KIASU ExamPaper

2019

Primary 6

Science

1	RGPS		SA1	SA2
2	Nanyang	CA1	SA1	SA2
3	ACS		SA1	SA2
4	MGS		SA1	SA2
5	Nan Hua		SA1	SA2
6	SCGS		SA1	SA2
7	Pei Hwa			SA2
8	CHIJ	CA1	SA1	SA2
9	Pei Chun			SA2
10	Christian Brother			SA2
11	Henry Park		SA1	SA2
12	Rosyth		SA1	SA2
13	Tao Nan		SA1	SA2
14	Catholic		SA1	SA2
15	Maris Stella		SA1	SA2
16	Maha Bodhi		SA1	SA2
17	Ai Tong			SA2
18	River Valley	CA1	SA1	SA2

KIASU ExamPaper

Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Termly Assessment
SCIENCE

BOOKLET A

28 February 2019

Total Time for Booklets A and B: 1 hour 30 minutes

26 questions
52 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 17 printed pages.

Section A (26 x 2 marks = 52 marks)

For each question from 1 to 26, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. Which two systems work together to ensure that we get the nutrients from the food we eat?

   (1) Skeletal and digestive system
   (2) Skeletal and circulatory system
   (3) Digestive and circulatory system
   (4) Respiratory and circulatory system

2. Which of the following statements about bacterium is/are true?

   A Some bacteria in our body are useful.
   B Bacterium is not an animal but a fungi.
   C Bacterium cannot reproduce on their own.

   (1) A only
   (2) B only
   (3) A and C only
   (4) B and C only

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3. Compare the following organisms.

mushrooms

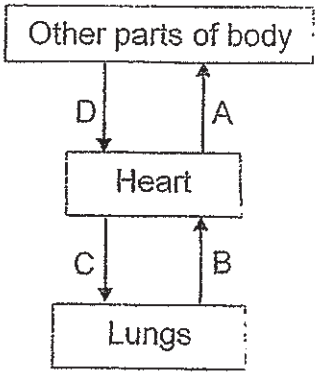
fern

How are they similar?

A They are both fungi.
B They do not bear flowers.
C They reproduce from spores.
D They can make their own food.

(1) A only
(2) B and C only
(3) A, B and C only
(4) B, C and D only

4. The diagram below shows how blood flows in certain parts of the human body.



Which of the following blood vessels carry blood rich in carbon dioxide?

(1) A and B
(2) A and C
(3) B and D
(4) C and D

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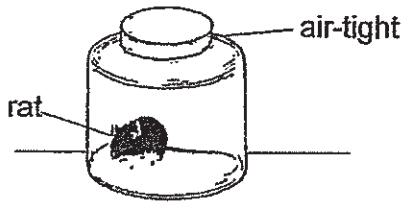
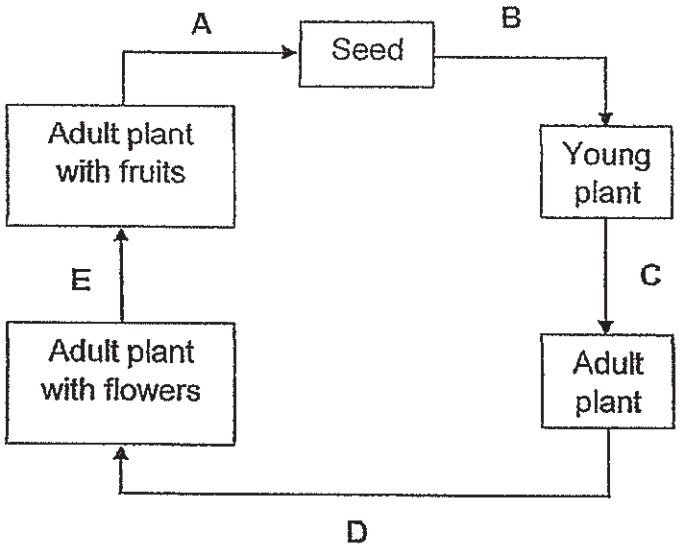
5. A rat was placed in a sealed container as shown below.



Which one of the following shows the change in the amount of gases in the container after 10 minutes?

	Water vapour	Oxygen	Carbon dioxide
(1)	No Change	Decrease	Increase
(2)	Increase	No Change	Decrease
(3)	Increase	Decrease	Increase
(4)	Decrease	Decrease	No Change

6. The diagram below shows the stages of development of a plant.



At which stages do fertilisation and germination occur?

	Fertilisation	Germination
(1)	E	B
(2)	E	C
(3)	D	B
(4)	D	A

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7. Raja conducted an experiment to show how overcrowding affects the growth of a plant. He planted some seeds of the same plant into two similar pots. Which other variables should he keep the same in order to conduct a fair experiment?

A Amount of soil
B Amount of water
C Number of seeds in each pot
D Location where the pots are placed

(1) C only
(2) B and D only
(3) A, B and C only
(4) A, B and D only

8. The diagram below shows the cross-sections of four different flowers.

A B C D

Which of the flower(s) will definitely not be able to develop into a fruit?

(1) C only
(2) A and B only
(3) C and D only
(4) A, B and D only

9. Which of the following characteristic(s) can a baby inherit from the parents?

A Fingerprints
B Length of hair
C Double eyelids
D Attached earlobes

(1) C only
(2) C and D only
(3) A, B and C only
(4) A, B and D only

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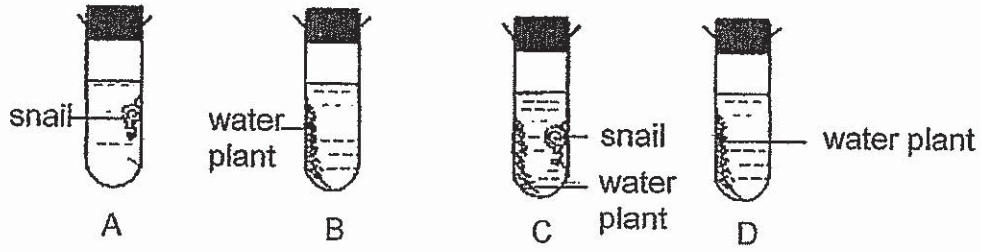
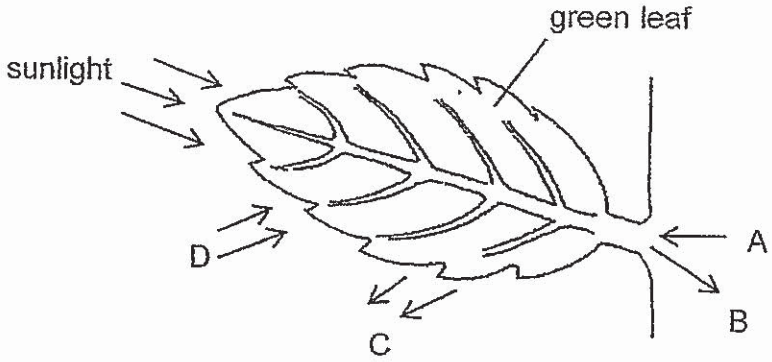
10. Mathew sets up an experiment as shown in the diagram below. All the tubes contain the same amount of a red indicator added to the water. The solution will turn yellow when it detects more carbon dioxide and turn purple when it detects more oxygen.



He then placed tubes A and B near a window and tubes C and D in a cupboard. What will be the colour of the solutions in each tube a day later?

	Tube A	Tube B	Tube C	Tube D
(1)	yellow	purple	yellow	yellow
(2)	red	purple	yellow	purple
(3)	purple	red	purple	yellow
(4)	yellow	purple	red	purple

11. The diagram below shows a green leaf on a plant carrying out certain life processes.



Which one of the following is correctly represented by A, B, C and D?

	A	B	C	D
(1)	oxygen	sugar	water	carbon dioxide
(2)	water	sugar	oxygen	carbon dioxide
(3)	water	oxygen	sugar	carbon dioxide
(4)	sugar	carbon dioxide	oxygen	water

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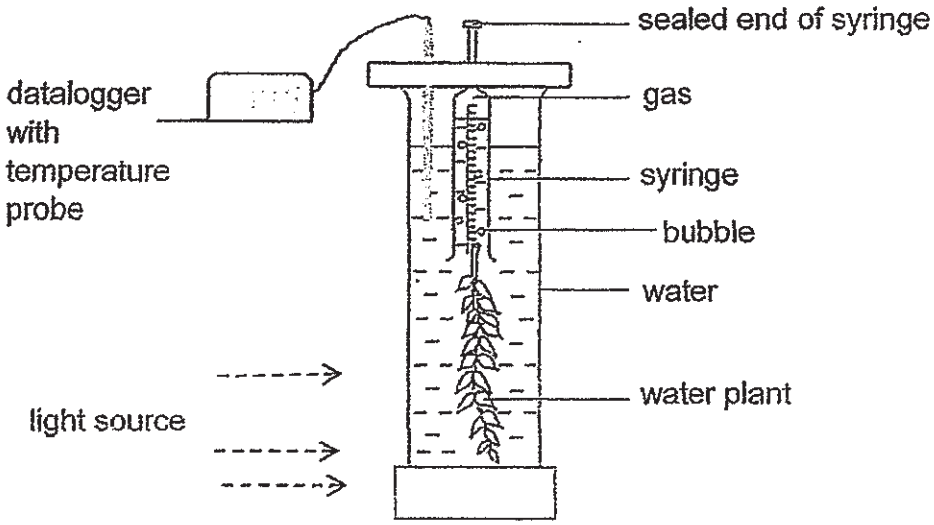
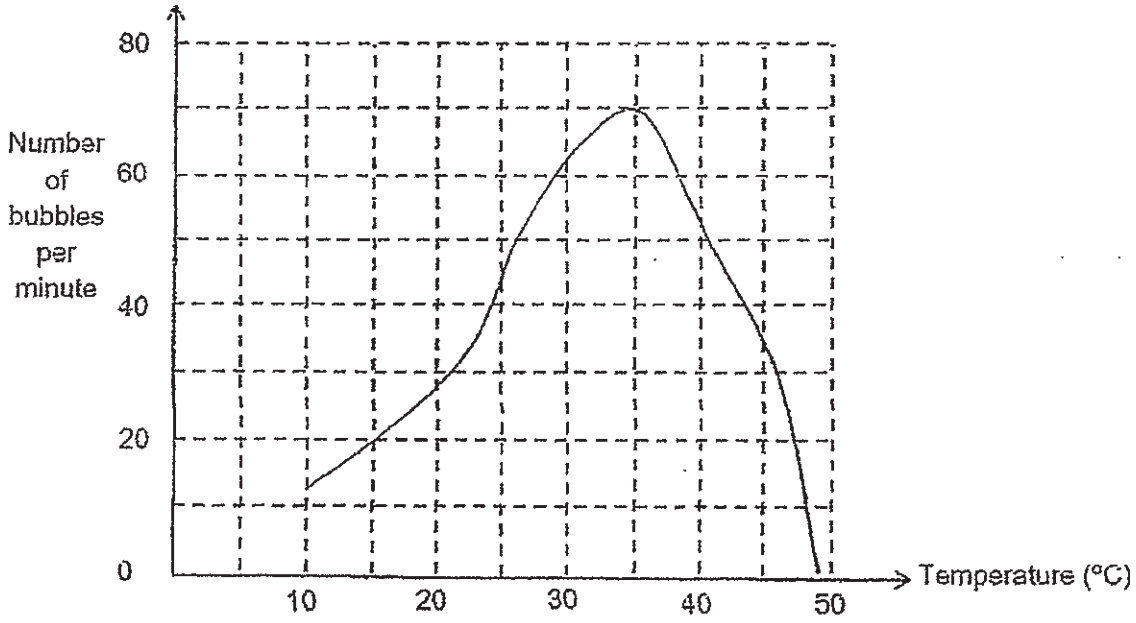
12. Hassan used the following set-up to investigate the rate of photosynthesis at different water temperatures.



He plotted a graph to show the number of bubbles counted per minute at different water temperatures as shown below.



At which temperature range of water should he expose the plant in the jar to in order to have the highest rate of photosynthesis?

(1) 10 °C to 15 °C
(2) 20 °C to 25 °C
(3) 30 °C to 35 °C
(4) 40 °C to 45 °C

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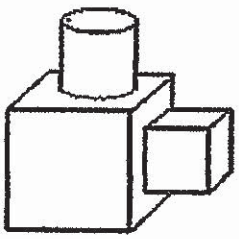
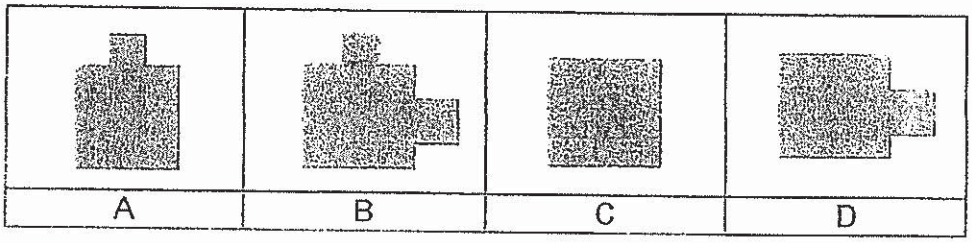
13. Study the object below carefully.



object X

Which of the following shadows cannot be formed by object X when light is shone on it from different directions?



(1) B only
(2) C only
(3) A and B only
(4) C and D only

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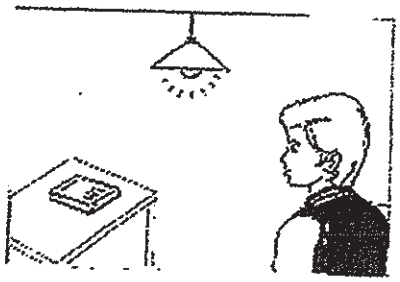
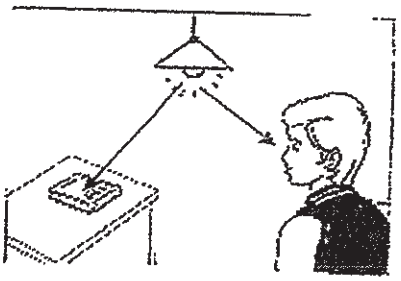
14. The diagram below shows a boy in a room with a lamp as its only light source.

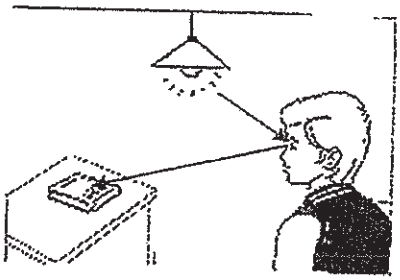


Which one of the diagrams below shows correctly the path of light that enables him to see the book on the table?

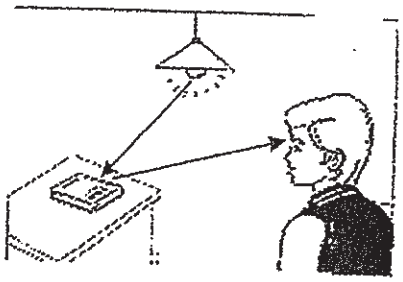
(1)



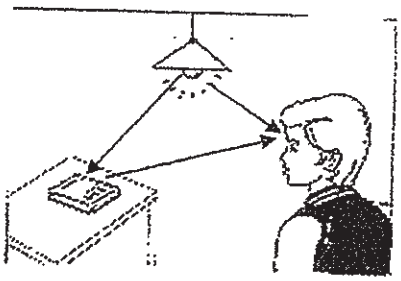
(2)



(3)



(4)



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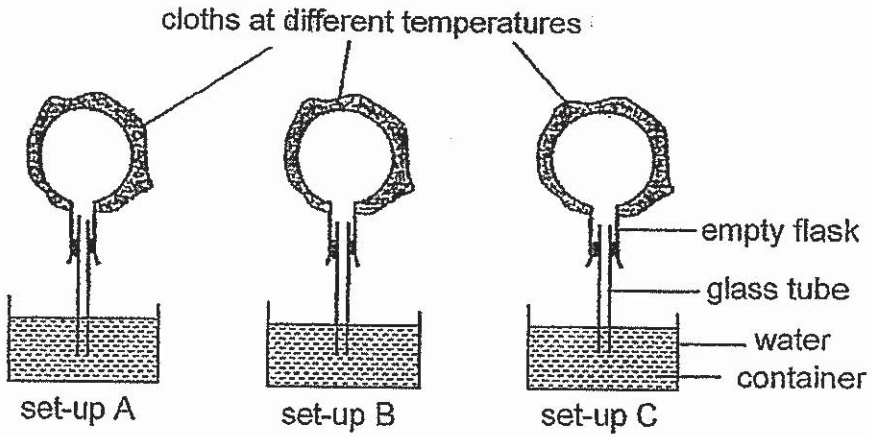
15. June conducted an experiment using three set-ups as shown below.



She recorded her observations in the table below.

Set-up A	Water rose up the glass tube.
Set-up B	Bubbles observed in the water in the container.
Set-up C	No changes were observed.

Which of the following correctly shows the temperature of the cloth used to wrap the flask in each set-up?

	Set-up A	Set-up B	Set-up C
(1)	90°C	5°C	room temperature
(2)	5°C	90°C	room temperature
(3)	room temperature	5°C	90°C
(4)	room temperature	90°C	5°C

16. As ice melts, _____.

A it gains heat
B its mass increases
C its temperature increases
D there is a change in material

(1) A only
(2) A and C only
(3) A, B and C only
(4) B, C and D only

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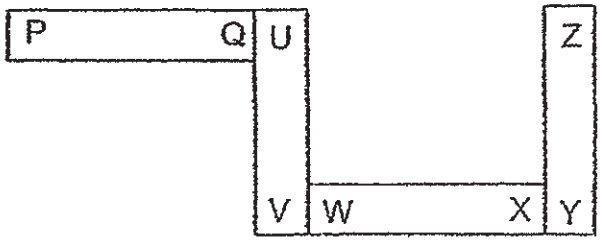
17. Four pieces of bar magnets are put together and their poles are marked as shown in the diagram below.



Which of the following arrangements of the magnets are possible?

diagram A

diagram B

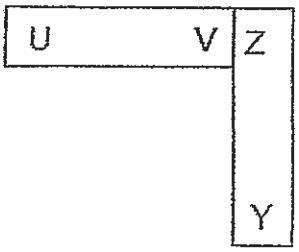


diagram C

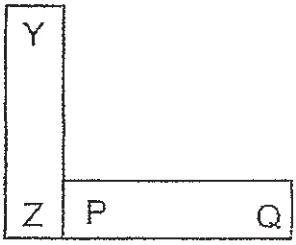


diagram D

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

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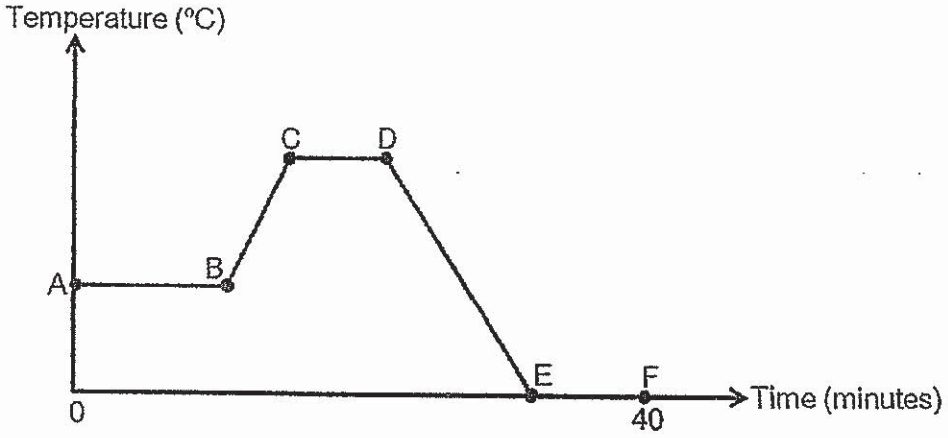
18. Muthu wanted to find out how the temperature of water affects the rate at which sugar dissolves. He used sugar cubes of similar size and 4 identical beakers to set up his experiment. Details of his experiment are shown in the table below.

Beaker	Number of sugar cubes	Temperature of water (°C)	Amount of water (ml)
W	2	90	600
X	1	30	600
Y	1	90	500
Z	1	40	500

Which two beakers should Muthu compare?

(1) W and X
(2) W and Y
(3) X and Y
(4) Y and Z

19. The line graph below shows the changes in the temperature of water over a period of 40 minutes.



Based on the above, which one of the following statements is/are correct?

A Water was boiling at C.
B Water was losing heat at DE.
C Melting occurs at AB and EF
D Evaporation occurs at BC only.

(1) A only
(2) A and B only
(3) C and D only
(4) A, B and D only

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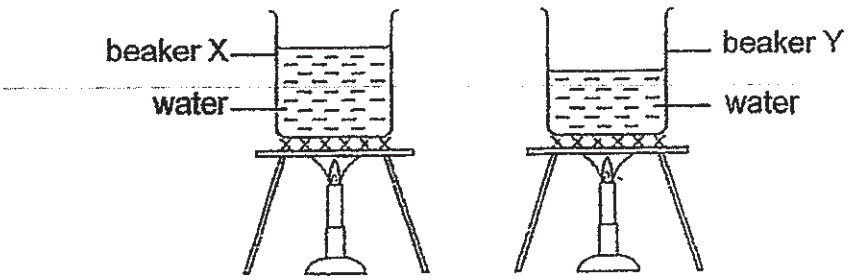
20. In the experiment below, two beakers containing different volumes of water at room temperature were heated to 50 °C.

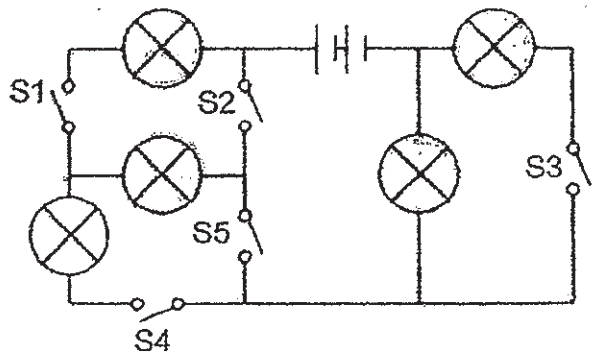


Which of the following statement(s) is/are correct?

A The water in beaker X has more heat energy than in beaker Y.
B The water in beaker Y took a shorter time to be heated to 50 °C.
C The water in beaker X gained heat faster than the water in beaker Y.
D The water in beaker X and beaker Y have the same amount of heat.

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

21. The set-up below shows an electric circuit using identical bulbs, switches, wires and two batteries.



How many bulbs will light up when switches S1, S3 and S5 are closed?

(1) 2 bulbs
(2) 3 bubs
(3) 4 bulbs
(4) None of the bulbs

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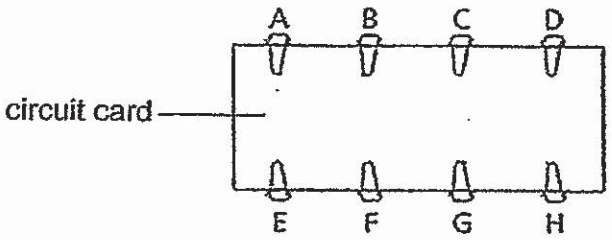
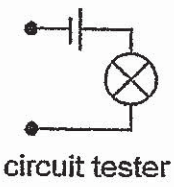
22. Zhi Hui used a circuit tester to test several points on a circuit card.



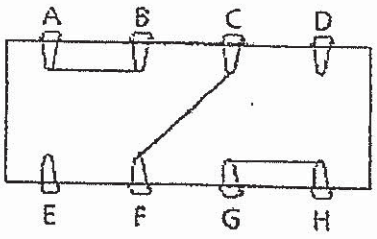


He recorded the results as shown in the table below.

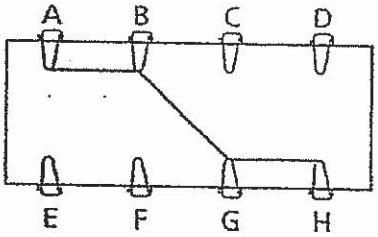
Points	Did the bulb of the circuit tester light up?
AF	Yes
BC	Yes
BG	No
DE	No
BF	Yes
GH	No

Which one of the following circuit cards did Zhi Hui use?

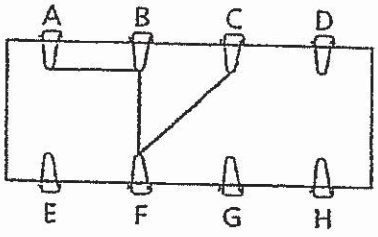
(1)



(2)



(3)



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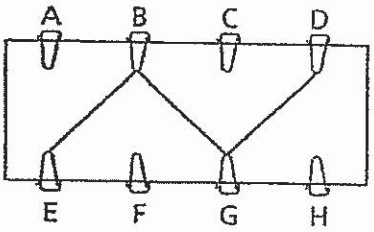

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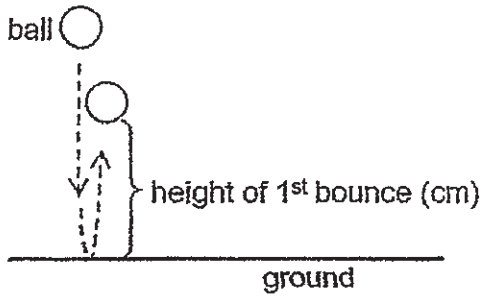
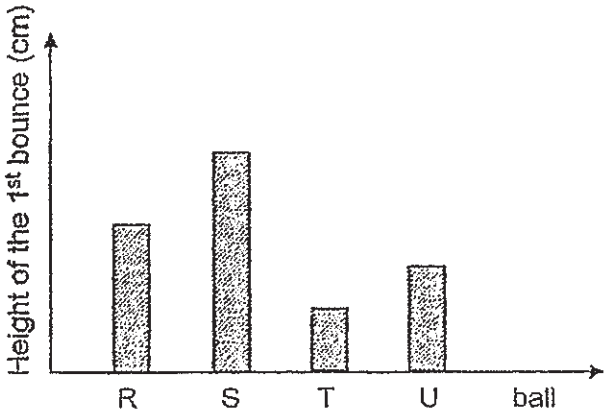
23. Salleh conducted an experiment with 4 balls R, S, T and U which were made of different materials. He released each ball from the same height and recorded the height of the first bounce from the ground.



The results of his experiment are presented in the bar graph below.



What could Salleh infer from the results?

A Ball U was bigger than ball T.
B Ball S most likely can bounce the most number of times before stopping.
C Ball R had less kinetic energy than Ball U when it bounced up from the ground.
D Ball T had the least gravitational potential energy compared to the other balls after the first bounce.

(1) A and B only
(2) C and D only
(3) B and D only
(4) A, B and D only

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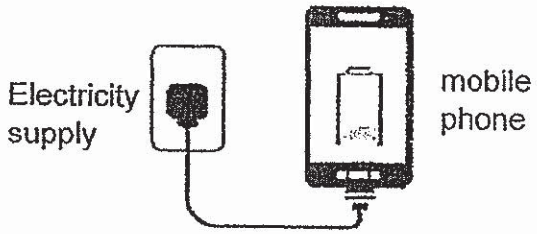
24. Energy cannot be created or destroyed. However, it can be converted from one form to another form. How does a zebra obtain its energy indirectly from the sun?

(1) The zebra obtains its energy by feeding on other herbivores.
(2) The zebra obtains its energy by spending many hours under the sun.
(3) The zebra gets its energy by feeding on the plants which have converted the light energy into chemical potential energy.
(4) The zebra gets its energy by feeding on the plants which have converted the heat energy into chemical potential energy.

25. Jason has a mobile phone. Energy is stored in the battery of the phone. The diagram below shows the battery of the mobile phone being charged.



What is the main energy conversion in the battery as it is being charged?

(1) Electrical energy → sound energy
(2) Electrical energy → sound + heat energy
(3) Chemical potential energy → electrical energy
(4) Electrical energy → chemical potential energy

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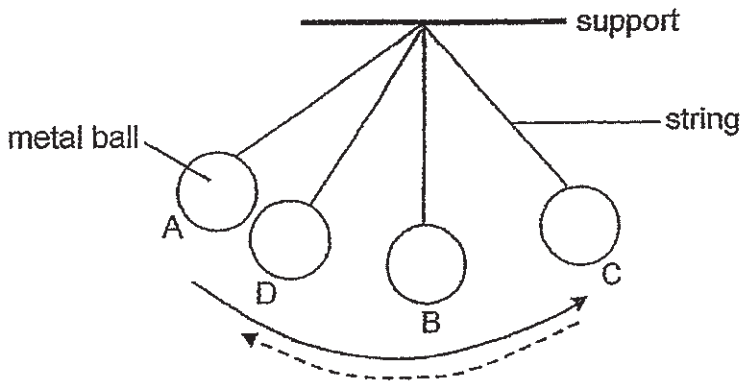
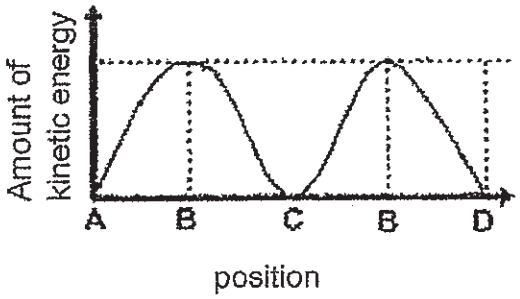
26. Shaun carried out an experiment with the set-up below. He released the metal ball at position A. The ball swung to position C and then back to position D.

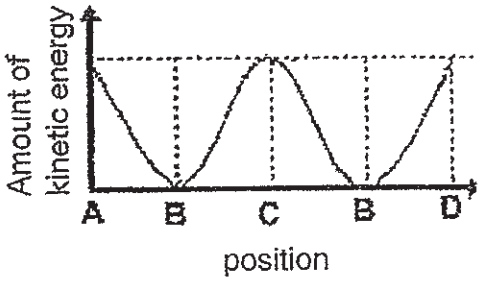


Which one of the following graphs shows the change in kinetic energy of the metal ball as it swung from A to C and then back to D?

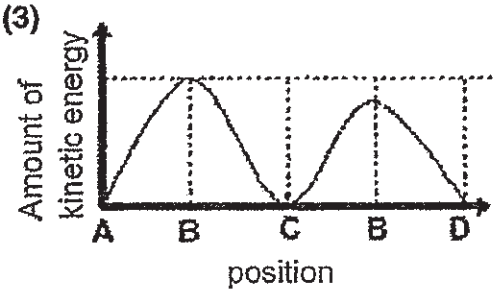
(1)



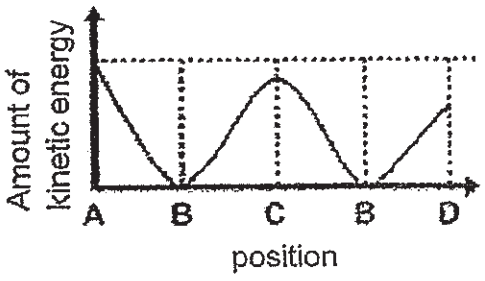
(2)



(3)



(4)



~ End of Booklet A ~

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Name : _____

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Termly Assessment
SCIENCE

BOOKLET B

28 February 2019

Booklet A	52
Booklet B	38
Total	90

Total Time for Booklets A and B: 1 hour 30 minutes

11 questions
38 marks

_____
Parent's Signature/Date

Do not open this booklet until you are told to do so.
Follow all instructions carefully.

This booklet consists of 13 printed pages.

Section B: (38 marks)

For questions 27 to 37, write your answers in this booklet.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

27. Melvin wanted to know how his pulse rate would change after completing two different activities. The table below shows his pulse rates at different intervals after he had completed the activities.

Activity (10 minutes)	Pulse rate (beats per minute)		
	Just after activity	2 minutes after activity	20 minutes after activity
Walking	81	78	70
Running	120	105	70

(a) What does pulse rate measure? [1]

_____

_____

(b) Based on the table above, explain why Melvin's pulse rate was higher when he was running. [2]

_____

_____

_____

(c) Based on the table above, what was Melvin's pulse rate when he is at rest? [1]

_____

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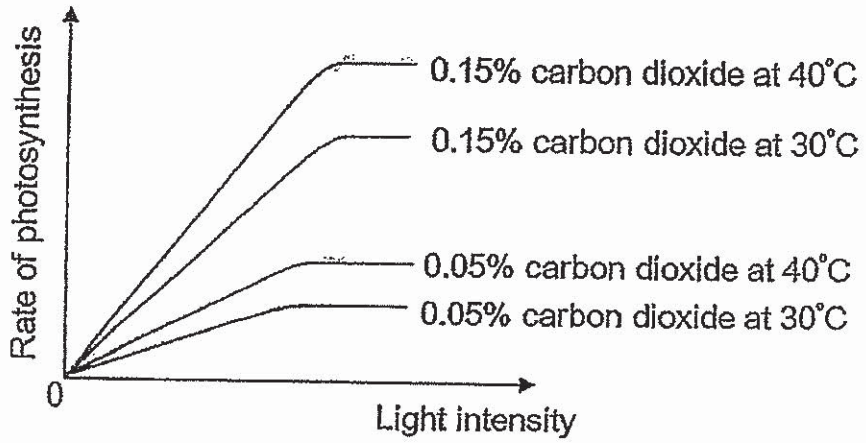
28. Henry carried out an experiment to find out the effects of light intensity, amount of carbon dioxide and temperature on the rate of photosynthesis. He obtained the following results.



Based on the results above, state whether each of the following statements is true (T), false (F) or not possible to tell (NP) by writing T, F or NP in the table below. [4]

Statement	True (T), False (F) or Not Possible to tell (NP)
The rate of photosynthesis increases with increasing light intensity until it is limited by other factors.	
The rate of photosynthesis is the highest when the temperature is above 40 °C.	
At the same temperature, the rate of photosynthesis is not affected by the amount of carbon dioxide present.	
At the same light intensity, the rate of photosynthesis is not affected by a change in temperature.	

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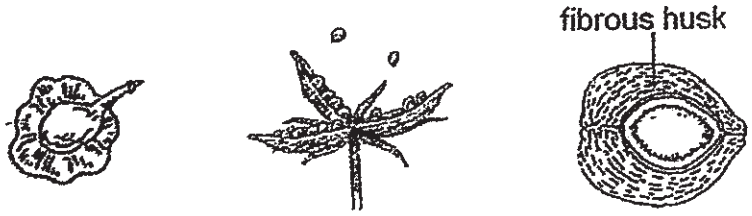
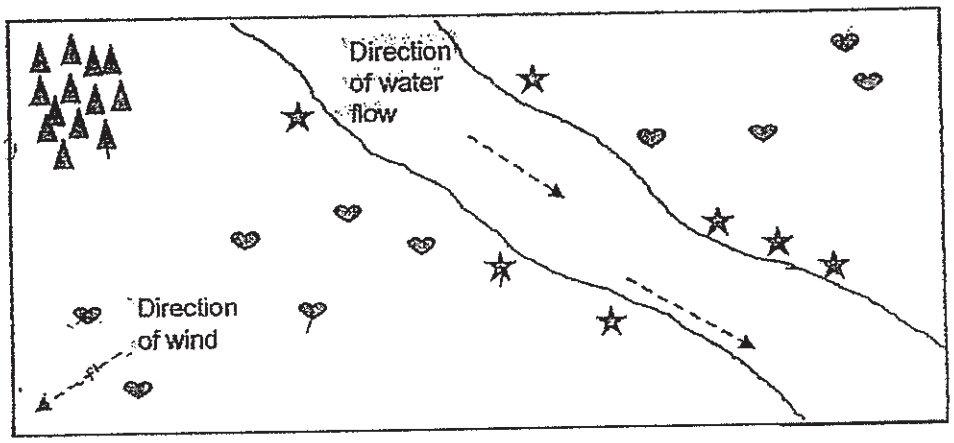
29. Karen found three samples of fruits A, B, and C on a plot of land as shown below.



fruit A fruit B fruit C

The diagram below shows the distribution of the plants A, B and C.



(a) Which of the following symbols represents plants A, B and C respectively? [1]

Symbol	Plant
★	
▲	
♥	

(b) How does having a fibrous husk help fruit C in its dispersal? [1]

_____

_____

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The diagram below shows another fruit that Karen found on the same plot of land.

She studied the fruit and concluded that the dispersal method of this fruit is similar to fruit A.

(c) Do you agree with Karen? Explain your answer. [2]

(d) Why is it important for plants to disperse their seeds? [1]

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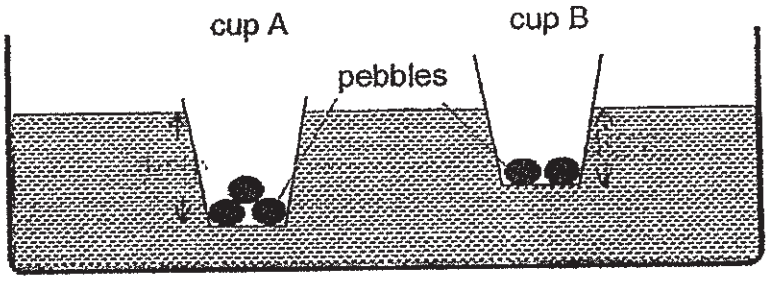
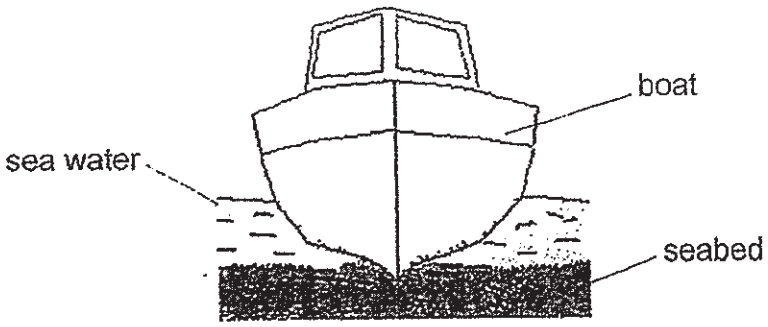
30. Swari placed different numbers of similar pebbles into two similar cups A and B. She wanted to find out the relationship between the numbers of pebbles in the cups and the depth to which the cups will sink when put in water. The diagram below shows what she observed.



(a) Based on her observation, what is the relationship between the number of pebbles in the cup and the depth to which the cups will sink when put in water? [1]

A boat carrying a full load of fish was stuck on the seabed as shown below.



(b) Based on the experiment above, what could the fisherman on the boat do in order for the boat to be lifted off the seabed and move forward? Explain your answer. [1]

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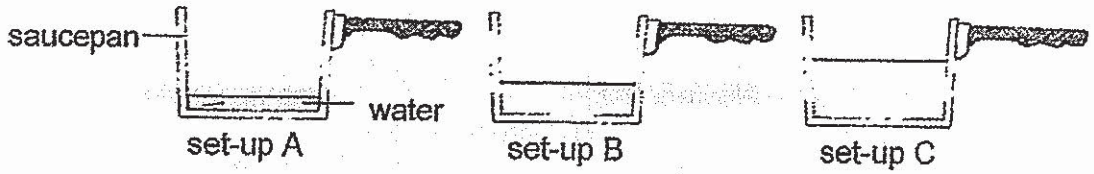
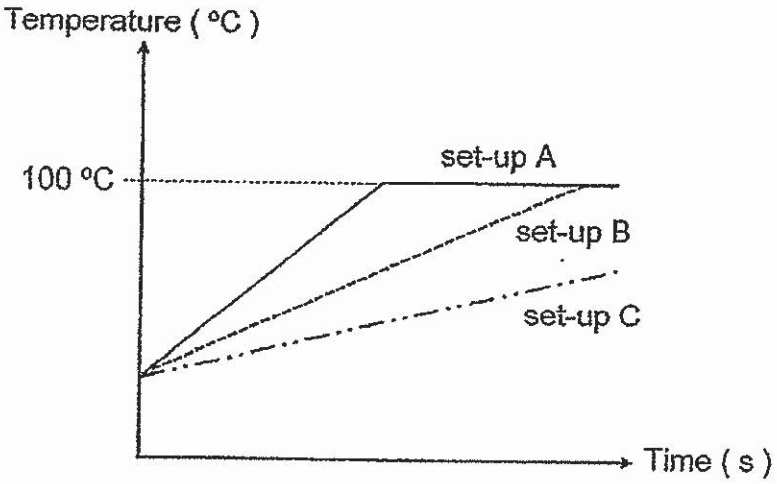
31. Sarah conducted an experiment with 3 similar saucepans filled with different amounts of water as shown below.



She recorded the changes in the temperature of water in the saucepans over a period of time. The graph below shows the results of her experiment.



(a) What is the aim of Sarah's experiment? [1]

(b) Based on the results above, water in set-up A boiled the fastest. Explain why this is so. [1]

(c) Based on Sarah's experiment, state two other variables that she has to keep constant in order for this experiment to be a fair one. [2]

Variable 1:	
Variable 2:	

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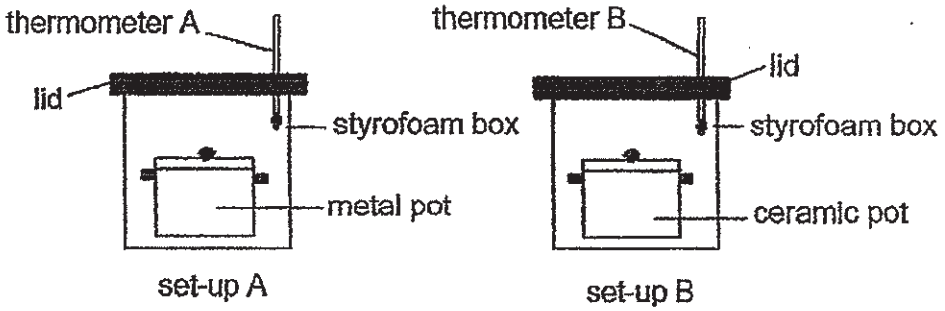
32. Winston conducted an experiment using the set-ups shown. The metal and ceramic pots contained hot water at the same temperature.



(a) After 10 minutes, Winston found that the temperature in the styrofoam box with the metal pot is higher than that in set-up B. Explain why. [2]

(b) Explain how using styrofoam boxes helped to make the results more reliable. [1]

(c) Give a reason why Winston left the two styrofoam boxes uncovered for 15 minutes before repeating the experiment with pots made of glass and plastic. [1]

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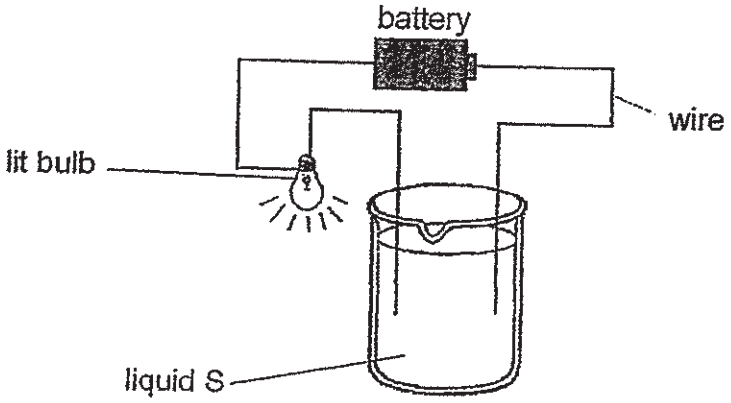
33. Study the set-up below.



(a) What does the experiment above tells you about liquid S? [1]

_____

_____

(b) Suggest a change to the set-up such that the bulb will be brighter. [1]

_____

_____

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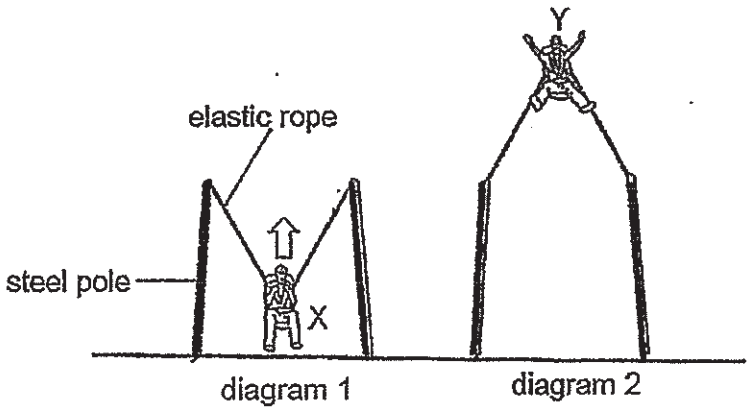
34. David sat on a ride at an amusement park. The elastic ropes were pulled down to point X as shown in diagram 1.



When released, the stretched elastic ropes pulled David upwards as shown in diagram 2. The elastic ropes stretched to a maximum length when he was at point Y.

(a) What was the main energy conversion when David was moving from point X in diagram 1 to point Y in diagram 2? [1]

(b) If David is replaced with a boy who has a smaller mass and released from point X, will his final position be higher or lower than point Y? Explain your answer. [2]

_____

_____

_____

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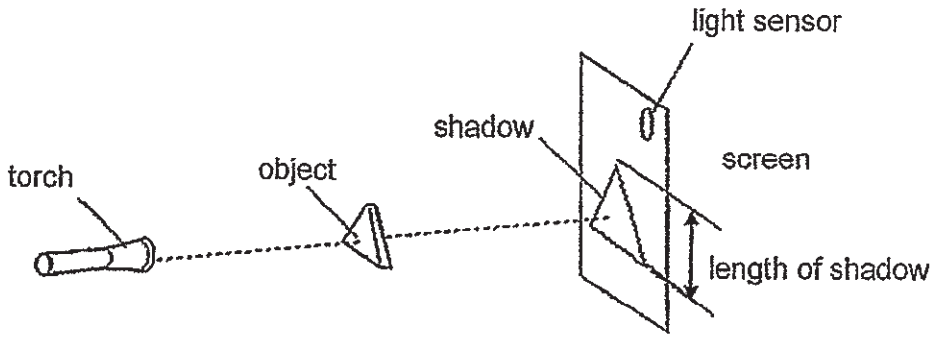
35. Nazri used the set-up below to conduct an experiment. He used a light sensor to measure the amount of light on the screen.



He changed the position of one of the items in the set-up and recorded his observations for each position as follows.

Light sensor reading (units)	Length of shadow (cm)
80	6
130	8
200	13

(a) Based on his observations, could he have moved the object towards the torch? Explain your answer. [2]

(b) What is the main property of light that enables a shadow to be formed? [1]

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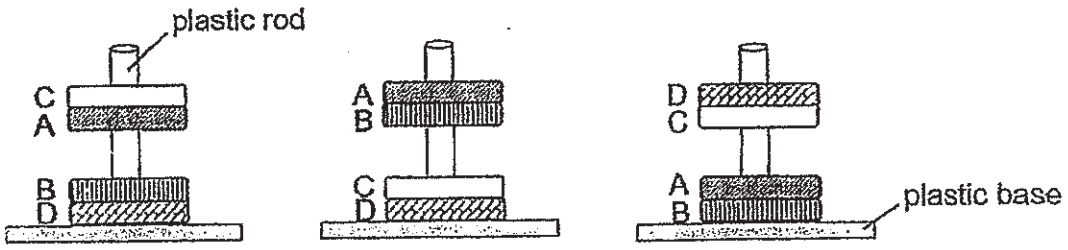
36. Joo Seng put four metal rings A, B, C and D through a plastic rod in three different arrangements as shown below.



arrangement 1 arrangement 2 arrangement 3

(a) Based on the observations above, which of the metal rings are definitely magnets? [1]

(b) Explain your answer in (a) above. [2]

(c) Name two magnetic materials. [1]

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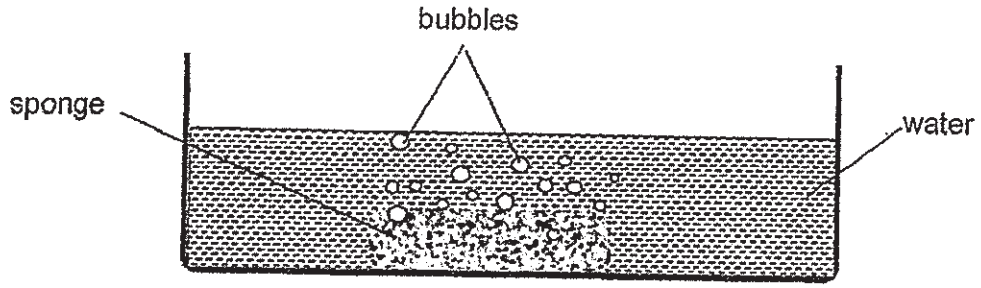
37. Study the diagram below.



(a) When Alexis pushed the sponge into the basin of water, she saw bubbles coming out of the sponge. What do these bubbles contain? [1]

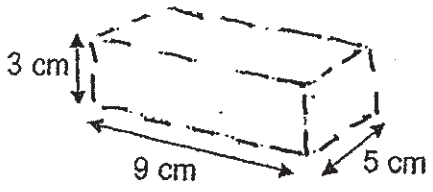
_____

(b) After the sponge was pushed into the water, the mass of the sponge increased. Explain why. [1]

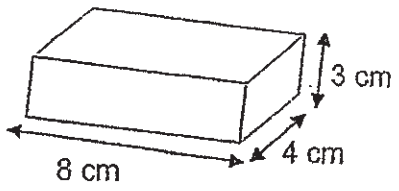
_____

_____

Alexis then took another piece of sponge and a box as shown below.



sponge



box

(c) She managed to squeeze the sponge into the box. Explain why she was able to do so. [1]

_____

_____

_____

~~End of Paper ~~

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICLOLAS GIRLS' SCHOOL
SUBJECT : SCIENCE
TERM : SA1

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	2	4	3	1	4	1	2	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	3	2	3	2	1	3	4	2	2
Q21	Q22	Q23	Q24	Q25	Q26				
3	3	3	3	4	3				

BOOKLET B

Q27 (a) Number of heartbeat per minute.

(b) When he runs, his body needs more energy. His heart will need to pump faster to transport more blood rich in oxygen and digested food to all parts of his body for higher rate of respiration.

(c) 70 beats per minute.

Q28 (i) T (ii) NP (iii) F (iv) F

Q29 (a)

	C
	B
	A

(b) It contains air space that allows it to float on water.

(c) No. Fruit A has a wing-like structure whereas the new fruit have stiff hair which will help it hook onto the fur of passing animals. Thus fruit A is dispersed by wind and the new fruit is dispersed by animals.

(d) To pervent overcrowding. The seedling will not compete with each other for space, light, water and nutrients.

Q30 (a) The greather the number of pebbles in the cup, the greater the depth to which the cups will sink when put in water.

(b) They could throw out some fish in the boat. With lesser fish, there will be lesser mass and the boat will sink lesser.

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Q31 (a) To find out if the amount of water will affect the temperature of water in the saucepans over a period of time.

(b) It has the least amount of water, so it can gain most heat within the shortest time.

(c) same amount of heat, same temperature of water at the start of the experiment.

Q32 (a) Metal is better conductor of heat. Therefore more heat in conducted by the metal pot from the hot water to the air inside the styrofoam box.

(b) Styrofoam is a poor conductor of heat. It will slow down the heat lost from the air inside the box to the surrounding air.

(c) To allow time for the hot air in the box to cool down to the same starting temperature for a fair test.

Q33 (a) Liquid S is a good conductor of electricity.

(b) Increase the number of batteries in set-up.

Q34 (a) Elastic potential energy → Kinetic energy → Gravitational potential energy

(b) It will be higher since the person is lighter, the same amount of elastic potential energy will be converted to more kinetic energy and hence pushing him higher than point Y.

Q35 (a) No. From the table, the intensity of light increases indicationg that the torch is moved nearer to the screen. This will cause a bigger shadow observed.

(b) Light travel in a straight line.

Q36 (a) A, B and C.

(b) They all repel each other, indicating that they are magnets as like poles of magnets repel each other.

(c) Iron and steel / cobalt and nickel

Q37 (a) Air

(b) As the water is being absorber into the sponge, the mass of the sponge will be increase as water has mass.

(c) There are air pockets in the sponge. Since air can be compressed, the sponge will compress a little to fit inside the box.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2019

BOOKLET A

Date : 6 March 2019

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 21 printed pages including this cover page.

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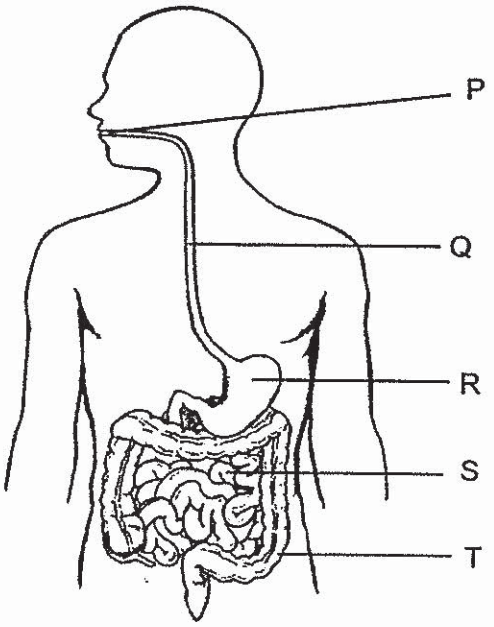
Section A (56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. **Indicate your choice in this booklet and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. The diagram below shows the human digestive system.



Which of the following statements about the digestive system are correct?

A Digestion is completed at part S.
B Digestion is not carried out by parts Q and T.
C Digested food is absorbed into the bloodstream at part T
D Food is broken down into simpler substances at parts P and R.

(1) A and C only
(2) B and D only
(3) A, B and D only
(4) A, B, C and D

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2. James wanted to investigate how the number of leaves affect the amount of water taken in by a plant. He was given 4 set-ups, P, Q, R and S. The table below shows the different conditions in each set-up at the start of his experiment.

	Set-ups			
	P	Q	R	S
Number of leaves	12	12	12	8
Number of roots	8	8	12	8
Volume of water (ml)	200	100	200	200
Temperature of water (°C)	30	30	25	30
Layer of oil on the surface of the water	Yes	Yes	No	Yes

Which 2 set-ups should he use to ensure a fair test?

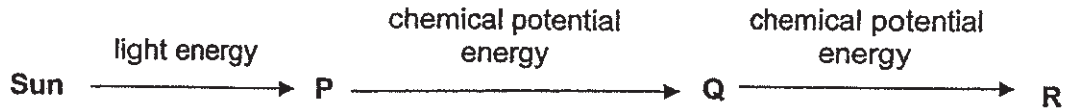
(1) P and Q
(2) P and S
(3) Q and R
(4) R and S

3. Which of the following statement(s) about photosynthesis is/are correct?

A Photosynthesis breaks down food to release energy.
B Food made during photosynthesis is used by the plant.
C Photosynthesis takes place only in cells with chloroplast.

(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

4. The diagram below shows how energy from the Sun is passed on to living things, P, Q and R.



Based on the information above, which one of the following sentences is correct?

(1) Energy in P is stored as starch.
(2) R gets its energy directly from P.
(3) Q gets its energy indirectly from P.
(4) P is the main source of heat and light energy.

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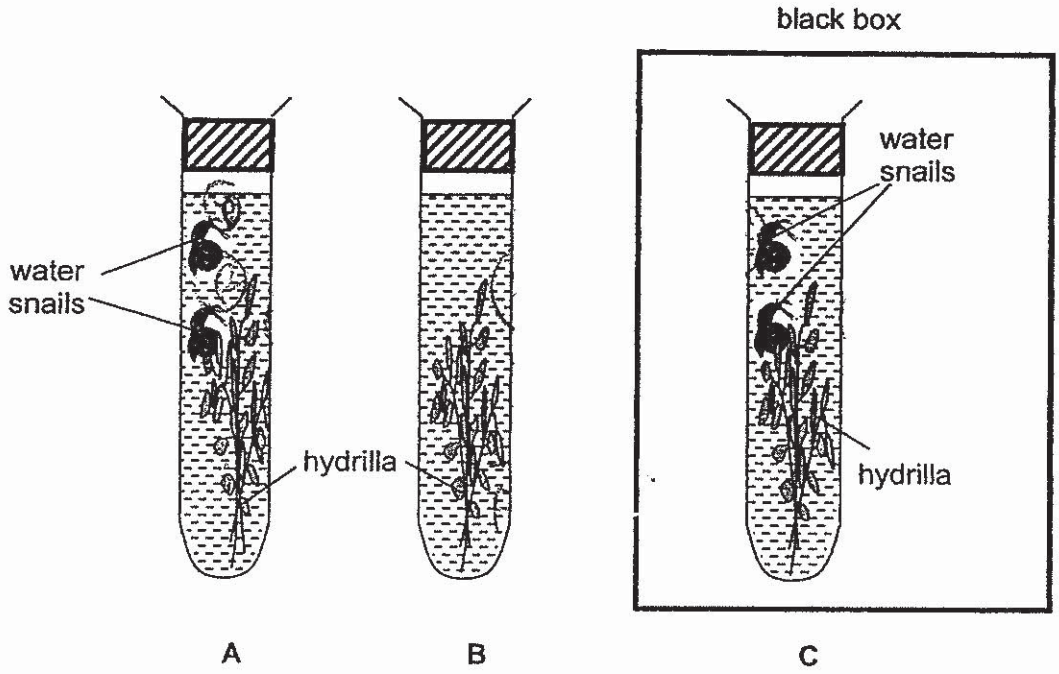
5. Su Ling carried out an experiment using some water snails and hydrilla plants. Water with the same amount of dissolved carbon dioxide was used to set up the experiment as shown in the diagram below. A stopper was placed at the top of each set-up.

Set-up A and set-up B were left in the sun for 2 hours while set-up C was placed in a black box for the same duration of time.



At the end of the experiment, Su Ling measured the amount of carbon dioxide in each set-up again.

Arrange set-ups, A, B and C, according to the amount of carbon dioxide left in each set-up.

	Lowest amount of carbon dioxide →		Highest amount of carbon dioxide
(1)	A	B	C
(2)	B	A	C
(3)	B	C	A
(4)	C	A	B

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6. In the presence of light, plants are able to photosynthesise.

Which one of the following correctly states what is taken in and produced during this process?

	Gas released	Gas taken in	Produced by the leaf	Taken in by the roots
(1)	oxygen	carbon dioxide	sugar	water
(2)	carbon dioxide	oxygen	sugar	water
(3)	oxygen	carbon dioxide	water	mineral salts
(4)	carbon dioxide	oxygen	water	mineral salts

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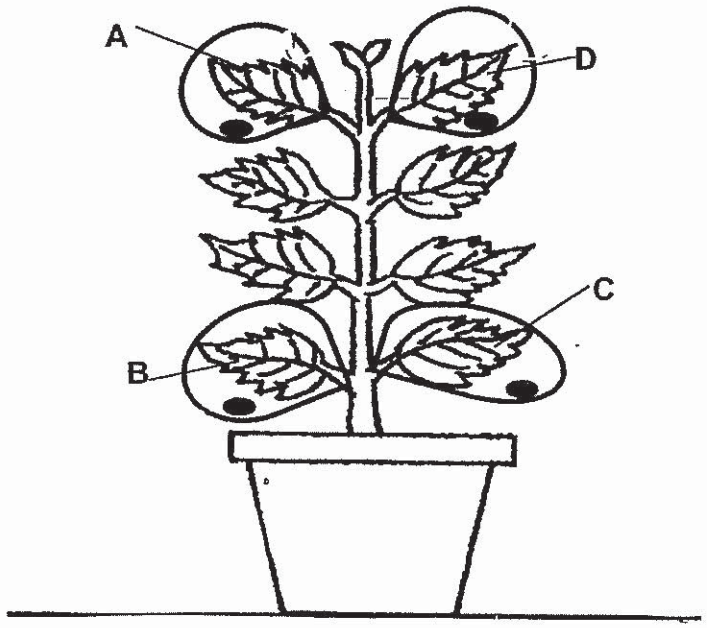
7. Luke placed a plant in the dark for 12 hours. The next morning, he used the plant and set up his experiment as shown in the diagram below.

Leaves A, B, C and D were each wrapped with a clear plastic bag as shown below. Each bag contains different substances as stated in the table.



Leaf	Content in clear plastic bag
A	Substance that absorbs water
B	Substance that absorbs oxygen
C	Substance that absorbs carbon dioxide
D	Substance that produces carbon dioxide

Luke then left the plant in the sun for 12 hours before plucking the leaves, A, B, C and D, and conducted a starch test on them.

Which one of the following shows the results of the starch test?

	Starch present	Starch absent
(1)	A, D	B, C
(2)	B, C	A, D
(3)	A, B, C	D
(4)	A, B, D	C

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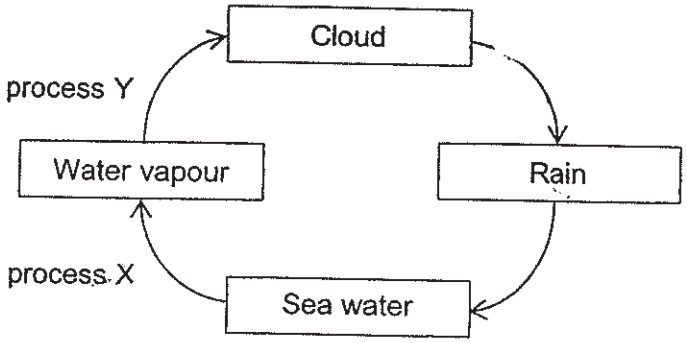
8. Which of the following ways help to conserve water?

A Taking shorter showers.
B Fixing water pipes that are leaking.
C Switching off the lights when not in use.
D Re-using water from washing vegetables to water the plants.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, B, C and D

9. The diagram below represents the water cycle.



Which of the following statement(s) about the water cycle is/are correct?

A Sea water loses heat during process X.
B Water vapour gains heat during process Y.
C Water vapour changes its state during process Y.

(1) C only
(2) A and B only
(3) B and C only
(4) A, B, and C

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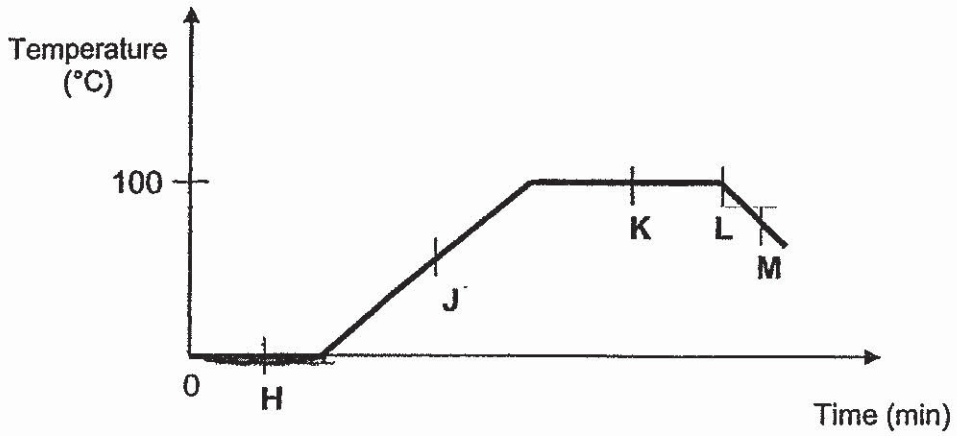
10. Tom placed a thermometer into a beaker of crushed ice. He then heated the beaker of crushed ice for some time and recorded the change in temperature in the graph below.

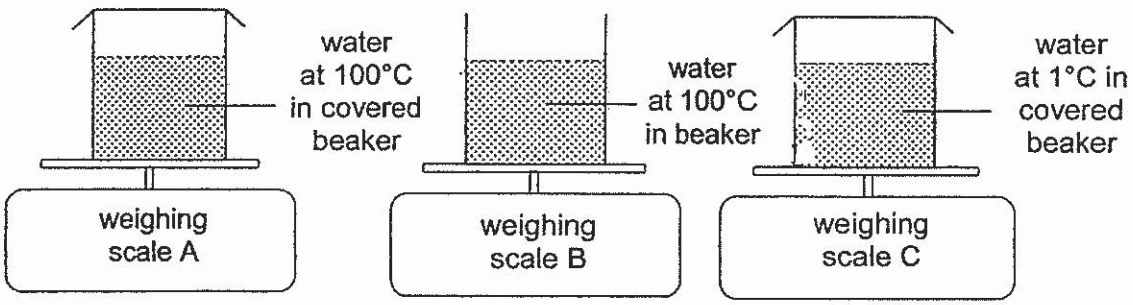


Based on the graph above, which of the following statements are **true**?

A Steam was formed at point M.
B The heat source was removed at point L.
C Water can be observed in the beaker at point H.
D Evaporation is taking place at points J and K only.

(1) B and C only
(2) A and D only
(3) B, C and D only
(4) A, B, C and D

11. Bala set up an experiment as shown below. He left the set-ups in a classroom at 28°C for 30 minutes and observed the readings on the weighing scales throughout the experiment.



Which one of the following shows the most likely readings on the weighing scales after 30 minutes compared to the start of the experiment?

	A	B	C
(1)	Increase	Decrease	Increase
(2)	Remain the same	Decrease	Increase
(3)	Remain the same	Decrease	Remain the same
(4)	Decrease	Increase	Decrease

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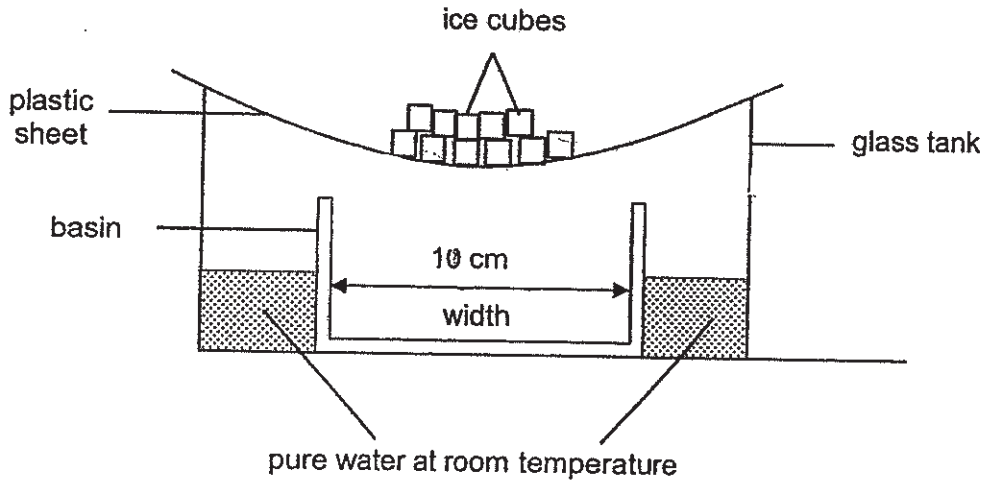
12. Sam set up the experiment as shown in the diagram below and placed it under a light source for 30 minutes.



He decided to make one change to the set-up and repeated the experiment again for the same duration of 30 minutes.

Which of the following are the possible changes that he could have made and the most likely observed results?

	Change made to the set-up	Observed results
A	Replace pure water with saltwater.	Pure water will be collected in the basin
B	Use a basin with a width of 5 cm.	More pure water will be collected in the basin.
C	Fill more pure water into the glass tank at the start of the experiment.	More pure water will be collected in the basin.

(1) A only
(3) A and C only

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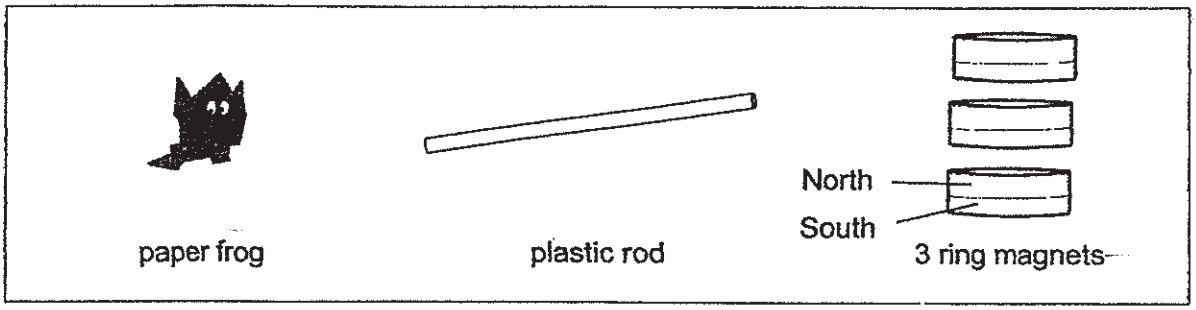
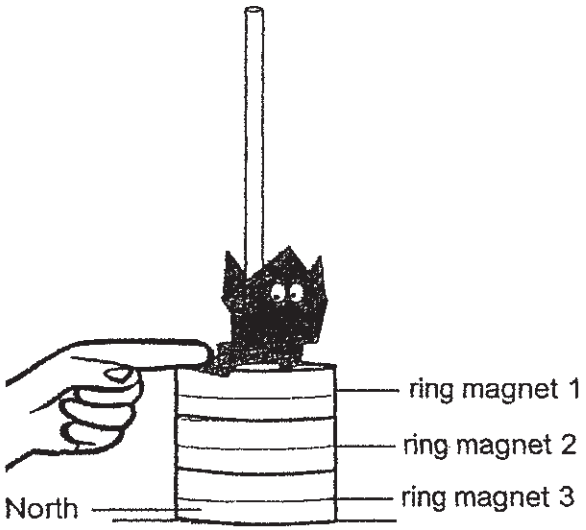
13. Eddie created a jumping frog toy using the following items.

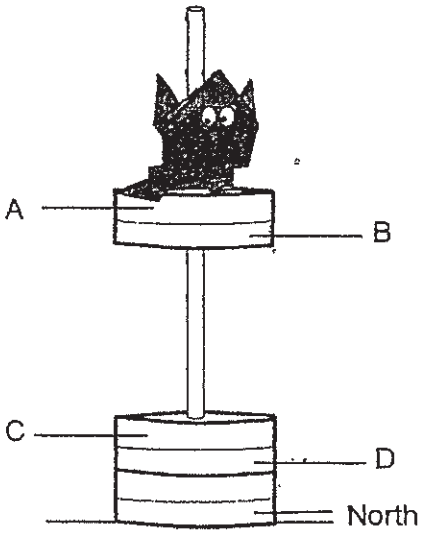


He glued the paper frog onto the top of one of the ring magnets and assembled the toy as shown in Figure 1. When he released the magnet, the frog jumped up as shown in Figure 2.



Before magnet was released

Figure 1



After magnet was released

Figure 2

Which one of the following correctly identifies the poles of ring magnets 1 and 2?

	A	B	C	D
(1)	North	South	South	North
(2)	North	South	North	South
(3)	South	North	North	South
(4)	South	North	South	North

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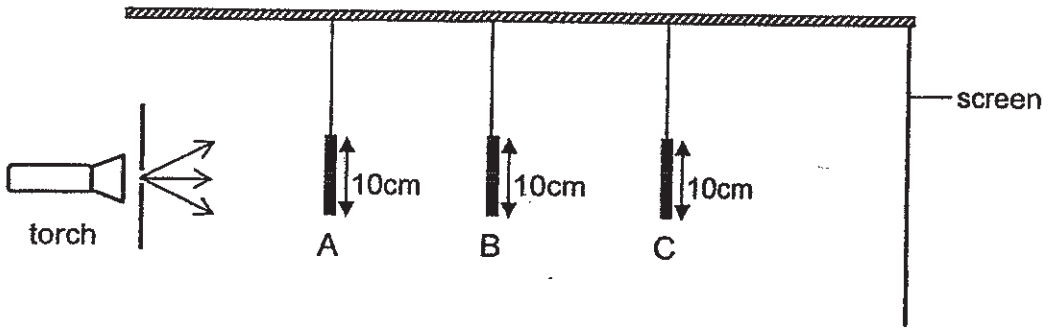
14. The set-up below shows light from a torch shining on three shapes made of different materials. All 3 shapes are placed at different distances from the torch at points A, B and C.



Shape			
Property	Does not allow light to pass through	Allows some light to pass through	Does not allow light to pass through

The experiment was repeated many times such that each shape was placed at all 3 points A, B and C each time.

Which one of the following shadows **cannot** be observed on the screen?

(1)

(2)

(3)

(4)

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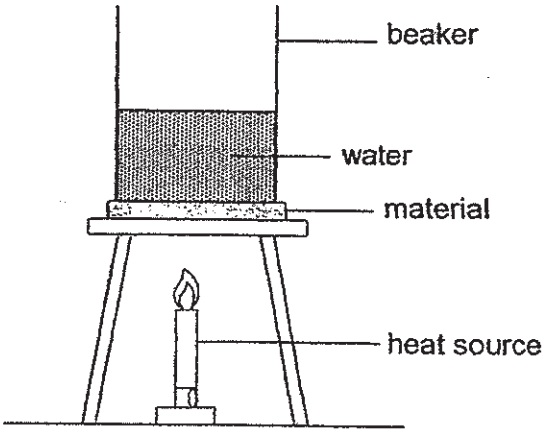
15. Jamilah conducted an experiment using the set-up as shown below.



She recorded the time taken for the water to boil when the different materials, A, B, C and D, were placed below the beaker of water.

Material	Time taken for the water to start boiling (min)
A	5
B	10
C	15
D	20

Which of the following material is the most suitable to make a container to store ice-cream such that the ice cream inside will melt the slowest?

(1) A
(2) B
(3) C
(4) D

16. The following activities involve the use of forces.

A Squeezing a lemon
B Wringing a wet towel
C Attracting a paper clip with a magnet

Which of the following activity/activities involve(s) only a pulling force?

(1) C only
(2) A and B only
(3) A and C only
(4) B and C only

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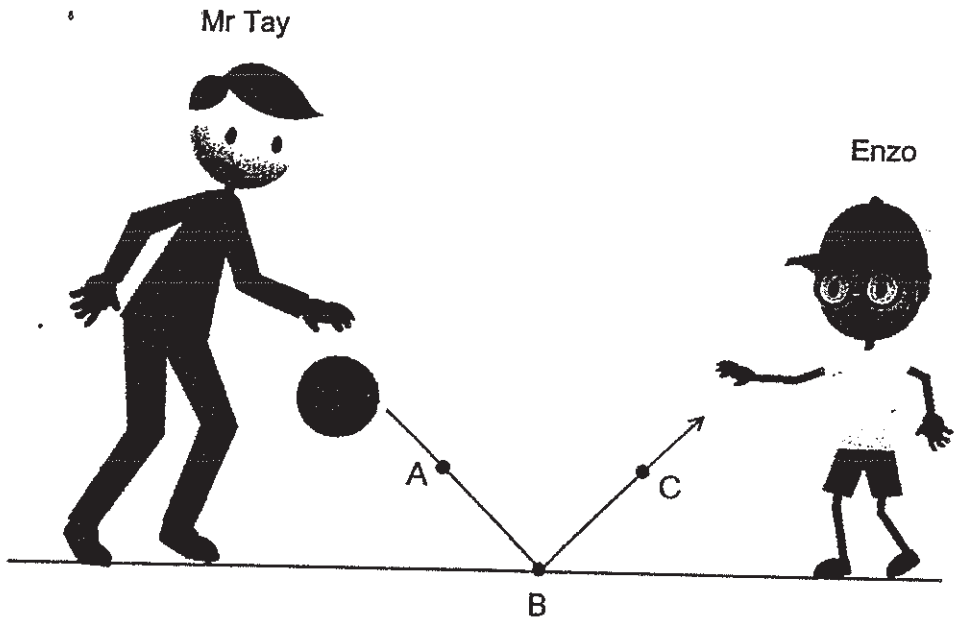
17. The diagram below shows Mr Tay bouncing a ball to Enzo.



The ball bounced once before Enzo caught it.

Which one of the following statements is correct?

(1) No force was acting on the ball when it was at B.
(2) Gravitational force was acting on the ball from A to B.
(3) There was no gravitational force acting on the ball from B to C.
(4) Mr Tay exerted both a pushing and pulling force when he bounced the ball to Enzo.

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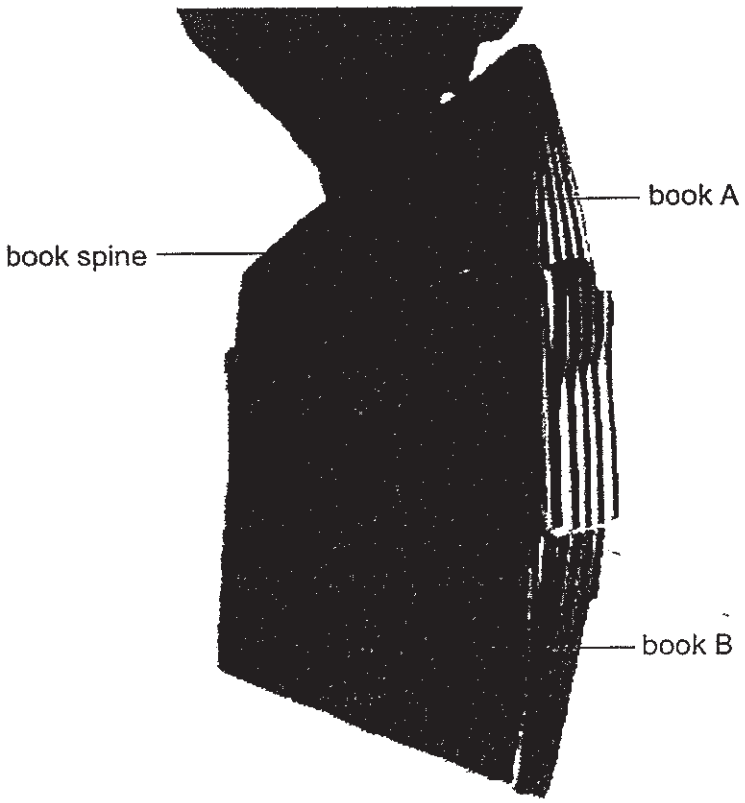
18. Ahmad overlapped the pages of two books, A and B, as shown in the diagram below.



He then held book A only by the book spine and observed that book B did not fall to the ground.

Which one of the following statements explains why book B did not fall to the ground?

(1) There is gravitational force acting on the books.
(2) There is frictional force between the pages of the books.
(3) There is magnetic force between the pages of the books.
(4) There is frictional force between Ahmad's hands and book A.

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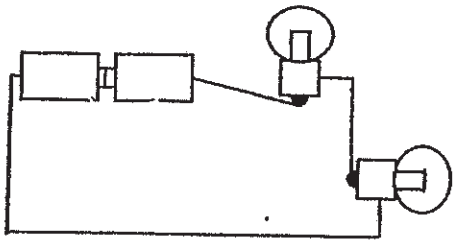
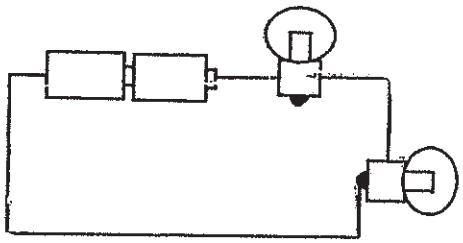
19. Declan connected the circuits in four different arrangements, A, B, C and D, as shown below. All the electrical components are working properly.

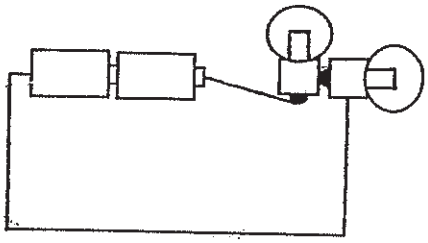
A



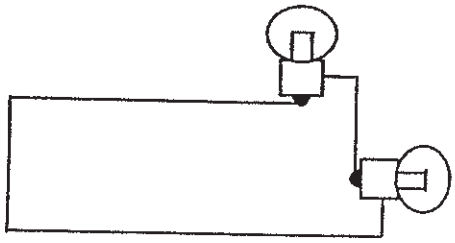
B



C



D



In which of the arrangement(s) would there be at least one bulb that lit up?

(1) C only
(2) A and D only
(3) B and C only
(4) A, B and C only

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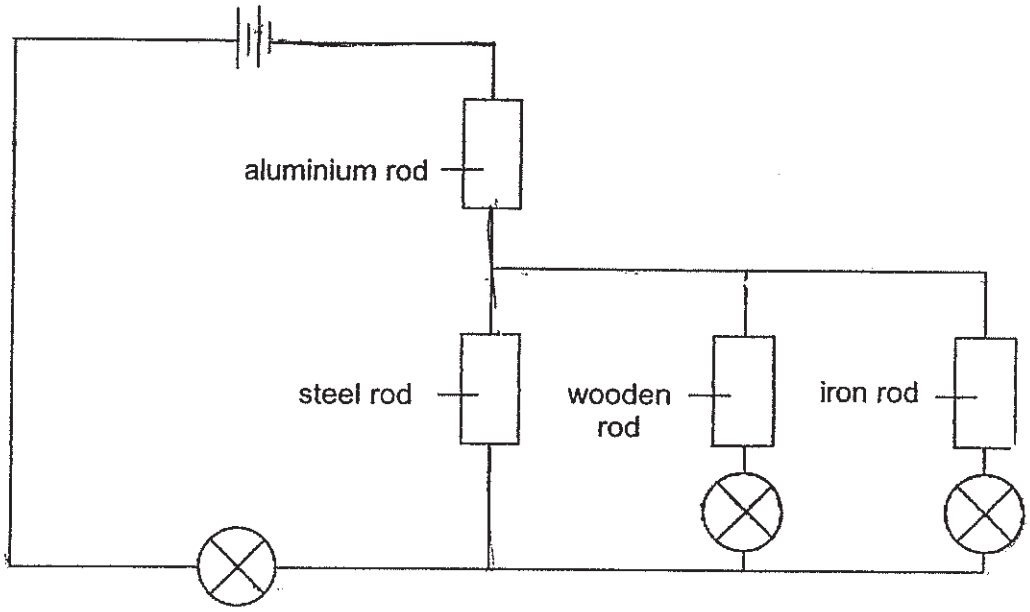
20. Study the circuit diagram below. All the electrical components are working properly.



Jerry wanted only one bulb to light up. Which rod should he remove?

(1) Iron rod
(2) Steel rod
(3) Wooden rod
(4) Aluminium rod

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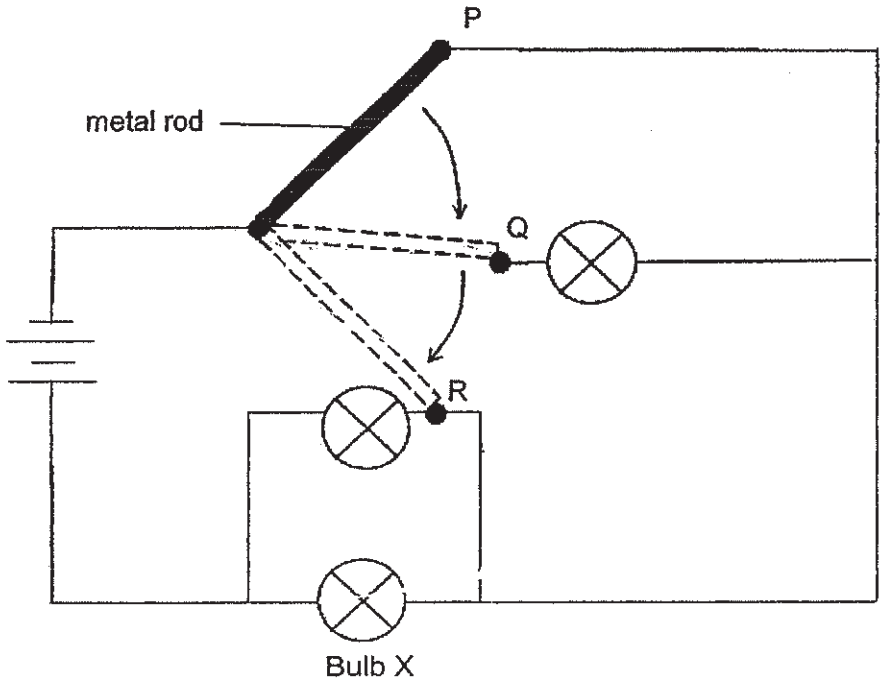
21. Elyssa set up an electrical circuit as shown below using identical bulbs. All the electrical components are working properly. In the beginning, the metal rod was connected to point P and she realised that bulb X lit up.



She then moved the position of the metal rod to point Q and compared the brightness of bulb X with that at point P. Next, she repeated the experiment by connecting the rod to point R.

Which of the following statements are true?

	Metal rod connected to	Brightness of bulb X
A	Point Q	decreased
B	Point Q	remained unchanged
C	Point R	decreased
D	Point R	remained unchanged

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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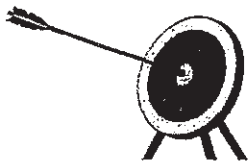
22. Which of the following are ways to conserve electricity?

A Using an energy-efficient appliance
B Using the fan instead of the air conditioner
C Using the half flush button when flushing the toilet
D Checking electrical appliances regularly for exposed wires

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, C and D only

23. Riani placed the arrow on the bow and pulled the arrow backwards. When she released the arrow, it flew forward and hit the target board as shown in the diagram below.

Pulling the arrow



target board

Which one of the following shows the **main** energy conversion that took place from the moment Riani pulled the arrow?

	Pulled arrow	Arrow moving in the air	Arrow hit target board
(1)	kinetic energy	heat energy	sound energy
(2)	kinetic energy	kinetic energy + potential energy	potential energy + sound energy
(3)	potential energy	kinetic energy + potential energy	potential energy +heat energy + sound energy
(4)	potential energy	potential energy	kinetic energy

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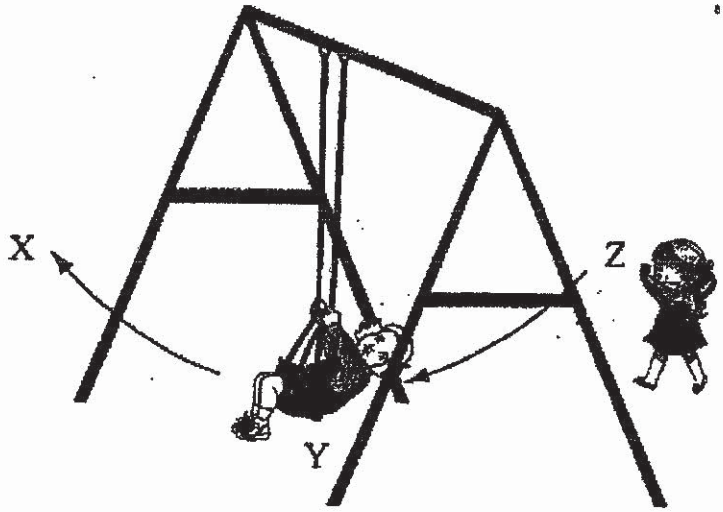
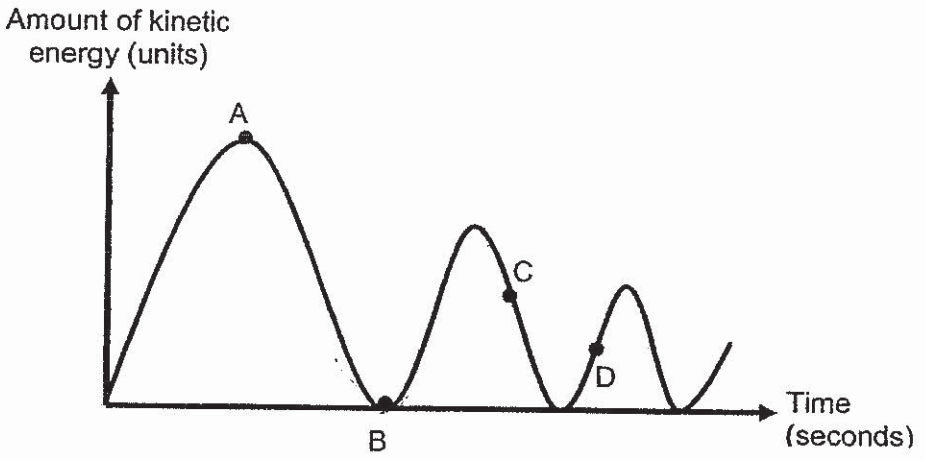
24. The diagram below shows Meiyin on a swing. Aisha gave Meiyin a push on the swing at point Z.



Which point on the graph best represents the amount of kinetic energy that Meiyin possessed when the swing was at point Y?



(1) A
(2) B
(3) C
(4) D

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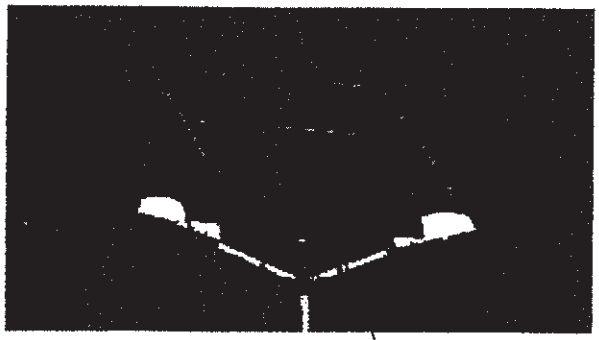
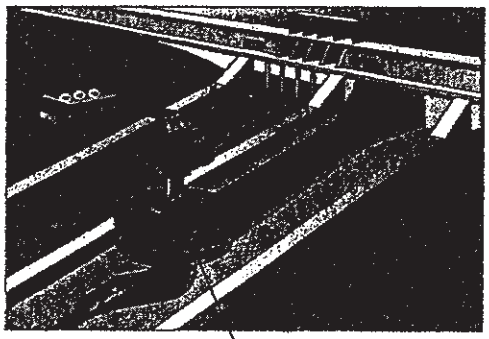
25. The diagrams below show 4 different objects, A, B, C and D, which are able to convert different forms of energy to electrical energy.

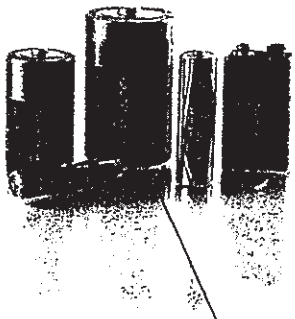


A



B

C



D

Which one of the following identifies the form of energy that is used by each object to convert to electrical energy?

	A	B	C	D
(1)	heat energy	potential energy	light energy	potential energy
(2)	light energy	kinetic energy	kinetic energy	heat energy
(3)	light energy	kinetic energy	kinetic energy	potential energy
(4)	potential energy	potential energy	heat energy	light energy

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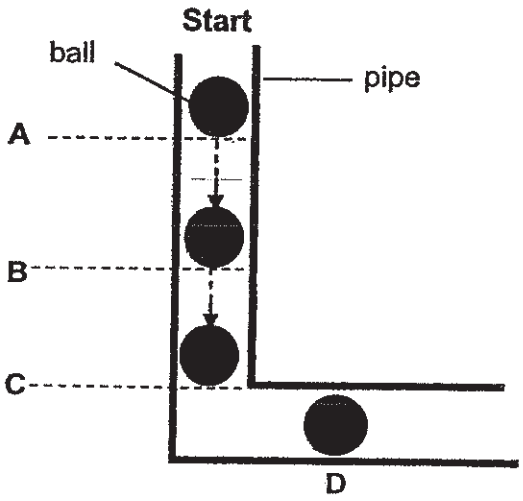
26. The diagram below shows the 4 different positions of a ball as it was dropped into a pipe. The ball continued to roll until it came to a stop at point D.



Which one of the following statements about the ball is **correct**?

(1) The ball at point D has less kinetic energy than at point C.
(2) The ball has the same kinetic energy at point B and point C
(3) Kinetic energy of the ball decreased from point B to point C.
(4) The ball at point A has greatest kinetic energy and potential energy.

27. Which of the following object(s) do(es) **not** possess any gravitational potential energy?

A A plane flying in the sky.
B A ball rolling on the ground.
C A balloon stuck at the ceiling.

(1) A only
(2) B only
(3) A and C only
(4) B and C only

28. Which of the following electrical appliance(s) produce(es) **useful** heat energy?

A A laptop
B A toaster
C A handphone
D An electric iron

(1) A only
(2) A and C only
(3) B and D only
(4) B, C and D only

~ END OF BOOKLET A ~

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2019

BOOKLET B

Date : 6 March 2019

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		56
Booklet B :		44
Total :		100

Any query on marks awarded should be raised by 14 March 2019. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

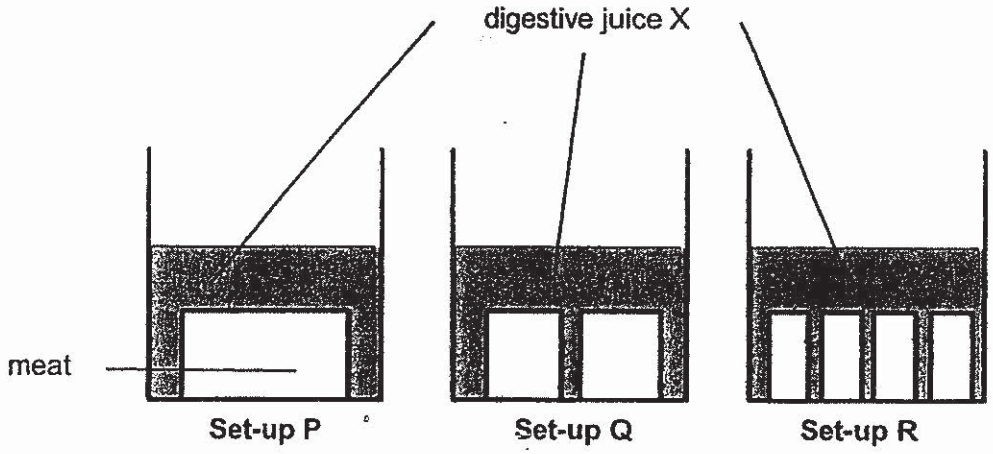
Parent's signature: _____

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 19 printed pages including this cover page.

Section B (44 marks)
Write your answers to questions 29 to 40 in the spaces provided.

29. Jane placed 100g of meat into each of the set-ups, P, Q and R, as shown below. She cut the meat into 2 equal pieces for set-up Q and 4 equal pieces for set-up R. She then placed the meat into equal volume of digestive juice X, as shown in the diagram below.



After 30 minutes, she recorded the results in the table below.

Set-up	Total mass of meat (g)	
	At the start of the experiment	After 30 minutes
P	100	(i)
Q	100	83
R	100	(ii)

(a) Based on the information above, what was the aim of Jane's experiment? [1]

(b) **Write in the table above**, the most likely mass of the meat after 30 minutes for set-ups P and R. [1]

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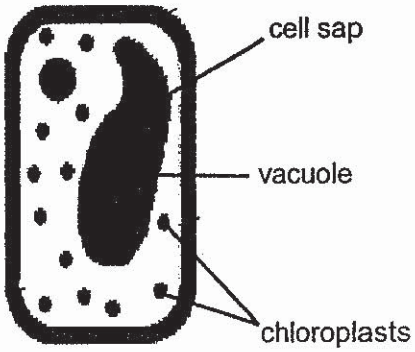
(c) Based on the experiment conducted by Jane, explain why food should be chewed properly before being swallowed. [1]

_____

_____

_____

30. Reshinan observed the following cell under the microscope.



(a) In the diagram above, **label and name** another part of the cell that is only present in this type of cell. [1]

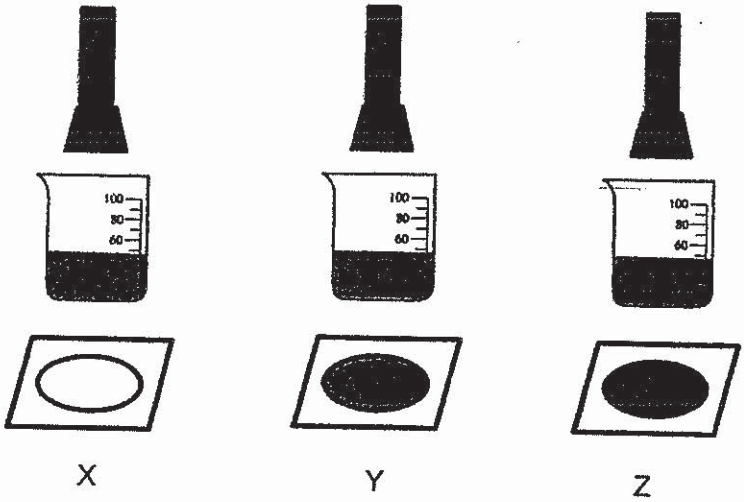
(b) Identify the part of the living thing that the cell above was most likely taken from. [1]

_____

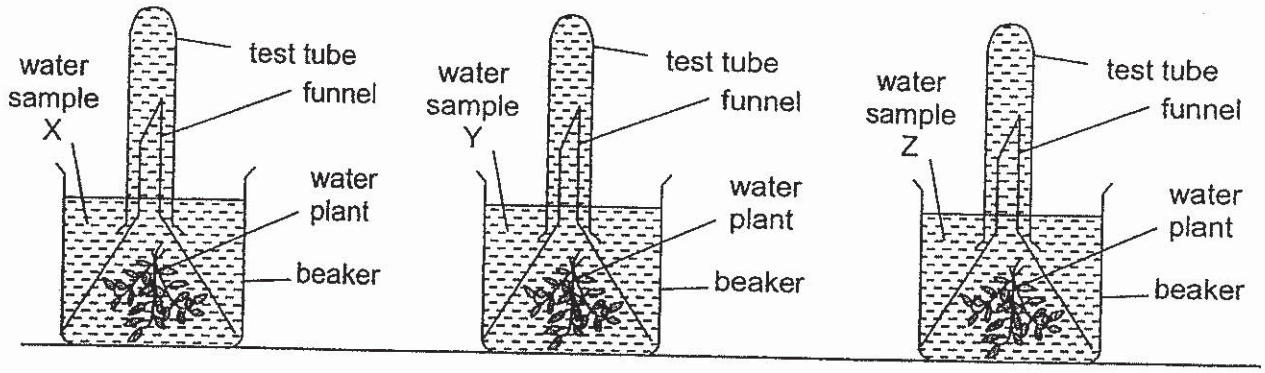
(c) State the function of the chloroplast present in the cell. [1]

_____

31. Xiu Ming collected 3 water samples, X, Y and Z, from different parts of a pond. He shone the same amount of light through the same amount of water sample. The diagrams below show the shadows that were cast on the papers placed below each water sample.



Xiu Ming then set up another 3 setups, each containing the same amount of water samples, X, Y and Z, and water plants as shown in the diagram below. He placed the 3 setups in the same brightly lit room for 2 days.



At the end of the 2 days, he measured the amount of gas collected in the test tube of each water sample.

(a) **Match** each water sample, X, Y and Z, with the results as shown in the table below. [1]

Water sample	Amount of gas collected (units)
	13
	20
	8

1

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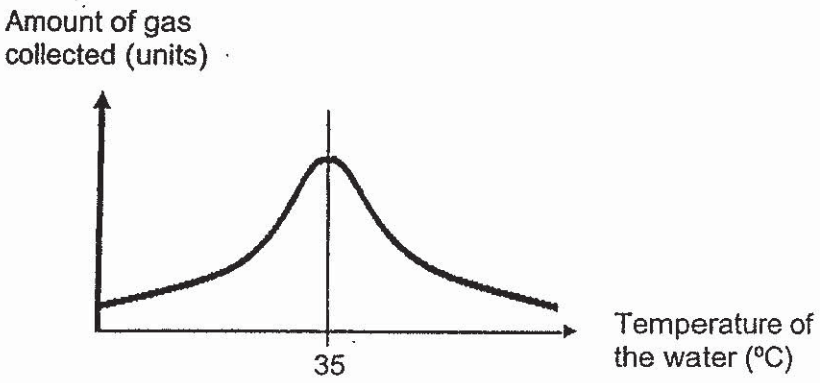
(b) Name the gas collected at the end of each test tube. [1]

Xiu Ming used another water sample W and conducted the same experiment to find out how temperature of the water will affect the amount of gas collected.

The graph below showed the result.



(c) Based on the graph above, describe the relationship between temperature of the water and the rate of photosynthesis. [2]

(d) Describe the process of photosynthesis. [1]

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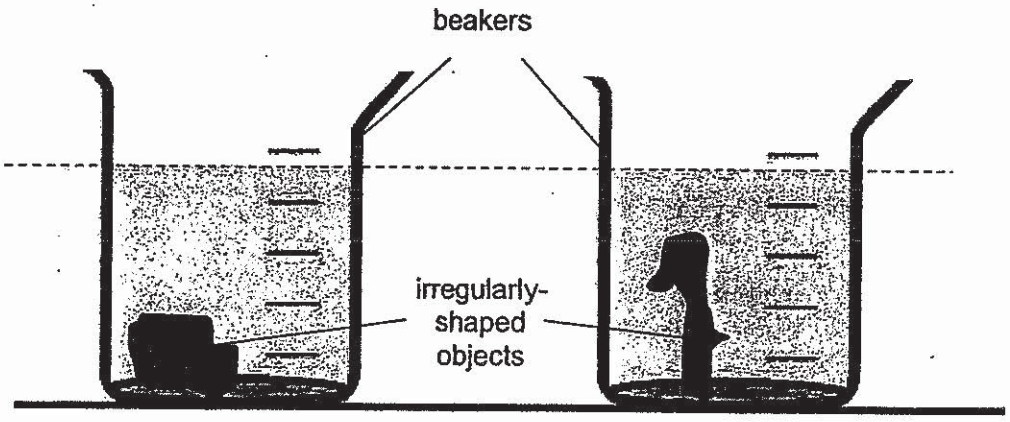
32. Xiao Qing placed 2 irregularly-shaped objects, each at the base of a 500ml beaker. She then filled each of the beakers with water to the same height as shown in the diagram below.



Describe and explain what Xiao Qing can do in order to find out which of the two objects has a greater volume.

[2]

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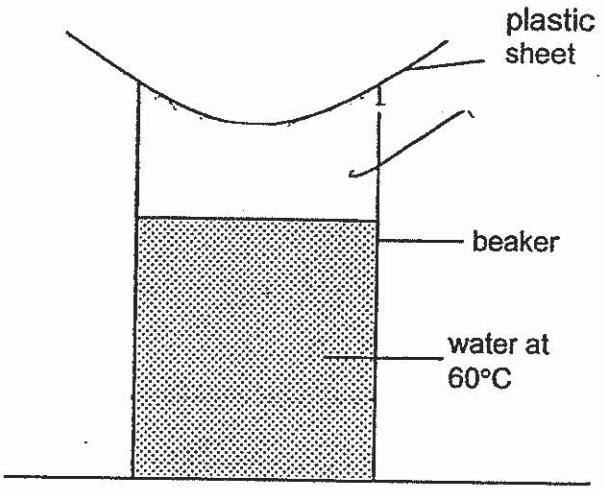
33. Oliver took a beaker of water at 60°C and placed it in a classroom at room temperature for 10 minutes as shown in the diagram below.



Set-up A

(a)(i) Draw and label in the diagram above to show where the water droplets were observed after 5 minutes. [1]

(a)(ii) Explain how the water droplets in set-up A were formed. [1]

_____

_____

_____

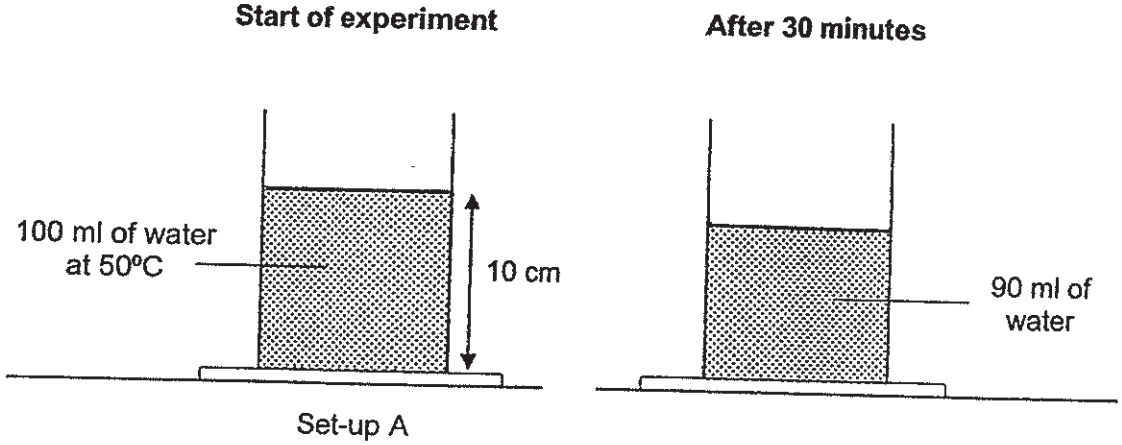
(b) Using the same plastic sheet and beaker, explain how he could increase the amount of water droplets forming in set-up A. [2]

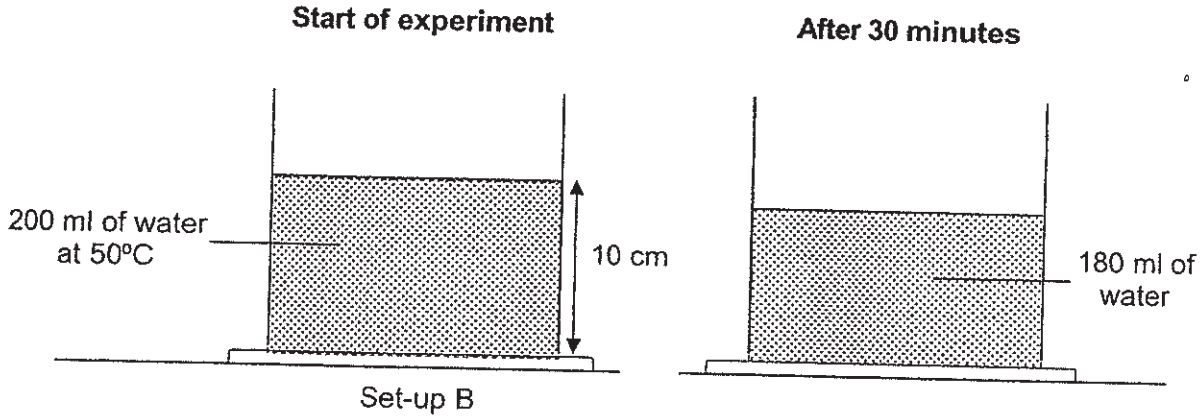
_____

_____

_____

34. Joe wanted to find out how the size of the beaker affects the amount of water left in the beaker. He set up an experiment as shown below.





(a)(i) Based on the experiment above, explain why it is not a fair test. [1]

(ii) State one change Joe should make to the set-up above to achieve his aim of the experiment. [1]

2

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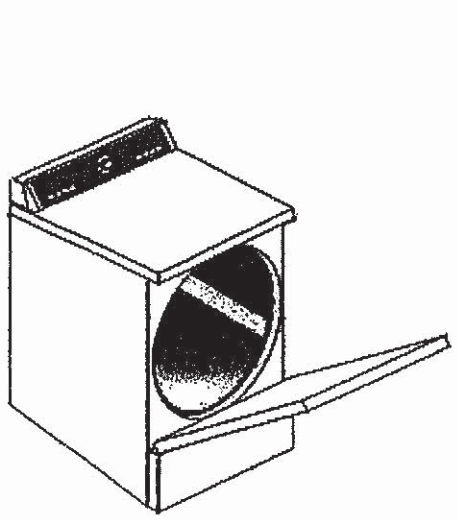
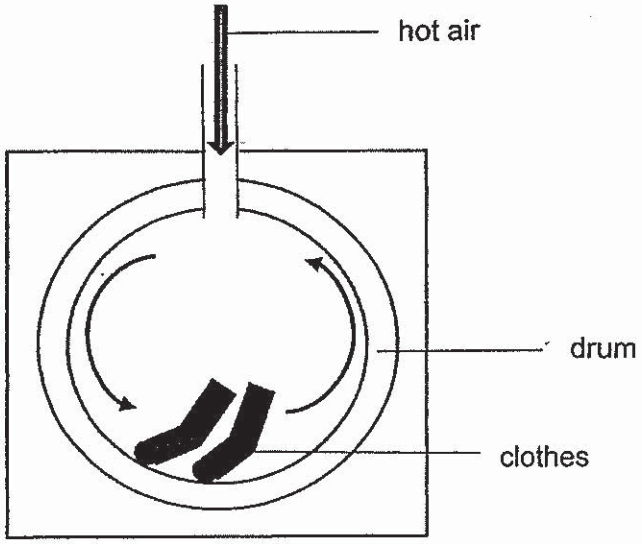
The diagram below shows a dryer. When the dryer is switched on, clothes placed in this machine are tumbled around in the drum many times. Hot air is blown continously at the clothes. Many households use the dryer during the rainy seasons.



dryer



front view of dryer

(b) Based on the information above, explain how the following actions help the clothes to dry faster. [2]

(i) **Tumbling of clothes in the drum**

Explanation:

_____

_____

(ii) **Continuous blowing of hot air at the clothes**

Explanation:

_____

_____

0

2

8

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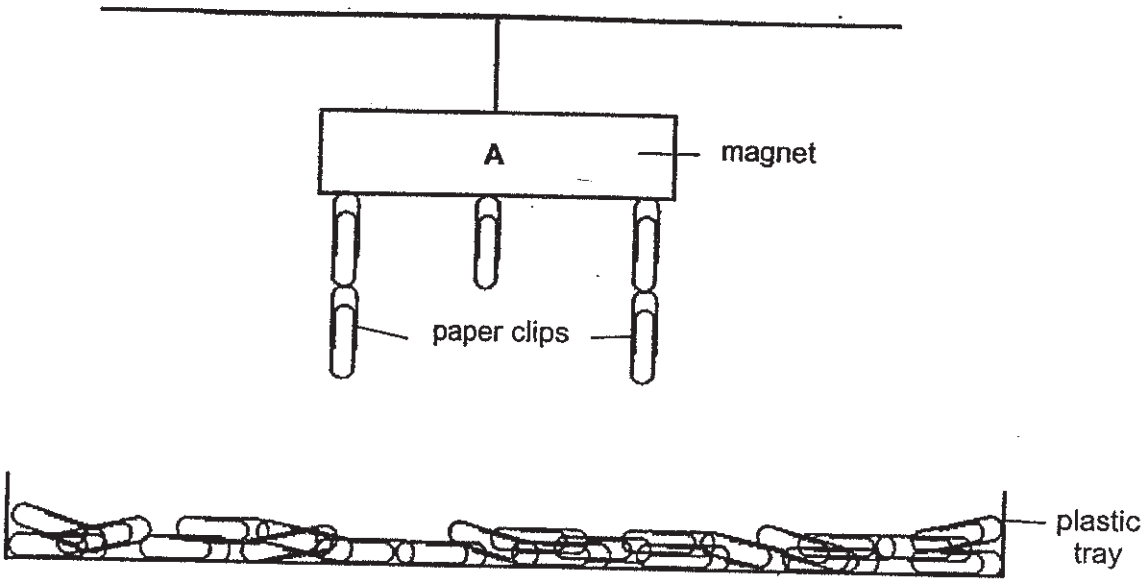
35. Alice hung magnet A over a tray of plastic, steel and copper paper clips as shown in the diagram below.



(a) Which type(s) of paper clips above would the magnet attract? Give a reason for your answer. [1]

_____

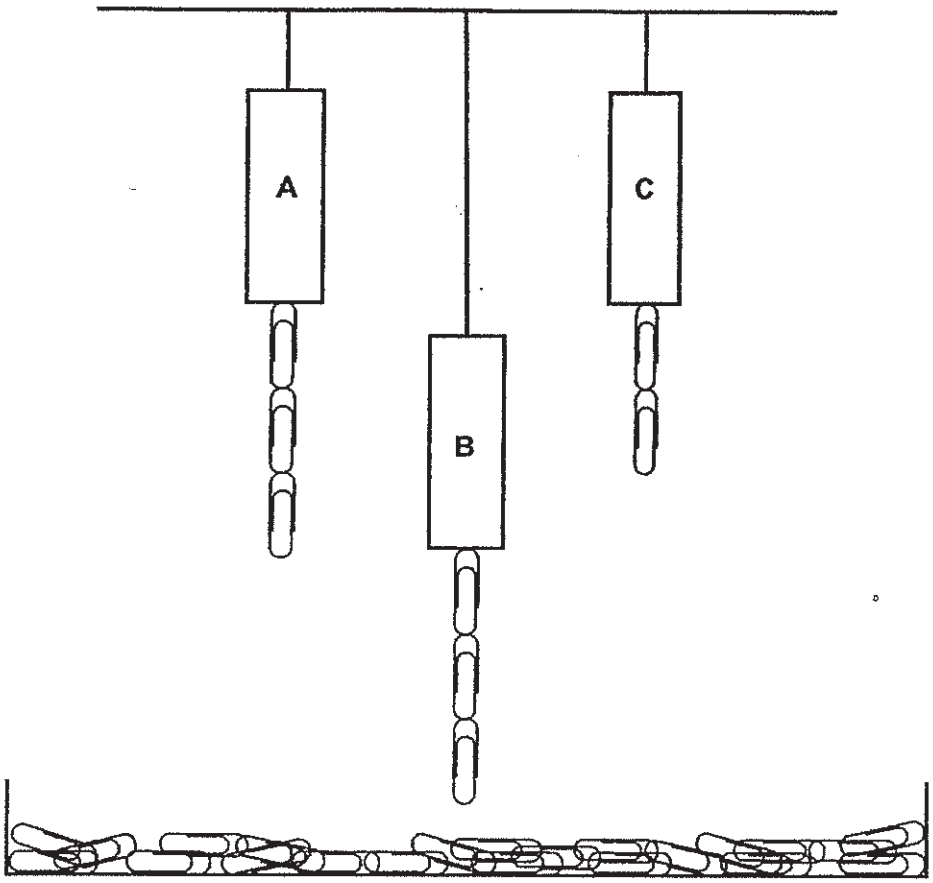
_____

(b) She observed that the poles of magnet A attracted the most number of paper clips. Give a reason to explain her observation. [1]

_____

_____

Alice changed the set up and hung magnets B and C. She then placed a tray of paper clips and observed the number of paper clips attracted by each magnet as shown below.



Alice said that magnet A has a weaker pull than magnet B and C.

(c) Explain why her statement is incorrect.

2

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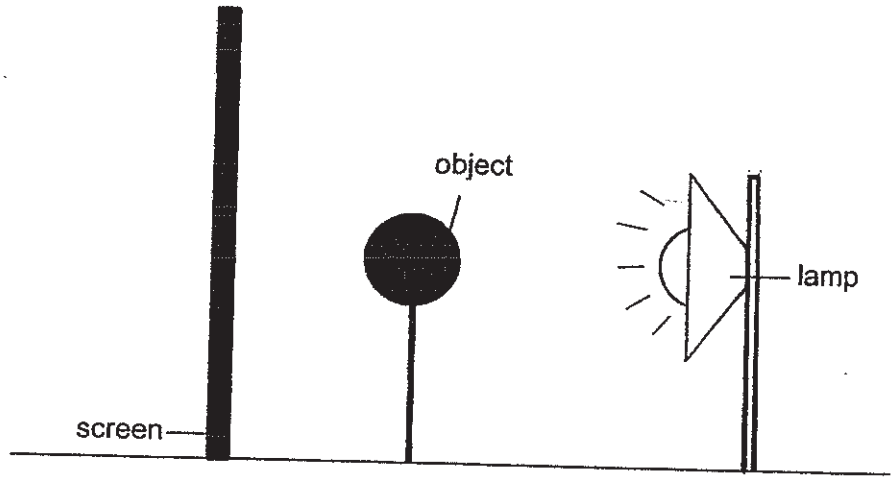
36. Tim carried out the following experiment in a dark room.



(a) Without moving the screen state two changes that he could make to the set-up above to **decrease** the size of the shadow formed on the screen. [1]

(i) _____

(ii) _____

(b) Explain why Tim conducted the experiment in a dark room. [1]

_____

_____

_____

2

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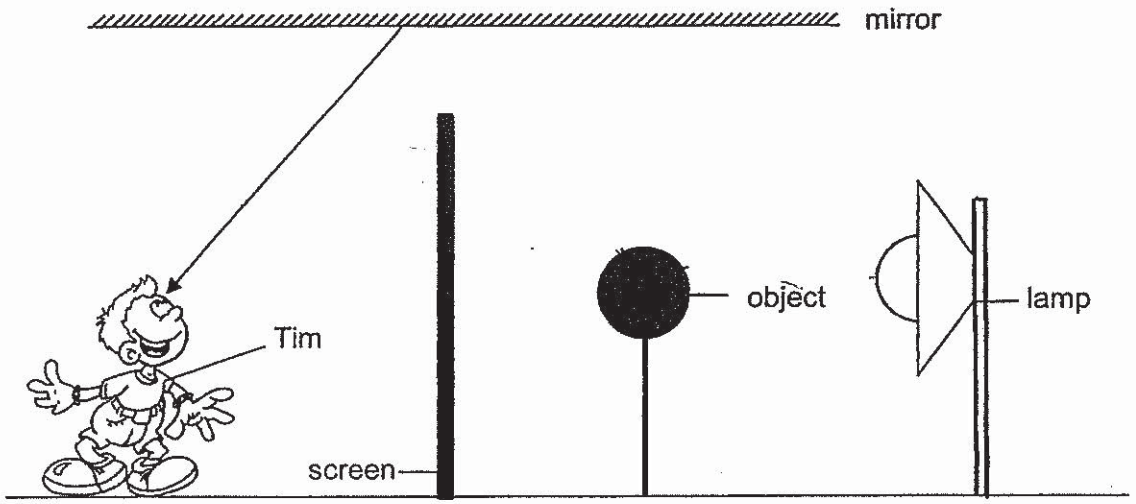
Tim then entered the room and used a mirror to view the object as seen in the diagram below.



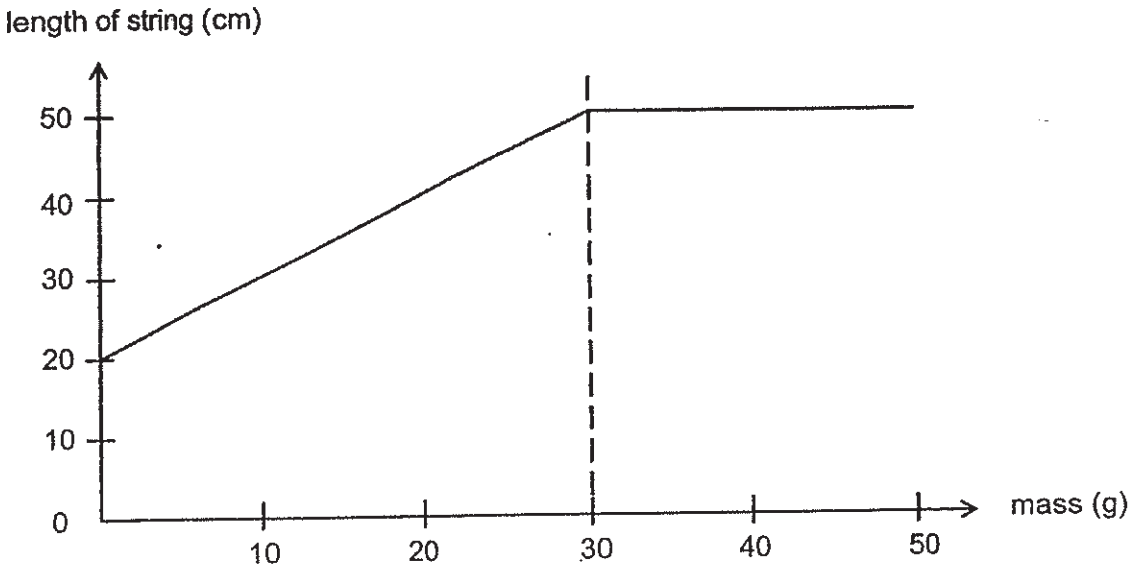
(c) **Complete the light rays** in the diagram above to show how Tim was able to see the object in the mirror. [1]

(d) State 2 properties of light that enabled Tim to see the object. [1]

(i) _____

(ii) _____

37. Shane hung different masses on a stretchable string of 20 cm to find out how the mass hung on the string affects the length of the string. He recorded his results in the graph below.



Joe said that the graph was wrong because Shane should have drawn the graph starting from 0 cm.

(a) Explain why Joe was wrong. [1]

_____

_____

(b) What is the relationship between the mass hung on the string and the length of the string? [2]

_____

_____

_____

3

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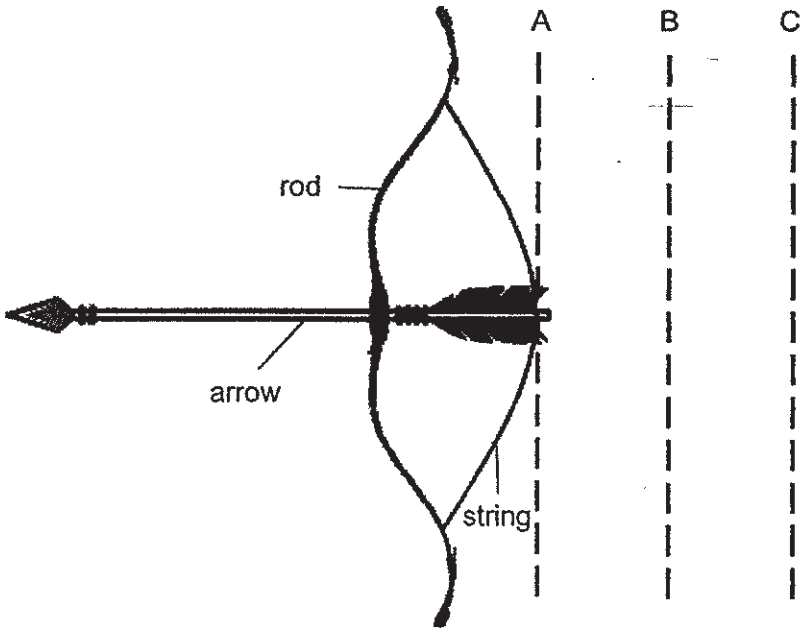
Shane constructed a bow using a rod and the same string from his experiment.

He pulled the string back, together with the arrow, to position A before releasing the arrow. He then measured the distance travelled by the arrow. He repeated the steps by stretching to positions B and then C.



(c) In which position would the arrow be able to travel the furthest distance? Explain your answer in terms of forces. [2]

2

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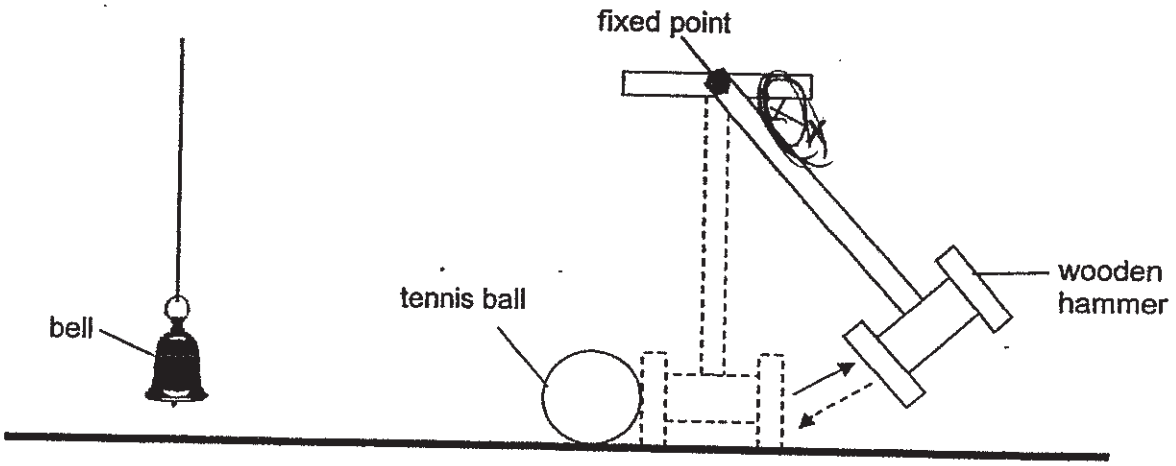
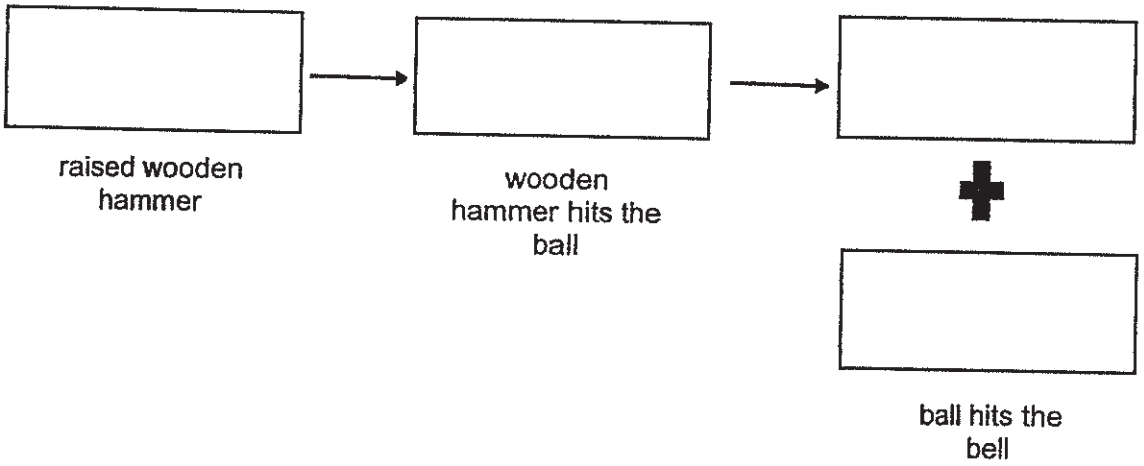
38. The diagram below shows a wooden hammer fixed at one end which enable it to swing freely. A tennis ball was placed just touching the wooden hammer so when the wooden hammer was released, it would hit the ball causing it to roll and hit the bell.



(a) What is the relationship between angle X and the volume of the sound of the bell makes?

[1]

(b) State the main energy conversion in the experiment above. [1]



(c) Explain why the sound of the bell was louder when a wooden hammer of a greater mass was used. [1]

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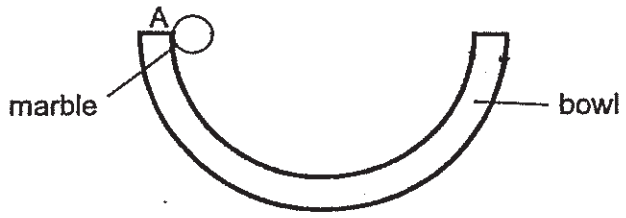
3

39. When a marble was released from point A of a bowl as shown in the diagram below, it moved up the opposite side of the bowl.



(a) (i) Mark **point X** on the diagram above to show the highest point the marble will most likely reach on the opposite end of the bowl. [1]

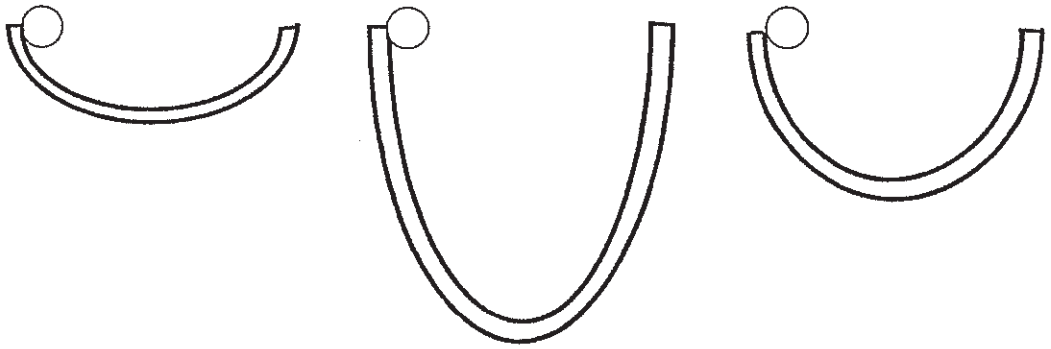
(a) (ii) Explain your answer above in terms of energy conversion. [1]

_____

_____

The experiment was repeated with three identical marbles on three different containers, J, K and L. The containers were made of identical materials and were of the same width.

container J **container K** **container L**



(b) Arrange the containers above starting with the one which will allow the marble to take the shortest time to stop. [1]

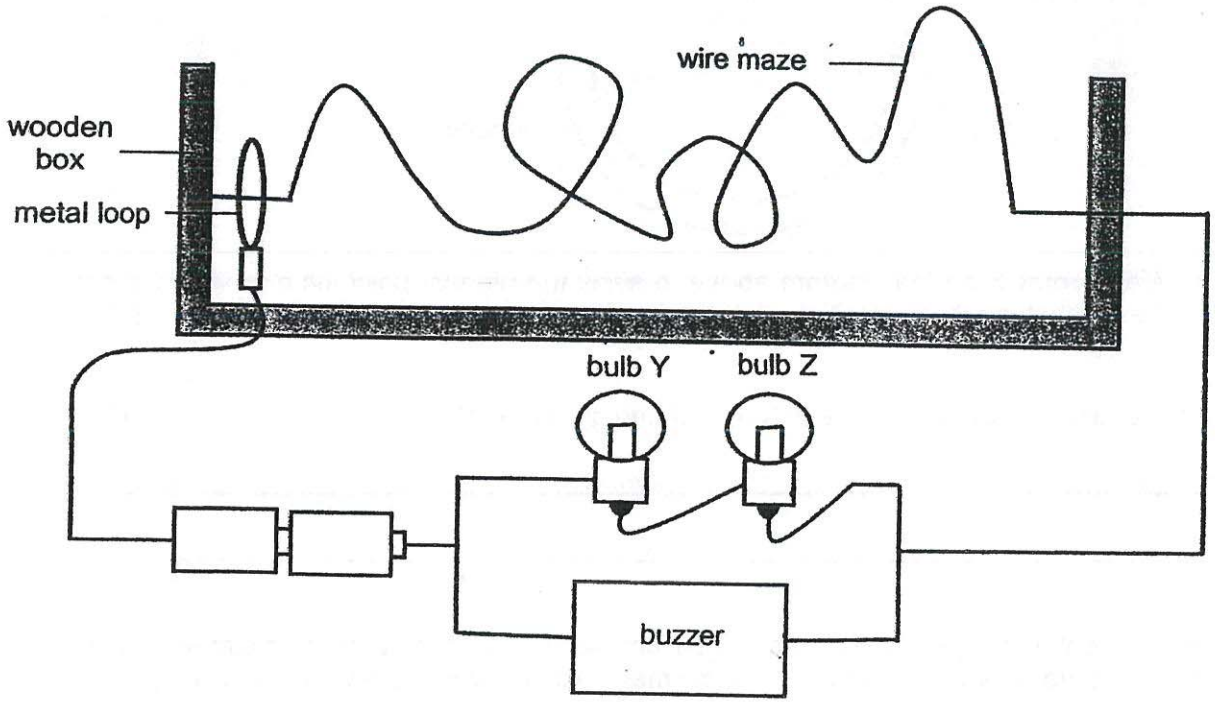
Stop within the shortest time ⟶ Stop after the longest time

(c) Suggest one way to enable the marble in container J to roll for a longer time than it originally did. [1]

_____

_____

40. Ruth created her own wire loop game and connected the circuit as shown in the diagram below.



She moved the metal loop through the wire maze. She observed that when the metal loop came into contact with the wire maze, both the bulbs lit up and the buzzer rang.

(a) Give a reason for her observation. [1]

_____

_____

(b) Describe what she would observe about bulb Z and the buzzer when the metal loop came into contact with the wire maze, if bulb Y fused. [2]

Bulb Z: _____

Buzzer: _____

~ END OF BOOKLET B ~

3

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Suggested Answer Key
Section A

1	3	11	2	21	2
2	2	12	2	22	1
3	4	13	1	23	3
4	1	14	2	24	1
5	2	15	4	25	3
6	1	16	1	26	1
7	4	17	2	27	2
8	3	18	2	28	3
9	1	19	3		
10	1	20	1		

Section B

Qn No	Answers
29a	To find out how the exposed surface area of the meat affects the rate of digestion of meat.
b	P→ less than 100, more than 83 R→ less than 83, more than 0
c	Chewing helps to break down the food into smaller pieces so that the food can be digested faster.
30a	Identify and label cell wall in diagram
b	Leaf / green stem
c	Traps light for the plant to make food
31a	Y, X, Z
b	Oxygen
c	Rate of photosynthesis increased with increasing temperature until it reached 35°C. After 35°C, rate of photosynthesis decreased with increasing temperature.
d	Photosynthesis is the process of plant making their own food using light, carbon dioxide and water.
32	Remove the objects from the containers. Compare the water level. The container with the lower water level had the object with the greater volume as it took up more space.
33a	i) Draw & label water droplets on the underside of the plastic sheet/inner side of the beaker ii) Water in the beaker will evaporate. Water vapour in the beaker will condense on cooler surface of the plastic sheet.
b	Increase the temperature of water in the beaker. The warmer water will have a greater rate of evaporation. More water vapour will condense on the plastic surface, forming more water droplets. Add ice to the plastic/cool down the surrounding room temperature. The surface of the plastic will be cooler because of the ice. Faster rate of condensation on the plastic sheet to form more water droplets.
34a	i) Both the volume of water at the start and size of beaker have been changed so

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	more than 1 variable was changed. ii) Pour out 100ml from set-up B or add 100 ml to set-up A, (keeping the temperature to 50°C).
b	i) Different surfaces exposed to the hot air to increase the rate of evaporation of water ii) Increase the surrounding temperature/ increase wind speed to increase the rate of evaporation of water
35a	Magnet A would attract the steel paper clips because steel is a magnetic material but copper and plastic are not magnetic.
b	The magnetic force of attraction of a magnet is the strongest at its poles.
c	Magnet A has a stronger pull than magnet B because magnet A attracted the same number of paper clips from a greater height. Magnet A also has a stronger pull than magnet C because magnet A can attract more paper clips than magnet C from the same distance.
36a(i)	-Shift the lamp further away from the object/screen
(ii)	-Shift the object closer to the screen
b	To ensure that the shadow is darker/ clearer/ sharper
c	Light ray from lamp, to object, to mirror.
d	1) Light travels in a straight line (0.5m) 2) Light can be reflected (0.5m)
37a	Joe is wrong because the original length of the string is 20 cm, hence the y-axis needs to start at 20 cm, not 0 cm.
b	As the mass hung on the string increases, the length of the string increases until 30g. After this point, when the mass hung on the string increases, the length of the string remained the same.
c	Position C. At C, the string is stretched the most. So, it had the most elastic spring force, allowing the arrow to travel the furthest distance.
38a	The smaller angle X is, the louder sound the bell will make.
b	PE → KE → KE + SE (spell out!)
c	The hammer with greater mass will have a greater potential energy when raised to the same height so it when it hit the ball, the ball will have higher kinetic energy to sound the bell louder.
39a	i) Point X must be lower than original starting point, at the opposite side. ii) When the marble rolled down some of the kinetic energy has been converted to sound and heat energy so it will move up the other side with less kinetic energy to reach a lower height.
b	J, L, K
c	Give the marble a push/ apply lubricant in the bowl/Release the marble from a greater height
40a	When the metal loop comes into contact with the wire maze, there is a closed circuit/ electricity flows through.
b	Bulb Z: Bulb Z will not light up. Buzzer: The buzzer will ring.

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RIVER VALLEY PRIMARY SCHOOL
2019 CONTINUAL ASSESSMENT 1 (CA1)
PRIMARY 6

STANDARD SCIENCE

(BOOKLET A)

Name : _____ ( ) Date : 05/03/2019 (Tue)

Class : P6 _____ Time: 1 hour 45 min

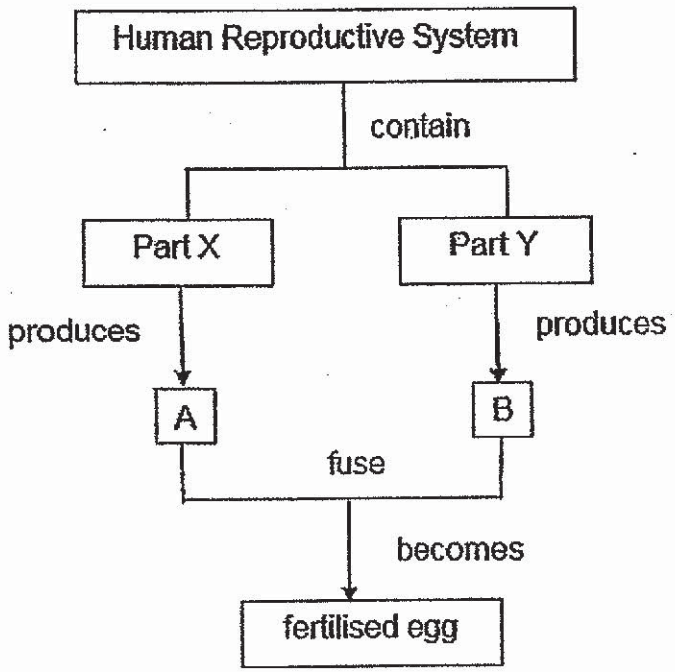
INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the Optical Answer Sheet (OAS).
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet A is 56 marks.

Section A (56 marks)

For each question 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. The chart below shows the process of fertilisation when A from Part X fuses with B from Part Y in the human reproductive system.



Which of the following shows correctly A, B, Parts X and Y?

	Part X	Part Y	A	B
(1)	womb	testis	egg	sperm
(2)	penis	womb	sperm	egg
(3)	ovary	testis	egg	sperm
(4)	testis	ovary	egg	sperm

( )

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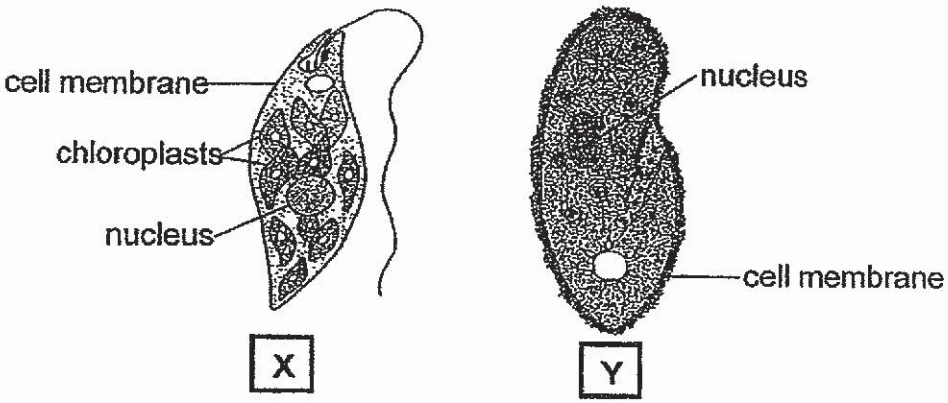
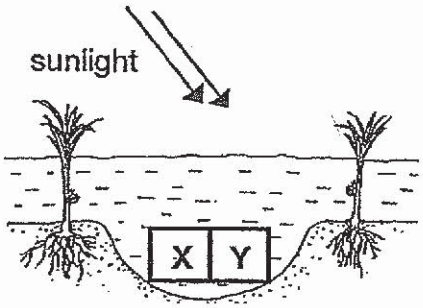
2. The diagrams below show two single-celled organisms, X and Y, found in water.

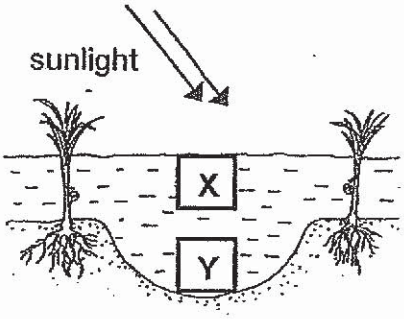


Based on the diagrams above, which of the following best shows where organisms X and Y could be found?

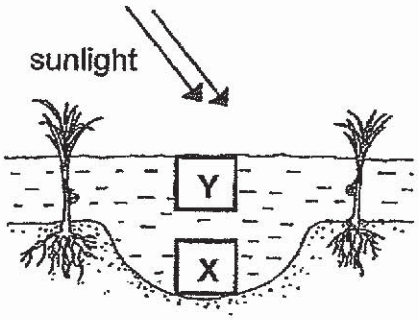
(A)



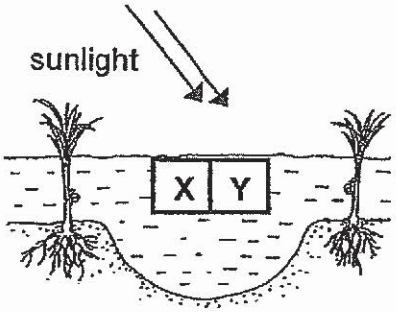
(B)



(C)



(D)



(1) A and D only
(2) B and C only
(3) A and C only
(4) B and D only

( )

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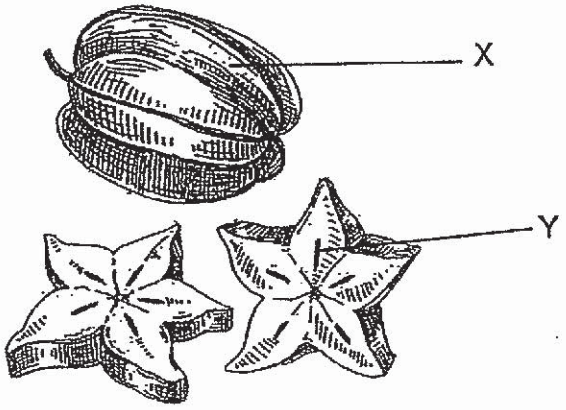
3. The diagram below shows Fruit S and cut slices of Fruit S.



Which parts of the flower do X and Y develop from?

	X	Y
(1)	stigma	ovule
(2)	ovule	ovary
(3)	ovary	ovule
(4)	anther	stigma

( )

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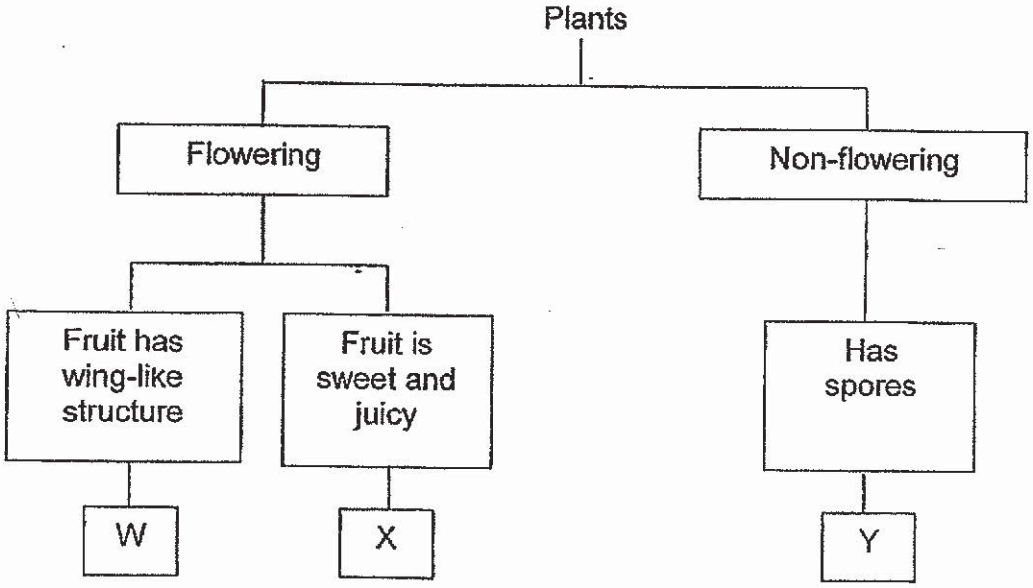
4. The table below shows the characteristics of two plants, A and B.

Plant	Characteristics	
	dispersed by wind	reproduce by seeds
A	✓	✓
B	✓	

From the information given above, identify the groups that plants A and B belong to as shown in the classification chart below.



	Plant A	Plant B
(1)	W	Y
(2)	W	X
(3)	Y	W
(4)	X	W

( )

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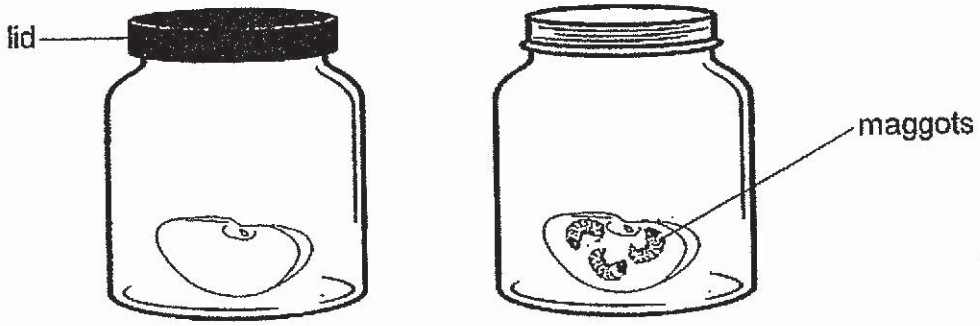
86

5. Jessica placed a slice of apple each into two identical jars. She sealed Jar X and left Jar Y open as shown in the diagram below. Both jars were left on her kitchen table for seven days.



Jar X Jar Y

After seven days, Jessica observed that there were maggots, which are the young of fruit flies, in Jar Y, but not in Jar X. Based on her observation, what can she conclude?

A: Jar Y allowed air to enter to keep the maggots alive.
B: The apple slice produced the maggots.
C: The fruit flies depend on the apple for food.

(1) A and B only
(2) A and C only
(3) C and B only
(4) A, B and C

( )

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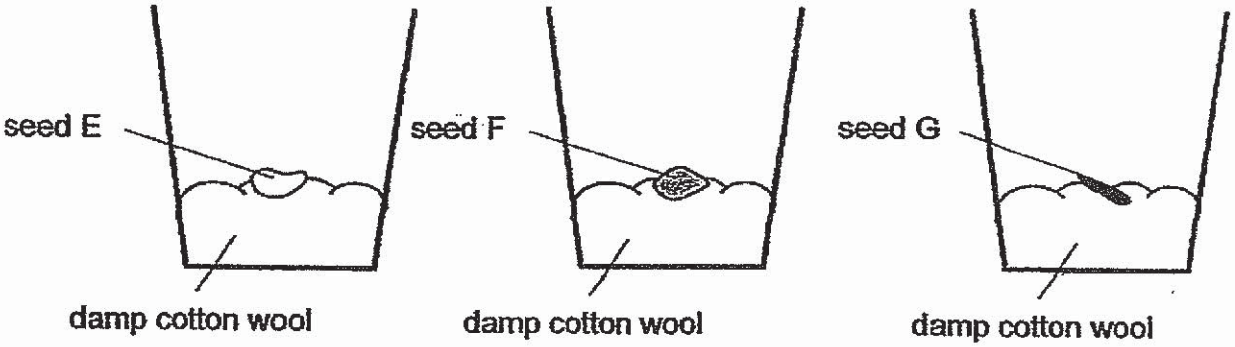
6. Alice conducted an experiment using three different types of healthy seeds, E, F and G. She placed each seed E, F and G in identical cups as shown below. She placed all the cups next to a window. She watered the seeds with the same amount of water.



Alice observed the seeds for 15 days. She recorded the number of days taken for the roots of each seed to appear.

Seed	Number of days taken for the roots to appear
E	12
F	No roots appeared
G	7

Which of the following could Alice conclude?

A: Seed F needed more sunlight to germinate.

B: Seed G took the shortest time to germinate.

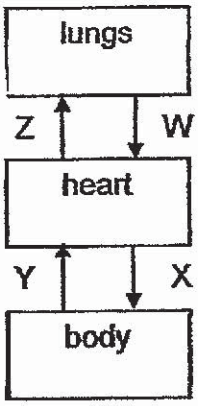
C: Only seeds E and G needed warmth to germinate.

D: Seed G would likely be the first to develop leaves for photosynthesis.

(1) A and B only
(2) B and D only
(3) C and D only
(4) A and C only

( )

7. The diagram below shows the human circulatory system.



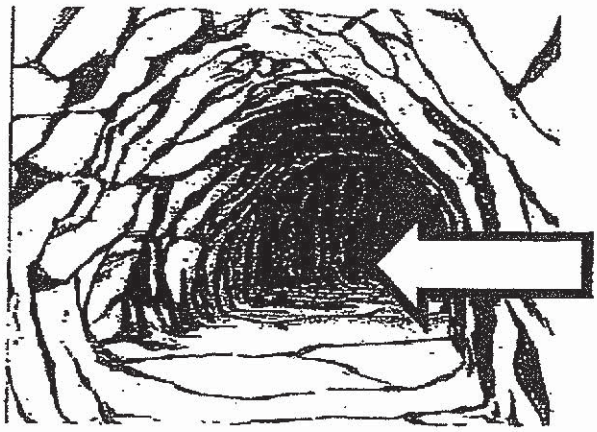
Circulatory system

Which of the paths contain **more** carbon dioxide and waste products?

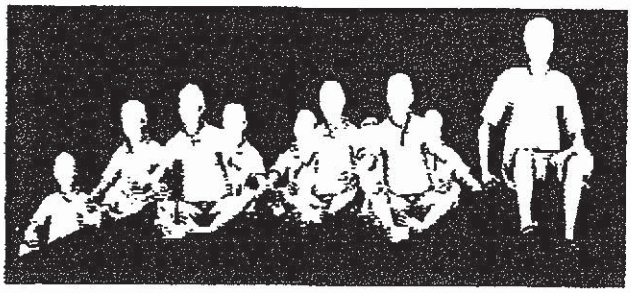
(1) W and X only
(2) X and Y only
(3) Y and Z only
(4) W and Z only

( )

8. A group of tourists were trapped in a cave as shown below.



cave



tourists trapped in a cave

How would the gases in the air change after some time?

A: The amount of oxygen increased.

B: The amount of nitrogen increased.

C: The amount of water vapour increased.

D: The amount of carbon dioxide increased.

(1) A and B only
(2) B and D only
(3) C and D only
(4) A and C only

( )

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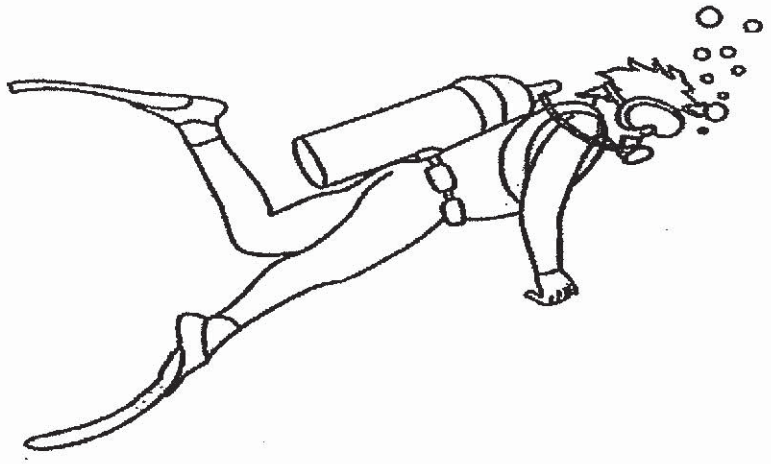
90

9. Craig is a diver. After being underwater for some time, he felt a shortness of breath.



Which of his body's human systems are affected?

A: Respiratory system

B: Digestive system

C: Circulatory system

D: Reproductive system

(1) A and B only
( ) B and D only
( ) C and D only ( )
( ) A and C only

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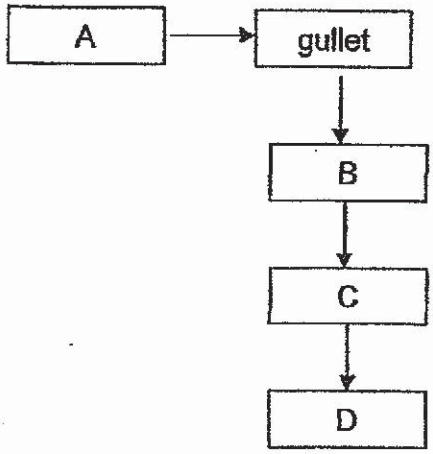
10. The diagram below shows Part A to Part D of the human digestive system and the path which food will take as it enters the human body at Part A.



Which one of the following is correct?

	Parts ____ digest food.	Part ___ absorbs digested food.	Part ____ absorbs water.
(1)	A and C	B	C
(2)	A and D	B	C
(3)	A and B	C	D
(4)	A, B and C	C	D

( )

11. Study the table below. Which one of the following sources of energy are **wrongly** classified?

	Potential Energy	Kinetic Energy
(1)	Petrol	Running water
(2)	The food we eat	A moving car
(3)	Ball rolling down a hill	Wind around us
(4)	A compressed spring	Waves in the sea

( )

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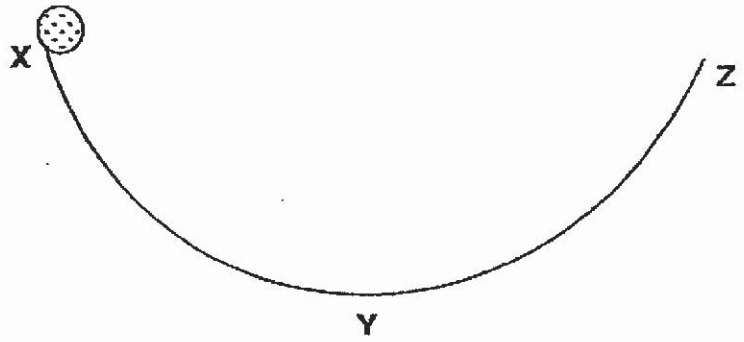
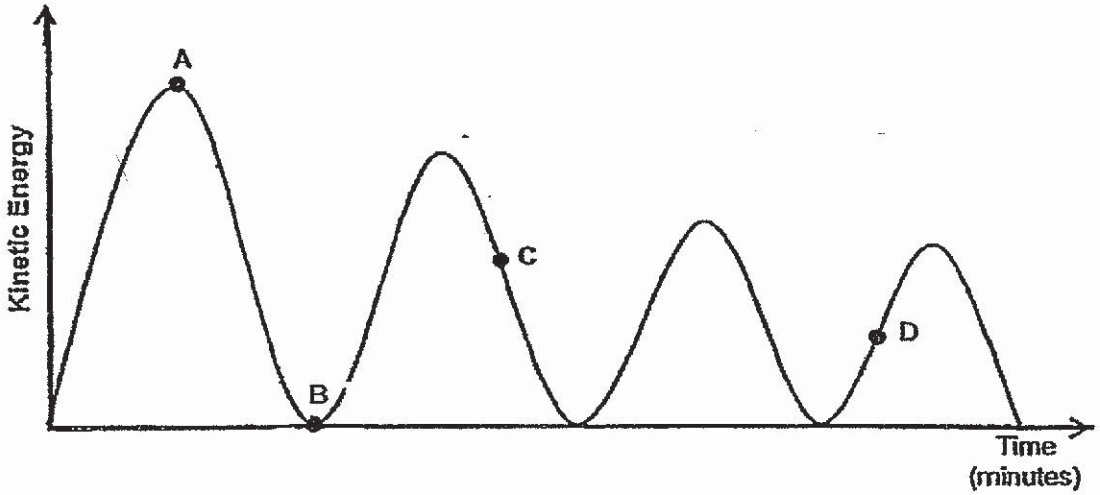
12. Bala released a ball at Point X as shown in the diagram below.



As the ball moved, its kinetic energy was calculated and plotted on the graph below.



Which point on the graph represents the kinetic energy of the ball when it was at Y?

(1) A
(2) B
(3) C
(4) D ( )

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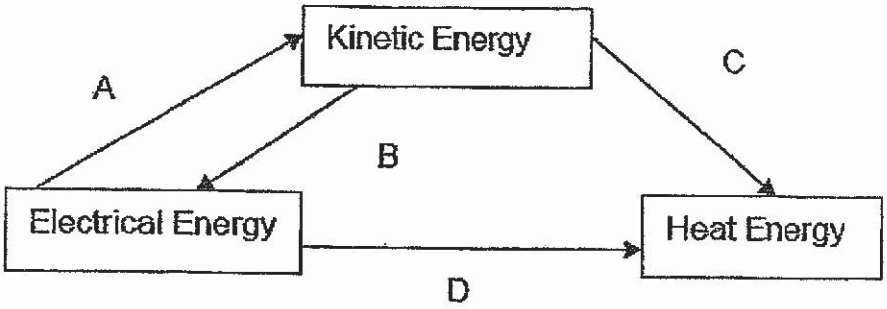
13. One form of energy can be changed to another. In the diagram below, different energy changes are marked by the arrows A, B, C and D. Which one of the following below shows the energy changes represented by arrows A, B, C and D?



	A	B	C	D
(1)	A moving car	A turbine generating electricity	Waving your hands	A torchlight
(2)	A washing machine	A turbine generating electricity	Rubbing your hands together	An electric iron
(3)	A turbine generating electricity	An electric fan	An electric iron	A microwave oven
(4)	An aeroplane	A dynamo in a bicycle	Kicking a ball	An electric lamp

( )

14. Which one of the following shows the correct sequence of energy changes when a battery-operated torch is switched on?

(1) Electrical energy → Light energy + Heat energy
(2) Potential energy → Electrical energy → Kinetic energy
(3) Potential energy → Electrical energy → Kinetic energy → Light energy
(4) Potential energy → Electrical energy → Light energy + Heat energy

( )

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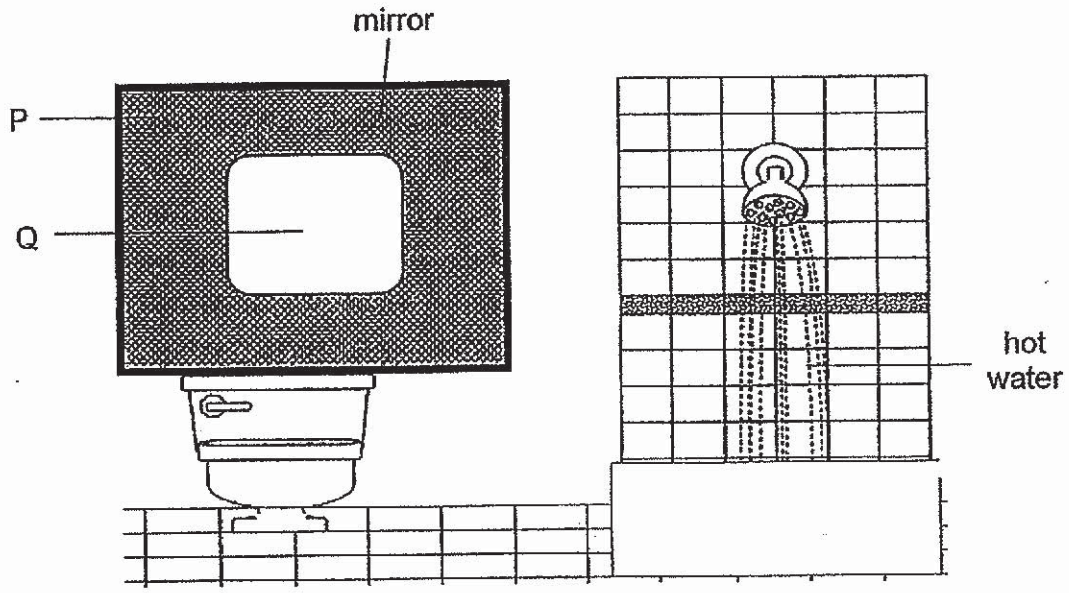
15. Daniel took a shower using hot water and noticed that his bathroom mirror was cloud as shown in the diagram. He observed that Part P of the mirror was cloudy but Part Q of the mirror was clear.



Which of the following statements is most likely **true**?

A: Water vapour had condensed on P.

B: P is warmer than Q during the shower.

C: The clouds in P is made of water droplets.

D: The temperature of Q is higher than that of P during the shower.

(1) A and B only
(2) A, C and D only
(3) A, B and C only
(4) A, B and D only

( )

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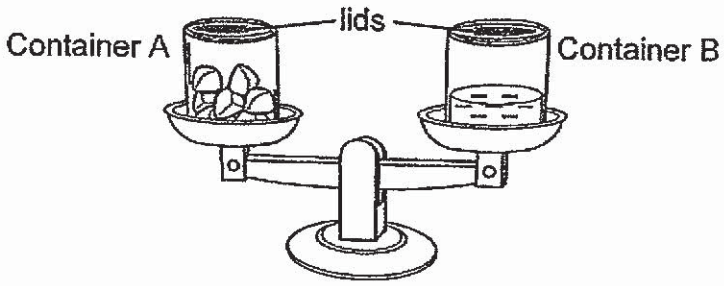
16. Two identical containers A and B were covered with identical lids. Container A was filled with 250g of ice cubes and Container B was filled with 250g of water at room temperature. They were placed on a balance as shown below.



After ten minutes, the balance tilted downwards on the side of Container A.
Which of the following could be the reason?

(1) The ice cubes in Container A melted.

(2) The water in Container B had evaporated.

(3) Water vapour condensed inside Container B.

(4) Water vapour condensed on the outer surface of Container A.

( )

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17. The table below shows the melting points and boiling points of four substances, P, Q, R and S.

Substance	Melting Point (°C)	Boiling Point (°C)
P	0	100
Q	5	80
R	20	90
S	40	120

At which temperature(s) would all the substances be in the same state?

A: 3°C
B: 45°C
C: 100°C
D: 150°C

(1) B only
(2) A and C only
(3) B and D only
(4) A, C and D only

( )

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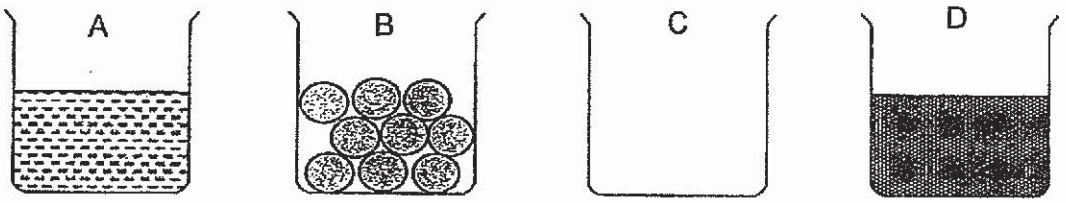
97

18. Sara was given four similar beakers, A, B, C and D. Each beaker was filled with different substances. She added water into each beaker at the same rate, one at a time. She measured the time taken for the water in each beaker to start to overflow.



Which of the following shows the time taken for the water to overflow, from the first to overflow to the last?

(1) A, C, B, D

(2) A, B, D, C

(3) B, C, A, D

(4) B, D, A, C

( )

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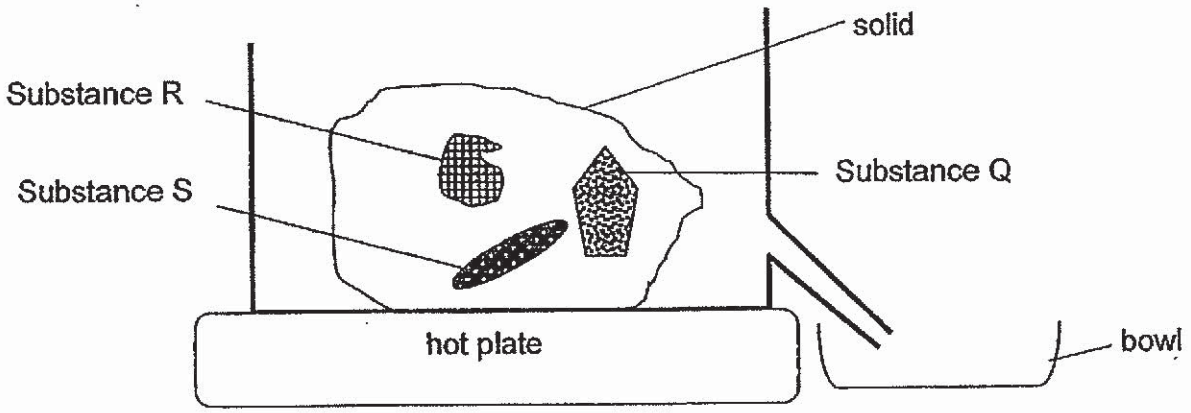
19. Jack placed a solid made of substances Q, R and S in the set-up as shown below Substances Q and R had higher melting points than substance S.



Before switching on the hot plate, he wanted to make sure that the liquid in the bow contains only substance S. What temperature should he set for the hot plate?

(1) Above the melting points of Q, R and S
(2) Below the melting points of Q, R and S
(3) Above the melting points of Q and R but below melting point of S
(4) Above the melting point of S but below melting points of Q and R

( )

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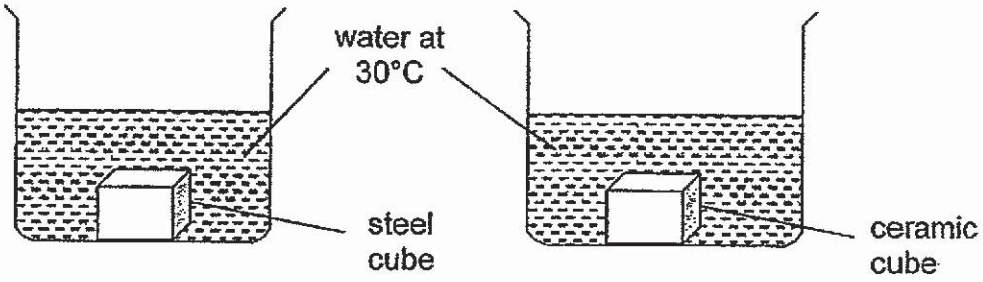
20. Grace sets up an experiment as shown below. A steel cube and a ceramic cube both of the same volume were heated up to 85°C. They were immediately placed into Beaker A and Beaker B.



Beaker A Beaker B

Which one of the following could be observed two minutes after the cubes were placed in the beakers?

	Temperature (°C)			
	water in Beaker A	water in Beaker B	steel cube	ceramic cube
(1)	30	30	85	85
(2)	50	60	70	80
(3)	60	50	85	85
(4)	60	50	70	80

( )

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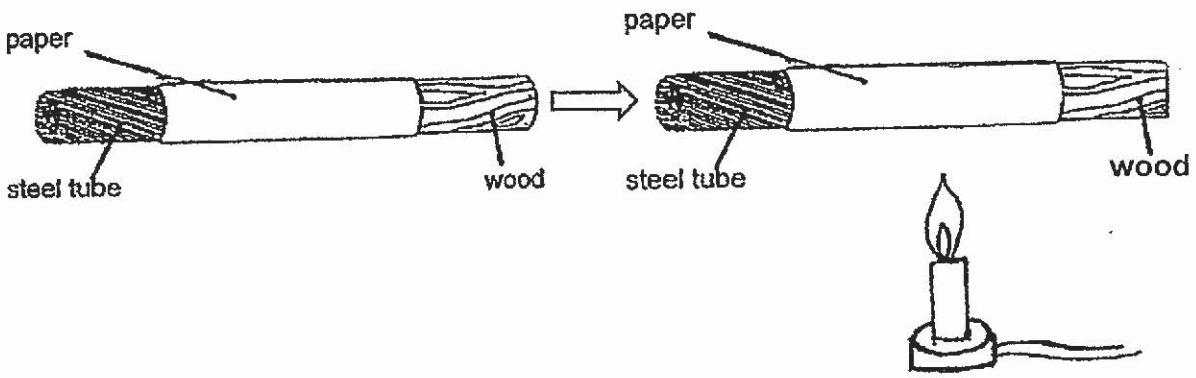
21. Cheryl joined a piece of wood to a steel tube. She then wrapped a piece of paper tight around the centre of it. The paper was gently heated over at the centre as shown below.



What will she observe after some time?

(1) The paper around the wood is burnt as steel conducts heat better.
(2) The paper around the wood is burnt as wood conducts heat better.
(3) The paper around the steel tube is burnt as steel conducts heat better.
(4) The paper around the steel tube is burnt as wood conducts heat better.

( )

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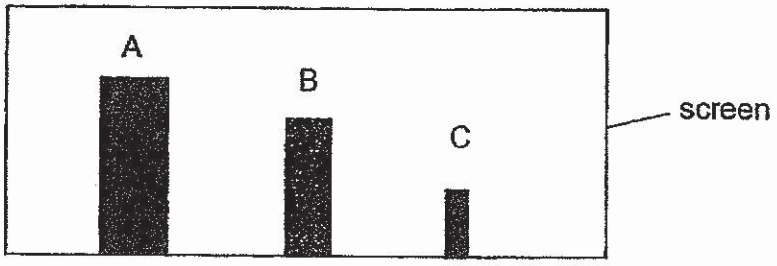
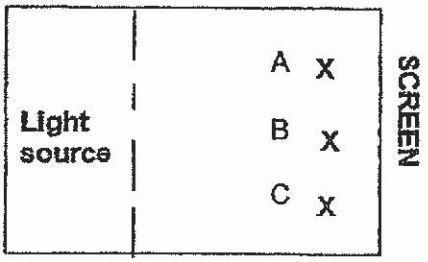
22. The following diagram shows the shadows of three identical sticks, A, B and C, placed at different positions in front of the screen.

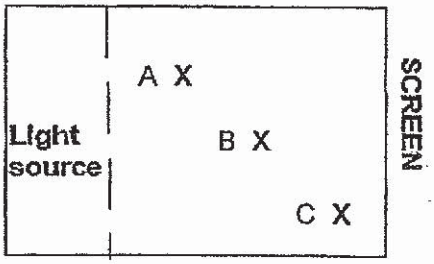


Which one of the following shows the correct positioning of the sticks?

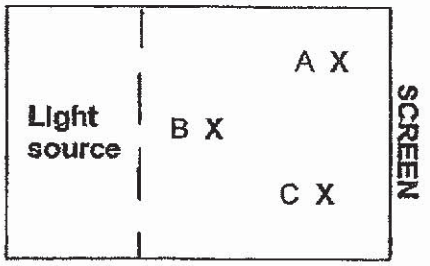
(1)



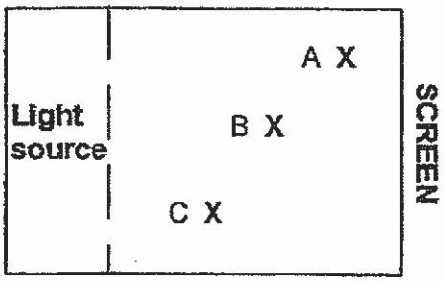
(2)



(3)



(4)



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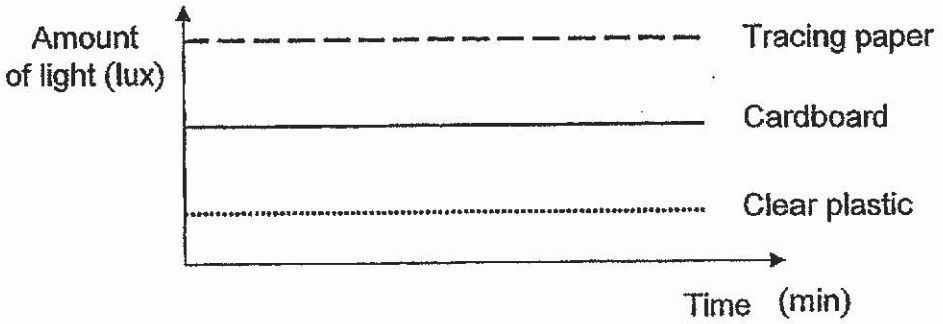
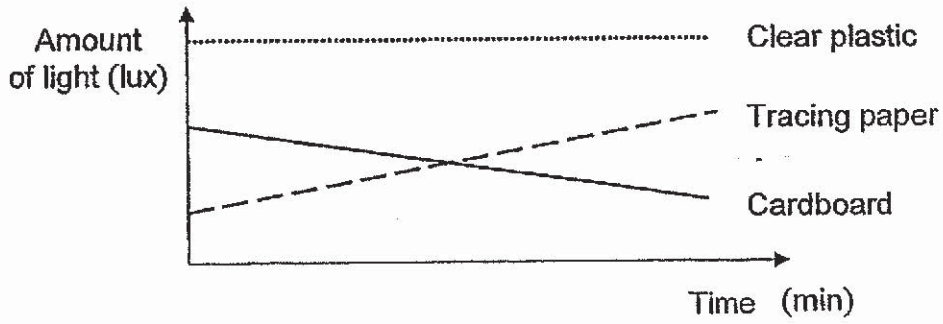
23. Kieran wanted to investigate the amount of light that can pass through three materials - clear plastic, tracing paper and cardboard. All the materials were of the same thickness. He used a light sensor to measure the amount of light that passed through. Which one of the following graphs best represents the result of the experiment?

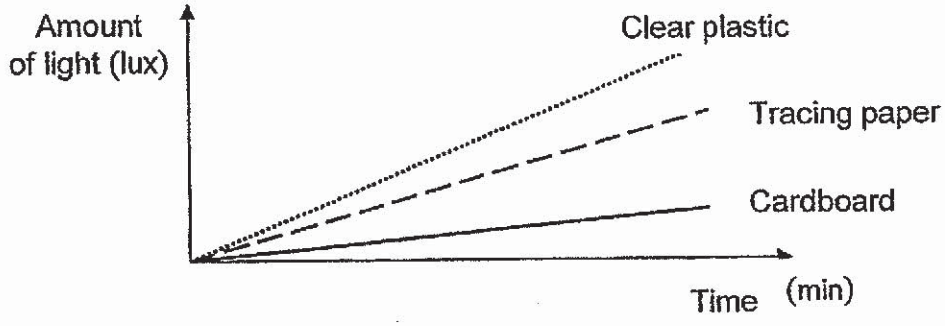
(1)



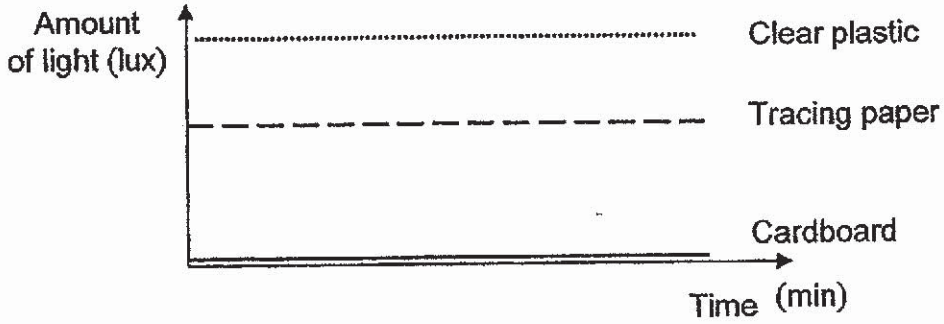
(2)



(3)



(4)



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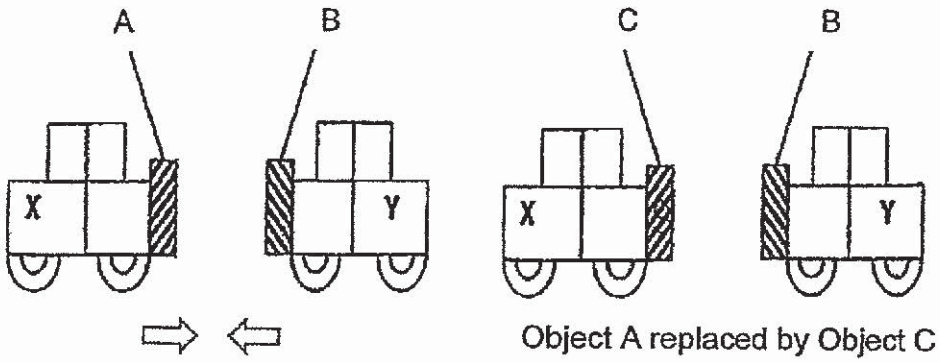
24. When two objects, A and B were placed on toy cars X and Y, the cars began to move towards each other. But when Object A is replaced by Object C, both toy cars did not move.



What could Objects A, B and C be?

	Object A	Object B	Object C
(1)	South pole of magnet	North pole of magnet	Plastic block
(2)	North pole of magnet	South pole of magnet	Steel block
(3)	Steel block	Plastic block	North pole of magnet
(4)	Plastic block	South pole of magnet	North pole of magnet

( )

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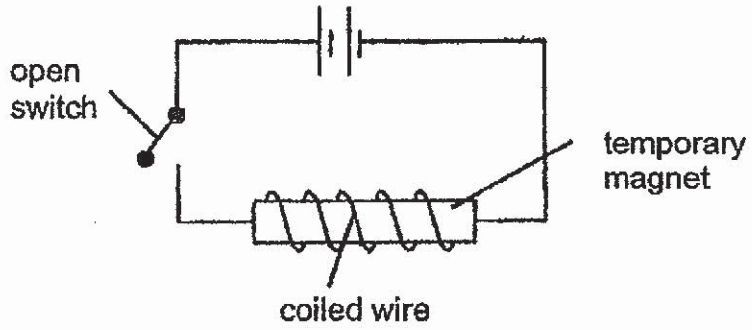
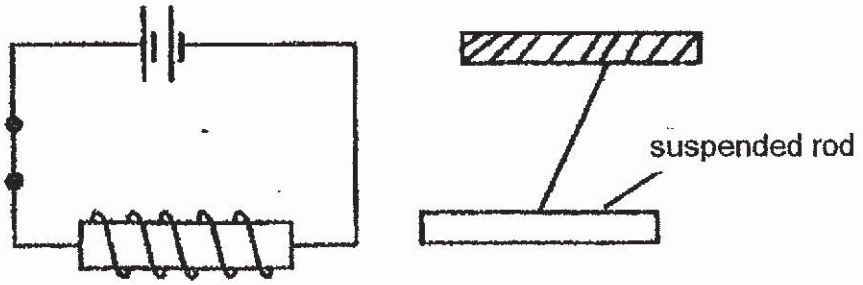
25. Ahmad set up the experiment to make a temporary magnet as shown below.

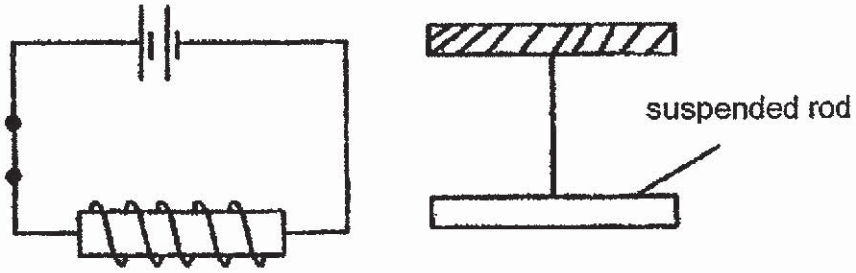


He brought a suspended rod near the temporary magnet. Which of the following diagrams is **not** a possible observation?

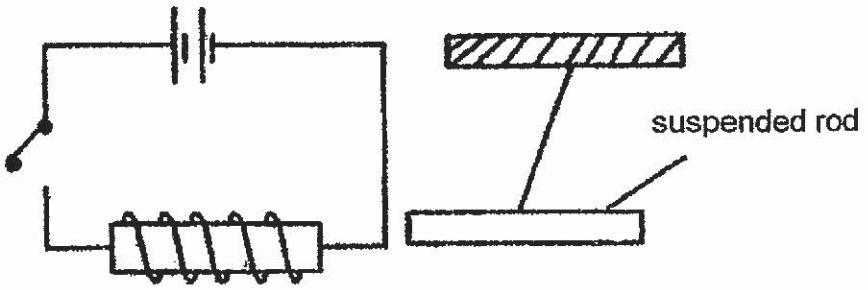
(1)



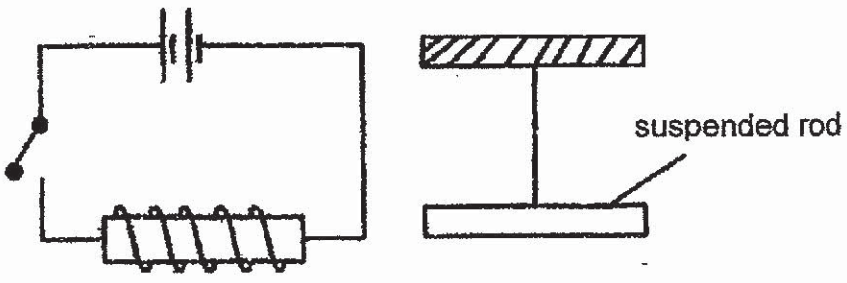
(2)



(3)



(4)



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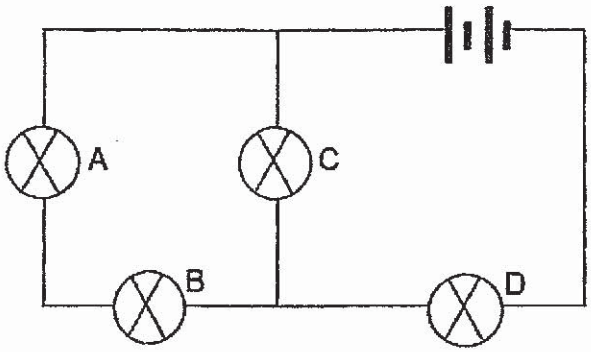
26. Study the circuit diagram below.



When one of the bulbs is not working, only two bulbs remain lighted.
Which bulb is **not** working?

(1) A or B
(2) B or C
(3) C or D
(4) A or D

( )

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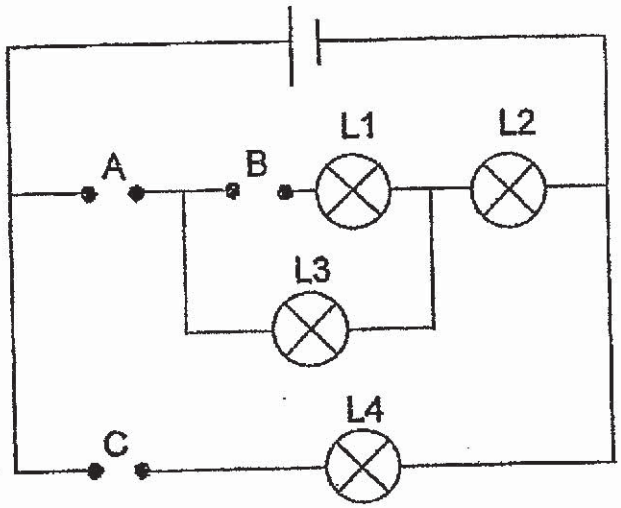
27. Karen had three rods, P, Q and R, of unknown materials. She placed them in various positions, A, B and C, on the circuit shown below.



The results of the experiment were shown in the table below. When any of the lamps, L1, L2, L3 or L4, lit up during the experiment, a tick (√) was placed in the box.

Experiment Results						
Positions where rods were placed			Lamp			
A	B	C	L1	L2	L3	L4
P	Q	R		√	√	√

Which of the following would show the correct result if the rods, P, Q and R, were placed at different positions?

	Positions where rods were placed			Lamp			
	A	B	C	L1	L2	L3	L4
(1)	P	R	Q		√	√	√
(2)	Q	R	P			√	√
(3)	R	Q	P	√	√	√	
(4)	Q	P	R				√

( )

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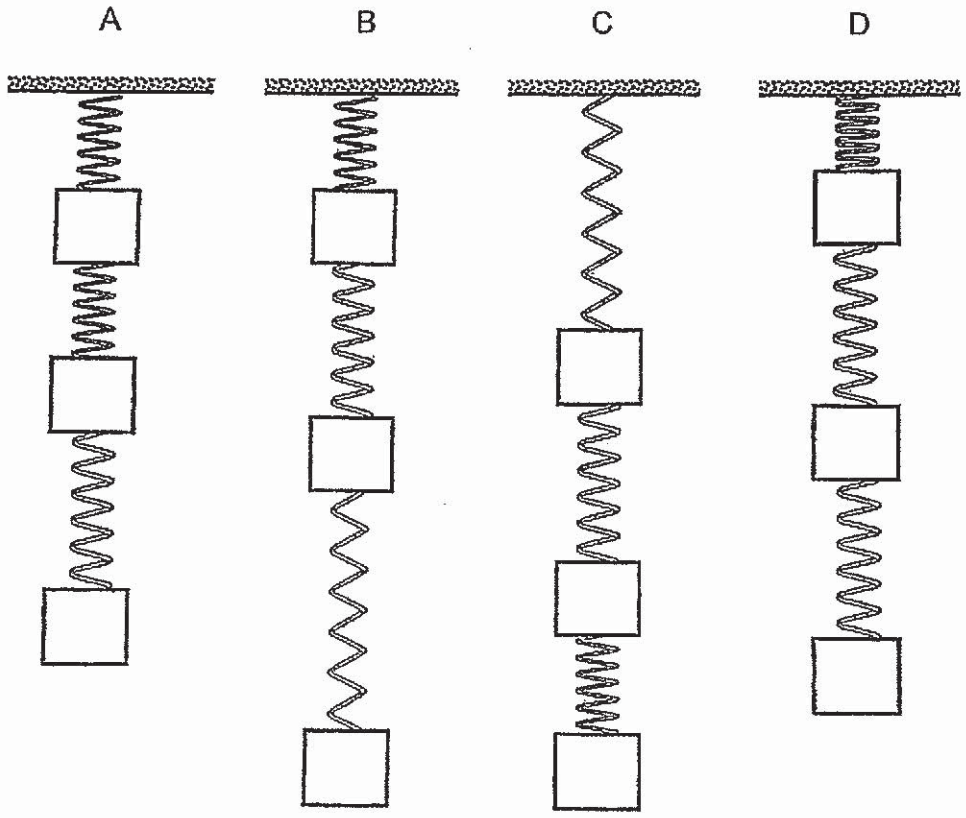
28. Jane hung three identical springs from the ceiling as shown below. Each spring was attached to an object of equal mass. Which of the following is <u>not</u> a possible observation Jane would make?



(1) A and C
(2) B and C
(3) A, B and C
(4) A, B and D

( )

~ End of Booklet A ~

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RIVER VALLEY PRIMARY SCHOOL
2019 CONTINUAL ASSESSMENT 1 (CA1)
PRIMARY 6

STANDARD SCIENCE

(BOOKLET B)

Name : _____ ( ) Date : 05/03/2019 (Tue)

Class : P6 _____ Time : 1 hour 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the OAS.
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet B is 44 marks.

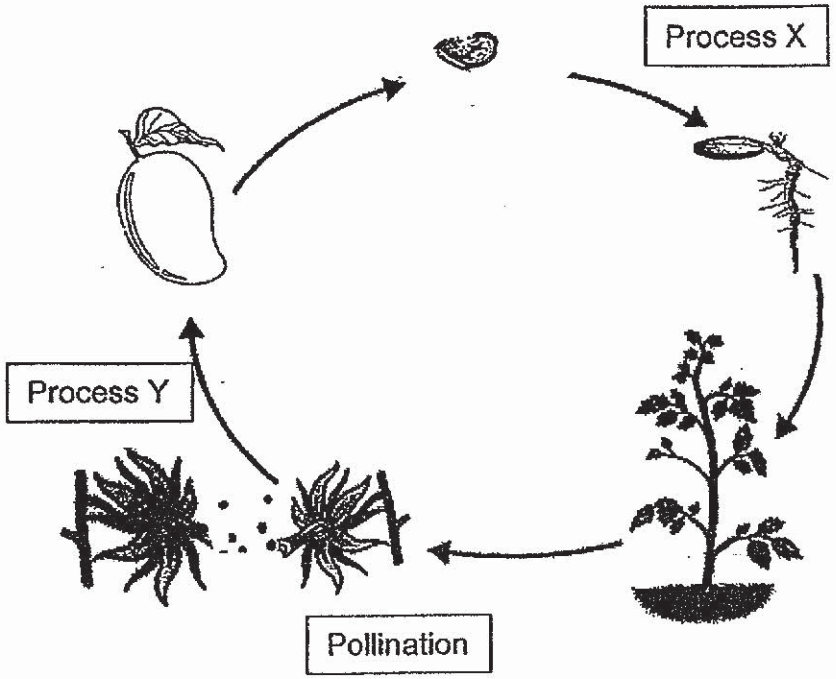
Booklet A	56
Booklet B	44
Total	100

Parent's Signature: _____

Section B (44 marks)

Write your answers to questions 29 to 40 in this booklet.

29. The diagram below shows the different stages of the development of a plant.



(a) Name the processes X and Y. [1m]

Process X: _____ Process Y: _____

(b) Explain how insects help in the development of the fruit in the plant. [1m]

_____

_____

(c) State one way insects benefit during the pollination process. [1m]

_____

_____

	3

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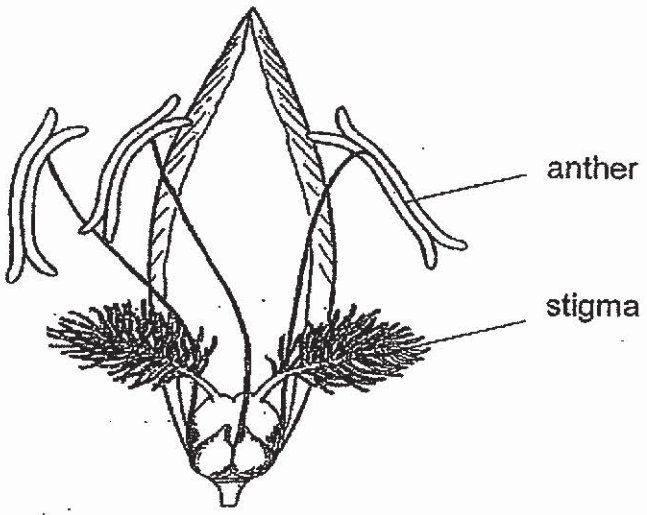
30. During a field trip to a jungle, a group of scientists saw a flower as shown in the diagram.



(a) Based on the diagram, give two reasons to explain why the flower is likely to be wind pollinated. [2m]

Reason 1:

_____

_____

Reason 2:

_____

_____

	2

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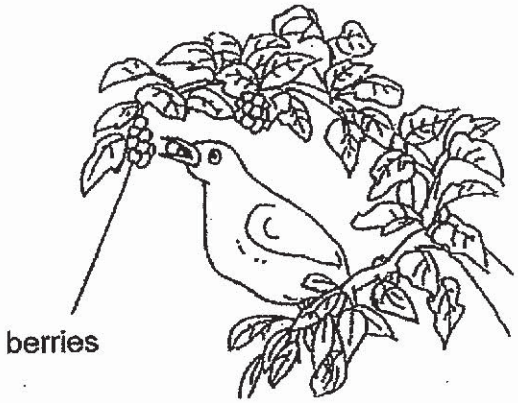
The scientists found out that the flower develops into berries which are small fruits that contain many seeds. Birds eat these berries and pass out the seeds in their wastes. In this way, the birds helps the plant to disperse its seeds.



(b) State two advantages in this method of dispersing seeds for the plant. [2m]

Advantage 1:

_____

_____

Advantage 2:

_____

_____

	2

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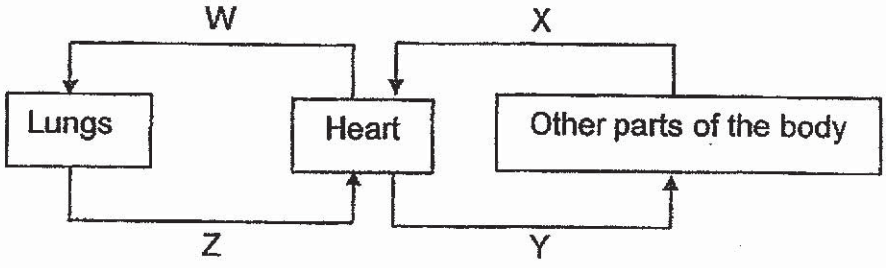
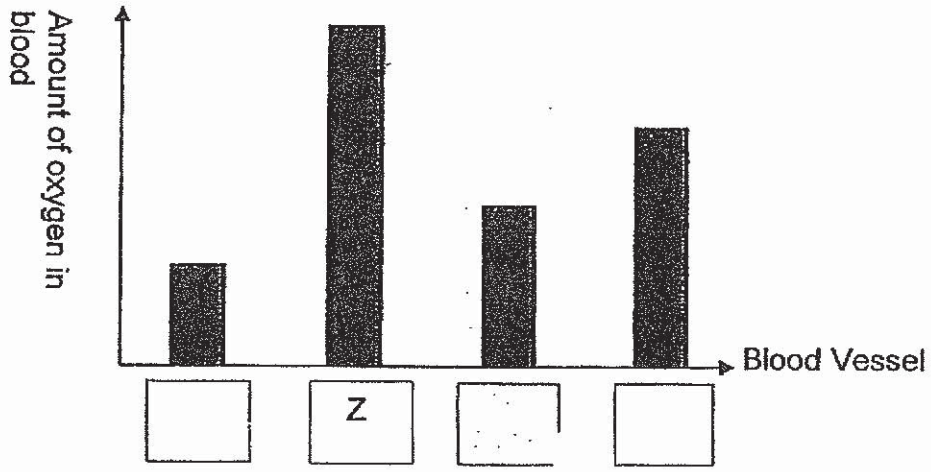
31. The diagram below shows how blood flows in certain parts of the human body. W, X, Y and Z represent the blood vessels at different parts of the human body.



Based on the blood flow diagram above, Ray plotted a bar graph to show the difference in the amount of oxygen in the blood at W, X, Y and Z.

(a) Fill in each box below with the letters W, X and Y show the correct amount of oxygen in each blood vessel. [2m]



(b) A medical condition (where the heart stops working suddenly) have been on the rise. A person who experiences such a condition may lose consciousness easily. Based on the blood flow diagram above, explain why a person experiences such a condition. [2m]

_____

_____

_____

	4

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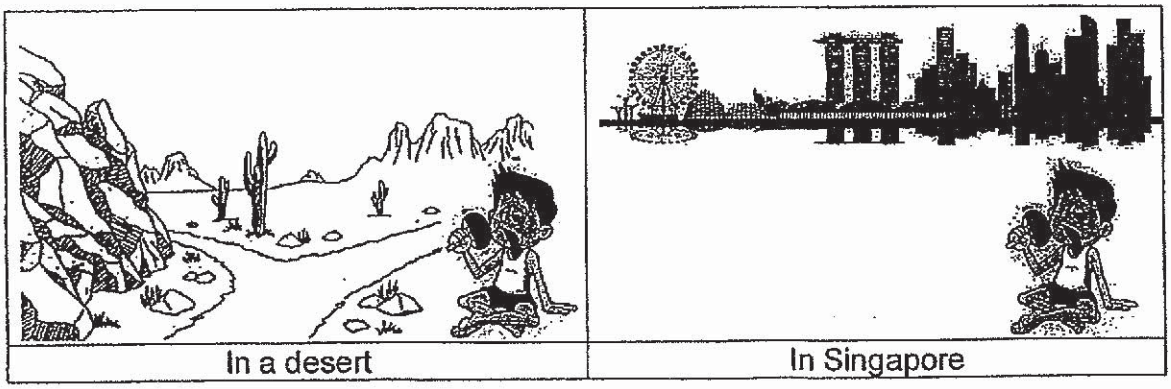
32. A few students wanted to find out if temperature affects the rate of evaporation. They placed two similar containers of water in rooms P and Q. Both rooms are at different temperatures. They then recorded the volume of water and the results are shown below

Time (days)	Volume of water in each container (ml)	
	Room P	Room Q
0	100	100
1	84	92
2	68	84
3	52	78

(a) Which room is at a higher temperature? Explain your answer. [2m]

Unlike Singapore, deserts are much hotter. People who live in the desert perspire more but their clothes are still dry.



In a desert | In Singapore

(b) Based on the experiment, explain why people in the desert will feel that their clothes are still dry, though they perspire more. [1m]

	3

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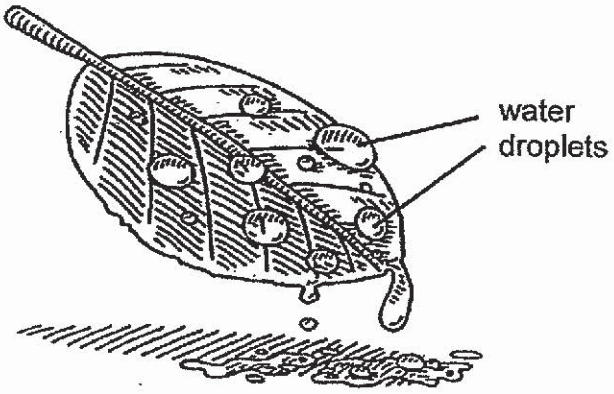
At night, the temperature in the desert drops below 10°C. Water droplets can be seen on plants the next morning.



(c) Explain what causes water droplets to be seen on the plants the next morning. [1m]

_____

_____

	1

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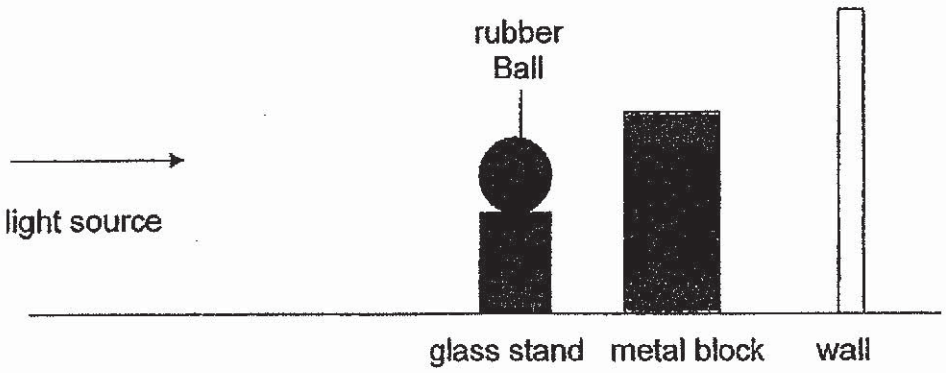
33. Jane set up the experiment below in a dark room.



(a) When Jane switched on the torch, she observed a dark shadow on the wall.
Draw the shadow observed on the wall. [1m]

(b) Without moving the wall, what must Jane do to make the shadow bigger? [1m]

_____

	2

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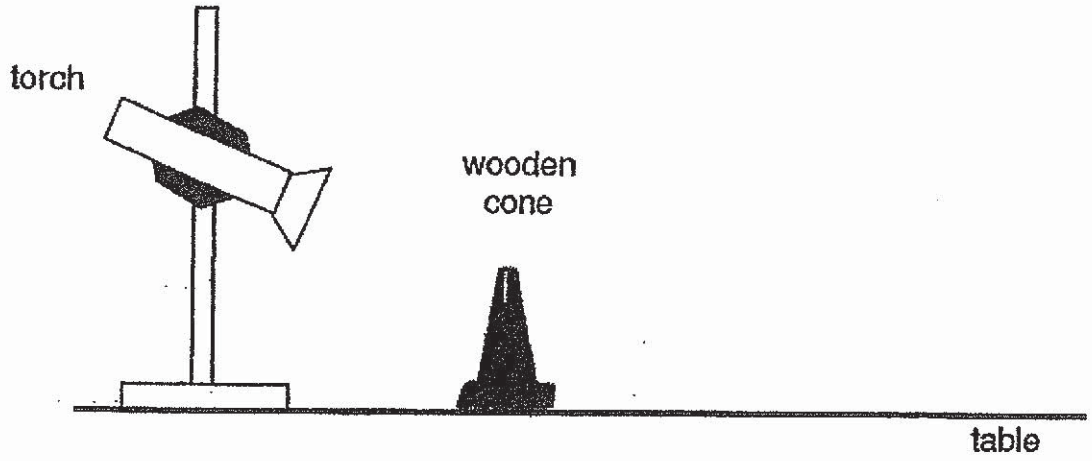
Jane wanted to find out how the distance between the torch and an object would affect the length of the shadow formed. In the experiment shown below, the angle at which the torch was shining at the wooden cone remained unchanged.



Jane measured the length of the shadow when the torch was placed at different distances from the wooden cone and recorded the results in the table below.

Distance of wooden cone from the torch (cm)	Length of shadow formed on the table (cm)
10	20
15	17
20	12
25	8

(c) What is the relationship between the distance of the wooden cone from the torch and the length of shadow formed? [1m]

(d) Jane used the same set-up and repeated the experiment with another object of the same size. She placed the object 20 cm away from the torch. This time no shadow was formed when the torch was switched on. Explain why this happened. [1m]

	2

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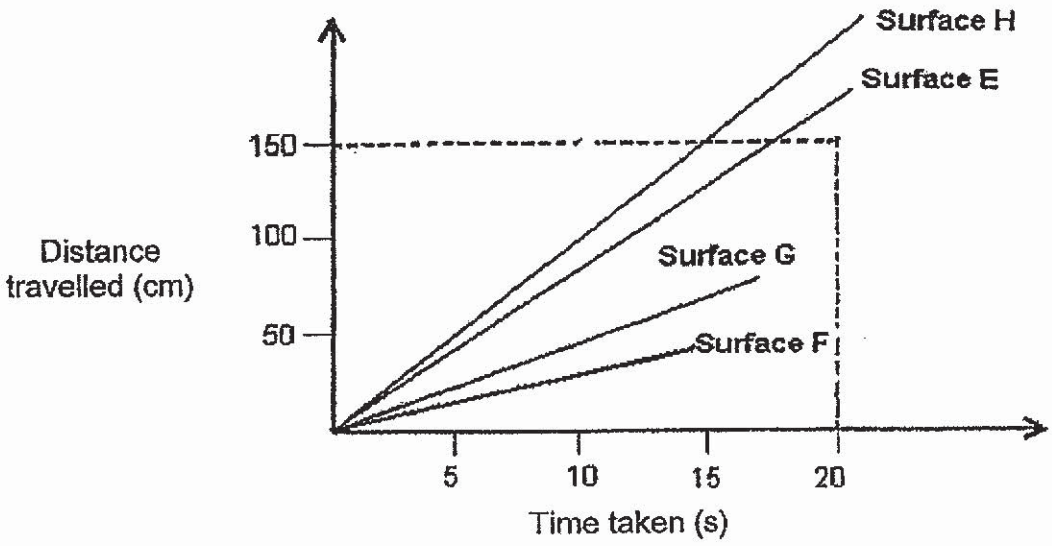
34. John plotted the graph below to show the time taken for a tennis ball to come to a stop when it was rolled over four different floor surfaces, E, F, G and H.



(a) Which surface, E, F, G and H, is the roughest? Give a reason for your answer. [1m]

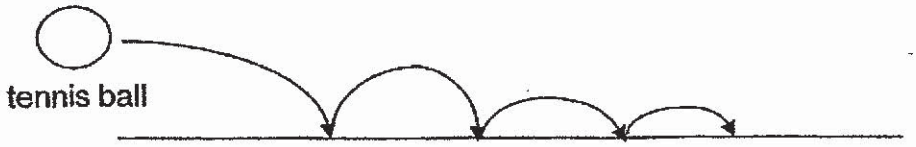
_____

(b) What can John conclude about the relationship between the surface of the floor and the amount of friction? [1m]

_____

_____

John dropped a tennis ball from a height and noticed that it bounced on the ground a few times. The height of the next bounce was lower than the height of the previous bounce.



(c) Explain why the height reduced with each bounce. [1m]

_____

_____

	3

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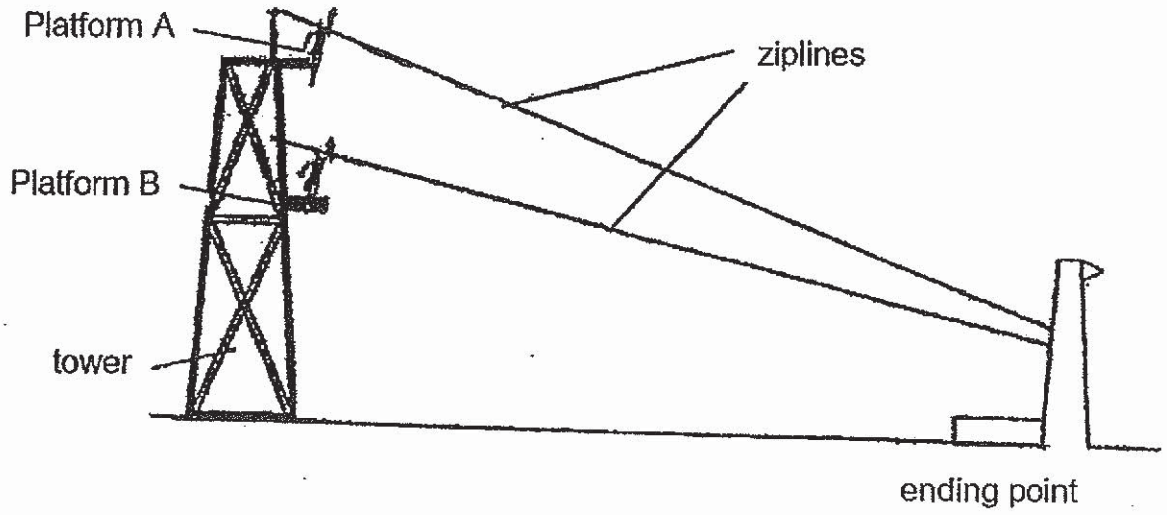
35. The diagram below shows a tower in an adventure camp. The students will start at the platforms and travel down the zipline to reach the ending point.



(a) David is a thrill-seeker who wants to travel down to the ending point at a higher speed. Which platform, A or B, should he choose? Give a reason for your answer. [1m]

(b) Name two forces acting on David as he is travelling down the zipline. [1m]

	2

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David was told that falling objects of more mass have more potential energy.

(c) Using the materials given in the table below, help him plan a fair investigation to prove that the above statement is true. [2m]

Materials
iron ball 50g; iron ball 100g; ruler; sand in a tray

Step 1	
Step 2	
Step 3	
Step 4	

(d) If the statement that falling objects of more mass have more energy is true, what would David observe so that he could make the right conclusion? [1m]

_____

_____

3

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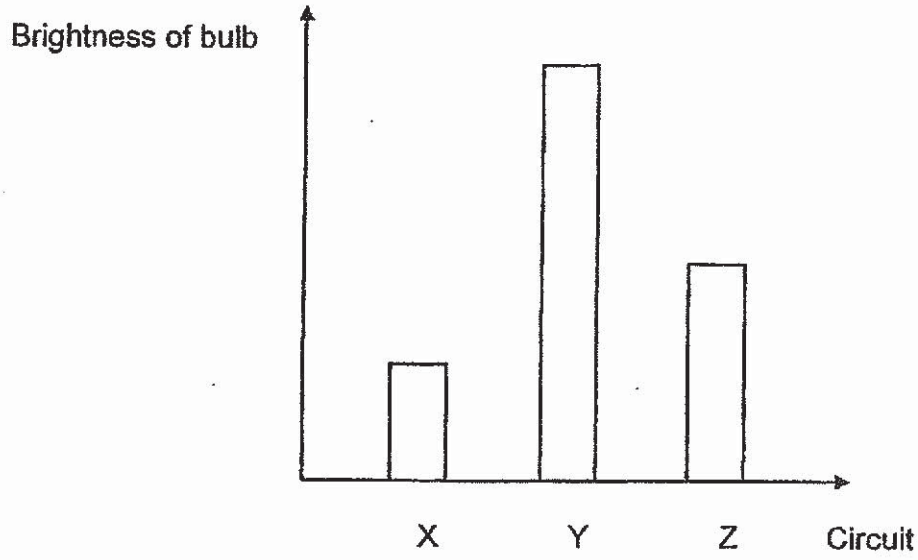
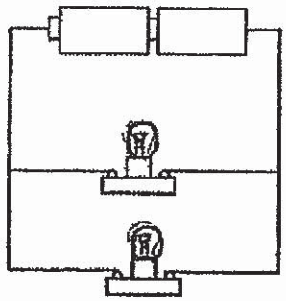
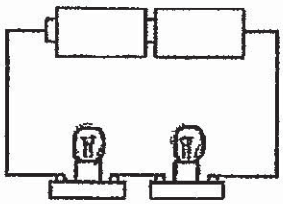
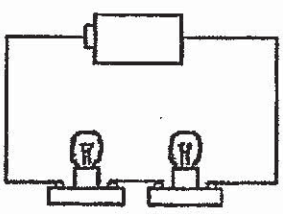
36. Anna formed three new circuits X, Y and Z. She used a light sensor to measure the brightness of one of the bulbs in each circuit. The sensor gave the results on the bar graph below.



(a) The following table shows the three circuits. Observe them carefully and match the circuit to the corresponding letter in the bar graph. [1m]

Circuit	Letter
	
	
	

	1

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(b) Anna wanted to test the following materials, P, Q, R and S, to see if they conduct electricity.

P	Q	R	S

Using a bulb, a battery, a switch and some wires, draw a circuit diagram in the box be to show how Anna should test material P. [1m]

bulb

battery

switch

wires

	1

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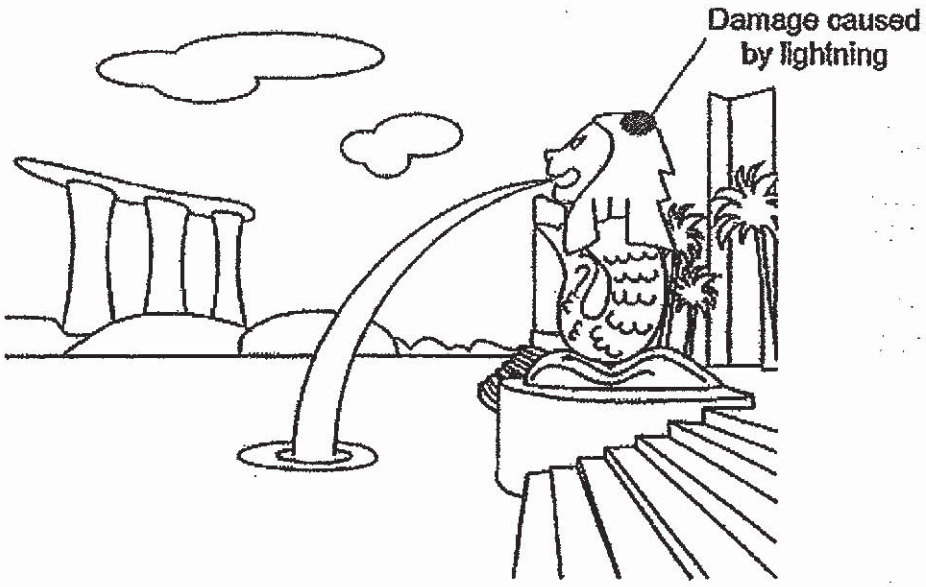
123

As Anna tested the materials, she recorded the brightness of the bulb in the table below.

Materials	Brightness of Bulb
P	Bright
Q	Unlit
R	Very bright
S	Dim

Lightning rods are placed at the highest point and they channel lightning safely to the ground when lightning strikes. The Merlion statue was damaged when lightning struck. Anna suggested installing lightning rods on the statue.



(c) Which material P, Q, R or S is the most suitable to be used as a lightning rod? Explain your answer. [2m]

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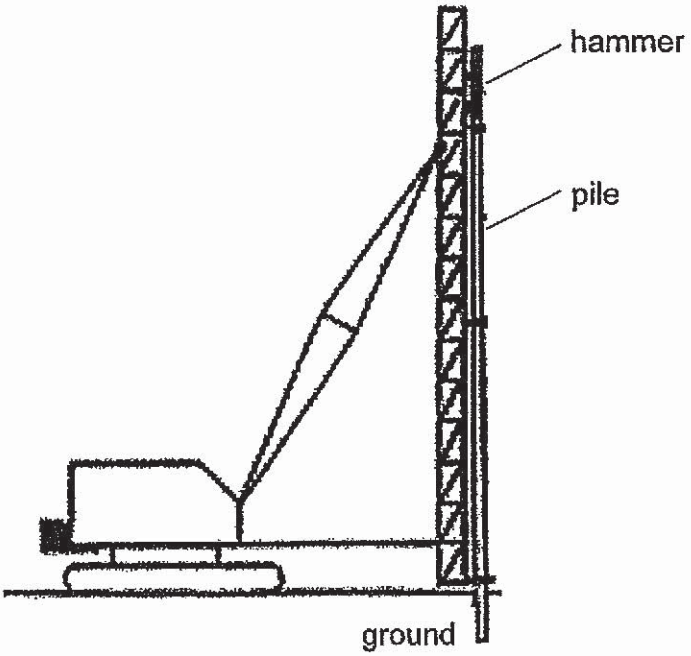
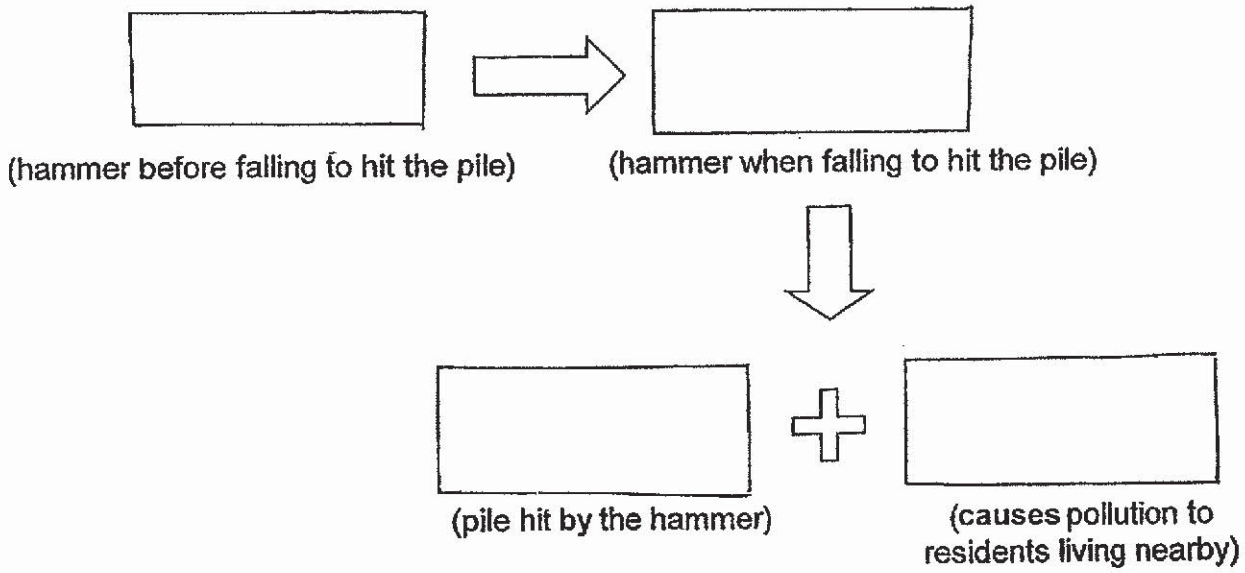
37. The picture below shows a pile driver. The hammer is raised first before it is dropped to push the pile into the ground.



(a) Complete the energy conversion diagram below. [2m]



	2

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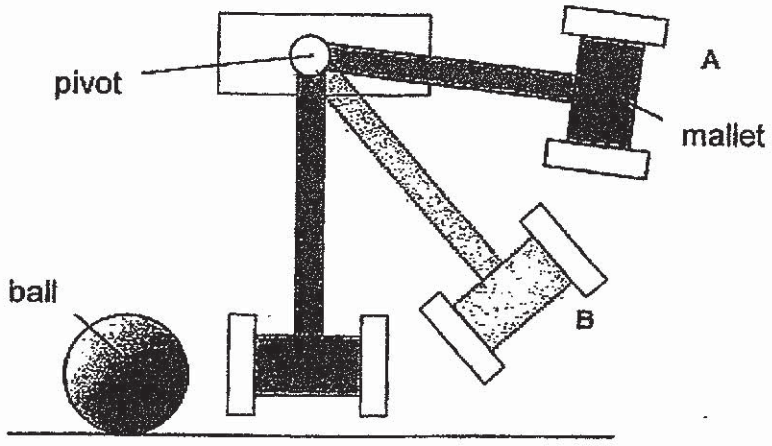
The picture below shows a mallet brought up to Position A before it is released to hit the ball on the ground.



When the mallet is released at A or B, the ball gets energy from the mallet to move a certain distance. For the pile driver, when the hammer hits the pile, the pile also gets energy from the hammer and moves into the ground.

(b) Explain why the pile gets more energy from the hammer than the ball from the mallet. [1m]

	1

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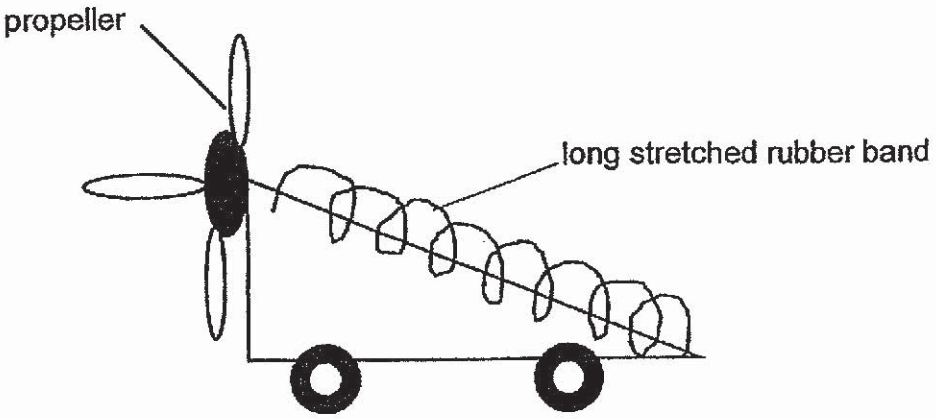
126

38. Jenny made a toy car as shown below.



(a) Identify the energy the stretched rubber band possesses. [1m]

_____

(b) State the energy conversion when the toy car is released and moved a distance. [1m]

_____

_____

(c) Without changing the set-up of the car, state two ways Jenny can make the toy car go further. [2m]

_____

_____

	4

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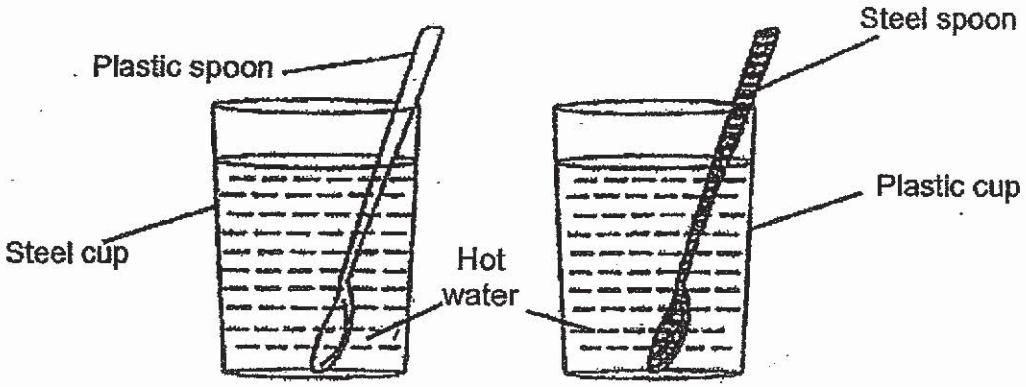
39. Study Set-ups A and B as shown below carefully. In Set-up A, a plastic spoon is placed in the steel cup. In Set-up B, a steel spoon is placed in the plastic cup. The volume of water is the same in both cups. The table below shows the changes in temperature of the water over 15 minutes.



Set-up A Set-up B

Set-up	Temperature of water (°C)			
	0 min	5 min	10 min	15 min
	70	58	49	41
	70	47	35	30

(a) In the table above, complete the table by stating which set-up is 'A' or 'B'. [1m]

(b) Explain your answer in (a). [2m]

_____

_____

	3

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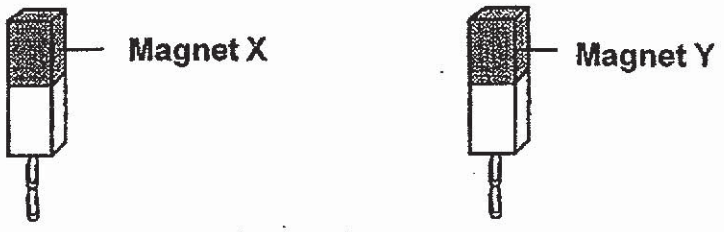
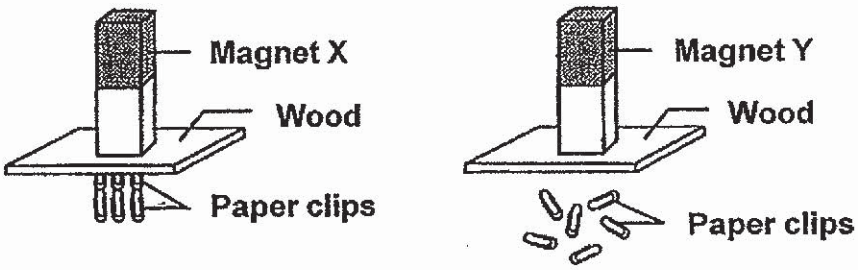
128

40. Peter had two magnets, Magnet X and Magnet Y. To test if these two magnets could still be used, he brought both magnets near two paper clips and his observation was shown in the diagrams below.



He then carried out the experiment below using six paper clips. The paper clips were attracted by Magnet X. When he repeated the same experiment with Magnet Y, the paper clips were not attracted.



(a) Give **one** possible reason to explain why only Magnet X was able to attract the paper clips. [1m]

_____

_____

	1

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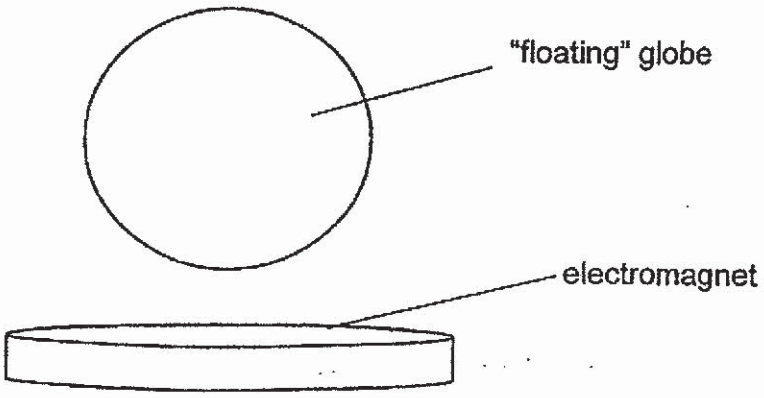
Peter's father bought a "floating" globe as shown in the diagram below.



(b) Based on the above set-up, name the forces that are acting on the "floating" globe. [1m]

_____

_____

(c) Explain how the electromagnet allows the globe to "float" in the air. [1m]

_____

_____

	2

~ End of Paper ~

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130

SCHOOL : RIVER VALLEY PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 CA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	3	1	2	2	3	3	4	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	1	2	4	2	4	3	2	3	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	2	4	3	3	1	4	1		

SECTION B

Q29)	a)Process X: Germination Process Y : Fertilisation b)Insects carry pollen grains from the anther to the stigma of the flower and it helps in pollination the plant. c)Insects obtain nectar from the flower.
Q30)	a)Reason 1:The anthers and the stigmas are hanging outside of the flower, allowing the wind to carry/blow the pollen grains away easily. Reason 2 :The stigma is sticking out of the flowers, allowing it to catch the pollen grains carried by the wind easily. b)Advantage 1:The seeds can be dispersed a further distance away from the posent plant to prevent overcrowding. Advantage 2:The bird's wastes/droppings provide nutrients for the young seedling/plant.
Q31)	a)W Z X Y b)During a cardiac arrest, the heart is unable to pump oxygenated blood to all parts for the body.Thus,the brain does not get the

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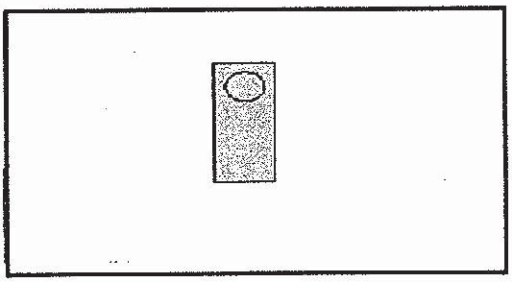
	oxygen it needs to function, causing the person to lose consciousness.
Q32)	a)Room P. The volume of water in the container is the least. Hence, there is a higher temperatures and the water in the container gained heat and evaporates the most. Thus, room P is at a higher temperature. b)In areas of higher temperature, there is higher rate of evaporation. c)The warmer water vapour from the surroundings comes into contact with the cooler surface of the leaves, loses heat and condense to form water droplets on the leaves of the plants.
Q33)	a)  b)Move the light source nearer to the objects c)When the distance between the wooden cone from the torch increases, the length of shadow formed decreases. d)The object could be made of a transparent material.
Q34)	a)Surface F. The distance travelled is the shortest. Hence, there is more friction between the tennis ball and the floor. b)John can conclude that when the surface of the floor is rougher the amount of friction increases. c)Some of the kinetic energy of the tennis ball is converted into heat energy and sound energy when it reaches the ground.
Q35)	a)Platform A. At platform A, there is more gravitational potential energy than at platform B. Hence, more gravitational potential energy is converted into more kinetic energy when he reaches the ending point. b)Gravitational force and frictional force.

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c)

d)He would observe that the 100g iron ball made a deeper hole than

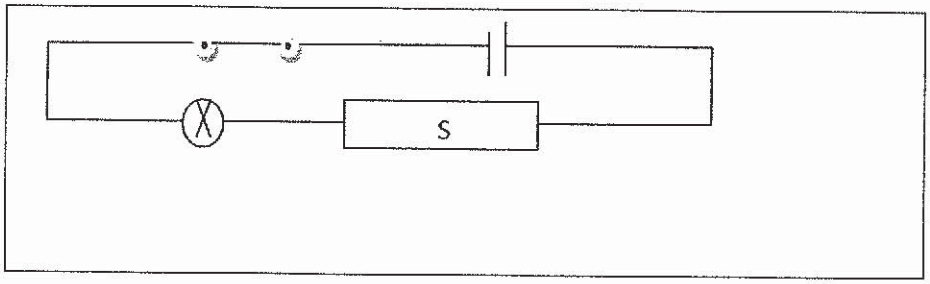
Step 1	Drop the 50g iron ball from a fixed height onto the tray of sand.
Step 2	Measure the depth of the depression/dent made by the ball in the sand using the ruler.
Step 3	Repeat step 1 and 2 for the next iron ball.
Step 4	Release the 100g iron ball and measure the depth made by the 100g iron ball.

the 50g iron ball.

Q36)

a) Y , Z , X

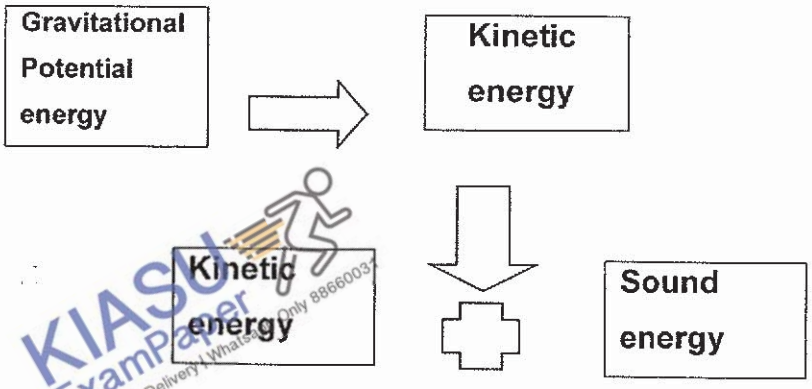
b)



c)Material R because bulb is the brightest and hence R is the best conductor of electricity.

Q37)

a)



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b)The hammer has greater gravitational potential energy. It also has a greater mass and it is raised through a greater height.

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Q38)	a)Elastic potential energy. b)Elastic potential energy of the rubber band is converted to kinetic energy of the propelles and is converted into kinetic energy of the moving car and it is converted to heat and sound energy. c)Use a stiffer rubber bands, use more force to push the car, change to smoother surface, use more rubber bands, stretch the rubber bands more.
Q39)	a)B , A b)As set-up A has a steel cup and steel is a better conductor of heat than plastic, the water in A would lose heat more quickly. Though set-up B has a steel spoon, the surface area of the steel spoon in contact with the watere is smaller than the surface area of the steel cup contact with the water in set-up A.
Q40)	a)Magnet X has a greater magnetic strength. b)Gravitational force and magnetic force. c)It repels the globe so the globe floats.

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Anglo-Chinese School (Junior)

SEMESTRAL ASSESSMENT 1 (2019)

PRIMARY 6

SCIENCE

BOOKLET A

Friday **17 May 2019** **1 hr 45 min**

Name: _____ ( ) Class: 6.( )

INSTRUCTIONS TO PUPILS

1 Do not tum over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 28 questions in this booklet.

4 Answer ALL questions.

5 Shade your answers in the Optical Answer Sheet (OAS) provided.

This question paper consists of 19 printed pages (inclusive of cover page).

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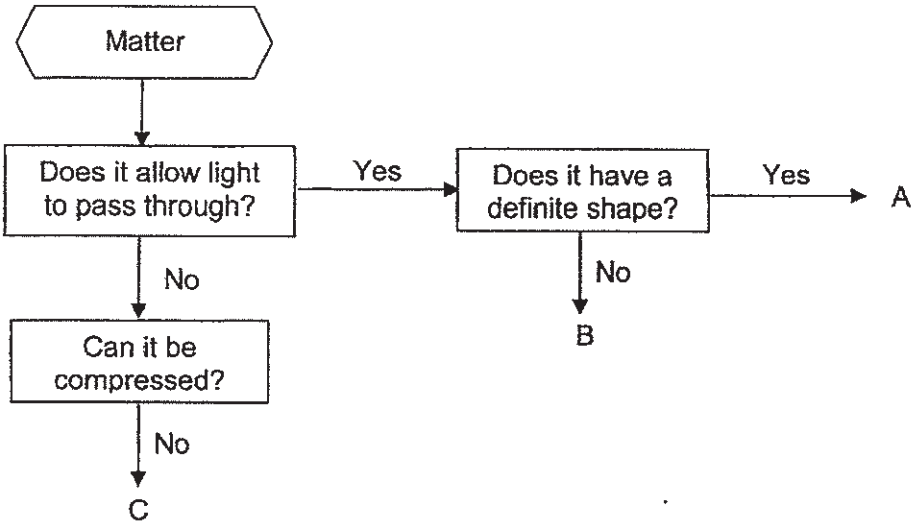
Booklet A

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet.

[56 marks]

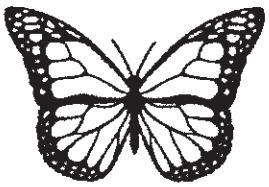
1. The flowchart shows how some matter can be classified.



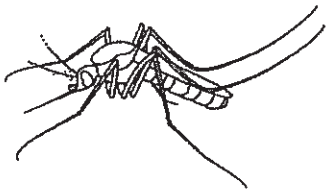
What do A, B and C represent?

	A	B	C
(1)	glass	cardboard	water
(2)	water	glass	cardboard
(3)	glass	water	cardboard
(4)	~~glass~~ cardboard	~~cardboard~~ glass	water

2. Study Animals X and Y.



Animal X



Animal Y

Which of the following comparisons between their life cycles is correct?

		Animal X	Animal Y
(1)	Its young moults.	Yes	No
(2)	Its young has wings.	No	Yes
(3)	The young looks like the adult.	Yes	No
(4)	There are 4 stages in its life cycle.	Yes	Yes

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3. The diagram shows a fungus.

fungus

Which of these statements correctly describes how the fungus grow?

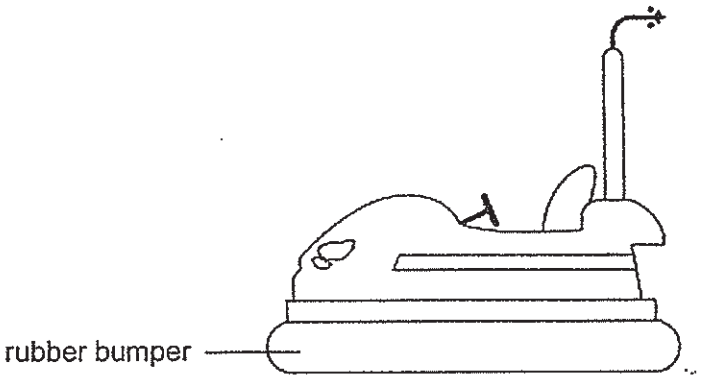
(1) It gets food from living things that are dead or alive.

(2) It disperses its seeds by air to reduce overcrowding.

(3) It needs a cold, bright and dry environment to grow well.

(4) It continues to grow as long as it can make its own food.

4. A bumper car at amusement parks has a large rubber bumper all around it. This helps to protect the driver and bumper car when a collision occurs.



Which property of the rubber bumper is most important to ensure safety?

(1) flexibility

(2) waterproof

(3) transparency

(4) ability to float

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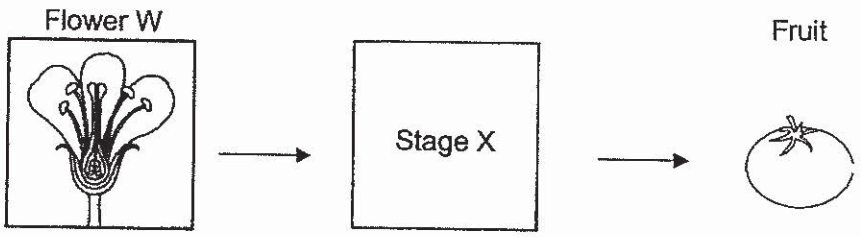
5. The diagram shows how Flower W grows from a flower to a fruit.

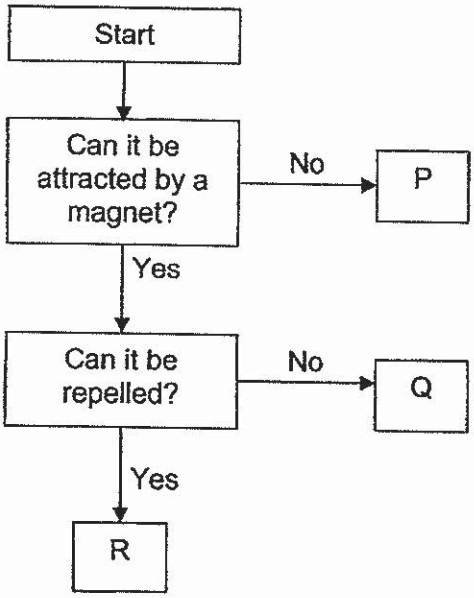


Which of the following statements correctly describes what happened in Stage X?

A Fertilisation took place
B The petals, stigma and anthers withered
C The ovule developed into a seed.

(1) A only
(2) A and B only
(3) A and C only
(4) A, B and C

6. Study the flowchart.



Based on the flowchart, which of the following statements are correct?

A P is non-magnetic.
B Q can be made of copper
C R can attract magnetic objects.
D P and Q are made of magnetic material.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, C and D only

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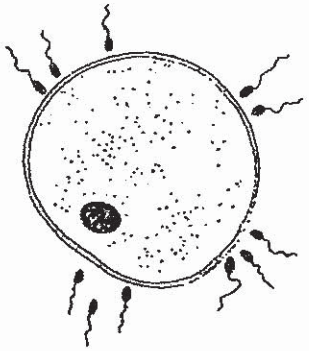
7. The diagram shows sperms and an egg.



Which of the following statements are true?

A The sperm and egg fuse during fertilisation.

B The genetic information from both parents are found in the fertilised egg.

C The fertilised egg develops in the womb of the female reproductive system.

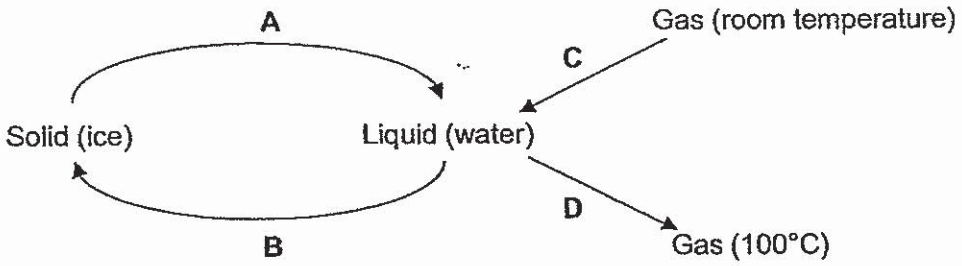
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

8. In the diagram, A, B, C and D represent different processes that result in the change in state of water.



Which of the following correctly states processes A, B, C and D?

	A	B	C	D
(1)	freezing	melting	evaporation	condensation
(2)	melting	freezing	condensation	boiling
(3)	freezing	melting	condensation	evaporation
(4)	melting	freezing	evaporation	boiling

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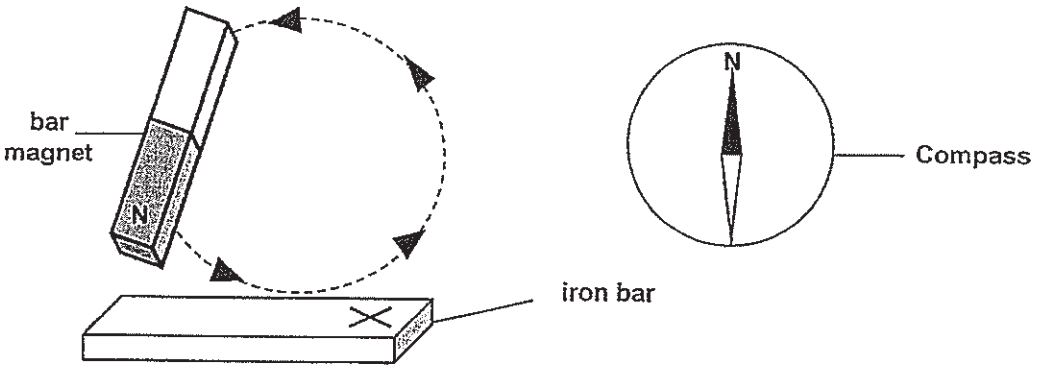
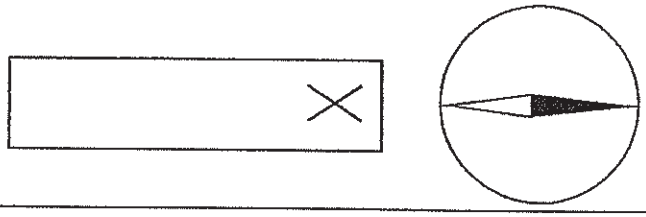
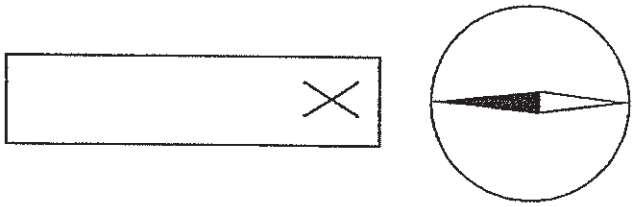
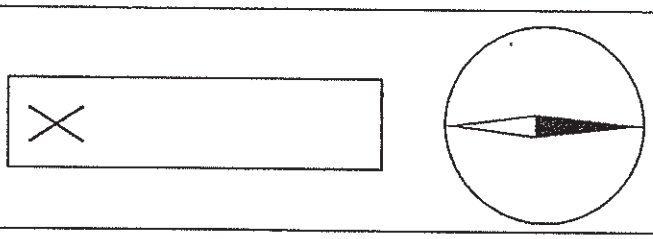
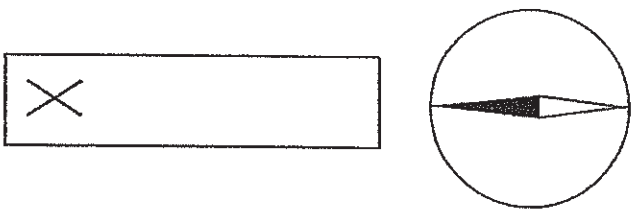
9. Tessa used a bar magnet to repeatedly stroke an iron bar as shown.



She then placed the iron bar next to a compass. Which of the following two are possible observations?

	Possible Observation
A	
B	
C	
D	

(1) A and B
(2) B and C
(3) C and D
(4) A and D

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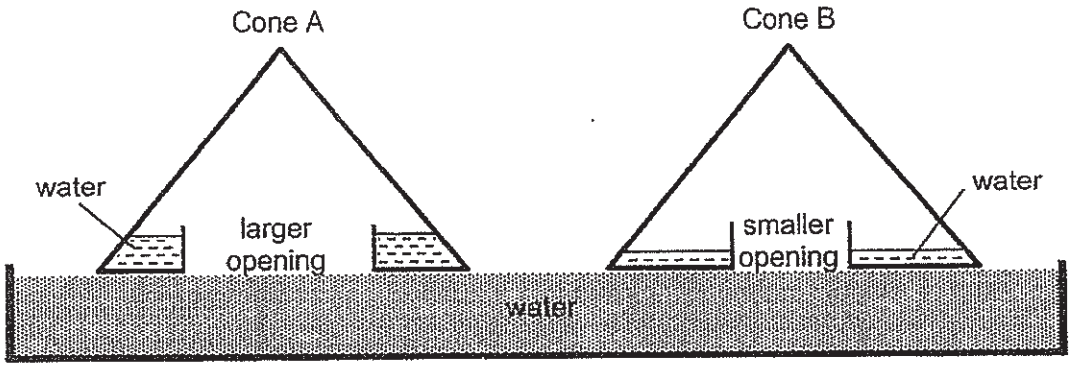
10. William placed two similar plastic Cones, A and B, on a basin of water in the garden at noon. Cone A had a larger opening at its base than Cone B.



After 2 hours, William observed that there was more water collected in Cone A than in Cone B. Which of the following correctly explains the reason?

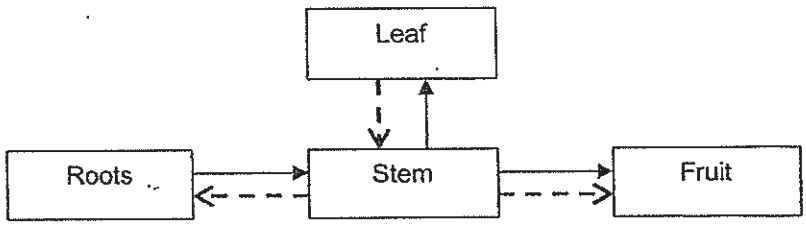
(1) There was more water under Cone A than Cone B.

(2) There was a bigger exposed surface area under Cone A than Cone B.

(3) The contact surface area between the base of the cone and the water is greater under Cone B than Cone A.

(4) There was a bigger surface area for water vapour to condense under Cone A than Cone B.

11. The diagram shows how some substances are transported in a plant.



Which of the following correctly shows what the materials are?

	→	- - - →
(1)	Glucose	Water
(2)	Water	Starch
(3)	Minerals	Water
(4)	Water	Glucose

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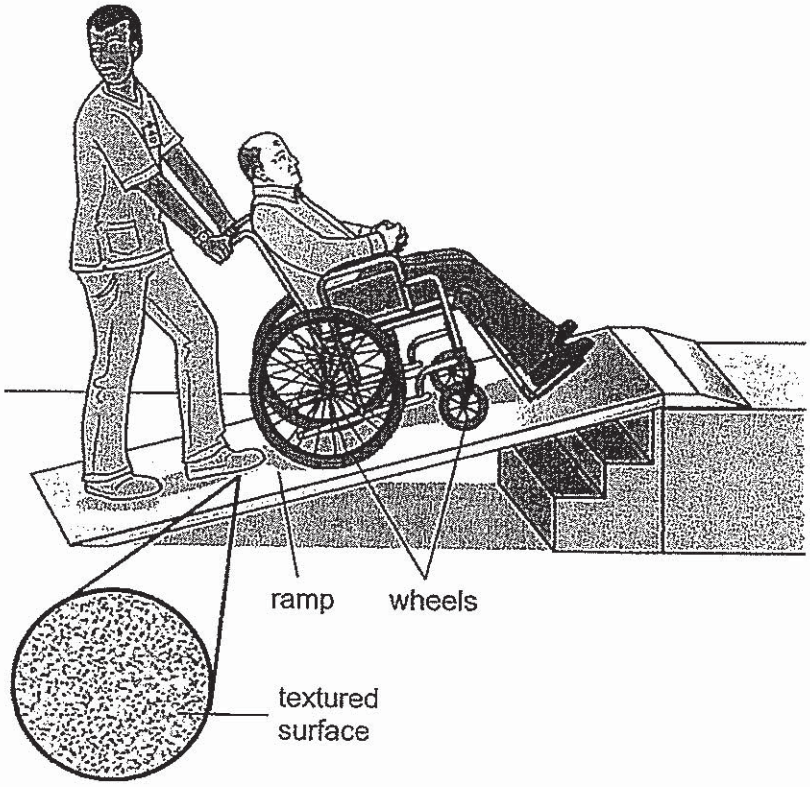
12. At hospitals, instead of steps, the nurses use a ramp to help move patients on wheelchairs to go up and down different levels. The surface of the ramp is often textured like the one shown in the image.



Which one of the following statements explains the reason for the textured surface of the ramp?

(1) It reduces wear and tear to the wheels.

(2) It strengthens the ramp and prevents breakage.

(3) It increases friction between the wheels and the surface of the ramp.

(4) It increases friction between the patient and the wheelchair to prevent accidental fall.

13. Which of the following is/are **not** example(s) of the effects of a force?

A The umbrella blocking the sunlight.

B A boy bouncing a ball against a wall.

C Mother sweeping the floor with a broom.

(1) A only

(2) A and B only

(3) A and C only

(4) B and C only

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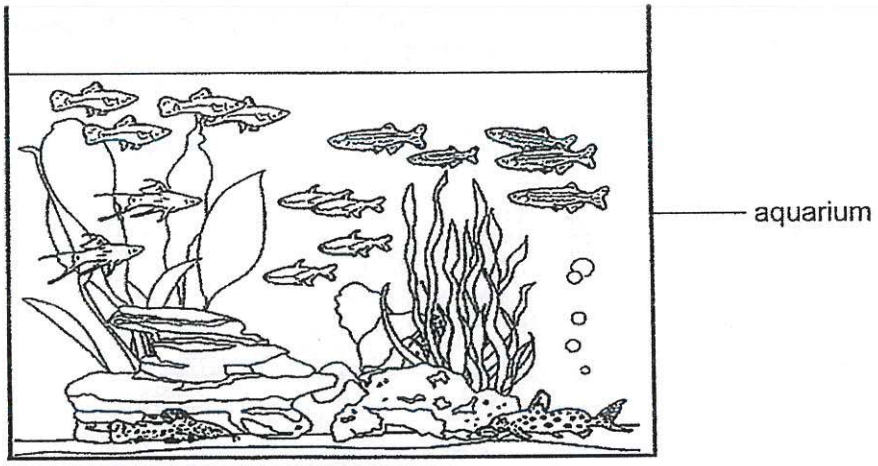
14. Allan observed the organisms in the school aquarium.



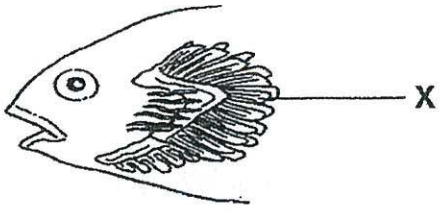
He wrote a few statements based on his observations.

A The plants and fishes form a habitat.
B The plants and fishes form two populations.
C The fishes and the plants form one community.
D The plants and fishes form more than two populations.

Which of the following two statements are correct?

(1) B and C
(2) B and D
(3) C and D
(4) A and C

15. The diagram shows part of the respiratory system of a fish.



Which one of the following statements is **false** about X?

(1) It is protected with a cover.
(2) It has a rich supply of blood vessels.
(3) It absorbs water containing dissolved oxygen.
(4) It releases carbon dioxide that dissolves into the water.

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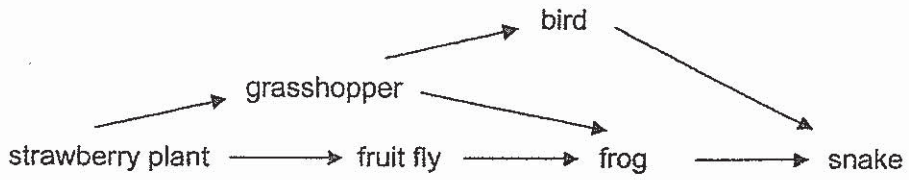
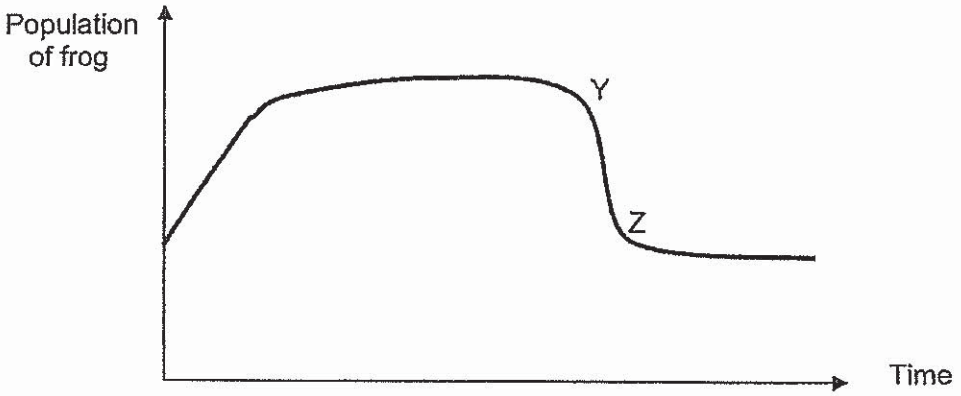
16. Study the food web in Community A.



The graph shows the changes in the population of the frogs over a period of time.



Which of the following best explains the change in the population of the frog at YZ in the graph?

(1) Addition of grasshopper to the community

(2) Addition of strawberry plant to the community

(3) Removal of grasshopper from the community

(4) Removal of fruit fly and grasshopper from the community

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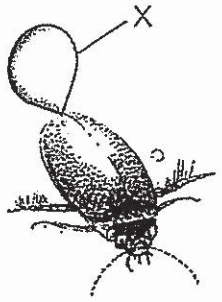
17. Harry observed two organisms, P and Q at the school pond.



Organism P

Organism Q

Which one of the following correctly identifies how each organism breathes and where they are found at the pond?

	Organism P		Organism Q	
	X	Location at the pond	Y	Location at the pond
(1)	air bag	just below the pond surface	blow hole	near the bottom of the pond
(2)	air bubble	near the bottom of the pond	air tube	just below the pond surface
(3)	air bag	above the pond surface	blow hole	above the pond surface
(4)	air bubble	just below the pond surface	air tube	just below the pond surface

18. The table shows some information about three different cells, P, Q and R.
A tick (✓) indicates that the part is present.

Parts of a cell	Cell P	Cell Q	Cell R
Cytoplasm	✓	✓	✓
Chloroplast		✓	
Cell wall		✓	✓

Based on the information given, which of the following statements describe(s) cells P, Q and R correctly?

A Cell Q is a plant cell.

B Cell P is able to make food.

C Cell R may be taken from the root of a plant.

(1) B only

(2) A and C only

(3) B and C only

(4) A, B and C

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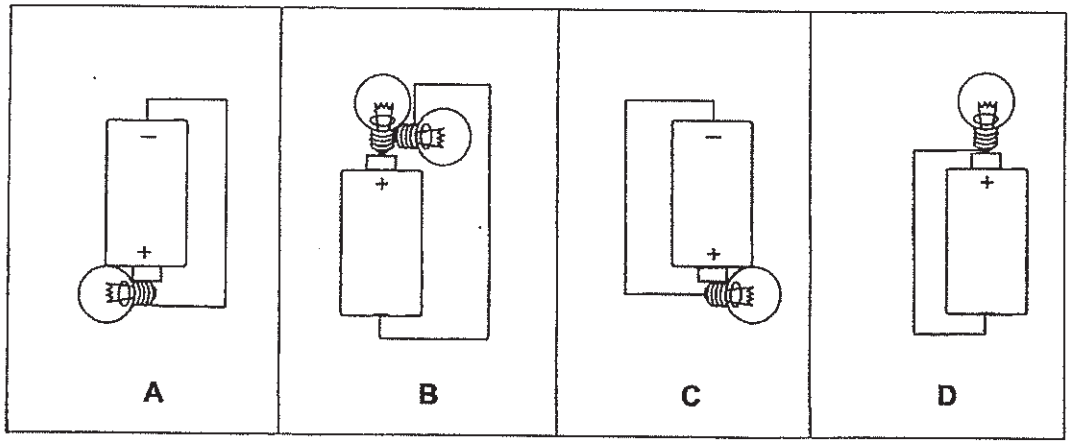
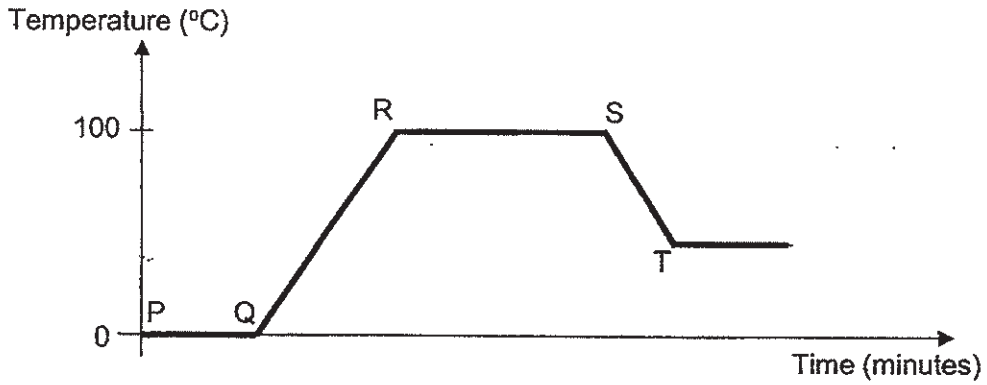
19. Study the diagrams carefully.



In which two circuits would the bulbs light up?

(1) A and B
(2) B and C
(3) C and D
(4) A and D

20. A beaker of ice was heated over a bunsen burner. The temperature of the contents in the beaker was taken and recorded over time. The results were plotted in the graph.



Which of the following two statements are true?

A The bunsen burner was turned off at S.
B There was no change of state from P to Q.
C The temperature of the contents started to increase at Q.
D There was no heat gained by the boiling water from R to S.

(1) A and B
(2) A and C
(3) B and D
(4) C and D

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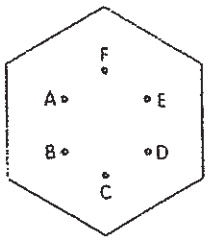
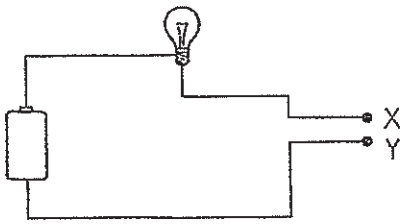
21. Calvin used a circuit tester in an experiment involving a circuit card.
He connected Points X and Y of the circuit tester to various clips A, B, C, D, E and F on a circuit card to see if the bulb would light up.



Circuit Card



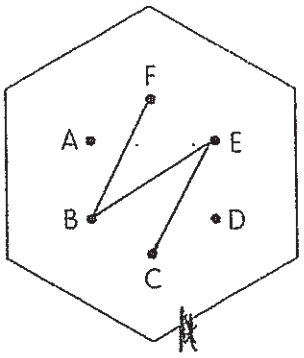
Circuit Tester

He recorded the results of his experiment in the following table :

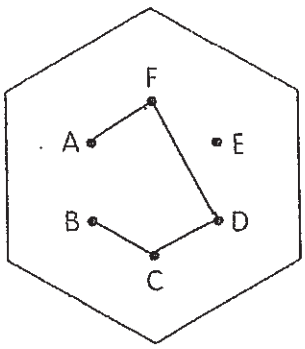
Clips Tested	Bulb of Circuit Tester
A and B	Did not light up
A and F	Lit up
B and D	Did not light up
C and E	Did not light up
C and F	Lit up

Which of the following circuit cards did Calvin use in his experiment?

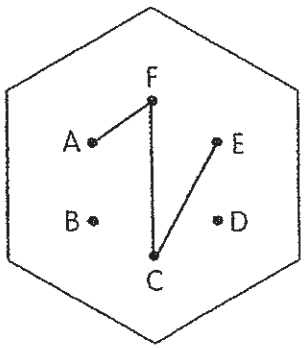
(1)



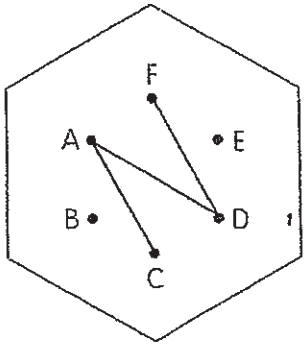
(2)



(3)



(4)



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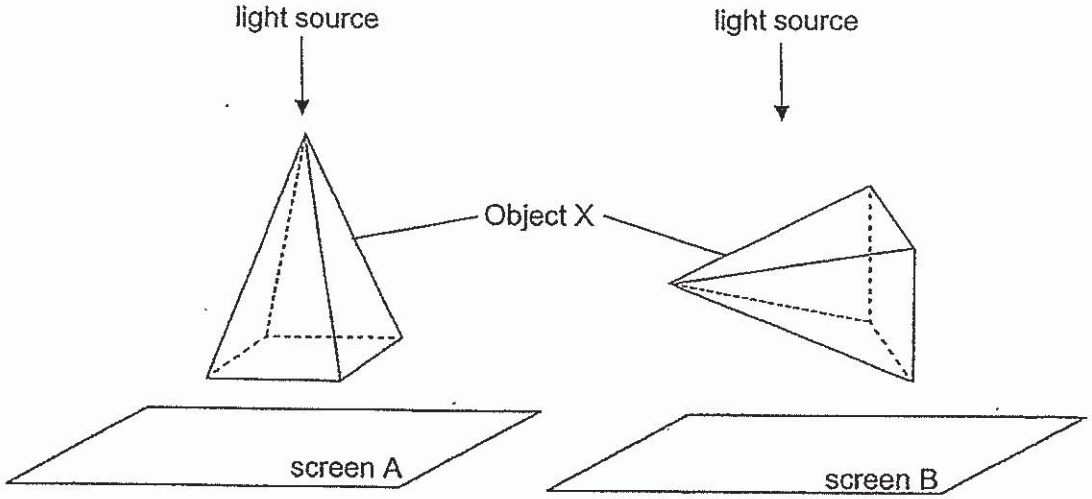
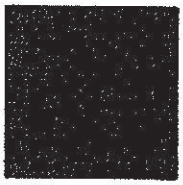
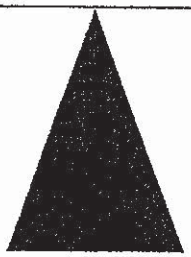
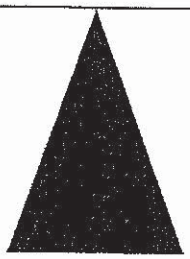
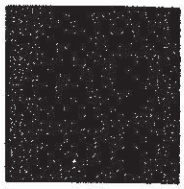
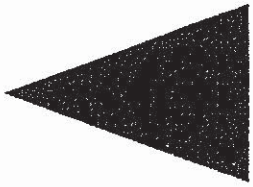
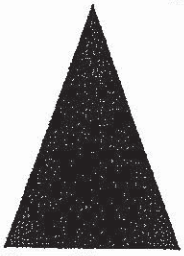
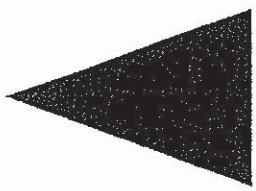
22. Sally wanted to study the shadows that could be formed by Object X. Object X was placed in two different positions directly under identical light sources in a dark room so that shadows were formed respectively on screens A and B as shown.



Which of the following shadows would be observed for each screen?

	Screen A	Screen B
(1)		
(2)		
(3)		
(4)		

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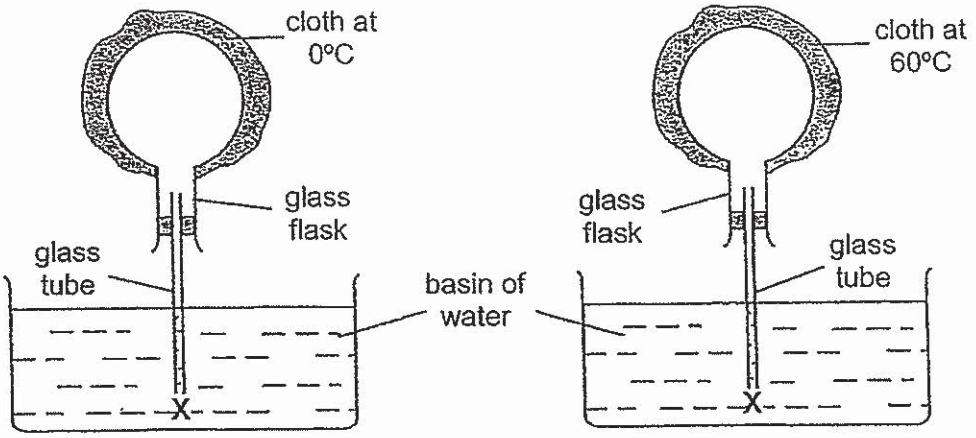
23. Study the set-ups A and B.



A cloth soaked in water at 0°C was placed on the glass flask A and another cloth soaked in water at 60°C was placed on the glass flask B. Which one of the following can be observed one minute after the cloths were placed on the glass flask A and B?

	Observation for Set-up A	Observation for Set-up B
(1)	Water rises up the glass tube	Water rises up the glass tube
(2)	Bubbles escape from the glass tube at X	Water rises up the glass tube
(3)	Water rises up the glass tube	Bubbles escape from the glass tube at X
(4)	Bubbles escape from the glass tube at X	Bubbles escape from the glass tube at X

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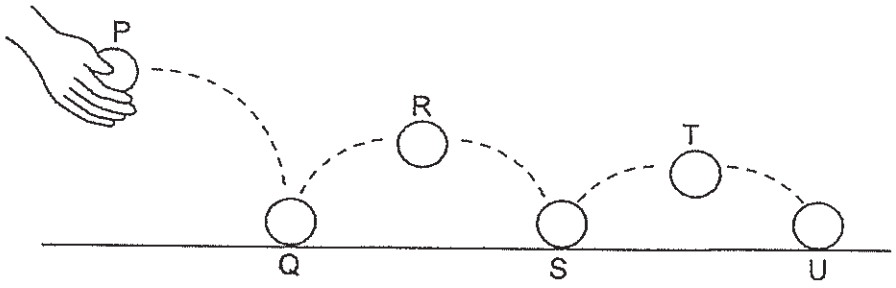
24. Calvin drops a ball from P.



Which of the following statements are true?

A The ball has the greatest amount of gravitational potential energy at P.

B The ball stops bouncing because some of its energy is changed to sound energy and heat energy.

C Kinetic energy is changed to gravitational potential energy when the ball moves from S to T.

D The ball never bounces back to the height it was released from because some of its kinetic energy is destroyed every time its hits the floor.

(1) A and B only
(2) B and C only
(3) A, B and C only
(4) A, C and D only

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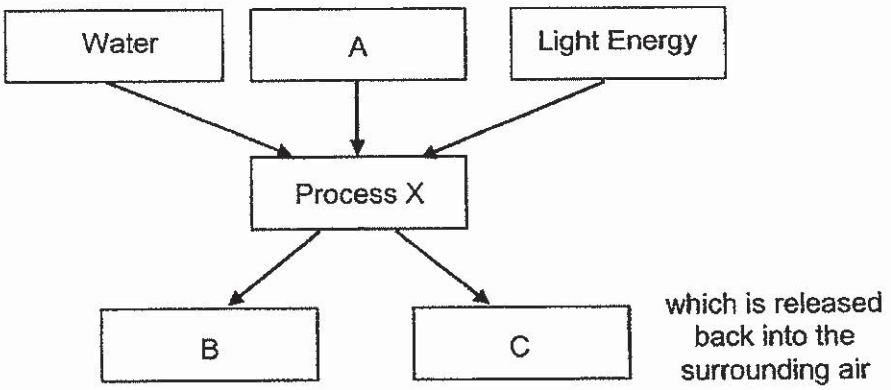
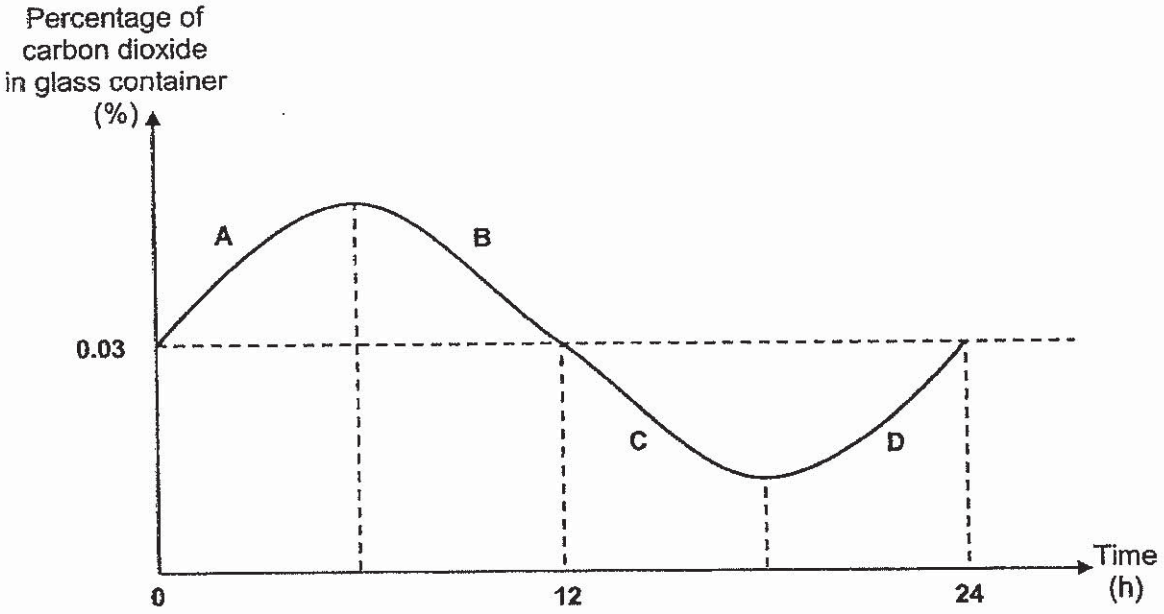
25. Below is a concept map of process X.



Which of the following correctly represents process X and substances A, B and C?

	A	B	C
(1)	Oxygen	Glucose	Carbon Dioxide
(2)	Oxygen	Starch	Carbon Dioxide
(3)	Carbon Dioxide	Glucose	Oxygen
(4)	Carbon Dioxide	Starch	Oxygen

26. Tom placed a healthy potted plant in a glass container and sealed it. He placed the glass container in the garden and measured the percentage of carbon dioxide in the container at regular intervals over a 24 hour time period. He plotted the results on the graph shown.



Which two parts of the graph show that photosynthesis was taking place?

(1) A and B

(2) B and C

(3) C and D

(4) A and D

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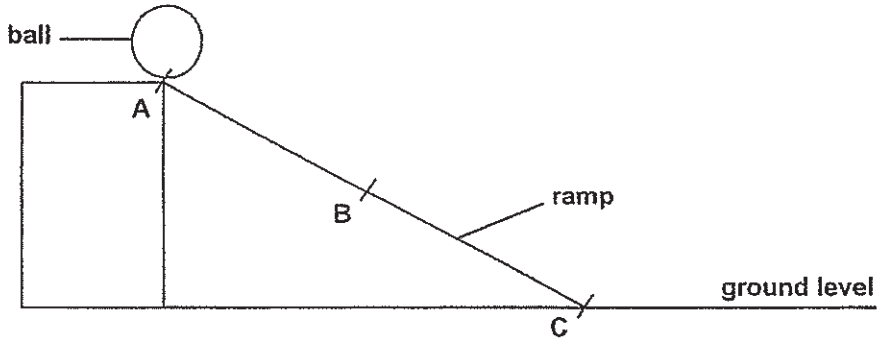
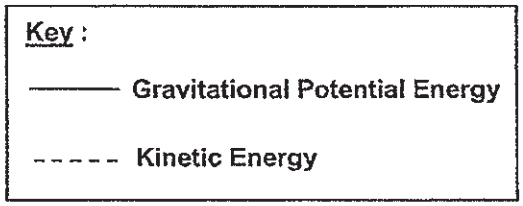
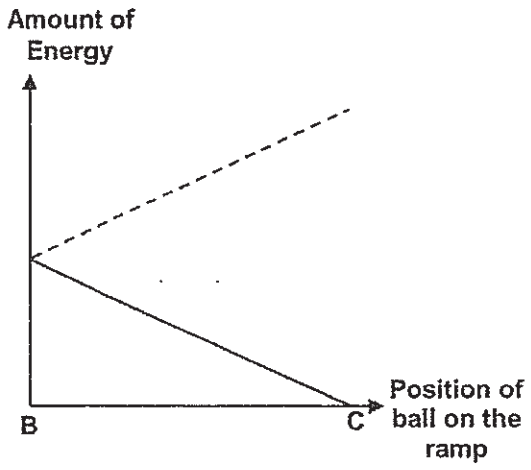
27. Rowan placed a ball at the top of a ramp at position A as shown. When she released the ball, it rolled down the ramp from position A to position B and C.



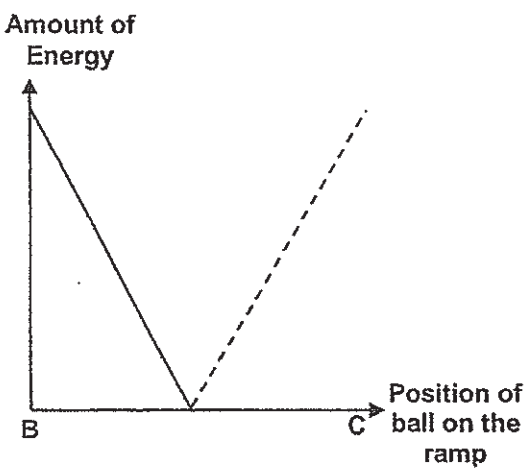
Which one of the following graphs correctly represents the change in the amount of gravitational potential energy and kinetic energy possessed by the ball as it rolled down the ramp from position B to C?



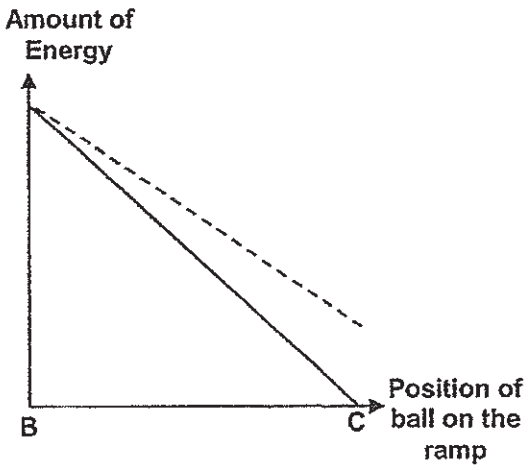
(1)



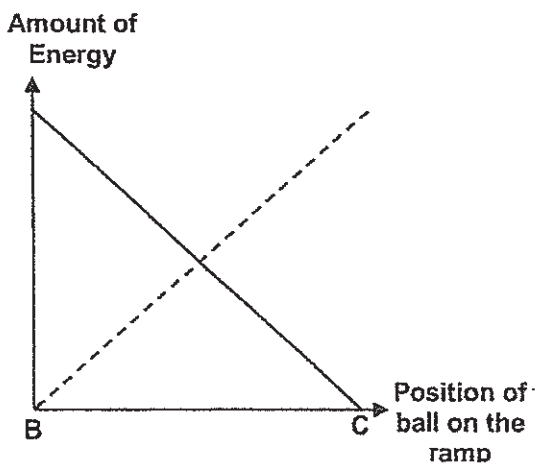
(2)



(3)



(4)



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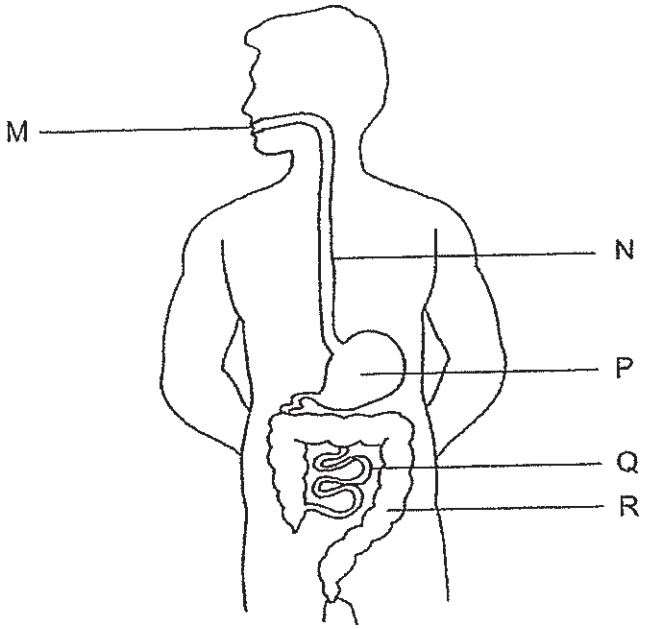
28. The diagram shows the human digestive system.



Which of the following correctly identifies the function(s) of M, N, P, Q and R?

	Produces digestive juices	Where digested food is absorbed and passed into the bloodstream	Removes water from undigested food
(1)	M, N, P	Q	Q, R
(2)	M, P, Q	Q	R
(3)	M, N, Q	Q, R	Q, R
(4)	M, P, Q	P, Q	R

End of Booklet A

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Anglo-Chinese School (Junior)

SEMESTRAL ASSESSMENT 1 (2019)

PRIMARY 6

SCIENCE

BOOKLET B

Friday **17 May 2019** **1 hr 45 min**

Name: _____ ( ) Class: 6.( ) Parent's Signature: _____

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 13 questions in this booklet.

4 Answer ALL questions.

5 The marks are given in the brackets [ ] at the end of each question or part question.

Booklet	Possible Marks	Marks Obtained
A	56	
B	44	
Total	100	

This question paper consists of 14 printed pages (inclusive of cover page).

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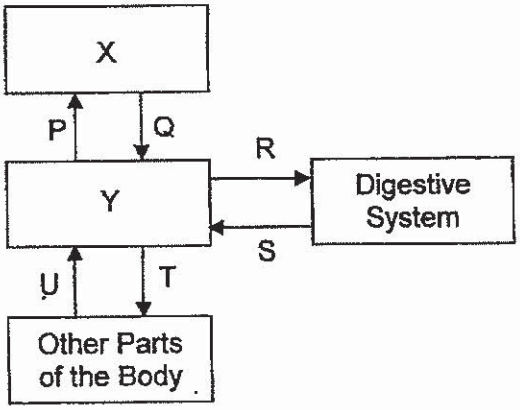
Booklet B

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

[44 marks]

---

29 The diagram shows the blood vessels, P, Q, R, S, T and U between different systems and parts of a human body.



(a) Identify X and Y. [1]

X : _____

Y : _____

(b) In which blood vessel(s), P, Q, R, S, T or U is the blood rich in oxygen? Explain why. [1]

_____

_____

(c) Name two useful substances that are present in the blood in S that are provided only by the digestive system. [1]

_____

_____

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SCORE	
	3

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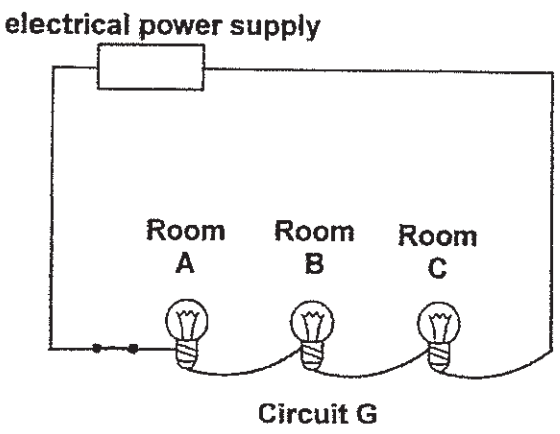
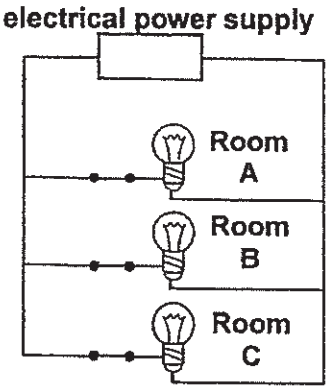
30 The diagrams show two possible ways in which electric bulbs in three different rooms can be connected to the electrical power supply.



Circuit G



Circuit H

(a) Identify the arrangement of bulbs in the circuits. [1]

Circuit G : _____

Circuit H : _____

(b) Compare Circuit G and Circuit H. Explain clearly what are two advantages that Circuit H has over Circuit G. [2]

Advantage 1 :

_____

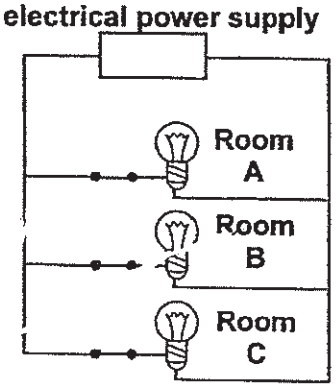
_____

Advantage 2 :

_____

_____

(c) Mark an "X" on the diagram to indicate the position of a switch such that when it is open, only the bulb in Room A remains lit. [1]



Circuit H

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SCORE	/ 4

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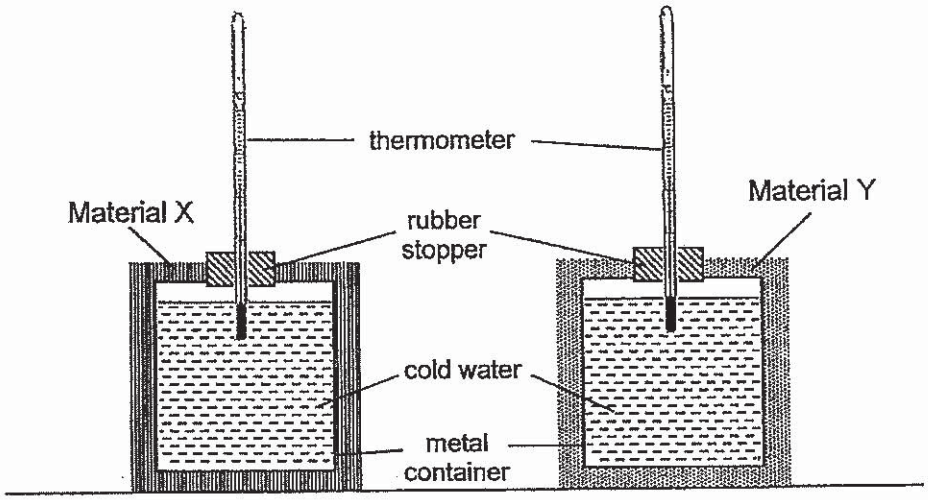
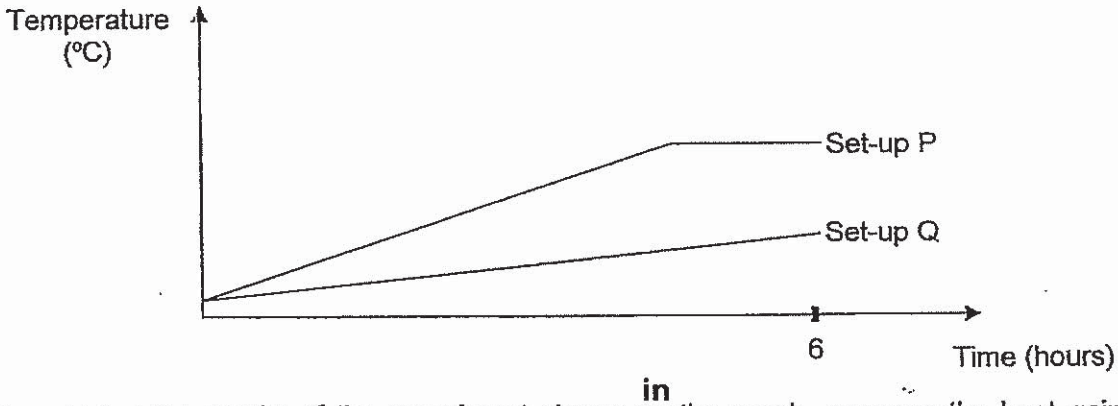
31 Tom set up an experiment as shown.. Identical thermometers, rubber stoppers and metal containers were used in Set-up P and Set-up Q, with an equal volume of cold water at 5°C added to both set-ups. The metal containers in each set-up were wrapped around with Material X and Material Y respectively.



Tom recorded the temperature of the water in Set-up P and Set-up Q over 6 hours in the graph.



(a) Using the results of the experiment shown in the graph, compare the heat gain between the water in Set-up P and Set-up Q. [1]

(b) Based on the results of the experiment, which material, X or Y, should Tom use to make a box which can keep ice-cream from melting for the longest time? Explain your answer clearly. [1]

(Go on to the next page)

SCORE	2

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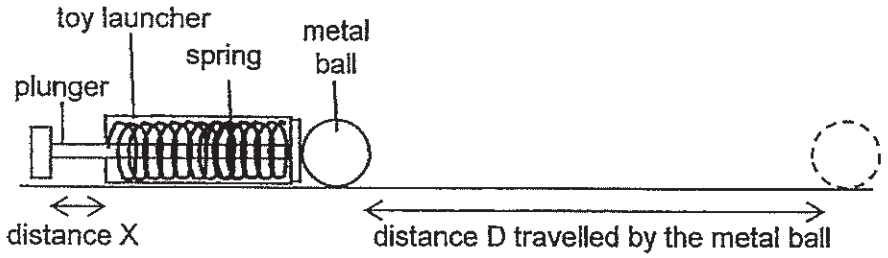
(c) State another variable that should be kept constant. Explain clearly how this ensures that the experiment is a fair test. [2]

32 Jack set up an experiment as shown in the diagram. He pulled the plunger of the toy launcher back (distance X). When he released the plunger, it moved forward and hit the metal ball so that the ball rolled a distance away. He measured the distance travelled by the ball (distance D).



Jack repeated the experiment by pulling the plunger back to different distances each time before releasing it, and measured the distance travelled by the metal ball. He recorded the results in the table.

Distance the plunger was pulled back (Distance X) (cm)	Distance travelled by the metal ball (Distance D) (cm)
1	6
2	12
3	18
4	24

(a) State the relationship between the distance the plunger was pulled back and the distance travelled by the metal ball. [1]

(b) Fill in the blanks to show the correct energy conversions that occur when Jack pulls the handle of the toy back and then releases it. [1]

energy (in the compressed spring) → energy (in the moving metal ball) + energy + energy

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SCORE ___/4

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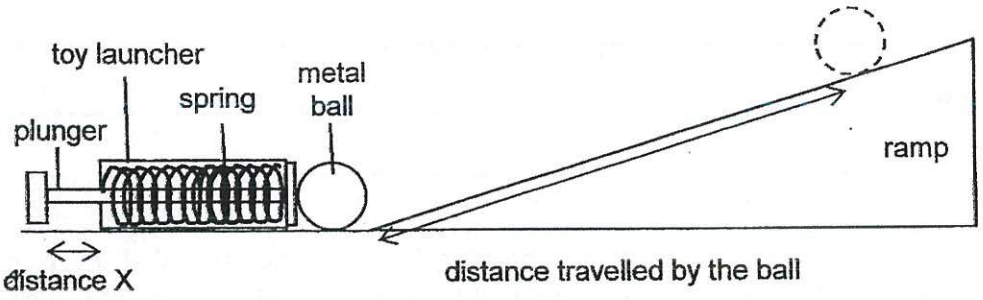
Jack then modified his earlier experiment by putting a ramp in front of the metal ball.



(c) If Jack pulls the handle of the toy back by 1 cm and releases it, will the distance travelled by the metal ball up the ramp be greater or less than 6 cm? Explain the reason for your answer in energy terms. [1]

_____

_____

33 The table compares the amount of certain gases in inhaled air and exhaled air in the human respiratory system.

(a) Fill in the words "More", "Less" or "Same" in the boxes to complete the table. [1]

S/N	Amount of Gas	Inhaled Air	Exhaled Air
1	Oxygen		
2	Carbon Dioxide		
3	Nitrogen		

(b) What is the use of oxygen in the human body? Explain clearly. [1]

_____

(c) Does inhaled air or exhaled air contain less dust? Explain the reason for your answer. [1]

_____

_____

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SCORE	/ 4

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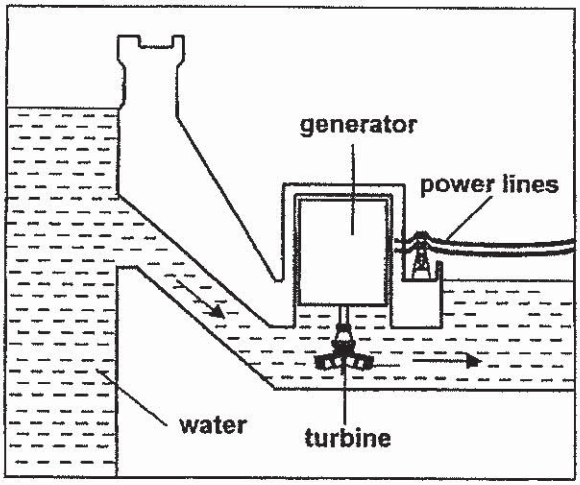
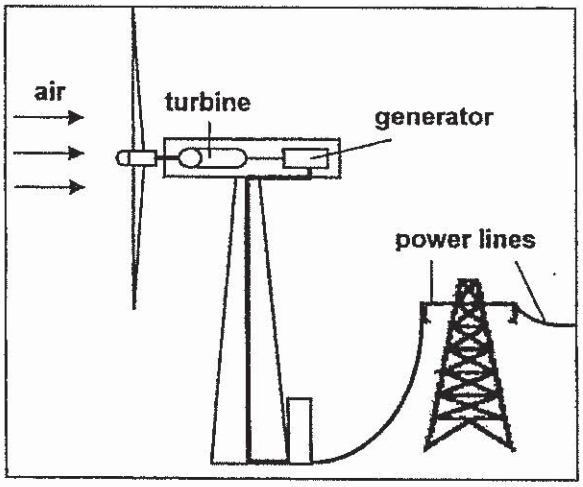
34 The diagrams show two power stations that generate electricity.



Power Station R



Power Station S

(a) What is the source of energy that Power Stations R and S use to generate electricity? [1]

(i) Power Station R - _____

(ii) Power Station S - _____

(b) State two advantages of using the source(s) of energy in (a) to generate electricity, as compared to a power station that uses fossil fuels to generate electricity. [1]

(i) Advantage 1 :

_____

(ii) Advantage 2 :

_____

(c) State two disadvantages of using S to generate electricity, as compared to using a power station that uses fossil fuels to generate electricity. [1]

(i) Disadvantage 1 :

_____

(ii) Disadvantage 2 :

_____

(Go on to the next page)

SCORE	
	3

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35 The diagram shows a stage in the life cycle of a plant.

(a) George decided to place the plant at this stage in a dark cupboard for two weeks. He watered it regularly. Explain clearly what happened to the plant during the two weeks. [2]

(b) George noticed that many insects and small birds are attracted to the adult plant in his garden. How do these organisms help the plant reproduce? Explain your answer. [1]

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SCORE	/ 3

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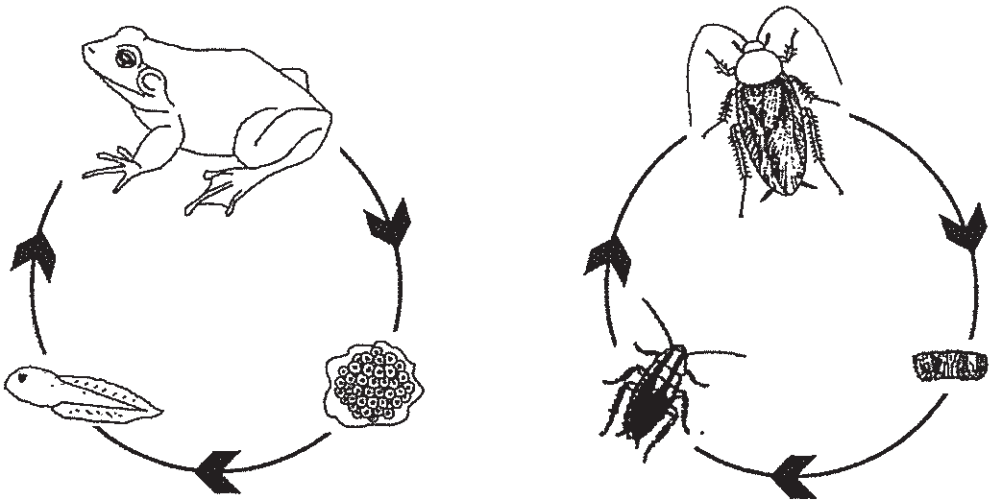
36 The diagrams show the life cycle of a frog and a cockroach.



(a) State two differences between the two life cycles. [2]

(i) _____

_____

(ii) _____

_____

(b) Diana studies the effect of surrounding temperature on the life cycles of both organisms. Her findings are shown in the table.

Temperature (°C)	Number of weeks for one complete life cycle
	Cockroach
15	10
20	8
25	7
30	4
35	4

From Diana's findings, state the relationship between temperature and the number of weeks for one complete life cycle of the cockroach. [1]

_____

_____

_____

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SCORE	
	3

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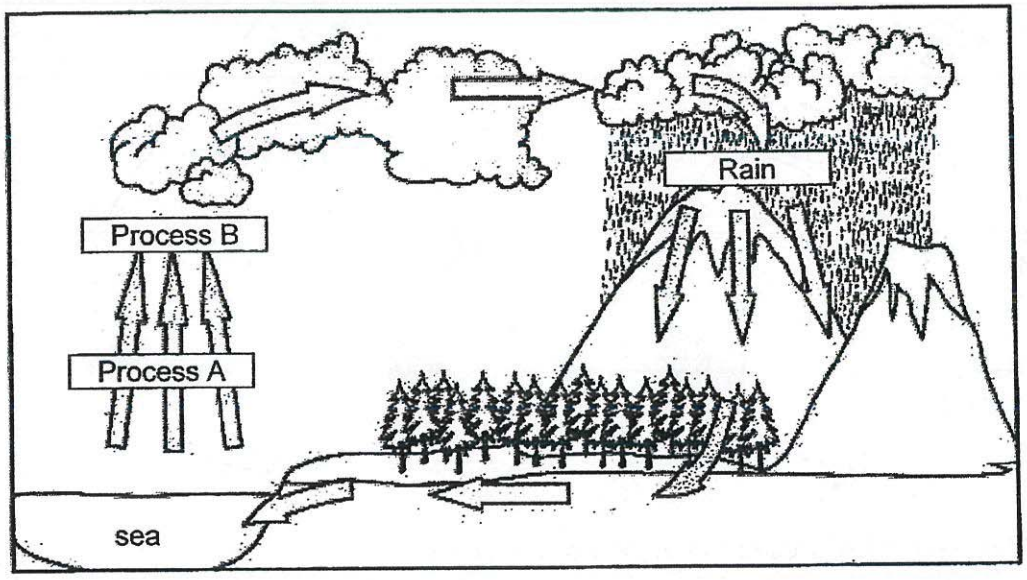
37 Study the diagram carefully.



(a) Describe Processes A and B. [1]

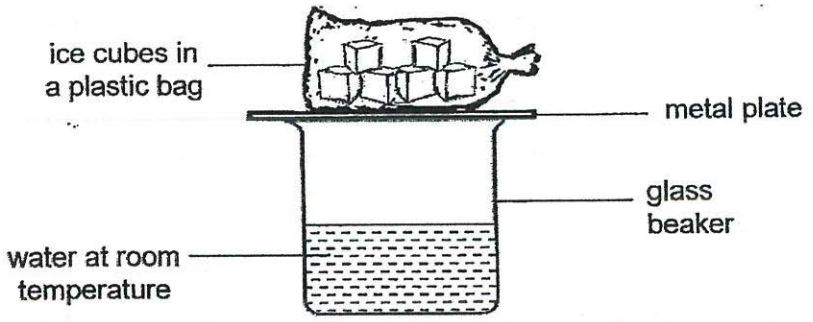
Process A : _____

_____

Process B : _____

_____

Mr Tan put up the following set up in the classroom to show Processes A and B to his students.



(b) After a few minutes, Mr Tan and his students observed that there were water droplets on the underside of the metal plate. What had caused the water droplets to form there? Explain your answer clearly. [2]

_____

_____

_____

_____

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SCORE	/ 3

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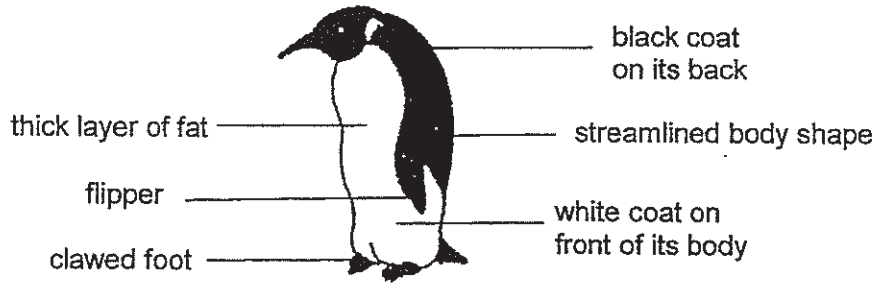
38 Study Bird W. It is adapted to live in very cold temperatures and feeds on fish.



Bird W

(a) Which structural adaptation of Bird W helps to survive in such cold temperatures? Explain how. [1]

_____

_____

(b) Since Bird W feeds primarily on fish, state two adaptations that enable it to catch fish effectively. Write your answer in the boxes provided. [2]

Adaptation	How the adaptation helps Bird W feed on fish

(c) In Antarctica, where it is covered with ice and snow, Bird W huddles together with others of its own kind to stay warm in the icy winds.

How does this behavioural adaptation help Bird W to survive in such an extreme environment? Explain your answer clearly. [1]

_____

_____

_____

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SCORE	/ 4

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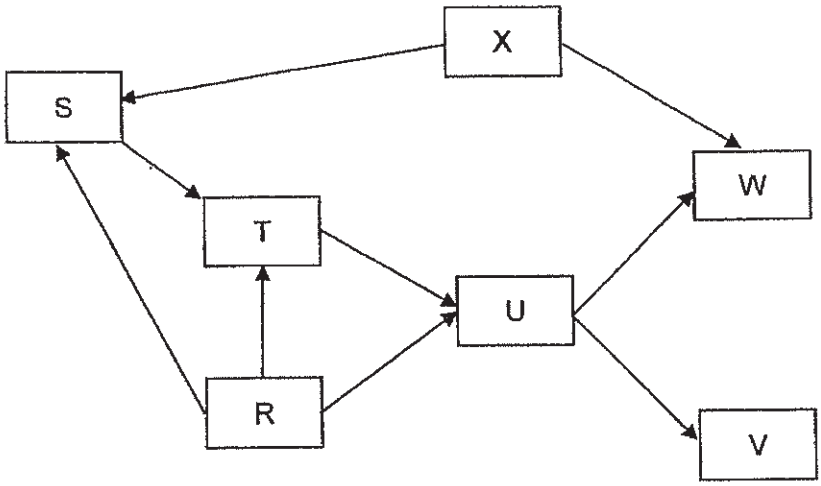
39 The diagram shows a food web.



(a) Identify the following organisms : [2]

(i) Food producer(s) : _____

(ii) Animal-eater(s) : _____

(iii) Plant and animal-eater(s) : _____

(iv) Both prey and predator : _____

(b) After two weeks, it was observed that the population of S had increased. State two possible reasons why this could have happened. [2]

_____

_____

_____

(c) V is a predator and it also feeds on the chickens and ducks which live in the nearby village from time to time. The villagers set up traps to catch and kill them to prevent them from feeding on their chickens and ducks. Which population will be most affected by this? Explain your answer. [1]

_____

_____

_____

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SCORE	
	5

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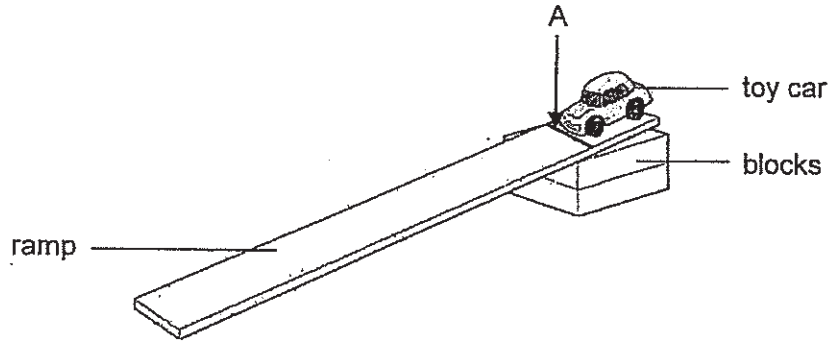
40 Charles set up an experiment in the science laboratory as shown. He released the toy car from point A and measures the distance that the car has travelled.



(a) What force(s) is/are acting on the car as it travels down the ramp? [1]

_____

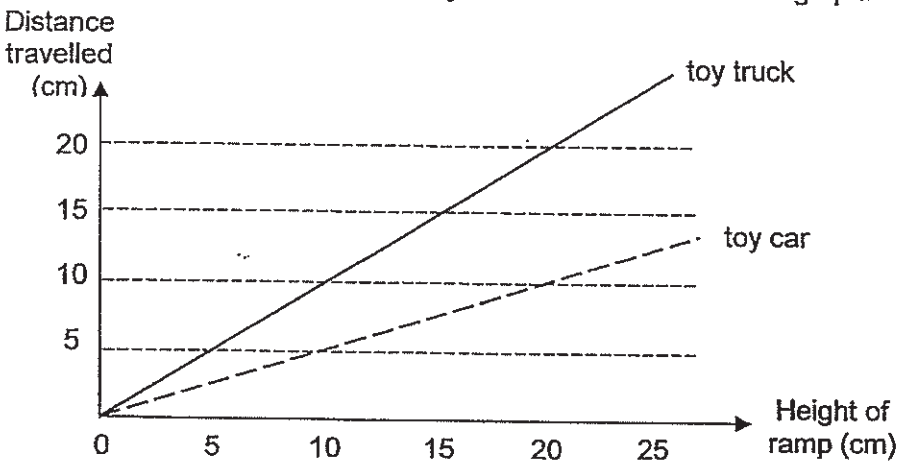
_____

(b) Without changing any of the items in the experiment, what can Charles do to make the car travel down the ramp faster? Explain your answer clearly. [1]

_____

_____

Charles repeated the experiment by changing the toy car to a bigger and heavier toy truck. The distance travelled by the two toy vehicles are shown in the graph.



(c) What can be concluded from the results? [1]

_____

_____

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SCORE	3

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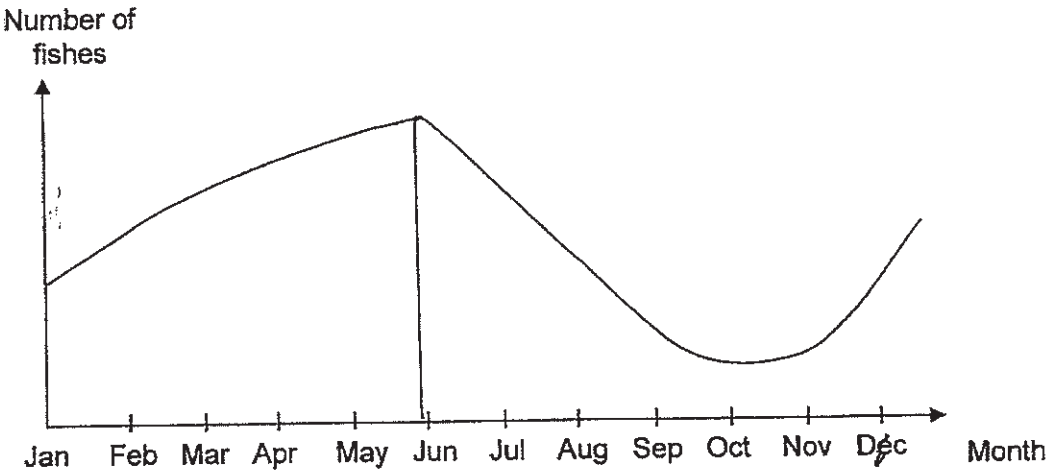
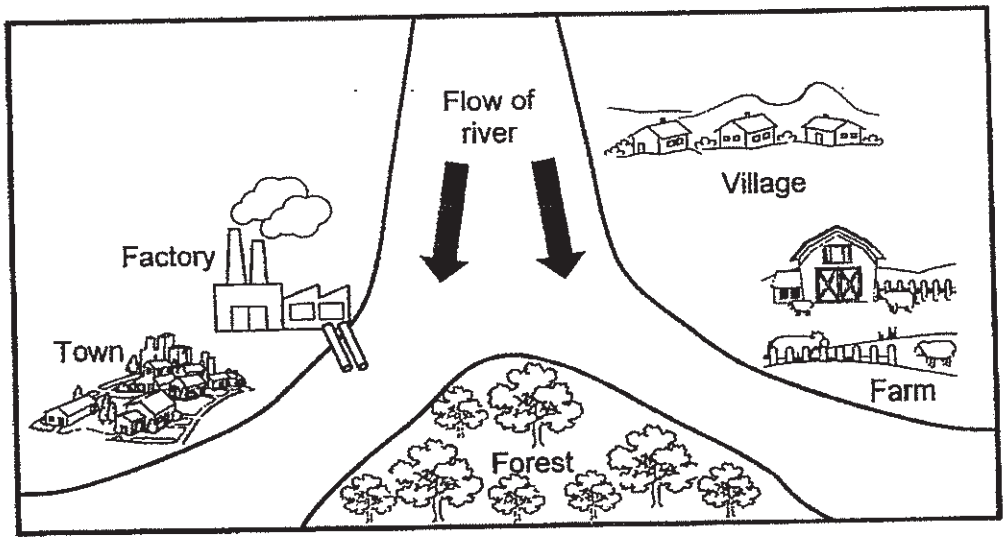
41 There was a leakage of harmful chemical from a nearby factory into the River Nole, causing fishes to die. When it was discovered, the government closed down the factory. The graph shows the number of fishes in the river over a year.



(a) State the months that show when the leakage had started and when the conditions of the river was once again suitable for the fishes to thrive. [1]

Activity	Month
Leakage began	
Fishes start to reproduce	

(b) On the diagram, mark with the letter 'X' to show the most likely location on the river where the dead fishes were found. [1]



(c) In some countries, factories dump waste materials into the rivers. Other than the reasons stated in (a), state one other effect of this activity on the local environment as shown in the diagram. [1]

_____

_____

End of Paper

SCORE	
	3

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EXAM PAPER 2019
LEVEL : PRIMARY 6
SCHOOL : ANGLO-CHINESE SCHOOL (JUNIOR)
SUBJECT : SCIENCE
TERM : SA1
BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	1	1	4	1	4	2	2	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	1	3	3	4	2	2	2	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	3	3	3	3	1	1	2		

BOOKLET B

Q29. (a) X : lungs
Y : heart

(b) Q, R and T. The blood has just returned from the lungs where oxygen was taken in and carbon dioxide was given out.

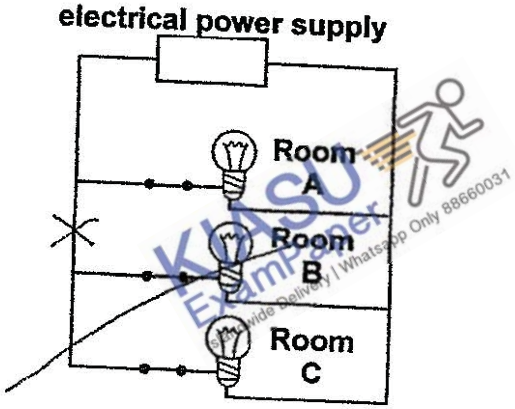
(c) Water and digested food.

Q30. (a) Circuit G : series
Circuit H : parallel

(b) In H, when one bulb fuses, the other bulbs will still light up.

Bulbs in H will be brighter.

(c)



Circuit H

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Q 31. (a) The water in set-up P gains more heat than the water in set-up Q.

(b) Material Y. As in set-up Q, the water took a longer time to reach room temperature, hence Y is not a good conductor of heat.

(c) The materials must have the same thickness as it will take a longer time for the water to gain heat if it is thicker. This will affect the reliability of the results of the experiment.

Q32. (a) The longer the plunger was pulled back, the longer the distance travelled by the metal ball.

(b) elastic potential energy → kinetic energy + heat energy + sound energy

(c) Some of the kinetic energy of the metal ball was converted to gravitational potential energy.

Q33. (a) 1) more, less
2) less, more
3) same, same

(b) It is used to release energy during respiration.

(c) Exhaled air. If you inhale, you will inhale more dust.

Q34. (a) (i) moving water
(ii) wind

(b) (i) Does not cause air pollution.
(ii) It is renewable energy.

(c) (i) A lot more space is needed for S.
(ii) There may not be enough wind all the time to generate electricity.

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Q35. (a) It will die as the stored food in the seed leaves would have used up and there was no sunlight for the leaves to make food.

(b) The birds will eat the fruit together with the seed and can disperse the seed. The insects help with the pollination of the plants.

Q36. (a) (i) The young of the cockroach looks like the adult but the young of the frog does not.
(ii) The frog lays its eggs in the water, however the cockroach does not lay its eggs in the water.

(b) The higher the temperature, the lesser the number of weeks taken for the cockroach take to complete one life cycle, until 30°c.

Q37. (a) Process A : The water in the sea gains heat and evaporates into water vapour.
Process B : The water vapour loses heat and condense into tiny water droplets to form clouds.

(b) Water evaporated into water vapour which touched the cooler underside of the metal plate and condensed onto tiny water droplets on it.

Q38. (a) Bird W has a thick layer of fat to stop its body from losing heat.

(b)

Adaptation	How the adaptation helps Bird W feed on fish
Streamlined body shape	To swim fast in the water to catch fish
Flippers	Helps it to swim

(c) It enables the penguins to share body heat from other penguins.

Q39. (a) (i) Food producer(s) : R, X
(ii) Animal-eaters(s) : v
(iii) Plant and animal-eater(s) : T, U, W
(iv) T

(b) The population of T decrease and the population of X and R increase.

(c) U. Its population will increase as there are fewer V as they are a source of food for them.

Q40. (a) Gravitational force and frictional force .

(b) Apply a lubricant to in the ramp to reduce friction between the toy car and the surface of the ramp.

(c) The heavier the car, the longer it travels.

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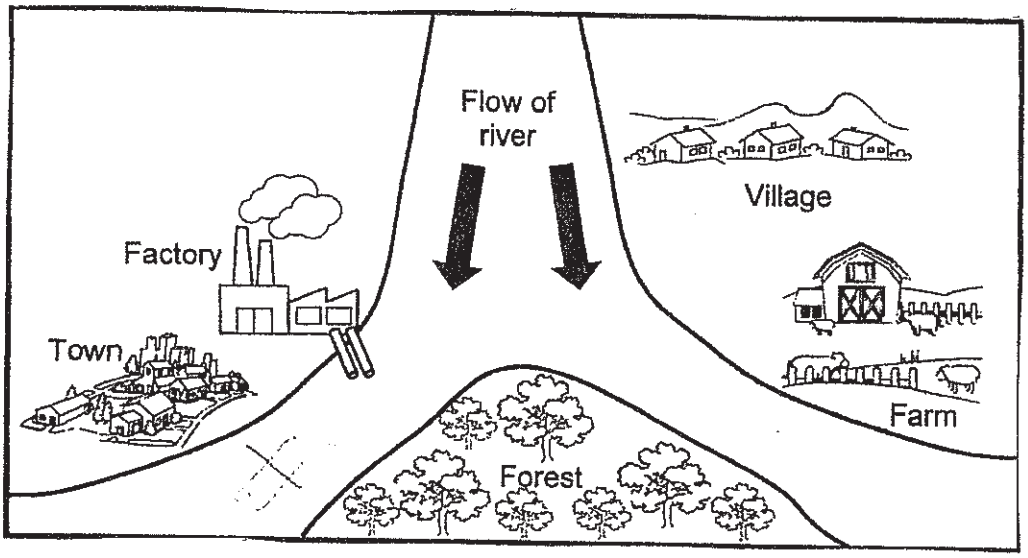
173

(c) The heavier the car, the longer it travels.

Q41. (a) June, November.

(b)



(c) The water supply to the town will be polluted.

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4

THE END

CATHOLIC HIGH SCHOOL

MID-YEAR EXAMINATION (2019)

PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

Date: 16 May 2019

28 questions

56 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 22 printed pages, excluding the cover page.

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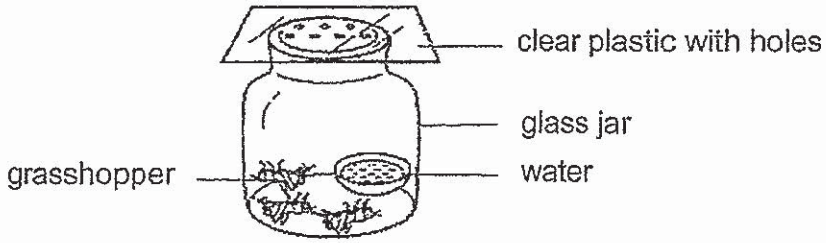
Booklet A (28 × 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet. (56 marks)

1 Adrian put three grasshoppers and a dish of water in a glass jar. He used a sheet of clear plastic with some tiny holes to cover the jar as shown below. After a week, all the grasshoppers died.



What could Adrian have done so that the grasshoppers would stay alive?

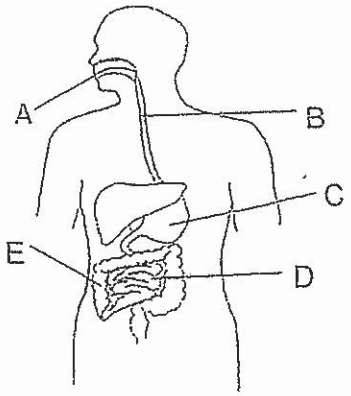
(1) Put some grass into the jar.

(2) Take out two grasshoppers.

(3) Use a clear plastic with more tiny holes.

(4) Place a bigger dish of water into the jar.

2 The diagram below shows parts of a human digestive system.



In which parts A, B, C, D and E are digestive juices added?

(1) C and D only

(2) A, C and D only

(3) A, B, C and E only

(4) A, B, D and E only

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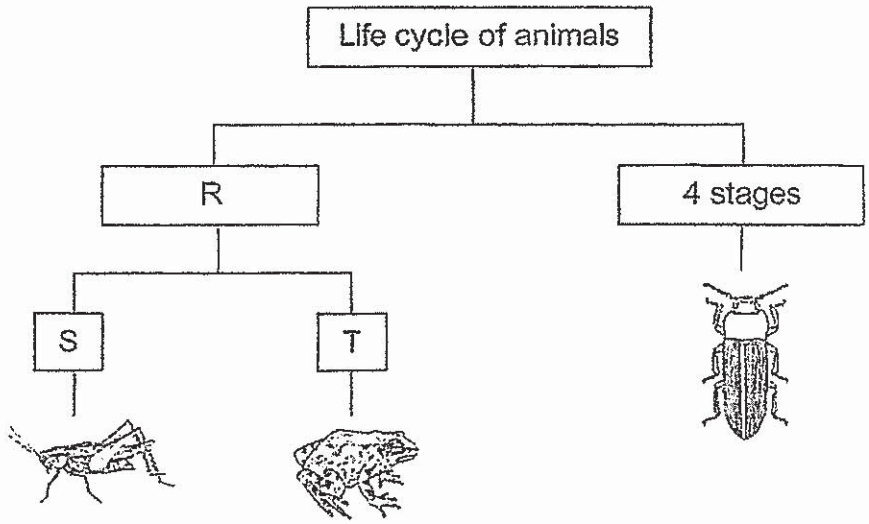
178

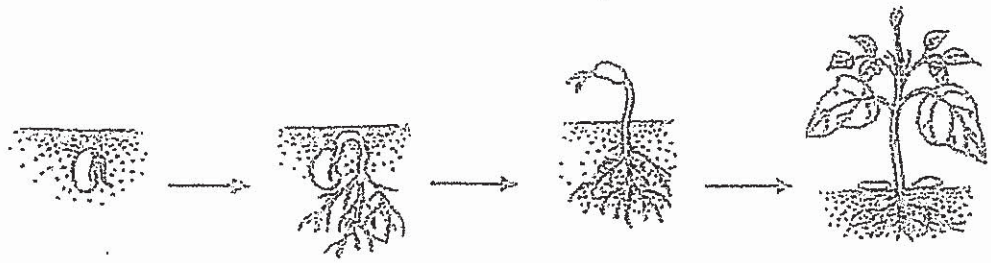
3 Study the diagram below.



Which of the following is represented by R, S and T?

	R	S	T
(1)	2 stages	Young looks like the adult	Young does not look like the adult
(2)	2 stages	Young does not look like the adult	Young looks like the adult
(3)	3 stages	Young looks like the adult	Young does not look like the adult
(4)	3 stages	Young does not look like the adult	Young looks like the adult

4 The diagram below shows the growth of a bean plant.



At which stage(s) is/are sunlight needed for the plant's growth?

(1) D only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D

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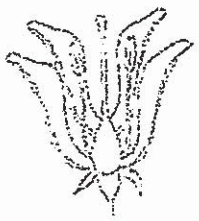
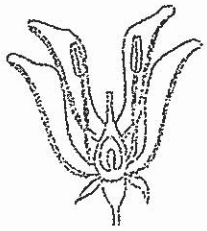
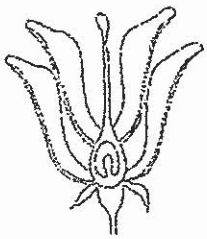
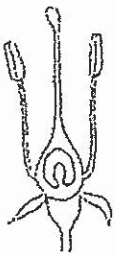
179

5 Bala wanted to find out if a fruit could still develop when a certain part of the flower was removed. The diagram below shows the part of a flower removed from flowers P, Q, R and S from the same plant.

			
ovules removed	stigmas removed	anthers removed	petals removed
flower P	flower Q	flower R	flower S

Pollen grains from the same type of flower were dusted over flowers P, Q, R and S.

Which of the flowers P, Q, R or S will develop into a fruit?

(1) P only

(2) P and Q only

(3) R and S only

(4) Q, R and S only

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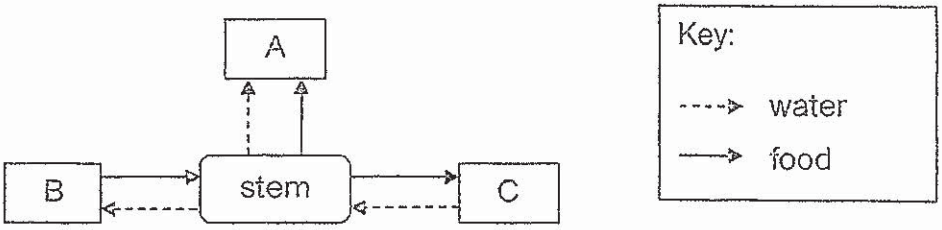
6 The following table shows the comparison between sexual reproduction in plants and humans.

	Plants	Humans
Which part produces the male reproductive cell?	W	X
What is the female reproductive cell?	egg	egg
Where does the fertilised egg develop in?	Y	Z

What do W, X, Y and Z represent?

	W	X	Y	Z
(1)	testis	anther	womb	ovary
(2)	testis	anther	ovary	womb
(3)	anther	testis	womb	ovary
(4)	anther	testis	ovary	womb

7 The diagram below shows how water and food are transported to and from parts A, B and C of a plant.



Which one of the following correctly represents parts A, B and C?

	A	B	C
(1)	flowers	leaves	roots
(2)	flowers	roots	leaves
(3)	leaves	fruits	roots
(4)	roots	flowers	fruits

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181

8 Amin observed three cells under a microscope and made the following observations. A tick (✓) indicates that the cell part is present.

Cell part	Cell X	Cell Y	Cell Z
nucleus	✓	✓	✓
cell wall	✓		✓
cytoplasm	✓	✓	✓
cell membrane	✓	✓	✓
chloroplast	✓		

Which of the following statements is/are correct?

A Cells Y and Z cannot trap light.
B Both Cells X and Z are plant cells.
C Cell Z does not have a regular shape.
D Cell Y is the only cell that cannot make its own food.

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

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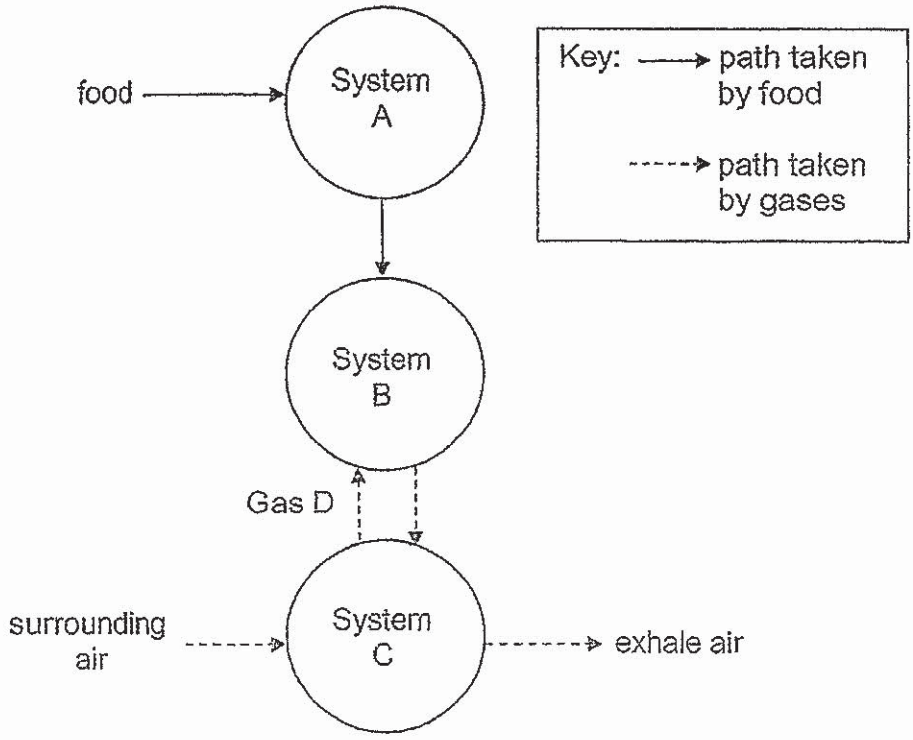
182

9 The diagram below shows how food and various gases are transported in the human body.



Which systems do A, B and C represent and what is Gas D?

	System A	System B	System C	Gas D
(1)	circulatory	respiratory	digestive	carbon dioxide
(2)	digestive	respiratory	circulatory	carbon dioxide
(3)	circulatory	digestive	respiratory	oxygen
(4)	digestive	circulatory	respiratory	oxygen

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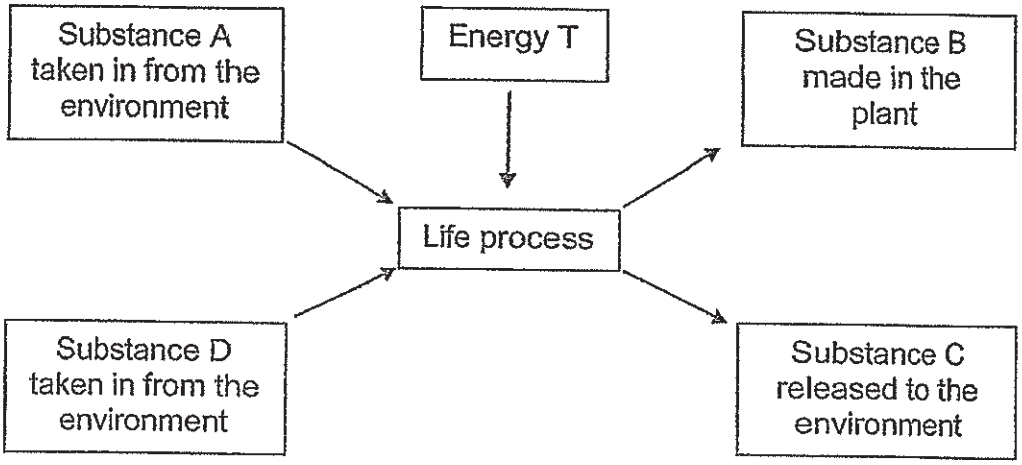
183

10 The diagram below represents a certain life process that takes place in green plants.



Which one of the following correctly represents Substances A, B, C, D and Energy T?

	A	B	C	D	T
(1)	food	water	oxygen	carbon dioxide	light
(2)	oxygen	food	carbon dioxide	water	heat
(3)	carbon dioxide	food	oxygen	water	light
(4)	oxygen	water	food	carbon dioxide	heat

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184

11 The food relationship between three organisms is shown below.

The following took place when a large number of organism Z died.

A The number of organism X decreased.
B The number of organism Y increased.
C The number of organism Y decreased.
D There was insufficient food for Y.

Which of the following shows the correct sequence of events?

(1) A, B, D, C
(2) A, D, C, B
(3) B, A, D, C
(4) B, D, C, A

12 Four pupils came up with the following statements while reading about decomposers.

John Decomposers break down their own food and produce oxygen.

Gabriel Decomposers prevent dead organisms and wastes from piling up.

Naomi Decomposers help to break down animal wastes and remains of the plants and animals to make the soil fertile for the food producers.

Amy Decomposers speed up the process of decomposition by breaking down dead plants and animal wastes into smaller pieces.

Who had made the correct statements?

(1) Amy and John
(2) Amy and Naomi
(3) Gabriel and Naomi
(4) Amy, Gabriel and Naomi

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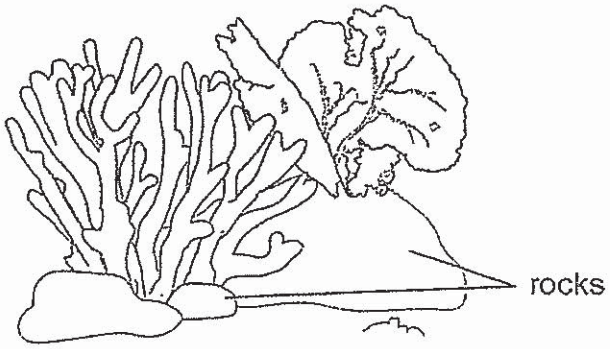
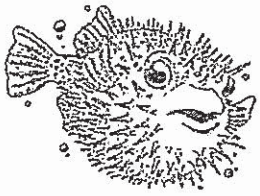
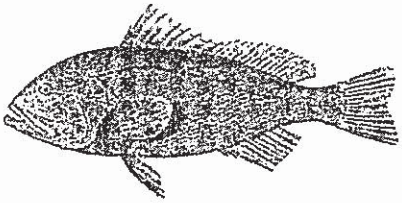
13 The diagram below shows a part of a sea habitat.

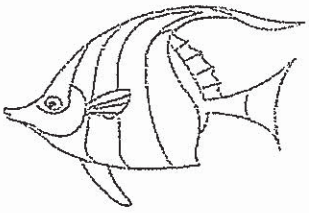


Which of the following fish has a mouth that helps it to get food in between the rocks?

(1) 

(2)

(3) 

(4) 

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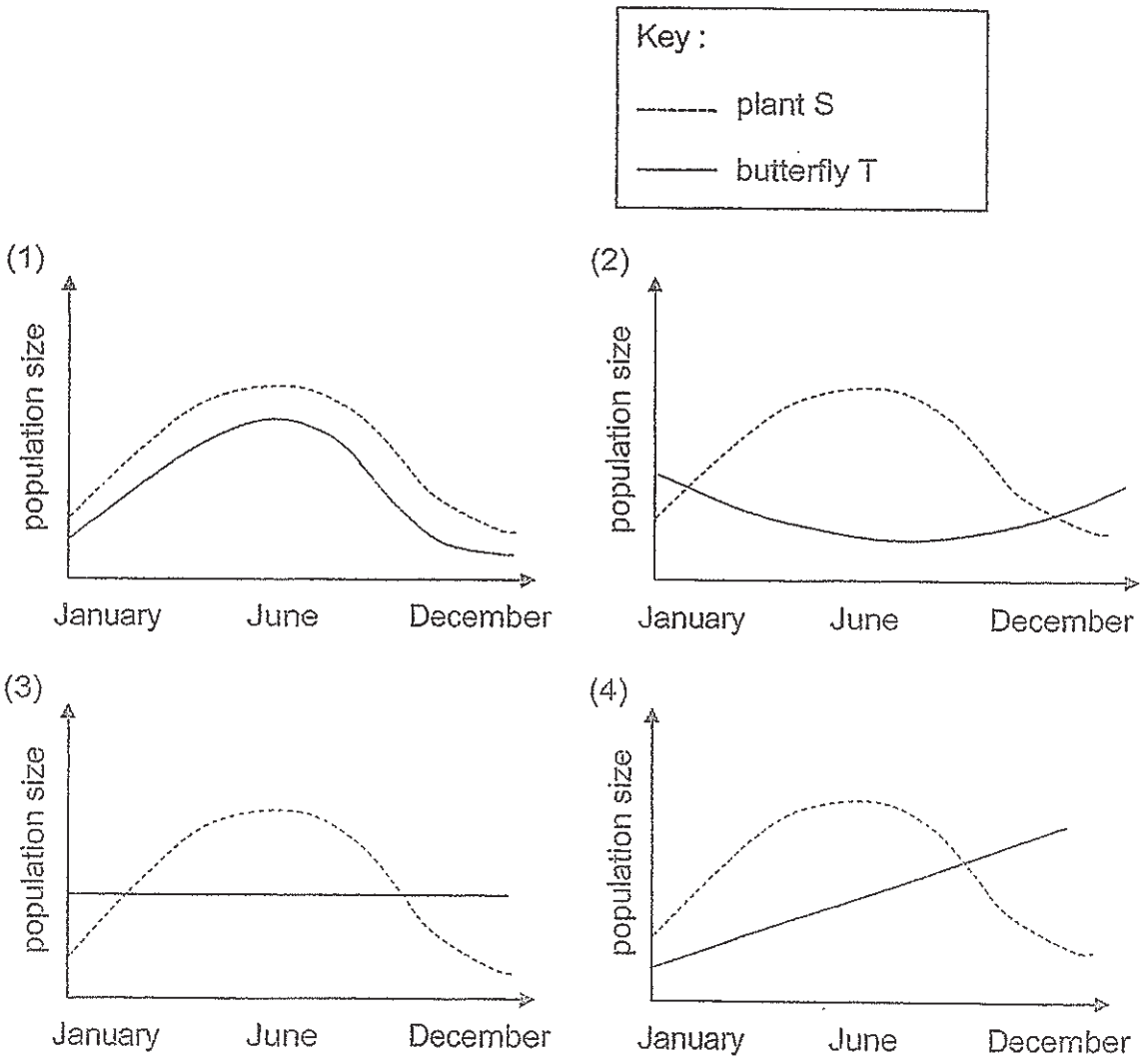
14 The graphs below show how the population size of plant S and butterfly T change throughout the year.

Given that butterfly T only feeds on the nectar of the flowers of plant S, which one of the following graphs is correct?



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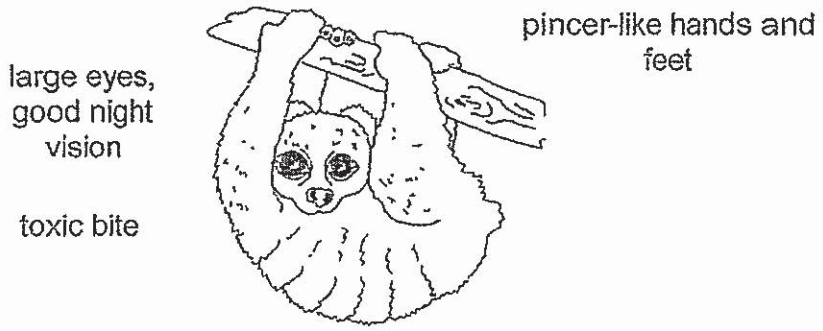
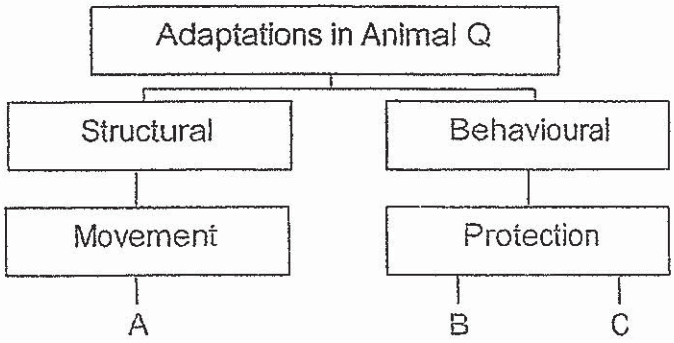
15 The diagram below shows Animal Q; a nocturnal mammal. Animal Q feeds on plants and insects. It has pincer-like hands to grasp branches for long periods of time. It covers its young with poisonous saliva by licking the toxin onto the baby's fur before heading off to find food.



The chart below shows how the adaptations stated above are classified.



Which one of the following correctly represents A, B and C?

	A	B	C
(1)	large eyes, good night vision	pincer-like hands	a toxic bite
(2)	pincer-like hands	a toxic bite	covers her young with poisonous saliva
(3)	covers her young with poisonous saliva	large eyes, good night vision	pincer-like hands
(4)	a toxic bite	covers her young with poisonous saliva	large eyes, good night vision

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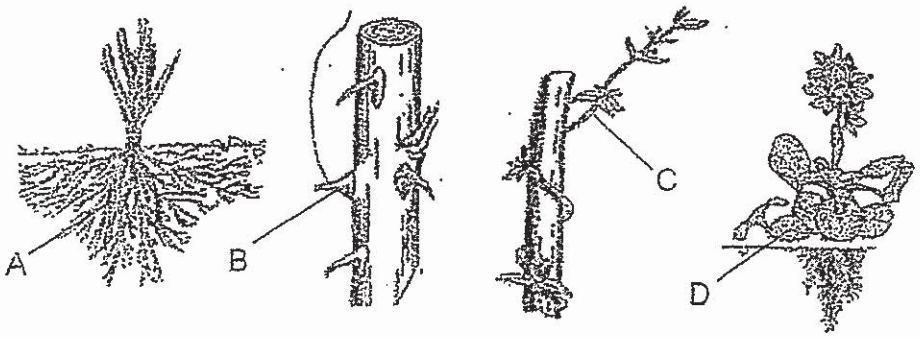
16 The diagram below shows adaptations of plant A, B, C and D.



Which adaptation(s) help(s) the plant to receive more water?

(1) A only

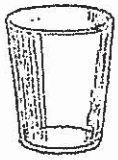
(2) A and D only

(3) B and C only

(4) B, C and D only

17 Young children are usually given plastic cup rather than glass cup when drinking.

plastic cup



glass cup

Which of the following properties of plastic make it a more suitable material for young children to use than glass?

A It is light.
B It floats on water.
C It does not break easily.
D It does not allow light to pass through.

(1) A and B only

(2) A and C only

(3) B and D only

(4) C and D only

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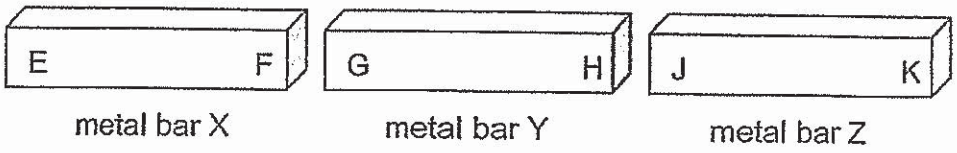
189

18 Siew Teng labelled the ends of three metal bars, X, Y and Z, as shown in the diagram below.



metal bar X metal bar Y metal bar Z

She wanted to find out if the metal bars would repel or attract when they were brought close to each other.

The table below shows the results of Siew Teng's experiment.

		metal bar Y		metal bar Z	
		G	H	J	K
metal bar X	E	attract	attract	attract	attract
	F	attract	attract	attract	attract
metal bar Y	G			attract	repel
	H			repel	attract

Based on the results above, which of the following statements is/are correct?

A Only metal bar Y is a magnet.
B All the metal bars are magnets.
C Only metal bars Y and Z are magnets.
D All the metal bars are made of magnetic materials.

(1) A only
(2) B and C only
(3) B and D only
(4) C and D only

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19 Guorong measured the mass of a basketball at the beginning of his experiment. After that, he pumped air into the basketball with an air pump. He then recorded the results in the table shown below.

Number of pumps	Mass of basketball (g)
0	600
10	610
20	620
30	630

Based on his results above, what can Guorong conclude?

A The mass of the basketball increases with more pumps.
B The volume of the basketball remains the same with more pumps.
C The number of pumps given to the basketball determines the mass of it.
D The number of pumps given to the basketball determines the volume of it.

(1) A and B only
(2) A and C only
(3) B and D only
(4) A, B, C and D

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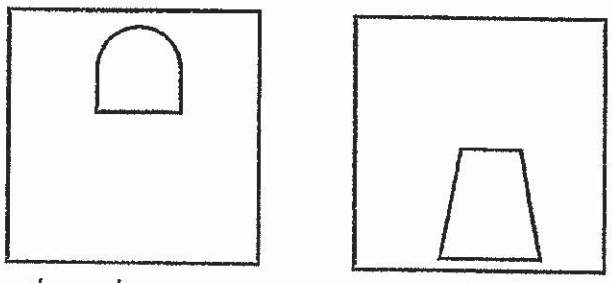
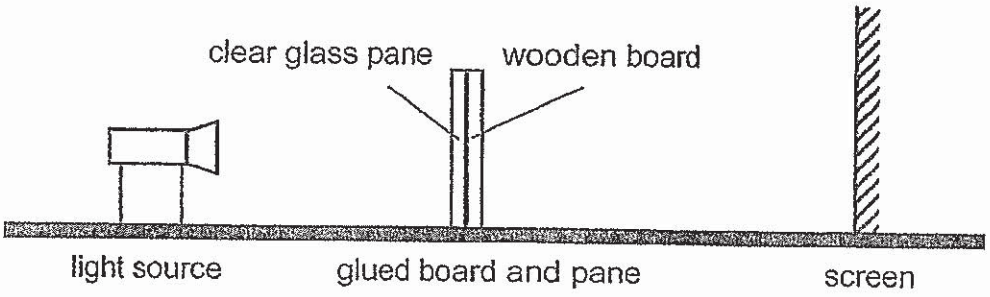
191

20 Farah took a wooden board and a clear glass pane of similar size and thickness. She cut out shapes from them as shown in the diagram.



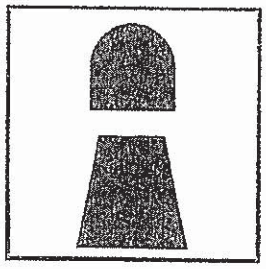
clear glass pane wooden board

The wooden board and clear glass pane were then glued together and a light source was brought near them.

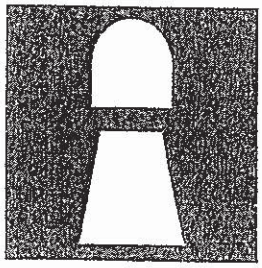


Which one of the following is the shadow formed on the screen?

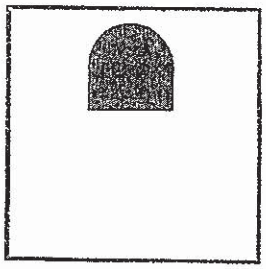
(1)



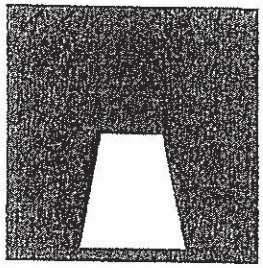
(2)



(3)



(4)



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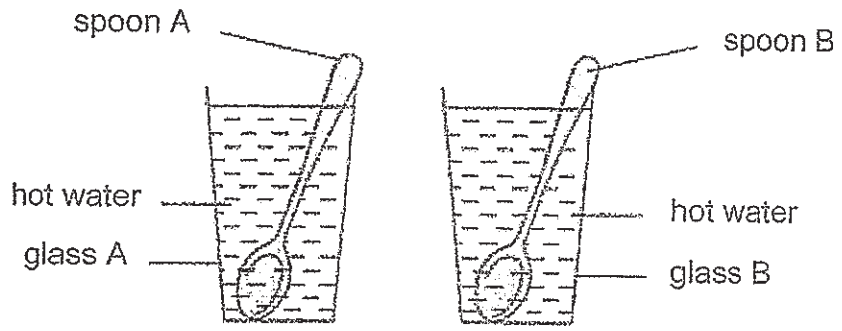
192

21 George filled two identical glasses with the same amount of water of the same temperature. He then placed spoons made of different materials in each glass as shown in the diagram below.



After two minutes, he removed the spoon and measured the temperature of water in both glasses again. He found that the temperature of water in glass A was higher than the water in glass B.

Which of the following statements are correct?

A Spoon A was a poorer conductor of heat.
B Spoon B was a poorer conductor of heat.
C Different materials conducted heat at different rates.
D Heat was transferred faster in spoon B than in spoon A.

(1) A and D only
(2) B and C only
(3) A, C and D only
(4) B, C and D only

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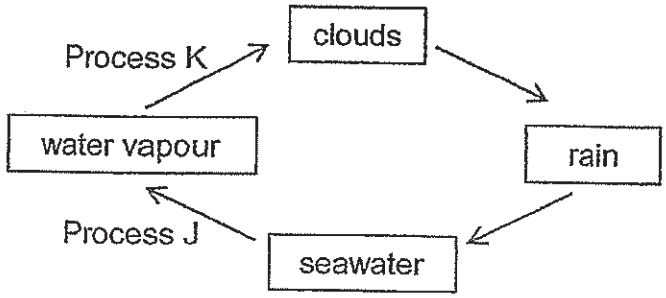
193

22 The diagram below shows the water cycle.



Which of the following correctly describe(s) the processes J and K in the diagram above?

A Process J takes place all the time.
B Process K can occur at any temperature.
C Heat is gained by the water vapour during Process J.

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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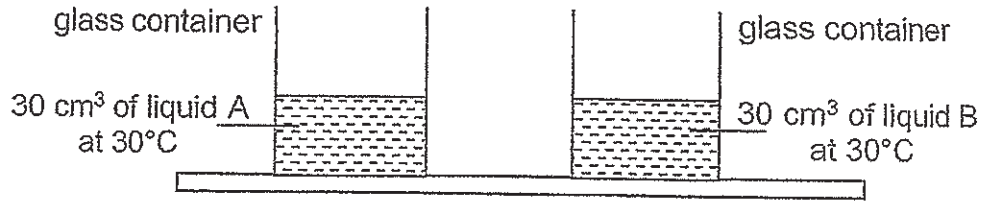
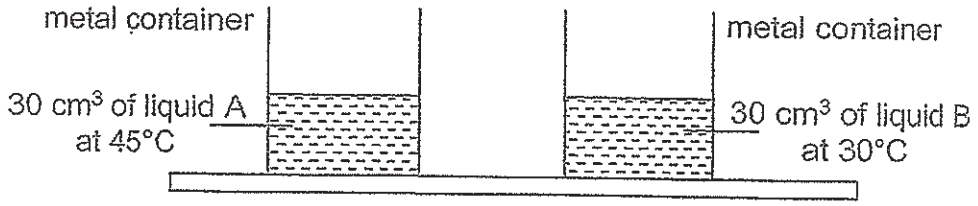
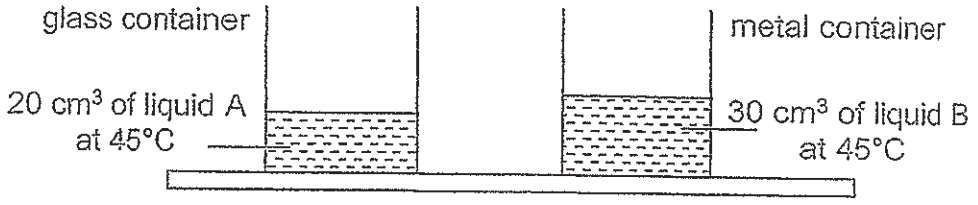
23 Ian set up an experiment to compare the rate of evaporation of two liquids, A and B. The diagrams below show four different set-ups J, K, L and M.



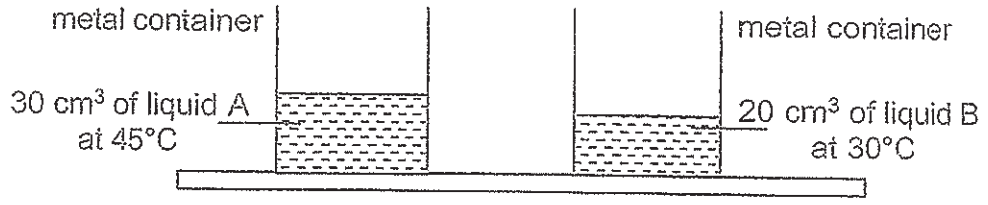
set-up J



set-up K



set-up L



set-up M

Which of the following set-ups will give a fair test?

(1) Set-up J

(2) Set-up K

(3) Set-up L

(4) Set-up M

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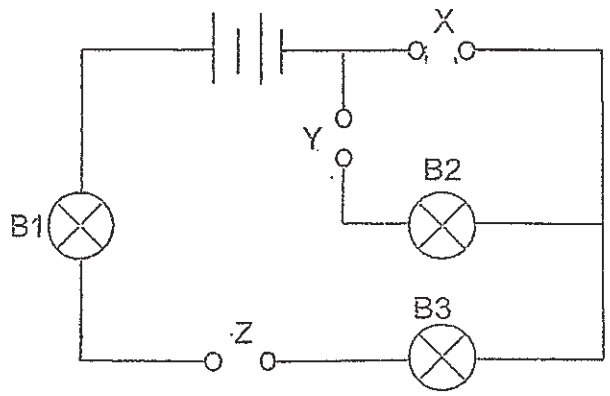
195

24 Samy wanted to find out the electrical conductivity of three rods, A, B and C, made of different materials. He inserted the rods into the circuit at different position, X, Y and Z as shown below.



The table below shows the results obtained at the end of the experiment.

Positions where rods were placed			Did the bulbs light up?		
X	Y	Z	B1	B2	B3
A	B	C	yes	yes	yes
B	C	A	no	no	no
C	A	B	yes	no	yes

Based on the results above, which statement is correct?

(1) Only Rod A is an electrical insulator.

(2) Only Rod C is an electrical insulator.

(3) Only Rods B and C are electrical insulators.

(4) Only Rods A and B are electrical conductors.

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196

25 The diagram below shows a boy on a sled sliding down the slope.

What could be the reason why the boy is sliding down?

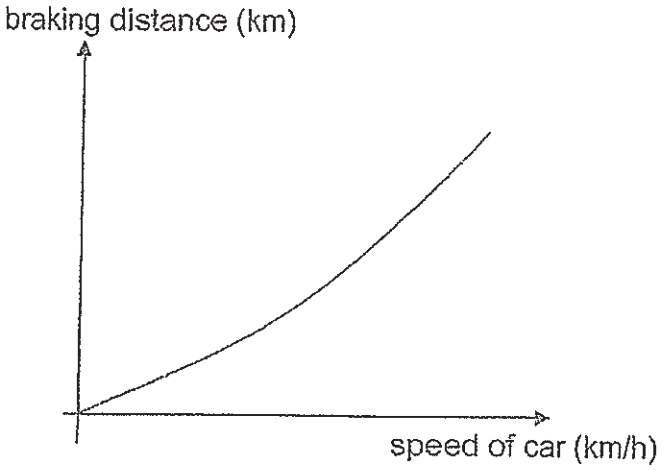
(1) The sled is pulling him down.

(2) Frictional force is acting on him.

(3) Gravitational force is acting on him.

(4) Gravitational force is pushing him down.

26 A group of pupils conducted an experiment to find out the braking distance of a car travelling at a certain speed on a dry road. The braking distance is the distance the car has to cover when the brakes are applied before it comes to a complete stop. The graph below shows the data collected by the pupils.



Based on the graph above, which of the following statements is correct?

(1) The braking distance is not affected by the mass of the car.

(2) The car will move a longer distance to come to a stop when its speed is higher.

(3) The braking distance will increase when the kinetic energy of the car decreases.

(4) The braking of the car will convert potential energy of the car into heat and sound energy.

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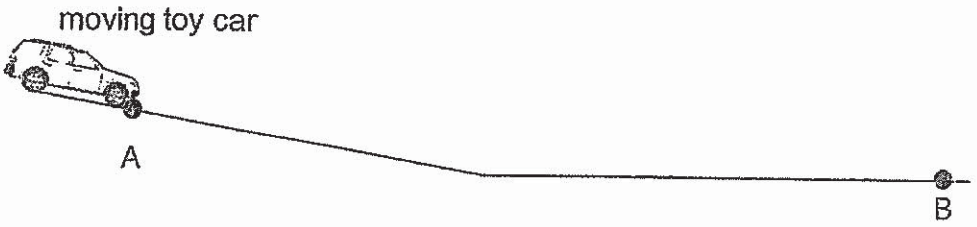
27 A toy car, at Point A, was moving down a slope as shown below.



After some time, the toy car stopped at point B.

Compare the potential energy and kinetic energy of the toy car at points A and B.
Which one of the following is correct?

	potential energy at B compared to A	kinetic energy at B compared to A
(1)	more	more
(2)	more	less
(3)	less	more
(4)	less	less

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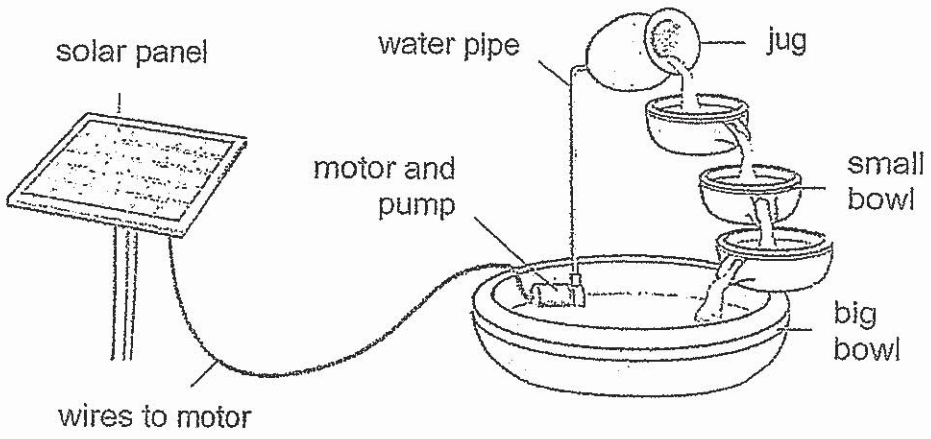
28 The water garden feature below is solar-powered. The solar panel which absorbs energy from the Sun is connected to a motor in the bowl. The motor pumps water up into the jug through the water pipe. Then the water flows down the bowls.



Which one of the following statements is correct about the water garden feature above?

(1) The water garden feature cannot operate when there is no heat.

(2) The water flowing out of the jug has both potential energy and kinetic energy.

(3) The water in the big bowl has more potential energy than the water in the jug.

(4) Heat energy is converted to potential energy and kinetic energy for the feature to work.

End of Booklet A

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199

CATHOLIC HIGH SCHOOL

MID-YEAR EXAMINATION (2019)

PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____

Class: Primary 6 - _____

Date: 16 May 2019

Parent's Signature: _____

Booklet A	/56
Booklet B	/44
Total	/100

13 questions

44 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

This booklet consists of 18 printed pages, excluding the cover page.

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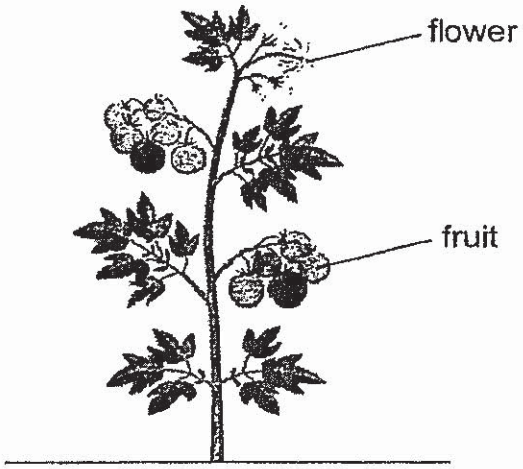
Booklet B (44 marks)

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Sarah saw an adult plant with bright and colourful flowers. The fruits were fleshy and had a sweet smell.



(a) Explain how the bright and colourful flowers help the plant to reproduce. [1]

_____

_____

(b) Sarah noticed that the young plants grew far away from the adult plant. Describe how the seeds of the plant above can be dispersed over a wide area. [1]

_____

_____

(c) How does being far away from the adult plants help the young plants to grow well? [1]

_____

_____

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SCORE	/ 3

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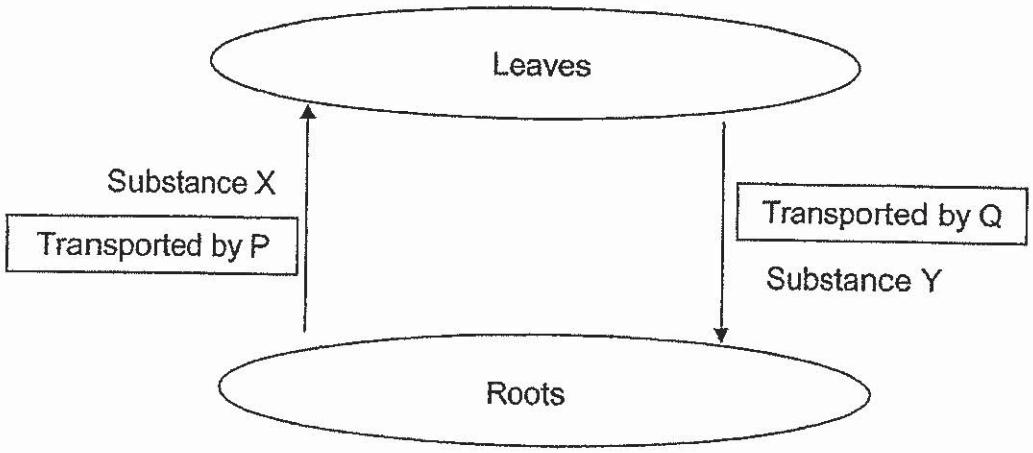
201

30 The diagram below shows the movement of substances in a plant.



(a) Identify P and Q in the stem of the plant. [1]

P : _____

Q : _____

(b) Identify substances X and Y. [1]

X : _____

Y : _____

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SCORE	2

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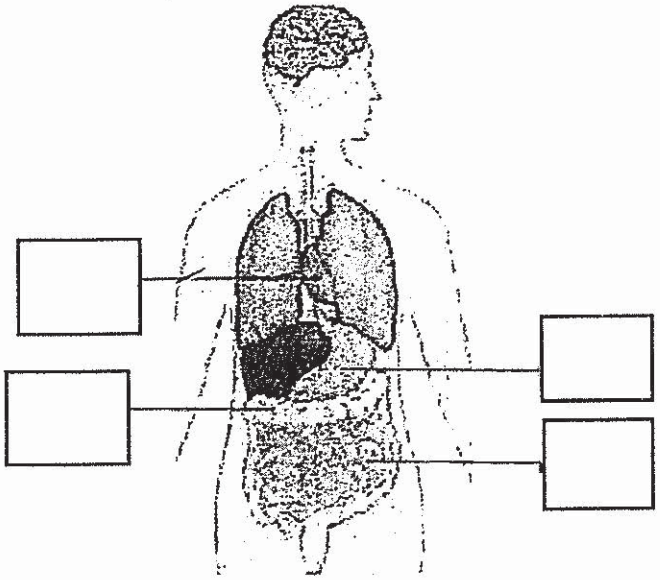
202

31 Study the human body system below.



(a) Put the letter 'A' in the box above to identify the organ that pumps blood around the body.

Put the letter 'B' in the box above to show where digested food is absorbed. [1]

James wanted to find out if exercise affects the pulse rate. He measured the pulse rates of three friends when resting and after exercising for 20 minutes.

Friend	Pulse rate when resting (per minute)	Pulse rate after exercising for 20 minutes (per minute)
X	73	85
Y	72	80
Z	80	89

(b) What can James conclude about the effect of exercise on pulse rate? [1]

_____

_____

(Go on to the next page)

SCORE	/ 2

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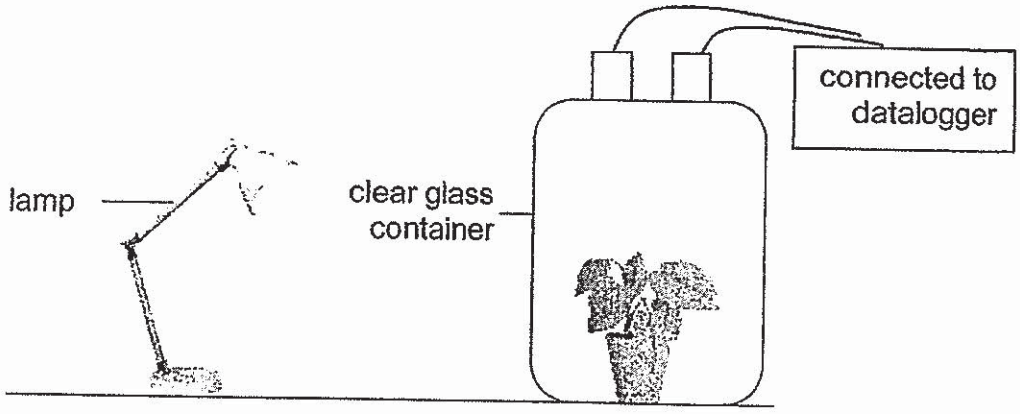
203

32 Meili carried out an experiment in a dark room. She placed a plant in a closed clear glass container as shown below.



(a) Meili switched on the lamp. She observed that the amount of oxygen in the container increased while the amount of carbon dioxide decreased. Name this process. [1]

_____

(b) Explain why she used a clear glass container for her experiment. [1]

_____

_____

(c) Meili switched off the lamp. What would happen to the amount of oxygen and the amount of carbon dioxide after a while? Explain. [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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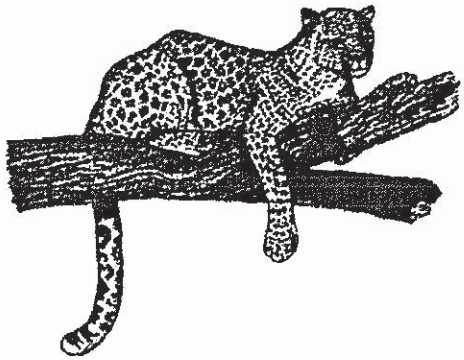
204

33 Organism P lives in the grasslands. It has patterns on its body to blend in with its surroundings. It has strong legs to run fast but can only do so for less than a minute. As such, it usually tries to get closer to its prey before chasing it. It has keen eyesight and hunts during the day.



(a) Based on the information above, state one structural and one behavioural adaptation of Organism P that helps it hunt for food. [2]

Structural adaptation: _____

_____

Behavioural adaptation: _____

_____

(b) After a speedy chase, Organism P will not be able to move much and needs to rest for half an hour. Explain why this could be a disadvantage for Organism P. [1]

_____

_____

(c) Organism P sometimes prey in a group. State one advantage of hunting for food in this manner. [1]

_____

_____

(Go on to the next page)

SCORE	/ 4

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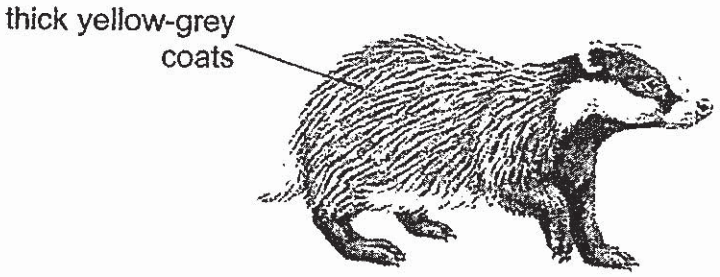
Continue from Question 33

The young of Organism P will not be able to run as fast as the adult but it has a thick yellow-grey coat on its back which resembles that of organism Q. Organism Q is known to be aggressive when provoked. The young of Organism P is often left alone when its adults go out to hunt for food.



Organism Q

(d) Suggest a reason why having a thick yellow-grey coat is an advantage for the young of Organism P. [1]

_____

_____

(Go on to the next page)

SCORE	/ 1

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206

34 There were five populations of organisms A, B, C, D and E in a pond community. Glenn kept some of the organisms together in containers over a period of time. The table below shows the outcome of the experiment.

Organisms kept together	Outcome of experiment
A, B and C	A and C remaining
D and E	E remaining
A, C and D	D remaining

(a) Based on the results of his experiment, construct a possible food web to show the relationships among the five organisms in the space provided below. [1]

In Glenn's hometown, the period of daylight during the months of July to December is shorter than the first half of the year.

(b) Explain how this would affect the population size of organism A in the food web. [1]

Glenn noticed that the plant population in the pond had been decreasing over the past few months.

(c) Without adding more plants, which one of the organisms, A, B, C, D or E, should Glenn add, to increase the plant population? Explain your answer. [1]

(Go on to the next page)

SCORE / 3

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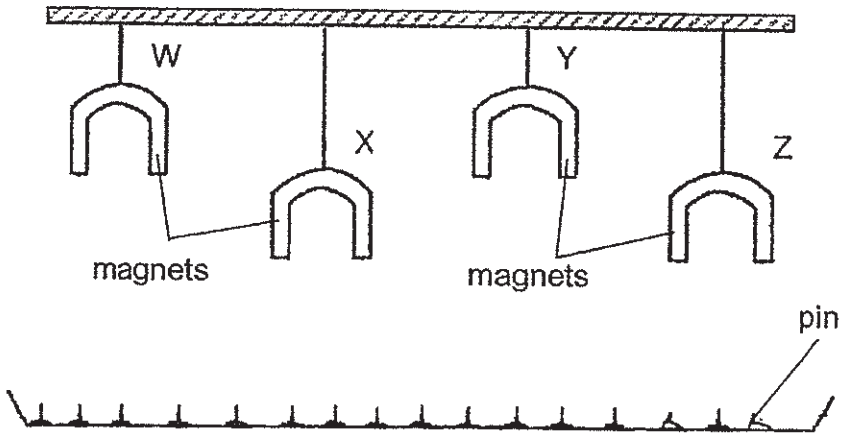
207

35 Zhi Wen conducted an experiment to compare the strength of four U-shaped magnets as shown below. He hung the magnets on strings of different lengths over a tray of pins.



He recorded the number of pins attracted to the magnets in the table below.

Magnet	Number of pins attracted
W	10
X	2
Y	4
Z	6

(a) Which was the weakest magnet? Give a reason. [1]

_____

_____

(b) Based on the set-up above, Zhi Wen was unable to compare the strength of Magnets Y and Z. Give a reason. [1]

_____

_____

(c) Magnet Y was replaced by a very strong magnet. Besides attracting more pins, state another possible observation that could happen. [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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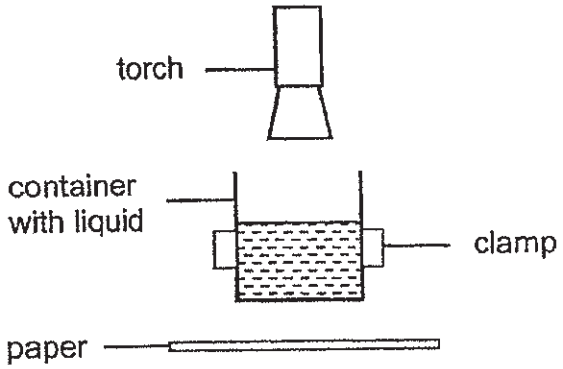
208

36 Yaakob collected three samples of liquids R, S and T from different sources. He placed each liquid in a container. He shone a torch through each container of liquid and placed a sheet of paper below the container as shown in the diagram below.



Yaakob observed how much light fell on the sheet of paper when each of the three liquid samples R, S and T was in the container. He recorded his observations in the table below.

Liquid Sample	Observation
R	Bright patch of light on paper
S	No light on paper
T	Dim patch of light on paper

(a) What was the aim of Yaakob's experiment? [1]

_____

_____

(b) Based on Yaakob's observation, which liquid sample was the muddiest? Give a reason for your answer. [1]

_____

_____

(c) State one variable which must be kept constant for the experiment to be a fair test. [1]

_____

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SCORE	/ 3

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209

37 After a soccer game, Benny's friend used water mist to cool him. Tiny droplets are produced in the form of mist as shown below.

(a) Explain how the water mist is able to cool Benny after his soccer game. [2]

_____

_____

_____

Benny stands in front of a fan as shown.

(b) Explain how standing in front of the fan would help Benny cool more effectively. [2]

_____

_____

_____

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SCORE	/ 4

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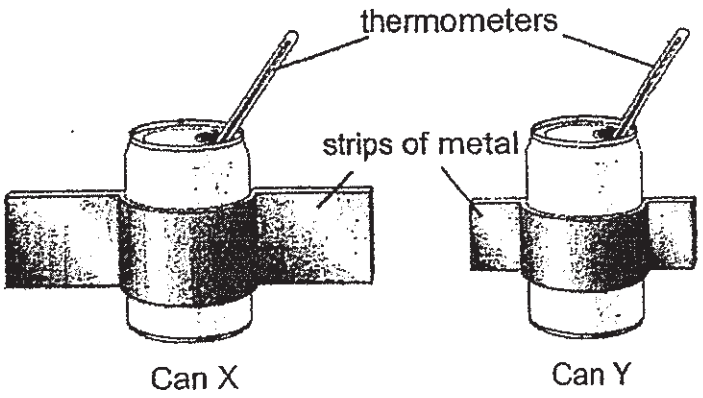
38 Xavier filled two identical metal cans with 200 cm^3 of hot water and wrapped strips of metal of different sizes around them as shown below.



He recorded the temperature of the water in each can every five minutes. The results are shown in the table below.

Time (minutes)	Temperature (°C)	
	Can X	Can Y
0	90	90
5	84	88
10	78	82
15	72	78
20	66	72

(a) Based on the experiment above, explain why the water in Can X cooled faster than the water in Can Y. [2]

_____

_____

_____

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SCORE	/ 2

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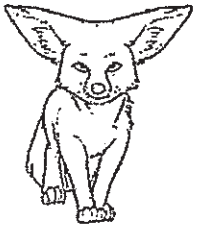
Continue from Question 38

Foxes keep cool by losing heat from their ears.



Fox A

Fox B

(b) Which fox can lose more heat through its ears? Give a reason for your answer. [1]

_____

_____

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SCORE	/ 1

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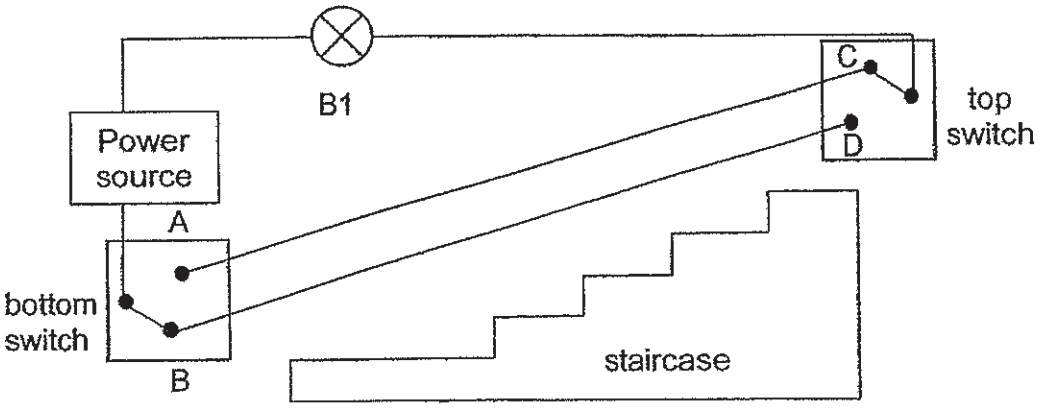
39 The diagram below shows a two-way switch installed at the staircase. The bulb can be switched on or off from either ends of the staircase.



At the moment, the bulb is switched off. The bottom switch is connected to point B while the top switch is connected to point C.

(a) David is at the bottom of the staircase.
What can he do to switch on the bulb at the bottom of the staircase? [1]

_____

_____

(b) David walks up the staircase after he has switched on the bulb at the bottom of the staircase. What can he do to switch off the bulb at the top of the staircase? [1]

_____

_____

(Go on to the next page)

SCORE	2

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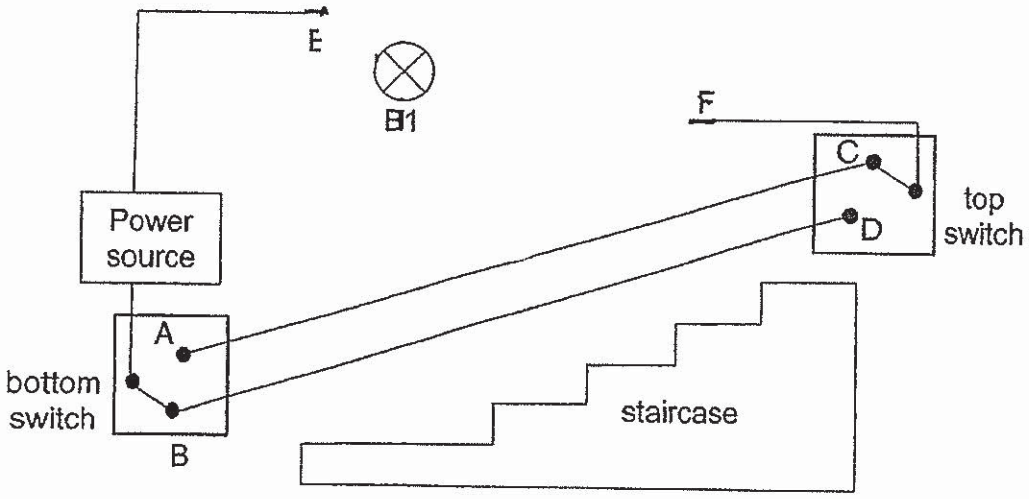
Continue from Question 39

(c) David wants to install two more bulbs for the stairway while maintaining the same brightness as before for each bulb.
Draw two more bulbs and show the connections in the diagram below.

[1]



(d) Other than having the same brightness as before, what is the advantage of having the bulbs connected in the way you have drawn in (c)?

[1]

_____

_____

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SCORE	2

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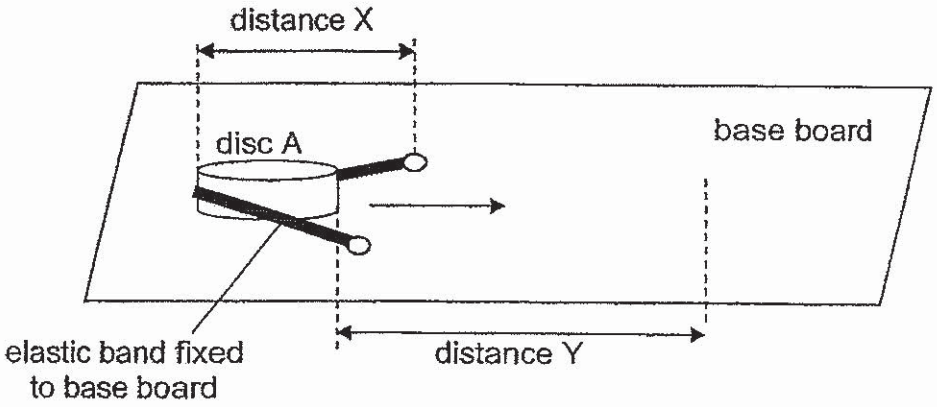
214

40 Hailey conducted an experiment with the set-up shown below.



She pulled disc A and the elastic band back at different distances (X) and released it to find out how far disc A will travel (Y). She then recorded her results in the table shown below.

distance X (cm)	distance Y (cm)
2	3.5
4	6
6	9.5
8	12

(a) Explain, in terms of energy conversion, how distance Y is affected by distance X. [2]

_____

_____

_____

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SCORE	2

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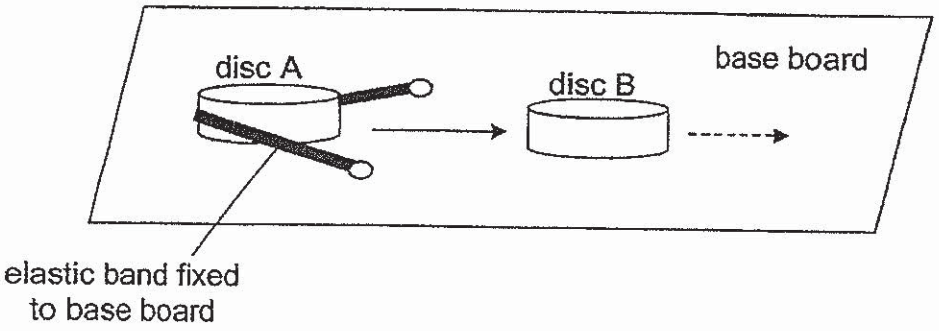
215

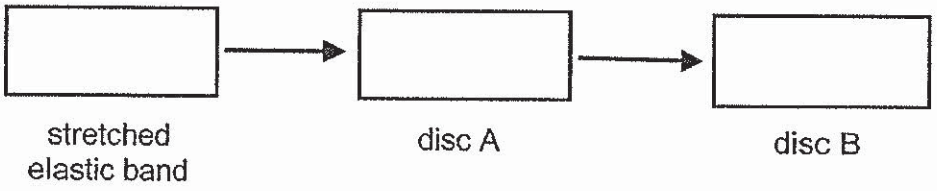
Continue from Question 40

Hailey then added disc B to the set-up as shown below.



She used disc A to hit disc B.

(b) Fill in the boxes to show the main energy changes during the experiment. [1]



(c) Hailey noticed that disc B travelled at a slower speed as compared to disc A. Explain, in terms of energy. [2]

_____

_____

_____

(Go on to the next page)

SCORE	3

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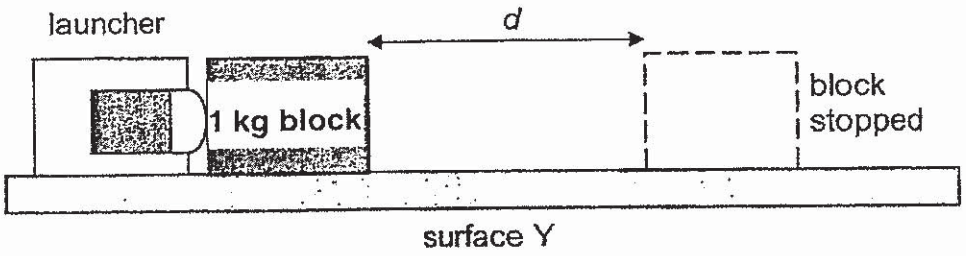
41 Ahmad conducted an experiment using the set-up below. He used the launcher to give the 1 kg block a push. The block moved a distance, *d*, along surface Y before stopping.



(a) Name the force that caused the block to stop moving. [1]

_____

Ahmad repeated the experiment using a different surface, X. His results are shown in the table below.

surface	mass of block (kg)	*d* (cm)
Y	1	20
X	1	60

(b) In Ahmad's experiment, the launcher always pushed the block with the same amount of force. Why must the amount of force be the same? [1]

_____

_____

(c) Explain why the block moved a shorter distance along surface Y than X. [1]

_____

_____

(Go on to the next page)

SCORE 3

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217

Continue from Question 41

(d) Ahmad repeated the experiment using a 2-kg block instead of a 1-kg block. He obtained the results shown below.

surface	mass of block (kg)	*d* (cm)
Y	2	10
X	2	30

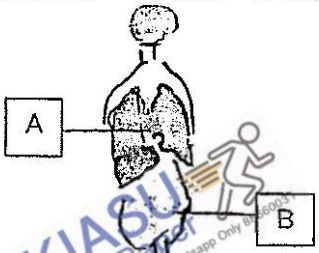
Based on Ahmad's results, how does the mass of the block affects the distance, *d*? [1]

_____

_____

END OF BOOKLET B

SCORE	/ 1

Qn	Acceptable Answer	Feedback
29a	Pollinators are attracted to the flowers ***(bright and colourful)*** hence they help to pollinate the flowers ***(reproduce)***.	<u>Two hints in question</u> *1. bright and colourful flowers (asking for the function)* *2. reproduce*
b	<u>Two acceptable answers</u> - Animals will feed on the fruit and pass out the seeds in their droppings ***(how seeds are dispersed)*** when they move to other locations ***(wide area)***. - Animals feed on the fruit and discard the seeds ***(how seeds are dispersed)*** when they move to other locations ***(wide area)***.	<u>Two hints in question</u> *1. how seeds are dispersed* *2. wide area*
c	To reduce overcrowding ***(far away from parent plant)*** hence there is less competition for sunlight, water, nutrients and space ***(young plants grow well)*** between the adult and young plants.	<u>Two hints in question</u> *1. far away from adult plant* *2. young plants grow well*
30a	P: water-carrying tubes / xylem Q: food-carrying tubes / phloem	
b	X: water (and mineral salts) Y: sugar / food / glucose	*Starch is not accepted as it is excess food stored in different parts of the plant.*
31a		
b	Exercise increases the pulse rate.	*CONCLUSION always ANSWERS the AIM.* <u>These are not conclusions</u> *1. Exercise increases the pulse rate of Friends X, Y and Z.* *(It is incorrect to conclude that exercise increases the pulse rate of the above three people and no one else.)* *2. Exercising for 20 minutes increases the pulse rate.* *(It is incorrect to conclude that the pulse rate increases for only 20 minutes of exercise.)*

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32a	photosynthesis	*Two hints in question* *1. switched on the lamp (there is light)* *2. amount of oxygen increased and amount of carbon dioxide decreased*
b	The container allowed most light to pass through it ***(clear glass container)*** so that the plant could trap maximum light to make food ***(explain purpose)***.	*Two hints in question* *1. clear glass container* *2. EXPLAIN purpose*
c	The lamp was switched off ***(Cause)*** ↓ so there was no light. ↓ The plant was not able to photosynthesise but it could respire. ↓ So the plant took in oxygen and gave off carbon dioxide. ↓ Hence the amount of oxygen decreased while amount of carbon dioxide increased. ***(Effect)***	
33a	Three acceptable answers for Structural Adaptation - Patterns on Organism P's body - Strong legs - Keen eyesight Behavioural Adaptation: Organism P will get closer to its prey before chasing it.	
b	Two acceptable answers - Organism P's prey would have escaped and Organism P would have to wait for its next hunt. - Organism P's prey would have escaped and Organism P would have no food.	*Please take note* *1. Some pupils only answered that the prey would have escaped but did not tackle how the prey escaping was a disadvantage to Organism P.* *2. Some pupils answered that the predators would take the opportunity to attack Organism P. The question did not mention that the organism is injured or at its most vulnerable so it is not possible for Organism P to remain without making an attempt to escape.*
c	It increases the chances of catching its prey.	*(HOW) Hunting prey in a group* *(PURPOSE) ??*
d	(How) By having a thick yellow-grey coat, the young of P will be mistaken as the young of Q. (Purpose) Predators will not feed on the young of P.	

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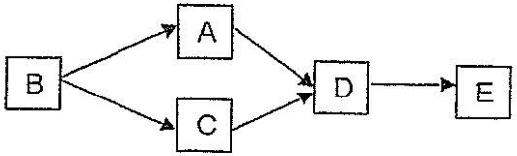
34a		
b	There would be less sunlight. **(Cause)** ↓ Organism B being a producer would make less food ↓ so the population of Organism B would decrease. ↓ Since Organism A depends on Organism B for food, ↓ population of Organism A would decrease. **(Effect)**	*For every population increase or decrease, it should always be supported with a reason.*
c	Add Organism D. **(Cause)** ↓ Since there is more Organism D feeding on Organisms A and C, ↓ the population of Organisms A and C decreases. ↓ Hence there will be less Organisms A and C to feed on the plant population. ↓ Population of plants will increase. **(Effect)**	*For every population increase or decrease, it should always be supported with a reason.*
35a	**(Choice)** Magnet X **(Evidence)** It attracted the least number of pins even though it was the nearest to the tray of pins.	*The reasoning has been given in the question – weakest magnet.*
b	They were placed at different heights / distance from the tray of pins.	
c	Acceptable answers - It would repel / attract Magnet X. - It would repel / attract Magnet Z. - It would repel / attract Magnet X and Z. - It would repel / attract other magnets.	

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36a	Three acceptable answers - To find out which liquid sample is the clearest / muddiest. - To find out which liquid sample allows the most light to pass through.	
b	**(Choice)** Liquid Sample S **(Evidence)** It does not allow light to pass through.	*The reasoning has been given in the question – muddiest liquid sample.*
c	Acceptable answers - Amount / Volume of liquid sample - Size of container / Thickness of container - Light intensity of torch - Distance of base of container to paper - Distance of torch to surface of liquid sample	
37a	Two acceptable answers - Heat is lost from Benny's body to the mist / water droplets when it evaporates. - The mist / water droplets gained heat from Benny's body and evaporates.	*Do apply the concepts to other situations, e.g. stepping out from a shower or a swimming pool, fans with mist spraying from them at coffee shops, etc.* *Do apply the concepts of condensation to real-life situations, e.g. warm bananas becoming soggy and wet in a closed container, white mist appearing above ice cubes placed on a plate, white mist appearing from a person's mouth in a cold country, etc.*
b	With the fan blowing at Benny, **(Cause)** ↓ the presence of wind increased the rate of evaporation. ↓ Hence heat was lost from his body to the mist / water droplets faster. ↓ This helps to cool Benny more effectively. **(Effect)**	
38a	Two acceptable answers - As the metal strip in Can X has a greater surface area, heat is lost from the water to the metal strip faster. - As the metal strip in Can X has a greater surface area, heat is conducted away from the water to the metal strip faster.	*Analysis of diagrams and table of results* *1. From the table of results, the temperature of water in Can X is lower for the same duration. This means that the water in Can X is losing heat faster.* *2. From the diagrams, the only difference is the larger metal strip wrapping Can X.*
b	**(Choice)** Fox A **(Evidence)** Its (large) ears have a larger surface area exposed to the surroundings. **(Reasoning)** Heat is lost from the body of Fox A to the surroundings faster.	*From part a, find a relationship (similar to Q34 in PSLE Specimen Paper)* *The larger the metal strip, the greater the surface area, the faster heat is lost from the water in the can to the metal strip.*

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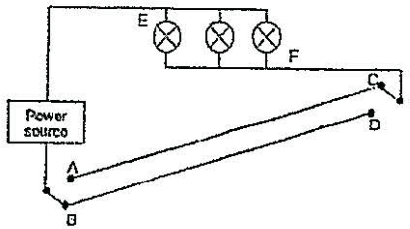
39a	Connect the bottom switch to point A.	
b	Connect the top switch to point D.	
c		
d	If one bulb fuses, the other bulbs will still light up.	
40a	As distance X increases, **(Cause)** ↓ the band is stretched more so there is more elastic potential energy in the band. ↓ This is converted to more kinetic energy in disc A, ↓ so distance Y increases. **(Effect)**	
b	(elastic) potential energy → kinetic energy → kinetic energy	
c	Some of the kinetic energy in disc A is converted to heat and sound energy. Hence less kinetic energy of disc A is transferred to disc B, so it moves slower.	
41a	frictional force	
b	To ensure that the distance moved by the block is only due to the type of surfaces and not due to the amount of force used to push the block.	
c	Surface Y is rougher hence would be more frictional force between Surface Y and the block.	*Frictional force is a contact force so do ensure that the contact surfaces are mentioned in your answer.*
d	As the mass of the block increases, the distance, *d*, decreases.	

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		Paper Type:	MCQ Paper 1
Class	Level Name:	Assessment:	MidYear
Total Score:	Class Name:	Subject:	SCIENCE
Total Scan:			

1)	1	2)	2	3)	3	4)	1	5)	3
6)	4	7)	1	8)	2	9)	4	10)	3
11)	3	12)	3	13)	4	14)	1	15)	2
16)	1	17)	2	18)	4	19)	2	20)	4
21)	3	22)	1	23)	1	24)	1	25)	3
26)	2	27)	4	28)	2				

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Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Mid-Year Assessment

SCIENCE

BOOKLET A

16 May 2019

Total Time for Booklets A and B: 1 hour 45 minutes

28 questions
56 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 16 printed pages.

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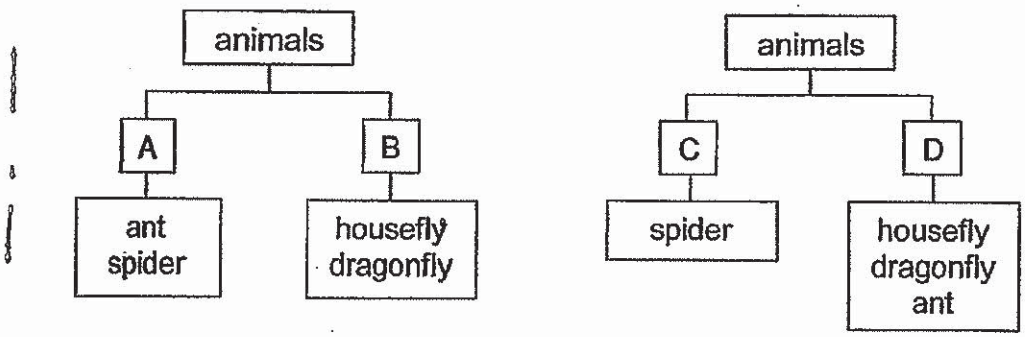
Section A (28 x 2 marks = 56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Study the classification charts below.



Which one of the following shows the correct headings for A, B, C and D?

	A	B	C	D
(1)	have 3 body parts	have 2 pairs of wings	has more than 3 pairs of legs	have 3 pairs of legs
(2)	have more than 3 pairs of legs	have 3 pairs of legs	has no wings	have wings
(3)	have no wings	have 3 pairs of legs	has more than 3 body parts	have 3 body parts
(4)	have no wings	have wings	has more than 3 pairs of legs	have 3 pairs of legs

2. The following observations were made about organ H of a human body system.

A Digestive juices were not found.
B Water was absorbed from undigested food.
C Undigested food starts to become solid waste.

Which one of the following would most likely happen if organ H fails to function properly?

(1) Food cannot be digested in organ H.
(2) Undigested food will flow back to the stomach.
(3) Watery waste will be passed out through the anus.
(4) Digested food cannot be absorbed into the bloodstream.

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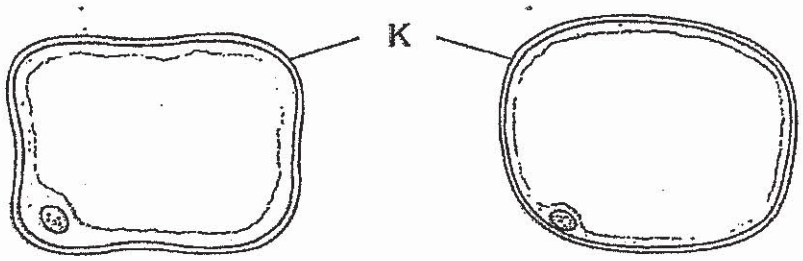
229

3. The diagram below shows what happened after cell T was placed in pure water for some time.



cell T at the start of experiment

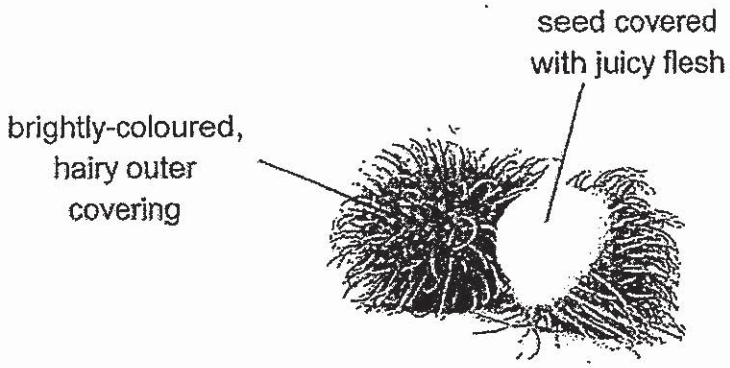
cell T after being placed in water for some time

When part K of cell T was removed and cell T was placed in pure water again, cell T was observed to burst after some time.

Which one of the following best explains the function of part K?

(1) It controls the activities of the cell.
(2) It allows substances to move around within the cell.
(3) It controls the substances moving in and out of the cell.
(4) It allows the cell to swell up and still retain a regular shape.

4. Study the picture of fruit X below.



Which of the following statement(s) about fruit X is / are correct?

A The seed can be dispersed by splitting
B The seed is developed from a single ovary.
C The fruit is dispersed by hooking onto the fur of animals.
D Pollination and fertilisation has taken place before fruit X is formed.

(1) D only
(2) A and B only
(3) B and C only
(4) A, C and D only

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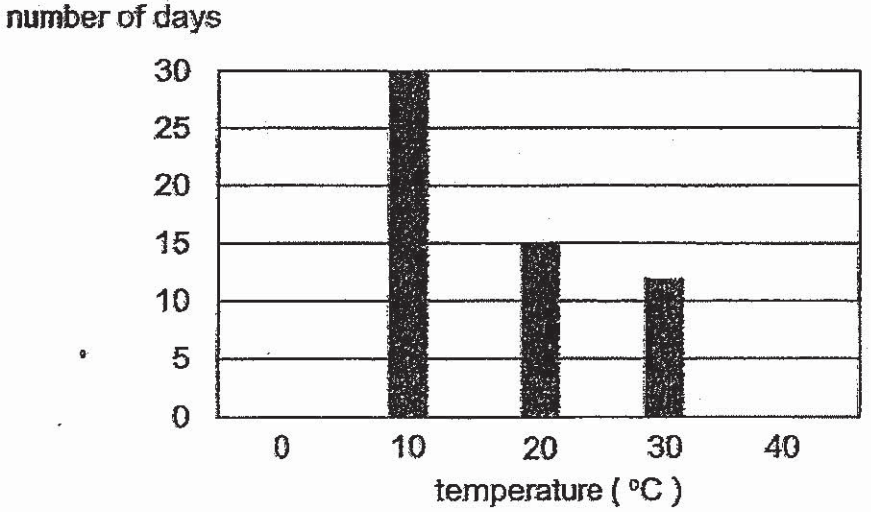
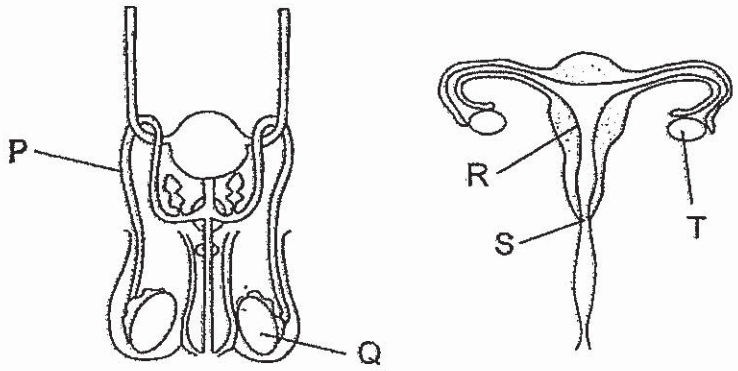
5. Five similar seeds from plant A were each planted in 5 similar pots. Each pot was placed at a different surrounding temperature. The number of days that it took for the roots to appear was recorded in the graph shown below.



Based on the experiment, which one of the following statement is **false**?

(1) The seed at 0 °C did not have enough warmth to germinate.
(2) The seed planted at 30 °C took the shortest time to germinate.
(3) Increasing the temperature of the surroundings caused the seed to germinate faster.
(4) When planted at 20 °C, the seed took 15 days lesser to germinate than when planted at 10 °C.

6. The diagram below shows the human male and female reproductive systems.



Which one of the following statements is **false**?

(1) Both parts Q and T produce reproductive cells.
(2) Female reproductive cells can be found at part T.
(3) The male reproductive cells are deposited at part S.
(4) The male reproductive cell enters part Q through part P.

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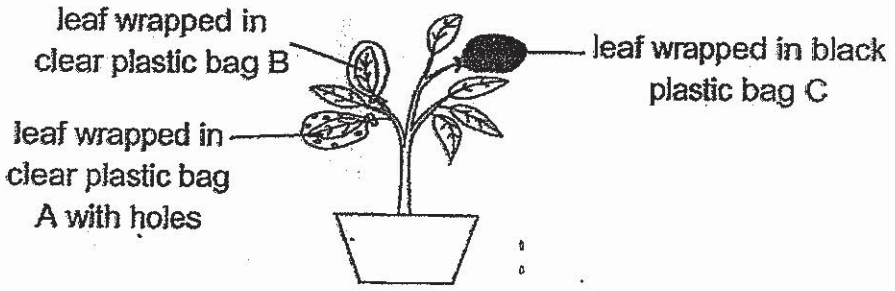
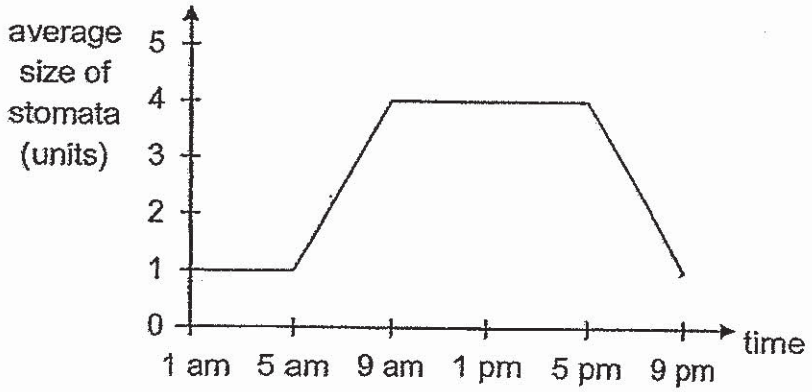
7. Sheena set up the experiment as shown below. She wrapped three similar leaves in different plastic bags A, B and C and measured the amount of carbon dioxide, water vapour, oxygen and nitrogen inside each of the bags at the start of the experiment. She then left the plant in a dark room and measured the amounts of the gases at the end of one day.



Which one of the following is likely to be the results after one day?

		Plastic bag A	Plastic bag B	Plastic bag C
(1)	amount of carbon dioxide	remained the same as before	increased	increased
(2)	amount of water vapour	increased	remained the same as before	increased
(3)	amount of oxygen	decreased	increased	remained the same as before
(4)	amount of nitrogen	remained the same as before	decreased	decreased

8 The graph below shows how the average size of the stomata of a plant changes at different times of the day.



Based on the graph above, which one of the following statements is most likely to be true?

(1) The plant did not photosynthesis after 9 pm.
(2) The plant was photosynthesising at its maximum rate from 9 am to 5 pm.
(3) The average size of the stomata increases with increasing amount of light.
(4) When the amount of light increases, the average size of the stomata decreases.

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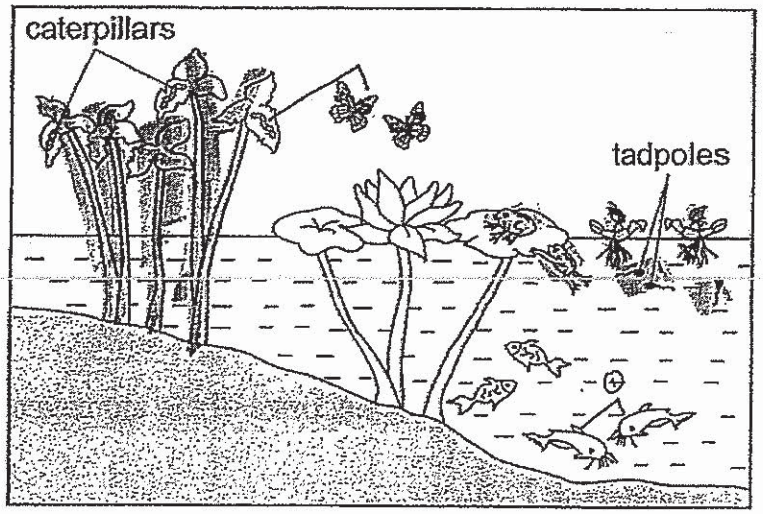
9. Ravi wanted to find out if the colour of the leaves would affect whether the leaves were able to photosynthesise. Which of the following variable(s) should he keep constant to ensure that his experiment was a fair one?

A size of leaves
B colour of the leaves
C amount of water given to the plant
D amount of carbon dioxide given to the plant

(1) B only
(2) C and D only
(3) A, C and D only
(4) A, B, C and D

10. The diagram below shows a pond habitat.



Based on the diagram above, which one of the following statements is true?

(1) All the populations form two communities.
(2) There are only two populations of producers.
(3) There are only four populations of consumers.
(4) The frog population is only made up of two frogs.

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233

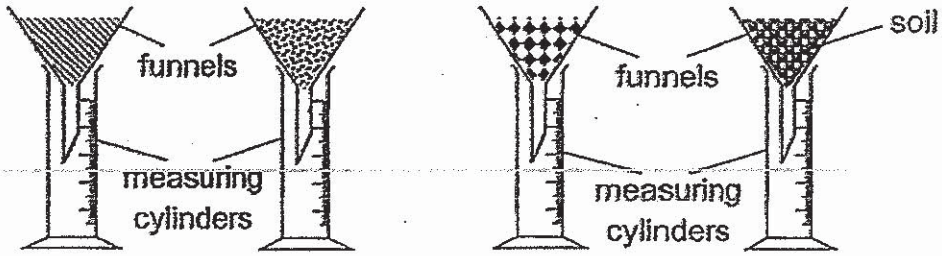
11. The table below shows some animals living in their respective habitats.

Habitat	Animals
A	hermit crab, starfish, clam
B	fish, duck, frog
C	butterfly, ladybird, beetle
D	fungi, termites, woodlouse

In which of the above habitats A, B, C or D would you most likely find a bee?

(1) A
(2) B
(3) C
(4) D

12. Four set-ups each containing equal amount of soil samples A, B, C and D were placed into each funnel as shown below.



soil sample A soil sample B soil sample C soil sample D

50 ml of water was poured into each funnel and the volume of water collected in each measuring cylinder after 3 minutes was recorded in the table below.

Soil sample	Volume of water collected (ml)
A	22
B	10
C	45
D	35

Which soil sample was most likely taken from the mangrove swamp?

(1) A
(2) B
(3) C
(4) D

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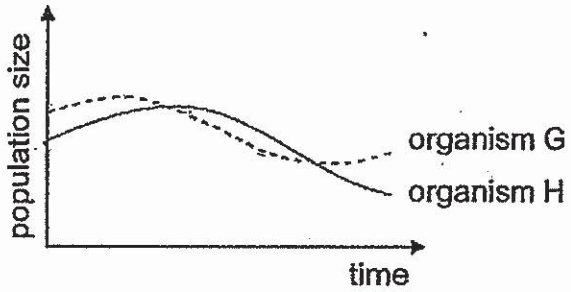
13. The graph below shows how the populations of organisms G and H changed over time in an environment.

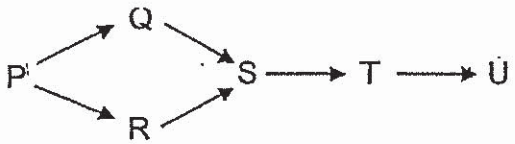


Based on the graph, which of the following conclusion(s) would **not** be possible?

A H is a predator of G.
B H feeds on G, which is a producer.
C Both G and H prey on the same animal.
D The population of organism G increases when the population of organism H increases.

(1) C only
(2) D only
(3) A and B only
(4) C and D only

14. Study the food web below.



Which one of the following is a possible conclusion?

(1) P is a prey of Q and R.
(2) U is a decomposer in the community.
(3) When the population of T increases, the population of Q will decrease.
(4) The energy from the Sun is transferred to P before it is transferred to the other organisms in the community.

15. Peter was stirring a hot drink with a metal spoon. After some time, the spoon felt hot.

Which one of the following correctly explains why the spoon became hot after some time?

(1) The spoon lost heat to the hot drink and his fingers.
(2) The spoon gained heat from the hot drink and his fingers.
(3) The spoon lost heat to the hot drink and gained heat from his fingers.
(4) The spoon gained heat from the hot drink and lost heat to his fingers.

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235

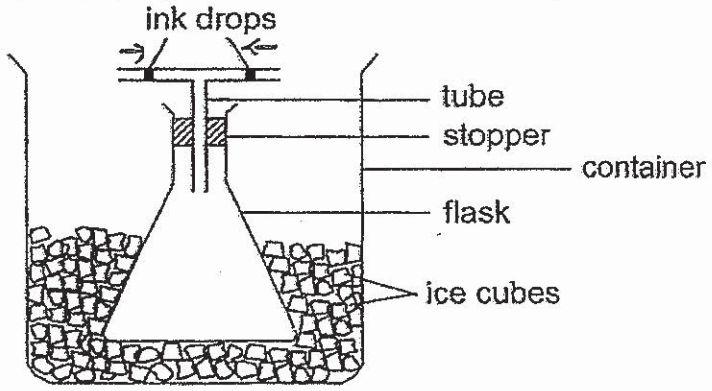
16. Three powders X, Y and Z were mixed together in a beaker. These powders cannot be dissolved in water. The properties of the three powders are given in the table below.

	Property A Is it a magnetic material?	Property B Is it a good conductor of heat?	Property C Does it float in water?
Powder X	no	no	no
Powder Y	yes	yes	no
Powder Z	no	yes	yes

Which of the following property / properties should be used in order to separate the three powders quickly?

(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

17. A flask connected to a tube containing two drops of ink was immersed in a container filled with ice cubes as shown below. The positions of the ink drops were observed after 5 minutes.



Which one of the following shows the correct observation and explanation about the positions of the ink drops?

	Observation	Explanation
(1)	The ink drops moved towards each other.	The air in the flask lost heat and contracted.
(2)	The ink drops moved away from each other.	The air in the flask gained heat and expanded.
(3)	The ink drops moved towards each other.	The ink drops gained heat and expanded.
(4)	The ink drops moved away from each other.	The ink drops lost heat and contracted.

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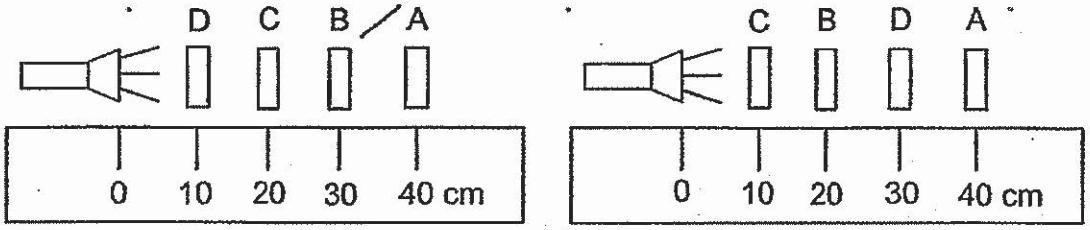
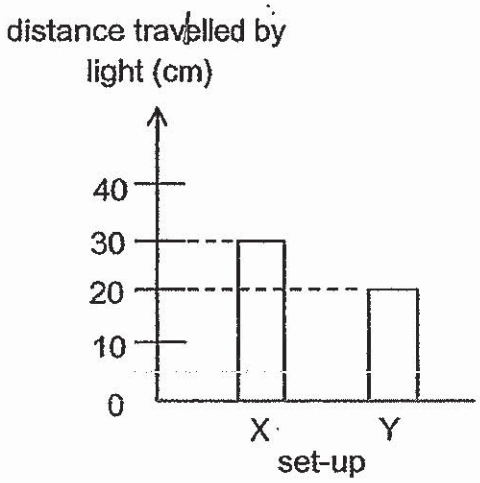
18. An experiment was conducted to find out if light can pass through four sheets A, B, C and D made of different materials. The sheets were arranged in the two set-ups shown below.



set-up X set-up Y

The graph below shows the distance travelled by light in set-ups X and Y.



Which one of the following correctly describes sheets A, B, C and D?

	Does it allow light to pass through?			
	A	B	C	D
(1)	yes	no	yes	unable to tell
(2)	unable to tell	no	yes	yes
(3)	no	yes	unable to tell	yes
(4)	yes	unable to tell	no	no

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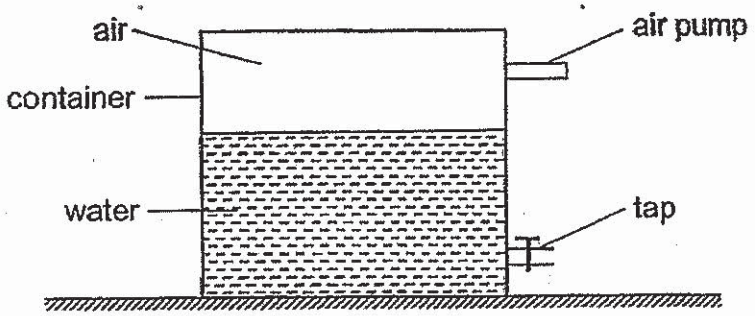
237

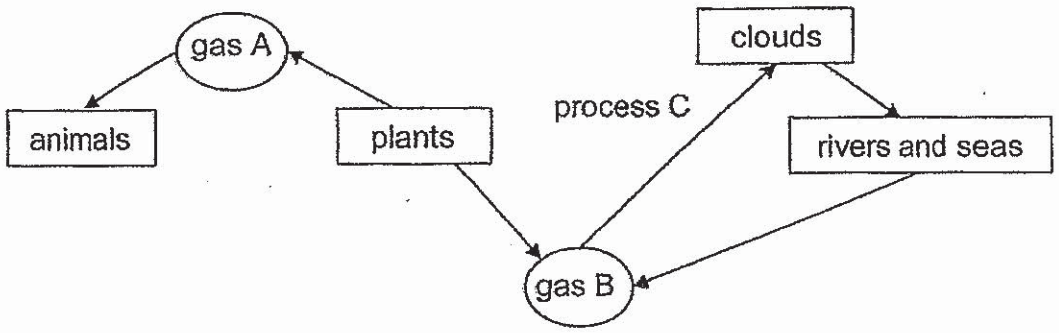
19. The diagram below shows a container with **70 cm^3 of water and 30 cm^3 of air.** 20 cm^3 of water was removed and 50 cm^3 of air was pumped into the container.



What would be the final volume of water and air in the container?

	Final volume of water (cm^3)	Final volume of air (cm^3)
(1)	50	80
(2)	40	50
(3)	50	50
(4)	20	80

20. Study the diagram below. The arrows show some processes that occur in the environment.



Which one of the following is correct?

	Gas A	Gas B	Process C
(1)	oxygen	carbon dioxide	evaporation
(2)	oxygen	water vapour	condensation
(3)	carbon dioxide	oxygen	condensation
(4)	water vapour	carbon dioxide	evaporation

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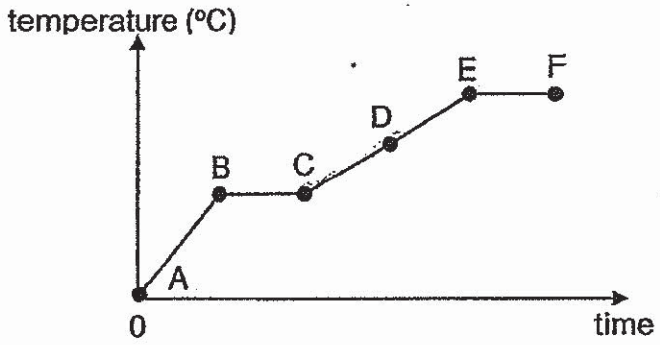
238

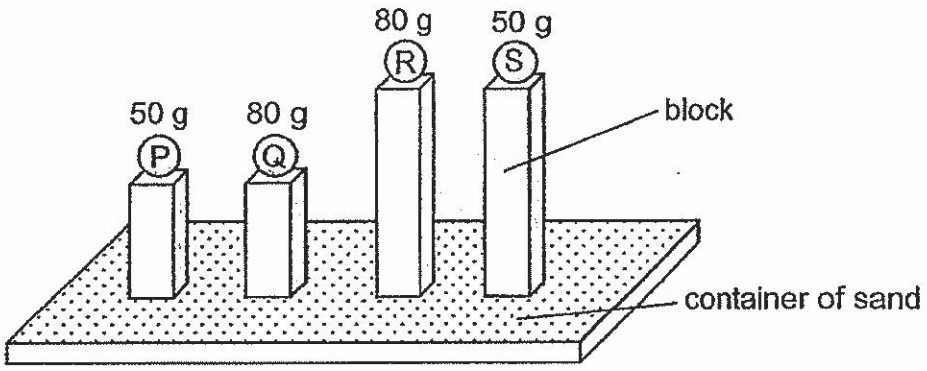
21. The graph below shows the changes in temperature of substance Q over time.



Which one of the following is correct?

(1) Substance Q is not gaining heat at part BC of the graph.
(2) Part AB of the graph represents the melting point of substance Q.
(3) Part CE of the graph represents substance Q changing state from solid to liquid.
(4) The graph remains constant at part EF as substance Q is changing from a liquid to a gas.

22. The diagram below shows four balls P, Q, R and S of similar sizes but different masses resting on blocks of different heights. They were then released into a container of sand from their respective heights.



Based on the above diagram, which of the following statements are correct?

A Ball S has more gravitational potential energy than ball P.
B Ball R has more kinetic energy than ball Q when released.
C Ball Q has the least amount of gravitational potential energy
D Ball R will make the deepest depression in the sand when released.

(1) A and B only
(2) B and C only
(3) A, B and D only
(4) A, C and D only

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239

23. Which one of the following is a non-renewable source of energy?

(1) sun
(2) wind
(3) fossil fuels
(4) flowing rivers

24. Block M was hung on spring L as shown in diagram 1. When a magnet was placed under block M, length of spring L decreased as shown in diagram 2.

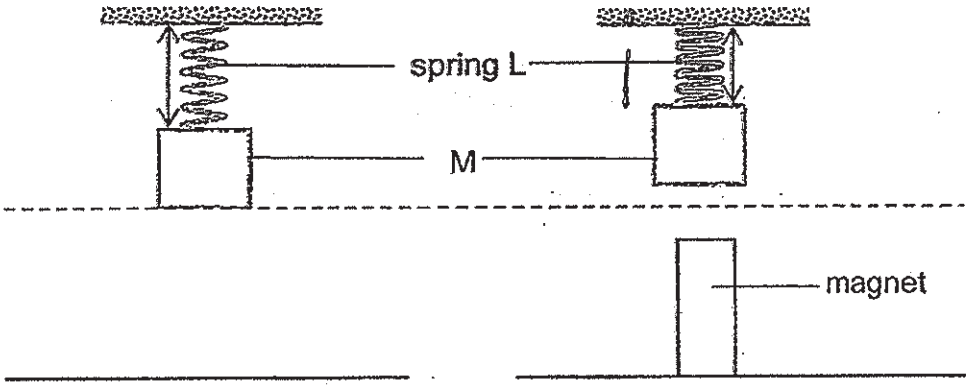

diagram 1 diagram 2

Which of the following forces are acting on spring L in diagram 2?

A frictional force
B magnetic force
C gravitational force
D elastic spring force

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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25. Which of the following **does not** show the effects of forces?

(1)

pushing against a wall

(2)

catching a ball

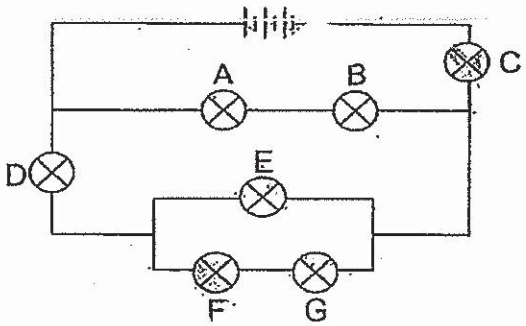
(3)

pushing a trolley

(4)

moulding a clay vase

26. Study the circuit diagram below. The batteries and bulbs are all working properly.



Which one of the following correctly states the number of bulbs that will still be lit when one or more bulbs is / are removed?

	Bulb(s) removed	Number of bulb(s) still remained lit
(1)	A and G	3
(2)	C and F	4
(3)	B	4
(4)	D and E	5

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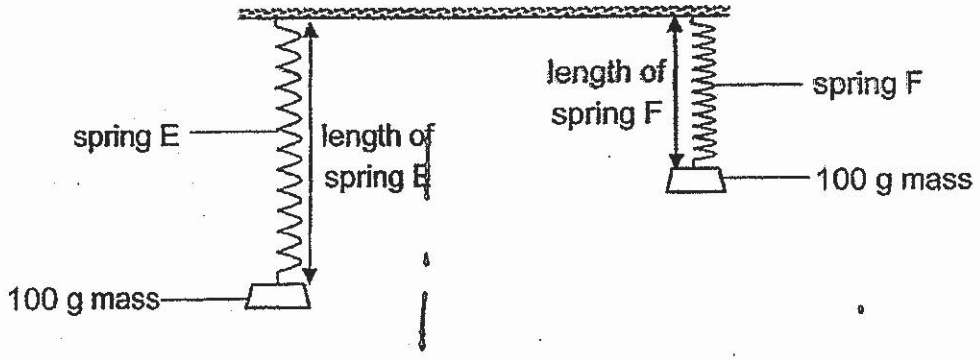
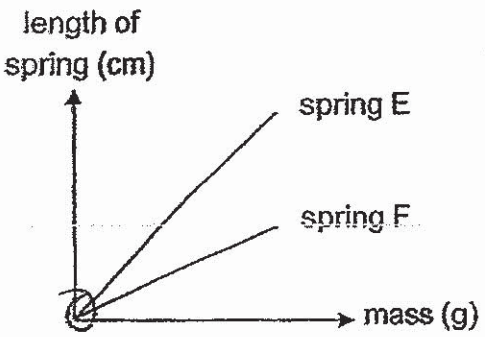
27. Putra wanted to investigate two springs E and F of the same length. He added a 100 g mass on each spring as shown below and recorded the change in lengths of the springs. He added more 100 g masses to the springs and plotted his results in a graph.

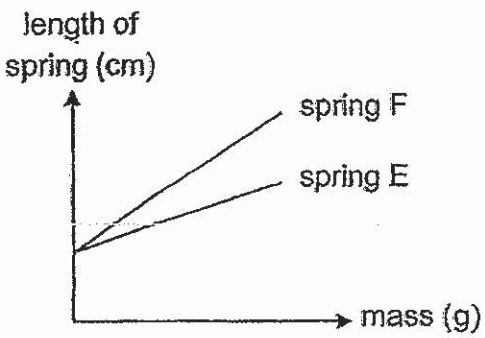


Which one of the following shows the graph that Putra has most likely plotted?

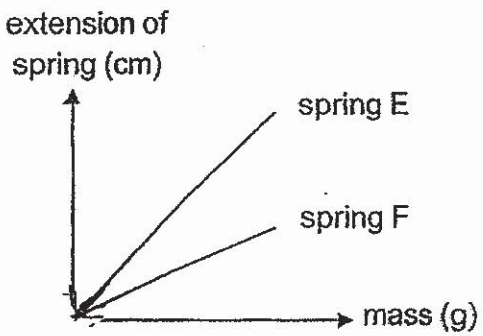
(1)



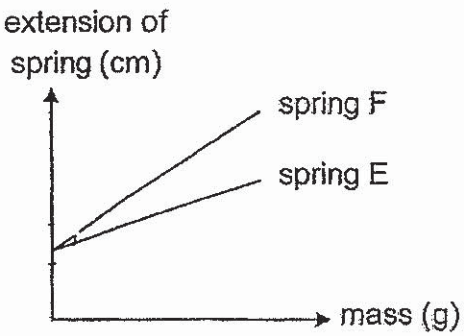
(2)



(3)



(4)



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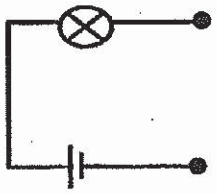
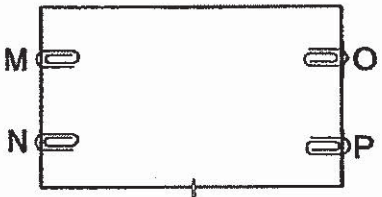
28. A circuit card was tested with a circuit tester to find out which metal clips M, N, O and P are connected by wires.



circuit tester



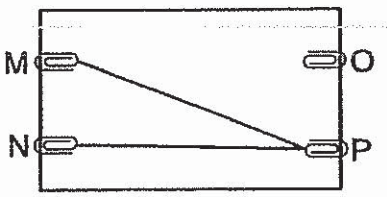
circuit card

The results of the circuit test is shown in the table below.

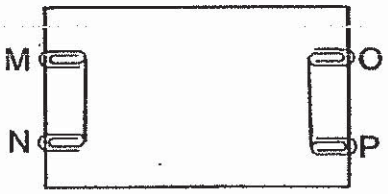
Clips tested	Did bulb light up?
M and N	no
N and P	no
O and P	yes
M and O	yes
M and P	yes

Which one of the following shows the correct wire connections on the card?

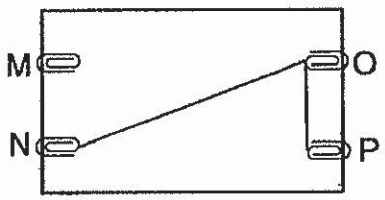
(1)



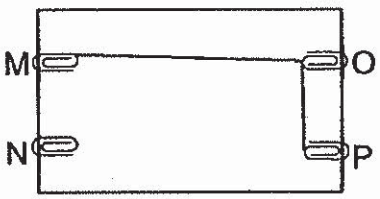
(2)



(3)



(4)



~End of Booklet A~~

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243

Name : _____ ( )

Class : Primary 6

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6

Mid-Year Assessment

SCIENCE

BOOKLET B

16 May 2019

Booklet A	56
Booklet B	44
Total	100

Total Time for Booklets A and B: 1 hour 45 minutes

13 questions
44 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

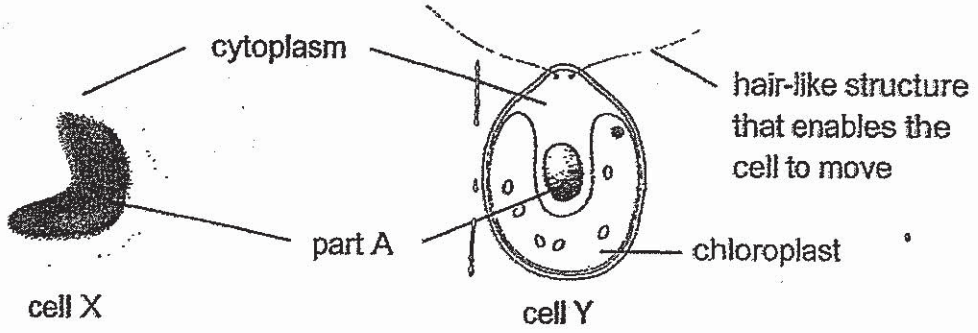
This paper consists of 14 printed pages.

Section B (44 marks)

For questions 29 to 41, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

29. The diagram below shows two cells X and Y.



(a) Part A contains genetic information of the cell. State the function of part A. [1]

_____

_____

(b) Based on the diagram above, suggest what cell Y can do but cell X cannot do. [1]

_____

_____

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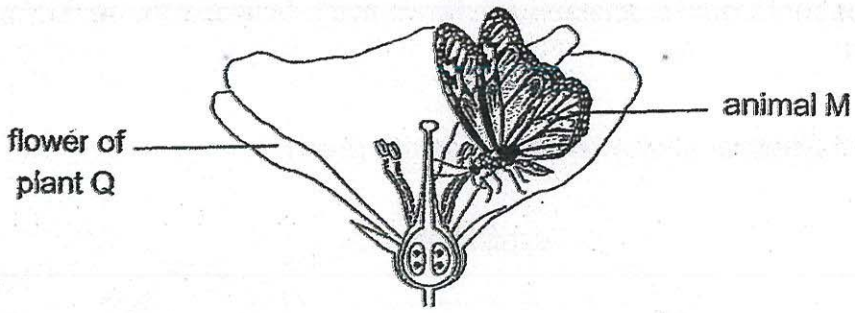
30. Animal M and plant Q depend on each other as shown below.



(a) Suggest how animal M and plant Q are beneficial to each other. [2]

(i) Benefit for animal M: _____

_____

(ii) Benefit for plant Q: _____

_____

(b) How will the number of fruits produced by plant Q be affected when the population of animal M decreases? Give a reason for your answer. [1]

_____

_____

31. Every year, farmers piled layers of dead leaves on their plots of land after harvesting their crops. After some time, the dead leaves turned into a soil-like substance.

(a) Name the process that causes the dead leaves to turn into a soil-like substance. [1]

_____

(b) Besides air and temperature, name one other environmental factor that could affect the rate of the above process. [1]

_____

(c) How does the process in (a) benefit the farmer? [1]

_____

_____

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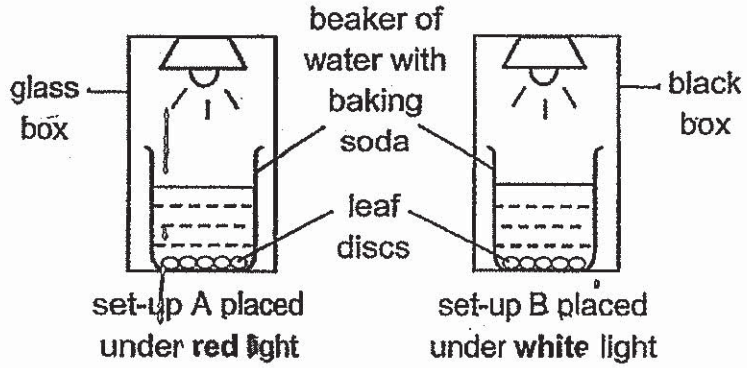
246

32. Karen wanted to find out if plants can photosynthesise faster under red light. She set up an experiment using leaf discs of similar size punched from freshly plucked leaves of the same plant. She placed the same amount of baking soda in both beakers of water. Baking soda increases the amount of dissolved carbon dioxide in the water. The set-ups were left on a table in a brightly lit room.



Karen made sure that all the leaf discs had sunk to the bottom of the beakers before she started the experiment. The leaf discs would float to the water surface when photosynthesis had occurred. She recorded the number of leaf discs that floated to the water surface after 2 minutes.

The table below shows her results.

Colour of light	Red	White
Number of leaf discs that floated to the water surface in 2 minutes	1	0

(a) Based on her experiment above, she concluded that plants photosynthesise faster under red light. Her teacher said that her experiment was not fair. Suggest two ways in which she can improve her experiment. [2]

Improvement 1: _____

_____

Improvement 2: _____

_____

(b) Set-up B is a control set-up. Why is set-up B needed? [1]

_____

_____

(c) Bubbles of gas X were observed from the leaf disc that floated in set-up A. What could gas X be?

_____

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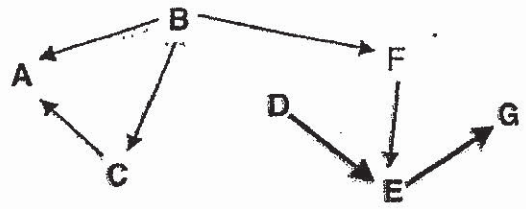
33. Study the food web below.



(a) How many food chains are there in the food web above? [1]

(b) Explain why the energy transfer along a food chain decreases. [1]

(c) Besides a prey-predator relationship, what other relationship does organism A and C have? [1]

(d) Would the removal of organism B or organism G result in a greater effect on the rest of the organisms in the food web above? Why? [1]

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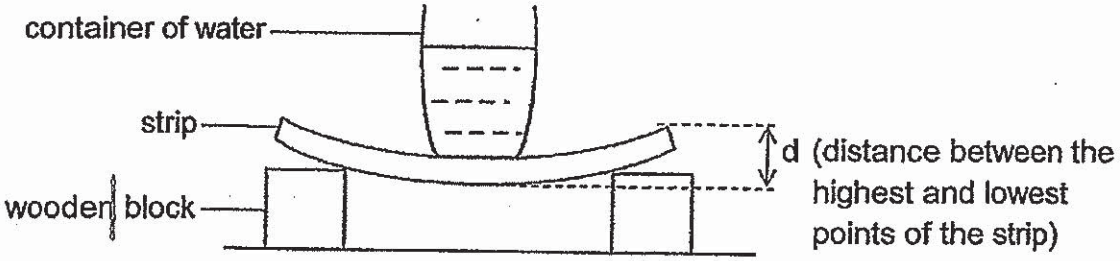
248

34. Malcom set up the experiment shown below to compare a property of four strips M, N, O and P which are made of different materials.



For each strip, he added 80 cm^3 of water into the container and measured the distance, d. He recorded the results in the table below.

Strip	Amount of water added into the container (cm^3)	d (mm)
M	80	56
N	80	34
O	80	6
P	80	18

(a) Based on the above experiment, what could be **the aim of the** experiment? [1]

_____

_____

(b) Which material M, N, O or P is most suitable for making a table top? Explain your answer. [1]

_____

_____

_____

_____

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249

35. When a ball of plasticine was added to a beaker of water, the water level rose to level X as shown in diagram 1.

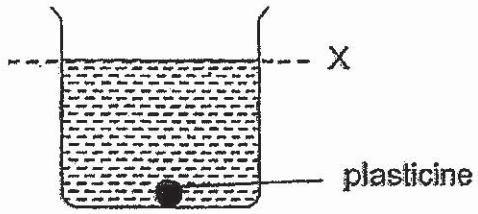

diagram 1

(a) Which property of matter allows the above observation to be made? [1]

The ball of plasticine was removed from the beaker of water and reshaped. It was then placed back to the same beaker of water.

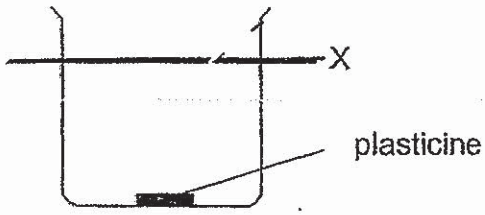

diagram 2

(b) In diagram, 2, draw the final water level after the plasticine was being placed in the beaker. [1]

(c) Explain your drawing in (b). [1]

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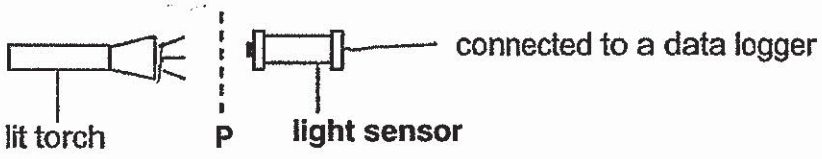
36. The set-up below is used to test for the transparency of materials. When no material is placed at position P, the light sensor shows a reading of 100 units. Materials X, Y and Z are placed at position P, one at a time, and the readings recorded by the light sensor are shown in the table below.



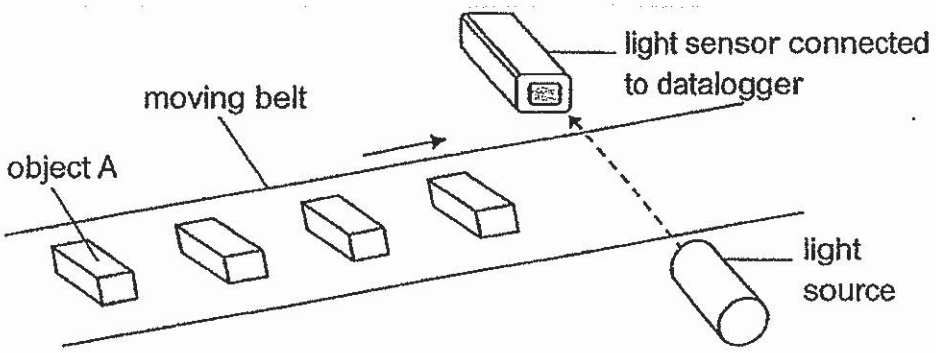
Material	Amount of light recorded (units)
X	95
Y	0
Z	50

(a) Based on the table, compare the transparency of materials **X and Z** [1]

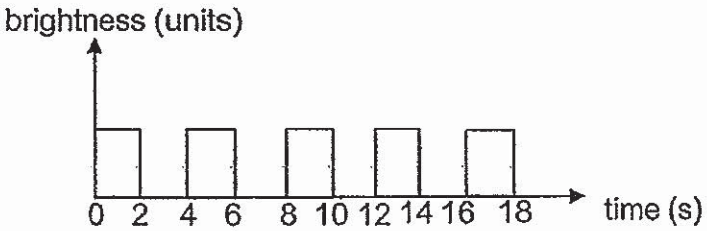
_____

_____

The set-up below shows a light sensor used to count the number of identical object A made of material Y on a moving belt.



The belt moves at a constant speed. The data recorded is shown below.



(b) Based on the graph, how many objects passed the sensor in 18 seconds? [1]

_____

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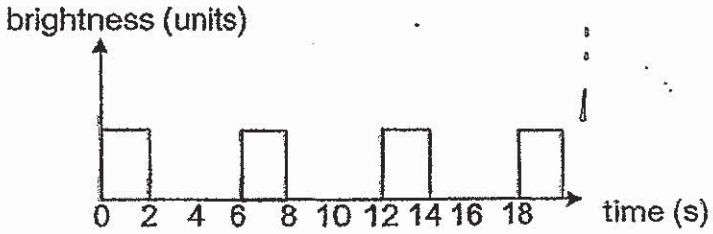
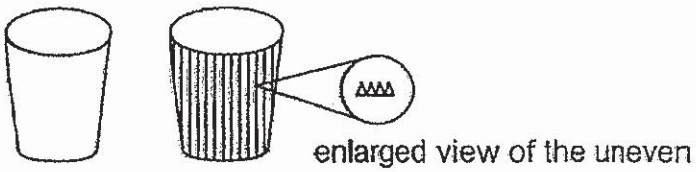
(c) The light source and the sensor are placed 5 cm above the belt. State whether an object less than 5 cm in height can be counted by the light sensor. Give a reason for your answer. [1]

When identical object B made of material Y were placed on the moving belt, the number of objects counted in 18 seconds were fewer. The data recorded is as shown below.



(d) Based on the above graph, state a difference between object A and B. [1]

37. Mandy wanted to design a cup that allowed her to hold a hot drink for a longer time. She made two designs of the cup using similar material of the same thickness as shown below. Cup A had a smooth outer surface and cup B had uneven jagged outer surface. When both cups A and B were filled with equal amount of hot milk, Mandy's hand felt less hot while holding cup B.



(a) Explain why Mandy's hand felt less hot when holding cup B. [2]

(b) State one other variable that she has to keep constant in order for the experiment to be a fair one. [1]

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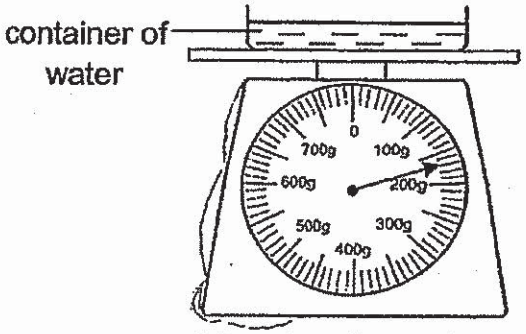
252

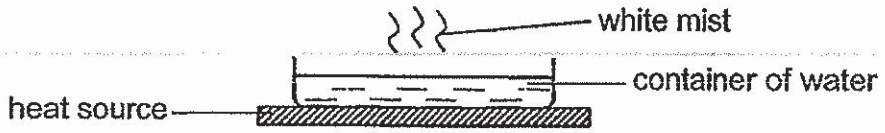
38. Sindu carried out an experiment as shown below. She noted the mass of the water at the start of the experiment before leaving the set-up in a room for five hours.



at the start of experiment

(a) After five hours, Sindu observed a change in the mass of the water. State the process that has taken place. [1]

(b) Sindu wanted to find out if the mass of the water will decrease faster when the container was placed over a heat source as shown below. After 10 minutes, she noticed that some white mist started to form over the top of the water.



Explain how this white mist was formed. [2]

(c) Would the mass of water in part (b) decrease faster or slower as compared to part (a)? Give a reason for your answer. [1]

(d) Other than the temperature of the water, state another factor that can affect the process in (a). [1]

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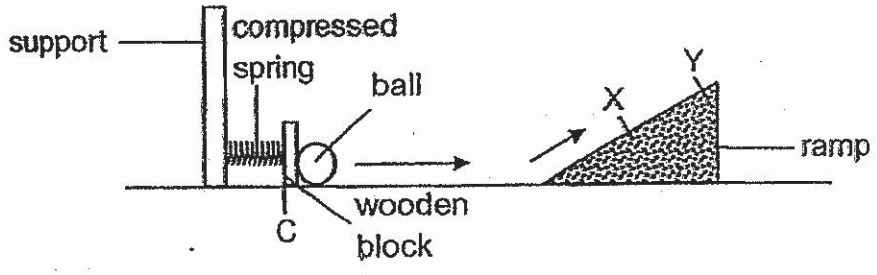
39. The set-up below shows a device which consists of a spring connected to a wooden block. When the spring was compressed to position C and released, the ball rolled up the ramp. It was observed that the ball continue rolling but stopped at point X before rolling down the ramp.



(a) Fill in the boxes to show the main energy conversion. [1]

energy (spring) | energy (rolling ball) | energy (ball at position X)

(b) Without changing the above set-up, give a suggestion that will allow the ball to roll to point Y on the ramp. Explain your suggestion in terms of energy conversion. [2]

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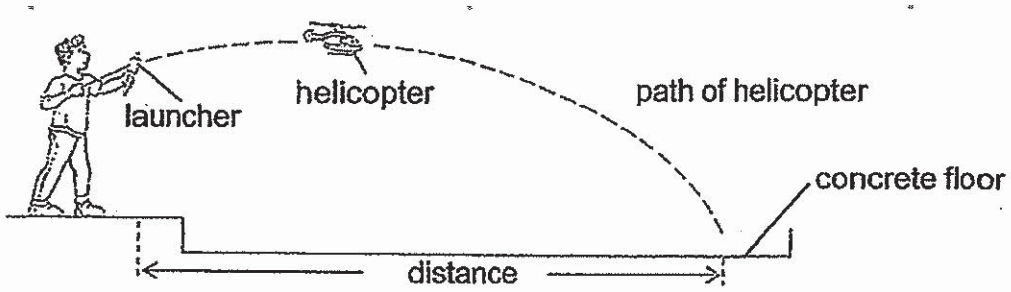
40. Khye carried out an experiment on three toy helicopters of similar size but different masses using the set-up shown below.



He launched the helicopters from the same height and angle and measured the distance moved. His results are shown below.

	Distance (cm)		
	Helicopter A (mass = 10 g)	**Helicopter B (mass = 20 g)**	**Helicopter C (mass = 30 g)**
1st try	400	350	200
2nd try	420	310	210
3rd try	380	320	230

(a) Give a reason why the distance moved by each toy helicopter is different for each try. [1]

_____

_____

(b) Based on the results, what is the relationship between the mass of the helicopter and the distance moved by it? [1]

_____

_____

(c) How can you tell that along the path of the helicopter, there is a force acting on the helicopter? [1]

_____

_____

_____

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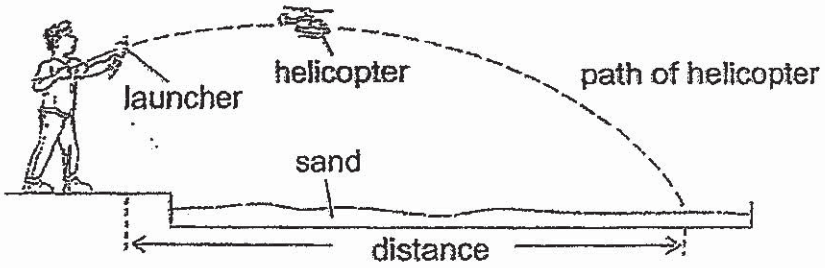
(d) Why did Khye repeat the experiment 3 times for each toy helicopter? [1]

Khye's teacher suggested that he could conduct his experiment on a sandpit in the diagram shown below.



(e) Suggest how does the sandpit help him measure the distance moved by the helicopter more accurately? [1]

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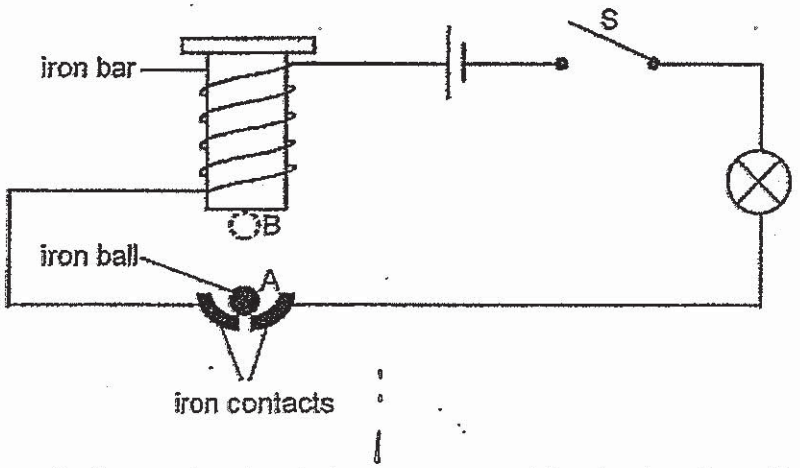
41. Study the circuit shown below. When switch S was closed, the iron ball moved up and down between points A and B, and the light bulb was lit and unlit repeatedly.



(a) When the iron ball was at point A, it was attracted by the iron bar. Explain this observation.

_____

_____

_____

(b) Would the light bulb be lit or unlit when the metal ball is at point A and B? [1]

Point A: _____

Point B: _____

Another metal ball was used to replace the iron ball. When switch S was closed, the metal ball remained at point A and the bulb was lit.

(c) Based on the above observation, state two properties of the metal ball. [1]

Property 1: _____

Property 2: _____

~ End of Booklet B ~

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICHOLAS GIRLS' SCHOOL PRI
SUBJECT : SCIENCE
TERM : MID-YEAR

BOOKLET A

Q1	4	Q2	3	Q3	4	Q4	1	Q5	3
Q6	4	Q7	1	Q8	2	Q9	3	Q10	3
Q11	3	Q12	2	Q13	4	Q14	4	Q15	4
Q16	3	Q17	1	Q18	2	Q19	3	Q20	2
Q21	4	Q22	3	Q23	3	Q24	4	Q25	1
Q26	1	Q27	3	Q28	4				

BOOKLET B

Q29a) Part A controls the activities inside the cell.

Q29b) Cell Y can move around.

Q30a) i: Animal M can obtain nectar as food
ii: Flower Q is pollinated by animal M.

Q30b) There will be lesser fruits produced by Q as there will be lesser animal M to pollinate Q, resulting in lesser fertilization.

Q31a) Decomposition

Q31b) Humidity

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Q31c) The next batch of plants can grow healthier.

Q32a) Improvement 1: Use a black box instead of a glass box for set-up A.

Improvement 2: Give a longer duration for leaf discs to float to the top of the beaker instead of 2 minutes.

Q32b) To show that any changes in the number of floating leaf discs is solely due to the presence of red light.

Q32c) Oxygen

Q33a) 4 food chains

Q33b) Energy is used to carry out life processes.

Q33c) They are competitors for food.

Q33d) The removal of organism B. B is a food producer which provides food and energy directly or indirectly to most of the others except D.

Q34a) To find out which material bends the most/least.

Q34b) Material D. It bent the least when holding the same amount of water, showing that it is least flexible and sturdy enough to be made into a table-top.

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Q35a) Matter has mass/occupy space/has volume.

Q35b) (DRAW SAME LINE AS X)

Q35c) Though the plasticine has changed shape, its volume remained the same.

Q36a) Material X allows more light to pass through compared to Material Z.

Q36b) 4

Q36c) No. Objects lesser than 5cm in height would not be able to block light and hence the light sensor would not be able to record any readings.

Q36b) Object B is bigger/larger in size/has longer width than Object A.

Q37a) Cup B has a smaller surface area in contact with her hand. Thus, her hand gained lesser heat from the hot milk.

Q37b) Duration of holding both cups/ Size of cup to be constant/ Temperature of milk at start of experiment

Q38a) Evaporation

Q38b) The water from the container gained heat from heat source to become hot water vapour. The hot water vapour touches the cooler surrounding air, loses heat and condenses to become tiny water droplets.

Q38c) The mass of water will decrease faster. The water gained heat from the heat source and hence rate of evaporation was faster.

Q38d) ↳ Presence of wind ↳ Humidity of surroundings
↳ exposed surface of water ↳ surrounding temperature.

Q39a) Elastic potential > Kinetic > Gravitational potential

Q39b) Compress the spring further towards the support. More elastic potential energy will be converted to more kinetic energy to allow the ball to roll higher.

Q40a) The force used to launch the helicopter was different.

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261

Q40b) The larger the mass of the helicopter, the shorter the distance moved.

Q40c) The push force from the launcher caused the helicopter to move forward.

Q40d) He repeated his experiment, so the results are more reliable.

Q40e) There would be a marking on the sand where the helicopter first land, so it would be easier to measure the distance.

Q41a) There is a close circuit and electric current could flow through the circuit, so the iron bar is magnetised and attracts the ball.

Q41b) Point A: Lit Point B: Unlit

Q41c) Property 1: It is an electrical conductor
Property 2: It is a non-magnetic material.

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END

HENRY PARK PRIMARY SCHOOL

FIRST SEMESTRAL ASSESSMENT 2019

PRIMARY 6

SCIENCE

BOOKLET A (56 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.

Name: _____ ( )

Class: Primary 6 ( )

Date: 22 May 2019

Total Time: 1 h 45 min

Booklet	Marks	
A		/ 56
B		/ 44
Total (A+B)		/ 100

Parent's Signature: _____

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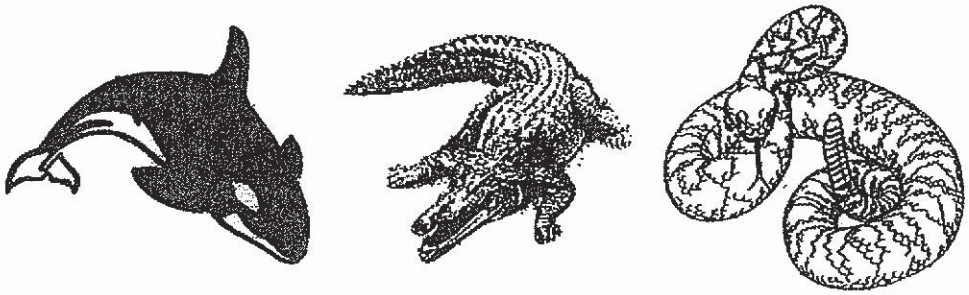
Booklet A (56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the **Optical Answer Sheet**.

---

1. Study the organisms shown below.



Which characteristic(s) do all three animals have in common?

A: lay eggs

B: have lungs

C: have scaly skin

D: give birth to their young alive

(1) A only

(2) B only

(3) A and C only

(4) B and D only

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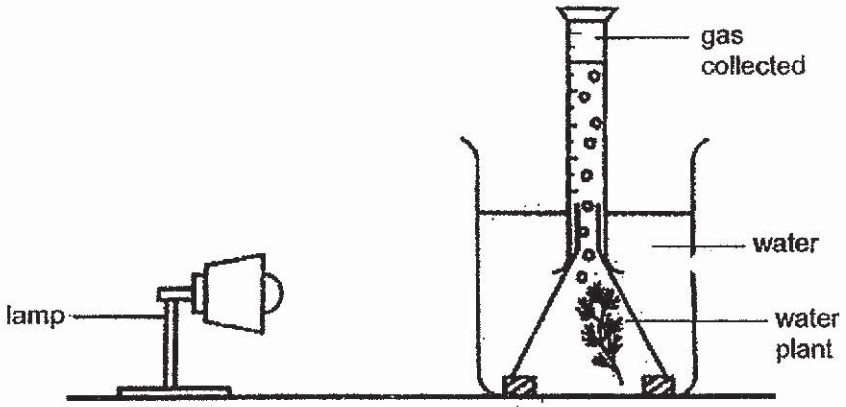
265

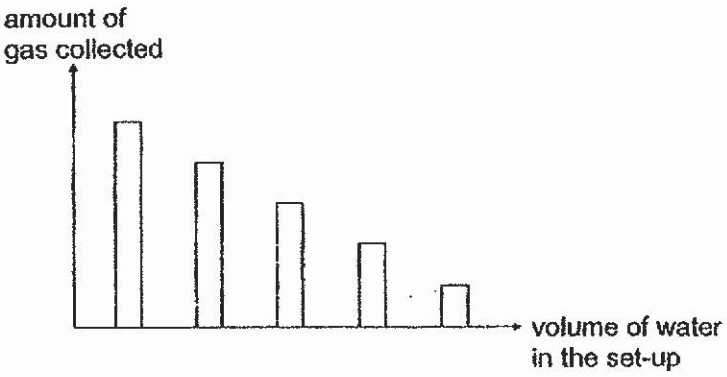
2. Amery conducted an experiment on photosynthesis in a dark room using the set-up below. She measured the amount of gas collected in the measuring cylinder after some time.



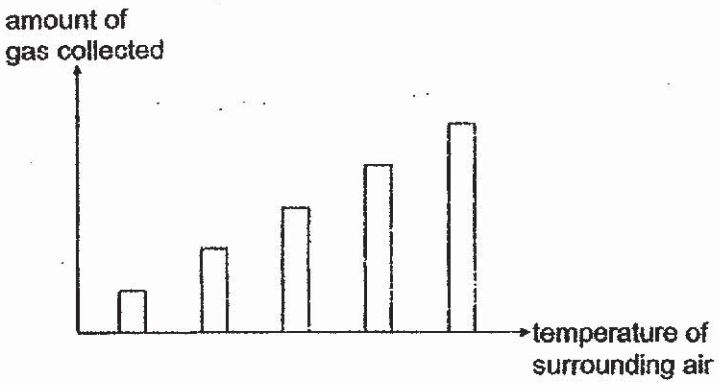
The graphs below show the amount of gas collected plotted against different variables.

Which of the following graphs shows the correct amount of gas collected?

(1)



(2)



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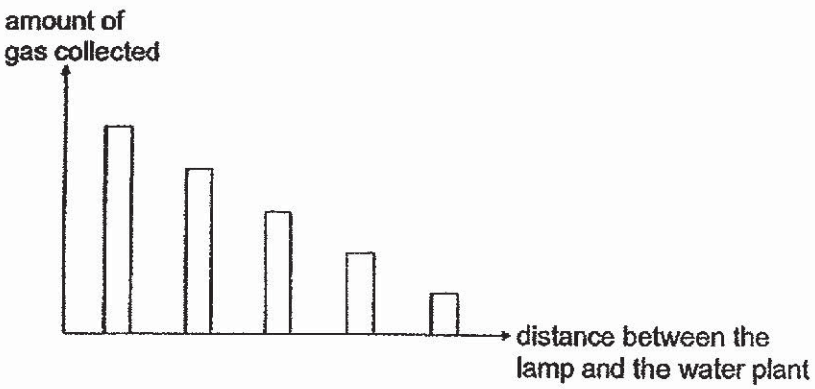
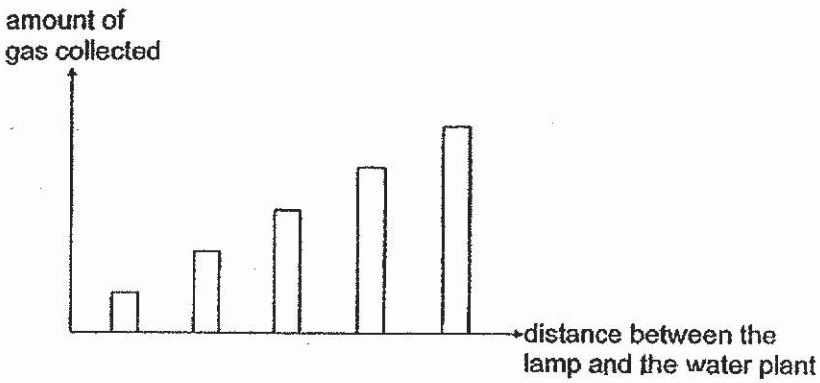
266

(3)



(4)



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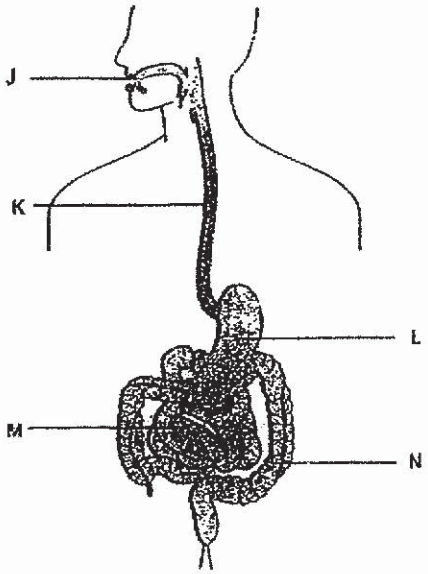
267

3. The diagram below shows the human digestive system.



Where does digestion take place?

(1) J, K and L only
(2) J, L and M only
(3) K, L and M only
(4) L, M and N only

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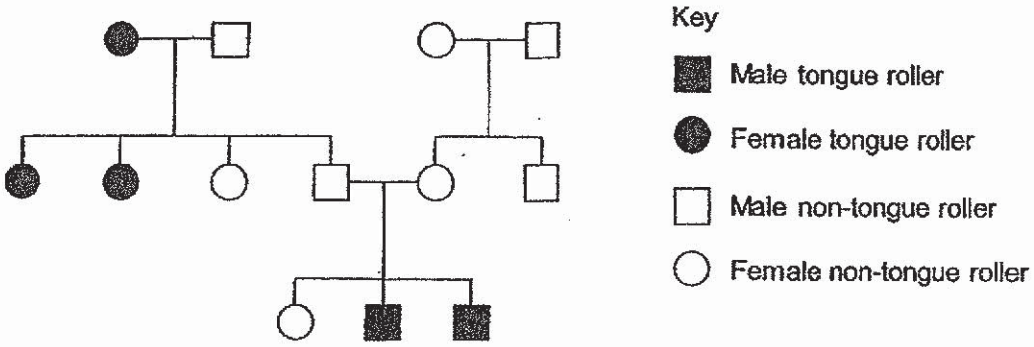
268

4. The diagram shows Peter's family tree. The members of the family are either tongue rollers or non-tongue rollers.



Which one of the following statements about the family tree is correct?

(1) Peter's parents are tongue rollers.

(2) Peter and his siblings are all tongue-rollers.

(3) Both Peter's grandfathers are tongue rollers.

(4) Peter's father has a sister who is a non-tongue roller.

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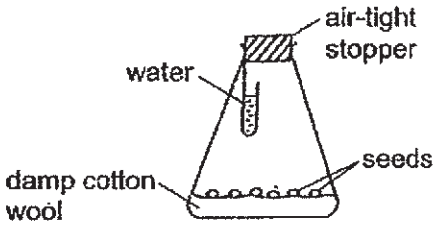
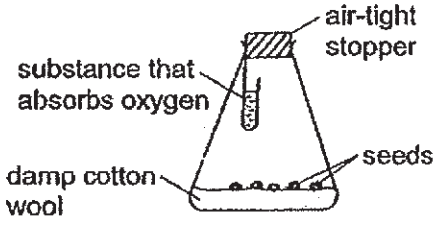
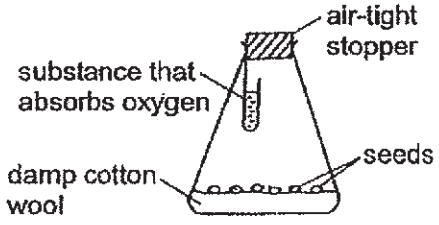
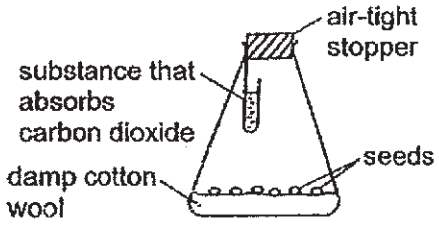
5. Julia conducted an experiment to find out whether oxygen is needed for the germination of seeds.

Which of the following set-ups are the most suitable for conducting a fair test?

A	
B	
C	
D	

(1) A and B only

(2) A and C only

(3) A and D only

(4) C and D only

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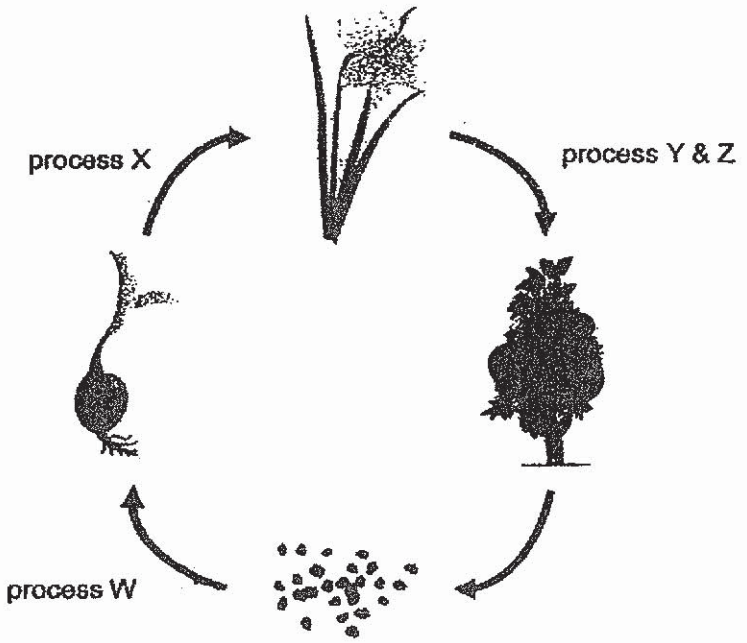
270

6. The diagram shows the life cycle of a flowering plant.



Which of the process(es) would be able to take place if light is not present?

(1) W only
(2) Y and Z only
(3) W and X only
(4) X, Y and Z only

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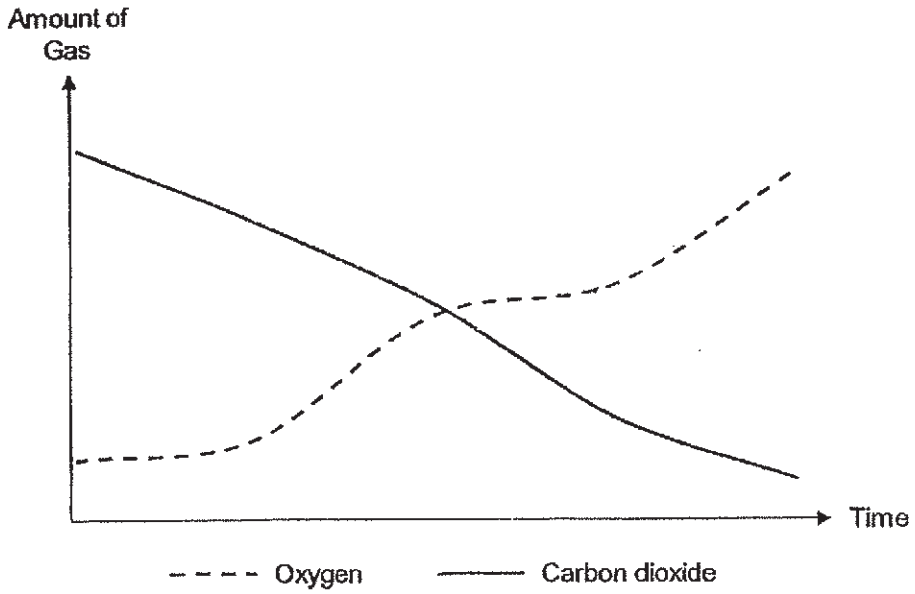
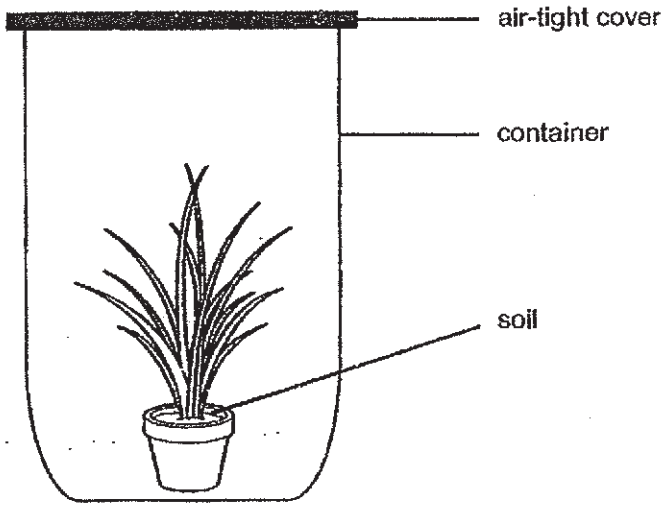
271

7. Joel wanted to know how the amount of oxygen and carbon dioxide changes inside a sealed container as the plant is left under the sun. Using his results from the experiment, he plotted the graph below.



Which set-up best describes the material of the container and the soil used in the experiment?



	soil	container
(1)	moist	clear glass
(2)	moist	ceramic
(3)	dry	ceramic
(4)	dry	clear glass

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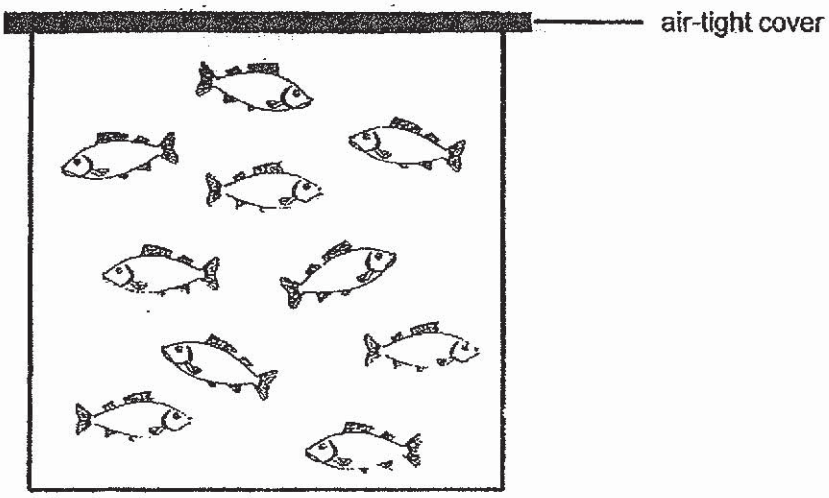
272

8. Zoe released several fish into a fish tank as shown below.



She fed the fish and observed them daily. She then noticed that the number of live fish in the tank decreased as the days passed.

She stated the following reasons to explain the decreasing number of fish in the tank.

A: There was insufficient water in the tank.

B: There was insufficient space in the tank.

C: There was insufficient food in the water in the tank.

D: There was insufficient oxygen in the water in the tank.

Which of the statement(s) is/are correct?

(1) C only

(2) D only

(3) A, B and D only

(4) A, B, C and D

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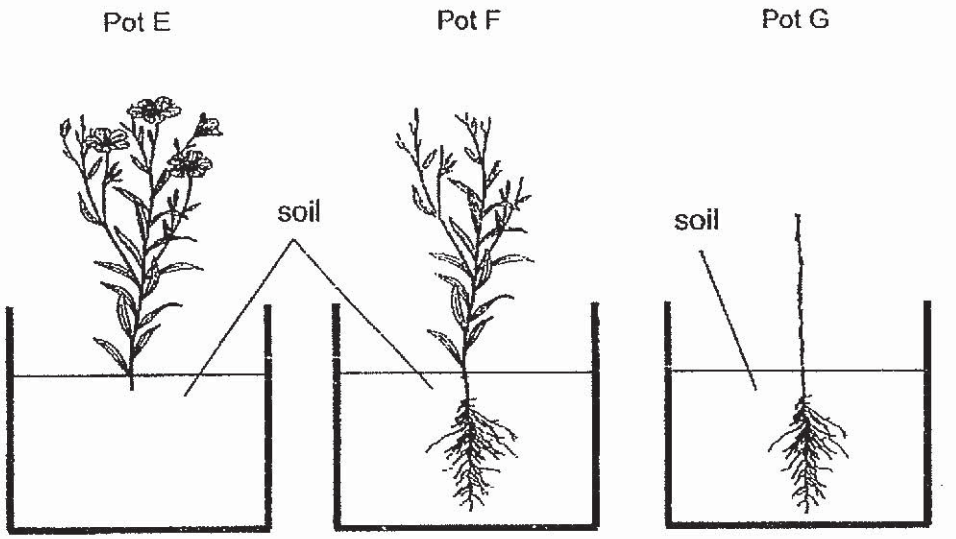
9. Which of the following action(s) does/do **not** contribute to water pollution directly?

A: burning of fossil fuel for electricity
B: release of sewage into water bodies
C: excessive use of fertilisers during planting of crops

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

10. Adrianne wanted to know how the different parts of the plant affect the ability of the plant to make food. She removed different plant parts from each plant. She then placed the pots of plants in the garden where there was plenty of sunlight and watered them regularly with the same amount of water.



all the roots were removed	all the flowers were removed	all the leaves and flowers were removed

Which of the following pots of plants died after a week if the removed parts did not regrow?

(1) E and F
(2) E and G
(3) F and G
(4) E, F and G

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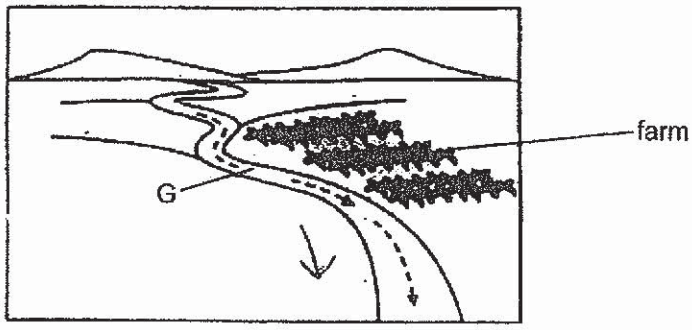
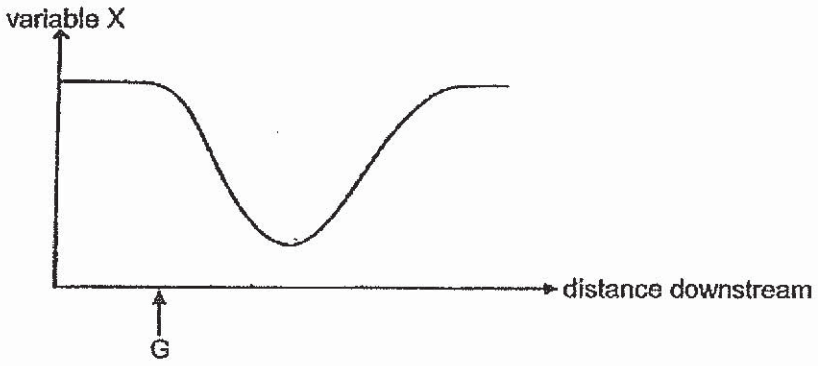
274

11. A large amount of fertiliser from a farm flows into a nearby river at point G. The arrow shows the direction in which the river flows.



After some time, fully-submerged water plants living in the river after point G died.
The graph below represents the effect of fertiliser entering the river at G.



What could variable X be?

(1) amount of floating plants
(2) amount of oxygen in water
(3) amount of bacteria in water
(4) amount of nutrients in water

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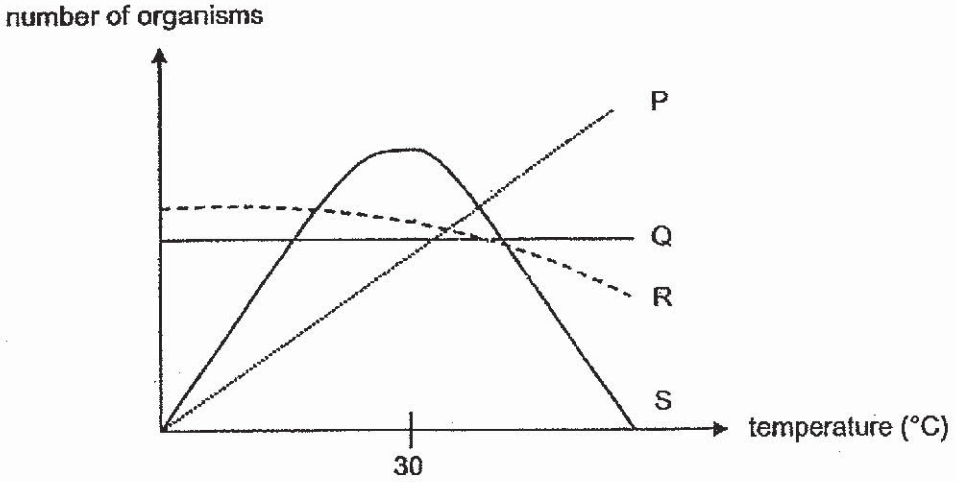
275

12. The graph below shows the effect of temperature on the number of organisms P, Q, R and S.



Four pupils made some conclusions.

Amy: Only Organism P grows better in high temperatures than in low temperatures.

Ben: Organism Q grows better in low temperatures than in high temperatures.

Chris: Organism R grows better than organism P at 30 °C.

David: Organism S grows the best in high temperatures as compared to organisms P, Q and R.

Whose conclusion(s) is/are correct?

(1) David only
(2) Amy and Chris only
(3) Ben and Chris only
(4) Amy, Ben and David only

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276

13. Which of the following statements about deforestation is **not** correct?

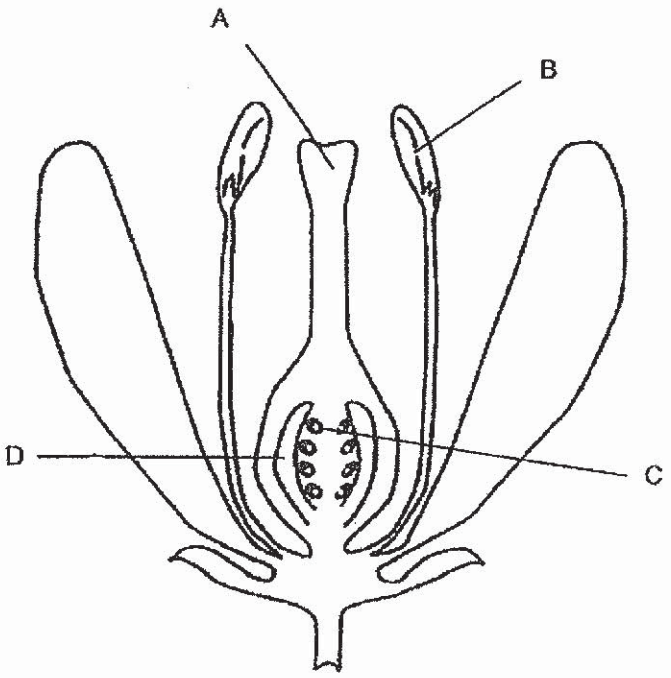
(1) Deforestation increases the rate of soil erosion.

(2) Deforestation decreases the rate of extinction of animals.

(3) Deforestation decreases the reproduction of plants in the area.

(4) Deforestation increases the amount of carbon dioxide in the atmosphere.

14. Royce conducted an experiment with a flower on a plant.



He removed parts of the flower. The flower could **not** develop into a fruit after that. Which part(s) of the flower A, B, C or D did Royce remove?

(1) A only

(2) B only

(3) A and B

(4) C and D

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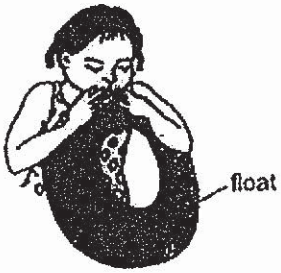
15. The diagrams below show Jenny blowing air into a float and then sitting on it in water.



Based on what Jenny has done, which of the following shows correctly the properties of the material used to make the float?

	Properties				
	light	**waterproof**	**flexible**	**colourful**	**transparent**
(1)	✓	✓	✓		
(2)	✓	✓	✓		✓
(3)	✓		✓	✓	
(4)	✓	✓		✓	✓

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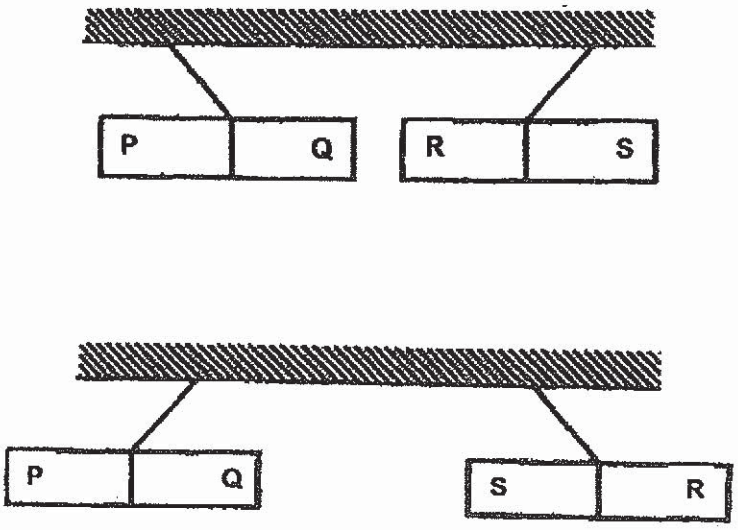
278

16. The diagram below shows what happens when 2 bar magnets, PQ and RS, are brought near to each other.



Which of the following statements are correct about the likely poles of the 2 magnets?

A: P and R are north poles while Q and S are south poles.

B: Q and S are north poles while P and R are south poles.

C: P and S are north poles while Q and R are south poles.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

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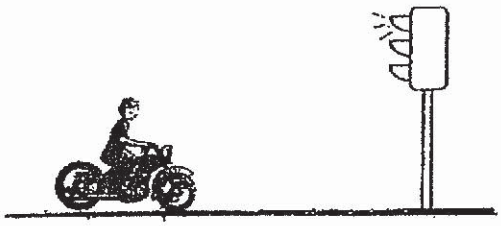
17. The diagram below shows a motorcyclist getting ready to stop at a traffic light that has turned red.



Which one of the following statements explains correctly why the motorcyclist is able to see the red light?

(1) The traffic light gives out light.

(2) The traffic light is higher than him.

(3) His eyes reflect light to the traffic light.

(4) Red light is more easily seen than green light.

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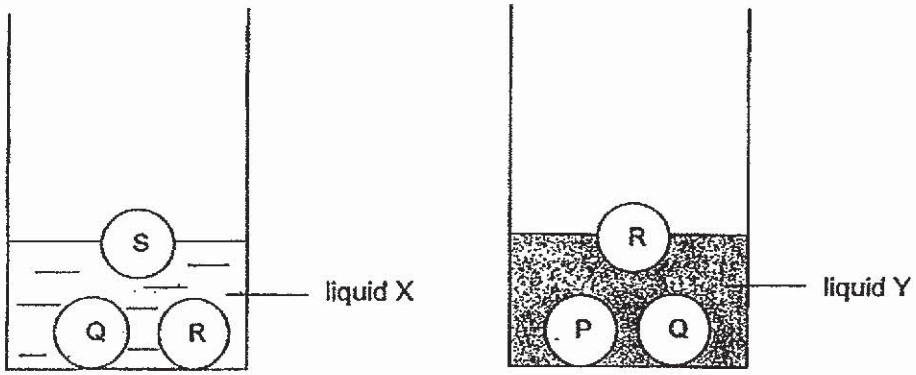
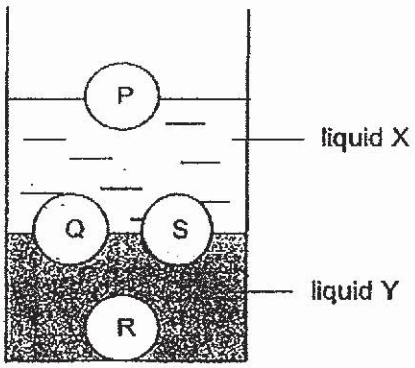
280

18. Four similar balls of different materials, P, Q, R and S, were placed in liquids X and Y. The balls stayed at the positions as shown below.

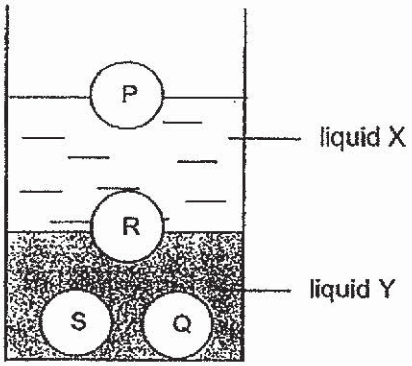


Liquid X and liquid Y do not mix together. When they were poured into a container, liquid X floated on top of liquid Y. If similar balls of materials P, Q, R and S were added to this container, which one of the following diagrams would show their correct positions?

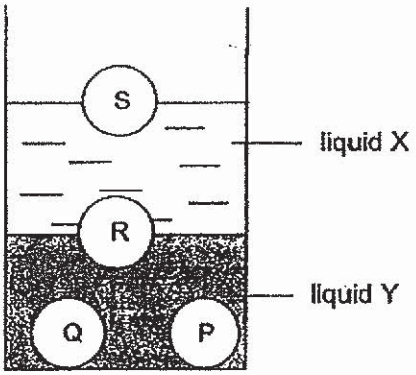
(1)



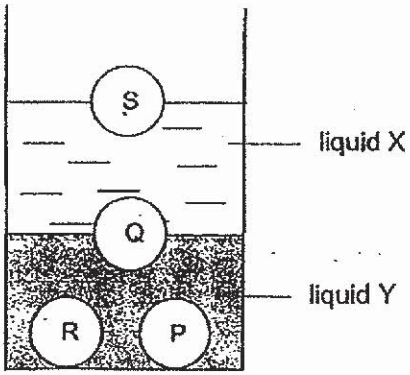
(2)



(3)



(4)



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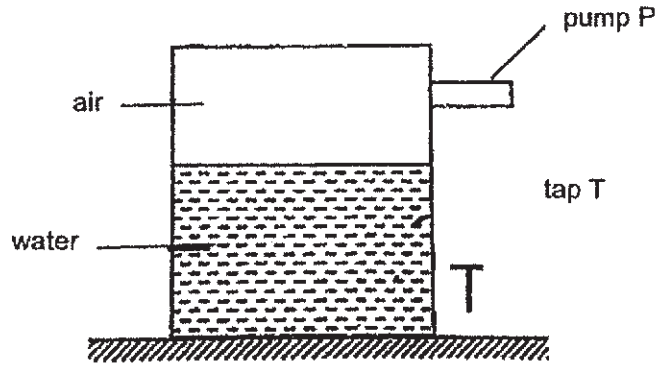
281

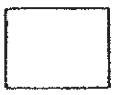
19. The diagram below shows a sealed metal container which had 60 cm^3 of water and 40 cm^3 of air.



20 cm^3 of water was removed from the container through tap T and 100 cm^3 of air was then pumped in using pump P.

Which of the following shows correctly the change in the mass and volume of water and air in the container?

	air		water	
	mass	**volume**	**mass**	**volume**
(1)	increased	no change	decreased	decreased
(2)	decreased	increased	no change	increased
(3)	Increased	increased	decreased	decreased
(4)	no change	no change	decreased	increased



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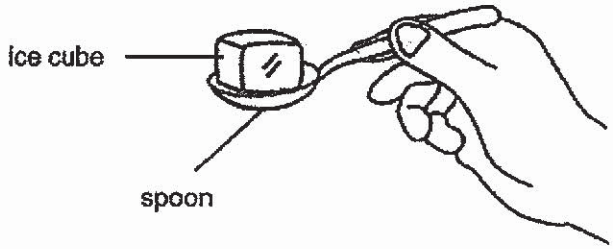
282

20. Agnes was holding a metal spoon with an ice cube as shown below.



After a while, she felt that the spoon was cold.

Which one of the following statements explains why Agnes felt that the spoon was cold?

(1) The spoon lost heat to the ice and her fingers.
(2) The spoon gained heat from the ice and her fingers.
(3) The spoon gained heat from her fingers but lost heat to the ice.
(4) The spoon lost heat to her fingers but gained heat from the ice.

21. Three substances, A, B and C, have the following properties.

Substance A freezes at 0°C and boils at 100°C.
Substance B melts at 10°C and boils at 200°C.
Substance C has a high melting point of 1000°C.

Which of the following shows the state of substance A, B and C are likely to be at a temperature of 280°C?

	A	B	C
(1)	liquid	solid	solid
(2)	solid	liquid	gas
(3)	liquid	gas	gas
(4)	gas	gas	solid

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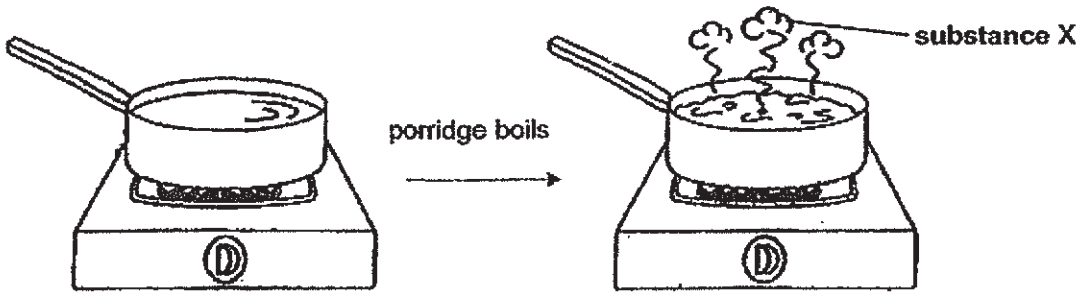
283

22. Mrs Chong is cooking porridge on a stove. When the porridge boils, substance X is formed as shown in the diagram below.



Which of the following shows correctly the state of substance X and the transfer of heat during the process of forming substance X.

	state of substance X	transfer of heat during the process of forming substance X
(1)	liquid	heat gain
(2)	liquid	heat loss
(3)	gas	heat gain
(4)	gas	heat loss

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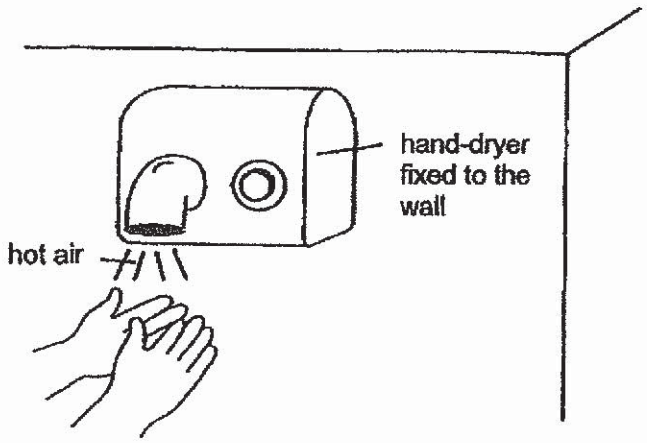
23. Rajah dries his wet hands under a hand-dryer as shown in the diagram below.



Which one of the following statements are correct?

A: Wind enables Raju's hands to dry more quickly.
B: Water first evaporates and then condenses on Raju's hands.
C: Heat is transferred from the air of the hand-dryer to the water on Raju's hands.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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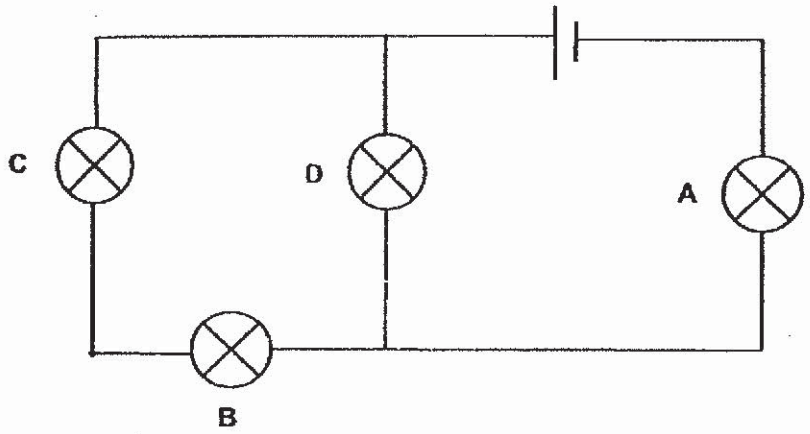
285

24. A circuit is set up as shown below. All the bulbs light up.



All of a sudden, 2 bulbs fuse but the remaining 2 remain lighted.
Which 2 bulbs have fused?

(1) A and B
(2) A and D
(3) B and C
(4) C and D

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25. When a toy canon is fired, it moves up the slope from P to Q as shown in Diagram 1. The cannon then moves back from Q to P on its own as shown in Diagram 2.

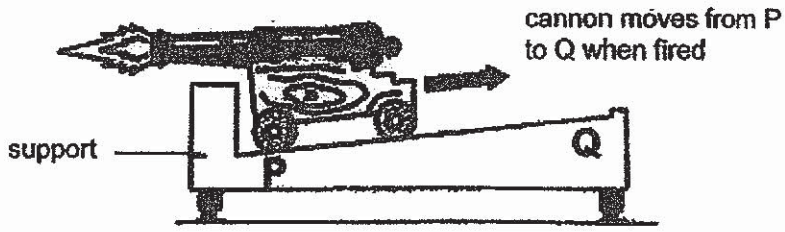

Diagram 1

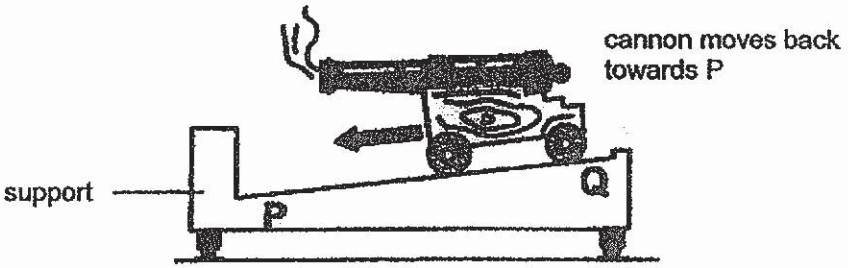

Diagram 2

Which one of the following shows correctly the change in the potential energy and kinetic energy of the cannon as it moves from P to Q and then back from Q to P?

	P to Q		Q to P	
	potential energy	kinetic energy	potential energy	kinetic energy
(1)	increases	decreases	decreases	increases
(2)	increases	increases	decreases	decreases
(3)	decreases	increases	increases	decreases
(4)	decreases	decreases	increases	increases

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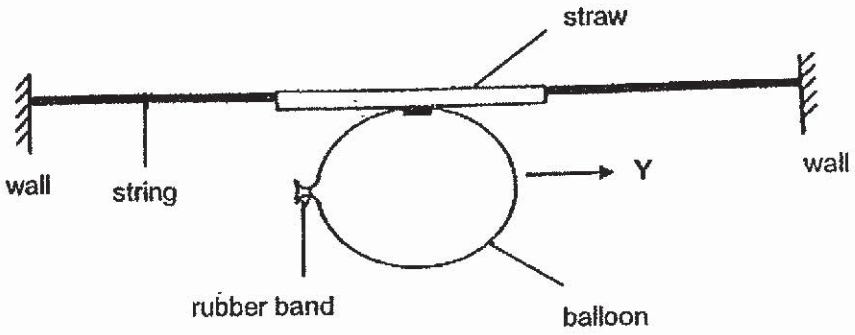
26. Bala glued a balloon to a straw and passed a string through the straw as shown below.



When he removed the rubber band, air rushed out of the balloon, causing the balloon and the straw to move in direction Y.

Which of the following shows correctly the energy conversion in the above experiment?

(1) elastic potential energy → kinetic energy → kinetic energy + sound energy

(2) heat energy → kinetic energy → kinetic energy + sound energy

(3) sound energy → kinetic energy → elastic potential energy + heat energy

(4) kinetic energy → gravitational potential energy → kinetic energy + sound energy

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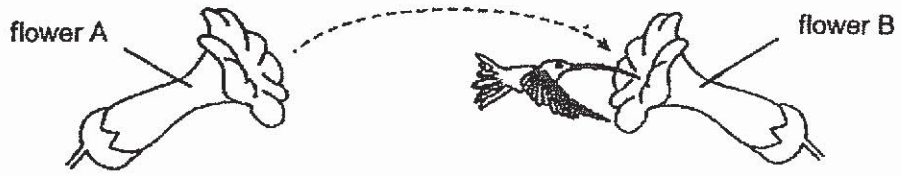
27. The diagram below shows a bird flying from flower A to flower B.

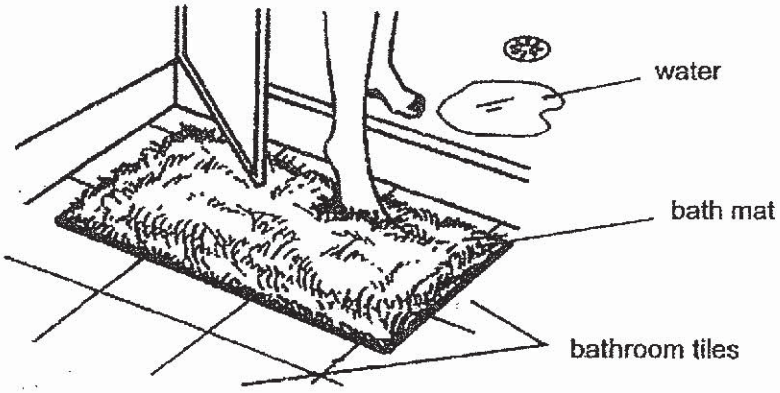


Which of the following force(s) is/are acting on the bird?

A: gravitational force
B: frictional force
C: magnetic force

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

28. Aunt Lilian placed a bath mat outside a bathroom to prevent herself from slipping when she comes out immediately from the bathroom.



How does the bath mat prevent Aunt Lilian from slipping?

(1) It supports her whole body weight.
(2) It enables her to see the tiles more clearly.
(3) It increases friction between her feet and the tiles.
(4) It prevents water from being splattered from the bathroom.

End of Booklet A

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289

HENRY PARK PRIMARY SCHOOL

FIRST SEMESTRAL ASSESSMENT 2019

PRIMARY 6

SCIENCE

BOOKLET B (44 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.

Name: _____ ( )

Class: Primary 6 ( )

Date: 22 May 2019

Total Time: 1 h 45 min

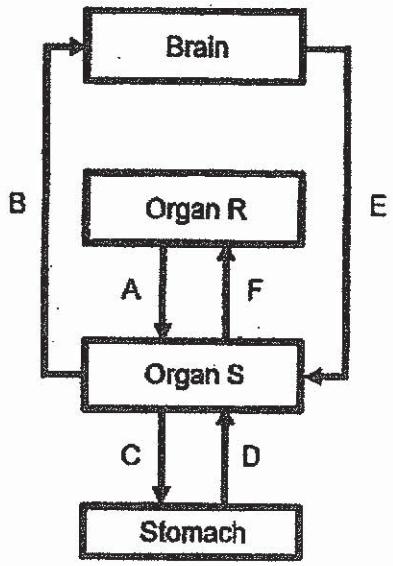
Marks for Booklet B: __ _____ __

Booklet B (44 marks)

Write your answers to questions 29 to 41 in the spaces given.

---

29. The diagram shows how blood travels in the human body.



Arrows A, B, C, D, E and F represent the movement of blood R and S represent two organs that assist in the movement of blood.

a) Name organs R and S. [1]

Organ R: _____

Organ S: _____

b) The blood at B contains a larger amount of substance X than at E. [2]

What is substance X? Explain your answer.

_____

_____

_____

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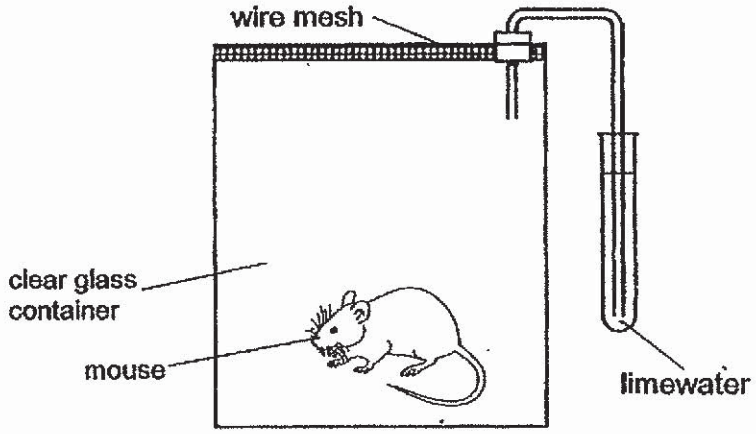
292

30. Brandon set up an experiment as shown below with a clear glass container and a plant. He left the set-up under the sun for two hours.

In the presence of carbon dioxide, the colourless limewater turns cloudy.

a) Will the limewater turn cloudy after two hours? Give a reason for your answer. [1]

He repeated the experiment with another set-up shown in the diagram below.



b) After two hours, Brandon noticed that the limewater remained colourless. [1]
Explain why.

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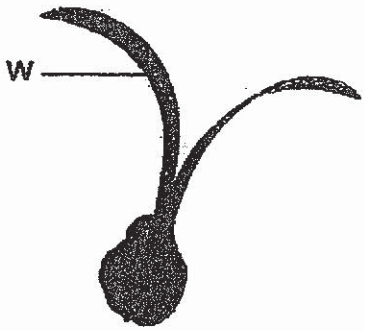
293

31. The picture below shows a seed from a tree in a garden.



a) Explain how part W helps the seed in its dispersal. [2]

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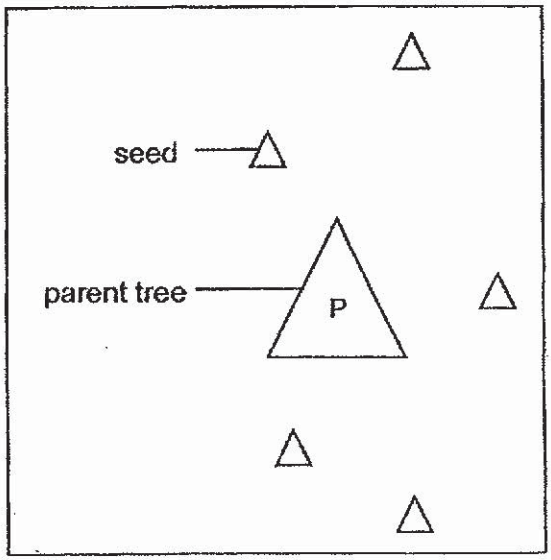
294

Question 31 continues on this page

Shanti collected some dispersed seeds around the tree as shown in the diagram below.



She recorded the distance between the seeds and the tree in the table below.

	seed 1	seed 2	seed 3	seed 4	seed 5
distance (m)	52.3	60.6	43.1	71.2	41.8
area of part W (cm^2)	5.3	7.2	4.3	7.9	4.1

b) What is the relationship between the area of part W and the distance the seed was dispersed? [1]

_____

_____

c) Other than the area of part W, state one **other** variable that will affect the distance the seed was dispersed. [1]

_____

_____

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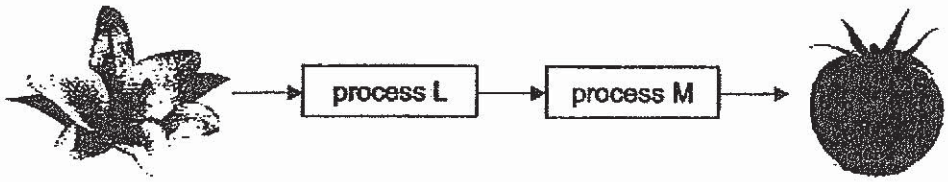
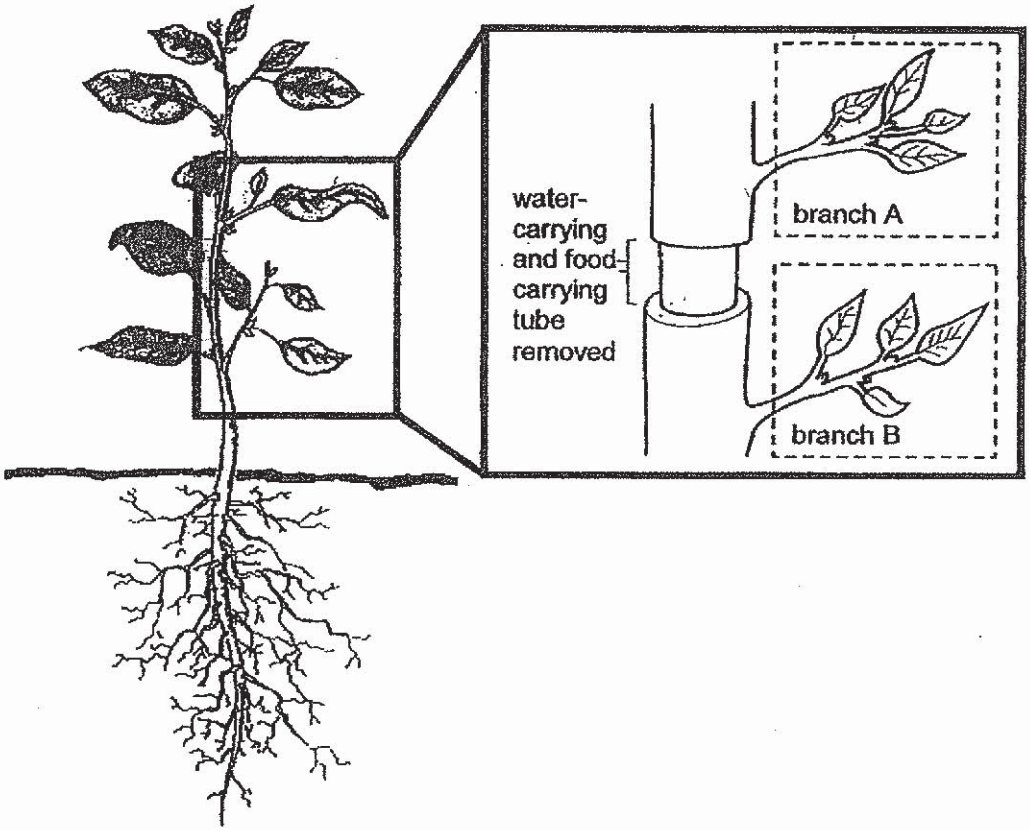
32. The diagram shows how a fruit is formed in a flowering plant.



Name and describe process M. [2]

33. A ring of bark between two branches (A and B) of a plant was removed, as shown below.



a) What will happen to the leaves on branch A after a few days under the sun? Explain your answer. [2]

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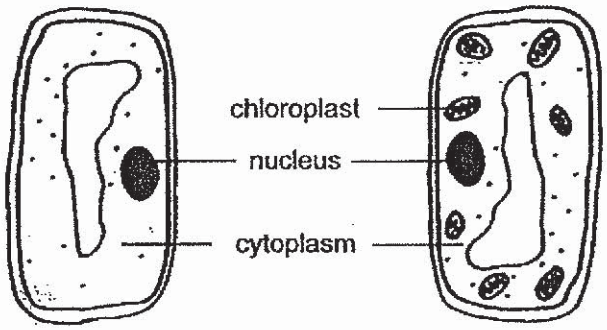
296

Question 33 continues on this page

Robin observed cell G and H from different parts of a plant.



b) State where cell G and H could be found in the plant and explain why. [2]

Cell G: _____

_____

Cell H: _____

_____

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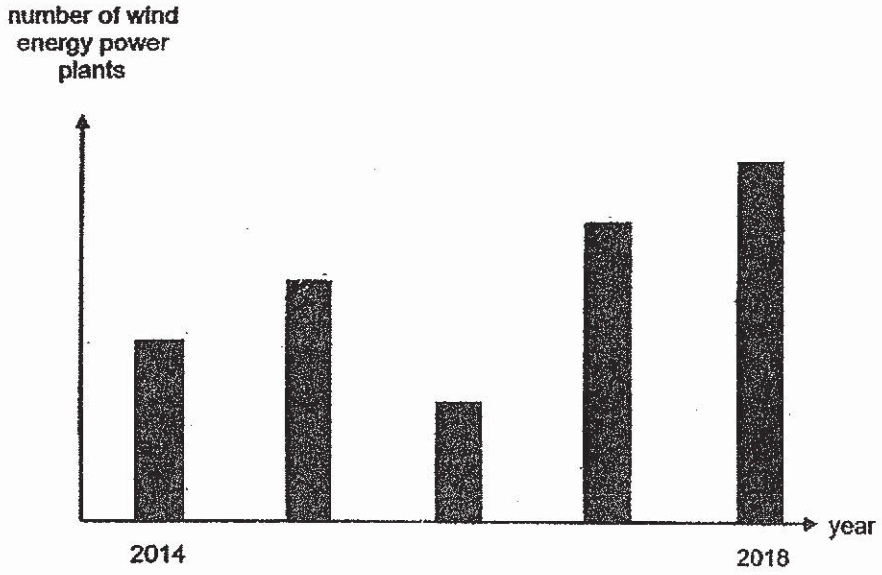
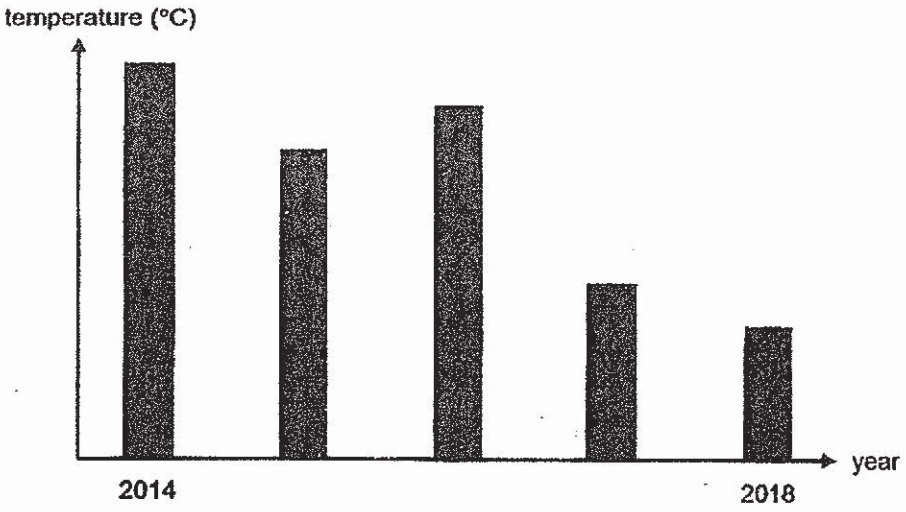
34. Wind energy power plants use wind to generate electricity.

Graphs A and B show the number of wind energy power plants and the temperature of the environment in city S.



Graph A



Graph B

a) Explain how the number of wind energy power plants affects the temperature of the environment in city S. [2]

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Question 34 continues on this page

b) Suggest how the use of electric vehicles and bicycles benefits the environment. [2]

Benefit 1: _____

_____

Benefit 2: _____

_____

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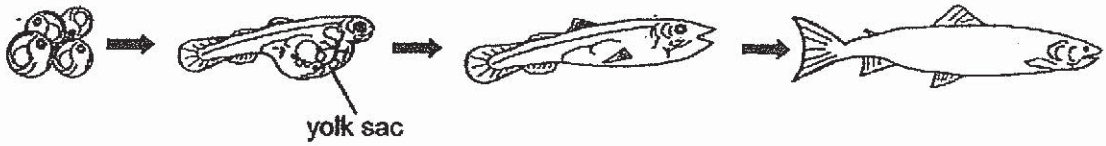
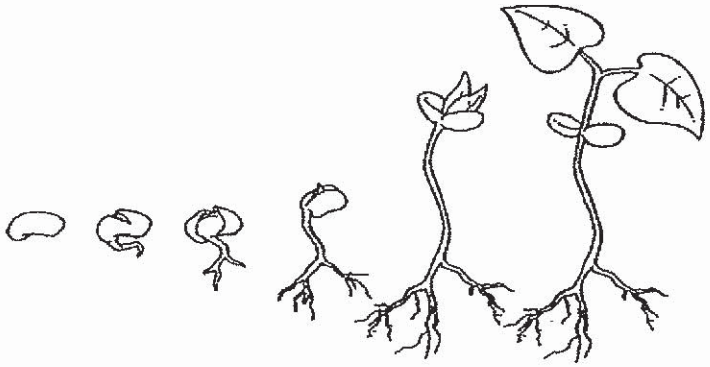
35. Read the short article on the life cycle of a salmon shown in the diagrams below.

> The salmon starts its life as an egg. The just-hatched fish is called an *alevin* and still has the yolk sac attached to its body. When its yolk sac is absorbed and it begins to swim freely, it is called a *fry*. As the salmon matures into an adult, it starts feeding on microscopic animals and aquatic insects.



eggs alevin fry adult

The diagram below shows the life cycle of a bean plant.



a) Explain how the way an alevin obtains its food is similar to the way a seed obtains its food during germination. [1]

_____

_____

_____

b) Name the conditions necessary for germination [1]

_____

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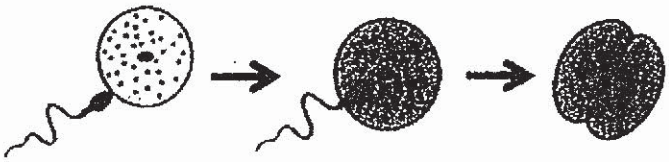
300

Question 35 continues on this page

c) Ben and Dan are identical twins. They have attached earlobes like their father.



Using the diagram given, explain how Ben and Dan inherited the trait from their father. [2]

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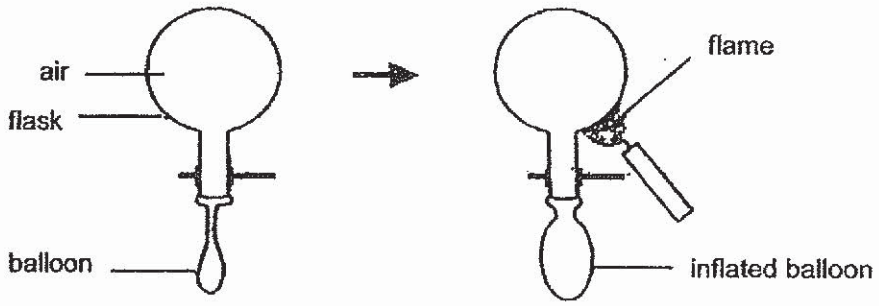
301

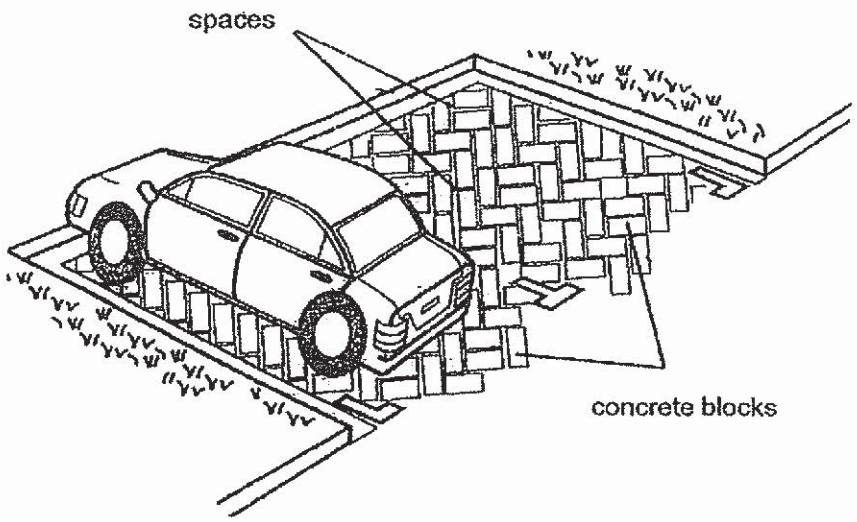
36. Matthew conducted an experiment shown below.



a) What does Matthew's experiment show about heat and the property of air? [1]

_____

The diagram below shows carpark lots which are often covered with concrete blocks with spaces between them.



b) Explain why there are spaces between the concrete blocks. [2]

_____

_____

_____

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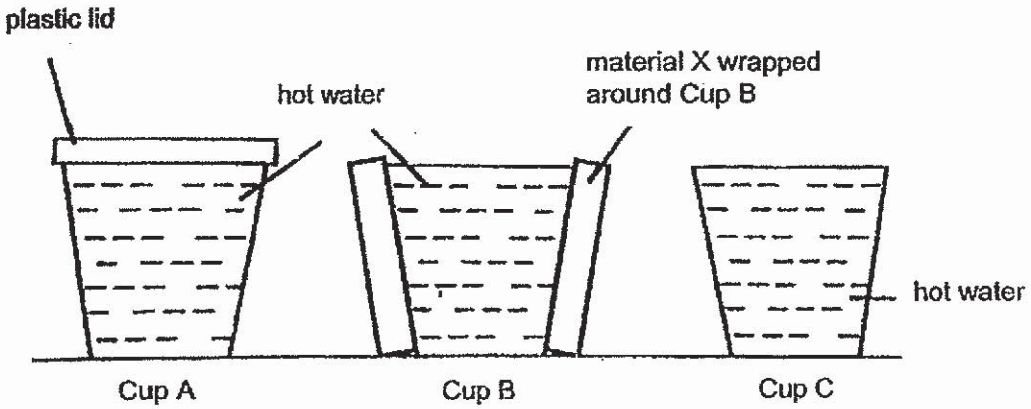
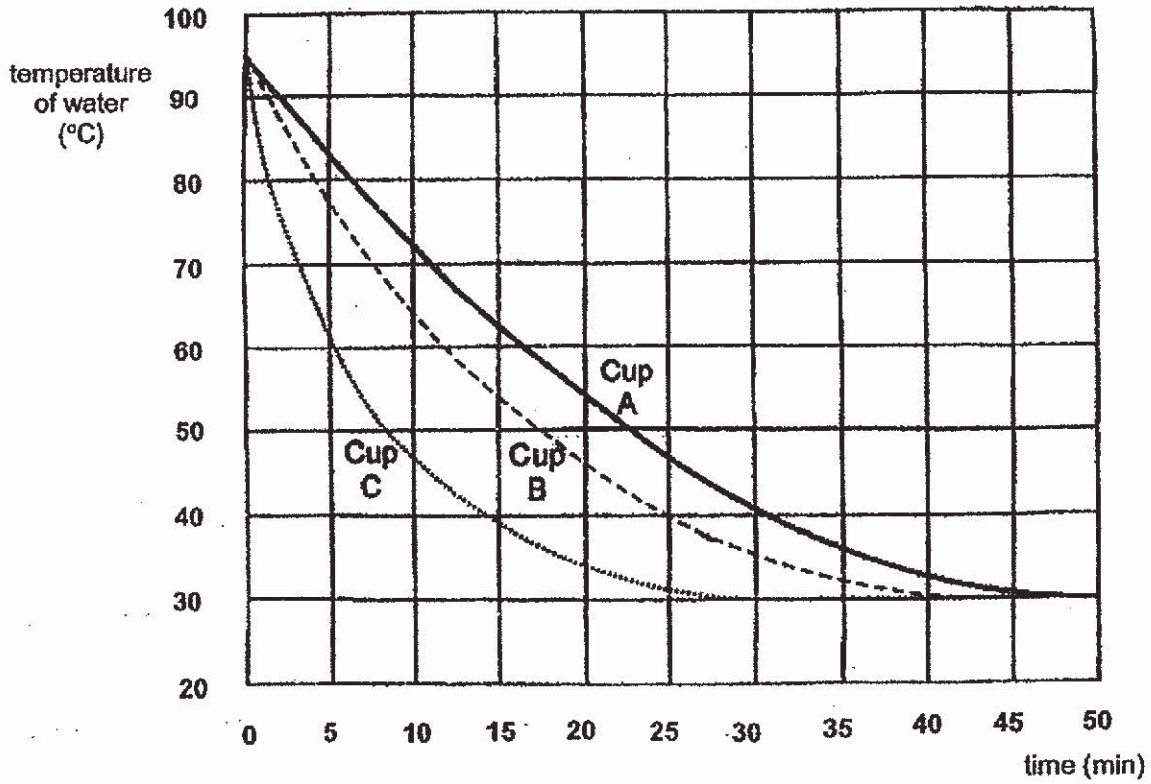
37. Sally wanted to find out which is the best way to keep water warm using the set-up shown below She poured equal amount of hot water into three similar paper cups.



She measured the temperature of water in each cup. Her results are shown in the graph below.



(a) Sally concluded that plastic is a poorer conductor of heat than material X.

Has she made the correct conclusion? Explain your answer. [1]

_____

_____

_____

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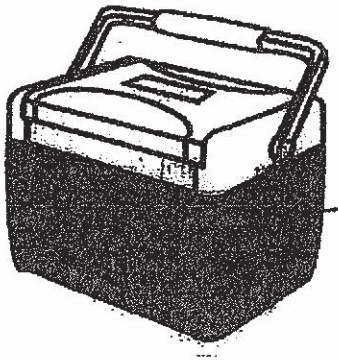
Question 37 continues on this page

b) Explain the purpose of cup C in the experiment. [1]

The container shown below is made of plastic. It can be used for keeping cold drinks and ice when going on a picnic.



c) Explain how the cold drinks can be kept cold in the plastic container. [1]

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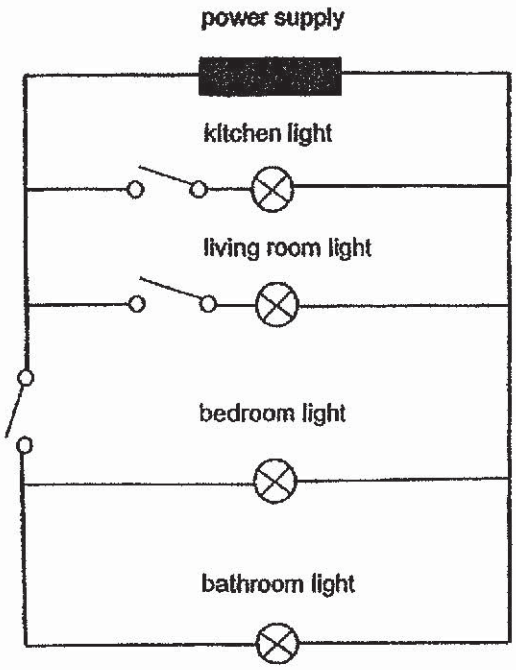
38. The lighting circuit of Daniel's house is shown in the diagram below.



a) His friend, Farah, suggested that he improves the lighting circuit for two areas of his house as it does not help to conserve electricity.

Which **two** areas of his house is Farah referring to? [1]

(i) _____ (ii) _____

b) In the box below, use circuit diagram to **draw** the lighting circuit based on Farah's suggestion. [1]

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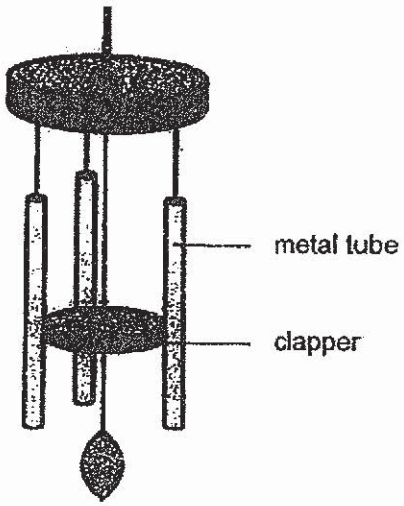
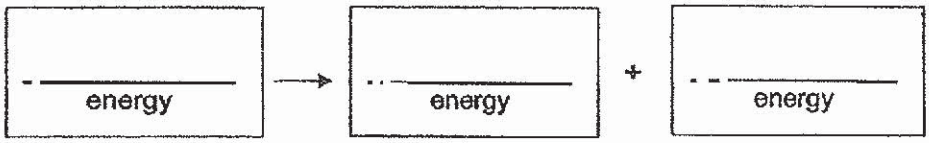
39. Alice made a wind chime using three metal tubes and a clapper as shown below.

When the wind blows, the clapper hits the metal tubes to produce a sound.

a) State the energy conversion in the wind chime when the wind blows to produce sounds. Write your answer in the boxes below. [1]





(in the wind) (in the clapper)

b) How does the strength of wind affect the frequency of the sounds produced? [1]

c) Explain your answer in (b) using energy conversion. [2]

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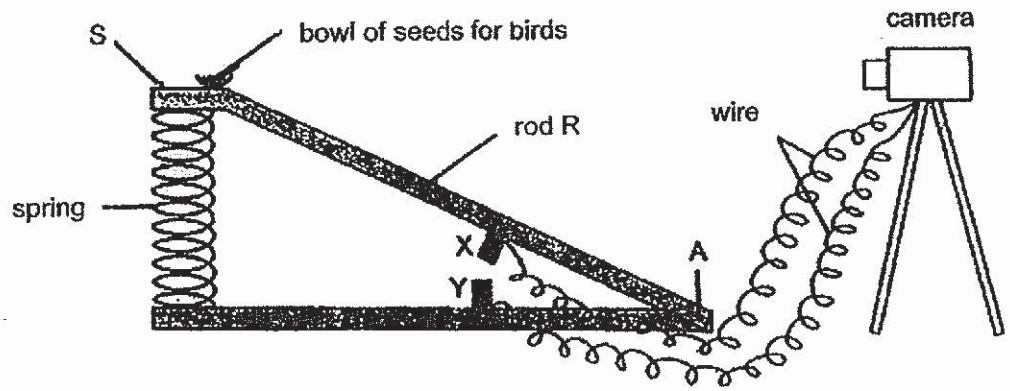
306

40. Alvin uses the set-up shown below to take photographs of birds automatically when they land on S.



The rod R is pivoted at A.

X and Y are connected to a special camera by wires such that when X touches Y, the camera will take a photograph of the bird at S.

a) State the property of X and Y which enables the camera to work. [1]

_____

b) Name the force exerted by the spring when a bird stands on S. [1]

_____

c) Give a reason for your answer in (b). [1]

_____

The diagram below shows two birds, P and Q, which Alvin observed to have landed on S on separate occasions.

bird P of mass 300g

bird Q of mass 750g

However, the camera could only take a photograph of bird Q and not bird P.

d) Explain why bird P could **not** be photographed [2]

_____

_____

_____

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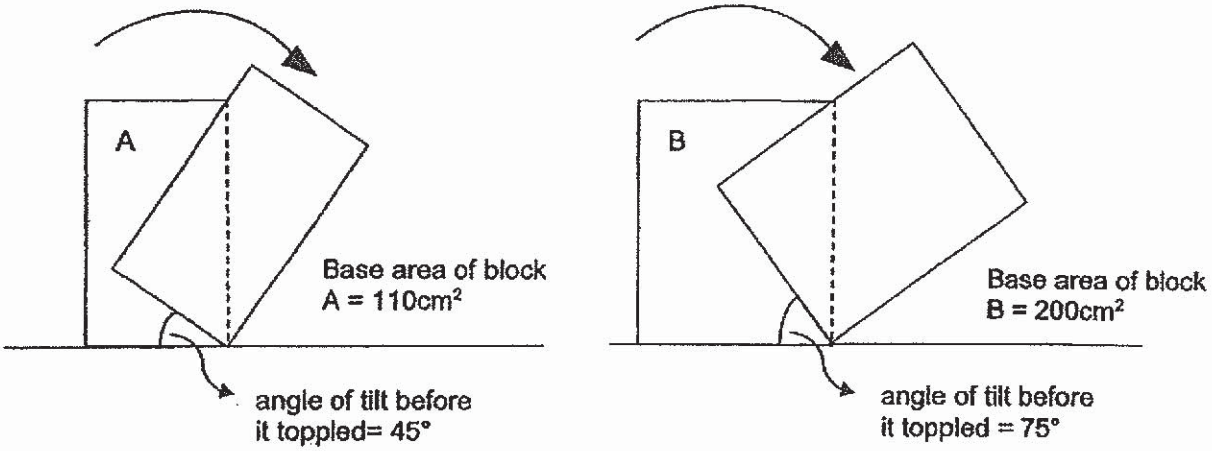
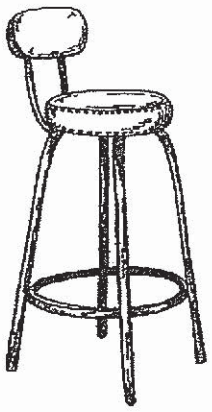
41. Janet carried out an experiment with two wooden blocks, A and B. They are of similar heights but have different base area in contact with the table top. She tried to find out how much she had to tilt each block before it toppled.



a) Based on the experiment, which variable indicates how easily the block topples? [1]

_____

The diagram below shows a high chair.



b) Based on the results of Janet's experiment, explain why the legs of the high chair are widely spread out. [1]

_____

_____

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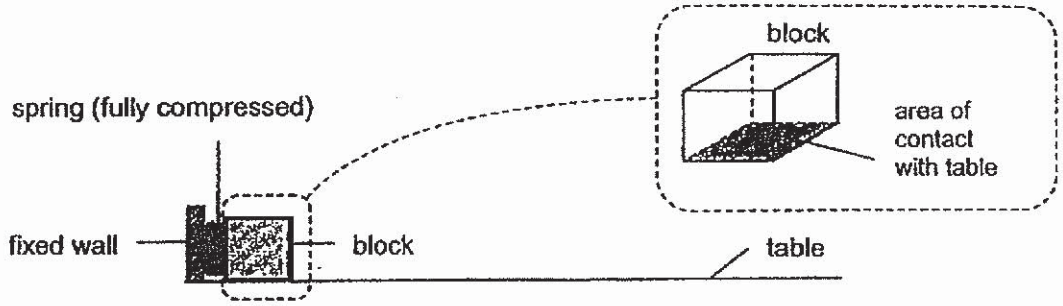
308

Question 41 continues on this page

Janet conducted another experiment using blocks, X, Y and Z as shown below.



She measured the distance the blocks moved after releasing the spring.
Her results are shown in the table below.

block	mass (g)	area of block in contact with the table (cm^2)	distance moved (cm)
X	50	100	9
Y	80	220	12
Z	80	100	12

c) Name the force that is between the block and the table. [1]

d) Based on the information in the table, state which variable affects the force mentioned in (c). [1]

End of Booklet B

Setters: Dr Evelyn Tan and Miss Kuek Tsing Xiu

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2019 P6 SA1 Science
Correction Sheet

Name: _____ ( ) Class: _____

Booklet A

1.	2	11.	2	21.	4
2.	3	12.	2	22.	2
3.	2	13.	2	23.	2
4.	4	14.	4	24.	3
5.	2	15.	1	25.	1
6.	1	16.	1	26.	1
7.	1	17.	1	27.	2
8.	2	18.	3	28.	3
9.	2	19.	3		
10.	2	20.	3		

Booklet B

Question	Suggested answer
29a	Organ R: lung(s) Organ S: heart
29b	At B, the blood that is rich in oxygen has just left the heart. At E, some of the oxygen in the blood has already been taken up by the brain.
30a	No. In the presence of light, the plant in the container will be able to take in carbon dioxide to photosynthesise.
30b	The carbon dioxide given out by the mouse could escape from the glass container through the wire mesh.
31a	Part W is a wing-like part that helps the seed stay longer in the air and be dispersed further away from the parent tree.
31b	The greater the area of Part W, the further the distance of the seed from the tree.
31c	Mass/weight of the seed / intensity/speed of the wind / size/area of seed / thickness/number of part W / presence/amount/duration of wind / height at which the seed was dispersed
32	Fertilisation. The male reproductive cell in the pollen tube fuses with the egg cell in the ovule.
33a	The leaves on branch A will wither/die because the leaves cannot get water to photosynthesise.
33b	Cell G: It is found in the roots / stem / branch as it does not contain chloroplasts needed for photosynthesis. Cell H: It is found in the leaves as it contains chloroplasts needed for photosynthesis.
34a	The more wind energy plants there are, the lower the emission of carbon dioxide to the environment. Less heat will be trapped by the carbon dioxide, thus the temperature in city S will be lower.
34b	Reduced greenhouse gas emission / use of recycled materials to produce electric vehicles / increased use of renewable energy resources / reduced use of fossil fuels

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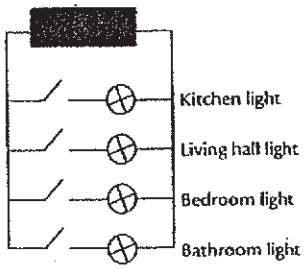
2019 P6 SA1 Science
Correction Sheet

35a	The seedling / germinating seed gets stored food from its seed leaves just like the alevin gets its food from the yolk sac attached to its body.
35b	Air/oxygen, water/moisture, warmth
35c	The nucleus of the sperm cell contains the father's genetic information which is passed down to the twins when the sperm cell and egg cell fuse.
36a	Air expands when heated.
36b	On a hot/sunny day, the concrete blocks gain heat and expand. The spaces prevent the blocks from pushing/pressing against one another and breaking.
37a	No. The plastic and material X are covering different parts of the cup.
37b	It is used to compare and confirm that the differences in temperature of the water are due to the plastic and material X.
37c	Plastic is a poor conductor of heat hence the cold drinks and ice gain heat slowly from the surrounding.
38a	(i) bedroom (ii) bathroom
38b	
39a	kinetic energy, kinetic energy + sound energy
39b	The stronger the wind, the more frequent the sounds.
39c	There is more kinetic energy in the wind to be converted to more kinetic energy of the clapper, causing it to hit the metal tubes more times, thus creating more sounds.
40a	Conductors of electricity
40b	Elastic spring force
40c	The spring is compressed.
40d	Bird P has a smaller mass so it cannot compress the spring for X and Y to touch each other to form a closed circuit for electricity to flow through.
41a	The angle of tilt before the block topples.
41b	To increase the base area so that the chair will be more stable / chair will not topple easily.
41c	Frictional force / friction
41d	Mass of the block

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MAHA BODHI SCHOOL

2019 SEMESTRAL ASSESSMENT 1

PRIMARY SIX SCIENCE

(BOOKLET A)

Name : _____ _____ ( )

Class : Primary 6_____

Date : 16 May 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of **19** printed pages.

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BOOKLET A : [28 x 2 marks = 56 marks]

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade your answer on the Optical Answer Sheet.**

1. Which one of the following represents a community?

   (1) frog and tadpoles in a pond
   (2) cockroaches, nymphs and eggs on a shelf
   (3) butterflies, caterpillars and eggs on a plant
   (4) earthworms, spiders and grasshoppers in a garden

2. Which one of the following shows the direct transfer of energy correctly?

   (1) sun → plant eater
   (2) plant → animal eater
   (3) plant eater → animal eater
   (4) animal eater → plant eater

3. Which of the following are examples of behavioural adaptations?

   A. Rabbits have long hind legs.
   B. Bears hide and rest during winter.
   C. Peacocks have colourful tail feathers.
   D. Penguins huddle together to keep warm.

   (1) A and C only
   (2) B and D only
   (3) A, B and D only
   (4) A, B, C and D

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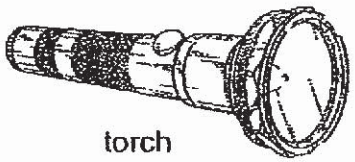
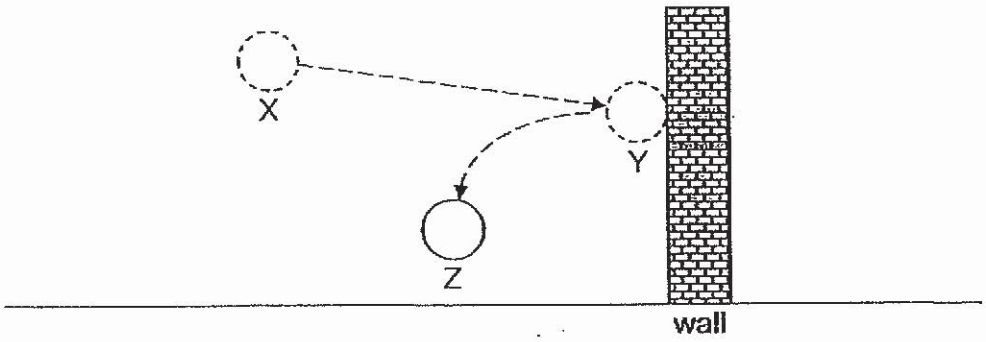
4. Which of the following most accurately shows the energy conversion of a battery-powered torch?



(1) electrical energy → light energy → heat energy
(2) chemical energy → light energy → heat energy
(3) electrical energy → chemical energy → light energy+ heat energy
(4) chemical energy → electrical energy → light energy + heat energy

5. A ball was thrown towards the wall. It travelled from X to Y and then to Z as shown below.



Which of the following shows that a force was exerted by the wall on the ball?

(1) The moving ball stopped.
(2) The moving ball sped up.
(3) The stationary ball moved.
(4) The moving ball changed direction.

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6. Devi shone a light on the container below.

Which one of the following is/are not possible shadow(s) for the container?

A B C D

(1) A only
(2) D only
(3) A and B only
(4) C and D only

7. Which of the following processes require heat gain?

A. Boiling
B. Melting
C. Evaporation
D. Condensation

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) B, C and D only

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8. Three animals X, Y and Z reproduce by laying eggs.
The table below shows the characteristics of these animals.

Characteristics	Animal X	Animal Y	Animal Z
Number of legs	6	6	4
Number of stages in their life cycle	4	3	3

Based on the characteristics above, what could possibly be Animals X, Y and Z?

	Animal X	Animal Y	Animal Z
(1)	butterfly	cockroach	frog
(2)	ant	butterfly	grasshopper
(3)	cockroach	grasshopper	mealworm
(4)	mealworm	frog	butterfly

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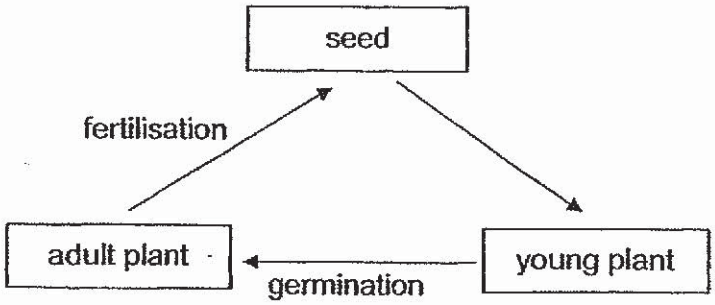
9. Which of the following diagrams correctly shows the processes in the life cycle of a flowering plant?

(1)



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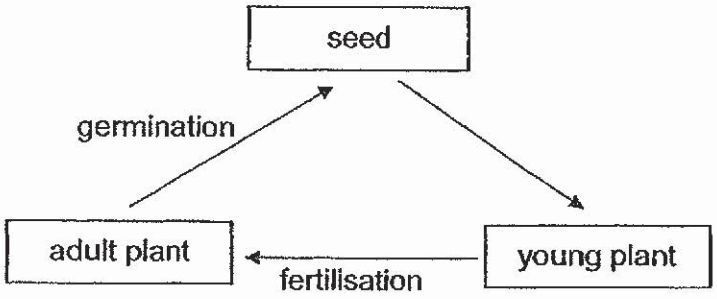

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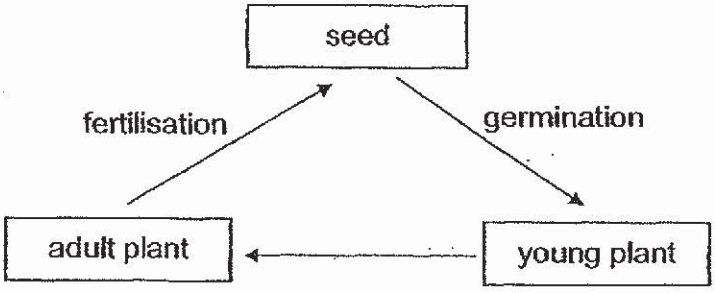

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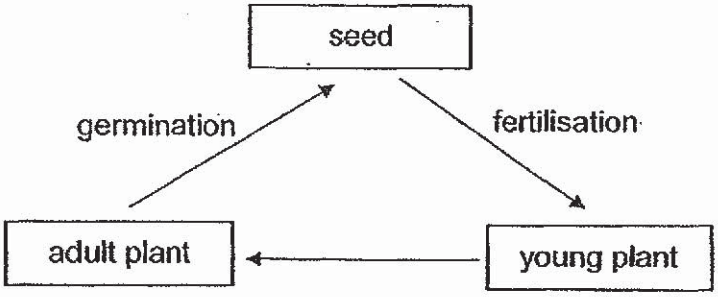

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10. Blood leaving the small intestine carries more _____ than the blood entering it.

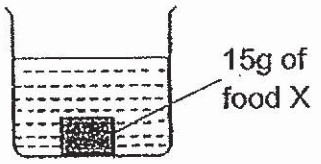
A. food
B. oxygen
C. carbon dioxide

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

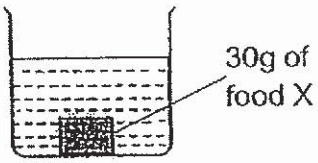
11. The diagrams below show the setup of an experiment to study the digestion of food. Each beaker contains food X and the same amount of digestive juice.

In which set-up would the food be completely digested first?

(1)



(2)



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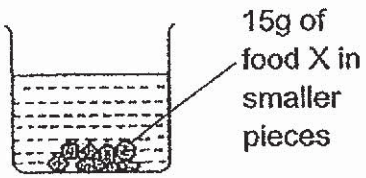
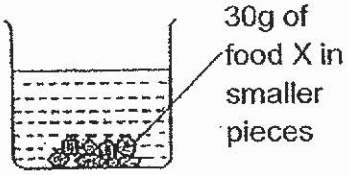


(4)



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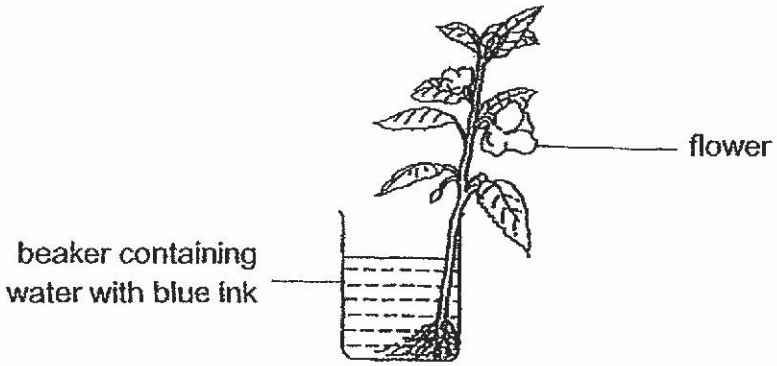
12. Henry puts a plant into a beaker of water in which some blue ink has been added. A few hours later, he observes that the flowers turn from white to blue.



What can Henry conclude from this experiment?

(1) Water is absorbed by the roots.
(2) The stem joins the roots to the rest of the plant.
(3) Water is lost to the surroundings from the leaves.
(4) The stem carries water from the roots to the rest of the plant.

13. Christina wants to investigate the effect of water on plant growth.

Which one of the following shows correctly the number of set-ups, the variable changed and variable measured for her investigation?

	Number of set-ups	Variable changed	Variable measured
(1)	2	Amount of water	Amount of oxygen released
(2)	2	Amount of sunlight	Amount of oxygen released
(3)	3	Amount of water	Number of green leaves
(4)	3	Amount of sunlight	Number of leaves dropped

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14. P, Q, R and S represent four organisms in a habitat.

- P is a predator of S
- S is a prey to R
- Q is a predator of P
- R is a prey to Q

Using the information given above, which of the following most correctly represents P, Q, R and S?

	P	Q	R	S
(1)	plant eater	animal eater	plant eater	producer
(2)	animal eater	plant eater	animal eater	animal eater
(3)	animal eater	producer	animal eater	animal eater
(4)	animal eater	animal eater	animal eater	plant eater

15. Hassan took 50 g of leaves from four different plants A, B, C and D. He placed the leaves on separate plates in a room at 40°C under bright light.
He weighed the leaves again 12 hours later and recorded the results in the table below.

	Type of plant			
	A	B	C	D
Mass of leaves at first (g)	50	50	50	50
Mass of leaves after 12 hours (g)	25	40	35	30

Hassan can conclude that the rate of _____ varies for different plants.

(1) water loss
(2) water gain
(3) photosynthesis
(4) absorption of light

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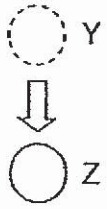
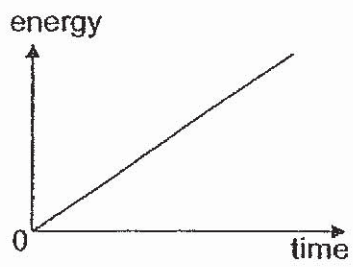
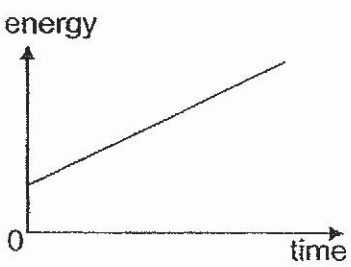
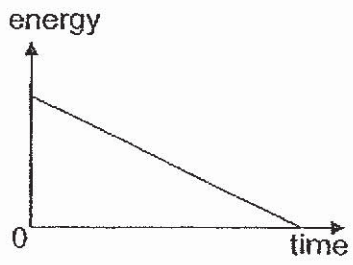
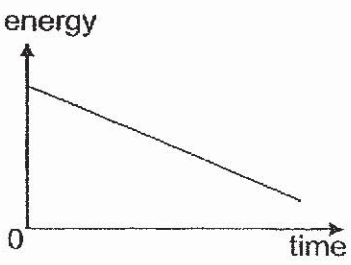
16. Which of the following correctly shows the change in potential energy as the ball falls from point Y to Z?



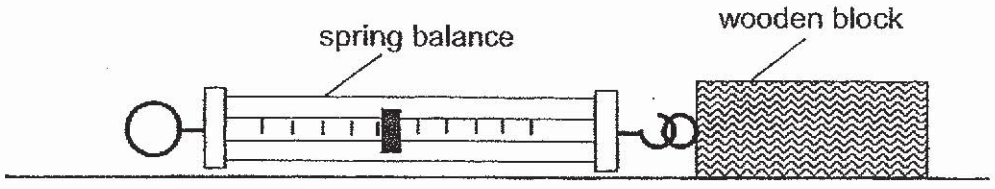
(1)


(2)


(3)


(4)


17. A spring balance is used to pull a wooden block over a table top.



Which of the following will affect the amount of force needed to pull the block?

A. mass of the wooden block
B. roughness of the table top surface
C. change in length of the spring in the spring balance

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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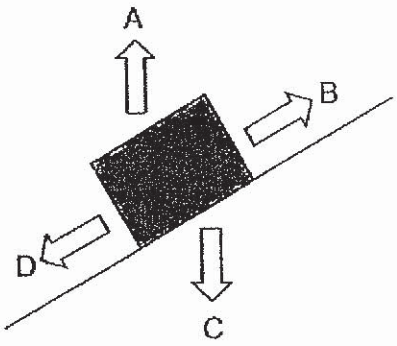
18. A box was pushed off a ramp. It slid down the ramp before stopping at the position shown below.



Which arrow correctly shows the direction of the force that stopped the box?

(1) A
(2) B
(3) C
(4) D

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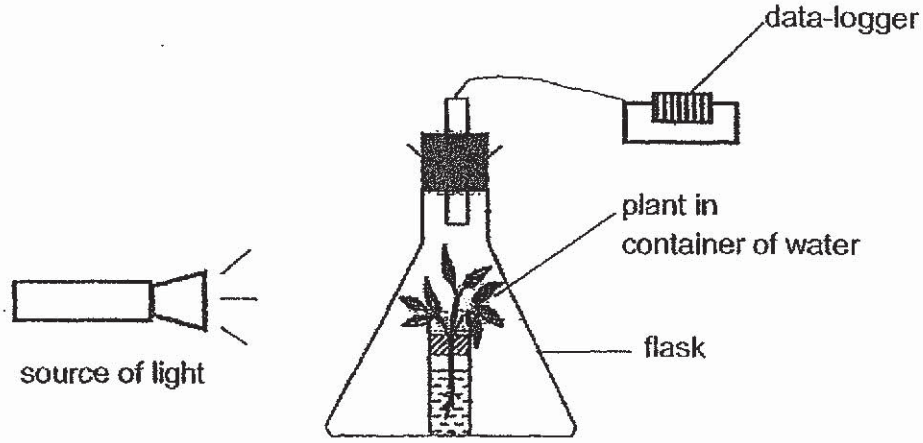
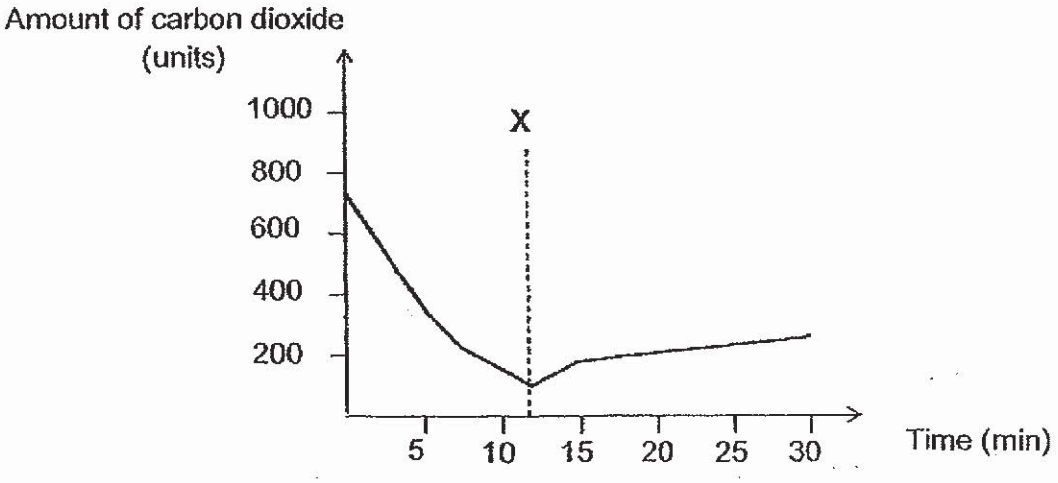
19. Joyce placed a plant in a container of water in a flask near a source of light. She measured the amount of carbon dioxide in the flask using a data-logger as shown below.



The graph below shows the results recorded by the data-logger.



Which of the following could have happened at X to cause the change in the amount of carbon dioxide as shown in the graph?

(1) The light was switched off.
(2) The amount of light was increased.
(3) There was too much oxygen in the flask.
(4) There was not enough oxygen in the flask.

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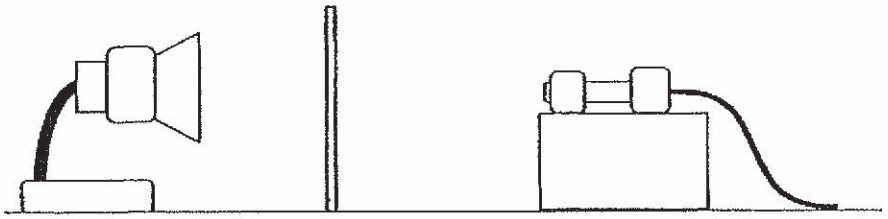
20. The set-up below was used to test how much light can pass through different materials.



Which of the following correctly shows the changed and measured variables?

	Changed variable	Measured variable
(1)	type of material	distance between lamp and sensor
(2)	type of material	amount of light received by sensor
(3)	brightness of lamp	amount of light received by sensor
(4)	brightness of lamp	distance between lamp and sensor

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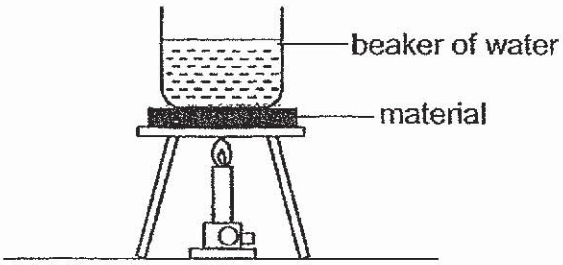
21. Muru conducted an experiment using the set-up below.



He recorded the time taken for the water to boil when different materials P, Q and R were placed below the beaker of water in the table below.

Material	How well it conducts heat	Time taken for water to start boiling (min)
P	very good	10
Q	poor	10
R	good	10

Which of the following correctly shows the volume of water used at the start of each experiment?

	Volume of water at the start (cm^3)		
	P	Q	R
(1)	50	150	100
(2)	150	50	100
(3)	50	100	150
(4)	150	100	50

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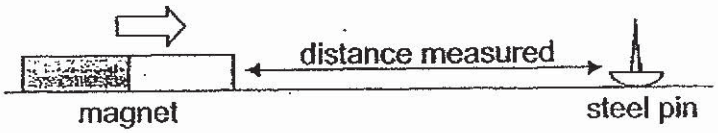
22. Lewis tested the strength of different magnets X, Y and Z using the set-up shown below.



He moved the magnet towards the steel pin and recorded the distance between the two when the steel pin was attracted to the magnet in the table below.

magnet	distance when steel pin was attracted to magnet (cm)
X	5
Y	2
Z	3

Which of the following correctly shows the strength of the magnet from strongest to the weakest?

	strongest ⟶		weakest
(1)	X	Y	Z
(2)	X	Z	Y
(3)	Y	Z	X
(4)	Z	Y	X

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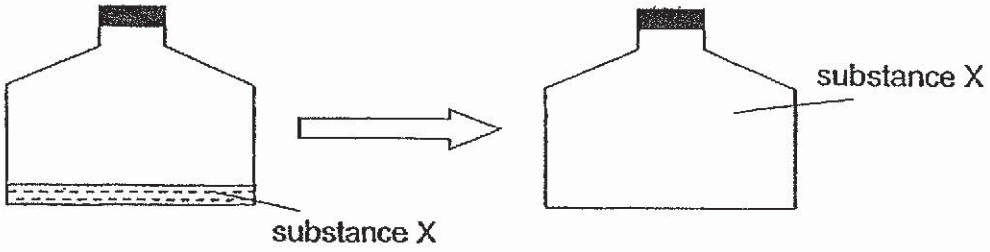
23. Rishi poured substance X into a sealed container. He heated it until it boils.



Which of the following properties of substance X changed after boiling?

A. mass
B. shape
C. volume

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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24. David wanted to find out how the conditions in the different locations affect how fast clothes dry. Four similar shirts were soaked in water. Their masses were measured before they were hung out to dry in a similar manner at different locations. After 1 hour, he measured the mass of each shirt and recorded in the table below.

Shirt	Mass after soaking in water (g)	Mass after drying for 1 hour (g)
A	400	320
B	400	350
C	500	350
D	500	320

Which two shirts should David use to explain the results of his experiment?

	Shirts compared	Possible explanation
(1)	A and B	A was exposed to less wind than B.
(2)	A and D	A and D were exposed to the same surrounding temperature.
(3)	B and C	B and C were exposed to the same amount of wind.
(4)	C and D	D was exposed to a higher surrounding temperature than C.

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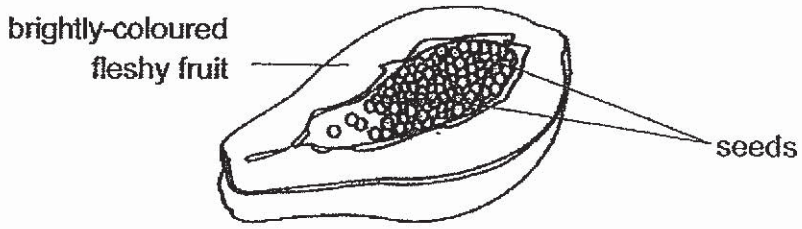
25. A fruit was cut open as shown.



Which of the following statements are correct?

A. There were many ovules in the ovary.
B. Pollination and fertilization have taken place.
C. The fruits and seeds were developed from a flower.
D. The seeds would be dispersed by wind as they were small.

(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D

26. Simon conducts an experiment to find out if the presence of water and air affect the germination of seeds. He places the seeds in various pots. The table below shows the conditions of the pots.

Pots	Condition
A	Moist cotton wool in sealed container
B	Moist cotton wool in open container
C	Dry cotton wool in sealed container
D	Dry cotton wool in open container

Which one of the following shows correctly the pair of pots that Simon could use to compare the results?

	Variable tested - Water	Variable tested - Air
	Pots used	Pots used
(1)	A and B	A and C
(2)	A and C	B and C
(3)	B and D	A and B
(4)	B and D	C and D

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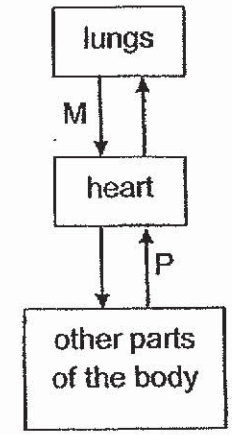
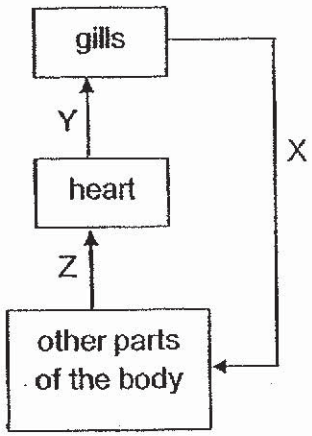
27. The diagram below shows the circulatory systems of a human and a fish. The arrows represent the direction of blood flow in the organisms.



Human circulatory system



Fish circulatory system

Based on the diagrams above, which of the following statement(s) is/are correct?

A. Blood vessels at Y carry blood rich in oxygen.
B. Blood vessels at M carry blood rich in oxygen.
C. Blood vessels at X carry blood rich in carbon dioxide.
D. Blood vessels at P and Z carry blood rich in carbon dioxide.

(1) A only
(2) A and B only
(3) B and D only
(4) C and D only

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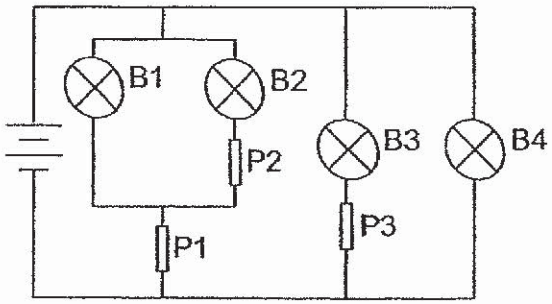
28. Julia wanted to test which rods W, X and Y are conductors of electricity by using the circuit below.



The table below shows which bulbs lit up when the rods were placed in different positions.

Position			Bulb lit up			
P1	P2	P3	B1	B2	B3	B4
W	X	Y				✓
X	Y	W	✓			✓

Which of the materials are conductors of electricity?

(1) W only
(2) X only
(3) X and Y only
(4) W and Y only

END OF BOOKLET A

GO ON TO BOOKLET B

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MAHA BODHI SCHOOL

2019 SEMESTRAL ASSESSMENT 1

PRIMARY SIX SCIENCE

(BOOKLET B)

Name:_ _____ _____( )

Class: Primary 6_____ _____

Date : 16 May 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write all your answer in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		100

Parent's signature: __ _____

This booklet consists of 16 printed pages.

BOOKLET B : [44 marks]
For questions 29 to 41, write your answers in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part-question.

29. The table below shows the set-up of an experiment to find out if the amount of soil would affect the growth of plant X. The experiment was set-up for 3 weeks.

Variables	Pot A	Pot B	Pot C
Number of leaves at the start of the experiment	10	10	10
Amount of soil (cm^3)	500	700	900
Type of soil	sandy	garden	clayey
Amount of water added to soil daily (ml)	100	120	150
Number of leaves at the end of the experiment	10	40	20

(a) What is the variable measured for this experiment? [1]

(b) Why is this experiment not a fair test? Explain your answer. [1]

(c) Based on the set-up in the table above, state what can be done to make the experiment a fair test? [2]

(i)

(ii)

Marks : / 4

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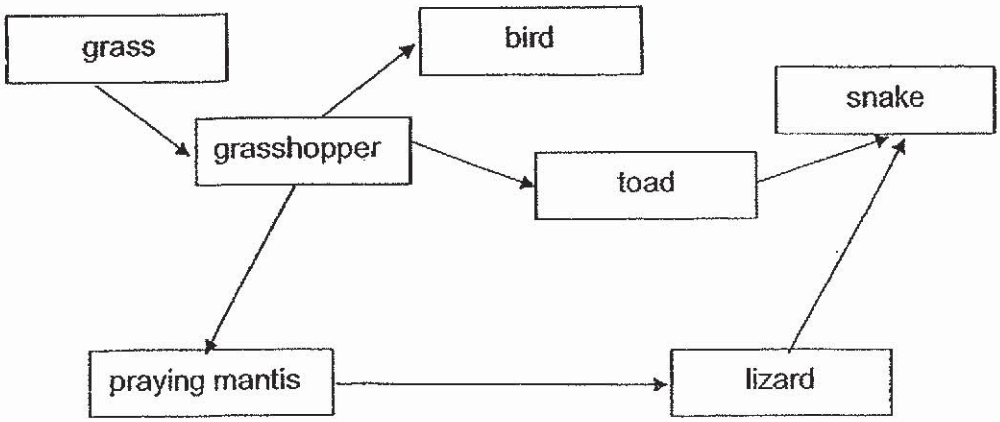
30. The diagram below shows a food web in a community.



(a) Based on the food web above, construct a food chain with 3 types of organisms. [1]

(b) If the population of praying mantis is killed by a disease, which population in the food web would be most affected?
Explain your answer. [1]

(c) Which action, the removal of snake or grass from the community, would have a greater effect on the organisms in the food web?
Explain your answer. [2]

Marks : / 4

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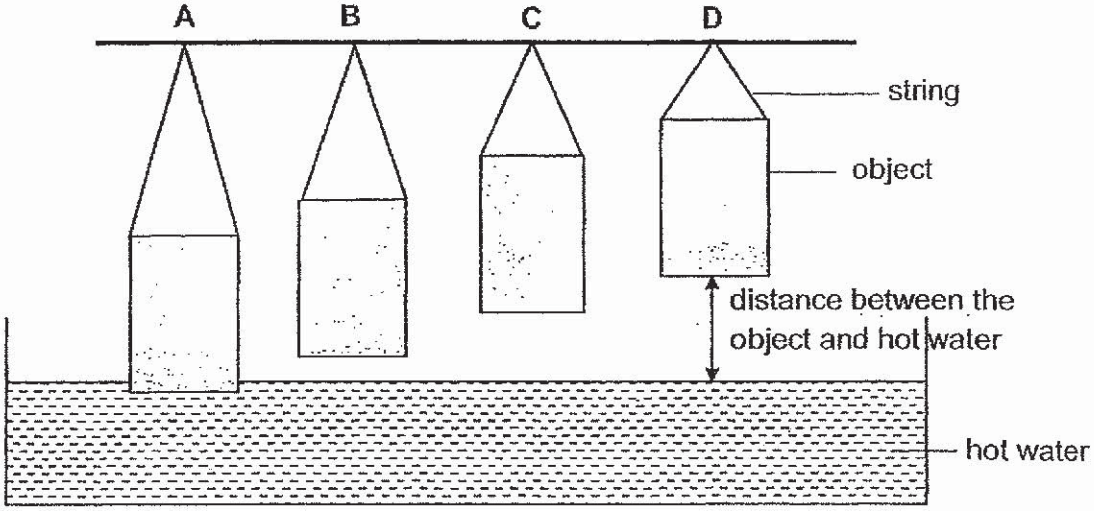
31. Ai Ling hung four similar objects A, B, C and D above a basin of hot water. She measured the temperature of the objects after few minutes.



Her results are shown in the table below.

Object	A	B	C	D
Temperature of object (°C)	60	38	25	25

(a) What is the relationship between the temperature of the object and the distance between object and hot water? [1]

(b) Explain why the temperature had to be taken within a short period of time. [1]

Marks : / 2

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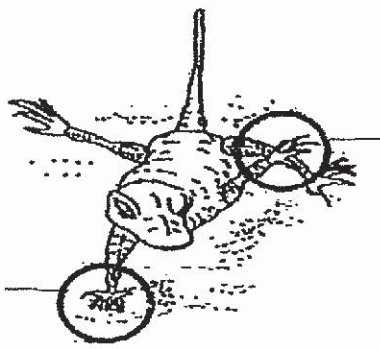
(c) The lizard lifts its foot as it crawls along the desert floor on a hot day.



Explain why the feet have different temperature. [2]

	Explanation
Foot on the ground	
Foot above the ground	

(d) It is observed that the lizard runs quickly across the hot desert ground. Explain how this behaviour helps the lizard reduce heat gain. [1]

Marks : / 3

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32. Leroy wound the spring of a wound-up toy car and released it. He wanted to find out how the number of times the toy car was wound up would affect the distance travelled by the toy car.

toy car

He recorded the results of his experiment as shown below.

Number of times toy car wound up	Distance travelled (cm)
5	12
10	26
15	39

(a) State the energy conversion that took place in the boxes below. [1]

energy (spring)

energy (toy car)

(b) Explain how winding the toy car more times allowed the car to travel further. [1]

(c) Leroy wound the toy car 30 times. The toy car did not move when released.
Suggest a possible reason. [1]

Marks : / 3

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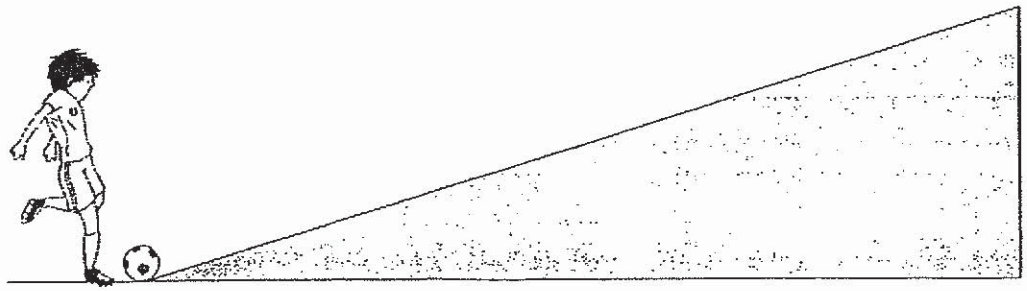
33. Zhi Hua kicked a ball up a ramp as shown below.



Explain in terms of energy conversion why the ball would slow down as it moved up the ramp. [2]

Marks : / 2

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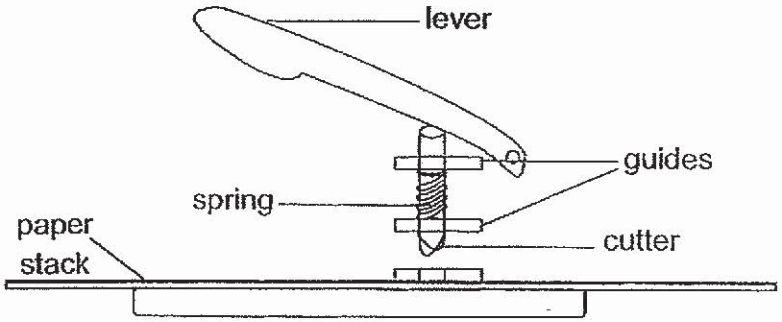
34. The diagram below shows the cross section of a hole-puncher.



When the lever is pushed down, it moves the cutter down to punch a hole through the stack of paper.

When the lever is released, it moves back to its original position.

(a) Name the force that allows the lever to return to its original position.[1]

(b) After using for a few months, the lever of the hole-puncher was unable to return to its original position after being pushed down.

(i) Give a reason why the lever was unable to return to its original position. [1]

Oil was applied to the area of contact between the cutter and the guides. This allowed the lever to return to its original position again.

(ii) Explain how oil helped the lever return to its original position.[2]

Marks : / 4

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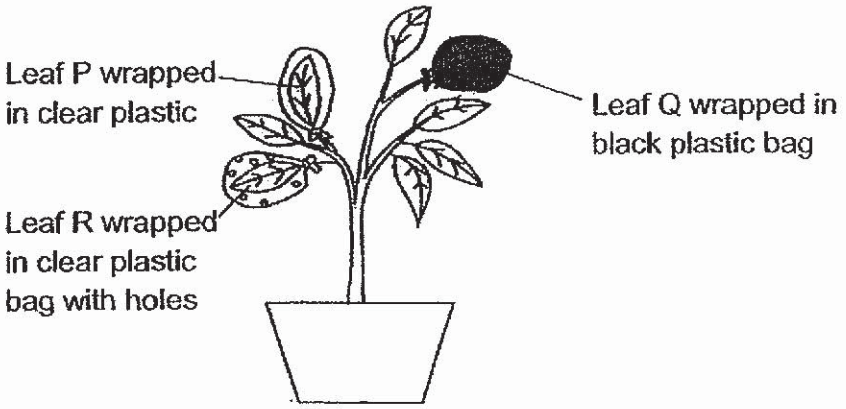
35. An experiment was carried out using the set-up shown below. The leaves were wrapped in different types of plastic bags. The bags were of the same size. The plant was watered daily and placed under the sun.



(a) Before the start of the experiment, the plant was left in complete darkness for two days to remove starch in the leaves.
Why was this necessary? [1]

(b) After two days in the sun, leaves P, Q and R were removed and tested for starch using iodine. The table below shows the results of the starch test. Iodine is a yellowish brown liquid that turns blue black in the presence of starch.

Leaf P	Leaf Q	Leaf R
yellowish brown	yellowish brown	blue black

Which leaf, P, Q or R's starch test result is incorrect? Explain why. [2]

Marks : / 3

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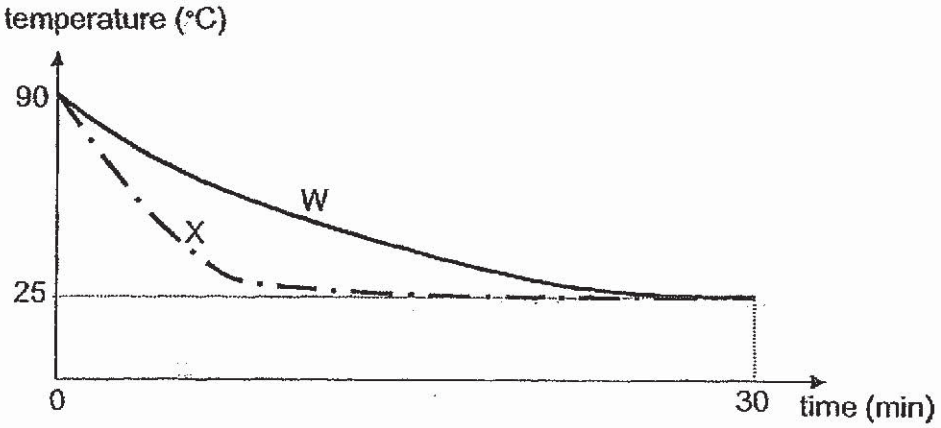
36. Annie heated up the same amount of water sealed in containers W and X which are made of different materials to 90°C.

She left both containers in the same room, measured the temperature of the water over 30 minutes and recorded them in the graph below.



(a) Why did the water in both beakers reach the same temperature after 30 minutes? [1]

(b) Explain which container of water, W or X, will freeze first if they were both placed into the same freezer. [2]

(c) Annie wanted to test if the volume of water affects the rate its temperature changes. What changes should she make to her experiment? [1]

Marks : / 4

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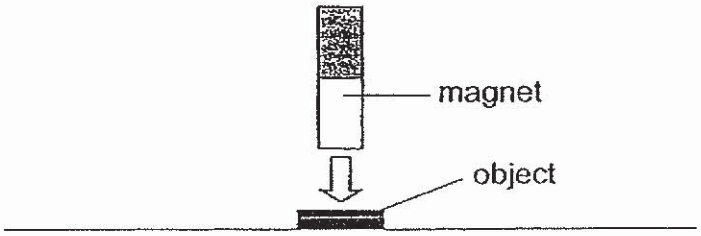
37. Joseph lowered a magnet towards an object as shown below.



As the magnet was lowered, the object moved up towards the magnet.

(a) What is the property of the material of the object? [1]

(b) What would Joseph need to do to pick up a heavier object with the same magnet? [1]

Marks : / 2

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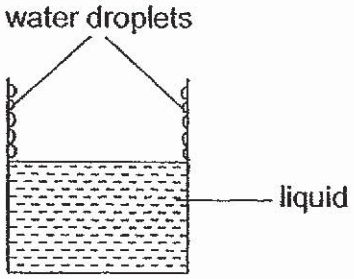
38. Lilian poured some liquid into a glass and noticed water droplets forming on the inside of the glass after a few minutes as shown below. The surrounding temperature is 25°C.



(a) Explain how the water droplets were formed. [1]

(b) Based on the observation, what can you tell about the temperature of the liquid? [1]

Marks : / 2

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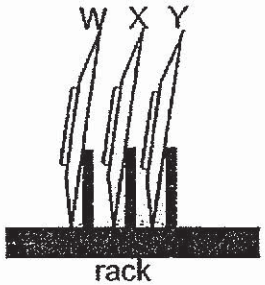
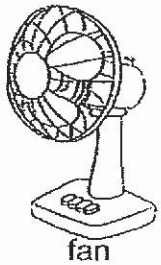
39. 3 similar plates W, X and Y were washed and placed on a rack in front of a fan as shown below.





(a) How does turning on the fan help dry the plates faster? [1]

(b) Which plate, W, X or Y, will dry fastest? Explain your answer. [2]

Marks : / 3

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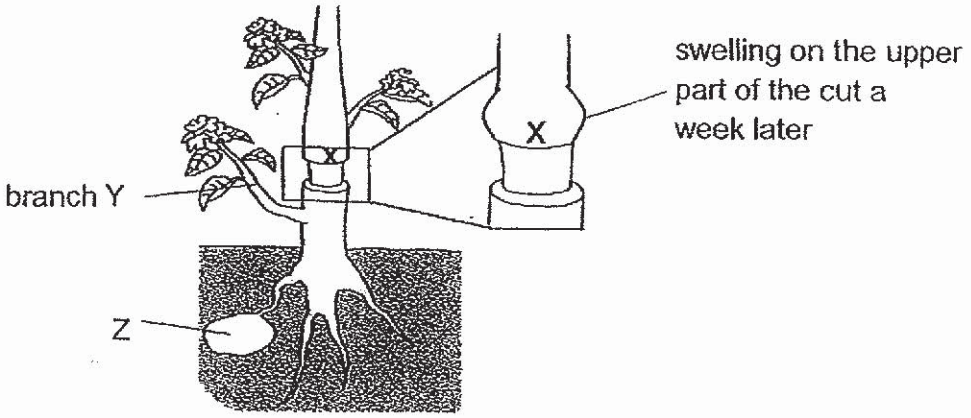
40. The outer ring of a stem was cut as shown below. As a result, the food-carrying tubes were removed.



(a) A swelling on the upper part of the cut at X was observed a week later. Explain why part X swelled up. [1]

(b) Part Z grew bigger after one week. Explain why this is possible. [1]

Marks : / 2

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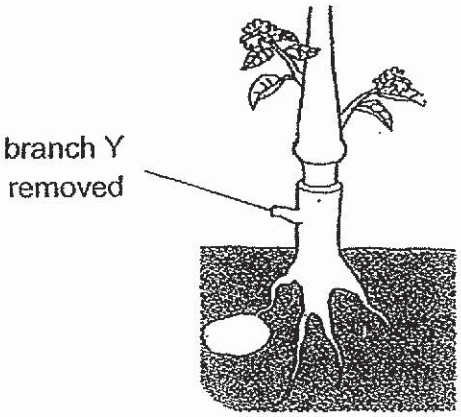
(c) Two weeks later, branch Y was removed as shown below.



Explain why the leaves above the plant wilted and the plant died after a few weeks. [2]

Marks : / 2

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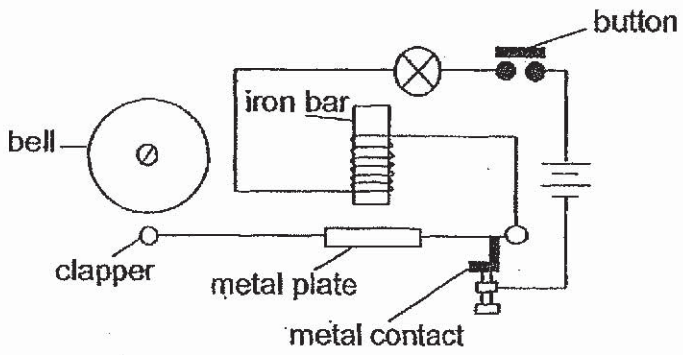
41. The circuit diagram shows how a simple electrical bell system works.



When the button was pressed down, the metal plate moves towards the iron bar, lifting the metal contact as well as the clapper to strike the bell once.

(a) Give a reason why the metal plate moved towards the iron bar when the button was pressed. [1]

(b) If the button was pressed down without releasing, the clapper would continuously strike the bell.
Explain how this happens. [2]

Marks : / 3

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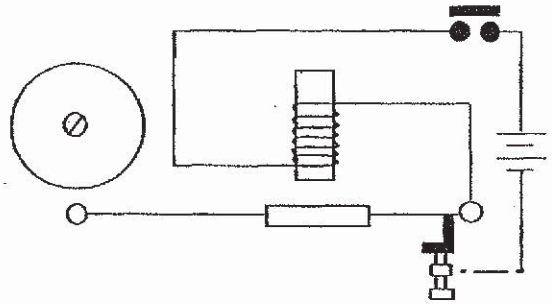
(c) The bulb flickered continuously as the button was pressed.

Show how you can connect the bulb to the circuit below such that it stays lit while the button is pressed down.

Draw your own bulb and wires. [1]



Marks : / 1

~ END OF PAPER ~

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SCHOOL : MAHA BODHI PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	2	4	4	1	3	1	3	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	3	4	1	4	1	2	1	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	2	3	4	3	3	3	2		

SECTION B

Q29)	a)Number of leaves at the end of the experiment. b)There is more than one changed variable. c i)Change the type of soil of all pots to garden soil. ii)Change the amount of water added to the soil of the three pots daily to 100ml.
Q30)	a) Grass $\longrightarrow$ Grasshopper $\longrightarrow$ Bird b)The population of lizards. As lizards feed on praying mantis only, if the population of praying mantis is killed, the population of lizards will not have food and will die. c)Grass. The grass is the only producer in the food web. Its removal would decrease the population of all the other organisms in the food web. The removal of snake would result in an increase in the population of some organisms.
Q31)	a)As the distance increases, the temperature desreases until it reaches 25°C.

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<table>
<tr><td></td><td>b)Within a short period of time, the hot water will not heat from the surroundings and evaporate, so the object would not be able to lose as much heat to the surroundings compared to a long period of time.
c)<table><tr><td></td><td>The foot on the ground will gain heat from the hot desert floor and so the temperature would be higher.</td></tr><tr><td></td><td>The foot above the ground would lose heat to the surroundings and so the temperature would be lower.</td></tr></table>d) There will be lesser time spent on the hot desert ground and the lizard would be able to lift up its Feet faster and lose heat to the surroundings, which will reduce heat gain.</td></tr>
<tr><td>Q32)</td><td>a) Elastic potential ⟶ Kinetic
b)The spring would be more stretched and have more elastic potential energy stored in the spring. More elastic potential energy would be converted to kinetic of the toy car, allowing the car to travel further.
c)The spring in the toy car was over stretched.</td></tr>
<tr><td>Q33)</td><td>There is less kinetic energy as the kinetic energy of the ball was converter to potential energy.</td></tr>
<tr><td>Q34)</td><td>a)Elastic spring force.
b i)The elastic spring force was unable to overcome the friction between the cutter and the guides
ii)Oil reduced the friction between the cutter and the guides. The elastic spring force could overcome the friction and push the lever back up.</td></tr>
<tr><td>Q35)</td><td>a)This ensures that the presence of starch tested at the end of the experiment was due to the plastic bags.
b)P. It could carry out photosynthesis as it could receive light through the clear plastic bag and there is carbon dioxide in the bag</td></tr>
<tr><td>Q36)</td><td>a)The water in both beakers lost heat to the surroundings and reached room temperature.
b)X.The temperature of the water decreases at a faster rate which means it loses heat more quickly. X is a better conductor of heat.
c)Use containers of the same material but with different volumes of</td></tr>
</table>

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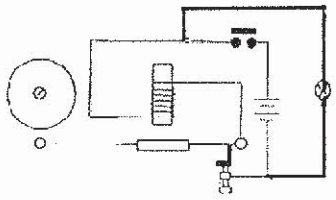
	water.
Q37)	a)The material of the object is a magnetic material. b)Place the magnet closer to the object.
Q38)	a)Water vapour in the surroundings lost heat to the glass and condensed into water droplets. b)The temperature of the liquid is higher than the room temperature.
Q39)	a)The wind from the fan increases the rate of evaporation of the water on the plates. b)Y. Y was exposed directly to the wind unlike the others. Water on the plate will evaporate the fastest.
Q40)	a)Food made by the leaves above the cut could not be transported to the plant parts below the cut , so the food was stuck at the upper part of the cut and resulted in swelling. b)The food made by the leaves below the cut could not be transported to plant parts above the cut so most of the food will be started in part 2. c)As there was no leaves below the cut and food cannot be transported from the leaves above the cut , the roots would have no food and will not absorb any water , since no water is absorbed , the whole plant will have no water and die.
Q41)	a)The iron bar became an electromagnet and attracted the metal plate. b)The circuit would be a closed circuit so electric current can flow through it and the iron bar would become an electromagnet and attract the metal plate, the clapper would strike the bell , but the metal contact would also move up, making the circuit and open circuit , so electric current would not be able to flow through it , the metal plate would not be attracted and fall back the metal , contact would also fall back,making the circuit a closed one again. c) 

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MARIS STELLA HIGH SCHOOL (PRIMARY)

SA1 EXAMINATION

SCIENCE

16 MAY 2019

BOOKLET A

NAME: _____ ( )

CLASS: Primary 6 ( )

28 questions

56 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS).

(28 x 2 marks)

---

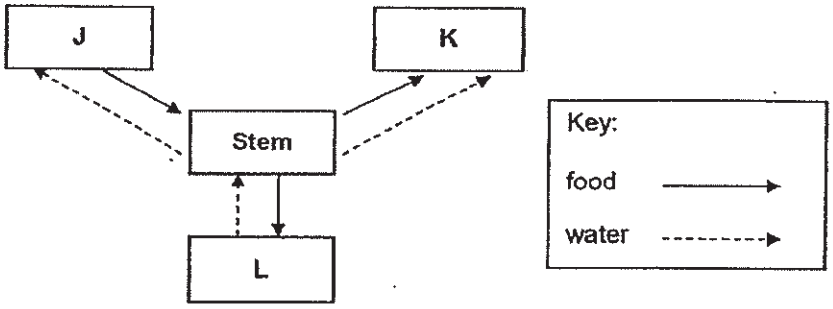
1 The table below shows the mass of organism X in January and February.

Month	Mass (g)
January	600
February	1200

Which of the following is the most likely reason for the difference in mass observed?

(1) The cells in X died.
(2) The cells in X became bigger.
(3) The number of cells of X decreased.
(4) The cells in X went through cell division.

2 The diagram below shows how food and water are transported in plants. J, K and L represent different plant parts.



Which of the following plant parts best represent J, K and L?

	J	K	L
(1)	fruits	leaves	roots
(2)	leaves	roots	fruits
(3)	roots	fruits	leaves
(4)	leaves	fruits	roots

(Go on to the next page)

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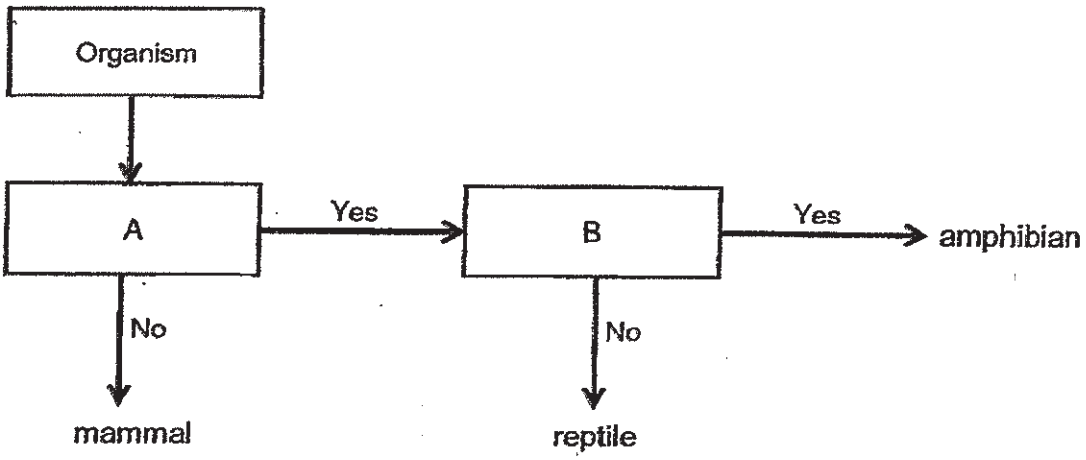
361

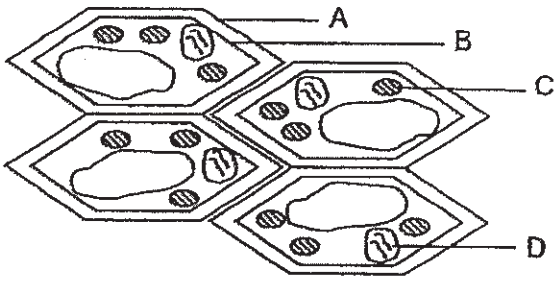
3 Study the flow chart below.



Which of the following shows the characteristics represented by A and B?

	A	B
(1)	has lungs	has four legs
(2)	has four legs	lays eggs
(3)	has lungs	has dry scaly skin
(4)	lays eggs	has smooth moist skin

4 Study the cells below.



Which of the following cell parts are correctly matched to the descriptions?

	Gives plant cells its shape	Contains genetic information
(1)	A	C
(2)	A	D
(3)	B	C
(4)	B	D

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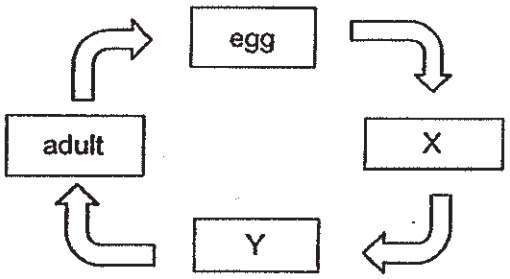
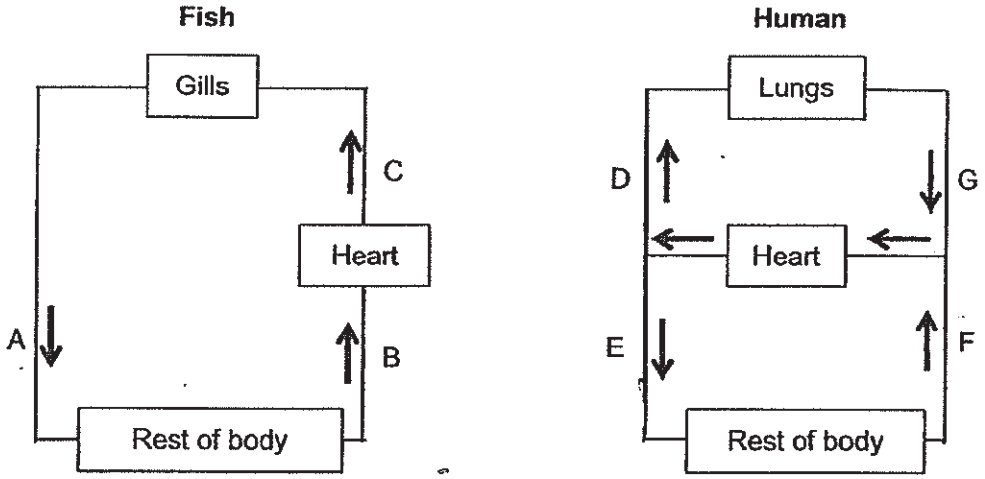
5 The diagram shows the stages in the life cycle of a mosquito.



Which of the following correctly describes the mosquito at stages X and Y?

	X	Y
(1)	unable to fly	able to fly
(2)	feeds a lot	does not feed at all
(3)	lives on land	lives on land
(4)	does not look like adult	looks like adult

6 The diagrams below show the circulatory systems of a fish and a human.



Which of the following pairs of blood vessels carry blood poor in oxygen?

(1) A and F
(2) A and E
(3) B and G
(4) C and D

(Go on to the next page)

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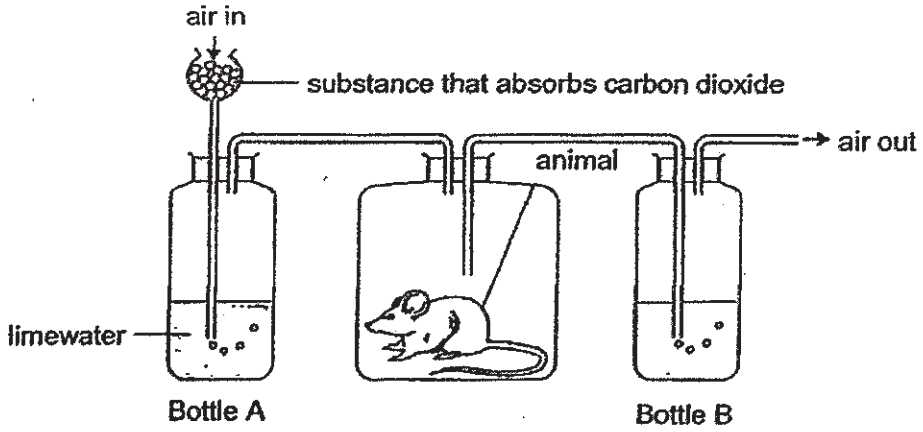
363

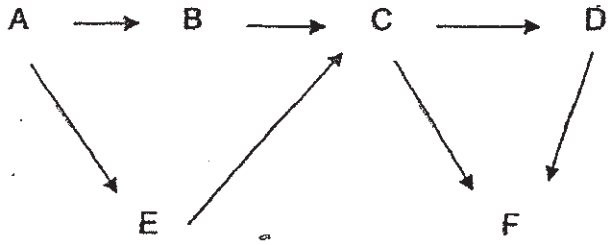
7 Cynthia carried out an experiment as shown below to investigate the difference between inhaled and exhaled air. Limewater turns chalky when carbon dioxide is present.



Which of the following shows the correct observations?

	Limewater in Bottle A	Limewater in Bottle B
(1)	clear	clear
(2)	clear	chalky
(3)	chalky	clear
(4)	chalky	chalky

8 The diagram below shows a food web.



Which organisms are both a prey and a predator?

(1) B and E only
(2) C and D only
(3) C, D and F only
(4) B, C, D and E only

(Go on to the next page)

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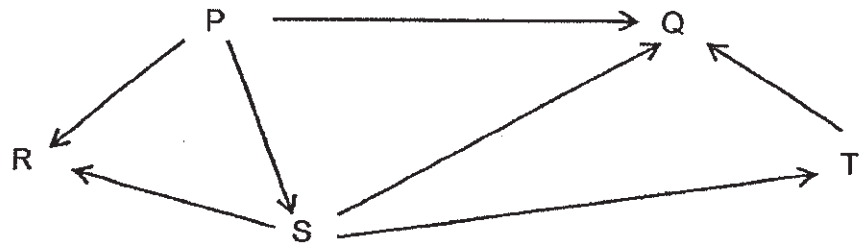
364

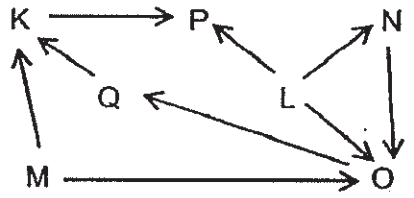
9 The diagram below shows part of a food web in a certain habitat.



Based on the information provided, what could most likely lead to an increase in the population size of S?

(1) Increase in the number of T
(2) Increase in the number of Q
(3) Decrease in the number of R
(4) Decrease in the number of P

10 The food web below shows the food relationships among various organisms in a particular community.



Based on the food web above, which one of the following statements is correct?

(1) O is a predator.
(2) L is a consumer.
(3) P eats meat only..
(4) M is the only producer

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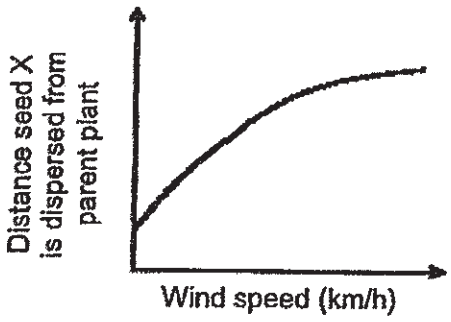
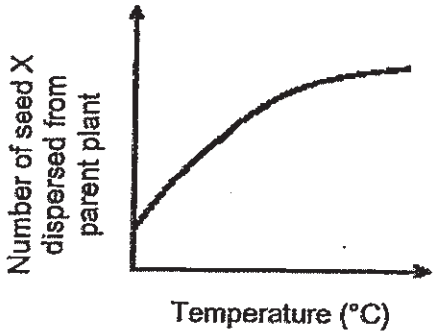
11 Graphs A and B show how the dispersal of seed X is affected by wind and temperature.



Graph A



Graph B

Which conclusions about seed X can be drawn from graphs A and B?

A The stronger the wind, the more seeds are dispersed.
B The stronger the wind, the further the seeds are dispersed.
C The higher the surrounding temperature, the more seeds dispersed.
D The higher the surrounding temperature, the further the seeds are dispersed.

(1) A and D only
(2) B and C only
(3) A, C and D only
(4) A, B, C and D

(Go on to the next page)

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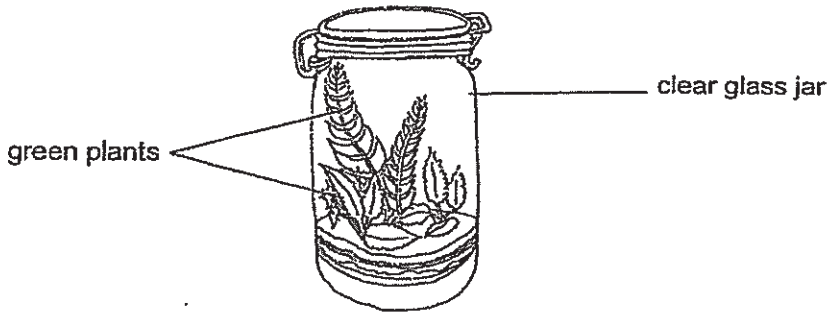
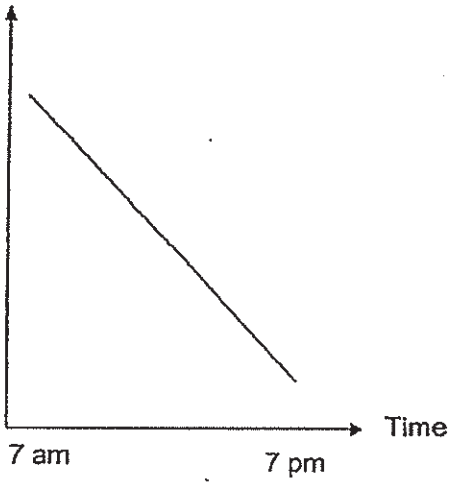
366

12 The terrarium below is left near an open window.

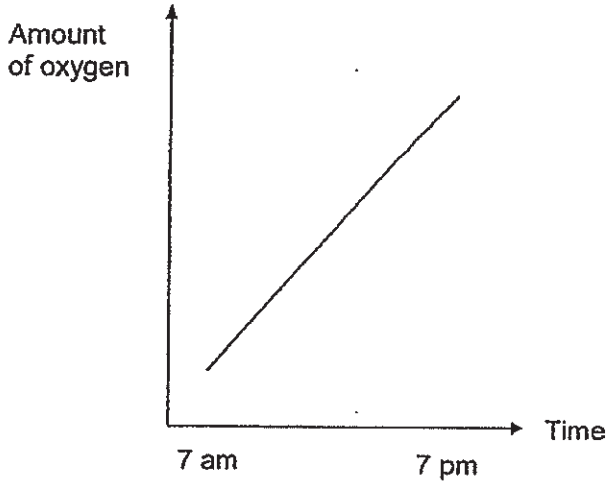


Which one of the following graphs shows the amount of oxygen found in the terrarium between 7 am and 7 pm?

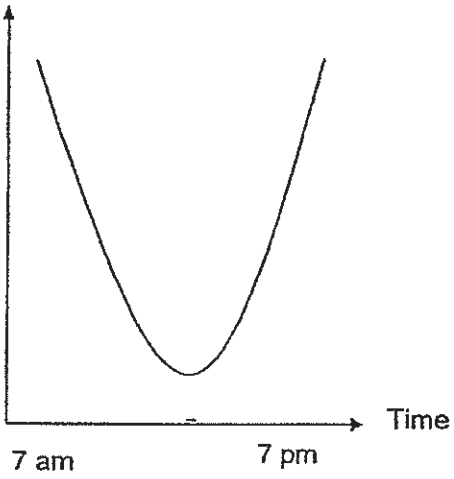
(1)



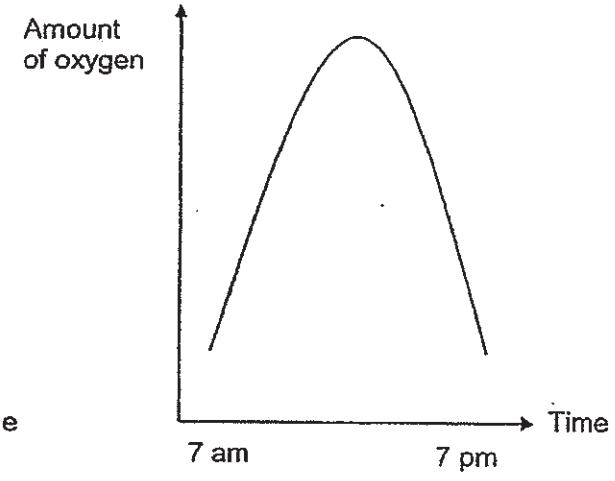
(2)



(3)



(4)



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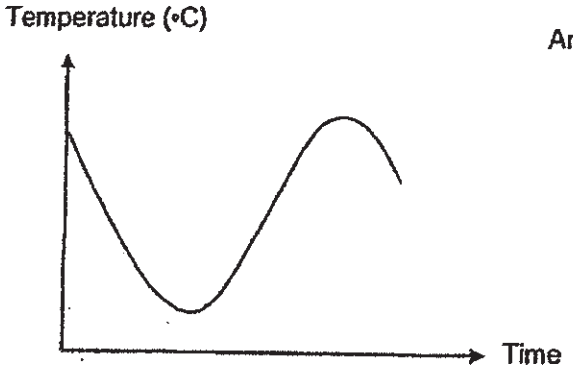
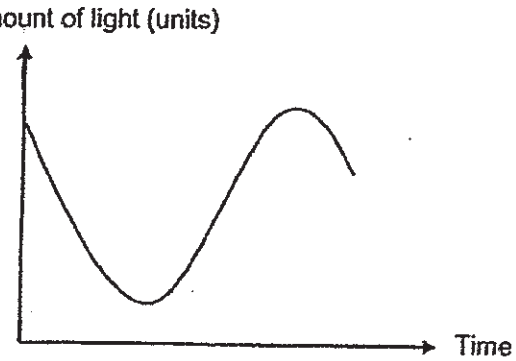
367

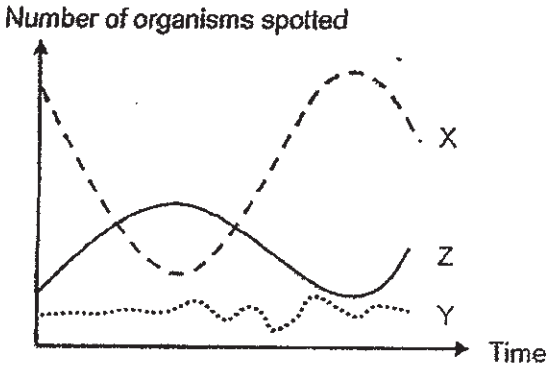
13 Graphs 1 and 2 show the temperature and amount of light in a certain area over a period of time. Graph 3 shows the number of three different organisms, X, Y and Z, spotted in the same period.



Graph 1



Graph 2



Graph 3

Which of the following can be concluded from the graphs?

A Organism X likes hot and bright places.

B Organism Y likes cool and dark places.

C The change in temperature and amount of light has the least effect on organism Z.

(1) A only

(2) C only

(3) A and B only

(4) B and C only

(Go on to the next page)

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14 Tree A grows at the bottom of a hill.

After some time, some seedlings of A were found growing on top of the hill.

Which of the following are possible methods of seed dispersal for tree A?

A wind
B water
C animal
D splitting

(1) A and B only
(2) A and C only
(3) B and C only
(4) B and D only

15 When a force is applied to a stationary object, several effects are possible.

Which of the following effects is **not** possible?

(1) The object rotates.
(2) The object does not move.
(3) The object changes shape.
(4) The object decreases in mass.

(Go on to the next page)

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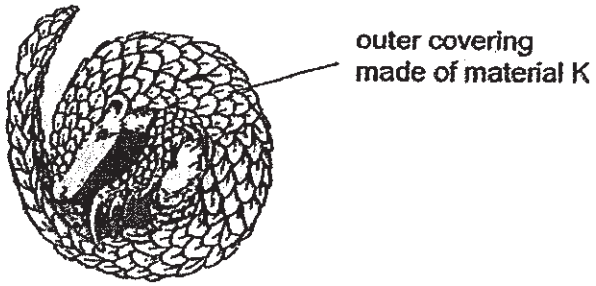
369

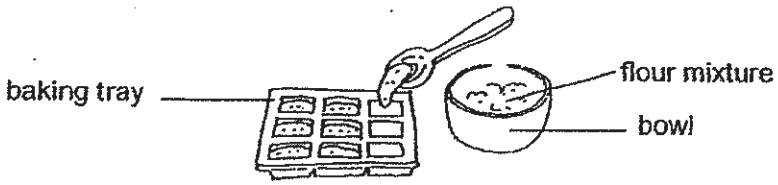
16 Animal P is a mammal that curls up into a ball when faced with predators. By doing this, predators cannot bite through it. Its outer covering is made of material K.



Which property of material K allows the outer covering to perform the functions described?

(1) strength
(2) waterproof
(3) transparency
(4) ability to float

17 Carrie transferred the flour mixture from a bowl into a baking tray as shown below.



Which of the following explains why the flour mixture can fill the spaces in the baking tray?

(1) The flour mixture has definite shape.
(2) The flour mixture has definite volume
(3) The flour mixture has no definite shape.
(4) The flour mixture has no definite volume.

(Go on to the next page)

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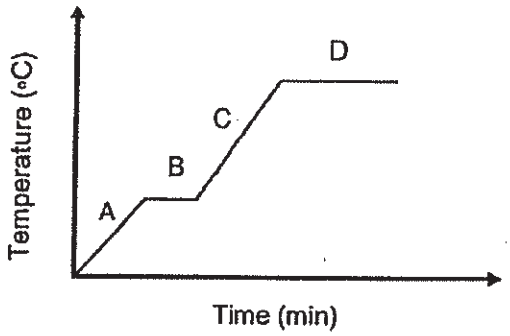
370

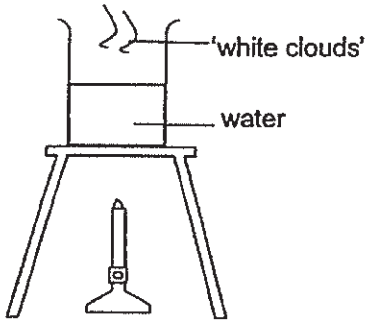
18 The graph below shows the changes in temperature of a beaker of water over time. A, B, C and D are different parts of the graph.



Which of the following best explains the change in temperature of water at part C of the graph?

(1) Water in the beaker was boiling.
(2) Water gained heat from a heat source.
(3) The beaker of water was placed into a freezer.
(4) Water in the beaker lost heat to the surrounding.

19 Jane boiled a beaker of water. Two processes, A and B, took place. Process A took place in the water and process B resulted in the formation of the 'white clouds'.



Which of the following is correct?

	Process A	Process B
(1)	evaporation	condensation
(2)	boiling	evaporation
(3)	condensation	boiling
(4)	boiling	condensation

(Go on to the next page)

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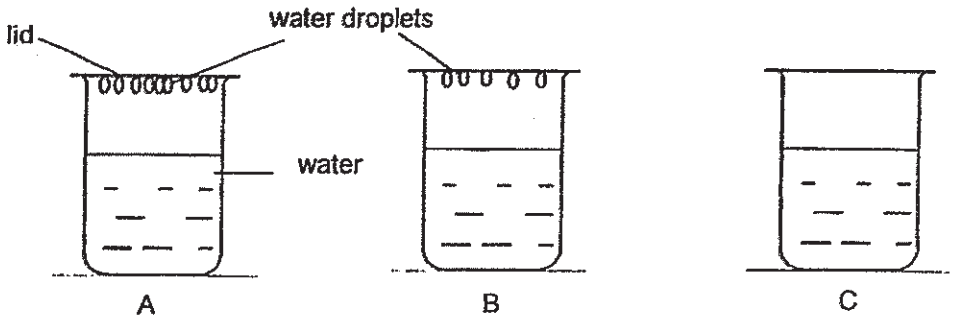
371

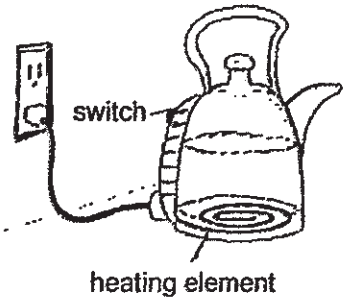
20 Three identical beakers were filled with water of different temperatures and covered with identical lids. The diagrams below show the observations made on the lids of the three beakers 20 minutes after they were placed in a room at 30°C.



Which of the following correctly shows the temperature of the water in each beaker at the start?

	A	B	C
(1)	90°C	10°C	30°C
(2)	30°C	90°C	10°C
(3)	90°C	50°C	30°C
(4)	30°C	40°C	90°C

21 The diagram below shows a kettle with its heating element.



Which of the following shows the energy conversion that will take place when the kettle is switched on?

(1) electrical energy → heat energy

(2) elastic potential energy → heat energy

(3) heat energy → electrical energy → heat energy

(4) chemical potential energy → electrical energy → heat energy

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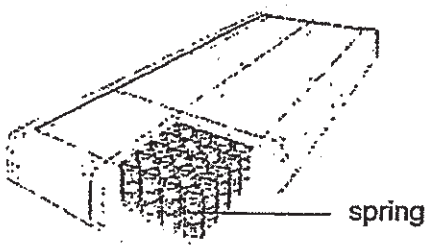
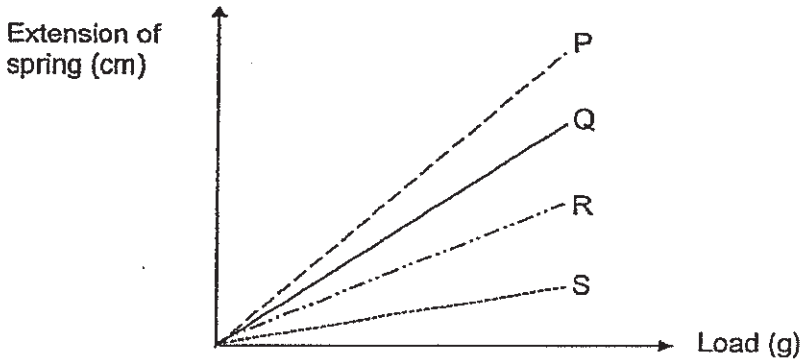
372

22 The inside of spring mattresses are filled with springs to provide support.



spring mattress

A spring mattress manufacturer wants to make a firm spring mattress that can support heavy persons. The graph below shows the extension of four different springs, P, Q, R and S, when loads were hung on them. The springs used are similar except for the material of the spring.



Which spring should the manufacturer choose to make the mattress if he wants the firmest possible mattress?

(1) P
(2) Q
(3) R
(4) S

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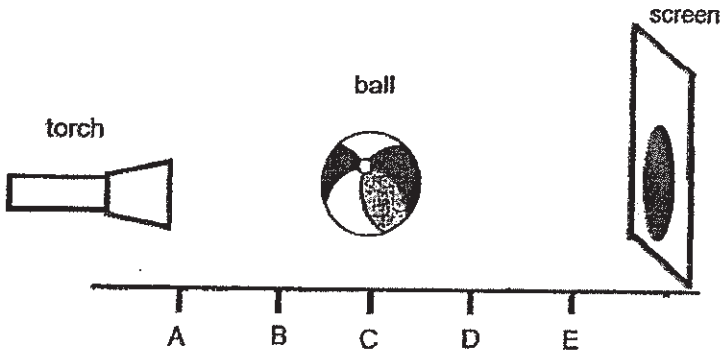
373

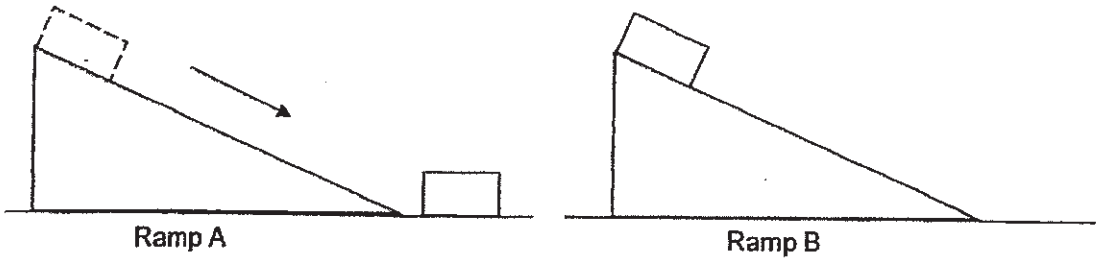
23 A ball is placed at position C. When a torch is shone from position A, a shadow is formed on the screen.



Without shifting the positions of the torch and screen, which position should the ball be placed to form the biggest shadow on the screen?

(1) B
(2) C
(3) D
(4) E

24 Ramps A and B are of the same size. Two identical blocks are placed on the ramps and released from the same height. The block on ramp A slid down but the block on ramp B did not move.



Which of the following statements is/are likely explanation(s) for the observations?

A Ramp A has a smoother surface than ramp B.
B Frictional force is present between the block and ramp B but not present on ramp A.
C The block on ramp A had more gravitational force acting on it than the block on ramp B.

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

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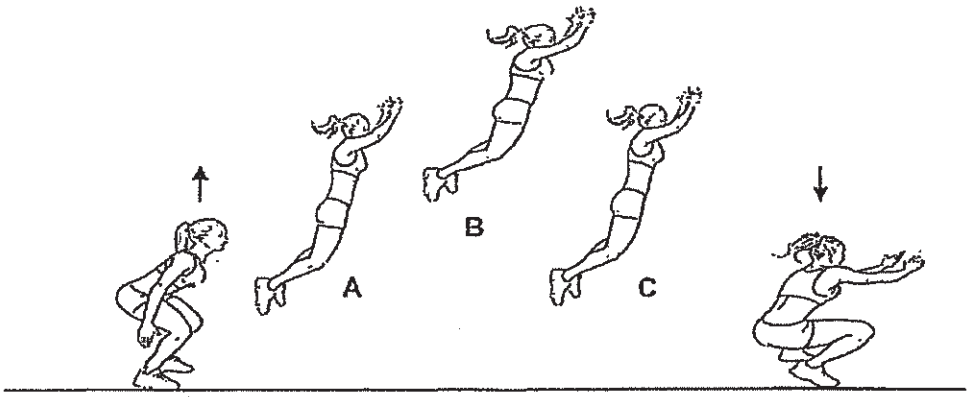
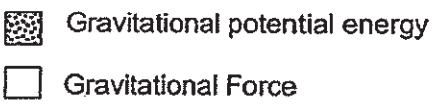
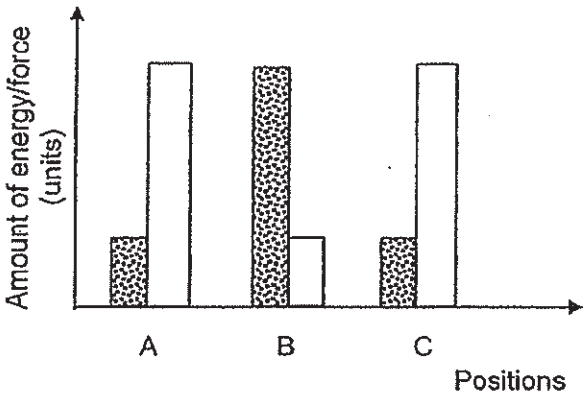
25 The diagram below shows a girl performing standing broad jump.



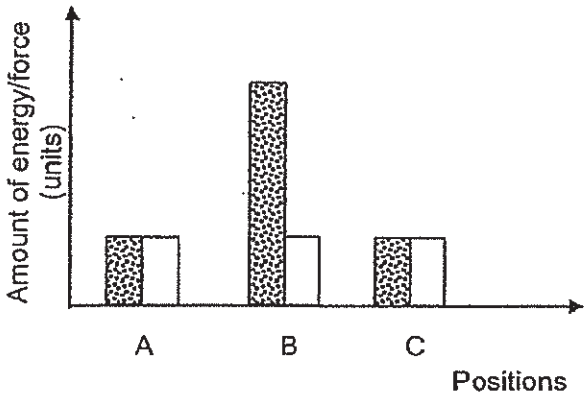
Which of the following shows the amount of gravitational potential energy and gravitational force of the girl at A, B and C?



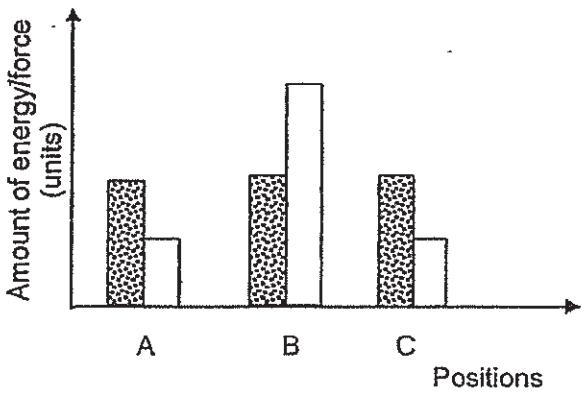
(1)



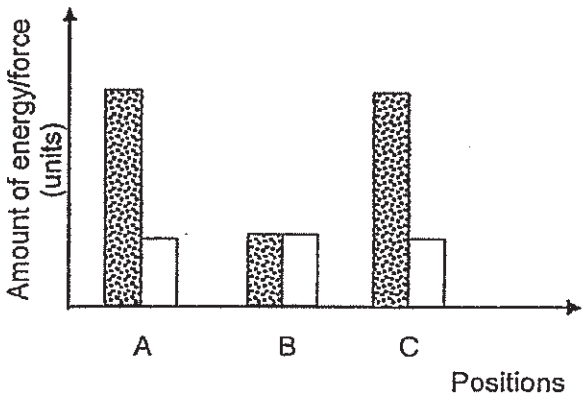
(2)



(3)



(4)



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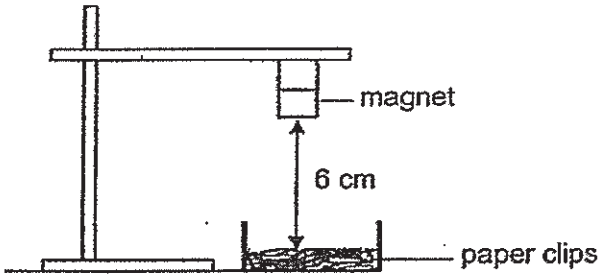
375

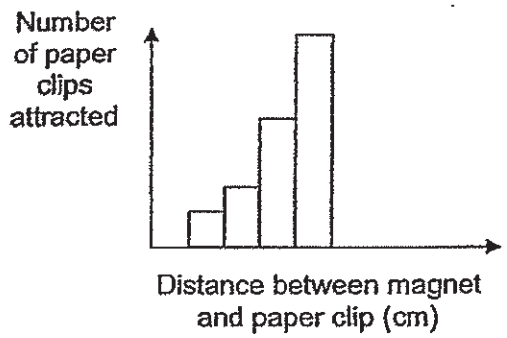
26 Kevin used a strong bar magnet to conduct the following experiment. He placed the magnet 6 cm away from 50 identical paper clips and counted the number of paper clips attracted to the magnet.



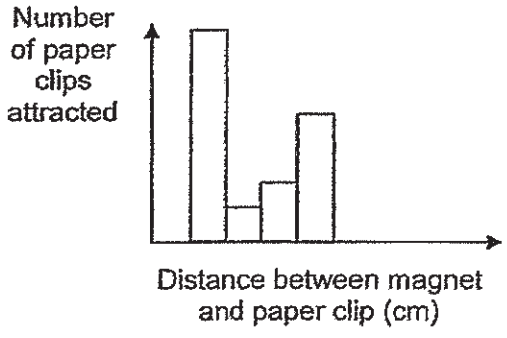
He repeated the experiment by increasing the distance between the magnet and paper clips.

Which of the following graphs is most likely the results of Kevin's experiment?

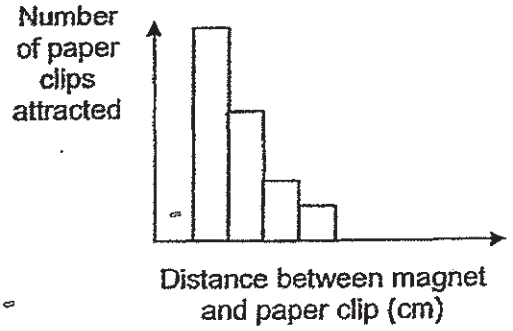
(1)



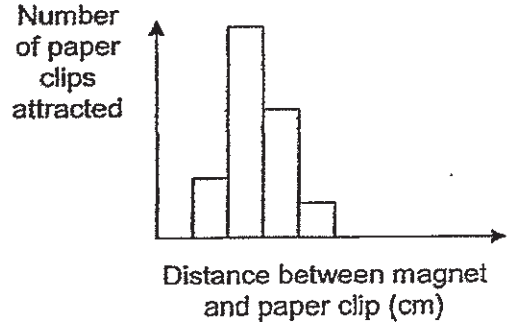
(2)



(3)



(4)



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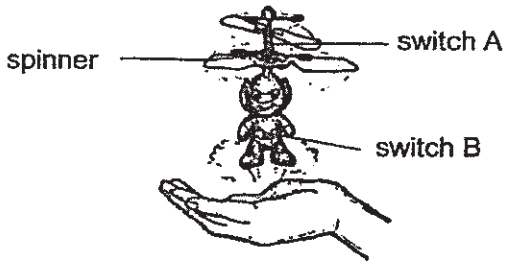
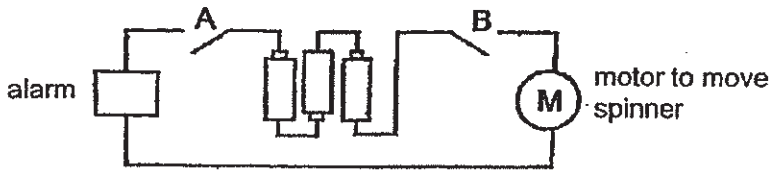
27 Luke has a toy that works on batteries.



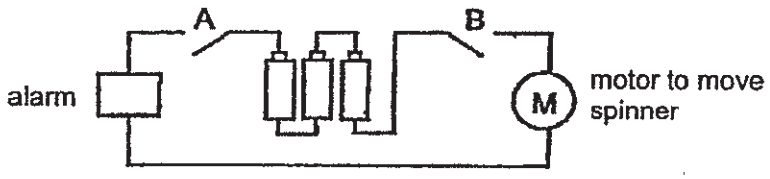
His observations of the toy when different switches are switched on are shown below.

Switched on	Observation
Both A and B	Spinner turned. Toy alarm made a sound.
B only	Spinner turned. Toy alarm did not make a sound.
A only	Spinner did not turn. Toy alarm made a sound.

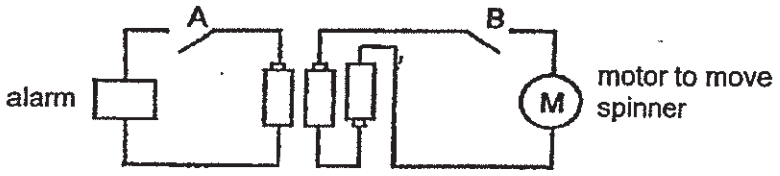
(1)



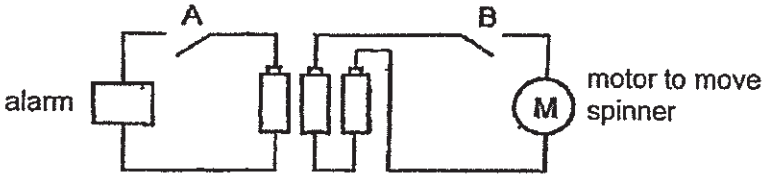
(2)



(3)



(4)



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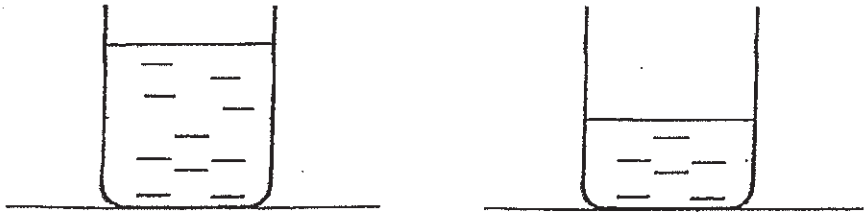
28 Jane poured 450 cm^3 of boiling water into container A and 200 cm^3 of boiling water into container B. Containers A and B are identical.



Container A Container B

Which one of the following is correct?

(1)

Container	Temperature of water (°C)	Amount of heat (units)
A	100	1200
B	100	1200

(2)

Container	Temperature of water (°C)	Amount of heat (units)
A	100	1200
B	100	500

(3)

Container	Temperature of water (°C)	Amount of heat (units)
A	100	1200
B	90	500

(4)

Container	Temperature of water (°C)	Amount of heat (units)
A	100	1200
B	90	1200

END OF BOOKLET A

Go on to Booklet B

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378

MARIS STELLA HIGH SCHOOL (PRIMARY)

SA1 EXAMINATION

SCIENCE

16 MAY 2019

BOOKLET B

NAME: _____ ( )

CLASS: Primary 6 ( )

13 questions

44 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A:	**/ 56**
Booklet B:	**/ 44**
Grand Total:	**/ 100**

Parent's Signature: _____

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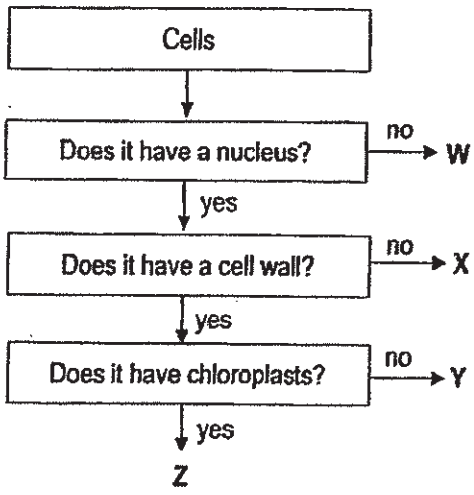
For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Study the flowchart below.



(a) Which cell, W, X, Y or Z, cannot reproduce? [1]

(b) Which cell, W, X, Y or Z, is most likely taken from the root of a plant? Explain your answer. [1]

(c) State the function of the chloroplast. [1]

3

(Go on to the next page)

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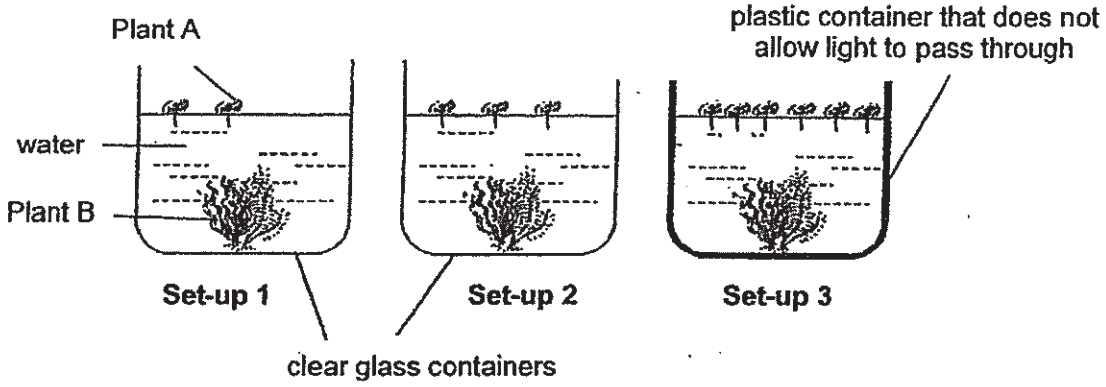
30 Tom carried out an experiment to find out if the growth of Plant B is affected by the number of Plant A.

The diagrams below show the set-ups which he placed near the window for his experiment.



After 2 weeks, he noticed that the leaves of Plant B in Set-up 3 turned yellow.

(a) Explain why the leaves of Plant B in set-up 3 turned yellow. [1]

(b) Tom did not conduct a fair test.
Suggest a change to one of Tom's experimental set-ups to make it a fair test. [1]

(c) Suggest a control set-up to confirm that the growth of Plant B is only affected by the number of Plant A. [1]

3

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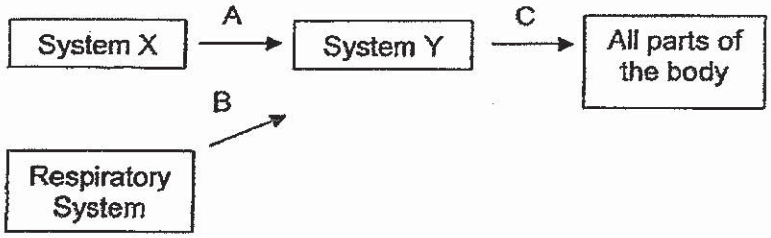
381

31 The diagram below shows the direction of blood flow in some parts of the human body. Systems X and Y are two different human body systems.



(a) Identify systems X and Y. [1]

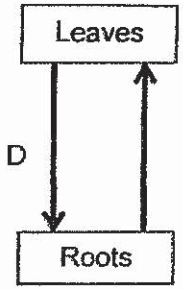
System X: _____

System Y: _____

(b) Name two substances that are transported by the blood in C. [1]

_____

The diagram below shows the plant transport system.



(c) Which arrow(s), A, B and/or C, in the human body system transport(s) similar substance as arrow D? [1]

_____

	3

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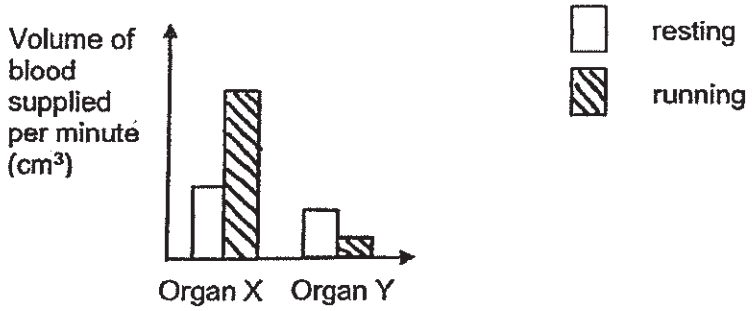
382

The graph below shows the amount of blood supplied to the legs and small intestines of a person during resting and running.



(d)(i) Which organ, X or Y, represents the legs and small intestines? [1]

Legs: _____ Small intestines: _____

(ii) Using the graph above, explain why more blood is supplied to organ X when running. [1]

_____

_____

2

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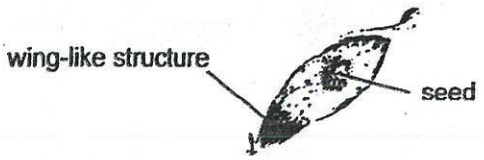
383

32 Chee Beng was given two fruits from plant G. One fruit had its wing-like structure cut off and another fruit was left intact.



fruit with wing-like structure

fruit without wing-like structure

He dropped both fruits from a height of 10 metres and recorded the time the fruits took to reach the ground. His results are shown in the table below.

	Time taken for fruit to reach the ground (s)			
	1st try	2nd try	3rd try	Average
Fruit with wing-like structure	8.6	8.1	8.5	8.4
Fruit without wing-like structure	4.5	4.8	4.2	4.5

(a) How are the fruits of plant G most likely dispersed? [1]

(b) Based on Chee Beng's results, explain how the fruit's wing-like structure helps the fruit in dispersal. [1]

(c) Other than having wing-like structures, state another likely characteristic of the fruits of plant G that helps them in dispersal. [1]

	3

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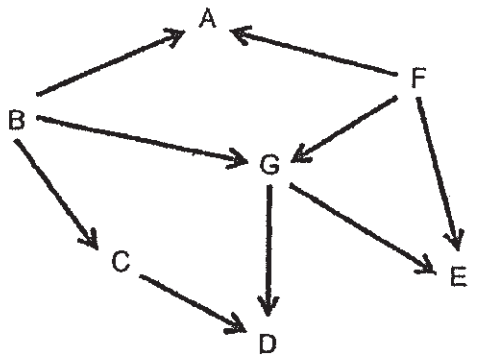
33 Study the food web below.



(a) Fill in the table below with organisms from the food web. [1]

Eats plant only	Eats meat only

(b) What is likely to happen to the population of organism G if a disease killed all organism A in the community? Explain your answer. [2]

_____

_____

_____

(c) When organism P was introduced to the above community, the populations of both organism C and organism G increased within a short period of time.

Add organism **P** into the food web above. [1]

	4

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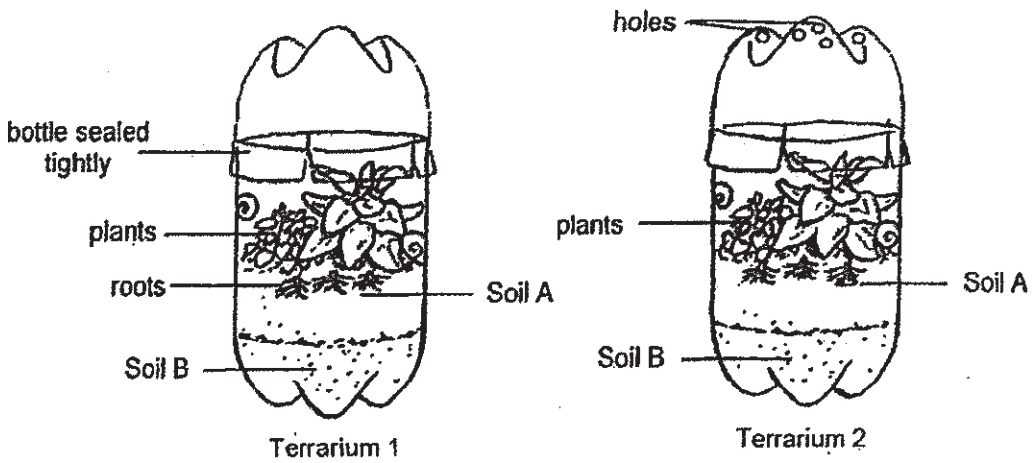
385

34 Susan placed terrariums 1 and 2 by a window. Both terrariums are identical except that terrarium 2 has holes in its upper cover but terrarium 1 does not.



(a) Explain why terrarium 1 does not have to be watered as often as terrarium 2. [2]

(b) Susan used two types of soil, A and B, to build the terrariums. One of the soils had smaller soil particles than the other. Soils A and B are positioned such that the plants can take in as much water as possible.

Which soil, A or B, is likely to be the one with smaller soil particles? Give a reason for your answer. [1]

	3

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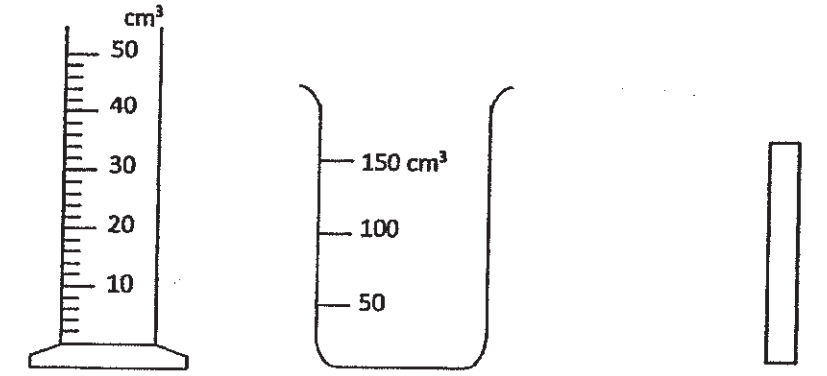
386

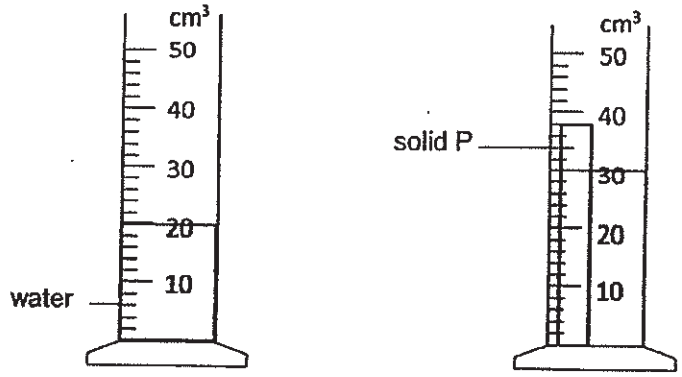
35 The diagrams below show a measuring cylinder, a beaker and solid P.



measuring cylinder A beaker B solid P

(a) The measuring cylinder is more suitable to measure the volume of solid P. Explain why. [1]

Roy placed solid P into measuring cylinder A and concluded that the volume of solid P is 10 cm³.



(b) Give a reason why it is wrong to say that the volume of object P is 10 cm³. [1]

(c) Max told Roy that in order to find the volume of solid P, he needs to fill cylinder A with 50 cm³ of water before placing solid P in.

Do you agree with Max? Explain your answer. [1]

3

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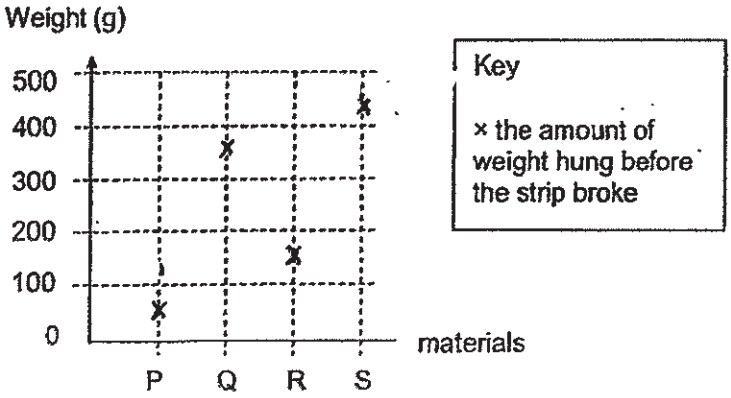
387

36 Ron had 4 different strips of materials, P, Q, R, S, of the same length and thickness. He set up an experiment as shown below to test the strength of each material.

He hung 20-g weights, one at a time, on the strip made of material P until it broke. He repeated the experiment using strips Q, R and S. The graph below shows the amount of weight needed to break each material.



(a) Based on the graph, what can you conclude about materials P, Q, R and S? [1]

(b) What can Ron do to more accurately measure the strength of each material? [1]

(c) Other than the length and thickness of the strips, state another important variable that has to be kept the same for the experiment to be fair. [1]

3

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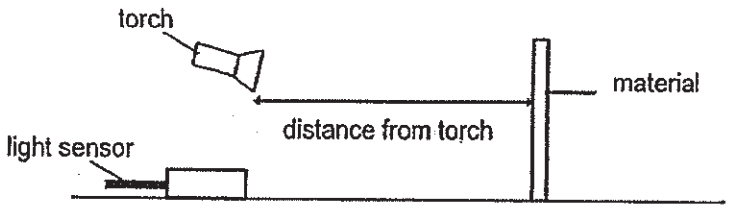
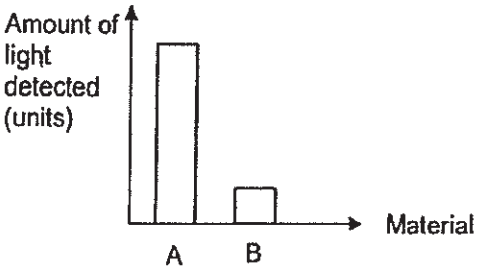
388

37 Ethan conducted an experiment to find out how much light materials A and B reflect. He set up the experiment as shown below and placed materials A and B, one at a time, a fixed distance away from the torch.



He recorded the amount of light detected by the light sensor for each material. The graph below shows his results.



(a) Study the statements below and put a tick (✓) in the appropriate boxes. [2]

	Statement	True	False	Not possible to tell
(i)	Material B allows light to pass through.			
(ii)	Material A reflects more light than material B.			

(b) Explain why Ethan had to conduct the experiment in a dark room to ensure a fair test. [1]

_____

_____

	3

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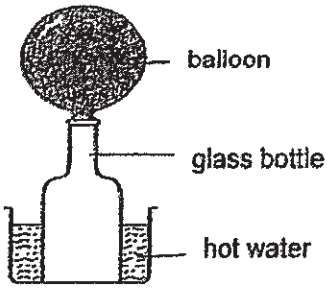
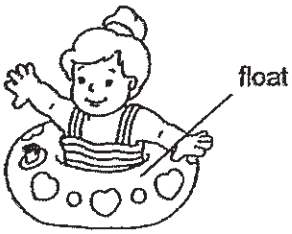
389

38 Kim set up the experiment as shown below.



(a) Why did the balloon inflate when the glass bottle is placed in hot water? [1]

A float is used to keep someone afloat in the water.



(b) Kim observed that the float became firmer when she left it under the hot sun.
Give a reason for her observation. [1]

(c) Kim could continue to pump air into the float even when it was fully inflated.
What property of air does this show? [1]

	3

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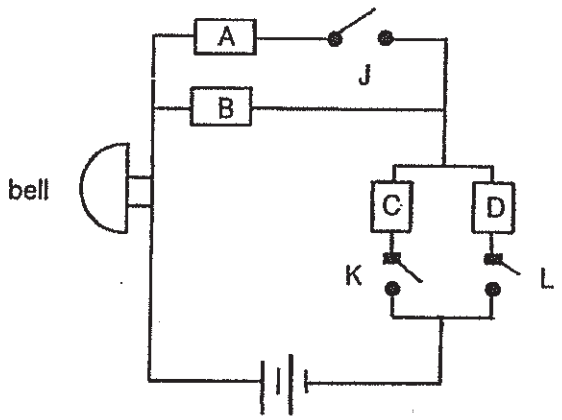
390

39 Alex used the electrical circuit below to find out if materials A, B, C and D are conductors of electricity.



Alex's observations when different switches were closed are recorded in the table below.

Switch J	Switch K	Switch L	Did the bell ring?
open	open	closed	Yes
open	closed	open	Yes
closed	open	closed	Yes

(a) Study the statements below and put a tick (✓) in the appropriate boxes. [2]

	Statement	True	False	Not possible to tell
(i)	Material A is a conductor of electricity.			
(ii)	Material B is a conductor of electricity.			

(b) If material C is replaced with aluminium in the electrical circuit above, will the bell ring when all 3 switches, J, K and L, are closed? Explain your answer. [1]

_____

_____

	3

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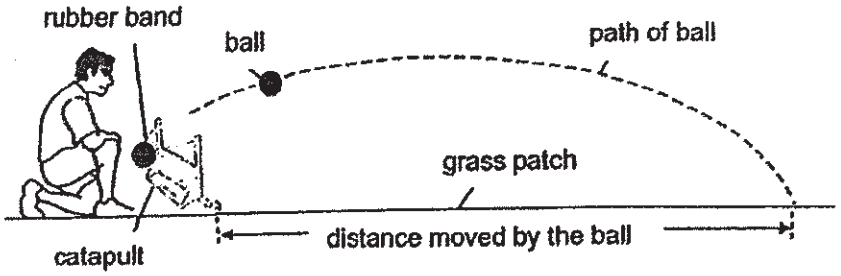
40 Sam carried out an experiment with a catapult and a ball. When he pulls the rubber band back and releases it, the ball flies upwards before landing on the grass patch.



He measured the distance moved by the ball and recorded his results in the table below.

	Distance moved by the ball (cm)
1st try	180
2nd try	300
3rd try	250

(a) Why is there a need for Sam collect results for three tries? [1]

_____

(b) Sam did not make any changes to his set-up for all three tries of his experiment. Suggest a reason for the big difference in the distance moved by the ball for each try. [1]

_____

_____

(c) Sam added 2 rubber bands to the catapult and repeated the experiment. How will this affect the distance moved by the ball? Explain your answer. [2]

_____

_____

(d) Sam's friend suggested that he conduct the experiment on a sand pit instead of the grass patch. How does the change help in measuring the distance moved by the ball? [1]

_____

_____

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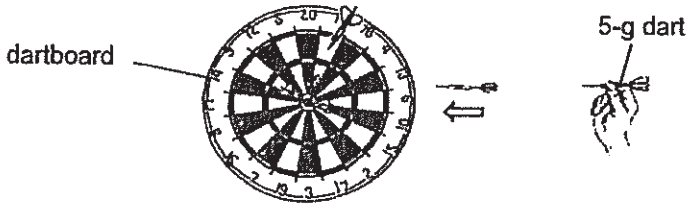
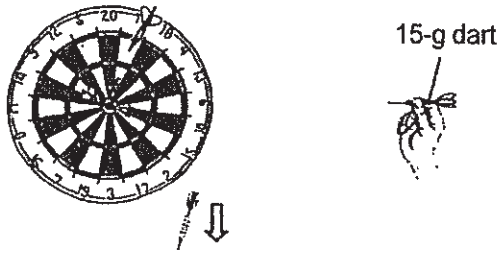
41 The picture below shows a dartboard. When Remy throws a 5-g dart onto the board, the dart remained on the board.



(a) Name the force that allowed the dart to remain on the board. [1]

When Remy threw a 15-g dart onto the board, it stayed on the board for a while before falling to the ground.



(b) Give a reason for his observation made with the 15-g dart. [1]

(c) How can Remy throw the 15-g dart to ensure that it stays on the board after hitting the board? [1]

END OF BOOKLET B

	3

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : MARIS STELLA
SUBJECT : SCIENCE
TERM : SA1

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	4	4	2	2	4	2	2	3	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	4	1	2	4	1	3	2	4	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
1	4	1	1	2	3	3	2		

BOOKLET B

Q29 (a) Cell W.

(b) Cell Y. It has a nucleus and a cell wall but no chloroplasts.

(c) It traps sunlight and makes food.

Q30 (a) Set-up 3 was made with a plastic container that does not allow light to pass throught so the plant lesser sunlight to make food. Therefore, the leaves of Plant B turned yellow in set-up 3.

(b) Change set-up 3 to one with clear glass.

(c) Use the same container with the same amount of water with plant B but has no plant A.

Q31 (a) System X : Digestive system.
System Y : Circulatory system.

(b) Digested food and oxygen.

(c) C.

(d)(i) Legs : X Small intestines : Y

(ii) To allow the legs to have more oxygen and digested food to get more energy for running.

Q32 (a) By wind.

(b) It helps the fruit to glide longer in the air and further away from the parent plant by wind.

(c) The seeds are light weight.

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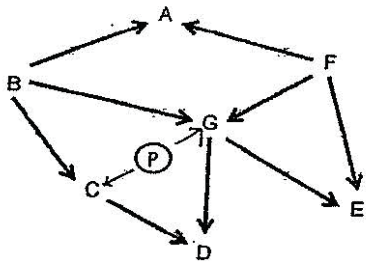
Q33 (a) Eats plants only : A, C and G Eat meat only: D

(b) The population of organism G will increase as A feed on F and B. With no A, there would be more organism F and B as organism A feed on F and B. Organism G feeds on B amd F so with more organism B and F, G will have more food and organism G will increase.

(c)



Q34 (a) In terrarium 1, water from the soil and water, lost through to stomata will evaporate and water vapour will condense on the cooler surface of the top of the terrarium. The water vapour will condense to water droplets and drip down to soil. But water vapour can escape in terrarium B.

(b) Soil A. It has smaller air spaces to retain more water.

Q35 (a) Measuring cylinder A. It has smaller units of measurement which will give a more accurate reading.

(b) Solid P is not fully submerged.

(c) No. No reading above 50cm^3 and water will overflow.

Q36 (a) S is the strongest followed by Q, R and P.

(b) Use smaller unit of weights.

(c) The weight of the weight. <OR> Distance between the planks position at which the weights were hung.

Q37 (a)(i) Not possible to tell.

(ii) True

(b) To ensure that the light detected by the light sensor is only the reflected light from the material and not other light sources.

Q38 (a) The air in the bottle gaine heat from the hot water and expanded and occupied more space. Therefore, the ballon will inflate.

(b) Air in the float gained heat from the sun and expanded. The air was more compressed causing the float became firmer.

(c) Air does not have a definite volume.

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Q39 (a)(i) Not possible to tell.

(ii) True

(b) Yes. Aluminium is a conductor of electricity so current can flow through and the circuit made the bell to ring.

Q40 (a) Increase reliability of results.

(b) Sam pulled the rubber band back to different distance.

(c) The distance moved by the ball will increase as more rubber bands. there will be more elastic potential energy to convert kinetic energy.

(d) A mark will be made on the sand.

Q41 (a) Frictional force.

(b) Gravittional force is greater than the frictional force between the dart and the board.

(c) Throw the dart with more force.

3

2 N P.

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET A

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____ ( )

Class: Primary 6._____

Date : 16 May 2019

This booklet consists of 19 printed pages including this page.

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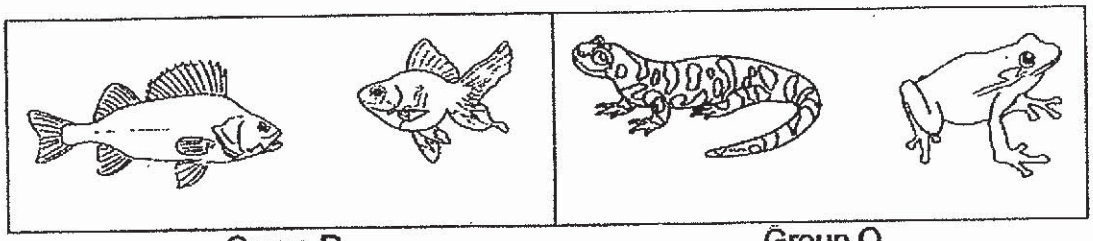
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS).

[28 marks]

---

1 Study the two groups of organisms, P and Q shown below.



Group P Group Q

Based on the diagram, some pupils made the following comparisons between the two groups of organisms in the table below.

Amirul	The organisms in Group P breathe through gills but organisms in Group Q breathe through lungs and moist skin.
Bo Zhang	The organisms in Group P give birth but the organisms in Group Q lay eggs.
Chloe	The organisms in Group P and Q have scales as their outer covering.

Which of the pupil(s) made a **correct** comparison?

(1) Amirul only
(2) Bo Zhang only
(3) Amirul and Chloe only
(4) Bo Zhang and Chloe only

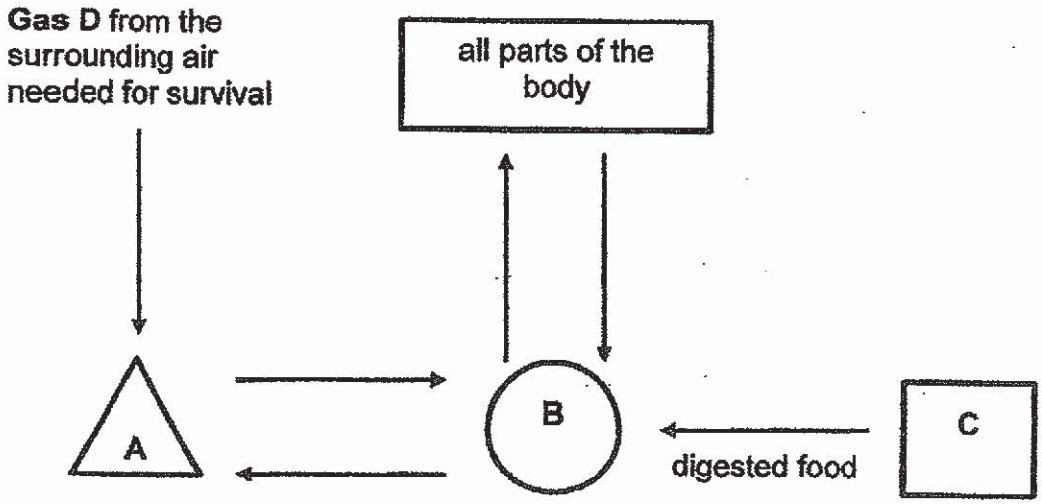
2 Which of the following statement(s) about fungi is/are true?

A All fungi are microorganisms.
B Fungi are non-flowering plants.
C Fungi reproduce through spores.
D Fungi can make food in the presence of sunlight.

(1) B only
(2) C only
(3) A and C only
(4) B and D only

(Go on to the next page)

3 The diagram below shows how the various body systems work together in a human body.

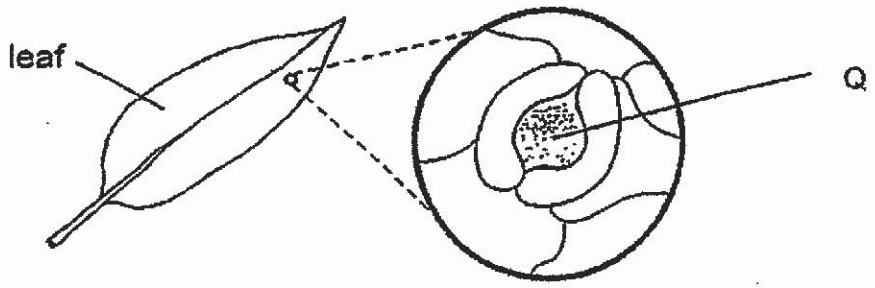


Which of the following identifies body systems A, B, C and Gas D?

	System A	System B	System C	Gas D
(1)	digestive	circulatory	respiratory	oxygen
(2)	respiratory	digestive	circulatory	carbon dioxide
(3)	circulatory	respiratory	digestive	carbon dioxide
(4)	respiratory	circulatory	digestive	oxygen

(Go on to the next page)

4 The diagram below shows Part Q which is found on the leaves of a land plant.



Some pupils made the following statements shown in the table below.

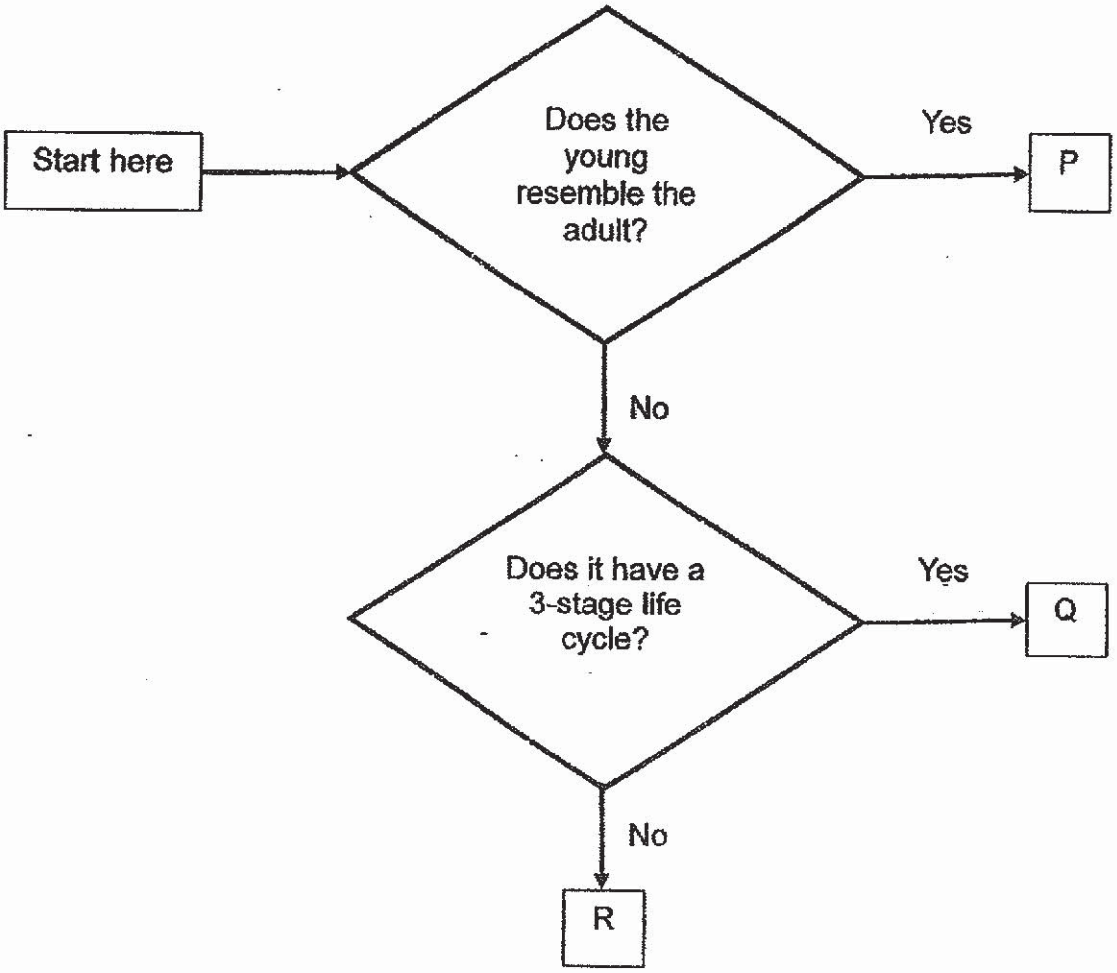
Jaya	More of Part Q can be found on the underside of the leaf.
Fatimah	Part Q helps the plant absorb sunlight during photosynthesis.
Rose	Part Q allows gaseous exchange for the plant.

Which of the pupil(s) is/are correct?

(1) Jaya only
(2) Fatimah only
(3) Jaya and Rose only
(4) Jaya and Fatimah only

(Go on to the next page)

5 The flow chart below shows the characteristics of organisms P, Q and R.

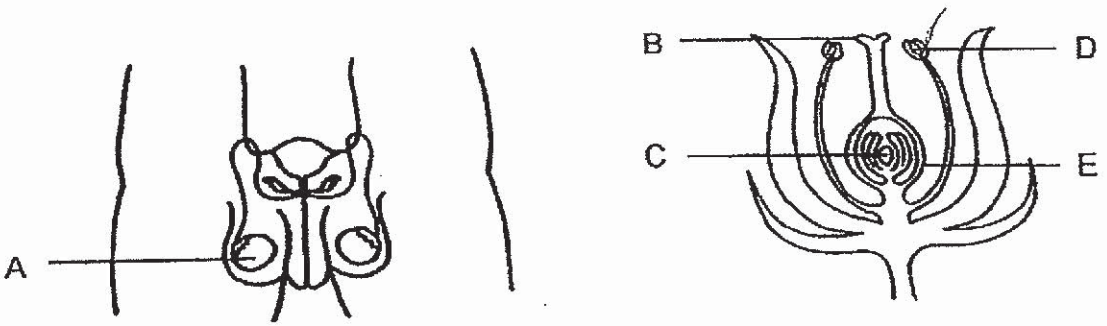


Which of the following best represents organisms P, Q and R?

	P	Q	R
(1)	chicken	mosquito	butterfly
(2)	chicken	frog	grasshopper
(3)	grasshopper	chicken	beetle
(4)	cockroach	frog	mosquito

(Go on to the next page)

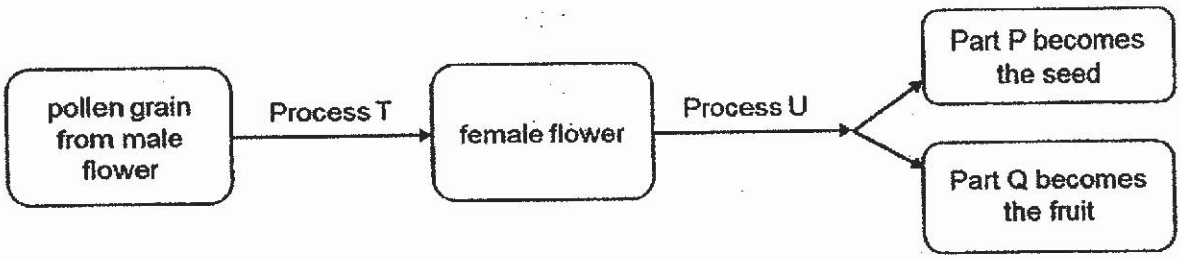
6 The diagrams below show the parts of the reproductive systems of a human and a plant.



Which part of the flower has a similar function as Part A?

(1) B
(2) C
(3) D
(4) E

7 The diagram below shows the processes that a flowering plant undergoes to become Part P and Q.



Which one of the following represents Process T, U and Part P, Q correctly?

	Process T	Process U	Part P	Part Q
(1)	pollination	fertilisation	ovule	ovary
(2)	fertilisation	pollination	ovule	ovary
(3)	germination	dispersal	ovary	ovule
(4)	pollination	germination	ovary	ovule

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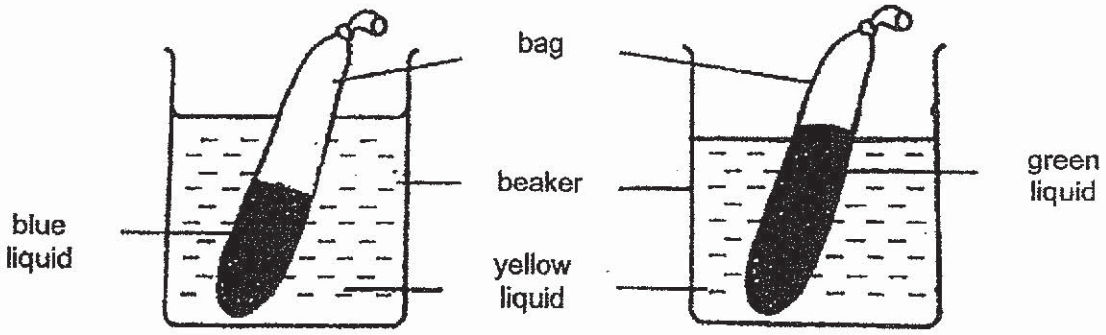
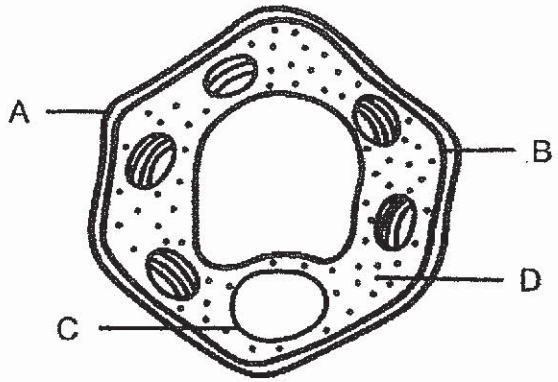
8 Jimin added some blue liquid into a bag. He placed the bag into a beaker of yellow liquid as shown below.



After 30 minutes, the liquid in the bag increased in volume and turned green. He learnt in his art lesson that when blue and yellow paint are combined, it becomes green paint. The liquid in the beaker remained yellow but decreased in volume.

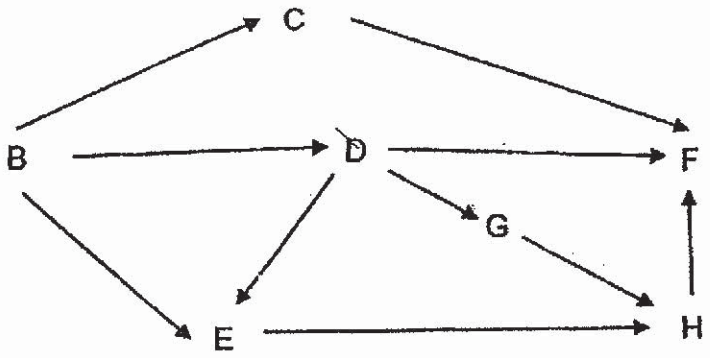
Which part of the plant cell, A, B, C or D functions in a similar way to the bag in the experiment?



(1) A
(2) B
(3) C
(4) D

(Go on to the next page)

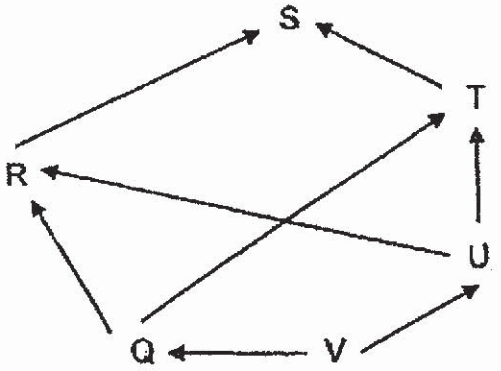
9 Study the food web below.



If the whole population of D is killed by a disease, which of the following population will decrease the most?

(1) B
(2) E
(3) F
(4) G

10 Study the food web below.

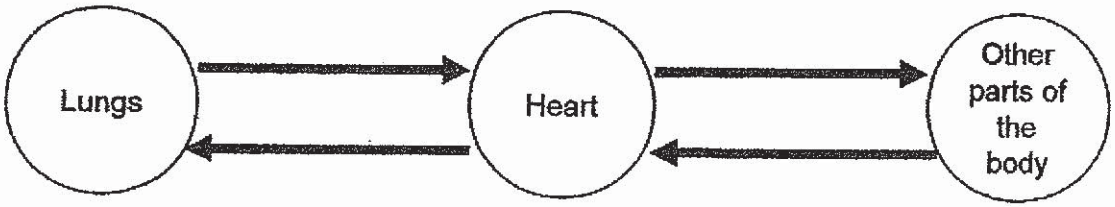


Which of the organisms are both prey and predator?

(1) Q and U only
(2) U and T only
(3) R and T only
(4) P and S only

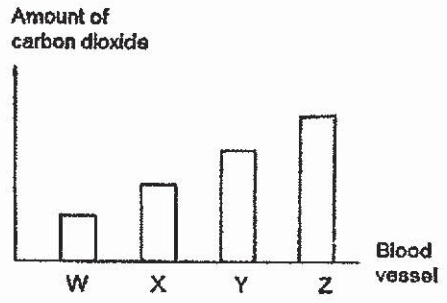
(Go on to the next page)

11 The diagram below shows the direction of blood flow in the blood vessel, W, X, Y and Z. They carry blood from one part to another part of the body. The arrows indicate the blood flow.

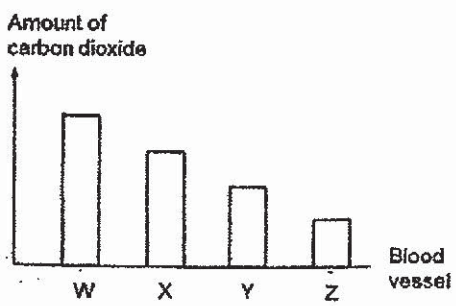


Which one of the following graphs represents the amount of carbon dioxide in blood vessels W, X, Y and Z?

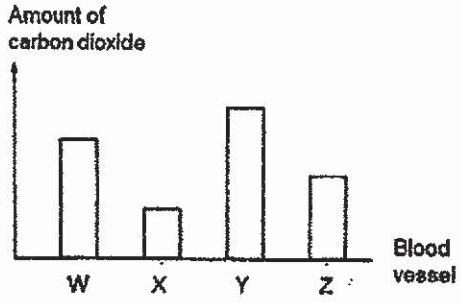
(1)



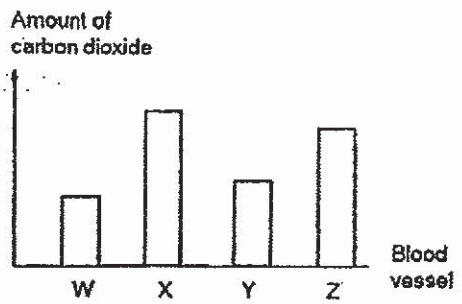
(2)



(3)



(4)



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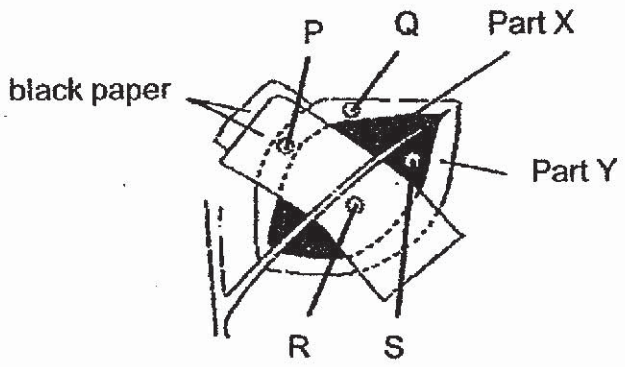
12 Study the diagram below.

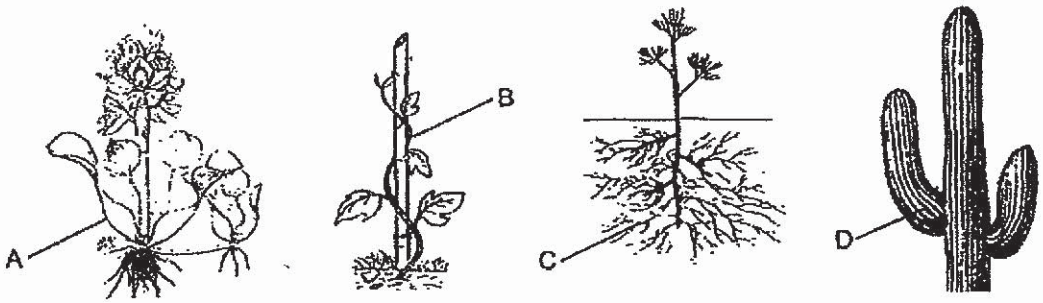


The leaf did not contain any starch at the beginning of the experiment. Part X contains chlorophyll but Part Y does not. The plant was placed under sunlight for six hours. P, Q, R and S were removed from the leaf in the positions shown above and were tested for starch using iodine solution.

Which one of the following correctly shows the colour change of P, Q, R and S after the iodine test?

	Dark blue	**Brown**
(1)	R and S	P and Q
(2)	P, Q and R	S
(3)	S	P, Q and R
(4)	Q and S	P and R

13 The diagrams below show the examples of adaptations A, B, C and D in plants.

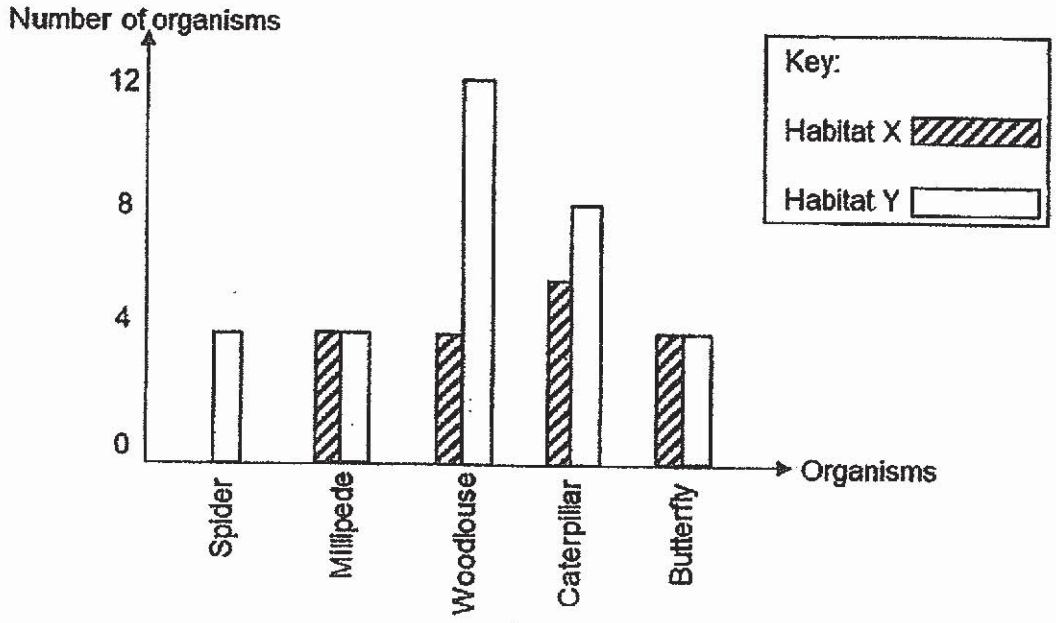


Which of the adaptation(s) help(s) the plant receive more water?

(1) C only
(2) D only
(3) A and C only
(4) B and D only

(Go on to the next page)

14 The bar graph below shows the number of different organisms living in habitat X and Y.



Based on the graph, which of the following statements are true?

A There are five populations of organisms in habitat Y.
B There are three populations of organisms in habitat X.
C Habitat Y has more populations of organisms than habitat X.
D The populations of the different organisms above form a habitat.

(1) A and C only
(2) A and D only
(3) B and C only
(4) C and D only

(Go on to the next page)

15 Rae tested four blocks, W, X, Y and Z, which are made of different materials. The properties of the four blocks are given in the table below.

Property	W	X	Y	Z
It conducts electricity	no	yes	yes	no
It is attracted by magnet	no	yes	no	no
It floats in water	no	no	no	yes

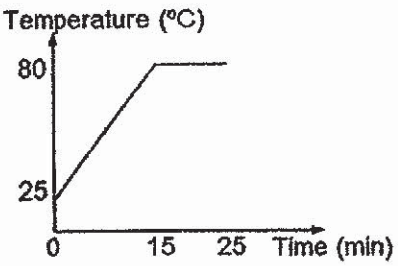
Which block(s) is/are made up of metal?

(1) X only
(2) Y and Z only
(3) X and Y only
(4) W and Z only

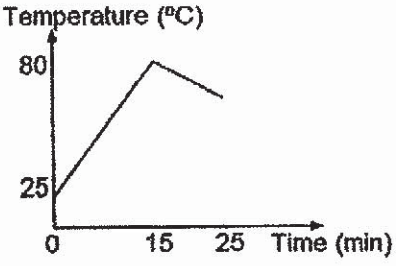
16 A steel bar was heated for 15 minutes and put into cold water for 10 minutes.

Which one of the graphs below shows how the temperature of the iron bar changed with time?

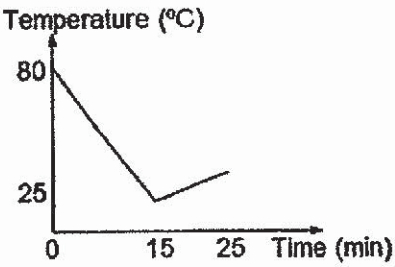
(1)



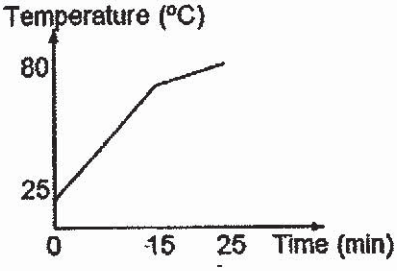
(2)



(3)



(4)



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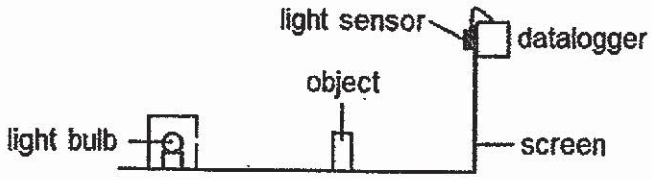
17 Xiao Ming set up an experiment as shown below. A light sensor was mounted above the screen.



He recorded the reading from the datalogger before placing the object and measured the length of the shadow at each position. The results are shown below.

Light sensor reading (units)	Length of shadow (cm)
110	6
160	9
250	13

What change did Xiao Ming make?

(1) He moved the torch nearer to the object.
(2) He moved the screen nearer to the torch.
(3) He moved the object away from the torch.
(4) He moved the torch away from the screen.

18 Which of the following statements about condensation and evaporation are correct?

A Both processes involve a change in state.
B Both processes occur at fixed temperatures.
C The rate for both processes are affected by the surrounding temperature.
D One process involves heat loss to the surrounding while the other involves heat gain from the surrounding.

(1) A and B only
(2) B and D only
(3) A, C and D only
(4) B, C and D only

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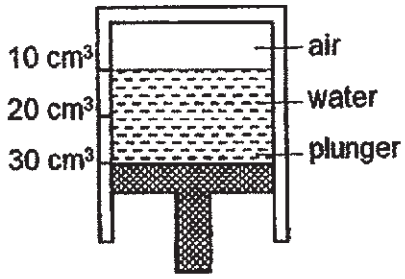
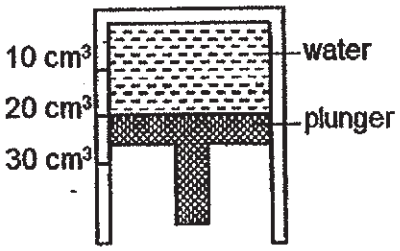
19 Rosie filled the cylinder with 20 cm^3 of water, leaving 10 cm^3 of air and covered it with a plunger as shown below. She then turned it upside down.

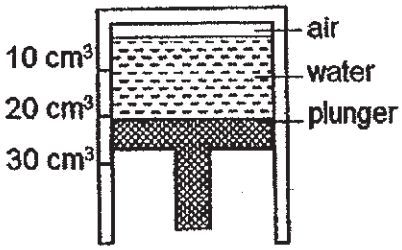


Which diagram below shows Rosie's observation after she pushed the plunger upwards as far as she could without any air or water escaping?

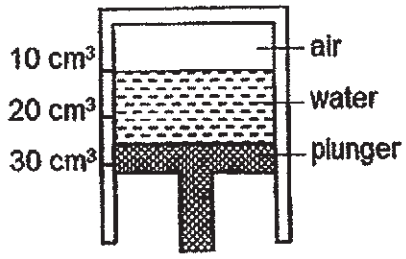
(1)



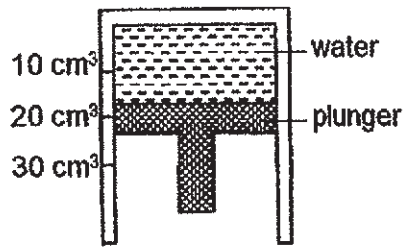
(2)



(3)



(4)



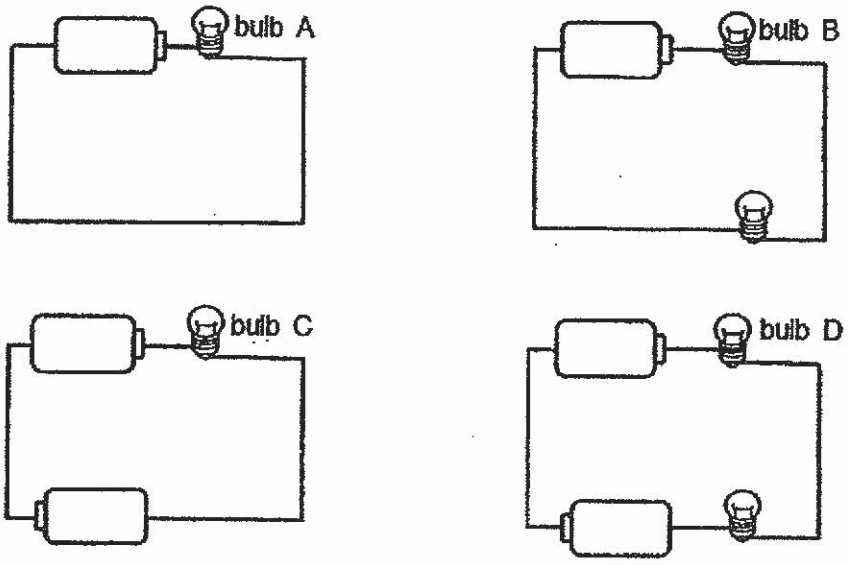
20 Which of the following are advantages of using hydropower to generate electricity?

A Hydropower does not cause air pollution.
B The construction of large dams destroys wildlife and its habitat.
C Hydropower is a renewable energy source.
D Hydropower changes the temperature of the water and the river's flow.

(1) A and C only
(2) A and D only
(3) A, B and D only
(4) A, C and D only

(Go on to the next page)

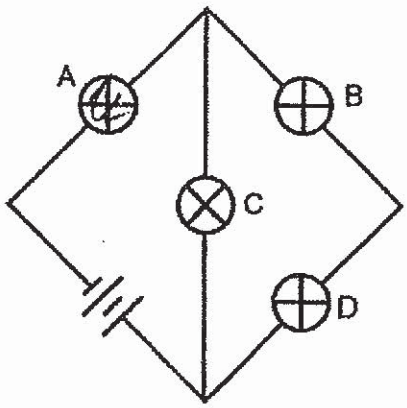
21 Study the four circuits below carefully.



Which of the following two bulbs have the same brightness?

(1) A and B
(2) A and D
(3) B and C
(4) C and D

22 After one of the bulbs in the circuit below had blown, all the other bulbs did not light up.



Which bulb had blown?

(1) A
(2) B
(3) C
(4) D

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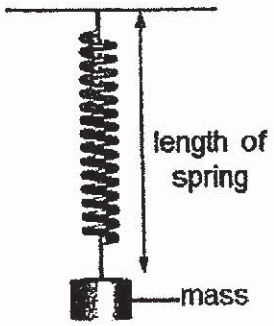
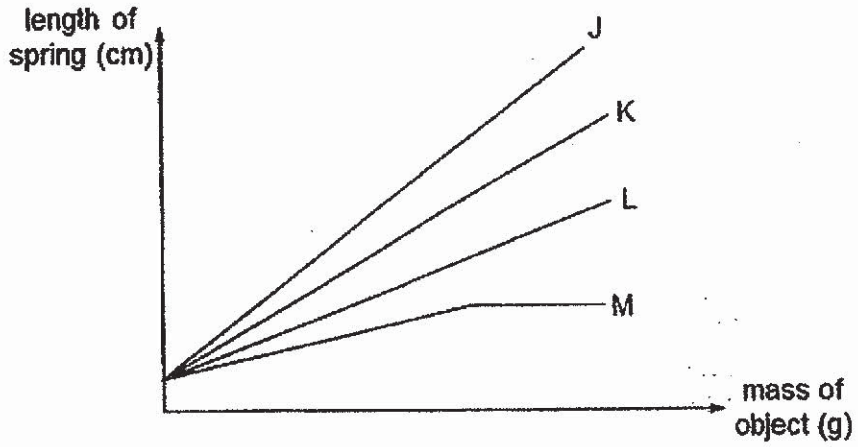
23 Alex used the set-up below to compare four types of springs, J, K, L and M.



He placed different masses on each spring and measured the length of the spring. The results are as shown in the graph below.



Using the same set-up, Alex wanted to find the small difference in mass between the two tomatoes below.

Which spring, J, K, L or M, would be the most suitable for his set-up?

(1) J
(2) K
(3) L
(4) M

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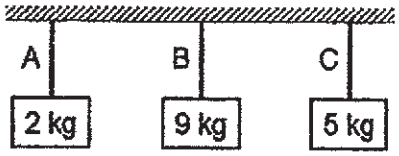
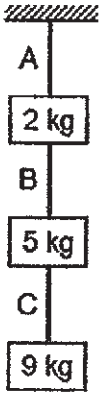
24 Ravi tested the strength of three types of string, A, B and C, by hanging weights on each string. The maximum mass that each string could hold before breaking is shown below.

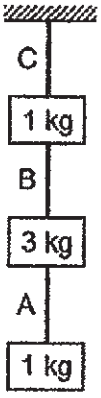


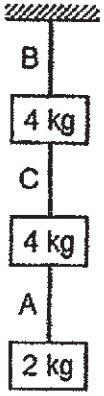
Ravi then tried a few arrangements of hanging different weights.

Which one of the following arrangements would be possible?

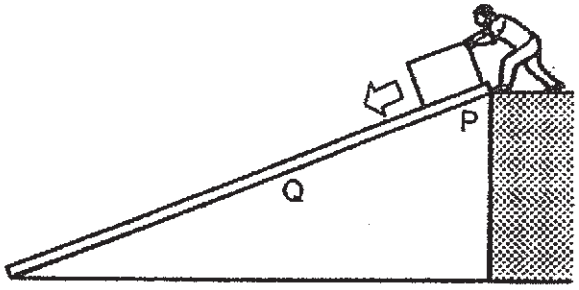
(1)


(2)

(3)


(4)


25 Bala wanted to move a box down a ramp. He gave a push to the box at position P, causing the box to slide down and stop at position Q.



Which of the following statements are correct?

A The box stopped at position Q because of friction.
B The box stopped at position Q because it has used up its energy.
C The amount of gravitational force acting on the box remained the same at position P and position Q.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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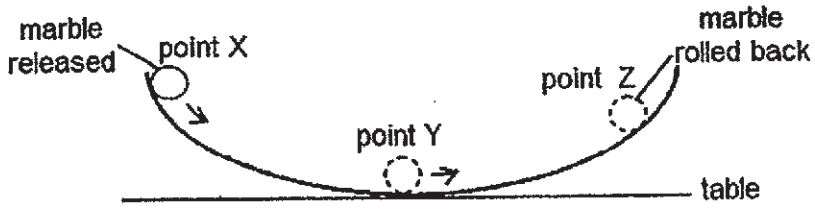
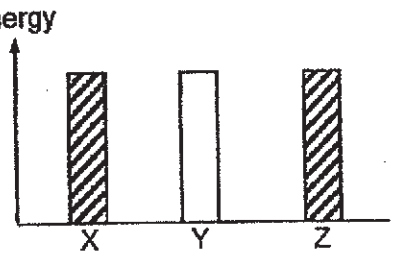
26 The diagram below shows a marble being released at point X on the rim of a bowl.



When it was released at point X, it rolled down the bowl to point Y and then moved up to point Z on the other side of the bowl before rolling back to point Y.

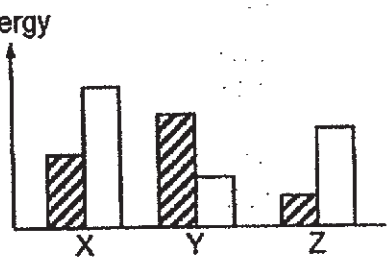
Which one of the following graphs shows the energy the marble possessed at point X, Y and Z when the marble rolled from X to Y and then Z?

(1)

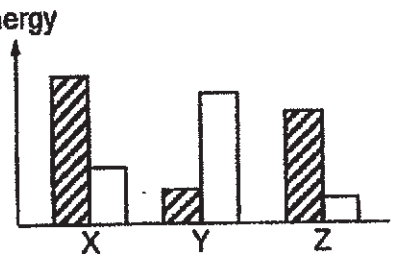


Legend:
Potential energy
Kinetic energy

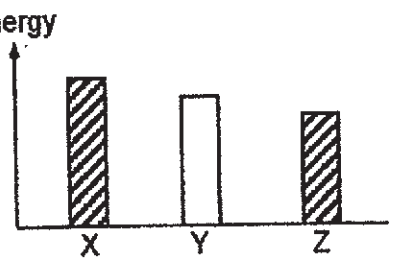
(2)



(3)



(4)



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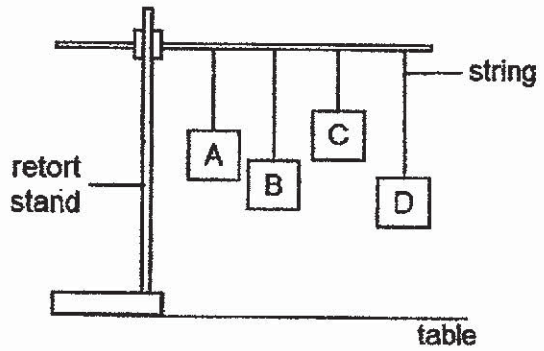
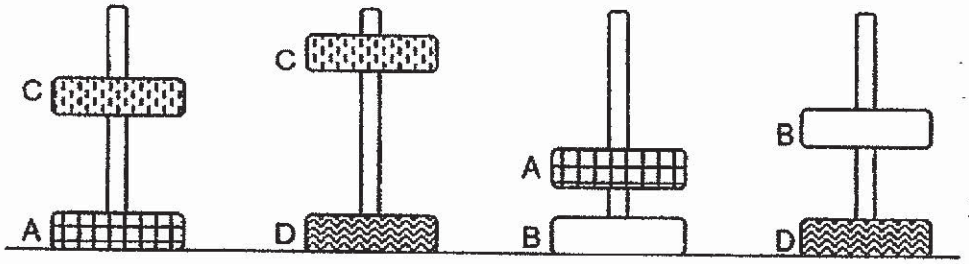
27 Four boxes of the same mass, A, B, C and D, were hung from a retort stand as shown below. The strings were then cut and the boxes fell to the table.



Which one of the boxes would have the least kinetic energy just before it hit the table?

(1) A
(2) B
(3) C
(4) D

28 James set up an experiment to study some ring magnets as shown below.



Which one of the following statements are correct?

A Magnet A has a stronger force than Magnet B
B Magnet B has a stronger force than Magnet C
C Magnet C has a stronger force than Magnet B
D Magnet D has a stronger force than Magnet A

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

End of Booklet A

METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET B1

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Name: _____ ( )

Class: Primary 6._____

Date : 16 May 2019

Booklet A1 & A2	56
Booklet B1	22
Booklet B2	22
Total	100
Parent's Signature	

This booklet consists of 11 printed pages including this page.

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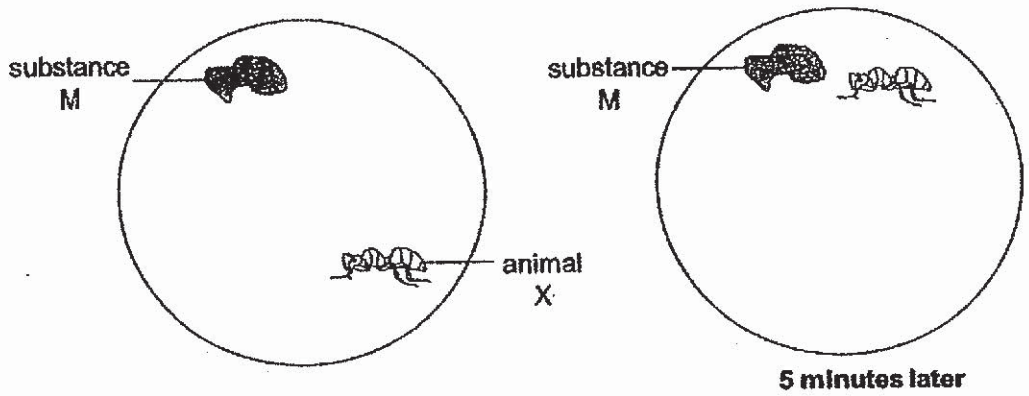
For questions 29 to 34, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

29 Jin placed animal X on a dish as shown below and observed its behaviour for five minutes.



(a) Living things need air, food and water to survive. Identify two other characteristics of living things that are demonstrated by animal X in the experiment. [1]

(i) _____

(ii) _____

Jin wanted to investigate the effects of surrounding temperature on animal X. He placed 30 animal X in each of the boxes P, Q, R and S. He then exposed the boxes P, Q, R and S to different temperatures. After 15 minutes, he recorded his results in the table below.

Box	Temperature (°C)	Number of active animal X
P	15	3
Q	20	12
R	25	26
S	30	28
T	35	24

(b) Based on the information above, how does the surrounding temperature affect the number of active animal X? [1]

_____

_____

2

(Go on to the next page)

Jin conducted another experiment to find out if animal X prefer to feed on substance M or L. He recorded the number of animal X attracted to substance M or L in the table below.

Substance	Number of animal X attracted
M	10
L	28

Jin wanted to kill animal X using a poison, chemical P in his home. He prepared the following set-ups, A, B, C and D as shown below.

Set-up	Temperature (°C)	Amount of chemical P (g)	Amount of substance M (ml)	Amount of Substance L (ml)
A	20	5	0	100
B	20	5	100	0
C	30	5	0	100
D	30	5	100	0

(c) Based on all the results of Jin's experiments, in which set-up, A, B, C or D, would he observe the most number of dead animal X? Explain your answer. [1]

Jin found some animal X in a packet of sweets. His friend, Roy, suggested that he should spray chemical P on the packet of sweets so as to kill animal X immediately.

(d) Give a reason why Roy's suggestion could not be accepted. [1]

2

(Go on to the next page)

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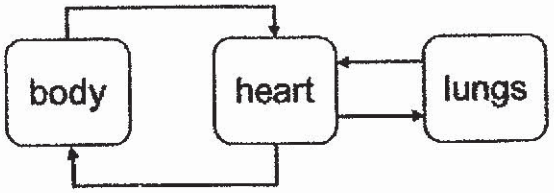
30 The diagram below shows the movement of water in a plant.

(a) What is Part M? State one function of Part M. [1]

(b) Some insects ate their way into Part M of the plant. Explain how they affected the growth of the roots of the tree. [1]

The arrows below show the flow of blood in a human body.



(c) What is the difference between the direction of movement of water in plants and the direction of movement of blood in the body? [1]

3

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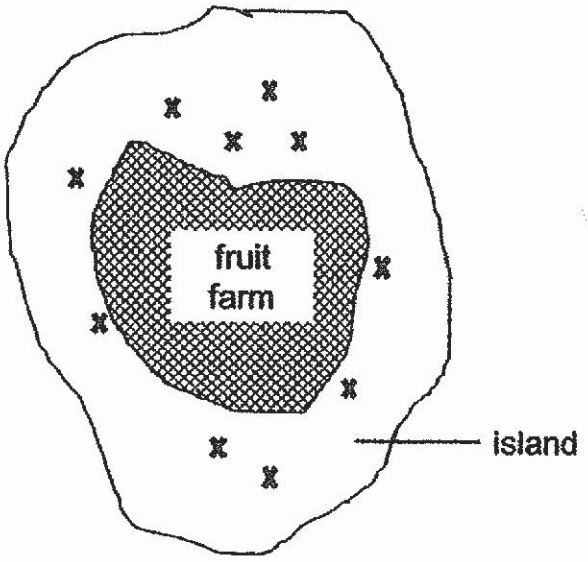
31 A farmer bought a piece of land on an island. He started planting some young plants far apart in his fruit farm.

(a) What is the advantage of planting the young plants far apart? [1]

After some time, the farmer noticed that the plants from the fruit farm could be found in the other parts of the island as shown below. The plants growing outside the fruit farm are indicated by ✖ in the diagram.



(b) Suggest how the fruits of this plant are adapted to help it reproduce. [1]

2

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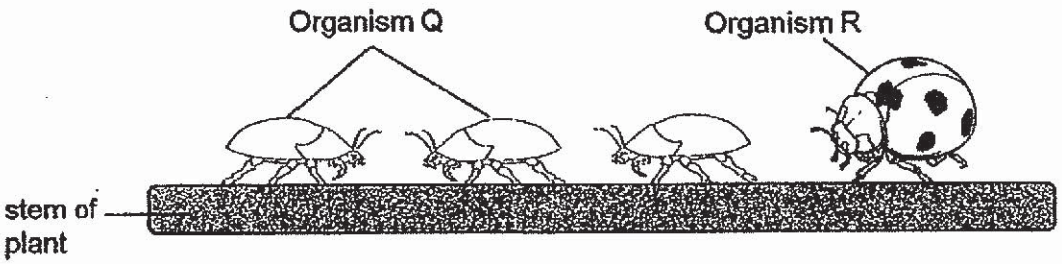
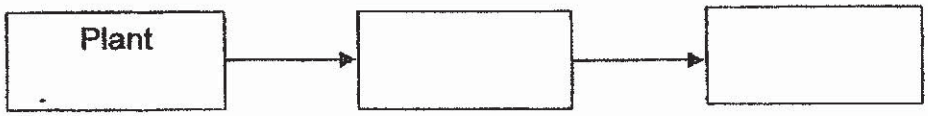
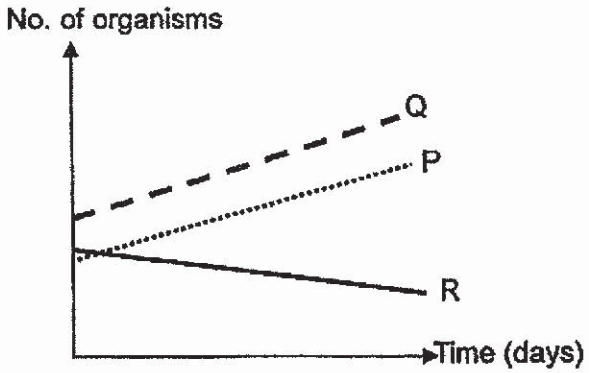
The farmer found many organism Q on the stems of his plants as shown below. He then released a population of organism R in his farm and found out that the population of organism Q decreased.



(c) Based on the information provided, complete the food chain below. [1]



During summer, organism P on the island increased in population. The graph below shows the population of organism P, Q and R.



(d) How did organism P affect the population of the farmer's plants? Explain your answer. [2]

_____

_____

_____

3

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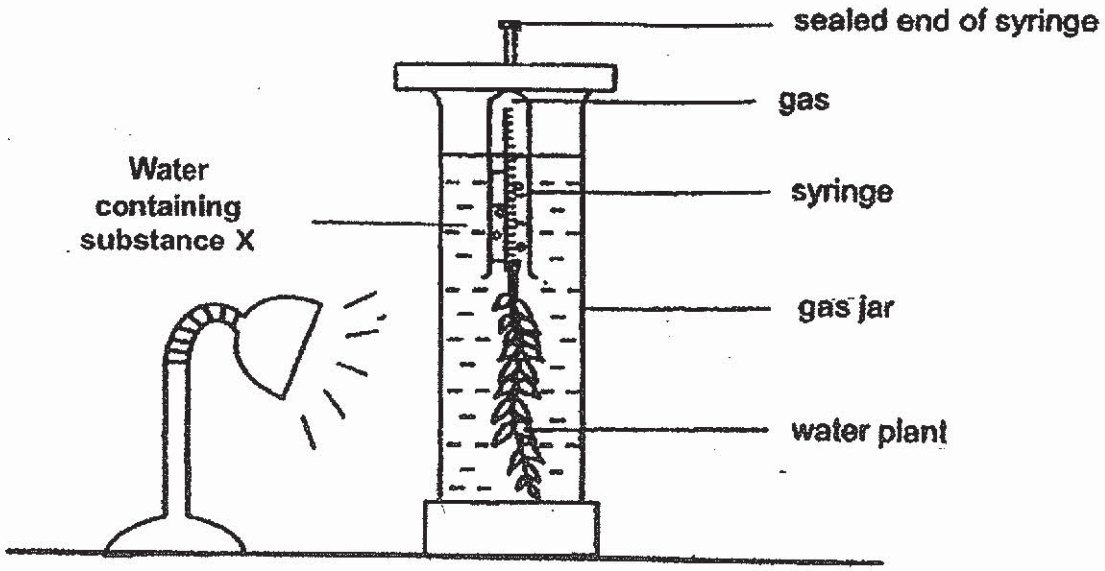
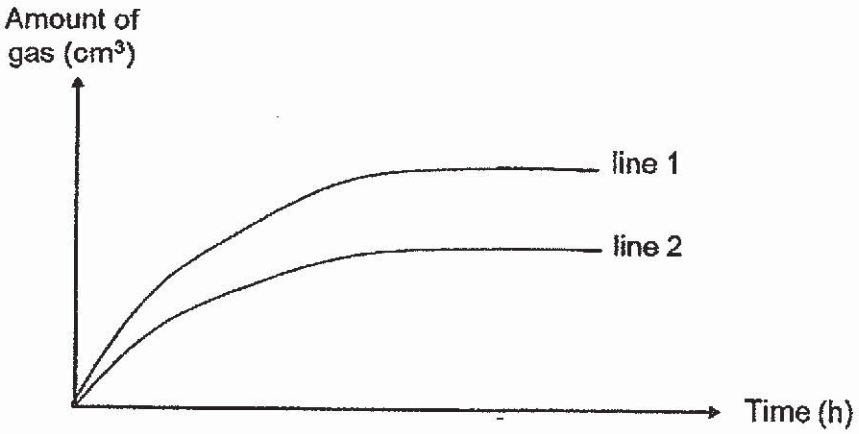
32 Renee wanted to find out if the amount of carbon dioxide in the water affects the rate of photosynthesis. Substance X was added to the water to increase the amount of carbon dioxide in the water. She set up the experiment shown below and measured the amount of gas produced over a fixed period of time. She then repeated the experiment with different amounts of substance X in the water.



She recorded the readings as shown below.

Set-up	Amount of substance X (g)	Amount of gas produced (cm^3)		
		1st try	2nd try	3rd try
A	1	40	50	50
B	3	80	75	70

The graph below shows the result of her experiment.



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(a) Which line, 1 or 2, represents the results of Set-up B? Explain your answer. [1]

(b) Renee prepared another identical set-up but she did not put any substance X into the water. Explain why there is a need for the set-up. [1]

(c) Why did Renee repeat the experiment for each set-up? [1]

(d) Describe the process of photosynthesis in green plants. [1]

4

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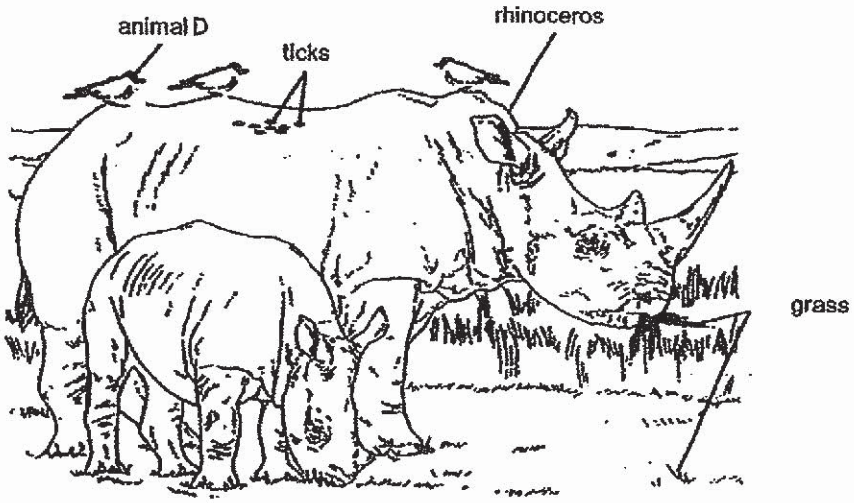
33 Animal D can be found on the bodies of the rhinoceros during the day as shown below. When animal D senses danger, it makes a loud hissing sound. It also feeds on ticks on the rhinoceros.



(a) Suggest two ways in which the rhinoceros benefits from animal D. [2]

Benefit 1:

Benefit 2:

The pictures below show three different types of beaks.

Beak X Beak Y Beak Z

(b) Which beak, X, Y or Z, would animal D most likely have? Give a reason for your answer. [1]

3

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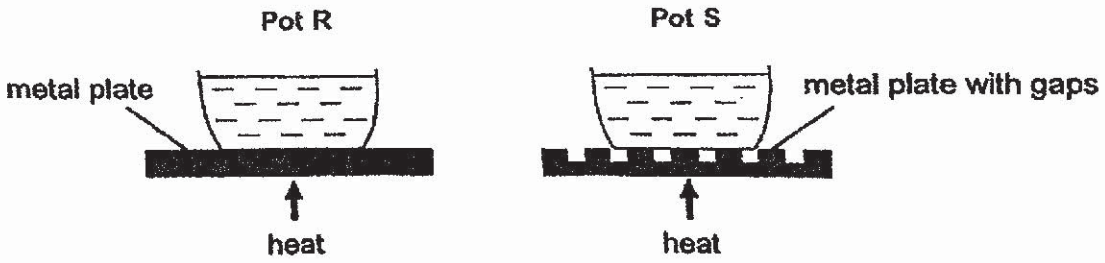
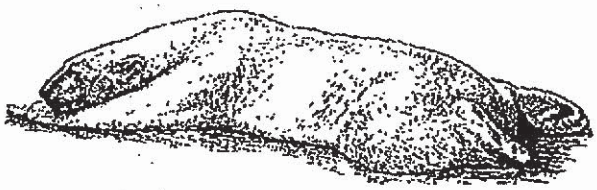
34 Ahmad placed two identical pots, R and S, containing the same amount of water on two metal plates as shown below. The metal plates are made of the same material but their surfaces are different.



(a) Which pot, R or S, would the water boil first? Give a reason for your answer. [1]

Animal G lives in a cold environment. The picture below shows how animal G behaves during summer time. Although it is warmer in the summer months, the ground remains frozen.



(b) Explain why animal G spreads itself out on the frozen ground during the summer months. [1]

2

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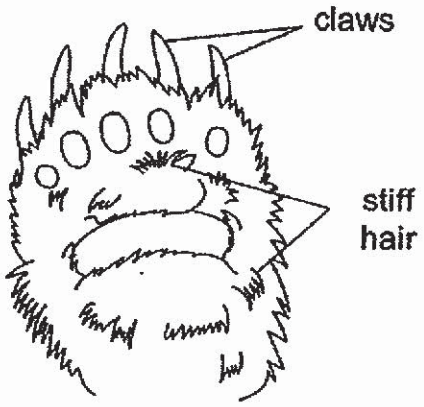
Animal G walks on ice as it moves from place to place. The underside of the paw of animal G is shown below.



(c) Explain how animal G is adapted to walk on ice. [1]

1

End of Booklet B1

METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET B2

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Name: _____ ( )

Class: Primary 6._____

Date : 16 May 2019

Booklet B2	22

This booklet consists of 12 printed pages including this page.

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For questions 35 to 40, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.
[22 marks]

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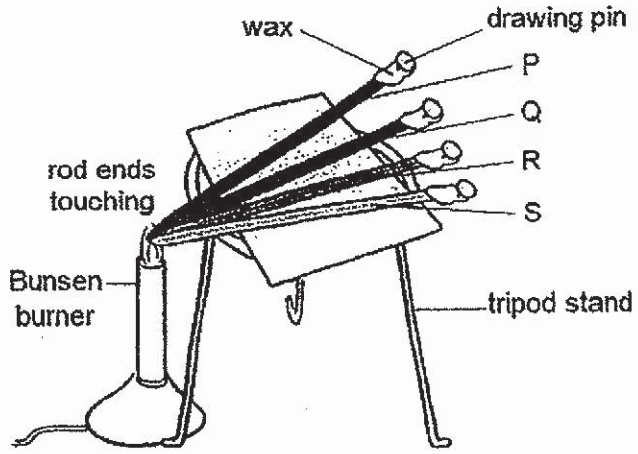
35 Four rods of identical diameters and lengths, P, Q, R and S, are made of different materials. An equal amount of wax was put at one end of each rod while the other end was heated by a Bunsen burner.



The time taken for the wax on each rod to melt completely is recorded in the table below.

Rod	Time taken for wax to melt completely (min)
P	13
Q	25
R	7
S	32

(a) Based on the results, which rod, P or S, is a better conductor of heat? Explain your answer. [1]

_____

_____

_____

1

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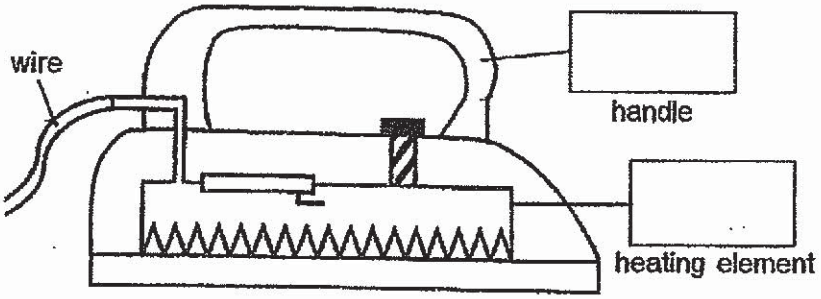
(b) Which one of the four materials is most suitable for making the handle and heating element of the electric iron? Write P, Q, R or S in the two boxes provided. [1]



(c) Based on the results, explain your choice of material for the handle of the iron. [1]

_____

_____

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2

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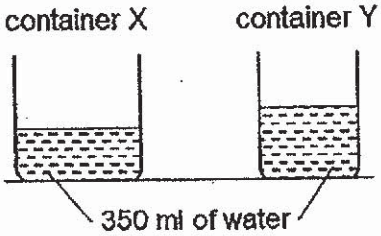
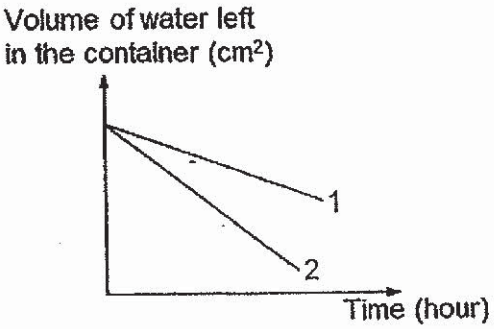
36 Zac wanted to find out how the exposed surface area of the water affects the rate of evaporation. He used two containers, X and Y, and poured 350 ml of water into each container.

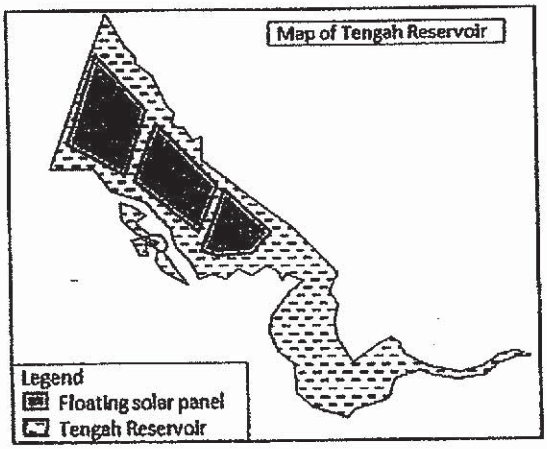


Zac then plotted a graph based on the amount of water left in the containers over time. The graph is as shown below.



(a) Which line, 1 or 2, represent the volume of water left in container Y? Explain your answer. [1]

Tengah Reservoir in Singapore has a floating solar energy system which is made up of an array of solar panels on a structure that floats on top of the reservoir. The system covers 33% of the reservoir.



1

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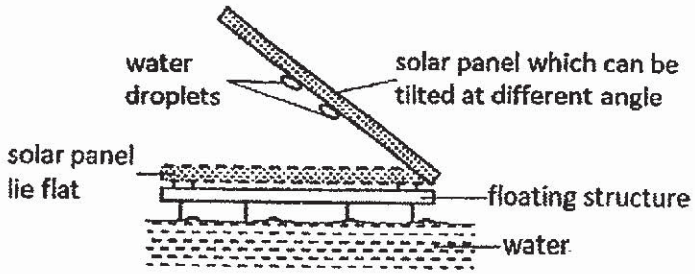
Zac observed that the solar panels are adjusted to lie flat on the floating structure from 11 am to 2 pm.



(b) How does this action affect the rate of evaporation of water in Tengah Reservoir? Explain your answer. [1]

(c) Water droplets are seen at the underside of the solar panel every morning. Explain how the water droplets are formed. [2]

3

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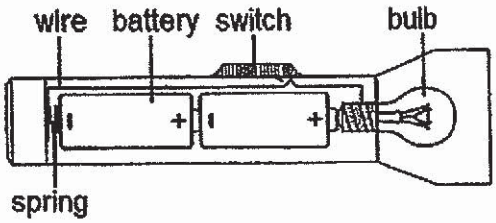
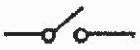
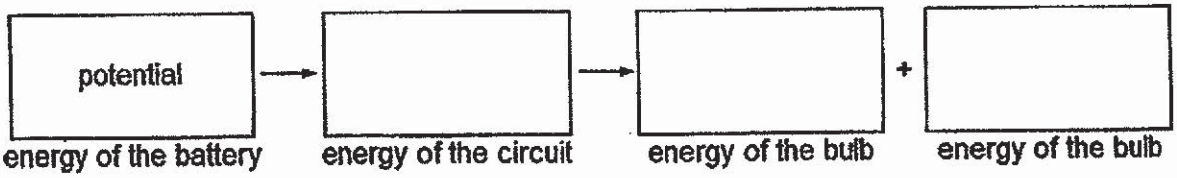
37 Hamid bought a torch with a diagram printed on the packaging as shown below.



(a) In the diagram below, draw wires to connect the components and complete the circuit diagram of the torch. [1]



(b) Fill in the boxes below to show the energy conversion when Hamid switched on the torch. [1]



2

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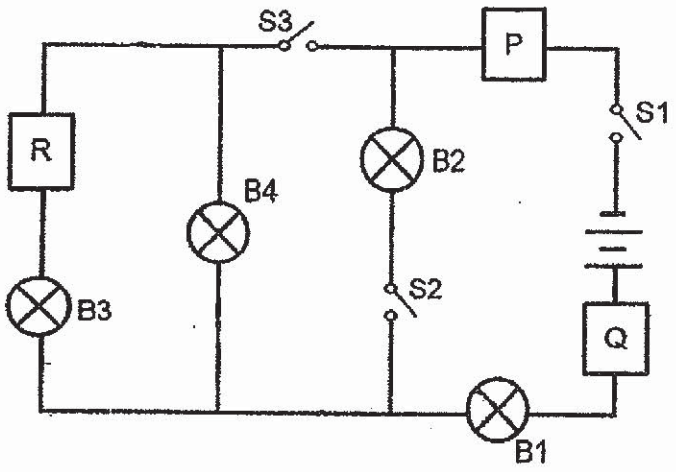
Hamid set up an electrical circuit as shown in the diagram below. The three objects P, Q and R, were made of different materials. He noticed that when he closed two switches at the same time, only some bulbs were lit.



The table below shows the combination of switches that were closed and the bulbs that lit respectively.

Switches closed	Bulbs lit
S1, S3	B1, B4
S1, S2	B1, B2

(c) What could Hamid conclude about the property of objects, P, Q and R, based on his observations above? [1]

(d) Hamid wanted to place a buzzer in the circuit so that when he closes switches S1 and S3, the buzzer will ring.

In the diagram above, indicate with a cross, '**X**', to show where Hamid should place the buzzer. [1]

2

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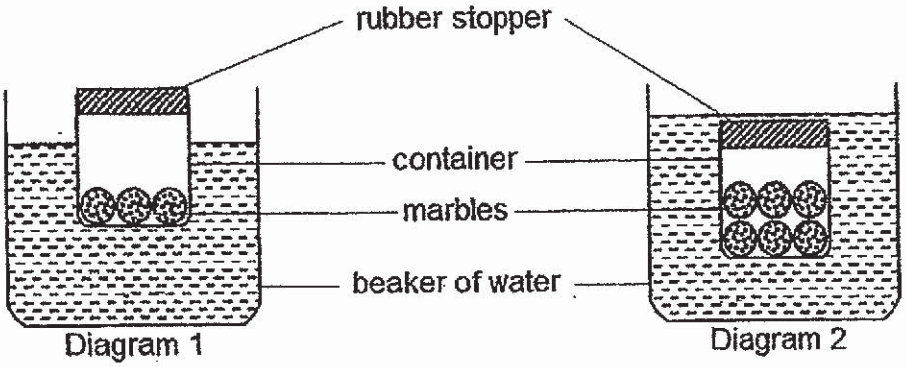
38 Sulaiman filled a container with some marbles. He placed the container into a beaker of water. The container floated as shown in Diagram 1.

When he filled the container with more marbles and placed it into the beaker of water, the container sank as shown in Diagram 2.



(a) Give a reason why the container sank when it was filled with more marbles. [1]

_____

_____

1

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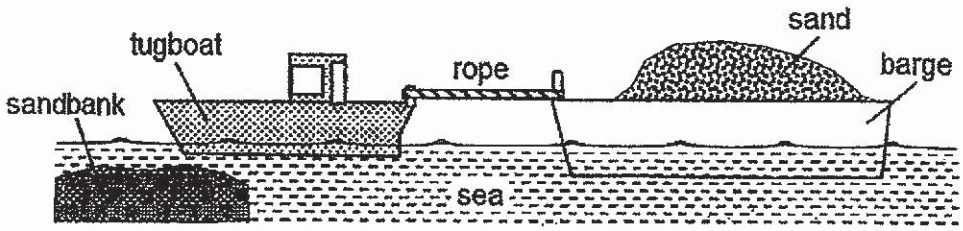
A tugboat is a small and powerful watercraft which pulls barges and large ships near the shore. The diagram below shows a tugboat pulling a barge filled with sand. They are approaching a sandbank and the barge will be stuck.



(b) Other than the pull from the tugboat, there are other forces acting on the barge.

State two other forces which are acting on the barge when the tugboat is pulling the barge. [1]

(c) Suggest one way the barge could float above the sandbank. Explain your answer clearly. [1]

2

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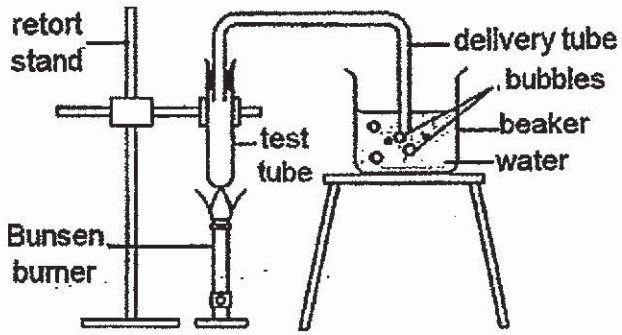
39 Vani set up an experiment as shown below. She observed bubbles in the beaker of water when the test tube was heated over a Bunsen burner.



(a) Why were bubbles observed in the beaker of water? [2]

Vani noticed that the pot she bought had the following picture printed in the manual. It indicated the maximum level at which she should fill the pot.

(c) What would happen if Vani filled the pot to the brim when she used it to boil soup? Explain your answer. [1]

3

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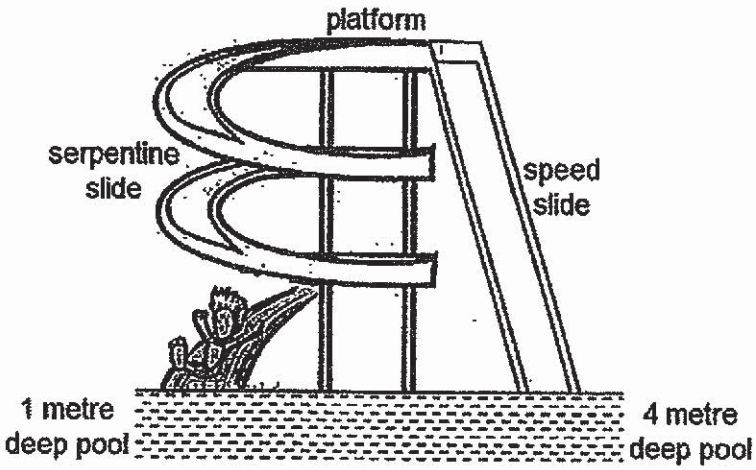
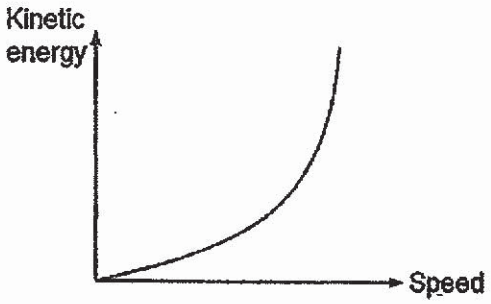
40 At the water theme park, two types of slides can be found. Serpentine slides take riders around a series of sharp curves while speed slides plummet riders straight down a slide and delivers them to a pool.

The diagram below shows Alex sliding down a serpentine slide.



(a) State two important properties of the material used for making the slides. [1]

Alex constructed a graph below to show the effect of speed on the kinetic energy possessed by a falling object.



(b) Based on the graph, what is the relationship between the speed and kinetic energy of a falling object? [1]

2

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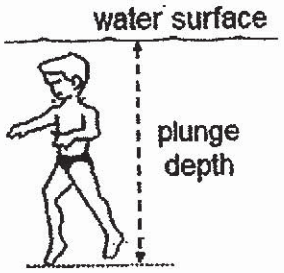
At the end of the slide, the plunge depth was recorded. Next, Alex took the speed slide and the plunge depth was also measured. The results are as shown in the table below.

Type of slide	Plunge depth (m)		
	1st reading	2nd reading	3rd reading
Serpentine	0.50	0.60	0.70
Speed	2.70	2.60	2.80



(c) Describe the energy change as Alex slid down the speed slide from the top. [1]

(d) Why was the plunge depth for the speed slide greater than that for the serpentine slide? Explain your answer. [1]

(e) Alex observed that both water slides have water flowing down the slides continuously. Why is this necessary? [1]

3

End of Booklet B2

SCHOOL : MGS PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	4	3	4	3	1	2	4	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	1	3	3	2	1	3	2	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	1	1	3	2	4	4	4		

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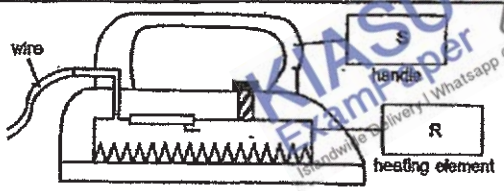
Methodist Girls' School (Primary)
Mid-Year Examination 2019
Primary 6 Booklet B Answer Key

Qn	Answer
29a	Living things can move by themselves. Living things can respond to changes around them.
29b	As the temperature increases, the number of active animal X increases until temperature reaches 30°C, the number of active animal X then decreases.
29c	Set-up C. More animal X would be attracted to a higher temperature of 30°C and substance L. Thus, the presence of chemical P would kill the most number of animal X in set-up C.
29d	Spraying chemical P on the sweets will harm/kill/poison the person eating the sweets.
30a	Part M is the stem. It helps to hold the plant upright / OR It transports food from the leaves to other parts of the plant/ OR It transports water and mineral salts from the roots to other parts of the plant.
30b	The food-carrying tubes were damaged so food from the leaves cannot be transported to the roots and affected the growth of the roots of the tree.
30c	The water in plants moves in one direction upwards but the blood in the human moves in two directions /circulates throughout the body.
31a	The plants are planted far apart to prevent overcrowding so as to reduce competition of sunlight, space and water.
31b	It is sweet / fleshy / brightly coloured/ has small indigestible seeds so that animals will eat it and pass it out as droppings / throw the seeds after eating the fruits.
31c	Plant → Q → R
31d	The population of farmer's plants would decrease. The increase in the population of organism P would decrease the population of organism R as P feeds on R. This caused an increase in population Q as there is less organism R to feed on organism Q. As there is more organism Q to feed on the farmer's plants, the population of the plants decreases.
32a	Line 1. As the amount of substance X increases, the amount of gas / oxygen produced increases at a higher rate.
32b	To serve as a control so as to confirm that the results are due to the presence of substance X.
32c	To ensure reliability / consistency of results.
32d	Plants take in water and carbon dioxide from the surrounding and in the presence of sunlight and chlorophyll, it produces sugar and gives out oxygen during photosynthesis.
33a	The hissing sound of animal D would alert the rhinoceros of danger. Animal D helps to clean the body of the rhinoceros as it removes / eat the pests / ticks of its body.
33b	Beak Y. It is short and pointed to help the bird feed on the ticks on the rhinoceros.
34a	Pot R. Pot R has a greater surface area in contact with the metal plate so it will gain heat faster than Pot S.
34b	Animal G spreads out on the ice to increase the surface area of its body in contact with the ice so that its body will lose heat faster to cool itself down.
34c	Animal G has stiff hair which increases friction between its paw and the ice so that it does not slip easily on ice / helps animal G to have a better grip when walking on ice.
35a	Rod P. It gained heat /conducted heat faster than rod S as it took a shorter time for the wax on it to melt completely.
35b	
35c	S is the poorest conductor of heat because the wax on rod S took the longest time to melt. It will prevent the users from getting burnt.
36a	Line 1. Container Y has a smaller exposed surface area of water so the rate of evaporation is less/ slower, therefore more water is left in container Y.

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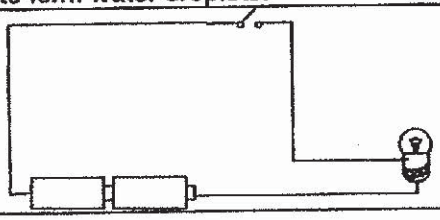
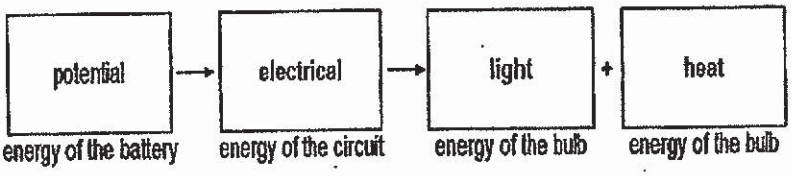
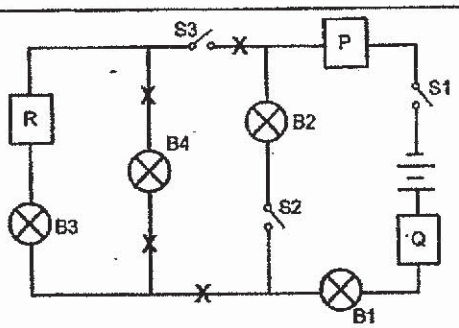
36b	When the solar panels lie flat, they reduce the exposed surface area of Tengah Reservoir so the rate of evaporation water decreases.
36c	At night, the solar panels cool down and the water in the reservoir evaporate to form water vapour. The warmer water vapour touches the cooler surface of the solar panel, loses heat and condenses to form water droplets.
37a	
37b	
37c	P and Q are conductors of electricity. R is insulator of electricity.
37d	 any one position marked X
38a	When more marbles are added, the total mass increased which resulted in greater gravitational force pulling the container down into the water.
38b	Gravitational force and frictional force.
38c	Transfer some sand from the barge to the tugboat. This will reduce the mass of sand in the barge and less gravitational force will act on the barge and the barge will float higher.
39a	The air in the test tube gained heat and expanded. It travelled/ escaped through the delivery tube into the beaker of water and appeared as bubbles.
39b	The soup in the pot would gain heat and expand /increase in volume when it is boiling. The soup would spill out of the pot as there is not enough space in the pot.
40a	Strong / stiff / waterproof
40b	The greater the speed of the falling object, the more kinetic energy it possesses.
40c	Alex has (gravitational) potential energy at the top of the slide. As he slid down, the gravitational potential energy is converted to kinetic energy, heat energy and sound energy.
40d	The speed of users on speed slide is greater than those on serpentine slide. Thus, (gravitational) potential energy is converted to more kinetic energy and users plunge deeper into the pool.
40e	Water acts as a lubricant and reduces friction between the slide and the person sliding.

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NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2019
PRIMARY 6

SCIENCE

BOOKLET A

28 Multiple Choice Questions (56 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/ 56
Booklet B		/ 44
Total		/ 100

Name: _____ ( ) Class: P 6 _____

Date : 15 May 2019 **Parent's Signature: _____**

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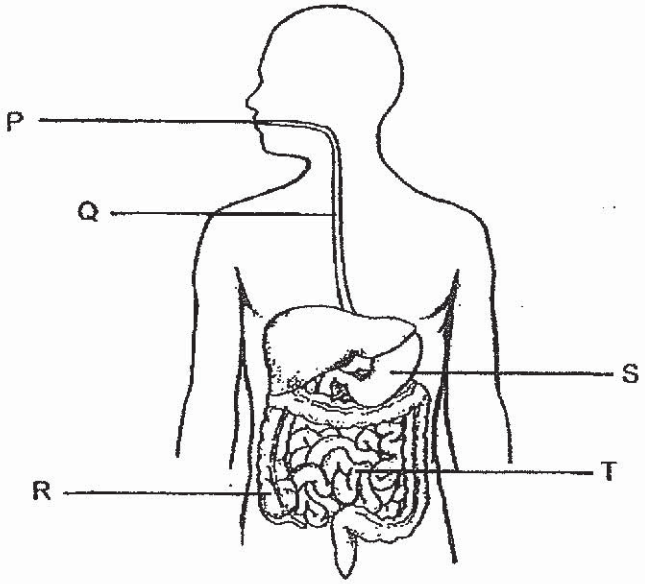
Section A: (28 × 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade the correct oval on the Optical Answer Sheet.

1. The diagram below shows our digestive system.



Study statements A to D carefully.

A Both P and Q produce digestive juice.
B The digestion of food is completed in R.
C Water is absorbed from the undigested food in S.
D Digested food is absorbed into the bloodstream in T.

Which of the above statements is/are correct?

(1) D only
(2) A and B only
(3) B and C only
(4) A, C and D only

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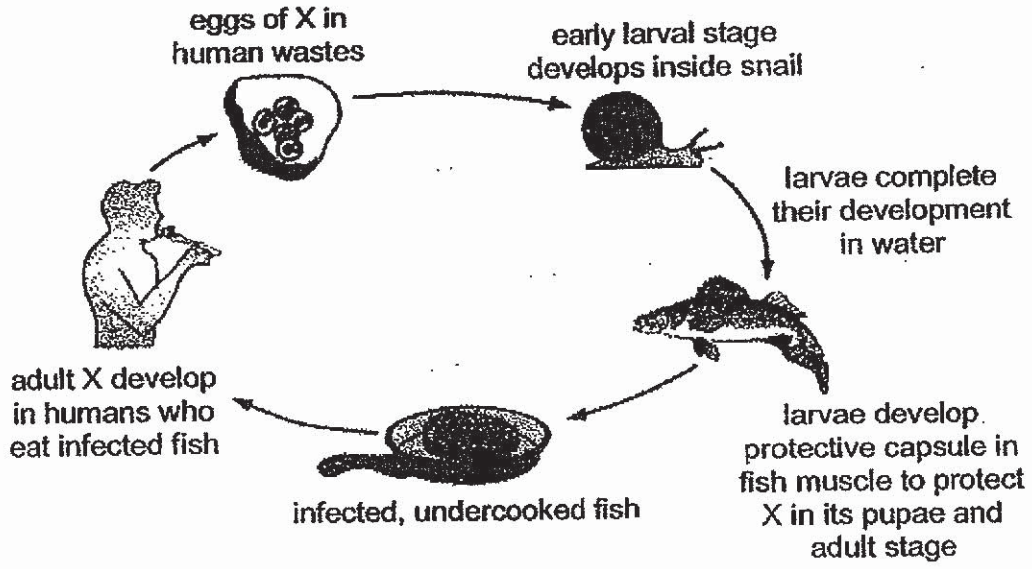
449

2. The diagram below shows the development of organism X from eggs.



The diagram above shows that organism X _____.

(1) dies when it enters the fish
(2) completes its life cycle in the snail
(3) depends on other organisms for survival
(4) can be killed easily with heat during cooking

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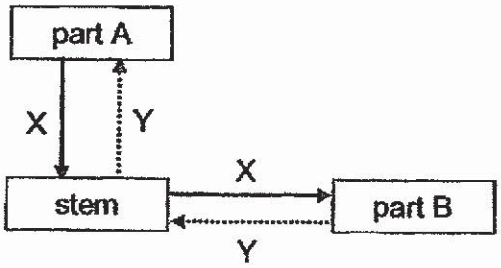
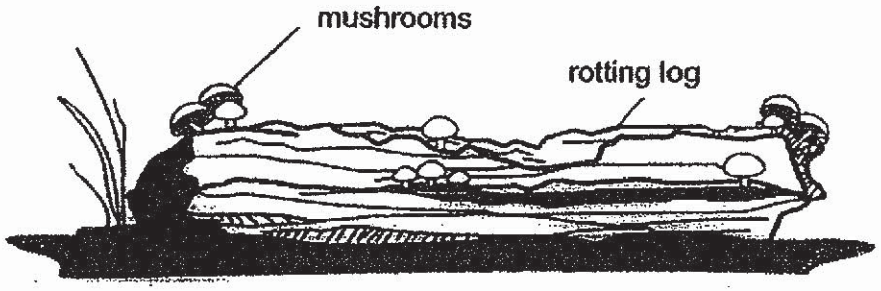
3. Parts A and B in the diagram below represent the different parts of a plant. The arrows X and Y show the transportation of water or food from one part of the plant to another part of the plant.



Which of the following correctly represents part A, part B, arrow X and arrow Y?

	Arrow X	Arrow Y	Part A	Part B
(1)	food	water	flower	leaf
(2)	food	water	leaf	roots
(3)	water	food	leaf	roots
(4)	water	food	leaf	flower

4. The diagram below shows mushrooms growing on a rotting log.



Which of the following statements are correct when the mushrooms act on the rotting log?

A They release oxygen into the air.
B They release carbon dioxide into the air.
C They provide food and nutrients for the rotting log.
D They break down the rotting log into simple substances.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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5. The table below provides a description of some physical factors in four different habitats.

Physical Factors	Habitats			
	A	B	C	D
Amount of moisture	Low	Low	High	High
Light intensity	Low	High	High	Low
Average temperature (°C)	23	18	25	21

Organism X has the following characteristics:

- thrives in a damp environment
- prefers to stay in a dark environment
- most active when the surrounding temperature ranges from 20 °C to 25 °C

Based on the given information, in which habitat would you find the greatest number of organism X?

(1) A
(2) B
(3) C
(4) D

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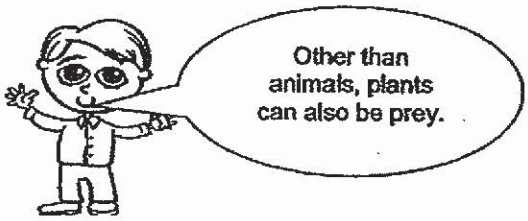
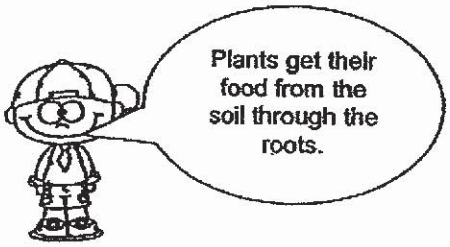
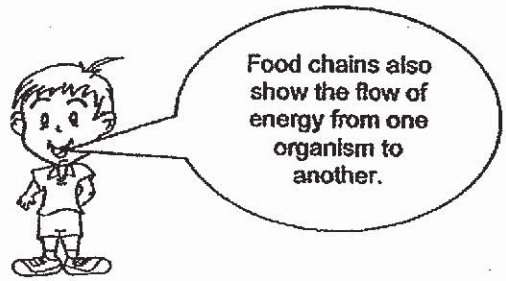
6. Four boys made some statements.



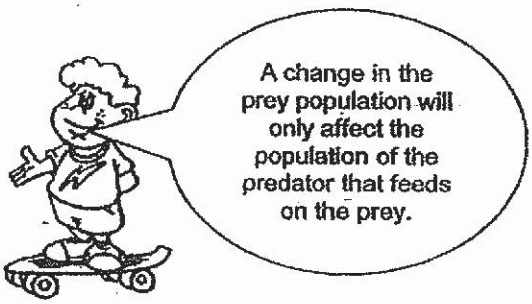
Ahmad



Ben



Chris



Dawei

Who made the correct statement(s)?

(1) Chris only
(2) Ben and Chris only
(3) Ahmad and Dawei only
(4) Ahmad, Ben and Dawei only

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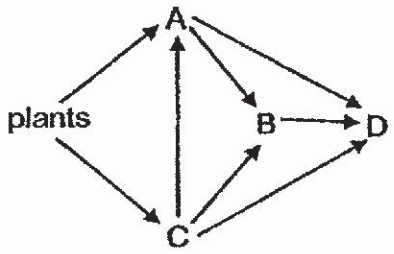
7. The table below shows four animals, A, B, C and D, and the types of food they eat.

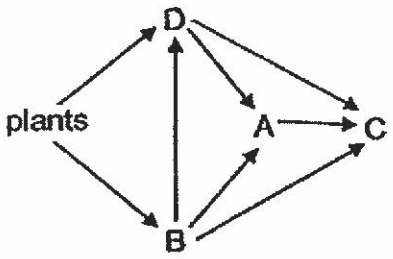
Animals	Type of food consumer
A	animal-eater
B	plant-and-animal-eater
C	animal-eater
D	plant-eater

Which of the following shows a possible food relationship among the organisms?

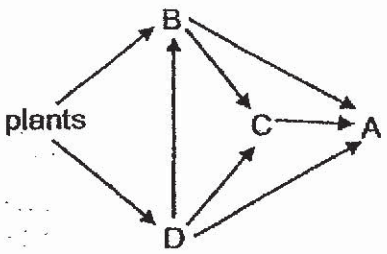
(1)



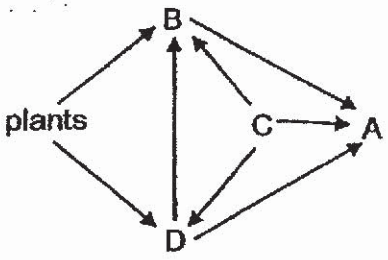
(2)



(3)



(4)



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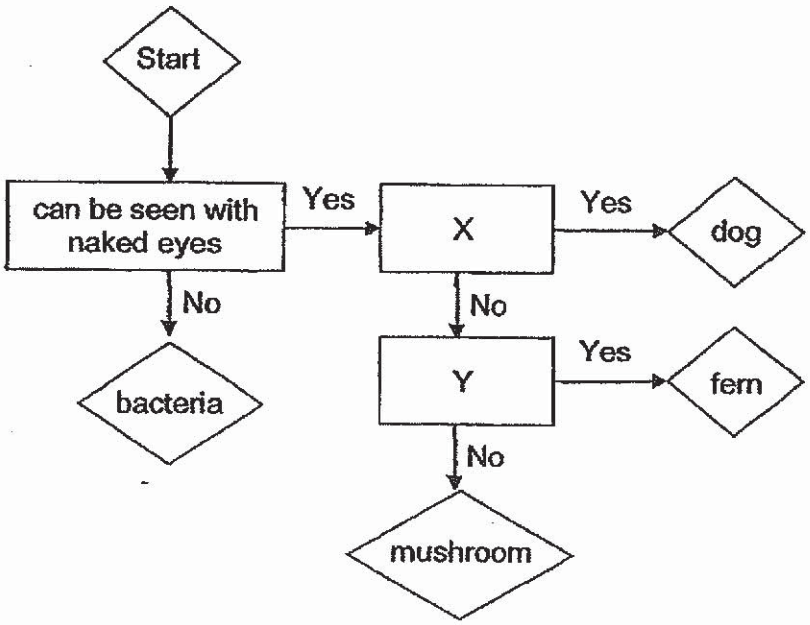
8. The flow chart below provides information on the characteristics of four different organisms.



Two characteristics of living things are represented by the letters X and Y. Based on the information in the flow chart, which characteristics are best represented by the letters X and Y respectively?

	X	Y
(1)	Can respond to changes around them	Reproduces by spores
(2)	Can respond to changes around them	Makes its own food
(3)	Moves from place to place on its own	Reproduces by spores
(4)	Moves from place to place on its own	Makes its own food

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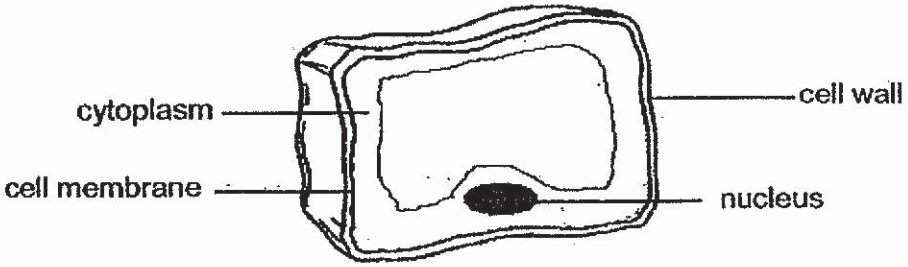
9. Four students, Abdul, Bala, Charles and Ding Ding, observed a cell under a microscope.



They observed that the cell has the following cell parts and they made the following statements:

Student	Statement
Abdul	It is a plant cell because it has a cell wall.
Bala	It is an animal cell because it has no chloroplast.
Charles	It is a plant cell because only plant cells have a cell membrane.
Ding Ding	It is an animal cell because only animal cells have a nucleus.

Whose statement(s) is/are correct?

(1) Abdul only
(2) Bala only
(3) Abdul and Charles only
(4) Bala and Ding Ding only

10. Which of the following statements correctly show the similarities between the sexual reproduction in humans and in flowering plants?

A Both require pollination to take place before fertilisation.
B Both require male and female reproductive parts for reproduction.
C Both the ovaries will swell and become fruits and the ovules will become seeds.
D Both the male reproductive cell will fuse with the female reproductive cell during fertilisation.

(1) A and C only
(2) B and D only
(3) A, B and D only
(4) B, C and D only

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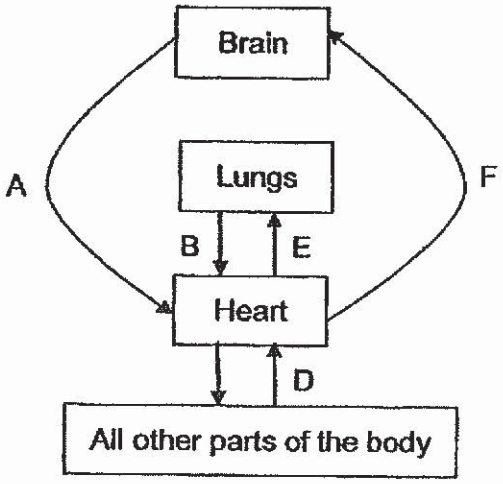
11. The diagram below shows how blood circulates in a human body. Arrows A, B, C, D, E and F represent the blood vessels.



Which blood vessels contain blood rich in oxygen?

(1) B and C only
(2) A, D and E only
(3) B, C and F only
(4) A, D, E and F only

12. Which of the following statements about food made during photosynthesis are correct?

A Food made by plants will be stored as starch.
B Food made by plants provides them with the energy to carry out life processes.
C Food made in the leaves is transported to all parts of the plant.
D Photosynthesis only takes place in the parts of the plants with chlorophyll.

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B, C and D

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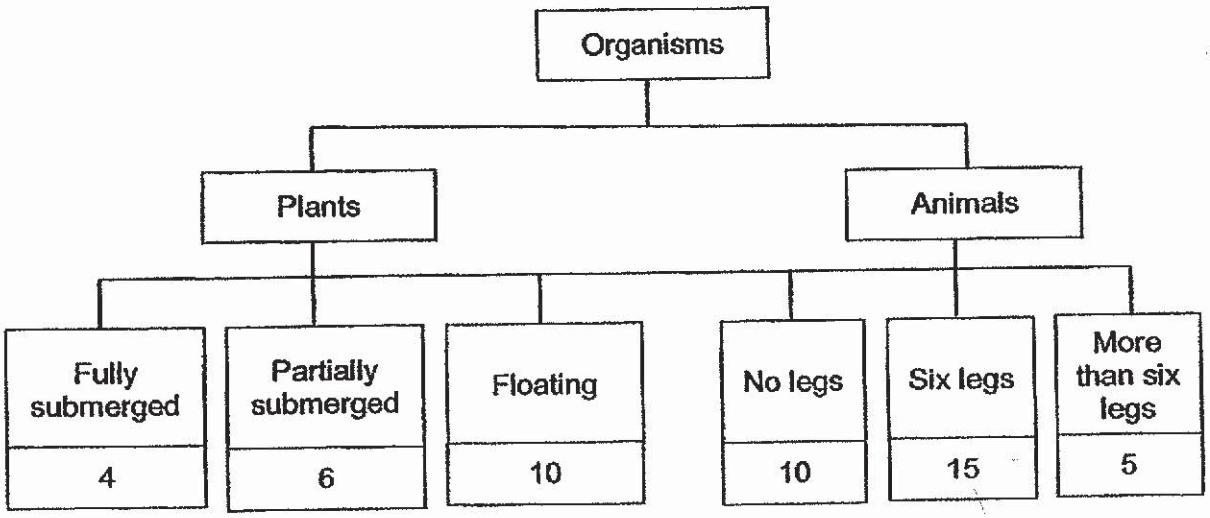
13. A group of Primary 6 pupils counted the number of plants and animals found in the school pond. They recorded their findings in the chart shown below.



Based on the information in the chart above, which of the following statements about the plants and animals are correct?

A There was only one community.
B There were 50 populations in the school pond.
C There were fewer insects than plants in the school pond.
D There were at least three populations of animals in the school pond.

(1) A and B only
(2) C and D only
(3) A, C and D only
(4) A, B, C and D

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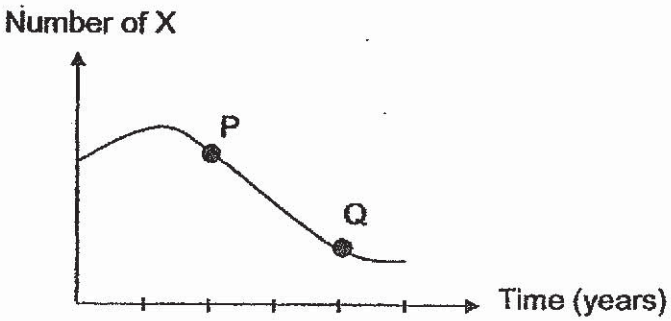
14. Animals X, Y and Z are organisms living in a grassland habitat.

The food chain below shows the food relationships among the organisms.

The graph below shows the population size of X for the last 5 years.



Which of the following statements describe the possible causes for the change in the population of X from point P to Q?

A There was a prolong period of drought.
B There was a decrease in the population of Z.
C The birth rate of X was greater than its death rate.
D A disease-causing organism killed the population of Y.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

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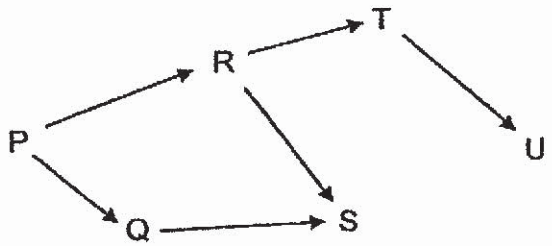
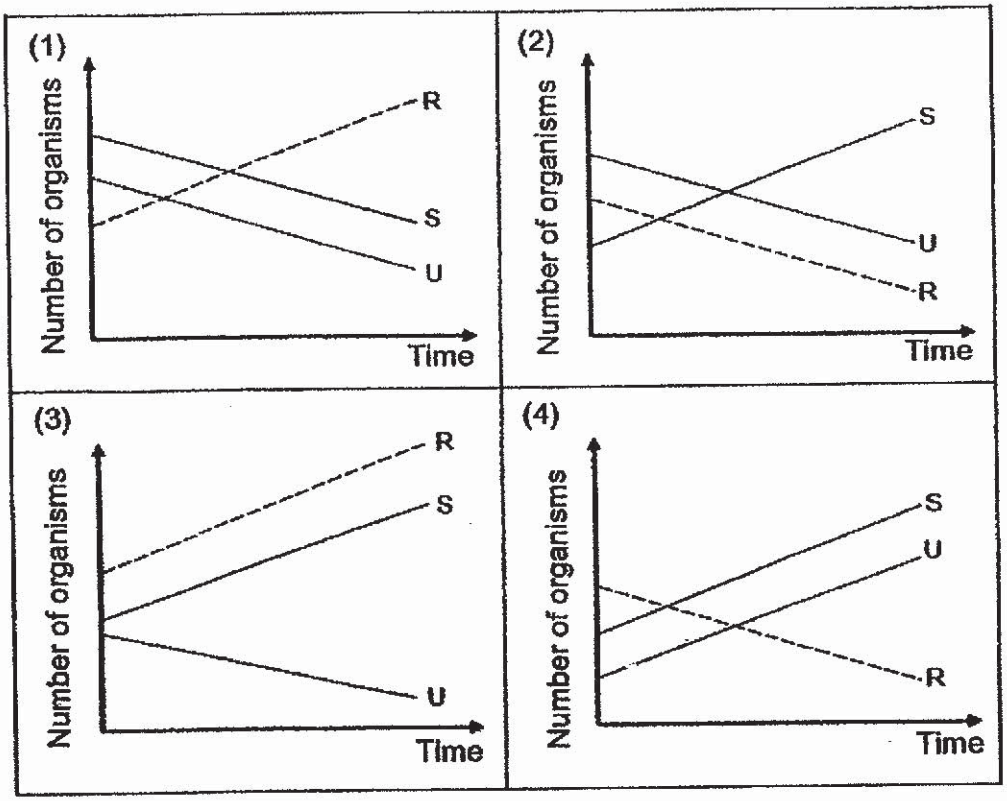
15. Study the food web below.



When animal T migrated out of the habitat, the number of animal Q remains the same.

Which of the following graphs shows how the populations of R, S and U are most likely to be affected?



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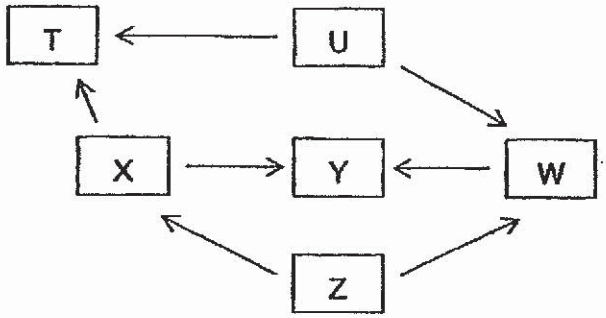
16. Study the food web given below. U, T, W, X, Y and Z represent organisms in the food web.



Which of the following statements about the food web is/are correct?

A There is only one food producer.
B There are more animal-eaters than plant-eaters.
C Organism U transfers energy directly or indirectly to all other organisms in the food web.
D A decrease in the number of organism T will affect the population of all the other organisms in the food web.

(1) A only
(2) D only
(3) A and B only
(4) C and D only

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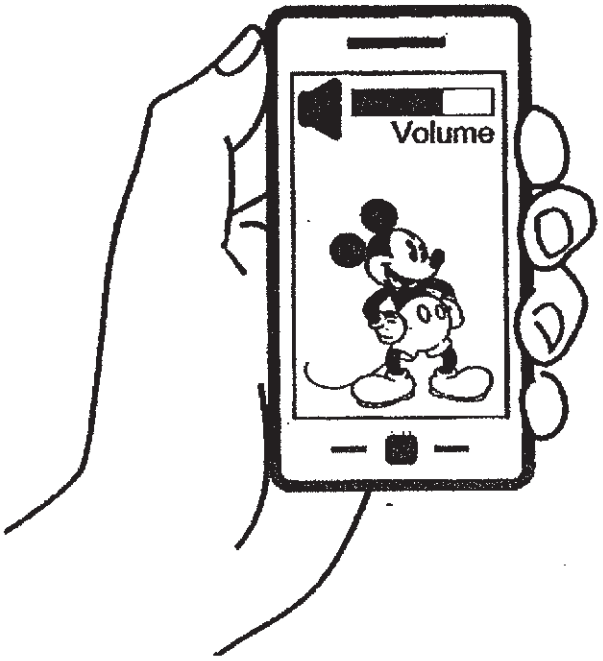
17. Josh uses his mobile phone to watch his favourite movie clip.



Which of the following correctly identifies the useful energy and the unwanted energy of his mobile phone?

	Useful energy	Unwanted energy
(1)	Heat Energy	Light Energy + Sound Energy
(2)	Heat Energy + Light Energy	Sound Energy
(3)	Heat Energy + Sound Energy	Light Energy
(4)	Light Energy + Sound Energy	Heat Energy

18. Which of the following statements about forces are correct?

A A force can stop a moving object.
B A force can move an object at rest.
C A force can change the shape of an object.
D A force can change the speed of a moving object.

(1) A and D only
(2) B and C only
(3) A, B and D only
(4) A, B, C and D

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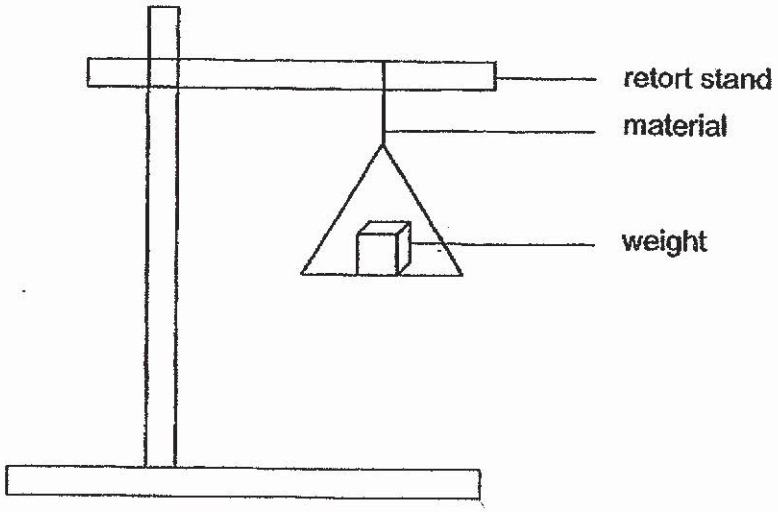
19. Hannah carried out an experiment to find out the strength of four different materials, E, F, G and H.



She added weights until the materials broke. The table below shows the number of weights that each material could hold before it broke.

Type of materials	Number of weights added before the material broke
E	6
F	3
G	8
H	10

Arrange the materials according to their strength, starting from the weakest to the strongest.

	Weakest →			Strongest
(1)	F	E	G	H
(2)	F	G	E	H
(3)	H	E	G	F
(4)	H	G	E	F

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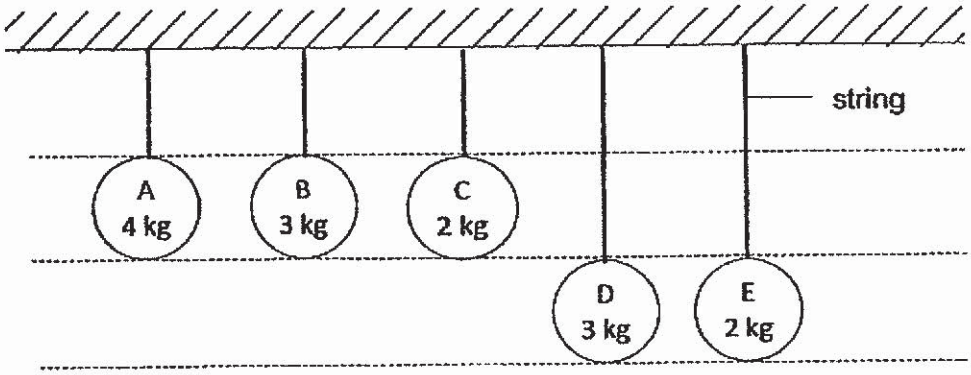
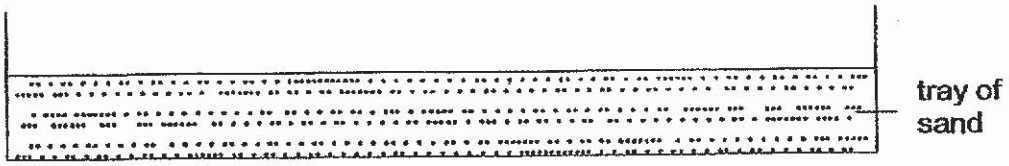
20. Alesea tied five balls of the same size each to a string and hung them at different heights as shown in the diagram below.





She then cut the strings and let the five balls drop on the tray of sand. She measured the depth of depression made by each ball in the sand and recorded the results in the table below.

Ball	A	B	C	D	E
Depth of depression made by the ball in the sand (cm)	5	4	2	2	1

Which of the following statements is/are correct?

P Ball E has less gravitational potential energy than ball C.
Q Ball A has more gravitational potential energy than ball B.
R Ball B has the same amount of gravitational potential energy as ball D.
S Comparing balls of the same mass, the greater the height of the ball above the ground, the greater the amount of gravitational potential energy it possesses.

(1) Q only
(2) P and R only
(3) P, Q and S only
(4) P, Q, R and S

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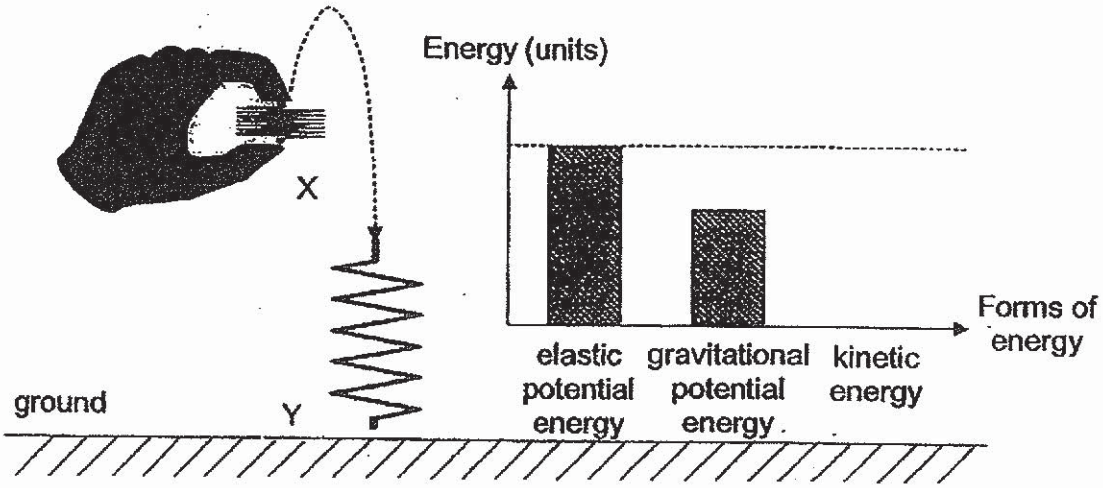
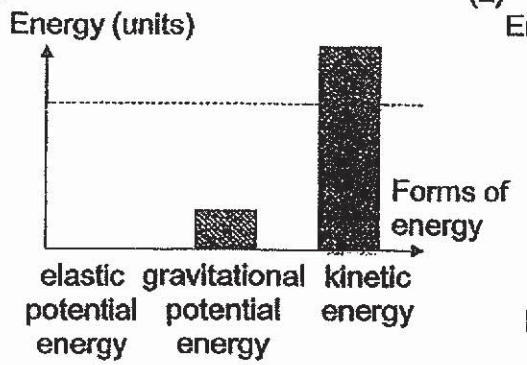
21. A spring is compressed and released at X. It moves to Y as shown in the diagram below. The graph shows the amount of different forms of energy possessed by the spring at X.

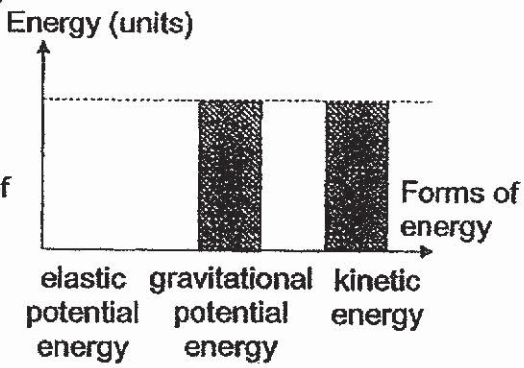


Which of the following graphs shows the amounts of different forms of energy possessed by the spring at Y before it hits the ground?

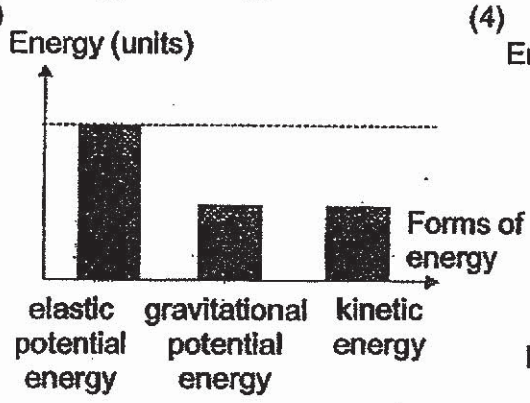
(1)



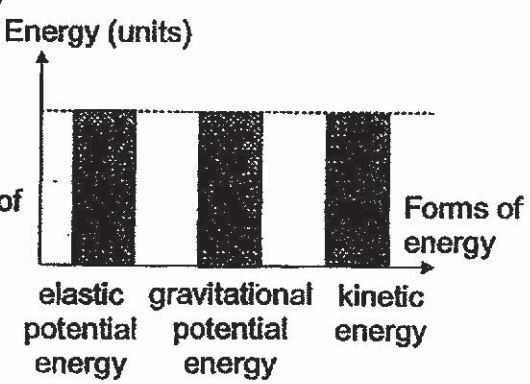
(2)



(3)



(4)



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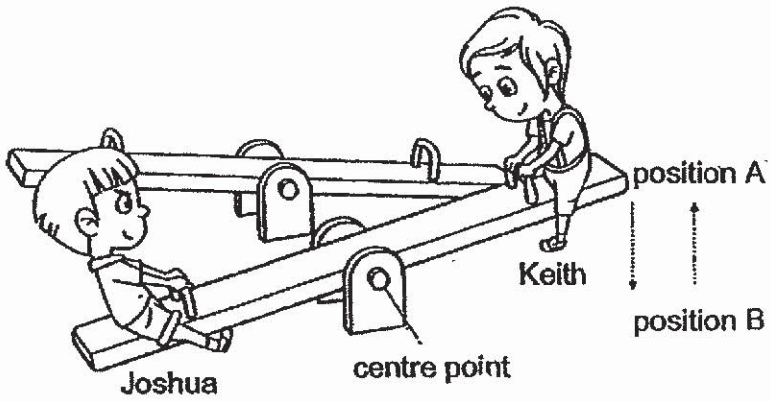
465

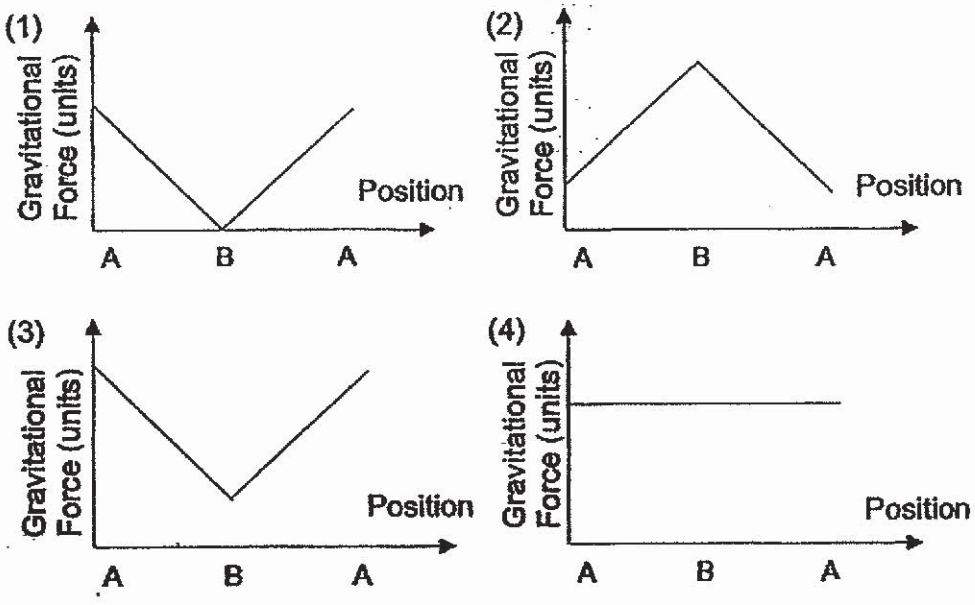
22. Study the diagram below.



Joshua and Keith were playing see-saw in the playground. A see-saw is a long, narrow board supported by a single centre point. When Joshua moves down, Keith will move up.

From position A, Keith moves down to position B and he moves up to position A again. The cycle repeats itself.

Which of the following graphs shows the amount of gravitational force acting on Keith when he moves up and down on the see-saw?



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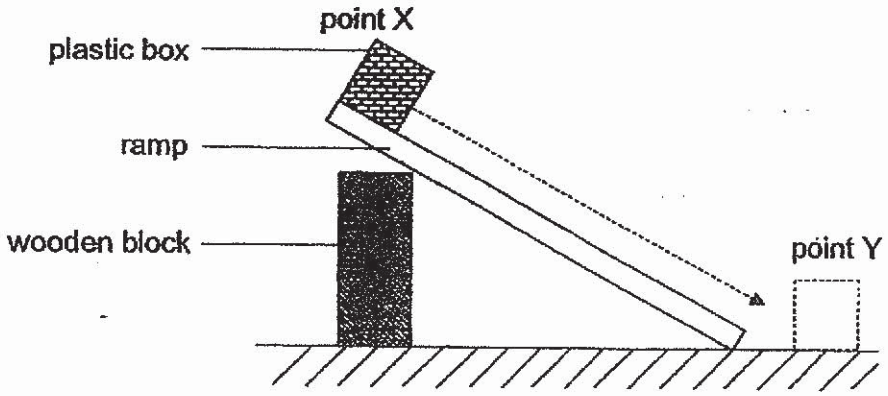
466

23. Elizabeth wanted to find out which liquid is the best lubricant for reducing friction between two surfaces. She set up the experiment as shown in the diagram below.

She coated the surface of the ramp with liquid P and released the plastic box at point X. She repeated the experiment three times and measured the time taken for the plastic box to reach Point Y.



The experiment was then carried out with liquids Q, R and S.

The table below shows the average time taken for the plastic box to reach Point Y.

Type of liquid	Average time taken for the block to reach point Y (s)
P	2.3
Q	3.6
R	0.8
S	1.9

Which of the following shows the correct order of liquids, starting from the liquid that reduces the most amount of friction to the liquid that reduces the least amount of friction between the plastic box and the surface of the ramp?

	Reduces the most amount of friction →			Reduces the least amount of friction
(1)	Q	P	S	R
(2)	Q	S	P	R
(3)	R	P	S	Q
(4)	R	S	P	Q

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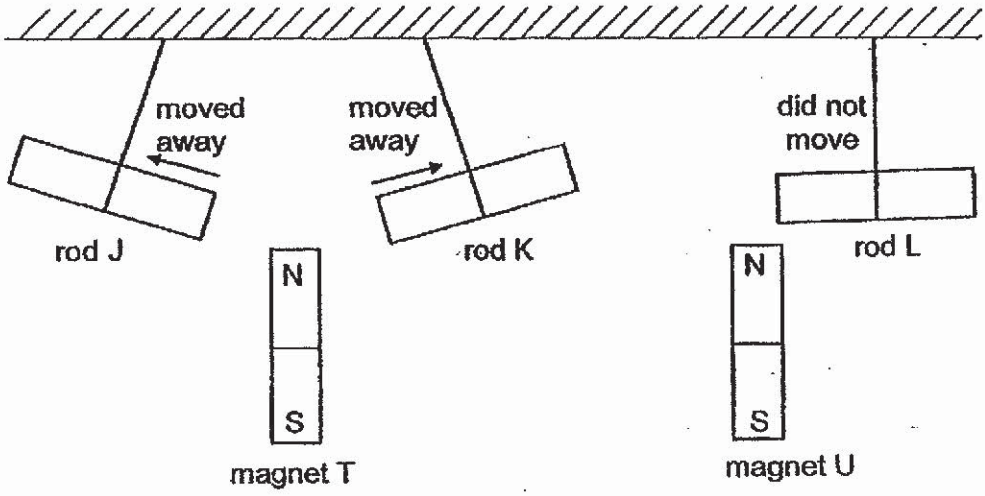
467

24. Three rods, J, K and L, were tied to three similar strings and mounted onto the ceiling. Two strong magnets, T and U, were brought near the rods as shown below.



Which of the following are possible explanations for the above observations?

V Rod J must be a magnet.
W Rod L must be a magnet.
X Rod K and rod L are made of magnetic materials.
Y There is a magnetic force of repulsion between rod K and magnet T.

(1) V and X only
(2) V and Y only
(3) V, X and Y only
(4) W, X and Y only

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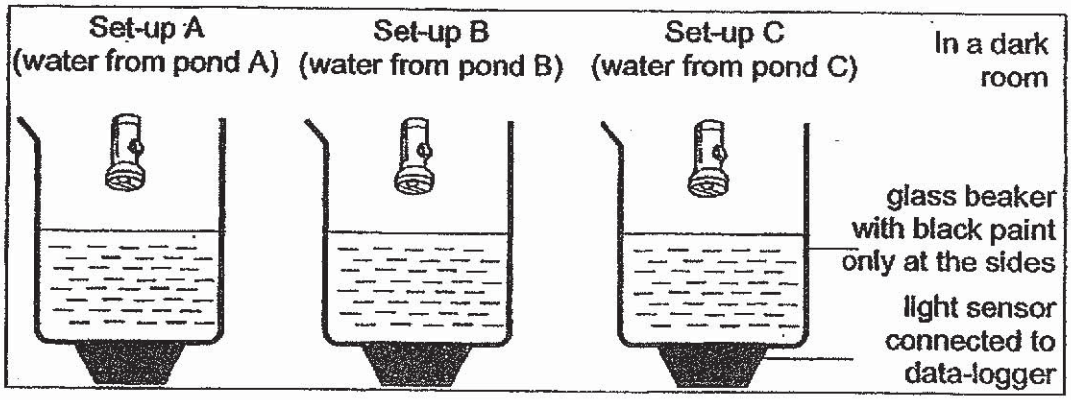
468

25. Nadna wants to find out which pond allows the most amount of light to reach the fully-submerged plants. She poured the same amount of water from three different ponds into each beaker and conducted the experiment in a dark room as shown in the diagram below.



Nadna recorded the amount of light detected by the light sensor for the three set-ups. She took three readings for each set-up and calculated the average of the readings. The table below shows the average reading for each set-up.

Set-up	Average amount of light detected by the light sensor (unit)
A	1000
B	2150
C	3300

Based on the results above, which of the following statements is/are correct?

S Water from pond A allows the fully-submerged plants to carry out photosynthesis at the fastest rate.
T Water from pond C allows most amount of light to reach the fully-submerged plants.
U Set-up B allows more light to reach the fully-submerged plants than set-up C.

(1) T only
(2) S and T only
(3) S and U only
(4) S, T and U

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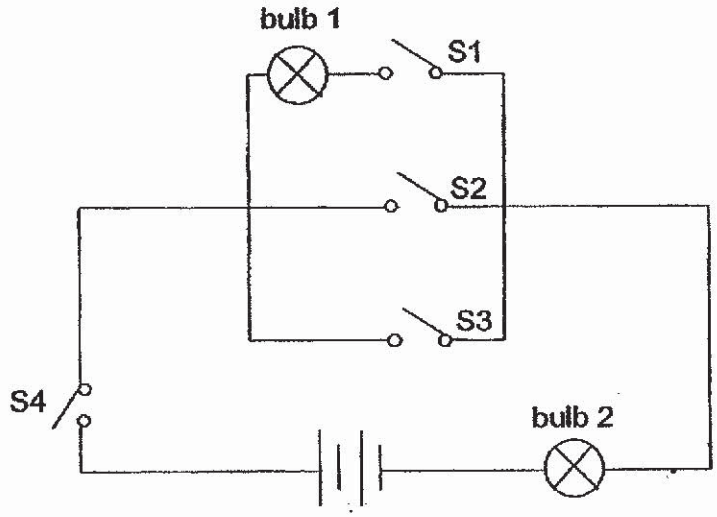
469

26. The diagram below shows an electric circuit. The batteries and bulbs are all working properly.



Which pair of switches must be closed in order for both bulbs to light up?

(1) S1 and S2
(2) S1 and S4
(3) S2 and S3
(4) S2 and S4

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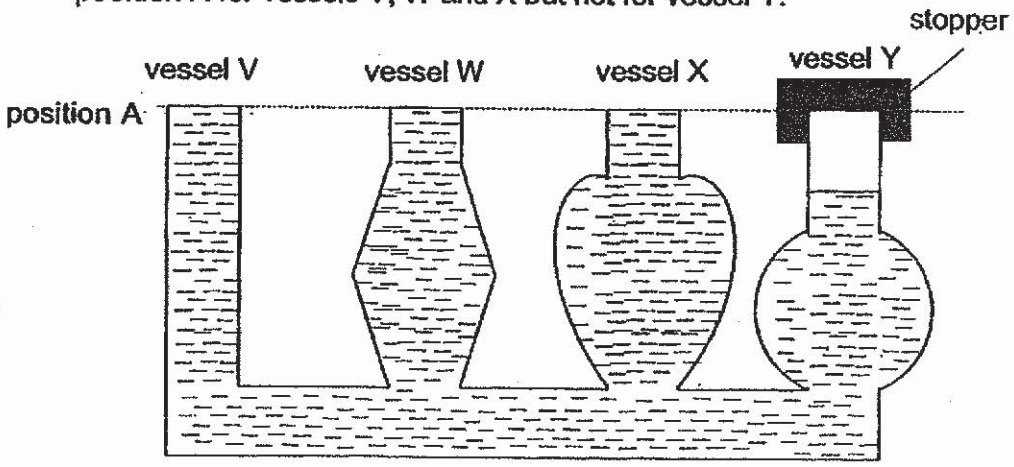
470

27. The diagram below shows four vessels, V, W, X and Y, that are connected to the same base. Only the opening of vessel Y is covered with a stopper.

Zena poured a jug of water through vessel V, the water level rose to position A for vessels V, W and X but not for vessel Y.



Based on the information provided, which of the following statements best explains why the water level in vessel Y is lower than the water level in the rest of the vessels?

(1) The air in vessel Y has mass and does not have a definite volume.
(2) The water has a definite volume and cannot be compressed in vessel Y.
(3) The air in vessel Y occupies space and cannot escape out of the vessel.
(4) The water does not have a definite shape and takes the shape of the different vessels.

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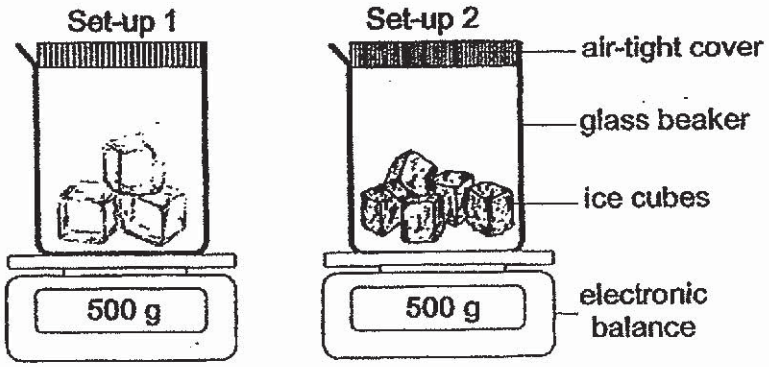
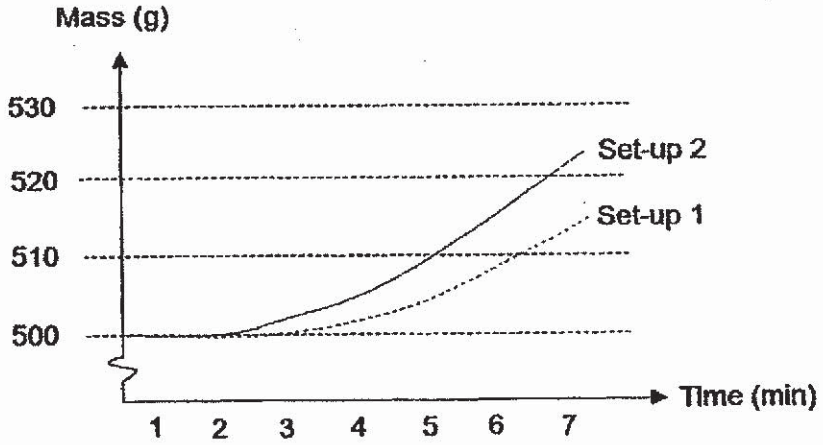
471

28. Henry set up the experiment as shown below. He used the same amount of water to make the ice-cubes in both set-ups 1 and 2.



Henry recorded the mass of both set-ups over a period of 7 minutes and plotted the line graph below.



Which of the following statements best explain the difference in the increase in mass for both set-ups over time?

A The mass of ice cubes in set-up 2 is more than in set-up 1 at the start of the experiment.
B The exposed surface area of the ice cubes in set-up 2 is more than in set-up 1.
C The surface of the beaker in set-up 2 is cooler than set-up 1 from the 2nd minute to the 7th minute.
D More air condenses on the cooler surface of the beaker in set-up 2 than in set-up 1.

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B, C and D

End of Booklet A

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472

NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2019
PRIMARY 6

SCIENCE

BOOKLET B

12 Open-ended questions (44 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

Section B		/ 44

Name: _____ ( ) **Class: P 6**_____

Date : 15 May 2019 **Parent's Signature:**_____

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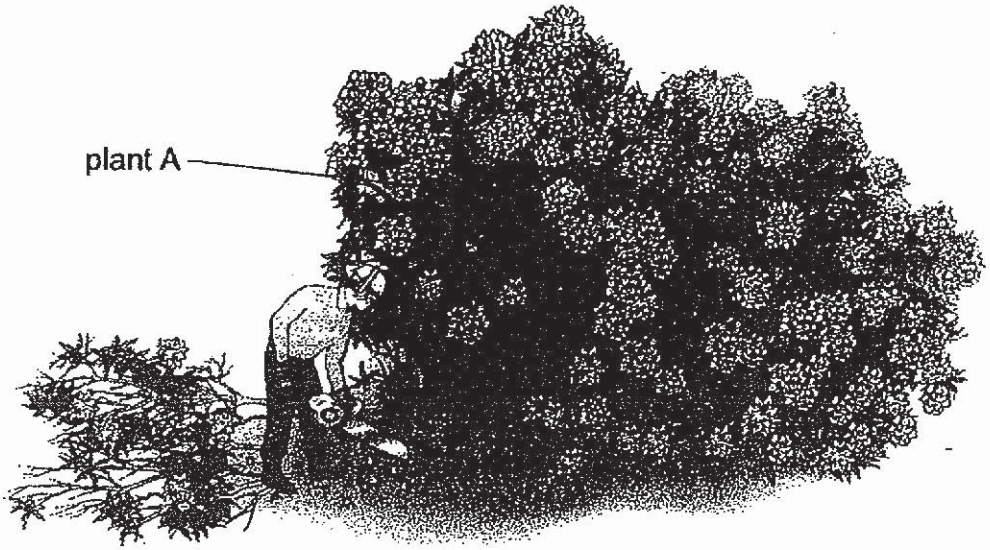
Section B: (44 marks)
Write your answers to question 29 to 40.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

29. Plant A grows bigger and faster than other plants.
The diagram below shows a man cutting down plant A.



(a) Scientists think that the roots of plant A might produce a chemical that stops other plants from growing near them. How does this help plant A to grow better? [1]

_____

_____

(b) Give another reason why hardly any other plants can grow under the bushes of plant A. [1]

_____

_____

(c) After plant A and their roots are cleared away, there will not be any of the chemical in the soil. What will happen to the population of other plants growing there? Explain why. [1]

_____

_____

Score 3

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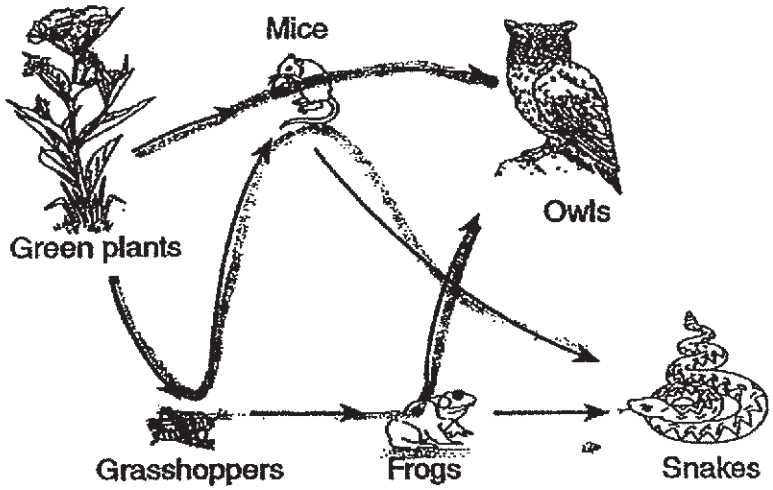
30. Study the food web shown below.



(a) How are the feeding relationships of the mice different from the feeding relationships of the other animals in the food web? [1]

(b) How many food chains are there in the food web? [1]

(c) Explain how the energy for all the organisms in the food web can be traced back to the sun. [1]

Score	3

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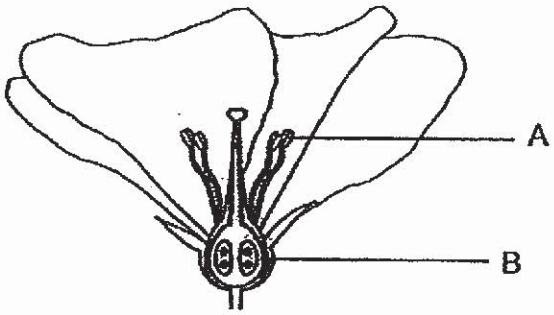
476

31. The diagram below shows the structure of flower X.



Flower X

(a) What is the function of part A? [1]

(b) Bees are often seen visiting flower X. Describe how the bees help to pollinate flower X? [1]

(c) How would the removal of part B affect flower X? Explain your answer clearly. [1]

Score 3

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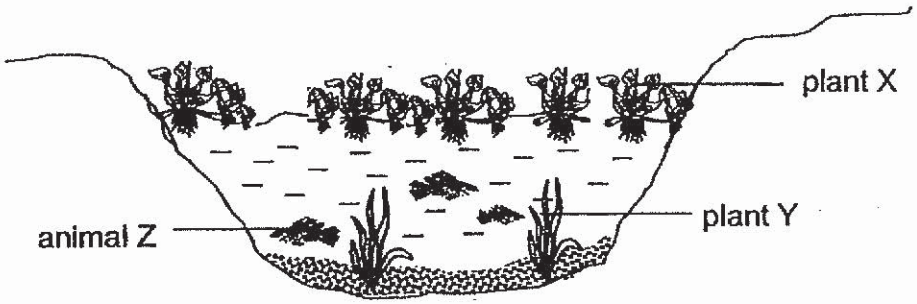
32. Joanne recorded some observations about the aquatic plants in her school pond over a period of 3 months. The table below shows her findings.



Month	Number of plant X	Number of plant Y
January	20	16
February	35	9
March	85	3

(a) From the table above, what is the relationship between the number of plant X and the number of plant Y? [1]

_____

_____

(b) Give an explanation for your answer in (a). [1]

_____

_____

(c) The organisms in the pond are interdependent on one another.

(i) State one way how plant X and plant Y can benefit animal Z. [1]

Plant X: _____

Plant Y: _____

(ii) Explain how animal Z can benefit plant Y. [1]

_____

_____

Score 4

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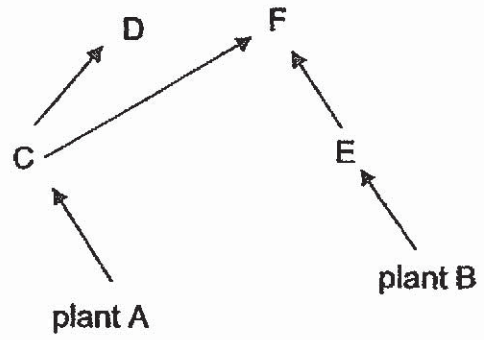
478

33. The diagram below shows a food web in a sea community.



(a) In the food web above, is there an organism that is both a prey and a predator? Explain your answer. [1]

(b) A large number of D were caught by fishermen. The number of F remained the same. How would the population of plant A and the population of E change? Explain your answers. [2]

Effect on A and reason:

Effect on E and reason:

Score 3

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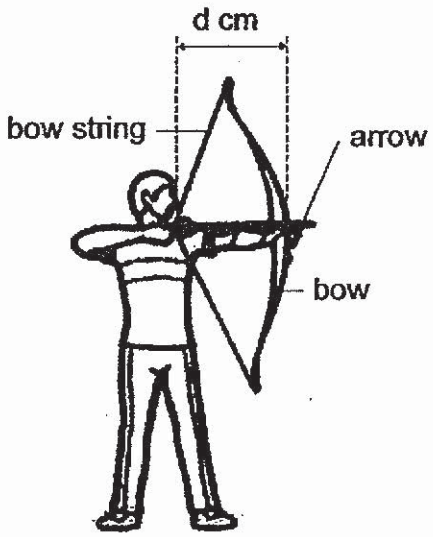
34. Jie Zhi tried out archery at an archery range. He wants to find out how the distance, d, between the bow and bow string would affect the distance travelled by the arrow.



He recorded his results as in the table below.

Distance, d, between the bow and bow string (cm)	Distance travelled by the arrow (m)			
	1st Reading	2nd Reading	3rd Reading	Average Reading
50	53	52	54	53
55	61	63	65	63
60	76	73	73	74

(a) Name the form of energy present in the stretched bow string. [1]

(b) Based on the results, explain how the distance between the bow and the bow string affects the distance travelled by the arrow. [2]

(c) Besides changing the distance between the bow and the bow string, suggest another way to increase the distance travelled by the same arrow. [1]

Score	4

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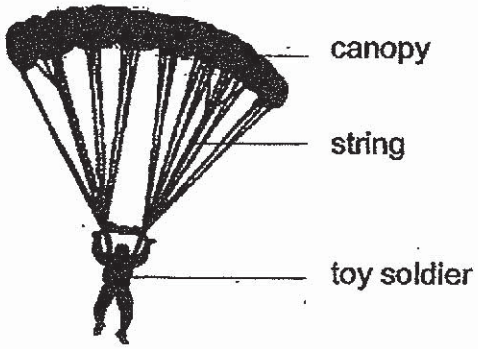
480

35. Jayden dropped a toy soldier attached to a canopy of 1000 cm^2 at a certain height. He used a stopwatch and measured the time taken for the toy soldier to fall to the ground. He wanted to find out if the size of the canopy affects the time taken for the toy soldier to fall to the ground.



Set-up	Size of canopy (cm^2)	Average time taken for the toy soldier to fall to the ground (s)
A	1000	3.1
B	900	2.7
C	800	?
D	700	1.8

(a) What could be the average time taken for the toy soldier to fall to the ground when the size of canopy is 800 cm^2? [1]

(b) Name the force(s) acting on the toy soldier as it falls to the ground. [1]

(c) Suggest two changes to the experimental set-up if Jayden wanted to find out if the mass of the toy soldier affects the average time taken for the toy soldier to fall to the ground. [2]

Score 4

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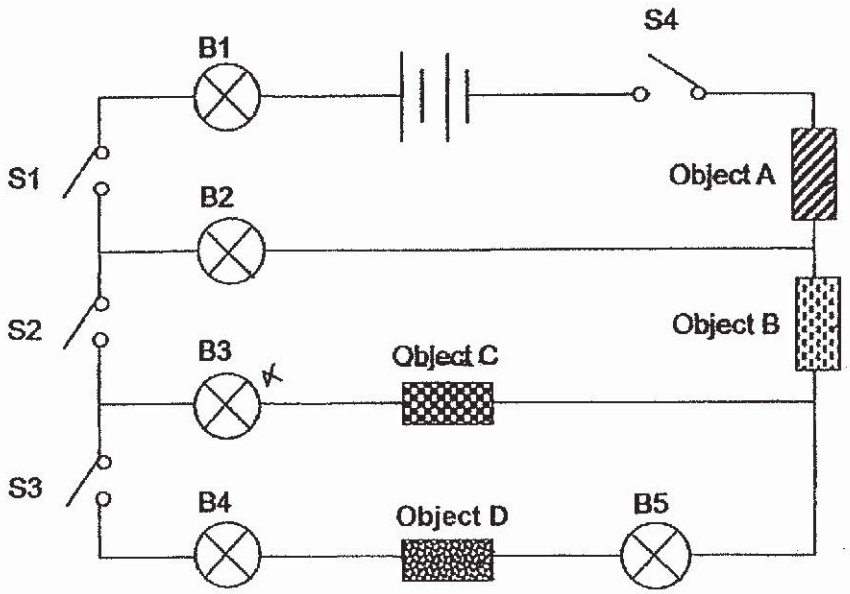
36. Joachim set up the electric circuit as shown below. He used five identical bulbs and two identical batteries in the set-up. The four objects, A, B, C and D, were made of different materials.



The table below shows the combination of switches that were closed and the bulbs that lighted up respectively.

Switches that were closed	Bulbs that lighted up
S1 and S4	B1 and B2
S1, S2 and S4	B1 and B2
S1, S2, S3 and S4	B1, B2, B4 and B5

(a) Based on the information provided above, which of the objects, A, B, C and D, are electrical conductors? Give a reason for your answer. [2]

(b) Name a suitable material for object C. [1]

Score 3

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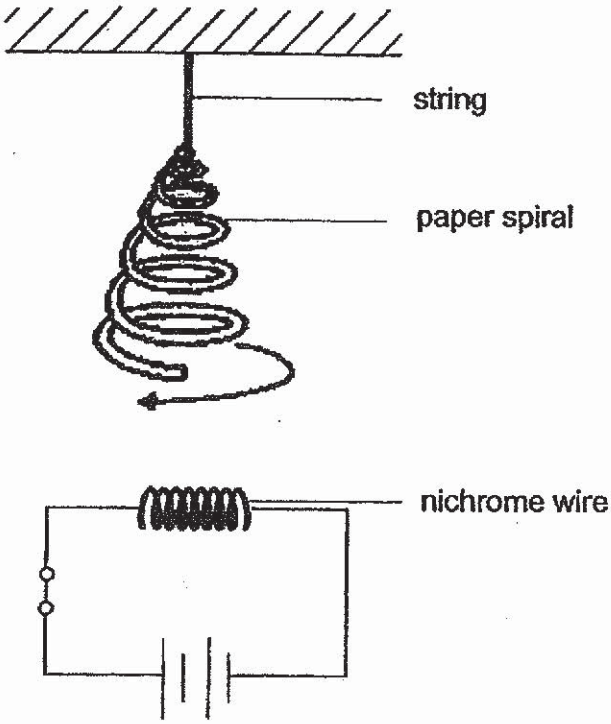
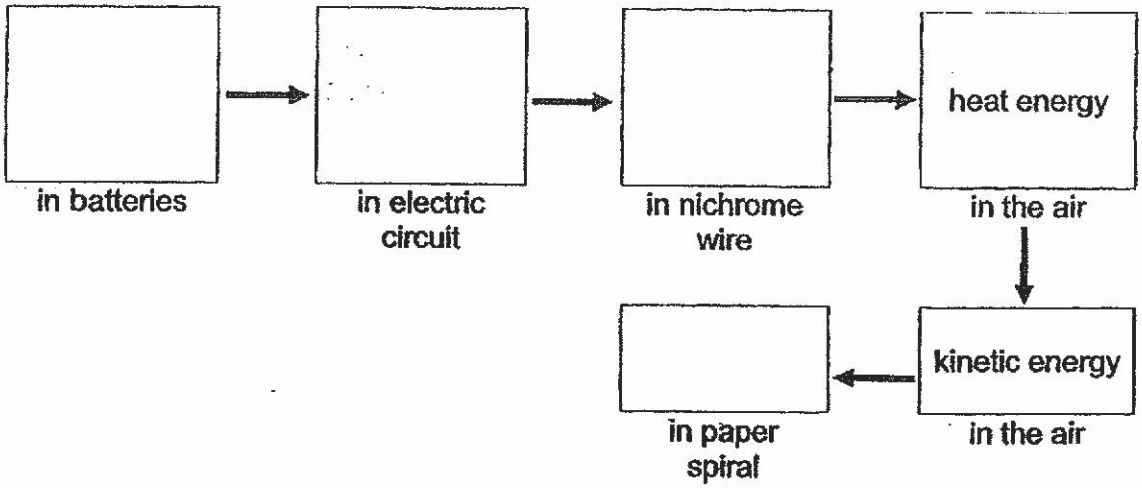
482

37. Jonathan set up the experiment below during his Science lesson.



When the switch is closed, Jonathan observed that the paper spiral started spinning after some time.

(a) State the energy conversion that caused the paper spiral to spin. [1]



(b) Jonathan then added more batteries in series to the circuit. What will happen to the paper spiral after some time? [1]

Score 2

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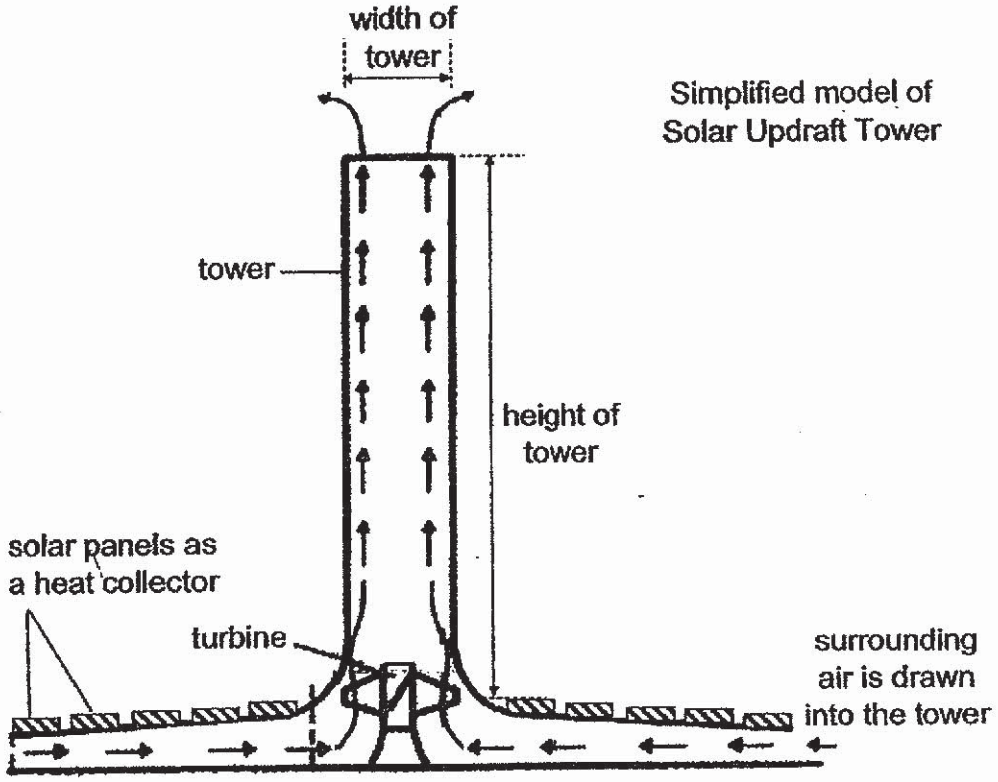
483

(c) In 1896, Mr Alfred and his team came up with the idea of creating a solar updraft tower as shown in the diagram below. The tower draws in surrounding air and makes use of the heat from the Sun to heat up the air. The heated air then moves to turn the turbine and generate electricity.



Name the two sources of energy that enable this tower to work. [1]

_____

Score 1

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484

(d) Using computer simulations, the team designed four models, P, Q, R and S, by changing two variables, the height of the tower and width of the tower. The speed of the air in the tower is measured and recorded.

Model	Variable 1	Variable 2	Results
	Height of the tower (m)	Width of the tower (m)	Speed of air in the tower (km/h)
P	60	6	70
Q	60	12	80
R	120	6	140
S	120	12	160

With reference to the table above, which one of the variables have a greater effect on the results? Explain your answer by comparing the different models.

[2]

Score 2

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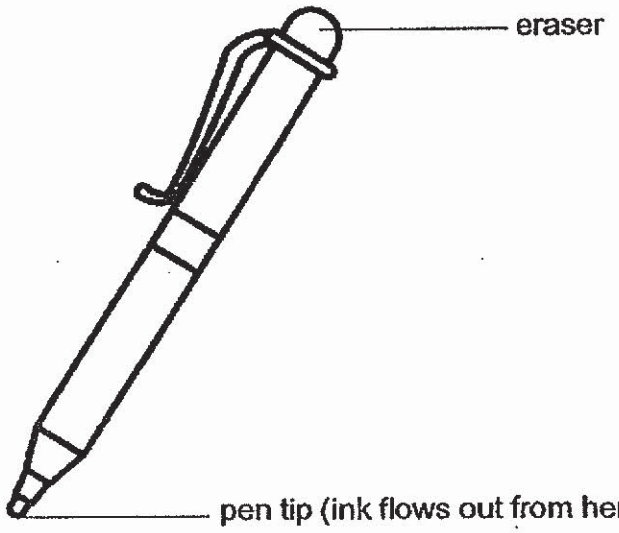
485

38. **Dr Natalie wants to develop a pen with an erasable ink that can be erased in the shortest time. At the same time, she wants to ensure that the ink does not reappear easily after being erased.**

In her development of the ink, she discovered that it is possible to use heat to make the ink colourless.



Dr Natalie tested the pen with four different inks, F1, F2, F3 and F4. She recorded the time taken for her to erase the ink using a special machine. The machine applies the same amount of force throughout the erasing process to ensure that it is a fair test. She recorded some observations from her testing in the table below.

	Observations	
Ink	**Time taken to erase the ink (s)**	**Time taken for the ink to reappear (s)**
F1	0.5	4
F2	0.4	3
F3	0.3	Ink does not reappear
F4	1.2	Ink does not reappear

(a) **Using the information provided, which ink, F1, F2, F3 or F4, is the most suitable ink to be used in the pen that Dr Natalie wants to develop? Explain your answer.** [2]

Score	2

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486

(b) How can the eraser on the pen cause the ink to become colourless? Explain your answer using the concept of forces. [1]

(c) Dr Natalie did more tests and found out that when she tried to use the pen to write on a piece of paper placed on the vertical wall, the ink did not flow out. Explain why. [1]

Score	2

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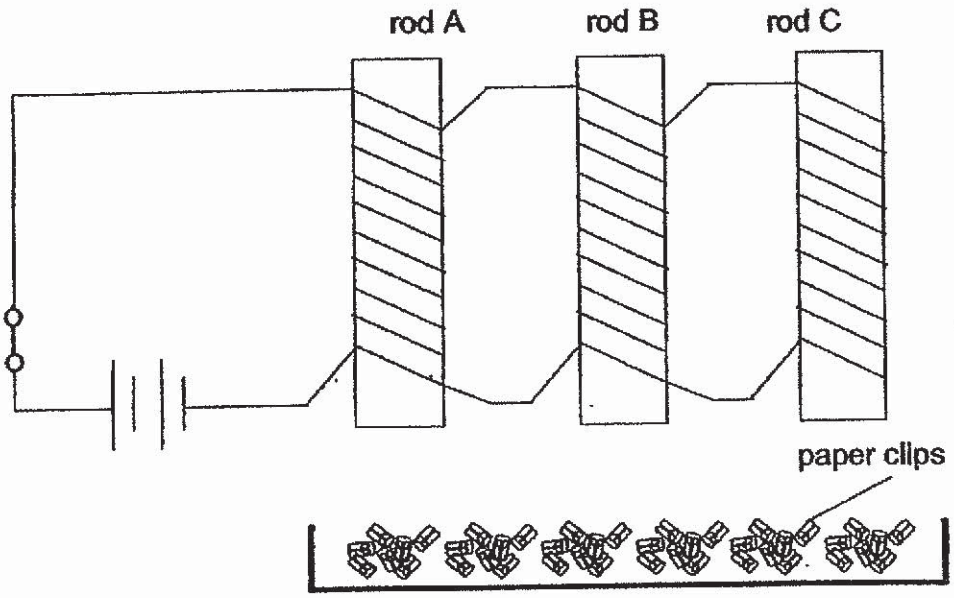
487

39. Elsie set up the experiment as shown below.



When the switch was closed, some of the rods were able to attract some paper clips. Elsie counted the number of paper clips that were attracted to the rods and recorded her results in the table below.

Rod	Number of paper clips attracted when the switch was closed
A	0
B	4
C	6

(a) When the switch was closed, some of the paper clips were attracted to rods B and C. Explain why. [1]

_____

_____

(b) Name one suitable material for rod A. Explain your choice. [1]

_____

_____

Score 2

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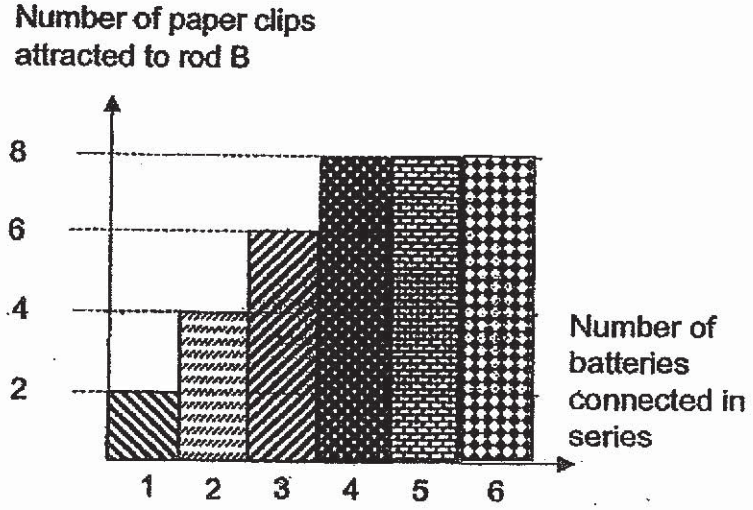
488

(c) Elsie continued to add batteries connected in series to the circuit. She counted the number of paper clips that was attracted to rod B.



When the number of batteries connected in series increases to more than four, she noticed that the number of paper clips attracted to rod B stays the same. Give two reasons for her observations. [2]

Reason 1: _____

_____

Reason 2: _____

_____

Score	2

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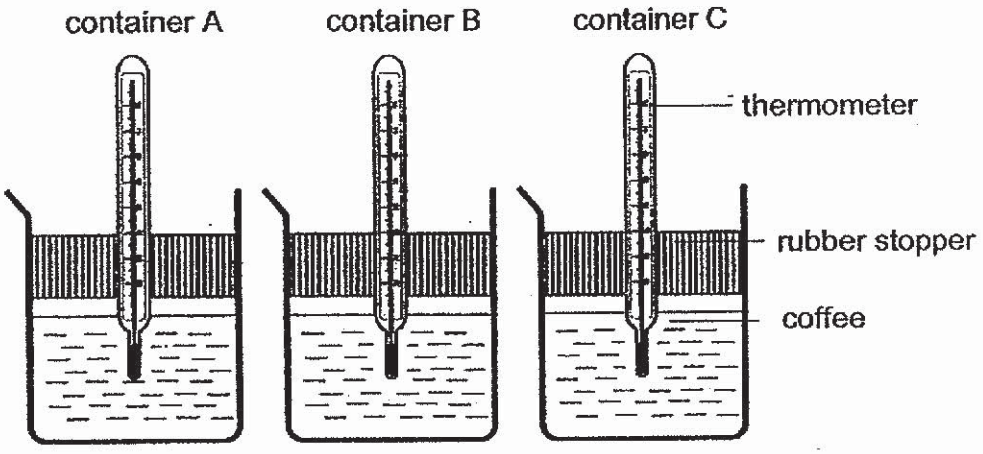
489

40. Faizal wants to find out which containers, A, B or C, that are made of different materials can keep his coffee hot for the longest period of time. He poured coffee at 100 °C into each container.



(a) Which variable(s) should Faizal keep the same to ensure a fair test? [1]

Place a tick (✓) in the box(es) next to the variable(s) that should be kept the same.

Variable	Keep the same
The amount of coffee in each container.	
The time taken for the coffee to reach 50 °C.	
The type of materials used to make the container.	
The thickness of materials used to make the container.	

Score 1

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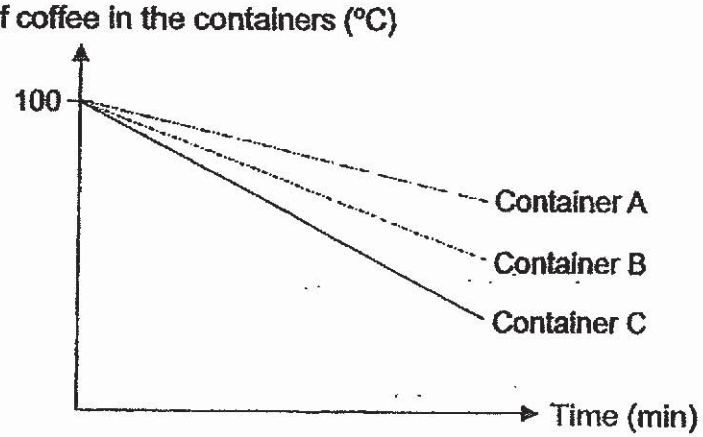
490

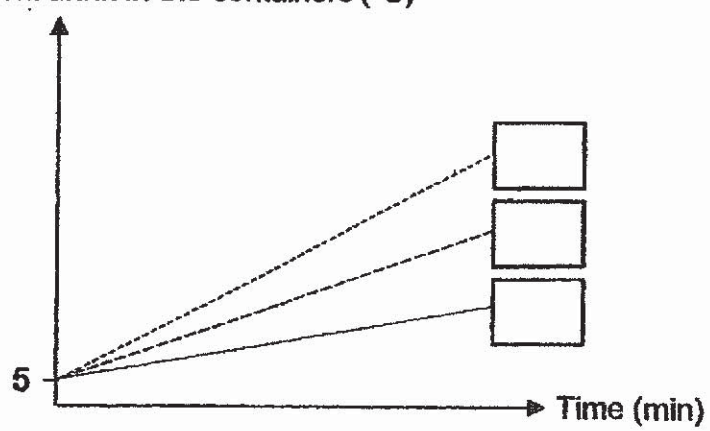
(b) Faizal recorded the change in the temperature of coffee over time and plotted the graph as shown below.



Which container, A, B or C, is the most suitable for keeping the coffee hot for the longest period of time? Explain your answer. [2]

(c) Faizal changed the aim of the experiment to find out which container, A, B or C, is the most suitable to keep his cold drink cool for the longest period of time. He recorded the change in the temperature of the cold drink over time and plotted the graph as shown below.

Write letters 'A', 'B' and 'C' in the correct boxes below to show the change in the temperature of the cold drink in the containers over time. [1]



End of Booklet B

Score	3

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491

SCHOOL : NAN HUA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	3	2	4	4	1	3	4	1	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	3	3	1	3	2	4	4	1	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
1	4	4	2	1	2	3	2		

SECTION B

Q29)	a)It will reduce the number of plants that will compete with it for space, water nutrients and sunlight. b)The plants will not be able to receive sunlight and the rate of photosynthesis will decrease and thus they will not be able to make food. c)The other plants will reproduce and their population will increase as there will be less competition for resource.
Q30)	a)The mice is the only omnivore. b)6 food chains. c)The plants obtain sunlight from the sun to make food. The animals in the food web depend directly or indirectly on the plants for food.

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Q31)	a)To produce pollen grains. b)Bees can rub its body on the stigma and pollen grains from the anther of another flower can fertilised with the ovary and become a fruit. c)Flower X will not be able to make fruits. Without part B, there will be no female sex cell to fertilise with the pollen grains of the male reproductive part.
Q32)	a)When the number of plant X increase, the number of plant Y decrease. b)As 'X' increase, its covers most surface of the pond, preventing sunlight from reaching Y. Hence Y will not receive enough sunlight to make food and some of them will die. c)i)Plant X : Provide Z with shade. Plant Y : Animal Z can hide in plant Y to hide away from their predators. ii)Its droppings provide nutrients for Y's growth.
Q33)	a)No. C and E are only prey. D and F are only predators. b)<u>Effect on A and reason :</u> The population of plant A will decrease. When D decrease, less predators will feed on C thus the population of C will increase. When C increase more predators will feed on plant A thus the population of plant A will decrease. <u>Effect on E and reason :</u> 'E' will increase. D feeds on C. Thus, a decrease in D would lead to an increase in the number of C. Since the population of F stays the same and it feeds on both C and E, F would eat more C and fewer E, causing population of E to increase.
Q34)	a)Elastic potential energy. b)As the distance between the bow and bow string increase, the distance travelled by the arrow also increase. There is more elastic

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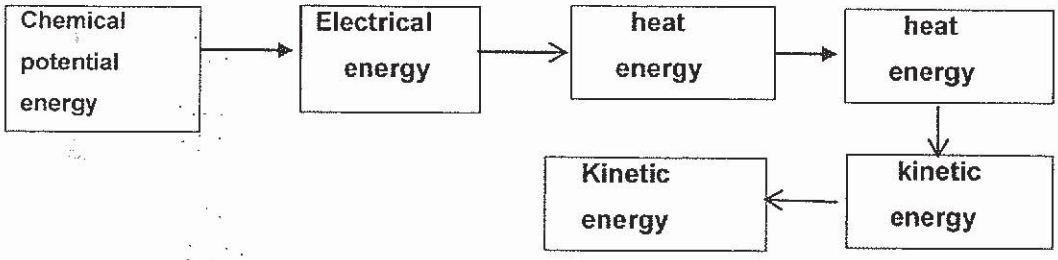
	potential energy in the stretched bow string to be converted to more kinetic energy in the arrow. c)Use a bow string that is more stiffer.
Q35)	a)2.3s b)Air resistance and gravity. c)Replace the canopies in set-ups B, C and D with a same canopy size of 1000cm². Ensure the mass of the toy soldier in every set-up is different.
Q36)	a)A,B,D. When the switch is closed, there is a closed circuit and electric current is able to flow through objects A, B and D to light up light bulbs B1, B2, B4 & B5. b)Plastic.
Q37)	a)  b)It will spin at a faster speed. c)Sun and wind. d)The height of the tower. By comparing models P and R, when the height of the tower increases, the speed of air in the tower increases more than when the width of the tower increases in models P and Q.
Q38)	a)F3. The time taken to erase the ink is the fastest and the ink does not reappear, thus ink F3 should be used in the pen Dr Natalie wants to develop.

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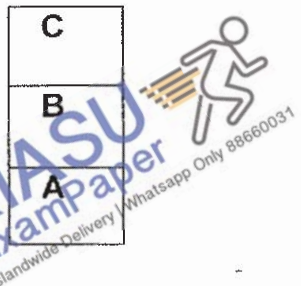
	b)When the eraser rubs on the surface of the ink, there is friction between eraser and ink. The heat produced caused the ink to become colourless. c)The ink was pulled away from the pen tip due to gravity.
Q39)	a)When the switch is closed, there is a closed circuit where electric current can flow through the rods B and C. The rods become electromagnets. b)Wood. Rod A is made of non-magnetic material and cannot be magnetised. c)Reason 1: There is no more space for more paper clips to be attracted to rod B. Reason 2 : The magnetic force is not strong enough to attract another paper clip.
Q40)	a)

	√
	√

b)Container A. The temperature of the coffee remained the highest. It is tue poorest conductor of heat as the coffee loses the least amount of heat to the surrounding air.

c)



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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2019

BOOKLET A

Date : 15 May 2019
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 18 printed pages including this cover page.

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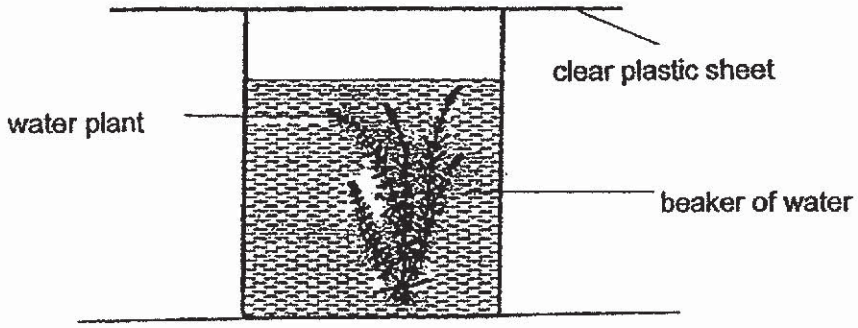
Section A (28 x 2 marks = 56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Indicate your choice (1, 2, 3 or 4) and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Alicia prepared the set-up in the morning as shown below. She then placed it in an open field for 24 hours.



At every six-hour interval, she tested a sample of the water from the beaker by adding liquid A to it.

Liquid A causes a colour change in the water as shown below.

Amount of carbon dioxide in the water	low	high
Colour of water with liquid A	yellow	red

What would be the colour observed when Alicia tested water samples taken at noon and at midnight?

	At noon	**At midnight**
(1)	red	red
(2)	red	yellow
(3)	yellow	yellow
(4)	yellow	red

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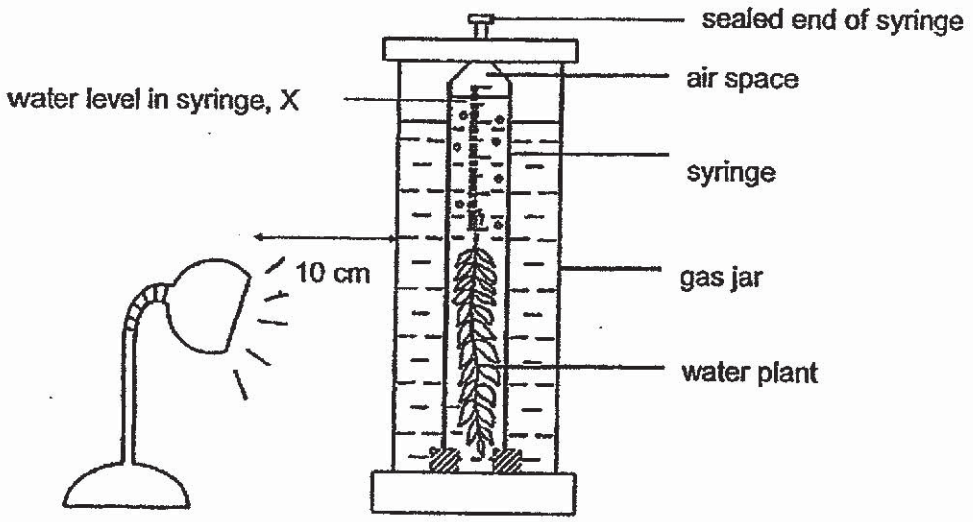
2. Winnie set up an experiment in a dark room as shown below.



She placed a table lamp at a distance from the gas jar. After half an hour, she observed that the water level, X, in the syringe changed.

How did the water level, X, change and what was the reason for its change?

	Water level X	Reason
(1)	rises	Heat from the lamp caused the water to expand.
(2)	rises	The plant gave out water during photosynthesis.
(3)	falls	Oxygen released by the plant gets collected in the air space.
(4)	falls	Carbon dioxide in the air space is taken in by the plant.

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3. Which of the following statements about food made during photosynthesis are correct?

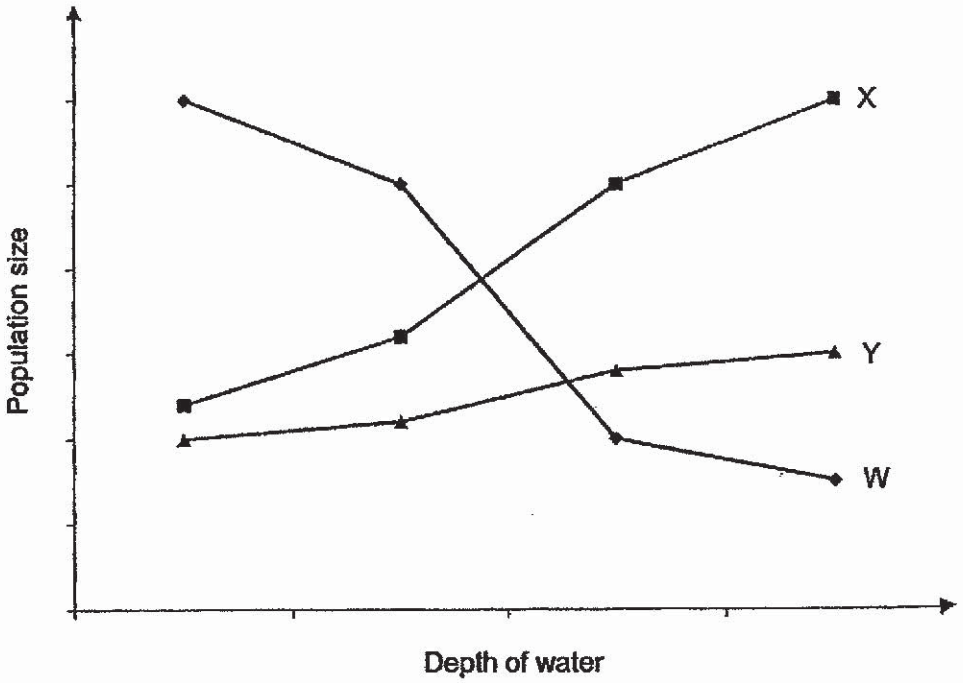
A Food made by plants can be stored as starch.
B Plants make use of the food that they made for energy.
C Food made in the leaves is transported to all parts of the plant.
D Excess food that plants made can be stored in different plant parts.

(1) A and D only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D

4. Which one of the following represents a single population?

(1) All the insects found in a field.
(2) All the birds counted in one day in a garden.
(3) All the animals and plants living on an island.
(4) All the bacteria of the same kind found in yoghurt.

5. The graph below shows the population size of three different organisms, W, X and Y, at different water depths.
As the depth of a pond increases, the amount of light that passes through the water decreases.



Which organism(s) survive(s) better when there is less light?

(1) X only
(2) W and X only
(3) W and Y only
(4) X and Y only

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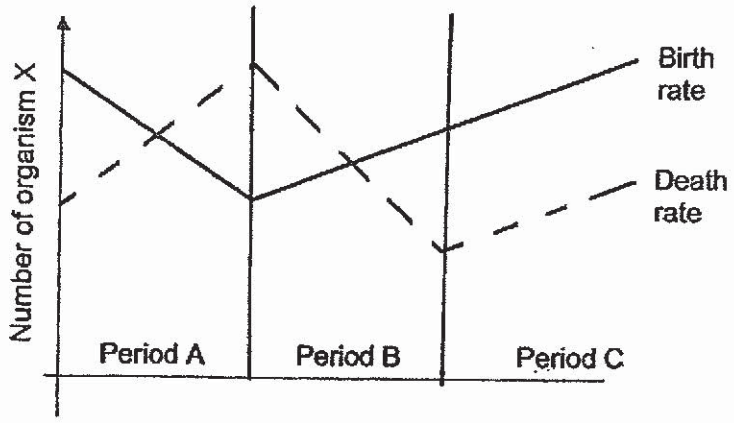
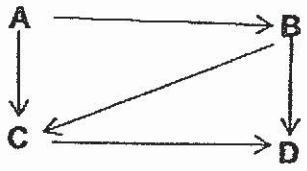
6. The graph below shows the birth and death rates of a population of organism X.



Which period(s) show(s) a decrease in the population of organism X?

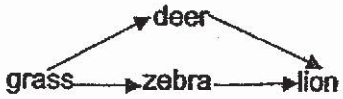
(1) A only
(2) B only
(3) A and B only
(4) A and C only

7. In the food web shown below, which organism is most likely a plant?



(1) A
(2) B
(3) C
(4) D

8. A safari park is a large area where wild animals are kept in the open and may be observed by visitors driving through. The diagram shows a food web in one location of the safari park.



If there is a shortage of zebra in that area of a safari park, which of the following could the lions do?

A Eat the bark and roots of a tree.
B Hunt for more deer in that area of the safari park.
C Move to another area of the safari park to hunt for zebra.

(1) B only
(2) A and B only
(3) A and C only
(4) B and C only

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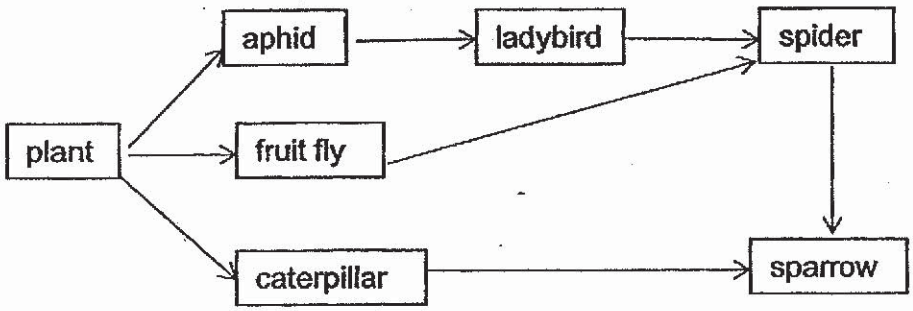
9. Which of following organisms break down dead matters into simpler substances?

A fern
B moss
C mould
D bacteria

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

10. The food web below shows the food relationships of different organisms living in a garden community.



Based on the food web above, which organisms are both predators as well as prey?

(1) aphids only
(2) ladybird and spider only
(3) caterpillar and sparrow only
(4) fruit fly, spider and sparrow only

11. Which of the following explain why the water cycle on Earth can take place repeatedly?

A Water freezes at 0°C and boils at 100°C.
B Water has no definite shape but has a definite volume.
C Water can condense when it comes into contact with a cooler surface.
D Water can change from one state to another when it gains or loses heat.

(1) A and D only
(2) B and C only
(3) C and D only
(4) A, B and D only

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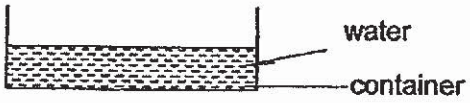
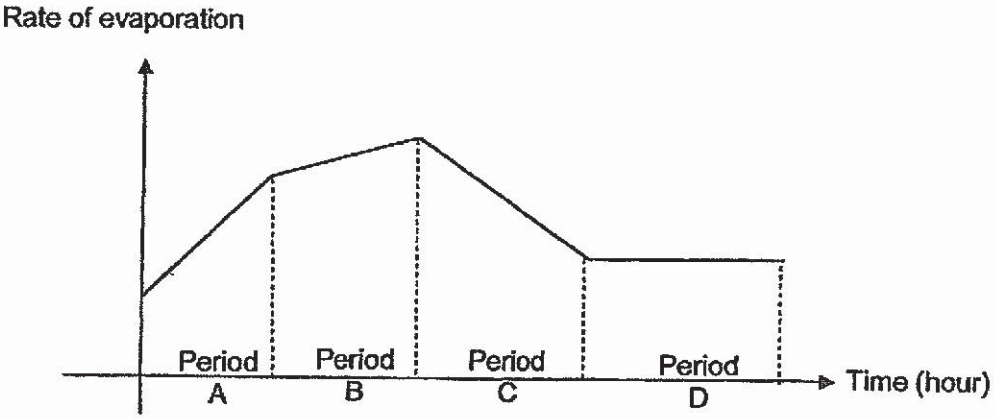
12. The graph below shows the changes in the amount of water left in the container shown below over a period of time.





Which one of the following statements is a possible explanation for the change in the rate of evaporation of the water in the container?

	Period	Change in rate of evaporation	Explanation
(1)	A	increased	There was the most amount of water at the start.
(2)	B	increased	There was an increase in the temperature of the surrounding air around the container.
(3)	C	decreased	There was a decrease in the exposed surface area of water in the container.
(4)	D	remained constant	All the water in the container had completely evaporated.

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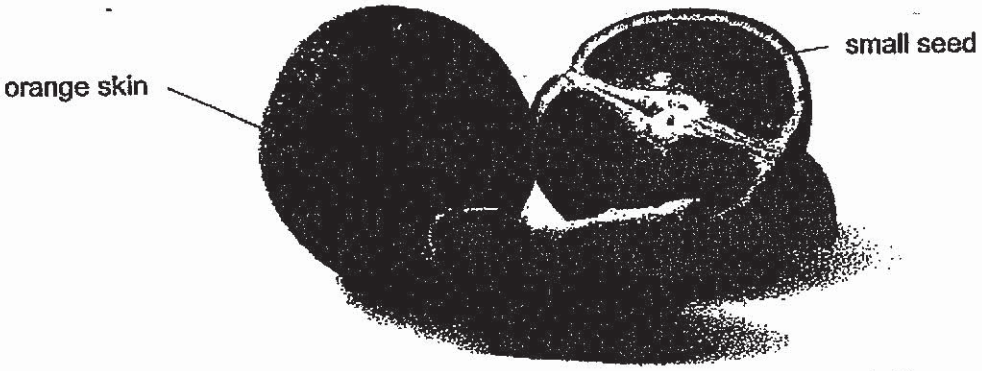
13. The table below shows the characteristics of three different flowers, A, B and C.

Characteristics	Flowers		
	A	B	C
Does it produce nectar?	Yes	No	Yes
Does it have sticky stigma?	Yes	No	Yes
Does it have brightly coloured and large petals?	No	Yes	Yes
Does it have stigma and anthers dangling outside the flower?	No	Yes	No

Based on the information above, which of the following flower(s) is/are most likely pollinated by insects?

(1) A only
(2) B only
(3) A and C only
(4) A, B and C

14. The diagram below shows two oranges. One of them had been cut open.



Which of the following characteristics most likely help in the dispersal of its seeds?

A It is round.
B It is fleshy and juicy.
C Its skin is bright in colour.
D Its seeds are small, hard and indigestible.

(1) A and B only
(2) B and C only
(3) A, B and D only
(4) B, C and D only

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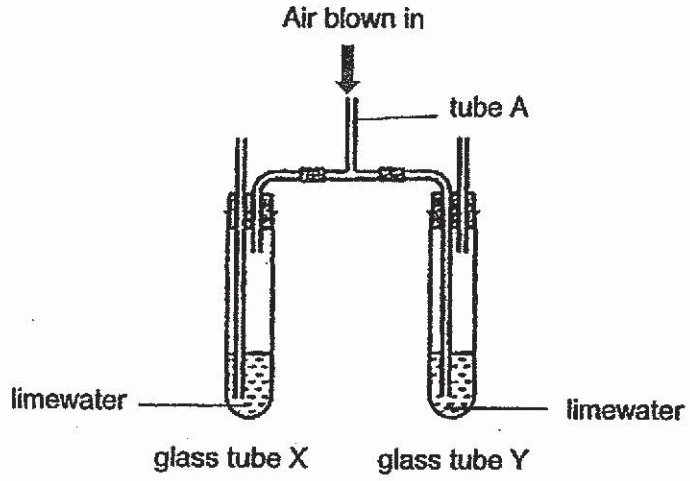
15. Dylan set up the following apparatus with the same amount of limewater poured into identical glass tubes, X and Y.



Air was being blown into tube A continuously for 15 seconds.

Which one of the following describes Dylan's observation and the explanation for the observation?

(1) The limewater in X and Y remained clear as there was no carbon dioxide in Dylan's breath.

(2) Only the limewater in X turned cloudy after coming into contact with the carbon dioxide in Dylan's breath.

(3) The limewater in Y turned cloudy faster than X after coming into contact with the carbon dioxide in Dylan's breath.

(4) The limewater in X and Y turned equally cloudy after coming into contact with the carbon dioxide in Dylan's breath.

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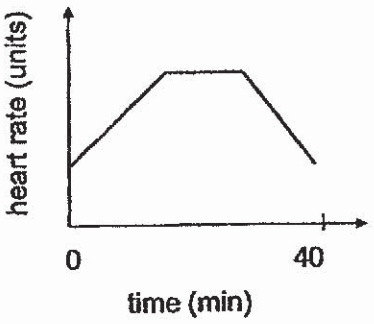
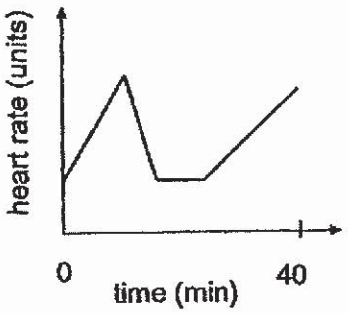
16. During her exercise, Wan Ru ran up a hill, rested for 10 minutes at the top of the hill and then ran down the hill. She ran at a constant speed and took 40 minutes to complete her exercise.

Which one of the following graphs correctly represents Wan Ru's pulse rate during the 40 minutes?

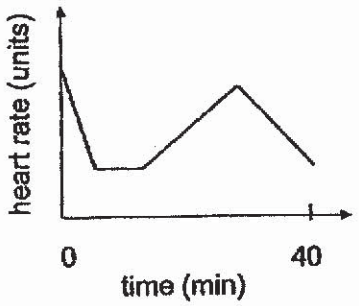
(1)



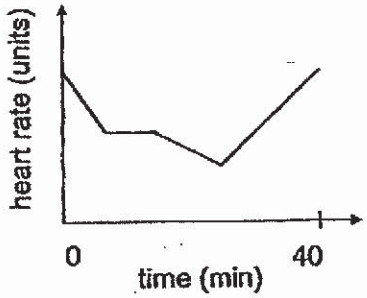
(2)



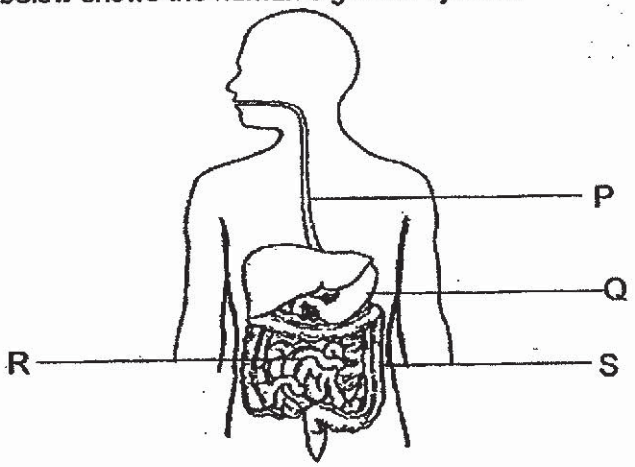
(3)



(4)



17. The diagram below shows the human digestive system.



At which part of the human digestive system would digested food be passed into the circulatory system?

(1) P
(2) Q
(3) R
(4) S

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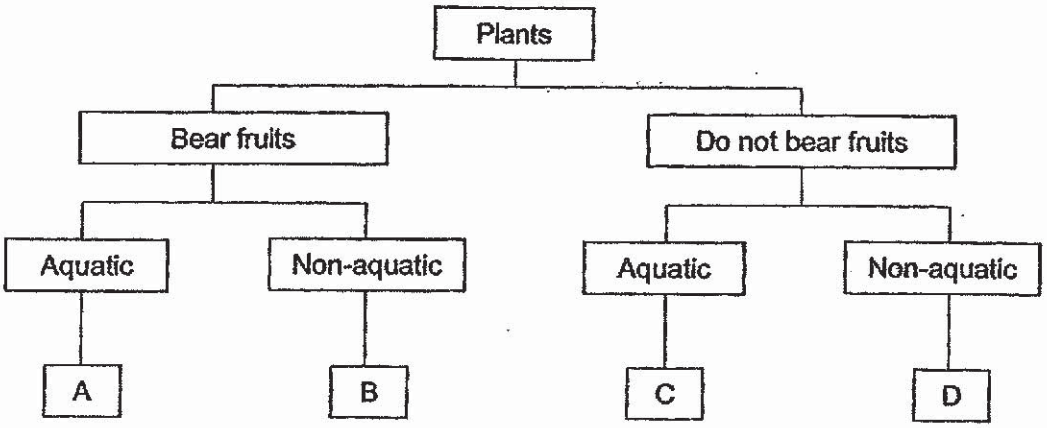
18. The table below shows the characteristics of plants P and Q. A tick (✓) shows that the plant has the characteristic stated.

Characteristics \ Plant	P	Q
Has flowers		✓
Grows on land	✓	

Study the classification chart below.



Based on the information above, which letters best represent plants P and Q?

	Plant P	Plant Q
(1)	C	A
(2)	C	B
(3)	D	A
(4)	D	B

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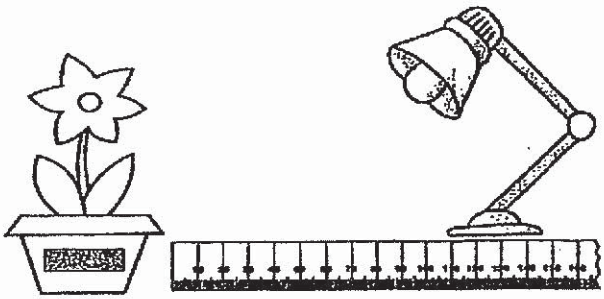
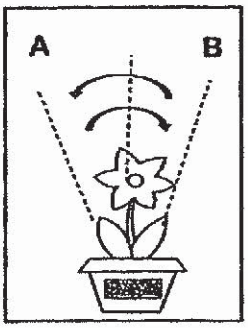
19. Priscilla used a solar-powered toy flower to carry out an experiment as described in the table below.



Set-up of experiment



movement of flower

Step	Procedure
1	Place a lamp about 5 cm away from the toy flower.
2	Turn on the lamp and observe the number of rounds that the toy flower makes. In each round, the flower moves from A to B then back to A.
3	Record the number of rounds the toy flower moves in 5 minutes.
4	Repeat steps 1, 2 and 3 by placing the lamp at the 10 cm mark and 15 cm mark of the ruler.

Priscilla wrote the following aims and conclusions for the experiment.

	Aim	Conclusion
A	To find out how the intensity of light affects the amount of electricity produced.	When there is more electrical energy, the light is more intense.
B	To find out how the intensity of light affects the speed at which the toy moved.	The greater the light intensity, the faster the toy moved.
C	To find out how the intensity of light affects the amount of electricity produced.	The greater the light intensity, the greater the amount of electrical energy.
D	To find out the how the intensity of light affects the speed at which the toy moved.	Light intensity has no effect on the amount of electrical energy produced.

Which of the following statements are possible aims and conclusions for her experiment?

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B, C and D

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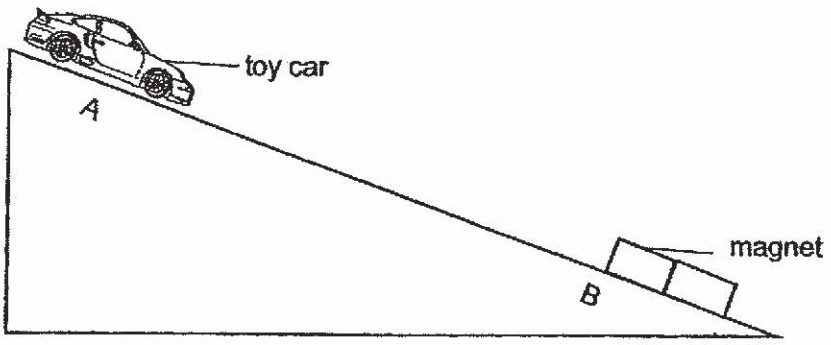
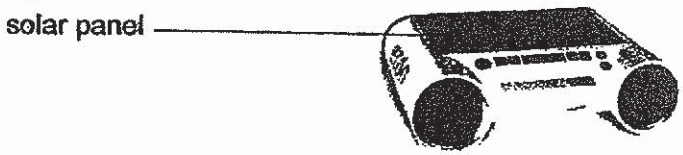
20. A steel toy car was moving down a slope as shown below.



Which of the following shows the change in gravitational potential energy and kinetic energy of the toy car as it moved from A to B?

	Gravitational potential energy	Kinetic energy
(1)	decrease	remains the same
(2)	remains the same	remains the same
(3)	decrease	increase
(4)	increase	increase

21. The diagram below shows a solar-powered radio. The radio can only work when placed in a bright location.



What is the energy conversion that takes place when the radio is being used?

(1)	light energy	→	chemical potential energy	→	sound energy
(2)	light energy	→	electrical energy	→	sound energy
(3)	electrical energy	→	chemical potential energy	→	sound energy
(4)	chemical potential energy	→	electrical energy	→	sound energy

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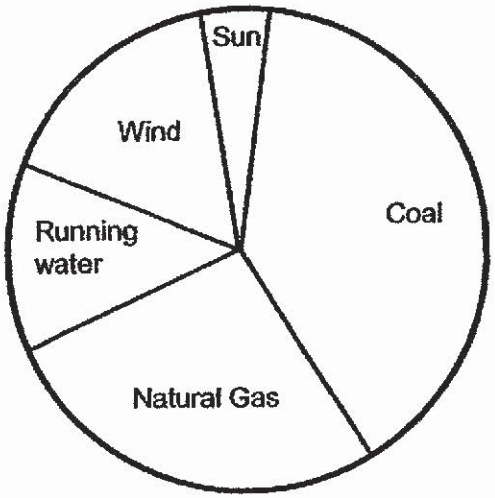
22. The diagram shows the sources of energy in Country S.



Which one of the following statements is true?

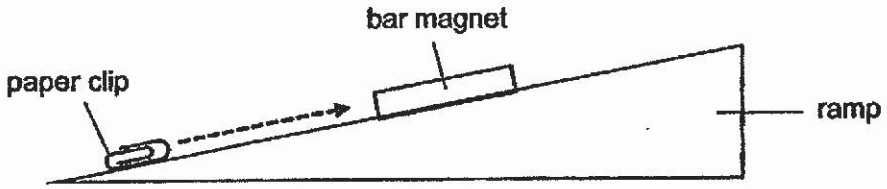
(1) Country S does not use solar energy.

(2) Country S uses energy mostly from fossil fuels.

(3) Country S uses the least energy from the wind.

(4) Country S uses equal amounts of energy from running water and natural gas.

23. Nikhil placed a bar magnet in the middle of a ramp as shown in the diagram below. He observed that the paper clip moved up the ramp and became attached to the magnet.



Which of the following forces are acting on the paper clip as it moves up the ramp?

A Frictional force
B Magnetic force
C Gravitational force
D Elastic spring force

(1) A and B only
(2) B and D only
(3) A, B and C only
(4) A, C and D only

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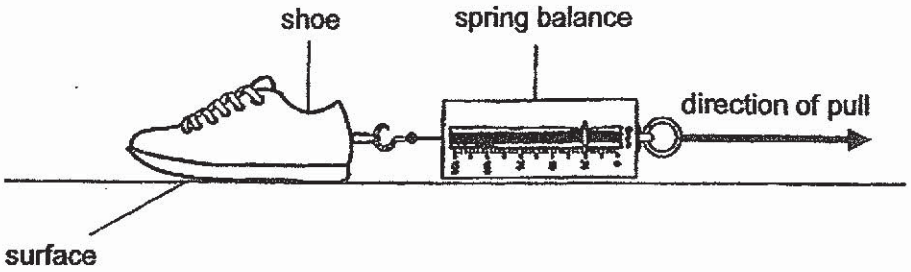
24. Charles conducted an experiment as shown below. He hooked a spring balance onto a shoe and pulled it along the same distance on 4 different surfaces, P, Q, R and S, as shown in the diagram below.



The amount of force needed to pull the shoe across the different surfaces is shown in the table below.

Type of surface	Amount of force needed (units)
P	18
Q	11
R	9
S	15

Based on the information above, on which one of the surfaces is Charles most likely to slip and fall?

(1) P
(2) Q
(3) R
(4) S

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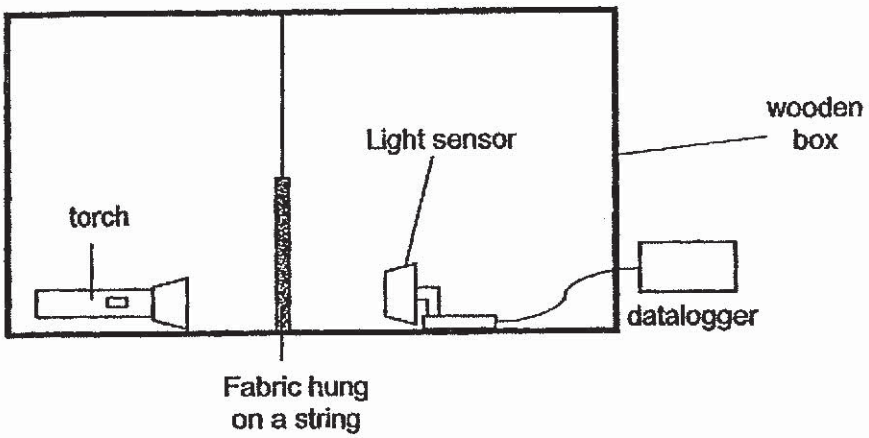
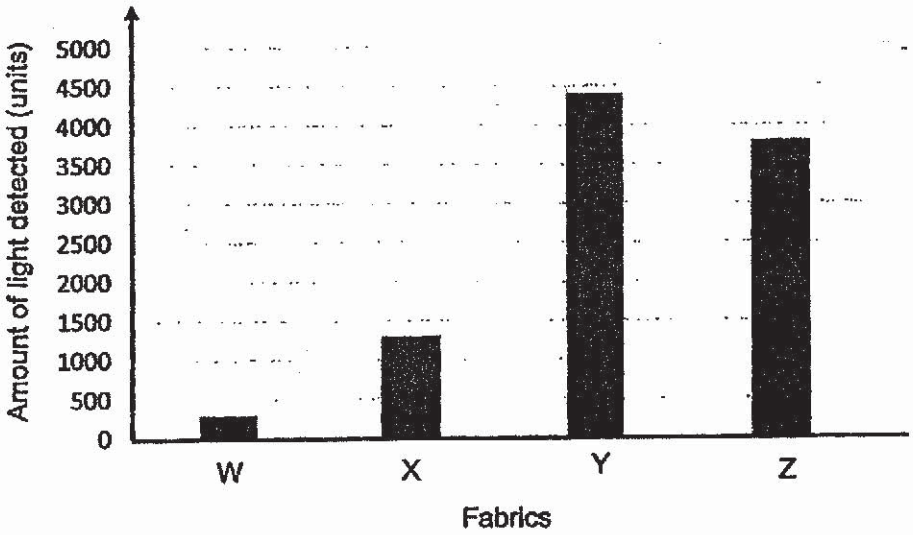
25. Kai Lin set up the following experiment to measure the amount of light passing through 4 different pieces of fabric, W, X, Y and Z.



The datalogger detected 5000 units of light when no fabric was hung.

The results were shown in the graph below.



Kai Lin wanted to use one of the pieces of fabric to make curtain A to block out some light and another piece of fabric to make curtain B to block out most light from her bedroom.

Which of the following show the best choices of fabrics to make curtains A and B?

	Curtain A	Curtain B
(1)	W	X
(2)	W	Y
(3)	Y	W
(4)	Y	Z

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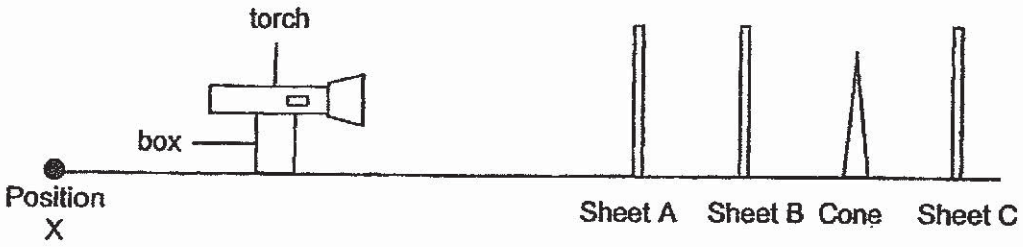
513

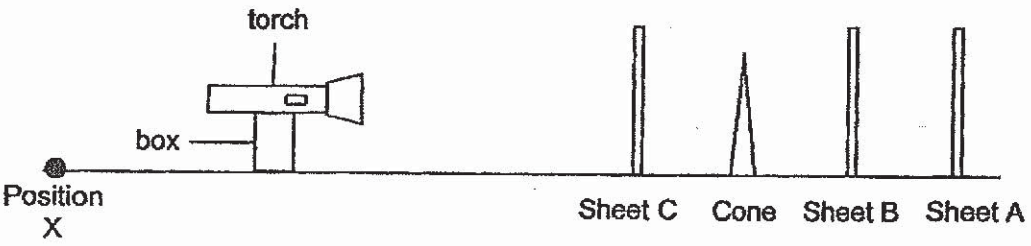
26. Wati set up an experiment in a dark room using a torch, a cone, and 3 sheets, A, B and C, which are made of different materials. She supported the torch on a box and arranged the objects as shown below.



Wati switched on the torch and made the following observations when standing at position X.

- Sheet B has a shiny surface.
- Sheet C and the cone could not be seen.

Wati rearranged the objects as shown below.



She then made the following observations when standing at position X.

- A dark shadow is formed on Sheet B by the cone.
- The cone could be seen clearly.

Which of the following correctly matches the properties to the sheets and cone?

	Allows most light to pass through	Does not allow light to pass through
(1)	Sheet A and sheet B	Sheet C and cone
(2)	Sheet A and sheet C	Sheet B and cone
(3)	Sheet B and cone	Sheet A and sheet C
(4)	Sheet C and cone	Sheet A and sheet B

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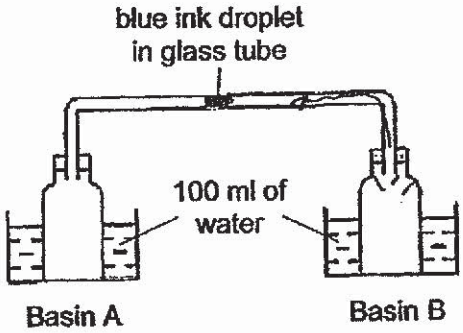
514

27. Aniq connected 2 empty bottles with a glass tube which has a droplet of blue ink placed in the middle. Each bottle was then placed into a basin of water as shown in the diagram below.



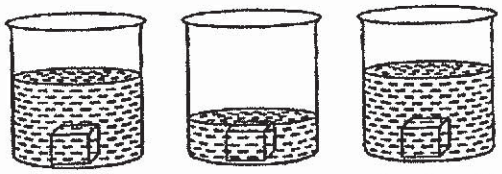
After a while, the droplet of blue ink moved towards the bottle in basin A and dripped into it.

Which of the following changes would together cause the droplet of ink to drip into the bottle in basin A the fastest?

A Increase the width of basin A
B Decrease the width of basin B
C Increase the temperature of the water in basin A
D Increase the temperature of the water in basin B

(1) A and C
(2) A and D
(3) B and C
(4) B and D

28. Arturo poured different amounts of water at different temperatures into each of the 3 identical beakers, P, Q and R, as shown in the diagram below. He then placed an ice cube of the same size into each beaker at the same time.



Arturo measured the time taken for the whole ice cube to melt completely in the water. Arrange the beakers in order of the amount of time taken to melt the whole ice cube, starting with the shortest amount of time.

	Shortest time ⟶		Longest time
(1)	P	Q	R
(2)	Q	P	R
(3)	Q	R	P
(4)	R	Q	P

~ END OF BOOKLET A ~

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2019

BOOKLET B

Date : 15 May 2019

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		56
Booklet B :		44
Total :		100

Any query on marks awarded should be raised by 24 May 2019. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

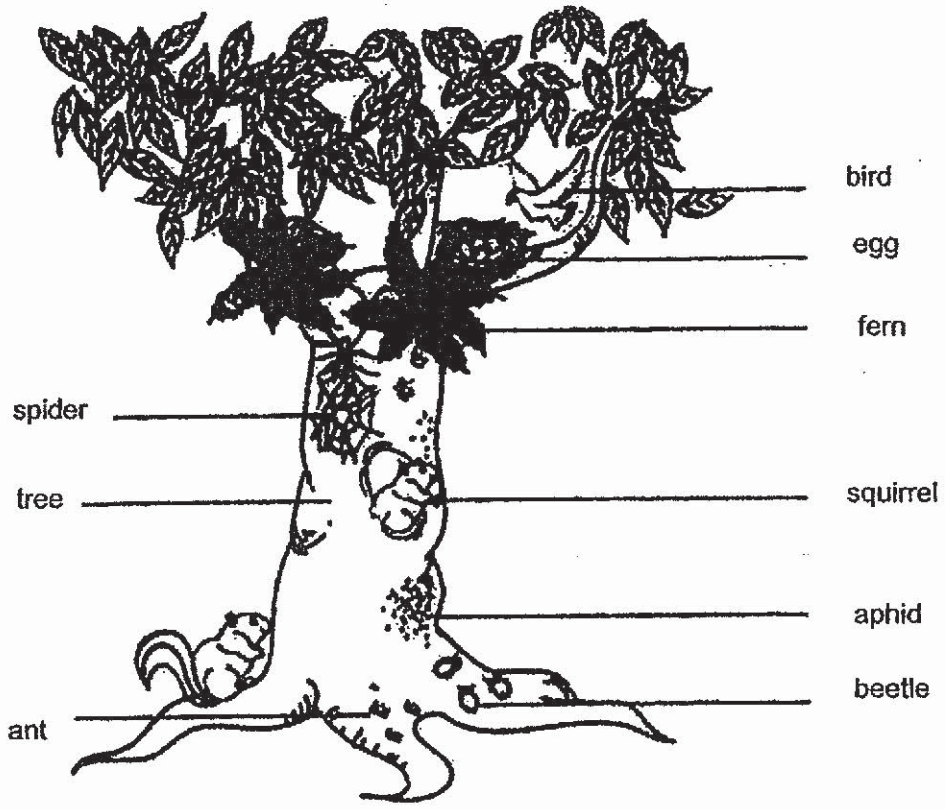
Parent's signature: _____

DO NOT OPEN THIS BOOKLEY UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 17 printed pages including this cover page.

Section B
Write your answers to questions 29 to 40 in the spaces provided.

29. The diagram below shows different organisms found living together in a tree.



(a) Describe what a tree community is, using specific examples of the organisms shown in the diagram above. [1]

1

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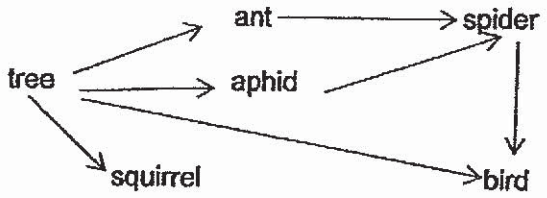
517

The tree provides food and shelter to the organisms living in it. The tree also benefits from these organisms. Study the food web below and answer part (b).



(b) Based on the food web, describe how the tree benefits from the birds and the spiders living in it. [2]

(i) the tree benefits from the birds:

_____

_____

(ii) the tree benefits from the spiders:

_____

_____

2

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30. Study the following food chains carefully. They show the food relationships of organisms living in one habitat.

- Plant → squirrel → python
- Plant → caterpillar → toad → python
- Plant → millipede → centipede → toad → python

(a) Construct one food web in the space provided based on the 3 food chains above.[2]

plant

(b) How would the squirrel population be affected immediately and after a period of time if the number of pythons were to decrease?Explain your answer. [2]

(i) Immediate effect:

(ii) After some time:

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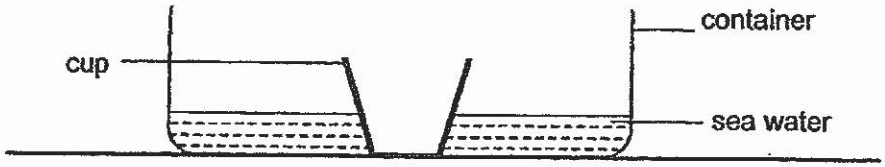
519

31. Lucas was given a container of sea water to obtain pure water from it.
The diagram below shows the initial set-up given to him before he conducted his experiment.



His science teacher provided him with the following apparatus:

- a clear plastic sheet
- a 10 g weight
- some sticky tape
- a stove

He then recorded the procedure of the experiment in the table below.

Step	Procedure
1	Cover the container with a clear plastic sheet.
2	Use some sticky tape to stick the sides of the plastic sheet to both sides of the container.
3	Place a weight in the middle on the surface of the plastic sheet.
4	Place the set-up on a stove and turn it on for 30 minutes.
5	Collect pure water in the cup.

(a) Explain why the set-up was placed on a stove. [1]

(b) Explain how the above experiment enabled him to obtain fresh water in the cup from the sea water. [2]

3

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520

32. Mr Koh placed five identical fruits, A, B, C, D and E, in rooms of different temperatures and measured the time taken for each fruit to split. The results of his experiment are shown below.

	Temperature (°C)				
	20	**25**	**30**	**35**	**40**
Fruit	**A**	**B**	**C**	**D**	**E**
Time taken to split (hrs)	Did not split	24	10	5	1

(a) What was the aim of Mr Koh's experiment? [1]

(b) Based on the results above, state the relationship between the temperature and the time taken for the fruit to split. [1]

Mr Koh observed that Fruit E split with the greatest force and dispersed the seeds the furthest away.

(c) State an advantage of dispersing the seeds far away from the parent plant. [1]

(d) State one characteristic of a fruit that disperses its seeds by splitting. [1]

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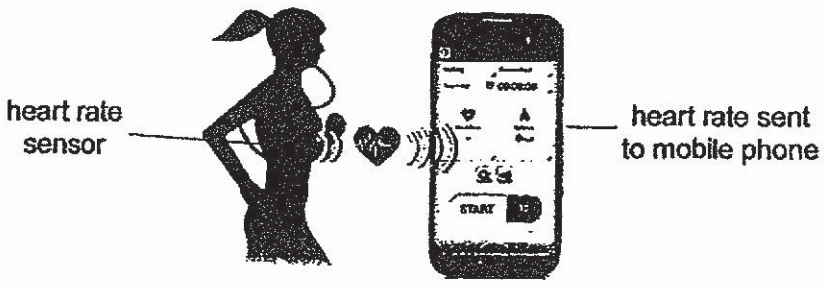
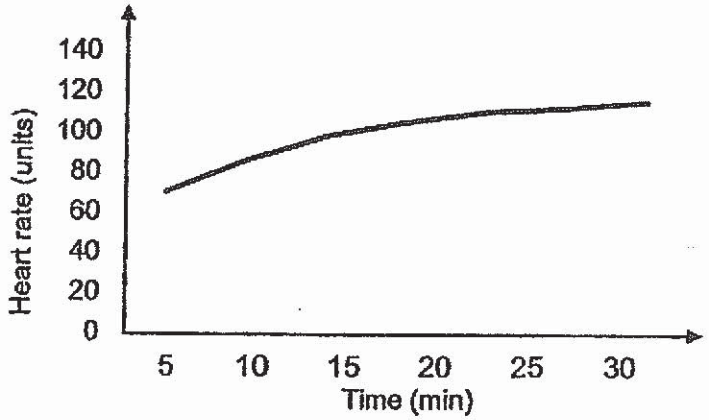
521

33. The diagram below shows Peifen wearing her heart rate sensor while she is jogging. The sensor detects her heart rate and sends the data to her mobile phone.



Her heart rate during her 30-minute jog is shown in the graph below.



(a) State the function of the heart in the circulatory system. [1]

(b) Describe the change in her heart rate and explain why it has to change with time during exercise as shown in the graph above. [2]

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34. Figure 1 below shows the cut-section of a stem and insect A feeding on it. This insect inserts its long and pointed mouthpart into the stem to obtain nutrition.

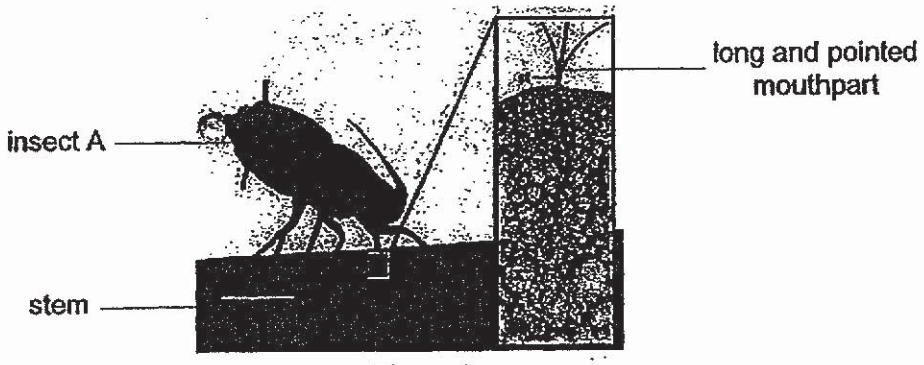

Figure 1

(a) State the part in the stem of the plant which insect A obtains its nutrition from. [1]

While obtaining its nutrition, insect A is known to inject a harmful liquid into the stem of the plant. Figure 2 below shows the leaf of the plant turning white after being infested by insect A.

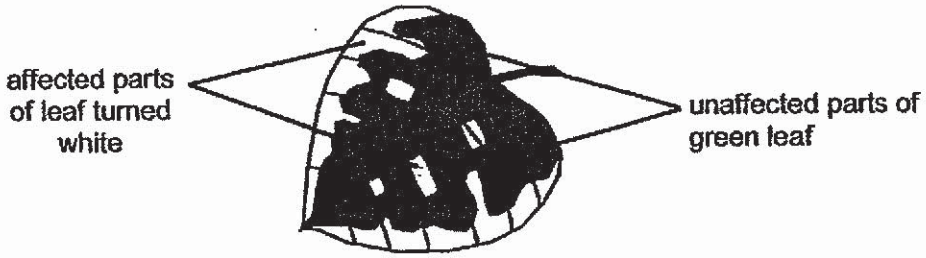

Figure 2

(b) Based on figure 2, state which part of the leaf cell was damaged by the liquid to cause the change from green to white. [1]

(c) Explain how the plant might eventually die if it continues to be infested by insect A. [1]

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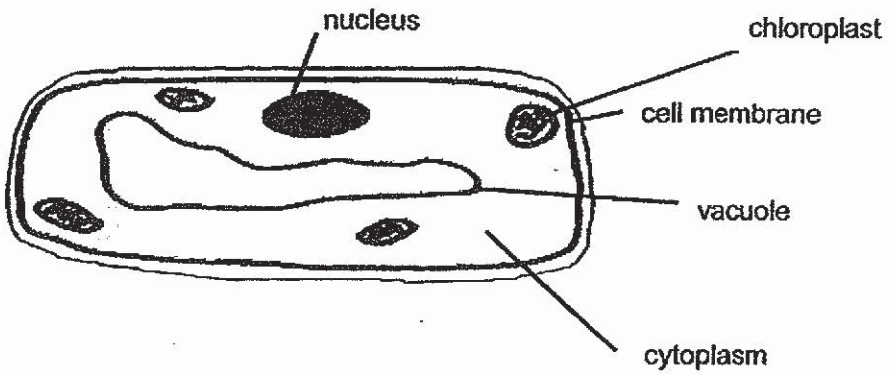
523

35. Qi Qi tried to draw a cell as shown below but she missed drawing one part of the cell.



(a) **Draw** the missing part of the cell for her and **label** it. [1]

(b) State 2 other characteristics of the cell above that enables Qi Qi to identify and draw the missing part in (a). [1]

_____

_____

(c) State the function of the nucleus. [1]

_____

_____

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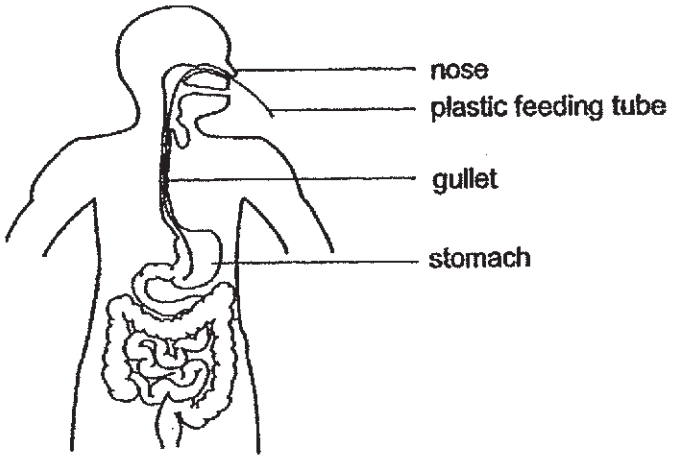
36. The diagram below shows a patient who was not able to chew after a jaw surgery. A plastic tube was inserted through the nose and gullet into the stomach directly. Nutritional drinks, that still needed to be digested, were then poured through the opening of the tube into the stomach once every few hours.



(a) In the diagram above, **put a cross (X)** at the part of the human digestive system where the digestion of food was skipped in this method of feeding. [1]

(b) Explain how the patient was still able to obtain his nutrients using this method of feeding. [2]

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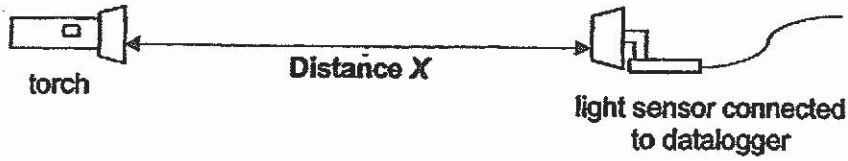
37. Terine wanted to find out how the distance between the torch and the light sensor affects the amount of light detected by the light sensor. She placed a light sensor at different distances, *X*, from the torch as shown in the diagram below.



Terine recorded her results in the table below.

Distance, *X* (cm)	Amount of light detected (units)
50	900
100	750
150	580
200	350

(a) Based on the aim of her experiment, what can Terine conclude about her experiment? [1]

_____

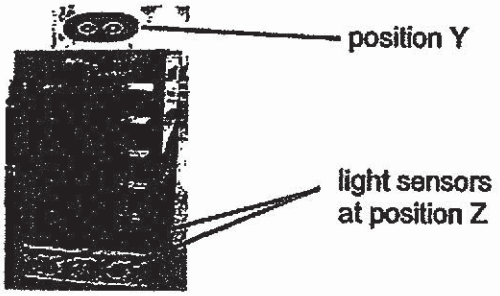
_____

(b) Terine wants to ensure that the light detected by the light sensor is from the torch only. State the condition of the surroundings for her to achieve this. [1]

_____

_____

The diagram below shows a tray return robot with light sensors at position Z. Whenever a person blocks light from reaching the light sensors, the robot will stop moving to allow trays to be slotted in.



(c) Explain why the light sensors have to be placed at position Z instead of Y. [1]

_____

_____

3

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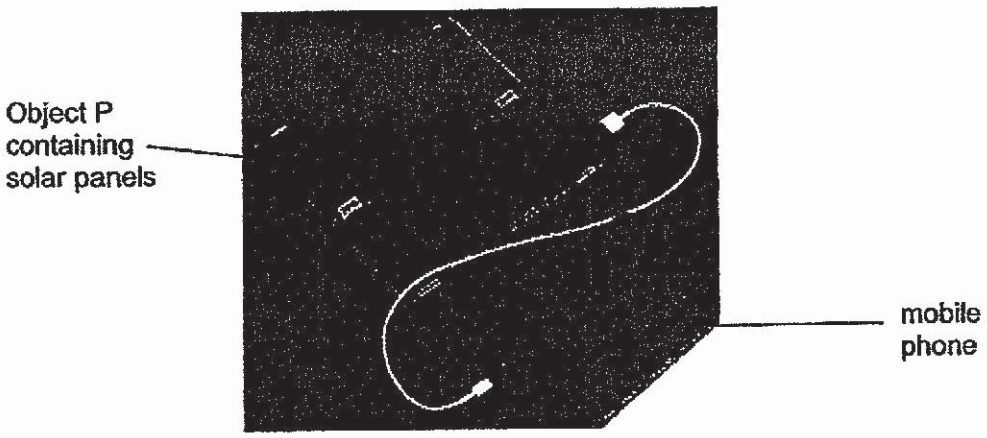
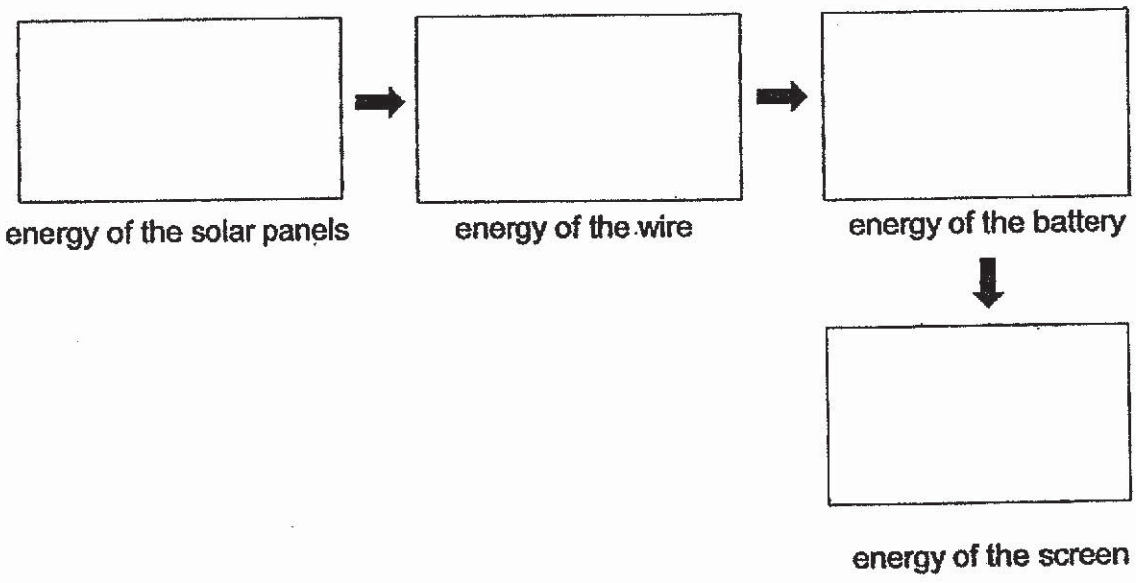
38. Object P can be used to charge the battery in a mobile phone as shown below. It contains solar panels.



(a) Explain in terms of energy how the solar panels in object P function. [1]

(b) Fill in the boxes to show the main energy conversions that take place when the mobile phone is switched on while charging the battery using Object P. [2]



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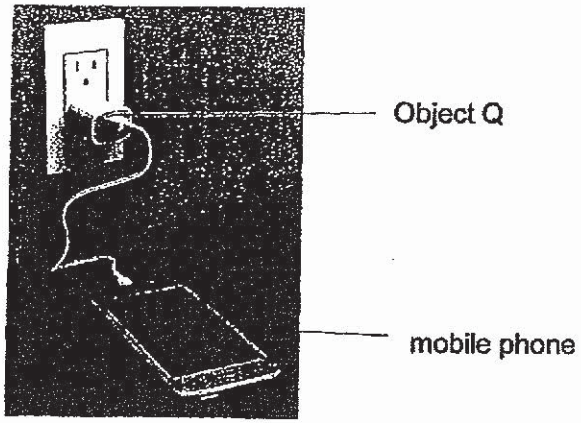
(c) Object Q can also be used to charge the battery in a mobile phone as shown below. It needs to be plugged into a socket that obtains electrical supply from the burning of fossil fuels.



(i) State one advantage of using the source of energy for object P as compared to the source of energy for object Q. [1]

(ii) State one disadvantage of using the source of energy for object P as compared to the source of energy for object Q. [1]

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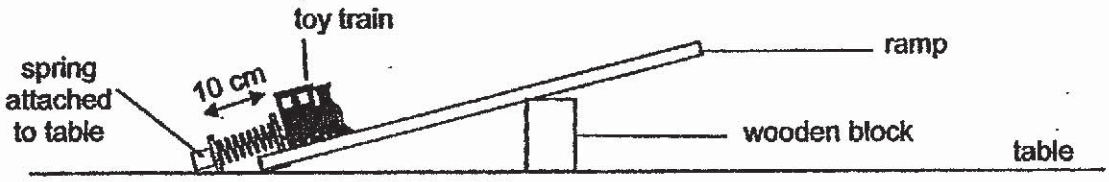
528

39. (a) What is a force? [1]

Joe set up an experiment with a coil of spring attached to the table, a ramp, a wooden block and a toy train. The original length of the spring is 10 cm.



Joe compressed the spring to different lengths, released it and measured the distance the toy train moved up the ramp just before it slid backwards down the ramp.

The results were shown in the table below.

Length of compressed spring (cm)	Distance toy train moved up the ramp (cm)
8	4
6	7
4	9
2	10

(b) What is the relationship between the length of the compressed spring and the distance the toy train moved up the ramp? [1]

(c) Joe applied a layer of lubricant on the surface of the ramp to increase the distance the toy train move up the ramp. Explain, in terms of forces, how this method works. [1]

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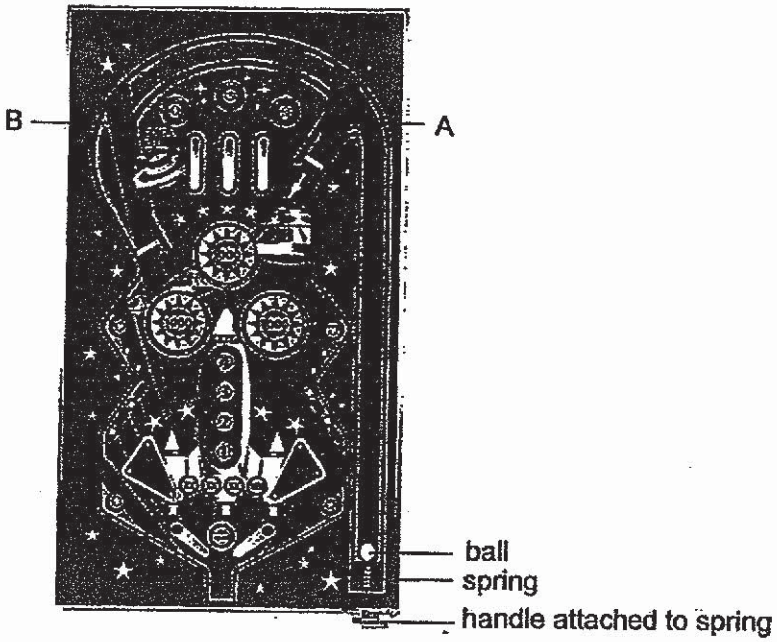
529

The diagram below shows a pinball game machine. A ball in the slot is launched into the game after the player pulls and releases the handle that is attached to a spring. The surface of the game machine is covered by a clear, plastic cover.



(d) Based on the results from the experiment, what should Joe do to launch the ball so that it will reach point B instead of point A? Explain your answer in terms of forces. [2]

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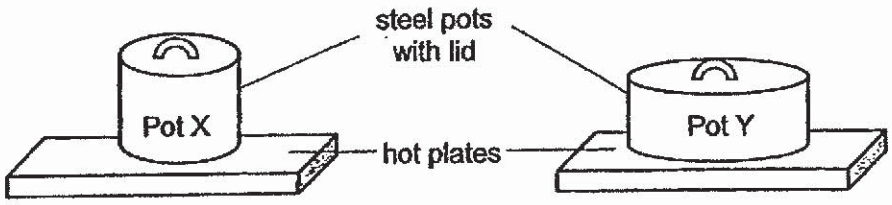
530

40. At the start of an experiment, Sharon placed 2 steel pots of different widths, X and Y, on identical hot plates as shown in the diagram below. She then poured the same amount of water, at the same temperature, into each pot and turned on the hot plates.



After 5 minutes, the water in one of the pots started boiling first.

(a) What was the aim of Sharon's experiment? [1]

(b) In which pot, X or Y, did the water start boiling first? Explain your answer. [2]

At a party, Sharon placed some bottled drinks into a container filled with ice cubes as shown in Figure 1. However, she realised that the bottled drinks took a long time to chill. Sharon's friend suggested that she added some water into the container of ice as shown in Figure 2.

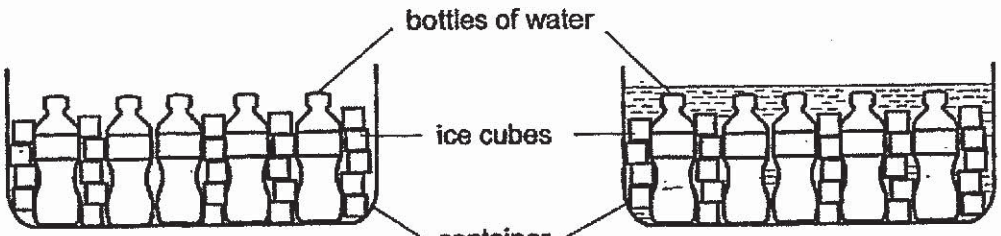


Figure 1 Figure 2

(c) Explain how adding water into the container of ice would help to chill the bottled drinks faster. [2]

~ END OF BOOKLET B ~

5

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531

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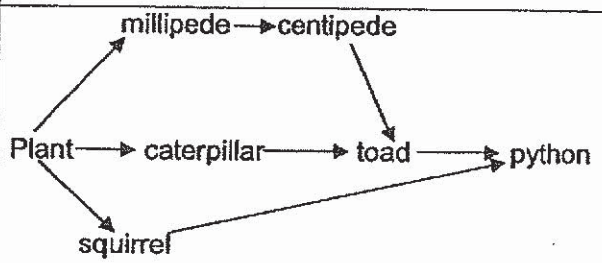
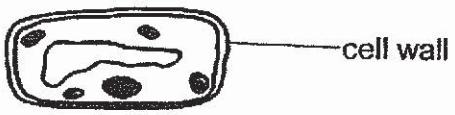
532

Nanyang Primary School
P6 SCIENCE SA1 2019
Suggested Answers

1.	4	6.	1	11.	3	16.	2	21.	2	26.	2
2.	3	7.	1	12.	2	17.	3	22.	2	27.	4
3.	4	8.	4	13.	3	18.	3	23.	3	28.	4
4.	4	9.	4	14.	4	19.	2	24.	3		
5.	4	10.	2	15.	3	20.	3	25.	3		

Qn No	Acceptable Answers
29(a)	The tree community is a community where different populations of plants like the fern and animals like the squirrel, birds living together in a habitat which is the tree.
b)	Bird: The bird may help in the dispersal of the seeds of the tree. Spider: The spider feeds on insects that may be harmful to the tree.
30(a)	
(b)	Immediate effect: The population of squirrel will increase/ remain the same as there are less predators. After some time: The population of squirrel will decrease as there is more competition for food.
31(a)	The stove provides heat causing the water in the seawater to gain more heat and evaporate faster.
(b)	The stove provides heat to allow the water to gain more heat to evaporate. Water vapour will lose heat to the cooler surface and condense forming water droplets which will slide down towards the cup.
32(a)	To find out how the temperature of the surroundings affect the time taken for the fruit to split.
(b)	As the temperature increases, the time taken for the fruit to split decreases.
(c)	To reduce competition for space, mineral salts, water and sunlight.
(d)	Pod-like structure
33(a).	The heart pumps blood (through the blood vessels) to all parts of the body.
(b)	Her heart rate increases during exercise. Her heart needs to beat faster to transport more blood rich in oxygen and digested food to the different parts of her body.
34(a)	Food-carrying tubes Q34)c.The leaves cannot trap light to make food for the plant.
(b)	The harmful liquid damaged the chloroplasts in the green leaves, causing them to turn white.
35(a)	

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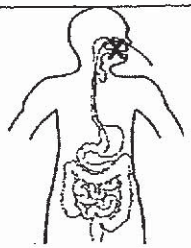
35(b)	The cell has chloroplasts and has a regular shape
(c)	To control all the cell activities or to contain genetic information
36(a)	
(b)	Digestion of the nutritional drink is carried out in both the stomach and small intestine and the digested food gets absorbed by the small intestine into the bloodstream.
37(a)	The further the distance between the torch and the light sensors, the less light detected by the light sensors.
(b)	Terine should conduct the experiment in a dark room.
(c)	Even a short person is still tall enough to block light from the light sensor.
38(a).	The solar panels are to trap light energy from the sun and convert it to electrical energy.
(b)	Electrical energy → Electrical energy → [Chemical] Potential energy → Light energy
(ci)	Solar energy is a renewable source of energy but fossil fuels are non-renewable sources of energy
(cii)	Solar energy does not cause pollution but burning fossil fuels do cause pollution Source of P is only available during the day but source of Q is available day and night.
39(a)	A force is a push or a pull.
(b)	As the length of the compressed spring decreases, the distance the toy train moved up the ramp increases.
(c)	The layer of lubricant would reduce the amount of frictional force between the toy train and the ramp. Hence the toy train can move a longer distance up the ramp.
(d)	Joe should pull down the handle more to compress the spring more so that there will be more elastic spring force to launch the ball further to position B.
40(a)	To find out if the amount of surface area of the pot in contact with the hot plate would affect the amount of time taken for the water to boil.
(b)	Pot Y. The surface area in contact between the pot and the hotplate is larger for pot Y than pot X. Hence the water in Pot Y gains heat from the hot plate faster and boils earlier.
(c)	When water is being added into the container of ice, water would lose heat to the ice cubes and the temperature of the water would be lowered. There is more surface area of the bottles of water in contact with the cold water and thus increases the rate of heat loss.

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RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1) 2019

Section A	/56
Section B	/44
Total score %	
Parent's signature	

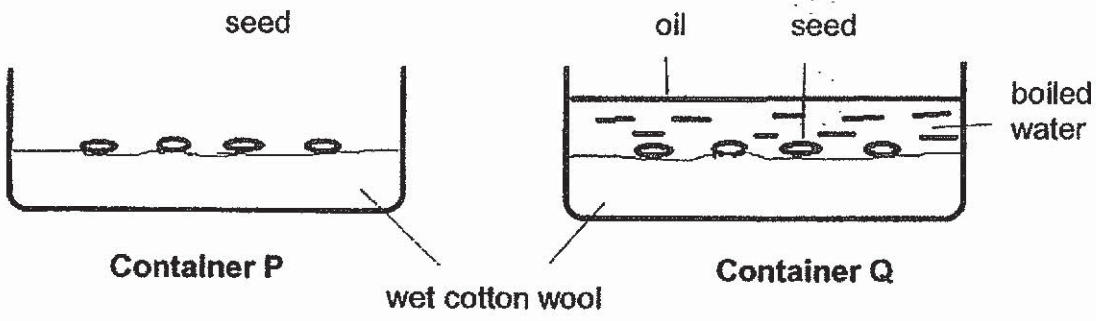
Name : _____ **Index No.:** ____ **Class: P6**___ **Date:**_____

15 May 2019 **SCIENCE** **ATT: 1 h 45 min**

SECTION A (28 x 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1. Susan carried out an experiment on the germination of seeds using two containers, P and Q, in her room as shown below. She observed the seeds in the containers over one week.



Based on this experiment, what could Susan most likely observe and conclude?

(1) Seeds in both containers did not germinate, as sunlight was absent.
(2) Seeds in container Q did not germinate as the layer of oil blocked out sunlight.
(3) Seeds in container P germinated but not those in container Q as there was no air in container Q.
(4) Seeds in container Q germinated but not the seeds in container P as water was absent in container P.

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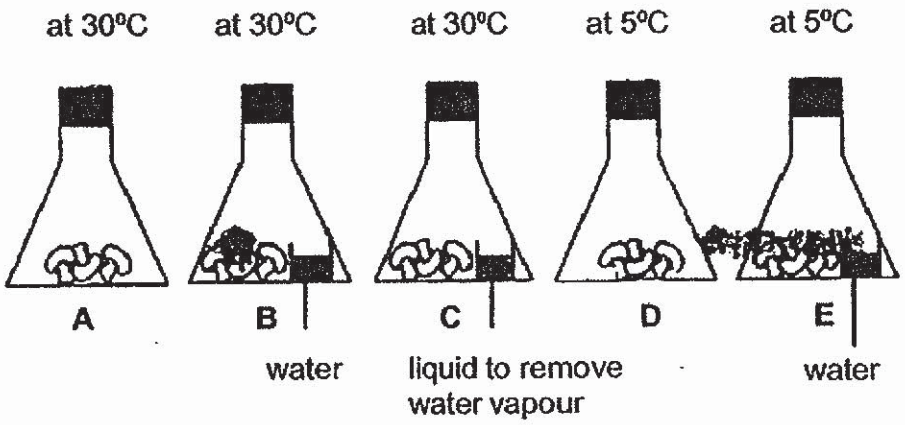
537

2. James wanted to find out the conditions needed to slow down the rate of decomposition. He carried out the following experiment using three fresh mushrooms in each of the flasks, A, B, C, D and E. He kept the mushrooms in different conditions.



After one week, he recorded his observations in the table as shown below.

Flasks	A	B	C	D	E
Shows signs of decomposition	Yes	Yes	No	No	Yes

Based on his findings above, which one of the following conditions would slow down the rate of decomposition?

(1) moist
(2) at 30°C
(3) dry and at 5°C
(4) moist and at 5°C

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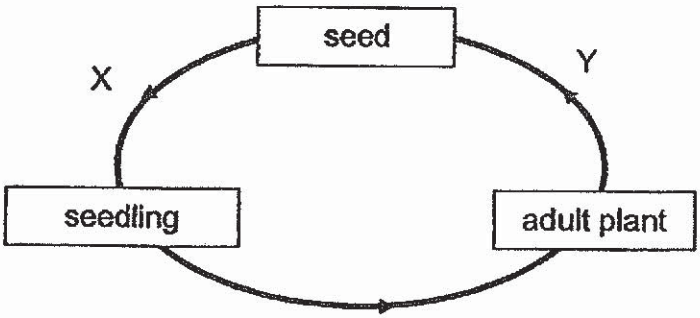
3. The diagram below shows the life cycle of a flowering plant.



Which of the following processes take place at X and Y respectively?

A Fruit formation
B Dispersal of seed
C Pollination of flower
D Germination of seed

	Process(es) at X	Process(es) at Y
(1)	D only	A, B and C only
(2)	A, B and D only	C only
(3)	B and C only	A and D only
(4)	A and D only	B and C only

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4. The table below shows the characteristics of Mr and Mrs Lim.

	Mr Lim	Mrs Lim
Natural hair colour	brown	black
Hair length	short	short
Types of eyelids	single	double
Ears	attached earlobes	detached earlobes

Which of the following states correctly the inherited characteristics of each of their four children?

Child	Inherited traits
A	long and brown hair, attached earlobes
B	short hair, detached earlobes, single eyelids
C	black hair, double eyelids, detached earlobes
D	brown hair, double eyelids, attached earlobes

(1) A only
(2) B and C only
(3) C and D only
(4) A, B and D only

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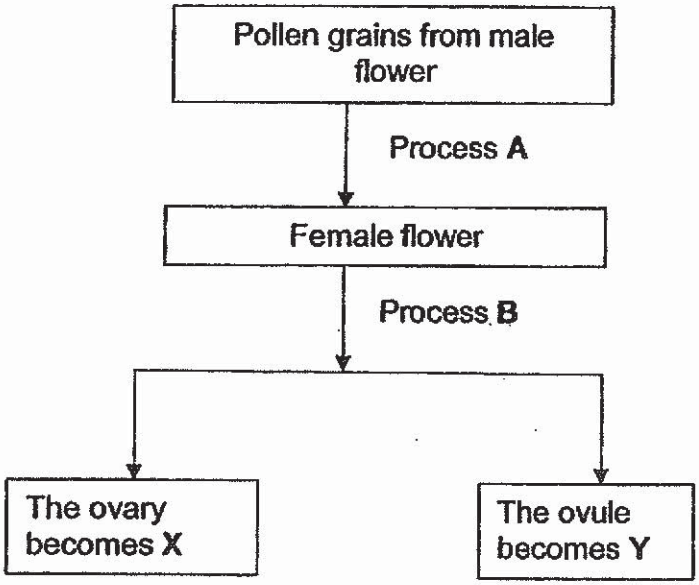
5. Study the diagram below.



Which one of the following correctly identifies A, B, X and Y?

	Process		Parts of the plant	
	A	B	X	Y
(1)	pollination	fertilisation	seed	fruit
(2)	fertilisation	pollination	fruit	seed
(3)	pollination	fertilisation	fruit	seed
(4)	fertilization	pollination	seed	fruit

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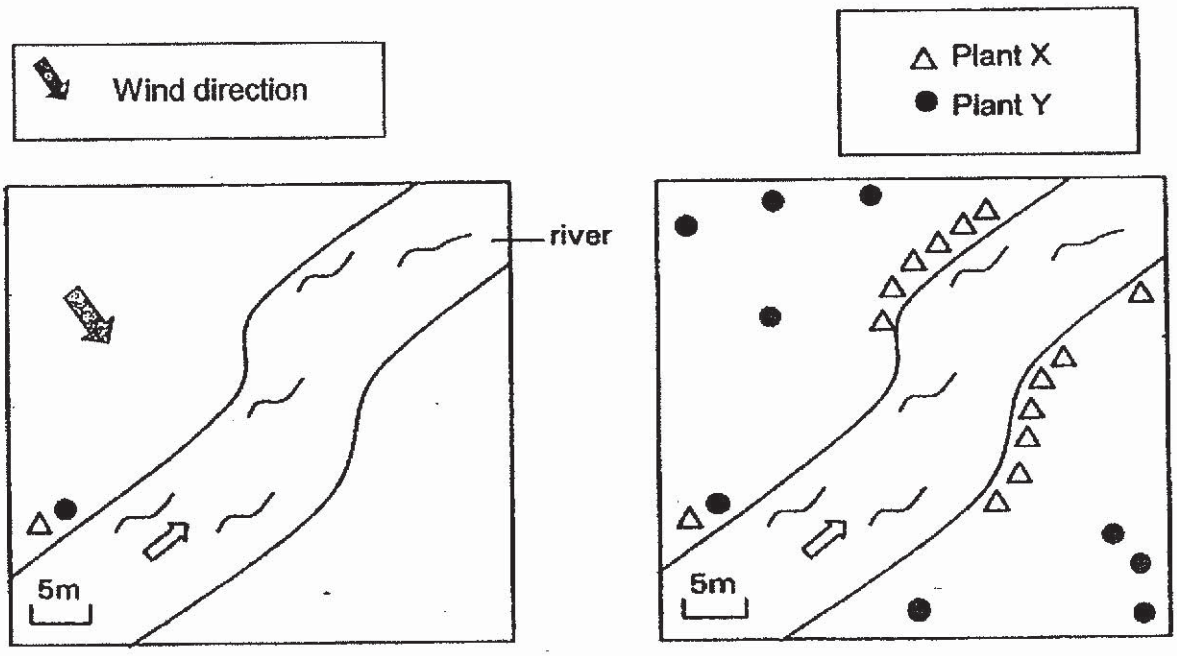
6. Sheila counted the number of wild plants X and Y on a piece of land over several months. Her observations are shown below.



Which one of the following correctly identifies the characteristics of the fruit and seeds of plants X and Y?

	Physical characteristics the fruit most likely has	
	Plant X	**Plant Y**
(1)	waterproof covering	edible and fleshy
(2)	hooks	pod-like structure
(3)	fibrous husks	waterproof covering
(4)	edible and fleshy	hooks

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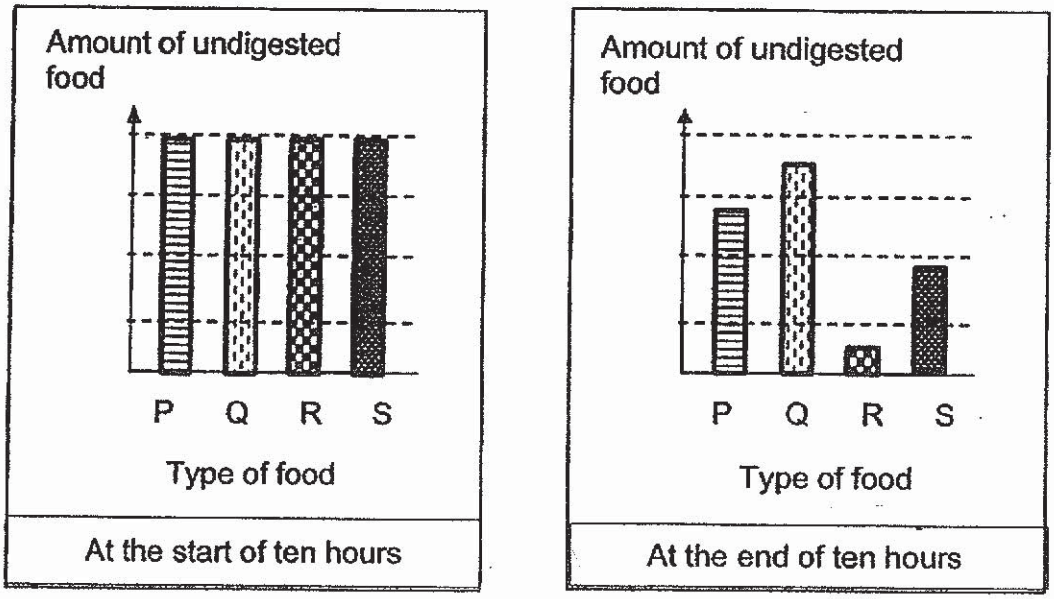
7. Four different types of food, P, Q, R and S, were mixed with digestive juices when passed through the digestive system.

The graphs below show the amount of undigested food left at the start and at the end of ten hours.



Based on the above graphs, which type of food would be mostly absorbed into the bloodstream in the small intestine of the digestive system?

(1) P
(2) Q
(3) R
(4) S

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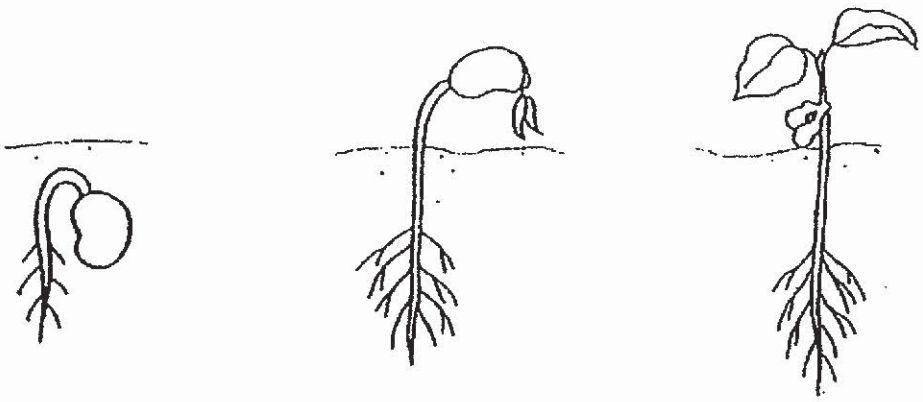
8. The diagram below shows the different stages of development, A, B, and C, of a plant.



Stage A Stage B Stage C

At which stage(s) shown above does/do the seed leaves provide food for the plant to grow?

(1) A only
(2) B only
(3) A and B only
(4) A, B and C

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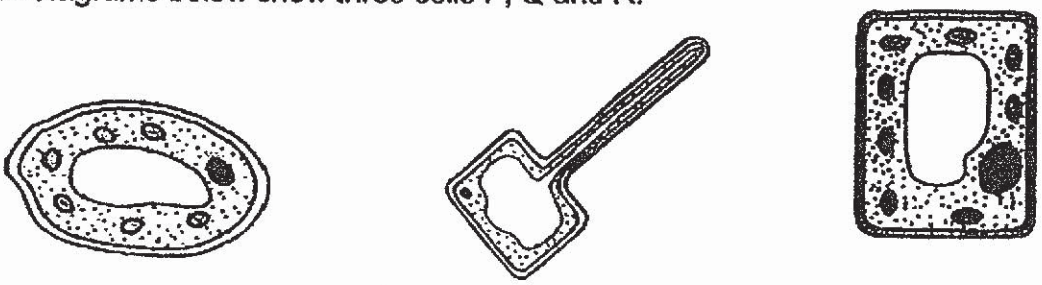
9. The diagrams below show three cells P, Q and R.

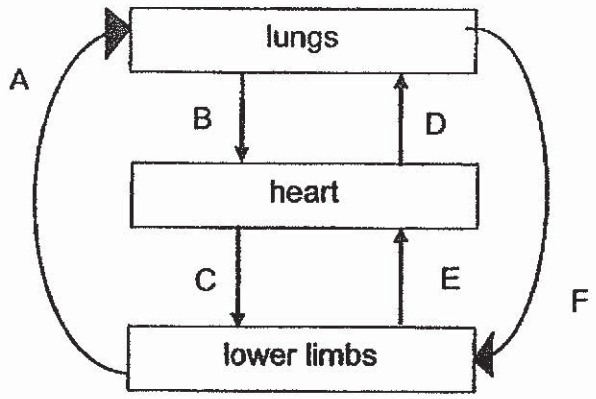


P Q R

Which one of the following statements is correct?

(1) Only P and R have cell wall and chloroplasts.
(2) Q is an animal cell as it does not have chloroplasts.
(3) Q is a plant cell found in the leaves and roots of plants.
(4) All three cells are plant cells as they have nucleus, cell wall, chloroplast and cytoplasm.

10. Betty drew the diagram below to show the direction of blood flow in the human body represented by the arrows.



Which arrow(s) represent(s) the direction of blood flow incorrectly?

(1) F only
(2) B and D only
(3) C and E only
(4) A and F only

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11. The set-up in diagram 1 was used to measure the distance moved by an air bubble in the glass tube when the plant took in water.

Lily added a fan beside the set-up (diagram 2) to study how the speed of the fan affects the distance moved by the air bubble in the glass tube.

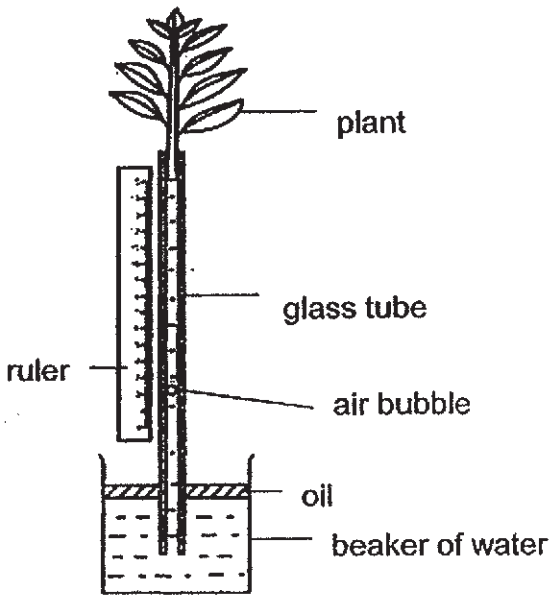

Diagram 1

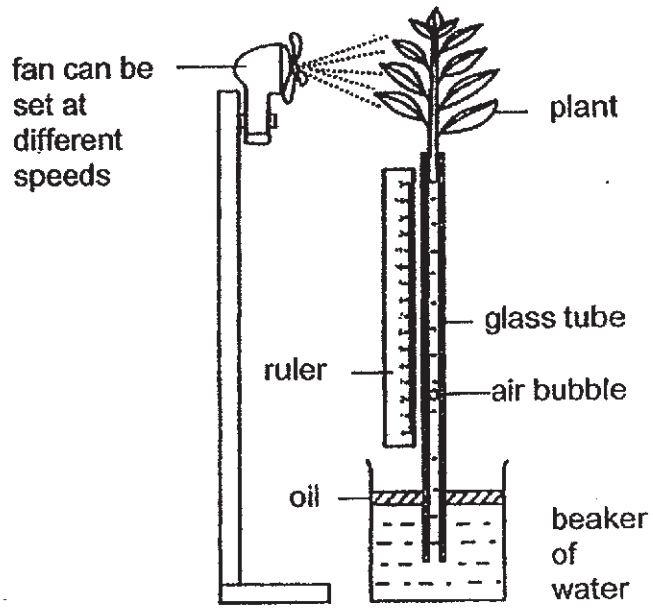

Diagram 2

Which one of the following correctly explains why the air bubble moved a greater distance up the glass tube when the fan speed increased?

(1) More water was evaporated from the beaker of water.
(2) The wind from the fan increased the rate of condensation.
(3) The rate of photosynthesis increased as the fan speed increased.
(4) More water was lost in the form of water vapour through the stomata.

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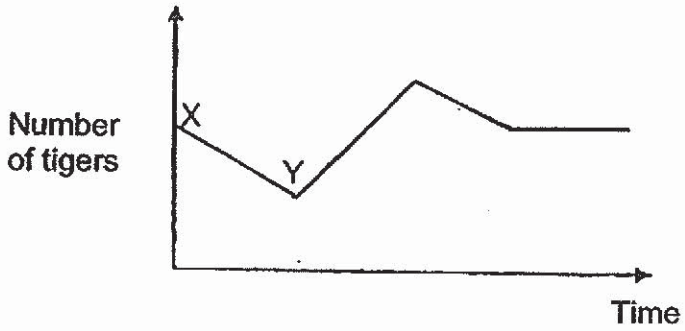
12. The graph below shows the change in the population of tigers in a jungle. Tigers feed on other animals such as deer and wild boars.



Which of the following event(s) could most likely to have caused a change in the tiger population from Point X to Point Y on the graph?

A An increase in the food source for deer.
B An increase in the reproduction rate of wild boars.
C An increase in the population of other animals feeding on deer.

(1) C only
(2) A only
(3) A and B only
(4) B and C only

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13. The table below shows the characteristics of the environment found in four different habitats during the day.

Habitats	Average temperature (°C)	Amount of water	Amount of light
A	30	Plenty	Little
B	5	Little	Little
C	42	Little	Plenty
D	25	Plenty	Plenty

Organism X has the following characteristics:

- Sensitive to light
- Breathes through moist skin
- Able to live in areas with temperature range from 20°C to 32°C

Which one of the following habitats, A, B, C or D, would be best suited for Organism X?

(1) A
(2) B
(3) C
(4) D

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14. The number of organisms in a pond is shown in the table below.

Organisms	Number of organisms
ducks	4
frogs	6
tadpoles	7
water lily	3
male goldfish	4
goldfish eggs	20
female goldfish	6
water hyacinth	5

Based on the information above, which of the following statements is correct?

(1) There is 1 habitat and 5 populations.
(2) There is 8 communities and 1 habitat.
(3) There is 1 community and 8 populations.
(4) There are 55 populations and 5 communities.

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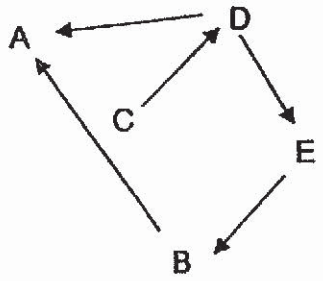
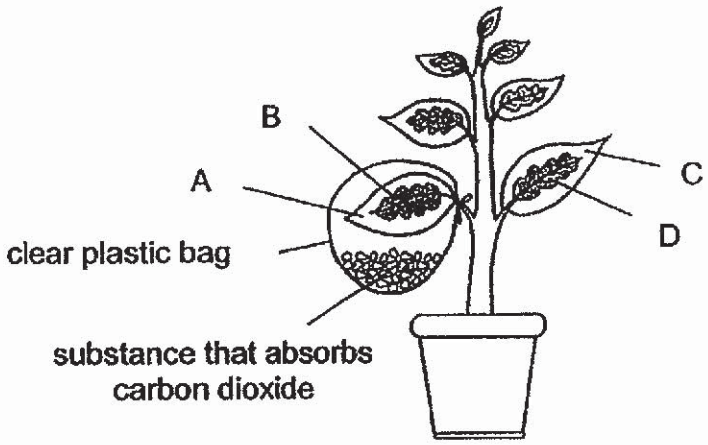
15. Study the food web below.



Which of the following statements best describes what will happen to the other populations if the population of D is wiped out by a disease?

(1) Population A will increase.
(2) Population E will decrease.
(3) Population C will decrease.
(4) Population B will remain unchanged.

16. Peter wanted to find out if carbon dioxide is needed for photosynthesis. He used a plant which had green areas in the middle and white areas around the edges as shown below.



Which of the following two areas should Peter compare to show that carbon dioxide is needed for photosynthesis?

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

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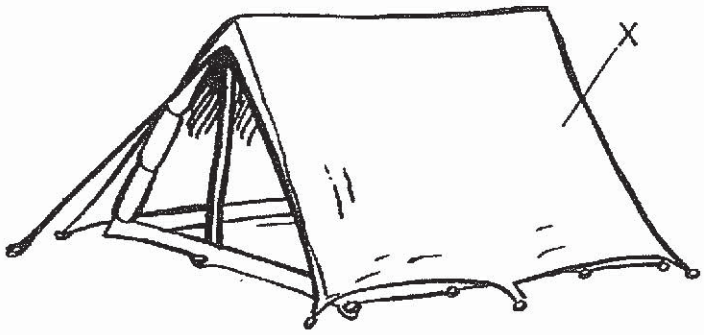
17. The diagram below shows a tent.



Study the properties of the four materials shown below.

Material	Property of material		
	Waterproof	Flexible	Strong
A	√		√
B	√	√	√
C	√	√	
D		√	√

Which material is most suitable for making part X of the tent?

(1) A
(2) B
(3) C
(4) D

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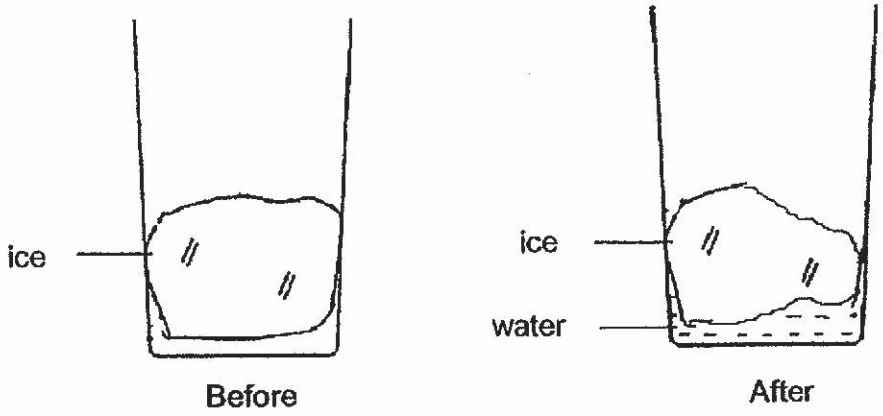
18. The diagram below shows a container containing an ice block left in an air-conditioned room with a constant temperature of 18°C and the change observed after five minutes.



Which of the following statement(s) is / are correct?

A The temperature of ice remained at 0°C.
B The temperature of ice and water rose to 18°C.
C The ice melted as it gained heat from the water only.
D The temperature of water remained at 0°C when the ice is melting.

(1) B only
(2) C only
(3) A and D only
(4) B and C only

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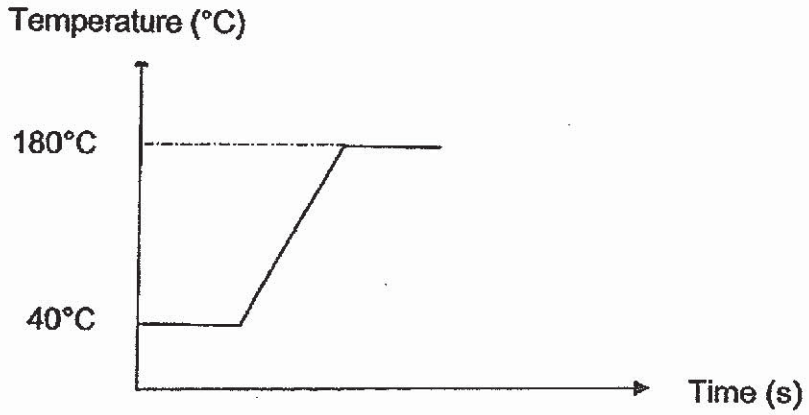
19. The graph below shows the temperature of solid substance X when heated.



Which one of the following shows correctly the state(s) of substance X at 20°C and at 210°C?

	State of substance X at	
	20°C	**210°C**
(1)	solid	liquid
(2)	solid	gas
(3)	liquid	gas
(4)	liquid	liquid

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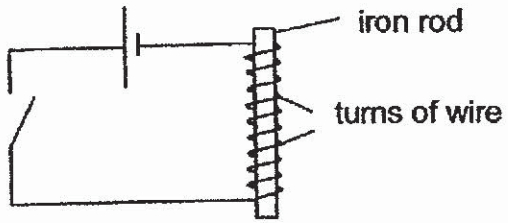
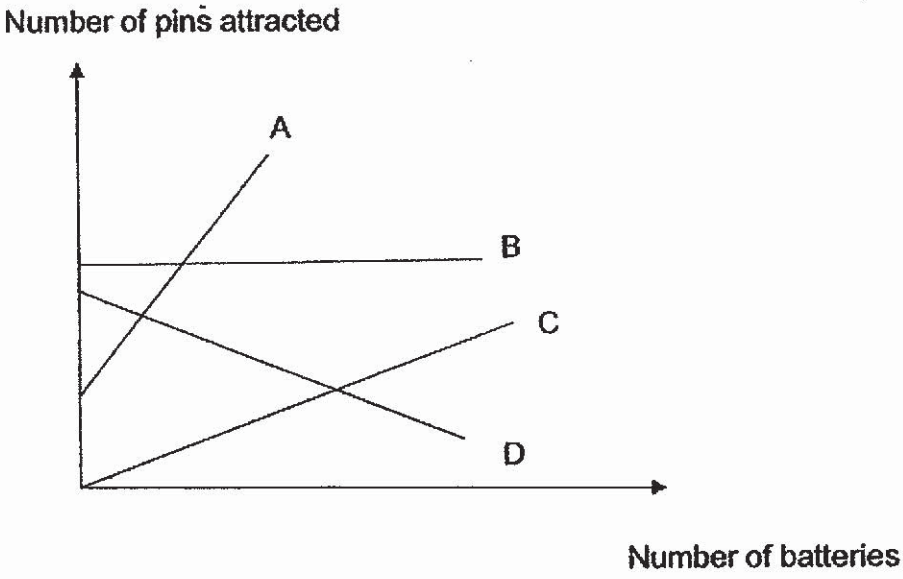
20. Sami used the set-up below to attract iron pins.



He added more batteries in the set-up and recorded the number of pins attracted.



Which one of the lines, A, B, C or D, in the graph shows the result of his experiment correctly?

(1) A
(2) B
(3) C
(4) D

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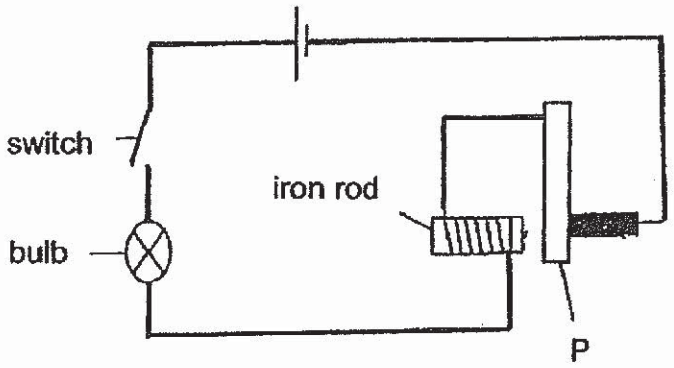
21. William set up a circuit as shown below. He wanted the bulb in the circuit to switch on and off on its own after he had turned on the switch.



However, when William turned on the switch, he observed the bulb lit up. The bulb only went off when he turned off the switch.

Which of the following could have caused this to happen?
P is made of _____.

A steel
B wood
C copper

(1) A only
(2) B only
(3) C only
(4) A and B only

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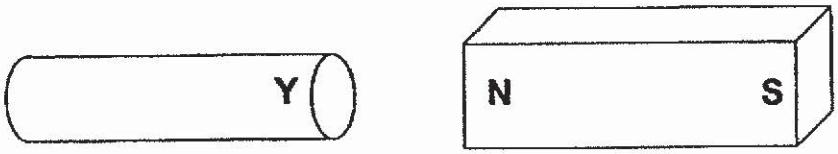
22. Similar rods of different materials were placed near a bar magnet as shown below.



Rod Bar magnet

Part Y of each rod was brought near to the North-seeking pole and South-seeking pole of the bar magnet. The results are shown in the table below.

Material of Rod	North-seeking pole	South-seeking pole
A	Attracts	Repels
B	Attracts	Attracts
C	Repels	Attracts
D	Remains in its original position	Remains in its original position

Which one of the following statements is correct?

(1) C can attract D.
(2) A, B and C are magnetic materials.
(3) B and D can be made into magnets.
(4) A and C are poor conductors of heat.

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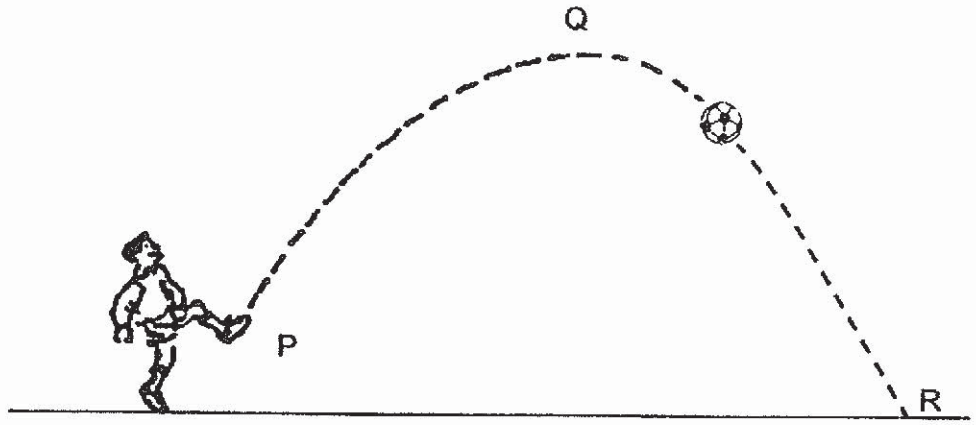
23. Ah Seng kicked a soccer ball with his foot. The diagram below shows the path of the ball after he had kicked it.



Which of the following statements about the soccer ball is/are true?

A When it reached the ground at R, no force acted on it.

B Its kinetic energy increased as it moved from P to Q but decreased as it moved to R.

C When it reached Q, there was greatest amount of gravitational force acting on it.

D The amount of gravitational force acting on it is the same throughout its journey from P to R.

(1) A only
(2) D only
(3) B and C only
(4) A, B and C only

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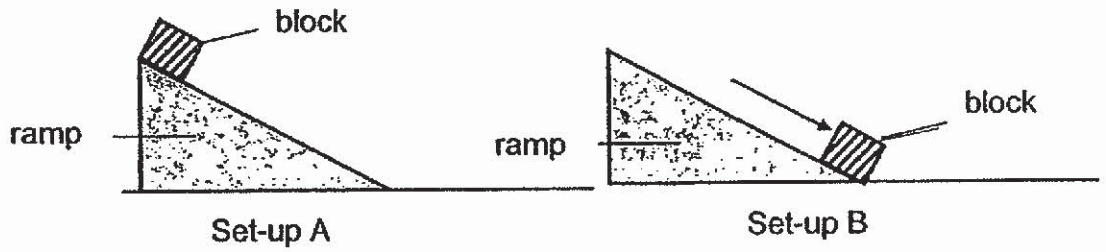
24. Two identical blocks are placed on two ramps of the same size. The blocks were released from the same height. The block in set-up A did not move but the block in set-up B slid down the ramp.



Which of the following statements is/are likely explanation(s) for the observation?

A The block in Set-up B has greater gravitational force acting on it than that in Set-up A.

B There is greater frictional force between the block and the ramp in Set-up A than in Set-up B.

C In Set-up A, the frictional force between the block and the ramp is greater than the gravitational force acting on the block.

(1) A only
(2) B only
(3) A and B only
(4) B and C only

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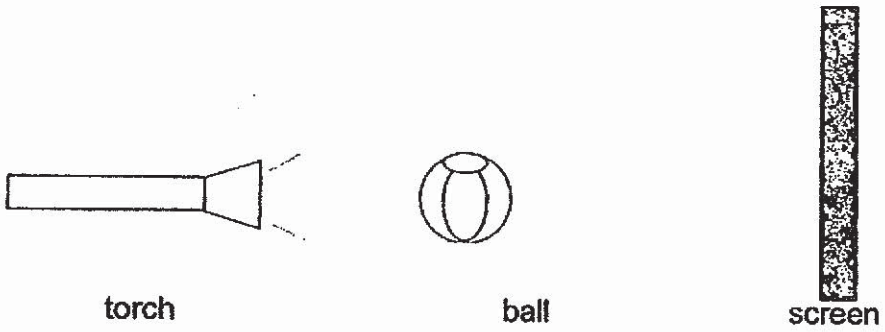
25. Mary set up an experiment in a dark room. She shone a torch on a ball as shown in the diagram below. A shadow of the ball was cast on the screen.



What could Mary do to cast a smaller shadow on the screen?

A Move the torch towards the ball.
B Move the screen towards the ball.
C Move the torch further away from the ball.
D Move the ball further away from the torch.

(1) A and B only
(2) B and C only
(3) C and D only
(4) B, C and D only

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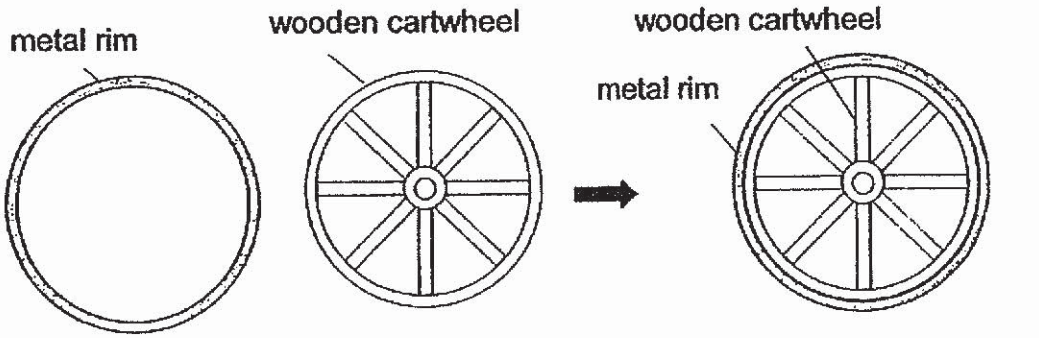
26. John was instructed by his uncle to fit a metal rim tightly round the wooden cartwheel, as shown in the diagrams below.



Before fitting the rim round the cartwheel

After fitting the rim round the cartwheel

However, the metal rim that John had was too small to fit round the wooden cartwheel. His uncle suggested two steps to complete the task.

Which of the following steps would allow John to fit the metal rim tightly round the wooden cartwheel in the shortest time?

A Immerse the metal rim and wooden cartwheel in cold water before fitting the metal rim round the cartwheel.

B Heat the metal rim and immerse the wooden cartwheel in cold water before fitting the metal rim around the cartwheel.

C Immerse the metal rim and cartwheel in hot water after fitting the rim round the cartwheel.

D Immerse the metal rim and cartwheel in cold water after fitting the rim around the cartwheel.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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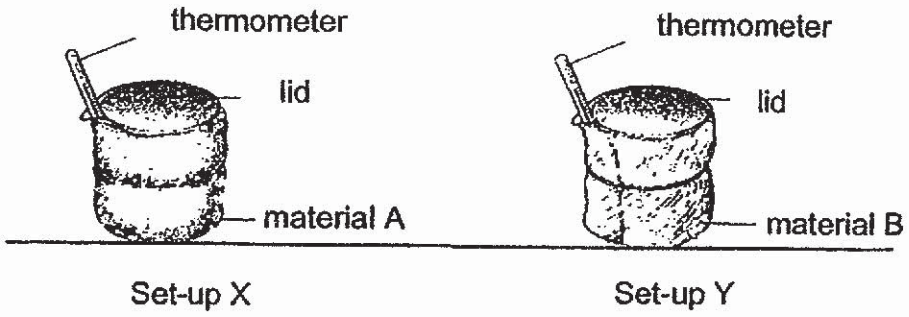
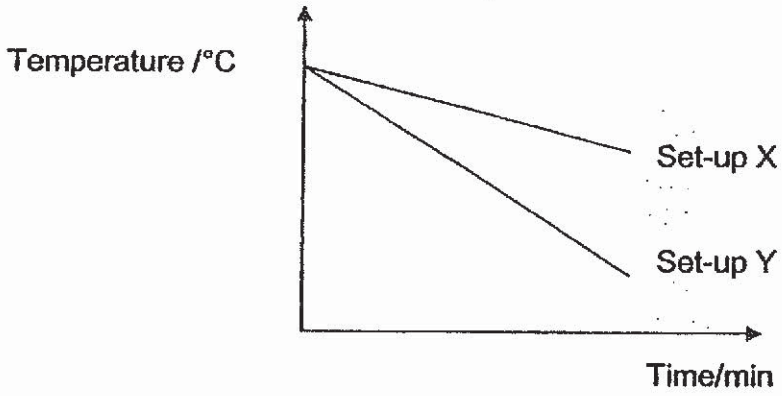
560

27. Ahmad conducted an experiment using set-ups X and Y as shown below. In set-up X, he wrapped a glass beaker with material A. In set-up Y, an identical glass beaker was wrapped with material B. He filled both beakers with the same volume of hot water at 85 °C.



Set-up X Set-up Y

The graph shows the temperature in both set-ups over 10 minutes.



Which one of the following describes the use of material A or B correctly?

(1) Material A can be used to make an ice box to reduce the rate of ice melting.
(2) Material A can be used to make a cooking pot as it is a better conductor of heat.
(3) Material B can be used to make the handle of a cooking pot as it is a poorer conductor of heat.
(4) Material B can be used to make a lunchbox as it can keep food warmer for a longer period of time.

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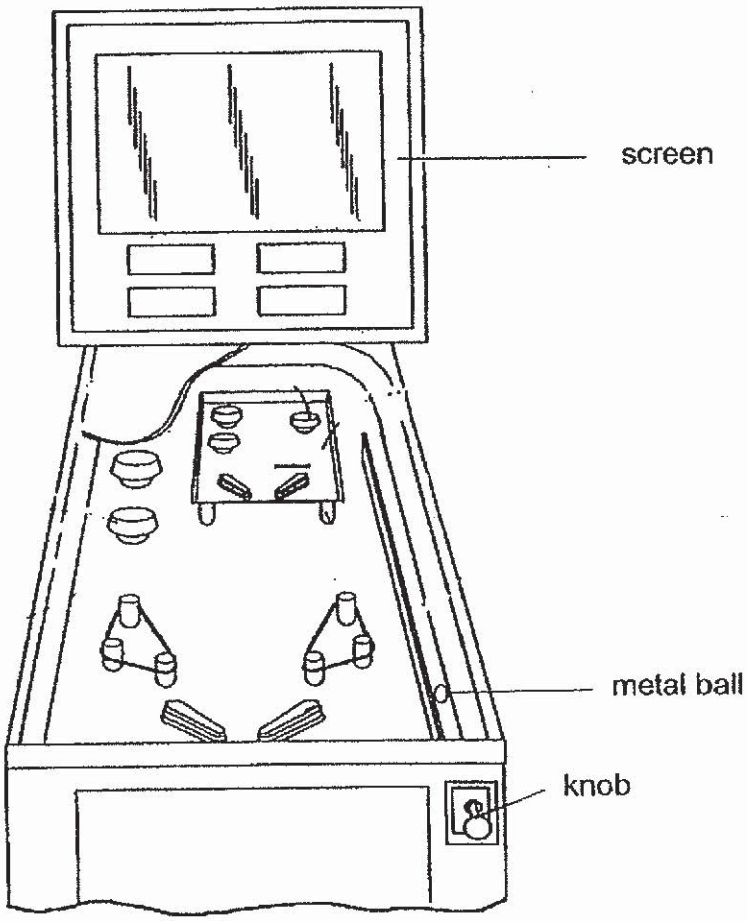
561

28. The school installed a pinball machine as shown below to demonstrate how energy can be converted from one form to another. When a pupil pushes the knob, the compressed spring will shoot a metal ball into the maze and finally it rings the bell to signal a score which is lighted up on the screen.



Which one of the following shows the energy conversion when a pupil pulls the knob until a point is scored on the screen?

(1) kinetic energy → electrical energy → sound energy + light energy
(2) elastic potential energy → kinetic energy → sound + light enegy
(3) elastic potential energy → electrical energy → kinetic + sound energy
(4) kinetic energy → elastic potential energy → kinetic → sound + light energy

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562

Name : _____ Index No : _____ Class : P6 ___

44

SECTION B (44 marks)

For questions 29 to 41, write your answers clearly in the spaces provided.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

29. Diagrams 1 and 2 show the plant reproductive system and the female human reproductive system respectively.

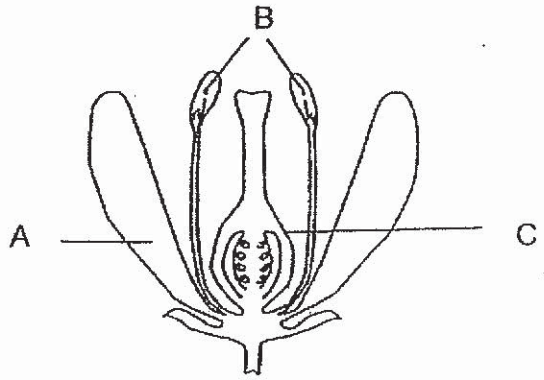

Diagram 1

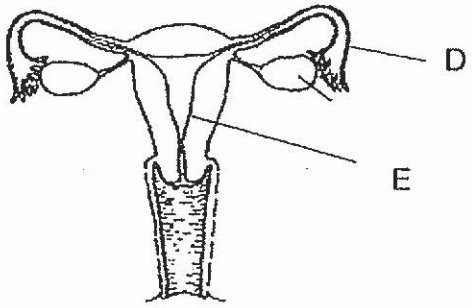

Diagram 2

(a) In diagram 1, which parts of the flower, A, B, C, can be removed such that the flower can still develop into a fruit? Explain your answer. [2]

_____

_____

(b) Based on the two diagrams above, which parts, A, B, C, D, E, correctly identify where fertilisation takes place in the plant and human reproductive systems? [1]

_____

_____

Score 3

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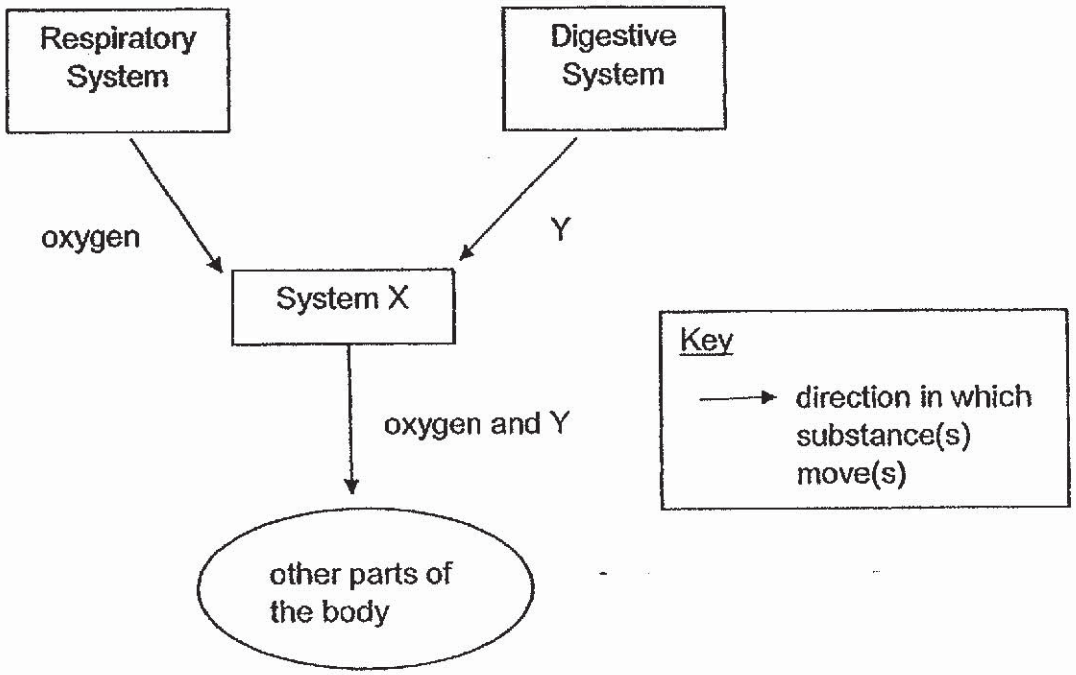
30. The diagram below shows how substances are moved from one system to another in a human body.



(a) Which system in the human body best represents X? [1]

_____

(b) What is the substance Y after digestion? [1]

_____

(c) Explain why oxygen and substance Y are needed to be transported to other parts of the body. [1]

_____

_____

Score	/ 3

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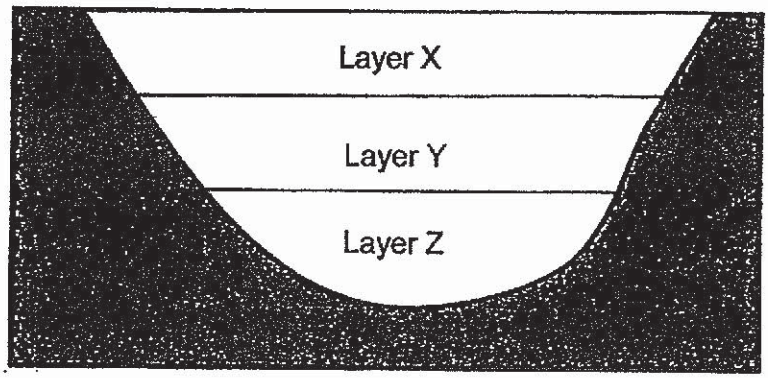
564

31. The diagram below shows the cross-section of a pond.



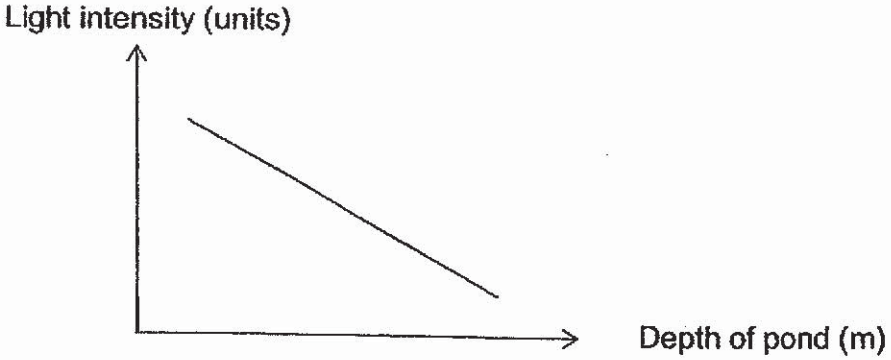
The table below shows the temperature and the number of organisms found in the different layers of the pond.

Layer of the pond	Temperature of pond (°C)	Number of organisms
X	18 to 24	22
Y	7 to17	14
Z	4 to 6	4

(a) Based on the information above, what is the relationship between the temperature of the pond and the number of organisms in it? [1]

_____

(b) The graph below show how light intensity changes with depth of the pond.



Based on the information above, what will happen to the number of organisms in the pond as the light intensity in the pond decreases? [1]

_____

_____

Score	2

Continue on next page

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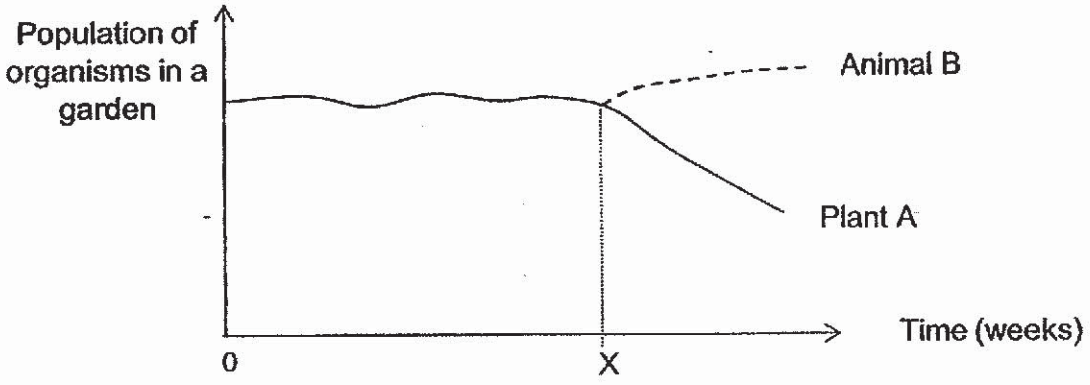
565

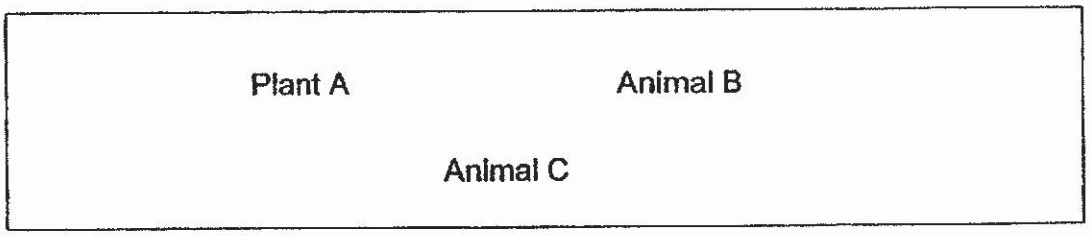
Continued from previous page

(c) The number of plants floating on Layer X of the pond increases significantly. What would happen to the number of animals in Layer Z if they feed on Plants in Layer Z? Explain your answer. [2]

32. The graph below shows the population of plant A in a garden. Animal B was introduced into the garden at point X.



(a) Based on the information above, if Animal C feeds on Plant A and Animal B, draw arrows to complete the food web below. [1]



(b) Fill in the letters A, B and/or C in the boxes below. [1]

Prey(s)	Predator(s)

Continue on next page

Score / 4

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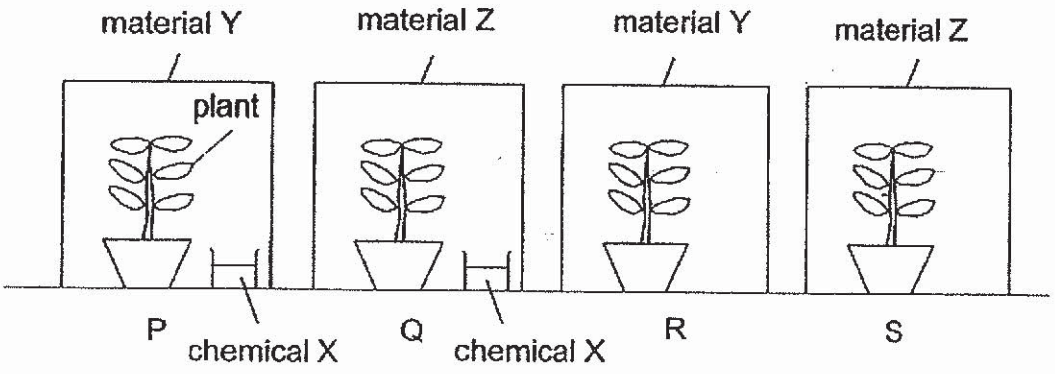
566

Continued from previous page

(c) What would happen to the population size of Animal B if population of Animal C was wiped out by a disease? Explain your answer. [2]

33. Chloe set up an experiment with four similar pots of plants, as shown below. The plants were placed in a dark room for forty-eight hours before the start of the experiment. All the boxes were of the same size but made of two different materials, Y and Z. Chemical X in set-ups P and Q absorbed carbon dioxide. The boxes were left in the sun for three hours.



After three hours, starch test was performed on the leaves from each set-up. Only the leaves in set-up R showed the presence of starch.

(a) Identify the property of material Z. Explain your answer. [2]

(b) Which pair of set-ups can be used to show carbon dioxide is needed for photosynthesis to take place? Explain your answer. [2]

Score 6

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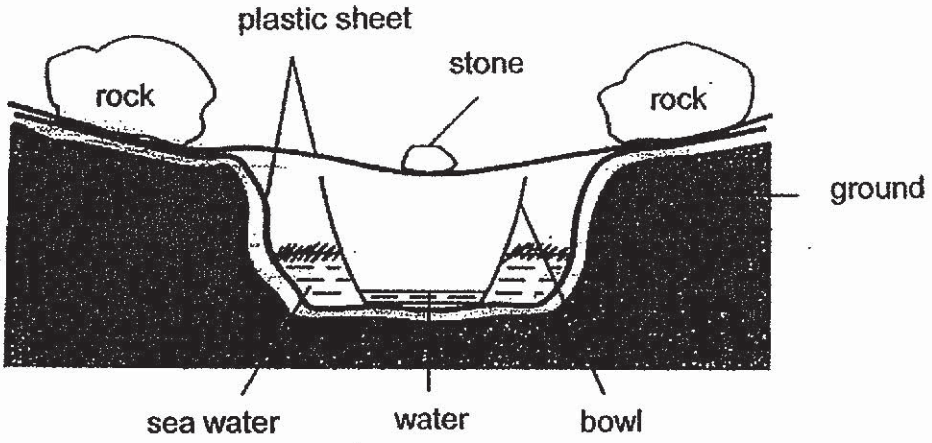
34. Bryan and his friends carried out the experiment below to obtain water from sea water.



(a) What would happen to the amount of water collected in the bowl if Bryan and his friends replaced the bowl with a smaller one? [1]

_____

(b) Explain your answer in (a) [2]

_____

_____

Score	3

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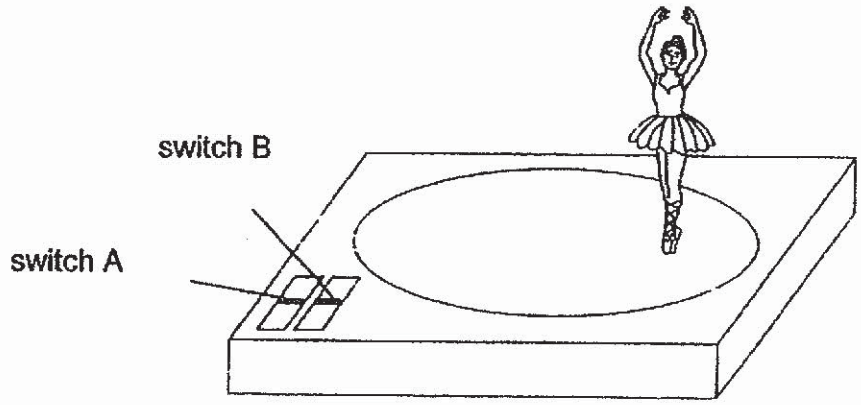
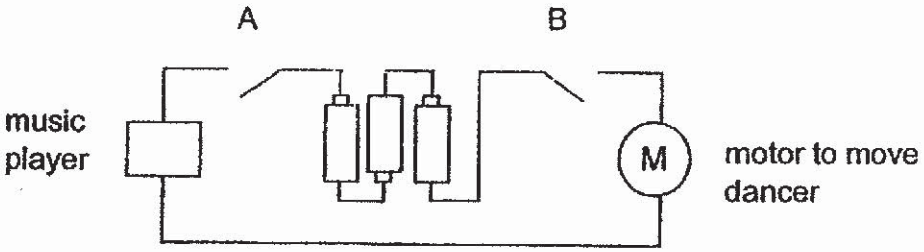
35. Maison has a toy that works on batteries as shown in the diagram below.



She recorded her observations in the table below when she turned on the switches.

Switches which were turned on	Observation
Both A and B	Dancer moved in a circle with music.
A only	Dancer did not move. There was music.
B only	Dancer moved in a circle. There was no music.

Maison drew a diagram to represent how the parts of the toy are connected in an electrical circuit.



(a) Maison's teacher told her that her circuit diagram was incorrect. Explain why it was incorrect. [2]

_____

_____

Score	/ 2

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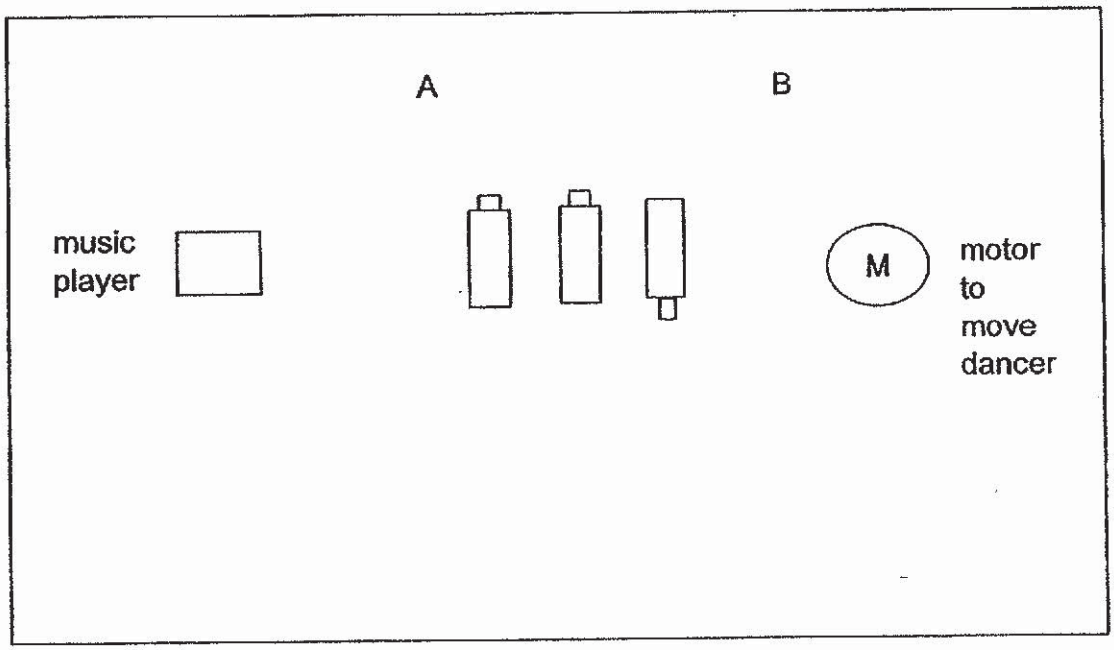
569

Continued from previous page

(b) In the space provided, draw 3 wires to complete the arrangement correctly below to show the observations made by Maison. [2]



Score	/ 2

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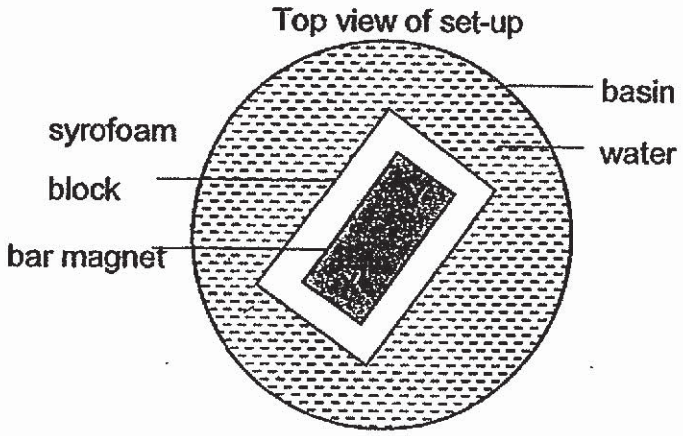
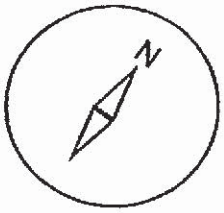
36. Ahmad taped a bar magnet with poles X and Y, onto a piece of styrofoam block and spun it ten times in a basin of water. The diagram below shows the top view of the set-up when the magnet was at rest. The bar magnet always came to rest in the direction as shown in the diagram below.

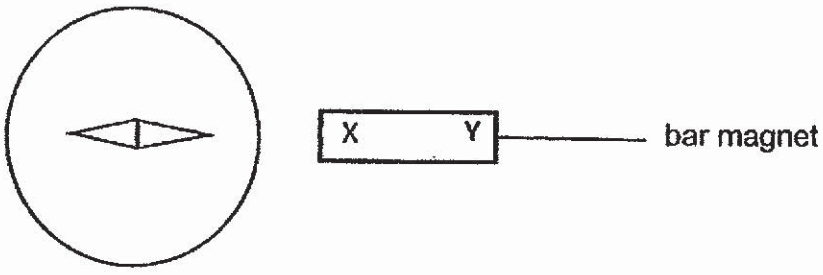


The direction North is shown in the compass below.



(a) Based on Ahmad's results, which property of magnets is shown in his observation? [1]

(b) The diagram below shows the bar magnet placed near a compass.



compass

Label the needle of the compass 'N' for north or 'S' for south when the magnet is placed near it as shown in the diagram above. Explain your answer. [2]

Score 3

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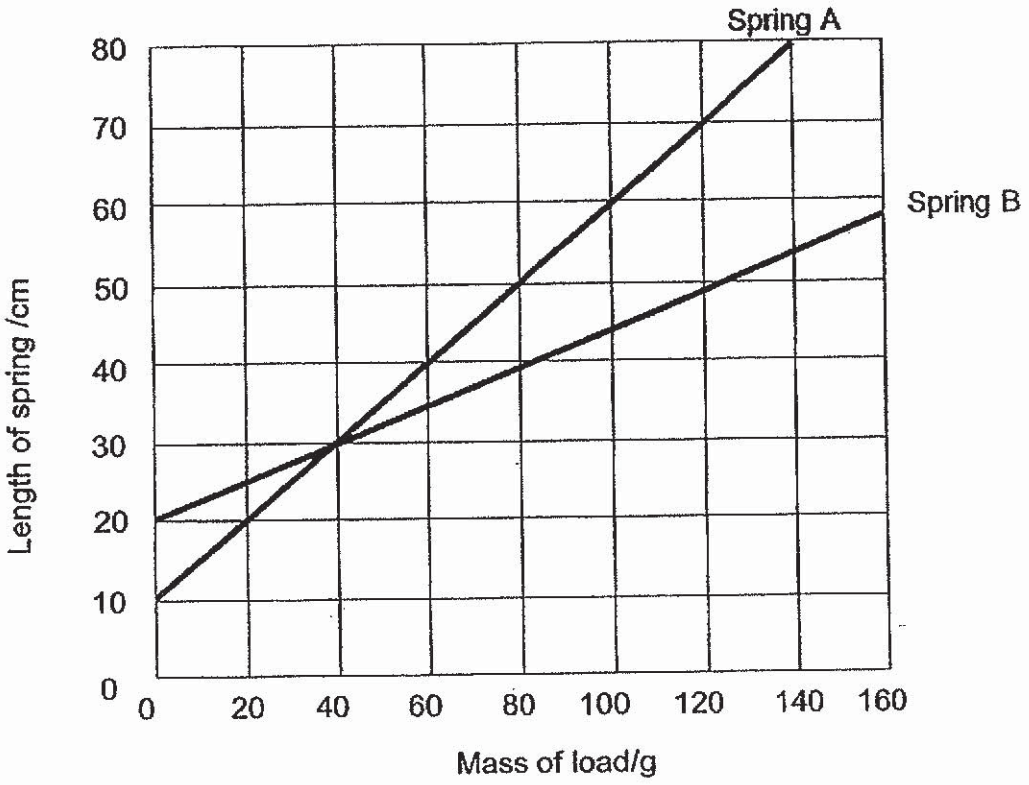
571

37. Some pupils carried out an experiment to find out how different loads hung on Springs A and B affect the length of two springs. The results are shown in the graph below.



(a) What is the length of Spring A when 40 g load is added to Spring A? [1]

_____

_____

(b) Which Spring, A or B, will extend more when 100g load is added? [1]

_____

(c) Based on the graph above, what is the relationship between the length of the spring and the mass of the load added? [1]

_____

Score	3

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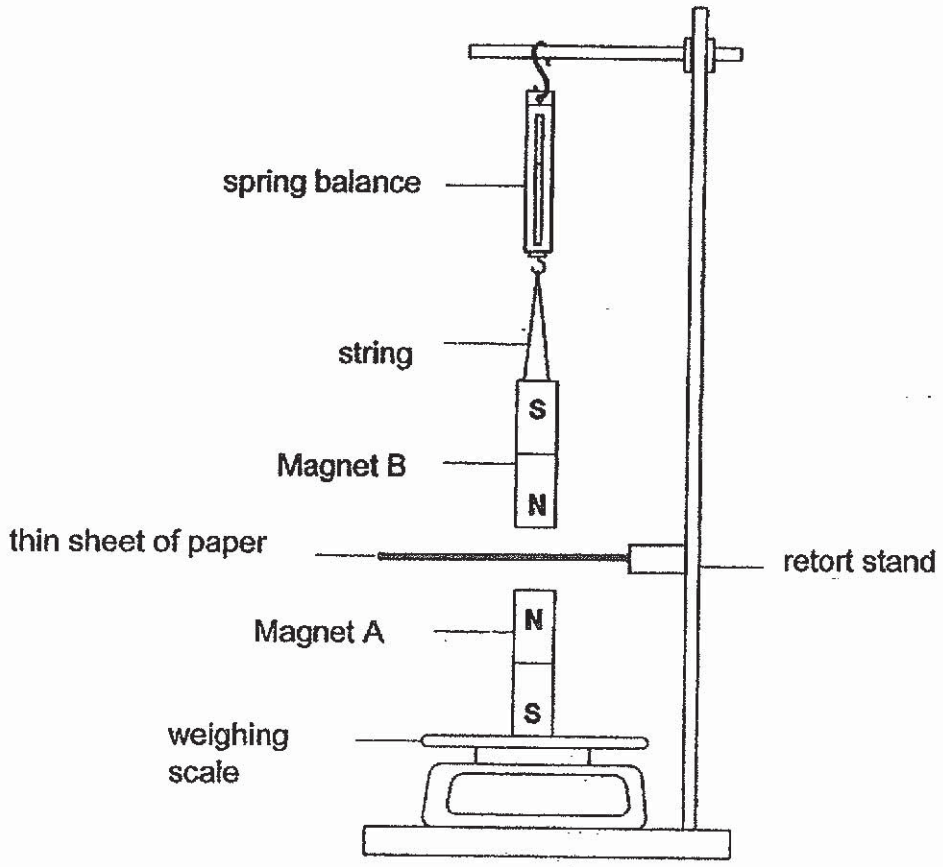
572

38. Mrs Lee set up an experiment using two identical strong magnets as shown in the diagram below. Both Magnets A and B have a weight of 1 N each. (N stands for Newtons which is the unit for force).



(a) Based on the experiment above, what is/are the force(s) acting on Magnet B? [1]

_____

(b) What readings will be shown on the weighing scale and spring balance? (less than 1 N, 1 N or more than 1N) [1]

(i) Reading on weighing scale _____

(ii) Reading on spring balance _____

(c) What is most likely to be the reading on the weighing scale if the thin sheet of paper is replaced with a piece of steel sheet ? Explain your answer. [1]

_____

_____

Score	3

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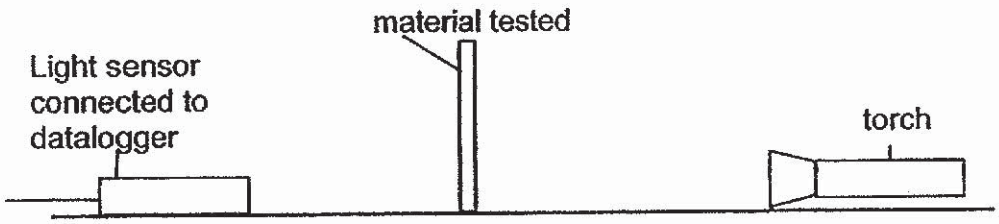
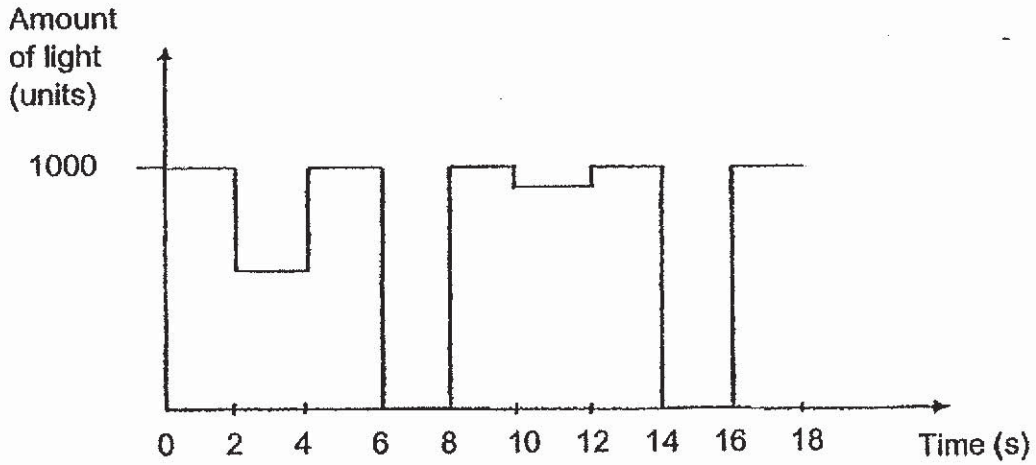
573

39. Andy set up an experiment to investigate the degree of transparency of four different materials. The diagram below shows Andy's experiment set-up.



The light sensor and torch were switched on throughout the experiment. First the reading was taken without the material placed in the set up for the first two seconds. Then the material was placed in the set up and the reading was recorded for the next two seconds before it was removed. After an interval of two seconds, the next material was placed in the set-up.

The graph below shows the amount of light detected by the light sensor, 1000 units indicate the amount of light when no material was placed in the set-up.



(a) Based on the graph, determine the sequence of materials tested in Andy's experiment by putting 1 as the first material tested and 4 as the last material tested. [2]

Material	Sequence of material tested
aluminium foil	
clear glass	
frosted glass	
mirror	

(b) Explain your choice of material from 6 s to 8s time interval. [1]

Score 3

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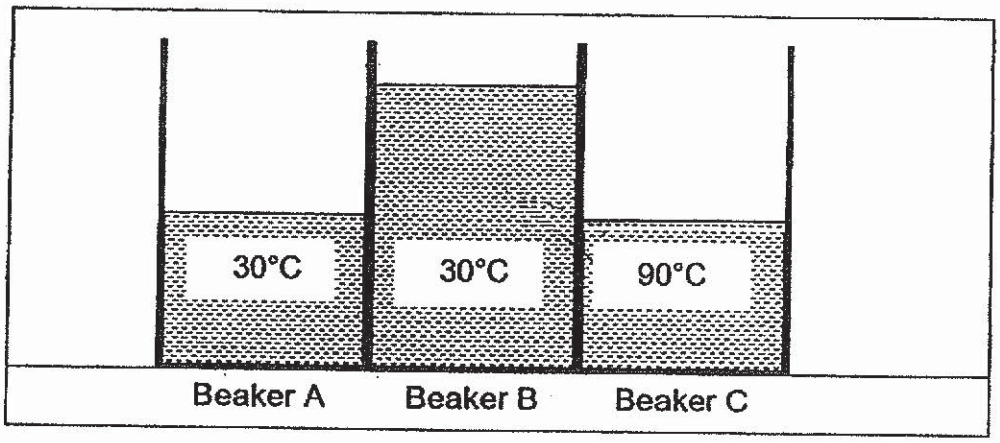
574

40. Three identical beakers of water at different temperatures were placed side by side as shown below during a Science experiment.



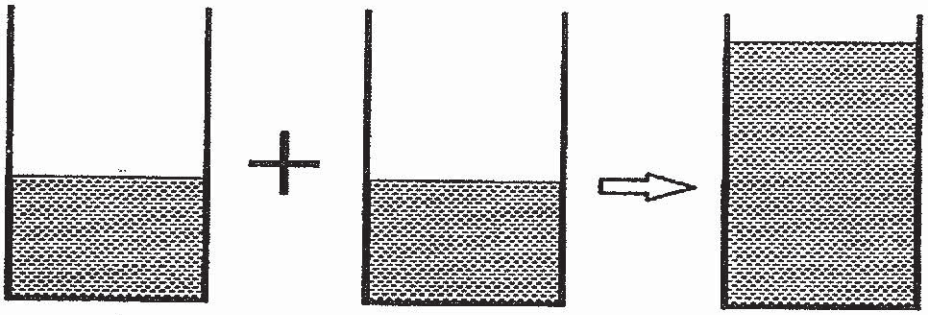
(a) On the diagram above, draw an arrow to indicate the direction of heat transfer between water in beaker B and C at the beginning of the experiment. [1]

(b) Compare the amount of heat energy in beakers A and B at the beginning of the experiment. Explain your answer. [1]

_____

_____

(c) The teacher told her pupils to mix water from beaker A and beaker C together into one beaker as shown below.



(d) What is likely to be the temperature of water in Beaker D? [1]

_____

Score	3

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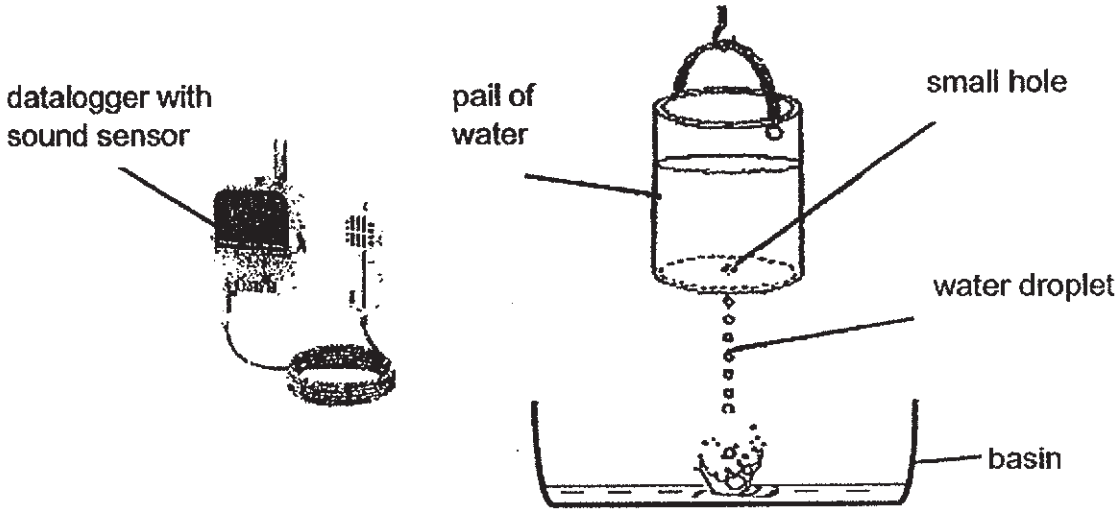
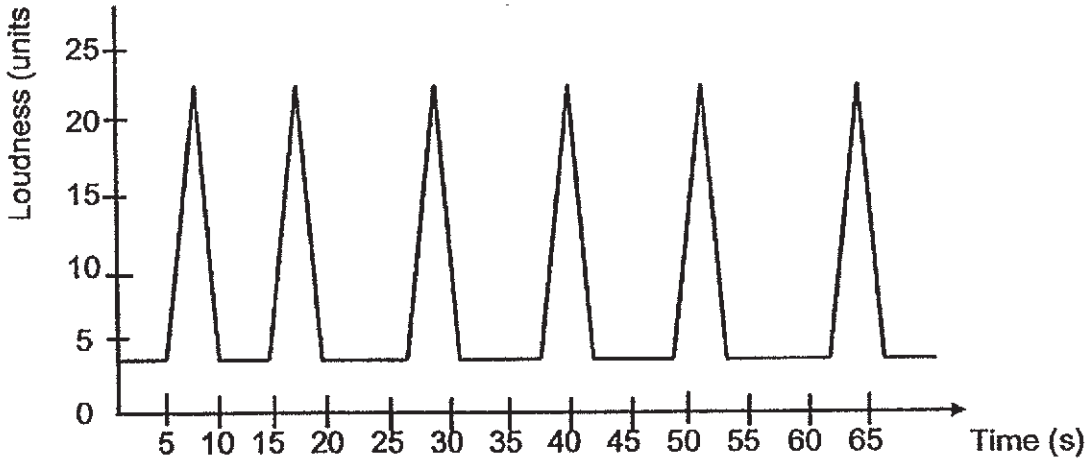
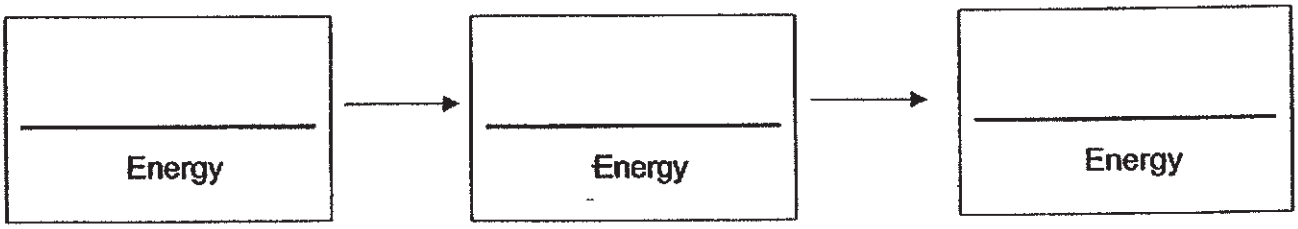
41. A pail of water was hung above a basin as shown below. A very small hole was made at the bottom of the pail for the water to drip into the basin. A sound was produced each time as each water droplet fell on the basin.

Gerald placed a datalogger with sound sensor near the basin, the following graph was displayed on the datalogger screen.





(a) Fill in the blanks to show the main energy conversion when the water droplets fell into the basin. [1]



(water in the pail) (dripping water) (water droplets fell onto basin)

Score	1

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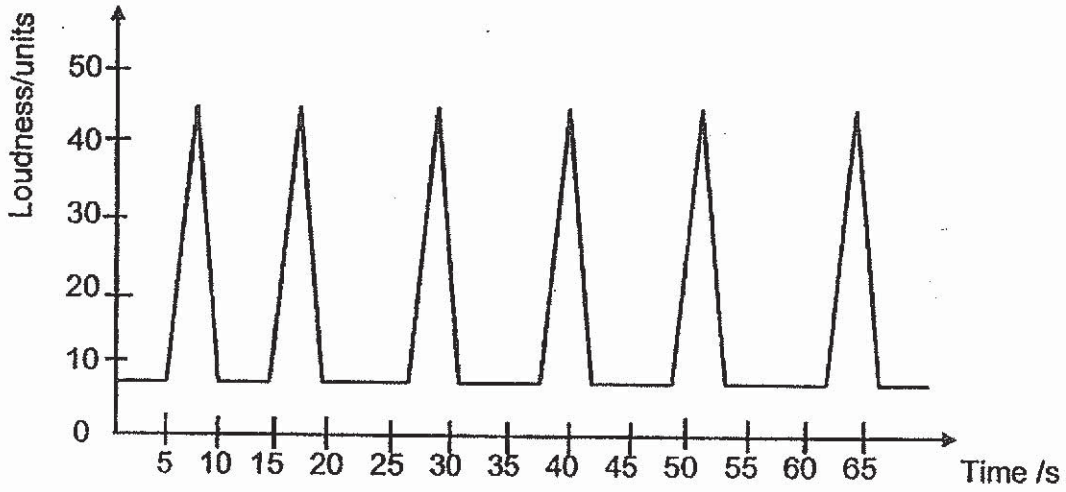
(b) What happened to the loudness indicated by the sound sensor if Gerald raised the pail of water higher from the basin? Explain your answer. [2]

Gerald modified the experiment set-up without changing the height of the pail of water and obtained the results as shown in the graph below.



(c) Suggest how Gerald could modify the experiment set-up to obtain the results as shown in the graph above. [1]

End of Paper

Score 3

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577

SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	3	1	3	3	1	3	3	1	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	1	1	1	2	3	2	3	2	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	2	2	4	4	4	1	4		

SECTION B

Q29)	a)Part A and B. The stigma on the flower can still receive pollen grains from another flower. Hence fertilization can still occur/Hence fertilization can still fuse with the female reproductive cell. b)C and D.
Q30)	a)Circulatory system. b)digested food. c)To provide energy for the human.
Q31)	a)The higher the temperature of the pond, the greater the number of organisms in it. b)The number of organisms in the pond would decrease. c)The population of Animals in Layer Z which feeds on the plants living in Z will decrease too due to lack of plants to feed on.

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Q32)	a)Pant A → Animal B ↘ ↙ Animal C b)B / C c)The population of Animal B will increase. As there would be no predator animal C, to prey on animal B. There will also be more food, plant A for animal B since there will be no animal C feeding on plant A.
Q33)	a)It does not allow light to pass through. Starch is produced when the plant can photosynthesise. If the plant in set-up Q was not able to produce starch, that meant that it was not able to photosynthesise. Photosynthesise can only take place when light is present. b)Set-up P and R. The plant in set-up R was able to photosynthesise, meant that material Y allows light to pass through, so by using set-up P made of material Y, and there is chemical X inside which absorbs carbon dioxide and there is no chemical X inside set-up R, Hence, set-up P and R can be used to show carbon dioxide is needed for photosynthesis to take place.
Q34)	a)The amount of water collected would be greater. b)When a smaller bowl was used. The exposed surface area of the sea water increased. Hence, more water will (gain heat and)evaporate, higher rate of evaporation more water vapour condensed into more water droplets on the plastic sheet which will be collected in the bowl.
Q35)	a)When either A or B was switched off, it formed an open circuit, electricity, could not flow through and neither dance nor the music will work.

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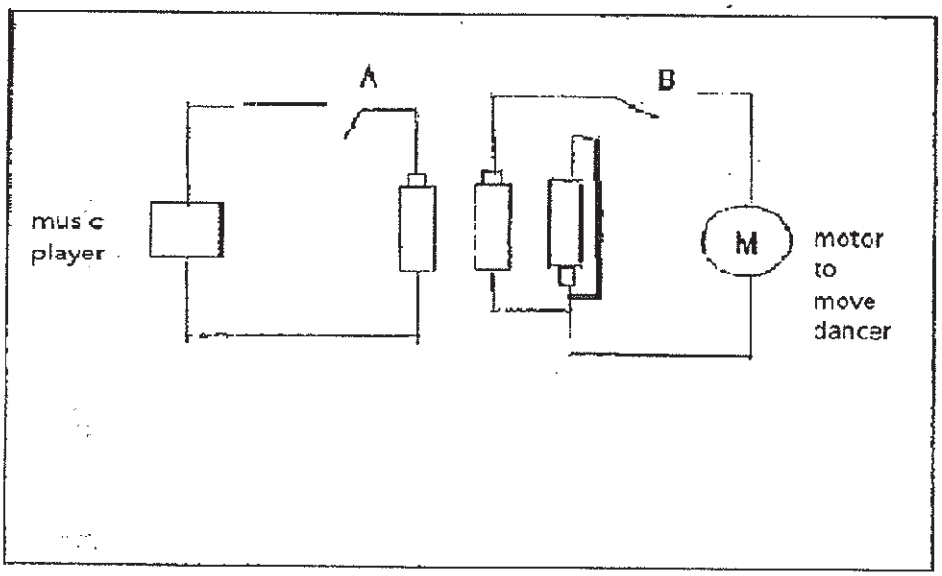
	b) 
Q36)	a)A freely suspended magnet will come to rest in a north-south direction. b)Unlike poles of the bar magnet and needle are facing each other and they attract.
Q37)	a)30cm b)spring A c)The heavier the mass of the load added, the longer the length of the spring.
Q38)	a)Elastic potential energy, magnetic force. b)i)more than IN. ii)less than IN. c)IN. Magnetic force cannot pass through the steel sheet which is a magnetic material. Hence, there is no magnetic force of repulsion acting on the weighing scale.
Q39)	a)2 , 3 ,1 ,4 b)The material is opaque, as there was no light detected by the light sensor, stating that the material did not allow light to pass through.

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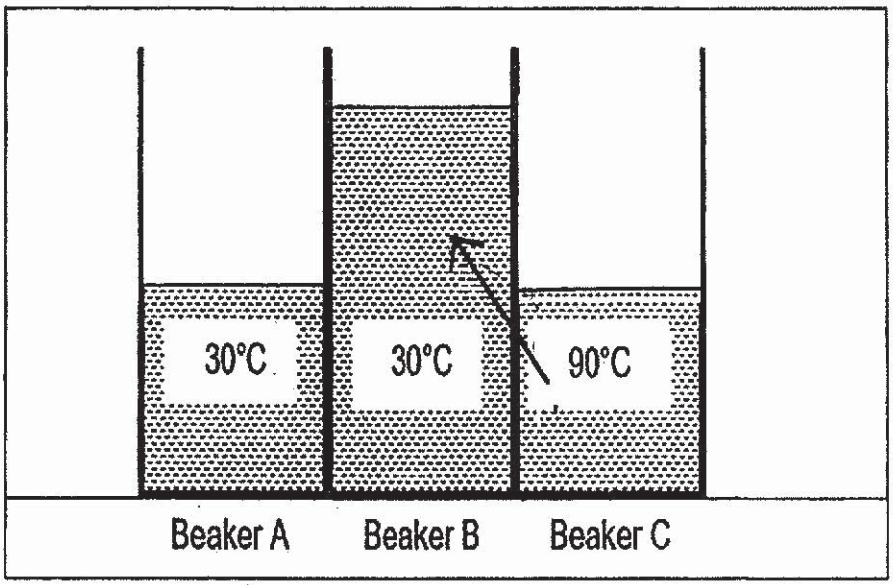
Q40)	a)  b)There was less heat energy present in the water of beaker A than beaker B because it had smaller amount of water. d)60℃
Q41)	a)gravitational potential → kinetic energy → sound energy b)The higher the pail of water was dropped, the greater gravitational potential energy of the water converted to more kinetic energy which will be converted to more sound energy. c)He made a bigger hole at the bottom of the pail.

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RIVER VALLEY PRIMARY SCHOOL
2019 SEMESTRAL ASSESSMENT 1 (SA1)
PRIMARY 6

STANDARD SCIENCE

(BOOKLET A)

Name : ___ _____ ( ) Date : 22/05/2019 (Wed)

Class : P6 _____ Time: 1 hour 45 min

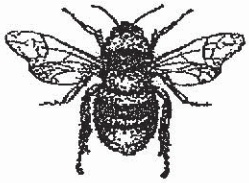
INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the Optical Answer Sheet (OAS).
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet A is 56 marks.

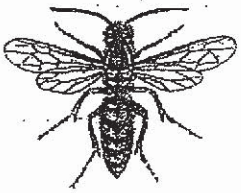
Section A (56 marks)

For each question 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. The diagram below shows two organisms X and Y.



Organism X



Organism Y

Organism X stings and feeds on smaller organisms such as ants and spiders.
Organism Y looks similar to Organism X. It feeds on nectar but does not sting.

Which of the following is a benefit for Organism Y to resemble Organism X?

(1) Predators of Organism X will prey on Organism Y too.
(2) Predators of Organism Y will avoid preying on Organism Y.
(3) Organism Y will be able to mate with Organism X to reproduce.
(4) Organism Y will be able to feed on ants and spiders like Organism X.

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2. The table below shows some information about three different organisms, X, Y and Z.

Organism	Information
X	• Weak stem • Pollinated by wind
Y	• Lives in a desert • Walks on sandy grounds
Z	• Spends most of the time in the water • Feeds on animals which are active at night

Which one of the following descriptions shows the correct adaptations of the three organisms respectively?

	Organism X	Organism Y	Organism Z
(1)	• Has climbing stem • Bright coloured flowers	• Large ears • Sharp vision	• Streamlined body • Good night vision
(2)	• Has climbing stem • Stigma hanging outside petals	• Sweats very little • Padded feet	• Streamlined body • Webbed feet
(3)	• Has thorns • Feather-like stigma	• Urinates very little • Webbed feet	• Short wingspan • Good sense of hearing
(4)	• Has climbing stem • Anthers hanging outside petals	• Active at night • Sharp claws	• Waxy feathers • Long beaks

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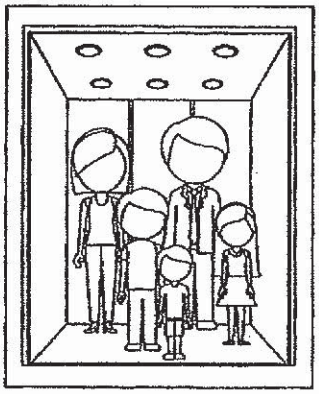
3. Tom and his family were trapped in an enclosed lift for half an hour as shown in the diagram below. There was no fresh air entering the lift.



Which one of the following correctly shows the changes in the composition of gases in Tom's blood after half an hour of being trapped in the lift?

	Changes in the composition of gases in Tom's blood		
	carbon dioxide	**oxygen**	**nitrogen**
(1)	increases	decreases	decreases
(2)	decreases	increases	remains the same
(3)	decreases	increases	increases
(4)	increases	decreases	remains the same

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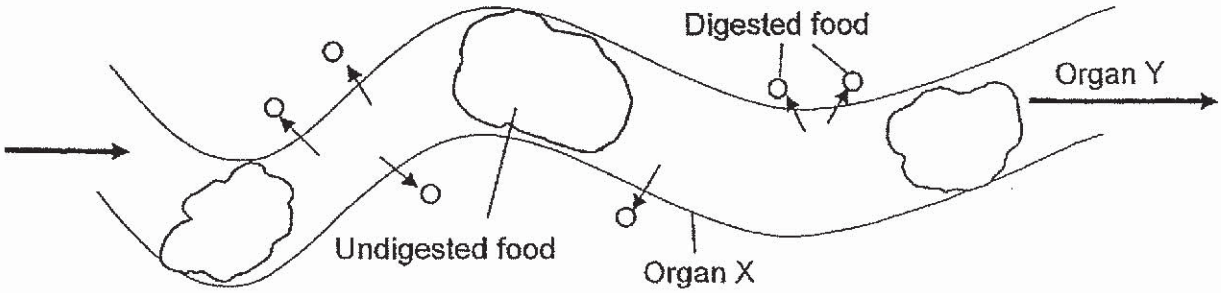
4. The diagram below shows a part of the human digestive system.



Which of the following shows the correct Organs X and Y?

	X	Y
(1)	Small intestine	Large intestine
(2)	Stomach	Small intestine
(3)	Gullet	Stomach
(4)	Large intestine	Anus

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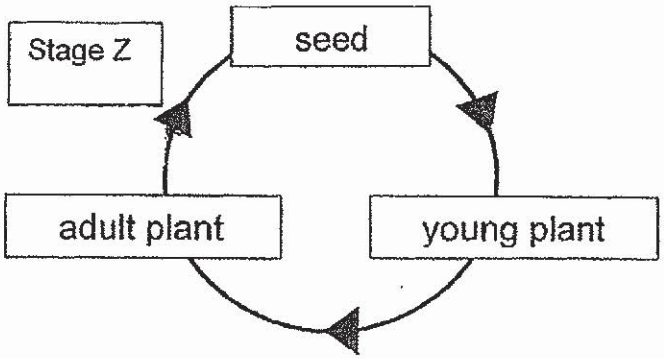
5. The diagram shows the life cycle of a flowering plant.



Which one of the following statements describes Stage Z correctly?

A: The flower gives off a scent to attract insects.

B: Pollen grains from the anther lands on the stigma.

C: The plant uses the food stored in the seed leaves.

D: Special characteristics help the seeds scatter away from parent plant.

(1) A and B only

(2) A, B and D only

(3) B, C and D only

(4) All of the above

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6. Which of the following statements are true about the sexual reproduction in humans?

A: The male reproductive cell is the sperm.
B: The fertilized egg develops in the stomach of the female's body.
C: Fertilization usually takes place in the ovary of the female's body.
D: Fertilization takes place when the male and female reproductive cells fuse.

(1) A and D only
(2) B and C only
(3) C and D only
(4) A, B and C only

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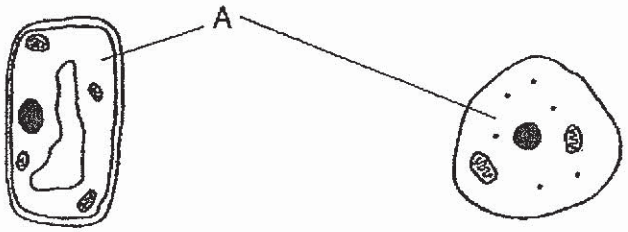
7. Two cells X and Y are shown below.



Cell X Cell Y

Which of the following gives the correct classification of the cells and the function of Part A?

	Animal Cell	Plant Cell	Function of Part A
(1)	X, Y	-	controls movement of substances in and out of the cell
(2)	Y	X	controls movement of substances in and out of the cell
(3)	Y	X	allows movement of substances within the cell
(4)	X	Y	allows movement of substances within the cell

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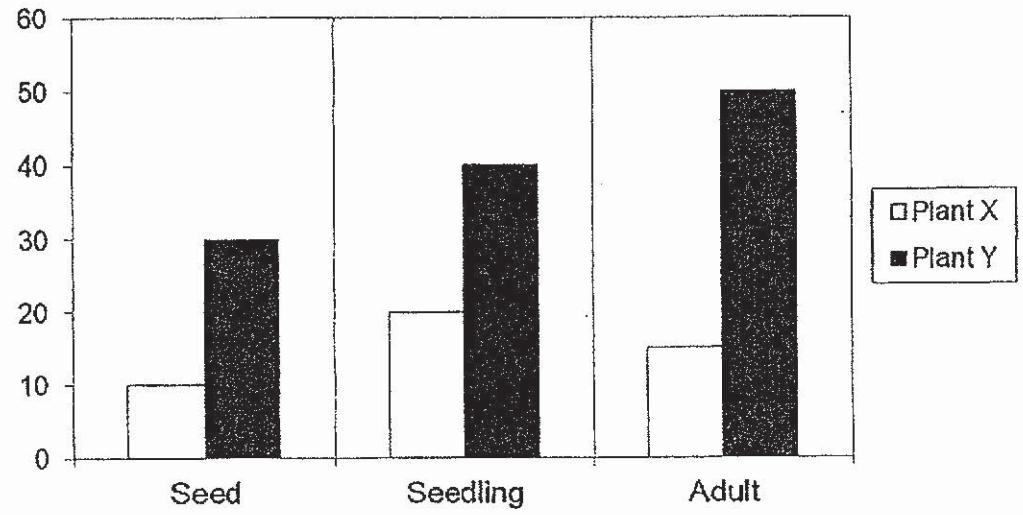
8. The graph below shows the number of days of each stage of the life cycles of plants X and Y.



In which stage would Plants X and Y be on the 40th day of their life cycle?

	Plant X	Plant Y
(1)	Adult	Seedling
(2)	Seed	Adult
(3)	Adult	Adult
(4)	Seedling	Seedling

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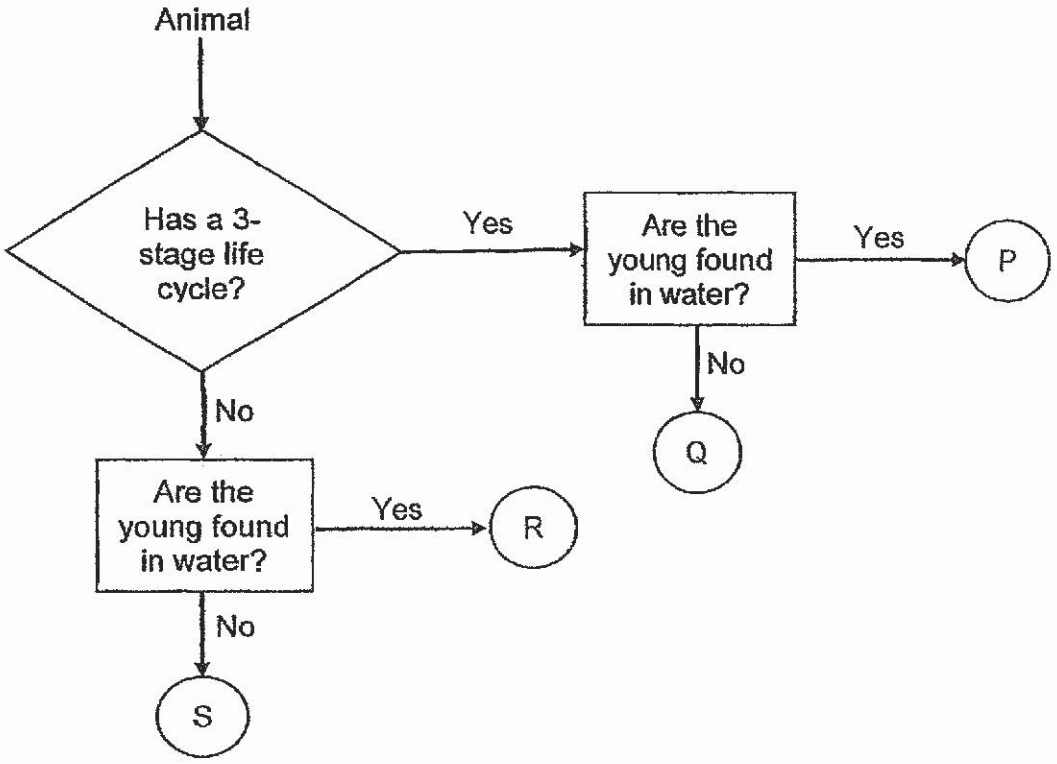
9. Study the flowchart below.



Which of the following shows the correct grouping for P, Q, R and S?

	P	Q	R	S
(1)	Frog	Chicken	Mosquito	Butterfly
(2)	Chicken	Mosquito	Butterfly	Frog
(3)	Mosquito	Grasshopper	Frog	Beetle
(4)	Cockroach	Frog	Beetle	Mosquito

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10. The table below compares the life cycles of animal A and B.

Characteristics	A	B
4 stages in the life cycle	No	Yes
Lays eggs on land	No	Yes
The young resembles the adult	Yes	No
It is a pest during the larva stage	No	Yes

Based on the graph above, what can animal A and B be?

	A	B
(1)	grasshopper	butterfly
(2)	beetle	cockroach
(3)	frog	beetle
(4)	grasshopper	mosquito

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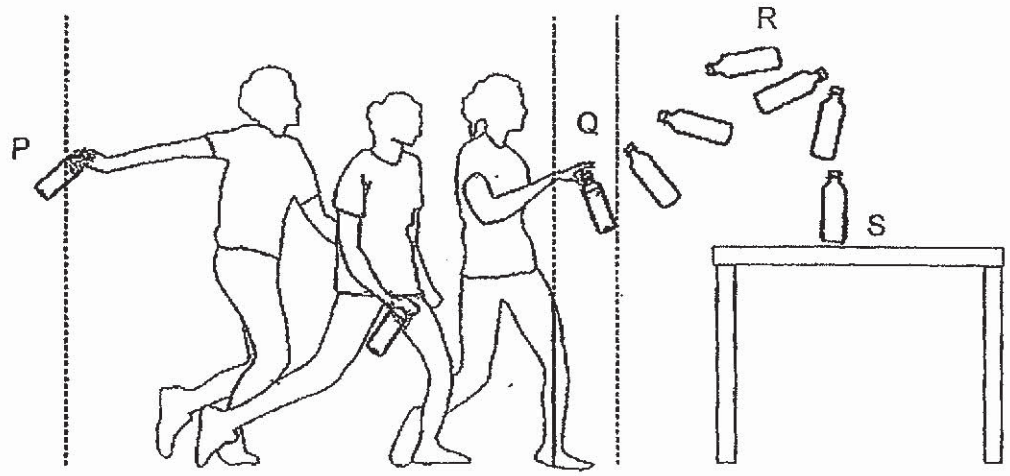
11. Min tries to throw his bottle so that it can land on the table standing upright at S. He swings the bottle backward to point P and then swings to point Q before releasing it. The bottle reaches its maximum height at point R and lands at point S.



Which one of the following statements is true?

(1) There is no gravitational force acting at S.

(2) The gravitational force at R is more than at S.

(3) The amount of potential energy at R is the highest.

(4) The amount of kinetic energy is increasing from Q to R.

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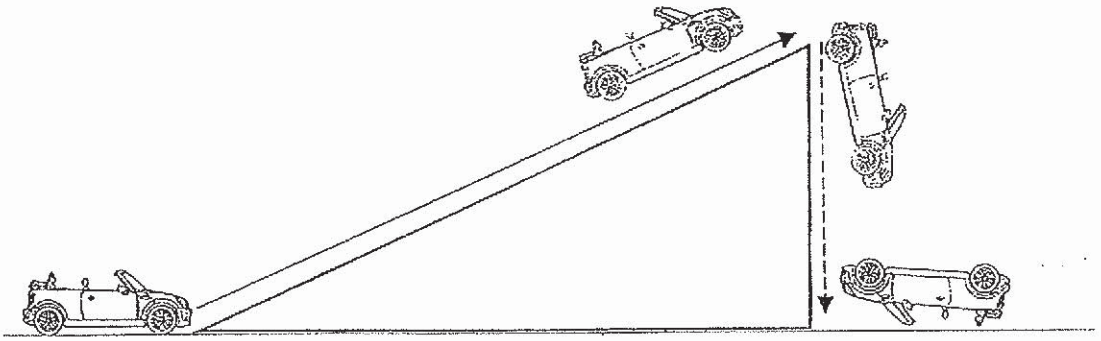
12. Haley left a battery-operated car at the bottom of a slope as shown below.



Once she pressed the "GO" button on her remote control, the car moved up the slope. She stopped the car just before it reached the edge at the top but it fell down to the floor.

Which one of the following correctly shows the correct energy conversion which took place after she pressed the "GO" button on her remote control?

(1) kinetic energy → potential energy → sound + heat energy

(2) electrical energy → potential energy → sound + heat energy

(3) potential energy → electrical energy → kinetic energy → sound + heat energy

(4) potential energy → electrical energy → potential energy → sound + heat energy

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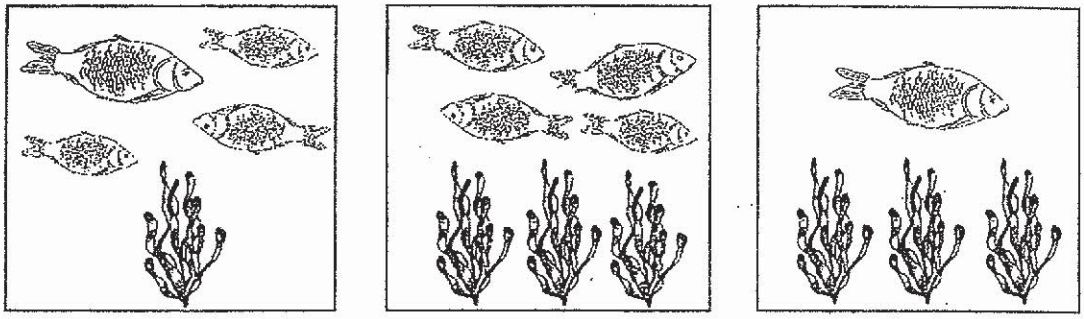
13. May filled 3 identical tanks with equal amount of water and same amount of oxygen. She placed the tanks in a brightly lit room with different numbers of plants and fish.



P Q R

After 3 hours, she measured the amount of dissolved oxygen in the water in Tank Q.

	After 3 hours
Amount of dissolved oxygen in Tank Q	15 units

Which of the following would be the correct amount of dissolved oxygen in the water in Tanks P and R after three hours?

	Amount of dissolved oxygen in the tank (units)	
	Tanks P	Tank R
(1)	25	5
(2)	5	25
(3)	5	5
(4)	25	25

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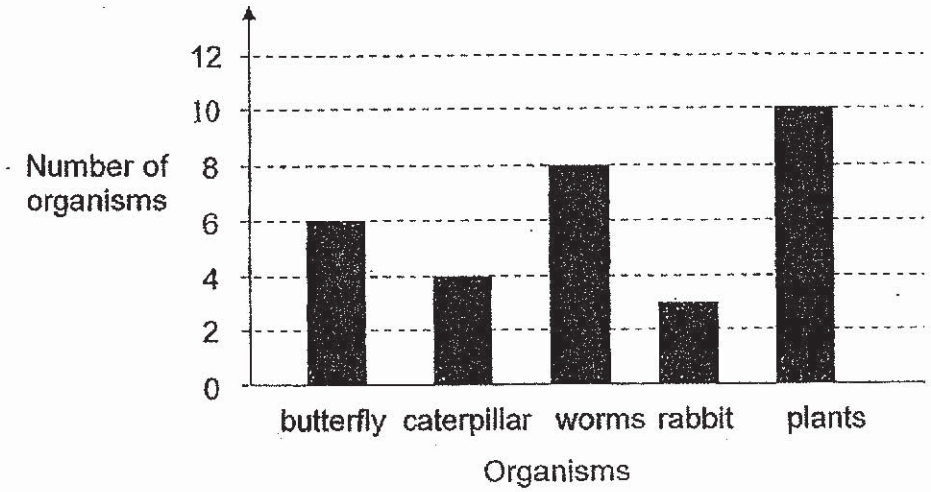
14. Deming observed the organisms found in a garden and recorded the number of each organism in a graph as shown below.



Based on the information given above, which of the following statements are definitely correct?

A: The garden is the habitat of the organisms.

B: There are ten populations of plants in the garden.

C: There is a total of 31 communities in the garden.

D: There are four populations living in the garden.

(1) A and C only

(2) A and D only

(3) B and C only

(4) B and D only

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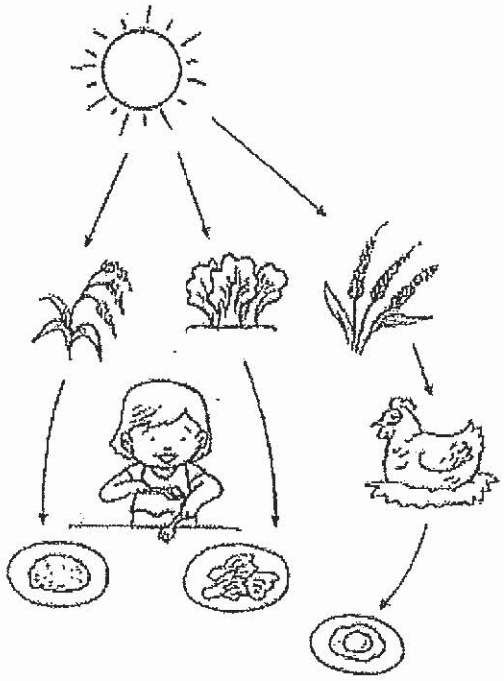
15. The diagram below shows what Zehua eats for dinner.



Her friends, Ali, Ben, Cara and Devi made the following statements:

Ali: Animals are the main source of energy.

Ben: The energy in the food that Zehua eats comes from the Sun indirectly.

Cara: Zehua eats in order to get energy to carry out life processes.

Devi: Energy is transferred from the Sun to plants and then to animals.

Who made the correct statements?

(1) Ali and Ben only

(2) Ben and Cara only

(3) Ali, Cara and Devi only

(4) Ben, Cara and Devi only

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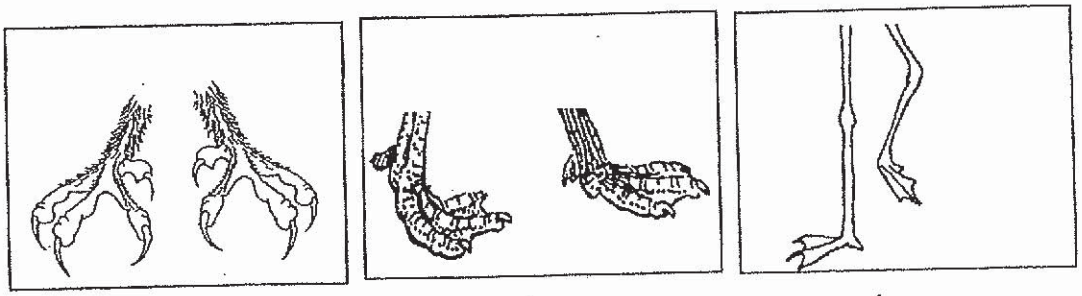
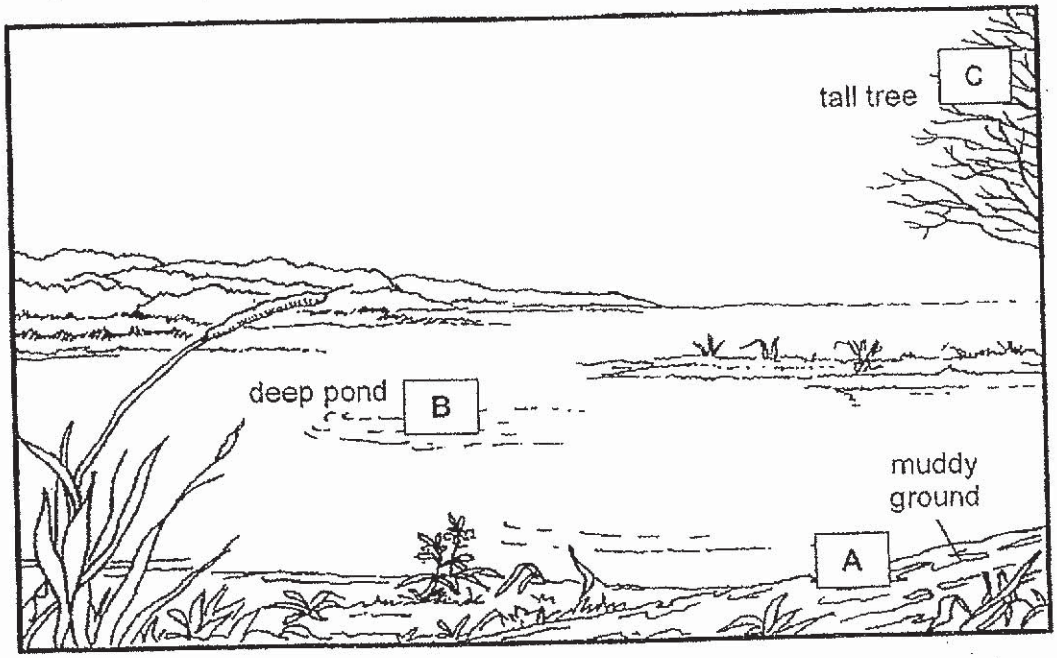
16. The diagram below shows the legs of three birds J, K and L which feed on fish.



J K L

They are usually seen in different parts A, B and C of the habitat below.



Which of the birds J, K and L are most likely to be found at A, B and C?

	A	B	C
(1)	J	K	L
(2)	K	L	J
(3)	L	J	K
(4)	J	L	K

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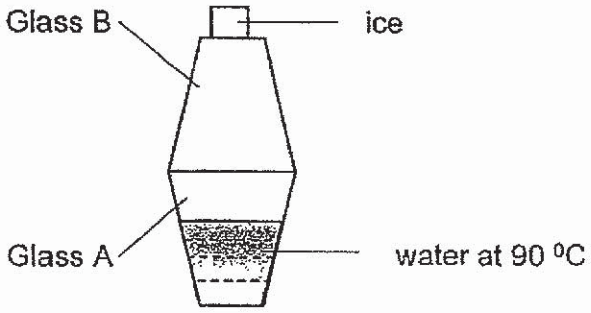
17. Timothy used a set up to show the water cycle. He poured some hot water at 90 ^{0}C into a glass A. He then turned glass B upside down and placed it on top of A. Next, he placed an ice cube on glass B.



Why did Timothy place an ice cube on glass B?

(1) To increase rate of melting

(2) To increase the rate of evaporation

(3) To increase the rate of condensation

(4) To increase rate of heat loss in glass B

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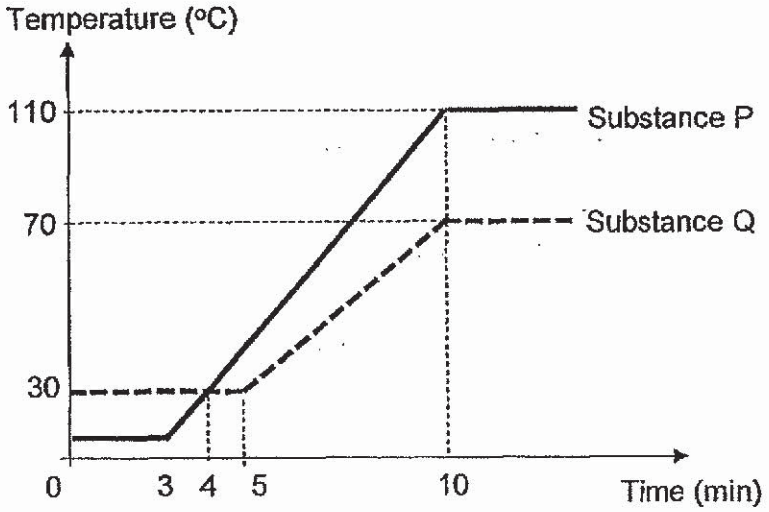
18. The table below shows the temperature changes of two different substances, P and Q, over time. The room temperature is 30^0C.



Based on the graph above, which of the following statements are correct?

A. Q is a solid and a liquid at room temperature.
B. Both P and Q were liquids at 4 minutes.
C. The melting point of Q is higher than P.
D. Both P and Q started to boil at 10 minutes.

(1) A and C only
(2) C and D only
(3) A, C and D only
(4) All of the above

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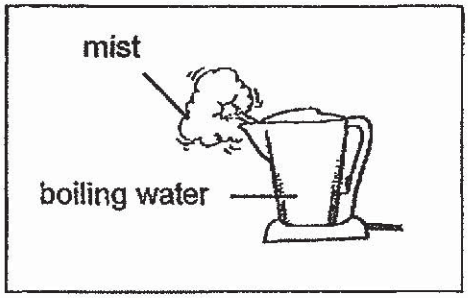
19. Study the diagram below.



Which statements describe the mist formed?

A: It is made up of water vapour.

B: It is made up of water droplets.

C: It is formed by water evaporating into the surrounding air.

D: It is formed by water vapour losing heat to the surrounding air.

(1) A and C only

(2) B and C only

(3) A and D only

(4) B and D only

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20. Study the table below.

	State of substance at		
Substance	**80°C**	**100°C**	**120°C**
A	solid	solid	solid
B	solid	solid	liquid
C	liquid	liquid	gas

Which one of the following is correct?

(1) Substance A has the lowest melting point.

(2) The boiling point of Substance B is 120°C.

(3) Substance B has a higher melting point than Substance C

(4) All three substances are solid at 30°C.

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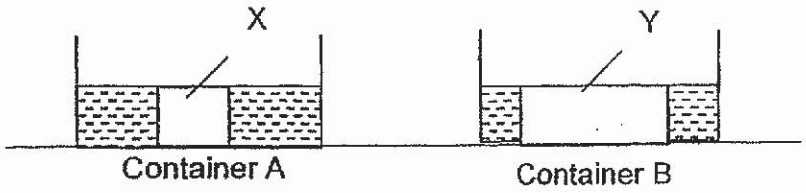
21. Nor placed blocks X and Y into two identical containers, A and B. He then filled both the containers with water until both blocks are fully submerged.



Nor observed that less water filled container B. Which of the following correctly explains why less water filled container B?

(1) Block Y has more mass.

(2) Block Y has more volume.

(3) Water has no fixed shape.

(4) Water cannot be compressed.

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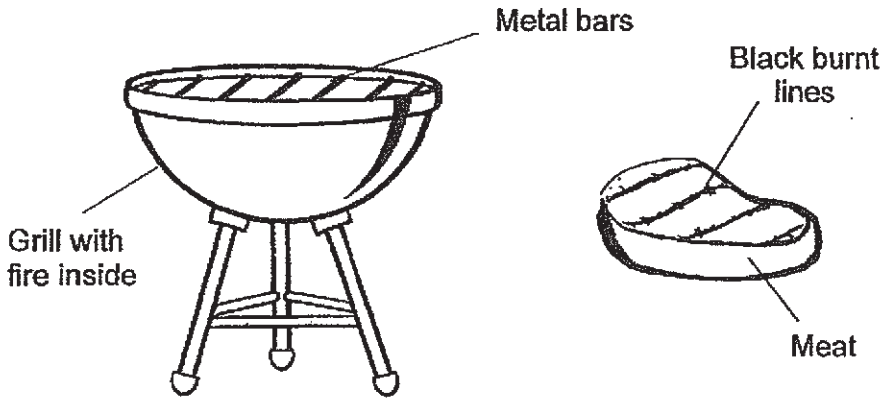
22. Vincent was cooking a piece of meat. He left the meat on the grill for a short period of time before removing it. He observed black burnt lines on it.



Which one of the following statements best explains the presence of the black burnt lines on the meat?

(1) The fire was too strong.
(2) The meat lost heat to the metal bars.
(3) The metal bars conducted heat quickly.
(4) The metal bars gained heat from the hot meat.

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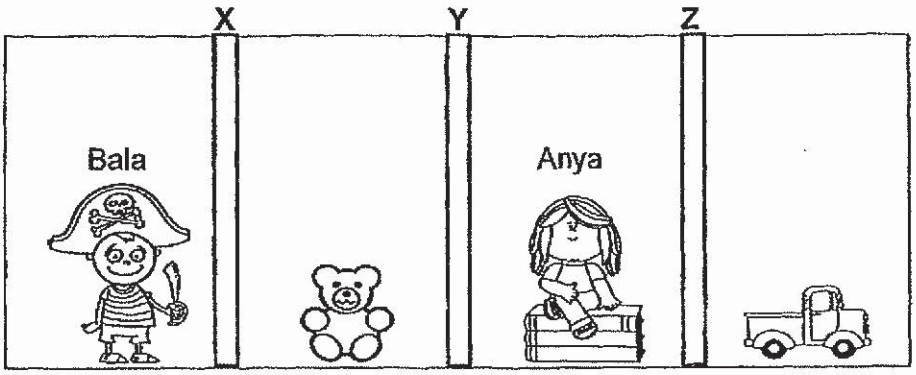
23. Study the diagram below.



Two children and two of their toys are separated by screens, X, Y and Z. Given that the screens are made of different materials,

- Bala is unable to see Anya.
- Anya can see both the teddy bear and the toy truck.

Which one of the following could possibly be the materials of the screens?

	X	Y	Z
(1)	clear glass	metal	clear plastic
(2)	wood	clear plastic	clear glass
(3)	clear plastic	clear glass	black cloth
(4)	metal	black cloth	wood

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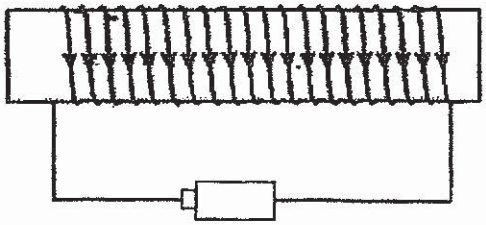
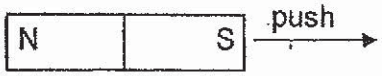
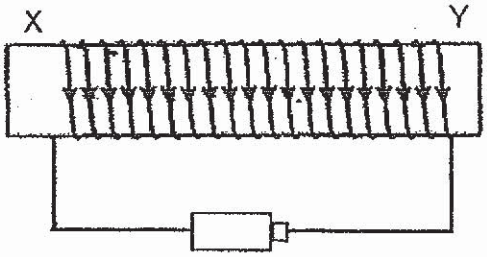
24. When the battery is connected in the opposite direction, the poles of the electromagnet will change. Remi connected an iron rod to a battery using some wires. When she placed a magnet beside the iron rod, she observed that the magnet was pushed away from it.







If Remi changes the battery in the opposite direction, what will be the poles of the electromagnet, X and Y, and how will the magnet move?

	X	Y	Magnet
(1)	N	S	push
(2)	S	N	push
(3)	N	S	pull
(4)	S	N	pull

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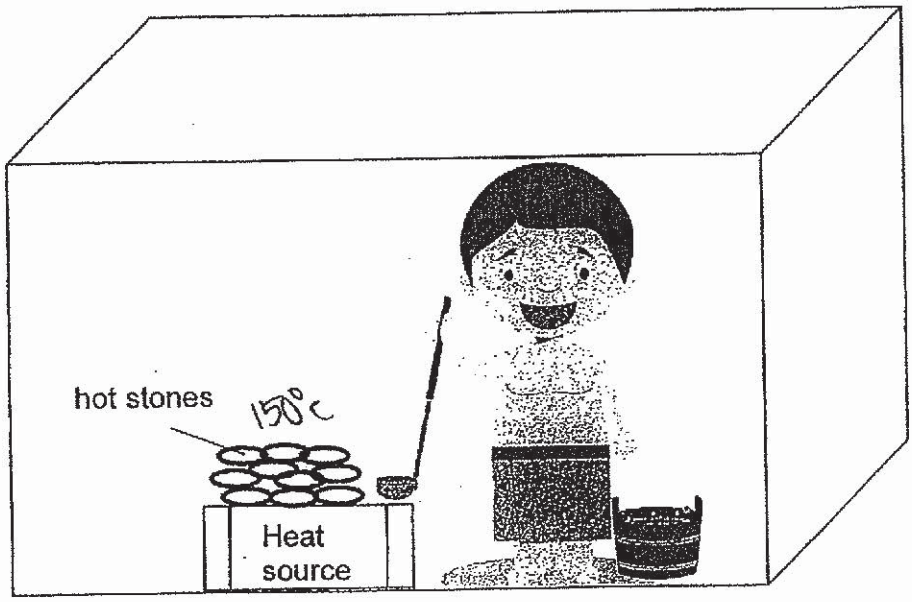
25. Mike is in an enclosed bath room. He poured tap water at 30°C on some hot stones, which are at a temperature of 150 °C. The heat source keeps the stones at 150°C.



Which one of the following explains the temperature of the room after water is poured on the stones?

	Temperature of the room	Explanation
(1)	decreases	The stones lost heat to the water and became cooler.
(2)	decreases	The surrounding air lost heat to the cooler stones and became cooler.
(3)	increases	Water gained heat from the stones and became hot water vapour.
(4)	increases	The surrounding air gained heat from the water and became warmer.

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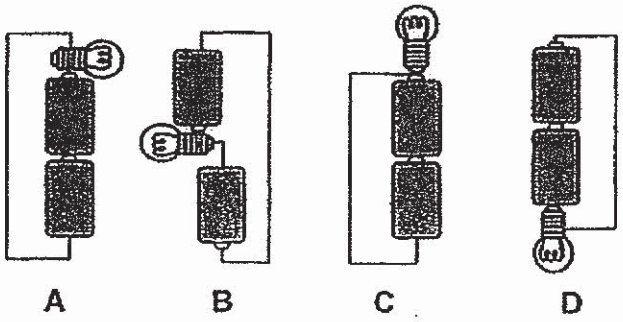
26. Suresh used 2 similar batteries and 1 bulb to form circuits, A,B,C and D.



Which of the circuits would the bulb **not** light up?

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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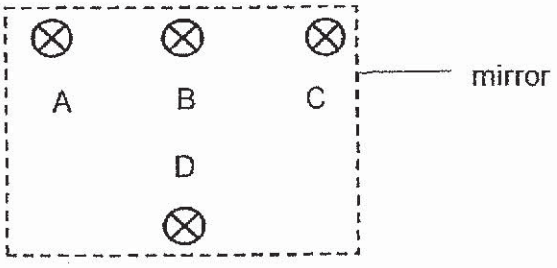
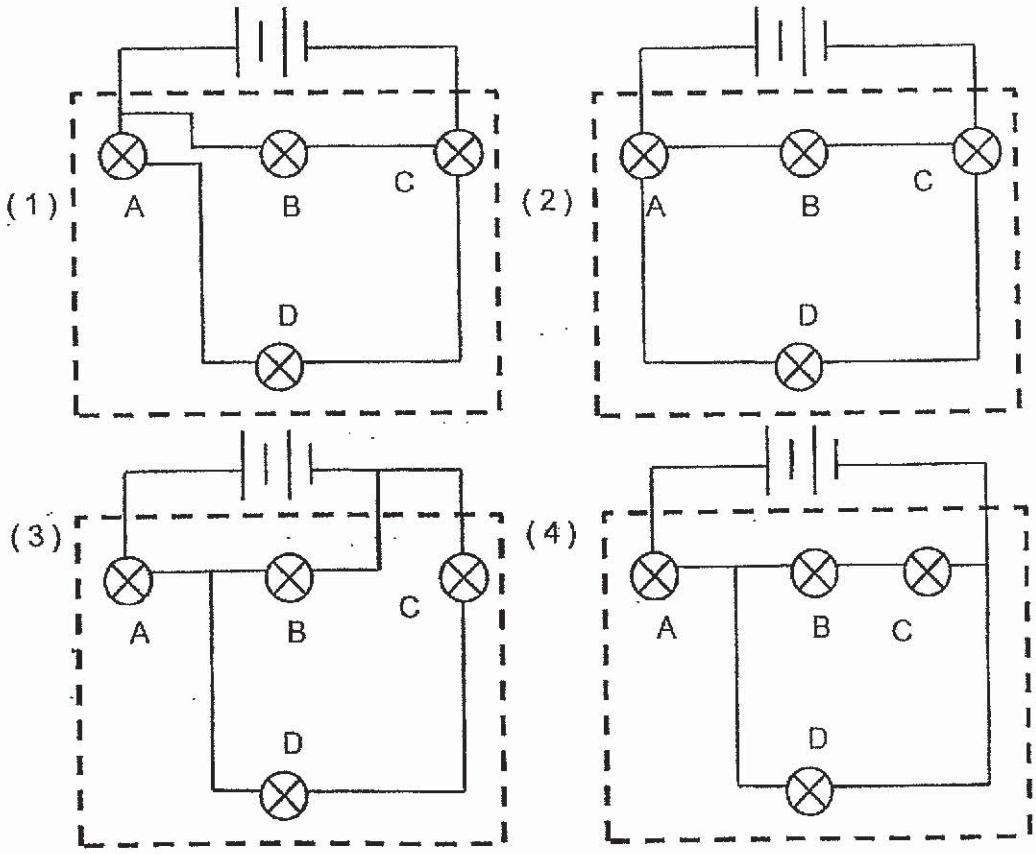
27. An electrician installed bulbs A, B, C and D to light up a mirror shown below. All the bulbs lit up when the circuit was closed.



He removed one light bulb from the circuit each time and recorded his results in the table below.

Bulb removed	Bulb(s) lit
A	None
B	A and D
C	A and D
D	A, B and C

Which of the circuits shows the connection of the bulbs?



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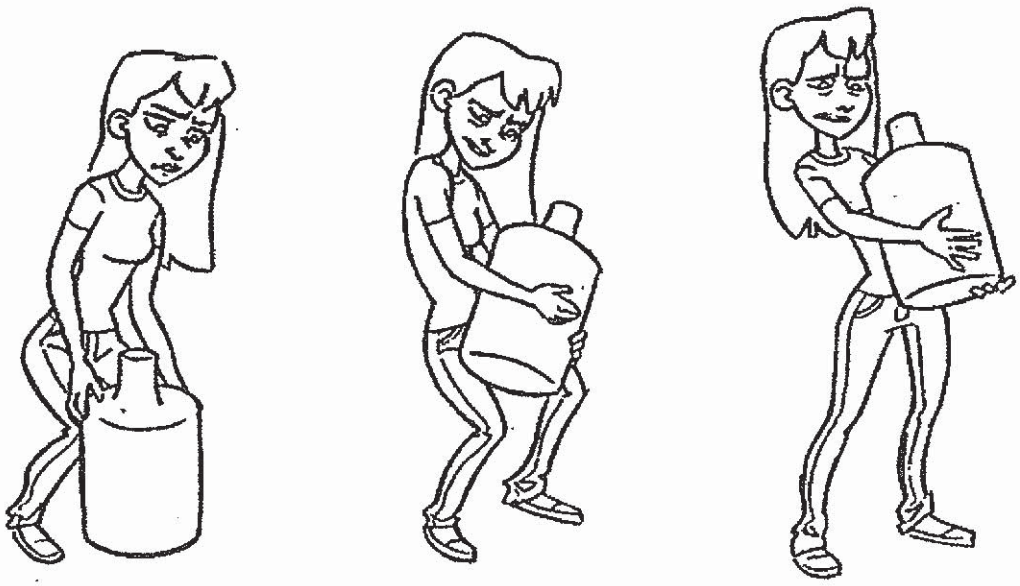
28. Penny tried to lift an object from the ground. Positions A, B and C show three different positions of the object.



Position A Position B Position C

Which of the following correctly describes the weight and gravitational potential energy of the object from Position A to Position C?

	Weight	Gravitational Potential Energy
(1)	remains the same	remains the same
(2)	increases	increases
(3)	remains the same	increases
(4)	increases	remains the same

( )

~ End of Section A ~

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RIVER VALLEY PRIMARY SCHOOL
2019 SEMESTRAL ASSESSMENT 1 (SA1)
PRIMARY 6

STANDARD SCIENCE

(BOOKLET B)

Name : _____ ( ) Date : 22/05/2019 (Wed)

Class : P6 _____ Time : 1 hour 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the OAS.
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet B is 44 marks.

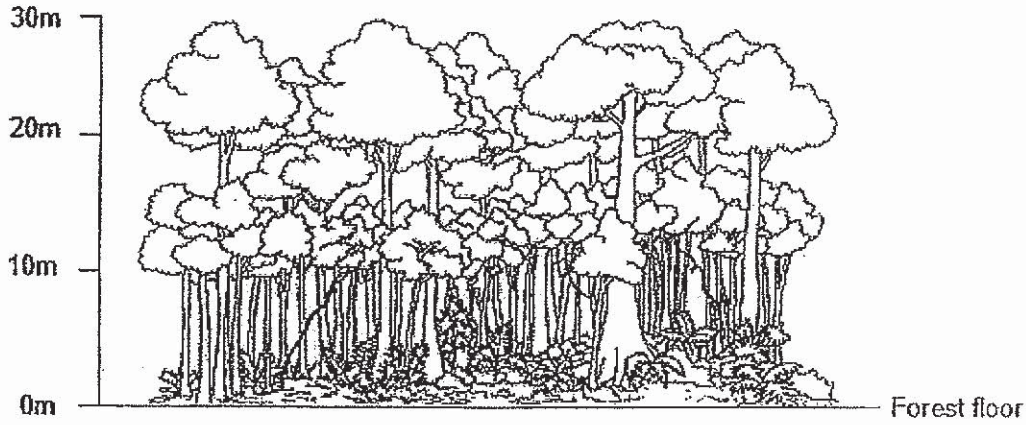
Booklet A	56
Booklet B	44
Total	100

Parent's Signature: _____

Section B (44 marks)

Write your answers to questions 29 to 40 in this booklet.

29. The diagram below shows plants of different height growing in a rainforest.



An investigation was carried out to measure the amount of light received at two different heights from the forest floor. The results are shown in the table below.

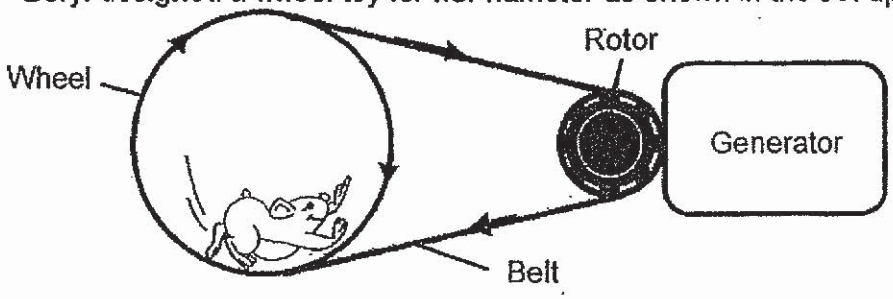
Height above the forest floor (m)	Average amount of sunlight received by the plants (lux)	Average increase in mass of the plants (units)
10	100	10
30	1000	100

The plants at 10m above the forest floor increased slower in mass than the plants found at 30m above the forest floor. Give a reason. [2m]

_____

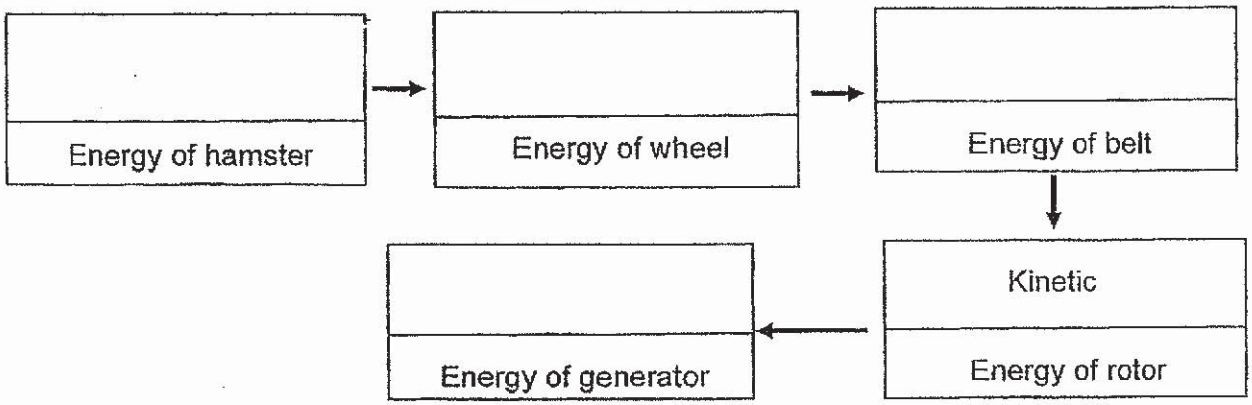
_____

30. Beryl designed a wheel toy for her hamster as shown in the set up below.

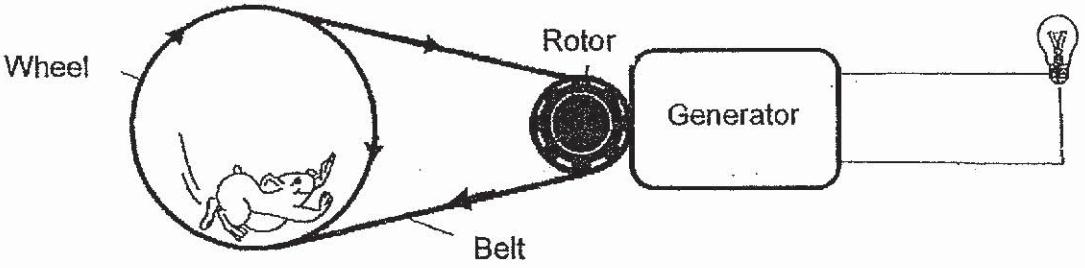


As the hamster ran on the wheel, the wheel started to spin causing the belt to also move. The rotor started to turn, which was connected to a generator.

(a) Fill in the blanks below to show the energy conversion. [2m]



A bulb was then connected to the generator.



(b) Beryl noticed that the bulb did not light up when the hamster started to run on the wheel. All the components in set up were in working condition. Explain why. [2m]

_____

_____

31. Altaff set up an experiment to determine how well duckweeds grow in different water conditions. Water samples were taken from 2 different locations, X and Y. He placed an equal number of duckweeds in beakers A and B.

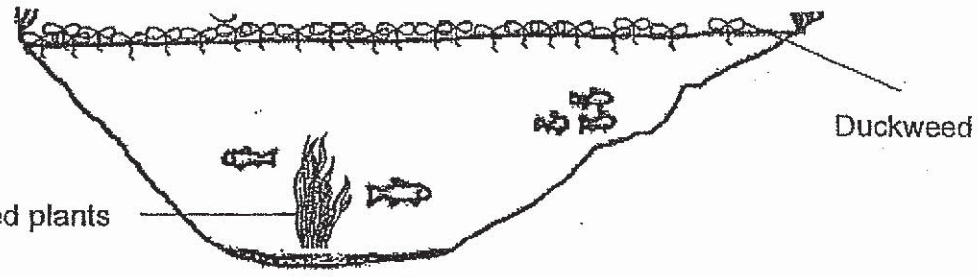
After one week, he observed the duckweeds and represented his findings in the table below.

	Beaker A	Beaker B
Location where water is taken from	X	Y
Observation of number of duckweeds	Increase by a little	Increase by a lot

(a) Which water sample, X or Y, is **most likely** to be from muddy water? Explain your answer. [1m]

_____

_____



(b) Study the diagram above. Explain how too many duckweeds is harmful to fully submerged plants in the water. [2m]

_____

_____

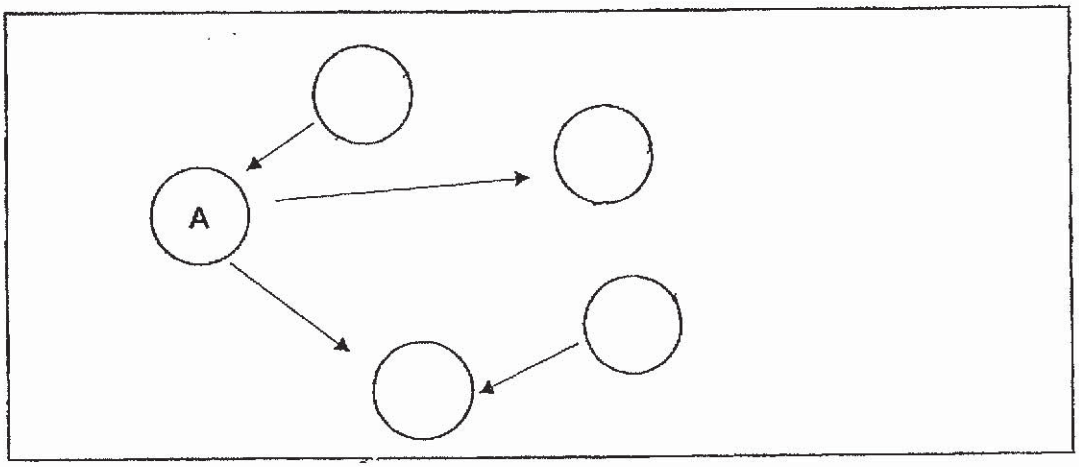
_____

	3

32. The table below shows the food relationships among the organisms living in community X.

Relationships among organisms in community X
• A feeds on D
• E feeds on A and B
• D contains chlorophyll
• A is the only prey for C
• C is a carnivore that is not a prey of any organism in the community

(a) Based on the information above, complete the food web as shown in the box below. [2m]



(b) State how the population of organisms C and D will be affected if the population of organism A decreases. Give a reason for your answer. [2m]

Organism C: _____

_____

Organism D: _____

_____

	4

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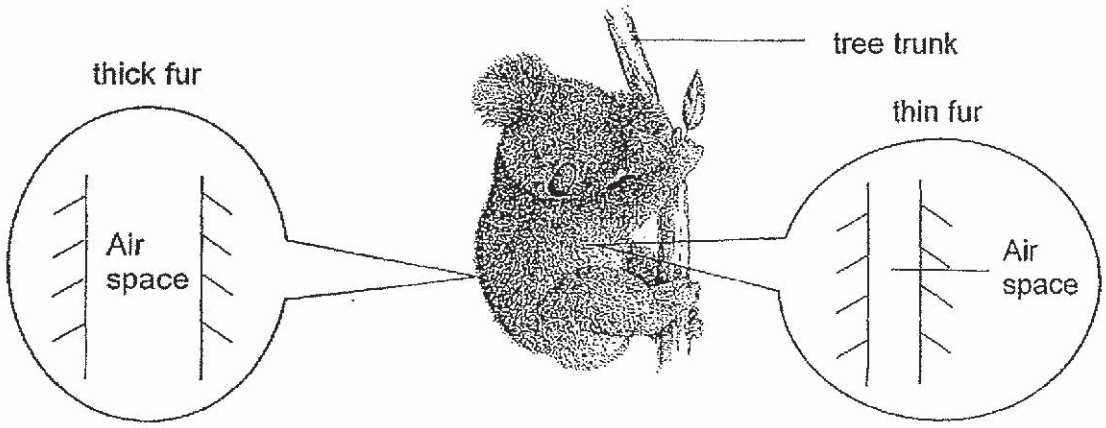
33. (a) State the difference between structural and behavioural adaptation in animals. [1m]

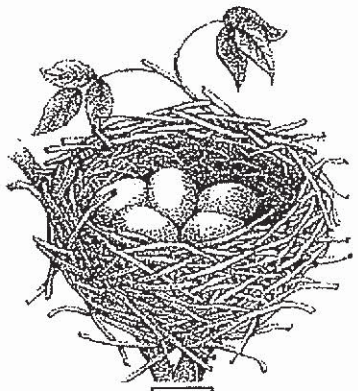
A koala has both thick fur and thin fur on different parts of its body. Thick fur traps more air than thin fur .The temperature of the tree trunk is lower than the temperature of the surrounding air.



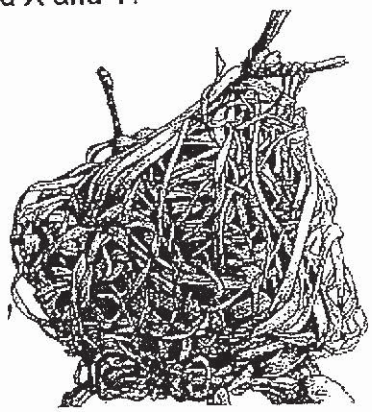
(b) On a warm day, the koala hugs the tree trunk as shown in the diagram below. Explain why the koala bear behaves in this way on a warm day. [2m]

	3

34. The diagram below shows the nests built by Bird X and Y.



X



Y

(a) Based on the diagrams above, which bird has built a nest that is advantageous for its young on a rainy day? Explain your answer. [1m]

Predatory birds fly from a great height and feed on eggs of birds like X and Y.

(b) How does the structure of the nest increase the survival rate of the eggs of Bird Y? Explain your answer. [2m]

	3

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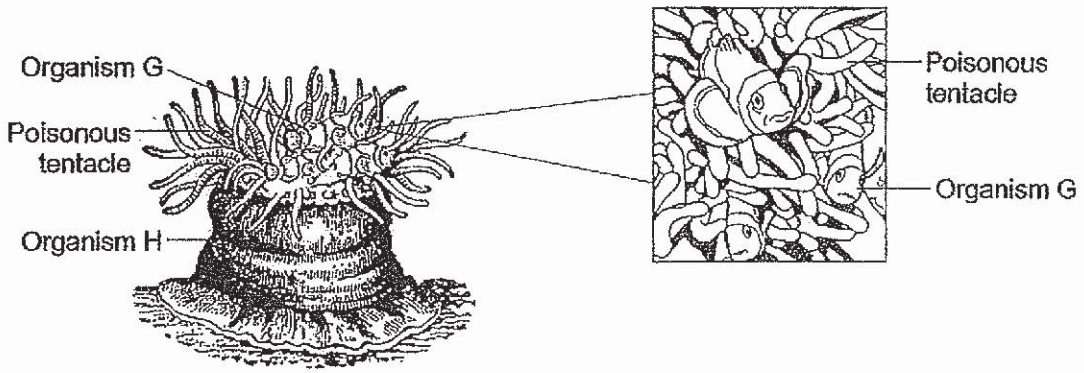
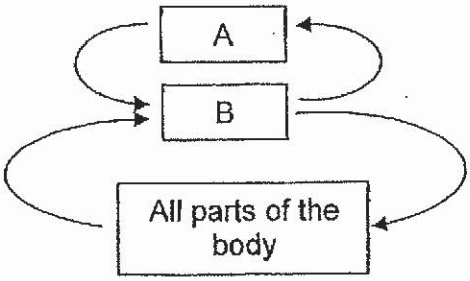
Organism G often gets preyed on by bigger fish. Thus, Organism G will hide among the poisonous tentacles of Organism H and move in between the tentacles. This will attract bigger fish to swim towards Organism H as Organism H is not able to move from place to place.

When the bigger fish touch Organism H's poisonous tentacles, they will be stung and they cannot move. The bigger fish will be stuck to Organism H.



(c) Based on the information above, explain how Organism G and Organism H depend on each other. [2m]

35. The diagram below shows how blood travels in our body.

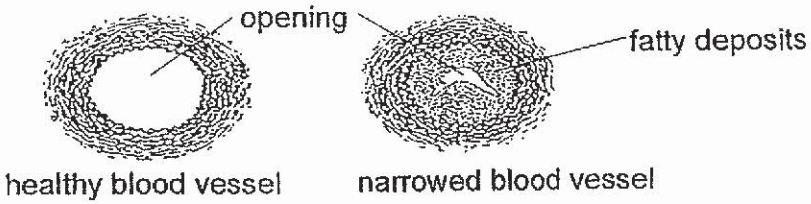


(a) Name the organs which A and B represent [1m]

Organ A: _____

Organ B: _____

The diagrams below show a healthy blood vessel and a narrowed blood vessel. Narrowed blood vessels leave a smaller opening for blood to flow through.



The table below shows the heart rate of two volunteers at rest and while jogging.

Volunteer	Heart rate (beats per minutes)	
	At rest	While running
X	70	100
Y	80	125

	1

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(b) Why do the volunteers have higher heart rate while running than at rest? [1m]

_____

_____

(c) Based on the information above, which volunteer, X or Y is most likely to have a narrowed blood vessel? Explain your answer. [2m]

_____

_____

	3

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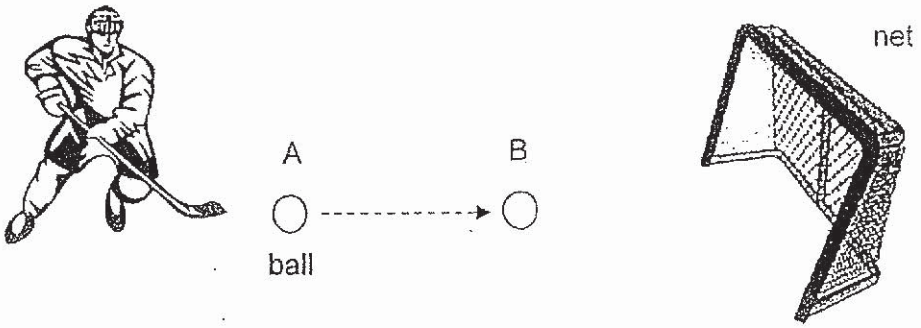
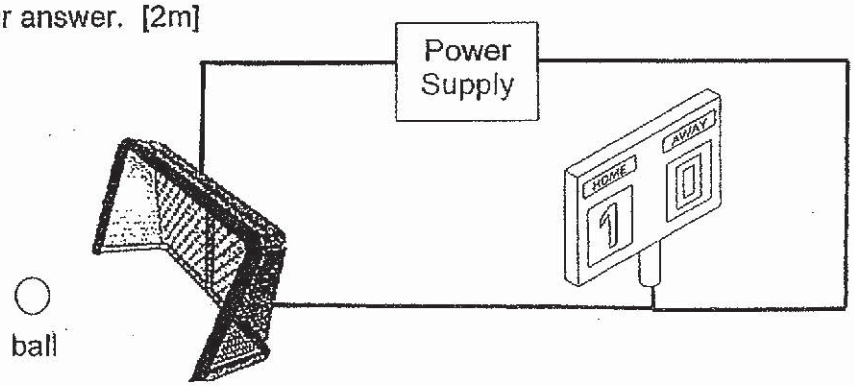
36. Maverick hit the ball gently at A before using more force to hit it into the net at B as shown below.



(a) State the effect of more force on the moving ball at B. [1m]

(b) Name two forces acting on the ball. [1m]

(c) The net is connected to an electrical scoring system that updates the score when the ball touches the net. Suggest a material for the ball so that the system can work. Explain your answer. [2m]



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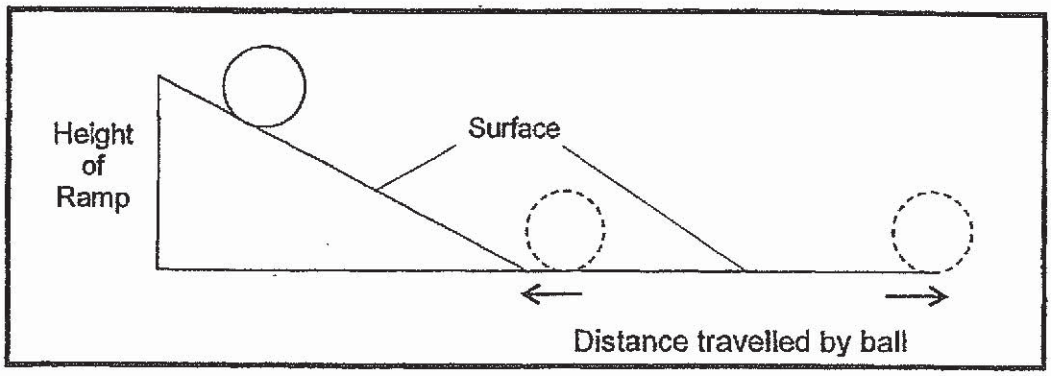
37. Indu carried out the experiment below using a ball and different surfaces.



She measured and recorded the distance travelled by the two balls on the ground.

	Distance travelled on Surface A	**Distance travelled on Surface B**
1st try	60 cm	11 cm
2nd try	62 cm	16 cm
3rd try	64 cm	12 cm
Average	62 cm	13 cm

The two surfaces are shown in the diagrams below.

Side view of Surface (i)

Side view of Surface (ii)

(a) Based on the results above, identify the side view of surface A and B. Write the correct letter **A** or **B** in the blanks (i) and (ii) above. [1m]

(b) Give a reason why the ball rolled for a shorter distance on surface B. [1m]

(c) Without changing the ball, name two other ways to make the ball move further. [2m]

_____

_____

(d) Indu concluded that friction is a force. Do you agree? Explain your answer. [1m]

_____

_____

	3

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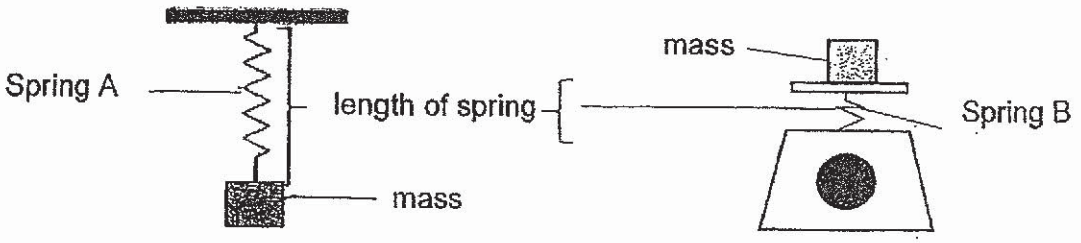
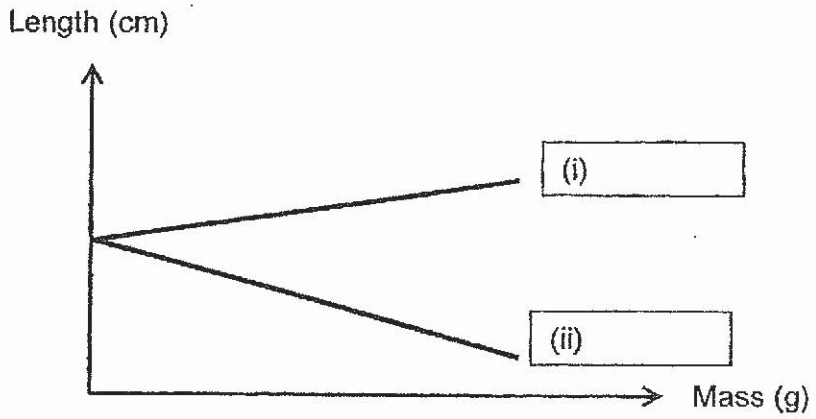
38. Miss Tan wanted to find out how the length of two springs, A and B, change when different masses were attached.



She measured the lengths of Springs A and B each time a mass was added. The graphs below show the results of the experiment.



(a) Identify on the graph Spring A and B by indicating A or B in the space above. [1m]

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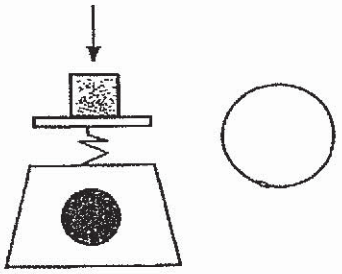
(b) As shown below, Miss Tan drew the direction of gravity acting on the mass as it was placed on Spring B.



Draw the direction of elastic force of Spring B in the circle - ◯ above. [1m]

(c) Miss Tan placed the following object of mass 130g on Spring B and found that the mass was different, as shown below.

Mass: 130g
(measured on another weighing scale)

Mass: 100g
(measured on Spring B)

Explain why the mass was different on Spring B. [2m]

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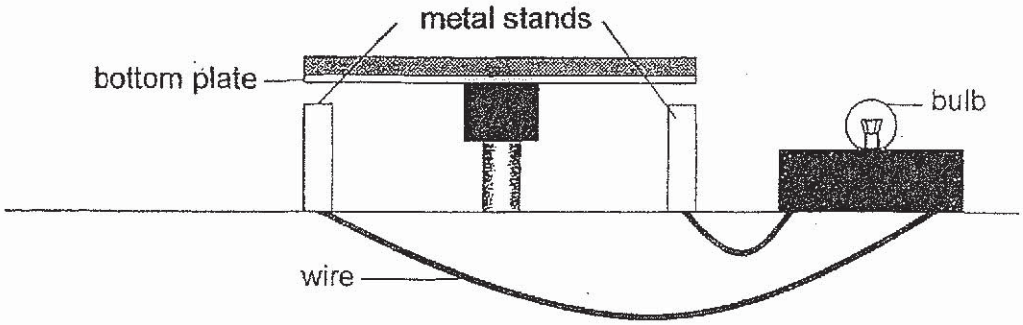
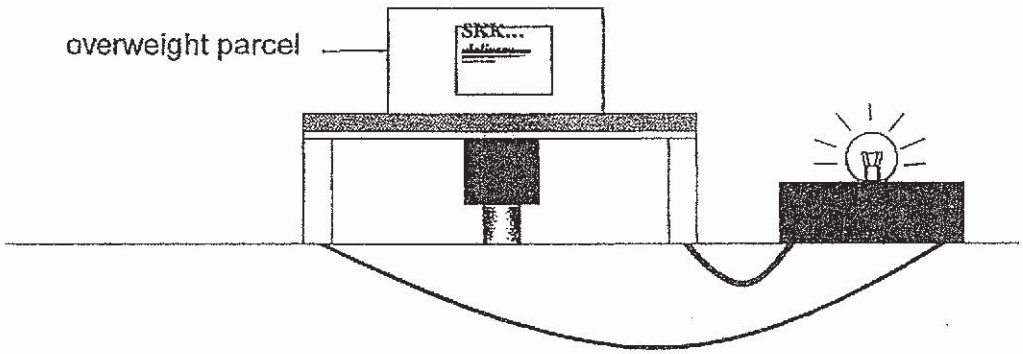
39. The machine shown below is used to check if a parcel is too heavy.



When an overweight parcel is placed on the machine, it pushes the bottom plate down fully, causing it to touch the metal stands. The bulb will then light up as shown below.



(a) Explain why the bulb does not light up when a parcel that is too light is placed on the machine. [1m]

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(b) A disadvantage of the machine is that it might still allow overweight parcels to pass through. Explain why the above situation is possible. [1m]

_____

_____

(c) A second bulb is added in parallel so that the machine stops overweight parcels from passing through. Explain how this will stop overweight parcels. [1m]

_____

_____

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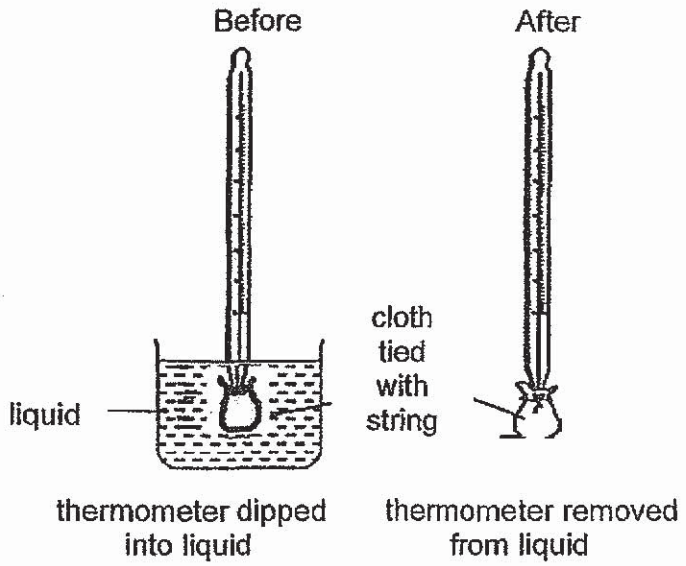
40. Noel carried out the below experiment at 25°C room temperature with three different liquids, A, B and C. He wrapped a piece of cloth around the bulb of a thermometer. The thermometer was put into the liquid first. After that, it was immediately removed.



He recorded the reading every two minutes and repeated the experiment with the other two liquids. His results are shown in the table below.

Time (min)	Thermometer reading (°C)		
	Liquid A	Liquid B	Liquid C
0	5	5	5
2	12	20	10
4	19	25	15
6	22	25	20

(a) Which of the liquids, A, B or C, evaporated the slowest? Explain your answer. [1m]

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Noel injured his knee during soccer practice and he used a spray with a cooling effect to numb his pain.

(b) Which of the liquids, A, B or C, would be the most suitable for the spray? Explain your answer. [2m]

_____

_____

~ End of Paper ~

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631

SCHOOL : RIVER VALLEY PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	2	4	1	2	1	3	1	1	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	3	2	2	4	2	3	3	4	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	3	2	3	3	1	4	3		

SECTION B

Q29)	Plants found at 30m received more sunlight. Thus, they were able to photosynthesize at a greater rate.
Q30)	a)Kinetic → Kinetic → Kinetic ↓ Electrical ← Kinetic b)The hamster did not run fast enough to convert kinetic energy to electrical energy to light up the bulb.
Q31)	a)Water sample X. Muddy water does not contain enough nutrients to carry out photosynthesis for the plant to grow. b)The duckweeds prevent sunlight from reaching the bottom of the lake. With less sunlight, fully submerged plants have slower rate of photosynthesis and make less food.

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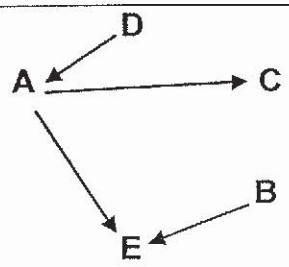
Q32)	a)  b)Organism C : When the population of organism A decreases, C has not enough food to feed on organism A. Hence, the population of organism C will decrease. Organism D : The population of organism D will increase as there will be lesser organism A to feed on organism D.
Q33)	a)The structural adaptation is what an animal has but behavioural adaptation is how an animal behaves in its environment. b)Most of the thin fur is in contact with the tree to lose heat faster from the body to the tree. Thick fur reduces heat gain from surrounding air.
Q34)	a)Bird Y. The young of bird Y has shelter and will not get wet on a rainy day. b)The structure of the nest helps the birds to hide from predators so that they will not be seen easily. Hence , the structure of the nest increases the survival rate of the eggs of bird Y. c)Organism G can use Organism H's poisonous tentacles to scare away predators and reduce chances of predators preying on it. Since organism H could not move from place to place, Organism G helps to attract the prey of H to get food.
Q35)	a)Organ A: Lungs Organ B: Heart b)When they are running, the body cells require more oxygen and digested food to produce more energy. There is a higher heart rate to produce more oxygen and digested food to the muscle cells.

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Q35)	c) Volunteer Y. The heart rate beating per minute is faster than volunteer X, so volunteer Y have to breathe more to transport more oxygen and digested food to the muscle cells.
Q36)	a)When there is more force, the ball will move faster. b)Gravitational force and frictional force. c)Iron. Iron is a good conductor of electricity, so electric current can flow through the circuit to update the score.
Q37)	a)i)A ii)B b)Surface B is rougher and thus, has more friction so a greater force is needed to overcome the friction between the ball and the surface, so it moved a shorted distance. c)Put lubricants such as oil on the surface and change the ramp to a smoother ramp such as iron. Raise the ramp. d)Yes. Friction opposes the motion of the object and changes direction.
Q38)	a)i)A ii)B b) c)Spring B is too stiff and not easily compressed so the mass is lower.
Q39)	a)When the parcel is too light, the bottom plate will not touch the metal stands . There is an open circuit and electric current cannot pass through to light up the bulb. b)The light bulb could be fused. c)If one bulb fuses, current can still flow through the other bulb.

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Q40)	a)Liquid C. The temperature is the lowest and the water will evaporate slower. b)Liquid B. The thermometer reading increased the fastest. This allows the knee to lose heat the fastest and liquid B gains heat fastest to cause cooling.

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Rosyth School
Mid-Year Examination 2019
SCIENCE
Primary 6

Name: _____ Total Marks: ____/56

Class: Pr 6 _____ Total time for Booklets A and B: 1h 45min

Register No. _____

Date: 16 May 2019 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 40, give your answers in the spaces given in the Booklet B.

* This booklet consists of 18 printed pages (including cover page).

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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(56 Marks)**

1. The table below shows some information on four living things, P, Q, R and S. A tick (✓) shows that the living thing has the characteristic.

	living thing			
characteristic	P	Q	R	S
Six legs	✓			
Hair as body covering		✓		
Make food				✓
Feathers as body covering			✓	

Based on the table above, which one of the following correctly identifies the groups the living things belong to?

	P	Q	R	S
(1)	insect	bird	plant	fish
(2)	insect	mammal	fish	plant
(3)	bird	plant	mammal	fish
(4)	insect	mammal	bird	plant

2. The diagram shows organisms in a food chain.

plant ⟶ insect ⟶ bird

What is the source of energy for this food chain?

(1) sun
(2) water
(3) oxygen
(4) carbon dioxide

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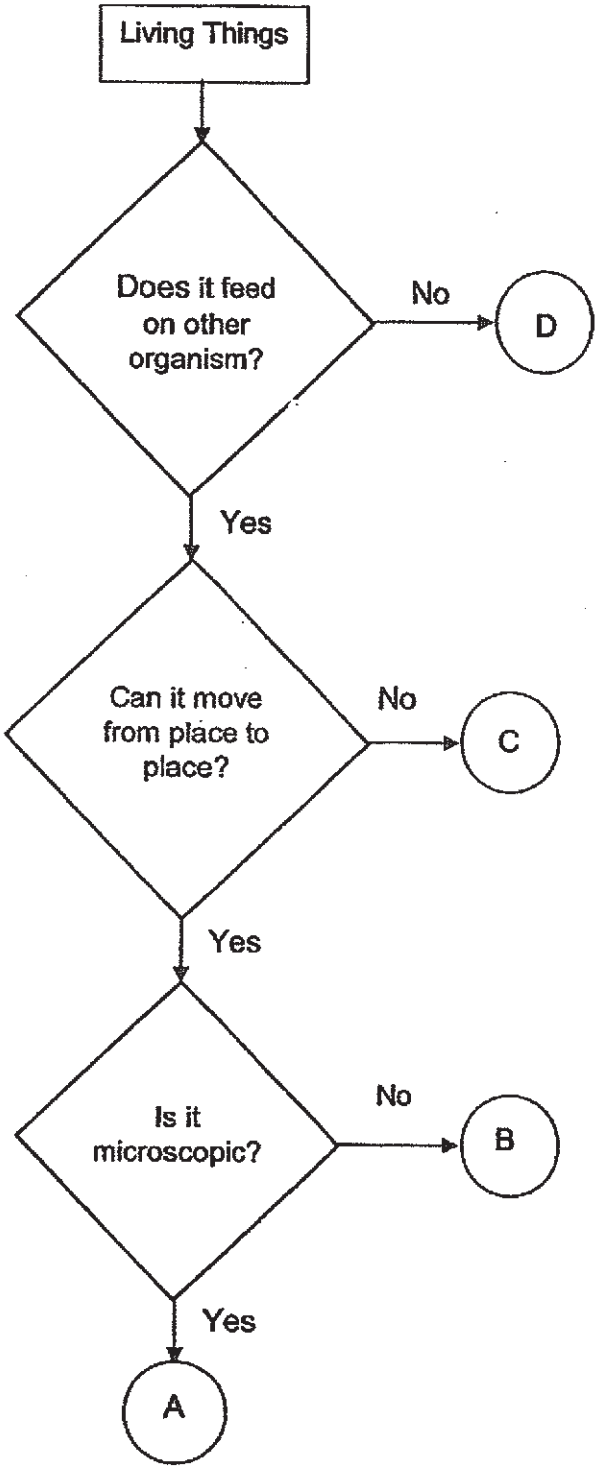
639

3. Refer to the flowchart below. A, B, C and D are groups of living things.



Which one of the above represents a mushroom?

(1) A
(2) B
(3) C
(4) D

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640

4. Andrew observed three cells X, Y, Z and completed the table below. A tick (✓) indicates that the part was observed in the cell.

parts of cell	cell X	cell Y	cell Z
cytoplasm	✓	✓	✓
cell wall	✓		✓
cell membrane	✓	✓	✓
chloroplasts			✓
nucleus	✓	✓	✓

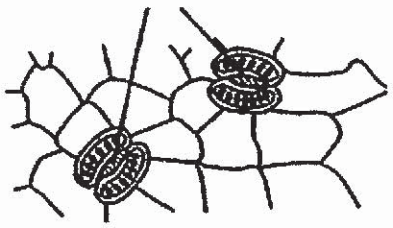
Based on what he had observed, he classified the three cells X, Y, Z into two groups.

Which one of the following shows the correct classification?

	animal cell	plant cell
(1)	X and Z	Y
(2)	Y	X and Z
(3)	X and Y	Z
(4)	Z	X and Y

5. The diagram below shows tiny openings called stomata found mostly on the underside of the leaves.

stomata



Which one of the following describes the function of the stomata?

(1) It traps sunlight to make food.
(2) It transports water from the leaves to all parts of the plant.
(3) It transports food made in the leaves to all parts of the plant.
(4) It takes in carbon dioxide from the surrounding during photosynthesis.

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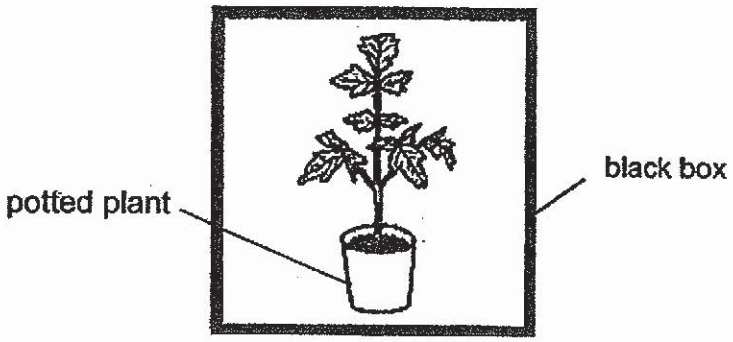
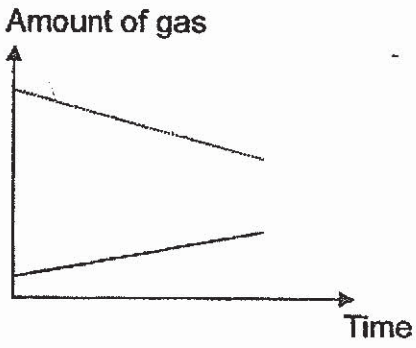
641

6. A potted plant is placed in a black box. The amount of oxygen and carbon dioxide in the box is measured over a few hours.

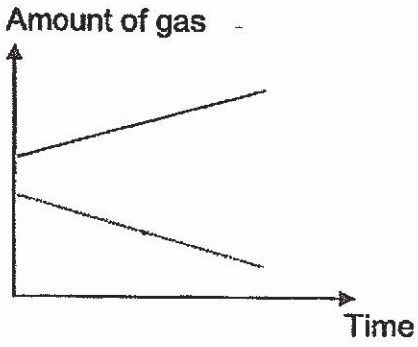


Which one of the following graphs correctly shows the amount of oxygen and carbon dioxide in the box over time?

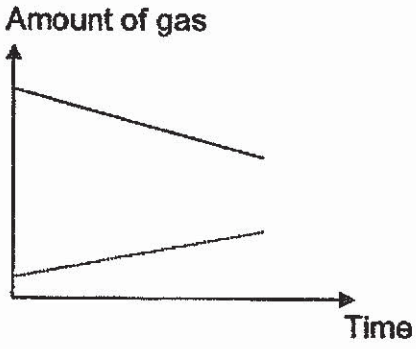
(1)



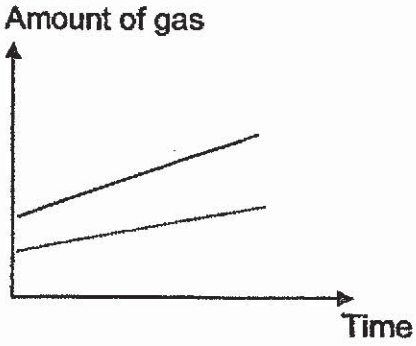
(2)

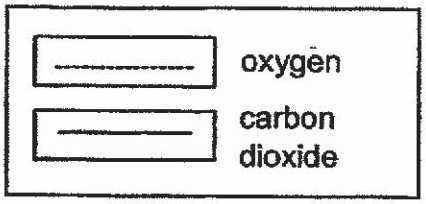


(3)



(4)





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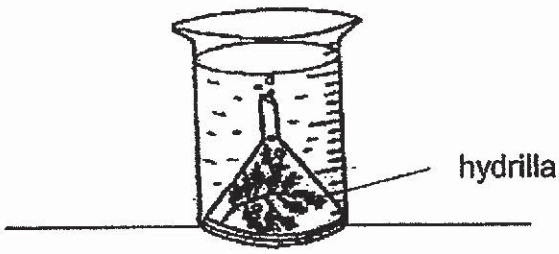
642

7. Jennifer set up an experiment, as shown in the diagram below.

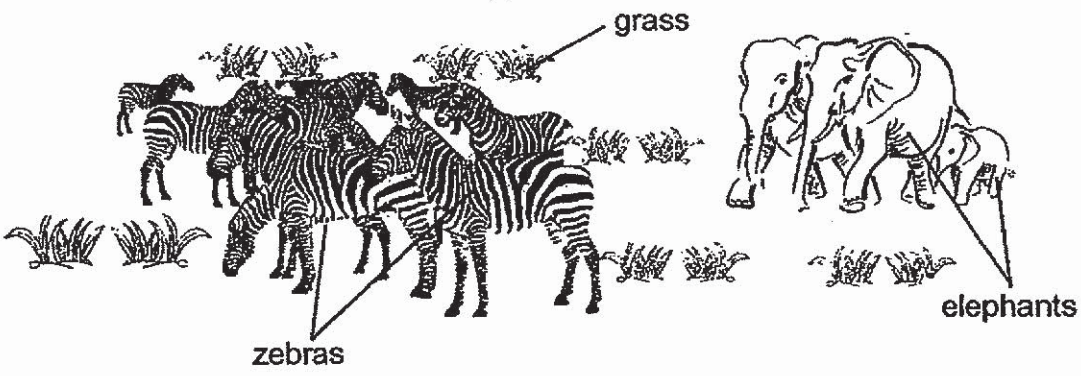


She prepared three similar set-ups and left them at three locations, X, Y and Z in her garden, from 12 noon to 1pm. She counted the number of bubbles produced by the hydrilla.

The rate of photosynthesis of the hydrilla was different at X, Y and Z. This was most likely caused by the amount of _____.

(1) water
(2) light
(3) carbon dioxide
(4) chlorophyll

8. The diagram shows a grassland habitat.



Which one of the statements is not true?

(1) The group of grass forms one population.
(2) The group of grass and zebra form two populations.
(3) The groups of elephant and zebra form two communities.
(4) The groups of grass, zebra and elephant form one community.

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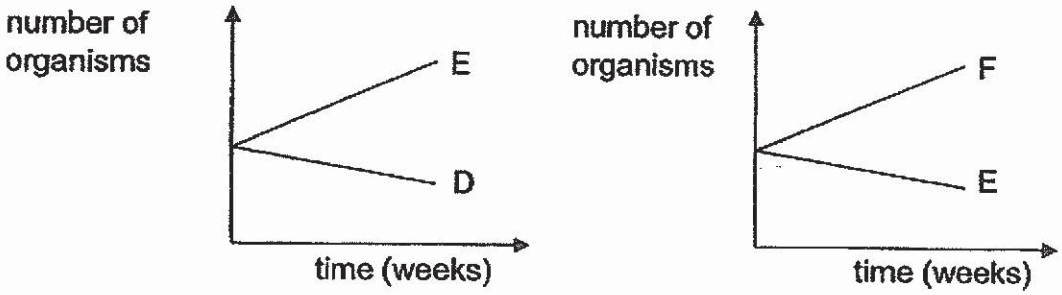
643

9. Ben caught three different types of organisms, D, E and F, from the school pond. One of them is a plant-eater. He put equal number of water plants into two similar tanks. In one tank, he put the same number of organisms E and D and in the other tank, he put the same number of organism E and F.

He monitored both set-ups over a few weeks and recorded the number of organisms left in each tank at the end of each week. The graphs below show how the number of organisms changed over time. There was no dead organisms in the tanks.



Which one of the following food chains correctly shows the above food relationships?

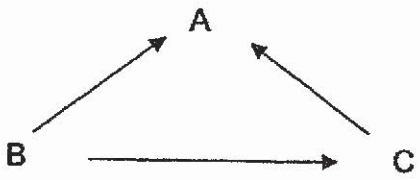
(1) Water plant → E → F → D

(2) Water plant → D → F → E

(3) Water plant → E → D → F

(4) Water plant → D → E → F

10. The letters, A, B and C below represent organisms in a community and the arrows show the direction of the flow of energy.



Which of the following correctly represents A, B and C in the community?

	A	B	C
(1)	plants	decomposers	animals
(2)	animals	decomposers	plants
(3)	plants	animals	decomposers
(4)	decomposers	plants	animals

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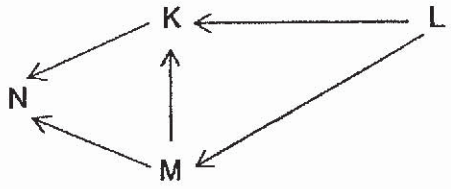
644

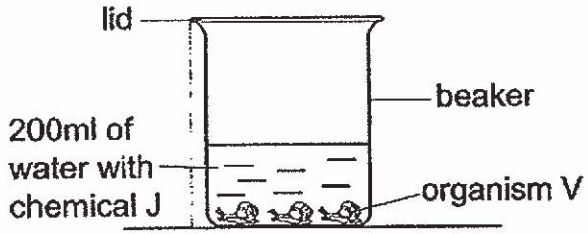
11. The food web below shows the food relationships between four living organisms.



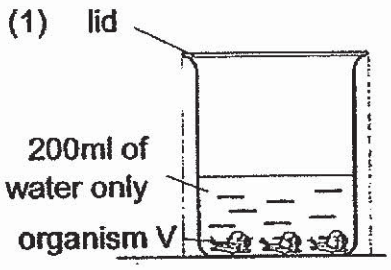
Which one of the following classifications is correct?

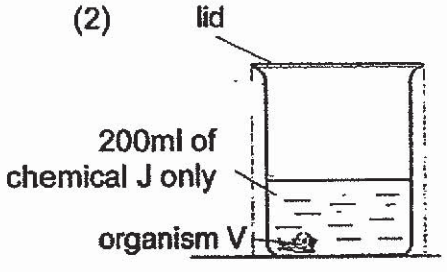
	producer	prey	predator	prey and predator
(1)	L	N	M	K
(2)	N	L	K	M
(3)	L	M	N	K
(4)	N	K	L	M

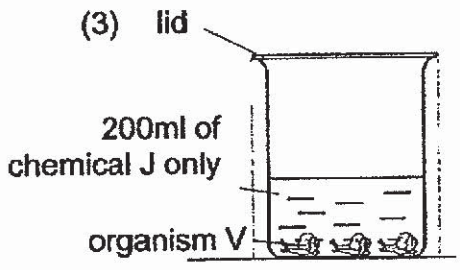
12. Daphne wanted to find out if the presence of chemical J in water would affect the growth of organism V. She used the set-up below for her experiment.

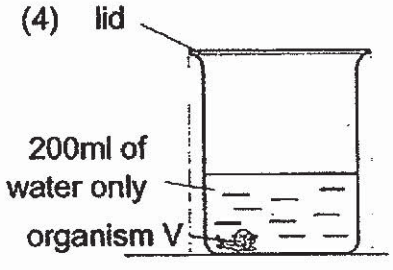


Which one of the following set-ups should she use as a control for her experiment?

(1)


(2)


(3)


(4)


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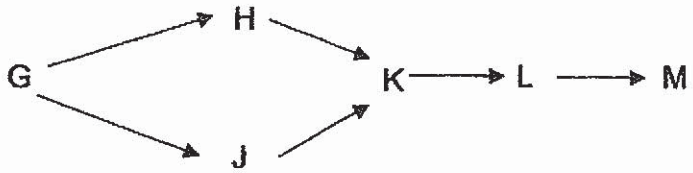
645

13. Study the food web below.



The whole population of K is wiped out by a disease. Which one of the following populations will be affected immediately?

(1) G
(2) H
(3) L
(4) M

14. Angie wanted to find out how a certain factor will affect the growth of goldfish. She listed the following factors.

W: Amount of food
X: Size of fish tank
Y: Number of goldfish
Z: Temperature of surrounding

She proposed several experiments which she would like to conduct in the table below.

Which one of the following is possible to find out the effect of a certain factor on the growth of goldfish?

	aim of the experiment	variables kept constant
(1)	To find out if the size of the fish tank affects the growth of the goldfish.	W, X and Z only
(2)	To find out if temperature of water affects the growth of the goldfish.	W, X and Y only
(3)	To find out if overcrowding affects the growth of the goldfish.	W, X and Y only
(4)	To find out if the amount of food given affects the growth of the goldfish.	X and Z only

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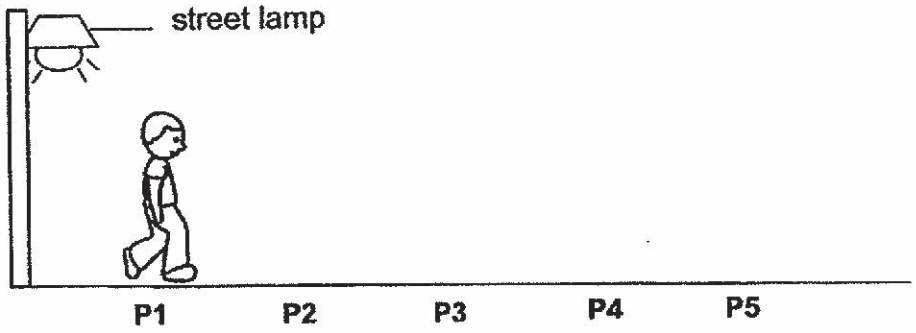
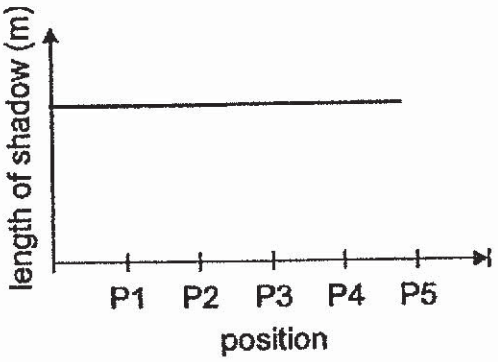
646

15. Zachary walked past a lighted street lamp from point P1 to P5 on a dark night.

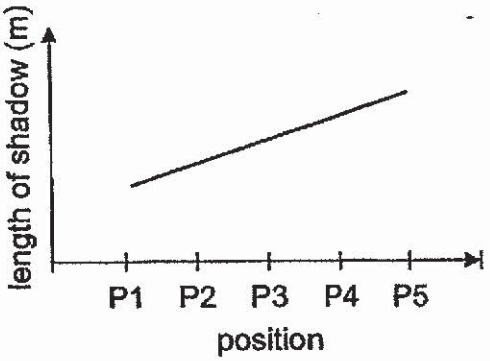


Which one of the following graphs best represents the changes in the length of Zachary's shadow as he walked from point P1 to P5?

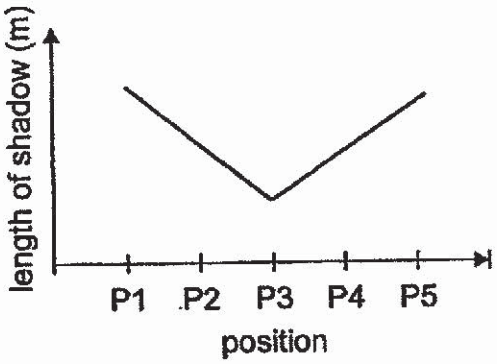
(1)



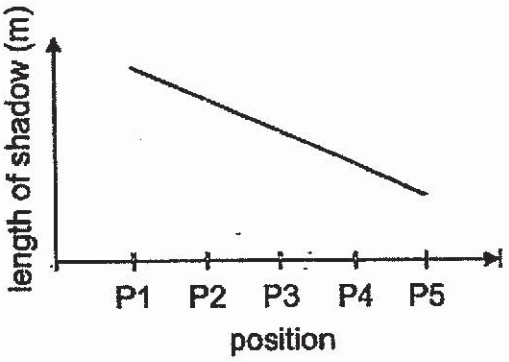
(2)



(3)



(4)



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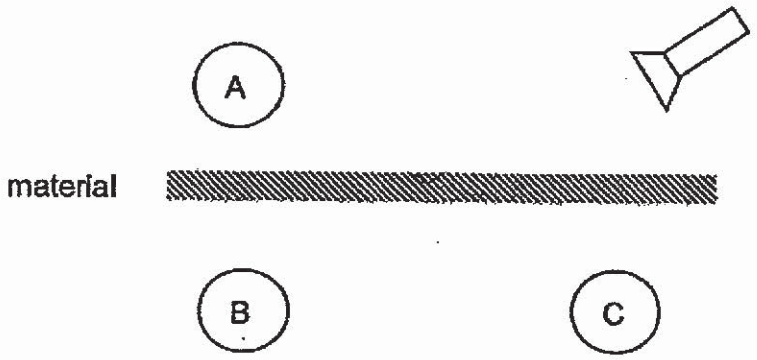
16. There is a special material that can be seen by motorist from a far distance during day and night. Daniel used a similar material to measure the light intensity using a light sensor at positions A, B and C.

He placed the light sensor at A and measured the light intensity as shown below. He repeated the experiment by placing the light sensor at B followed by C.



At which position(s) would the light intensity be the highest for this special material?

(1) A only
(2) B only
(3) A and B only
(4) B and C only

17. Which one of the following statements about energy is false?

(1) Energy can be stored.
(2) Energy can be used up.
(3) Energy is the ability to do work.
(4) Energy can be transferred from one object to another.

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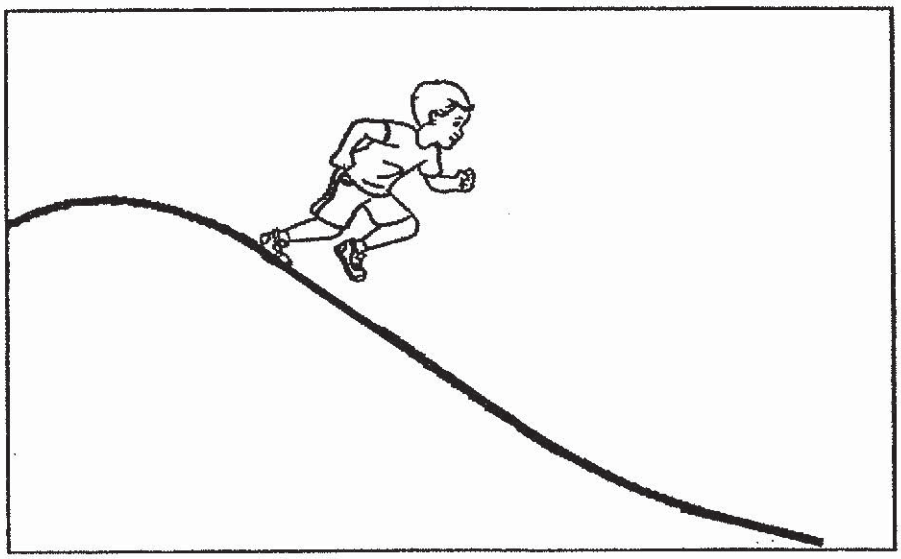
648

18. Terry started to run down a slope as shown below.



Which one of the following describes the changes in kinetic and potential energy as he runs down the slope?

	kinetic energy	potential energy
(1)	decreases	increases
(2)	increases	decreases
(3)	remains the same	decreases
(4)	increases	remains the same

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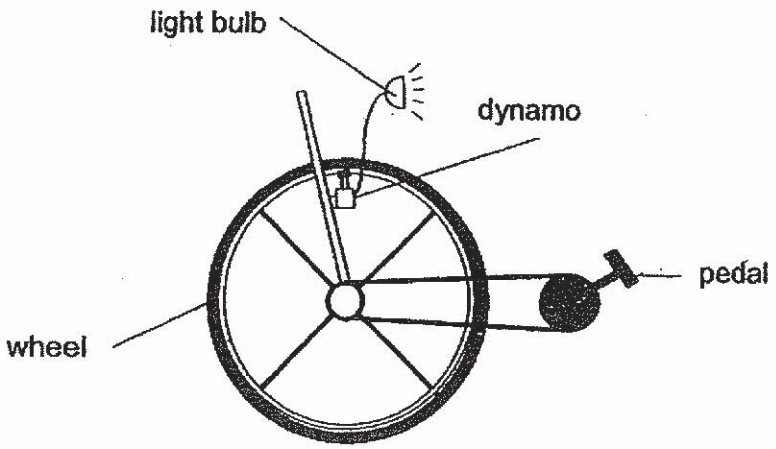
649

19. A dynamo is a gadget that converts kinetic energy into electrical energy. Some pupils fixed a dynamo to a wheel as shown below and began turning the wheel. They observed that the bulb lit up after a while. The pupils then turned the pedal of the wheel at different speed and measured the intensity of the light.



Which one of the following tables correctly shows the most likely results of their investigation?

(1)

speed of wheel (number of turns per min)	intensity of light (lux)
50	60
70	80
90	130
110	180

(2)

speed of wheel (number of turns per min)	intensity of light (lux)
50	60
70	130
90	180
110	80

(3)

speed of wheel (number of turns per min)	intensity of light (lux)
50	180
70	80
90	60
110	130

(4)

speed of wheel (number of turns per min)	intensity of light (lux)
50	180
70	130
90	80
110	60

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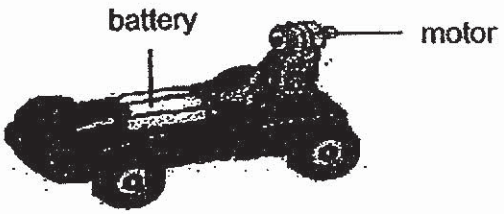
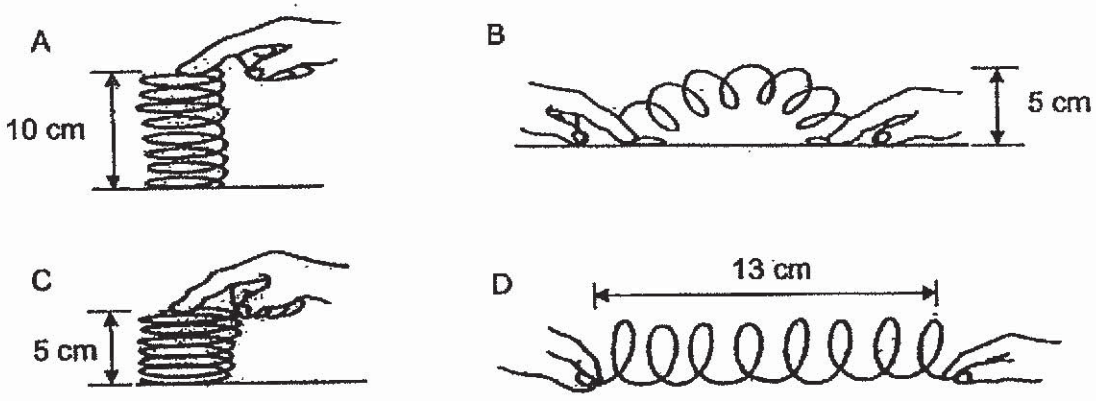
20. The diagram below shows a battery-operated toy car. When the toy car is switched on, it moves.



Which one of the following correctly shows the energy conversion taking place when the toy car moves?

(1) potential energy → kinetic energy
(2) kinetic energy → electrical energy
(3) potential energy → electrical energy → kinetic energy
(4) electrical energy → potential energy → kinetic energy

21. The original length of a spring is 10 cm. Wei Ling did the following actions as shown below.



For which actions, the spring would possess potential energy?

(1) A and C only
(2) B and D only
(3) B, C and D only
(4) A, B, C and D

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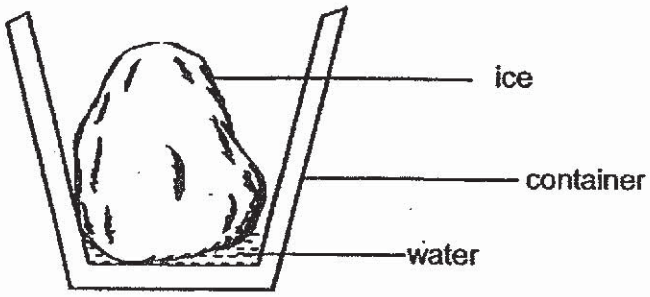
651

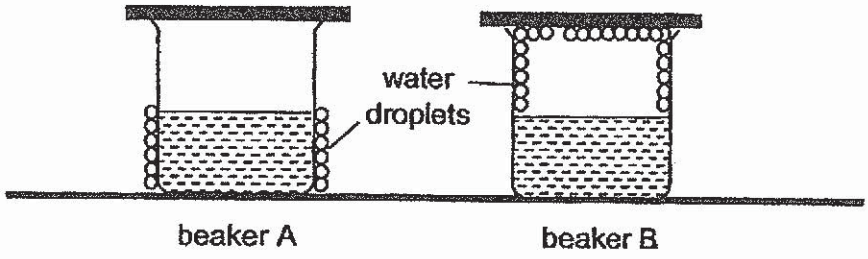
22. A block of ice was placed in an empty container and left in the kitchen as shown below.



What will happen after some time?

(1) The temperature of the block of ice will increase.
(2) The temperature of the block of ice will decrease.
(3) The temperature of the water around the block of ice is 0°C.
(4) The temperature of the water around the block of ice is less than 0°C.

23. Study the diagrams of beaker A and beaker B which were left on the table for 15 minutes.



Which one of the following statements is true?

(1) Beaker A is a better conductor of heat than beaker B.
(2) The temperature of the water in both glasses is the same.
(3) The water in beaker A has a higher temperature than the water in beaker B.
(4) The water droplets formed in beaker B is hotter than the water droplets formed in beaker A.

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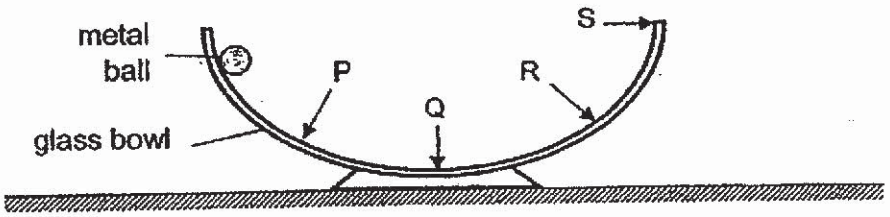
24. A driver finds that it is more difficult to drive his car uphill. Which of the following forces below slow the car down?

A: Frictional force
B: Magnetic force
C: Gravitational force
D: Elastic spring force

(1) A and C only
(2) B and C only
(3) A, B, and C only
(4) B, C and D only

25. Ravi released a metal ball at a height in the bowl as shown below. He observed the metal ball rolled to a position then it rolled back.



At which position would the metal ball roll back the first time it was released?

(1) P
(2) Q
(3) R
(4) S

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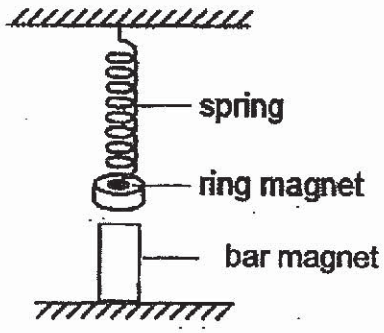
653

26. Refer to the diagram below. At first a ring magnet was hung on a spring. Then a bar magnet was placed under the ring magnet and the spring stretched less than before.

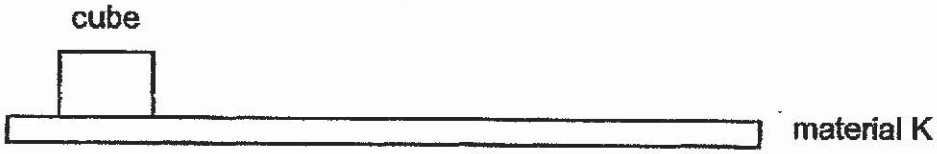


Which of the following force(s) is/are acting on the bar magnet?

A: Friction
B: Gravitational
C: Magnetic

(1) B only
(2) C only
(3) B and C only
(4) A, B and C

27. Jessie conducted an experiment using the set-up below.



Jessie gave the cube an identical push. The cube moved a distance along the surface of material K before stopping. She repeated the experiment with materials L, M and N. The table below shows her results.

material	distance moved before stopping (cm)
K	8
L	12
M	14
N	16

Jessie added same amount of oil on the four materials, K, L, M and N. Which material will be most slippery?

(1) K
(2) L
(3) M
(4) N

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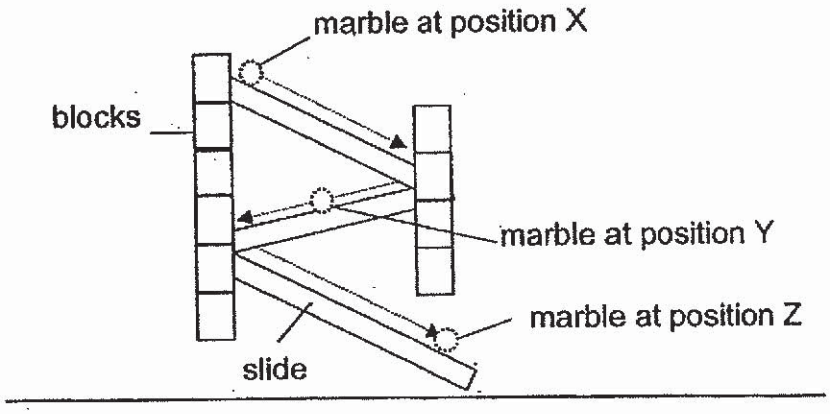
654

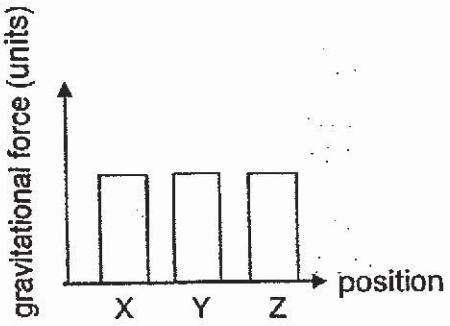
28. Mary used some blocks and slides to build the set-up as shown below.



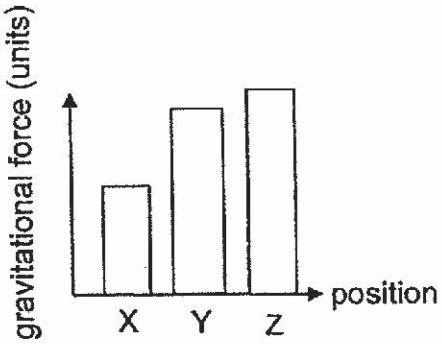
She released a marble at position X and it rolled to position Y and then to position Z.

Which one of the following graphs correctly shows the amount of gravitational force acting on the marble at positions X, Y and Z?

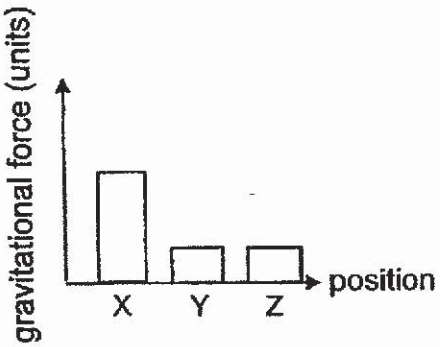
(1)



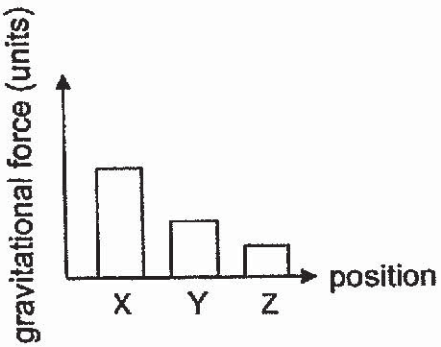
(2)



(3)



(4)



End of booklet A

(Go on to Booklet B)

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Rosyth School
Mid-Year Examination 2019
SCIENCE
Primary 6

Name: _____ Total Marks: 100

Class: Pr 6 ____ Total time for Booklets A and B: 1h 45min

Register No. _____

Date: 16 May 2019 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 40, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 14 printed pages (including cover page).

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For questions 29 to 40, write your answers in the space provided. **(44 Marks)**

29 Read the following statements about mammals.

A: An animal is a mammal because it has 4 legs.
B: An animal is a mammal because it can lay eggs.
C: An animal is a mammal because it has hair or fur on its outer covering.

(a) Which statement would you agree with the most? Explain why. [1]

Study the classification table.

animals	
group 1	group 2
reptiles	fish

(b) Name the characteristics that will help you put reptiles and fish into two groups as shown above. [1]

Reptiles: _____

Fish: _____

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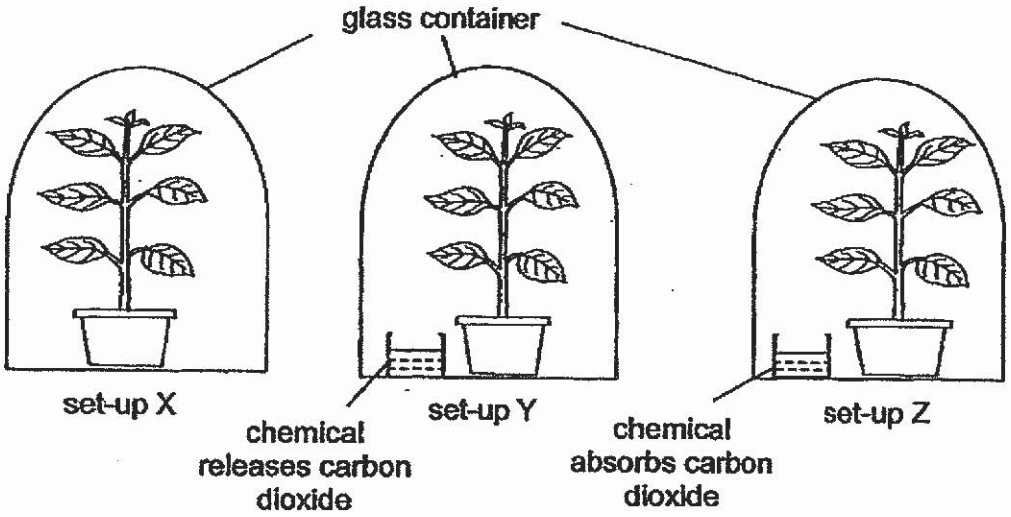
30 Andy conducted an experiment with 3 set-ups, X, Y and Z, as shown below. Similar plants were put in glass containers, watered and placed in an open field for a few hours during the day.



(a) What is the changed variable in the above experiment? [1]

(b) Which set-up X, Y or Z will contain the most amount of oxygen after a few hours? Explain your answer. [1]

(c) In which set-up, will the plant not survive after some time? Explain your answer. [1]

(d) What is the purpose of having set-up X? [1]

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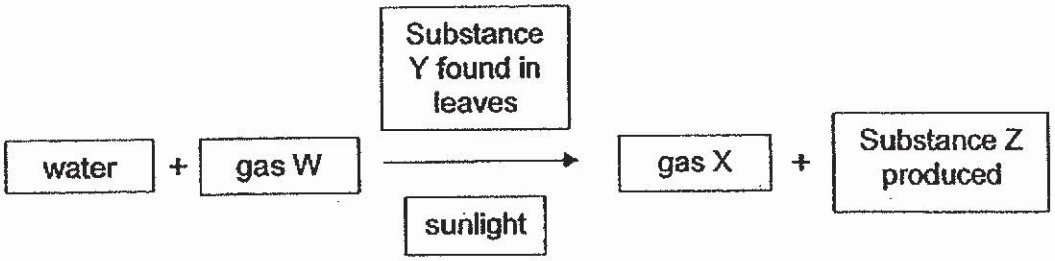
31 Simon drew the diagram below showing how plants make food.



(a) Identify the following: [2]

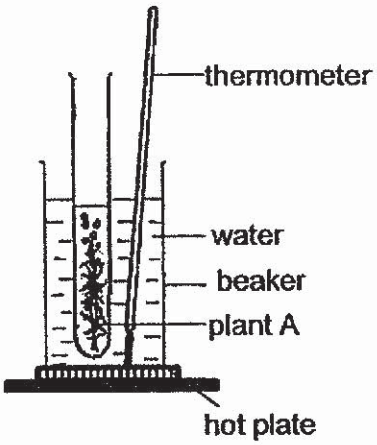
gas W: _____

gas X: _____

Substance Y: _____

Substance Z: _____

After that, Simon went to find out how the temperature of the water affects the number of bubbles produced by plant A in one minute. He set up the experiment as shown below in a bright room.



(b) What is the purpose of the hot plate? [1]

_____

_____

(Question 31 continues on page 5)

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He collected the data and recorded his results in the table below.

Temperature of water (°C)	10	20	30	40	50
No. of bubbles of gas X per minute	2	8	10	6	2

(c) State the relationship between the temperature of water and the rate of photosynthesis [2]

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32 Farah used sensors to measure the light intensity and temperature of air in two different habitats, garden and open field. She recorded the readings in the table as shown below.

habitat	light intensity (lux)				temperature of air (°C)			
	8 am	11 am	2 pm	5 pm	8 am	11 am	2 pm	5 pm
garden	1345	2006	2879	1389	30	32	33	29
open field	1552	2881	3356	1775	31	33	34	30

(a) Based on the data above, decribe how the temperature of air is affected by light intensity. [1]

(b) Name two other physical factors that can affect the temperature of air in the two habitats? [2]

33 In a pond, animals and plants depend on one another to form the pond community.

(a) Besides providing food for the animals in the pond, suggest two other reasons why plants are important to the animals [2]

i)

ii)

(b) If there is too much algae growing on the surface of the pond, how will this growth affect the plants growing inside the pond? [1]

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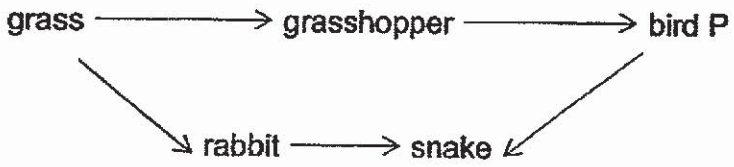
34 Study the food web below.



(a) Identify one food chain from the above food web. [1]

(b) Explain why grass is important to all the organisms in the above food web. [2]

(c) A population of bird Q was introduced into the habitat. James said that due to this introduction, the bird P population will decrease while John said that bird P population will increase.

i) Explain how it is possible for James to be correct. [1]

ii) Explain how it is possible for John to be correct. [1]

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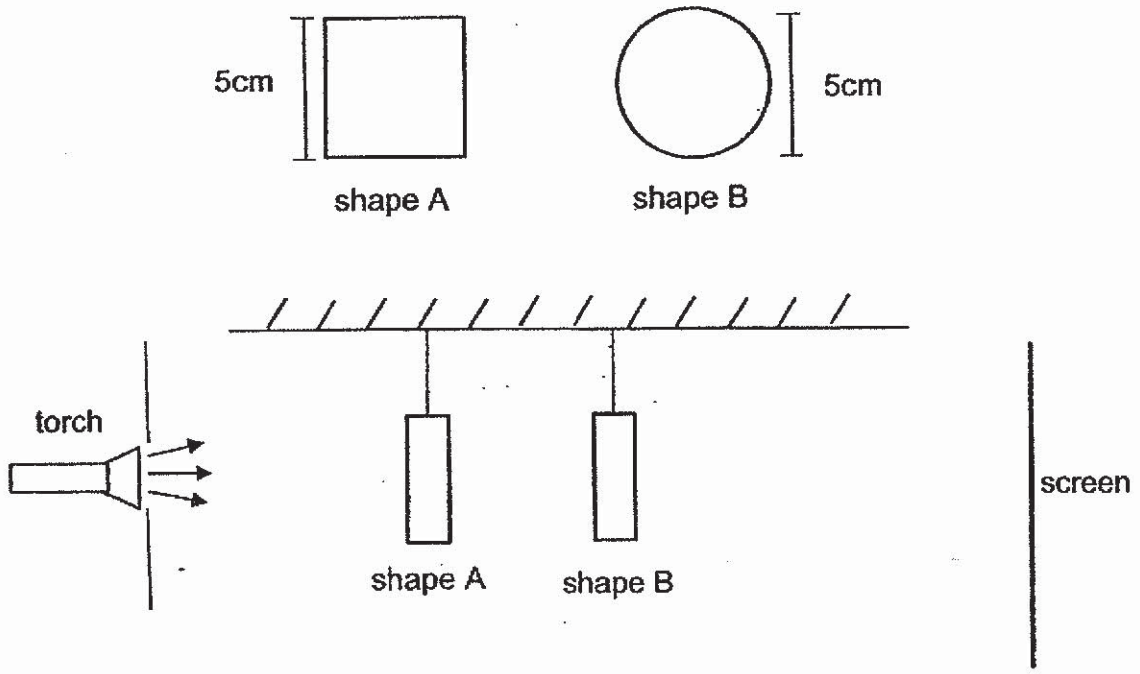
35 The set-up below shows light shining on two shapes A and B made of cardboard. They are placed at different distances from the torch.



(a) Draw the shadow of the object on the screen provided below. [1]

(b) Explain your answer in (a). [1]

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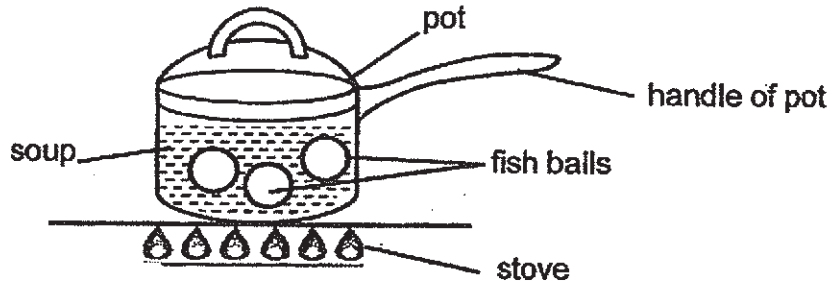
36 Benny put some fish balls at room temperature into a pot of boiling soup as shown in the diagram below.



(a) The temperature of the soup decreased after adding the fish balls. Explain why. [1]

_____

_____

The diagram below represents a fish ball. Temperature was recorded at positions, A and B of the fish ball in the soup as shown below.

(b) The temperature at point A of the fish ball is lower than at point B of the fish ball. State the property of heat to explain the above observation. [1]

_____

_____

(c) Give an example of materials to make the pot and the handle of the pot. [2]

Pot: _____

Handle of pot: _____

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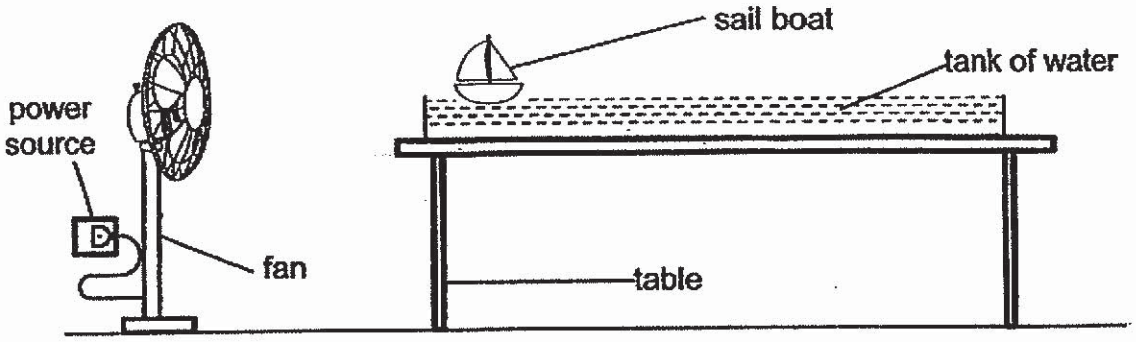
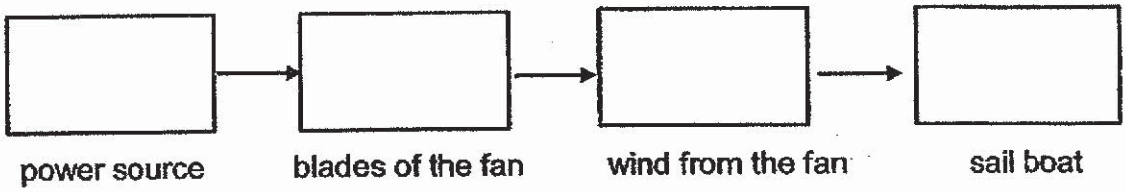
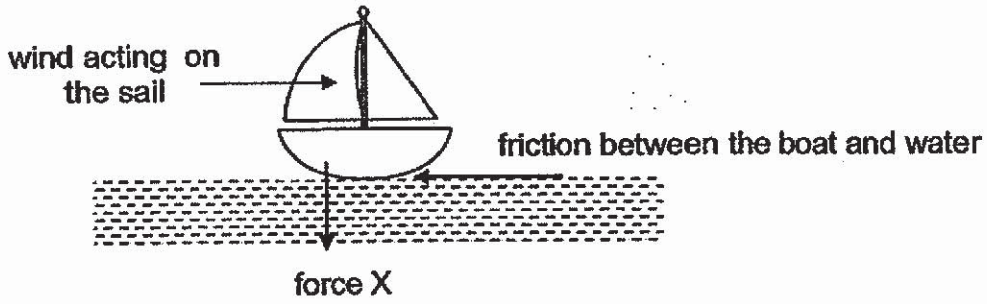
37 Study the set-up below.



Sarah switched on the fan which was connected to the power source and observed that the sail boat moved across the tank of water.

(a) Write down the energy conversion for the above observation in the boxes below. [1]





(b) Name the force X. [1]

_____

(c) If Sarah increase the size of the sail, explain how this will be an advantage. [2]

_____

_____

_____

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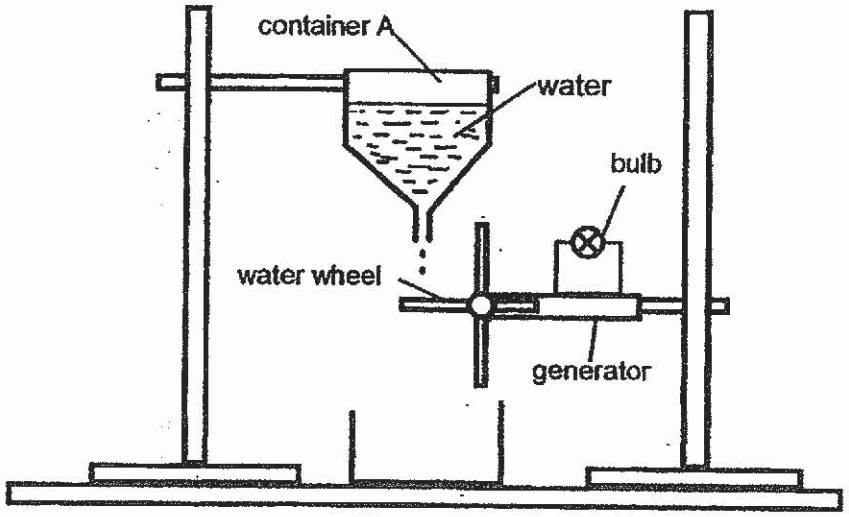
38 Study the set-up below. When the water dripped from container A, the water wheel would spin and the generator would generate energy for the bulb to work.



(a) Name the source of energy for the above set-up. [1]

(b) Using the concept of energy conversion, describe how the turning wheel cause the bulb to work. [2]

(c) Using the same items in the set-up, suggest an action and give a reason why the action taken enables the bulb to light up more brightly. [2]

Action taken:

Reason:

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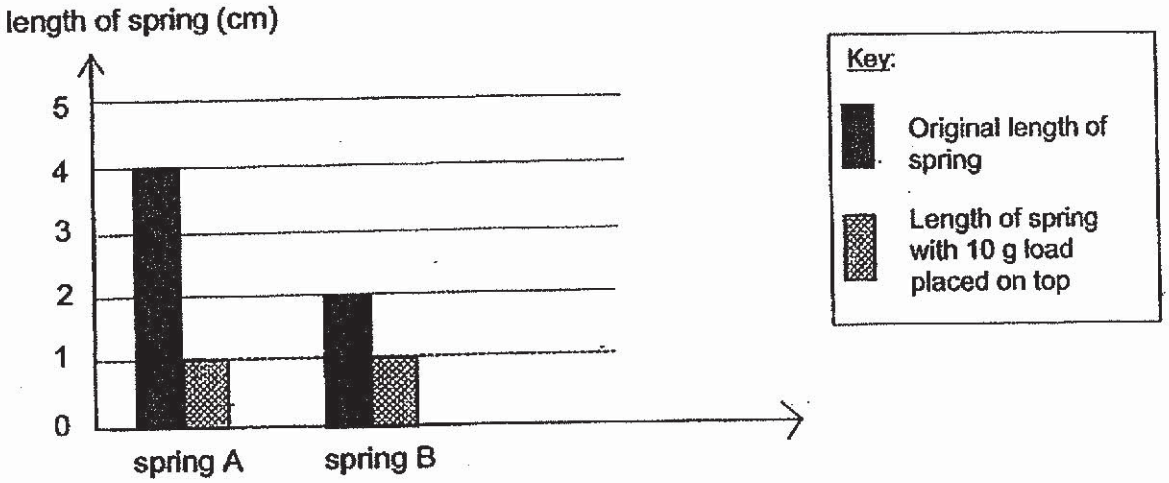
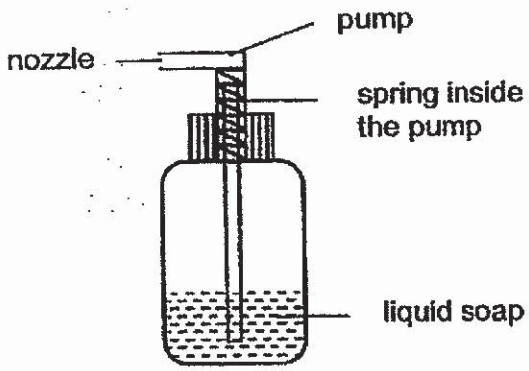
39 Alastair conducted an experiment to investigate the effect of a force on two different springs A and B. He measured the length of the spring before and after a 10g load was placed on top of each spring. The results are shown in the graph below.



(a) Give a reason why the compression of spring A is more than spring B. [1]

Study the bottle, which is being used to dispense liquid soap.



When the pump is being pushed down, the spring compresses and pushes the air and liquid soap into the bottle.

(b) Describe what will happen when the pump is released. [2]

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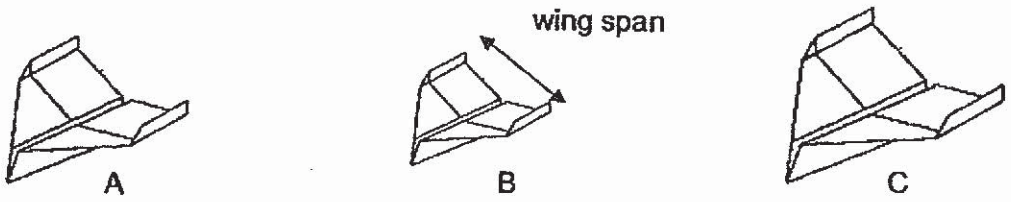
40 Steven took three identical pieces of paper and made three similar planes of different sizes as shown below.



He had a paper plane launcher that is able to throw paper planes. He used the launcher to throw the three paper planes. He recorded the time taken for each plane to stay in the air.

The table below shows the results.

plane	wing span of the paper plane (cm)	time for plane to stay in the air (sec)
A	4	20
B	3	18
C	5	25

(a) Why must he use a plane launcher to throw the paper plane? [1]

(b) Based on the results above what can Steven conclude about the experiment? [1]

(Question 40 continues on page 14)

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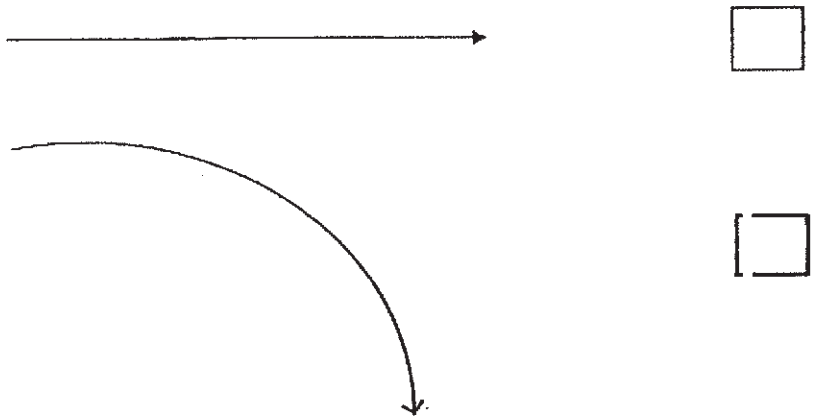
(c) (i) Will the pathway taken by the plane be straight or curved? Put a tick in the correct box. [1]



(ii) Explain why. [1]

_____

_____

_____

End of Paper

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SCHOOL : ROSYTH PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	1	3	2	4	1	2	3	4	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	1	3	2	2	1	2	2	1	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	3	4	1	3	3	4	1		

SECTION B

Q29)	a)Statement C. Only mammals have hair or fur on its outer covering. b)Reptiles: has lungs Fish : has gills
Q30)	a)The amount of carbon dioxide in the glass containers. b)Set up Y. Set up Y will have the most carbon dioxide, allowing the plant in it to photosynthesise at the fastest rate, producing the most amount of oxygen. c)Set up Z. Set-up Z has a chemical that absorbs carbon dioxide, so there will be no carbon dioxide soon for the plant in set-up Z to photosynthesise and make food, causing it to not survive. d)To compare and confirm that the amount of carbon dioxide is the only variable affecting the rate of photosynthesise.
Q31)	a)gas W : carbon dioxide gas X : oxygen Substance : chlorophyll

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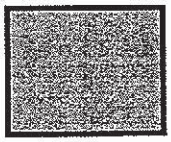
	Substance : sugar b)The hot plate heats up the water to increase the temperature of the water. c)From 10℃ to 30℃as the temperature of water increases, the rate of photosynthesis also increases, but from 40℃to 50℃, as the temperature of water increases, the rate of photosynthesis decreases.
Q32)	a)As the light intensity increases, the temperature of air also increases. b)Amount of water and the wind speed.
Q33)	a)i)Plants give out oxygen for the animals during photosynthesis. ii)Plants also provide shelter for the animals. b)If there is too much algae growing on the surface of the pond, they will block out most light from the plants growing inside the pond, so they will photosynthesise at a slower rate and make lesser food.
Q34)	a)grass→rabbit→snake b)The grass is a food produce and will make its own food. The other organisms depend directly or indirectly on it for food. c)i)Bird Q feds on bird P so its death rate becomes higher than its birth rate. ii)Bird P is the predator of bird Q so bird P can also feed on bird on bird Q, so bird P will have more food and thus the population of bird P will increase.
Q35)	a)  b)Shape A blocks all the light.
Q36)	a)The fish balls gained heat from the soup. b)Heat travels from a hotter place to a cooler place. c)Pot : metal Handle pf pot : plastic
Q37)	a)Electrical energy → kinetic energy → kinetic energy → kinetic energy b)Gravitational force.

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	c)As the size of the sail increases, the amount of wind in contact with the sail will increase. More kinetic energy of the wind will be converted to more kinetic energy of the boat to move it further.
Q38)	a)The water in container A. b)The kinetic energy of the turning wheel will be converted into electrical energy of the generator, allowing the bulb to work. c)Action taken : Place the water wheel lower. Reason :More kinetic energy of the dripping water will be converted to more electrical energy of the generator, allowing the bulb to lit more brightly.
Q39)	a)Spring A is thicker than spring B. b)When the pump is released, the spring inside the pump will go back to its original length.
Q40)	a)To ensure that the amount of force acting on the paper planes is the same for each set up. This is to compare and confirm that the wing span of the paper plane is the only variable affecting the time for the paper planes to stay in the air. b)As the wing span of the paper plane increase, the time for the plane to stay in the air also increase. c)i) ii)The gravitational pull of the earth acted on the paper plane, causing it to be pulled to the ground. Thus , the pathway taken by the plane will be curved.

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2019

NAME: _____ ( ) DATE: 14 May 2019

CLASS: PRIMARY 6 SY / C / G / SE / P

Parent's Signature:

_____

SCIENCE

BOOKLET A

28 questions

56 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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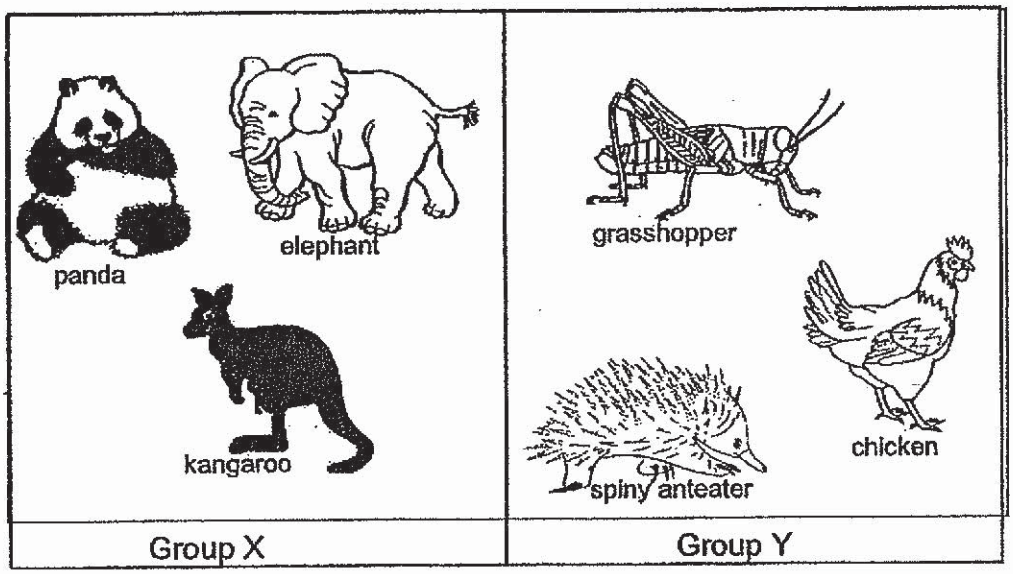
Part I (56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Roger classified the animals below into two groups, X and Y.



He grouped them according to:

1) how they are reproduce
2) their outer covering
3) what they eat
4) where they live

2. Which of the following is true about reproduction in both plants and animals?

A: Eggs in both plants and animals are the female reproductive cells.

B: The pollen grains and testes are the male reproductive cells.

C: After fertilisation, plants develop seeds and animals develop their youngs.

1) A and B only
2) B and C only
3) A and C only
4) A, B and C

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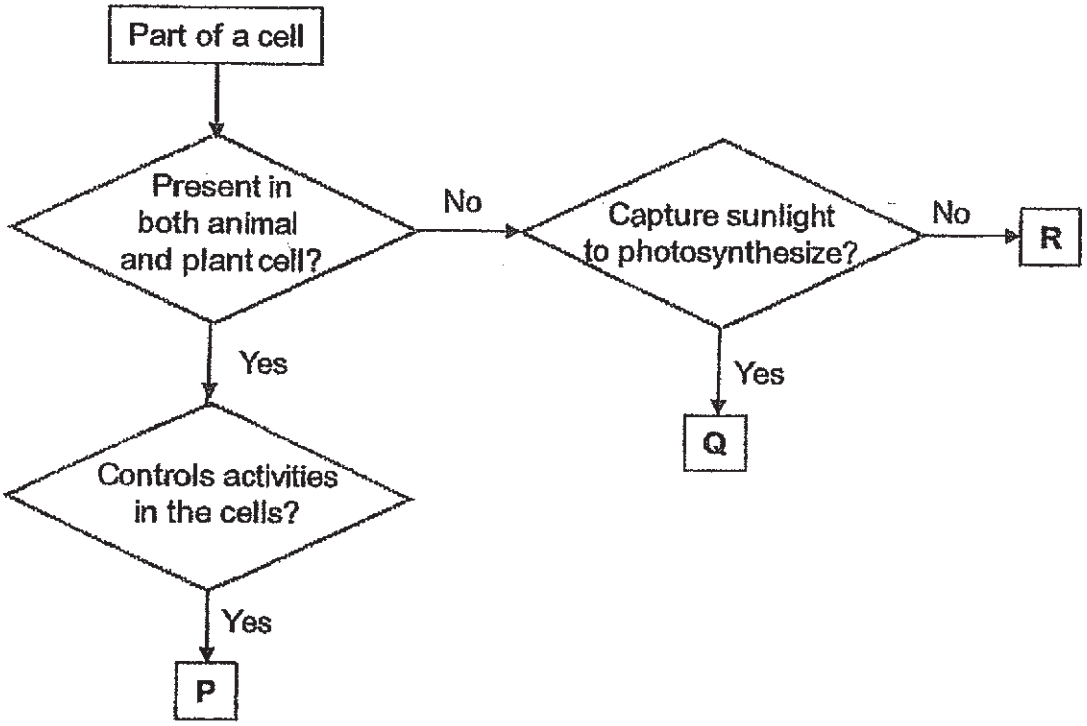
3. Which one of the classifications of the animals shown below is correct?

	Fish	Mammals that lay eggs	Mammals that give birth to young alive
1)	dolphin	platypus	guppy
2)	platypus	shark	dolphin
3)	shark	platypus	dolphin
4)	shark	dolphin	platypus

4. Study the flowchart below. Identify the parts P, Q and R of a cell.



Which one of the following represents P, Q and R respectively?

	P	Q	R
1)	cell membrane	chloroplasts	cytoplasm
2)	nucleus	chloroplasts	cell membrane
3)	nucleus	cytoplasm	nucleus
4)	nucleus	chloroplasts	cell wall

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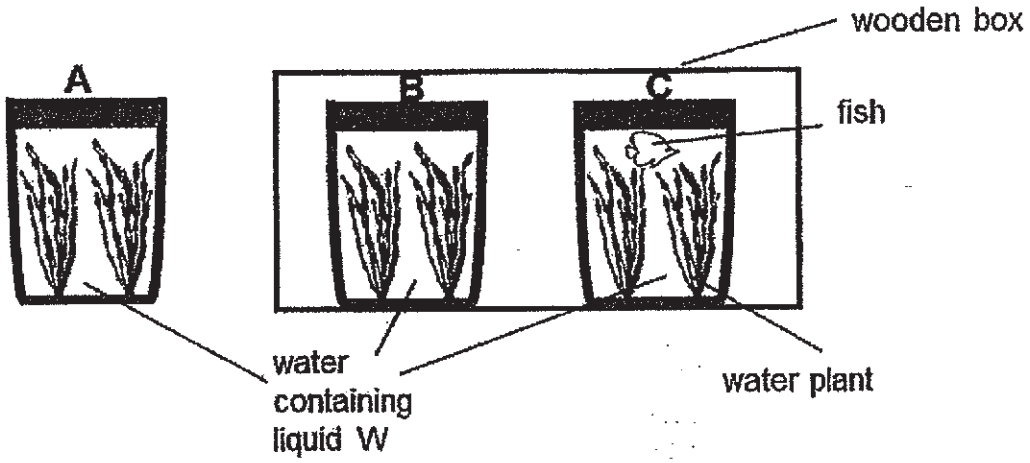
5. Which of the following systems are used when a person exercises?

A: Skeletal System
B: Muscular System
C: Respiratory System
D: Circulatory System

1) A only
2) C only
3) B and C only
4) A, B, C and D

6. Layla used the set-ups below to investigate if the presence of water plants would affect the amount of carbon dioxide in water at different times of the day.



A few drops of liquid W were added to the water and the set-ups were placed in a well-lit place. Liquid W changes colour as the amount of carbon dioxide varies as shown in the table below.

Amount of carbon dioxide	Colour of Liquid W
Low	Red
Moderate	Blue
High	Yellow

What would the colour of the water with liquid W be in each set-up after some time?

	Colour of liquid W		
	A	B	C
1)	Red	Red	Yellow
2)	Red	Yellow	Yellow
3)	Blue	Yellow	Red
4)	Yellow	Blue	Red

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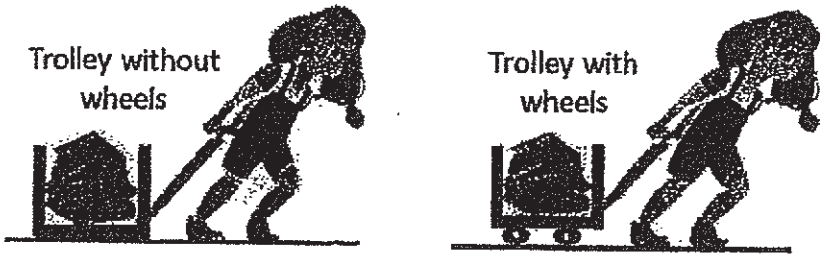
7. Which of the following statement is/are true about the girls pulling the trolley full of books?

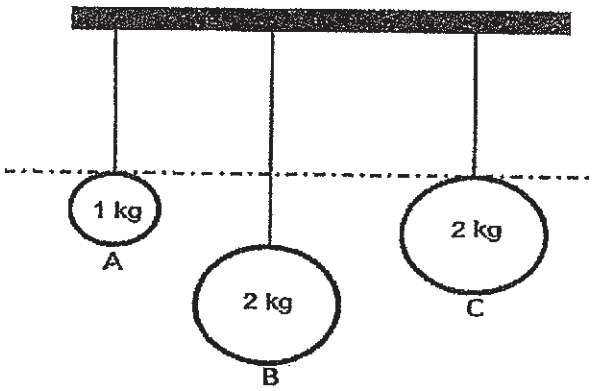


Girl X Girl Y

A: Girl X has to work against friction.
B: Girl Y does not have to work against friction.
C: Girl Y needs less energy to move the trolley as the wheels reduced friction.
D: Girl Y needs no energy to move the trolley as there is no friction.

1) A only
2) A and B only
3) A and C only
4) A, B and D only

8. The diagram below shows 3 balls of different masses hanging from the ceiling.



Which of the following statements is true?

1) All the balls have no gravitational force acting on them since they are stationary.
2) Ball B has the most gravitational force acting on it as it is the lowest.
3) Ball C has more gravitational force than Ball A as it is heavier.
4) Ball C has more gravitational force than Ball B as it is higher than B.

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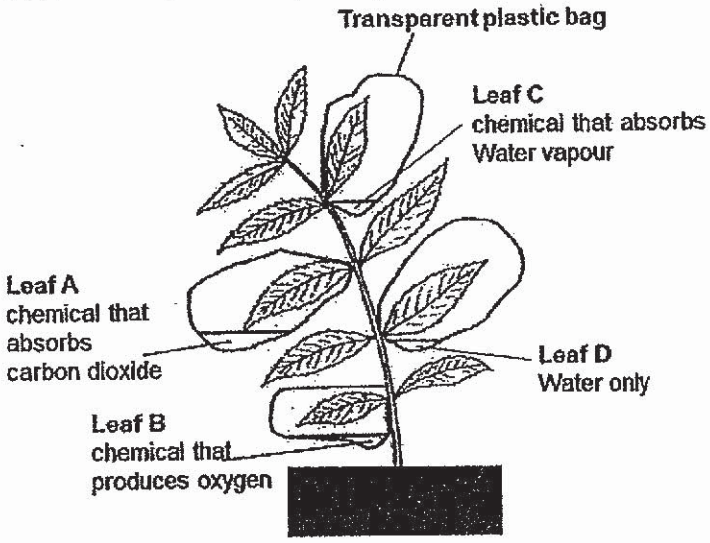
9. Mrs Tan wanted to find out the conditions necessary for the plant to photosynthesize. She set up the experiment below and placed Plant X in the cupboard for two days before putting it under the sun.



Plant X

After a few hours in the sun, Mrs Tan removed leaves A, B, C and D from the plastic bags and plant. She conducted a starch test on the leaves. Which of the leaves would likely turn iodine solution dark blue to show that the plant has photosynthesized?
Note : Iodine turns dark blue when it reacts with starch.

1) A and D only
2) B and D only
3) A, B and C only
4) B, C and D only

10. The table below shows the boiling point and freezing point of some substances.

Substance	Boiling Point (°C)	Freezing Point (°C)
P	55	2
Q	60	10
R	75	15
S	95	30

Based on the table above, which of the following statements are true about the substances?

A: Substance P is in the solid state at 5°C.

B: Substance S is in the liquid state at 90°C.

C: All the four susbtances are in the liquid state at 40°C.

D: Substances Q and R are in the gaseous state at 70°C.

1) A and B only
2) B and C only
3) C and D only
4) B, C and D only

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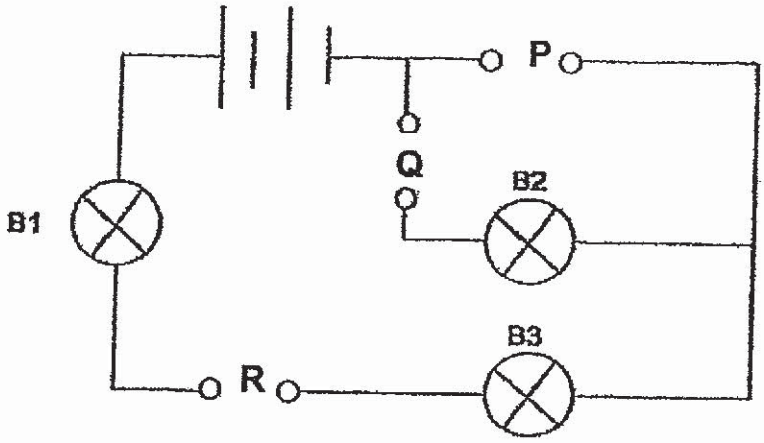
680

11. 3 rods, X, Y and Z, made of different materials were placed at the positions P, Q and R in the circuit below.



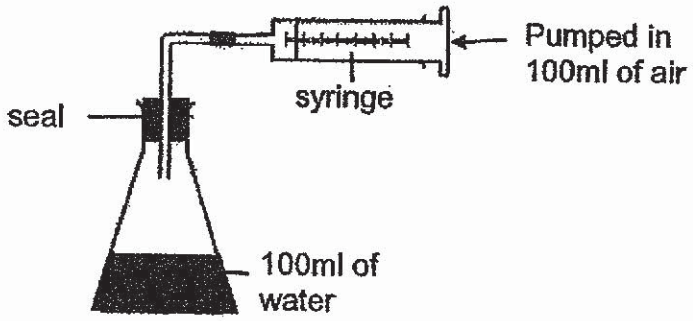
The table below shows the results collected at the end of the experiment.

Position where rods were placed			Did the bulb light up ?		
P	Q	R	B1	B2	B3
X	Y	Z			
Y	Z	X	√		√
Z	X	Y			

Based on the table above, which of the following statements is true ?

1) Only Rod Z is a non-conductor of electricity
2) Only Rod X is a non-conductor of electricity.
3) Only Rod Y and Rod Z are non-conductors of electricity.
4) Both Rod X and Rod Z are conductors of electricity.

12. Mary filled a 300ml conical flask with 100ml of water. She then attached a syringe to the flask and pumped in 100ml of air into the conical flask. What should be the final volume of air in the conical flask?



1) 100ml
2) 200ml
3) 300ml
4) 400ml

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13. Study the following food chain carefully.

E ⟶ F ⟶ G ⟶ H

The food chain above shows 4 different organisms E, F, G and H found in a rainforest. What are the possible causes that are likely to increase the population of organism F?

A: There are more Organism E in the rainforest.

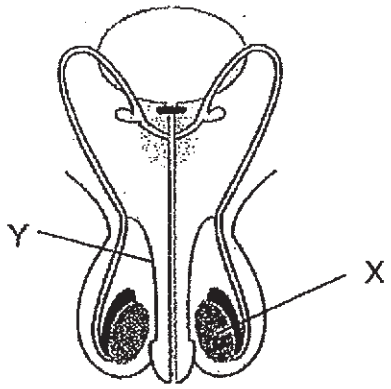
B: Population of Organism H decrease in the rainforest.

C: There are more Organism G in the rainforest.

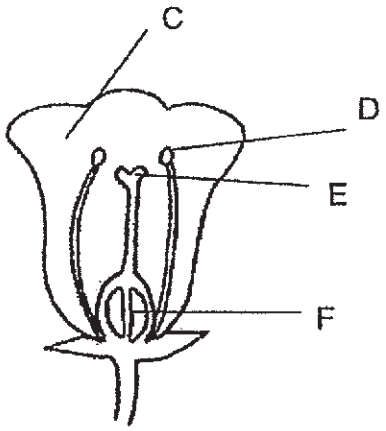
D: Population of Organism H increase in the rainforest.

1) A only
2) A and D only
3) A, B and C only
4) A, C and D only

14. Diagram A shows a human reproductive system and Diagram B shows a plant reproductive system.



A



B

Which parts are female parts?

1) X, E and F only
2) X, Y and D only
3) C, E and F only
4) E and F only

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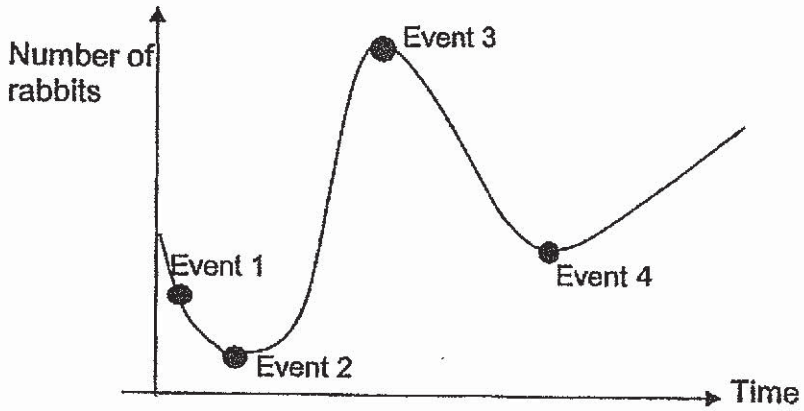
15. The graph below shows the changes in the population of rabbits in a plantation over a period of time.



A, B, C and D are four events that occurred during this period of time.

A: There was a decrease in the number of foxes.

B: There was an increase in the number of foxes.

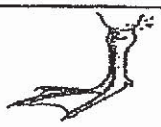
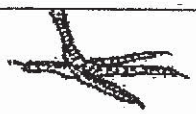
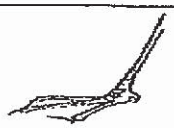
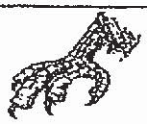
C: Crops were removed by farmers during harvesting.

D: New crops were planted by farmers.

Which of the following shows the correct sequence of events?

	Event 1	Event 2	Event 3	Event 4
1)	A	B	C	D
2)	B	A	C	D
3)	C	A	D	B
4)	D	C	A	B

16. Cormorant is a kind of bird that swims and hunts for fish in water.
Which one of the following pairs of feet and beak are most probably those of the bird?

	Feet	Beak
1)		
2)		
3)		
4)		

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683

17. Alayna counted the number of organisms in a pond and recorded the findings below.

Organisms	Number of organisms
Guppy	15
Tadpole	3
Mosquito larva	10
Frog	4
Mosquito	3
Water lily	10
Dragonfly	8
Algae	15

Which of these statements about the organisms in the pond community is true?

1) There are 6 populations of animals.

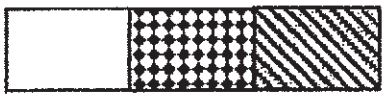
2) There are 8 populations of organisms.

3) The guppy and mosquito have the same population size.

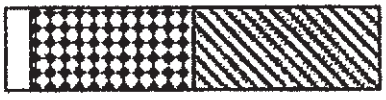
4) There are 6 populations of organisms.

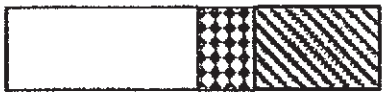
18. Nathan kept an insect in an air-tight jar as shown below.

Which of the following shows the correct composition of various gases in the jar after a few days?

1) 

2)

3) 

4) 

Oxygen

carbon dioxide

nitrogen

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19. There are four iron bars, P, Q, R and S. Only two of them are magnets. The ends of the iron bars are labelled as shown below.

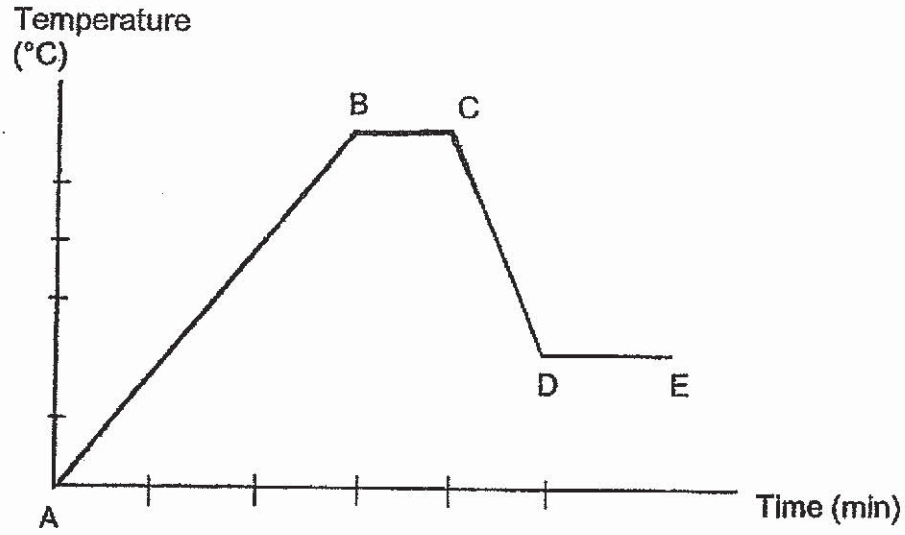
The ends of the iron bars are brought close to each other to find out how they would interact. The observations are recorded below.

Ends that are brought close to each other	Observations
D and G	Attract
C and F	Repel
B and F	Attract
B and E	Attract
A and C	Attract

Based on the above observations, which one of the iron bars is definitely **not** a magnet?

1) P
2) Q
3) R
4) S

20. The graph shows the changes of temperature of water as shown below.



Which of the following shows the stages when heat is gained?

1) AB and BC
2) BC and CD
3) BC and DE
4) CD and DE

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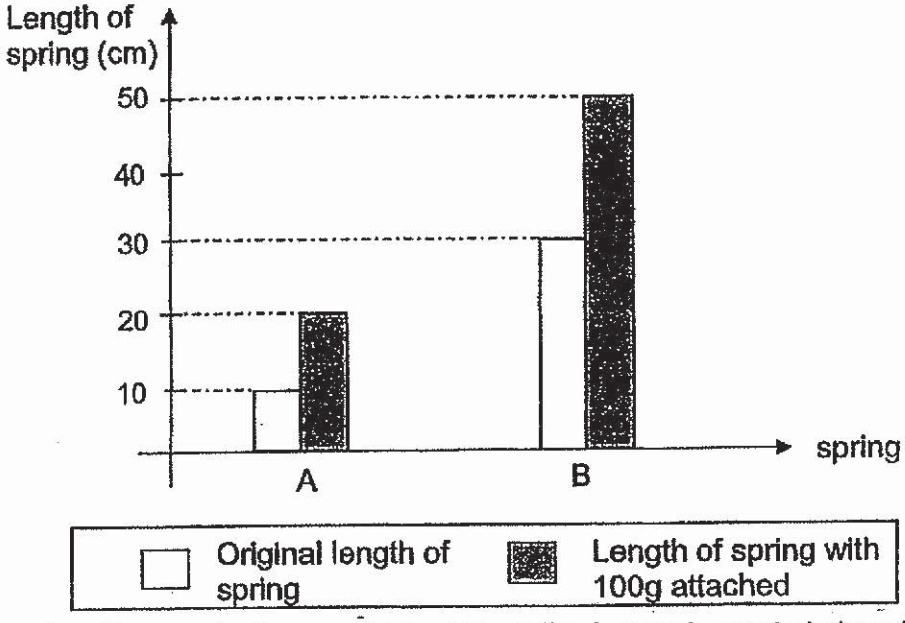
21. The graph below shows the increase in length of two springs, A and B, when a 100g load is hung on them.



Based on the graph above, which of the following statements is true ?

1) The extension of both springs is the same for the same load hung.

2) The original length of spring A is longer than the length of spring B.

3) Spring A will be 25 cm long when 150g is hung on it.

4) Spring B will be 55 cm long when 150g is hung on it.

22. The diagram below shows a person holding a pencil to write.

Which one of the following type of force enables the person to write using a pencil?

1) Frictional force

2) Elastic Spring force

3) Magnetic force

4) Gravitational force

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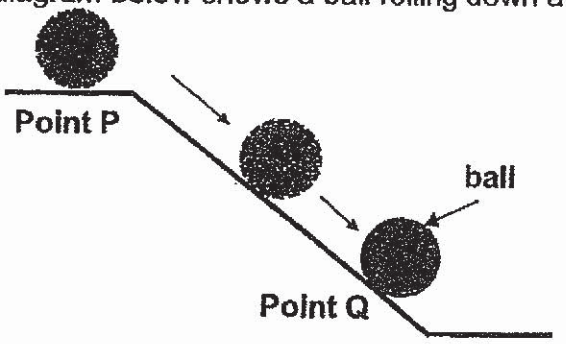
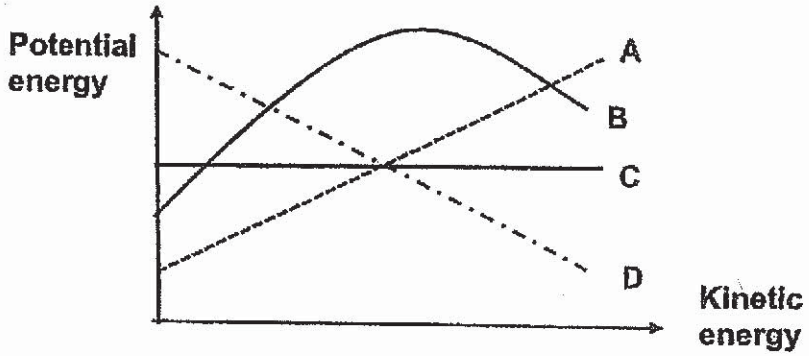
23. The diagram below shows a ball rolling down a slope.

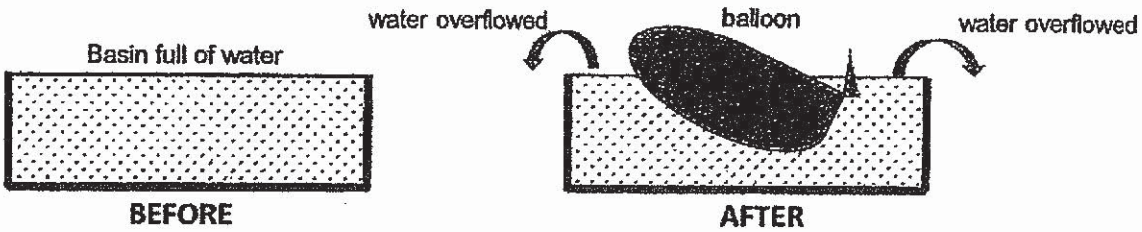




What line, A, B, C or D, in the graph above shows the correct relationship between of potential energy and kinetic energy of the ball as it rolls down the slope from P to Q ?

1) A
2) B
3) C
4) D

24. Weiwei filled a balloon with air. She pushed the balloon into a basin full of water as shown in the diagram below. She noticed that some water had overflowed.



Explain why some water had overflowed.

1) Air occupies space.
2) Air has mass.
3) Air can be compressed.
4) Air does not have a definite shape.

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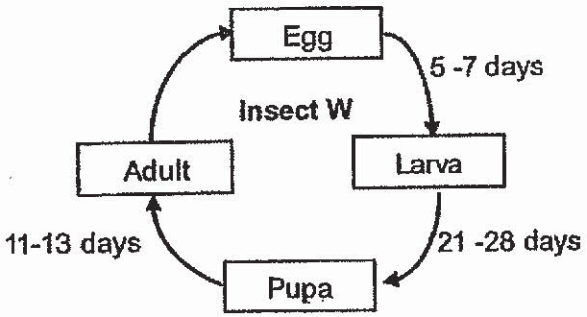
25. Study the life cycle of Insect W.



Which of the following statements is true?

1) Insect W can be a cockroach.

2) Insect W took between 32 days to 41 days to develop from egg to adult.

3) Insect W spends more days eating than not eating while developing into an adult.

4) Insect W must be in the pupa stage 21 days after egg is laid.

26. Which of the following statements are true about human digestive system?

A: The saliva in our mouth helps to digest the food.

B: Digestion of food is completed in the small intestine.

C: Digestion of food takes place in the gullet and the stomach only.

1) A only
2) A and B only
3) B and C only
4) C only

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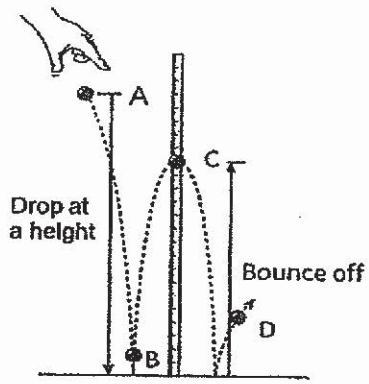
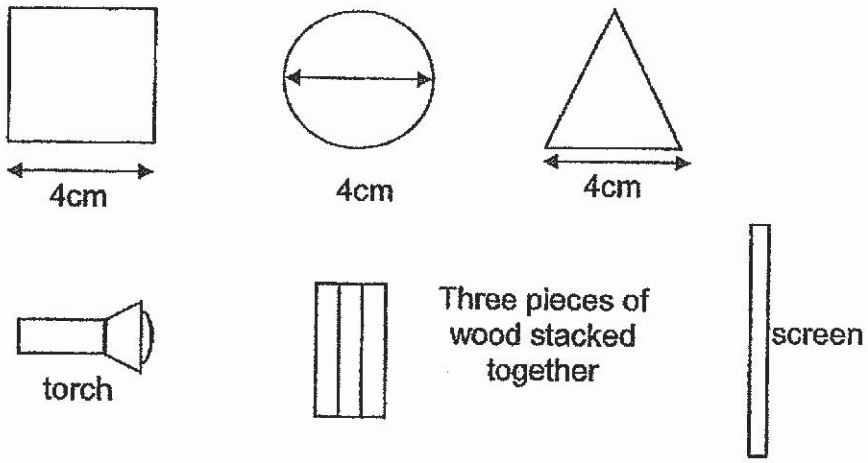
27. A rubber ball was dropped from Position A. The ball bounced as show below.



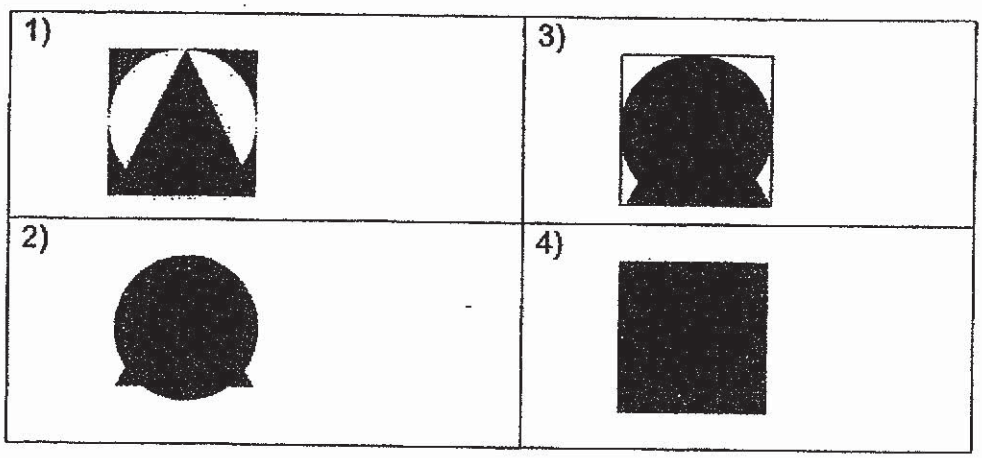
At which of these positions does the ball have the greatest kinetic energy and least potential energy?

1) Position A
2) Position B
3) Position C
4) Position D

28. The diagram below shows 3 pieces of wood of different shapes.



Which of the following shadows would be observed on the screen?



End of Booklet A

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2019

NAME: _____ ( ) DATE: 14 May 2019

CLASS: PRIMARY 6 SY / C / G / SE / P

Parent's Signature.

_____

SCIENCE

BOOKLET B

	Total Actual Marks	Total Possible Marks
Booklet A		**56**
Booklet B		**44**
Total		**100**

13 questions

44 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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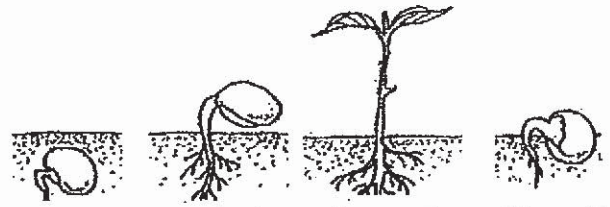
Part II (44 marks)

Answer all the following questions.

29. The diagram below shows some stages in the growth of a bean plant.



a) At stage B, where does the seedling get its food from? [1]

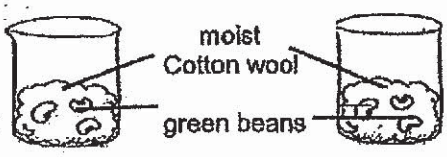
_____

b) State the stage(s), A, B, C or/and D, which require(s) oxygen.
Explain your answer. [1]

_____

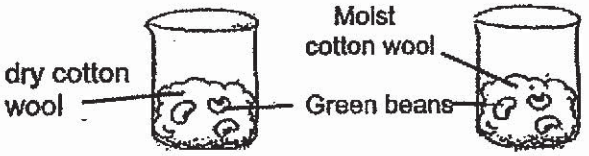
_____

c) A Science teacher set up the following experiment with set-ups P, Q, R and S.



Set-up P
in a well-lit room
at 30°C

Set-up Q
in a dark room
at 30°C



Set-up R
in a well-lit room
at 30°C

Set-up S
in the refrigerator
at 0°C

Huijuan concluded that the seed could not germinate in Set-up S because there was no light. Was she correct? Explain. [1]

_____

_____

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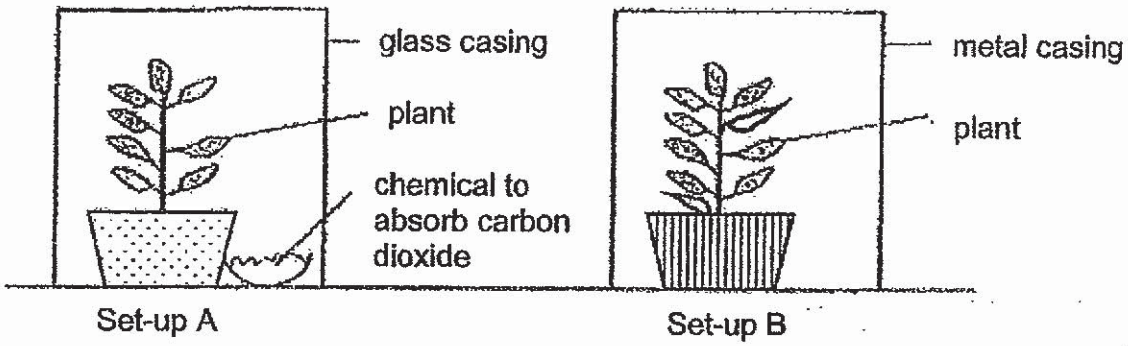
30. Yasmin carried out an experiment as shown below. She wanted to find out whether carbon dioxide is needed for the plants to carry out photosynthesis. She placed set-ups, A and B, near the window in the same room.

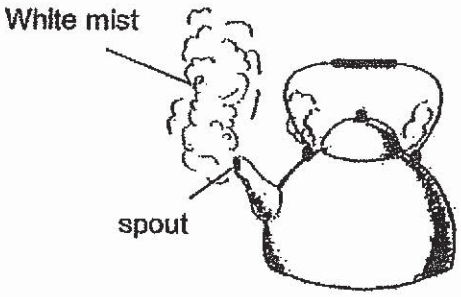


a) Suggest two changes to Set-up B to ensure that the experiment will be a fair test. [2]

(i) _____

(ii) _____

31. Mrs Tan boiled some water in a kettle at room temperature. She noticed white mist' forming near the spout of the kettle when the temperature of the water reached 100°C.



a) Explain how the 'white mist' was produced when the water was boiling. [2]

_____

_____

b) Mrs Tan wanted to find out if water droplets will form on 2 metal plates placed near the spout of the kettle. Put a tick (✓) in the box(es) below to indicate if water droplets can be seen on the metal plate(s). [1]

	Temperature of metal plate	Tick (✓) below if water droplets were observed
Plate A	30°C	
Plate B	100°C	

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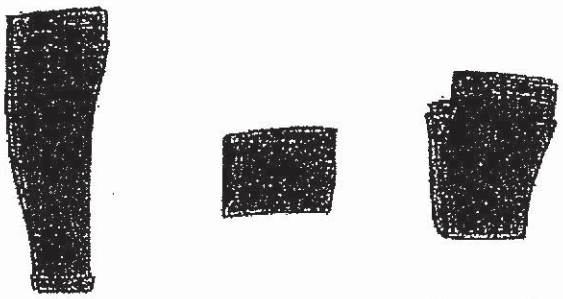
32. At 12 noon, Sally conducted an experiment by putting three identical pairs of wet pants, A, B and C, in an open area. The initial mass of the soaked pants was recorded. The mass of each pair of pants was recorded again every two hours for 8 hours.



Pants A Pants B Pants C

a) What is the aim of the experiment? [1]

b) The results of the experiment are shown in the table below.

	Mass of pants at 12pm (g)	Mass of pants at 2pm (g)	Mass of pants at 4pm (g)	Mass of pants at 6pm (g)	Mass of pants at 8pm (g)
A	600	430	350	280	260
B	600	550	510	480	465
C	600	500	430	390	370

i) Explain why Pants B weighed the heaviest at the end. [1]

ii) Why did the mass of the pants change most slowly in the last 2 hours? [1]

3

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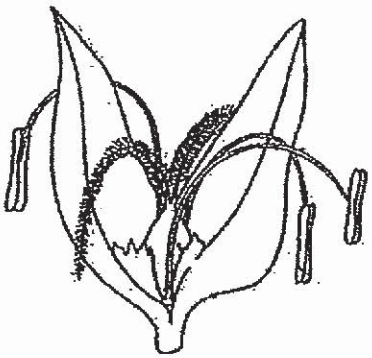
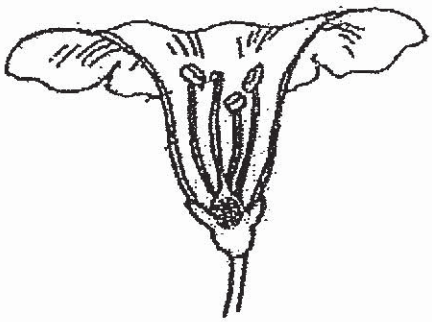
33. Study the diagrams below.



Flower A



Flower B

a) Based on the diagrams, identify which flower, Flower A or Flower B, is pollinated by : [1]

(i) Wind : _____

(ii) Animals : _____

b) Support your answers in (a). [2]

Flower	Reason
A	
B	

3

(Go on to the next page)

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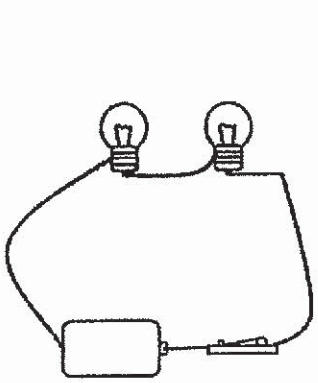
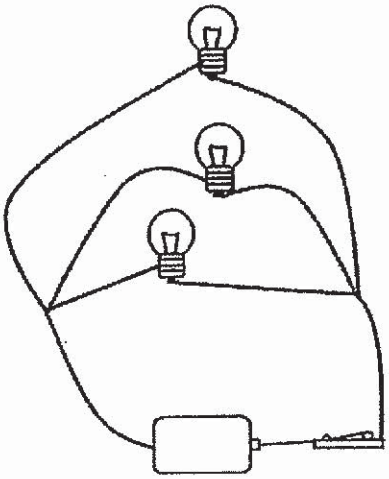
34. Ben wanted to find out how the number of bulbs arranged in series will affect the brightness of the bulbs. He set up 2 arrangements, Circuit E and Circuit F, using the same type of components, as shown in the diagram below.



Circuit E



Circuit F

Ben concluded that when the number of bulbs arranged in series increases, the brightness of the bulbs increases.

a) Based on the diagrams above, explain why Ben made a wrong conclusion. [1]

b) Ben was given some materials, **5 bulbs, 2 switches, 2 batteries and some wires.** Draw a **circuit diagram using symbols** below to show how **Circuit E** and **Circuit F** should be set up to achieve his aim. [3]

Circuit E	Circuit F

c) Explain how the rubber coating on the copper wire prevent us from being electrocuted. [1]

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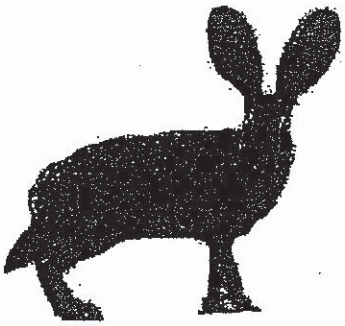
35. The following picture shows a camel. It has survived well in places with extremely high temperatures like the desert.

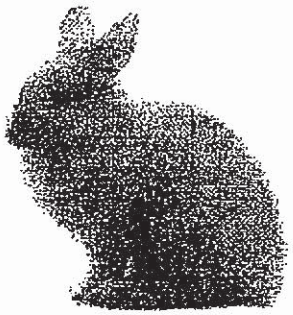
a) Below are 2 structural adaptations of the camel that help it to survive in deserts. Explain how each adaptation has helped the camel to survive in deserts. [2]

Structural adaptation	How adaptation is helpful
Large padded feet	
Long eyelashes	

b) Below are 2 animals, P and Q.



Animal P



Animal Q

Why will Animal P survive better in the desert? [1]

_____

_____

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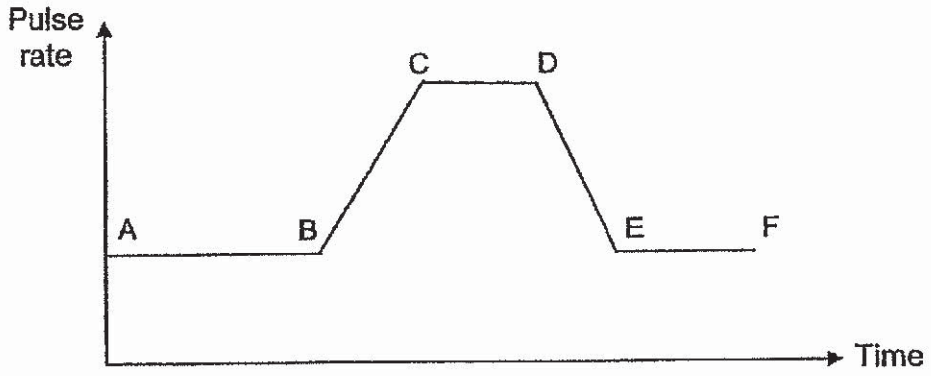
36. The graph below shows the changes in the pulse rate as Annie jogs around a running track.



a) When Annie starts running at B, the pulse rate increases. Explain why. [1]

_____

_____

b) At which point does Annie stop jogging? [1]

_____

c) Annie's muscle cells produce more carbon dioxide as she jogs. Write the path taken by the carbon dioxide as it travels from her muscle cells to leave the body. [1]

3

(Go on to the next page)

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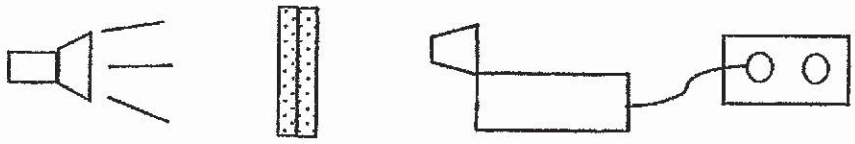
698

37. Raymond set up an experiment to measure the amount of light that passes through Material A. He switched on the light and measured the amount of light that passed through Material A using a light sensor that was connected to a datalogger as shown below.
He repeated the experiment with more pieces of Material A stacked together and recorded the results as shown in the table below.



Light source | 2 pieces of Material A | Light sensor | Datalogger

Number of pieces of Material A in front of light sensor	Amount of light recorded (lux)
1	4000
2	2000
3	1000
4	0

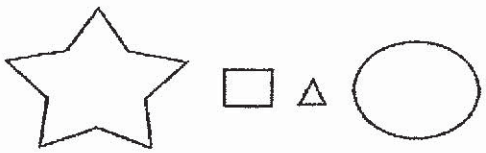
Table 1

a) Based on the results above, describe the relationship between the number of pieces of material A used and the amount of light detected by the datalogger. [1]

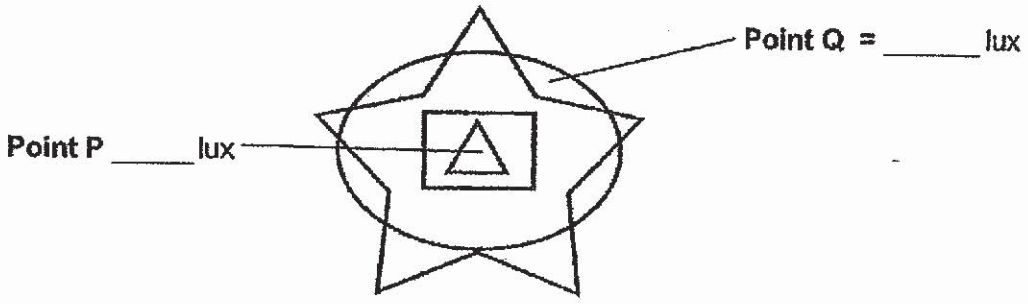
_____

_____

b) 4 shapes are made of Material A as shown below.



They are put together and the outline has been drawn as shown below. Based on the results as shown in Table 1 above, indicate the amount of light that would be recorded by the datalogger for **Points P and Q** : [2]



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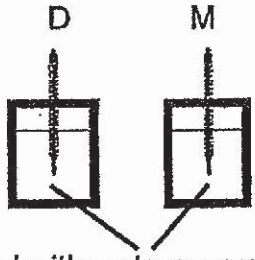
38. Alex has two containers, D and M, each made of different material as shown below. He filled them with the same amount of water measuring 3°C at the same time.

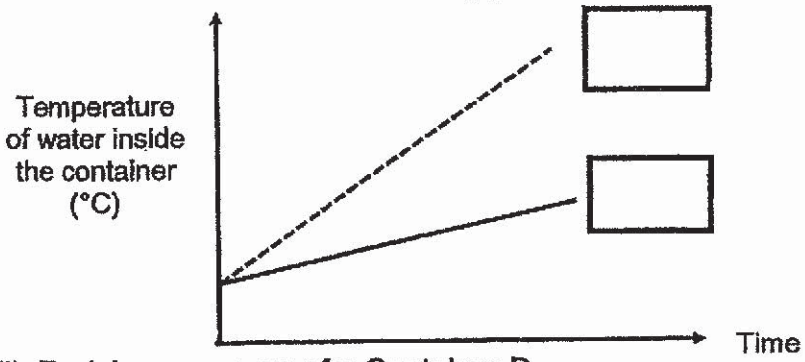


When he touched the containers, container D felt colder to his hands than container M.

a) Which container, D or M, is a better conductor of heat? Explain your answer. [1]

b) Alex then left the containers in the room and recorded the temperature of the water over time. The graph below shows the temperature of the water in Container D and M over a period of 20 minutes.

i) Alex forgot to label the graph for Container D and M. Please **label** the graph for Container D and M accordingly. [1]



ii) Explain your answer for Container D. [1]

c) Using the above information from the experiment, which container, D or M, will be more suitable to be used as a flask for keeping hot drink warm for as long as possible? Explain your answer. [1]

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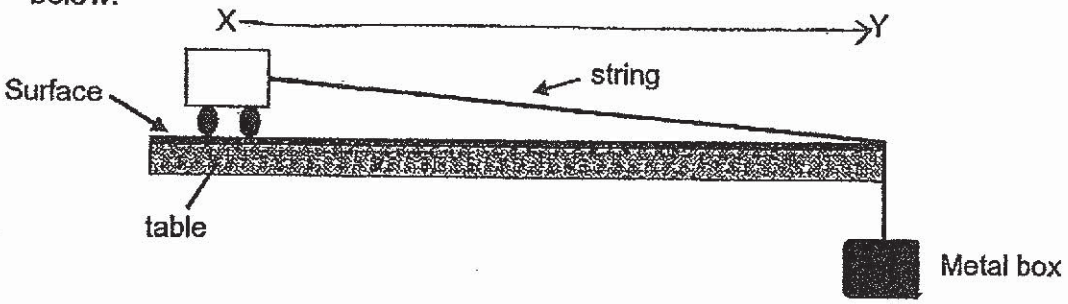
39. A metal box was attached to a wooden cart by a string as shown in the diagram below.



The time was taken for the wooden cart to travel from X to Y was recorded in the table below. The whole experiment was repeated using different surfaces on which the wooden cart moved across.

Surface	Time taken for the wooden cart to travel from X to Y (s)
A	36
B	14
C	20
D	30

a) Which surface would be the most suitable to cover a table used for pushing heavy boxes across the surface? Explain your answer using the information from the table. [2]

b) Without changing the wooden cart, what could be done to the set-up above to enable the cart to move faster across the table? [1]

c) Why does it take a greater effort to walk up the stairs than to walk down the stairs? [2]

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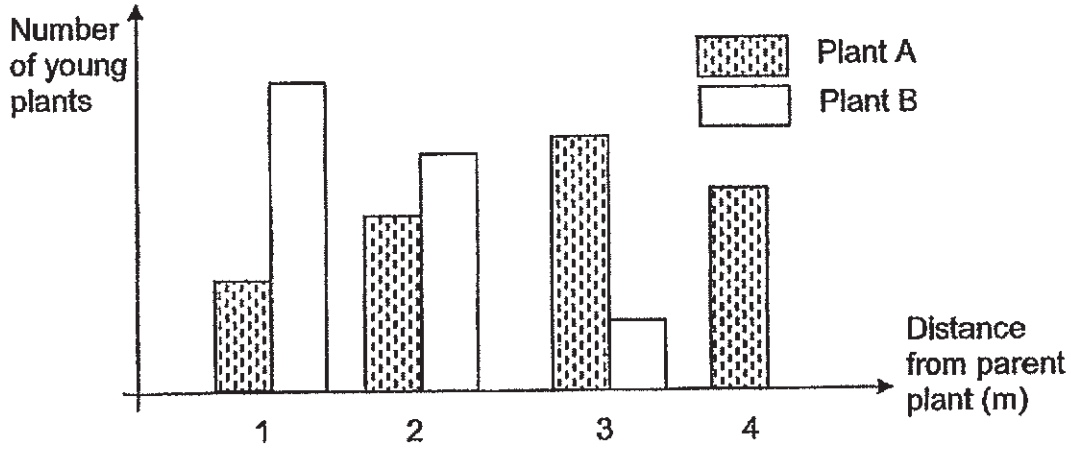
40. The graph shows the number of young plants, A and B, at various distances from their parent plant in the garden. The results are shown below.



a) Based on the graph above, which of the following below best represents the fruits from Plant A and B ? [1]

b) Explain how you identify the fruits from Plant A and Plant B. [2]

Plant A : _____

_____

Plant B : _____

_____

c) Based on the picture above, which plant, X or Y, is more likely to be dispersed further away from the parent plant ? Explain. [1]

_____

_____

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4

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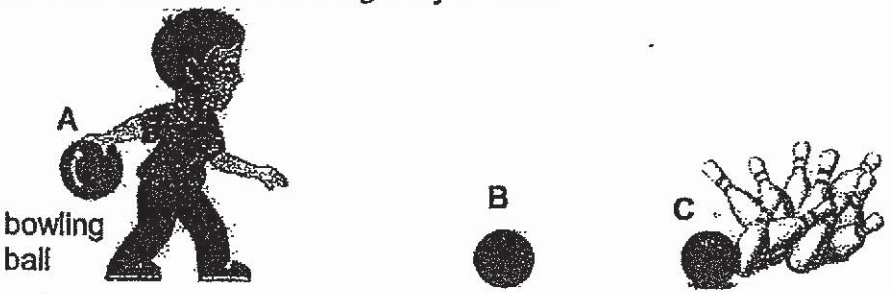
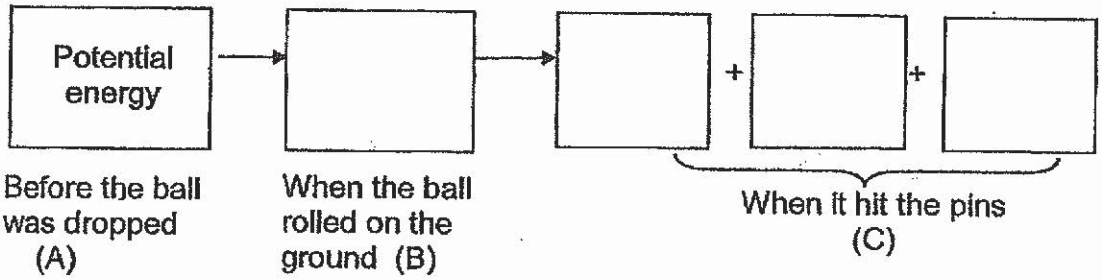
41. John went to the bowling alley to bowl.



a) As John released the bowling ball, it started to fall and roll on the ground towards the pins. The bowling ball collided into the pins.

Write the energy conversion of the bowling ball from B to C. [1]



b) John decided to change to a heavier bowling ball in order to increase his chance of hitting more pins. (The speed of bowling ball remains the same).
Do you agree with him? Explain your answer. [1]

_____

_____

c) John needs to choose a pair of shoes that allows him to slide easily along the polished surface of the bowling lanes. Which soles, P or Q, should he choose? Explain your answer. [1]

_____

_____

3

End of Booklet B

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SCHOOL : SCGS PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	3	3	4	4	2	3	3	4	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	2	4	2	1	4	2	1	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	1	4	1	3	2	2	4		

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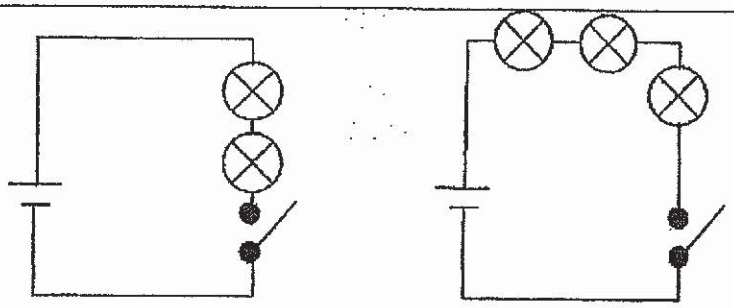
2019 PRIMARY 6 SCIENCE SA1

	Booklet B Answers
29a	Seed leaves
29b	A,B,C and D OR All stages. It is a living thing so it needs oxygen to respire at all stages
29c	No. Light is not needed for germination.
30a	(i) Change the metal casing to a glass casing. (ii) Remove 2 leaves to make the number of leaves the same.
31a	The **steam from the boiling water** touches the **cooler air** in the surroundings, **loses heat** and **condenses** to form the mist. (Note – Steam is invisible – it is not the white mist)
31b	Tick **30°C** only
32a	To find out if the exposed surface area of the pants affect the rate of the evaporation.
32bi)	Pants B has the least /smallest **exposed surface area**, it had the slowest **rate of evaporation of water.**
32c	**Temperature** decreases / is lower from 6 to 8pm, so there is a slower rate of evaporation. OR It's cooler from 6 to 8pm, so there is slower rate of evaporation.
33a	(i) Wind – Flower A (ii) Animal – Flower B
33b	A – The anthers / stigma are exposed to the wind outside the petals. B – The anthers are inside the petals.
34a	The bulbs in Circuit F are arranged in parallel OR The bulbs in Circuit F are not arranged in series.
34b	 Circuit E Circuit F
33c	Rubber is a non-conductor of electricity.
35a	**Large padded feet** – (to spread out its weight when walking and) prevent the camel from sinking into the sand. **Long eyelashes** – to block the sand from reaching the eyes
35b	Animal P has **larger ears** to enable it to **lose heat faster** in desert. OR Animal P has a **darker** coloured fur to **blend into the colour of sand.**
36a	Pulse rate increases as the body needs **more oxygen** and **more food** during exercise so oxygen and food need to be pumped at a faster rate to all parts of the body.
36b	Point D.

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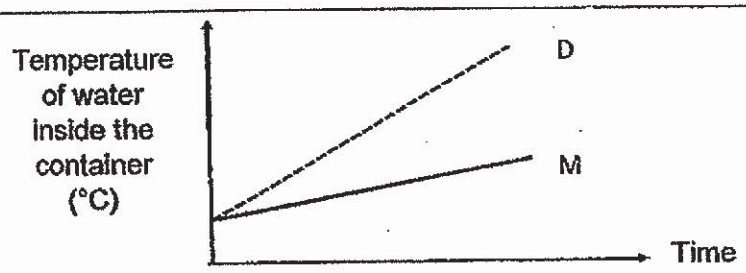
S/N	Booklet B Answers
36c	Muscle Cells → Blood → Heart → Lungs → Nose
37a	The greater the number of pieces of A, the lower the amount of light detected by the datalogger BUT with 4 or more pieces of material A, no more light can be detected by datalogger.
37b	Point Q : 4000 lux Point P : 0 lux
38a	D is a **better conductor of heat** than M. D will conduct heat from the hand to the container faster, thus the hand felt colder.
38bi)	
38bii)	D is a better conductor of heat than M So it will conduct heat from the surrounding air to the water faster.
38c.	Container M. M is a **poorer conductor of heat** so it will conduct heat from the hot water in the flask to the surroundings slower.
39a.	Surface B. It takes the shortest time for the wooden cart to move from X to Y, so the **friction** between the surfaces of the ramp and the heavy box is the **least**.
39b	Add lubricant OR Use heavier metal box
39c.	It has to go against the direction of gravity when going up the stairs so it takes greater effort than coming down the stairs which is going in the same direction as gravity.
40a	 **Fruit from Plant A** **Fruit from Plant B**
40b	**Fruit / Seed A** has hair-like structures that enable them to float/stay in the air longer and disperse further away from parent plant **Fruit/ Seed B** has pod-like structure and dispersed by splitting, and disperse at a shorter distance away from parent plant
40c	Fruit/ Seed Y has longer hair than X, thus it will have more surface area against air / stay in the air longer , allowing Y to travel a longer distance away from its parent plant.
41a	Potential Energy → Kinetic Energy → Kinetic Energy + Sound Energy + Heat Energy
41b	Yes, the heavier ball has **more** kinetic energy to knock more pins down.
41c	Sole P has less grooves than Sole Q, thus P will have less friction than Q. This enables John to slide on the polished surface easier.

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2019 PRIMARY 6 SEMESTRAL ASSESSMENT 1

Name: _____ ( )

Class: Primary 6 ( )

Parent's Signature: _____

Date: 14 May 2019

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

Marks: _____ / 56

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

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Booklet A (28 x 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet. (56 marks)

---

1. Study the table below. A tick (✓) shows that the characteristic is present.

	Has legs	Makes its own food	Able to reproduce	Able to move freely from place to place
W			✓	
X	✓		✓	✓
Y	✓			
Z		✓	✓	

Which of the statements is true of W, X, Y and/ or Z?

(1) W is a plant.
(2) Z is a fungus.
(3) X and Y are animals.
(4) W, X and Z are living things.

2. Wendy counted the number of organisms in a habitat. She recorded her observations in the table below.

Type of organism	Number of organisms
Butterfly	2
Fish	2
Frog	2
Caterpillar	4
Tadpole	5
Water lily	3
Hydrilla	4
Water hyacinth	2

Based on Wendy's table, which of the following statements is correct?

(1) There are 3 communities.
(2) There are 7 water plants.
(3) There are 5 populations of animals.
(4) There are 6 populations of plants and animals.

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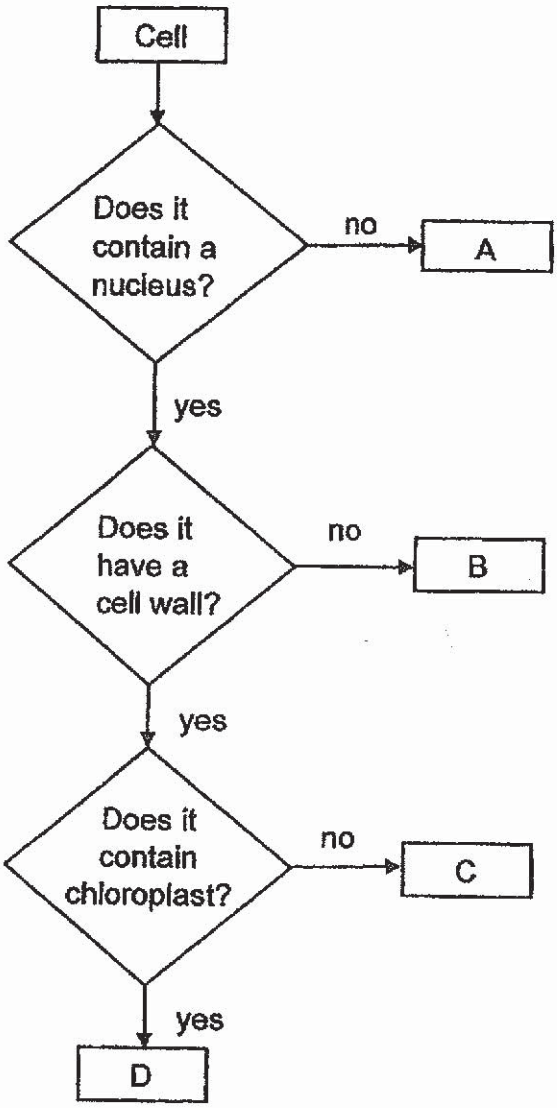
3. In a flow chart below, A, B, C and D are cells taken from a plant.



From which parts of the plant are the above cells taken from?

	Leaf	Root
(1)	A	B
(2)	D	A
(3)	D	C
(4)	C	B

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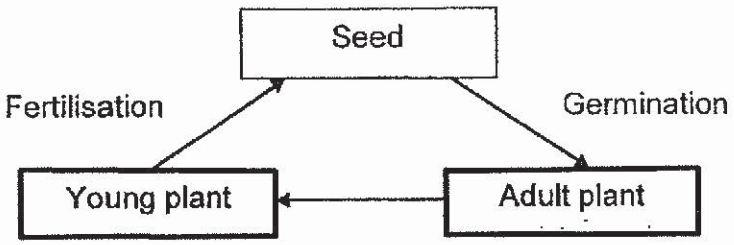
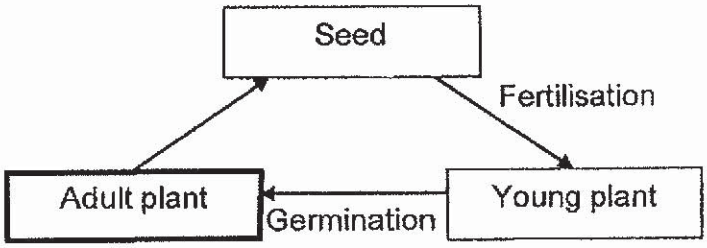
4. Which the following diagrams shows the correct order in the life cycle of a flowering plant?

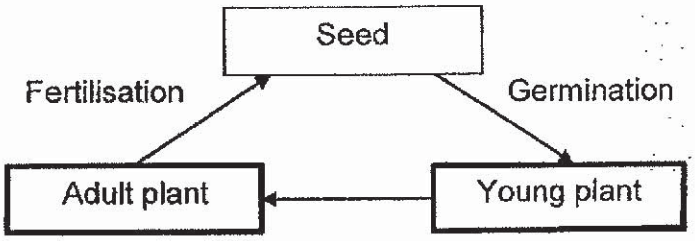
(1)



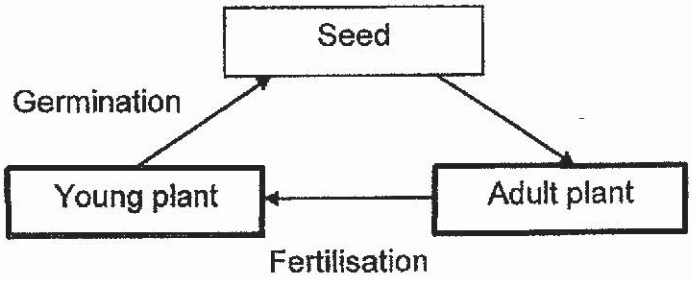
(2)



(3)



(4)



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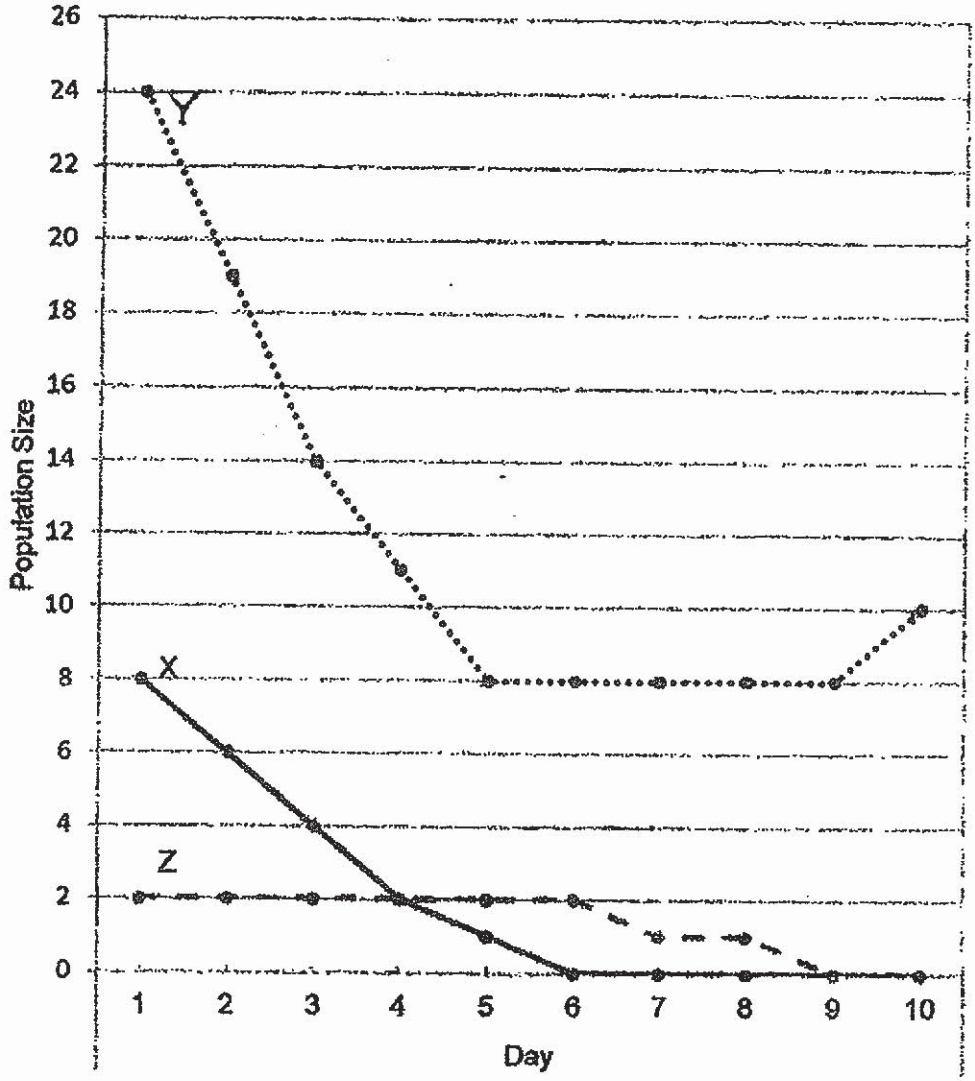
5. Darius placed three populations of aquatic organisms X, Y and Z into a tank. The living conditions were suitable for all the organisms. He did not add or take any organism out during the ten days. He recorded and plotted their numbers over ten days in a graph below.



Which of the following food chains correctly shows the relationship among the three organisms?

(1) X → Y → Z
(2) X → Z → Y
(3) Y → X → Z
(4) Z → Y → X

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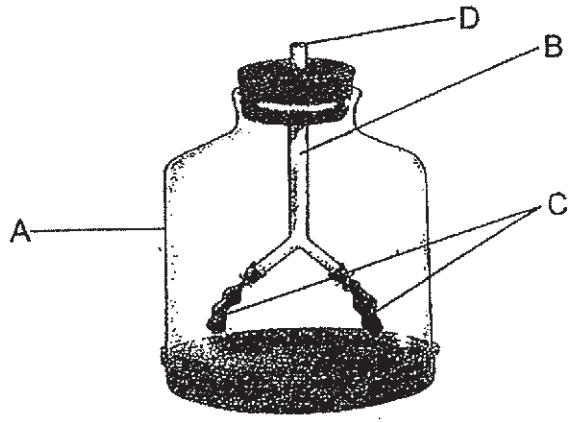
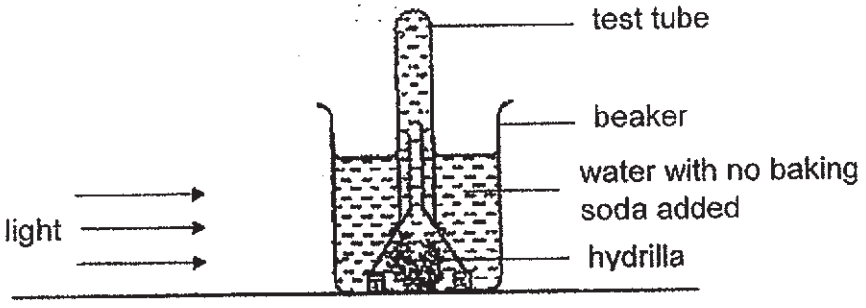
6. The diagram shows a model of the human respiratory system.



Which the following correctly represents A, B, C and D, in the human respiratory system?

	A	B	C	D
(1)	chest	nose	lungs	ribcage
(2)	ribcage	windpipe	lungs	nose
(3)	nose	windpipe	lungs	chest
(4)	chest	lungs	ribcage	nose

7. The set-up below is used to find out how the rate of photosynthesis is affected by the amount of carbon dioxide in the water.



Set-up A

Different amounts of baking soda is added to three other set-ups, B, C and D, to increase the amount of carbon dioxide dissolved in the water.

Which of the following should be measured to show how the rate of photosynthesis in each set-up is affected?

(1) the mass of baking soda added
(2) the volume of water added in each test tube
(3) the volume of oxygen trapped in each test tube
(4) the number of bubbles of carbon dioxide released by the hydrilla

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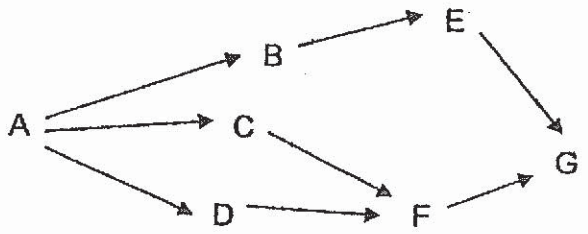
8. Study the food chain of a fish tank.

water weed ⟶ snail ⟶ fish

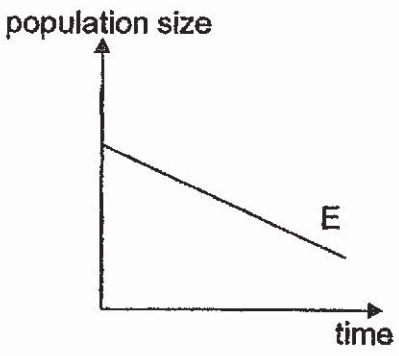
Based on the food chain above, which of the following statements is true about these living things?

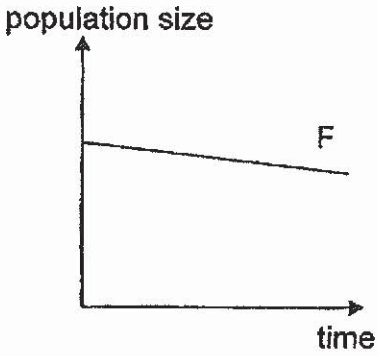
(1) The fish is a prey of the snail.
(2) The fish eats the water weeds and the snails to survive.
(3) Energy is transferred from the water weeds to the snails and then to the fish.
(4) All the living things in the fish tank depend directly on the water weeds for survival.

9. Study the food web below.



The two graphs below show the change in the populations of organisms E and F over six months.





Based on above food web, which of the following is the most likely cause for the change in the populations of organisms E and F?

(1) A decrease in both populations of B and C.
(2) An increase in both populations of B and D.
(3) A decrease in the population of G and an increase in the population of C.
(4) An increase in the population of A and a decrease in the population of G.

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10. The information below describes the physical factors at two habitats S and T within a day.

Physical factor	Habitat	
	S	T
Amount of light	changes throughout the day	remains dim throughout the day
Temperature	changes throughout the day	fairly constant throughout the day
Air movement	changes throughout depending on presence of wind	little air movement at certain parts even when there is wind

Based only on the information above, which locations are most likely to be habitats S and T respectively?

	S	T
(1)	rotting log	leaf litter
(2)	open field	leaf litter
(3)	pond	open field
(4)	rotting log	pond

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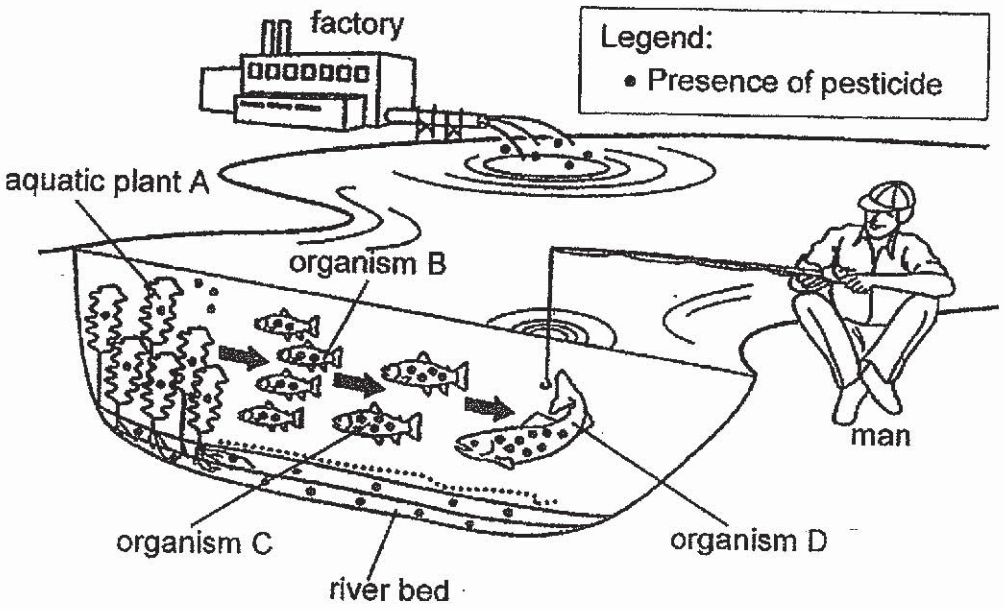
11. The diagram below shows the transfer of pesticide from one organism to the next along the food chain in the river. The pesticide cannot be removed from the bodies of the organisms.



Which of the following statements is false?

(1) Each plant absorbs some of the pesticide.
(2) Organism B gets the pesticide when it eats the plants.
(3) Organism B has the most amount of pesticide because it depends directly on the plants for food.
(4) The man will have more pesticide in his body when he eats one organism D as compared to one organism C.

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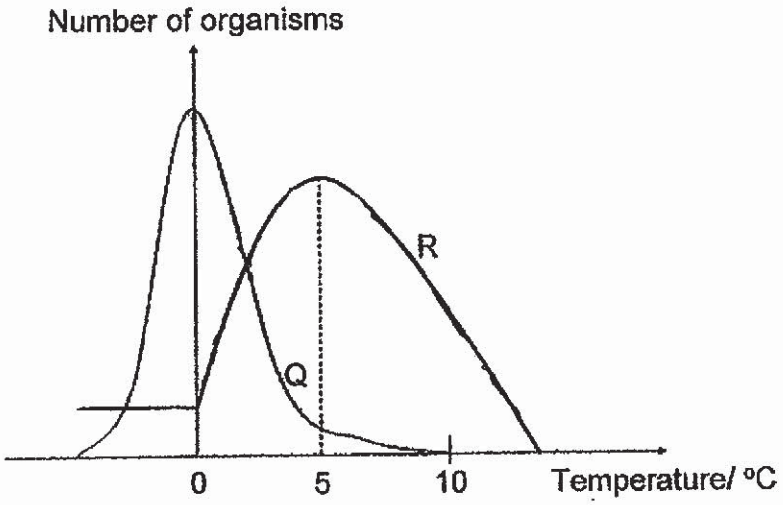
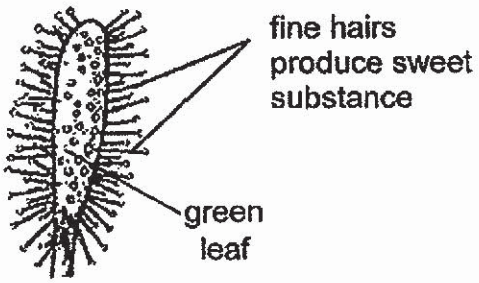
12. The graph below shows how the populations of organisms Q and R are affected by the temperature of the surroundings they live in.



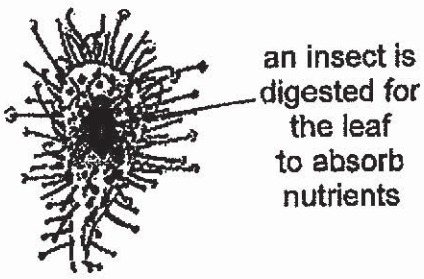
Which of the following can be concluded based on the graph above?

(1) Organism R depends on organism Q to survive.
(2) Organism R can survive well at temperatures above 0°C.
(3) Number of organism R decreases at temperatures below 0°C.
(4) Number of organism Q decreases at temperatures above 0°C.

13. Plant X has many tiny fine hairs on its green leaf surface. Insects are attracted to the sweet substance produced by the fine hairs.



leaf of plant X



leaf of plant X capturing an insect

Based on the information and the diagrams above, which of the following statements is true about plant X?

(1) Plant X grows in soil low in nutrients.
(2) The fine hairs attract insects for pollination.
(3) The fine hairs protect the plant from predators.
(4) Plant X cannot make its own food and so it traps insects for food

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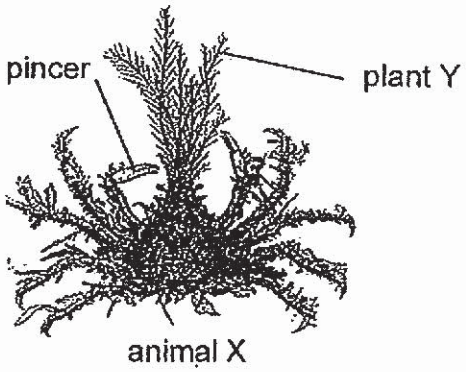
718

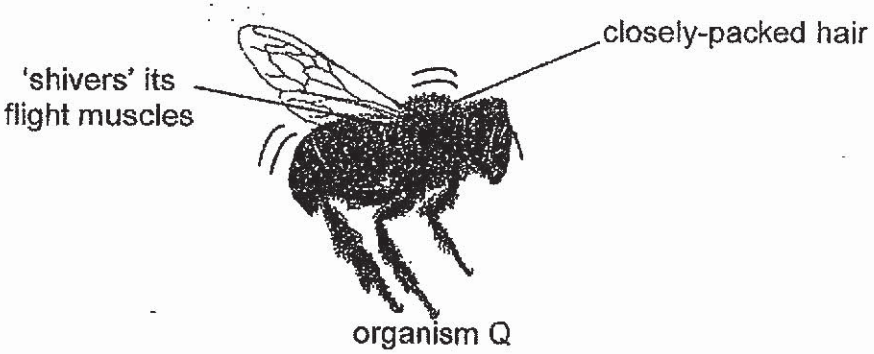
14. The diagram below shows animal X. It lives on the seabed with many plant Y. Animal X is an animal eater. It has many tiny 'hooks' on its back to carry plant Y.



Which of the following statements states how this behavioural adaptation helps the survival of animal X?

(1) Plant Y helps to keep animal X warm.
(2) Plant Y helps to make food for animal X.
(3) Plant Y helps animal X to move faster in water.
(4) Plant Y helps animal X not to be spotted by its predator easily.

15. The diagram below shows the adaptations of organism Q. Organism Q lives in cold places. It has dense hair on its body to trap air. It also 'shivers' its flight muscles to generate heat.



Based on the information, how do both adaptations help organism Q to survive in the cold?

(1) To look for its mate.
(2) To pollinate the flowers.
(3) To keep warm during winter.
(4) To slow down heat gain from the surrounding air to organism Q's body.

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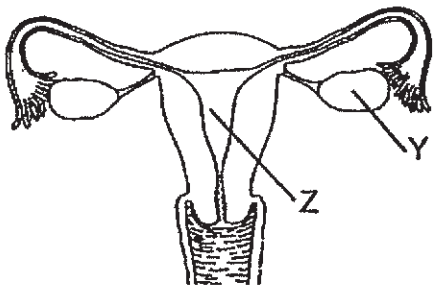
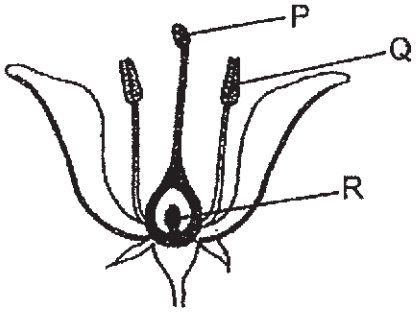
16. The diagrams below show the reproductive systems of a human and a plant.



parts of a human reproductive system

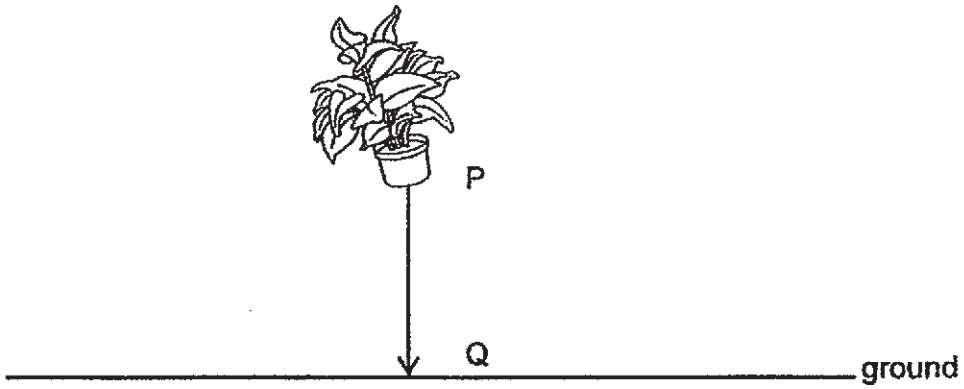


parts of a plant reproductive system

Which of the following statements is true?

(1) Part P stores reproductive cells
(2) Fertilised eggs develop at parts Z and R.
(3) Male sex cells are produced in parts Y and Q.
(4) Part Q usually releases one reproductive cell at a time.

17. A potted plant fell from point P to point Q as shown in the diagram below.



Which of the following is correct?

	Potential energy of the potted plant from P to Q	Kinetic energy of the potted plant from P to Q
(1)	decreases	increases
(2)	decreases	decreases
(3)	increases	remains the same
(4)	remains the same	decreases

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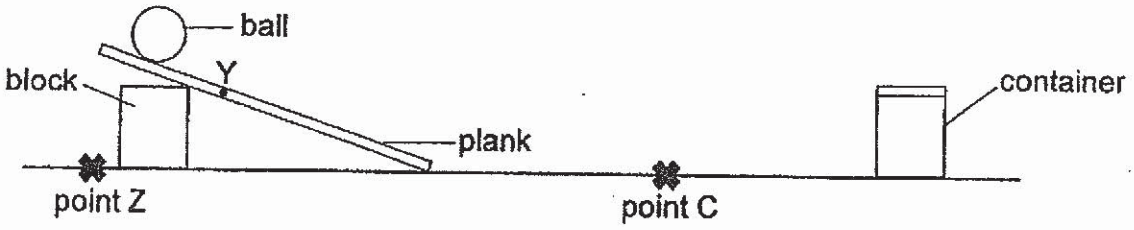
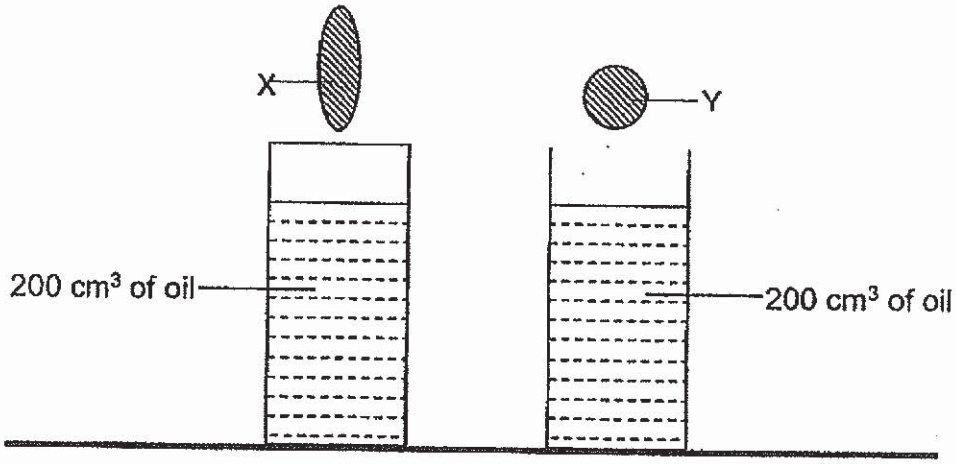
18. Sandra set up the following experiment. When she released the ball, it travelled down the ramp and stopped at point C.



Without changing any of the apparatus, which of the following would most likely allow the ball to travel further in order to hit the container?

(1) Apply oil on the ball.
(2) Move the block to point Z.
(3) Release the ball from point Y.
(4) Wrap the plank with sandpaper.

19. Melissa made objects, X and Y, with the same mass of clay. She filled two identical containers with 200 cm^3 of oil and dropped the shapes into the containers as shown.



She then measured the time taken for the shapes, X and Y, to travel from the surface of the oil to the bottom of the containers. She observed that shape X took a shorter time to reach the bottom of the container.

Which of the following correctly explains her observation?

(1) There was less gravity acting on object X.
(2) There was more gravity acting on object X.
(3) There was less friction between object X and the oil.
(4) There was more friction between object X and the oil.

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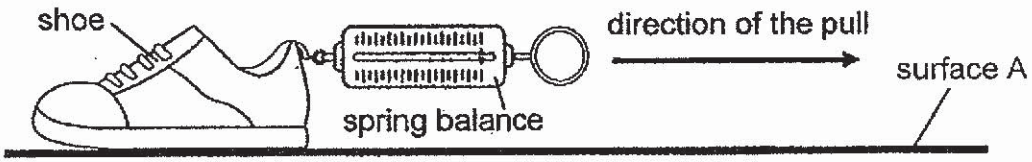
20. Jasmine conducted an experiment to compare the texture of four different surfaces, A, B, C and D. She placed a shoe on surface A and pulled the spring balance in the direction as indicated by the arrow shown in the diagram below.



The experiment was repeated for surfaces, B, C and D. Jasmine's readings are as follows.

Type of surface	Amount of force needed to pull the shoe (units)
A	1.6
B	2.1
C	2.3
D	1.2

Based on the results above, what can she conclude?

(1) The smoothest surface is surface C.
(2) The friction between the shoe and surface D is the most.
(3) The gravitational force exerted on the shoe when it was on surface D was the least.
(4) The friction between the shoe and surface A was less than that between the shoe and surface B.

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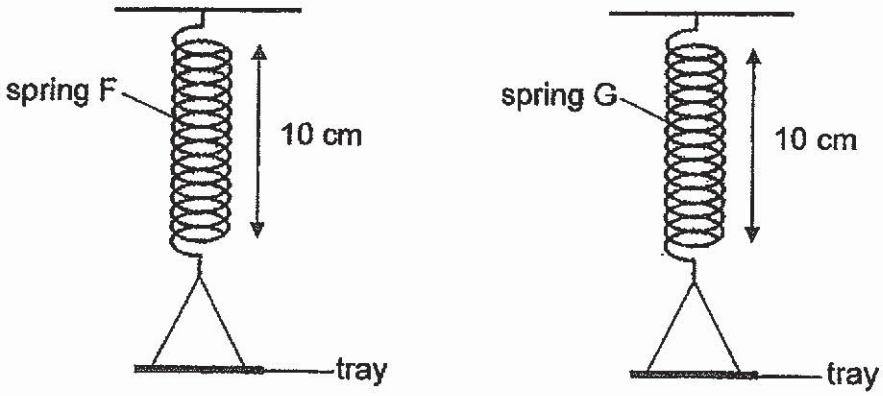
21. Karen recorded the length of two springs, F and G, as shown in the diagram below.



She put loads of different masses on both trays and recorded the length of the springs in the table below.

Mass of load (g)	Length of spring F (cm)	Length of spring G (cm)
0	10	10
100	15	12
200	20	14
300	25	14

Which of the following statements is definitely true?

(1) Spring G was damaged when a mass of 100 g was put on the tray.
(2) Spring G stretched to a longer length with a 300 g mass than Spring F.
(3) Spring F stretched longer than spring G with the same mass put on the tray.
(4) Spring F and G would extend to the same length when a 200 g mass put on the tray.

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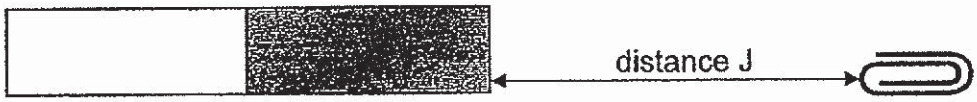
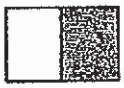
22. Danielle placed magnet R and a paper clip 15 cm away from each other.



magnet R

Danielle moved the paper clip slowly towards magnet R. She recorded distance J, the greatest distance the magnet could attract the paper clip. She repeated the experiment with three other magnets, S, T, and U, as shown below.



magnet S

magnet T

magnet U

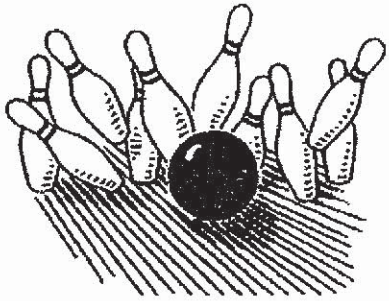
The table below shows the results of her experiment.

Magnet	R	S	T	U
Distance J (cm)	2	7	5	8

Based on the results, which of the following statements is true?

(1) Magnet U is the weakest.
(2) Magnet S is stronger than magnet R.
(3) The bigger the magnet, the stronger the magnetic force.
(4) Only magnet T can attract paper clips that are placed 5 cm away.

23. The diagram below shows bowling pins falling after being hit by a bowling ball.



Which of the following best shows the energy conversions when the bowling ball is rolling and hits the bowling pins?

(1) Kinetic energy → Heat energy → Kinetic energy
(2) Kinetic energy → Kinetic energy + Sound energy +Heat energy
(3) Potential energy →Kinetic energy + Sound energy + Heat energy
(4) Potential energy → Kinetic energy → Sound energy + Heat energy

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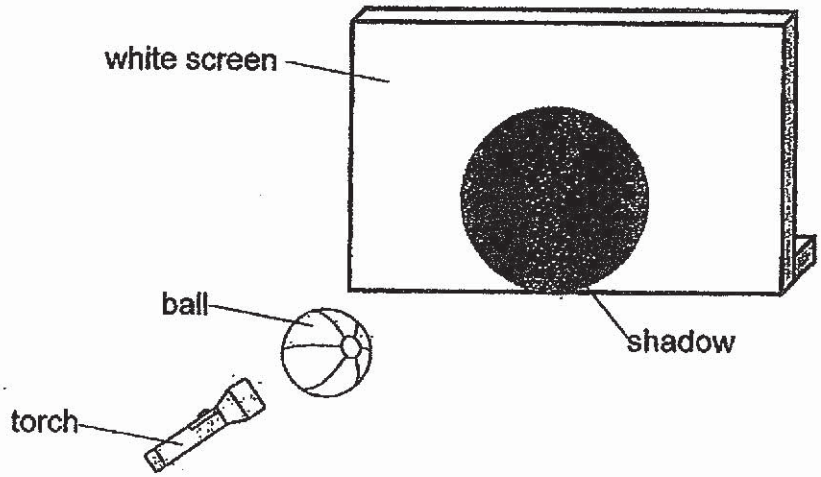
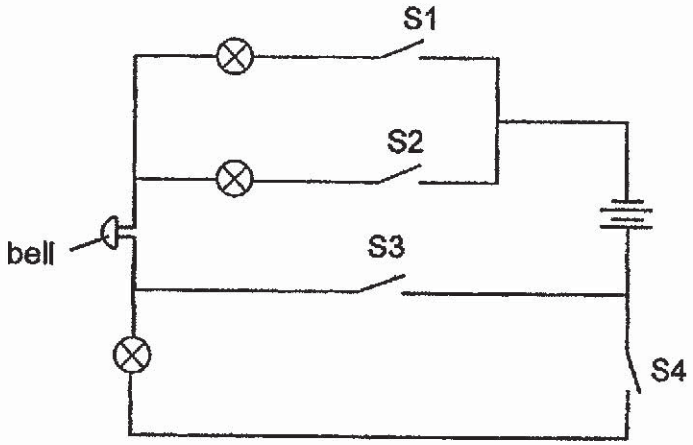
24. When Oliver placed a ball between the torch and a white screen, a shadow of the ball was cast on the white screen as shown below.



Which of the following changes should Oliver make to the set-up so that he could observe a bigger shadow of the ball?

(1) Move the torch nearer to the ball.
(2) Move the ball nearer to the screen.
(3) Move the white screen nearer to the ball.
(4) Move the ball further away from the torch.

25. Study the electrical circuit below.



Which of the following actions to the switches, S1, S2, S3 and S4, will result in the bell ringing and only one bulb being lit up?

	S1	S2	S3	S4
(1)	closed	closed	closed	opened
(2)	opened	closed	opened	closed
(3)	opened	closed	closed	opened
(4)	closed	opened	opened	closed

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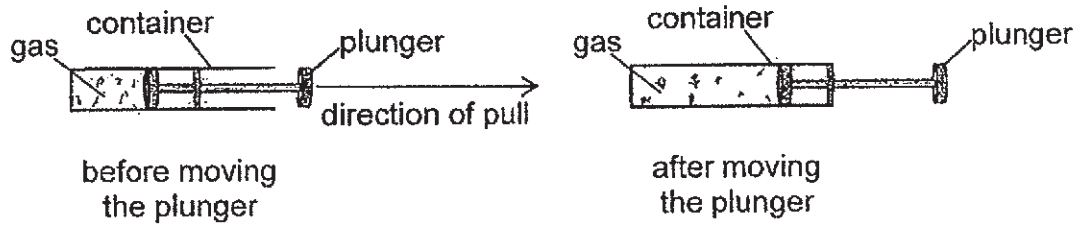
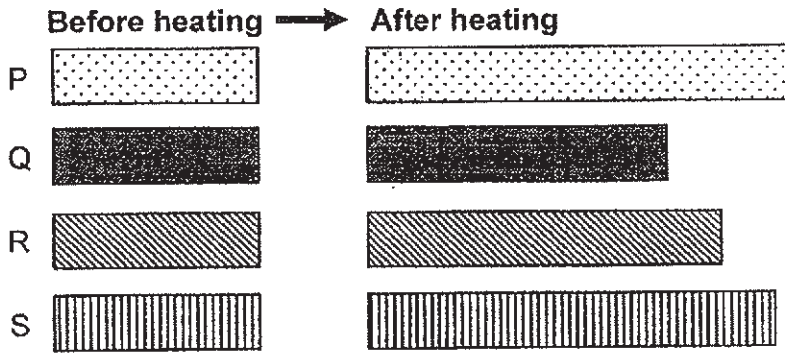
26. David trapped some gas in a container. He pulled the plunger towards the open end of the container as shown below.



How was the volume and mass of the gas in the container affected by the movement of the plunger?

	Volume of gas	Mass of gas
(1)	decrease	decrease
(2)	increase	increase
(3)	decrease	remains the same
(4)	increase	remains the same

27. Carla had four different metal strips, P, Q, R and S, of the same length. She heated each strip with the same amount heat for the same period of time.



Based on the information above, which of the following shows the correct arrangement of metals, P, Q, R and S, from the lowest to the greatest rate of expansion?

	Lowest rate of expansion →			Greatest rate of expansion
(1)	P	R	Q	S
(2)	Q	R	S	P
(3)	S	Q	R	P
(4)	P	S	R	Q

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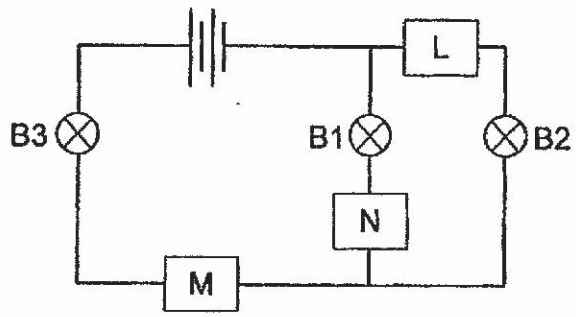
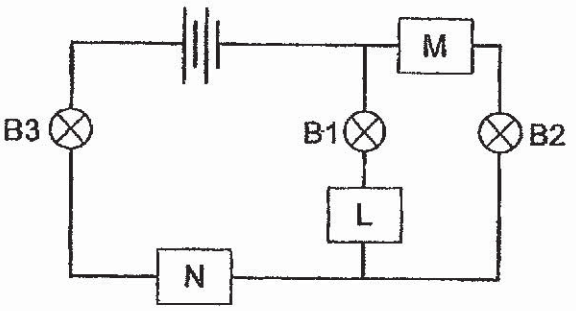
28. Hariz had 3 bars, L, M and N, each made of different materials. He placed them at positions as shown in the circuit below.



His results are shown in the table below.

Bulb	Did the bulb light up?
B1	Yes
B2	No
B3	Yes

He then repeated the experiment by placing the bars at different positions in the electrical circuit as shown below.



Which of the following correctly shows the bulbs that will light up?

	B1	B2	B3
(1)	no	yes	yes
(2)	yes	yes	no
(3)	yes	no	yes
(4)	no	no	no

End of Booklet A

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2019 PRIMARY 6 SEMESTRAL ASSESSMENT 1

Name : _____ ( )

Class : Primary 6 ( )

Parent's Signature : _____

Date: 14 May 2019

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	56
Booklet B	44
Total	100

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Booklet B (44 marks)

For questions 29 to 41, write your answers clearly in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

---

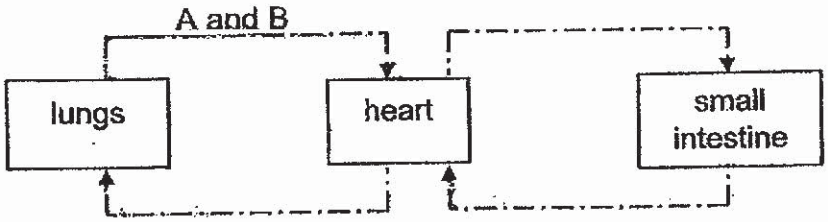
29. The diagram below shows how substances A and B are transported in the plant transport system.

a) What do substances A and B represent? [1]

A: _____

B: _____

The human circulatory system also transports A and B as shown below.



b) Based on the diagrams above, state one difference on how substances A and B are transported in plant and in human. [1]

_____

_____

Score	2

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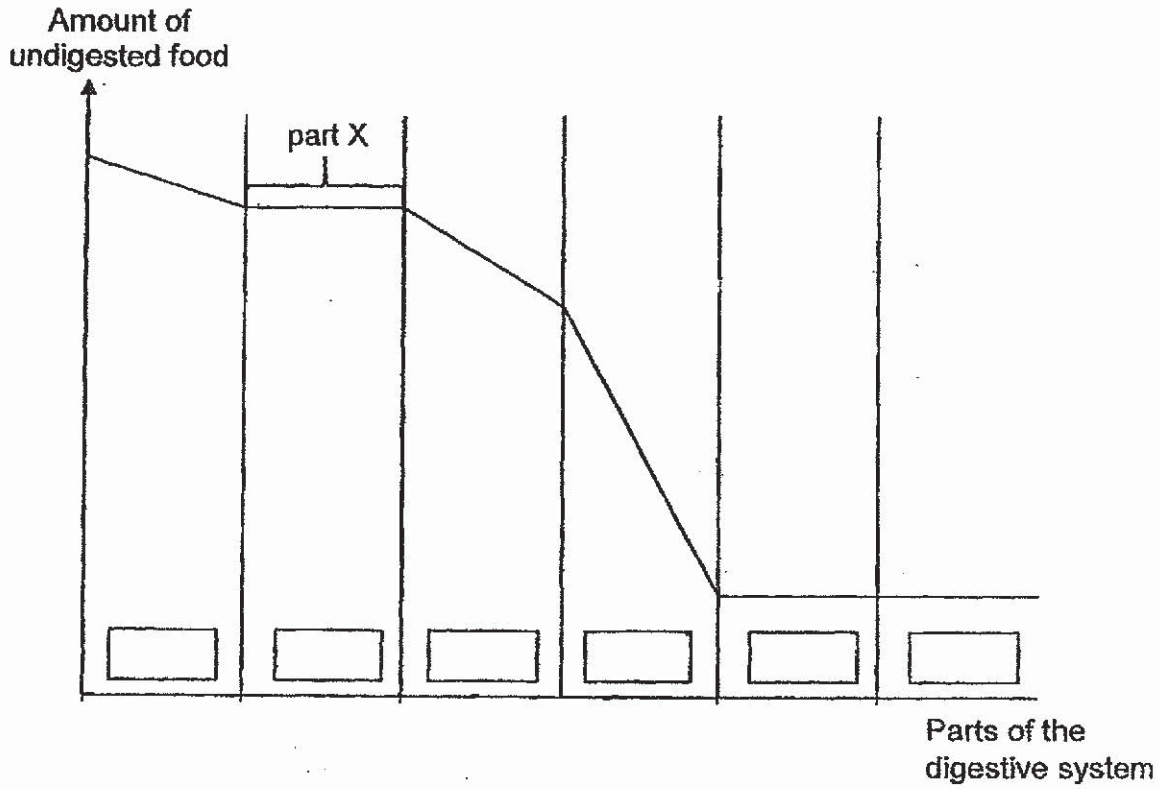
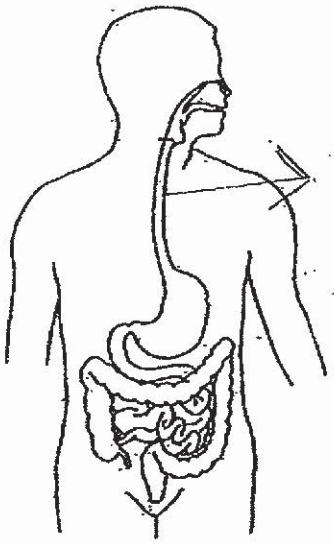
The diagram below shows how the amount of undigested food changes as it passes through the human digestive system, beginning from the mouth.



c) (i) Put a tick in the box(es) in the graph above to indicate where digestion takes place. [1]

(ii) Identify part X by labelling and naming it in the diagram below. [1]



Score	
	2

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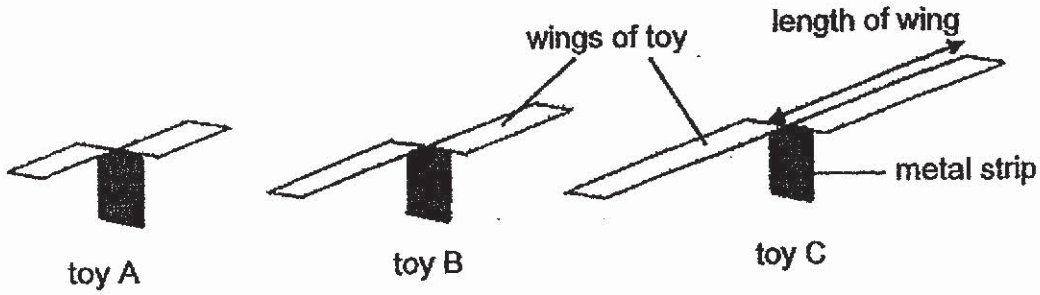
30. An experiment was conducted to find out how the length of the wings of a toy affects the length of time the toy could remain in the air. Toys A, B and C were made using the same type of paper, as shown in the diagram below. A metal strip was attached to each toy.



The toys were released, one at a time, from a height of 5m and the time taken for each toy to reach the ground was recorded in the table below.

	Time taken for toy to reach the ground (s)			
Toy	1st reading	2nd reading	3rd reading	Average reading
A	3.5	3.3	3.4	3.4
B	4.5	4.7	4.3	4.5
C	5.4	5.8	5.9	5.7

a) State another variable that needs to be kept constant to ensure a fair test. [1]

_____

_____

b) Based on the results, how does the length of wings affect the time taken for the toy to reach the ground? [1]

_____

_____

c) Some fruits in nature have large wing-like structures. Using your answer in (b), explain how this benefits the reproduction of plants. [1]

_____

_____

Score	
	3

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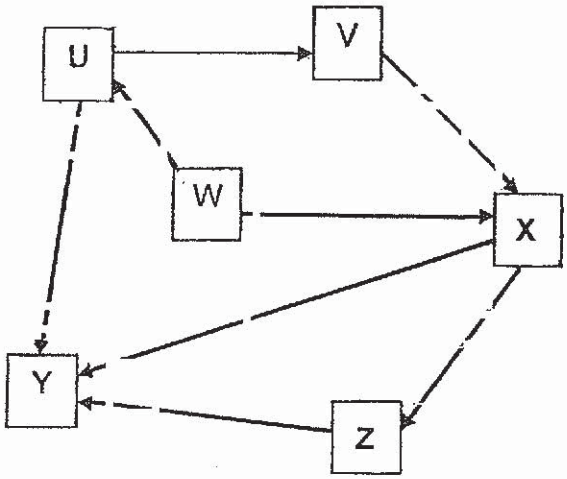
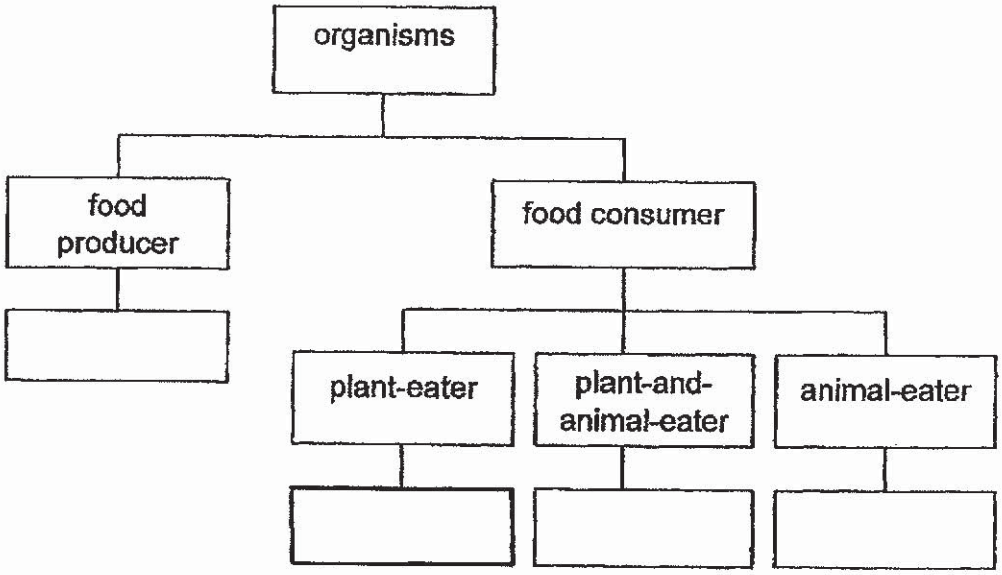
31. Study the food web below.



a) How many food chains are there in the food web above? [1]

b) Classify all the organisms in the food web by writing the correct letter, U, V, W, X, Y and Z, in the boxes of the chart below. You may write more than one letter for each box. [2]



c) If a disease has wiped out organisms U, X and Z in the community, what can organism Y do to survive? [1]

Score 4

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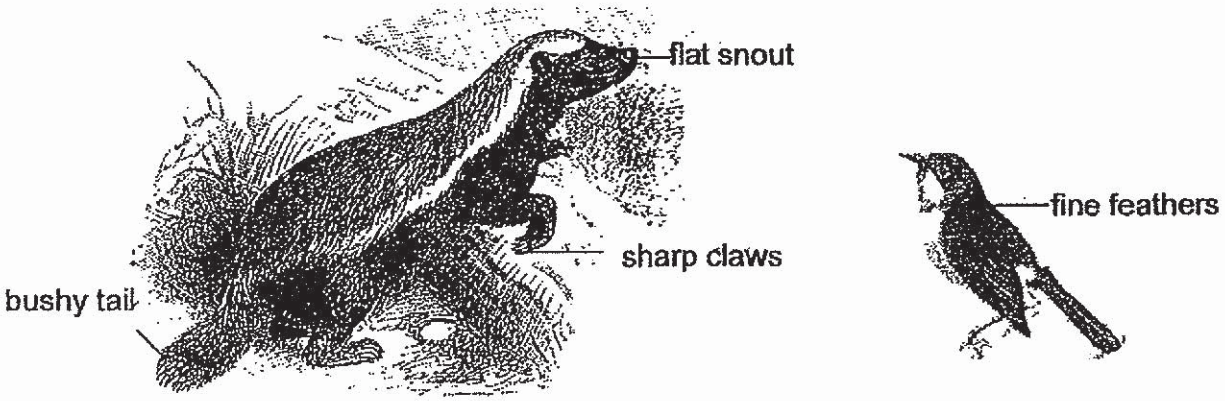
32. Organism H and organism R live in the same habitat. Both organisms look for food in beehives found close to the ground. The organisms are not shown to scale.



organism R

organism H

a) Based on the pictures above, identify a structural adaptation in organism R that helps it to break open beehives. [1]

_____

_____

Score	/ 1

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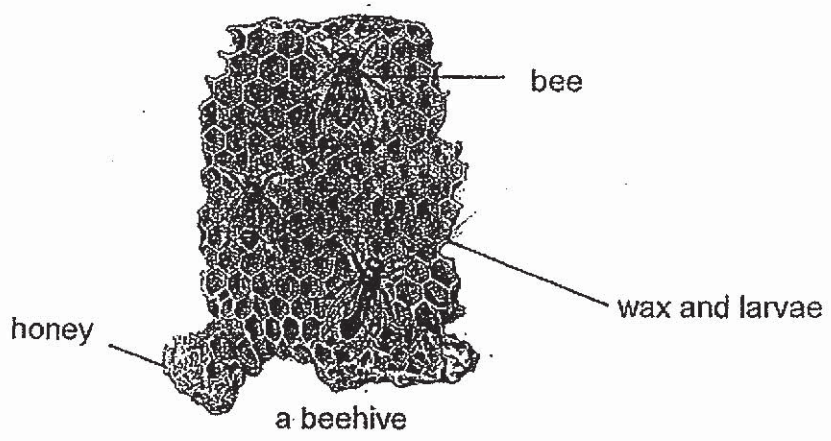
734

Organism R feeds on the honey and organism H feeds on the wax and the larvae found in the beehive.



Organism R cannot find beehives easily while organism H is not able to break open the beehives to feed on the wax and larvae. Organism H has a keen sense of smell.

b) Suggest how organism R and organism H can work together to obtain their favourite food. [2]

c) Give a reason why this relationship reduces the population size of the bee over time. [1]

d) The above type of bees feeds on flowers of plant K. Explain how the population size of the bees would affect the population of plant K. [1]

Score	/ 4

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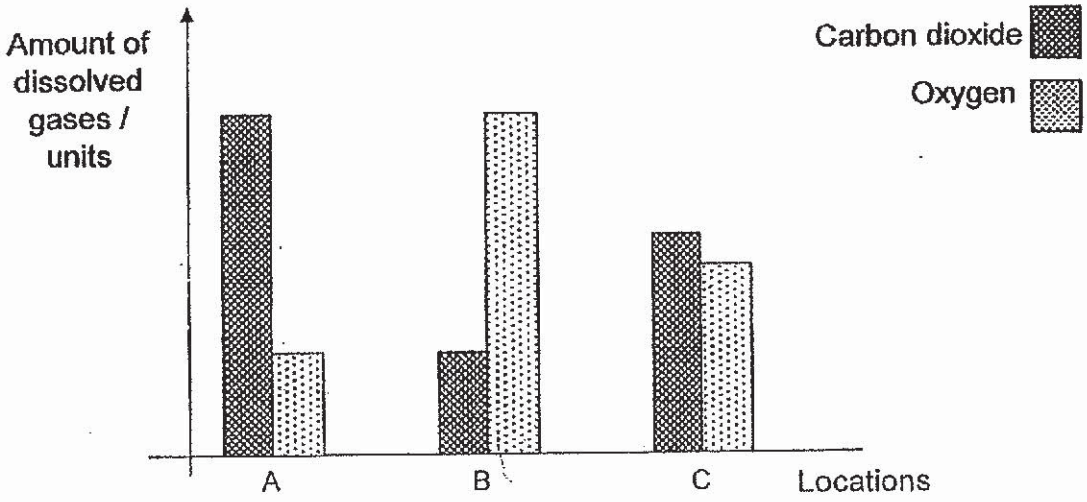
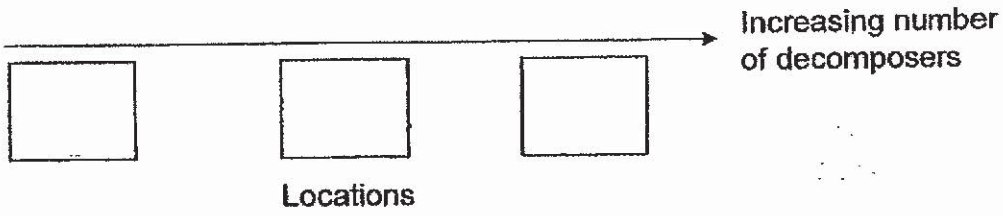
33. Melissa wanted to find out which part of a river has the most decomposers. She collected equal volumes of water samples from different locations, A, B and C, along a river. She measured the amount of dissolved oxygen and carbon dioxide in each water sample and showed the results in the following graph.



a) Arrange the water samples from locations, A, B and C, in increasing number of decomposers in the boxes below. [1]



b) What kind of environmental condition would speed up the rate of decomposition of dead matter in the river? [1]

c) Melissa wanted to introduce a large number of floating water plants into the river to increase the amount of dissolved oxygen in the water. Explain why this suggestion may not work. [1]

Score	
	3

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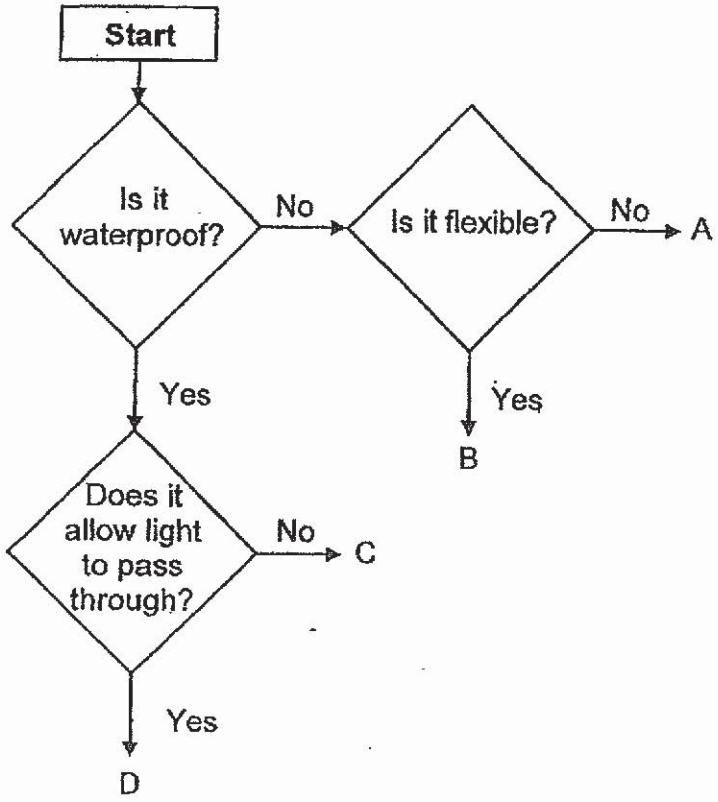
34. The flowchart below shows how different materials can be classified.



a) State two properties of material A. [1]

b) Which of the materials, A, B, C, or D, could be used to make the lenses for a pair of reading spectacles. Based on the above flowchart, explain your answer. [1]

Score	
	2

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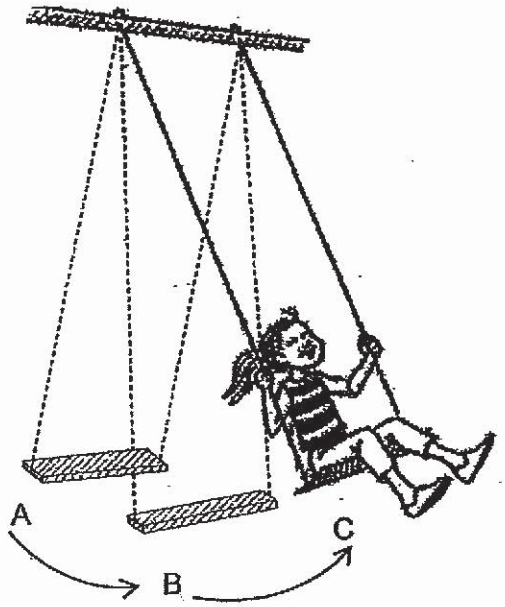
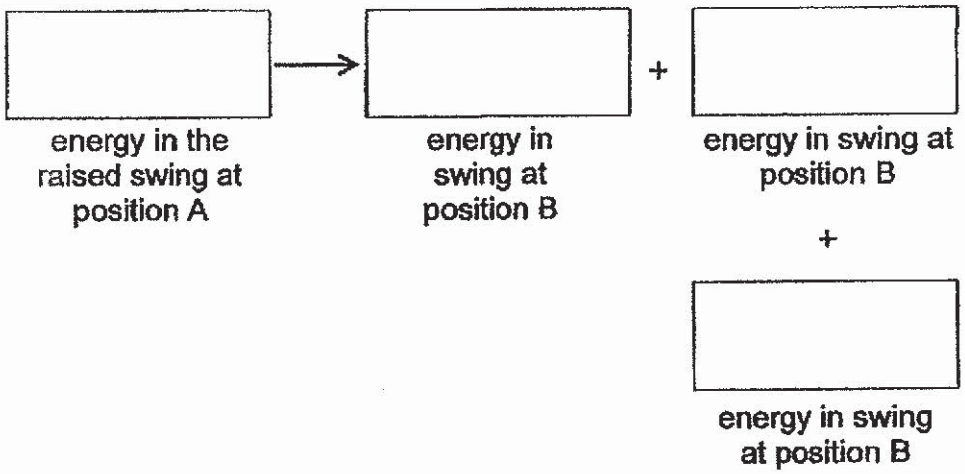
35. The diagram below shows a girl sitting on a swing that was raised to position A, and when released, moved to position B, then position C.



a) State the energy conversion of the swing as it moves from position A to position B. [1]



Score	
	1

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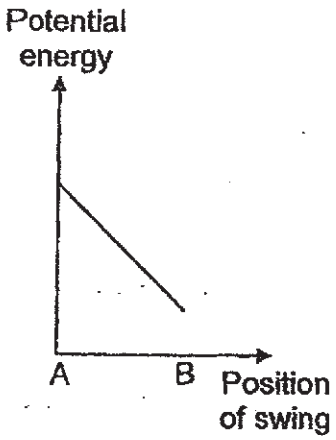
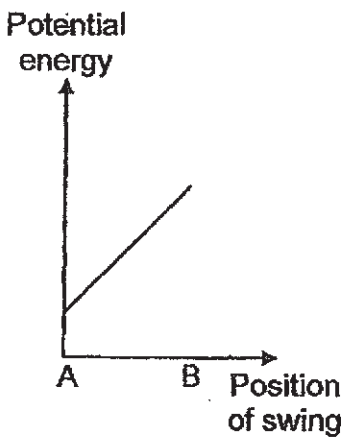
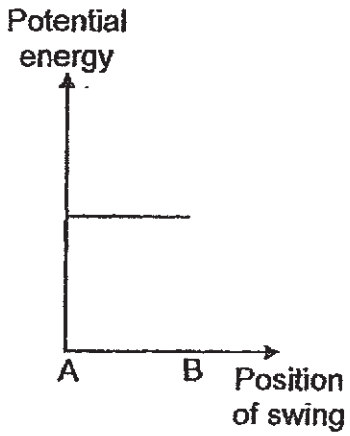
b) Study the graphs below.



Graph X



Graph Y



Graph Z

Which graph, X, Y or Z, best represents the change in potential energy in the swing from position A to position B of the swing?
Explain why. [1]

c) Describe what can be done, so that the girl can swing to a greater height at position C.
Explain how in terms of energy changes. [1]

Score	2

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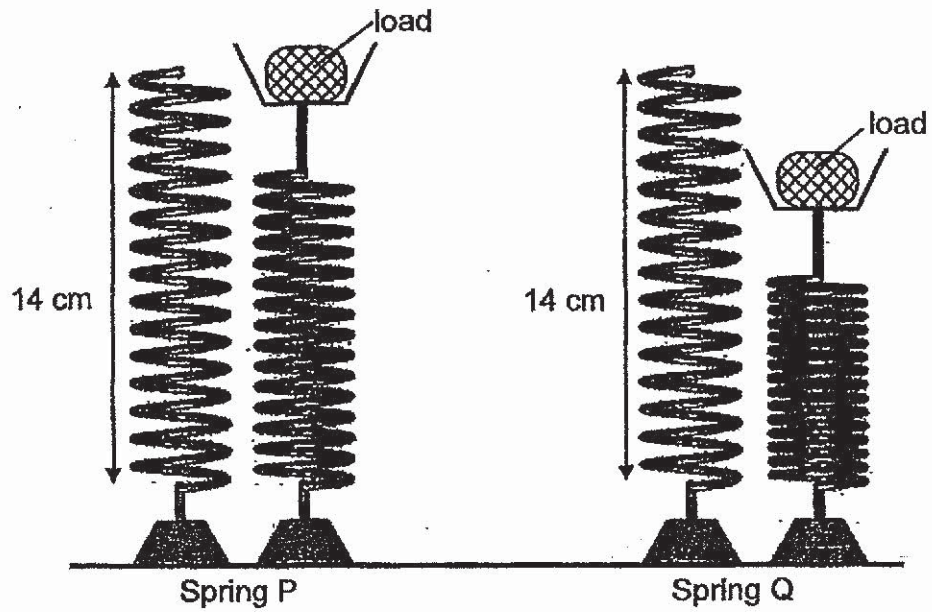
739

36. Jamimah conducted an experiment on two different types of springs, P and Q, of the same length, using the set-ups shown below.



Jamimah measured the new length of each spring after placing similar loads on both springs. Her results are shown in the table below.

Load (g)	New length of spring P (cm)	New length of spring Q (cm)
100	13	11
150	12	8
200	11	5

a) What was the length of the spring P when a 150 g load was placed on it? [1]

_____

b) Based on the above results, how was the length of the springs affected by the mass of the load? [1]

_____

_____

Score	/ 2

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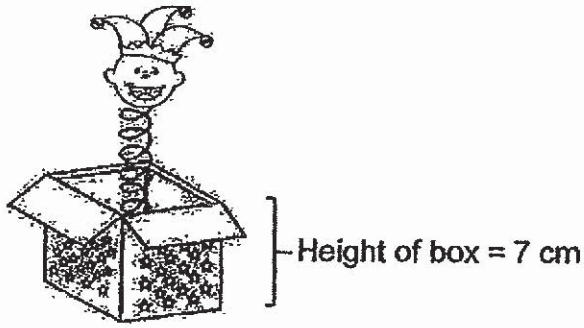
Based on the results in the table above, Jamimah decided that she wanted the clown-in-the-box shown in the diagram below, to spring faster and with a greater force out of the box.



c) Which spring, P or Q, should Jamimah use? Explain why. [1]

_____

_____

_____

Score	
	1

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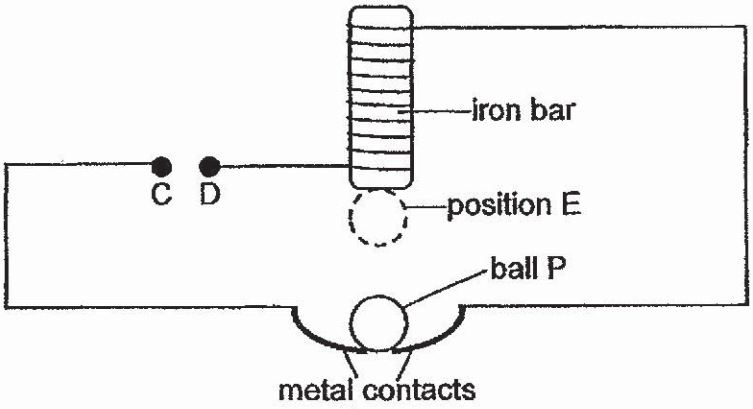
37. Melissa set up an experiment shown below where a wire was coiled around an iron bar in the circuit shown below.



An object Y was used to connect point C to D in the circuit. Melissa observed that the ball P moved repeatedly between the iron bar and the metal contacts until object Y was removed.

a) What is object Y? [1]

b) What material is ball P made of? [1]

c) When object Y was connected between points C and D, explain why ball P is able to move to position E? [2]

Score	/ 4

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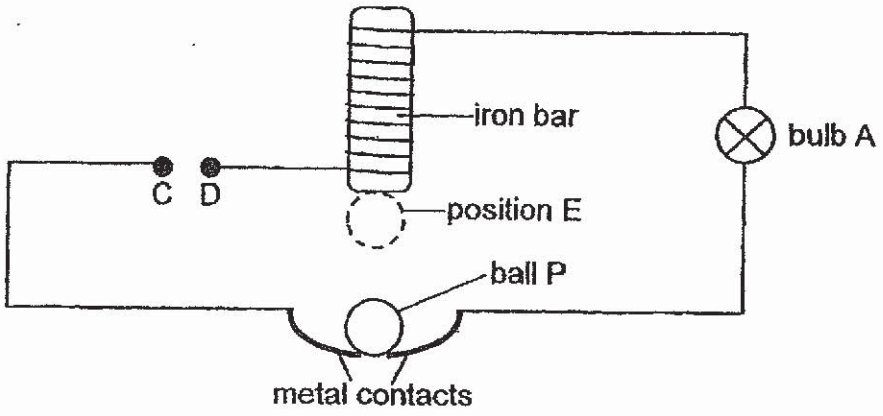
Melissa then added bulb A to the same set-up, as shown below.



d) When object Y was placed between points C and D, describe what will Melissa observe for Bulb A when ball P moved repeatedly between the iron bar and the metal contacts? [1]

_____

_____

Score	/ 1

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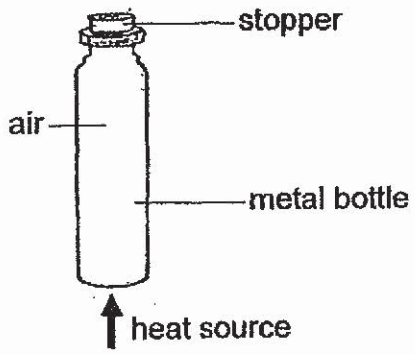
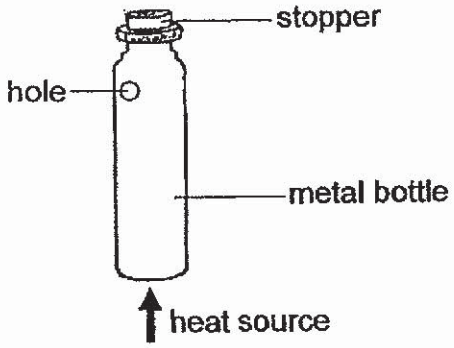
38. A metal bottle with a stopper was heated by Olivia as shown below.



a) Only after some time, the stopper flew off. Explain why. [2]

Olivia then made a hole in the bottle and repeated her experiment.



b) She observed that the stopper did not fly off this time. Explain her observation. [1]

Score	3

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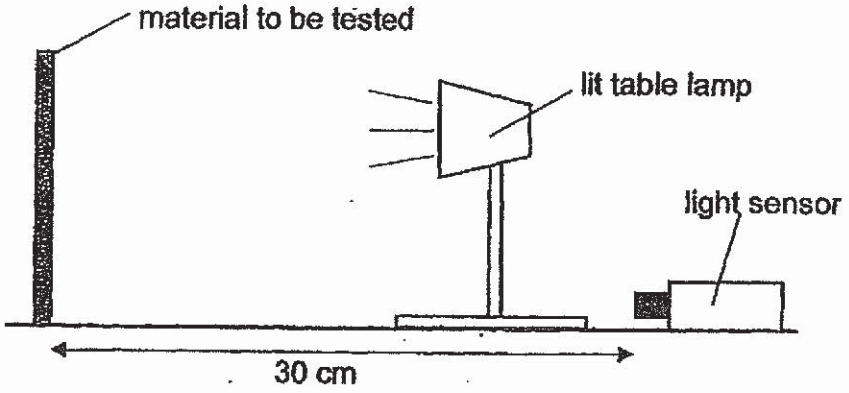
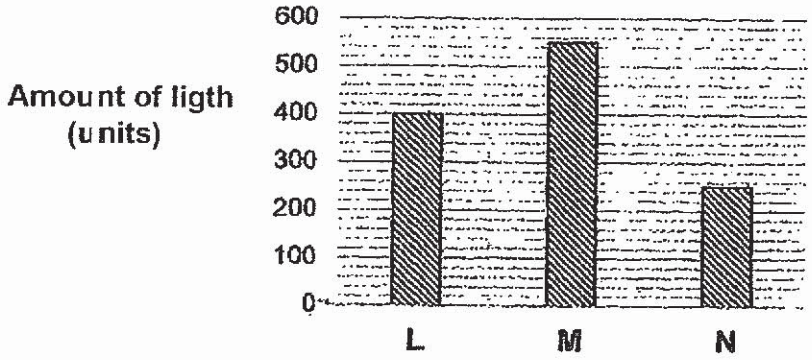
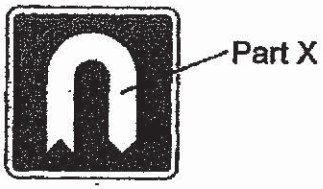
39. Amanda conducted the experiment in a dark room using different materials, L, M and N. She measured the amount of light reflected by the materials with a light sensor, as shown below.



Her results were recorded in the bar chart below.



When driving at night, Amanda noticed Part X of the road sign shown below, which would 'glow' brighter as she drove closer to it.



Based on the above results, which of the above materials, L, M or N, is most suitable for making Part X? Explain your answer. [2]

_____

_____

_____

_____

Score	
	2

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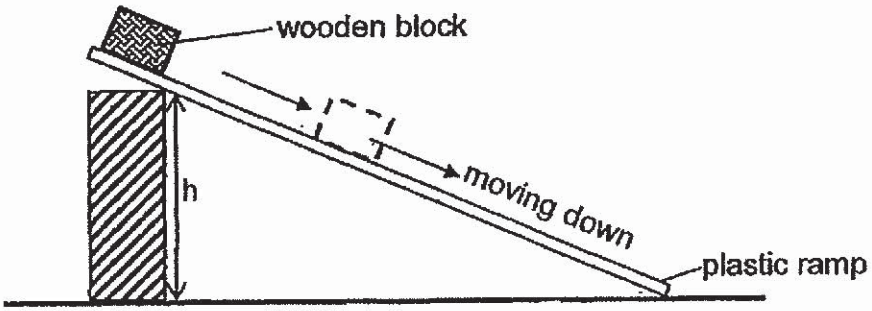
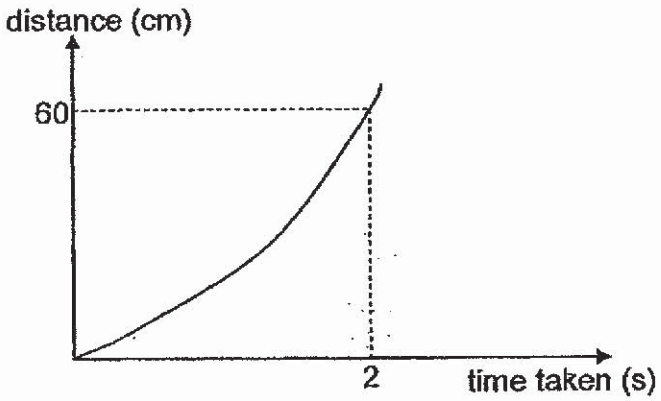
40. Ray set up the experiment shown below.



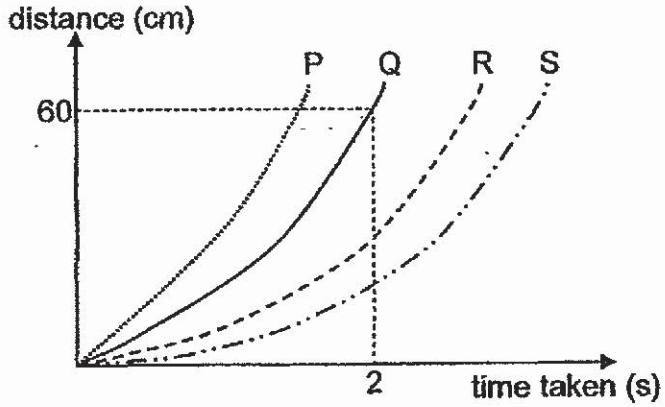
Set-up A

He releases the wooden block from the top of the ramp and measured the distance travelled by the block and the time taken. His results are shown in the graph below.



Ray repeated the experiment by applying oil to the surface of an identical ramp.

a) State which graph, P, Q, R or S, correctly represents the set-up with oil added to the ramp. [1]



Graph: _____

Score	1

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b) Explain why you chose the graph in (a). [2]

c) Without changing the plastic ramp, suggest one change to set-up A so that the wooden block will take a longer time to reach the bottom of the plastic ramp. [1]

Score	
	3

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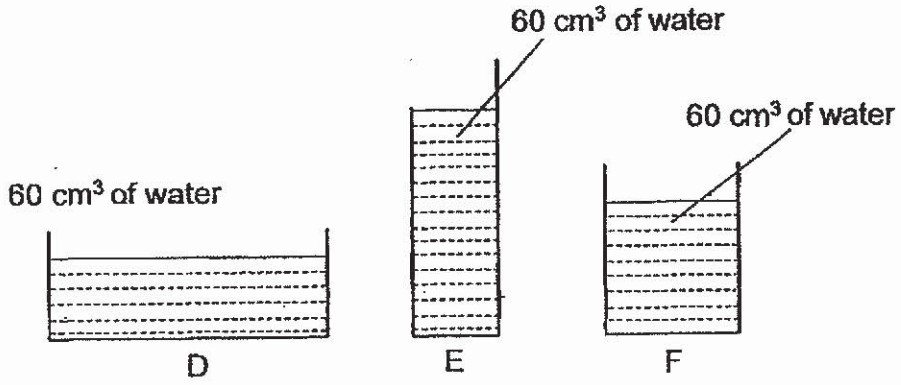
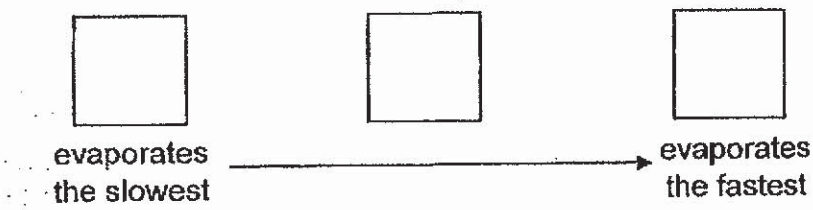
747

41. An experiment was carried out to find out how the exposed surface area of water affects the rate of evaporation. Three glass containers, D, E and F, were filled with the same amount of water at the same temperature. The amount of water left in each container was measured every few hours until all the water fully evaporated.



a) In the boxes below, arrange the containers in **ascending** order on the rate of evaporation of the water. [1]



b) List another variable, which is not stated above, that needs to be kept constant. [1]

_____

_____

c) Why must the same amount of water be used in all three glass containers to ensure a fair test? [1]

_____

_____

End of Booklet B

20

Score	
	3

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SCHOOL : TAO NAN PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	4	3	3	3	2	3	3	1	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	1	4	4	2	1	1	3	4
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	2	2	1	3	4	2	1		

SECTION B

Q29)

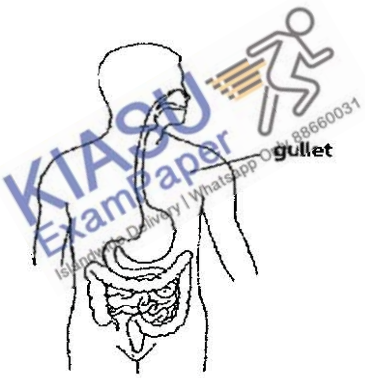
a)A: Water B: Food

b)In humans substances A and B are transported together in the blood while substances A and B are transported through two different tubes, the food carrying tubes and the water carrying tubes.

c)i)

√		√	√		

ii)



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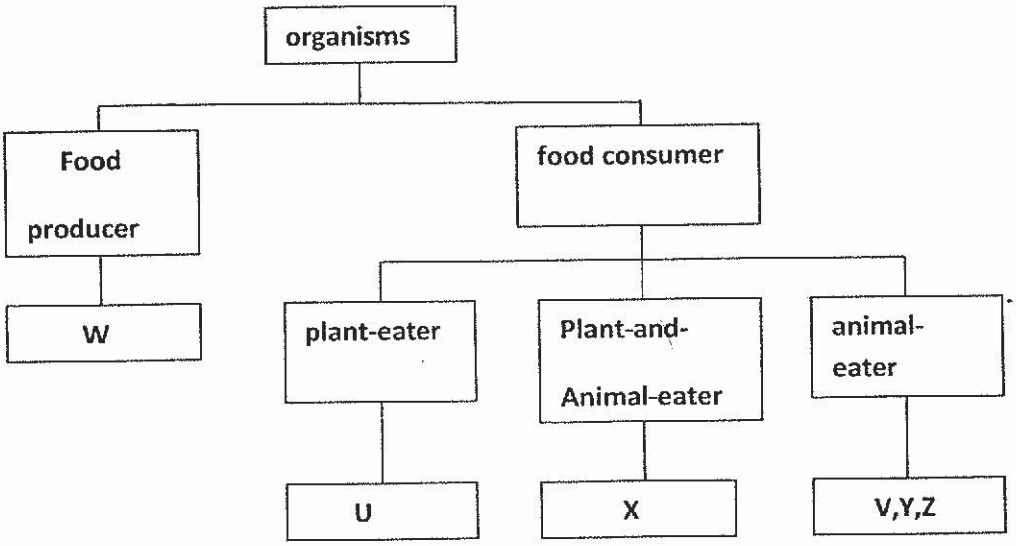
Q30)	a)The mass of the toy. b)The longer the wings, the longer the time taken for the toy to reach the ground. c)The fruits will be able to stay afloat for a longer time thus it can land further away from its parents to avoid competition with them for spare, nutrient and water. As a result, more plants will survive.
Q31)	a)5 b)  c)Organism Y can migrate to another suitable environment.
Q32)	a)Organism R has sharp claws. b)Organism H can lead organism R to the beehive. c)As organism H feeds on the bees larvae, there will be less larvae to grow up into adult bees. d)As there are less bees to pollinate the flowers, the rate of reproduction decreases.
Q33)	a)B , C , A b)Someplace with higher surrounding temperature. c)As some floating plants have their leaves above the water level, the oxygen produced during photosynthesis may be released into the atmosphere instead of the water.

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Q34)	a)It is not water proof and is not flexible. b)D. It allows light to pass through so the person will be able see through the lens.
Q35)	a)Potential → Kinetic + Sound + Heat b)Graph X. As the swing is at its highest position in A, the amount of potential energy it has is the most while at position B has the lowest amount of potential energy as it is at it's lowest point. c)The girl can start at a higher position. The higher she starts the more potential energy she has. This energy is then converted to more kinetic energy. As a result more kinetic energy can be converted to potential energy.
Q36)	a)12 cm. b)The heavier the load the shorter the spring. c)Spring P. As spring P is harder to be compressed it will have more elastic spring force thus the clown-in-the-box will spring faster.Also more elastic spring force can be converted into more kinetic energy.
Q37)	a)A battery. b)Steel c)AS Iron is a conducted of electricity, the circuit became a closed circuit thus the iron bar turned into an electro-magnet. As a result the steel ball got attracted to the iron bar. As a result the ball could reach position E. d)Bulb A flickers repeatedly.
Q38)	a)As air in the bottle is a poor conductor of heat, it gained heat from the metal bottle slowly. When the air gained enough heat from the heat source. Tried to expand there was no space left so it pushed out the stopped. b)When the air expanded, it no longer needed to push out the stopper as the air could escape through the hold in the bottle.

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Q39)	Material M. As a result Amanda will be able to see the road sign from a further distance.
Q40)	a)Graph : P b)As oil is a lubricant, it reduces the amount of friction between the ramp and the wooden block. As a result the block can slide down faster. c)Decrease the length of h
Q41)	a)E , F , D b)The location of the experiment. c)The results will be soley due to the exposed surface area of the water and not the volume of water.

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Anglo-Chinese School (Junior)

Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2019
SCIENCE
PRIMARY SIX
BOOKLET A

Name: _____ ( ) **Class: Primary 6** ____

Date: 27 August 2019 **Total Time for Booklets A and B: 1 h 45 min**

Additional Materials: Optical Answer Sheet (OAS)

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.

This booklet consists of 23 printed pages including this cover page.

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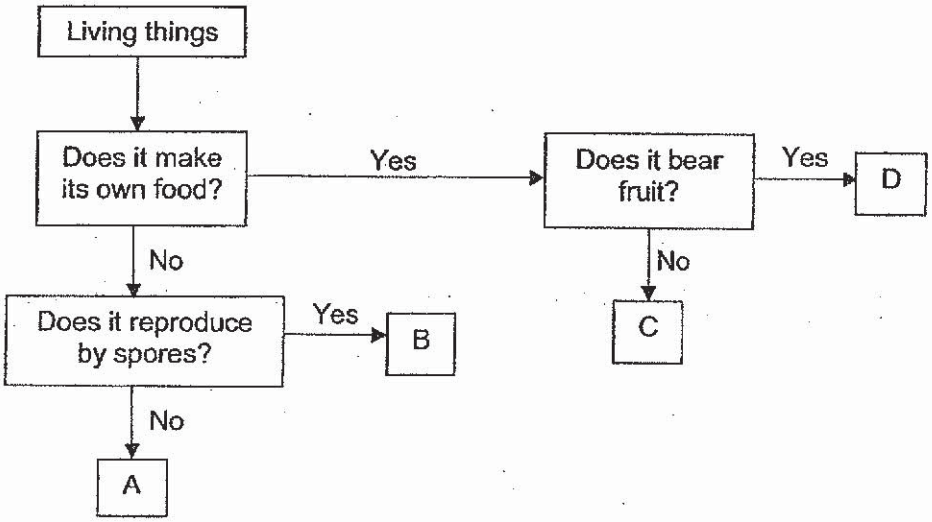
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(56 marks)

---

1 Study the flowchart below.



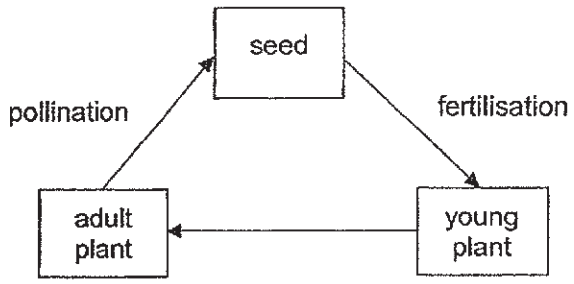
Which of the following most likely represents A, B, C and D?

	A	B	C	D
(1)	Bacteria	Animal	Fern	Flowering plant
(2)	Fungus	Fern	Bacteria	Flowering plant
(3)	Animal	Fungus	Fern	Flowering plant
(4)	Bacteria	Flowering plant	Animal	Fungus

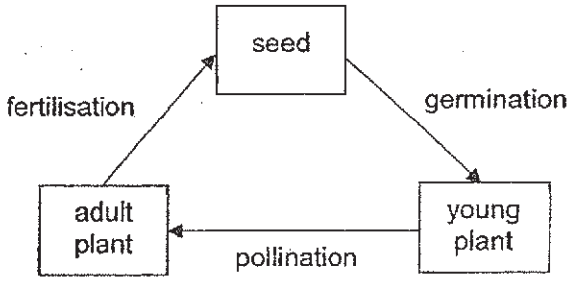
(Go on to the next page)

2 Which of the following diagrams shows the correct order of stages and processes in the life cycle of a flowering plant?

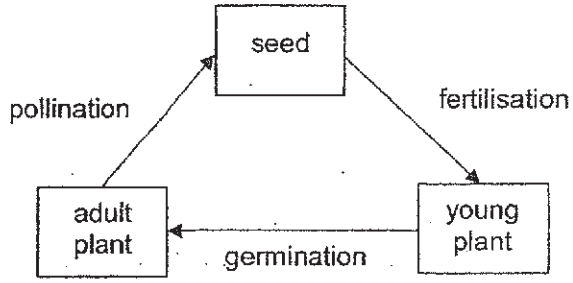
(1)



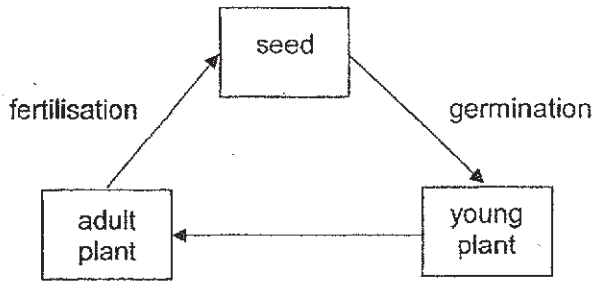
(2)



(3)



(4)



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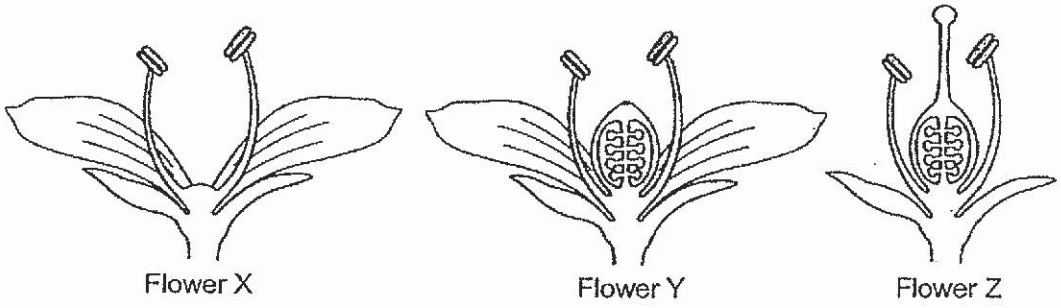
3 The diagram shows flowers, X, Y and Z, with some of their parts removed.



Charlie sprinkled some pollen grains from a similar flower over flowers X, Y and Z. The flowers were observed for the formation of fruits.

Which flower(s) would most likely develop into a fruit?

(1) X only
(2) Z only
(3) Y and Z only
(4) X, Y and Z

4 The diagrams show the reproductive systems of a human and a plant.

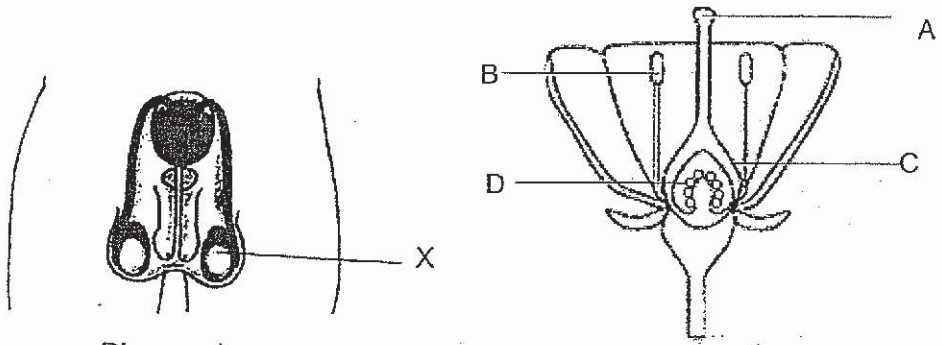


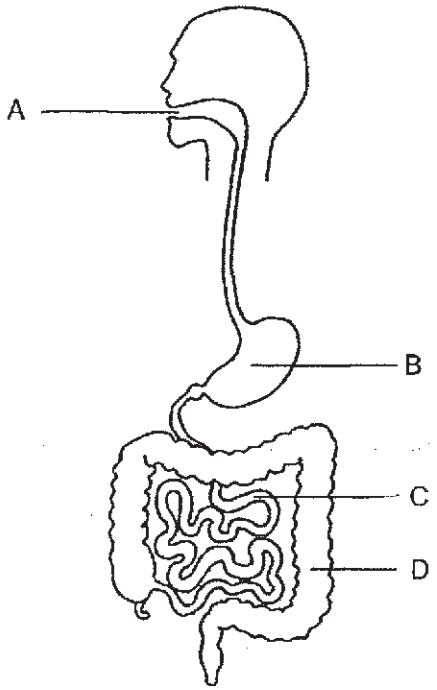
Diagram 1 Diagram 2

Which part, A, B, C or D, in diagram 2 has a similar function as part X in diagram 1?

(1) A
(2) B
(3) C
(4) D

(Go on to the next page)

5 The diagram shows the human digestive system.



Which of the following shows the part(s) where digestive juices is/are released?

(1) B only

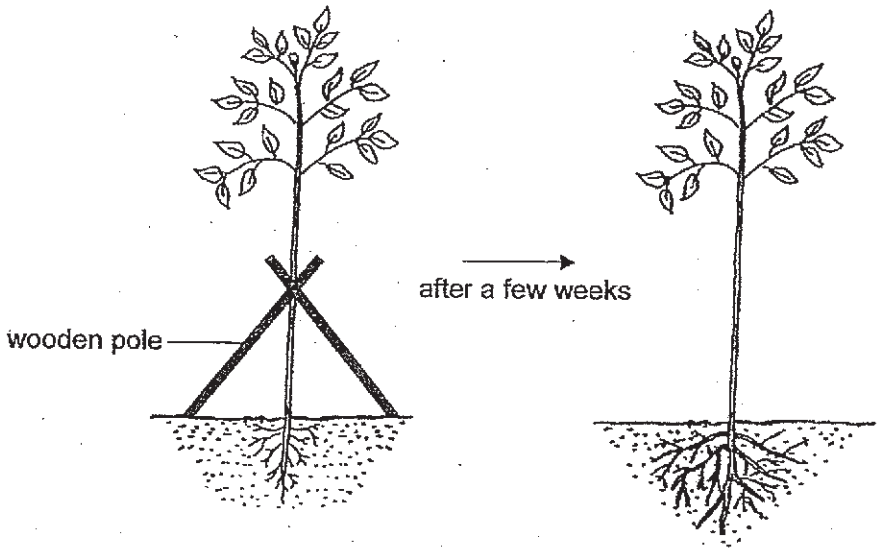
(2) D only

(3) A, B and C only

(4) A, B and D only

(Go on to the next page)

6 The diagram shows how some gardeners will attach wooden poles to a young plant when it is being planted into the ground. The poles are removed after a few weeks.



Based on the diagram, why does the young plant need to be attached to the wooden poles when it is being planted into the ground?

(1) It has a weak stem.

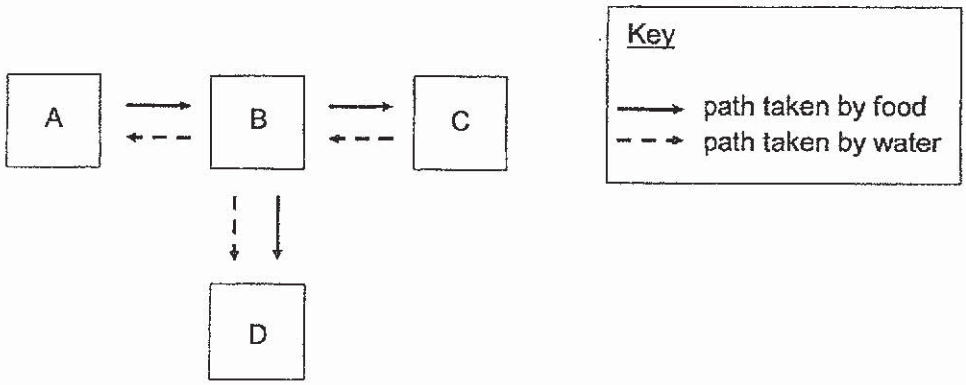
(2) The roots are unable to anchor it firmly to the ground yet.

(3) The poles help transport more water to the leaves for photosynthesis.

(4) The stem needs a support to grow upwards to reach for more sunlight.

(Go on to the next page)

7 The diagram shows the different paths taken by food and water in a plant. A, B, C and D represent parts of the plant.

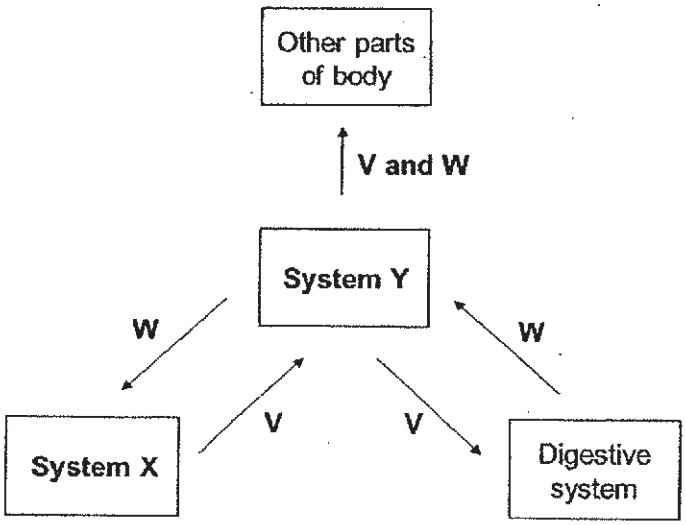


Which of the following best represents A, B, C and D?

	A	B	C	D
(1)	leaf	stem	root	fruit
(2)	root	stem	fruit	leaf
(3)	flower	leaf	root	stem
(4)	stem	root	leaf	flower

(Go on to the next page)

8 The chart shows how some substances are transported in the human body. The arrows represent the directions of how different substances are transported from one system to another.

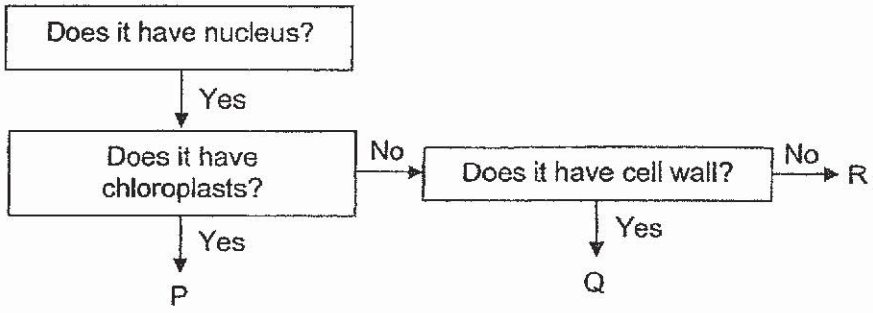


Which of the following correctly identifies substances V and W and systems X and Y?

	Substance V	Substance W	System X	System Y
(1)	Digested food	Oxygen	Circulatory	Respiratory
(2)	Digested food	Oxygen	Respiratory	Circulatory
(3)	Oxygen	Digested food	Circulatory	Respiratory
(4)	Oxygen	Digested food	Respiratory	Circulatory

(Go on to the next page)

9 The diagram shows a flow chart describing three types of cells, P, Q and R.



Which of the following best represents where cells P, Q and R can be found?

	P	Q	R
(1)	Leaf of plant	Root of plant	Skin of human
(2)	Leaf of plant	Flower of plant	Stem of plant
(3)	Stem of plant	Skin of human	Root of plant
(4)	Stem of plant	Flower of plant	Root of plant

(Go on to the next page)

10 William recorded the number of organisms he saw on a tree in the table below.

Organism	Number of organisms
bird	2
ant	10
butterfly	3
aphid	5
caterpillar	7
fern	2

Based on the table, which of the following statements is correct?

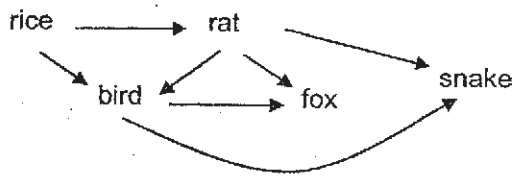
(1) There are 6 communities living on the tree.

(2) There are 5 communities living on the tree.

(3) There are 6 populations of organisms living on the tree.

(4) There are 5 populations of organisms living on the tree.

11 The diagram represents a food web in a farm.



The farmer noticed that although the number of rice plants were the same as the previous year, there was an increase in the mass of rice he harvested.

Which of the following is a possible cause for the increase in the mass of rice harvested?

(1) An increase in the population of rats.

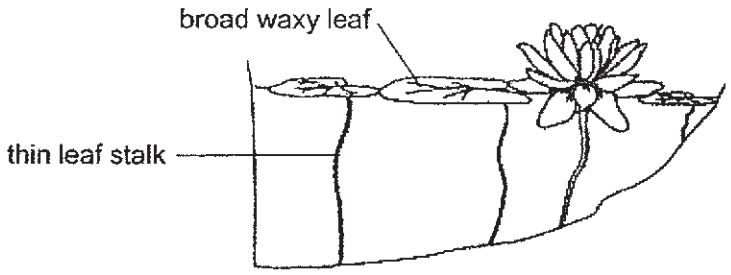
(2) A decrease in the population of foxes.

(3) An increase in the population of birds.

(4) An increase in the population of snakes.

(Go on to the next page)

12 The diagram shows the water lily plant in a pond.



The broad waxy leaf of the water lily plant floats on the surface of the water and carries out gaseous exchange with the surrounding atmosphere.

Which one of the following is **incorrect**?

(1) The broad leaf helps to trap more light.

(2) The thin leaf stalk traps air and helps it float.

(3) The waxy leaf prevents water from weighing it down.

(4) The stomata on the upper surface of the leaf allows gaseous exchange with the surrounding air.

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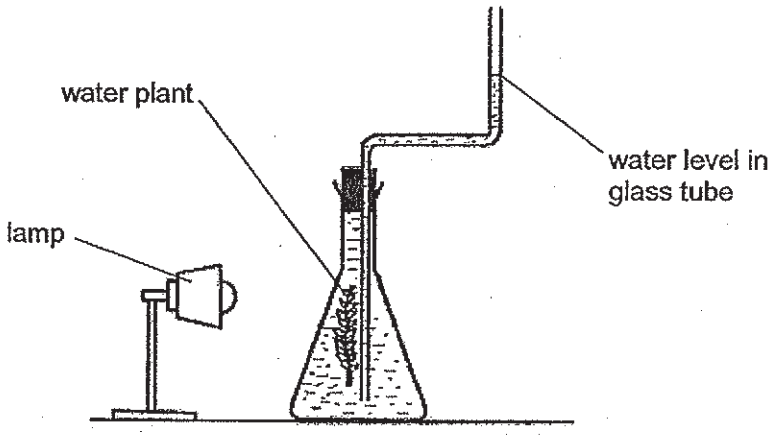
13 Dave conducted an experiment using a set-up shown below. He switched on the lamp and observed that the position of the water level in the glass tube changed after some time.



Which direction did the water level in the glass tube move and what was the reason for the movement?

	Direction moved	Reason for the movement
(1)	↑	Water is taken in by the plant.
(2)	↑	Oxygen is produced by the plant.
(3)	↓	Oxygen is produced by the plant.
(4)	↓	Carbon dioxide is taken in by the plant.

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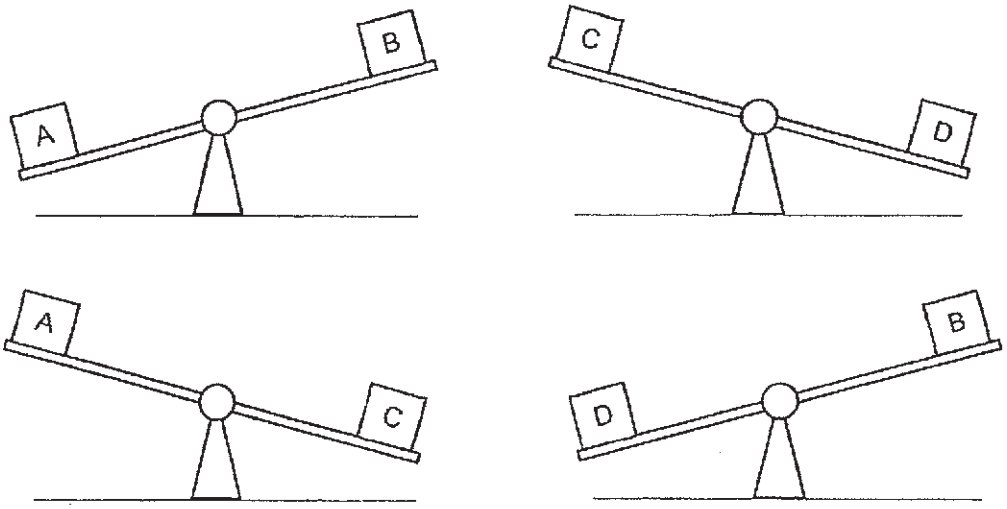
14 Study the containers, A, B, C and D, in the diagrams.



Which container has the largest mass?

(1) A

(2) B

(3) C

(4) D

15 Study the table below that indicates the state of substances X, Y and Z at certain temperatures.

Substance	State of substance at		
	30°C	60°C	100°C
X	liquid	liquid	gas
Y	liquid	gas	gas
Z	solid	solid	solid

Based on the information above, which of the following statements is correct?

(1) Substance X has the highest boiling point.

(2) Substance Z has the highest melting point.

(3) Substance X has the same melting point as substance Y.

(4) Substance Y has a higher melting point than substance Z.

(Go on to the next page)

16 David poured the same amount of water on three identical towels, J, K and L. He then hung the towels at three different locations in the garden.

He recorded the mass of each towel at the start of the experiment and after two hours in the table below.

Towel	Mass of towel (g)	
	At start	After 2 hours
J	1500	1050
K	1500	1200
L	1500	1150

Based on the results, under which condition(s) was Towel J hung?

(1) shady

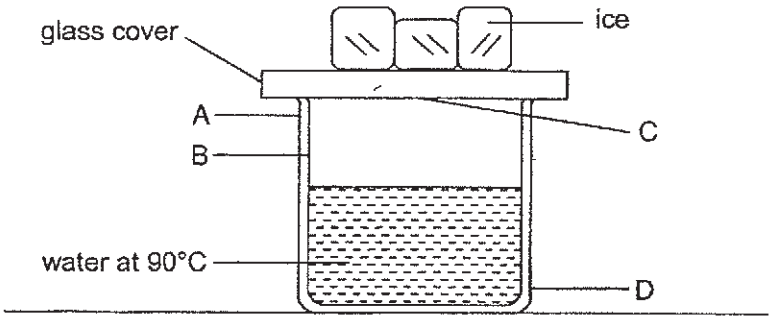
(2) sunny

(3) shady and windy

(4) sunny and windy

(Go on to the next page)

17 Edward set up an experiment as shown in the diagram.



After a while, he noticed that some water droplets had formed. At which two parts, A, B, C or D, did the water droplets form?

(1) A and B

(2) A and D

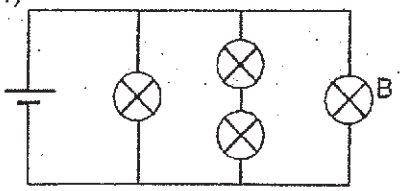
(3) B and C

(4) C and D

18 Leonard set up four different circuits using identical bulbs and batteries as shown. All the electrical components are in working condition.

In which circuit will bulb B be the dimmest?

(1)



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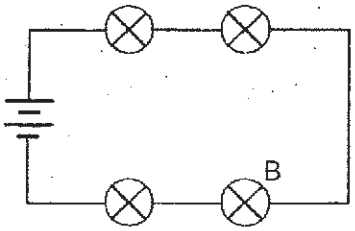
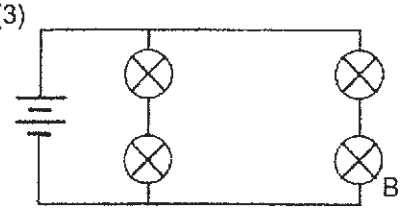


(3)



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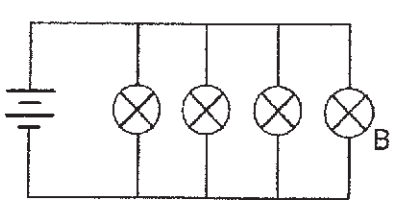

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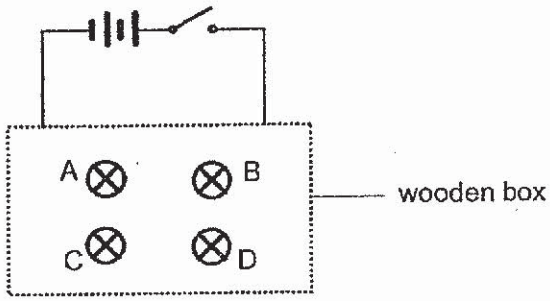
19 Bulbs A, B, C and D were connected in a circuit hidden in a wooden box as shown. All the bulbs lit up when the circuit was closed.

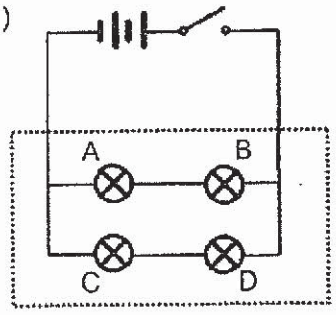


Larry removed one bulb from the circuit each time and observed what happened to the remaining bulbs. His observations were recorded in the table below.

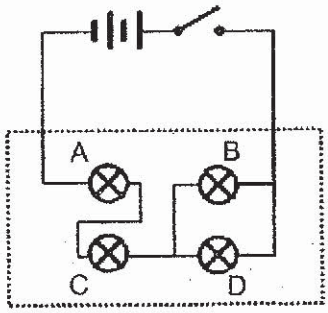
Bulb removed	Bulb(s) lit
A	B, C and D
B	A, C and D
C	A, B and D
D	B only

Which of the following correctly shows the circuit hidden in the wooden box?

(1)



(2)



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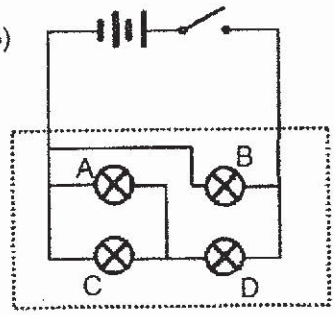

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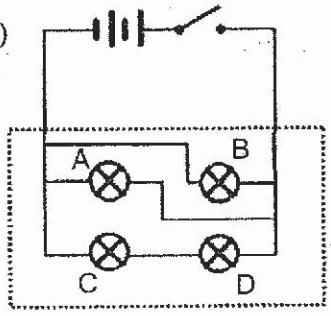

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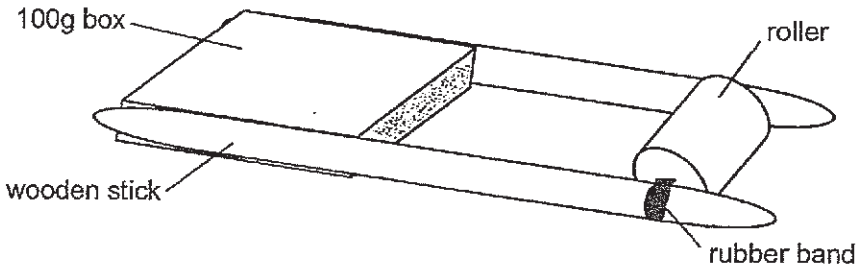
20 Max made a toy as shown.



When Max turned the roller 10 times and placed the toy on the table, the toy moved forward. He replaced the box with an identical box of 50g and repeated his experiment. He noticed that the toy moved further.

Which of the following explains why the toy was able to move a further distance in the second experiment?

(1) There is less air resistance acting on the toy.
(2) There is less frictional force acting on the toy.
(3) There is more gravitational force acting on the toy.
(4) There is more elastic spring force acting on the toy.

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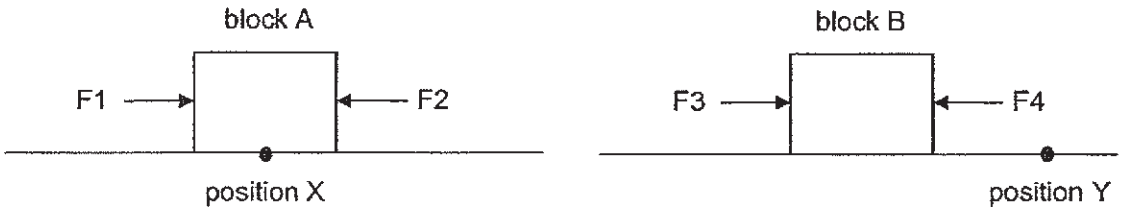
21 Alan placed two identical blocks on his desk. He exerted forces F1 and F2 on block A at the same time and forces F3 and F4 on block B all at the same time.



Which of the following would result in block A remaining at position X and block B moving to position Y?

	Block A remaining at position X	**Block B moving to position Y**
(1)	F1 is less than F2	F3 is the same as F4
(2)	F1 is more than F2	F3 is more than F4
(3)	F1 is the same as F2	F3 is less than F4
(4)	F1 is the same as F2	F3 is more than F4

22 Which of the following two activities contribute to an increase in the amount of carbon dioxide in the air?

A Using a bicycle to get around.
B Using reusable bags when shopping.
C Clearing forest area to make factories.
D Burning trash instead of dumping them into landfills.

(1) A and B
(2) A and C
(3) B and D
(4) C and D

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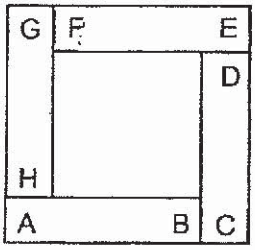
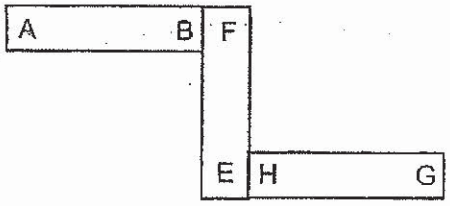
23 Four bar magnets with their ends marked A to H are arranged as shown.

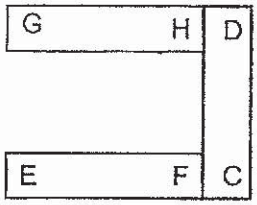


Which of the following diagrams shows a possible arrangement using three of the magnets?

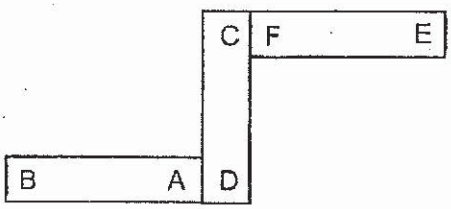
(1)



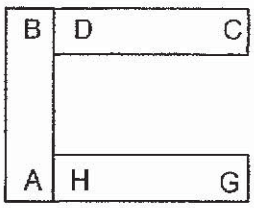
(2)



(3)



(4)



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24 In a scrap yard, electromagnets are used to separate objects. Which of the following explains why they are used?

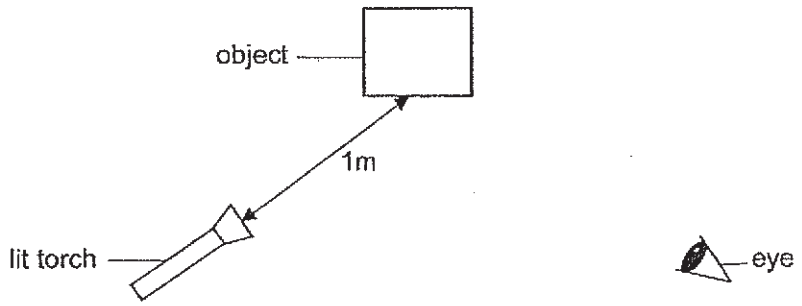
(1) Electromagnets have only one pole.

(2) Electromagnets can repel non-magnetic objects.

(3) Electromagnets are able to attract magnetic objects.

(4) Electromagnets are strong and made of strong metal.

25 Four objects, A, B, C and D, are separately placed from a distance of one metre from a lit torch as shown in the diagram.



Which of the object(s) can reflect light from the torch into the eye?

A brown wood

B polished mirror

C shiny metal

D clear glass

(1) A only

(2) D only

(3) B and C only

(4) A, B, C and D

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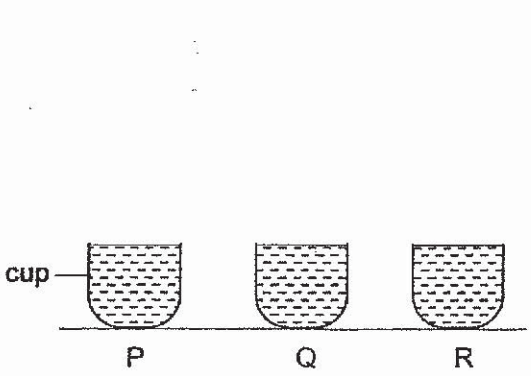
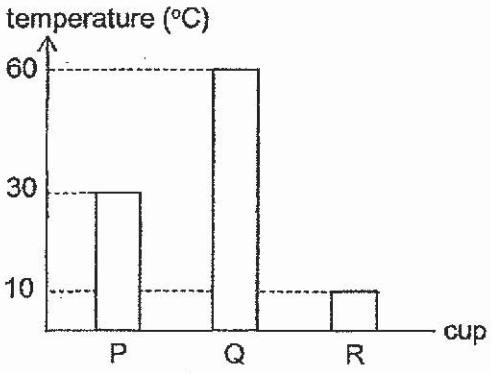
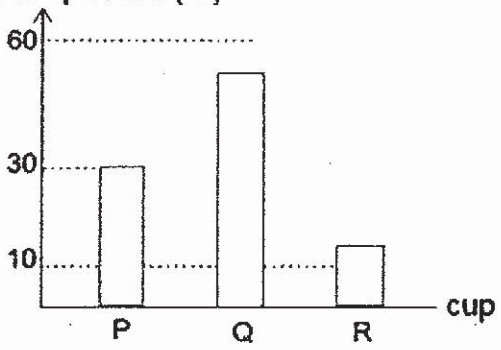
26 Three identical cups, P, Q and R, were filled with water at different temperatures and left at room temperature (30°C) as shown. The graph below shows the temperatures of the water in each cup at the start of the experiment.



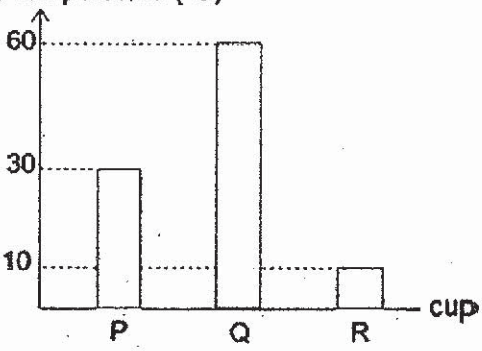


The temperatures of the water were taken again at the end of ten minutes.
Which of the graphs shows the most likely temperature of the water in each cup at the end of ten minutes?

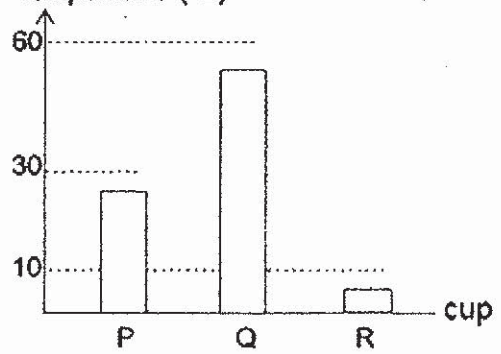
(1)



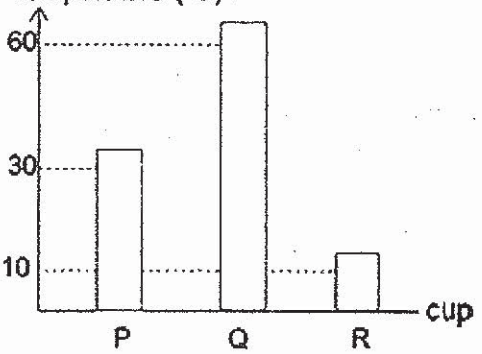
(2)



(3)



(4)



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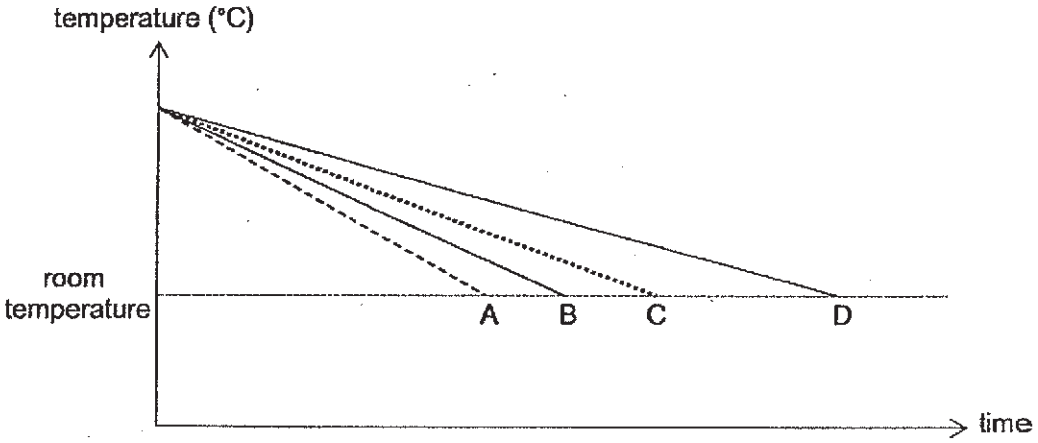
27 Four different containers of the same volume were filled with equal amount of hot water and allowed to cool to room temperature. The graph below shows the results.



Based on the information above, which container, A, B, C or D, is the poorest conductor of heat?

(1) A

(2) B

(3) C

(4) D

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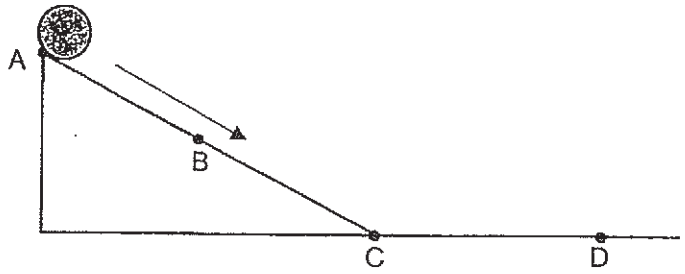
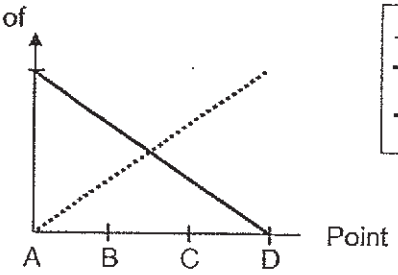
28 The ball, as shown in the diagram, rolls down from Point A. It rolls past Points B and C before finally stopping at Point D.



Which of the following graphs shows the changes in the amount of gravitational potential energy and kinetic energy of the ball from Point A to Point D?

(1)

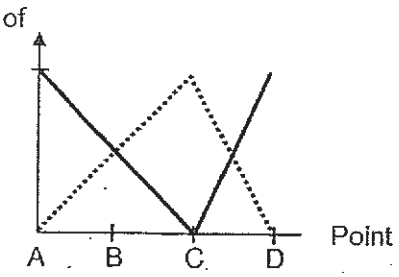


Key

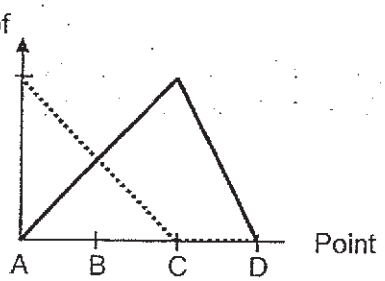
Gravitational potential energy

Kinetic energy

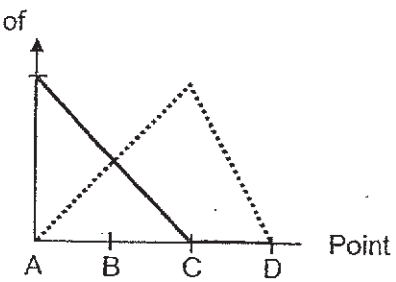
(2)



(3)



(4)



Anglo-Chinese School (Junior)
Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2019
SCIENCE
PRIMARY SIX
BOOKLET B

Name: _____ ( ) **Class: Primary 6** ____

Date: 27 August 2019 **Total Time for Booklets A and B: 1 h 45 min**

_____
Parent's/ Guardian's signature

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

BOOKLET	MAX MARKS	MARKS OBTAINED
A	56	
B	44	
Total	**100**	

This booklet consists of 15 printed pages including this cover page.

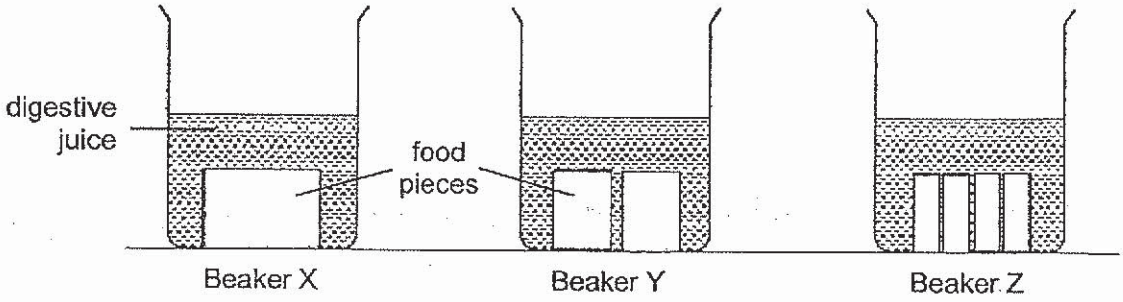
For questions 29 to 40, write your answers in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.
(44 marks)

---

29 Ranjit wanted to investigate the factors that affect the digestion of food in the human digestive system.

(a) He conducted an experiment to find out if the size of food affected how fast the food was being digested. He cut up pieces of the same food and placed them in three beakers of digestive juices as shown. The food in each beaker has the same total mass.



After two hours, Ranjit measured the mass of the food pieces left in each beaker and recorded the results in the table as shown.

Beaker	Mass of food pieces (g)	
	Start of experiment	End of experiment
X	100	91
Y	100	77
Z	100	52

(i) Explain why the mass of the food pieces in all the three beakers decreased. [1]

_____

_____

(ii) Based on the results, explain how chewing food well before swallowing can help food to be digested faster. [1]

_____

_____

_____

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Score	/2

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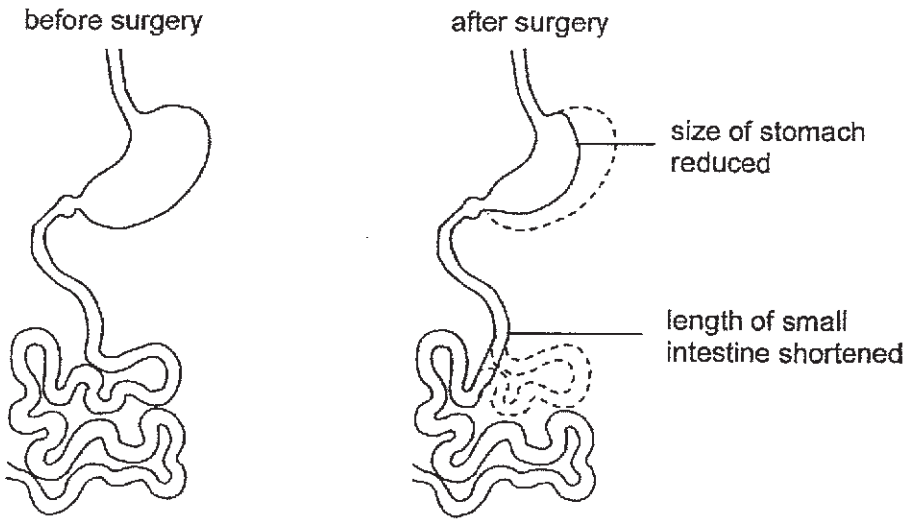
(b) Ranjit found out that a type of surgery can reduce the size of the stomach and shortens the length of the small intestine.



Based on the diagram, explain how the digestion of food in the stomach and the small intestine will be affected, immediately after the surgery. [2]

Stomach: _____

_____

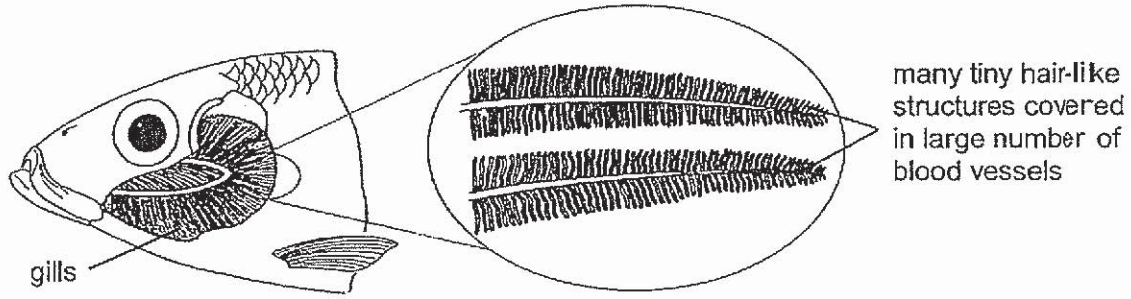
Small intestine: _____

_____

(Go on to the next page)

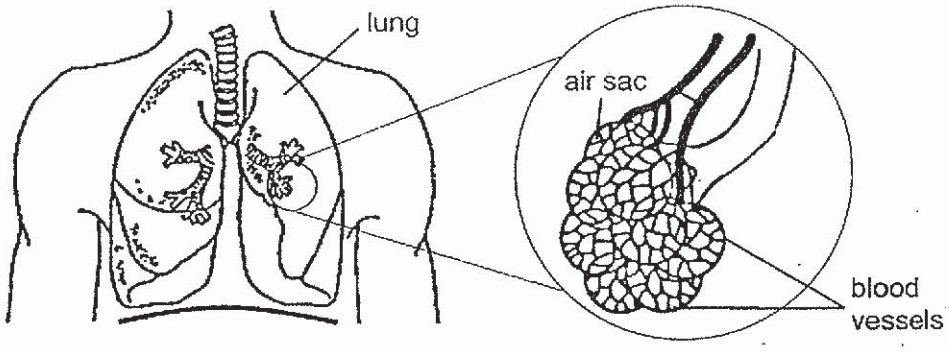
Score 2

30 The diagram shows the respiratory system of a fish. Fishes absorb dissolved oxygen from the water as the water passes through the gills.



(a) How does having many tiny hair-like structures help the fish get more dissolved oxygen? [1]

The diagram below shows the human respiratory system.



(b) How does oxygen in the environment reach the blood vessels of the air sacs? [1]

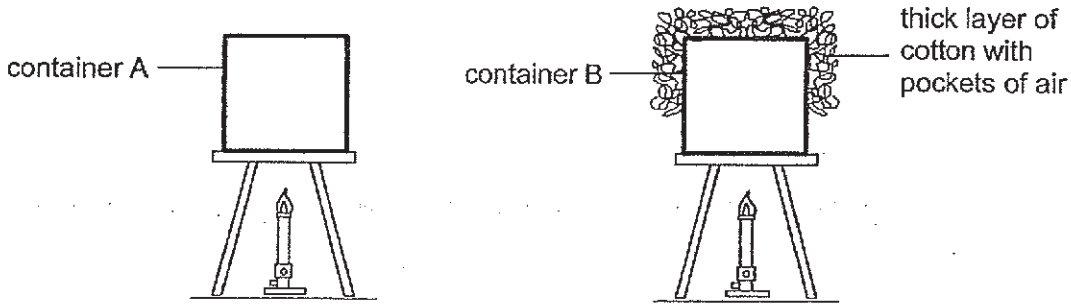
(c) Based on the diagrams, describe one similarity between the structure of the gills and the lungs. [1]

(Go on to the next page)

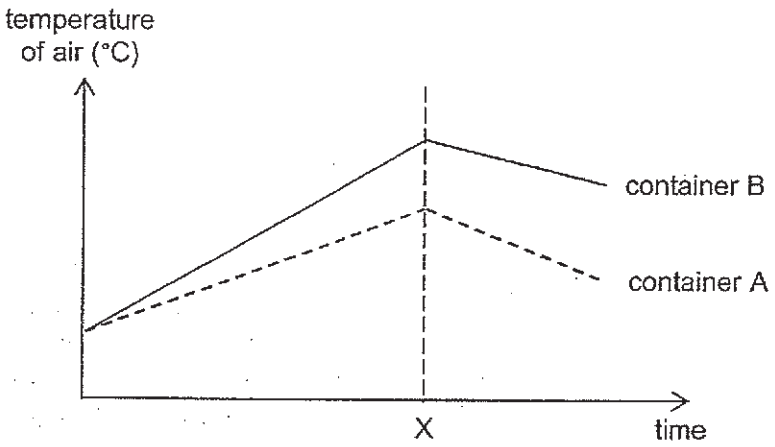
Score	3

31 (a) What is the difference between heat and temperature? [1]

Two similar containers, A and B, were heated and the temperature of air in each container was taken over a period of time. Container B was covered by a thick layer of cotton with pockets of air.



The graph shows the results of the experiment.



(b) (i) Based on the results of the experiment, describe the difference in the temperature of air between container A and container B as they were heated. [1]

(Go on to the next page)

Score 2

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(b)(ii) How does the cotton wool result in the difference between the temperatures of air in both containers when they were being heated? [1]

_____

_____

(c) What was done at time X to cause a change in the temperature of air in both the containers? [1]

_____

_____

Look at the picture of the animal below.

(d) The animal has thick long fur. Based on the results of the experiment, explain how the thick long fur keeps the animal warm in cold environments. [1]

_____

_____

(Go on to the next page)

Score	/3

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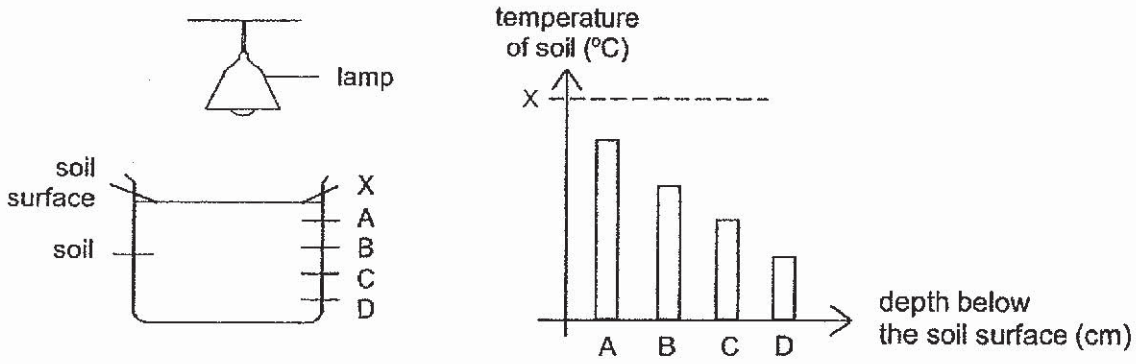
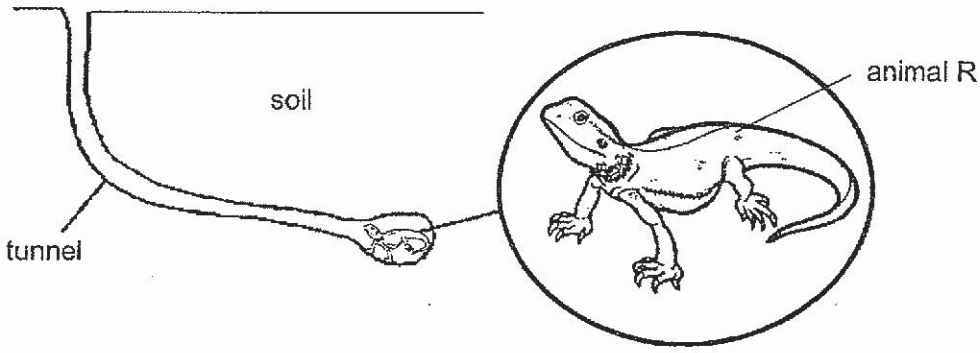
32 Ian conducted an experiment to find out how temperature changes with the depth of soil using the set-up shown. After the lamp had been turned on for one hour, Ian recorded the temperature of the soil in the graph. A, B, C and D are different depths below the soil surface and X is at the soil surface.



(a) Based on the results, state the relationship between the depth below the soil surface and temperature of soil. [1]

Animal R lives in a desert which is hot and dry. It stays in an underground tunnel during the day.



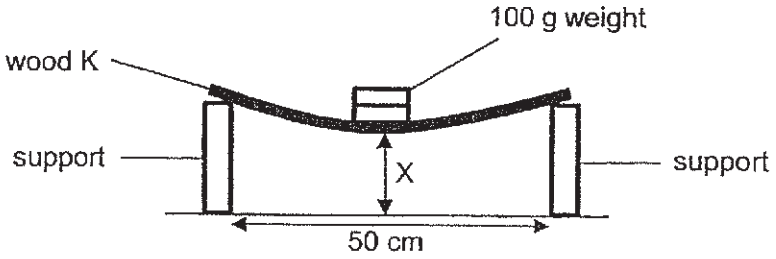
(b) Based on Ian's experiment, explain how staying underground during the day helps animal R survive in its environment. [1]

(c) Based only on the diagram of animal R, state a structural adaptation it has that enables it to dig a tunnel in the soil. [1]

(Go on to the next page)

Score	/3

33 An experiment was conducted to compare the flexibility of two different types of wood, K and L. Wood K was placed on two identical supports that were positioned 50 cm apart. Different numbers of 100 g weights were placed on wood K and the distance X was measured as shown.



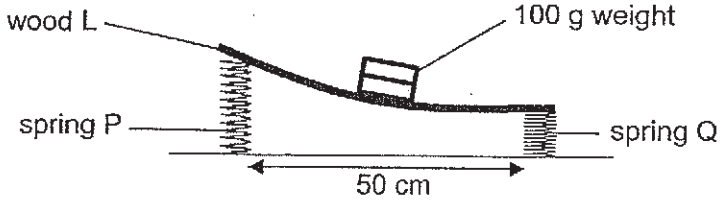
The experiment was repeated with wood L of the same size and the results were recorded in the table below.

Number of 100 g weight	Distance X (cm)	
	Wood K	Wood L
0	6.0	6.0
1	5.3	5.6
2	4.6	5.2
3	3.9	4.8
4	3.3	Wood L broke
5	2.7	

(a) Based on the results, which wood, K or L, is less flexible? Explain your answer. [1]

(b) Name one other variable that must be kept constant for a fair test. [1]

In another experiment, wood L was placed on two different springs of equal size, P and Q, that were positioned 50 cm apart. Some 100 g weights were placed on wood L and caused wood L to tilt unevenly as shown.

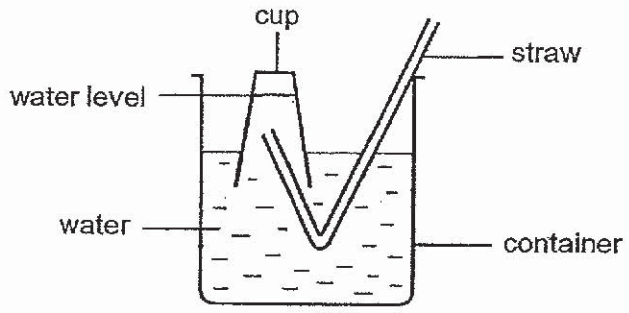


(c) Based on the above observation only, why did wood L tilt unevenly? [1]

(Go on to the next page)

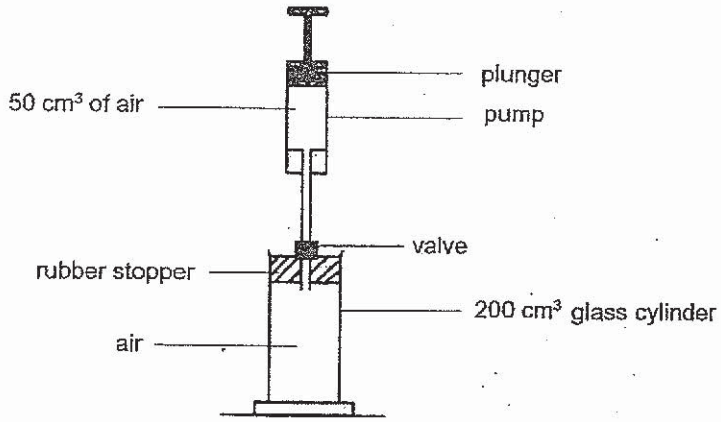
Score 3

34 Ivan wanted to investigate the properties of air. He filled a cup with water and inverted it into a container of water as shown.



(a) What will happen to the water level in the cup when air is blown into the cup through the straw? Explain your answer. [2]

Ivan then carried out another experiment. He used a 200 cm^3 glass cylinder that was filled with air and was connected to a pump which contained 50 cm^3 of air. He used a valve which prevented the air in the glass cylinder from flowing back into the pump as shown.



50 cm^3 of air went into the glass cylinder when the plunger was pushed all the way into the pump. The plunger was pushed all the way once.

(b) What is the volume of air in the glass cylinder? Explain why. [1]

(c) Will the mass of air in the glass cylinder increase, decrease or remain the same? Explain your answer based on the property of air. [1]

(Go on to the next page)

Score 4

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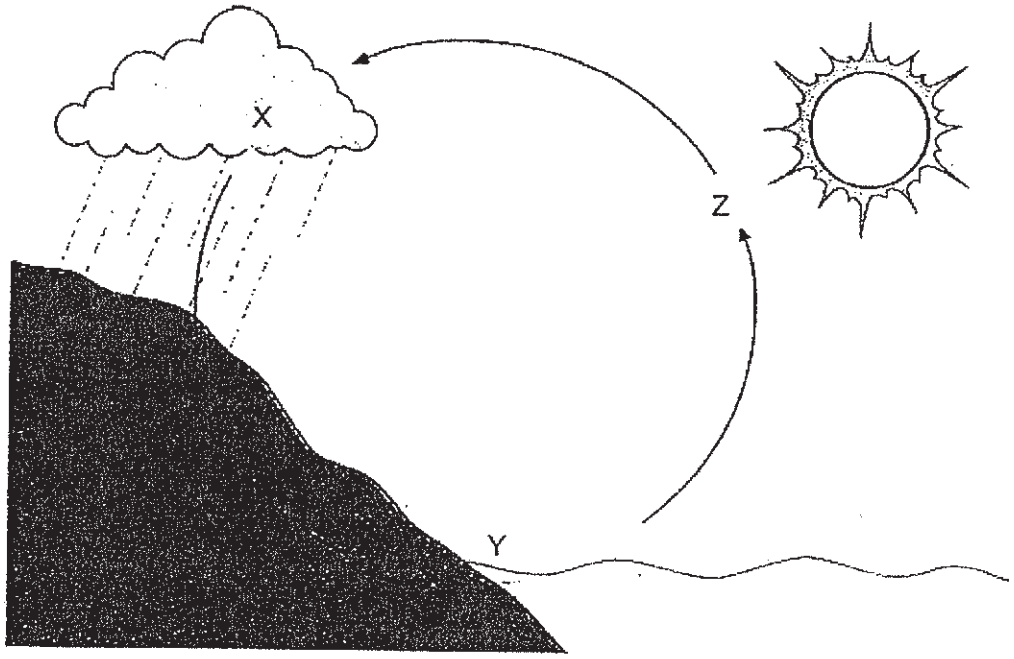
35 The diagram shows the water cycle. X, Y and Z represent the different parts of the water cycle.



(a) Why is the Sun important in the water cycle? [1]

_____

_____

(b) Complete the following with X, Y or Z. [2]

(i) Condensation: _____ to _____

(ii) Evaporation: _____ to _____

(c) Describe what will happen to the water cycle if condensation did not take place? [1]

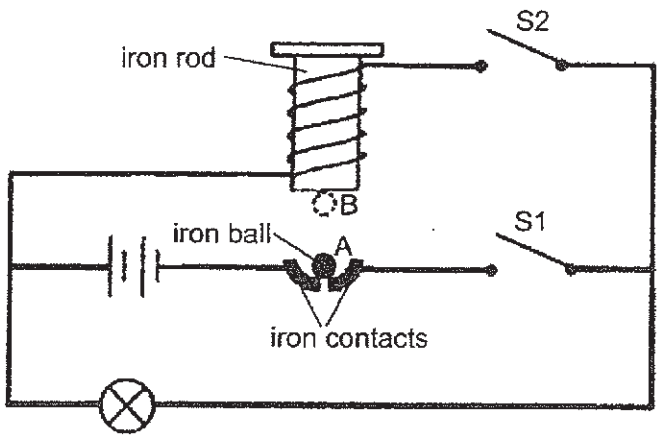
_____

_____

(Go on to the next page)

Score	/4

36 Study the circuit shown in the diagram carefully. The iron ball was resting on two iron contacts.



(a) What could be observed in the circuit when only switch S1 was closed? [1]

When both switches S1 and S2 were closed, the iron ball moved repeatedly from A to B and back to A.

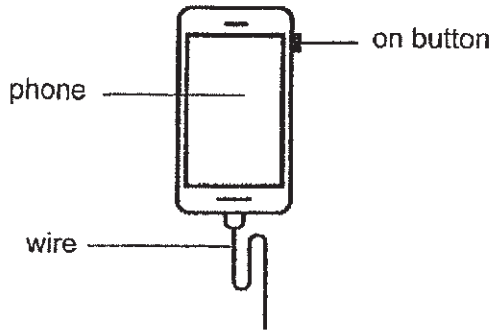
(b) Explain why the iron ball moved up and down repeatedly. [2]

(c) What happened to the bulb when both switches S1 and S2 were closed? [1]

(Go on to the next page)

Score 4

37 Gabriel wanted to use his phone.



(a) What force(s), push, pull or both, did he apply when he:

(i) unplugged the wire. _____ [½]

(ii) switched on the phone. _____ [½]

Gabriel pasted a layer of clear plastic on his phone screen. However, there was an air bubble trapped under the clear plastic as shown in diagram 1. Diagram 2 shows what happened to the air bubble when he pressed it.

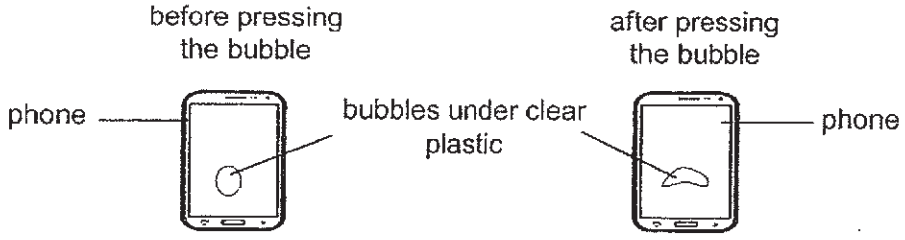


Diagram 1 Diagram 2

(b) What is the effect of force on the bubble? [1]

_____

_____

(c) Gabriel noticed that the bubble had increased in size when he was outdoors on a hot day. Explain why this is so. [1]

_____

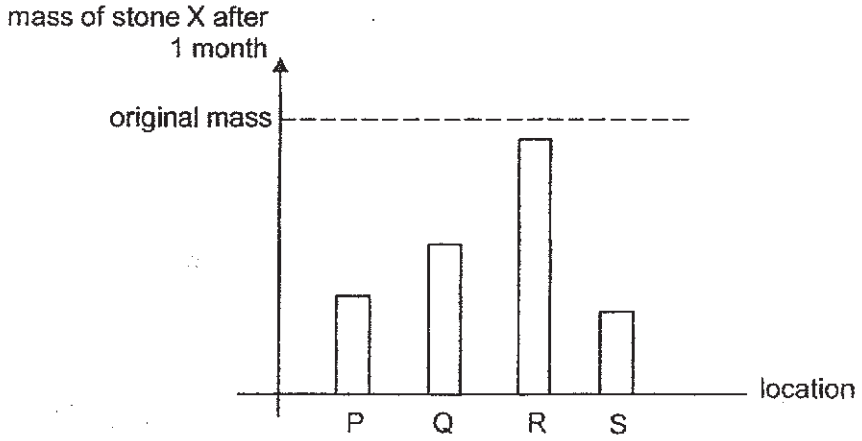
_____

(Go on to the next page)

Score	/3

38 Sometimes rain mixes with pollutants in the air to form acid rain. David wants to investigate the effects of acid rain on stone X.

He collected four beakers of rainwater from four different locations, P, Q, R and S. He added an identical piece of stone X to each beaker of rainwater and recorded its mass after a month. The graph shows the results.



(a) David used the same volume of rainwater for each of his set-ups. How does this ensure a fair test? [1]

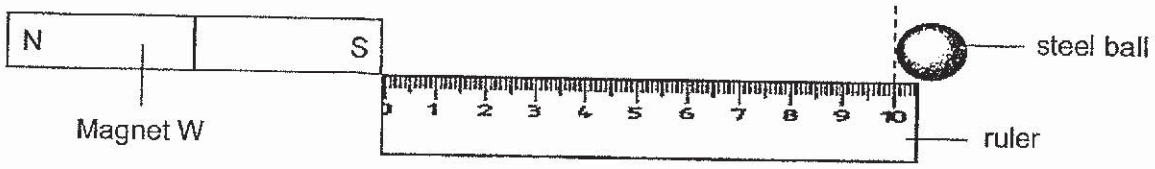
(b) Based on the results, which location, P, Q, R or S, would be most suitable to display a statue made from stone X? Explain why. [1]

(c) State two other negative effects of acid rain.

(Go on to the next page)

Score 3

39 Herman set up an experiment as shown. He moved the steel ball slowly from the 10 cm mark along the ruler towards Magnet W. He recorded the distance, *d*, at the point where the magnet attracted the steel ball. He repeated the experiment using Magnets X, Y and Z.



The table shows the results for all the four magnets, W, X, Y and Z.

Magnet	Distance *d* (cm)
W	6
X	8
Y	3
Z	5

(a) Why did the steel ball get attracted to the magnet? [1]

(b) Based on the result of his experiment, arrange the magnets according to their strength from the strongest to the weakest. [1]

(c) In the table, tick (✓) the variable(s) that Herman must keep the same to ensure a fair test? [1]

Variables	Tick (✓)
Magnets of different sizes	
Same steel ball for each experiment	
Magnets of the same magnetic strength	

(d) Herman replaced Magnet Y with a bigger-sized magnet. It attracted the steel ball from a distance of 3 cm. What can you conclude about magnetic strength and size of magnet? [1]

(e) Herman dropped Magnet X several times and tested it out again. Will Magnet X attract the steel ball from a distance of 8 cm, more than 8 cm or less than 8 cm? Explain your answer. [1]

(Go on to the next page)

Score 5

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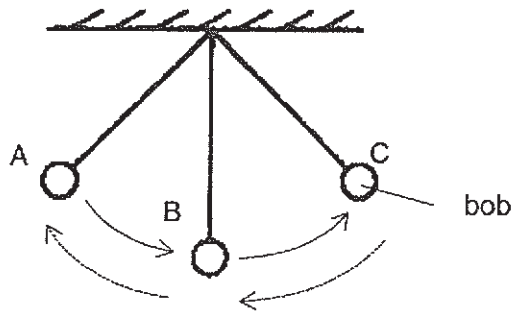
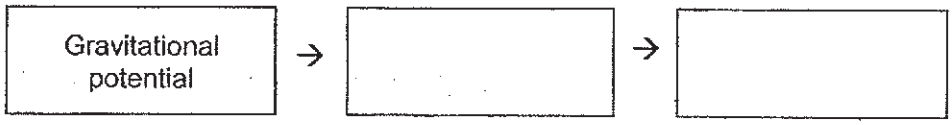
40 Eddy used a set-up as shown to find out the time taken for a bob to make one complete swing. The bob makes one complete swing when it moves from A to C and back to A.



(a) Fill in the two empty boxes below to show the energy conversions as the bob swings from A to C. [1]



energy of the bob at A | energy of the bob at B | energy of the bob at C

Eddy conducted four experiments. He did not change the size of bobs and type of strings. His results are shown in the table below.

Experiment	Mass of bob (units)	Length of string (units)	Time taken for one complete swing (units)
W	3	8	9
X	4	14	12
Y	5	8	9
Z	5	20	14

(b) If Eddy wanted to find out how the length of string would affect the time taken for one complete swing, which two experiments should he use to make a conclusion? [1]

Experiments _____ and _____

(c) Based on experiments W and Y, what can Eddy conclude? [1]

_____

_____

End of Paper

Score	3

ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : ANGLO-CHINESE SCHOOL
SUBJECT : SCIENCE
TERM : SA2

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	2	2	3	2	1	4	1	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	2	2	4	2	4	3	2	3	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	4	3	3	4	1	4	4		

BOOKLET B

Q29 (a) (i) The digestive juice broke down some of the food pieces into simple substances in all three beakers.

(ii) The smaller the food pieces, the faster the rate digestion of he food pieces so chewing food will break down the food into smaller pieces, increasing the rate of digestion of the food as it increases the exposed surface area of the food pieces to the digestive juice.

(b) Stomach : There is less digestion as there is less digestive juices.
Small intestine : Food remains in the small intestine for a shorter time, so that will be less digestion.

Q30 (a) The tiny hair-like structures increase the exposed surface area so the fish can absorb more dissolved oxygen.

(b) Air enters the lungs via the nose. The oxygen in the air I then absorbed into the blood vessels.

(c) They both have blood vessels around their organ that the organism undergo gaseous exchange.

Q31 (a) Heat is a form of energy that makes things hot while temperature is the measurement of how hot and cold.

(b) (i) The temperature of the air in container A is lower than the temperature of the air in container B.

(ii) The cotton wool is poor conductor of heat. Heat conducted of the air in container B is lower than container A. So, the air in B lost less heat than A.

(c) The burner was turn off at time X.

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(d) The thick long fur traps air which is a poor conductor of heat and conducted heat from the animal to the cold surrounding slower, so the animal will lose less heat and can keep warm.

Q32 (a) As the depth below the soil surface becomes deeper, the temperature of of the soil decrease.

(b) By staying underground, animal R will stay cool as the temperature of the soil is lower.

(c) Its sharp claws.

Q33 (a) Wood L as it broke when four 100g weights were place on unlike Wood K.

(b) The mass of the wood.

(c) Spring P was compressed less than Q so the wood tilted unevely.

Q34 (a) The water level in the cup will decrease as the air blown into the cup will be displaced by the water and will take up the space in the cup previously taken up by water, pushing the water out.

(b) $200cm^3$. Air can be compressed

(c) Increase. As air has mass and can be compressed so as more air is pumped in, the volume will stay the same but there will be more air which will result in an increase in the mass of air in the cylinder.

Q35 (a) The sun is the heat source and will help the water in water bodies to evaporate.

(b) Condensation = Z to X

Evaporation = Y to Z

(c) If condensation does not take place, there will be no coulds and rains.

Q36 (a) The bulb would light up.

(b) When both switches were closed, a closed circuit was formed and current could flow through the circuit, magnetising the iron rod and allowing the ball to be attracted to the iron rod, thus causing the circuit to be opened, cauing there be no more electromagnet causing it to go back to A.

(c) The bulb would be repeatly, turning on and off.

Q37 (a) (i) pull

(ii) push

(b) The bubble's shape changed.

(c) The air in the bubble gained heat from the hot sun and expanded, making the bubble bigger.

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Q38 (a) This ensures that the difference between the mass of stone X after one month is depend to the location.

(b) Location R, causing it to be most suitable to display a statue as the rain water there is less polluted.

(c) Acid rain corrodes building and causing soil too acidic for plants to grow.

Q39 (a) The Steel Ball is a magnetic object.

(b) X , W , Z , Y

(c) Same steel ball for each experiment

(d) The size of a magnet does not affect the magnetic strength of a magnet.

(e) Less than 8cm as magnet X will lose some of its magnetism when it was dropped.

Q40 (a) kinetic → Gravitational potential

(b) Y and Z.

(c) Eddy can conclude that the mass of the bob does not affect the time taken for it to make a complete swing.

3

END.

AI TONG SCHOOL

2019 PRELIMINARY EXAMINATION

PRIMARY SIX SCIENCE

(BOOKLET A)

27 AUGUST 2019

Total time for booklets A and B : 1 h 45 min

INSTRUCTIONS

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Name : _____ ( )

Class : Primary 6 _____

Parent's Signature : _____

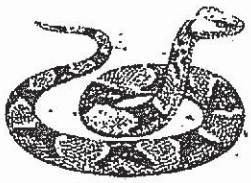
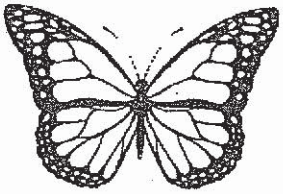
Booklet A	/56
Booklet B	/44
Total	/100

Section A (28 x 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. In the table below, A, B and C represent the characteristics of the given animals.

A tick (✓) shows that the characteristic is present.

Animal	Characteristics		
	A	B	C
eagle	✓	✓	✓
 snake		✓	
 butterfly		✓	✓

Which of the following characteristics represent A, B and C?

	A	B	C
(1)	Has scales	Can fly	Has legs
(2)	Has scales	Lays eggs	Can fly
(3)	Has feathers	Can fly	Has legs
(4)	Has feathers	Lays eggs	Can fly

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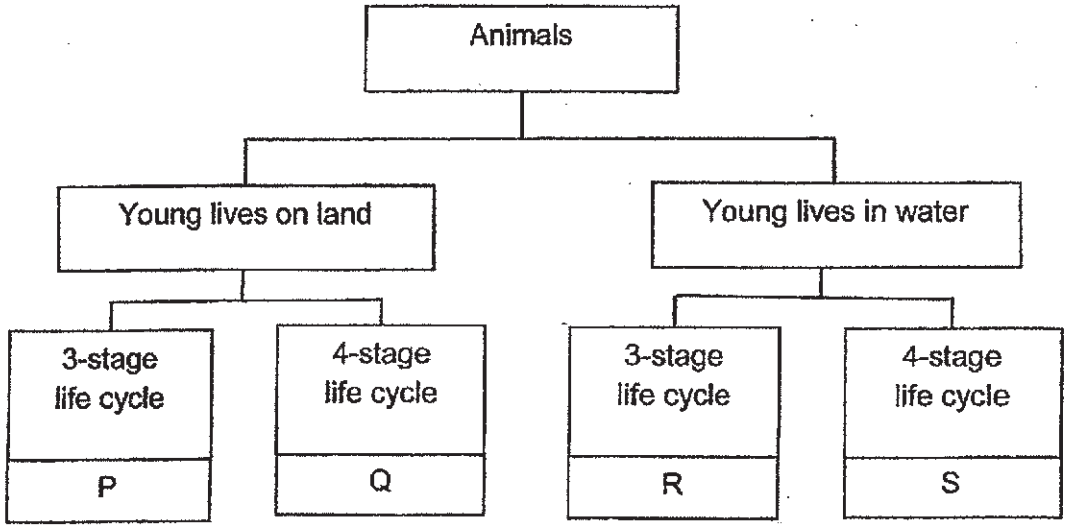
800

2. The classification chart below shows the characteristics of animals P, Q, R and S.



Which of the following animals represent P, Q, R and S?

	P	Q	R	S
(1)	cockroach	mosquito	butterfly	mealworm beetle
(2)	mealworm beetle	cockroach	grasshopper	butterfly
(3)	grasshopper	butterfly	frog	mosquito
(4)	butterfly	mealworm beetle	cockroach	frog

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3. Diagram 1 shows two seeds planted in a garden. The seeds were watered daily.

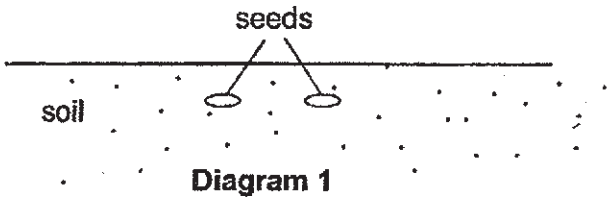

Diagram 1

Diagram 2 shows what happened in the garden after a few months.

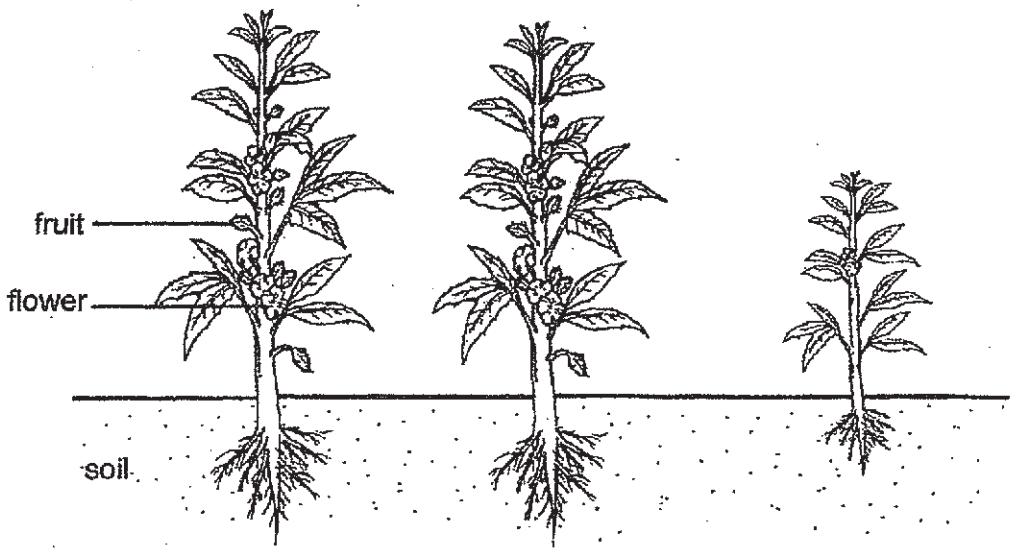

Diagram 2

Based on the diagrams above, which of the following processes have taken place?

A fertilisation
B germination
C pollination
D seed dispersal

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

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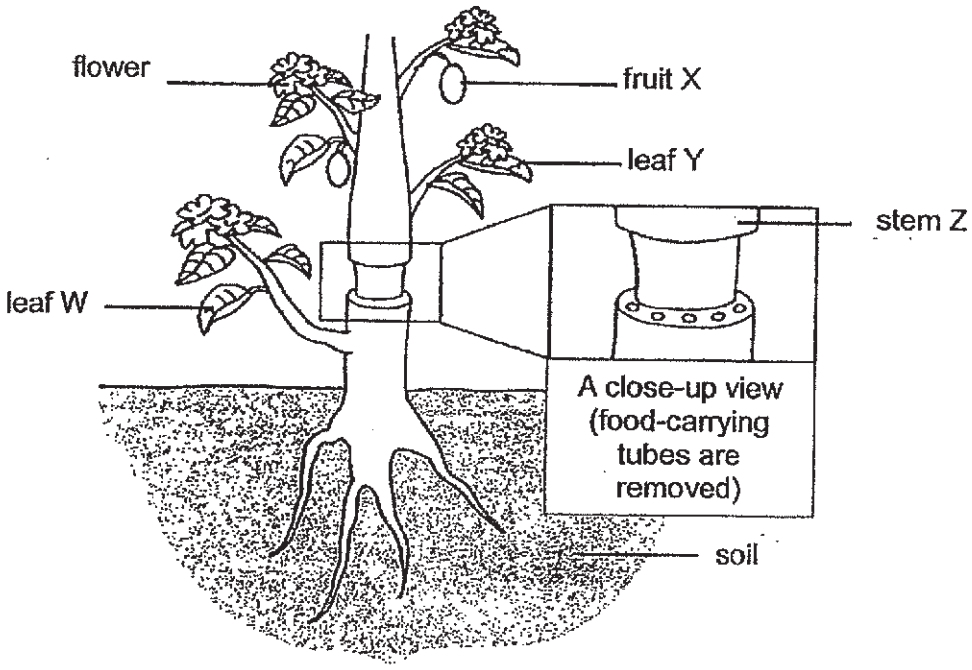
4. Mdm Lim removed the food-carrying tubes from the stem of a plant shown below. The water-carrying tubes remained in the stem.



After some time, she observed some changes in the plant.

Which of the following is correct?

(1) Leaf W remains green as food made by the plant is transported there.

(2) Fruit X becomes bigger than normal as more water is being stored there.

(3) Stem Z is slightly swollen as water could not be transported from the stem to the roots.

(4) Leaf Y remains green as removing the food-carrying tubes does not affect the process of photosynthesis.

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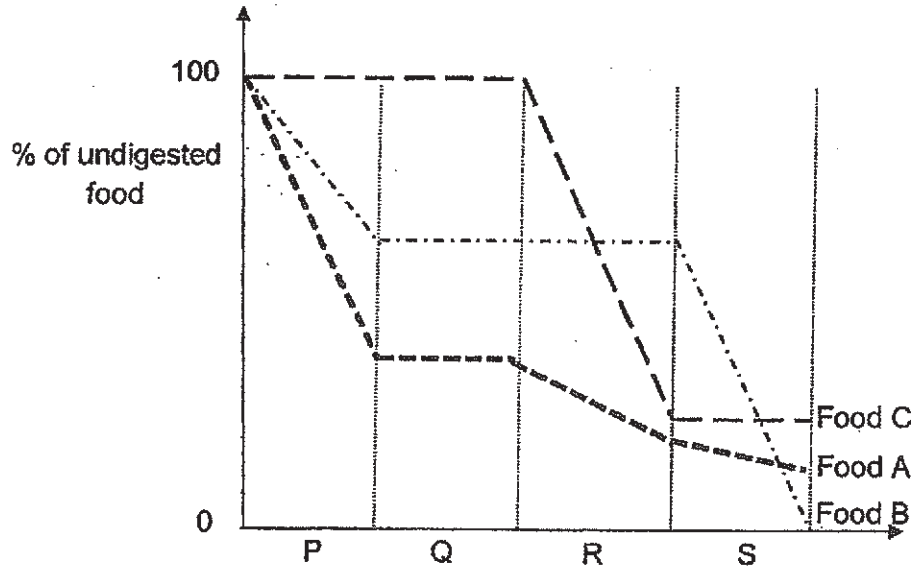
5. Some scientists wanted to study the digestive system of Animal Z. They fed Animal Z with the same amount of food, A, B and C, according to the table below.

Day	Type of food
1	A
2	B
3	C

Animal Z's digestive system was checked at specific time intervals each day to find out how much of the food remained undigested.

The results were plotted in the line graph below.



Some organs of the digestive system

Based on the above results, what can the scientists conclude at the end of the experiment?

(1) Organ P is the most effective at digestion.

(2) The amount of food Animal Z ate affects the process of digestion.

(3) The type of food Animal Z ate does not affect the amount of food digested.

(4) Different organs of the digestive system digest different types of food at different rates.

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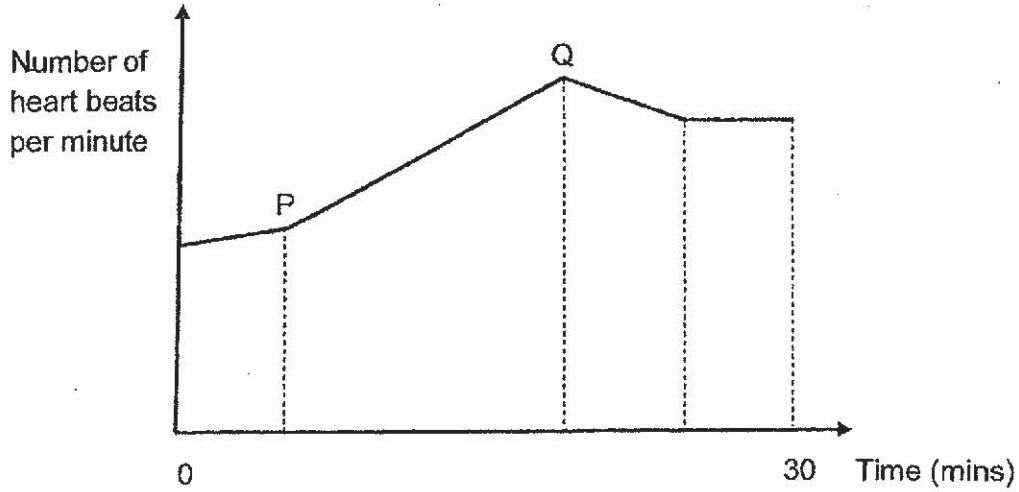
804

6. Zhi Wei performed various physical activities within 30 minutes. The graph below shows the number of times his heart beats per minute over that period.



Which of the following statements correctly describes what is happening to Zhi Wei during the period indicated by line PQ on the graph?

(1) Zhi Wei's breathing rate is decreasing.

(2) Zhi Wei's heart is pumping blood to different parts of the body at a decreasing rate.

(3) Zhi Wei's body is releasing an increasing amount of carbon dioxide per minute. ✓

(4) Zhi Wei's body requires the same amount of oxygen per minute during that period.

7. Simon studied cells W, X, Y and Z. He listed in the table below the cell parts each cell had. A tick (✓) represents the presence of the cell part.

Part of the cell	Cell W	Cell X	Cell Y	Cell Z
Cytoplasm	✓	✓	✓	✓
Cell membrane	✓	✓	✓	✓
Cell wall		✓	✓	
Nucleus		✓	✓	✓
Chloroplast			✓	

Which cell could be a cheek cell from a human?

(1) W
(2) X
(3) Y
(4) Z

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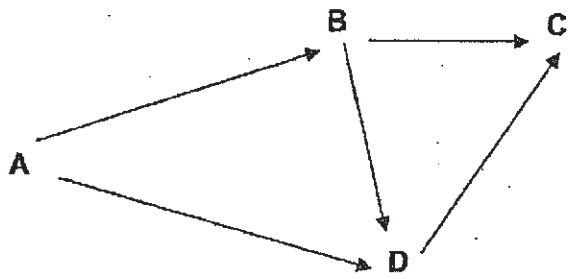
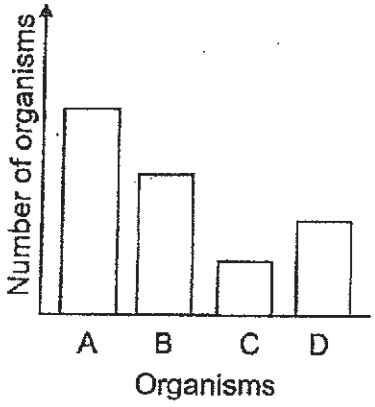
8. The diagram shows a food web.

Organisms A, B, C and D are found in the same community.

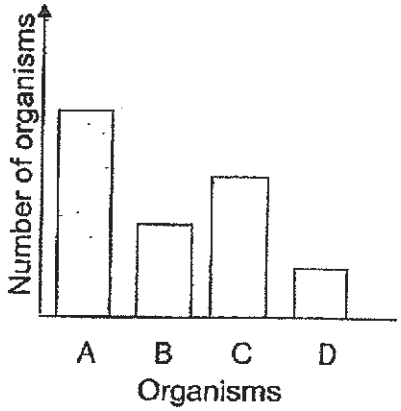


Which of the following graphs correctly shows the number of each organism present in the community?

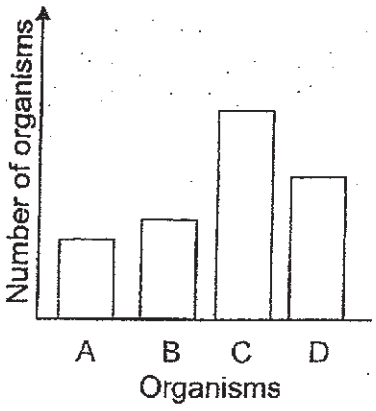
(1)



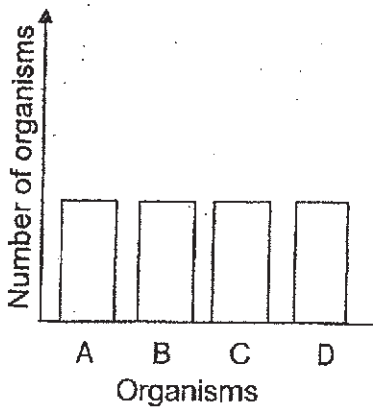
(2)



(3)



(4)



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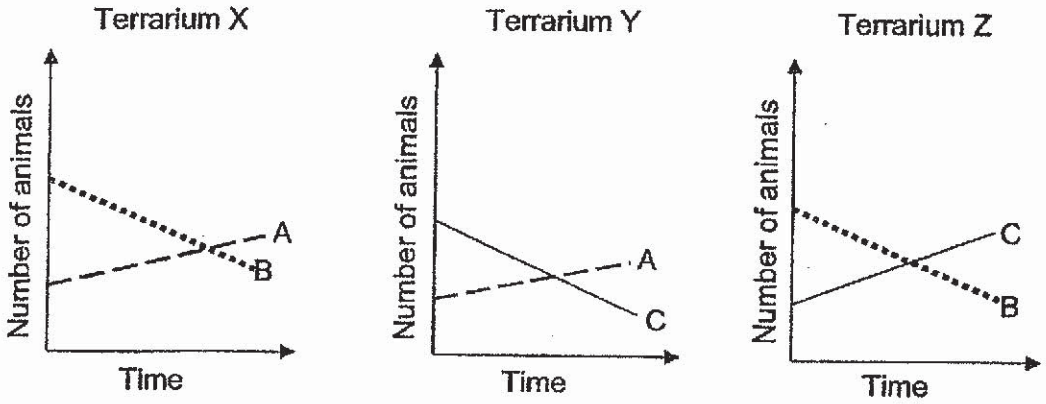
9. Isaac decided to study the food relationship among three different types of animals, A, B and C. He created three similar terrariums, X, Y and Z, such that they resembled the natural habitat of the three animals. He then placed a number of the animals in the terrariums in the following manner.

Terrarium	Animals
X	A and B only
Y	A and C only
Z	B and C only

For a month, Isaac counted the number of each type of animal in the terrariums every two days. He plotted three graphs, as shown below, to illustrate the results that he had recorded.



Based on the graphs, which of the following statements correctly explains a possible food relationship between the animals?

(1) A is the prey of C.
(2) B is the predator of A.
(3) B is both a predator and a prey.
(4) C is the prey of A and predator of B.

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10. The table below shows some information about two different organisms, X and Y.

Organism	Information
X	Weak stem Pollinated by wind
Y	Lives in a desert Walks on hot sandy grounds

Which of the following descriptions correctly matches the information about the two organisms above?

	Organism X	Organism Y
(1)	▪ Stem creeps along the ground ▪ Bright coloured flowers	▪ Large ears ▪ Sharp vision
(2)	▪ Stem twines around a support ▪ Stigma hanging outside petals	▪ Sweats very little ▪ Padded feet
(3)	▪ Has thorns ▪ Feather-like stigma	▪ Urinates very little ▪ Camouflages with the surrounding
(4)	▪ Has climbing stem ▪ Anthers hanging outside petals	▪ Active at night ▪ Sharp claws

11. A company is mindful of the impact its products have on the environment. Which of the following measures could the company take to be environmentally friendly?

A Using materials that are biodegradable
B Using renewable energy sources to power its plants
C Designing products that are attractive to the customers
D Designing packages that save space during transportation

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, B, C and D

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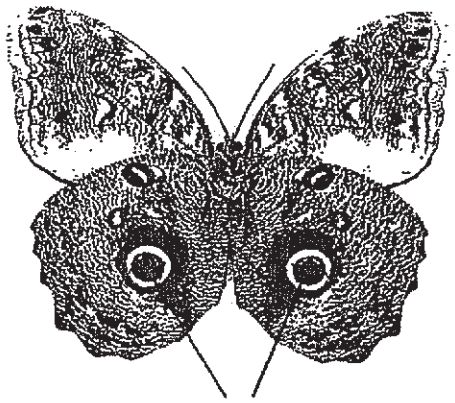
12. The diagram below shows an organism with big eyespots on its body as a form of adaptation. These big eyespots look like eyes on larger animals.



big eyespots

Which of the following is correct about the organism's adaptation?

	Type of adaptation	Purpose
(1)	Behavioural	resemble the appearance of larger animals to frighten away predators
(2)	Structural	resemble the appearance of larger animals to frighten away predators
(3)	Behavioural	camouflage to blend in with the tree bark to avoid being spotted by predators
(4)	Structural	camouflage to blend in with the tree bark to avoid being spotted by predators

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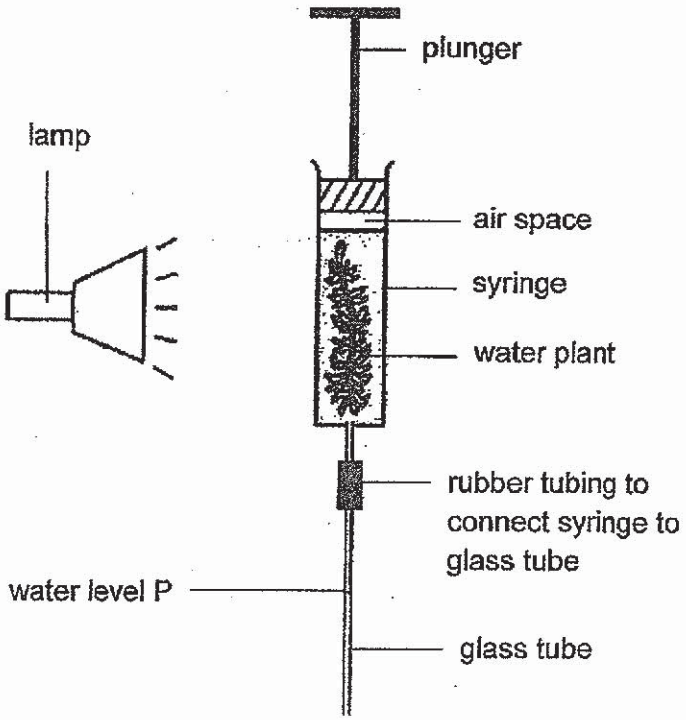
13. Mr Lee conducted an experiment in a dark room with the set-up below. He switched on the lamp and made an observation one hour later.

He observed that the water level P in the glass tube had moved, while the plunger remained at the same place.



In which direction did the water level P move and what was the reason for the movement?

	Direction in which water level P moved	**Reason**
(1)	Down	Heat from the lamp caused syringe to expand.
(2)	Up	Food made during photosynthesis took up space.
(3)	Down	Oxygen produced during photosynthesis took up the air space.
(4)	Up	Carbon dioxide produced during photosynthesis took up the air space.

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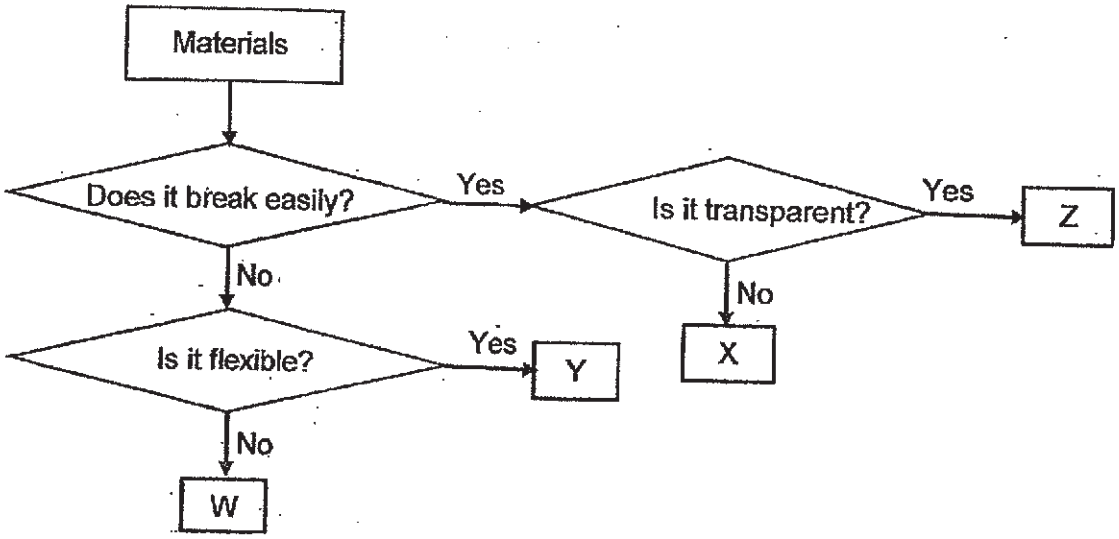
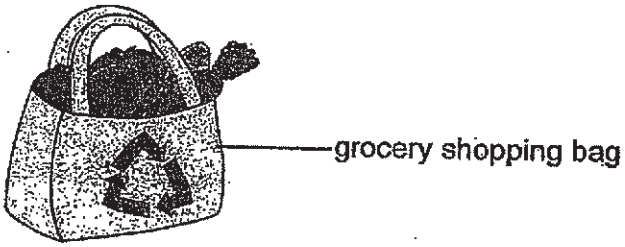
14. Ben observed four materials, W, X, Y and Z, and came up with the flowchart below.



Based on the flowchart above, which material, W, X, Y or Z, is used to make the shopping bag to carry groceries as shown below?



(1) W
(2) X
(3) Y
(4) Z

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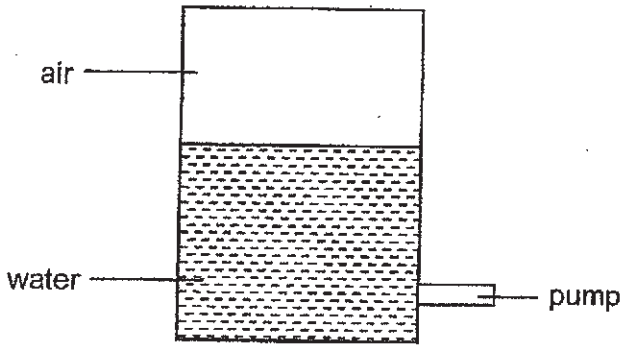
15. An experiment was set up using a sealed metal container which holds $700cm^3$ of water and $300cm^3$ of air as shown below.



What observations about the volume of air and the volume and mass of water in the container could be made after $200cm^3$ of water was removed from the container through the pump?

	Volume of air in the container	**Volume of water in the container**	**Mass of water in the container**
(1)	remained the same	decreased	decreased
(2)	decreased	remained the same	decreased
(3)	increased	decreased	decreased
(4)	Increased	increased	decreased

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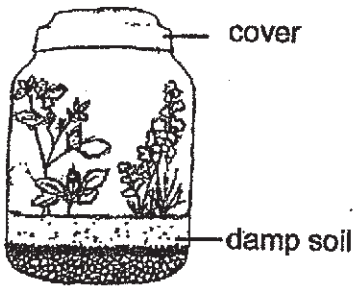
16. The diagram below shows a terrarium. After it was created, it was placed near a window undisturbed without opening the cover for a few days.



terrarium

Which of the following did **not** occur in the terrarium?

(1) Water in the terrarium went through the process of evaporation.

(2) Excess water in the plants was still lost through its leaves as water vapour.

(3) The plants absorbed water from the damp soil and the soil became dry after a few days.

(4) Water vapour in the terrarium condensed into tiny water droplets on the sides of the terrarium.

17. Max filled two identical beakers with an equal amount of liquid X and liquid Y each. Both liquids were at the same temperature at the start of the experiment. He left the beakers on a table for one hour.
After one hour, he recorded his results in the table shown below.

Beaker	Volume of liquid at the start of experiment (ml)	Volume of liquid at the end of the experiment (ml)
With liquid X	150	20
With liquid Y	150	140

Based only on Max's results, what can he conclude about liquids X and Y?

A Liquid Y evaporates slower than liquid X.
B Both liquids X and Y can evaporate at room temperature.
C Liquid Y can evaporate faster in a room with a lower temperature.

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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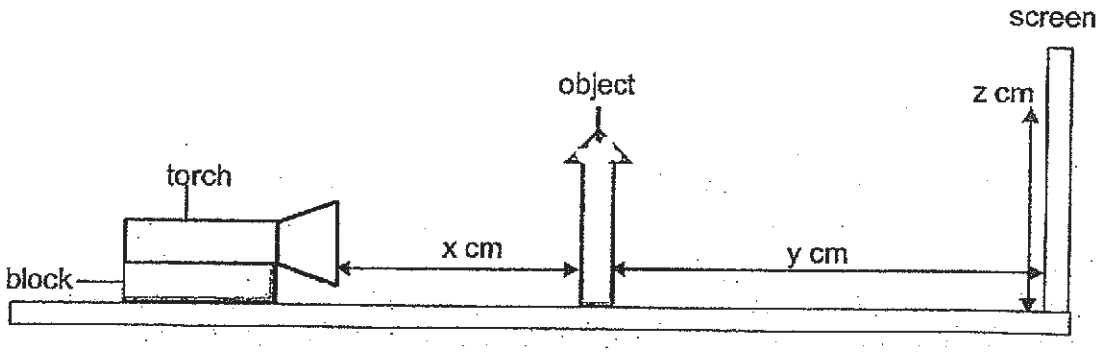
18. The table below gives some information about A, B, C and D.

<table>
<tr><th colspan="3">A, B, C and D</th></tr>
<tr><th colspan="2">Has mass</th><th>Has no mass</th></tr>
<tr><th colspan="2">Has definite volume</th><th>Has no definite volume</th></tr>
<tr><th>Has definite shape</th><th>Has no definite shape</th><td rowspan="2">C</td><td rowspan="2">D</td></tr>
<tr><td>A</td><td>B</td></tr>
</table>

Which of the following correctly matches water and sound?

	Water	Sound
(1)	D	B
(2)	C	D
(3)	B	D
(4)	A	C

19. The diagram below shows how the shadow of an object can be cast on a screen using a torch. **All** the items of the set-up can be moved.



Which of the following is correct when the distances x and y are changed?

	Distance between the torch and the object (x cm)	Distance between the object and the screen (y cm)	Height of the shadow on the screen (z cm)
(1)	increase	decrease	remain the same
(2)	remain the same	decrease	decrease
(3)	decrease	increase	decrease
(4)	increase	remain the same	increase

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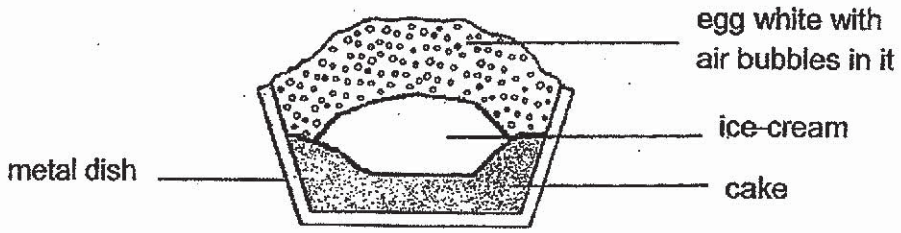
814

20. The diagram below shows a dessert called Baked Alaska. It contains ice-cream and cake under a thick layer of well-beaten egg white.

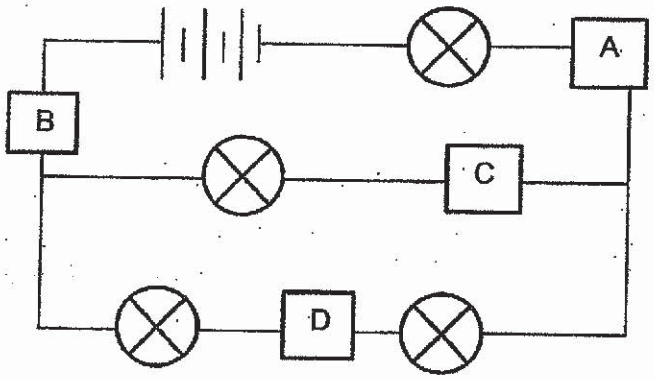


The dessert was placed in a very hot oven and baked until the top of the egg white turned brown. It was then removed from the oven, ready to be served. It was observed that the ice cream inside the metal dish **did not** melt.

Which one of the following statements best explains the above observation?

(1) The metal dish is a good conductor of heat and conducted heat to the ice-cream quickly.
(2) Air is a good conductor of heat and heat from the ice-cream is lost to the surroundings quickly.
(3) The cake is a good conductor of heat and it conducted heat away from the ice-cream to the surroundings quickly.
(4) Air in the egg white is a poor conductor of heat and it slowed down heat gain by the ice-cream from the surroundings.

21. The diagram below shows four bulbs in a circuit.



At which position, A, B, C or D, should a switch be placed so that only two bulbs will remain lighted up when the switch is opened?

(1) A
(2) B
(3) C
(4) D

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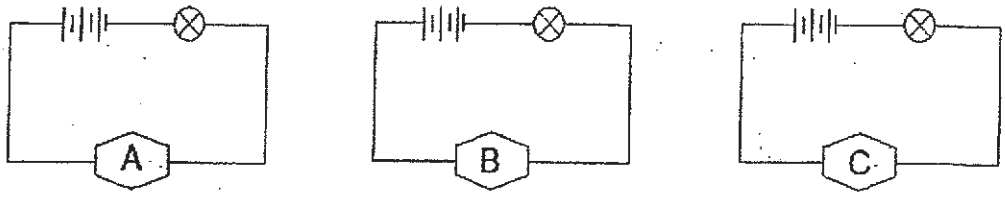
22. Kelly was given three circuits X, Y and Z as shown below. The bulbs and batteries in all the circuits are new and identical. Different objects, A, B and C, are connected in each circuit.



Circuit X Circuit Y Circuit Z

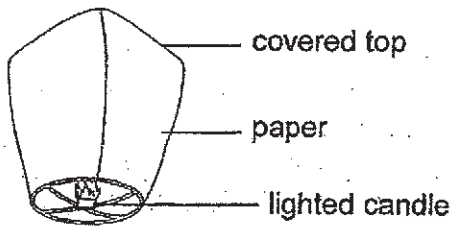
Kelly made the following observations in her notebook.

- The bulb in circuit X did not light up.
- The bulbs in circuits Y and Z lighted up.
- The bulb in circuit Y was brighter than the bulb in circuit Z.

Which of the following is possible?

(1) Object A is made of metal.
(2) Object C is another light bulb.
(3) Object B is an electrical insulator.
(4) Objects B and C are identical electrical wires.

23. The diagram below shows a sky lantern. A sky lantern is made of paper. It has a covered top and an opening at the bottom.



Which one of the following correctly shows the energy changes when the candle is lit and the sky lantern rises up into the air?

(1) Light energy → kinetic energy → heat energy + sound energy

(2) Kinetic energy + gravitational potential energy → heat energy + light energy

(3) Chemical potential energy → light energy + heat energy → gravitational potential energy

(4) Chemical potential energy → heat energy + light energy → kinetic energy + gravitational potential energy

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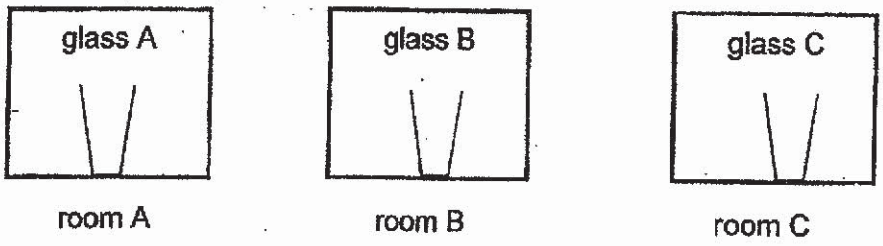
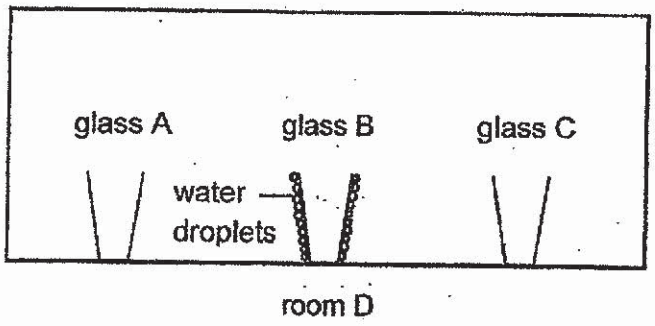
24. Jay left three identical glasses in rooms A, B and C for an hour.



After one hour, the three glasses were removed and left in room D.
Five minutes later, Jay noticed water droplets form on the outer surface of glass B but not on glasses A or C.



If the room temperature of all the rooms, A, B, C and D are different from one another, which of the following is definitely correct?

(1) Room B is the coldest room.
(2) Room D is the warmest room.
(3) Room A is colder than room D.
(4) Room C is as warm as room D.

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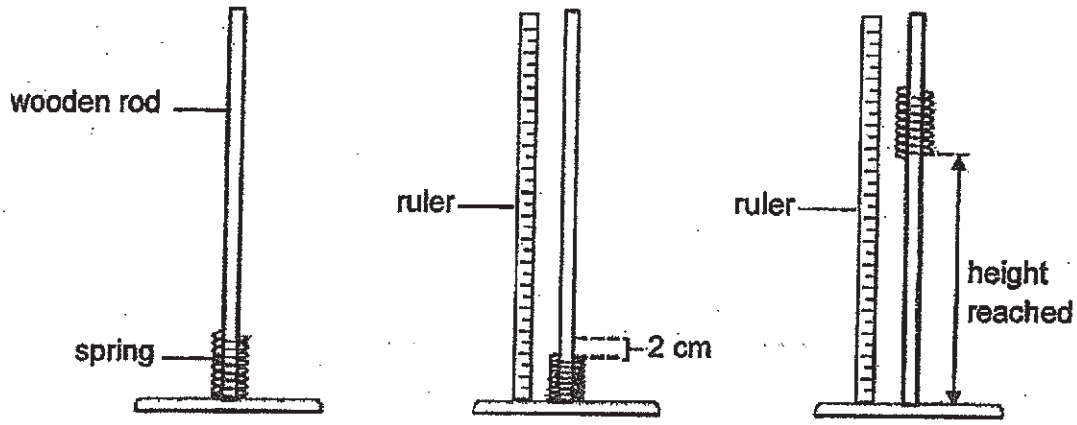
25. Tanya carried out an experiment as shown below.

Step 1: Put a spring over a wooden rod.	Step 2: Push the spring down by 2cm.	Step 3: Release the spring and measure the height it reached.



Based on the information given above, which of the following statements are true?

A The spring started moving because of elastic spring force.
B Frictional force caused the spring to change its direction.
C The force applied by Tanya caused the spring to change its size.
D Gravitational force caused the spring to stop moving upwards.

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, C and D only

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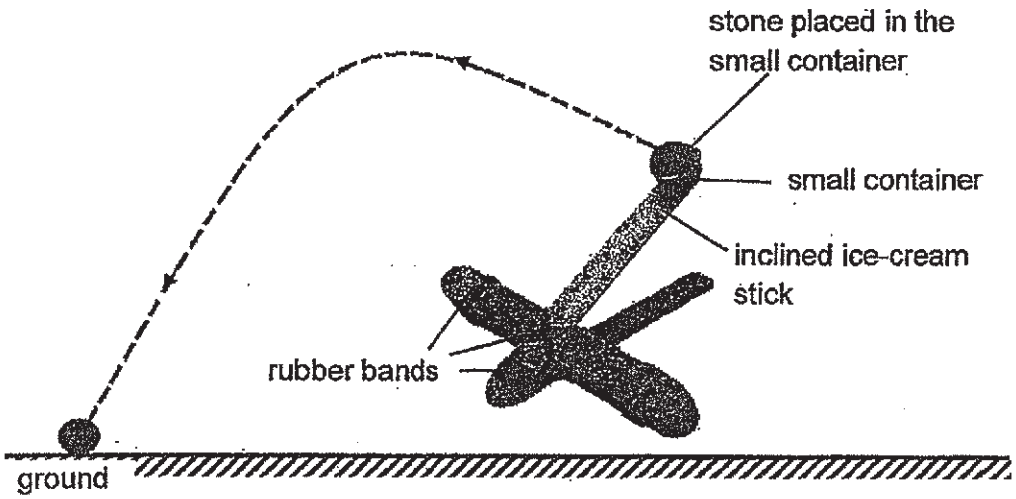
26. Sam used some ice-cream sticks and rubber bands to make a catapult as shown in the diagram below. A small container is attached at the end of the inclined ice-cream stick to hold a piece of stone. When the inclined ice-cream stick is pushed down, the rubber bands are stretched. When it is released, the stone will propel forward and travel in the air for a certain distance before dropping to the ground.



Which of the following is correct?

(1) The stone did not possess any potential energy as it travelled in the air.

(2) The stone had no kinetic energy when it was just about to reach the ground.

(3) Some kinetic energy in the stone is converted to heat energy as it moves in the air.

(4) Potential energy in the stretched rubber bands increases when the inclined ice-cream stick is released.

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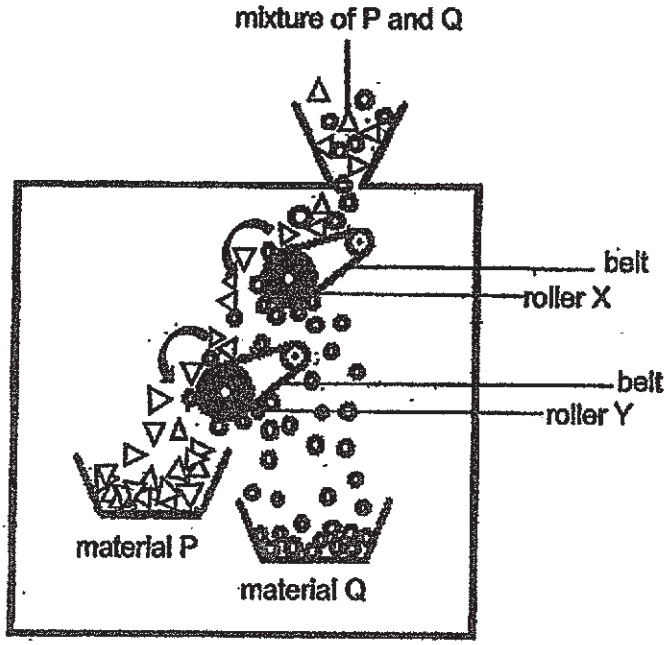
27. A mixture of materials P and Q was poured into machine Z. This machine can separate materials based on their magnetic properties. The arrows show the direction the belts on the rollers are moving in.



machine Z

Based on the diagram above, which of the following statements is true?

(1) Only roller X contains a magnet.

(2) Material P is a magnetic material.

(3) Material Q is a magnetic material.

(4) Material Q is heavier than material P.

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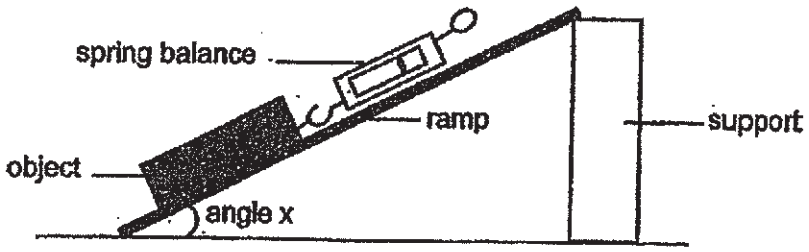
28. Lenny wanted to find out if the angle between the ramp and the ground, angle x, affects the amount of force needed to move an object up the ramp. He used the set-up below to carry out his experiment.



Which one of the following tables shows that Lenny had conducted the experiment correctly and fairly? A tick (✓) represents the action he had taken.

(1)

Variables	What he changed	What he kept the same	What he measured
the amount of force used	✓		
the mass of the object			✓
the height of the support		✓	
type of surface of the ramp		✓	

(2)

Variables	What he changed	What he kept the same	What he measured
the amount of force used			✓
the angle of the ramp	✓		
the mass of the object		✓	
type of surface of the ramp		✓	

(3)

Variables	What he changed	What he kept the same	What he measured
the amount of force used		✓	
the angle of the ramp	✓		
type of spring balance		✓	
the height of support			✓

(4)

Variables	What he changed	What he kept the same	What he measured
the amount of force used	✓		
the angle of the ramp			✓
the mass of the object		✓	
type of surface of the ramp		✓	

End of Booklet A

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AI TONG SCHOOL

2019 PRELIMINARY EXAMINATION

PRIMARY SIX SCIENCE

(BOOKLET B)

27 AUGUST 2019

Total time for booklets A and B : 1 h 45 min

INSTRUCTIONS

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

Name : _____ **( )**

Class : Primary _____

Parent's Signature : _____

Booklet B	/ 4

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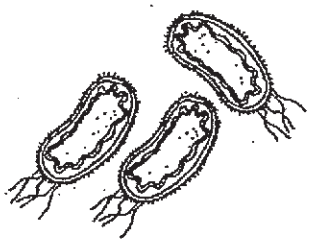
Section B: 44 marks

Read the questions carefully and write down your answers in the spaces provided.

29. The diagrams below show two organisms, X and Y.



Organism X

Organism Y

(a) Organisms X and Y do not belong to the same group of living things but they are both decomposers. State the two groups of living things that organisms X and Y belong to. [1]

Organism X: _____

Organism Y: _____

(b) It was observed that after a night of heavy rain, many organism Y started growing on a grass patch near a dead tree stump. From this observation, state two factors that organism Y needs for its rapid growth. [1]

_____

_____

2

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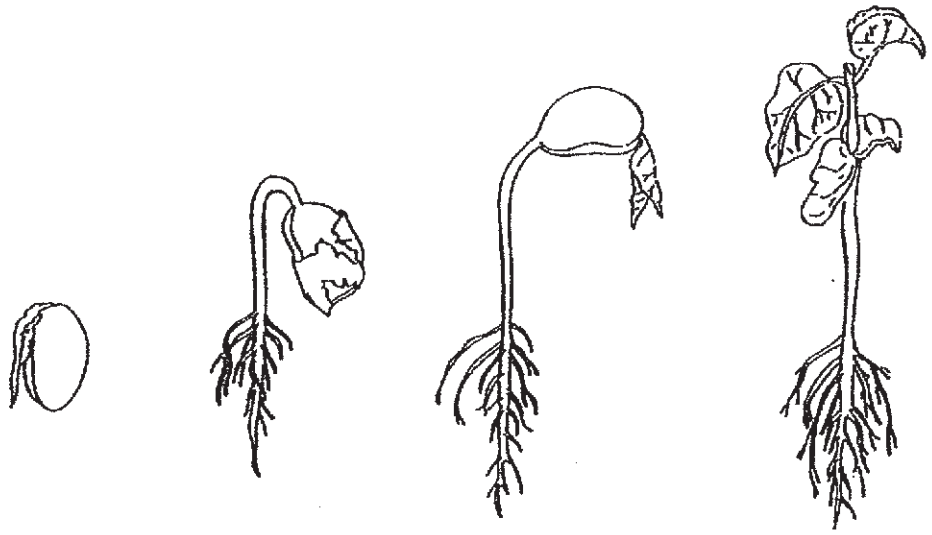
30. The diagram below shows the growth of a green bean seed.



A B C D

(a) A student commented that the plant only starts absorbing water at stage B. Is this comment correct? Explain your answer. [1]

_____

_____

(b) Would the green bean plant get from stage B to stage C if it was placed inside a wooden cupboard for a week? Explain your answer. [2]

_____

_____

_____

_____

3

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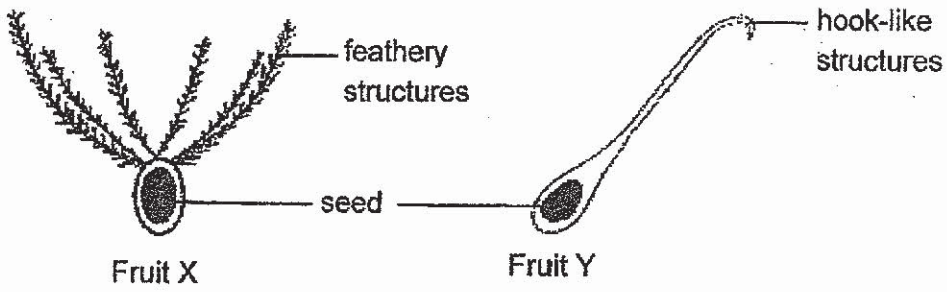
31. The diagram below shows two fruits, X and Y with a seed in each.



(a) Which part of a flower does a fruit develop from? [1]

_____

(b) Based on the structures observed in the diagram above, state the method which fruit X and fruit Y are dispersed by. [1]

Fruit X: Dispersed by _____

Fruit Y: Dispersed by _____

(b) On a windy day, the direction that fruit X is dispersed from its parent plant is different from that of fruit Y. State the difference. [1]

_____

_____

3

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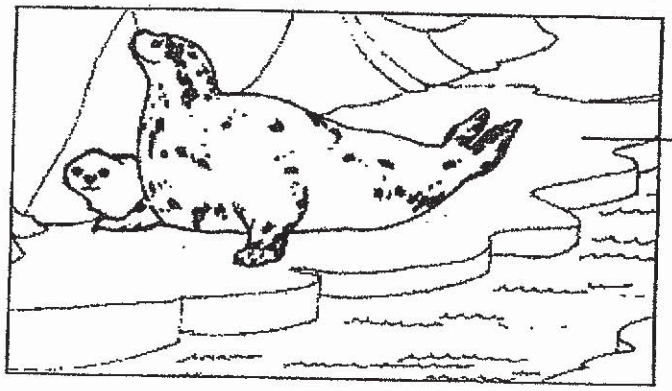
32. The picture below shows organism T and its young resting on floating sea ice. Organism T lives in the cold arctic region. It has a thick coat of fur that is water resistant. It gives birth to and takes care of its young. The floating sea ice helps keep the young safer from predators. Organism T can swim and it also hunts for food from the ice edge or under the ice.



(a) Based on the information above, will organism T be able to breathe underwater? Explain. [1]

_____

_____

(b) Explain how man's activities which release more carbon dioxide into the air would affect the population of organism T. [2]

_____

_____

_____

_____

3

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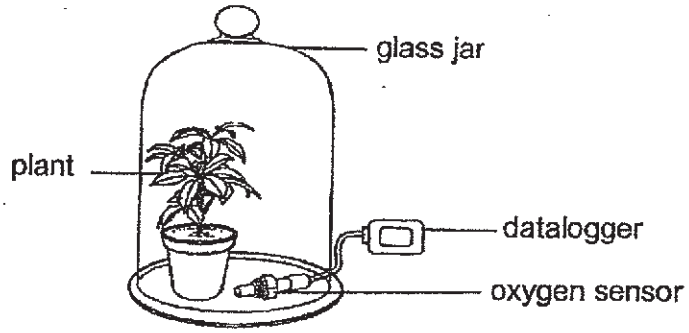
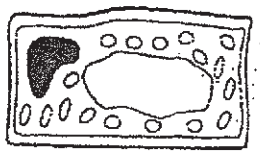
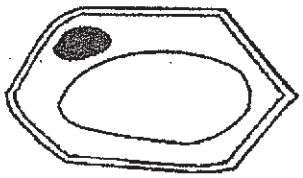
33. Xiao Ming set up an experiment as shown below to investigate if the presence of light affects the process of photosynthesis of a plant.



The diagram below shows two different types of cells, X and Y, taken from the plant in the set-up.



Cell X



Cell Y

(a) Which cell, X or Y, is able to produce oxygen? Explain your answer. [1]

_____

_____

(b) The oxygen sensor measures the amount of oxygen given out by the plant over time. How does the amount of oxygen produced by the plant per minute show the rate of photosynthesis of the plant? [1]

_____

_____

(c) Xiao Ming's teacher told him that his experimental set-up as shown in the diagram is not complete. What else must Xiao Ming do so that he can come to a conclusion for his experiment? Explain your answer. [2]

_____

_____

_____

_____

4

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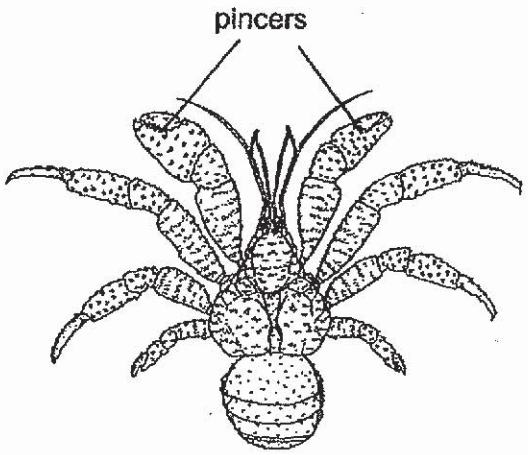
34. Organism C is a big animal that lives on a beach. It usually stays in the burrow in the day and is active at night. Its young carries a shell but not the adult. The adult is able to climb coconut trees and has powerful pincers which can break open fallen coconuts.



adult organism C

(a) Based on the information given, how do the young and adult organism C protect themselves from predators? [2]

(b) What behavioural adaptation does organism C have to cope with the hot weather? Explain your answer. [1]

(Question 34 continues on the next page.)

3

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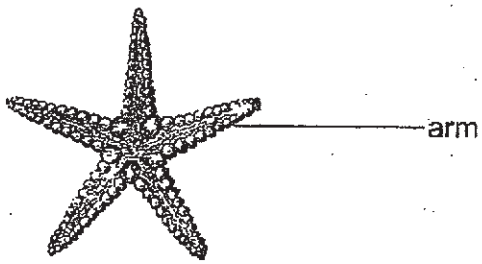
(Question 34 continues.)

Organism C feeds on organism S. Organism S has five arms which can be regenerated if it breaks them off. This means when organism S loses an arm, it can produce a new arm after some time.



Organism S

(c) From the information given above, state one action organism S can do to protect itself when it is attacked by organism C. Explain how this action helps to ensure the survival of organism S. [2]

_____

_____

_____

_____

2

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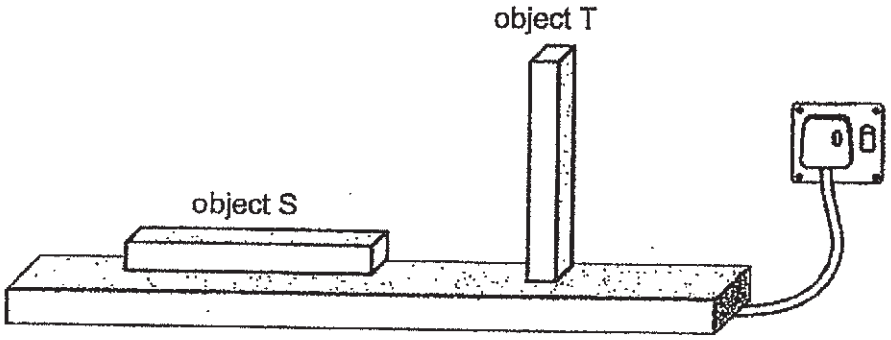
35. John carried out an experiment by placing two identical objects, S and T, on an electrical metal plate which was heated evenly. He measured the temperature of the top surface of both objects over a period of time and recorded his results in the table below.



Time (s)	Temperature of the top surface (°C)	
	Object S	Object T
0	20	20
5	24	22
10	28	24
15	32	26
20	36	28
25	40	30

(a) Based on the above results, how does the temperature of the top surface of the objects change the longer they get heated? [1]

_____

_____

(b) Explain why the top surface of object T has a lower temperature than the top surface of object S at the end of 25 seconds. [1]

_____

_____

(Question 35 continues on the next page.)

2

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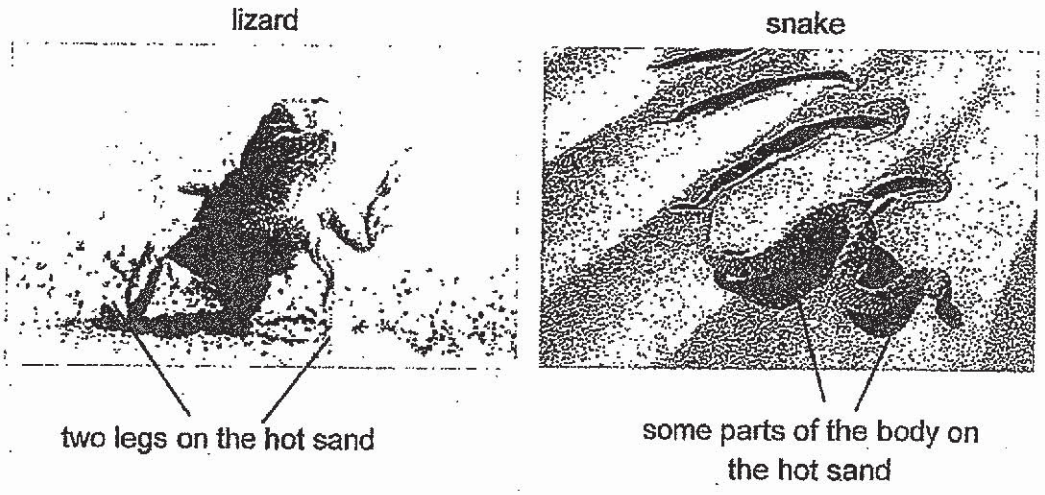
(Question 35 continues.)

In a desert, the lizards run using two of its four legs while the snakes lift some parts of its body and move sideways on hot sand, as shown in the diagrams below.



(c) Based on the information above, state one similarity between the two animals in the way they move. Explain how this similarity helps them reduce heat gain from the hot sand. [1]

(d) Based on John's experiment on the previous page, give a reason why the lizard would be able to move on the hot sand for a longer period of time compared to the snake. [1]

2

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36. The diagrams below show how Mandy's newly designed candle holder could help reuse candles. Diagram 1 shows a lit candle placed into the candle holder while diagram 2 shows the same candle after ten minutes.

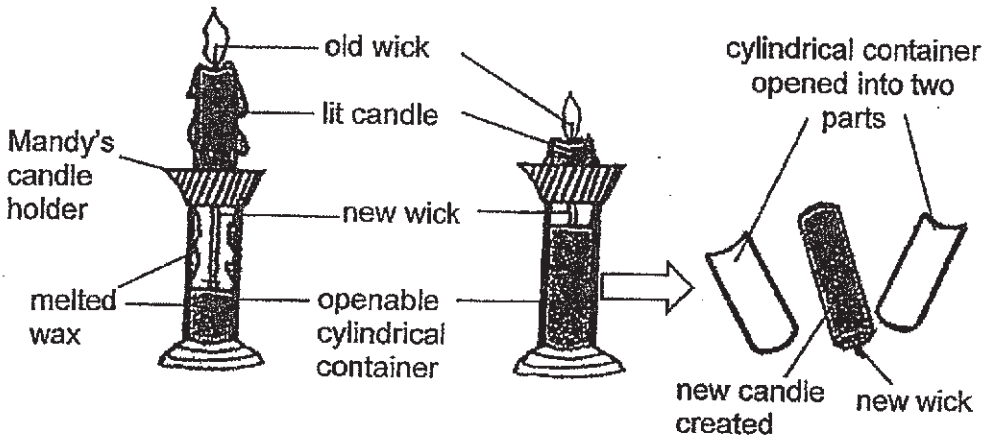


diagram 1 diagram 2 diagram 3

(a) What property of melted wax allows it to be collected in the cylindrical container? [1]

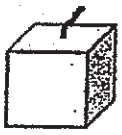
_____

(b) When the old candle is used up, the candle holder has to be left untouched for some time before opening the cylindrical container to obtain the newly created candle. Explain why. [1]

_____

_____

(c) Suggest one thing that Mandy could change in her design so that the new candle would be of a cube shape as shown. [1]



_____

_____

(Question 36 continues on the next page.)

3

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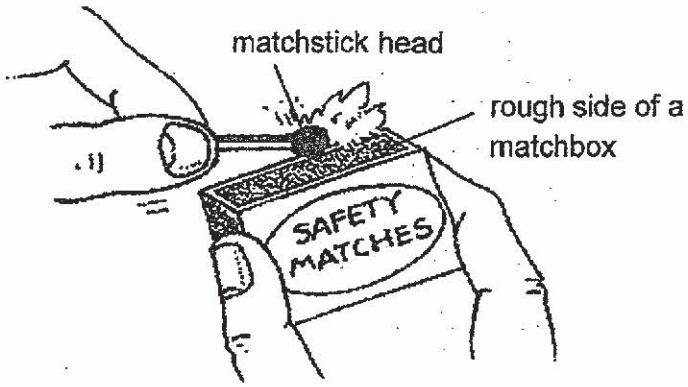
(Questions 36 continues.)

(d) To light the candle in diagram 1, Mandy struck the head of a matchstick against the rough side of a matchbox. This produced a flame.



Explain why the matchstick head and the side of the matchbox has to be rough for the matchstick to light up. [1]

_____

_____

1

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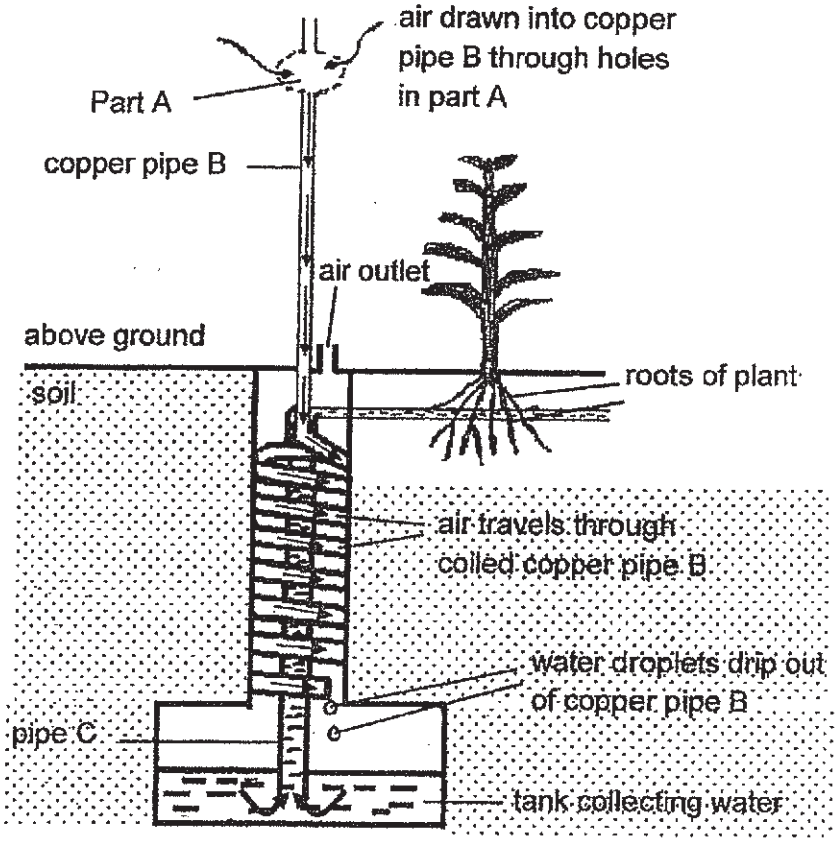
37. The diagram below shows system Z. It is able to extract water from the air and is used in areas where it is hot and the soil condition is dry.



System Z draws air into part A and air is transported down copper pipe B. As air travels through the coiled copper pipe B, water droplets are formed in the copper pipe and are dripped into a large underground tank. Water from the tank is then pumped up through pipe C and transported directly to the roots of plants.

(a) System Z works well when it is buried under the ground. What does this tell us about the temperature underground compared to the air above ground? [1]

_____

_____

(Question 37 continues on the next page.)

1

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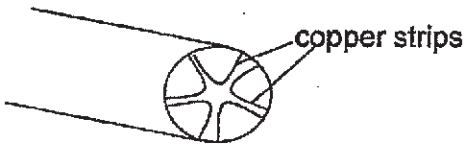
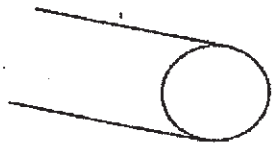
(Question 37 continues.)

(b) Based on the information above, explain how system Z is able to collect water from the air that was drawn in. [2]

A cross-sectional view of copper pipe B shows that the inner surface of the pipe is lined with copper strips as shown below.



copper pipe B lined with copper strips



copper pipe not lined with copper strips

(c) Explain how the presence of the copper strips in the pipes help speed up the rate of collection of water in the tank. [1]

(d) With the use of system Z, farmers can grow crops even in dry areas. What does this tell you about water vapour in the air? [1]

4

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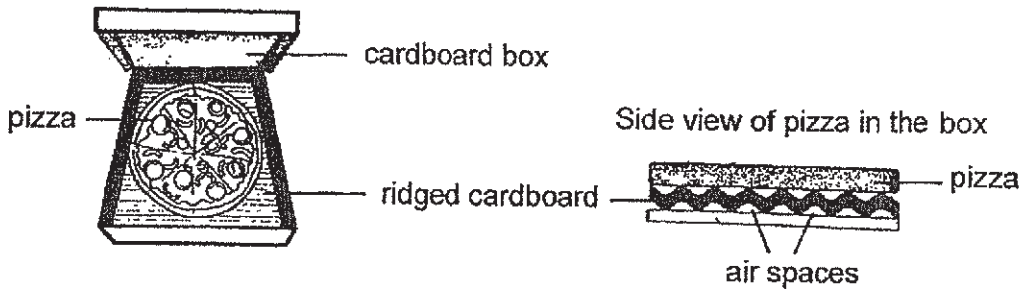
38. Mrs Sam ordered some pizzas for her class party. She noticed that the pizzas were delivered in closed cardboard boxes. When the cover of the box was lifted, she saw a piece of ridged cardboard at the bottom of each pizza as shown below. The pizza was still hot and not soggy.



(a) Air spaces can be found under the ridged cardboard. What is the advantage of having these air spaces? [1]

(b) State the property of cardboard which makes it more suitable than plastic to make the delivery box. Explain how this property is able to keep the pizza from turning soggy. [2]

3

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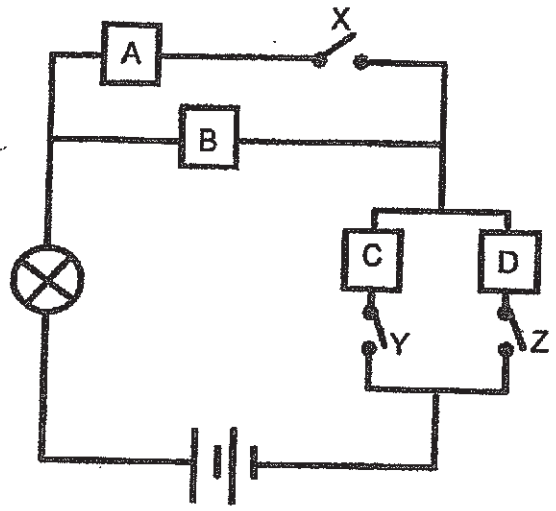
39. Justin set up a circuit as shown below to find out which object(s), A, B, C or D is/are electrical conductors.



Justin recorded his observations in the table below.

Test	Switch X	Switch Y	Switch Z	Did the bulb light up?
1	Closed	Open	Open	No
2	Open	Closed	Open	Yes
3	Open	Open	Closed	Yes
4	Closed	Closed	Open	Yes

(a) What is the purpose of the bulb in the circuit? [1]

(b) Justin's teacher commented that Test 1 is not useful as it would not help him find out if any of the objects are electrical conductors. Explain why the teacher said so. [2]

(c) From the results of Justin's experiment, which object(s), A, B, C and/or D is/are definitely electrical conductors? [1]

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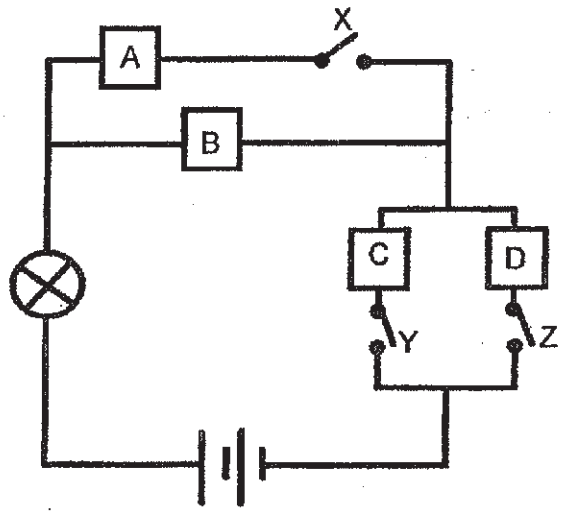
39. Justin set up a circuit as shown below to find out which object(s), A, B, C or D is/are electrical conductors.



Justin recorded his observations in the table below.

Test	Switch X	Switch Y	Switch Z	Did the bulb light up?
1	Closed	Open	Open	No
2	Open	Closed	Open	Yes
3	Open	Open	Closed	Yes
4	Closed	Closed	Open	Yes

(a) What is the purpose of the bulb in the circuit? [1]

_____

_____

(b) Justin's teacher commented that Test 1 is not useful as it would not help him find out if any of the objects are electrical conductors. Explain why the teacher said so. [2]

_____

_____

_____

_____

(c) From the results of Justin's experiment, which object(s), A, B, C and/or D is/are definitely electrical conductors? [1]

_____

4

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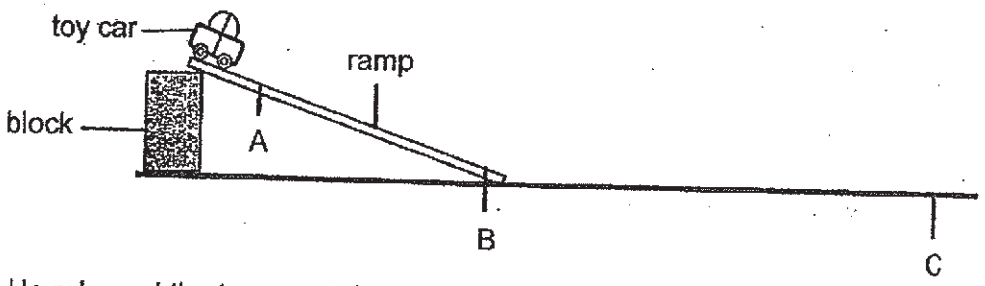
40. Tim carried out an experiment using a toy car and a ramp as shown in the diagram below.

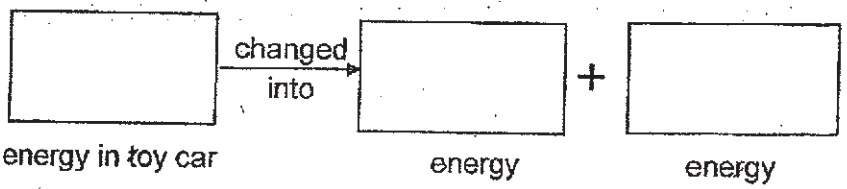


He released the toy car at the top of the ramp and observed it as it moved down the ramp, passing through points A and B. It then moved on to the smooth level ground and stopped at point C.

(a) What are the forces acting on the toy car as it moves down the ramp? [1]

(b) Tim noticed that the toy car moved slower at point A than at point B. Explain in terms of energy, why this happened. [2]

(c) Fill in the blanks below to show the energy changes that caused the toy car to stop moving at point C. [1]



END OF BOOKLET B

4

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Answer Sheets

AI TONG Pri 6 SA2/2019 SCIENCE

1.	4	6.	3	11.	3	16.	3	21.	4	26.	3
2.	3	7.	4	12.	2	17.	2	22.	2	27.	3
3.	4	8.	1	13.	3	18.	3	23.	4	28.	2
4.	4	9.	4	14.	3	19.	2	24.	1		
5.	4	10.	2	15.	3	20.	4	25.	4		

29a.X: Bacteria Y: Fungi

29b.organism y needs water and dead organisms

30a.That comment is wrong. The seed at stage A already absorbs water for germination.

30b.Yes, The green bean plant would get from stage B to stage C.(the grren bean plant at stage B has seed leaves when it is placed inside a wooden cupboard for a week Instead of real leaves so it does not need light to photosynthesize as theseed leaves provide food for the green bean plant at stage B.

31a.Ovary

31b.X wind Y animals

31c.Fruit X is dispersed in the direction of the wind but Fruit Y is dispersed in mo specific direction.

32a.Organism T will not be able to breathe underwater. Organism T has a thick coat of fur and gives birth to and takes care of its young. So it is a mammal, and mammals have lungs, which do not allow it to breathe underwater.

32b.When more carbon dioxide is released into the air, more heat is trapped in the atmosphere, increasing the temperature on Earth. With higher temperature more ice in the arctic region melts. There will be less floating sea ice to keep the young safer, so they will be eaten by predators, hence there will be less organism T.

33a.Cell X, Cell X has chloroplasts, which traps light during photosynthesis and gives out oxygen.

33b.The higher the amount of oxygen produced by the plant per minute, the higher the rate of photosynthesis of the plant.

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33c.Xiao Ming musty repeat the similar experiment, but this time he must change the glass jar to an ox ague jar, so no light will be able to pass through and then measure the amount of oxygen produces by the plant and he will be able to check if the presence of light affects the process of photosynthesis in a plant.

34a.The young organism C carries a shell which is hard, and the predators will not be able to break open fallen coconuts, which they can us e to attack or pinch their predators, so the predators would not be able to eat the adult organism C.

34b.Organism C stays in the burrow in the day. In the burrow, It is not as hot as outside the burrow, so they stay in their burrow in the day where it is not so hot to cope with the hot weather.

34c.It will scare away or distract Organism C, to give Organism S time to escape.

35a.The longer the objects get heated, the higher the temperature of the top surface of the objects.

35b.The heat from the electrical metal plate has to travel a shorter distance to reach the top surface of object S than object T. Object S also has more contact surface area with the electrical metal plate than object T, so object S gains more heat and heats up object S and its top surface faster than object T.

35c.Both animals do not put down all their body parts when they move. When they do that their body has less contact surface area with the hot sand, which reduces heat gain from the hot sand.

35d.The lizard has less contact surface area with hot sand than the shake, so the lizard gains less heat than the snake.

36a.Melted wax has no definite shape.

36b.The candle is left untouched, melted wax in cylindrical container is losing to form again.

36c.Mandy could change the cylindrical container to a cube container.

36d.When the matchstick head and the side of the matchbox is rough, there is more frictional force between the matchstick head and the side of the matchbox, which creates more heat between them, and causes a fire on the matchstick head.

37a.The temperature underground is colder than the air above the ground.

37b.The hotter water, vapor in the air that was drawn in came into contact with the cooler copper pipe B, lost heat, and condensed into tiny water droplets, which accumulated and dropped out of copper pipe B, and into the tank collecting water.

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37c.The will be more contact surface area of the copper strips and pipe with the hotter water vapor, which condensed into more tiny water droplets, which will accumulate and drop into the tank collecting water.

37d.There will still be water vapor in the air even in dry area.

38a.Air in the air spaces is a poor conductor of heat, so heat from the pizza travels to the surrounding slowly.

38b.(Not waterproof. Cardboard is able to absorb the water droplets that was formed from the condensation of water vapor.

39a.The bulb serves as an indicator by lighting up to show that electricity is passing through the circuit.

39b.OpeningY and Z would cause the circuit to be open. Therefore, the bulb would not light up even if the materials allow electricity to pass through.

39c.B C and D

40a. Gravitational force and frictional force.

40b.It is because there was more gravitation potential energy in the toy car at A, s there was less kinetic energy in toy car at A. The gravitational potential energy in the toy car converted to kinetic energy I the toy car as it moved from A to B, so the toy car moved slower at point A.

40c.Kinetic →heat + sound

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CATHOLIC HIGH SCHOOL

PRELIMINARY EXAMINATION (2019)

PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

Date: 29 August 2019

28 questions

56 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 24 printed pages, excluding the cover page.

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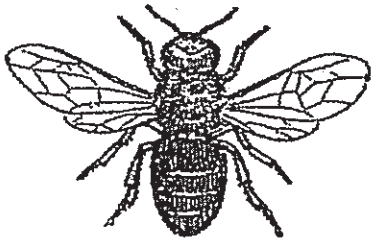
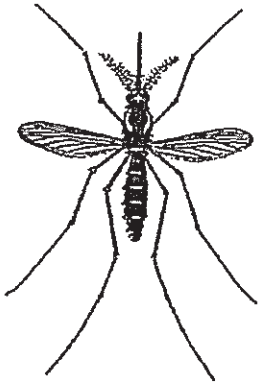
Booklet A (28 × 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet.

(56 marks)

1 Boon Chong saw two organisms in the garden as shown below.





He made the following observations.

A Both have six legs.
B Both have two wings.
C Both have two feelers.
D Both have a hard body covering.

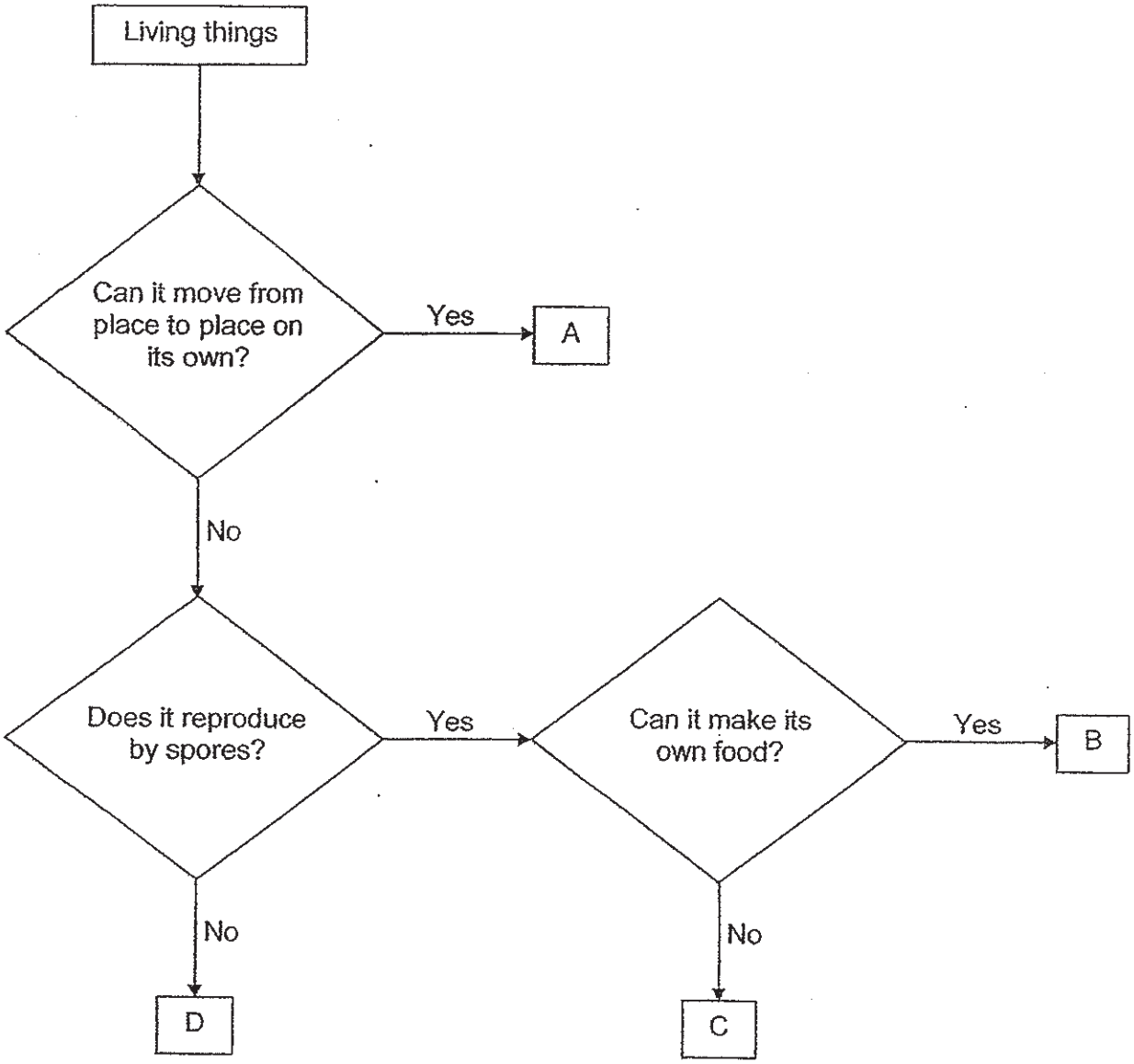
Which of the above characteristics conclude(s) that both organisms is/are insects?

(1) A only
(2) B and C only
(3) A , B and D only
(4) A, B, C and D

2 Which one of the following is a function of the human muscular system?

(1) It protects the bones in the body.
(2) It helps different parts of the body to move.
(3) It breaks down food into simple substances.
(4) It transports digested food, oxygen and water around the body.

3 Study the chart below.

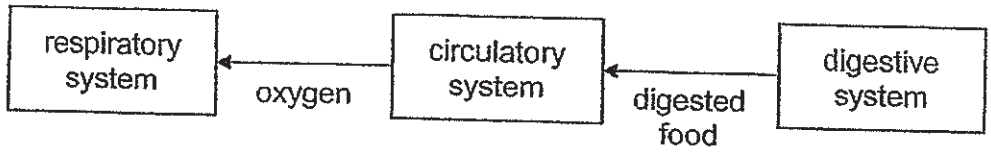


Which of the following represents B and C?

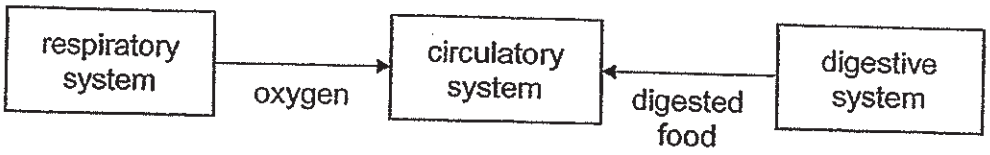
	B	C
(1)	moss	bird's nest fern
(2)	hibiscus	mushroom
(3)	bird's nest fern	mushroom
(4)	hibiscus	moss

4 Which one of the following correctly shows the movement of digested food and oxygen in the different systems of the body?

(1)



(2)



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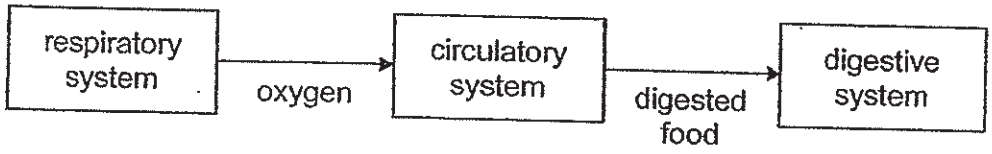
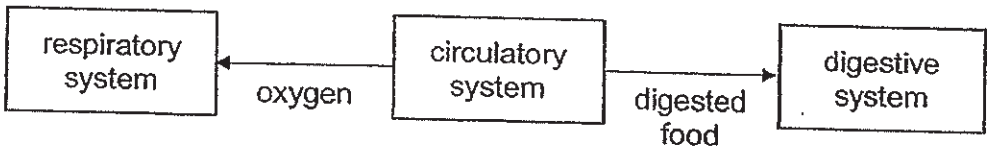
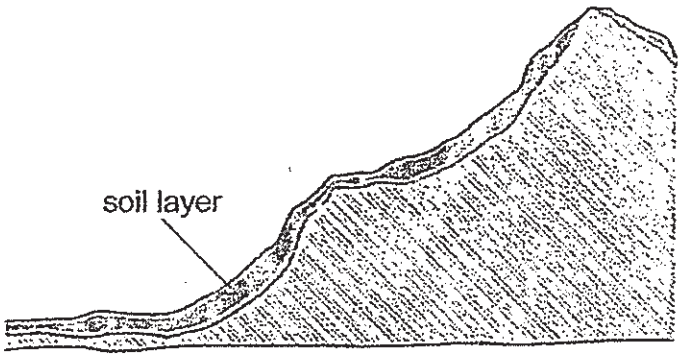


(4)



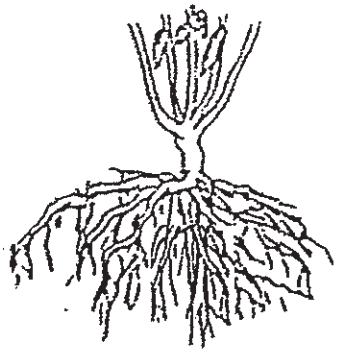
5 The diagram below shows part of a small hill.



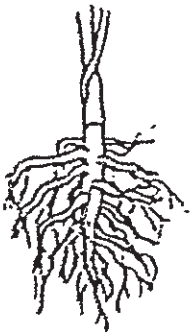
A farmer wanted to grow plants on the hill to prevent soil from being washed down by heavy rain.

Which one of the following plants should the farmer grow?

(1)



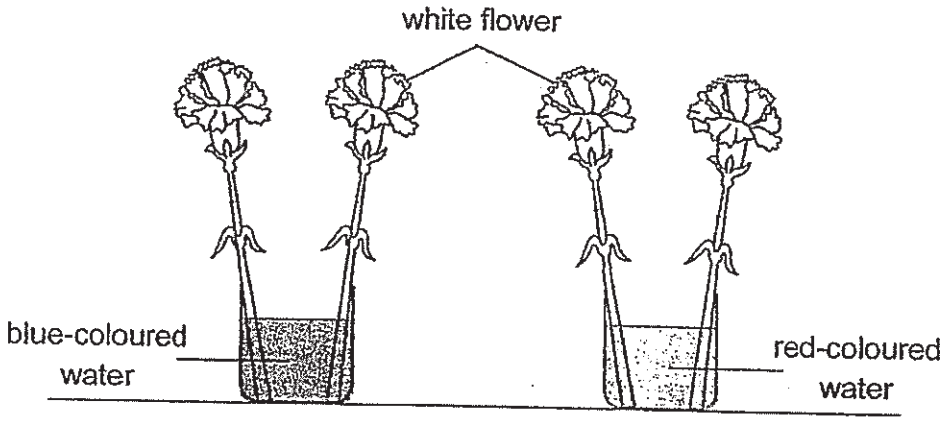
(2)



(3)

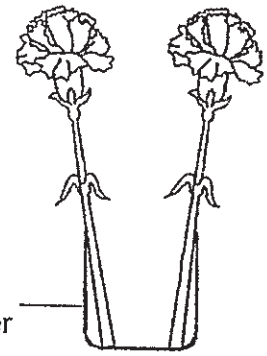
(4)

6 Amin wanted to investigate how water is transported through a type of flower. The diagram below shows two of his set-ups.

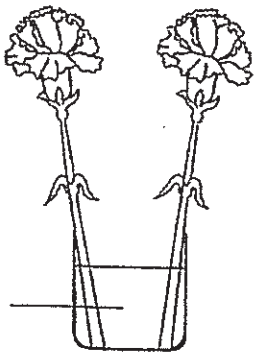


Which one of the following could be used as a control for his experiment?

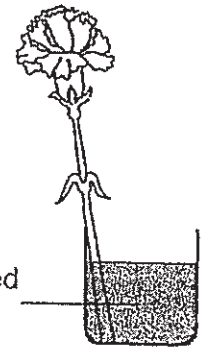
(1)



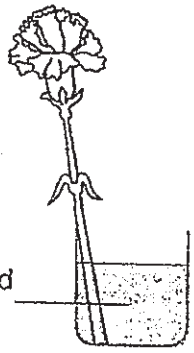
(2)



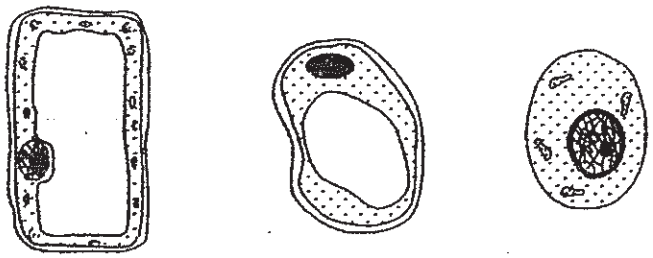
(3)



(4)



7 The diagram below shows three samples of different cells.



cell E cell F cell G

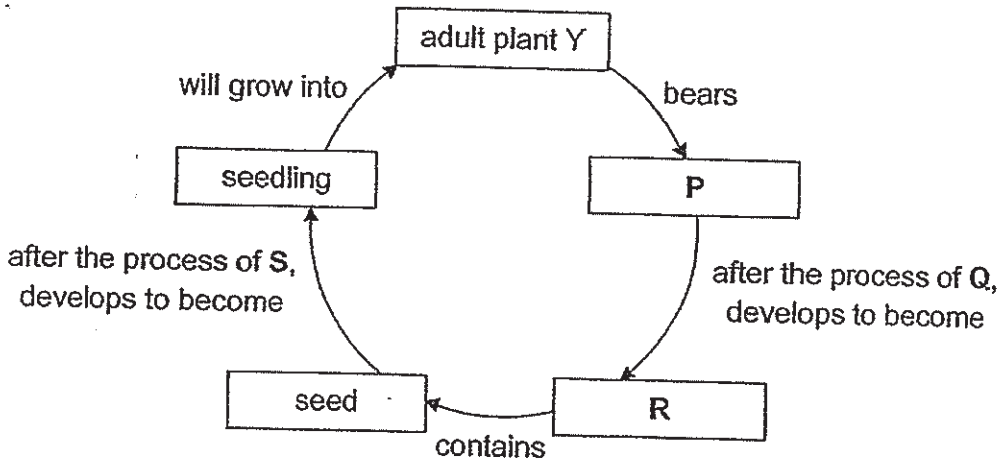
After observing the characteristics of the three cells under the microscope, Rennie made some statements.

Which statement(s) is/are correct?

A Cell G can make food.
B Cell F is most likely a root cell.
C Cell E is most likely to increase in size.

(1) B only
(2) C only
(3) A and C only
(4) A, B and C

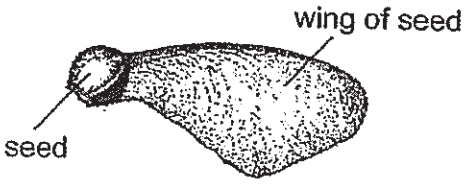
8 The diagram below shows the development of plant Y.



Which of the following correctly represents P, Q, R and S?

	P	Q	R	S
(1)	fruit	fertilisation	flower	pollination
(2)	flower	pollination	fruit	dispersal
(3)	fruit	dispersal	flower	germination
(4)	flower	fertilisation	fruit	germination

9 Prakesh wanted to find out how the height at which the seeds are dropped affects the distance travelled.

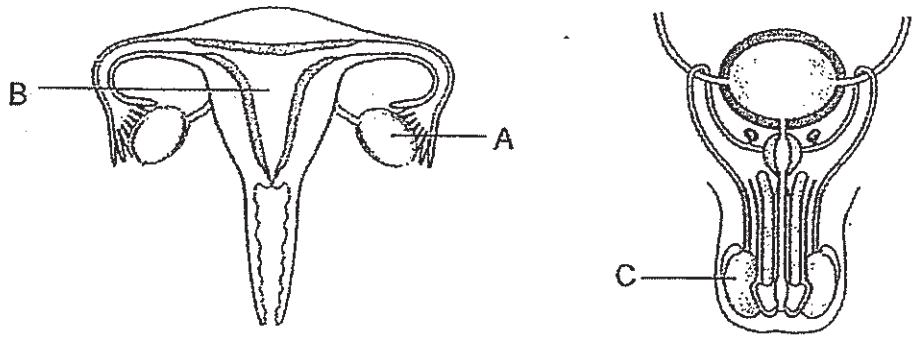


Which variable(s) should be kept constant for a fair test?

A size of seeds
B mass of seeds
C length of wings of seeds
D height at which the seeds is dropped

(1) D only
(2) A and D only
(3) B and C only
(4) A, B, C and D

10 The diagrams below show the male and female reproductive systems.



Which of the following correctly describes the functions of the parts labelled A, B and C?

	A	B	C
(1)	produces female reproductive cells	where the egg and sperm fuse	produces male reproductive cells
(2)	produces female reproductive cells	where the fertilised egg develops	produces male reproductive cells
(3)	where the fertilised egg develops	where the egg and sperm fuse	produces female reproductive cells
(4)	produces male reproductive cells	where the fertilised egg develops	where the egg and sperm fuse

11 A scientist conducted a study and observed that organism R prefers a dark and wet environment.

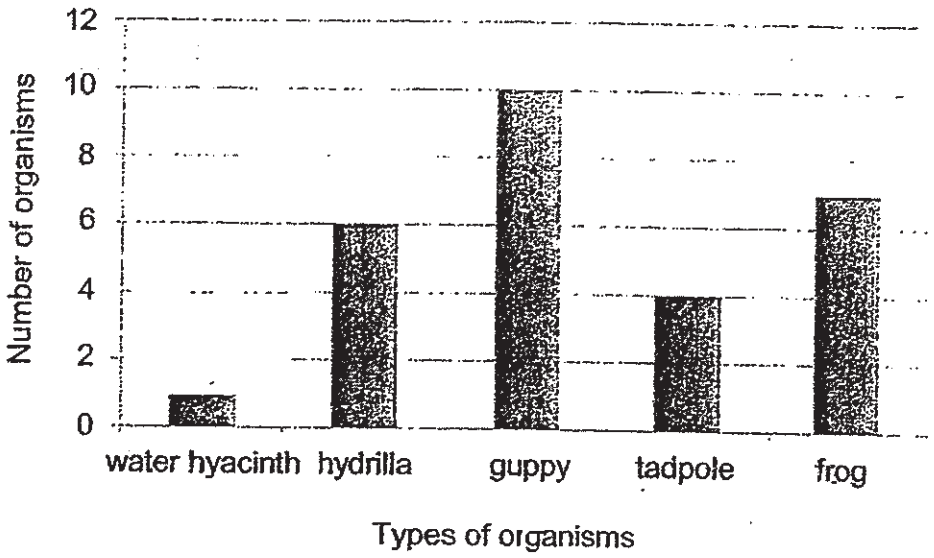
The table below shows two physical characteristics A and B, and the habitats that organisms live in.

Habitat	Characteristic A	Characteristic B
desert	low	high
garden	high	high
Q	high	low
P	low	low

Which habitat does organism R live in and what are the characteristics of A and B?

	Habitat of organism R	Characteristic A	Characteristic B
(1)	Q	temperature	amount of light
(2)	P	temperature	amount of light
(3)	Q	amount of water in the soil	amount of light
(4)	P	amount of water in the soil	temperature

12 Rita counted all the plants and animals found in a pond and recorded the results in the graph as shown below.



Which statement(s) about the plants and animals is/are correct?

A There is only one pond community.
B There are three populations of plants and animals.
C There are twenty-eight populations of plants and animals.

(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

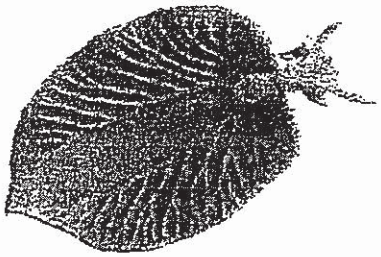
13 Large areas of forests are cleared by burning or cutting down trees to make more space for farming or housing as shown in the diagram below.

Which of the following are the effects of deforestation?

A soil erosion
B organisms lose their habitats
C Earth's temperature increases
D water in rivers and lakes become polluted

(1) A and B only
(2) C and D only
(3) B , C and D only
(4) A, B, C and D

14 Organism S lives in the water and is able to trap chloroplasts after feeding on algae as shown in the diagram below.



When organism S is placed in a water tank under the light without food for two months, it is still alive.

Which one of the following explains why organism S is still alive after two months?

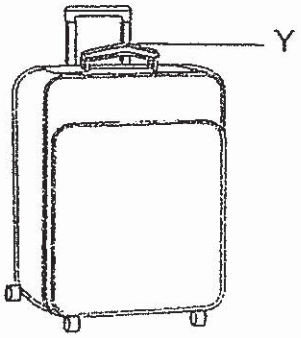
(1) Organism S feeds on the water.

(2) Organism S absorbs the light energy.

(3) Organism S has stored food in its body.

(4) Organism S is able to make its own food.

15 The diagram below shows a luggage with a handle labelled as Y in the diagram below. The maximum mass the luggage can hold is 30 kg.



Which properties of the handle ensure that the luggage can be transported from one place to another?

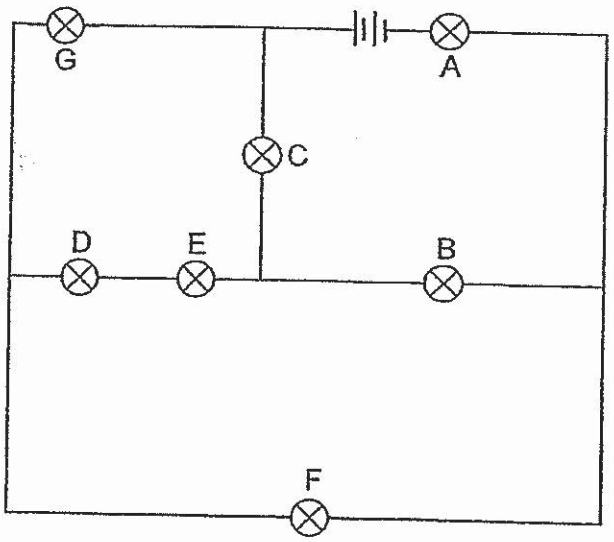
(1) strength and flexibility

(2) strength and waterproof

(3) flexibility and waterproof

(4) flexibility and ability to float on water

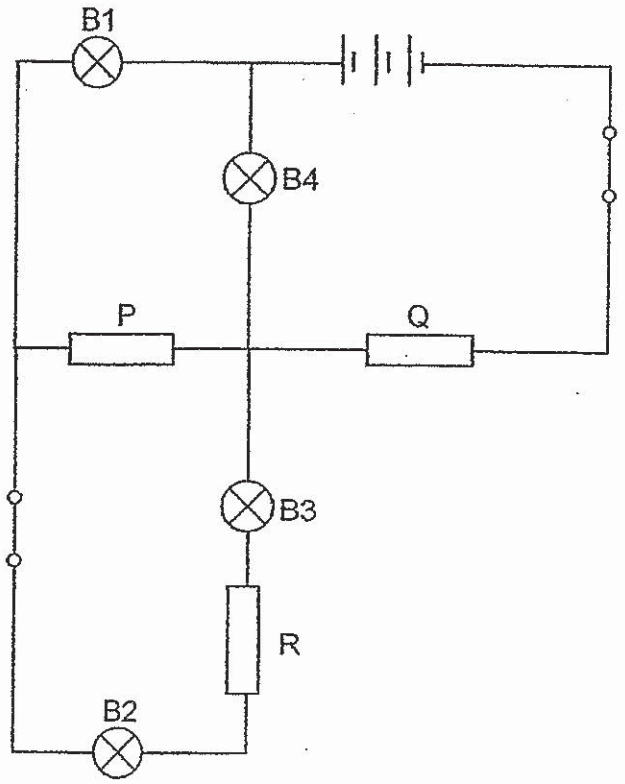
16 Study the circuit diagram.



Three bulbs remain lit up when two of the bulbs are not working.
Which bulbs are **not** working?

(1) A and G
(2) B and F
(3) D and E
(4) F and G

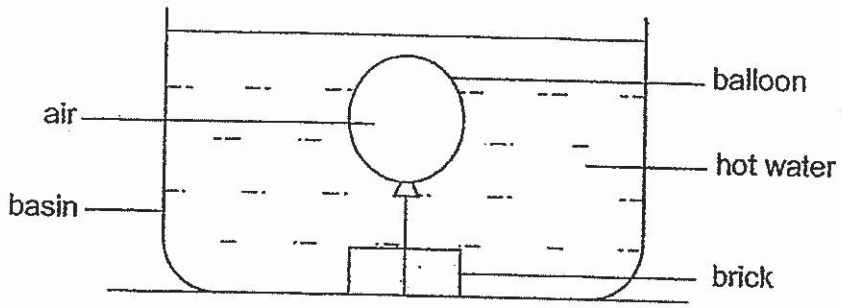
17 Johanna connected three objects P, Q and R into a circuit as shown in the diagram below.



When Johanna closed both switches, only B1 and B4 lit up.
Based on the result, what could the objects be made of?

	Object P	Object Q	Object R
(1)	glass	plastic	rubber
(2)	copper	rubber	aluminum
(3)	silver	steel	plastic
(4)	aluminum	rubber	glass

18 Study the diagram below.



The balloon became larger after some time.
What happened to the mass and volume of the air in the balloon?

	Mass of air	Volume of air
(1)	increased	increased
(2)	decreased	no change
(3)	no change	increased
(4)	decreased	decreased

19 The table below shows the melting and boiling points of three substances X, Y and Z.

Substance	Melting point (°C)	Boiling point (°C)
X	10	90
Y	40	150
Z	95	200

Based on the data given in the table above, which one of the following statements is correct?

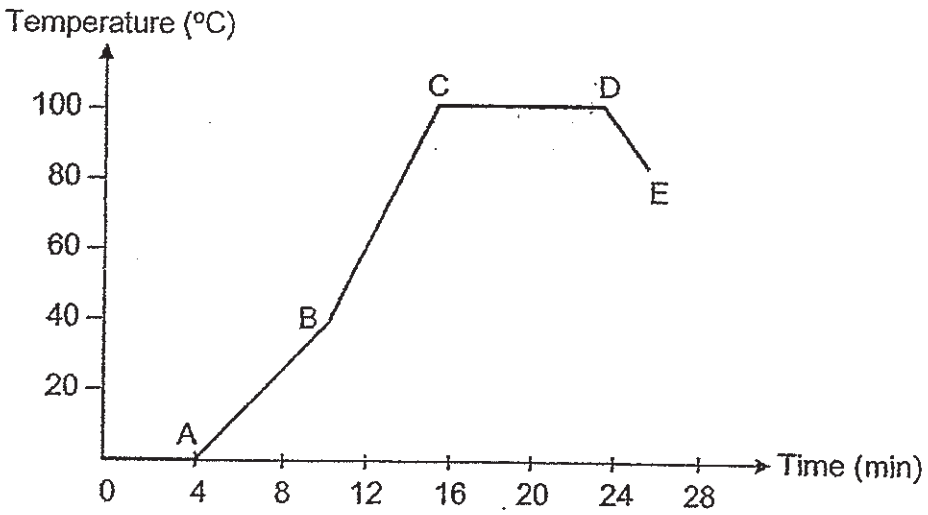
(1) X and Y are solids at 45°C.

(2) Y and Z are gases above 170°C.

(3) At 85°C, X is a liquid and Z is a solid.

(4) At 200°C, Y is a liquid and Z is a gas.

20 The graph below shows the temperature of water over a period of time.

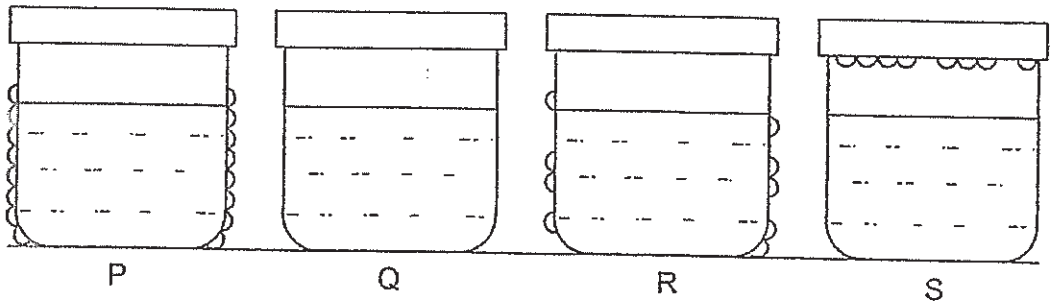


Based on the graph above, which statement(s) is/are correct?

A Water lost heat between DE as there was a decrease in the temperature.
B There was no heat gain between CD because the temperature remained at 100°C.
C Water gained heat between AC as there was an increase in the temperature.

(1) C only
(2) A and B only
(3) A and C only
(4) A, B and C

21 Four identical covered beakers P, Q, R and S contained the same amount of water set at different temperatures.



After five minutes, water droplets were observed for some of the beakers as shown above.

Which one of the following represents the correct order of temperatures of the four beakers of water, from the lowest to the highest?

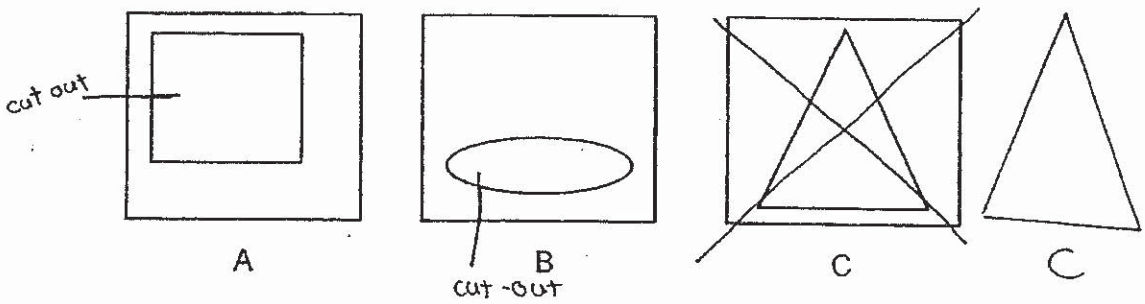
(1) Q, R, S, P

(2) Q, S, R, P

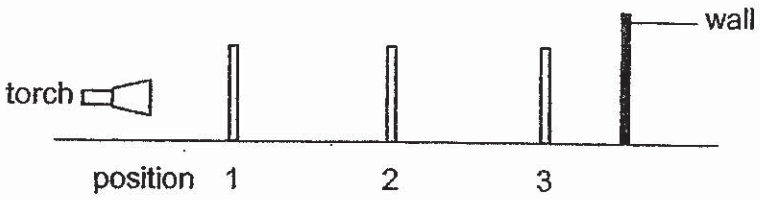
(3) P, R, S, Q

(4) P, R, Q, S

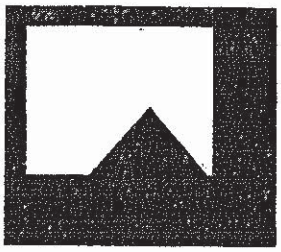
22 Le Ting was given three cards of the same size A, B and C ~~with out out shapes~~.



She then placed all three cards together as shown in the diagram below.



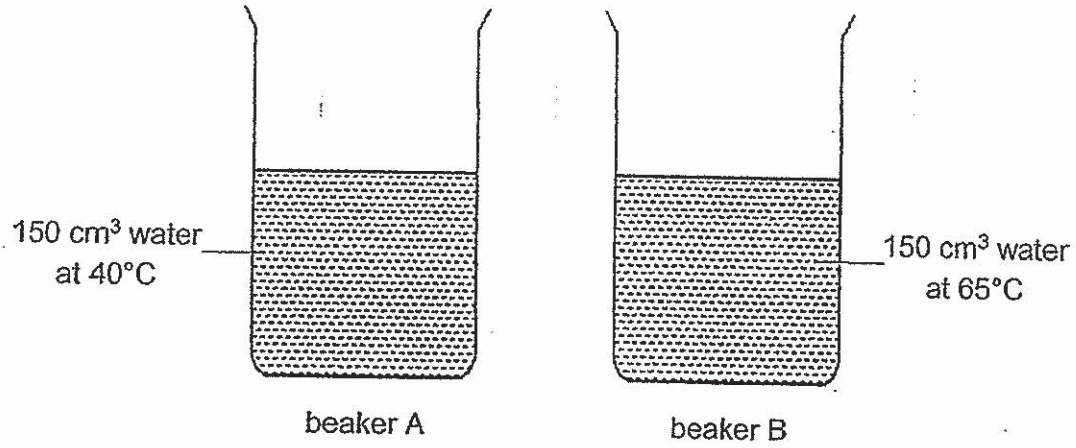
The diagram below shows the shadow on the wall.



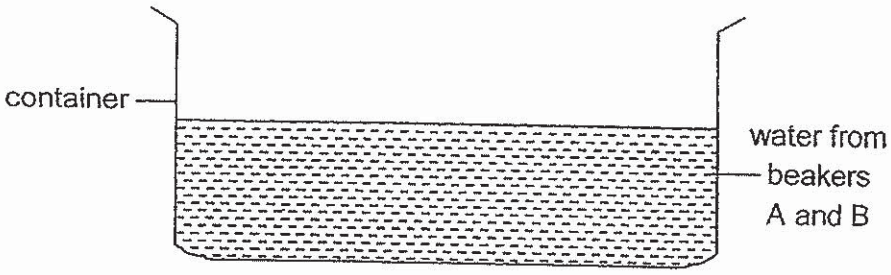
Which of the following correctly represents A, B and C?

	Position 1	Position 2	Position 3
(1)	A	B	C
(2)	A	C	B
(3)	C	A	B
(4)	C	B	A

23 The diagram below shows two beakers A and B containing an equal amount of water. Temperature of the surrounding air was 30°C.



Weihua emptied both beakers into a container and measured the temperature of the water.



What would be the final temperature of the water in the container after 24 hours?

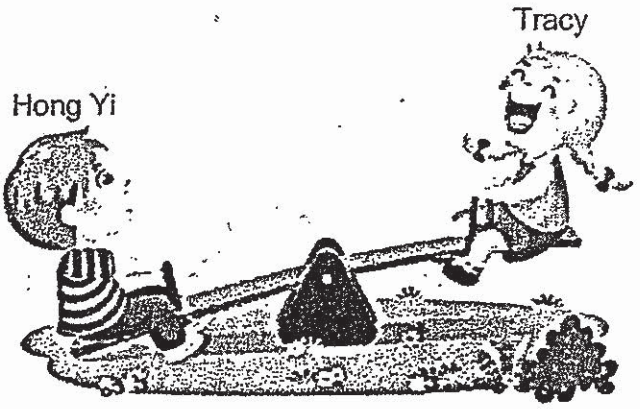
(1) 30°C

(2) 40°C

(3) 65°C

(4) 105°C

24 Study the diagram below.



When a pushing force is applied by Tracy using her feet, she moves upwards while Hong Yi moves downwards.

Which effect(s) of forces is/are demonstrated by the above activity?

A A force can move a stationary object.
B A force can change the shape of an object.
C A force can speed up or slow down an object.
D A force can change the direction of motion of an object.

(1) B only
(2) A and C only
(3) A, C and D only
(4) B, C and D only

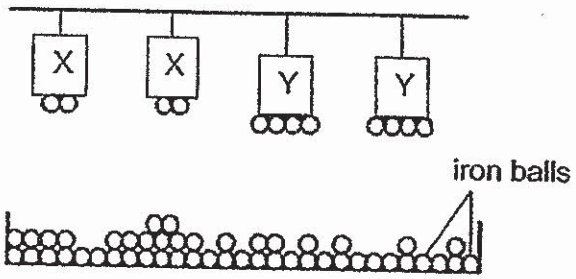
25 Gavin made two claims.

- A magnet made of material X has greater magnetic force than that made of material Y.
- Magnetic force is affected by the distance of the magnet from the object it is to attract.

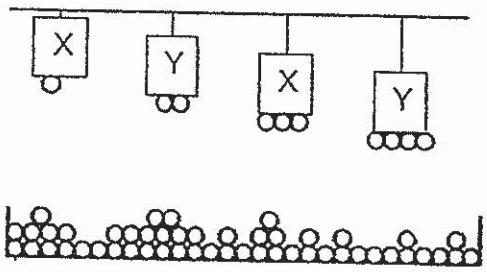
He prepared a set-up using magnets made of materials X and Y to verify his claims.

Which one of the following set-ups did he use to verify both claims?

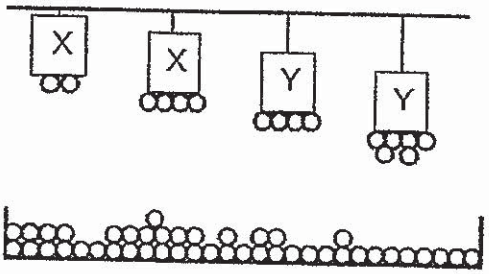
(1)



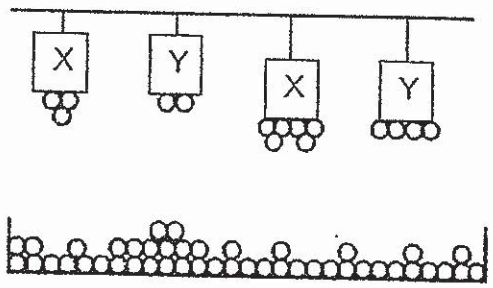
(2)



(3)



(4)



26 Wei Lin conducted an experiment using a wooden block and a wooden plank as shown in Diagram 1.

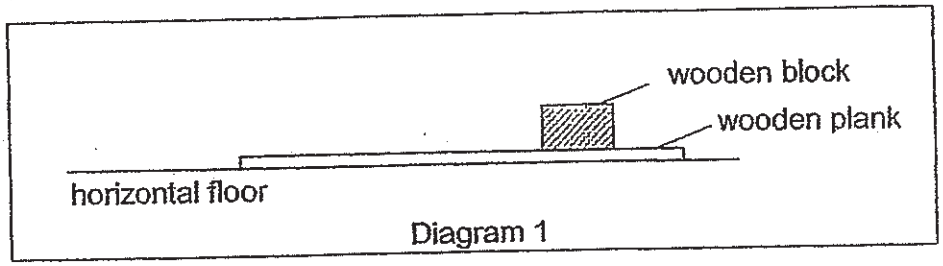


Diagram 1

She raised one end of the wooden plank slightly and observed that the wooden block did not slide down as shown in Diagram 2.

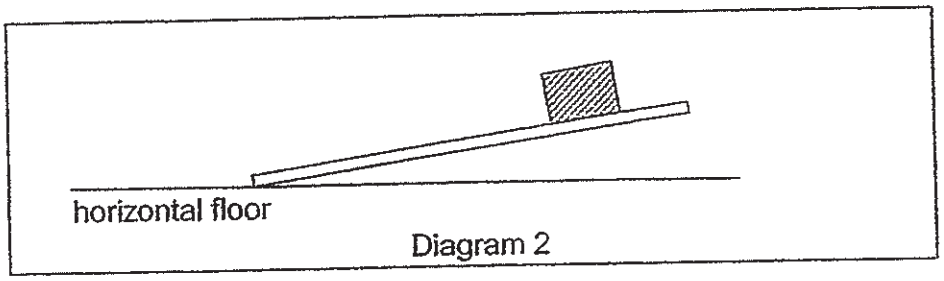


Diagram 2

However, when she raised the same end of the wooden plank high enough, the wooden block slid down as shown in Diagram 3.

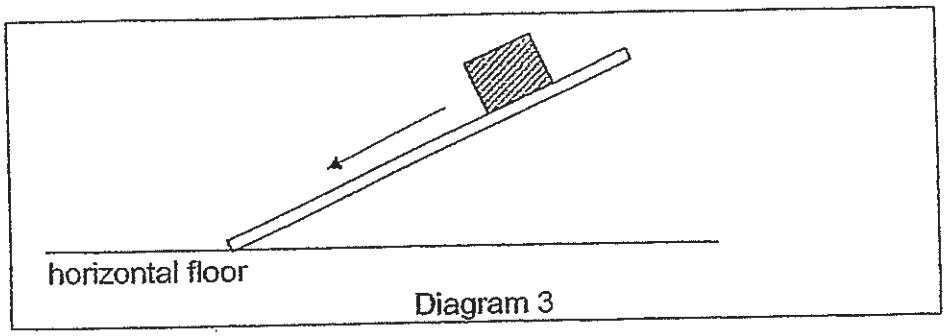


Diagram 3

Which statements are correct?

A Frictional force acted on the wooden block as it slid down the wooden plank in Diagram 3.

B Gravitational force acting on the wooden block in Diagram 2 was greater than that in Diagram 1.

C No gravitational force was acting on the wooden block when it was resting on the wooden plank in Diagram 1.

D Gravitational force was greater than the frictional force causing the wooden block to slide down the wooden plank in Diagram 3.

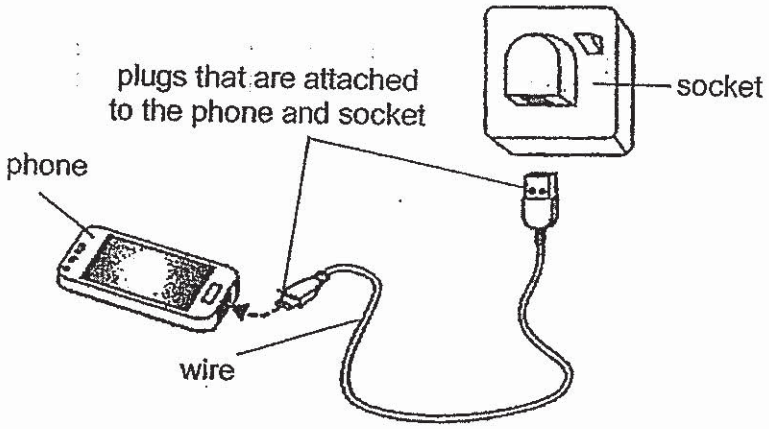
(1) A and D only

(2) B and C only

(3) A, B and D only

(4) A, B, C and D

27 When the battery of the handphone is fully charged, it is unplugged from the socket.



Which one of the following represents the energy conversion of the handphone when it is switched on?

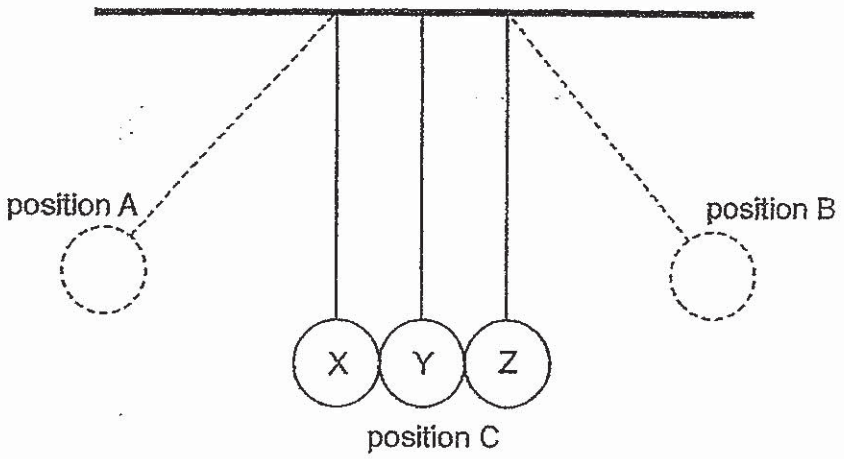
(1) heat energy ⟶ electrical energy ⟶ sound and light energy

(2) kinetic energy ⟶ electrical energy ⟶ sound and light energy

(3) electrical energy ⟶ potential energy ⟶ sound and light energy

(4) potential energy ⟶ electrical energy ⟶ sound and light energy

28 The diagram below shows three metal balls X, Y and Z each hung by a string from a support.



When ball X is moved up to position A and released, it swings back and strikes ball Y at position C. Ball X comes to a complete stop while ball Z moves in the opposite direction, reaching position B before swinging back towards ball Y and striking it at position C.

Which statements correctly describe balls X and Z?

A Gravitational potential energy increases as ball X moves from position C to position A.
B Gravitational force acting on ball Z increases as it moves from position B to position C.
C The distance moved by ball X to position A is less than the distance moved by ball Z to position B.
D Kinetic energy is transferred from ball X to ball Y to ball Z when ball X is released from position A and strikes ball Y at position C.

(1) A and D only
(2) B and C only
(3) A, B and D only
(4) B, C and D only

End of Booklet A

CATHOLIC HIGH SCHOOL

PRELIMINARY EXAMINATION (2019)

PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 29 August 2019

Parent's Signature: _____

Booklet A	56
Booklet B	44
Total	100

12 questions

44 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

This booklet consists of 16 printed pages, excluding the cover page.

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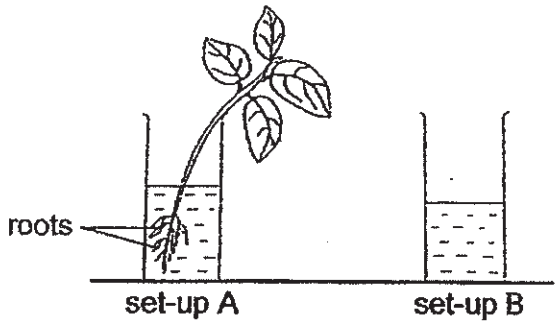
Booklet B (44 marks)

For questions 29 to 40, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Lynn wanted to find out the volume of water taken in by a plant. She placed a plant in a measuring cylinder as shown in set-up A. Set-up B act as a control to ensure a fair test.



Set-ups A and B were left in the open for a week. The table below shows the volume of water on Day 1 and Day 7 of the experiment.

Set-up	Volume of water (cm^3)	
	Day 1	Day 7
A	1500	1350
B	1500	1450

(a) What was the volume of water taken in by the plant? [1]

_____

(b) How does set-up B help to ensure a fair test? [1]

_____

_____

(c) If set-up B was removed, suggest what Lynn could do to set-up A to obtain an accurate result. [1]

_____

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SCORE / 3

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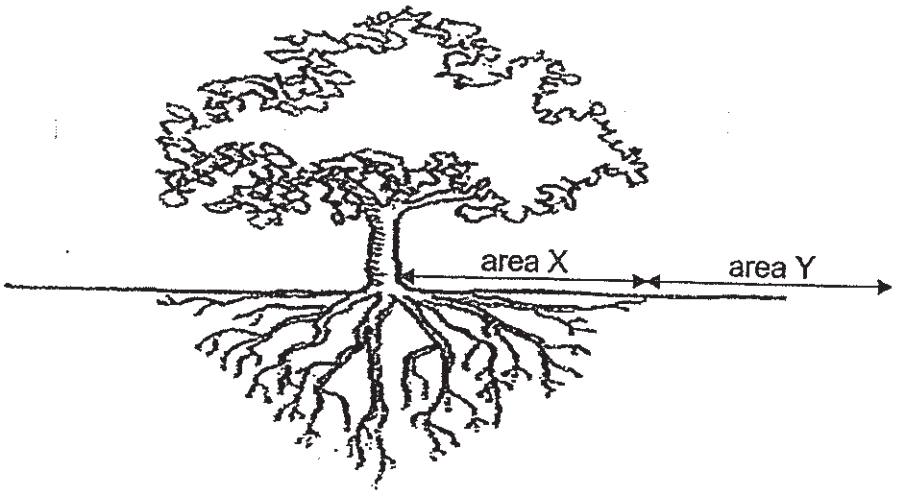
30 In the diagram below, seeds dispersed from the tree may fall in any of the two areas X or Y.



(a) List all the conditions necessary for seeds to germinate. [1]

_____

(b) From the diagram above, give a reason why seeds falling in area X are less likely to germinate. [1]

_____

_____

(c) Some of the seeds in area X were able to germinate and grow into young plants. It was observed that these young plants in area X were taller and thinner. Explain why. [1]

_____

_____

(Go on to the next page)

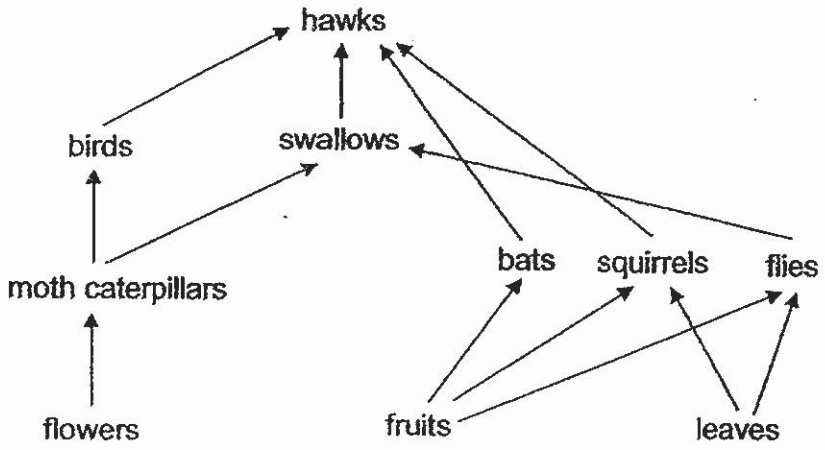
SCORE	/ 3

31 (a) State what a population is. [1]

_____

_____

(b) Study the food web below. The flowers, fruits and leaves of a wild fruit tree are food sources for the organisms.



In the food web above, explain which animal would be most affected if the flowers of the wild fruit tree were **not** pollinated? [2]

_____

_____

_____

(Go on to the next page)

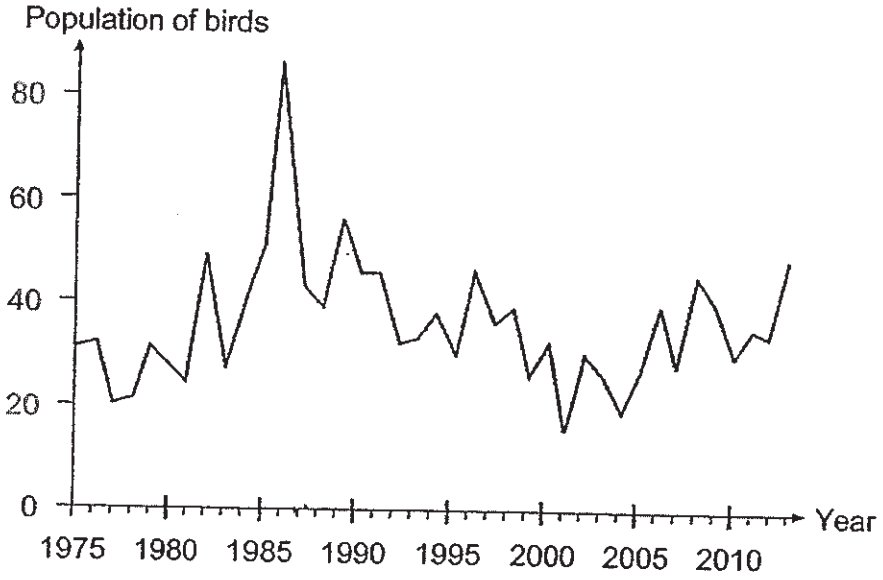
SCORE	3

Continue from Question 31

(c) Study the food chain below.

flowers ⟶ moth caterpillars ⟶ birds ⟶ hawks

The graph below shows how the population of birds in the food chain above changed over a period of time.



Based on the results in the graph, suggest two years where the population of hawks was probably the least. Explain your answer for each year. [2]

(i) Year: _____

Explanation:

_____

_____

(ii) Year: _____

Explanation:

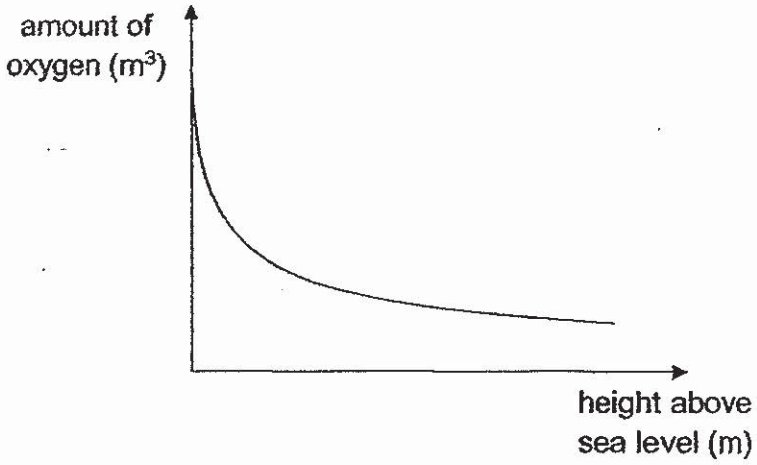
_____

_____

(Go on to the next page)

SCORE	/2

32 The amount of oxygen in the atmosphere changes at different heights above sea levels.



Ahmad went on an overseas mountain climbing trip.

(a) State the relationship between the amount of oxygen and the height above sea level. Explain how Ahmad's heart rate would change as he climbed up the mountain. [2]

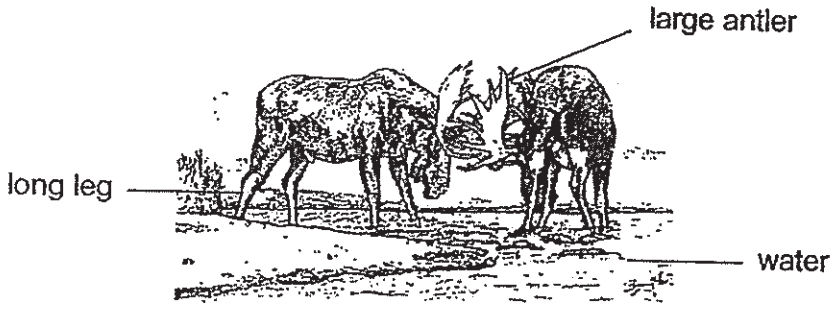
Mason is a mountain guide and lives in the mountains.

(b) Explain why Mason has bigger lungs and heart when compared to those who live below the mountains. [2]

(Go on to the next page)

SCORE	/ 4

33 Male of animal D lives in a cold and thick forested environment. It can swim and run very fast. It has a large variety of food source that can be found on land and water. During the mating season, the males of animal D will challenge each other.



(a) Based on the diagram above, give two reasons how having large antlers help the male of animal D in its survival. [2]

(i) _____

_____

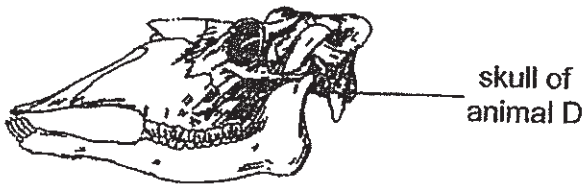
(ii) _____

_____

(b) Apart from being able to run faster with its long legs, state another advantage of this structural adaptation of animal D. [1]

_____

_____



(c) Based on the structure of animal's D skull as shown above, suggest the diet of animal D. [1]

_____

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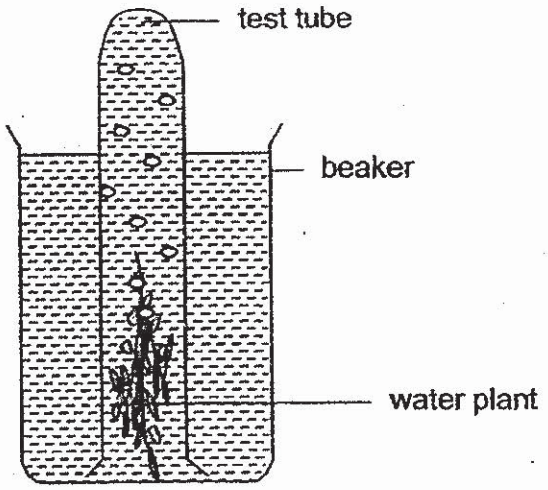
SCORE	/ 4

34 Meili added chemical X into the set-up below to increase the amount of carbon dioxide.



after adding chemical X

After adding a spoonful of chemical X, she placed the set-up under the sun. She measured the number of bubbles produced in the set-up for ten minutes.

She repeated the experiment with two spoonfuls of chemical X and recorded her results in the table below.

	Number of bubbles produced	
Time (min)	**1 spoonful of chemical X**	**2 spoonfuls of chemical X**
0	0	0
2	2	3
4	4	7
6	6	9
8	9	12
19	13	16

(a) Identify the gas present in the bubbles. [1]

_____

(Go on to the next page)

SCORE 1

Continue from Question 34

(b) Based on the experiment, what is the effect of the amount of chemical X on the rate of photosynthesis? [1]

_____

_____

(c) Give a reason why Meili filled the test tube completely with water at the start of the experiment. [1]

_____

_____

(d) Suggest a control set-up to show that the increase in the number of bubbles was caused by chemical X. [1]

_____

_____

(Go on to the next page)

SCORE 3

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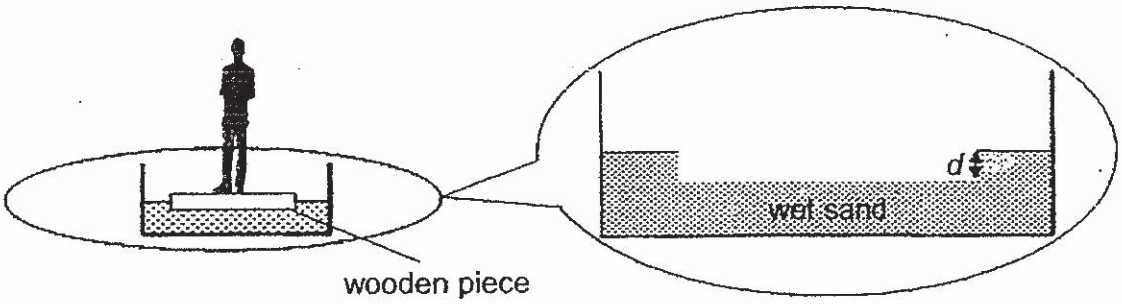
35 Meng Ki placed a square wooden piece onto a trough of wet sand and stood on it. He lifted the wooden piece and measured the depth of the depression, d, made in the wet sand as shown below.



He repeated the experiment with square pieces of different dimensions and recorded the results in the table below.

Area of square wooden piece (cm^2)	Depth of depression, d (cm)		
	1st try	2nd try	3rd try
400	2.0	2.3	2.2
625	1.4	1.3	1.5
900	1.0	0.9	1.0
1225	0.7	0.6	0.8

(a) Based on the results in the table above, what is the relationship between the depth of depression made and the area of the square wooden piece? [1]

_____

_____

(b) For an area of 400 cm^2, give a reason why the depth of depression, d, was different for each try. [1]

_____

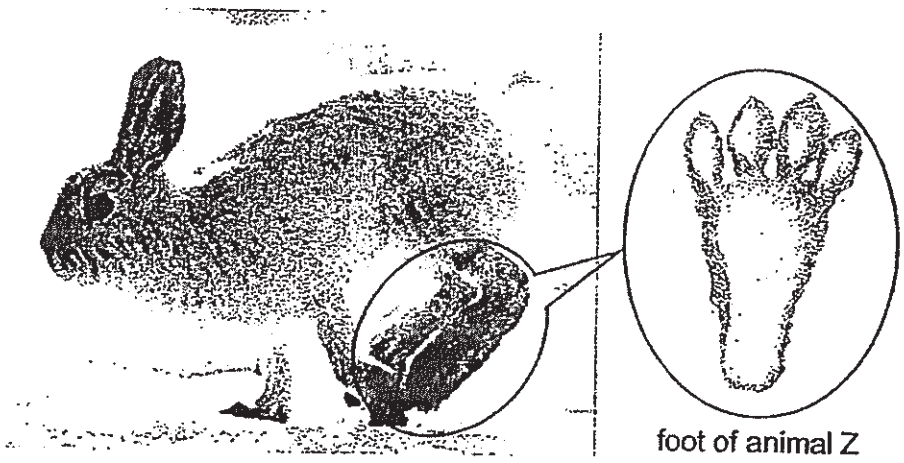
_____

(Go on to the next page)

SCORE	/ 2

Continue from Question 35

The diagram below shows animal Z in a snow-covered environment.



(c) Animal Z has noticeably large hind feet with enlarged toes. The toes spread out and flatten as the animal puts its weight on them.

Using the findings from Meng Ki's experiment, explain how the feet of animal Z are adapted to walk on the soft snow. [2]

_____

_____

_____

(d) Give a reason why having large feet that are adapted to walk on the soft snow is an advantage when animal Z is threatened by a larger animal. [1]

_____

_____

(Go on to the next page)

SCORE 3

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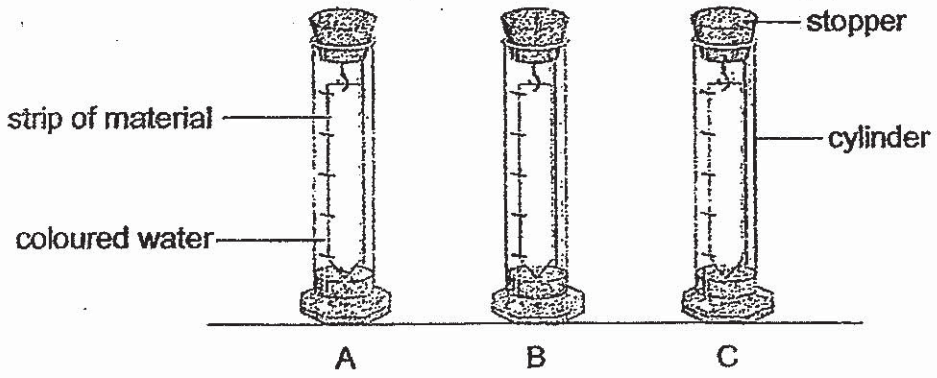
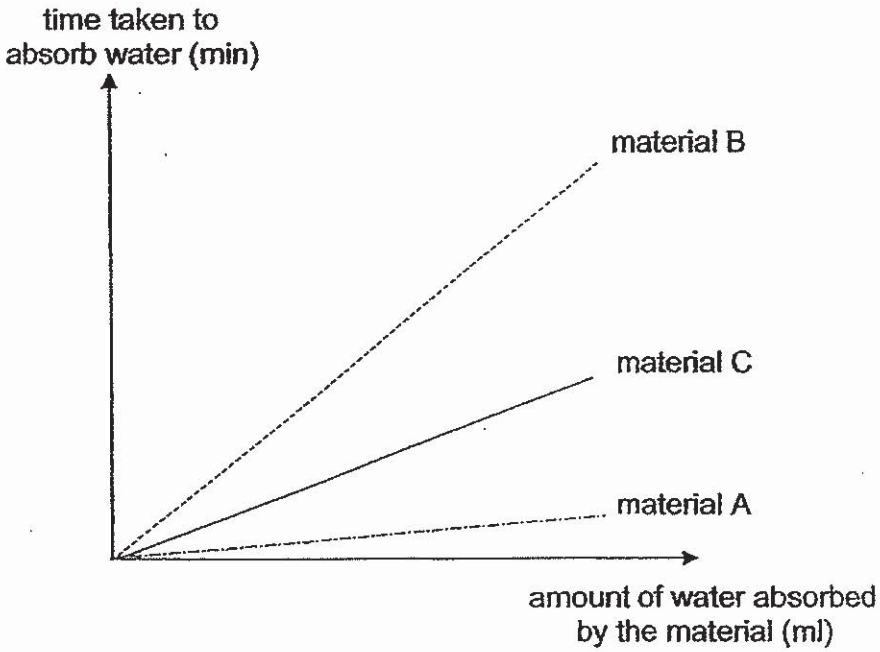
36 Sammy wanted to find out how well material A, B and C can absorb water. He conducted an experiment as shown in the diagram below.

He hung three similar strips made of different materials into identical cylinders filled with the same amount of coloured water.



He measured the time taken for each strip to absorb all the water and the results were plotted in the graph below.



(a) Why was a stopper placed at the opening of the cylinder? [1]

_____

_____

(Go on to the next page)

SCORE	1

Continue from Question 36

(b) Based on the graph, which material should Sammy choose to make the children's bath mat if he wants to keep their feet dry? Explain why. [1]

_____

_____

(c) When making the children's bath mat, Sammy then decided to attach a layer of rubber below the material. Give a reason why Sammi added the layer of rubber. [1]

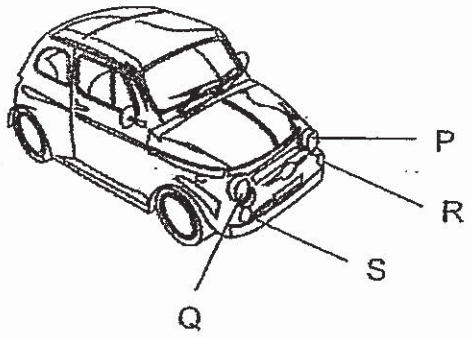
_____

_____

(Go on to the next page)

SCORE	/2

37 The diagram below shows the positions of light bulbs P, Q, R and S.



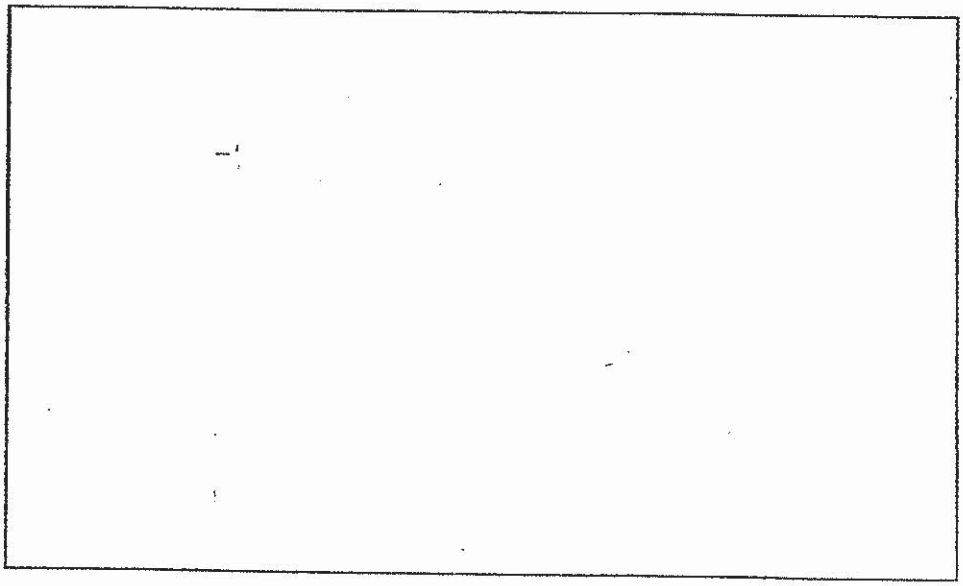
There are two switches S1 and S2 located at the bottom of the battery-operated toy car.

The bulbs in the toy car will light up as shown in the table below.

	Bulb P	**Bulb Q**	**Bulb R**	**Bulb S**
S1: closed **S2: open**	no	no	yes	yes
S1: closed **S2: closed**	yes	yes	yes	yes

When all four light bulbs are lit, all the bulbs are equally bright.

The diagram below shows part of the circuit in the toy car.
Complete and label the circuit below so that the toy car will work as described. [3]



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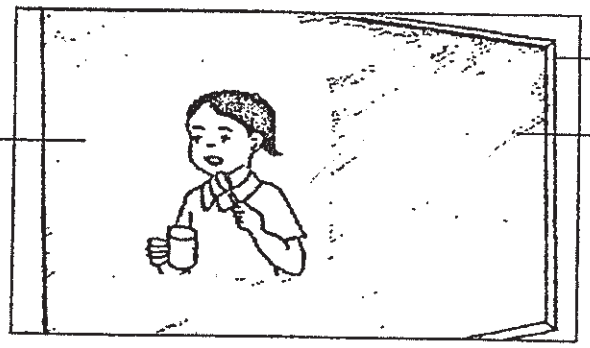
SCORE	/ 3

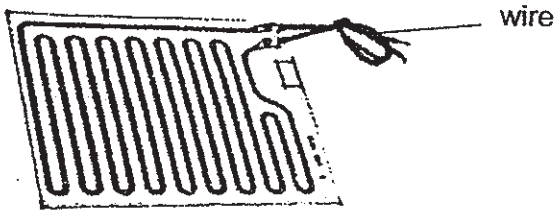
38 The diagram below shows a mirror in a bathroom immediately after Bee Leng had taken a warm shower.



She observed that part Y of the mirror appeared fogged. However, part X of the mirror appeared clear and Bee Leng could see her reflection in it.

(a) Explain how part Y of the mirror became fogged. [2]

A heating pad as shown below was mounted behind part X to ensure that this part of the mirror stayed clear each time Bee Leng turned on the switch to the warm shower.

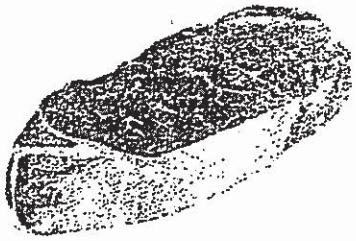


(b) Explain how the heating pad kept part X of the mirror clear when the switch was turned on. [2]

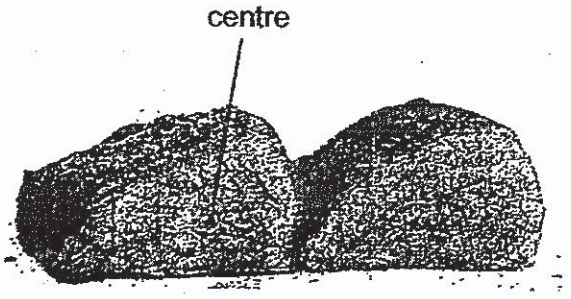
(Go on to the next page)

SCORE	/ 4

39 Mrs Lim wanted to grill meat in the oven. She decided to conduct an experiment to grill a few pieces of meat at 100 g each at different temperatures in the oven for 15 minutes as shown below.



before grilling



meat sliced into two after grilling

She then sliced the pieces of meat into two and made the following observations. The results of her experiment are shown in the table below.

Temperature (°C)	150	180	210
Appearance of meat in the centre when sliced into two	raw	half cooked	fully cooked

(a) Mrs Lim decided to grill a thicker piece of meat of 200 g at 210°C. Based on her results, would the time require to fully cook this piece of meat be more than, same as or less than 15 minutes? [1]

_____

(b) Explain your answer in (a). [2]

_____

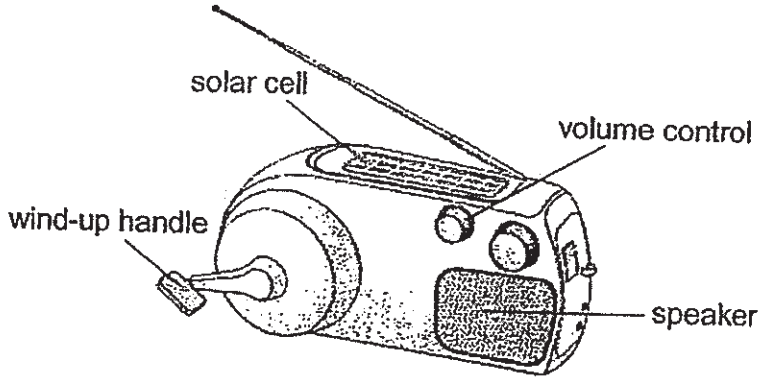
_____

_____

(Go on to the next page)

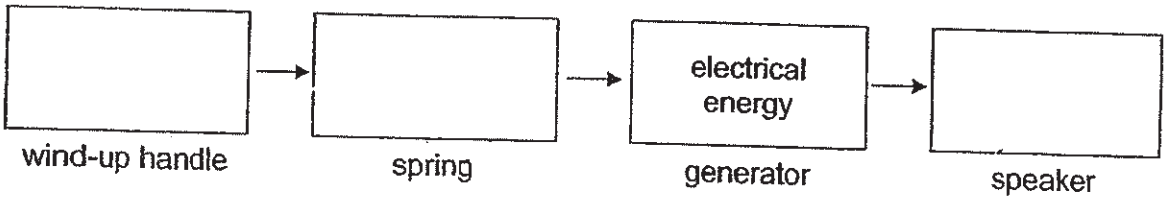
SCORE 3

40 Neela has a wind-up radio as shown below.



It does not run on batteries but is powered by a spring when it is wound up. As the spring unwinds, the generator in the radio provides the electrical energy needed.

(a) Fill in the boxes below to show the energy conversion as the wind-up handle is turned. [1]



(b) When Neela turns the volume up so that the radio is louder, the spring unwinds more quickly. Explain why. [1]

_____

_____

(c) The radio has a solar cell which converts light energy to electrical energy. Neela winds up her radio in an open field without changing the volume. Give a reason why the spring unwinds slower when sunlight falls on the solar cell. [1]

_____

_____

End of Booklet B

SCORE	3

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : CATHOLIC HIGH SCHOOL
SUBJECT : SCIENCE
TERM : SA2.

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	2	1	2	1	4	3	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	2	4	4	1	4	3	3	3	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	2	1	3	4	1	4	1		

BOOKLET B

Q29 (a) $100cm^3$

(b) To compare and confirm that water lost in set-up A is due to the roots taking in the water.

(c) Lynn could put a layer of oil on the water in set-uo A.

Q30 (a) Water, oxygen and warmth

(b) The seeds dispersed in area X will compete for water.

(c) The young plants compete for sunlight as same of them were blocked by the leaves and branches.

Q31 (a) A population is a group of organisms of the same kind, living together and reproducing in a particular habitat.

(b) Bats. If the flowers were not pollinated, fertilisation could not take place and fruit would not be produced. The population of the bats would decrease as they could only feed on the fruit.

(c) (i) 2001

Explanation : The population of birds was the least so there could be fewer birds for the hawks to feed on.

(ii) 1986

Explanation : The population of birds was the greatestso the least number of birds were preyed upon.

Q32 (a) As the height above sea level increase, the amount of oxygen decreases. Admad's heart rate would increase as he climbed up to the mountain His heart needed to pump blood faster to supply more oxygen to all parts of the body.

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(b) The amount if oxygen is lower in the mountain than below the mountains. Mason has bigger lungs to take in more oxygen with each breath and a bigger heart to pump blood faster to supply more oxygen to all parts of the body.

Q33 (a)(i) The large antlers help male of animal D to fight predator and escape.

(ii) The large antlers help the male of animal D to win the fight and mate with the female.

(b) They can go deeper into the water to look for more food.

(c) Animal D can eat plants.

Q34 (a) Oxygen.

(b) As the amount of chemical X increases, the rate of photosynthesis also increase.

(c) To ensure the gas collected was solely produced by the plant only during photosynthesis.

(d) She can add another set-up which is identical to first set-up but without adding chemical X.

Q35 (a) As the area of square wooden piece increase, the depth of depression made decreases.

(b) Meng Ki was not standing at a constant spot on the wooden piece.

(c) When Animal Z flatten its toes would have more surface of its leg touching the snow, then will smaller depth of depression. Therefore, Animal Z could walk on snow with lesser stuck because of lesser depth of depression.

(d) Animal Z will out run its predator.

Q36 (a) To prevent any coloured water from evaporating.

(b) Material A. It absorbed the same amount of water in the shortest period of time. Material A is the most absorbent.

(c) Adding rubber creates more friction between the mat and the floor so his children will not trip and fall.

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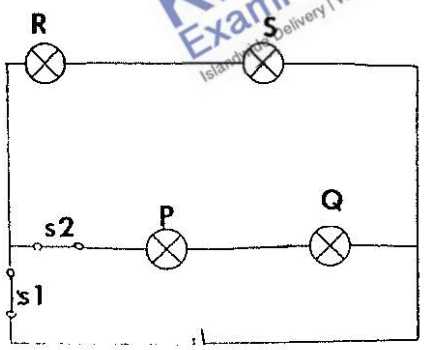
Q37



Q38 (a) The surrounding air in the bath room gained heat from the warm water. Warm water vapour touched the cooler surface of the mirror, I lost heat and condensed to form water droplets.

(b) When the switch was closed, a closed circuit was formed so electric current flowed through the circuit. Part X of the mirror gained heat from the heating pad so warm water vapour was not able to condense.

Q39 (a) More than 15min.

(b) The thicker piece of meat has a greater mass so it will need more time for heat to be transferred from the oven to the meat for fully cooked.

Q40 (a) Kenetic energy → potential energy → electrical energy → sound energy

(b) More potential energy of the spring is converted to more electrical energy for the generator to produce a louder sound from the speaker.

(c) Since the solar cell is able to convert light energy from the sun to produce electrical energy, less potential energy the spring is needed to produce the same volume from the speaker.

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Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Preliminary Examination
SCIENCE

BOOKLET A

22 August 2019

Total Time for Booklet A and B: 1 hour 45 minutes

28 questions
56 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 21 printed pages.

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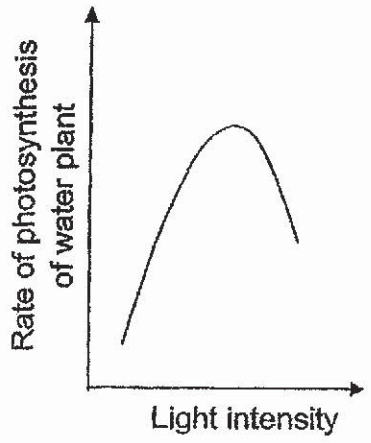
894

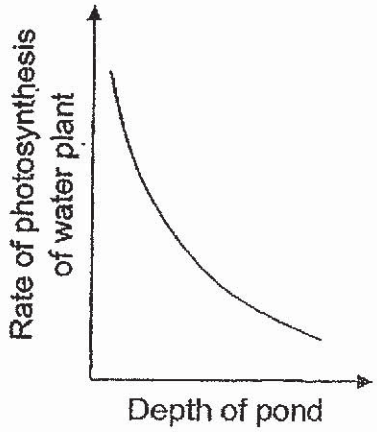
Section A (28 x 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet provided.

---

1. The two graphs below show how the light intensity and the depth of the pond affect the rate of photosynthesis of the submerged water plants.





Based on the graphs above, which one of the following statements is correct?

(1) The light intensity does not affect the rate of photosynthesis.
(2) The rate of photosynthesis increases as the light intensity increases.
(3) The rate of photosynthesis does not depend on the depth of the pond.
(4) The lower the depth of the pond, the higher the rate of photosynthesis.

2. Which one of the following is **not** a fossil fuel?

(1) coal
(2) charcoal
(3) petroleum
(4) natural gas

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3. The table below shows the stages of development of a fertilized human egg.

Period	Stages
End of 1st week	Fertilized egg implants itself in the womb
End of 4th week	Brain, spinal cord and nervous system are formed
End of 8th week	Face and limbs are visible
Around 12th week	Foetus starts to move
End of 16th week	Entire body parts are formed
End of 28th week	Head and body are proportionate
End of 38th week	Foetus is ready to be born

From the table above, when is the earliest time the parents are able to find out the gender of their baby?

(1) After 1st week

(2) After 8th week

(3) After 16th week

(4) After 38th week

4. Reforestation is a process of replanting an area with trees. Which of the following are the benefits of reforestation?

A More soil would be eroded.

B More oxygen would be released into the air.

C More carbon dioxide would be released into the air.

D More food and shelter would be available for the animals.

(1) A and B only

(2) C and D only

(3) B and D only

(4) A, B, C and D

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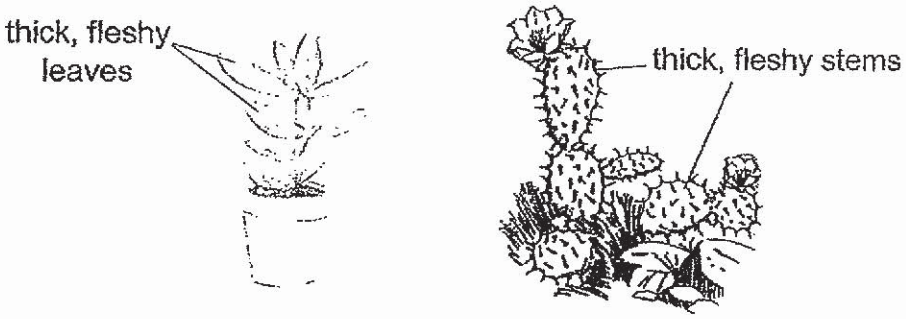
5. F, G, H, J and K are five organisms living in a community. The food relationships between the five organisms are stated below:

- Organism K feeds on Organism J.
- Organism F and J feed on Organism H.
- Organism G feeds on Organisms F and H.

Which one of the following is correct?

	Producer(s)	Plant-eater(s)	Animal-eater(s)	Plant-and-animal eater(s)
(1)	G	F	K and J	H
(2)	F	J	G	H and K
(3)	H	J and F	K	G
(4)	G and K	H	F	J

6. The picture below shows the structural adaptations of two plants.



Which one of the following best explains the function of these adaptations?

(1) Adaptation for pollination.

(2) Adaptation for reproduction.

(3) Adaptation for water retention.

(4) Adaptation for getting sunlight.

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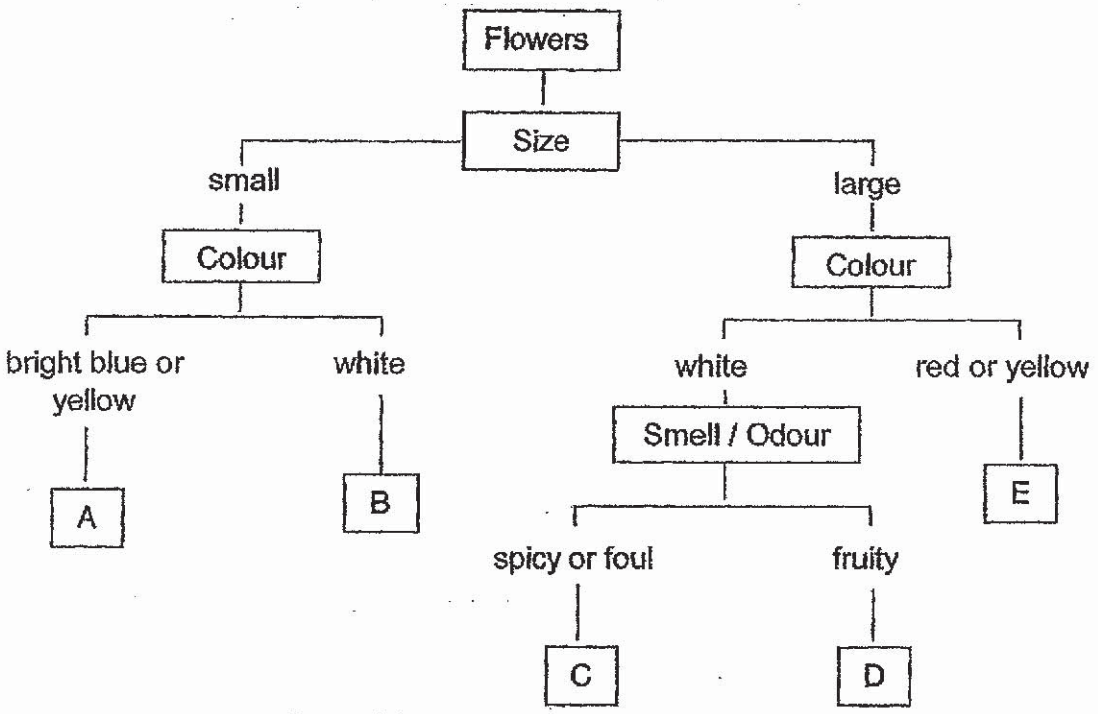
7. The table below shows the characteristics of some flowers which attract specific animals.

Animal	The characteristics of flowers that mainly attract the animal		
	Size	Colour	Smell / Odour
moth	small	white	-
beetle	large	white	spicy or foul
bee	small	bright blue or yellow	-
bird	large	red or yellow	-
bat	large	white	fruity

The chart below classifies five flowers A, B, C, D and E.



What animals would be attracted to flowers B and D respectively?

	Flower B	Flower D
(1)	bird	beetle
(2)	moth	bat
(3)	bat	bird
(4)	moth	beetle

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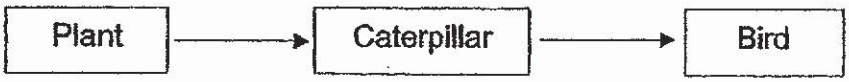
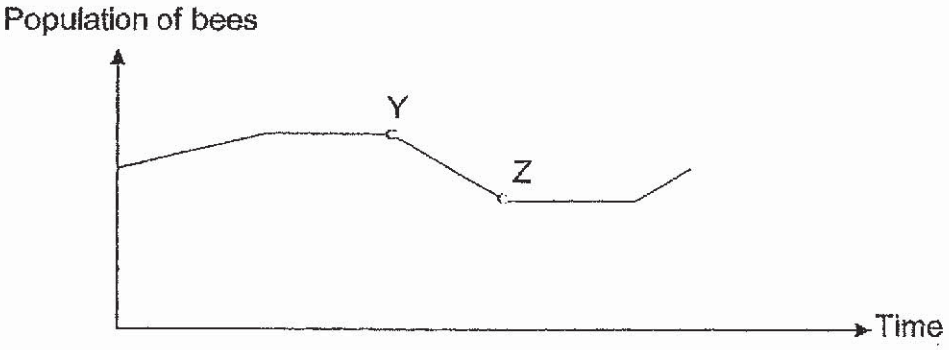
8. Study the food chain shown below.



What is the main source of energy for the food chain?

(1) Sun
(2) Plant
(3) Water
(4) Carbon dioxide

9. The graph below shows the population of bees in a community over a period of time.



Which of the following explains the change in the population of bees shown by YZ in the graph?

A There was a drought.
B Butterflies were introduced to the habitat.
C More land was used for building of houses.
D A disease had infected on some of the flowering plants.

(1) A and B only
(2) C and D only
(3) B and D only
(4) A, B, C and D

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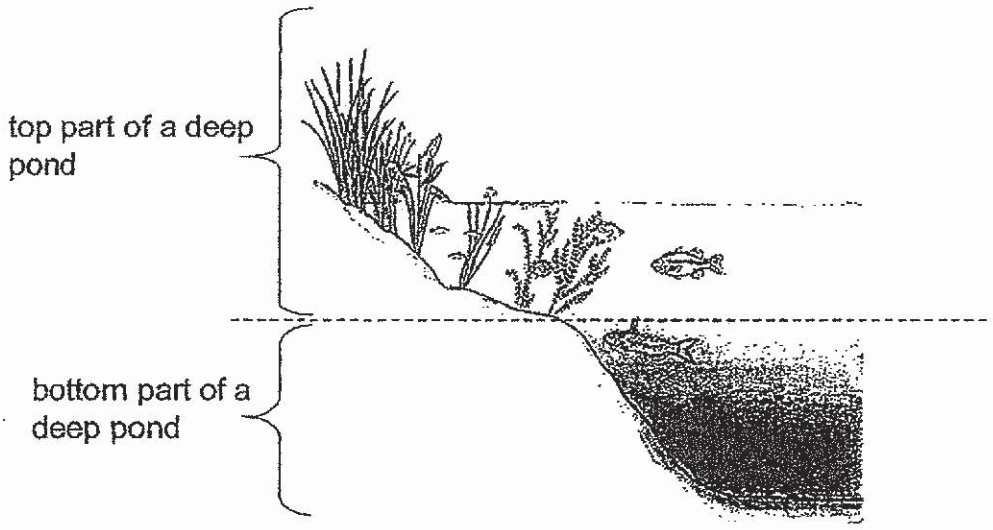
10. Which one of the following adaptive features of the organisms is **incorrectly** matched to its function?

	Organism	Adaptive feature	Function of adaptive feature
(1)	Owl	night vision	to be able to hunt at night
(2)	Fish	streamlined body	to be able to swim fast in water
(3)	Penguin	huddle together	to keep its body warm
(4)	Frog	webbed feet	to grip onto its prey

11. The diagram below shows the cross-section of a deep pond.



There are more aquatic plants found at the top part of the deep pond. What is the main reason for such an observation?

(1) The aquatic plants can get sufficient nutrients to grow well.

(2) The aquatic plants can absorb more sunlight for photosynthesis.

(3) The aquatic plants can take in oxygen from the air above the water.

(4) The aquatic plants can provide shade and shelter for the aquatic animals living in the pond.

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12. Study the diagram below.

Which of the following substances will be returned to the environment and be recycled?

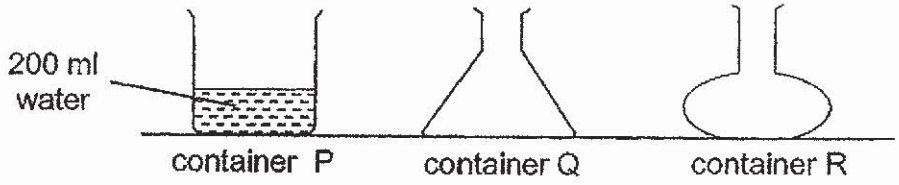
(1) Mineral salts only.

(2) Mineral salts and water only.

(3) Carbon dioxide and mineral salts only.

(4) Carbon dioxide, mineral salts and water.

13. Jody poured 200 ml of water into container P as shown in the diagram below. She then poured all the water from container P to container Q. All the water was then poured out from container Q to container R.



Which of the following best describes what Jody was trying to find out?

(1) She was trying to find out if water has definite mass.

(2) She was trying to find out if water has a definite shape.

(3) She was trying to find out if water has a definite volume.

(4) She was trying to find out if water has definite mass and shape.

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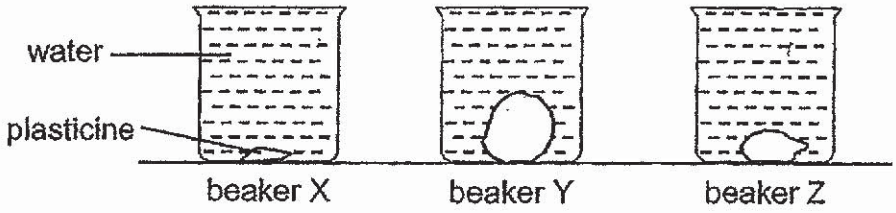
14. The diagram below shows three identical beakers X, Y and Z. Three pieces of plasticine of different sizes were placed into the beakers. The beakers were then filled to the brim with water.



Which one of the following shows the most likely amount of water added into each beaker?

	Amount of water (ml)		
	X	Y	Z
(1)	260	480	390
(2)	480	390	260
(3)	480	260	390
(4)	390	480	260

15. Mei Ling wanted to investigate whether the size of a magnet affects the greatest distance it can attract a paper clip.

Which of the following variables should she keep constant?

A Size of magnet
B Type of magnet
C Size of paper clip
D Type of paper clip
E Distance between magnet and paper clip

(1) A only
(2) B, C and D only
(3) A, B, D and E only
(4) B, C, D and E only

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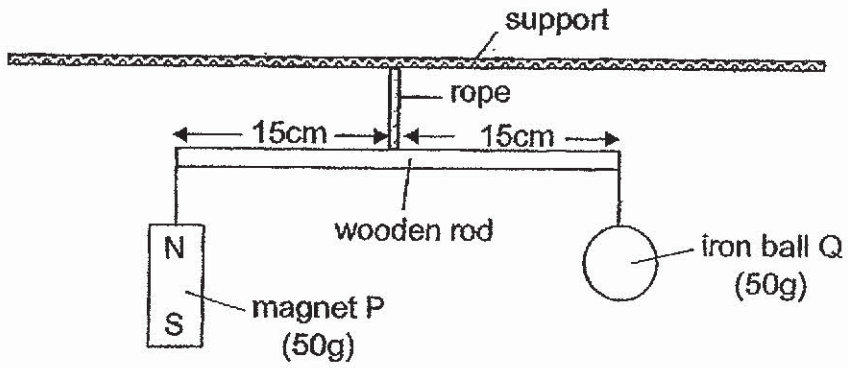
16. The diagram below shows a wooden rod with a magnet P and iron ball Q hanging from a rope.



Which one of the following statements is **false**?

(1) When the north pole of another magnet is placed under magnet P, the wooden rod will tilt towards magnet P.

(2) When the north pole of another magnet is placed under iron ball Q, the wooden rod will tilt towards magnet P.

(3) When the south pole of another magnet is placed under magnet P, the wooden rod will tilt towards iron ball Q.

(4) When the south pole of another magnet is placed under iron ball Q, the wooden rod will tilt towards iron ball Q.

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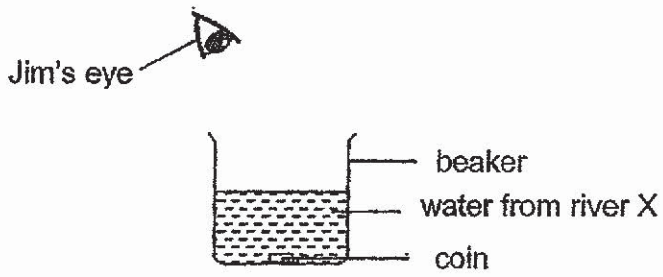
17. Jim placed a coin at the bottom of a beaker as shown in the diagram below. He then poured some water from river X into the beaker slowly and observed the coin from above the beaker. He stopped pouring when he could not see the coin clearly and recorded the amount of water in the beaker.



He repeated the same experiment with water from rivers Y and Z. The table below shows the results.

	Amount of water in the beaker (ml)
River X	250
River Y	160
River Z	370

Based on Jim's results, which of the following shows the clarity of water from rivers X, Y and Z in the correct order?

	Clearest ⟶		**Least Clear**
(1)	X	Y	Z
(2)	Y	X	Z
(3)	Z	X	Y
(4)	Z	Y	X

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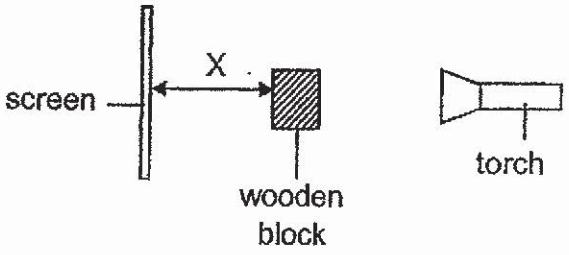
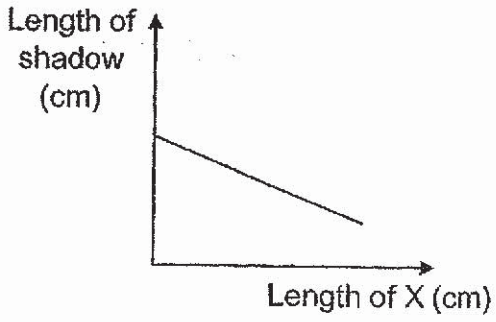
18. Study the set-up below.

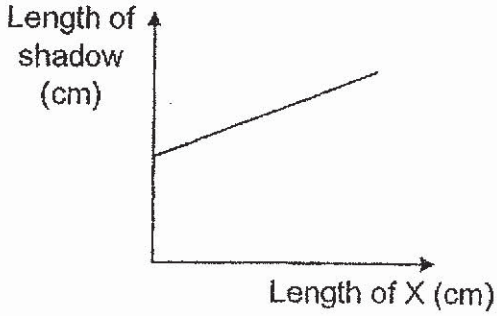


Based on the diagram above, which one of the following graphs shows the relationship between X and the length of the shadow observed on the screen?

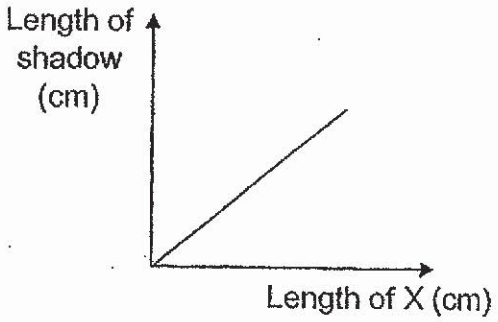
(1)



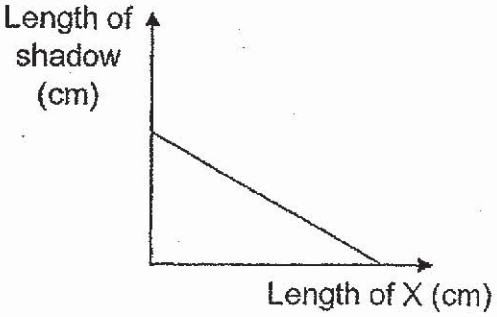
(2)



(3)



(4)



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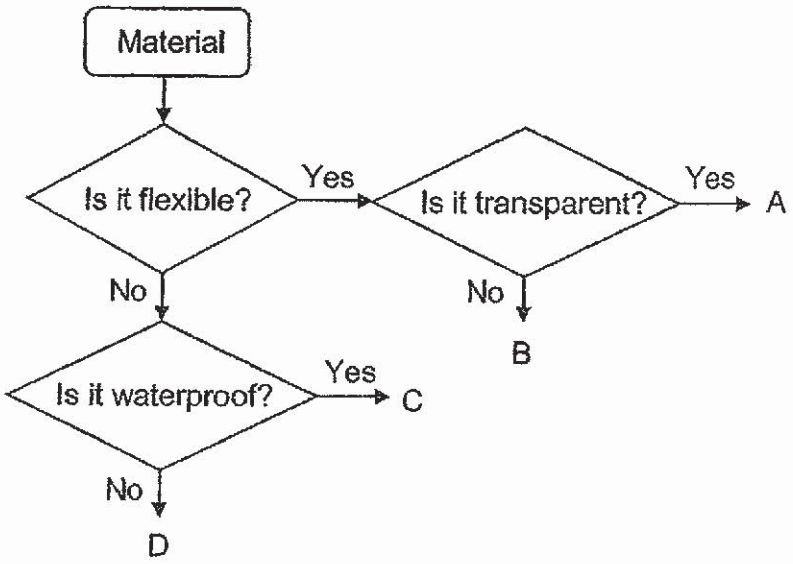
19. Study the flow chart below.



Which one of the following best represents A, B, C and D?

	A	B	C	D
(1)	styrofoam board	t-shirt	metal key	glass cup
(2)	wooden plank	metal bowl	rubber band	plastic folder
(3)	plastic folder	rubber band	metal bowl	wooden plank
(4)	cellophane paper	coloured paper	metal key	styrofoam board

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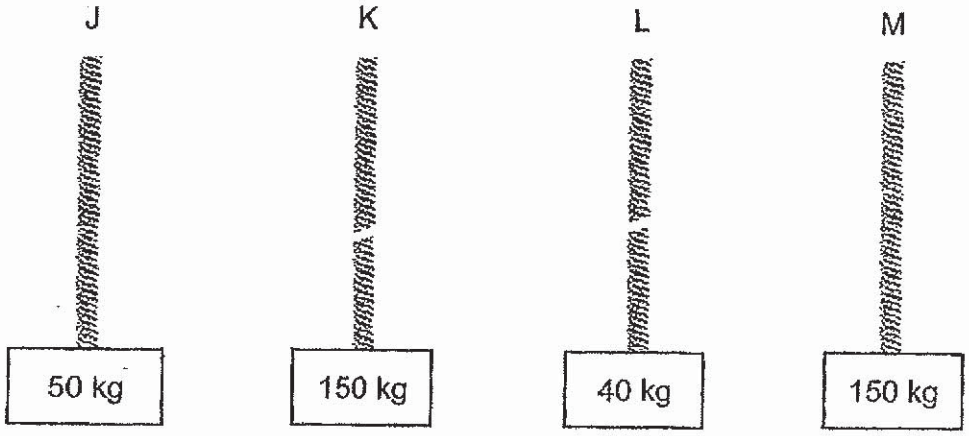
20. Four masses were tied to four ropes made from different materials J, K, L and M as shown in the diagram below. The ropes were all of similar thickness. When the masses were lifted by the ropes, ropes K and L broke.



Which of the following statements is definitely true?

A Material L is the weakest.

B Material M is the strongest.

C Material J is stronger than material L.

D Material K is weaker than material M.

(1) A and B only

(2) C and D only

(3) A, C and D only

(4) A, B, C and D

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21. A study was conducted to identify the factors that affect the evaporation rate of some liquids. The table below shows the results of the investigation.

Type of liquid	Exposed surface area (cm^2)	Initial amount (ml)	Amount evaporated after 1 week of exposure (ml)			
			Trial 1	Trial 2	Trial 3	Average
Water	12	40	9.3	9.2	8.8	9.1
Water	8	60	6.3	5.9	6.2	6.1
Water	4	80	2.8	3.1	2.9	2.9
Alcohol	4	80	9.1	8.8	8.9	8.9
Alcohol	8	80	18.6	18.1	17.8	18.2
Orange juice	4	80	2.7	3.2	3.2	3.0

Based on the data above, which of the following statements is **not** correct?

(1) The evaporation rate for water is less than that for alcohol.

(2) The larger the amounts of water the higher the evaporation rate.

(3) Water has approximately the same evaporation rate as orange juice.

(4) The larger exposed surface areas of water had greater evaporation rates.

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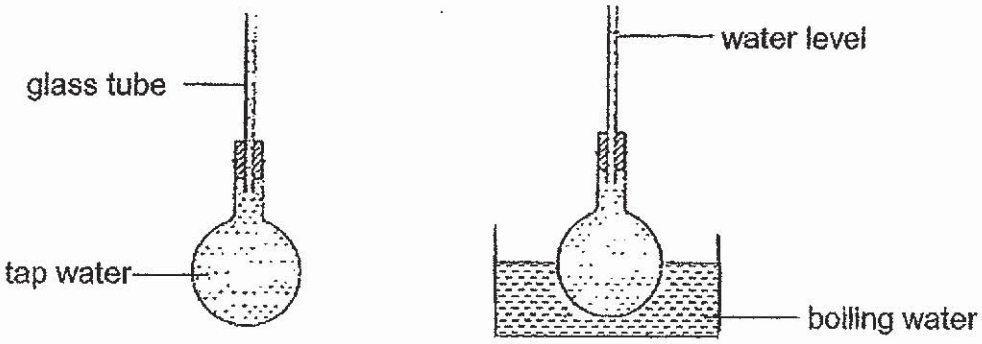
22. When John put the flask of tap water into a container of boiling water, he observed that the water level in the glass tube fell first before it rose.



Which one of the following best explains his observation?

(1) Tap water is a good conductor of heat.

(2) Glass is a poorer conductor of heat than tap water.

(3) The flask expands before the water in the flask expands.

(4) The flask contracts causing the water level in the tube to fall.

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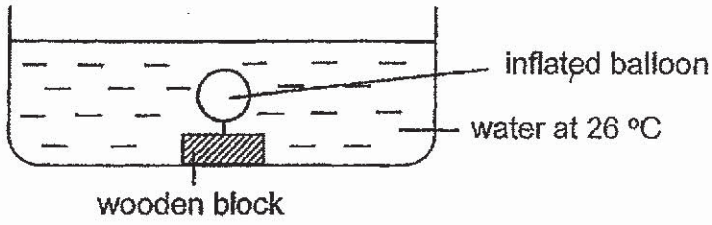
23. An inflated balloon was attached to a wooden block and placed in a container of water at 26 °C as shown in the diagram below.



Which one of the following shows the most likely observation and corresponding explanation when the water in the container was heated to 65 °C?

	Observation(s)	Explanation
(1)	The balloon remained the same size.	Heat did not cause any visible change in the set-up.
(2)	The balloon became smaller.	Some air had escaped from the balloon causing it to reduce in size.
(3)	The balloon became bigger.	Some air from the water had entered the balloon causing it to expand.
(4)	The balloon became bigger and the water level in the container increased.	Both the air in the balloon and the water in the container gained heat and expanded.

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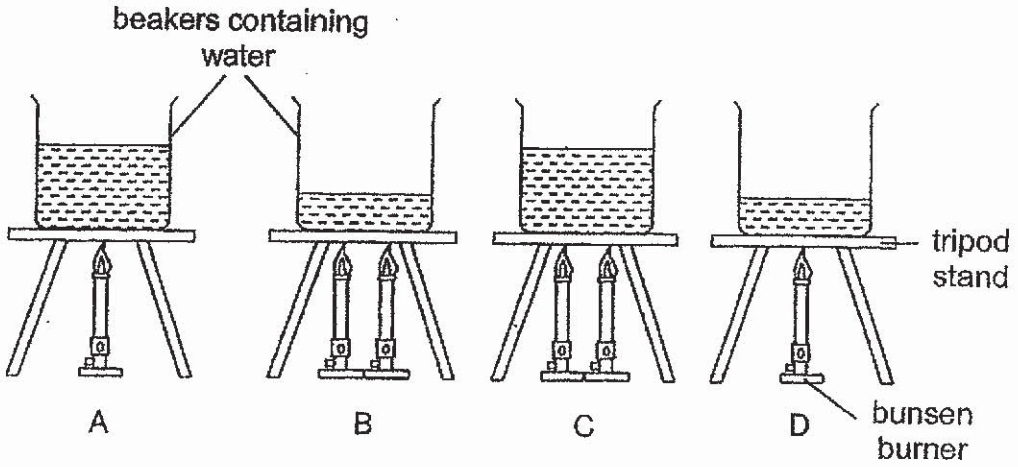
24. Benjamin carried out an experiment using four set-ups A, B, C and D as shown below. The water in all the beakers were at room temperature at first.



In which set-up would the temperature of water be the lowest after 10 minutes of heating?

(1) A

(2) B

(3) C

(4) D

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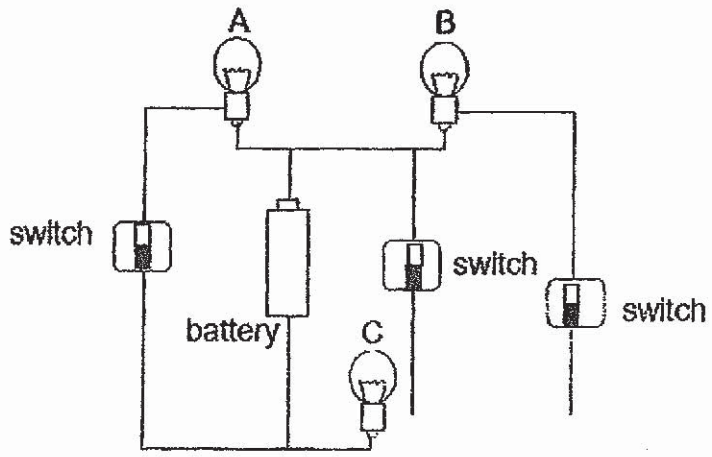
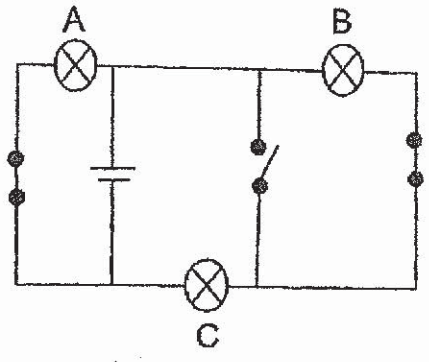
25. The diagram below shows a circuit with three similar bulbs A, B and C.

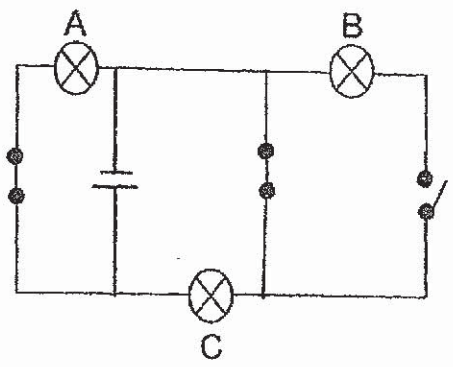


If only bulbs B and C are lit, which one of the following circuit diagrams correctly represents the circuit above?

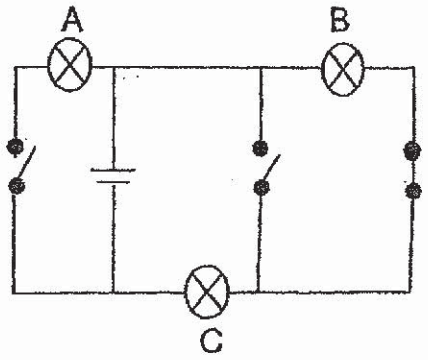
(1)



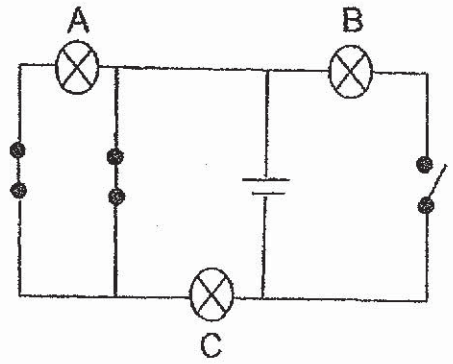
(2)



(3)



(4)



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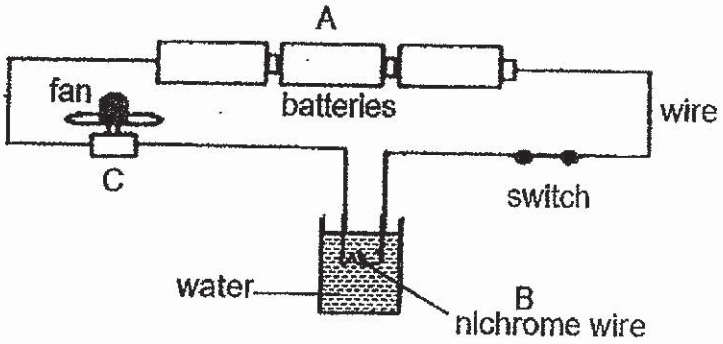
26. A fan and a container of water were connected to a circuit as shown below.



When the switch was closed, the fan started moving and the water in the container was slowly heated up.

What were the main energy changes that had taken place at each point labelled A to C?

	A	B	C
(1)	Chemical potential energy → electrical energy	Electrical energy → light energy	Kinetic energy → sound energy
(2)	Electrical energy → kinetic energy	Electrical energy → light energy	Electrical energy → sound energy
(3)	Chemical potential energy → electrical energy	Electrical energy → heat energy	Electrical energy → kinetic energy
(4)	Electrical energy → kinetic energy	Heat energy → light energy	Kinetic energy → heat + sound energy

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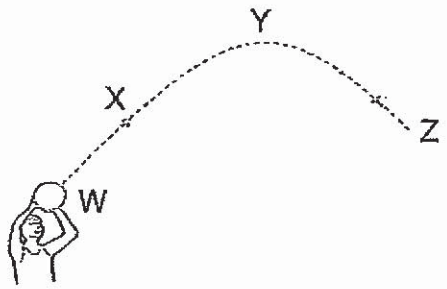
27. The diagram below shows a man throwing a ball.



Which of the following statements is / are true?

A At point W, there is no force acting on the ball.

B At point X, ball slows down because of gravity.

C At point Y, the ball starts to drop as no force is acting on it.

D At point Z, the ball drops further as frictional force is acting on it.

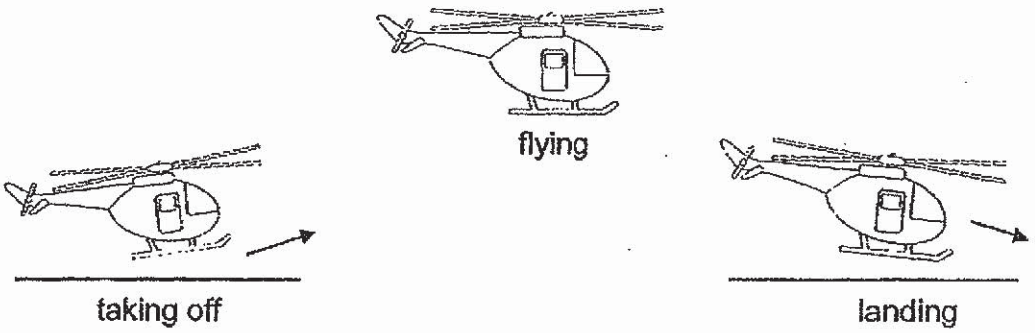
(1) B only

(2) A and B only

(3) C and D only

(4) A, B and D only

28. The diagram below shows a helicopter during the different stages of its flight.



At which stage(s) does gravity act on the helicopter?

(1) Landing only

(2) Taking off and flying only

(3) Taking off and landing only

(4) Taking off, flying and landing

~~ End of Booklet A ~~

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6

Preliminary Examination
SCIENCE

BOOKLET B

22 August 2019

Total Time for Booklet A and B: 1 hour 45 minutes

13 questions
44 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 15 printed pages.

Booklet A	56
Booklet B	44
Total	100

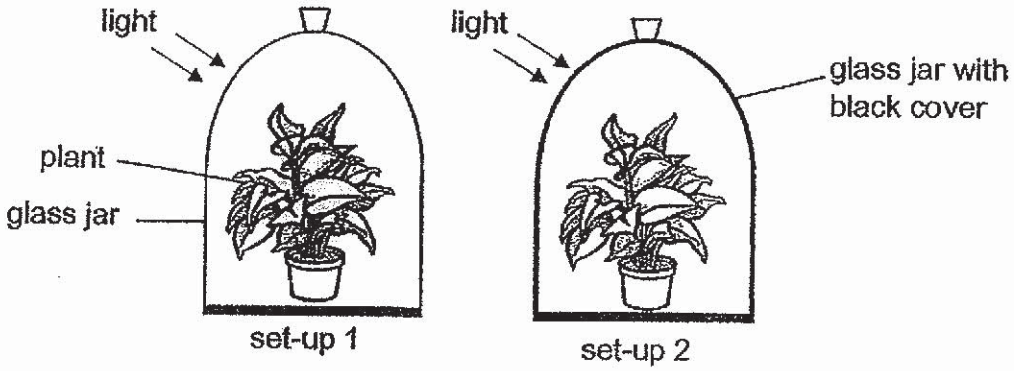
_____

Parent's Signature

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in the brackets [ ] at the end of each question or part question. **(44 marks)**

---

29. Mary carried out an experiment to find out whether light is needed for photosynthesis.



(a) What is the purpose of set-up 1? [1]

_____

_____

(b) Based on her experiment, how can Mary confirm that light is needed for photosynthesis? [2]

_____

_____

(c) What is produced during photosynthesis that is needed by the plant ? [1]

_____

_____

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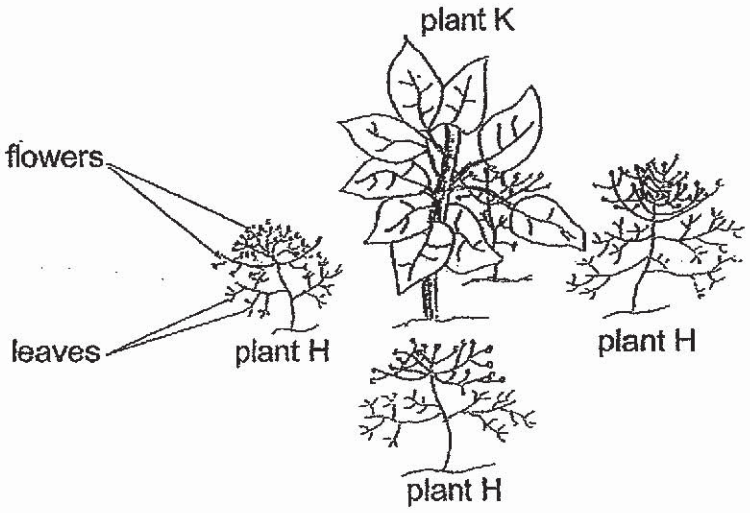
30. A gardener observed a food relationship in his garden.

plant K ⟶ insect A

The gardener learnt that another insect, M, is a predator of insect A. Insect M also likes to feed on pollen. Using this information, he decided to grow plant H around plant K, as shown below.



Based on the information above, explain how this planting method allows the gardener to grow plant K without the use of pesticides? [2]

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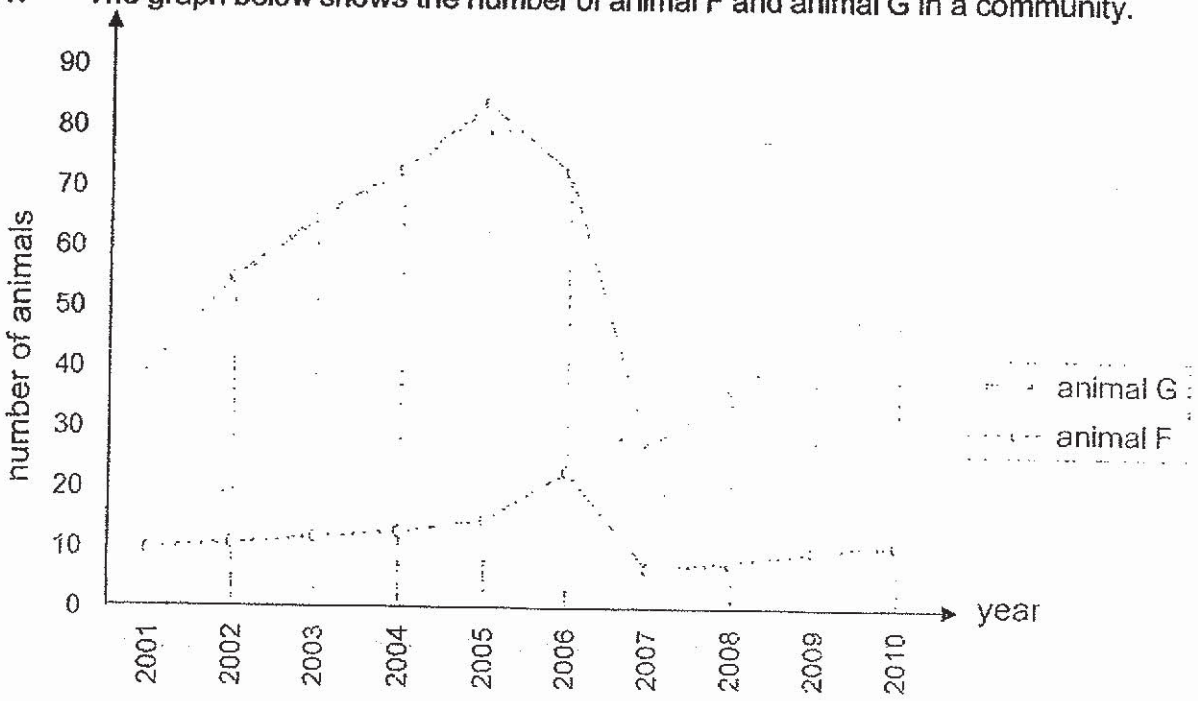
31. The graph below shows the number of animal F and animal G in a community.



(a) Animal F and G have a prey-predator relationship. Based on the graph above, which animal is a prey and which is a predator? [1]

Prey: _____

Predator: _____

(b) Based on the graph given above, there was a period with very little rainfall.

This most likely happened from _____ to _____. [1]

(c) Other than lack of water for the predator, give another possible reason why with very little rainfall would cause a decrease in the population of the predator. [1]

_____

_____

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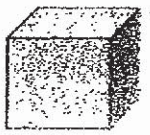
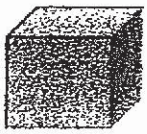
32. Halim wanted to conduct an experiment to find out if plastic is harmful to the environment. He buried a plastic box and a paper box for a month. Every week, Halim dug out the boxes to observe them.



plastic box



paper box

(a) Besides the size of the boxes, state two other variables that he should keep the same in order for it to be a fair test. [1]

_____

_____

(b) The results of Halim's experiment showed that the plastic box remained the same condition while the paper box had broken down into smaller pieces. Which of the following statements is supported by the results of Halim's experiment? Put a tick in the box next to the correct statement. [1]

Statement	Correct
Plastics can kill wildlife.	
Plastics cause global warming.	
Plastics remain as waste in our environment.	
Plastics release harmful gases when they break down.	

(c) State one way that we can help to reduce plastic waste in our environment. [1]

_____

_____

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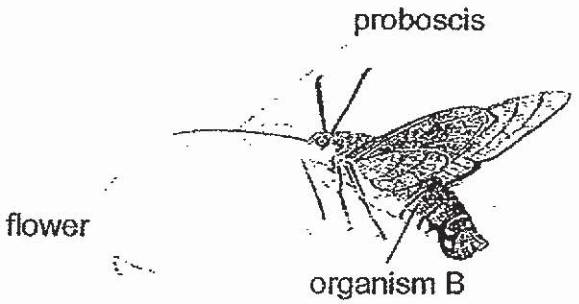
33. The diagram below shows organism B using its long proboscis to obtain nectar from a flower. It will curl up its proboscis when it flies from flower to flower. Other than nectar, organism B also feeds on honey. It will mimic the scent of the bees in order to enter the beehives to consume the honey. It has clawed feet that help it to climb around the beehives easily. When met with predators, organism B will flash its brightly coloured abdomen to frighten them away.



(a) Based on the information above, state one structural and one behavioural adaptation of organism B that allow it to obtain food. [1]

Structural adaptation: _____

_____

_____

Behavioural adaptation: _____

_____

_____

(b) Organism B usually feeds at night. How will feeding at night benefit organism B? [1]

_____

_____

(c) State one reason why organism B mimics the scent of the bees when entering the beehives. [1]

_____

_____

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(d) The forest where organism B lives in is being cleared for building of new houses. How will this affect the population of Organism B? Explain your answer. [1]

_____

_____

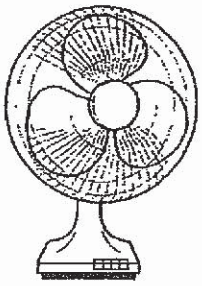
_____

(e) Deforestation can also lead to global warming. Explain why. [1]

_____

_____

34. The diagram below shows a table fan.



(a) Complete the conversion of energy when the switch is turned on. [1]

Electrical energy → [ ] energy + [ ] energy + [ ] energy

(b) Explain why the fan continued to spin for a while even after the switch was turned off. [1]

_____

_____

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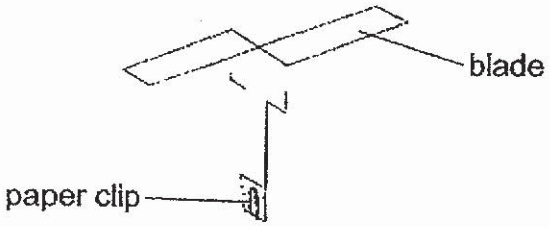
35. Nathan made paper flyer A with a paper clip as shown in the diagram below.

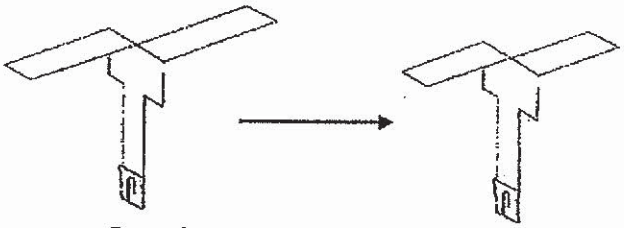


paper flyer A

He wanted to find out if the number of paper clips on paper flyer A would affect the time it took to fall to the ground.

(a) What must Nathan measure to help him draw a conclusion? [1]

Nathan threw paper flyer A with one paper clip and measured the distance it travelled. He then trimmed off 1 cm from each of the two blades of paper flyer A and measured the distance it travelled when it was thrown from the same height.



paper flyer A

after trimming off the blades

(b) Would the distance travelled by paper flyer A be affected after the blades were trimmed? Explain your answer. [2]

(c) Name one fruit or seed with a similar structure like paper flyer A. [1]

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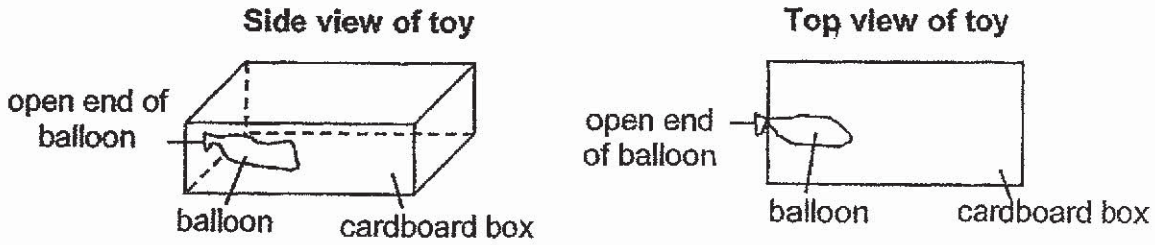
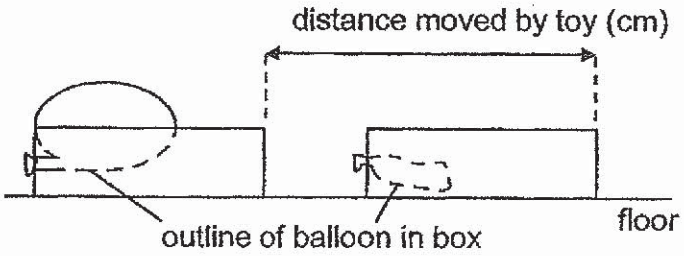
36. Lennard used an open-top cardboard box and a balloon to make a toy as shown below. He then used it to investigate if the size of the balloon would affect the distance moved by the toy.



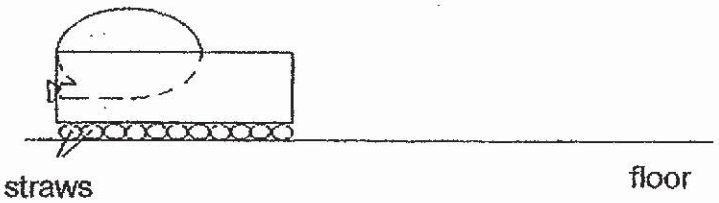
He inflated the balloon with some air before twisting the open end of the balloon and holding it between his fingers. He then placed the toy on the floor and released his grip on the balloon. Immediately, the toy moved a distance away from him. He then measured the distance moved by the toy.



Lennard then inflated the balloon with more air and repeated the experiment. He noted that the toy moved a greater distance.

(a) What can Lennard do to make his experimental results more reliable? [1]

Lennard made some modifications to his experiment as shown in the diagram below.



(b) Would the toy move a shorter or longer distance than before? Explain why. [2]

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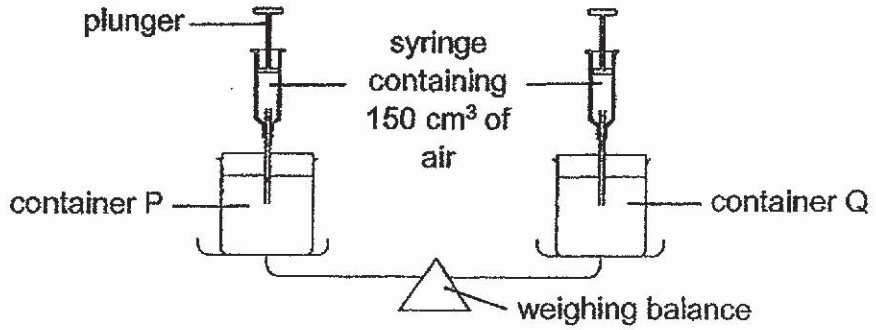
37. Study the set-up below.



(a) What would be observed when 150 cm^3 of air was pumped into container Q? [1]

_____

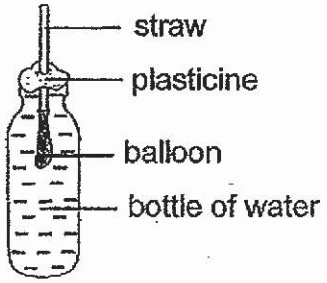
_____

(b) State one property of air demonstrated by the experiment above. [1]

_____

_____

Thomas set up an experiment as shown below.



(c) Thomas tried to inflate the balloon by blowing through the straw. Would the balloon inflate? Give a reason for your answer. [1]

_____

_____

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38. Alisha placed a square piece of red filter in front of a torch as shown in diagram 1.

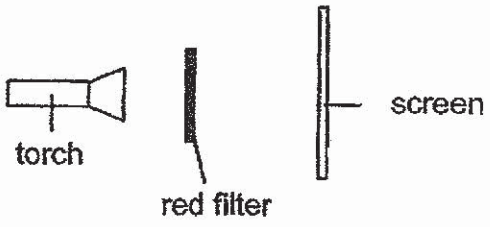

diagram 1

When the torch was switched on, she noted a square patch of light on the screen. She then repeated the same experiment with blue and green filters.

Colour of filter used	Colour of square patch of light
red	red
blue	blue
green	green

(a) What was the aim of Alisha's experiment? [1]

Alisha then placed a can of drink behind a red filter as shown in diagram 2.

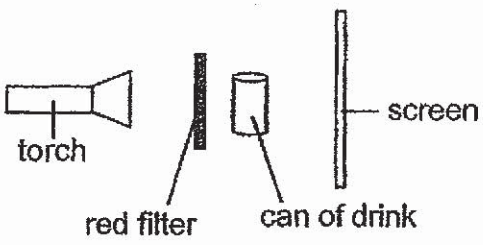

diagram 2

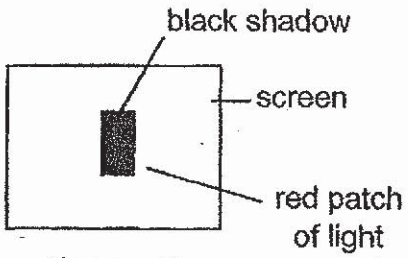

diagram 3

(b) Diagram 3 shows what she saw on the screen when the torch was switched on. Give an explanation for Alisha's observations in diagram 3. [2]

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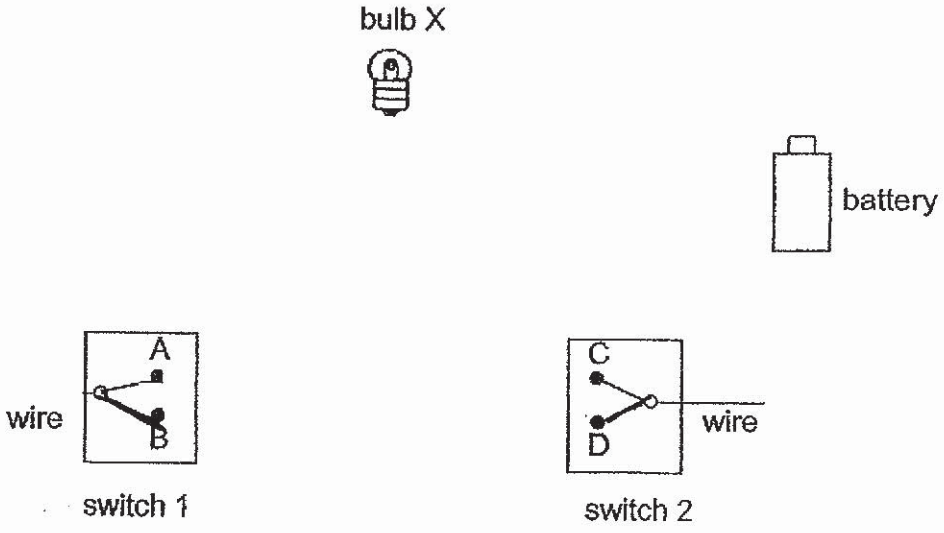
39. Wen Xiong wanted to set up a circuit to light up a hall using two special switches. Switch 1 can be turned to positions A or B and switch 2 can be turned to positions C or D.
He set up the circuit so that the bulb will be lit as described in the table below.

Position of switch		
Switch 1	**Switch 2**	**Bulb X is lit**
A	C	Yes
A	D	Yes
B	D	No
B	C	No

(a) The diagram below shows part of the circuit. Complete the circuit so that it will work as described. [2]



(b) If one more bulb is added to the circuit in series, how would it affect the brightness of bulb X? [1]

_____

_____

_____

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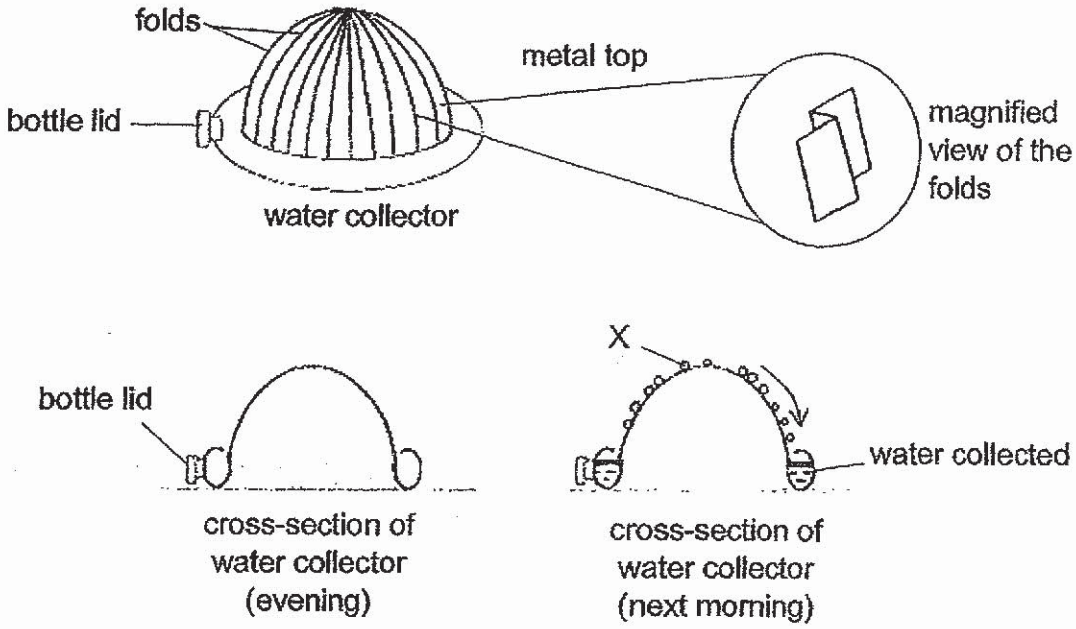
40. Hussein used a water collector to collect some water while on a trip to a desert. He placed the water collector in an open area in the evening and collected the water in the morning.



(a) What is X? [1]

_____

_____

(b) Explain why metal is used to make the top part of the water collector. [2]

_____

_____

_____

(c) Explain why there are folds in the metal top. [2]

_____

_____

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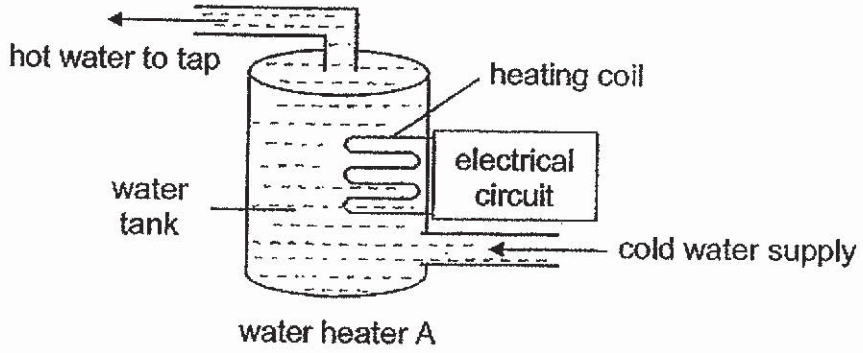
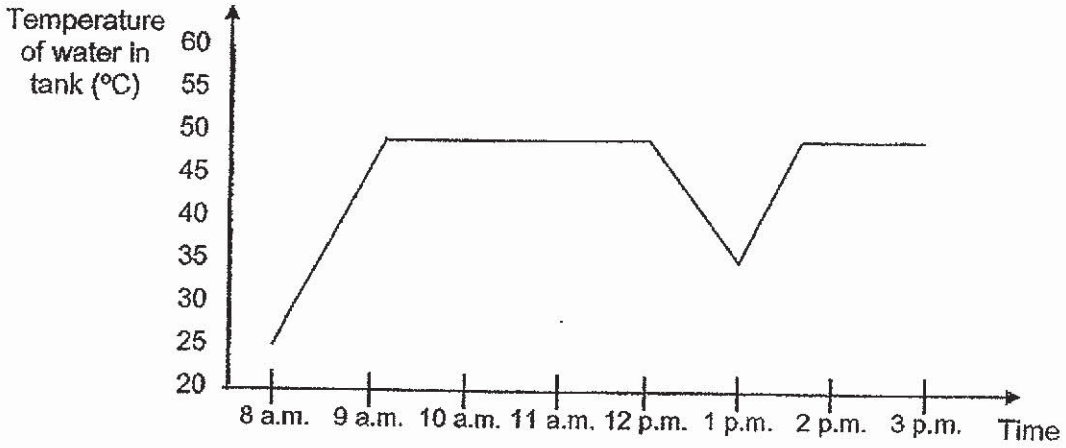
41. The diagram below shows water heater A. The heating coil inside the tank is able to heat the water up to a temperature of 49 °C when the heater is turned on. The temperature of the water is then maintained at 49 °C until the heater is switched off. When the hot water tap is turned on, cold water enters the tank to replace the water used.



water heater A

The graph below shows the temperature of the water in the tank over a period of time.



(a) How long does it take for the water in the tank to heat up to 49 °C? [1]

(b) Jia Ming took a bath during the period shown in the graph. Based on the graph above, what time did he probably take his bath? [1]

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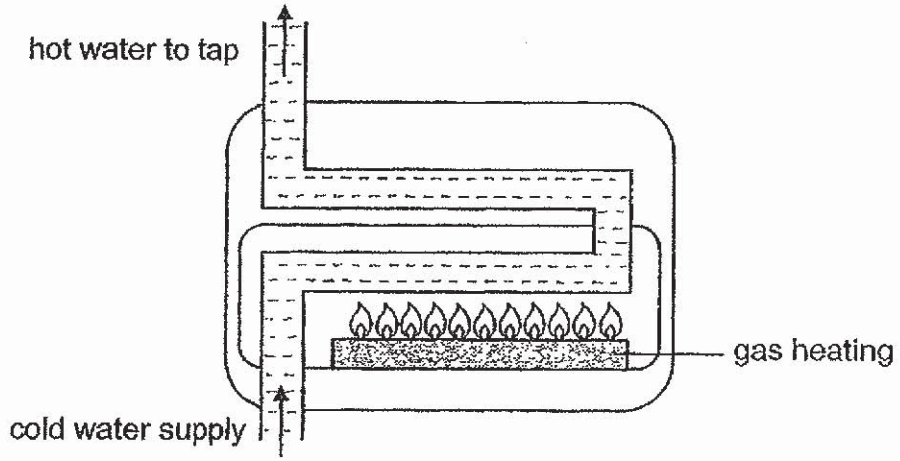
(c) While bathing, Jia Ming noticed that the temperature of the water was not as hot as when he started bathing. Give a reason why this is so. [1]

The diagram below shows water heater B. This type of water heater does not store water in a tank. When hot water is needed, the heater is switched on and cold water passes through the heater to be warmed up before leaving the heater. The water heater takes about 5 minutes to heat up the water to a temperature of 49 °C.



water heater B

(d) Which water heater A or B is more energy saving? Explain your choice. [1]

~~ End of Booklet B ~~

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SCHOOL : CHIJ PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	2	3	3	3	3	2	1	4	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	4	2	3	2	2	3	2	3	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	3	4	1	3	3	1	4		

SECTION B

Q29)	a)To act as a control set-up to show that light is needed for photosynthesis to take place. b)Take a leaf from each set-up and when photosynthesis takes place, starch will be present in the leaf. Test the presence of starch by Iodine test. The leaf in set-up 1 will turn blue-black which shows the presence of starch while the leaf in set-up 2 turn yellowish-brown which means there is no starch in set-up 2. Therefore, light is needed for photosynthesis to take place. c)Glucose and oxygen.
Q30)	Insect M will feed on insect A. The population of insect A will decrease and population of K will increase. Insect M will also help to pollinate plant K, causing plant K to grow without the use of pesticides.
Q31)	a)Prey : G Predator : F b)2006 to 2007

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	c)G also needs water to respire and carry out life processes so without water, G dies. As the population size of G decreases, lesser food is available for F, so the population size of F also decreases.
Q32)	a)i)The type of soil they are buried in. ii)The depth of the hole, the boxes are buried. b)Plastic remain as waste in our environment. c)Use lesser things made from plastic. Instead, use recyclable materials such as cloth bags instead of plastic bags.
Q33)	a)Structural adaptation : B has clawed feet that help it climb around the beehives easily. Behavioural adaptation : B mimics the scent of bees in order to enter the beehives to consume the honey. b)During feeding at night, organism B will flash its brightly coloured abdomen to frighten its predator away. The colours can be seen easily at night. Thus, it will be safe to feed at night. c)The bees would attack any intruder like B but the bees are fooled by B's mimicry of their scent so the bees think B is another bee and will not attack. d)The population size of B would decrease. When the forest is cleared, bees cannot build their beehives and not as many flowers can grow. B will have lesser food and no shelter. e)When deforestation happen, trees are cut down and lesser trees to photosynthesize. When the rate of photosynthesis slows down, more carbon dioxide is present in the air, More heat is trapped when there is more carbon dioxide. Thus, causes global warming.
Q34)	a)Electrical energy→Kinetic energy + sound energy + heat energy b)The kinetic energy of the blades was still converting into sound and heat energy.
Q35)	a)The time taken for the paper flyer A to reach the ground. b)The distance travelled by A after the blades were trimmed would be shorter. There will be lesser air resistance between the shorter blades and the air so gravitational force will overcome frictional force more easily, thus A with shorter blades cannot travel as far.

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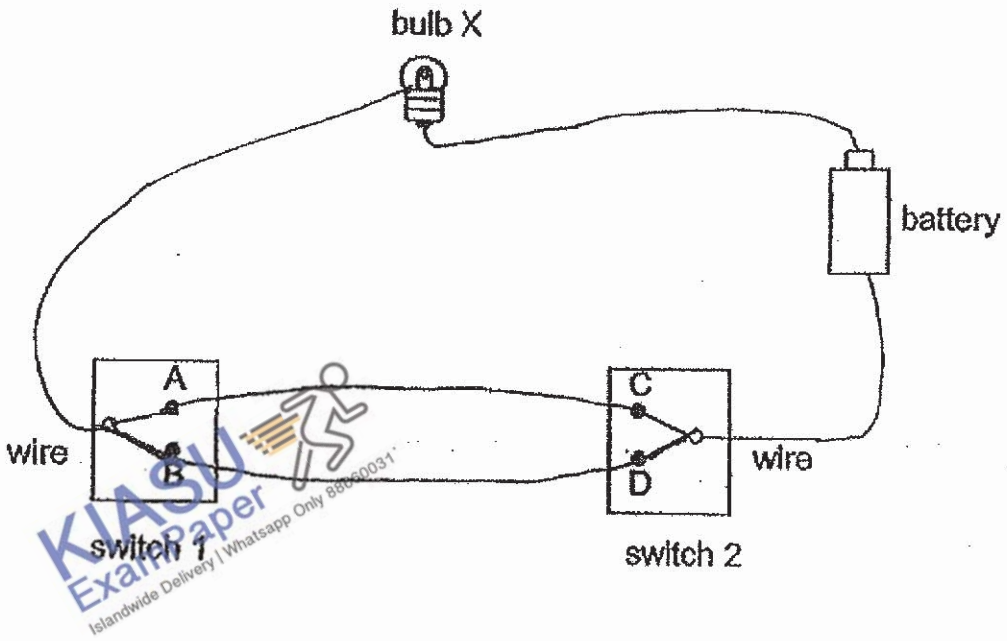
	c)African tulip.
Q36)	a)Repeat the experiment a few more times and take the average results. b)A longer distance. The straws have air spaces between them, so the new set-up has lesser friction between the floor and the toy, hence lesser frictional force needs to be overcome.
Q37)	a)The scale will still be balanced. b)Air can be compressed. c)No, the balloon will not inflate. The water in the bottle has a definite volume and cannot be compressed or displaced by and air blown into the balloon.
Q38)	a)To find out different colour filters would affect the colour of light produced. b)The can is opaque and blocks more light than the translucent filter. As light travels in a straight line, the can will block the light in its path and form a shadow. The filter only partially blocks light so its shadow is faint.
Q39)	a)  b)The brightness of X would decrease.

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Q40)	a)Water droplets. b)Metal is a good conductor of heat contact , so it would gain heat from the surrounding water vapour faster to allow more water vapour to process condense into more water droplets so more water is produced. c)This is so the metal top has more surface area in contact with more water vapour in the air so there will be a higher rate of condensation and more water will be produced.
Q41)	a)1 hour b)At 12p.m. c)As hot water leaves the water tank when Jia Ming is bathing, the cold water will enter the water tank to fill up the space. It takes time for the cold water to gain heat from the heating coil but cold water keeps entering the tank when tap is on. So it will not reach 49° C instantly so not so hot as when he started bathing. d)B. B only takes 5 minutes to heat water up to 49°C whereas A takes 1 hour and the amount of heated water is finite.The water is heated up only when needed.

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CHRISTIAN BROTHERS' SCHOOLS

PRELIMINARY EXAMINATIONS

2019

SCIENCE

PRIMARY 6

BOOKLET A

NAME : _____ ( )

CLASS : St _____ 6

28 Questions
56 Marks

Instructions to candidates

- An Optical Answer Sheet is provided for answers to Questions 1 to 28.
- Do not waste time. If a question is difficult, go on to the next one.
- You are allowed **1 h 45 min** to answer all the questions in both the **Booklets A and B**.

BOOKLET	MARKS	
	POSSIBLE	ACTUAL
A	56	
B	44	
TOTAL	100	

This booklet has 23 pages including this cover page.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

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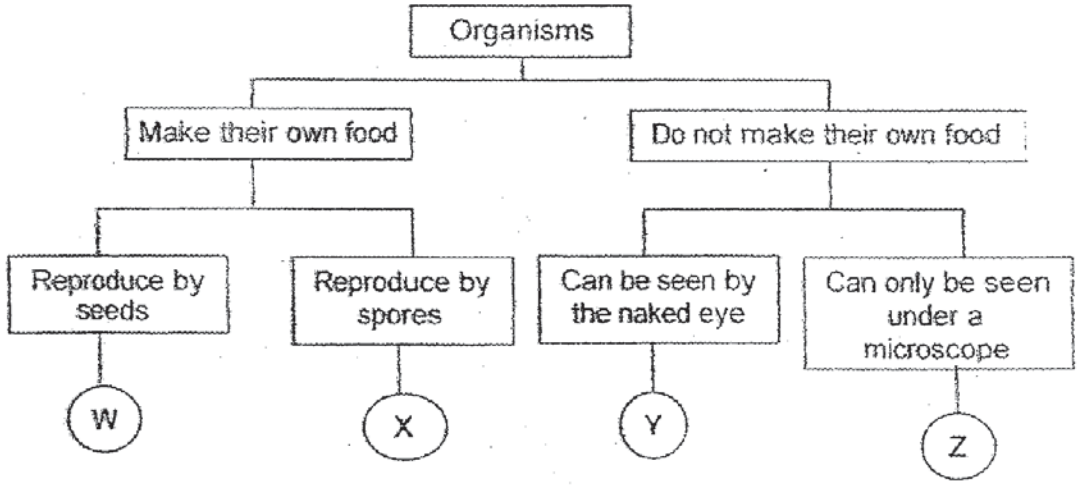
Section A [56 marks]

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

---

1 Study the classification chart below.



Which of the following represents the correct group of organisms for W, X, Y and Z?

	W	X	Y	Z
(1)	Flowering plants	Ferns	Fungi	Bacteria
(2)	Flowering plants	Ferns	Bacteria	Fungi
(3)	Ferns	Flowering plants	Fungi	Bacteria
(4)	Ferns	Flowering plants	Bacteria	Fungi

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2 The diagram below shows insects X and Y.

Insect X		Insect Y	
young	adult	young	adult

Which of the following shows the correct number of stages of life cycle for Insect X and Y?

	Insect X	Insect Y
(1)	3	3
(2)	3	4
(3)	4	3
(4)	4	4

3 Four students were discussing on how plants and fish take in oxygen differently. They made the following statements as shown below.

Raj	Fish take in oxygen into their blood through their gills.
Alice	Fish take in oxygen into their blood through their mouth.
Haikal	Plants have tubes that take in oxygen.
Jonathan	Plants have tiny openings on their leaves to take in oxygen.

Who made the correct statement(s)?

(1) Raj only

(2) Haikal only

(3) Alice and Haikal only

(4) Raj and Jonathan only

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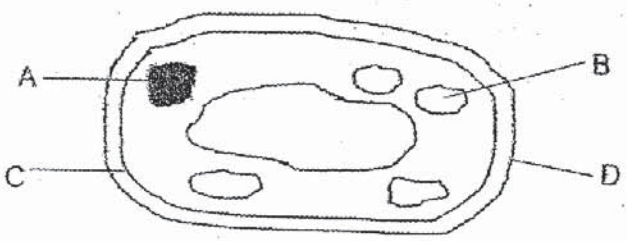
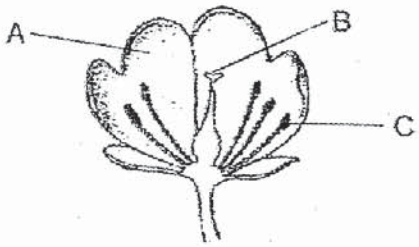
4 Which part of the cell controls cell activities?



(1) A
(2) B
(3) C
(4) D

5 Rajes conducted an experiment using four similar flowers, W, X, Y and Z.



From each flower, she removed different parts of the flower.

Flower	Part(s) removed
W	All of part C
X	All of parts A and C
Y	All of part B
Z	All of parts A and B

Which of the following flower(s) will continue to bear fruits?

(1) W only
(2) X and Z only
(3) W and X only
(4) Y and Z only

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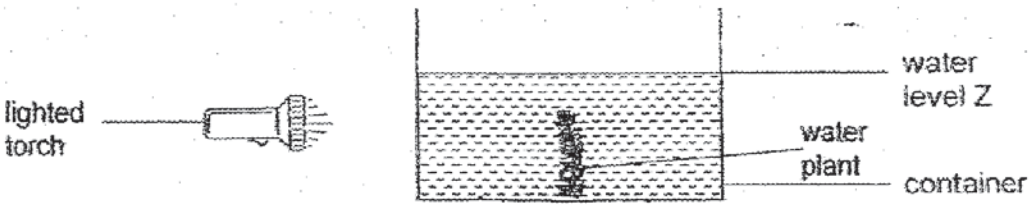
6 Rahim conducted an experiment as shown below.

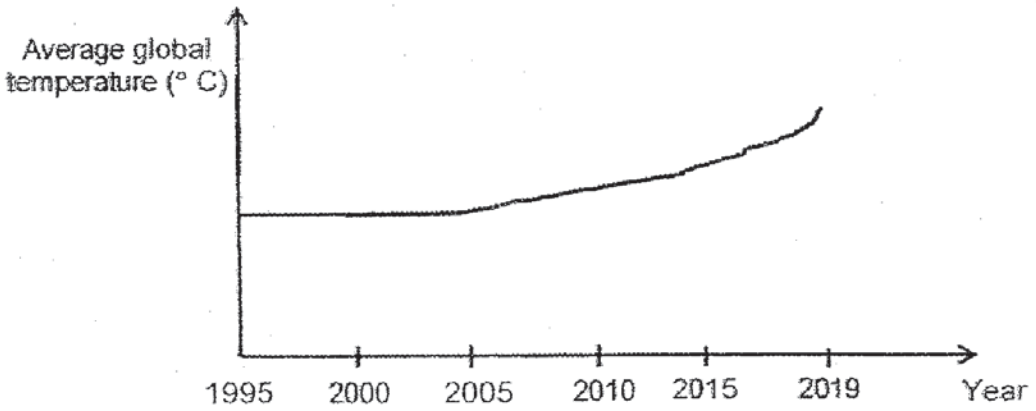


He switched on the torch and observed that water level Z in the container moved after some time.

In which direction did water level Z move and what was the reason for the movement?

	Direction which water level Z moved	Reason
(1)	↑	Plant gives out water during photosynthesis.
(2)	↑	Water evaporates from the container.
(3)	↓	Plant gives off oxygen in the water.
(4)	↓	Plant takes in water during photosynthesis.

7 The graph below shows the average global temperature in the atmosphere from 1995 to 2019.



Which of the following actions could cause the graph as shown above?

A Air pollution
B Reforestation
C Deforestation
D Saving natural resources

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B, C and D

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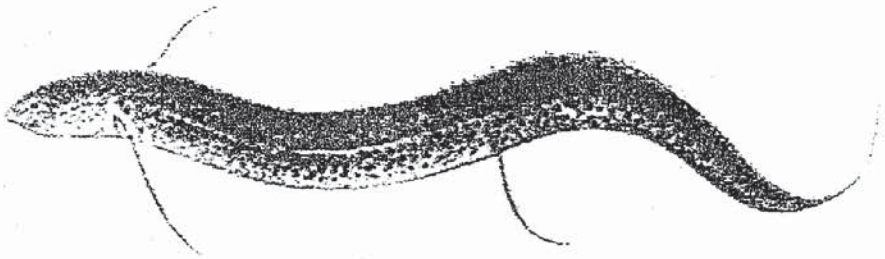
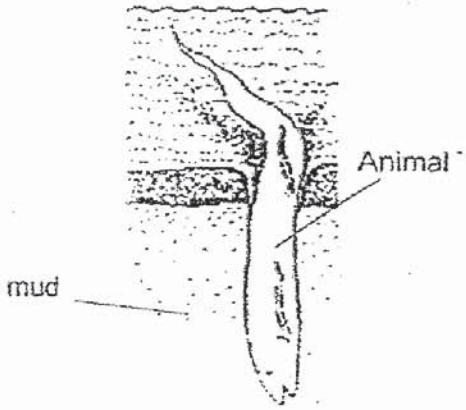
8 Animal T, as shown in the diagram below, burrows into the mud at the bottom of streams when the weather becomes hot and dry. It will go into a deep sleep until the wet season returns.



Animal T



Which of the following is a structural adaptation that helps Animal T to burrow into the mud more easily?

(1) A long body

(2) A streamlined body

(3) Ability to go into a deep sleep

(4) Searches for darker places to burrow

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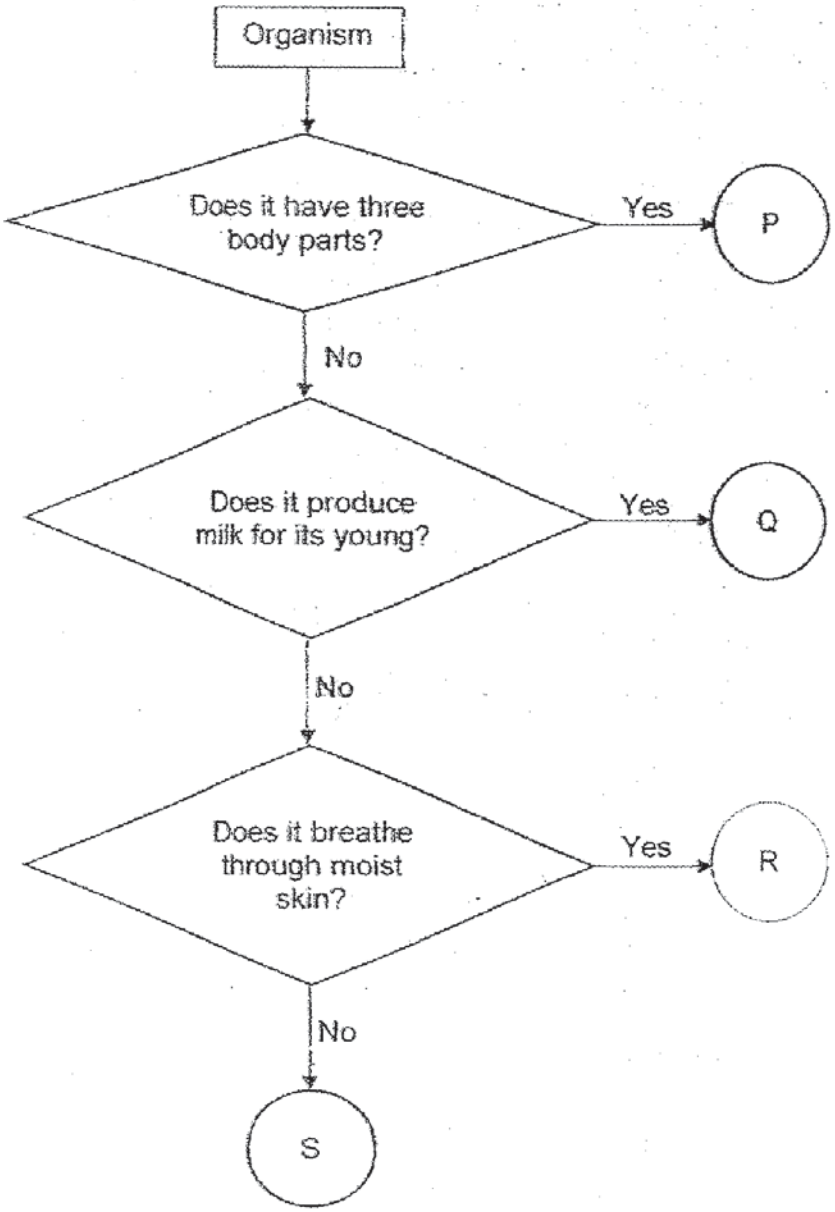
9 Study the flowchart below.



Which of the following shows the correct group of organisms for P, Q, R and S?

	P	Q	R	S
(1)	Mammal	Reptile	Amphibian	Insect
(2)	Mammal	Amphibian	Reptile	Insect
(3)	Insect	Mammal	Reptile	Fish
(4)	Insect	Mammal	Amphibian	Fish

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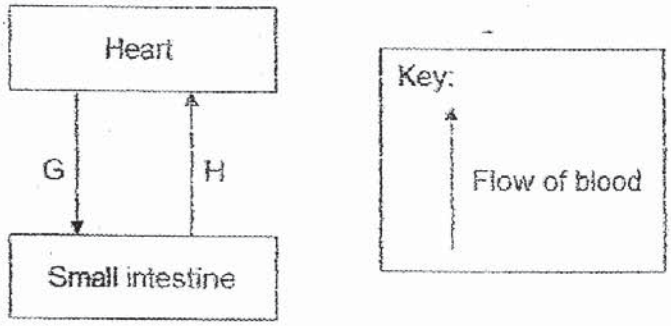
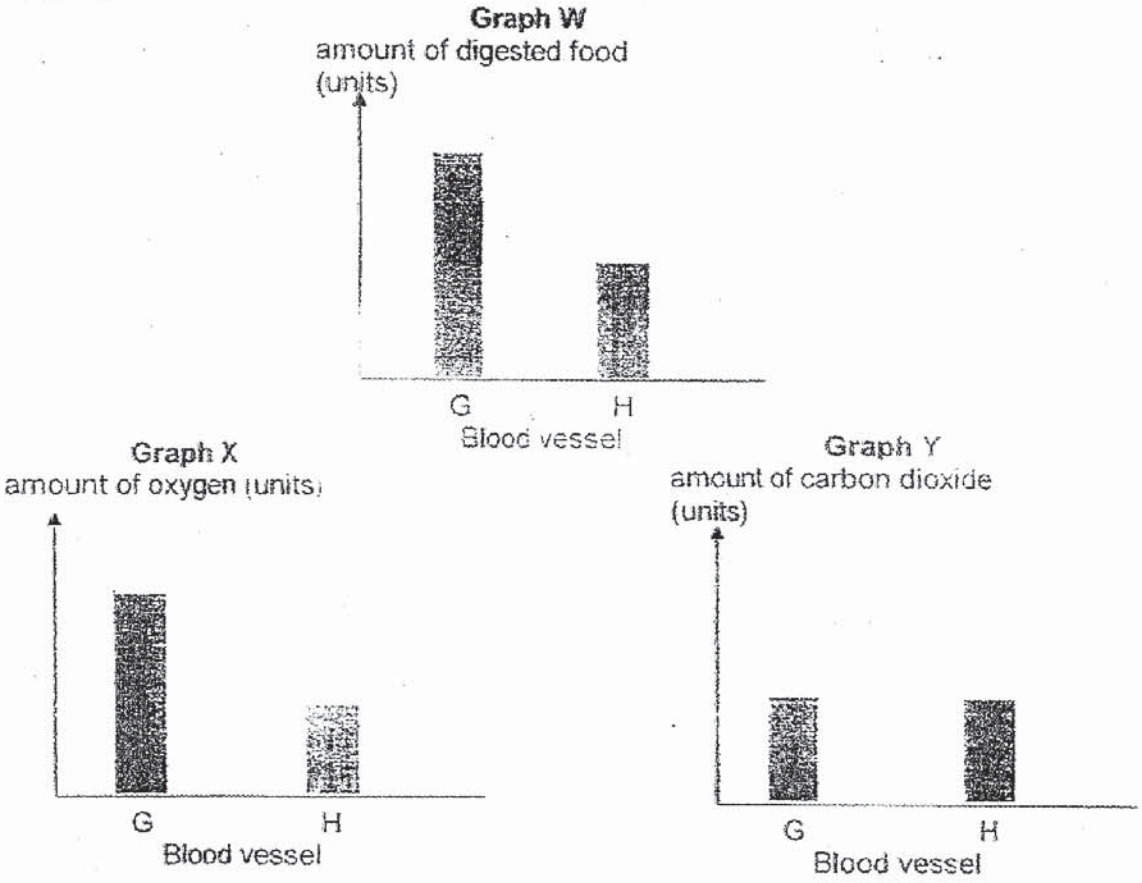
10 Blood samples were collected from blood vessels, G and H, as shown below.



The blood samples were tested for amount of digested food, oxygen and carbon dioxide.



Which of the above graph(s) is/are correct?

(1) W only

(2) X only

(3) W and Y only

(4) X and Y only

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11 Diagram 1 shows Flower A which gives off a sweet scent when in full bloom. Diagram 2 shows a magnified view of two kinds of pollen grains, J and K.

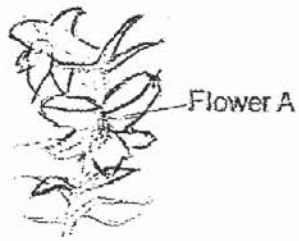

Diagram 1

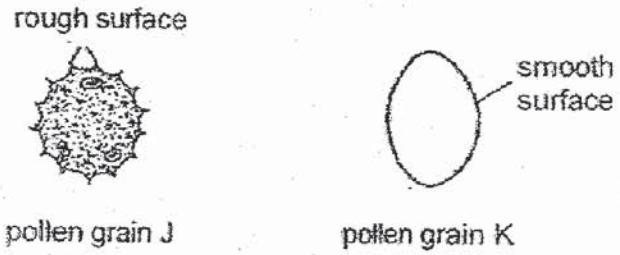

Diagram 2

Which of the following shows the most possible pollen grain produced by Flower A and its pollination method?

	Pollen grain	Pollinated by
(1)	J	Wind
(2)	K	Wind
(3)	J	Insects
(4)	K	Insects

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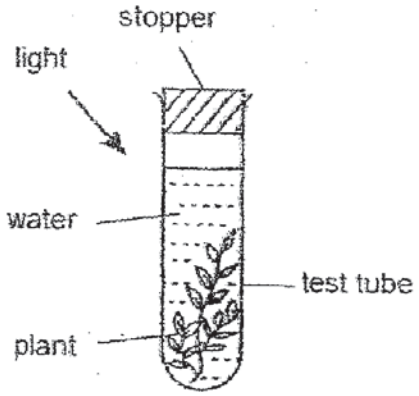
12 Tom set up four test tubes, G, H, I and J in an experiment, each similar to the set up shown below.



He added different amounts of baking soda into the four test tubes and measured the amount of water that was taken in by the plant.
Note: Baking soda increases the amount of carbon dioxide in the water.

Test tube	Number of scoops of baking soda added	Amount of water taken in by the plant (ml)
G	1	20
H	3	28
I	5	34
J	7	36

What is the most possible aim of Tom's experiment?

(1) To find out if amount of light affects the rate of photosynthesis.

(2) To find out if amount of water taken in affects the rate of photosynthesis.

(3) To find out if amount of carbon dioxide affects the rate of photosynthesis.

(4) To find out if amount of water taken in affects the number of scoops of baking soda.

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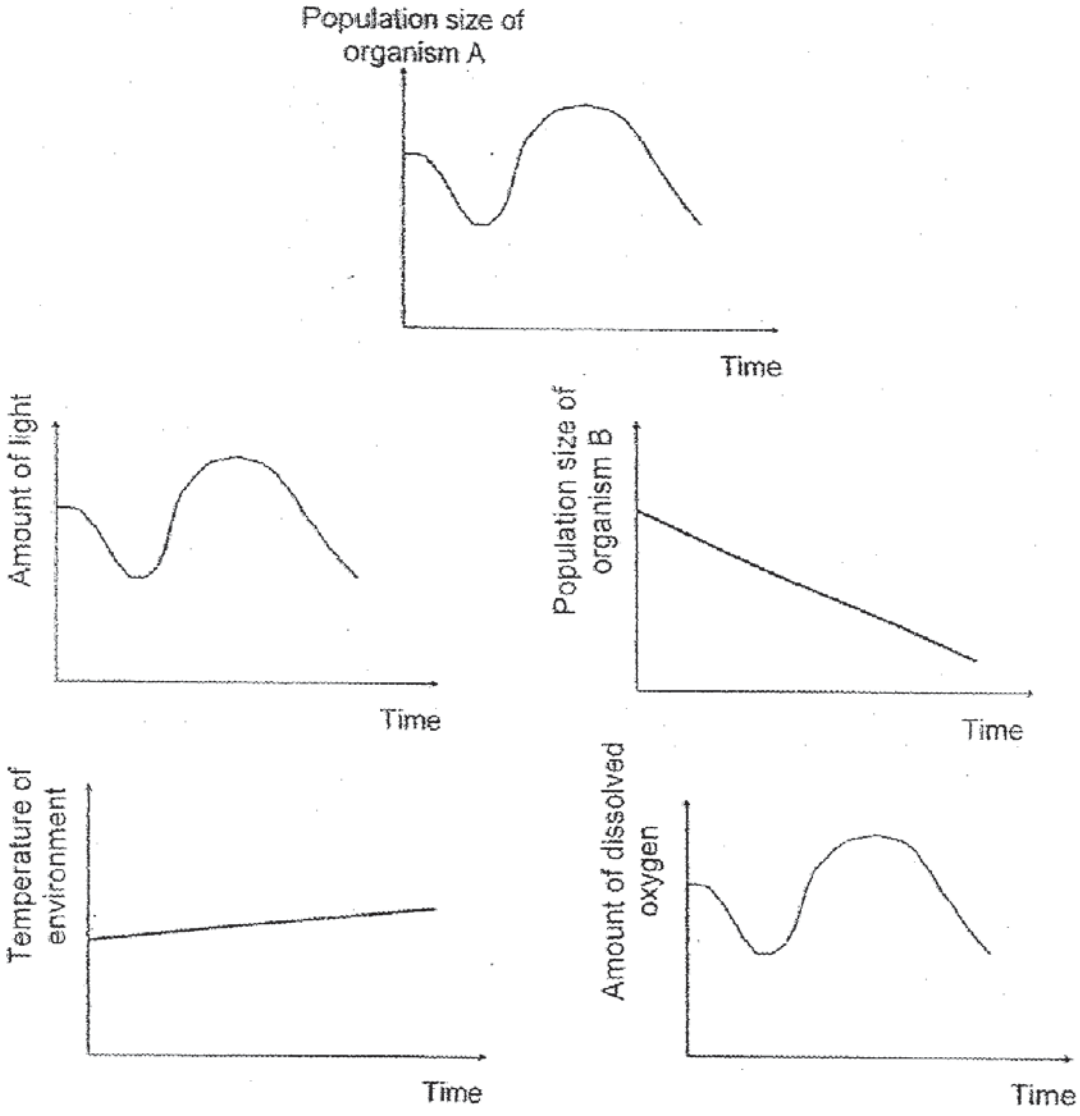
13 The graphs below show how the population of an aquatic organism, A, changes over a period of time, under the influence of four different environmental factors:

- amount of light
- amount of dissolved oxygen
- temperature of environment
- population of another organism B



The population of organism A is directly affected by _____.

(1) amount of light only

(2) population of organism B only

(3) amount of light and amount of dissolved oxygen only

(4) population of organism B and temperature of environment only

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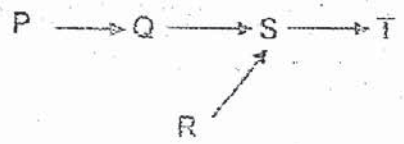
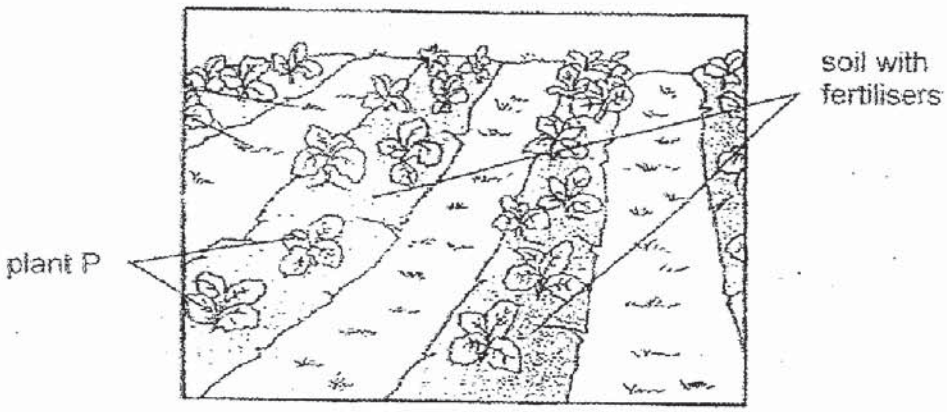
14 Study the food web below



Mr Lim planted plant P in straight rows on a plot of land as shown below.



Which of the following actions can he take so that he can attract organism S into his garden to ensure that plant P grows well?

(1) Remove organism Q in his garden.

(2) Put plant R near plant P in his garden.

(3) Increase more organism T in his garden.

(4) Put less fertilisers in the soil for plant P in his garden.

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15 A boy is wearing a helmet that protects his head when he is skateboarding. The helmet is made of material E.

Which property of material E allows the helmet to perform the function as described?

(1) strength

(2) flexibility

(3) waterproof

(4) transparency

16 John carried out an experiment on four magnets, P, Q, R and S. He put each magnet into a pile of nails and counted the number of nails each magnet attracts.

Magnet	Number of nails attracted
P	10
Q	5
R	2
S	6

Based on the information above, which of the following statements is true?

(1) P is the weakest magnet.

(2) R is the strongest magnet.

(3) Magnet Q is weaker than magnet R.

(4) Magnet P is stronger than magnet S.

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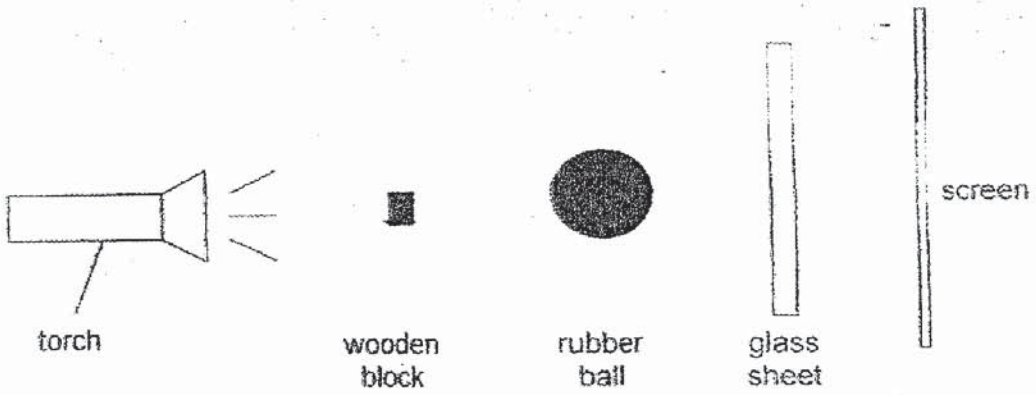
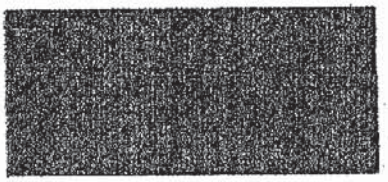
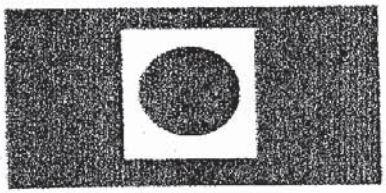
17 The diagram below shows an experiment set up by Ramesh. He ovserved the shadow formed on the screen when the torch was shone.

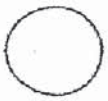


Which of the following best represents the shadow cast on the screen?

(1)

(2) 

(3) 

(4) 

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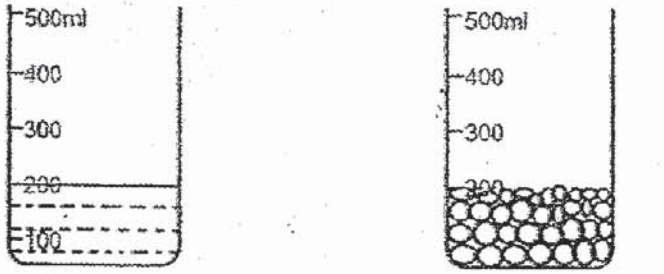
18 Shuhui filled up identical beakers A and B with water and small stones as shown below.



A (with water) B (with small stones)

What would be the water level in beaker B when all the water in beaker A is transferred to beaker B?

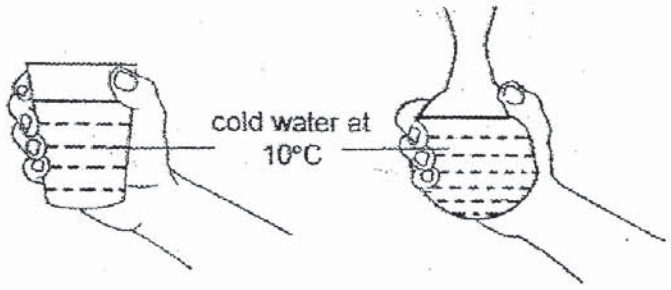
(1) 200 ml

(2) Between 300ml and 400ml

(3) 400ml

(4) More than 400ml

19 Peter put the same amount of cold water at 10°C into a styrofoam cup and a plastic vase. When he touched them, his hands felt that the plastic vase was colder than the styrofoam cup.



styrofoam cup plastic vase

Which of the following explains why Peter's hands felt that the plastic vase was colder than the styrofoam cup?

(1) The plastic vase gained heat slower than the styrofoam cup.

(2) The plastic vase conducted heat faster than the styrofoam cup.

(3) The plastic vase had a lower temperature than the styrofoam cup.

(4) The plastic vase had more contact with the hand than the styrofoam cup.

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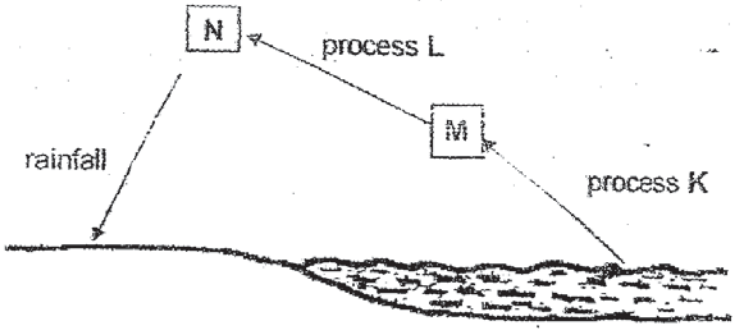
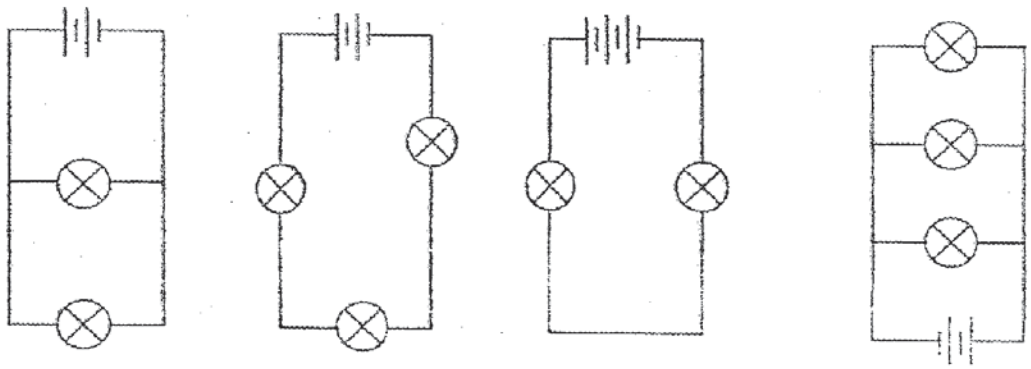
20 The diagram below shows the water cycle at a river.



Which of the following correctly identifies processes K and L and states of water M and N?

	Process		State of water	
	K	L	M	N
(1)	condensation	evaporation	gas	liquid
(2)	evaporation	condensation	liquid	gas
(3)	evaporation	condensation	gas	liquid
(4)	condensation	evaporation	liquid	gas

21 Norah was told to investigate if the arrangement of the bulbs in a circuit affects their brightness. She then set up four circuits as shown in the diagrams below. All the components are in good working condition.



Which of the two circuits above should she use to ensure a fair test?

(1) A and C only
(2) B and C only
(3) A and D only
(4) B and D only

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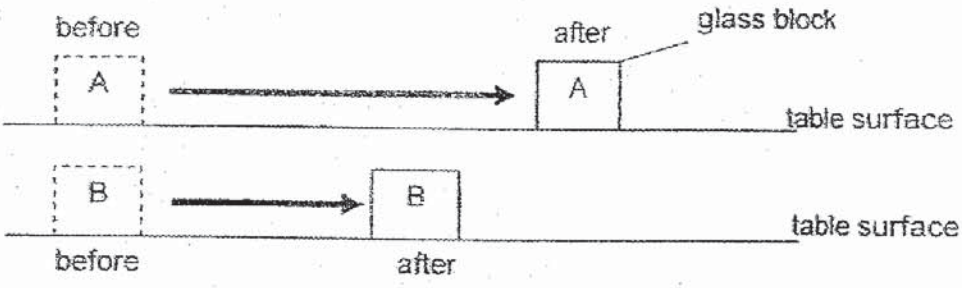
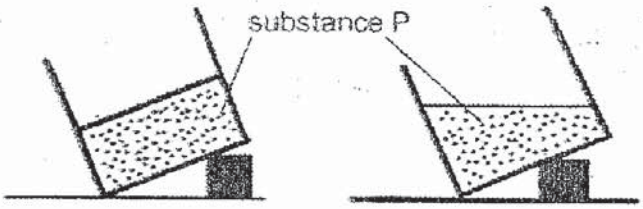
22 The diagram below shows two identical glass blocks, A and B. Samy pushed them with equal amount of force on a table. He found that block A travelled a longer distance than block B.



Which of the following statements is the most possible explanation?

	Surface on which block A was pushed	Surface on which block B was pushed
(1)	dry	wet
(2)	dry	smooth
(3)	rough	dry
(4)	smooth	rough

23 A beaker containing substance P was left in the classroom for an hour.



Which of the following statement about substance P is true after an hour?

(1) Substance P can be compressed.

(2) Substance P has a definite shape.

(3) Substance P has changed its state.

(4) Substance P has changed its volume.

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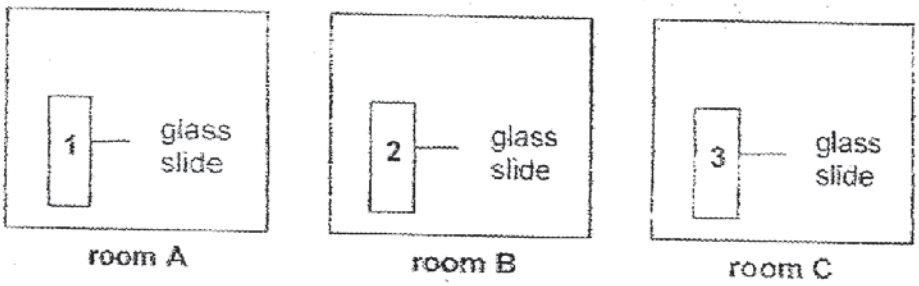
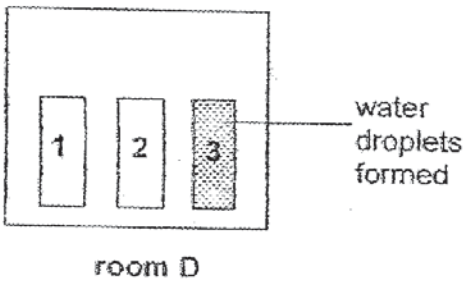
24 Jansen left three similar glass slides in three rooms, A, B and C for an hour. The three rooms have different room temperatures.



The three glass slides were then moved to room D immediately. After five minutes, he noticed water droplets on the glass slide from room C but not on the glass slides from rooms A and B.



Which of the following statements could be true?

(1) Room C was warmer than room D.

(2) Rooms A and B were colder than room D.

(3) Rooms A and B were warmer than room D.

(4) Room C had the same temperature as room D.

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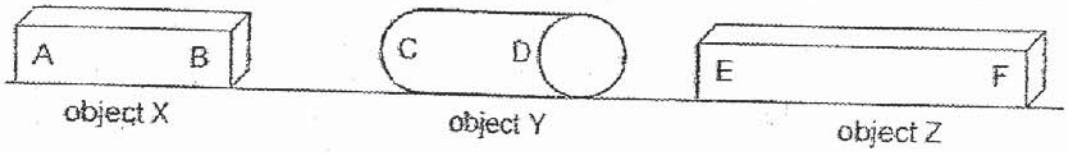
25 Zaki carried out an experiment with three different objects. The ends of objects X, Y and Z are labelled as shown.



Firstly, he brought the ends of object X and object Y close to each other to test if they would repel or attract.

He recorded the result of his experiment in the table below.

		Object Y	
		C	D
Object X	A	Attract	Repel
	B	Repel	Attract

Secondly, he brought the ends of object Y and object Z close to each other to test if they would repel or attract.

He recorded the result of his experiment in the table below.

		Object Z	
		E	F
Object Y	C	Attract	Attract
	D	Attract	Attract

Based on the results given above, which of the following statement(s) below is/are true?

A Objects X and Y are magnets.
B Objects Y and Z are not magnets.
C When separated, all three objects, X, Y and Z are magnets.

(1) A only
(2) B only
(3) A and C only
(4) A, B and C

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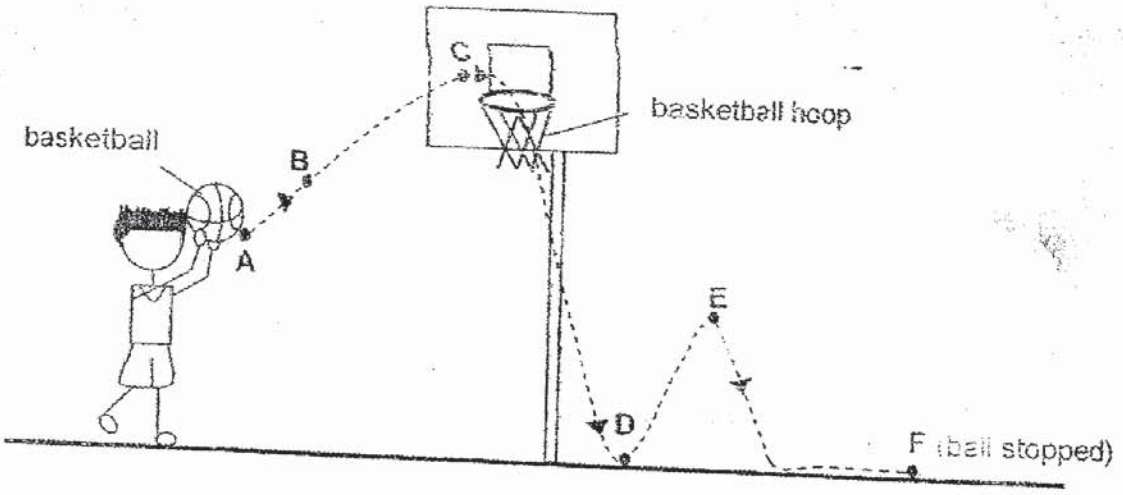
26 Study the diagram below.



Jordan aimed and shot a basketball into the basketball hoop. The dotted arrows in the diagram above show the path of the basketball from the time it was released at point A to the time it stopped at point F.

Which of the following statement(s) is/are true?

A The ball has no kinetic energy at point F.

B The ball has no potential energy at point A.

C The ball has the most gravitational potential energy at point C.

D The ball has more gravitational potential energy at point D compared to point B.

(1) A only

(2) B and D only

(3) A and C only

(4) A, B and C only

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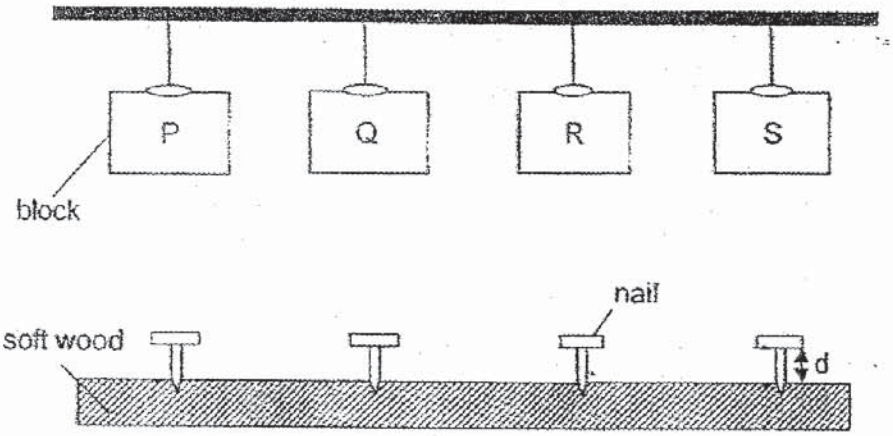
27 Benjamin inserted four identical nails into a piece of soft wood. He dropped four blocks P, Q, R and S with different mass from same height onto each of the nails as shown below.



The length of nail that did not go into the wood (d) was measured and recorded in the table below.

Block	Length of nail that did not go into the wood d (cm)
P	1.5
Q	0.2
R	1.2
S	0.8

Which of the following statements is true?

(1) Block S is lighter than Block R and Block Q.

(2) Block P is lighter than Block R and Block S.

(3) Block P is heavier than Block Q and Block S.

(4) Block R is heavier than Block P and Block Q

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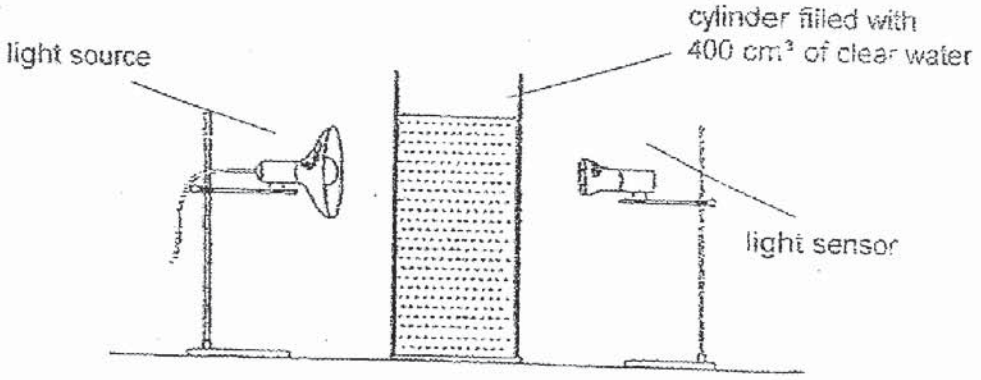
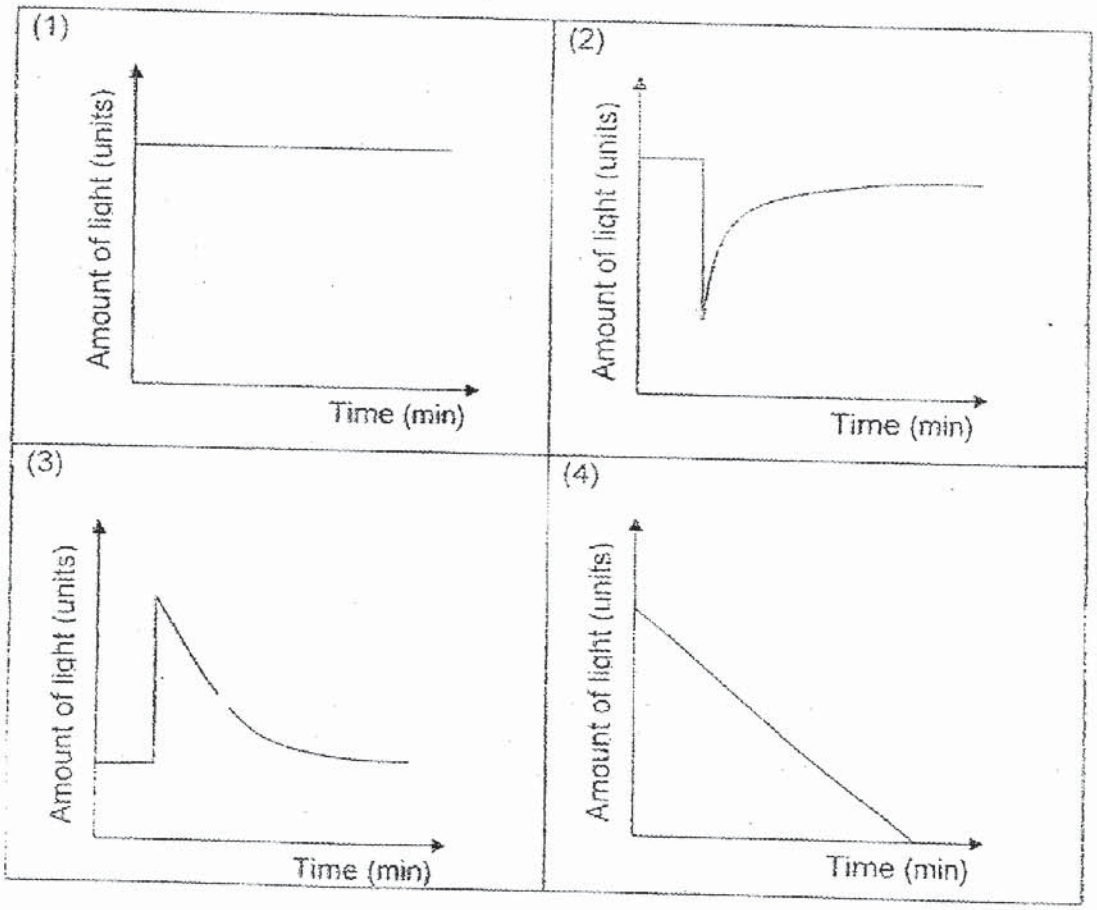
28 The diagram below shows a cylinder filled with 400 cm^3 of clear water. The light sensor can measure the intensity of light as it passes through the water.

One minute after the light is turned on, a mixture of 100 cm^3 of garden soil and clay is poured into the cylinder. The mixture slowly sinks to the bottom of the cylinder.



Which one of the graphs below shows the change in the light intensity recorded throughout the experiment after the light is turned on?



End of Booklet A

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CHRISTIAN BROTHERS' SCHOOLS

PRELIMINARY EXAMINATIONS

2019

SCIENCE

PRIMARY 6

BOOKLET B

NAME : _____ ( )

CLASS : St_____6

12 Questions
44 Marks

Duration of Paper: 1 hour 45 minutes

BOOKLET	MARKS	
	POSSIBLE	ACTUAL
A	56	
B	44	
TOTAL	100	

This booklet has 16 pages including this cover page.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

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Section B [44 marks]

For questions **29** to **40**, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

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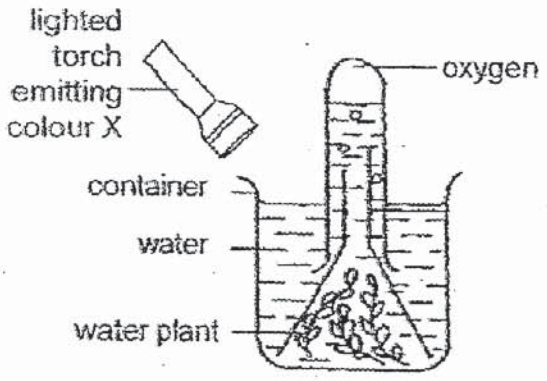
29 Muthu set up an experiment in a dark room as shown below. He wanted to find out if the colour of light affects the amount of oxygen given out by the water plant after three hours.



He repeated his experiment with colour Y and Z and recorded his results in the table below.

Colour of light	Amount of water at the start (ml)	Amount of oxygen produced by the plant (cm^3)
X	400	0.2
Y	400	0.5
Z	400	0.3

(a) Based on Muthu's results, which colour of light allows the water plant to have the highest rate of photosynthesis? Explain your answer. [1]

(b) Explain why Muthu set up the experiment in a dark room instead of the school field. [1]

(Go on to the next page)

SCORE / 2

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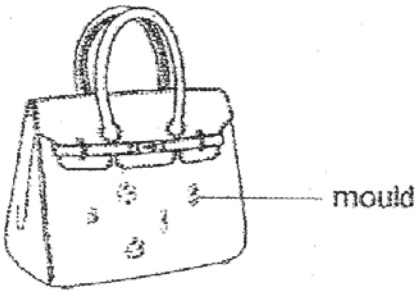
960

30 Judy kept her leather handbag in a dark and damp cupboard. When she took the bag out of the cupboard after one month, she saw mould growing on her bag.



Her brother told Judy to put her bag in a brightly-lit and sunny place so that mould will not grow on her handbag in the future.

(a) What conditions would allow the mould to grow on the bag? [1]

(b) Explain why her brother's suggestion will work. [1]

(c) In order to prevent mould from growing on her leather bag in the future, her brother told her to apply a layer of wax on the leather bag.
Explain how can applying a layer of wax on the bag can help in preventing the growth of mould on it. [1]

(Go on to the next page)

SCORE	/ 3

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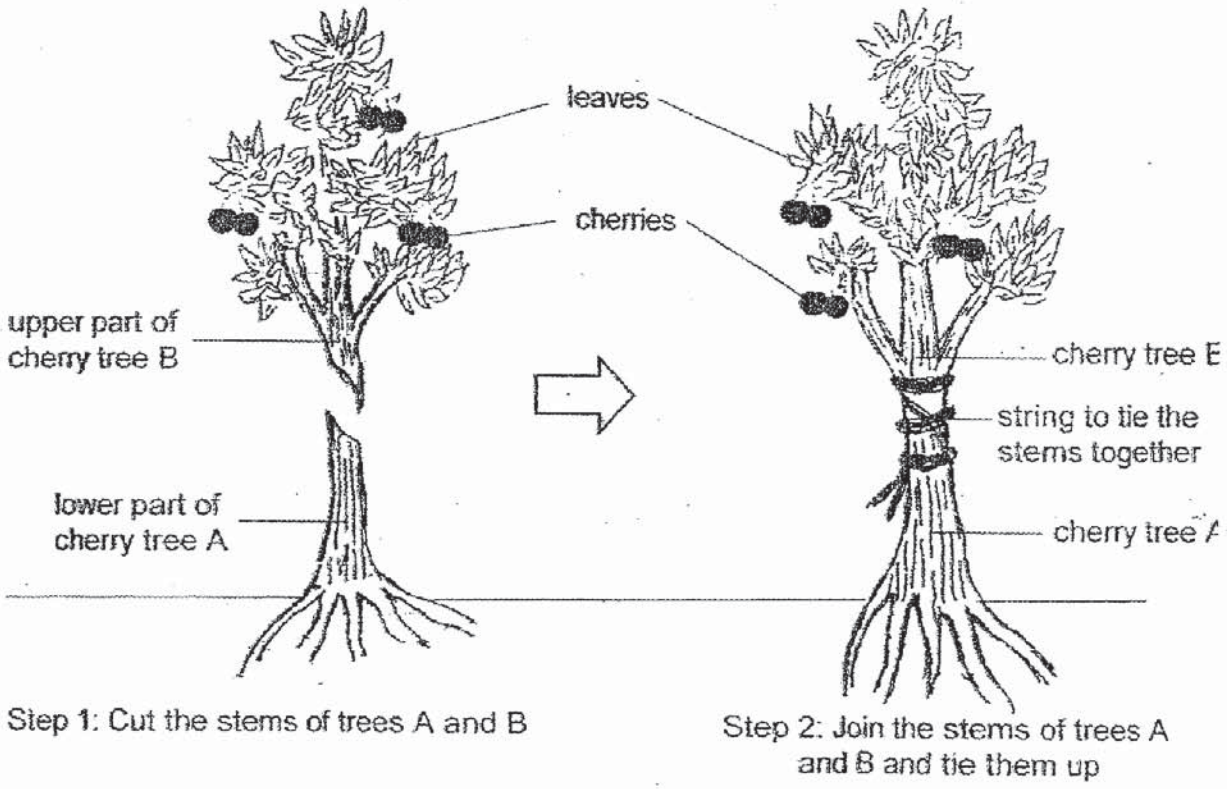
31 Farmer Tan wanted to grow a better species of cherry tree by using a special method of joining the parts from two different species of cherry trees. The diagram below shows how this method is done.



Step 1: Cut the stems of trees A and B

Step 2: Join the stems of trees A and B and tie them up

(a) Based on the cut stems, give two reasons why this method may fail. [2]

(b) Explain why:

(i) the upper part of cherry tree B was chosen. [1]

(ii) the lower part of cherry tree A was chosen. [1]

(Go on to the next page)

SCORE 4

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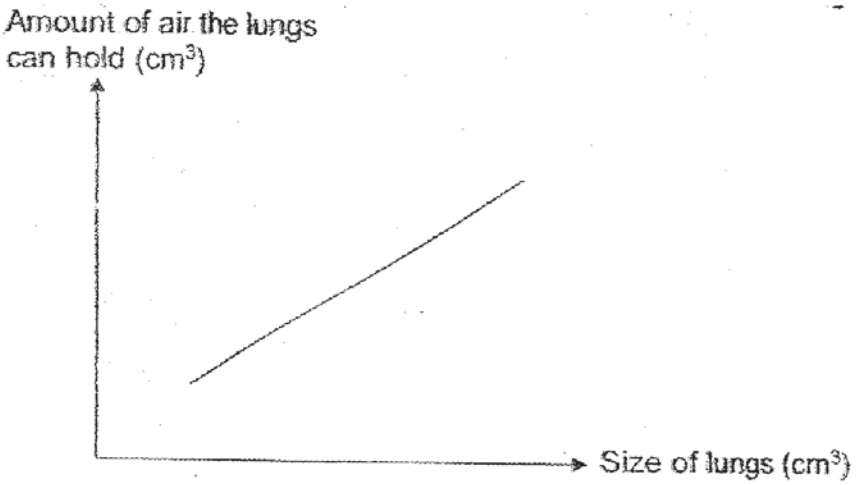
32 The graph below shows the relationship between the size of lungs of a person and the amount of air it can hold in the lungs.



(a) Based on the graph, what is the relationship between the size of lungs of a person and the amount of air it can hold? [1]

Mr Lim had a bacterial infection which affected his lungs. The bacteria caused his lungs to be filled with water.
At the hospital, he found that his breathing rate was higher than when he was healthy.

	Breathing rate per min
When he was healthy	20
When he had a bacterial infection	32

(b) Explain why his breathing rate increased when he had a bacterial infection. [2]

(c) The doctor noticed that Mr Lim's heart rate also increased when he had a bacterial infection. Besides getting more oxygen into the body, explain why his heart rate increased. [1]

(Go on to the next page)

SCORE — / 4

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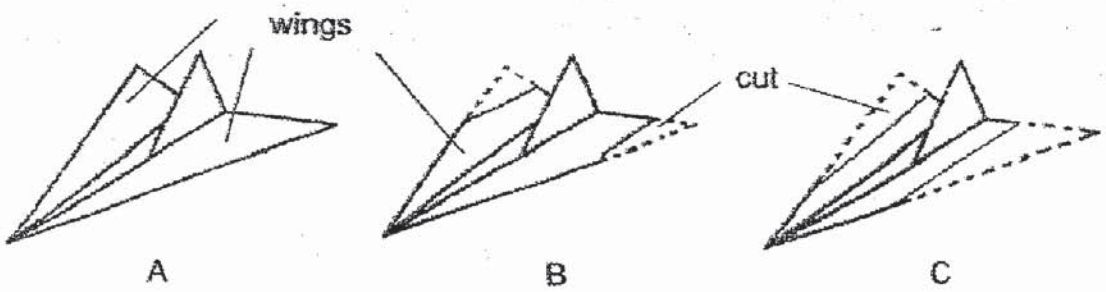
33 Aiden conducted an experiment with three similar paper aeroplanes, A, B and C, as shown below. He cut the wings of B and C as shown below.



He launched the paper aeroplane from the same height and recorded the distance that the paper aeroplane travelled before reaching the ground.

Paper aeroplane	Surface area of wings (cm^3)	Distance travelled (cm)
A	100	32
B	80	25
C	50	16

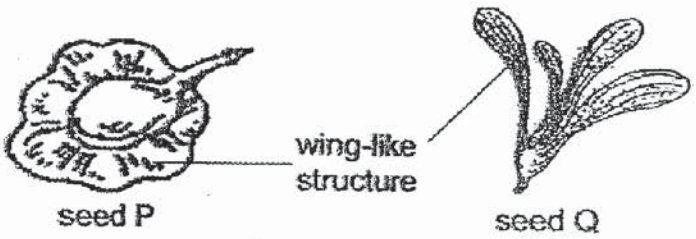
(a) State the aim of Aiden's experiment. [1]

(b) State the force that:

(i) caused the plane to fall to the ground: _____ [1]

(ii) caused the plane to slow down: _____ [1]

Aiden then compared seeds P and Q as shown below and observed their wing-like structures that help in their dispersal.



(c) Based on Aiden's observations and experiment above, can he conclude which seed, P or Q, can disperse a further distance? Give 2 reasons for your answer. [2]

(Go on to the next page)

SCORE 5

34 Diagram 1 shows how Animal F is often found resting and staying still near Animal G in the ocean.

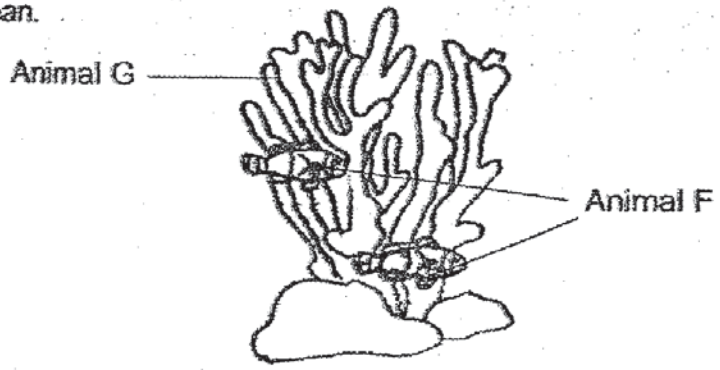


Diagram 1

(a) State one benefit for Animal F to be found near Animal G. [1]

Diagram 2 shows how plant H lives on Animal G. Plant H gives Animal G its colour when it lives on Animal G.

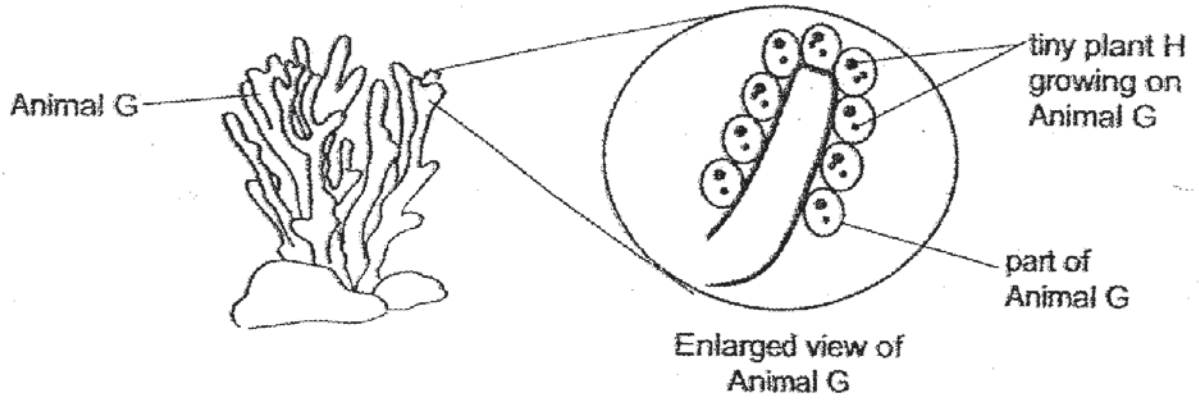


Diagram 2

(Q34 continues at the next page)

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Diagram 3 shows what happens to Plant H and Animal G when the temperature of water becomes too high.

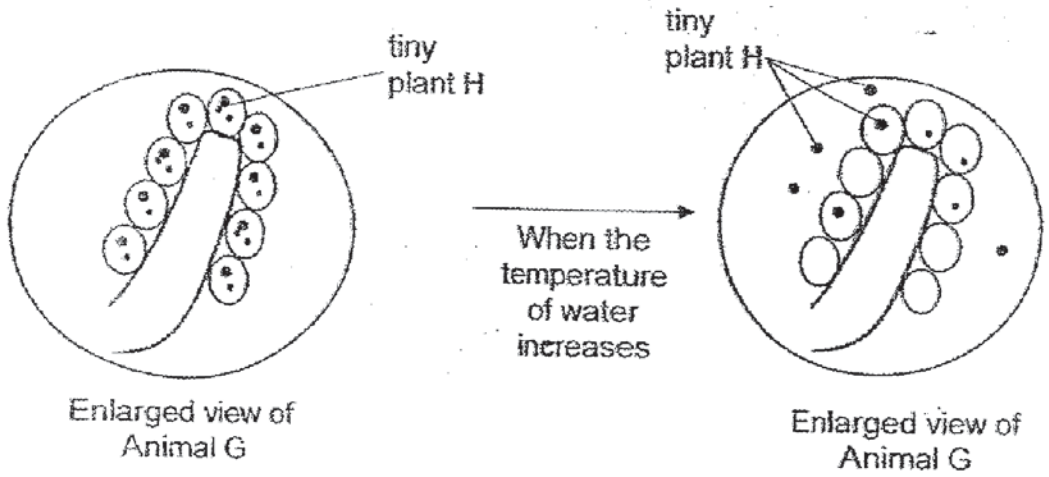

Diagram 3

(b) Explain how global warming causes Animal G to lose its colour. [2]

(c) Besides global warming, name another man's activity that can cause Animal G to lose its colour. Explain why. [2]

(Go on to the next page)

SCORE 5

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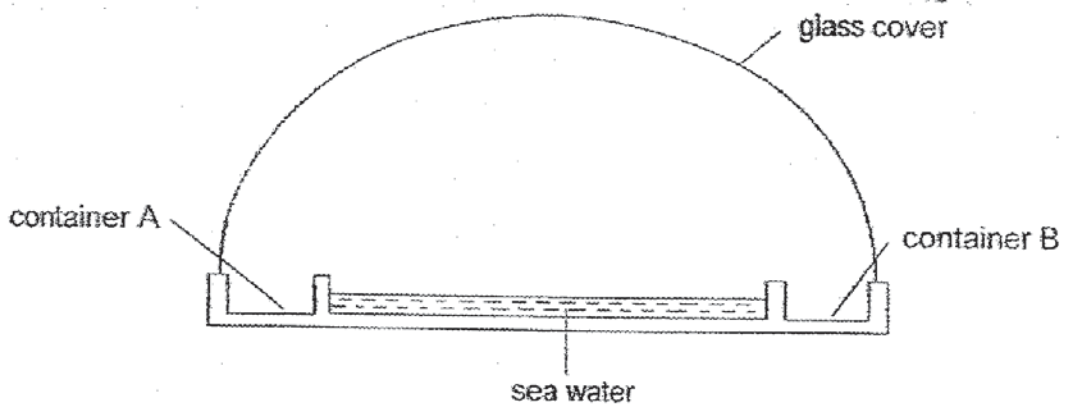
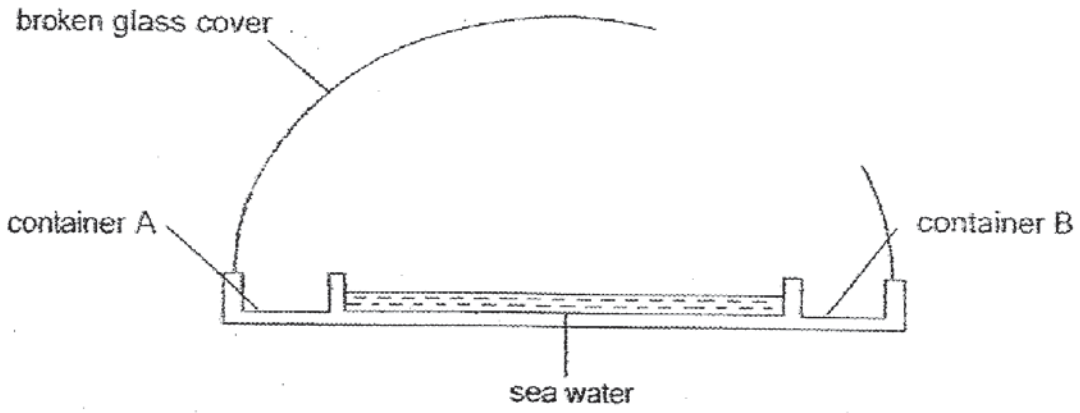
35 Vasanthy set up the following model to collect pure water from sea water.
She placed the set-up under the shade in his garden.



(a) Explain how pure water is collected in containers A and B. [2]

Vasanthy dropped a stone accidentally on the set-up and the glass cover was broken.
She repeated the experiment and continued to leave the set-up in the garden and observed the amount of water collected in containers A and B.



(b) Would the amount of water collected in containers A and B be less, same or more than her first attempt? Explain your answer. [1]

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SCORE 3

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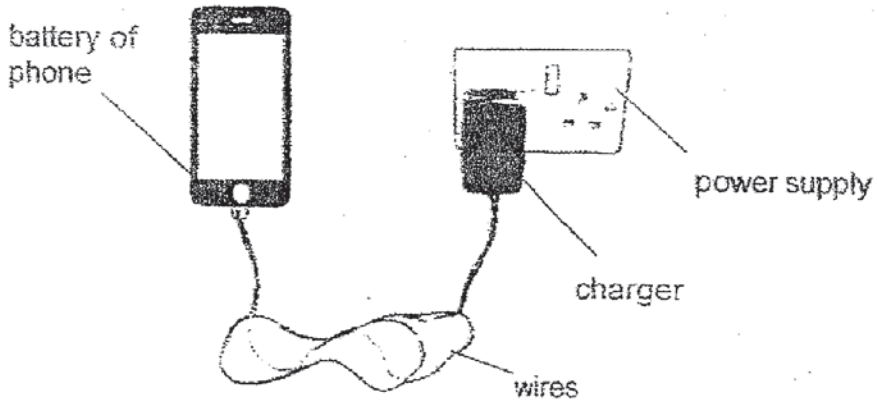
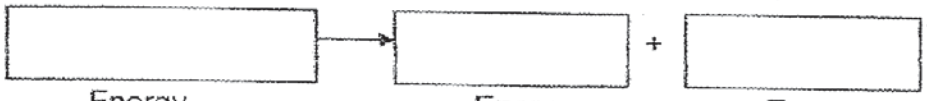
36 Kelvin connected the battery of his phone to a charger with wires. The charger was then plugged into the power supply.



(a) Write down the energy conversion in the battery and wires when it is being charged. [2]



Kelvin studied how the temperature of the room affects the time it takes to charge the battery of his phone.

Room Temperature (°C)	Time taken for battery to be fully charged (minutes)
25	100
30	120
35	190

(b) Based on the table above, explain why it is best to keep the phone charging in a cooler place. [1]

(Go on to the next page)

SCORE / 3

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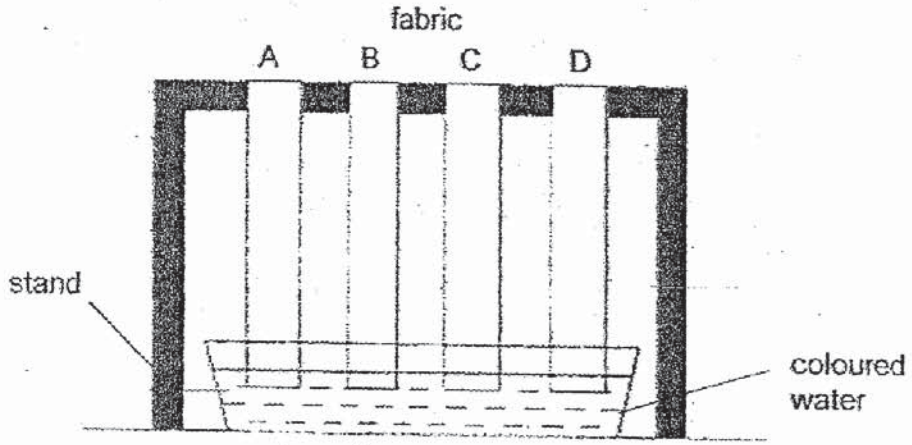
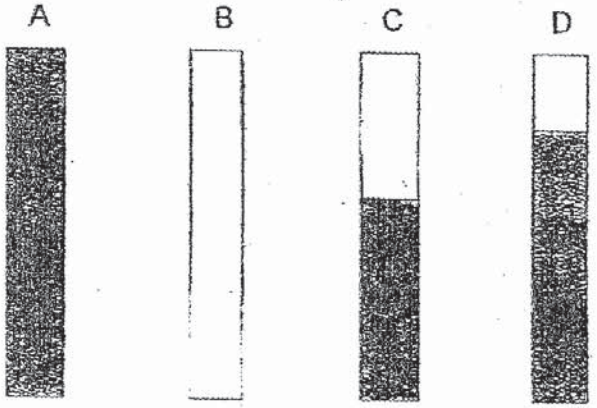
37 Aaron set up the following experiment. Four strips A, B, C and D made of different fabric were hung from a stand such that the end of each strip was dipped into a container of coloured water.



The diagram below shows the four strips of fabric after three hours. The shaded parts indicate the absorption of coloured water by the four strips of fabric.



(a) Aaron wants to have a T-shirt made for his sister who sweats a lot so that she can wear it during an outdoor running race.

Based on the results of his experiment, which fabric should he use to make the T-shirt? Explain why. [1]

(b) Based on his experiment, state a property of Material B that he can conclude. [1]

(Go on to the next page)

SCORE	– / 2

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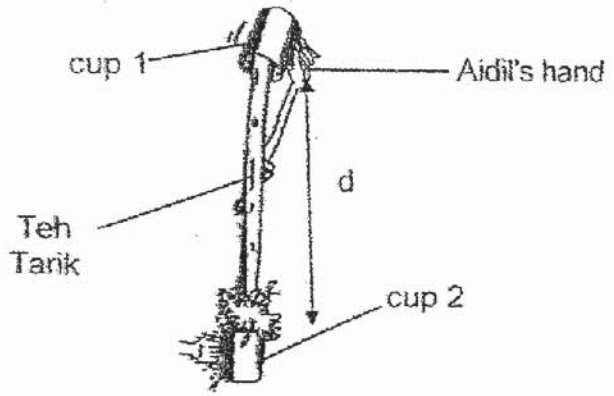
38 A Teh Tarik drink is hot tea poured from one cup to another repeatedly as shown below.



(a) Aidil measured the temperature of his Teh Tarik drink before and after he repeatedly poured it from one cup to another for ten times. What would Aidil observe about the temperature of the Teh Tarik drink? Explain why. [2]

(b) Aidil carried out another experiment by changing the distance, d, between cup 1 and cup 2. Each experiment started with the same amount of drink at 80°C. He recorded the results as shown below.

Experiment	Distance between cup 1 and cup 2, d (cm)	Temperature of drink (°C)
A	20	75
B	50	70
C	100	65

State a conclusion Aidil could make based on the results shown above. [1]

(c) Aidil left all the drinks from the three experiments, A, B and C, in the room for an hour.
State the temperature of the drinks when he returned. [1]

(Go on to the next page)

SCORE ___/4

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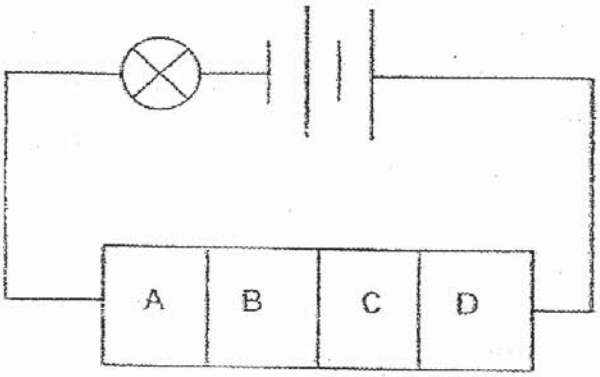
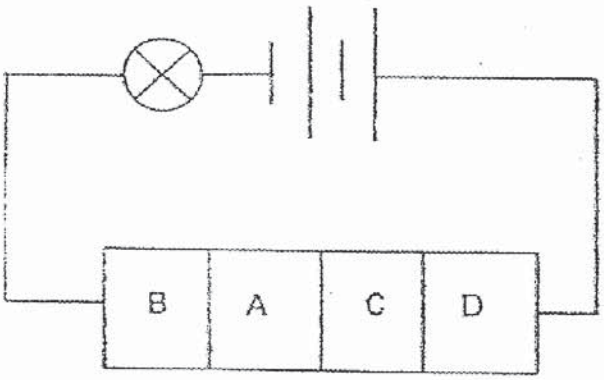
39 Angelica was given materials A, B, C and D as described below. To test whether they conduct electricity, she joined them together and connected them to an electric circuit as shown in the diagram below. The bulb, batteries and wire were in good working condition.

Material	Type of material
A	Plastic
B	Iron
C	Aluminium
D	Glass



Experiment 1

In experiment 1, she observed that the bulb did not light up. Keeping the rest of the circuit unchanged, she re-arranged the order of the materials in the circuit below.



Experiment 2

(a) Will the bulb in Experiment 2 light up? Explain why. [2]

(Q39 continues at the next page)

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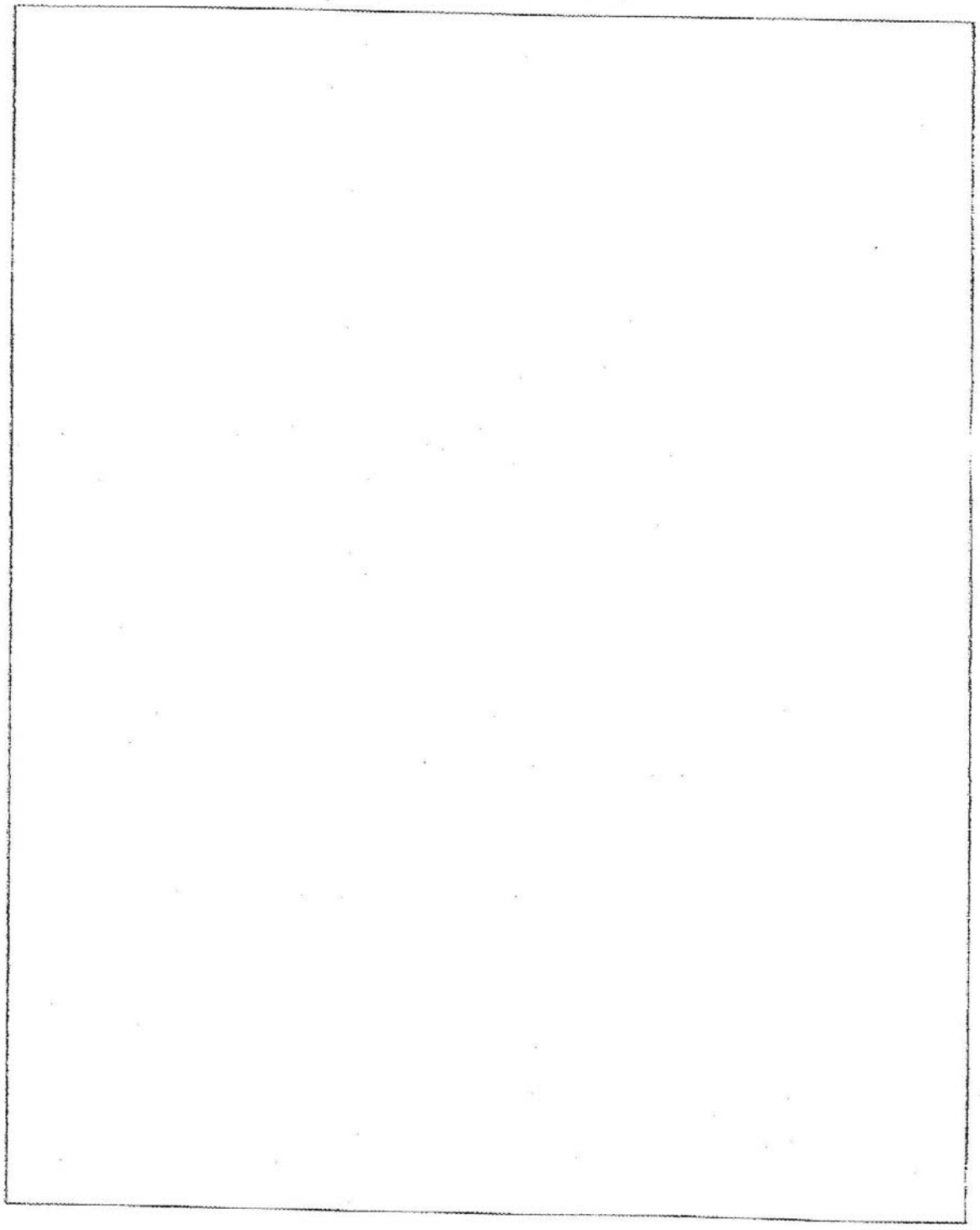
(b) Using two batteries, one bulb and all the four materials, A, B, C and D, re-arrange them in a circuit such that the bulb will light up. Complete the circuit so that it will work as described. [2]



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SCORE	/ 4

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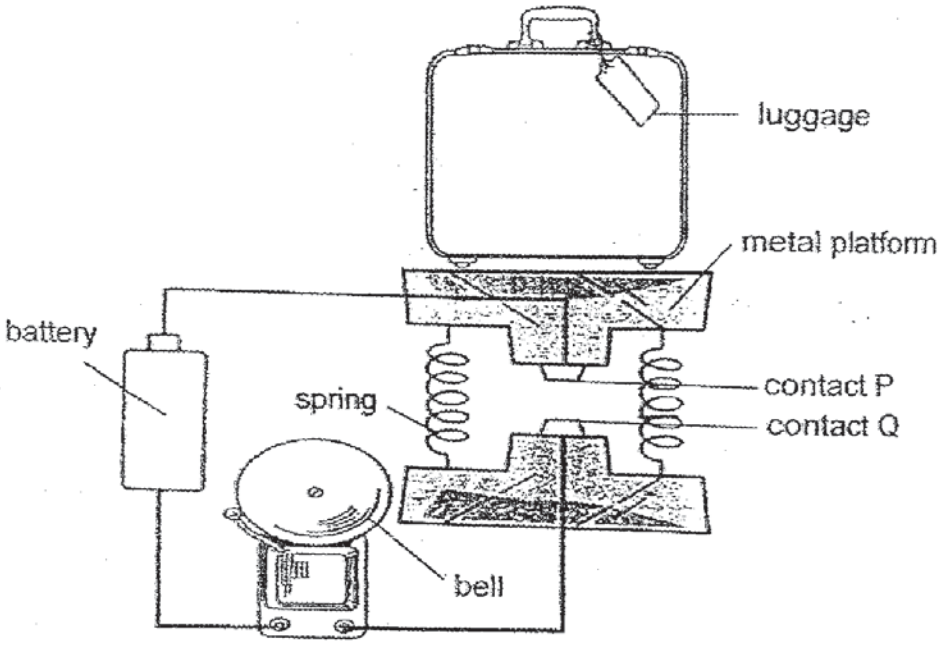
40 Mr Lim used the set-up as shown below to help airport staff check the mass of luggage of passengers. His set-up helps the airport staff to separate passengers' luggage that are less than 30kg from overweight luggage weighing 30kg or more. When the luggage is overweight, the bell will ring.



(a) Name two forces that are present in the set-up. [1]

(b) What property should the contacts P and Q have to ensure that the set-up works? [1]

(c) Explain how the bell would ring when a 40kg luggage is placed onto the metal platform. [2]

(d) Mr Lim wants to change his set-up so that it separates luggage that is below 40kg from those that are above 40kg. State the change to his set-up to achieve this. [1]

SCORE	/ 5

End of Booklet B

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : Christian Brothers School
SUBJECT : Science
TYPE : Preliminary

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	4	1	3	4	2	2	4	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	3	3	2	1	4	1	2	2	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	4	3	3	1	3	2	2		

Booklet B

Q29.

a) Y. The amount of oxygen produced by the plant was the most amongst the three colors of light showing that it photosynthesizes the best.

b) The light sources when in the school field can affect the amount of light entering the water plant but in a dark room, no other light sources can enter the water plant to affect the experiment.

Q30.

a) Water, darkness, air and warmth.

b) If it would be in a brightly lit room and sunny place, it will die as mould grows best at dark places and the temperature might be too high thus causing the mould to die.

c) The layer of wax prevents water from coming into contact with the bag so mould will not grow when there is no water.

Q31.

a) The food carrying tubes may be damaged and cannot be connected properly, so food cannot be transported from the leaves to other parts of the plant. The water carrying tube may be damaged and cannot be connected properly so water cannot flow from roots to other parts of the plant.

b) The flowers of cherry tree B are more beautiful and will thus attract more pollinators.(i) The roots of cherry tree A are stronger to support the tree. (ii)

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Q32.

a) As the size of the lungs increases, the amount of air it can hold increases.
b) Water takes up space in the lungs so lesser oxygen is taken in so he needs to breathe faster to get the same amount of oxygen.
c) His heart needs to pump faster to transport blood with digested food.

Q33.

a) Aiden wanted to find out how the surface area of wings affects the distance travelled.
b) i) Gravitational force ii) Frictional force
c) He cannot tell as the surface area of the wing like structures are not known and these seeds are not of the same type.

Q34.

a) Animal G provides shelter for Animal F to hide from predators.
b) During global warming, the temperature of water increases which cause the plant H to detach.
c) Water pollution. It will prevent sunlight from reaching plant H and plant H will die and animal G will lose its color.

Q35.

a) The water in the sea water would gain heat and evaporate as water vapour. When the warmer water vapour from the sea water comes into contact with the inner cooler surface of the glass container, it will lose heat and will condense into tiny water droplets which will drip into container A and B.
b) There will be lesser water than her first attempt. Water that has evaporated can now escape from the hole in the glass cover, causing less water to condense on the inner surface of the glass cover, resulting in lesser water dripping into containers A and B.

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Q36.

a) Electrical energy -> Chemical potential energy + Heat energy
b) From the table, the lower the room temperature, the lesser time taken for battery to be fully charged. This shows that phones charge faster when the environment is cooler. As a result, it is best to keep the phone charging in a cooler place.

Q37.

a) A. It absorbs the most amount of colored water.

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b) Material B is water proof.

Q38.

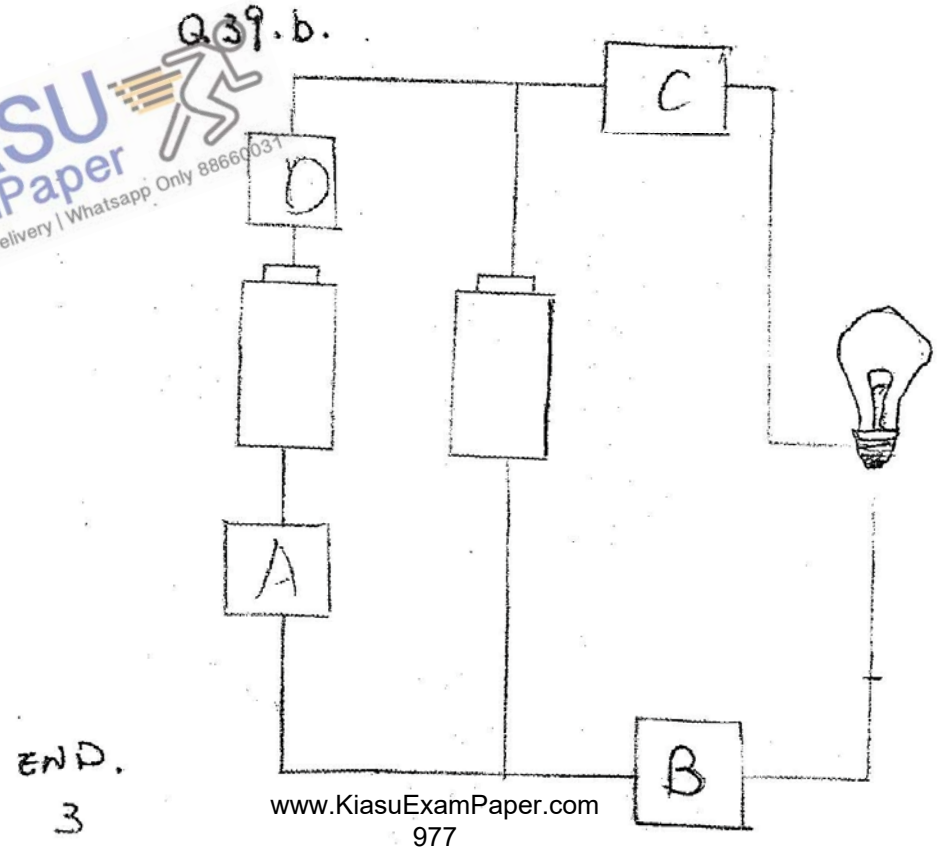
a) The temperature of the Teh Tarik drink will decrease. The Teh Tarik had more surface area to lose heat faster to the cooler surrounding air and reduce the temperature more quickly.
b) The temperature of the drink would decrease when the distance between cup 1 and cup 2 increases.
c) The drinks are at room temperature.

Q39.

a) No. Electricity cannot flow through the circuit as there is a gap in the circuit.
b) Points to note: 2 batteries and bulbs in parallel. D and A connect to outer-most battery. C and B connected between the light bulb and the center battery.

Q40.

a) Gravitational force and elastic spring force.
b) Contacts P and Q must be good conductors of electricity.
c) When the 40 kg luggage is placed onto the metal platform, the spring would compress causing the contact P and Q to come into contact. When they come into contact, this circuit would become closed to ring the bell. Electric current cannot flow through the circuit.
d) He should change the springs to be stiffer ones.



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HENRY PARK PRIMARY SCHOOL

PRELIMINARY ASSESSMENT 2019

PRIMARY 6

SCIENCE

BOOKLET A (56 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.

Name: _____ _____ ( )

Class: Primary 6 ( )

Date: 27 August 2019

Total Time: 1 h 45 min

Booklet	Marks	
A		/ 56
B		/ 44
Total (A+B)		/ 100

Parent's Signature: _____

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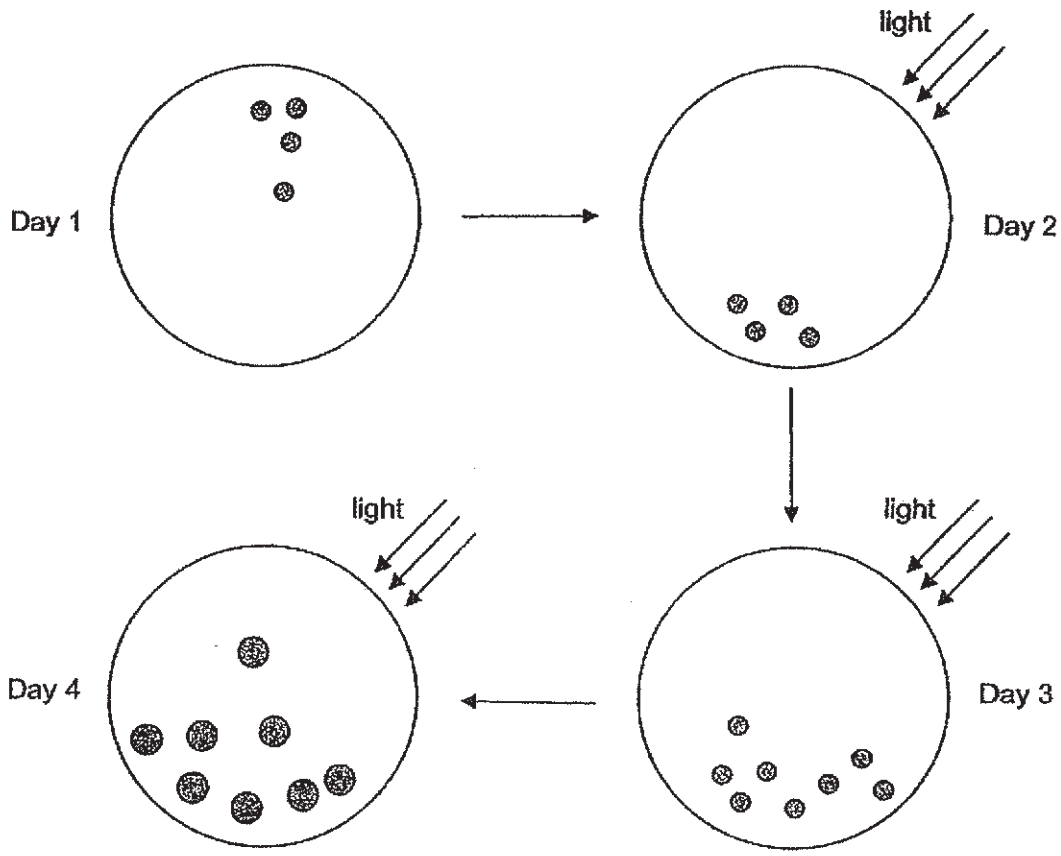
Booklet A (56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

---

1. Oliver observed a group of living things under a microscope over 4 days.



Which of the following characteristics of living things did he observe over the 4 days?

A: Living things can grow.

B: Living things need food.

C: Living things can respond.

D: Living things can reproduce.

(1) A, B and C only

(2) A, C and D only

(3) B, C and D only

(4) A, B, C and D ( )

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2. John made a list of common characteristics observed in reptiles and amphibians, as shown in the table below.

Which of the following comparisons of the characteristics between the amphibians and reptiles is/are correct?

	characteristic	amphibians	reptiles
A	breathing method	through gills	through gills
B	outer body covering	moist skin	dry scales
C	reproduction method	give birth	lay eggs

(1) B only

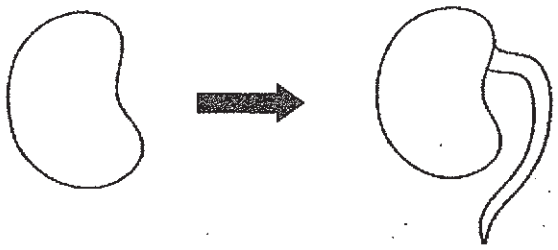
(2) A and B only

(3) A and C only

(4) A, B and C

( )

3. The diagram below shows a process during a stage in the life cycle of a flowering plant.



Which of the following is correct about the process that is taking place at this stage of the life cycle of the flowering plant?

	Process	Gas taken in	Gas given off	Light needed	Warmth needed
(1)	fertilisation	carbon dioxide	oxygen	yes	no
(2)	fertilisation	carbon dioxide	oxygen	yes	yes
(3)	germination	oxygen	carbon dioxide	no	yes
(4)	germination	oxygen	carbon dioxide	yes	yes

( )

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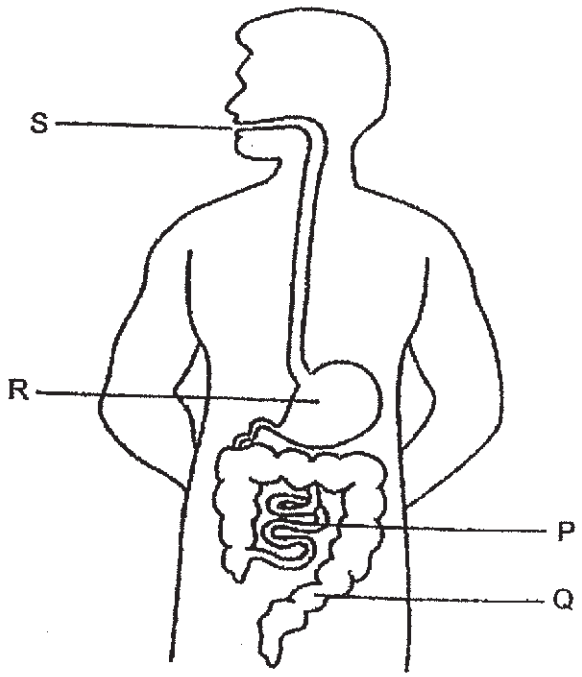
4. The diagram shows the human digestive system.



In which one of the following parts is water absorbed from the undigested food?

(1) P

(2) Q

(3) R

(4) S

( )

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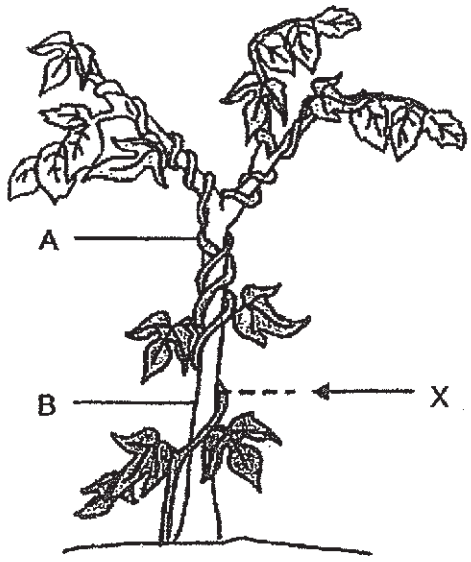
5. The diagram below shows that plant A has climbed around plant B.



The stem of plant A was cut off at X.

Which one of the following explains what is likely to happen to the part of plant A above X after some time?

	Part of plant A above X	Main reason
(1)	died	has no water to make food
(2)	died	has no support from plant B
(3)	died	cannot get light to make food
(4)	survive	can still get water to make food

( )

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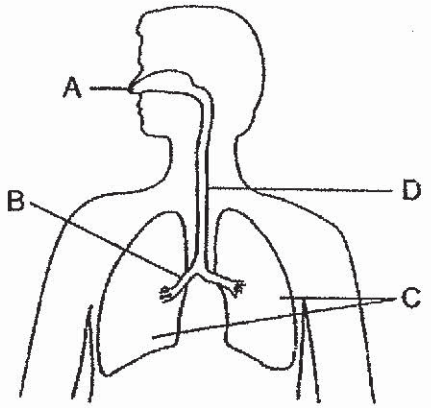
6. Study the table below.

	Parts of the respiratory system			
	A	B	C	D
air passes through here		✓	✓	
air from the surrounding enters here				✓
gaseous exchange takes place here	✓			

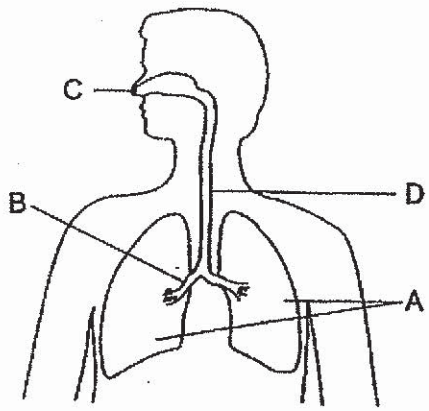
Key : ✓ present

Which of the following correctly shows the parts labelled, A, B, C and D?

(1)



(2)



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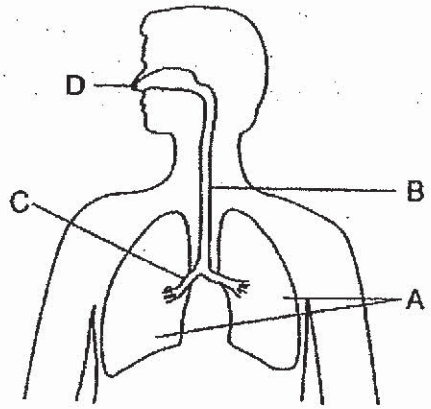
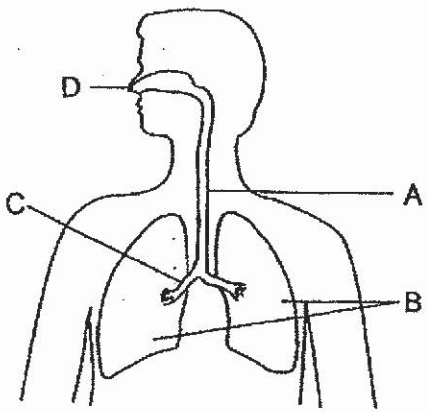


(4)



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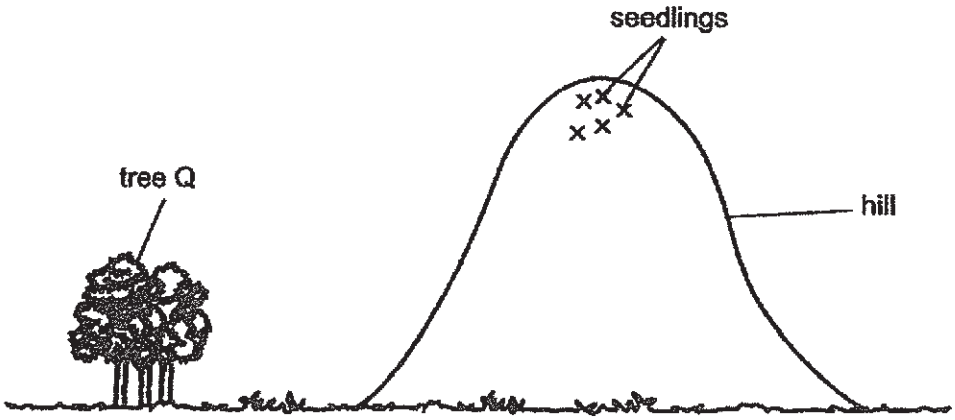
7. The diagram below shows tree Q at the bottom of a hill.



After some time, seedlings of tree Q were found growing on the hill as shown in the diagram above.

Which of the following are possible characteristics of the fruits of tree Q?

A: has dry pods

B: has fibrous parts

C: has wing-like parts

D: has fleshy edible parts

(1) A and C only

(2) C and D only

(3) A, B and D only

(4) B, C and D only

( )

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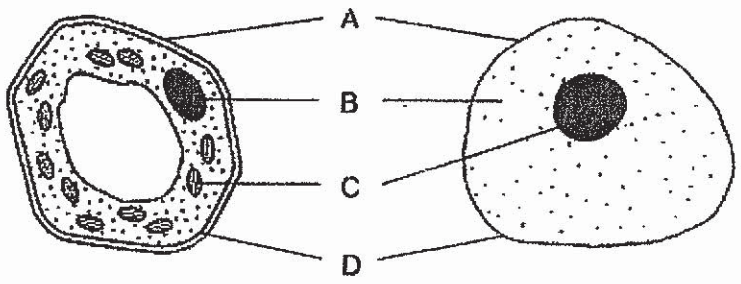
8. Two types of cells are shown below.



Study the table below.

Part of cell	Function
A	gives the cells a fixed shape
B	controls activities in the cells
C	gives the cells a green colour
D	controls substances entering the cells

Which one of the parts labelled, A, B, C or D, and its function is correct for both cells?

(1) A

(2) B

(3) C

(4) D

( )

9. Which of the following activities help to keep the environment clean and green?

A: drive to a nearby destination

B: turn unwanted vegetable parts into fertiliser

C: bring your own bag during shopping

D: turn on the air-conditioners all the time

(1) B and C only

(2) A, B and D only

(3) B, C and D only

(4) A, B, C and D

( )

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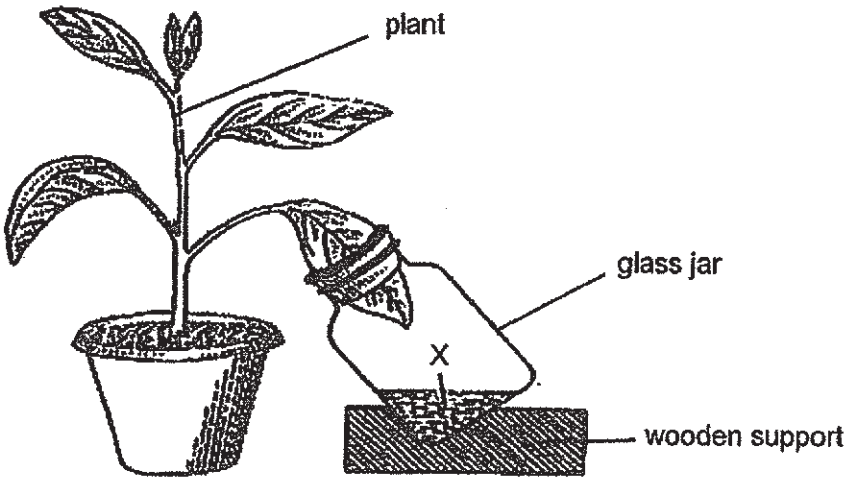
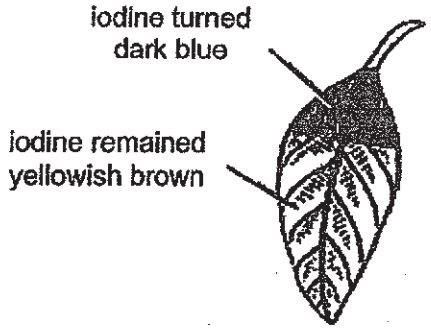
10. Yasmeen placed substance X in a glass jar and conducted an experiment as shown below.



She then tested the leaf for starch using iodine solution. The result of her experiment is as shown below.



What did substance X do in this experiment?

(1) absorb oxygen

(2) give out oxygen

(3) absorb carbon dioxide

(4) give out carbon dioxide ( )

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11. A group of researchers was investigating the changes in the population of land animals in Singapore over a period of 30 years. They noted a decrease in the population of land animals over time.

Which of the following factor(s) is/are most likely to have caused the decrease in the population of these animals?

A: deforestation

B: increased sunlight

C: introduction of other animals

(1) A only

(2) A and B only

(3) A and C only

(4) B and C only ( )

12. Alice studied a community living on a rotting log. She found the following organisms:

ants	millipede	mould	toadstool

Which one of the following classification is correct?

	Decomposers	Organisms that help decomposers
(1)	ants, toadstool	millipede, mould
(2)	mould, toadstool	ants, millipede
(3)	millipede, mould	ants, toadstool
(4)	millipede, mould, toadstool	ants

( )

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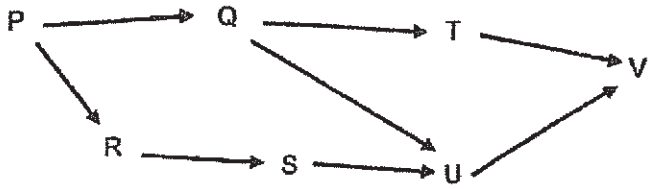
13. The following diagram shows a food web in a particular habitat.



Which of the following organisms are both a prey and predator?

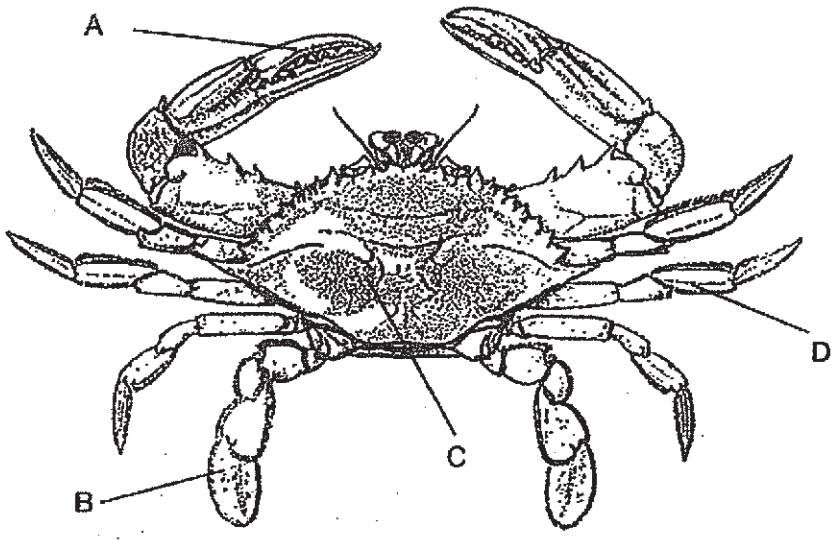
(1) Q and U

(2) R and S

(3) S and T

(4) U and V ( )

14. The diagram below shows animal X. It has a hard outer covering and lives in the seashore habitat.



Which of the following is correct about the function of the parts labelled, A, B, C and D?

	For moving around	For protection
(1)	A	B, C and D
(2)	A, B and D	C
(3)	A and C	B and D
(4)	B and D	A and C

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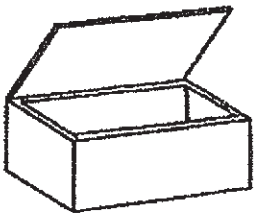
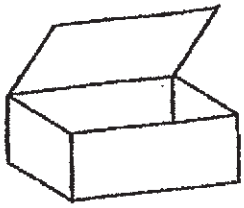
15. The diagram below shows two cardboard boxes, A and B, of the same size but of different thickness.



Box A



Box B

Zachary used box A to send a heavy parcel. He also wrapped it up with a clear plastic as shown in the diagram below.

Box A wrapped in clear plastic

Why did Zachary choose box A and wrap it up with clear plastic?

	Reason for	
	using box A	**wrapping box A with a clear plastic**
(1)	heavier	to allow most light to pass through
(2)	stronger	to make it flexible
(3)	stronger	to make it waterproof
(4)	more flexible	it is a poor conductor of heat

( )

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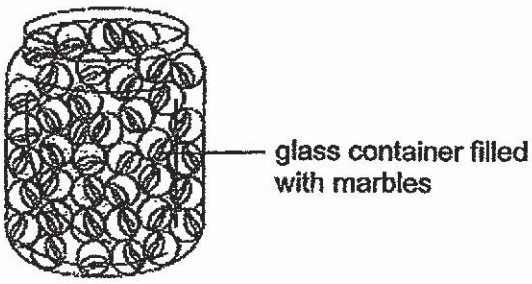
16. In an experiment, Yue Ling filled a glass container with marbles until she could not put any more marbles into it. She concluded that there was no more space in the container for her to put anything into it.



However, her friend, Sally said that she was wrong.

How could Sally prove that Yue Ling was wrong?

A: shake the container of marbles

B: heat up the container of marbles

C: pour sand into the container of marbles

D: pour water into the container of marbles

(1) A and B only

(2) B and C only

(3) A, B and C only

(4) A, C and D only ( )

17. Which of the following is correct about heat and light?

(1) Both help us to see.

(2) Both are forms of energy.

(3) Both can be compressed.

(4) Both occupy space and have mass.

( )

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18. A bimetallic strip is formed by joining two different metals together. The diagrams below show how the strip bends when it is heated.

Four metals, A, B, C and D, were used in different combinations to form four bimetallic strips. The diagrams below show how each strip bent when heated equally for 5 minutes.

Strip 1

Strip 2

Strip 3

Strip 4

Based on the information given, which of the following shows metals, A, B, C and D, arranged in the correct order, based on how much the metal had expanded when heated?

	Expanded the least → Expanded the most			
(1)	B	C	A	D
(2)	C	A	B	D
(3)	C	B	A	D
(4)	D	A	B	C

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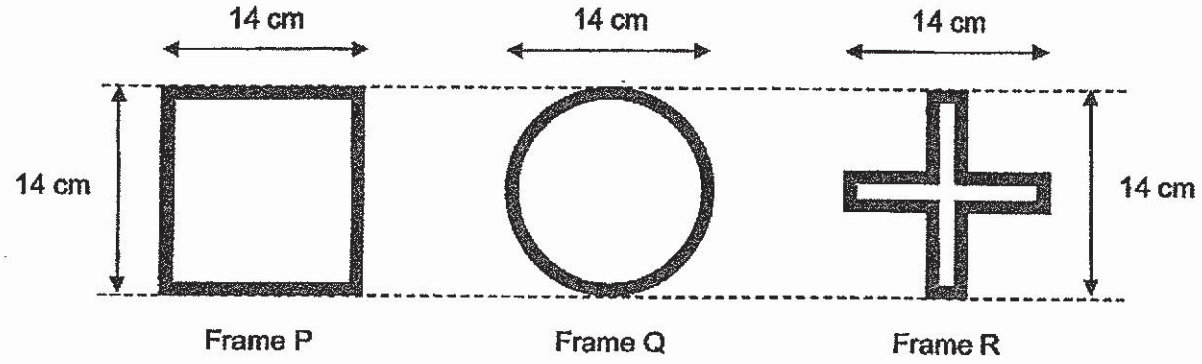
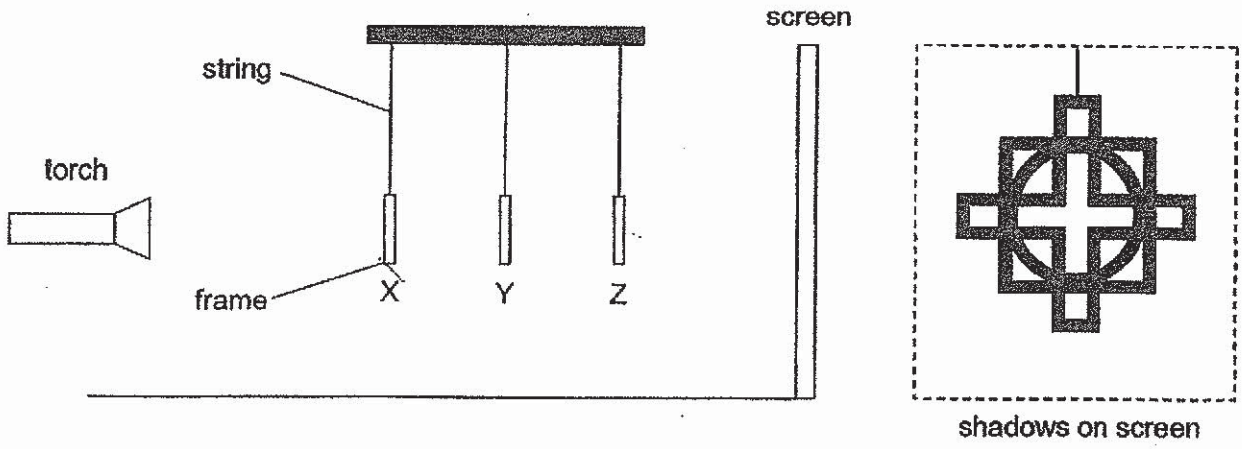
19. Gopal used three wooden frames, P, Q and R, as shown below for an experiment on shadows.



He conducted the experiment in a dark room using the following set-up. The shadows formed on the screen are shown below.



Which of the following shows the correct positions of the wooden frames for the shadows cast on the screen?

	Position of		
	Frame P	**Frame Q**	**Frame R**
(1)	X	Y	Z
(2)	Y	Z	X
(3)	Y	X	Z
(4)	Z	Y	X

( )

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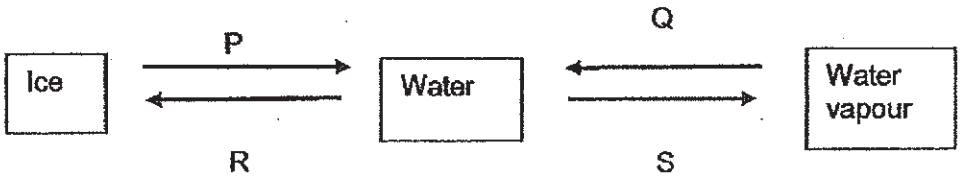
20. Study the diagram below.



P: Melting

Q: Evaporation

R: Freezing

S: Condensation

Based on the diagram above, which of the processes are labelled correctly?

(1) P and Q

(2) P and R

(3) R and Q

(4) R and S ( )

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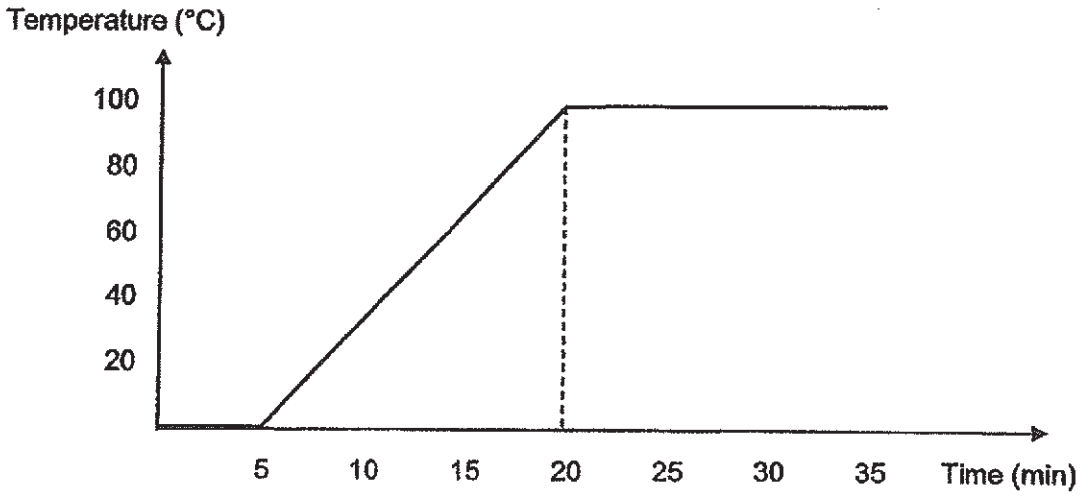
21. Esther heated some ice in a beaker and recorded the temperature changes over time.



Based on the graph above, which of the statements below is correct?

(1) The ice took 5 minutes to melt completely.

(2) The water took 35 minutes to reach boiling point.

(3) Esther stopped applying heat to the beaker after 30 minutes.

(4) The water in the beaker stopped evaporating after 30 minutes. ( )

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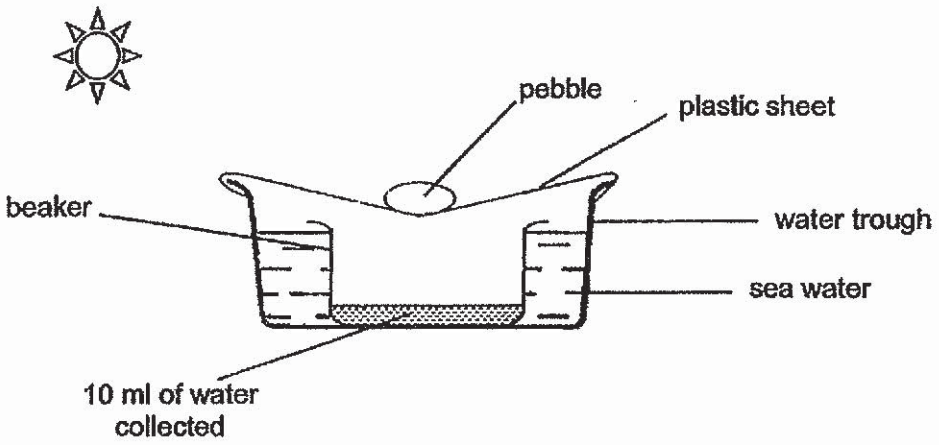
22. Maria conducted an experiment as shown in the diagram below.



What are some of the way(s) to increase the amount of water collected in the beaker?

A: increase the size of the pebble

B: place the set-up in a shaded area

C: reduce the size of the beaker

D: reduce the size of the water trough

(1) C only

(2) A and B only

(3) B and C only

(4) C and D only ( )

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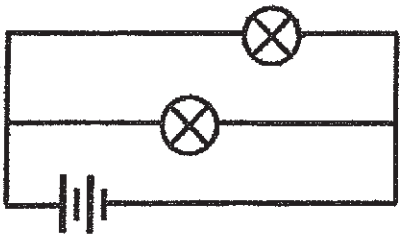
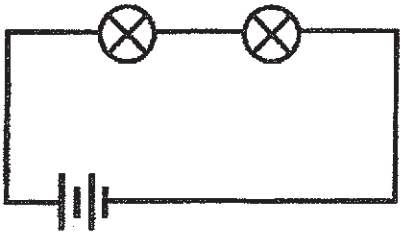
23. Aidan used similar bulbs, batteries and wires to set up four circuits as shown below.

In which one of the following circuits will all the bulbs shine the brightness?

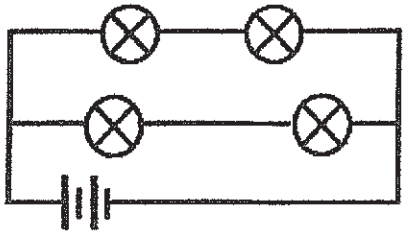
(1)



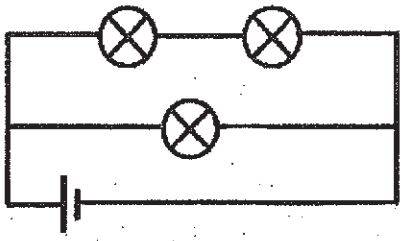
(2)



(3)



(4)



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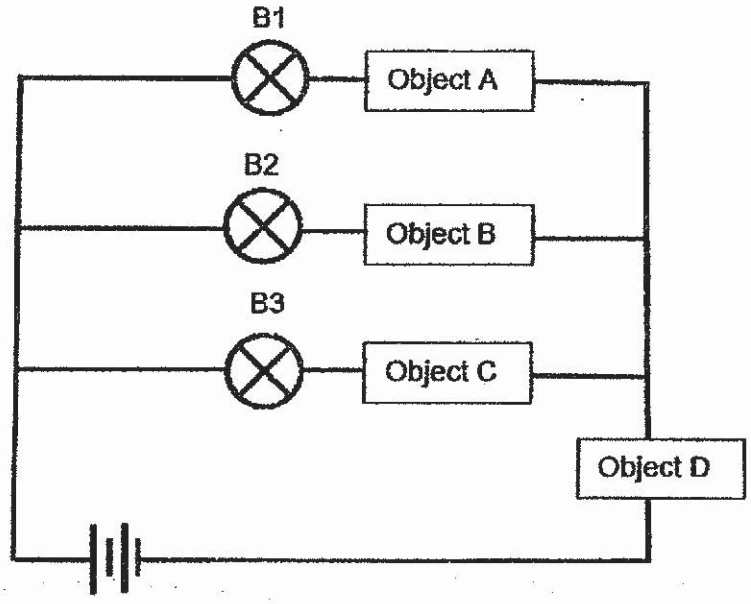
24. Bryan set up an electric circuit as shown below.



Only bulb B2 lit up.

What objects were used in the set-up above?

	Object A	Object B	Object C	Object D
(1)	metal ruler	coin	eraser	marble
(2)	marble	metal ruler	coin	eraser
(3)	eraser	coin	marble	metal ruler
(4)	coin	marble	metal ruler	eraser

( )

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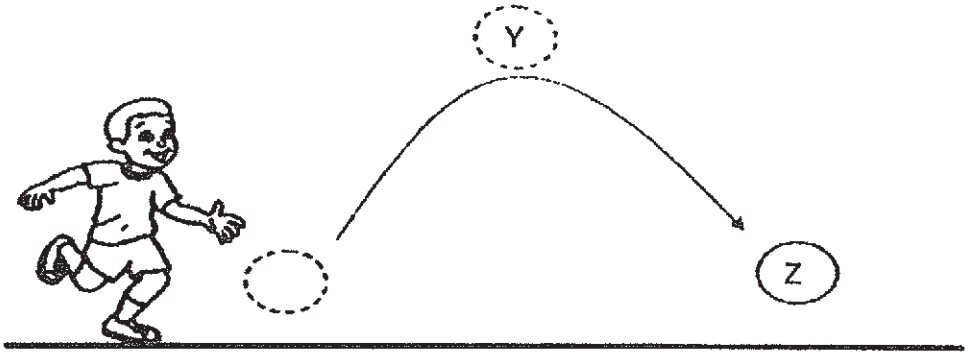
25. Joel kicks a ball. The diagram shows the path of the ball after he has kicked it.

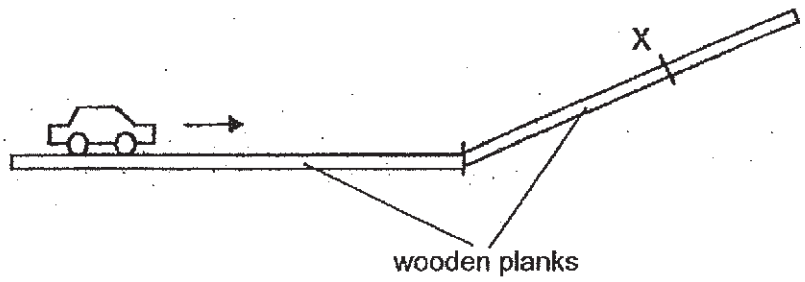


Which one of the following is correct?

	Kinetic energy of the ball from Y to Z	Potential energy of the ball from Y to Z
(1)	decreases	decreases
(2)	decreases	increases
(3)	increases	increases
(4)	increases	decreases

( )

26. The diagram below shows a toy car being pushed on two similar wooden planks. The toy car moved up the plank, stopped at X and then, it rolled down.



Which one of the following statements about the movement of the toy car is correct?

(1) The toy car stopped at X because it had run out of energy.

(2) The car stopped at X because there was no force acting on it.

(3) The car slowed down as it moved up because the frictional force increased.

(4) The toy car rolled down as it had gained potential energy while moving to X.

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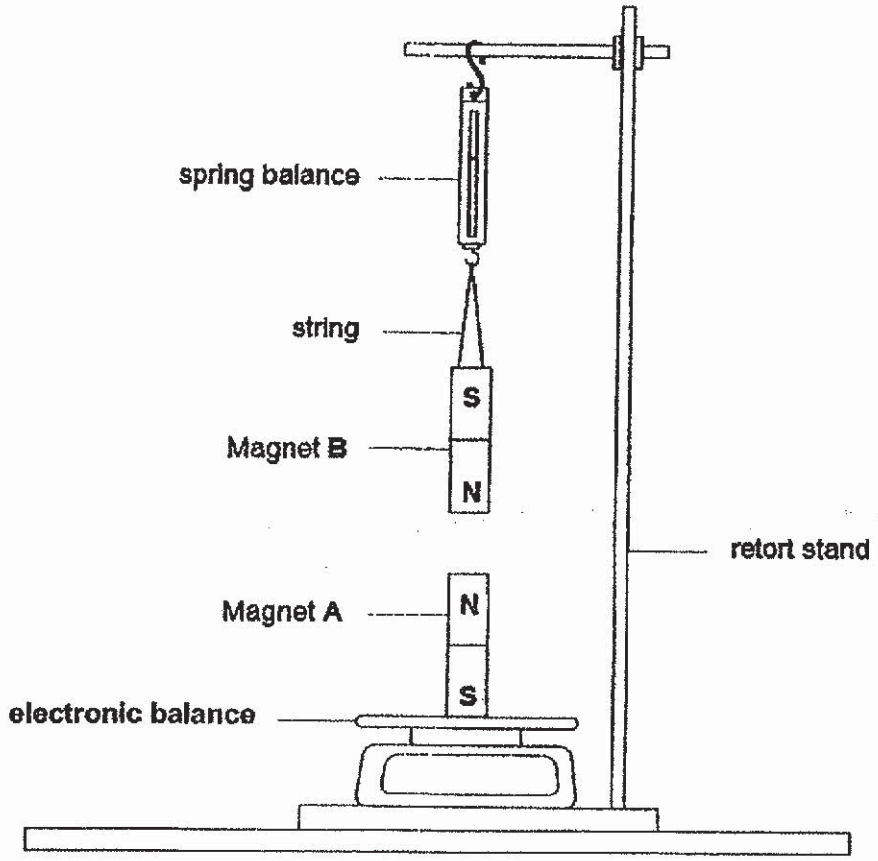
27. Rui En set up an experiment as shown in the diagram below. Magnets A and B are equal in mass and weigh 10g each.



Which one of the following is correct about the set-up as shown in the diagram above?

	Position of magnet B	Reading on electronic balance (g)
(1)	moved upwards	less than 10
(2)	moved upwards	more than 10
(3)	remain at the same level	equal to 10
(4)	moved downwards	less than 10

( )

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28. Diagram 1 shows object X attached to a spring.

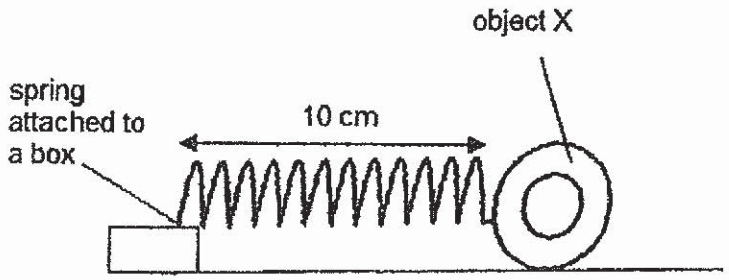

Diagram 1

Diagram 2 shows how object X moved in the direction indicated by the arrow when object Y was brought near to object X.

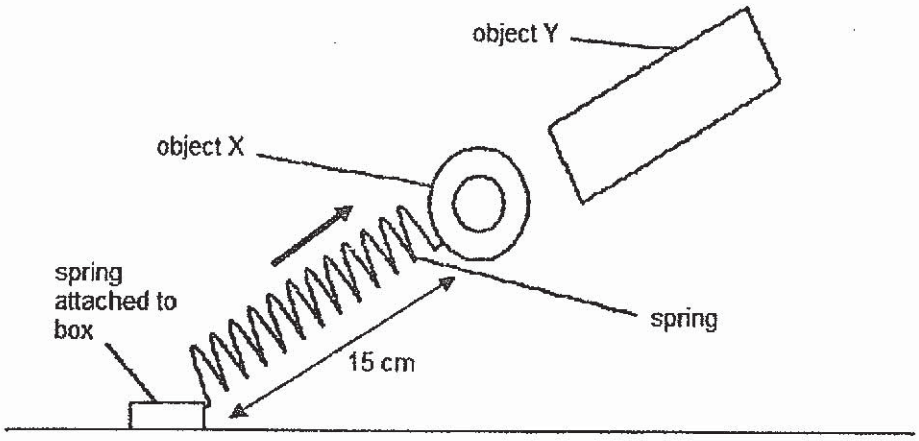

Diagram 2

Which of the following statements is correct?

(1) Magnetic force of repulsion exists between X and Y.

(2) Magnetic force can stop the gravitational force acting on X.

(3) The elastic spring force increases when Y was brought near to X.

(4) The gravitational force acting on X decreases when Y was brought near to X.

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End of Booklet A

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IENRY PARK PRIMARY SCHOOL

RELIMINARY ASSESSMENT 2019

PRIMARY 6

SCIENCE

BOOKLET B (44 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.

Name:_____ _____( )

Class: Primary 6 ( )

Date: 27 August 2019

Total Time: 1 h 45 min

Marks for Booklet B: _____

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Booklet B (44 marks)

For questions 29 to 40, write your answers in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.

---

29. The diagram below shows a mosquito.

a) State a characteristic of the mosquito that makes it an insect. [1]

_____

A group of scientists kept some mosquitoes at different temperatures and they observed the time taken for each stage of development in its life cycle.

	Duration of stage at different temperature (days)			
	24°C	28°C	32°C	36°C
Egg	2	3	2	1
Larva	11	9	8	7
Pupa	3	3	3	2

b) How does temperature affect the number of days mosquitoes take to develop into adult stage? [1]

_____

_____

c) Mosquitoes breed in stagnant water and spread the dengue virus when they are in the adult stage. [2]

Based on the information given, explain why the number of cases of dengue fever rises during the rainy season.

_____

_____

_____

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30. Figures 1 and 2 show how oxygen is transported in the circulatory system of a human and fish respectively.

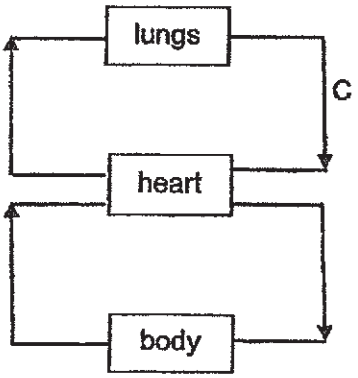


Figure 1 (human)

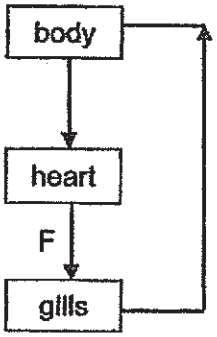
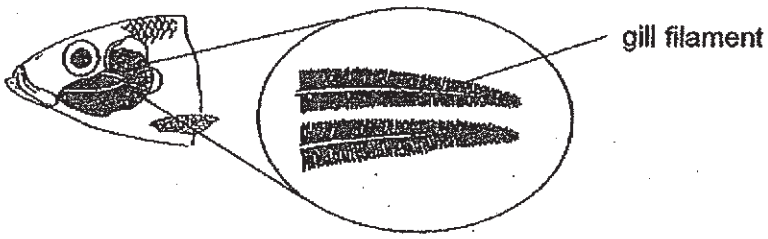


Figure 2 (fish)

a) Based on the diagram, state how the flow of blood is similar between a human and a fish. [1]

b) State one difference between the amount of oxygen found in the blood flowing at C and F [2]
Give a reason for the difference.



c) The gills of a fish consist of many fine gill filaments. [1]

How does this structural adaptation help the fish take in more dissolved oxygen from the water?

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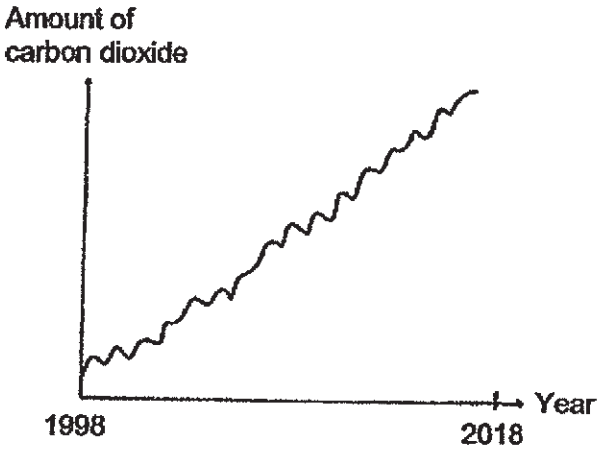
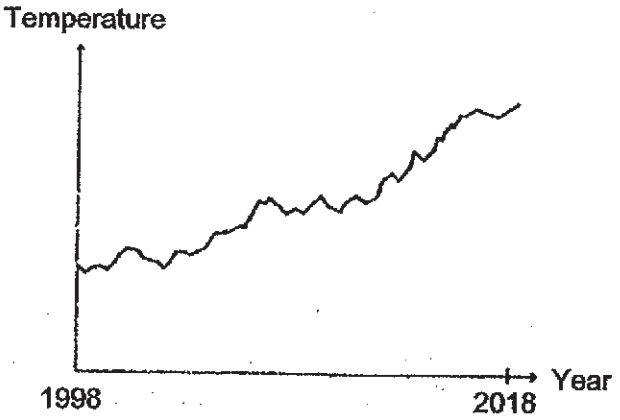
31. Graph 1 shows the amount of carbon dioxide emissions in a certain area.



Graph 1

a) What is the trend in the amount of carbon dioxide as observed in Graph 1? [1]

Study Graph 2 shown below.



Graph 2

b) Based on Graphs 1 and 2, what is the relationship between carbon dioxide levels and temperature in the environment? [1]

c) As global temperatures rises, the ice in the Antarctic melts.

Explain how this may affect small islands around the world in future. [1]

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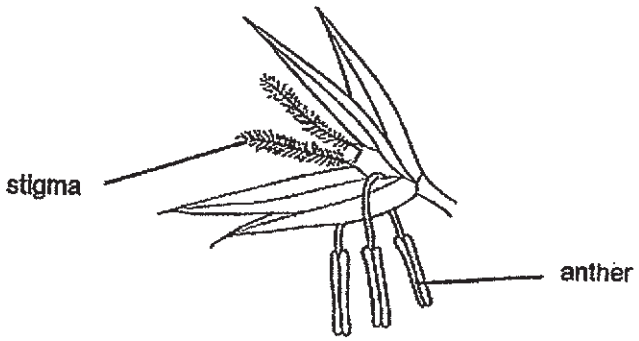
32. Study the diagram of a flower below.



a) Describe the process of pollination. [1]

b) Is the flower pollinated by wind or animal? Explain your answer. [1]

c) After pollination, the flower develops into a fruit. [1]

Explain why it is important for the seeds of the fruits to be dispersed far away from the parent plant.

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33. Jun Hong carried out an experiment with a plant as shown in diagram 1. Two parts of the stem, X and Y, were removed as shown in diagram 2.

Before the start of the experiment, the plant was kept in the dark to remove all the starch. The plant was then exposed to sunlight for at least 12 hours.

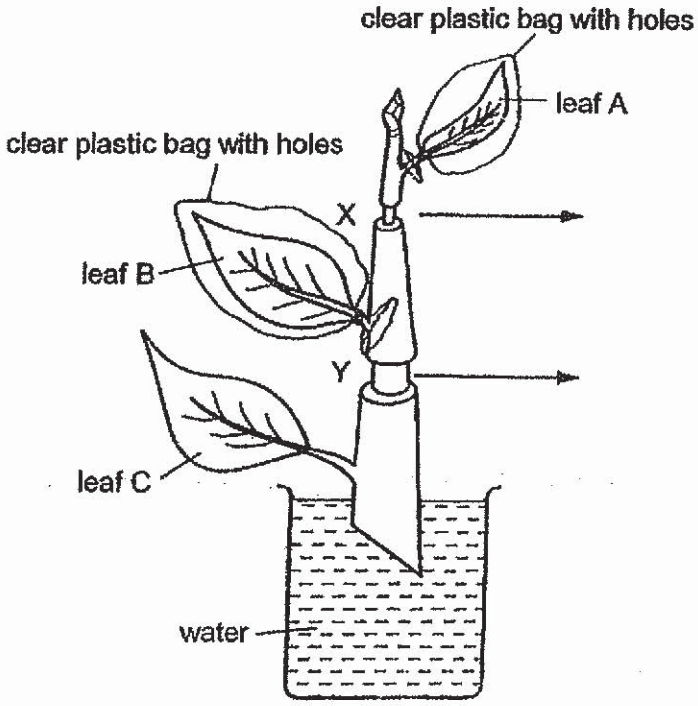

Diagram 1

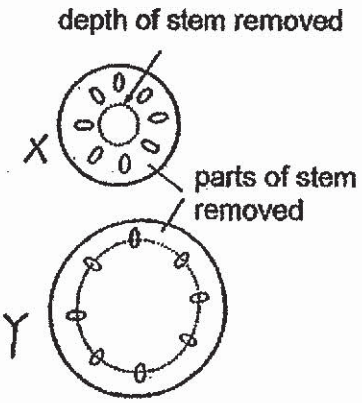

Diagram 2

a) A substance which is necessary for photosynthesis is absent in leaf A. [1]

State the substance.

_____

b) Give a reason why the plant was exposed to sunlight for at least 12 hours. [1]

_____

_____

c) Besides repeating the experiment, suggest another way Jun Hong could make the results of the experiment more reliable. [1]

_____

_____

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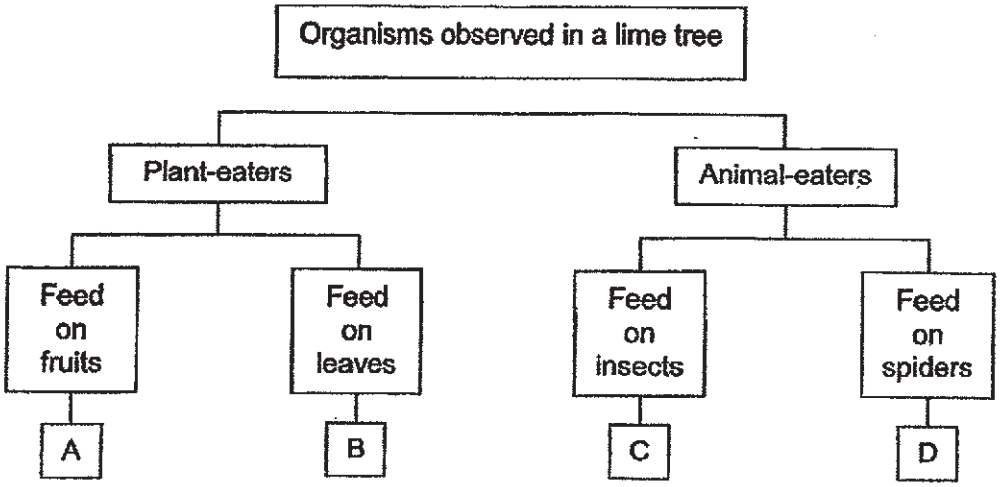
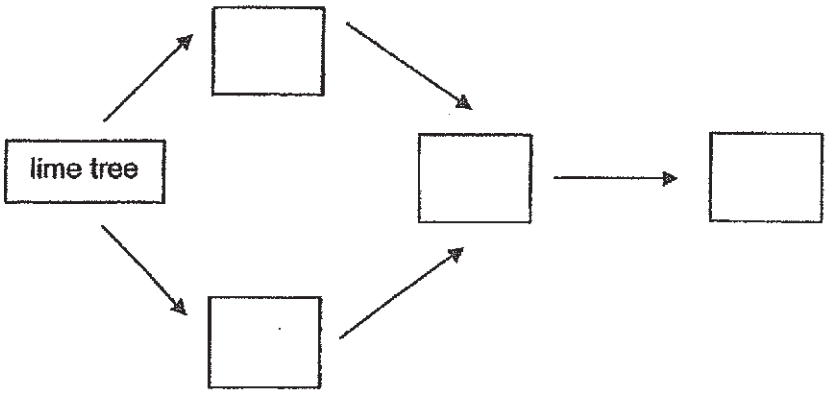
34. Aurelia classified some organisms, A, B, C and D, which she observed in a lime tree and drew a classification chart as shown below.



a) Based on the classification table, fill in the letters, A, B, C and D, which represent the organisms in a likely food web of the lime tree community below. [1]



b) Which one of the organisms, A, B, C or D, would likely be affected directly if the flowers of the lime tree are not pollinated? Give a reason for your answer. [1]

_____

_____

c) If the population of organism D decreases over time, what is the most immediate effect likely to be observed in the lime tree community? Give a reason for your answer. [1]

_____

_____

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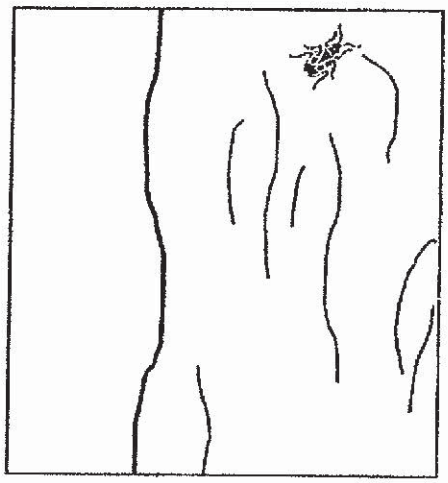
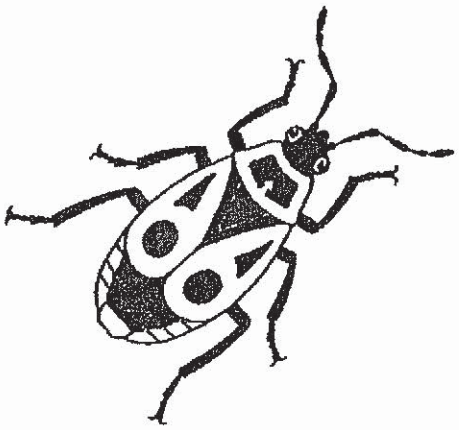
Question 34 continued

Aurelia also discovered another organism E on the bark of the trunk of the lime tree.

The diagrams below show part of the lime tree trunk and the enlarged diagram of organism E.



Part of the lime tree trunk



Enlarged diagram of organism E

d) Based on the diagrams given, explain how organism E is able to avoid being eaten by its predators. [1]

_____

_____

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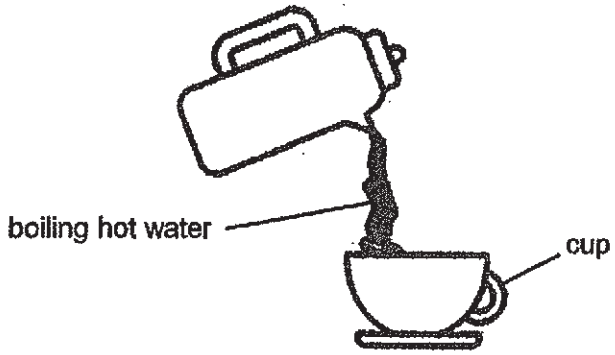
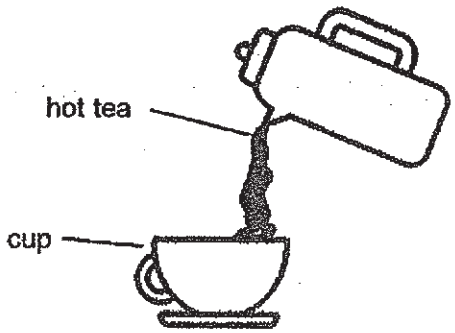
35. Isaac was ordering hot tea from the drinks stall when he noticed that the drink stall assistant poured boiling water into the cup first and waited for a few seconds.

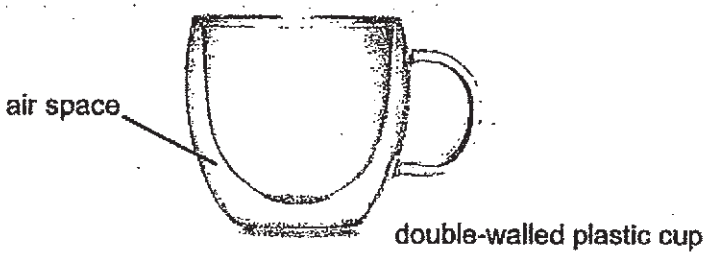


The drinks stall assistant then poured away the boiling hot water in the cup and replaced it immediately with the hot tea as shown in the diagram below.



a) How does this method make the tea hotter than if it was poured into the cup directly? [2]

The diagram below shows a double-walled plastic cup with air space.



b) How does this cup help to keep the hot drinks warm for a longer period of time? [1]

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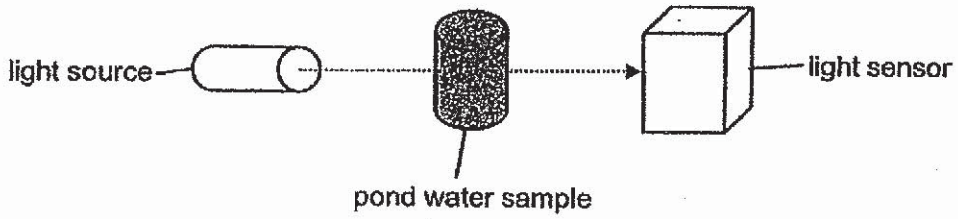
Question 35 continued

c) Isaac poured some iced water in the double-walled plastic cup. [2]

Will there be many water droplets formed due to condensation on the outside of the cup? Explain your answer.

The set-up below uses a light sensor to detect the amount of light coming from the light source.



Ali collected water samples from three ponds, X, Y and Z. The water samples are then placed one at a time between the light source and light sensor. He recorded the amount of light captured by the light sensor in the table below.

Water Sample	Pond X	Pond Y	Pond Z
Amount of light captured (unit)	91	15	206

a) Based on Ali's results, at which pond, X, Y or Z, are you most likely to find water plants growing at the bottom of the pond? Give a reason for your answer. [2]

b) Predict how the population of fishes will change when the number of water plants growing at the bottom of the pond increases.

Give a reason for your answer. [2]

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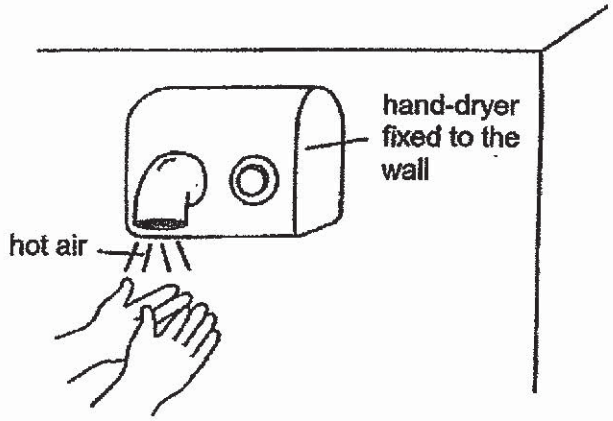
37. In the diagram below, Zac put his wet hands under a hand-dryer, which is fixed to the wall.



a) A process causes Zac's wet hands to be dry after some time.

State and describe how this process help Zac to dry his hands. [1]

b) Zac observed that he could dry his hands more quickly when he rubbed his wet hands under the hand dryer.

Explain why this is so. [2]

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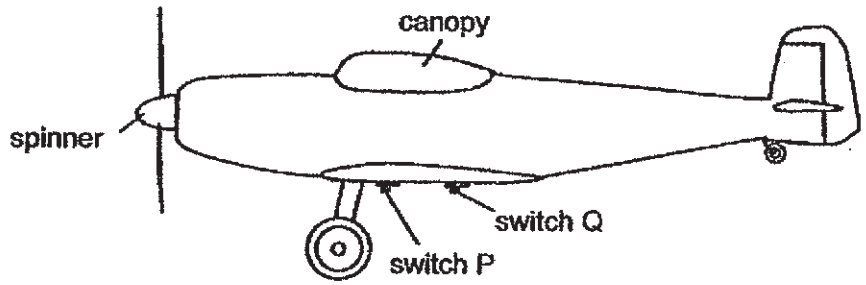
38. Gene has a toy aeroplane that works on batteries.



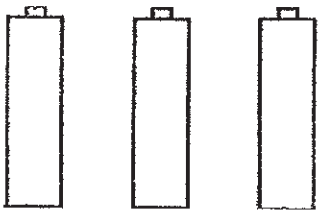
He plays with the toy aeroplane and makes the following observation.

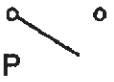
Switched ON	Number of batteries used	Observation
P only	1	Spinner turned. Canopy did not light up.
Q only	2	Spinner did not turn. Canopy lit up.
Both P and Q	3	Both spinner and canopy light turned on.

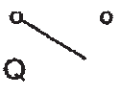
a) The diagram below shows the circuit of the toy aeroplane.

Based on Gene's observation, complete the circuit so that it will work. [2]

motor to turn spinner







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Question 38 continued

b) Of the three batteries, one of them is faulty. Gene would like to continue playing with the toy aeroplane.

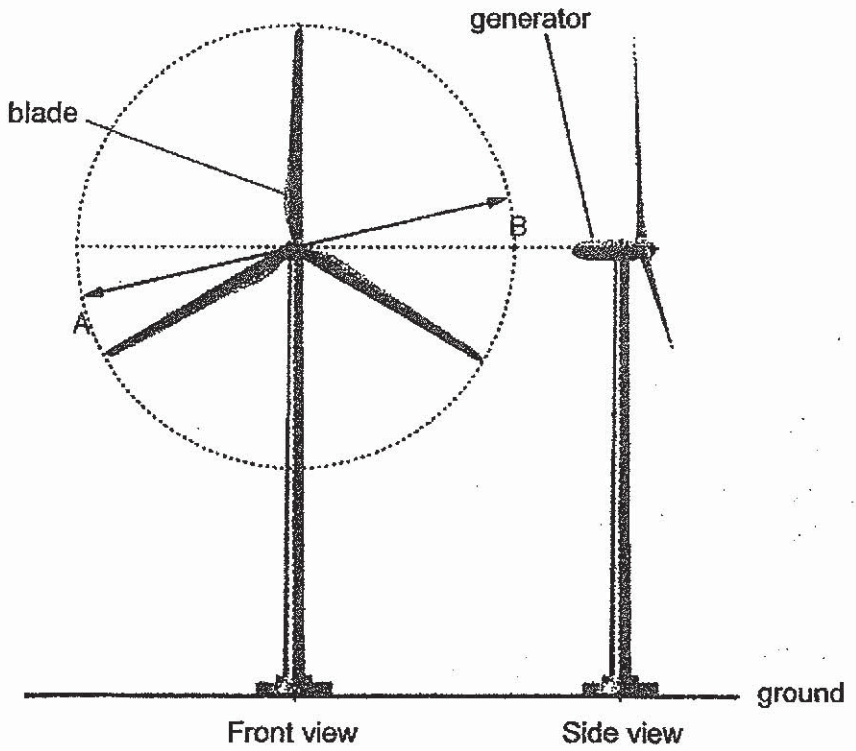
He found the following items in the kitchen drawer.

- a wooden ruler
- a plastic sheet
- a roll of aluminium foil

Using the remaining batteries and one of the given items, describe how Gene could continue to play with the toy aeroplane with both the spinner and canopy turn on. [2]

39. The diagram below shows the front and side views of wind turbine X.

AB is the diameter of the wind turbine.



Wind turbine X

a) State how using wind turbines help us to protect our environment. [1]

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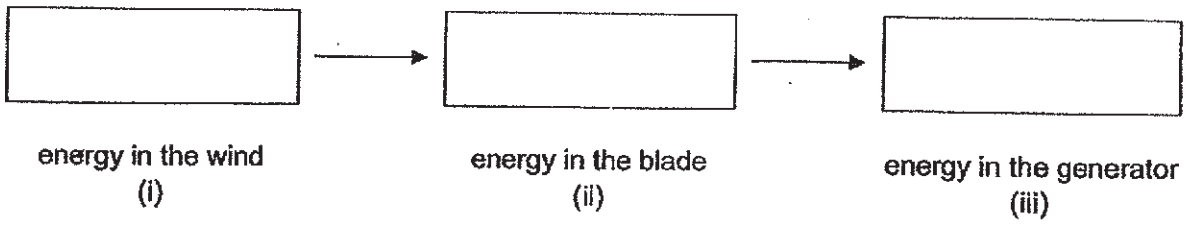
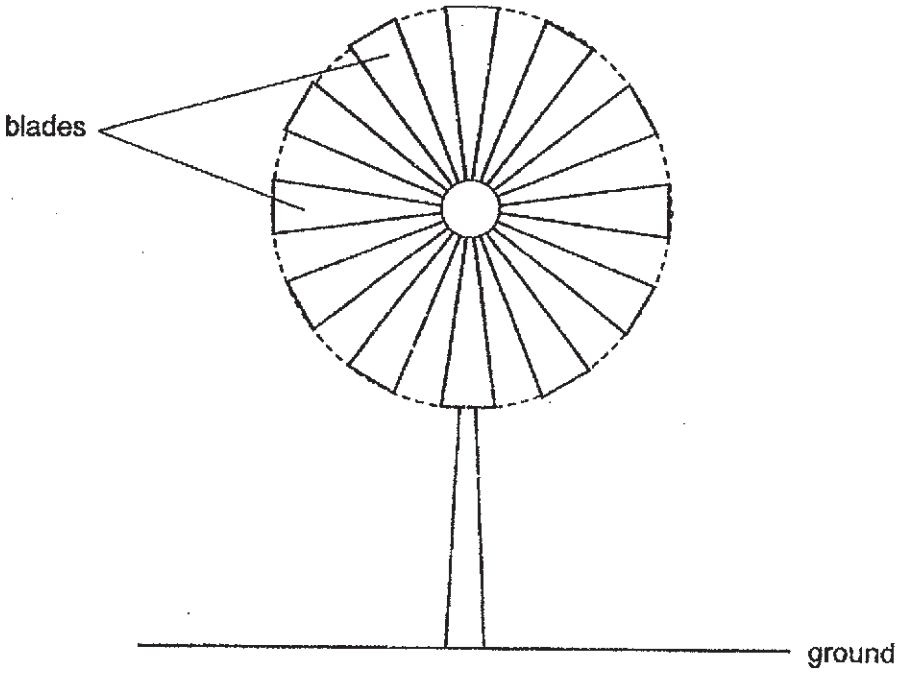
Question 39 continued

b) Fill in the boxes to show the energy changes in a wind turbine. [1]



The diagram below shows another type of wind turbine Y of the same diameter as AB and made of the same material as wind turbine X.



Wind turbine Y

Wind turbine Y is also found at the same location as wind turbine X.

c) The amount of electricity produced by wind turbine Y is less than wind turbine X.

Explain why this is so. [2]

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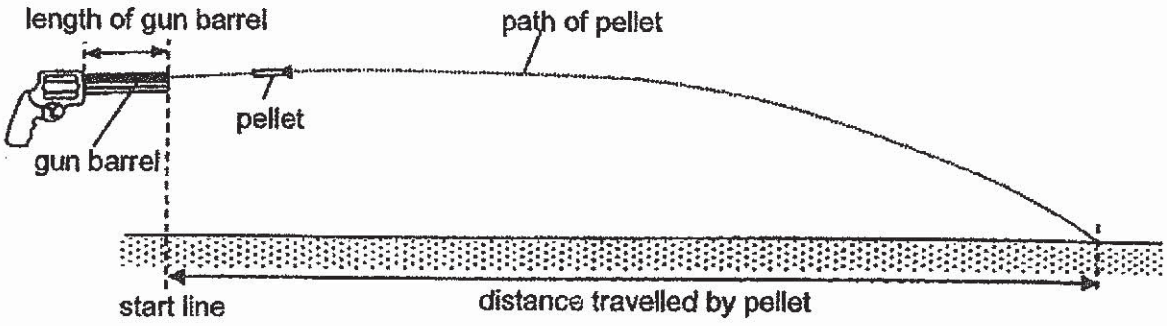
40. Ayush carried out an experiment with three toy guns, X, Y and Z, each with a different length of the gun barrel.

The experiment was carried out in an enclosed area without wind. For each try, he measured the distance travelled by the pellet.



Toy gun	Gun barrel length (cm)	Distance travelled by the pellet (cm)		
		1st try	2nd try	3rd try
X	10	141	147	143
Y	12	166	170	168
Z	14	182	186	179

a) For each of the tries of the same gun barrel length, the distance travelled by the pellet is different.

Give two possible reasons for this. [2]

Reason 1: _____

_____

Reason 2: _____

_____

b) How is the distance travelled by the pellet affected by the length of the gun barrel of the toy gun? [1]

_____

_____

End of Booklet B

Setters: *Mr Tan Joo Nam* and *Mr Matthew Teo Puay Liang*

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SCHOOL : HENRY PARK PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	3	2	1	3	2	4	1	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	2	3	4	3	4	2	3	2	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
1	1	1	3	4	4	2	3		

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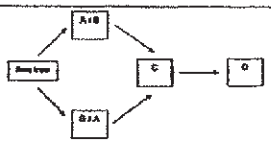
2019 P6 Prelims Science
Correction Sheet

Name: _____ ( ) Class: _____

Booklet B

Question	Suggested answer
29a	It has six legs / three body parts.
29b	The higher the temperature, the shorter the number of days mosquitoes take to develop into adult stage
29c	There will be more places with stagnant water, so more eggs will be laid and develop into the adult stage.
30a	The blood for both human and fish flows to the heart before going to the respiratory organ / lungs or gills for gaseous exchange.
30b	There is more oxygen at C than at F. The blood at C had just obtained oxygen from the lungs while the blood at F is being pumped by the heart to obtain oxygen from the gills.
30c	The filaments increase the surface area for (faster) gaseous exchange.
31a	The amount of carbon dioxide is increasing.
31b	As the amount of carbon dioxide increases, the temperature in the environment increases.
31c	Sea levels will rise and small islands could be submerged due to more floods.
32a	Pollination. It is the transfer of pollen grains from the anther to the stigma of a flower.
32b	Wind pollinated flower. The anthers are sticking outside from the petals and the stigma is large / feathery.
32c	The seeds are dispersed far away to prevent overcrowding and reduce competition for water, nutrients, space and sunlight.
33a	Water
33b	It is for the plant to carry out photosynthesis.
33c	He should conduct the experiment on more plants / leaves of the same plant.
34a	

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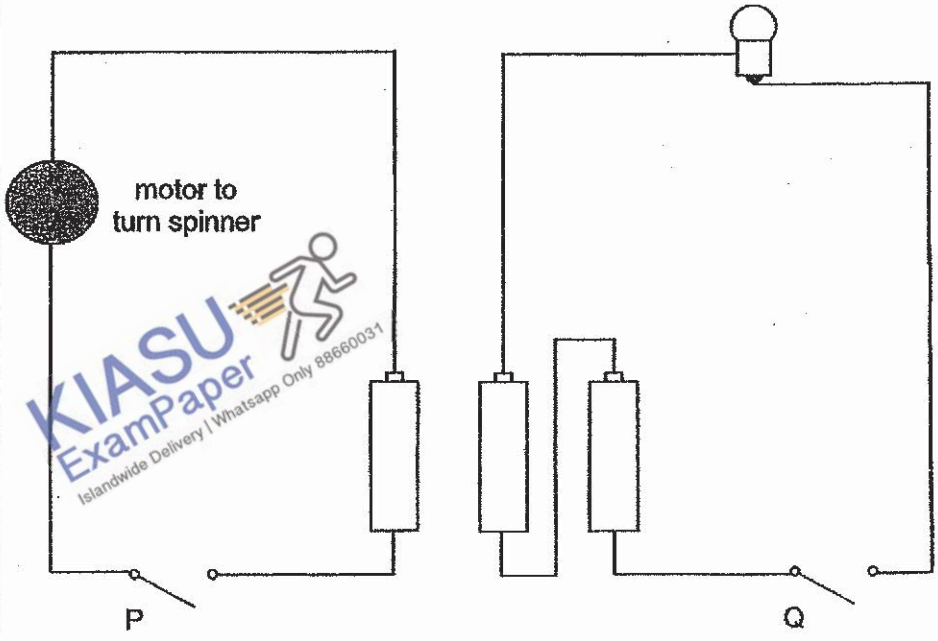
34b	Organism A. Fertilisation cannot take place and fruits cannot be formed.
34c	The population of organism C will increase as there are fewer predators to feed on them.
34d	The 'patterns' on the back of organism E scare away its predators.
35a	The cup gains heat from the boiling water and becomes warm. The hot tea will lose less heat to the cup / gain heat from the cup.
35b	Air is a poor conductor of heat and the hot drinks lose heat to the surroundings at a slower rate / the hot drinks lose less heat to the surroundings.
35c	No. The outer surface of the cup will lose less heat to the iced water, thus the outer surface will not be as cold. Water vapour in the surrounding air will condense more slowly on the outer surface.
36a	Pond Z. The amount of light captured is the highest, thus more water plants can photosynthesise.
36b	Population of fishes will increase. The plants provided the fishes with more food / more oxygen / more shelter from predators.
37a	Evaporation. Water on his hands gains heat from the hot air and evaporates / becomes water vapour.
37b	Rubbing of wet hands produce more heat, causing the water to evaporate more quickly.
38a	

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38b	Replace the faulty battery lighting up the canopy with the aluminium foil.
39a	It reduces the release of pollutants into the air.
39b	(i) kinetic, (ii) kinetic, (iii) electrical
39c	Turbine Y has more mass hence it needs more kinetic energy in the wind to spin the blades.
40a	Each time, he shot the pellet at different heights from the ground. Each time, he shot the pellet at different angles from the ground.
40b	As the length of the barrel of the toy gun increases, the distance travelled by the pellet increases.

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MAHA BODHI SCHOOL

2019 PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET A)

Name : _____ ( )

Class : Primary 6 _____

Date : 29 August 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of **19** printed pages.

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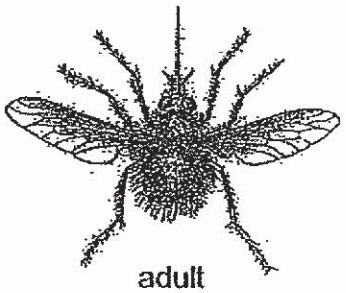
BOOKLET A : [28 x 2 marks = 56 marks]

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade your answer on the Optical Answer Sheet.**

---

1. Study the young and adult of the animal shown below.

young



adult

Which of the following statements is not true?

(1) The animal has a 3-stage life cycle.

(2) The young does not look like the adult.

(3) The animal reproduces by laying eggs.

(4) The young of the animal needs air, food and water.

2. From which of the following organs will water be absorbed into the bloodstream?

(1) heart

(2) lungs

(3) small intestine

(4) large intestine

3. Which of the following could be used to tell the difference between a plant cell and an animal cell?

(1) presence of nucleus

(2) presence of cell wall

(3) presence of cytoplasm

(4) presence of cell membrane

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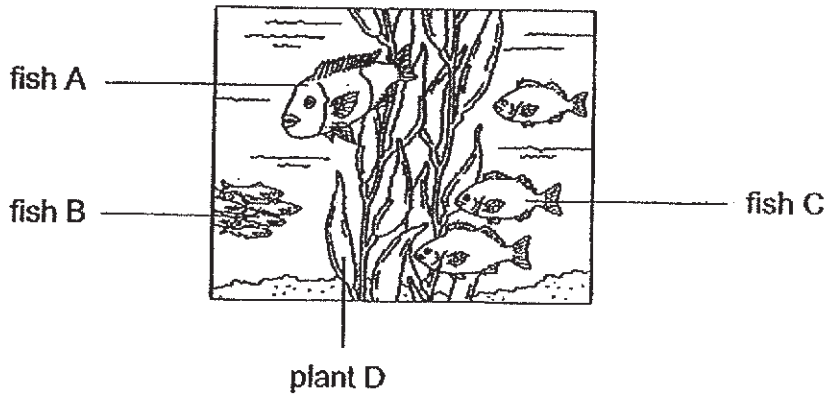
4. The diagram below shows a marine aquarium.



Based on the diagram, which of the following statement is correct?

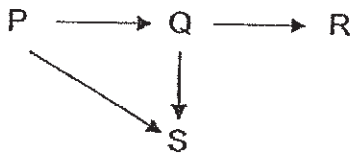
(1) There are four communities.

(2) Fish C forms three populations.

(3) The four populations of organisms form a community.

(4) The community is made of populations of fish A, B and C only.

5. Study the food web below.



Based on the food web, which of the following is correct?

(1) R is a producer.

(2) P is a prey to Q and S.

(3) Q, R and S are consumers.

(4) Q is both a prey and a predator.

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6. Which of the following shows the incorrect way in which organisms obtain energy?

(1) sun → plant

(2) sun → plant-eater

(3) plant-eater → plant and animal eater

(4) animal-eater → plant and animal eater

7. Study the table below.

Living things	Does it make its own food?	Question U	Does it produce flowers?
grass	Yes	Yes	Yes
T	No	No	No
papaya tree	Yes	Yes	Yes

Which of the following is correct?

	Living thing T	Question U
(1)	moss	Does it produce spores?
(2)	bacteria	Does it produce seeds?
(3)	rose plant	Is it dispersed by wind?
(4)	bird's nest fern	Is it dispersed by wind?

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8. Kumar wanted to find out if light is needed for seeds to germinate.

He placed a similar number of seeds into set-ups with different conditions as shown below.

Set-up	Amount of water given (ml)	Amount of light received (units)	Surrounding temperature (°C)
A	50	1000	5
B	50	200	30
C	50	0	35
D	100	0	35
E	100	1000	35

Which pair of set-ups should he use for a fair experiment?

(1) A and B

(2) A and C

(3) B and E

(4) D and E

9. Which of the following are the functions of a stem?

A. absorb water and mineral salt
B. hold the plant firmly to the ground
C. transport water to other parts of the plant
D. support the leaves so they can get more sunlight

(1) A and B only

(2) A and C only

(3) B and D only

(4) C and D only

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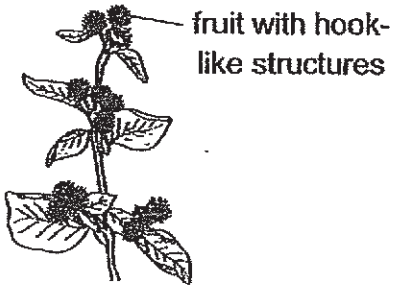
10. A new island was formed in the middle of the sea due to volcanic eruptions. Within a few years, plants started growing before any animals started living on the island.

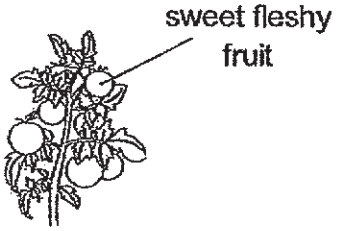
Which of the following plant is most likely to be found on the island before the animals started living on the island?

(1)

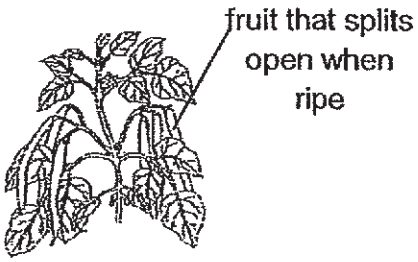
(2)



(3)



(4)



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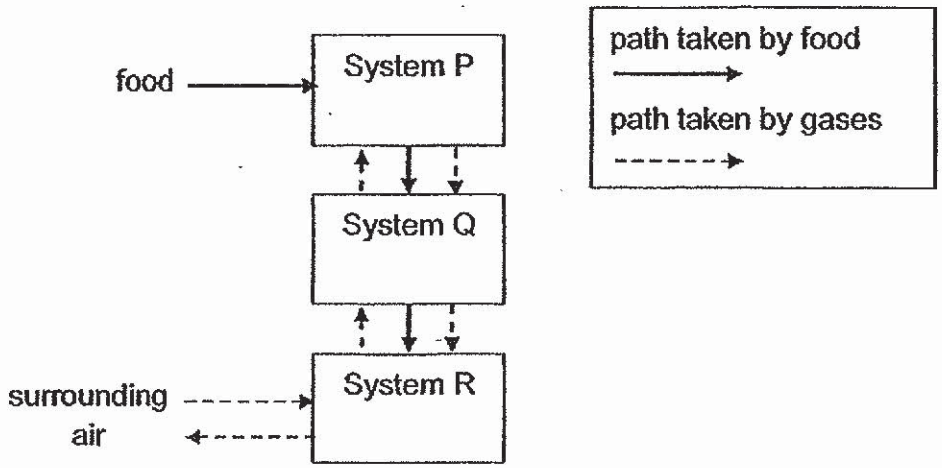
11. The diagram below shows how food and gases are transported in the human body.



Which systems do P, Q and R represent?

	Circulatory system	Respiratory system	Digestive system
(1)	R	Q	P
(2)	P	R	Q
(3)	R	P	Q
(4)	Q	R	P

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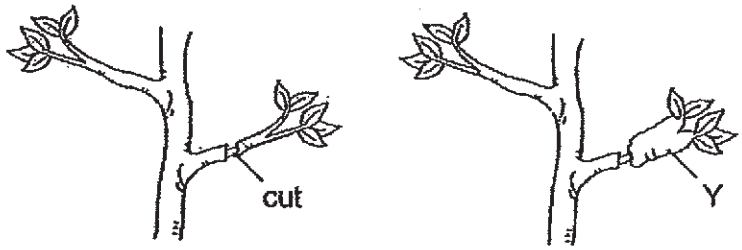
12. A cut was made on the branch of a plant as shown below. After some time, part Y was observed to be swollen.



Based on your observation, which of the following statement(s) is/are correct?

A. Food was accumulated at Y.
B. The roots could not receive any food.
C. Water could not be transported above the cut.
D. The food-carrying tubes were removed at the cut.

(1) C only
(2) A and D only
(3) B and C only
(4) A, B and D only

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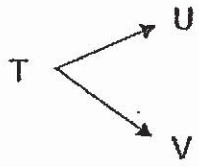
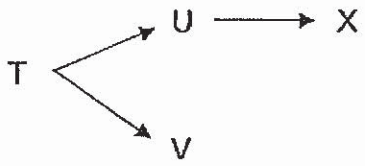
13. Food relationships between organisms T, U and V, are shown in the food web below.

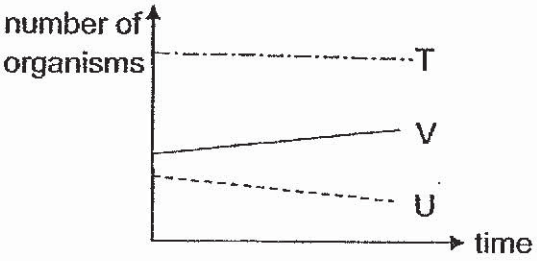


After some time, organism X was introduced to the habitat as shown in the food web below.

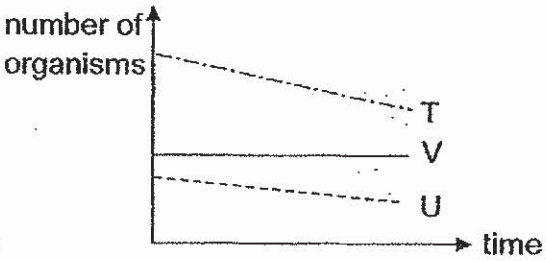


Which of the following graphs correctly shows how the number of organisms, T, U and V change after organism X was introduced?

(1)



(2)



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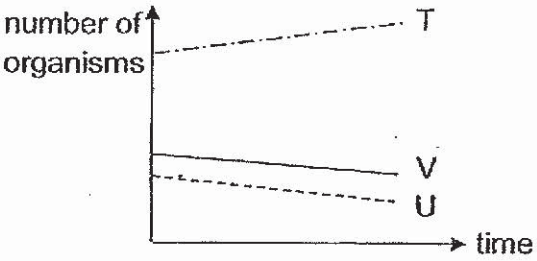

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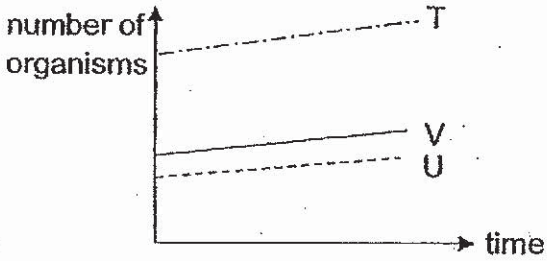

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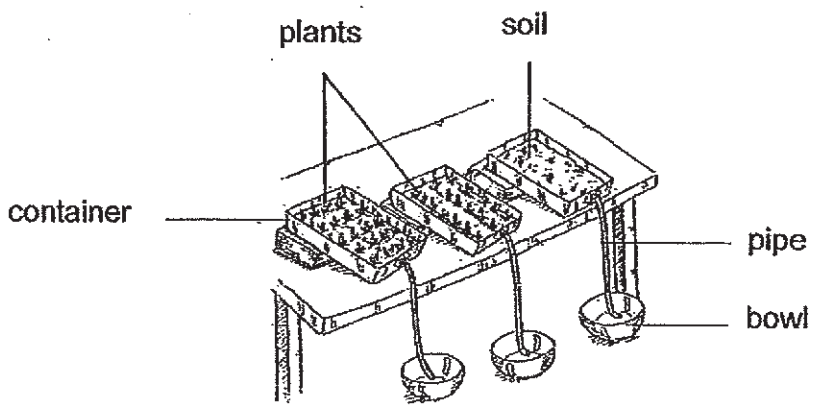
14. Tom set up an experiment as shown below to find out how plants affected soil erosion. He used the same type of plants for his experiment. He would pour water into the soil and after some time, water and soil would flow into the bowl.



Which of the following variables should Tom keep the same to ensure a fair test?

A. amount of roots in the soil
B. amount of soil in the container
C. amount of water and soil collected
D. amount of water poured into the soil

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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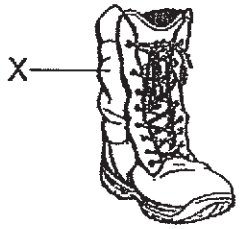
15. A pair of boots needs to be able to be used in different environments without tearing and keeping the feet dry.



Which of the following properties must the material for Part X of the boots have?

A. strong
B. flexible
C. waterproof
D. able to float in water

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

16. Which of the following statements about evaporation and boiling of water is correct?

	Evaporation	Boiling
(1)	water gains heat	water gains heat
(2)	occurs at a specific temperature	occurs at many temperatures
(3)	Water vapour changes from gas to liquid	water changes from liquid to gas
(4)	bubbles are observed during the process	bubbles are observed during the process

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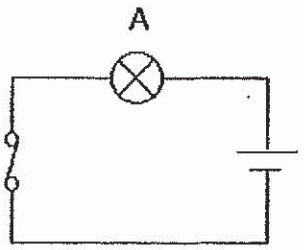
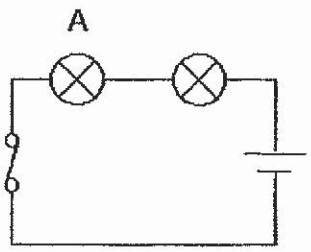
17. In which of the following circuits will bulb A be the brightest?

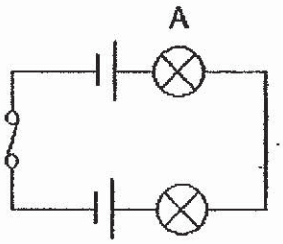
(1)



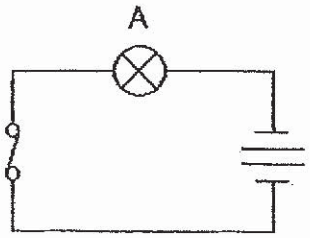
(2)



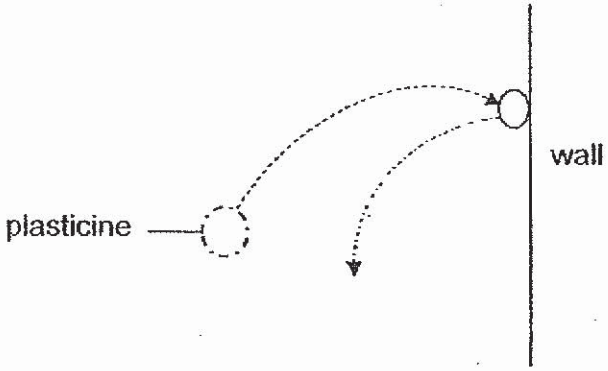
(3)



(4)



18. A piece of plasticine was thrown against a wall as shown in the diagram.



Which of the following could have happened to the piece of plasticine?

A. The plasticine changed shape.
B. The plasticine stopped moving.
C. The plasticine bounced off the wall.
D. The mass of the plasticine increased.

(1) C only
(2) A and C only
(3) A, B and C only
(4) A, B, C and D

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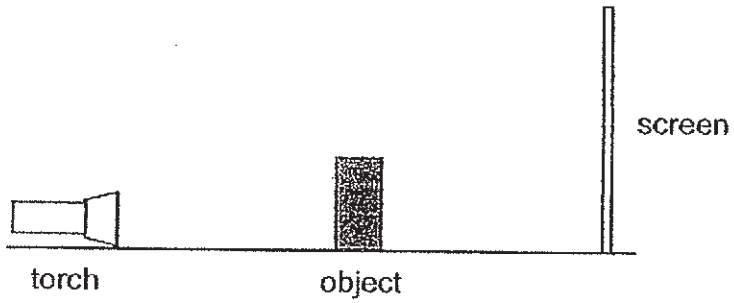
19. In which of the following would friction be useful?

A. Car moving on the road.
B. Man pushing a heavy box.
C. Boy holding a cup of water.
D. Girl writing on a piece of paper.

(1) A and B only
(2) C and D only
(3) A, C and D only
(4) A, B, C and D

20. The diagram below shows how a shadow of an object is formed on a screen.



What can be done so that a bigger shadow can be formed?

A. Move the object nearer to the torch.
B. Move the object nearer to the screen.
C. Move the screen further away from the object.
D. Move the torch and screen further away from the object.

(1) A only
(2) B only
(3) A and C only
(4) B and D only

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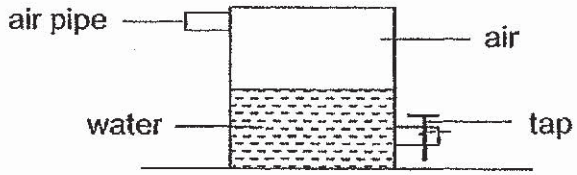
21. Jason conducted an experiment by heating substance Q. The table below shows the characteristics of Q at starting temperature of 30°C and at 100°C after being heated for some time.

Temperature of Q (°C)	Characteristics of Q
30	Has a definite volume and a definite shape
100	Has a definite volume but no definite shape

Based on Jason's experiment, which of the following is possible?

	Melting point of Q (°C)	Boiling point of Q (°C)
(1)	10	200
(2)	20	100
(3)	30	50
(4)	40	300

22. The diagram below shows a sealed metal container filled with water and air.



Which of the following is most likely to be correct after more air is pumped into the container?

	Volume of air	Reason
(1)	increase	Air has no definite shape.
(2)	increase	Air has no definite volume.
(3)	remain the same	Air occupies space.
(4)	remain the same	Air can be compressed.

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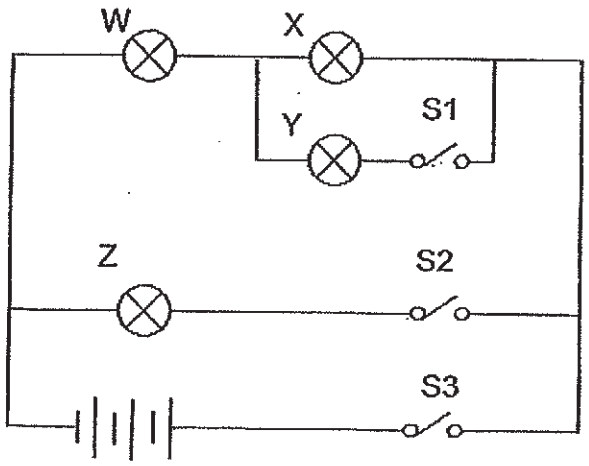
23. A circuit diagram is shown below.



Which of the following is correct?

	Closed switch(es)	Bulb that lights up			
		W	X	Y	Z
(1)	S1	✓		✓	
(2)	S2	✓	✓		✓
(3)	S1 & S3	✓	✓	✓	✓
(4)	S2 & S3	✓	✓		✓

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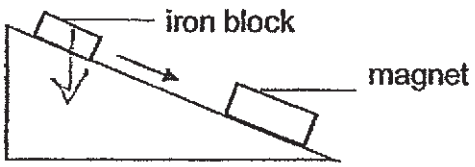
24. A stationary iron block was resting on a slope. A magnet was then placed at the bottom of the slope as shown in the diagram below. The iron block then moved down the slope until it touched the magnet.



Which of the following statements are correct?

A. Gravitational force is acting on the iron block.
B. Frictional force is acting on the iron block when it is at rest.
C. Frictional force acting on the iron block is greater than the magnetic force acting on it.
D. Gravitational force and the magnetic force are acting on the iron block in the same direction.

(1) A and B only
(2) B and C only
(3) A, C and D only
(4) A, B, C and D

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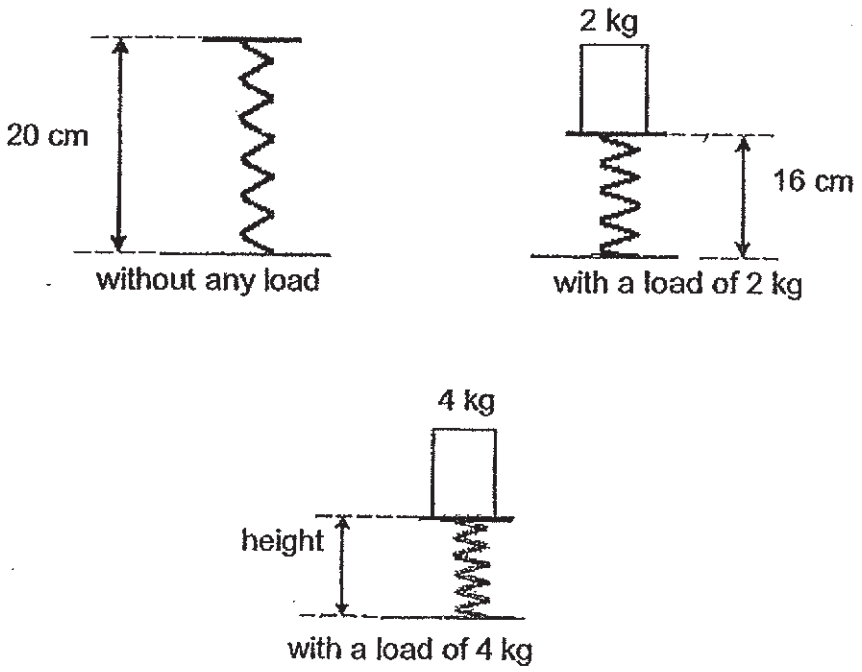
25. The diagram below shows the length of a spring before and after a mass of 2 kg and 4kg are placed on it.



What is the height of the spring when a mass of 4 kg is placed on the spring as shown in the diagram below?

(1) 8 cm

(2) 12 cm

(3) 16 cm

(4) 18 cm

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26. A boy has a four pieces of metals, P, Q, R and S. The table below shows the interaction between the metals when they are brought closed together.

Metals	Observation
P and Q	no attraction or repulsion
P and S	attraction
Q and S	attraction
R and S	no attraction or repulsion

Which of the following about metals P, Q, R and S is correct?

	P	Q	R	S
(1)	magnetic material	magnetic material	non-magnetic material	magnet
(2)	magnetic material	non-magnetic material	magnet	magnetic material
(3)	non-magnetic material	magnet	magnetic material	magnetic material
(4)	magnet	magnet	non-magnetic material	magnet

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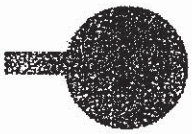
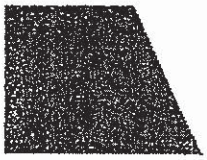
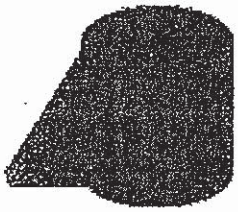
27. The diagram below shows the shadow cast by an unknown object from three different directions.

Direction 1	Direction 2	Direction 3
		

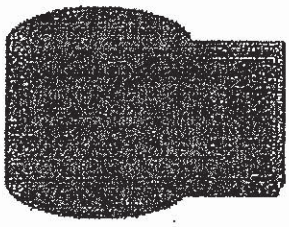
Which of the following is the unknown object?

(1)

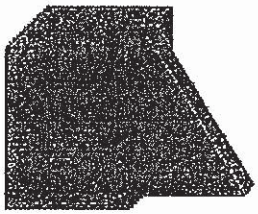


(2)

(3)



(4)



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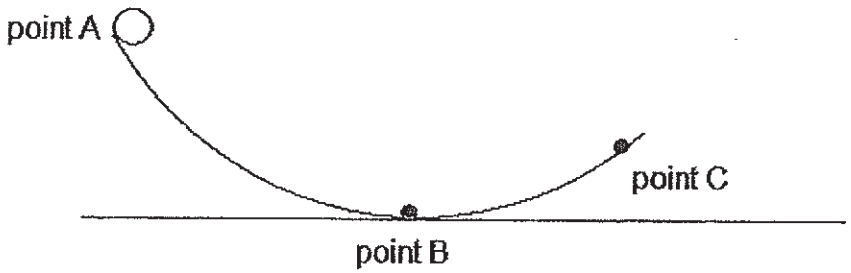
28. A ball was released at point A on a ramp and it rolls down the ramp.



Which of the following correctly shows the amount of potential energy and kinetic energy of the ball from point A to point C?

	Point A		Point B		Point C	
	Kinetic Energy (units)	Potential Energy (units)	Kinetic Energy (units)	Potential Energy (units)	Kinetic Energy (units)	Potential Energy (units)
(1)	10	20	30	0	15	15
(2)	0	40	40	0	25	20
(3)	30	0	30	5	20	15
(4)	0	20	20	0	15	5

END OF BOOKLET A

GO ON TO BOOKLET B

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MAHA BODHI SCHOOL

2019 PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET B)

Name: _____ ( )

Class: Primary 6 _____

Date : 29 August 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answer in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		100

Parent's signature: _____

This booklet consists of 19 printed pages.

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BOOKLET B : [44 marks]
For questions 29 to 41, write your answers in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part-question.

29. A student observed some animals and recorded her observations in the table below.

Animals	has scales	has wings	has 4 legs	breathes underwater	breathes on land
P	x	x	✓	x	✓
Q	✓	x	x	✓	x
R	x	x	✓	✓	✓
S	x	✓	x	x	✓

(a) Based on the table, state the animal group that animal R belongs to. [1]

(b) The animals P, Q, R and S were classified into two groups X and Y.

Group X	Group Y
P	Q
S	R

Write a suitable heading for X and Y. [1]

X: _____

Y: _____

Marks : / 2

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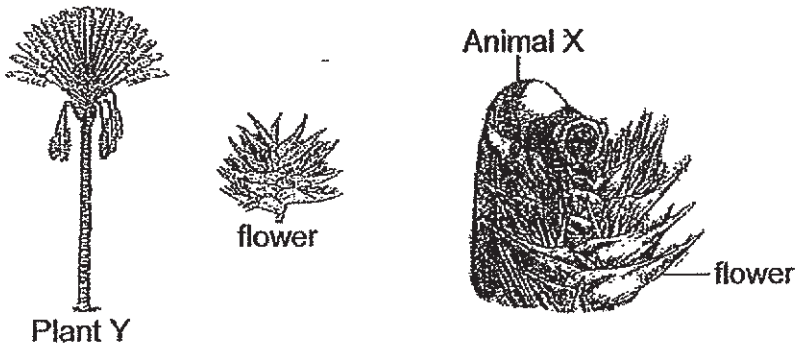
30. The pictures below show Plant Y, its flower, and Animal X which belong to the same habitat. Animal X feeds on the nectar inside the flower.



(a) State how Animal X benefits Plant Y. [1]

_____

_____

(b) Fruits of Plant Y split open to reveal seeds with bright blue flesh that Bird Z feeds on.

How does the bright blue flesh of the seeds benefit Plant Y? [2]

_____

_____

_____

(c) A disease wiped out the population of Animal X in the area.
Give a reason why this will lead to a decrease in the population of Bird Z. [1]

_____

_____

_____

Marks : / 4

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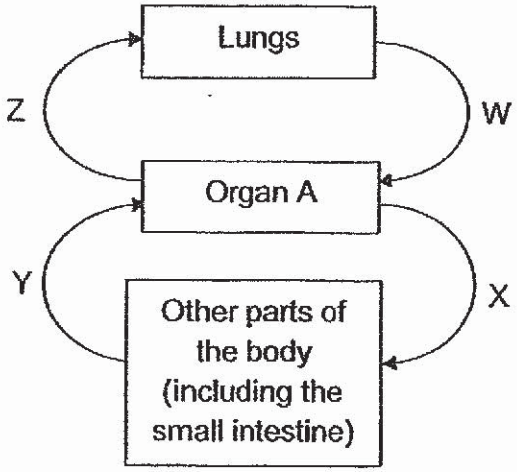
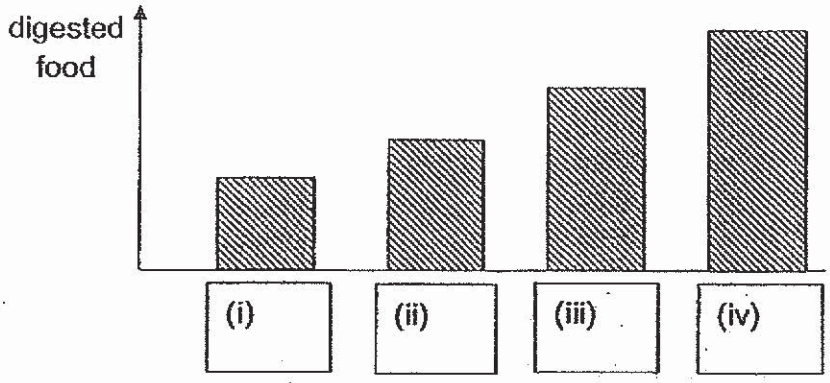
31. The diagram below shows how blood flows in blood vessels W, X, Y and Z in a human.



(a) What is organ A? [1]

(b) The graph below shows the amount of digested food found in blood taken from different parts of the body. Place the correct labels, W, X, Y and Z, in the boxes below. [1]



(c) All the digested food has already been absorbed into the bloodstream. Will the amount of digested food in the blood vessels decrease faster or slower during exercise compared to before exercising? Give a reason for your answer. [1]

Marks : / 3

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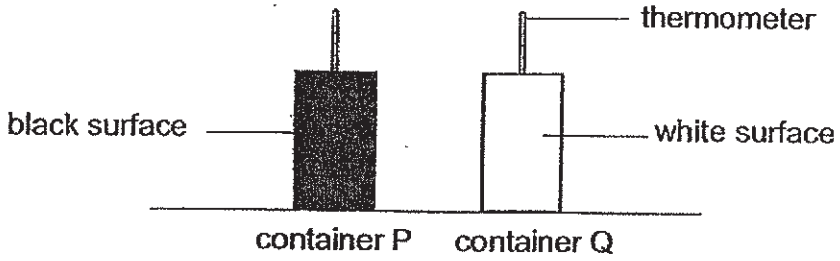
32. William wanted to find out how colour of the surface affects the rate of heat absorption. He conducted an experiment using two identical air-tight containers, P and Q, as shown. Container P had a black surface while container Q had a white surface. He placed the containers under the sun. At first, the thermometers showed the same reading.



After a few hours, he observed that the temperature in container P was higher than that in container Q.

(a) What could William conclude from this observation? [1]

_____

_____

Animal G lives in a hot and sandy place.

(b) Explain why having a white outer covering benefits animal G. [1]

_____

_____

Marks : / 2

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(c) The young of animal G usually has a sand-coloured outer covering instead of a white one.
Explain why having such an adaptation enhances its survival. [1]

(d) During cold windy nights, animal G would be resting inside a hole it dug instead of just resting on top of the sandy ground.

Explain how this behavior helps to keep animal G warm. [2]

Marks : / 3

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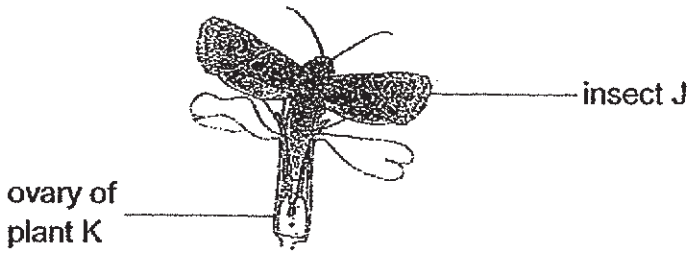
33. The diagram below shows insect J laying eggs into the ovary of a flower of plant K. Insect J is a pollinator of plant K. The young of insect J eats the seeds of plant K.

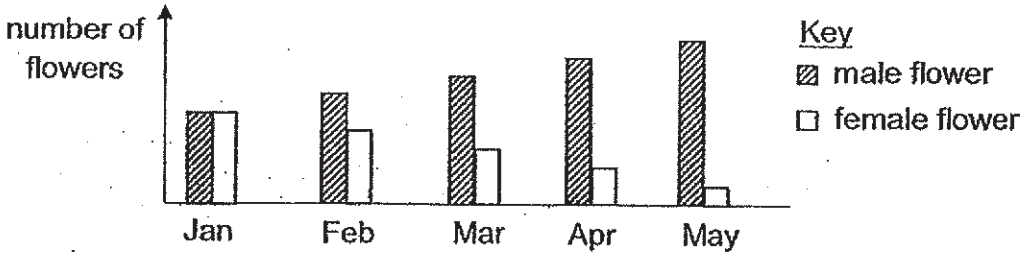


(a) Explain how pollination enhances the survival of young insect J. [1]

(b) Before insect J flies off, it would mark the flower with a smell to prevent other insects from laying eggs.

Explain why this is an advantage to the young insect J when it eats the seeds of plant K. [1]

(c) The graph below shows how the number of flowers of plant K change over time.



Based on the information given above, how would the population of insect J change over time? Explain your answer. [1]

Marks : / 3

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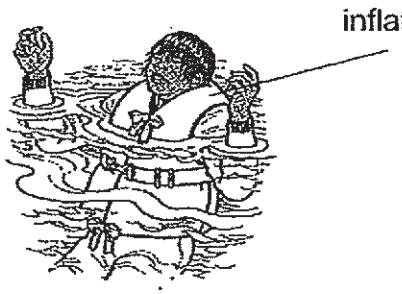
34. A life jacket is used to prevent a person from drowning in water. The life jacket must be inflated with air as it is the air that prevents the person from sinking in water.



(a) Material W was used to make a life jacket. The life jacket was inflated and placed in water. After some time, the life jacket sank and the inside was filled with water. There were no holes in the life jacket.

Suggest a property that was missing in Material W that did not allow the life jacket to stay afloat. [1]

_____

(b) Life jackets are usually kept under the seats of airplanes. It is deflated in order for it to take up less space.

State the property of the material that allows life jackets to be deflated. Explain how this property allows the life jacket to fit neatly under the seat. [1]

_____

_____

Marks : / 2

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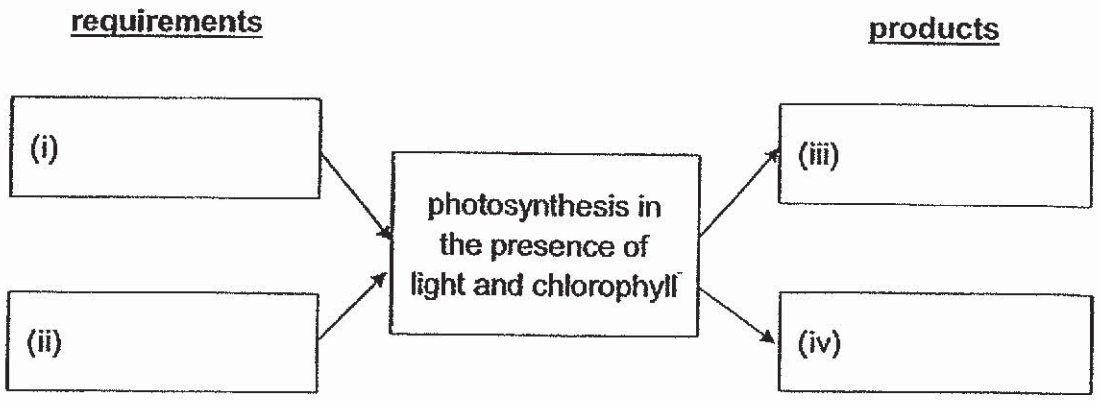
35. (a) Fill in the boxes to list the requirements and products of photosynthesis. [1]



Marks : / 1

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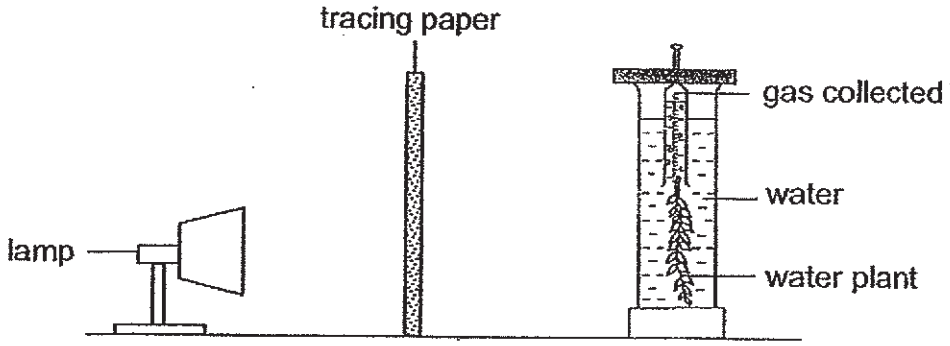
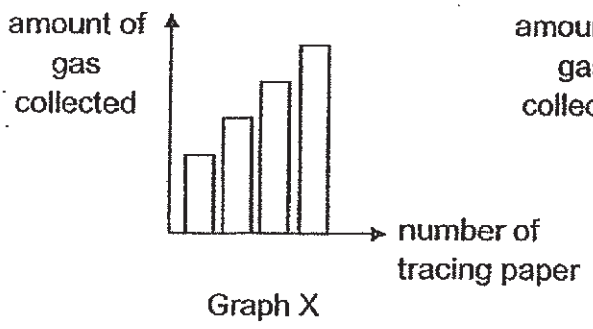
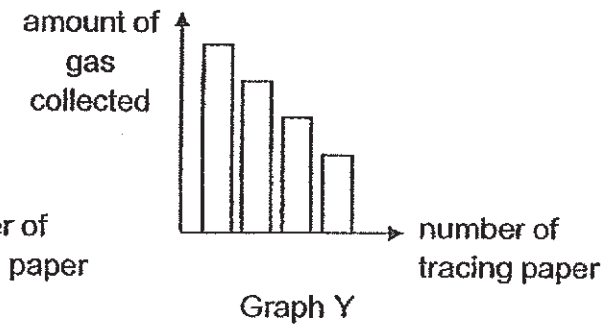
(b) Zelia conducted an experiment on photosynthesis in a dark room using the set-up below. She measured the amount of gas collected in the tube after some time.



Zelia repeated her experiment by increasing the number of pieces of tracing paper and keeping all other variables constant. The graphs X and Y below show her possible results.



Graph X



Graph Y

Which graph, X or Y, correctly shows how the amount of gas collected changed as the number of pieces of tracing paper changed? Explain your answer. [2]

Marks : / 2

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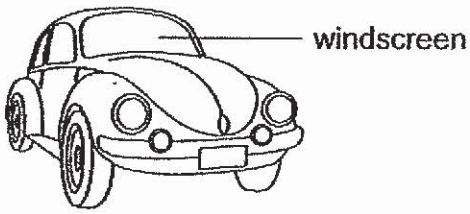
36. The diagram below shows a car.



After a cool night, tiny water droplets are observed on the windscreen the next morning.

(a) Explain how water droplets are formed on the windscreen. [1]

_____

_____

(b) Give a reason why water droplets are less likely to form when the windscreen becomes warm after some time. [1]

_____

_____

(c) Explain how the water droplets disappear when the windscreen continues to remain warm for a long time. [1]

_____

_____

Marks : / 3

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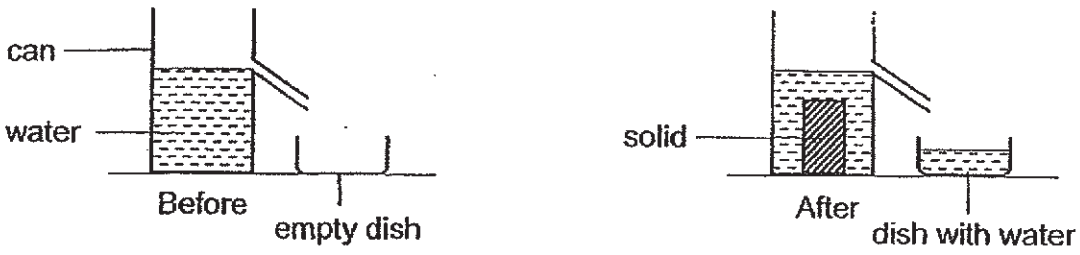
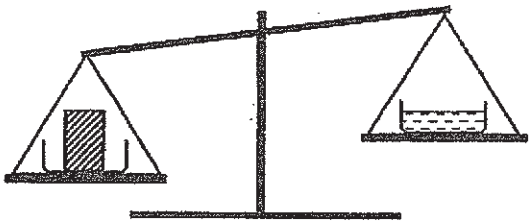
37. Shanti filled a can with water as shown below. She then placed a solid into the can and collected the water that flowed out from it.



(a) Based on the information above, which property of the solid allowed water to flow out? [1]

_____

Shanti wanted to compare the mass of the water that was collected with the mass of the solid. She took the solid out from the can and dried it. She then placed the dish of water and the solid onto a balance. She used similar dishes to hold the solid and water on the balance. The diagram below shows her observation.



(b) (i) Explain why the same piece of solid had to be dried before placing it onto the balance. [1]

_____

_____

(ii) Based on the above observation, what could she conclude about the mass of the water that was collected? [1]

_____

_____

Marks : / 3

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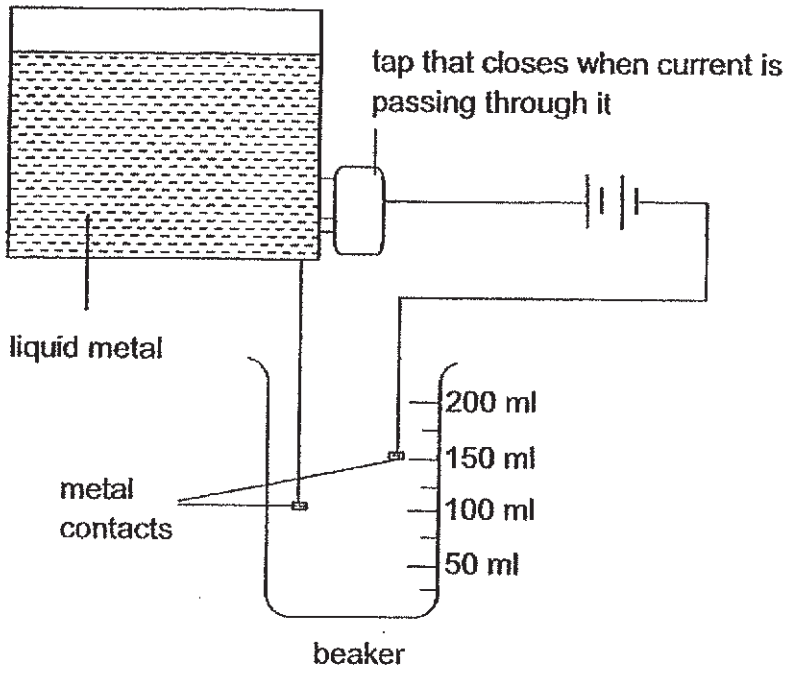
38. (a) The circuit shown below is designed to dispense a fixed amount of liquid metal into a beaker.



(i) Based on the circuit diagram above, how much liquid metal will fill the beaker before the tap closes? [1]

_____ ml

(ii) How can you change the design to dispense 200 ml of liquid metal instead? [1]

_____

_____

Marks : / 2

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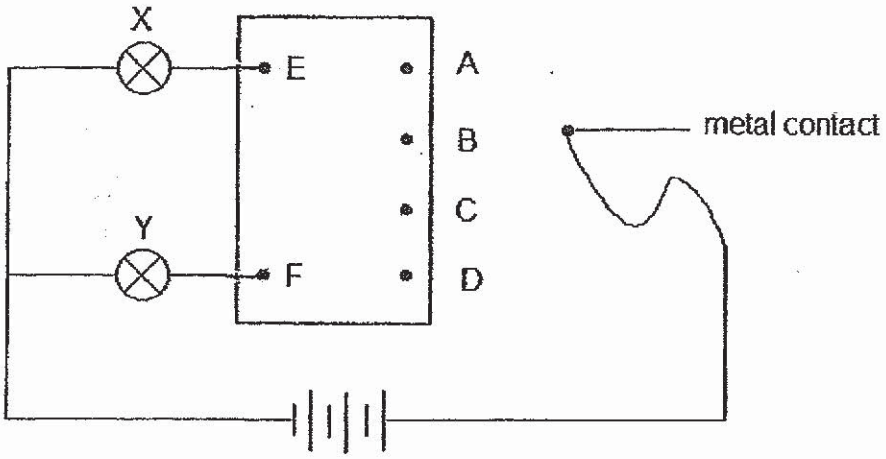
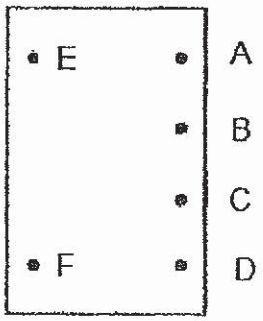
(b) A student conducted an experiment using a circuit card joined to a parallel circuit as shown below.



The table below shows the results when the metal contact is placed at points A to D.

	Bulb that lights up	
Metal contact at point	X	Y
A	✓	
B	✓	
C		✓
D		

Draw in the circuit card below to show how the points are connected. [1]



Marks : / 1

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39. A metal clip, held by a string to the table, was attracted by the magnet and remained hanging in the air as shown in Diagram 1.
The experiment was then repeated by placing the magnet at a higher position above the table and the metal clip did not remain hanging in the air as shown in Diagram 2.

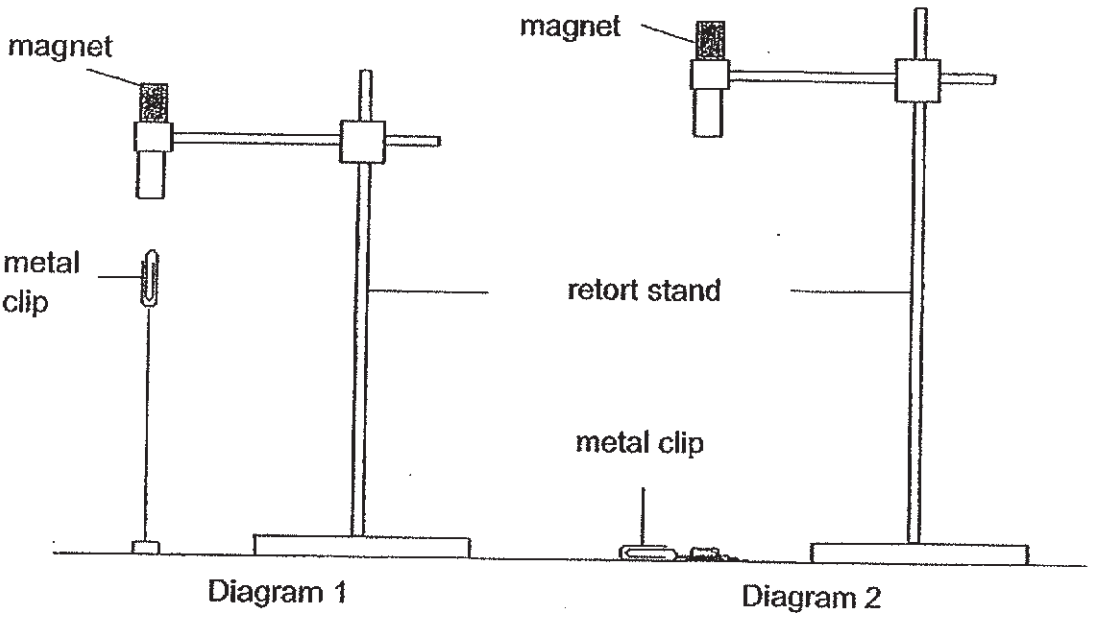

Diagram 1 Diagram 2

(a) Explain why the metal clip dropped to the table when the magnet was placed higher. [2]

Marks : / 2

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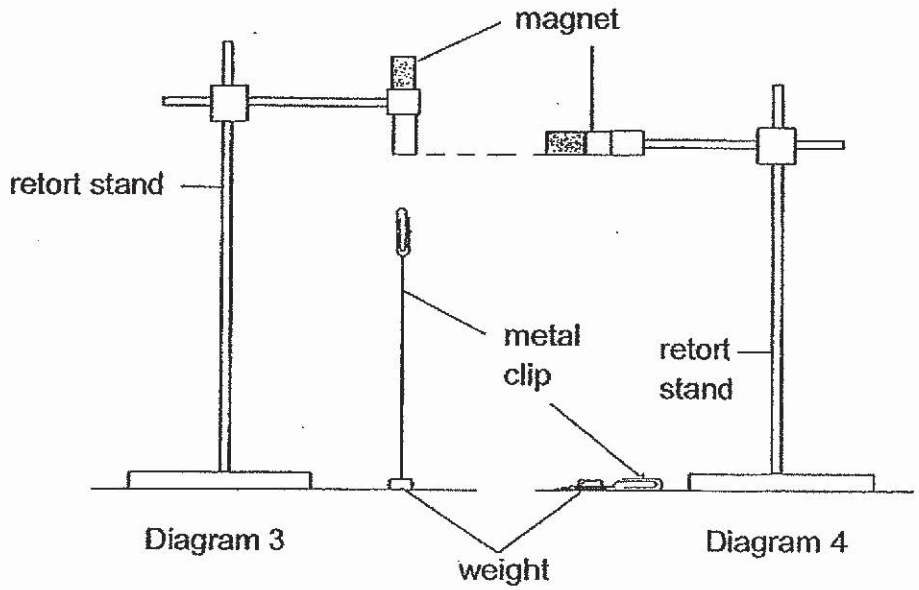
(b) Another experiment was conducted as shown in Diagram 3 where the weight holding the metal clip is placed directly below the magnet. The experiment was repeated by placing the same magnet horizontally as shown in Diagram 4 where the weight holding the metal clip is placed directly below the center of the magnet.



Explain why the metal clip in Diagram 4 will not be attracted. [1]

Marks : / 1

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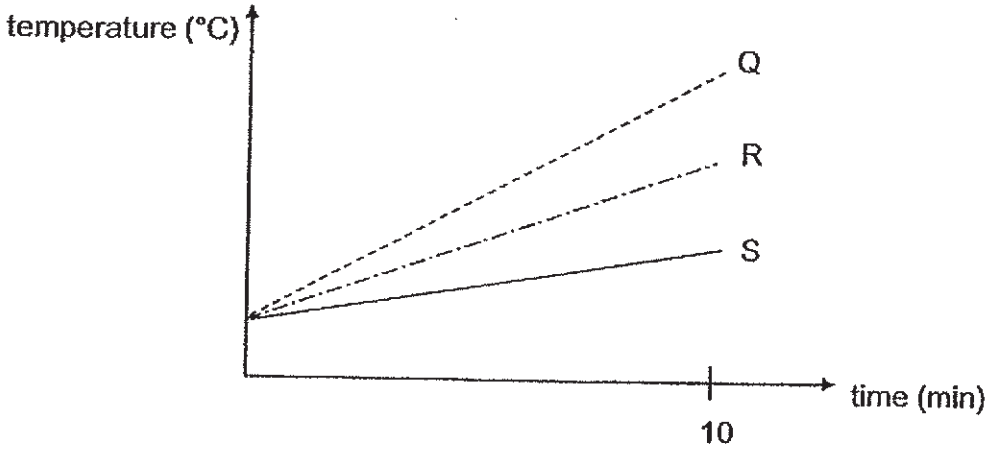
40. Three different materials, Q, R and S were heated up and the graph below shows how temperatures of the materials change over time.



(a) What is the relationship between the time taken to heat the materials and the temperature of the materials? [1]

(b) Which material is most suitable for making a box to keep ice so that the ice will take the longest time to melt? Explain your answer. [2]

Marks : / 3

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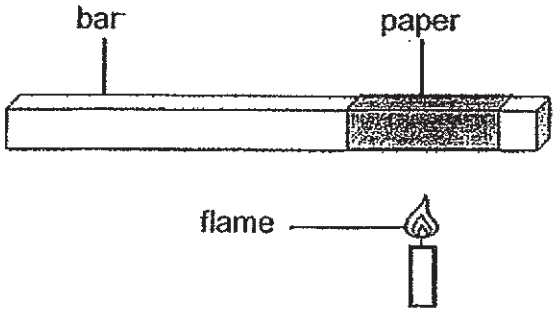
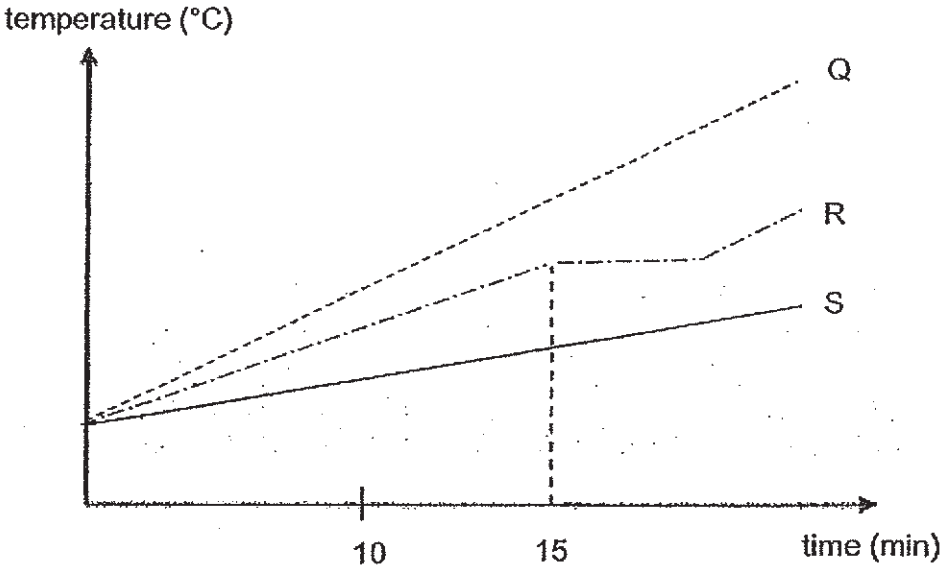
(c) A piece of paper was used to cover a bar made of material Q and held over a flame as shown in the diagram. The experiment was repeated with materials R and S.



The paper took the longest time to burn when it is placed on material Q. Explain this observation. [1]

(d) The three materials were heated over a longer period of time.



State the process that occurred to material R at the 15th minute. [1]

Marks : / 2

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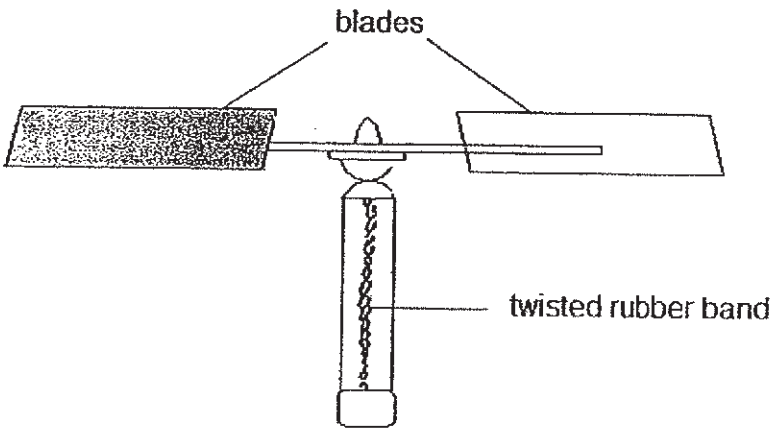
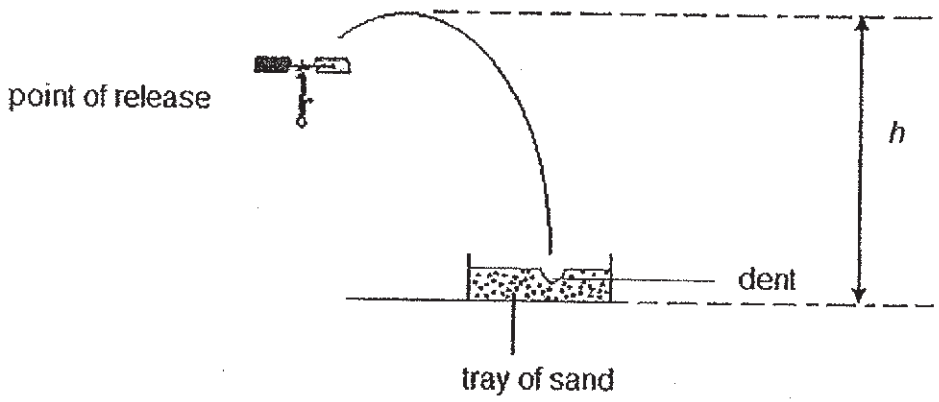
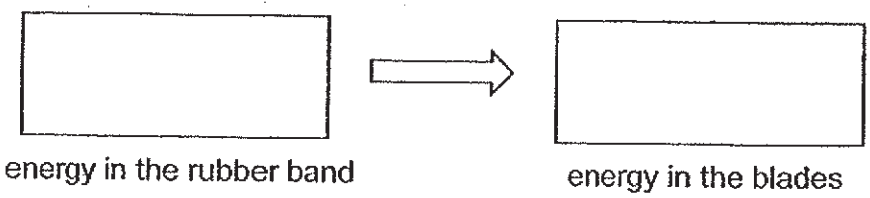
41. Alan made a toy as shown below.



The blades were joined to the bottom of the toy with a rubber band. When the blades were turned several times, the rubber band was twisted. Upon release, the blades turned and the toy flew upwards to height *h* before it dropped onto a tray of sand. The toy made a dent in the sand.



(a) State the energy conversion that occurs in the toy. [1]



Marks : / 1

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(b) In his second attempt to fly the toy, Alan twisted the rubber band fewer times. The toy created a smaller dent when it landed.
Explain this observation. [2]

(c) Alan replaced the blades with similar-sized but heavier blades. The toy flew to the same height, *h* before it landed in the tray of sand.
Would the depth of the dent remains the same, increase or decrease?
Explain your answer in terms of energy changes. [2]

~ END OF PAPER ~

Marks : / 4

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SCHOOL : MAHA BODHI PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	2	3	3	2	2	4	4	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	2	1	4	3	1	1	2	3	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	4	4	1	2	1	1	4		

SECTION B

Q29)	a)Amphibian b)X: Does no breathe underwater Y: Breathes underwater
Q30)	a)When animal X goes to the flower of plant Y, its body will brush past the anther, causing pollen grains to stick on its body. When X goes to the flower of another plant Y, in body will brush past the stigma, so pollen grains on X's body would be transfer to the stigma pollinate the flower. b)The bright blue colour attracts birds which help disperse the seeds of plant Y further away. c)The population of Plant Y would decrease as there are no X to pollinate the flower, so less fertilisation would occur and less ovules would develop into seeds. There would be less seeds for Z to consume, so the population of Z would decrease.

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Q31)	a)Heart b)(i) X (ii) W (iii) Z (iv) Y c)Decrease faster. When exercising, the body needs more energy and digested food is needed for energy, so the amount of digested food in the blood vessels would decrease faster.
Q32)	a)The colour black absorbs heat faster than the colour white. b)Animal G would gain heat slower from the surroundings, so G would be able to keep cool. c)The sand-coloured outer covering would blend in with the surroundings, so it would be harder for predators of the young of animal G to spot and feed on the young. d)Less surface area of the body is exposed to the wind. Animal G loses less heat to surrounding.
Q33)	a)The flower will be fertilised and develop into fruits, the young can feed on the seeds of the fruit. b)There would be less competition for food which is the seeds, so young insect J would have more food to consume. c)The population will decrease. There are less ovaries for insect J to lay eggs in.
Q34)	a)Waterproof b)Flexibility. It needs to be flexible so that the life jackets can be folded.
Q35)	a)(i) Carbon dioxide (ii) Water (iii) Food (iv) Oxygen b)Y. As the number of tracing paper increased, the amount of light received by the plant decreases, the plant would photosynthesis slower and give out less oxygen, so the amount of gas collected decreases.
Q36)	a)The windscreen lost heat to the surroundings during the night, so temperature of the windscreen is lower than the surroundings in the morning. The water vapour in the surroundings air lost heat to the windscreen and condense into water droplets. b)The water vapour could not lose heat to the windscreen. c)The water droplets gained heat from the warm windscreen and

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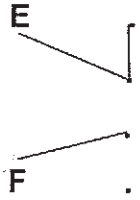
	evaporated into water vapour.
Q37)	a)The solid occupies space b)i) Water has mass, so the water would add mass to the solid, causing the solid to have a different mass. ii)The mass of the water that was collected was lighter than the mass of the solid.
Q38)	a) i) 150ml ii) Place both metal contacts at the 200ml mark on the beaker. a) E  F
Q39)	a)The magnetic force of attraction acting on the metal clip was weaker, as the distance between the metal clip and the magnet increased, so the metal clip could not be attracted to the magnet and was pulled down by gravitational force. The magnetic force of attraction is unable to overcome the gravitational force acting on the metal clip. b)The magnet is the weakest at the centre.
Q40)	a)As the time taken to heat the materials increases, the temperature of the materials increases. b)S. The temperature increases the slowest. Heat from surrounding will be conducted to the ice the slowest as S is the poorest conductor of heat. c)Q is the best conductor of heat, so it would conduct heat from the paper to the surroundings the fastest, so the paper would gain heat the slowest and burn the slowest. d)Melting
Q41)	a)Elastic potential ⟶ Kinetic b)The rubber band contains less potential energy to be converted to less kinetic energy, resulting in less impact. c)Increase. When the toy with the heavier blades is flew to the same

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	height, the toy would have more gravitational potential energy as the toy has a greater mass. More gravitational potential energy of the toy would be converted to kinetic energy of the toy.

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MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

27 AUGUST 2019

BOOKLET A

NAME: _____ ( )

CLASS: Primary 6 ( )

28 questions

56 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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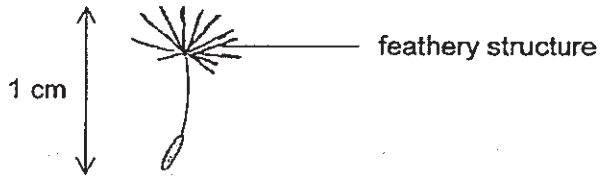
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS). **(56 marks)**

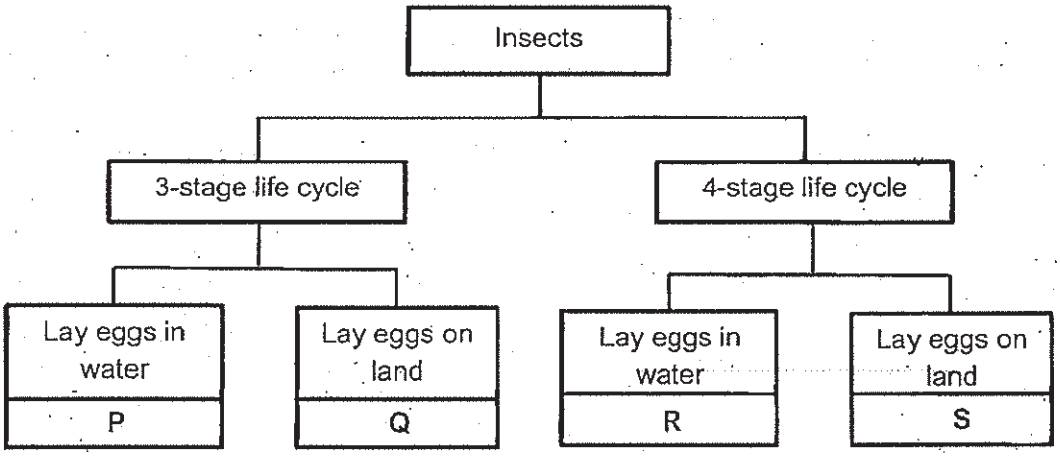
1 The diagram below shows the fruit of a plant.



How is the fruit most likely dispersed?

(1) by wind
(2) by water
(3) by animal
(4) by explosive action

2 Study the classification chart below.



Which insect is most likely a mosquito?

(1) P
(2) Q
(3) R
(4) S

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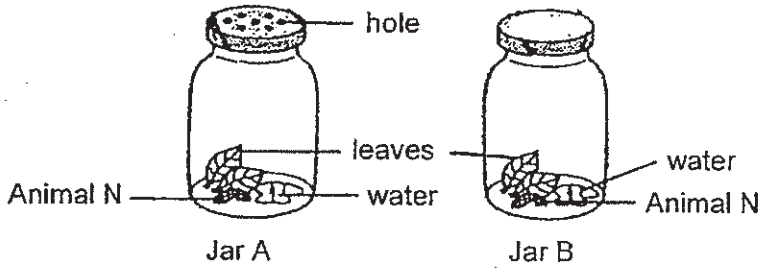
3 Isabel set up an experiment as shown below to investigate the **conditions needed by living things to survive.** Both jars were **left by the window.**

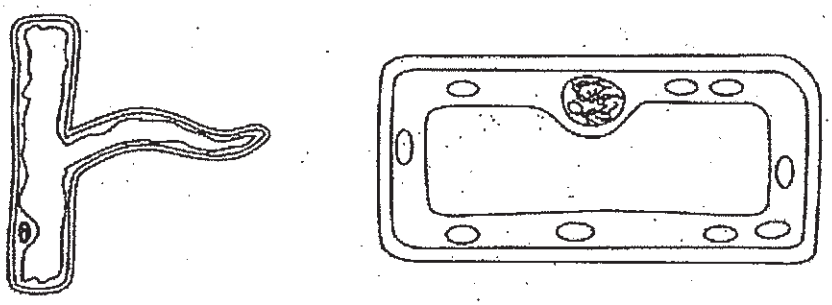


After 2 days, **Animal N in Jar B died but Animal N in Jar A remained alive.**

Based on the result of the experiment, what can Isabel conclude?

(1) Living things need air to survive.
(2) Living things need air and water to survive.
(3) Living things need air, food and water to survive.
(4) Living things need air, food, water and light to survive.

4 Study the two cells below.



Which of the following about cells A and B is correct?

	Cell A	Cell B
(1)	cannot make food	can make food
(2)	cannot undergo cell division	can undergo cell division
(3)	does not have a fixed shape	has a fixed shape
(4)	does not allow any substance to enter	allows some substances to enter

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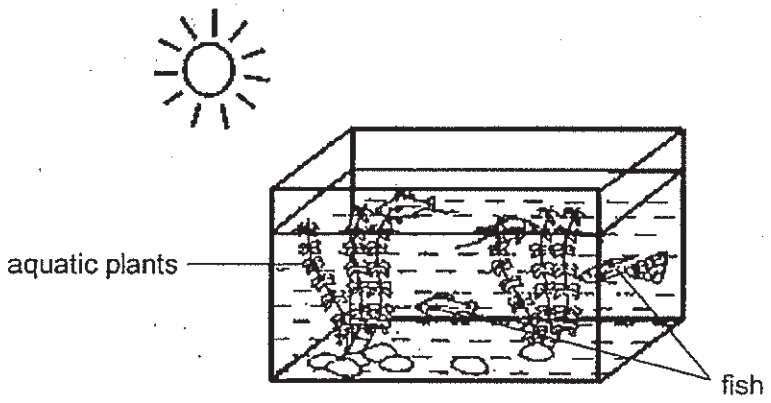
5 Which of the following results in growth of an organism?

(1) Its cells dividing.
(2) Its cells absorbing water.
(3) Its cells becoming bigger.
(4) Its cells absorbing light energy.

6 A tank containing some aquatic plants and fish is placed in the garden on a sunny day.



Which of the following factor(s) will affect the amount of oxygen in the water?

A the number of fish in the tank
B the material used to make the tank
C the amount of aquatic plants in the tank

(1) B only
(2) C only
(3) A and C only
(4) A, B and C

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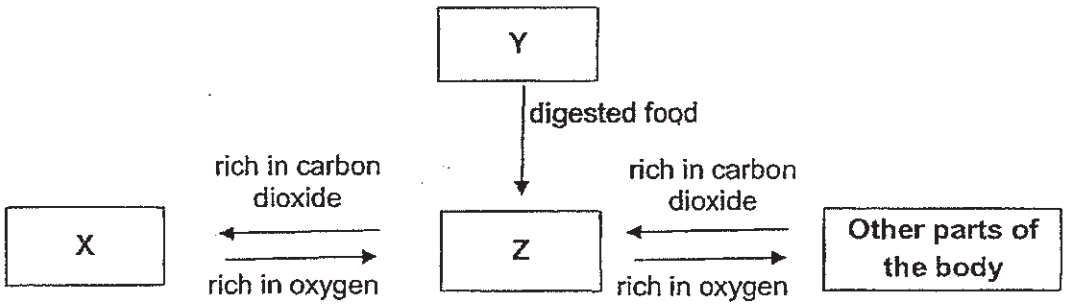
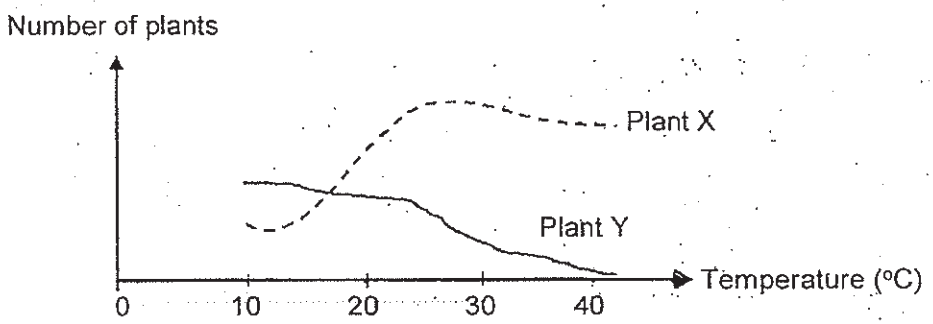
7 Study the flow chart below.



Which of the following correctly represents systems X, Y and Z?

	X	Y	Z
(1)	respiratory	circulatory	digestive
(2)	digestive	respiratory	circulatory
(3)	circulatory	digestive	respiratory
(4)	respiratory	digestive	circulatory

8 The graph below shows how the number of plants X and Y is affected by the temperature of their surroundings.



Based on the information given in the graph, which of the following most likely describes plants X and Y?

	Plant X	Plant Y
(1)	thin stem	thick swollen stem
(2)	shallow and narrow roots	deep and widespread roots
(3)	needle-like leaves	broad and large leaves
(4)	brightly-coloured flowers	dull-coloured flowers

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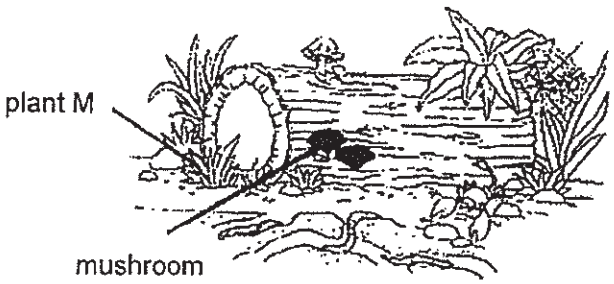
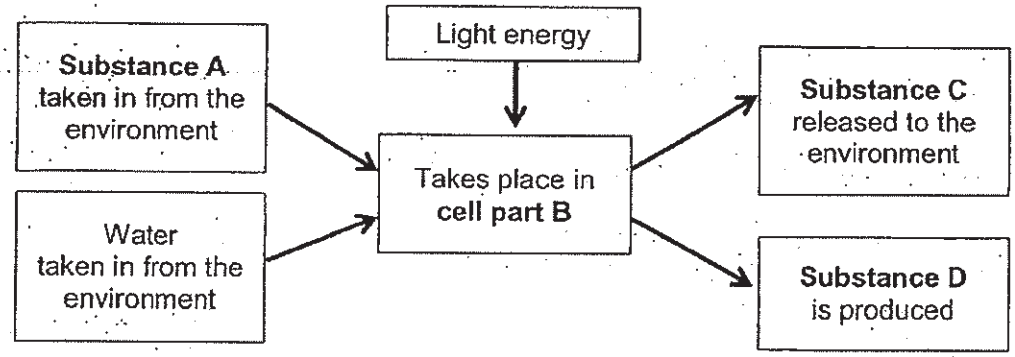
9 A rotting log community is shown below.



Which of the following shows how **plant M and the mushroom** benefit from each other?

	What plant M gets from the mushroom	**What the mushroom gets from plant M**
(1)	oxygen	food
(2)	carbon dioxide	oxygen
(3)	water	carbon dioxide
(4)	mineral salts	water

10 The diagram below represents one of the processes that takes place in plants.



Which of the following correctly identifies A, B, C and D?

	A	B	C	D
(1)	oxygen	chloroplast	carbon dioxide	food
(2)	carbon dioxide	nucleus	oxygen	water
(3)	oxygen	nucleus	carbon dioxide	water
(4)	carbon dioxide	chloroplast	oxygen	food

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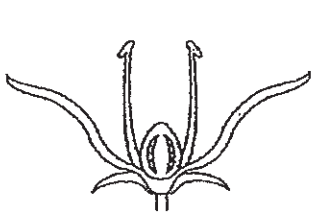
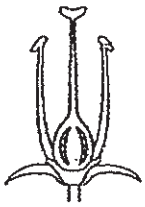
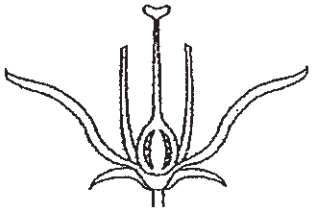
11 Three flowers, P, Q and R, from the same plant have different flower parts removed as shown below.



Flower P



Flower Q

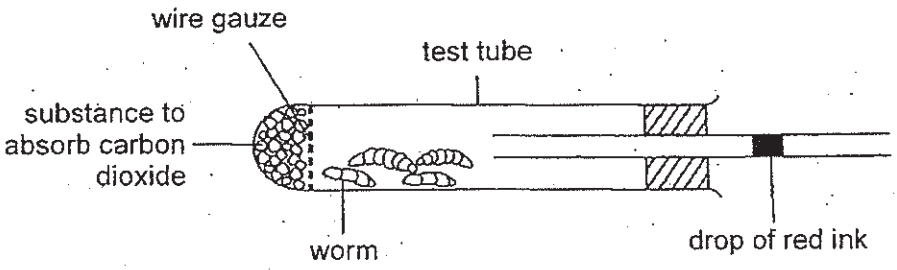


Flower R

Which of the flower(s) can develop into a fruit?

(1) Q only
(2) P and R only
(3) Q and R only
(4) P, Q and R

12 Gabriel set up the apparatus as shown below. In the set-up, the drop of red ink prevents air from entering the test tube.



After 1 hour, the red ink drop moved.

Which of the following shows the correct observation and reason for the observation?

	Direction the red ink drop moved	Reason
(1)	Away from the test tube	Amount of oxygen in the test tube increased
(2)	Away from the test tube	Amount of carbon dioxide in the test tube increased
(3)	Towards the test tube	Amount of oxygen in the test tube increased
(4)	Towards the test tube	Amount of carbon dioxide in the test tube increased

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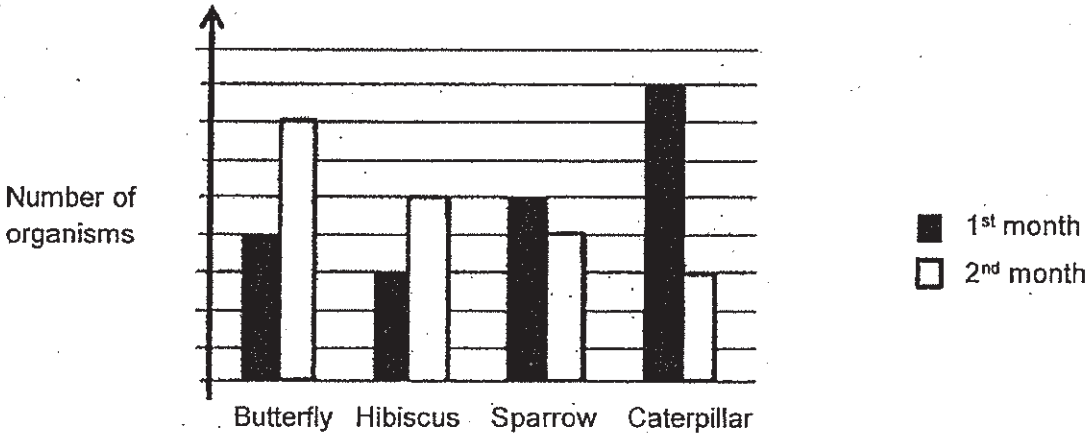
13 The food chains below show how 4 organisms depend on one another in a garden community.

Hibiscus ⟶ Caterpillar ⟶ Sparrow

Hibiscus ⟶ Butterfly ⟶ Sparrow

The bar graph below shows the different number of organisms spotted in the garden over 2 months.



Based only on the graph, which one of the following reasons could **explain why the number of caterpillars decreased in the second month?**

(1) There was less food for the caterpillars.

(2) The caterpillars became adult butterflies.

(3) The caterpillars were killed by pesticides.

(4) There were more predators of the caterpillars.

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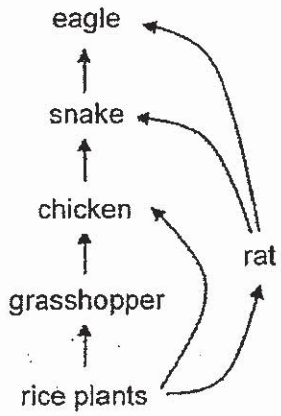
14 The diagram below shows a food web in a rice field.

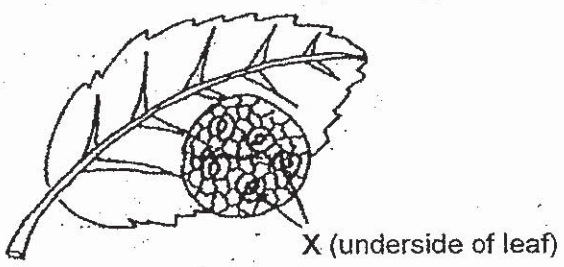


After Animal X was released into the field, the number of grasshoppers increased and the number of rats decreased.

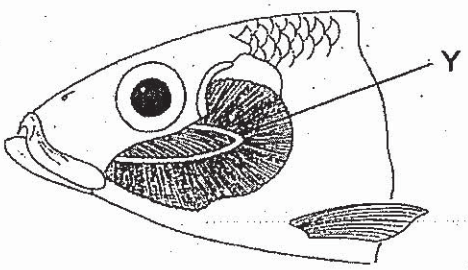
Which organism did Animal X feed on?

(1) snake
(2) chicken
(3) rice plants
(4) grasshopper

15 The diagrams below show parts of the respiratory system of a leaf and a fish.



Leaf



Fish

Which one of the following statements is true about parts X and Y?

(1) X and Y store gases.
(2) X takes in sunlight but Y takes in water.
(3) X and Y allow carbon dioxide to move through them.
(4) X and Y take in oxygen and give out carbon dioxide only.

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16 The pictures below show insects A and B.

Insect A

Insect B

Insects A and B look alike. Insect B can sting its predator but insect A cannot.

How does insect A **benefit** from looking like insect B?

A It helps deter predators.
B It helps attract mates for reproduction.
C It helps insect A camouflage amongst its surrounding.

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

17 The materials below are classified into 2 groups.

Group 1	Group 2
wood	iron
plastic	steel
rubber	copper

What property are the materials classified according to?

(1) absorbency
(2) transparency
(3) heat conductivity
(4) ability to be magnetised

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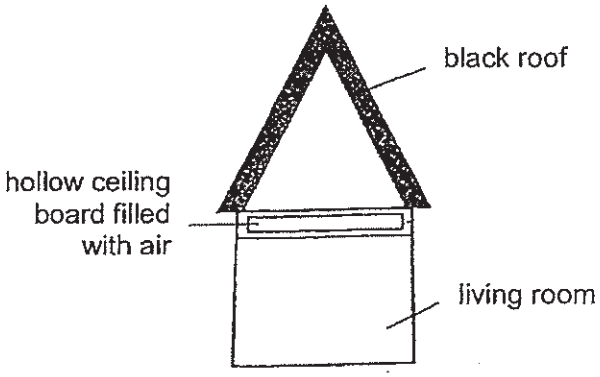
18 The diagram below shows the structure of a house in a cold country.



Which statement explains why the temperature in the living room is higher than the air outside the house at night?

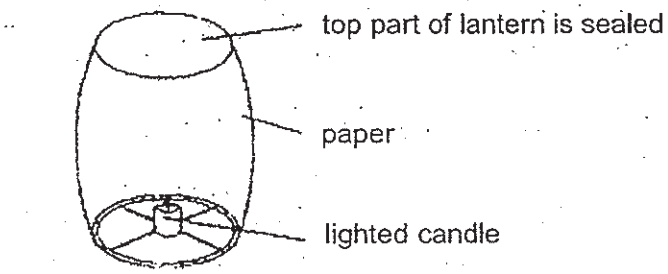
(1) The black roof reduces heat gain in the day.

(2) The air in the ceiling board reduces heat loss at night.

(3) The air in the ceiling board is a good conductor of heat.

(4) The black roof gains heat from the surroundings at night.

19 The paper lantern below rises into the air after the candle is lighted.



Which form of energy does **not** help the paper lantern to rise?

(1) heat

(2) light

(3) kinetic

(4) potential

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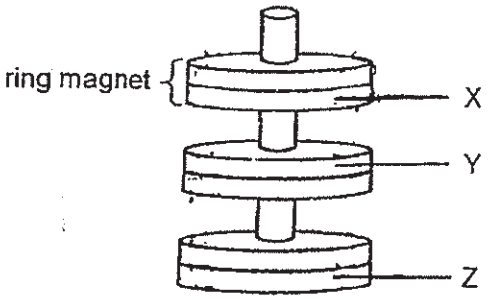
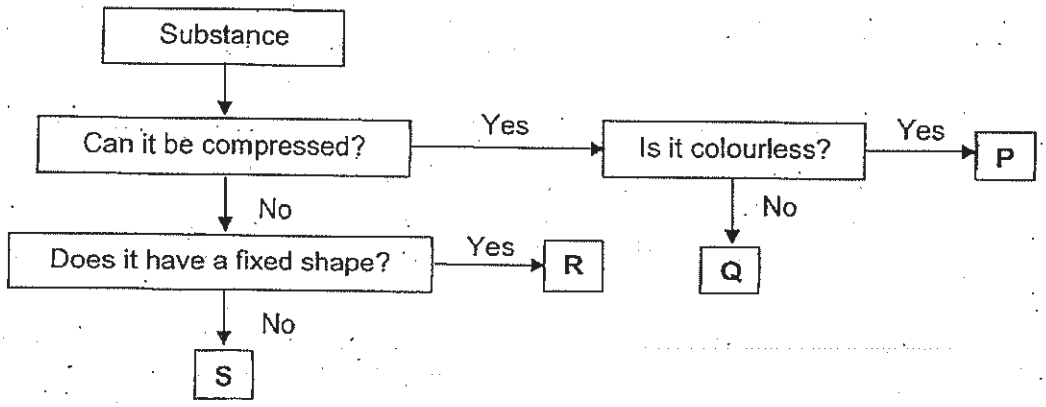
20 The diagram below shows 3 ring magnets.



Which of the following represents the poles X, Y and Z?

	X	Y	Z
(1)	north	north	south
(2)	north	south	south
(3)	south	south	north
(4)	south	south	south

21 The flow chart below describes the properties of substances P, Q, R and S at 10°C.



Y is a colourless substance which freezes at 18°C and boils at 65°C.

Which substance in the flow chart represents Y at 10°C?

(1) P
(2) Q
(3) R
(4) S

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22 What is the effect of gravity on matter around us?

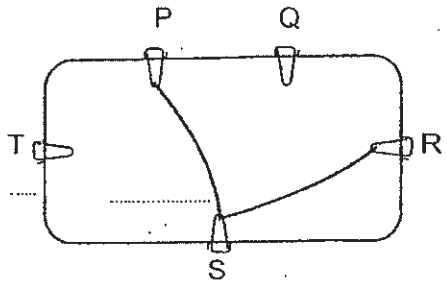
(1) Matter has mass.

(2) Matter has weight.

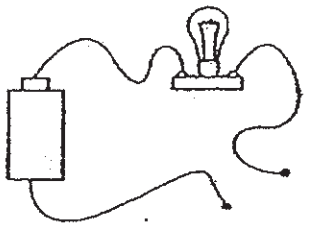
(3) Matter occupies space.

(4) Matter can change states.

23 The diagrams below show how wires in a circuit card are connected and a circuit tester.



circuit card



circuit tester

Which of the following tables correctly shows the lighting up of the bulb when the circuit tester is used to test the circuit card?

(1)

Wires	Bulb lighted up
P and Q	No
P and R	Yes
S and Q	Yes

(2)

Wires	Bulb lighted up
Q and R	No
P and T	No
P and S	No

(3)

Wires	Bulb lighted up
P and R	Yes
S and R	Yes
T and S	Yes

(4)

Wires	Bulb lighted up
P and S	Yes
R and T	No
Q and S	No

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24 An equal amount of water was poured into four containers. The containers were then left under different conditions as described in the table below.

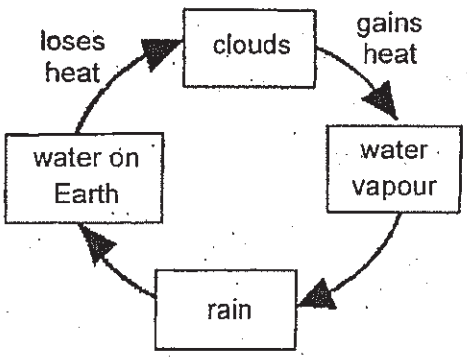
	Container			
	A	B	C	D
Presence of wind	Yes	No	No	Yes
Temperature of water (°C)	60	90	70	60
Exposed surface area (cm^2)	50	50	70	70

Which of the following pairs of containers should be used to find out if the exposed surface area of a container affects the rate of evaporation?

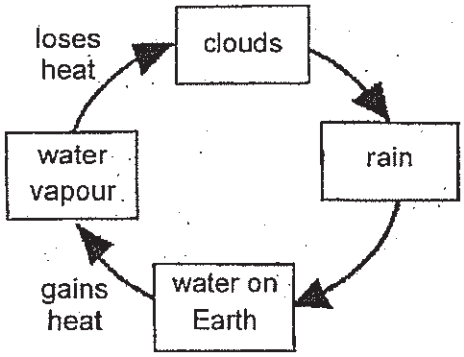
(1) A and C
(2) A and D
(3) B and C
(4) B and D

25 Which diagram correctly represents the water cycle?

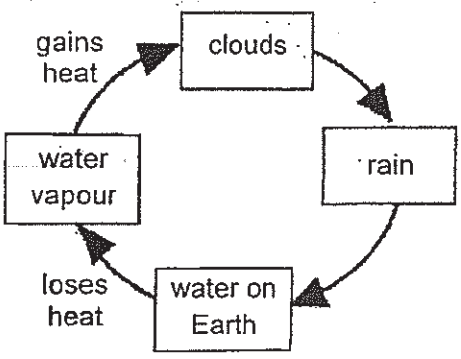
(1)



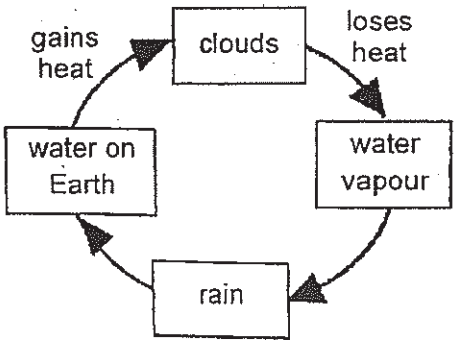
(2)



(3)



(4)



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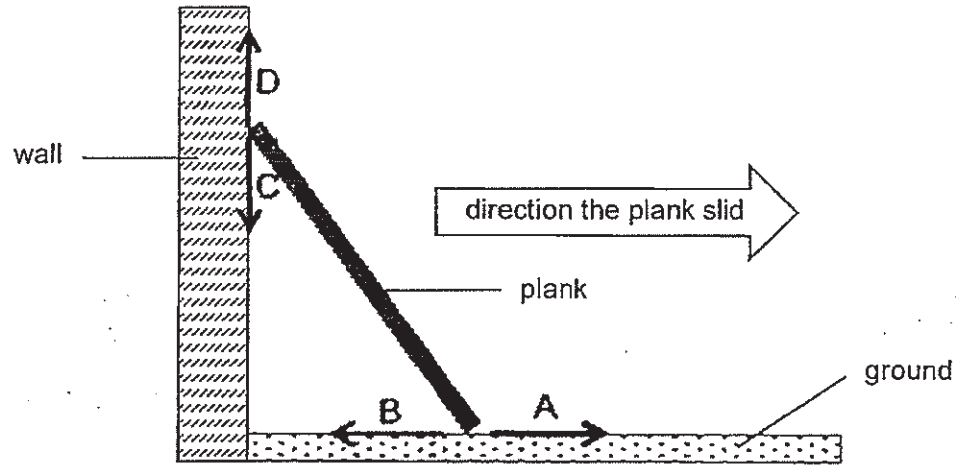
26 The diagram below shows a plank leaning against a wall. After some time, the plank slid down towards the ground.



Which two arrows show the direction of frictional force when the plank is sliding down towards the ground?

(1) A and C
(2) A and D
(3) B and C
(4) B and D

27 Yasmin had two identical pieces of papers, X and Y. She crushed one of the papers into a ball. Both X and Y were then dropped from the same height.

X
(uncrushed paper)

Y
(crushed paper)

She observed that Y reached the ground before X.

Which of the following statements explains her observation?

(1) Y is lighter than X.
(2) Y had less air resistance than X.
(3) Y had more gravitational potential energy than X.
(4) Y had more gravitational force acting on it than X

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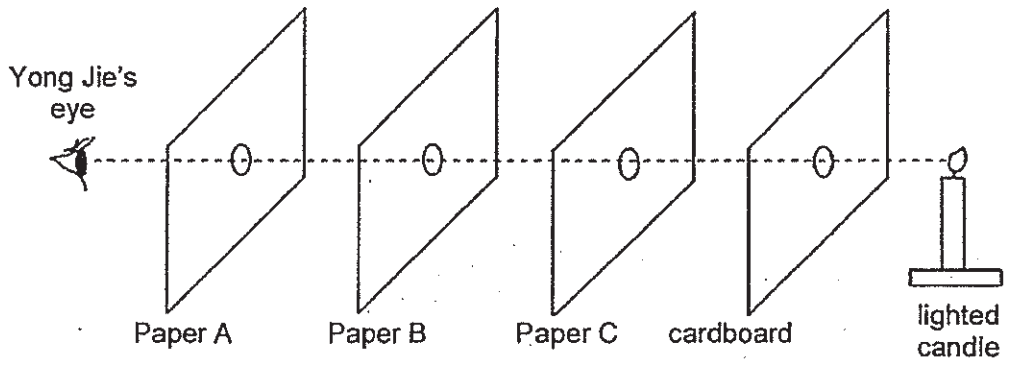
28 Yong Jie set up an experiment using three different types of paper, A, B and C, and a piece of cardboard as shown below. Pin-sized holes were poked in the centre of each type of paper and the cardboard.



From the experiment, Yong Jie observed the following:

- When he arranged all the holes in line, he saw the lighted candle.
- When he shifted only Paper A to his right, he could not see the lighted candle.
- When he shifted only Paper B to his right, he could still see the lighted candle.

What could Yong Jie conclude from his experiment?

	Paper A allows light to pass through	Paper B allows light to pass through	Paper C allows light to pass through
(1)	No	Yes	No
(2)	Yes	Not possible to tell	Not possible to tell
(3)	No	Yes	Not possible to tell
(4)	Not possible to tell	Yes	No

End of Booklet A

Go on to Booklet B

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MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

27 AUGUST 2019

BOOKLET B

NAME: _____ ( )

CLASS: Primary 6 ( )

13 questions

44 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A:	**/ 56**
Booklet B:	**/ 44**
Grand Total:	**/ 100**

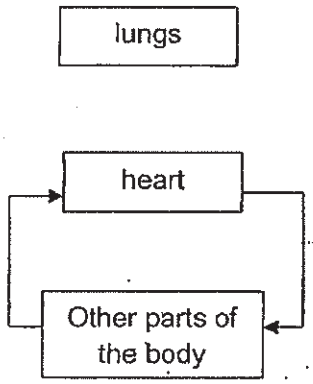
Parent's Signature: _____

For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. **(44 marks)**

---

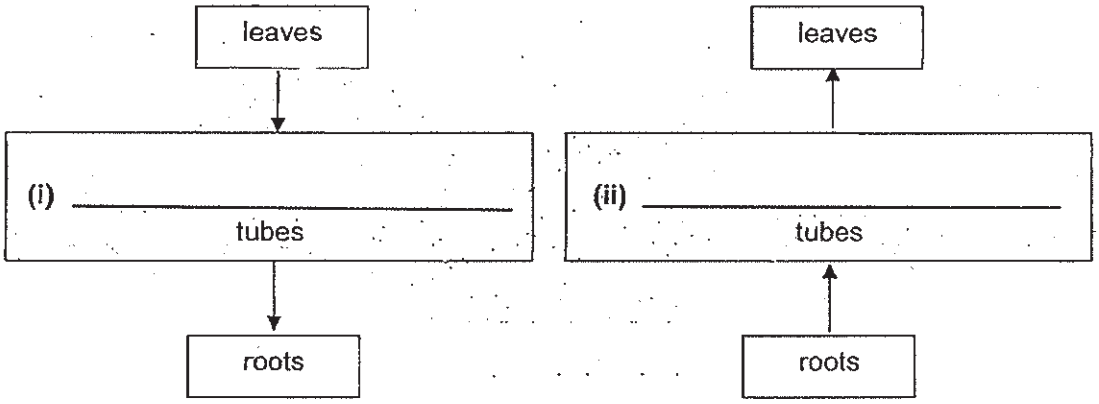
29 The diagram below is an incomplete representation of the human circulatory system.

(a) Draw two arrows (→) to complete the diagram. [1]



(b) The plant transport system consists of two different types of tubes that carry different materials.

Name the tubes in the blanks below. [2]



	3

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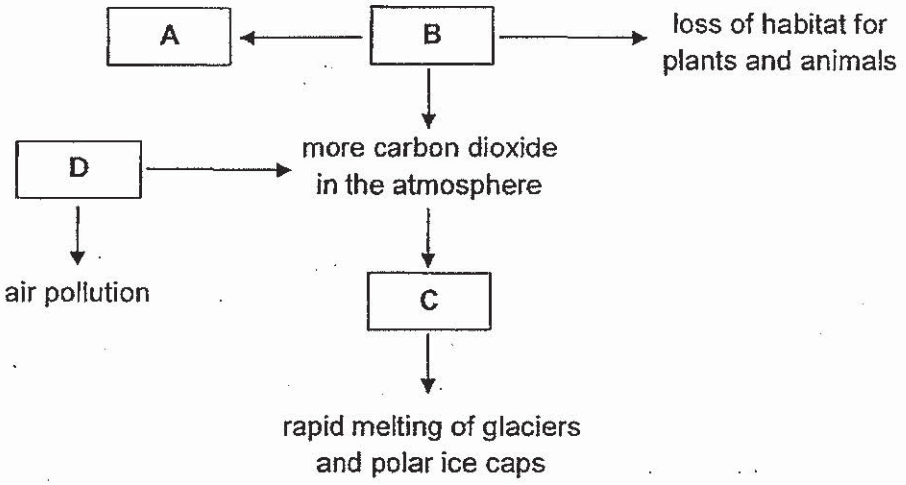
30 The diagram below shows the **negative impacts of human activities** on the environment.



(a) Which of the following best represent A, B, C and D? [2]

burning of fossil fuels	deforestation	greenhouse effect
global warming	soil erosion	destruction of ozone layer

A: _____

B: _____

C: _____

D: _____

(b) Explain how soil erosion can have a negative effect on aquatic plants in the rivers. [1]

_____

_____

3

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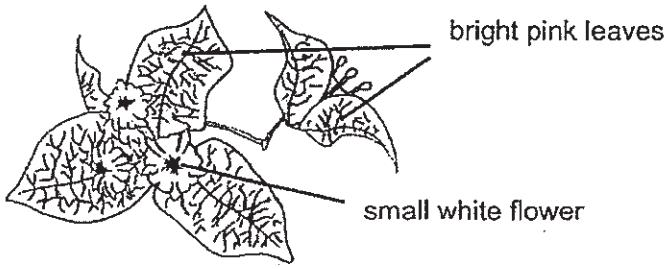
31 Plant P has modified leaves which are bright pink in colour. These bright pink leaves surround small white flowers and help in reproduction. The remaining leaves on Plant P are green.



Plant P

(a) Name the process the bright pink leaves help Plant P in. [1]

_____

(b) How do the bright pink leaves help Plant P in reproduction? [1]

_____

(c) Other than being small and white, state another likely characteristic of the flowers. [1]

_____

	3

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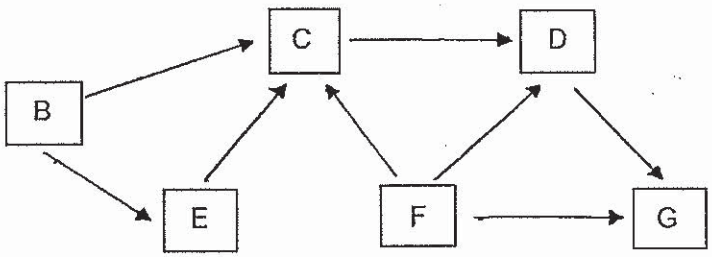
32 Study the food web below.



(a) Which organism(s), B to G, is/are both prey and predator? [1]

(b) Explain how the population of F will be affected if there is a long period without rain. [1]

(c) If a disease was to wipe out the population of B, which organism, C or E, will be more affected? Explain your answer. [2]

4

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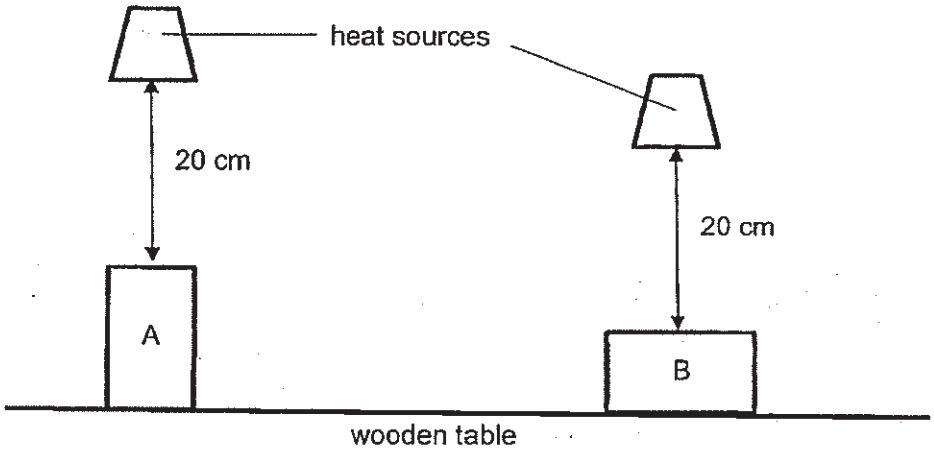
33 Muthu set up an experiment as shown below to compare the amount of heat gained by blocks A and B. Blocks A and B are identical. They are made of the same material and have the same volume. Both heat sources give off the same amount of heat.



Muthu measured the temperature of blocks A and B over time.

(a) The table below shows part of his result's table.

Time (min)	Temperature of blocks (°C)	
	A	B
0	28	?

To obtain accurate results, what should the temperature of block B be at the start of experiment? [1]

(b) After 10 minutes, block B had a higher temperature than block A. Explain why. [1]

2

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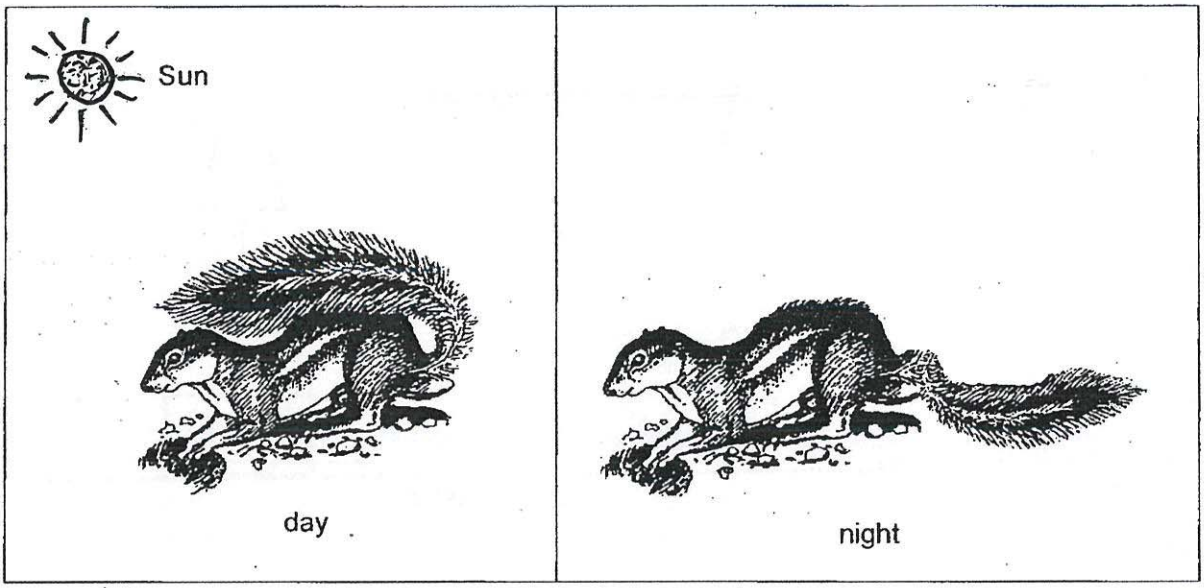
Animal X lives in the desert. During the day, Animal X moves around with its tail above its body. At night, it moves around with its tail on the ground.



(c) Based on Muthu's findings, explain how moving around with its tail above its body helps Animal X stay cool in the day.

_____

_____

1

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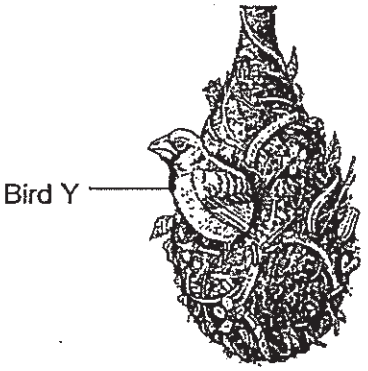
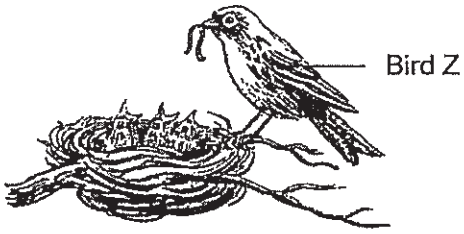
34 Birds Y and Z build different types of nests to lay and store their eggs. For both birds, their young stay in their nests and are taken care of by their parents.



Nest Y



Nest Z

(a) State two advantages Nest Y has over Nest Z in terms of increasing the chances of survival of the young of the birds. [2]

(1) _____

_____

(2) _____

_____

(b) State the advantage Nest Y has over Nest Z when it rains. [1]

_____

_____

	3

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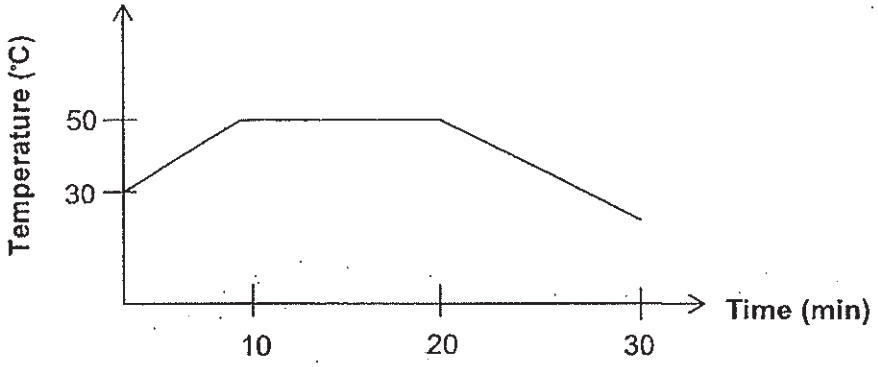
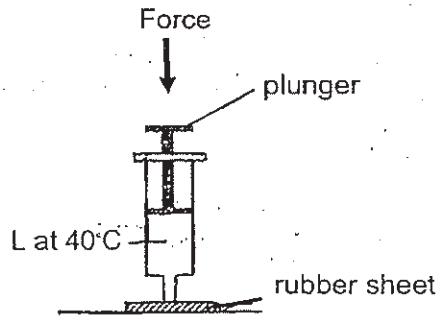
35 Amy heated substance L. After 10 minutes, L reached its boiling point. She continued heating L for another 10 minutes before turning off the heat source. She then allowed L to cool for 10 minutes.



(a) Based on the given information, would you be able to tell the state of L at 0°C? Explain your answer. [1]

(b) Identify the state L is in at 40°C. [1]

(c) At 40°C, substance L is placed in a syringe as shown in the diagram below.



Will the plunger move upwards, downwards or remain in the same position when force is exerted in the direction as shown above? Explain your answer. [1]

3

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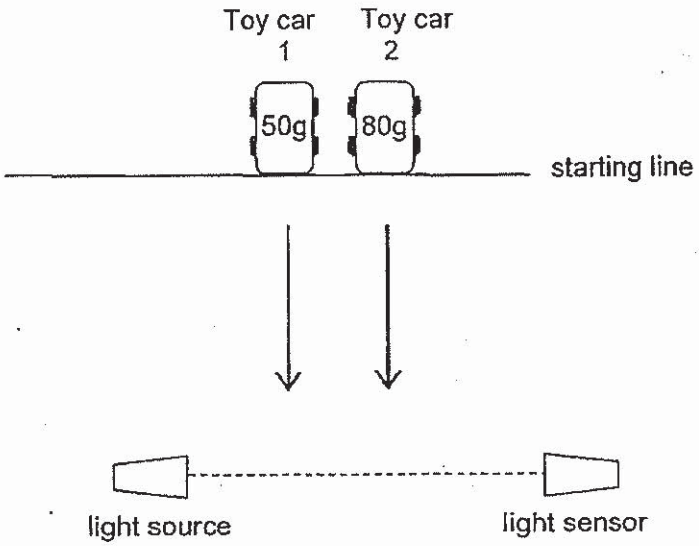
36 Eleanor conducted an experiment to find out how the mass of toy cars will affect how fast they move. She pushed 2 similar toy cars of different mass, one at a time, from the same starting line as shown below.



The table below shows the amount of light detected by the light sensor over time. The light sensor started recording the amount of light when each car is pushed off the starting line.

Time (s)	Amount of light detected by the light sensor (units)	
	Toy Car 1 (50 g)	Toy Car 2 (80 g)
0	2500	2500
0.5	2500	2500
1.0	0	2500
1.5	2500	0
2.0	2500	2500

(a) Which toy car, 1 or 2, moved faster? Using the data in the table above, explain your answer. [1]

_____

_____

	1

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(b) Based on the data in the table, what is the relationship between the mass of the car and how fast it moves? [1]

(c) Based on the data in the table, state the property of the toy cars. [1]

(d) Was the experiment conducted in a completely dark room? Explain your answer. [1]

(e) State another important variable that must be kept the constant for the experiment. [1]

	4

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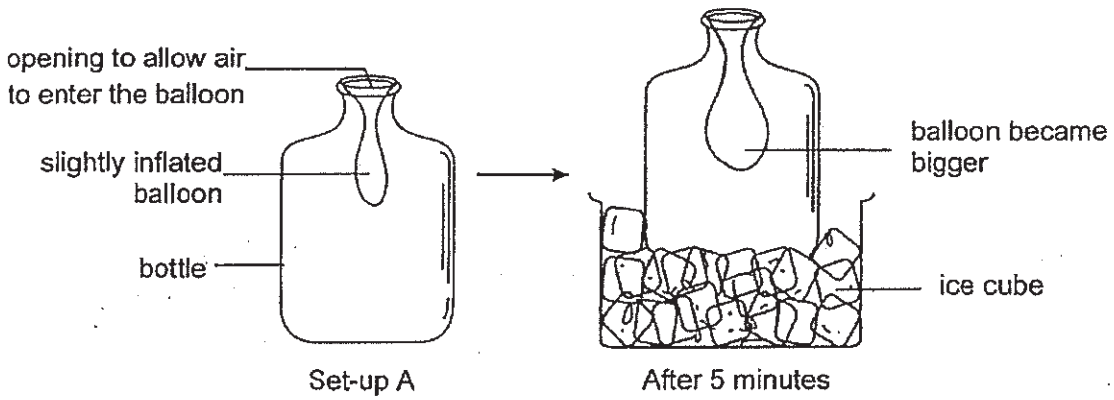
37 When set-up A was placed in a basin of ice cubes, the balloon in the bottle became bigger as shown in the diagram below.



(a) Explain why the balloon became bigger after the bottle was placed in the basin of ice cubes. [2]

(b) What will happen to the balloon if set-up A was placed in a basin of hot water? [1]

3

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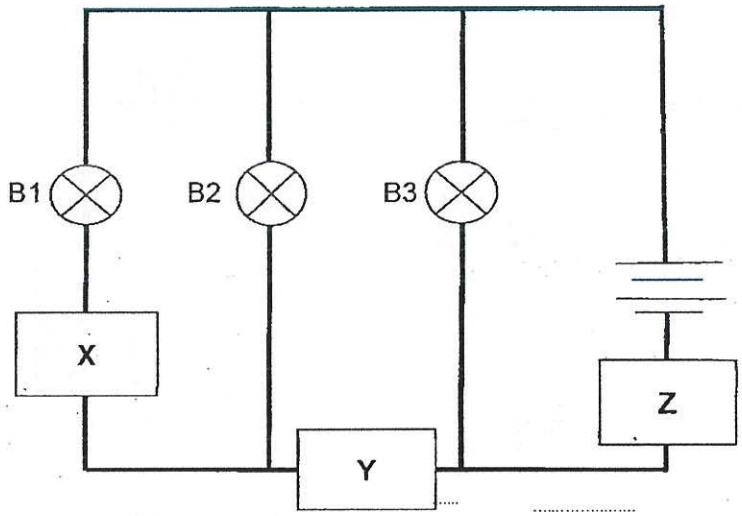
38 Sam has 3 objects, X, Y and Z, made of different materials. He connected the 3 objects to a circuit as shown below.



(a) When connected, only 2 of the bulbs are lit.

Which are the 2 bulbs, B1, B2 or B3, that are lit? [1]

(b) Each of the objects, X, Y and Z, is made of one of the materials listed in the table below.

Material
iron
rubber
copper

(i) Sam can only be sure of the material of one the objects.

Which object, X, Y or Z, is that? [1]

(ii) What material is the object identified in (i) made of? [1]

3

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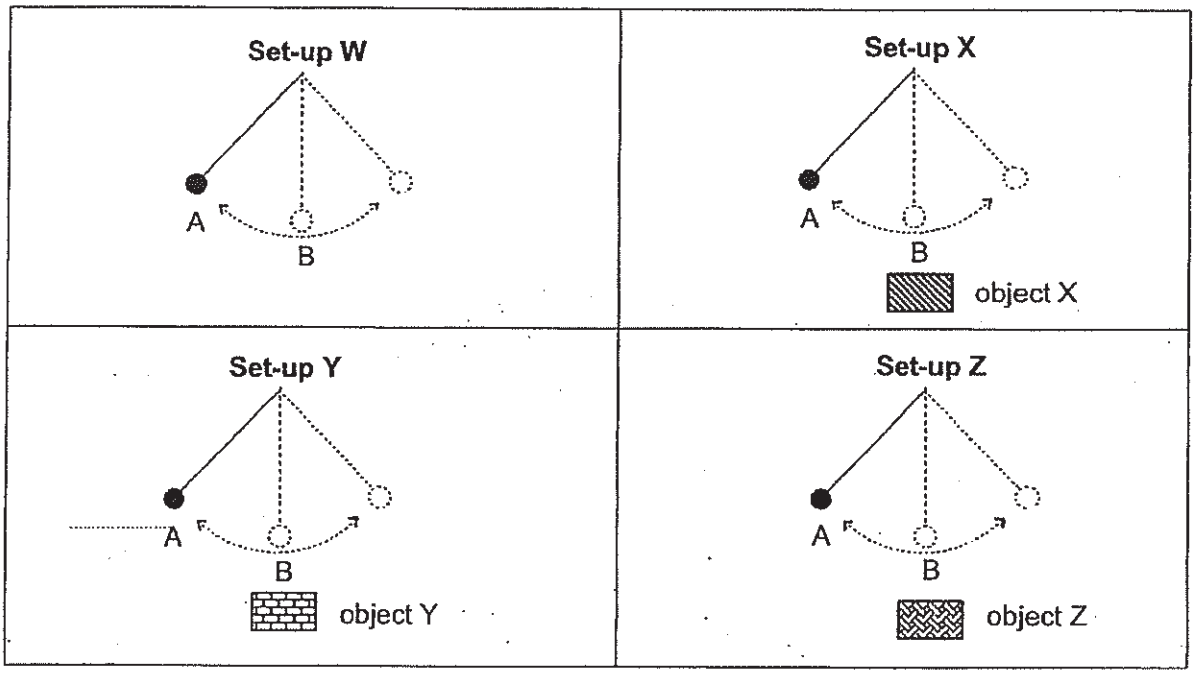
39 In the four set-ups below, identical steel balls are hung on identical strings of the same length. Objects X, Y and Z are placed under position B in set-ups X, Y and Z respectively.



The four steel balls were released from position A and allowed to swing freely till they came to a complete stop. The time taken for the balls to come to a complete stop is shown in the table below.

Set-up	Time taken for the ball to stop completely (s)
W	20
X	2
Y	5
Z	20

(a) The items listed in the table below are objects X, Y and Z. Based on the results, identify objects X, Y and Z by writing the letters in the space provided. [1]

Items	Object
Magnet with strong magnetism	
Magnet with weak magnetism	
Wooden box	

	1

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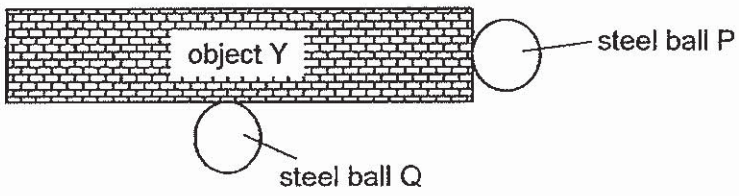
(b) Two identical steel balls, P and Q, were placed next to object Y as shown below.



When object Y is lifted, only ball P remained attached to object Y.
Explain why this is so. [1]

(c) After object Y was heated for 5 minutes, ball P could no longer be lifted up together with object Y. Explain why. [1]

(d) What can be done to increase reliability of the results? [1]

3

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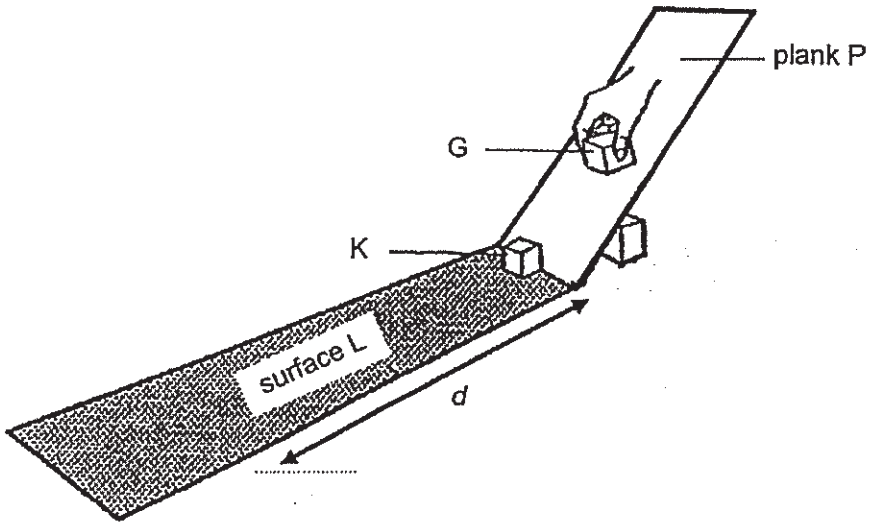
40 Blocks G and K are made of the same material. However, block G has a bigger mass than block K. After block G was released from plank P, it hit block K at the bottom of the slope. Block K moved *d* distance and then came to a stop.



(a) Name the forces present when block G moved down the slope. [1]

(b) Explain why block K stopped moving after *d* distance. [1]

(c) Without using different apparatus, suggest one way to increase distance *d*. [1]

(d) How would distance *d* change if the positions of blocks G and K are exchanged and block K is released to hit block G? [1]

	4

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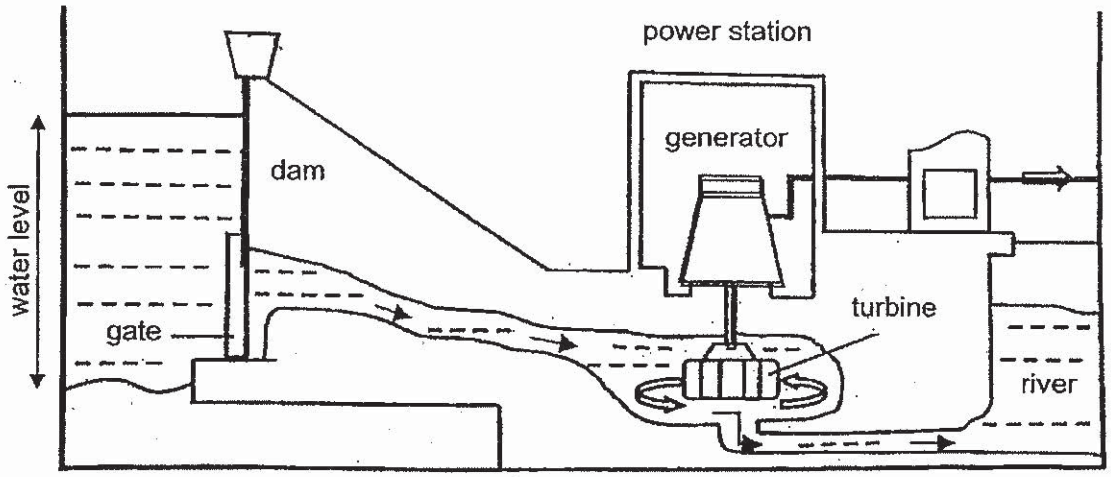
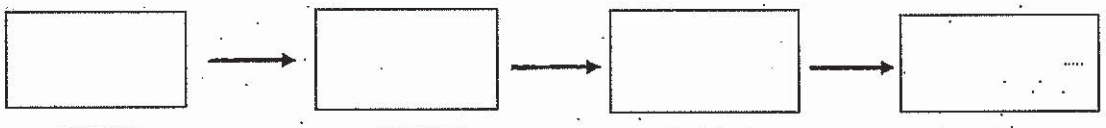
41 The diagram below shows a hydroelectric power station. The turbine is attached to the generator.



(a) Based on the diagram above, fill in the boxes to show the energy conversion. [1]



(b) During long periods without rain, the water level behind the dam decreases greatly. Explain how this will affect the amount of electricity generated. [2]

End of Booklet B

	3

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ANSWER KEY

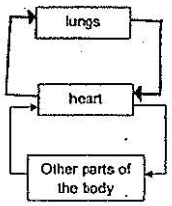
YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : MARIS STELLA
SUBJECT : SCIENCE
TERM : SA 2

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	3	1	1	1	4	4	3	2	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	2	2	3	1	3	2	2	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	2	4	2	2	4	2	3		

BOOKLET B

Q29 (a)



(b) (i) Food-carrying
(ii) Water-carrying

Q30 (a) A: Soil erosion
B: Deforestation
C: Global warming
D: Burning of fossil fuels

(b) When soild erosion occurs, the soil slides into rivers and they blocked aquatic plants taking in sunlight for photosynthesis. So the aquatic plants make less food and might die.

Q31 (a) Pollination

(b) They attract animals to pollinate it and after it is pollinated, it can reproduce by fertilisation.

(c) They havea sweet smell.

Q32 (a) C and D only

(b) Without rain, F the plant connot take in water thus it will photosynthesize lesser and make less food, so when F lack food, F will die and population will decrease.

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(c) E . Organism B is only food source of E, organism E will decrease rapidly. However, Organism C feed on F and E. So C has alternative food but E does not. At the end, organism E will decrease more organism C.

Q33 (a) It should be at 28°C.

(b) As more of B exposed to the heat source than A, it gains more heat faster and thus has a higher temperature than A.

(c) By lifting its tail up, less of X's body is exposed to the hot ground and touching the hot ground so it gain less heat and stay cooler.

Q34 (a) (1) Nest Y is more covered than Z so predators have a harder time going in to Y whereas predators can just swoop down to eat Z's young.

(2) The young in nest Y will not be washed by rain but Z's young will.

(b) Y can shelter the young better than Z.

Q35 (a) No, L may be a liquid or solid at 0°C since the freezing and melting point is unknown.

(b) Liquid.

(c) It will remain the same. As L is at liquid state at 40°C, it cannot be compressed so the plunger will not move.

Q36 (a) Toy car 1 moved faster, At 1.0 seconds, toy car 1 blocked the light sensor while toy car 2 blocked the light at 1.5 seconds. This show that 1 was faster and blocked the light first.

(b) As the mass of the car increases, it travels slower.

(c) The toy cars are made of an opaque which material does not allow light to pass throught it.

(d) Yes. No light was detected by the sensor when the car blocked the light.

(e) The amount of force exerted on each car pushed.

Q37 (a) The air in the bottle lost heat to the ice cubes and contracted, letting more air in the surroundings enter the balloon.

(b) The balloon will become smaller.

Q38 (a) B2, B3

(b) (i) X

(ii) Rubber.

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Q39 (a)

Items	Object
Magnet with strong magnetism	X
Magnet with weak magnetism	Y
Wooden Box	Z

(b) As Y is a magnet, its magnetism is strongest at its poles so P could stay attracted while Q dropped.

(c) As Y was heated, itt lost some of its magnetism and did not have enough magnetic strength to attract P.

(d) Repeat the experiment at least 3 times.

Q40 (a) Frictional force and gravitational force.

(b) All kinetic energy is converted to heat and sound energy.

(c) Slunt P to a higher angles.

(d) d will be shorter.

Q41 (a) Gravitational potential → kinetic → kinetic → Electrical

(b) When there is lesser water behind the dam, the water has less gravitational potential energy and less gravitational potential energy is converted to less kinetic energy in the moving water which is transferred to the moving turbine which is converted to less electrical energy is the generator.

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3
2nd P

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET A

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____ _____( )

Class: Primary 6._____

Date : 22 August 2019

This booklet consists of 18 printed pages including this page.

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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS).

[56 marks]

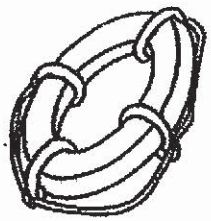
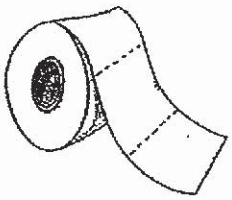
1 Study the three organisms as shown below.

Mushroom	**Bacteria**	**Fern**

Which statement is correct?

(1) They can make food.
(2) They respond to changes.
(3) They reproduce by spores.
(4) They can break down dead matter.

2 Study the classification table below.

Group X		**Group Y**	
			
wine glass	swimming float	cotton socks	paper towel

Which of the following properties are used to classify the objects into Group X and Group Y?

	Group X	**Group Y**
(1)	Stiff and float in water	Flexible and absorbent
(2)	Strong and float in water	Break easily and sink in water
(3)	Waterproof and strong	Absorbent and flexible
(4)	Transparent and stiff	Opaque and flexible

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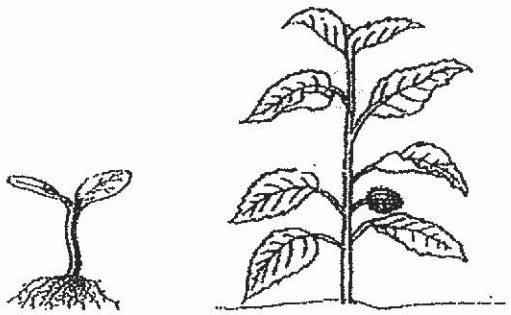
3 The diagram below shows a seedling and its adult plant.



Which one of the following statements is **not** true?

(1) Both have strong stems.
(2) Both cannot bear flowers.
(3) Both can make their own food.
(4) The adult plant bears fruits but not the seedling.

4 Gopal observed two insects, S and T, and recorded his observations below.

Characteristics	Insect S	Insect T
It has three body parts	✓	✓
Part of its life cycle is spent in water	✓	
The young resembles the adult		✓

Which of the following insects did Gopal observe?

	Insect S	Insect T
(1)	mosquito	cockroach
(2)	dragonfly	mosquito
(3)	frog	dragonfly
(4)	butterfly	grasshopper

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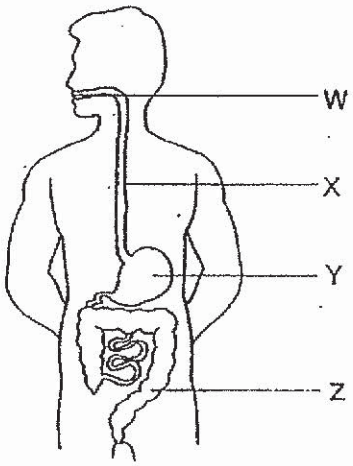
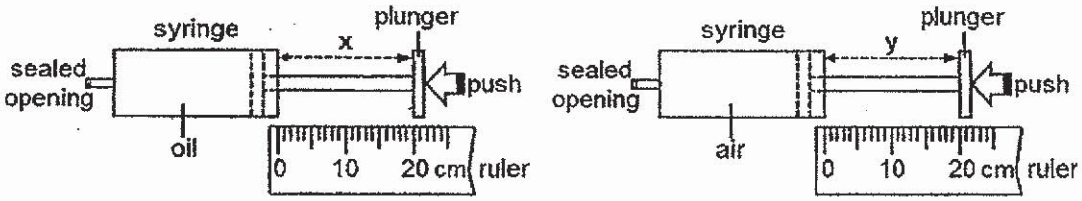
5 The diagram below shows the different organs, W, X, Y and Z, of a human digestive system.



What of the following shows the correct function for each organ?

	Food is further digested into a soupy mix	Food is broken into smaller substances	Water is removed from the undigested food	Partially digested food moves into the stomach
(1)	Y	W	X	Z
(2)	Z	W	Y	X
(3)	Y	W	Z	X
(4)	X	Y	Z	W

6 Joshua used two identical syringes for an experiment. One syringe was filled with 50 cm^3 of oil while the other was filled with 50 cm^3 of air.



He pushed each plunger as hard as he could and measured distance **x** and distance **y**.

Which of the following shows the correct values of **x** and **y**?

	x (cm)	y (cm)
(1)	0	10
(2)	5	20
(3)	10	0
(4)	20	5

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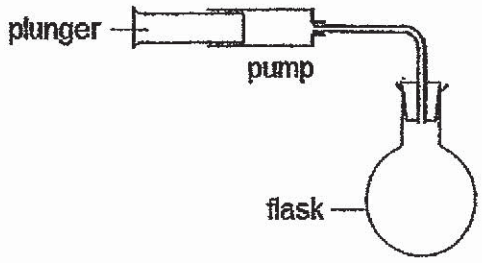
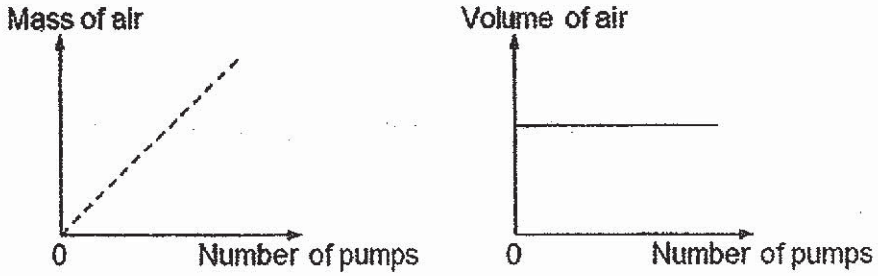
7 A pump was connected to a flask as shown below. It was able to pump 50 cm^3 of air into the flask each time the plunger was pushed in completely.

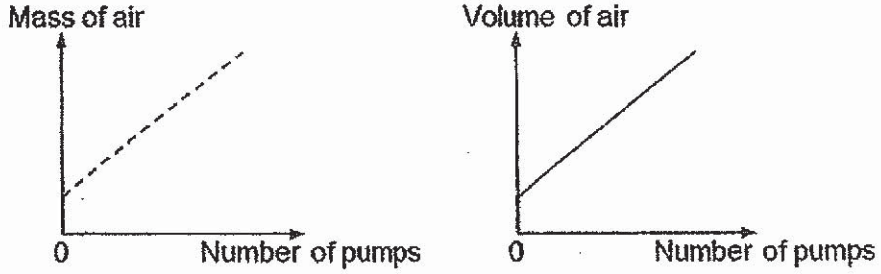


Which of the following pair of graphs show the mass and volume of the air in the flask as air was continually pumped into the flask?

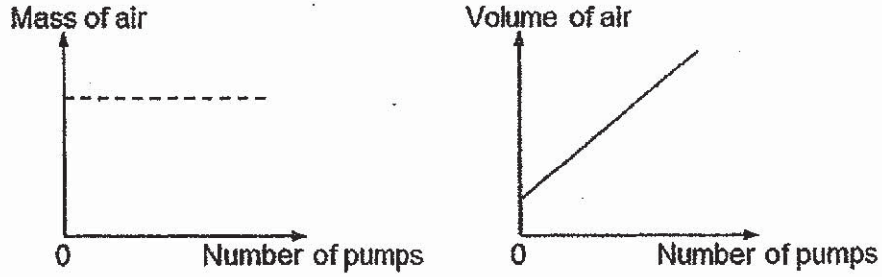
(1)



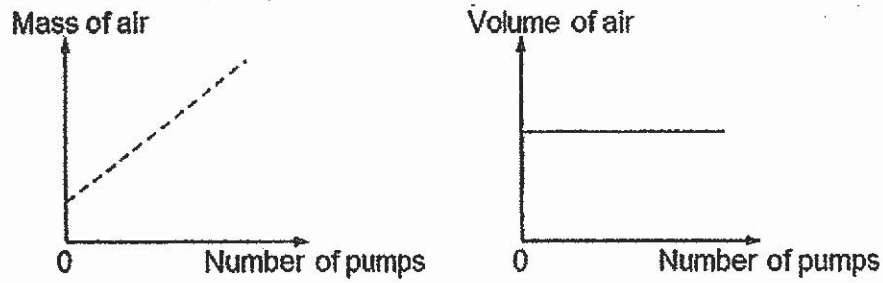
(2)



(3)



(4)



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8 Three different types of flowering plants, A, B and C, were growing in fields near a river as shown in Diagram 1.

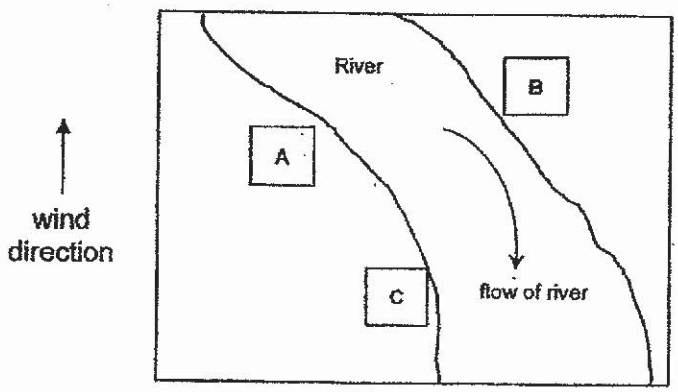


Diagram 1

A few years later, more of each plant, A, B and C, were found growing in the fields as shown in Diagram 2.

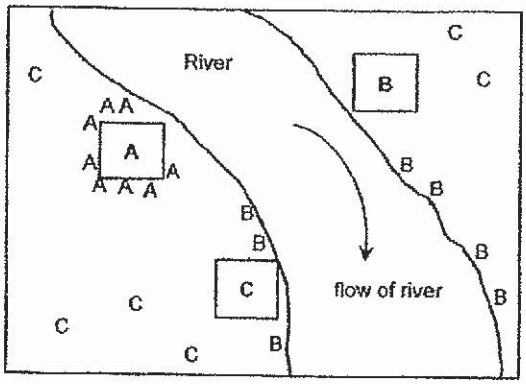


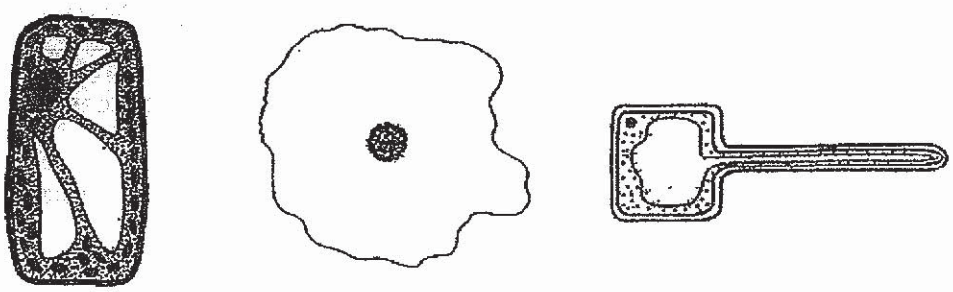
Diagram 2

What are the likely characteristics of the fruits of plants A, B and C, which helped them to disperse their seeds?

	Plant A	Plant B	Plant C
(1)	fleshy and edible	splits open when ripe	hook-like structures
(2)	splits open when ripe	waterproof covering	wing-like structure
(3)	splits open when ripe	fibrous husk	fleshy and edible
(4)	fibrous husk	fleshy and edible	wing-like structure

(Go on to the next page)

9 The diagram below shows three cells, P, Q and R.



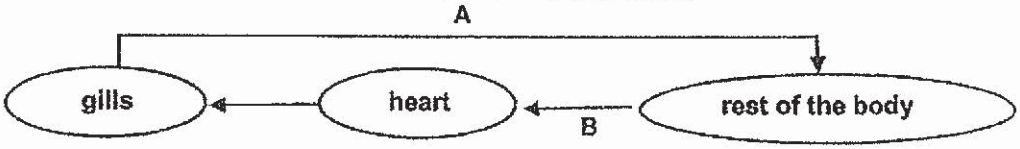
Cell P Cell Q Cell R

Which one of the following statements is true?

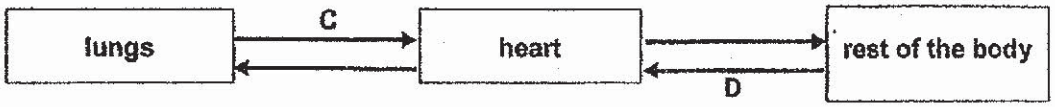
(1) Cell Q and Cell R are animal cells.
(2) Cell P and Cell R have no fixed shapes.
(3) Cell P and Cell R can make food for the plant.
(4) Cell P, Cell Q and Cell R can control the substances that enter or leave them.

10 The diagrams below show how gases are transported in the circulatory systems of a fish and a man.

Circulatory system of a fish



Circulatory system of a man



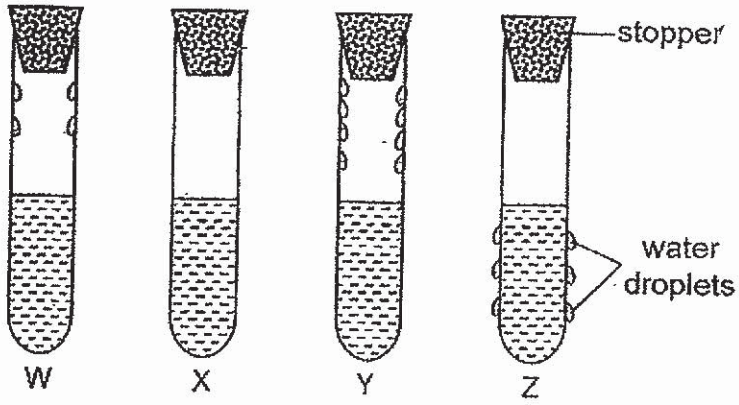
Which of the following correctly describe the blood vessels A, B, C and D?

	Blood rich in oxygen	Blood rich in carbon dioxide
(1)	A and C	B and D
(2)	A and B	C and D
(3)	B and D	A and C
(4)	B and C	A and D

(Go on to the next page)

11 Kaylie conducted an experiment in the laboratory. She filled four identical test tubes, W, X, Y and Z with the same volume of water at different temperatures. Then she covered the test tubes with identical stoppers.

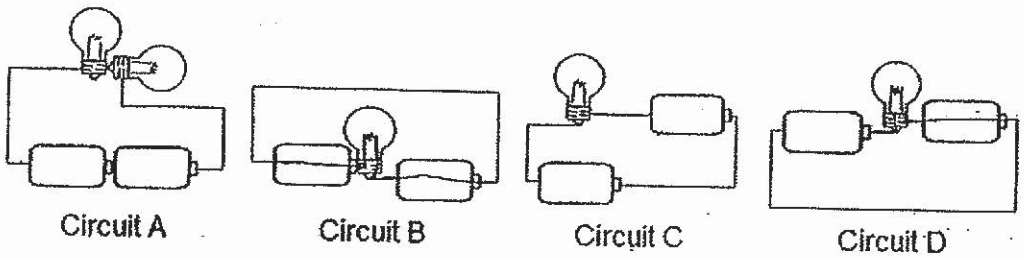
The diagram below shows Kaylie's observation after five minutes.



Which one of the following shows how the temperature of water arranged from the highest to the lowest?

	Highest → Lowest
(1)	X, W, Y, Z
(2)	Y, W, X, Z
(3)	Y, Z, W, X
(4)	Z, X, W, Y

12 Study the four circuits in which identical bulbs and batteries are connected as shown below.

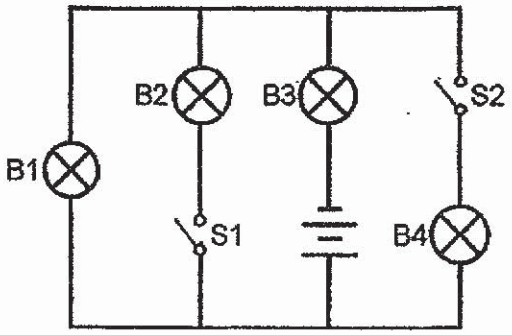


In which circuits would the bulb(s) light up?

(1) A and B
(2) A and C
(3) B and D
(4) C and D

(Go on to the next page)

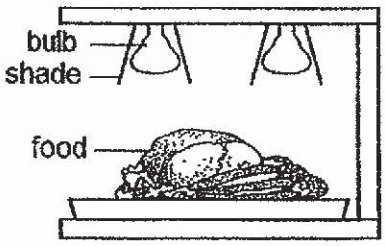
13 Four bulbs, B1, B2, B3 and B4, were connected in a circuit with two switches, S1 and S2. All the components were working properly.



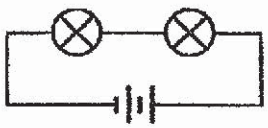
Which of the following is correct?

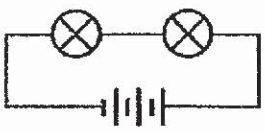
	Switches		Did the bulb light up?			
	S1	S2	B1	B2	B3	B4
(1)	closed	closed	yes	no	yes	yes
(2)	closed	open	no	yes	yes	no
(3)	open	closed	no	no	yes	yes
(4)	open	open	yes	no	yes	no

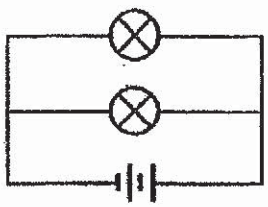
14 A restaurant uses a portable food warmer to keep food hot. The warmer has two identical bulbs which give out more heat when they are brighter.

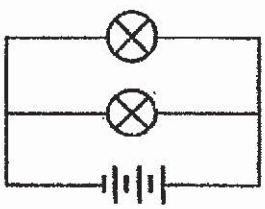


Which of the following circuits should be used such that food will be kept the warmest?

(1)


(2)


(3)


(4)


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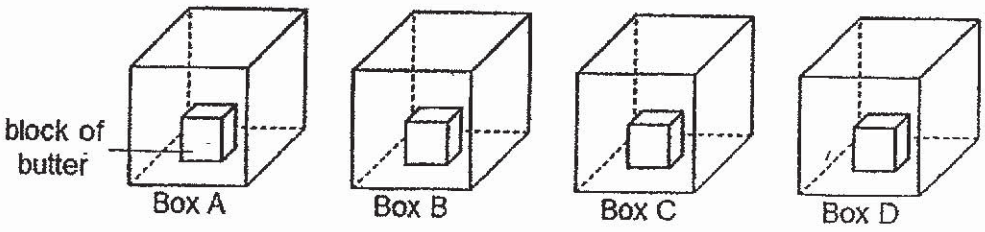
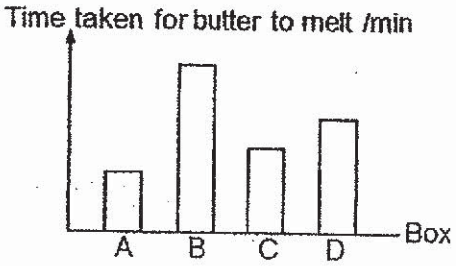
15 A block of butter was placed in each of the four boxes, A, B, C and D. The boxes are identical in size and made up of different materials of equal thickness.



The graph below shows the time taken for the block of butter in each box to melt completely.



Based on the results, which box is the most suitable for keeping the butter?

(1) A
(2) B
(3) C
(4) D

16 Clarice heated a beaker of pure water and measured its temperature. The table below shows the results of the experiment.

Time / min	Temperature / °C
0	30
2	50
4	70
6	90
8	?

What is the temperature of the beaker of water at the 8th minute?

(1) 90 °C
(2) 100 °C
(3) 110 °C
(4) 120 °C

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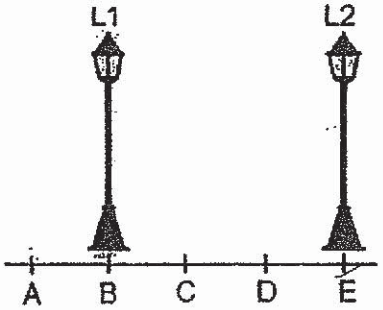
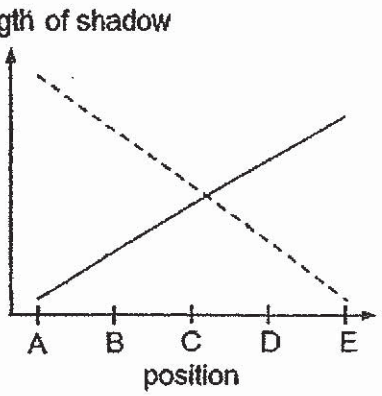
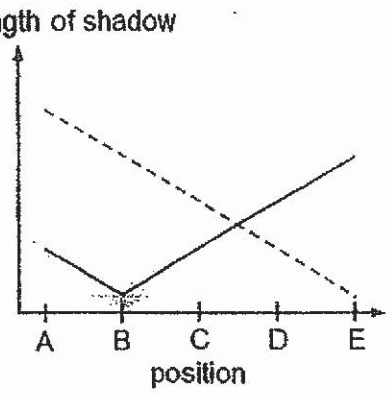
17 Siti was walking along a path, from A to E, with two lamps, L1 and L2, placed at position B and E respectively.

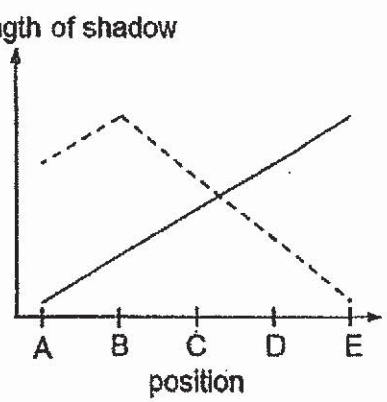


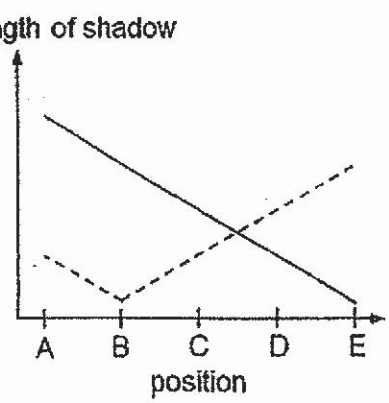
Which one of the following graphs shows how the length of her shadows changed?

Legend:
—— Shadow caused by L1
------ Shadow caused by L2

(1)


(2)


(3)


(4)


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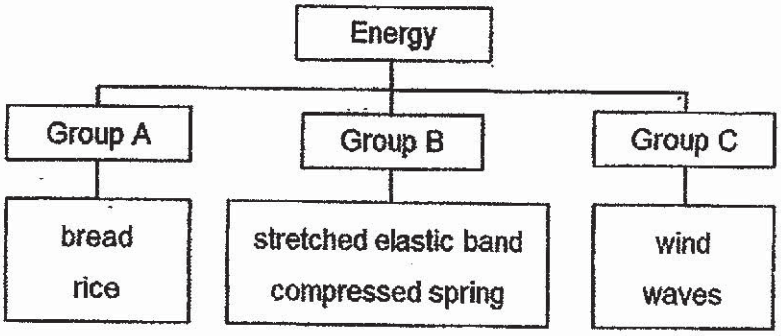
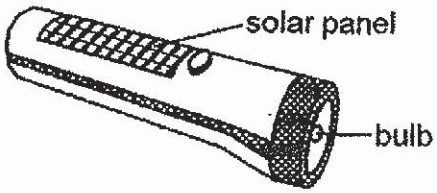
18 Study the classification chart below.



Which of the following are suitable headings for groups A, B and C?

	A	B	C
(1)	heat energy	kinetic energy	chemical potential energy
(2)	chemical potential energy	heat energy	sound energy
(3)	sound energy	chemical potential energy	heat energy
(4)	chemical potential energy	elastic potential energy	kinetic energy

19 The diagram below shows a solar powered torch. The solar panel traps energy from the sun and stores it in the cell.



Which one of the following correctly shows the energy conversion when the torch is switched on?

(1) Solar energy → light energy → heat energy
(2) Solar energy → electrical energy → light energy + heat energy
(3) Potential energy → electrical energy → light energy + heat energy
(4) Potential energy → solar energy → light energy → heat energy

(Go on to the next page)

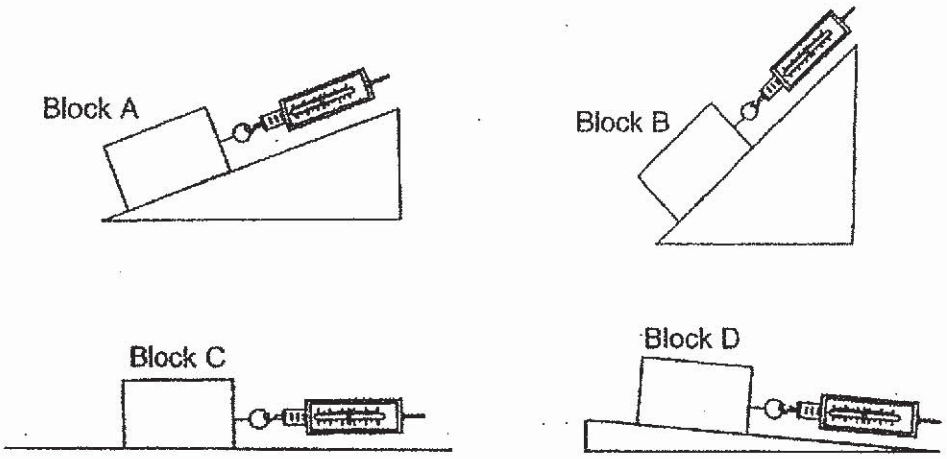
20 Five bell jars, each containing a similar plant with the same number of leaves, were set up according to different set of conditions as shown in the table below.

	Set-up				
Condition	**1**	**2**	**3**	**4**	**5**
100 ml of water	No	No	Yes	Yes	Yes
Presence of sunlight	No	Yes	No	No	Yes
Presence of oxygen	Yes	Yes	Yes	No	Yes
Presence of carbon dioxide	No	No	Yes	Yes	Yes

Which pair of set-ups is the most appropriate to show that sunlight is needed for photosynthesis?

(1) Set-ups 1 and 2
(2) Set-ups 1 and 5
(3) Set-ups 3 and 4
(4) Set-ups 3 and 5

21 Ali used a spring balance to pull four blocks, A, B, C and D, along four similar surfaces in his experiment below. The blocks are of similar sizes and made of same material.

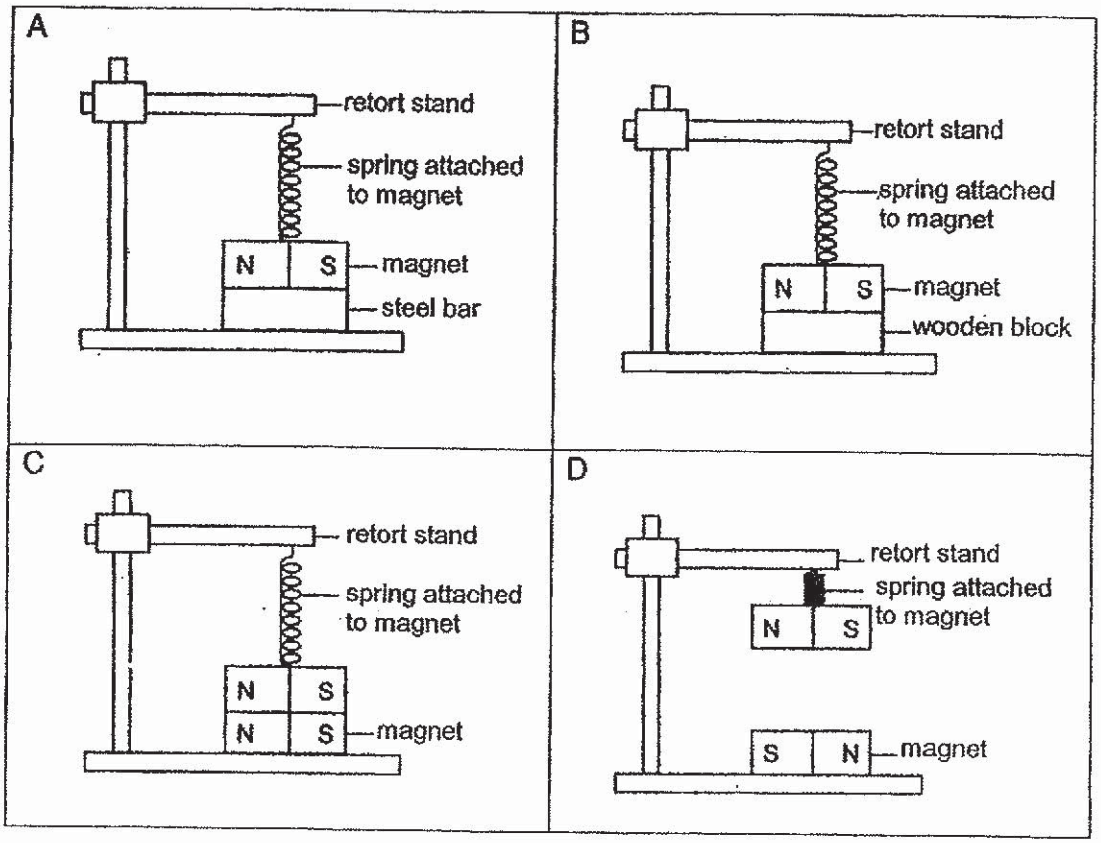


If the spring balance shows the same readings for all the blocks, which block has the smallest mass?

(1) Block A
(2) Block B
(3) Block C
(4) Block D

(Go on to the next page)

22 Study the four set-ups below.

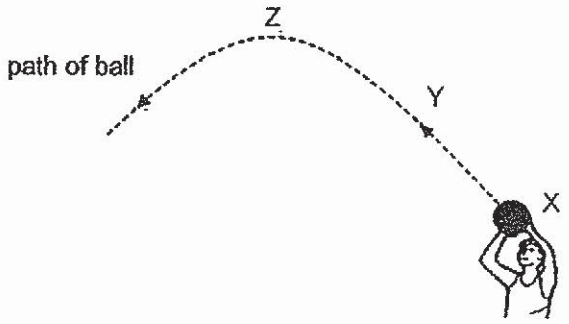


Which of the above arrangement(s) of the magnets is/are possible?

(1) A only
(2) A and B only
(3) C and D only
(4) A, B, C and D

(Go on to the next page)

23 Joshua threw a basketball at X and it moved along the path as shown in the diagram below.

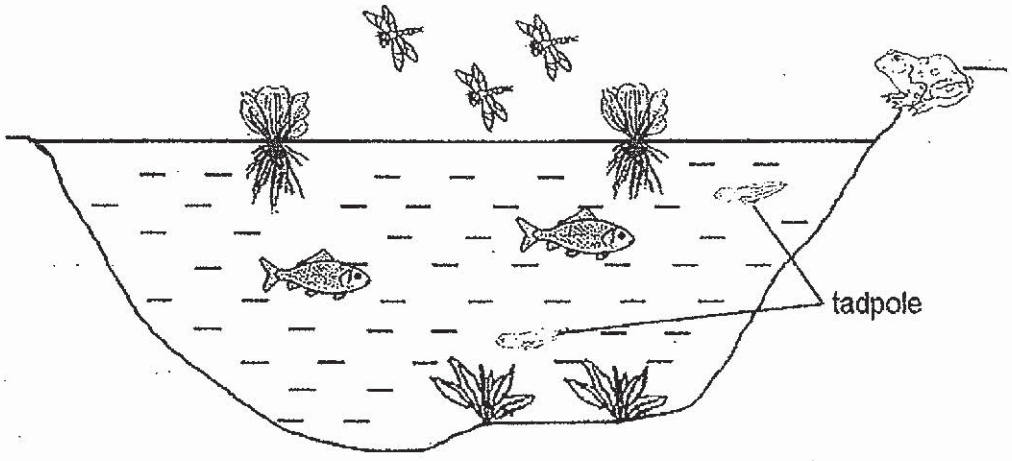


Which statements are **not** true?

A At X, there is no force acting on the basketball.
B At Y, there is gravitational attraction between the basketball and the Earth.
C At Z, the basketball started to fall as there was no more force acting on it.
D The gravitational force acting on the basketball does not change from point X to Z.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

24 The diagram below shows a pond habitat.

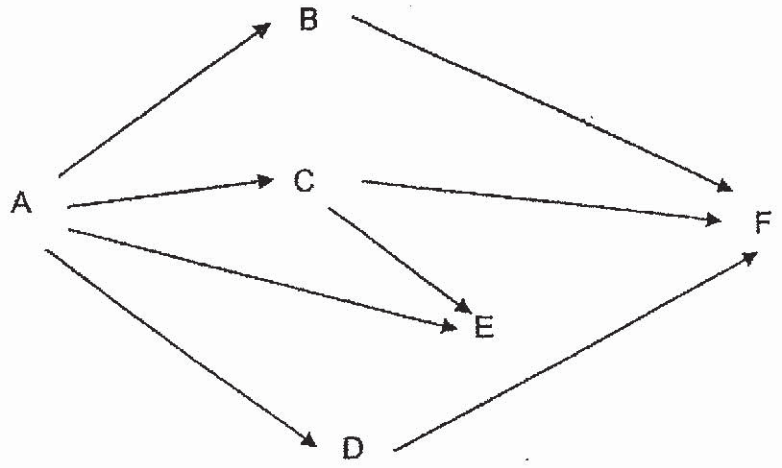


How many populations of producers and consumers are present in this habitat?

	Number of populations of	
	producers	consumers
(1)	2	3
(2)	2	4
(3)	4	3
(4)	4	8

(Go on to the next page)

25 Study the food web as shown below.



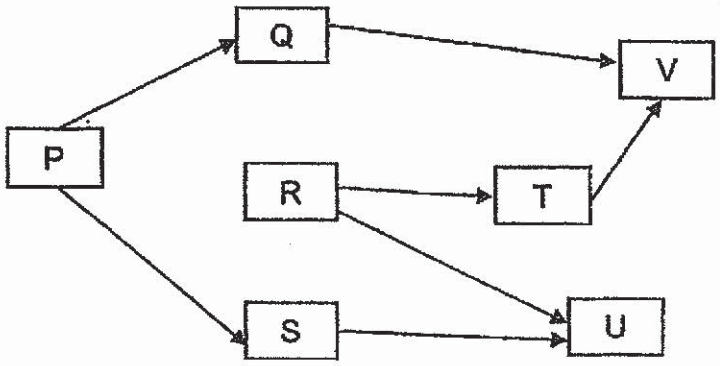
Which of the following statements about the food web are true?

A Organism D and F are both preys and predators.
B There are three plant-eaters and one animal-eater.
C Organism E gets its energy directly from organisms A and C.
D All the energy in organism B is transferred to organism F.

(1) A and D only
(2) B and C only
(3) A, B and C only
(4) B, C and D only

(Go on to the next page)

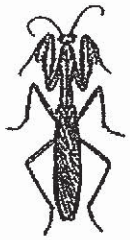
26 Study the food web shown below.



If the population of organism R decreases, which of the following populations will be most affected?

(1) Q
(2) S
(3) T
(4) U

27 A praying mantis has several adaptations which help to protect it from predators.



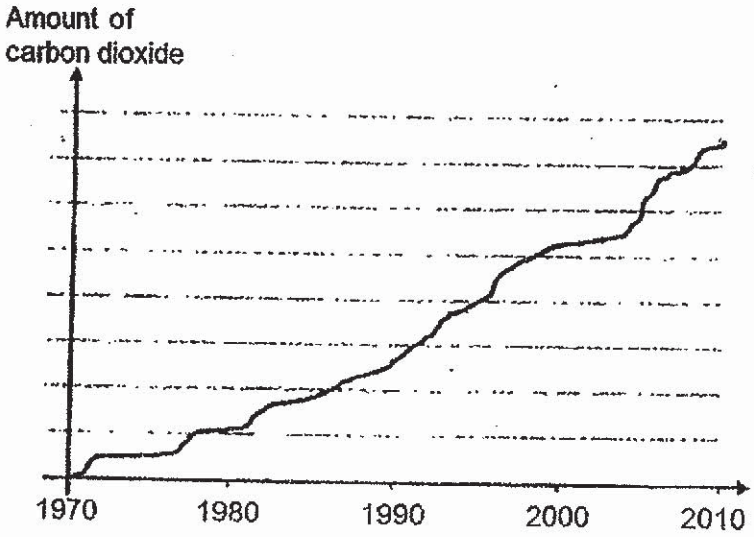
What are some of these structural adaptations?

A It spreads its forelegs to appear bigger.
B It has feelers which help it to detect danger.
C It fans its wings to appear more threatening.
D It blends in with the surroundings to hide from its predators.

(1) B and D only
(2) A, B and D only
(3) A, C and D only
(4) A, B, C and D

(Go on to the next page)

28 The graph below shows how the amount of carbon dioxide in the air has changed over the years in a country from 1970 to 2010.



Which of the following is/are effect(s) of the trend shown in the graph above?

A flood
B acid rain
C soil erosion
D deforestation

(1) A only
(2) A and B only
(3) B, C and D only
(4) A, C and D only

End of Booklet A

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET B1

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6._____

Date : 22 August 2019

Booklet A	56
Booklet B1	22
Booklet B2	22
Total	100
Parent's Signature	

This booklet consists of 9 printed pages including this page.

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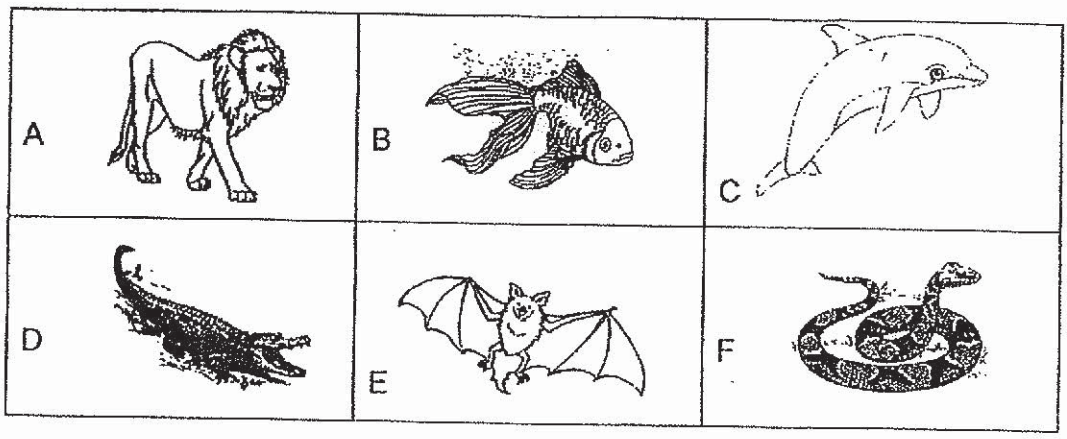
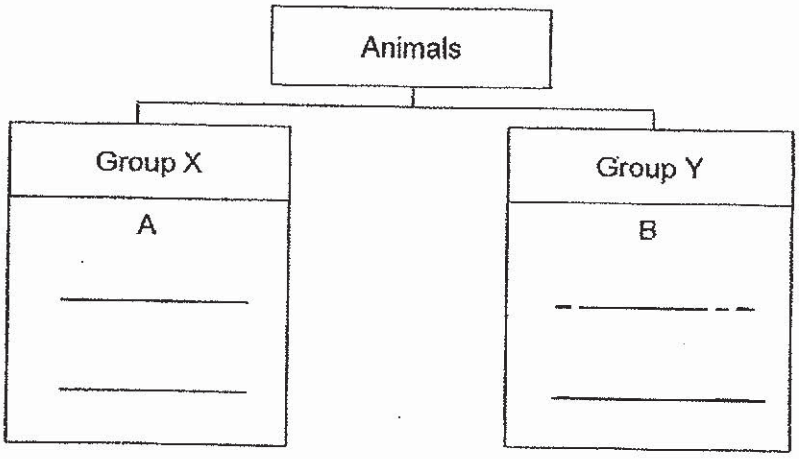
For questions 29 to 34, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

29 Study the animals as shown below.



(a) Animals A and B have been grouped under Group X and Group Y respectively as shown below. Classify animals C to F in the chart below respectively. [2]



(b) Suggest suitable headings based on your answer in (a) [1]

Group X: _____

Group Y: _____

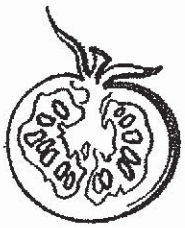
SCORE	
	3

(Go on to the next page)

30 The table below shows some characteristics of flowers from two plants, F and G.

Plant F	Plant G
Large brightly coloured petals	Small dull coloured petals
Long stigma	Short stigma
One ovule in ovary	Many ovules in ovary

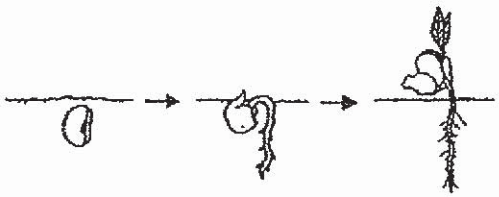
The diagram below shows a fruit formed from one of the plants. It is cut into half as shown below.



(a) How are the flowers of Plant F pollinated? Give a reason for your answer. [1]

(b) Which plant, F or G, is the fruit most likely taken from? Explain your answer. [1]

The diagram below shows a seed germinating into a seedling after it was dispersed.



(c) What are the conditions necessary for it to take place? [1]

(Go on to the next page)

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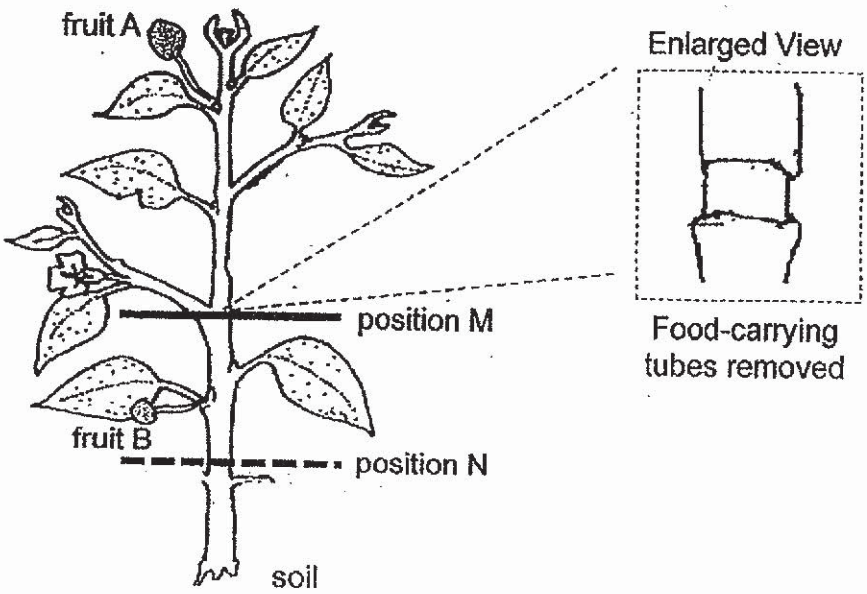
A farmer conducted an experiment using plant F. He removed an outer ring of the stem at position M as shown in the diagram below. The food-carrying tubes were removed while the water carrying tubes remained in the stem.



Plant F

(d) The farmer observed that after two weeks, fruit A grew bigger than fruit B. Suggest why fruit A was bigger. [1]

(e) The farmer then made a deeper cut at position N and removed the water-carrying tubes. He observed that the plant wilted after some time. Suggest a possible reason. [1]

SCORE	
	5

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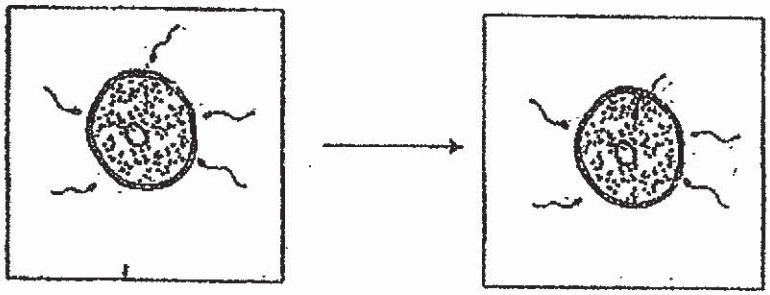
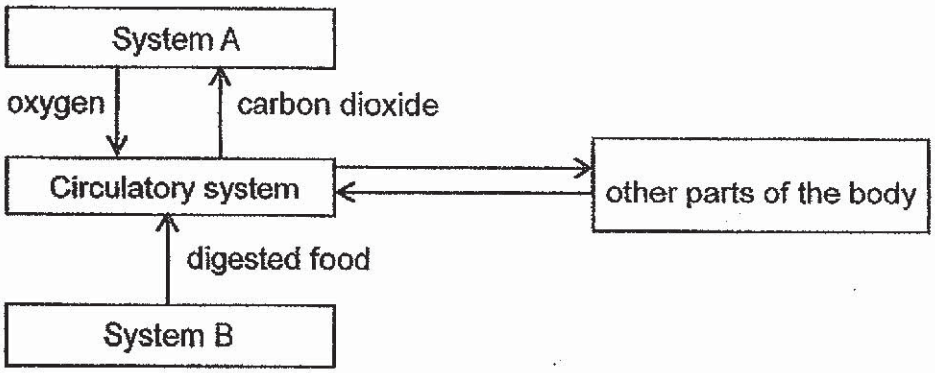
31 The diagram below shows a life process occurring in a female body.



Stage 1 Stage 2

(a) Describe what happens during the process. [1]

The flow of substances between different body systems in a human being can be represented by the diagram below.



(b) What are systems A and B? [1]

System A: _____ system

System B: _____ system

SCORE 2

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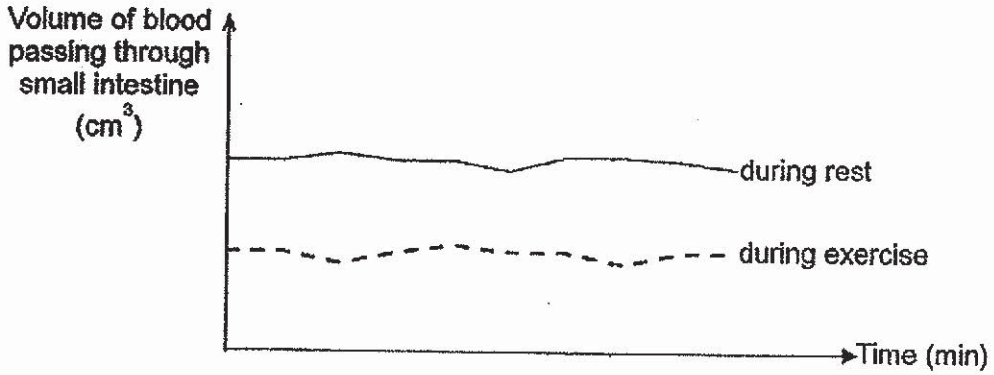
The graph below shows the volume of blood passing through the small intestine during rest and exercise over a period of time.



(c) Using the graph above, explain how exercising after a meal affects the absorption of digested food in the small intestine. [2]

SCORE 2

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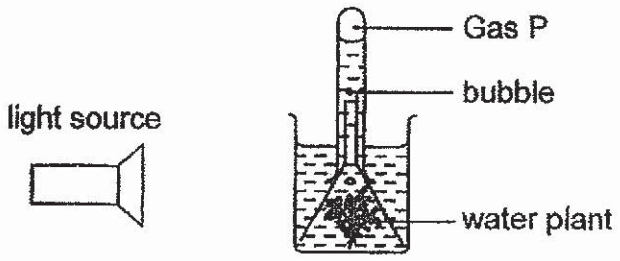
32 Muthu wanted to find out how light affects the number of bubbles produced by a water plant. He placed a lamp at different distances from set-up and counted the number of bubbles produced per minute.



set-up

His results are shown below.

Distance of lamp from set-up (cm)	25	20	15	10	5
Number of bubbles per minute	10	15	20	25	25

(a) Based on Muthu's results, what is the relationship between the distance of lamp from the water plant and the rate of photosynthesis? Explain your answer. [2]

(b) Name Gas P. How was it produced? [1]

(c) Murthu prepared another set-up as above without the light source. Explain the purpose of the set-up. [1]

SCORE 4

(Go on to the next page)

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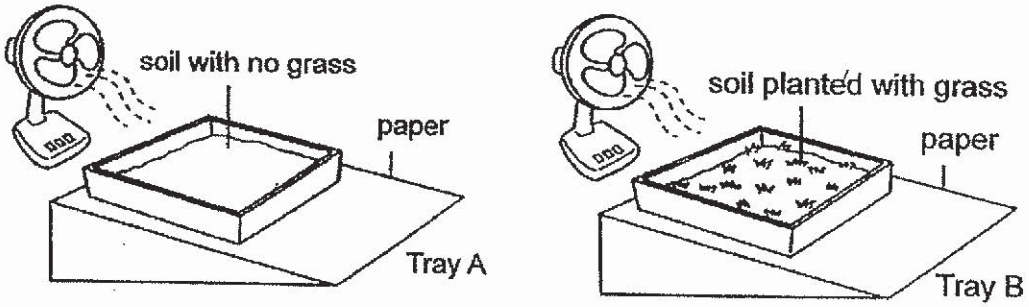
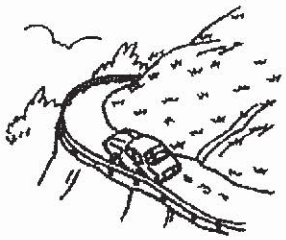
33 Lily conducted an experiment with two trays containing the same amount of soil as shown below. A patch of grass was placed in Tray B but not Tray A. She left each tray at equal distance in front of a fan. After two hours, she recorded the amount of soil particles collected on the paper under each tray.



After the experiment, she concluded that there was more soil particles collected on the paper under Tray A than Tray B.

(a) Give a reason why there was more soil particles collected on the paper under Tray A than Tray B. [1]

The diagram below shows a road winding around a highland in a country.



(b) Based on the experiment in (a), explain clearly how growing plants on the slope can prevent soil erosion. [1]

(c) Suggest another negative impact if all the plants on the slope of the highland are cut down. [1]

SCORE	/ 3

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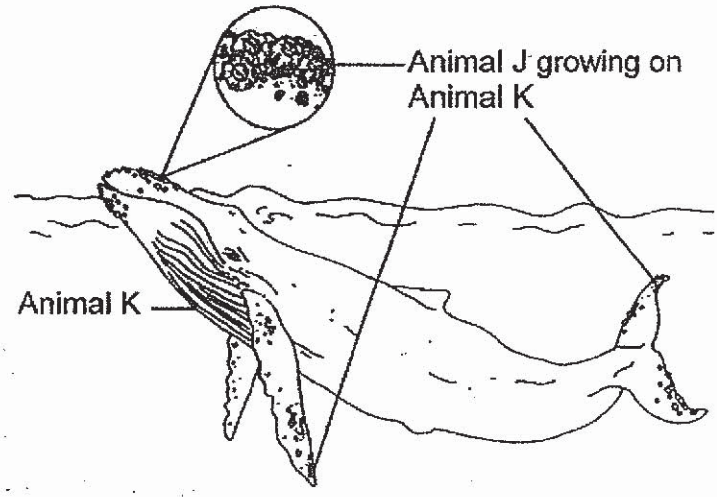
34 **Animal J is a small animal with hard shell and it can be found on rocks. Some of them attach themselves to the skin of Animal K and form thick crusts on its head, tail and flippers as shown below.**



(a) Animal J attach themselves on Animal K and get carried to other places. How does being carried to other places benefit Animal J? [1]

_____

_____

(b) Animal K sometimes defends itself by striking its head, flippers or tail at its predators. How is the presence of Animal J an advantage to Animal K? [1]

_____

_____

(c) Explain how the body shape of Animal K can help in its survival. [1]

_____

_____

SCORE	
	3

End of Booklet B1

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET B2

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Name: _____ ( )

Class: Primary 6._____

Date : 22 August 2019

Booklet B2	22

This booklet consists of 10 printed pages including this page.

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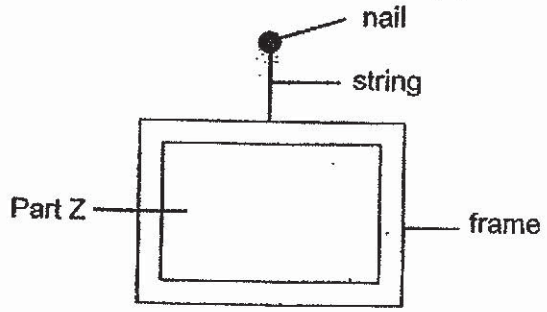
For questions 35 to 40, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

35 Morgan wanted to frame some photos and hang them onto the wall for display. Each frame has a mass of 150g and he had to attach a string to it so that he could hang it.



To find suitable strings for his frames, Morgan carried out an experiment. He kept adding loads onto each string, A, B, C and D, until it broke. The strings were of equal length but made of different materials.

His results are as shown in the table below.

String	Amount of loads hung onto string before it broke (g)
A	130
B	190
C	80
D	220

(a) Which strings should Morgan chose to hang his picture frames? Give a reason for your answer. [1]

_____

_____

(b) What property of material is suitable for making part Z of the photo frame? Give a reason for your answer. [1]

_____

_____

SCORE	/ 2

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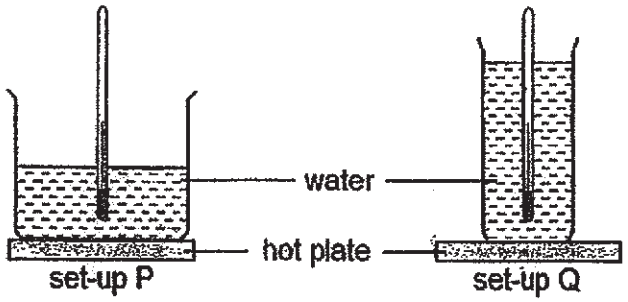
36 Mei Li set up an experiment with two setups, P and Q, as shown.



Two beakers of different sizes, filled with equal amount of water at room temperature, were heated on identical hot plates for two minutes.

(a) In which setup, P or Q, would the thermometer record a higher reading? Explain your answer. [1]

(b) Mei Li observed that there was less water left in set-up P at the end of the experiment. Explain the observation. [1]

Mei Li watched a documentary film featuring animal H which lived in a hot desert with temperature of up to 60 °C. It lifted up its front leg and opposite hind leg on an alternate basis.

(c) How does this adaptation help animal H to keep itself cool in the hot desert? [1]

(Go on to the next page)

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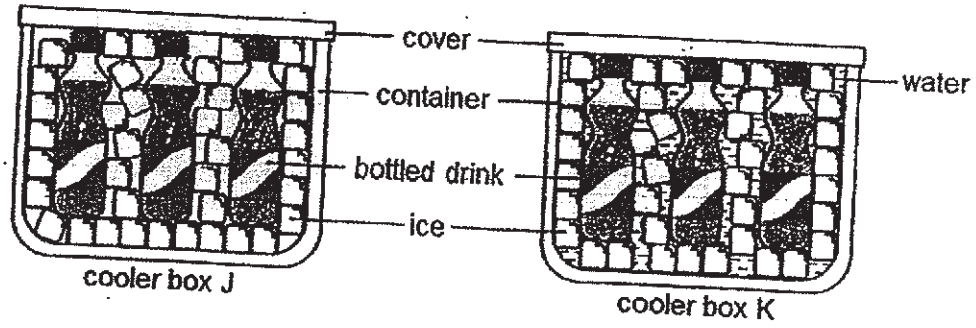
Mei Li filled two identical cooler boxes, J and K, with the same number of bottled drinks and same mass of ice cubes as shown below. Then she filled cooler box K with tap water but left cooler box J as it was.



(d) Mei Li found that the bottled drinks in cooler box K were colder than those in cooler box J. Explain the observation.

[1]

SCORE 4

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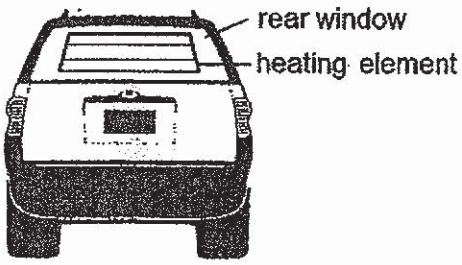
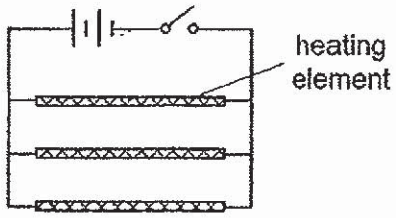
37 The diagram below shows the heater of a car and its circuit diagram. When the heater is switched on, it helps to clear mist formed on the rear window and prevent mist from forming.



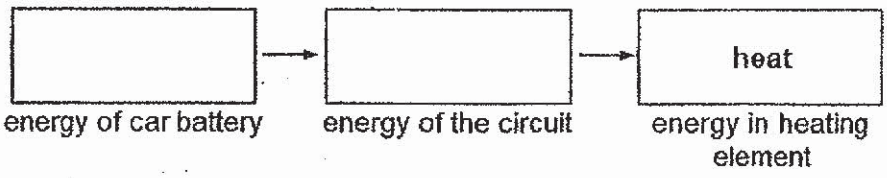


Circuit diagram of heater

(a) Are the heating elements arranged in series or parallel? What is the advantage of this arrangement? [1]

(b) Explain how the heater prevents forming of mist on the rear window when it is switched on. [1]

(c) Fill in the boxes below to show the energy conversion when the switch is closed. [1]



SCORE	
	3

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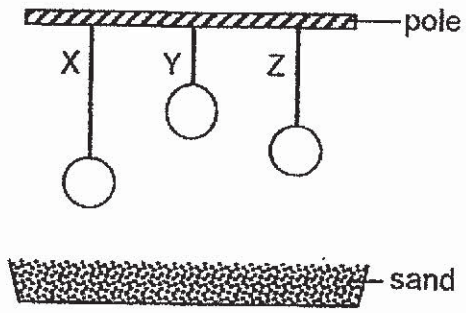
38 Jim set up an experiment as shown below. He hung three balls of the same mass, X, Y and Z, from the same type of strings from a pole above a tray of sand.



Tim cut the strings and measured the depth of depression, d, made by each ball in the sand.

The results were as shown in the table below.

Ball	Depth of depression, d (cm)		
	First reading	Second reading	Third reading
	3.2	3.5	3.3
	4.9	5.1	5.0
	0.9	1.1	1.2

(a) Fill in the table above to show the results for balls X and Z. [1]

(b) Why did ball Y make the deepest depression? Explain your answer in (a) in terms of energy conversion. [2]

(c) Why were balls of the same mass used in the experiment? [1]

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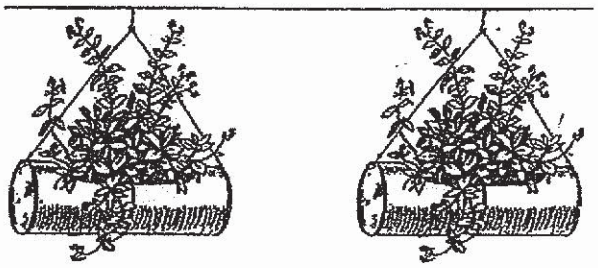
Jim saw two flower pots, A and B, hanging from the ceiling at the common corridor outside his neighbour's house.



flower pot A
1 kg

flower pot B
3 kg

(d) Which flower pot, A or B, would drop to the ground with a greater impact? Explain your answer. [1]

SCORE 5

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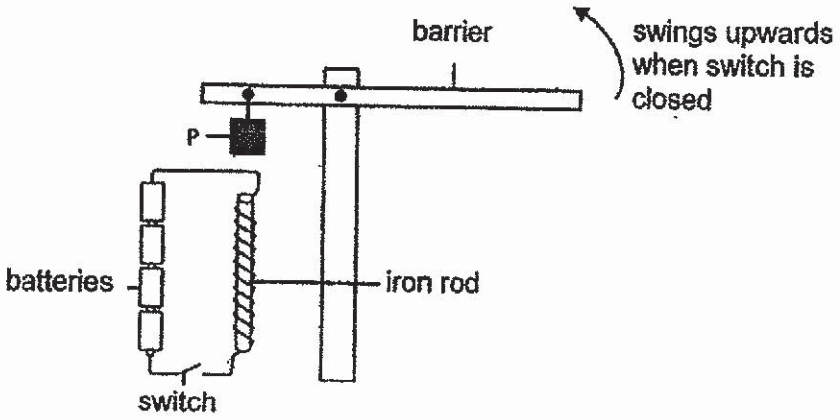
39 Mr Tan used the set-up below to show how a carpark barrier works.



The carpark barrier remains in a balanced position when the switch is open as shown above. However, the barrier will swing upwards when the switch is closed.

(a) Explain why the carpark barrier swings upwards after the switch is closed. [2]

(b) What happens if the iron rod is replaced by a copper rod? Explain your answer. [1]

(c) Suggest one change to the set-up to decrease the speed of the carpark barrier. [1]

SCORE	/ 4

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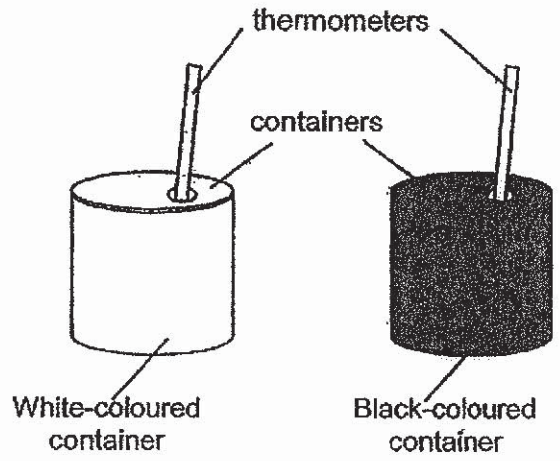
40 Jerry conducted an experiment using the two containers as shown below.

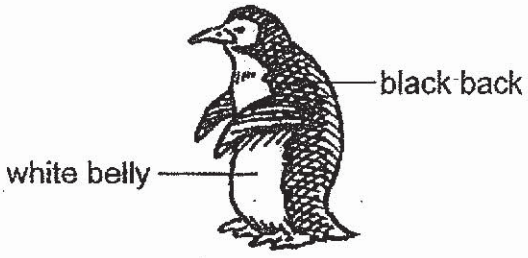


He painted the two containers with different colours and placed them under the sun. He recorded the temperature of the air inside each container at the start and after five hours in the table below.

Colour of container	White	Black
Initial Temperature (^{0}C)	28	28
Final Temperature (^{0}C)	35	40

(a) Based on Jerry's table, explain how the colour of the container affects the final temperature of the air in it. [1]

(b) Based on the results in (a), explain why having black back is an advantage for Animal P. [1]



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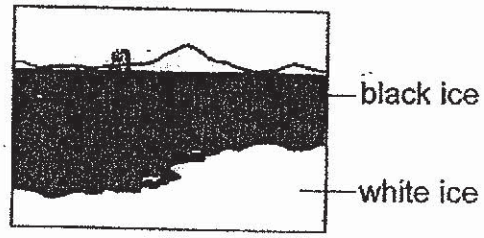
Air pollution has caused some black carbon to be deposited on ice. This has resulted in the ice turning black in the Polar Regions as shown in the diagram below.



(c) Based on the above results and information, explain how this would reduce the population size of Animal P staying in the Polar Regions. [2]

SCORE 4

End of Booklet B2

SCHOOL : MGS PRIMARYSCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	2	1	3	4	4	3	4	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	3	4	4	2	2	2	4	3	4
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	2	1	1	2	3	1	1		

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Methodist Girls' School (Primary)
P6 Preliminary Examination 2019 Answer Key (For Students)
Section B1 & B2

Qn.	Acceptable Answers
29a	Group X: A, C, E Group Y: B, D, F
29b	Group X: Have hair/ Reproduce by giving birth Group Y: Have scales/ Reproduce by laying eggs
30a	By animals because Plant F has large brightly-coloured petals that attract insects/ birds/ pollinators.
30b	Plant G, the fruit has many seeds which are developed from the ovules of its flower.
30c	Germination requires air/ oxygen, water/ moisture and warmth.
30d	More food was made by more leaves above position M and it was transported to fruit A.
30e	The farmer remove the water- carrying tubes so the water absorbed by the roots could not be transported to the leaves for making food/ life processes/ survival.
31a	Fertilization occurs when the sperm and egg fuse together.
31b	System A: Respiratory System B: Digestive
31c	During exercise, more blood is pumped to other parts of the body, less blood passes through the small intestine so less digested food can be absorbed by the blood (which slows down the rate of digestion).
32a	The greater/ shorter the distance of lamp from the water plant, the lower/ higher the rate of photosynthesis.
32b	Oxygen. The water plant produced oxygen when it trapped light energy to make food during photosynthesis.
32c	It acts as a control set-up to prove/ compare & confirm that the results/ number of bubbles produced is due to the presence of light source.
33a	There were no roots of the grass to hold the soil together in Tray A so soil was being blown away more easily as compared to Tray B.
33b	The roots of the plants will hold the soil particles together, preventing soil erosion/landslide.
33c	Global warming/ Loss of habitat for plants/ animals/ Water pollution.
34a	Animal J can find more food / find food more easily as Animal K moves to different places/ protection/hide/escape from predators
34b	The thick crusts formed by Animal J serves as an armour/ weapon to help Animal K injure its predators/ other animals.
34c	The body shape of Animal K helps it to swim quickly in/through water to hunt for its prey/ to escape from its predators.
35a	Strings B and D. Each can support a load of more than 150g before they break/ tear.
35b	The material for making part Z must allow all/ most light to pass through/ transparent so that the photo can be seen.
36a	Set-up P. There was more surface in contact with the hot plate so water in set-up P gained heat faster than in set-up Q.
36b	The water in set-up P has a bigger exposed surface area, the higher rate of evaporation caused more water to evaporate and less water left.
36c	Less surface area of Animal H's legs were in contact with the hot sand so Animal H gained less heat.
36d	Water is a better conductor of heat than air and it lost heat faster to ice. The bottled drinks in cooler box K lost heat faster to cooled water/ water and ice and thus had lower temperature.
37a	Parallel. If one of the heating elements is faulty, the heater/other heating elements can still work.
37b	The heating element heats up the rear window to a temperature higher than the surrounding. Water vapour cannot condense on the rear window /The absence of cooler surface prevents condensation. So no mist will be formed.

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<table>
<tr><td>37d</td><td>(chemical) potential energy of car battery → Electrical energy of the circuit → heat energy in heating element</td></tr>
<tr><td>38a</td><td>
<table>
<tr><th rowspan="2">Ball</th><th colspan="3">Depth of depression, d (cm)</th></tr>
<tr><th>First reading</th><th>Second reading</th><th>Third reading</th></tr>
<tr><td>Z</td><td>3.2</td><td>3.5</td><td>3.3</td></tr>
<tr><td>Y</td><td>4.9</td><td>5.1</td><td>5.0</td></tr>
<tr><td>X</td><td>0.9</td><td>1.1</td><td>1.2</td></tr>
</table>
</td></tr>
<tr><td>38b</td><td>When Y was hung the highest above the sand, it possessed the most (gravitational) potential energy. When the string was cut, the potential energy was converted to kinetic energy as it was falling. Y had the most kinetic energy before it hit the sand and made the deepest depression.</td></tr>
<tr><td>38c</td><td>To ensure the depth of depression was due to the height at which the ball was hung and not due to the mass of the ball.</td></tr>
<tr><td>38d</td><td>Flower pot B. B has a greater mass than A so it possesses more (gravitational) potential energy.</td></tr>
<tr><td>39a</td><td>When the switch is closed, electric current flows through the circuit, the iron rod becomes an electromagnet /becomes magnetised and attracted Object P downwards. This caused the barrier to swing upwards.</td></tr>
<tr><td>39b</td><td>The copper rod cannot not be an electromagnet / magnetised as it is a non-magnetic material so the set-up will not work.</td></tr>
<tr><td>39c</td><td>Reduce the number of turns of the coil around the rod. / Reduce the number of batteries.</td></tr>
<tr><td>40a</td><td>The final temperature of the air inside the black container is higher/ greater the air inside the white container as black colour absorbs/ gains more heat than white colour.</td></tr>
<tr><td>40b</td><td>The black back is able to absorb/ gain more heat from the Sun to keep Animal P warmer.</td></tr>
<tr><td>40c</td><td>The black ice will gain more heat/ heat faster than the white ice and melt faster, causing the sea level to rise. This causes the loss of ice and breeding ground for Animal P to lay their eggs so the population of the penguins will decrease.</td></tr>
</table>

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NAN HUA PRIMARY SCHOOL
PRELIMINARY ASSESSMENT – 2019
PRIMARY 6

SCIENCE

BOOKLET A

28 Multiple Choice Questions. (56 marks)

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/ 56
Booklet B		/ 44
Total		/ 100

Name: _____ ( ) **Class: P 6** _____

Date: 21 August 2019 **Parent's Signature:** _____

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Section A: (28 x 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

---

1 Which one of the following correctly shows the characteristics of reptiles and insects?

	Reptiles	Insects
(1)	give birth to young alive	lay eggs
(2)	have scales	have a hard outer covering
(3)	do not have wings	have a pair of wings
(4)	live on land and in water	live on land only

2 Ali did a study of two organisms, X and Y. At the end of his study, he recorded his observations in the table below:

Observation	Organism	
	X	Y
young resembles adult	No	No
4-stage life cycle	Yes	No
spends part of its life cycle in water	No	Yes

Which one of the following correctly represents X and Y?

	X	Y
(1)	mosquito	frog
(2)	frog	mosquito
(3)	grasshopper	mosquito
(4)	butterfly	frog

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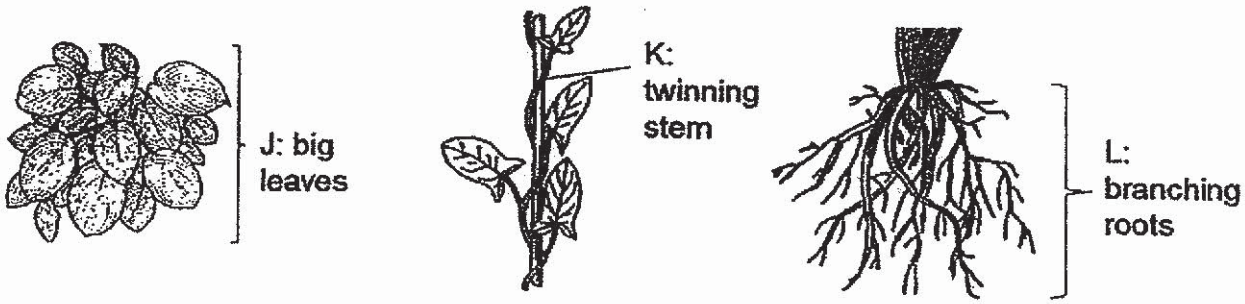
3 The diagrams below show plant parts J, K and L.



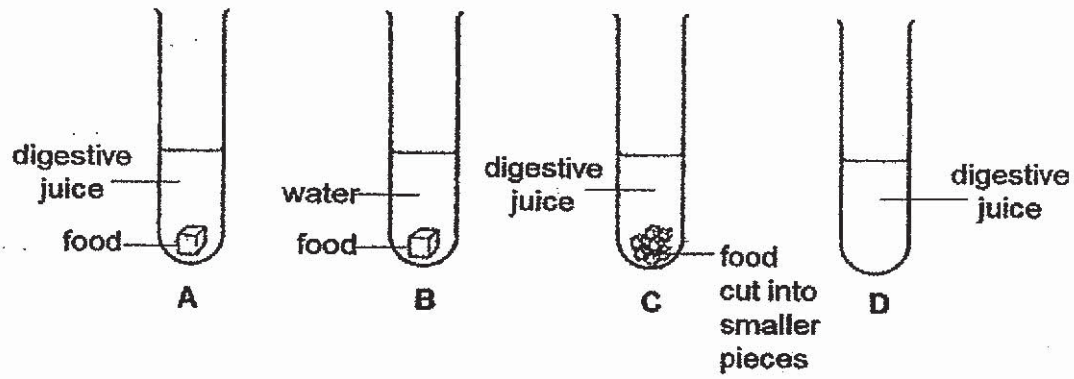
Which plant part(s) help(s) the plant(s) to obtain more sunlight?

(1) J only
(2) J and K only
(3) K and L only
(4) J, K and L

4 Which of the following in human has the same function as the pollen grains of a flower?

(1) eggs
(2) testis
(3) ovary
(4) sperms

5 Joe wants to find out if cutting food into smaller pieces will speed up digestion.



Which two set-ups should Joe use for his experiment?

(1) A and B only
(2) A and C only
(3) B and C only
(4) C and D only

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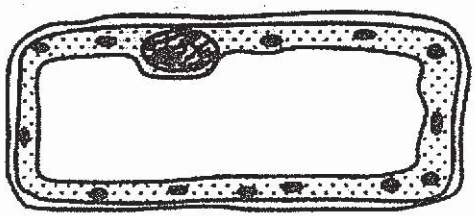
6 The diagram below shows a plant cell.

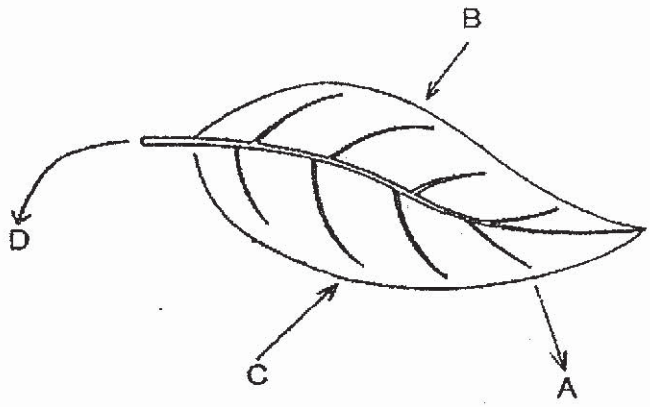


How can you tell that this cell is **not** taken from a root?

A It has a cell wall.
B It has chloroplasts.
C It has a regular shape.

(1) A only
(2) B only
(3) A and B only
(4) B and C only

7 The diagram below shows a leaf photosynthesising. Arrows A, B, C and D show either the raw materials taken in by the leaf or products of photosynthesis.



Based on the diagram above, which of the following is correct?

	A	B	C	D
(1)	oxygen	light	carbon dioxide	sugar
(2)	carbon dioxide	light	oxygen	water
(3)	light	carbon dioxide	oxygen	sugar
(4)	light	water	carbon dioxide	oxygen

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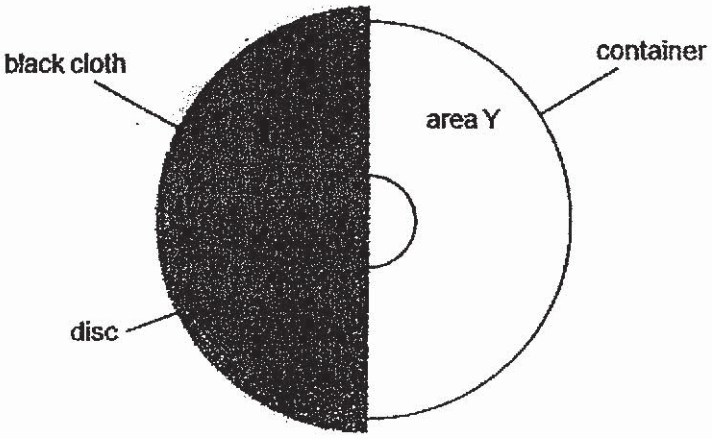
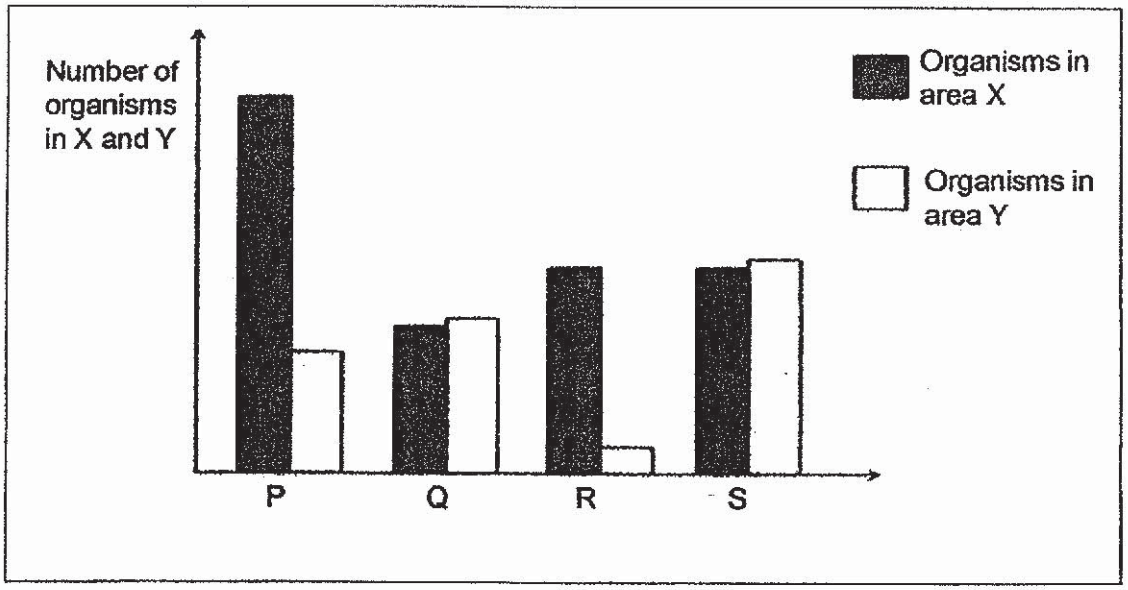
8 A container filled with soil was divided into 2 equal areas, X and Y. Equal amount of water was sprinkled onto both areas. A thick black cloth was used to cover area X. Some organisms P, Q, R and S, were placed in the disc in the centre of the container at the beginning of the experiment.



Top view of container

At the end of the experiment, the total number of organisms in each area was counted and recorded in the bar chart below.



Which of the organisms, P, Q, R and/or S, is/are likely to be found in a leaf litter habitat?

(1) P only
(2) P and R only
(3) Q and S only
(4) P, R and S only

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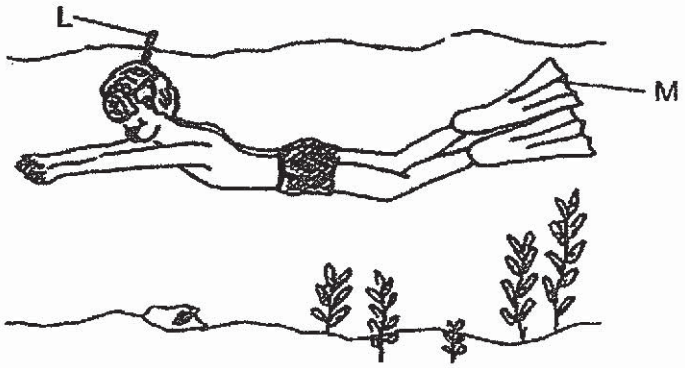
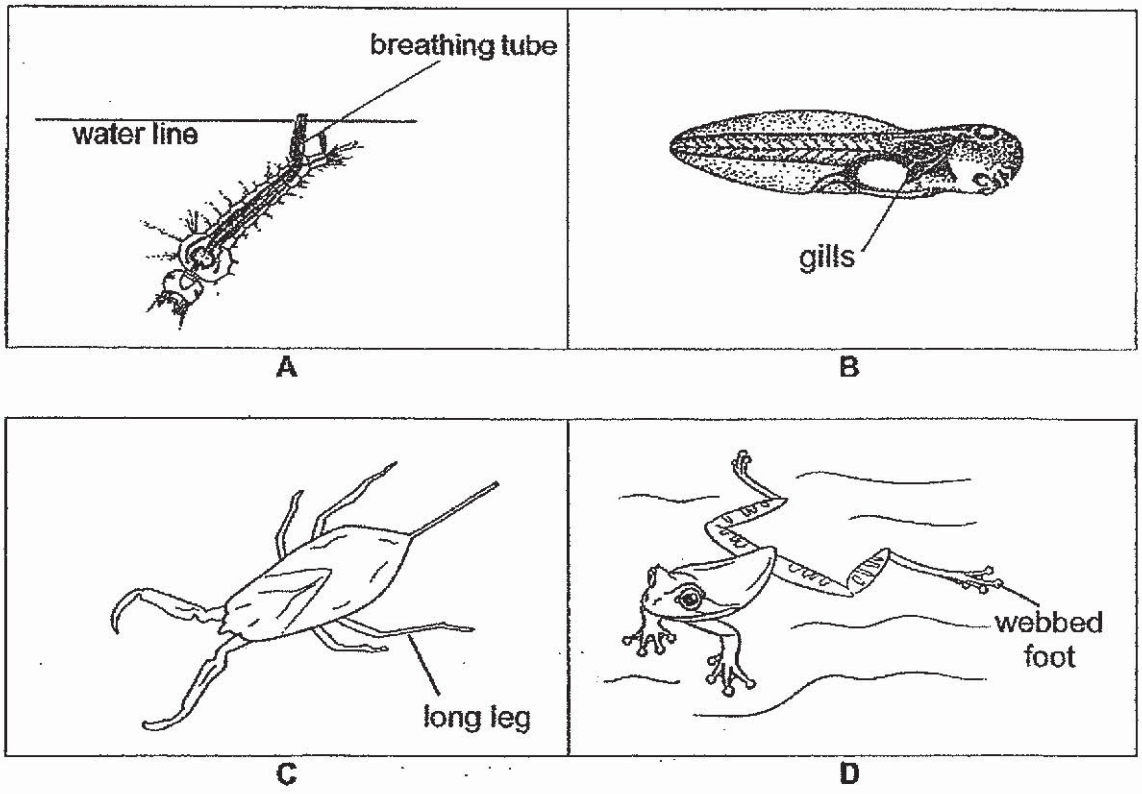
9 The diagram below shows a man in the sea wearing snorkeling gears, L and M.



Which of the following animals have parts with similar functions as L and M respectively?



	L	M
(1)	A	C
(2)	A	D
(3)	B	C
(4)	B	D

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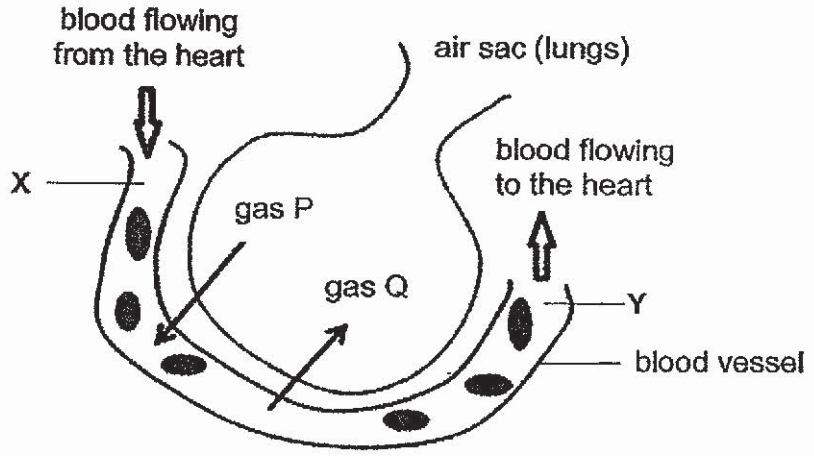
10 The diagram below shows the exchange of gases between an air sac (found in the lungs) and a blood vessel.

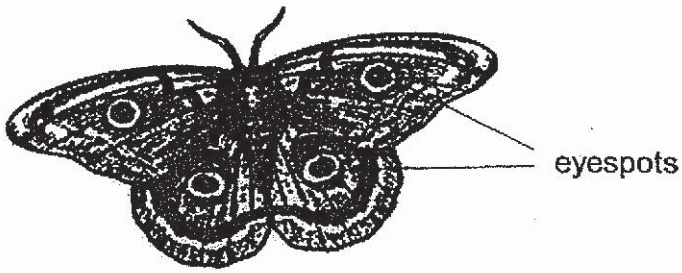


Which of the following statements is/are true?

A The blood at X does not carry any oxygen.
B The blood at Y carries less carbon dioxide than the blood at X.
C Gas P is carbon dioxide and gas Q is oxygen.

(1) B only
(2) A and B only
(3) A and C only
(4) B and C only

11 Butterfly X shown below has four huge eyespots on its wings.



How do the eyespots help butterfly X to survive?

A They help to frighten away predators.
B They help butterfly X to spot their predators.
C They help the butterfly X to camouflage with the leaves.
D They trick the predators into attacking its wings instead of its head.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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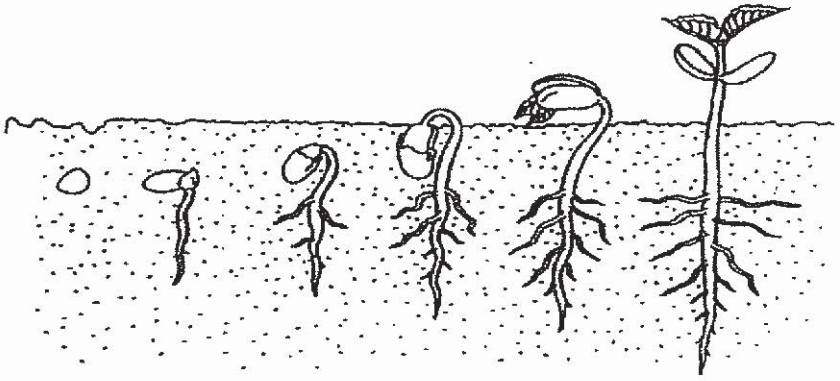
12 The diagram below shows the germination of a seed in a garden.

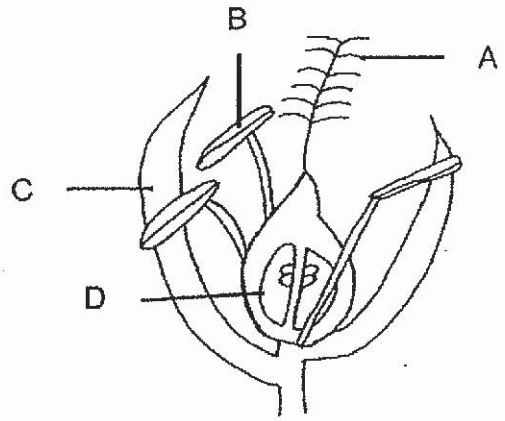


Which of the following statements is/are true?

A The seed leaves developed into the first pair of leaves.
B During germination, the root developed before the shoot.
C The seed leaves store food produced by the young seedling.

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

13 Kern removed two parts out of the four parts of the flower labelled as A, B, C and D as shown below. He then transferred pollen grains from another flower of the same plant to one of the remaining parts of the flower.



Kern observed that the flower developed into a fruit after a period of time.
Which two parts of the flower had been removed?

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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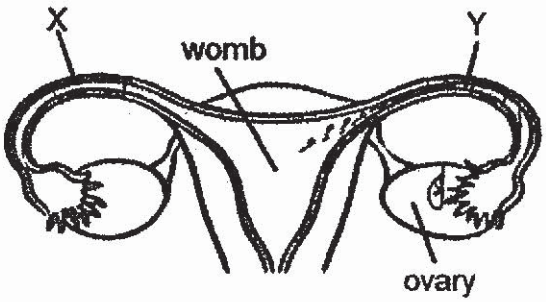
14 The diagrams below show tube X and tube Y of a female human reproductive system where fertilisation takes place. A surgical procedure that clamps both tubes X and Y help to prevent pregnancy.



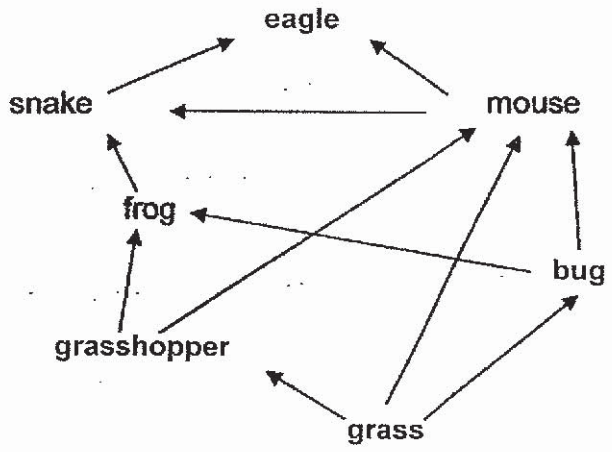
drawing of a clamp tube

Which of the following statements explain(s) how this procedure helps to prevent pregnancy?

A It prevents the ovary from producing eggs.
B It prevents the fertilised egg from developing.
C It prevents the sperms from reaching the egg.

(1) B only
(2) C only
(3) A and B only
(4) B and C only

15 The diagram below shows a food web.



How many animals in this food web are both a prey and a predator?

(1) Five
(2) Two
(3) Three
(4) Four

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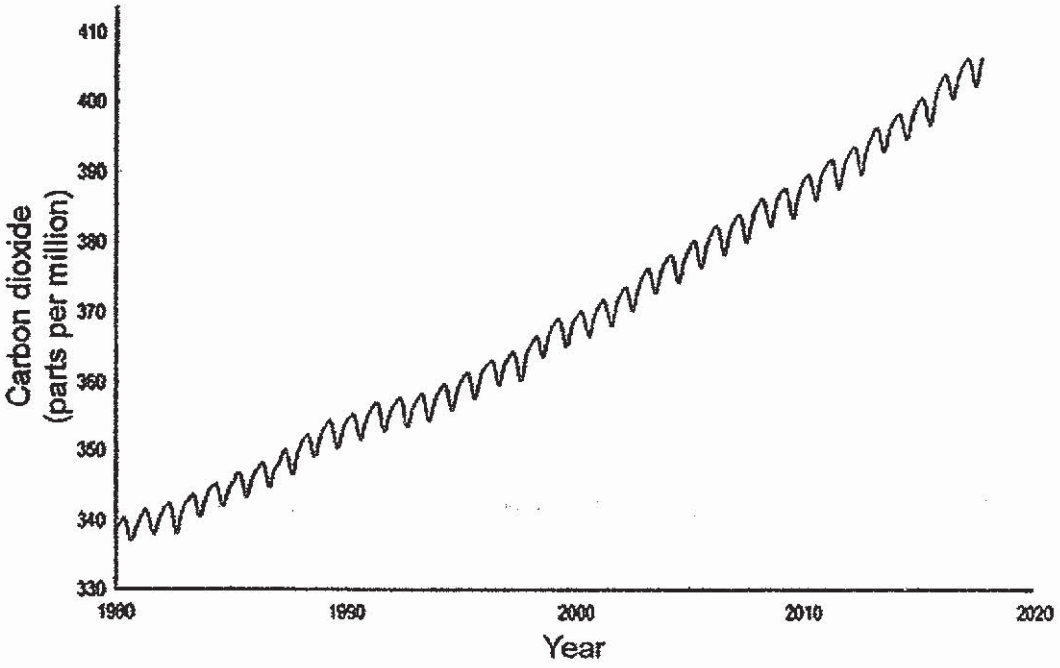
16 The graph below shows how the global monthly average concentration of carbon dioxide in the Earth's atmosphere changes from Year 1980 to Year 2019.



Which of the following are the possible causes of the increased concentration of carbon dioxide in the Earth's atmosphere?

A deforestation
B climate change
C burning of fossil fuel
D use of pesticide in farm

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, C and D only

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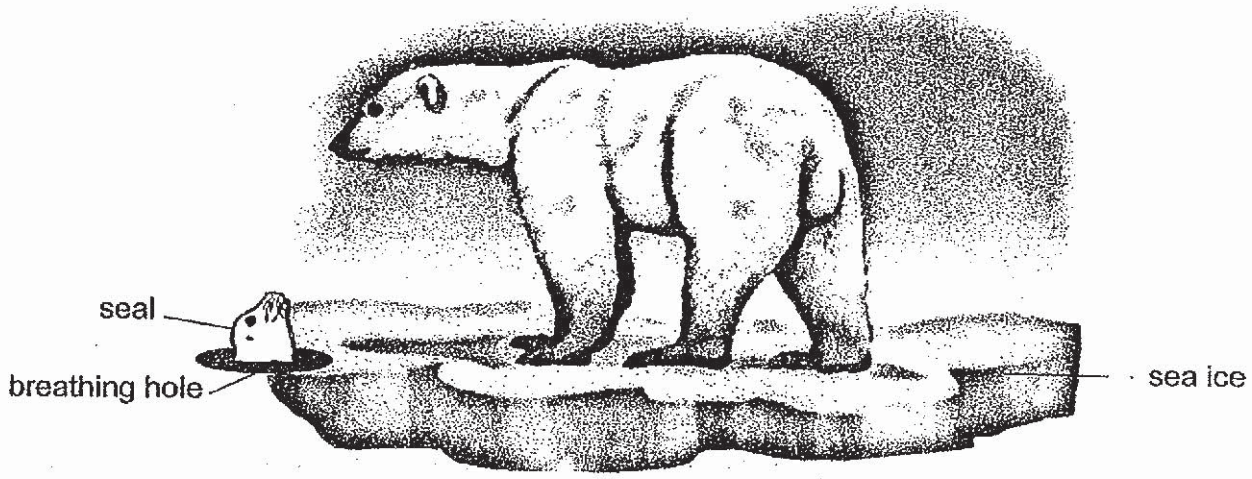
17 Polar bears which live in the Arctic rely on seals for food and energy. To catch its prey, a polar bear will stand near a breathing hole on the sea ice and wait for a seal to pop its head out of the water to breathe.

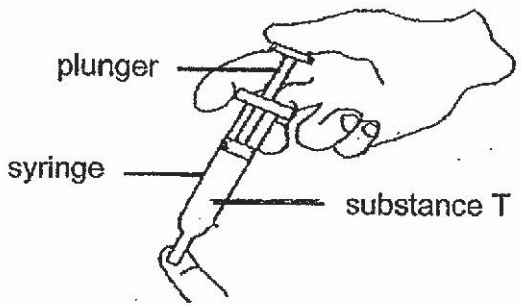


Global warming is causing the sea ice in the Arctic to melt rapidly and resulting in more polar bears starving to death.

Based on the information above, which one of the following statements correctly explains why polar bears are unable to have enough food due to global warming?

(1) Decrease in the number of seals.
(2) With less sea ice, the seals have more places to hide.
(3) With less sea ice, polar bears have fewer spaces to stand and wait for the seals.
(4) The sea ice were too cold for the polar bears to stand and wait for the seals to surface.

18 Ashlee filled a syringe with substance T. She covered the opening with her finger. She then tried to push the plunger in and observed that she could not do so.



What conclusion can she make about substance T based on her observation?

(1) It is a gas.
(2) It has mass.
(3) It has a definite shape.
(4) It has a definite volume.

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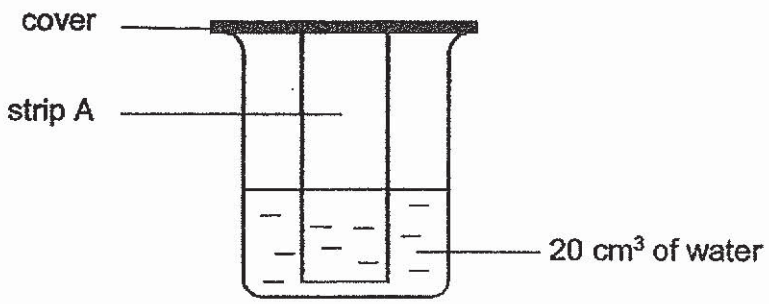
19 Devi conducted an experiment as shown below.



She replaced strip A with strips B, C and D of the same size but different materials into three other identical containers each filled with 20 cm^3 of water.

Devi recorded the results of the amount of water left in each container after 5 minutes as shown in the table below.

Strip	Amount of water left in container (cm^3)
A	14
B	20
C	0
D	3

Based on the information given above, which strip, A, B, C or D, is most likely to be waterproof?

(1) A
(2) B
(3) C
(4) D

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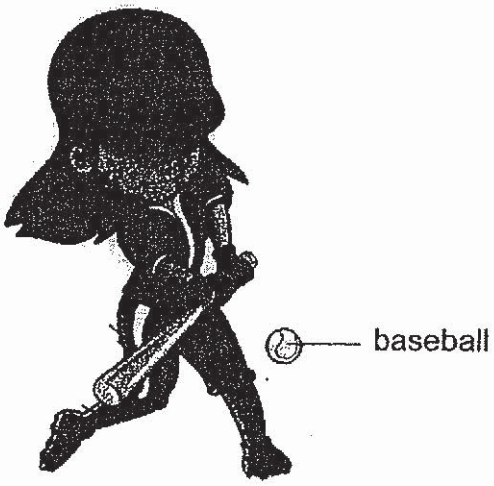
20 The diagram below shows a girl about to hit a baseball.



Which of the following are most likely to happen when she hits the baseball?

A The baseball changes speed.
B The baseball changes direction.
C The baseball decreases in mass.
D The baseball stops immediately.

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B, C and D

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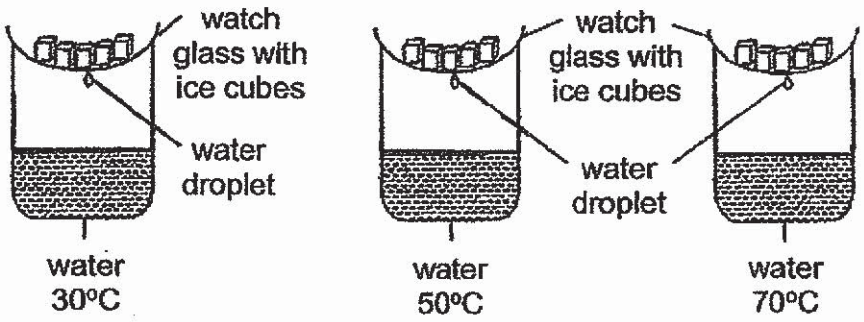
21 Keith conducted an experiment as shown below. Each beaker contained the same amount of water at different temperatures. He added five identical ice cubes onto each set-up. He measured the time taken for the first water droplet to drip into the beaker.



The table below shows the results of his experiment.

Temperature of water (°C)	Time taken for first water droplet to drip (s)
30	100
50	70
70	20

What is the aim of Keith's experiment?

(1) To find out how the time taken affects the temperature of water.
(2) To find out how the temperature of water affects the rate in which the ice cubes melt.
(3) To find out how the temperature of water affects the rate of evaporation of water.
(4) To find out how the number of ice cubes affects the time taken for the first water droplet to drip.

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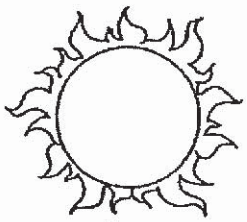
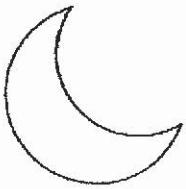
22 Which of the following are **not** sources of light?

A



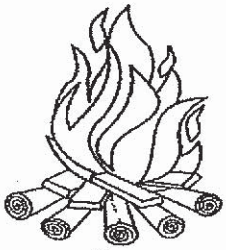
sun

B



moon

C



fire

D

mirror

(1) A and B only
(2) A and C only
(3) B and D only
(4) A, C and D only

23 The table below shows the melting and boiling points of two substances, A and B.

Substance	Melting point (°C)	Boiling point (°C)
A	5	77
B	90	173

Which of the following shows the correct state of substances A and B at 80°C?

	A	B
(1)	liquid	gas
(2)	gas	solid
(3)	liquid	liquid
(4)	solid	gas

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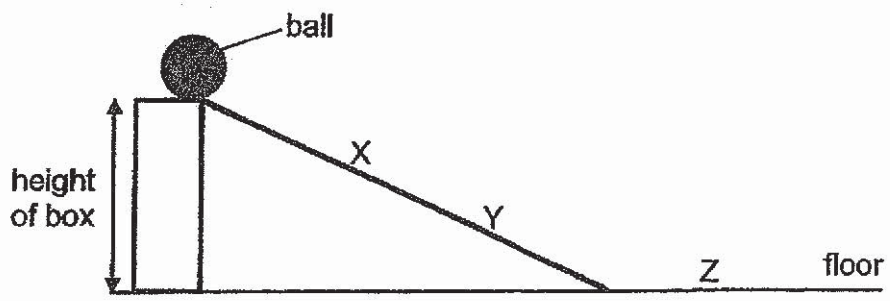
24 John released a ball at the top of the slope as shown below. It rolled down the slope, moved along the floor and stopped at point Z on the floor.

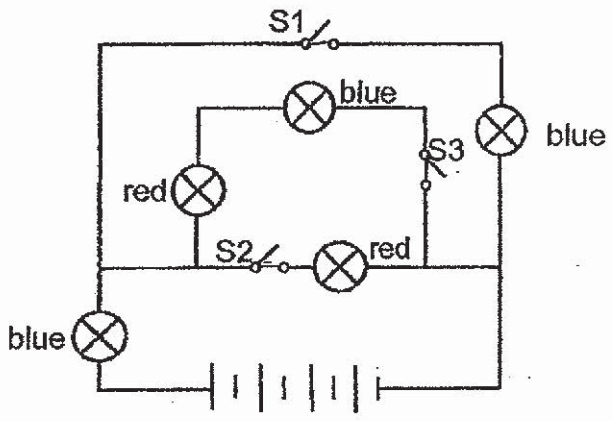


Which of the following statements are correct about the ball?

A At point X and Y, the ball only has kinetic energy.
B The ball would have rolled down the slope faster if the height of the box is lower.
C The ball would have rolled beyond point Z if a lubricant is added onto the floor.
D At the top of the slope, the ball has the maximum gravitational potential energy.

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B, C and D

25 The diagram below shows some blue and red bulbs in a circuit.



Which switch(es) should be closed in order to light up only 2 blue bulbs and 2 red bulbs at the same time?

(1) S2 only
(2) S1 and S3 only
(3) S2 and S3 only
(4) S1, S2 and S3

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26 Susan conducted an experiment. In diagram 1, she placed magnet X on a spring with an original length of 5 cm.
Then she placed another strong magnet, magnet Y, directly beneath magnet X in Diagram 2.
The results are shown in the two diagrams below.

Diagram 1

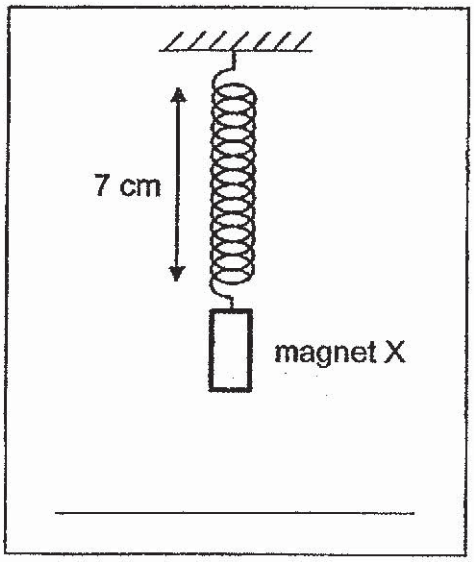
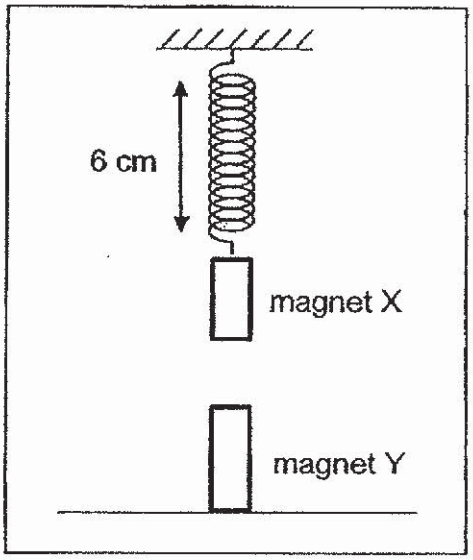


Diagram 2



Which of the following shows the correct direction of the various forces acting in Diagram 2?

	Gravitational force acting on magnet Y	Elastic spring force acting on the spring	Magnetic force acting on magnet X
(1)	↓	↓	↑
(2)	↓	↑	↑
(3)	↑	↑	↑
(4)	↑	↓	↓

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27 An iron bar AB was magnetised using the stroke method as shown in Diagram 1 below. Diagram 2 shows the magnetic poles of iron bar AB after it was magnetised.

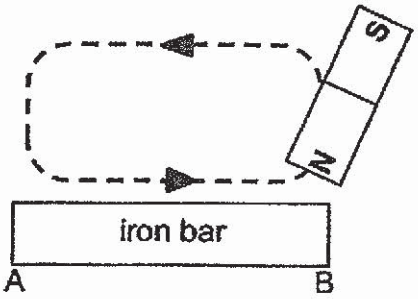


Diagram 1

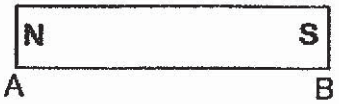
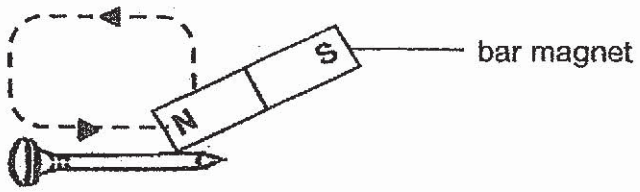
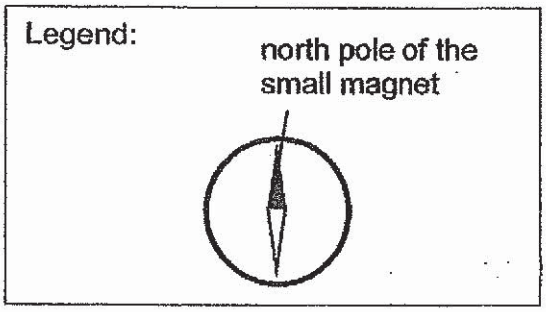


Diagram 2

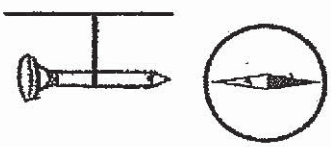
An iron nail is magnetised by using the stroke method as shown below. The nail is then suspended from a string and a compass was brought near the magnetised iron nail.



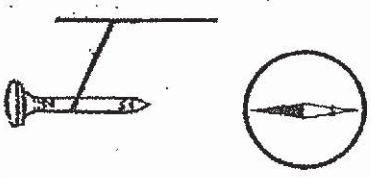
Which one of the following correctly shows what happened when the compass, which contains a small magnet, was brought near the magnetised iron nail?



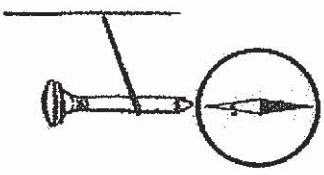
(1)



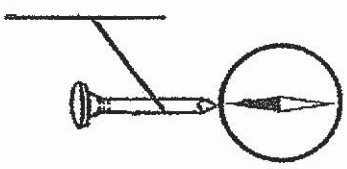
(2)



(3)



(4)



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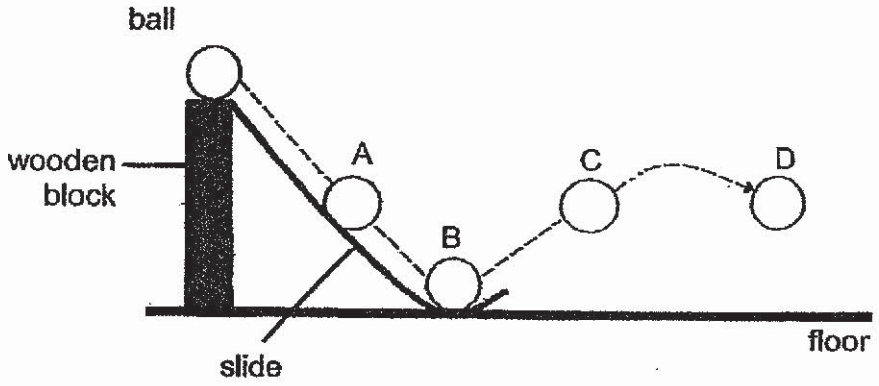
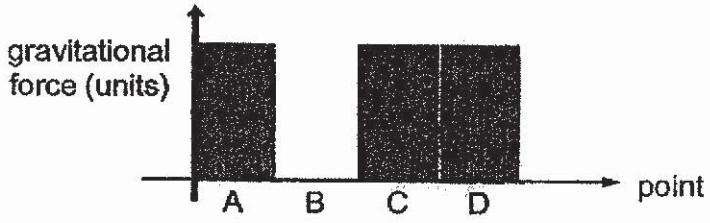
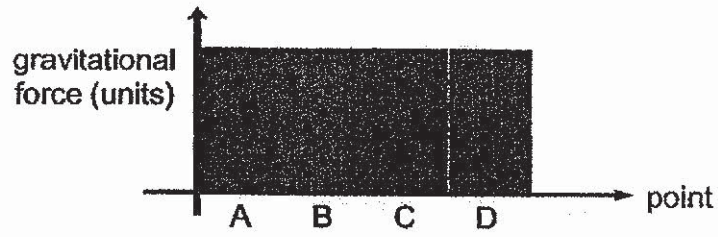
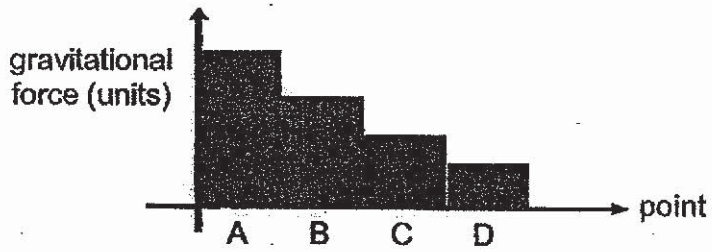
28 Carrie dropped a ball from the top of the wooden block and it started to roll down the slide as shown below.

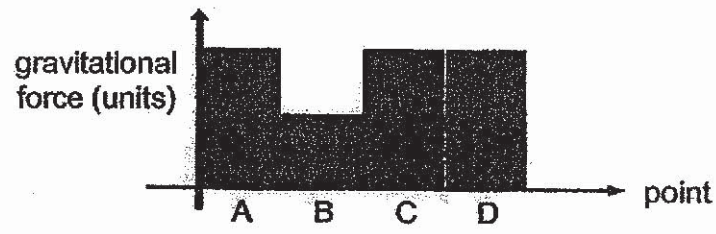


Which one of the following graphs shows the amount of gravitational force acting on the ball at points A, B, C and D?

(1)


(2)


(3)


(4)


End of Booklet A

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NAN HUA PRIMARY SCHOOL
PRELIMINARY ASSESSMENT – 2019
PRIMARY 6

SCIENCE

BOOKLET B

13 Structured / Open-ended questions (44 marks)

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

Section B		/ 44

Name: _____ ( ) **Class: P 6** _____

Date: 21 August 2019 **Parent's Signature:** _____

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Section B: (44 marks)
For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part-question.

---

29 When our brain senses danger such as the sight of an angry dog running towards us, it releases a substance which speeds up our breathing and heart rate.

How do the following body responses enable us to release more energy so that we can run faster to escape from danger?

(a) **(i)** Higher breathing rate [1]

_____

_____

(ii) Higher heart rate [1]

_____

_____

(b) Which of the following body parts are found in the respiratory system?
Tick (✓) the correct boxes. [1]

- ☐ heart
- ☐ lungs
- ☐ blood vessels
- ☐ nose
- ☐ blood
- ☐ windpipe

Score	/3

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30 During a learning journey to pick litter in a park, the students saw many dead leaves covering the grass field. They also noticed that some of the grass had turned yellow.

(a) Why did the grass below the dead leaves turn yellow? [1]

The students were told to collect the dead leaves. The dead leaves were crushed into smaller pieces and mixed with soil to be used for growing plants.

(b) How were the dead leaves beneficial to the plants? [1]

(c) What was the purpose of crushing the dead leaves into smaller pieces? [1]

Score	
	3

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31 The seeds of plant J are dispersed by bird K. The table below shows some adaptations of the fruits and seeds of plant J for seed dispersal.

Unripe fruits	Ripe fruits
• Dull coloured	• Brightly coloured
• Taste sour	• Taste sweet
• Immature seed is damaged when the fruit is eaten	• Mature seed is tough and undamaged when the fruit is eaten
• Fruits cling tightly to the plant	• Fruits can be removed from the plant easily

(a) Based on the information in the table, other than colour, state another adaptation of the fruits of plant J that attracts birds to feed on the ripe fruits and not the unripe ones. [1]

_____

_____

(b) More of bird K feed on the ripe fruits instead of the unripe fruits. With reference to the information from the table above, state how this benefits plant J. [1]

_____

_____

Score	
	2

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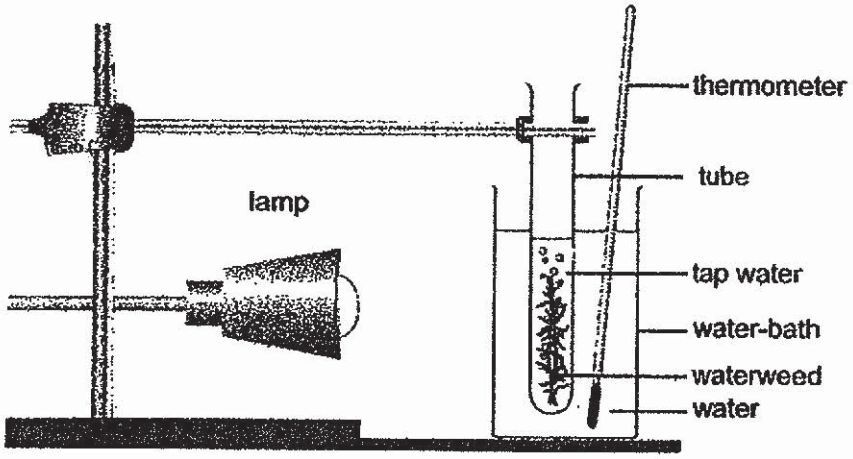
32 Suzi wants to find out how the temperature of water affects the rate of photosynthesis of the waterweed. She set up the experiment with a water-bath containing water at 10°C as shown below. She then repeated the experiment with water at 20°C and 30°C, one at a time.



(a) Suzi kept the distance between the lamp and the waterweed constant throughout her experiment. How does this ensure a fair test? [1]

(b) The table below shows the result of her experiment.

Temperature of water (°C)	Number of bubbles produced per minute
10	3
20	7
30	13

State the relationship between the temperature of water and the rate of photosynthesis. [1]

(c) When Suzi added two water snails into the tube which was placed in the water-bath with water at 20°C, the number of bubbles produced per minute increased to 10. Explain this observation. [2]

Score 4

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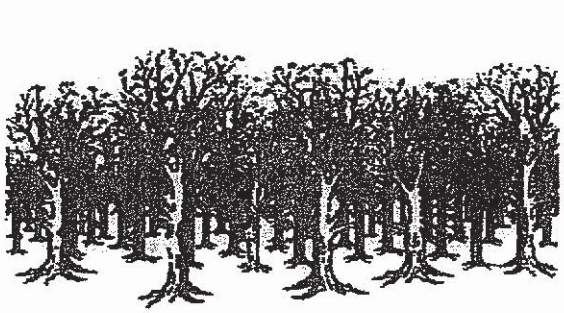
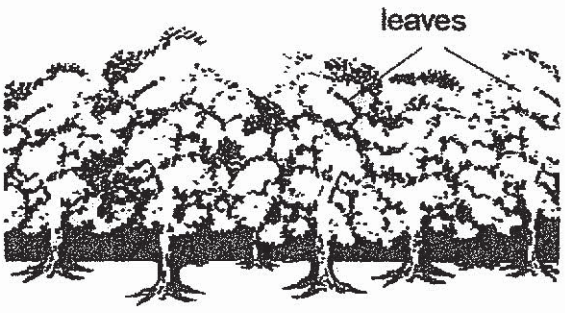
33 The diagrams below show a forest at the beginning of March and at the end of May.

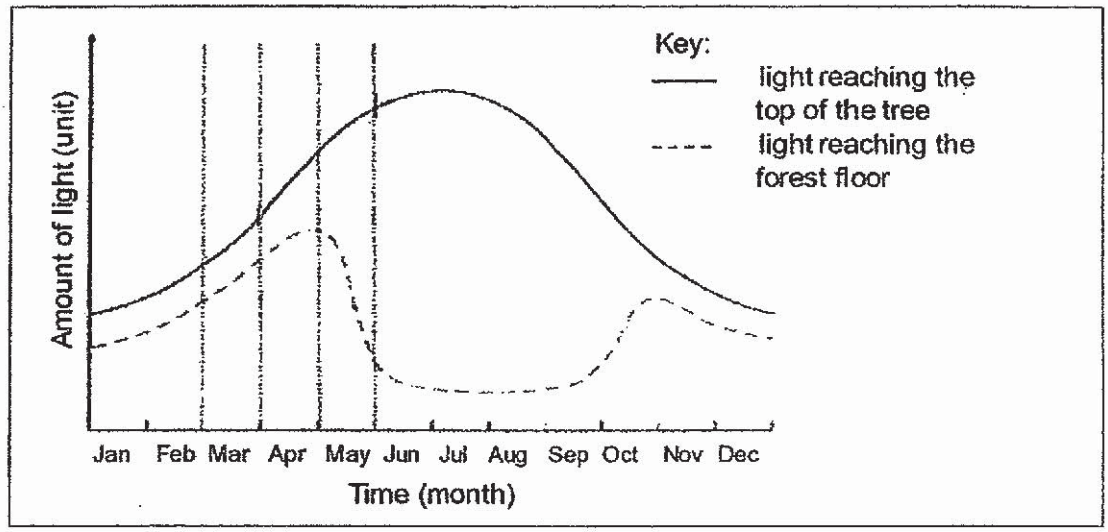


Beginning of March



End of May

The graph below shows the amount of light reaching the top of the trees and the forest floor over one year.



(a) There was a sharp increase in the amount of light reaching the top of the trees from early March to end of May. Based on the information above, explain how this had caused the amount of light reaching the forest floor to decrease during May. [2]

(b) The population of bird X in this habitat was lower at the beginning of March than at the end of May. Based on the information given, state a reason for this observation. [1]

Score	
	3

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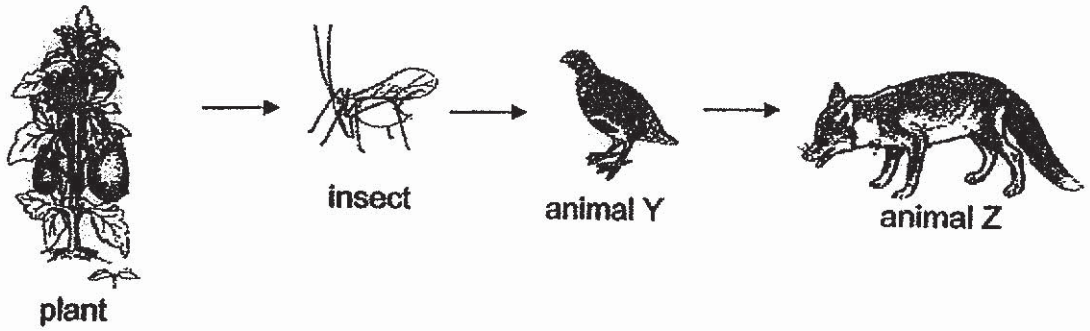
34 The diagram below shows a food chain.



(a) Adults of animal Y build their nests on the ground among plants. They lay up to 18 eggs in the nest. Suggest why adults of animal Y need to lay so many eggs at one time.
[1]

(b) Some farmers spray their plants with chemicals to kill the insects. How will this affect the number of animal Z? Explain your answer.
[2]

Score	
	3

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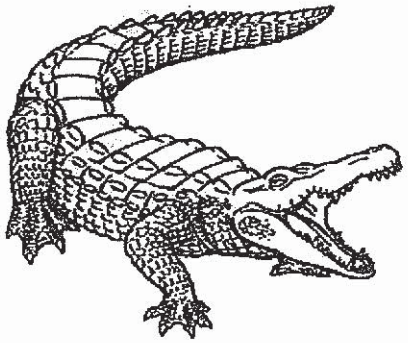
35 Animal X is a reptile and it cannot control its body temperature. When it is hot, it stays in the water instead of on land to keep cool. It positions its nose just above the waterline when its body is in the water.



Animal X

(a) How does staying in the water help animal X to keep cool? [1]

(b) Only the ears, eyes and nose of animal X are above the water surface when it tries to hide from its prey while it is in the water. How does positioning its nose above water help it to survive? [1]

Female animal X will cover the nest with vegetation once its eggs are laid. She will stay very near to her eggs until they are hatched.

(c) How does covering the eggs with vegetation help the developing animals in the eggs to survive before they are ready to hatch? [1]

(d) Based on the information given, why is it dangerous for us to stay too close to the nest of animal X when we are out in nature? [1]

Score	
	4

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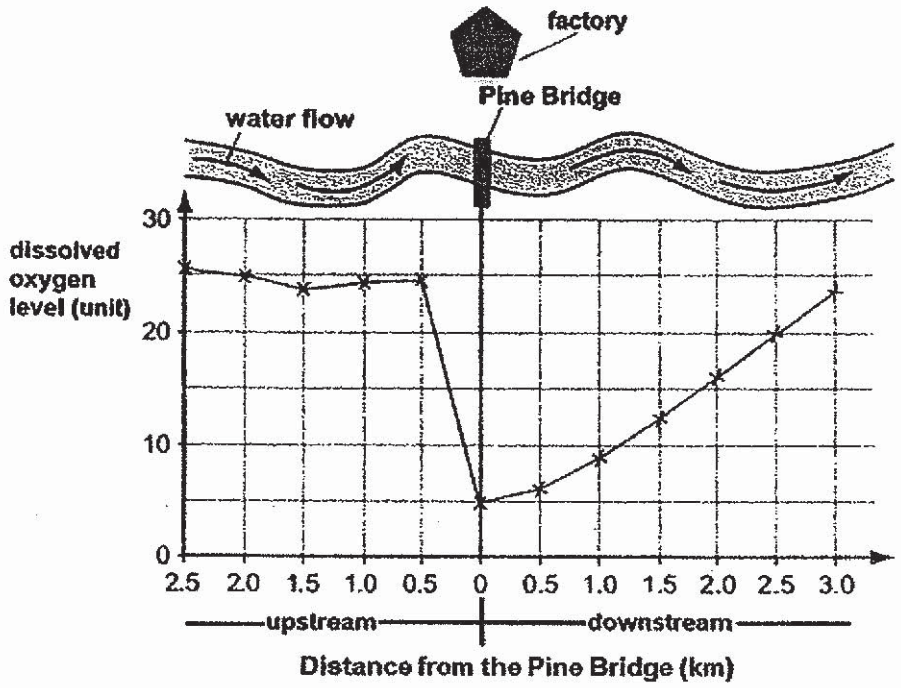
36 A factory near the Pine Bridge as shown below discharged its waste into the river. A scientist conducted checks on the water upstream and downstream of the factory to study the effects of the waste on the organisms in the river.



The table below shows the types of organisms found at different parts of the river.

Organisms	Distance from Pine Bridge (km)			
	upstream		downstream	
	2.0	1.0	1.0	2.0
A	✓	✓	×	✓
B	✓	✓	×	×
C	✓	✓	×	×
D	×	×	✓	✓

(a) What is the purpose of checking on the type of organisms found upstream of the factory? Explain your answer. [2]

(b) Based on the information above, which of the organism(s), other than organism D, is/are able to survive when oxygen level is below 20 units? [1]

Score	
	3

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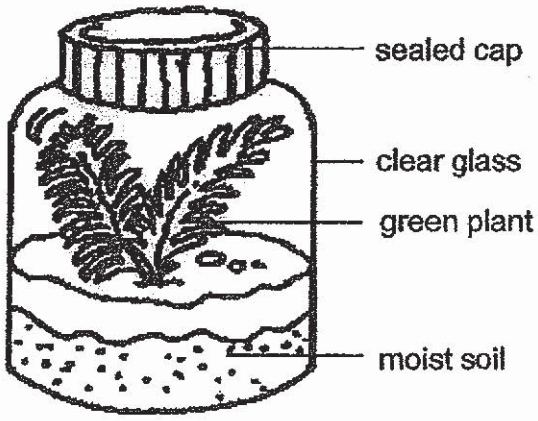
37 Mandy created a bottle garden as shown below.



(a) The green plant is able to survive even if Mandy did not water the plant for a month. Explain why. [2]

Go on to the next page for parts (b) and (c) →

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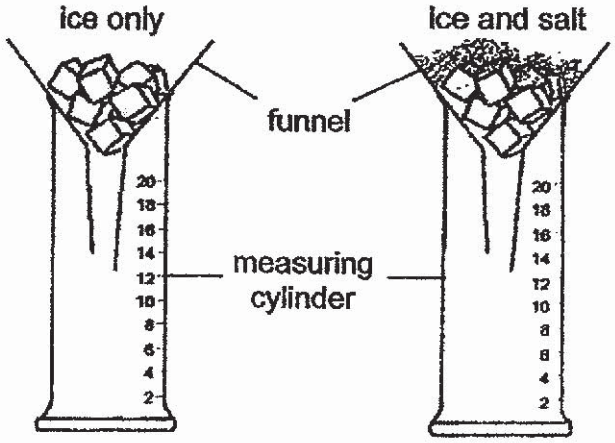
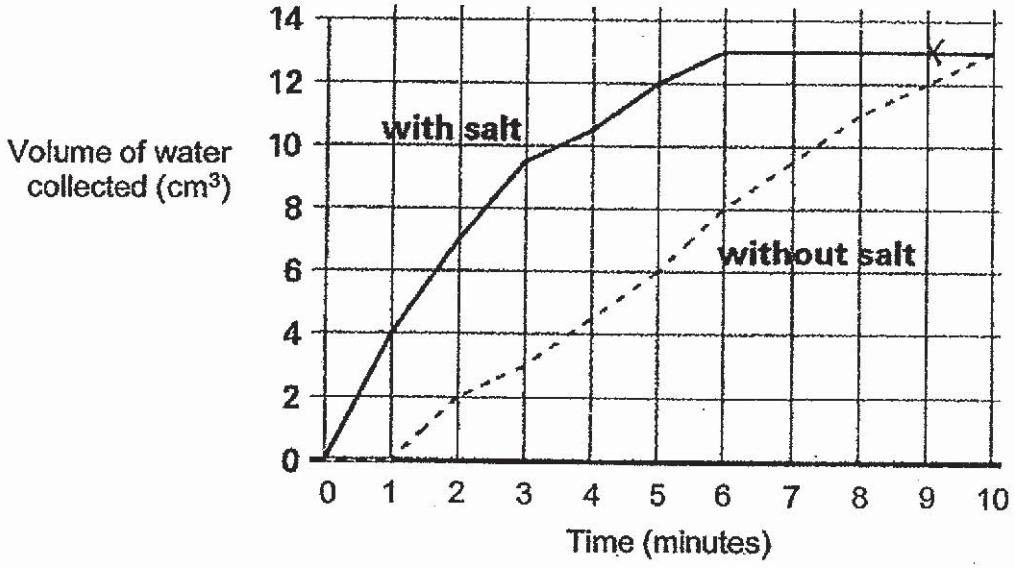
In another experiment, Mandy investigated the effect of salt on melting ice. She put the same amount of ice in two funnels and added salt to the ice in one funnel as shown below.



Mandy measured the volume of water collected in the measuring cylinder and recorded the results as shown below.



(b) Based on the data above, describe the effect of salt on the volume of water collected during the first 9 minutes of the experiment. [1]

_____

_____

(c) In cold countries, snow often piles up on the roads making it very difficult for vehicles to move through. To solve this problem, workers sprinkle salt on the road. Based on the experiment, explain how sprinkling of salt on the roads helps to solve the problem. [1]

_____

_____

Score	4

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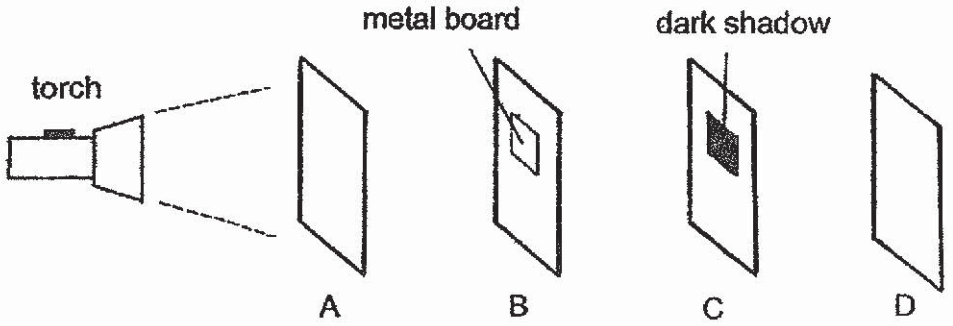
38 Sherman arranged four sheets of different materials, A, B, C and D, in a straight line in a dark room as shown below. He pasted a metal board on sheet B.



(a) When he switched on the torch, a dark shadow is formed on sheet C.
Based on the results of the experiment, put a tick (✓) in the boxes accordingly to show if each statement is true, false or not possible to tell. [2]

	Statement	True	False	Not possible to tell
(i)	A and B allow light to pass through.			
(ii)	C does not allow light to pass through.			
(iii)	D allows light to pass through.			
(iv)	If the metal board is pasted on C instead of B, a dark shadow will be formed on D.			

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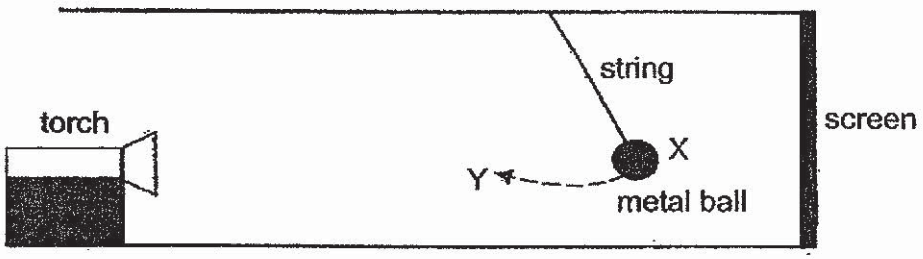
Sherman conducted another experiment in a dark room using the set-up as shown below. He hung a metal ball and let it swing freely in front of a torch. He observed that a shadow had formed on the screen.



(b) How would the size of the shadow on the screen change as the metal ball swung from position X to Y? [1]

(c) Using the same set-up, how can Sherman increase the size of the shadow of the metal ball cast on the screen at position X? [1]

Score	
	4

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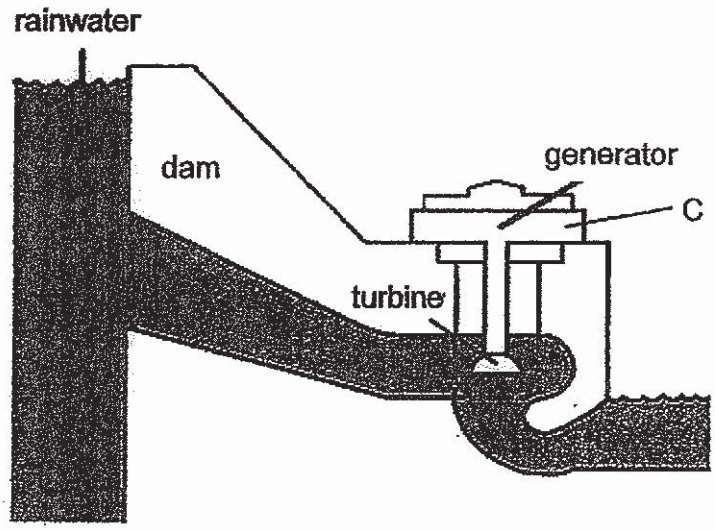
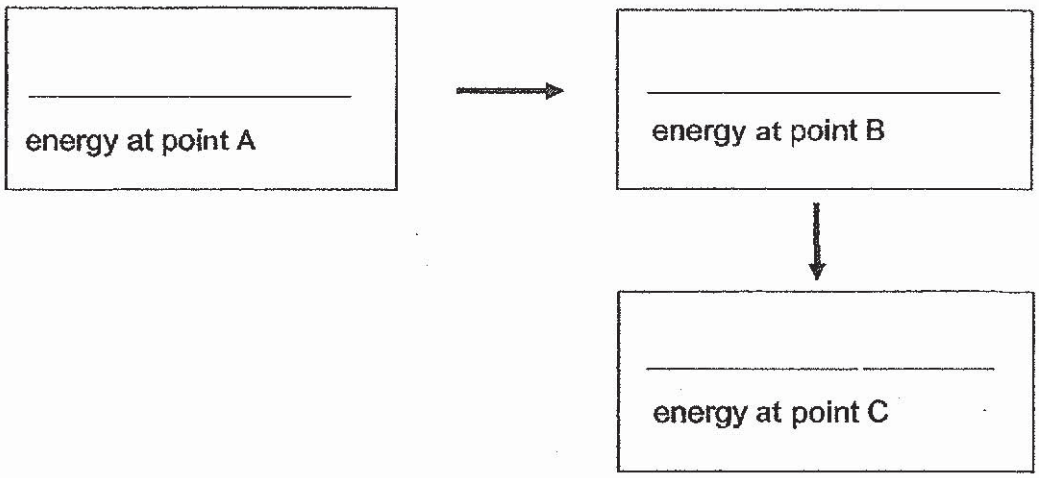
39 A hydroelectric power station makes use of a dam on a river to store water in a reservoir. Water released from the reservoir flows through a turbine, spinning it, which in turn activates a generator to produce electricity.



(a) State the energy changes that take place from point A to point B to point C as shown in the diagram above. [1]



(b) State one advantage of using a hydroelectric power station to generate electricity. [1]

_____

_____

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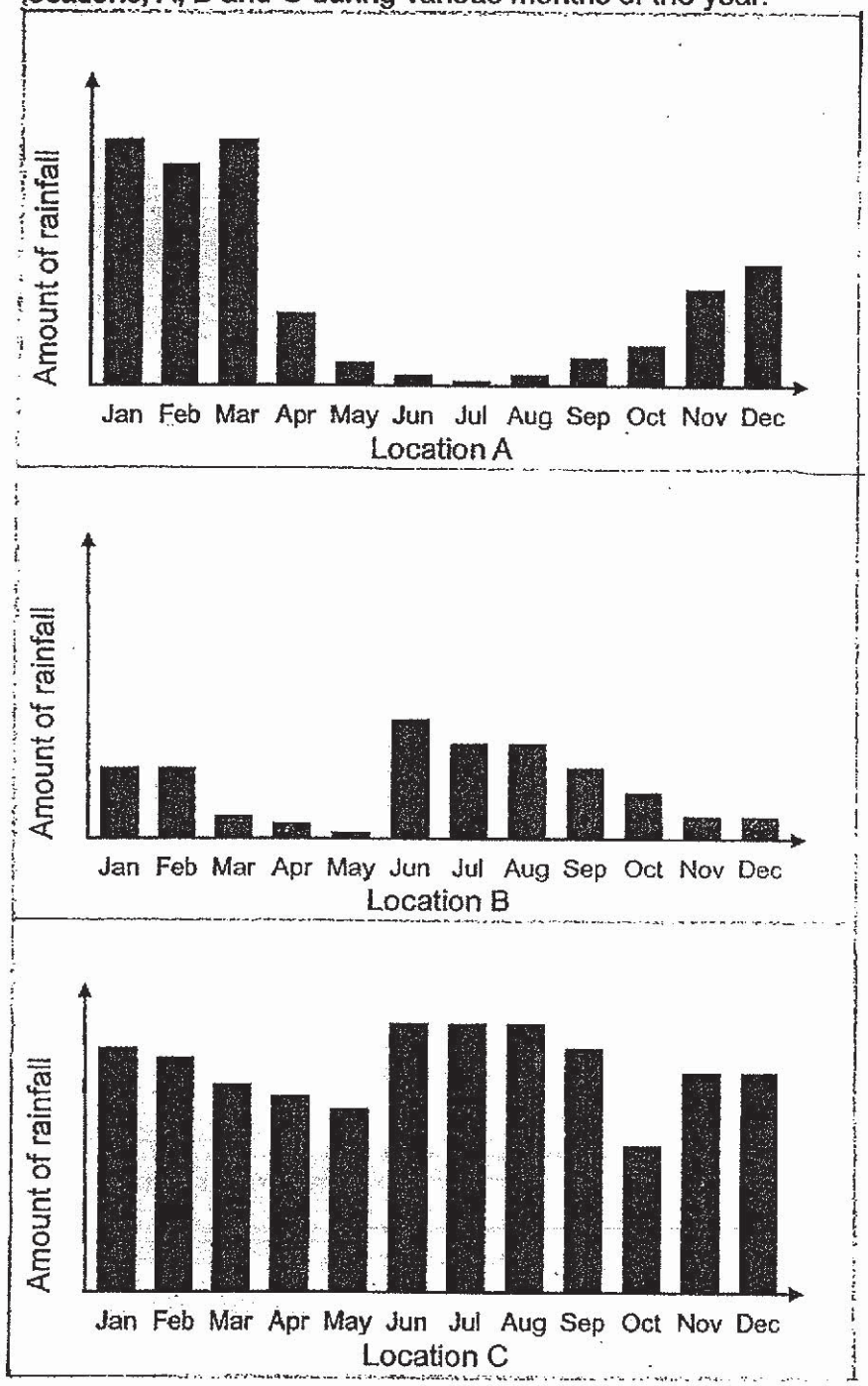
The diagrams below show the amount of rainfall collected in three different locations, A, B and C during various months of the year.



(c) Which location is the most suitable for building the hydroelectric power station? Explain your choice. [2]

Score	
	4

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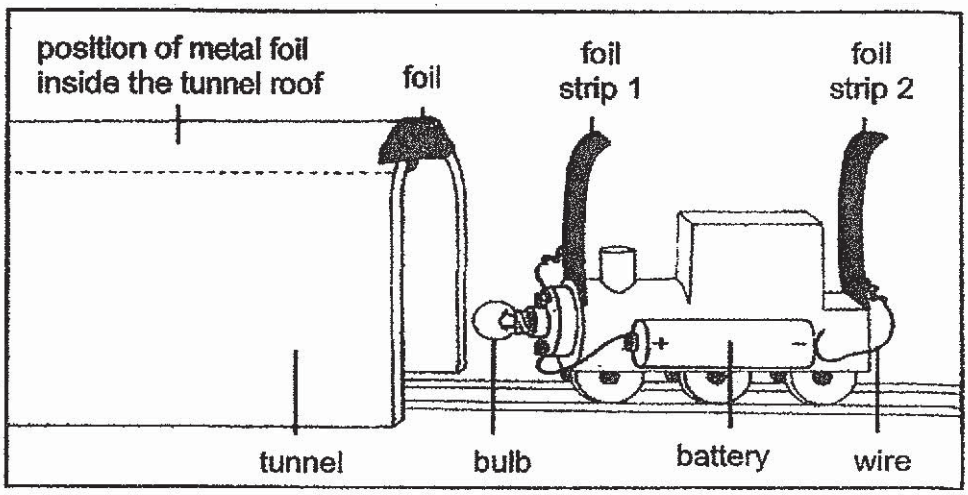
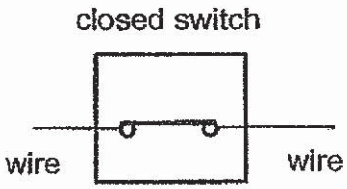
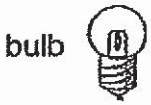
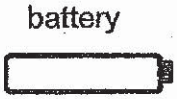
40 Sara wants a light bulb to light up when her toy train is pushed through a tunnel. She makes an electric circuit for her toy train. She makes a tunnel and puts a strip of foil inside the tunnel roof as shown below.



(a) Complete the circuit below to light up the bulb by connecting the bulb, switch and battery with wires. [1]







(b) When only one foil strip on the train touches the foil in the tunnel, the bulb does not light up. Explain why. [1]

_____

_____

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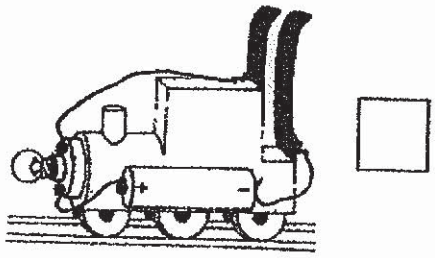
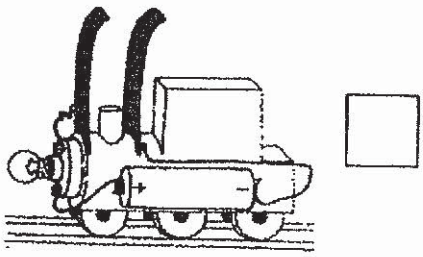
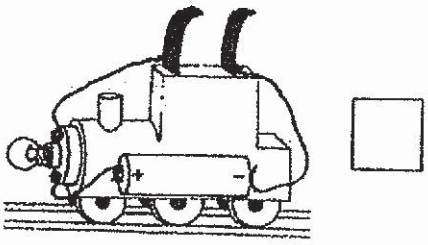
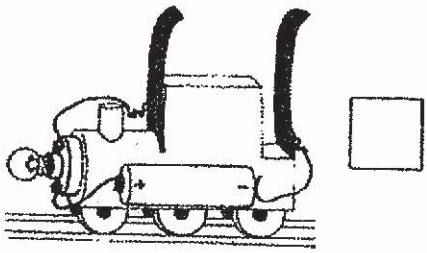
Sara wants to improve her circuit so that the bulb lights up when the train has only just entered the tunnel.

(c) Which train has foil strip that would allow the bulb to light up first when the train has only just entered the tunnel? Put a tick (✓) in the box. [1]

Score	3

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41 The diagrams below show an iron rod and a hollow iron rod attached to a spring balance respectively.

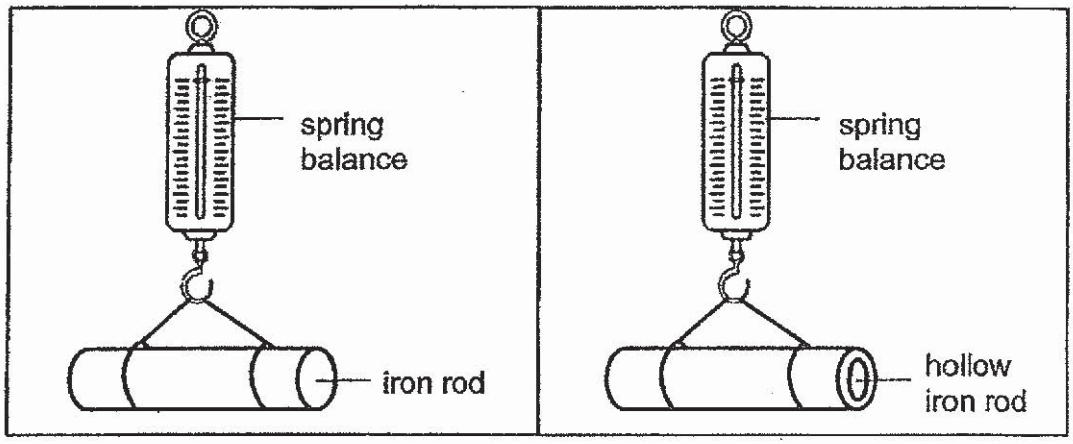

Diagram 1 Diagram 2

The readings from the spring balance were recorded in the table below.

	without iron rod	with iron rod	with hollow iron rod
Reading on spring balance (units)	0	17	?

(a) What caused the reading of the spring balance to increase when the iron rod was attached to the spring balance? [1]

(b) (i) In diagram 2, a hollow iron rod of the same shape and size is attached to the same spring balance. Predict the reading on the spring balance. [1]

(ii) Explain your answer in (b)(i). [1]

(c) Migratory birds have hollow bones as an adaptation for movement in the air. Explain how this adaptation helps them to fly a long distance. [1]

Score	
	4

- End of Paper -

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SCHOOL : NAN HUA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	2	4	2	2	1	2	2	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	1	3	2	3	2	3	4	2	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	3	2	3	3	2	4	2		

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Name:
Class:

29	**What are the organs that made up our body systems?** **The body systems work together to carry out life processes.**
ai	More oxygen is taken in (for respiration)
aii	More oxygen and food can be transported to the muscles and other parts of the body /transported faster
b	Nose, windpipe and lungs
30	**What are the factors required for photosynthesis?** **What happens when things decompose?** **What factors affect the rate of decomposition?**
a	The grass cannot receive enough sunlight (to make food) as the dead leaves blocked the light from reaching the grass.
b	When the leaves decompose, mineral salts are returned to the soil.
c	To speed up the rate of decomposition
31	**What are some structural adaptations that enhance plant reproduction?**
a	Adaptations: 1. Unriped fruits taste sour whereas riped fruits taste sweet. 2. Unriped fruits cling tightly to the plant whereas riped fruits can be removed from the plant easily.
b	Mature seed of ripe fruit is tough and undamaged when the fruit is eaten, so the seed can germinate and develop into plant J.

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32	**How does changing only one variable in an experiment ensure a fair test? Can you identify the relationship between the independent (changed) and the dependent (measured) variables? What are the factors affecting rate of photosynthesis? In the presence of light, what is the gas given out by plants? What is the gas given out by the animals?**
a	To ensure that the number of bubbles produced per min (rate of photosynthesis) is due to the temperature of the water and not the amount of light the waterweed received.
b	As the temperature of the water increases, the rate of photosynthesis also increases.
c	Water snails gave out carbon dioxide (during respiration).
33	**What are some of the adaptations of plants to compete for sunlight? Organisms in a habitat are interdependent on each other. How does one organism affect the other in a food chain (relationship)?**
a	As amount of light reaching the top of the trees increased sharply from March to May, the trees photosynthesised faster and grew more leaves. Hence, more light was blocked by these trees and less light reached the forest floor.
b	There are less leaves for bird X to hide from their predators/ protect bird X from strong sunlight or heavy rain.
34 & 35	**What are some of the adaptations of animals that help them to survive? Organisms in a habitat are interdependent on each other. How does one organism affect the other in a food chain (relationship)?**
34a	To increase the chance of at least some eggs hatching (to continue the life cycle).
b	When the insects are killed by the chemicals, animal Y will have less food to eat and will die. Z feeds on Y. With fewer Y, the number of Z will decrease due to lack of food.
35a	Animal X can lose heat to the water faster.
b	It can breathe while its body is in the water.

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35c	The eggs will not be easily spotted by their predators (and so will not be eaten).
d	Female animal X may attack us so as to protect their eggs.
36	**What is the purpose of setting up a control in an experiment?** **What are some examples of negative impact of man on the environment?**
a	To find out the number and type of organisms upstream before the factory discharged its waste so as to compare and prove that the change in the number and the type of organisms downstream is due to the waste discharged into the river by the factory.
b	A
37	**What is the change in state of water when water gains or loses heat during evaporation or condensation? What is the effect of salt on melting ice?**
a	The water in the moist soil gained heat and evaporated into water vapour. Water vapour is also produced by the green plant. These water vapour comes into contact with the underneath side of the cooler sealed cap, loses heat and condenses to form water droplets which drip down to the soil.
b	The volume of water collected is higher in the measuring cylinder with the ice and salt than in the measuring cylinder with ice only for the same amount of time (faster).
c	Sprinkling of salt on the roads will cause the snow to melt faster (lower the melting point of ice). Hence, the snow will not block the roads and the cars are able to move with ease.
38	**Can you differentiate between materials that: allow light to pass through/ allow some light to pass through/ allow no light to pass through?** **What is the relationship between the size of the shadow formed and the distance of the object from the torch?**
a	(i) True, (ii) True, (iii) Not possible to tell, (iv) False
b	The size of the shadow on the screen increases as the metal ball swings from position X to Y.
c	Move the torch nearer to the ball or screen Move the screen further away from the ball or screen

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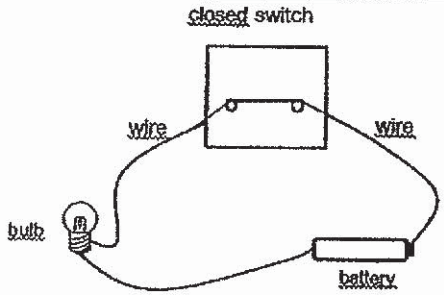
39	**What is the energy conversion that takes place in a hydroelectric power station? What are some of Man's activities and their effects on the environment? What are some of the alternative clean energy sources?**
a	(Gravitational) Potential energy at A → Kinetic energy at B → Electrical energy at C
b	It will not produce greenhouse gases/carbon dioxide that causes global warming. Running water is a renewable source of energy.
c	Location C. Location C has a consistent high supply of water through the year as compared to location A and B. Hence, it will ensure that the hydroelectric power station is able to generate electricity continuously.
40	**What are the main components of a simple electrical system? Can a current flow in an open circuit?**
a	
b	The circuit is opened (gap in the circuit), hence electric current cannot flow through the circuit.
c	The train with both foil strips nearer to the bulb.

41	**What are some of the different types of forces and their effects? What are some of the structural adaptations of a bird?**
a	Weight of iron rod/ Gravitational force acting on the iron rod
bi	Any reading between 0 and 17 units.
bii	The weight of the hollow iron rod is less than the iron rod. There is less iron in the hollow iron rod as compared to the iron rod.
c	The bird will weigh less. Hence, less energy/effort is required for the birds to fly a long distance.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAM
2019

BOOKLET A

Date : 23 August 2019
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 21 printed pages including this cover page.

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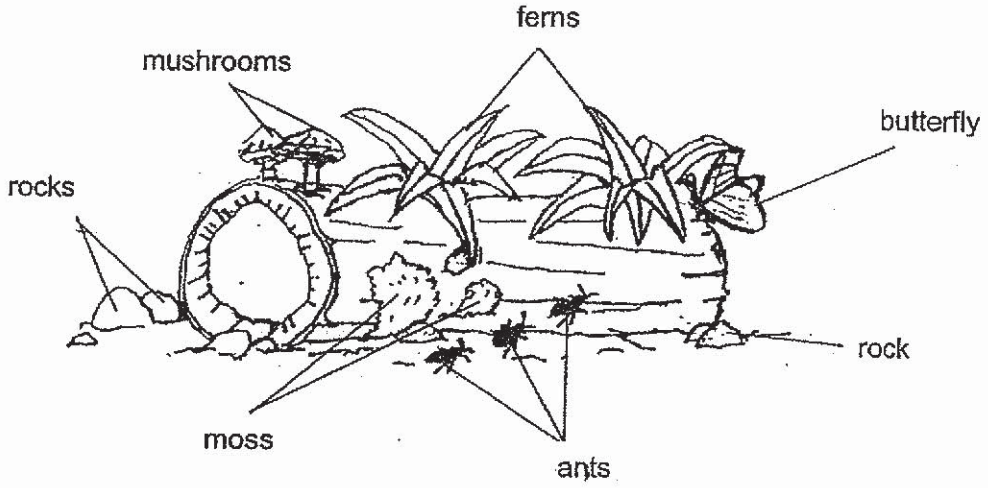
Section A

For each question from 1 to 28, four options are given. One of them is the correct answer. **Indicate your choice in this booklet and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. The diagram below shows a rotting log habitat.



Based only on the diagram above which of the following statements are correct?

A There is only one community.
B There are two populations of fungi.
C There are two populations of plants.
D There are two populations of insects.

(1) A and C only
(2) B and D only
(3) A, C and D only
(4) B C and D only

2. The table below shows 3 organisms grouped according to 2 physical factors, X and Y, that are found in the environment they live in.

Organism	Physical Factor X	Physical Factor Y
K	Low	High
Water hyacinth	High	High
Earthworm	High	Low

John found that organism K preferred bright and dry environments. Which of the following best represents physical factors X and Y, and the habitat that organism K can be most likely found in?

	Physical factor X	Physical factor Y	Habitat
(1)	Light	Moisture	Desert
(2)	Moisture	Light	Pond
(3)	Light	Moisture	Pond
(4)	Moisture	Light	Desert

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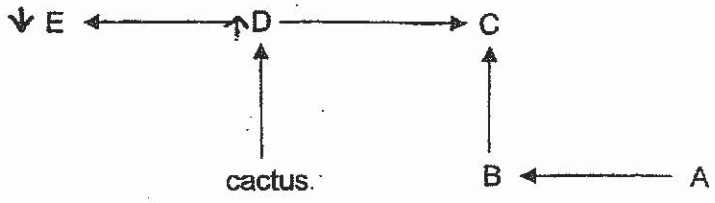
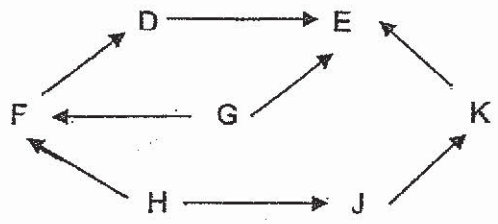
3. The diagram below shows the food relationships among organisms found in the desert. The cactus provides shelter for organism B.



After hunters have killed most of organism E, the population of organism C still remains constant. How would the population of the cactus and animal B be affected?

	Cactus	Organism B
(1)	Increase	Increase
(2)	Increase	Decrease
(3)	Decrease	Increase
(4)	Decrease	Decrease

4. The diagram below shows a food web.



Rahman made three statements about the food web above.

A There are six food chains.
B There are five consumers.
C J is both a prey and a predator.

Which statement(s) is/are correct?

(1) only
(2) B only
(3) and B only
(4) A, B and C

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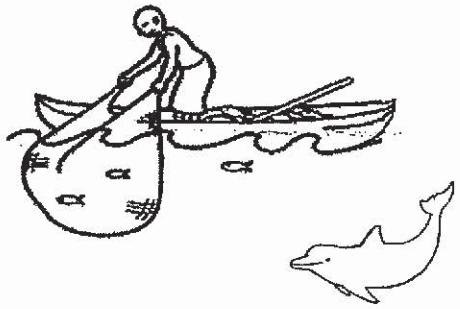
5. A type of dolphins was observed to swim around a school of fish and guide them towards a fisherman's boat. The dolphins feed on the small fish that escape from the fisherman's net.



Based only on the information above, which one of the following correctly states and explains the relationship between dolphins and man?

	Relationship	Reason
(1)	Dolphins benefit, man is harmed	Dolphins have man's protection from predators, but man loses money with less fish caught.
(2)	Man benefits, dolphins do not benefit	Man can control dolphins and dolphins are their servants.
(3)	Both man and dolphins benefit	Man can catch more fish and dolphins have food to eat.
(4)	Neither dolphins nor man benefits	Man has fish stolen by dolphins and dolphins are hunted by man.

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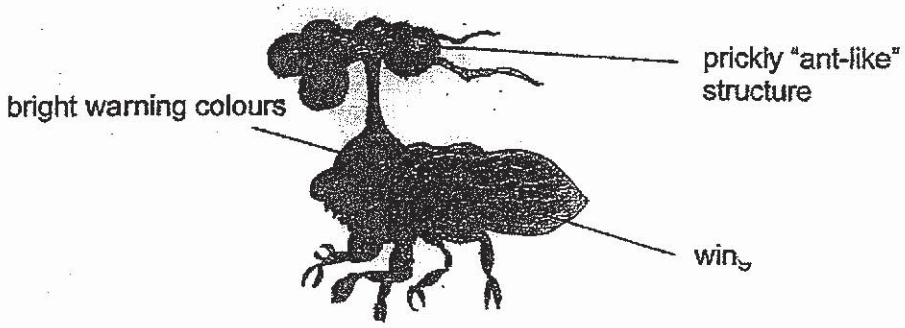
6. The diagram below shows insect X which is a plant-eater.

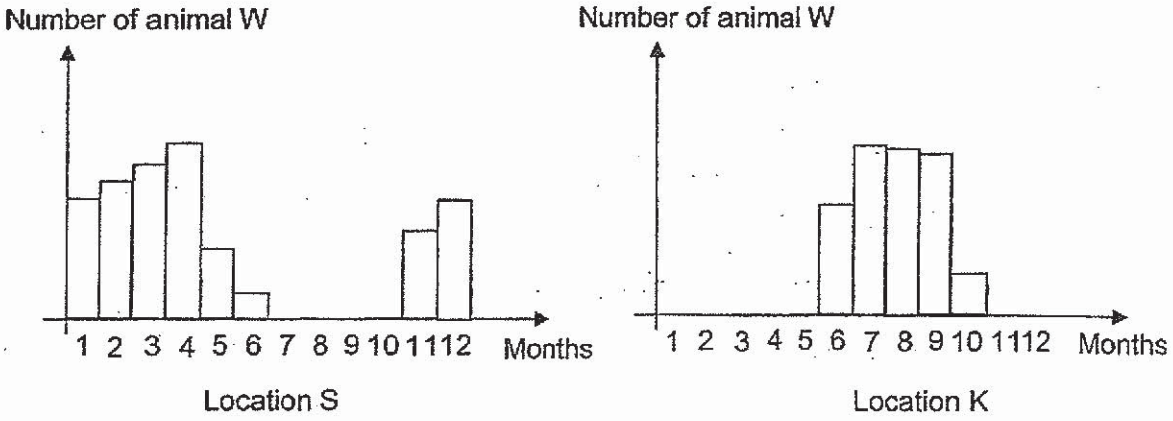


Insect X has a large "ant-like" structure on its head. The "ant-like" structure is light and has prickly spikes.

Which of the following characteristic(s) help to protect insect X from its predators?

	Characteristics		
	Bright warning colours	**Wings**	**Prickly "ant-like" structure**
(1)	Yes	No	No
(2)	No	Yes	No
(3)	No	Yes	Yes
(4)	Yes	Yes	Yes

7. The graphs below show a population of animal W. Anima W eats grass grown at either locations S or K over a period of a year.



Based on the information given, which of the following statement is likely to be correct?

(1) Animal W was able to survive in places with very low rainfall.
(2) Animal W was completely killed off several times during the year.
(3) More grass was available at location K than S from months 7 to 9.
(4) The birth rate of animal W decreased and its death rate increased from months 2 to 4.

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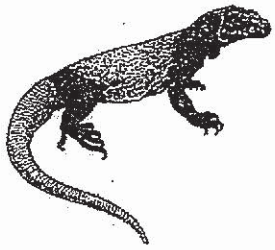
8. The diagram below shows animal C



The following are adaptations that animal C uses to help it survive in its habitat. Wl these are behavioura adaptations?

A Shakes its head to communicate.
B Hibernates when the weather turns cold.
C Males are more colourful than females to attract mates.
D Inflates itself in small spaces to avoid being pulled out by its predators.

(1) B and C only
(2) C and D only
(3) A, B and C only
(4) A, B and D only

9. Which one of the following does not ensure that an organism will survive till adulthood?

(1) Eggs are laid in a shelter.
(2) Eggs are laid near a food source.
(3) Eggs are laid in large numbers each time.
(4) Eggs are not cared for by the adult organism.

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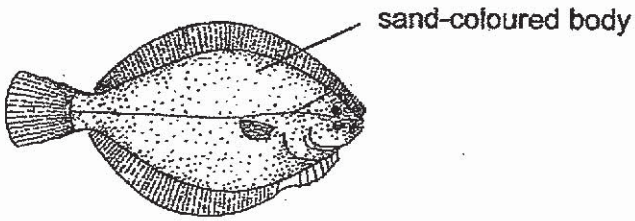
10. The diagram below shows fish P.



Fish P is streamlined, has both eyes on one side of its body. It eats other fish and is often found flat on the seabed covering its body, except its eyes. with sand.

Based on the information above, which of the following reasons for fish P's adaptations are correct?

	Adaptation	Reason
A	Has a streamlined body	Swims quickly to catch its prey
B	Has a sand-coloured body	Blends into its environment to prevent its prey from spotting it
C	Covers its body with sand	Anchors it to the bottom of the sea
D	Has both eyes on one side of its body	Keeps it warm

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B and C only

11. Which one of the following is **not** a method to reduce overfishing?

(1) Remove predators of the fish.
(2) Impose fines on excess fish caught.
(3) Allow only larger sized fish to be caught.
(4) Allow only certain areas of the sea to be used for fishing.

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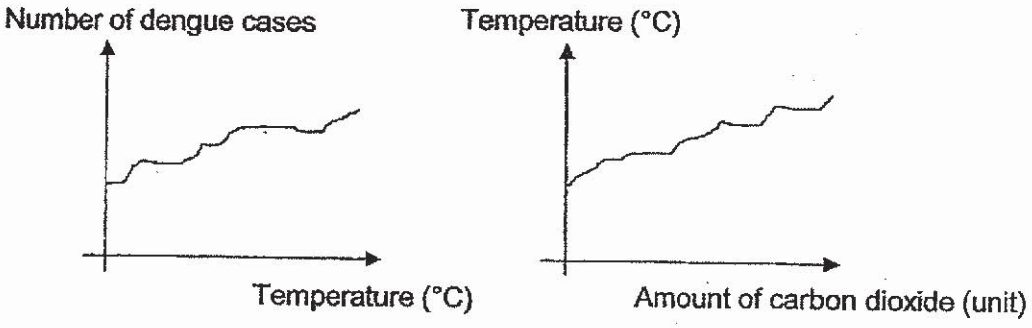
12. Some scientists studied the effect of carbon dioxide on the number of mosquitoes in country X. These mosquitoes cause the spread of dengue

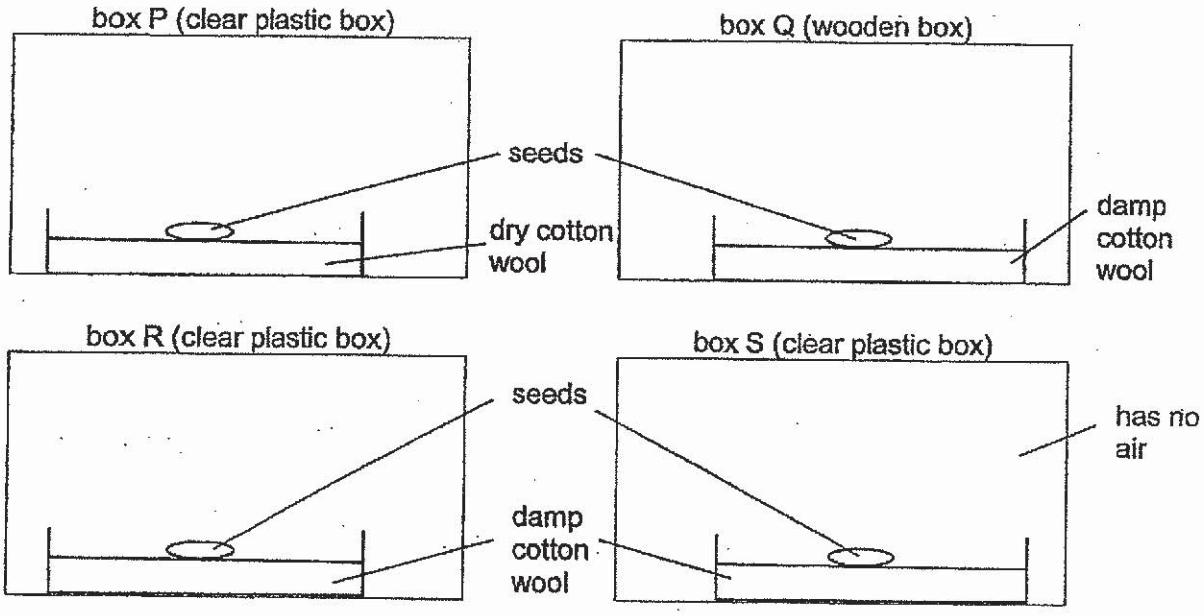


Based on the graphs above, which of the following could have caused the increase in the number of dengue cases?

A Increase in deforestation
B Increase in the usage of fossil fuels
C Decrease in the use of plastic straws

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

13. Jasmyn set up an experiment using similar seeds in a warm room as shown below.



In which box(es) could the seed germinate?

(1) R only
(2) P and S only
(3) Q and R only
(4) Q and S only

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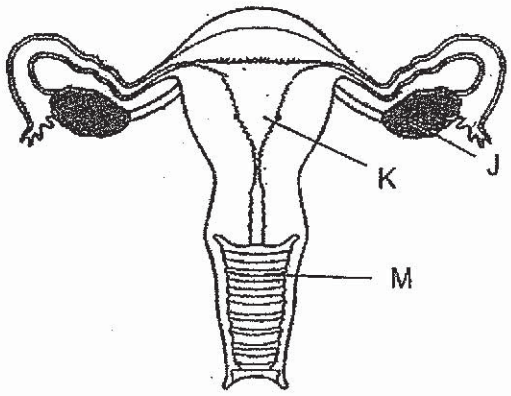
14. Study the table below.

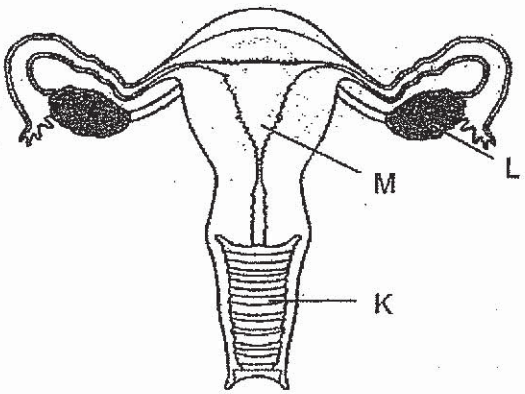
Reproductive part	Function
J	Where eggs are produced
K	To receive the sperm
L	To produce the sperm
M	Where a fertilised egg develops

Which one of the following diagrams has been labelled correctly based on the functions above?

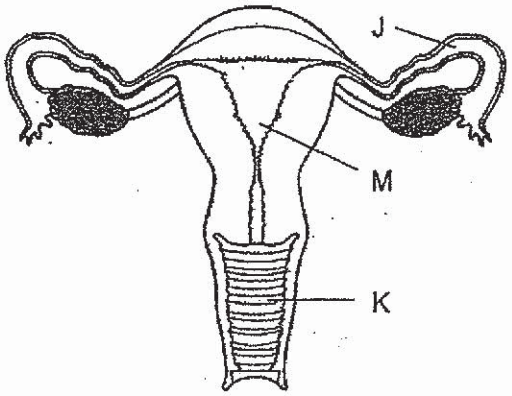
(1)



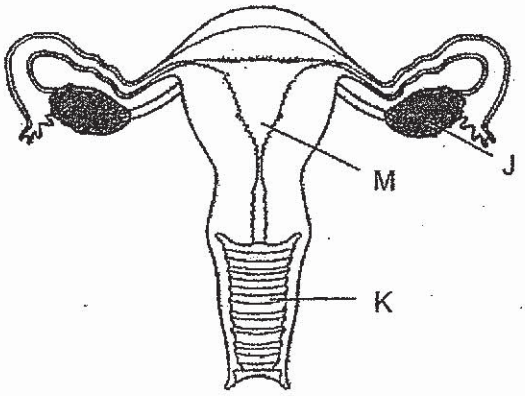
(2)



(3)



(4)



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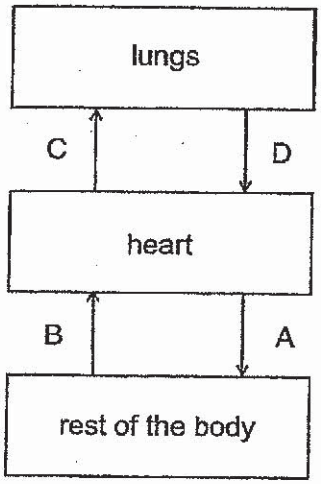
15. The table below shows the amount of carbon dioxide found in blood samples collected from blood vessels, A, B, C and D, in the human body.

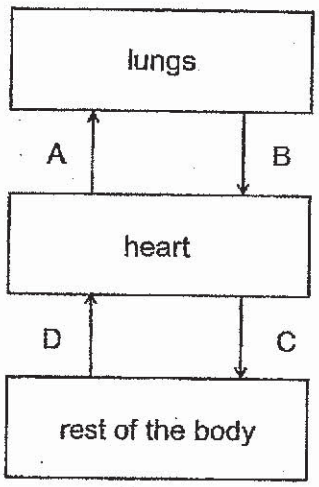
Blood vessels	Amount of carbon dioxide in blood sample (units)
A	low
B	high
C	high
D	low

Which one of the following diagrams correctly identifies blood vessels A, B, C and D?

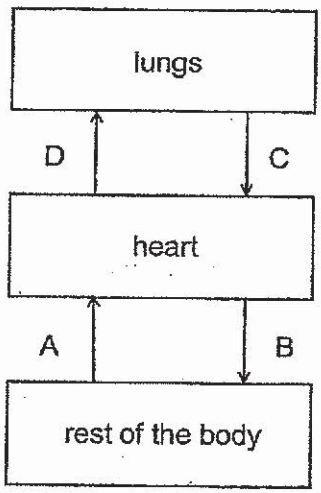
(1)



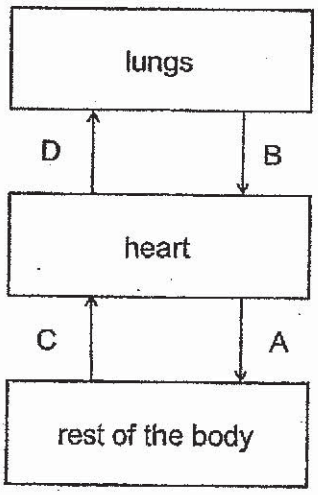
(2)



(3)



(4)



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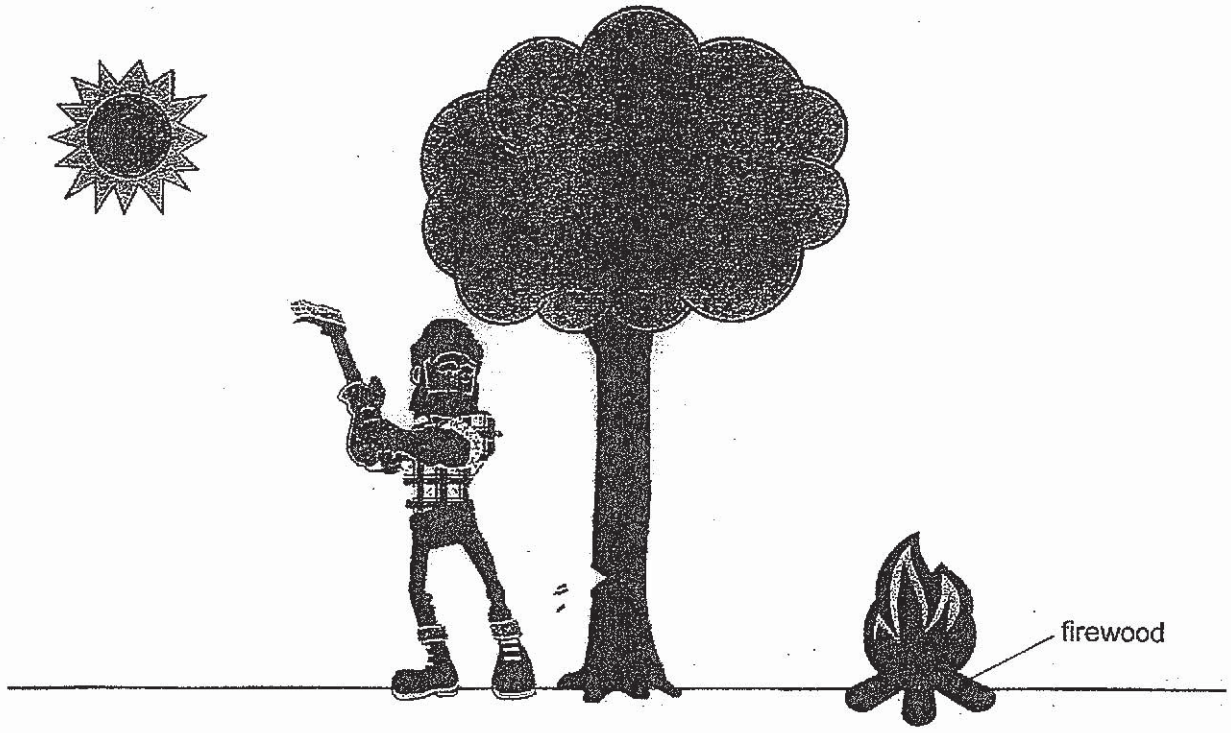
16. Which of the following correctly describes the functions of the digestive system?

A To remove water from undigested food
B To break down food into smaller pieces
C To transport digested food around the body.
D To break down food into simpler substances

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B and D only

17. John cut down a tree to set up a campfire as shown in the diagram below.



Which one of the following shows the main energy conversion?

	Energy from the Sun		Energy of the firewood		Energy of the fire
(1)	light energy	→	heat energy	→	light energy
(2)	potential energy	→	potential energy	→	heat energy
(3)	light energy	→	potential energy	→	heat energy + light energy
(4)	heat energy	→	potential energy	→	heat energy + light energy

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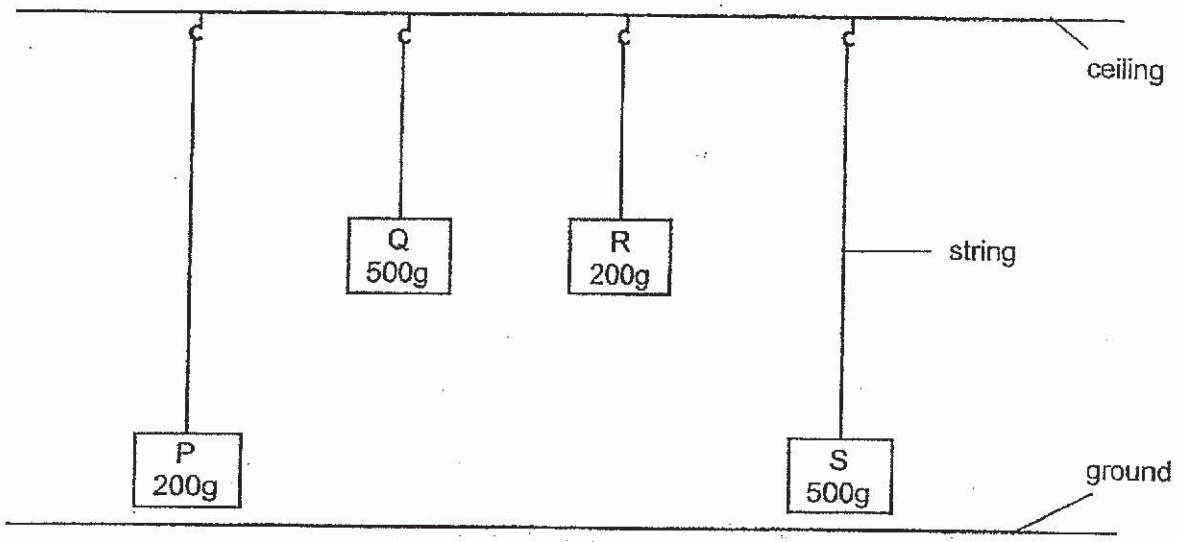
18. Four similar-sized blocks, P, Q, R and S, were set up as shown below.



Which one of the following statements is correct?

(1) R has less gravitational potential energy than P.
(2) Q has the greatest amount of gravitational potential energy.
(3) P and S have the same amount of gravitational potential energy.
(4) Q and S have the same amount of gravitational potential energy.

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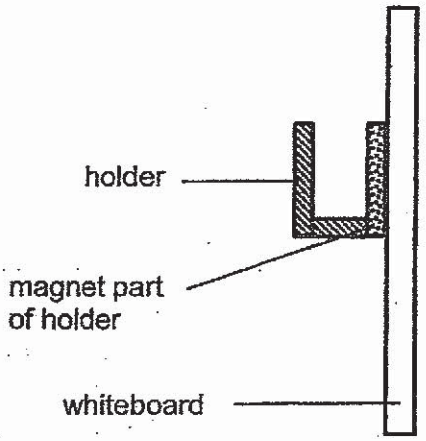
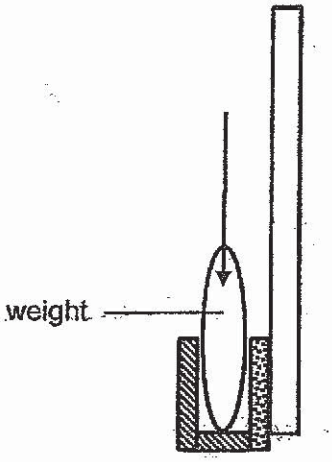
19. A marker pen holder with a magnet in it was attached to a whiteboard made of magnetic material. A weight was then added to the holder and the holder started to slide down while still being attracted to the whiteboard as shown in the diagram below.



before weight was added



after weight was added

Which of the following forces were present when the holder was sliding down the whiteboard?

A frictional force
B gravitational force
C elastic spring force
D magnetic force of attraction

(1) A and B only
(3) C and D only

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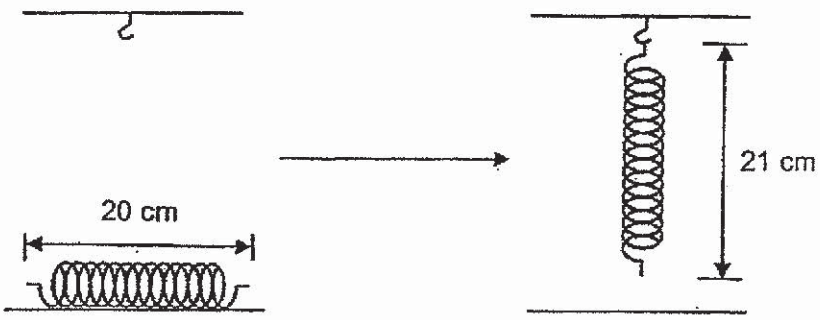
20. A very elastic spring of original length 20 cm was hung from a ceiling and came to rest as shown below.



before experiment — spring hung from a ceiling

Figure 1 — Figure 2

Which of the following statement(s) is/are correct about the spring in figure 2 above?

A Gravitational force has caused the spring to extend.
B There is less elastic spring force in the spring when it was extended.
C There is more gravitational force acting on the spring after it was hung from the ceiling.

(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

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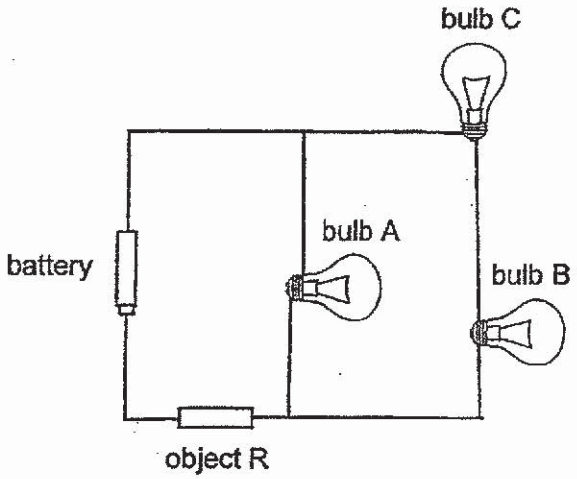
21. Ameenah set up the circuit as shown below to test if object R conducts electricity. She then repeated the experiment by replacing object R with object S.



The table below shows her observations.

Object	Observations		
	Bulb A	**Bulb B**	**Bulb C**
R	light up brightly	did not light up	light up brightly
S	light up dimly	did not light up	light up dimly

Based on the observations above, which of the following statements are correct?

A Object R is a conductor of electricity.
B Object S does not allow electricity to pass through.
C There is no electricity passing through the filament of bulb B.
D Less electricity passes through bulb A than through bulb C in both experiments.

(1) A and B only
(2) A and C only
(3) C and D only
(4) A, B, C and D

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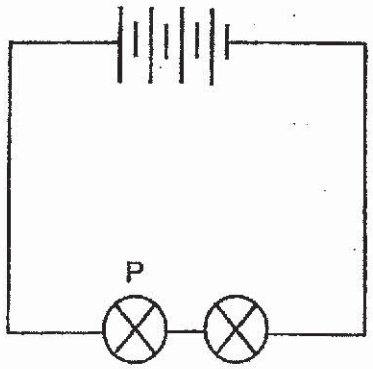
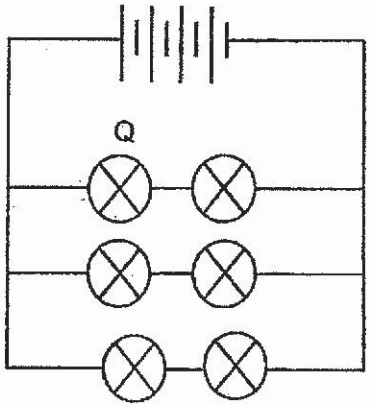
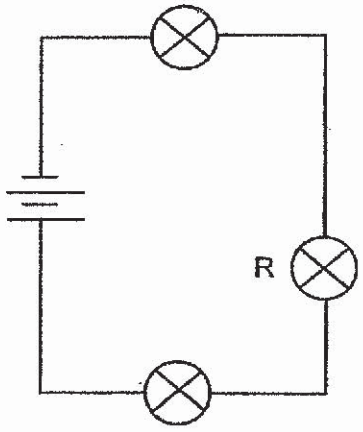
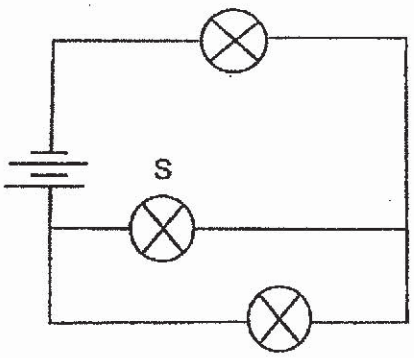
22. Study the four circuit diagrams below.









Which two bulbs would have the same brightness?

(1) P and Q
(2) P and S
(3) R and S
(4) Q and R

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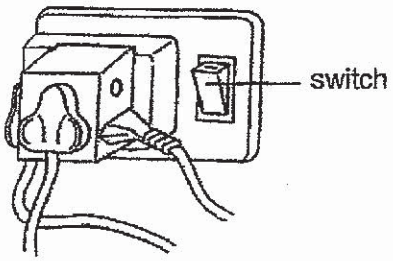
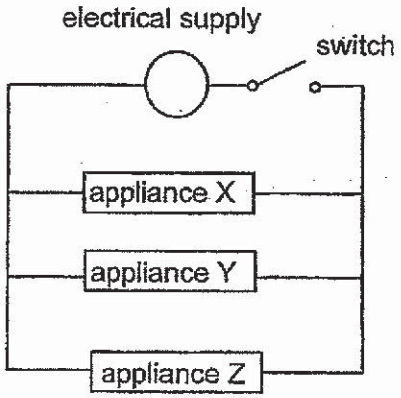
23. James plugs in many appliances into a single socket as shown in the diagram below.



The diagram below shows the arrangement of the appliances to show the connection above.



many appliances
connected to one socket

Based on the information above, which of the following statement(s) is/are correct?

A When the switch is switched off, all the appliances can no longer work.

B When one appliance fuses, the rest of the appliances will continue to work as electricity can flow through them.

C When many appliances are connected to one socket, more electricity passes through appliance X than appliance Y.

(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

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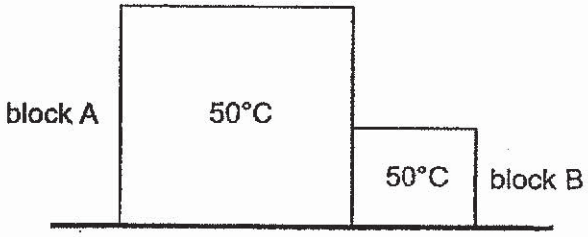
24. Jake is in a completely dark room with several objects.
Which of the objects below would he be able to see?

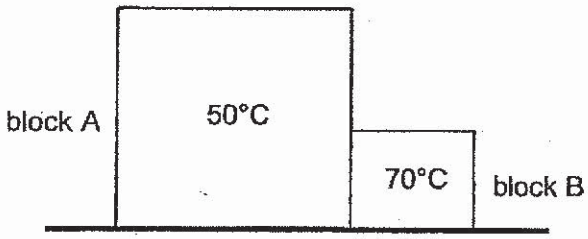
A A mirror
B A sheet of black paper
C A sheet of white paper
D A piece of aluminium foil

(1) A and D only
(2) B and C only
(3) A, C and D only
(4) None of the above

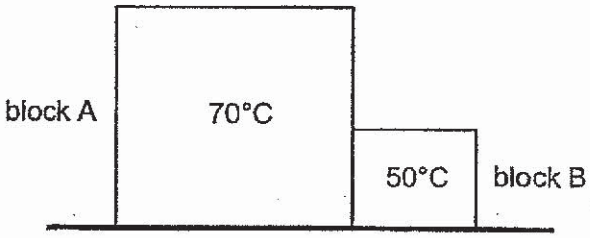
25. Sets of two blocks, A and B, of different sizes were placed side by side. Both blocks A and B are made of the same metal. The temperature of each block at the start of the experiment is indicated in the diagram below.



set-up D



set-up E



set-up F

In which of the set-up(s) will the temperature of block B increase immediately after being placed beside block A?

(1) E only
(2) F only
(3) D and E only
(4) E and F only

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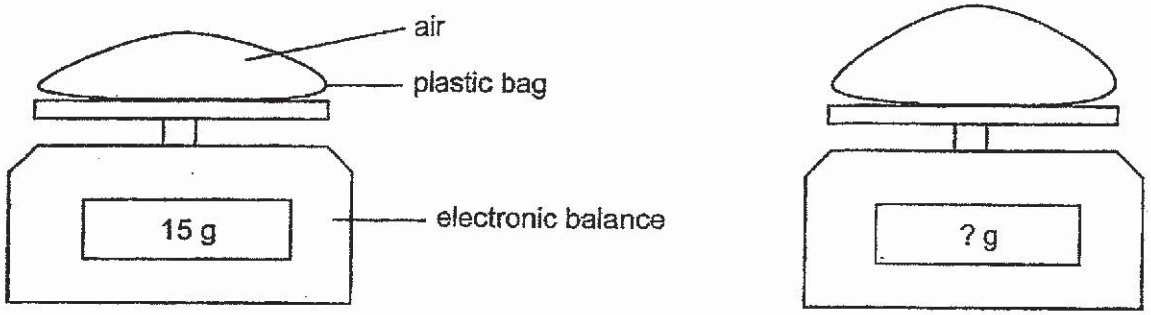
26. A sealed plastic bag of air was left on an electronic balance under the sun for 4 hours as shown below.



Start of experiment

End of experiment

Which of the following statements about the set-up at the end of the experiment are correct?

A The air in the plastic bag expanded.
B The mass of air in the plastic bag increased.
C The volume of air in the plastic bag decreased.
D The reading on the electronic balance remained the same.

(1) A and D only
(2) B and C only
(3) A, B and D only
(4) A, C and D only

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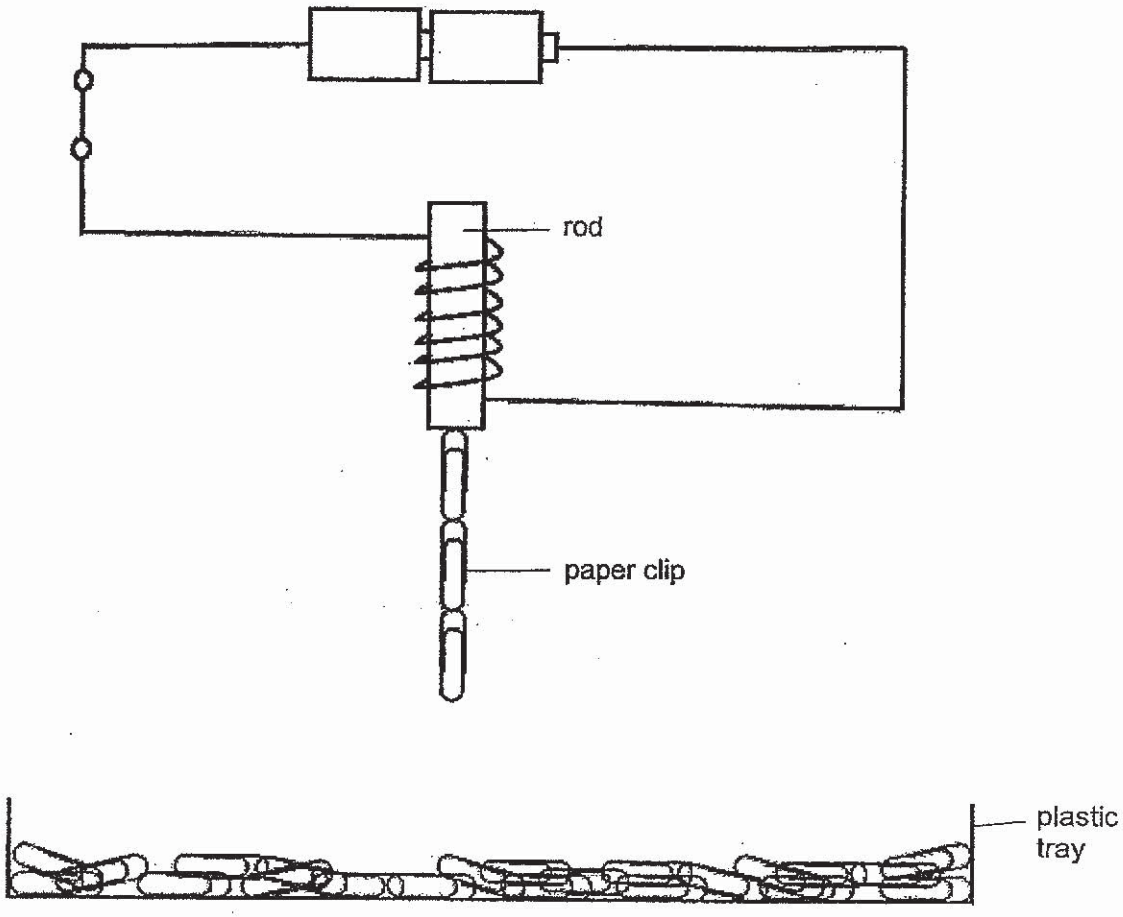
Study the diagram below and answer Questions 27 and 28.



27. Which of the following are materials that the rod can be made of?

A iron
B steel
C wood
D copper

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B and D only

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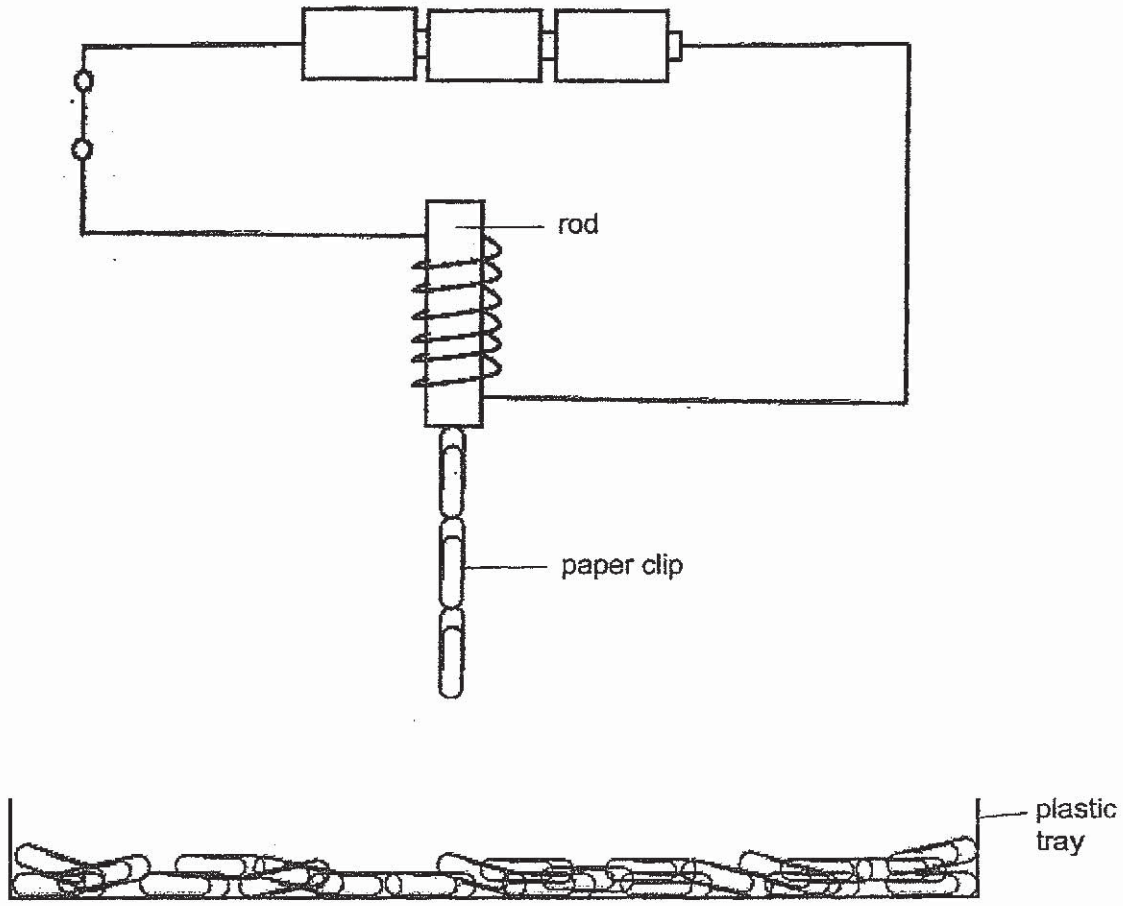
28. Abby added an additional battery to the set-up as shown below.



She observed that the number of paper clips attracted by the magnetised rod did not increase.

Which of the following are possible reasons for her observation?

A The battery added had no energy.
B The wire could not conduct electricity.
C The other paper clips in the tray were made of non-magnetic materials.

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

~ END OF BOOKLET A ~

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAM
2019

BOOKLET B

Date : 23 August 2019
Duration : 1 h 45 min

Name : _____( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		56
Booklet B :		44
Total :		100

Any query on marks awarded should be raised by 2 September 2019. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature: .....

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 17 printed pages including this cover page.

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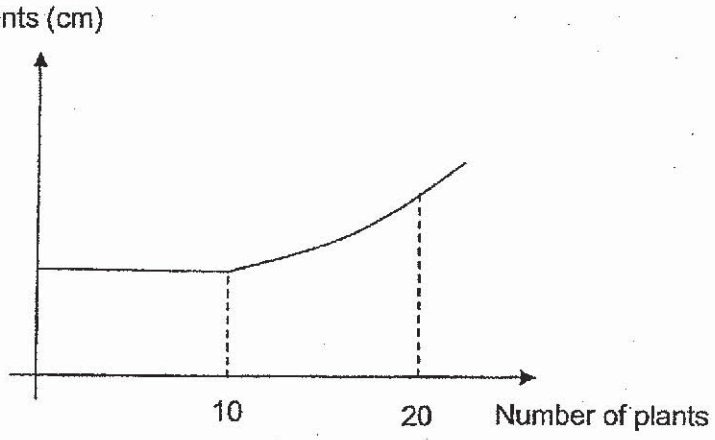
Section B
Write your answers to questions 29 to 40 in the spaces provided.

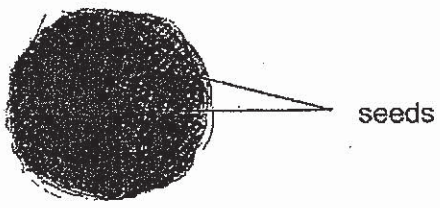
29. A farmer set up an experiment to find out how the number of plants grown on a plot of land affected the height of the plants.

His results are shown in the graph below.



(a) What is the relationship between the number of plants grown and the height of the plants? [2]

The diagram below shows a seedball. It contains seeds in a mixture of soil and mineral salts. The farmer observed that when he used a seedball containing 20 seeds, the seedlings appeared tall and unhealthy.



(b) Explain why using seedballs with more than 10 seeds leads to taller and unhealthier seedlings. [1]

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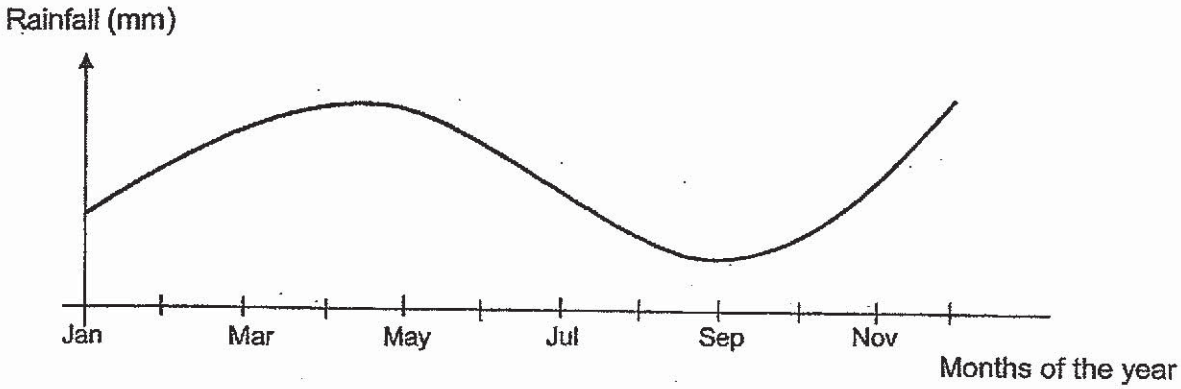
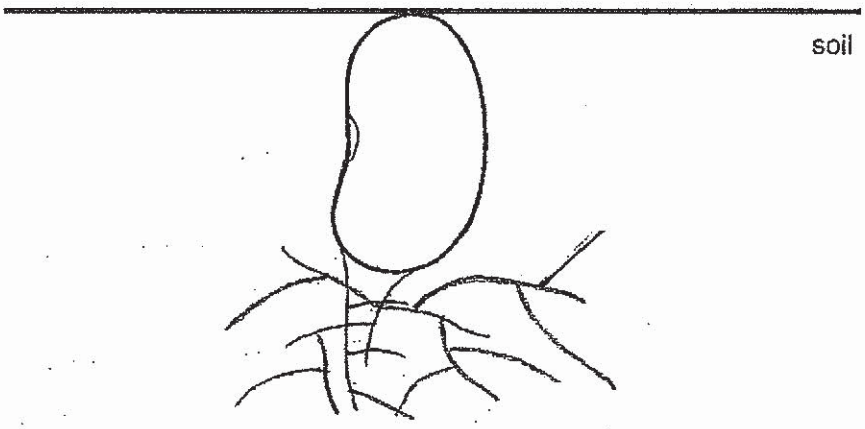
Throwing seedballs is a technique used to disperse many seeds quickly for reforestation. Seedballs of plant P were released from airplanes over location X.

The graph below shows how the amount of rainfall changes at location X over a year.



(c) Based on the graph above, explain why despite releasing a large number of seedballs of plant P in September, the population of plant P remained low. [1]

(d) The diagram below shows a seed. Draw and label the part that will appear first when it germinates. [1]



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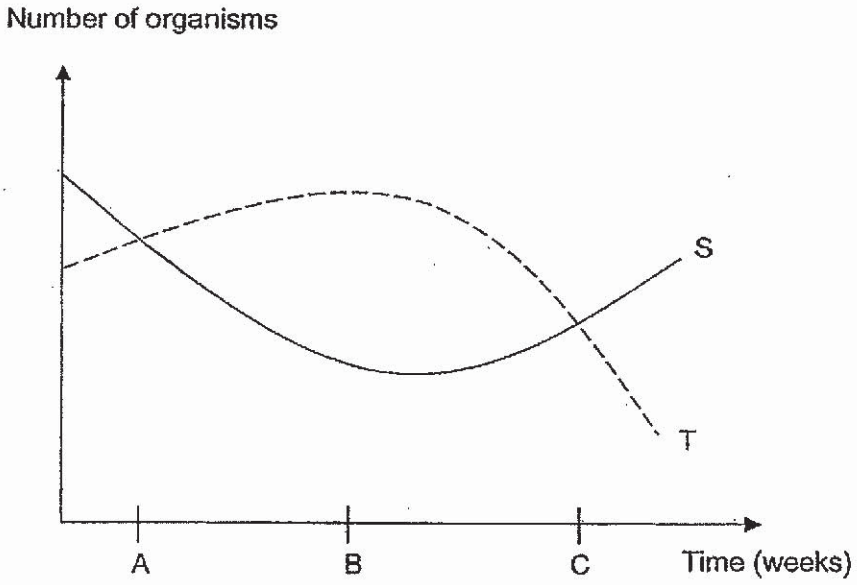
30. The table below shows the food relationships among organisms S, T and U in a habitat.

Relationship	Organism
Prey	S
Predator	T
Producer	U

(a) State the food chain found in the habitat above using S, T and U. [1]

_____

The graph below shows how the number of organisms S and T change over a period of time.



Several organisms R, which feeds on T, were released into the habitat during the year.

(b) Circle the letter A, B or C on the horizontal axis in the graph above to show when organism R was likely introduced into the habitat. [1]

(c) Explain why the population of organism U decreases when R has no natural predators in this habitat. [1]

_____

_____

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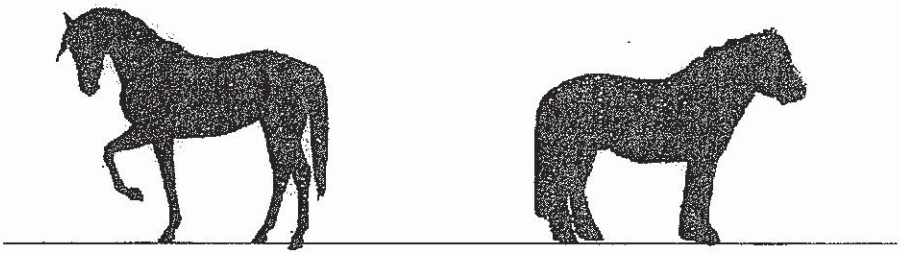
31. Simon conducted an experiment using 3 objects made of the same material. All the objects had the same volume. He placed all 3 objects on a table in a room at 30°C. He measured the temperature of the objects after 5 minutes. His results are shown in the table below.

Block	Exposed surface area (cm^2)	Start temperature (°C)	Final temperature (°C)
A	24	80	56
B	28	80	44
C	32	80	36

(a) State the relationship between the exposed surface area of the object and the amount of heat lost by the object. [1]

Animals G and H shown below are found in different parts of the world. Animal G has a greater exposed surface area to its surroundings than animal H.



animal G animal H

(b) Based on the results of Simon's experiment, explain why animal G is more likely to be found living in a hot environment. [1]

(c) Animal H has a thick layer of hair around its body. Explain how the thick layer of hair helps animal H survive in a cold environment. [2]

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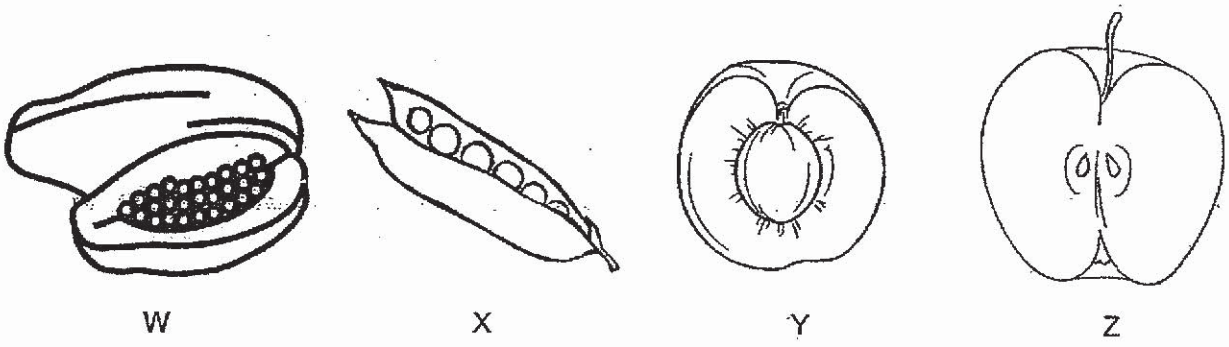
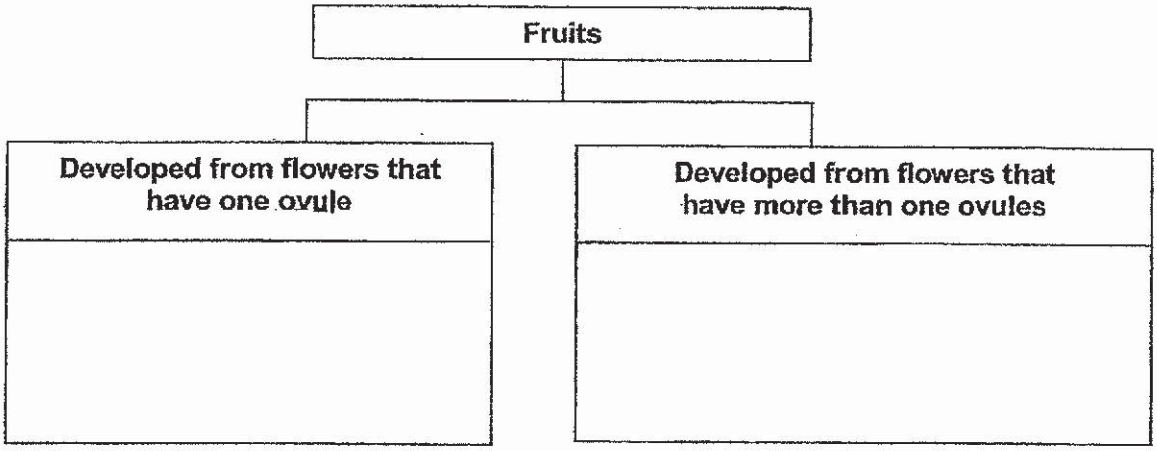
32. The diagram below shows fruits, W, X, Y and Z, which have been cut open.



W X Y Z

(a) Fill in the classification chart below with fruits W, X, Y and Z. [1]



1

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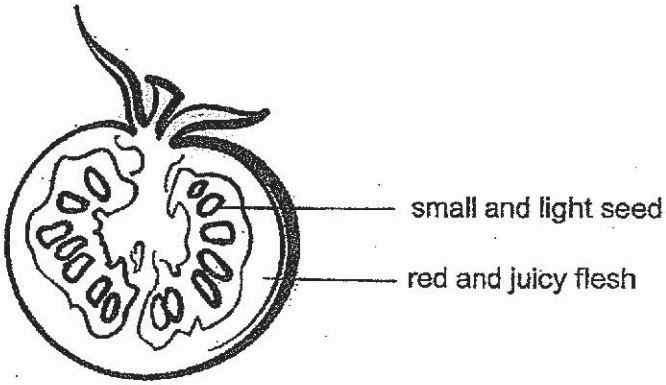
Evan and Fion obtained part P from a plant and cut it in half as shown in the diagram below.



Part P

They made the following statements.

Evan: Part P came from a non-flowering plant.
Fion: The seeds of part P are dispersed by wind because they are small and light.

Their teacher said that both their statements were incorrect.

(b)(i) Based on the diagram, explain why Evan is wrong. [1]

_____

_____

(b)(ii) Based on the diagram, explain why Fion is wrong. [1]

_____

_____

2

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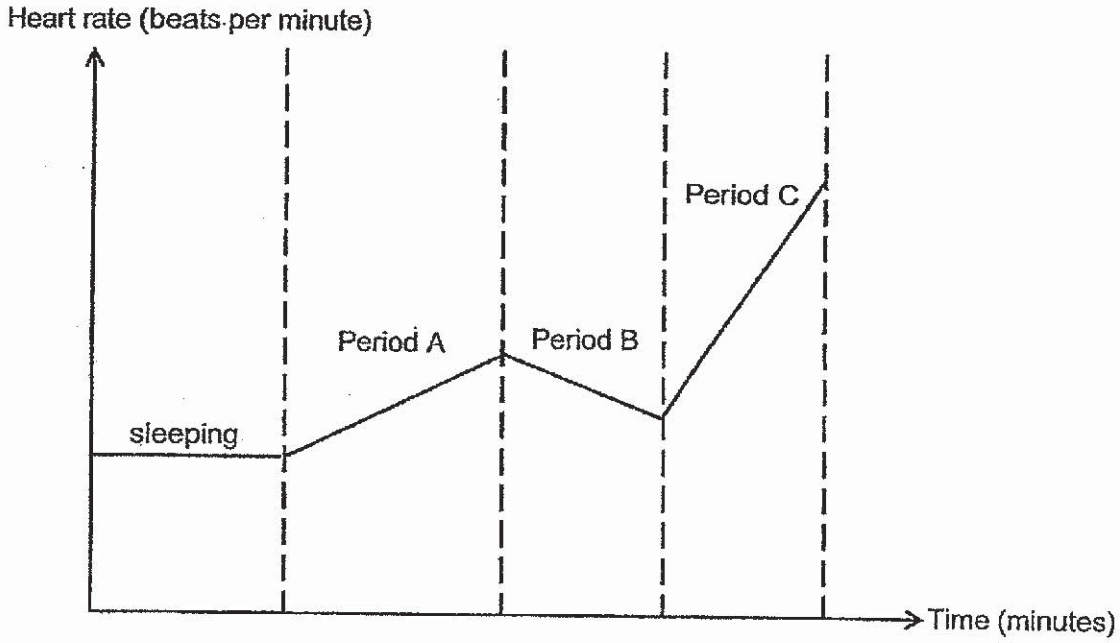
33. Aisha was told that she needed to eat food in order to have energy to carry out activities.

(a) Describe what happens to the digested food after it passes through the walls of the small intestine. [2]

The graph below shows Aisha's heart rate while she was performing different activities.

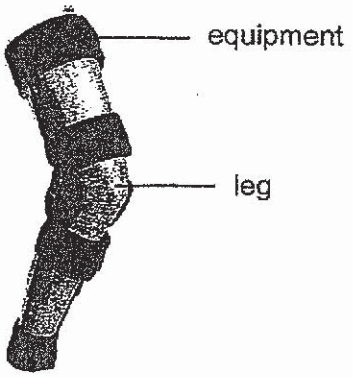


(b) Match the following activities to the periods, A, B and C, shown above. [1]

Activity	Period
Running	
Reading	
Sweeping	

34. The table below shows the average time taken for food to travel through the stomach of a healthy person and the stomach of Zach, who has a condition that causes all his muscles to become weaker over time.

Due to his condition, Zach has to put on the equipment as shown in the diagram below on his leg to help him walk without falling.



(a) State the human body system other than the muscular system that serves a similar function as the equipment above. [1]

_____

(b) What is the similarity in function between the body system mentioned in (a) and the equipment above? [1]

_____

_____

2

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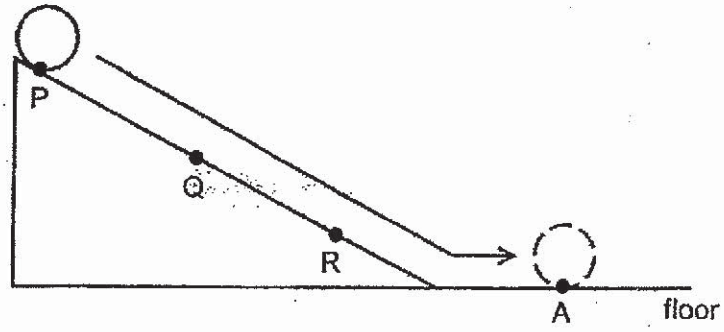
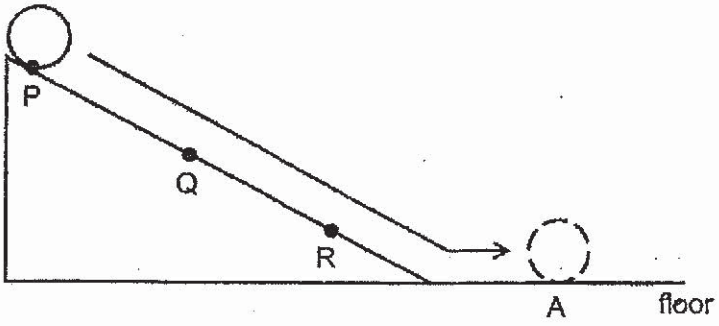
35. A ball was released from point P of a ramp. It rolled down through points Q and R and came to a stop at point A as shown in the diagram below.



(a) Fill in the table below with a tick (✓) to correctly show the change in the different types of energy that the ball has from point P to point R. [1]

Types of energy	Increases	Decreases	Remains the same
Potential energy			
Kinetic energy			
Heat energy			

Georgina then applied some oil on the ramp and repeated the experiment.



(b)(i) In the diagram above, mark with an 'X' the position where the ball will most likely stop. [1]

(b)(ii) In terms of energy conversion, explain your answer in (b)(i). [1]

_____

_____

_____

3

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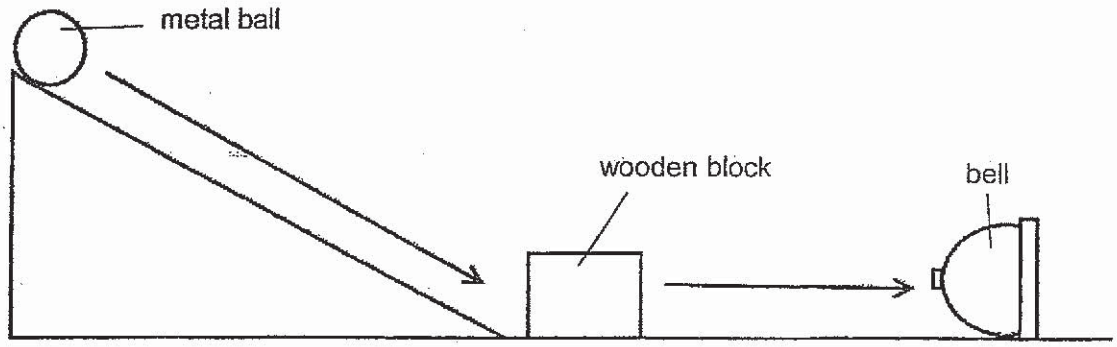
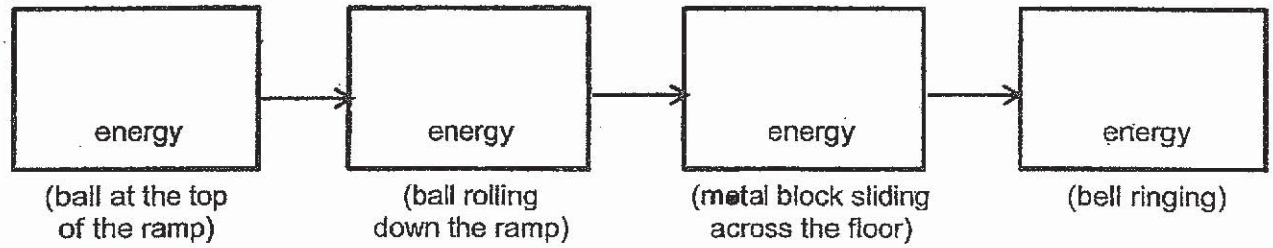
Georgina wanted to show how she could use a metal ball to ring a bell. She arranged the set-up as shown below.



(c) Fill in the boxes below to show the main energy conversion in the set-up above. [2]



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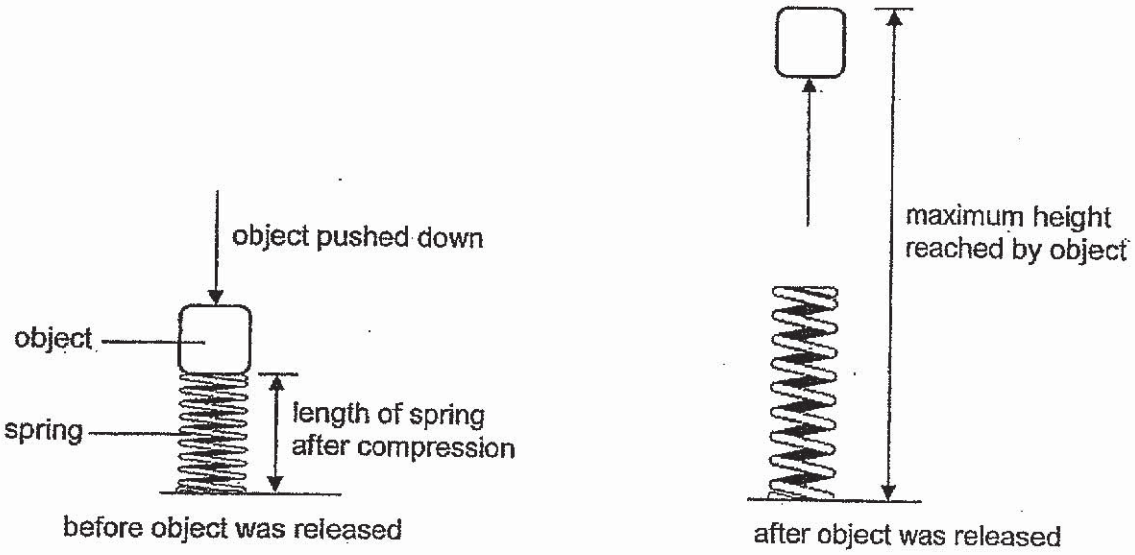
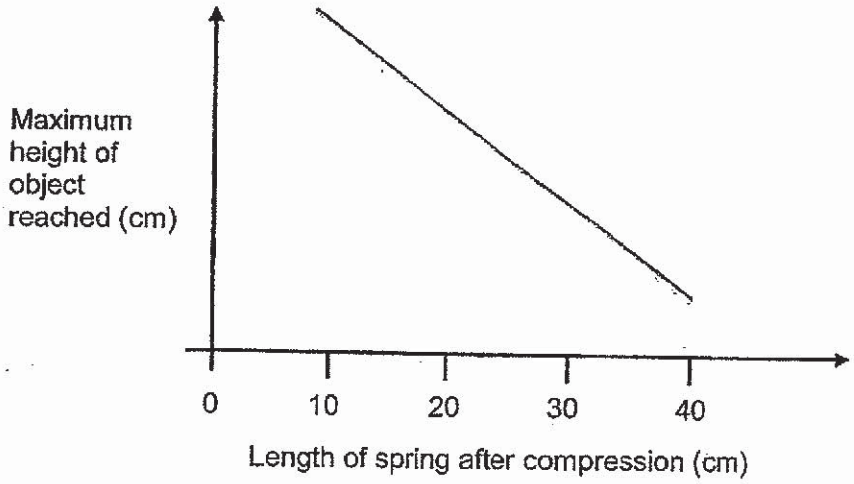
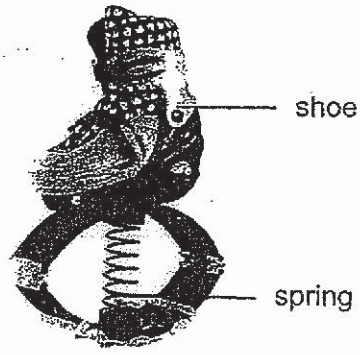
36. An experiment was conducted to find out the height reached by an object using a spring compressed to different lengths as shown below.



(a) The spring can be compressed to the shortest length of 10 cm. Draw a line graph below to show the most likely results obtained. [1]



The diagram below shows a jumping shoe made up of a shoe and a spring.



1

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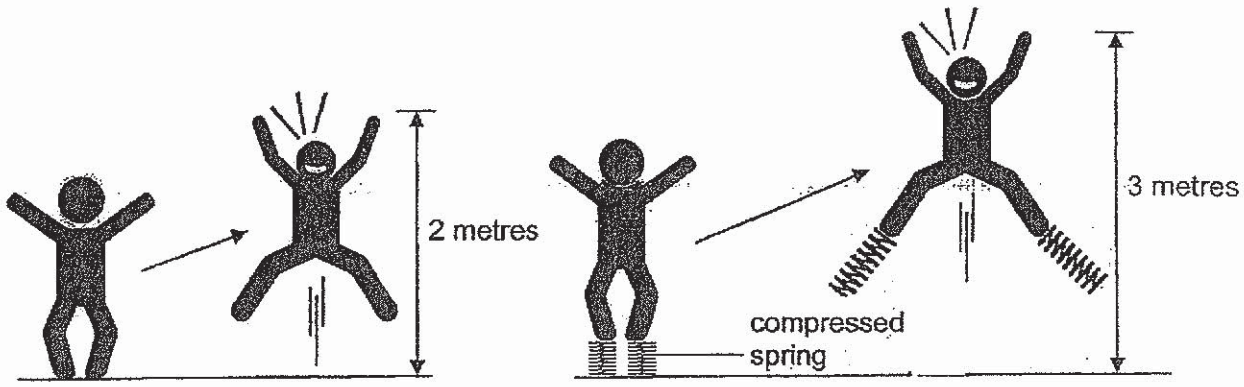
The diagram below shows the maximum height reached by the same user when jumping with and without the shoes.



jumping without shoe

jumping with shoe

(b) In terms of forces, explain the effects of jumping with the shoes on. [2]

_____

_____

_____

John bought a new pair of jumping shoes which has a stiffer spring.

(c) Complete the table below to show the maximum height reached by the same user when jumping with this new pair of shoes. [1]

Jumping shoe	Maximum height reach (m)
With original spring	3
With stiffer spring	

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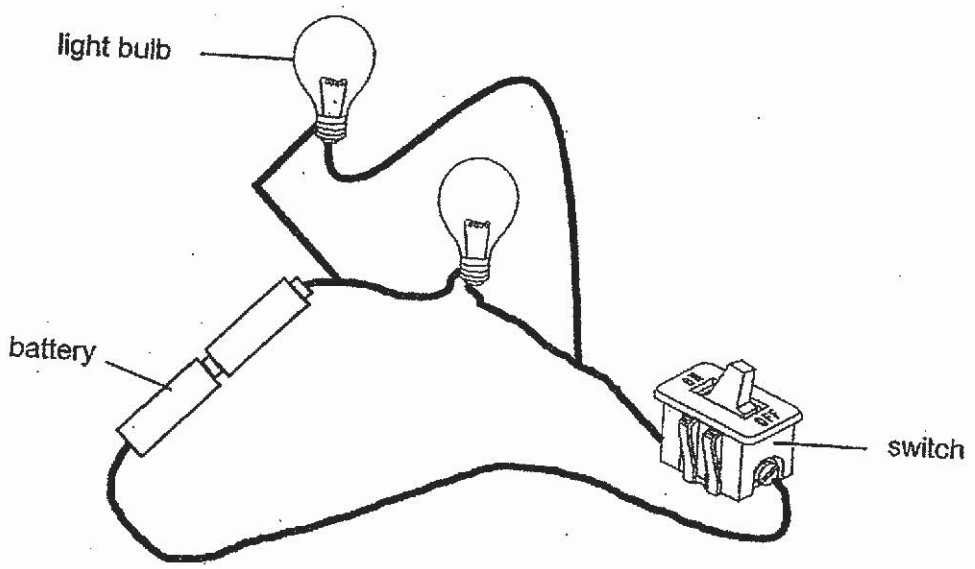
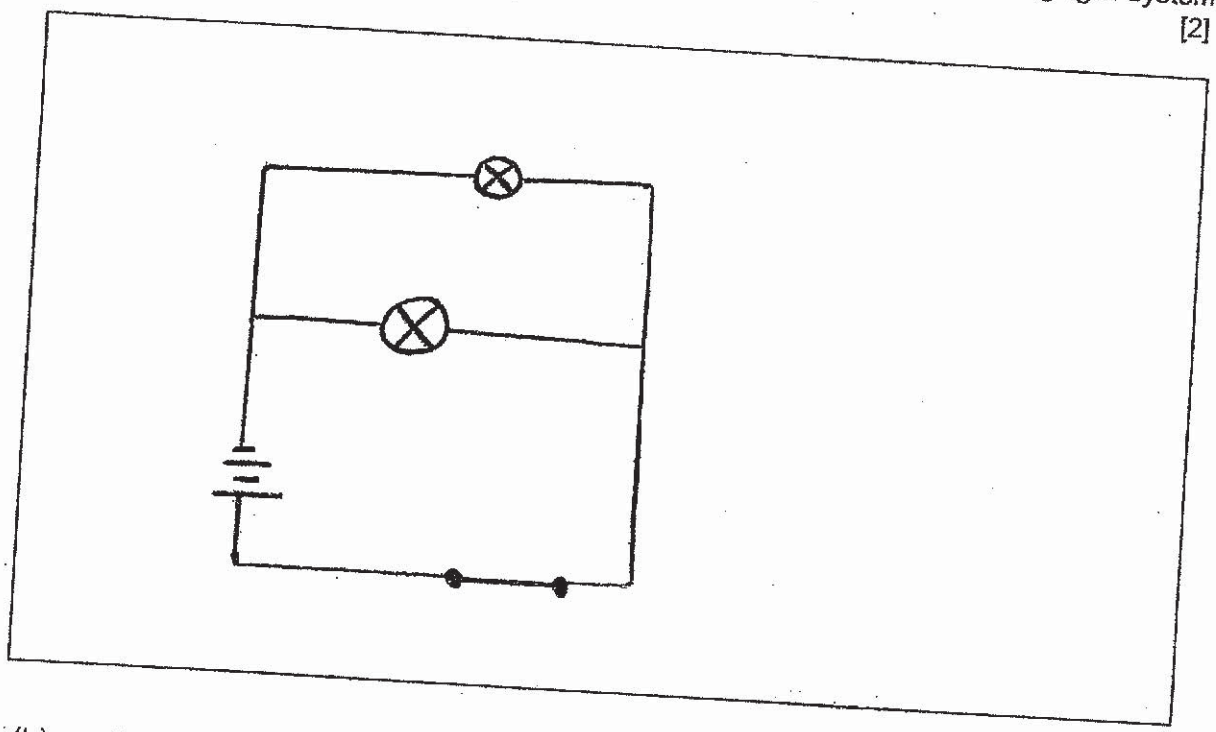
37. Glenda created a battery-operated warning light system as shown below. It has an extra light bulb so that she can still be alerted if one of the bulbs fuses.



(a) In the box below, draw and label a circuit diagram of Glenda's warning light system based on the diagram above. [2]



(b) Glenda added more batteries to the circuit and realised that both bulbs fused. Explain why the bulbs would not light up after they had fused. [1]

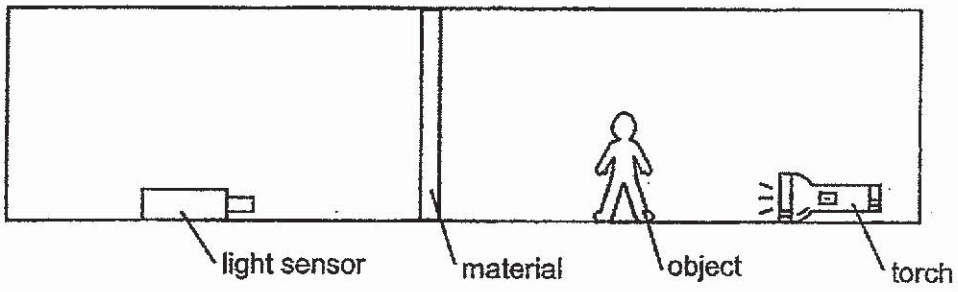
_____

_____

3

38. Tim conducted an experiment to find a suitable material to paste over his bathroom window so that no one could see through the window.

He set up the experiment in a dark room as shown below.



The table below shows the results of his experiment.

Set-up	Material	Amount of light detected (units)	Distance between light sensor and material (cm)
1	W	150	50
2	X	30	30
3	W	165	40
4	X	18	50

(a) Based on the table above, which set-ups should Tim use to conduct his experiment? [1]

_____

(b) Which material is more suitable to be pasted over Tim's bathroom window? Explain your answer. [2]

_____

_____

The material selected is still not suitable as Tim could see a faint image through the bathroom window.

(c) State the property of the material that would be more suitable to be pasted over the bathroom window. [1]

_____

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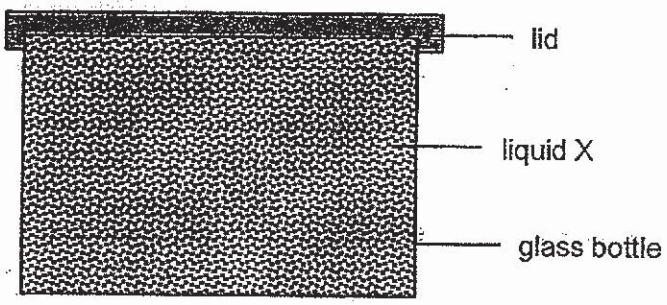
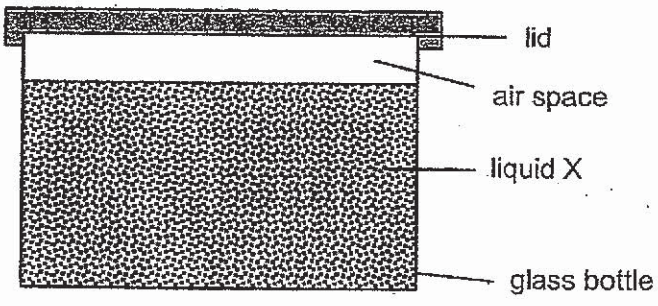
39. Emily made a glitter-in-a-bottle toy by filling a glass bottle to the brim with liquid X and sealed it tightly with a lid as shown in the diagram below.



Emily left the toy under the sun for half a day and found that some liquid X had leaked out of the bottle.

(a) Explain why liquid X leaked out of the bottle. [2]

One way to prevent liquid X from leaking out is to leave an air space in the bottle as shown below.



(b) Explain how the air space could prevent liquid X from seeping out of the bottle. [2]

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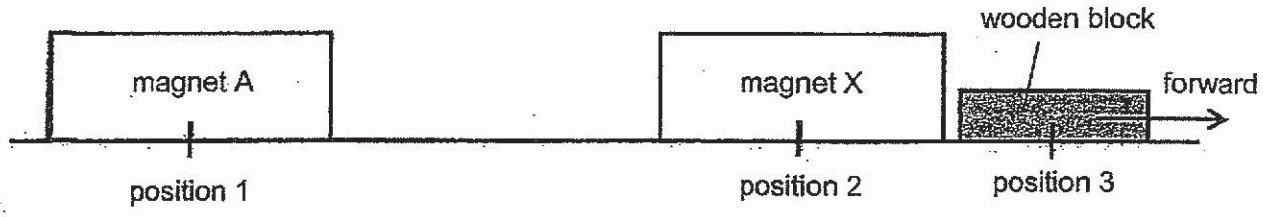
40. Eddie used the set-up shown below to investigate the effect of magnetic forces.



Eddie observed that when he placed magnet A at position 1, magnet X moved forward, pushing the wooden block forward as well. He recorded the distance travelled by the wooden block.

(a) Explain how magnet A was able to cause the wooden block to move forward. [1]

_____

_____

He repeated the experiment by placing magnets B, C and D at position 1, one at a time. He then recorded his results as shown in the table below.

Magnet	Distance travelled by the wooden block (cm)
A	5
B	8
C	3
D	0

(b) Which magnet, A, B, or C, has the strongest magnetism? Explain your answer. [2]

_____

_____

_____

(c) Give one possible reason why when magnet D was placed at position 1, the distance travelled by the wooden block was 0 cm. [1]

_____

_____

~ END OF BOOKLET B ~

4

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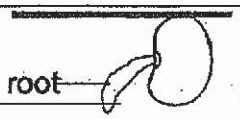
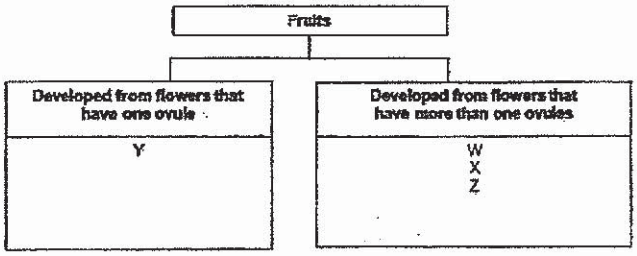
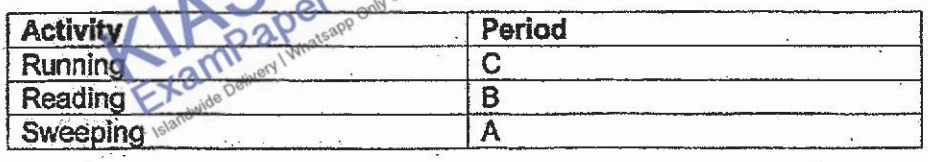
P6 SCIENCE Prelim 2019
Suggested Answers
Section A

1	1	11	1	21	2
2	4	12	1	22	1
3	4	13	3	23	2
4	2	14	4	24	4
5	3	15	1	25	2
6	4	16	4	26	1
7	3	17	3	27	1
8	4	18	2	28	2
9	4	19	4		
10	1	20	1		

Section B

Qn No	Acceptable Answers
29(a).	At 10 plants and below, the height of the plants remains constant. Above 10 plants, the greater the number of plants grown, the greater the height of the plants.
29(b).	The seedlings have to compete for space, light, water and nutrients/mineral salts.
29(c).	The rainfall in Sep was the least so the seeds did not have (enough) water to germinate.
29(d).	
30(a).	U → S → T
30(b).	Circle the letter B
30(c).	There will be **less T to feed on S.** There will be **more S to feed on U.**
31(a).	The greater the exposed surface area, the greater the amount of heat lost by the block.
31(b).	Animal G can lose more heat (to the surrounding) which will help it to cool down.
31(c).	The thick layer of hair traps air which is a poor conductor of heat. Thus, animal H will lose less heat to the surrounding which will help it to keep/ remain warm.
32(a).	
32(bi).	Evan is wrong because part P has seeds hence it is a fruit, and since fruits develop from flowering plants/ flowers.
32(bii)	Fion is wrong because part P is juicy/red hence it is more likely to be dispersed by animals.
33(a).	The digested food is absorbed into the bloodstream. The circulatory system will then transports the digested food to all parts of the body.
33(b).	
34(a).	Skeletal system
34(b).	Both ensure that the body remain upright. or Both support his body/leg.

Activity	Period
Running	C
Reading	B
Sweeping	A

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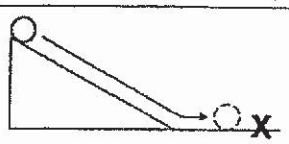
35(a).

Types of Energy	Increase	Decrease	Remains the same
Potential energy		√	
Kinetic energy	√		
Heat energy	√		

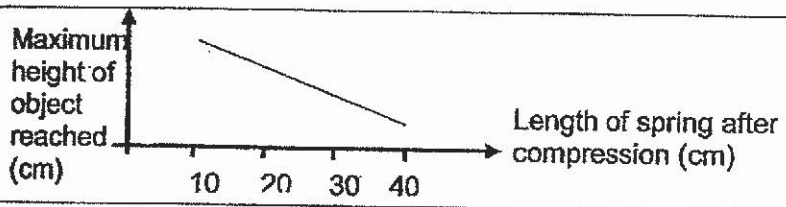
35(b)(i).



35(b)(ii). There will be **less kinetic energy converted to heat energy** so there will be **more kinetic energy for the ball to move faster/ further**.

35(c). PE → KE → KE → SE/ KE (write in full, not short forms ok?)

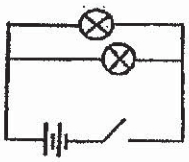
36(a).



36(b). The shoes allow the person to jump higher. When jumping with the shoes, there is elastic spring force of the spring (together with the push force of the legs), resulting in **more** force acting against gravitational force acting on the user.

36(c). More than 2m but less than 3m

37(a).



37(b). When the bulbs fused, there is an open circuit/ circuit is not closed and thus electricity can no longer flow through the bulbs to light up the bulb.

38(a). Set-ups 1 and 4.

38(b). Material X (material). There is less light detected by the sensor (data), so it allows less light to pass through (property), so no one could see clearly through the window (function).

38(c). It is opaque / allows no light to pass through/ does not allow light to pass through.

39(a). **Liquid X** will gain heat from the sun and expand, As there is no space for the liquid to occupy/ liquid cannot be compressed, the liquid seeped out (application) OR
Liquid X and the glass bottle will gain heat from the sun and expand. As liquid X expands more than the bottle, there is no space for the liquid to occupy, thus the liquid seeped out.

39(b). When liquid X expands, it compresses the air in the air space and occupies the space previously occupied by the air/ liquid X displaces the air. Thus it does not leak out.

40(a). The like poles of magnet A and magnet X were facing each other, hence they repelled. Magnet X moved forward causing the wooden block to move forward as well.

40(b). Magnet B. When magnet B was placed at position 1, the distance travelled by the wooden block was the furthest this means that there was the greatest repulsion/ repel the furthest.

40(c). The unlike poles of magnet D and magnet X could be facing each other so both magnets would attract each other. Or The magnetism in magnet D was so weak/ demagnetised that it could not repel magnet X so magnet X did not move.

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Index No. [ ][ ][ ][ ] – [ ]

PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION 2019

SCIENCE

SECTION A

Time: 1 h 45 min

Name: _____ ( )

Class: Primary 6 /( ) _____

Date: 20 August 2019

Science Teacher: _____

INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
SHADE YOUR ANSWERS ON THE OPTICAL ANSWER SHEET (OAS) PROVIDED.

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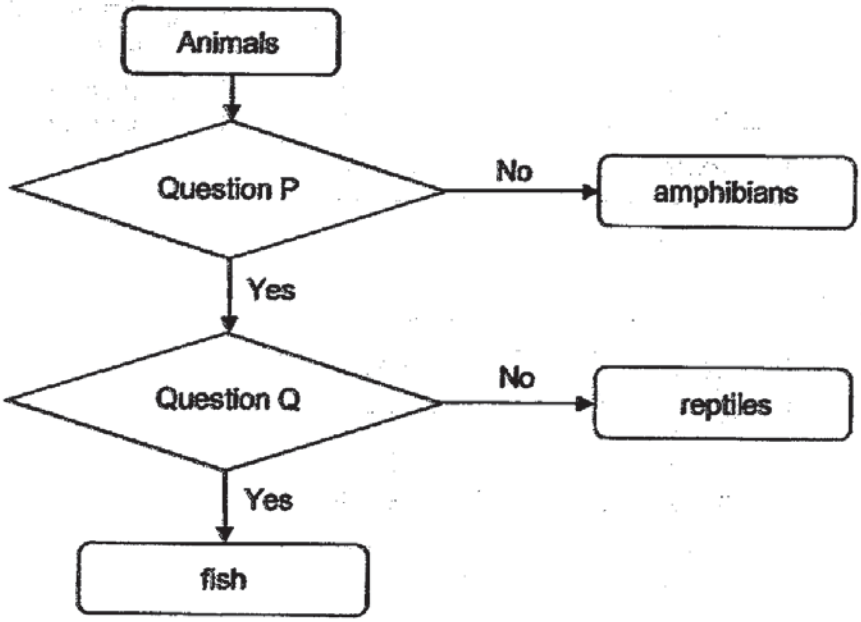
Section A (28 × 2 marks)
For questions 1 to 28, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1 Three groups of animals are classified in the flowchart shown below.



What are questions P and Q?

	Question P	Question Q
(1)	Does the adult have gills?	Does it have fins?
(2)	Does the adult have gills?	Does it have scales?
(3)	Does it have fins?	Does it have scales?
(4)	Does it have scales?	Does the adult have gills?

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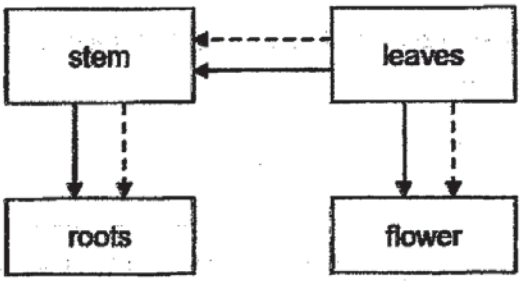
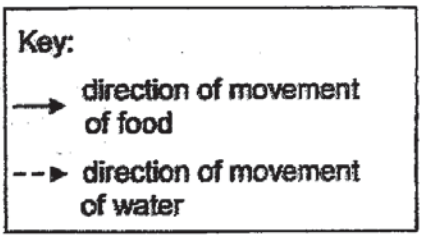
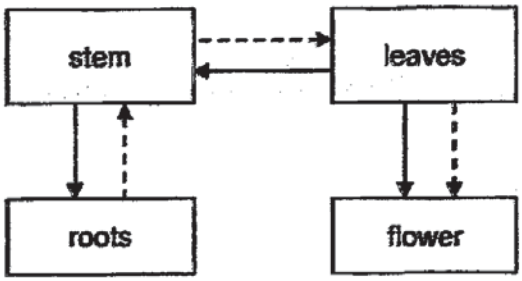
2 Which of the following diagrams correctly shows the direction of movement of food and water in a plant?

(1)

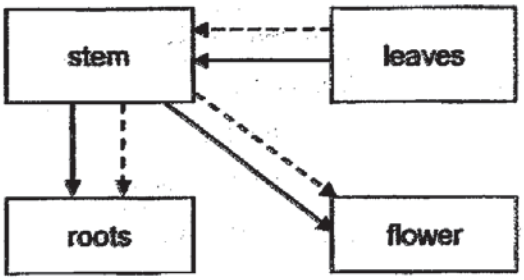




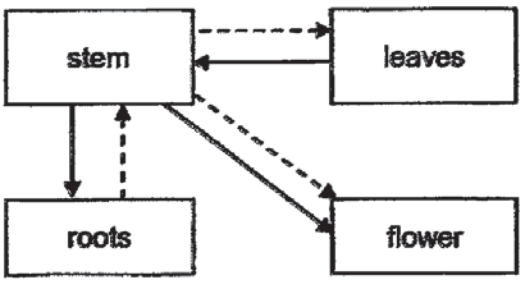
(2)



(3)



(4)



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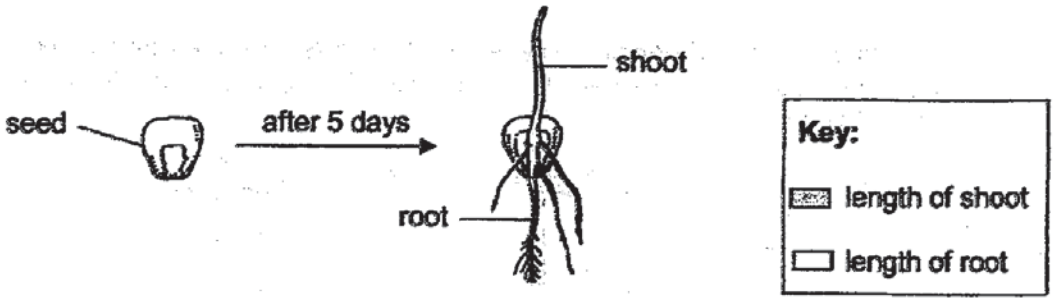
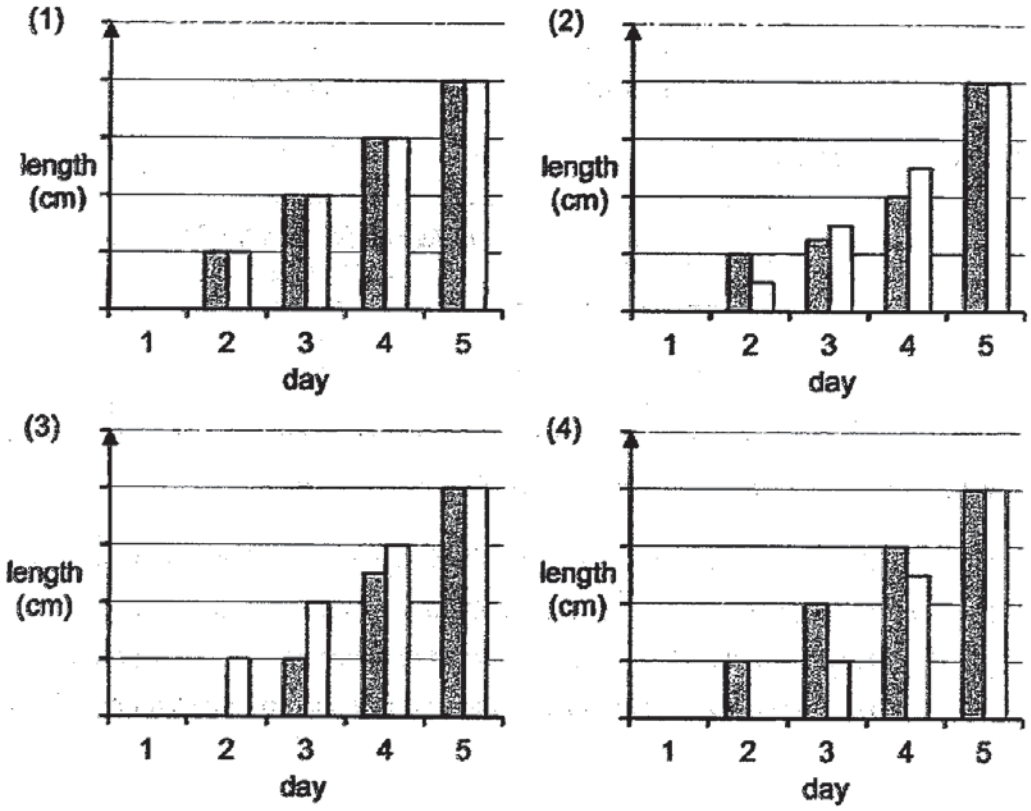
3 Huihui observed a seed germinating as shown below.



She measured the lengths of the shoot and root of the seedling every day.
Which of the graphs correctly shows the results of her experiment?



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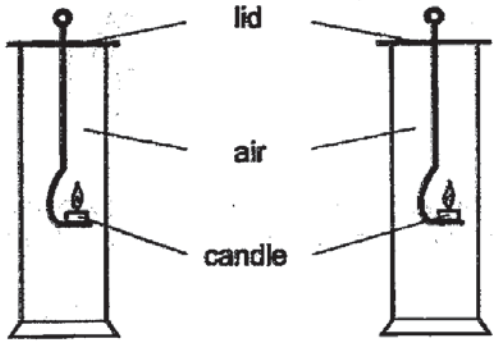
4 Gopal prepared two gas jars. One of the jars was filled with air that he breathed in and the other was filled with air that he breathed out.

He placed a lighted candle inside each of the jars as shown below. As the candles burn, they use up the oxygen in the jars. He measured the time taken for the candle flame to go out.



His results are shown below.

Gas jar	Time taken for candle flame to go out (s)
G	8
H	17

Which of following best explains the result of his experiment?

(1) Jar G contained air that Gopal breathed in which had less oxygen.

(2) Jar G contained air that Gopal breathed out which had less oxygen.

(3) Jar H contained air that Gopal breathed in which had more carbon dioxide.

(4) Jar H contained air that Gopal breathed out which had more carbon dioxide.

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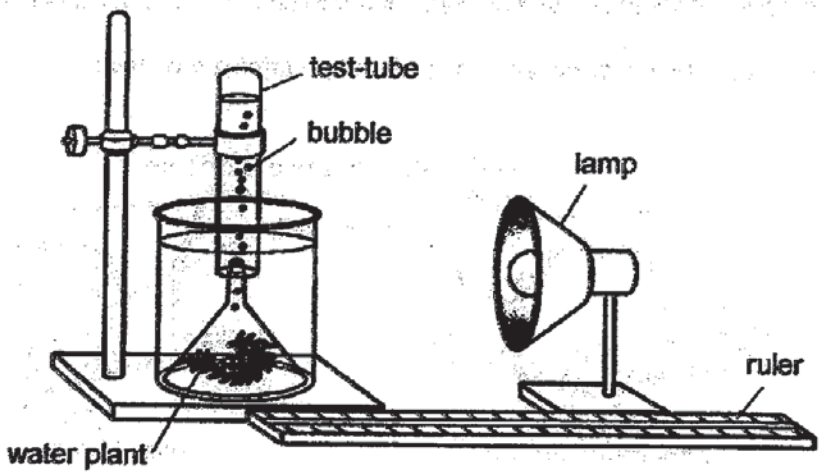
5 Aini conducted an experiment in a dark room using the set-up shown below.



She switched on the lamp and counted the number of bubbles the water plants produced in one minute.

Aini repeated the experiment with different masses of water plants and placed the lamp at different distances from the water plants.

Her results are shown below.

Set-up	Distance between the water plants and lamp (cm)	Number of bubbles produced by the water plants in one minute
A	20	18
B	30	18
C	40	18

Which of the following most likely shows the mass of water plants in each of the set-ups?

	Set-up A	Set-up B	Set-up C
(1)	10 g	15 g	20 g
(2)	10 g	20 g	15 g
(3)	20 g	10 g	15 g
(4)	20 g	15 g	10 g

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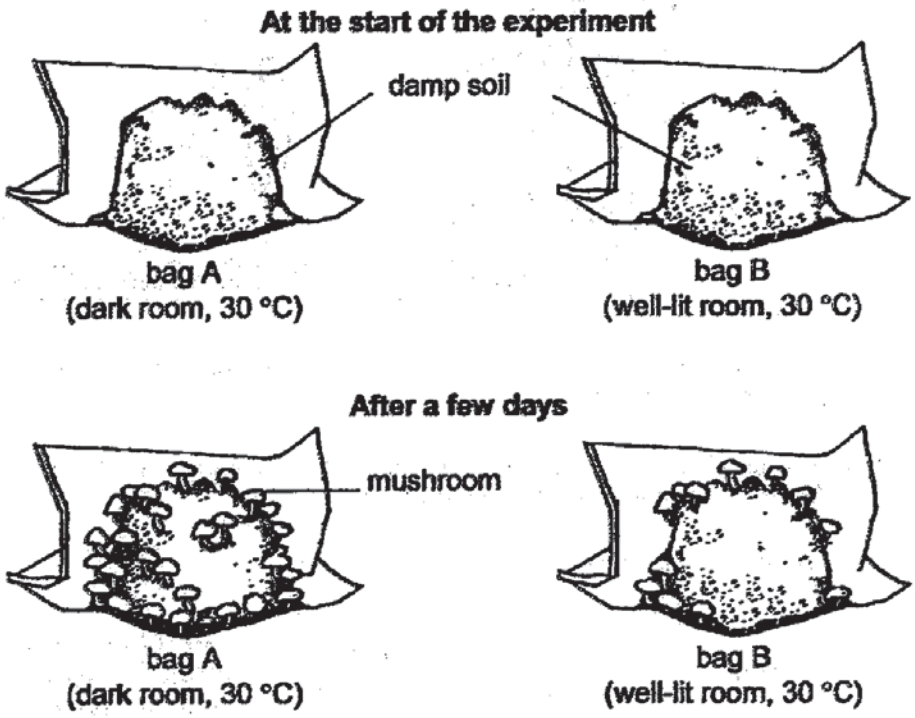
6 Judy carried out an experiment as shown below. She placed the same amount of mushroom spores in two sealed bags of damp soil and left the bags in different places.

The diagrams below show what she observed after a few days.



Which of the following could Judy conclude from her experiment?

(1) Mushrooms need light to grow.

(2) Mushrooms do not need light to grow.

(3) Mushrooms need warmth and light to grow.

(4) Mushrooms need warmth but do not need light to grow.

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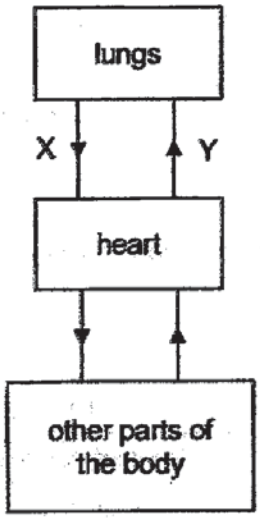
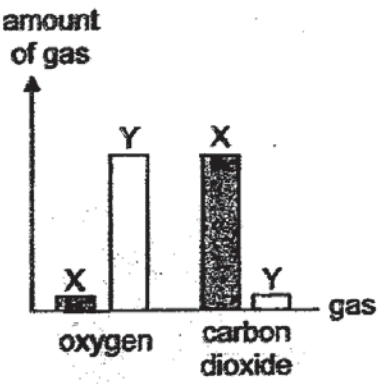
7 Which of the following correctly shows where digestion starts and end in the human digestive system?

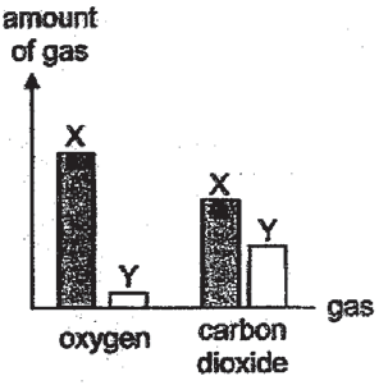
	Digestion starts	Digestion Ends
(1)	mouth	large intestine
(2)	mouth	small intestine
(3)	stomach	large intestine
(4)	stomach	small intestine

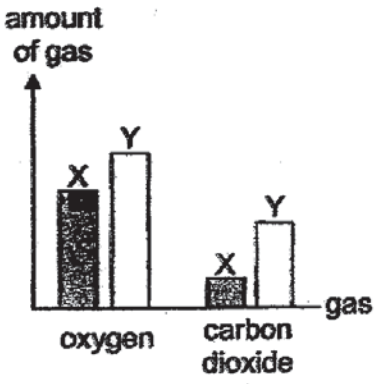
8 The diagram shows the direction of blood flow in some parts of the body.

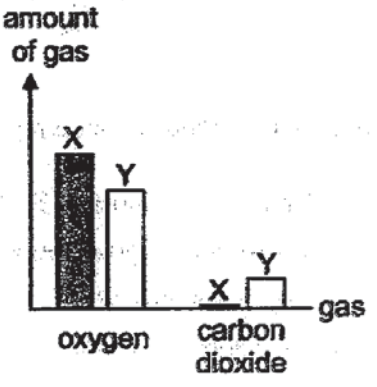


Which of the following shows the correct comparison of the amount of oxygen and carbon dioxide at X and Y?

(1)


(2)


(3)


(4)


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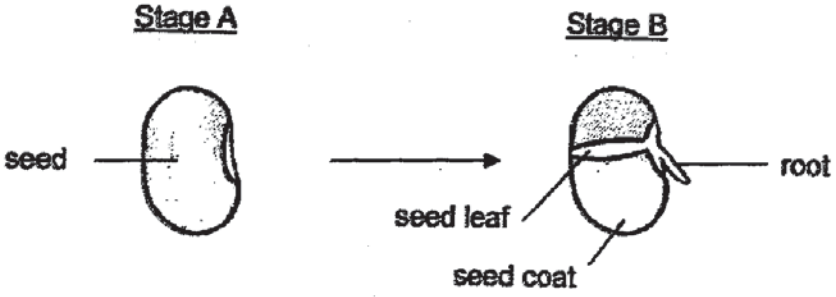
9 Which of the following statements about cells is correct?

(1) All plant cells contain chloroplasts.
(2) All animal cells do not have cell walls.
(3) Cell walls control the movement of substances into and out of a cell.
(4) All the cells within an organism look alike and perform similar functions.

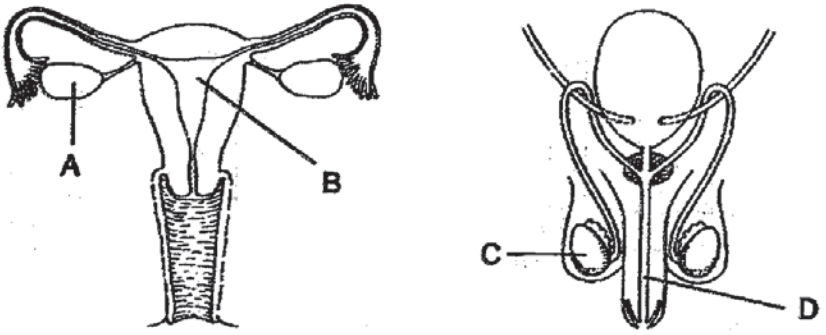
10 The diagram shows the germinating process of a seed.



How would the mass of seed change from stage A to stage B and what was the reason for the change in mass?

	Mass of seed	Reason
(1)	decrease	The seed coat broke apart.
(2)	decrease	The root had less mass than the seed leaf.
(3)	increase	The germinating seed absorbed water.
(4)	increase	The germinating seed made its own food.

11 Study the two human reproductive systems as shown below.



Which of the following is correct?

(1) Fertilisation occurs in B and D.
(2) The fertilised egg is found in A.
(3) Only one sperm will be released through D.
(4) Reproductive cells are produced in A and C.

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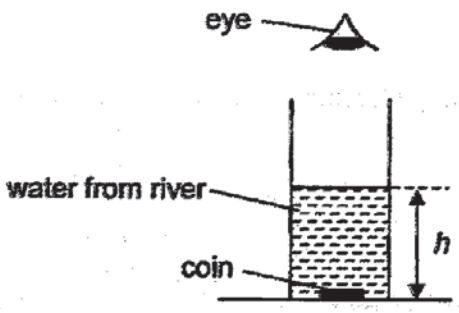
1253

12 Mary conducted an experiment using muddy water from different parts of a river, W, X, Y and Z.

She placed a coin at the bottom of a container and poured water taken from W until the coin could no longer be seen as shown in the set-up below. Then she recorded the height *h* of the water.



She repeated the experiment with water taken from X, Y and Z. The results are shown below.

Part of river	*h* (cm)
W	30
X	60
Y	10
Z	80

Based on her results, which of the following statements is most likely to be correct?

(1) More floating plants can be found at part W than part X.

(2) The most number of floating plants can be found at part Z.

(3) More plants can be found in the water at part X than part W.

(4) The most number of plants can be found in the water at part Y.

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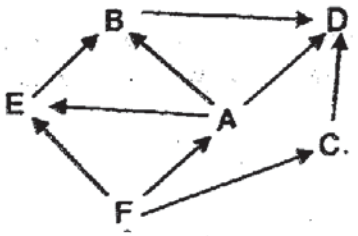
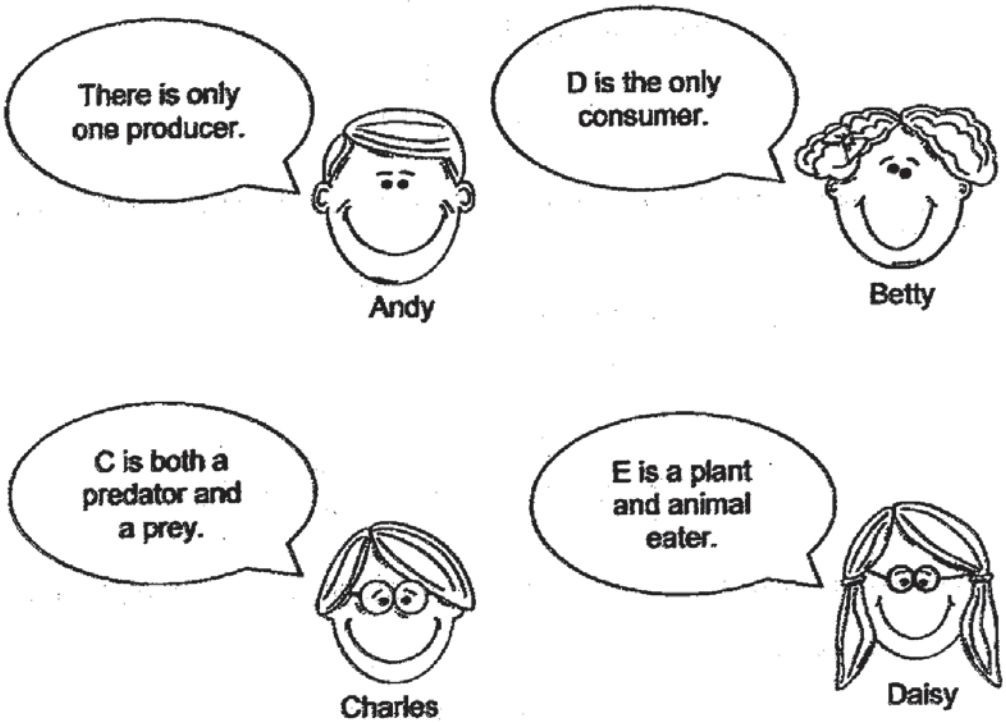
13 Study the food web below.



Four pupils made the following statements about the food web.



Which pupils were correct?

(1) Andy and Charles only
(2) Andy and Daisy only
(3) Betty and Charles only
(4) Betty and Daisy only

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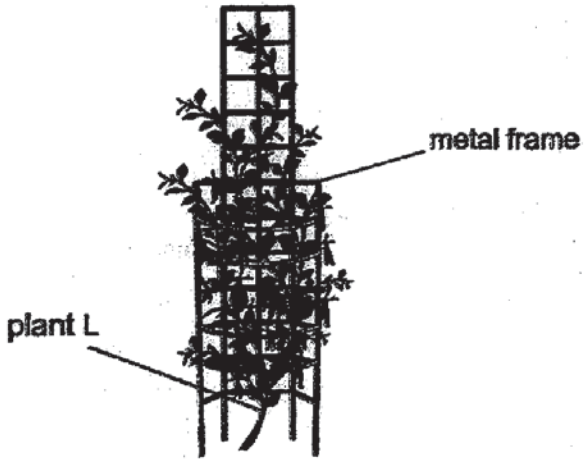
14 Plant L climbs around a metal frame as shown below.



What is the advantage of plant L climbing onto the metal frame?

(1) It can get more sunlight.
(2) It can keep animals away.
(3) It can store water in the leaves.
(4) It can increase the chance of pollination.

15 Which of the following actions have a positive impact on the environment?

(1) cutting down trees to clear land to build houses
(2) taking public transport instead of private car to school
(3) building more incineration plants to burn more rubbish
(4) switching on the air-conditioner to cool the surroundings

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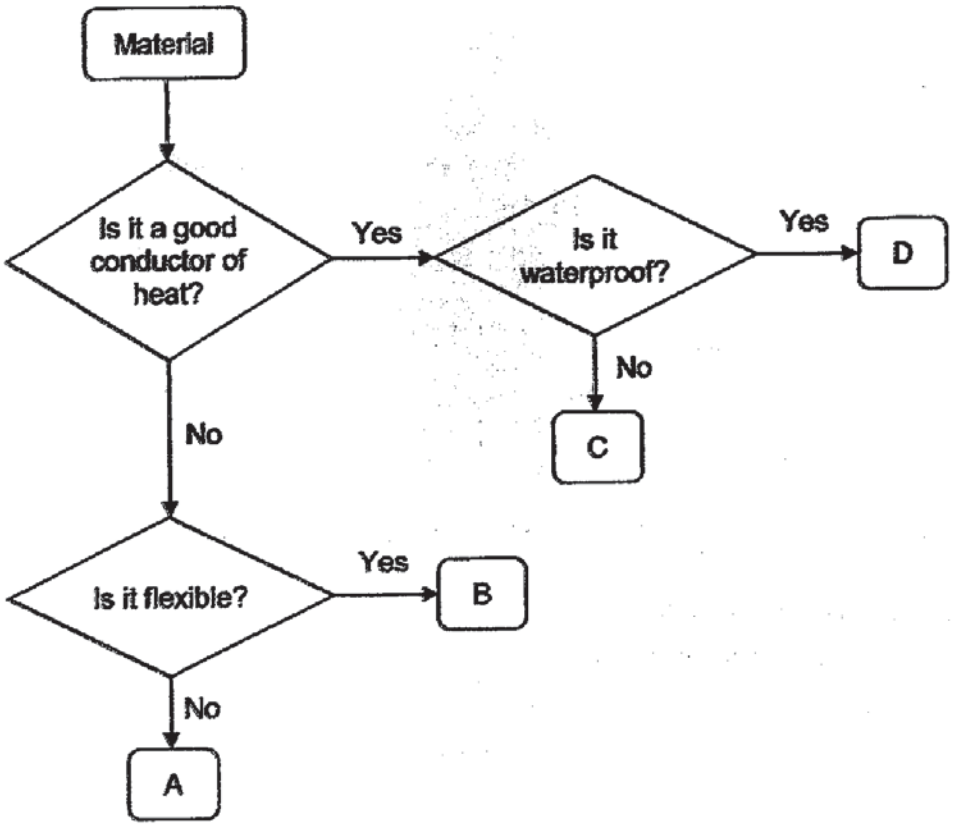
16 Study the diagram below.



All buildings need to have special fire doors as a safety feature. The fire door ensures that fire does not spread easily from one place to another.

Based on the diagram above, which material is most suitable for making the fire door?

(1) A
(2) B
(3) C
(4) D

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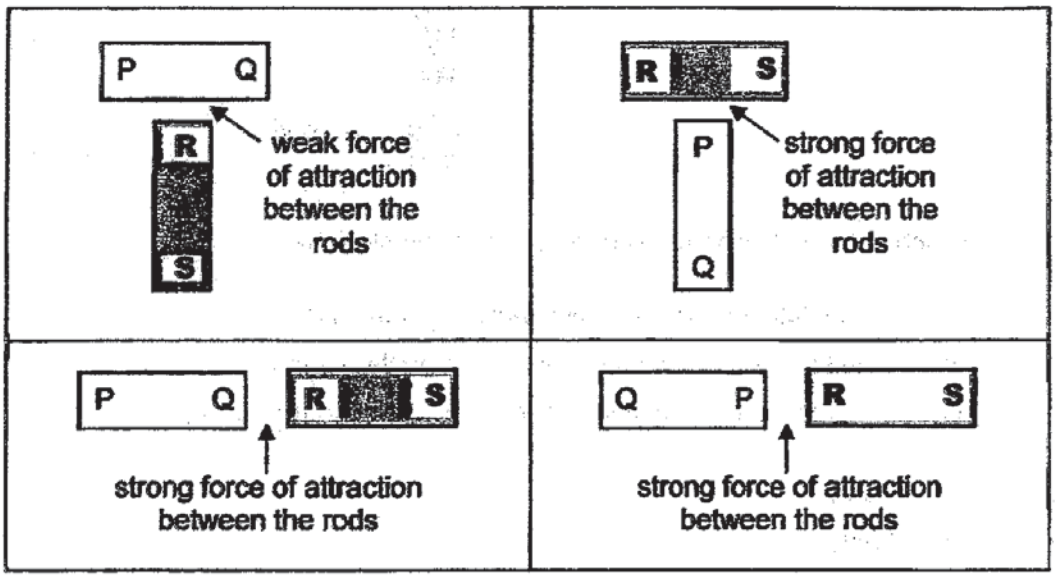
17 Matthew had two similar metal rods PQ and RS.

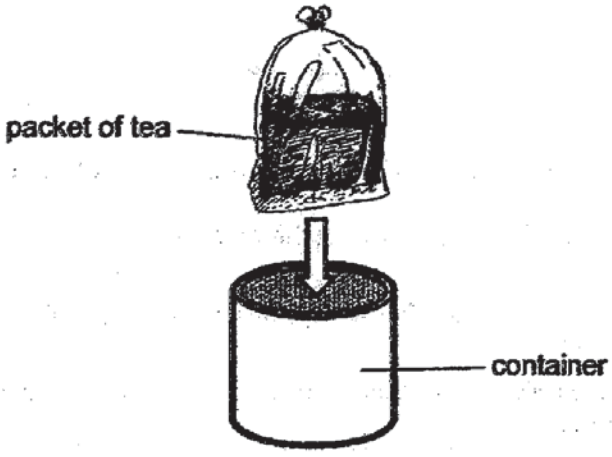
He arranged the two rods in four ways and the diagrams below show what he observed.



Which of the following best describes the two rods?

(1) PQ was a magnet and RS was a magnetic material.
(2) PQ was a magnetic material and RS was a magnet.
(3) PQ was a strong magnet and RS was a weak magnet.
(4) PQ was a weak magnet and RS was a strong magnet.

18 Carmen placed a packet of tea into a container without overflowing as shown below.



Which of the following about the packet of tea is correct?

(1) Both the shape and volume of the tea changed.
(2) The shape of the tea changed but the volume did not.
(3) The volume of the tea changed but the shape did not.
(4) Both the shape and the volume of the tea did not change.

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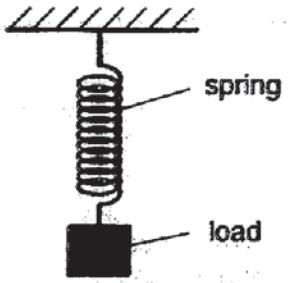
19 A spring is stretched by hanging a load from it.

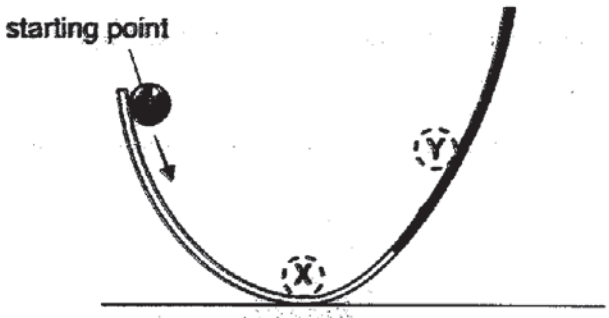


Which of the following caused the spring to be stretched?

A : gravitational force that was acting on the load
B : elastic spring force that was acting on the spring
C : friction that was acting between the load and the spring

(1) A only
(2) B only
(3) A and B only
(4) B and C only

20 A marble was held at rest on one side of a curved track.



When the marble was released, it rolled to X, then to Y, before rolling back to X.

Which of the following statements about the marble is correct?

(1) As the marble rolled up from X to Y, the amount of friction between it and the track increased.
(2) As the marble rolled down from Y to X, the amount of friction between it and the track increased.
(3) The gravitational force acting on the marble at Y is greater than the gravitational force acting on it at X.
(4) The gravitational force acting on the marble at Y is the same as the gravitational force acting on it at X.

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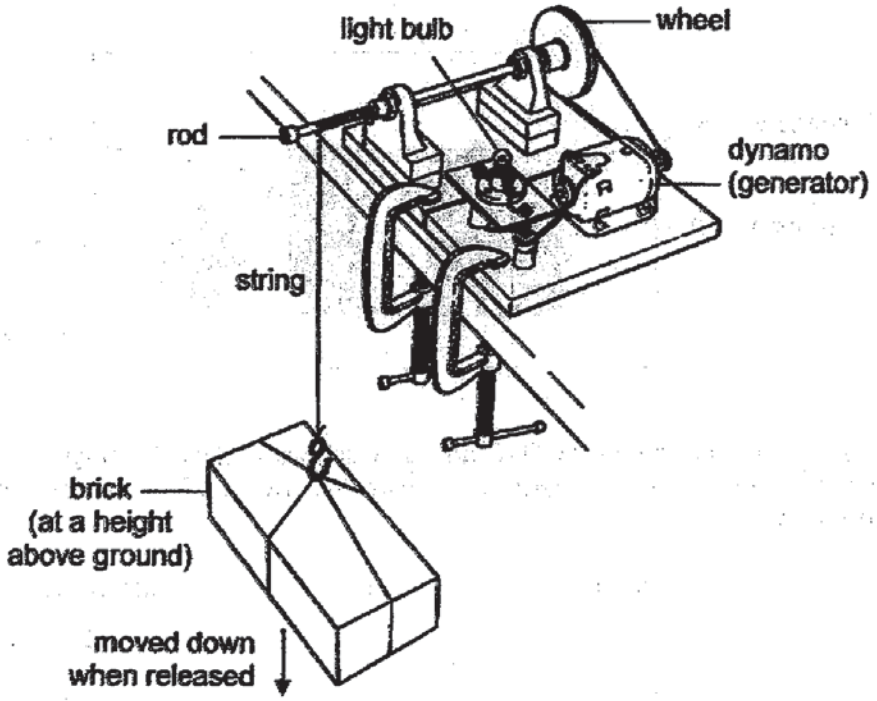
21 Julie constructed the system shown below to light up a bulb. The system was placed on a table and the brick was raised to a height above the ground.



When the brick was released, it moved down, turning the rod and wheel that was attached to the rod. The dynamo was turned and the bulb lit up.

Which of the following shows the energy changes that occurred?

(1) kinetic energy → potential energy → heat energy → light energy

(2) potential energy → kinetic energy → heat energy → light energy

(3) kinetic energy → potential energy → electrical energy → heat energy + light energy

(4) potential energy → kinetic energy → electrical energy → heat energy + light energy

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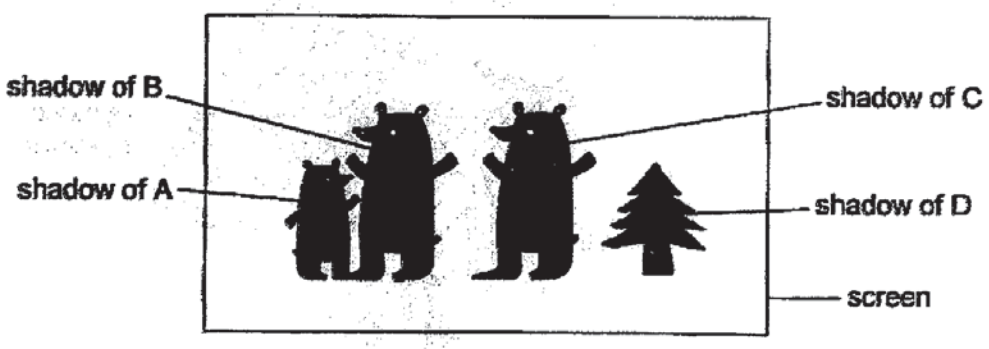
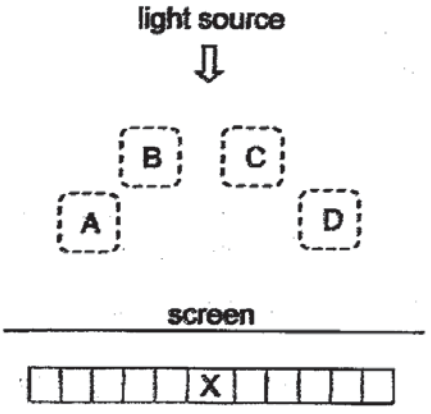
22 Xavier who was seated at X saw four shadows on a screen during a shadow performance as shown below.

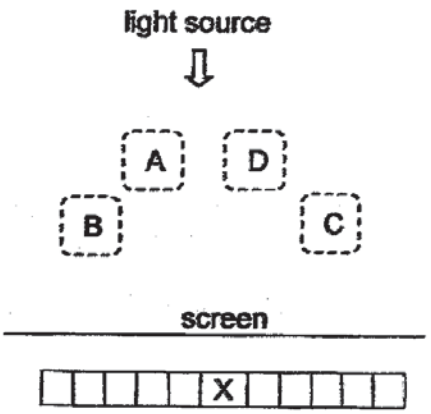


There were four objects, A, B, C and D, which were of similar height.
Which of the following diagrams shows the layout of the stage for this shadow performance?

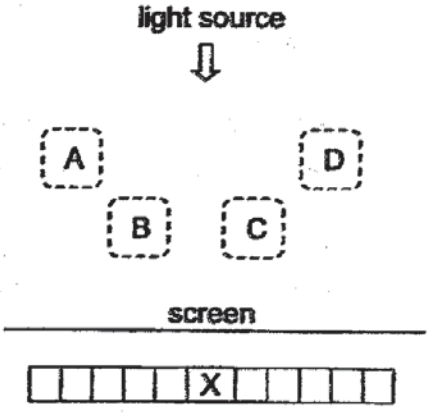
(1)



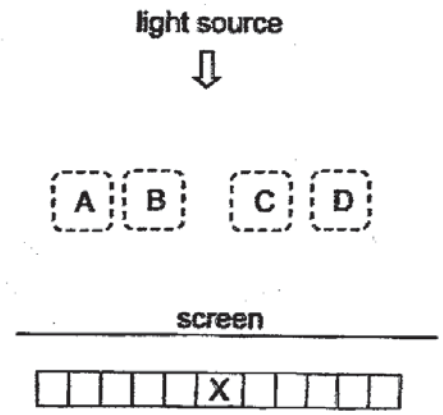
(2)



(3)



(4)



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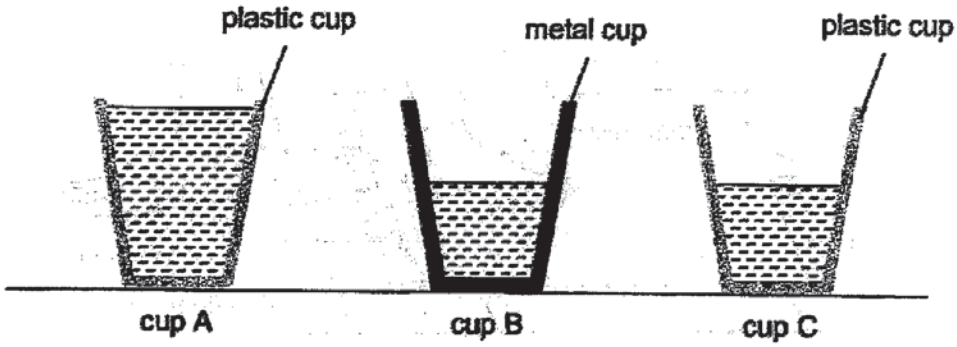
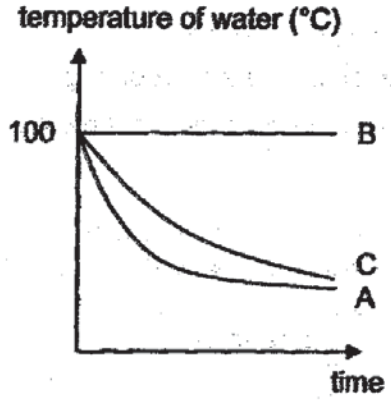
23 Three cups, A, B and C, were filled with water at 100 °C and left on a table as shown below. The cups are of the same size and thickness.

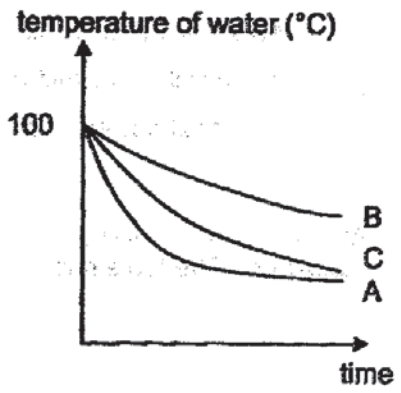


Which graph correctly shows the temperature of water in the three cups over a period of time?

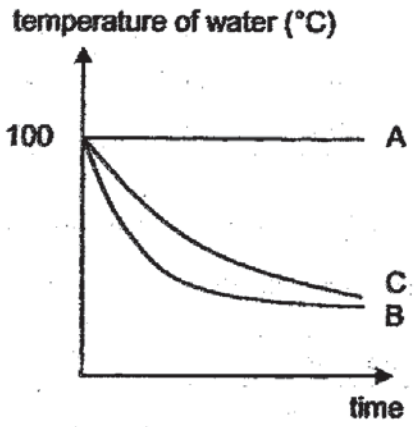
(1)



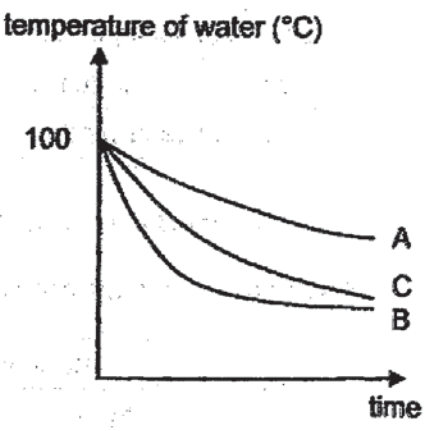
(2)



(3)



(4)



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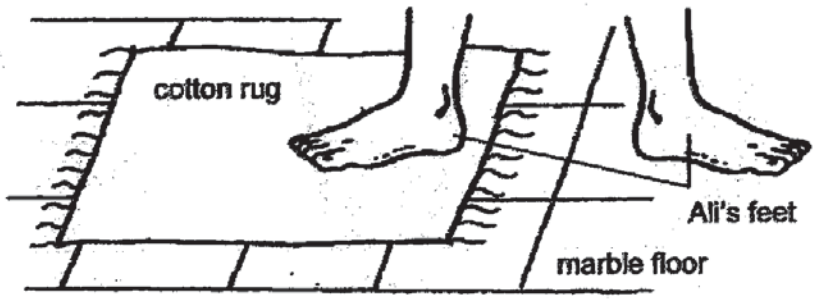
24 Ali's foot touched the marble floor of his room and his other foot touched the cotton rug on the floor. The floor and the rug were of the same temperature.



Which of the following best explains why his foot felt cooler on the marble floor compared to the cotton rug?

(1) The cotton rug was hotter than the marble floor.

(2) Marble is a poor conductor of heat compared to cotton.

(3) The marble floor had a greater surface area than the cotton rug.

(4) More heat flowed from Ali's foot to the marble floor than to the cotton rug.

25 Ah Seng set up four experiments, P, Q, R and S, using water in four identical containers. The table shows the different conditions at the start of each experiment.

	Experiment			
	P	Q	R	S
room temperature (°C)	25	31	25	25
duration of sunlight (hour)	6	6	0	0
volume of water (cm^3)	500	400	500	500
presence of wind	no	yes	no	yes

Ah Seng wanted to investigate if light or wind is necessary for evaporation to occur.

Which pairs of set-ups should he use in his investigation?

	Rate of evaporation depends on	
	light	wind
(1)	P and R	Q and S
(2)	R and S	P and Q
(3)	Q and S	P and R
(4)	P and R	R and S

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26 A glass beaker containing boiling water was left on a table.

Which of the following action(s) would help to cool the boiling water faster?

A Turn on the fan above the glass beaker.

B Cover the top of the beaker with a wooden lid.

C Wrap the beaker with a wet cloth that was rinsed with tap water.

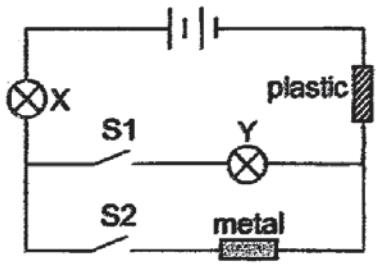
(1) A only
(2) B only
(3) A and C only
(4) B and C only

27 Xiaoli set up a circuit with a metal rod, a plastic rod and two bulbs, X and Y, placed at different parts of the circuit. S1 and S2 are switches and all the bulbs and batteries are working. She recorded her results in the table below.

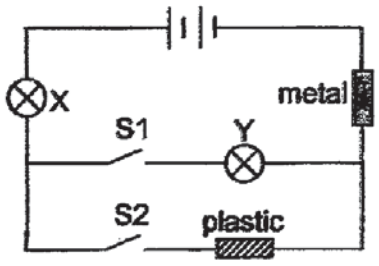
S1	S2	Bulb(s) lighted up
open	open	none
open	close	none
close	open	X and Y
close	close	X and Y

Which of the following correctly shows her circuit?

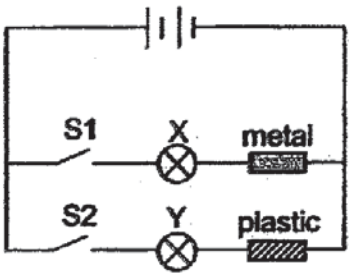
(1)



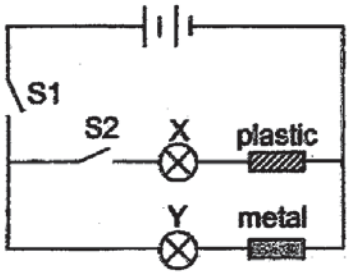
(2)



(3)



(4)



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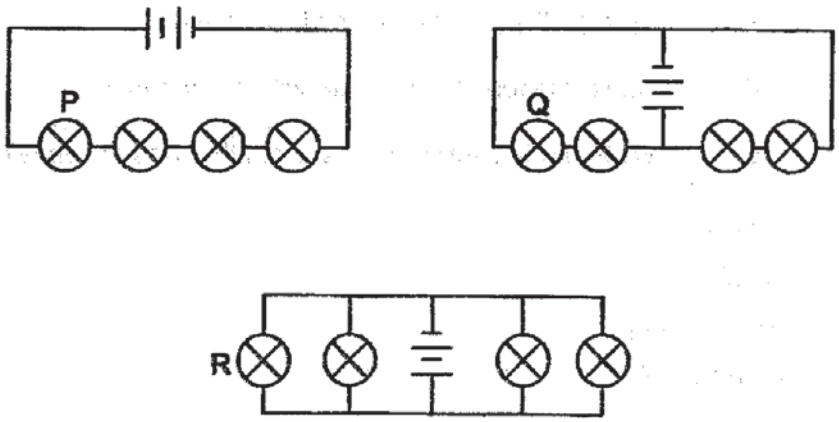
28 Raju set up three electric circuits, using identical batteries and bulbs. All the bulbs and batteries are working.



Which of the following statements about the circuits is correct?

(1) Bulb P is the brightest.

(2) Bulb Q is the brightest.

(3) Bulb R is the brightest.

(4) Bulbs P, Q and R have the same brightness.

End of Section A

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Index No. [ ][ ][ ][ ][ ] – [ ]

PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION 2019

SCIENCE

SECTION B

Time: 1 h 45 min

SECTION A	/56
SECTION B	/44
TOTAL	/100

Name: _____ ( )

Class: Primary 6 /( )_____

Date: 20 August 2019

Science Teacher: _____

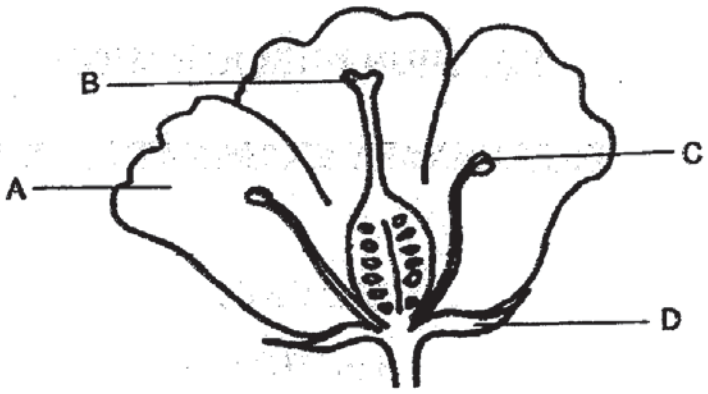
Parent's Signature: _____

INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
WRITE YOUR ANSWERS IN THIS BOOKLET.

Section B (44 marks)
For questions 29 to 40, write your answers in the spaces provided.

29 The diagram below shows a flower of plant W.



(a) A part of the flower has been removed before pollination could occur. The flower did not produce any seeds after that.

Which part of the flower, A, B, C or D, was removed? Name this part. [1]

_____

(b) Describe the process of fertilisation in flowering plants. [1]

_____

_____

(c) The fruit of plant W is juicy and it contains seeds that are hard and stone-like.

Suggest how the seeds of this plant can be dispersed over a wide area. [1]

_____

_____

SCORE	

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(d) Nora studied the effect of surrounding temperature on the growth of the fruit. Her findings are shown below.

Temperature (°C)	Number of days for fruit to ripen
20	17
25	10
30	20
35	24

From Nora's findings, how would temperature affect the time taken for the fruit to ripen?

[1]

_____

_____

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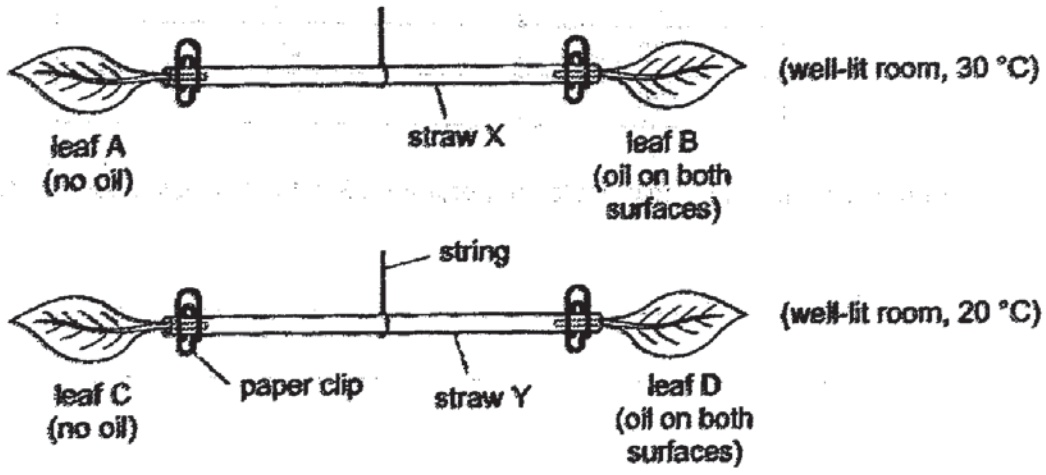
30 Sunil set up an experiment with four similar leaves, A, B, C and D, to find out how the surrounding temperature affects the rate of water lost from the leaves.

He coated both surfaces of leaves B and D with clear oil that did not drip. Then, he balanced the leaves on two identical straws, as shown below, in two different locations.



He recorded the time taken for the straws to be tilted. His results are shown in the table below.

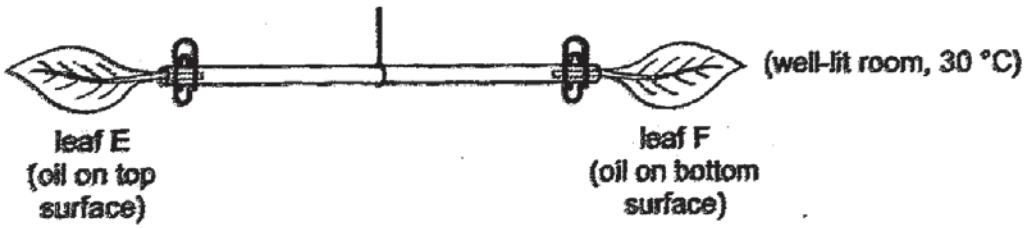
Straw	Temperature (°C)	Time taken for straw to be tilted (min)	Side that tilted downwards
X	30	4	leaf B
Y	20	12	leaf D

(a) Based on his experiment, how would the surrounding temperature affect the rate of water lost from the leaves? [1]

_____

_____

(b) Sunil set up another experiment with two similar leaves, E and F. He coated only one surface of each leaf with clear oil that did not drip.



What observation would show that the leaves have more stomata on the bottom surfaces than on the top surfaces? [1]

_____

_____

SCORE	

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(c) The diagram below shows grass M.

The leaves of grass M have more stomata on the bottom surfaces than on the top surfaces. On a cool day, the leaves of grass M are flat as shown in diagram 1. On a hot day, the leaves of grass M are rolled up as shown in diagram 2.

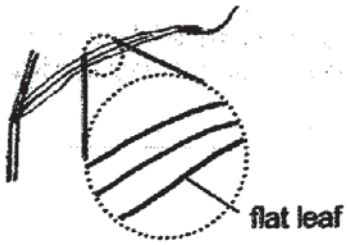

diagram 1 (cool day)

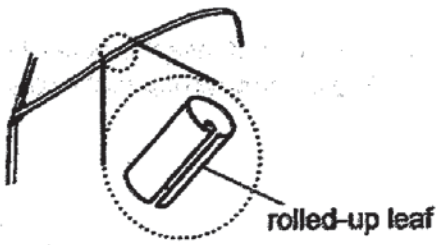

diagram 2 (hot day)

Based on Sunil's experiments, explain how rolling its leaves on a hot day will benefit grass M. [2]

SCORE	

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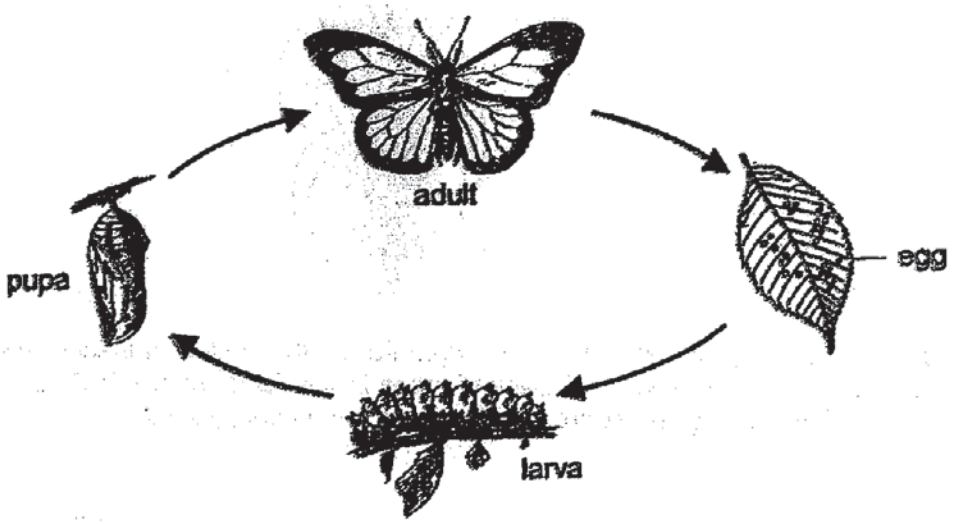
31 The diagram below shows the life cycle of insect D.



(a) The adult of insect D usually lays many eggs at a time on the leaves of plant C. Explain how laying many eggs each time helps insect D in its survival. [1]

(b) The larva of insect D only feeds on the leaves of plant C while the adult only feeds on nectar of its flowers. State the advantage for the larva and the adult to feed on different types of food. [1]

(c) Daniel carried out an experiment with some larvae of insect D and three tanks placed in rooms of different temperatures. He kept 20 larvae in each tank with a well-watered leafy plant C. He recorded the number of days each larva took to change from pupa to adult. His results are shown below.

Tank	Temperature (°C)	Number of pupae that have changed to adult in					
		4 days	5 days	6 days	7 days	8 days	9 days
X	24	0	0	1	3	5	7
Y	29	0	0	2	3	6	9
Z	34	0	3	6	8	3	0

Based on Daniel's results, suggest why the number of insect D may increase due to global warming. [1]

SCORE	

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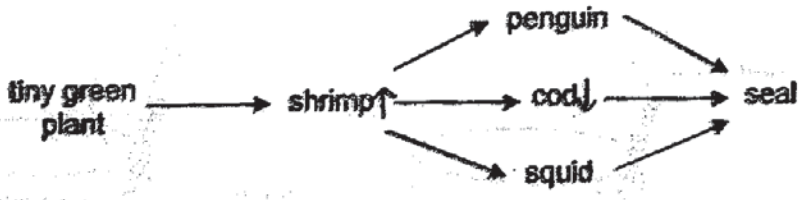
32 The diagram shows a food web in an ocean.



There is a large decrease in the number of cod due to overfishing.

(a) Some students think that this can lead to a decrease in the number of squid and penguin. Explain why the number of squid and penguin may decrease. [1]

(b) Other students think that the number of squid and penguin will remain the same. Explain why the number of squid and penguin may remain the same. [2]

SCORE

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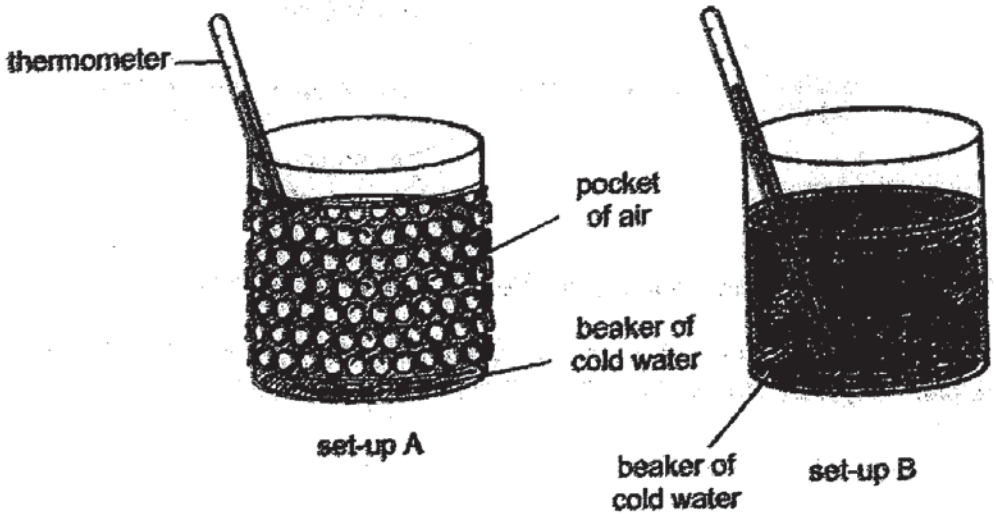
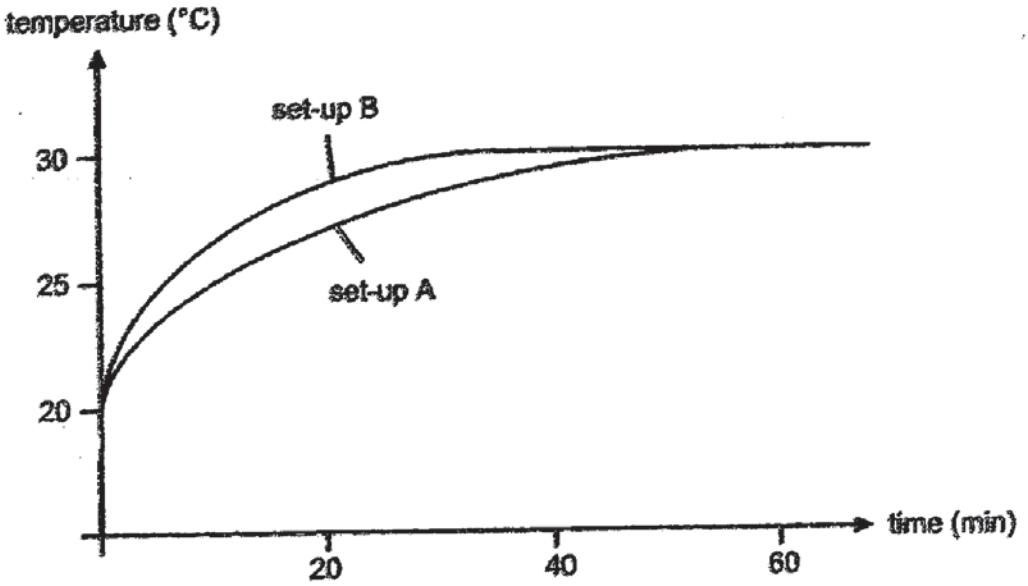
33 Xiaoming conducted an experiment using the set-ups as shown. The two beakers were identical and contained cold water at the same temperature.



Xiaoming recorded the readings of the thermometer over time. His results are shown below.



(a) Based on Xiaoming's results, what can he conclude about the pockets of air? Explain your answer. [1]

_____

_____

(b) Bird X has a thick layer of feathers. There are air pockets among the feathers.

Based on the results of Xiaoming's experiment, explain how puffing up the feathers keep Bird X warm in cold air. [1]

_____

_____

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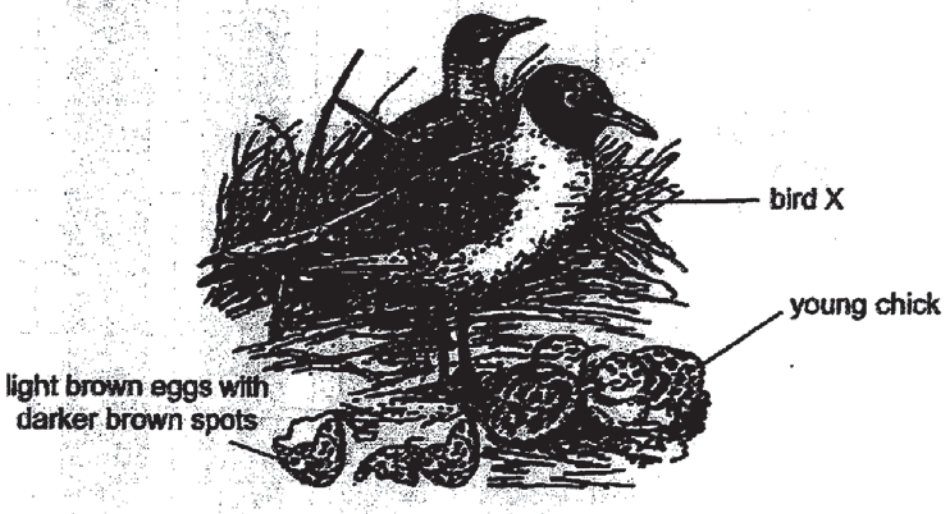
(c) In winter, bird X migrates to warmer areas. Other than to avoid the low temperature, suggest a reason for the migration. [1]

_____

(d) After bird X migrates to a new habitat, it starts to build nests of brown twigs on the ground. It lays eggs that are light brown and covered with darker brown spots.



(i) Suggest a disadvantage of bird X building its nest on the ground. [1]

_____

_____

(ii) Explain how the appearance of the eggs increases the chances of survival of bird X. [1]

_____

_____

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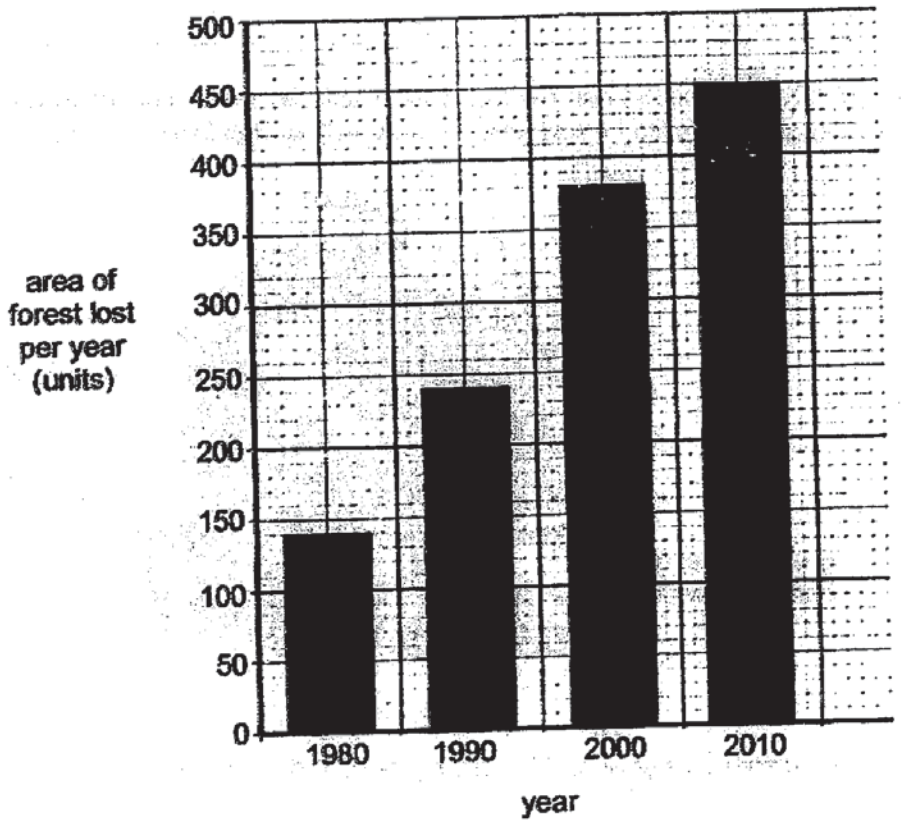
34 The diagram shows the area of forest lost globally from 1980 to 2010.



It was found that the average global temperature increased from 1980 to 2010.

Explain how the increase in the area of forest lost has an impact on the increase in the average global temperature. [2]

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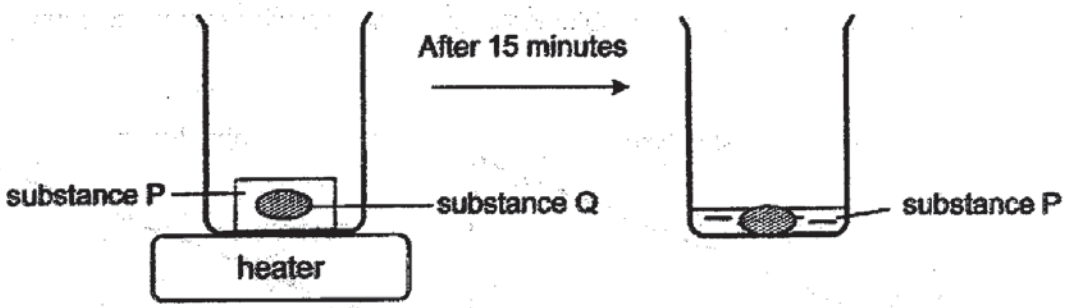
35 Dingyao placed a solid made of substances P and Q in the set-up as shown below. Substance P had a lower melting point than substance Q.



(a) Explain how he could use the set-up to obtain a liquid made of substance P. [1]

(b) In order to ensure that the liquid does not contain substance Q, at what temperature should he set the heater? [1]

(c) Based on the given information, would you be able to tell the state of substance P at 100 °C? Explain your answer. [1]

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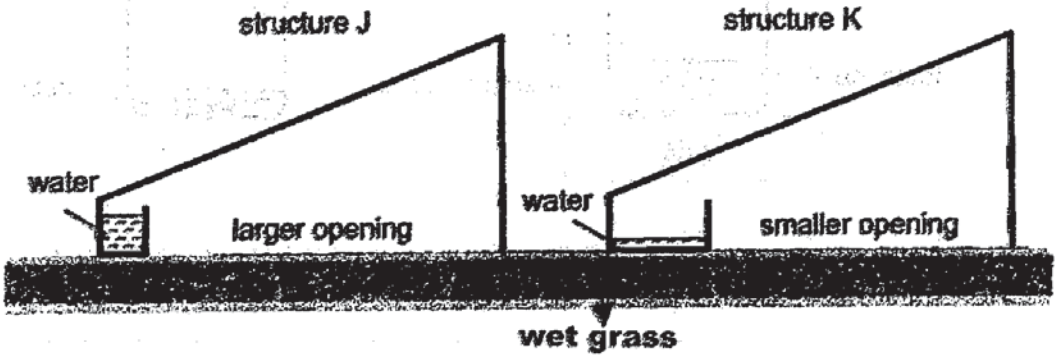
36 On a sunny day, Aisha placed two plastic structures, J and K, on wet grass. Structures J and K were similar but J had a larger opening at the base than K.

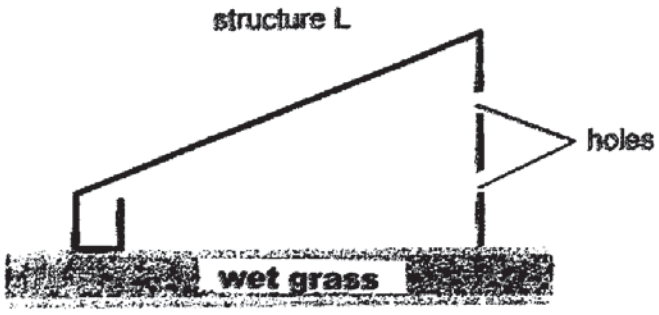
After a few hours, water was obtained at the base of each structure as shown.



(a) Describe how water was obtained at the base of the structures. [2]

(b) Less water was obtained in structure K than in structure J at the end of the few hours. Explain why. [1]

(c) Aisha used structure L that is similar to structure J, but structure L had some holes on its side.



Would the amount of water obtained after one day be more or less than that obtained for structure J? Explain your answer. [1]

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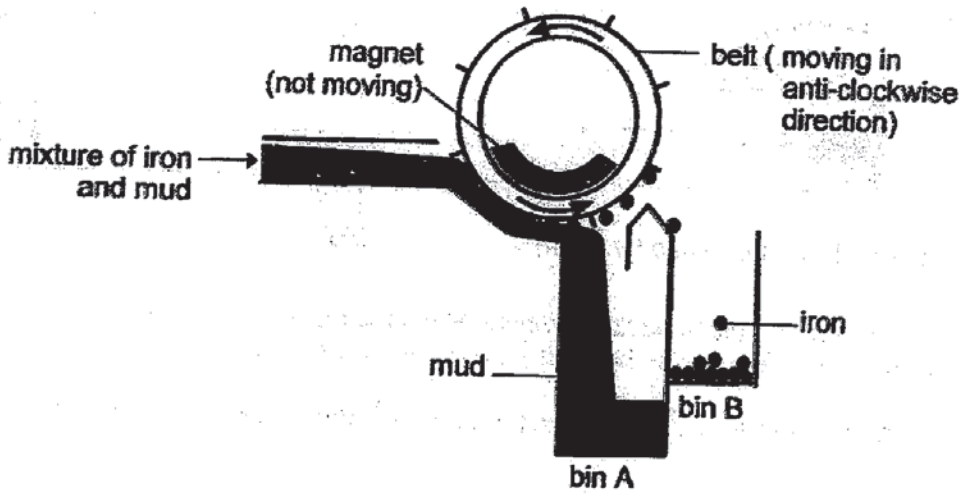
37 The diagram below shows a machine used to separate iron from mud.
A mixture of the iron pieces and mud was poured into the machine.



(a) The iron pieces in the mud were picked up by the moving belt.
Give a reason for this.

[1]

(b) When the iron pieces on the moving belt moved away from bin A, the iron pieces dropped and were collected in bin B. Explain why this happened.

[2]

(c) One way to fill bin B faster is to pour more mixture into the machine.
Suggest another way to fill bin B faster.

[1]

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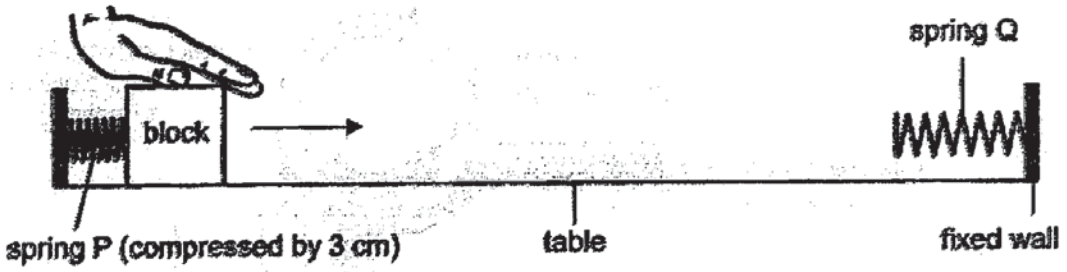
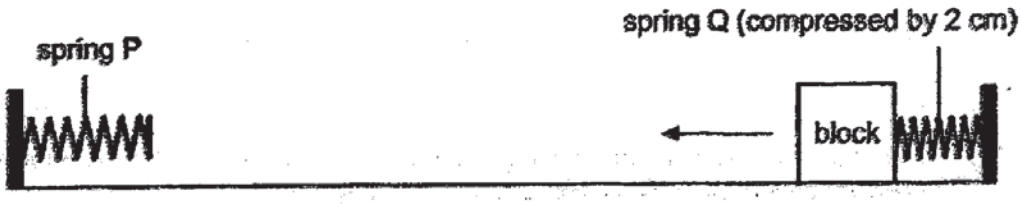
38 Hema conducted an experiment using the set-up shown below.
Springs P and Q are identical.



She pulled the block back and spring P was compressed by 3 cm.
When she released the block, it moved towards spring Q.

(a) State the energy change that occurred when Hema released the block. [1]

(b) The block moved towards spring Q and compressed it before moving back towards spring P.



Hema observed that spring Q was only compressed by 2 cm by the moving block.
Explain her observation in terms of energy changes. [2]

(c) Hema repeated her experiment with a heavier block.
Would the compression of spring Q by heavier block be more than or less than 2 cm?
Explain your answer. [1]

(d) The block moved back and forth between springs P and Q for a few times.
Explain why the block stopped moving after some time. [1]

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39 Matthew pasted a film on a glass window to reduce the amount of sunlight coming into the room. Gaps with air were observed where some air bubbles were trapped under the plastic film as shown in Diagram 1.

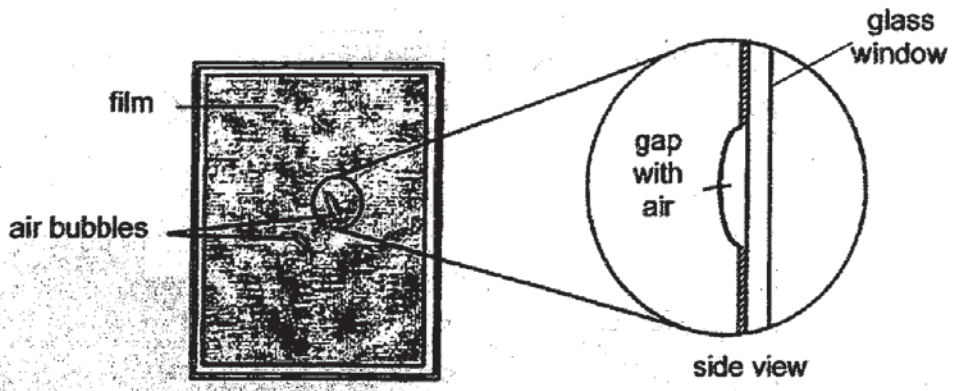

Diagram 1

(a) Matthew tried to press on the air bubbles to remove the gap but the gap remained. Which property of matter explains why Matthew could not remove the gap by pressing on it? [1]

_____

_____

(b) Matthew then switched on the air-conditioner inside his bedroom and left it on for a day. At the end of the day, he observed that the air bubbles that were trapped under the plastic film had become smaller as shown in Diagram 2.

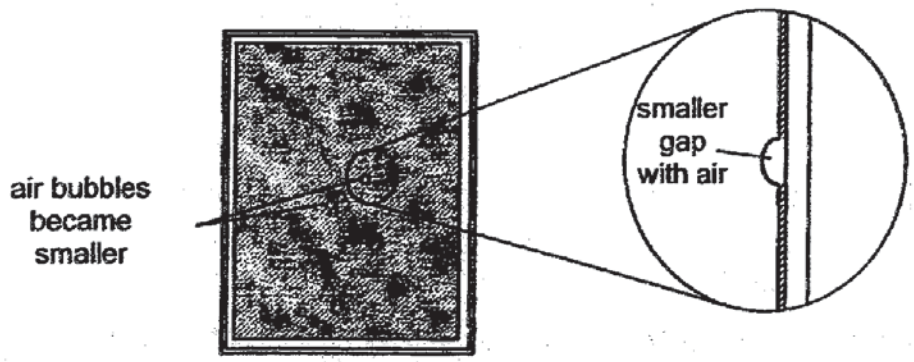

Diagram 2

Explain why the gap with air became smaller in Diagram 2. [2]

_____

_____

_____

_____

SCORE	

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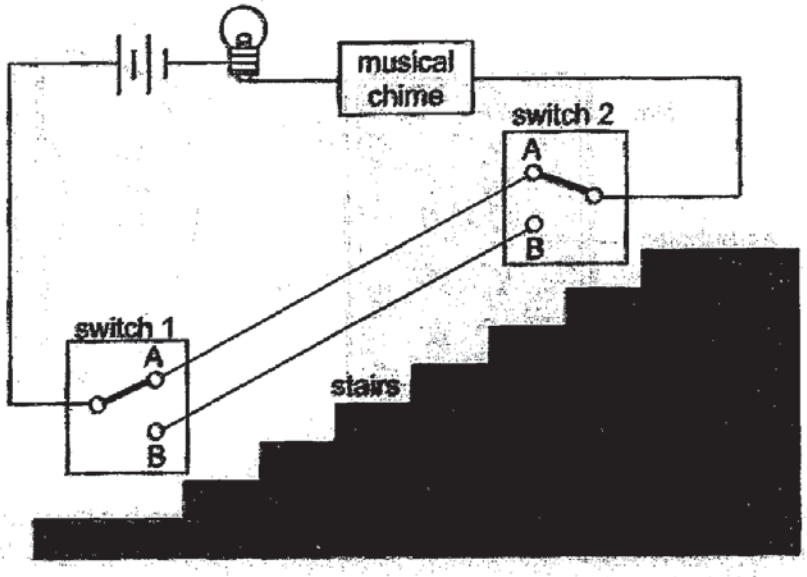
40 Mr Ong made an electric circuit using two special switches at the top and bottom of the stairs in a doll house as shown below. Each switch can be turned to position A or B so that the bulb and the musical chime can be turned on and off at the same time. The batteries, bulb and musical chime are all working properly.



(a) Fill in the table below with a tick (✓) if the bulb lights up and musical chime rings and a cross (×) if it does not ring for each of the following positions of the switches. [2]

Position of Switch		
Switch 1	**Switch 2**	**Bulb lights up and musical chime rings**
A	A	
A	B	
B	A	
B	B	

(b) Using the same set-up, Mr Ong changed the connection of the wires to the bulb. He set the switches to a position that the musical chime rings, but the bulb did not light up.

Suggest how Mr Ong could have connected the wires to the bulb. Explain why the musical chime can still ring. [2]

_____

_____

_____

End of Section B

SCORE	

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : PEI CHUN PUBLIC SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	4	3	2	1	2	2	4	2	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	2	1	2	1	1	2	1	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	1	4	4	4	3	2	3		

Q29.

a) Part B, stigma

b) Fertilisation occurs when the male reproductive cell fuses with the egg cell in the ovary.

c) An animal eats the fruit and spits out the seeds OR
An animal eats the fruit, swallows the seeds and passes out the seed in its droppings as it move about.

d) The time taken for the fruit to ripen decreases as the temperature increases to 25°C. AND
The time taken for the fruit to ripen increases as the temperature increases from 25°C To 35°C.

Q30.

a) As the surrounding temperature increases the rate of water lost from the leaves increases.

b) After some time, the side of the straw with leaf F would tilt downwards.

c) By rolling up the leaves on a hot day , fewer stomata will be exposed, the leaves will lose less water.

Q31

a) There is a higher chance that at least some of the eggs/young/larvae can survive.

b) They do not need to compete with one another for food.

c) With higher temperature, the pupa takes a shorter time to become an adult, so insect D will reproduce earlier.

Q32 a) The seal have fewer cods to feed on , so it will feed on more penguins and squids.

b) There are fewer cods to feed on the shrimps, therefore there is more food/shrimp for the squid and penguin. There is an increase in squid and penguin and it is about the same as the extra eaten by the seals.

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Q33 a) Air is a poor conductor of heat . The temperature of water in the beaker in set-up A increased slower than the temperature of water in set-up B.
OR The water in set-up A gained heat more slowly from the surroundings.

b) The puffed up feathers traps more air, so bird X loses less body heat to the cold air.

c) To enable bird X to find food/reproduce/lay eggs.

d)i) The predator of the bird X can eat the eggs easily./ the eggs in the nest may be trampled on.

ii) The eggs would be able to camouflage with the surrounding, so they will not be easily spotted by predators.

Q34 a) There will be less trees to use carbon dioxide for photosynthesis. Hence ,there will be more carbon dioxide in the atmosphere, more heat is trapped as carbon dioxide is a greenhouse gas.

Q35 a) Heat the solid to melt P.

b) Above the melting point of P and below the melting point of Q.

c) No, the boiling point and/or the melting point of P is not given.

Q36 a) Water evaporated from the wet grass to form water vapour. The warm water vapour touched the cooler inner surface of the structure, loss heat and condensed to form water droplets. These water droplet slid down due to gravity and is collected at the bottom of the cone.

b) The wet grass under structure K had a smaller exposed surface area than structure J so the water evaporated slower from the wet grass under structure K.

c) Water in the grass evaporated to form water vapour. The water vapour could escape through the holes in structure L but not structure J so less water vapour will condense to form water droplets and be collected in structure L.

Q37 a) Iron is magnetic.

b) the magnetic attraction became weaker as the iron pieces moved away from the magnet. The iron piece dropped off the belt/into the bin due to gravity.

c) Make the belt move faster.

Q38 a) Potential energy of the compressed spring is converted to kinetic energy of the block.

b) As the block moved from Spring P to Q, some of the block's kinetic energy was converted to heat energy due to friction between the block and the table. Thus, the block had less kinetic energy to be converted to potential energy in spring Q.

c) Less than 2cm. There would be more friction between the block and the table, so more of the block's kinetic energy would be converted to heat energy.

d) All of its kinetic energy was converted to heat energy.

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Q39 a) Air/Matter occupies space.

b) Air bubbles under the plastic film lost heat to the glass window/air inside the bedroom which was cooler. As air lost heat, it contracted and caused the size of the air bubbles to be smaller.

Q40 a)

Position of Switch		
Switch 1	Switch 2	Bulb lights up and musical chime rings
A	A	
A	B	
B	A	
B	B	

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b) Both the wires are connected to the metal tip/casing of the bulb. The bulb tip/casing is a conductor of electricity, the circuit is closed.

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PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET A)

23 AUGUST 2019

Name: _____ ( )

Class: _____

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

This booklet consists of 19 printed pages, excluding the cover page.

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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet. (56 marks)

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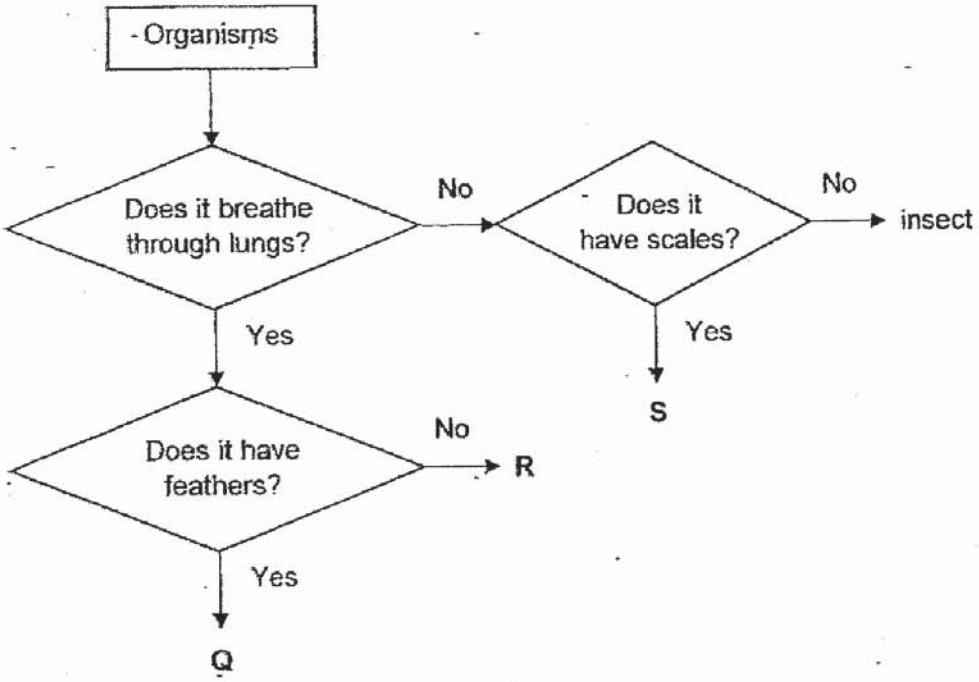
1 The diagram below shows a flowchart of three organisms, Q, R and S.



Based on the flowchart above, which of the following most likely represents organisms Q, R and S?

	Q	R	S
(1)	bird	mammal	fish
(2)	fish	amphibian	reptile
(3)	mammal	reptile	fish
(4)	bird	fish	reptile

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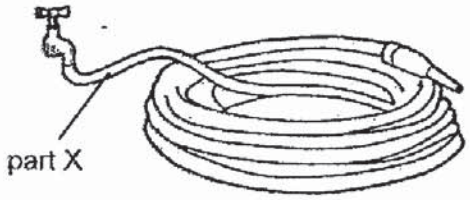
2 The table below shows the properties of four materials, A, B, C and D.

Property	Material			
	A	B	C	D
Flexible	No	Yes	No	Yes
Waterproof	Yes	Yes	No	No



Which material is most suitable for making part X of the water hose?

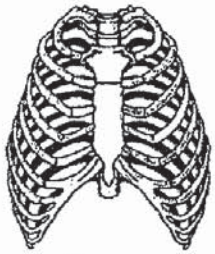
(1) A

(2) B

(3) C

(4) D

3 The diagram below shows a rib cage of a human. One of its function is to provide protection to organs S and T.



rib cage

Which organ system does organs S and T belong to?

	Organ S	Organ T
(1)	digestive	muscular
(2)	respiratory	skeletal
(3)	circulatory	respiratory
(4)	circulatory	skeletal

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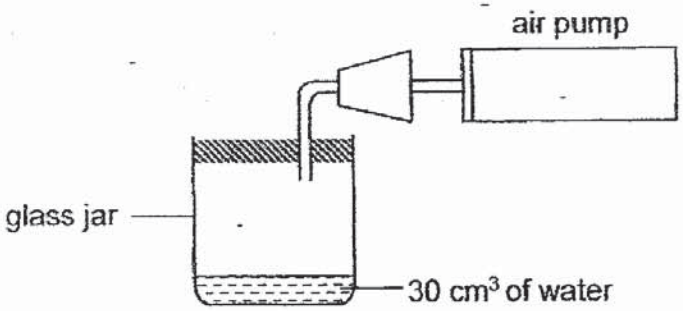
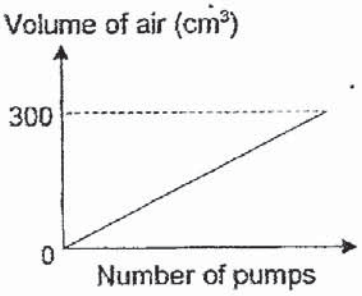
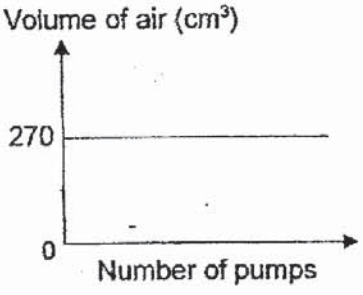
4 Devi set up the experiment as shown below.

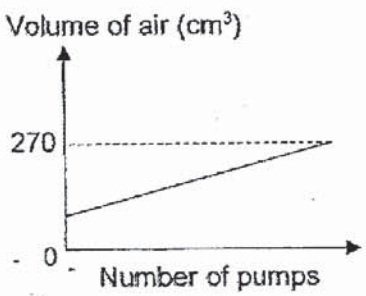
The capacity of the sealed glass jar is 300 cm^3. Each time she pumped the air pump completely, 50 cm^3 of air would enter the jar. She continued pumping air into the jar until she could no longer pump in any more air.

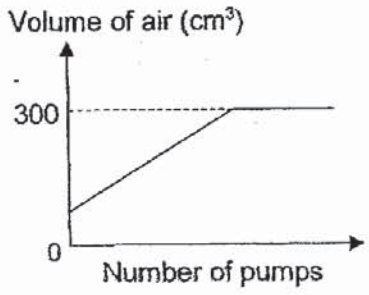


Which one of the following graphs shows the volume of air in the jar after each pump?

(1)


(2)


(3)


(4)


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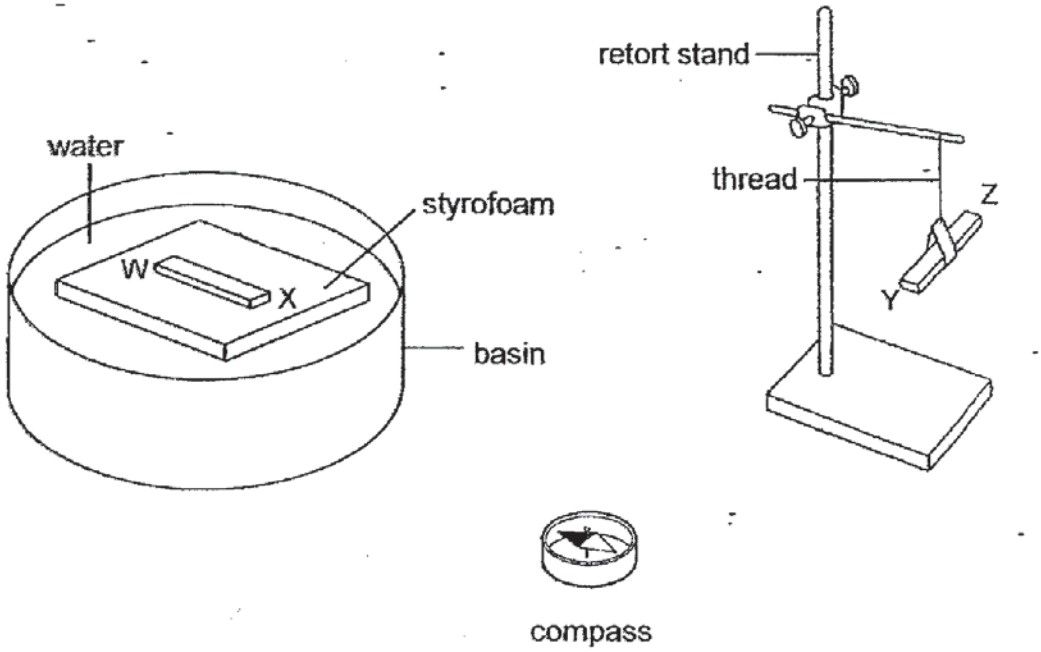
5 Peter placed an iron bar, WX, on a piece of styrofoam floating in a basin of water. He hung another iron bar, YZ, with a piece of thread on a retort stand.

The diagram below shows the position of the two iron bars and the compass needle when they came to rest.



What would Peter most likely observe if he brought bar WX close to bar YZ?

A End W will repel End Y.

B End X will attract End Y.

C End W will attract End Z.

D Bar WX will not interact with bar YZ.

(1) D only

(2) A and B only

(3) A and C only

(4) B and C only

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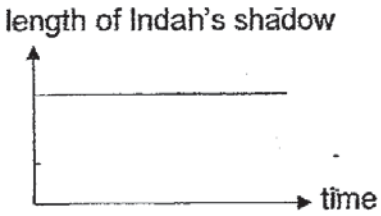
6 In an experiment, Ayu measured the length of Indah's shadow from a lighted lamp post over a period of time. Her results are shown in the graph below.



Which of the following statement(s) possibly describes Indah during the experiment?

A Indah stood still near the lamp post.

B Indah moved towards the lamp post.

C Indah moved away from the lamp post.

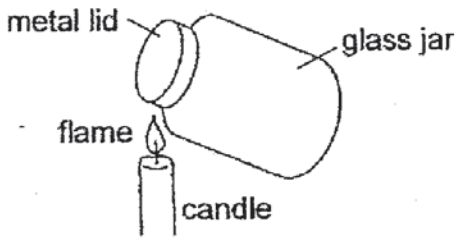
(1) A only

(2) B and C only

(3) A and C only

(4) A, B and C

7 Zhiming used the set-up below to open the tight metal lid of a glass jar.



Why was he able to open the metal lid more easily after heating for some time?

(1) The glass jar contracted.

(2) The metal lid and the glass jar expanded.

(3) The metal lid expanded more than the glass jar.

(4) The air in the glass jar pushed the metal lid open.

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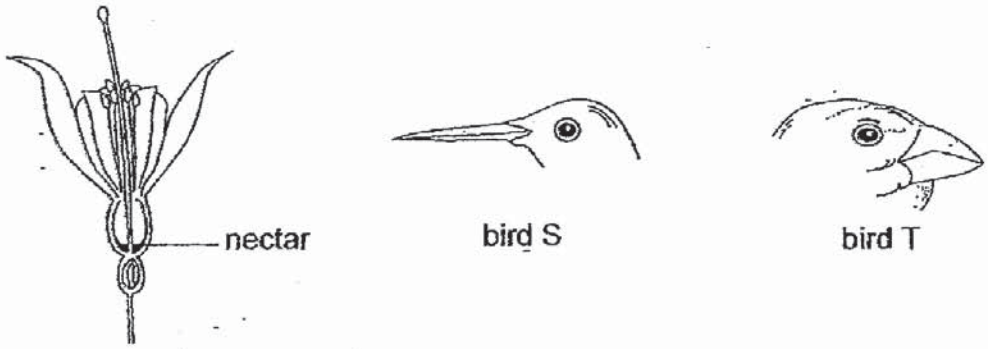
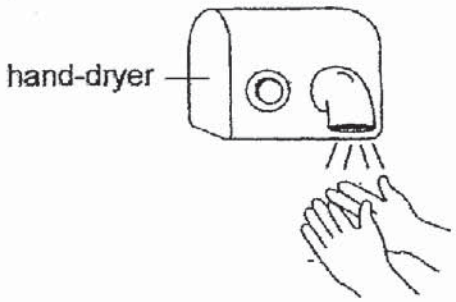
8 The diagrams below show a flower containing nectar and two birds, S and T, with different types of beaks.



Which bird, S or T, is more likely to feed on the nectar of this flower and how does the flower benefit from the bird?

	Bird	The flower benefits because
(1)	S	the bird disperses pollen grains to another plant.
(2)	S	the nectar is a source of food for the bird.
(3)	T	the bird disperses pollen grains to another plant.
(4)	T	the nectar is a source of food for the bird.

9 Matthew rubbed his wet hands under a hand-dryer which produces hot air as shown in the diagram below.



Which one of the following best explains why the water on his hands disappeared after a while?

(1) The water boiled.

(2) The water evaporated.

(3) The water was absorbed by the hand.

(4) The water vapour in the hot air condensed on his hand.

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10 Which of the following statements about breathing are true?

A Oxygen is the only gas that we breathe in.

B Breathing takes place all the time when we are alive.

C A faster breathing rate during an exercise allows more oxygen to enter our blood stream.

D The air that we breathe in has more carbon dioxide than the air that we breathe out.

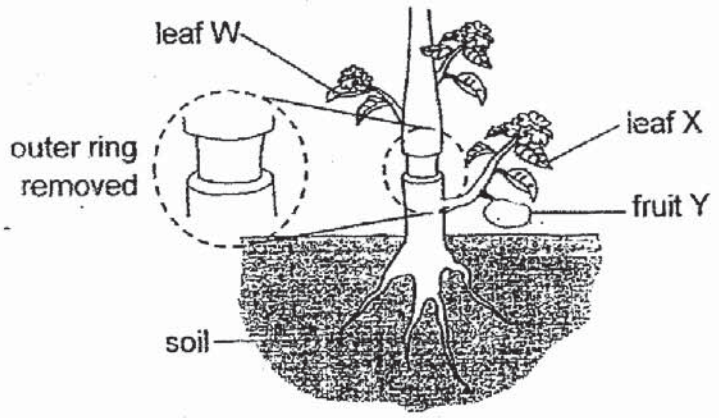
(1) A and B only

(2) B and C only

(3) C and D only

(4) B, C and D only

11 Kim removed an outer ring of a stem from a plant, as **shown** below. As a result, the tubes carrying food and water were removed.



After a week, Kim recorded her observations of leaf W, leaf X and fruit Y.

Which one of the following shows Kim's observations?

	leaf W	leaf X	fruit Y
(1)	remained healthy	wilted	grew smaller
(2)	remained healthy	wilted	grew bigger
(3)	wilted	remained healthy	grew bigger
(4)	wilted	remained healthy	grew smaller

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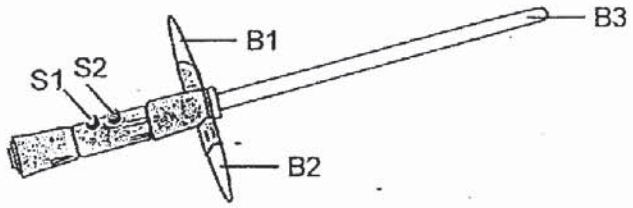
12 Kylo has a toy sword that works on batteries.

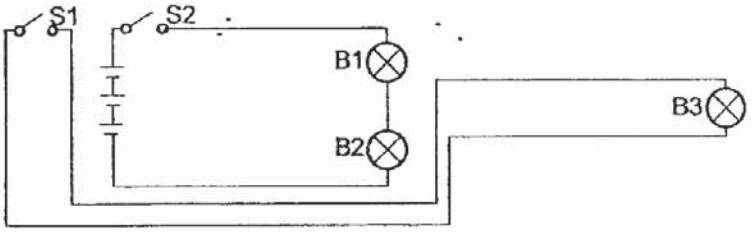


His observations are shown below.

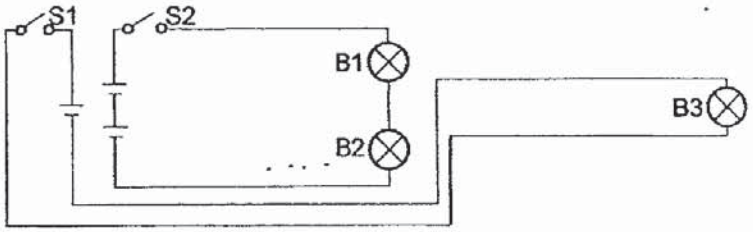
switches		Do the bulbs light up?		
S1	S2	B1	B2	B3
closed	closed	yes	yes	yes
open	closed	yes	yes	no
closed	open	no	no	yes

Which one of the following is a possible circuit in the toy sword?

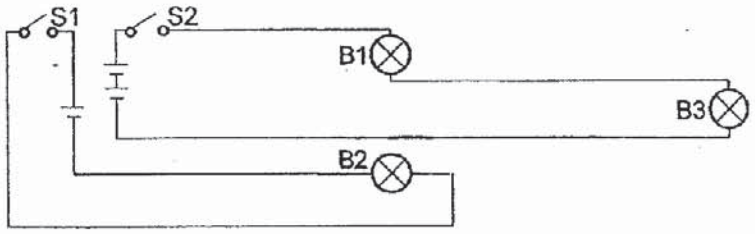
(1)



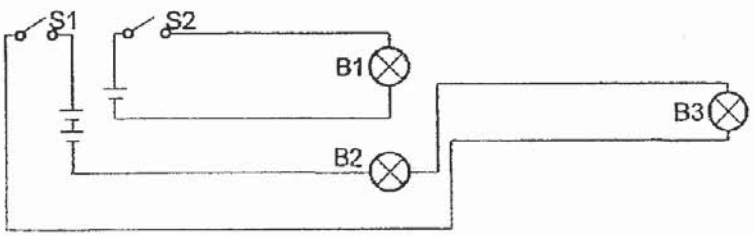
(2)



(3)



(4)



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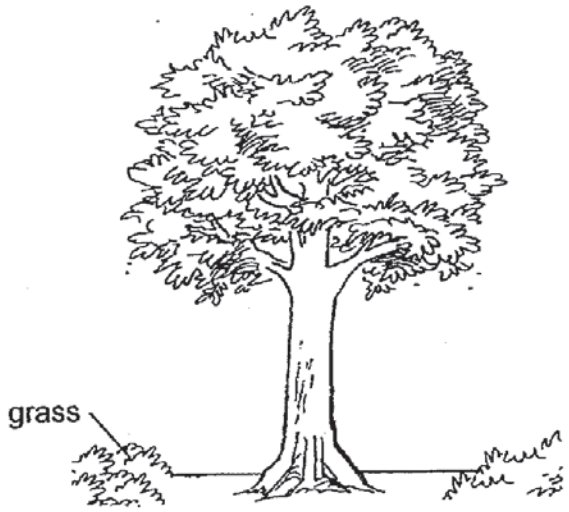
13 Which of the following is produced during photosynthesis?

(1) carbon dioxide
(2) food and oxygen
(3) food and carbon dioxide
(4) oxygen and carbon dioxide

14 Kerry observed that there was hardly any grass growing on the ground in the area below a tree even though the soil was wet.



Which of the following best explains his observation?

(1) There is not enough water for the grass to grow.
(2) There is not enough oxygen for the grass to grow.
(3) There is not enough sunlight for the grass to grow.
(4) There is not enough carbon dioxide for the grass to grow.

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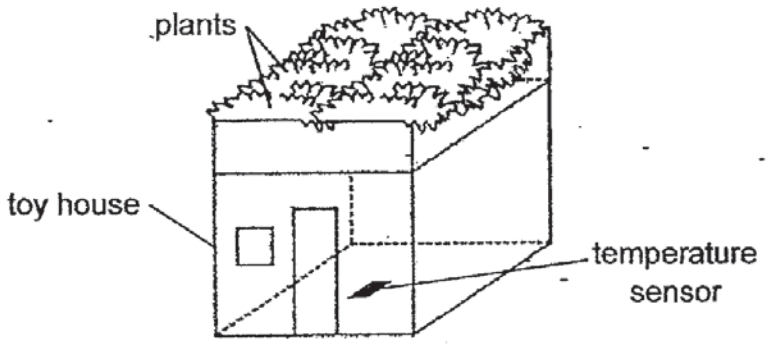
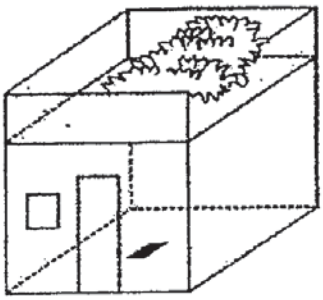
15 Minah wanted to investigate how the temperature inside a toy house is affected by the presence of plants. She used the set-up shown below.

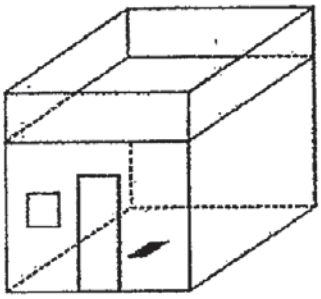


Which one of the following should Minah use as a control for her experiment?

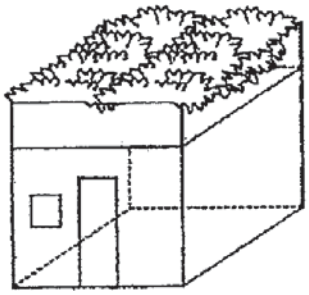
(1)



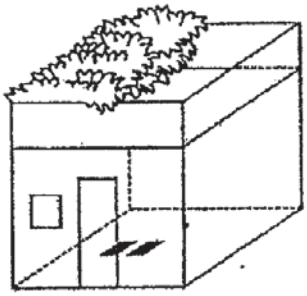
(2)



(3)



(4)



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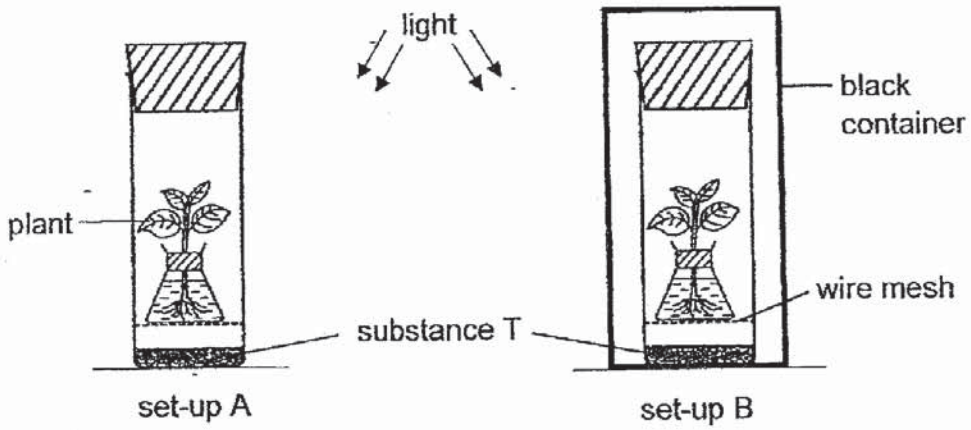
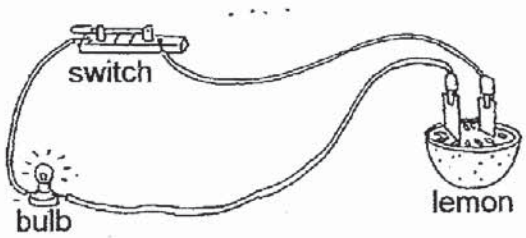
16 Study the two set-ups A and B below. At the start, the colour of the substance T was red. When the amount of carbon dioxide increases, substance T will change to yellow. When the amount of carbon dioxide decreases, substance T will change to purple.



What is the colour of substance T in each set-up after 6 hours?

	set-up A	set-up B
(1)	red	red
(2)	purple	red
(3)	purple	yellow
(4)	yellow	purple

17 Study the circuit below. When the switch was closed, the bulb lit up.



The bulb lit up due to the _____ energy in the lemon.

(1) heat
(2) kinetic
(3) potential
(4) electrical

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18 Which of the following correctly describes the energy conversion that takes place during photosynthesis?

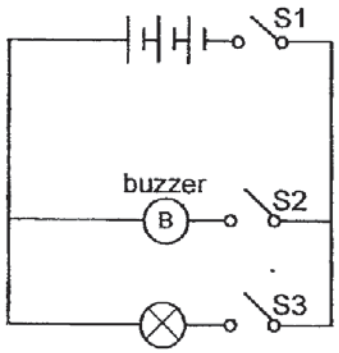
(1) light energy to kinetic energy

(2) light energy to potential energy

(3) heat energy to kinetic energy

(4) heat energy and light energy to potential energy

19 Study the diagram below carefully.



Potential energy → electrical energy → light energy + heat energy

Which of the switches must be closed for the above energy conversion to take place?

(1) S1 and S2 only

(2) S1 and S3 only

(3) S2 and S3 only

(4) S1, S2 and S3

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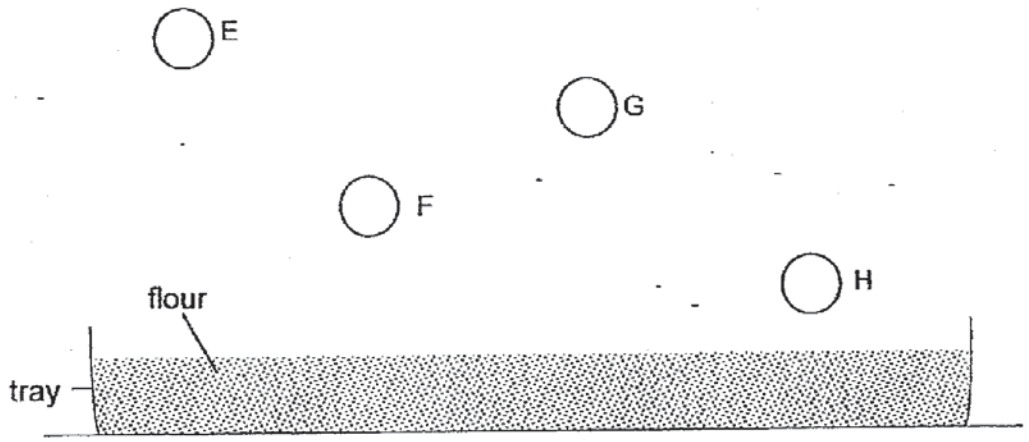
20 Four identical balls, E, F, G and H were dropped from different heights. The balls landed in a tray of flour placed directly below. Four dents of different depths were created in the flour by the four balls.



Which one of the following diagrams shows correctly the four dents in the flour?

(1)

(2)

(3)

(4)

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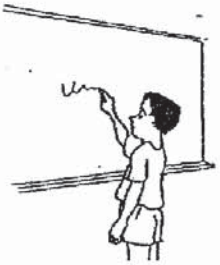
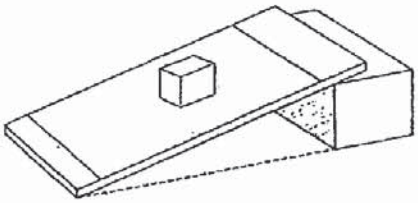
21 The diagram below shows four examples of how forces are used.

climbing up a cliff



writing on a whiteboard

opening a bottle

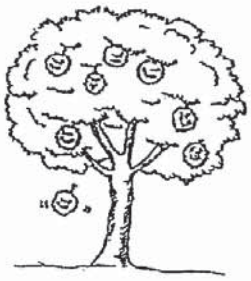


stationary block on a ramp

How many of these examples involve friction?

(1) 1
(2) 2
(3) 3
(4) 4

22 A fruit drops to the ground because of its _____.



(1) shape
(2) speed
(3) weight
(4) volume

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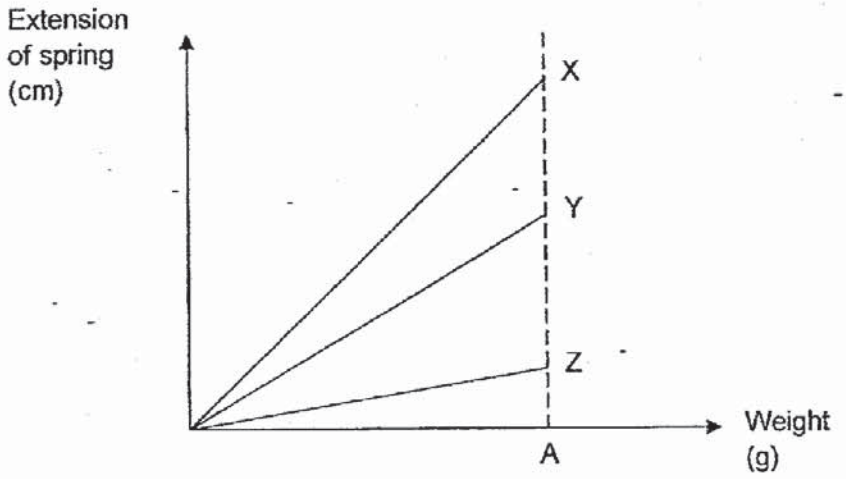
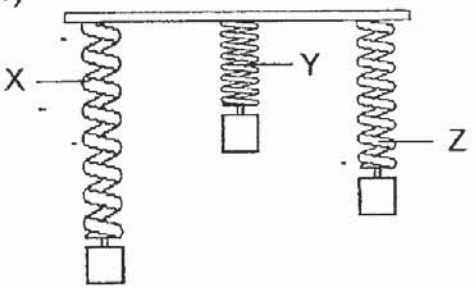
23 In an experiment, three springs, X, Y and Z, had the same original length. Weights were added to all three springs and the results were shown in the line graph below.

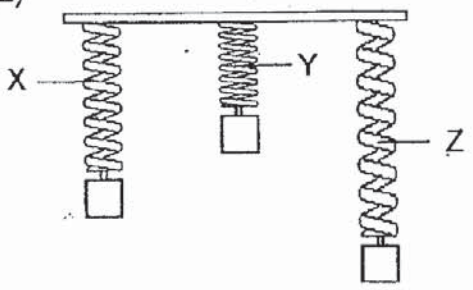


Based on the above graph, which one of the following diagrams correctly shows the lengths of springs, X, Y and Z, at point A?

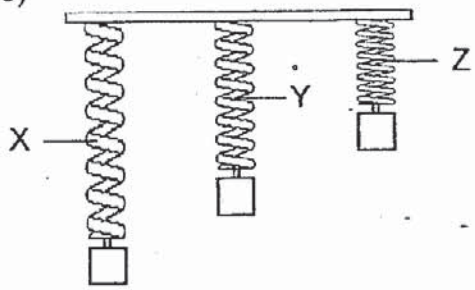
(1)



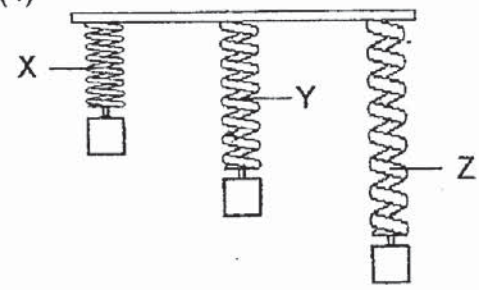
(2)



(3)



(4)



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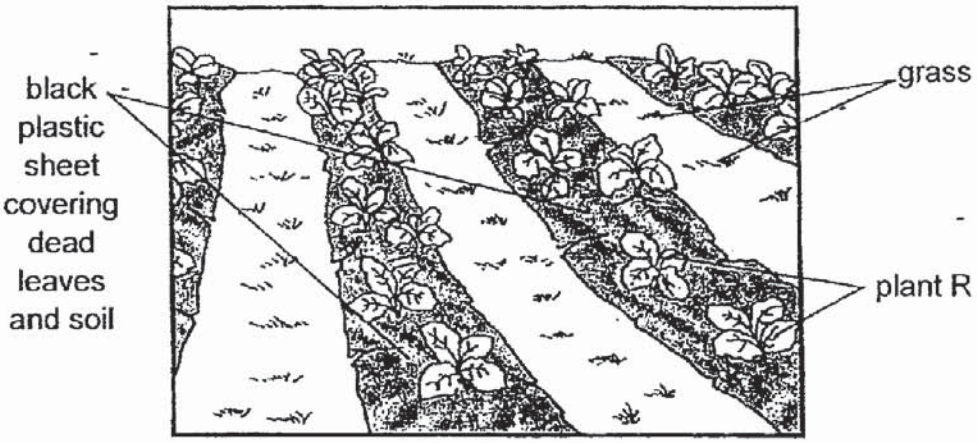
24 Jumat puts a black plastic sheet above a layer of dead leaves around plant R as shown below.



Which of the following statement(s) is/are true about the function of the black plastic sheet?

A It prevents the dead leaves from decomposing.

B It slows down the rate of water lost to the surrounding.

C It absorbs heat from the Sun and keeps the soil warm.

(1) B only

(2) C only

(3) B and C only

(4) A, B and C

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25 Gopal conducted two experiments on food relationships in a community consisting of a plant and three other organisms, P, Q and R.

The table below shows the observations of the experiments conducted over three days.

Experiment	Start of experiment	End of experiment
1	• leaves from the plant • one living organism Q	• bits of leaves left • one living organism Q
2	• one living organism P • one living organism Q • one living organism R	• one living organism R

Based on the observations above, which of the following possibly shows the food relationship among the plant, organism P, organism Q and organism R?

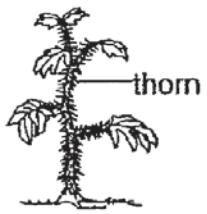
(1) plant → Q → P → R

(2) plant → Q → R → P

(3) plant → R → Q → P

(4) plant → P → R → Q

26 Plants A, B and C have adaptations that help them survive.



plant A

plant B

plant C

Study the diagrams above and match the plants with the function of its adaptation.

Function	Plant
To keep animals away	(i)
To store water in the leaves	(ii)
Attracts insects for pollination	(iii)

	(i)	(ii)	(iii)
(1)	A	B	C
(2)	A	C	B
(3)	B	C	A
(4)	C	A	B

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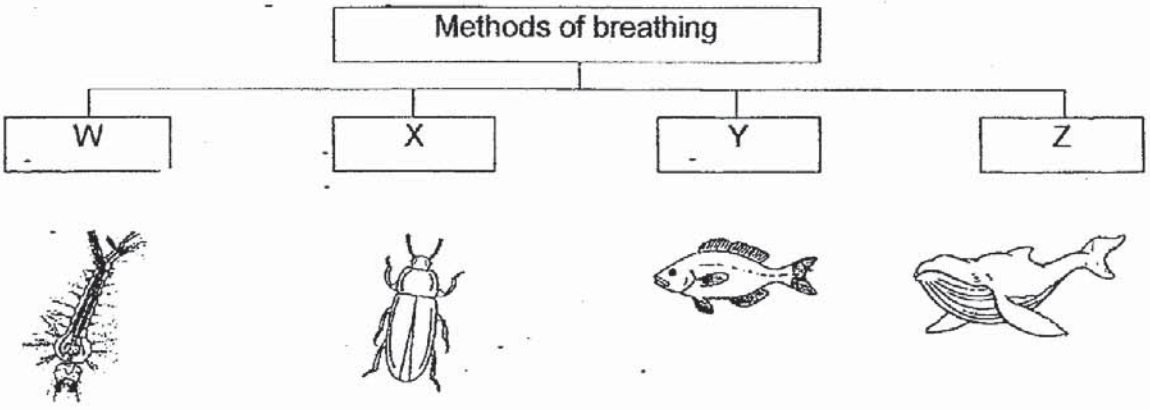
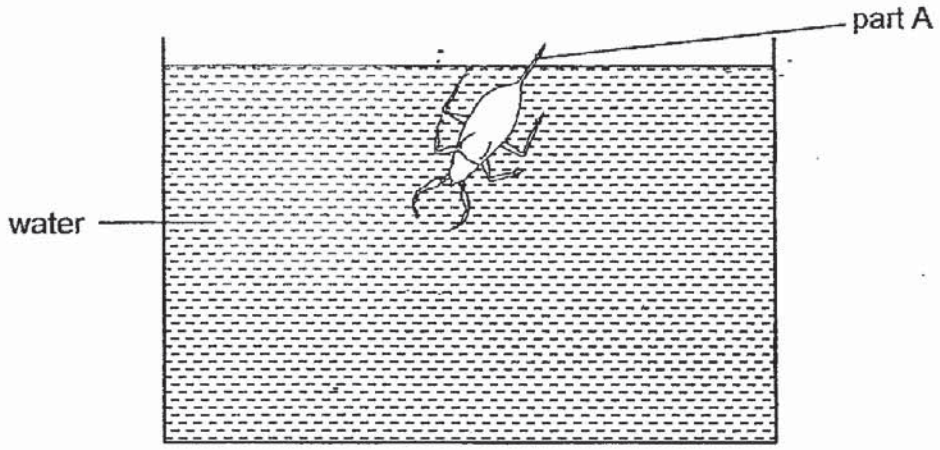
27 The table below shows how organisms are classified according to their methods of breathing.



The organism A below moves up to the surface and uses part A to breathe.



Based on the information above, which group, W, X, Y or Z, does the organism A belong to?

(1) W
(2) X
(3) Y
(4) Z

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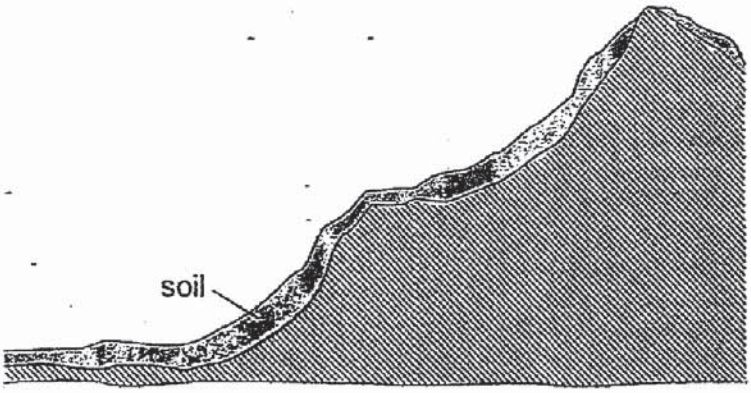
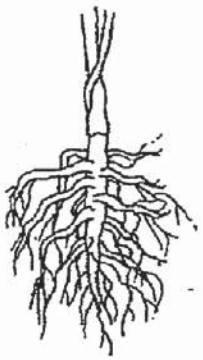
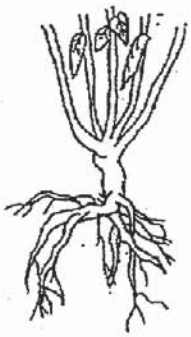
28 The diagram below shows part of a small hill.



A farmer wanted to grow plants on the hill to prevent soil from being washed down by heavy rain. Which of the following plant(s) should the farmer grow so that the least amount of soil will be washed down?


(1)

(2)


(3)

(4)

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PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET B)

23 AUGUST 2019

Name: _____

Class: _____

Parent's Signature

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklets A & B) :	100

This booklet consists of 15 printed pages, excluding the cover page.

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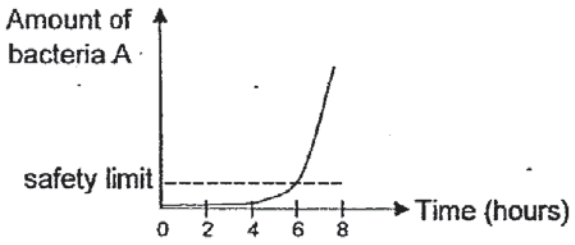
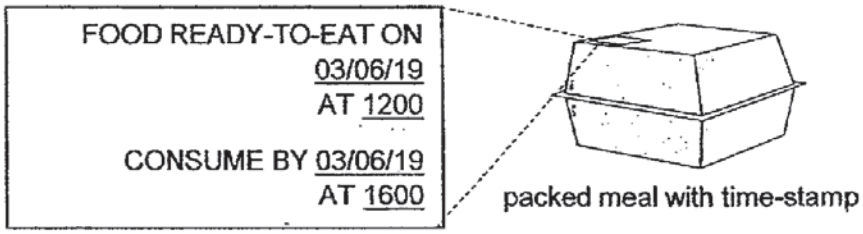
For questions 29 to 41, write your answers in the booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

---

29 Bacteria A can cause food poisoning when food is stored at temperatures between 5°C and 60°C. The food is still safe to eat if the amount of bacteria A is below the safety limit. Melvin carried out an experiment to find out how fast bacteria A grows at room temperature. His results are shown below.



Melvin bought a packed meal that was cooked at a temperature above 60°C. A time-stamp was printed with the information as shown below.



packed meal with time-stamp

Based on Melvin's experiment and the information above, explain why the cooked food inside the packed meal may no longer be safe to eat after 1800. [2]

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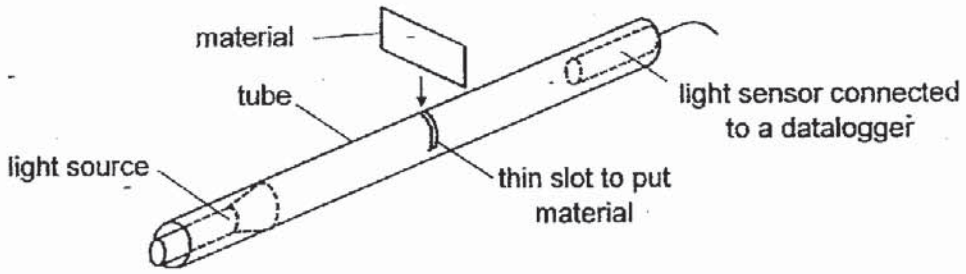
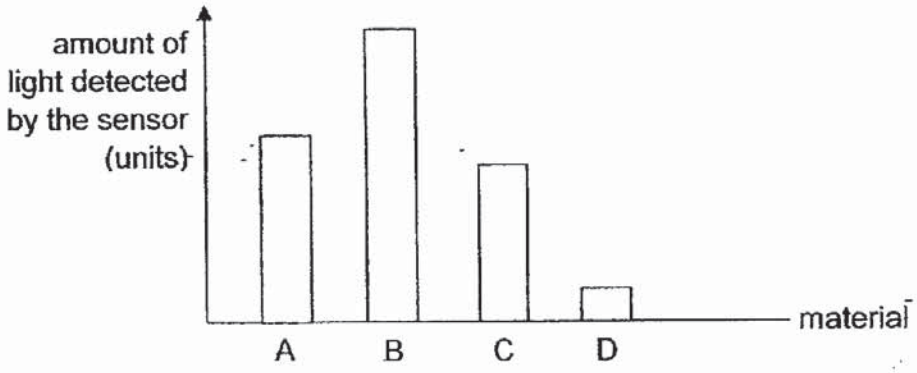
30 Jon set up the following experiment to measure the amount of light passing through four materials, A, B, C and D using a tube made of a material that did not allow light to pass through. A light sensor was fixed at one end of the tube and a light source was attached at the other end.



The graph below showed the results of his experiment.



Jon wanted to make curtains to make sure no one could see through his window from the outside.

(a) Based on his results above, which of the materials, A, B, C or D, is most suitable for making Jon's curtains? Give a reason for your answer. [1]

_____

_____

(b) Give a reason why it was unnecessary for Jon to conduct the experiment in a dark room. [1]

_____

_____

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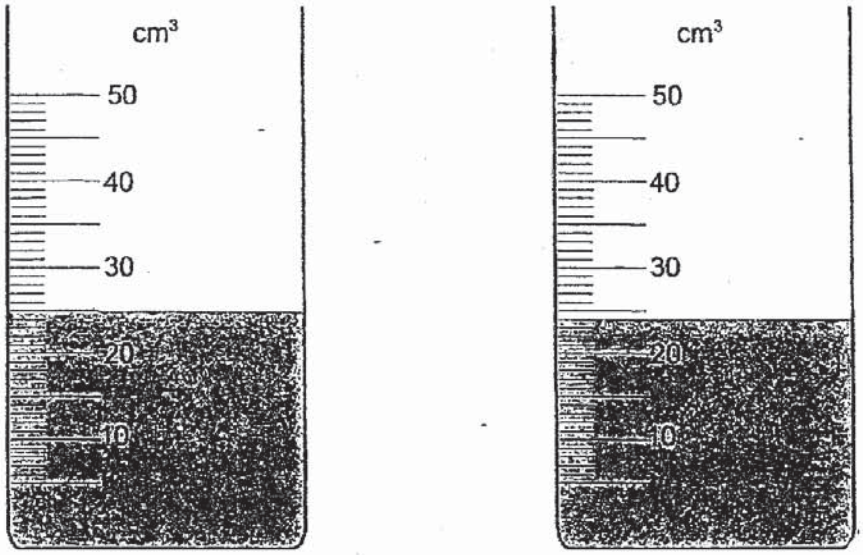
31 Anne carried out an experiment in a classroom. She wanted to find out how much volume of water in a beaker would evaporate in 4 hours.



Start of experiment End of experiment

(a) What is the decrease in volume of water? [1]

_____ cm³

(b) Anne repeated the experiment for 1 hour instead of 4 hours.
Should this beaker be used if Anne wants to have an accurate reading of the amount of water after 1 hour? Explain why. [2]

_____

_____

_____

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32 Poh Lee wants to find out where the poles are found on two magnetic strips A and B. He arranged the 2 strips in two different positions as shown in the Diagram 1 and 2.

In Diagram 1, he observed that the top half of strip A attracts only the bottom half of strip B.
In Diagram 2, when he rotated strip A and kept strip B in the same position, both surfaces of each strip attracted each other.

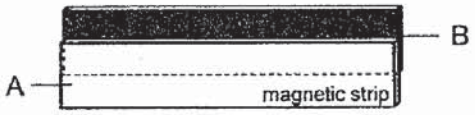
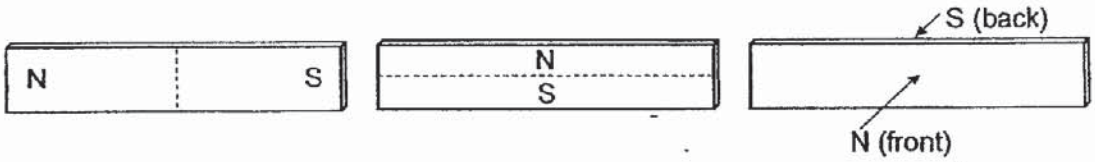


Diagram 1

Diagram 2

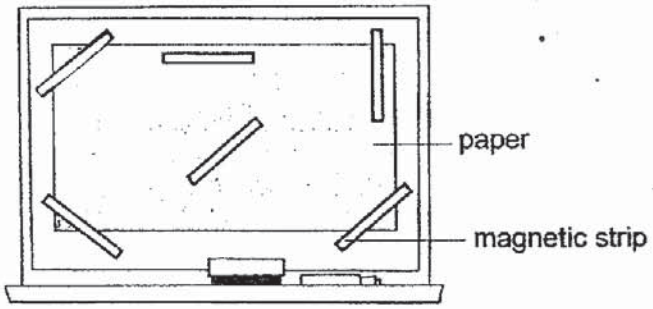
(a) Based on the observations above, which of the following diagrams, X, Y or Z, shows the correct poles of the magnetic strip?

Choose your answer by putting a tick (✓) in the box. [1]



X ☐ Y ☐ Z ☐

(b) Poh Lee used identical magnetic strips such as strip A and B to hold a piece of paper onto the whiteboard as shown below.



Explain why the whiteboard needs to be a magnetic material but not a magnet for the magnetic strips to hold the paper in place. [2]

_____

_____

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33 Benjamin pasted a sticker on a toy car. Some air bubbles were trapped under the sticker as shown in Diagram 1.

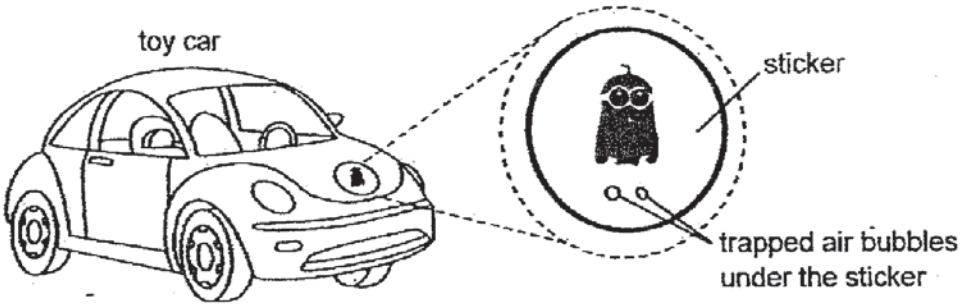

Diagram 1

The toy car was left in the sun. After some weeks, the air bubbles became larger as shown in Diagram 2.

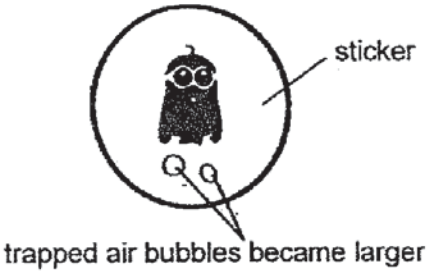

Diagram 2

(a) Put a tick (✓) in the correct boxes to describe the air bubbles in Diagram 2. [2]

		increase	constant	decrease
(i)	The mass of the air bubble.			
(ii)	The volume of the air bubble.			

(b) Explain why the air bubbles in Diagram 2 became larger. [1]

_____

_____

(c) Benjamin suggested putting the toy car inside the refrigerator in order to completely remove the air bubbles trapped under the sticker. Explain why this might not work. [1]

_____

_____

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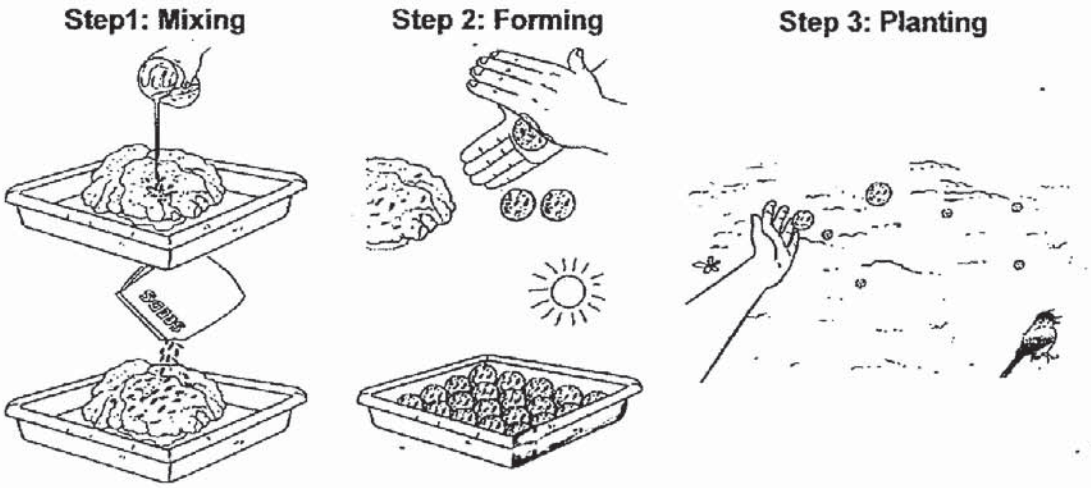
34 The diagram below shows the steps in making a seed ball used as a reforestation method.

Step 1: Mix soil, animal waste, water and seeds.
Step 2: Roll the mixture into balls and leave them in the sun to dry before storing.
Step 3: Scatter the seed balls onto empty land where new plants need to be grown.



(a) Animal waste is used as a fertiliser to provide nutrients for the plant. Suggest another reason why animal waste is added to the seed ball. [1]

_____

_____

(b) Based on the steps above, explain why it is important to leave the seed balls in the sun to dry before storing. [1]

_____

_____

(c) Explain why there should not be too many seeds in each seed ball. [1]

_____

_____

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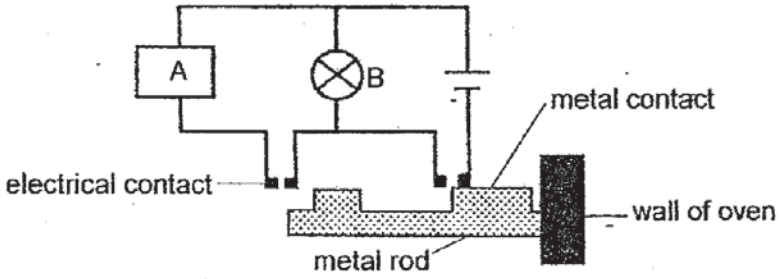
35 An engineer set up a system using alarm A and light bulb B to alert a user when the temperature of an oven is too high. He used a metal rod that expands easily when temperature increases. At 25°C, both alarm A and light bulb B are off. At 100°C, only light bulb B is switched on. At 300°C, both alarm A and light bulb B are switched on.

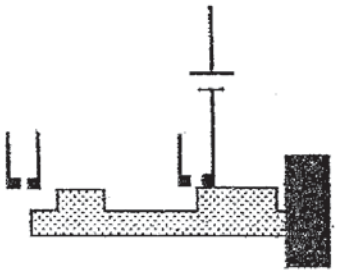


(a) Explain why both alarm A and light bulb B are switched on when the temperature of the oven is 300°C. [2]

(b) The engineer changed parts of the circuit to obtain the results as shown in the table below.

temperature of oven (°C)	yellow bulb	red bulb	alarm A
100	on	off	off
300	on	on	on

The diagram below shows part of the circuit. Complete the circuit so that it will work as described above. Use the symbol (Y) for the yellow bulb, (R) for the red bulb and [A] for alarm A. [2]



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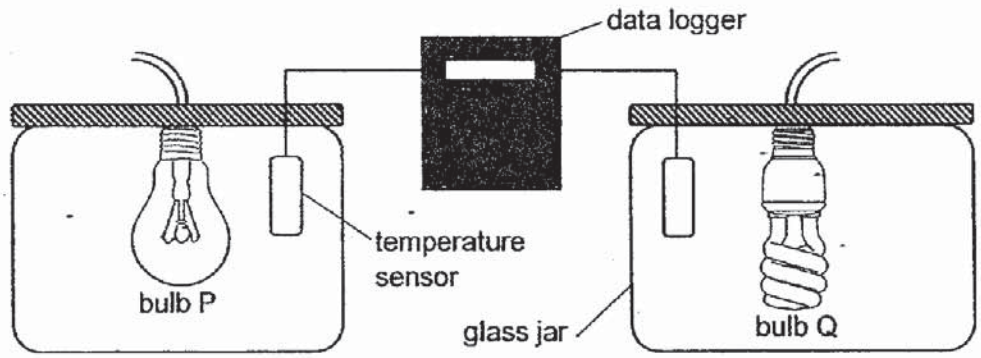
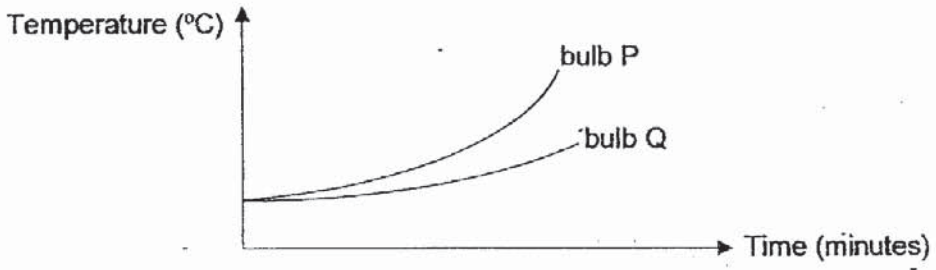
36 Sue conducted an experiment using the set-up below. Both bulbs P and Q were equally bright and placed in identical glass jars.

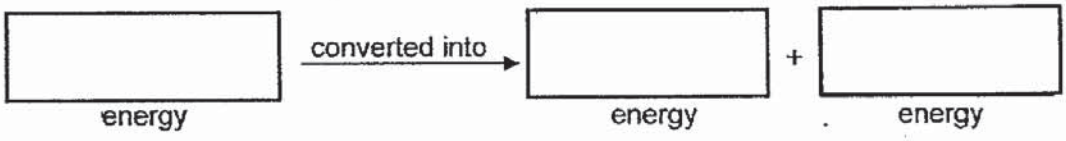


Sue turned on both bulbs and used the temperature sensors and a data logger to record the temperature of the air inside each glass jar.

The results of her experiment are shown below.



(a) Fill in the boxes to show the energy conversion in the bulb. [1]



(b) Sue wants to replace the light bulb in her room with a more energy-saving one. Based on the results of Sue's experiment, which of the two bulbs, P or Q, should she use? Explain your answer. [2]

_____

_____

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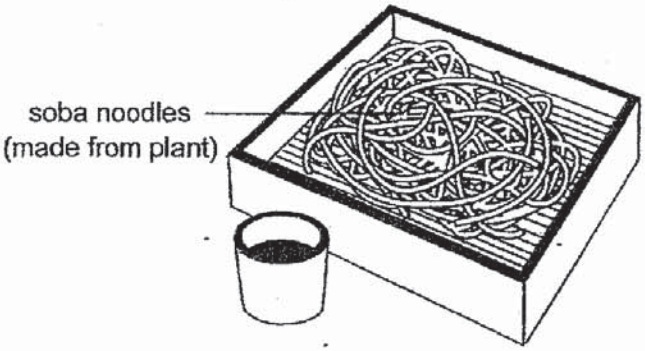
37 Joel is having soba noodles which is made from a type of plant.



(a) State what Joel can use to test if the soba noodles is made from a plant.[1]

_____

(b) Draw a diagram using arrows to show how energy from the Sun is passed on to Joel. [1]

(c) Give a reason why Joel does not get all the energy that the plant obtained from the Sun. [1]

_____

_____

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38(a) Wen Kang has a button magnet and a steel cup with a hole at the bottom as shown in Diagram 1. He places the button magnet at the bottom on the outside of the cup and pours in different volumes of water.

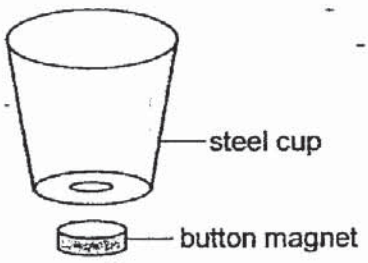

Diagram 1

Diagram 2

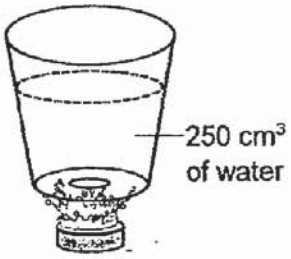

Diagram 3

(i) The button magnet did not drop when 50 cm^3 of water was poured into the cup in Diagram 2. Explain why the button magnet did not drop off. [1]

_____

_____

(ii) The button magnet dropped when 250 cm^3 of water was poured into the cup in Diagram 3. Explain, in terms of forces, why the button magnet dropped. [1]

_____

_____

Question 38 continues on page 11

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(b) The diagrams below show a system that fills a plastic cup with liquid from the bottom up.

Diagram 1	The plastic cup with a hole surrounded by a steel ring.
Diagram 2	A button magnet that seals the hole from above before it is placed on the dispenser.
Diagram 3	The cup is pushed down and part X separates the button magnet from the steel ring of the cup. Liquid flows into the cup from holes of the dispenser. Once filled, the cup is lifted upwards and the button magnet returns to its position as shown in Diagram 2.

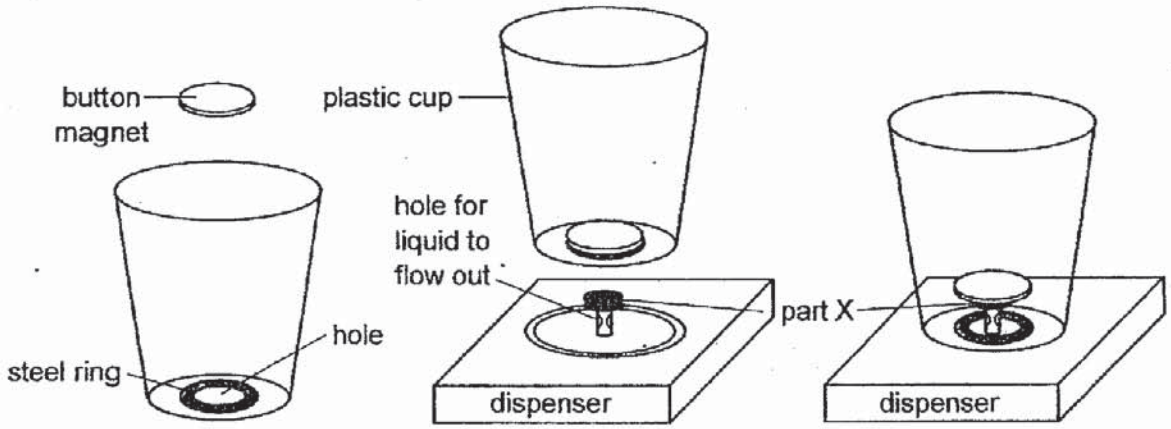

Diagram 1 **Diagram 2** **Diagram 3**

(i) Name the force(s) acting on the button magnet in Diagram 2. [1]

_____

(ii) Suggest a material for part X to ensure that the button magnet remain at its position above the steel ring when the plastic cup is filled and lifted. Explain your answer. [2]

Material for part X: _____

Reason:

_____

_____

_____

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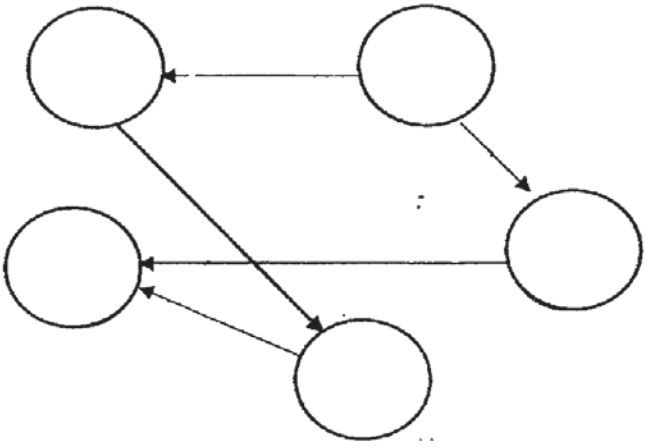
39 A, B, C, D and E are 5 organisms in a community.
Information about these organisms is given in the box below.

A eats E and C.
B is eaten by E.
D is eaten by B and C.
D is a food producer.

(a) Use the information above to help you complete the food web below. Write the correct letter A, B, C, D or E in each circle. [2]



(b) Based on the food web above, name an organism which is both a predator and a prey. [1]

_____

(c) If all organism C dies and the population of B remains constant, explain what will happen to the population of organism E. [2]

_____

_____

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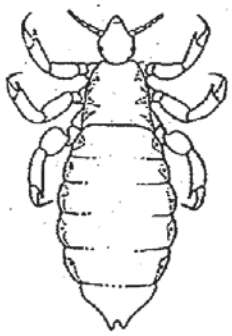
40 The diagram below shows organism H. Organism H clings onto human hair and feeds on human blood. Organism H do not have wings.



(a) Dinesh classified organism H as an insect. Give a reason why. [1]

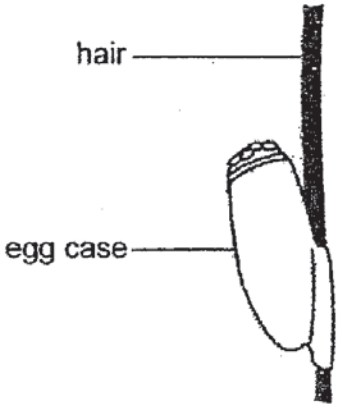
_____

(b) Based on the diagram above, describe one adaptation of organism H that enables it to cling onto human hair. [1]

_____

_____

Organism H lays eggs. The egg case is stuck to the hair as shown below.



(c) Give a reason why it is an advantage for organism H to lay eggs on human hair. [1]

_____

_____

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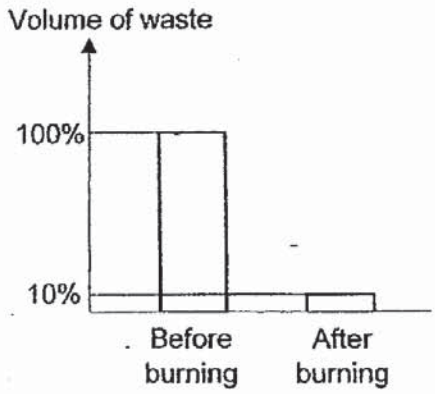
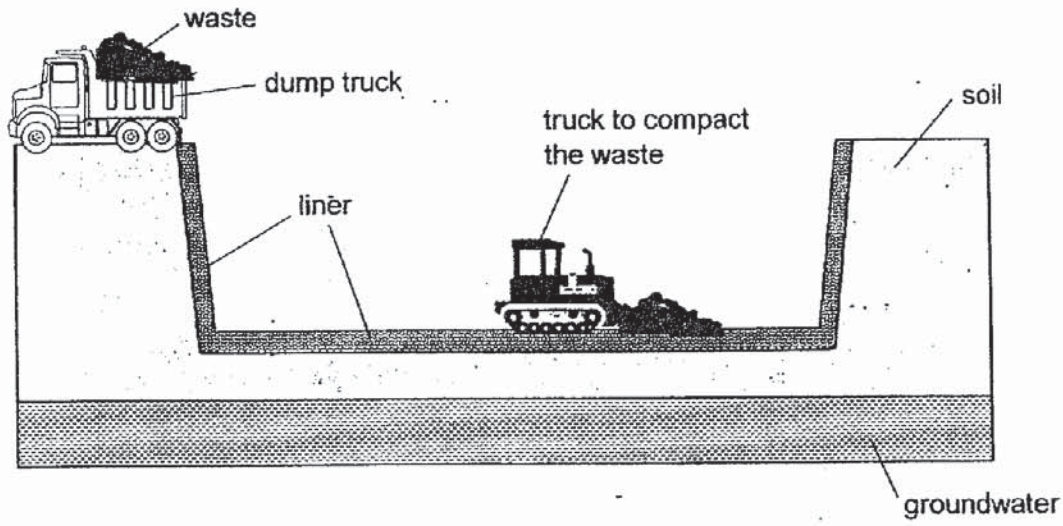
41 Waste is burnt in the incinerator plant before sending to landfills for burying. The bar graph below shows how burning waste affects the volume of the waste.



(a) Based on the information above, explain why waste is burnt before sending to landfills for burying. [2]

A liner is laid down before the waste is **dumpped into the landfill as shown below.**



(b) How does the liner in the landfill help protect the environment? [1]

Question 41 continues on page 15

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(c) How does burning large amounts of wastes harm the environment? [1]

_____

_____

End of Paper

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ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : PEI HWA PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : SA2

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	2	4	1	3	1	2	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	2	2	3	2	3	3	2	2	1
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	3	3	3	1	2	1	1		

BOOKLET B

Q29 The temperature will fall to room temperature where bacteria A can reproduce. After 6 hours, the amount of bacteria A grows beyong the safety limit, making the food unsafe to eat.

Q30 (a) Material D. The amount of light detected by the sensor when D was tested is the lowest.

(b) The tube prevent other possible sources of light from affecting the results.

Q31 (a) 1 cm^3

(b) No. Anne should use other beaker which has smaller unit indicater. Because there is no indications on the beaker to show units smaller than 1cm^3 therefore the reading would not be accurate.

Q32 (a) Y

(b) With a magnetic material, both poles of the magnetic strip will be attracted to the whiteboard to hold the paper in place. But with a magnet, the magnetic strip will repel, causing the paper not to be held in place.

Q33 (a)

		increase	constant	decrease
(i)	The mass of the air bubble.		✓	
(ii)	The volume of the air bubble.	✓		

(b) The air in the bubble gained heat and expanded over time, and its volume in the air bubble increased, so the air bubbles in Diagram 2 became larger.

(c) The air bubbles will contract when it loses heat, but the air bubbles will still remain trapped under the sticker.

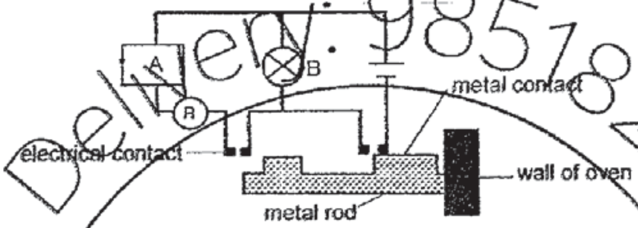
Q34 (a) The smell of animal waste could scare animals such as birds away from the seed ball and decreases the chances of the seeds being eaten.

(b) As water was added in making the seed ball, it is important to prevent the seeds from germinating when stored.

(c) There might be overcrowding and competition for mineral salts, water, sunlight and space between the plants after germination.

Q35 (a) The metal rod gain heat to 300°C and the metal contact touches the left-most electrical contact so both A and B because metal rod would conduct electricity.

(b)



Q36 (a) Electrical in the battery energy → converted into → Light energy + Heat energy

(b) The temperature rise of bulb Q is lower than bulb P shows that lesser heat is generated by bulb Q by bulb P. This means that lesser electrical energy is converted to heat energy in bulb Q.

Q37 (a) He should conduct a starch test on the soba noodles.

(b) The sun → Plant → Joel

(c) the plant uses some of the energy obtained from the sun for its daily activity such as respiration or photosynthesis.

Q38 (a)(i) The magnetic force was greater than gravitational force of the water so the button magnet did not drop off.

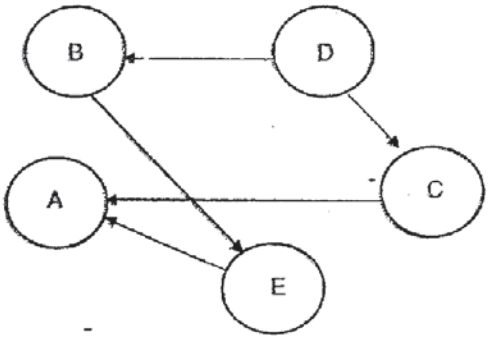
(a)(ii) The gravitation force of the water wa greater than magnetic force of the button magnet. So, the water could push the magnet away from steel cup.

(b)(i) Magnetic force and gravitational force.

(b)(ii) Iron. Part X must be made of a magnetic material so that the magnet will attract part X and prevent the liquid flowing out from the dispenser from pushing the magnet away.

2

Q39 (a)



(b) Organism E.

(c) The organism in population E decreases. As organism A without organism C, Organism A would depend heavily on Organism E for food.

Q40 (a) It has three parts of legs.

(b) Its legs could easily grasp on human hair as it has claws.

(c) The young of organism H could feed on human blood right after it comes out of its egg case.

Q41 (a) It reduces the volume of the waste significantly and could store more trash in each landfill, saving space, and slows the rate of filling the landfill.

(b) The liner prevents waste seeping into the water

(c) It causes air pollution which could result in acid rain, haze, et cetera and which most effects are harming health of living thing.

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3 ans.

RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2019

Section A	/56
Section B	/44
Your score out of 100 marks	
Parent's signature	

Name : _____ Index No: ____ Class: P 6 ___

22 August 2019 **SCIENCE** Attn: 1h 45min

SECTION A (28 X 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

1. Which of the following characteristic(s) is/are generally common among amphibians and insects?

   A They have three body parts.
   B Their young look like the adults.
   C They reproduce by laying eggs.
   D They have smooth and moist skin.

   (1) C only
   (2) D only
   (3) A and B only
   (4) A, B, C and D

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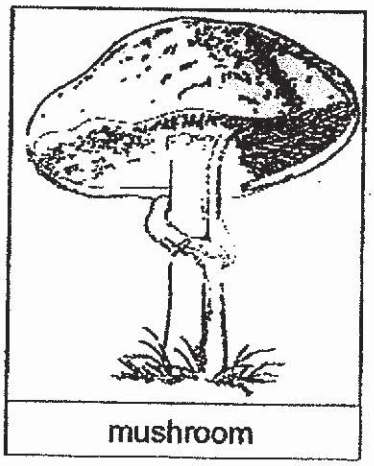
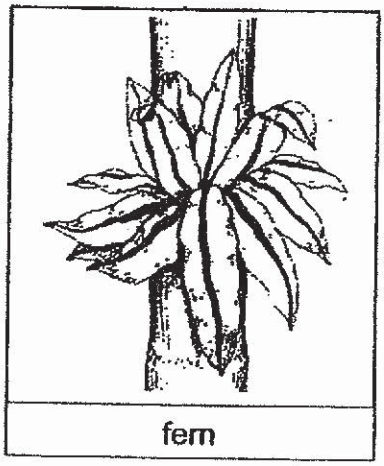
2. The diagrams below show a mushroom and a fern.



mushroom



fern

Which of the following comparison(s) between mushroom and fern is/are **incorrect?**

A Both reproduce by spores.
B Mushroom can bear flowers but not fern.
C Mushroom can make its own food but not fern.

(1) A only
(2) C only
(3) A and B only
(4) B and C only

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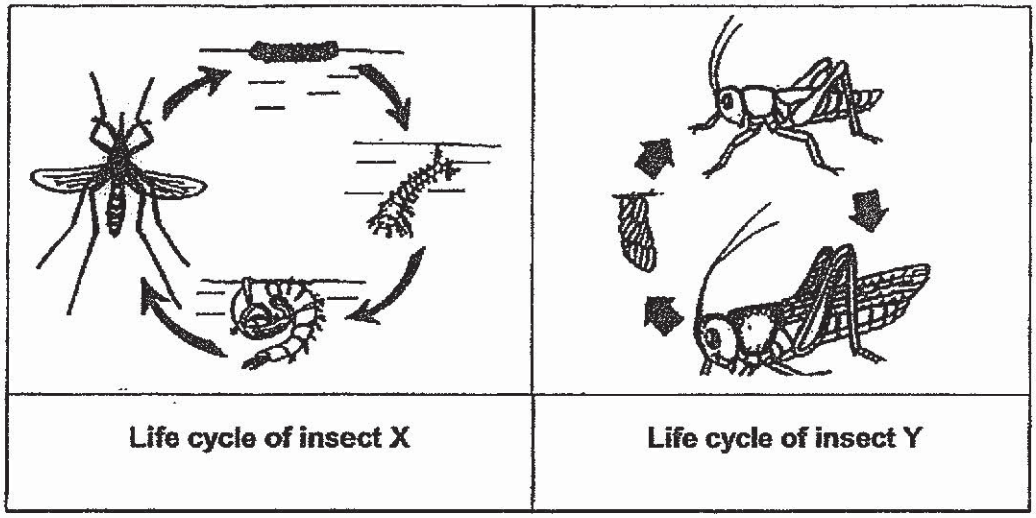
3. Study the life cycles of insects, X and Y, as shown below.



Life cycle of insect X	Life cycle of insect Y

Based on the diagrams above, which of the following statements are true?

A Both insects can live on land and in water.
B Both insects have different number of stages in their life cycles.
C The young of Y resembles its adult but not the young of X.
D The young of X takes a longer time to develop into the adult stage than the young of Y.

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B and D only

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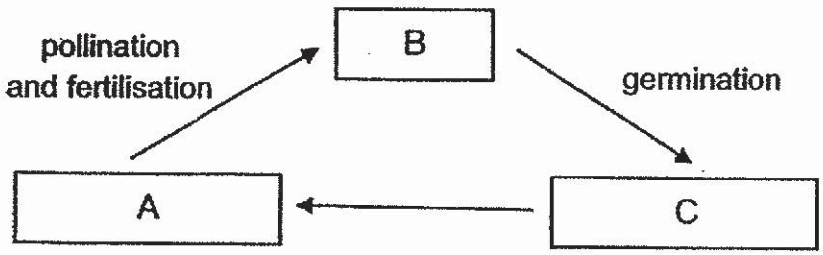
4. The diagram shows the life cycle of a flowering plant.



Which one of the following represents stages A, B and C correctly?

	A	B	C
(1)	adult plant	young plant	seed
(2)	young plant	seed	adult plant
(3)	seed	adult plant	young plant
(4)	adult plant	seed	young plant

5. Which of the following statements about heredity is/are true?

A The offspring inherit traits from both parents.
B A male parent cannot pass his traits to a female child.
C The eye colour of an offspring is a trait that can be inherited from parents.

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

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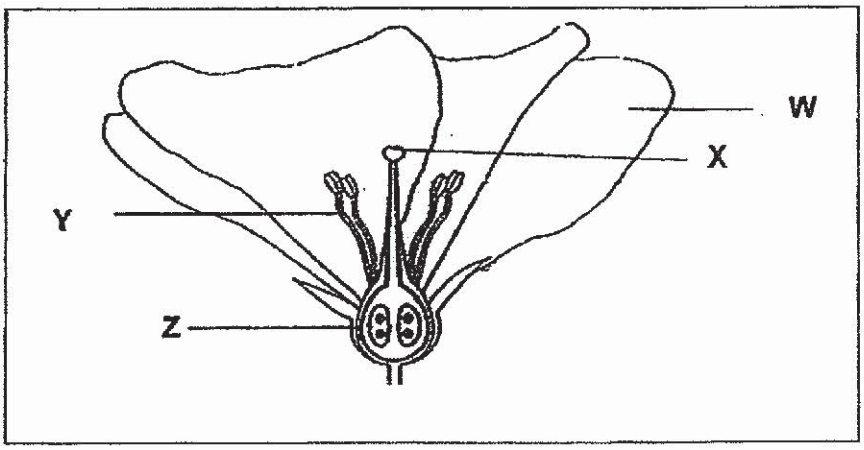
6. The diagram below shows the cross-section of a flower.



Four similar flowers, A, B, C and D, had some part(s) removed from them as shown in the table below. A cross (x) shows the part(s) removed.

Flower	Part(s) removed			
	W	X	Y	Z
A	x			
B			x	
C	x		x	
D		x		x

Which flowers are still able to develop into fruits?

(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D

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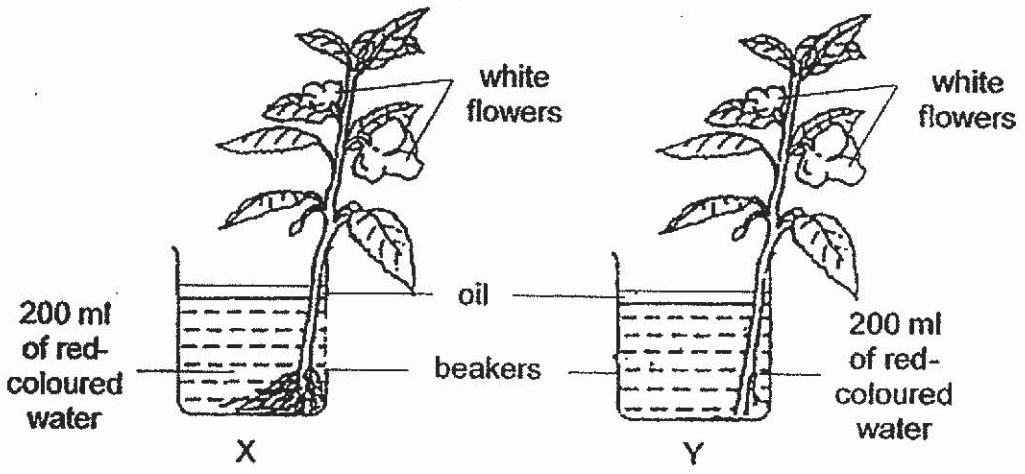
7. **Amanda wanted to find out if the presence of roots affects the rate of water transported up the plants. She prepared two set-ups, X and Y, using similar plants of the same height as shown below. The roots of the plant in set-up Y has been removed.**



Which of the following observations would allow Amanda to draw conclusion for her experiment?

A The height of growth of each plant after two hours.
B The volume of water left in each beaker after two hours.
C The time taken for both flowers in each in set-up to turn red.

(1) B only
(2) C only
(3) A and C only
(4) B and C only

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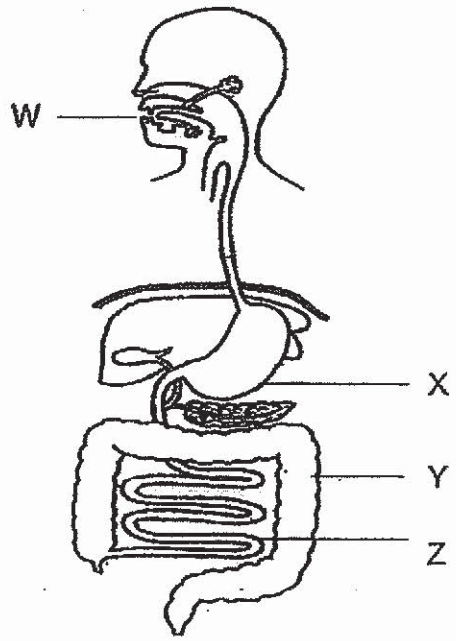
8. The diagram below shows the human digestive system.



Which of the following statement(s) is/are correct?

A Digestion ends at Z.
B There is most digested food at Y.
C There is more undigested food at W than at X.
D Digestive juices are produced at X and Z only.

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and D only

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9. The table below shows the characteristics of cells from different organisms, X, Y and Z. A tick (✓) indicates the presence of the parts of a cell.

Parts of cell	Cells from Organisms		
	X	Y	Z
nucleus	✓	✓	✓
chloroplast			✓
cell wall	✓		✓
cell membrane	✓	✓	✓

Which one of the following statements is **incorrect**?

(1) Organism Y could be an animal.

(2) Organism Z is able to make food.

(3) The cells of organisms Y and Z are taken from the same plant part.

(4) The cells of organisms X, Y and Z allow certain types of substances to move in and out their cells.

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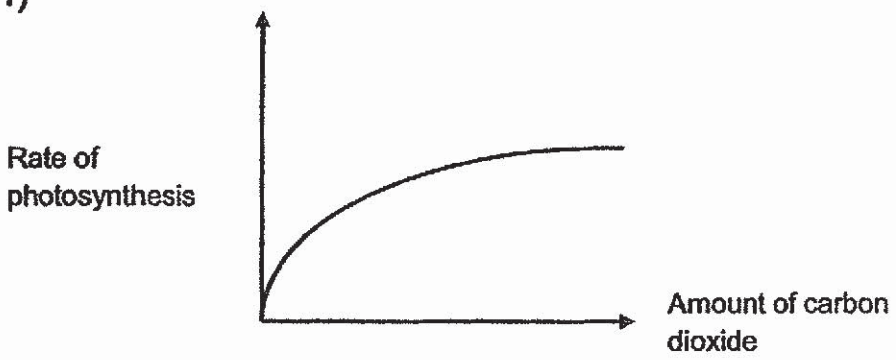
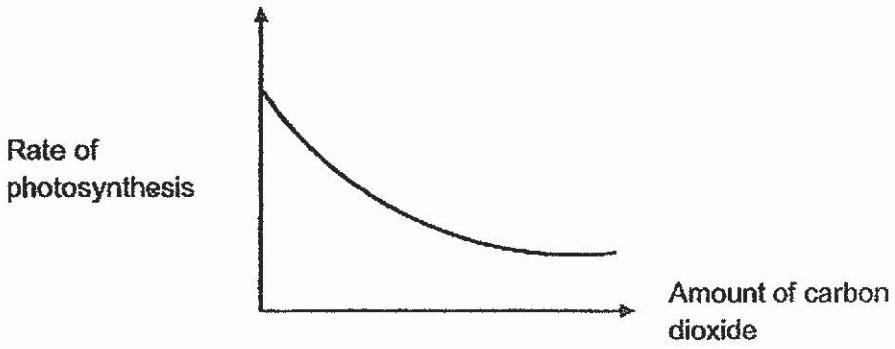
10. **Which one of the following graphs correctly shows how carbon dioxide affects the rate of photosynthesis ?**

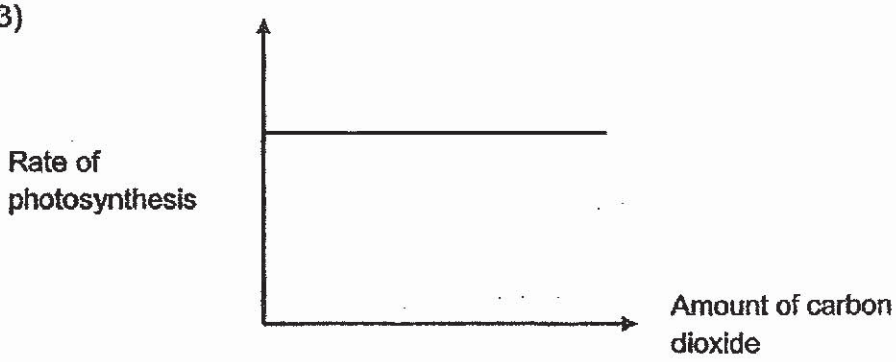
(1)



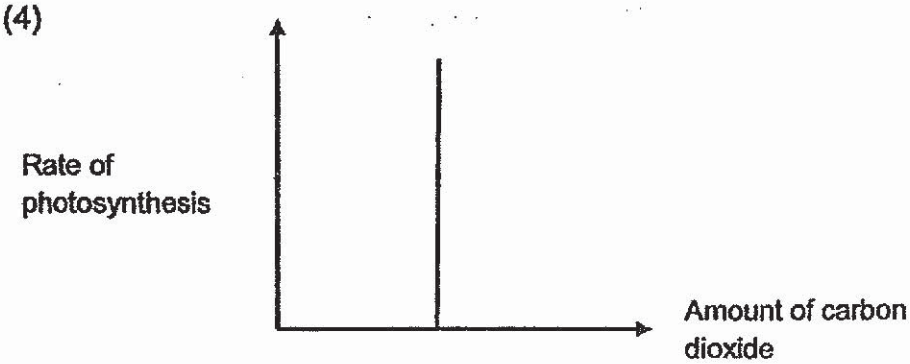
(2)



(3)



(4)



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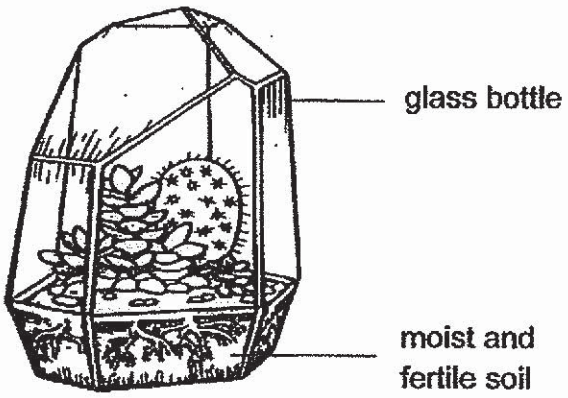
11. Some green plants were planted in the sealed glass bottle filled with moist and fertile soil. The glass bottle was placed near the window for one week.



Which of the following statement(s) is/ are correct?

A The plant would die three days later as there was no air.
B The plants could only carry out photosynthesis but not respiration.
C The plants survived as there was a constant supply of air and water.
D The water in the soil would dry up and the plants would have no water.

(1) B only
(2) C only
(3) A and C only
(4) B and D only

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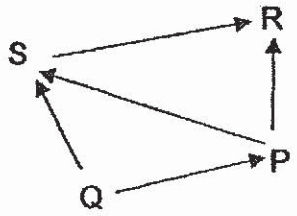
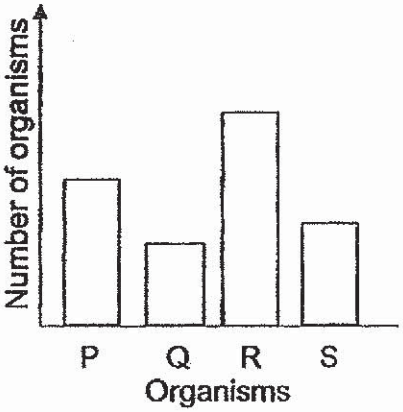
12. The diagram shows a food web. Organisms P, Q, R and S are found in the same community.

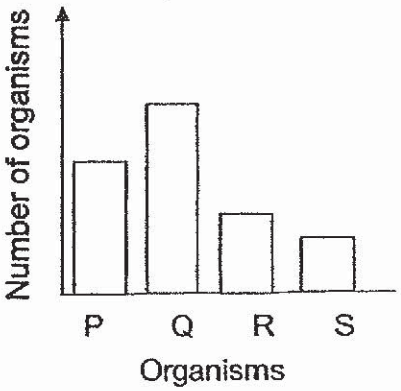


Which one of the following graphs correctly represents the number of organisms present in that community?

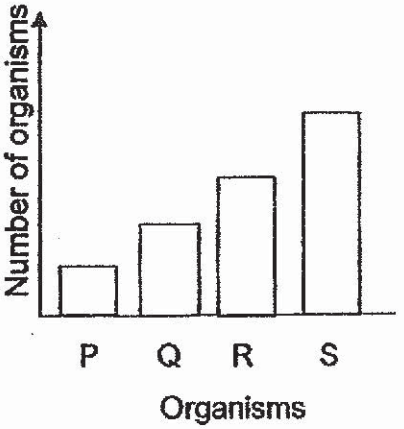
(1)



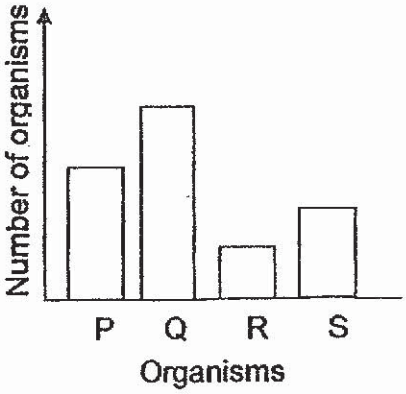
(2)



(3)



(4)



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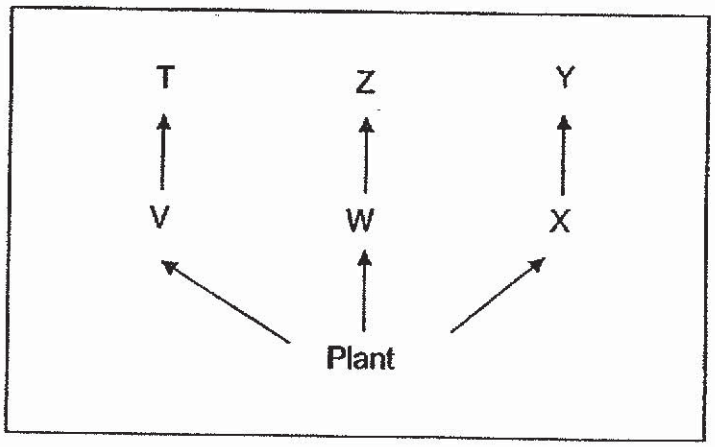
13. Study the following food web in a field.



The use of pesticide in the field resulted in the death of most organism V and organism W only.

Which one of the following most likely shows the effect of pesticide on the population of organisms X and Z?

	Population size of organism X	Population size of organism Z
(1)	increases	remains the same
(2)	decreases	remains the same
(3)	decreases	increases
(4)	increases	decreases

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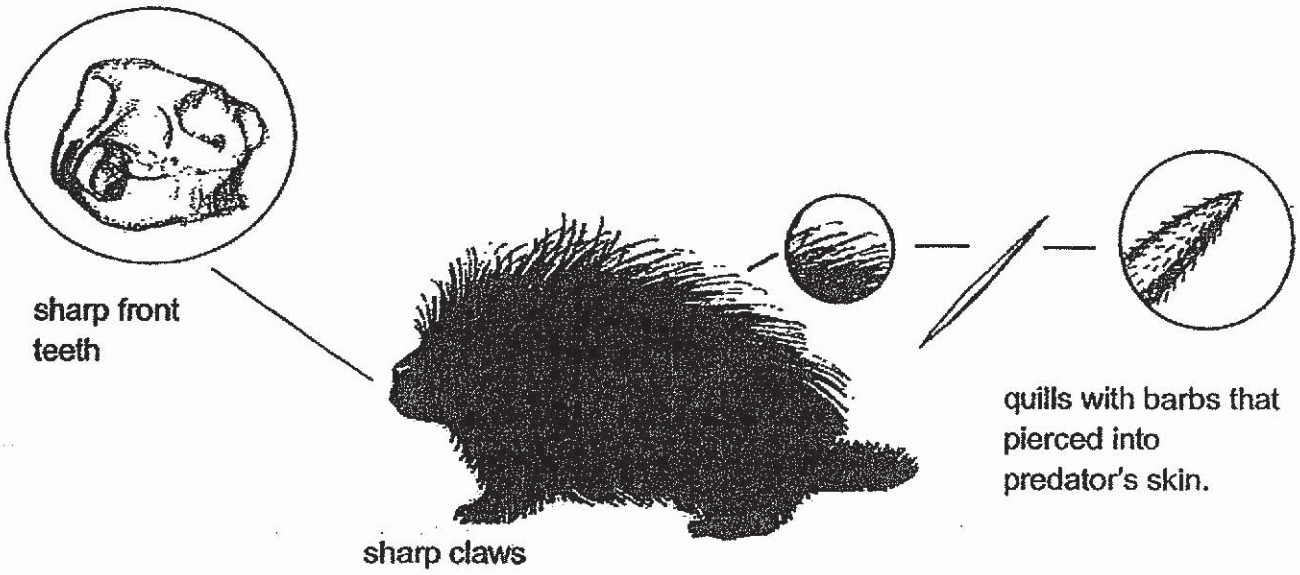
14. **Porcupines are very well adapted to live in the forest. They eat leaves, twigs, buds and even barks of trees.**



Which one of the following is a behavioural adaptation of the porcupine that enables it to survive well in the forest?

(1) They have sharp claws for climbing trees.

(2) They turn their backs and raise their quills in self-defense.

(3) They have sharp front teeth that grow throughout their lives.

(4) They have quills with barbs that can pierce into predator's skin.

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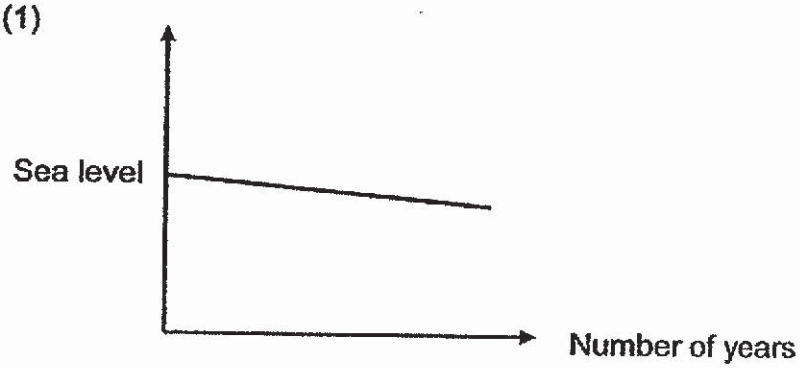
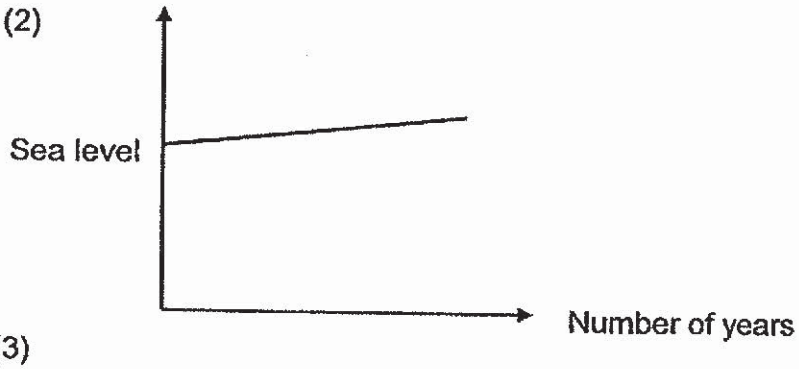
15. The four graphs below show the changes in global sea levels over a period of time.

Which one of the following most likely shows the effect of continual deforestation activities on the sea level over time?

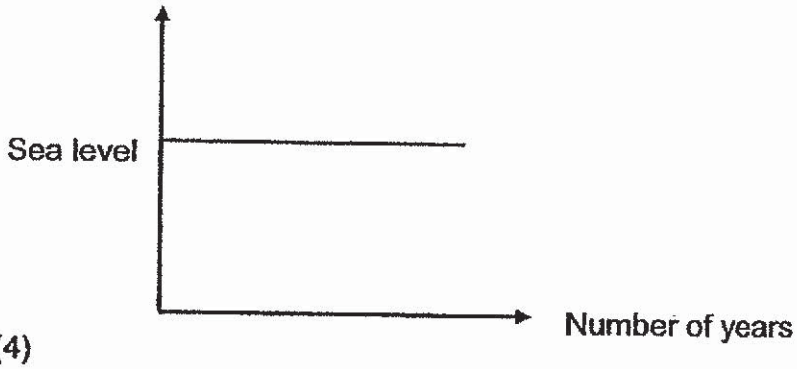
(1)



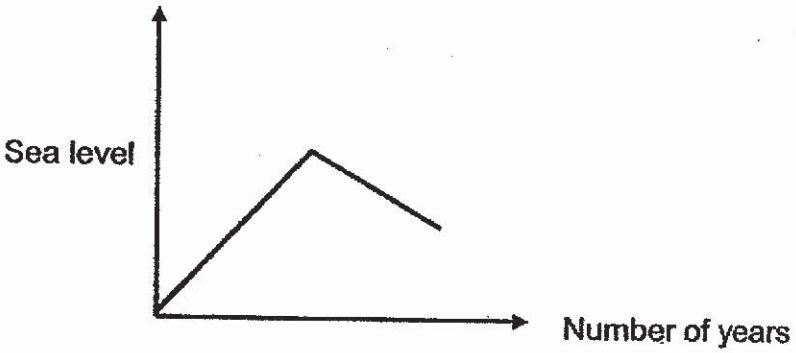
(2)



(3)



(4)



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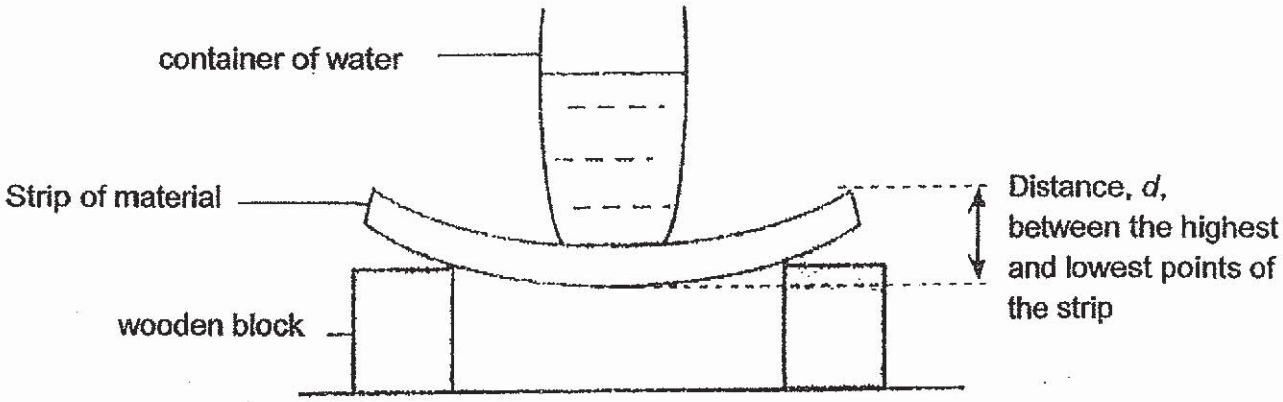
16. The table below shows how the amount of sugar produced by plants is affected by light intensity.

Light intensity (lux)	Amount of sugar produced (milligrams)			
	Plant E	Plant F	Plant G	Plant H
70	37	38	38	39
50	28	20	32	23
30	19	9	27	11
10	14	2	15	3

Which plants are suitable to be used as indoor plants?

(1) Plants E and G
(2) Plants E and H
(3) Plants F and H
(4) Plants F and G

17. Chloe set up an experiment as shown below to compare four strips of different materials, J, K, L and M, which are of the same thickness.



She placed a container containing 100 cm^3 of water on each strip of material and she recorded the distance, *d*, as shown in the table below.

Materials	J	K	L	M
d (mm)	38	55	5	42

Which materials are most suitable for making a food tray and a belt?

	Material for food tray	Material for belt
(1)	J	M
(2)	K	L
(3)	L	K
(4)	M	J

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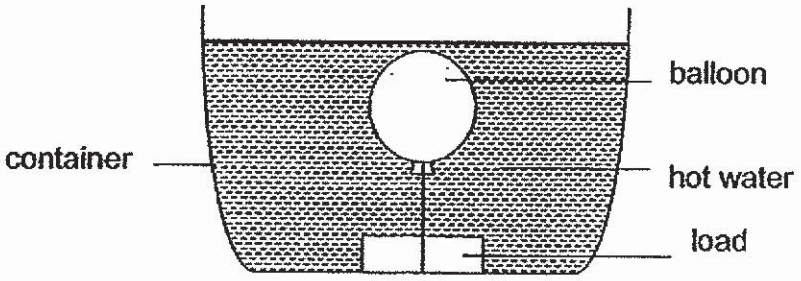
18. Jane set up the experiment below to find out about the properties of matter.



After some time, she observed both the size of the balloon and the water level in the container increased.

Which one of the following explains why the water level in the container increased?

(1) The balloon expanded and increased in mass.
(2) The hot water expanded and occupied more space.
(3) The hot water increased in mass and occupied more space.
(4) The air in the balloon expanded and occupied more space in water.

19. The table below shows the melting and boiling points of two substances, P and Q.

Substance	Melting Point (°C)	Boiling point (°C)
P	55	230
Q	110	180

Which one of the following shows the correct properties of substances P and Q at 200 °C?

	Property of P	Property of Q
(1)	definite volume	definite shape
(2)	definite shape	definite volume
(3)	no definite volume	can be compressed
(4)	no definite shape	can be compressed

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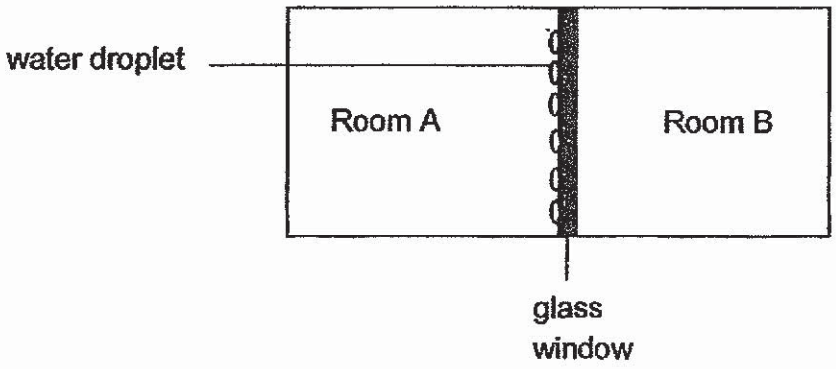
20. Two rooms, A and B, are separated by a glass window. Tiny water droplets are observed on the glass window in room A as shown below.



Based on the observation above, which one of the following shows the correct temperature in each room?

	Temperature of room A (°C)	Temperature of room B (°C)
(1)	15	40
(2)	40	5
(3)	40	40
(4)	5	15

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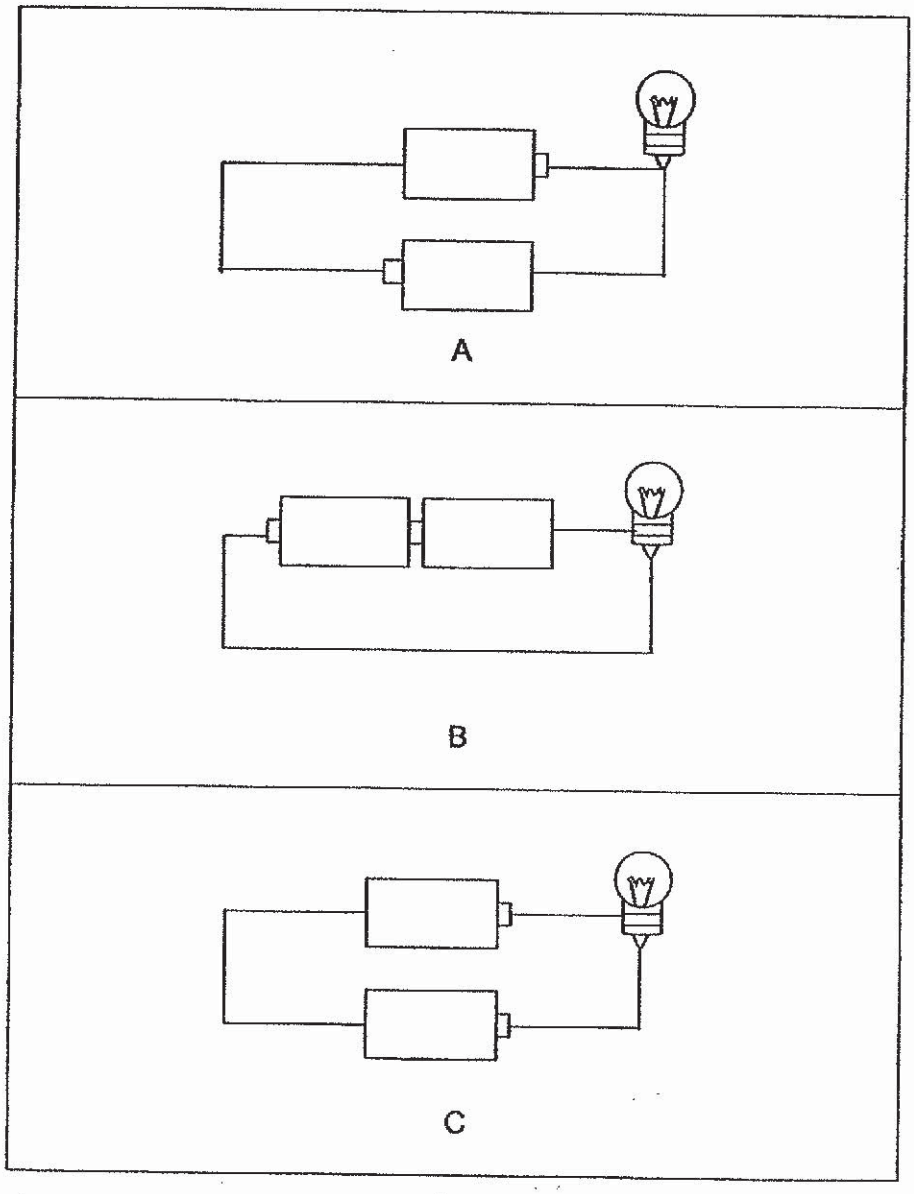
21. The diagrams below show three circuit arrangements, A, B and C.



In which of the following arrangements would the bulb light up?

(1) A only
(2) B only
(3) A and C only
(4) B and C only

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22. Five metal pins A, B, C, D and E were fixed onto a wooden board as shown in diagram 1 below. Diagram 2 shows a circuit connected to wires X and Y.

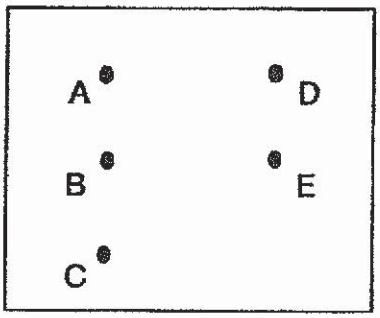


Diagram 1

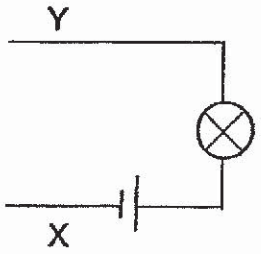


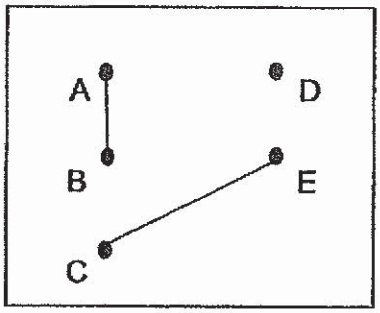
Diagram 2

Some of the pins in diagram 1 were connected with wires.
Then Wires X and Y were connected to different pairs of pins. The results were recorded in the table below.

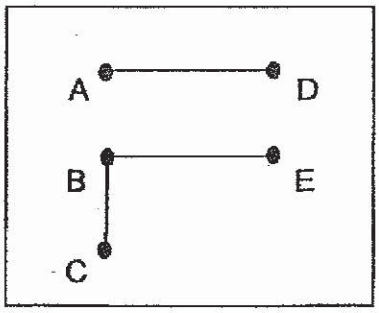
Pin connected to X	Pin connected to Y	Did the bulb light up?
A	B	No
A	C	Yes
B	D	No
D	E	No

Which of the following shows the correct arrangement of wires on the circuit card?

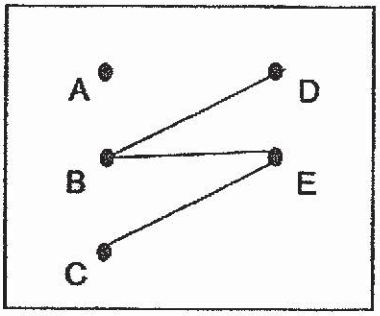
(1)



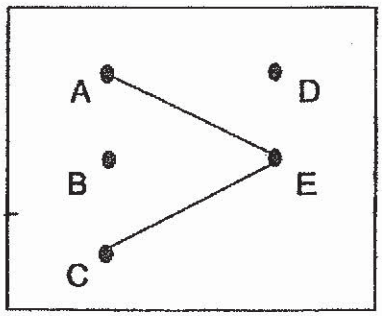
(2)



(3)



(4)



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23. Clara prepared an experiment set-up with objects P, Q and R. She placed each object near a magnet, an iron nail and a plastic spoon and observe the interaction amongst them. Her observations were recorded in the table below.

Object	Observation		
	Magnet	Iron Nail	Plastic spoon
P	repel	attract	no interaction
Q	attract	no interaction	no interaction
R	no interaction	no interaction	no interaction

Based on Clara's observations, which of the following correctly represent objects P, Q and R?

	P	Q	R
(1)	copper bar	magnet	iron bar
(2)	magnet	copper bar	iron bar
(3)	magnet	iron bar	copper bar
(4)	iron bar	copper bar	magnet

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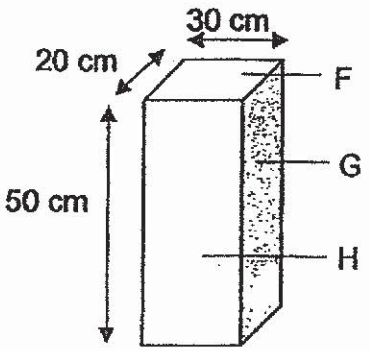
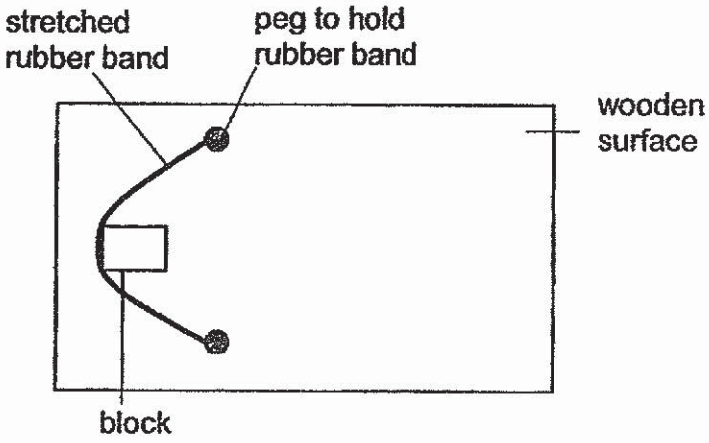
24. A rectangular block has surfaces labelled F, G and H as shown in the diagram below. Surface F of the rectangular block was placed in contact with the wooden surface. Then the block was pulled back against the rubber band before it was released and slid across the wooden surface.



Rectangular block



Top view of set-up

The experiment was repeated with its two other surfaces, G and H, in contact with the wooden surface. The distance moved by the block was recorded as shown in the table below.

Surface	Area of contact with the wooden surface (cm^2)	Distance moved by block on wooden surface (cm)
F	600	13
G	1000	13
H	1500	13

Based on the results of the experiment, which of the following statement(s) is / are true?

A The distance moved by the block is not affected by the size of the contact area.

B The gravitational force acting on the block is the greatest when it moved on surface H.

C There is no frictional force between the block and the wooden surface as the block travelled the same distance.

D Gravitational force and elastic spring force are the only forces acting on the wooden block as the block travelled on the wooden surface.

(1) A only
(2) B only
(3) A and C only
(4) A, B, C and D

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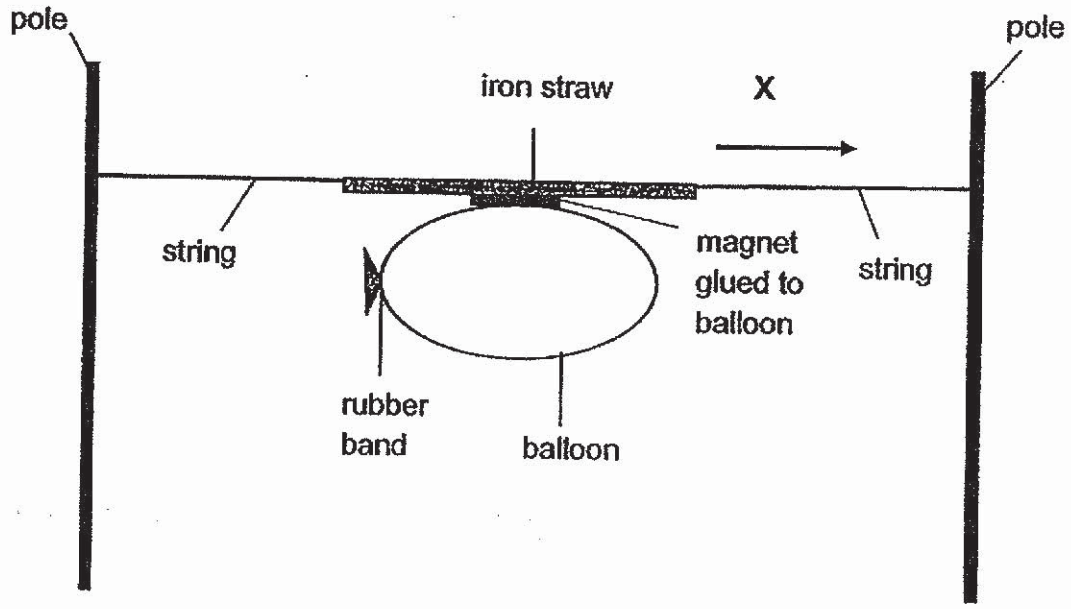
25. **Jason carried out an experiment using a balloon, string and iron straw as shown below. The string was passed through the iron straw and the balloon was then attached firmly to the iron straw with a magnet.**



When the rubber band on the balloon was removed to release the air. The balloon and the iron straw moved in direction X.

Which of the following forces did the iron straw need to overcome when it was moving in direction X?

A Frictional force
B Magnetic force
C Gravitational force

(1) A only
(2) B only
(3) A and C only
(4) A, B and C

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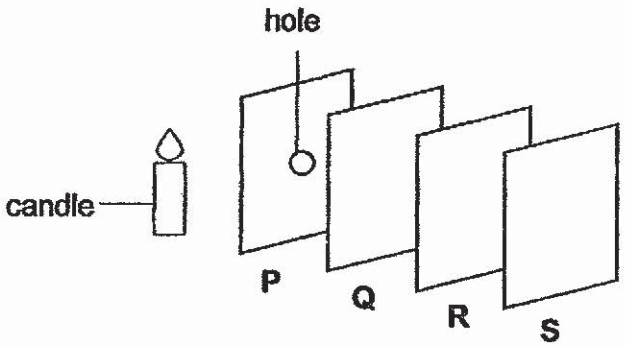
26. In a dark enclosed room, four sheets, P, Q, R and S, were arranged in a straight line as shown below. When the candle was lit, a bright circular patch of light was observed only on sheet R.



Based on the information above, which of the following statement(s) is/are definitely true?

A Sheet S allowed some light to pass through it.
B Sheets P and R did not allow any light to pass through it.
C Sheet R allowed more light to pass through than sheet Q.

(1) A only
(2) B only
(3) A and B only
(4) B and C only

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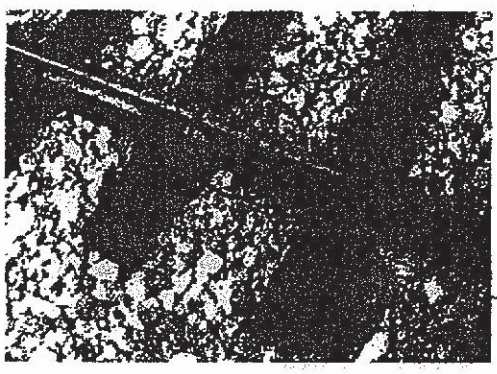
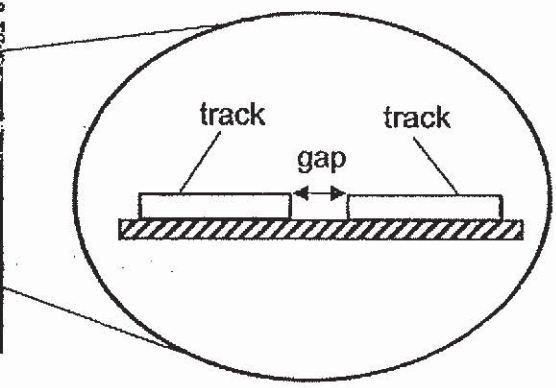
27. William conducted an experiment by heating three rods of identical length made of different metals, P, Q and R, for twenty minutes. He recorded the length of each rod before and after heating.

Metal	Length before heating (mm)	Length after heating (mm)
P	200	203
Q	200	212
R	200	208

William noticed there were gaps between train tracks, as shown below. He also observed that the gap was smaller on a hot day.



Gap between the train tracks



Magnified view of the gap

If metals P, Q and R were used to make the train tracks, which of the following choice of metals would result in the smallest and largest gaps between the tracks on a hot day?

	Smallest gap	Largest gap
(1)	P	R
(2)	Q	P
(3)	R	R
(4)	P	Q

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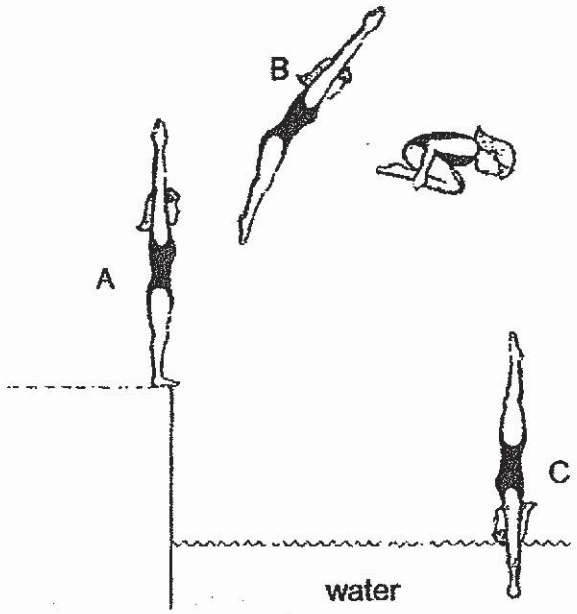
28. The diagram below shows a girl diving into the water.



Which of the following shows how the amount of energy changes from A to B to C?

	Potential energy from A to B	Kinetic energy from B to C
(1)	decreases	decreases
(2)	decreases	increases
(3)	increases	decreases
(4)	increases	increases

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Name : _____ Index No : _____ Class : P6 ___

44

SECTION B (44 marks)
For questions 29 to 41, write your answers clearly in the spaces provided.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

29. Sam wanted to find out the conditions required for the growth of mould on fruit X. She placed fruit X in four identical sealed boxes, P, Q, R and S, exposed to different conditions as shown in the table below. A tick (√) shows the presence of the condition.

Boxes	Conditions		
	Surrounding temperature (°C)	Presence of water	Presence of substance which absorbs water
P	35	√	
Q	15	√	
R	35		√
S	15		√

(a) Sam observed that white mould started to appear on fruit X in box P Give a reason for her observations. [1]

_____

_____

(b) How did the mould appear since all boxes were sealed? [1]

_____

_____

Score 2

Continue on next page

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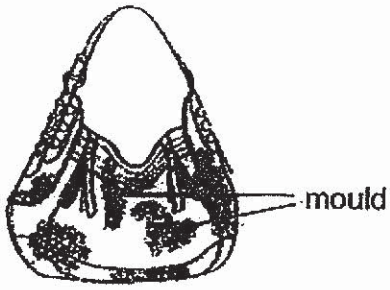
One day, Sam was caught in the rain. When she reached home, she immediately kept her leather bag in the cupboard. A week later, she discovered some mould on the leather bag as shown below.



(c) Sam's mother advised Sam to leave her wet bag under the Sun first before keeping it.

Explain how leaving the wet bag under the Sun helps to reduce the growth of mould. [1]

_____

_____

Score	/ 1

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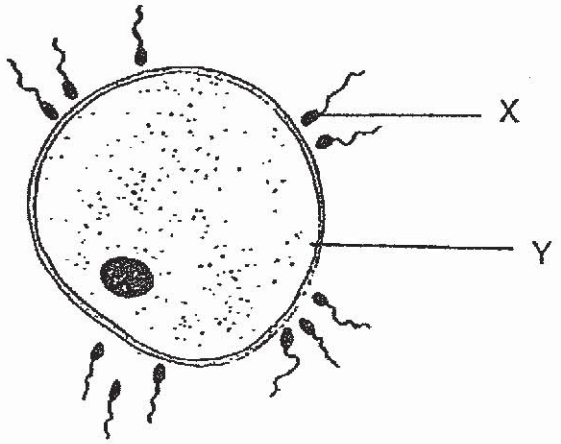
30. The diagram below shows two types of human reproductive cells, X and Y.

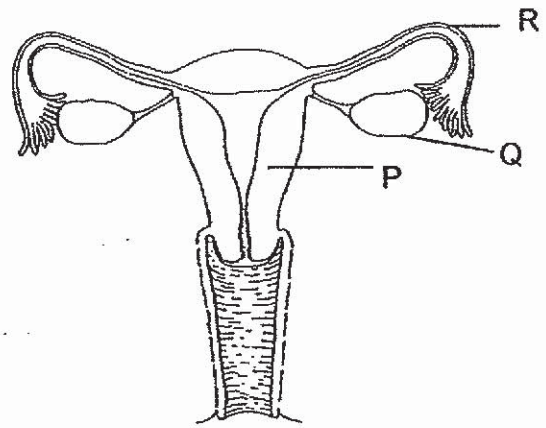


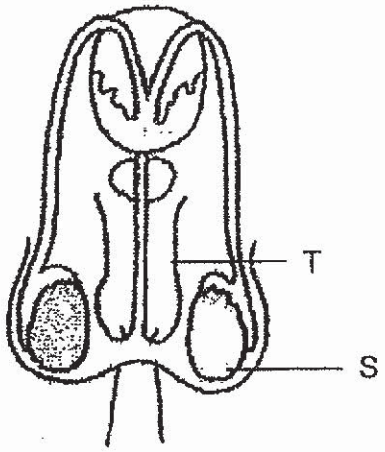
(a) Cell X is produced in large numbers. Give a reason for the observation. [1]

_____

_____

The diagrams below show the human reproductive systems.





(b) Which parts, P, Q, R, S or T produce the following cells? [1]

(i) Cell X : _____

(ii) Cell Y : _____

Continue on next page

Score	
	2

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1356

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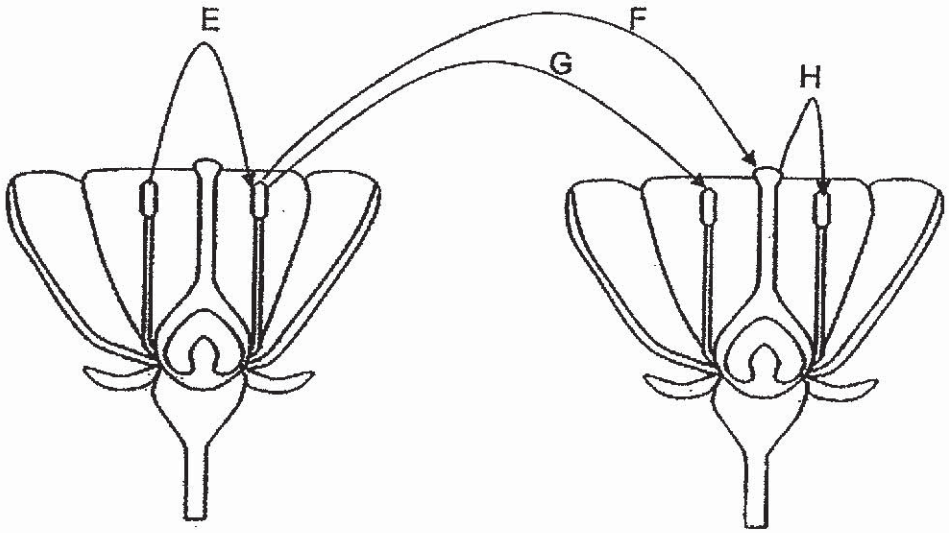
The diagrams below show two flowers, M and N, from the same type of plant.



Flower M **Flower N**

(c) Identify the arrow(s), E, F, G and/or H, that represent(s) the process of pollination. [1]

_____

_____

(d) State one characteristic of the flower that attracts animals to pollinate it. [1]

_____

Score	2

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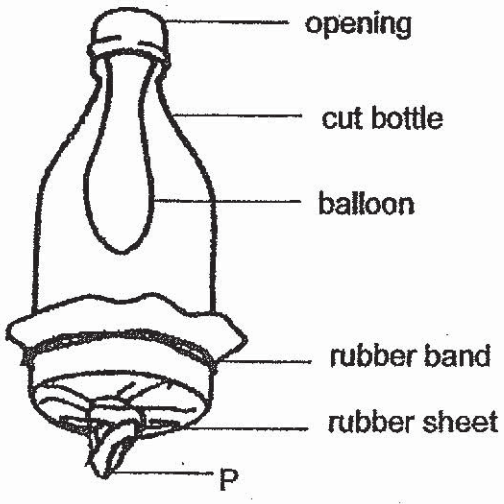
31. Molly made a model of the human respiratory system using a cut bottle as shown below. A balloon was secured over the opening at the top and a rubber sheet was attached at the bottom of the bottle.



(a) Which part of body do the following parts of the model represent? [1]

(i) balloon : _____

(ii) bottle : _____

(b) What will happen to the balloon when part P of the rubber sheet was pulled downwards? [1]

_____

_____

(c) State one difference between the composition of air entering the lungs and the air leaving the lungs in the human respiratory system. [1]

_____

_____

Score	3

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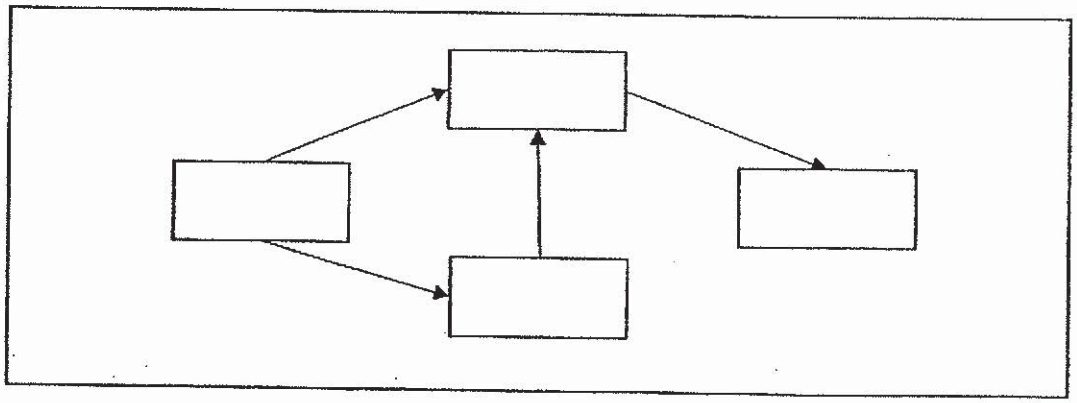
32. **Melissa wanted to study the food relationships among organisms J, K, L and plant M. She kept different organisms in identical tanks which have sufficient air and water for one week. After one week, she recorded her results in the table below.**

Tanks	Organisms kept together in the same tank	Number of Organisms	
		Start of Experiment	End of experiment
1	Plant M	30	5
	J	20	20
2	Plant M	30	30
	L	10	0
3	J	20	10
	K	10	10
4	Plant M	30	20
	K	10	5
	L	10	10

All animals L were found dead in tank 2 at the end of the experiment.

(a) Based on the above information, complete the food web below. [2]



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Score 2

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1359

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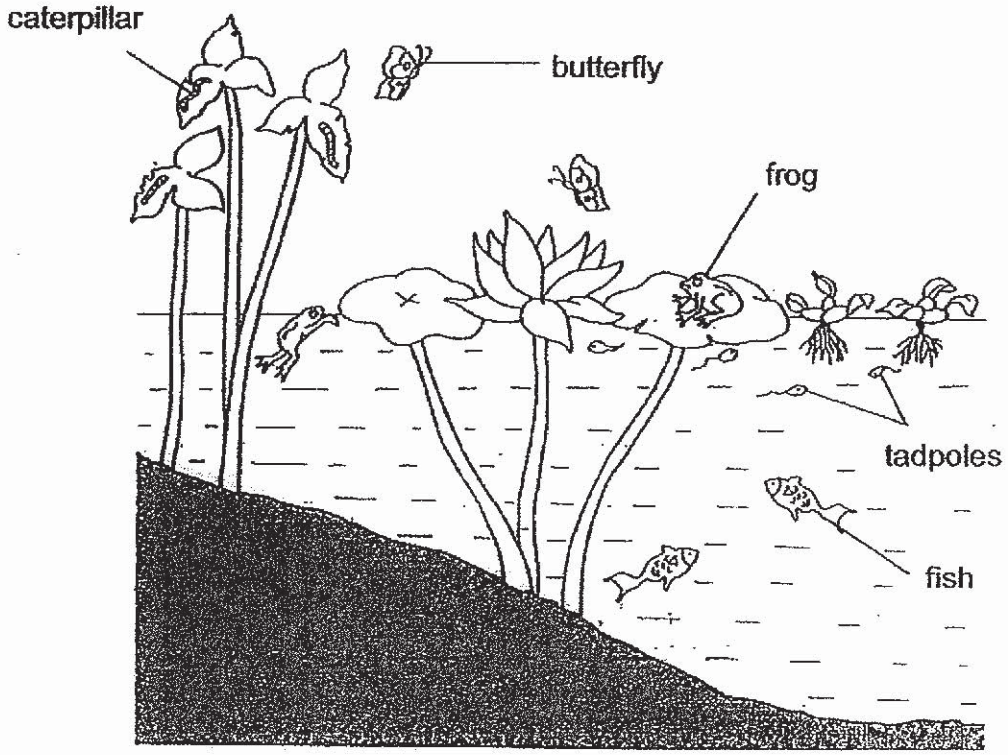
The diagram below shows a habitat with some organisms.



(b) Based on the diagram above, put a tick (√) in the correct column on the table below to indicate if the statements are True or False. [2]

	Statements	True	False
(i)	There are five populations of animals.		
(ii)	There is one community with six populations.		
(iii)	There are more populations of consumers than populations of producers.		
(iv)	The groups of tadpoles, frogs, fish, caterpillars and butterflies form one community.		

Score	2

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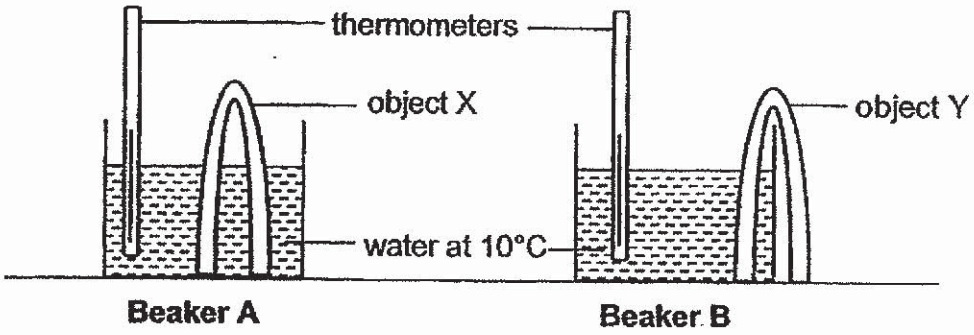
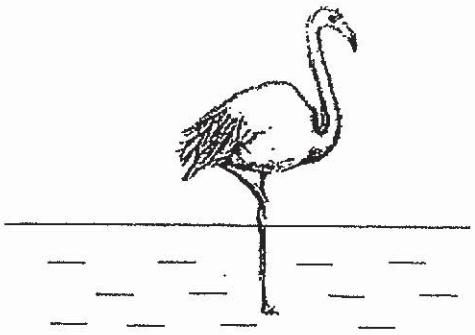
33. Sophie heated identical objects, X and Y, to 80°C and then placed them in beakers A and B, as shown below. Both beakers were filled with the same amount of water at a temperature of 10°C.



(a) Sophie observed that the temperature of water in beaker A increased more quickly than that in beaker B. Explain Sophie's observation. [2]

The diagram below shows bird Z standing on one leg in water.



(b) Explain how this adaptation benefits bird Z when the weather turns cold. [1]

Score	
	3

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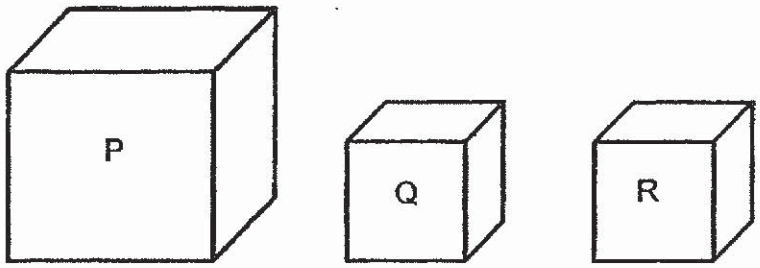
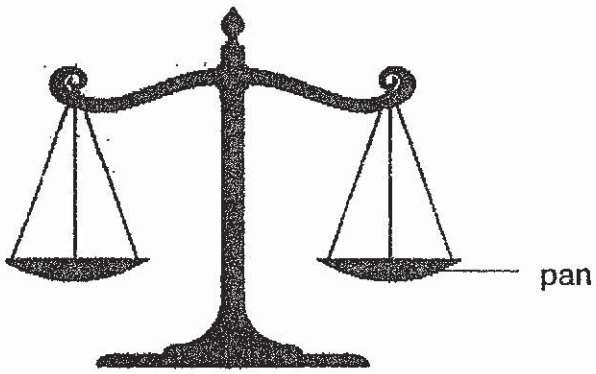
34. The diagrams below show three waterproof containers, P, Q and R, made of different materials.



P	Q	R
100 cm^3 50 g	50 cm^3 50 g	50 cm^3 100 g

The diagram below shows a weighing balance.



Balance

(a) Which two containers, P, Q or R, should be placed on each pan on the weighing balance so that it remains balanced as shown in the above diagram? [1]

_____

(b) Give a reason for your answer in (a). [1]

_____

_____

Score	
	2

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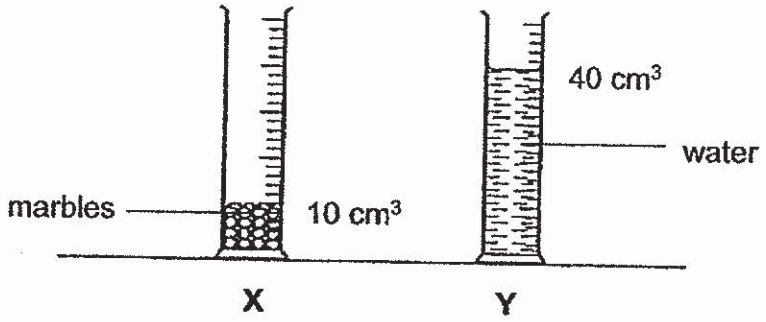
The diagram below shows two cylinders, X and Y, containing marbles and water respectively.



(c) When all the marbles and water were poured into container P, it was less than half-filled. Explain this observation. [1]

_____

_____

Score	
	1

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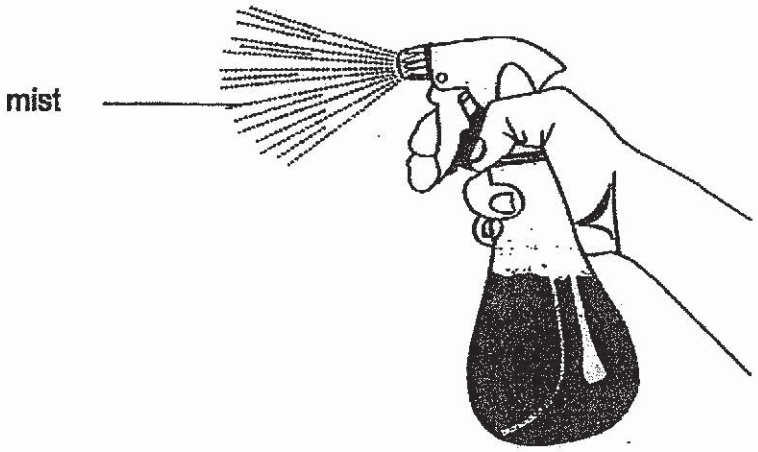
35. Amin sprays himself with mist to cool himself on a hot day.



(a) Explain how spraying mist on himself helps him to cool down on a hot day. [1]

_____

_____

(b) Why does Amin feel colder when he is spraying mist on himself on a windy day? [1]

_____

_____

(c) After Amin stepped out from an air-conditioned bus, he found tiny water droplets on his spectacle lens. Explain how the water droplets were formed. [2]

_____

_____

Score	
	4

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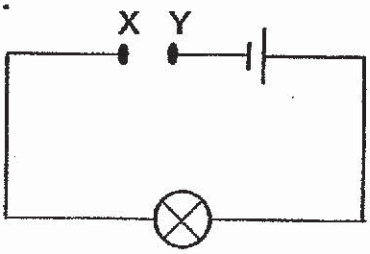
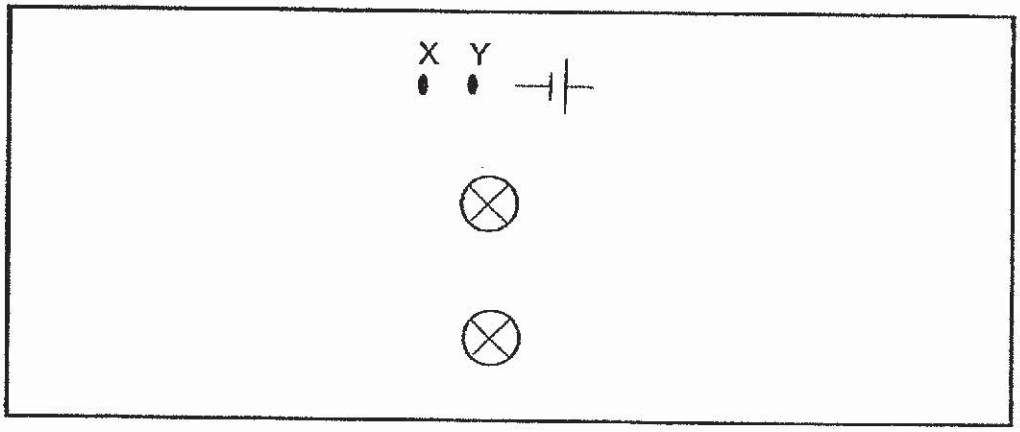
36. The diagram below shows a circuit. The table shows what happened to the light bulb when three different rods, P, Q and R, were connected one at a time to the contact points X and Y.



Rod that connects X and Y	Did the bulb light up?
P	Yes
Q	No
R	Yes

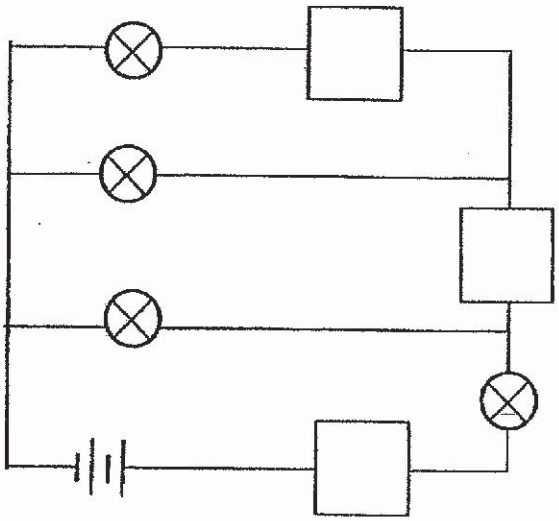
(a) The diagram below shows another circuit with two bulbs. The same results were obtained when rods P, Q and R were used. The brightness of the each bulb remained the same for both circuits.

Based on the information above, draw wires in the circuit diagram below to show how the two bulbs were connected. [1]



(b) In another experiment, rods P, Q and R were placed at different positions in the circuit, as shown below.

Fill in the boxes below with the letters P, Q and R to show the correct positions of the rods such that only two bulbs will light up. [2]



Score	3

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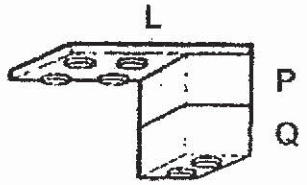
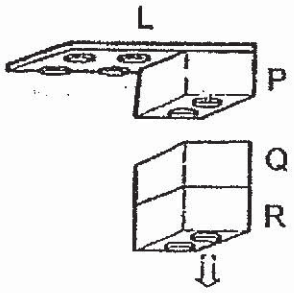
37. David attached Lego blocks Q and P to block L as shown in diagram below.



(a) Name the force that is acting on the blocks that enables them to be held together. [1]

_____

David added another block R to Q and both blocks R and Q fell as shown below.

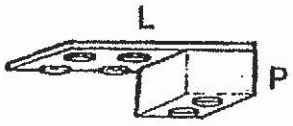


(b) Explain, in terms of forces, why the two blocks R and Q fell. [1]

_____

_____

(c) David wanted to separate block P from block L in the diagram below more easily.



David's friend suggested that he should smear oil on all exposed surfaces of block P and then pull P away from L.

Do you agree with his friend's suggestion? Explain your answer. [1]

_____

_____

Score	
	3

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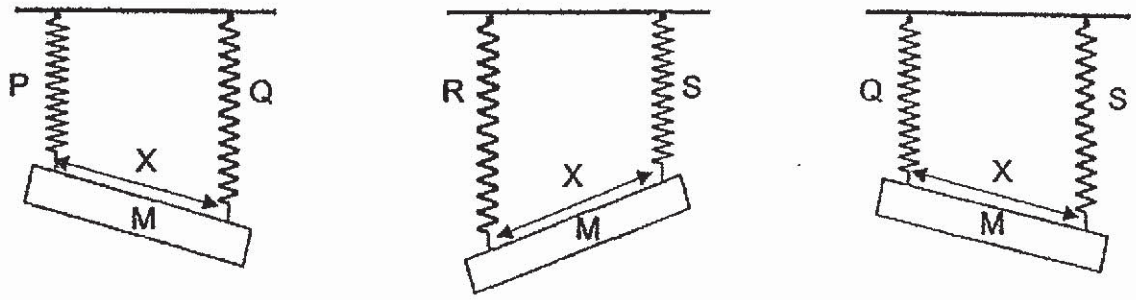
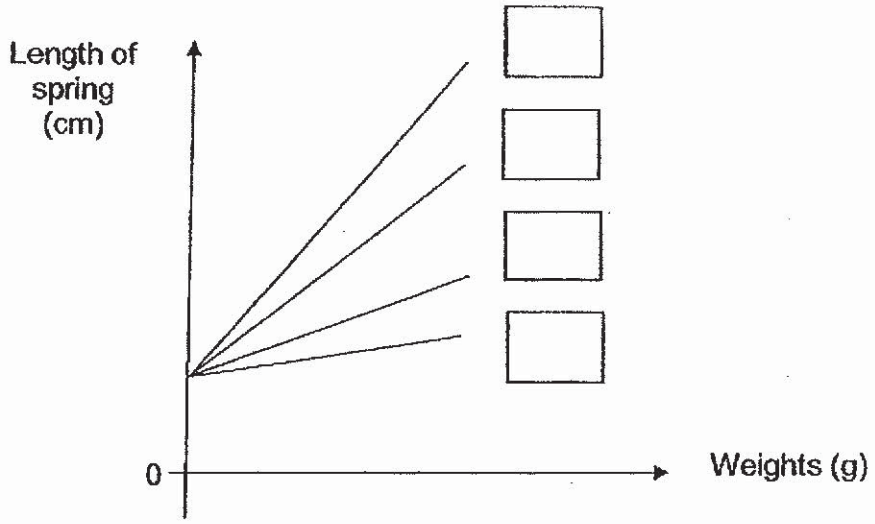
38. Melvin conducted an experiment using four springs, P, Q, R and S, of equal length.

He hung a metal rod M from two of the springs at an equal distance, X cm, apart. The results of his experiment are shown below.



(a) Based on the results of the experiment, fill in the boxes with P, Q, R and S, next to the lines on the graph below that best represent the respective springs. [2]



Continue on next page

Score	
	2

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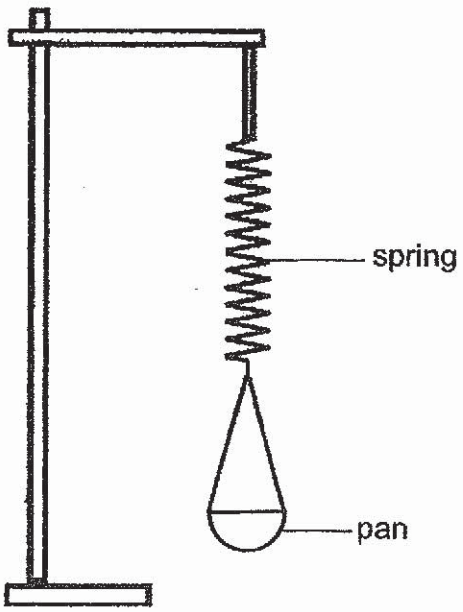
Continued from previous page

In another experiment, Melvin used the set-up below to compare the mass of two pears which are of similar size.



(b) His mother suggested that spring R is the most suitable to be used for his set-up. Give a reason for her suggestion. [1]

_____

_____

Score	
	1

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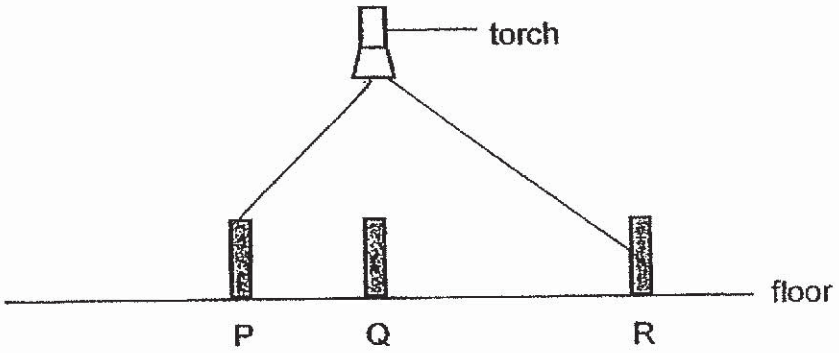
39. The diagram below shows an experiment set-up using a torch and three wooden sticks, P, Q and R. The length of the shadow cast by each stick on the floor was measured.



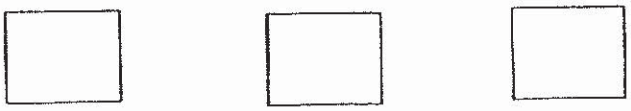
(a) Two properties of light cause shadows to be formed. One of these properties is light is blocked by opaque objects. State the other property of light. [1]

_____

_____

(b) Arrange the length of the shadow cast by sticks P, Q and R, starting with the longest shadow. [1]

Longest shadow → Shortest shadow



(c) Using wooden stick P and without changing its position, suggest one way to increase the length of the shadow cast by it. [1]

_____

_____

Score 3

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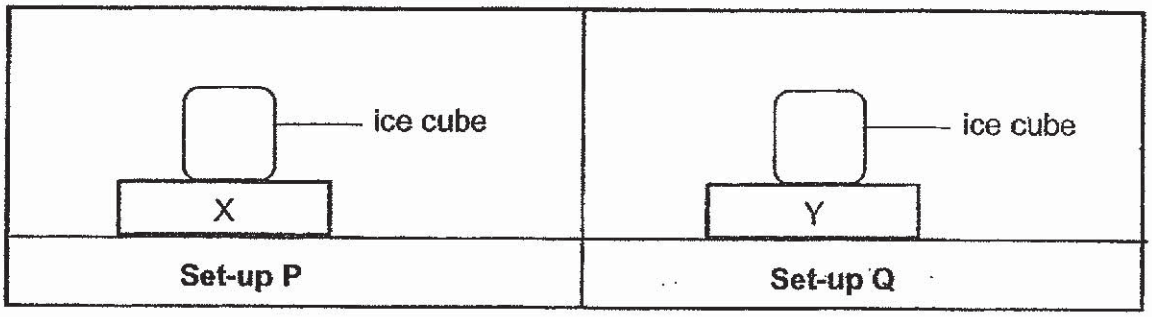
40. **The diagrams below show two identical ice cubes placed on blocks X and Y at room temperature. Blocks X and Y are made of different materials.**



(a) It was observed that the ice cube on block X took a shorter time to melt completely than that on block Y.

(i) Based on the results above, what can be concluded about the property of X and Y? [1]

_____

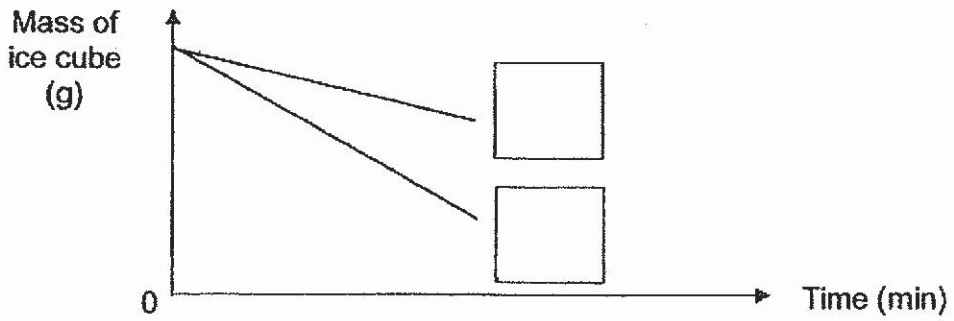
(ii) Explain your answer in (a)(i). [1]

_____

_____

(b) The mass of each ice cube was recorded over a period of time. The results are shown below.

Fill in the boxes with P and Q to show the correct results for each set-up. [1]



Score	
	3

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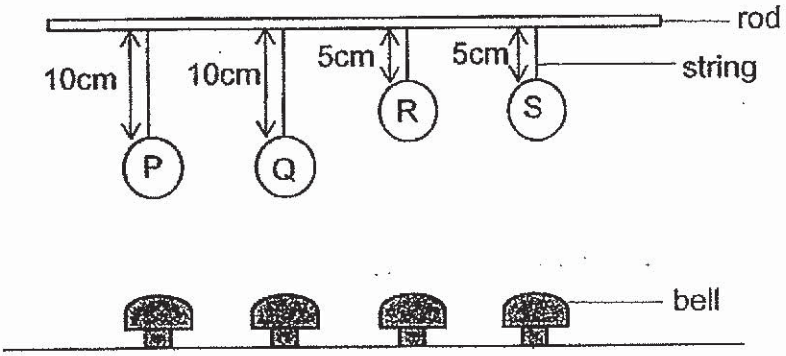
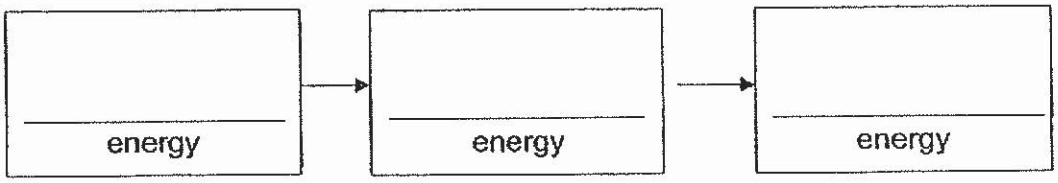
41. Jenny hung four balls, P, Q, R and S, above identical bells as shown below. The mass of balls P and R, was 100g each and the mass of balls Q and S was 200g each.



When each string was cut, the ball dropped and hit the bell below it.

(a) Fill in the boxes below to show the main energy conversion when the string was cut. [1]



(hanging ball) (falling ball) (ball hit the bell)

(b) Which ball, P, Q, R or S, would produce the loudest and softest sound when it hit the bell? [1]

(i) Loudest sound : Ball _____

(ii) Softest sound : Ball _____

(c) Explain your answer for (b)(i). [2]

_____

_____

(d) Jenny wanted to find out if the height of the ball will affect the loudness of the bell. Which two balls should she use? [1]

_____

- END OF PAPER -

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SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	2	4	2	3	4	2	3	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	4	4	2	2	1	3	4	4	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	4	3	1	1	2	2	4		

SECTION B

Q29)	a) In Box P, there was the presence of water making the environment moist and the surrounding temperature is at 35℃ which would provide warmth and allow mould to grow. b) Spores of fungi were already present in the box before sealing the box. c) The heat from the sun would dry up her bag from all the moisture.
Q30)	a) To increase the chance of at least one sperm fertilizing the egg. b) (i) S (ii) Q c) F d) It has large petals
Q31)	a) (i) lungs (ii) Rib-cage b) The balloon will inflate.

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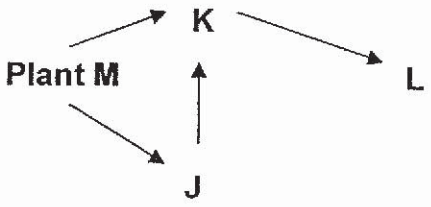
	c) Inhaled air has more oxygen, less carbon dioxide, less moisture and more dust than air leaving the lungs.
Q32)	a)  b) (i) False (ii) True (iii) False (iv) False
Q33)	a) There is more contact surface area of X with water, more heat is conducted from X to the water faster. b) Less contact surface area of the body with the water, hence the body loss heat to the water slower.
Q34)	a) P and Q b) Both of the containers have the same mass of 50g. c) The water occupies the spaces in between the marbles and displaces the air.
Q35)	a) The mist contains tiny water droplets, his body would lose heat to the mist and evaporate to form water vapour, reducing the amount of heat in his body. Water droplets gain heat from the body to evaporate. b) The mist on Amin would gain heat from his body at a faster rate from the cooler surrounding, due to the wind and evaporate to form water vapour, hence more heat is removed from his body. c) The warmer water vapour in the surrounding air came into contact with the cooler surface of Amin's spectacle lens, lost heat and condense to form tiny water droplets on his spectacle lens.

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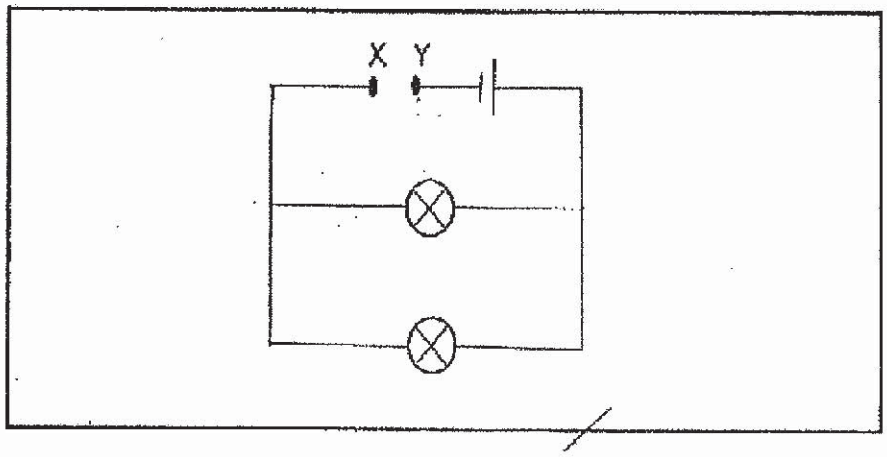
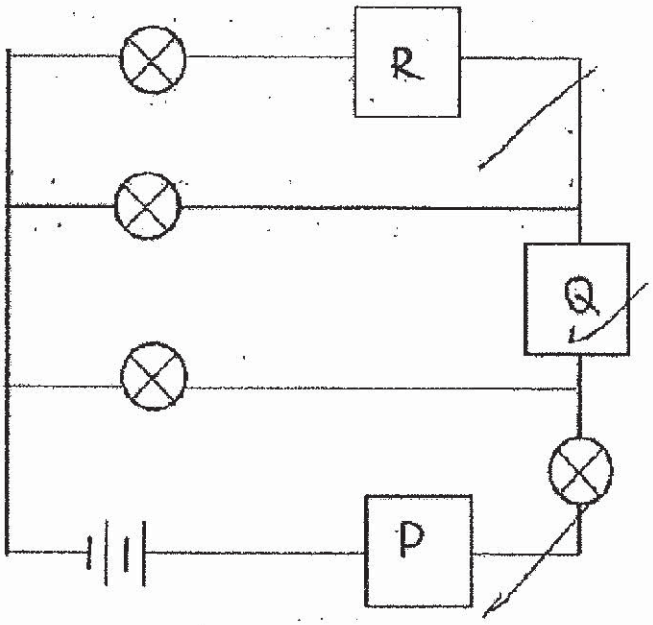
Q36)	a)  b) 
Q37)	a) Frictional force. b) The gravitational force pulling the two blocks down is greater than the frictional force acting between blocks P and Q. c) No, the oil reduces the frictional force between his hands and block P so he cannot have a good grip on it.
Q38)	a) R S Q P

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	b) Spring R. It extends the most when the same weight is hung on the springs.
Q39)	a) Light travels in a straight line. b) R – P – Q c) Move the torch further from P to the right.
Q40)	a) (i) X is a better conductor of heat than Y. (ii) X conduct heat from the surrounding to the ice faster. b) Q P
Q41)	a) Gravitational potential – kinetic – sound b) (i) S (ii) P c) It has the most gravitational potential energy which could be converted to kinetic energy and then to most sound energy. d) Q and S

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RIVER VALLEY PRIMARY SCHOOL
2019 PRELIMINARY EXAMINATION
PRIMARY 6

STANDARD SCIENCE

(BOOKLET A)

Name : _____ ( ) Date : 27 August (Tue)

Class : P6 _____ Time: 1 hour 45 min

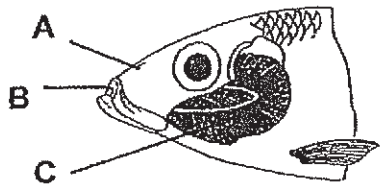
INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the Optical Answer Sheet (OAS).
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet A is 56 marks.

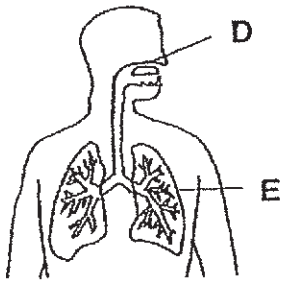
Section A (56 marks)

For each question 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. The diagrams below show the respiratory systems of two organisms.



Organism X



Organism Y

Which parts of organisms X and Y allow the exchange of gases to take place?

	Organism X	Organism Y
(1)	A	D
(2)	C	D
(3)	C	E
(4)	B	E

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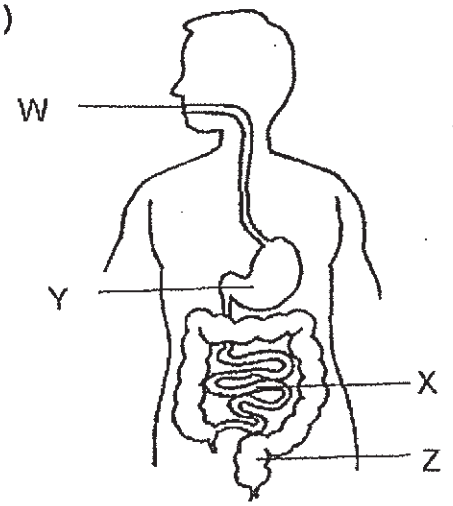
2. Study the table below.

Function	Parts of the digestive system			
	W	X	Y	Z
Food enters the bloodstream				√
Food is mixed with digestive juices	√		√	√
Water is removed from food		√		

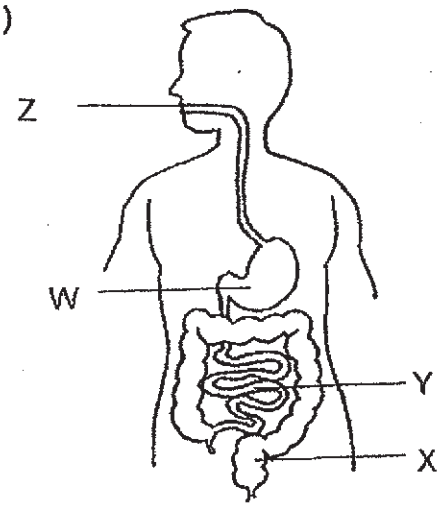
Key
√ : present

Which of the following correctly shows the parts labelled W, X, Y and Z?

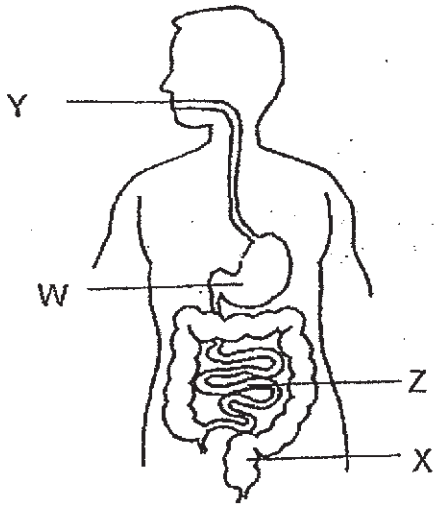
(1)



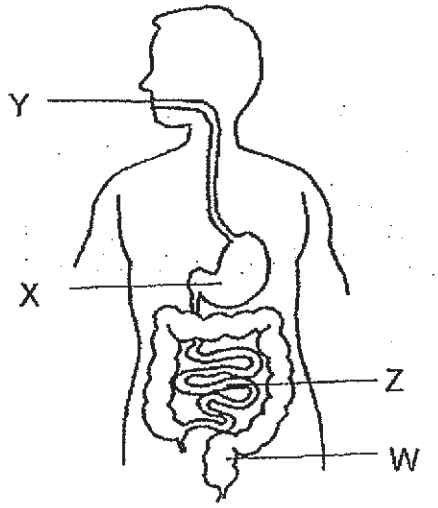
(2)



(3)



(4)



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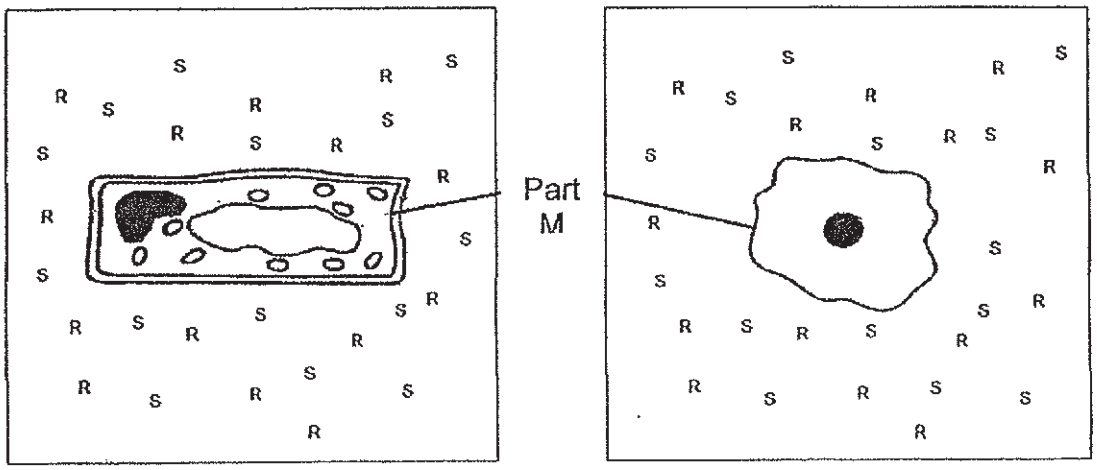
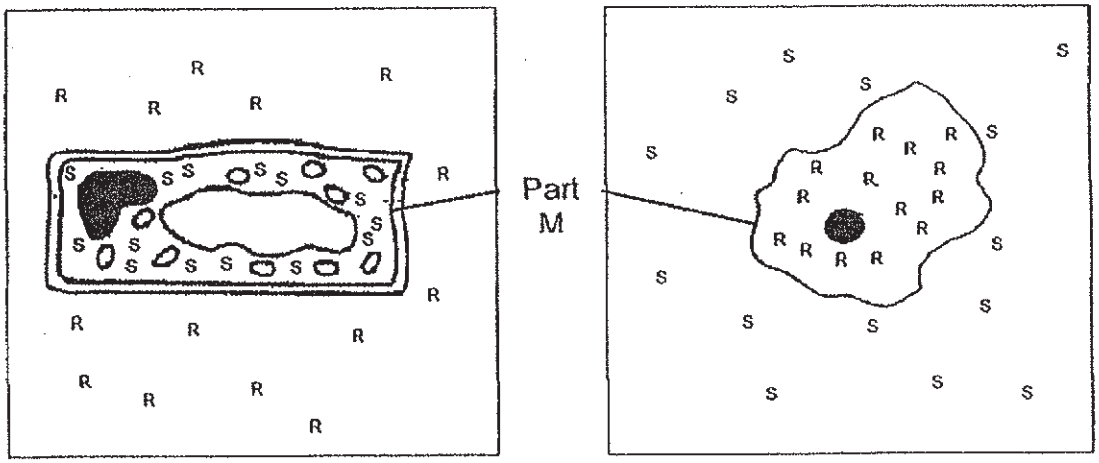
3. Jason placed two cells, X and Y, into separate containers. Each container contains equal amounts of substances R and S.



Cell X Cell Y

The diagram below shows what happened to the two cells after an hour.



Cell X Cell Y

What can Jason conclude about Part M?

(1) It gives the cell a shape.

(2) It controls all activities in the cell.

(3) It controls the type of substances that leave the cell.

(4) It controls the type of substances that enter the cell.

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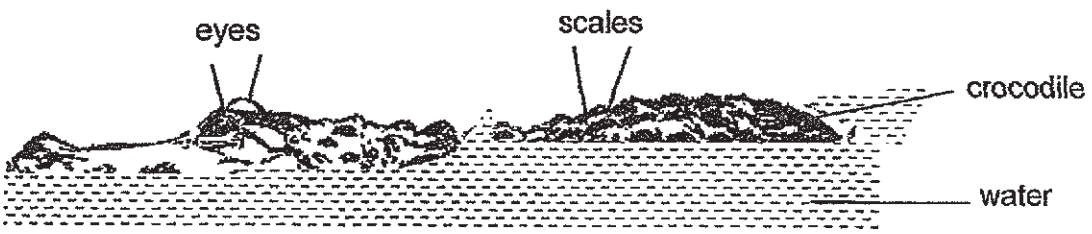
4. The picture below shows a crocodile that is in the water, waiting to catch its prey.



Which of the following correctly describes the crocodile's behavioural and structural adaptations in catching its prey?

	Behavioural Adaptation	Structural Adaptation
(1)	Scales as outer covering	Staying still in the water
(2)	Staying still in the water	Eyes on top of its head
(3)	Eyes on top of its head	Scales as outer covering
(4)	Staying still in the water	Scales as outer covering

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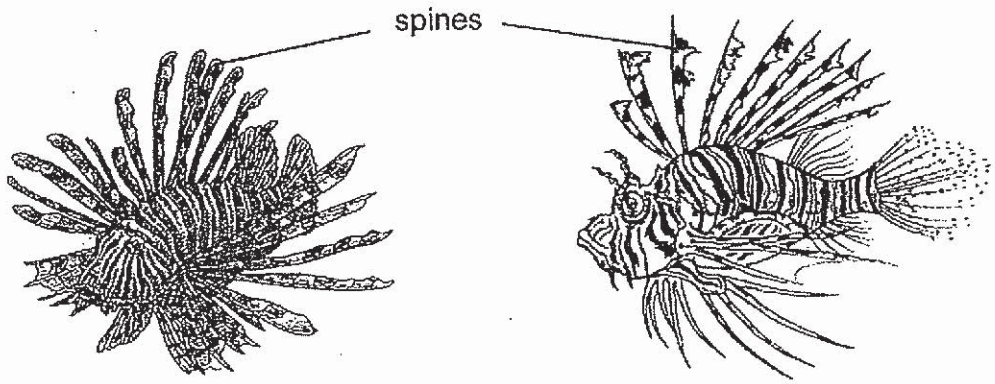
5. Observe Fish X and Fish Y as shown below. Fish X is non-poisonous and Fish Y is poisonous. Fish Y has poisonous spines on its back. Predators avoid Fish X as they mistake them for Fish Y.



Fish X (non-poisonous) Fish Y (poisonous)

Which of the following statements describe Fish X and Fish Y?

A: The spines on Fish X warn predators to stay away.
B: Fish X and Fish Y hunt for the same type of animal for food.
C: The spines on Fish Y allows it to move faster in the water.
D: The spines on Fish X and Fish Y are a form of structural adaptation.

(1) A and B only
(2) A and D only
(3) C and D only
(4) B and C only

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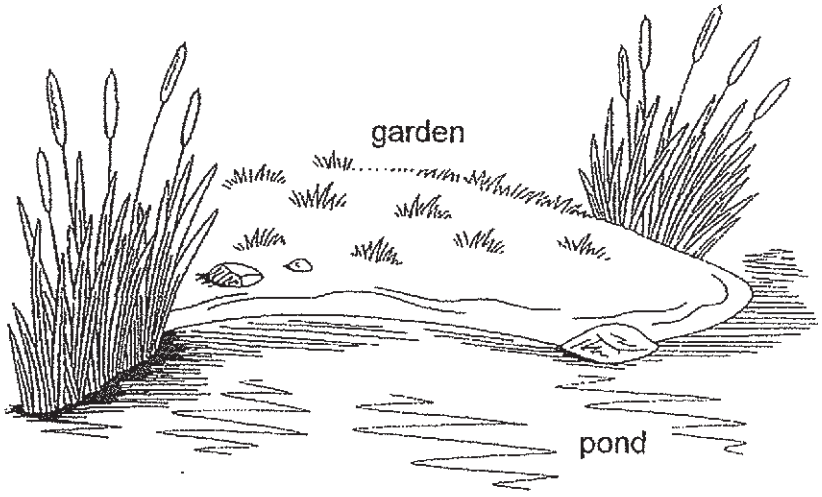
6. Meiling built a pond beside a garden.



She observed three types of animals - frog, mosquito and butterfly living in the garden. The number of days needed for their eggs to hatch is shown below.

Characteristic	frog	mosquito	butterfly
Number of days needed for eggs to hatch	6	2	4

On Day 5, what would Daniel most likely find in the pond?

(1) Mosquito eggs and frog larvae
(2) Mosquito larvae and frog eggs
(3) Mosquito eggs, frog larvae and butterfly eggs
(4) Mosquito larvae, frog eggs and butterfly larvae

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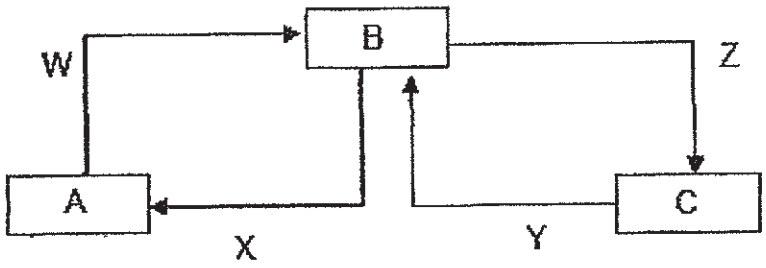
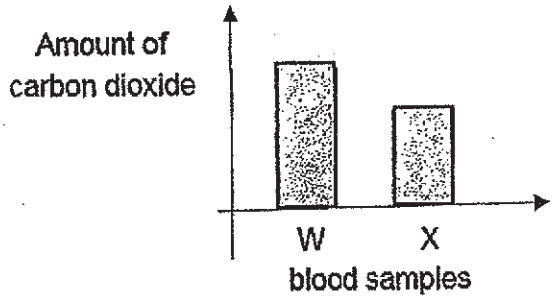
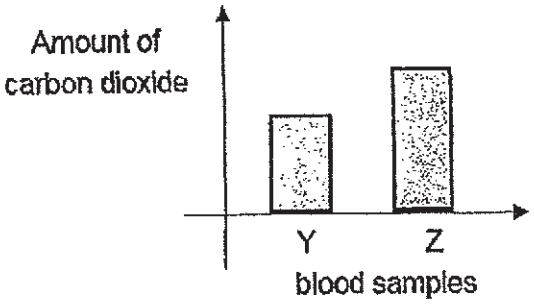
7. The diagram shows the direction of blood flow in parts of the human circulatory system.



The same amount of blood was taken from W, X, Y and Z. The charts below show the comparison of the amount of carbon dioxide in the blood samples.





What are A, B and C?

	A	B	C
(1)	lungs	heart	other parts of the body
(2)	heart	lungs	other parts of the body
(3)	other parts of the body	lungs	heart
(4)	other parts of the body	heart	lungs

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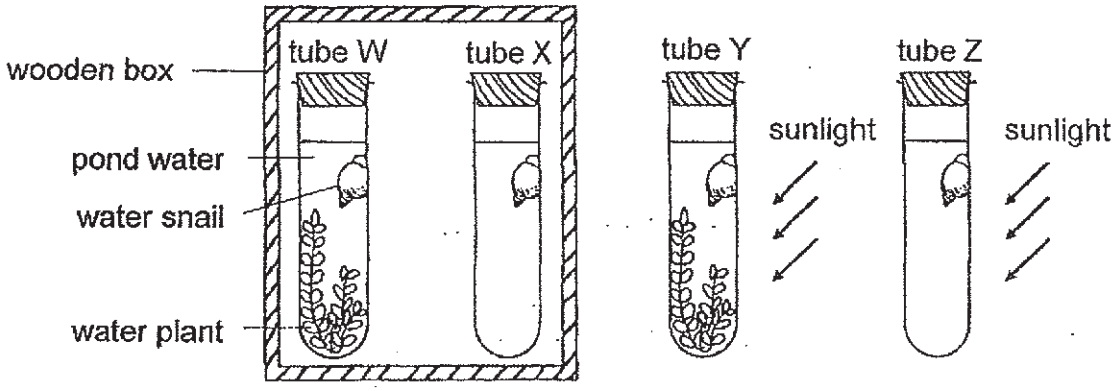
8. The diagram below shows four sealed test-tubes, W, X, Y and Z, placed either in a wooden box or under the sunlight. Each test-tube contained the same amount of pond water.



Which of the following test tubes,W, X,Y or Z , shows the most oxygen and carbon dioxide after three hours?

	Most oxygen	Most carbon dioxide
(1)	X	Y
(2)	Y	W
(3)	Z	W
(4)	Y	X

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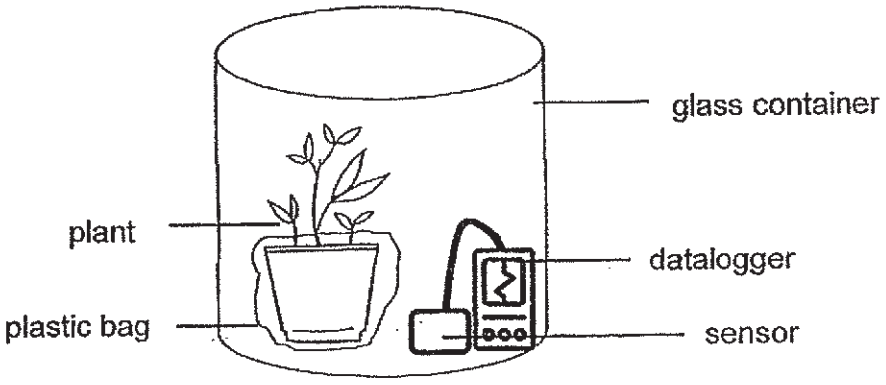
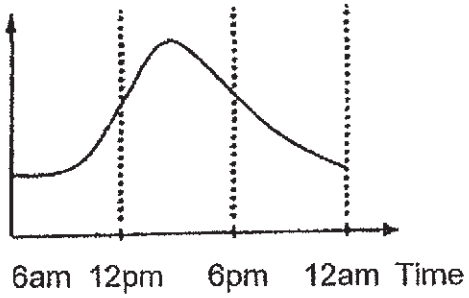
9. Timothy placed a set-up in the field as shown. The datalogger detects the amount of oxygen in the sealed glass container. The results are recorded over a period of 18 hours.



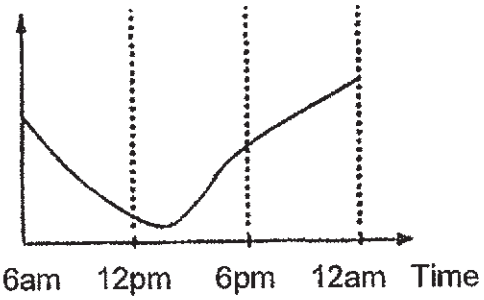
Setup

Which of the following graphs shows the amount of oxygen detected?

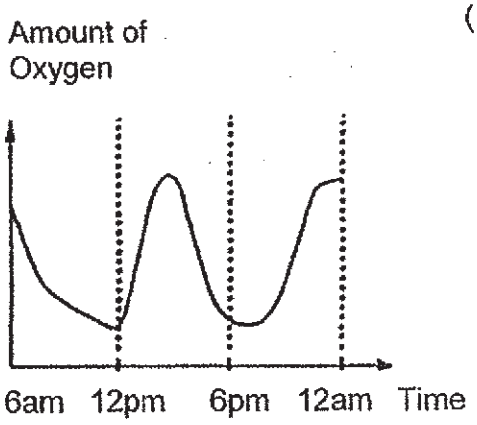
(1)



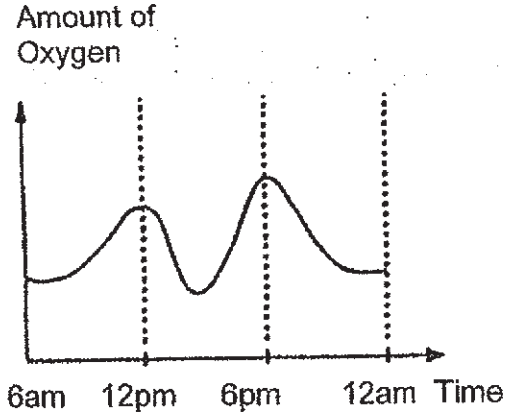
(2)



(3)



(4)



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10. Samu observed some organisms at different places in his school. He recorded his observations in the table below.

Organisms living and reproducing at		
fish tank	pond	field
2 gold fish	3 tadpoles 2 frogs 2 hydrilla plants	3 caterpillars 2 butterflies

Based on the table above, which statement is correct?

(1) There is 1 population in the field.

(2) There are 3 organisms in the pond.

(3) There are 14 populations altogether.

(4) There are 4 communities in his school.

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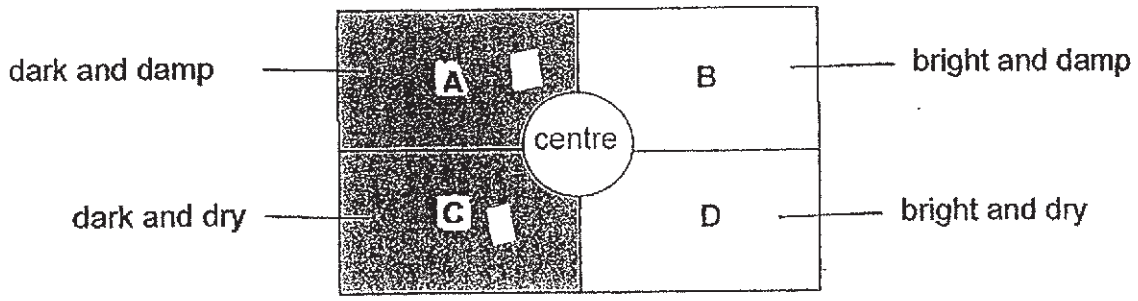
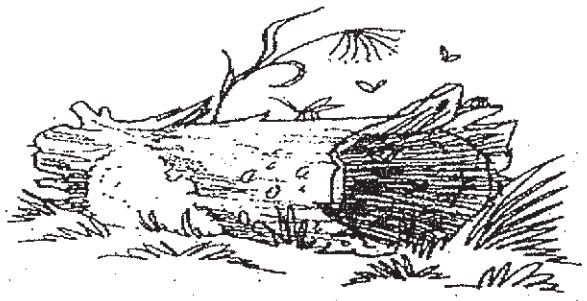
11. Nancy conducted an investigation to find out about four organisms, P, Q, R and S. She divided a rectangular tray into four sections, A, B, C and D, and placed the same number of organisms at the centre of the tray.



After thirty minutes, the number of organisms found in each section of the tray was recorded below.

Organism	Number of organisms in each section			
	A	B	C	D
P	3	0	27	0
Q	28	1	1	0
R	0	2	0	28
S	0	29	0	1



Which organism(s) is/are **most likely** to be found inside a rotting tree trunk habitat as shown above?

(1) P only
(2) Q only
(3) Q and R only
(4) R and S only

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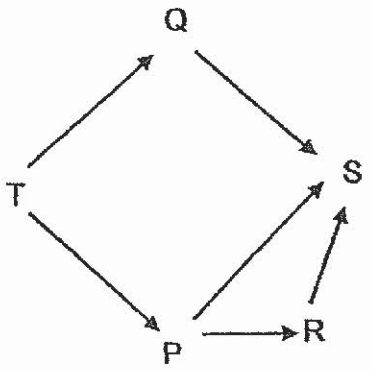
12. The diagram below shows a food web. P, Q, R, S and T represent different living things.



Which of the following is a correct conclusion?

(1) S is a decomposer.
(2) P is both a predator and a prey.
(3) Energy from the Sun is transferred to T, Q and S only.
(4) When the number of S decreases, the number of Q increases.

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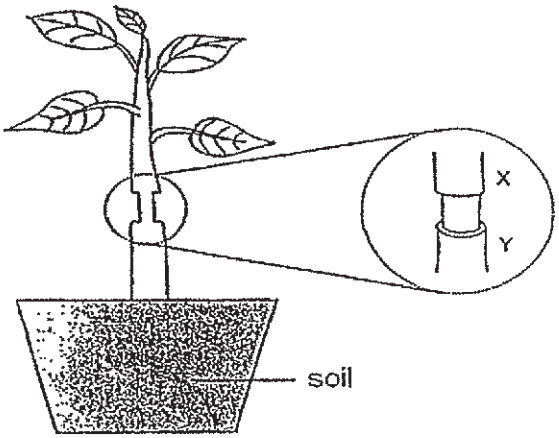
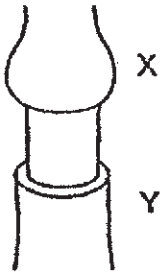
13. The diagram shows a plant. The outer layer of the stem between X and Y is removed.



The diagram below shows the stem after a few days.



Which statement explains why part X swell up after a few days?

(1) The food carrying tubes were removed.

(2) The water carrying tubes were removed.

(3) The leaves could not photosynthesize.

(4) The roots could not absorb water for the plant.

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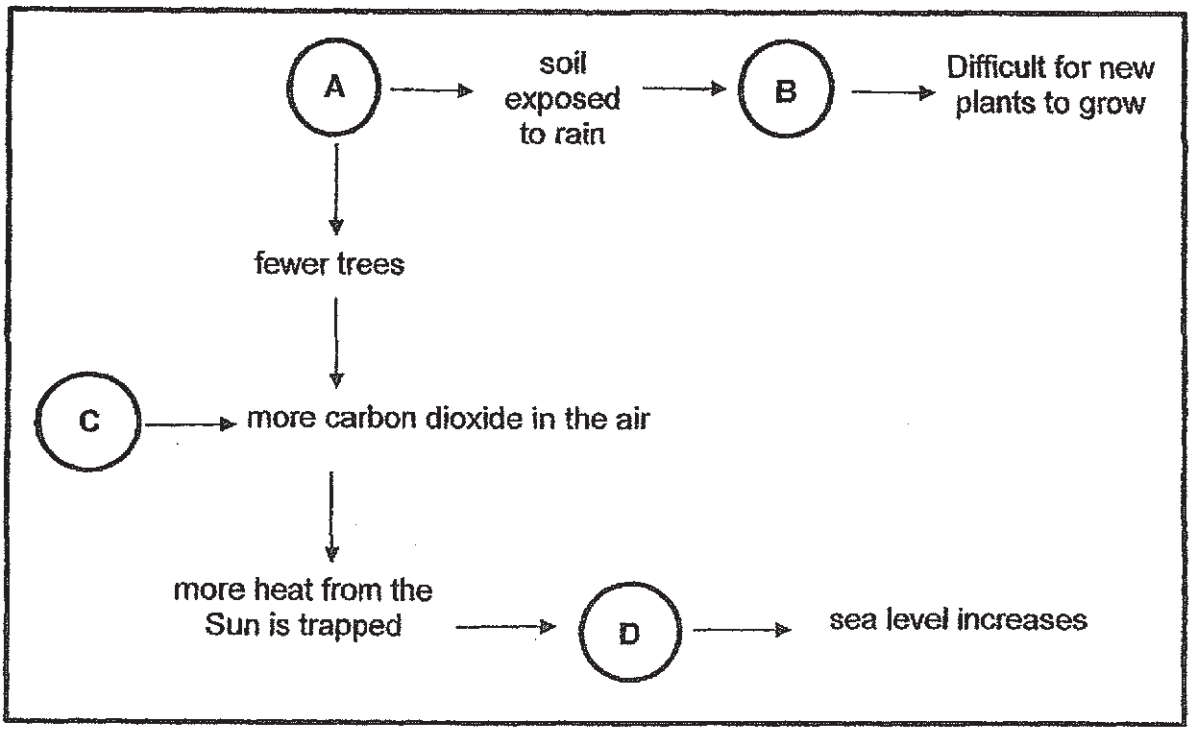
14. The diagram below is a representation of human's activities and the effects on the environment.



What do A, B, C and D represent?

	A	B	C	D
(1)	soil erosion	burning fossil fuels	deforestation	global warming
(2)	deforestation	soil erosion	global warming	burning fossil fuels
(3)	soil erosion	deforestation	global warming	burning fossil fuels
(4)	deforestation	soil erosion	burning fossil fuels	global warming

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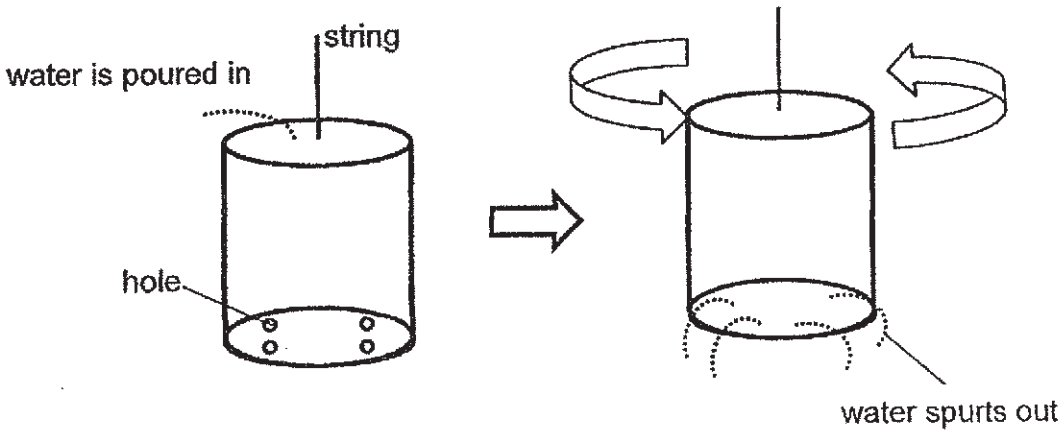
15. Minnie made holes at the base of a can as shown in the diagram below. The can is hung on a string. Water is then poured into the can from the top. As water spurts out of the can, it starts to spin.



The can spins because _____.

(1) potential energy of the water is converted to kinetic energy of the can
(2) kinetic energy of the water is converted to potential energy in the can
(3) kinetic energy of the water is converted to kinetic energy of the can
(4) potential energy of the water is converted to potential energy of the can

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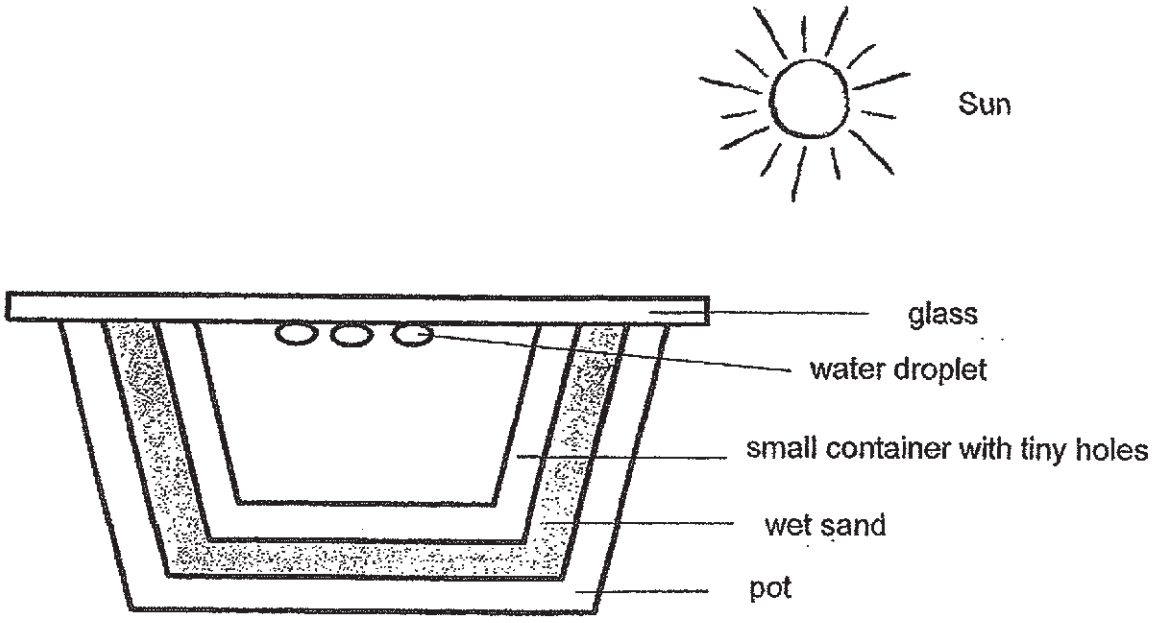
16. Maria set up the experiment as shown below.



She placed the set-up in a hot place and water droplets can be seen.

Which of the following statements about the set up are true?

A: water in the wet sand lose heat
B: water in the wet sand evaporated
C: water vapour condensed on the glass

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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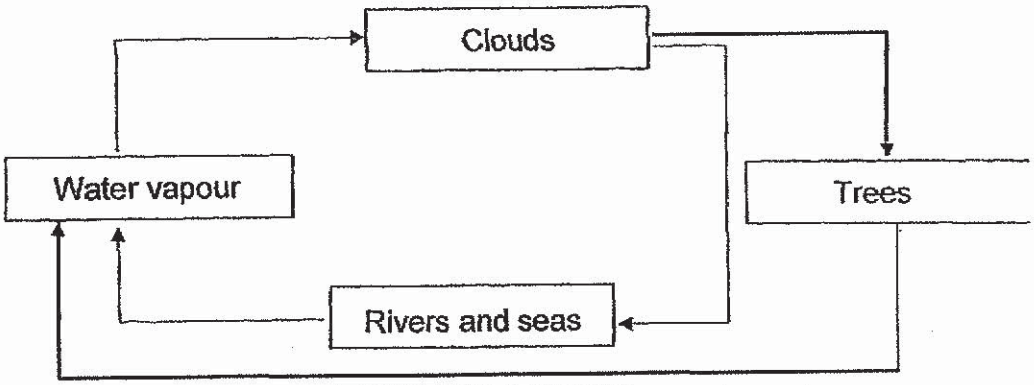
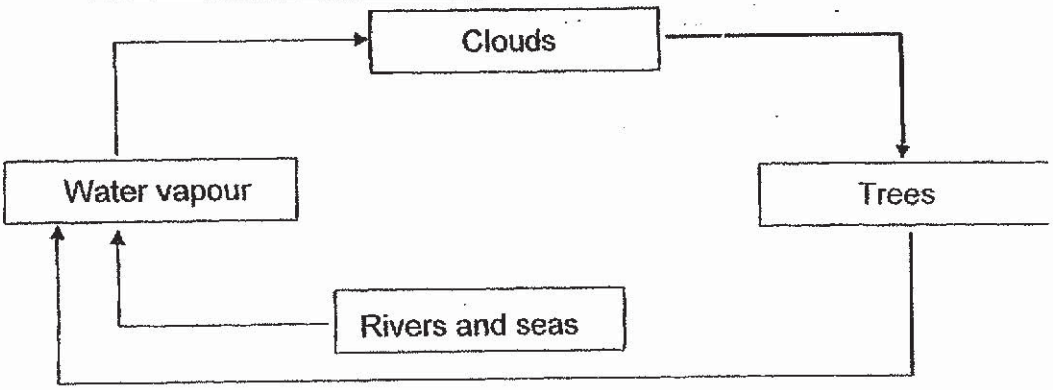
17. Which of the following correctly shows how trees play a part in the water cycle?

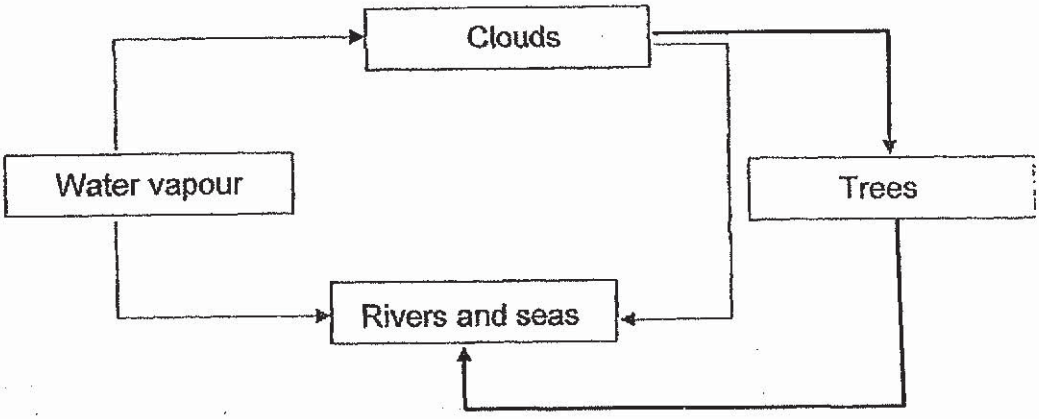
(1)



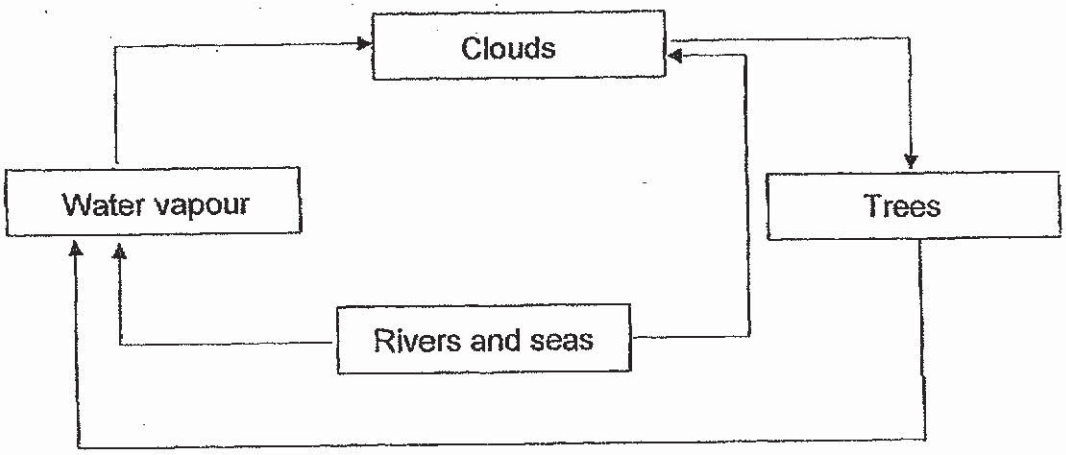
(2)



(3)



(4)



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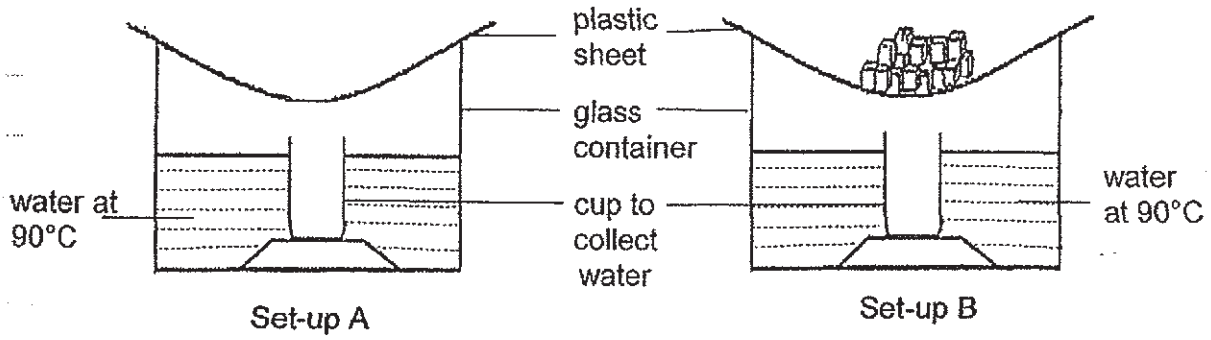
18. Ben placed two similar glass containers with equal amounts of water at 90°C at the same location.



Based on the set-up, Ben wants to find out if _____.

(1) condensation occurs at 90°C
(2) ice melts at a higher temperature
(3) rate of condensation increases with ice
(4) rate of evaporation decreases with ice

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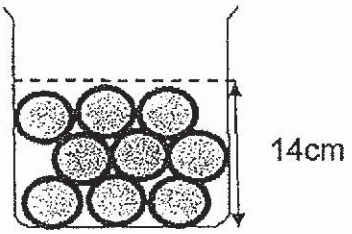
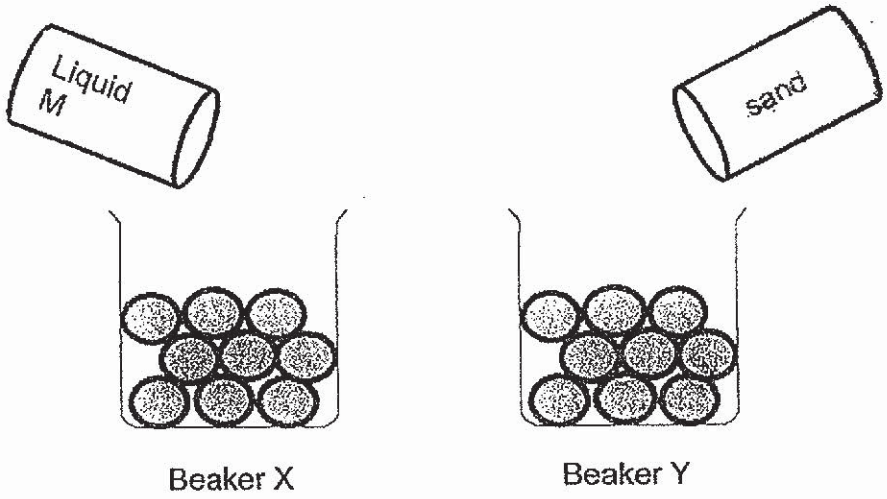
19. Becky was given a beaker with some balls. She poured 500 cm^3 of water into the beaker. She measured the height of the water to be at 14cm as shown in the diagram belom.



Becky prepared similar beakers, X and Y, with the same number identical balls. She added 500 cm^3 of Liquid M into beaker X and 500 cm^3 of sand into beakers Y .



Which of the following could be the final height of Liquid M and the sand in beakers X and Y?

	Beaker X	Beaker Y
(1)	15 cm	13 cm
(2)	14 cm	14 cm
(3)	14 cm	15 cm
(4)	15 cm	14 cm

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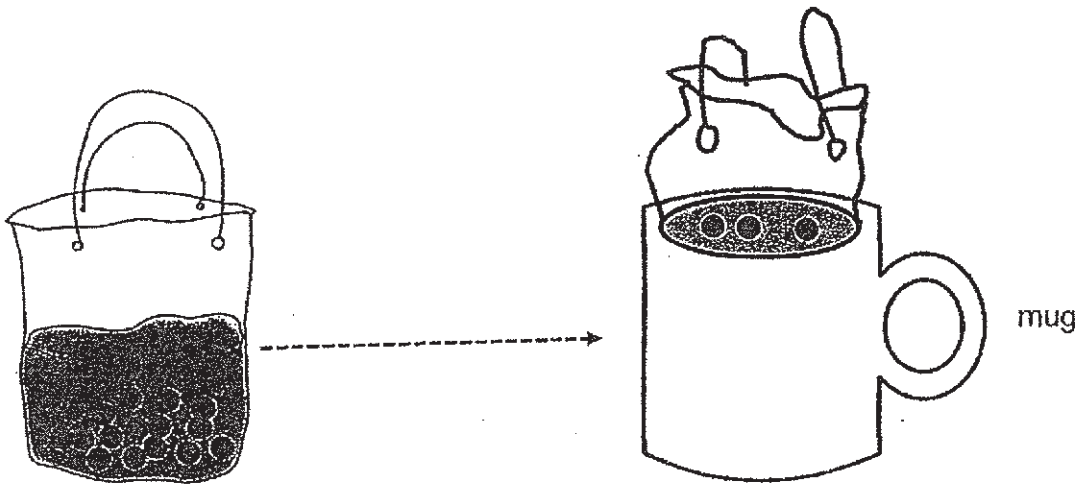
20. Dinesh bought a packet of milk tea with pearls. He placed it into a mug without overflowing as shown in the diagram below.



A packet of milk tea with pearls

Which of the following statements about the packet of milk tea are correct?

A: Both the shape and the volume of the pearls did not change.
B: Both the shape and the volume of the milk tea changed.
C: The volume of the milk tea did not change.
D: The shape of the milk tea did not change.

(1) A and C
(2) A and D
(3) B and C
(4) B and D

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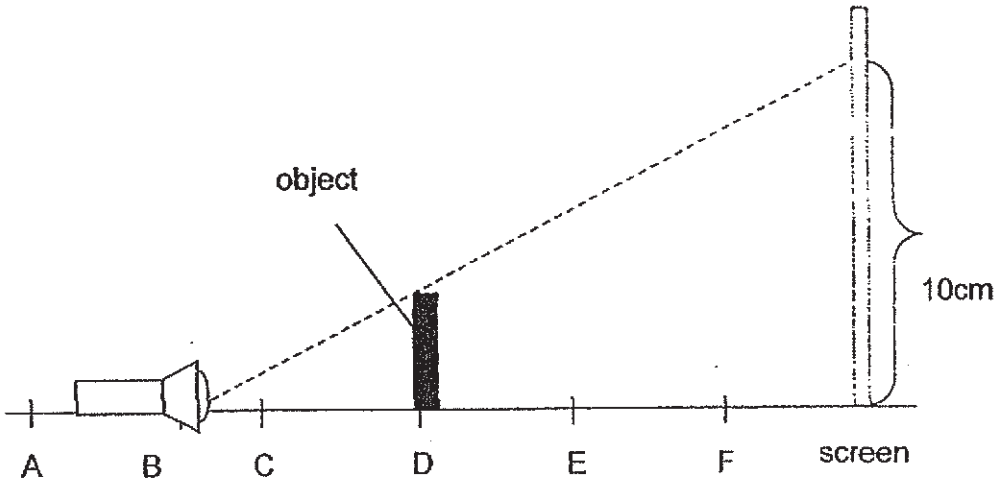
21. Jenna carried out an experiment to find out if the position of an object would affect the length of its shadow on the screen. The experiment was set up as shown in the diagram below.



Jenna observed that when she placed the torch at Position B, the object makes a shadow of 10cm. She then placed the torch at different positions and recorded her findings in the table below.

Which set of data is correct?

	Position of torch	Position of Object	Length of shadow
(1)	A	D	11cm
(2)	B	F	6cm
(3)	C	D	8cm
(4)	B	C	9cm

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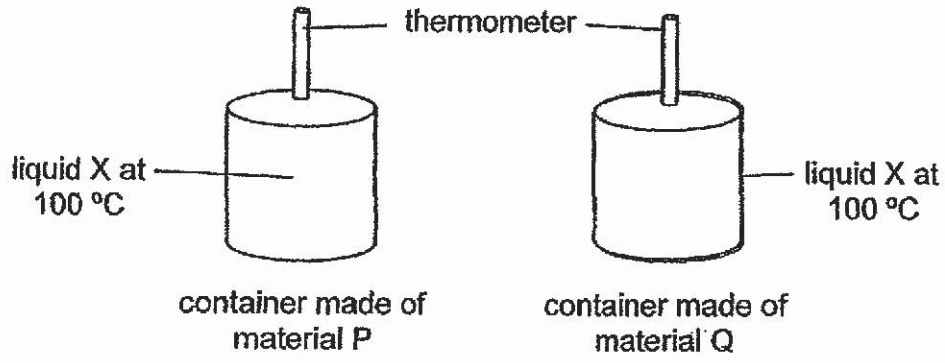
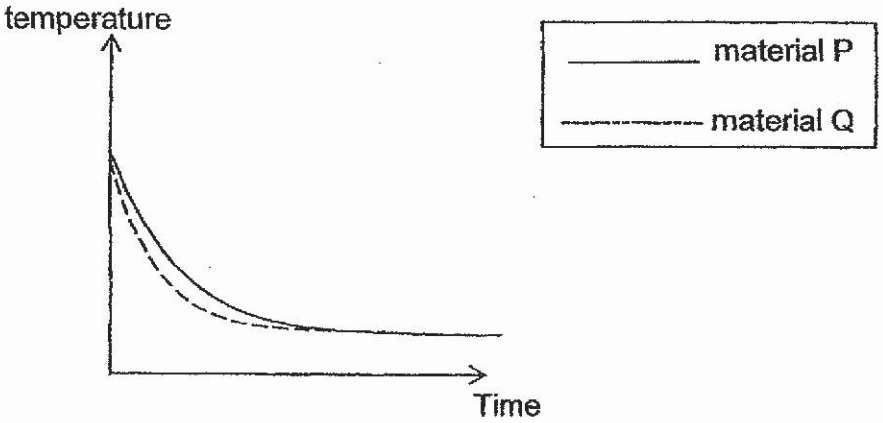
22. Marie has two containers made of different materials. She filled the containers with the same amount of liquid X.



She measured the temperature of liquid X in the two containers over some time and recorded the results in the graph below.



Which material(s) should she choose to keep cold drinks cool and a hot drink warm for the longest time?

	To keep cold drinks cool	To keep hot drinks warm
(1)	P	P
(2)	Q	Q
(3)	P	Q
(4)	Q	P

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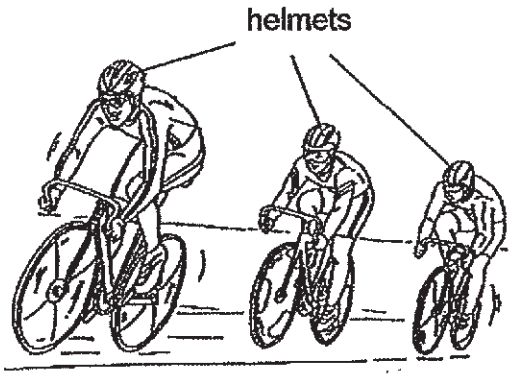
23. Cyclists wear helmets to protect their heads when they cycle.



Based on the properties shown below, which material is the most suitable for the helmet to keep cyclists safe?

	Material	Property			
		strong	smooth	flexible	ability to float
(1)	A	√	X	√	X
(2)	B	√	√	X	X
(3)	C	√	X	X	√
(4)	D	X	√	√	√

Key
√ : yes
X : no

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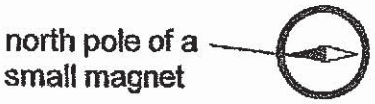
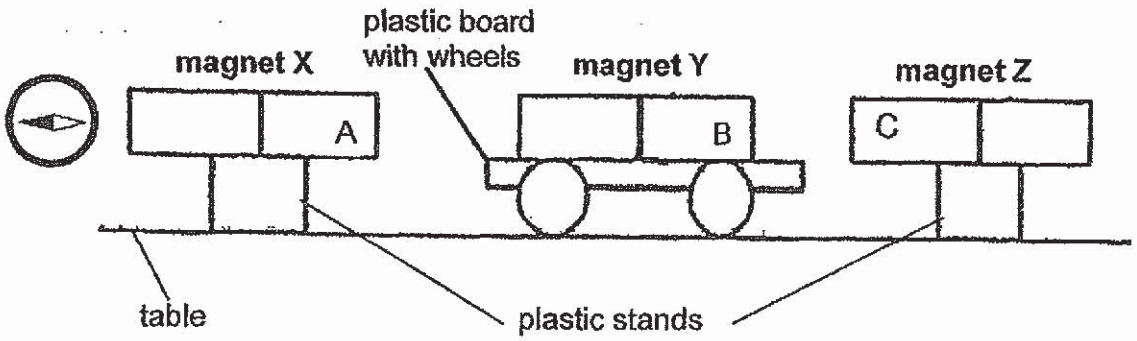
24. A compass has a small magnet that can rotate freely as shown.



Penny prepared the set-up as shown below. Magnets X and Z were placed on plastic stands, while magnet Y was placed on a plastic board with wheels. Penny pushed magnet Y towards one of the magnets and observed that magnet Y moved between the two magnets continuously.



Which of the following statements is correct?

(1) Pole A of magnet X repels pole C of magnet Z.
(2) Pole B of magnet Y attracts magnet Z.
(3) Pole C of magnet Z is a north pole.
(4) Pole C of magnet Z is a south pole.

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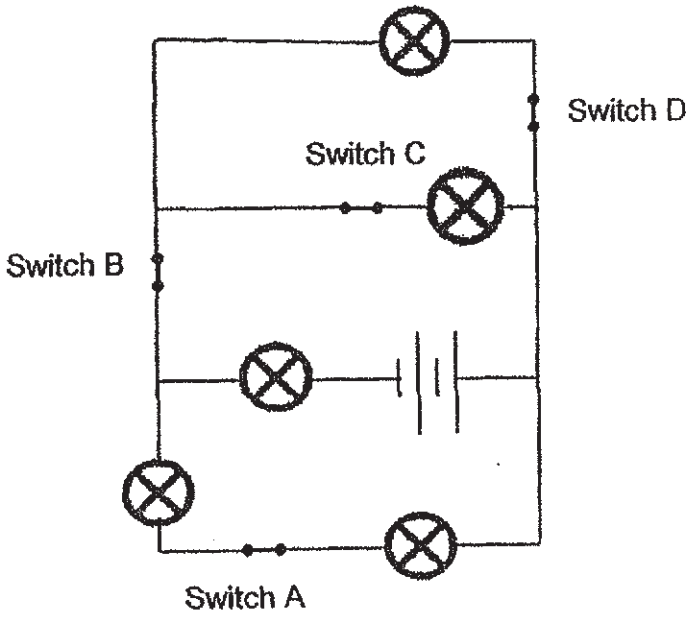
25. Colin set up a circuit as shown below.



All the bulbs were lit when all the four switches were closed. He wanted the **most** number of bulbs to light up when only one switch is open. Which switch should he open?

(1) A or B
(2) B or D
(3) A or C
(4) C or D

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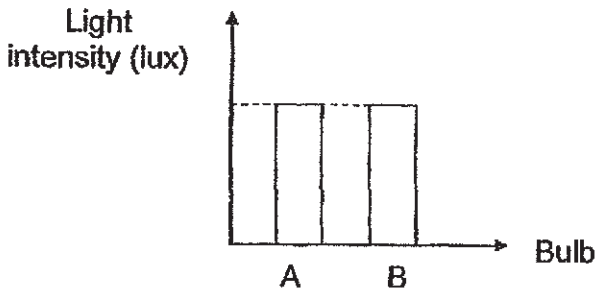
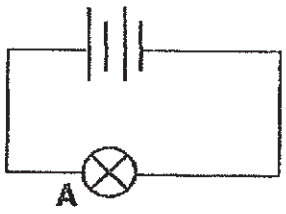
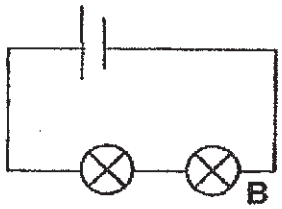
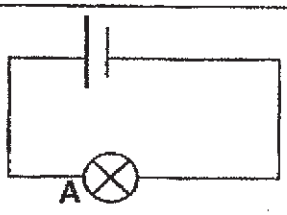
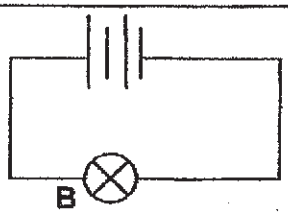
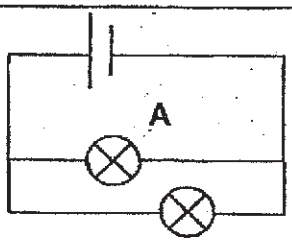
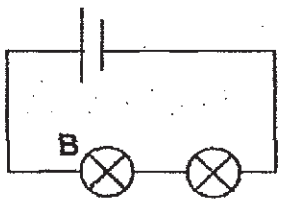
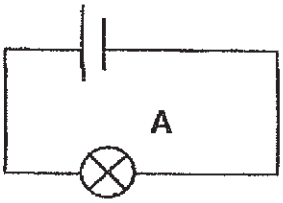
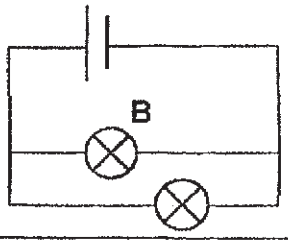
26. Varun constructed 2 electrical circuits, X and Y. He then measured the intensity of Bulb A from Circuit X and Bulb B from Circuit Y. He recorded the intensity of the bulbs as shown.



Which one of the following correctly matches the arrangement of the circuit with the intensity of light?

	Circuit X	Circuit Y
(1)		
(2)		
(3)		
(4)		

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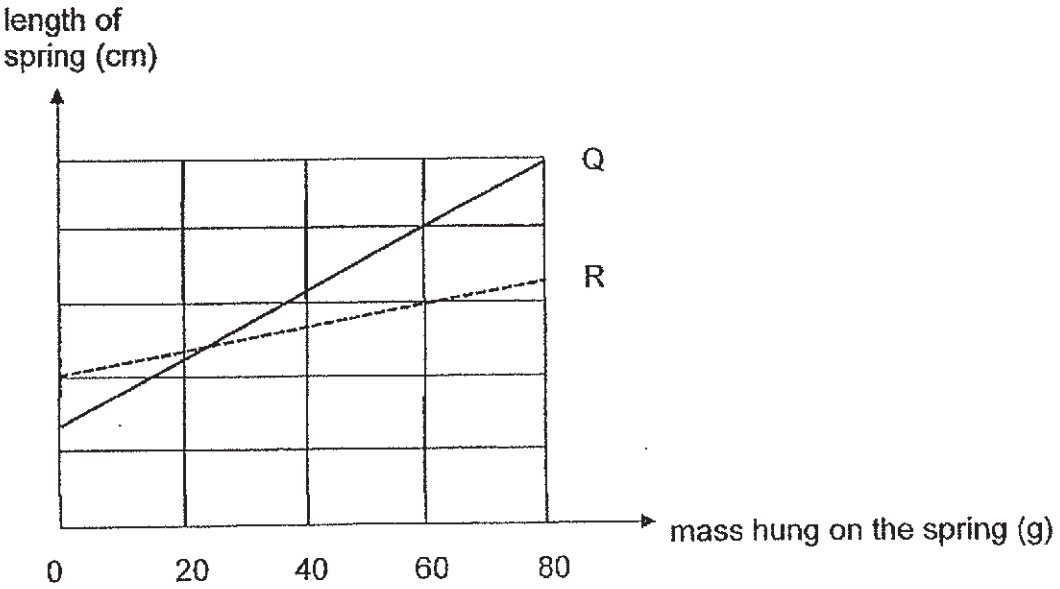
27. The graph below shows how the length of two springs, Q and R, changed when different amounts of mass were added to each spring.



Which of the following statements are correct?

A: The original length of Spring R is longer than that of Spring Q.

B: The original length of Spring R is shorter than that of Spring Q.

C: When a 40 g mass was hung on both springs, their lengths became the same.

D: When a 40 g mass was hung on both springs, the length of Spring Q was more than that of Spring R.

(1) A and C

(2) A and D

(3) B and C

(4) B and D

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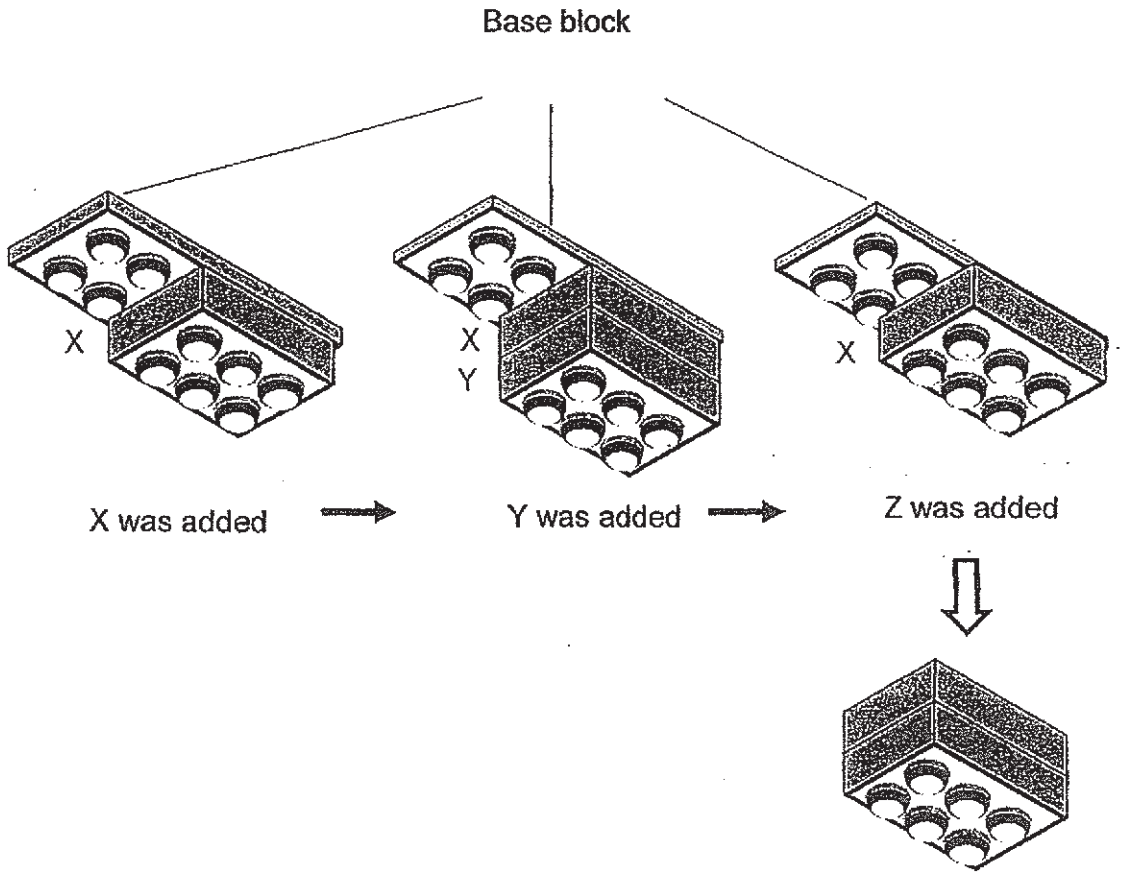
28. Ray added blocks X and Y one at a time to the base block. When he added the third block Z, the blocks Y and Z fell to the ground, leaving X stuck to the base block.



Which one of the following is the reason why the two blocks, Y and Z, fell?

(1) The weight of Z was greater than the weight of Y.
(2) Friction between X and Y was less than the weight of Y and Z.
(3) The weight of Y and Z was greater than the weight of X and Y.
(4) Friction between X and the base was less than the weight of X, Y and Z.

~ End of Booklet A ~

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RIVER VALLEY PRIMARY SCHOOL
2019 PRELIMINARY EXAMINATION
PRIMARY 6

STANDARD SCIENCE

(BOOKLET B)

Name : _____ ( ) Date : 27 August (Tue)

Class : P6 _____ Time : 1 hour 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the space above.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For Section A, shade your answers for questions 1 to 28 on the OAS.
6. For Section B, write your answers for questions 29 to 40 in the space provided.
7. The total marks for Booklet B is 44 marks.

Booklet A	56
Booklet B	44
Total	100

Parent's Signature: _____

Section B (44 marks)

Write your answers to questions 29 to 40 in this booklet.

29. John grew some seeds of a plant on four trays inside a room. The experimental conditions and results are shown below.

Tray	Soil	Presence of light	Appearance of seeds on Day 5
A	dry	no	
B	wet	no	
C	dry	yes	
D	wet	yes	

(a) Which two sets of trays should John select if he wanted to find out whether water is required for germination? [1m]

(b) From Day 5 to Day 15, the plants in Tray D grew taller than the plants in Tray B. Explain why. [1m]

	2

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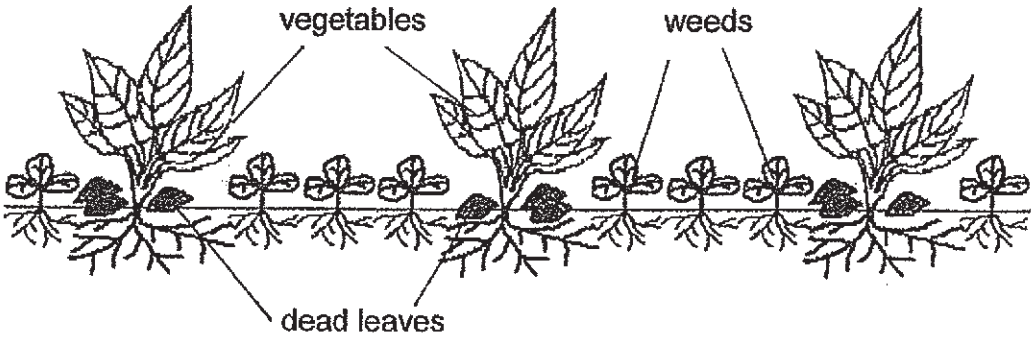
30. Weeds are plants which are not wanted by farmers. A farmer observed weeds and dead leaves around his vegetables in his garden as shown below.



The dead leaves provide nutrients for the vegetables.

(a) Describe how the dead leaves provide nutrients for the vegetables. [1m]

_____

_____

(b) The farmer observed that the vegetables decreased as the weeds multiply too quickly. Give a reason for the observation. [1m]

_____

_____

	2

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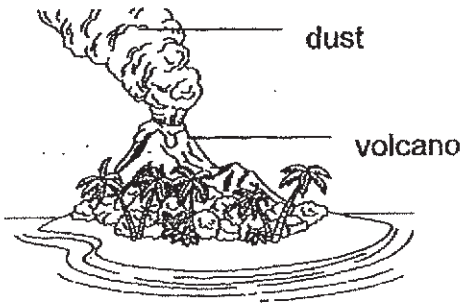
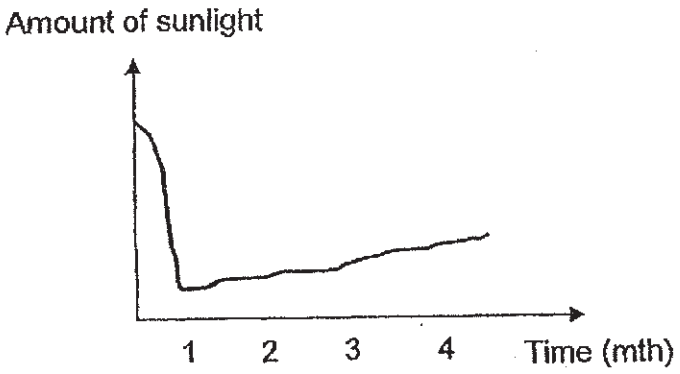
31. Organisms A and B are found on island H and the food relationship is shown below.

A ⟶ B

A volcano on island H erupted and filled the air around the island with dust.



The graph below shows the amount of sunlight covering island H for 4 months after the eruption.



(a) Predict whether the population of A will increase, remain the same or decrease in the first month after the eruption. Explain your answer. [1m]

_____

_____

	1

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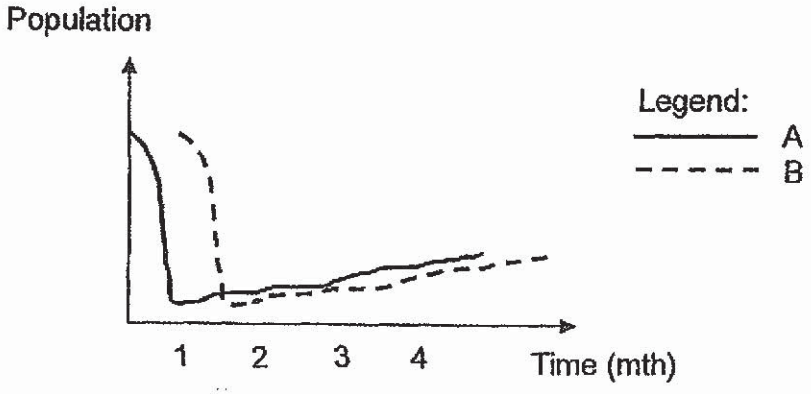
After the volcanic eruption, the soil becomes fertile for plants to grow. The graph below shows how the population of A and B changes after the volcano erupted.



(b) Explain why the population of B started increasing one month after the population of A increased. [1m]

_____

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	1

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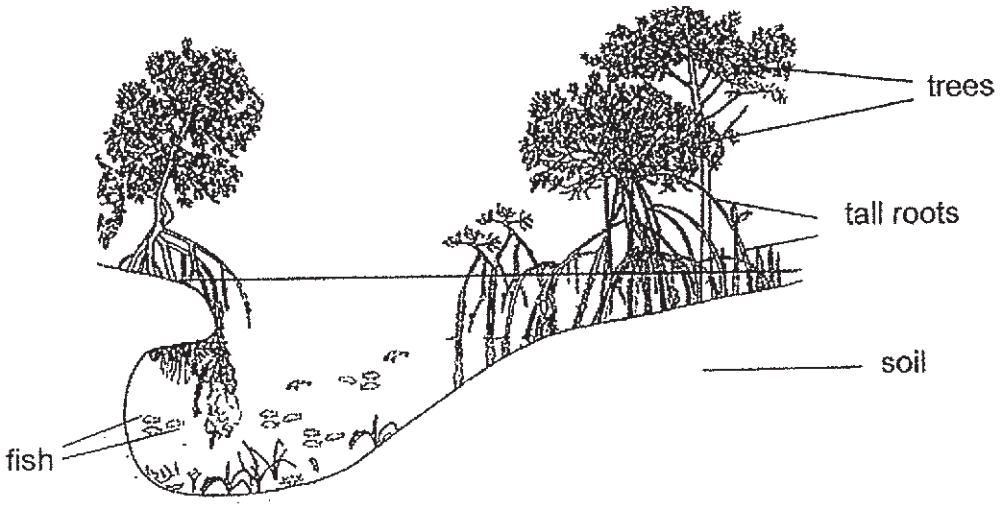
32. The diagram below shows trees that live near the sea. They have tall roots that rise above the water.



When the water level is low, the roots are exposed. When the water level is high, part of the roots are submerged in water.

(a) Give a reason why the tall roots need to rise above the water. [1m]

_____

_____

(b) Soil erosion happens when the soil is washed away by water. Explain how the trees help to prevent soil erosion. [1m]

_____

_____

	2

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(c) State how the roots help the fish to escape from their predator. [1m]

	1

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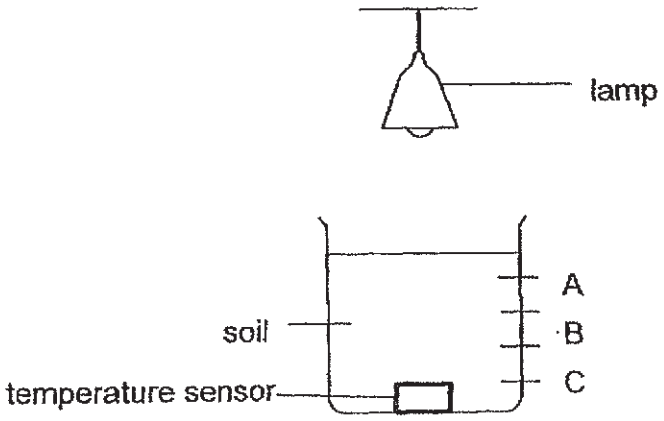
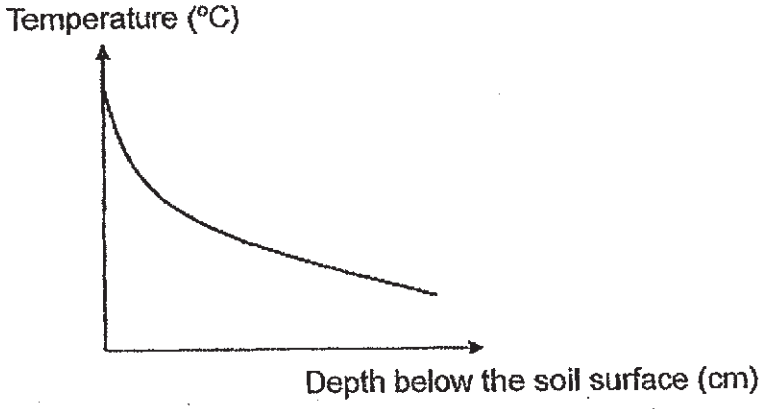
33. Selma conducted an experiment to see how temperature changes with the depth of soil using the set-up shown below. After the lamp had been turned on for one hour, Selma recorded the temperature of the soil at points A, B and C using a temperature sensor.



The results is shown in the graph below.



(a) Based on the graph above, state the relationship of the temperature and the depth of the soil. [1m]

_____

_____

	1

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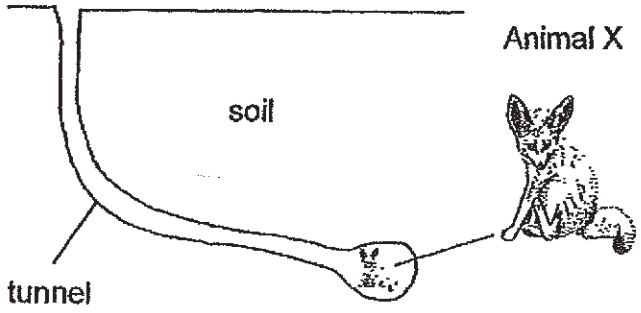
Animal X has big ears and thick fur. It lives in the desert where the days are hot and the nights are cold. It stays underground in the tunnel during the day.



(b) Explain how staying underground in the day helps Animal X. [1m]

(c) Describe how a structural adaptation of Animal X helps it to keep cool. [1m]

(d) Describe how Animal X keeps warm at night. [1m]

	3

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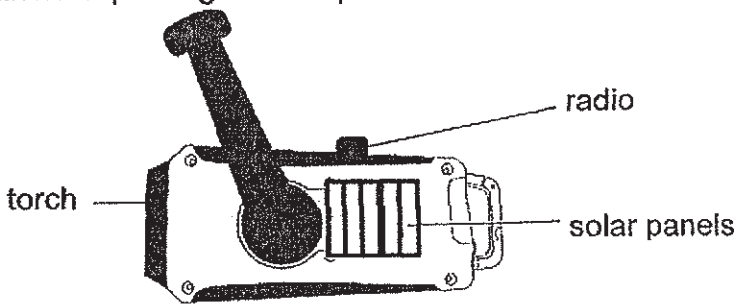
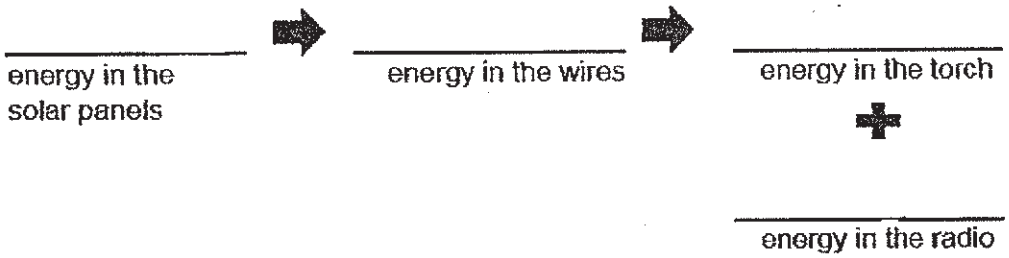
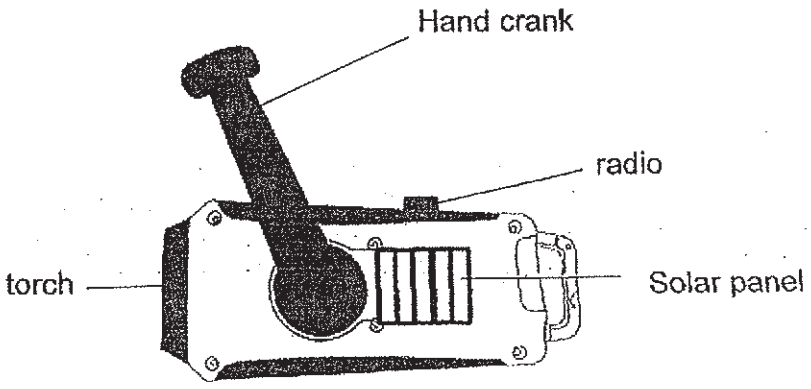
34. Lim Teck received the following device after participating in an emergency exercise. The solar panels trap sunlight which powers the device to work as a torch and a radio.



(a) Complete the energy conversion when the device is using the energy from the solar panels. [1m]



The device can also be powered by turning the hand crank continuously.



(b) Lim Teck observed that the torch turned on first before the radio. Explain why. [1m]

_____

_____

2

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(c) Without adding or removing any part of the device, state one way to increase the brightness of the torch. [1m]

_____

_____

	1

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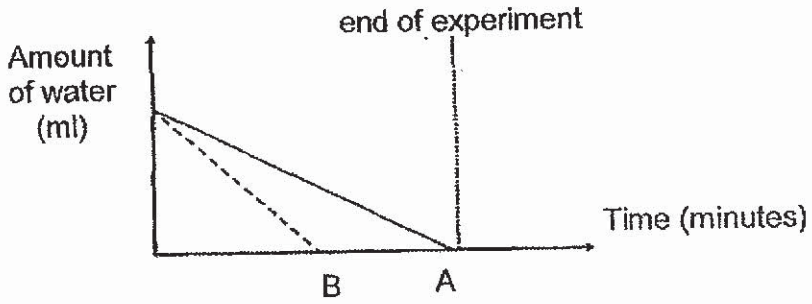
35 (a) State a difference between evaporation and boiling. [1m]

Charles filled two identical containers with the same amount of water and left them at two different locations.

After a few hours, he measured and recorded the amount of water left in each container.



(b) Explain why the changes in the water level in A and B are different. [1m]

	2

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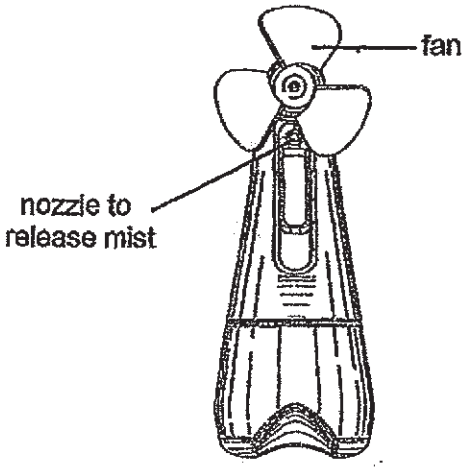
Charles used a fan shown below to cool himself. When the fan was switched on, mist comes out through the nozzle.



When he held the fan in front of his face and switched it on, the mist landed on his face and within a few minutes, the mist disappeared.

(c) Explain how the fan helps Charles cool down. [2m]

(d) The time taken for the mist to disappear was shorter when Charles' body temperature was higher. Explain why this is so. [1m]

	3

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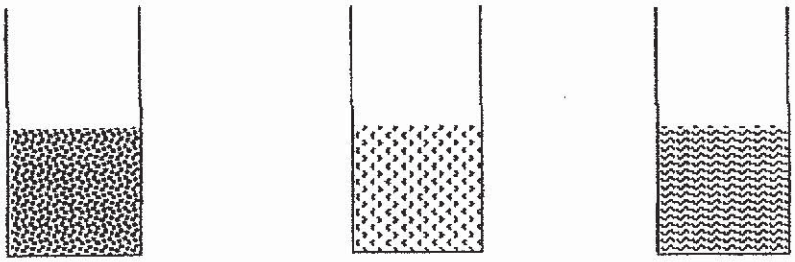
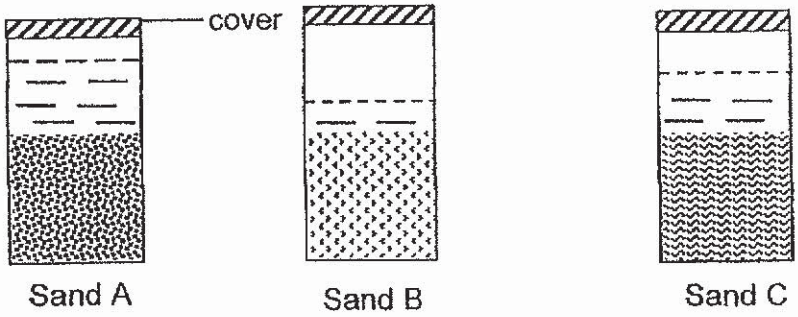
36. Lim put the same amount of sand A, B and C into three identical containers.



Then he added the same amount of water into the containers before covering them. **After** twenty minutes, the water level is shown below.



(a) State a property of matter shown by the water in the experiment. [1m]

_____

_____

(b) Give a reason why the water level in container B is the lowest. Explain your answer. **[2m]**

_____

_____

	3

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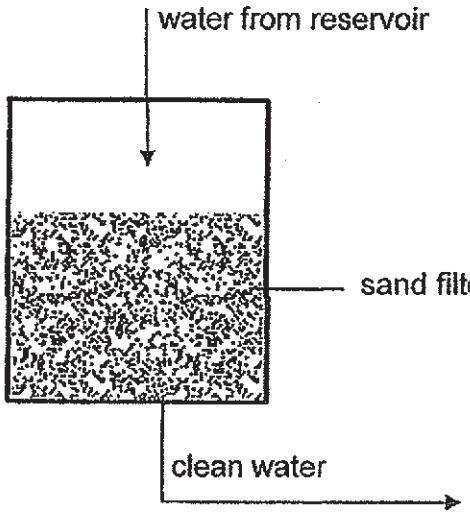
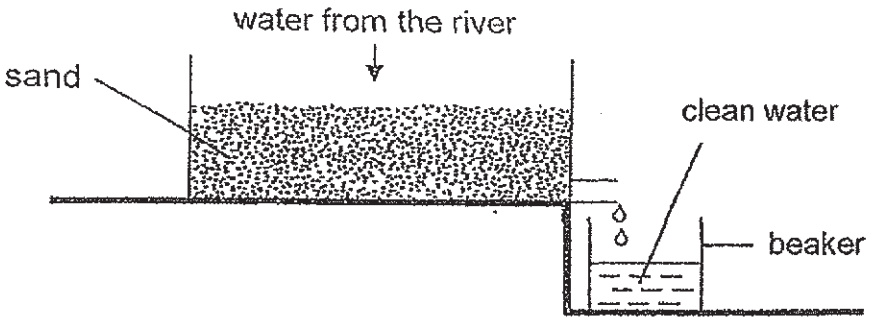
To get clean water, water from the reservoir is passed through a sand filter so that dirt is trapped in the filter.



Lim wanted to get clean water from a nearby river by creating his own filter system.



(c) Which type of sand, A, B or C, should Lim use to get clean water? Explain your answer. [2m]

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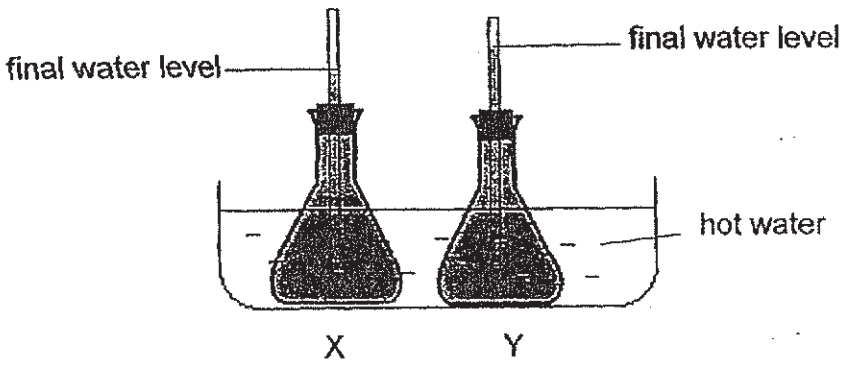
37. Smith conducted an investigation on materials X and Y. He made two flasks out of material X and Y and filled them with the same amount of coloured water. They were placed in a container of hot water. The diagram shows the final water level in each flask after five minutes.



(a) To ensure a fair experiment, what should Smith change and keep the same? [1m]

To change:_____

To keep the same:_____

(b) Explain why the final water level in flask Y is higher than flask X. [1m]

_____

_____

	2

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The table below shows the highest and lowest temperature which the laboratory and clinical thermometer can reach.

Type of thermometer	Temperature (^{0}C)	
	Lowest	Highest
Laboratory	-10	110
Clinical	35	42

(c) Which material X or Y is more suitable to be used in a clinical thermometer? Explain your answer. [2m]

_____

_____

	2

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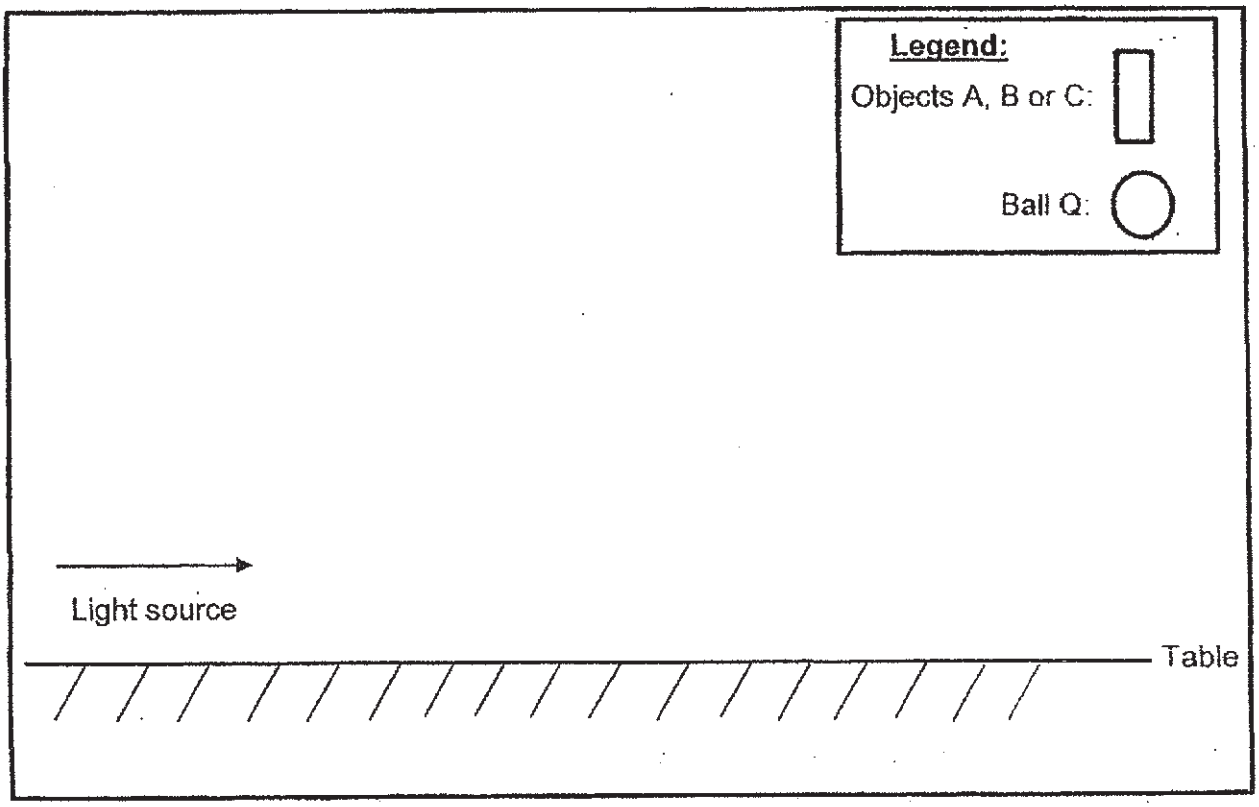
38. Ariel plans to set up an experiment in a dark room using different objects. A. B. C and Q.

A	B	C	Q
Storybook	Mirror	Clear glass	Ball

Ball Q must be placed between two objects before forming a shadow.

(a) Help Ariel by sketching in the box below how you would form a shadow of Ball Q based on the information given. [2m]



(b) What can Ariel do to the position of the torch to make the shadow bigger? [1m]

_____

_____

3

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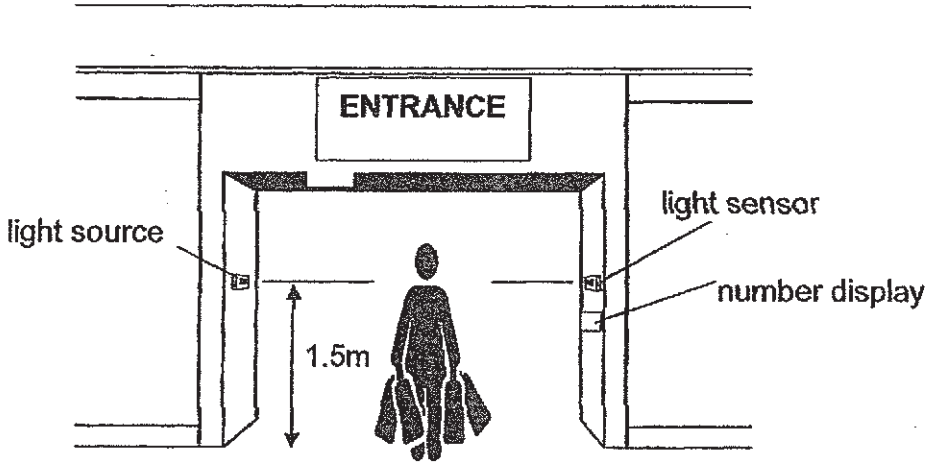
Ariel observed that a device is installed at the entrance of a shop to count the number of customers entering the shop.



(c) Explain how the device is able to count the number of customers. [1m]

(d) Ariel noted that the device did not accurately count the number of customers who entered the shop. Suggest one change to the device so that the counting can be accurate. [1m]

	2

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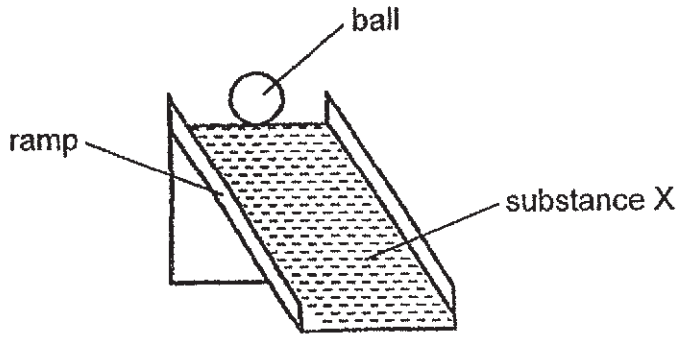
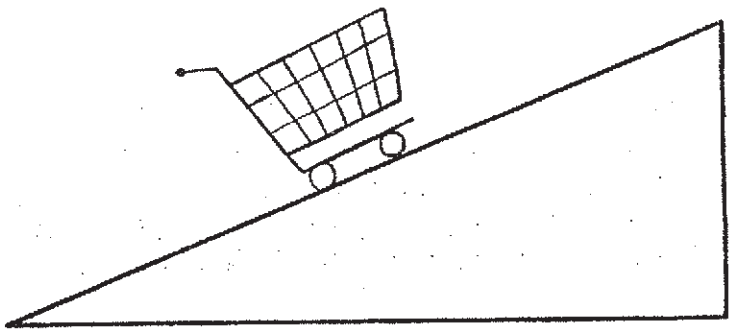
39. Peter did an experiment to find out which type of substance, X, Y or Z, lets the ball roll down the ramp the fastest. He covered the ramp surface with substance X and measured the time taken for the ball to reach the bottom of the ramp.



He repeated the experiment with similar ramps covered with substance Y and Z in each experiment, he pushed the ball with the same amount of force. The results are shown in the table below.

Substance	Time taken for the ball to roll down the ramp (s)
X	8
Y	2
Z	5

Peter tried to push a trolley up a slope as shown in the diagram below.



(a) Based on the results of his experiment, which substance, X, Y or Z, is the most suitable for the trolley to stop halfway on the ramp? Explain your answer. [1m]

_____

_____

	1

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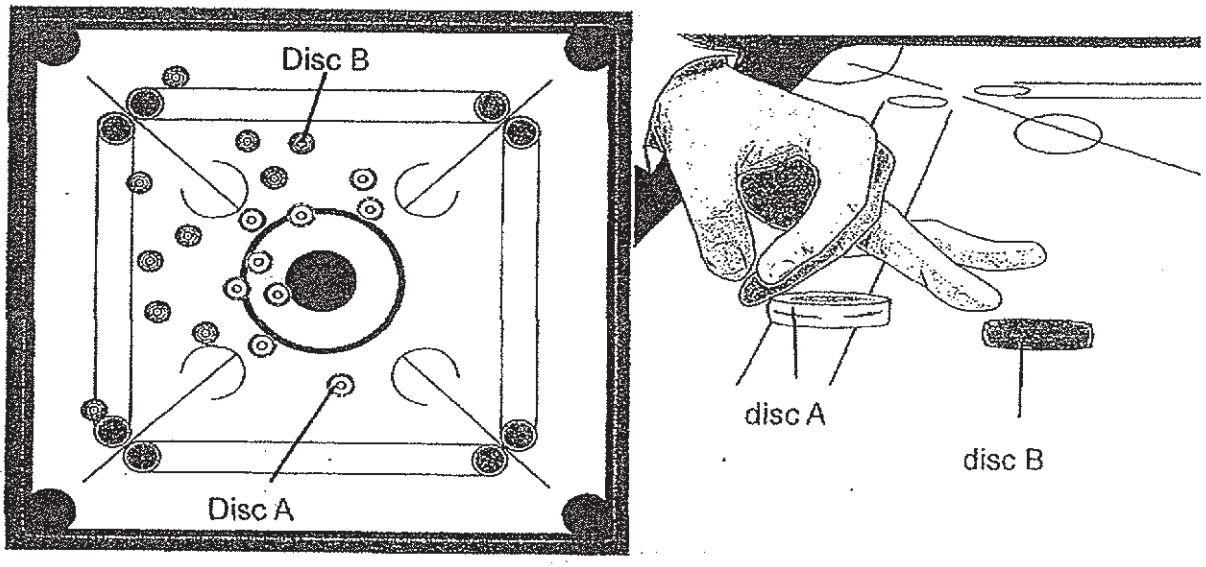
Carrom is played on a board where players push a disc at other discs as shown below.



carrom board

(b) After Peter pushed disc A, he observed that disc A moved a short distance and stopped before it reached disc B. Explain, in terms of forces, why disc A stopped. [1m]

(c) Peter wanted the discs to move faster on the board. Which substance, X, Y or Z, should Peter use on the board? Explain your answer. [2m]

	3

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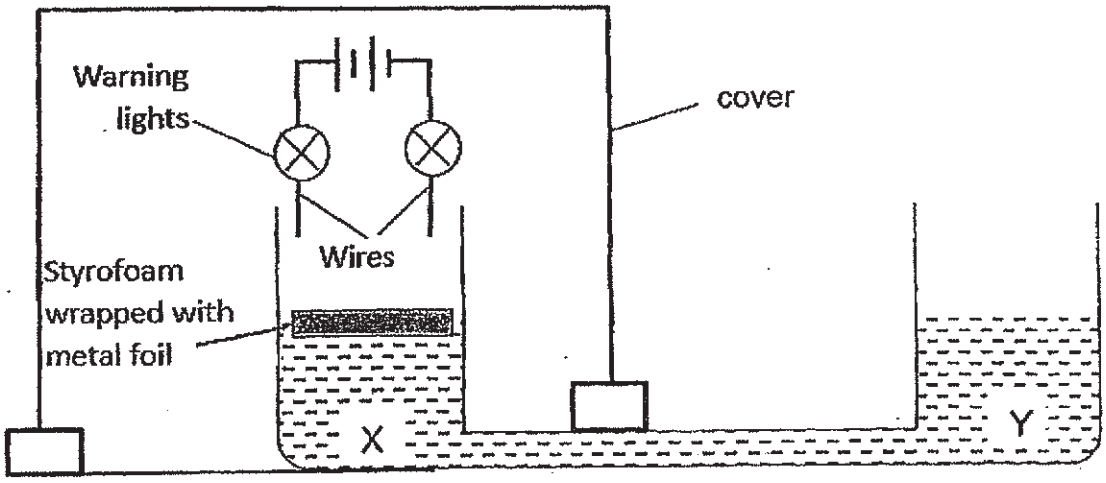
40. Archie constructed a simple flood warning system as shown below. Part X is covered and Part Y is not covered. When it rains, rainwater will flow into Part Y.



(a) Explain how a heavy rain can cause the warning lights to light up. [2m]

	2

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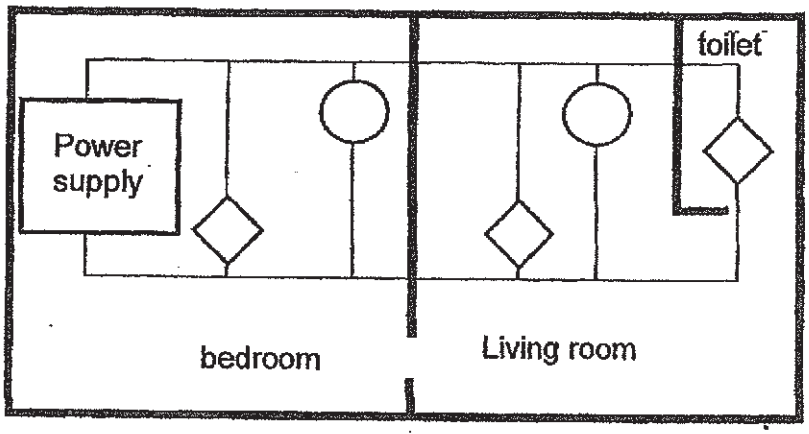
In the diagrams below, the fans and lights are connected in two different ways.

Diagram 1



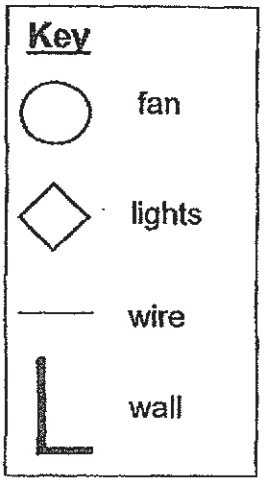
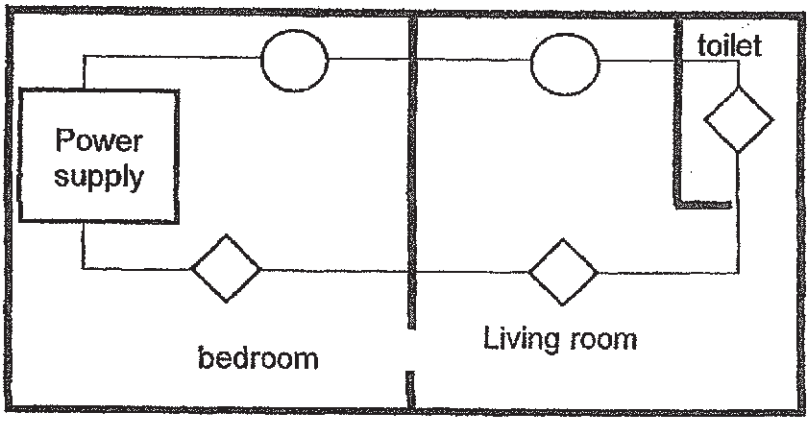


Diagram 2



(b) Mark a cross (X), on **Diagram 1** to show the position of a switch that controls the fan in the bedroom only. [1m]

(c) Compare Diagrams 1 and 2. Which electrical circuit arrangement will make the room brighter? Explain your answer. [2m]

_____

_____

	3

~ End of Paper ~

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SCHOOL : RIVER VALLEY PRIMARYSCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	3	4	2	2	2	4	2	1	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	4	1	4	3	3	1	3	3	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	1	1	3	4	4	2	2		

SECTION B

Q29)	a)Tray A and B
Q34)	a) Light → Electrical → Light + sound b)Most kinetic energy is converted to light energy first to produce the light. c)Turn off the radio.
Q36)	a)Matter occupies space.
Q37)	a)To change : The type of material b)To keep the same :The amount of coloured water.
Q38)	a)→ b)Ariel could bring the torch nearer to the objects.

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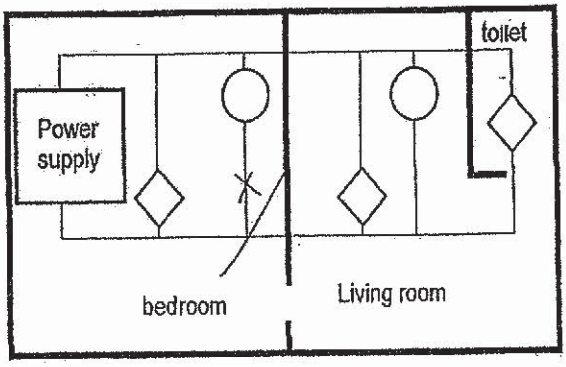
Q40) b)

Diagram 1



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Suggested Answer for RVPS Prelims 2019

29b. There is presence of sunlight in Tray D but not in Tray B. Plants in Tray D could received more sunlight to photosynthesize and thus grew taller.

30a. The decomposers break down the dead leaves into simpler substances by which act as nutrients for the vegetables.

30b. There is overcrowding and the weeds compete with the vegetables for sunlight, water, space and nutrients.

(Do not mention air or food. Air is all around unless it is in an enclosed or airtight place)

31a. The population of A will decrease as it cannot photosynthesize as it receives less sunlight.
(start food chain with A so A must be a food producer.)

31b. B eats A. When A increases, there will be more A for B to feed on so B increases too.

32a. The roots need to take in air from the surrounding because there is not enough air for the roots/plant in the soil.

32b. The roots of the trees hold on to the soil so it will not be washed away easily.

32c. The fish hides among the roots to escape from their predators.

33a. When the depth of the soil increases, the temperature decreases.
(Take note of cause and effect)

33b. The temperature underground is lower than above so by staying underground, Animal X will gain less heat and feel cooler.

33c. Animal X has big ears that help it to lose heat to the surroundings more quickly thus helping it to keep cool.

33d. Animal X has thick fur (1/2m). There is air trapped in the thick fur and air is a poor conductor of heat. This will help Animal X lose heat slower to the surroundings, keeping it warm at night.

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35a. Evaporation is at any temperature / all temperatures while boiling is at a fixed temperature.

OR

Evaporation occurs on the surface of the liquid while boiling occurs throughout/whole the liquid

35b. Rate of evaporation was faster in B than A.

35c. When the mist lands on Charles' face, it gained heat from his face and evaporated. Charles' face lost heat and thus helps him to cool down.

35d. The mist gains heat faster and evaporates faster when Charles' body temperature was higher.

36b. The sand in B has the most air spaces (1m) between them, thus allowing most water to fill up the spaces (1m), resulting in the lowest water level.

36c. Choose: Sand A.

Evidence: Container with Sand A has the highest water level which means it has the least air spaces (1m),

Concept: Thus it will be able to allow the least dirt to pass through (1m).

37b. Y is a better conductor of heat, allowing the water to gain heat faster and expand faster.

37c. Material Y. Material Y is more sensitive to temperature change (1m) as it gains heat faster and expands more (1m).

38c. The light sensor is unable to detect the light when blocked by the customer thus each time the light is blocked, a customer is being counted (on the number display).

38d. Lower both the light source and light sensor to a suitable height for both children and adults.

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39a. Choose: Substance X.

Evidence: The ball took the longest time to roll down the ramp, meaning there is most amount of friction between the ball and ramp.

Concept: Hence it is most suitable to be used to stop the trolley on ramp as it will have the most amount of friction between the ramp and the wheels of the trolley.

39b. The pushing force could not overcome the friction force between disc A and the board.

39c. Choose: Substance Y.

Evidence: The ball took the shortest time to roll down the ramp, showing it has the least friction between the ball and the ramp.

Concept: So it will be most suitable to use on the board to create least friction between the disc and the board so it will move faster.

40a. The heavy rain caused the water level in X to increase, pushing the styrofoam wrapped with metal foil upwards to touch the wire. As the metal foil is a conductor of electricity, this will form a closed circuit, allowing electricity to flow through the circuit to light up the warning lights.

40c. Diagram 1 will make the room brighter. The lights are in parallel arrangement and thus the brightness for each bulb will be brighter than the bulbs in the series arrangement.

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Rosyth School
Preliminary Examination 2019
SCIENCE
Primary 6

Name: _____ Total Marks: /56

Class: Pr 6-_____ Total time for Booklets A and B: 1 h 45 min

Date: 29 August 2019

Booklet A

Instructions to Pupils:

1. Do not open the booklet until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 28 in Booklet A , shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.

* This booklet consists of 22 printed pages (including cover page).

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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **[56 Marks]**

1 Which one of the following characteristics can be used to differentiate between a reptile and a bird?

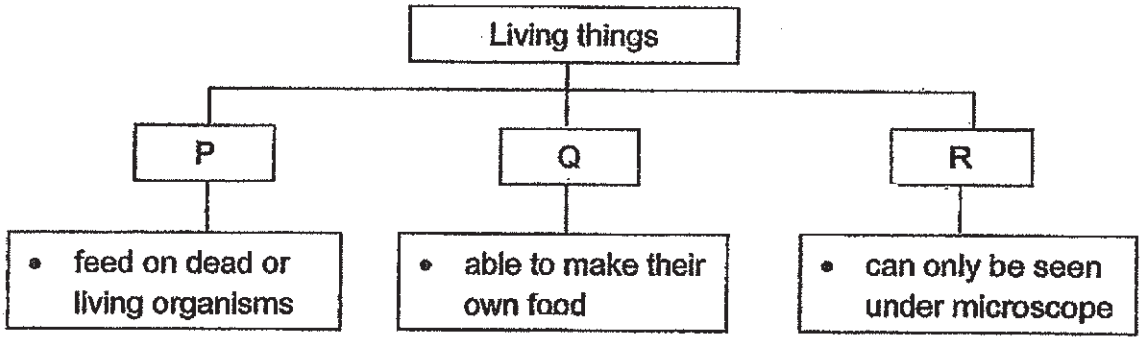
(1) The way they breathe

(2) The way they reproduce

(3) The number of body parts

(4) The type of outer covering

2 Study the classification chart below.



Which one of the following headings do P, Q and R represent?

	P	Q	R
(1)	fungi	bacteria	non-flowering plants
(2)	fungi	flowering plants	bacteria
(3)	plants	decomposers	bacteria
(4)	decomposers	flowering plants	fungi

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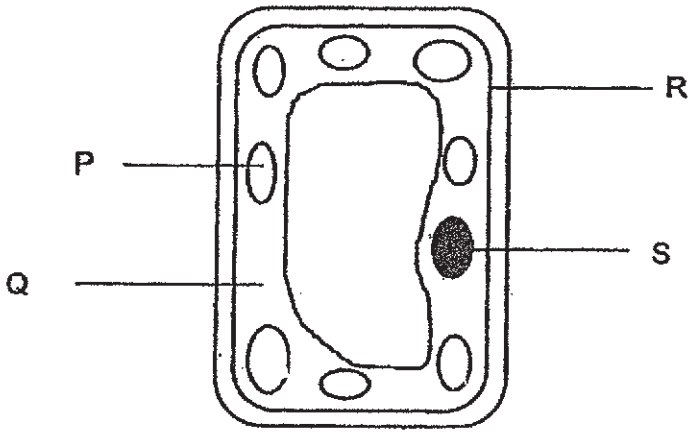
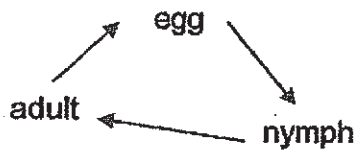
3 Study the plant cell shown below.



Where does photosynthesis take place inside the plant cell?

(1) P
(2) Q
(3) R
(4) S

4 Study the life cycle shown below.



Which one of the following animals has a life cycle similar to the one shown above?

(1) frog
(2) chicken
(3) mosquito
(4) grasshopper

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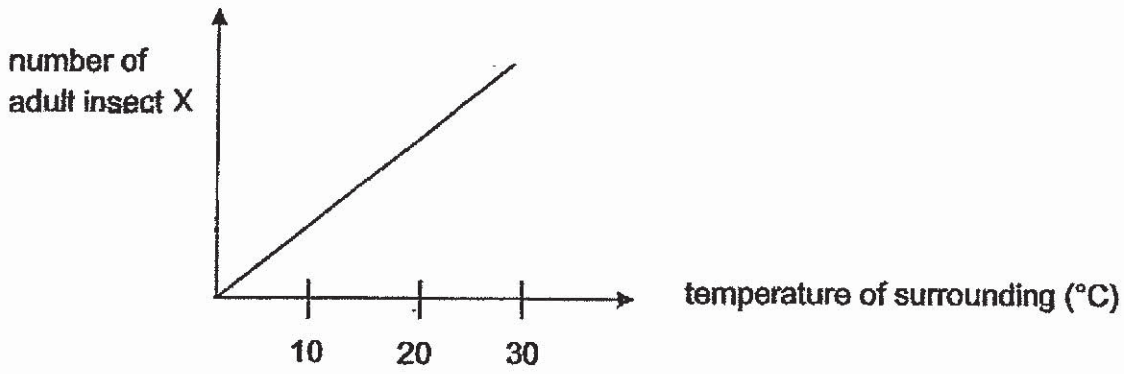
5 David studied the graph below.



The graph shows the relationship between the surrounding temperature and the number of adult insect X in a farm.

David stated two reasons to explain the relationship as shown in the graph:

A As the surrounding temperature increases, the number of eggs laid by insect X increases.

B As the surrounding temperature increases, the number of days to complete the life cycle of insect X decreases.

Based on the graph, which reason(s) is/are possible?

(1) A only

(2) B only

(3) A and B

(4) Neither A and B

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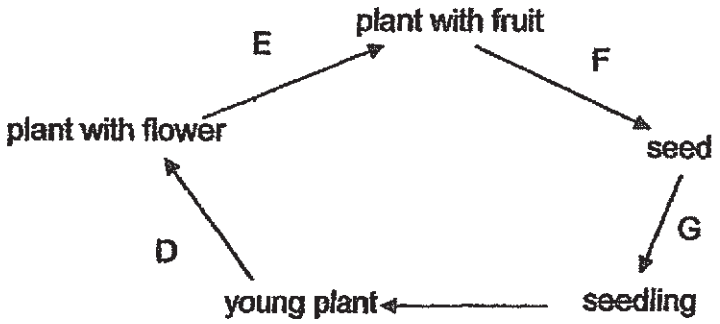
6 The diagram below shows the developmental stages of a flowering plant.



Where do the processes of pollination, fertilisation and germination take place?

	Pollination	Fertilisation	Germination
(1)	E	E	G
(2)	D	E	G
(3)	E	E	F
(4)	D	F	G

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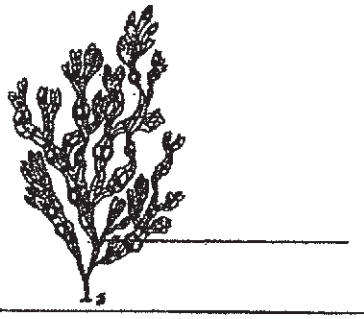
7 Seaweeds are plants that live in the sea. An example of a seaweed is shown below.



Waves pull the seaweed in different directions and the seaweed is adapted to survive the sea waves.

Which properties of the stalk have helped it to adapt in its environment?

(1) Elastic and Flexible

(2) Flexible and Strong

(3) Elastic and Strong

(4) Elastic and Waterproof

8 Which one of the following groups shows a population in a habitat?

(1) adults of animal A, adult plants

(2) young plants, adult plants, plant-eaters

(3) eggs of animal A, larvae of animal B, adults of animal C

(4) eggs of animal X, larvae of animal X, adults of animal X

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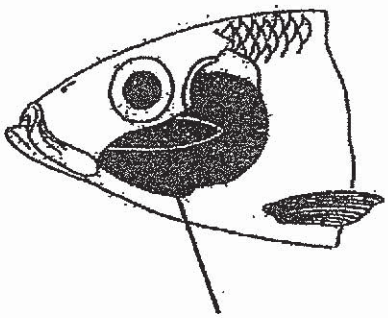
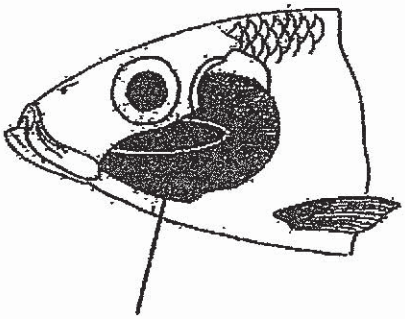
9 The diagrams below show the healthy and the infected gills. The infected gills have fungi S growing into them.



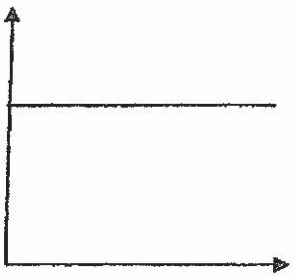
healthy gills



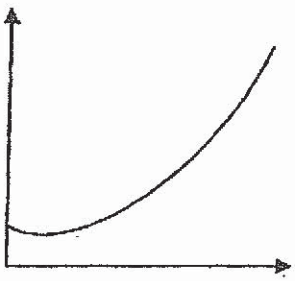
fungi S growing into the gills

Based on the above information, which one of the following graphs correctly shows the effect of fungi S on the amount of oxygen absorbed into the bloodstream of the fish?

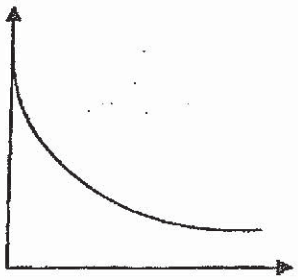
(1)



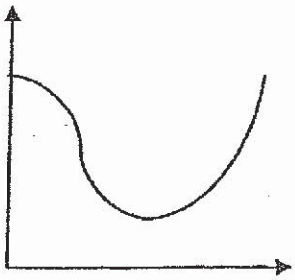
(2)



(3)



(4)



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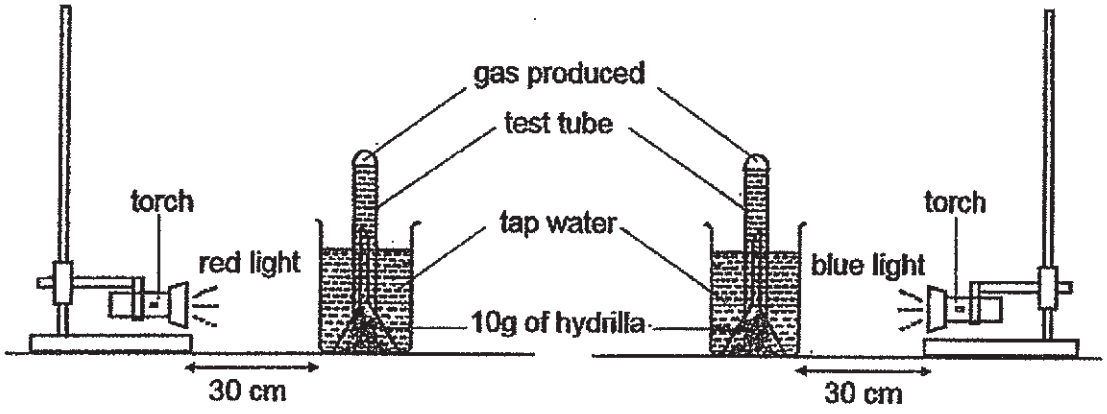
10 Amanda carried out an experiment using the set-ups as shown below.



Amanda kept the torch and the distance of the torch from the hydrilla the same to ensure a fair test.
What could she change in the above set-up to increase the amount of gas produced?

(1) Use pond water.

(2) Use green light.

(3) Use 20g of hydrilla.

(4) Use bigger beakers.

11 The diagram below shows a part of the circulatory system of a fish. The arrows represent the movement of blood in a fish.

circulatory system of a fish

The blood flowing through _____.

(1) P and Q are rich in oxygen

(2) P and Q are rich in carbon dioxide

(3) P is rich in oxygen while Q is poor in oxygen

(4) P is poor in oxygen while Q is rich in oxygen

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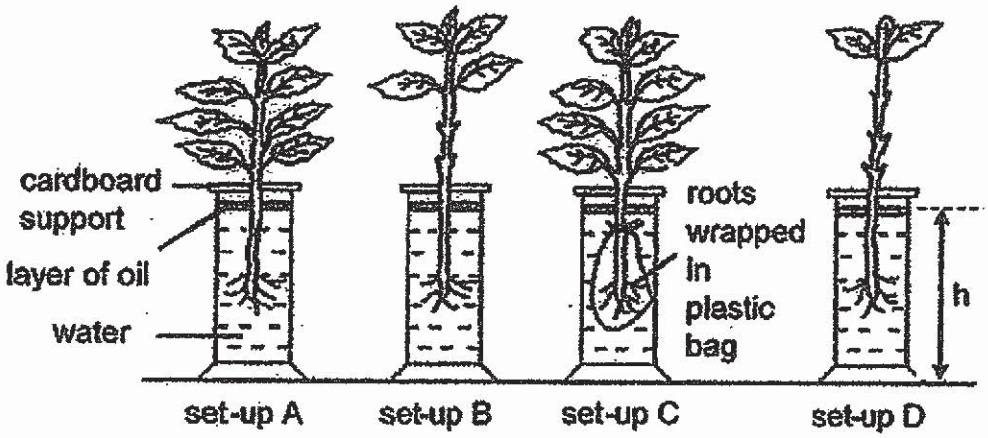
12 Four plants were placed into identical jars, each containing the same level of water at first. They were then left near a window for an hour. The height 'h' in each jar was measured at the end of the experiment.



Which one of the following correctly shows the height 'h' from the greatest to the smallest?

(1) B, A, D, C
(2) B, A, C, D
(3) C, D, A, B
(4) C, D, B, A

13 Study the food chain below.

Z ⟶ X ⟶ Y ⟶ W

Which one of the following is correct?

	Population size	Effect
(1)	Z increases.	X, Y and W will decrease.
(2)	Z decreases.	X, Y and W will decrease.
(3)	W increases.	X, Y and Z will decrease.
(4)	W decreases.	X, Y and Z will increase.

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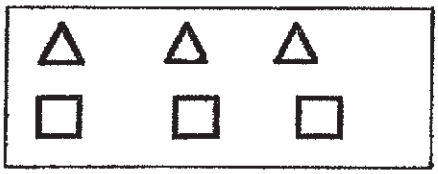
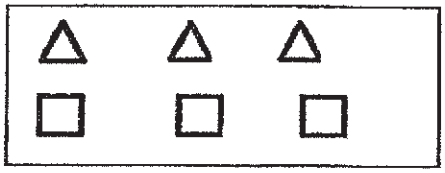
14 A scientist carried out an investigation to find out how the amount of dissolved oxygen in water will affect the number of two types of organisms.

Types of organism	Represented by
10 organism A	△
10 organism B	□

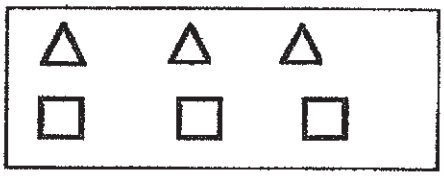
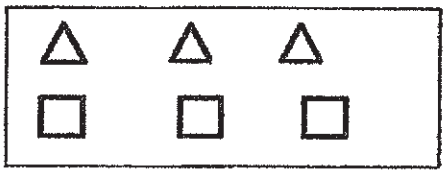
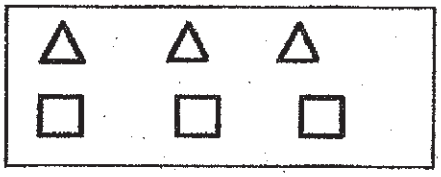
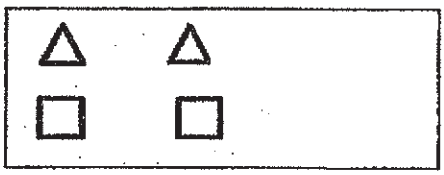
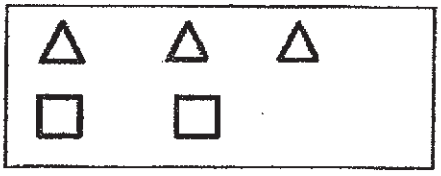
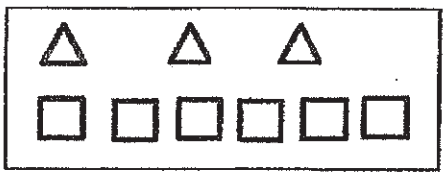
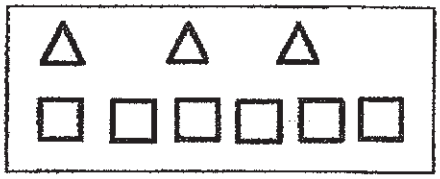
The organisms were placed in two different containers of water. The water in each containers had different amount of dissolved oxygen.





Based on results, he concluded that organism A is not affected by the amount of dissolved oxygen in water while organism B is affected by the amount of dissolved oxygen in water.

Which one of the following shows a possible result for his conclusion?

	More amount of dissolved oxygen in water than normal	Less amount of dissolved oxygen in water than normal
(1)		
(2)		
(3)		
(4)		

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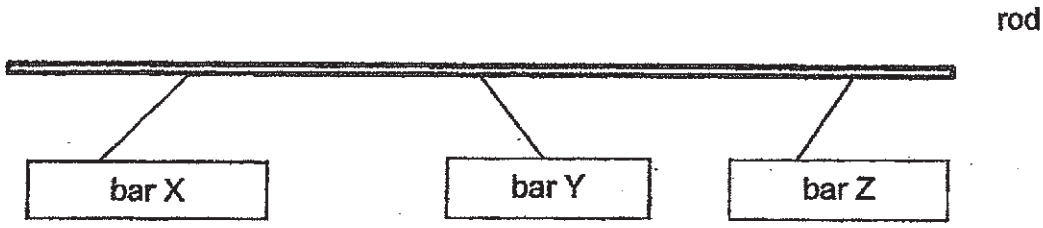
15 Which one of the following is a good conductor of heat?

(1) metal
(2) wood
(3) fabric
(4) plastic

16 Three bars were freely suspended on a rod as shown in the diagram below.



Based on the above observation, which bars are definitely magnets?

(1) X and Y only
(2) Y and Z only
(3) X and Z only
(4) X, Y and Z

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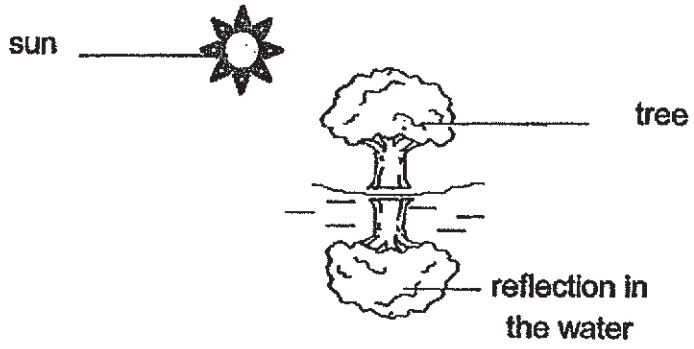
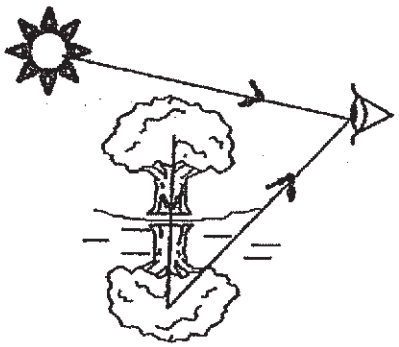
17 The picture below shows a tree and its reflection in the water.

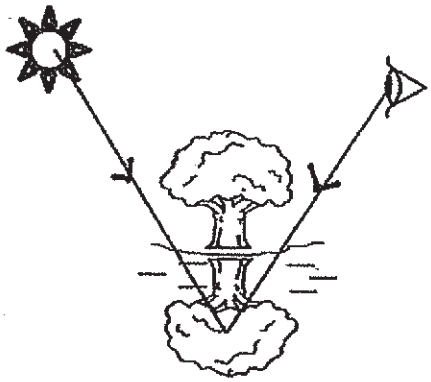


Which one of the following correctly shows the path of light for the reflection of the tree in the water to be seen?

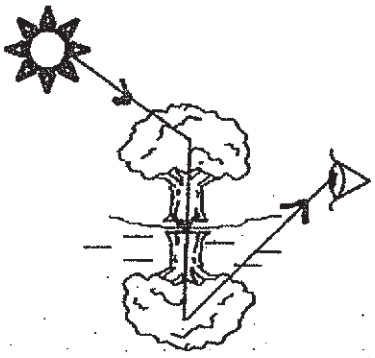
(1)



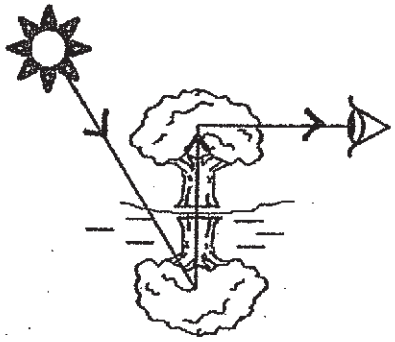
(2)



(3)



(4)



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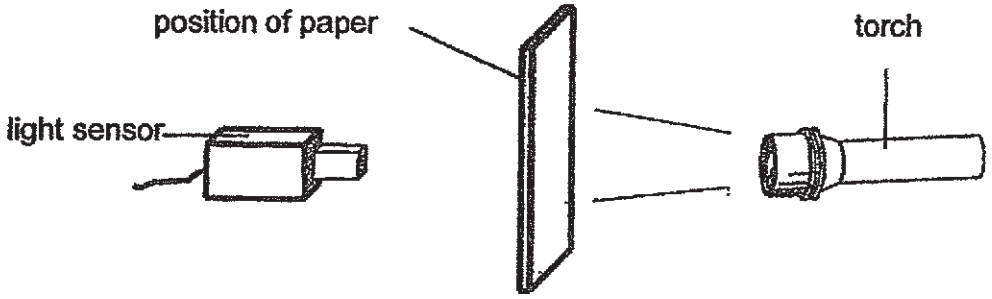
18 Victor wanted to find out if the number of pieces of paper would affect the amount of light that could pass through it. He set up an experiment as shown below.



He increased the number of pieces of paper and recorded the amount of light that passed through in the table below.

Number of pieces of paper	Amount of light detected (units)
0	48
2	33
4	24
6	12
8	0
10	0

Based on the information Victor collected, which one of the following is definitely true?

(1) The amount of light blocked by six pieces of paper was 12 units.

(2) The amount of light detected for one piece of paper would be 40 units.

(3) The amount of light detected for nine pieces of paper would be 0 units.

(4) The amount of light blocked by seven pieces of paper would be 48 units.

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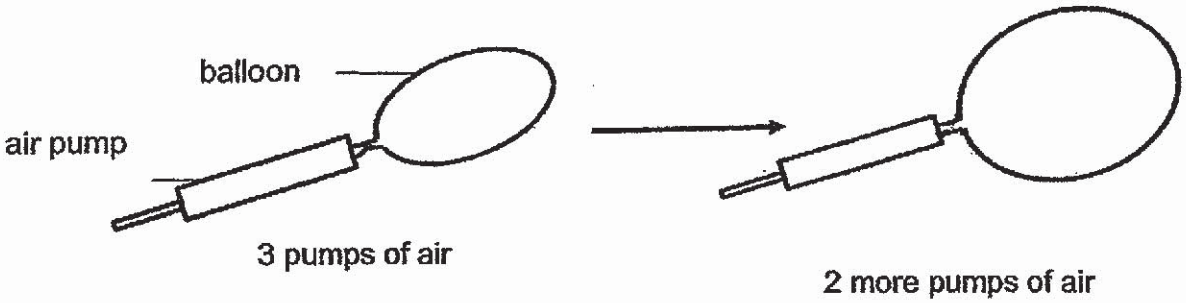
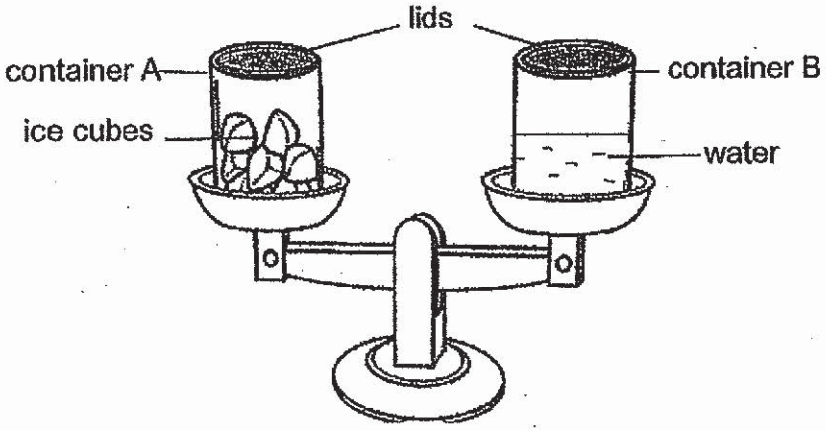
19 Air is pumped into the balloon as shown below using an air pump.



What happens to the total volume and the mass of air in the balloon after 2 more pumps of air is given?

	Total volume of air in the balloon	**Total mass of air in the balloon**
(1)	increases	increases
(2)	remains the same	increases
(3)	remains the same	remains the same
(4)	increases	remains the same

20 Two identical containers, A and B, were covered with identical lids. Container A was filled with 250g of ice cubes and Container B was filled with 250g of water at room temperature. They were placed on a balance as shown below.



After ten minutes, the balance tilted downwards on the side of container A. Which one of the following could be the reason for this observation?

(1) The ice cubes in container A had melted.

(2) The water in container B had evaporated.

(3) Water droplets were formed on the outer surface of container B.

(4) Water droplets were formed on the outer surface of container A.

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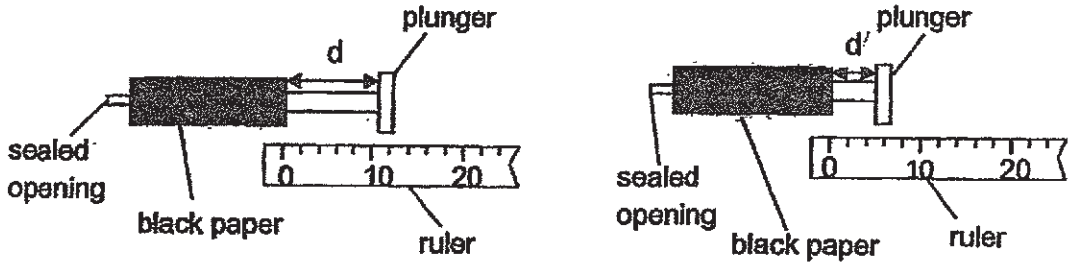
21 Susan was given two syringes covered with black paper. Syringe A contained substance S while syringe B contained substance T. The distance d before pushing was kept at 10 cm.
She pushed the plungers and measured the distance'd 'as shown below.



syringe A syringe B

She recorded her results in the table below.

	d (cm)	
	Before pushing	After pushing
Substance S	10	10
Substance T	10	5

Which one of the following could be substances S and T?

	Substance S	Substance T
(1)	cotton wool	fruit juice
(2)	air	cotton wool
(3)	water	fruit juice
(4)	water	cotton wool

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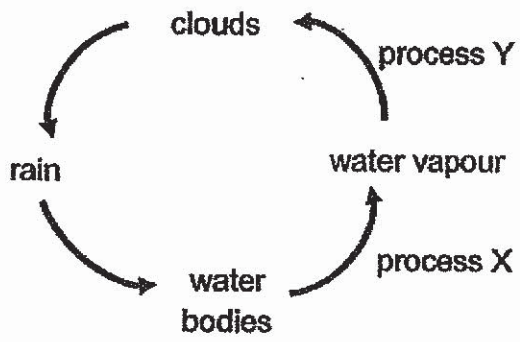
22 The diagram below shows a water cycle.



Which of the following statement is correct?

(1) Process X occurs at a fixed temperature.

(2) Process X occurs when water in waterbodies loses heat.

(3) Process Y occurs when there is no temperature difference.

(4) Process Y occurs when water vapour loses heat to surrounding air.

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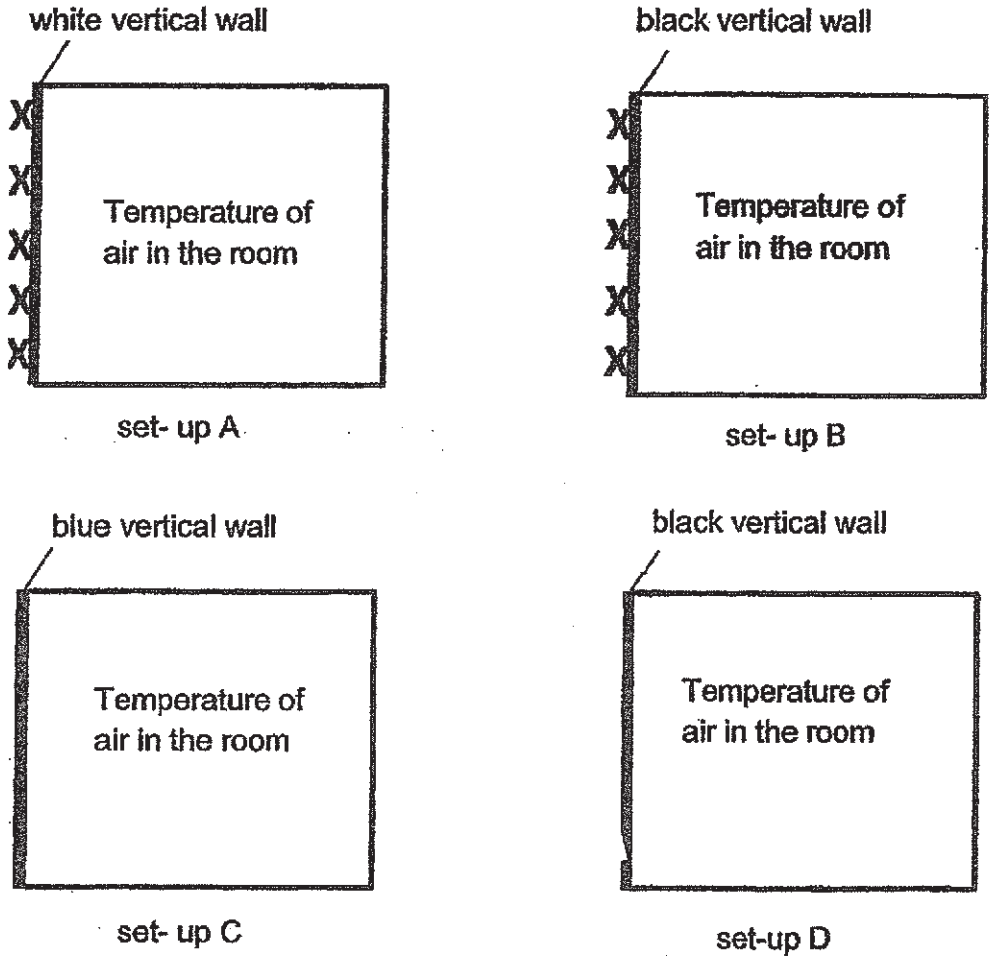
23 Lionel wanted to determine the effect of plants on the temperature of air in a room. He set up the experiment as shown below using three different coloured walls.



X represents plants on the vertical wall.

Which two set-ups should he use in his experiment?

(1) set-ups A and B only

(2) set-ups A and D only

(3) set-ups B and D only

(4) set-ups C and D only

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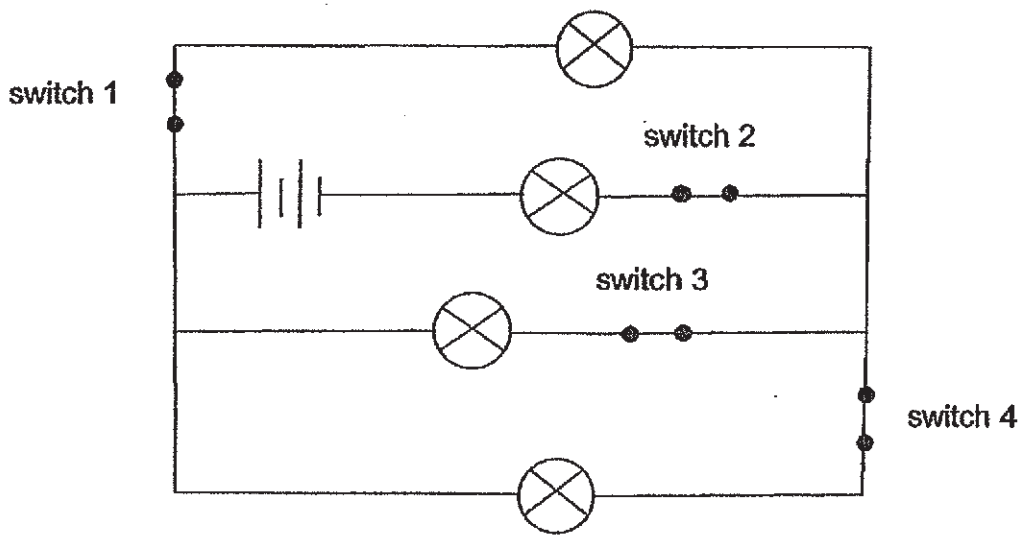
24 Weiling sets up a circuit as shown. All the bulbs and batteries are working properly.



All four bulbs light up when all four switches are closed.
Which switch should she open if she wants none of the bulbs to light up?

(1) Switch 1

(2) Switch 2

(3) Switch 3

(4) Switch 4

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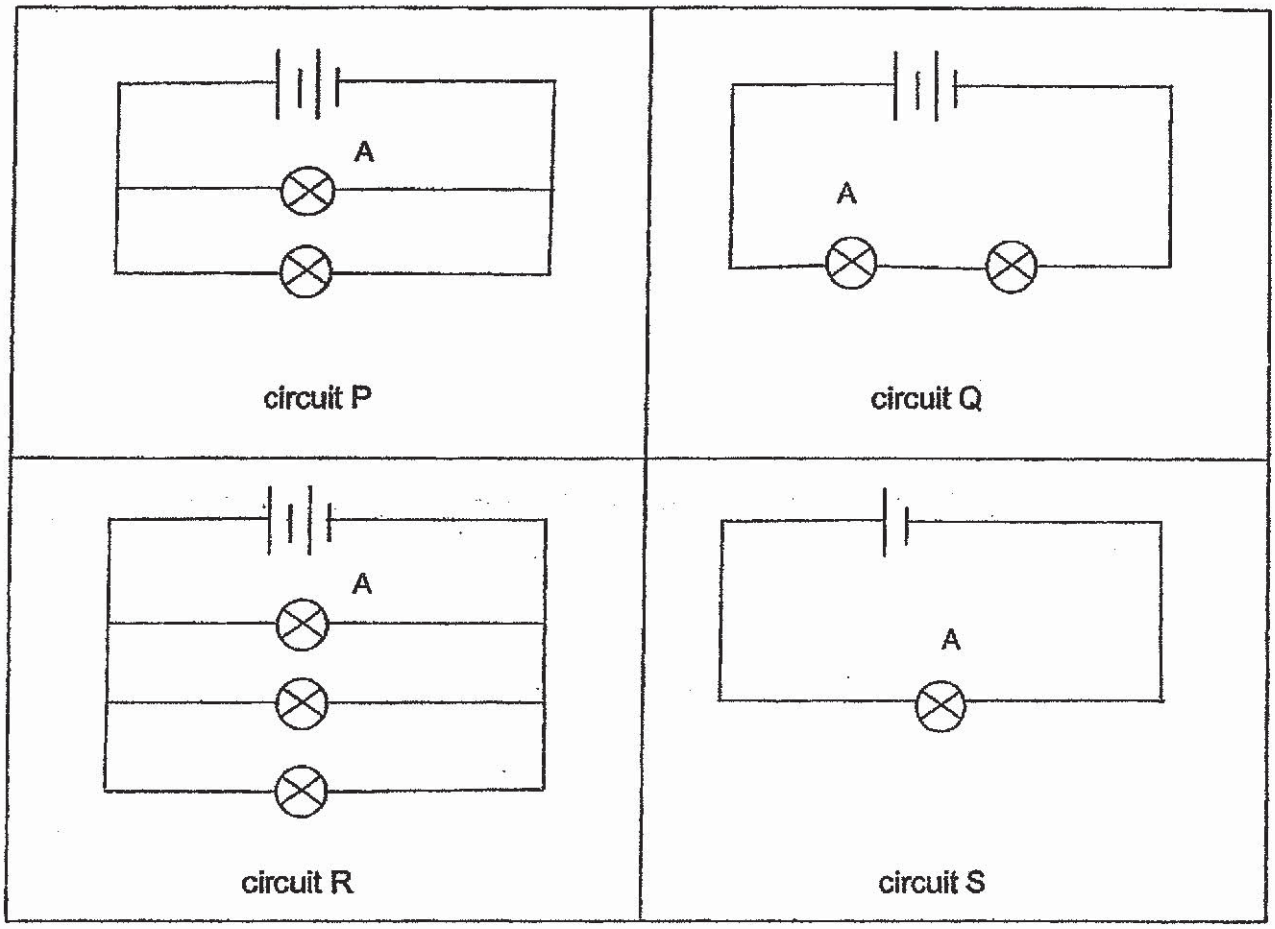
25 Gopal set up bulb A in four different electrical circuits P, Q, R and S using identical batteries and identical bulbs. The batteries and bulbs are all working properly.



In which circuits would bulb A have the same brightness?

(1) P and Q only

(2) P and R only

(3) P , R and S only

(4) Q , R and S only

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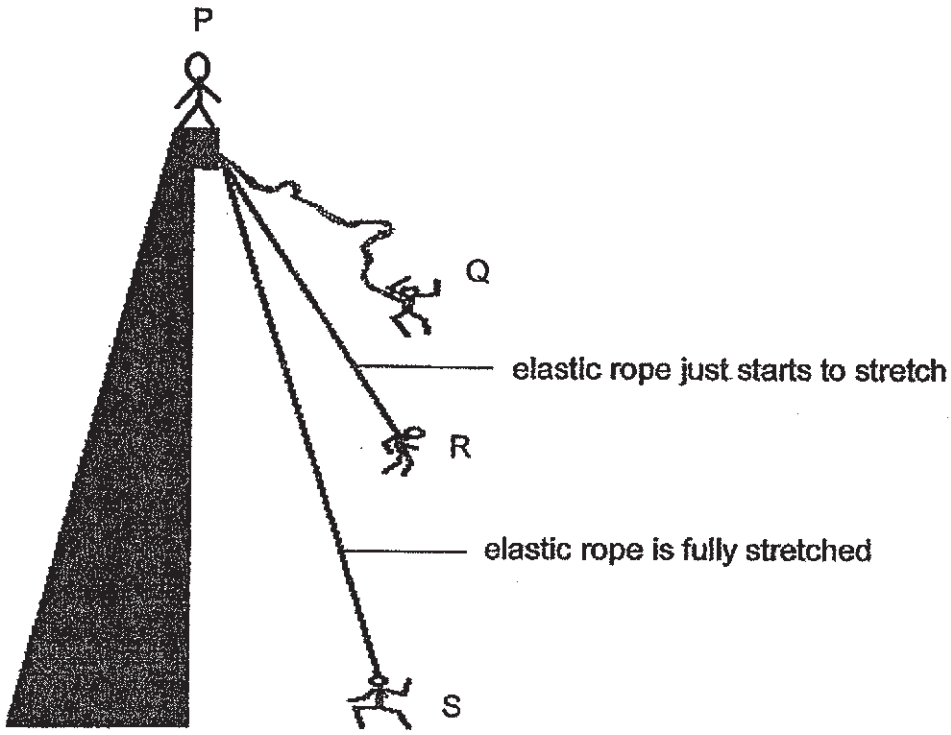
26 The diagram below shows the different positions of a bungee jumper who was secured by an elastic rope as he jumped off. At first, the bungee jumper was at the top, position P before he took his jump.



Which one of the following shows the correct conversion of energy as the bungee jumper jumps from position P to S?

(1) potential energy (stretched rope) ⟶ kinetic energy (jumper) ⟶ potential energy (jumper)

(2) potential energy (jumper) ⟶ potential energy (stretched rope) ⟶ kinetic energy (jumper)

(3) kinetic energy (jumper) ⟶ kinetic energy (stretched rope) ⟶ potential energy (jumper)

(4) potential energy (jumper) ⟶ kinetic energy (jumper) ⟶ potential energy (stretched rope)

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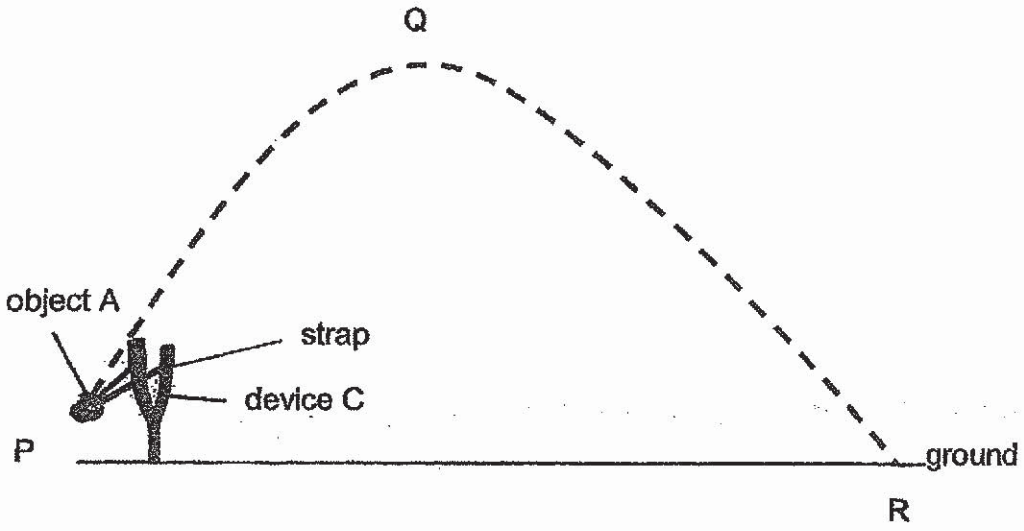
27 The diagram below shows the path of object A after the strap has been pulled back and released using device C.



Which of the following statement(s) is/are true?

A Gravity is acting on object A at point Q only.

B The speed of object A decreases as it falls from Q to R.

C A greater force is applied to the strap when it is pulled back further.

D The kinetic energy of object A decreases while its gravitational potential energy increases as it moves from P to Q.

(1) A only

(2) D only

(3) C and D only

(4) B, C and D only

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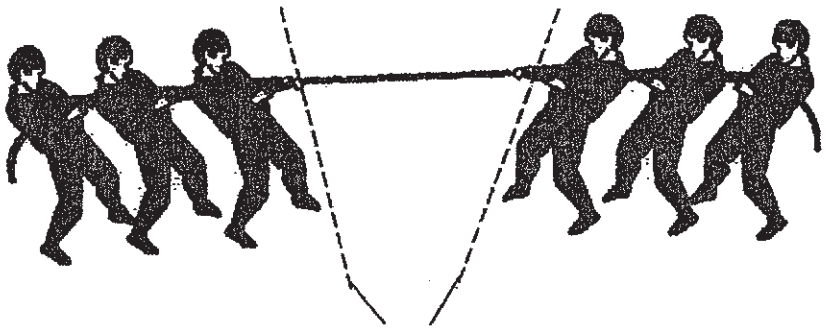
28 Two groups of people were in a tug-of-war as shown below.



starting lines marked on the floor for each group

Neither of the groups was able to make the other group move to its side because _____.

(1) the force they exerted was not great enough

(2) the friction between their feet and the ground prevented it

(3) each group exerted an equal and opposite force on the other group

(4) the gravitational force was greater than the pulling force exerted by each group

(go to Booklet B)

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Rosyth School
Preliminary Examination 2019
SCIENCE
Primary 6

Name: _____

Total Marks: /100

Class: Pr 6- _____

Total time for Booklets A and B: 1 h 45 min

Date: 29 August 2019

Parent's Signature: _____

Booklet B

Instructions to Pupils:

For questions 29 to 40, write your answers in the spaces given in this booklet.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 16 printed pages (including cover page).

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For questions 29 to 40, write your answers in the space provided. **[44 Marks]**

---

29 Robert set up a glass tank. He put some plants and animals, X and Y, into the tank, added some water before it was sealed tightly. He then placed it at a brightly-lit room.

(a) Name the process that must take place in plants and the gas that is required for the animals to survive. [2]

Process: _____

Gas: _____

Robert observed that animal Y fed only on animal X. Animal X fed on the plants in the tank. He recorded the number of animals, X and Y, over time in the tank as shown in the table below.

Day	Number of animals	
	Animal X	Animal Y
1	20	5
20	8	2
120	25	5

(b) Based on the results above, give a reason for the change in number of animal Y between Day 1 to Day 20. [1]

_____

_____

(c) Explain why the number of animal X on Day 120 was higher than that on Day 20 although the number of animal Y had also increased. [1]

_____

_____

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30 The diagram below shows animal K.

animal K

Animal K is found in country M that experiences short period of hot season and long period of cold season. It flies to country N during the period of cold season to look for food.

(a) Name two characteristics of living things that are shown by this behaviour of animal K. [2]

Characteristic 1: _____

_____

Characteristic 2: _____

_____

(b) Other than competing for food, suggest two possible ways in which animal K can be harmful to other animals living in country N. [1]

_____

_____

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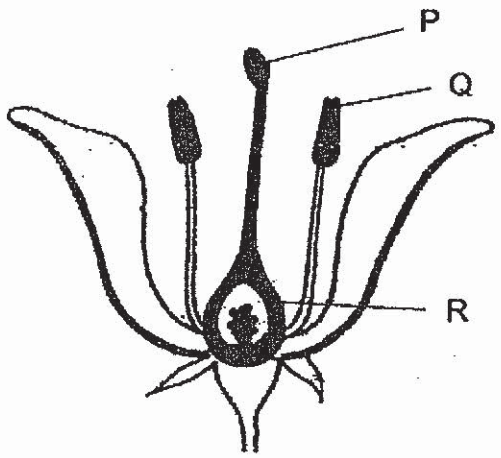
31 The diagram below shows the plant reproductive system.



(a) State the function of part P. [1]

(b) Which part (P, Q or R) of the flower will develop into a fruit after fertilisation? State the function of a fruit.

[1]

Scientists carried out an experiment with flowers from plant X and found out that within three minutes of exposure to the sound of bees, the flowers increased the amount of sugar in their nectar by twenty times.

(c) Explain how the above behaviour of the flowers can benefit plant X. [1]

When the above experiment was carried out, the scientists had two groups of flowers. One group was exposed to the sound of bees while the other was exposed to some other sound.

(d) Do you think the above is a necessary step to take? Explain why. [1]

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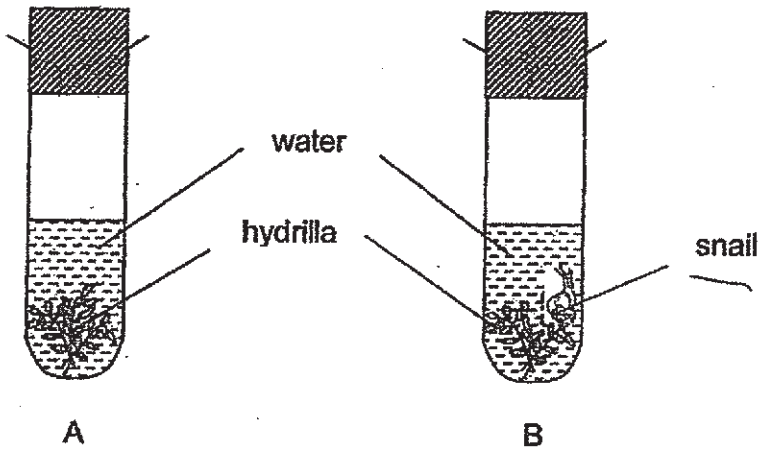
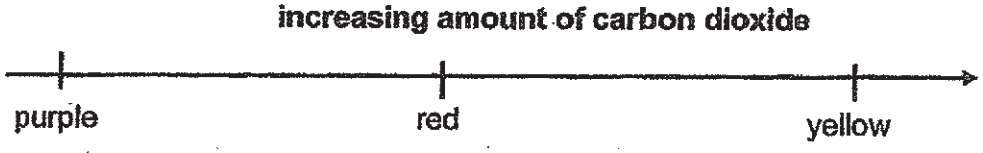
32 A group of students conducted an experiment using two identical tubes as shown. They put the two set-ups, A and B, in the sun for a few hours.



After a few hours, a drop of red indicator was added to each tube. When the red indicator was added, the colour of water changed according to the amount of carbon dioxide present.

The colour of water indicates the amount of carbon dioxide present as shown below.



(a) In which set-up would the colour of indicator more likely to turn purple? Explain your choice of answer. [1]

_____

_____

(b) Other than what is observed from the experiment above, state one way in which animals benefit from plants in a pond. [1]

_____

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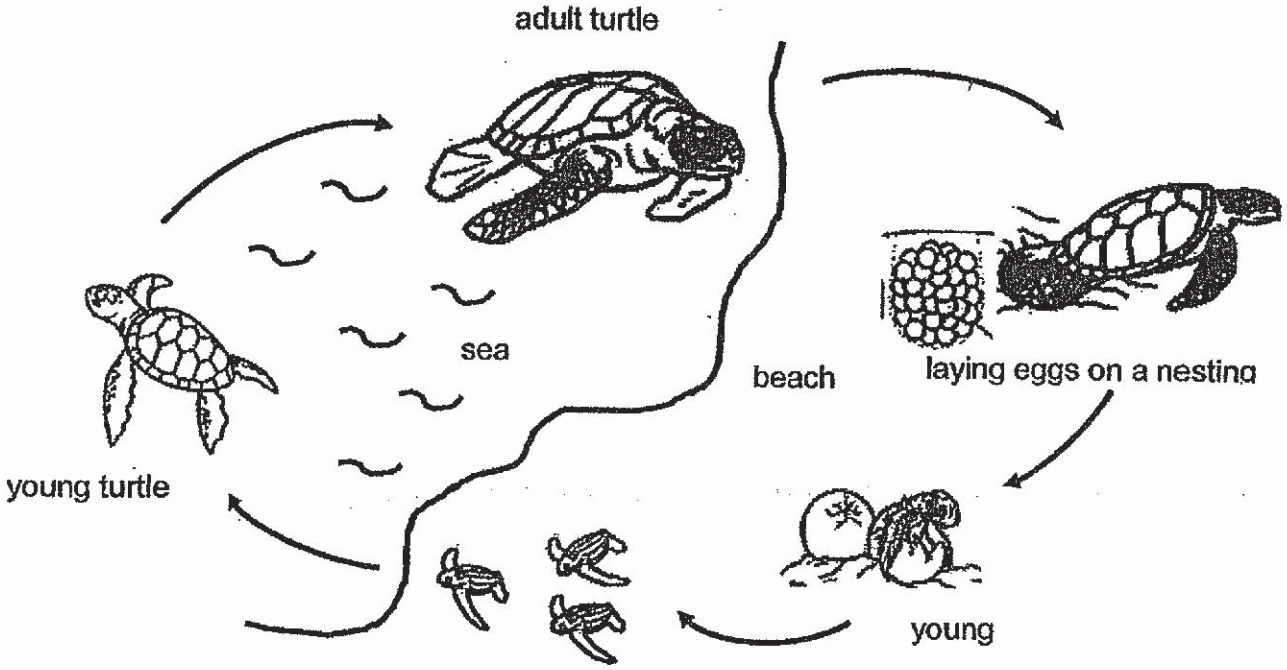
33 Scientists studied a certain type of sea turtles. Sea turtles live in the sea but lay their eggs on the beaches.



As the amount of carbon dioxide in the environment increases, it was observed that the nesting grounds of turtles were disappearing.

(a) Explain how this happens. [2]

Question 33 is continued on page 7

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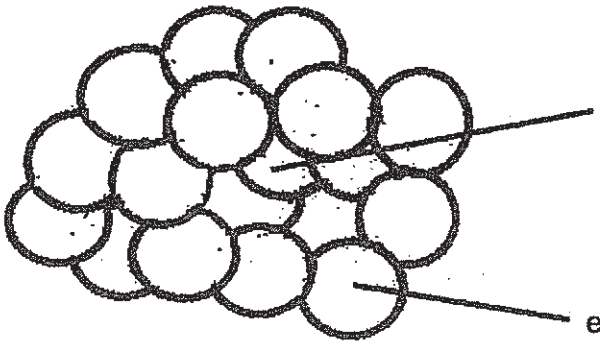
Scientists have discovered that the incubation temperature of the eggs determines the gender (male or female) of the turtle. The eggs also produce heat which contribute to the incubation temperature of the eggs. Female turtles need higher temperature to develop.

The diagram below shows some turtle's eggs clustered close together in a nest by the beach.



The eggs on the outer boundary and the eggs in the centre of the nest have different genders.

(b) Write 'female' or 'male' to indicate the gender of the young. [1]

Young hatched from eggs in the centre of nest: _____

(c) Explain your choice for (b). [1]

_____

_____

_____

If the temperature of the surrounding becomes too high (above 28°C), only female turtles will be produced. This leads to a decrease in the number of sea turtles over time.

(d) Explain why the number of sea turtles may decrease. [1]

_____

_____

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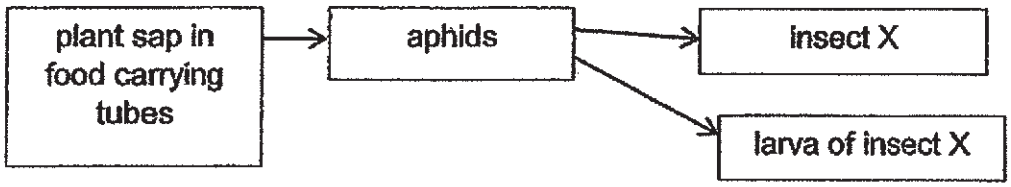
34 The diagram below shows the food relationship between plants, aphids and insect X.



(a) Explain why aphids are a pest to farmers. [1]

(b) Explain how the introduction of insect X will help farmers. [1]

(c) The adult insect X can lay 100 eggs at a time among the aphids on the leaves. How are the above two actions of the insect X useful for its survival? [2]

Lays 100 eggs:

Lays eggs among the aphids:

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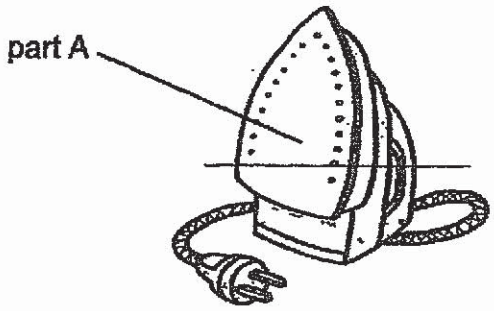
35 The picture below shows an electric iron.

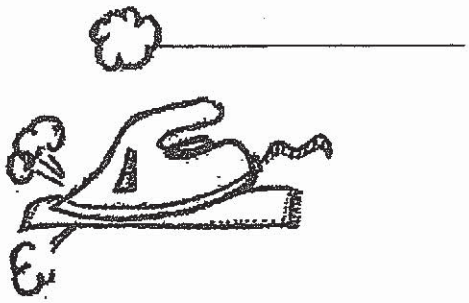


(a) State the material that is used to make part A of the electric iron and one property of the material used. [2]

Material: _____

Property: _____

When David poured water into an iron, he observed white clouds formed above the iron.



(b) Explain how the white clouds are formed. [2]

_____

_____

_____

_____

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36 The diagram below shows a metal rim and wooden wheel. Both the metal rim and the wooden wheel are of similar size.

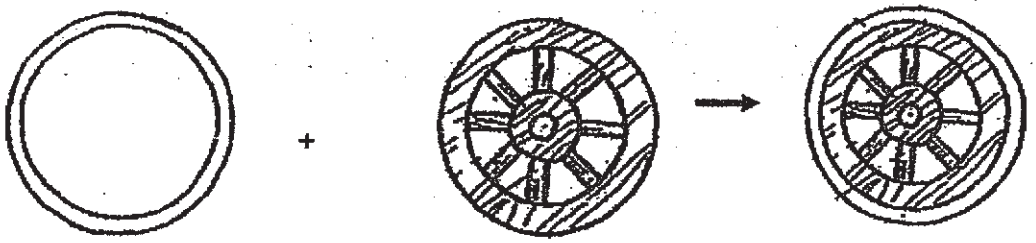
(a) Identify the difference between metal and wood in terms of conductivity of heat. [2]

Wood:__ _____ _____ _____ _____

Metal:__ _____ _____ _____ _____

The following steps were carried out to make a cartwheel.

1	A large amount of heat is applied to the metal rim.
2	The hot metal rim is placed round the wooden wheel to form the cartwheel.
3	A large amount of cold water is poured over the cartwheel.



Question 36 is continued on page 11

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(b) Explain how step 1 and step 3 ensure the metal rim is fitted round a wooden wheel to form the cartwheel. [2]

(i) step 1:

_____

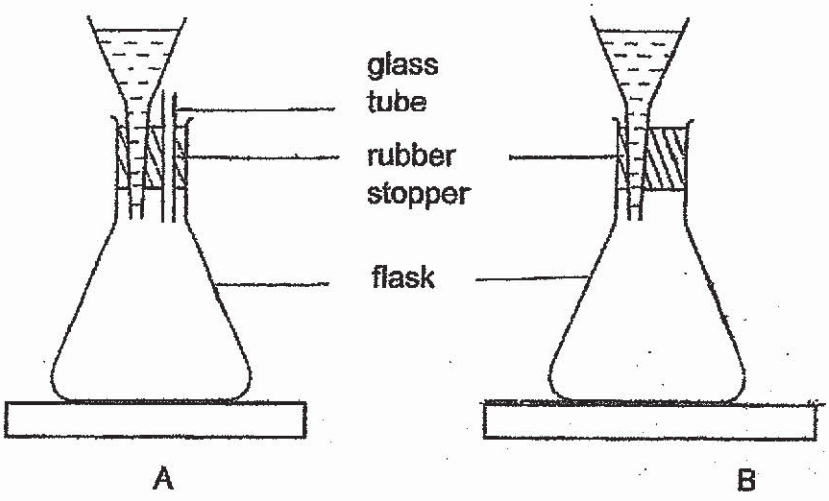
_____

(ii) step 3:

_____

_____

37 The diagram below shows two set-ups, A and B. In both set-ups the rubber stopper is fitted tightly into the flask. John poured an equal amount of water into each funnel.



(a) What would be his observations for the set-ups? [2]

(i) set-up A

_____

(ii) set-up B

_____

Question 37 is continued on page 12

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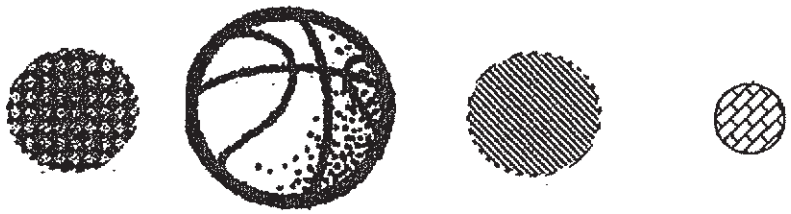
In another experiment, John had 4 different types of balls. The four balls are made of different materials C, D, E and F.



C D E F

He wanted to find out if the material of the ball will affect the mass of the ball.

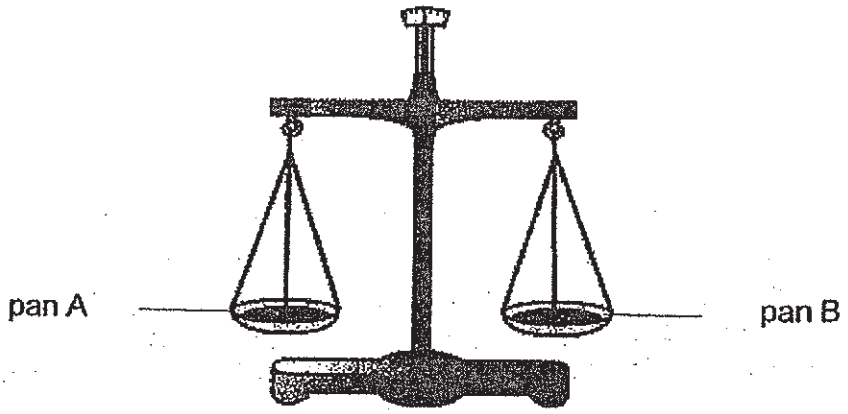
(b) Which two balls should he choose? Give a reason for your choice. [1]

_____

_____

John concluded that material of a ball affects the mass of the ball.

(c) Using a beam balance as shown below, describe the method and the result to confirm his conclusion. [2]



Method:

_____

_____

Result:

_____

_____

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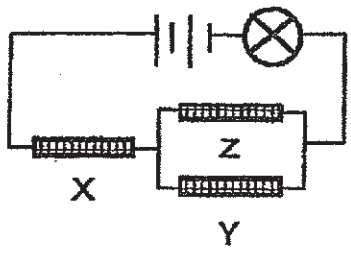
38 The diagram below shows three rods X, Y and Z placed at different positions of a circuit.



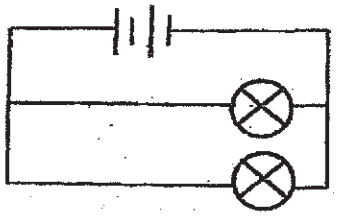
The bulb lights up in the circuit. Only two rods are conductors of electricity.

(a) Which one of the rods, X, Y or Z is definitely a conductor of electricity? Explain why. [1]

_____

_____

In another experiment, the following circuit A has been set up. All the bulbs and batteries are working properly.



circuit A

(b) What is the advantage of arranging the bulbs as shown in circuit A? [1]

_____

_____

Question 38 is continued on page 14

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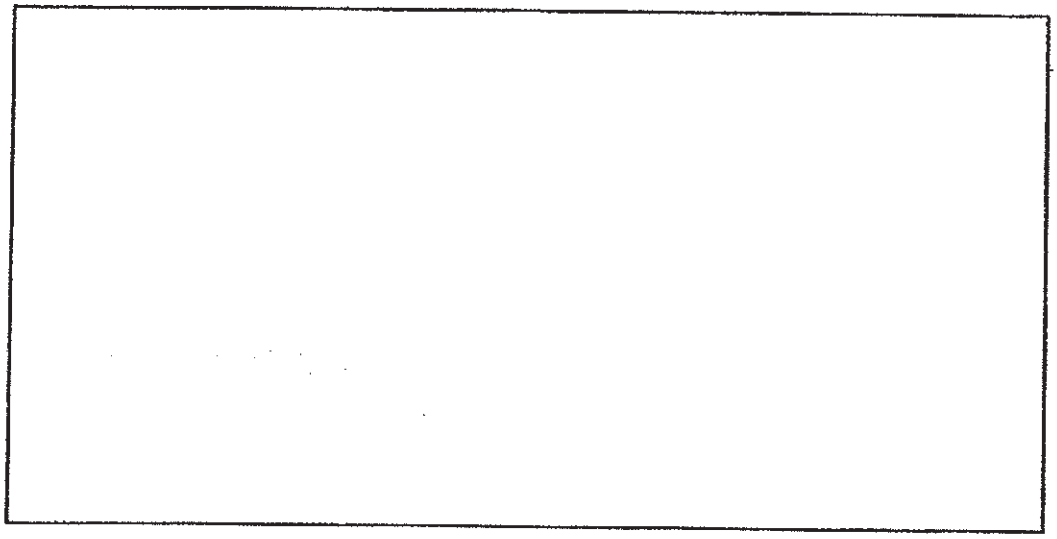
(c) The two bulbs in circuit A were re-arranged so that the bulbs in circuit A will remain lit for a longer time.

Draw a circuit diagram below to show the change. [1]



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39 Andy released a yo-yo from one of his hands and a stone from the other hand above the floor as shown below. Both the yo-yo and the stone are of the same mass.

floor

(a) Fill in the boxes to show the main energy conversion as the yo-yo and stone were released from the hand to the floor. [1]

Andy observed the yo-yo spinning as it was falling but the stone did not spin.

(b) Explain why the yo-yo fell slower than the stone in terms of energy changes. [1]

(c) Andy also observed that yo-yo continued to move up and down for a few times before stopping completely. Explain why. [1]

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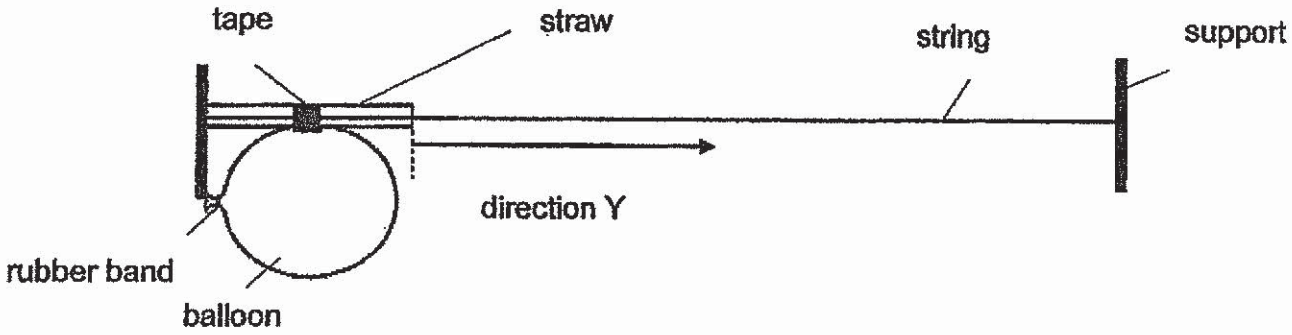
40 A string is passed through a straw. A balloon is then taped firmly to the straw as shown below.



When the rubber band is removed, air rushed out of the balloon producing a force. This force caused the straw with the balloon to move in direction Y by 100cm.

Muthu prepared two similar set-ups. In the first set-up, he coated the string with substance T. He released the rubber band and measured the distance the straw moved for the two tries. He then repeated the experiment using substance V for the second set-up. The results are shown in the table below.

Substance coated on the string	Distance travelled by the straw (cm)	
	1st try	2nd try
T	154	140
V	160	161

(a) Based on the results above, explain how substance V has affected the distance travelled by the straw compared to substance T. [2]

(b) For substance T, the distance travelled by the straw was different for each try. What could he do to obtain a more reliable result? [1]

End of Paper

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Answer Sheets

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1.	4	6.	1	11.	2	16.	1	21.	4	26.	4
2.	2	7.	2	12.	4	17.	3	22.	4	27.	3
3.	1	8.	4	13.	3	18.	3	23.	3	28.	3
4.	4	9.	3	14.	4	19.	1	24.	2		
5.	3	10.	3	15.	1	20.	4	25.	2		

29a.Process-Photosynthesis Gas-Oxygen

29b.There is not enough Animal X for Animal Y to feed on. So some animal Y died.

This led to a decrease in Animal Y.

29c.Birth rate of Animal X is higher that its death Rate.

30a.Livings Things respond to changes around them /Living Things can move by themselves. Living things need food to survive.

30b.Animal K can spread diseases. Animal K can compete for space/water. Animal K can occupy habit of another animal.

31a.Part P receives Pollen Grains from another for pollination to take place.

31b.R Fruit protects the seeds/Helps to disperse the seeds.

31c.It attracts more bees to the flowers of plant X so this increases the chance of pollination to take place.

31d.Yes. It is to compare and confirm that the only variable affecting the amount of nectar produced is due to the expose to the sound of bees.

32a.Set Up A as the hydrilla plant take in carbon dioxide for photosynthesis and there is no snail to give out carbon dioxide.

32b.plants provide animals with shelter and hiding places from predators/ Plants can be a source of food for the animals./Plants provide places for animal to lay egg/Plants provide oxygen for animals to take in.

33a.As the amount of carbon dioxide increase, more heat is trapped so temperature of Earth increase. This causes the melting of the polar ice caps which cause the rising of sea levels.

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33b.Female

33c.Eggs in the centre are surrounded by other eggs. It reduces the heat loss from the eggs in the centre to the surrounding air.

33d.There will not be enough male turtles to fertilize the eggs.

34a.Aphids feeds on Plant sap so the plant will have less food to grew. This will reduce plant growth.

34b.Insect X feds on aphids so there will be fewer aphids to feed on the plant sap. Plants can grow more healthy.

34c.Lay 100 eggs-Increase the chance of the eggs developing/ hatching into young and growing into adults.

Lay eggs among aphids –When the eggs are hatch the young will have a ready source of food to feed on. They can feed on aphids.

35a.Material : Iron Property:-Good conductor of heat

35b.This is because the water gained heat from the hot iron and evaporate to form water vapor. The water vapor then rose and came into contact with the surrounding air. The water vapors would then lose heat to the surrounding air and condensed to form tiny water droplets, which collect and appear as the white cloud.

36a.Wood :-Poor conductor of heat Metal :-God conductor of heat

36b.Step 1 : Matal rim will gain heat and expand so it will be bigger than the wooden wheel.

Step 3:Metal rim will lose heat and contract so it will hold the wooden wheel tightly.

37aiWater flowed into flask quickly

37aii.Water flowed into flask slowly

37b.C and E. Both balls are of similar size / Volume.

37c.Method: Place ball C on pan A and ball E on pan B.

Results: The beam balance will tilt downwards to one side.

38a.X .X is a conductor of electricity so the circuit is closed and electricity flow through for bulb to light up.

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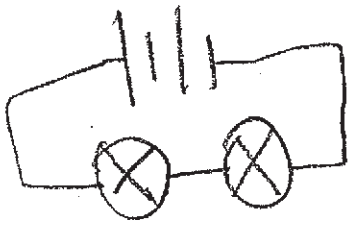
38b.The bulbs can be independently controlled. When one bulb fuses, the other bulb can still be lit .Bulbs will shine more brightly than when they are arranged in series.



38c.

39a.Gravitational Potential Energy→Kinetic Energy

39b.some of the Kinetic energy of the falling yo-yo is converted to the kinetic energy and heat energy of the spinning yoyo.

39c.Not all of the kinetic energy is converted to heat energy of the spinning yoyo. The yo-yo still had some kinetic energy.

40a.With substance V, the distance travelled by the straw is greater .Substance V reduced more friction between the straw and the string.

40b.Repeat the experiment a few more time, and obtain the average result from the experiment.

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SINGAPORE CHINESE GIRLS' SCHOOL
PRELIMINARY EXAMINATION 2019
PRIMARY 6 SCIENCE

Name: _____ ( ) Date: 22 August 2019

Class: Primary 6 SY / C / G / SE / P

SCIENCE

BOOKLET A

28 questions

56 marks

Total Time For Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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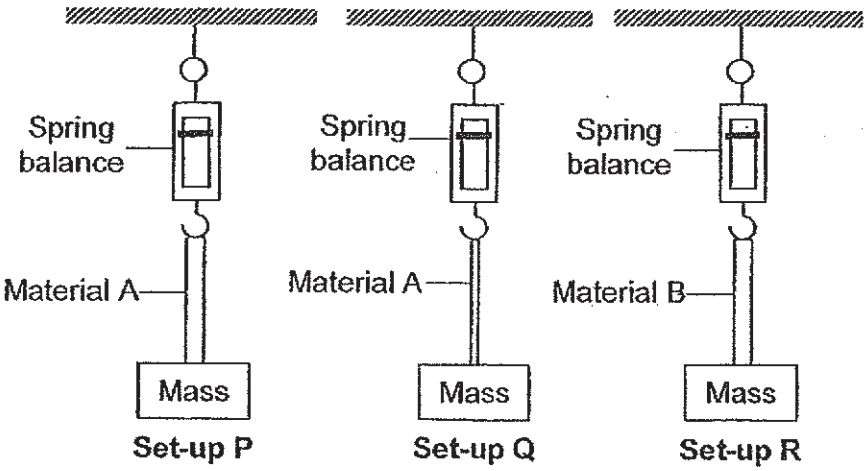
Booklet A (56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Which one of the following can be used to differentiate between fish and reptiles?

1) Ability to swim
2) Body temperature
3) Presence of legs
4) Presence of gills

2. Mohan conducted an experiment as shown below. He increased the mass hung on each material, A and B, until they broke.



Which of the following pairs of set-ups can he compare fairly?

X: P and Q
Y: P and R
Z: Q and R

1) X only
2) X and Y only
3) Y and Z only
4) X, Y and Z

3. Which one of the following about the digestive system is correct?

	Large intestine	Stomach	Small intestine
1)	Absorbs excess water from digested food	Absorbs digested food	Digests food
2)	Digests food	Digests food	Absorbs excess water from digested food
3)	Absorbs excess water from undigested food	Digests food	Absorbs digested food
4)	Absorbs digested food	Absorbs excess water from undigested food	Digests food

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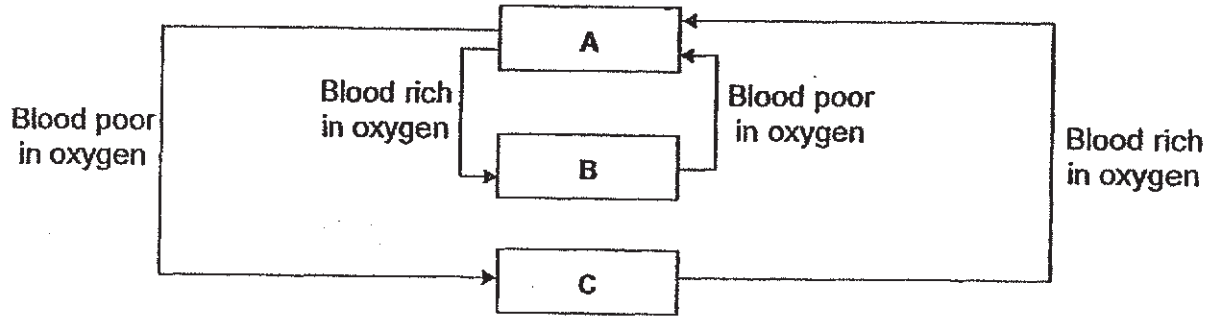
4. Which one of the following correctly shows what happens when we exercise?

	Oxygen required	Carbon dioxide released	Digested food required	Heartbeat rate
1)	Increases	Increases	Increases	Increases
2)	Decreases	Increases	Remain the same	Increases
3)	Increases	Decreases	Decreases	Decreases
4)	Decreases	Remain the same	Remain the same	Decreases

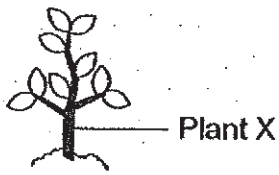
5. The diagram below shows the flow of blood in our body.



Which one of the following correctly shows A, B and C?

	A	B	C
1)	Other parts of the body	Heart	Lungs
2)	Other parts of the body	Lungs	Heart
3)	Lungs	Heart	Other parts of the body
4)	Heart	Other parts of the body	Lungs

6. Kumar set up an experiment using 4 similar leaves of the same mass, A, B, C and D of Plant X. He coated some surfaces of the leaves as shown in the table below.



Leaf	Underside coated with oil	Upper side coated with oil
A	✓	✓
B		
C	✓	
D		✓

After a few hours, Kumar weighed each leaf and recorded the mass. Which one of the following shows the correct order of the mass of the leaves, from the heaviest to the lightest?

1) A, C, D, B
2) A, D, C, B
3) B, C, D, A
4) B, D, C, A

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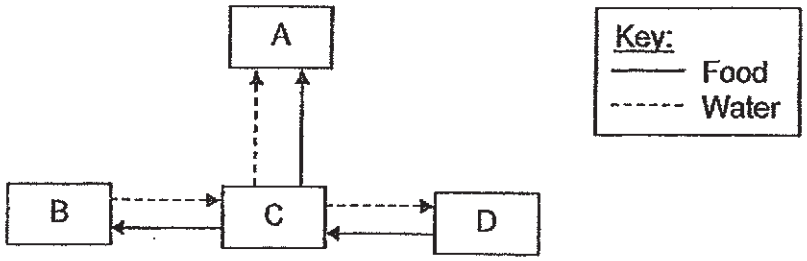
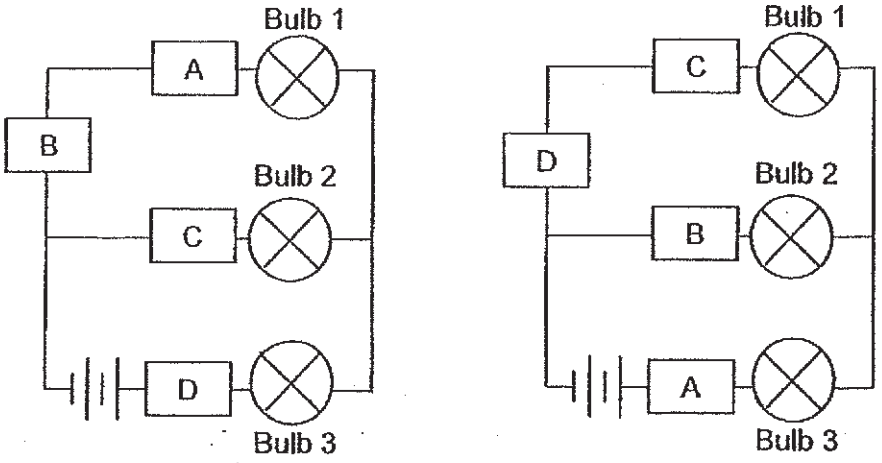
7. The diagram below shows the movement of food and water in a plant.



Which one of the following below is correct?

	A	B	C	D
1)	Fruit	Leaves	Stem	Roots
2)	Fruit	Roots	Stem	Leaves
3)	Leaves	Stem	Roots	Fruit
4)	Roots	Stem	Leaves	Fruit

8. Alice set up 2 circuits using similar electrical components as shown below.



The table below shows the results of her experiment.

	Did the bulbs light up?		
	Bulb 1	**Bulb 2**	**Bulb 3**
Circuit P	No	No	No
Circuit Q	No	Yes	Yes

Which one of the following is correct?

	Conductors of Electricity	Non- conductors of Electricity	Not possible to tell
1)	A	B	C and D
2)	A	-	B, C and D
3)	A and B	C and D	-
4)	A and B	D	C

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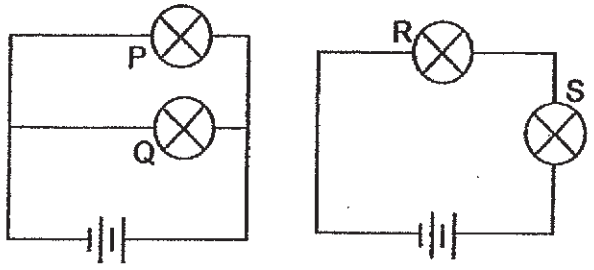
9. Alice set up 2 circuits using similar electrical components as shown below.



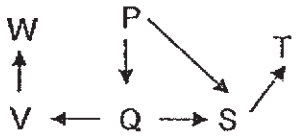
Circuit A **Circuit B**

Which of the following statements is/are correct?

A: The bulbs in both circuits are arranged in series.
B: The bulbs in Circuit A are brighter than the bulbs in Circuit B.
C: If Bulb R in Circuit B is fused, Bulb S will not be able to light up.
D: If Bulb P in Circuit A is fused, Bulb Q will not be able to light up.

1) A and B only
2) B and C only
3) C and D only
4) B, C and D only

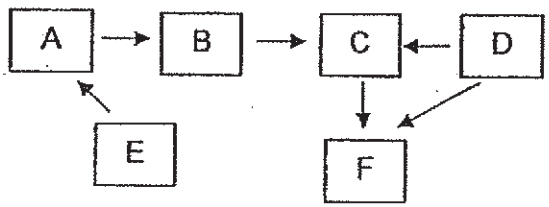
10. Study the food web below.



Which one of the following statements is correct?

1) P is a decomposer.
2) V and Q are animal eaters.
3) W and T are food producers.
4) S is a plant and animal eater.

11. The food web below shows the relationship between 6 organisms.



Which organism/s is/are both prey and predator?

1) B only
2) B and C only
3) A and F only
4) A, B, C and F only

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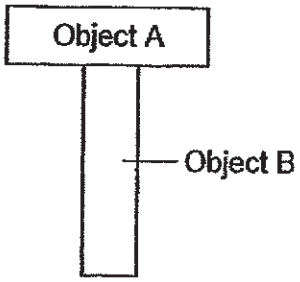
12. Aziz observed that Object A and Object B were attracted as shown below.

Aziz then placed Object A and Object B in another position as shown below.

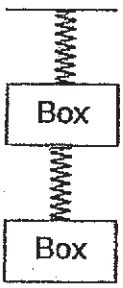


He noticed that Object A and Object B were not attracted. Which one of the following correctly explains why this happened?

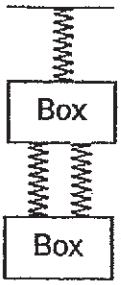
1) Only Object A is made of a non-magnetic material.
2) Only Object B is made of a non-magnetic material.
3) The magnetic force in the middle of Object A is too weak.
4) Both Object A and Object B are made of non-magnetic materials.

13. Cindy hung boxes of the same mass onto identical springs. Which one of the following correctly shows the extension of the springs when the boxes are hung on the springs?

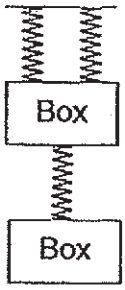
1)



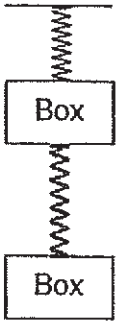
3)



2)



4)



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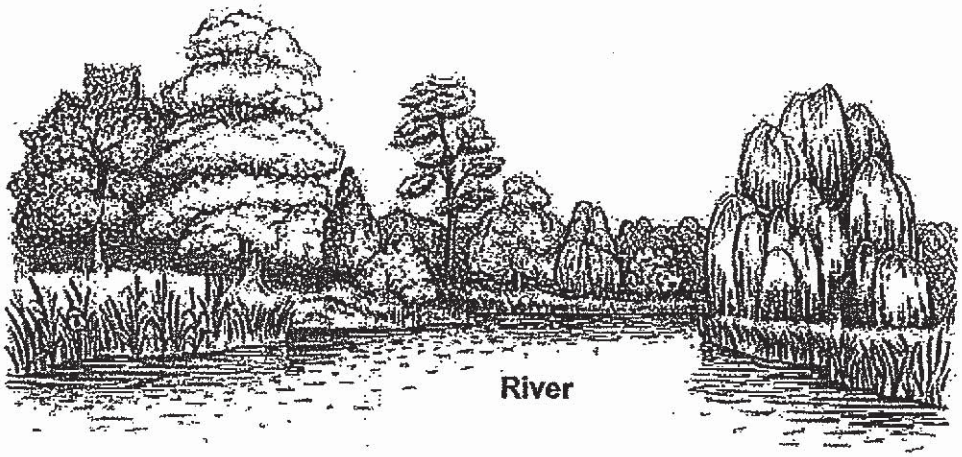
14. The picture below shows a group of polar bears looking for food in a rubbish dump in a town.

Which one of the following directly drives the polar bears to search for food in the town?

1) Acid rain
2) Deforestation
3) Air pollution
4) Global warming

15. What would happen if all the plants in the area as shown below are removed?



1) The animals in the river will increase.
2) The amount of soil eroded will increase.
3) The amount of rainfall in the area will increase.
4) The amount of oxygen in the area will increase.

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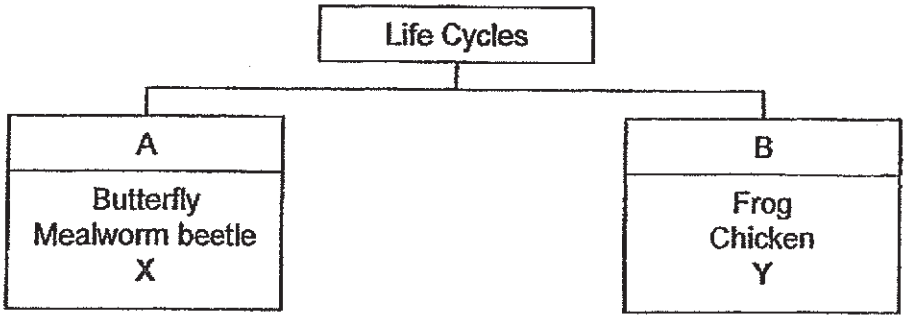
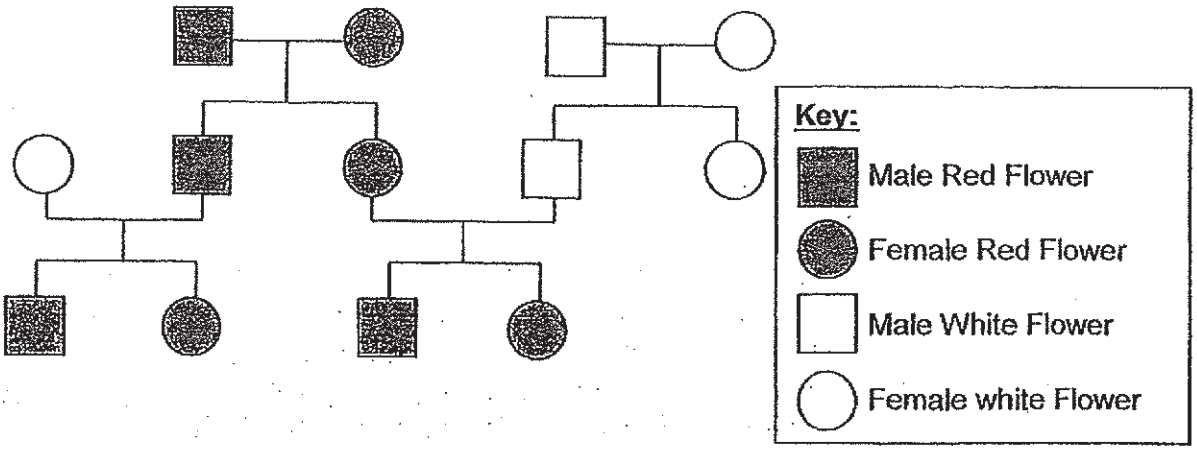
16. Study the classification chart below.



Which one of the following correctly shows what X and Y should be?

	X	Y
1)	Mosquito	Grasshopper
2)	Cockroach	Moth
3)	Grasshopper	Cockroach
4)	Moth	Mosquito

17. Plant A produces male and female flowers. The diagram below shows the different flowers of Plant A that can be produced on each plant.



Based on the diagram above, which of the following statements are true?

A: Both male and female flowers must be red to produce plants that have red flowers.
B: Both male and female flowers must be white to produce plants that have white flowers.
C: Female sex cell of the red flower and the male sex cell of the red flower can produce red flowers.
D: Male sex cell of the red flower and the female sex cell of the red flower can produce white flowers.

1) A and B only
2) A and D only
3) B and C only
4) C and D only

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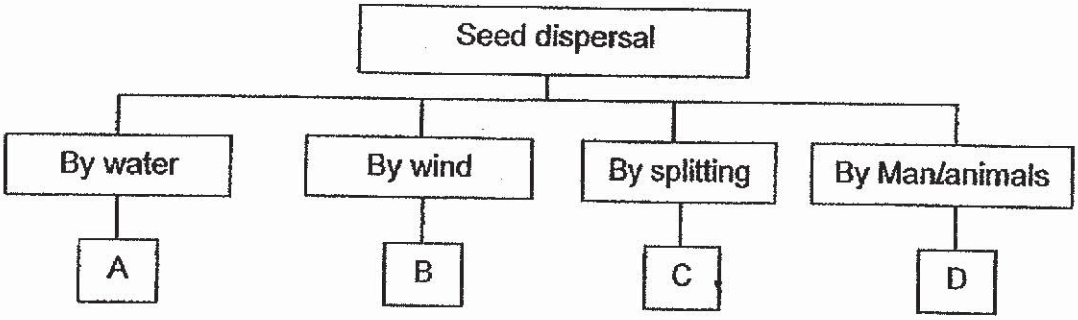
18. Study the classification chart below.

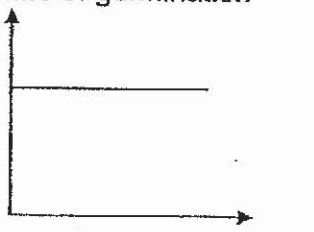


Which one of the following organisms cannot be placed in the classification chart above?

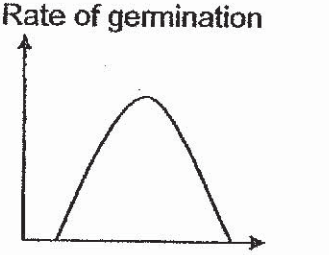
1) Mango tree
2) Bird's nest fern
3) Rubber plant
4) Mimosa plant

19. Which one of the following correctly shows the relationship between temperature and the rate of germination?

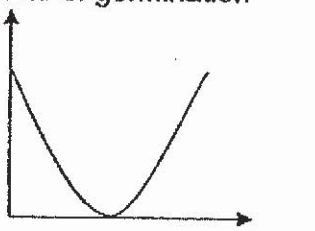
1) Rate of germination



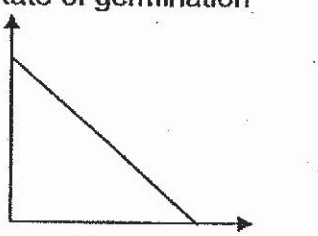
3) Rate of germination



2) Rate of germination



4) Rate of germination



20. Which of the following is required for both germination and decomposition to take place?

1) Shade
2) Sunlight
3) Moisture
4) Carbon dioxide

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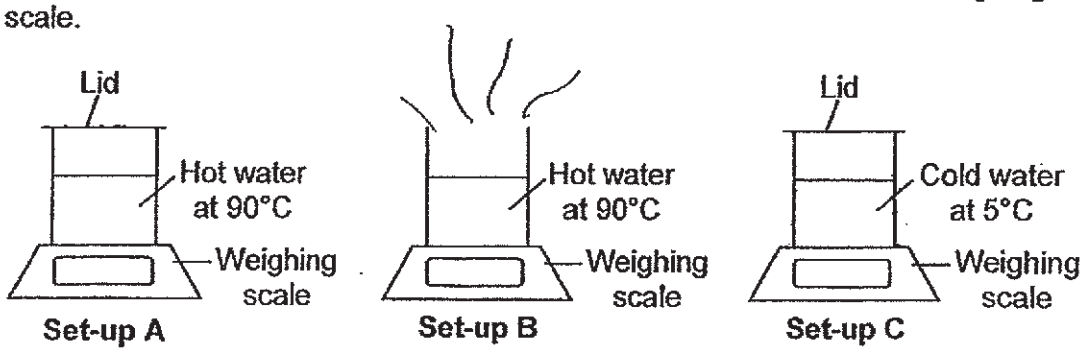
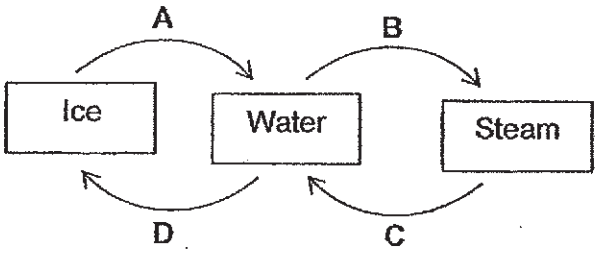
21. Jenny placed 3 containers of water on the weighing scales in the Science room as shown in the diagram below. She noted the mass indicated on each weighing scale.



After 10 minutes, she checked the weighing scales again. Which one of the following correctly shows the mass indicated on each weighing scale after 10 minutes as compared to the mass at the start of the experiment?

	Set-up A	Set-up B	Set-up C
1)	Remain the same	Decrease	Increase
2)	Remain the same	Decrease	Remain the same
3)	Decrease	Remain the same	Increase
4)	Decrease	Remain the same	Remain the same

22. The diagram below shows the changes of states of water.



Which processes take place at a fixed temperature?

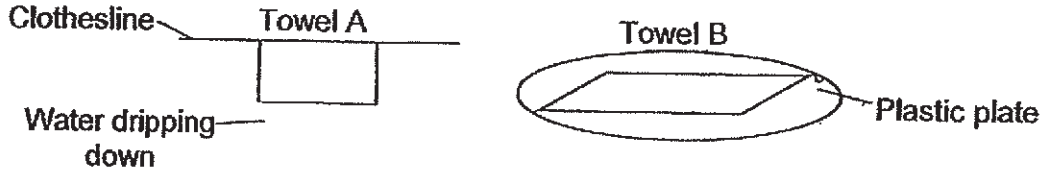
1) A and B only
2) C and D only
3) B, C and D only
4) A, B and D only

23. Substance X is a solid at 50°C and a gas at 220°C.

Which one of the following is possible?

	Freezing point of X (°C)	Boiling point of X (°C)
1)	75°C	180°C
2)	25°C	180°C
3)	75°C	250°C
4)	25°C	250°C

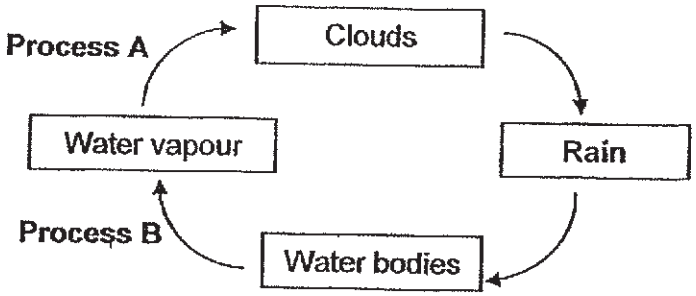
24. Siti wetted 2 identical square towels with the same amount of water. Towel A was folded over a clothesline such that half of it was facing the front and half of it was facing the back. Towel B was laid out flat onto a plastic plate. She then placed them at the same place as shown below.



After 5 hours, Siti observed that Towel A was completely dry but Towel B was still damp. Which one the following is the correct reason for this to happen?

1) Towel A had less water in it to evaporate.
2) Towel A was exposed to more light than Towel B.
3) Gravity increased the rate of evaporation in Towel A.
4) Towel A had more exposed surface area than Towel B.

25. The diagram below shows the water cycle.



Which one of the following correctly shows if heat was gained or lost by the water in Process A and Process B?

	Process A	Process B
1)	Heat loss	Heat gain
2)	Heat loss	Heat loss
3)	Heat gain	Heat gain
4)	Heat gain	Heat loss

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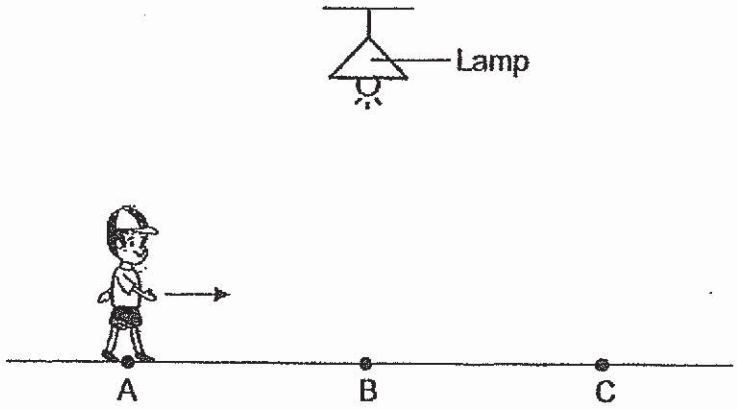
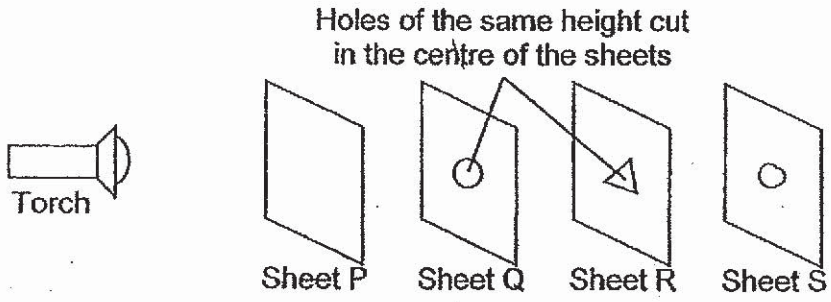
26. David walked in a straight line from A to B and then to C as shown in the diagram below.



Which of the following correctly describes the length and position of David's shadow at Position A and Position C?

	A		C	
	Length of shadow	**Position of shadow**	**Length of shadow**	**Position of shadow**
1)	Longer than at B	In front of David	Longer than at B	Behind David
2)	Shorter than at B	In front of David	Shorter than at B	Behind David
3)	Longer than at B	Behind David	Longer than at B	In front of David
4)	Shorter than at B	Behind David	Longer than at B	In front of David

27. The experiment shown below is carried out in a dark room.



Sheets P, Q, R and S are arranged in a straight line. When the torch is switched on, a bright round patch of light is seen on Sheet S only.

Which one of the following correctly describes the properties of materials that Sheets P, Q, R and S are made of?

	Transparent	Opaque
1)	P and Q	R and S
2)	R and S	P and Q
3)	P and R	Q and S
4)	P, Q and R	S

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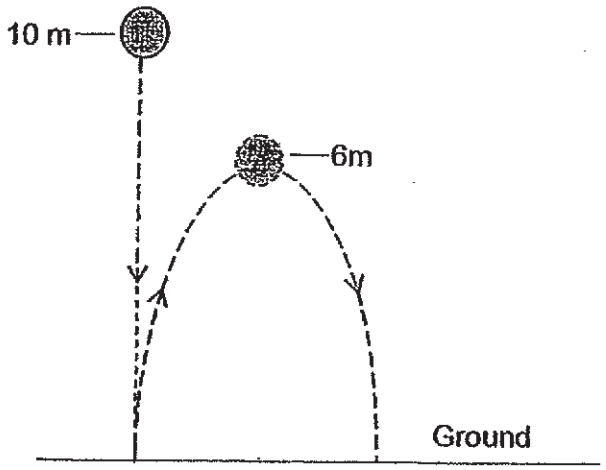
28. Xiao Ming dropped a ball from 10 m. The ball bounced up to 6 m.



What should Xiao Ming do if he wants the ball to bounce up to 10 m?

1) Use a lighter ball
2) Use a heavier ball
3) Drop the ball onto softer ground
4) Drop the ball from higher than 10 m

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SINGAPORE CHINESE GIRLS' SCHOOL
PRELIMINARY EXAMINATION 2019
PRIMARY 6 SCIENCE

Name: _____ ( ) Date: 22 August 2019

Class: Primary 6 SY / C / G / SE / P

Components	Marks Obtained	Total Marks
Booklet A		56
Booklet B		44
Total		100

_____
Parent's Signature

SCIENCE

BOOKLET B

12 questions

44 marks

Total Time For Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY

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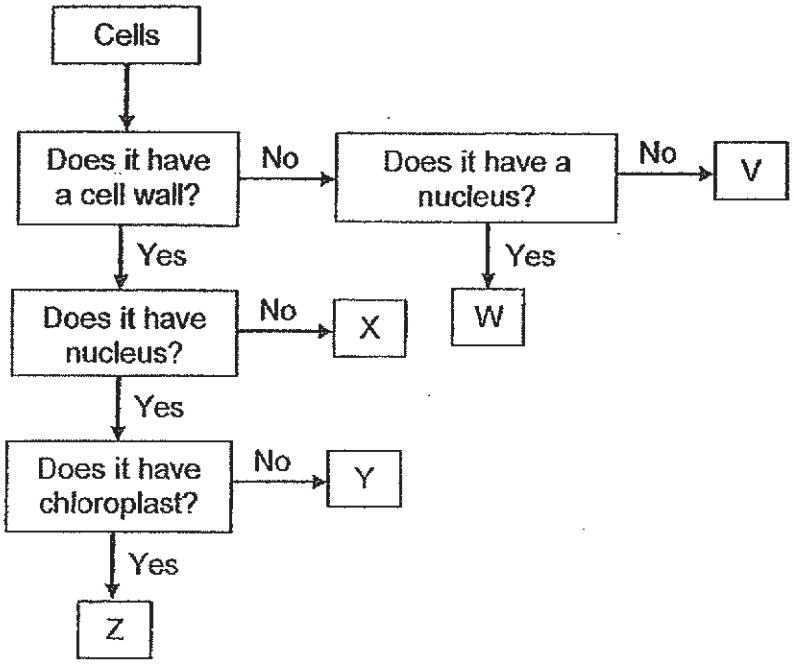
Name: _____ ( ) Date: _____

Class: Primary 6 SY / C / G / SE / P

Booklet B (44 marks)

Answer all the following questions.

29. Study the flowchart below.



a) Based on the flowchart above, describe Cell W. (1m)

_____

b) Based on the flowchart above, what is the difference between Cell V and Cell X? (1m)

_____

c) Based on the flowchart above, which cell/s above has/have a regular shape? (1m)

_____

d) Based on the flowchart above, which cell/s above is/are able to make food? (1m)

_____

4

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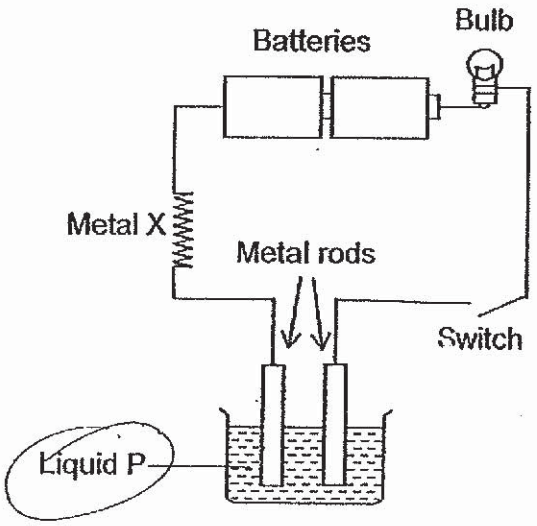
30. An experiment was set up as shown in the diagram below. Metal X became hot and the bulb lights up when the switch was closed.



a) Explain why the bulb lit up when the switch was closed. (2m)

b) When another battery was added to the circuit, Metal X produced more heat energy. Explain how Metal X became hotter. (2m)

4

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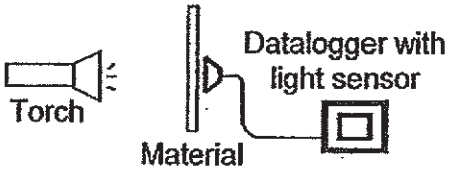
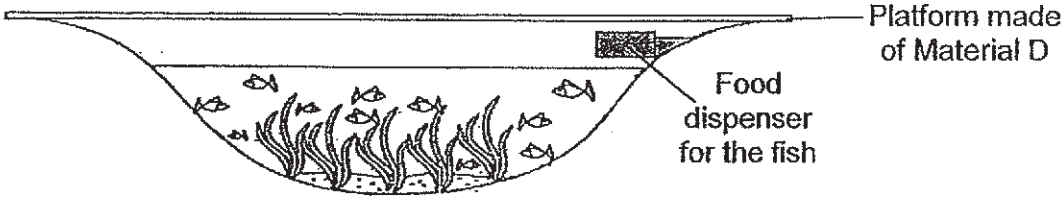
31. Sumin conducted an experiment as shown below. She placed different materials in front of a torch and measured the amount of light that passed through each material.



The table below shows the results of her experiment.

Material	Amount of light from the torch (units)	Amount of light detected by the light sensor (units)
A	1000	0
B	1000	945
C	1000	86
D	1000	154

Sumin then built a platform using Material D over a pond in a garden so that people can view the organisms in the pond from the platform. However, the organisms in the pond died sometime after the platform was built.



a) Explain why the plants and animals in the pond died after some time. (2m)

i) Plants: _____

_____

ii) Animals: _____

_____

b) Based on Sumin's experiment, which material should Sumin use to build the platform instead of Material D so that the plants and animals in the pond will not die? Explain your answer. (2m)

_____

_____

_____

c) State 1 way the plant can benefit from the fish. (1m)

_____

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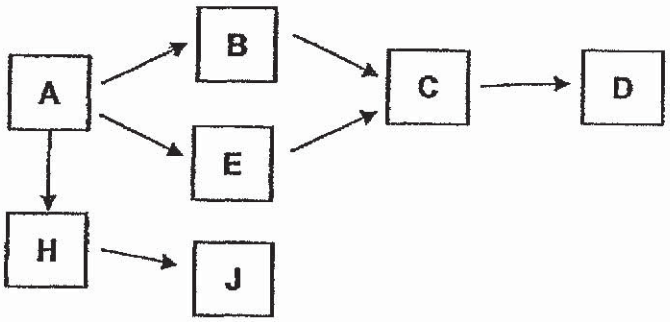
32. The food web below shows the relationships among Organisms A, B, C, D, E, H and J in a river.



a) Which organism/s will benefit directly if the level of carbon dioxide in the river increases? Explain your answer. (2m)

_____

_____

b) All of Organisms C and Organisms J died because of water pollution in the river.

i) Explain why the population of Organism D would then decrease. (1m)

_____

_____

ii) Explain why the population of Organism H would then increase. (1m)

_____

_____

2/4

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33. The caterpillar of Butterfly A feeds on Plant X which is poisonous. The poison stays in Butterfly A but does not harm it.

Butterfly A

a) Bird P likes to eat butterflies but avoids eating Butterfly A. Explain why. (1m)

_____

_____

b) The diagram below shows Butterfly B.

Butterfly B

Butterfly B is not poisonous. How is it an advantage for Butterfly B to look like Butterfly A? (1m)

_____

_____

c) Butterfly B lays green eggs on the leaves of plants. Explain why the eggs are able to avoid being detected by predators. (1m)

_____

_____

3

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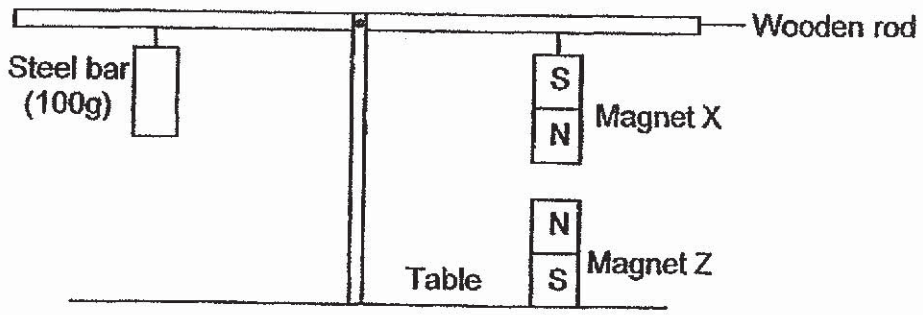
34. Linda set up an experiment as shown below. Magnet Z was fixed to the table below Magnet X to balance the wooden rod.

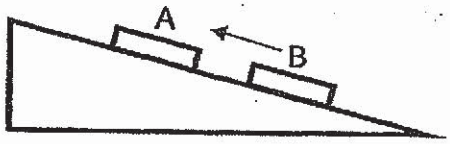


Based on Linda's experiment, indicate if each of the following statements is 'True', 'False' or 'Not possible to tell' by placing a tick (✓) in the correct column. (4m)

	Statements	True	False	Not possible to tell
a)	Magnet X is heavier than the steel bar.			
b)	If the steel bar is removed, the wooden rod will tilt upwards on the right.			
c)	If Magnet Z is replaced by an iron bar, the wooden rod will be balanced.			
d)	If Magnet Z is placed below the steel bar instead of below Magnet X, the wooden rod will be balanced.			

35. In Experiment 1, Meihua placed Magnet A on a slope. Magnet A remains stationary on the slope.

In Experiment 2, Meihua placed another magnet, Magnet B on the slope. Magnet B moved up the slope and touched Magnet A.



In the table below, indicate the forces that are acting on the magnets by placing ticks (✓) in the appropriate columns. (2m)

		Friction	Gravity	Magnetic force
a)	Magnet A in Experiment 1			
b)	Magnet B in Experiment 2			

6

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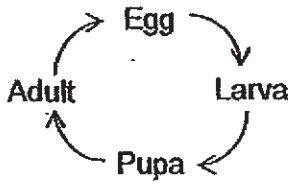
36. The diagram below shows the life cycle of Animal P. Animal P spreads Disease X to humans when it is in the adult stage. After mating, the female of Animal P is able to lay eggs once every 3 days.



A group of researchers kept some Animal P at different temperatures and observed their life cycles. The results are shown in the table below.

	Duration of each stage at different surrounding temperatures (Days)			
	22°C	26°C	30°C	34°C
Egg	13	8	6	2
Larva	4	4	4	4
Pupa	6	6	6	6
Adult	7	10	12	15

a) Based on the results of the experiment, which stage/s of Animal P is/are **not** affected by the change in the surrounding temperature? (1m)

_____

b) When the surrounding temperature is 22°C, how many days does Animal P take to develop into an adult after hatching? (1m)

_____

c) Give 2 reasons why Disease X is spread the **most** rapidly by Animal P when the surrounding temperature is at 34°C. (2m)

i) _____

_____

ii) _____

_____

4

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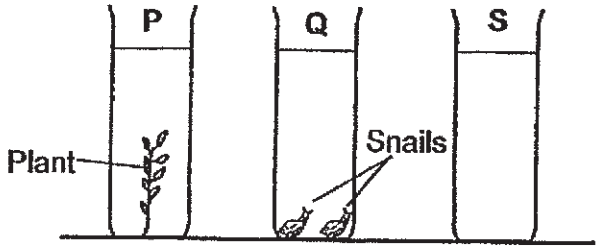
37. John conducted an experiment as shown below. Containers, P, Q and S had an equal amount of water. They were placed in a well-lit place.



a) In the table below, indicate if the amount of carbon dioxide in Container P and Container Q would 'increase' or 'decrease' after 1 hour by placing ticks (✓) in the appropriate columns. (1m).

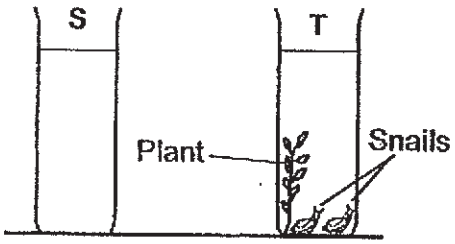
	Containers	Increase	Decrease
i)	P		
ii)	Q		

b) State the purpose of Container S. (1m)

_____

_____

c) John conducted another experiment as shown below.



Both containers had the same amount of water and were placed in a well-lit place. In the table below, indicate how the amount of carbon dioxide in Container S would compare with that in Container T after 1 hour by placing a tick (✓) in the appropriate column. (1m)

i.

S has more carbon dioxide	T has more carbon dioxide	Not possible to tell

ii. Explain your option. (1m)

_____

_____

_____

4

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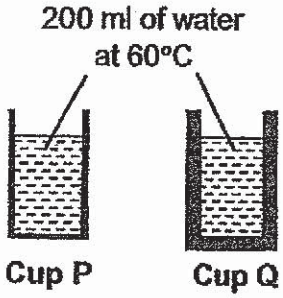
38. Mohan had 2 cups made of the same material but different thickness. He poured 200 ml of water at 60°C into each cup at the same time as shown below.

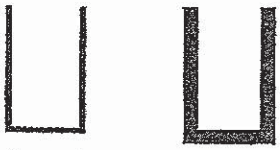


a) When Mohan touched the cup, he observed that the outer surface of Cup P felt warmer than the outer surface of Cup Q. Explain why this happened. (1m)

_____

_____

Mohan repeated the experiment with Glass Cup A and Glass Cup B with different thickness as shown below.



b) After pouring 200 ml of water at 95°C into each cup at the same time, Cup B cracked while Cup A did not. Explain Mohan's observation. (2m)

_____

_____

_____

3

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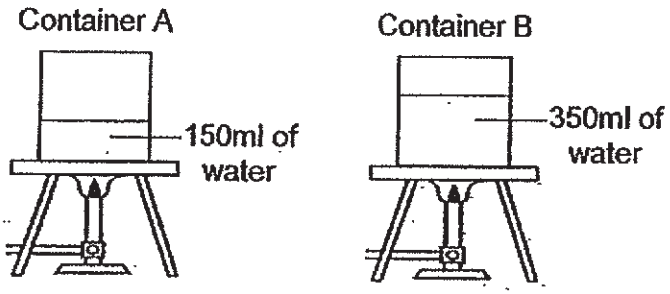
39a) The amount of heat in a liquid depends on its _____

and _____. (1m)

b) Amin heated 2 containers of water at the same time.



After 10 minutes, the water in Container A started to boil but not the water in Container B. Explain why this happened. (1m)

_____

_____

c) After the water in both containers boiled for 2 minutes, Amin turned off the heat and let the water cool down. Which container of water, A or B, will take a longer time to reach room temperature? Explain your answer. (1m)

_____

_____

3

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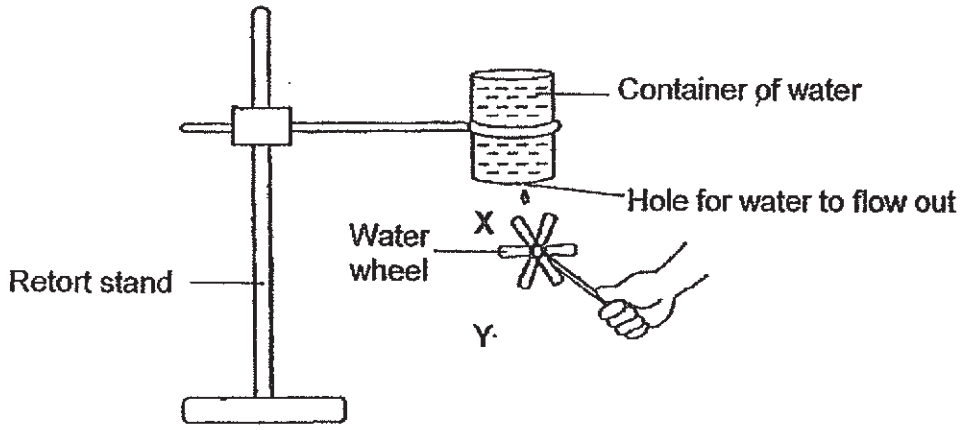
40. Rajah set up the experiment as shown below. He then filled a container with water and fixed it on a retort stand. He then made a small hole at the bottom of the container and held a water wheel at Position X. When water flowed out of the container, the water wheel spun.



a) State the energy conversion of Rajah's experiment. (1m)

b) State if the speed of spinning of the water wheel would 'increase', 'decrease' or 'remain the same'. (1m)

i)

Situation	Speed of water wheel [please tick (✓)]		
	Increase	Decrease	Remain the same
A slightly bigger hole is made at the bottom of the container.			

ii)

Situation	Speed of water wheel [please tick (✓)]		
	Increase	Decrease	Remain the same
Water wheel is held at Position Y instead of Position X.			

c) Explain your answer for (bii) on the speed of water wheel at Position Y (2m)

_____

_____

_____

End of Paper

4

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Name : _____( )

Class: _____

SINGAPORE CHINESE GIRLS' SCHOOL
SCIENCE PRELIMINARY EXAMINATION 2019

Booklet A

1) 4	6) 1	11) 2	16) 1	21) 1	26) 3
2) 2	7) 2	12) 3	17) 3	22) 4	27) 3
3) 3	8) 4	13) 2	18) 2	23) 1	28) 4
4) 1	9) 2	14) 4	19) 3	24) 1	
5) 4	10) 4	15) 2	20) 3	25) 1	

Booklet B

No.	Suggested Answer
29a	W has a nucleus but no cell wall.
20b	Cell X has a cell wall but Cell V does not.
29c	X, Y and Z
29d	Z
30a	Liquid P is a conductor of electricity. When the switch is closed, there will be a closed circuit / complete circuit, allowing the bulb to light up.
30b	When another battery is added, there will be more potential energy that will be converted into more electrical energy. More electrical energy will then be converted to more heat energy in Metal P.
31ai	The plants did not receive enough light to make food so the plants died.
31aii	There was not enough oxygen for the animals so the animals died.
31b	Material B. It allowed the most light to pass through so the plants can make the most food and give out the most / enough oxygen for itself and the animals.
31c	Give out carbon dioxide for the plants to make food. / Droppings are used as fertilizer / mineral salts for the plants.

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32a	A. It is a food producer / plant. When the carbon dioxide increases, it will make more food.
32bi	C is D's only source of food / there will be no more food for D / D has nothing else to eat.
32bii	There is no more predator to eat D.
33a	Poison from Plant X will harm Bird P.
33b	Predators / Bird P will think that Butterfly B is poisonous and will not eat it.
33c	Leaves are green so the green eggs can camouflage against the leaves.

34

	Statements	True	False	Not possible to tell
a)	Magnet X is heavier than the steel bar.	✓		
b)	If the steel bar is removed, the wooden rod will tilt upwards on the right.		✓	
c)	If Magnet Z is replaced by an iron bar, the wooden rod will also be balanced.		✓	
d)	If Magnet Z is placed below the steel bar instead of below Magnet X, the wooden rod will also be balanced.			✓

35

		Friction	Gravity	Magnetic force
a)	Magnet A in Experiment 1	✓	✓	
b)	Magnet B in Experiment 2	✓	✓	✓

36a	Larva and pupa
36b	10 days
36ci	At 34°C, they develop into the adult stage the fastest (which is the stage it can spread diseases).
36cii	Animal P stays as an adult for the longest time, so it can reproduce for the longest time / lay the most eggs.

<table>
<tr><td>37a</td><td>i)
ii)</td><td><table><tr><th>Containers</th><th>Increase</th><th>Decrease</th></tr><tr><td>P</td><td></td><td>✓</td></tr><tr><td>Q</td><td>✓</td><td></td></tr></table></td></tr>
<tr><td>37b</td><td colspan="2">It is a control set-up.</td></tr>
<tr><td>37c</td><td colspan="2">i.<table><tr><th>S has more carbon dioxide</th><th>T has more carbon dioxide</th><th>Not possible to tell</th></tr><tr><td></td><td></td><td>✓</td></tr></table></td></tr>
<tr><td>37cii</td><td colspan="2">The amount of carbon dioxide used by the plant for photosynthesis is unknown.
AND
The amount of carbon dioxide given out by the snails is unknown.</td></tr>
<tr><td>38a</td><td colspan="2">Cup P was <u>thinner</u> so heat from the water was conducted/ travelled to his hand <u>faster</u>.
NB: Comparison adjectives (thinner, thicker, faster, slower) are needed and direction of heat travel is needed</td></tr>
<tr><td>38b</td><td colspan="2">Glass is a poor conductor of heat.
The inner glass surface <u>gained heat first / gained more heat</u> and <u>expanded faster/ more</u> than the outer glass surface.
NB:Must' explain and mention difference in expansion between inner and outer glass</td></tr>
<tr><td>39a</td><td colspan="2">volume; temperature</td></tr>
<tr><td>39b</td><td colspan="2">The water in Container A had a <u>smaller volume</u> so it <u>needed to gain less heat</u> to reach boiling point. That is why it started boiling sooner than Container B's.
NB: Must use comparison adjectives unless you elaborate both A and B)</td></tr>
<tr><td>39c</td><td colspan="2">The water in Container B.
The water had a <u>larger volume</u> so it would <u>need to lose more heat</u> than water in Container A to reach room temperature.</td></tr>
<tr><td>40a</td><td colspan="2">Potential → Kinetic → Kinetic
energy of the water in the container
energy of the water when it flows out of the container
energy of the water wheel</td></tr>
</table>

<table>
<tr><td>40b</td><td>i)
ii)</td><td><table><tr><th>Situations</th><th>Speed of water wheel (please tick (✓)</th><th></th><th></th></tr><tr><th></th><th>Increase</th><th>Decrease</th><th>Remain the same</th></tr><tr><td>A bigger hole is poke at the bottom on the container</td><td>✓</td><td></td><td></td></tr><tr><td>Water wheel is held at Position Y instead of Position X</td><td>✓</td><td></td><td></td></tr></table></td></tr>
<tr><td>40c</td><td colspan="2">Y is a greater distance down from the container of water. Thus <u>more of the potential energy of water</u> can convert into <u>more kinetic energy.</u> With more kinetic energy, the water can turn the wheel faster.
NB: The container itself did not move, thus ' Water in the container' did not have more GPE.</td></tr>
</table>

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2019 PRIMARY 6 PRELIMINARY EXAMINATION

Date: 23 August 2019

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

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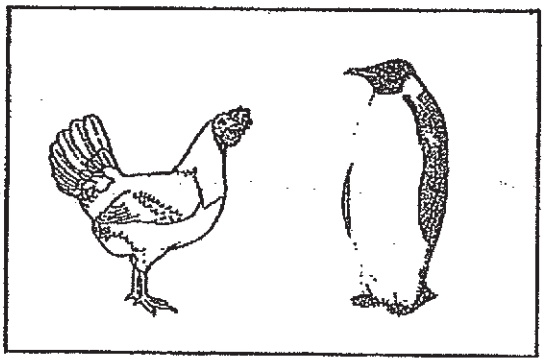
Booklet A (28 x 2 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

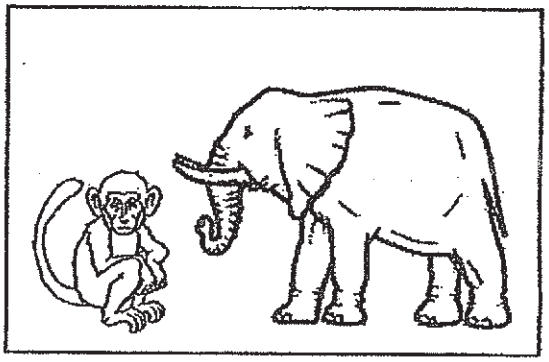
(56 marks)

---

1. Study the animals in group A and B, as shown below.



A



B

Which of the following describes the animals in group A and B?

	Group	Covered with hair	Lay eggs
(1)	A	Yes	Yes
(2)	A	No	Yes
(3)	B	No	No
(4)	B	Yes	Yes

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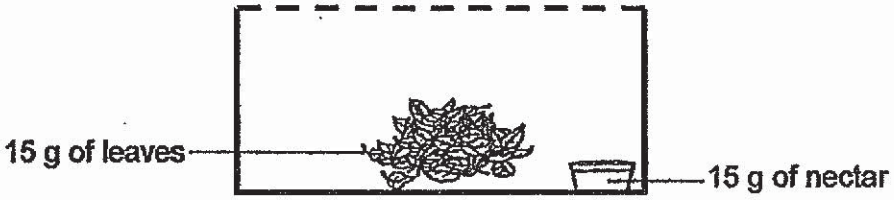
2. Bala has butterflies of three different stages. Each was placed separately into similar containers, A, B and C. Each container has 15 g of leaves and 15 g of nectar as shown below.



The results after five days are shown in the table below.

Container	Amount of green leaves left (g)	Amount of nectar left (g)
A	15	15
B	5	15
C	15	5

Which of the following shows the correct stage of the butterfly in each container?

	Container A	Container B	Container C
(1)	larva	pupa	adult
(2)	adult	larva	pupa
(3)	pupa	larva	adult
(4)	pupa	adult	larva

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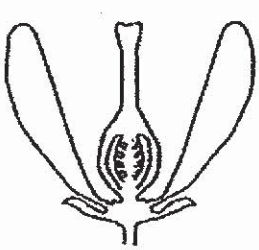
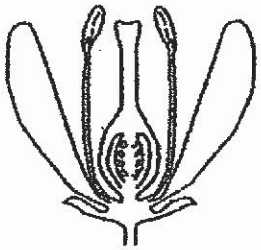
3. Study the two flowers as shown below.



Flower A



Flower B

After one month, both flowers A and B developed into fruits.

Which of the following statement(s) is/ are correct?

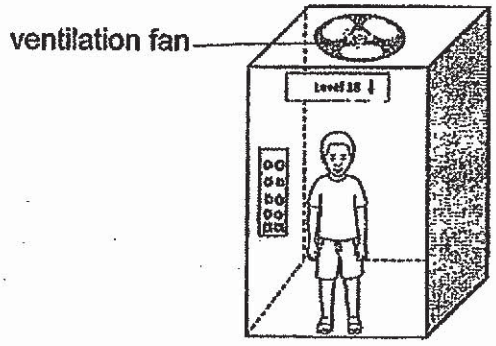
A Only flower B can produce pollen grains.

B Both flowers have male and female reproductive organs.

C Ovules from both flowers can develop into seeds after fertilisation.

(1) A only
(2) B only
(3) A and C only
(4) A, B and C

4. In a power disruption, Bala was trapped in a lift. The ventilation fan stopped working, no air can enter or leave the lift. After one hour, he started to feel unwell.



Which of the following statement(s) describe(s) what was happening to Bala?

A Bala's breathing rate increases.

B The amount of oxygen entering Bala's lungs decreases.

C The amount of carbon dioxide entering Bala's lungs decreases.

(1) B only
(2) C only
(3) A and B only
(4) A and C only

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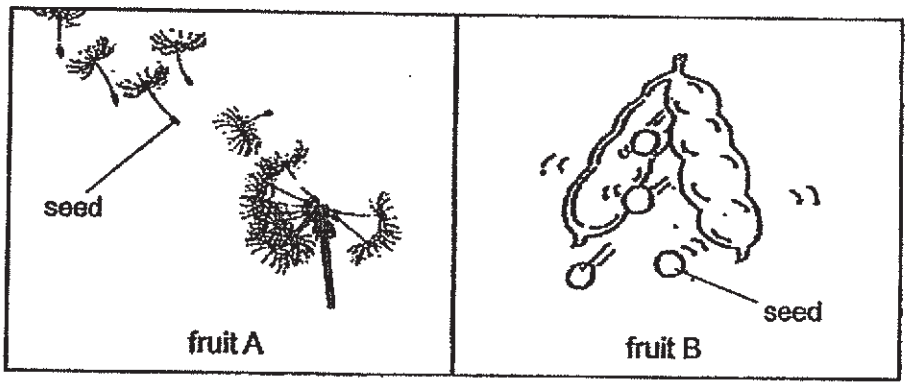
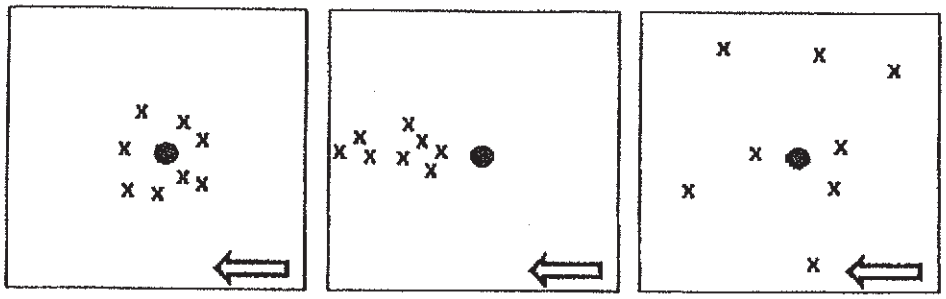
5. Study the characteristics of fruit A and B of different plants below.



Below are three maps showing the distribution of seeds.



Key

⟸ : wind direction

● : parent plant

x : seed

Which of the following maps correctly matches how the seeds of fruit A and B are dispersed?

	fruit A	fruit B
(1)	map Y	map X
(2)	map Y	map Z
(3)	map X	map Z
(4)	map Z	map X

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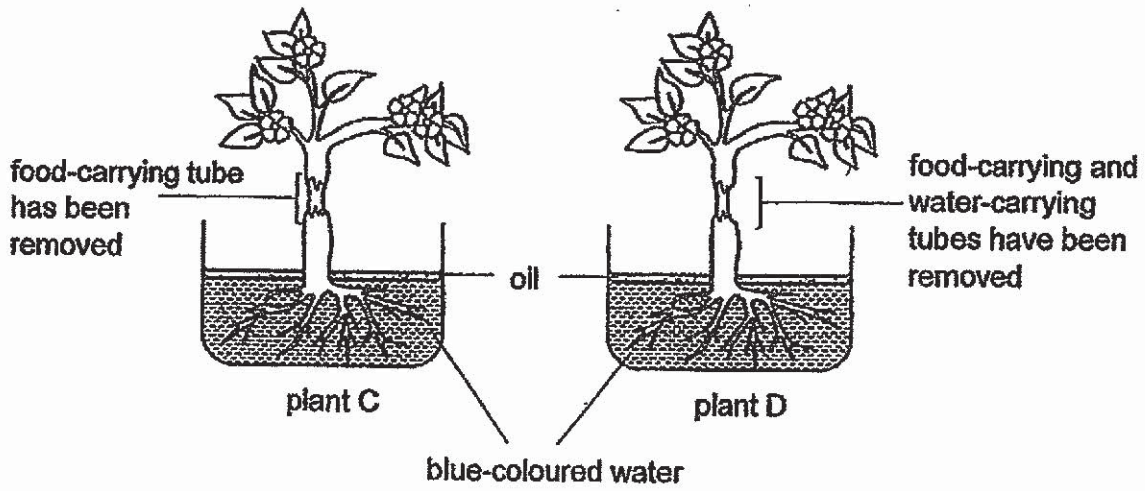
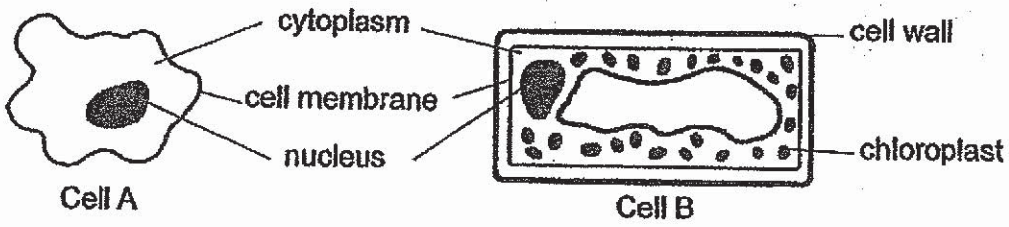
6. Mable prepared two set-ups as shown below.



What will be the colour of the leaves of plants C and D after a few days?

	leaves of plant C	leaves of plant D
(1)	remained green	turned blue
(2)	turned blue	remained green
(3)	remained green	remained green
(4)	turned blue	turned blue

7. The diagrams below show two different cells, A and B.



Which of the following statements about cell A and cell B is correct?

(1) Both cells have fixed shape.
(2) Both cells can photosynthesize.
(3) Only cell B can reproduce by itself but not cell A.
(4) Only certain substances can move in and out of both cells.

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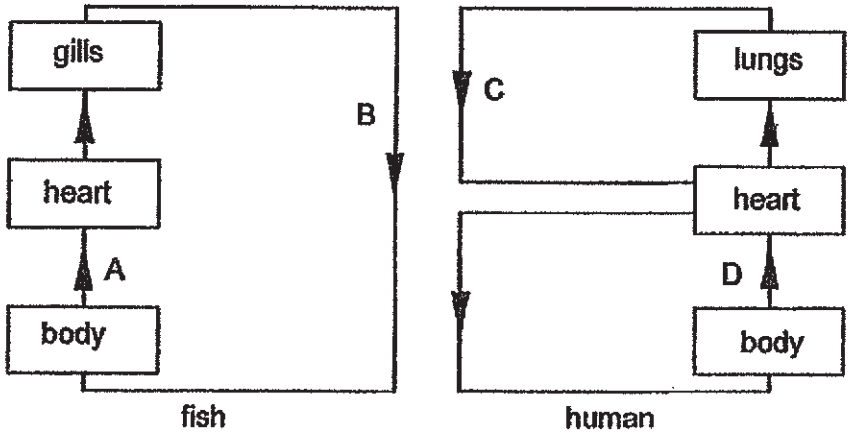
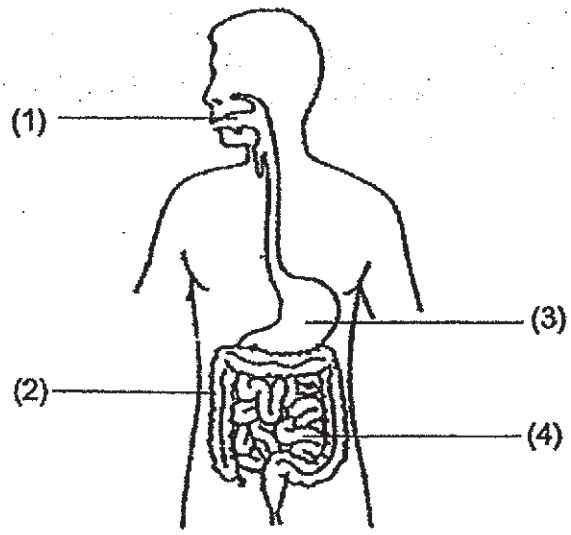
8. The diagrams below shows how blood flows in the body of a fish and a human.



At which parts A, B, C or D, is the blood rich in oxygen in the fish and human respectively?

	Rich in oxygen	
	Fish	Human
(1)	B	C
(2)	A	D
(3)	A	C
(4)	B	D

9. Which part of the human digestive system does not have any digestion taking place?



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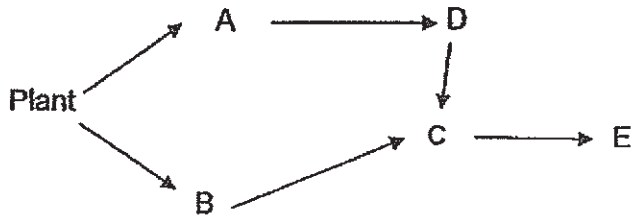
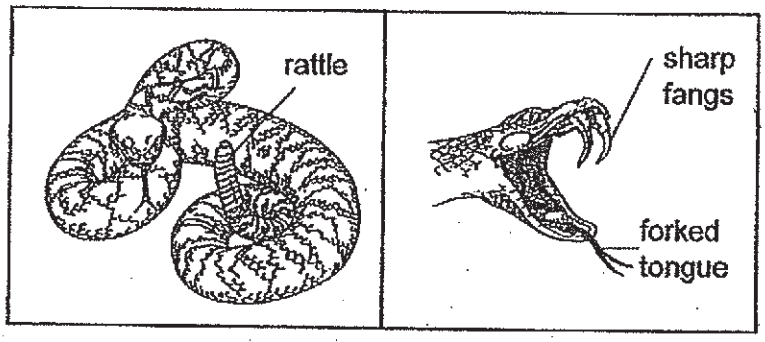
10. Study the food web below.



Which of the following shows how populations of A and B are immediately affected if population of C is wiped out by a disease?

	Changes in population size	
	A	B
(1)	increases	decreases
(2)	increases	increases
(3)	decreases	decreases
(4)	decreases	increases

11. Snake R is well-adapted to survive in its habitat. The rattle at its tail will make a sound when it is alarmed.



Which of its adaptions are grouped under the correct heading?

	Adaptation	
	Structural	Behavioural
(1)	Wait silently to attack	Shake its rattle to warn off its predators
(2)	Shake its rattle to warn off its predators	Forked tongue to sense changes
(3)	Sharp fangs to inject poison into its prey	Wait silently to attack
(4)	Forked tongue to sense changes	Sharp fangs to inject poison into its prey

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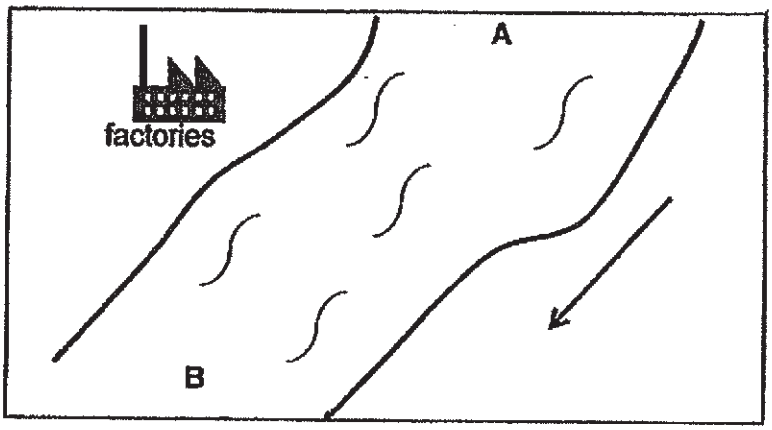
12. Susan collected equal amount of water from point A and B of a river. She found three types of organisms, X, Y and Z in her water samples.



Point	Number of organisms in the water		
	X	Y	Z
A	100	40	70
B	5	80	70

The factories discharged substance W into the river.

Susan wanted to find out the effect of substance W on the organisms.

Based on her results, which of the following is a possible conclusion?

	W is useful to	W is harmful to	W has no effect on
(1)	Y	Z	X
(2)	X	Y	Z
(3)	Z	X	Y
(4)	Y	X	Z

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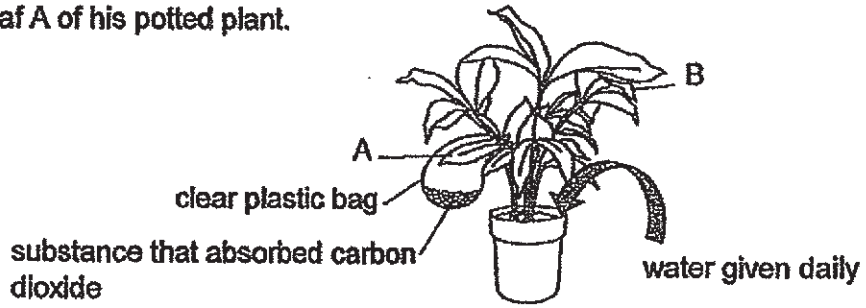
13. Ravi has a potted plant that had been placed in the dark for two days. He then tied a clear plastic bag with a substance which absorbs carbon dioxide around leaf A of his potted plant.

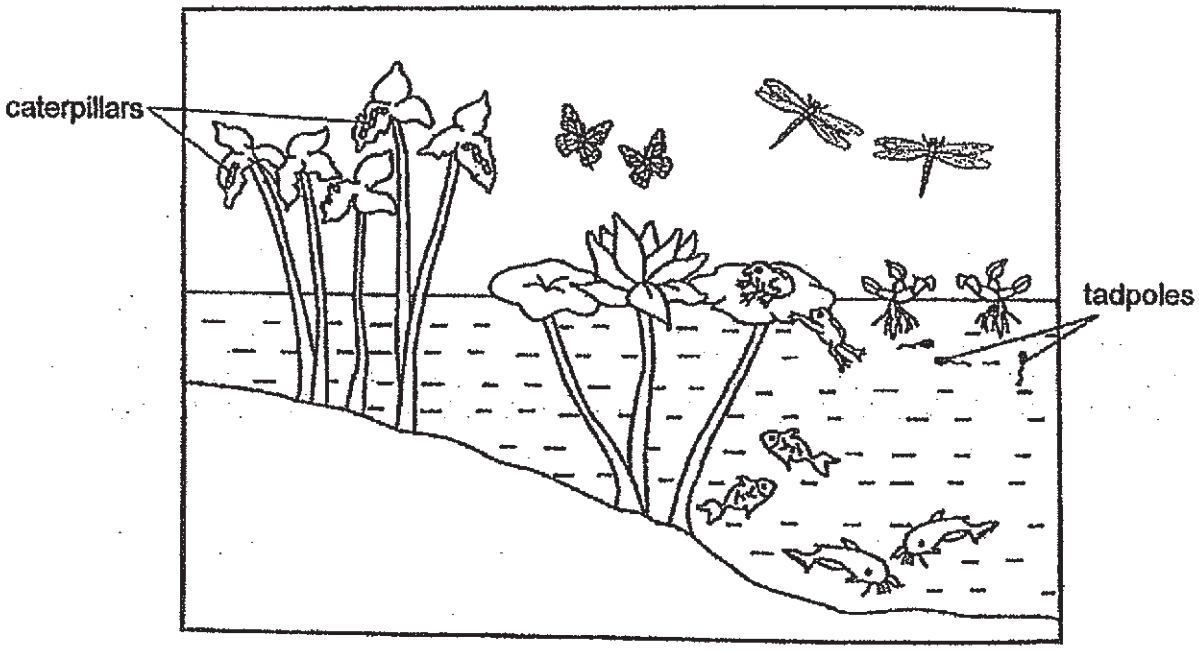


Then he placed the potted plant in the sun for another two days before plucking leaf A and B to test for starch. The iodine solution turned dark blue on leaf B but remain yellowish brown on leaf A.

Which of the following is the aim of Ravi's experiment?

(1) To find out if sunlight is needed for photosynthesis.
(2) To find out if carbon dioxide is needed for photosynthesis.
(3) To find out if carbon dioxide is released during photosynthesis.
(4) To find out if photosynthesis affects the amount of oxygen produced.

14. The diagram below shows a pond habitat.



Which of the following statements is correct?

(1) There are 4 populations of producers.
(2) There are 5 populations of consumers.
(3) There are 7 populations of consumers.
(4) There are 10 populations of living organisms.

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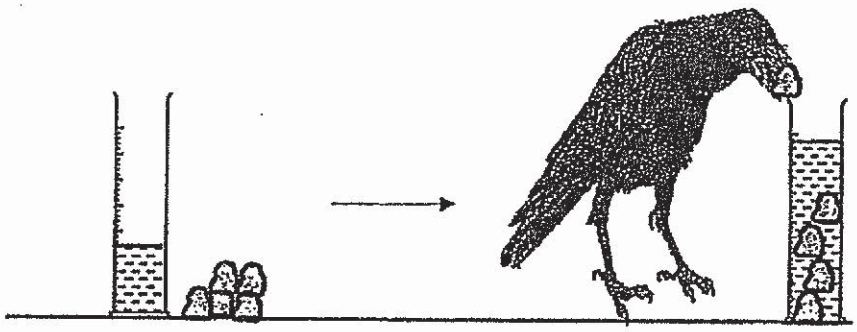
15. The diagram below shows a crow dropping small pebbles into a cylinder to obtain water to drink.

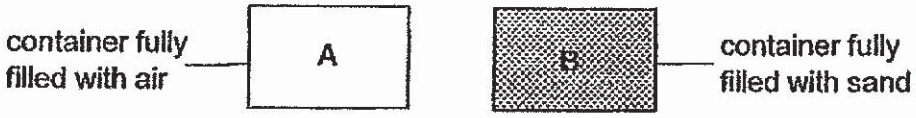


As the pebbles are dropped into the cylinder, the water level increases.

Which of the following is a reason why the water level increases?

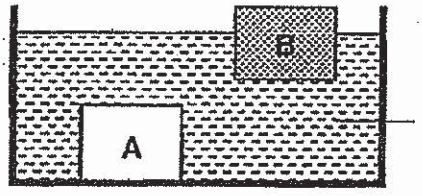
(1) The pebbles have mass.
(2) The mass of the water increases.
(3) The volume of the water increases.
(4) The pebbles take up the space in the water.

16. Tom placed two sealed containers that were fully filled with air and sand into a swimming pool.

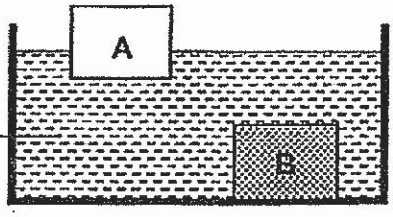


Which of the following diagrams shows the correct positions of containers, A and B, in the swimming pool?

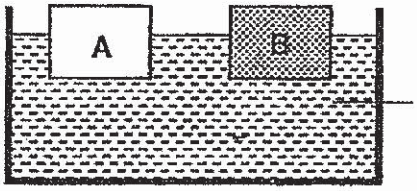
(1)



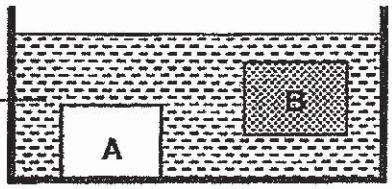
(2)



(3)



(4)



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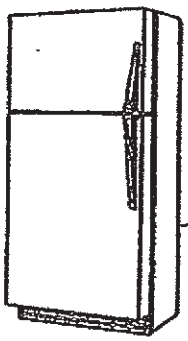
17. The amount of electrical energy used by a refrigerator can be greatly reduced by observing good conservation practices.



Which of the following action(s) help(s) to conserve electricity?

A Minimizing the opening of door.
B Putting hot food into the refrigerator.
C Setting the refrigerator to the lowest temperature.

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

18. The diagram below shows Nila bouncing a basketball.

Which of the following statements is incorrect?

(1) A push force was exerted on the basketball.
(2) When the ball hits the ground, its direction changes.
(3) A force was exerted by Nila to change the direction of the basketball.
(4) The gravity acting on the ball is greater as it drops than when it bounces up.

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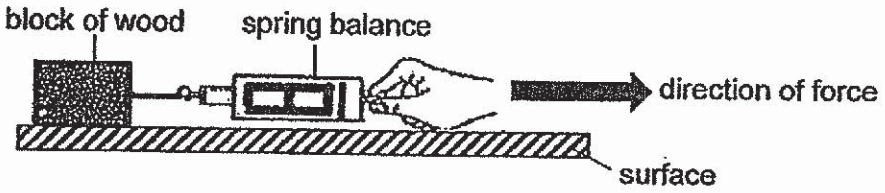
Study the experiment below and answer questions 19 and 20.

Xiao Ming pulled a block of wood across three different surfaces as shown below.



Xiao Ming recorded the force needed to pull the block across these three surfaces in the table below.

Surface	Force needed to move the block (unit)
X	20
Y	16
Z	14

19. Which of the following is the changed variable of the experiment?

(1) The type of surfaces
(2) The mass of the block
(3) The reading on the spring balance
(4) The amount of force used to pull the block

20. Based on his results, which of the following is true?

(1) Z has a rougher surface than X.
(2) The force needed to pull the block on Y is the most.
(3) More force is needed to pull the block on Y than on Z.
(4) There is less friction acting between the block and Y than the block and Z.

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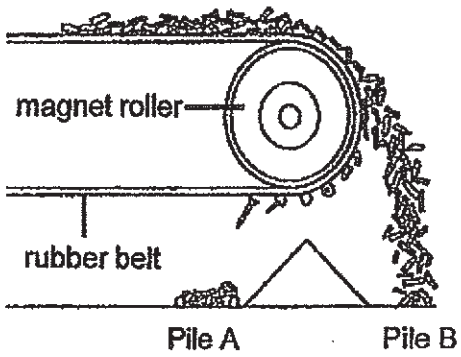
21. In a factory, a pile of metal pieces travels along a moving rubber belt. When these pieces reaches the end of the belt where the magnet roller is, they get separated into two piles, A and B.



What are the two main forces used to separate the metal pieces into pile A and pile B respectively?

	Pile A	Pile B
(1)	magnetic force	gravitational force
(2)	magnetic force	elastic spring force
(3)	frictional force	magnetic force
(4)	frictional force	gravitational force

22. Jeremy needs to inflate two identical balls. He pumps 20 units of air into ball A and 40 units of air into ball B.

ball A with 20 units of air

ball B with 40 units of air

He observed that the inflated ball A and ball B have the same size after different amount of air has been pumped into them.

What conclusion can Jeremy make from the above observation?

(1) Air has mass.
(2) Air is a non-matter.
(3) Air has definite shape.
(4) Air can be compressed.

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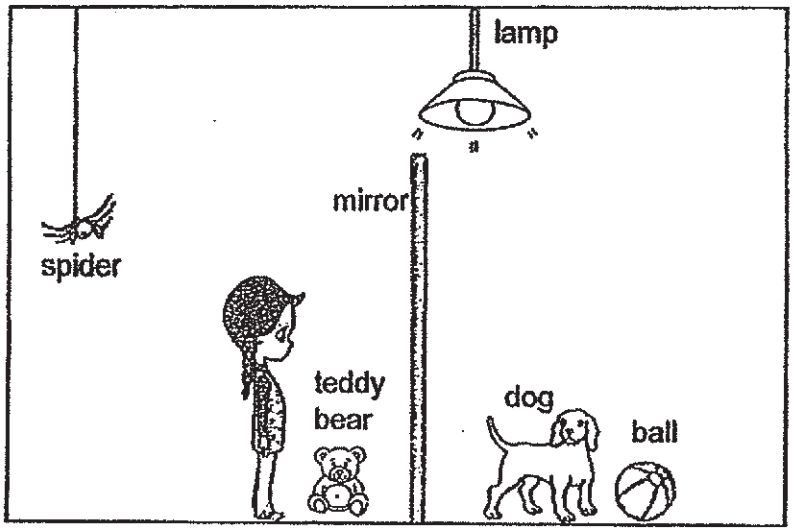
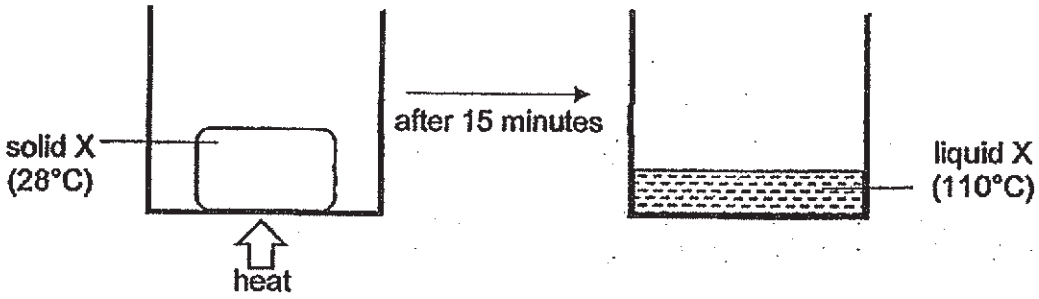
23. Mei Qi is in a well-lit room, standing in front of a mirror as shown in the diagram below.



Mei Qi can see her own reflection in the mirror. Which of the following item(s) will Mei Qi also be able to see in the mirror?

(1) teddy bear only
(2) dog and ball only
(3) lamp, dog and ball only
(4) teddy bear and spider only

24. Tisha conducted an experiment by heating substance X. At the start, substance X was a solid at 28°C. After 15 minutes of heating, substance X reached a temperature of 110°C as shown below.



Based on Tisha's experiment, which of the following is possible?

	Melting point of X (°C)	Boiling point of X (°C)
(1)	20	150
(2)	28	100
(3)	30	100
(4)	60	150

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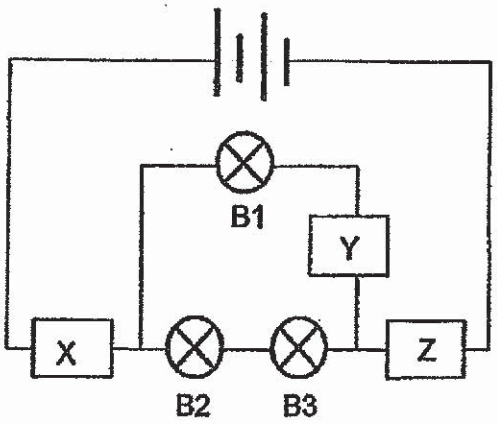
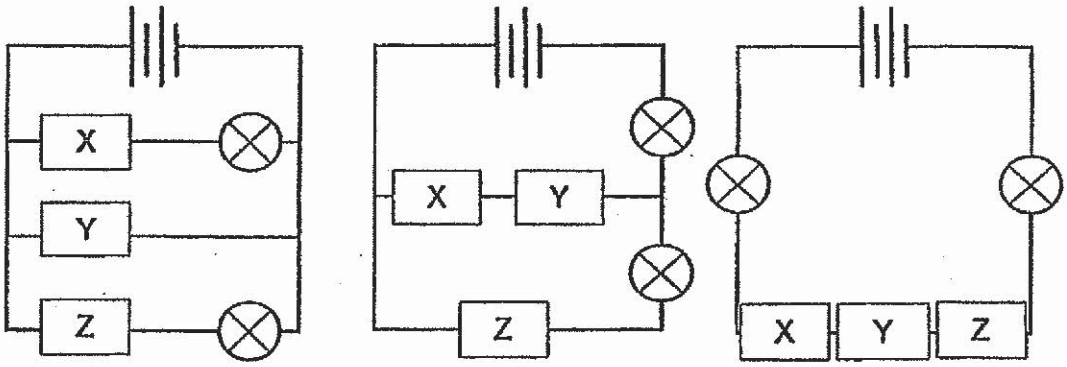
25. Xuan Wen set up a circuit with objects, X, Y and Z as shown.



She recorded her observations in the table below.

Does the bulb light up?		
B1	B2	B3
No	Yes	Yes

In which of the following circuit(s) will both bulbs remain lit?



circuit A circuit B circuit c

(1) circuit A only
(2) circuit C only
(3) circuit A and B only
(4) circuit B and C only

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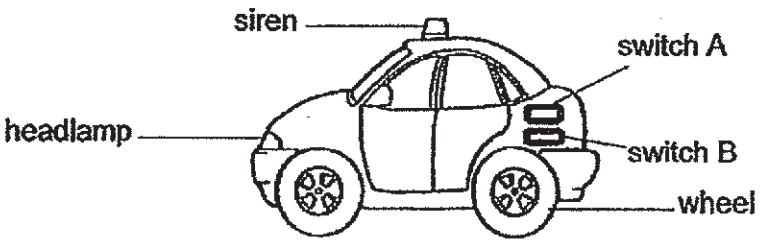
26. Ali has a toy car that works on batteries.

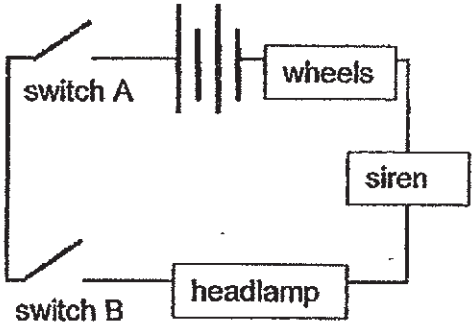


His observations are shown below.

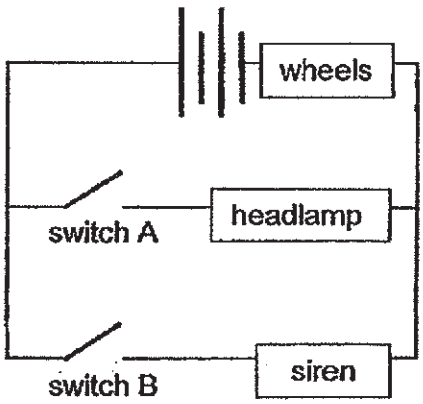
switched on	headlamp	siren	wheels
A only	did not light up	did not sound	spun
B only	lit up	sounded	did not spin
A and B	lit up	sounded	spun

Which of the following circuits is used in Ali's toy car?

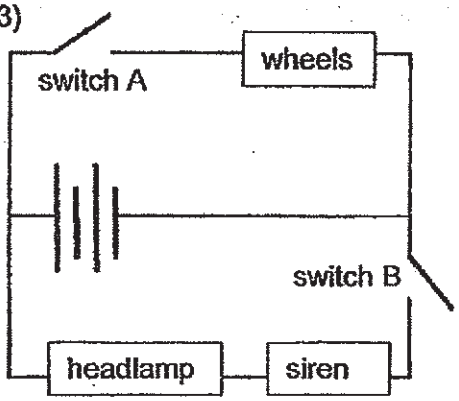
(1)



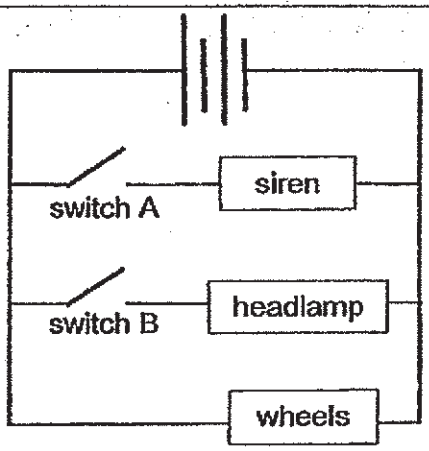
(2)



(3)



(4)



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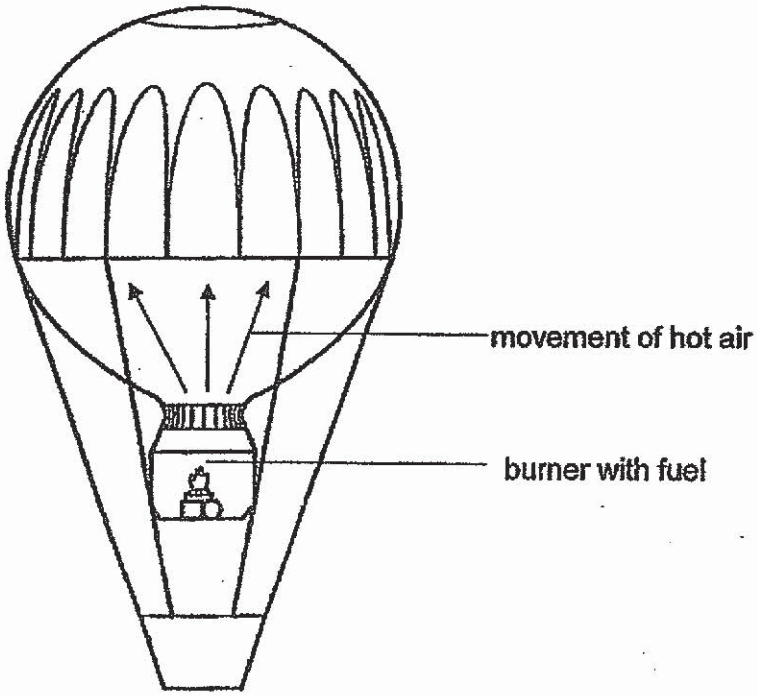
27. A hot air balloon uses hot air to rise. The burner with fuel is lighted. As the fuel burns, the hot air balloon floats up into the sky.



Which of the following best represents the energy conversions involved in making the hot air balloon float into the sky when the fuel is burnt?

(1) gravitational potential energy → kinetic energy
(balloon) (balloon)

(2) chemical potential energy → heat energy → kinetic energy
(fuel) (flame) (moving hot air)

(3) chemical potential energy → light energy → kinetic energy
(fuel) (flame) (moving hot air)

(4) gravitational potential energy → heat energy → kinetic energy
(balloon) (flame) (balloon)

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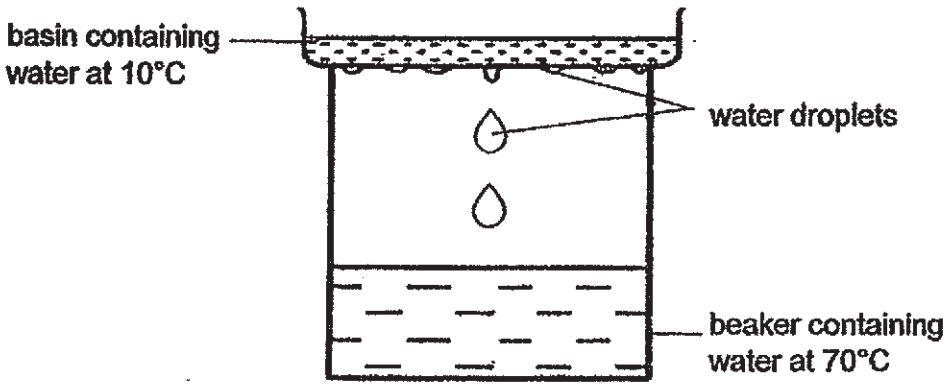
28. Thomas has a set-up below.



After a while, Thomas observed water droplets forming on the underside of the basin.

What should Thomas do in order to increase the number of water droplets formed on the underside of the basin?

	Basin	Beaker
(1)	Add ice cubes	Add more water at 100°C
(2)	Add ice cubes	Add ice cubes
(3)	Add more water at 10°C	Add more water at 70°C
(4)	Add more water at 100°C	Add ice cubes

End of Booklet A

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2019 PRIMARY 6 PRELIMINARY EXAMINATION

Date: 23 August 2019

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	56
Booklet B	44
Total	100

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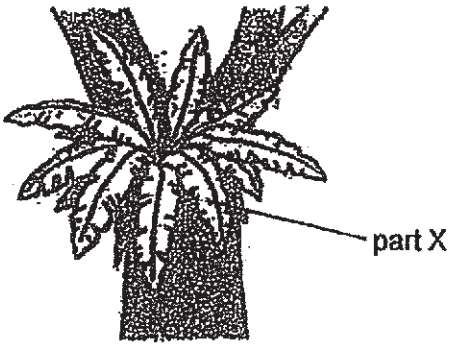
Booklet B (44 marks)

For questions 29 to 41, write your answers clearly in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.

---

29. The diagram shows a bird's nest fern on a tree.

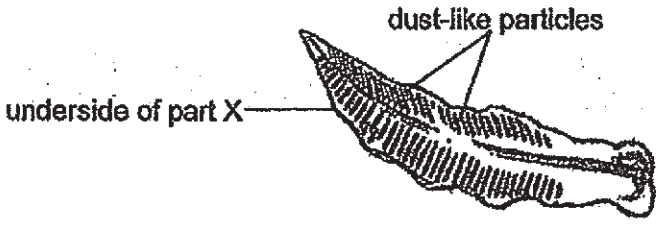


(a) State the function of part X. [1]

_____

_____

Many rows of small 'bags' containing dust-like particles were observed at the underside of part X as shown in the diagram below.



(b) Identify these 'dust-like particles'. [1]

_____

Score	
	2

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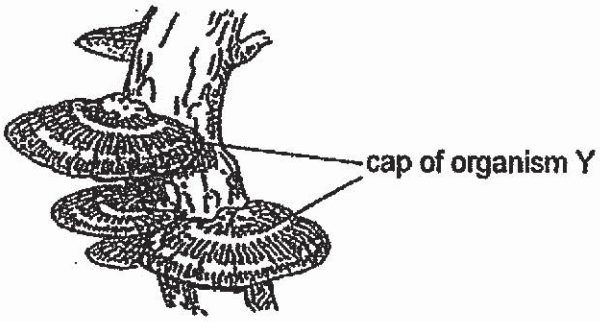
Organism Y also grows on the tree trunk. Some 'dust-like particles' are also found on the underside of the cap of organism Y.



(c) What is the function of these dust-like particles for both the organism Y and the bird's nest fern? [1]

Score	
	1

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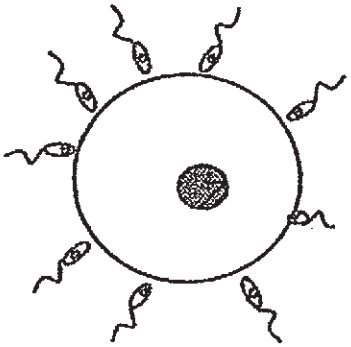
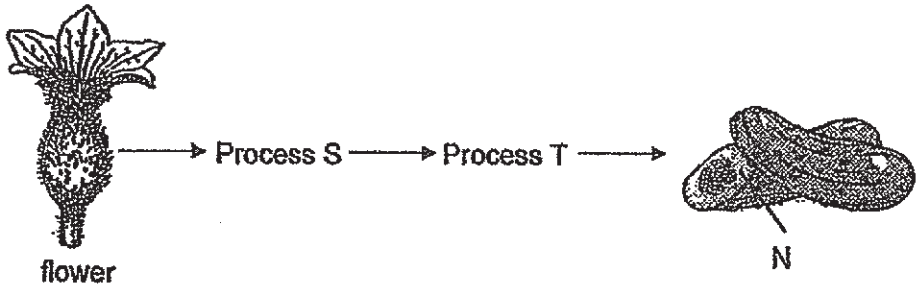
30. (a) The diagram shows two different types of cells in a process T in the reproduction of an animal. Part M controls all the activities in the animal cells.



Label and **identify** part M of the two different types of cells in the diagram above. [1]

(b) Process T also occurs in a plant. The diagram shows how N is developed from a flower of the plant.



(i) State the part of the flower that N developed from. [1]

_____

(ii) Describe process T. [1]

_____

_____

Score	
	3

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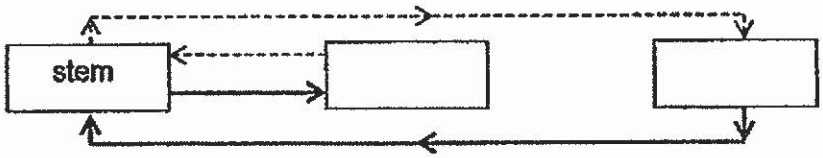
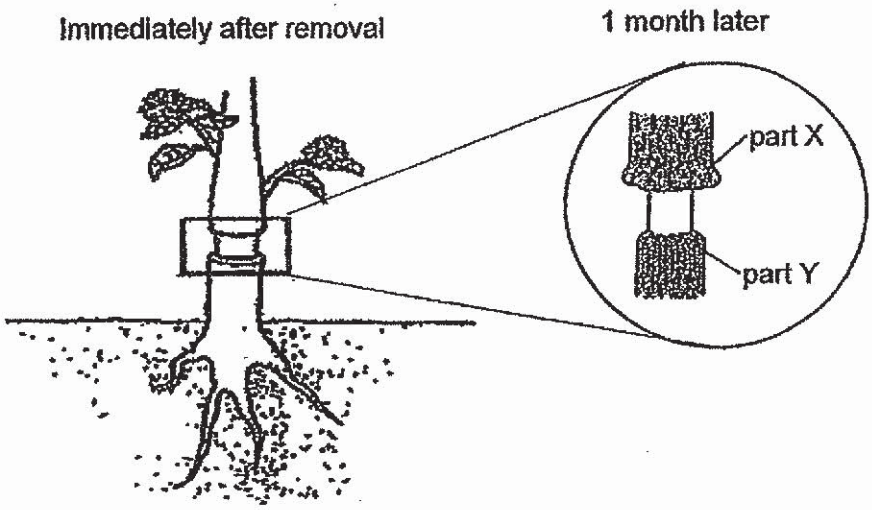
31. (a) The diagram below shows the movement of water and food in a plant.



(-----> represents path of water, ——> represents path of food)

In the diagram above, fill in the correct plant parts in the boxes provided to show the movement of water and food in a plant. [1]

(b) A ring of the stem of a plant was removed as shown below. Only the food carrying tubes have been removed.



Explain why part X became swollen and part Y had shrunk. [2]

Part X: _____

_____

Part Y: _____

_____

Score	
	3

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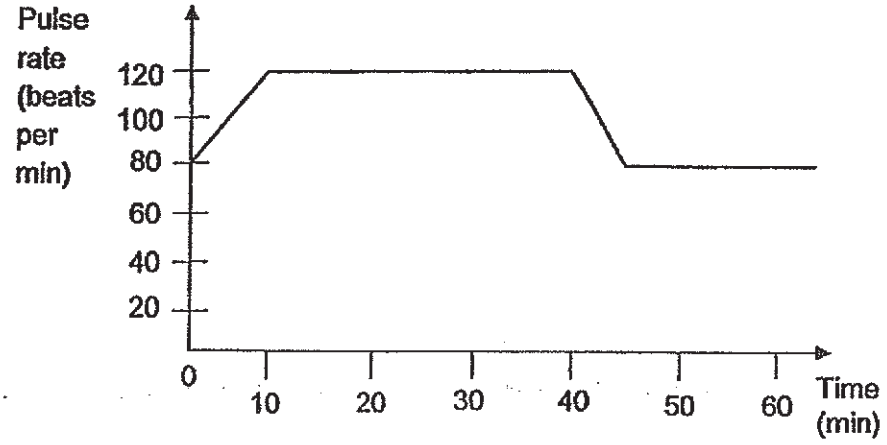
32. Bob started from rest to jog for 40 minutes before he decided to stop. The graph below shows Bob's pulse rate over a period of more than one hour.



(a) What was Bob's pulse rate when he was at rest? [1]

_____

(b) Explain why Bob's pulse rate increased during his jog. [2]

_____

_____

Score	
	3

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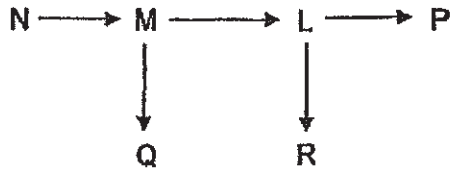
33. The food web below is found in a community.



(a) Based on the food web above, state the relationship between organism M and organism Q. [1]

_____

_____

(b) Organism K which feeds on organism R was introduced into the community in February. Explain how population of organism P was likely to be affected. [1]

_____

_____

(c) The habitat of the above community experience a shorter daylight from January to May. Explain how this would affect the population of organism M during these few months. [2]

_____

_____

Score	
	4

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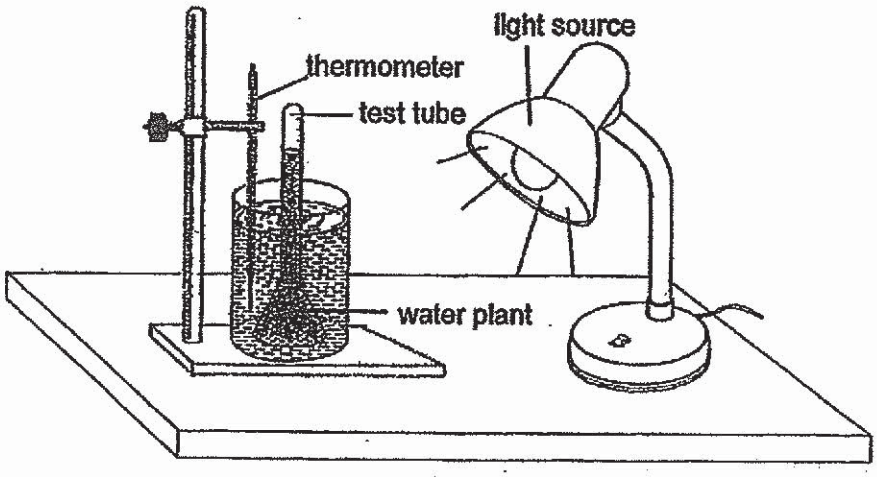
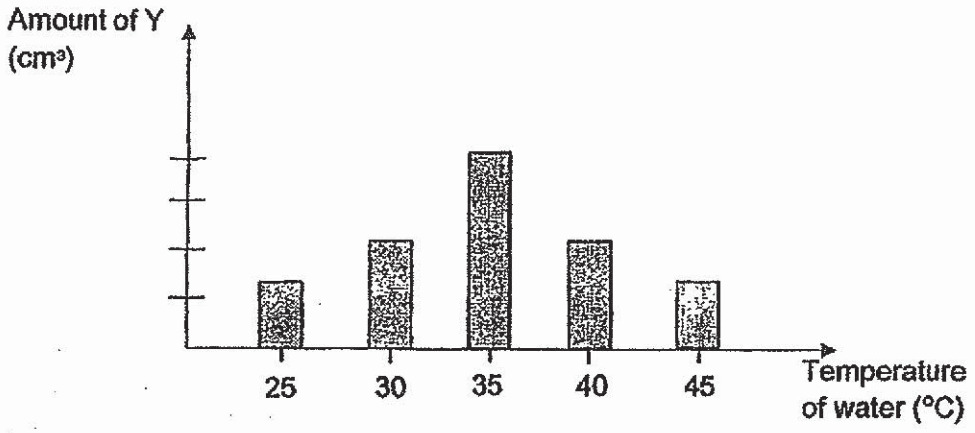
34. Bala wanted to find out how temperature of water affects the rate of photosynthesis of a water plant. He used the set-up as shown below.



Bala repeated the experiment with water of different temperature. He exposed each beaker of water to a strong light source for an hour. Bala measured the amount of substance Y collected in the test tube in each beaker after an hour. At the end of the experiment, he plotted the graph below.



(a) Name substance Y. [1]

_____

Score	
	1

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(b) Based on the graph, describe how the temperature of water affected the rate of photosynthesis of the water plant. [1]

_____

_____

(c) Using water at 35°C, Bala shifted the light source further away from the water plant. What change would he observe? Explain his observation. [2]

_____

_____

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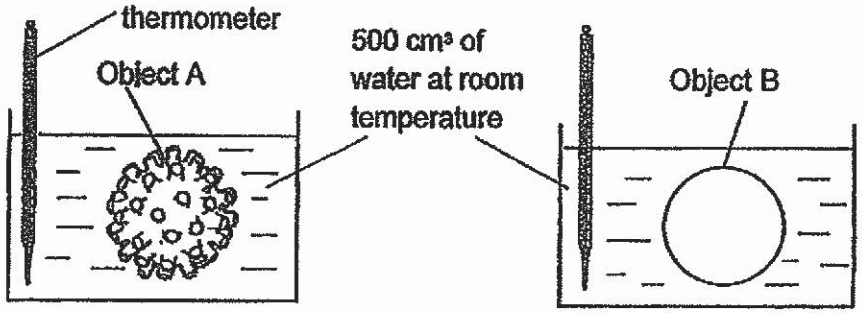
35. Objects, A and B, of similar volume and material, were heated in an oven to a same temperature. They were then placed inside two identical containers of water as shown below.



The temperature of the water in containers 1 and 2 were taken at regular time intervals and the results are shown below.

Time (min)	Temperature of water in container 1 (°C)	Temperature of water in container 2 (°C)
0	25	25
5	40	30
10	60	40
15	80	50
20	90	60

(a) Based on the results, describe the difference in the change in temperature of the water in the two containers over 20 minutes. [1]

_____

_____

(b) Give a reason for the answer in (a). [1]

_____

_____

Score	
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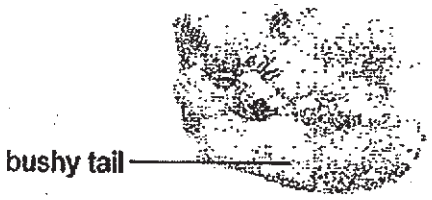
Fox P and fox Q live in two different places with extreme temperatures.

Fox P Fox Q

(c) Based on the results in the table, how does having big ears help fox P to survive better in a hot place? [1]

Fox Q lives in a snow mountain. When it is resting, Fox Q curls its bushy tail around its body as shown in the diagram below.



(d) Explain how this behaviour helps Fox Q to survive in the extreme cold environment. [2]

Score	
	3

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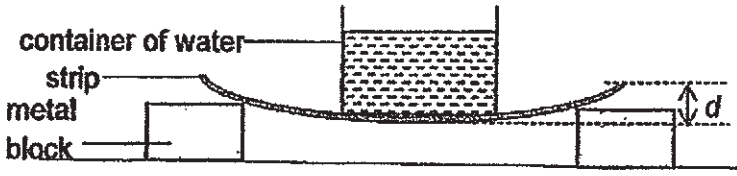
36. Zul set up an experiment as shown below to compare a property of three strips of different materials, X, Y and Z. He measured the distance *d*, when a container of 200 cm^3 of water is placed on it.



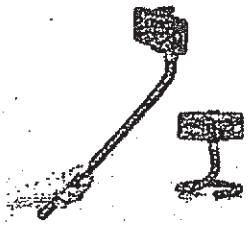
For each strip, he placed a container of 200 cm^3 of water on it and measured the distance *d*. His results are shown below.

Strip	Amount of water in the container (cm^3)	*d* (mm)
X	200	28
Y	200	12
Z	200	45

(a) Based on the results, what property of the materials was Zul trying to find out? [1]

_____

Zul wanted to choose a material to make a selfie stick as shown below.



(b) Based on the results, which strip, X, Y or Z, is most suitable for making this kind of selfie stick. Explain your answer. [1]

_____

_____

Score	
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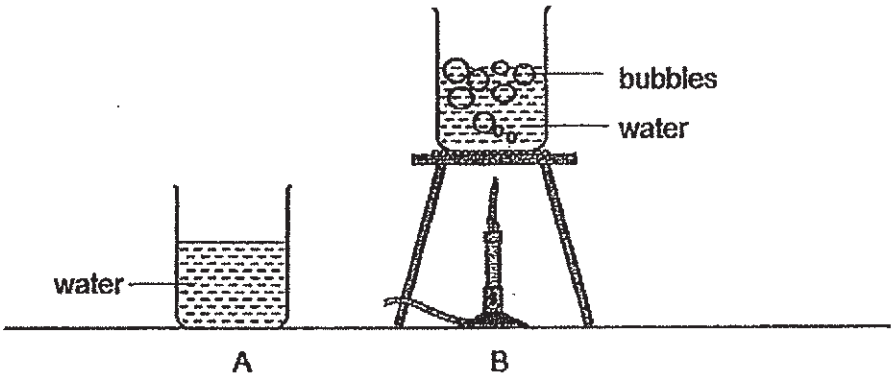
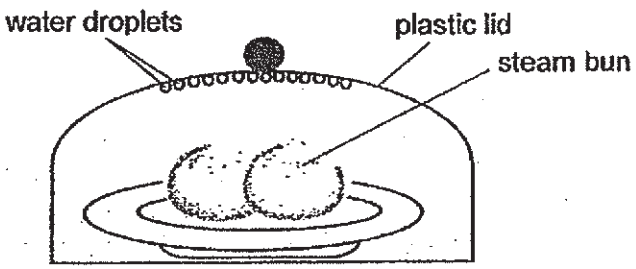
37. The diagrams below show two beakers with same amount of water going through two different processes, A and B.



(a) Identify the processes in A and B and state one difference between the two processes. [1]

Mei Ling steamed two hot buns and placed a plastic lid over them as shown below.



(b) She observed some water droplets formed immediately at the inner top of the plastic lid. Explain her observation. [2]

Score	
	3

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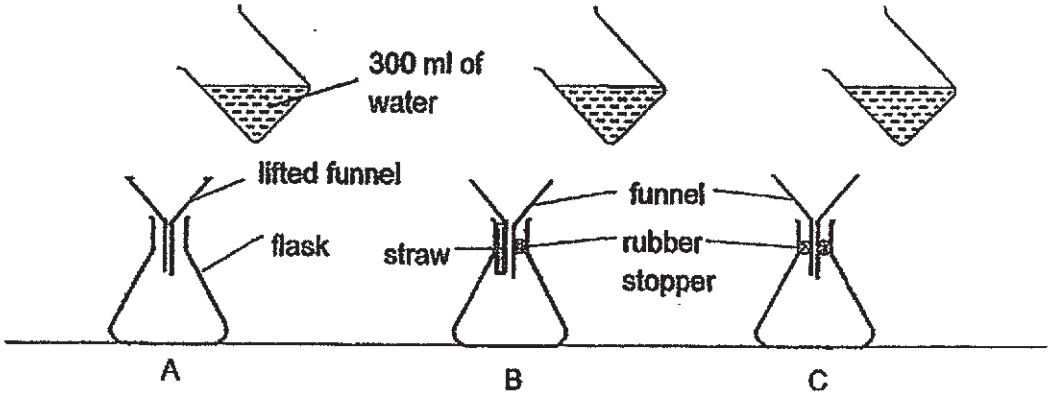
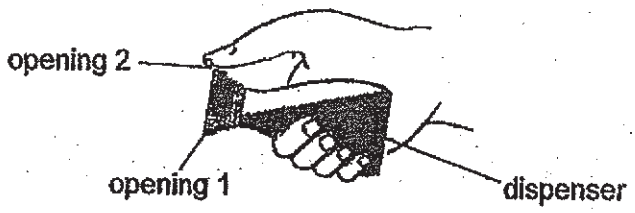
38. Sam prepared three set-ups as shown below. He then poured 300 ml of water into each flask.



(a) Based on the diagram above, which flask would he collect the least amount of water in one minute? Explain your answer. [2]

Sam saw his mother covering one of the openings of a soya sauce dispenser with her thumb as shown below. She told Sam that she only wanted to dispense 5 drops of the sauce into a dish.



(b) Based on the above experiment, explain why Sam's mother had to cover one of the openings partially to pour out 5 drops of the soya sauce. [1]

Score	
	3

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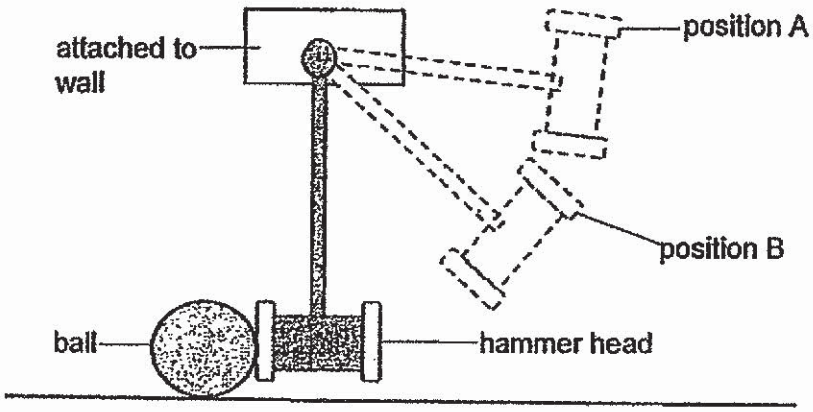
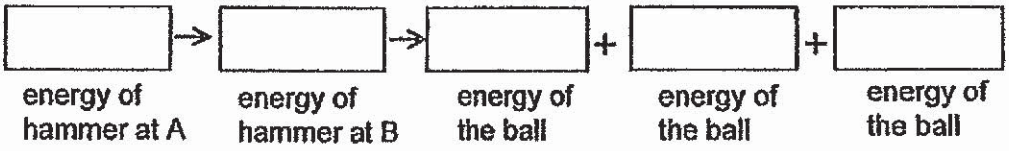
39. The diagram below shows a plastic hammer attached to the wall at one end. It can be lifted up freely to position A and released to hit a ball as shown below.



(a) Fill in the box to show the energy conversion when the hammer moved from position A to position B to when it hit the ball. [1]



(b) What would happen to the distance moved by the ball when the hammer head was changed to a heavier one? Explain why. [2]

_____

_____

Score 3

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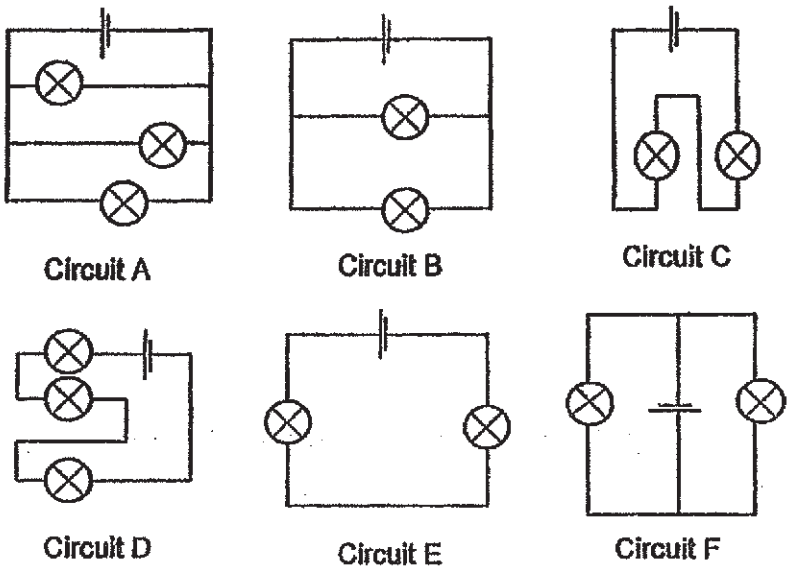
40. Study the circuit diagrams below.



(a) Classify the above circuit diagrams in the table below according to the arrangement of bulbs. [1]

Arrangement in Circuits	
Bulbs arranged in series	**Bulbs arranged in parallel**

Score	
	1

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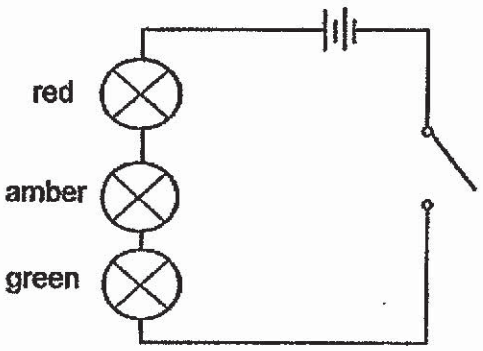
Amal designed and constructed her traffic light circuits using coloured bulbs as shown in the diagram below.



(b) Explain why this circuit cannot show a change from green to amber then to red, similar to traffic lights. [1]

(c) Draw a circuit diagram in the box below to show how the above circuit should be arranged so that the change in the colour of the bulbs can take place one at a time. [1]

Score	
	2

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41. Yixi carried out an experiment on two different types of spring, X and Y, of the same length using the set-up shown in Diagram 1.

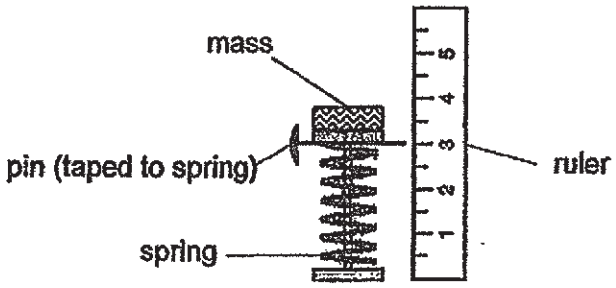

Diagram 1

She measured the compression of the spring after adding a mass. Her results are shown in the table below.

Mass (g)	Length of compression of Spring X (cm)	Length of compression of Spring Y (cm)
100	2.5	1.5
200	4.0	3.0
300	8.5	6.5
400	13.5	9.5

(a) Based on her results, state the relationship between the mass added and the compression of the springs. [1]

_____

_____

(b) What is the purpose of the pin? [1]

_____

_____

Score	
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A spring is used to make a candy dispenser as shown in Diagram 2.

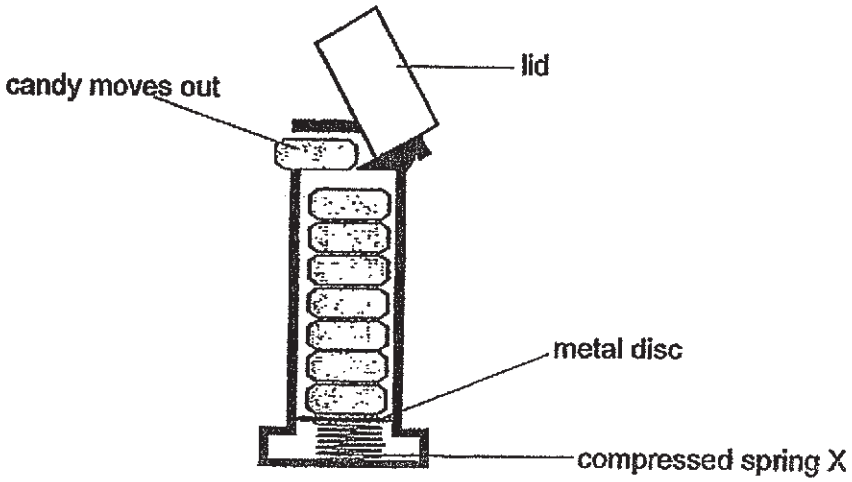

Diagram 2

(c) When Yixi removed a few pieces of candy quickly from the top, the metal disc moved up continuously. Name two types of force acting on the metal disc. [1]

_____

_____

(d) Yixi wanted the candy to move up faster. Based on the results in Table 1, which spring, X or Y, should she use in the candy dispenser?Explain why. [2]

_____

_____

Score	
	3

END OF BOOKLET B

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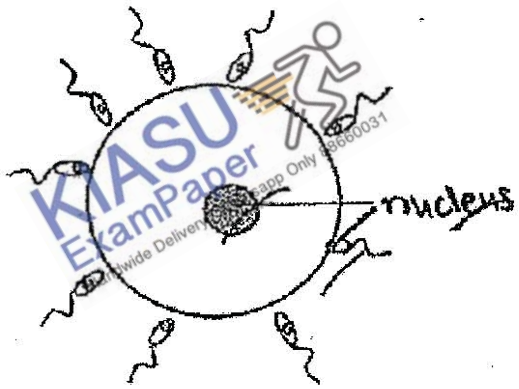
SCHOOL : TAO NAN PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 PRELIM

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	3	3	1	2	4	1	2	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	2	2	4	2	1	4	1	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
1	4	4	4	3	3	2	1		

SECTION B

Q29)	a)To trap light and carbon dioxide for photosynthesis to make food for the plant and oxygen to be released. b)Spores c)To allow the organisms to reproduce and the population to survive by dispersing the spores.
Q30)	a) 

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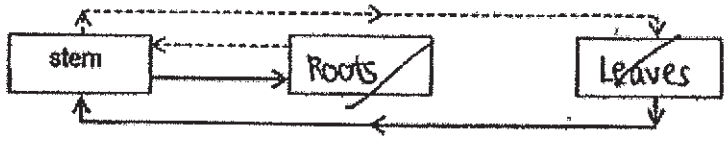
	b)i)Ovary ii)The male reproductive cell fuses with the female reproductive cell of the flower.
Q31)	a)  b)Part X : Food from the leaves is not able to be transported to the roots when the food-carrying tubes are removed and accumulates in part X. Part Y : The food carrying tubes in part Y have no more food in them and shrunk.
Q32)	a)80 beats per min. b)Bob used more energy when jogging so more digested food and oxygen needed to be transported to the muscles for energy. Hence, the heart needed to pump faster to transport the increased amount of oxygen and digested food and expel carbon dioxide created by the muscles.
Q33)	a)Organism Q is the predator of organism M. b)One less competitor for the same food source. The population of organism P will increase. There will be less organism R to feed on organism L and the population of organism L increases. Hence, there are more organism L for organism P to feed on and the population will increase. c)The rate of photosynthesis in organism N is reduced as there is less light and some may not survive due to a lack of food. Hence, organism M has less organism N to feed on and the population will decrease.
Q34)	a)Oxygen b)As the temperature of the water increases from 25°C to 35°C, the rate of photosynthesis of the water plant increases. As the _

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	temperature of the water increases from 40°C to 45°C, the rate of photosynthesis of the water plant decreases. c)The amount of oxygen collected in the test tube will decrease. There is less light for the water plant to trap and use for making food. Hence, the rate of photosynthesis will decrease and respiration occurs slower.
Q35)	a)The temperature of water in container 1 increased faster than the temperature of water in container 2 over 20 minutes. b)Object A had more surface area in contact with the cooler water so the water gained heat faster. c)There is a greater exposed surface area of the body in contact with surroundings so Fox P can lose heat faster in a hot place. d)This reduces the surface area of Fox Q in contact with the cold air and it loses heat slower and can keep warm in its cold environment to survive.
Q36)	a)Flexibility b)Strip Z. Strip Z bent the most when the same amount of water was placed on it, indicating that it is the most flexible. Hence, a selfie stick made of strip Z can be bended into different shapes easily.
Q37)	a)Evaporation and boiling. Evaporation only occurs at the surface of the water but boiling occurs throughout the whole body. b)The water vapour in the air gained heat from the hot buns. When the warmer water vapour came into contact with the cooler plastic lid,it lost heat and condensed into tiny water droplets.
Q38)	a)Flask C. The rubber stopper in C only allows air to escape through the opening of the funnel. Hence, the air in C has the least space to escape when water enters to displace it so the water displaces the air the slowest. b)Less air is allowed to enter to displace the soya sauce dripping out. Hence, the soya sauce drips out slower so Sam's mother can pour out only 5 drops.

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Q39) a)

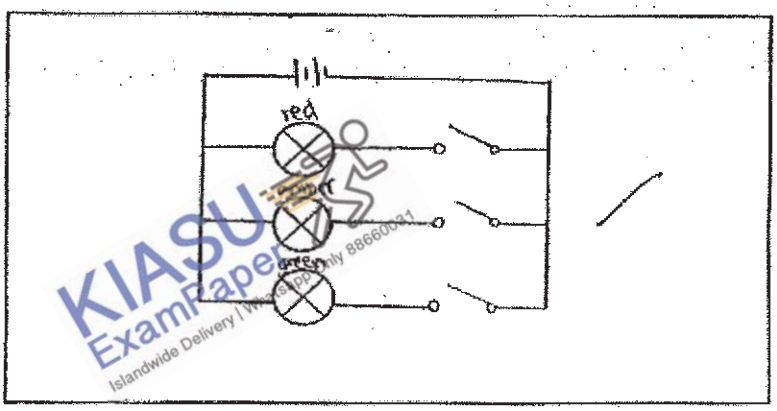
b)The distance moved by the ball will increase. There is more gravitational potential energy when the hammer head is heavier which is converted to more kinetic energy of the hammer at position B and transferred to more kinetic energy of the ball. Hence, the ball moved a greater distance.

Q40) a)

Arrangement in Circuits	
Bulbs arranged in series	Bulbs arranged in parallel
C	A
D	B
E	F

b)When the switch is closed, all the bulbs will light up at the same time as electricity can flow through all of them.

c)



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Q41)	a)As the mass added increases, the length of the compression of the springs increases. b)To ensure the results of the experiment are accurate as the pin points directly to the marks on the ruler. c)Elastic spring force and gravitational force. d)Spring Y. The length of the compression of spring Y is less than that of spring X when the same mass is placed on it. Hence, there will be more elastic potential energy in spring Y than spring X when there are compressed to the same length that is converted to the kinetic energy of the metal disc which is transferred to the kinetic energy of the candy.

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