

# 2019

## Primary 6 Science

1.	Henry Park	SA1
2.	Maha Bodhi	SA1
3.	MGS	SA1
4.	Nan Hua	SA1
5.	Nanyang	SA1
6.	Raffles	SA1
7.	River Valley	SA1
8.	Rosyth	SA1
9.	SCGS	SA1
10.	Tao Nan	SA1
11.	ACS	SA2
12.	Ai Tong	SA2
13.	Henry Park	SA2
14.	Maha Bodhi	SA2
15.	MGS	SA2
16.	Nan Hua	SA2
17.	Nanyang	SA2
18.	Raffles	SA2
19.	River Valley	SA2
20.	Rosyth	SA2

21.	SCGS	SA2
22.	St Nicholas	SA2
23.	Tao Nan	SA2

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**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

<b>Booklet</b>	<b>Marks</b>	
<b>A</b>		<b>/ 56</b>
<b>B</b>		<b>/ 44</b>
<b>Total (A+B)</b>		<b>/ 100</b>

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**.

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1. Study the organisms shown below.

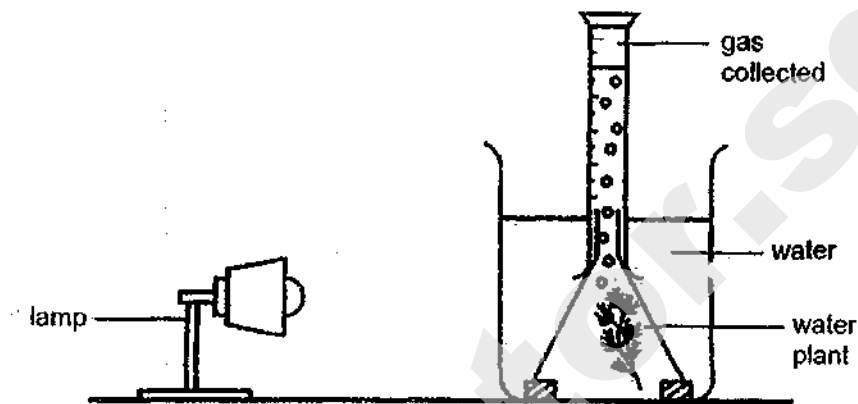


Which characteristic(s) do all three animals have in common?

- A: lay eggs
- B: have lungs
- C: have scaly skin
- D: give birth to their young alive

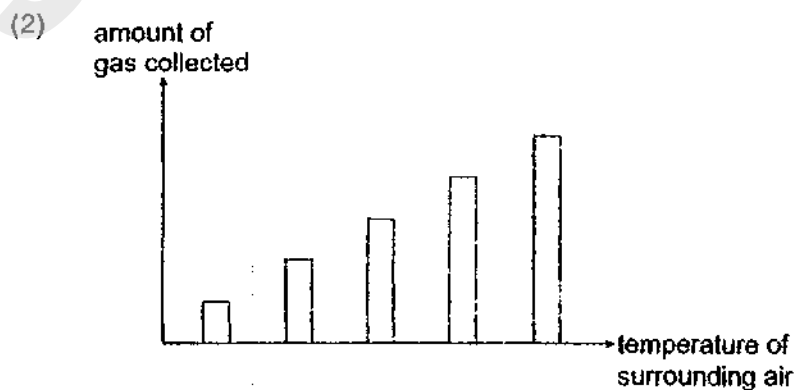
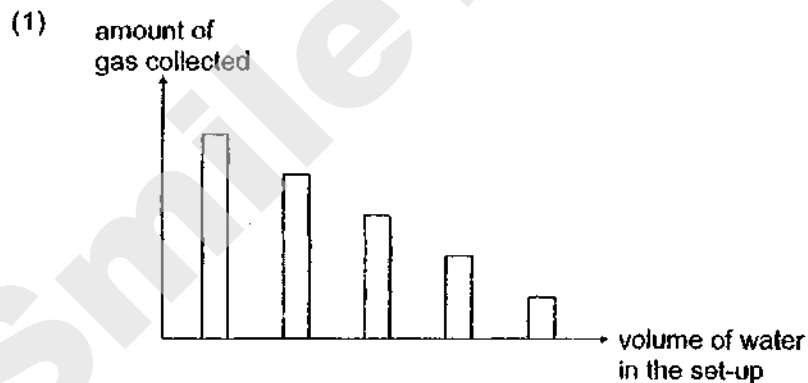
- (1) A only
- (2) B only
- (3) A and C only
- (4) B and D only

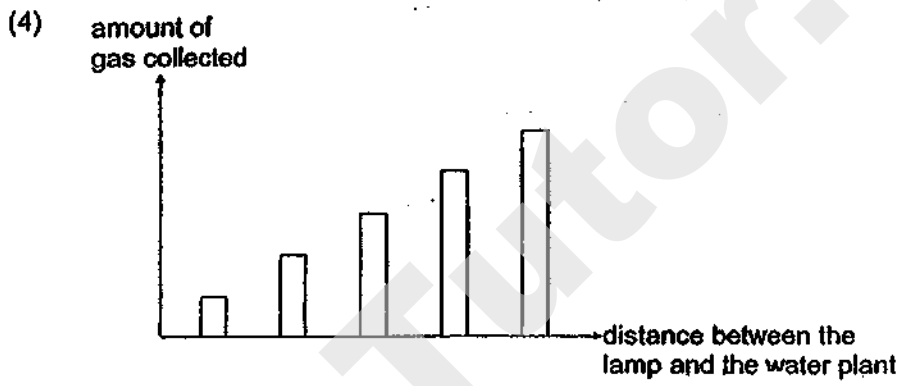
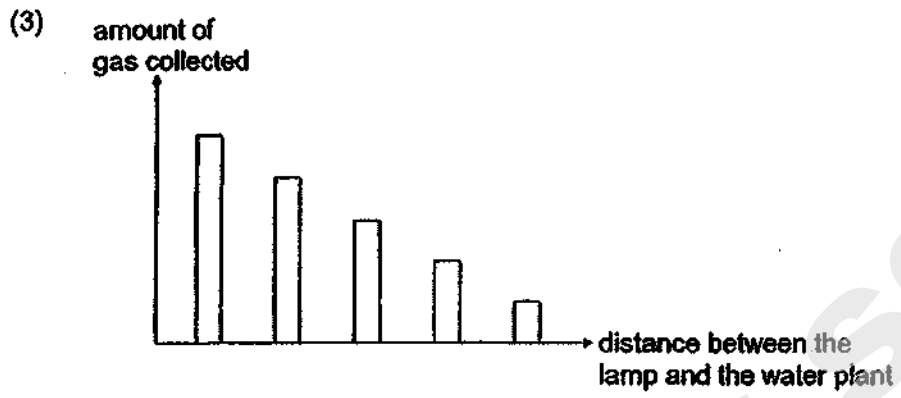
2. Amery conducted an experiment on photosynthesis in a dark room using the set-up below. She measured the amount of gas collected in the measuring cylinder after some time.



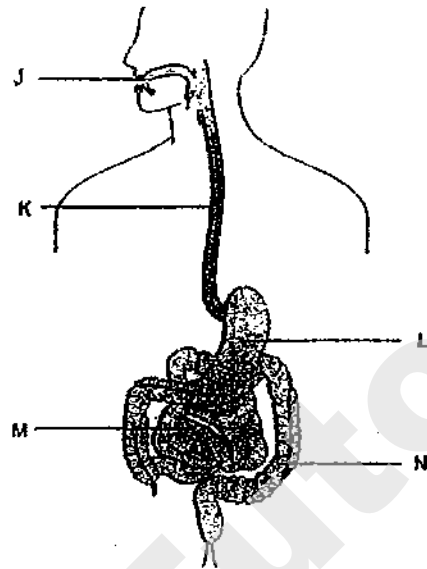
The graphs below show the amount of gas collected plotted against different variables.

Which of the following graphs shows the correct amount of gas collected?





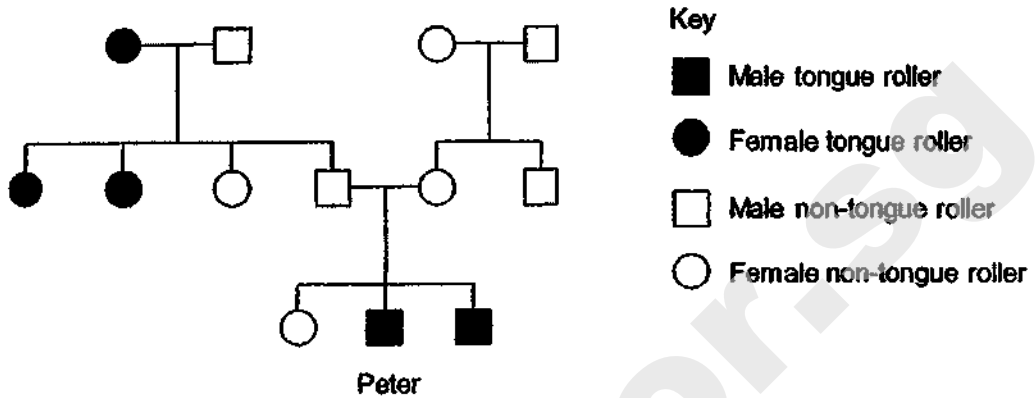
3. The diagram below shows the human digestive system.



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

4. The diagram shows Peter's family tree. The members of the family are either tongue rollers or non-tongue rollers.

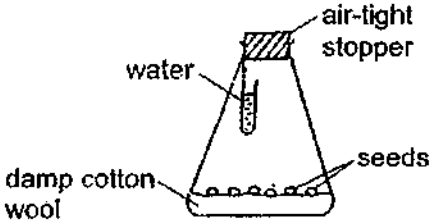
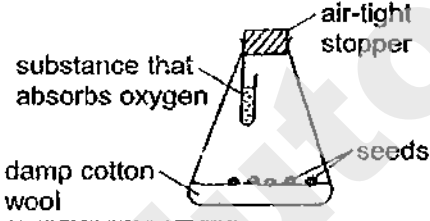
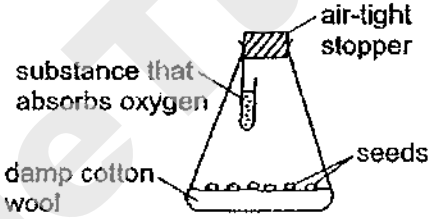
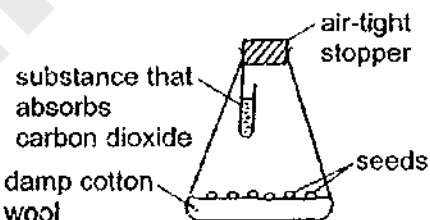


Which one of the following statements about the family tree is correct?

- (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.

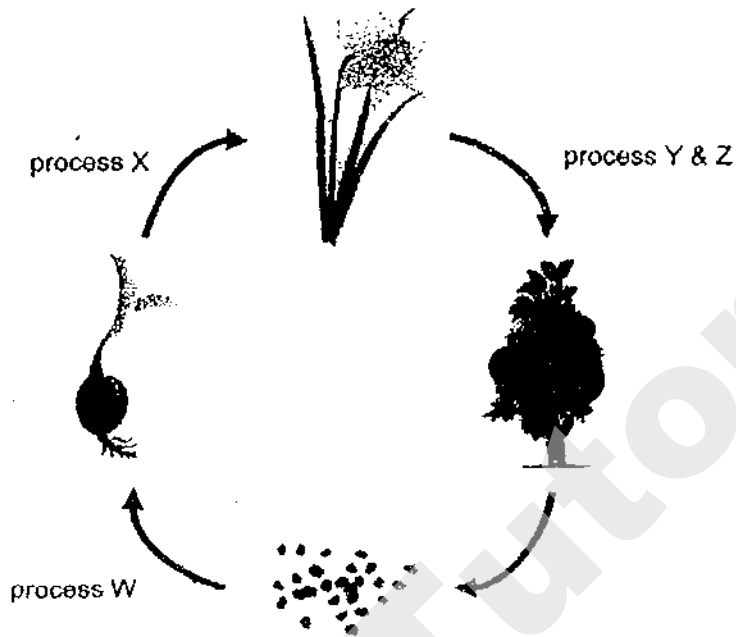
5. Julia conducted an experiment to find out whether oxygen is needed for the germination of seeds.

Which of the following set-ups are the most suitable for conducting a fair test?

A	 <p>air-tight stopper water seeds damp cotton wool</p>
B	 <p>air-tight stopper substance that absorbs oxygen seeds damp cotton wool</p>
C	 <p>air-tight stopper substance that absorbs oxygen seeds damp cotton wool</p>
D	 <p>air-tight stopper substance that absorbs carbon dioxide seeds damp cotton wool</p>

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

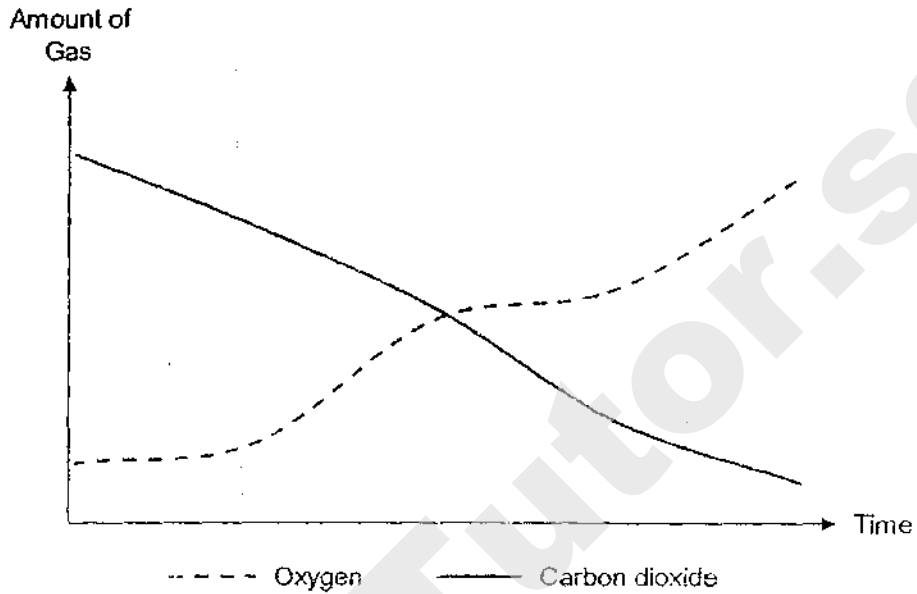
6. The diagram shows the life cycle of a flowering plant.



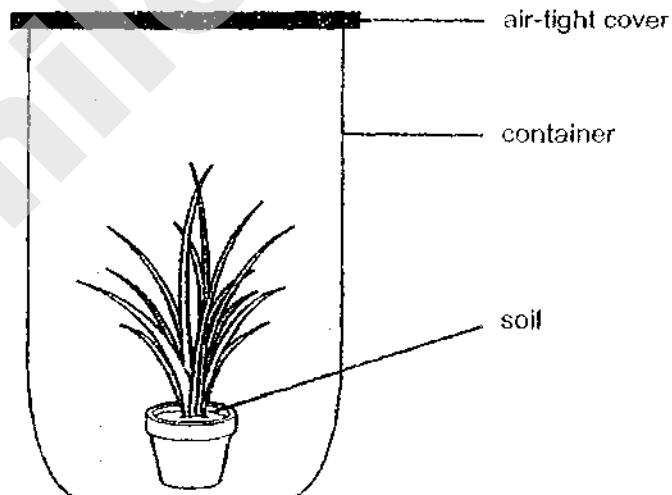
Which of the process(es) would be able to take place if light is not present?

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

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.



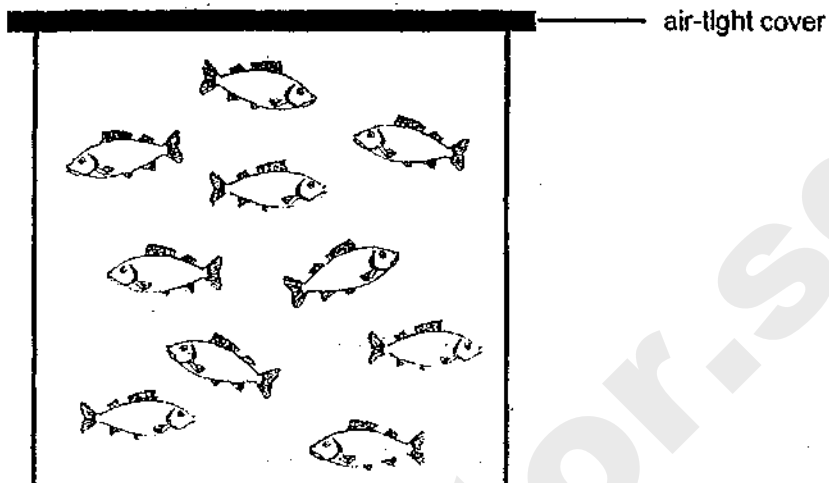
Which set-up best describes the material of the container and the soil used in the experiment?



	soil	container
(1)	moist	clear glass
(2)	moist	ceramic
(3)	dry	ceramic
(4)	dry	clear glass



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

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

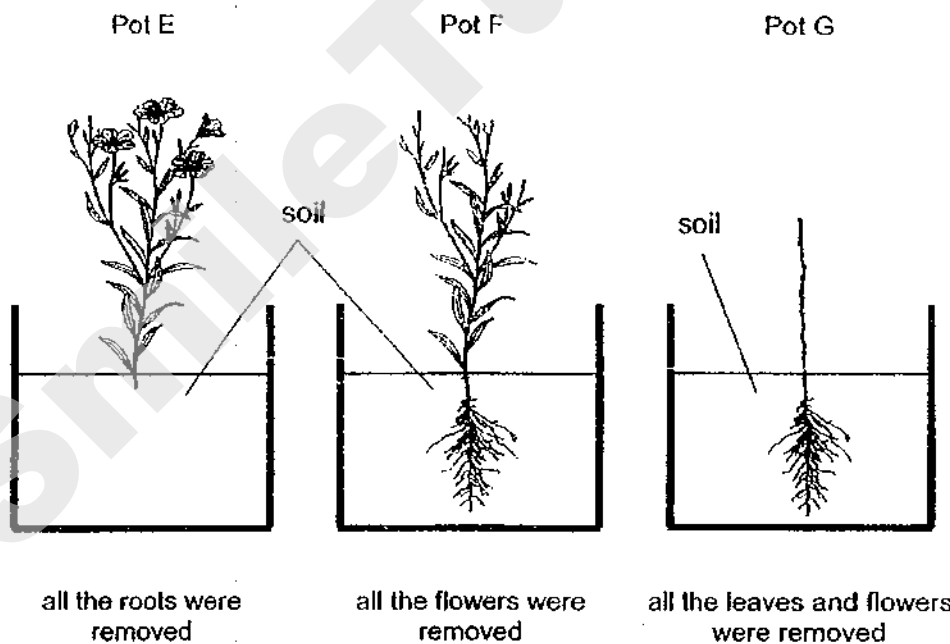
(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

10. Adrienne 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.



Which of the following pots of plants died after a week if the removed parts did not regrow?

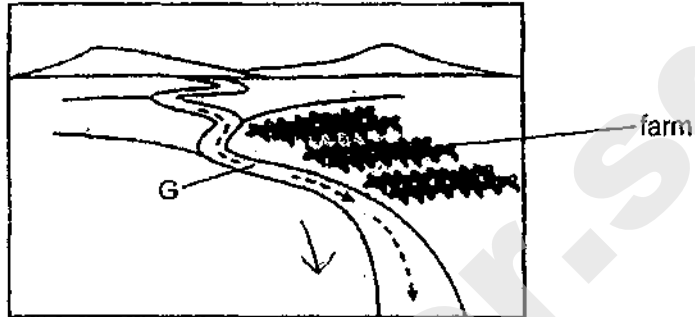
(1) E and F

(2) E and G

(3) F and G

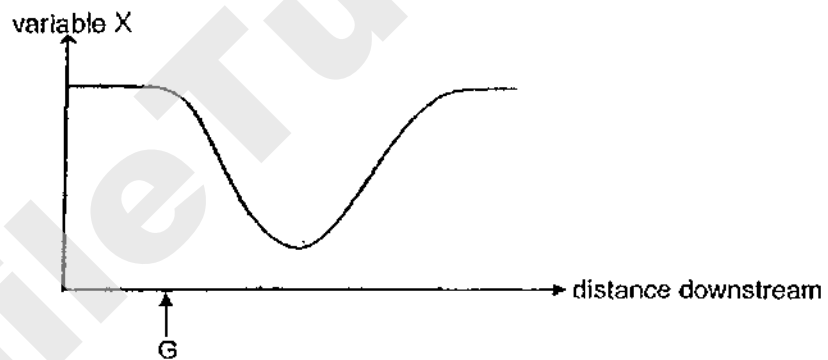
(4) E, F and G

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.

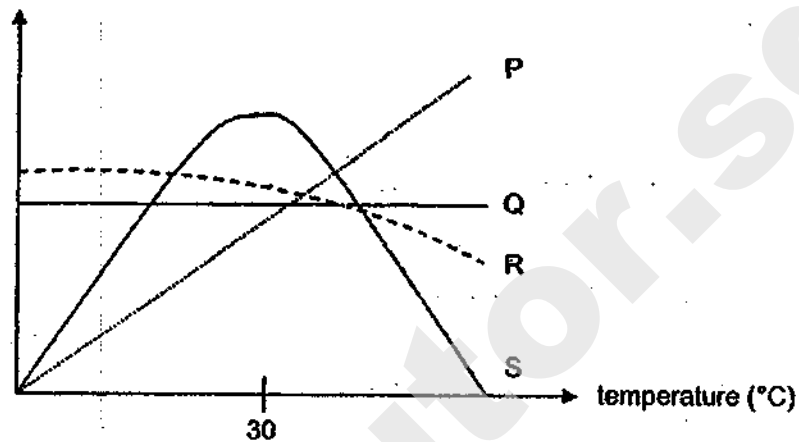


What could variable X be?

- (1) amount of floating plants
- (2) amount of oxygen in water
- (3) amount of bacteria in water
- (4) amount of nutrients in water

12. The graph below shows the effect of temperature on the number of organisms P, Q, R and S.

number of organisms



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.

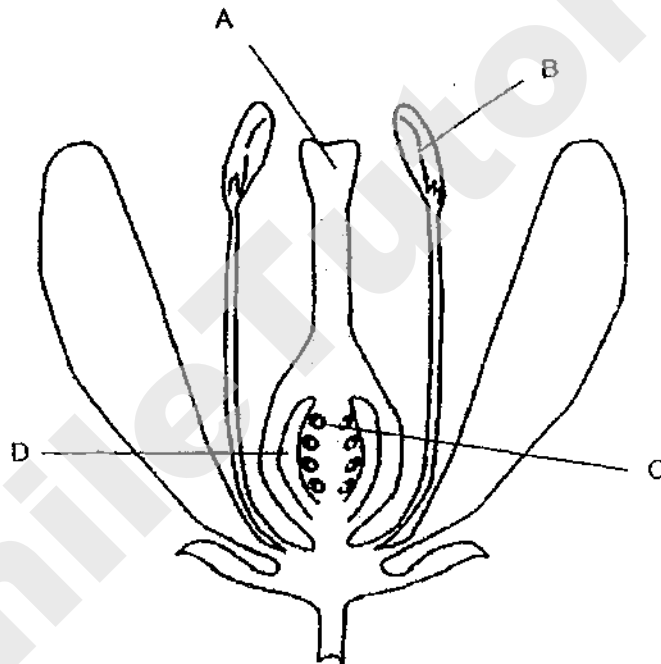
Whose conclusion(s) is/are correct?

- (1) David only
- (2) Amy and Chris only
- (3) Ben and Chris only
- (4) Amy, Ben and David only

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.

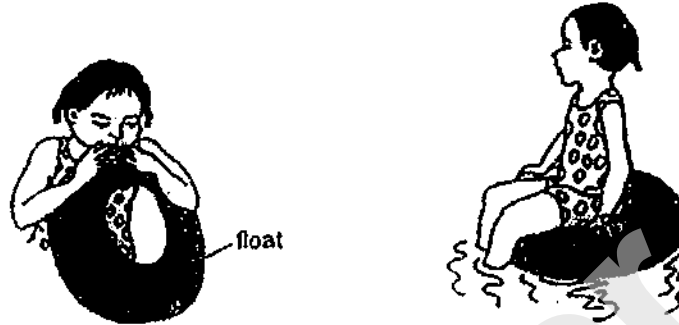
14. Royce conducted an experiment with a flower on a plant.



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

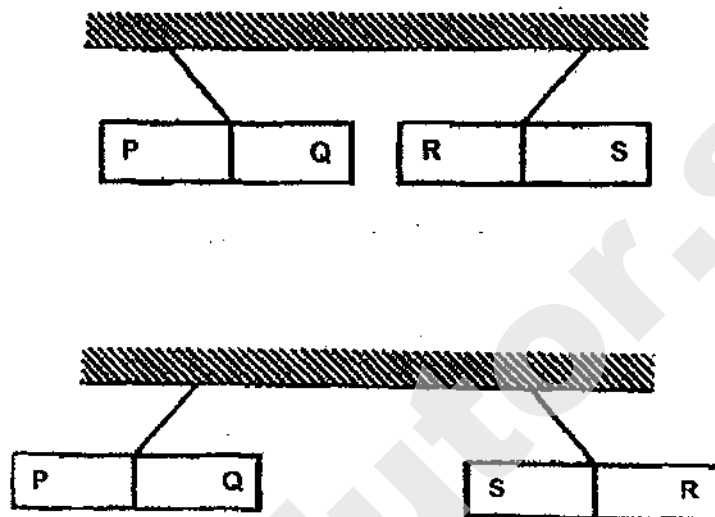
15. The diagrams below show Jenny blowing air into a float and then sitting on it in water.



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)	✓	✓		✓	✓

16. The diagram below shows what happens when 2 bar magnets, PQ and RS, are brought near to each other.

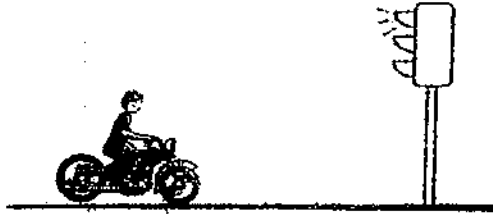


Which of the following statements are correct about the likely poles of the 2 magnets?

- 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

17. The diagram below shows a motorcyclist getting ready to stop at a traffic light that has turned red.

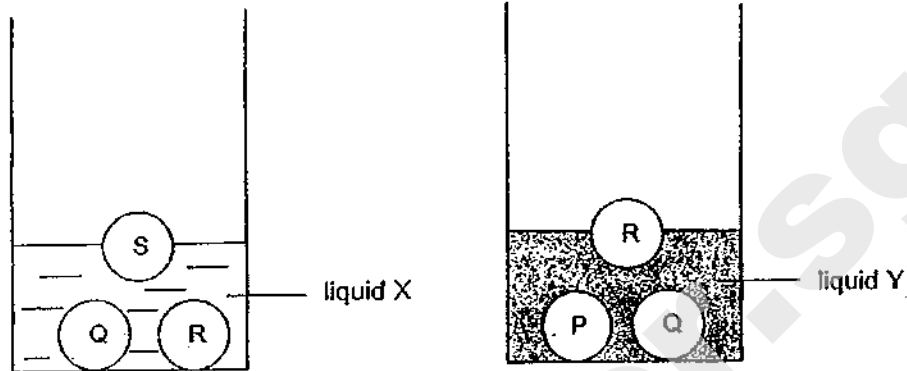


Which one of the following statements explains correctly why the motorcyclist is able to see the red light?

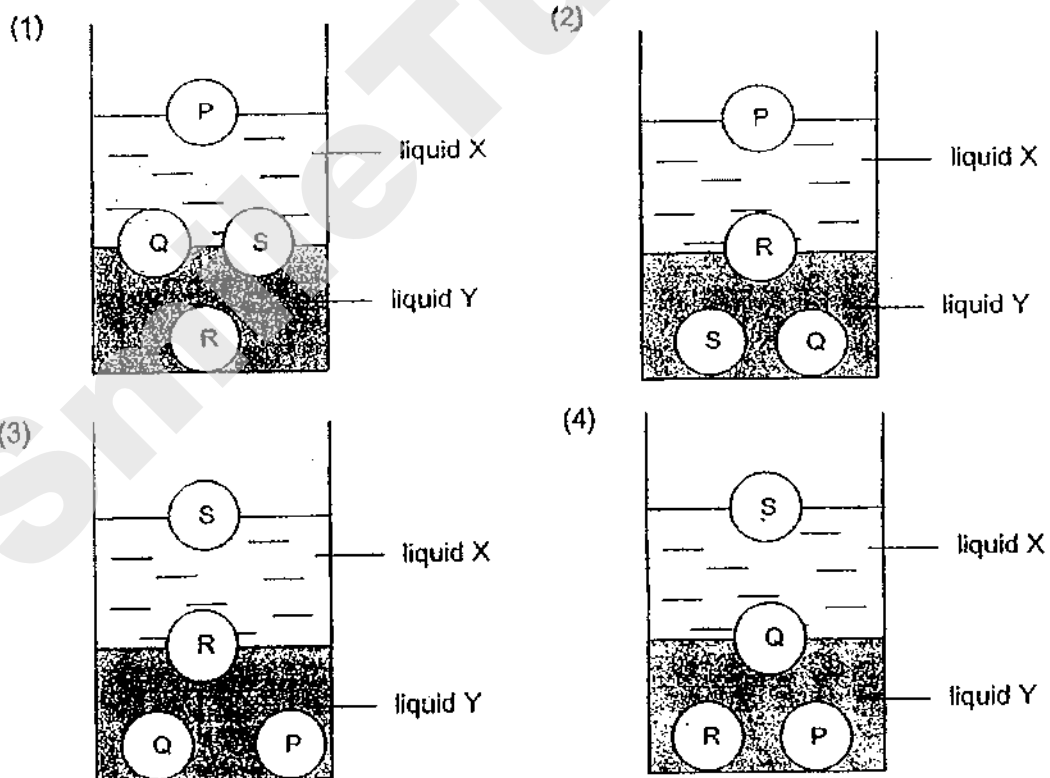
- (1) The traffic light gives out light.
- (2) The traffic light is higher than him.
- (3) His eyes reflect light to the traffic light.
- (4) Red light is more easily seen than green light.



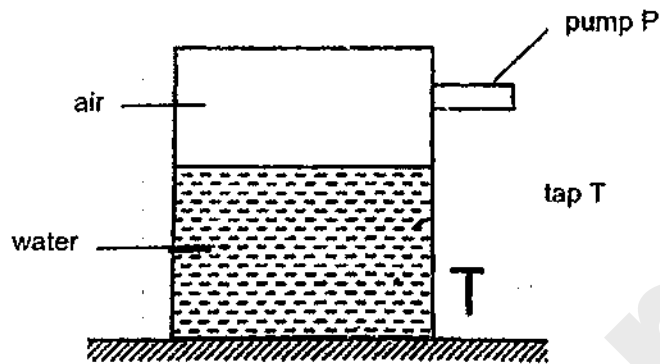
18. Four similar balls of different materials, P, Q, R and S, were placed in liquids X and Y. The balls stayed at the positions as shown below.



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?



19. The diagram below shows a sealed metal container which had 60 cm<sup>3</sup> of water and 40 cm<sup>3</sup> of air.

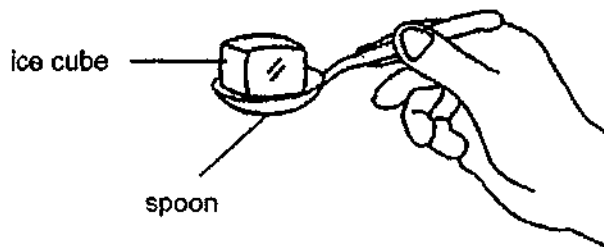


20 cm<sup>3</sup> of water was removed from the container through tap T and 100 cm<sup>3</sup> of air was then pumped in using pump P.

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

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  $0^{\circ}\text{C}$  and boils at  $100^{\circ}\text{C}$ .

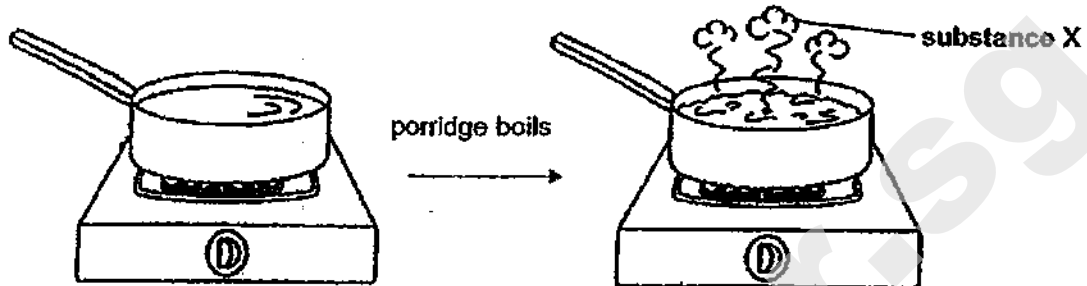
Substance B melts at  $10^{\circ}\text{C}$  and boils at  $200^{\circ}\text{C}$ .

Substance C has a high melting point of  $1000^{\circ}\text{C}$ .

Which of the following shows the state of substance A, B and C are likely to be at a temperature of  $280^{\circ}\text{C}$ ?

	A	B	C
(1)	liquid	solid	solid
(2)	solid	liquid	gas
(3)	liquid	gas	gas
(4)	gas	gas	solid

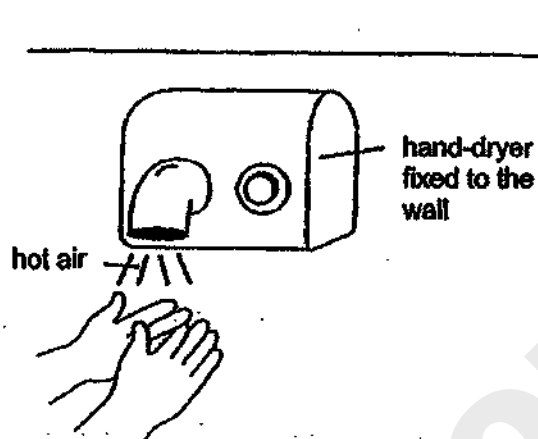
22. Mrs Chong is cooking porridge on a stove. When the porridge boils, substance X is formed as shown in the diagram below.



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

23. Rajah dries his wet hands under a hand-dryer as shown in the diagram below.

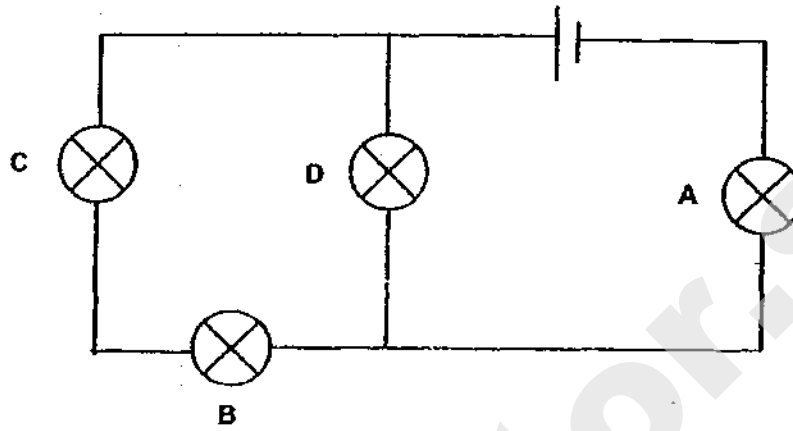


Which one of the following statements are correct?

- 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

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

25. When a toy canon is fired, it moves up the slope from P to Q as shown in Diagram 1. The canon then moves back from Q to P on its own as shown in Diagram 2.

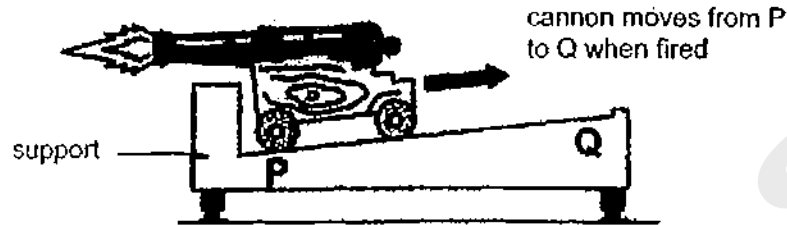


Diagram 1

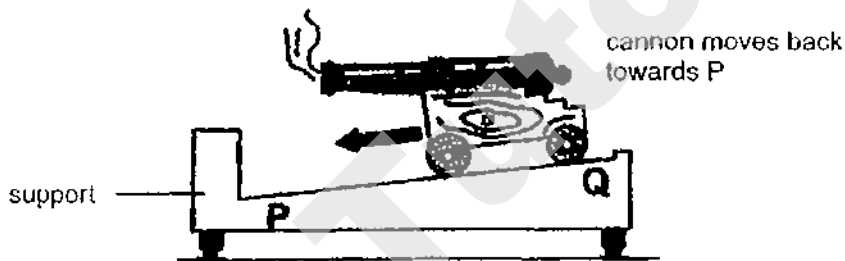
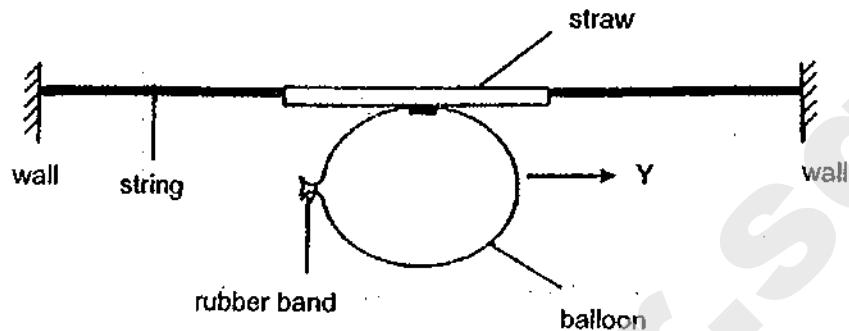


Diagram 2

Which one of the following shows correctly the change in the potential energy and kinetic energy of the canon 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

26. Bala glued a balloon to a straw and passed a string through the straw as shown below.



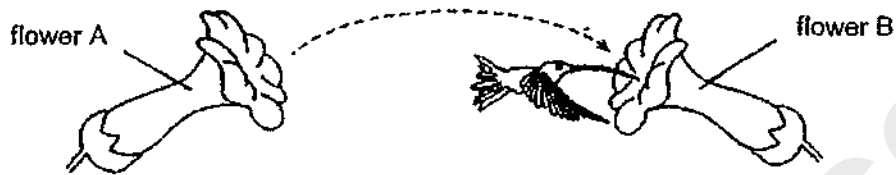
When he removed the rubber band, air rushed out of the balloon, causing the balloon and the straw to move in direction Y.

Which of the following shows correctly the energy conversion in the above experiment?

- (1) elastic potential energy  $\rightarrow$  kinetic energy  $\rightarrow$  kinetic energy + sound energy
- (2) heat energy  $\rightarrow$  kinetic energy  $\rightarrow$  kinetic energy + sound energy
- (3) sound energy  $\rightarrow$  kinetic energy  $\rightarrow$  elastic potential energy + heat energy
- (4) kinetic energy  $\rightarrow$  gravitational potential energy  $\rightarrow$  kinetic energy + sound energy



27. The diagram below shows a bird flying from flower A to flower B.

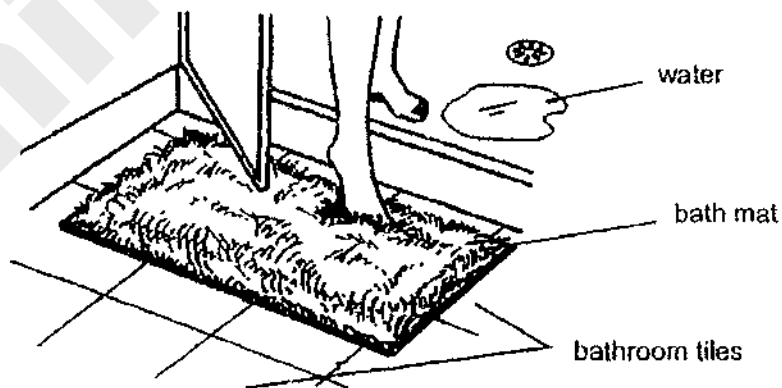


Which of the following force(s) is/are acting on the bird?

- 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 Lillian 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 Lillian 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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**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

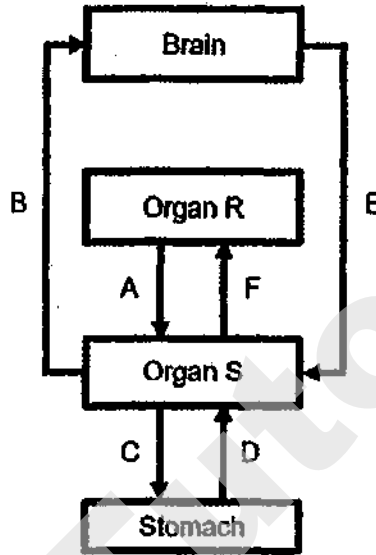
Marks for Booklet B: \_\_\_\_\_

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**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: \_\_\_\_\_

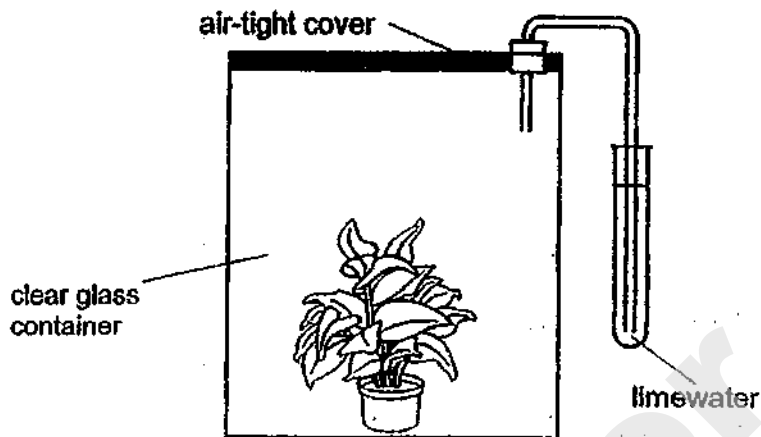
Organ S: \_\_\_\_\_

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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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.

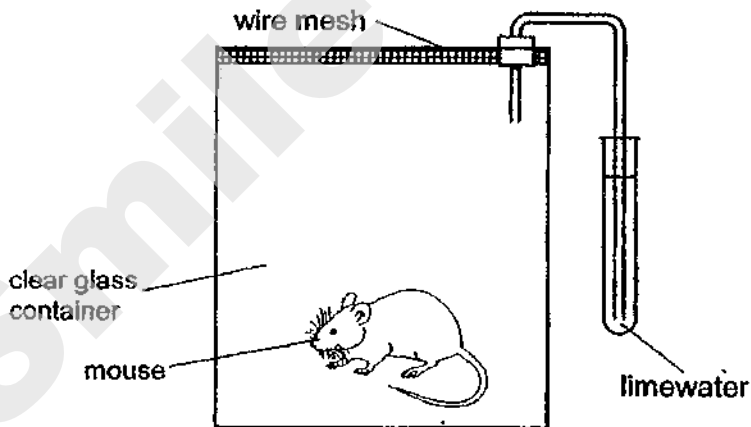
- a) Will the limewater turn cloudy after two hours? Give a reason for your answer. [1]

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He repeated the experiment with another set-up shown in the diagram below.



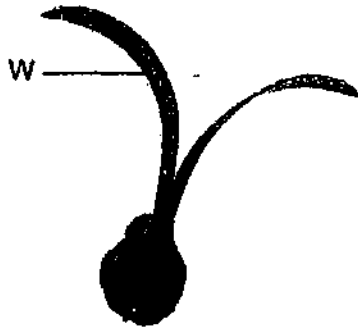
- b) After two hours, Brandon noticed that the limewater remained colourless. Explain why. [1]

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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]

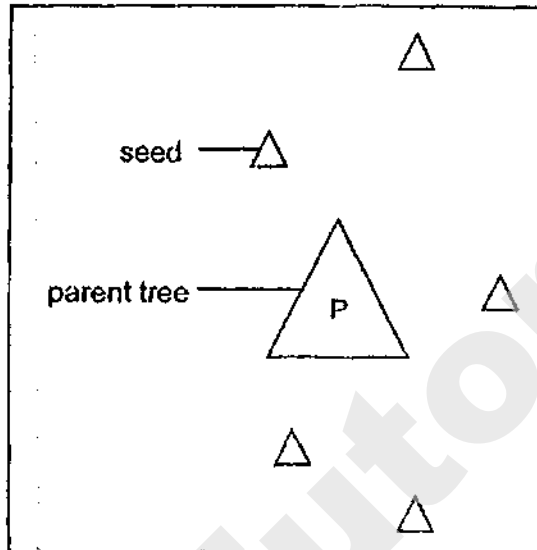
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Question 31 continues on this page

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 <sup>2</sup> )	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]

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- c) Other than the area of part W, state one other variable that will affect the distance the seed was dispersed. [1]

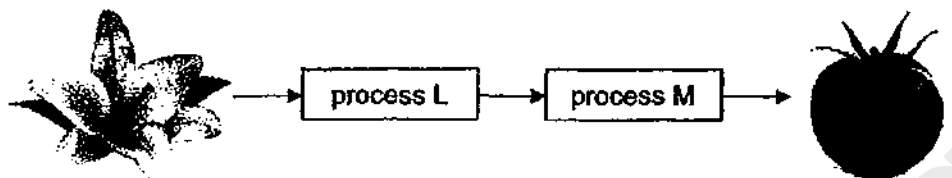
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32. The diagram shows how a fruit is formed in a flowering plant.



Name and describe process M.

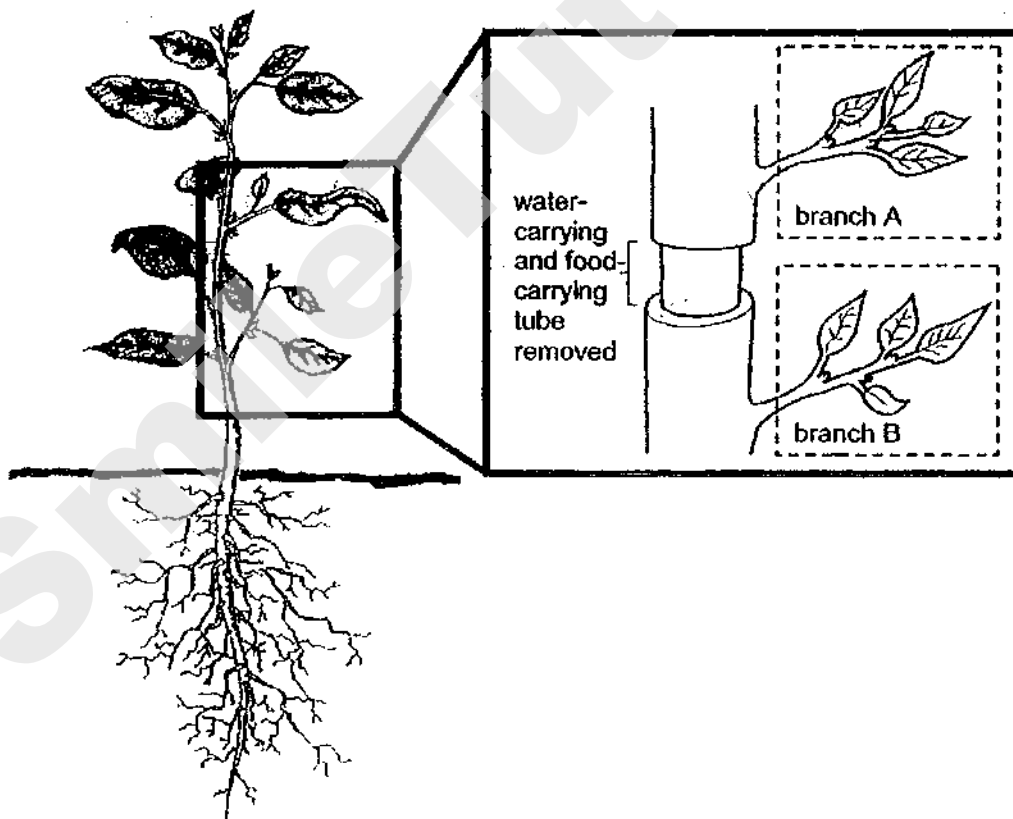
[2]

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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]

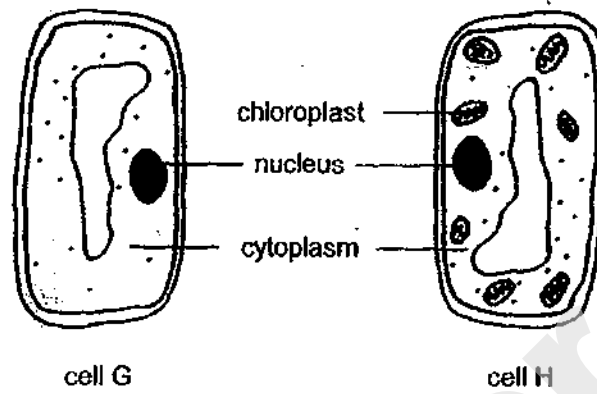
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Question 33 continues on this page

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: \_\_\_\_\_

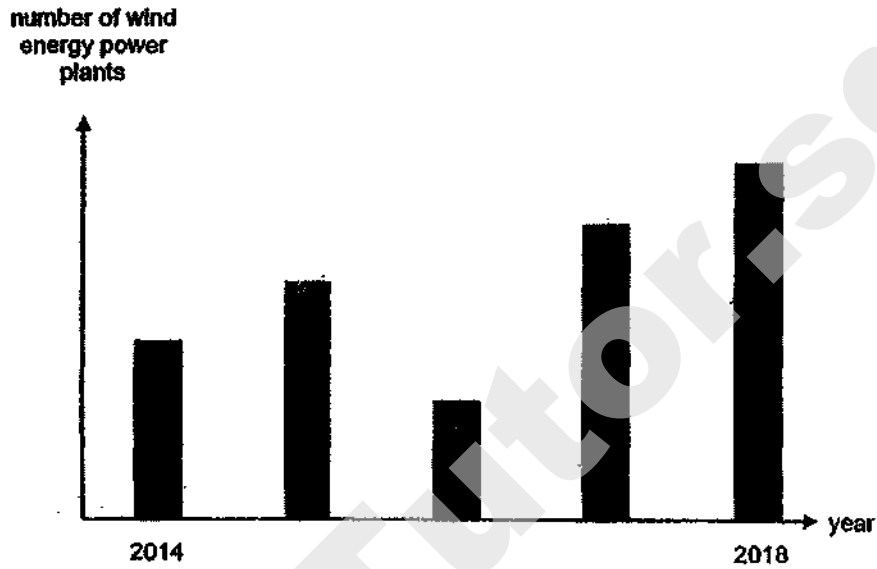
\_\_\_\_\_

Cell H: \_\_\_\_\_

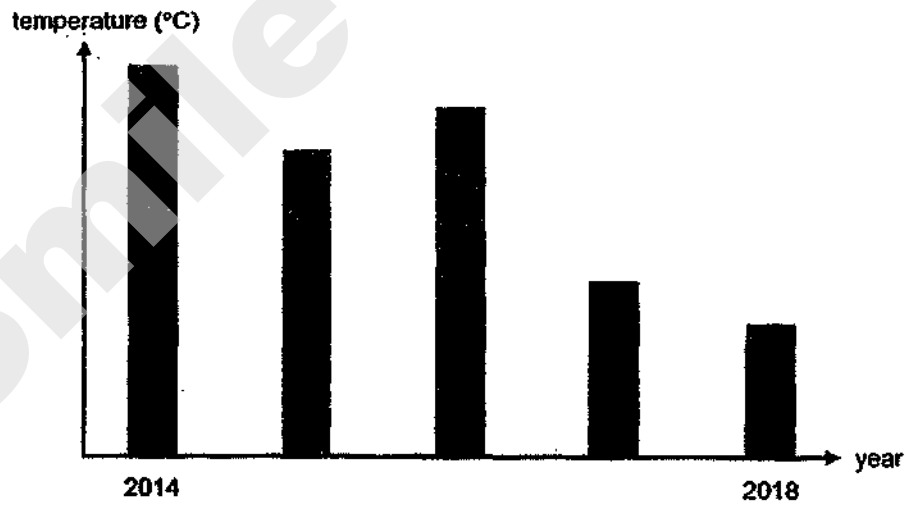
\_\_\_\_\_

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: \_\_\_\_\_

\_\_\_\_\_

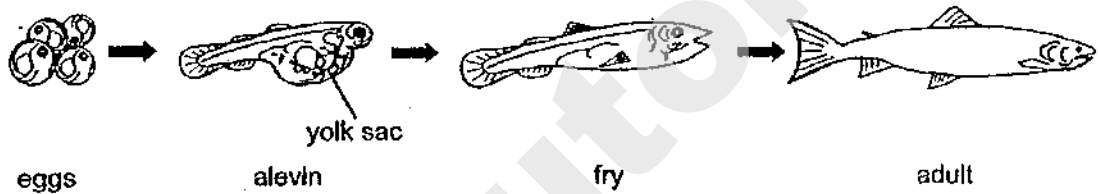
Benefit 2: \_\_\_\_\_

\_\_\_\_\_

SmileTutor.sg

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.



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]

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b) Name the conditions necessary for germination [1]

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Question 35 continues on this page

- c) Ben and Dan are identical twins. They have attached earlobes like their father.

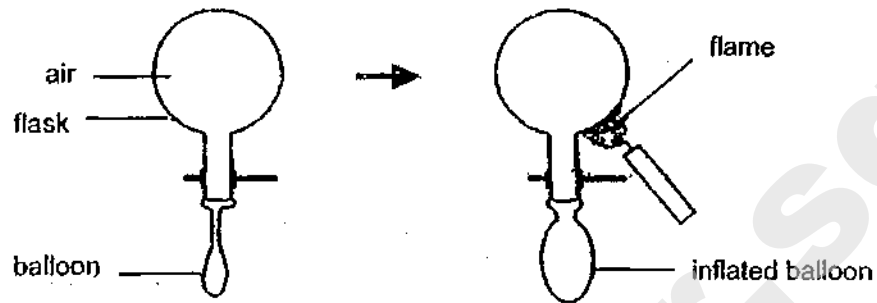


Using the diagram given, explain how Ben and Dan inherited the trait from their father. [2]

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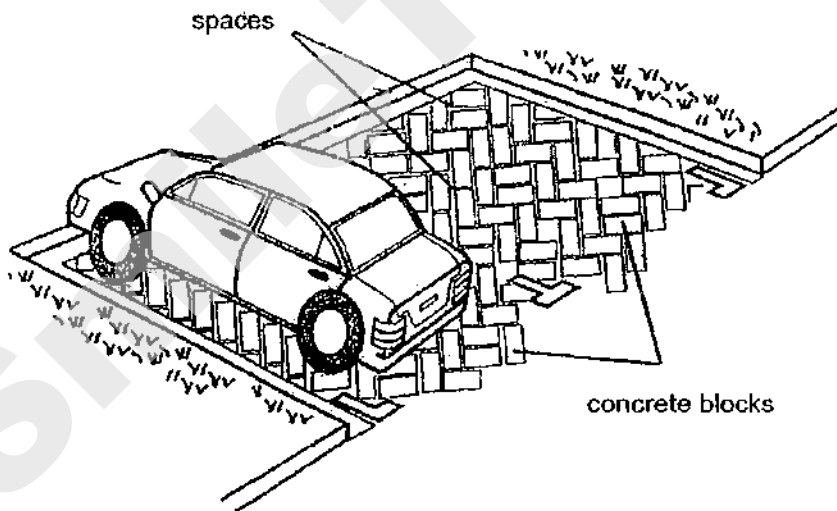
36. Matthew conducted an experiment shown below.



a) What does Matthew's experiment show about heat and the property of air? [1]

\_\_\_\_\_

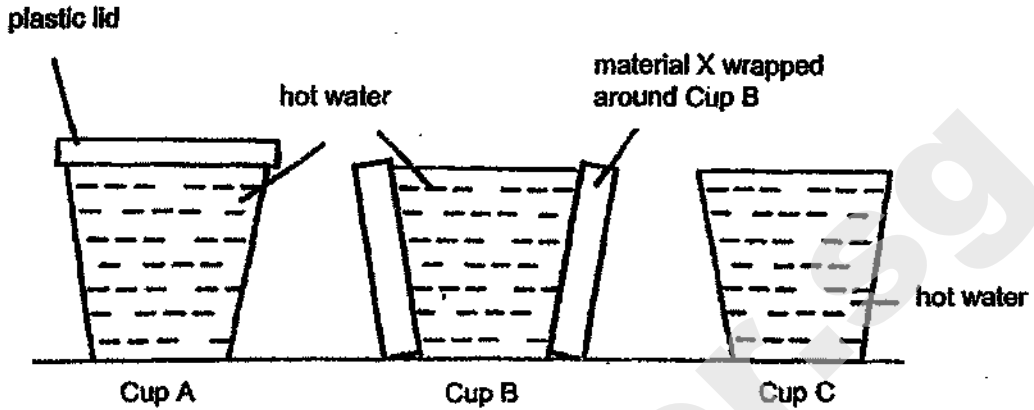
The diagram below shows carpark lots which are often covered with concrete blocks with spaces between them.



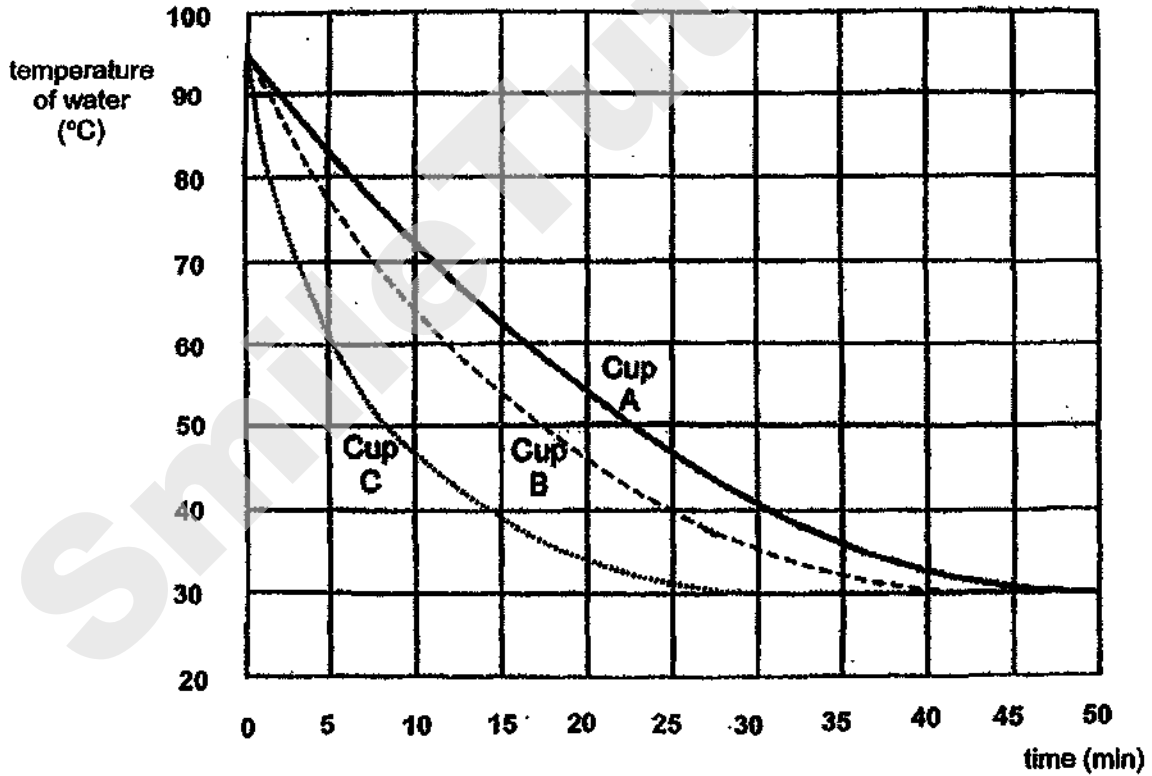
b) Explain why there are spaces between the concrete blocks. [2]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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.

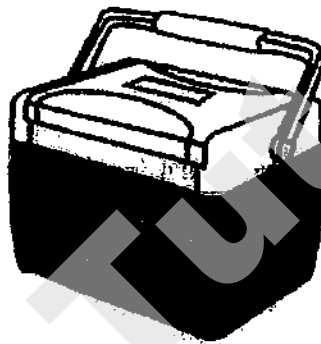
[1]

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The container shown below is made of plastic. It can be used for keeping cold drinks and ice when going on a picnic.



container made of plastic

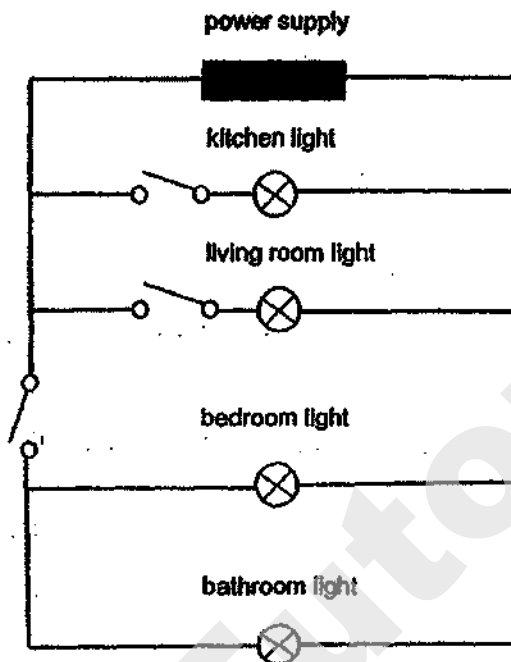
c) Explain how the cold drinks can be kept cold in the plastic container.

[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.

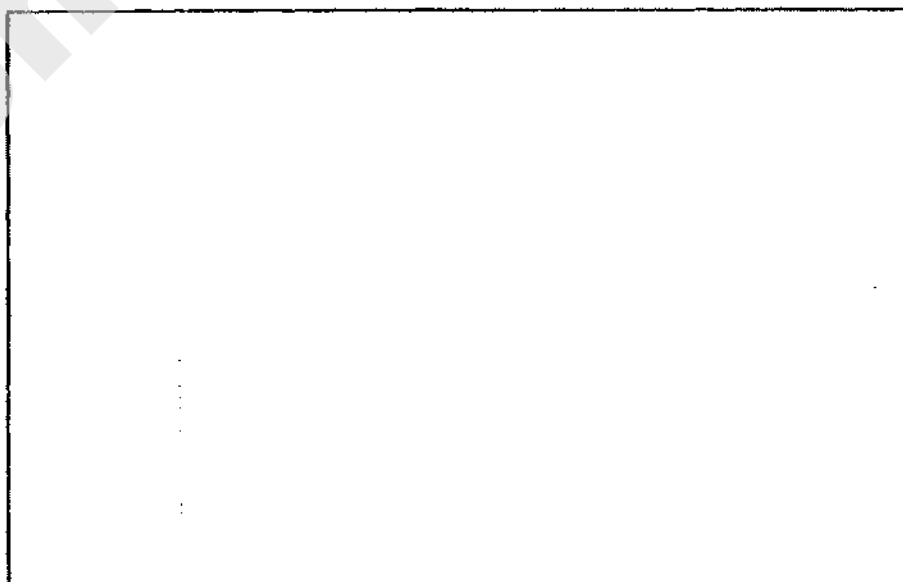
Which two areas of his house is Farah referring to?

[1]

- (i) \_\_\_\_\_ (ii) \_\_\_\_\_

- b) In the box below, use circuit diagram to draw the lighting circuit based on Farah's suggestion.

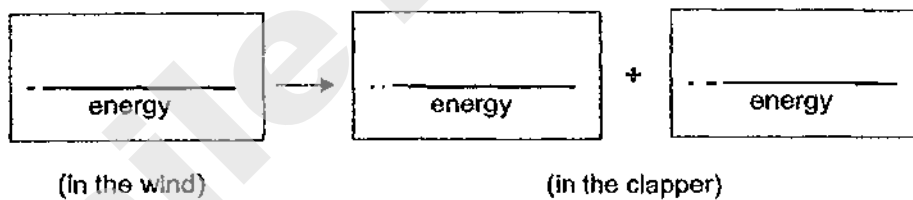
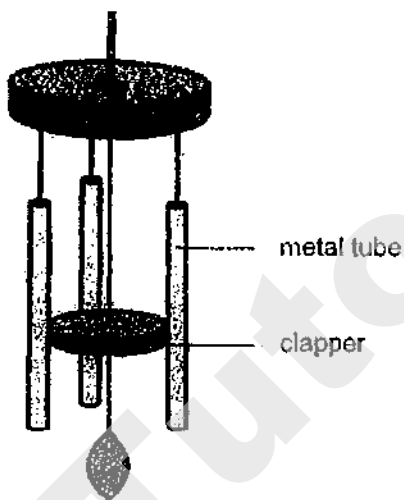
[1]



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]



- b) How does the strength of wind affect the frequency of the sounds produced? [1]

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- c) Explain your answer in (b) using energy conversion. [2]

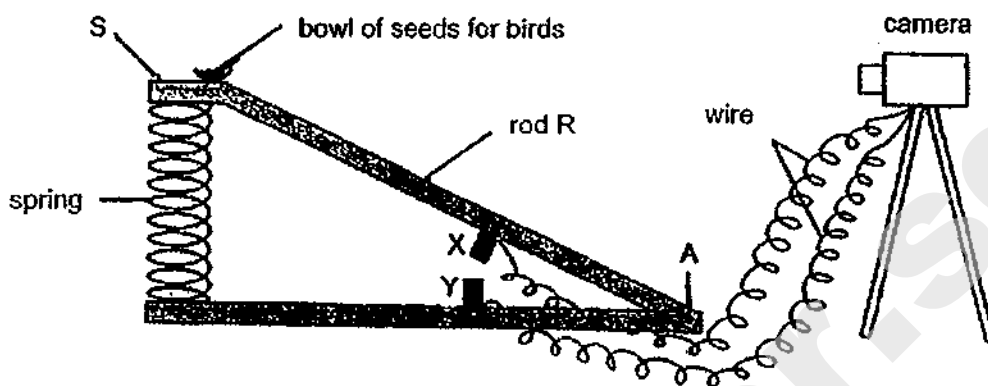
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40. Alvin uses the set-up shown below to take photographs of birds automatically when they land on S.



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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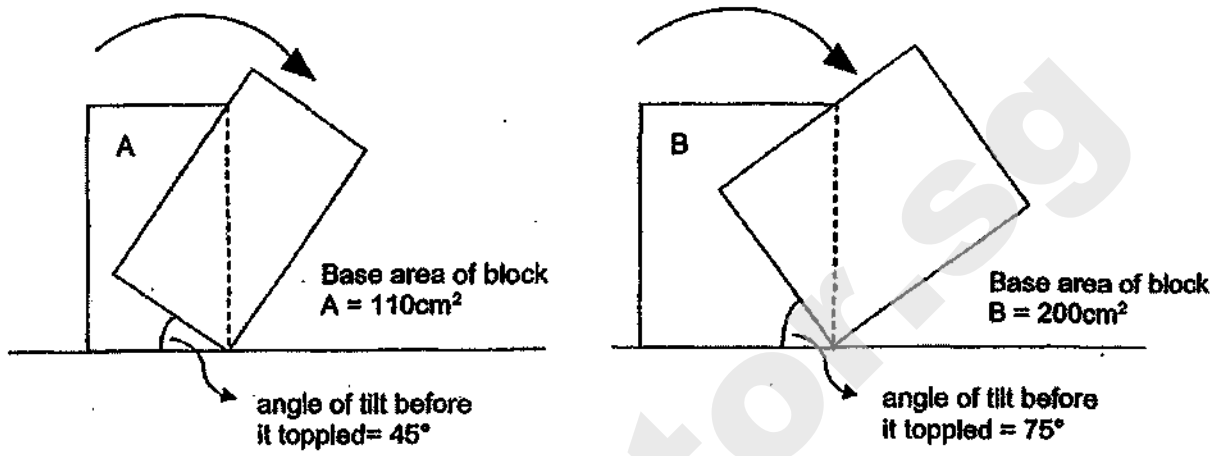


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41. Janet carried out an experiment with two wooden blocks, A and B. They are of similar heights but have different base area in contact with the table top. She tried to find out how much she had to tilt each block before it toppled.



- 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]

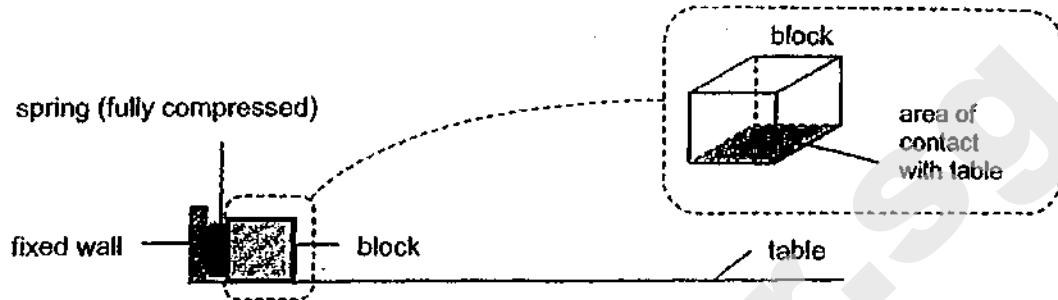
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Question 41 continues on this page

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 <sup>2</sup> )	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]

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- d) Based on the information in the table, state which variable affects the force mentioned in (c). [1]

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End of Booklet B

Setters: Dr Evelyn Tan and Miss Kuek Tsing Xiu

2019 P6 SA1 Science  
Correction Sheet

Name: \_\_\_\_\_ ( ) Class: \_\_\_\_\_

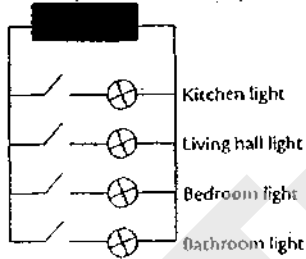
Booklet A

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

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





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

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**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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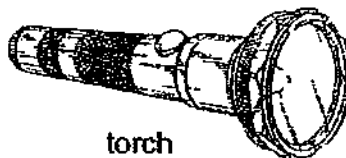
SmileTutor.sg

**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.

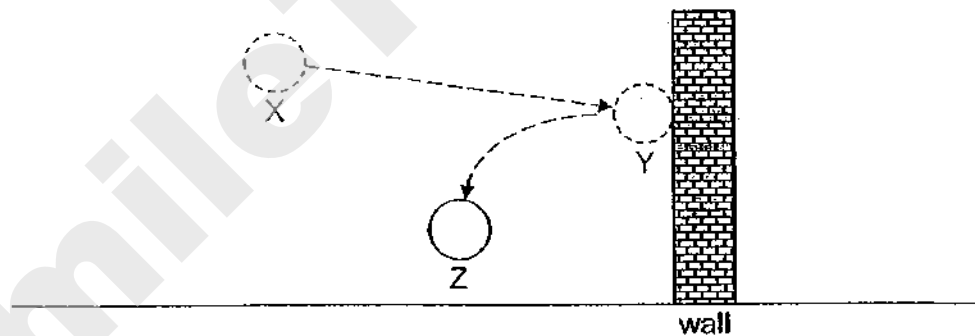
1. Which one of the following represents a community?
  - (1) frog and tadpoles in a pond
  - (2) cockroaches, nymphs and eggs on a shelf
  - (3) butterflies, caterpillars and eggs on a plant
  - (4) earthworms, spiders and grasshoppers in a garden
  
2. Which one of the following shows the direct transfer 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

4. Which of the following most accurately shows the energy conversion of a battery-powered torch?



- (1) electrical energy  $\rightarrow$  light energy  $\rightarrow$  heat energy
- (2) chemical energy  $\rightarrow$  light energy  $\rightarrow$  heat energy
- (3) electrical energy  $\rightarrow$  chemical energy  $\rightarrow$  light energy + heat energy
- (4) chemical energy  $\rightarrow$  electrical energy  $\rightarrow$  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.

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

8. Three animals X, Y and Z reproduce by laying eggs.  
The table below shows the characteristics of these animals.

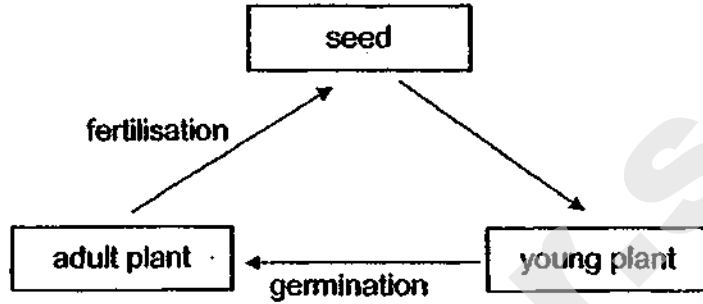
Characteristics	Animal X	Animal Y	Animal Z
Number of legs	6	6	4
Number of stages in their life cycle	4	3	3

Based on the characteristics above, what could possibly be Animals X, Y and Z?

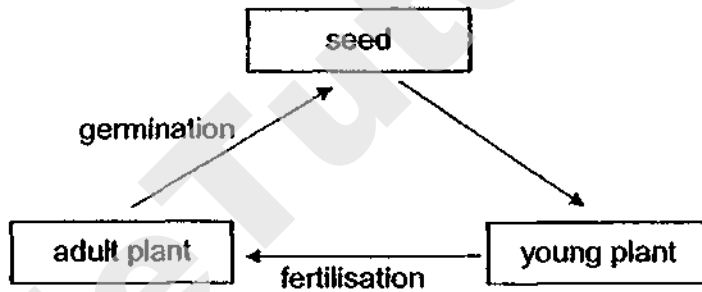
	Animal X	Animal Y	Animal Z
(1)	butterfly	cockroach	frog
(2)	ant	butterfly	grasshopper
(3)	cockroach	grasshopper	mealworm
(4)	mealworm	frog	butterfly

9. Which of the following diagrams correctly shows the processes in the life cycle of a flowering plant?

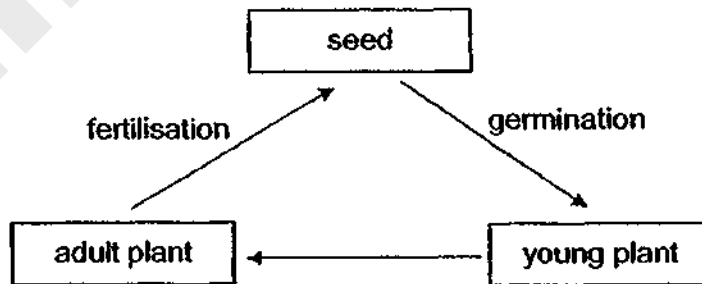
(1)



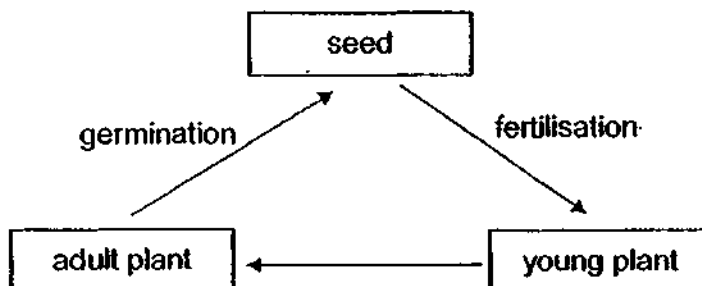
(2)



(3)



(4)



10. Blood leaving the small intestine carries more \_\_\_\_\_ than the blood entering it.

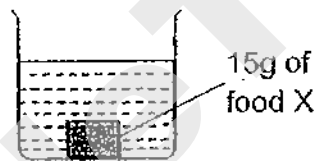
- A. food
- B. oxygen
- C. carbon dioxide

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

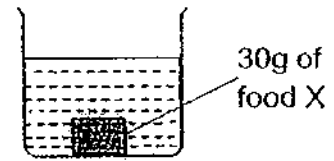
11. The diagrams below show the setup of an experiment to study the digestion of food. Each beaker contains food X and the same amount of digestive juice.

In which set-up would the food be completely digested first?

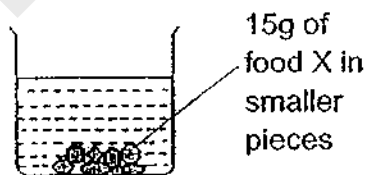
(1)



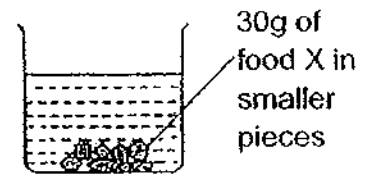
(2)



(3)

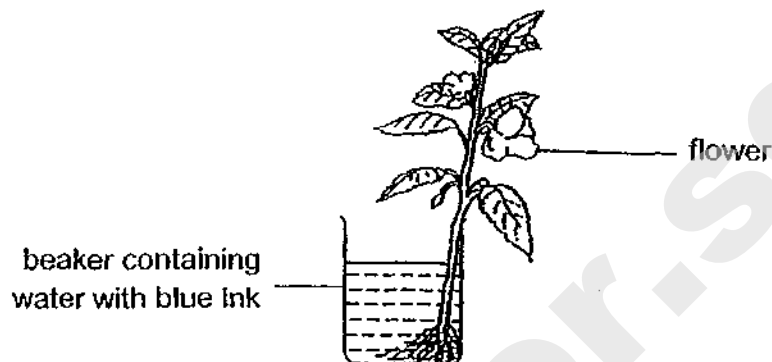


(4)





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

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

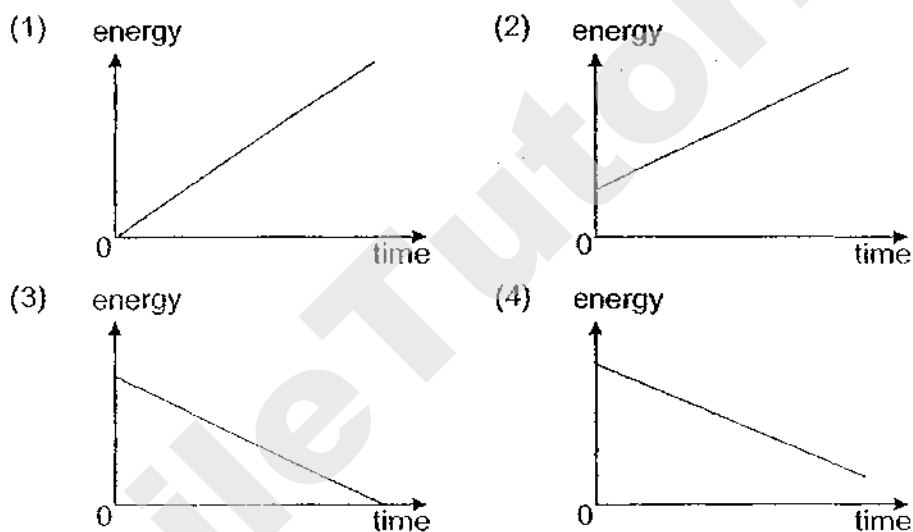
15. Hassan took 50 g of leaves from four different plants A, B, C and D. He placed the leaves on separate plates in a room at 40°C under bright light. He weighed the leaves again 12 hours later and recorded the results in the table below.

	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

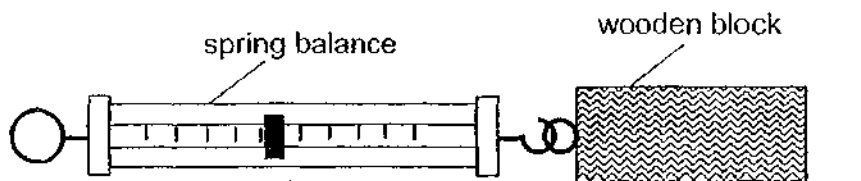
Hassan can conclude that the rate of \_\_\_\_\_ varies for different plants.

- (1) water loss
- (2) water gain
- (3) photosynthesis
- (4) absorption of light

16. Which of the following correctly shows the change in potential energy as the ball falls from point Y to Z?



17. A spring balance is used to pull a wooden block over a table top.

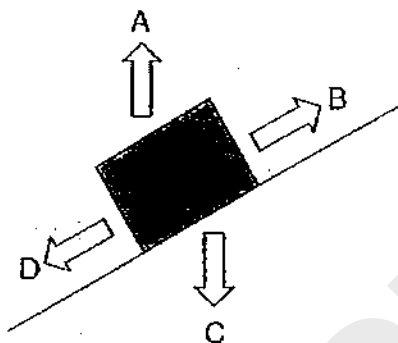


Which of the following will affect the amount of force needed to pull the block?

- 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

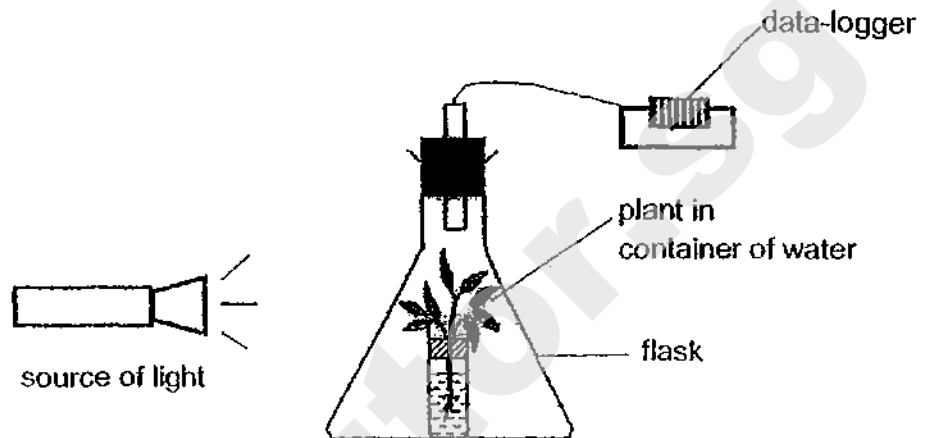
18. A box was pushed off a ramp. It slid down the ramp before stopping at the position shown below.



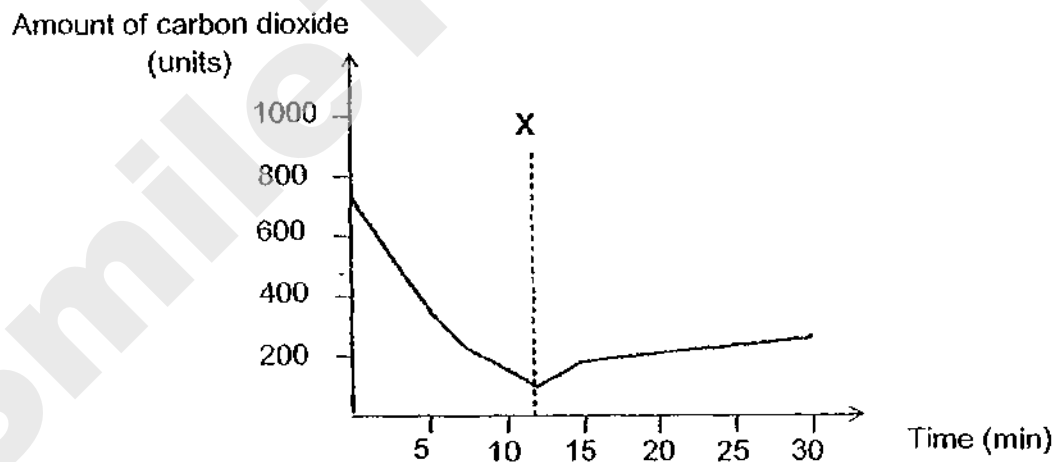
Which arrow correctly shows the direction of the force that stopped the box?

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

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.



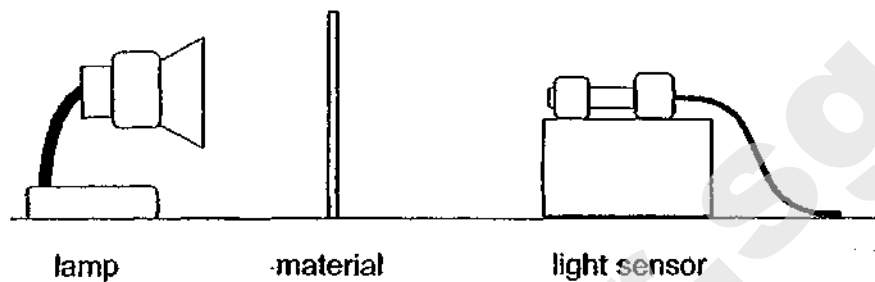
The graph below shows the results recorded by the data-logger.



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.

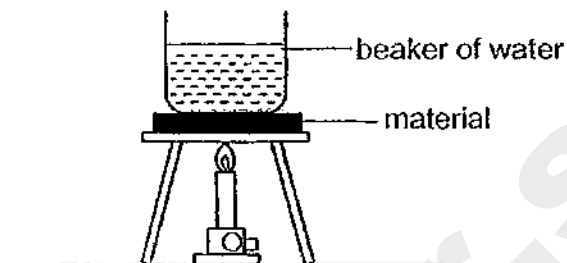
20. The set-up below was used to test how much light can pass through different materials.



Which of the following correctly shows the changed and measured variables?

	<b>Changed variable</b>	<b>Measured variable</b>
(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

21. Muru conducted an experiment using the set-up below.



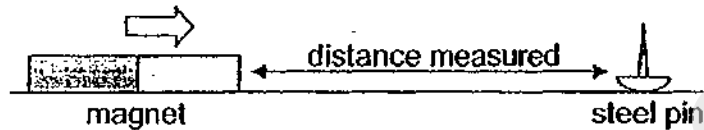
He recorded the time taken for the water to boil when different materials P, Q and R were placed below the beaker of water in the table below.

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 <sup>3</sup> )			
	P	Q	R
(1)	50	150	100
(2)	150	50	100
(3)	50	100	150
(4)	150	100	50

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.

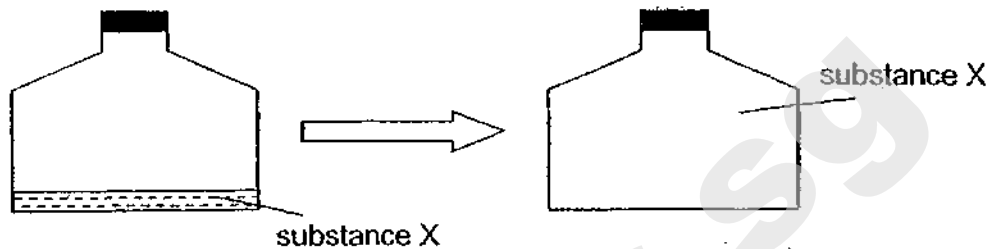
magnet	distance when steel pin was attracted to magnet (cm)
X	5
Y	2
Z	3

Which of the following correctly shows the strength of the magnet from strongest to the weakest?

	strongest	→	weakest
(1)	X		Z
(2)	X		Y
(3)	Y		X
(4)	Z		X



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

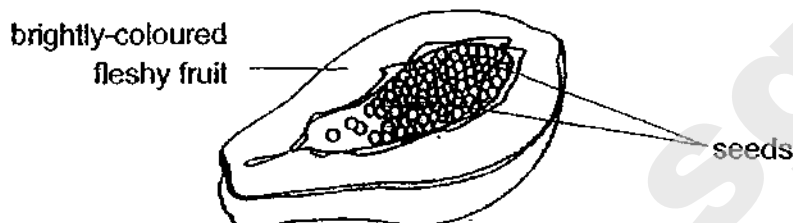
24. David wanted to find out how the conditions in the different locations affect how fast clothes dry. Four similar shirts were soaked in water. Their masses were measured before they were hung out to dry in a similar manner at different locations. After 1 hour, he measured the mass of each shirt and 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.

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

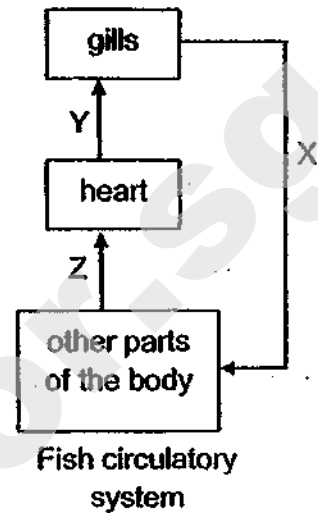
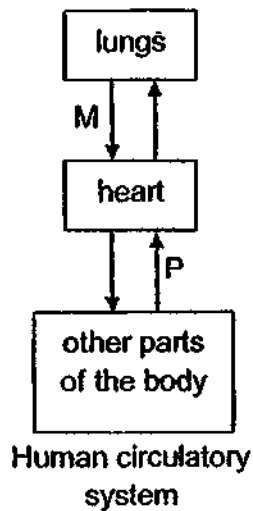
26. Simon conducts an experiment to find out if the presence of water and air affect the germination of seeds. He places the seeds in various pots. The table below shows the conditions of the pots.

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

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.

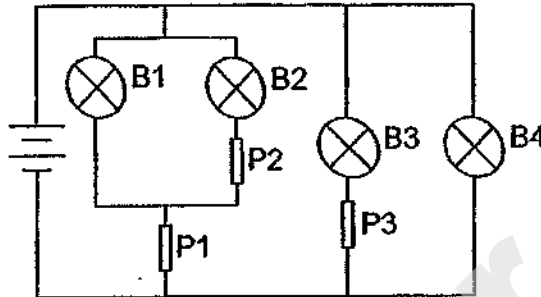


Based on the diagrams above, which of the following statement(s) is/are correct?

- 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

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

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**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.

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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. 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 <sup>3</sup> )	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)

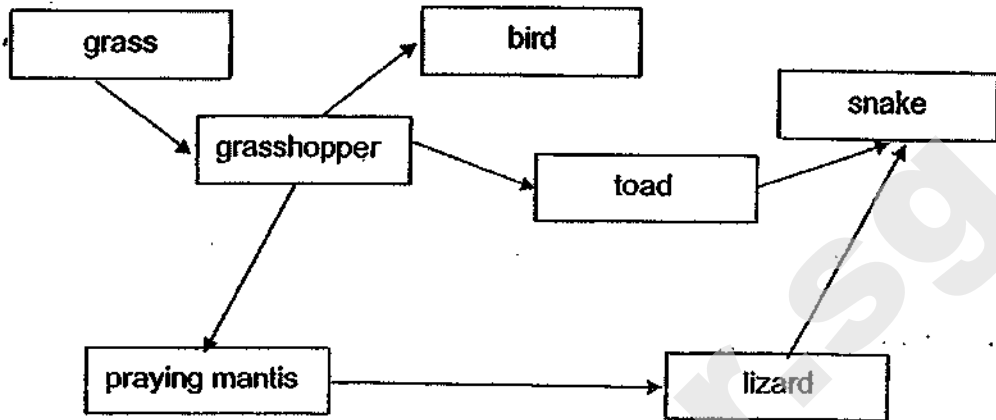
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Marks : 

	/ 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]

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(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]

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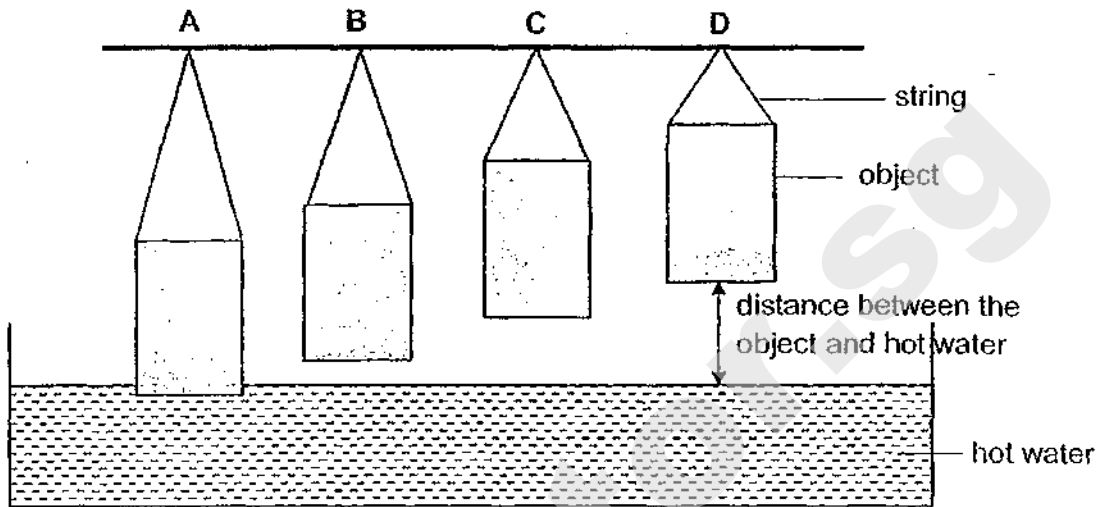
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Marks : / 4

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 ( $^{\circ}\text{C}$ )	60	38	25	25

- (a) What is the relationship between the temperature of the object and the distance between object and hot water? [1]

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- (b) Explain why the temperature had to be taken within a short period of time. [1]

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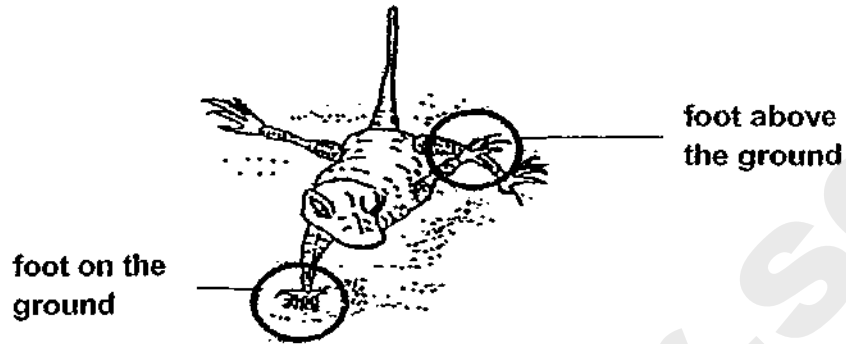
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Marks : / 2

- (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]

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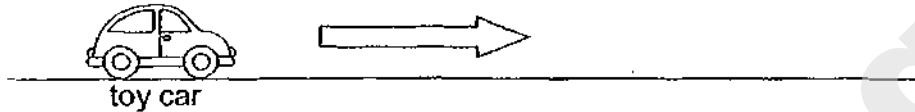
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Marks : / 3

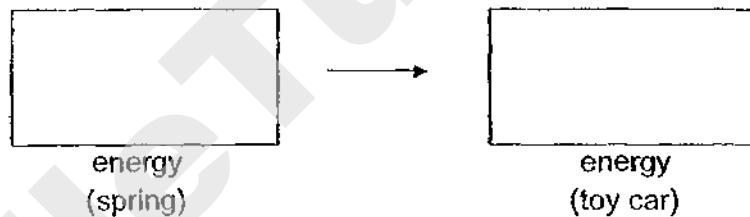
32. Leroy wound the spring of a wound-up toy car and released it. He wanted to find out how the number of times the toy car was wound up would affect the distance travelled by the toy car.



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]



- (b) Explain how winding the toy car more times allowed the car to travel further. [1]

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- (c) Leroy wound the toy car 30 times. The toy car did not move when released. Suggest a possible reason. [1]

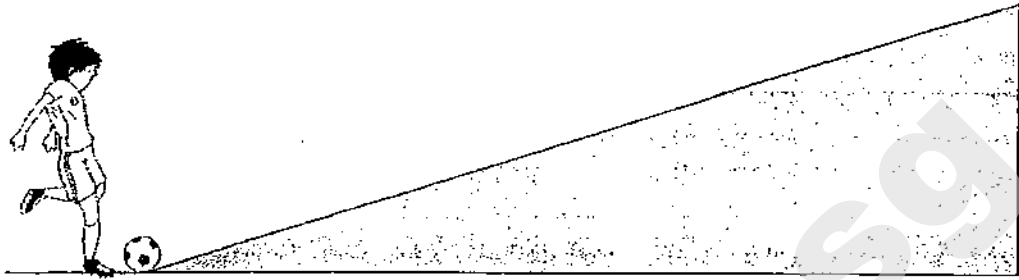
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Marks : / 3

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]

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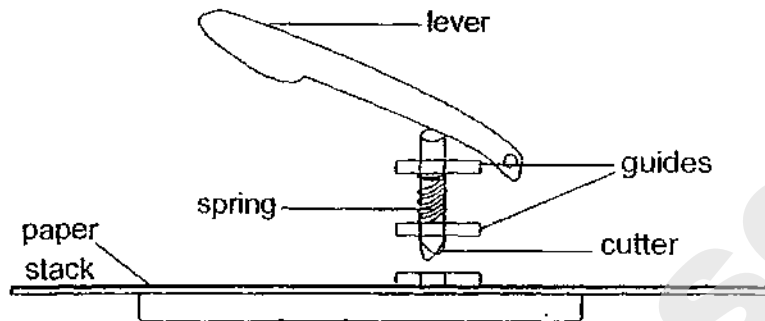
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Marks :

12

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.

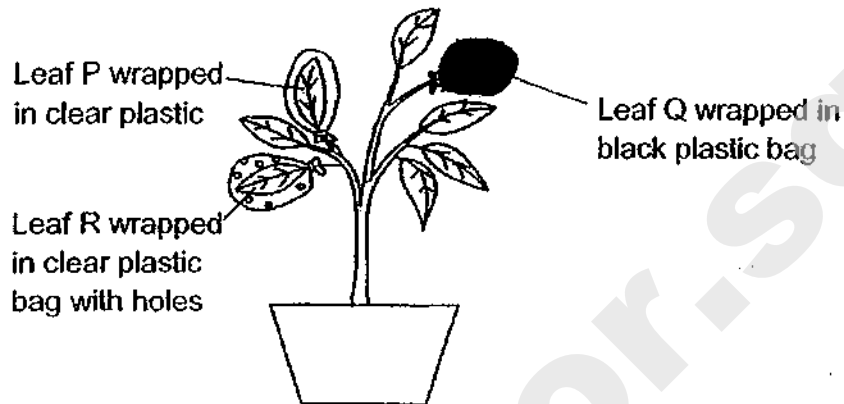
(ii) Explain how oil helped the lever return to its original position.[2]

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\_\_\_\_\_  
\_\_\_\_\_

Marks :

/ 4

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]

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- (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]

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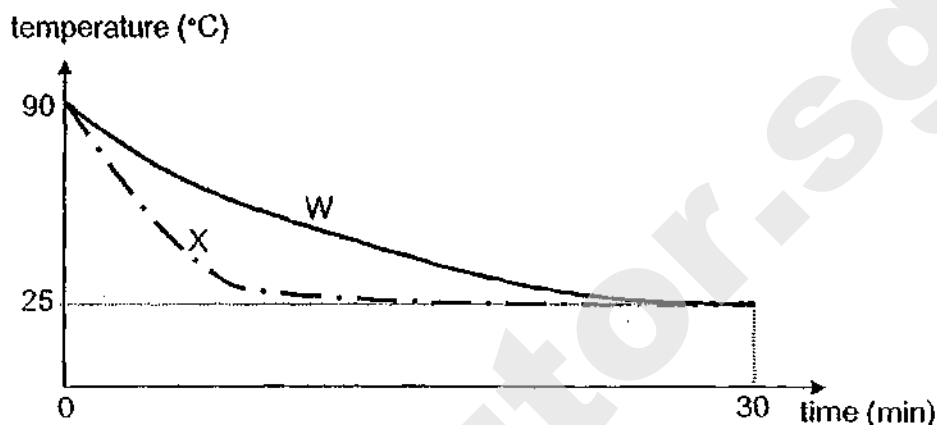
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Marks :  / 3



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]

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- (b) Explain which container of water, W or X, will freeze first if they were both placed into the same freezer. [2]

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- (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]

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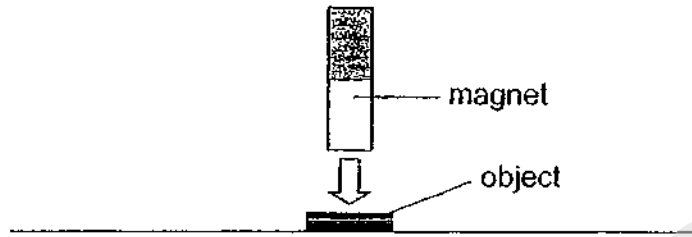
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Marks : 

/ 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]

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(b) What would Joseph need to do to pick up a heavier object with the same magnet? [1]

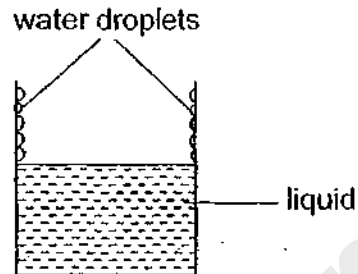
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Marks :

/ 2

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]

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- (b) Based on the observation, what can you tell about the temperature of the liquid? [1]

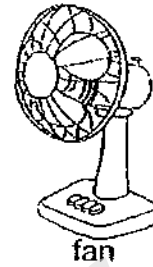
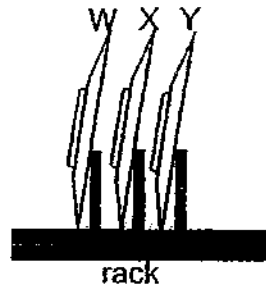
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Marks :

12

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]

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- (b) Which plate, W, X or Y, will dry fastest? Explain your answer. [2]

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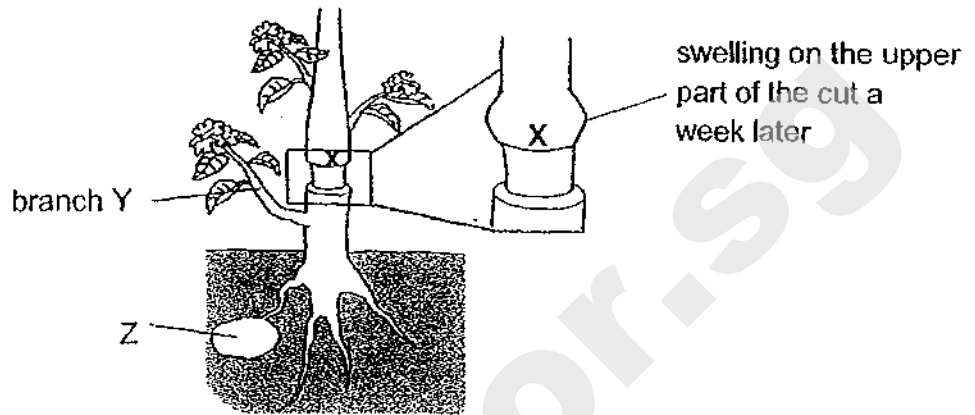
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Marks : 

/ 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]

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- (b) Part Z grew bigger after one week. Explain why this is possible. [1]

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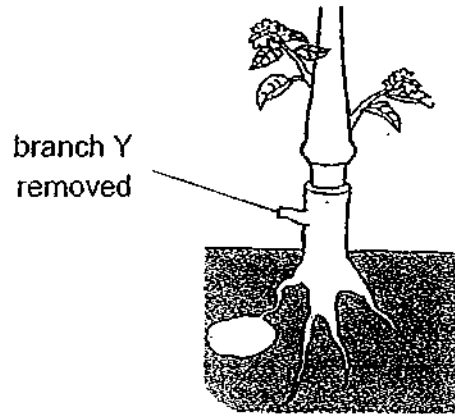
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Marks :

1 / 2

- (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]

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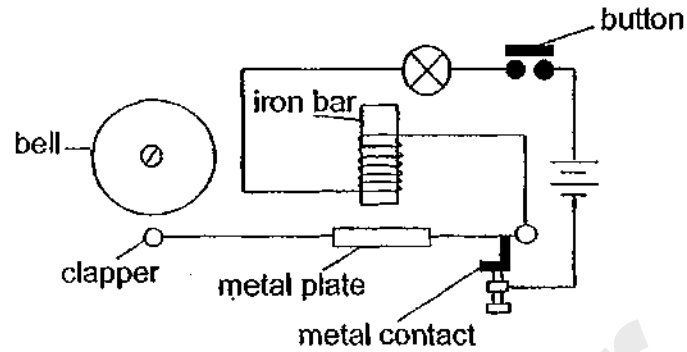
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Marks : 

/ 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]

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- (b) If the button was pressed down without releasing, the clapper would continuously strike the bell. Explain how this happens. [2]

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Marks : 

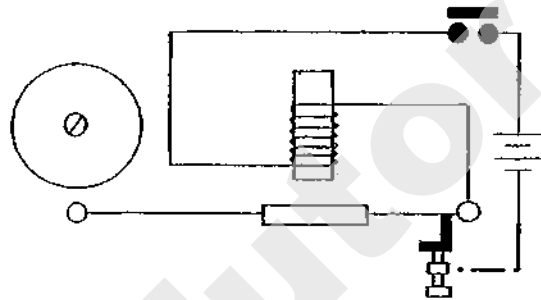
/ 3
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(c) The bulb flickered continuously as the button was pressed.

Show how you can connect the bulb to the circuit below such that it stays lit while the button is pressed down.

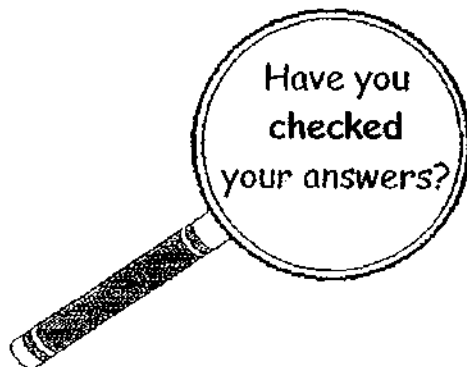
Draw your own bulb and wires.

[1]



Marks :  / 1

~ END OF PAPER ~





**SCHOOL : MAHA BODHI PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**

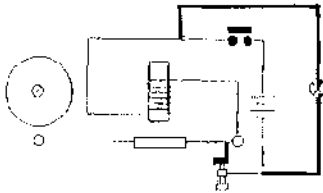
**SECTION A**

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)	<p>a)Number of leaves at the end of the experiment.</p> <p>b)There is more than one changed variable.</p> <p>c i)Change the type of soil of all pots to garden soil.</p> <p>ii)Change the amount of water added to the soil of the three pots daily to 100ml.</p>
Q30)	<p>a) Grass → Grasshopper → Bird</p> <p>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.</p> <p>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.</p>
Q31)	<p>a)As the distance increases, the temperature desreases until it reaches 25°C.</p>

	<p>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.</p> <p>c)</p> <table border="1"> <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> <p>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.</p>		The foot on the ground will gain heat from the hot desert floor and so the temperature would be higher.		The foot above the ground would lose heat to the surroundings and so the temperature would be lower.
	The foot on the ground will gain heat from the hot desert floor and so the temperature would be higher.				
	The foot above the ground would lose heat to the surroundings and so the temperature would be lower.				
Q32)	<p>a) Elastic potential <math>\longrightarrow</math> Kinetic</p> <p>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.</p> <p>c) The spring in the toy car was over stretched.</p>				
Q33)	There is less kinetic energy as the kinetic energy of the ball was converted to potential energy.				
Q34)	<p>a) Elastic spring force.</p> <p>b i) The elastic spring force was unable to overcome the friction between the cutter and the guides</p> <p>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.</p>				
Q35)	<p>a) This ensures that the presence of starch tested at the end of the experiment was due to the plastic bags.</p> <p>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</p>				
Q36)	<p>a) The water in both beakers lost heat to the surroundings and reached room temperature.</p> <p>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.</p> <p>c) Use containers of the same material but with different volumes of</p>				

	water.
Q37)	<p>a)The material of the object is a magnetic material.</p> <p>b)Place the magnet closer to the object.</p>
Q38)	<p>a)Water vapour in the surroundings lost heat to the glass and condensed into water droplets.</p> <p>b)The temperature of the liquid is higher than the room temperature.</p>
Q39)	<p>a)The wind from the fan increases the rate of evaporation of the water on the plates.</p> <p>b)Y. Y was exposed directly to the wind unlike the others. Water on the plate will evaporate the fastest.</p>
Q40)	<p>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.</p> <p>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.</p> <p>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.</p>
Q41)	<p>a)The iron bar became an electromagnet and attracted the metal plate.</p> <p>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 an 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.</p> <p>c)</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. \_\_\_\_\_**

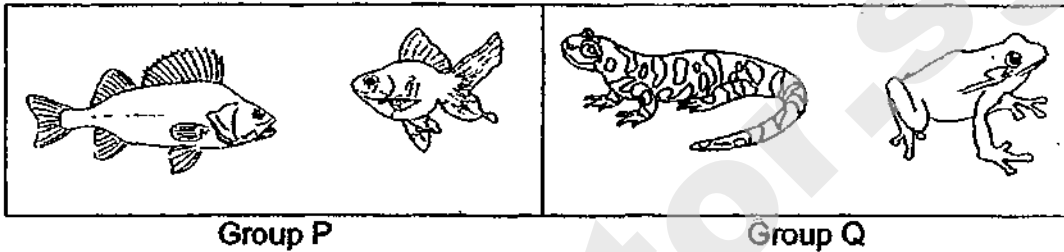
**Date : 16 May 2019**

**This booklet consists of 19 printed pages including this page.**

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.



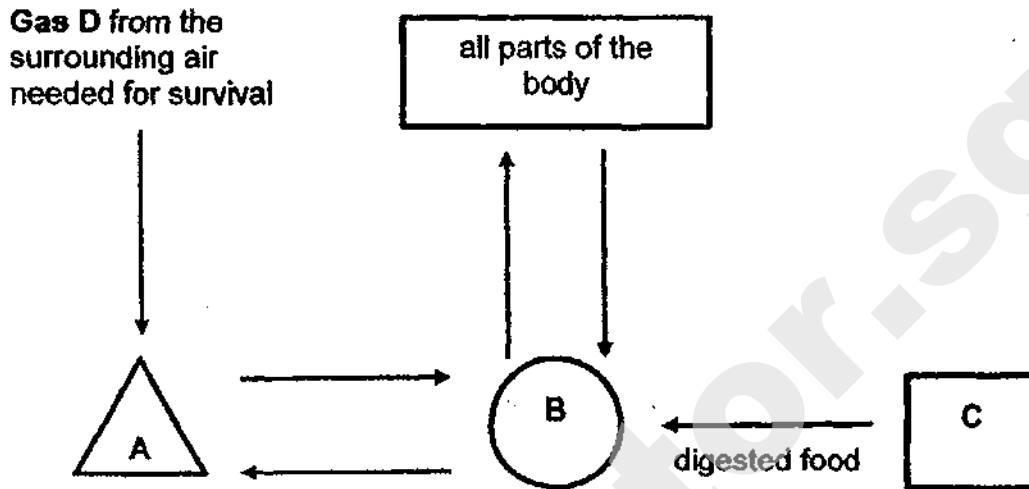
Based on the diagram, some pupils made the following comparisons between the two groups of organisms in the table below.

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

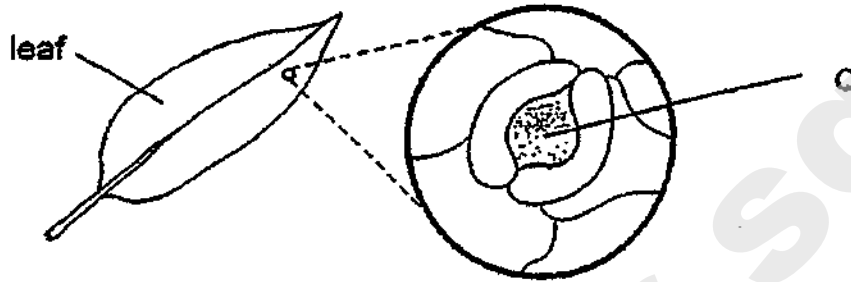
- 3 The diagram below shows how the various body systems work together in a human body.



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

- 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.

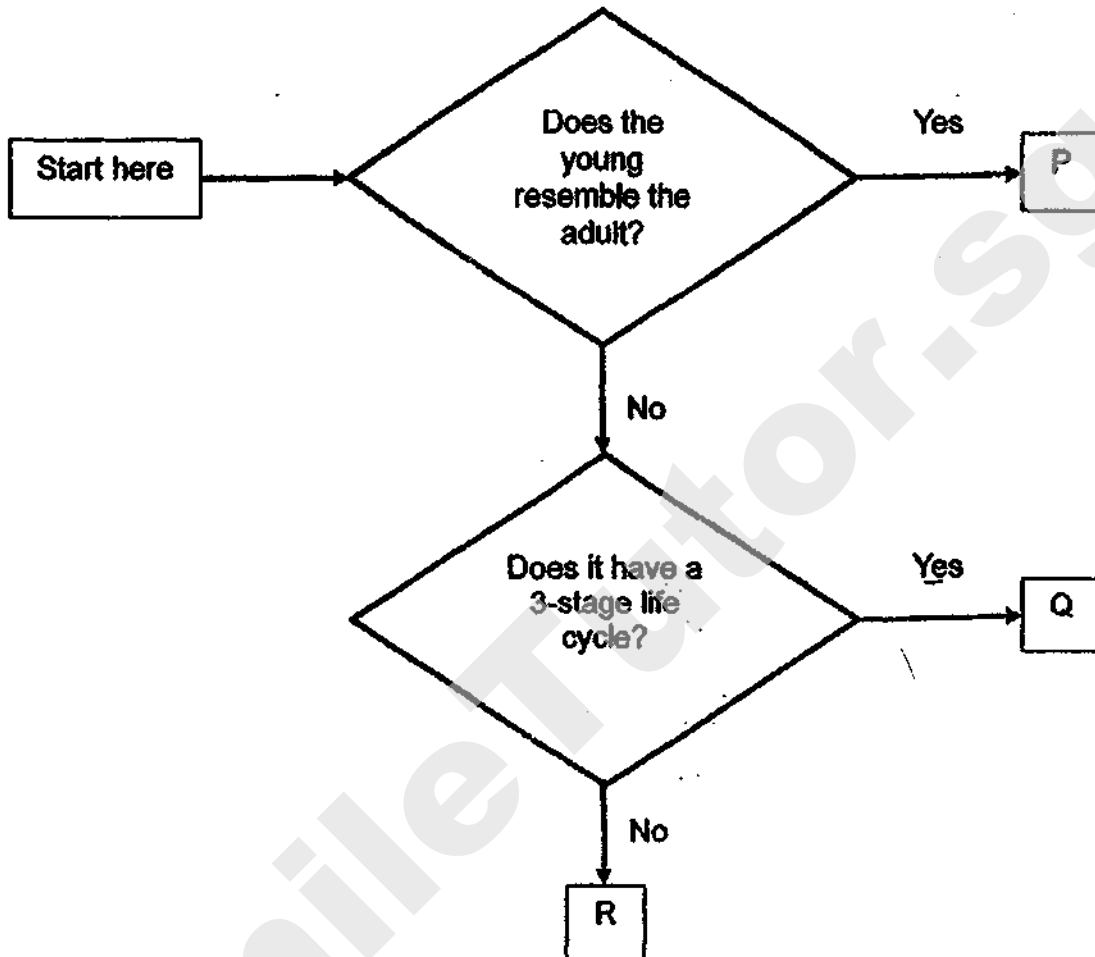
Jaya	More of Part Q can be found on the underside of the leaf.
Fatimah	Part Q helps the plant absorb sunlight during photosynthesis.
Rose	Part Q allows gaseous exchange for the plant.

Which of the pupil(s) is/are correct?

- (1) Jaya only
- (2) Fatimah only
- (3) Jaya and Rose only
- (4) Jaya and Fatimah only



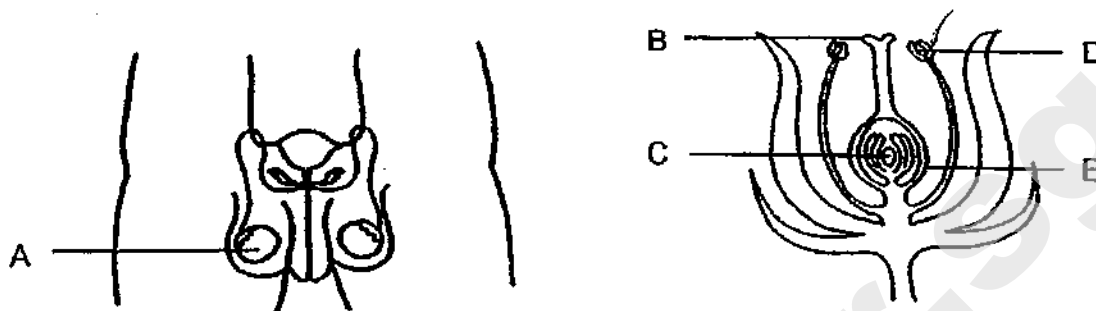
5 The flow chart below shows the characteristics of organisms P, Q and R.



Which of the following best represents organisms P, Q and R?

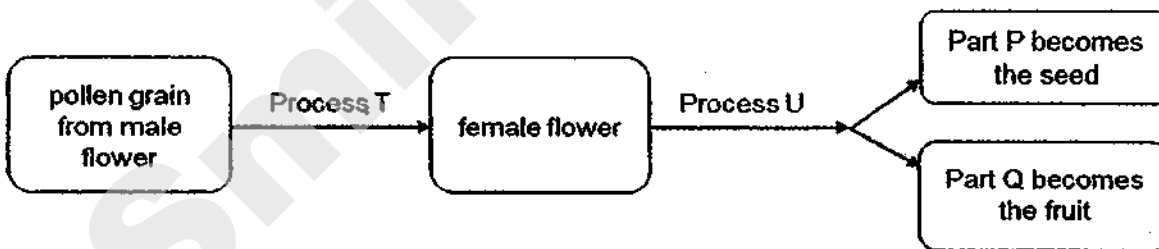
	P	Q	R
(1)	chicken	mosquito	butterfly
(2)	chicken	frog	grasshopper
(3)	grasshopper	chicken	beetle
(4)	cockroach	frog	mosquito

- 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?

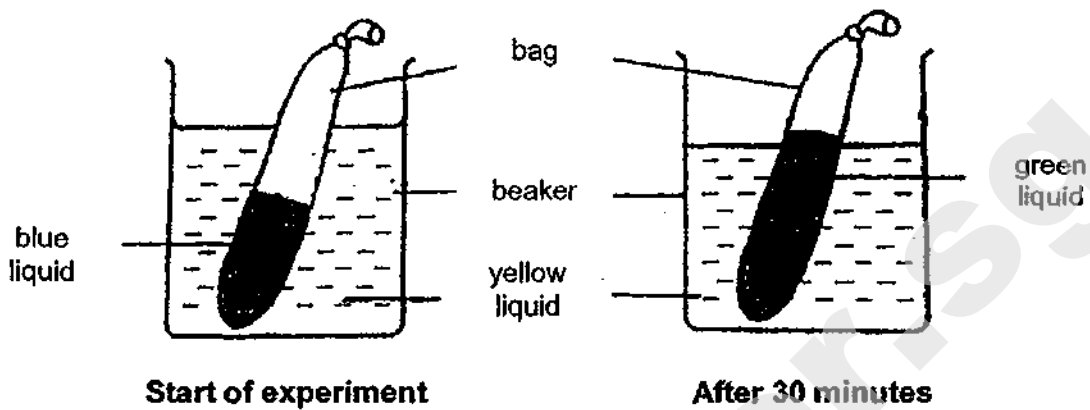
- (1) B  
 (2) C  
 (3) D  
 (4) E
- 7 The diagram below shows the processes that a flowering plant undergoes to become Part P and Q.



Which one of the following represents Process T, U and Part P, Q correctly?

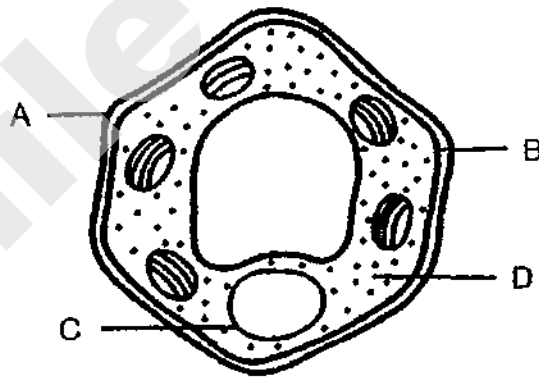
	Process T	Process U	Part P	Part Q
(1)	pollination	fertilisation	ovule	ovary
(2)	fertilisation	pollination	ovule	ovary
(3)	germination	dispersal	ovary	ovule
(4)	pollination	germination	ovary	ovule

- 8 Jimin added some blue liquid into a bag. He placed the bag into a beaker of yellow liquid as shown below.



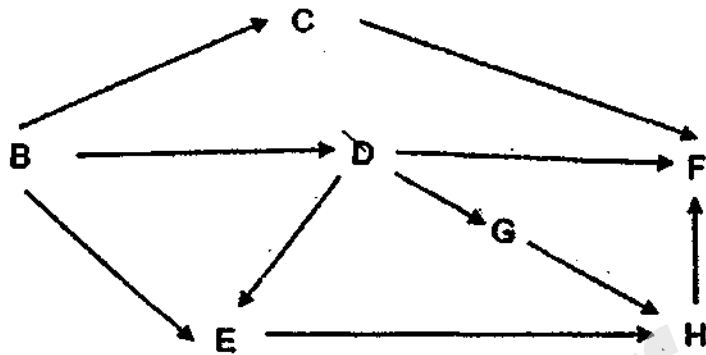
After 30 minutes, the liquid in the bag increased in volume and turned green. He learnt in his art lesson that when blue and yellow paint are combined, it becomes green paint. The liquid in the beaker remained yellow but decreased in volume.

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

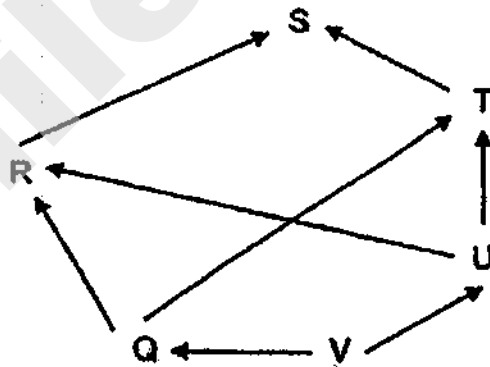
9 Study the food web below.



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

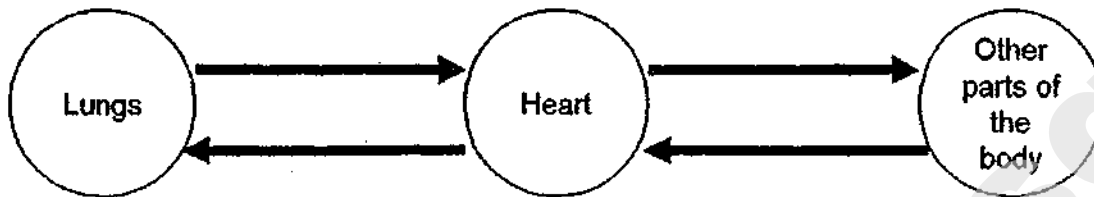
10 Study the food web below.



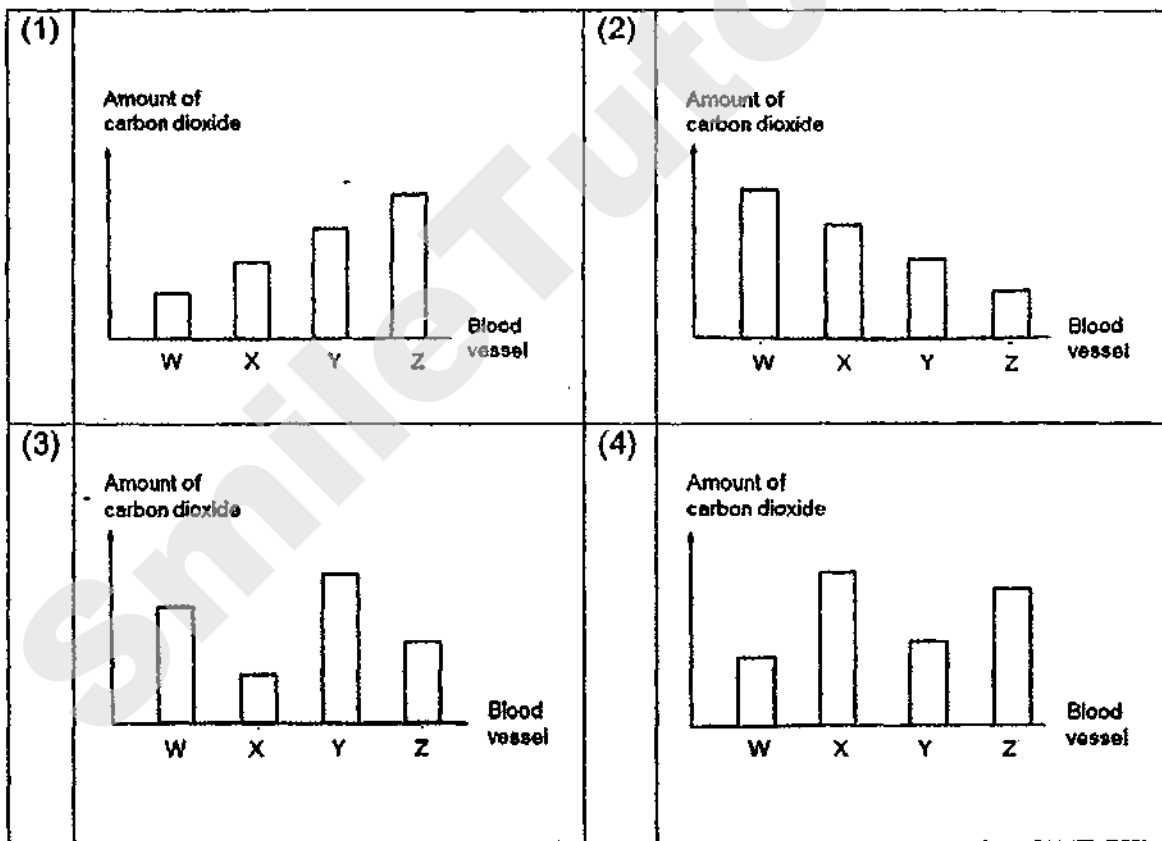
Which of the organisms are both prey and predator?

- (1) Q and U only
- (2) U and T only
- (3) R and T only
- (4) P and S only

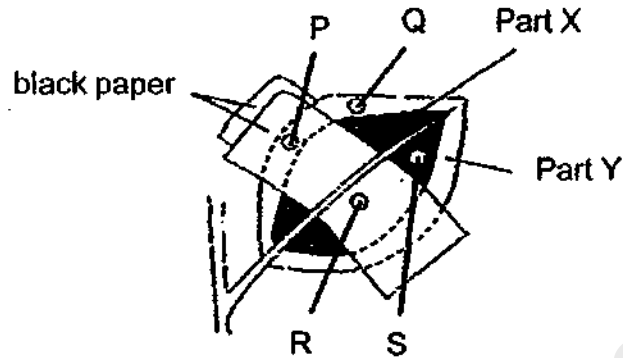
- 11 The diagram below shows the direction of blood flow in the blood vessel, W, X, Y and Z. They carry blood from one part to another part of the body. The arrows indicate the blood flow.



Which one of the following graphs represents the amount of carbon dioxide in blood vessels W, X, Y and Z?



- 12 Study the diagram below.

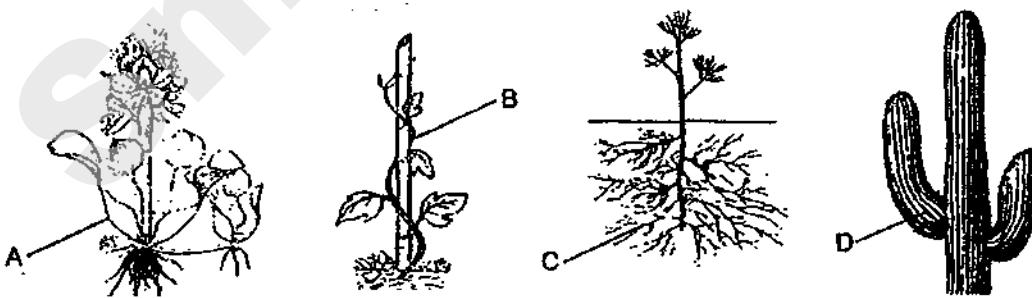


The leaf did not contain any starch at the beginning of the experiment. Part X contains chlorophyll but Part Y does not. The plant was placed under sunlight for six hours. P, Q, R and S were removed from the leaf in the positions shown above and were tested for starch using iodine solution.

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

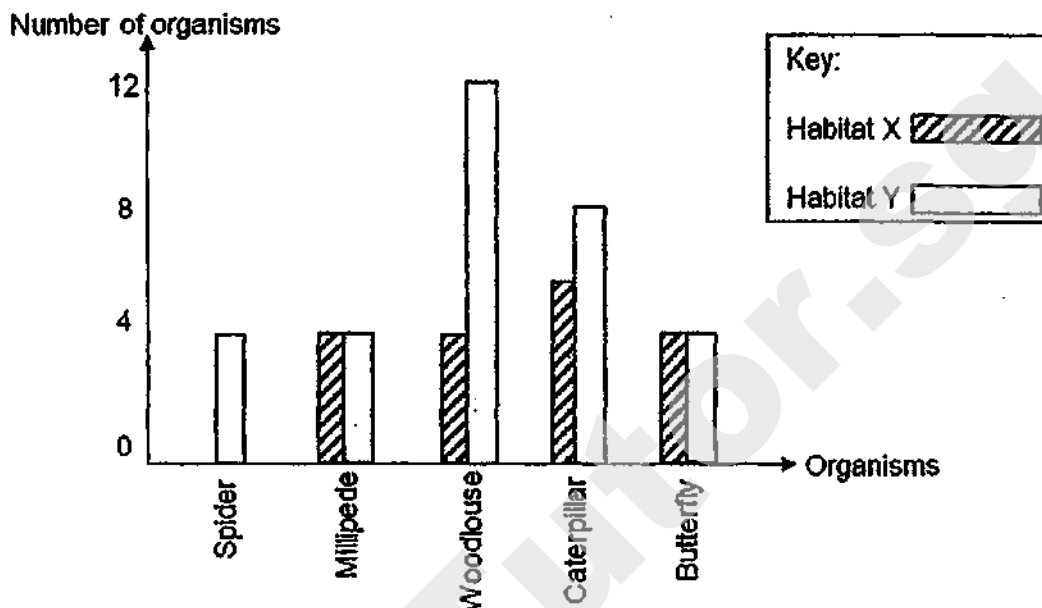
- 13 The diagrams below show the examples of adaptations A, B, C and D in plants.



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

- 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

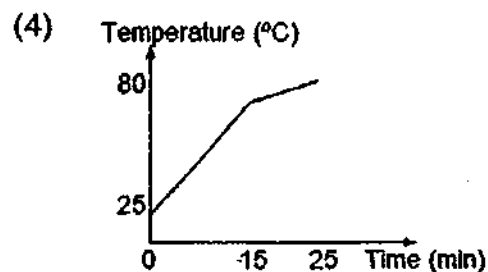
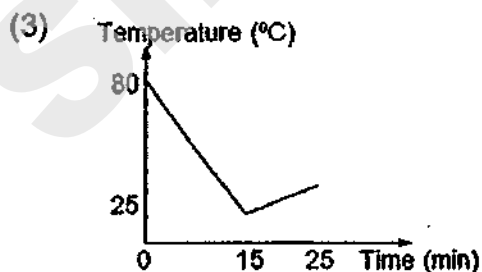
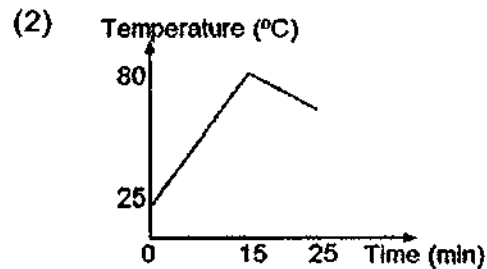
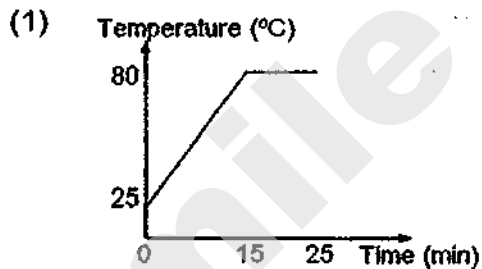
- 15 Rae tested four blocks, W, X, Y and Z, which are made of different materials. The properties of the four blocks are given in the table below.

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?

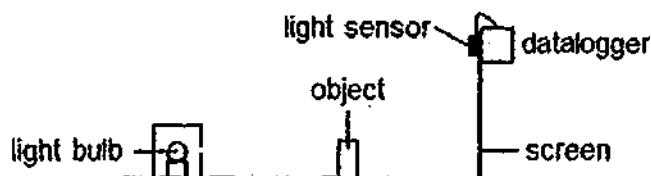
- (1) X only  
 (2) Y and Z only  
 (3) X and Y only  
 (4) W and Z only
- 16 A steel bar was heated for 15 minutes and put into cold water for 10 minutes.

Which one of the graphs below shows how the temperature of the iron bar changed with time?





- 17 Xiao Ming set up an experiment as shown below. A light sensor was mounted above the screen.



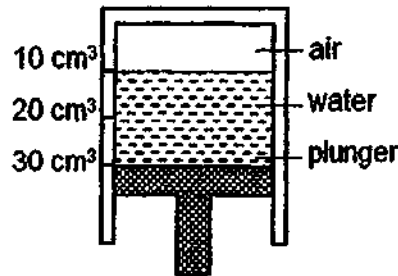
He recorded the reading from the datalogger before placing the object and measured the length of the shadow at each position. The results are shown below.

Light sensor reading (units)	Length of shadow (cm)
110	6
160	9
250	13

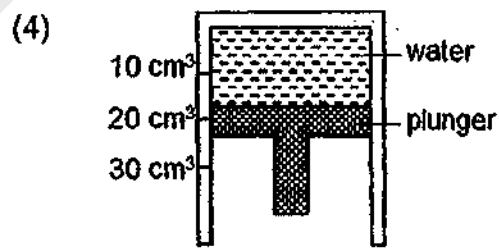
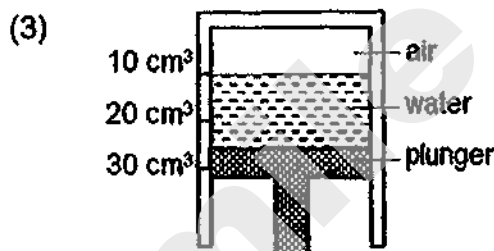
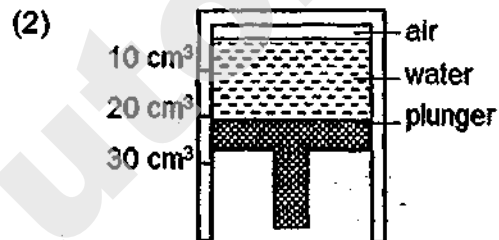
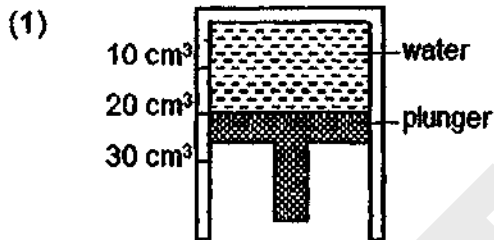
What change did Xiao Ming make?

- (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

- 19 Rosie filled the cylinder with  $20 \text{ cm}^3$  of water, leaving  $10 \text{ cm}^3$  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?

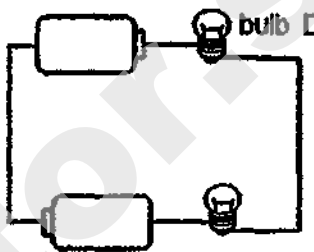
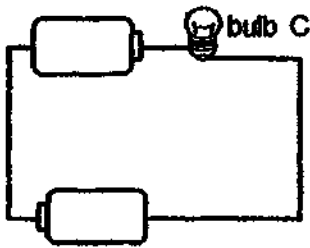
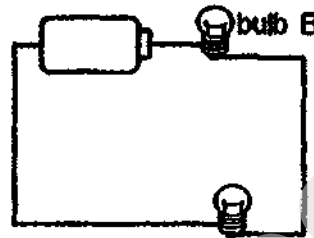
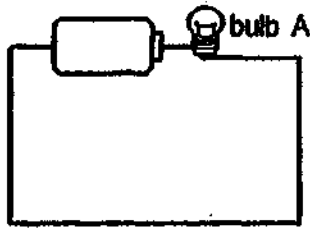


- 20 Which of the following are advantages of using hydropower to generate electricity?

- 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

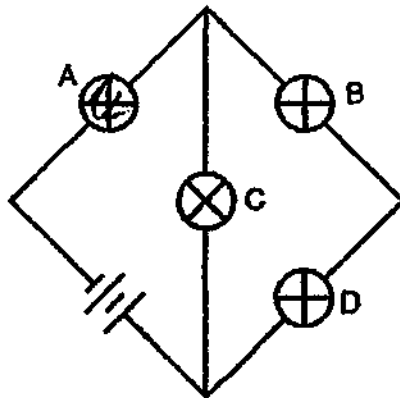
21 Study the four circuits below carefully.



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

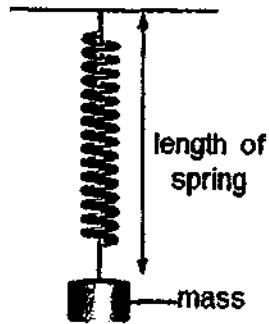
22 After one of the bulbs in the circuit below had blown, all the other bulbs did not light up.



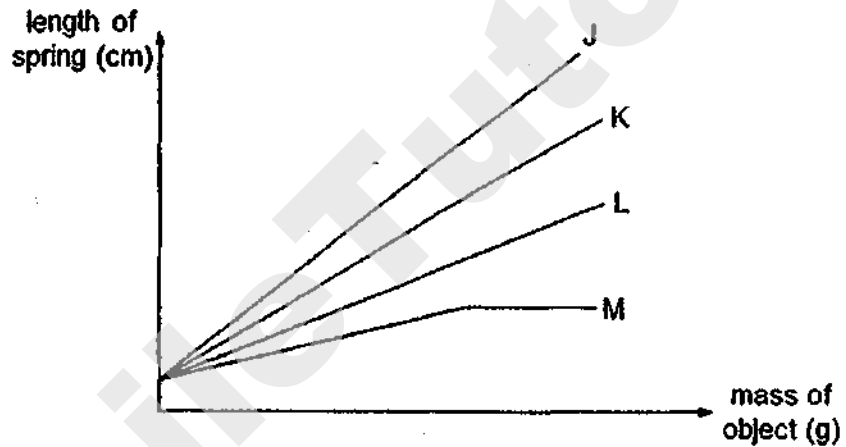
Which bulb had blown?

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

- 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.



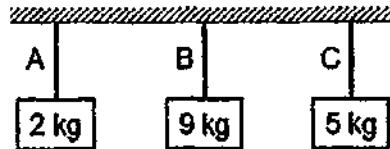
Using the same set-up, Alex wanted to find the small difference in mass between the two tomatoes below.



Which spring, J, K, L or M, would be the most suitable for his set-up?

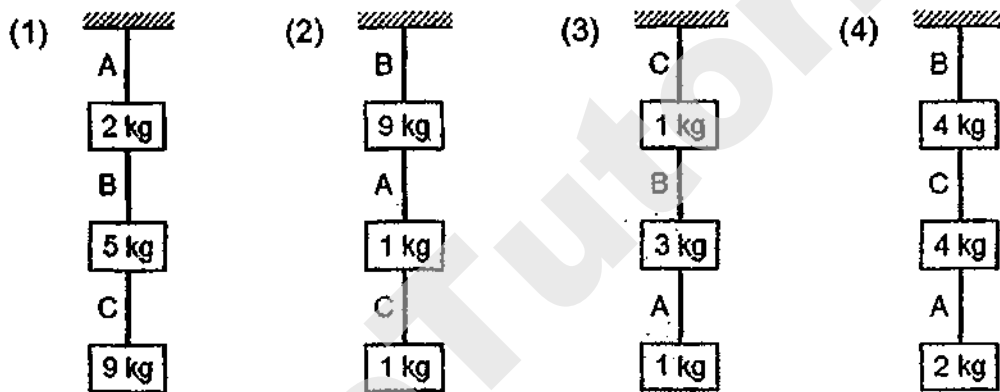
- (1) J
- (2) K
- (3) L
- (4) M

- 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.

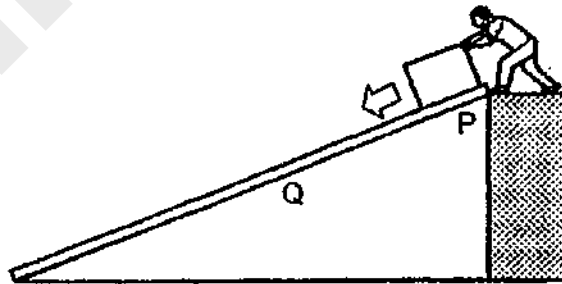


Ravi then tried a few arrangements of hanging different weights.

Which one of the following arrangements would be possible?



- 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.

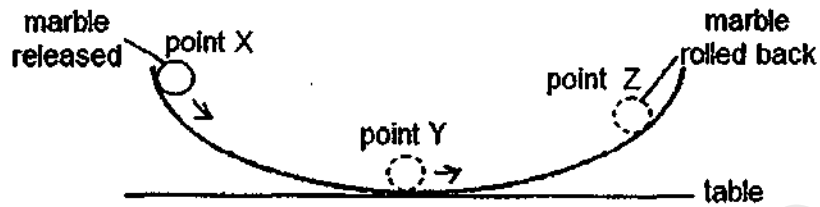


Which of the following statements are correct?

- 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.

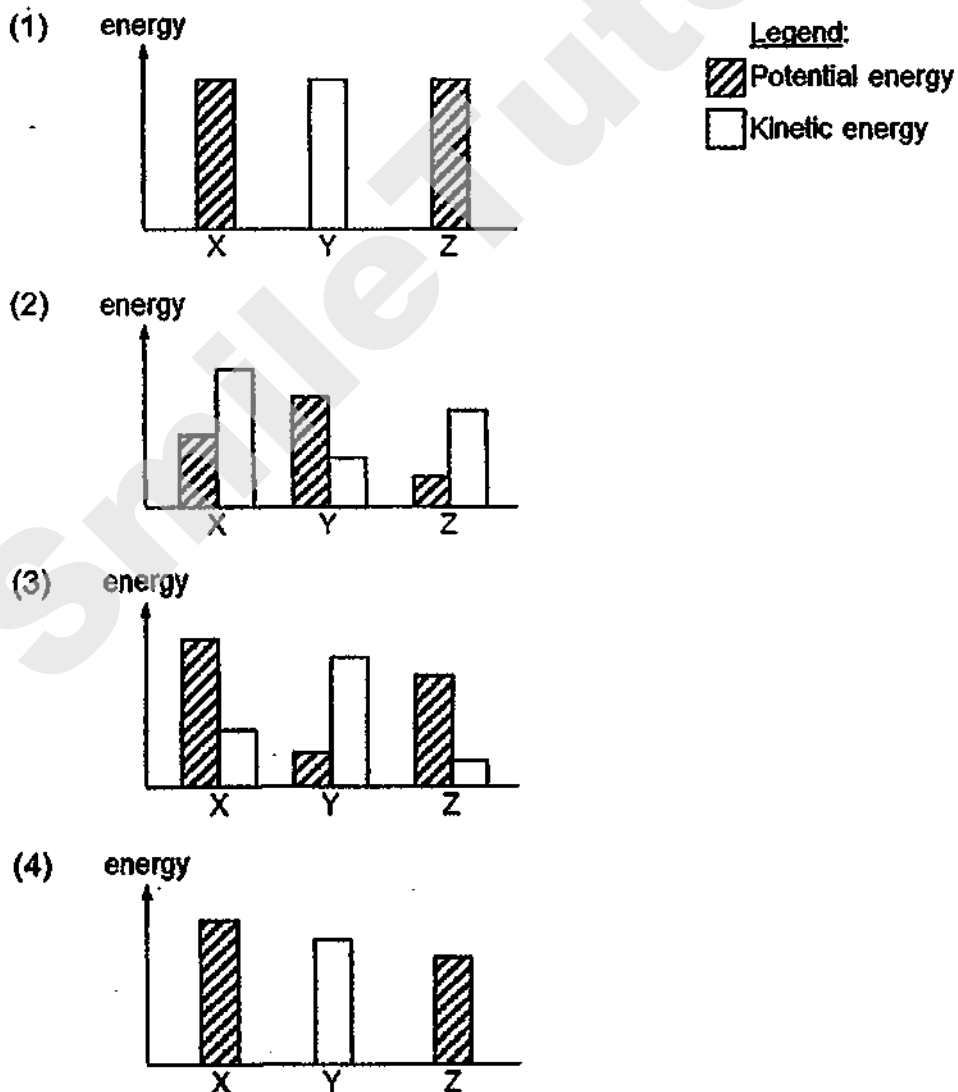
- (1) A and B only
- (2) A and C only
- (3) B and C only
- (4) A, B and C

- 26 The diagram below shows a marble being released at point X on the rim of a bowl.

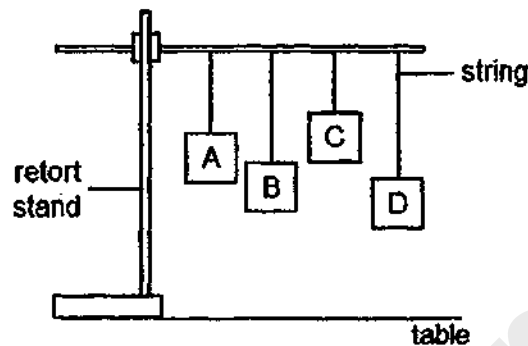


When it was released at point X, it rolled down the bowl to point Y and then moved up to point Z on the other side of the bowl before rolling back to point Y.

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?

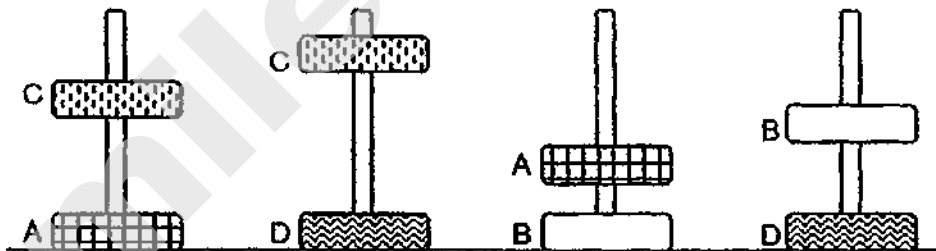


- 27 Four boxes of the same mass, A, B, C and D, were hung from a retort stand as shown below. The strings were then cut and the boxes fell to the table.



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

SmileTutor.sg



**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. \_\_\_\_\_

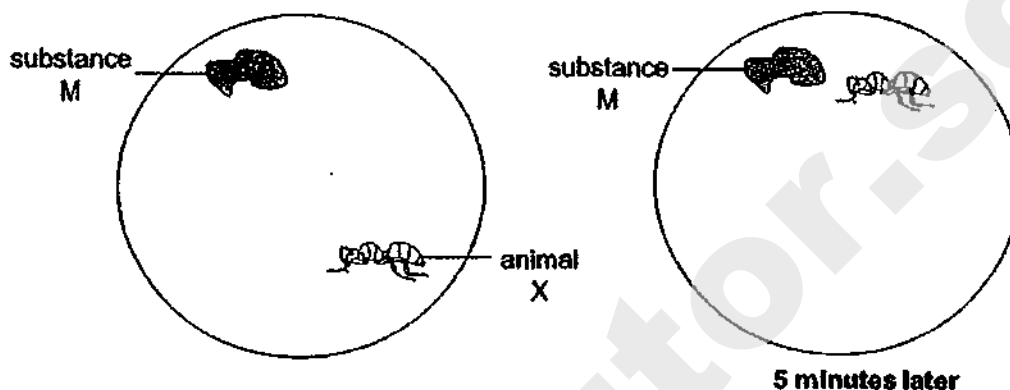
Date : 16 May 2019

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.

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)

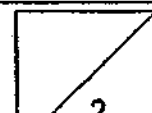
Jin wanted to investigate the effects of surrounding temperature on animal X. He placed 30 animal X in each of the boxes P, Q, R and S. He then exposed the boxes P, Q, R and S to different temperatures. After 15 minutes, he recorded his results in the table below.

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]

\_\_\_\_\_

\_\_\_\_\_



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]

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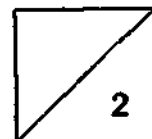
Jin found some animal X in a packet of sweets. His friend, Roy, suggested that he should spray chemical P on the packet of sweets so as to kill animal X immediately.

- (d) Give a reason why Roy's suggestion could not be accepted. [1]

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(Go on to ti

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



(a) What is Part M? State one function of Part M. [1]

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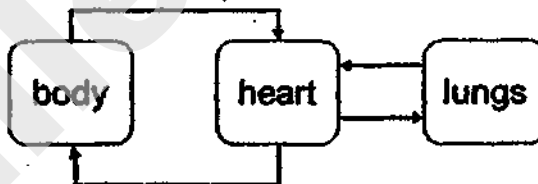
(b) Some insects ate their way into Part M of the plant. Explain how they affected the growth of the roots of the tree. [1]

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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]

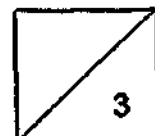
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- 31 A farmer bought a piece of land on an island. He started planting some young plants far apart in his fruit farm.

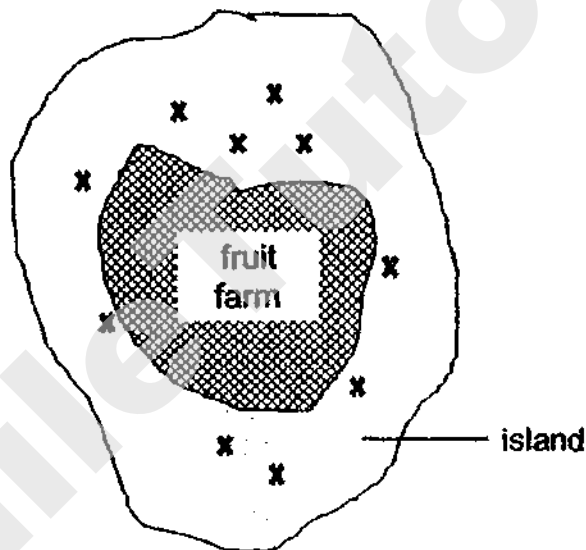
(a) What is the advantage of planting the young plants far apart? [1]

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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 X in the diagram.

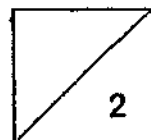


(b) Suggest how the fruits of this plant are adapted to help it reproduce. [1]

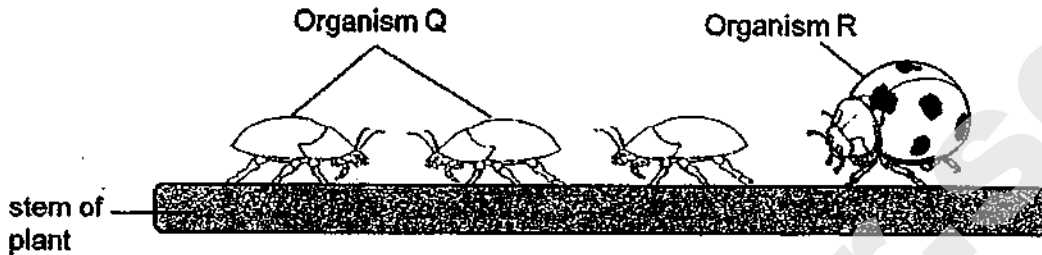
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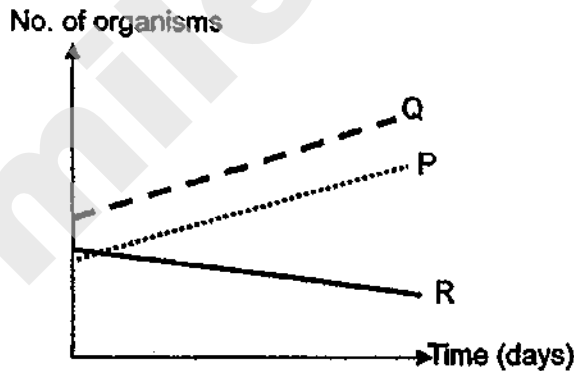
The farmer found many organism Q on the stems of his plants as shown below. He then released a population of organism R in his farm and found out that the population of organism Q decreased.



(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.

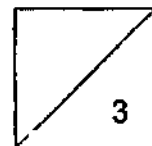


(d) How did organism P affect the population of the farmer's plants? Explain your answer. [2]

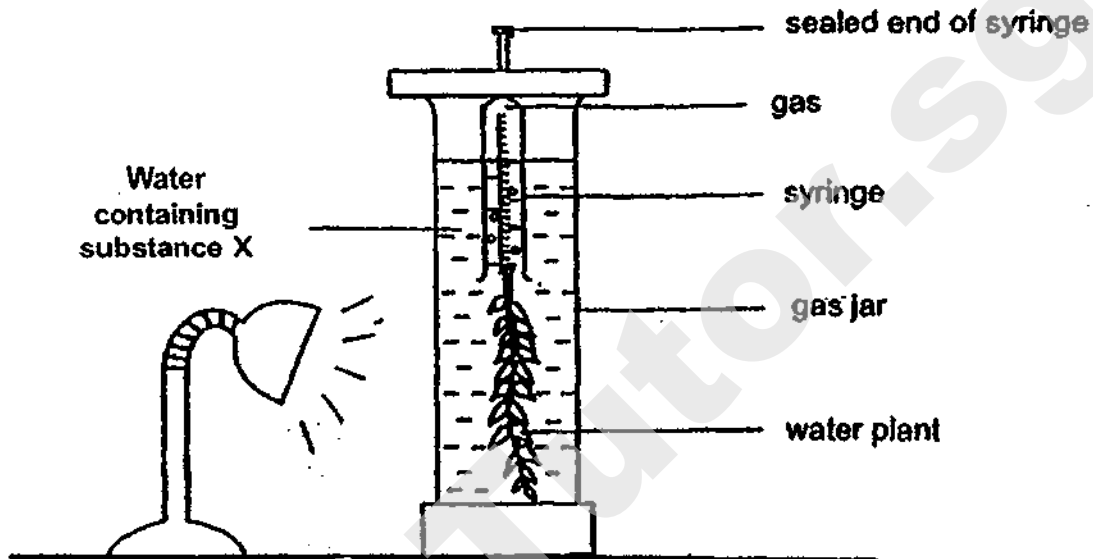
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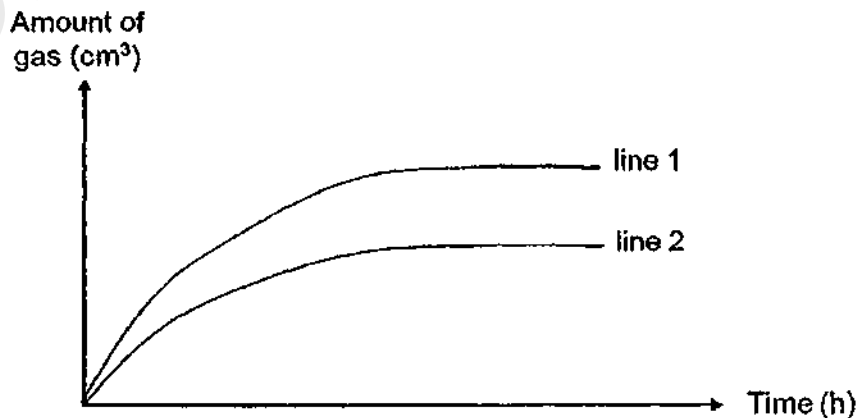
- 32 Renee wanted to find out if the amount of carbon dioxide in the water affects the rate of photosynthesis. Substance X was added to the water to increase the amount of carbon dioxide in the water. She set up the experiment shown below and measured the amount of gas produced over a fixed period of 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 <sup>3</sup> )		
		1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> try
A	1	40	50	50
B	3	80	75	70

The graph below shows the result of her experiment.



(a) Which line, 1 or 2, represents the results of Set-up B? Explain your answer. [1]

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(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]

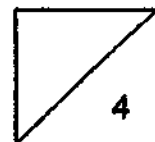
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(c) Why did Renee repeat the experiment for each set-up? [1]

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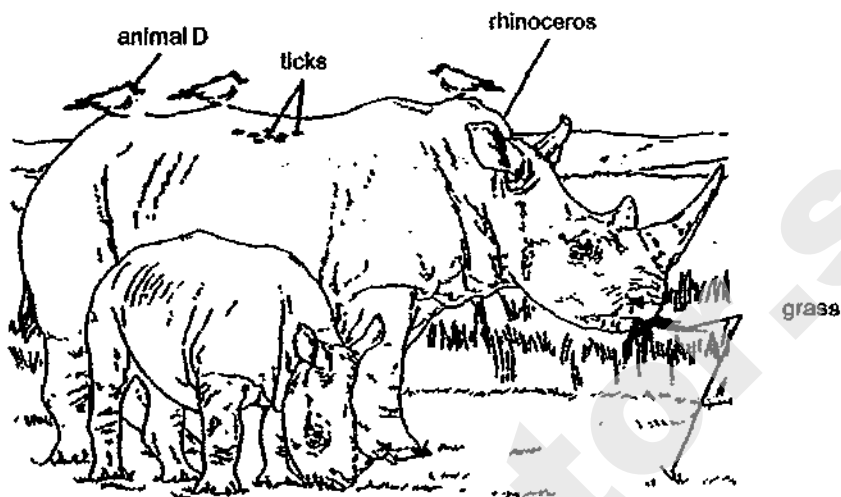
(d) Describe the process of photosynthesis in green plants. [1]

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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:

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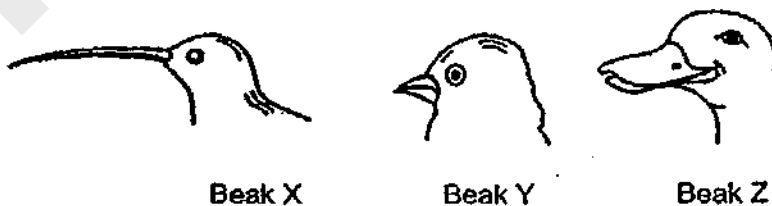
Benefit 2:

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The pictures below show three different types of beaks.



Beak X

Beak Y

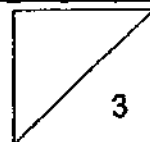
Beak Z

- (b) Which beak, X, Y or Z, would animal D most likely have? Give a reason for your answer. [1]

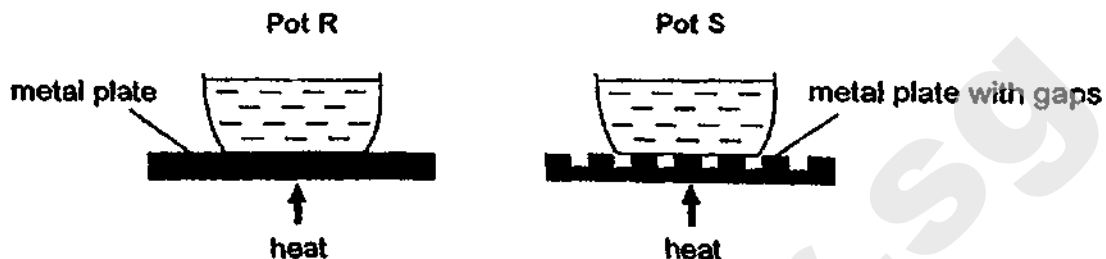
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- 34 Ahmad placed two identical pots, R and S, containing the same amount of water on two metal plates as shown below. The metal plates are made of the same material but their surfaces are different.



- (a) Which pot, R or S, would the water boil first? Give a reason for your answer. [1]

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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.

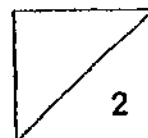


- (b) Explain why animal G spreads itself out on the frozen ground during the summer months. [1]

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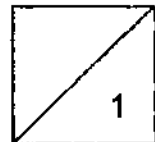
Animal G walks on ice as it moves from place to place. The underside of the paw of animal G is shown below.



(c) Explain how animal G is adapted to walk on ice. [1]

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# 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. \_\_\_\_\_

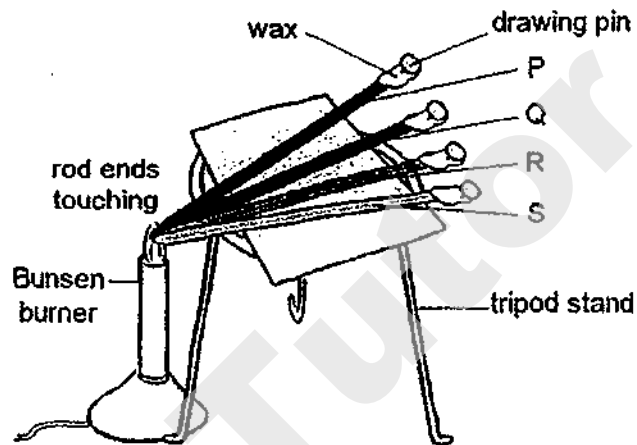
Date : 16 May 2019

Booklet B2	22
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This booklet consists of 12 printed pages including this page.

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 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]

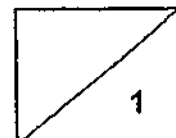
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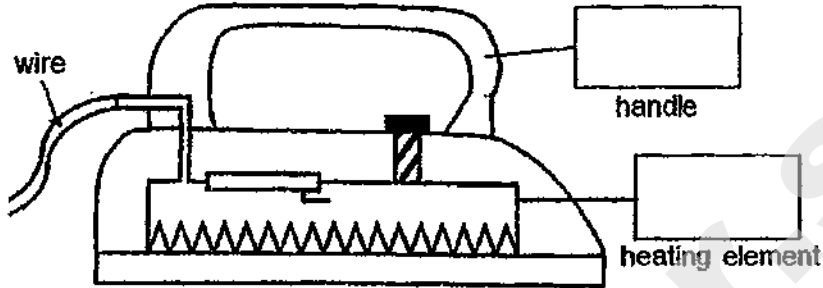
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- (b) Which one of the four materials is most suitable for making the handle and heating element of the electric iron? Write P, Q, R or S in the two boxes provided. [1]



- (c) Based on the results, explain your choice of material for the handle of the iron. [1]

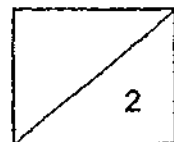
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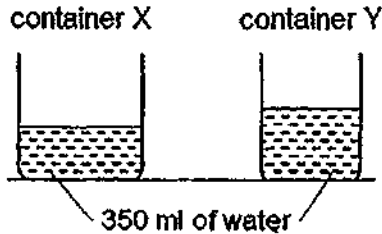
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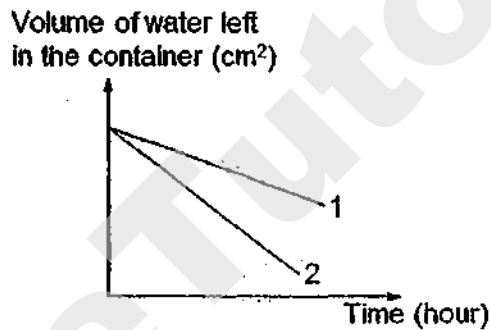
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- 36 Zac wanted to find out how the exposed surface area of the water affects the rate of evaporation. He used two containers, X and Y, and poured 350 ml of water into each container.

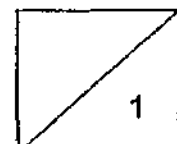
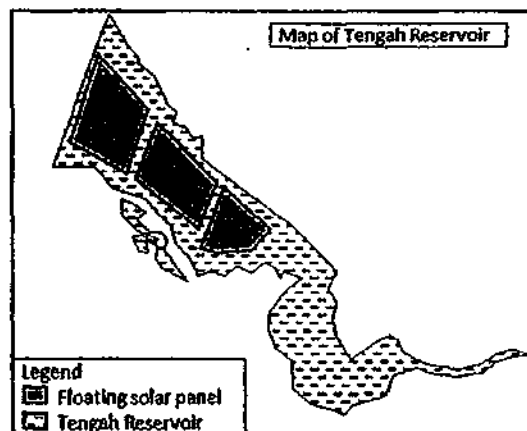


Zac then plotted a graph based on the amount of water left in the containers over time. The graph is as shown below.



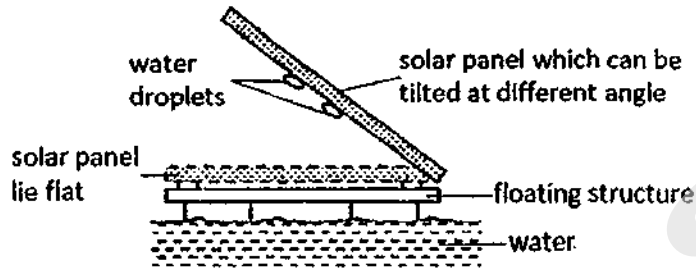
- (a) Which line, 1 or 2, represent the volume of water left in container Y? Explain your answer. [1]

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.





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]

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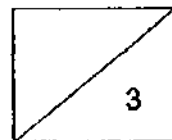
(c) Water droplets are seen at the underside of the solar panel every morning. Explain how the water droplets are formed. [2]

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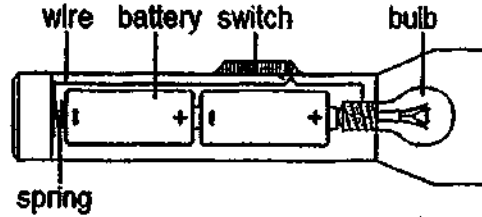
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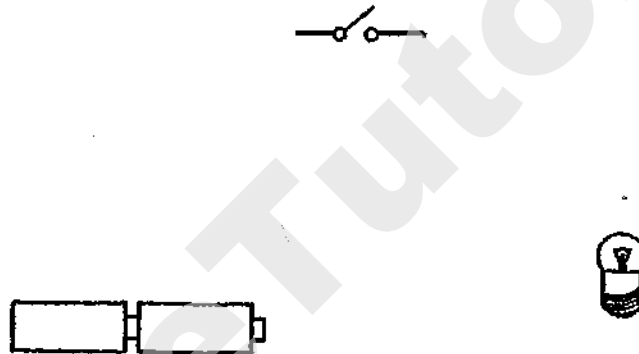
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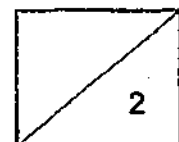
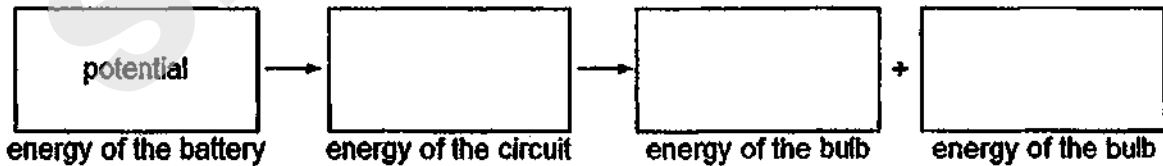
37 Hamid bought a torch with a diagram printed on the packaging as shown below.



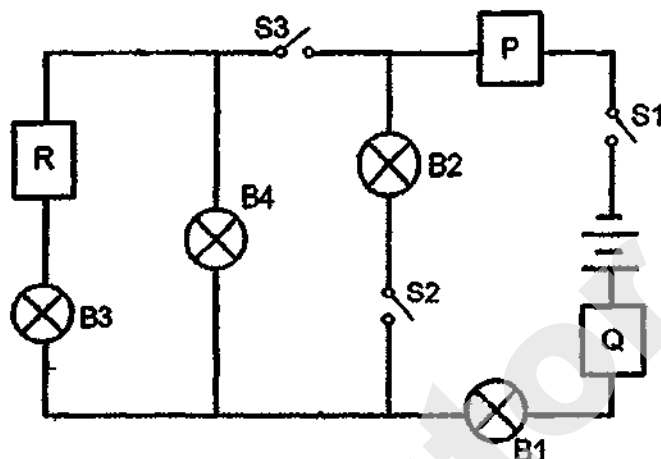
(a) In the diagram below, draw wires to connect the components and complete the circuit diagram of the torch. [1]



(b) Fill in the boxes below to show the energy conversion when Hamid switched on the torch. [1]



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

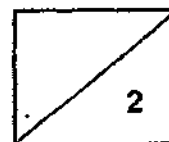
- (c) What could Hamid conclude about the property of objects, P, Q and R, based on his observations above? [1]

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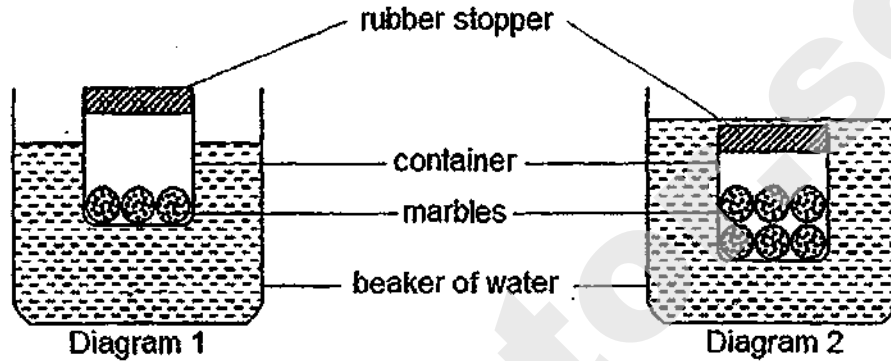
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- (d) Hamid wanted to place a buzzer in the circuit so that when he closes switches S1 and S3, the buzzer will ring.  
In the diagram above, indicate with a cross, 'X', to show where Hamid should place the buzzer. [1]



- 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.

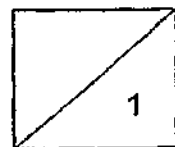


- (a) Give a reason why the container sank when it was filled with more marbles. [1]

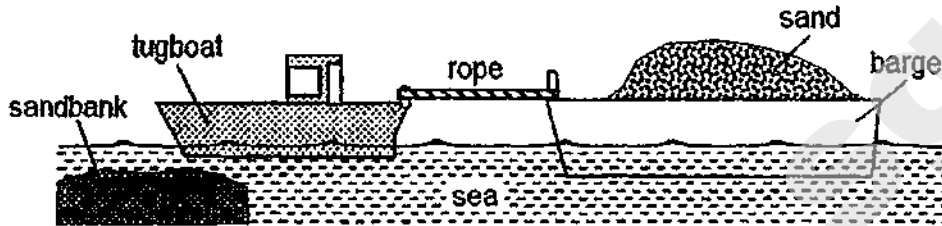
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A tugboat is a small and powerful watercraft which pulls barges and large ships near the shore. The diagram below shows a tugboat pulling a barge filled with sand. They are approaching a sandbank and the barge will be stuck.



- (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]

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- (c) Suggest one way the barge could float above the sandbank. Explain your answer clearly.

[1]

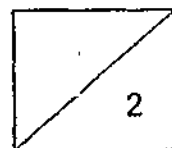
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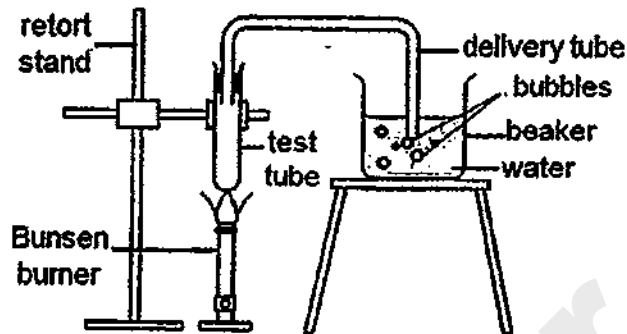
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- 39 Vani set up an experiment as shown below. She observed bubbles in the beaker of water when the test tube was heated over a Bunsen burner.



- (a) Why were bubbles observed in the beaker of water? [2]

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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]

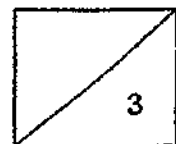
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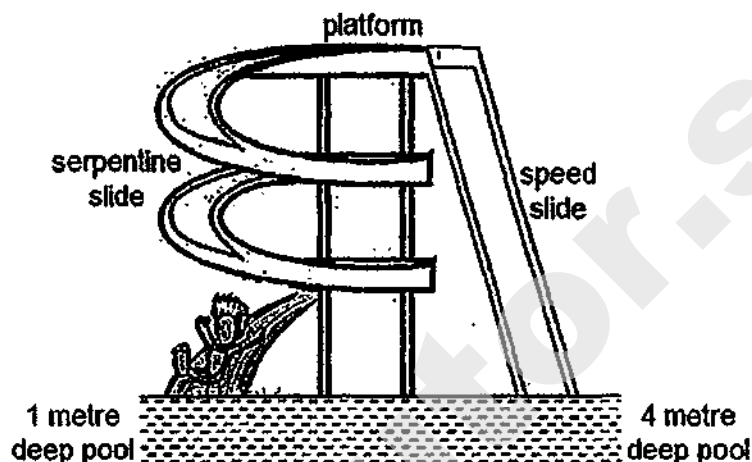


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- 40 At the water theme park, two types of slides can be found. Serpentine slides take riders around a series of sharp curves while speed slides plummet riders straight down a slide and delivers them to a pool.

The diagram below shows Alex sliding down a serpentine slide.

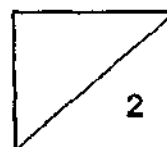


- (a) State two important properties of the material used for making the slides. [1]

Alex constructed a graph below to show the effect of speed on the kinetic energy possessed by a falling object.

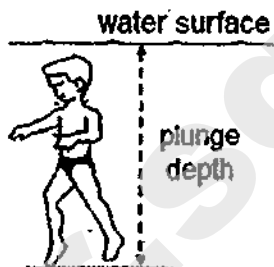


- (b) Based on the graph, what is the relationship between the speed and kinetic energy of a falling object? [1]



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]

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- (d) Why was the plunge depth for the speed slide greater than that for the serpentine slide? Explain your answer. [1]

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- (e) Alex observed that both water slides have water flowing down the slides continuously. Why is this necessary? [1]

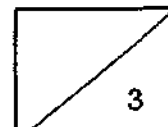
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**SCHOOL : MGS PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**

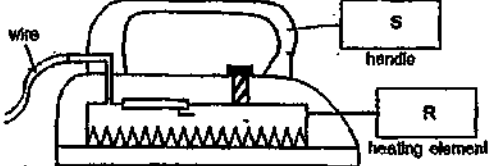
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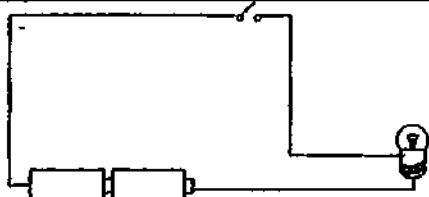
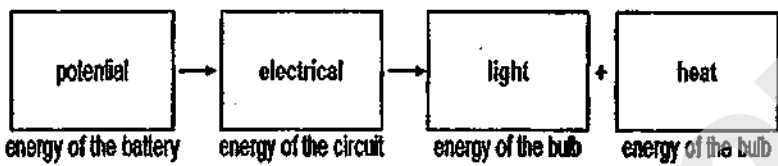
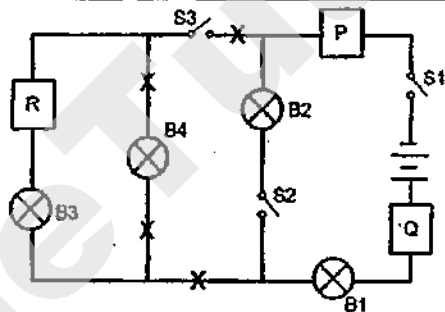
**SECTION A**

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

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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.

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	 <p>potential energy of the battery → electrical energy of the circuit → light energy of the bulb + heat energy of the bulb</p>
37c	P and Q are conductors of electricity. R is insulator of electricity.
37d	 <p>any one position marked X</p>
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.



**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**

<b>Booklet A</b>		<b>/ 56</b>
<b>Booklet B</b>		<b>/ 44</b>
<b>Total</b>		<b>/ 100</b>

**Name:** \_\_\_\_\_ (      )      **Class:** P 6 \_\_\_\_\_

**Date :** 15 May 2019

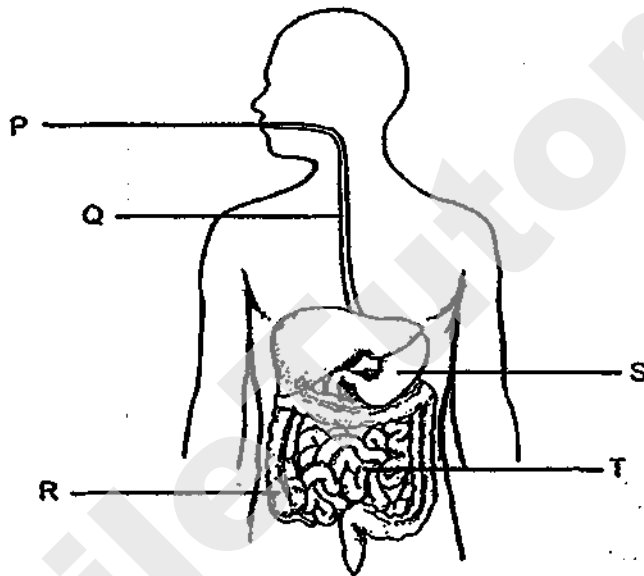
**Parent's Signature:** \_\_\_\_\_

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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.



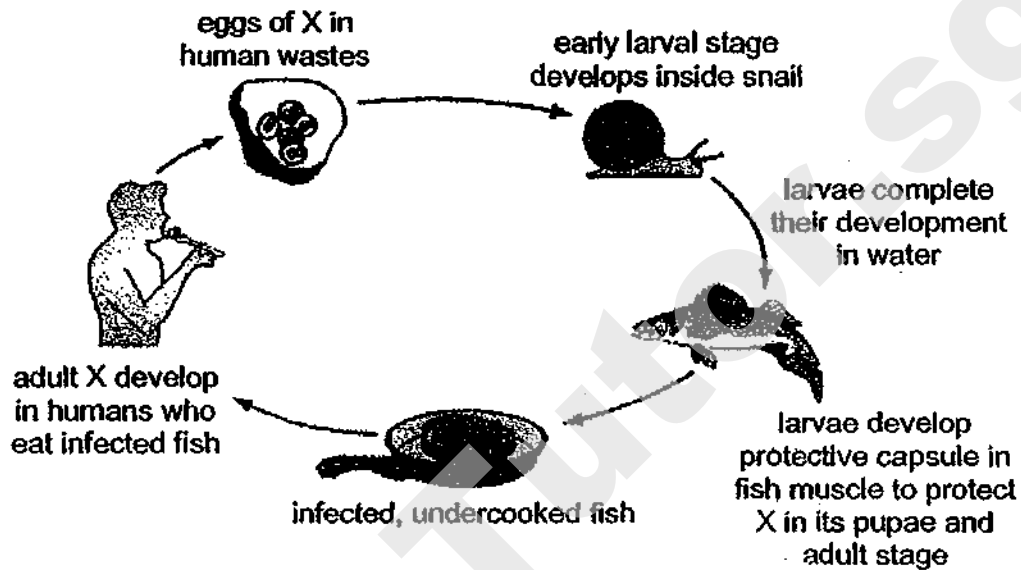
Study statements A to D carefully.

- 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

2. The diagram below shows the development of organism X from eggs.

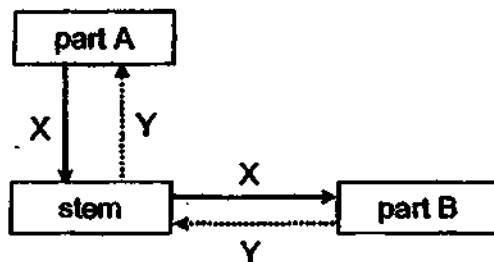


The diagram above shows that organism X \_\_\_\_\_.

- (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



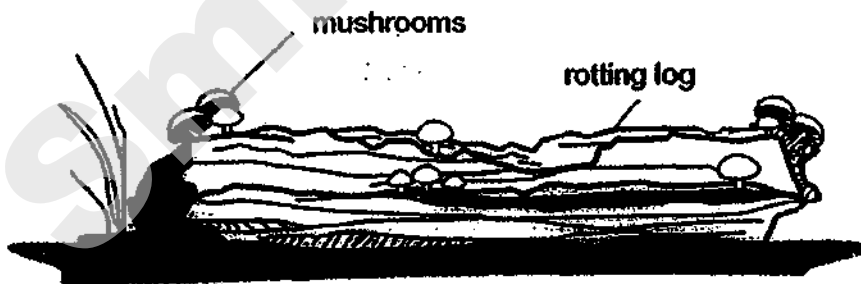
3. Parts A and B in the diagram below represent the different parts of a plant. The arrows X and Y show the transportation of water or food from one part of the plant to another part of the plant.



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

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

6. Four boys made some statements.



Other than animals, plants can also be prey.

Ahmad



Plants get their food from the soil through the roots.

Ben



Food chains also show the flow of energy from one organism to another.

Chris



A change in the prey population will only affect the population of the predator that feeds on the prey.

Dawei

Who made the correct statement(s)?

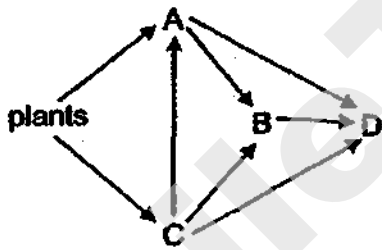
- (1) Chris only
- (2) Ben and Chris only
- (3) Ahmad and Dawei only
- (4) Ahmad, Ben and Dawei only

7. The table below shows four animals, A, B, C and D, and the types of food they eat.

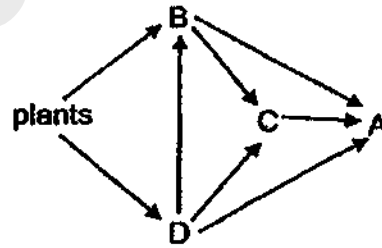
Animals	Type of food consumer
A	animal-eater
B	plant-and-animal-eater
C	animal-eater
D	plant-eater

Which of the following shows a possible food relationship among the organisms?

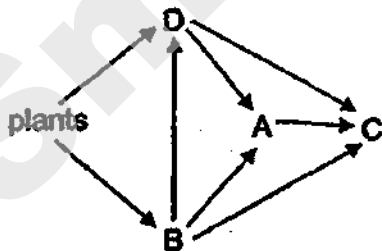
(1)



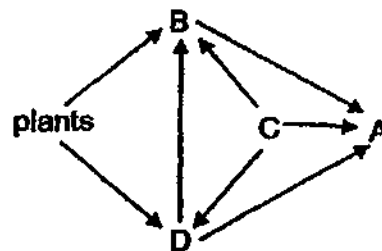
(3)



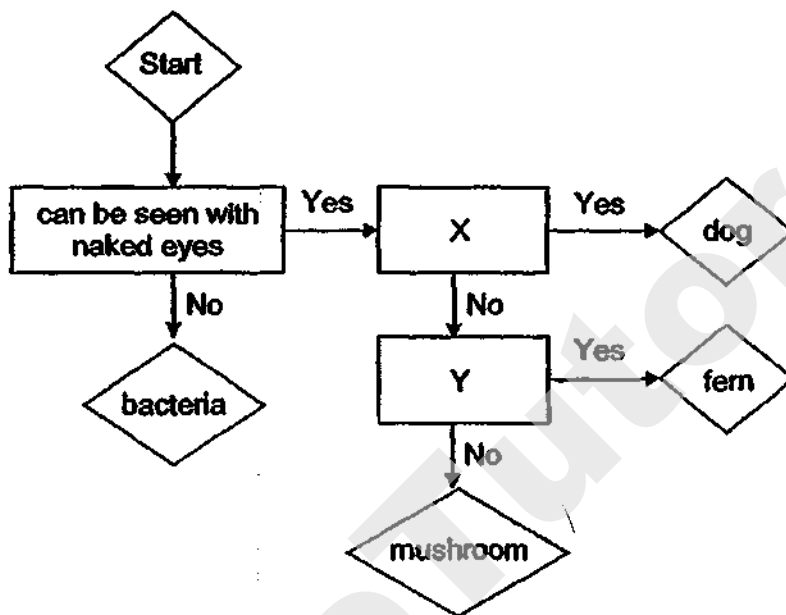
(2)



(4)



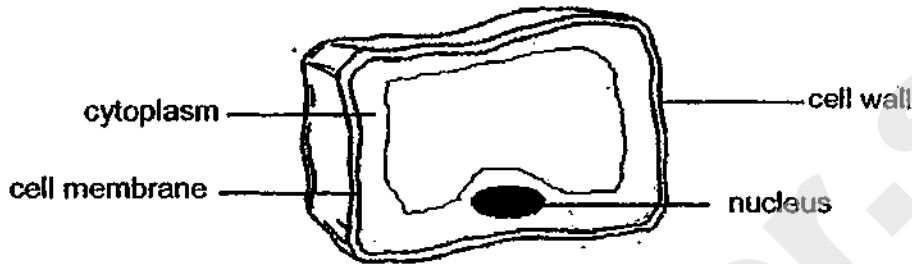
8. The flow chart below provides information on the characteristics of four different organisms.



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

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?

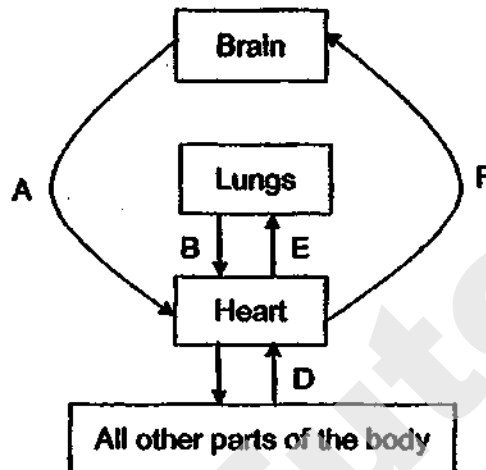
- (1) Abdul only
- (2) Bala only
- (3) Abdul and Charles only
- (4) Bala and Ding Ding only

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

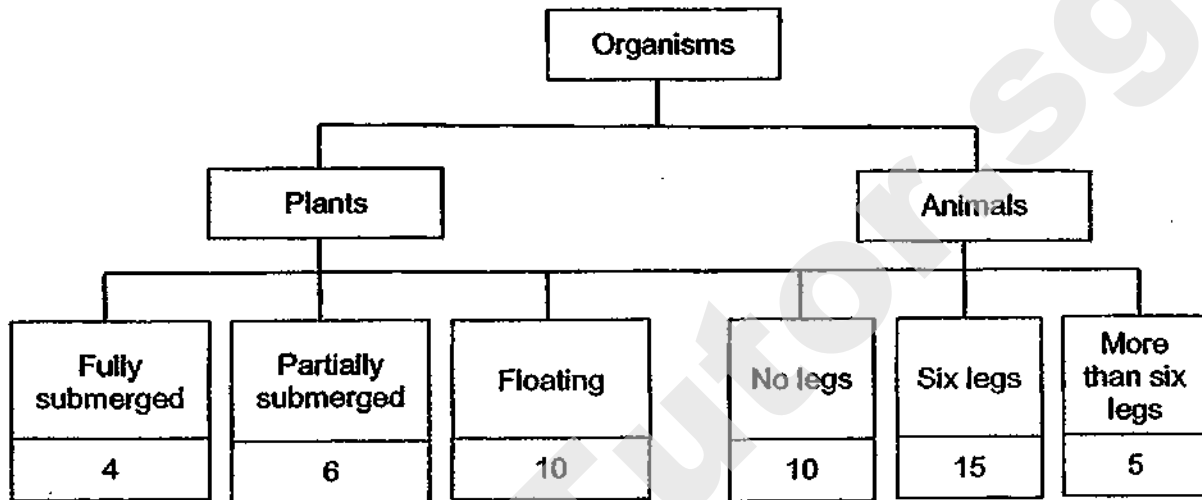
11. The diagram below shows how blood circulates in a human body. Arrows A, B, C, D, E and F represent the blood vessels.



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

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

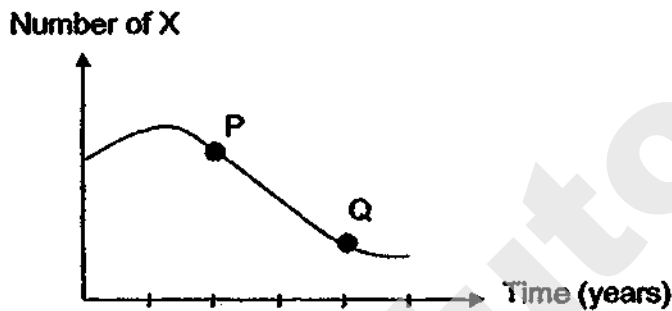


14. Animals X, Y and Z are organisms living in a grassland habitat.

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.

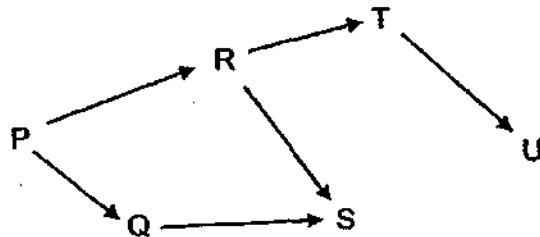


Which of the following statements describe the possible causes for the change in the population of X from point P to Q?

- 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.

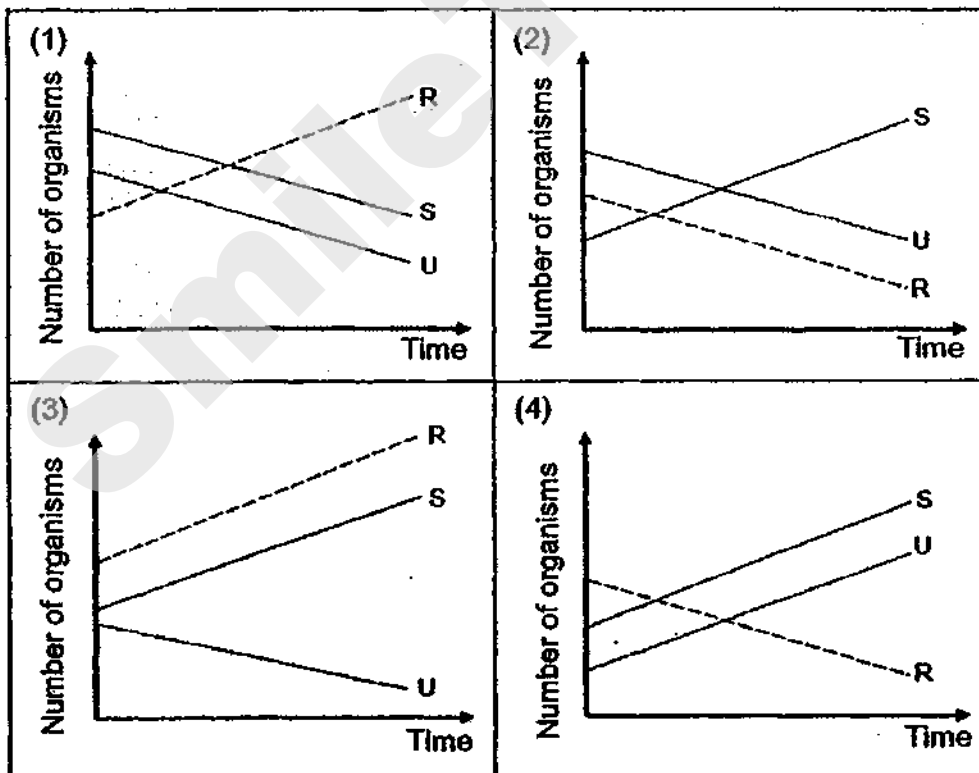
- (1) A and B only
- (2) C and D only
- (3) A, B and D only
- (4) B, C and D only

15. Study the food web below.

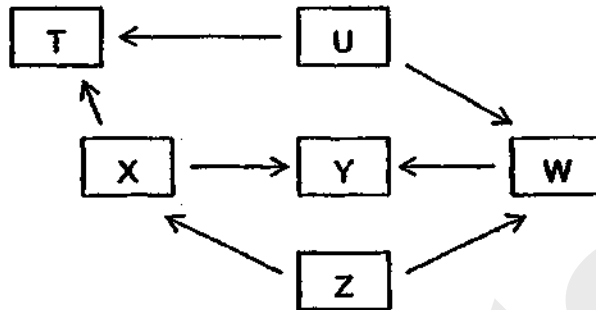


When animal T migrated out of the habitat, the number of animal Q remains the same.

Which of the following graphs shows how the populations of R, S and U are most likely to be affected?



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

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?

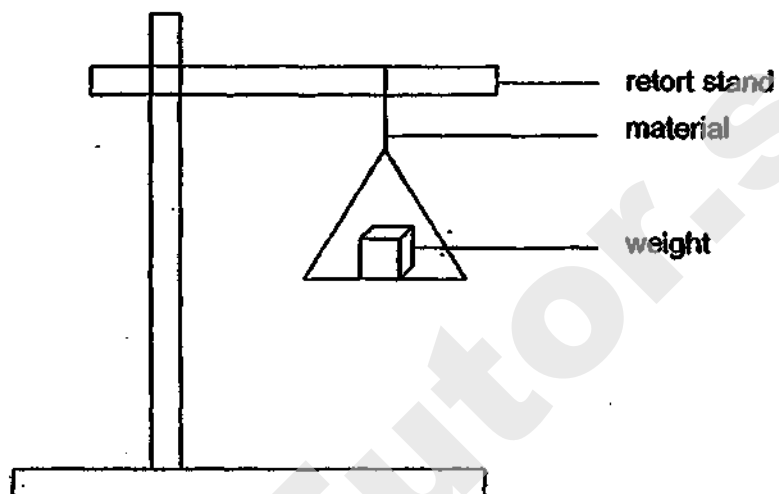
	Useful energy	Unwanted energy
(1)	Heat Energy	Light Energy + Sound Energy
(2)	Heat Energy + Light Energy	Sound Energy
(3)	Heat Energy + Sound Energy	Light Energy
(4)	Light Energy + Sound Energy	Heat Energy

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

19. Hannah carried out an experiment to find out the strength of four different materials, E, F, G and H.



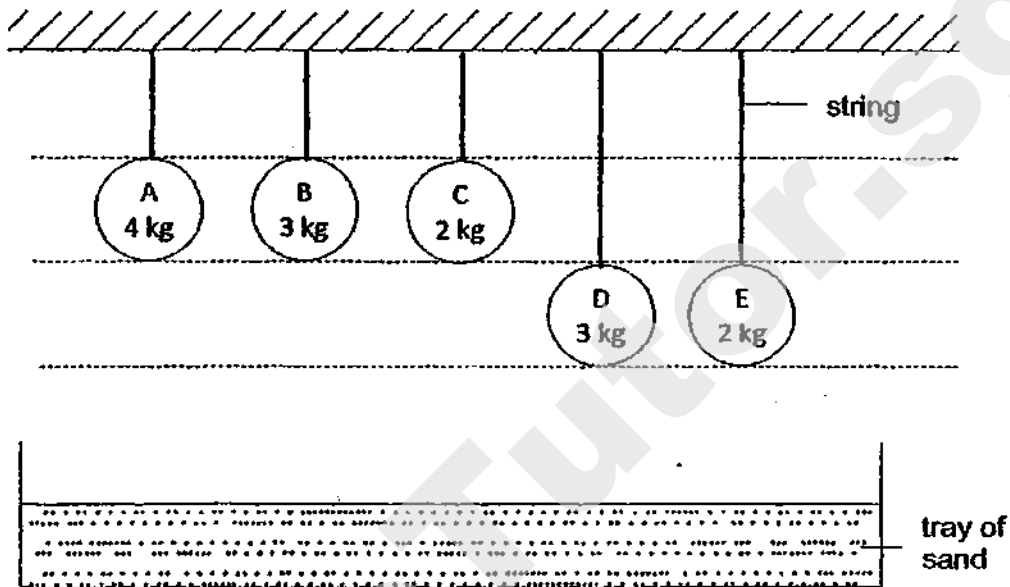
She added weights until the materials broke. The table below shows the number of weights that each material could hold before it broke.

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	H
(2)	F	G	H
(3)	H	E	F
(4)	H	G	F

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.

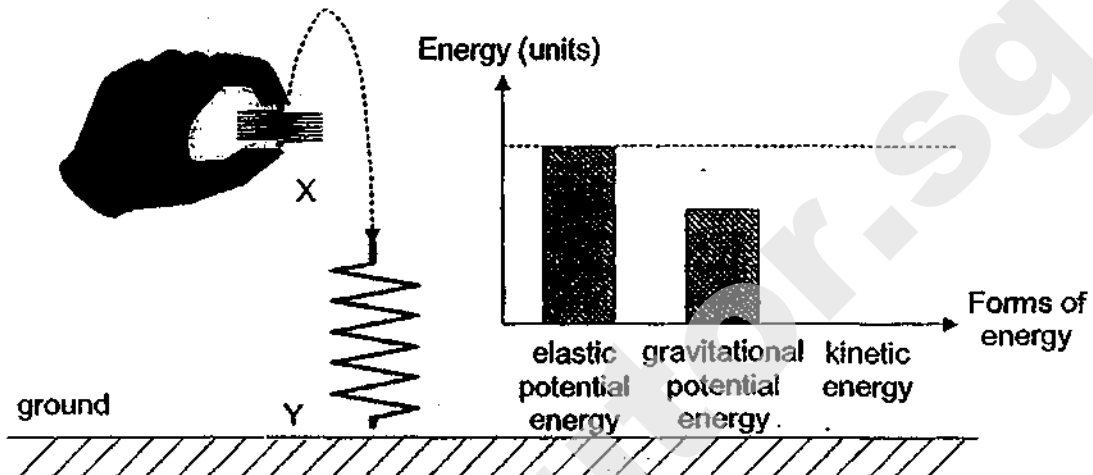
Ball	A	B	C	D	E
Depth of depression made by the ball in the sand (cm)	5	4	2	2	1

Which of the following statements is/are correct?

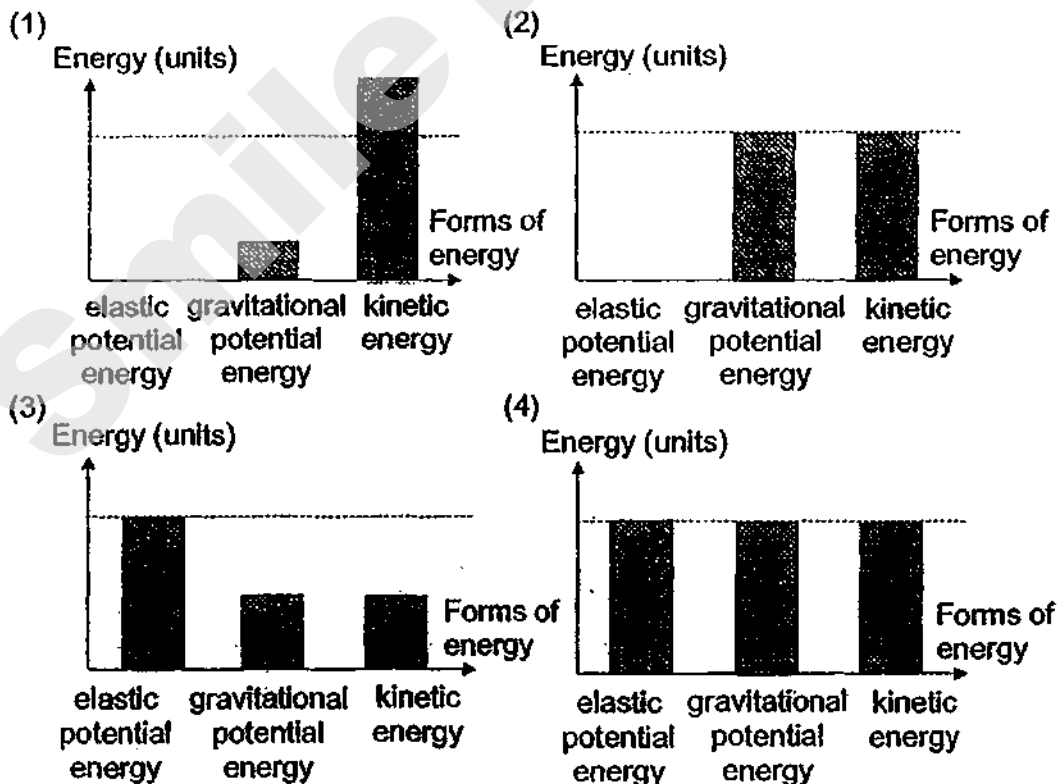
- P Ball E has less gravitational potential energy than ball C.
- Q Ball A has more gravitational potential energy than ball B.
- R Ball B has the same amount of gravitational potential energy as ball D.
- S Comparing balls of the same mass, the greater the height of the ball above the ground, the greater 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

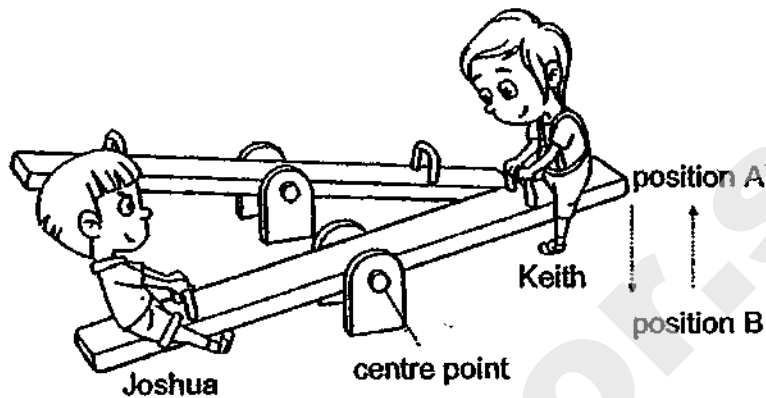
21. A spring is compressed and released at X. It moves to Y as shown in the diagram below. The graph shows the amount of different forms of energy possessed by the spring at X.



Which of the following graphs shows the amounts of different forms of energy possessed by the spring at Y before it hits the ground?



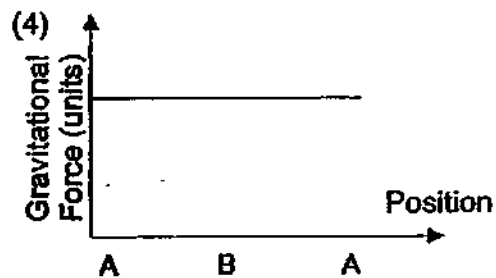
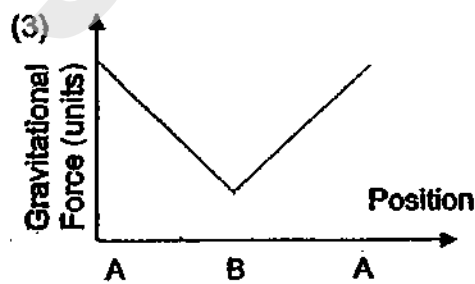
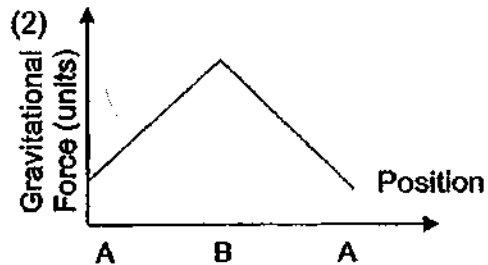
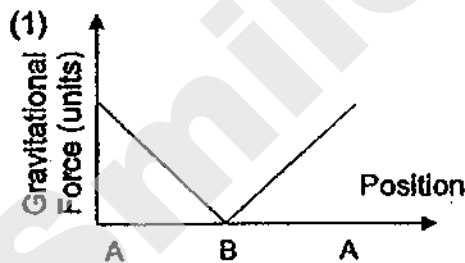
22. Study the diagram below.



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.

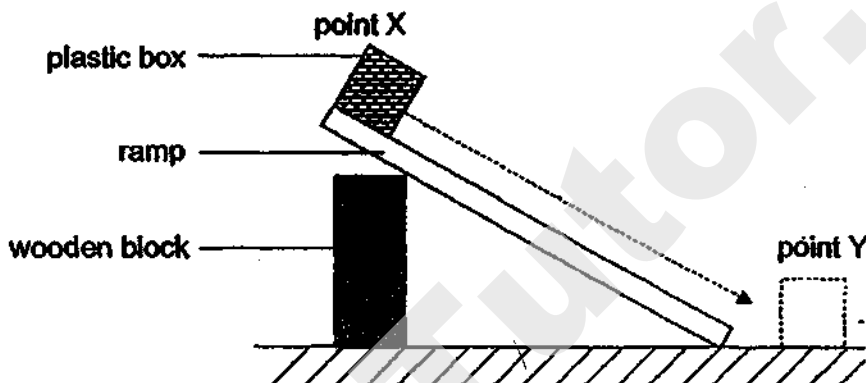
Which of the following graphs shows the amount of gravitational force acting on Keith when he moves up and down on the see-saw?





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.

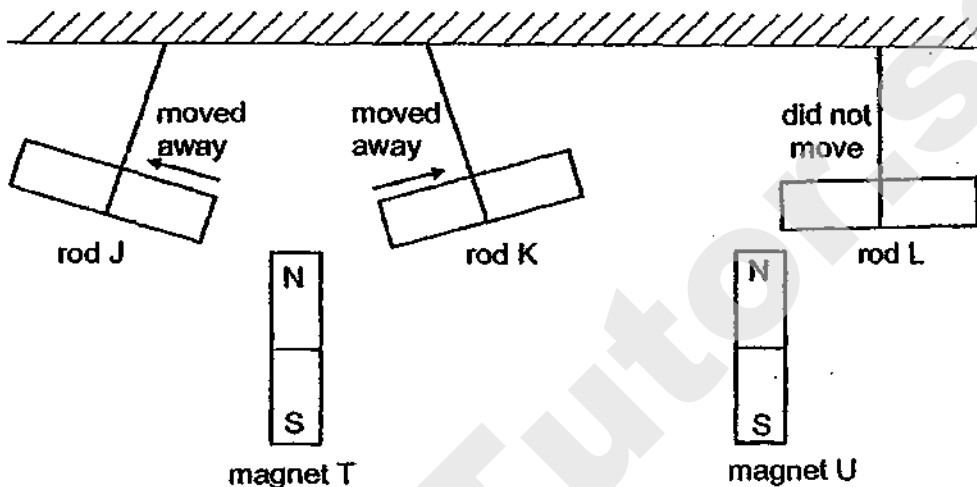
The table below shows the average time taken for the plastic box to reach Point Y.

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 $\longrightarrow$ 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

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.

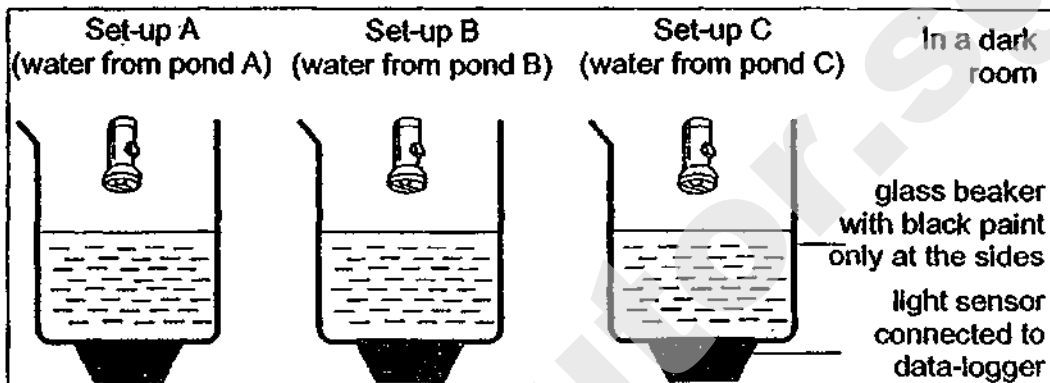


Which of the following are possible explanations for the above observations?

- 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

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.



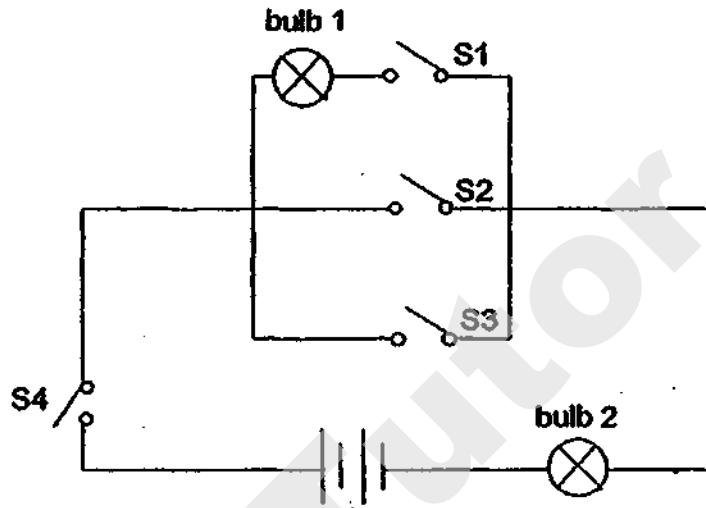
Nadna recorded the amount of light detected by the light sensor for the three set-ups. She took three readings for each set-up and calculated the average of the readings. The table below shows the average reading for each set-up.

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

26. The diagram below shows an electric circuit. The batteries and bulbs are all working properly.

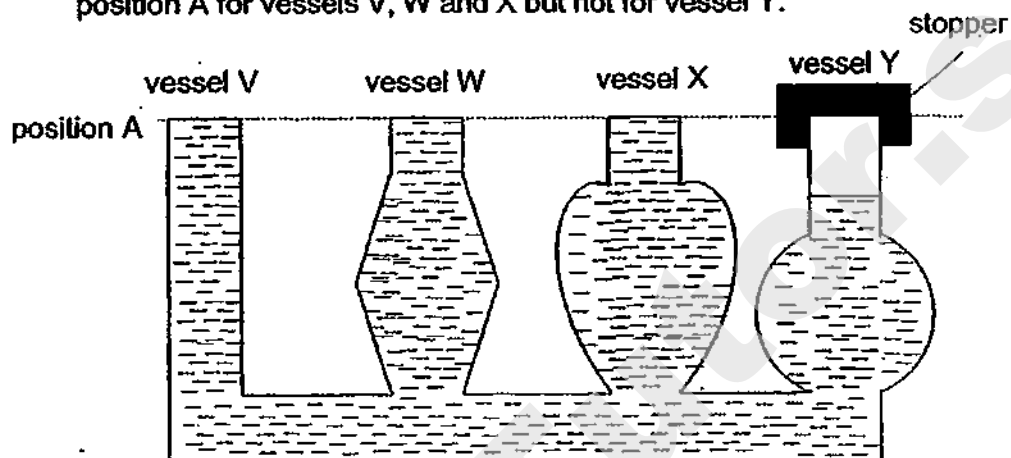


Which pair of switches must be closed in order for both bulbs to light up?

- (1) S1 and S2
- (2) S1 and S4
- (3) S2 and S3
- (4) S2 and S4

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.

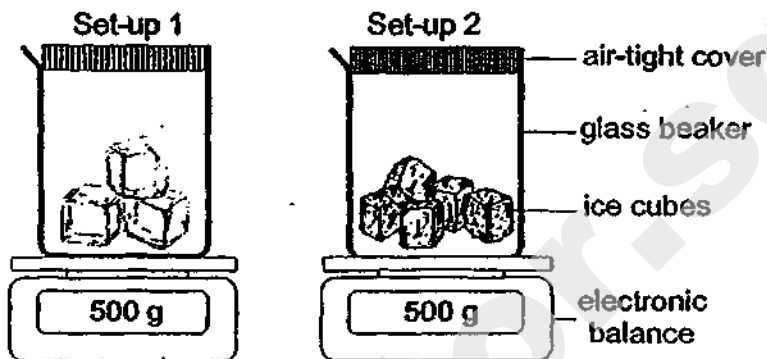
Zena poured a jug of water through vessel V, the water level rose to position A for vessels V, W and X but not for vessel Y.



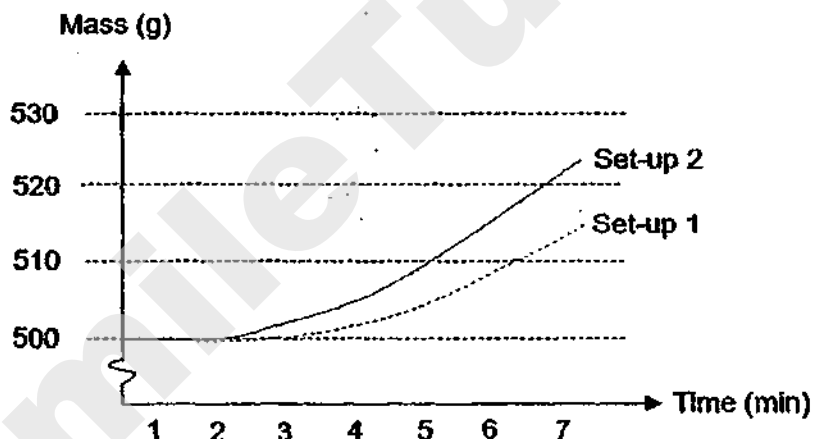
Based on the information provided, which of the following statements best explains why the water level in vessel Y is lower than the water level in the rest of the vessels?

- (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.

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 2<sup>nd</sup> minute to the 7<sup>th</sup> 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



**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**

<b>Section B</b>	/ 44
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**Name:** \_\_\_\_\_ (     )     **Class: P 6** \_\_\_\_\_

**Date : 15 May 2019**

**Parent's Signature:** \_\_\_\_\_

SmileTutor.sg



**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]

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- (b) Give another reason why hardly any other plants can grow under the bushes of plant A. [1]

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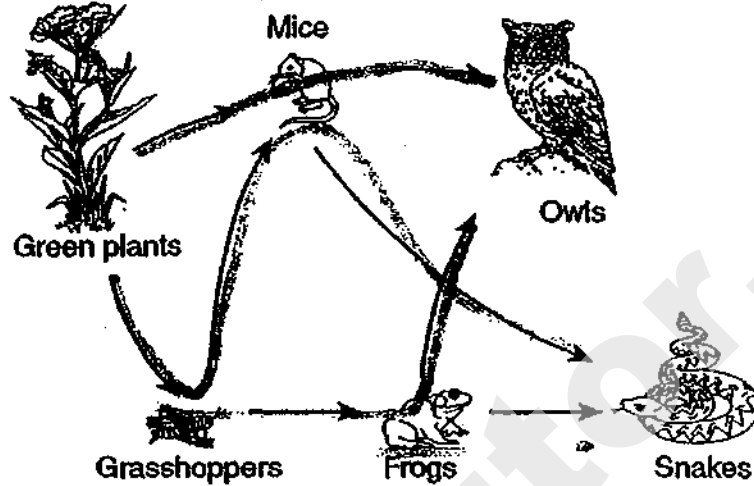
- (c) After plant A and their roots are cleared away, there will not be any of the chemical in the soil. What will happen to the population of other plants growing there? Explain why. [1]

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Score	
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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]

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(b) How many food chains are there in the food web? [1]

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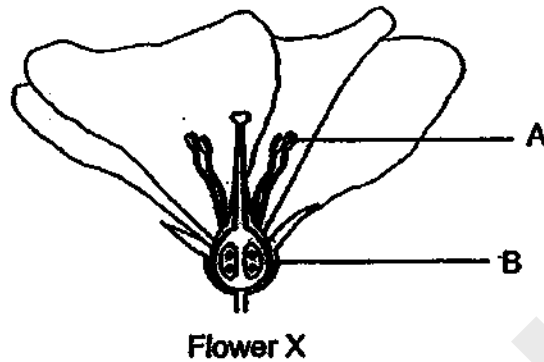
(c) Explain how the energy for all the organisms in the food web can be traced back to the sun. [1]

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31. The diagram below shows the structure of flower X.



(a) What is the function of part A? [1]

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(b) Bees are often seen visiting flower X. Describe how the bees help to pollinate flower X? [1]

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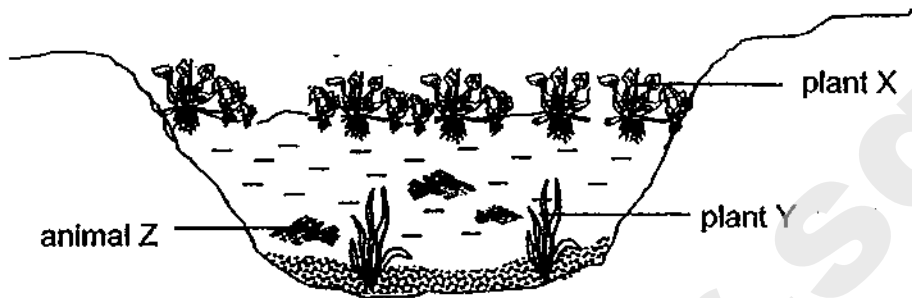
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(c) How would the removal of part B affect flower X? Explain your answer clearly. [1]

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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]

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- (b) Give an explanation for your answer in (a). [1]

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- (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: \_\_\_\_\_

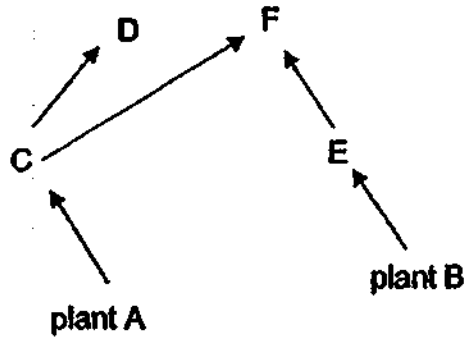
- (ii) Explain how animal Z can benefit plant Y. [1]

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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]

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(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: \_\_\_\_\_

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Effect on E and reason: \_\_\_\_\_

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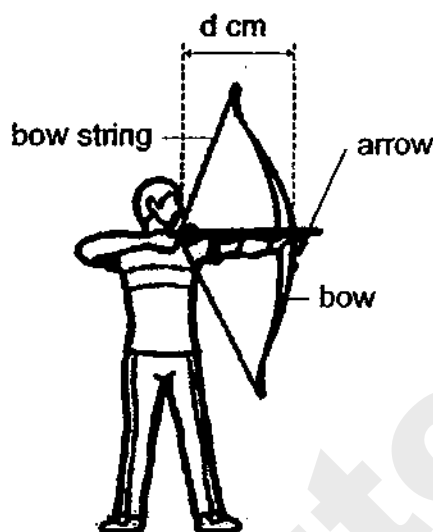


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34. Jie Zhi tried out archery at an archery range. He wants to find out how the distance,  $d$ , between the bow and bow string would affect the distance travelled by the arrow.



He recorded his results as in the table below.

Distance, $d$ , between the bow and bow string (cm)	Distance travelled by the arrow (m)			
	1 <sup>st</sup> Reading	2 <sup>nd</sup> Reading	3 <sup>rd</sup> 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]

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- (b) Based on the results, explain how the distance between the bow and the bow string affects the distance travelled by the arrow. [2]

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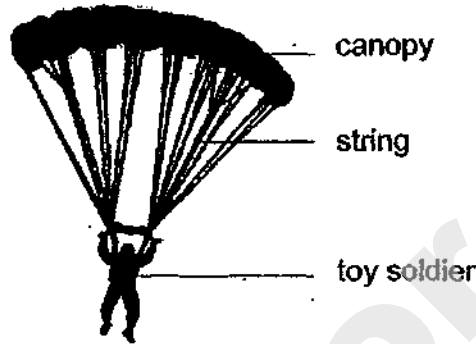


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- (c) Besides changing the distance between the bow and the bow string, suggest another way to increase the distance travelled by the same arrow. [1]

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35. Jayden dropped a toy soldier attached to a canopy of  $1000 \text{ cm}^2$  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.

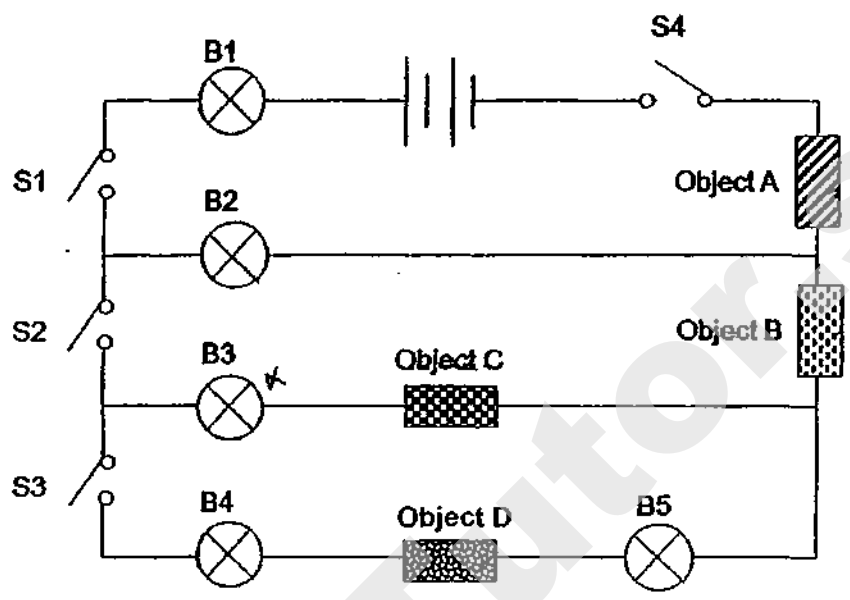


Set-up	Size of canopy ( $\text{cm}^2$ )	Average time taken for the toy soldier to fall to the ground (s)
A	1000	3.1
B	900	2.7
C	800	?
D	700	1.8

- (a) What could be the average time taken for the toy soldier to fall to the ground when the size of canopy is  $800 \text{ cm}^2$ ? [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	/
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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]

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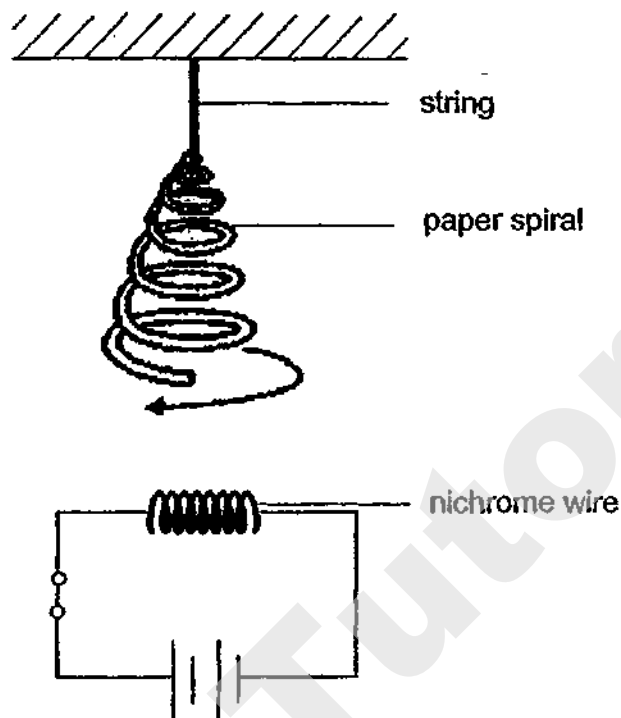
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(b) Name a suitable material for object C. [1]

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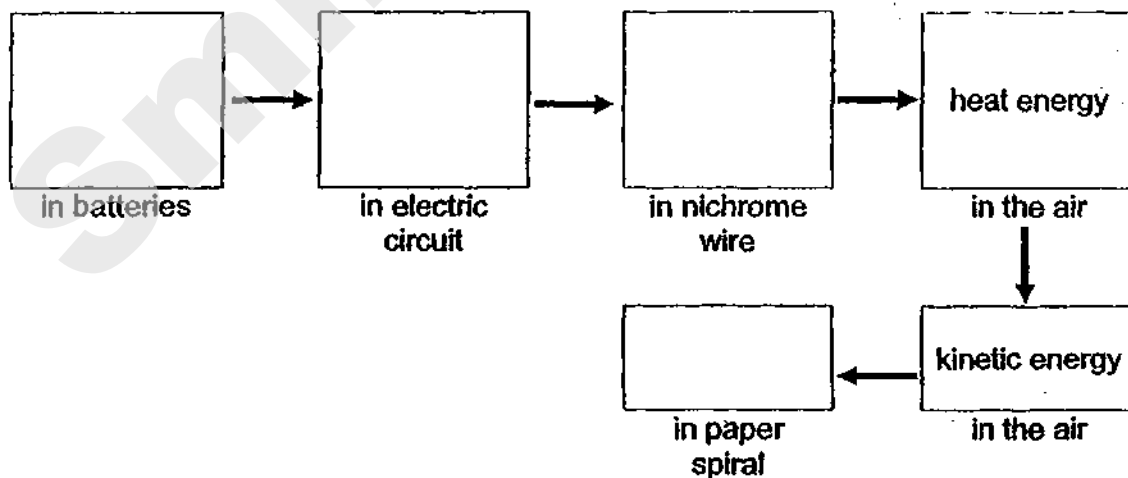


37. Jonathan set up the experiment below during his Science lesson.



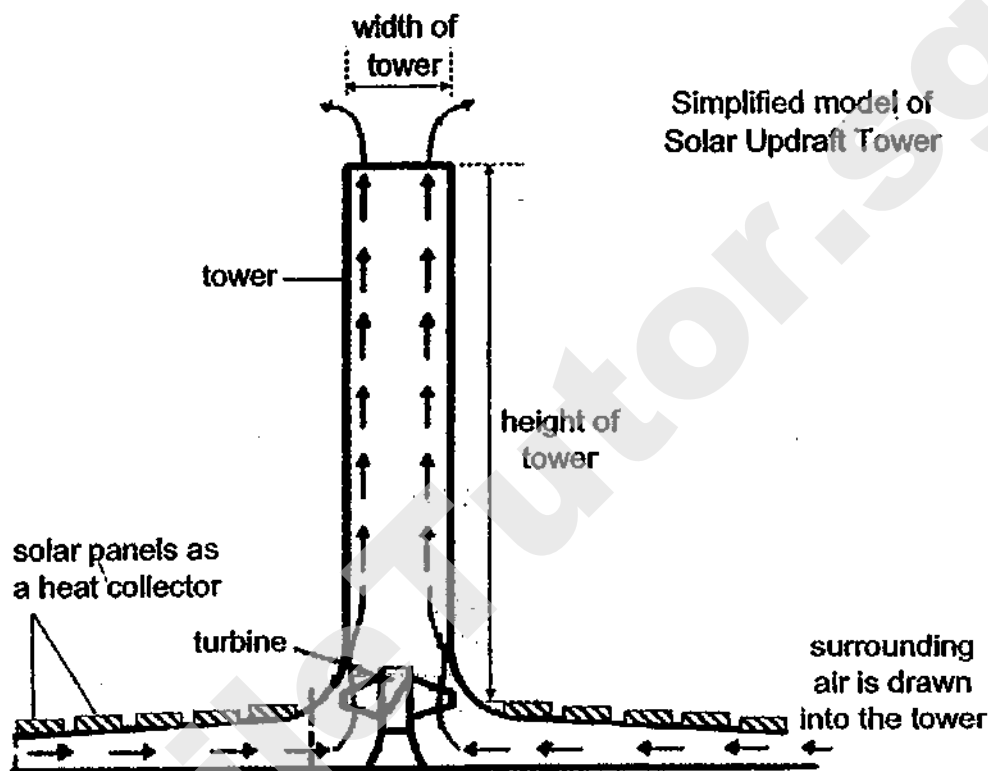
When the switch is closed, Jonathan observed that the paper spiral started spinning after some time.

(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]

- (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]

- (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.

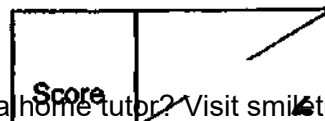
[2]

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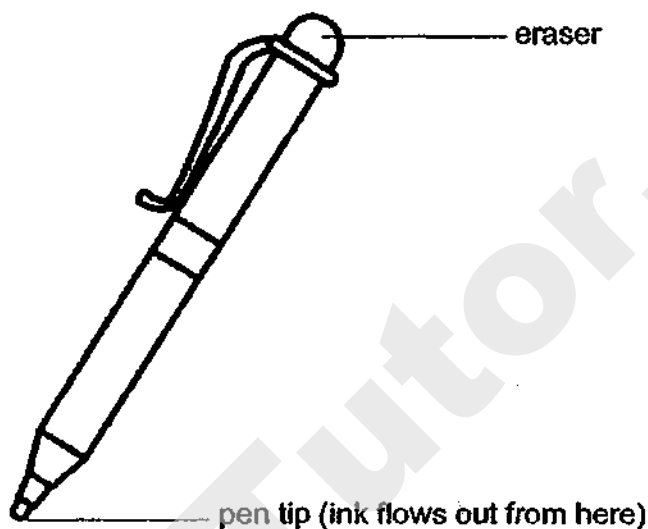
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38. Dr Natalie wants to develop a pen with an erasable ink that can be erased in the shortest time. At the same time, she wants to ensure that the ink does not reappear easily after being erased.

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]

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- (b) How can the eraser on the pen cause the ink to become colourless? Explain your answer using the concept of forces. [1]

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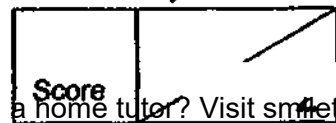
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- (c) Dr Natalie did more tests and found out that when she tried to use the pen to write on a piece of paper placed on the vertical wall, the ink did not flow out. Explain why. [1]

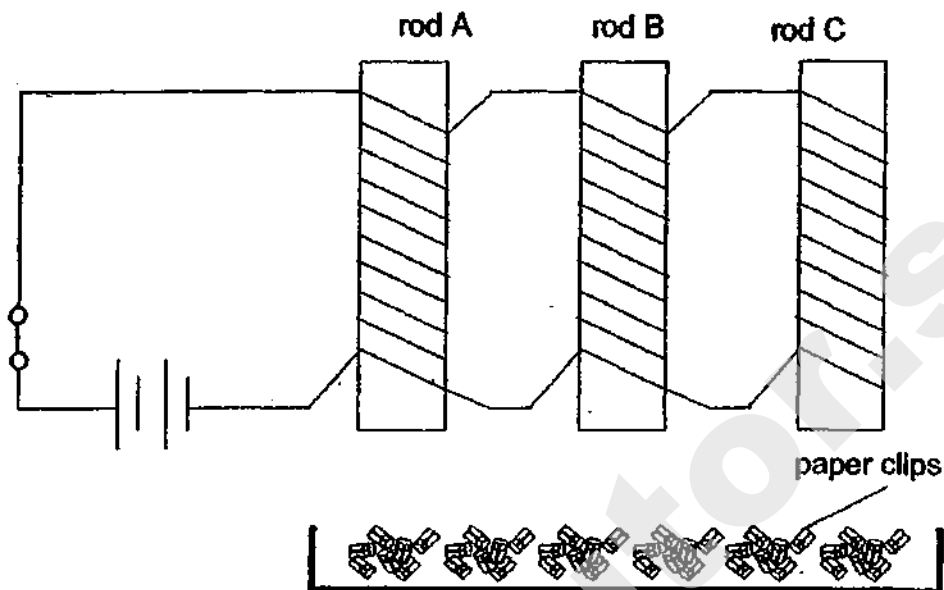
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39. Elsie set up the experiment as shown below.



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]

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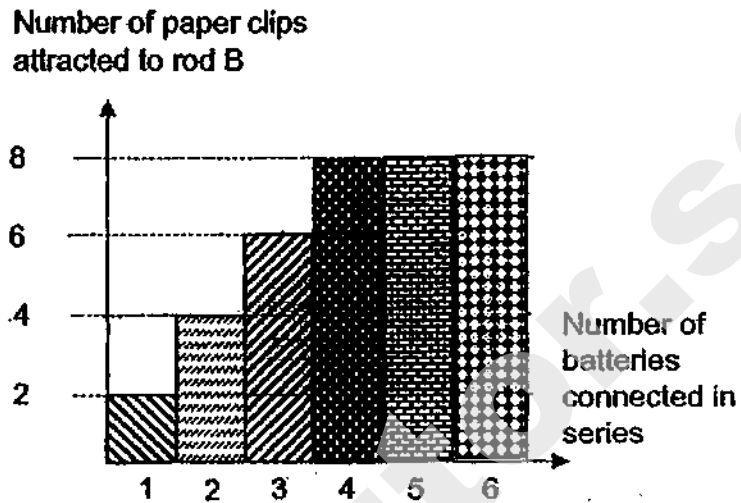
(b) Name one suitable material for rod A. Explain your choice. [1]

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- (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]

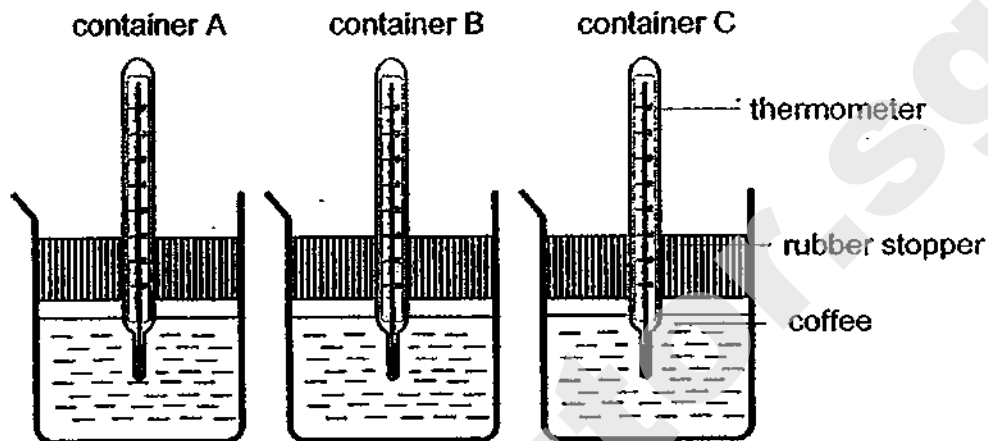
Reason 1: \_\_\_\_\_

\_\_\_\_\_

Reason 2: \_\_\_\_\_

\_\_\_\_\_

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]

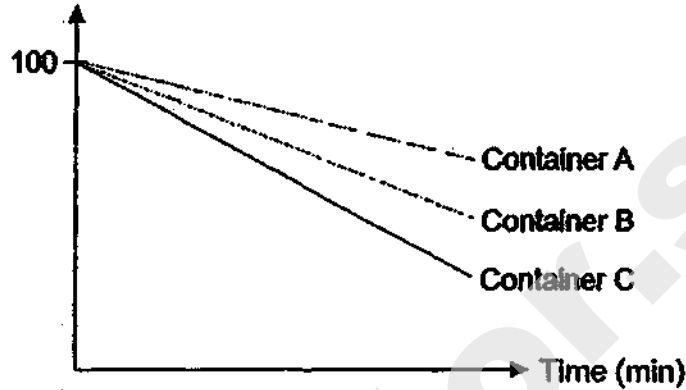
Place a tick (✓) in the box(es) next to the variable(s) that should be kept the same.

Variable	Keep the same
The amount of coffee in each container.	<input type="checkbox"/>
The time taken for the coffee to reach 50 °C.	<input type="checkbox"/>
The type of materials used to make the container.	<input type="checkbox"/>
The thickness of materials used to make the container.	<input type="checkbox"/>



- (b) Faizal recorded the change in the temperature of coffee over time and plotted the graph as shown below.

Temperature of coffee in the containers ( $^{\circ}\text{C}$ )



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]

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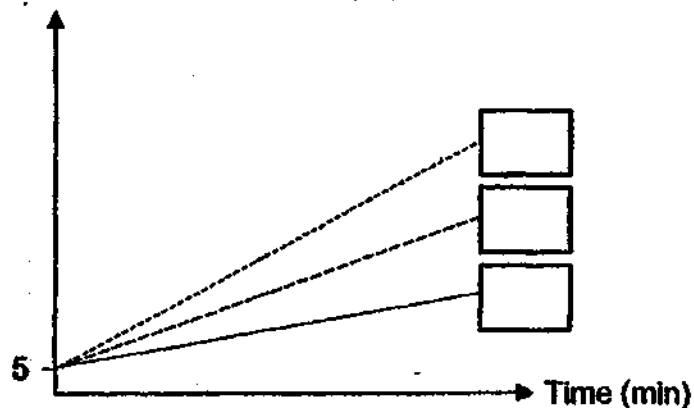


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- (c) Faizal changed the aim of the experiment to find out which container, A, B or C, is the most suitable to keep his cold drink cool for the longest period of time. He recorded the change in the temperature of the cold drink over time and plotted 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]

Temperature of cold drink in the containers ( $^{\circ}\text{C}$ )



End of Booklet B

Score	
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**SCHOOL : NAN HUA PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**

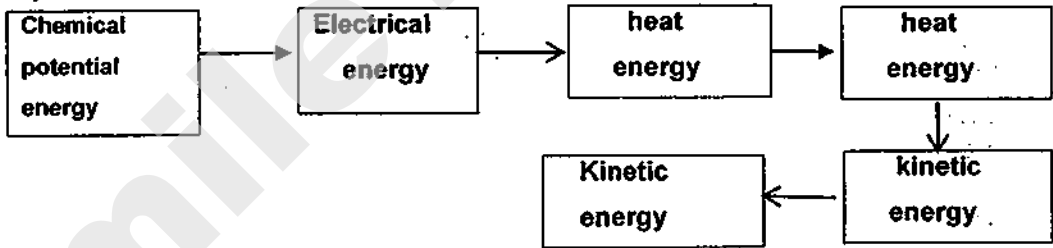
**SECTION A**

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)	<p>a)It will reduce the number of plants that will compete with it for space, water nutrients and sunlight.</p> <p>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.</p> <p>c)The other plants will reproduce and their population will increase as there will be less competition for resource.</p>
Q30)	<p>a)The mice is the only omnivore.</p> <p>b)6 food chains.</p> <p>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.</p>

Q31)	<p>a)To produce pollen grains.</p> <p>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.</p> <p>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.</p>
Q32)	<p>a)When the number of plant X increase, the number of plant Y decrease.</p> <p>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.</p> <p>c)i)Plant X : Provide Z with shade.  Plant Y : Animal Z can hide in plant Y to hide away from their predators.</p> <p>ii)Its droppings provide nutrients for Y's growth.</p>
Q33)	<p>a)No. C and E are only prey. D and F are only predators.</p> <p>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.</p> <p><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.</p>
Q34)	<p>a)Elastic potential energy.</p> <p>b)As the distance between the bow and bow string increase, the distance travelled by the arrow also increase. There is more elastic</p>

	<p>potential energy in the stretched bow string to be converted to more kinetic energy in the arrow.</p> <p>c) Use a bow string that is more stiffer.</p>
Q35)	<p>a) 2.3s</p> <p>b) Air resistance and gravity.</p> <p>c) Replace the canopies in set-ups B, C and D with a same canopy size of 1000cm<sup>2</sup>. Ensure the mass of the toy soldier in every set-up is different.</p>
Q36)	<p>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 &amp; B5.</p> <p>b) Plastic.</p>
Q37)	<p>a)</p>  <pre> graph LR     A[Chemical potential energy] --&gt; B[Electrical energy]     B --&gt; C[heat energy]     C --&gt; D[heat energy]     D --&gt; E[kinetic energy]     E --&gt; F[Kinetic energy]   </pre> <p>b) It will spin at a faster speed.</p> <p>c) Sun and wind.</p> <p>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.</p>
Q38)	<p>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.</p>

	<p>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.</p> <p>c)The ink was pulled away from the pen tip due to gravity.</p>													
<p>Q39)</p>	<p>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.</p> <p>b)Wood. Rod A is made of non-magnetic material and cannot be magnetised.</p> <p>c)Reason 1: There is no more space for more paper clips to be attracted to rod B.</p> <p>Reason 2 : The magnetic force is not strong enough to attract another paper clip.</p>													
<p>Q40)</p>	<p>a)</p> <table border="1" data-bbox="580 982 1005 1274"> <tr><td></td><td></td></tr> <tr><td></td><td>√</td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td>√</td></tr> </table> <p>b)Container A. The temperature of the coffee remained the highest. It is the poorest conductor of heat as the coffee loses the least amount of heat to the surrounding air.</p> <p>c)</p> <table border="1" data-bbox="549 1524 662 1765"> <tr><td>C</td></tr> <tr><td>B</td></tr> <tr><td>A</td></tr> </table>				√						√	C	B	A
	√													
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C														
B														
A														



**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 ( )**

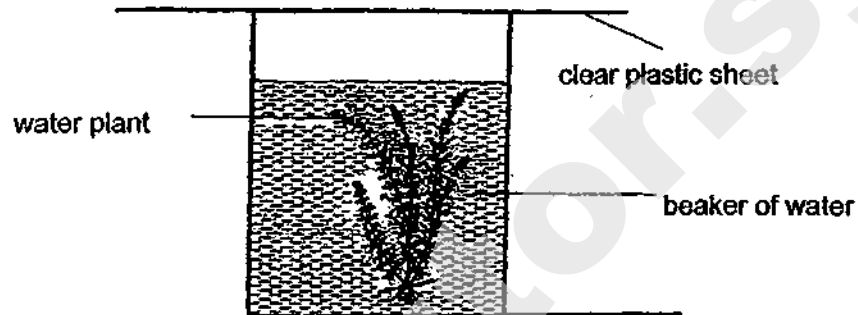
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 18 printed pages including this cover page.**

**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.

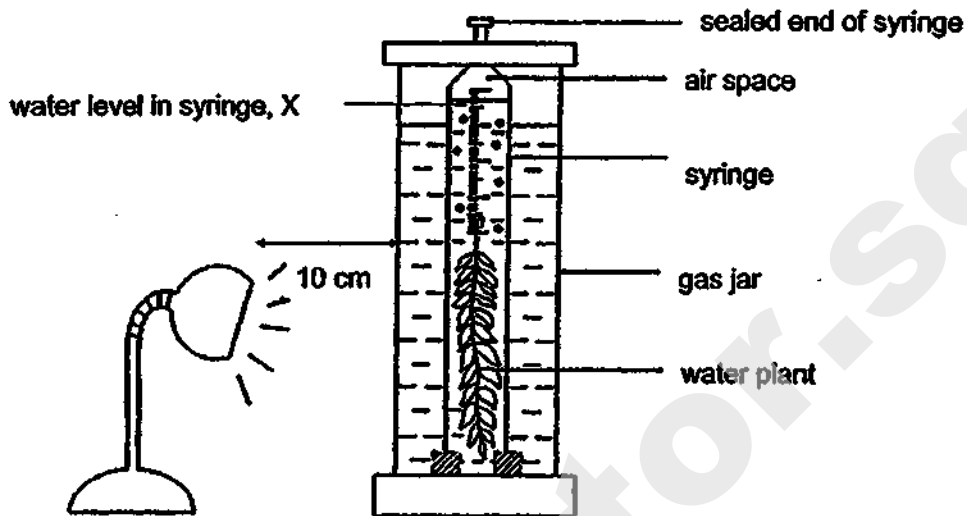
Amount of carbon dioxide in the water	low	high
Colour of water with liquid A	yellow	red

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



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.

3. Which of the following statements about food made during photosynthesis are correct?

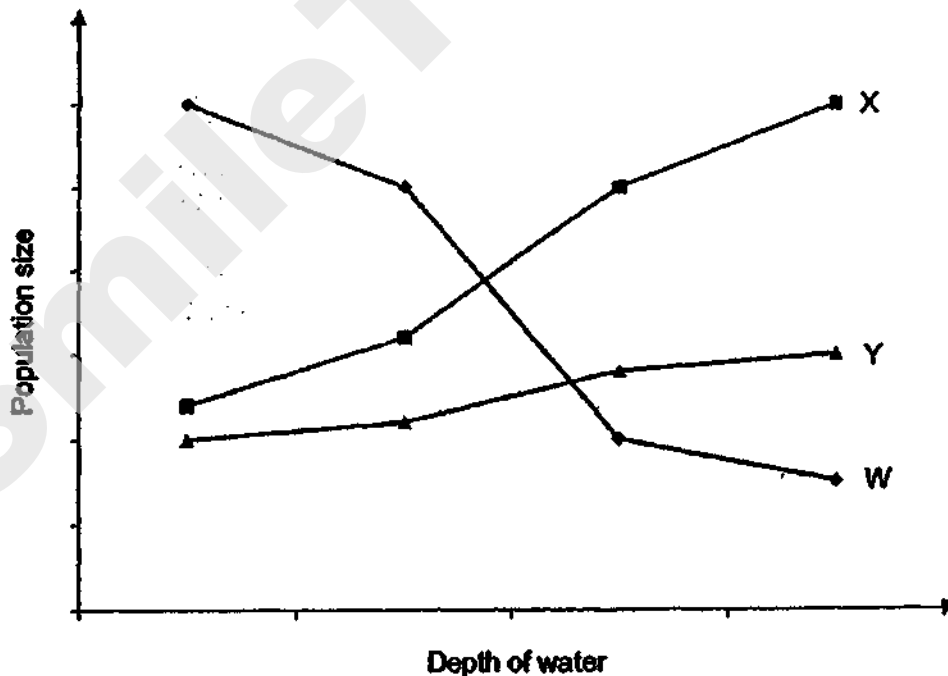
- A Food made by plants can be stored as starch.
- B Plants make use of the food that they made for energy.
- C Food made in the leaves is transported to all parts of the plant.
- D Excess food that plants made can be stored in different plant parts.

- (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.

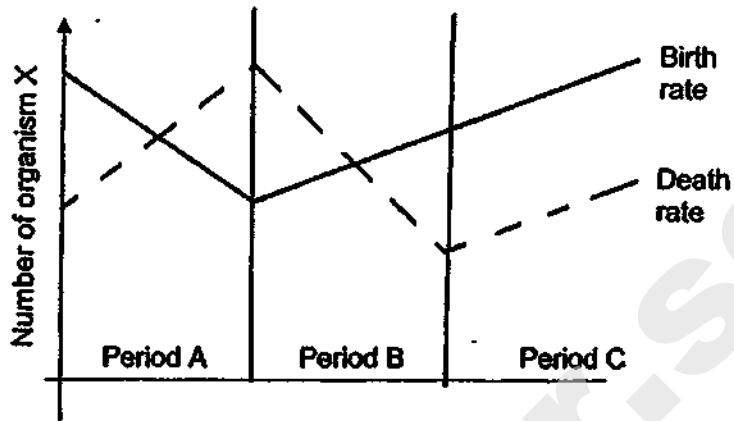
5. The graph below shows the population size of three different organisms, W, X and Y, at different water depths. As the depth of a pond increases, the amount of light that passes through the water decreases.



Which organism(s) survive(s) better when there is less light?

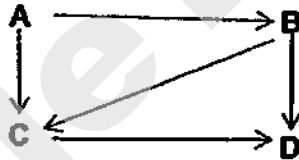
- (1) X only
- (2) W and X only
- (3) W and Y only
- (4) X and Y only

6. The graph below shows the birth and death rates of a population of organism X.

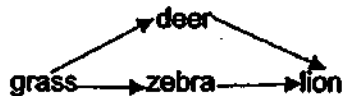


Which period(s) show(s) a decrease in the population of organism X?

- (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?

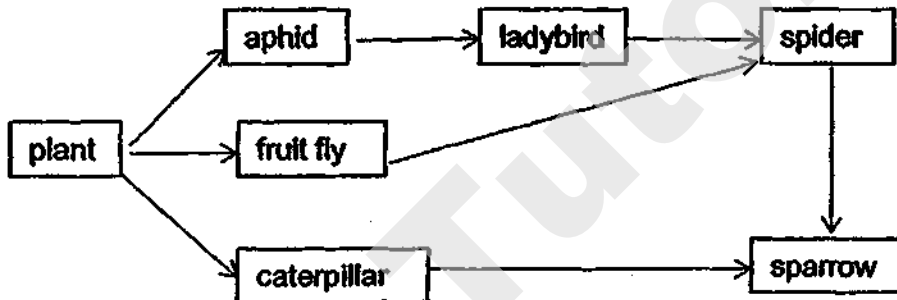
- A Eat the bark and roots of a tree.  
 B Hunt for more deer in that area of the safari park.  
 C Move to another area of the safari park to hunt for zebra.
- (1) B only  
 (2) A and B only  
 (3) A and C only  
 (4) B and C only

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?

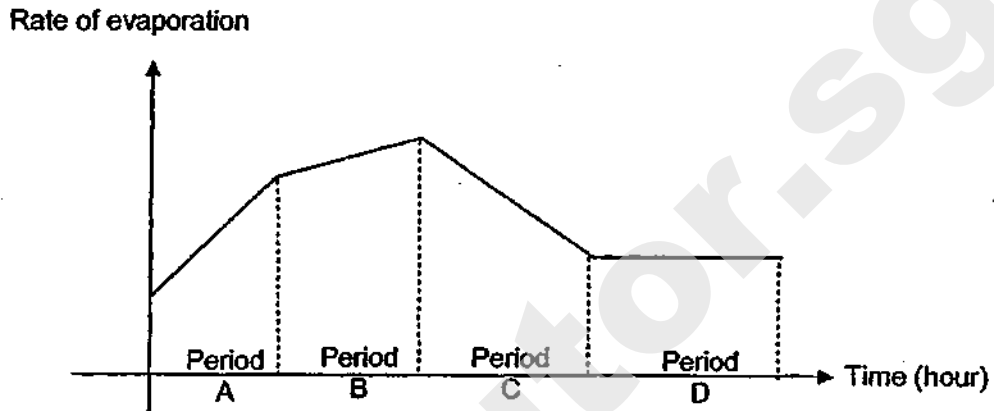
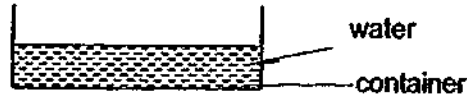
- (1) aphids only
- (2) ladybird and spider only
- (3) caterpillar and sparrow only
- (4) fruit fly, spider and sparrow only

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

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.

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?

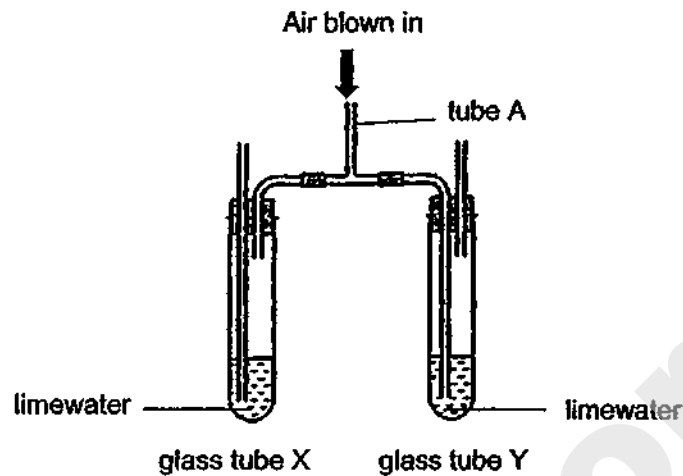
- (1) A only  
(2) B only  
(3) A and C only  
(4) A, B and C
14. The diagram below shows two oranges. One of them had been cut open.



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

15. Dylan set up the following apparatus with the same amount of limewater poured into identical glass tubes, X and Y.



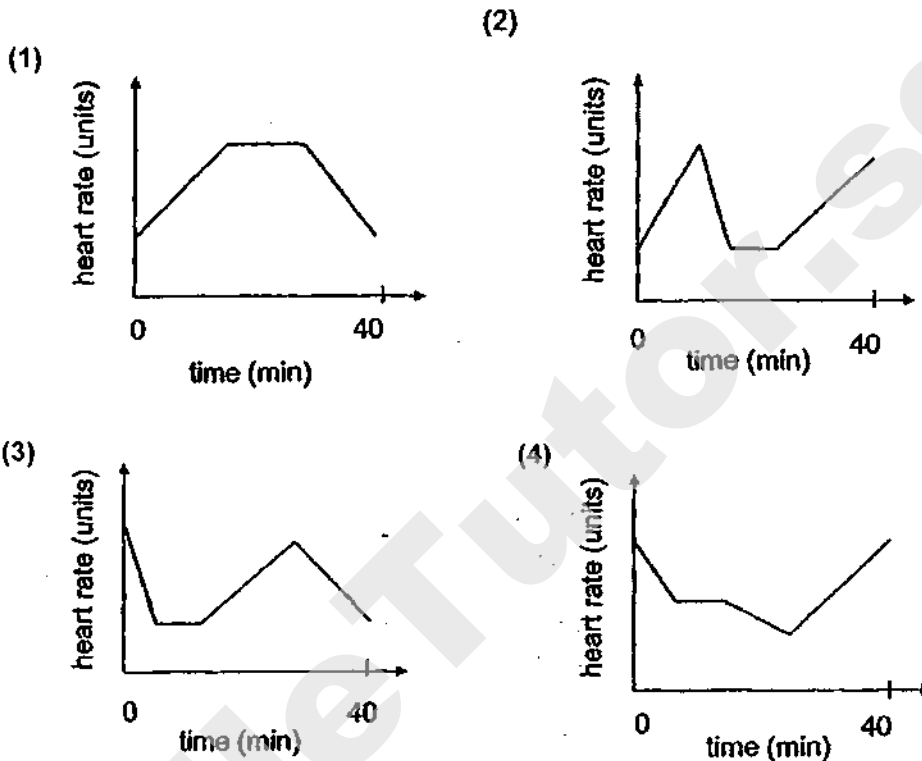
Air was being blown into tube A continuously for 15 seconds.

Which one of the following describes Dylan's observation and the explanation for the observation?

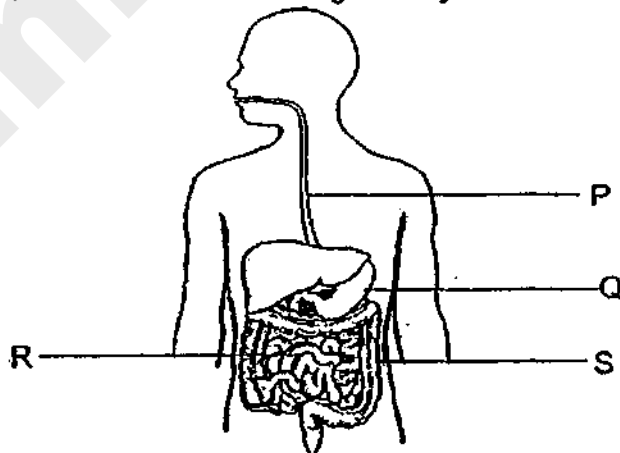
- (1) The limewater in X and Y remained clear as there was no carbon dioxide in Dylan's breath.
- (2) Only the limewater in X turned cloudy after coming into contact with the carbon dioxide in Dylan's breath.
- (3) The limewater in Y turned cloudy faster than X after coming into contact with the carbon 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.

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?



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?

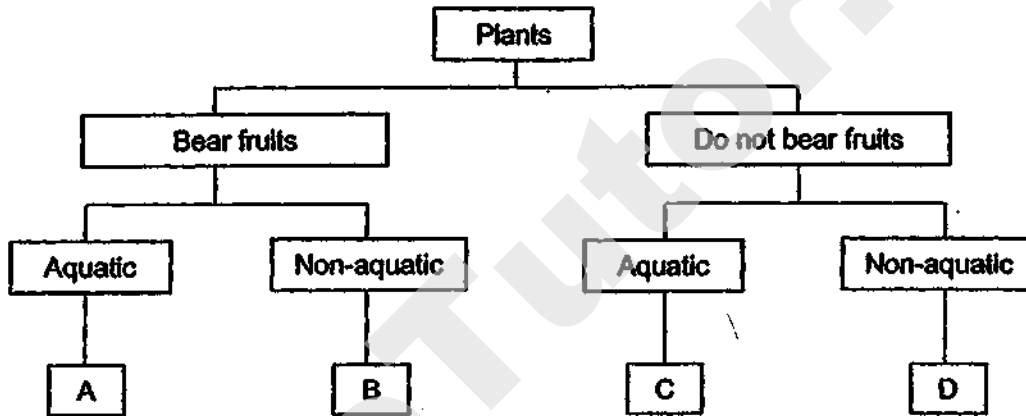
- (1) P
- (2) Q
- (3) R
- (4) S



18. The table below shows the characteristics of plants P and Q. A tick (✓) shows that the plant has the characteristic stated.

Plant	P	Q
Characteristics		
Has flowers		✓
Grows on land	✓	

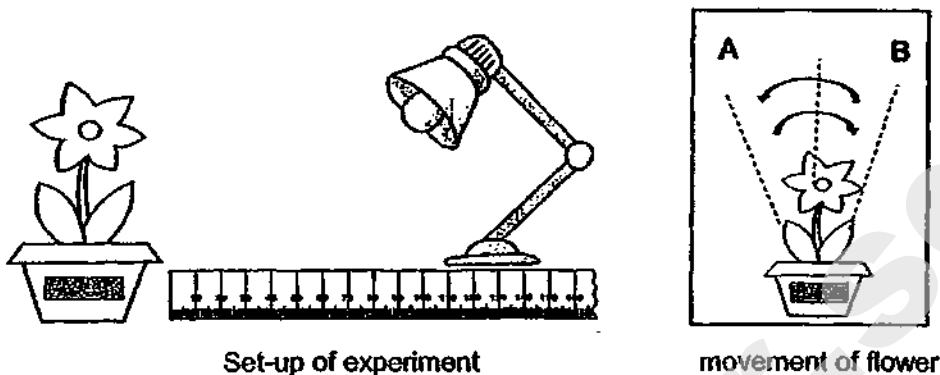
Study the classification chart below.



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

19. Priscilla used a solar-powered toy flower to carry out an experiment as described in the table below.



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.

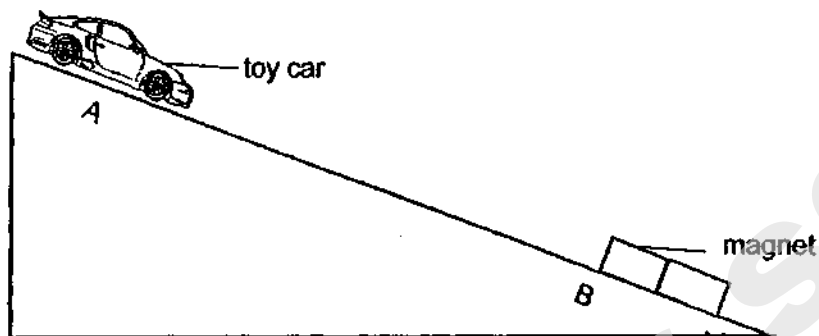
Priscilla wrote the following aims and conclusions for the experiment.

	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

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

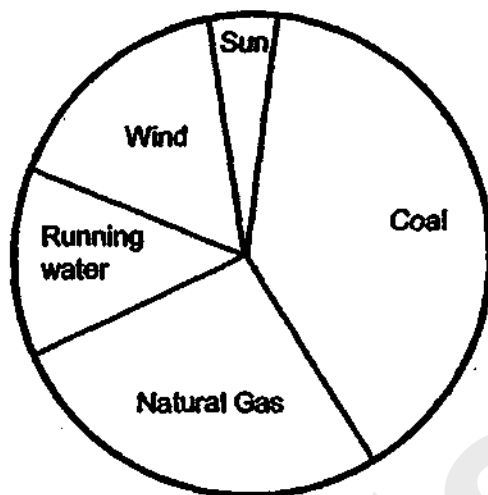
21. The diagram below shows a solar-powered radio. The radio can only work when placed in a bright location.



What is the energy conversion that takes place when the radio is being used?

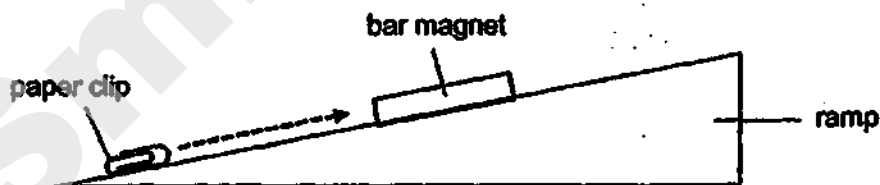
(1)	light energy	→	chemical potential energy	→	sound energy
(2)	light energy	→	electrical energy	→	sound energy
(3)	electrical energy	→	chemical potential energy	→	sound energy
(4)	chemical potential energy	→	electrical energy	→	sound energy

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.

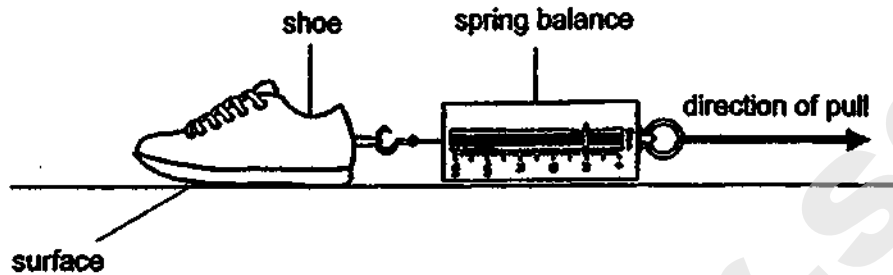


Which of the following forces are acting on the paper clip as it moves up the ramp?

- 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

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.



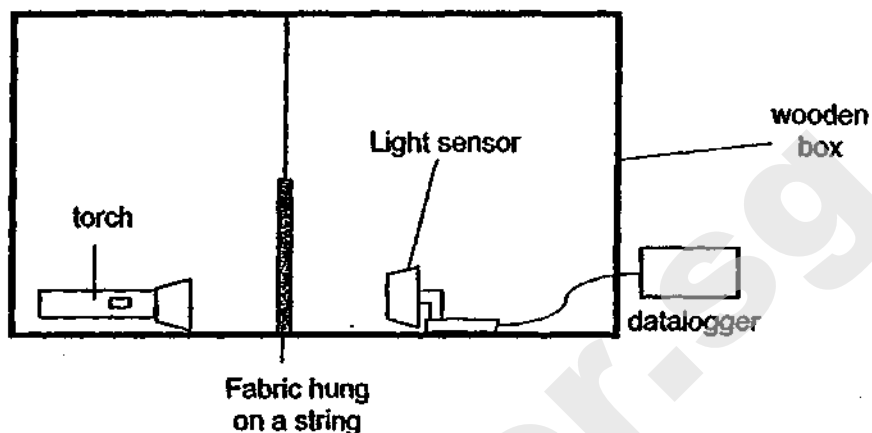
The amount of force needed to pull the shoe across the different surfaces is shown in the table below.

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?

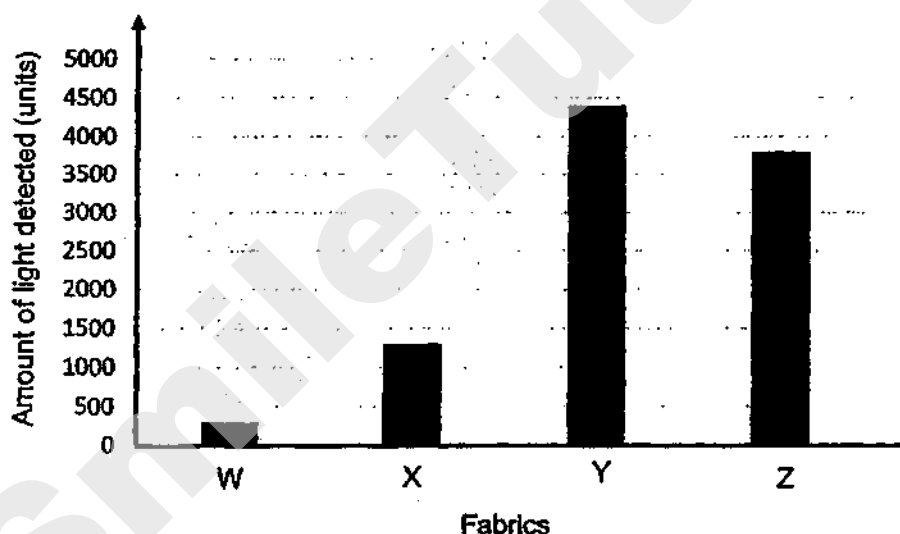
- (1) P
- (2) Q
- (3) R
- (4) S

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.

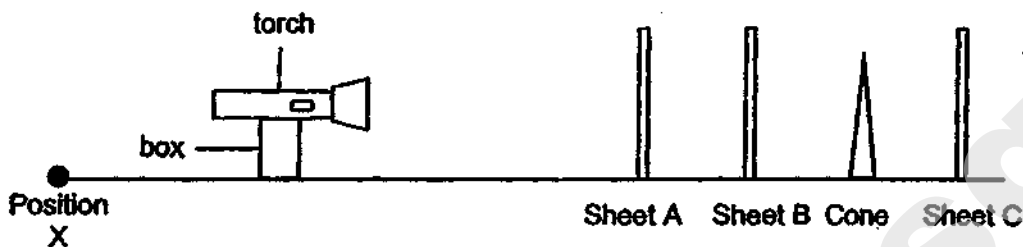


Kai Lin wanted to use one of the pieces of fabric to make curtain A to block out some light and another piece of fabric to make curtain B to block out most light from her bedroom.

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

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.



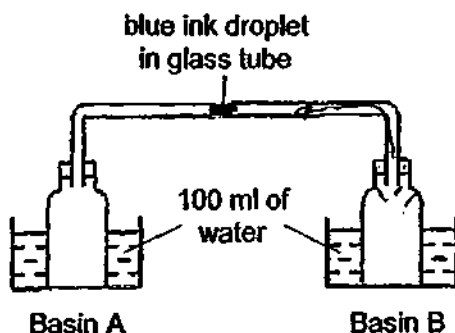
She then made the following observations when standing at position X.

- 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

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.



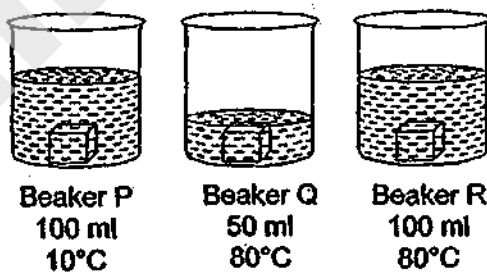
After a while, the droplet of blue ink moved towards the bottle in basin A and dripped into it.

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 ~





**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:**

<b>Booklet A:</b>		<b>56</b>
<b>Booklet B :</b>		<b>44</b>
<b>Total :</b>		<b>100</b>

**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: \_\_\_\_\_**

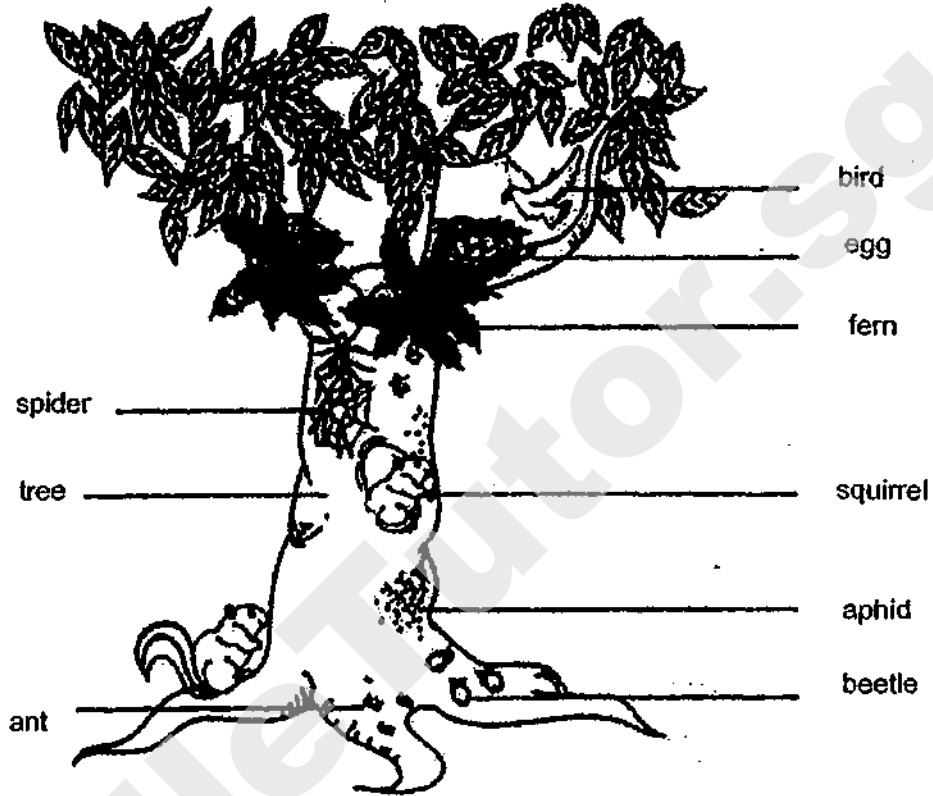
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**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.

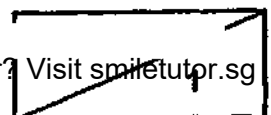
29. The diagram below shows different organisms found living together in a tree.



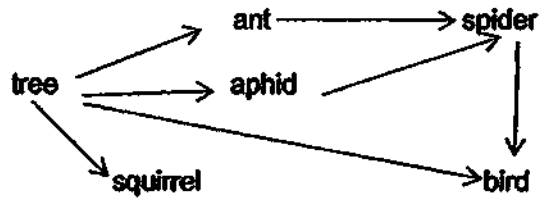
(a) Describe what a tree community is, using specific examples of the organisms shown in the diagram above. [1]

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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:

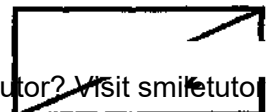
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(ii) the tree benefits from the spiders:

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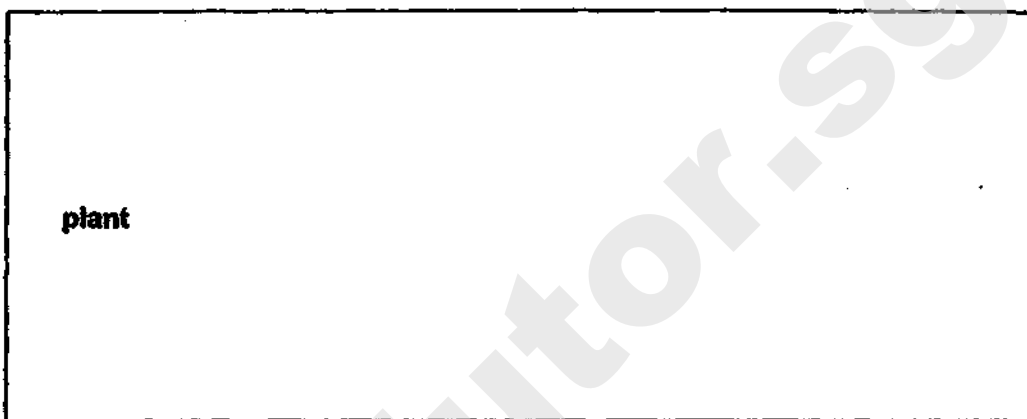
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30. Study the following food chains carefully. They show the food relationships of organisms living in one habitat.

- 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]



(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:

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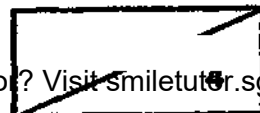
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(ii) After some time:

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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]

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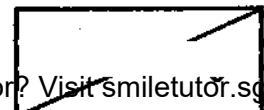
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- (b) Explain how the above experiment enabled him to obtain fresh water in the cup from the sea water. [2]

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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]

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- (b) Based on the results above, state the relationship between the temperature and the time taken for the fruit to split. [1]

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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]

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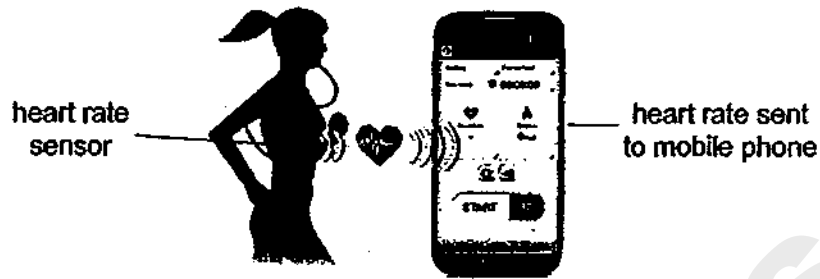
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- (d) State one characteristic of a fruit that disperses its seeds by splitting. [1]

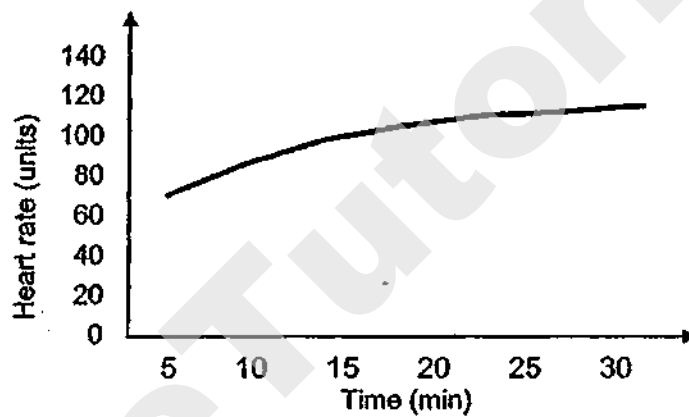
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33. The diagram below shows Peifen wearing her heart rate sensor while she is jogging. The sensor detects her heart rate and sends the data to her mobile phone.



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]

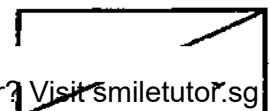
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- (b) Describe the change in her heart rate and explain why it has to change with time during exercise as shown in the graph above. [2]

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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.

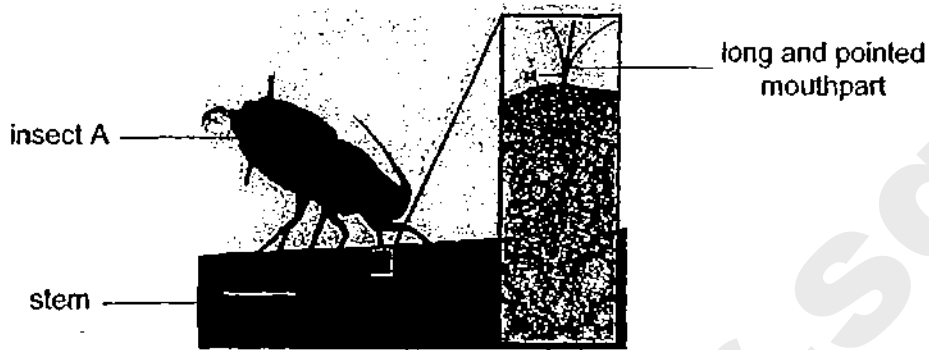


Figure 1

- (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.



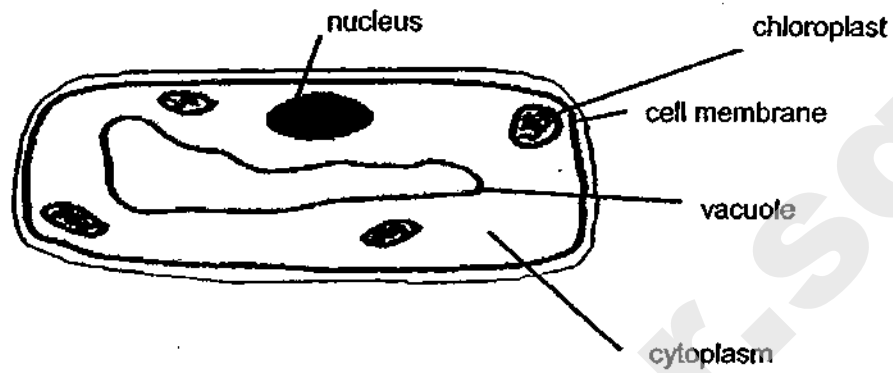
Figure 2

- (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]



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]

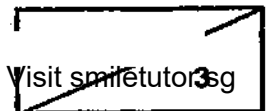
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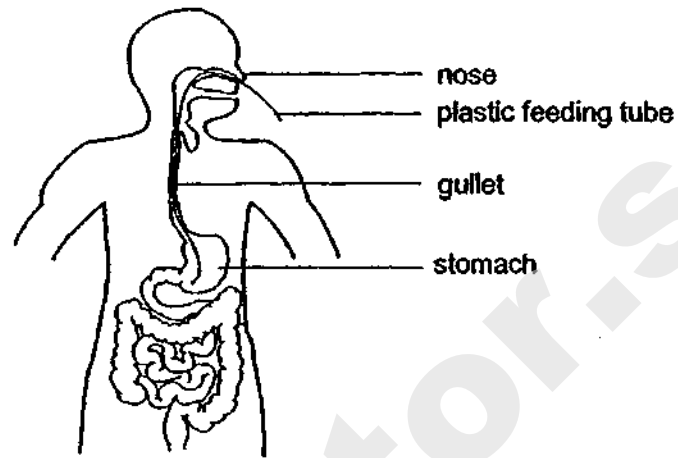
- (c) State the function of the nucleus. [1]

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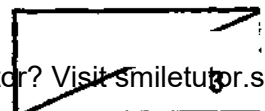
36. The diagram below shows a patient who was not able to chew after a jaw surgery. A plastic tube was inserted through the nose and gullet into the stomach directly. Nutritional drinks, that still needed to be digested, were then poured through the opening of the tube into the stomach once every few hours.



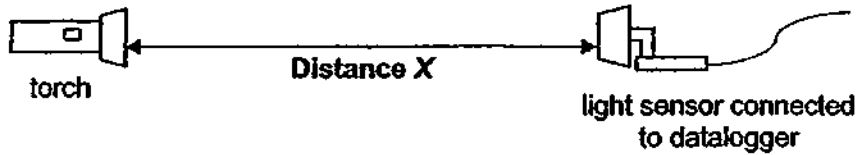
- (a) In the diagram above, put a cross (X) at the part of the human digestive system where the digestion of food was skipped in this method of feeding. [1]
- (b) Explain how the patient was still able to obtain his nutrients using this method of feeding. [2]

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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]

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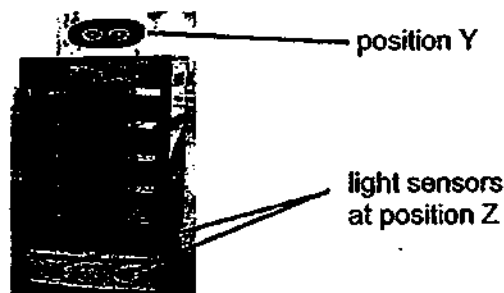
- (b) Terine wants to ensure that the light detected by the light sensor is from the torch only. State the condition of the surroundings for her to achieve this. [1]

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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.

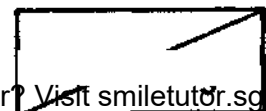


- (c) Explain why the light sensors have to be placed at position Z instead of Y. [1]

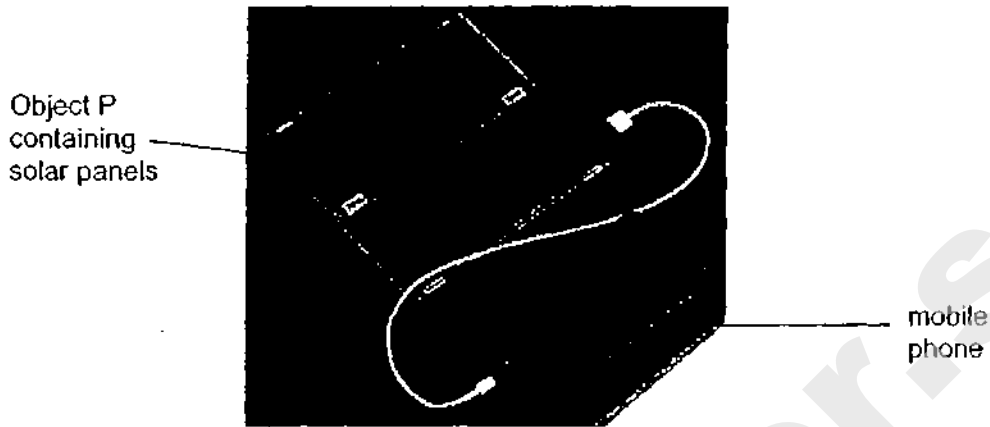
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38. Object P can be used to charge the battery in a mobile phone as shown below. It contains solar panels.

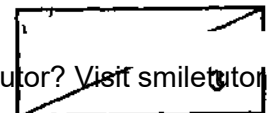
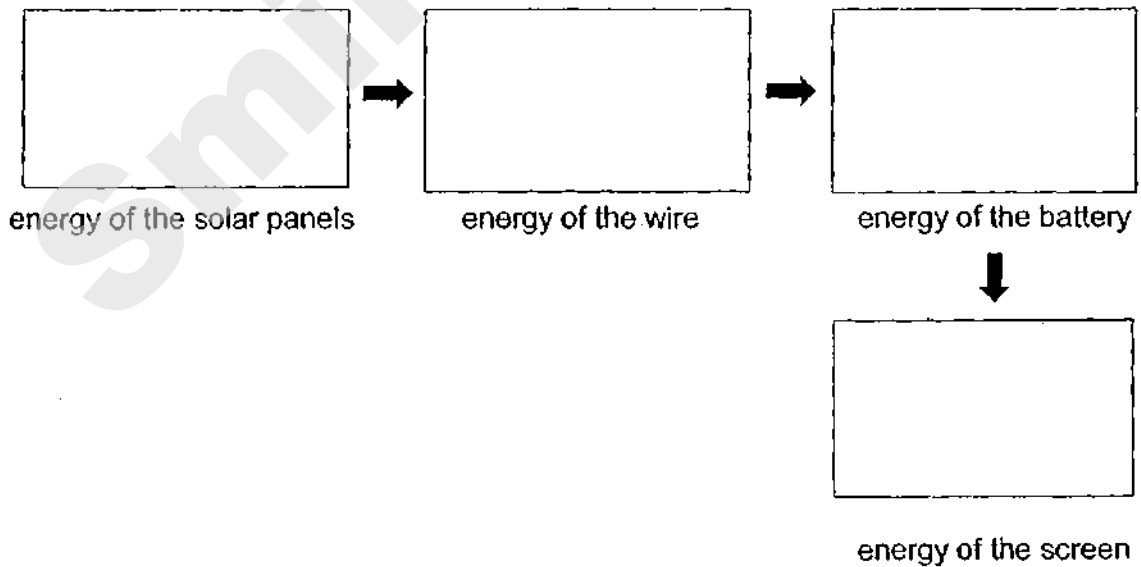


- (a) Explain in terms of energy how the solar panels in object P function. [1]

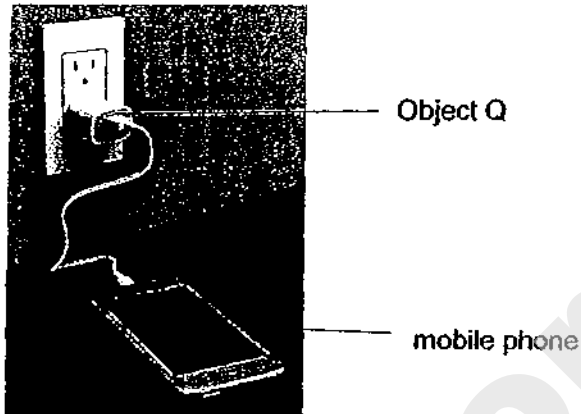
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- (b) Fill in the boxes to show the main energy conversions that take place when the mobile phone is switched on while charging the battery using Object P. [2]



- (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]

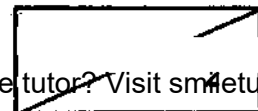
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- (ii) State one disadvantage of using the source of energy for object P as compared to the source of energy for object Q. [1]

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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.

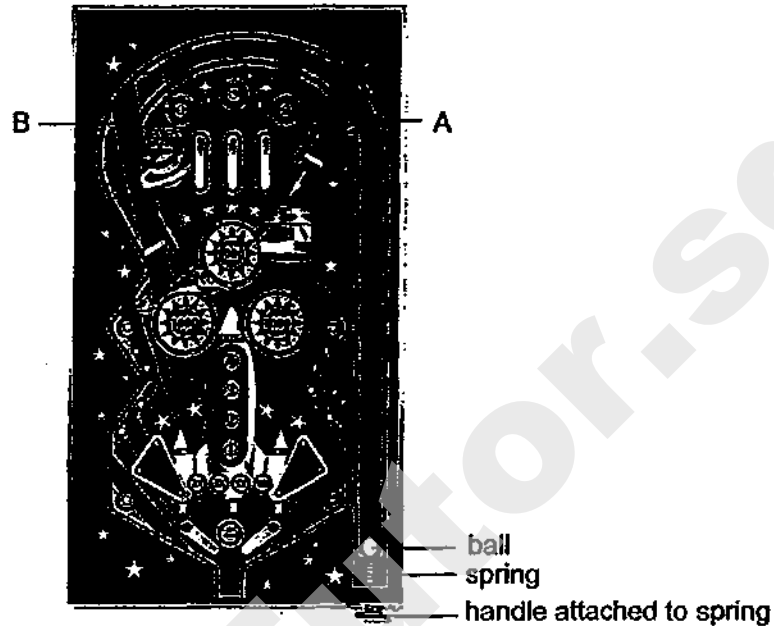
The results were shown in the table below.

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]

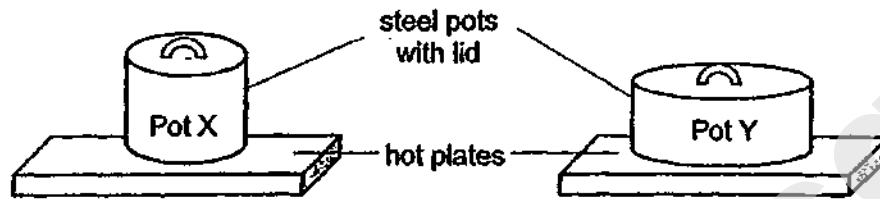
(c) Joe applied a layer of lubricant on the surface of the ramp to increase the distance the toy train move up the ramp. Explain, in terms of forces, how this method works. [1]

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]

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]

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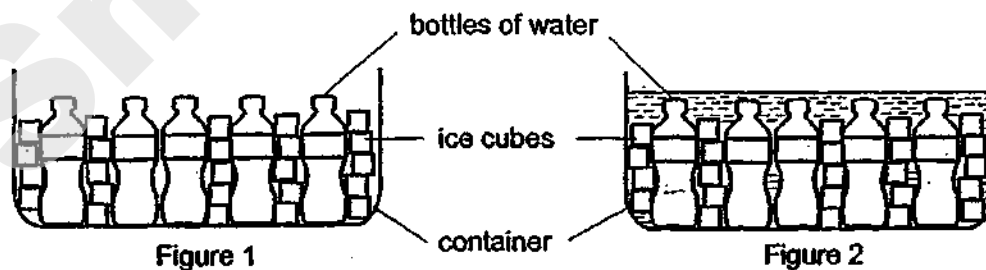
- (b) In which pot, X or Y, did the water start boiling first? Explain your answer. [2]

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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.

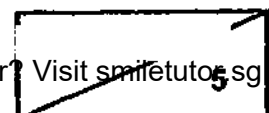


- (c) Explain how adding water into the container of ice would help to chill the bottled drinks faster. [2]

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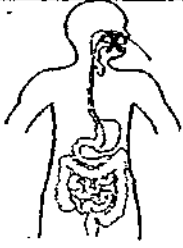
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P6 SCIENCE SA1 2019  
Suggested Answers

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)	<pre> graph LR     Plant --&gt; millipede     Plant --&gt; caterpillar     Plant --&gt; squirrel     millipede --&gt; centipede     caterpillar --&gt; centipede     centipede --&gt; toad     squirrel --&gt; toad     squirrel --&gt; python     toad --&gt; python </pre>
(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)	

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.



# 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

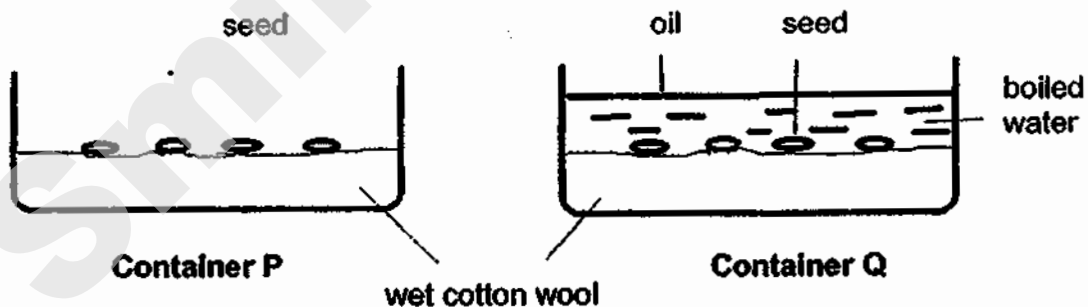
SCIENCE

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.

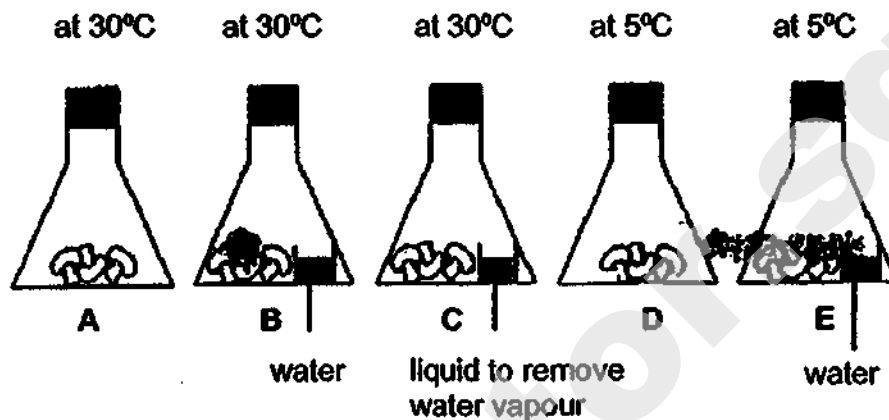
1. Susan carried out an experiment on the germination of seeds using two containers, P and Q, in her room as shown below. She observed the seeds in the containers over one week.



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.

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.



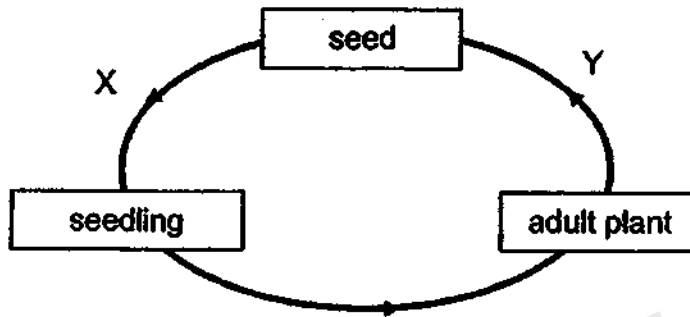
After one week, he recorded his observations in the table as shown below.

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

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

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

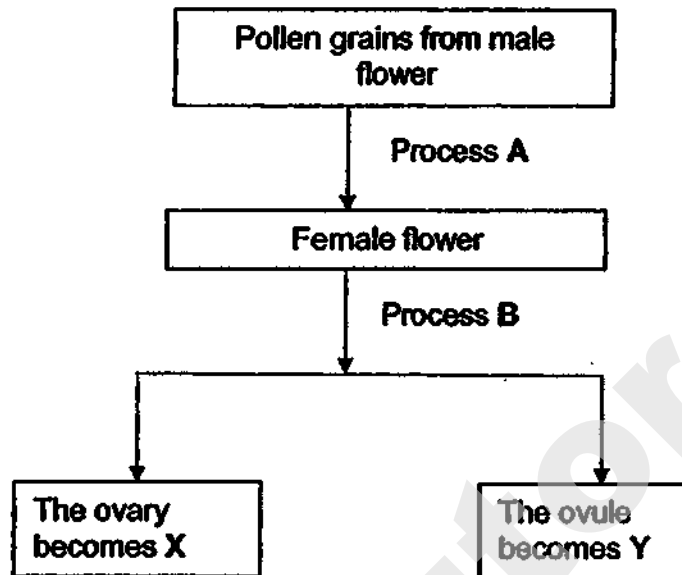
Which of the following states correctly the inherited characteristics of each of their four children?

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



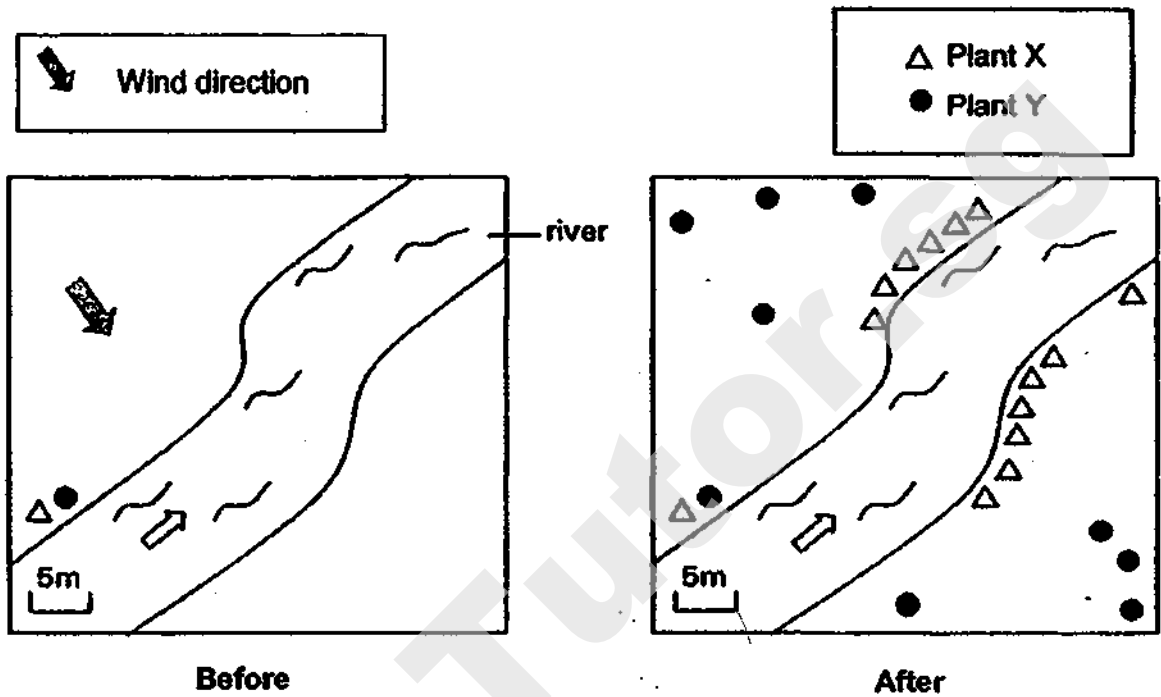
5. Study the diagram below.



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

6. Sheila counted the number of wild plants X and Y on a piece of land over several months. Her observations are shown below.

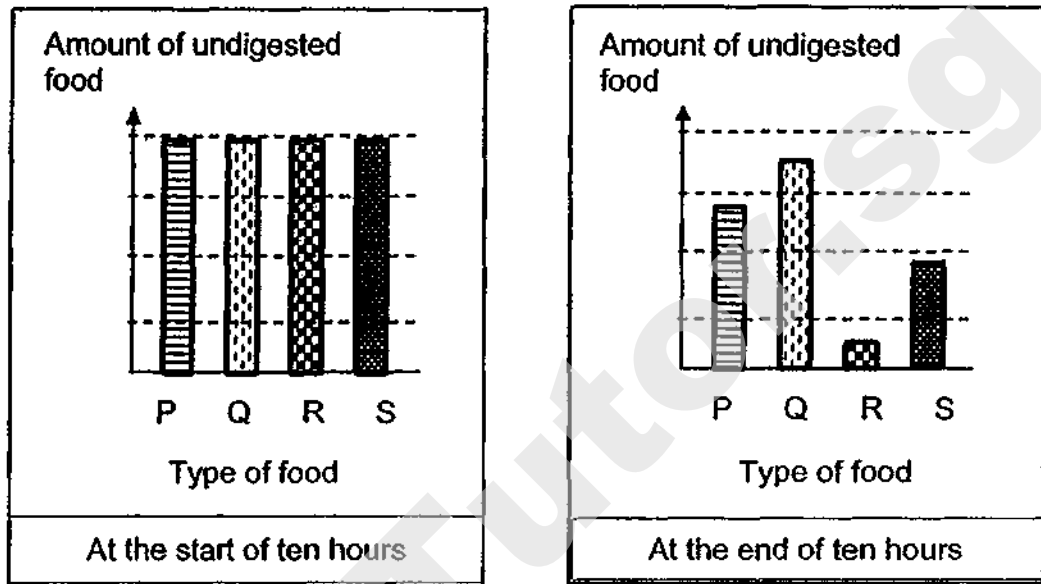


Which one of the following correctly identifies the characteristics of the fruit and seeds of plants X and Y?

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

7. Four different types of food, P, Q, R and S, were mixed with digestive juices when passed through the digestive system.

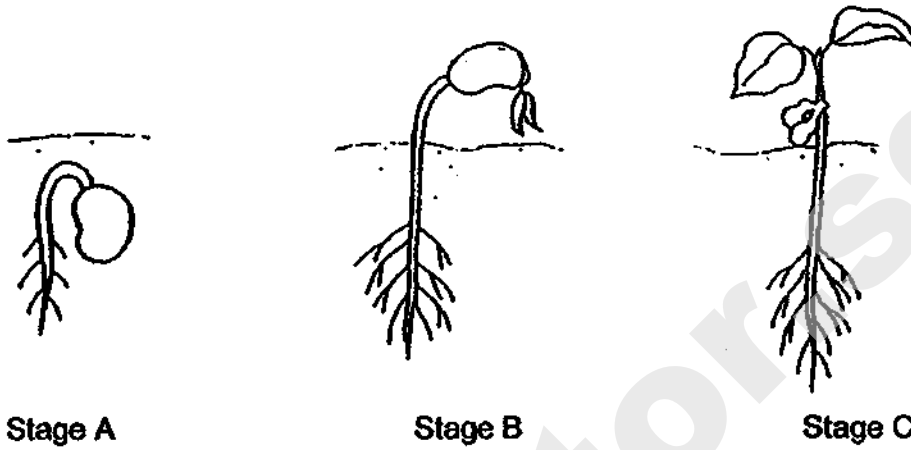
The graphs below show the amount of undigested food left at the start and at the end of ten hours.



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

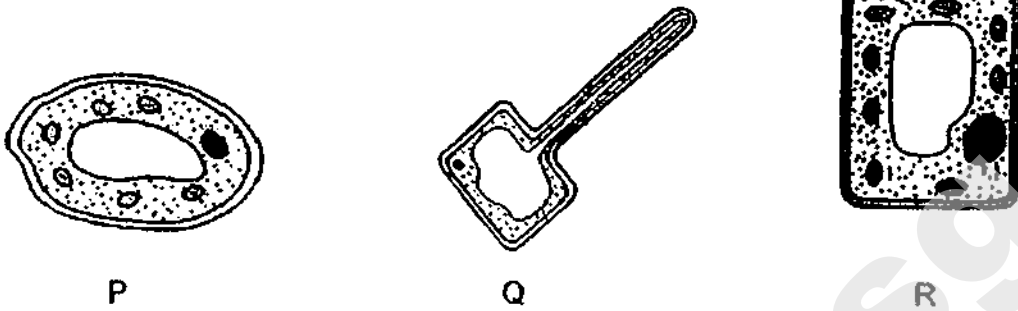
8. The diagram below shows the different stages of development, A, B, and C, of a plant.



At which stage(s) shown above does/do the seed leaves provide food for the plant to grow?

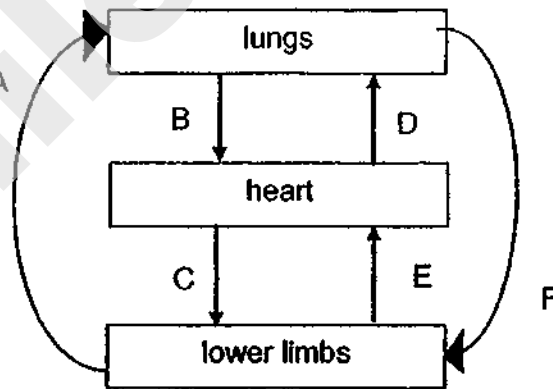
- (1) A only
- (2) B only
- (3) A and B only
- (4) A, B and C

9. The diagrams below show three cells P, Q and 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

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.

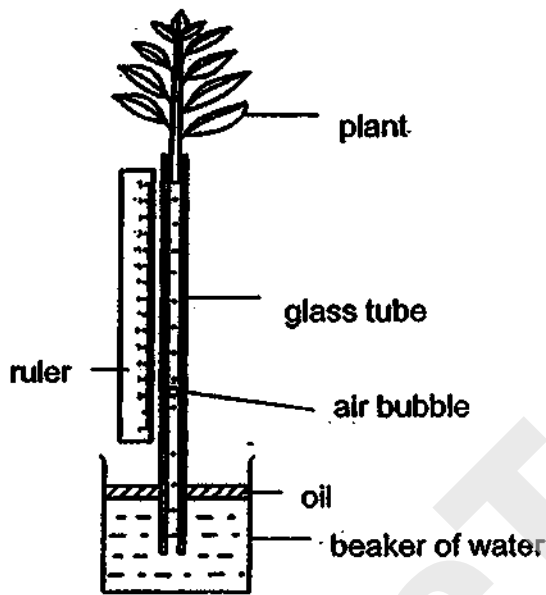


Diagram 1

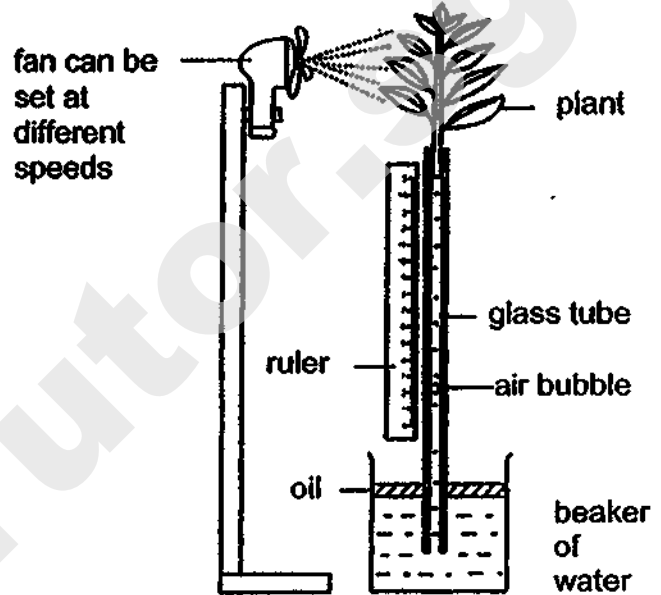
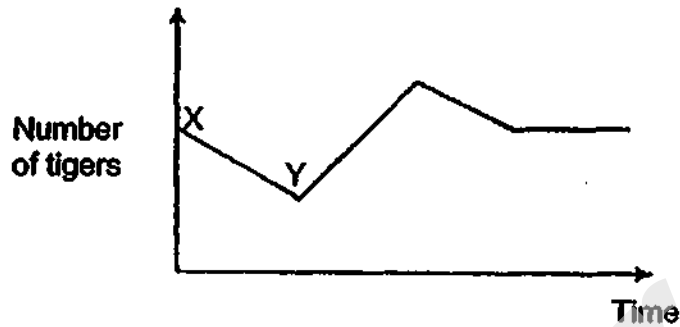


Diagram 2

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.

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

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



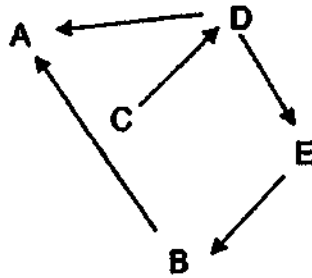
14. The number of organisms in a pond is shown in the table below.

<b>Organisms</b>	<b>Number of organisms</b>
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?

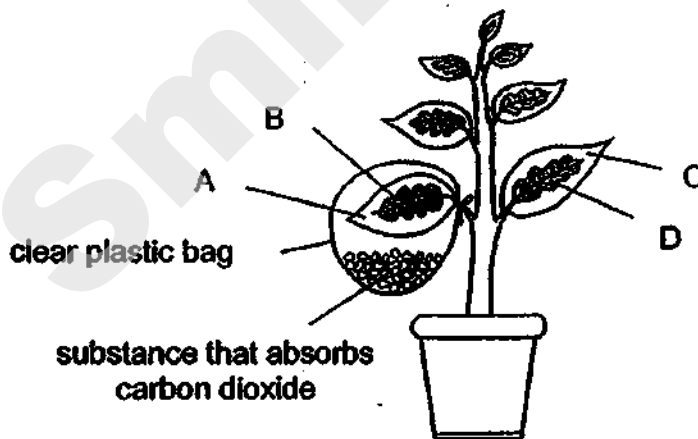
- (1) There is 1 habitat and 5 populations.
- (2) There is 8 communities and 1 habitat.
- (3) There is 1 community and 8 populations.
- (4) There are 55 populations and 5 communities.

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?

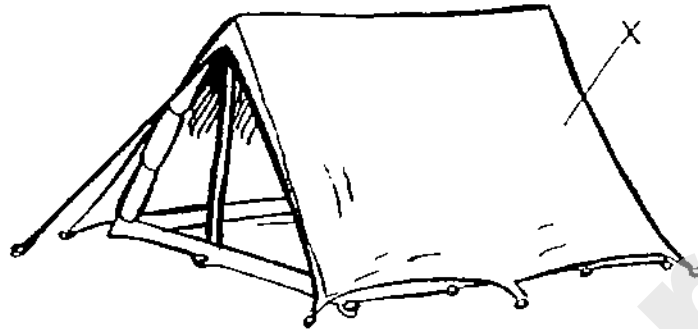
- (1) Population A will increase.
  - (2) Population E will decrease.
  - (3) Population C will decrease.
  - (4) Population B will remain unchanged.
16. Peter wanted to find out if carbon dioxide is needed for photosynthesis. He used a plant which had green areas in the middle and white areas around 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

17. The diagram below shows a tent.



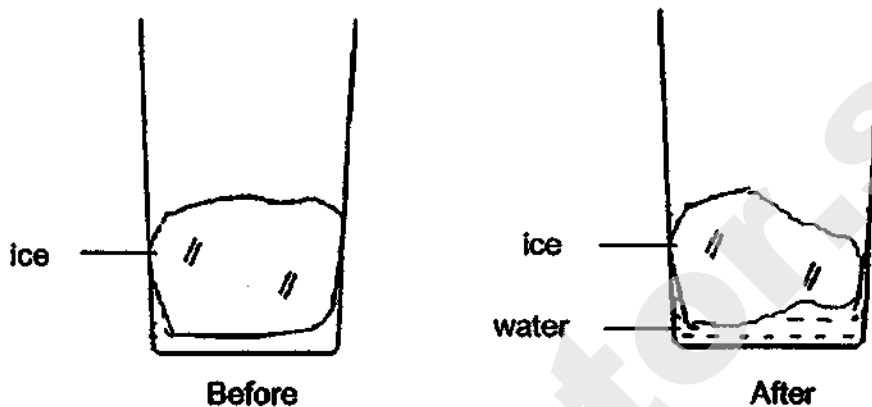
Study the properties of the four materials shown below.

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

18. The diagram below shows a container containing an ice block left in an air-conditioned room with a constant temperature of  $18^{\circ}\text{C}$  and the change observed after five minutes.

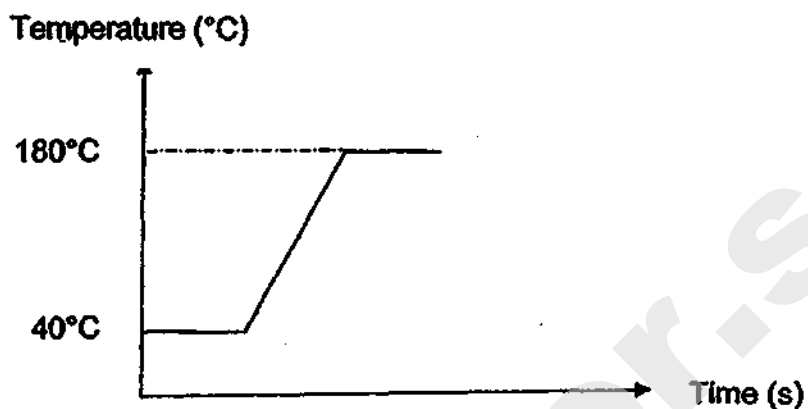


Which of the following statement(s) is / are correct?

- A The temperature of ice remained at  $0^{\circ}\text{C}$ .
- B The temperature of ice and water rose to  $18^{\circ}\text{C}$ .
- C The ice melted as it gained heat from the water only.
- D The temperature of water remained at  $0^{\circ}\text{C}$  when the ice is melting.

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

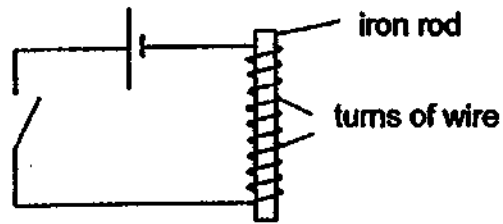
19. The graph below shows the temperature of solid substance X when heated.



Which one of the following shows correctly the state(s) of substance X at 20°C and at 210°C?

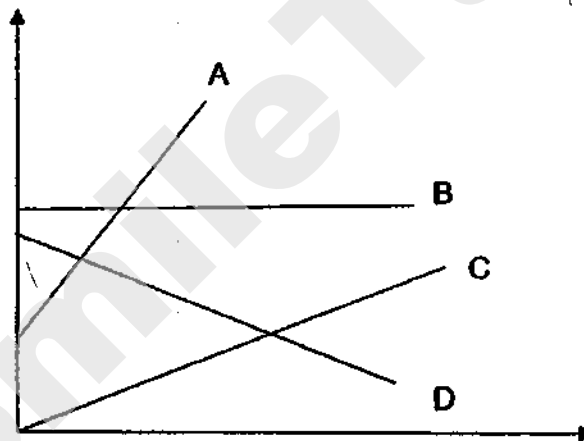
State of substance X at	
20°C	210°C
(1) solid	liquid
(2) solid	gas
(3) liquid	gas
(4) liquid	liquid

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.

Number of pins attracted

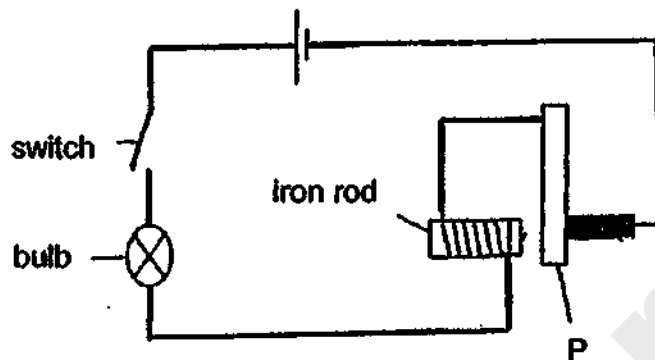


Number of batteries

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

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.

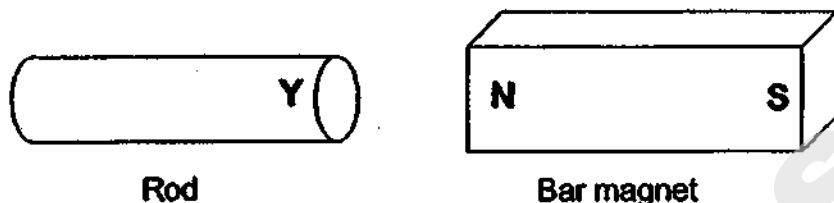


However, when William turned on the switch, he observed the bulb lit up. The bulb only went off when he turned off the switch.

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

22. Similar rods of different materials were placed near a bar magnet as shown below.



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.

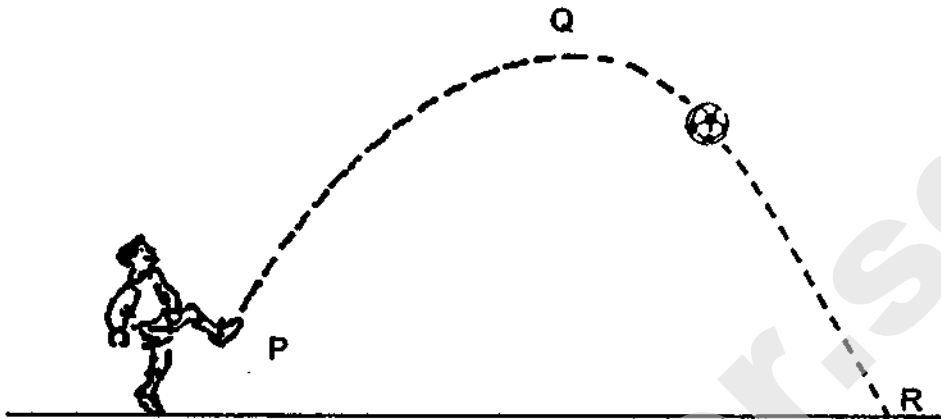
Material of Rod	North-seeking pole	South-seeking pole
<b>A</b>	Attracts	Repels
<b>B</b>	Attracts	Attracts
<b>C</b>	Repels	Attracts
<b>D</b>	Remains in its original position	Remains in its original position

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.



23. Ah Seng kicked a soccer ball with his foot. The diagram below shows the path of the ball after he had kicked it.

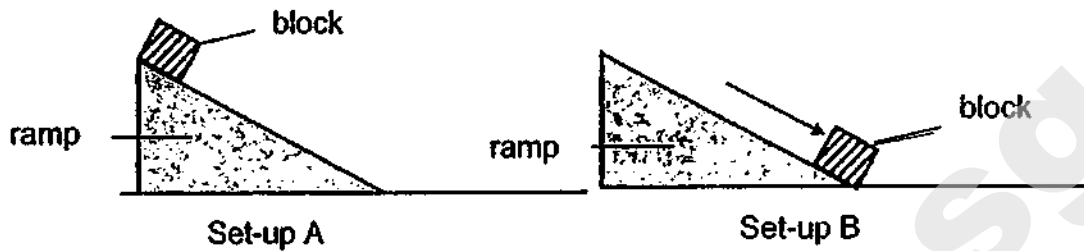


Which of the following statements about the soccer ball is/are true?

- 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

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.

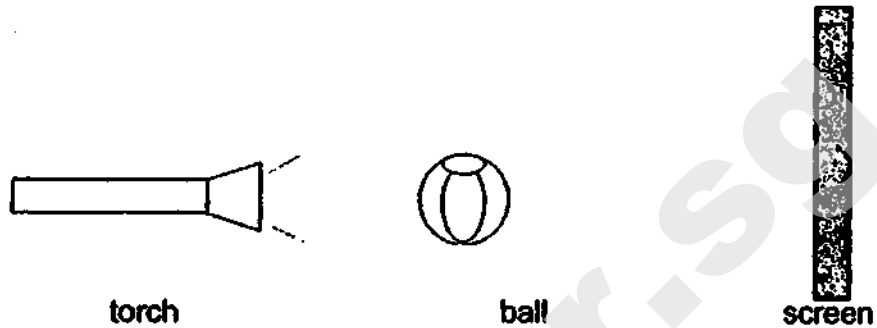


Which of the following statements is/are likely explanation(s) for the observation?

- 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

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.

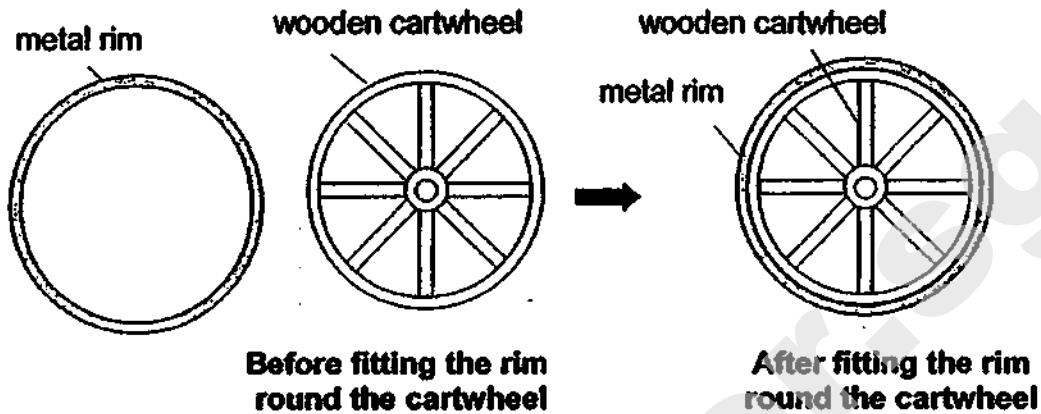


What could Mary do to cast a smaller shadow on the screen?

- 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

26. John was instructed by his uncle to fit a metal rim tightly round the wooden cartwheel, as shown in the diagrams below.



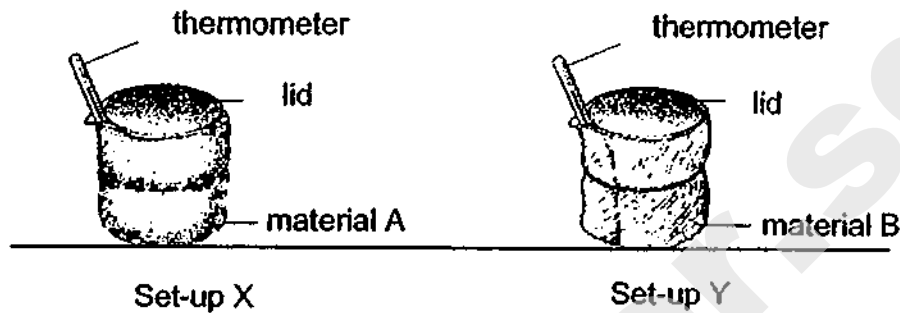
However, the metal rim that John had was too small to fit round the wooden cartwheel. His uncle suggested two steps to complete the task.

Which of the following steps would allow John to fit the metal rim tightly round the wooden cartwheel in the shortest time?

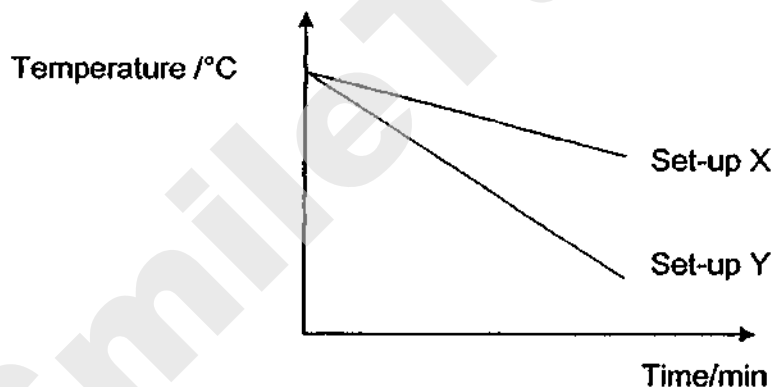
- A Immerse the metal rim and wooden cartwheel in cold water before fitting the metal rim round the cartwheel.
- B Heat the metal rim and immerse the wooden cartwheel in cold water before fitting the metal rim around the cartwheel.
- C Immerse the metal rim and cartwheel in hot water after fitting the 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

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.



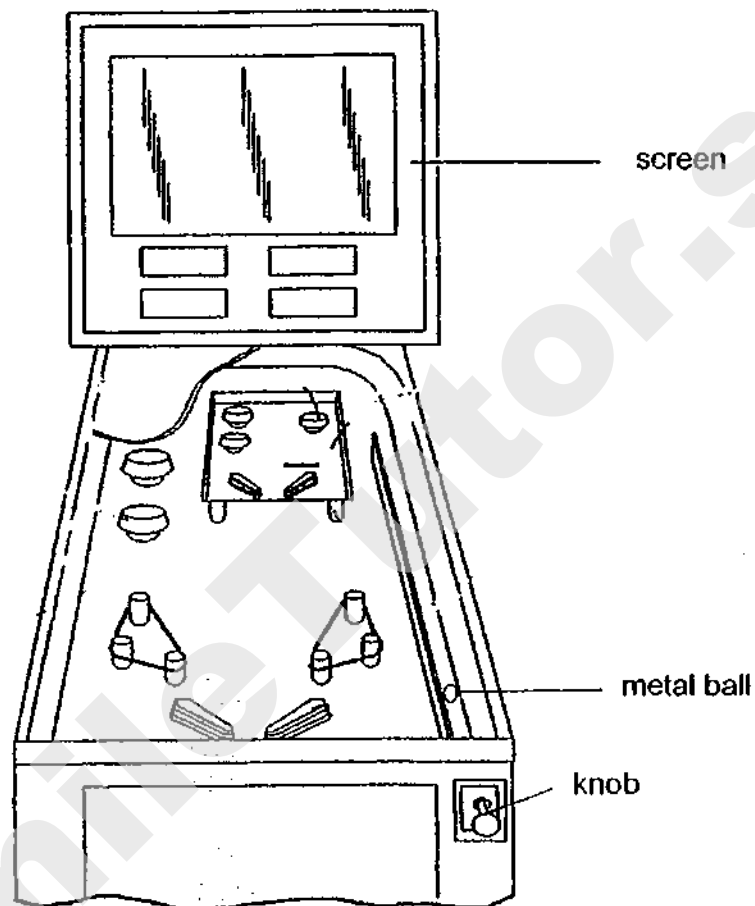
The graph shows the temperature in both set-ups over 10 minutes.



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.

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 lit 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  $\rightarrow$  electrical energy  $\rightarrow$  sound energy + light energy
- (2) elastic potential energy  $\rightarrow$  kinetic energy  $\rightarrow$  sound + light energy
- (3) elastic potential energy  $\rightarrow$  electrical energy  $\rightarrow$  kinetic + sound energy
- (4) kinetic energy  $\rightarrow$  elastic potential energy  $\rightarrow$  kinetic  $\rightarrow$  sound + light energy

**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.

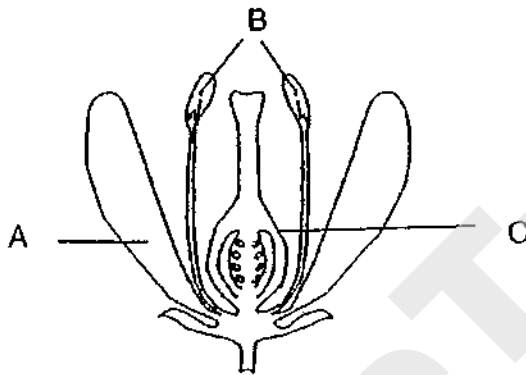


Diagram 1

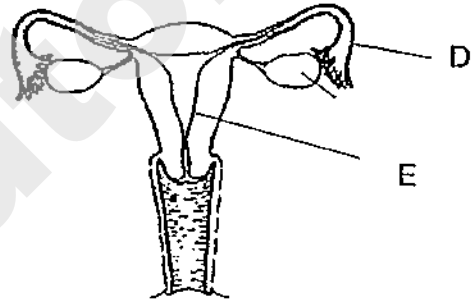


Diagram 2

- (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]

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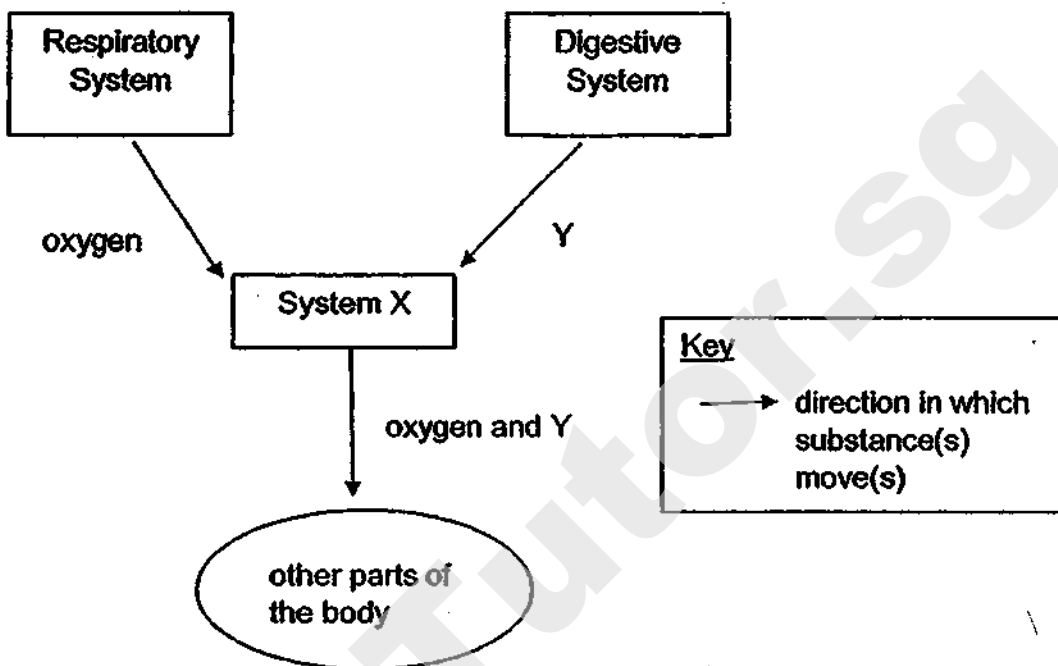
- (b) Based on the two diagrams above, which parts, A, B, C, D, E, correctly identify where fertilisation takes place in the plant and human reproductive systems? [1]

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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]

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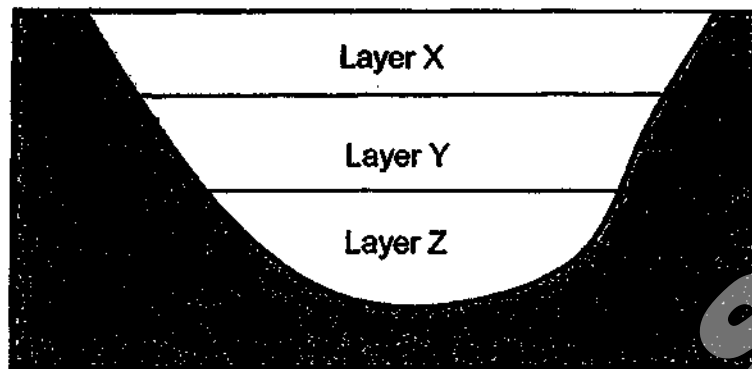
- (c) Explain why oxygen and substance Y are needed to be transported to other parts of the body. [1]

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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.

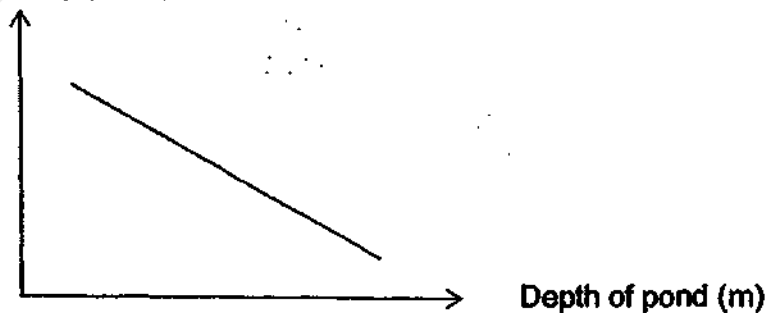
Layer of the pond	Temperature of pond (°C)	Number of organisms
X	18 to 24	22
Y	7 to 17	14
Z	4 to 6	4

(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.

Light intensity (units)



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]

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Score	2
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Continue on next page

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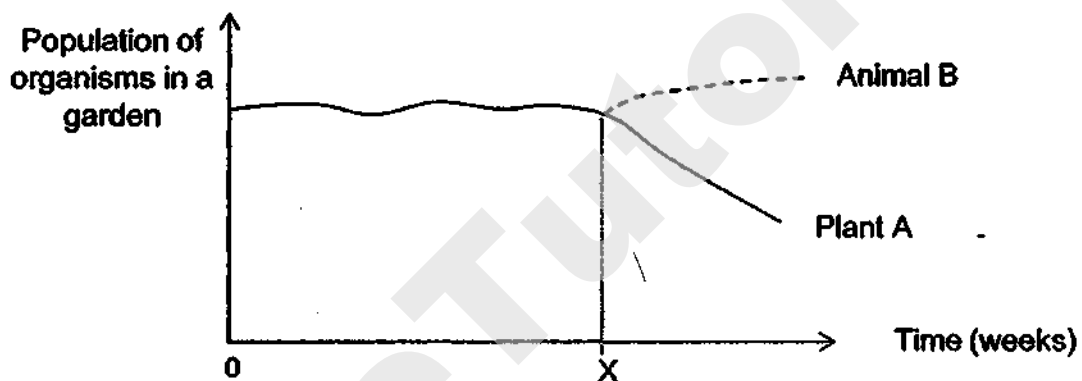
- (c) The number of plants floating on Layer X of the pond increases significantly. What would happen to the number of animals in Layer Z if they feed on Plants in Layer Z? Explain your answer. [2]

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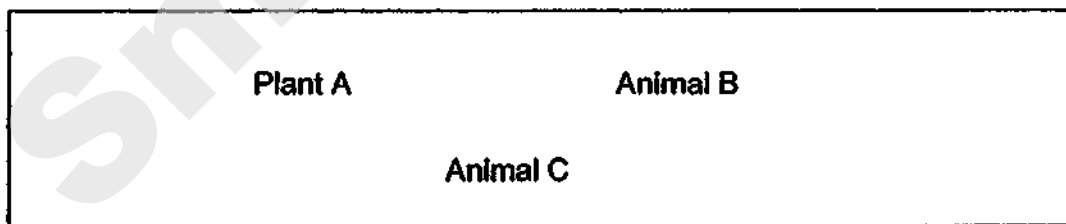


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32. The graph below shows the population of plant A in a garden. Animal B was introduced into the garden at point X.



- (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)

Score	
	4

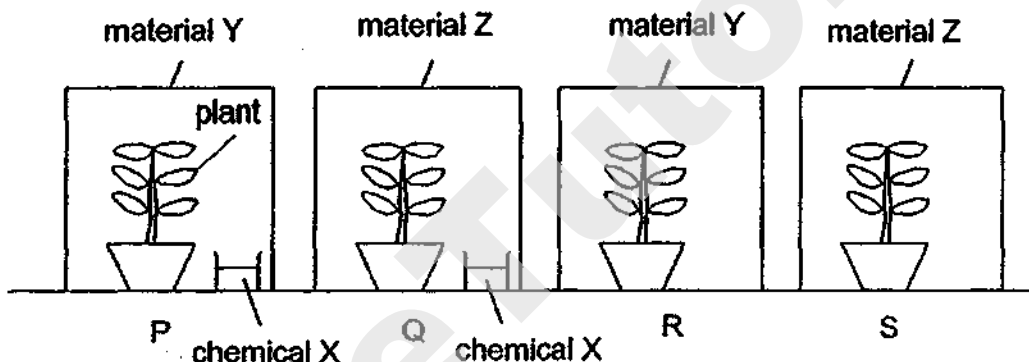
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- (c) What would happen to the population size of Animal B if population of Animal C was wiped out by a disease? Explain your answer. [2]

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---

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]

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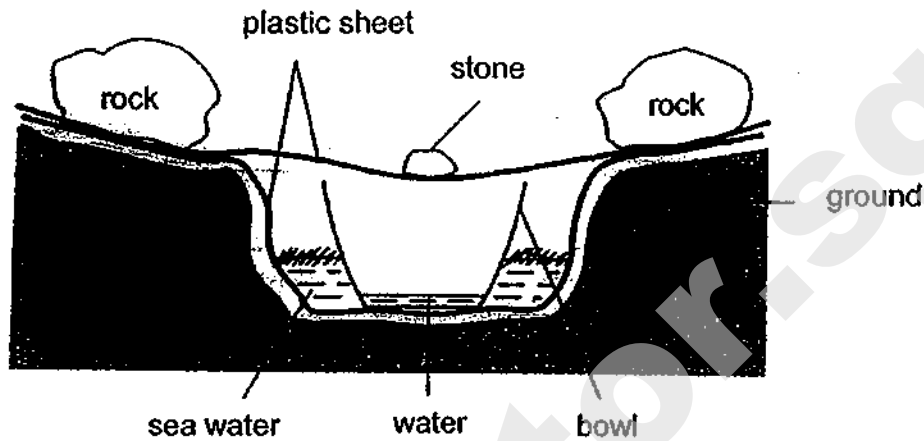
- (b) Which pair of set-ups can be used to show carbon dioxide is needed for photosynthesis to take place? Explain your answer. [2]

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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]

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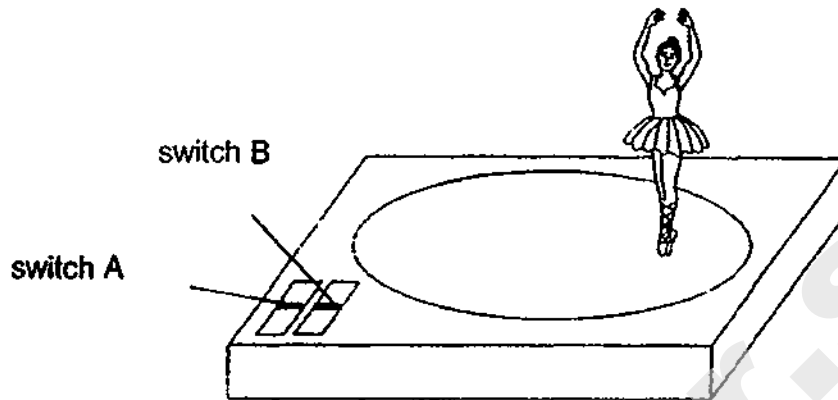
- (b) Explain your answer in (a) [2]

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Score	3
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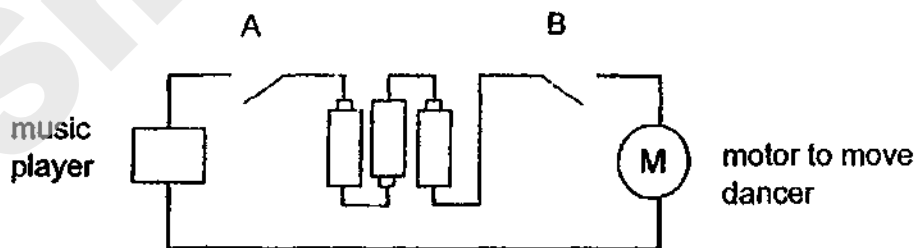
35. Maison has a toy that works on batteries as shown in the diagram below.



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]

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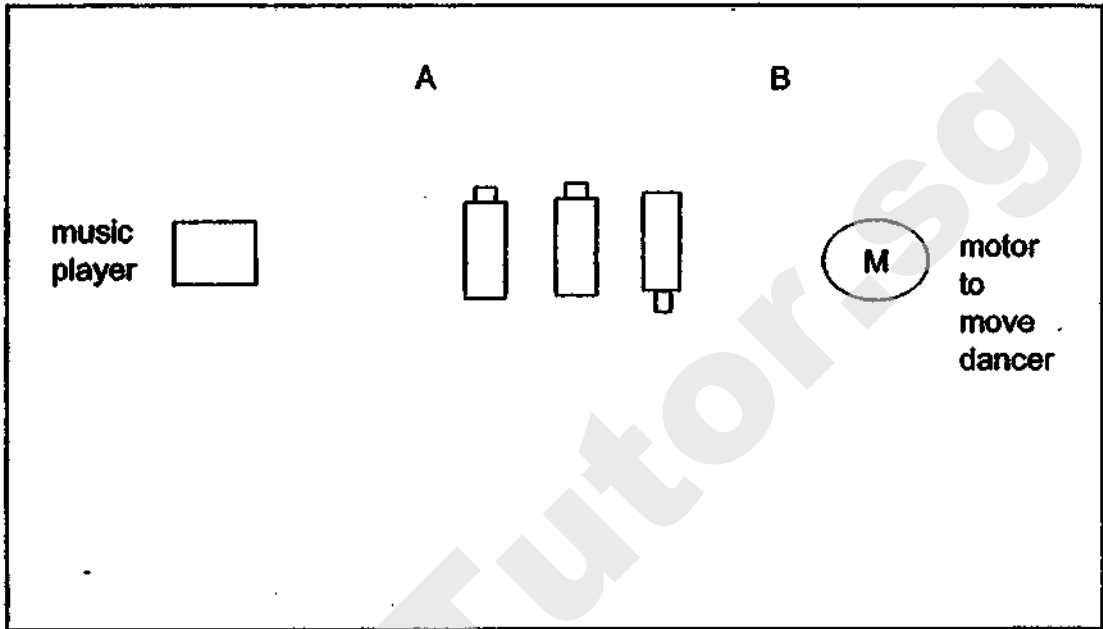


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Score	/
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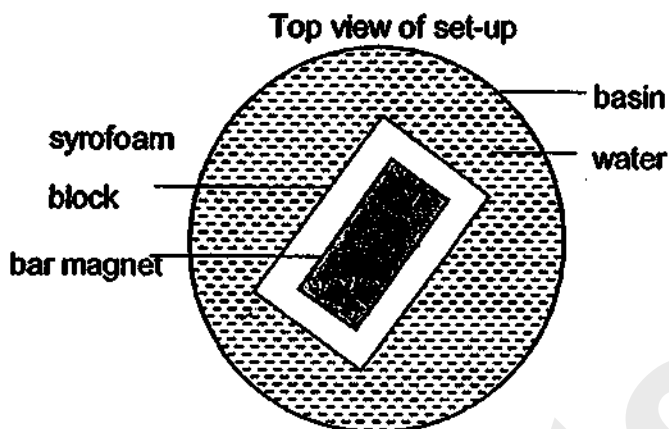
(b) In the space provided, draw 3 wires to complete the arrangement correctly below to show the observations made by Maison. [2]



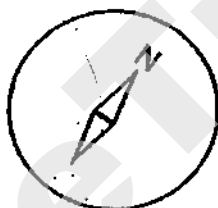
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36. Ahmad taped a bar magnet with poles X and Y, onto a piece of styrofoam block and spun it ten times in a basin of water. The diagram below shows the top view of the set-up when the magnet was at rest. The bar magnet always came to rest in the direction as shown in the diagram below.

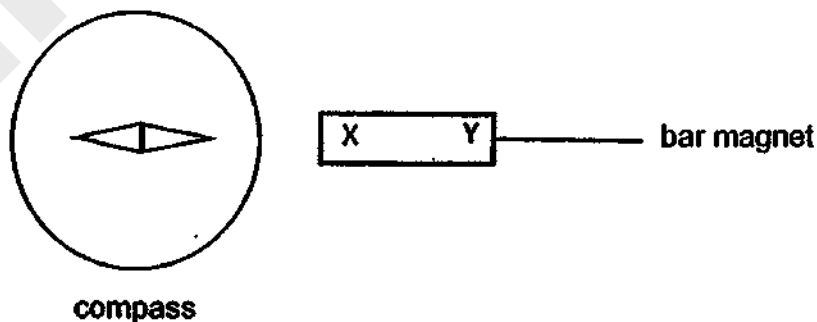


The direction North is shown in the compass below.



- (a) Based on Ahmad's results, which property of magnets is shown in his observation? [1]

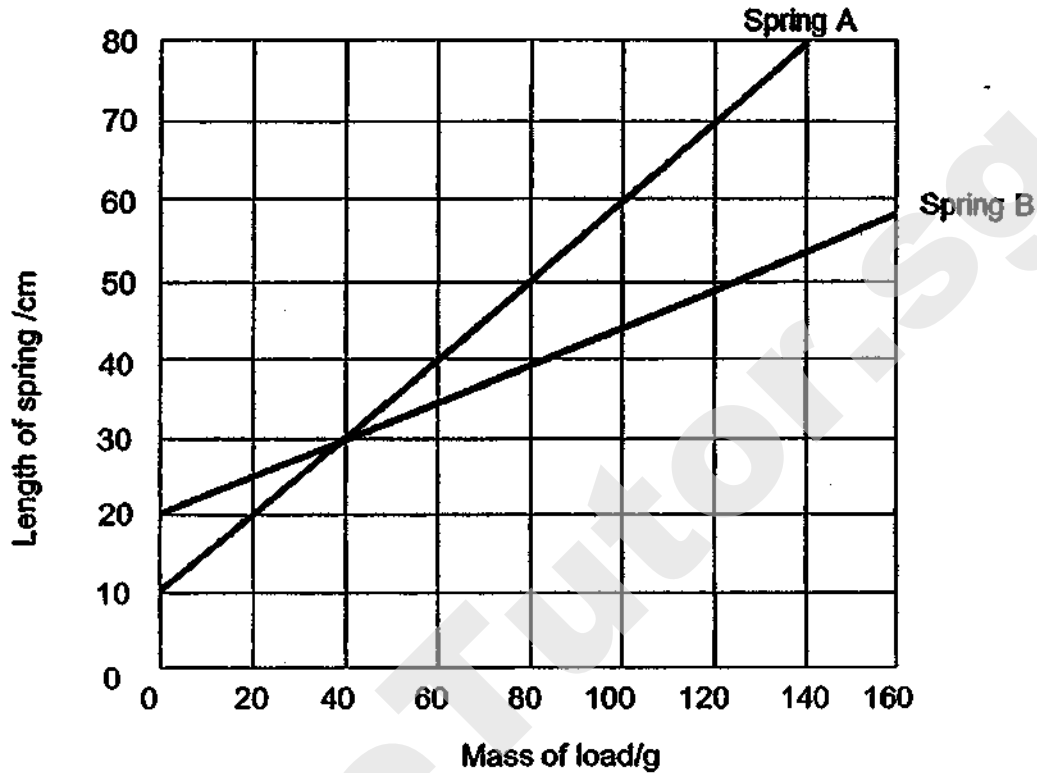
- (b) The diagram below shows the bar magnet placed near a compass.



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	2
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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.

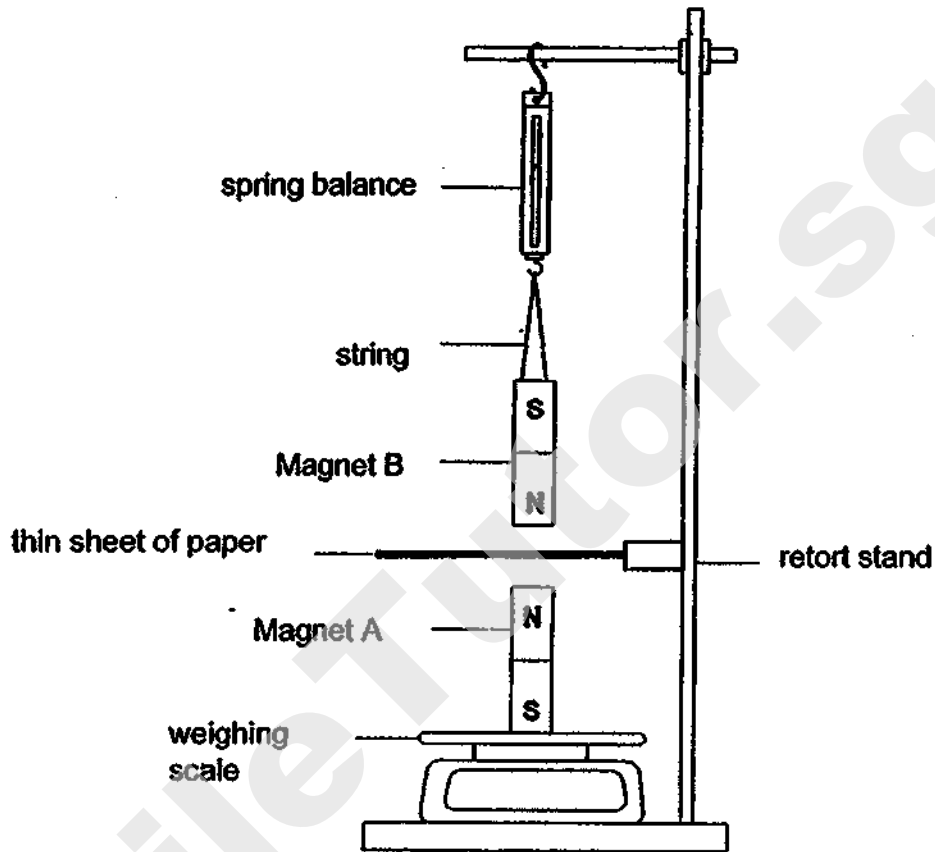


- (a) What is the length of Spring A when 40 g load is added to Spring A? [1]
- 
- (b) Which Spring, A or B, will extend more when 100g load is added? [1]
- 
- (c) Based on the graph above, what is the relationship between the length of the spring and the mass of the load added? [1]
- 

Score	3
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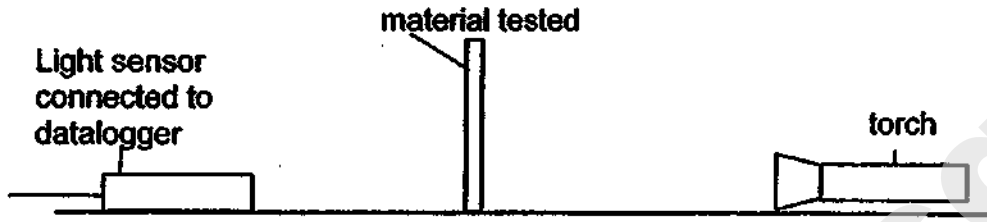
38. Mrs. Lee set up an experiment using two identical strong magnets as shown in the diagram below. Both Magnets A and B have a weight of 1 N each. (N stands for Newtons which is the unit for force).



- (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]
- 

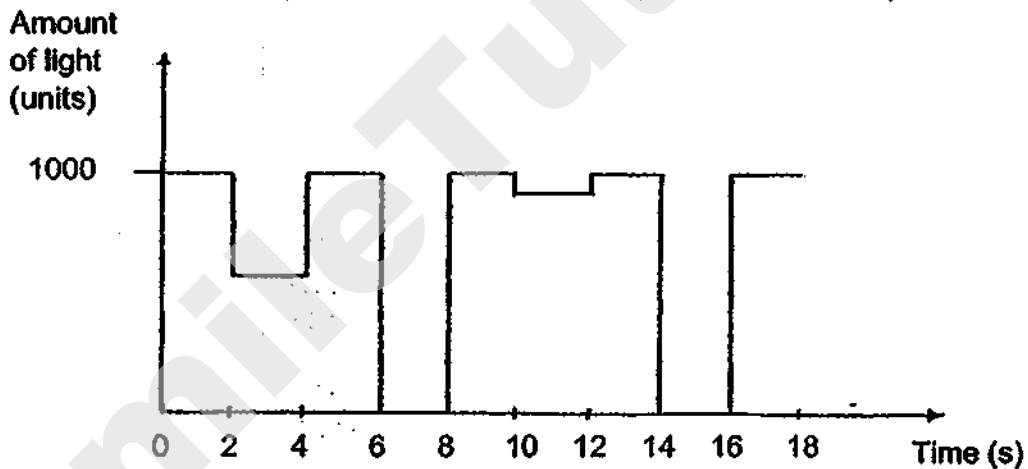
Score	3
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39. Andy set up an experiment to investigate the degree of transparency of four different materials. The diagram below shows Andy's experiment set-up.



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]

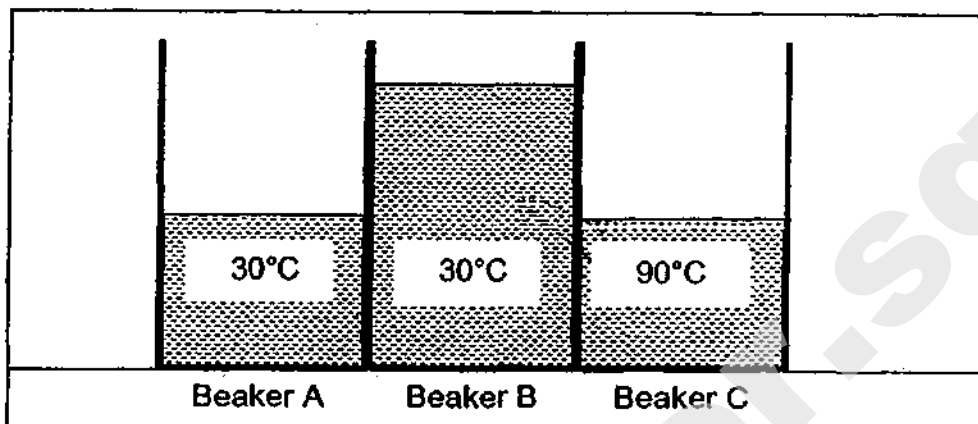
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Score	/
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40. Three identical beakers of water at different temperatures were placed side by side as shown below during a Science experiment.



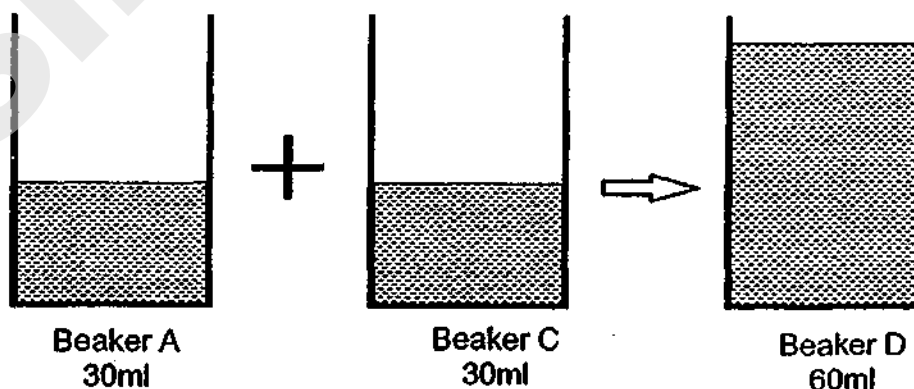
- (a) On the diagram above, draw an arrow to indicate the direction of heat transfer between water in beaker B and C at the beginning of the experiment. [1]
- (b) Compare the amount of heat energy in beakers A and B at the beginning of the experiment. Explain your answer. [1]

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- (c) The teacher told her pupils to mix water from beaker A and beaker C together into one beaker as shown below.



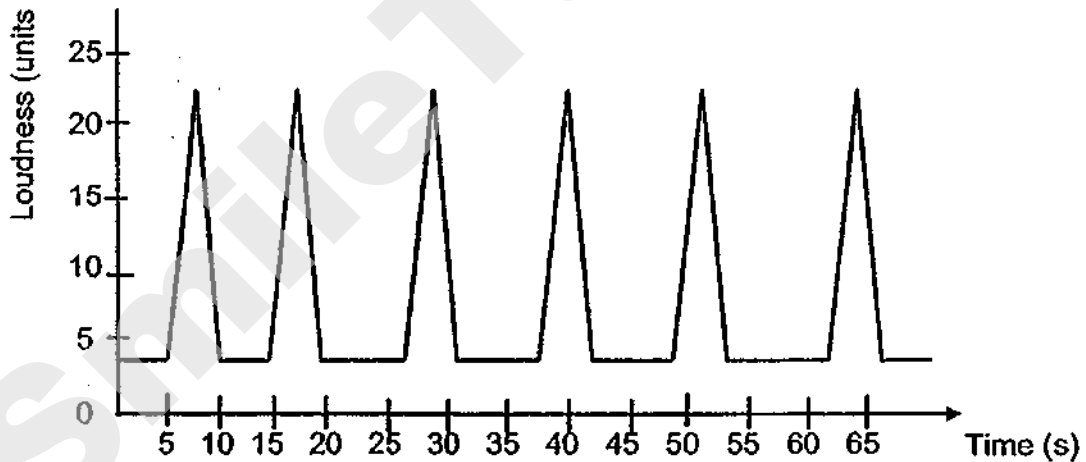
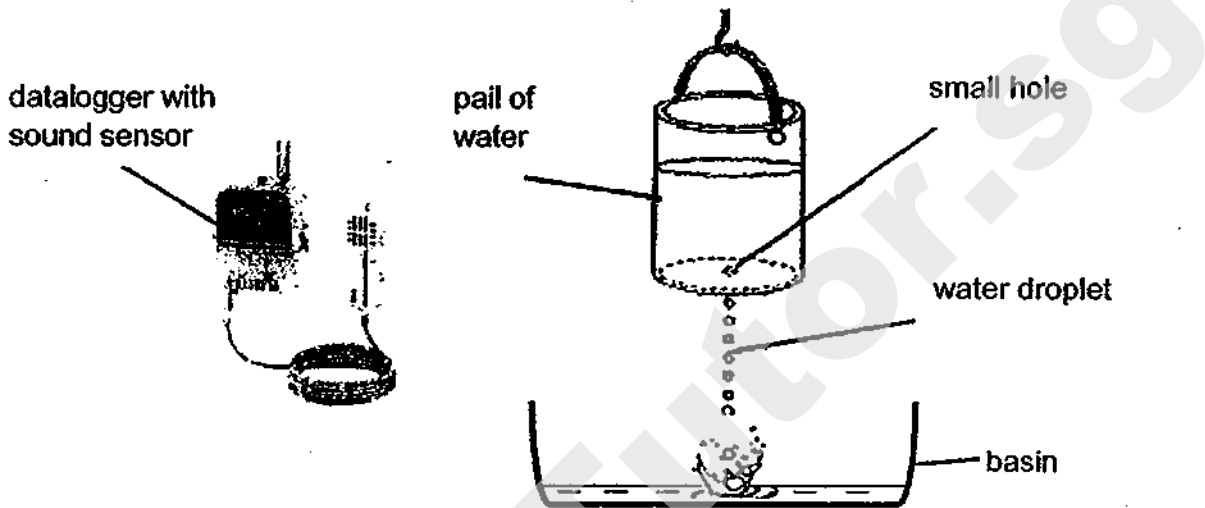
- (d) What is likely to be the temperature of water in Beaker D? [1]

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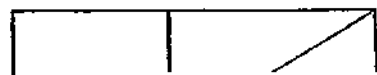
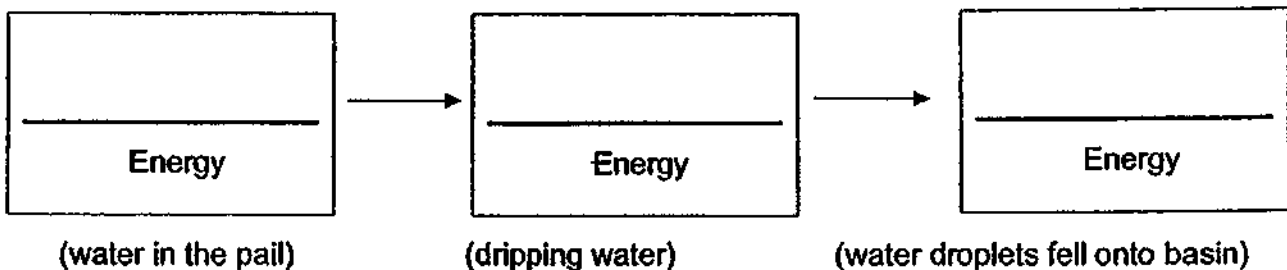
Score	/
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41. A pail of water was hung above a basin as shown below. A very small hole was made at the bottom of the pail for the water to drip into the basin. A sound was produced each time as each water droplet fell on the basin.

Gerard 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]



Score  
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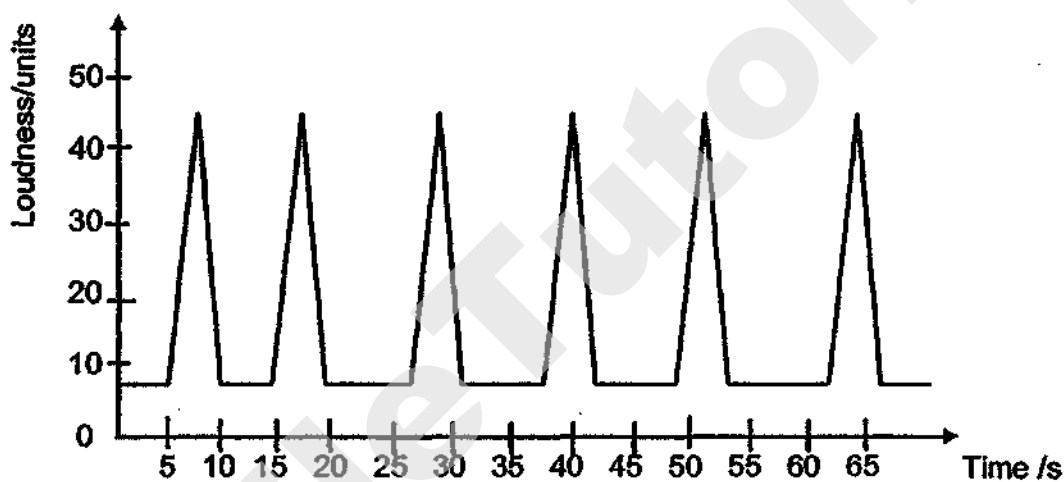
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- (b) What happened to the loudness indicated by the sound sensor if Gerald raised the pail of water higher from the basin? Explain your answer. [2]

---

---

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]

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End of Paper

Score	2
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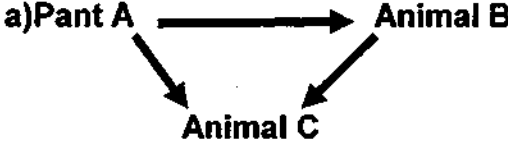
**SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**

**SECTION A**

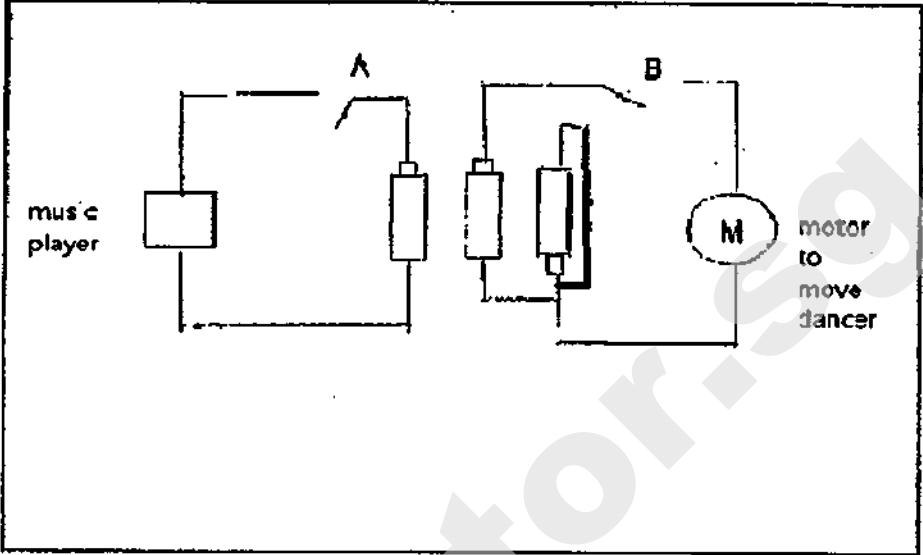
Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	3	1	3	3	1	3	3	1	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	1	1	1	2	3	2	3	2	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	2	2	4	4	4	1	4		

**SECTION B**

Q29)	<p>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.</p> <p>b)C and D.</p>
Q30)	<p>a)Circulatory system.</p> <p>b)digested food.</p> <p>c)To provide energy for the human.</p>
Q31)	<p>a)The higher the temperature of the pond, the greater the number of organisms in it.</p> <p>b)The number of organisms in the pond would decrease.</p> <p>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.</p>

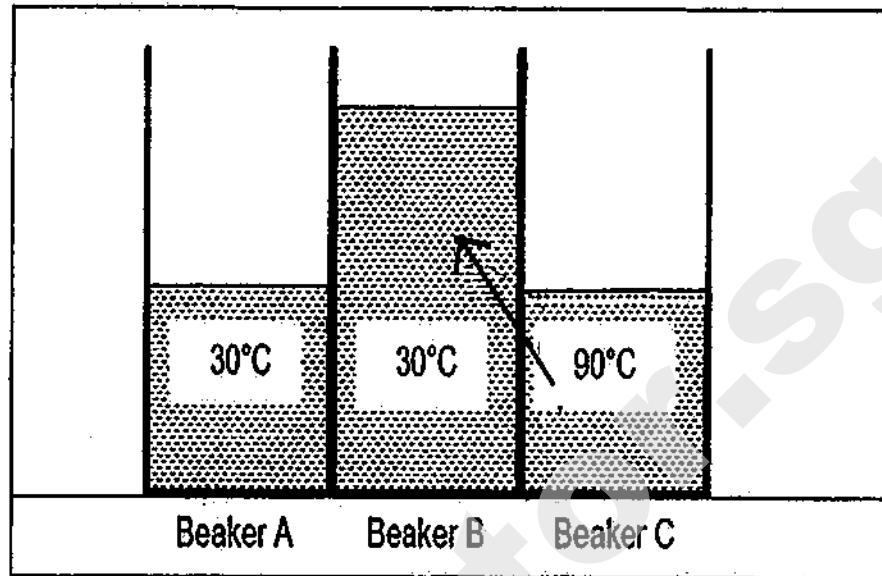
<p><b>Q32)</b></p>	<p>a) </p> <p>b) B / C</p> <p>c) The population of Animal B will increase. As there would be no predator animal C, to prey on animal B. There will also be more food, plant A for animal B since there will be no animal C feeding on plant A.</p>
<p><b>Q33)</b></p>	<p>a) It does not allow 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. Photosynthesis can only take place when light is present.</p> <p>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.</p>
<p><b>Q34)</b></p>	<p>a) The amount of water collected would be greater.</p> <p>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.</p>
<p><b>Q35)</b></p>	<p>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.</p>



	<p>b)</p> 
<p>Q36)</p>	<p>a) A freely suspended magnet will come to rest in a north-south direction.</p> <p>b) Unlike poles of the bar magnet and needle are facing each other and they attract.</p>
<p>Q37)</p>	<p>a) 30cm</p> <p>b) spring A</p> <p>c) The heavier the mass of the load added, the longer the length of the spring.</p>
<p>Q38)</p>	<p>a) Elastic potential energy, magnetic force.</p> <p>b) i) more than 1N. ii) less than 1N.</p> <p>c) 1N. 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.</p>
<p>Q39)</p>	<p>a) 2, 3, 1, 4</p> <p>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.</p>

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°C

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.

**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.

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**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.

( )

2. The table below shows some information about three different organisms, X, Y and Z.

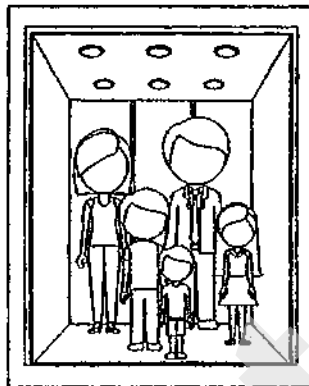
Organism	Information
X	<ul style="list-style-type: none"> <li>• Weak stem</li> <li>• Pollinated by wind</li> </ul>
Y	<ul style="list-style-type: none"> <li>• Lives in a desert</li> <li>• Walks on sandy grounds</li> </ul>
Z	<ul style="list-style-type: none"> <li>• Spends most of the time in the water</li> <li>• Feeds on animals which are active at night</li> </ul>

Which one of the following descriptions shows the correct adaptations of the three organisms respectively?

	Organism X	Organism Y	Organism Z
(1)	<ul style="list-style-type: none"> <li>• Has climbing stem</li> <li>• Bright coloured flowers</li> </ul>	<ul style="list-style-type: none"> <li>• Large ears</li> <li>• Sharp vision</li> </ul>	<ul style="list-style-type: none"> <li>• Streamlined body</li> <li>• Good night vision</li> </ul>
(2)	<ul style="list-style-type: none"> <li>• Has climbing stem</li> <li>• Stigma hanging outside petals</li> </ul>	<ul style="list-style-type: none"> <li>• Sweats very little</li> <li>• Padded feet</li> </ul>	<ul style="list-style-type: none"> <li>• Streamlined body</li> <li>• Webbed feet</li> </ul>
(3)	<ul style="list-style-type: none"> <li>• Has thorns</li> <li>• Feather-like stigma</li> </ul>	<ul style="list-style-type: none"> <li>• Urinates very little</li> <li>• Webbed feet</li> </ul>	<ul style="list-style-type: none"> <li>• Short wingspan</li> <li>• Good sense of hearing</li> </ul>
(4)	<ul style="list-style-type: none"> <li>• Has climbing stem</li> <li>• Anthers hanging outside petals</li> </ul>	<ul style="list-style-type: none"> <li>• Active at night</li> <li>• Sharp claws</li> </ul>	<ul style="list-style-type: none"> <li>• Waxy feathers</li> <li>• Long beaks</li> </ul>

( )

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.

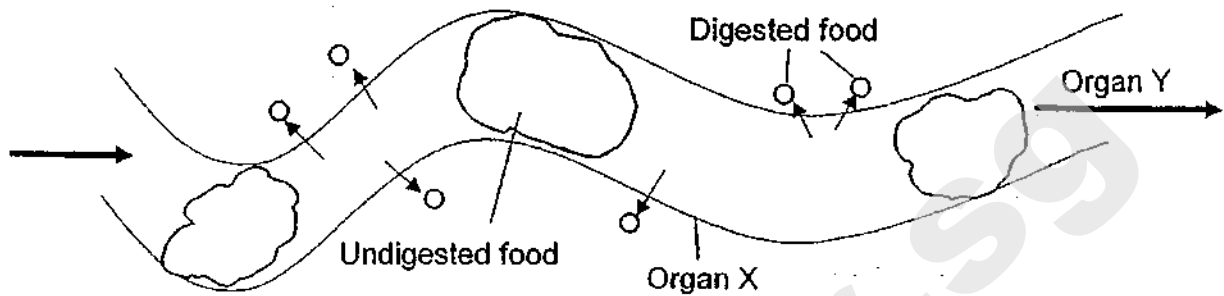


Which one of the following correctly shows the changes in the composition of gases in Tom's blood after half an hour of being trapped in the lift?

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

( )

4. The diagram below shows a part of the human digestive system.



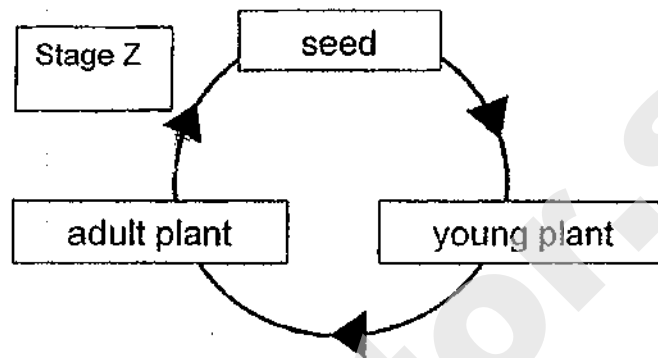
Which of the following shows the correct Organs X and Y?

	X	Y
(1)	Small intestine	Large intestine
(2)	Stomach	Small intestine
(3)	Gullet	Stomach
(4)	Large intestine	Anus

( )



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

( )

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

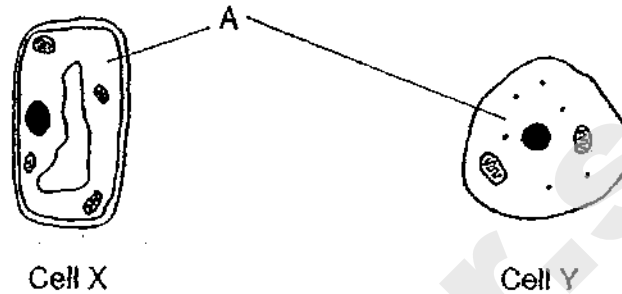
( 2 ) B and C only

( 3 ) C and D only

( 4 ) A, B and C only

( )

7. Two cells X and Y are shown below.



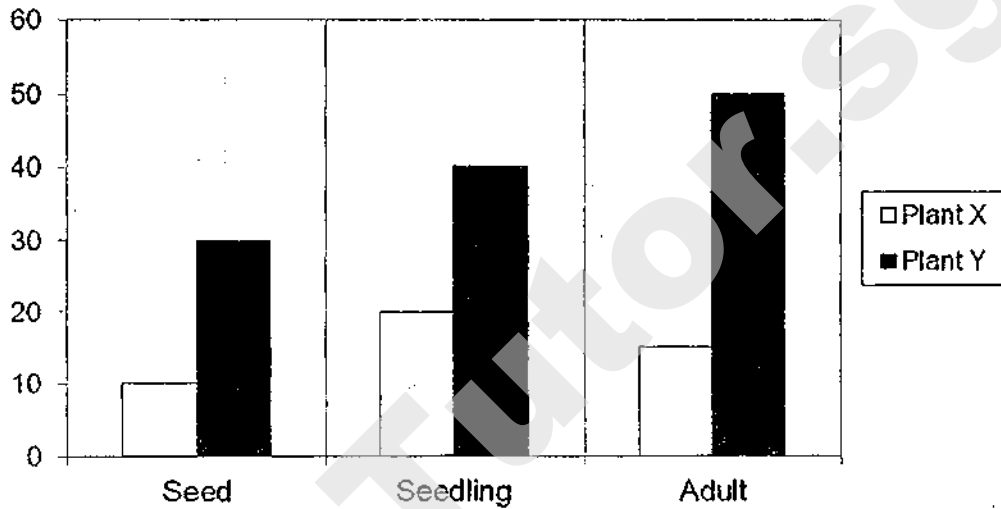
Which of the following gives the correct classification of the cells and the function of Part A?

	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

( )

8. The graph below shows the number of days of each stage of the life cycles of plants X and Y.

Number of days

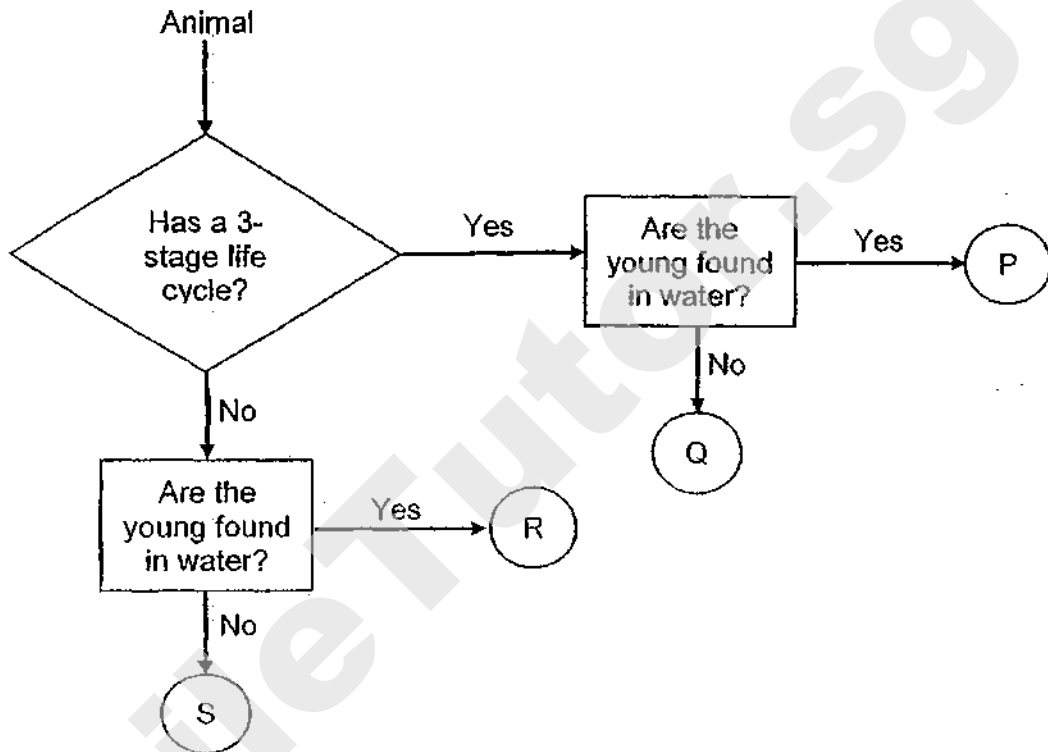


In which stage would Plants X and Y be on the 40th day of their life cycle?

	Plant X	Plant Y
( 1 )	Adult	Seedling
( 2 )	Seed	Adult
( 3 )	Adult	Adult
( 4 )	Seedling	Seedling

( )

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

( )

10. The table below compares the life cycles of animal A and B.

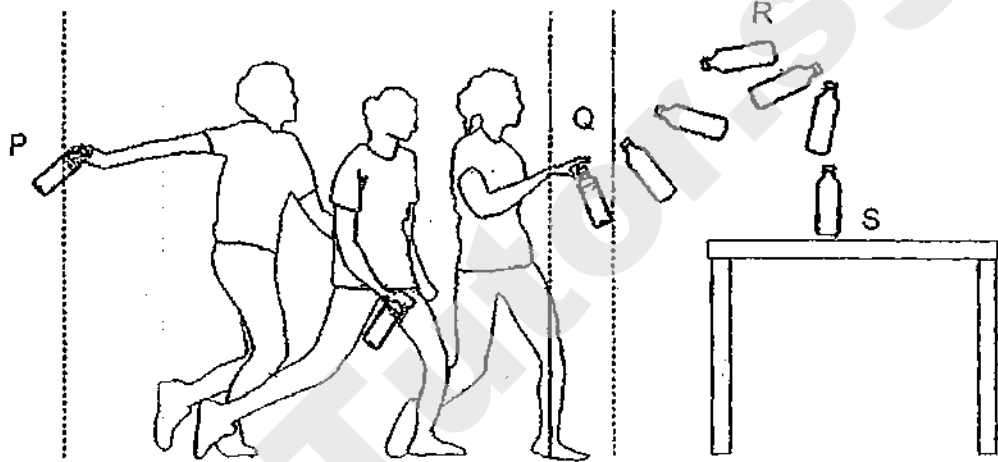
Characteristics	A	B
4 stages in the life cycle	No	Yes
Lays eggs on land	No	Yes
The young resembles the adult	Yes	No
It is a pest during the larva stage	No	Yes

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

( )

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.

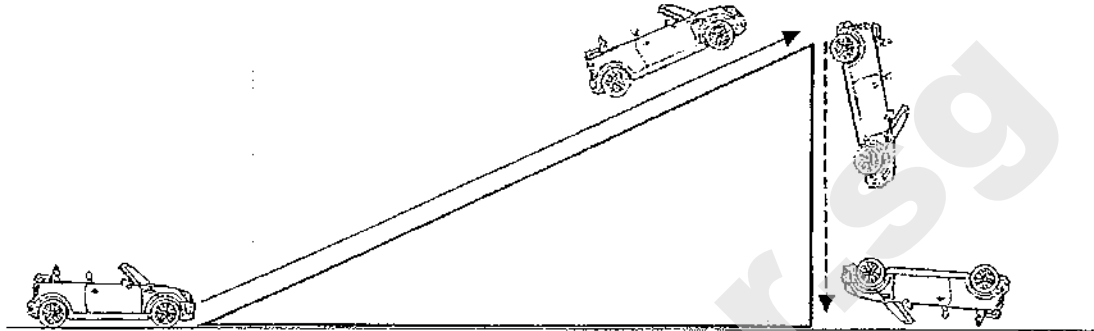


Which one of the following statements is true?

- (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.

( )

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.

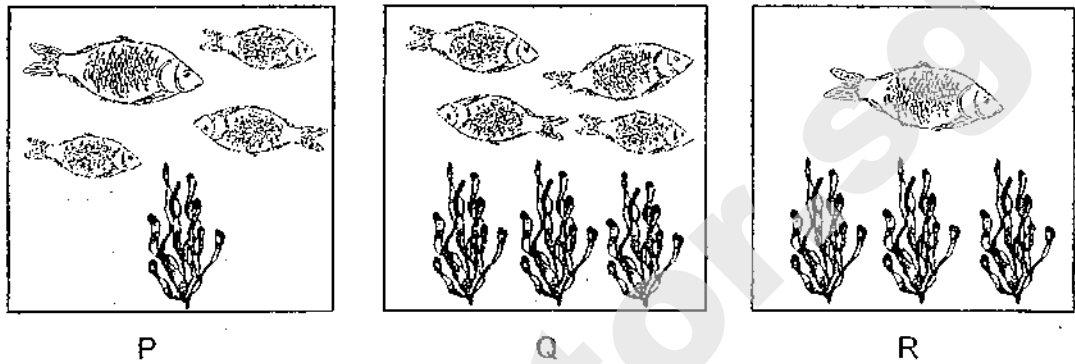
Which one of the following correctly shows the correct energy conversion which took place after she pressed the "GO" button on her remote control?

- (1) kinetic energy  $\rightarrow$  potential energy  $\rightarrow$  sound + heat energy
- (2) electrical energy  $\rightarrow$  potential energy  $\rightarrow$  sound + heat energy
- (3) potential energy  $\rightarrow$  electrical energy  $\rightarrow$  kinetic energy  $\rightarrow$  sound + heat energy
- (4) potential energy  $\rightarrow$  electrical energy  $\rightarrow$  potential energy  $\rightarrow$  sound + heat energy

( )



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.



After 3 hours, she measured the amount of dissolved oxygen in the water in Tank Q.

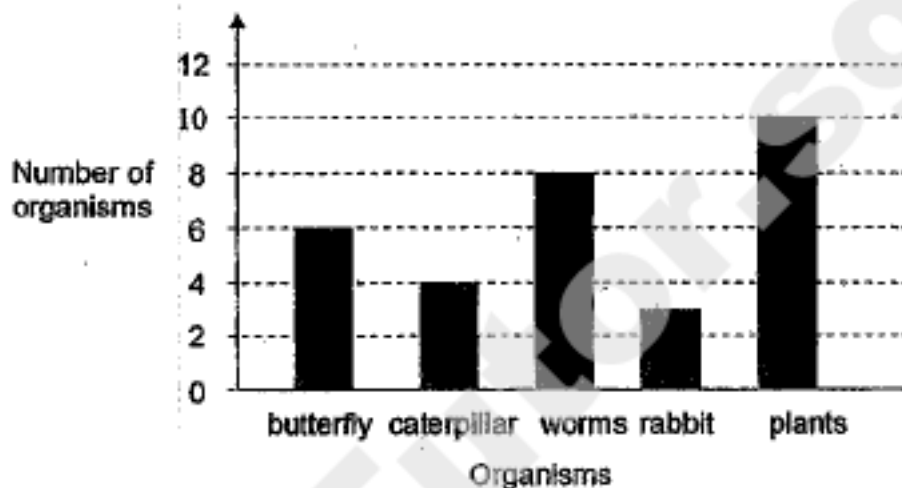
	After 3 hours
Amount of dissolved oxygen in Tank Q	15 units

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

( )

14. Deming observed the organisms found in a garden and recorded the number of each organism in a graph as shown below.

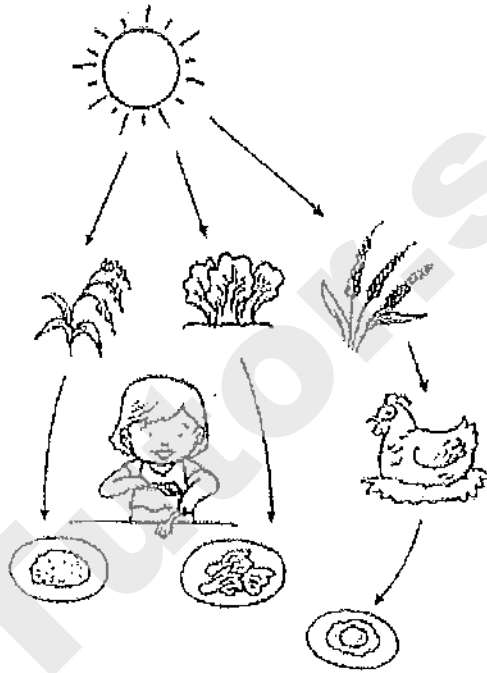


Based on the information given above, which of the following statements are definitely correct?

- 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

( . )

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.

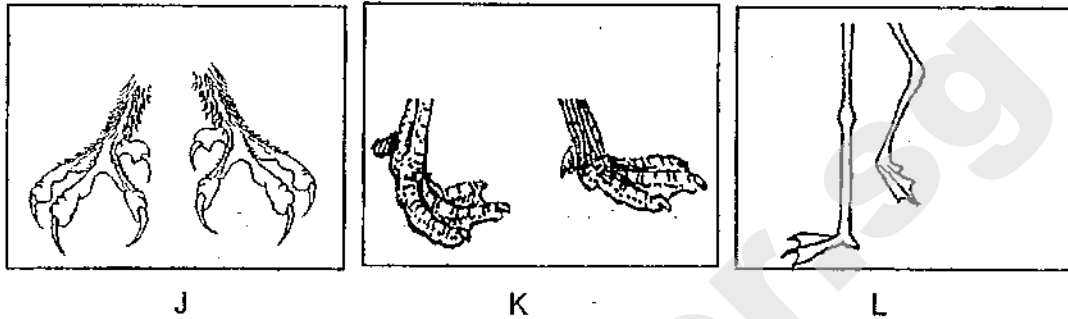
Devi: Energy is transferred from the Sun to plants and then to animals.

Who made the correct statements?

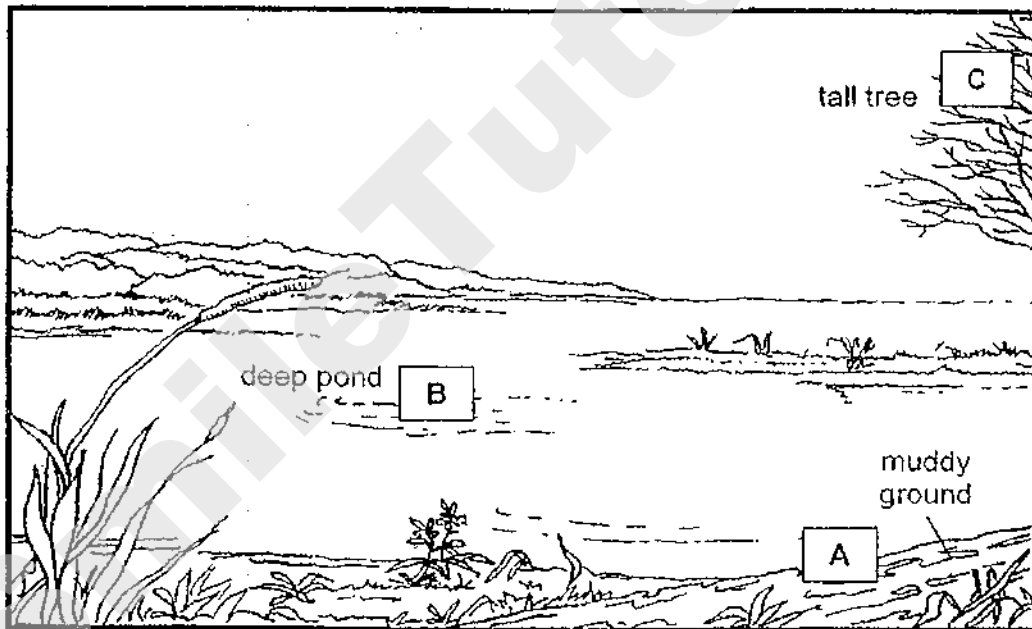
- (1) Ali and Ben only
- (2) Ben and Cara only
- (3) Ali, Cara and Devi only
- (4) Ben, Cara and Devi only

( )

16. The diagram below shows the legs of three birds J, K and L which feed on fish.



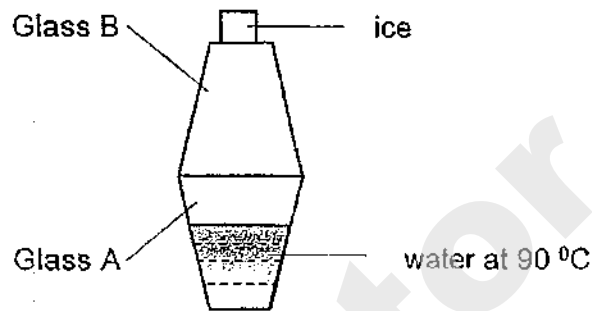
They are usually seen in different parts A, B and C of the habitat below.



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

17. Timothy used a set up to show the water cycle. He poured some hot water at  $90\text{ }^{\circ}\text{C}$  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.

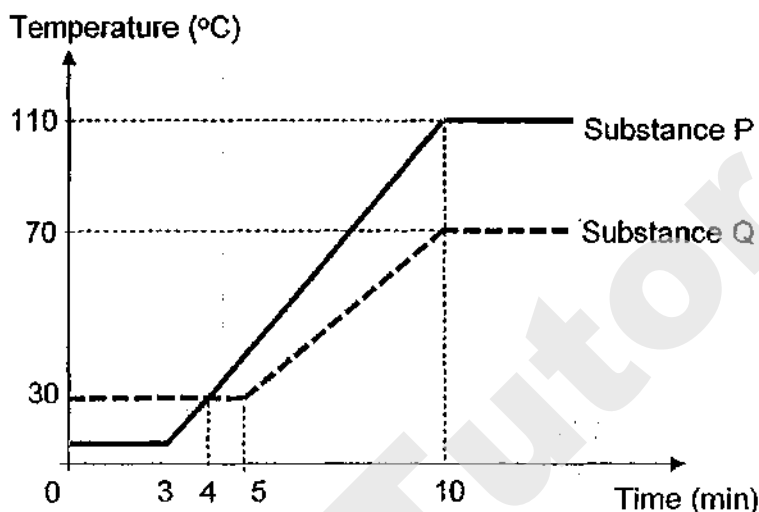


Why did Timothy place an ice cube on glass B?

- ( 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

( )

18. The table below shows the temperature changes of two different substances, P and Q, over time. The room temperature is 30°C.



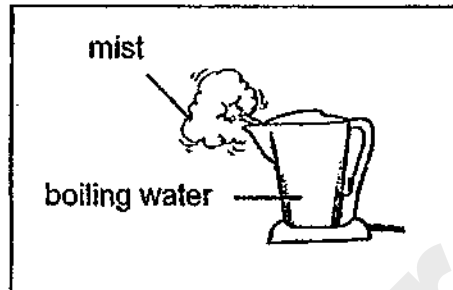
Based on the graph above, which of the following statements are correct?

- 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

( )

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

( )

20. Study the table below.

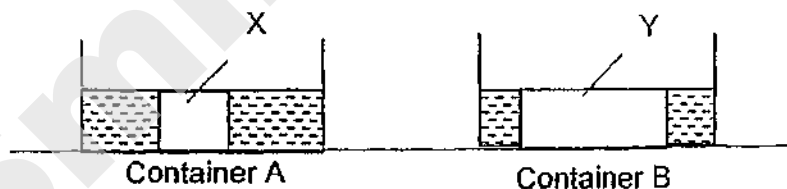
Substance	State of substance at		
	80°C	100°C	120°C
A	solid	solid	solid
B	solid	solid	liquid
C	liquid	liquid	gas

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.

( )

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.



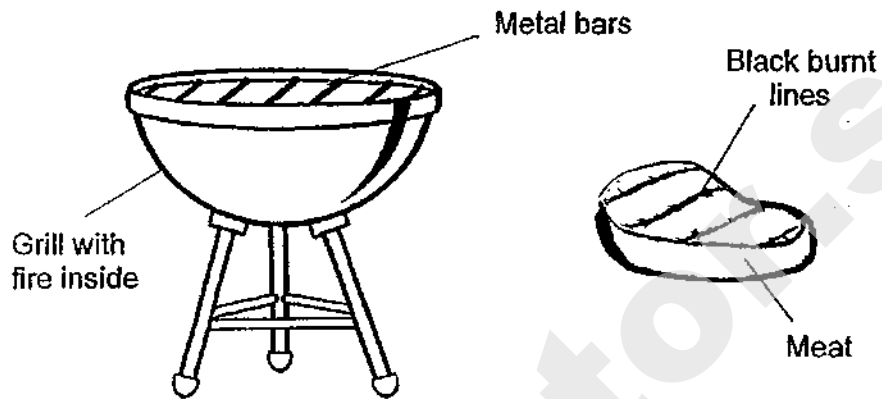
Nor observed that less water filled container B. Which of the following correctly explains why less water filled container B?

- ( 1 ) Block Y has more mass.
- ( 2 ) Block Y has more volume.
- ( 3 ) Water has no fixed shape.
- ( 4 ) Water cannot be compressed.

( )



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.

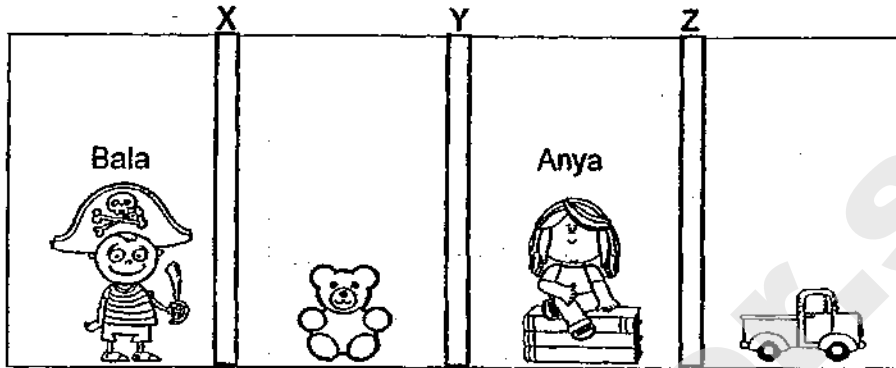


Which one of the following statements best explains the presence of the black burnt lines on the meat?

- ( 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.

( )

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,

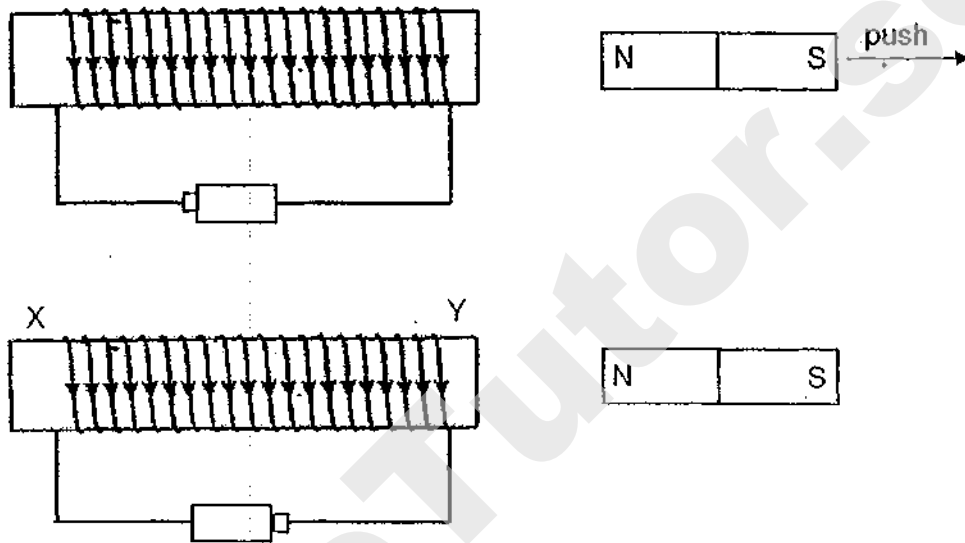
- Bala is unable to see Anya.
- Anya can see both the teddy bear and the toy truck.

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

( )

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.

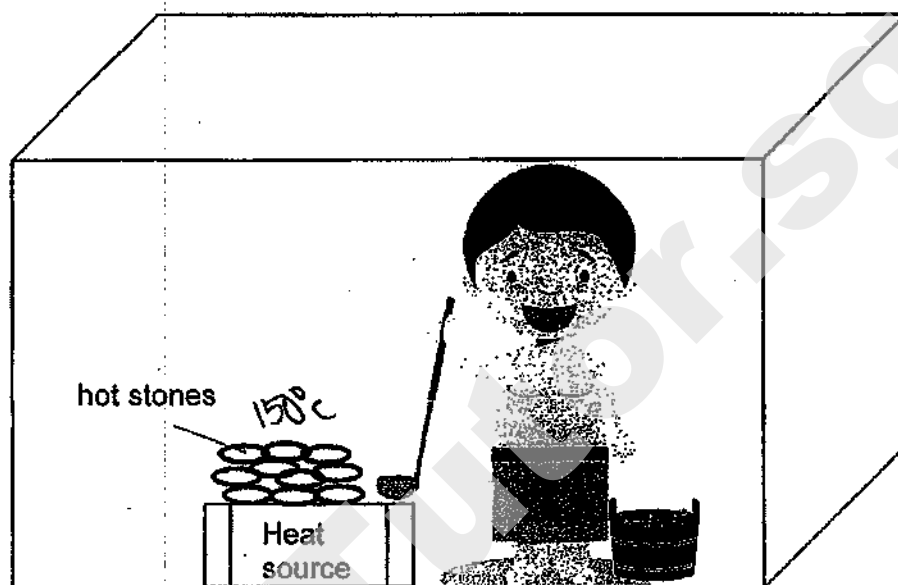


If Remi changes the battery in the opposite direction, what will be the poles of the electromagnet, X and Y, and how will the magnet move?

	X	Y	Magnet
(1)	N	S	push
(2)	S	N	push
(3)	N	S	pull
(4)	S	N	pull

( )

25. Mike is in an enclosed bath room. He poured tap water at  $30^{\circ}\text{C}$  on some hot stones, which are at a temperature of  $150^{\circ}\text{C}$ . The heat source keeps the stones at  $150^{\circ}\text{C}$ .

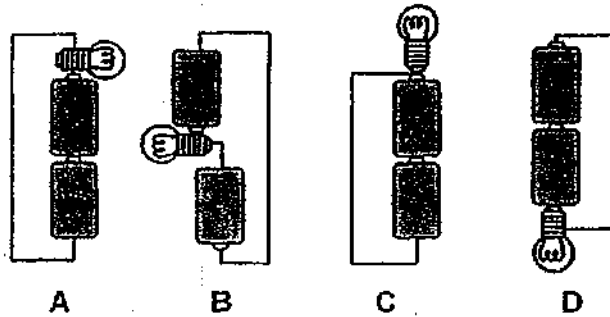


Which one of the following explains the temperature of the room after water is poured on the stones?

	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.

( )

26. Suresh used 2 similar batteries and 1 bulb to form circuits, A,B,C and D.

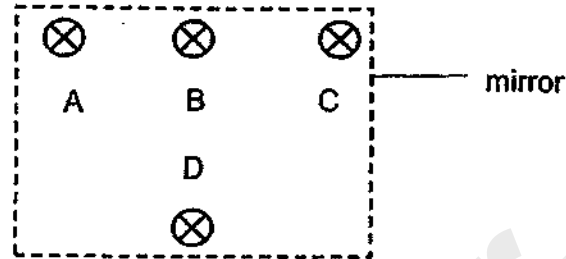


Which of the circuits would the bulb not light up?

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

( )

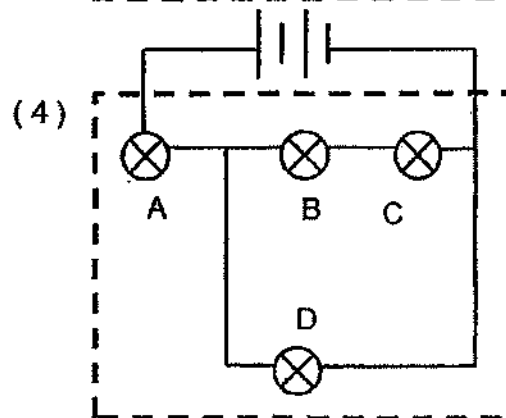
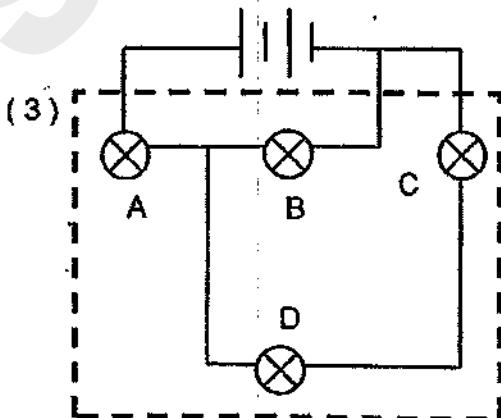
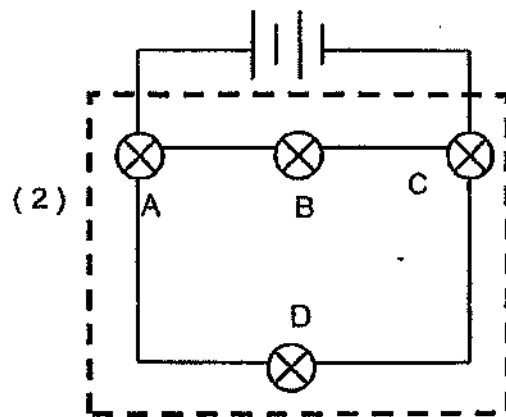
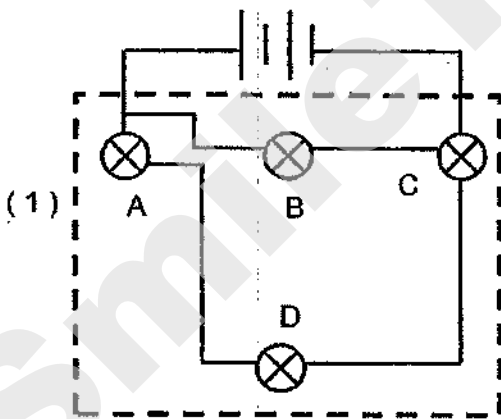
27. An electrician installed bulbs A, B, C and D to light up a mirror shown below. All the bulbs lit up when the circuit was closed.



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?



( )

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?

	<b>Weight</b>	<b>Gravitational Potential Energy</b>
(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
<b>Total</b>	<b>100</b>

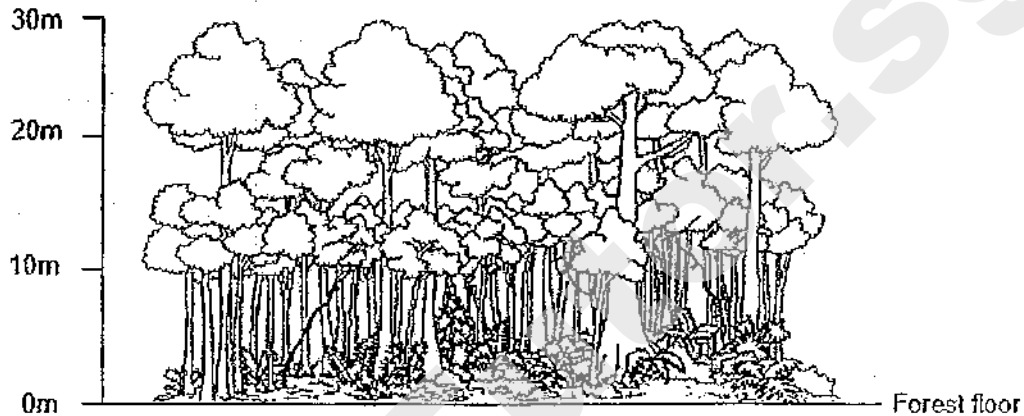
Parent's Signature: \_\_\_\_\_

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**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.

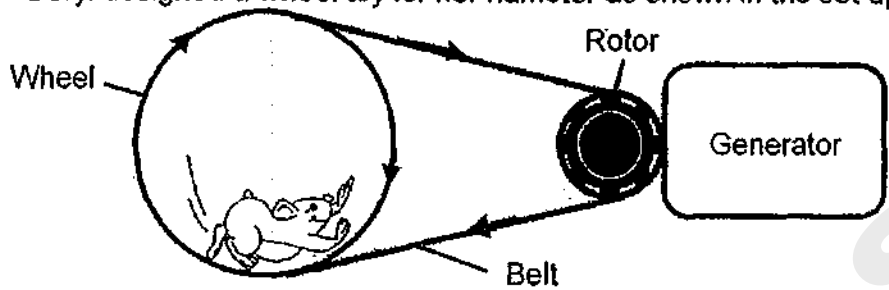
Height above the forest floor (m)	Average amount of sunlight received by the plants (lux)	Average increase in mass of the plants (units)
10	100	10
30	1000	100

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]

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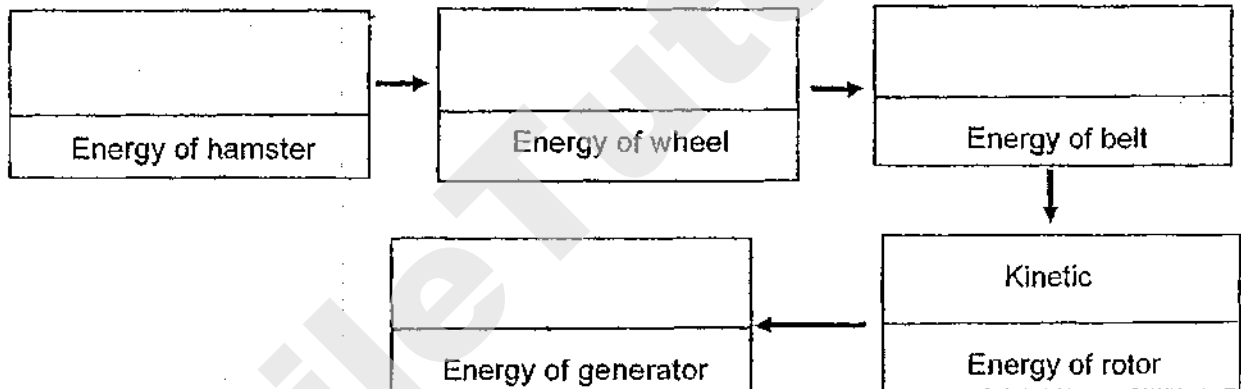
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30. Beryl designed a wheel toy for her hamster as shown in the set up below.

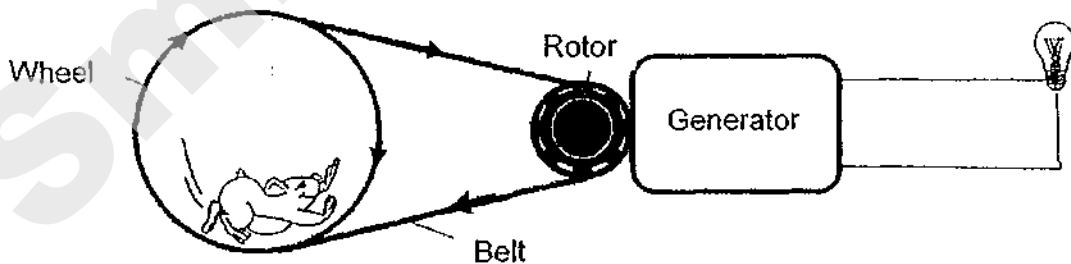


As the hamster ran on the wheel, the wheel started to spin causing the belt to also move. The rotor started to turn, which was connected to a generator.

(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]

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31. Altuff 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.

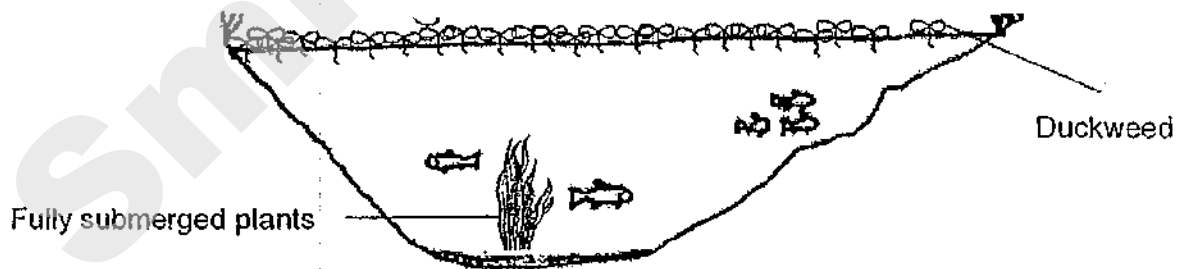
	Beaker A	Beaker B
Location where water is taken from	X	Y
Observation of number of duckweeds	Increase by a little	Increase by a lot

- (a) Which water sample, X or Y, is most likely to be from muddy water? Explain your answer. [1m]

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- (b) Study the diagram above. Explain how too many duckweeds is harmful to fully submerged plants in the water. [2m]

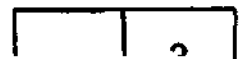
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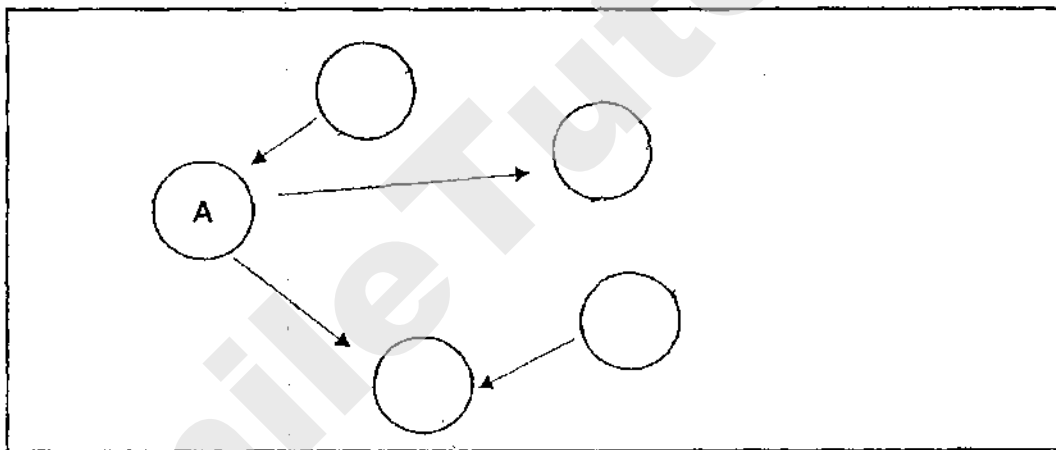
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32. The table below shows the food relationships among the organisms living in community X.

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: \_\_\_\_\_  
 \_\_\_\_\_

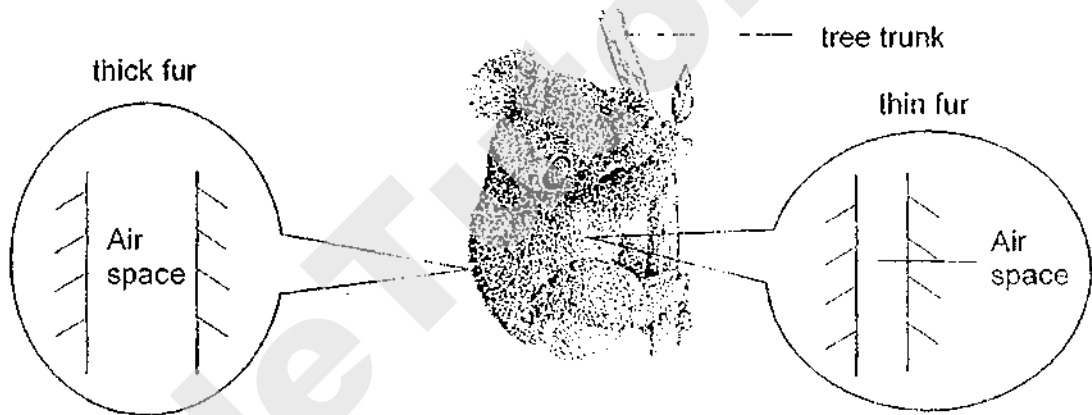
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33. (a) State the difference between structural and behavioural adaptation in animals. [1m]

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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.

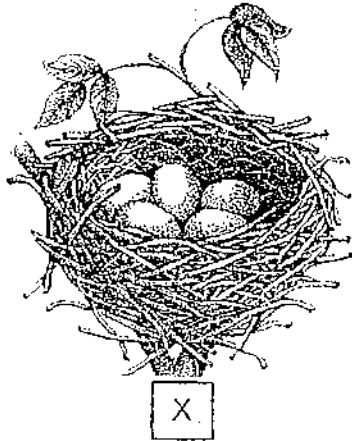


(b) On a warm day, the koala hugs the tree trunk as shown in the diagram below. Explain why the koala bear behaves in this way on a warm day. [2m]



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34. The diagram below shows the nests built by Bird X and 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]

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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]

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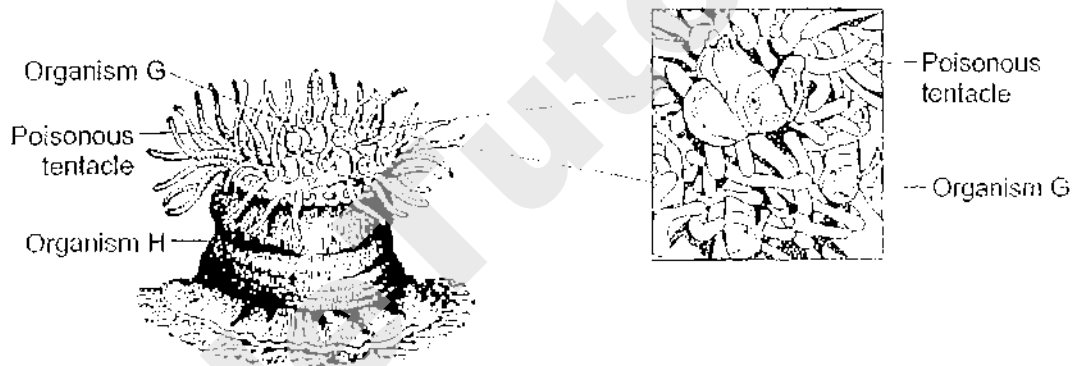
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Organism G often gets preyed on by bigger fish. Thus, Organism G will hide among the poisonous tentacles of Organism H and move in between the tentacles. This will attract bigger fish to swim towards Organism H as Organism H is not able to move from 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.



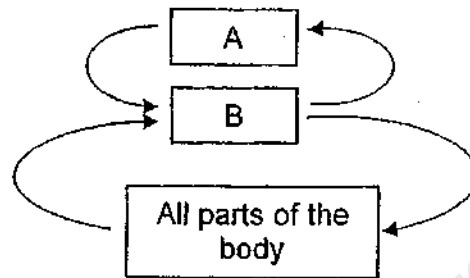
- (c) Based on the information above, explain how Organism G and Organism H depend on each other. [2m]

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35. The diagram below shows how blood travels in our body.

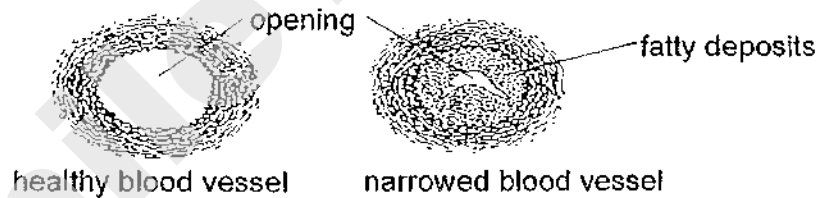


(a) Name the organs which A and B represent [1m]

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]

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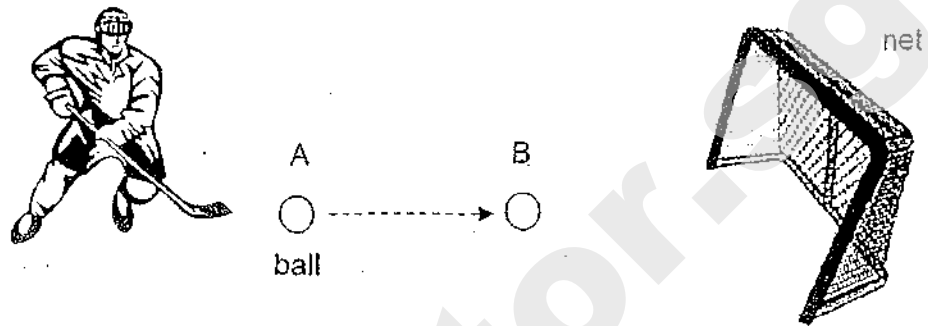
(c) Based on the information above, which volunteer, X or Y is most likely to have a narrowed blood vessel? Explain your answer. [2m]

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	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.



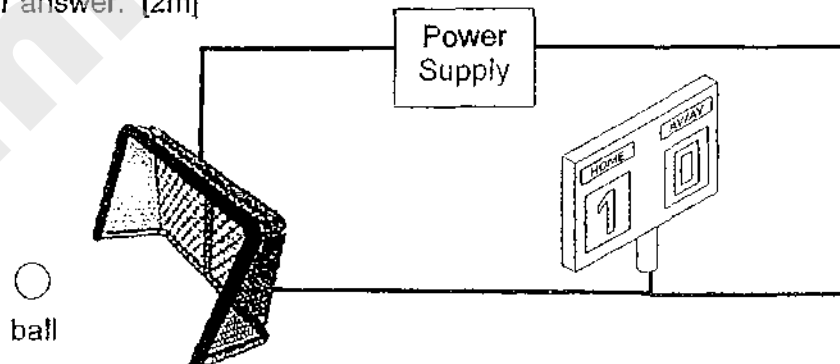
- (a) State the effect of more force on the moving ball at B. [1m]

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- (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]

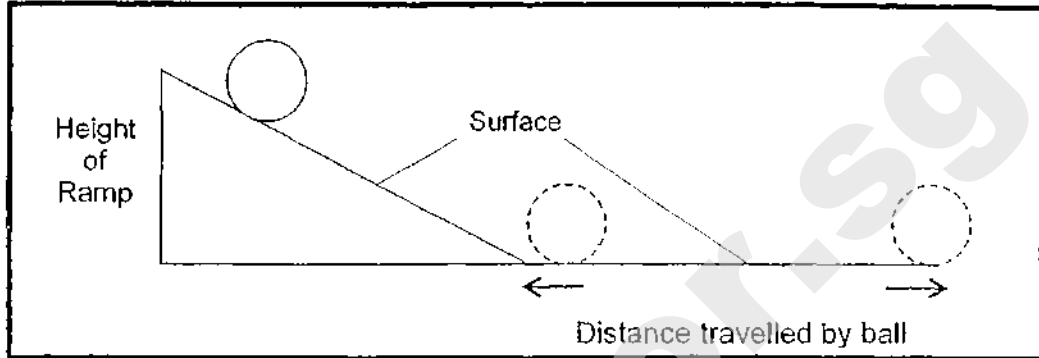



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37. Indu carried out the experiment below using a ball and different surfaces.



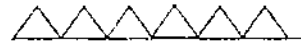
She measured and recorded the distance travelled by the two balls on the ground.

	Distance travelled on Surface A	Distance travelled on Surface B
1 <sup>st</sup> try	60 cm	11 cm
2 <sup>nd</sup> try	62 cm	16 cm
3 <sup>rd</sup> 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]

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(c) Without changing the ball, name two other ways to make the ball move further. [2m]

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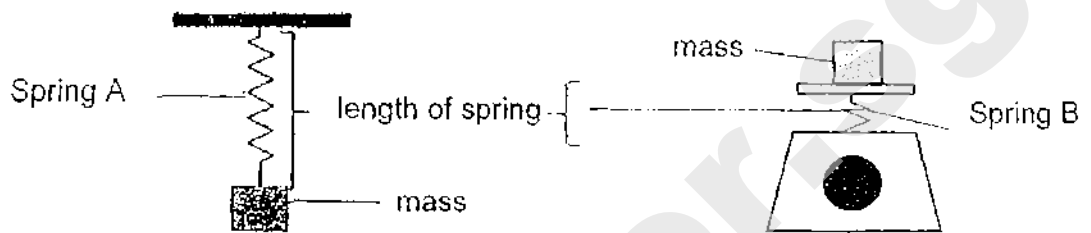
(d) Indu concluded that friction is a force. Do you agree? Explain your answer. [1m]

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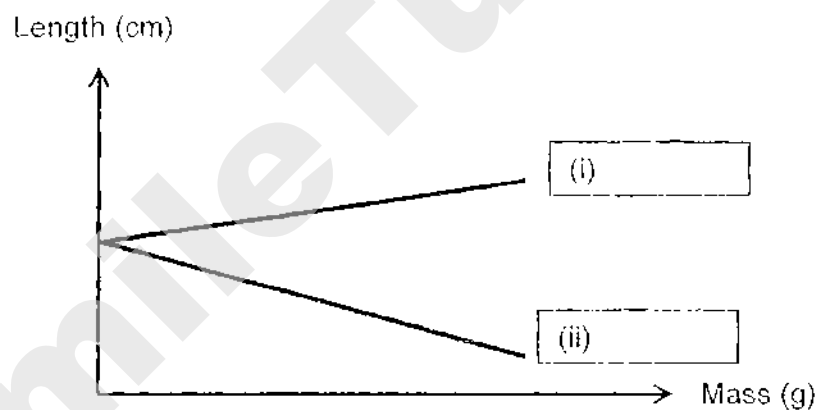
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	3
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38. Miss Tan wanted to find out how the length of two springs, A and B, change when different masses were attached.



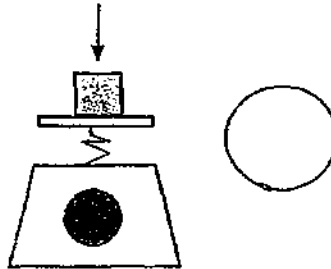
She measured the lengths of Springs A and B each time a mass was added. The graphs below show the results of the experiment.



- (a) Identify on the graph Spring A and B by indicating A or B in the space above. [1m]

	1
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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]

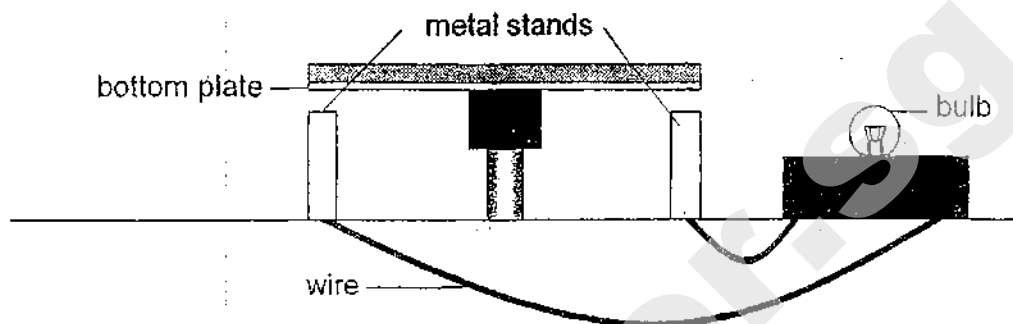
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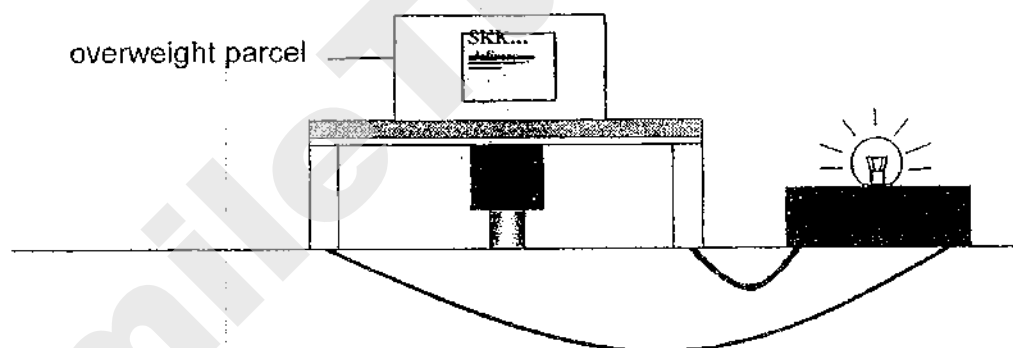
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39. The machine shown below is used to check if a parcel is too heavy.



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]

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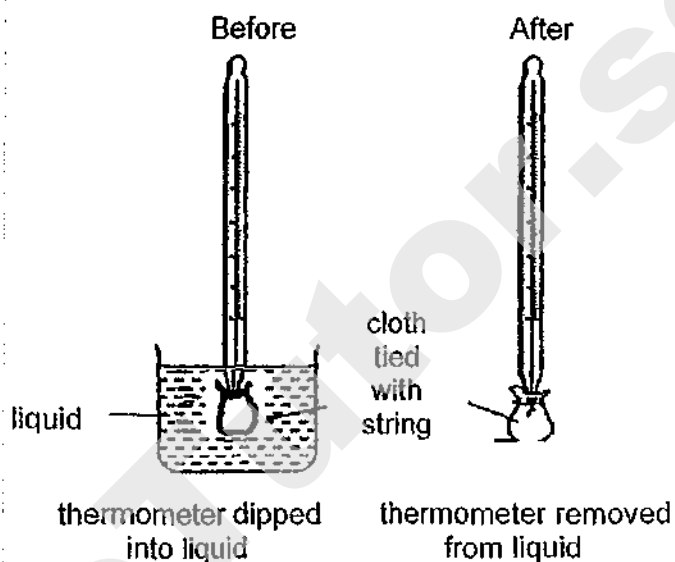
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- (c) A second bulb is added in parallel so that the machine stops overweight parcels from passing through. Explain how this will stop overweight parcels. [1m]

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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]

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~ End of Paper ~

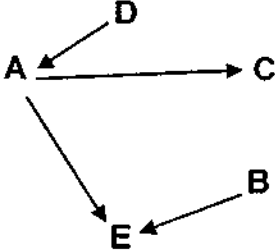
SCHOOL : RIVER VALLEY PRIMARY SCHOOL  
 LEVEL : PRIMARY 6  
 SUBJECT : SCIENCE  
 TERM : 2019 SA1


**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)	<p>a) Kinetic → Kinetic → Kinetic</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Electrical ← Kinetic</p> <p>b) The hamster did not run fast enough to convert kinetic energy to electrical energy to light up the bulb.</p>
Q31)	<p>a) Water sample X. Muddy water does not contain enough nutrients to carry out photosynthesis for the plant to grow.</p> <p>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.</p>

Q32)	<p>a)</p>  <pre> graph TD     D --&gt; A     A --&gt; C     A --&gt; E     B --&gt; E   </pre> <p>b) <b>Organism C</b> : 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.</p> <p><b>Organism D</b> : The population of organism D will increase as there will be lesser organism A to feed on organism D.</p>
Q33)	<p>a) <b>The structural adaptation is what an animal has but behavioural adaptation is how an animal behaves in its environment.</b></p> <p>b) <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.</b></p>
Q34)	<p>a) <b>Bird Y. The young of bird Y has shelter and will not get wet on a rainy day.</b></p> <p>b) <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.</b></p> <p>c) <b>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.</b></p>
Q35)	<p>a) <b>Organ A: Lungs</b> <b>Organ B: Heart</b></p> <p>b) <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.</b></p>

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)	<p>a)When there is more force, the ball will move faster.</p> <p>b)Gravitational force and frictional force.</p> <p>c)Iron. Iron is a good conductor of electricity, so electric current can flow through the circuit to update the score.</p>
Q37)	<p>a)i)A ii)B</p> <p>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.</p> <p>c)Put lubricants such as oil on the surface and change the ramp to a smoother ramp such as iron. Raise the ramp.</p> <p>d)Yes. Friction opposes the motion of the object and changes direction.</p>
Q38)	<p>a)i)A ii)B</p> <p>b) </p> <p>c)Spring B is too stiff and not easily compressed so the mass is lower.</p>
Q39)	<p>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.</p> <p>b)The light bulb could be fused.</p> <p>c)If one bulb fuses, current can still flow through the other bulb.</p>

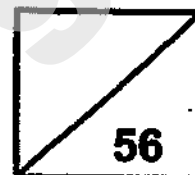
<b>Q40)</b>	<b>a)Liquid C. The temperature is the lowest and the water will evaporate slower.</b> <b>b)Liquid B. The thermometer reading increased the fastest. This allows the knee to lose heat the fastest and liquid B gains heat fastest to cause cooling.</b>

SmileTutor.sg





**Rosyth School**  
**Mid-Year Examination 2019**  
**SCIENCE**  
**Primary 6**



**Total  
Marks:**

**Name:** \_\_\_\_\_

**Class:** Pr 6 \_\_\_\_\_

**Total time for Booklets A and B:** 1h 45min

**Register No.** \_\_\_\_\_

**Date:** 16 May 2019

**Parent's Signature:** \_\_\_\_\_

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## **Booklet A**

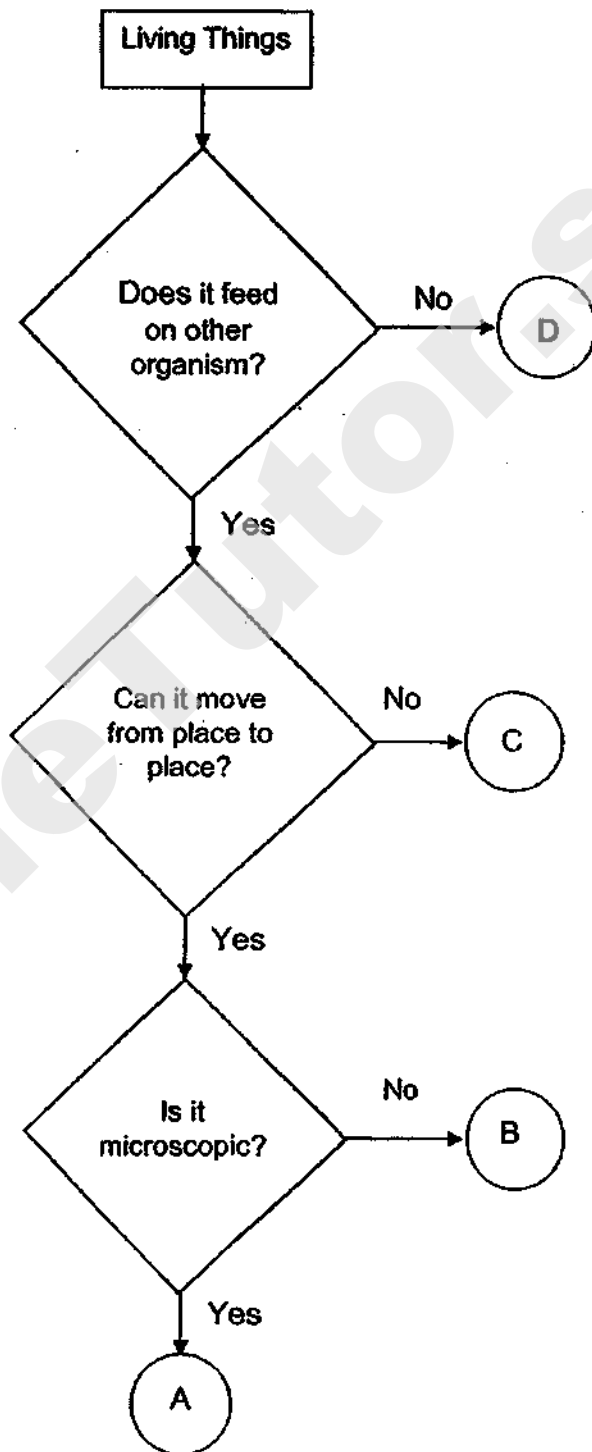
**Instructions to Pupils:**

- 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).**



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
- (3) C

- (2) B
- (4) D

4. Andrew observed three cells X, Y, Z and completed the table below. A tick (✓) indicates that the part was observed in the cell.

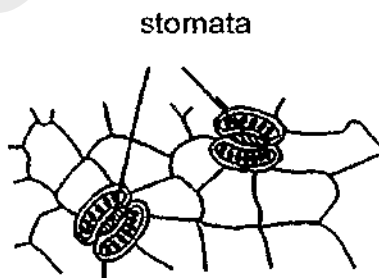
parts of cell	cell X	cell Y	cell Z
cytoplasm	✓	✓	✓
cell wall	✓		✓
cell membrane	✓	✓	✓
chloroplasts			✓
nucleus	✓	✓	✓

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

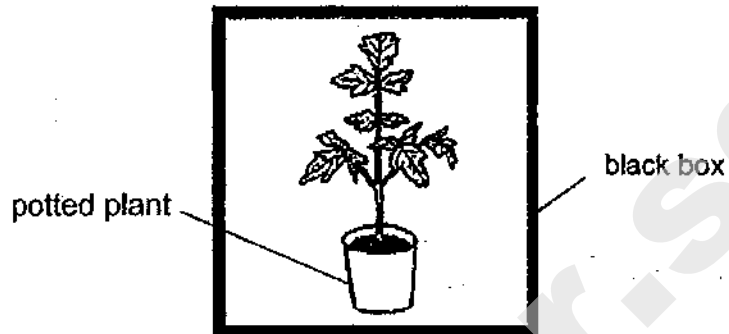
5. The diagram below shows tiny openings called stomata found mostly on the underside of the leaves.



Which one of the following describes the function of the stomata?

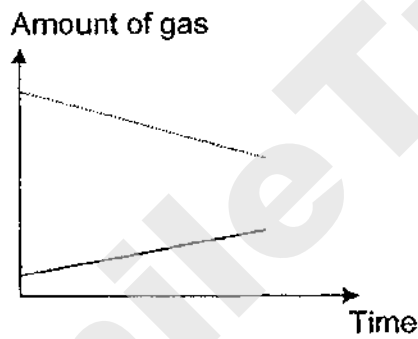
- (1) It traps sunlight to make food.
- (2) It transports water from the leaves to all parts of the plant.
- (3) It transports food made in the leaves to all parts of the plant.
- (4) It takes in carbon dioxide from the surrounding during photosynthesis.

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.

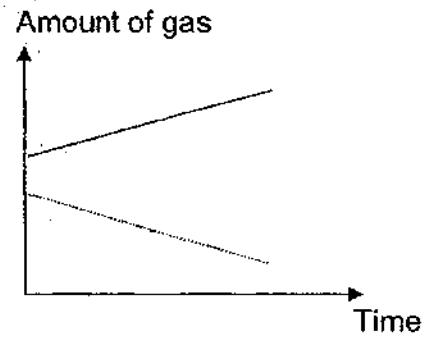


Which one of the following graphs correctly shows the amount of oxygen and carbon dioxide in the box over time?

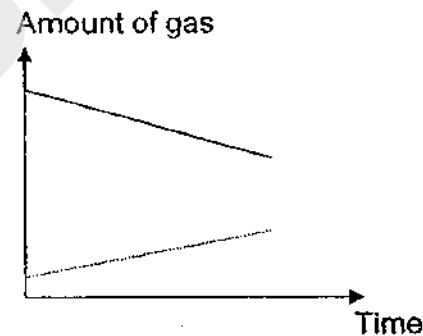
(1)



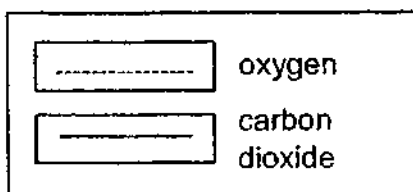
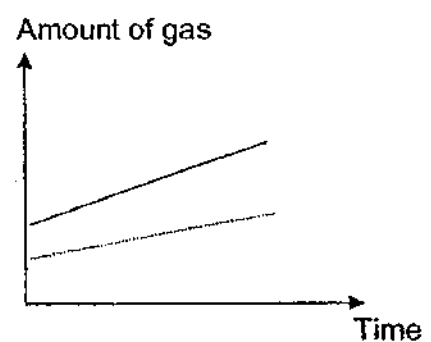
(2)



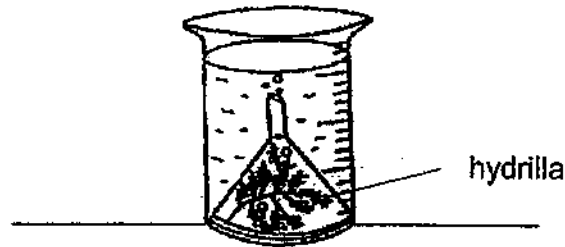
(3)



(4)



7. Jennifer set up an experiment, as shown in the diagram below.

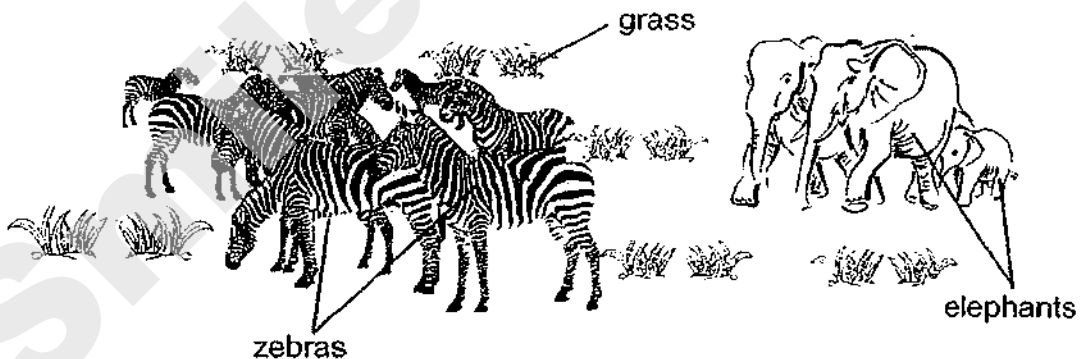


She prepared three similar set-ups and left them at three locations, X, Y and Z in her garden, from 12 noon to 1pm. She counted the number of bubbles produced by the hydrilla.

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.

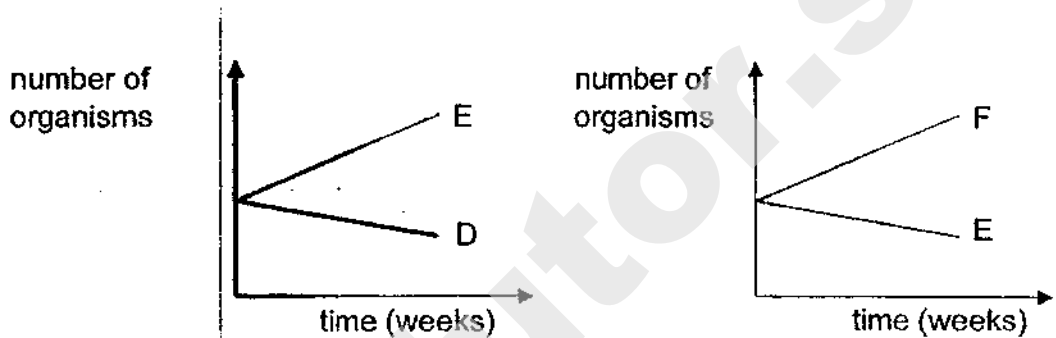


Which one of the statements is not true?

- (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.

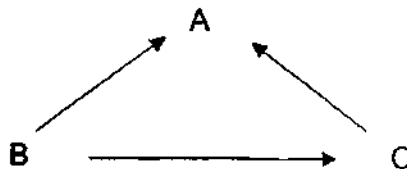
9. Ben caught three different types of organisms, D, E and F, from the school pond. One of them is a plant-eater. He put equal number of water plants into two similar tanks. In one tank, he put the same number of organisms E and D and in the other tank, he put the same number of organism E and F.

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?

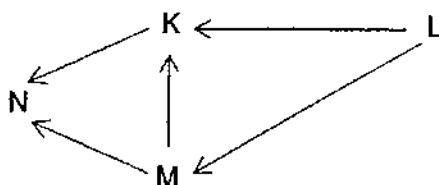
- (1) Water plant → E → F → D
  - (2) Water plant → D → F → E
  - (3) Water plant → E → D → F
  - (4) Water plant → D → E → F
10. The letters, A, B and C below represent organisms in a community and the arrows show the direction of the flow of energy.



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

	<b>A</b>	<b>B</b>	<b>C</b>
(1)	plants	decomposers	animals
(2)	animals	decomposers	plants
(3)	plants	animals	decomposers
(4)	decomposers	plants	animals

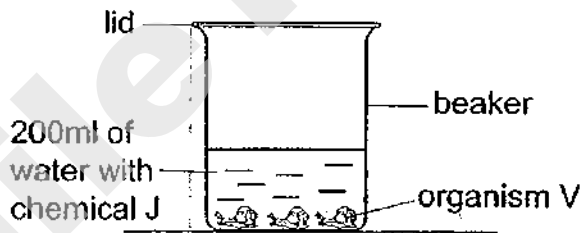
11. The food web below shows the food relationships between four living organisms.



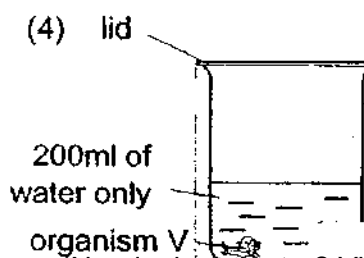
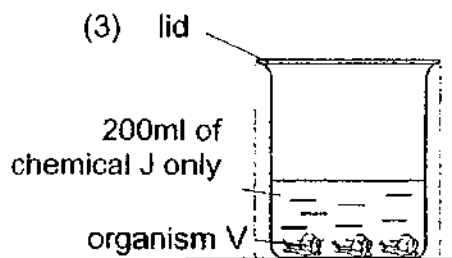
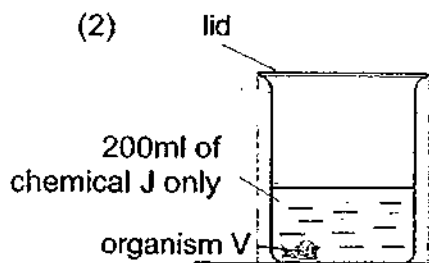
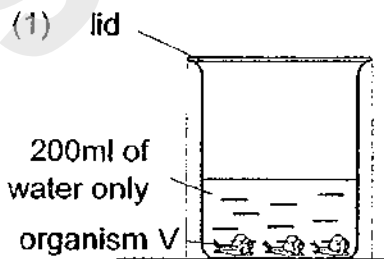
Which one of the following classifications is correct?

	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.

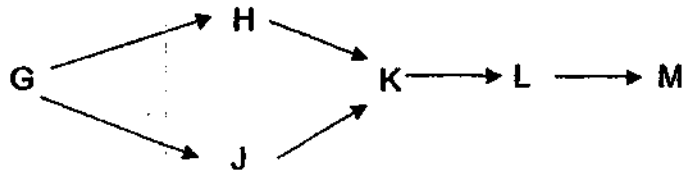


Which one of the following set-ups should she use as a control for her experiment?





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.

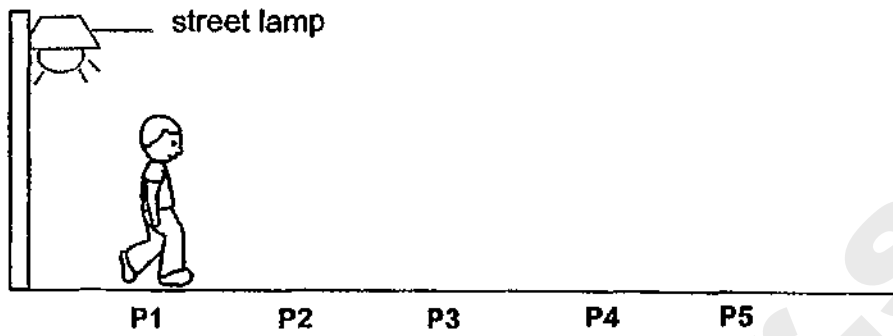
- W: Amount of food
- X: Size of fish tank
- Y: Number of goldfish
- Z: Temperature of surrounding

She proposed several experiments which she would like to conduct in the table below.

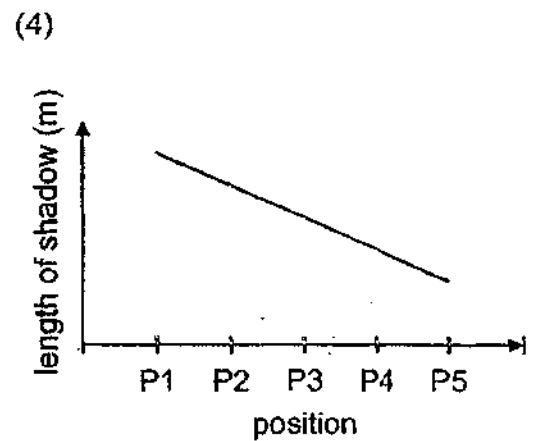
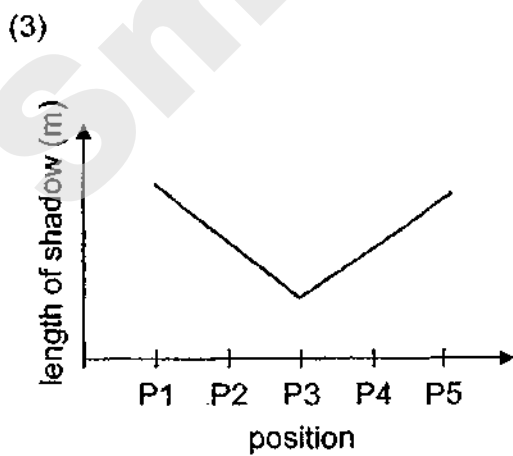
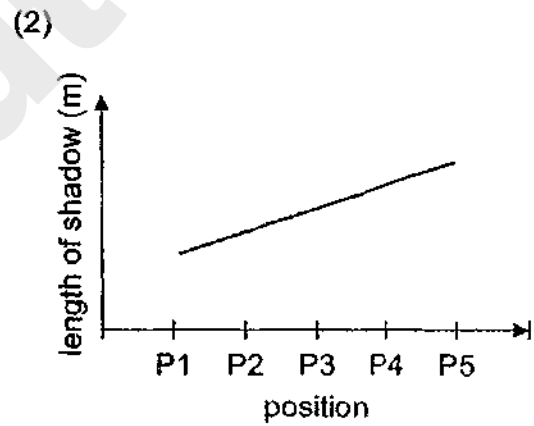
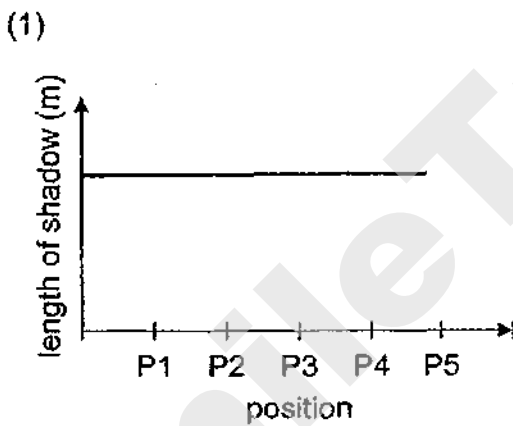
Which one of the following is possible to find out the effect of a certain factor on the growth of goldfish?

	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

15. Zachary walked past a lighted street lamp from point P1 to P5 on a dark night.

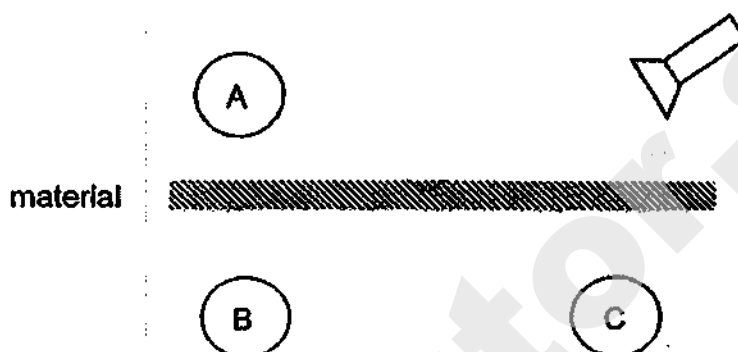


Which one of the following graphs best represents the changes in the length of Zachary's shadow as he walked from point P1 to P5?



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.

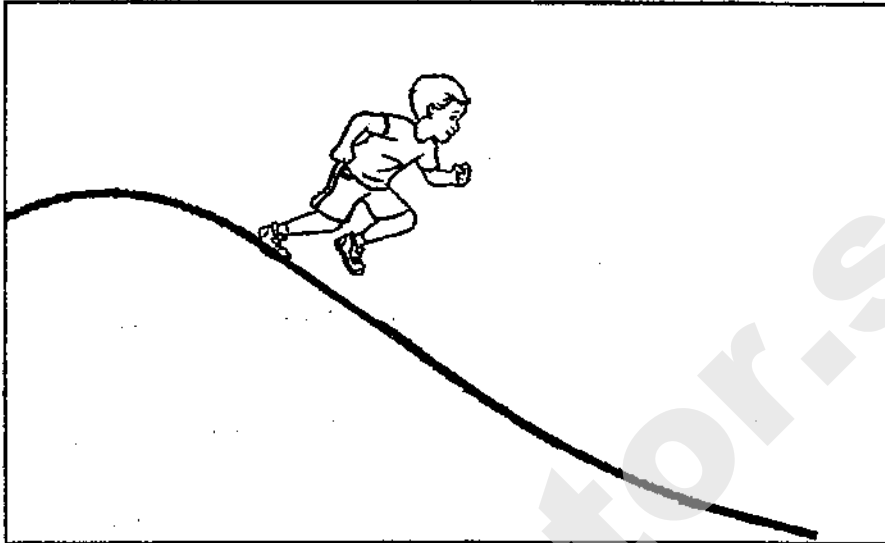
He placed the light sensor at A and measured the light intensity as shown below. He repeated the experiment by placing the light sensor at B followed by C.



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.

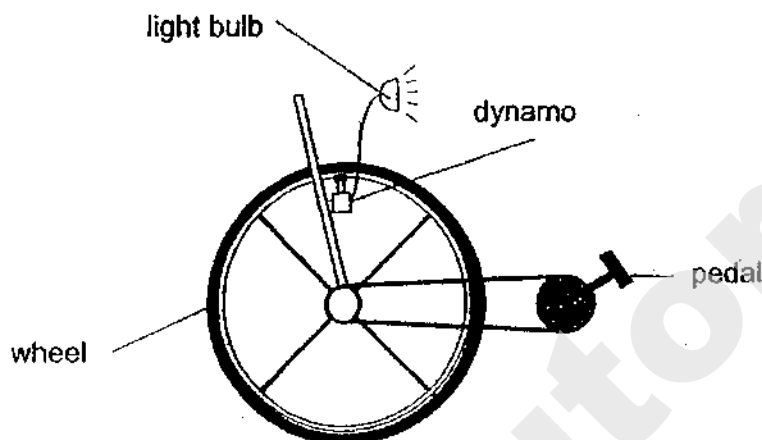
18. Terry started to run down a slope as shown below.



Which one of the following describes the changes in kinetic and potential energy as he runs down the slope?

	<b>kinetic energy</b>	<b>potential energy</b>
(1)	decreases	increases
(2)	increases	decreases
(3)	remains the same	decreases
(4)	increases	remains the same

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

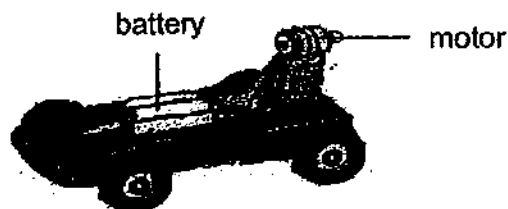
(3)

speed of wheel (number of turns per min)	intensity of light (lux)
50	180
70	80
90	60
110	130

(4)

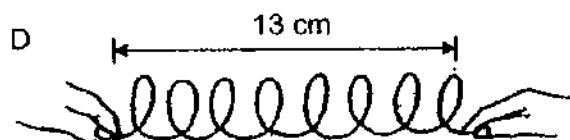
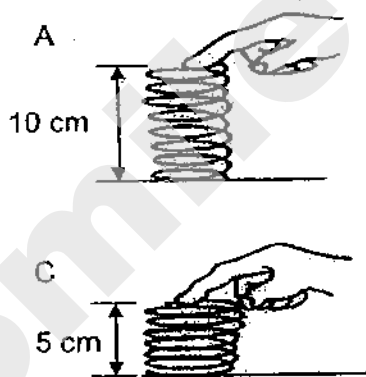
speed of wheel (number of turns per min)	intensity of light (lux)
50	180
70	130
90	80
110	60

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?

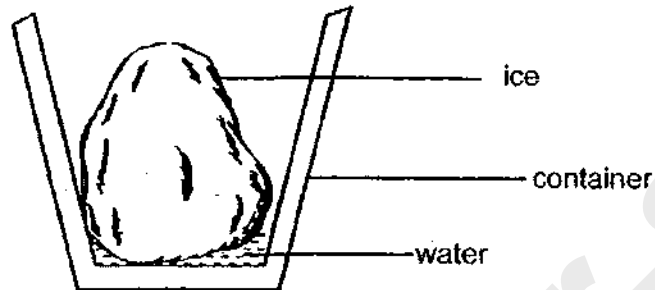
- (1) potential energy  $\longrightarrow$  kinetic energy  
 (2) kinetic energy  $\longrightarrow$  electrical energy  
 (3) potential energy  $\longrightarrow$  electrical energy  $\longrightarrow$  kinetic energy  
 (4) electrical energy  $\longrightarrow$  potential energy  $\longrightarrow$  kinetic 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?

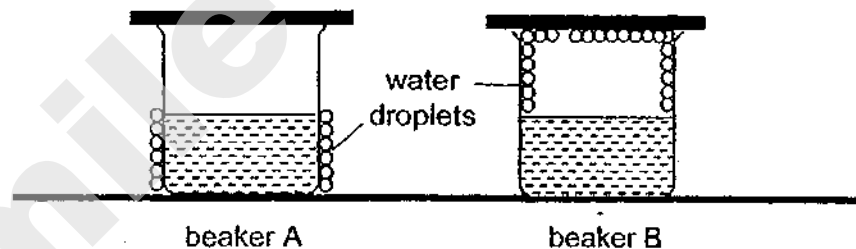
- (1) A and C only  
 (2) B and D only  
 (3) B, C and D only  
 (4) A, B, C and D

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  $0^{\circ}\text{C}$ .
  - (4) The temperature of the water around the block of ice is less than  $0^{\circ}\text{C}$ .
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?

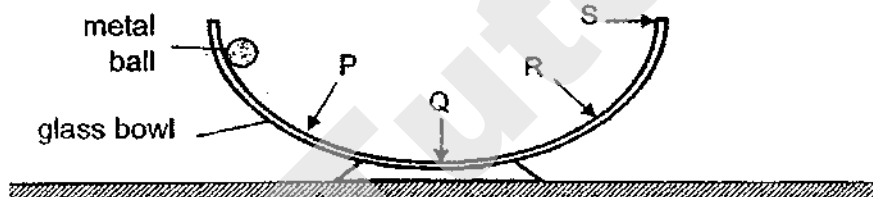
- (1) Beaker A is a better conductor of heat than beaker B.
- (2) The temperature of the water in both glasses is the same.
- (3) The water in beaker A has a higher temperature than the water in beaker B.
- (4) The water droplets formed in beaker B is hotter than the water droplets formed in beaker A.

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.

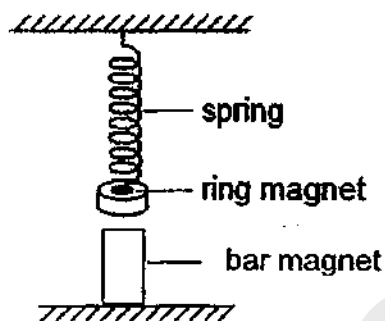


At which position would the metal ball roll back the first time it was released?

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



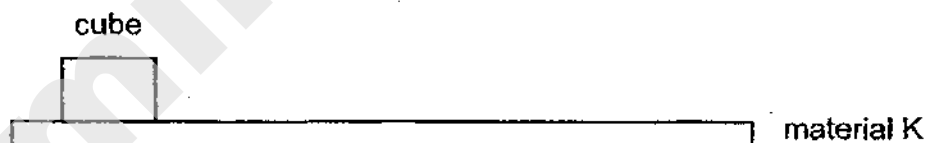
26. Refer to the diagram below. At first a ring magnet was hung on a spring. Then a bar magnet was placed under the ring magnet and the spring stretched less than before.



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.



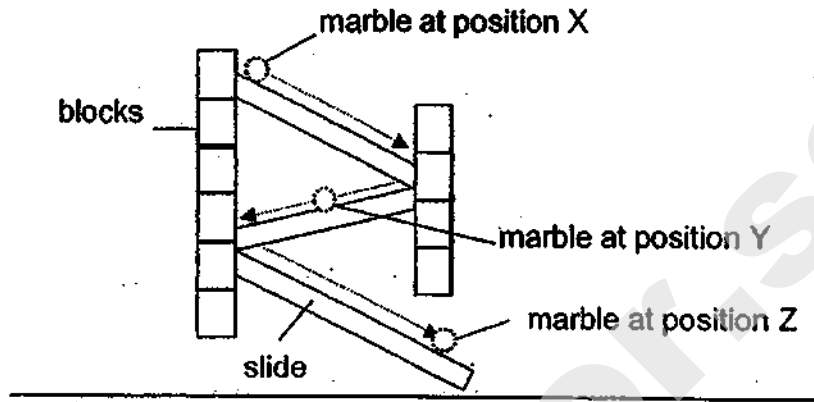
Jessie gave the cube an identical push. The cube moved a distance along the surface of material K before stopping. She repeated the experiment with materials L, M and N. The table below shows her results.

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?

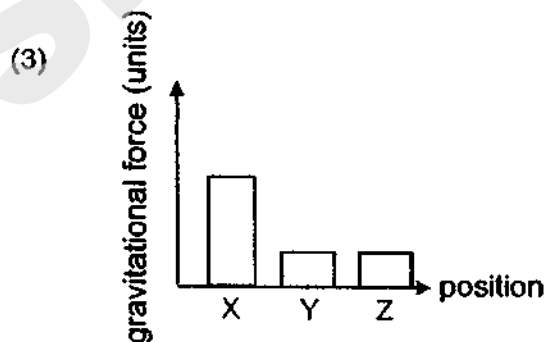
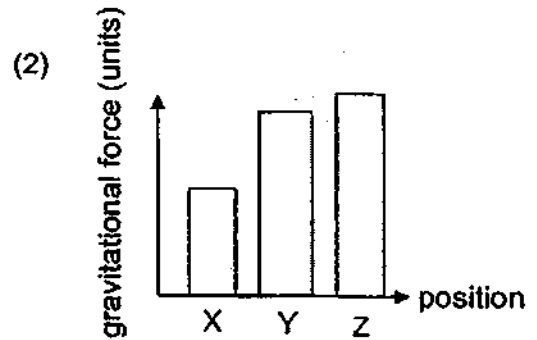
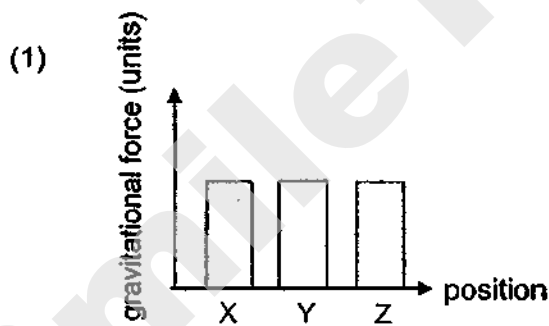
- (1) K  
 (2) L  
 (3) M  
 (4) N

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?



End of booklet A

(Go on to Booklet B)



**Rosyth School  
Mid-Year Examination 2019  
SCIENCE  
Primary 6**



Name: \_\_\_\_\_

Total  
Marks:

Class: Pr 6 \_\_\_\_\_

Total time for Booklets A and B: 1h 45min

Register No. \_\_\_\_\_

Date: 16 May 2019

Parent's Signature: \_\_\_\_\_

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## **Booklet B**

**Instructions to Pupils:**

1. For questions 29 to 40, give your answers in the spaces given in Booklet B.

	<b>Maximum</b>	<b>Marks Obtained</b>
<b>Booklet A</b>	<b>56 marks</b>	
<b>Booklet B</b>	<b>44 marks</b>	
<b>Total</b>	<b>100 marks</b>	

\* This booklet consists of 14 printed pages (including cover page).

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]**

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Study the classification table.

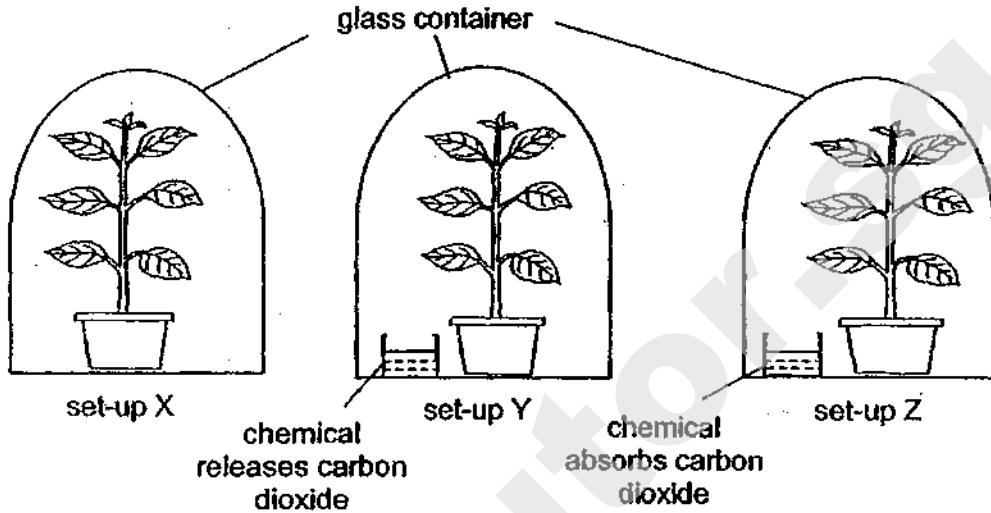
animals	
group 1	group 2
reptiles	fish

(b) Name the characteristics that will help you put reptiles and fish into two groups as shown above. **[1]**

Reptiles: \_\_\_\_\_

Fish: \_\_\_\_\_

- 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]

\_\_\_\_\_

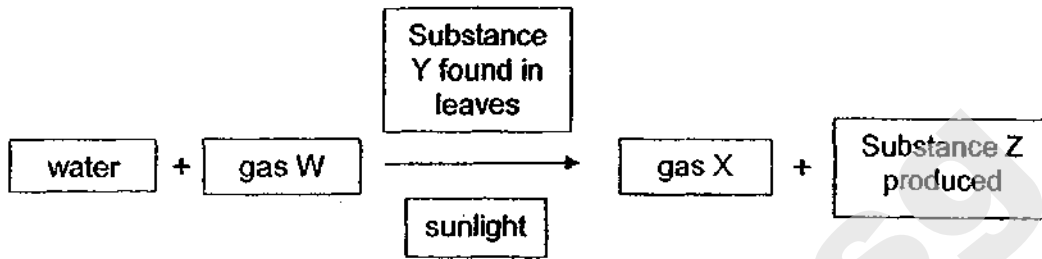
\_\_\_\_\_

- (d) What is the purpose of having set-up X? [1]

\_\_\_\_\_

\_\_\_\_\_

31 Simon drew the diagram below showing how plants make food.



(a) Identify the following:

[2]

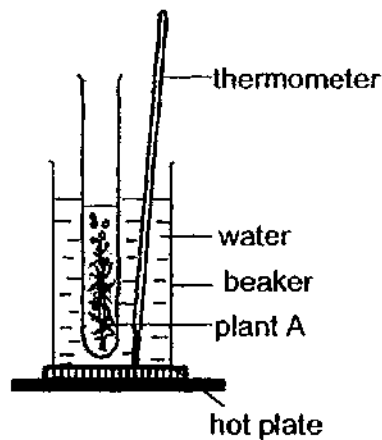
gas W: \_\_\_\_\_

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)

He collected the data and recorded his results in the table below.

<b>Temperature of water (°C)</b>	10	20	30	40	50
<b>No. of bubbles of gas X per minute</b>	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, describe how the temperature of air is affected by light intensity. [1]

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- (b) Name two other physical factors that can affect the temperature of air in the two habitats? [2]

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- 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]

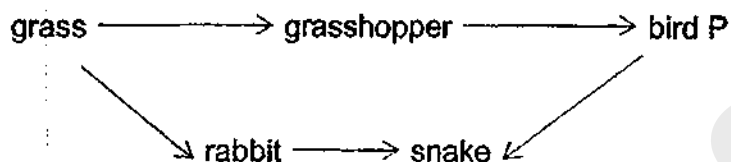
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34 Study the food web below.



(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]

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(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]

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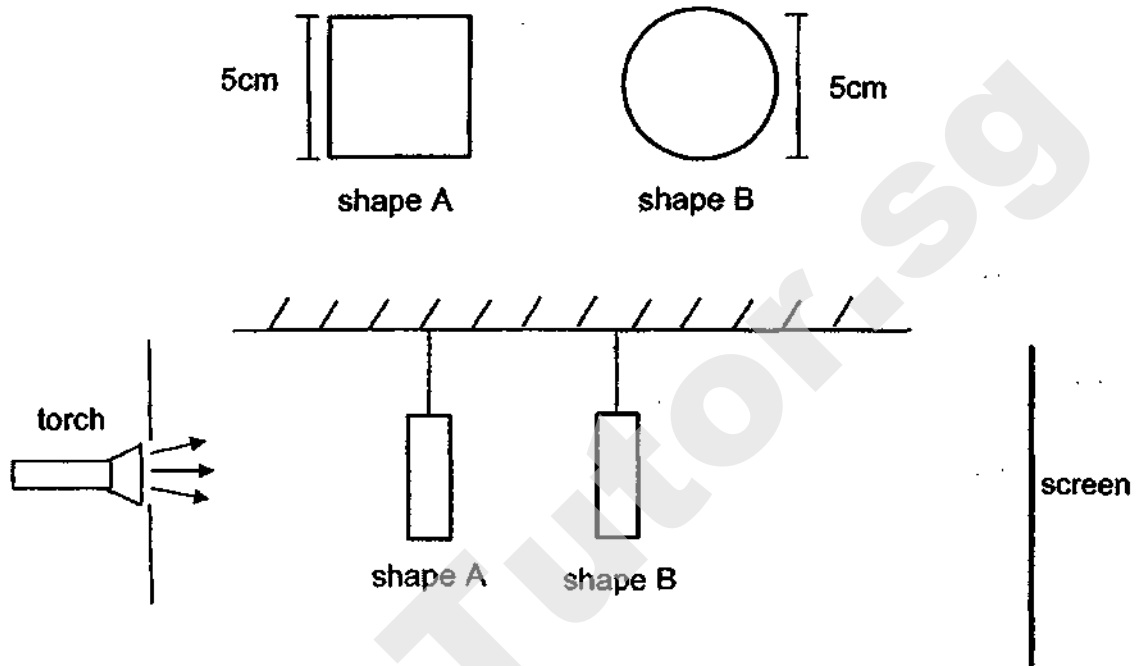
ii) Explain how it is possible for John to be correct. [1]

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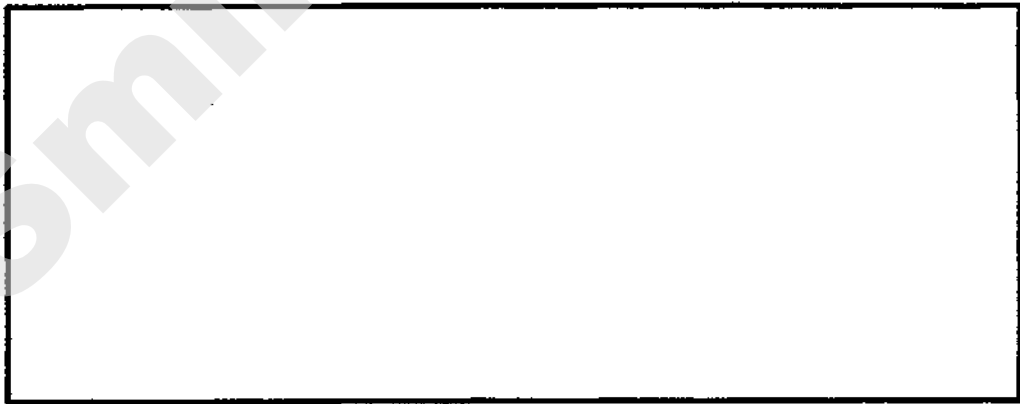


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- 35 The set-up below shows light shining on two shapes A and B made of cardboard. They are placed at different distances from the torch.



- (a) Draw the shadow of the object on the screen provided below. [1]



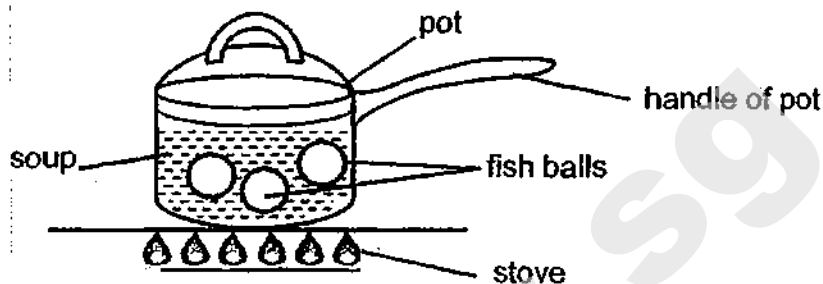
- (b) Explain your answer in (a). [1]

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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.



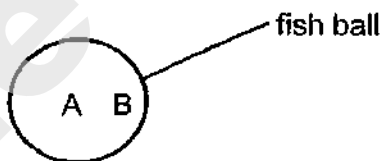
- (a) The temperature of the soup decreased after adding the fish balls. Explain why. [1]

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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]

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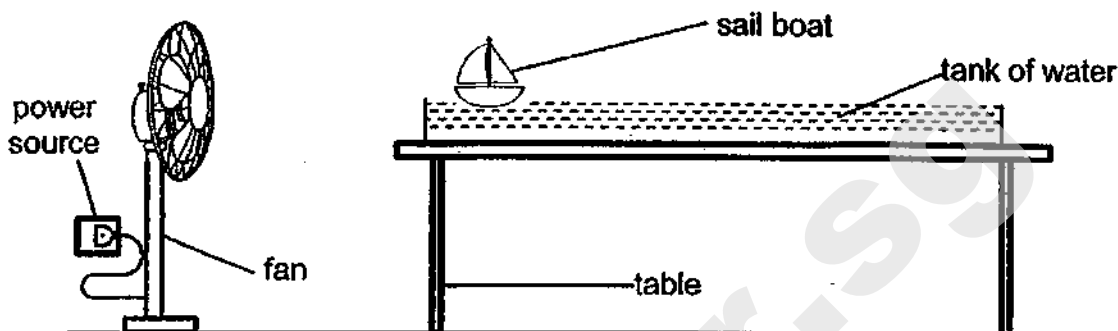
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- (c) Give an example of materials to make the pot and the handle of the pot. [2]

Pot: \_\_\_\_\_

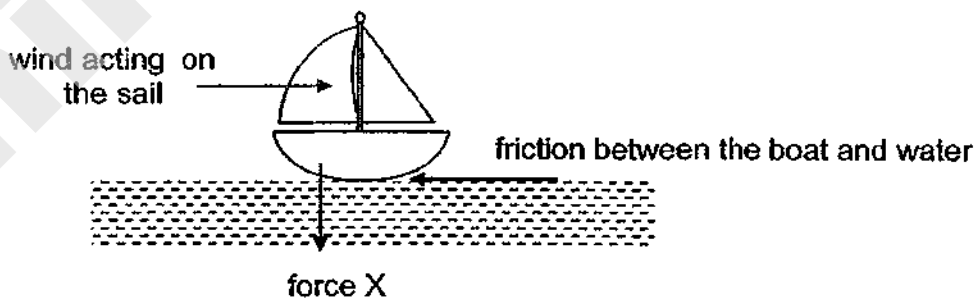
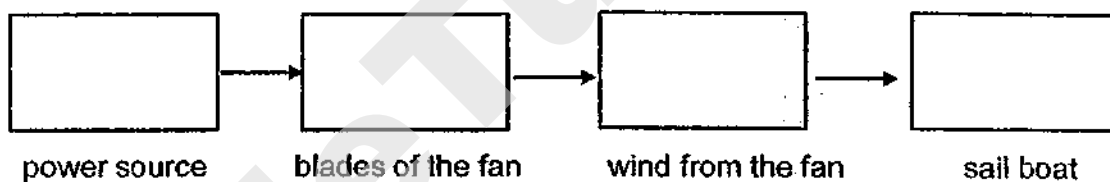
Handle of pot: \_\_\_\_\_

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]

\_\_\_\_\_

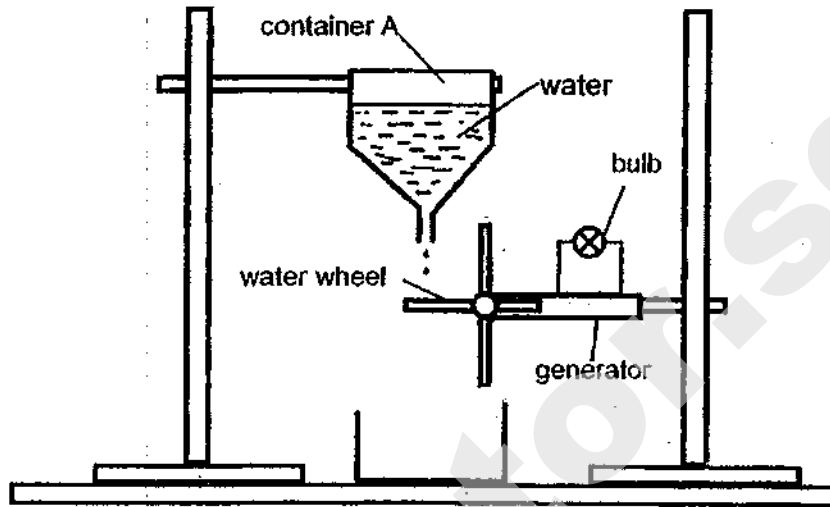
(c) If Sarah increase the size of the sail, explain how this will be an advantage. [2]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- 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]

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- (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:

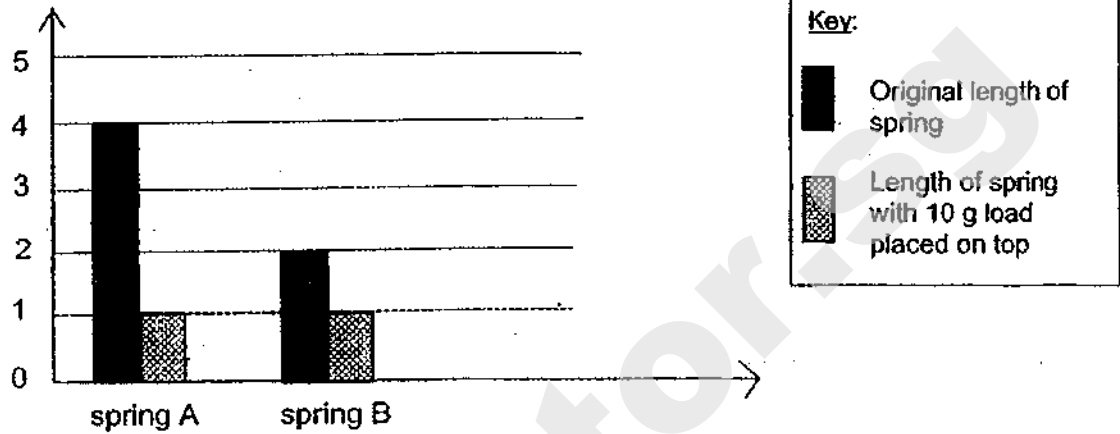
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Reason:

-----  
 -----

- 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.

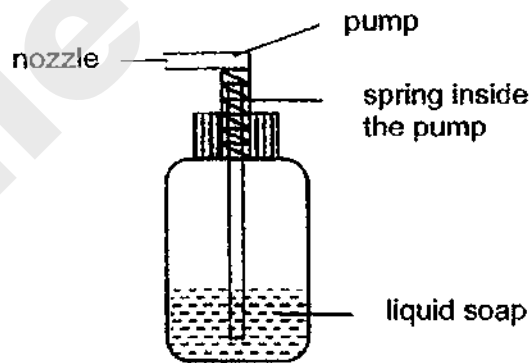
length of spring (cm)



- (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]

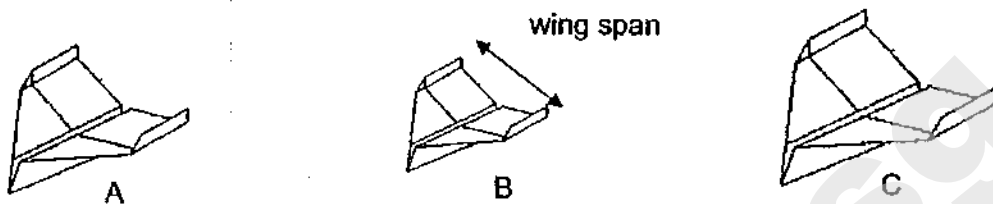
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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]

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(b) Based on the results above what can Steven conclude about the experiment? [1]

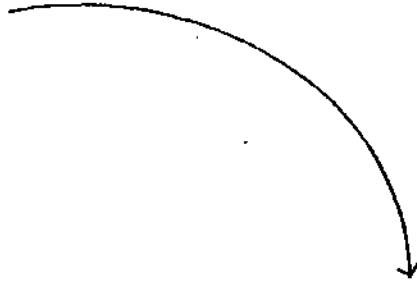
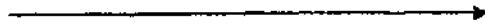
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(Question 40 continues on page 14)

- (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]

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End of Paper



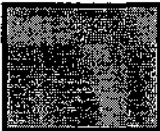
**SCHOOL : ROSYTH PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**


**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)	<p>a)Statement C. Only mammals have hair or fur on its outer covering.</p> <p>b)Reptiles: has lungs Fish : has gills</p>
Q30)	<p>a)The amount of carbon dioxide in the glass containers.</p> <p>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.</p> <p>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.</p> <p>d)To compare and confirm that the amount of carbon dioxide is the only variable affecting the rate of photosynthesis.</p>
Q31)	<p>a)gas W : carbon dioxide gas X : oxygen Substance : chlorophyll</p>

	<p><b>Substance : sugar</b></p> <p><b>b)The hot plate heats up the water to increase the temperature of the water.</b></p> <p><b>c)From 10°C to 30°Cas the temperature of water increases, the rate of photosynthesis also increases, but from 40°Cto 50°C, as the temperature of water increases, the rate of photosynthesis decreases.</b></p>
Q32)	<p><b>a)As the light intensity increases, the temperature of air also increases.</b></p> <p><b>b)Amount of water and the wind speed.</b></p>
Q33)	<p><b>a)i)Plants give out oxygen for the animals during photosynthesis.</b>  <b>ii)Plants also provide shelter for the animals.</b></p> <p><b>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.</b></p>
Q34)	<p><b>a)grass→rabbit→snake</b></p> <p><b>b)The grass is a food produce and will make its own food. The other organisms depend directly or indirectly on it for food.</b></p> <p><b>c)i)Bird Q feds on bird P so its death rate becomes higher than its birth rate.</b>  <b>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.</b></p>
Q35)	<p><b>a)</b> </p> <p><b>b)Shape A blocks all the light.</b></p>
Q36)	<p><b>a)The fish balls gained heat from the soup.</b></p> <p><b>b)Heat travels from a hotter place to a cooler place.</b></p> <p><b>c)Pot : metal</b>  <b>Handle pf pot : plastic</b></p>
Q37)	<p><b>a)Electrical energy → kinetic energy → kinetic energy → kinetic energy</b></p> <p><b>b)Gravitational force.</b></p>

	<p>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.</p>
Q38)	<p>a)The water in container A.</p> <p>b)The kinetic energy of the turning wheel will be converted into electrical energy of the generator, allowing the bulb to work.</p> <p>c)Action taken : Place the water wheel lower.</p> <p>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.</p>
Q39)	<p>a)Spring A is thicker than spring B.</p> <p>b)When the pump is released, the spring inside the pump will go back to its original length.</p>
Q40)	<p>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.</p> <p>b)As the wing span of the paper plane increase, the time for the plane to stay in the air also increase.</p> <p>c)i) </p> <p>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.</p>

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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

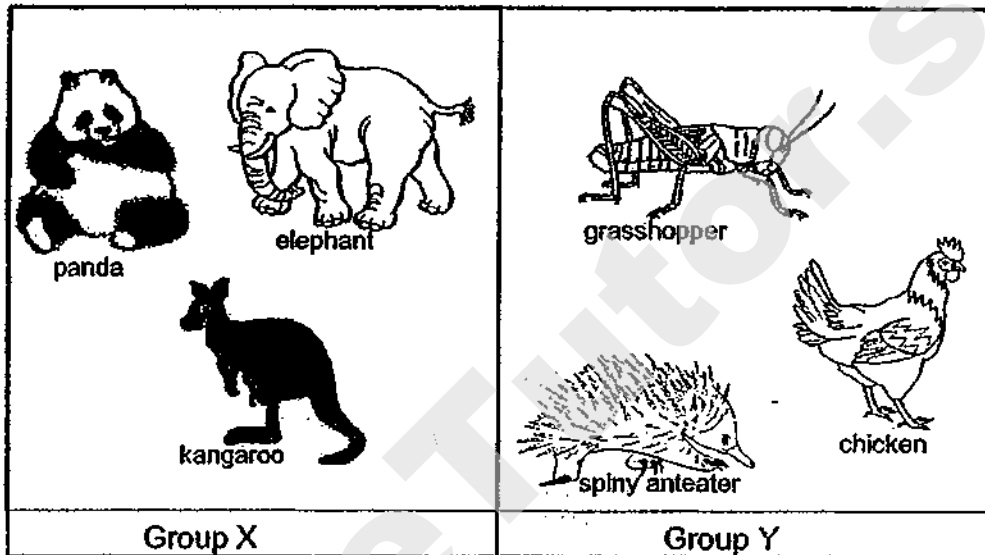
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**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 | 3) what they eat   |
| 2) their outer covering   | 4) where they live |

2. Which of the following is true about reproduction in both plants and animals?

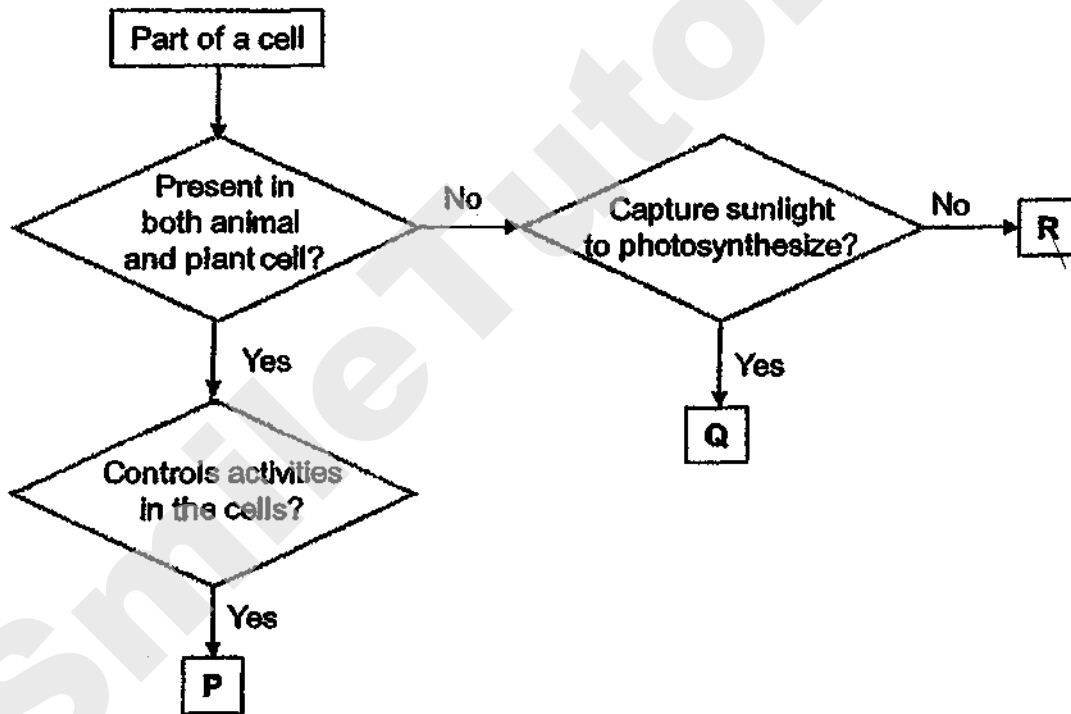
- A: Eggs in both plants and animals are the female reproductive cells.
- B: The pollen grains and testes are the male reproductive cells.
- C: After fertilisation, plants develop seeds and animals develop their youngs.

- |                 |                 |
|-----------------|-----------------|
| 1) A and B only | 3) A and C only |
| 2) B and C only | 4) A, B and C   |

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?

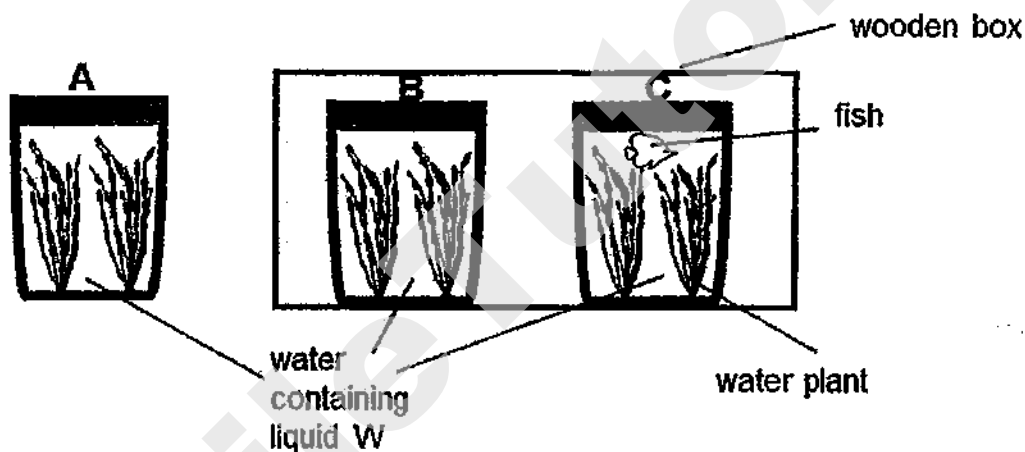
	P	Q	R
1)	cell membrane	chloroplasts	cytoplasm
2)	nucleus	chloroplasts	cell membrane
3)	nucleus	cytoplasm	nucleus
4)	nucleus	chloroplasts	cell wall

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.

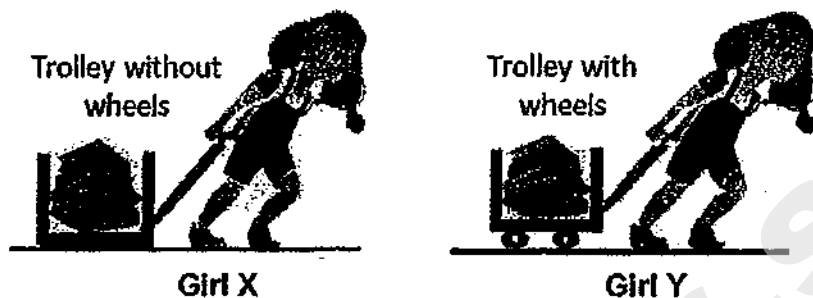
Amount of carbon dioxide	Colour of Liquid W
Low	Red
Moderate	Blue
High	Yellow

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

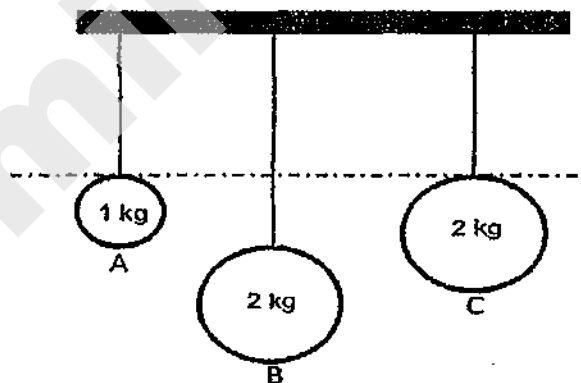


7. Which of the following statement is/are true about the girls pulling the trolley full of books?



- 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    3) A and C only  
2) A and B only                                      4) A, B and D only

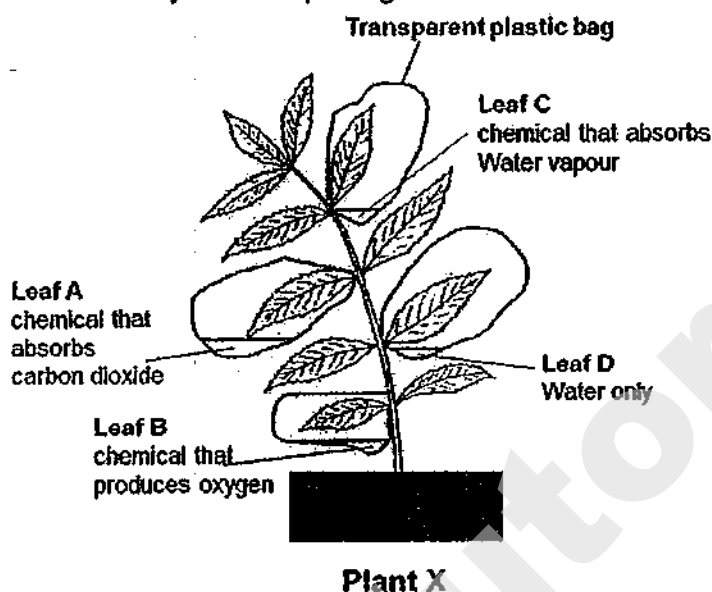
8. The diagram below shows 3 balls of different masses hanging from the ceiling.



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.

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.



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 | 3) A, B and C only |
| 2) B and D only | 4) B, C and D only |

10. The table below shows the boiling point and freezing point of some substances.

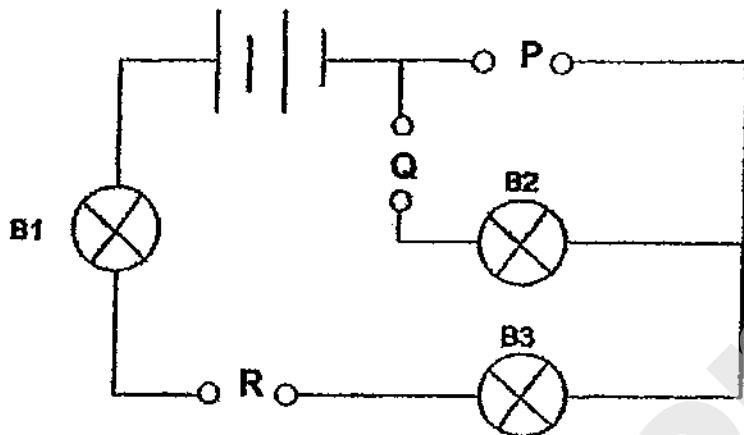
Substance	Boiling Point ( $^{\circ}\text{C}$ )	Freezing Point ( $^{\circ}\text{C}$ )
P	55	2
Q	60	10
R	75	15
S	95	30

Based on the table above, which of the following statements are true about the substances?

- A: Substance P is in the solid state at  $5^{\circ}\text{C}$ .  
 B: Substance S is in the liquid state at  $90^{\circ}\text{C}$ .  
 C: All the four substances are in the liquid state at  $40^{\circ}\text{C}$ .  
 D: Substances Q and R are in the gaseous state at  $70^{\circ}\text{C}$ .

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

11. 3 rods, X, Y and Z, made of different materials were placed at the positions P, Q and R in the circuit below.



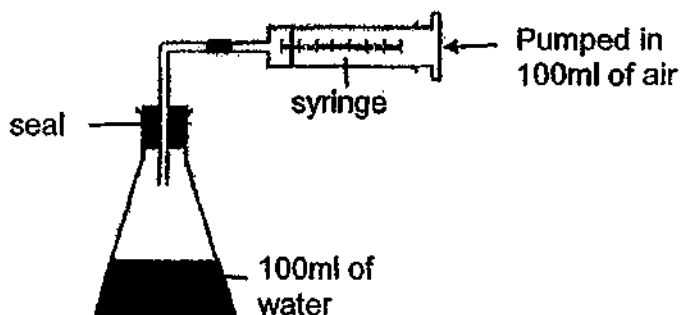
The table below shows the results collected at the end of the experiment.

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 ?

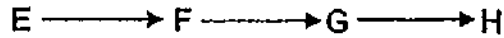
- 1) Only Rod Z is a non-conductor of electricity
- 2) Only Rod X is a non-conductor of electricity.
- 3) Only Rod Y and Rod Z are non-conductors of electricity.
- 4) Both Rod X and Rod Z are conductors of electricity.

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

13. Study the following food chain carefully.

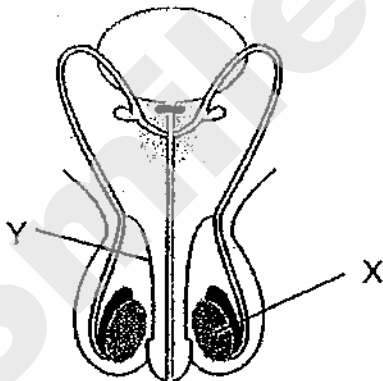


The food chain above shows 4 different organisms E, F, G and H found in a rainforest. What are the possible causes that are likely to increase the population of organism F?

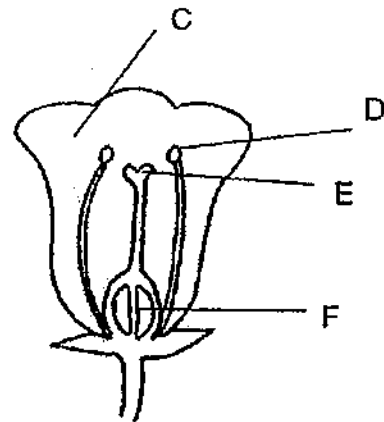
- A: There are more Organism E in the rainforest.
- B: Population of Organism H decrease in the rainforest.
- C: There are more Organism G in the rainforest.
- D: Population of Organism H increase in the rainforest.

- 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

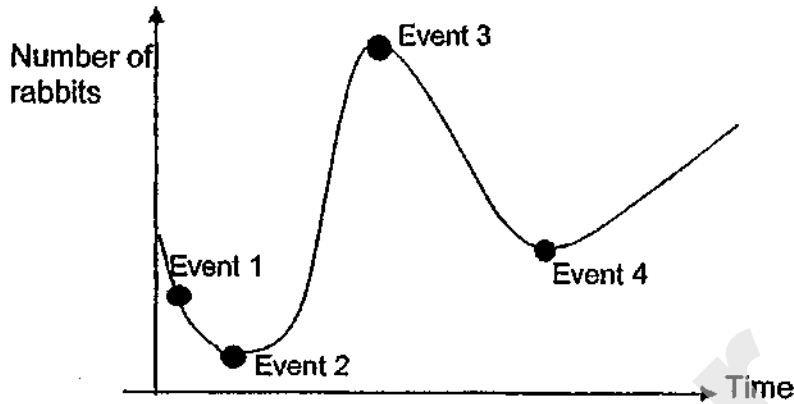


B

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

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)		

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)

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.



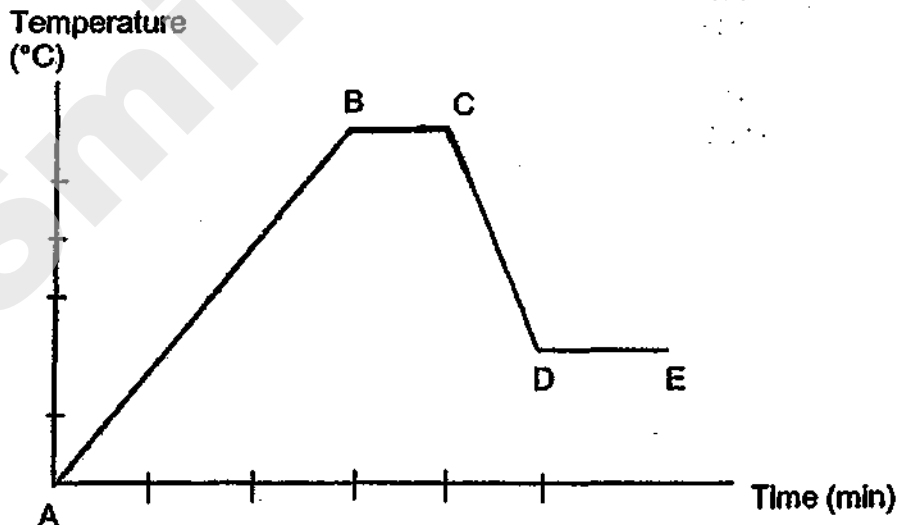
The ends of the iron bars are brought close to each other to find out how they would interact. The observations are recorded below.

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 | 3) R |
| 2) Q | 4) S |

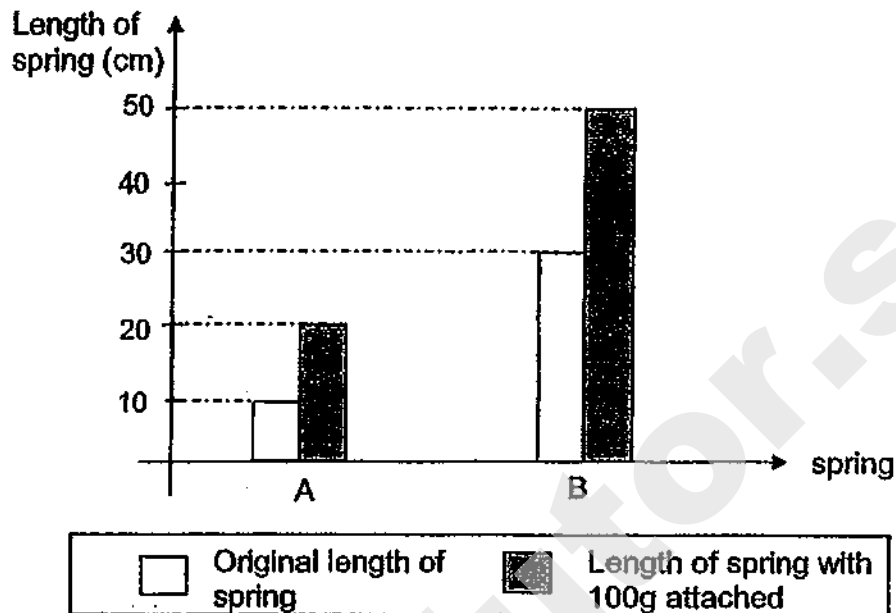
20. The graph shows the changes of temperature of water as shown below.



Which of the following shows the stages when heat is gained?

- |              |              |
|--------------|--------------|
| 1) AB and BC | 3) BC and DE |
| 2) BC and CD | 4) CD and DE |

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.

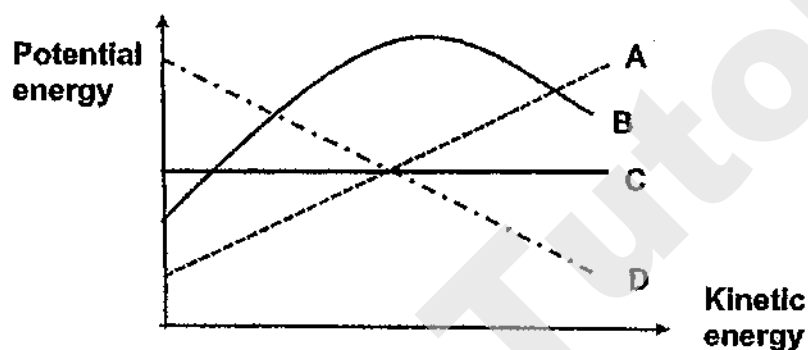
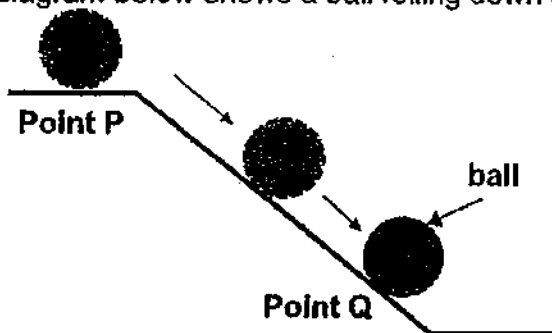


Which one of the following type of force enables the person to write using a pencil?

- 1) Frictional force
- 2) Elastic Spring force
- 3) Magnetic force
- 4) Gravitational force



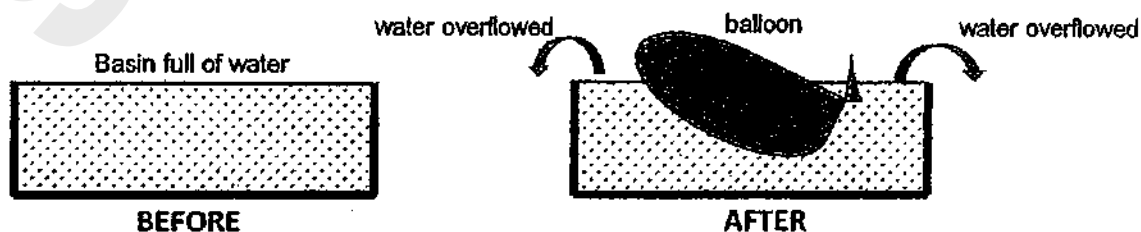
23. The diagram below shows a ball rolling down a slope.



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 | 3) C |
| 2) B | 4) D |

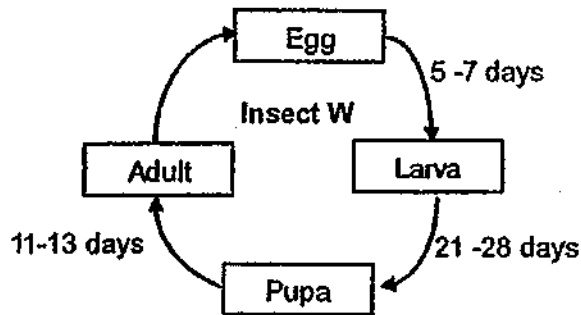
24. Weiwei filled a balloon with air. She pushed the balloon into a basin full of water as shown in the diagram below. She noticed that some water had overflowed.



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.

25. Study the life cycle of Insect W.



Which of the following statements is true?

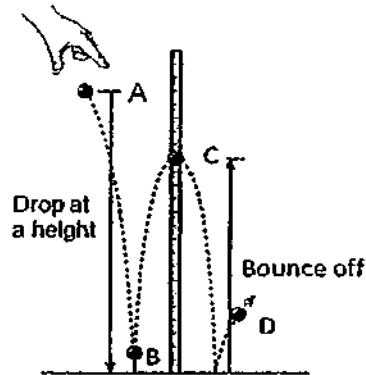
- 1) Insect W can be a cockroach.
- 2) Insect W took between 32 days to 41 days to develop from egg to adult.
- 3) Insect W spends more days eating than not eating while developing into an adult.
- 4) Insect W must be in the pupa stage 21 days after egg is laid.

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

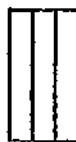
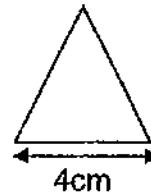
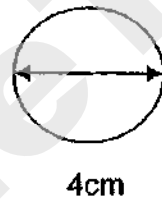
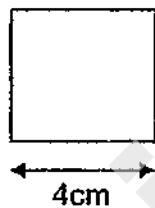
27. A rubber ball was dropped from Position A. The ball bounced as show below.



At which of these positions does the ball have the greatest kinetic energy and least potential energy?

- |               |               |
|---------------|---------------|
| 1) Position A | 3) Position C |
| 2) Position B | 4) Position D |

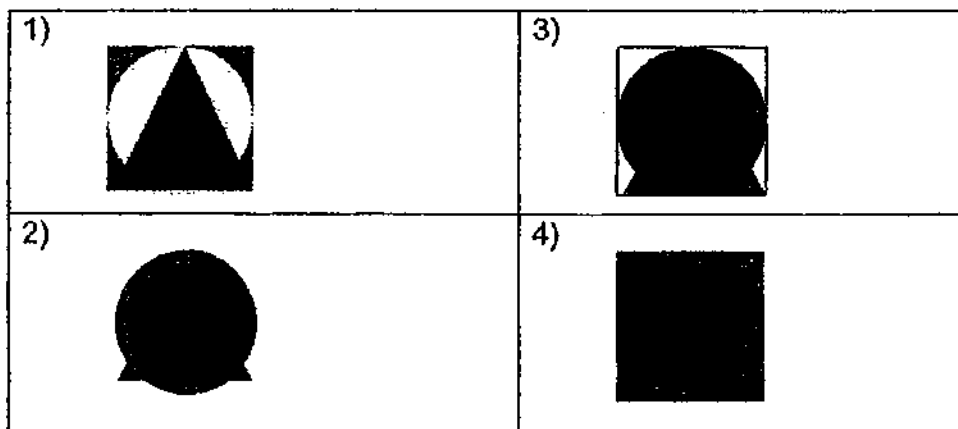
28. The diagram below shows 3 pieces of wood of different shapes.



Three pieces of wood stacked together



Which of the following shadows would be observed on the screen?



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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
<b>Booklet A</b>		<b>56</b>
<b>Booklet B</b>		<b>44</b>
<b>Total</b>		<b>100</b>

13 questions

44 marks

Total time for Booklets A & B: 1 h 45 min

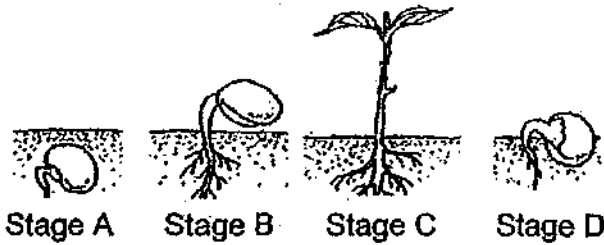
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Part II (44 marks)**

Answer all the following questions.

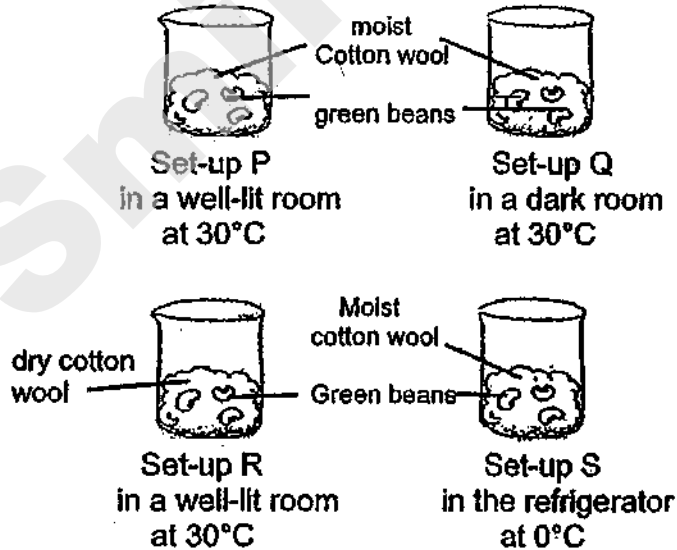
29. The diagram below shows some stages in the growth of a bean plant.



a) At stage B, where does the seedling get its food from? [1]

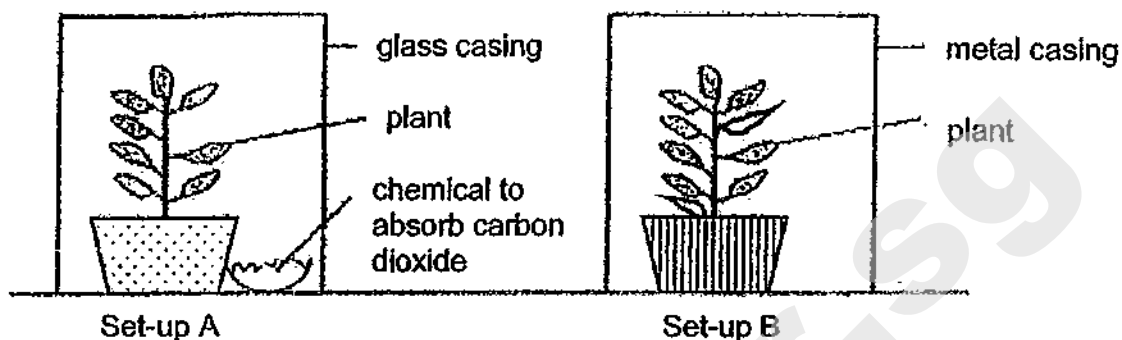
b) State the stage(s), A, B, C or/and D, which require(s) oxygen. Explain your answer. [1]

c) A Science teacher set up the following experiment with set-ups P, Q, R and S.



Huijuan concluded that the seed could not germinate in Set-up S because there was no light. Was she correct? Explain. [1]

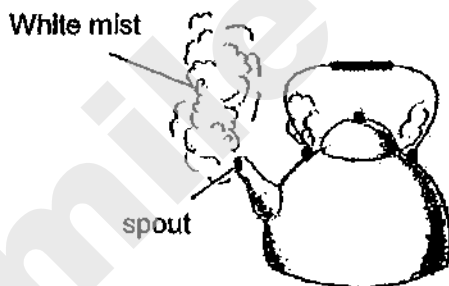
30. Yasmin carried out an experiment as shown below. She wanted to find out whether carbon dioxide is needed for the plants to carry out photosynthesis. She placed set-ups, A and B, near the window in the same room.



- 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	

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]

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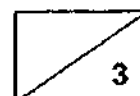
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- ii) Why did the mass of the pants change most slowly in the last 2 hours? [1]

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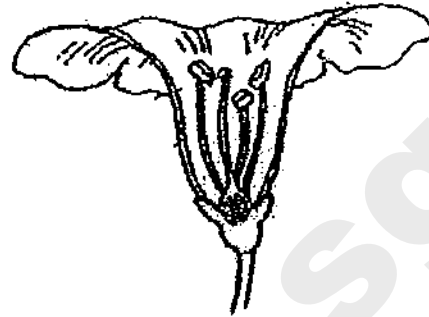




33. Study the diagrams below.



Flower A



Flower B

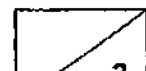
a) Based on the diagrams, identify which flower, Flower A or Flower B, is pollinated by: [1]

(i) Wind : \_\_\_\_\_

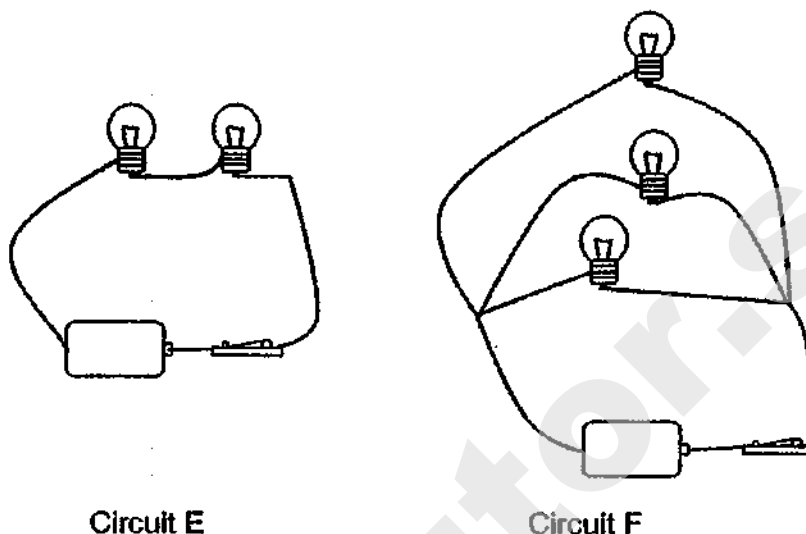
(ii) Animals : \_\_\_\_\_

b) Support your answers in (a). [2]

Flower	Reason
A	
B	



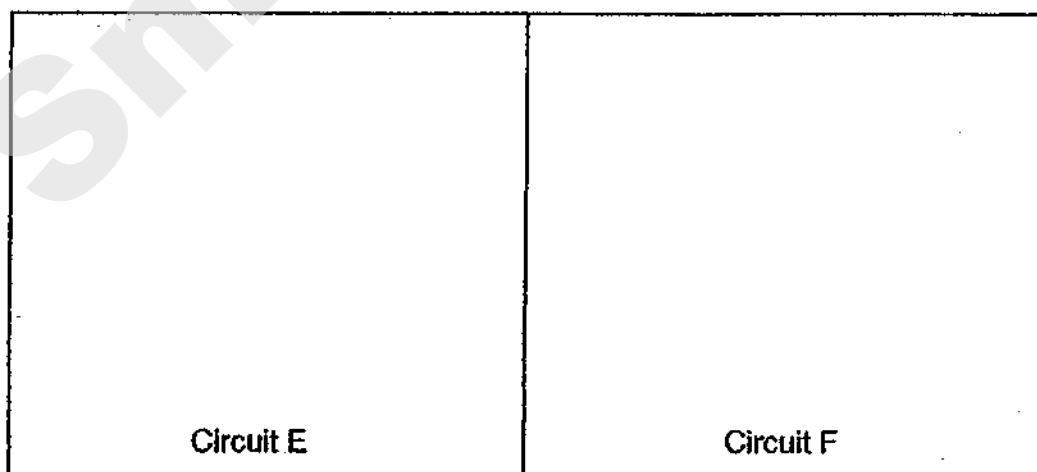
34. Ben wanted to find out how the number of bulbs arranged in series will affect the brightness of the bulbs. He set up 2 arrangements, Circuit E and Circuit F, using the same type of components, as shown in the diagram below.



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]



- c) Explain how the rubber coating on the copper wire prevent us from being electrocuted. [1]

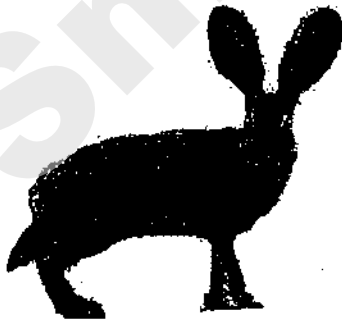
35. The following picture shows a camel. It has survived well in places with extremely high temperatures like the desert.



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



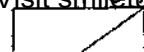
Animal Q

Why will Animal P survive better in the desert? [1]

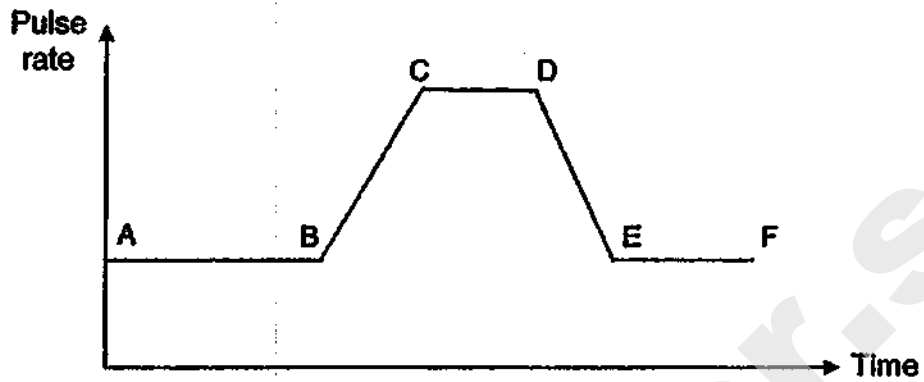
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36. The graph below shows the changes in the pulse rate as Annie jogs around a running track.



a) When Annie starts running at B, the pulse rate increases. Explain why. [1]

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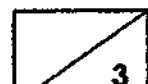


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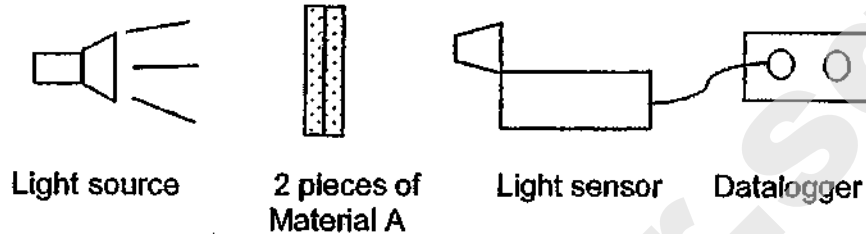
b) At which point does Annie stop jogging? [1]

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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]



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.



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

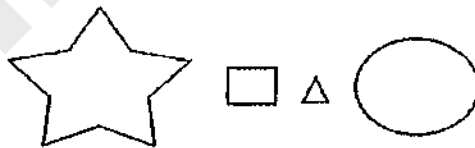
- a) Based on the results above, describe the relationship between the number of pieces of material A used and the amount of light detected by the datalogger. [1]

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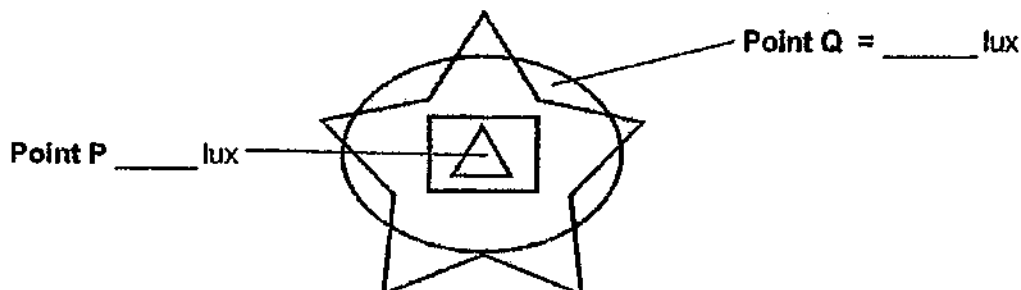


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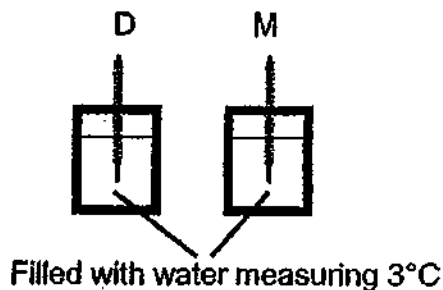
- b) 4 shapes are made of Material A as shown below.



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]



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  $3^{\circ}\text{C}$  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]

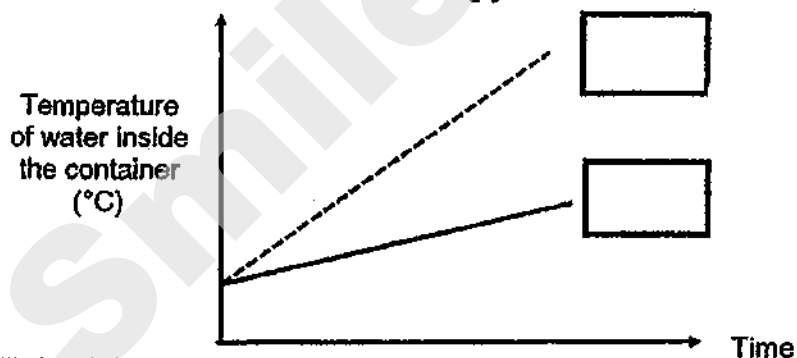
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- b) Alex then left the containers in the room and recorded the temperature of the water over time. The graph below shows the temperature of the water in Container D and M over a period of 20 minutes.

- 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]

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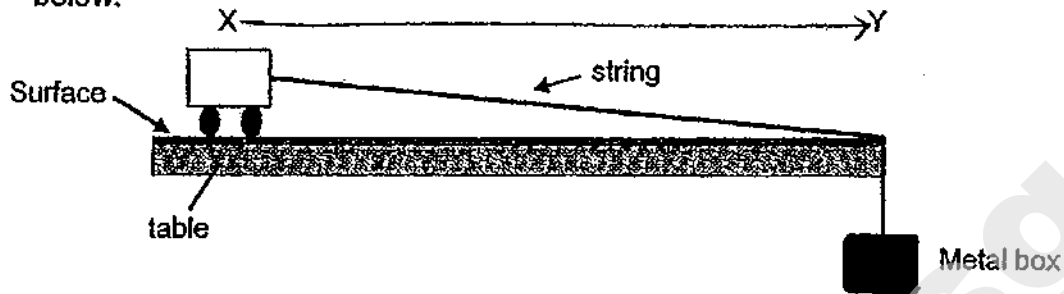
- c) Using the above information from the experiment, which container, D or M, will be more suitable to be used as a flask for keeping hot drink warm for as long as possible? Explain your answer. [1]

---



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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]

---



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- 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]

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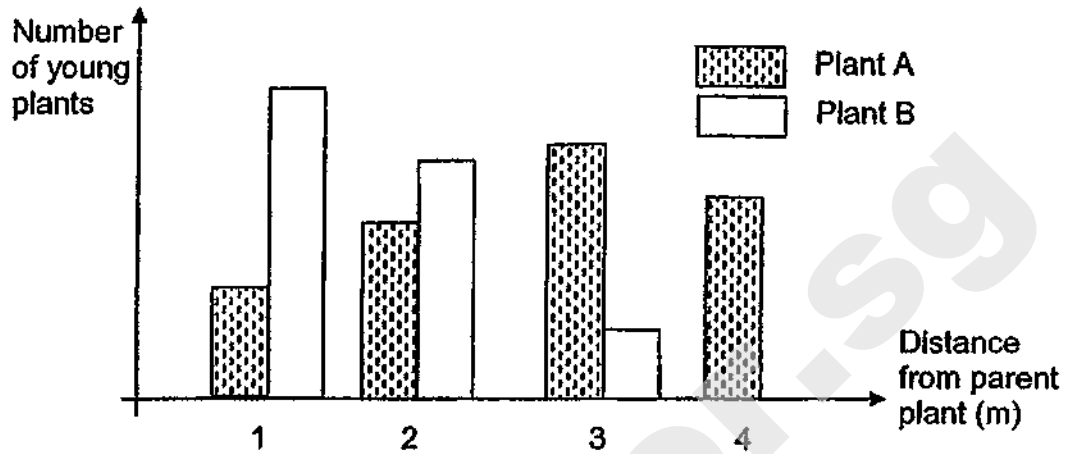
- c) Why does it take a greater effort to walk up the stairs than to walk down the stairs? [2]

---



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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 :

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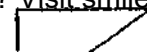


- c) Based on the picture above, which plant, X or Y, is more likely to be dispersed further away from the parent plant? Explain. [1]

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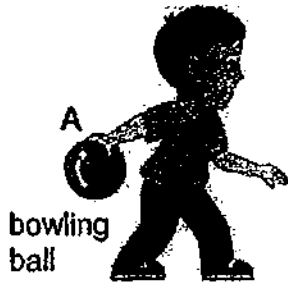


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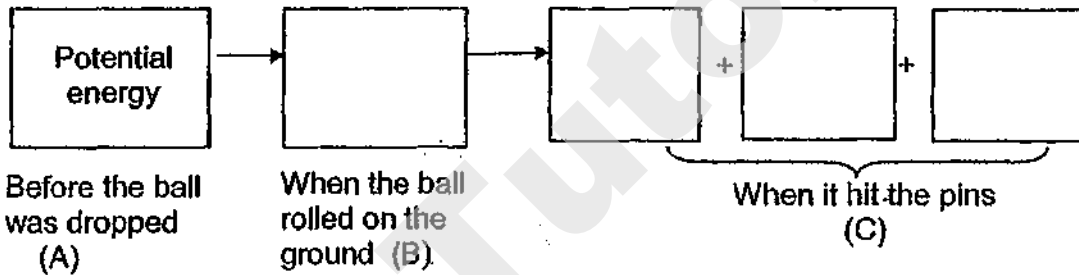


41. John went to the bowling alley to bowl.



- 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]



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**SCHOOL : SCGS PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 SA1**

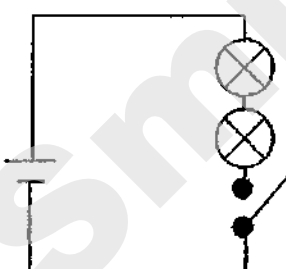
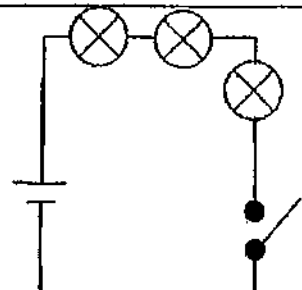
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**SECTION A**

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

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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.
32b)	Pants B has the <u>least /smallest exposed surface area</u> , it had <u>the slowest rate of evaporation of water</u> .
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	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Circuit E</p> </div> <div style="text-align: center;">  <p>Circuit F</p> </div> </div>
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 <u>larger ears</u> to enable it to <u>lose heat faster</u> in desert. OR Animal P has a <u>darker coloured fur</u> to <u>blend into the colour of sand</u> .
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.

S/N	Booklet B Answers
36c	Muscle Cells → Blood → <b>Heart</b> → <b>Lungs</b> → 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 <u>from the hand to the container faster</u> , thus the hand felt colder.
38bi)	<p>Temperature of water inside the container (°C)</p> <p>Time</p>
38bi)	D is a better conductor of heat than M So it will conduct heat <u>from the surrounding air to the water faster</u> .
38c.	Container M. M is a poorer conductor of heat so it will conduct heat <u>from the hot water in the flask to the surroundings slower</u> .
39a.	Surface B. It takes the shortest time for the wooden cart to move from X to Y, so the friction <u>between the surfaces of the ramp and the heavy box</u> 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	<p>Fruit from Plant A      Fruit from Plant B</p>
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 → <b>Kinetic Energy</b> → <b>Kinetic Energy</b> + <b>Sound Energy</b> + <b>Heat Energy</b>
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.



## 2019 PRIMARY 6 SEMESTRAL ASSESSMENT 1

Name: \_\_\_\_\_ ( )

Date: 14 May 2019

Class: Primary 6 ( )

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

Parent's Signature: \_\_\_\_\_

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.

**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.

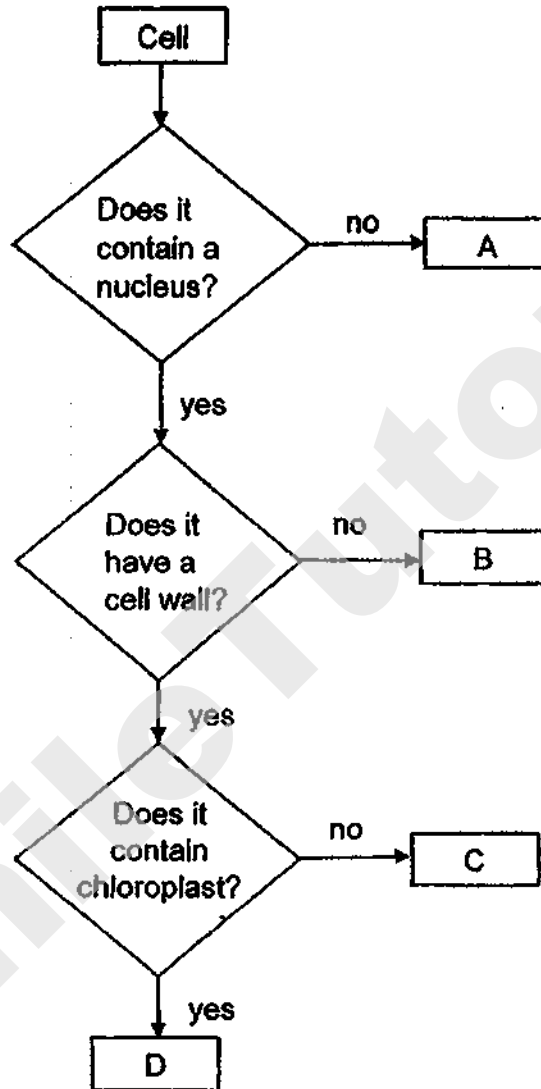
Type of organism	Number of organisms
Butterfly	2
Fish	2
Frog	2
Caterpillar	4
Tadpole	5
Water lily	3
Hydrilla	4
Water hyacinth	2

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.



3. In a flow chart below, A, B, C and D are cells taken from a plant.

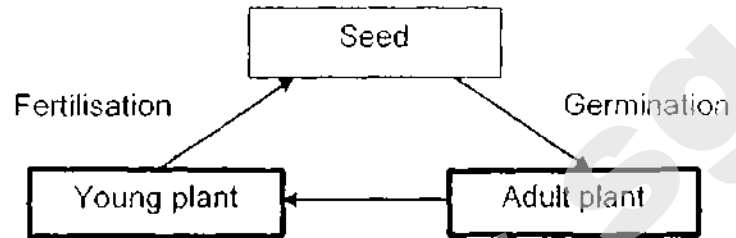


From which parts of the plant are the above cells taken from?

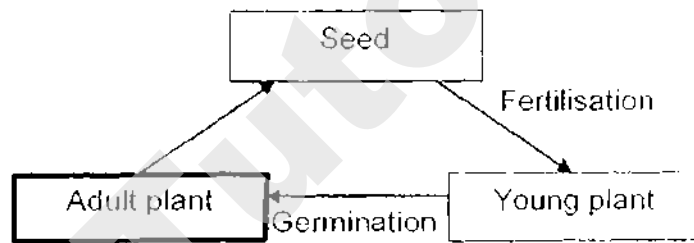
	Leaf	Root
(1)	A	B
(2)	D	A
(3)	D	C
(4)	C	B

4. Which the following diagrams shows the correct order in the life cycle of a flowering plant?

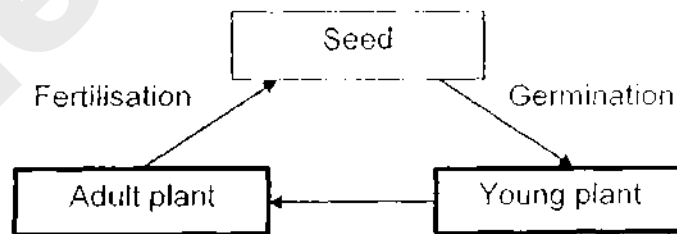
(1)



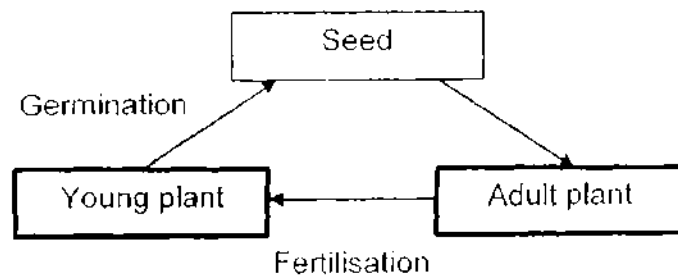
(2)



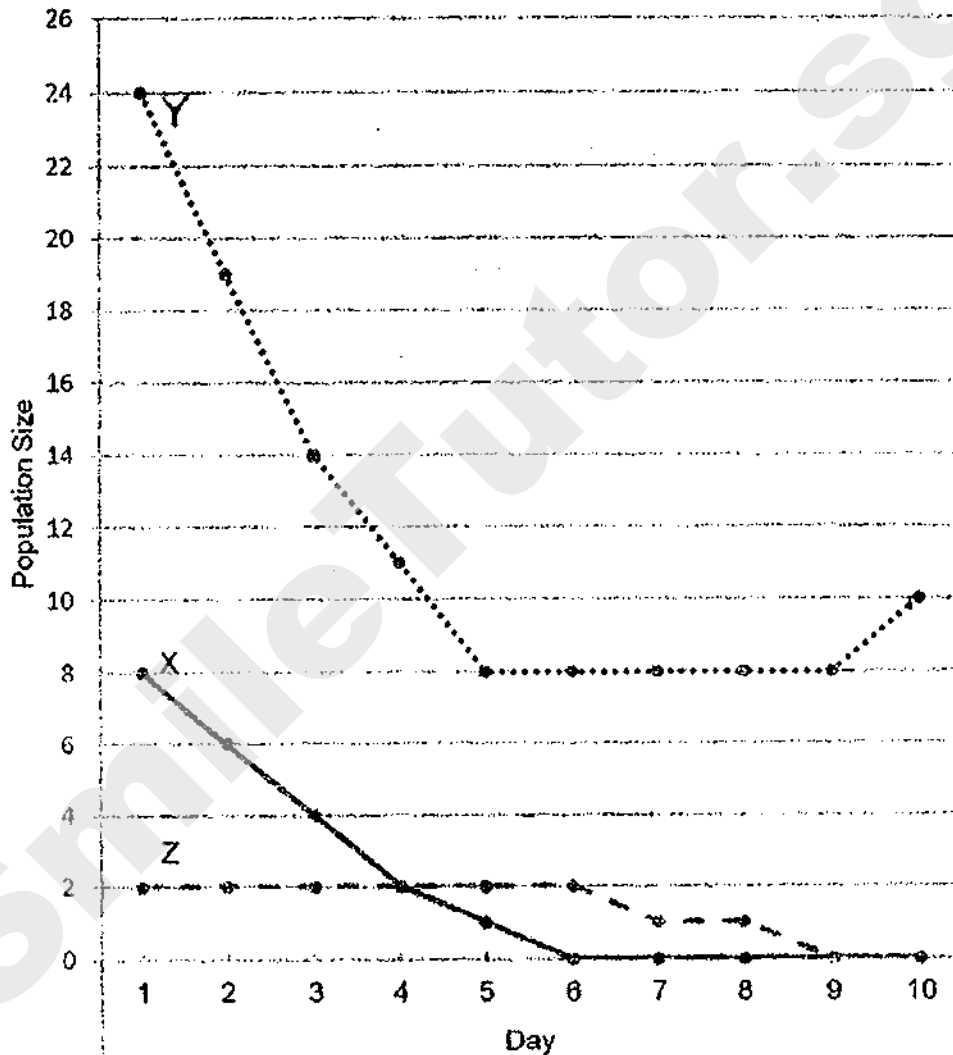
(3)



(4)



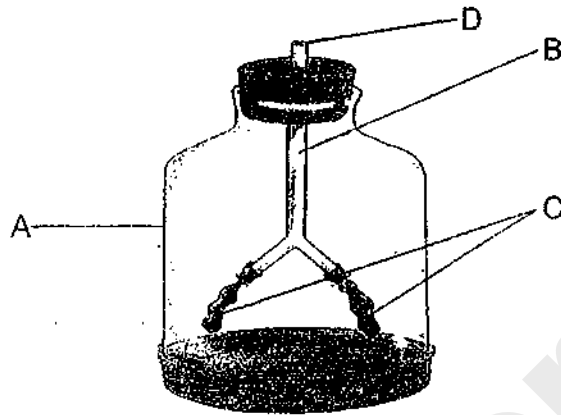
5. Darius placed three populations of aquatic organisms X, Y and Z into a tank. The living conditions were suitable for all the organisms. He did not add or take any organism out during the ten days. He recorded and plotted their numbers over ten days in a graph below.



Which of the following food chains correctly shows the relationship among the three organisms?

- (1)  $X \rightarrow Y \rightarrow Z$
- (2)  $X \rightarrow Z \rightarrow Y$
- (3)  $Y \rightarrow X \rightarrow Z$
- (4)  $Z \rightarrow Y \rightarrow X$

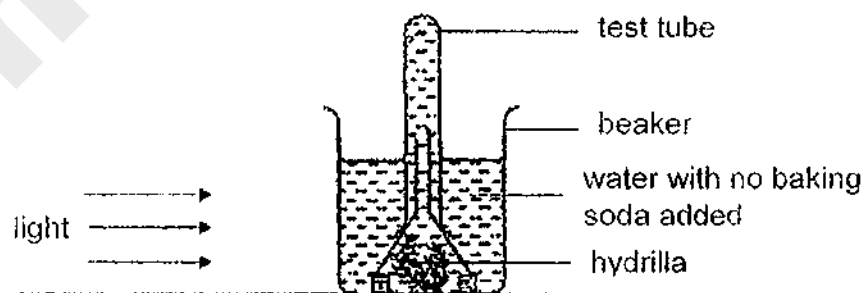
6. The diagram shows a model of the human respiratory system.



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

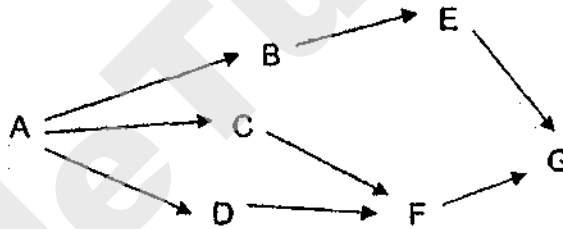
8. Study the food chain of a fish tank.



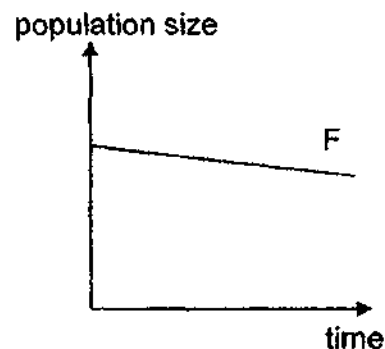
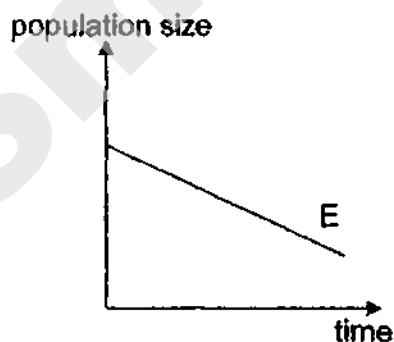
Based on the food chain above, which of the following statements is true about these living things?

- (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.

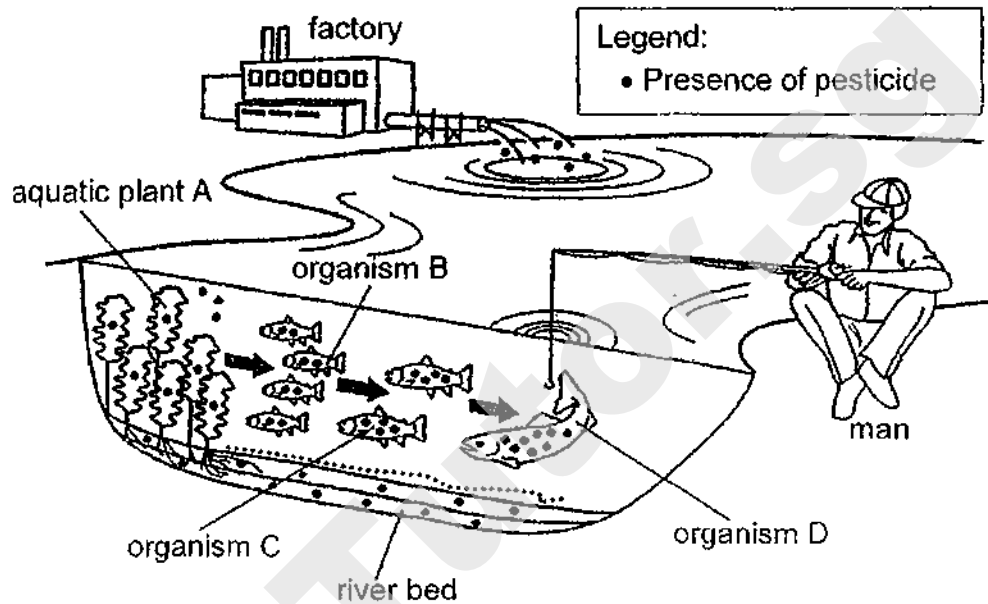
10. The information below describes the physical factors at two habitats S and T within a day.

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

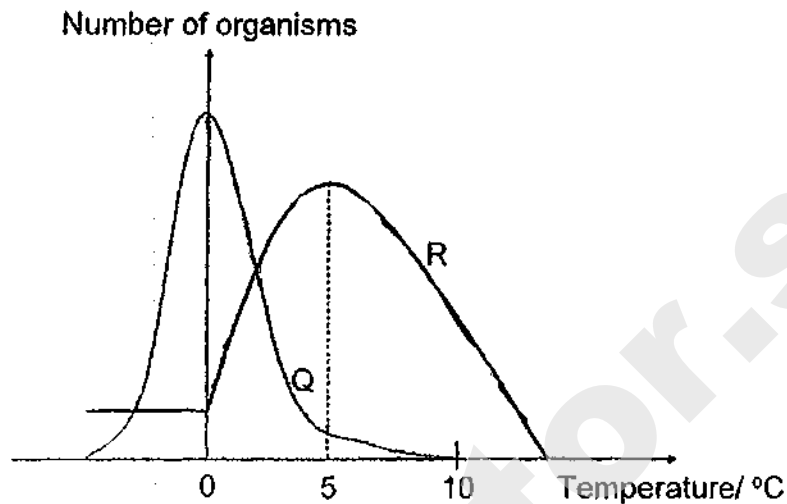
11. The diagram below shows the transfer of pesticide from one organism to the next along the food chain in the river. The pesticide cannot be removed from the bodies of the organisms.



Which of the following statements is false?

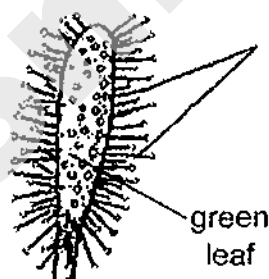
- (1) Each plant absorbs some of the pesticide.
- (2) Organism B gets the pesticide when it eats the plants.
- (3) Organism B has the most amount of pesticide because it depends directly on the plants for food.
- (4) The man will have more pesticide in his body when he eats one organism D as compared to one organism C.

12. The graph below shows how the populations of organisms Q and R are affected by the temperature of the surroundings they live in.

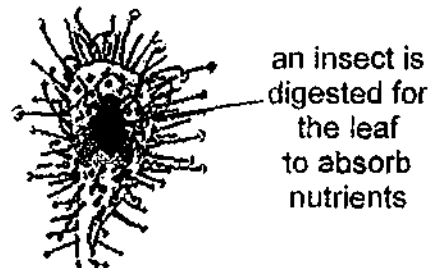


Which of the following can be concluded based on the graph above?

- (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



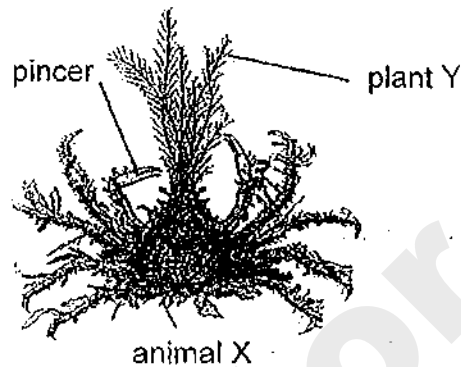
leaf of plant X capturing an insect

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

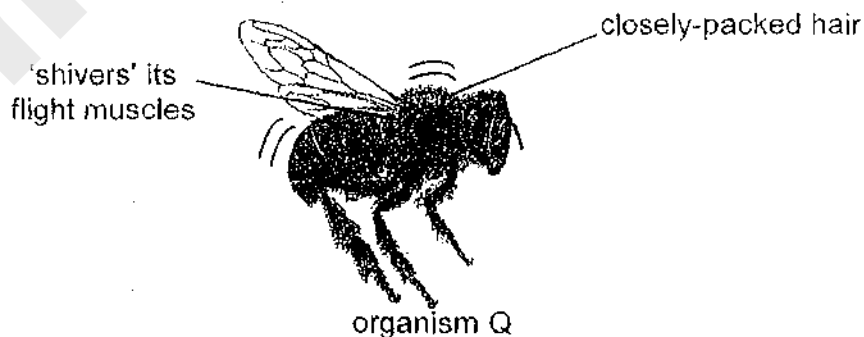


14. The diagram below shows animal X. It lives on the seabed with many plant Y. Animal X is an animal eater. It has many tiny 'hooks' on its back to carry plant Y.



Which of the following statements states how this behavioural adaptation helps the survival of animal X?

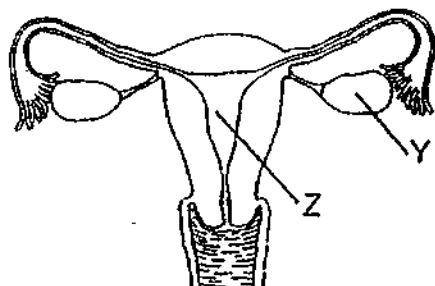
- (1) Plant Y helps to keep animal X warm.
  - (2) Plant Y helps to make food for animal X.
  - (3) Plant Y helps animal X to move faster in water.
  - (4) Plant Y helps animal X not to be spotted by its predator easily.
15. The diagram below shows the adaptations of organism Q. Organism Q lives in cold places. It has dense hair on its body to trap air. It also 'shivers' its flight muscles to generate heat.



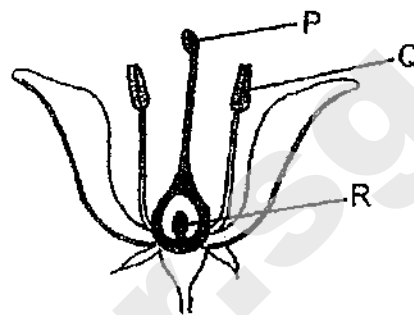
Based on the information, how do both adaptations help organism Q to survive in the cold?

- (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.

16. The diagrams below show the reproductive systems of a human and a plant.



parts of a human reproductive system

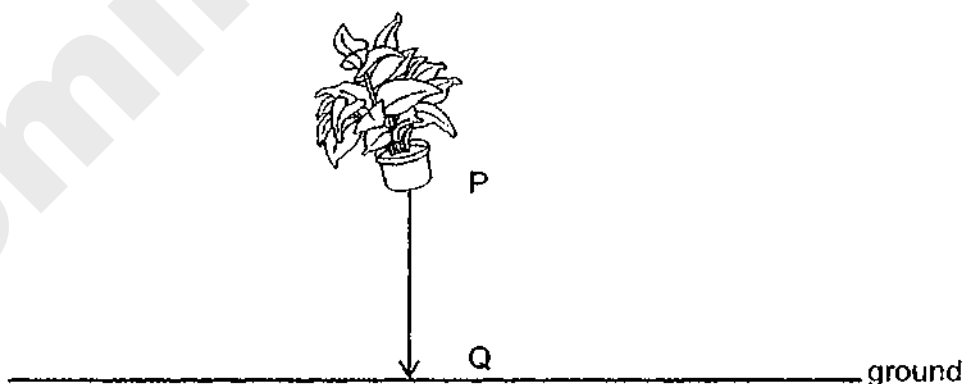


parts of a plant reproductive system

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.

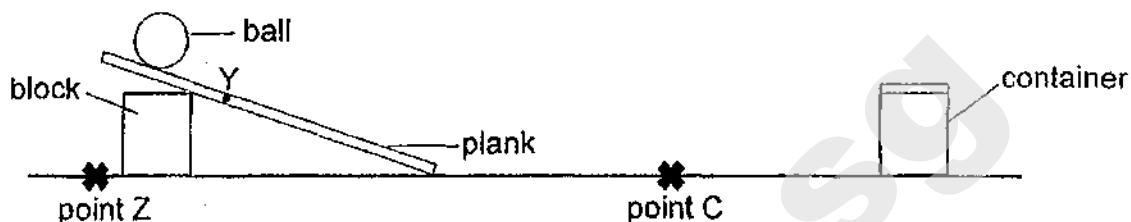
17. A potted plant fell from point P to point Q as shown in the diagram below.



Which of the following is correct?

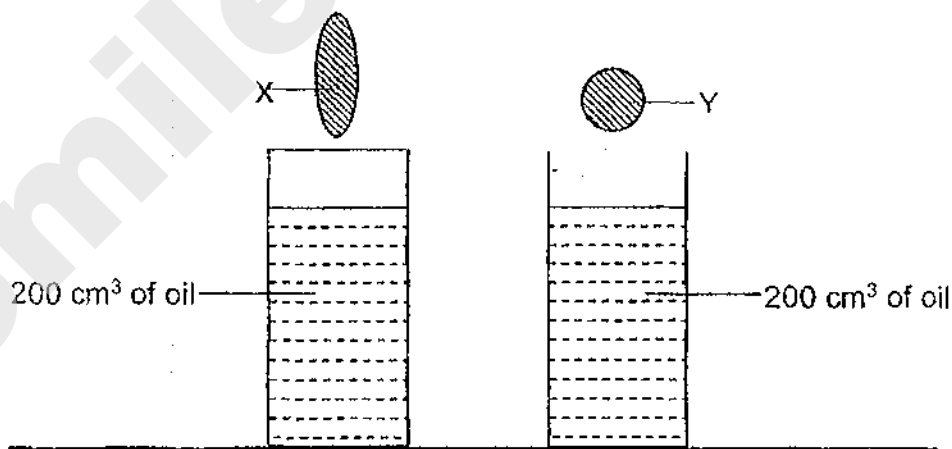
	Potential energy of the potted plant from P to Q	Kinetic energy of the potted plant from P to Q
(1)	decreases	increases
(2)	decreases	decreases
(3)	increases	remains the same
(4)	remains the same	decreases

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  $200 \text{ cm}^3$  of oil and dropped the shapes into the containers as shown.

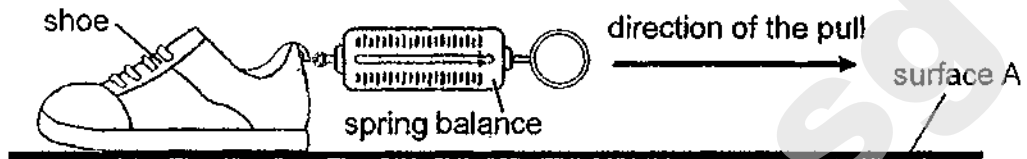


She then measured the time taken for the shapes, X and Y, to travel from the surface of the oil to the bottom of the containers. She observed that shape X took a shorter time to reach the bottom of the container.

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.

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.



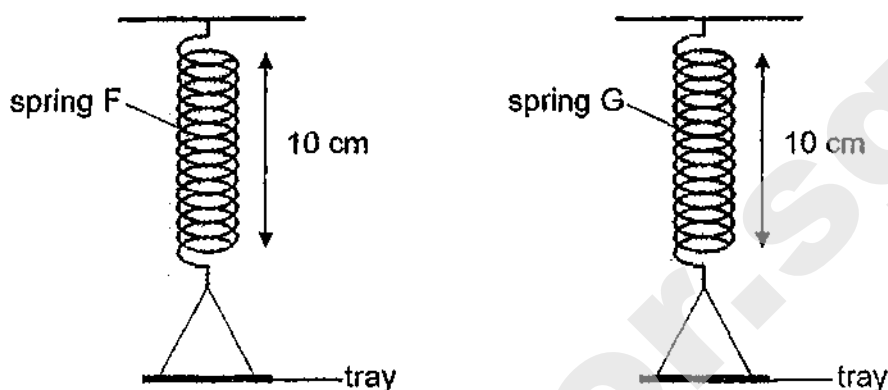
The experiment was repeated for surfaces, B, C and D. Jasmine's readings are as follows.

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.

21. Karen recorded the length of two springs, F and G, as shown in the diagram below.



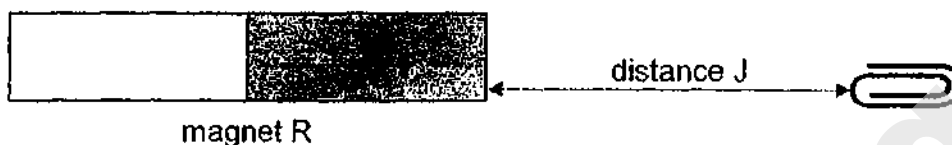
She put loads of different masses on both trays and recorded the length of the springs in the table below.

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.

22. Danielle placed magnet R and a paper clip 15 cm away from each other.



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.

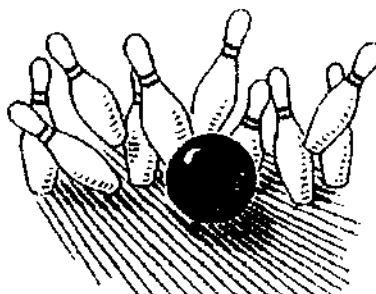


The table below shows the results of her experiment.

Magnet	R	S	T	U
Distance J (cm)	2	7	5	8

Based on the results, which of the following statements is true?

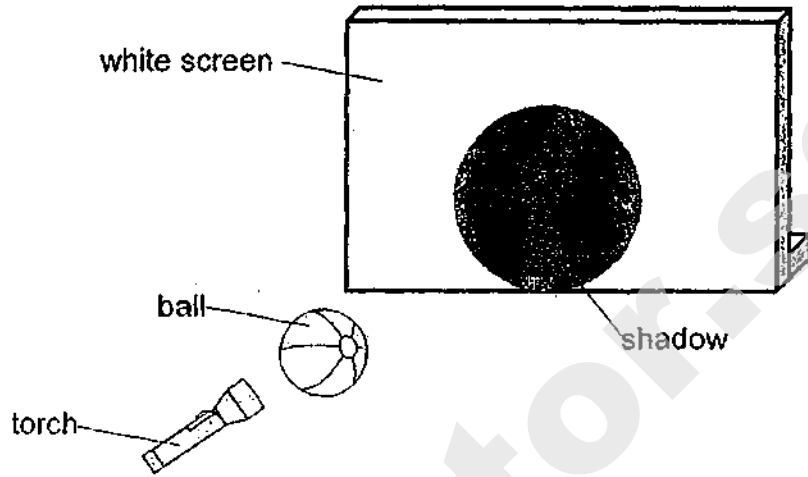
- (1) Magnet U is the weakest.
  - (2) Magnet S is stronger than magnet R.
  - (3) The bigger the magnet, the stronger the magnetic force.
  - (4) Only magnet T can attract paper clips that are placed 5 cm away.
23. The diagram below shows bowling pins falling after being hit by a bowling ball.



Which of the following best shows the energy conversions when the bowling ball is rolling and hits the bowling pins?

- (1) Kinetic energy  $\rightarrow$  Heat energy  $\rightarrow$  Kinetic energy
- (2) Kinetic energy  $\rightarrow$  Kinetic energy + Sound energy + Heat energy
- (3) Potential energy  $\rightarrow$  Kinetic energy + Sound energy + Heat energy
- (4) Potential energy  $\rightarrow$  Kinetic energy  $\rightarrow$  Sound energy + Heat energy

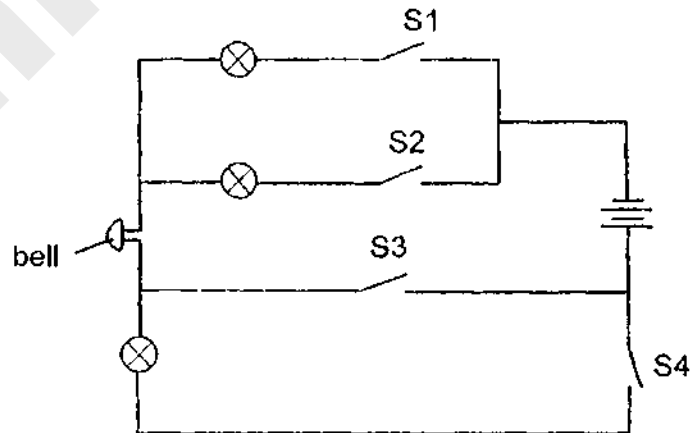
24. When Oliver placed a ball between the torch and a white screen, a shadow of the ball was cast on the white screen as shown below.



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.

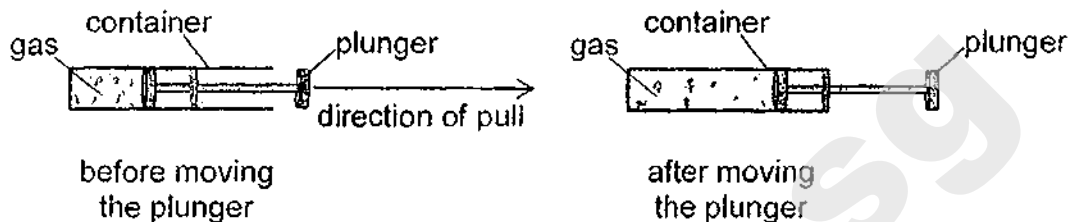
25. Study the electrical circuit below.



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

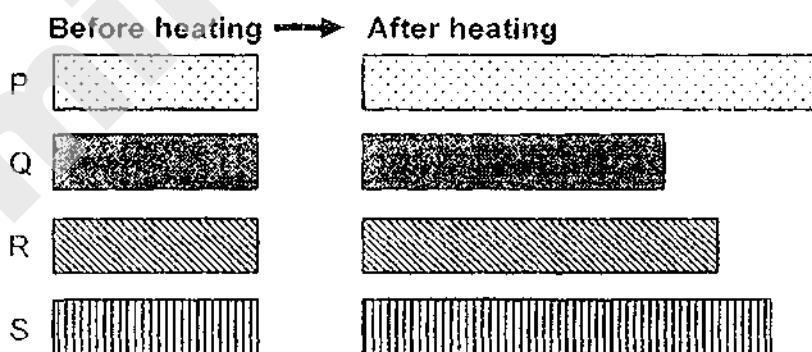
26. David trapped some gas in a container. He pulled the plunger towards the open end of the container as shown below.



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 of heat for the same period of time.

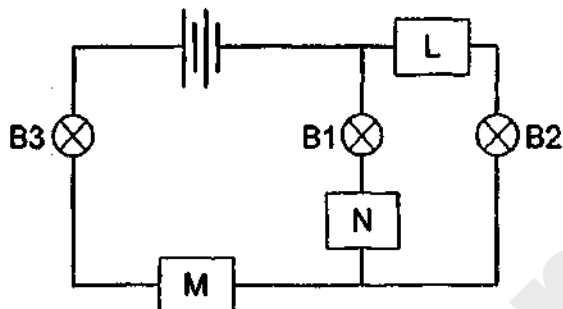


Based on the information above, which of the following shows the correct arrangement of metals, P, Q, R and S, from the lowest to the greatest rate of expansion?

	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



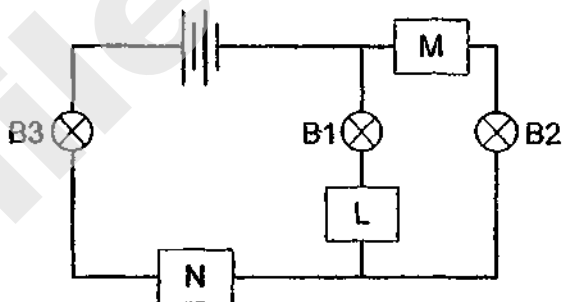
28. Hariz had 3 bars, L, M and N, each made of different materials. He placed them at positions as shown in the circuit below.



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 : \_\_\_\_\_ ( )

Date: 14 May 2019

Class : Primary 6 ( )

Time: 8.00 a.m. – 9.45 a.m.

Parent's Signature : \_\_\_\_\_

Duration: 1 hour 45 minutes

# SCIENCE

## BOOKLET B

### INSTRUCTIONS TO CANDIDATES

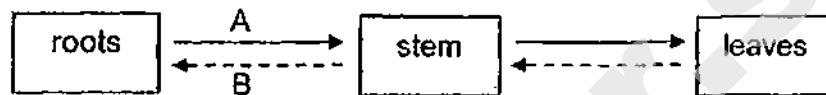
1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	56
Booklet B	44
Total	100

**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.

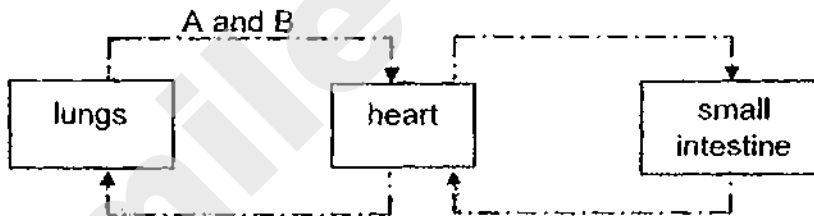


a) What do substances A and B represent? [1]

A: \_\_\_\_\_

B: \_\_\_\_\_

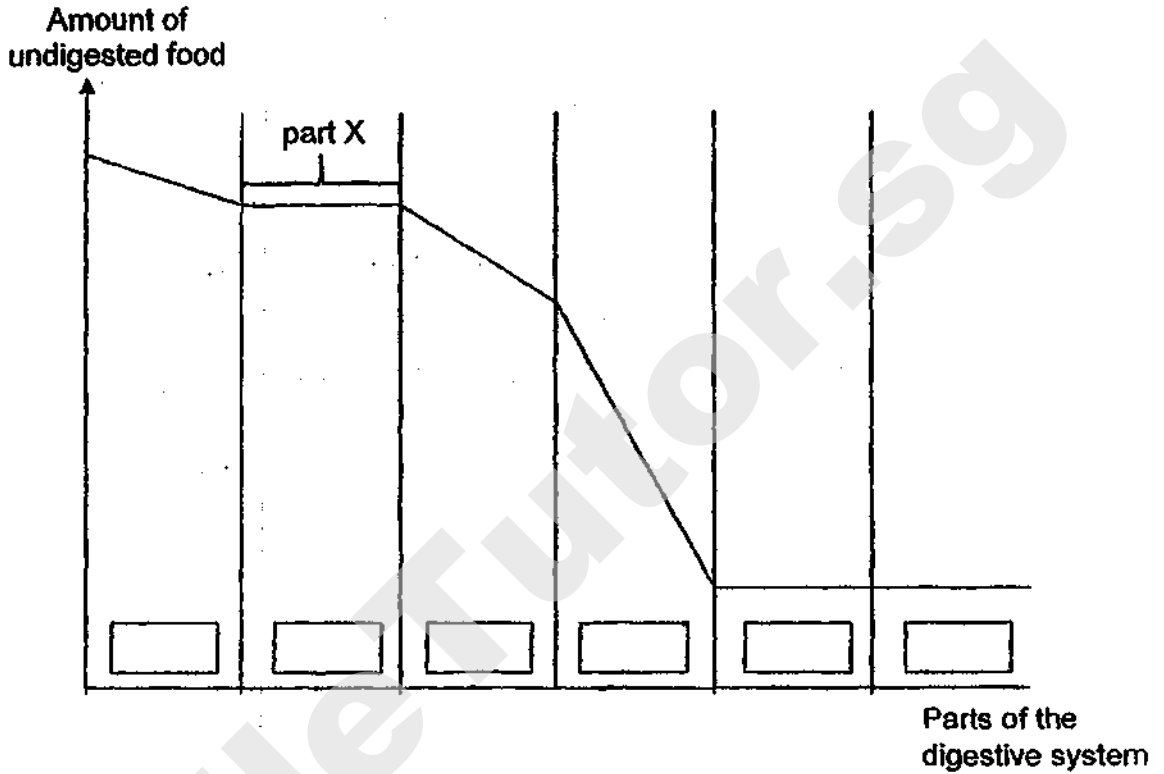
The human circulatory system also transports A and B as shown below.



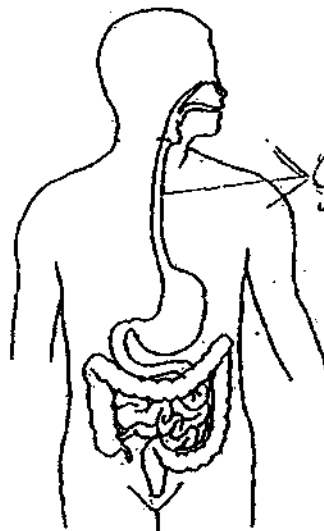
b) Based on the diagrams above, state one difference on how substances A and B are transported in plant and in human. [1]

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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.

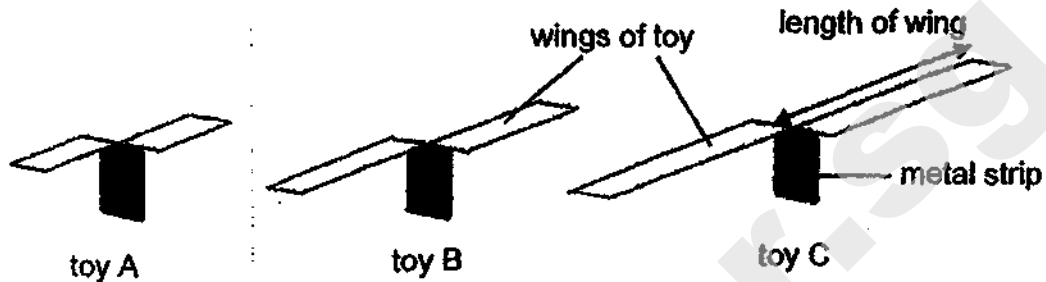


- c) (i) Put a tick in the box(es) in the graph above to indicate where digestion takes place. [1]
- (ii) Identify part X by labelling and naming it in the diagram below. [1]



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	1 <sup>st</sup> reading	2 <sup>nd</sup> reading	3 <sup>rd</sup> 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]

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- b) Based on the results, how does the length of wings affect the time taken for the toy to reach the ground? [1]

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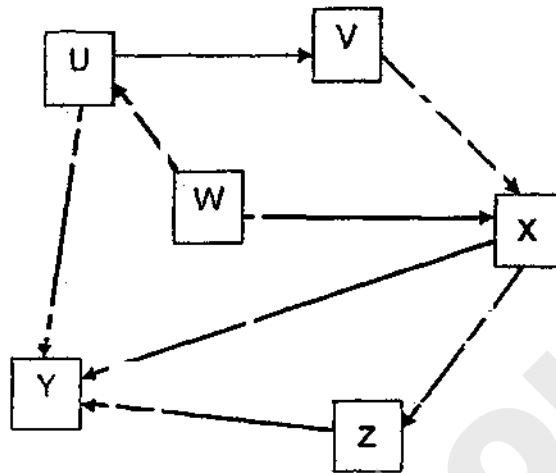
- c) Some fruits in nature have large wing-like structures. Using your answer in (b), explain how this benefits the reproduction of plants. [1]

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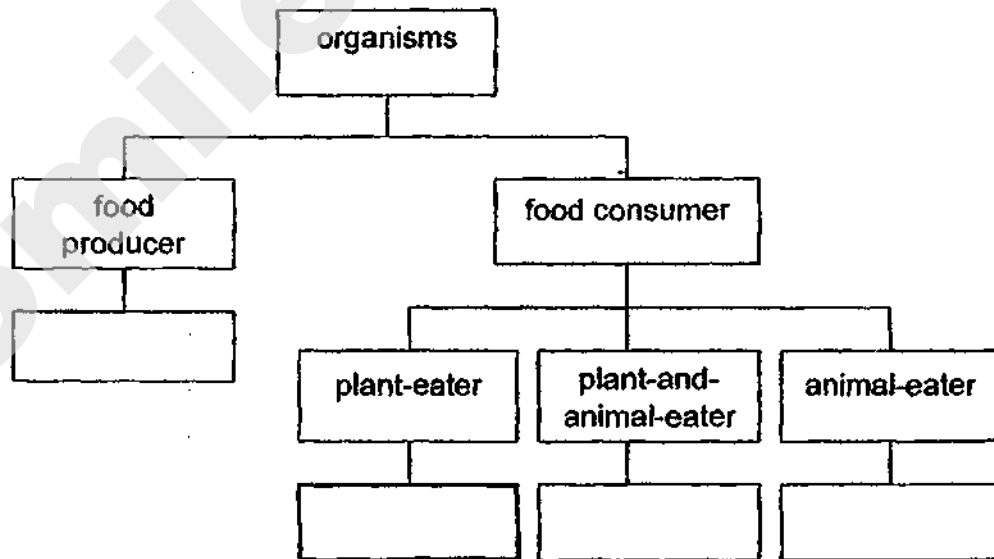
31. Study the food web below.



a) How many food chains are there in the food web above? [1]

\_\_\_\_\_

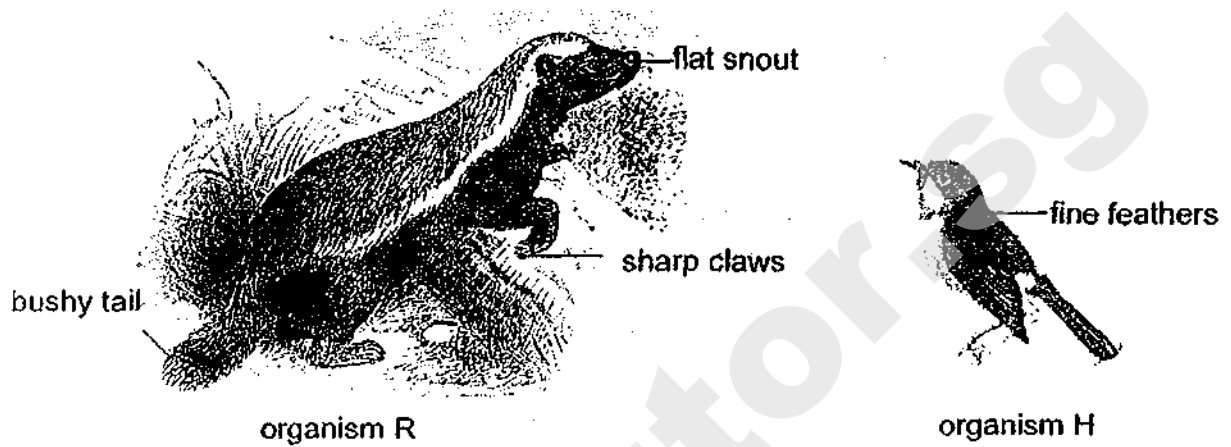
b) Classify all the organisms in the food web by writing the correct letter, U, V, W, X, Y and Z, in the boxes of the chart below. You may write more than one letter for each box. [2]



c) If a disease has wiped out organisms U, X and Z in the community, what can organism Y do to survive? [1]

\_\_\_\_\_  
 \_\_\_\_\_

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.



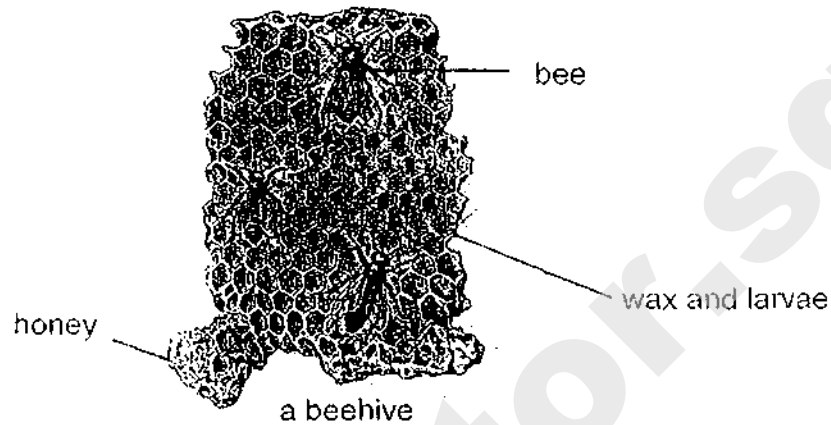
- a) Based on the pictures above, identify a structural adaptation in organism R that helps it to break open beehives. [1]

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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]

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- c) Give a reason why this relationship reduces the population size of the bee over time. [1]

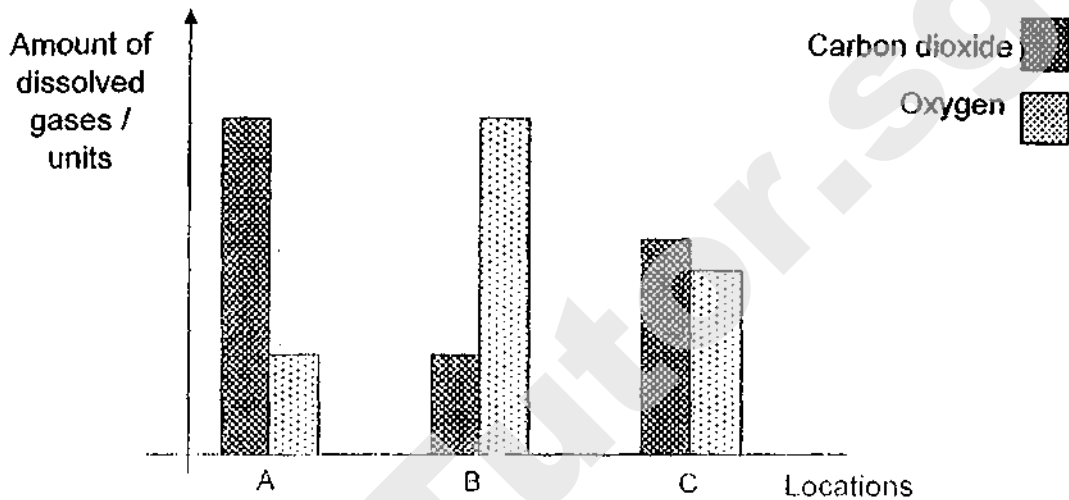
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- d) The above type of bees feeds on flowers of plant K. Explain how the population size of the bees would affect the population of plant K. [1]

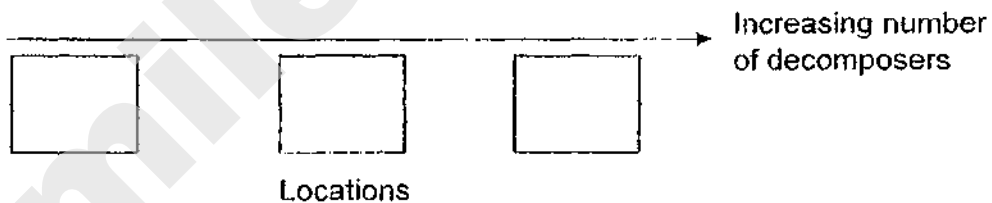
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33. Melissa wanted to find out which part of a river has the most decomposers. She collected equal volumes of water samples from different locations, A, B and C, along a river. She measured the amount of dissolved oxygen and carbon dioxide in each 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]

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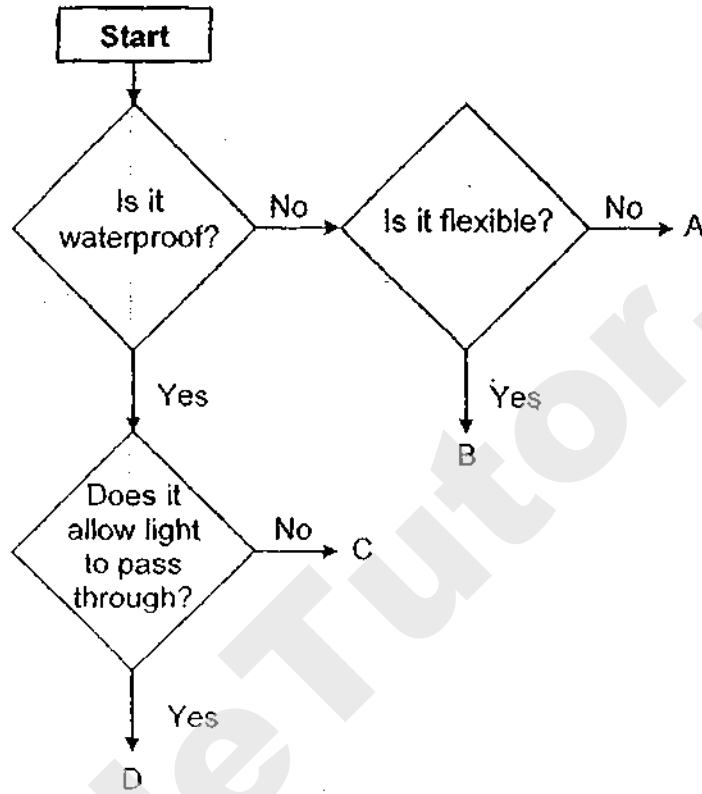
- c) Melissa wanted to introduce a large number of floating water plants into the river to increase the amount of dissolved oxygen in the water. Explain why this suggestion may not work. [1]

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34. The flowchart below shows how different materials can be classified.



a) State two properties of material A.

[1]

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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.

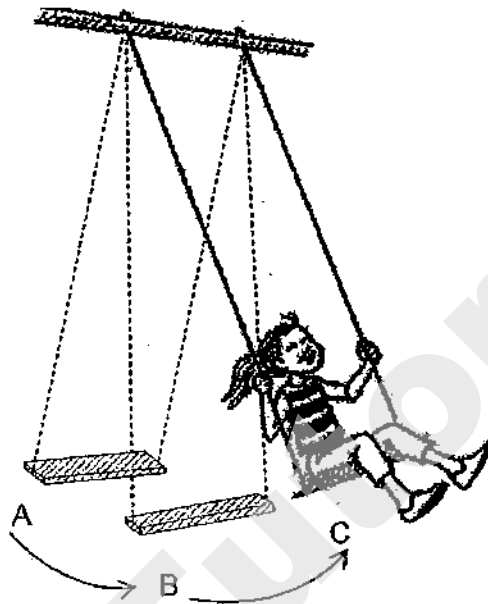
[1]

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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.

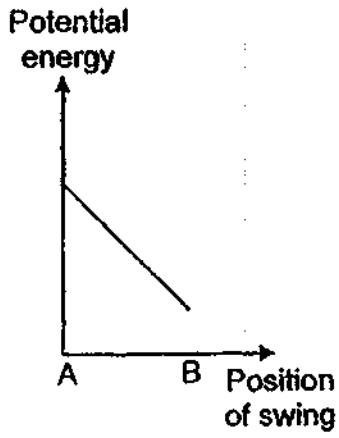


- a) State the energy conversion of the swing as it moves from position A to position B. [1]

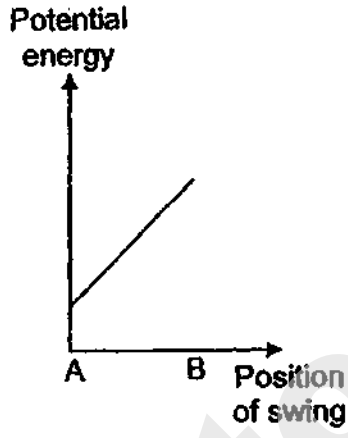
	→		+	
energy in the raised swing at position A		energy in swing at position B		energy in swing at position B
			+	
				energy in swing at position B

<b>Score</b>	/
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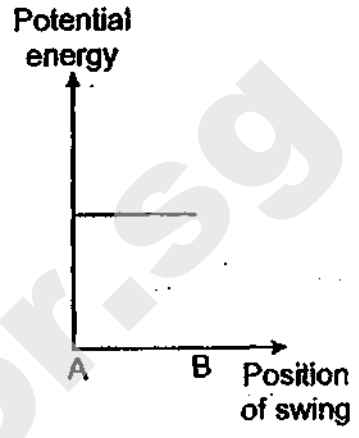
b) Study the graphs below.



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]

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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]

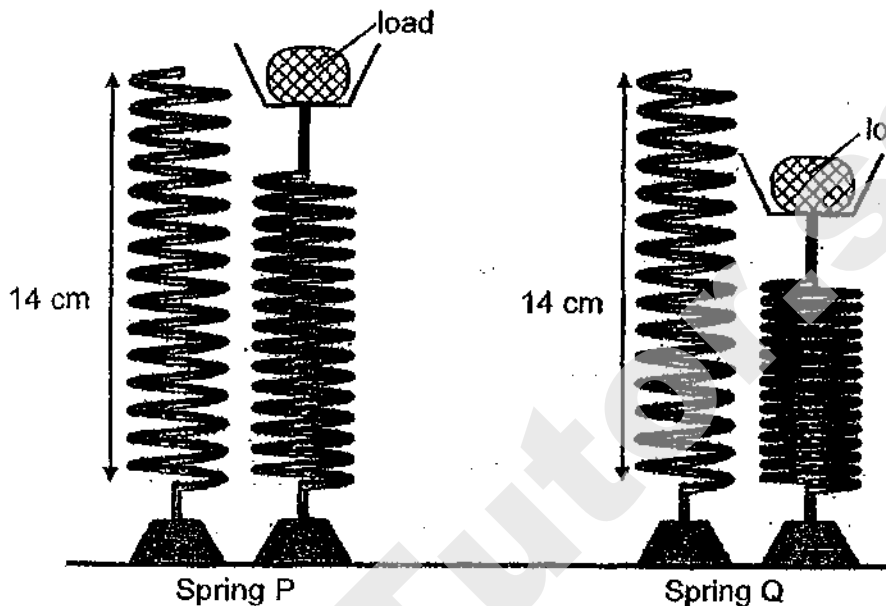
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Score	2
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36. Jamimah conducted an experiment on two different types of springs, P and Q, of the same length, using the set-ups shown below.



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]

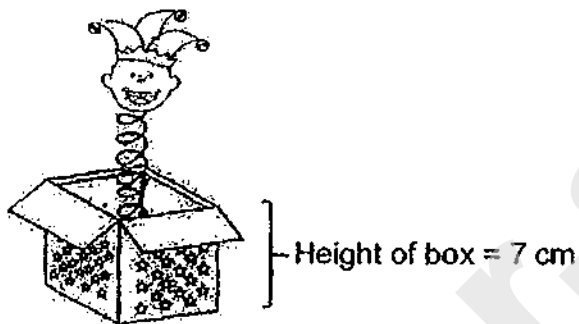
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Score	2
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Based on the results in the table above, Jamimah decided that she wanted the clown-in-the-box shown in the diagram below, to spring faster and with a greater force out of the box.



c) Which spring, P or Q, should Jamimah use? Explain why. [1]

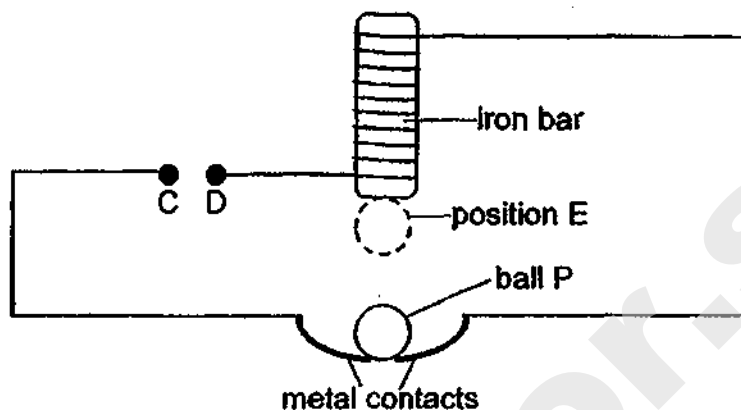
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Score	
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37. Melissa set up an experiment shown below where a wire was coiled around an iron bar in the circuit shown below.



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]

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- b) What material is ball P made of? [1]

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- c) When object Y was connected between points C and D, explain why ball P is able to move to position E? [2]

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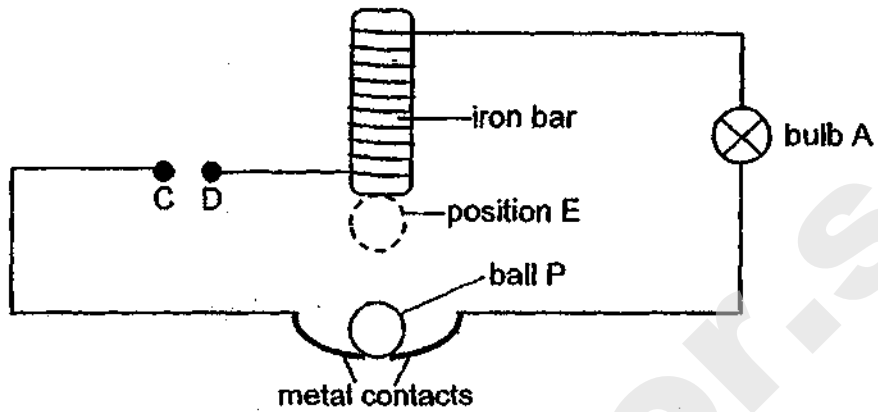


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<b>Score</b>	4
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Melissa then added bulb A to the same set-up, as shown below.



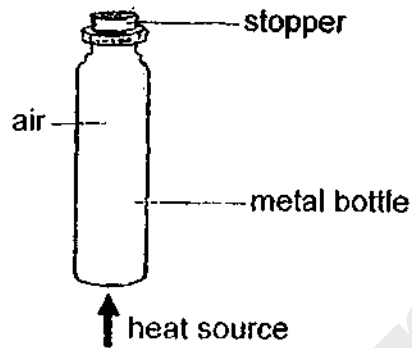
- d) When object Y was placed between points C and D, describe what will Melissa observe for Bulb A when ball P moved repeatedly between the iron bar and the metal contacts? [1]

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	1

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]

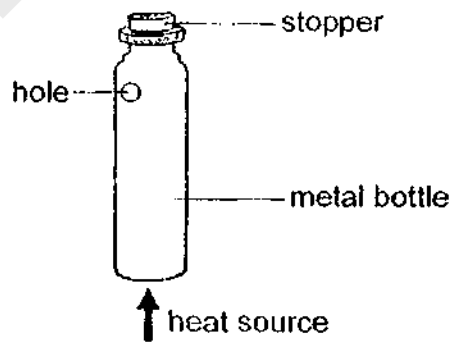
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Olivia then made a hole in the bottle and repeated her experiment.

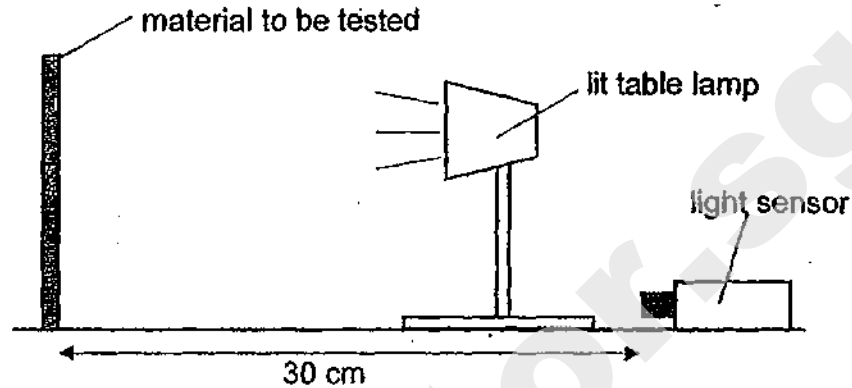


b) She observed that the stopper did not fly off this time. Explain her observation. [1]

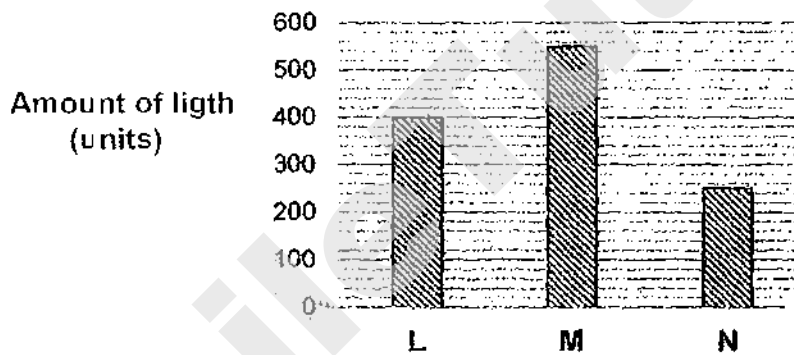
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39. Amanda conducted the experiment in a dark room using different materials, L, M and N. She measured the amount of light reflected by the materials with a light sensor, as shown below.



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]

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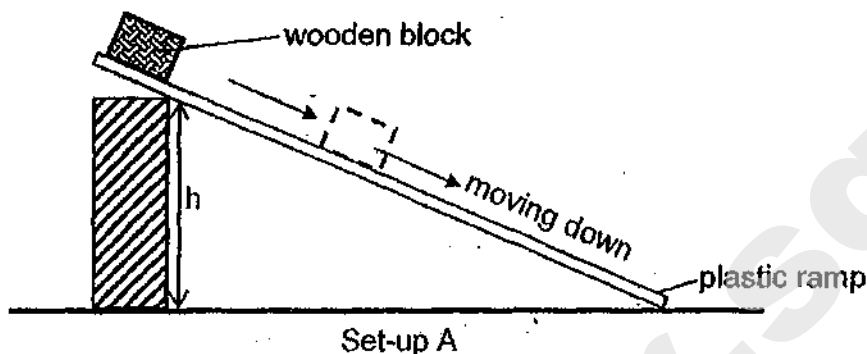


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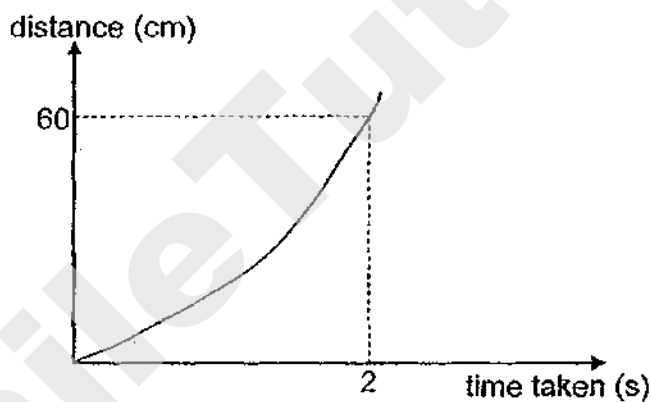


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40. Ray set up the experiment shown below.

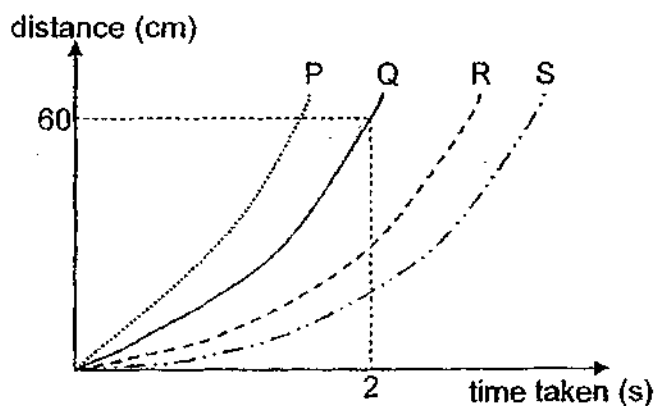


He releases the wooden block from the top of the ramp and measured the distance travelled by the block and the time taken. His results are shown in the graph below.



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: \_\_\_\_\_

<b>Score</b>	/
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b) Explain why you chose the graph in (a).

[2]

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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]

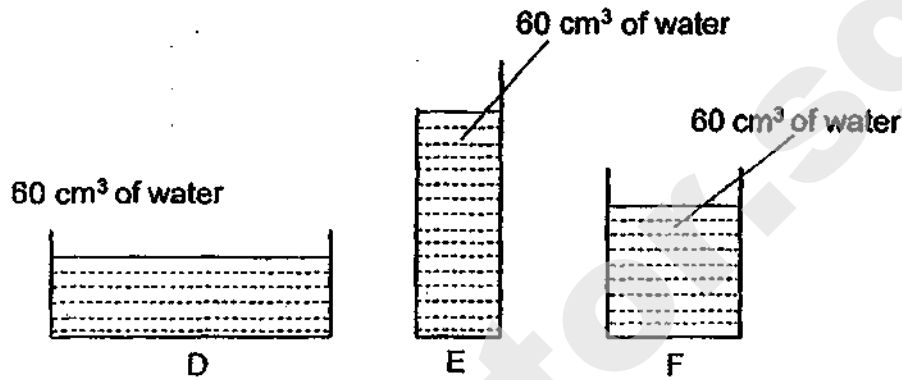
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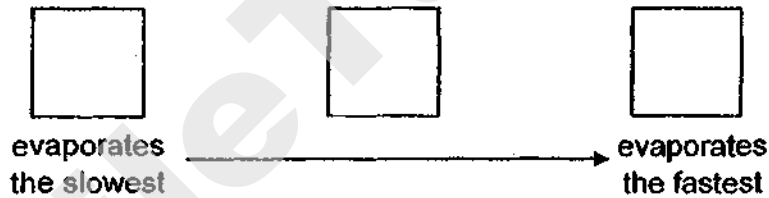
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Score	3
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41. An experiment was carried out to find out how the exposed surface area of water affects the rate of evaporation. Three glass containers, D, E and F, were filled with the same amount of 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]

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- c) Why must the same amount of water be used in all three glass containers to ensure a fair test? [1]

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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**

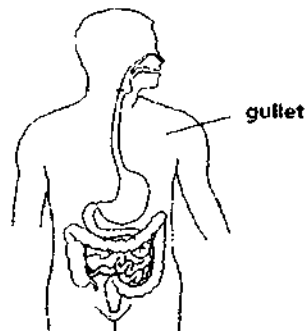
Q29)

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)



Q30)	<p>a)The mass of the toy.</p> <p>b)The longer the wings, the longer the time taken for the toy to reach the ground.</p> <p>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.</p>
Q31)	<p>a)5</p> <p>b)</p> <div style="text-align: center;"> <pre> graph TD     A[organisms] --&gt; B[Food producer]     A --&gt; C[food consumer]     B --&gt; D[W]     C --&gt; E[plant-eater]     C --&gt; F[Plant-and-Animal-eater]     C --&gt; G[animal-eater]     E --&gt; H[U]     F --&gt; I[X]     G --&gt; J[V,Y,Z]           </pre> </div> <p>c)Organism Y can migrate to another suitable environment.</p>
Q32)	<p>a)Organism R has sharp claws.</p> <p>b)Organism H can lead organism R to the beehive.</p> <p>c)As organism H feeds on the bees larvae, there will be less larvae to grow up into adult bees.</p> <p>d)As there are less bees to pollinate the flowers, the rate of reproduction decreases.</p>
Q33)	<p>a)B , C , A</p> <p>b)Someplace with higher surrounding temperature.</p> <p>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.</p>



Q34)	<p>a) It is not water proof and is not flexible.</p> <p>b) D. It allows light to pass through so the person will be able to see through the lens.</p>
Q35)	<p>a) Potential <math>\rightarrow</math> Kinetic + Sound + Heat</p> <p>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 its lowest point.</p> <p>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.</p>
Q36)	<p>a) 12 cm.</p> <p>b) The heavier the load the shorter the spring.</p> <p>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.</p>
Q37)	<p>a) A battery.</p> <p>b) Steel</p> <p>c) As iron is a conductor 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.</p> <p>d) Bulb A flickers repeatedly.</p>
Q38)	<p>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 stopper.</p> <p>b) When the air expanded, it no longer needed to push out the stopper as the air could escape through the hole in the bottle.</p>

Q39)	<b>Material M. As a result Amanda will be able to see the road sign from a further distance.</b>
Q40)	<b>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</b>
Q41)	<b>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.</b>

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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)

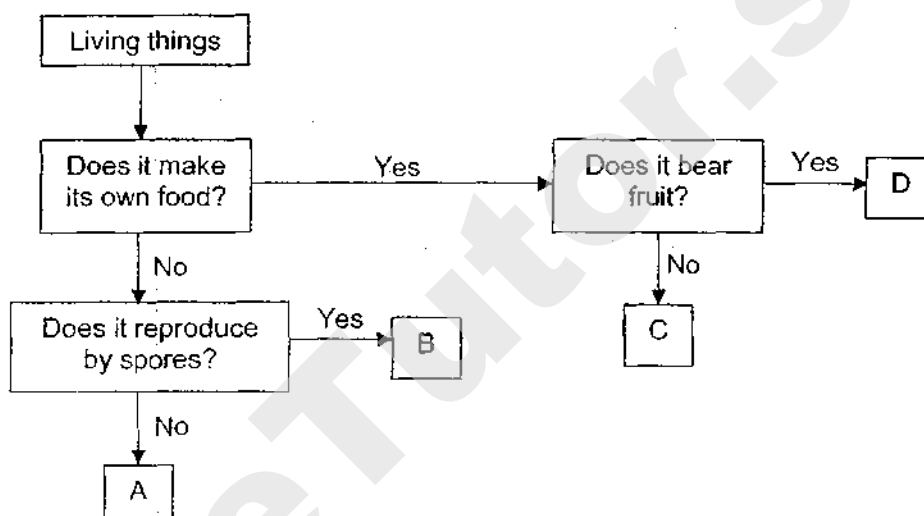
**INSTRUCTIONS TO CANDIDATES**

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.

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.

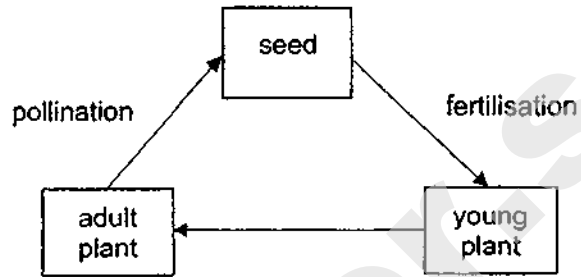


Which of the following most likely represents A, B, C and D?

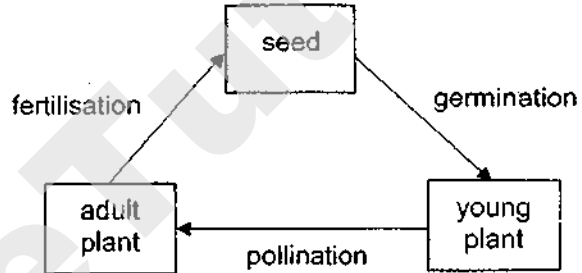
	A	B	C	D
(1)	Bacteria	Animal	Fern	Flowering plant
(2)	Fungus	Fern	Bacteria	Flowering plant
(3)	Animal	Fungus	Fern	Flowering plant
(4)	Bacteria	Flowering plant	Animal	Fungus

- 2 Which of the following diagrams shows the correct order of stages and processes in the life cycle of a flowering plant?

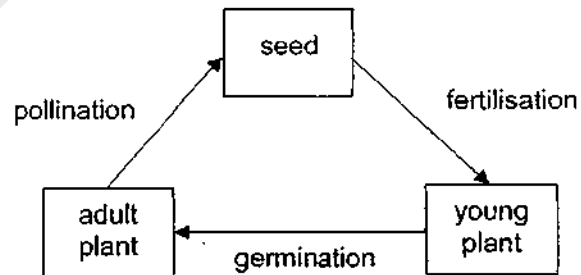
(1)



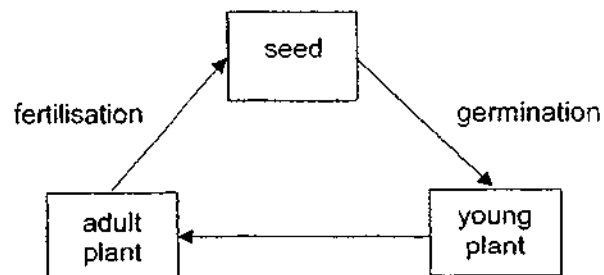
(2)



(3)

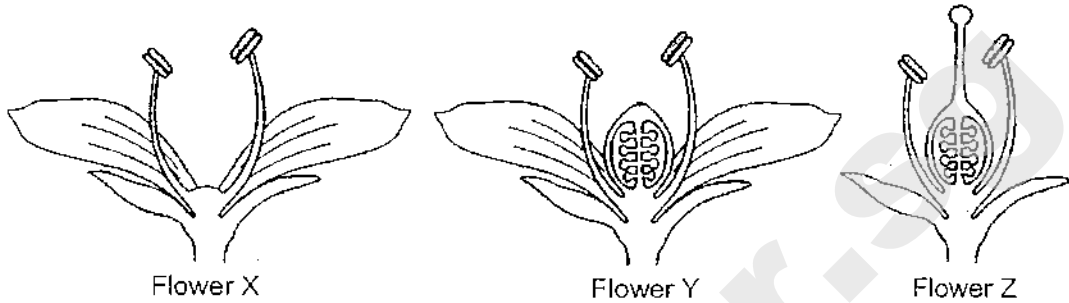


(4)



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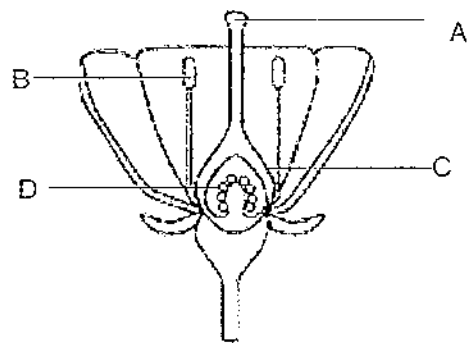
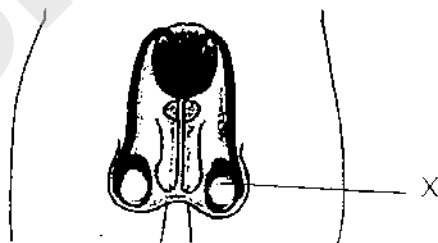
- 3 The diagram shows flowers, X, Y and Z, with some of their parts removed.



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.

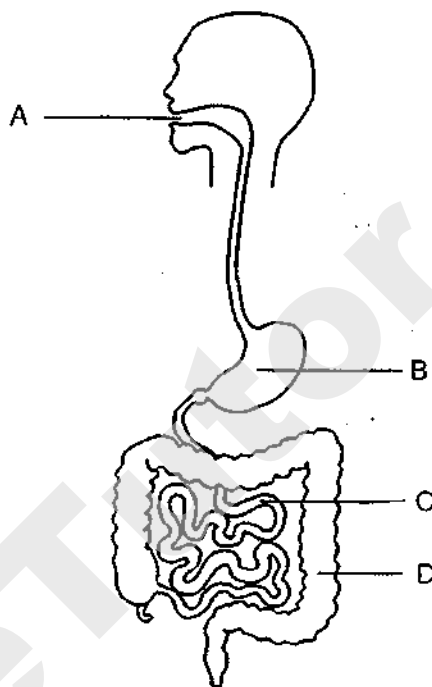


Which part, A, B, C or D, in diagram 2 has a similar function as part X in diagram 1?

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

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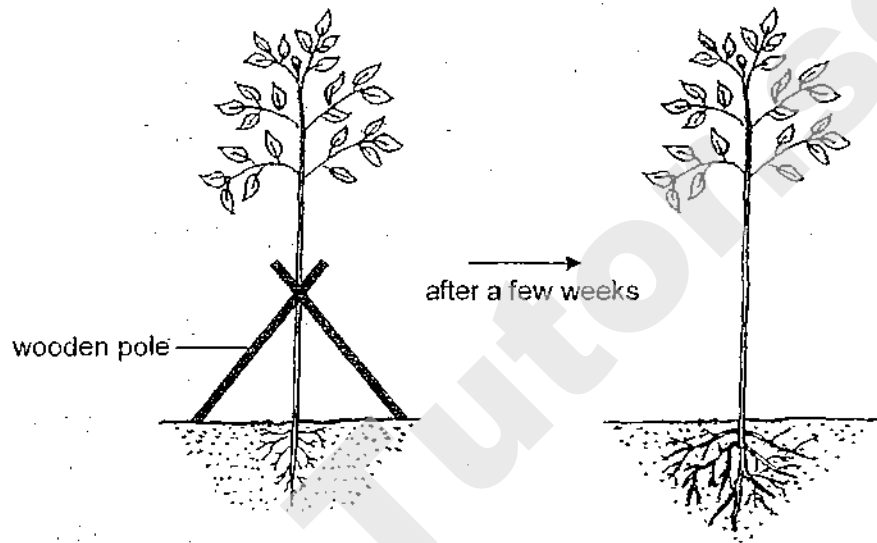
- 5 The diagram shows the human digestive system.



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

- 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.

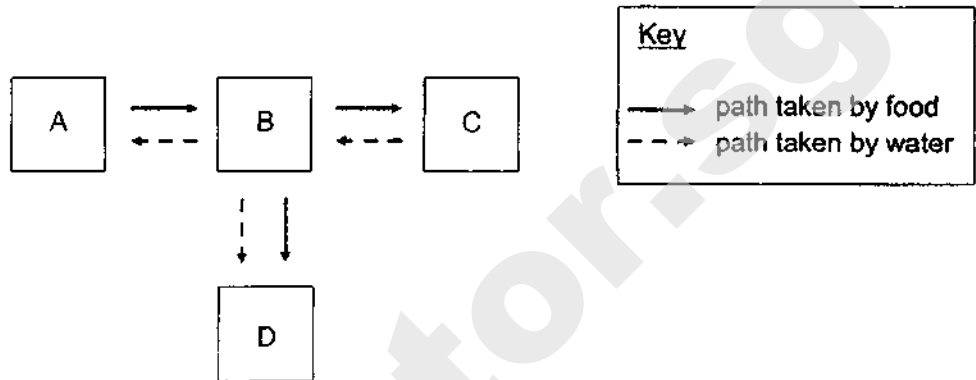


Based on the diagram, why does the young plant need to be attached to the wooden poles when it is being planted into the ground?

- (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.



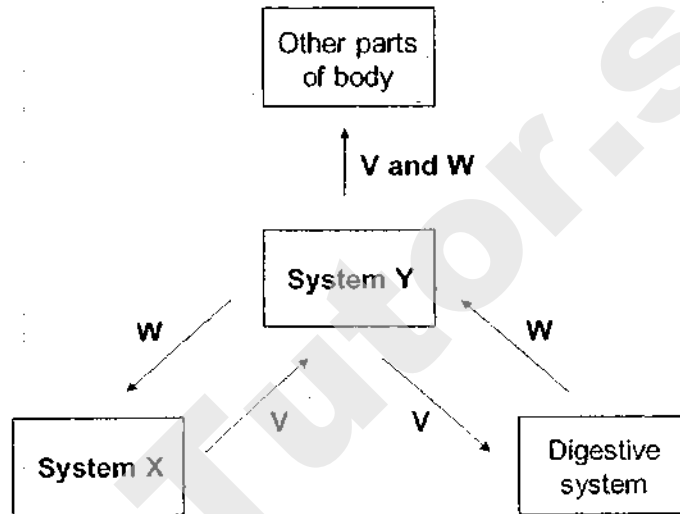
- 7 The diagram shows the different paths taken by food and water in a plant. A, B, C and D represent parts of the plant.



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

- 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.

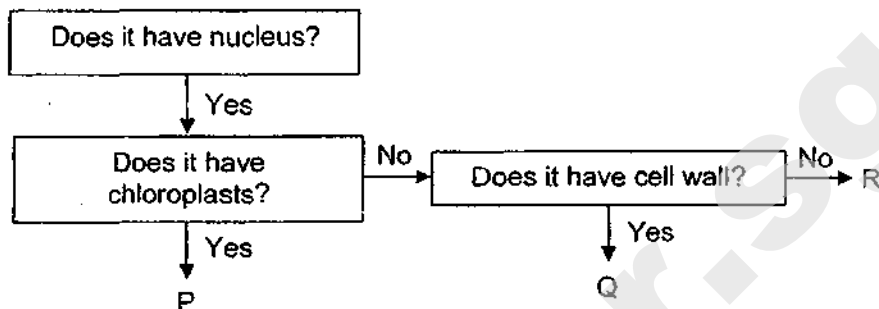


Which of the following correctly identifies substances V and W and systems X and Y?

	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?

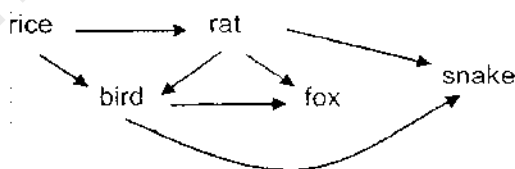
	P	Q	R
(1)	Leaf of plant	Root of plant	Skin of human
(2)	Leaf of plant	Flower of plant	Stem of plant
(3)	Stem of plant	Skin of human	Root of plant
(4)	Stem of plant	Flower of plant	Root of plant

- 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.

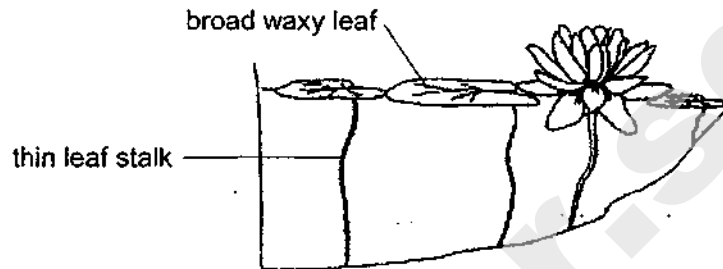


The farmer noticed that although the number of rice plants were the same as the previous year, there was an increase in the mass of rice he harvested.

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.

- 12 The diagram shows the water lily plant in a pond.



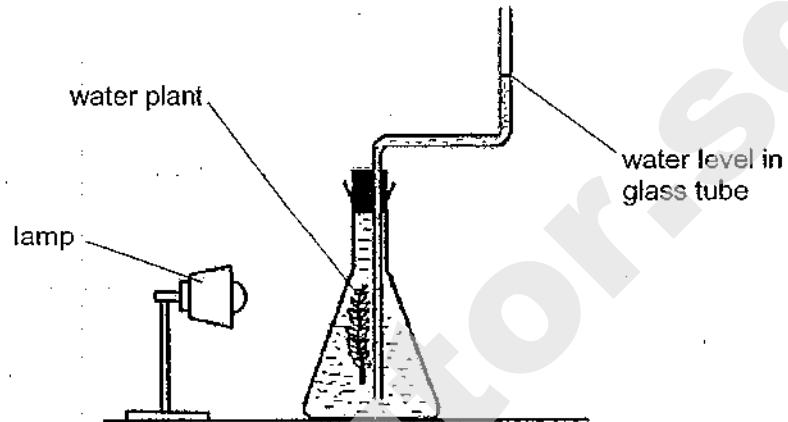
The broad waxy leaf of the water lily plant floats on the surface of the water and carries out gaseous exchange with the surrounding atmosphere.

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.

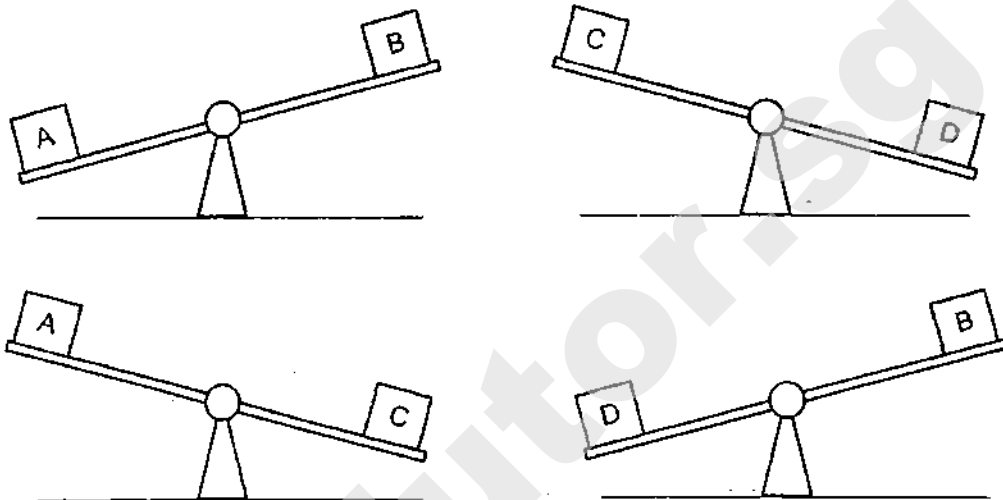


Which direction did the water level in the glass tube move and what was the reason for the movement?

	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.

(Go on to the next page)

- 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.

- 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.

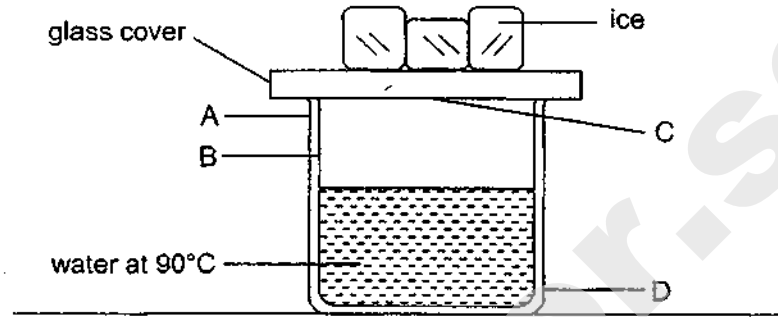
Towel	Mass of towel (g)	
	At start	After 2 hours
J	1500	1050
K	1500	1200
L	1500	1150

Based on the results, under which condition(s) was Towel J hung?

- (1) shady
- (2) sunny
- (3) shady and windy
- (4) sunny and windy



- 17 Edward set up an experiment as shown in the diagram.

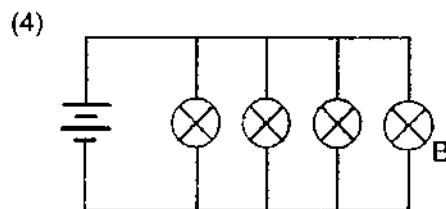
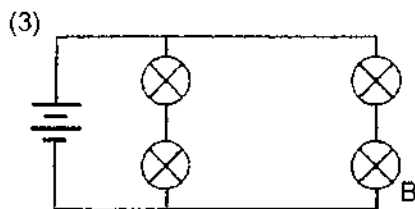
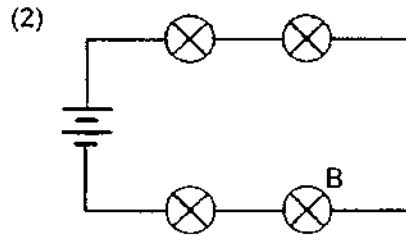
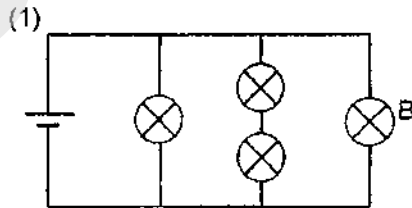


After a while, he noticed that some water droplets had formed. At which two parts, A, B, C or D, did the water droplets form?

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

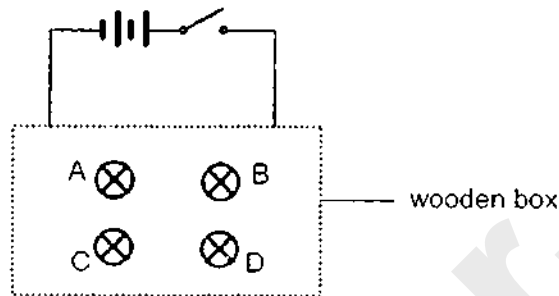
- 18 Leonard set up four different circuits using identical bulbs and batteries as shown. All the electrical components are in working condition.

In which circuit will bulb B be the dimmest?



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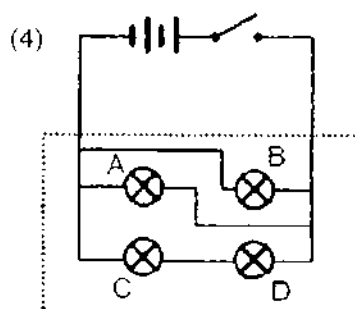
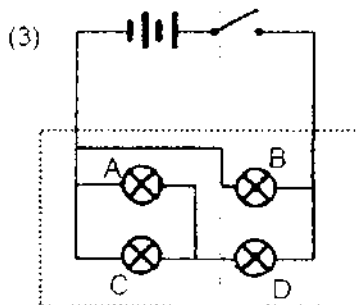
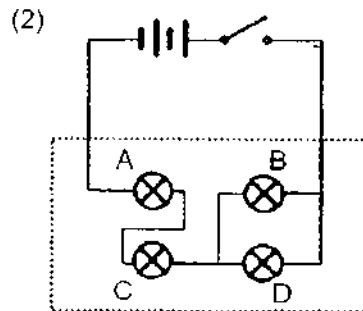
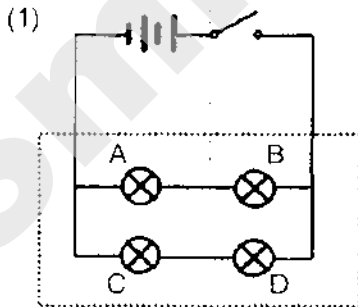
- 19 Bulbs A, B, C and D were connected in a circuit hidden in a wooden box as shown. All the bulbs lit up when the circuit was closed.



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.

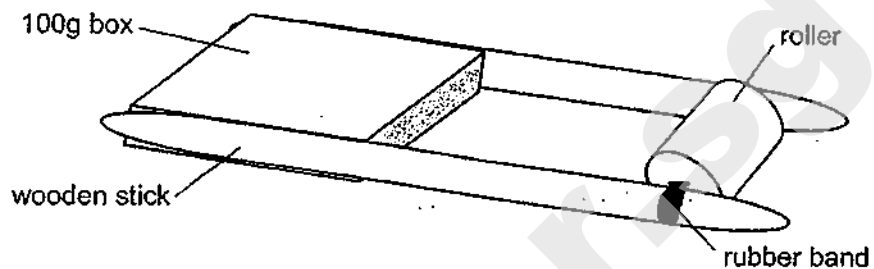
Bulb removed	Bulb(s) lit
A	B, C and D
B	A, C and D
C	A, B and D
D	B only

Which of the following correctly shows the circuit hidden in the wooden box?



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- 20 Max made a toy as shown.

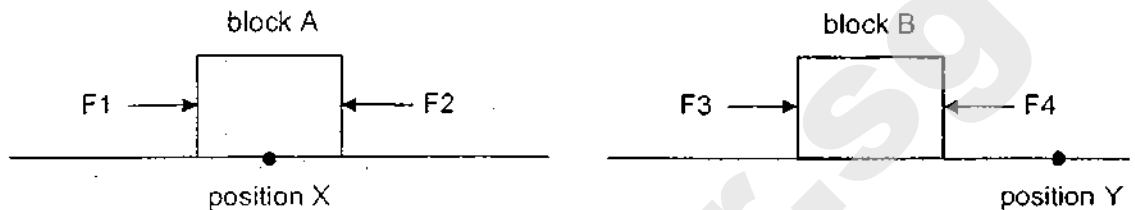


When Max turned the roller 10 times and placed the toy on the table, the toy moved forward. He replaced the box with an identical box of 50g and repeated his experiment. He noticed that the toy moved further.

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.

- 21 Alan placed two identical blocks on his desk. He exerted forces  $F_1$  and  $F_2$  on block A at the same time and forces  $F_3$  and  $F_4$  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)	$F_1$ is less than $F_2$	$F_3$ is the same as $F_4$
(2)	$F_1$ is more than $F_2$	$F_3$ is more than $F_4$
(3)	$F_1$ is the same as $F_2$	$F_3$ is less than $F_4$
(4)	$F_1$ is the same as $F_2$	$F_3$ is more than $F_4$

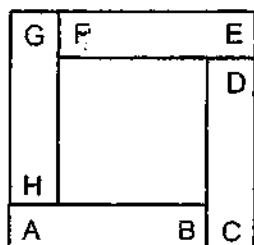
- 22 Which of the following two activities contribute to an increase in the amount of carbon dioxide in the air?

- 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

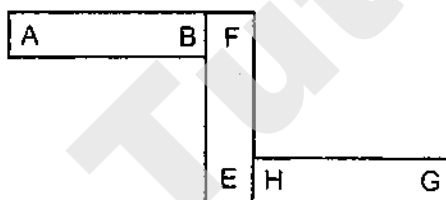
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- 23 Four bar magnets with their ends marked A to H are arranged as shown.

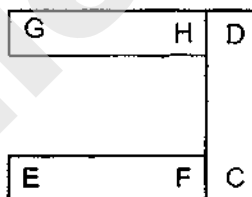


Which of the following diagrams shows a possible arrangement using three of the magnets?

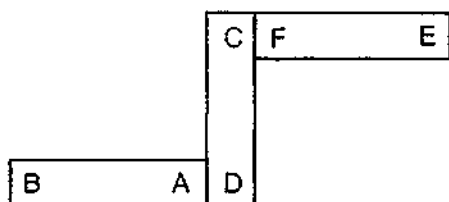
(1)



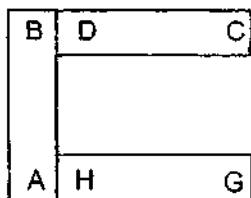
(2)



(3)



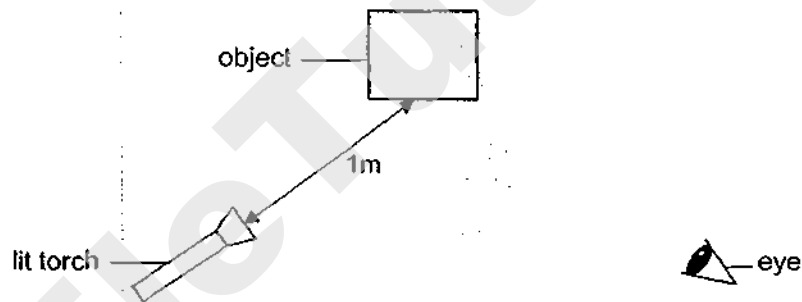
(4)



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.

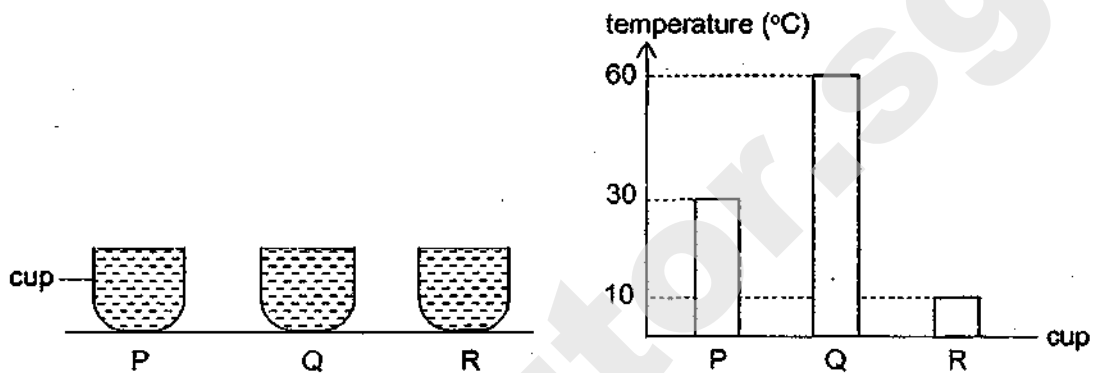


Which of the object(s) can reflect light from the torch into the eye?

- A brown wood
- B polished mirror
- C shiny metal
- D clear glass

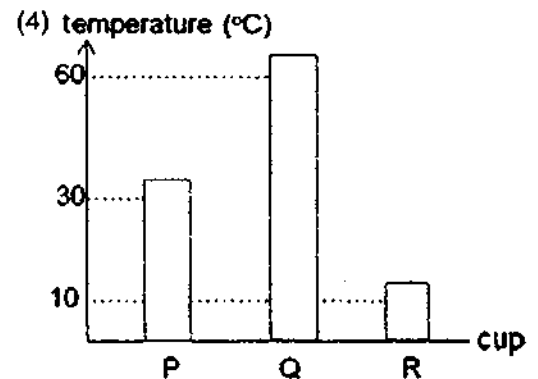
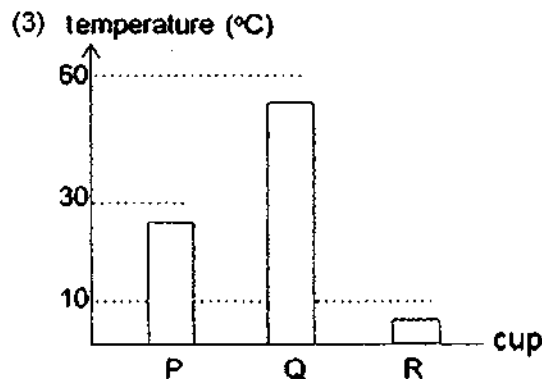
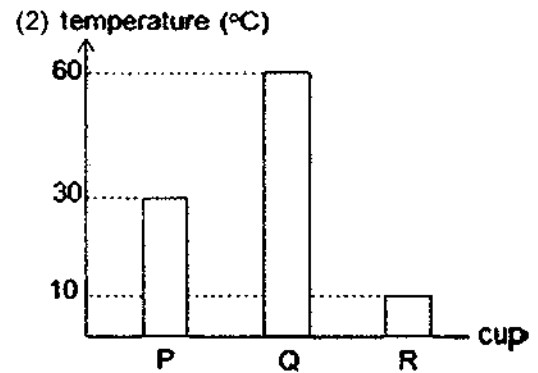
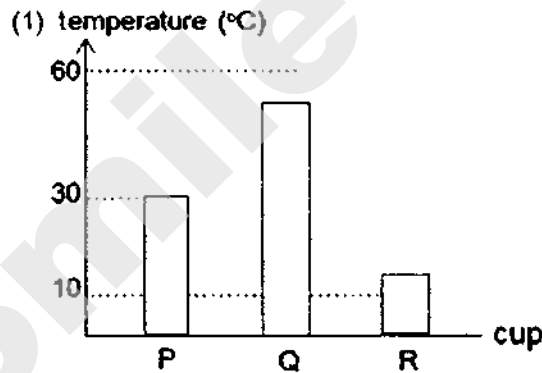
- (1) A only
- (2) D only
- (3) B and C only
- (4) A, B, C and D

- 26 Three identical cups, P, Q and R, were filled with water at different temperatures and left at room temperature ( $30^{\circ}\text{C}$ ) as shown. The graph below shows the temperatures of the water in each cup at the start of the experiment.



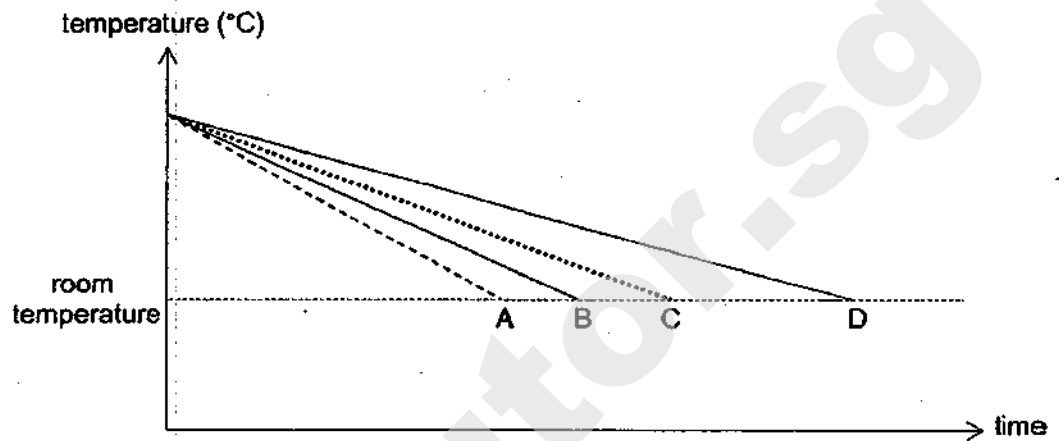
The temperatures of the water were taken again at the end of ten minutes.

Which of the graphs shows the most likely temperature of the water in each cup at the end of ten minutes?



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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.



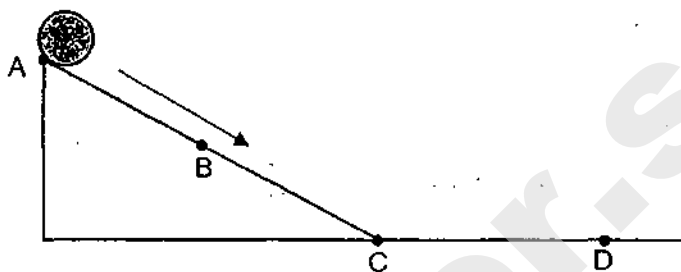
Based on the information above, which container, A, B, C or D, is the poorest conductor of heat?

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

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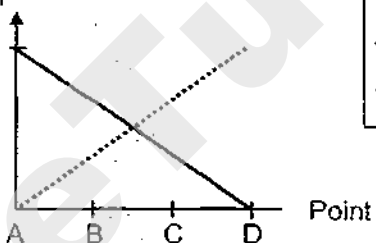


- 28 The ball, as shown in the diagram, rolls down from Point A. It rolls past Points B and C before finally stopping at Point D.



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?

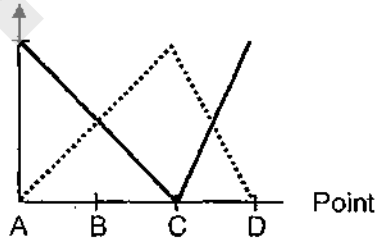
- (1) amount of energy



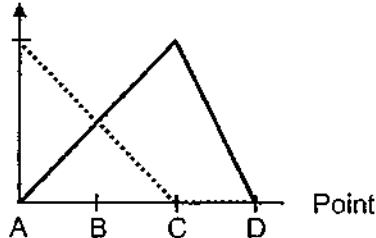
Key

— Gravitational potential energy  
 ..... Kinetic energy

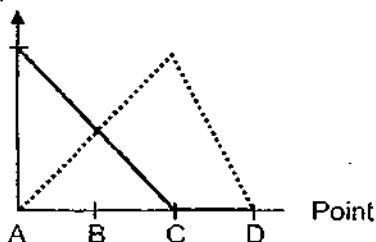
- (2) amount of energy



- (3) amount of energy



- (4) amount of energy



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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	
<b>Total</b>	<b>100</b>	

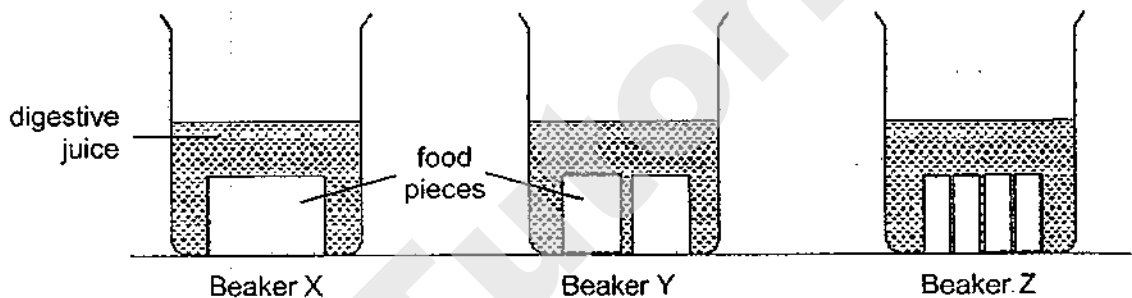
This booklet consists of 15 printed pages including this cover page.

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]

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- (ii) Based on the results, explain how chewing food well before swallowing can help food to be digested faster. [1]

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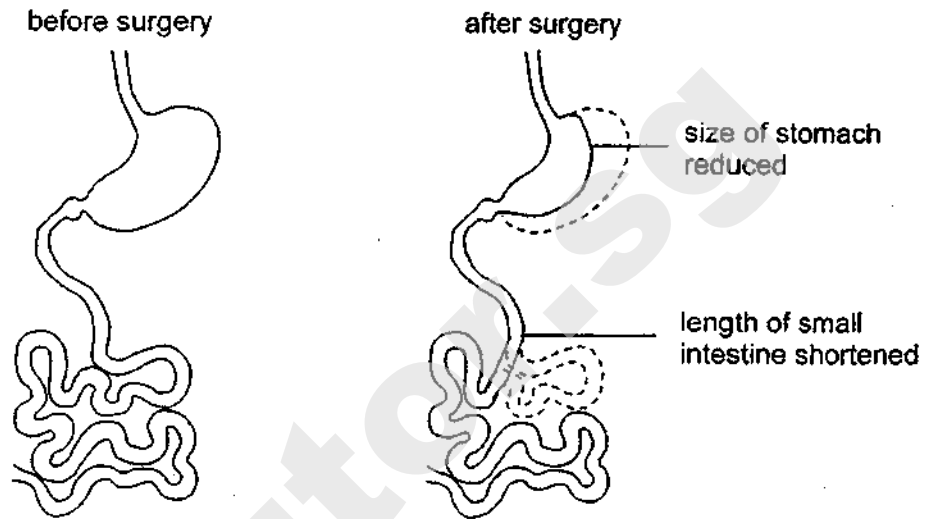


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- (b) Ranjit found out that a type of surgery can reduce the size of the stomach and shortens the length of the small intestine.



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]

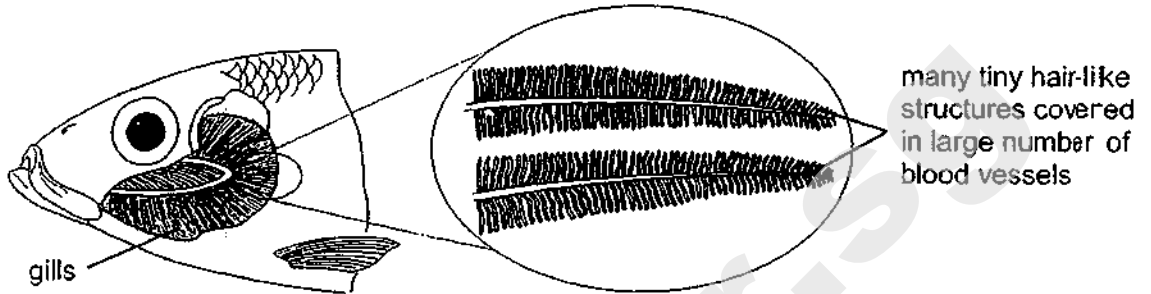
Stomach: \_\_\_\_\_

\_\_\_\_\_

Small intestine: \_\_\_\_\_

\_\_\_\_\_

- 30 The diagram shows the respiratory system of a fish. Fishes absorb dissolved oxygen from the water as the water passes through the gills.



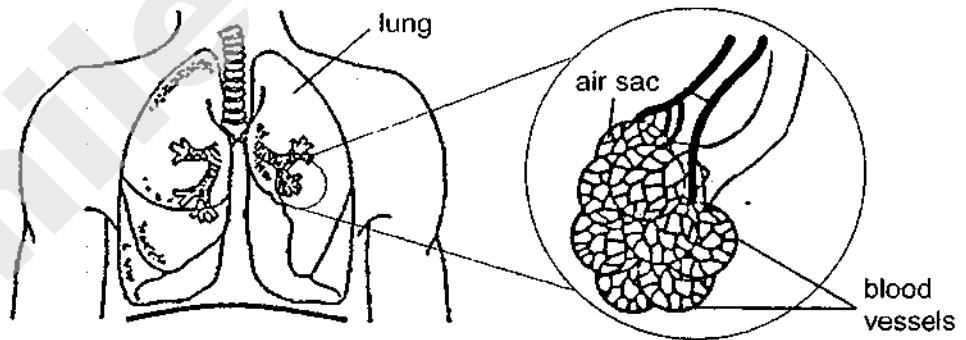
- (a) How does having many tiny hair-like structures help the fish get more dissolved oxygen? [1]

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The diagram below shows the human respiratory system.



- (b) How does oxygen in the environment reach the blood vessels of the air sacs? [1]

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- (c) Based on the diagrams, describe one similarity between the structure of the gills and the lungs. [1]

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31 (a) What is the difference between heat and temperature?

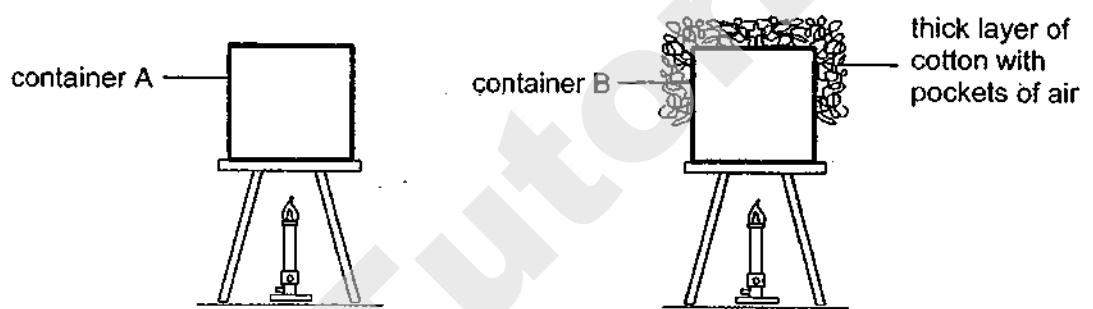
[1]

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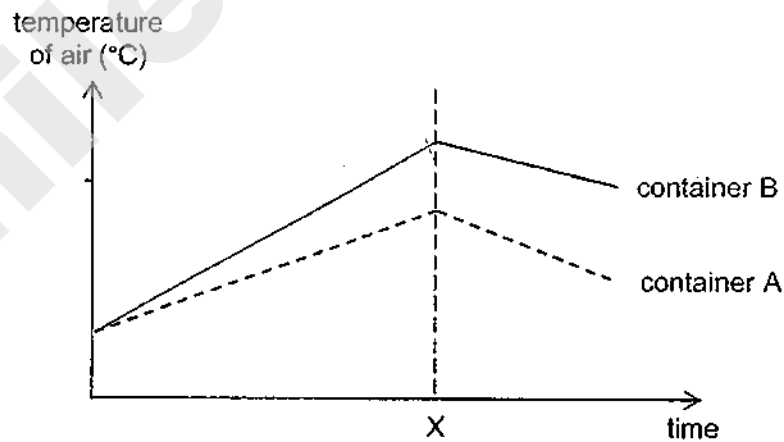


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Two similar containers, A and B, were heated and the temperature of air in each container was taken over a period of time. Container B was covered by a thick layer of cotton with pockets of air.



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]

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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]

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- (c) What was done at time X to cause a change in the temperature of air in both the containers? [1]

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Look at the picture of the animal below.



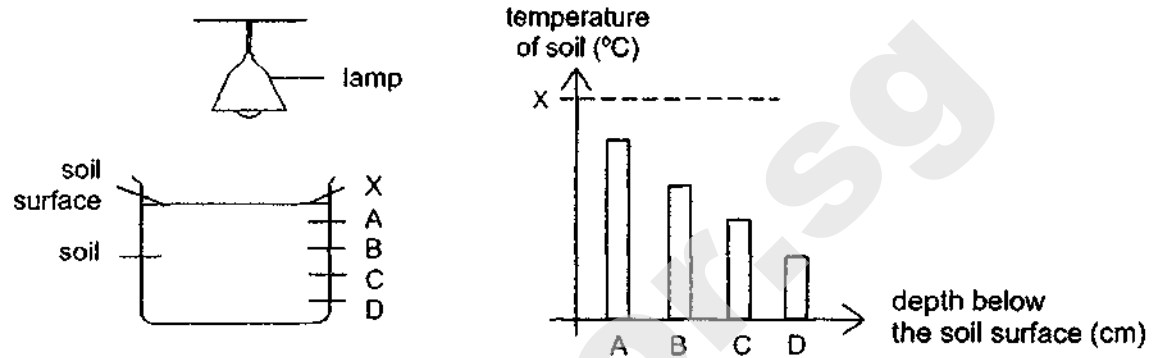
- (d) The animal has thick long fur. Based on the results of the experiment, explain how the thick long fur keeps the animal warm in cold environments. [1]

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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.



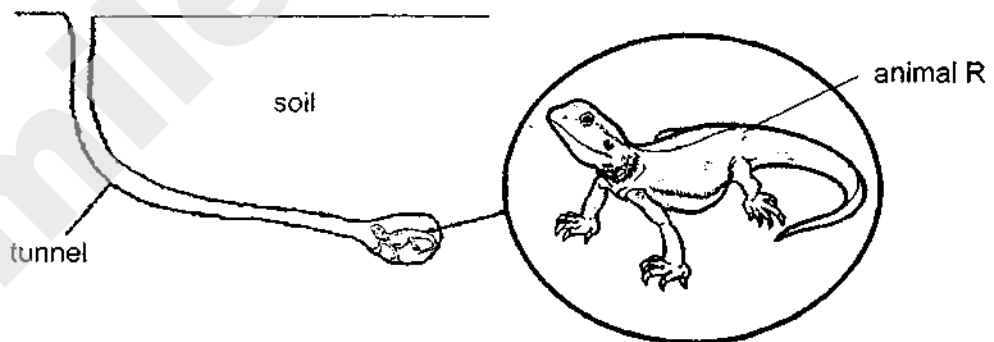
- (a) Based on the results, state the relationship between the depth below the soil surface and temperature of soil. [1]

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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]

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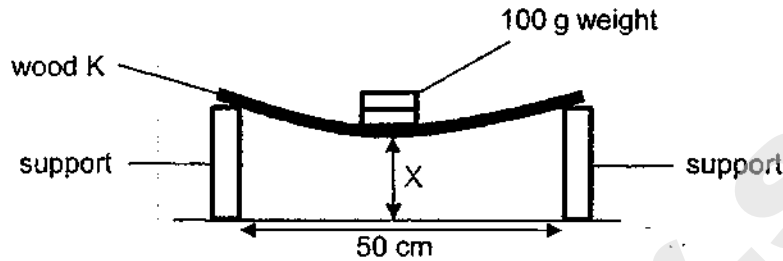
- (c) Based only on the diagram of animal R, state a structural adaptation it has that enables it to dig a tunnel in the soil. [1]

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- 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]

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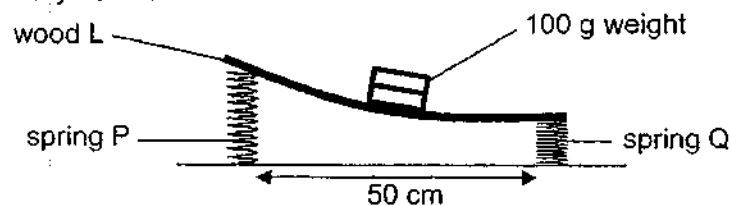


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- (b) Name one other variable that must be kept constant for a fair test. [1]

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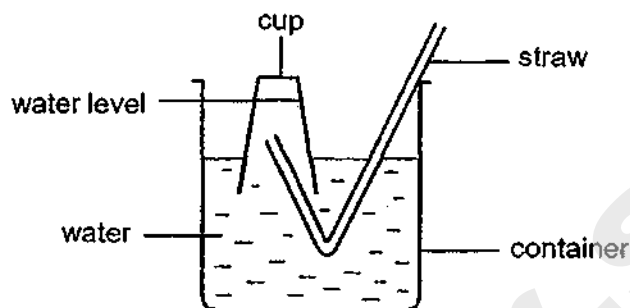
In another experiment, wood L was placed on two different springs of equal size, P and Q, that were positioned 50 cm apart. Some 100 g weights were placed on wood L and caused wood L to tilt unevenly as shown.



- (c) Based on the above observation only, why did wood L tilt unevenly? [1]

---

- 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.



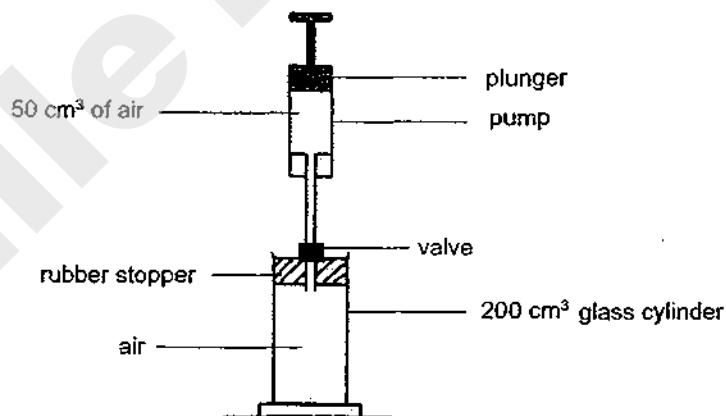
- (a) What will happen to the water level in the cup when air is blown into the cup through the straw? Explain your answer. [2]

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Ivan then carried out another experiment. He used a  $200 \text{ cm}^3$  glass cylinder that was filled with air and was connected to a pump which contained  $50 \text{ cm}^3$  of air. He used a valve which prevented the air in the glass cylinder from flowing back into the pump as shown.



$50 \text{ cm}^3$  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]

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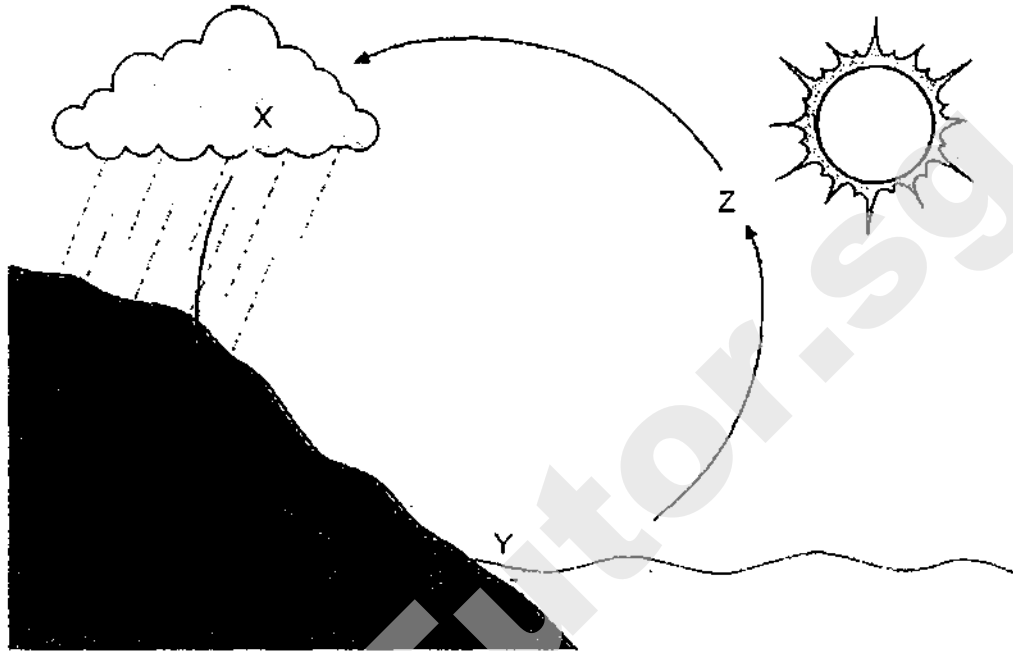
- (c) Will the mass of air in the glass cylinder increase, decrease or remain the same? Explain your answer based on the property of air. [1]

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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]

---



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- (b) Complete the following with X, Y or Z. [2]

(i) Condensation: \_\_\_\_\_ to \_\_\_\_\_

(ii) Evaporation: \_\_\_\_\_ to \_\_\_\_\_

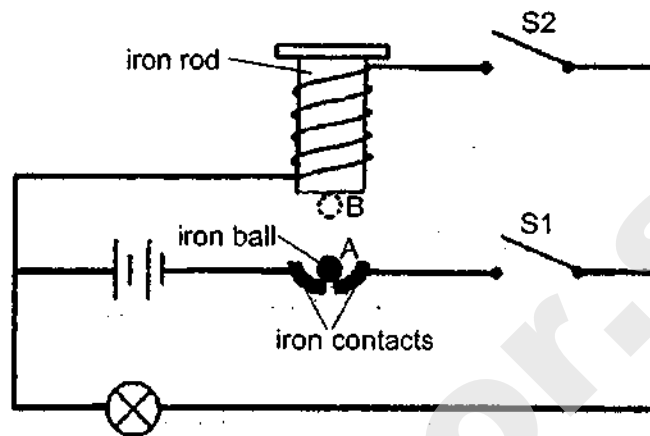
- (c) Describe what will happen to the water cycle if condensation did not take place? [1]

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- 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]

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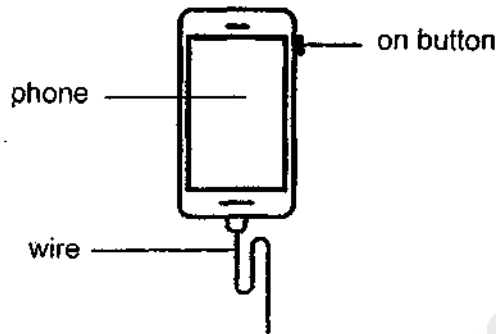
- (c) What happened to the bulb when both switches S1 and S2 were closed? [1]

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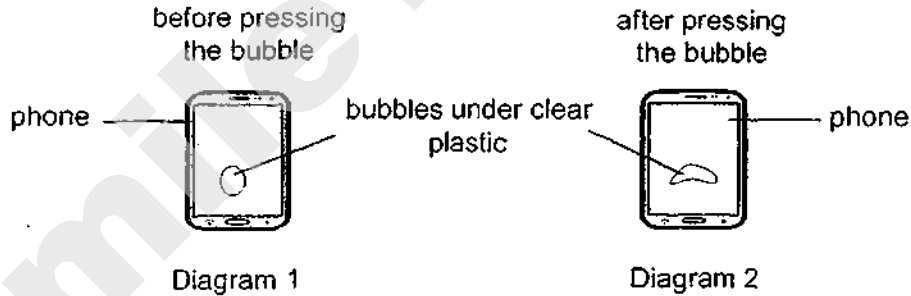
37 Gabriel wanted to use his phone.



(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.



(b) What is the effect of force on the bubble? [1]

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(c) Gabriel noticed that the bubble had increased in size when he was outdoors on a hot day. Explain why this is so. [1]

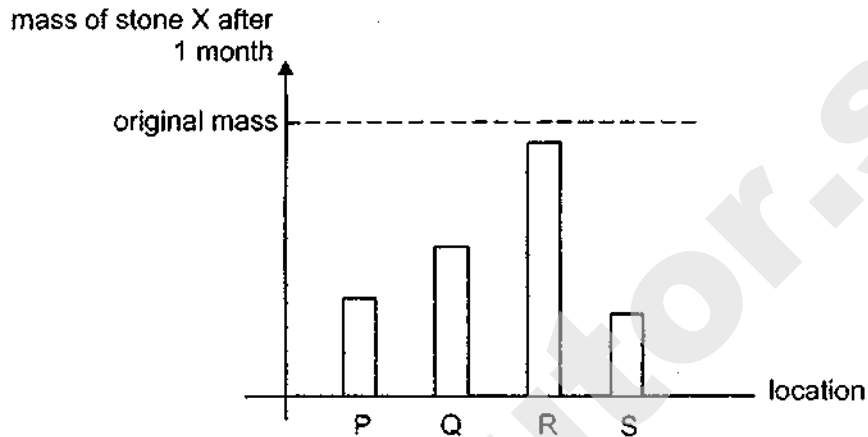
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- 38 Sometimes rain mixes with pollutants in the air to form acid rain. David wants to investigate the effects of acid rain on stone X.

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]

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- (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]

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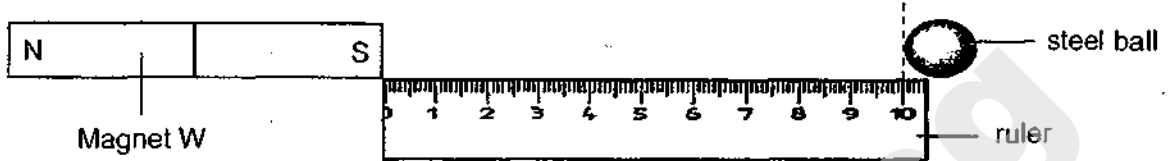
- (c) State two other negative effects of acid rain.

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- 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 ( $\checkmark$ ) the variable(s) that Herman must keep the same to ensure a fair test? [1]

Variables	Tick ( $\checkmark$ )
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]

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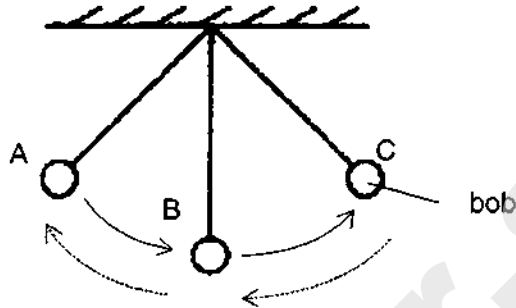
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- (e) Herman dropped Magnet X several times and tested it out again. Will Magnet X attract the steel ball from a distance of 8 cm, more than 8 cm or less than 8 cm? Explain your answer. [1]

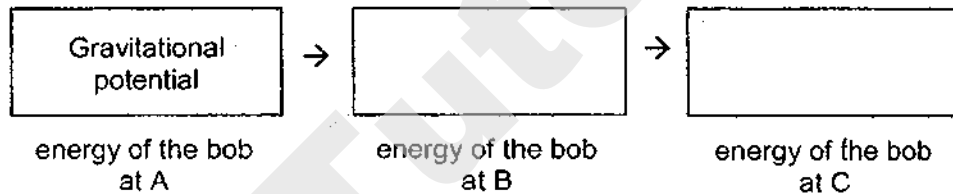
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- 40 Eddy used a set-up as shown to find out the time taken for a bob to make one complete swing. The bob makes one complete swing when it moves from A to C and back to A.



- (a) Fill in the two empty boxes below to show the energy conversions as the bob swings from A to C. [1]



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 \_\_\_\_\_

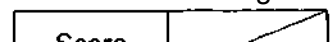
- (c) Based on experiments W and Y, what can Eddy conclude? [1]

\_\_\_\_\_

\_\_\_\_\_

End of Paper

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**Answer Sheets**  
**ACS Pri 6 SA2/2019 SCIENCE**

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

29ai. The digestive juice in the beakers digested the food pieces into simpler substances.

29aii. It breaks down food into smaller pieces and increases surface area for digestive juices to act on the food.

29b. stomach –less space to store food, so there will be less digestion

Small intestine-. There will be less surface area so there is less time for the food to be digested.

30a. The fish will have more exposed surface area to absorb more dissolved oxygen.

30b. Air enters the lungs through the nose. Oxygen transported through the wind pipe into the air sacs is absorbed into the blood vessel.

30c. Both have large number of blood vessels.

31a. heat is a form of energy

31bi. Temperature of air in B increases faster than A.

31bii. The cotton wool that contains air which is a poor conductor of heat helps the air in B to lose heat to the surroundings slower.

31c. The fire on the candle was put out.

31d. The thick long fur helps to trap air in between the fur and air is a poor conductor of heat so the animal will lose heat to the surroundings slower.

32a. The deeper the depth below the soil surface, the lower the temperature of soil.

32b. When it is deeper, the soil will be cooler so animal R will gain heat to the surroundings slower and feel less hot.

32c. Animal R has claws.

33a. L. It took fewer weights before breaking.

33b. The spot where the weights were placed.

33c.Spring Q was less stiff than P and Compressed more so spring Q was shorter than P and caused wood L to tilt unevenly.

34a.The water level in the cup will drop. Air is a matter and will take up space so it will displace the water as there will be more air within the cup and less space for the water.

34b. $200\text{cm}^3$  .The glass cylinder's volume is  $200\text{cm}^3$  and air does not have a definite volume so it will take up the volume of the glass cylinder.

34c.Increase.Air has mass so when there is more air, the glass cylinder will be heavier.

35a.The sun produces heat for the water to gain heat and evaporate.

35bi. Z to X                      35bii.Y to Z

35c.There will not be any water droplets to form and eventually no rain will fall.

36a.The bulb will light up.

36b.The circuit became a closed circuit and the iron rod become a electromagnet and attract the ball. When the ball was attracts, the circuit become an open circuit so the iron rod lost its magnetism and the ball dropped again causing the circuit to be closed circuit again.

36c.The bulb will keep being switched on and off.

37i.Pull              ii Push

37b.It caused the bubble to change shape

37c.Air under the clear plastic gained heat and expanded.

38a.so that any changes in the mass of stone after one month is only due to the location he collected the rainwater from and not other factors like volume of rainwater.

38b.R because the rainwater is least polluted as the mass of x decrease the least.

**38c.It damages buildings and contaminated the water bodies.**

39a.The steel bar is a magnetic material and magnets attract magnetic materials.

39b.X,W,Z,Y                      39c.Same steel bar for each experiment

39d.The size of the magnet does not affect the magnetic strength.

39e.Less.When he dropped magnet x, it was losing its magnetism so it became weaker and attracted at a closer distance.

40a.Gravitational—Kinetic— Gravitational Potential

40b.Y and Z

40c.The mass of bob does not affect the time taken of one complete swing.



**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 :** \_\_\_\_\_

<b>Booklet A</b>	<b>56</b>
<b>Booklet B</b>	<b>44</b>
<b>Total</b>	<b>100</b>




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**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.

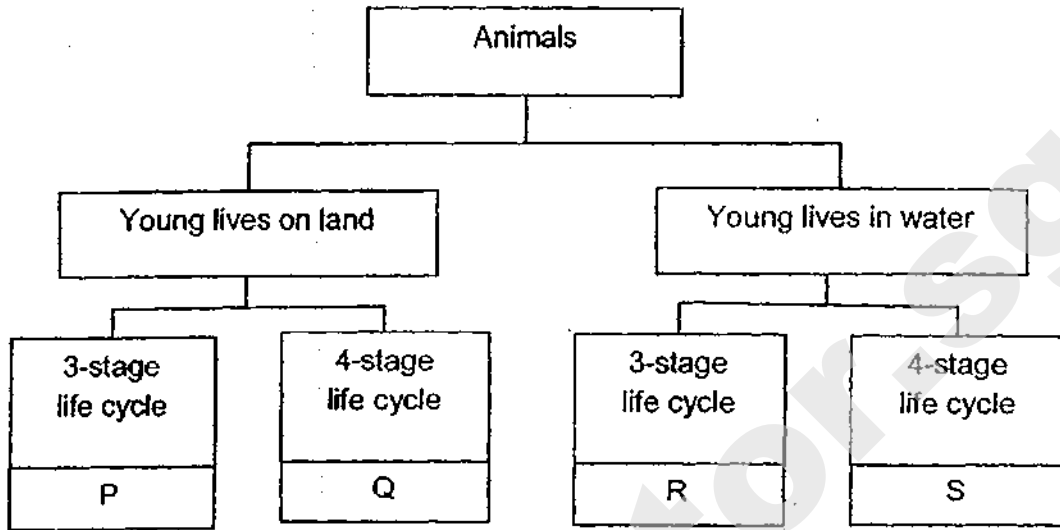
A tick (✓) shows that the characteristic is present.

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

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



3. Diagram 1 shows two seeds planted in a garden. The seeds were watered daily.

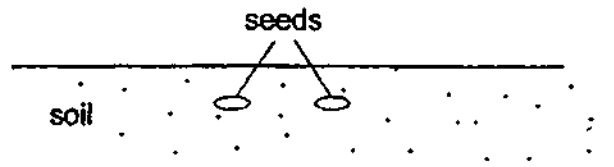


Diagram 1

Diagram 2 shows what happened in the garden after a few months.

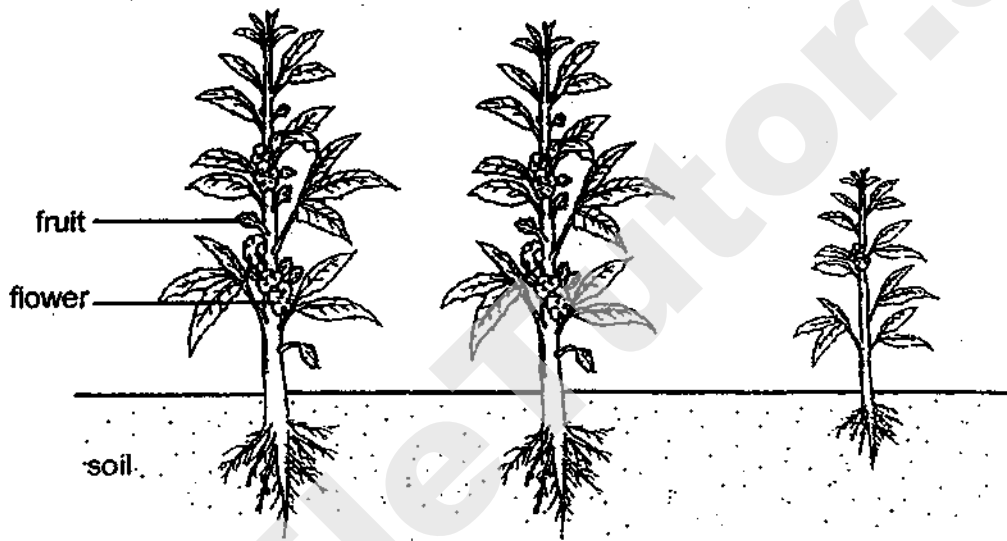
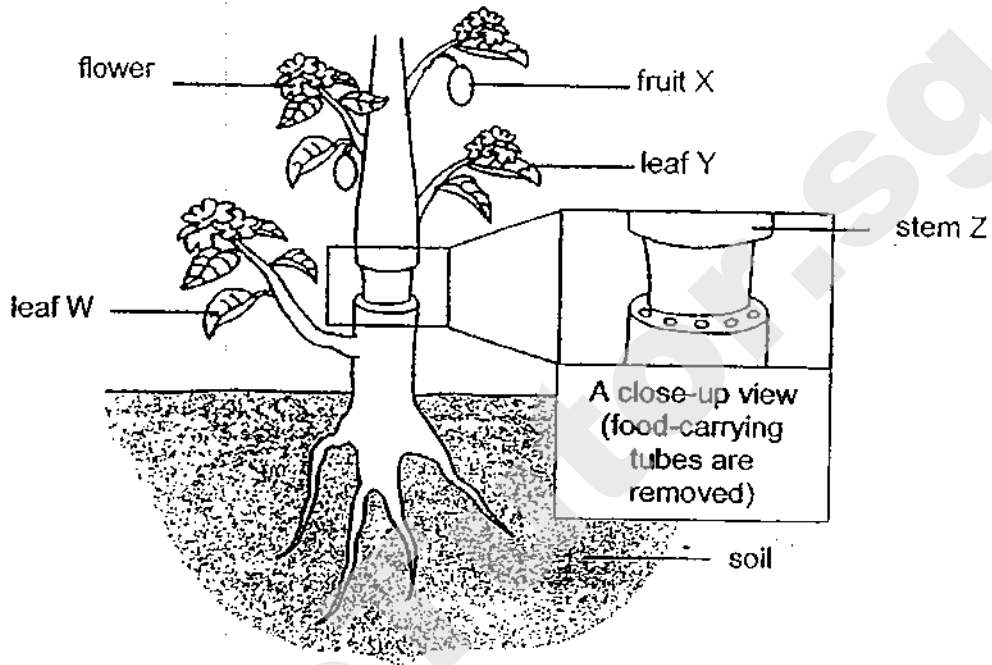


Diagram 2

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

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?

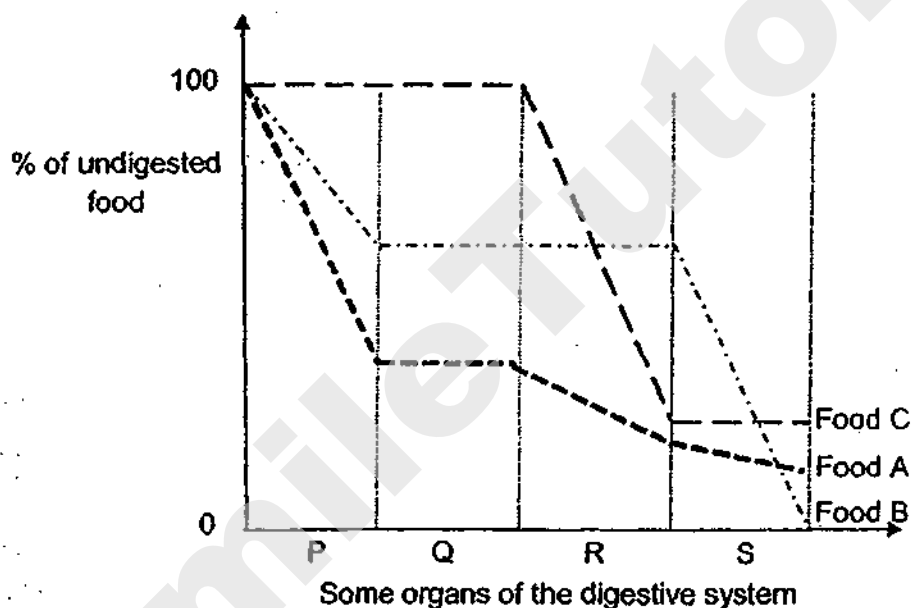
- (1) Leaf W remains green as food made by the plant is transported there.
- (2) Fruit X becomes bigger than normal as more water is being stored there.
- (3) Stem Z is slightly swollen as water could not be transported from the stem to the roots.
- (4) Leaf Y remains green as removing the food-carrying tubes does not affect the process of photosynthesis.

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.

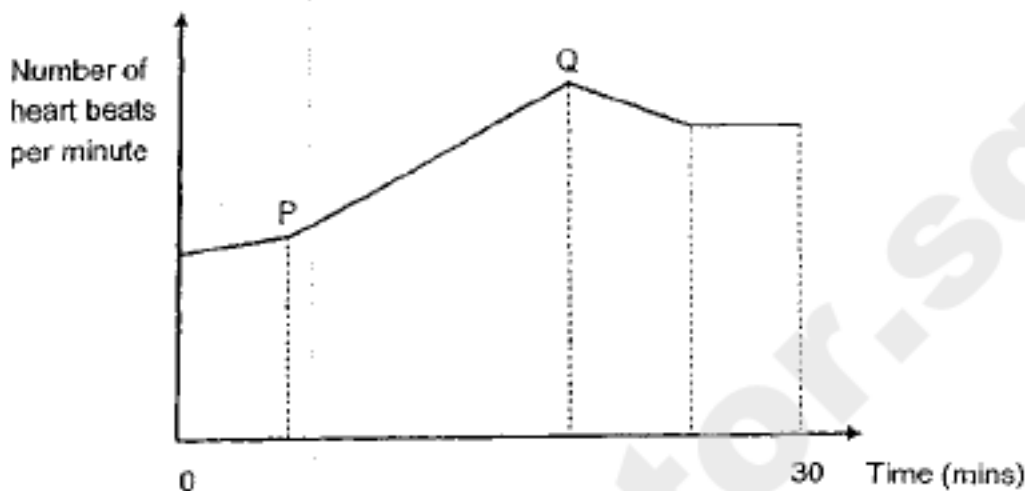
The results were plotted in the line graph below.



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.

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.

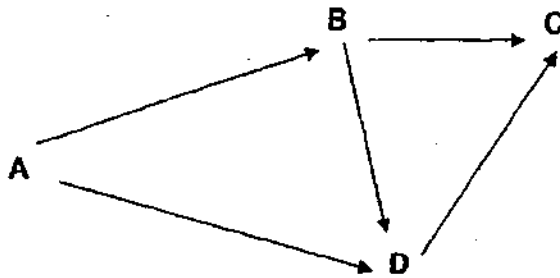
Part of the cell	Cell W	Cell X	Cell Y	Cell Z
Cytoplasm	✓	✓	✓	✓
Cell membrane	✓	✓	✓	✓
Cell wall		✓	✓	
Nucleus		✓	✓	✓
Chloroplast			✓	

Which cell could be a cheek cell from a human?

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

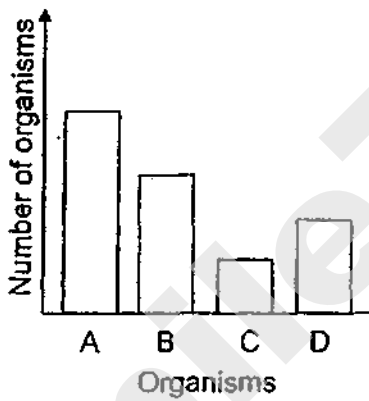
8. The diagram shows a food web.

Organisms A, B, C and D are found in the same community.

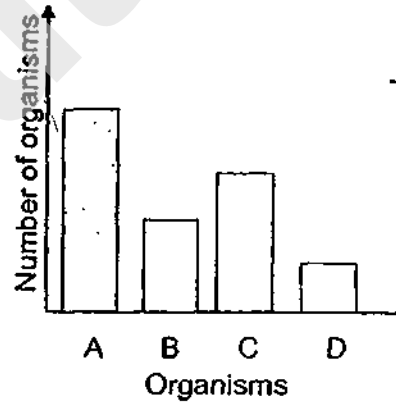


Which of the following graphs correctly shows the number of each organism present in the community?

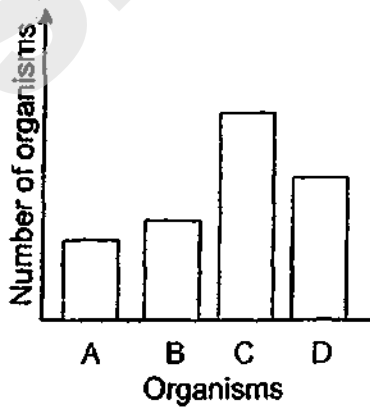
(1)



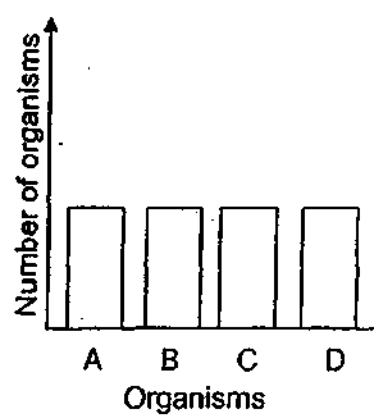
(2)



(3)



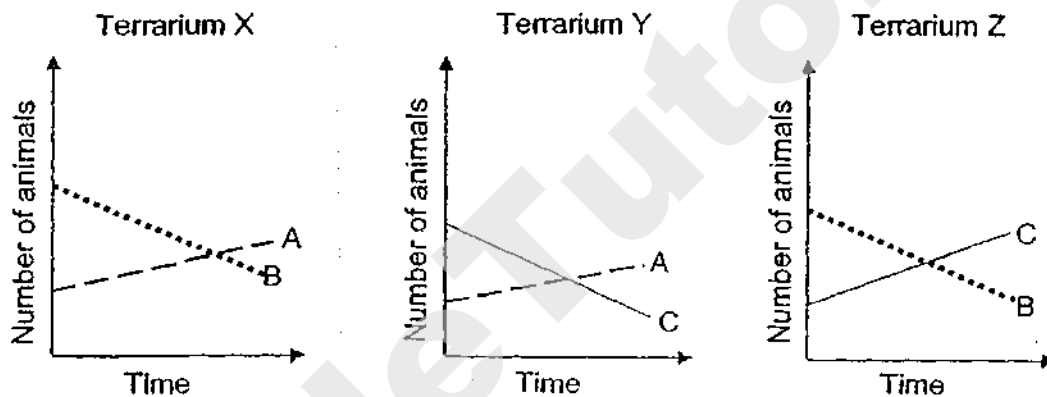
(4)



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.

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?

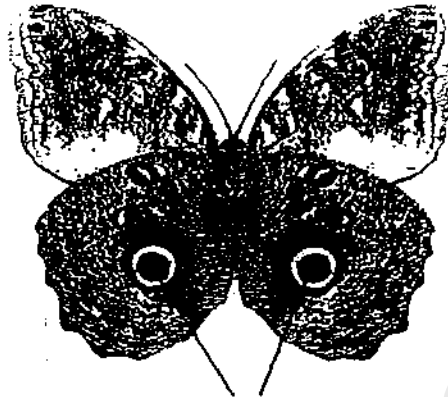
	Organism X	Organism Y
(1)	<ul style="list-style-type: none"> <li>▪ Stem creeps along the ground</li> <li>▪ Bright coloured flowers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large ears</li> <li>▪ Sharp vision</li> </ul>
(2)	<ul style="list-style-type: none"> <li>▪ Stem twines around a support</li> <li>▪ Stigma hanging outside petals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sweats very little</li> <li>▪ Padded feet</li> </ul>
(3)	<ul style="list-style-type: none"> <li>▪ Has thorns</li> <li>▪ Feather-like stigma</li> </ul>	<ul style="list-style-type: none"> <li>▪ Urinates very little</li> <li>▪ Camouflages with the surrounding</li> </ul>
(4)	<ul style="list-style-type: none"> <li>▪ Has climbing stem</li> <li>▪ Anthers hanging outside petals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Active at night</li> <li>▪ Sharp claws</li> </ul>

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

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

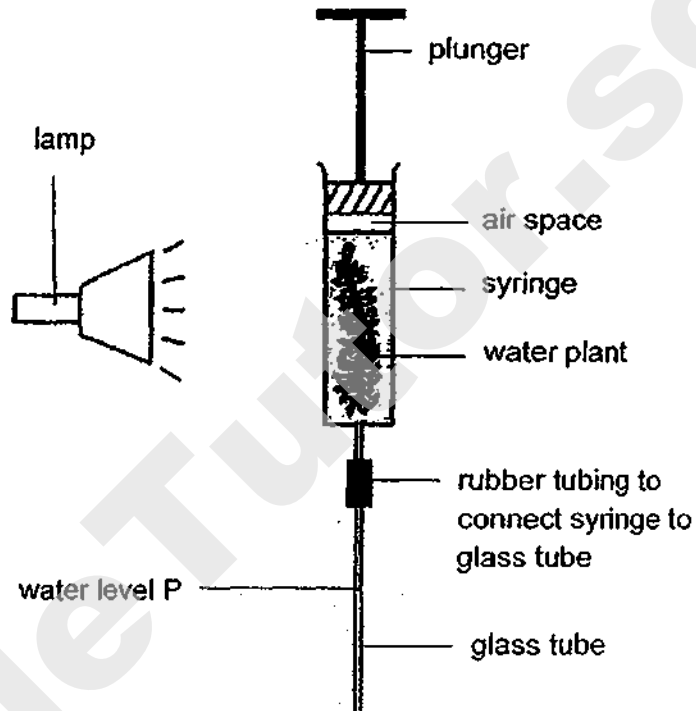
Which of the following is correct about the organism's adaptation?

	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



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.

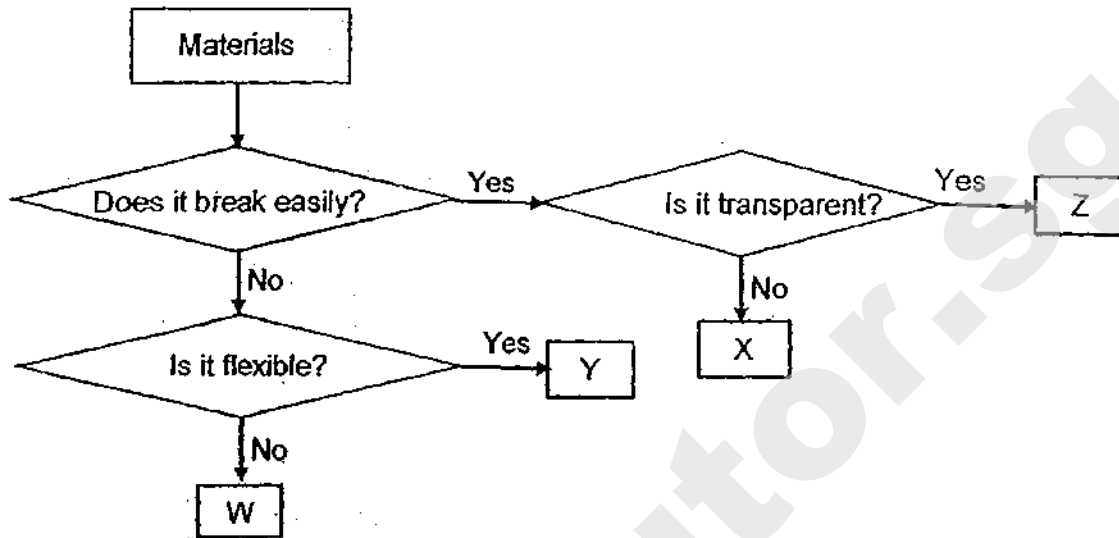
He observed that the water level P in the glass tube had moved, while the plunger remained at the same place.



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.

14. Ben observed four materials, W, X, Y and Z, and came up with the flowchart below.



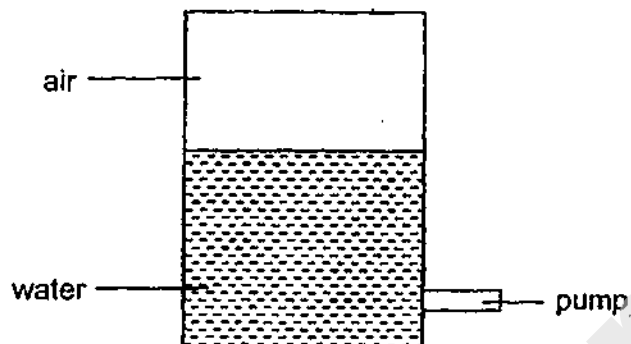
Based on the flowchart above, which material, W, X, Y or Z, is used to make the shopping bag to carry groceries as shown below?



grocery shopping bag

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

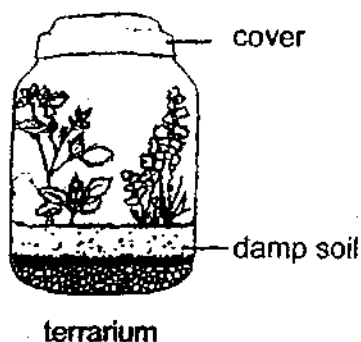
15. An experiment was set up using a sealed metal container which holds  $700\text{cm}^3$  of water and  $300\text{cm}^3$  of air as shown below.



What observations about the volume of air and the volume and mass of water in the container could be made after  $200\text{cm}^3$  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

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.



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

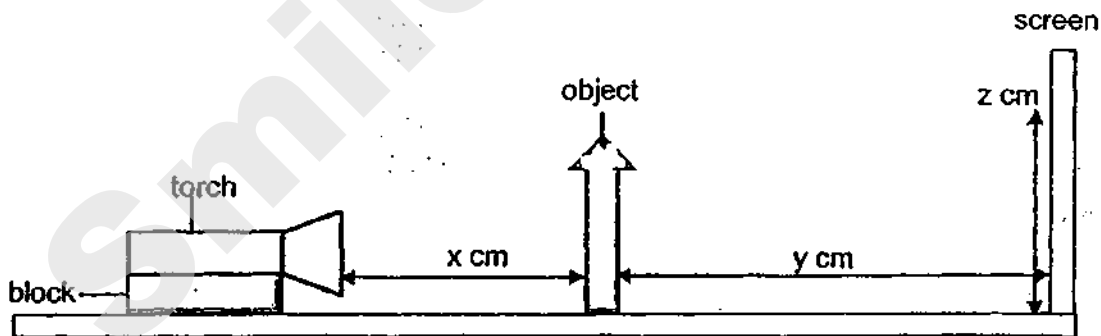
18. The table below gives some information about A, B, C and D.

A, B, C and D			
Has mass			Has no mass
Has definite volume		Has no definite volume	
Has definite shape	Has no definite shape	C	
A	B		

Which of the following correctly matches water and sound?

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

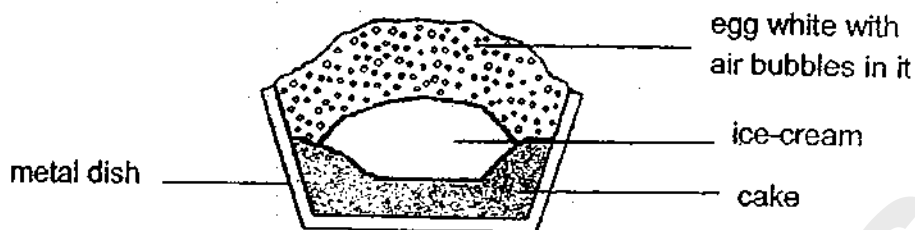
19. The diagram below shows how the shadow of an object can be cast on a screen using a torch. All the items of the set-up can be moved.



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

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.

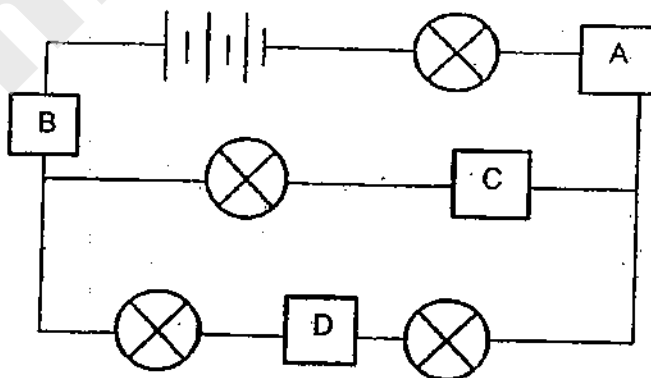


The dessert was placed in a very hot oven and baked until the top of the egg white turned brown. It was then removed from the oven, ready to be served. It was observed that the ice cream inside the metal dish did not melt.

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.

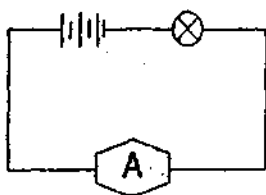
21. The diagram below shows four bulbs in a circuit.



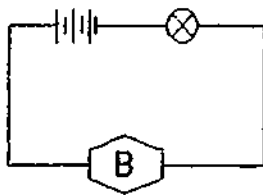
At which position, A, B, C or D, should a switch be placed so that only two bulbs will remain lighted up when the switch is opened?

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

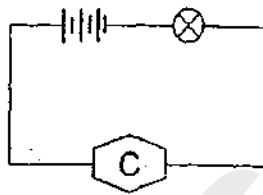
22. Kelly was given three circuits X, Y and Z as shown below. The bulbs and batteries in all the circuits are new and identical. Different objects, A, B and C, are connected in each circuit.



Circuit X



Circuit Y



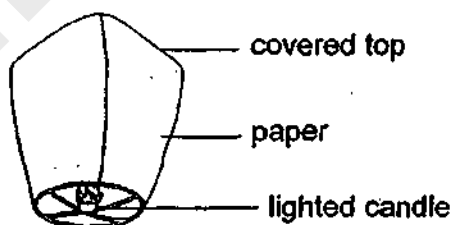
Circuit Z

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?

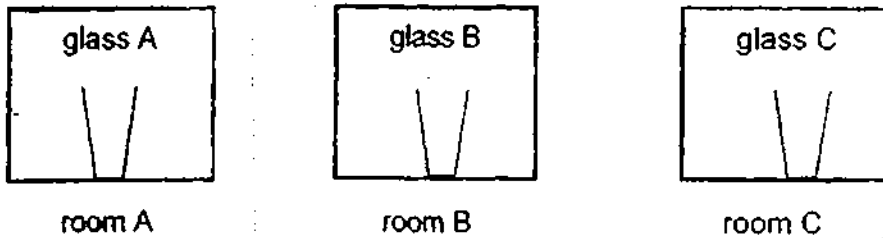
- (1) Object A is made of metal.
  - (2) Object C is another light bulb.
  - (3) Object B is an electrical insulator.
  - (4) Objects B and C are identical electrical wires.
23. The diagram below shows a sky lantern. A sky lantern is made of paper. It has a covered top and an opening at the bottom.



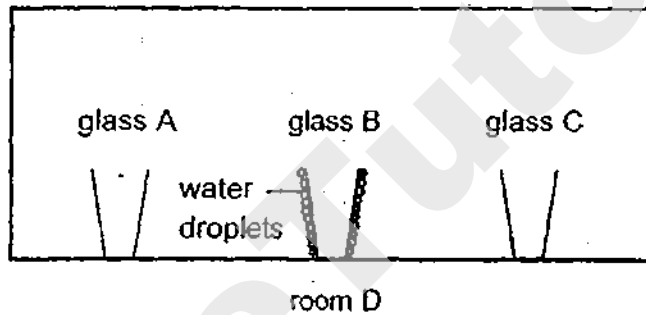
Which one of the following correctly shows the energy changes when the candle is lit and the sky lantern rises up into the air?

- (1) Light energy  $\rightarrow$  kinetic energy  $\rightarrow$  heat energy + sound energy
- (2) Kinetic energy + gravitational potential energy  $\rightarrow$  heat energy + light energy
- (3) Chemical potential energy  $\rightarrow$  light energy + heat energy  $\rightarrow$  gravitational potential energy
- (4) Chemical potential energy  $\rightarrow$  heat energy + light energy  $\rightarrow$  kinetic energy + gravitational potential energy

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.

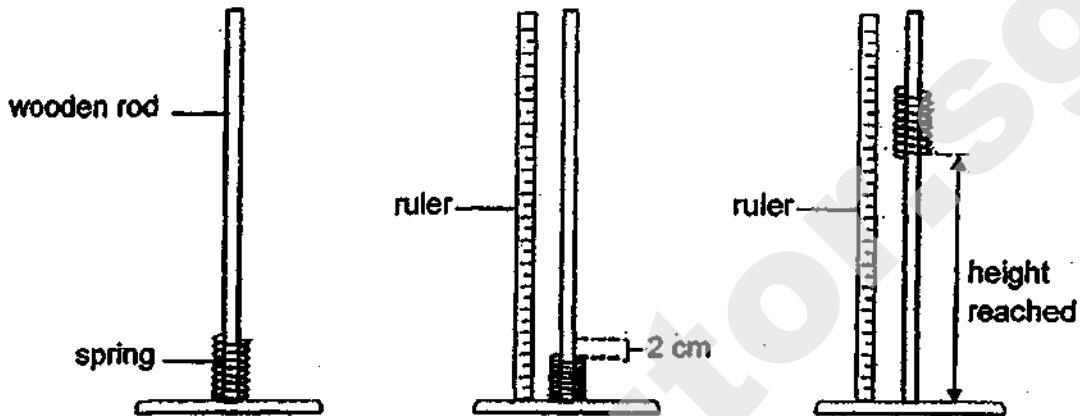


25. Tanya carried out an experiment as shown below.

Step 1: Put a spring over a wooden rod.

Step 2: Push the spring down by 2cm.

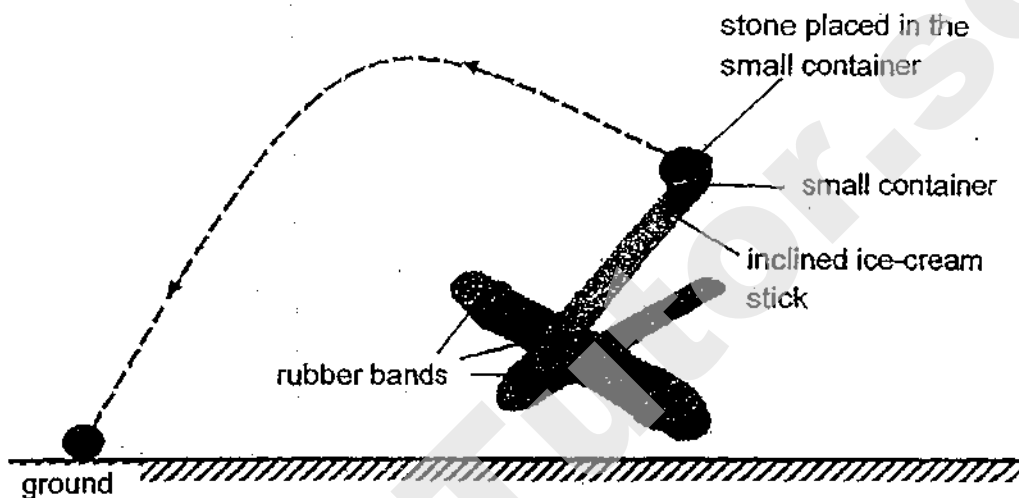
Step 3: Release the spring and measure the height it reached.



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

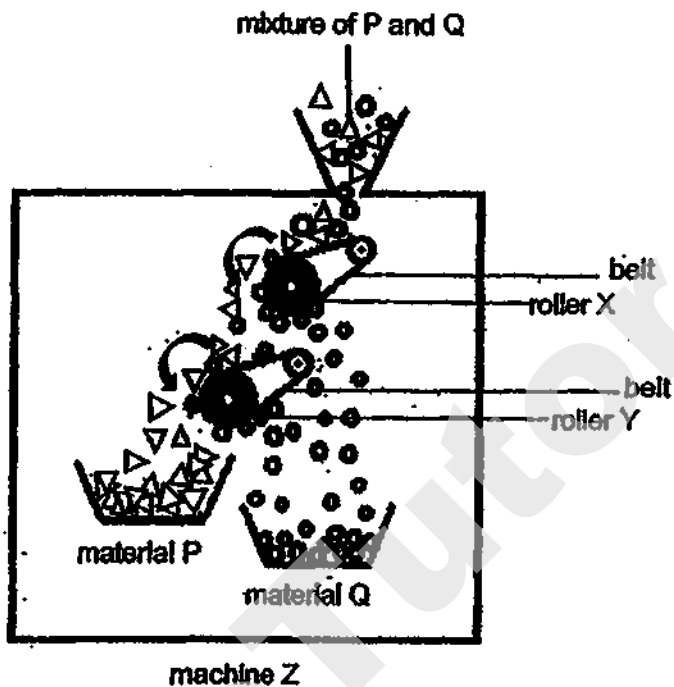
26. Sam used some ice-cream sticks and rubber bands to make a catapult as shown in the diagram below. A small container is attached at the end of the inclined ice-cream stick to hold a piece of stone. When the inclined ice-cream stick is pushed down, the rubber bands are stretched. When it is released, 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.

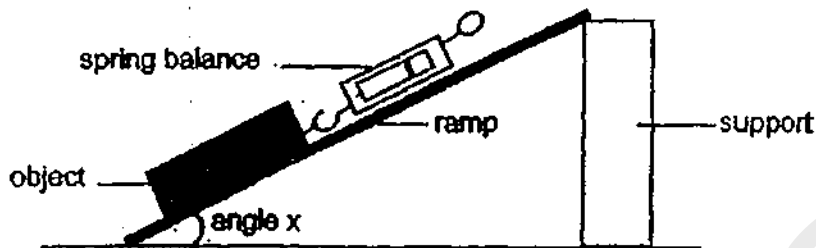
27. A mixture of materials P and Q was poured into machine Z. This machine can separate materials based on their magnetic properties. The arrows show the direction the belts on the rollers are moving in.



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.

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 ( $\checkmark$ ) represents the action he had taken.

(1)

Variables	What he changed	What he kept the same	What he measured
the amount of force used	$\checkmark$		
the mass of the object			$\checkmark$
the height of the support		$\checkmark$	
type of surface of the ramp		$\checkmark$	

(2)

Variables	What he changed	What he kept the same	What he measured
the amount of force used			$\checkmark$
the angle of the ramp	$\checkmark$		
the mass of the object		$\checkmark$	
type of surface of the ramp		$\checkmark$	

(3)

Variables	What he changed	What he kept the same	What he measured
the amount of force used		$\checkmark$	
the angle of the ramp	$\checkmark$		
type of spring balance		$\checkmark$	
the height of support			$\checkmark$

(4)

Variables	What he changed	What he kept the same	What he measured
the amount of force used	$\checkmark$		
the angle of the ramp			$\checkmark$
the mass of the object		$\checkmark$	
type of surface of the ramp		$\checkmark$	

End of Booklet A



**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.**

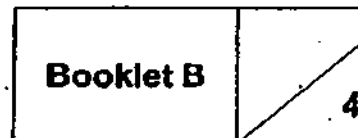
**Answer all questions.**

**Write your answers in this booklet.**

**Name : \_\_\_\_\_ ( )**

**Class : Primary \_\_\_\_\_**

**Parent's Signature : \_\_\_\_\_**

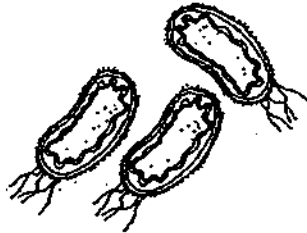


SmileTutor.sg

**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]

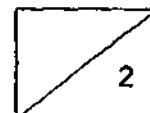
Organism X: \_\_\_\_\_

Organism Y: \_\_\_\_\_

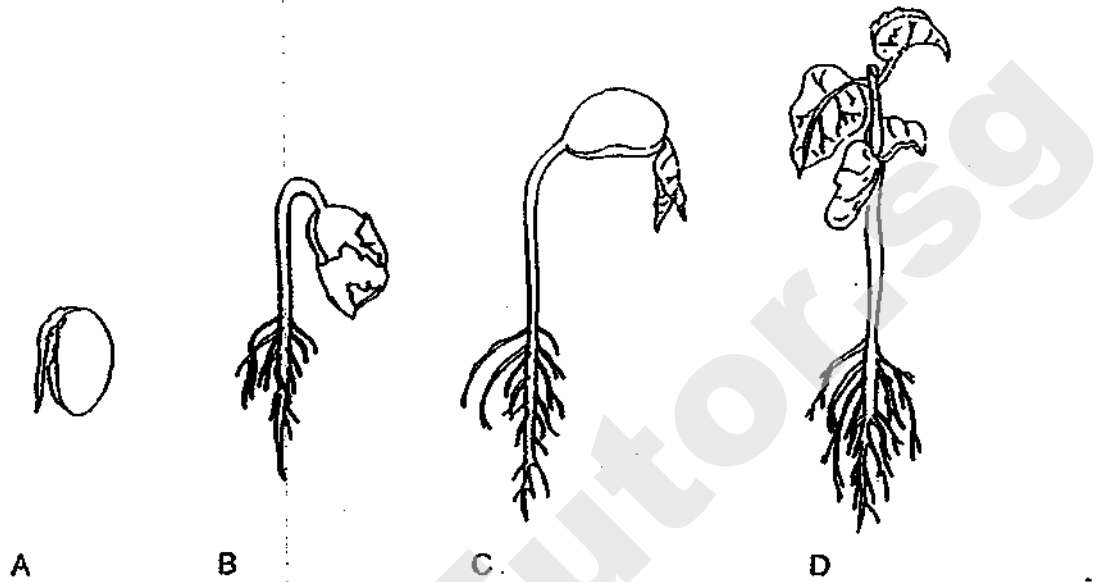
- (b) It was observed that after a night of heavy rain, many organism Y started growing on a grass patch near a dead tree stump. From this observation, state two factors that organism Y needs for its rapid growth. [1]

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30. The diagram below shows the growth of a green bean seed.



(a) A student commented that the plant only starts absorbing water at stage B. Is this comment correct? Explain your answer. [1]

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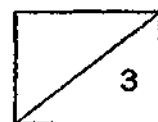
(b) Would the green bean plant get from stage B to stage C if it was placed inside a wooden cupboard for a week? Explain your answer. [2]

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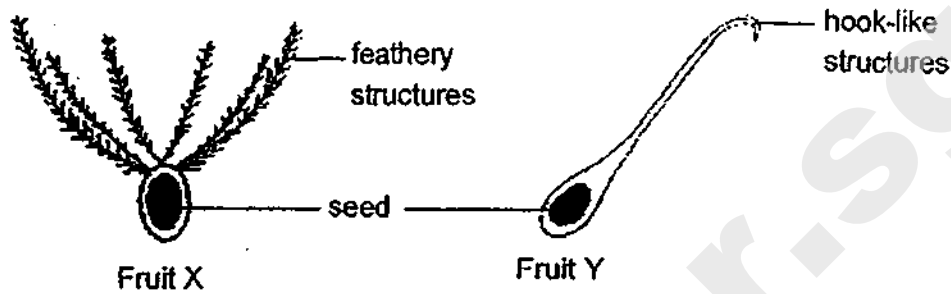
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31. The diagram below shows two fruits, X and Y with a seed in each.



(a) Which part of a flower does a fruit develop from? [1]

\_\_\_\_\_

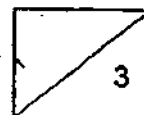
(b) Based on the structures observed in the diagram above, state the method which fruit X and fruit Y are dispersed by. [1]

Fruit X: Dispersed by \_\_\_\_\_

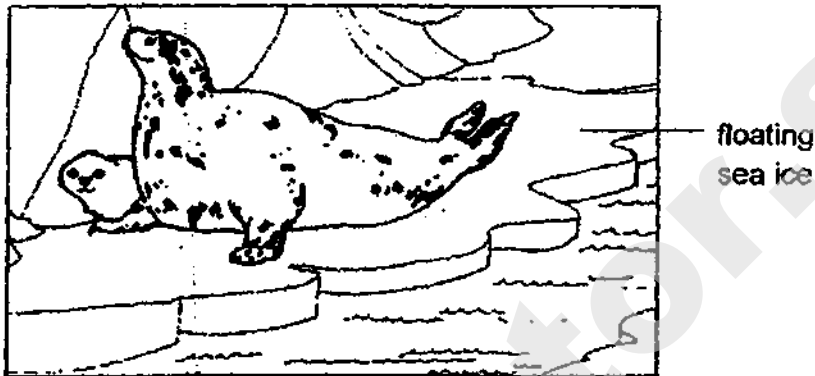
Fruit Y: Dispersed by \_\_\_\_\_

(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]

\_\_\_\_\_  
\_\_\_\_\_



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]

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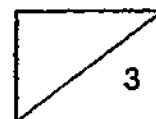
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- (b) Explain how man's activities which release more carbon dioxide into the air would affect the population of organism T. [2]

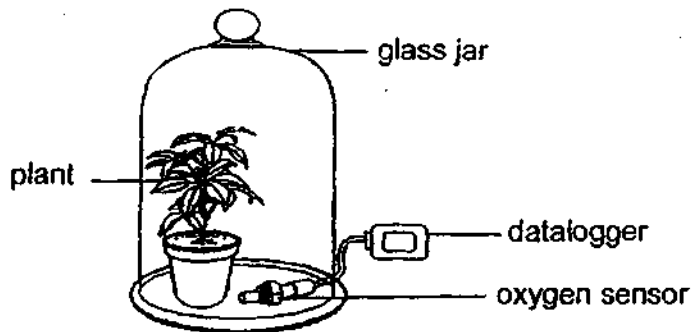
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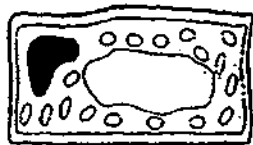
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33. Xiao Ming set up an experiment as shown below to investigate if the presence of light affects the process of photosynthesis of a plant.



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]

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- (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]

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- (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]

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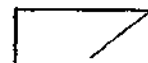
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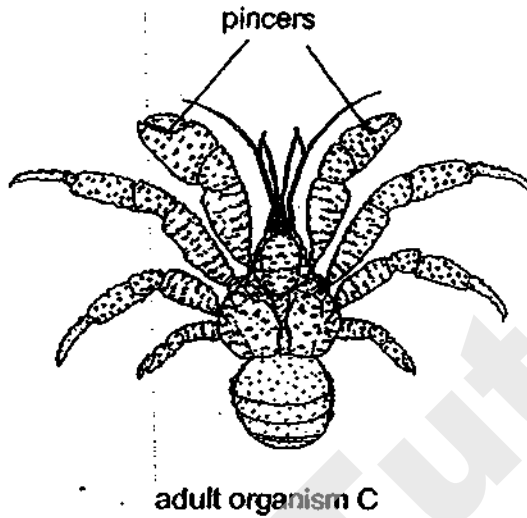
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34. Organism C is a big animal that lives on a beach. It usually stays in the burrow in the day and is active at night. Its young carries a shell but not the adult. The adult is able to climb coconut trees and has powerful pincers which can break open fallen coconuts.



- (a) Based on the information given, how do the young and adult organism C protect themselves from predators? [2]

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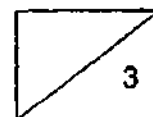
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- (b) What behavioural adaptation does organism C have to cope with the hot weather? Explain your answer. [1]

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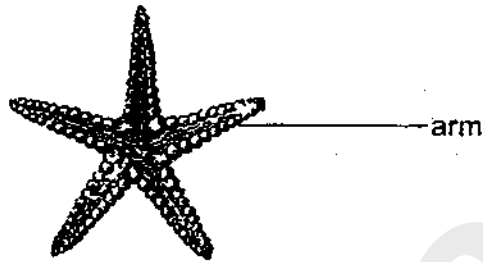
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*(Question 34 continues on the next page.)*



(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

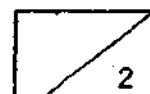
- (c) From the information given above, state one action organism S can do to protect itself when it is attacked by organism C. Explain how this action helps to ensure the survival of organism S. [2]

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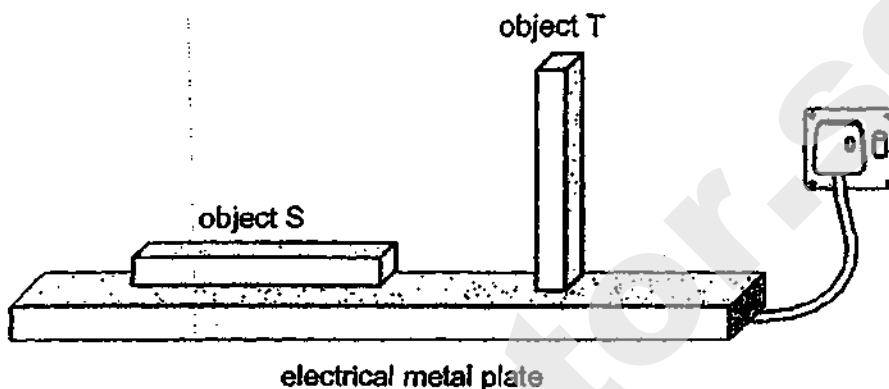
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35. John carried out an experiment by placing two identical objects, S and T, on an electrical metal plate which was heated evenly. He measured the temperature of the top surface of both objects over a period of time and recorded his results in the 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]

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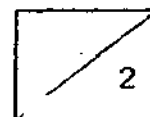
- (b) Explain why the top surface of object T has a lower temperature than the top surface of object S at the end of 25 seconds. [1]

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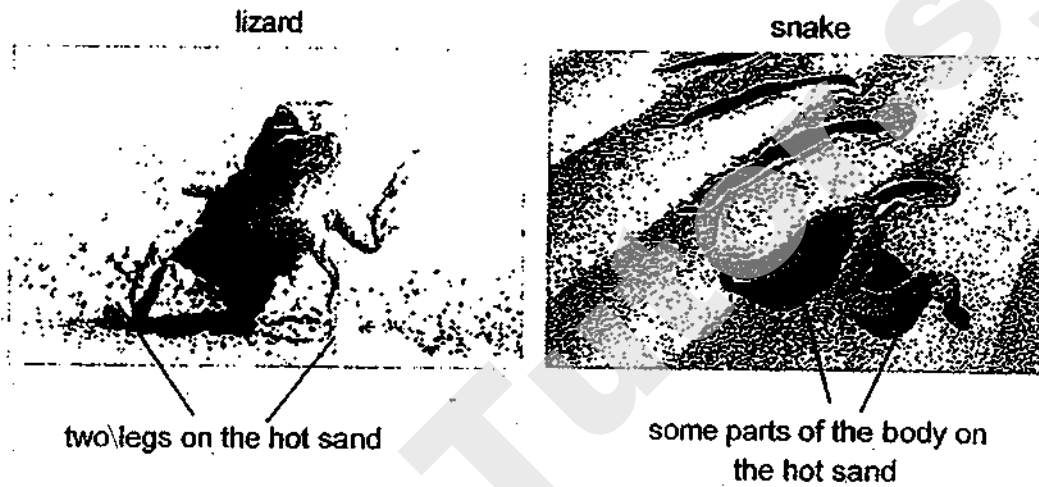
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(Question 35 continues on the next page.)



(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]

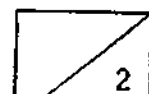
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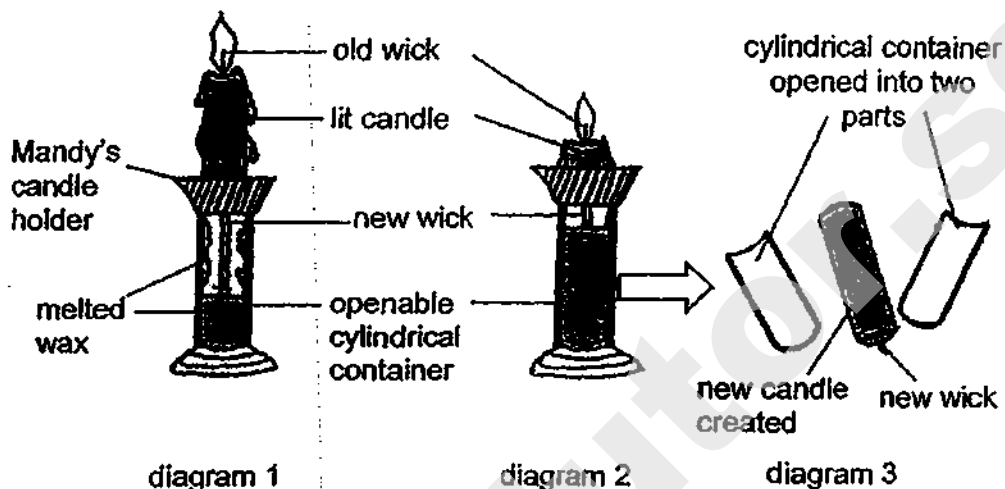
- (d) Based on John's experiment on the previous page, give a reason why the lizard would be able to move on the hot sand for a longer period of time compared to the snake. [1]

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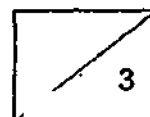
36. The diagrams below show how Mandy's newly designed candle holder could help reuse candles. Diagram 1 shows a lit candle placed into the candle holder while diagram 2 shows the same candle after ten minutes. Diagram 3 shows the candle holder opened into two parts, revealing a new candle and a new wick.



- (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]



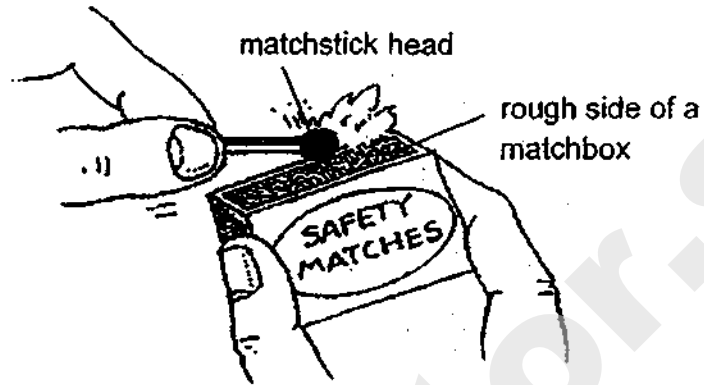
(Question 36 continues on the next page.)





(Questions 36 continues.)

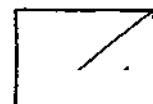
- (d) To light the candle in diagram 1, Mandy struck the head of a matchstick against the rough side of a matchbox. This produced a flame.



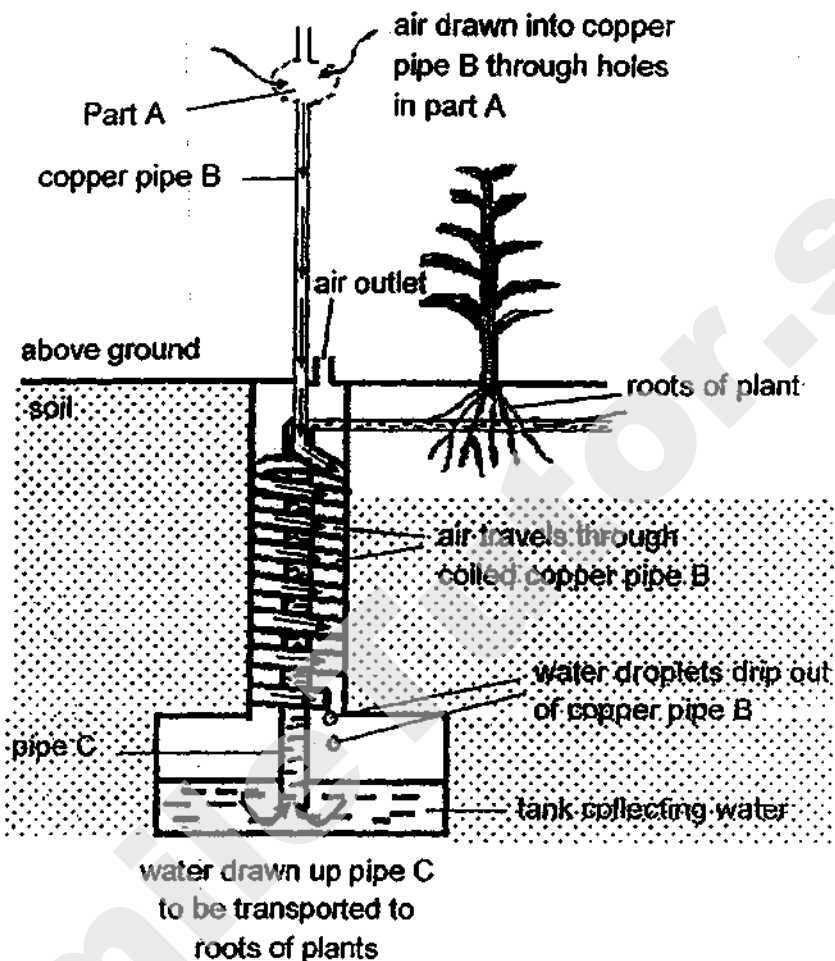
Explain why the matchstick head and the side of the matchbox has to be rough for the matchstick to light up. [1]

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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.

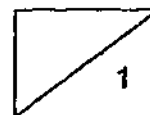
- (a) System Z works well when it is buried under the ground. What does this tell us about the temperature underground compared to the air above ground? [1]

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(Question 37 continues on the next page.)



(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]

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A cross-sectional view of copper pipe B shows that the inner surface of the pipe is lined with copper strips as shown below.



- (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]

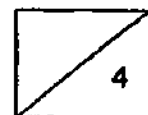
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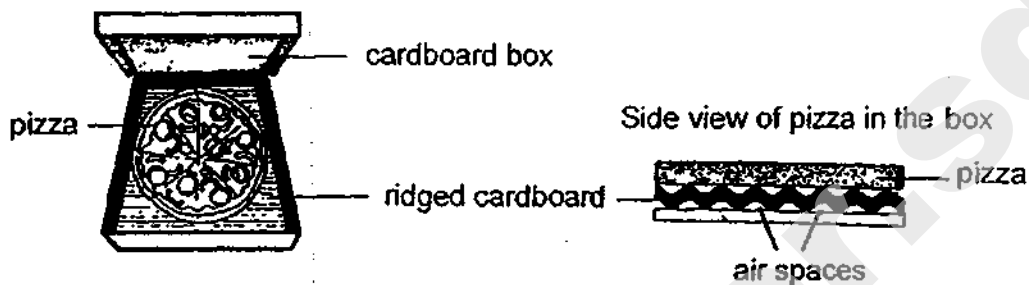
- (d) With the use of system Z, farmers can grow crops even in dry areas. What does this tell you about water vapour in the air? [1]

---

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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]

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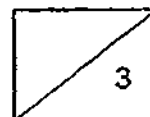
- (b) State the property of cardboard which makes it more suitable than plastic to make the delivery box. Explain how this property is able to keep the pizza from turning soggy. [2]

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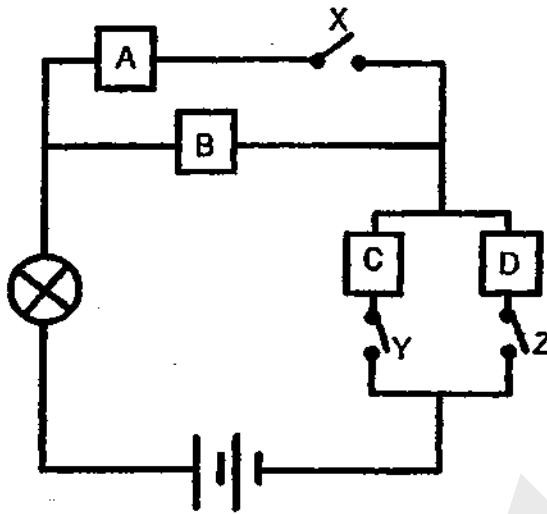
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39. Justin set up a circuit as shown below to find out which object(s), A, B, C or D is/are electrical conductors.



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]

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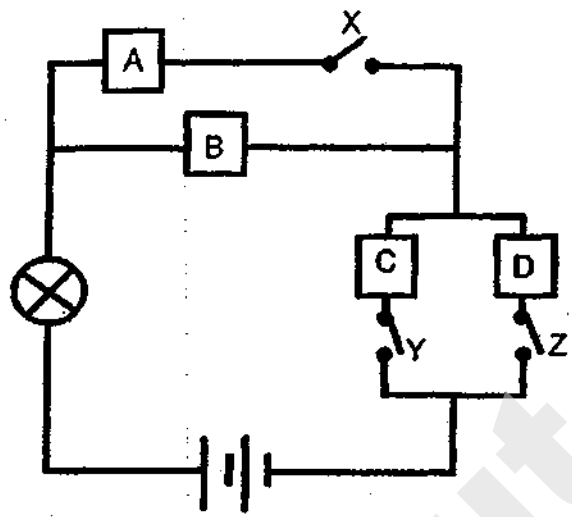


---

- (c) From the results of Justin's experiment, which object(s), A, B, C and/or D is/are definitely electrical conductors? [1]

---

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]

---



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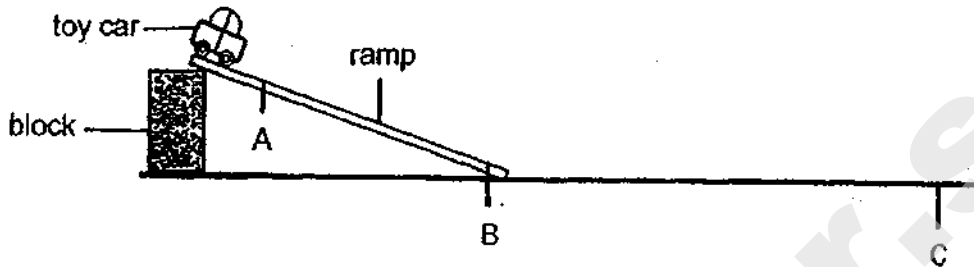


---

(c) From the results of Justin's experiment, which object(s), A, B, C and/or D is/are definitely electrical conductors? [1]

---

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.

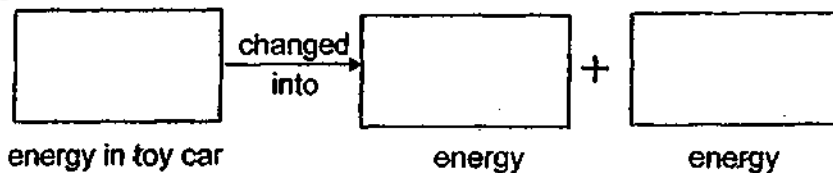
- (a) What are the forces acting on the toy car as it moves down the ramp? [1]

\_\_\_\_\_

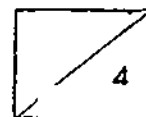
- (b) Tim noticed that the toy car moved slower at point A than at point B. Explain in terms of energy, why this happened. [2]

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- (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



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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 green 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 these seed 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 no 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 trap light during photosynthesis and give out oxygen.

33b.The higher the amount of oxygen produced by the plant per minute, the higher the rate of photosynthesis of the plant.

33c. Xiao Ming must repeat the similar experiment, but this time he must change the glass jar to an opaque jar, so no light will be able to pass through and then measure the amount of oxygen produced 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 use 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 snake, 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.

37c. There 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. Opening Y 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 gravitational potential energy in the toy car at A, so there was less kinetic energy in toy car at A. The gravitational potential energy in the toy car converted to kinetic energy in the toy car as it moved from A to B, so the toy car moved slower at point A.

40c. Kinetic  $\rightarrow$  heat + sound

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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

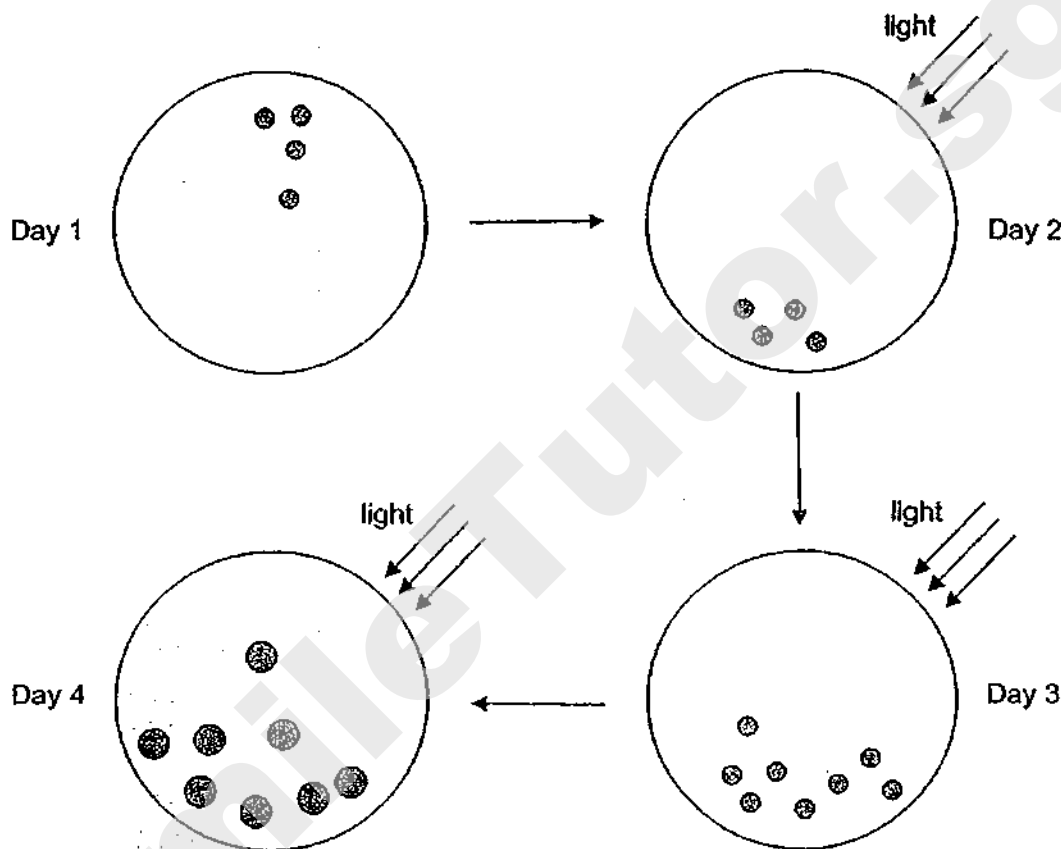
Total Time: 1 h 45 min

Booklet	Marks
A	/ 56
B	/ 44
<b>Total (A+B)</b>	<b>/ 100</b>

**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

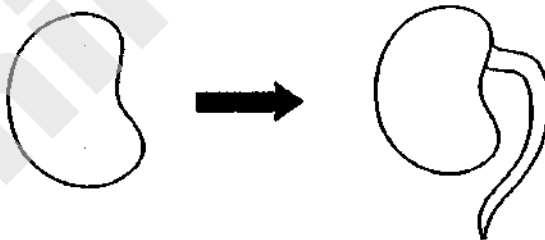
( )

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

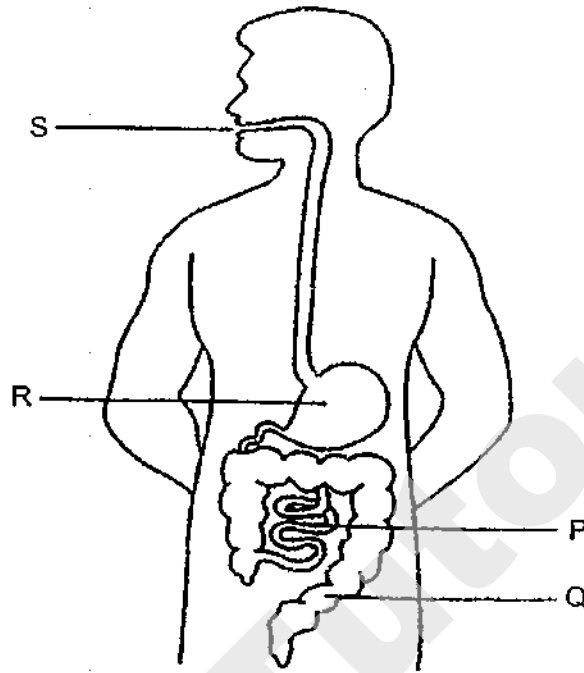
- (1) B only  
 (2) A and B only  
 (3) A and C only  
 (4) A, B and C
- ( )
3. The diagram below shows a process during a stage in the life cycle of a flowering plant.



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

4. The diagram shows the human digestive system.



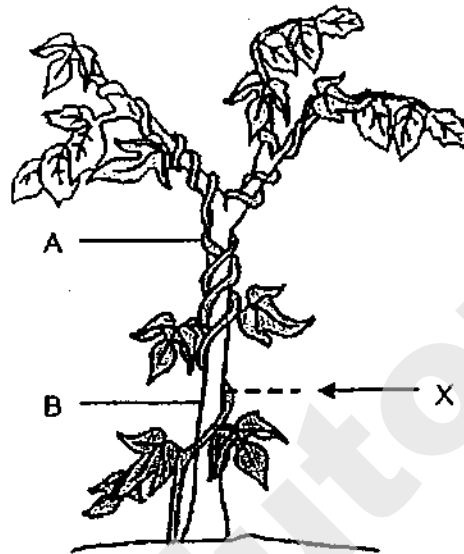
In which one of the following parts is water absorbed from the undigested food?

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

( )



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

( )

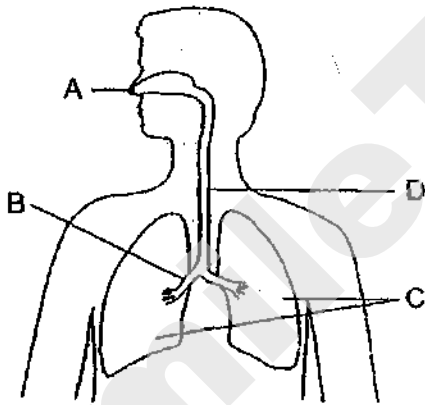
6. Study the table below.

	Parts of the respiratory system			
	A	B	C	D
air passes through here		✓	✓	
air from the surrounding enters here				✓
gaseous exchange takes place here	✓			

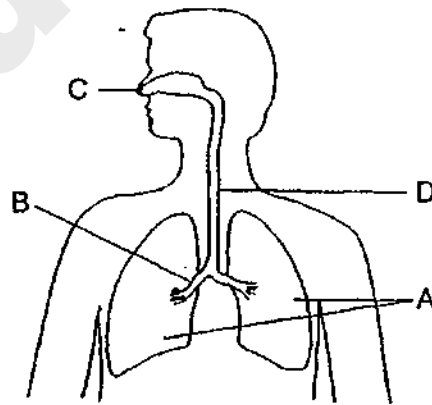
Key : ✓ present

Which of the following correctly shows the parts labelled, A, B, C and D?

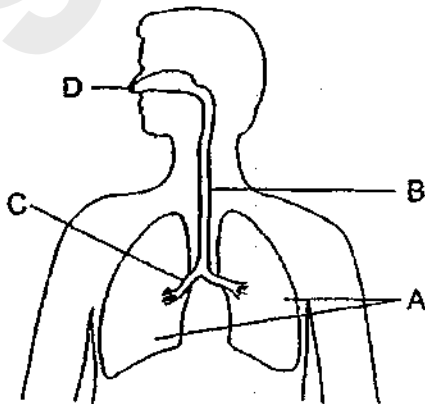
(1)



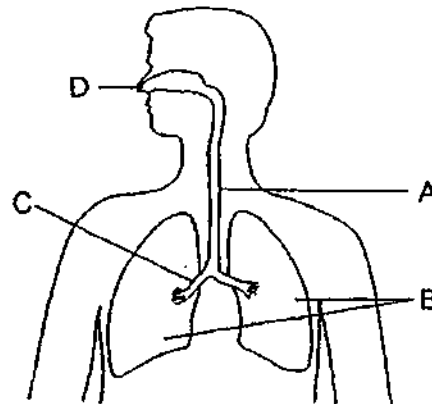
(2)



(3)

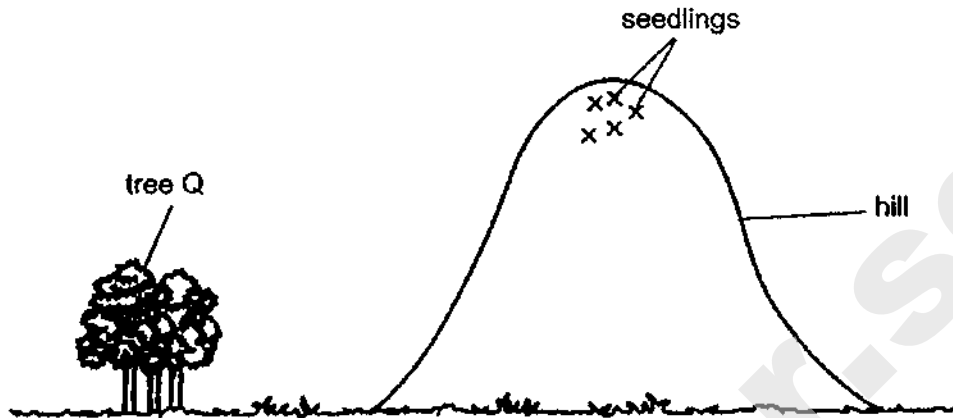


(4)



( )

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.

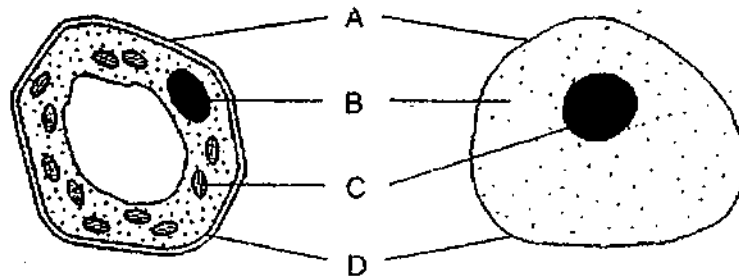
Which of the following are possible characteristics of the fruits of tree Q?

- 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

( )

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

( )

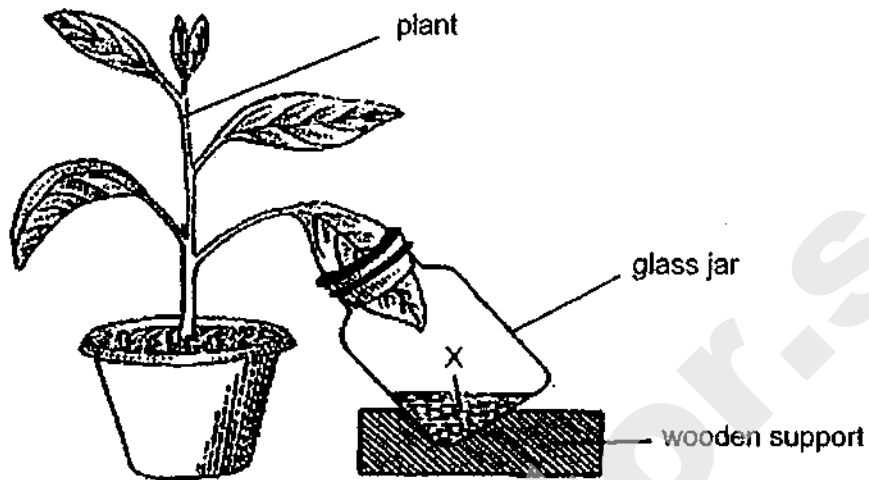
9. Which of the following activities help to keep the environment clean and green?

- 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

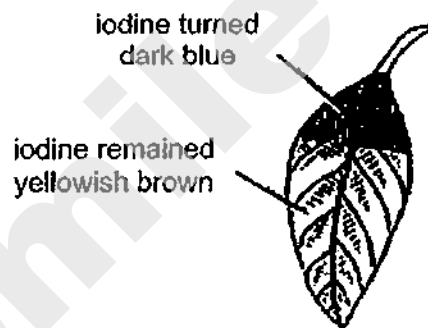
- (1) B and C only
- (2) A, B and D only
- (3) B, C and D only
- (4) A, B, C and D

( )

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

( )

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:

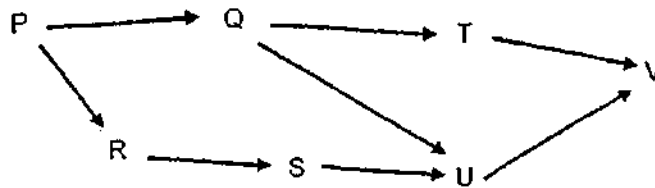
ants	millipede	mould	toadstool
------	-----------	-------	-----------

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

( )

13. The following diagram shows a food web in a particular habitat.

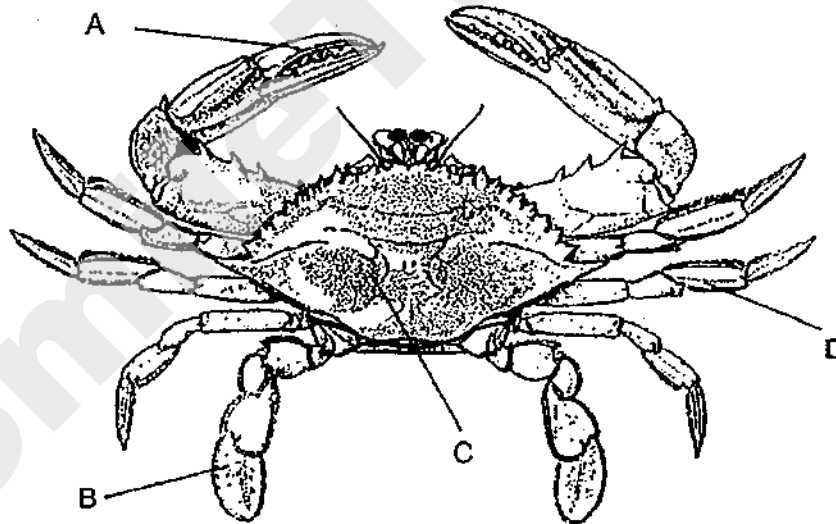


Which of the following organisms are both a prey and predator?

- (1) Q and U
- (2) R and S
- (3) S and T
- (4) U and V

( )

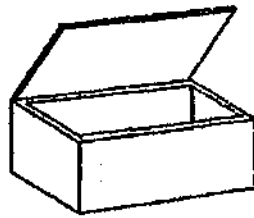
14. The diagram below shows animal X. It has a hard outer covering and lives in the seashore habitat.



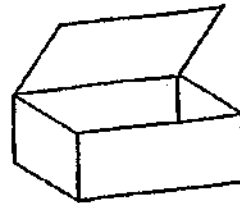
Which of the following is correct about the function of the parts labelled, A, B, C and D?

	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

15. The diagram below shows two cardboard boxes, A and B, of the same size but of different thickness.

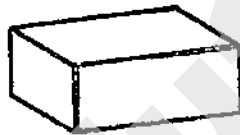


Box A



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

( )



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.



glass container filled with marbles

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

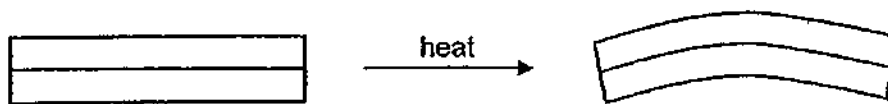
( )

17. Which of the following is correct about heat and light?

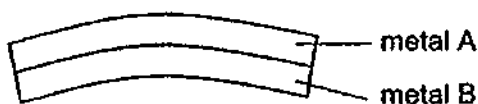
- (1) Both help us to see.
- (2) Both are forms of energy.
- (3) Both can be compressed.
- (4) Both occupy space and have mass.

( )

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.



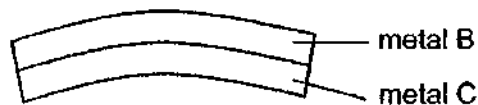
Strip 1



Strip 2



Strip 3



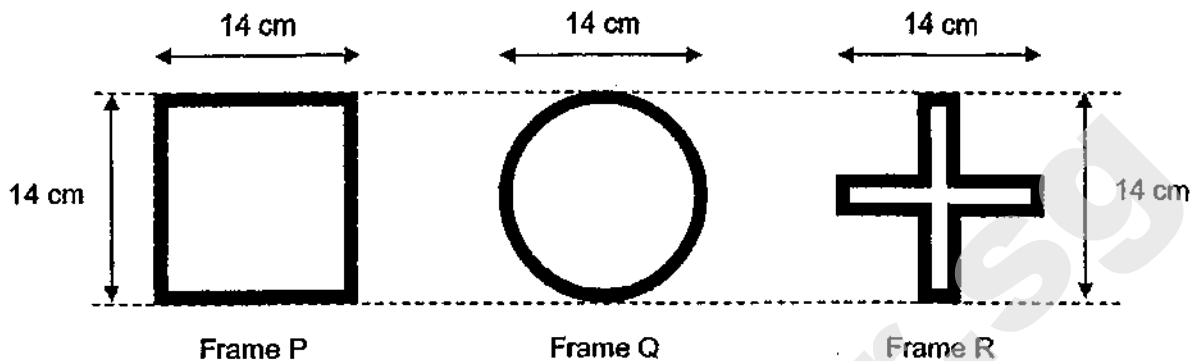
Strip 4

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?

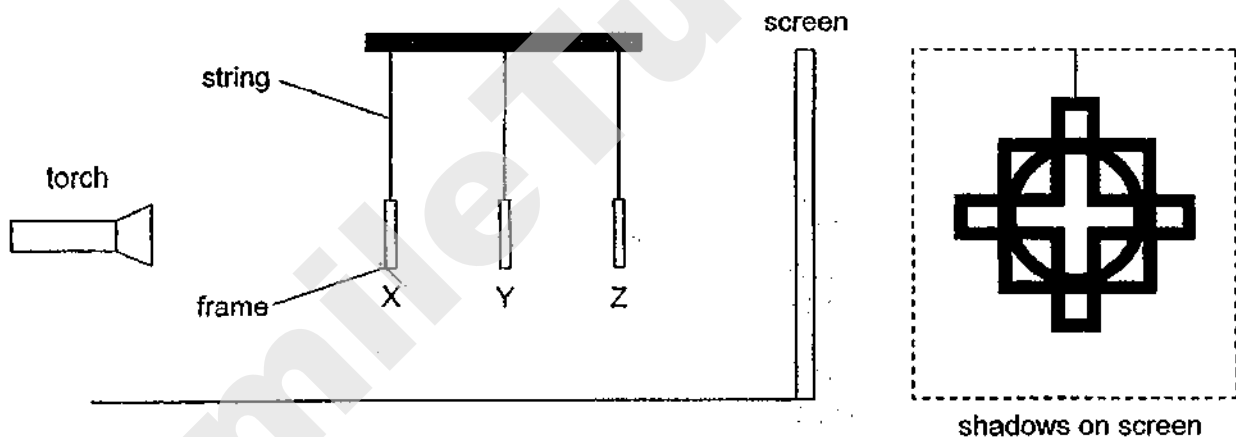
	Expanded the least	—————>	Expanded the most
(1)	B	C	A D
(2)	C	A	B D
(3)	C	B	A D
(4)	D	A	B C

( )

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.

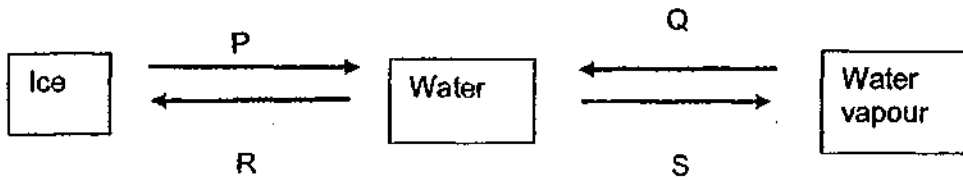


Which of the following shows the correct positions of the wooden frames for the shadows cast on the screen?

	Position of		
	Frame P	Frame Q	Frame R
(1)	X	Y	Z
(2)	Y	Z	X
(3)	Y	X	Z
(4)	Z	Y	X

( )

20. Study the diagram below.



P: Melting

Q: Evaporation

R: Freezing

S: Condensation

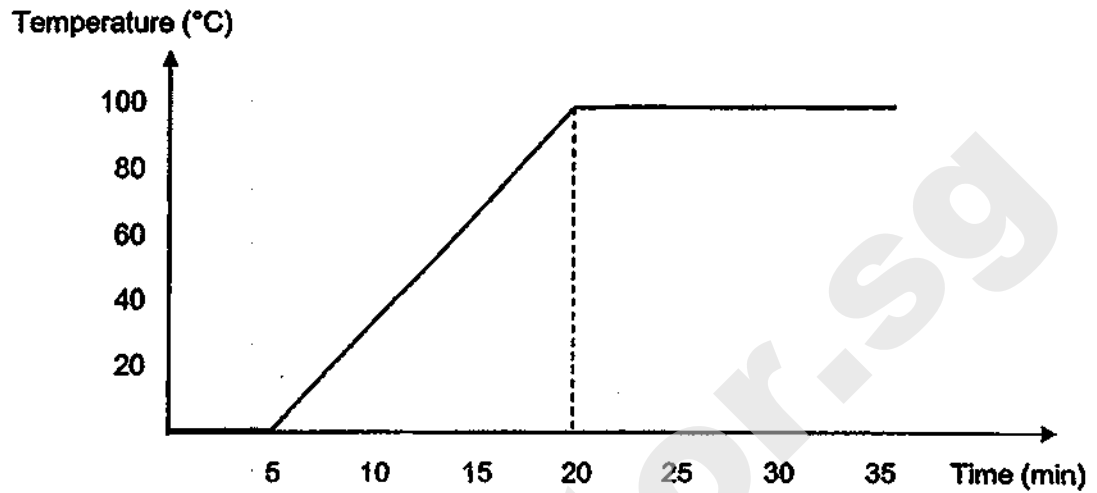
Based on the diagram above, which of the processes are labelled correctly?

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

( )

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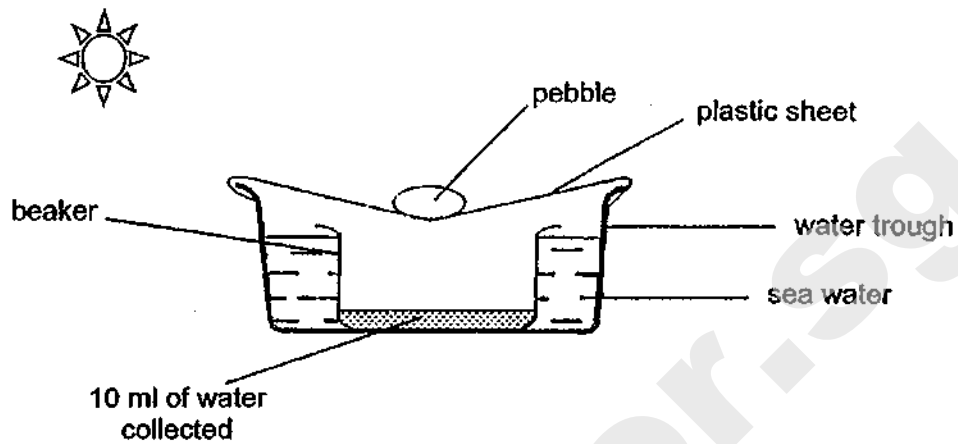
21. Esther heated some ice in a beaker and recorded the temperature changes over time.



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. ( )

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

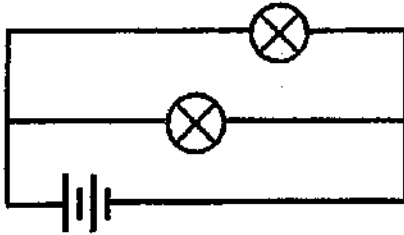
- (1) C only
- (2) A and B only
- (3) B and C only
- (4) C and D only

( )

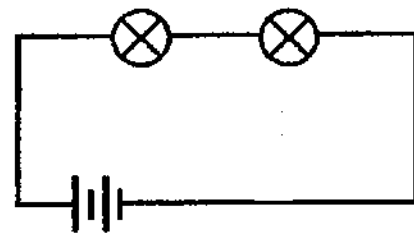
23. Aidan used similar bulbs, batteries and wires to set up four circuits as shown below.

In which one of the following circuits will all the bulbs shine the brightness?

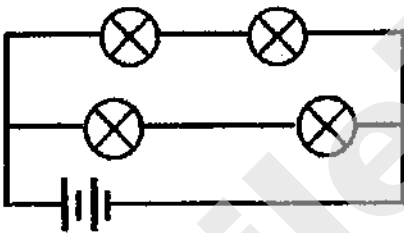
(1)



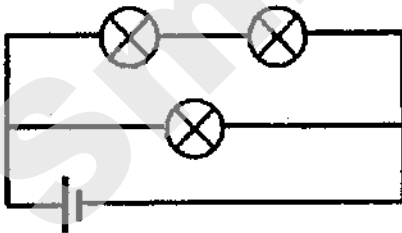
(2)



(3)

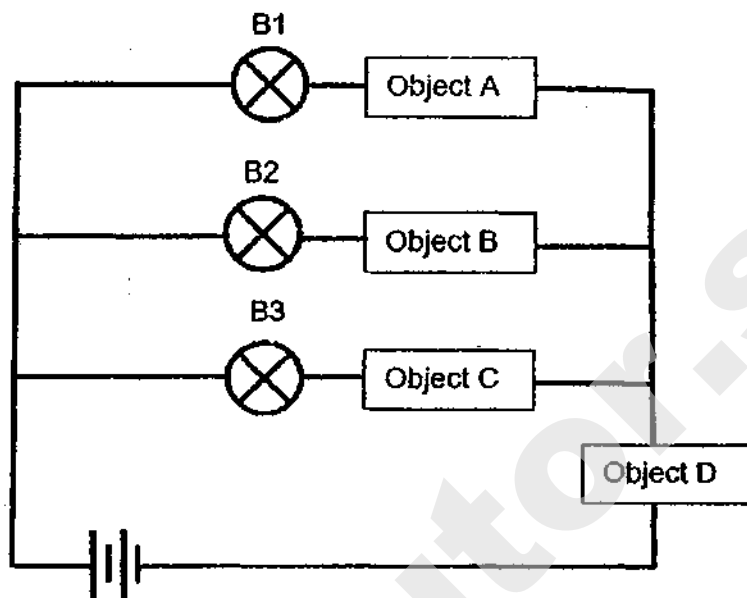


(4)



( )

24. Bryan set up an electric circuit as shown below.



Only bulb B2 lit up.

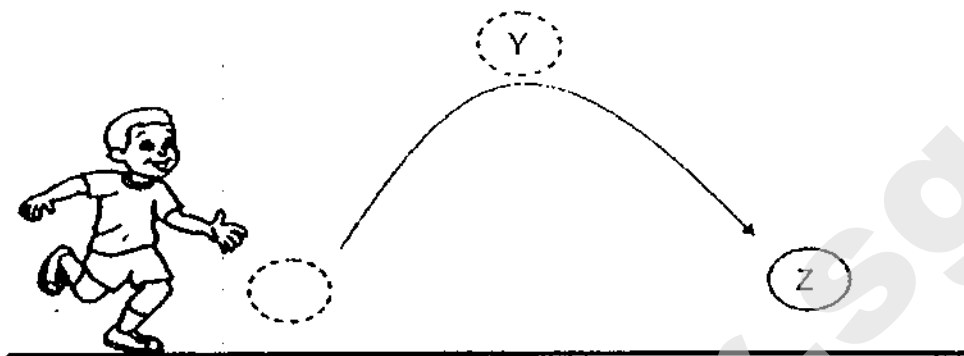
What objects were used in the set-up above?

	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

( )



25. Joel kicks a ball. The diagram shows the path of the ball after he has kicked it.

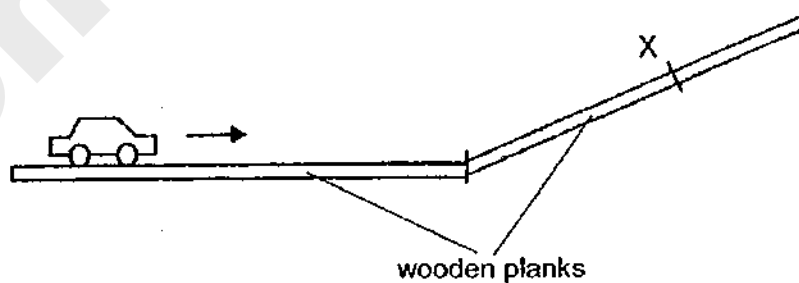


Which one of the following is correct?

	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.

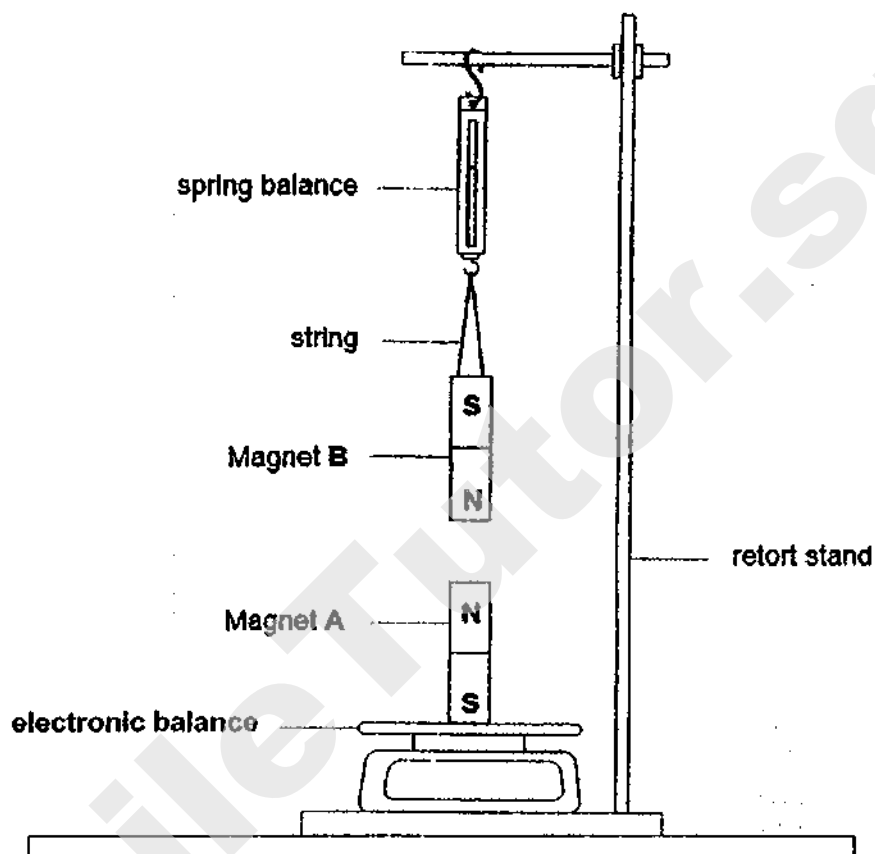


Which one of the following statements about the movement of the toy car is correct?

- (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.

( )

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

( )

28. Diagram 1 shows object X attached to a spring.

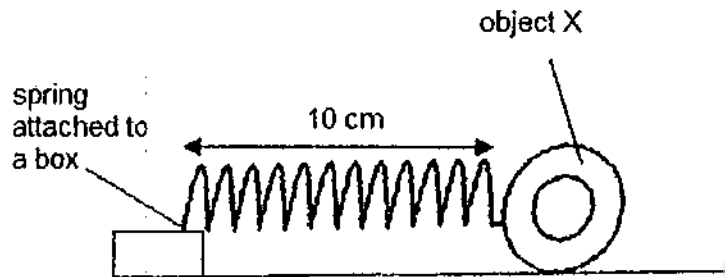


Diagram 1

Diagram 2 shows how object X moved in the direction indicated by the arrow when object Y was brought near to object X.

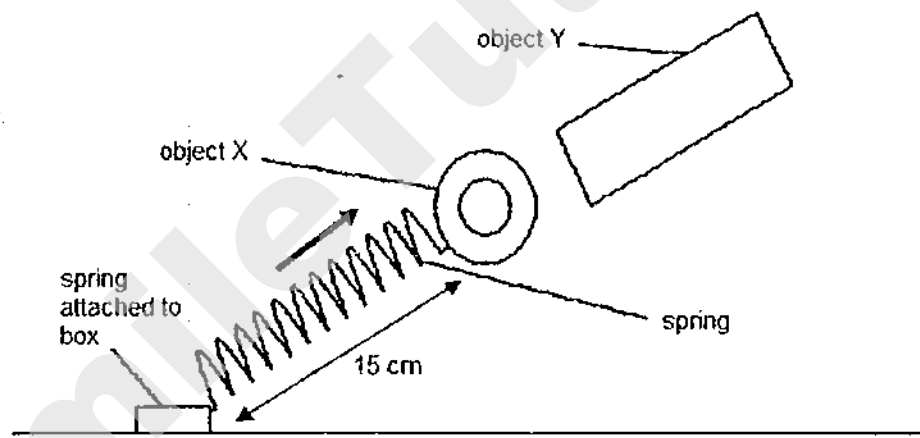


Diagram 2

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.

( )

End of Booklet A

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**HENRY 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: \_\_\_\_\_

**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.

30. Figures 1 and 2 show how oxygen is transported in the circulatory system of a human and fish respectively.

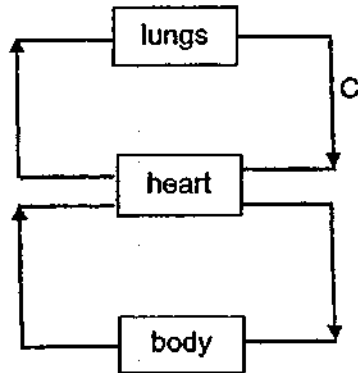


Figure 1 (human)

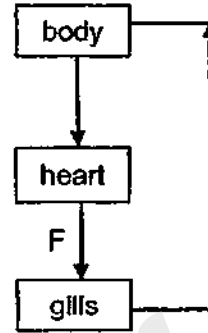


Figure 2 (fish)

- a) Based on the diagram, state how the flow of blood is similar between a human and a fish. [1]

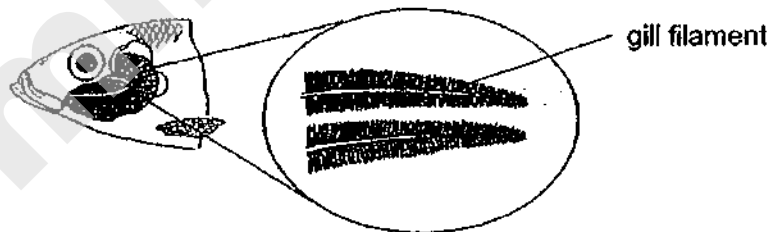
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- b) State one difference between the amount of oxygen found in the blood flowing at C and F. Give a reason for the difference. [2]

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- c) The gills of a fish consist of many fine gill filaments. [1]

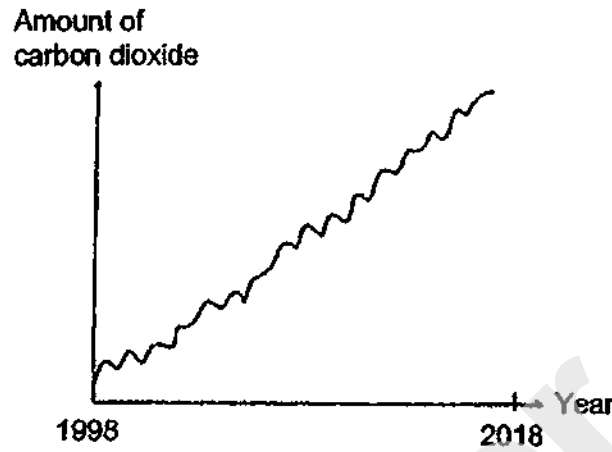
How does this structural adaptation help the fish take in more dissolved oxygen from the water?

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31. Graph 1 shows the amount of carbon dioxide emissions in a certain area.



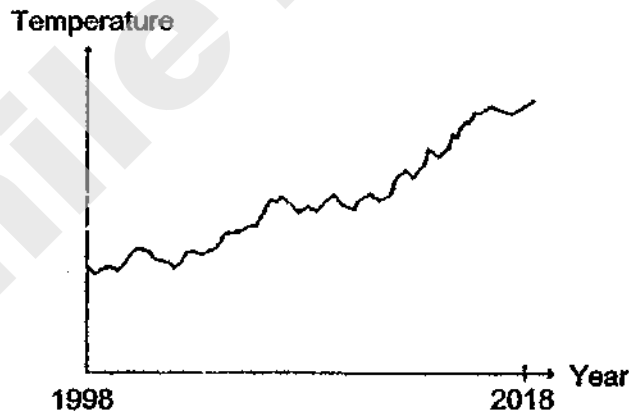
Graph 1

a) What is the trend in the amount of carbon dioxide as observed in Graph 1? [1]

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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]

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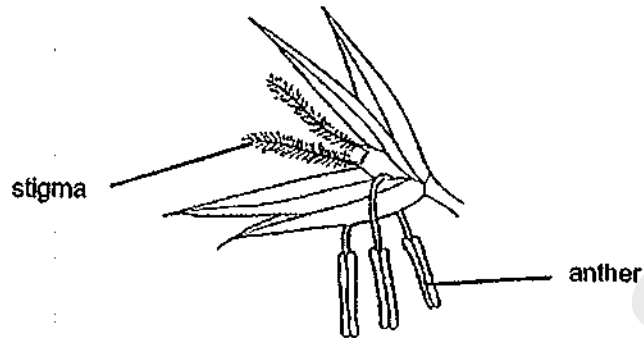
c) As global temperatures rises, the ice in the Antarctic melts.  
Explain how this may affect small islands around the world in future. [1]

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32. Study the diagram of a flower below.



a) Describe the process of pollination.

[1]

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b) Is the flower pollinated by wind or animal? Explain your answer.

[1]

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c) After pollination, the flower develops into a fruit.

[1]

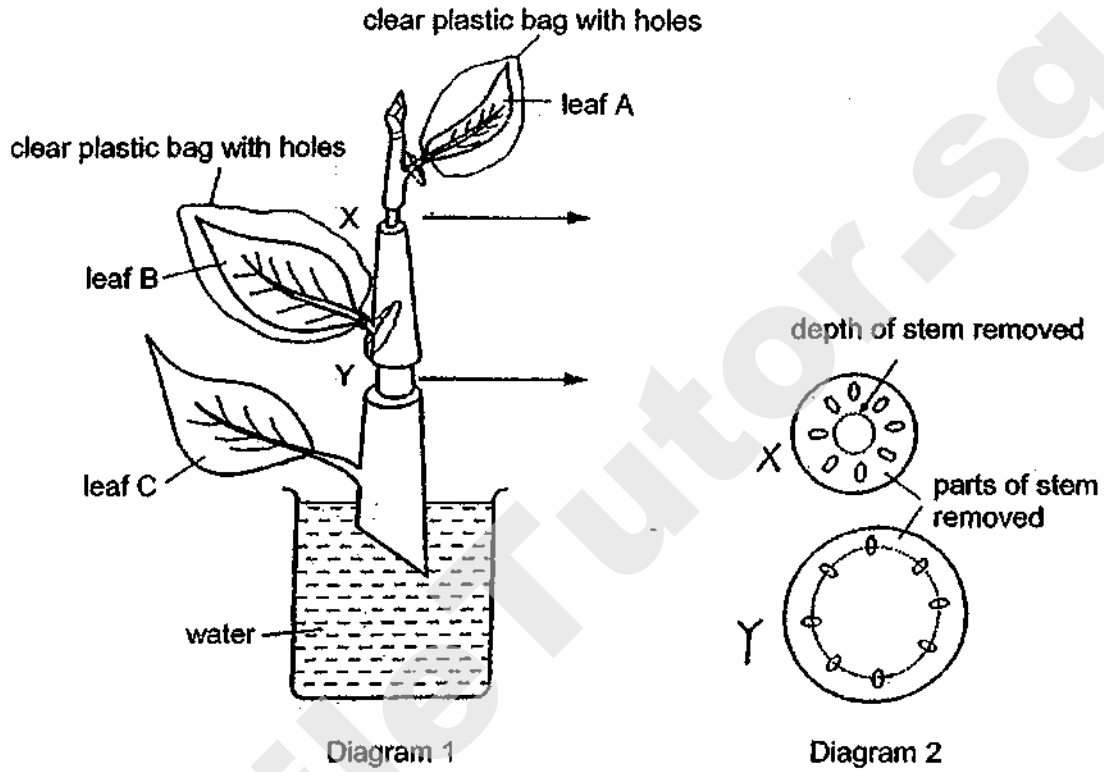
Explain why it is important for the seeds of the fruits to be dispersed far away from the parent plant.

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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.



- a) A substance which is necessary for photosynthesis is absent in leaf A. [1]  
State the substance.

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- b) Give a reason why the plant was exposed to sunlight for at least 12 hours. [1]

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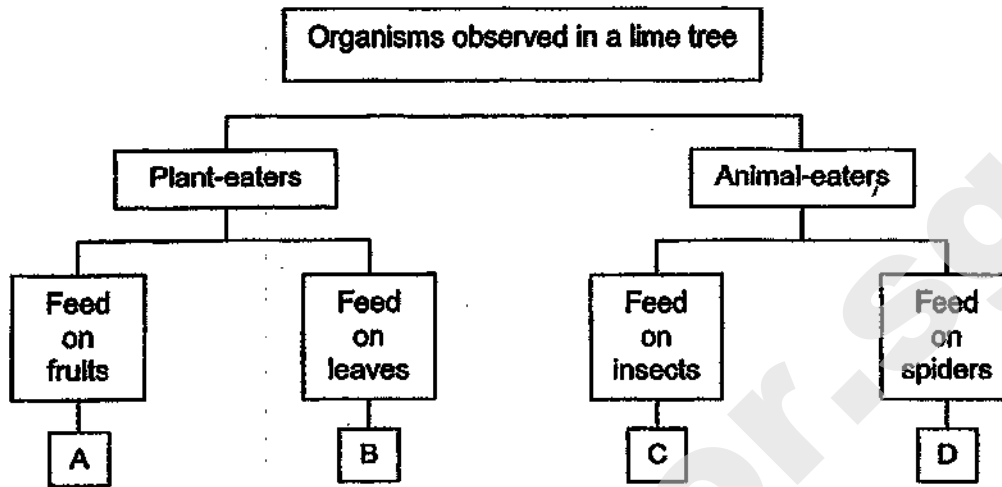
- c) Besides repeating the experiment, suggest another way Jun Hong could make the results of the experiment more reliable. [1]

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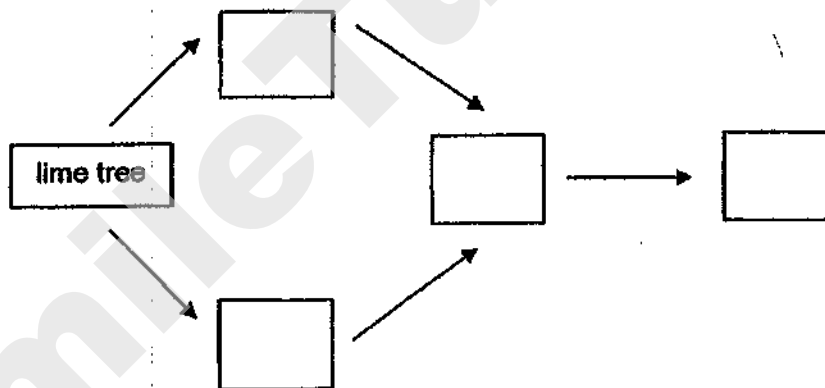


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34. Aurella classified some organisms, A, B, C and D, which she observed in a lime tree and drew a classification chart as shown below.



- 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]

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- 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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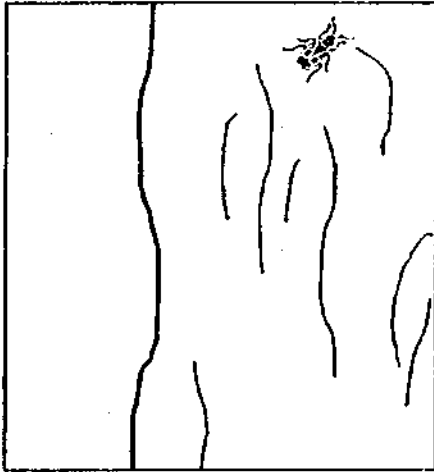


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**Question 34 continued**

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



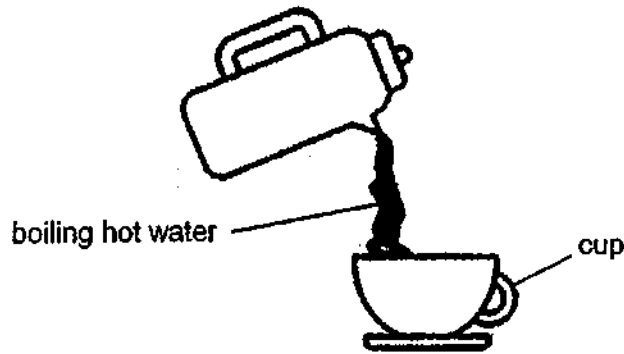
Enlarged diagram of organism E

- d) Based on the diagrams given, explain how organism E is able to avoid being eaten by its predators. [1]

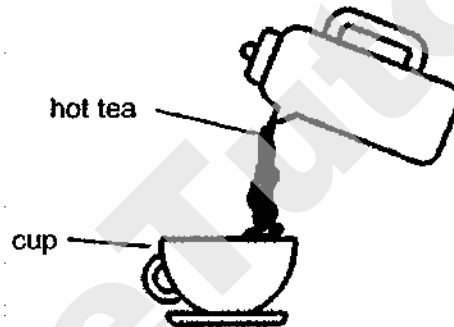
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35. Isaac was ordering hot tea from the drinks stall when he noticed that the drink stall assistant poured boiling water into the cup first and waited for a few seconds.



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.



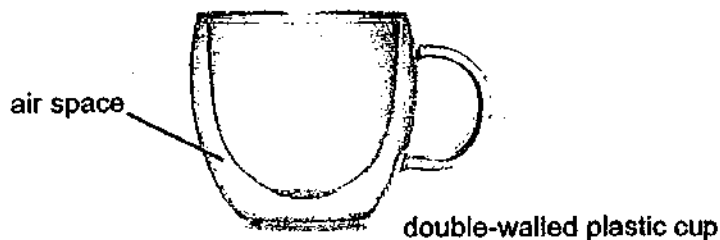
- a) How does this method make the tea hotter than if it was poured into the cup directly? [2]

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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**

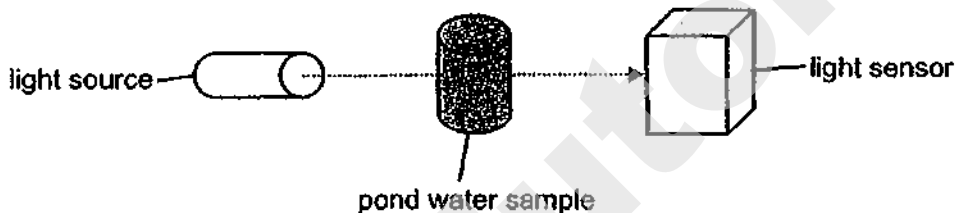
- c) Isaac poured some iced water in the double-walled plastic cup. [2]

Will there be many water droplets formed due to condensation on the outside of the cup?  
Explain your answer.

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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]

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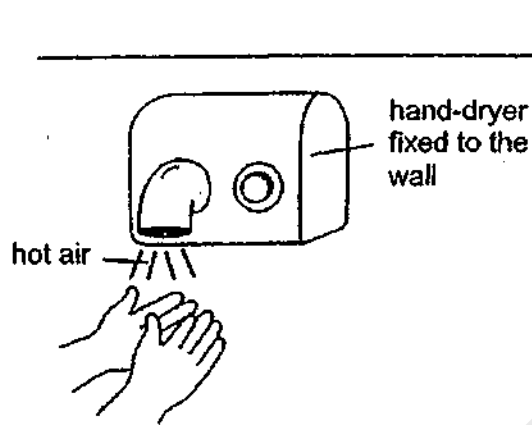
- b) Predict how the population of fishes will change when the number of water plants growing at the bottom of the pond increases.

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]

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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.

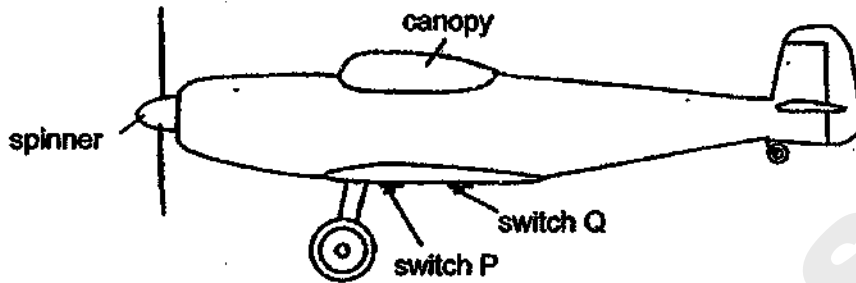
[2]

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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.

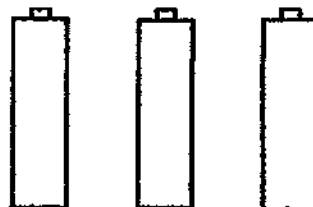
a) The diagram below shows the circuit of the toy aeroplane.

Based on Gene's observation, complete the circuit so that it will work.

[2]



motor to turn  
spinner





**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.

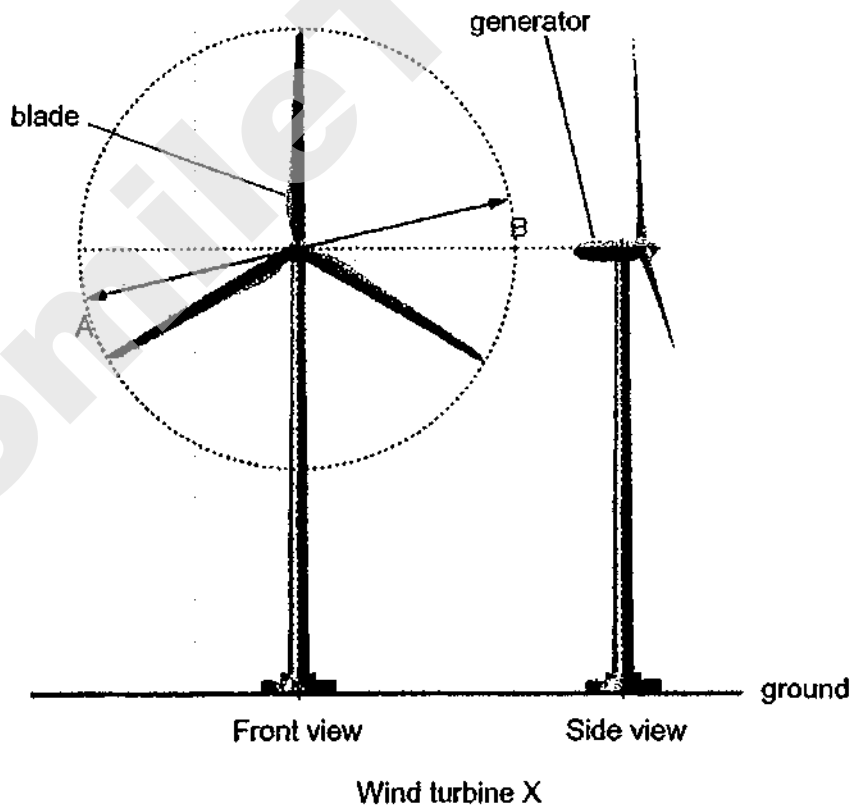
[2]

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39. The diagram below shows the front and side views of wind turbine X.

AB is the diameter of the wind turbine.



- a) State how using wind turbines help us to protect our environment.

[1]

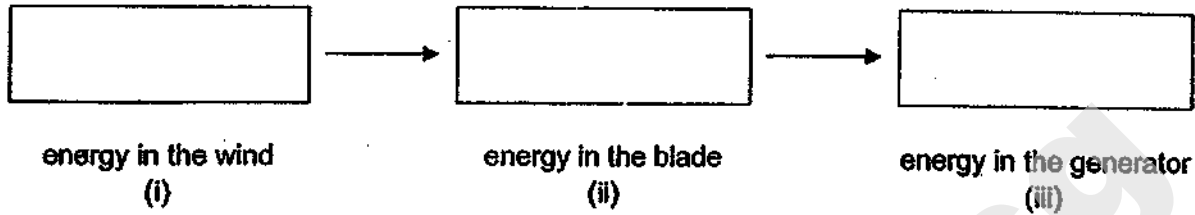
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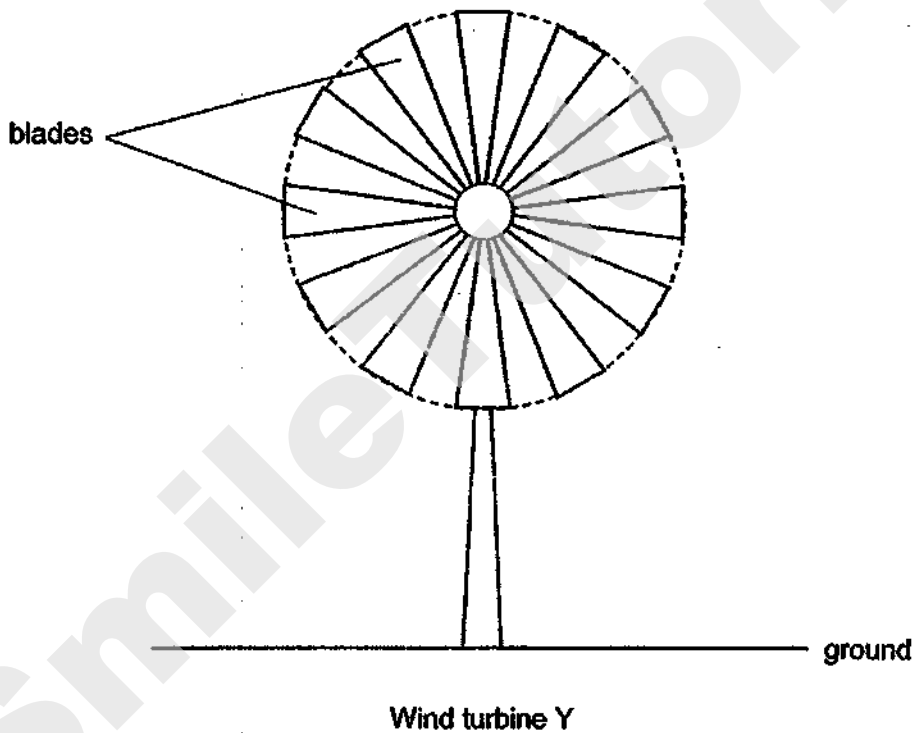
**Question 39 continued**

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 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.

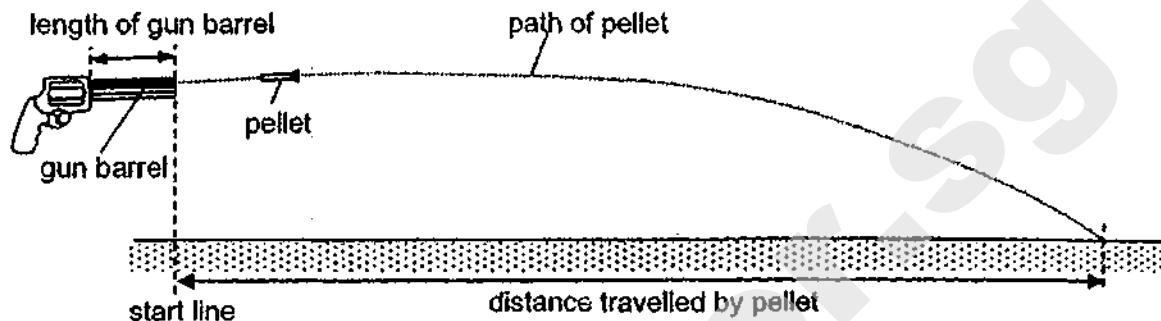
[2]

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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)		
		1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> 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:

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Reason 2:

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- b) How is the distance travelled by the pellet affected by the length of the gun barrel of the toy gun?

[1]

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**End of Booklet B**

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SCHOOL : HENRY PARK PRIMARY SCHOOL  
LEVEL : PRIMARY 6  
SUBJECT : SCIENCE  
TERM : 2019 PRELIM

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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 <u>more</u> places with <u>stagnant</u> water, so <u>more</u> 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 <u>anther</u> to the <u>stigma</u> 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	<pre> graph LR     Sunlight --&gt; A     Sunlight --&gt; B     A --&gt; C     B --&gt; C     C --&gt; D     </pre>

2019 P6 Prelims Science  
Correction Sheet

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	<p>The diagram shows a circuit with a battery at the bottom. Two parallel branches are connected to the battery. The left branch contains a motor labeled "motor to turn spinner" and a switch labeled "P". The right branch contains a light bulb and a switch labeled "Q". Both branches have their own resistors.</p>



2019 P6 Prelims Science  
Correction Sheet

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

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**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.**

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1. Study the young and adult of the animal shown below.



young

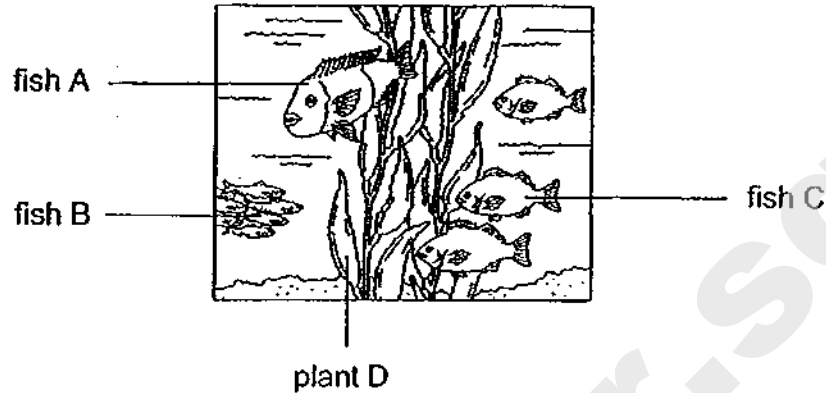


adult

Which of the following statements is not true?

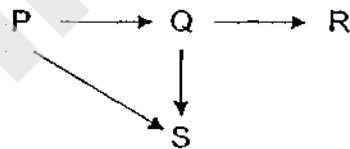
- (1) The animal has a 3-stage life cycle.
  - (2) The young does not look like the adult.
  - (3) The animal reproduces by laying eggs.
  - (4) The young of the animal needs air, food and water.
2. From which of the following organs will water be absorbed into the bloodstream?
- (1) heart
  - (2) lungs
  - (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

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.

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?

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?

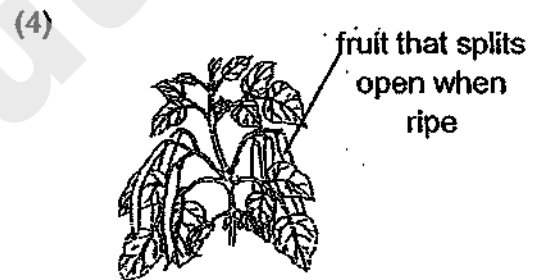
- (1) A and B
  - (2) A and C
  - (3) B and E
  - (4) D and E
9. Which of the following are the functions of a stem?
- A. absorb water and mineral salt
  - B. hold the plant firmly to the ground
  - C. transport water to other parts of the plant
  - D. support the leaves so they can get more sunlight

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

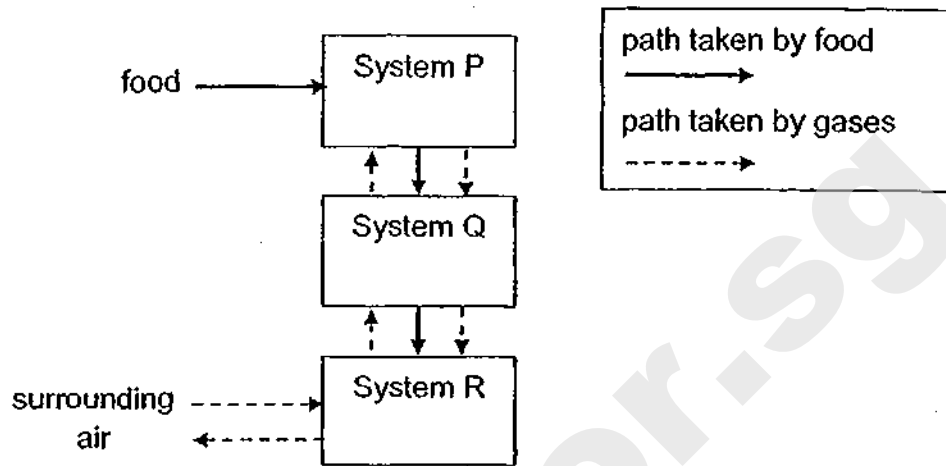


10. A new island was formed in the middle of the sea due to volcanic eruptions. Within a few years, plants started growing before any animals started living on the island.

Which of the following plant is most likely to be found on the island before the animals started living on the island?



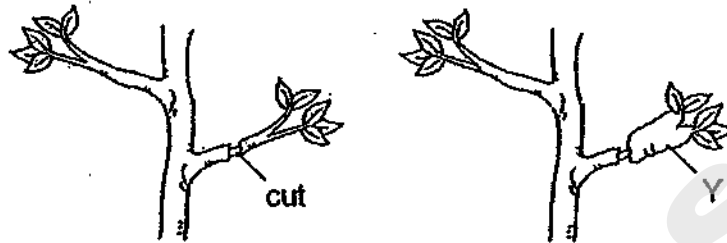
11. The diagram below shows how food and gases are transported in the human body.



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

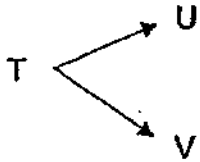
12. A cut was made on the branch of a plant as shown below. After some time, part Y was observed to be swollen.



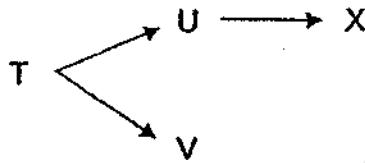
Based on your observation, which of the following statement(s) is/are correct?

- 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

13. Food relationships between organisms T, U and V, are shown in the food web below.

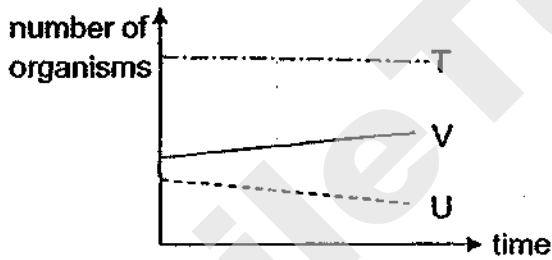


After some time, organism X was introduced to the habitat as shown in the food web below.

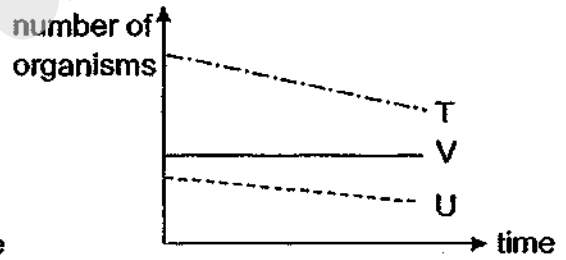


Which of the following graphs correctly shows how the number of organisms, T, U and V change after organism X was introduced?

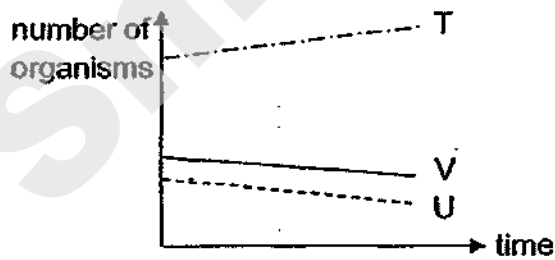
(1)



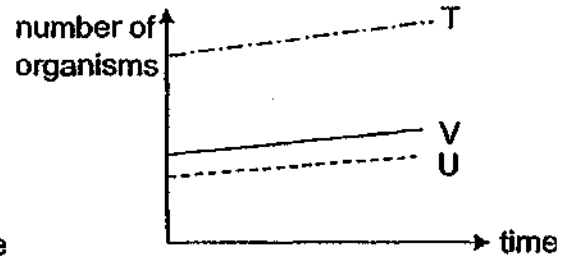
(2)



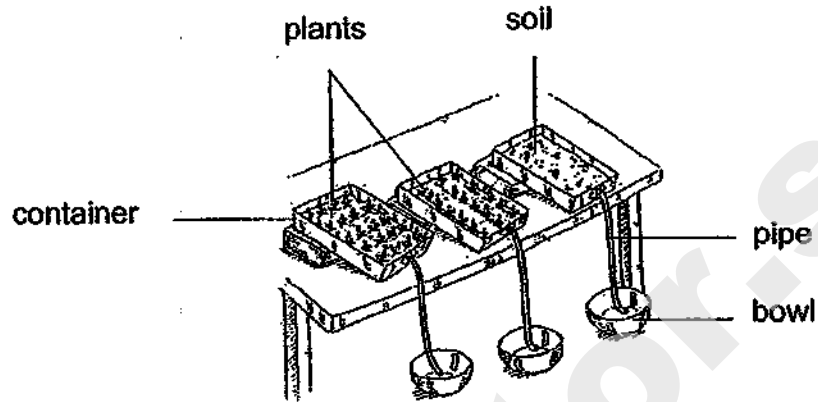
(3)



(4)



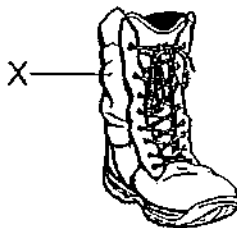
14. Tom set up an experiment as shown below to find out how plants affected soil erosion. He used the same type of plants for his experiment. He would pour water into the soil and after some time, water and soil would flow into the bowl.



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

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?

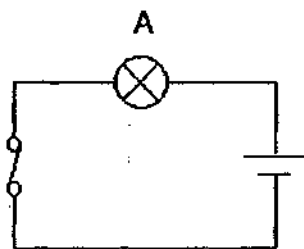
- A. strong
  - B. flexible
  - C. waterproof
  - D. able to float in water
- (1) A and C only
- (2) B and D only
- (3) A, B and C only
- (4) A, B, C and D

16. Which of the following statements about evaporation and boiling of water is correct?

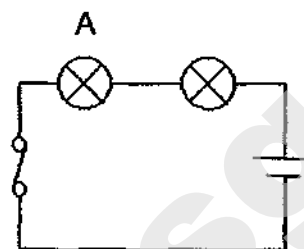
	Evaporation	Boiling
(1)	water gains heat	water gains heat
(2)	occurs at a specific temperature	occurs at many temperatures
(3)	Water vapour changes from gas to liquid	water changes from liquid to gas
(4)	bubbles are observed during the process	bubbles are observed during the process

17. In which of the following circuits will bulb A be the brightest?

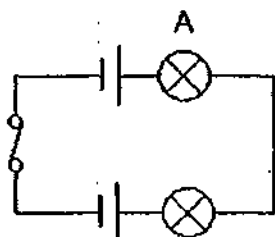
(1)



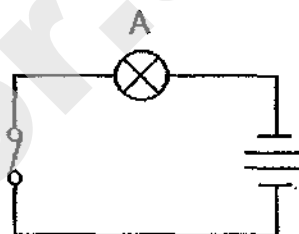
(2)



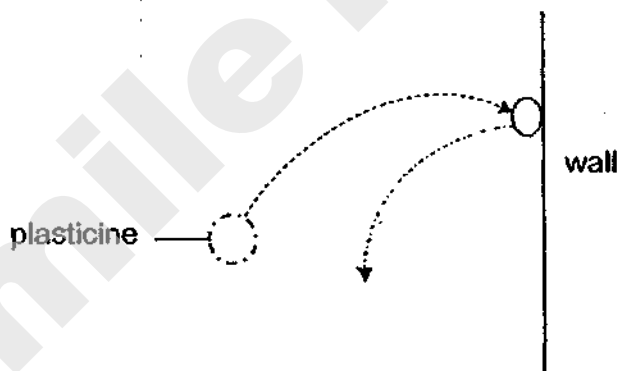
(3)



(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.

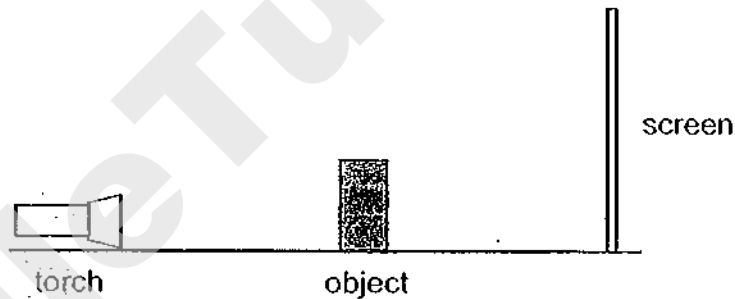
- (1) C only
- (2) A and C only
- (3) A, B and C only
- (4) A, B, C and D

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



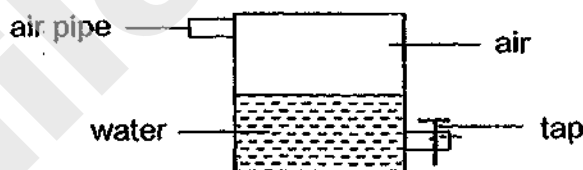
21. Jason conducted an experiment by heating substance Q. The table below shows the characteristics of Q at starting temperature of 30°C and at 100°C after being heated for some time.

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

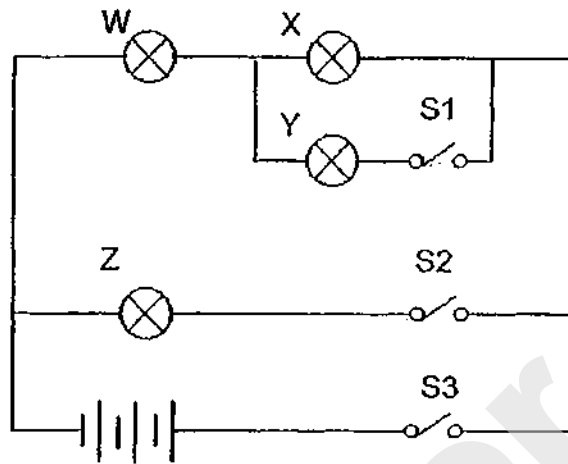
22. The diagram below shows a sealed metal container filled with water and air.



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.

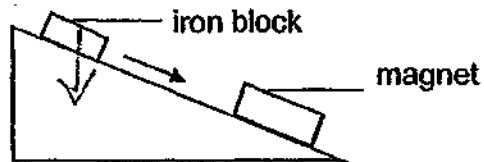
23. A circuit diagram is shown below.



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	✓	✓		✓

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.

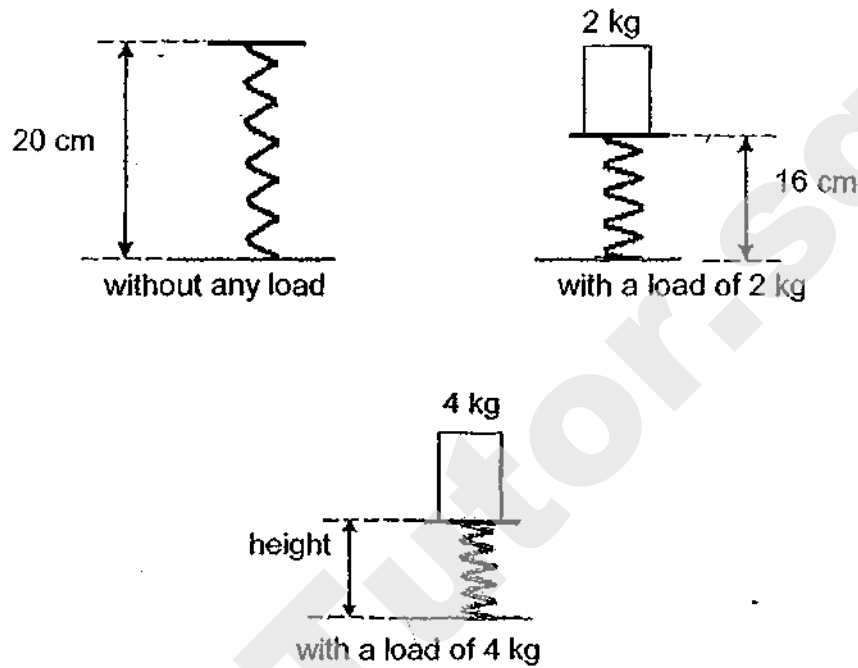


Which of the following statements are correct?

- 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

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

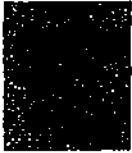


26. A boy has a four pieces of metals, P, Q, R and S. The table below shows the interaction between the metals when they are brought closed together.

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?

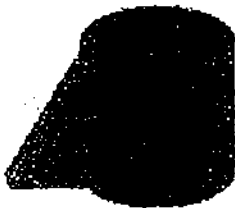
	P	Q	R	S
(1)	magnetic material	magnetic material	non-magnetic material	magnet
(2)	magnetic material	non-magnetic material	magnet	magnetic material
(3)	non-magnetic material	magnet	magnetic material	magnetic material
(4)	magnet	magnet	non-magnetic material	magnet

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)



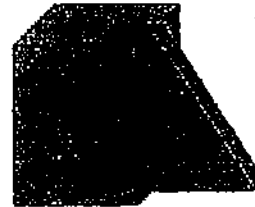
(2)



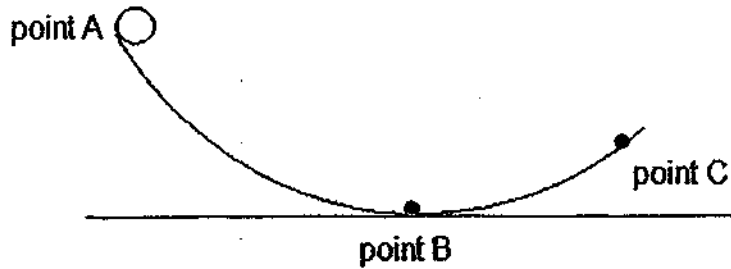
(3)



(4)



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

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**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]

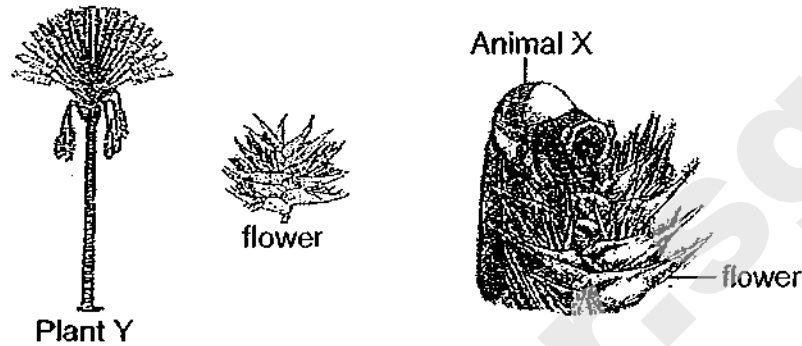
X: \_\_\_\_\_

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]

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---

- (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]

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- (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]

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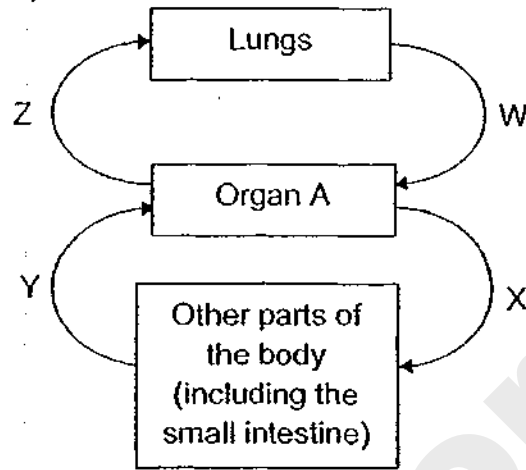
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Marks : 

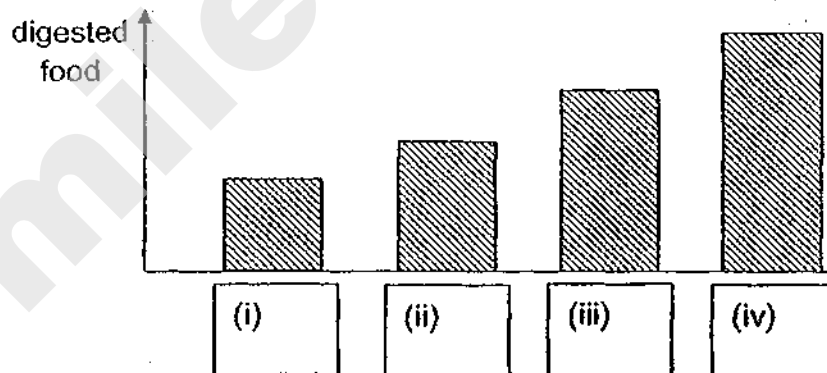
/ 4
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31. The diagram below shows how blood flows in blood vessels W, X, Y and Z in a human.



- (a) What is organ A? [1]

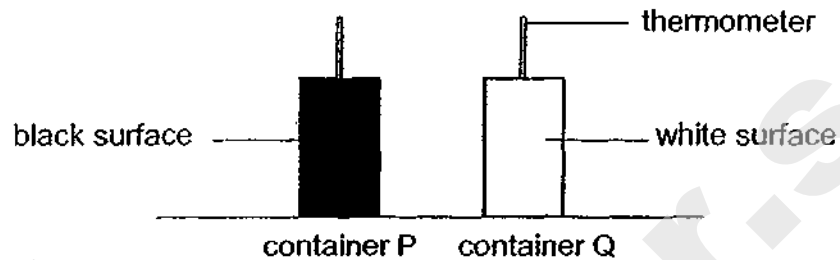
- (b) The graph below shows the amount of digested food found in blood taken from different parts of the body. Place the correct labels, W, X, Y and Z, in the boxes below. [1]



- (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 :

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]

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Animal G lives in a hot and sandy place.



- (b) Explain why having a white outer covering benefits animal G. [1]

---

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Marks : 

/ 2
-----

- (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]

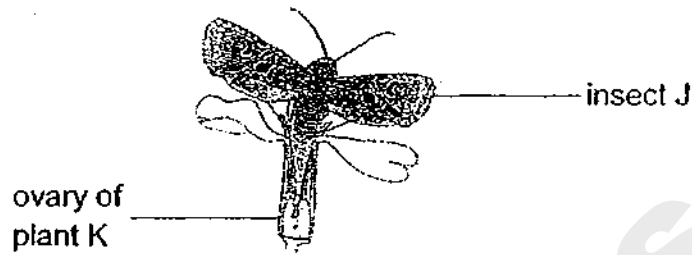
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Marks :

1/3

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]

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- (b) Before insect J flies off, it would mark the flower with a smell to prevent other insects from laying eggs.

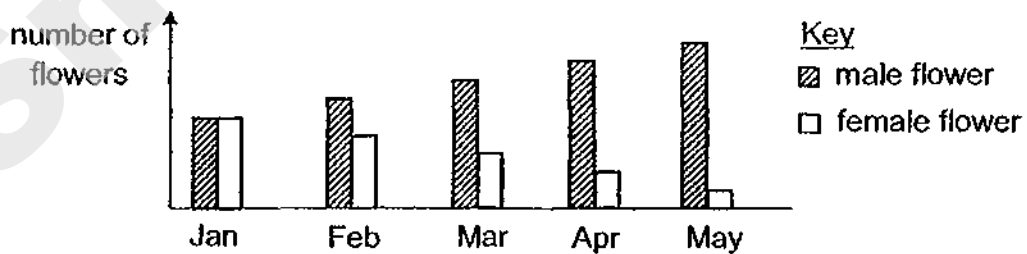
Explain why this is an advantage to the young insect J when it eats the seeds of plant K. [1]

---



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- (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]

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Marks :  / 3



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]

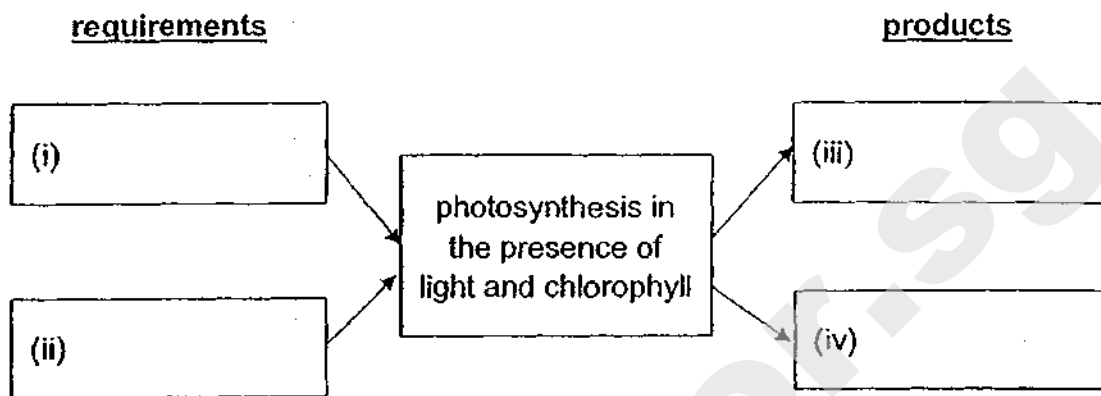
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Marks :

12

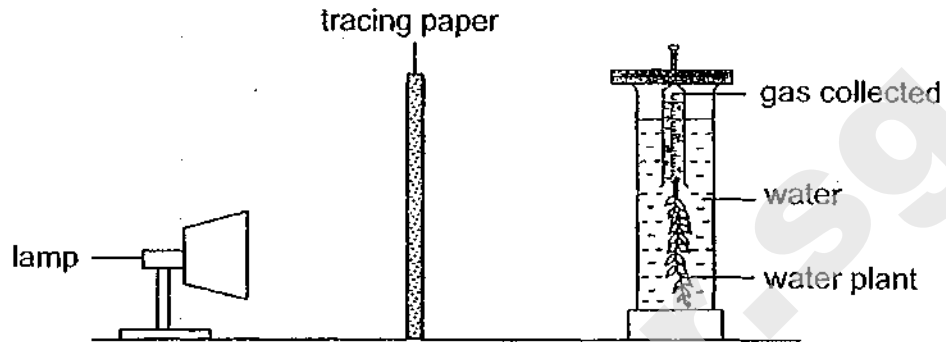
35. (a) Fill in the boxes to list the requirements and products of photosynthesis. [1]



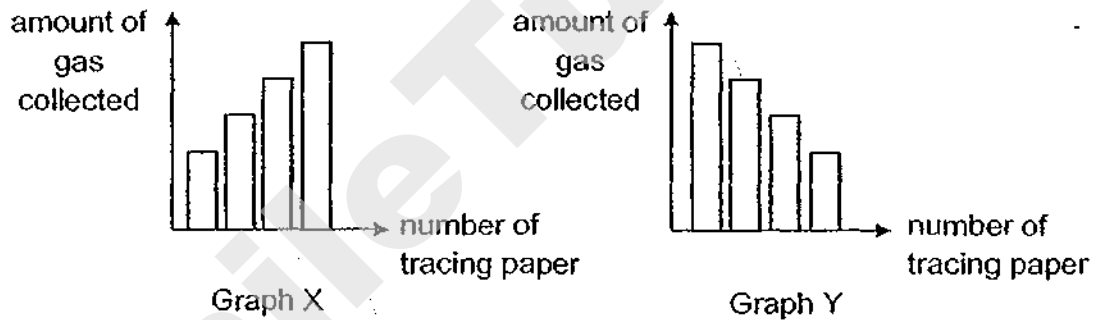
Marks :

[ ] / 1

- (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.



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]

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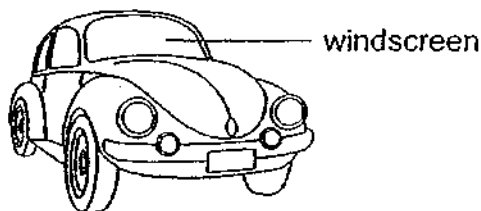
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Marks : / 2

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]

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(b) Give a reason why water droplets are less likely to form when the windscreen becomes warm after some time. [1]

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(c) Explain how the water droplets disappear when the windscreen continues to remain warm for a long time. [1]

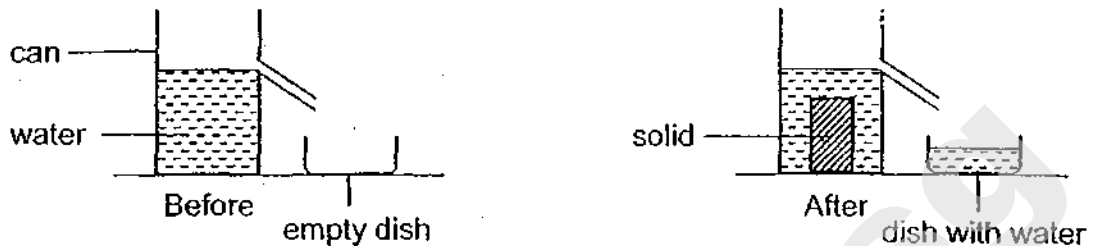
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Marks :

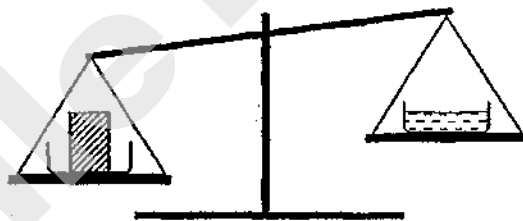
13

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.



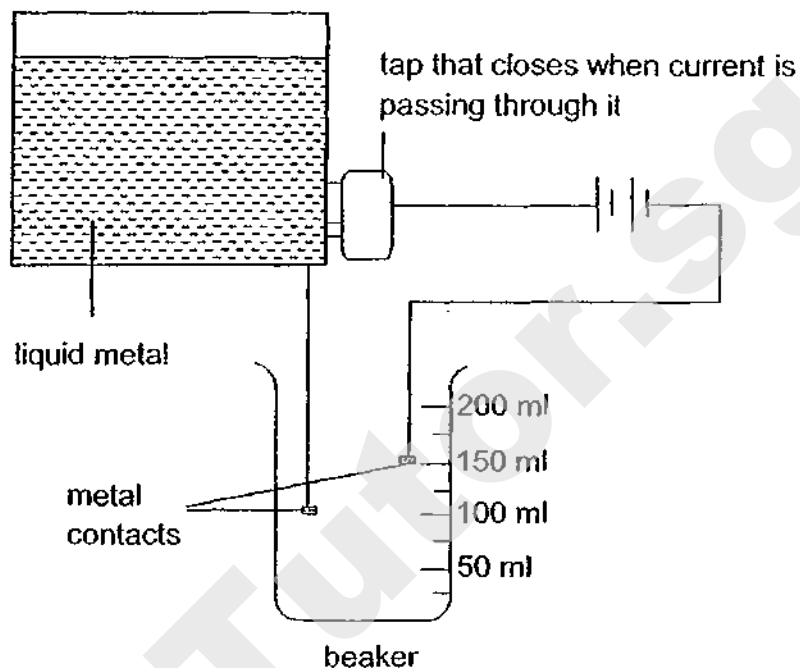
- (b) (i) Explain why the same piece of solid had to be dried before placing it onto the balance. [1]
- 
- 

- (ii) Based on the above observation, what could she conclude about the mass of the water that was collected? [1]
- 
- 

Marks : 

/ 3
-----

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]

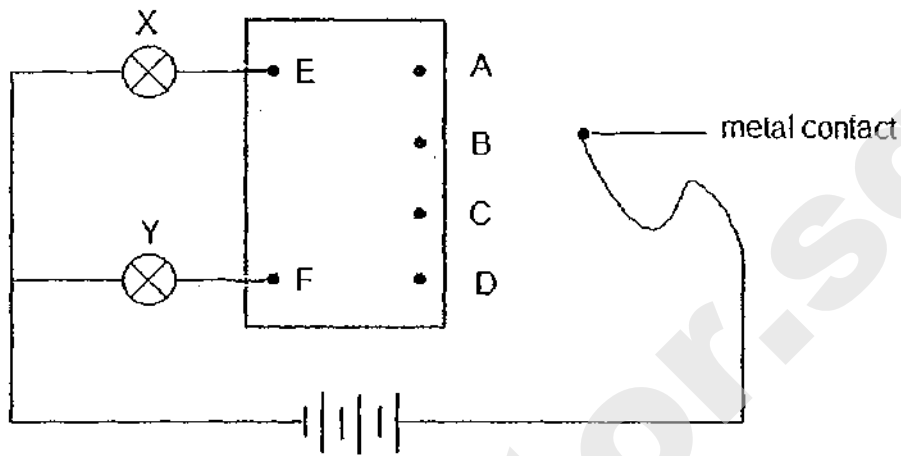
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Marks :

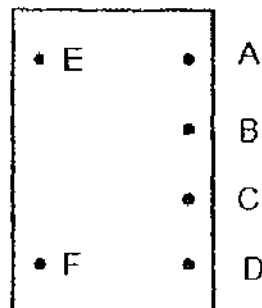
- (b) A student conducted an experiment using a circuit card joined to a parallel circuit as shown below.



The table below shows the results when the metal contact is placed at points A to D.

Metal contact at point	Bulb that lights up	
	X	Y
A	✓	
B	✓	
C		✓
D		

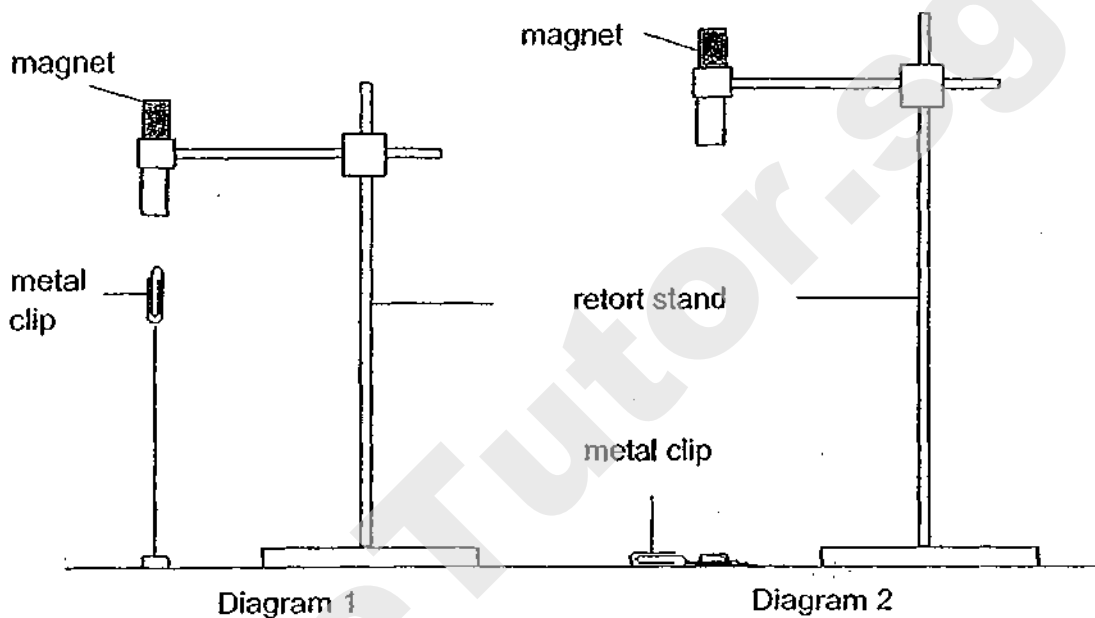
Draw in the circuit card below to show how the points are connected. [1]



Marks :

/ 1

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.



- (a) Explain why the metal clip dropped to the table when the magnet was placed higher. [2]

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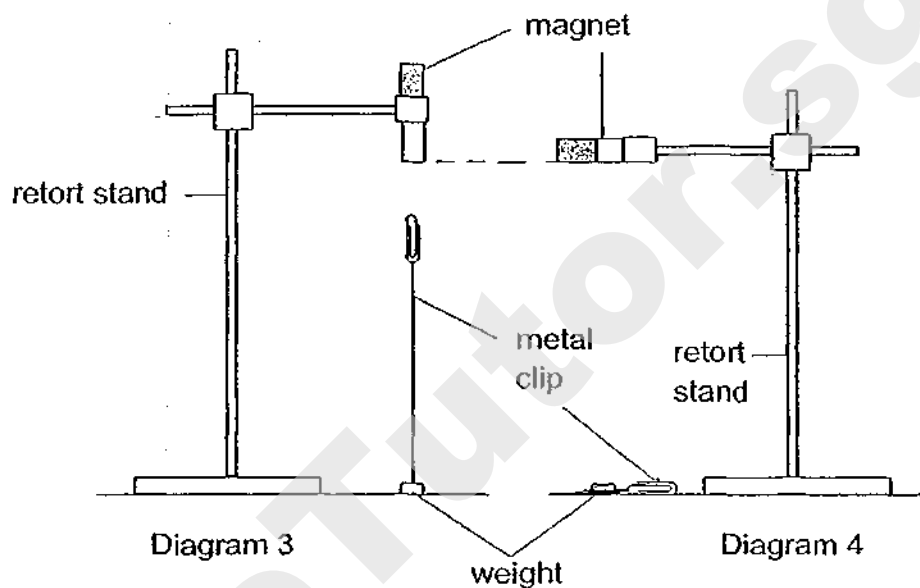
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Marks :

12



- (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]

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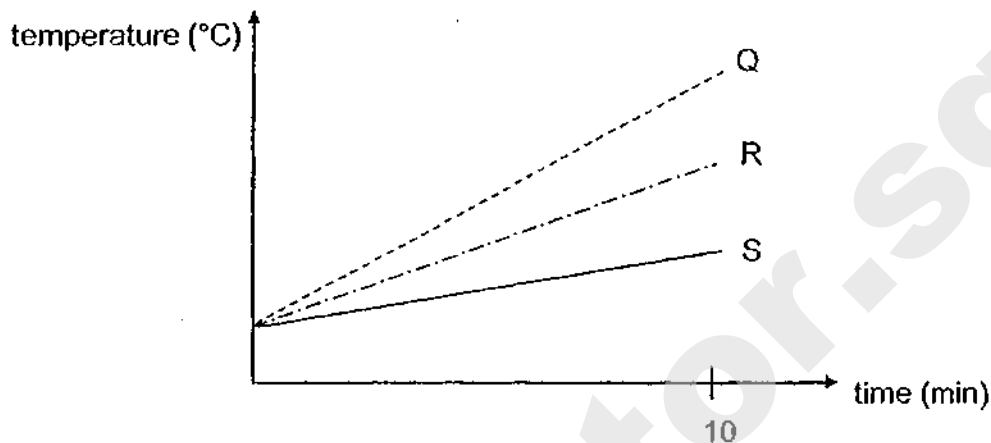
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Marks : 

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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]

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- (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]

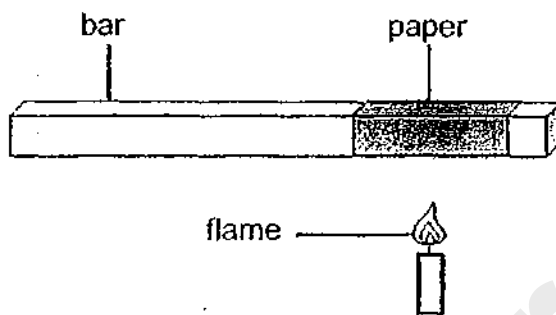
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/ 3
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- (c) A piece of paper was used to cover a bar made of material Q and held over a flame as shown in the diagram. The experiment was repeated with materials R and S.



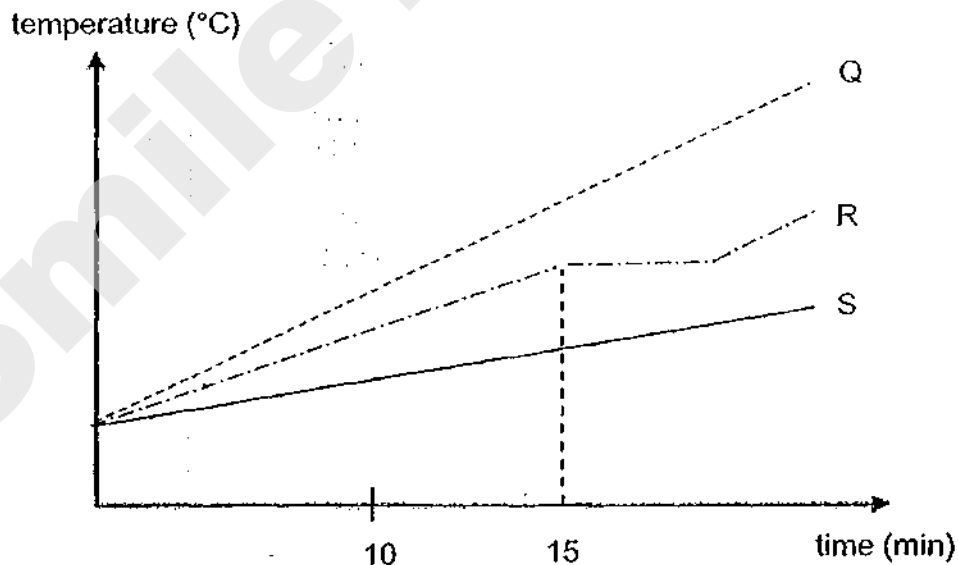
The paper took the longest time to burn when it is placed on material Q. Explain this observation. [1]

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- (d) The three materials were heated over a longer period of time.



State the process that occurred to material R at the 15<sup>th</sup> minute. [1]

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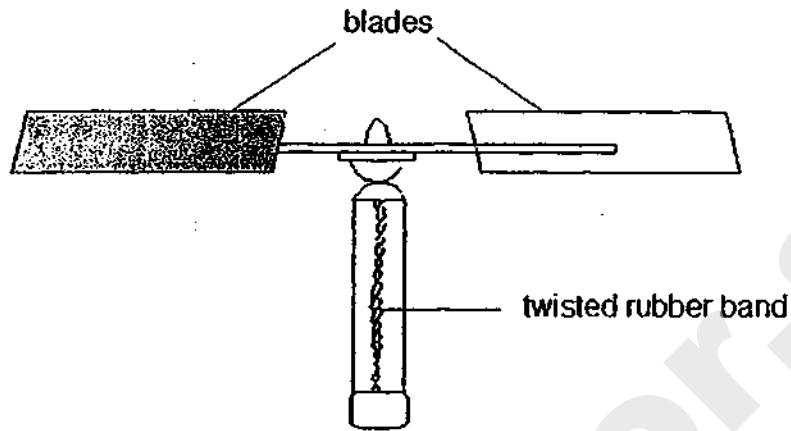


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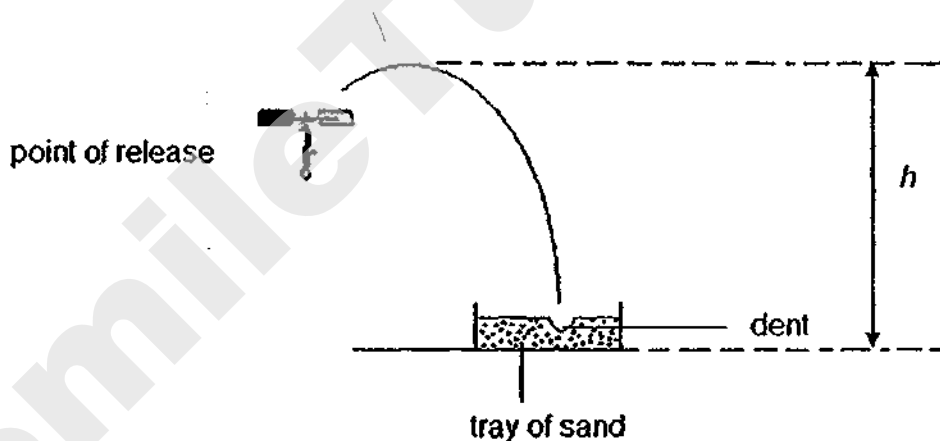
Marks : 

/ 2
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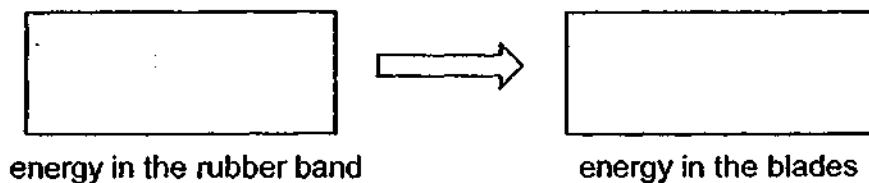
41. Alan made a toy as shown below.



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

- (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]

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---

- (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]

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~ END OF PAPER ~

Marks :

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SCHOOL : MAHA BODHI PRIMARY SCHOOL  
 LEVEL : PRIMARY 6  
 SUBJECT : SCIENCE  
 TERM : 2019 PRELIM

**SECTION A**

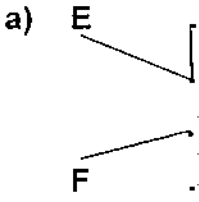
Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	2	3	3	2	2	4	4	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	2	1	4	3	1	1	2	3	3
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	4	4	1	2	1	1	4		

**SECTION B**

Q29)	<p>a)Amphibian</p> <p>b)X: Does no breathe underwater</p> <p>Y: Breathes underwater</p>
Q30)	<p>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.</p> <p>b)The bright blue colour attracts birds which help disperse the seeds of plant Y further away.</p> <p>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.</p>

Q31)	<p>a)Heart</p> <p>b)(i) X (ii) W (iii) Z (iv) Y</p> <p>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.</p>
Q32)	<p>a)The colour black absorbs heat faster than the colour white.</p> <p>b)Animal G would gain heat slower from the surroundings, so G would be able to keep cool.</p> <p>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.</p> <p>d)Less surface area of the body is exposed to the wind. Animal G loses less heat to surrounding.</p>
Q33)	<p>a)The flower will be fertilised and develop into fruits, the young can feed on the seeds of the fruit.</p> <p>b)There would be less competition for food which is the seeds, so young insect J would have more food to consume.</p> <p>c)The population will decrease. There are less ovaries for insect J to lay eggs in.</p>
Q34)	<p>a)Waterproof</p> <p>b)Flexibility. It needs to be flexible so that the life jackets can be folded.</p>
Q35)	<p>a)(i) Carbon dioxide (ii) Water (iii) Food (iv) Oxygen</p> <p>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.</p>
Q36)	<p>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.</p> <p>b)The water vapour could not lose heat to the windscreen.</p> <p>c)The water droplets gained heat from the warm windscreen and</p>



	evaporated into water vapour.
Q37)	<p>a)The solid occupies space</p> <p>b)i) Water has mass, so the water would add mass to the solid, causing the solid to have a different mass.</p> <p>ii)The mass of the water that was collected was lighter than the mass of the solid.</p>
Q38)	<p>a) i) 150ml</p> <p>ii) Place both metal contacts at the 200ml mark on the beaker.</p> <p>a) </p>
Q39)	<p>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.</p> <p>b)The magnet is the weakest at the centre.</p>
Q40)	<p>a)As the time taken to heat the materials increases, the temperature of the materials increases.</p> <p>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.</p> <p>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.</p> <p>d)Melting</p>
Q41)	<p>a)Elastic potential → Kinetic</p> <p>b)The rubber band contains less potential energy to be converted to less kinetic energy, resulting in less impact.</p> <p>c)Increase. When the toy with the heavier blades is flew to the same</p>

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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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, \_\_\_\_\_

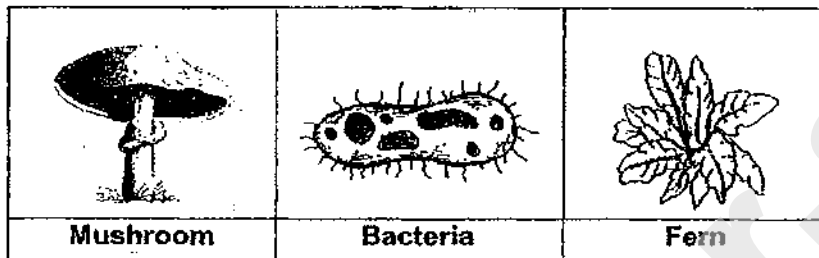
Date : 22 August 2019

This booklet consists of 18 printed pages including this page.

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]




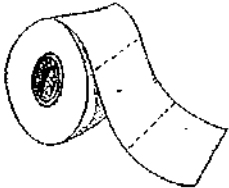
1 Study the three organisms as shown below.



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

- 3 The diagram below shows a seedling and its adult plant.



Which one of the following statements is not true?

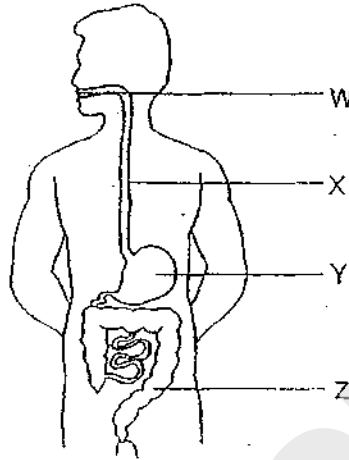
- (1) Both have strong stems.
  - (2) Both cannot bear flowers.
  - (3) Both can make their own food.
  - (4) The adult plant bears fruits but not the seedling.
- 4 Gopal observed two insects, S and T, and recorded his observations below.

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

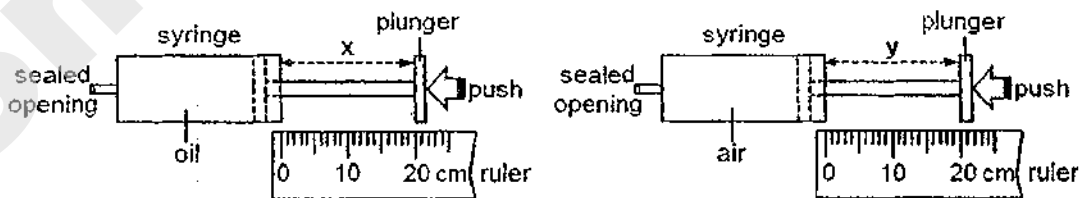
- 5 The diagram below shows the different organs, W, X, Y and Z, of a human digestive system.



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  $50 \text{ cm}^3$  of oil while the other was filled with  $50 \text{ cm}^3$  of air.

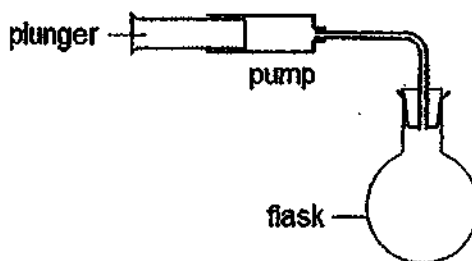


He pushed each plunger as hard as he could and measured distance  $x$  and distance  $y$ .

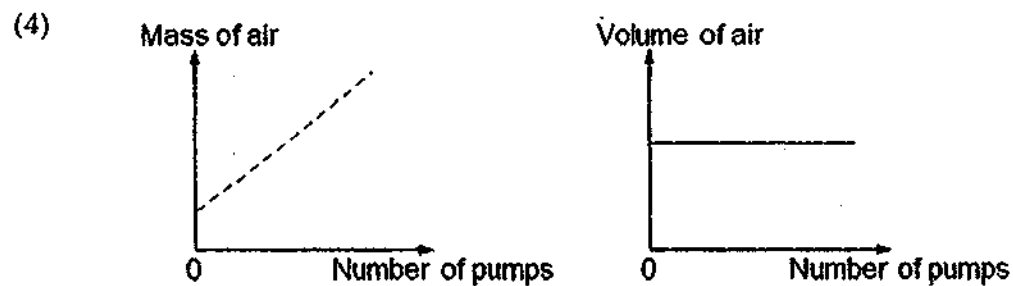
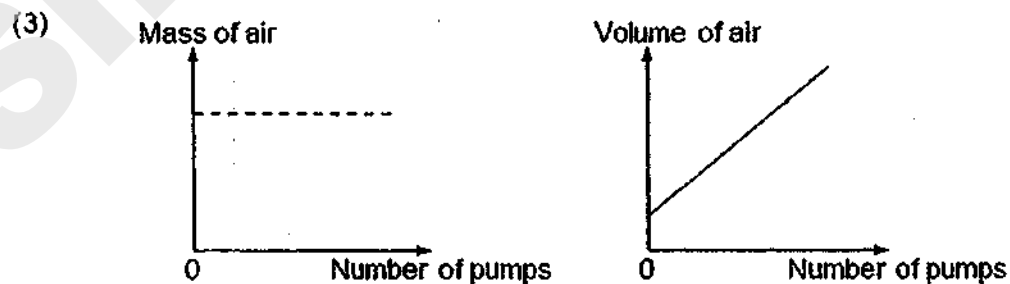
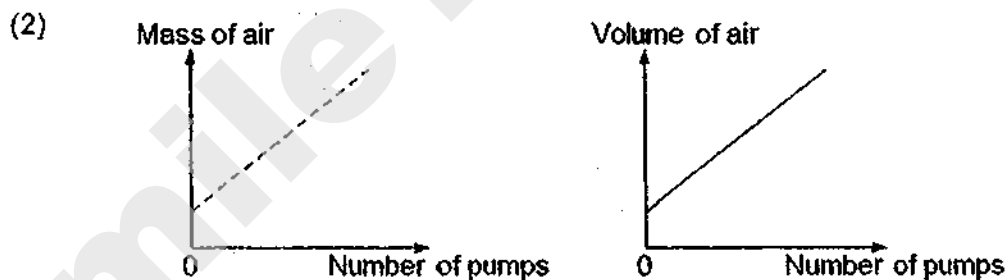
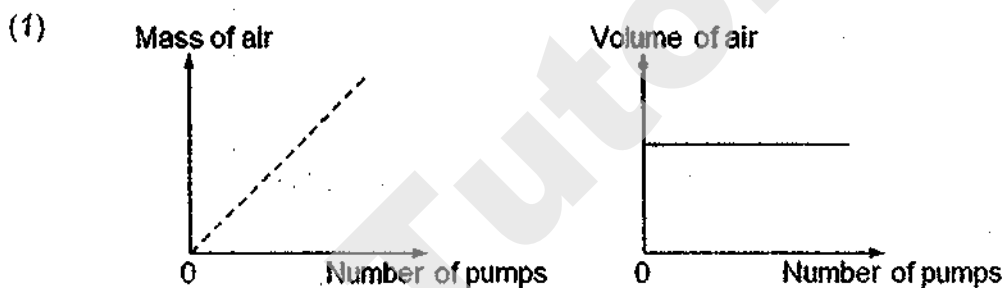
Which of the following shows the correct values of  $x$  and  $y$ ?

	$x$ (cm)	$y$ (cm)
(1)	0	10
(2)	5	20
(3)	10	0
(4)	20	5

- 7 A pump was connected to a flask as shown below. It was able to pump  $50 \text{ cm}^3$  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?



- 8 Three different types of flowering plants, A, B and C, were growing in fields near a river as shown in Diagram 1.

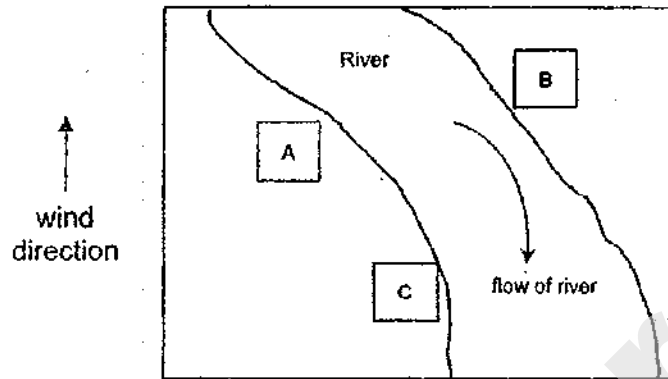


Diagram 1

A few years later, more of each plant, A, B and C, were found growing in the fields as shown in Diagram 2.

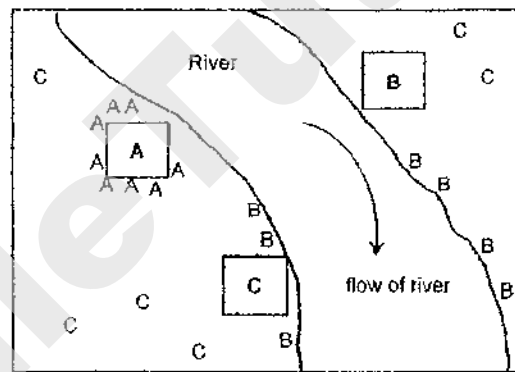


Diagram 2

What are the likely characteristics of the fruits of plants A, B and C, which helped them to disperse their seeds?

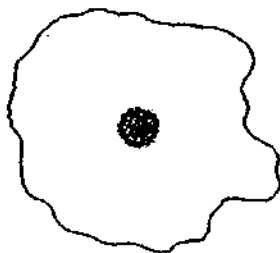
	Plant A	Plant B	Plant C
(1)	fleshy and edible	splits open when ripe	hook-like structures
(2)	splits open when ripe	waterproof covering	wing-like structure
(3)	splits open when ripe	fibrous husk	fleshy and edible
(4)	fibrous husk	fleshy and edible	wing-like structure



- 9 The diagram below shows three cells, P, Q and R.



Cell P



Cell Q

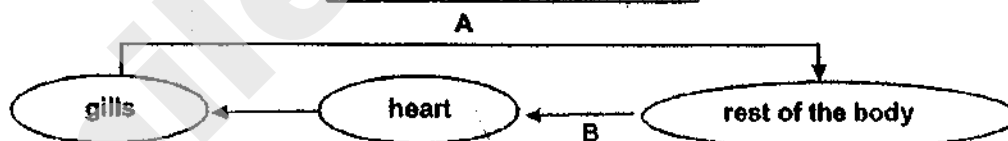


Cell R

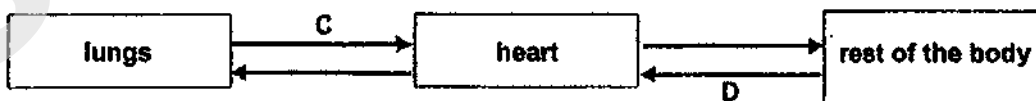
Which one of the following statements is true?

- (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**

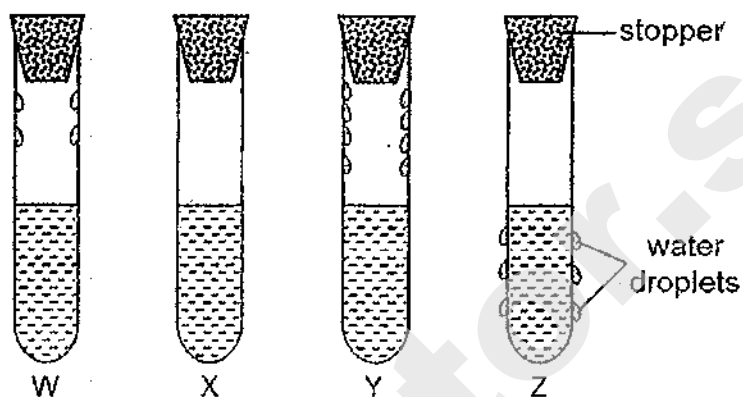


Which of the following correctly describe the blood vessels A, B, C and D?

	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

- 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.

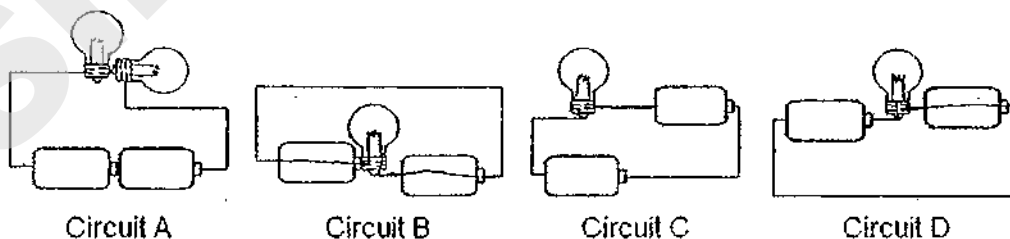


Which one of the following shows how the temperature of water arranged from the highest to the lowest?

Highest → Lowest

- (1) X, W, Y, Z  
 (2) Y, W, X, Z  
 (3) Y, Z, W, X  
 (4) Z, X, W, Y

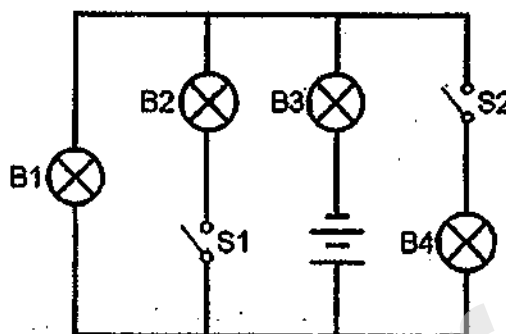
- 12 Study the four circuits in which identical bulbs and batteries are connected as shown below.



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

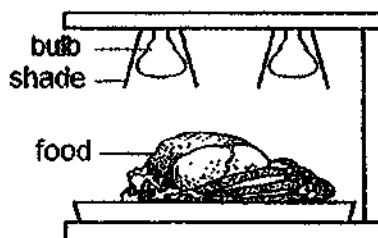
- 13 Four bulbs, B1, B2, B3 and B4, were connected in a circuit with two switches, S1 and S2. All the components were working properly.



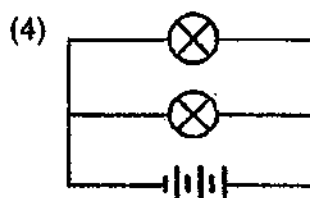
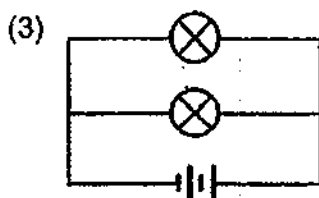
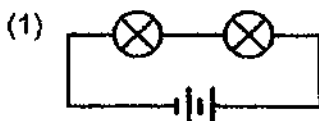
Which of the following is correct?

	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

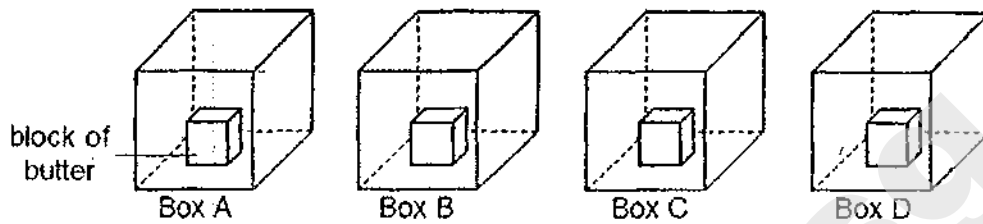
- 14 A restaurant uses a portable food warmer to keep food hot. The warmer has two identical bulbs which give out more heat when they are brighter.



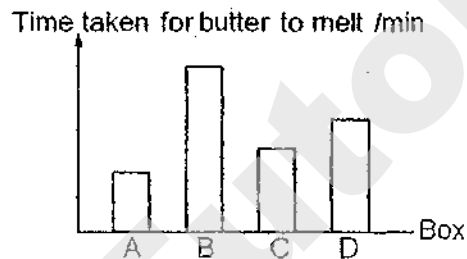
Which of the following circuits should be used such that food will be kept the warmest?



- 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?

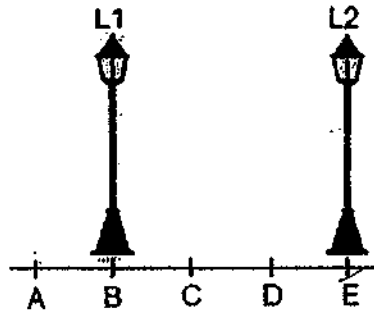
- (1) A  
 (2) B  
 (3) C  
 (4) D
- 16 Clarice heated a beaker of pure water and measured its temperature. The table below shows the results of the experiment.

Time / min	Temperature / °C
0	30
2	50
4	70
6	90
8	?

What is the temperature of the beaker of water at the 8<sup>th</sup> minute?

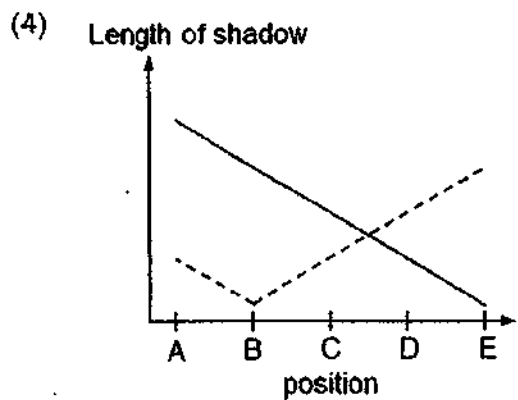
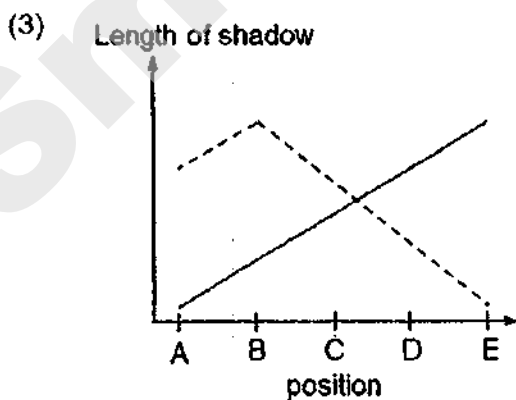
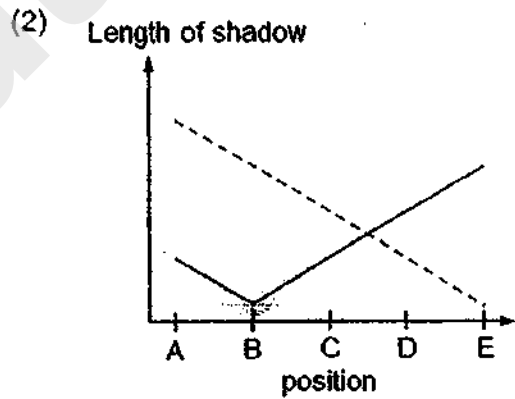
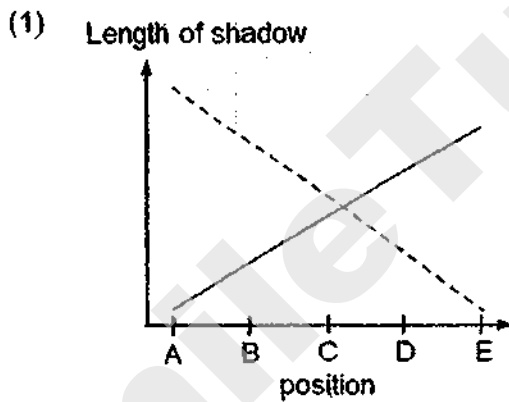
- (1) 90 °C  
 (2) 100 °C  
 (3) 110 °C  
 (4) 120 °C

- 17 Siti was walking along a path, from A to E, with two lamps, L1 and L2, placed at position B and E respectively.

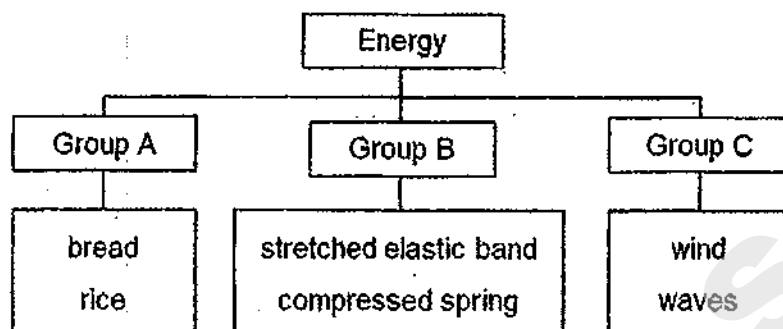


Which one of the following graphs shows how the length of her shadows changed?

**Legend:**  
 — Shadow caused by L1  
 - - - Shadow caused by L2



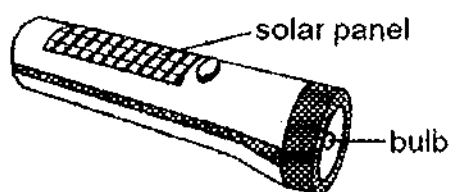
- 18 Study the classification chart below.



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?

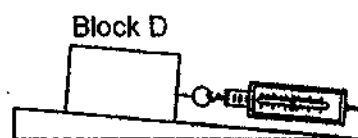
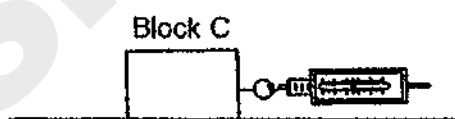
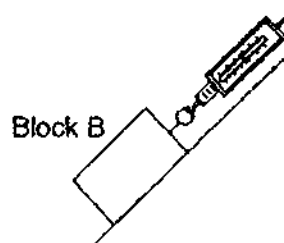
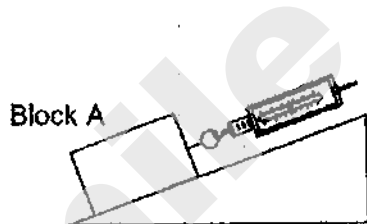
- (1) Solar energy → light energy → heat energy
- (2) Solar energy → electrical energy → light energy + heat energy
- (3) Potential energy → electrical energy → light energy + heat energy
- (4) Potential energy → solar energy → light energy → heat energy

- 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.

Condition	Set-up				
	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?

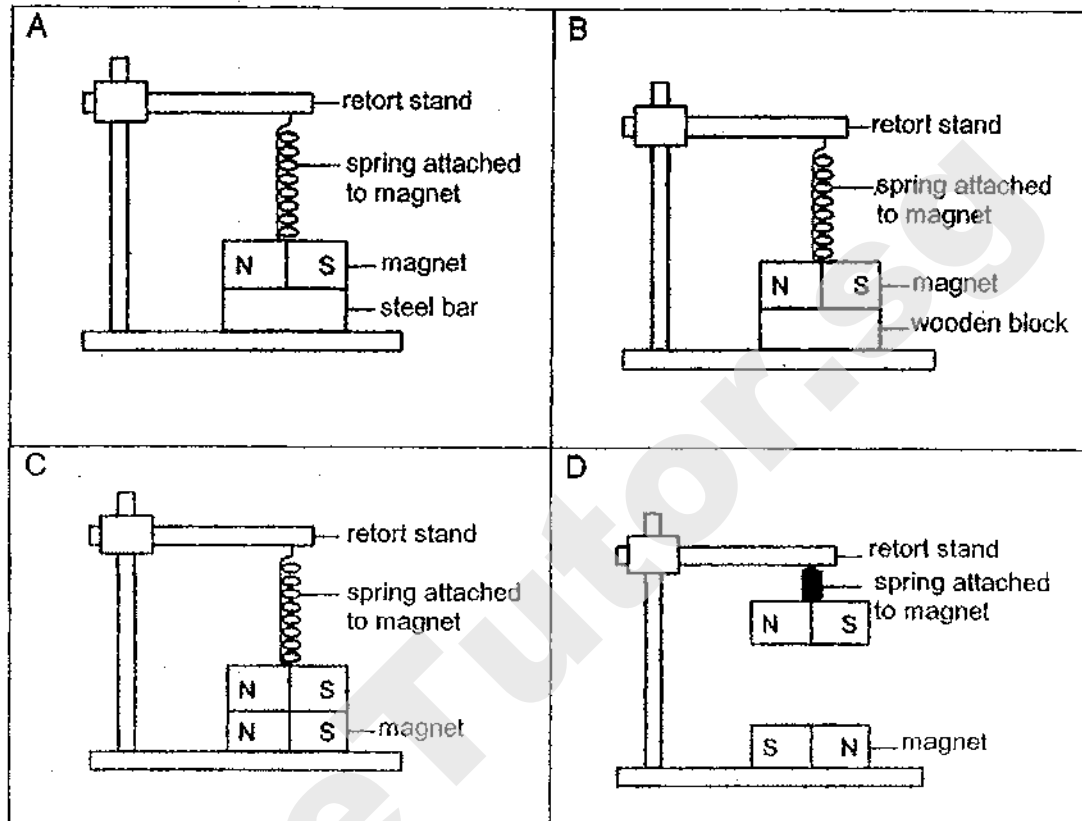
- (1) Set-ups 1 and 2  
 (2) Set-ups 1 and 5  
 (3) Set-ups 3 and 4  
 (4) Set-ups 3 and 5
- 21 Ali used a spring balance to pull four blocks, A, B, C and D, along four similar surfaces in his experiment below. The blocks are of similar sizes and made of same material.



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

22 Study the four set-ups below.

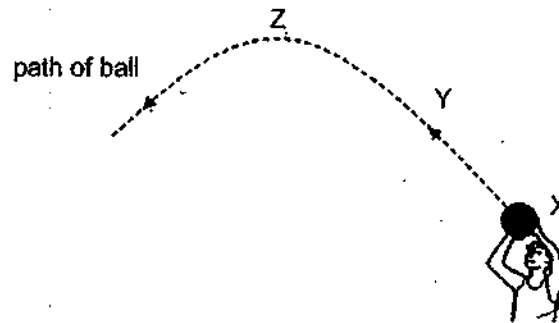


Which of the above arrangement(s) of the magnets is/are possible?

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



- 23 Joshua threw a basketball at X and it moved along the path as shown in the diagram below.

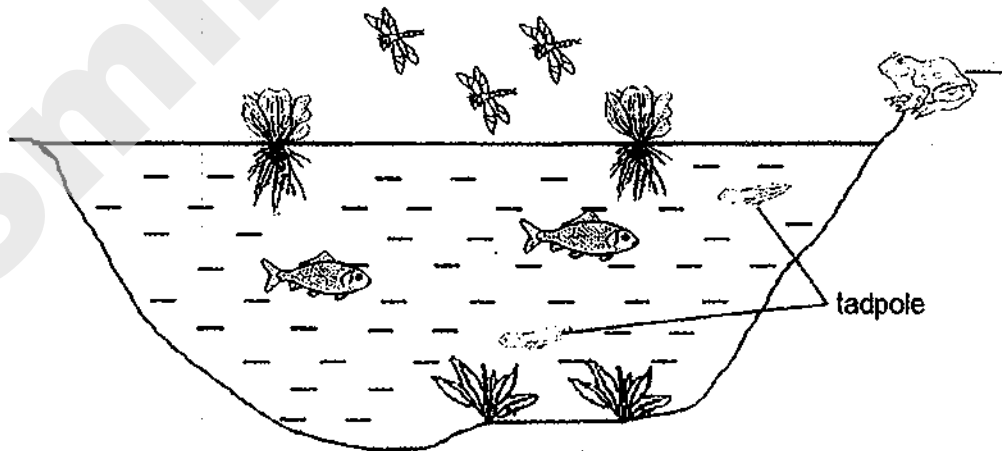


Which statements are not true?

- 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

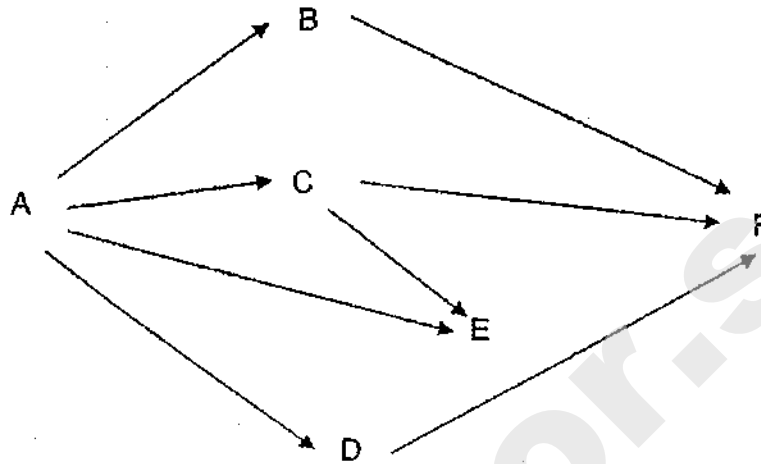
- 24 The diagram below shows a pond habitat.



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

25 Study the food web as shown below.

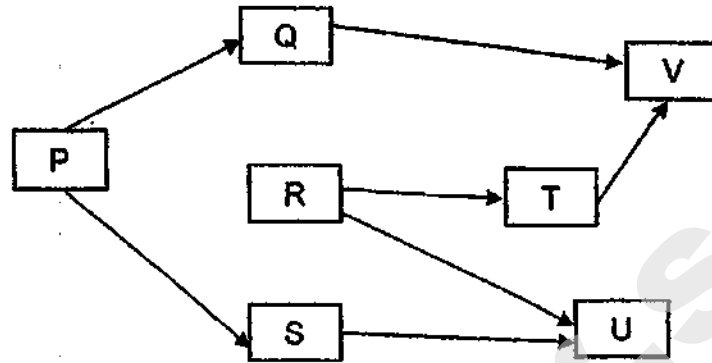


Which of the following statements about the food web are true?

- 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

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.

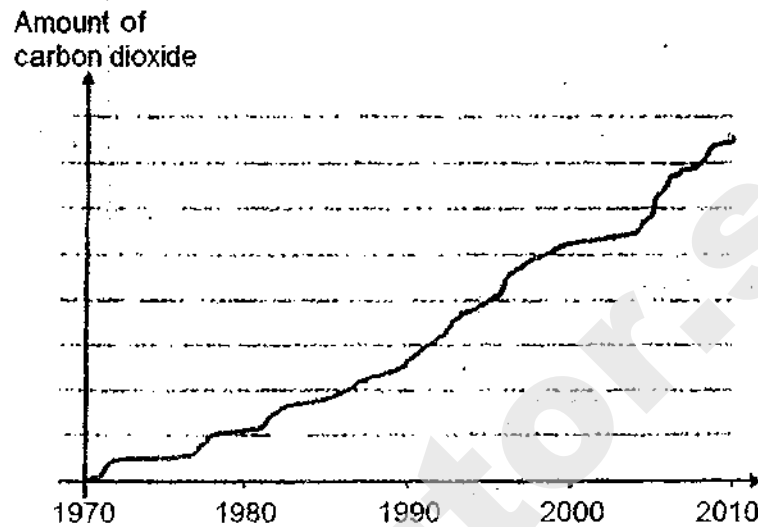


What are some of these structural adaptations?

- 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

- 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

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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. \_\_\_\_\_

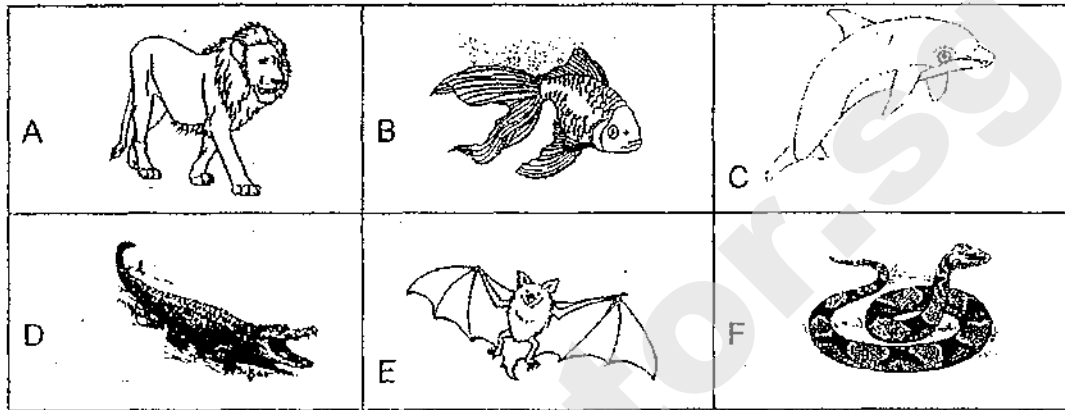
Date : 22 August 2019

<b>Booklet A</b>	56
<b>Booklet B1</b>	22
<b>Booklet B2</b>	22
<b>Total</b>	100
<b>Parent's Signature</b>	

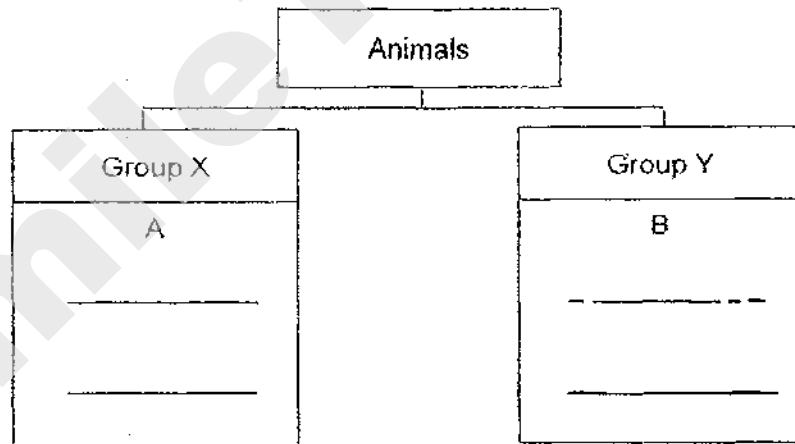
This booklet consists of 9 printed pages including this page.

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
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- 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]

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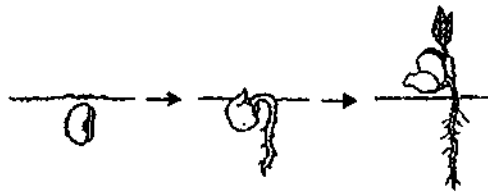
- (b) Which plant, F or G, is the fruit most likely taken from? Explain your answer. [1]

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The diagram below shows a seed germinating into a seedling after it was dispersed.



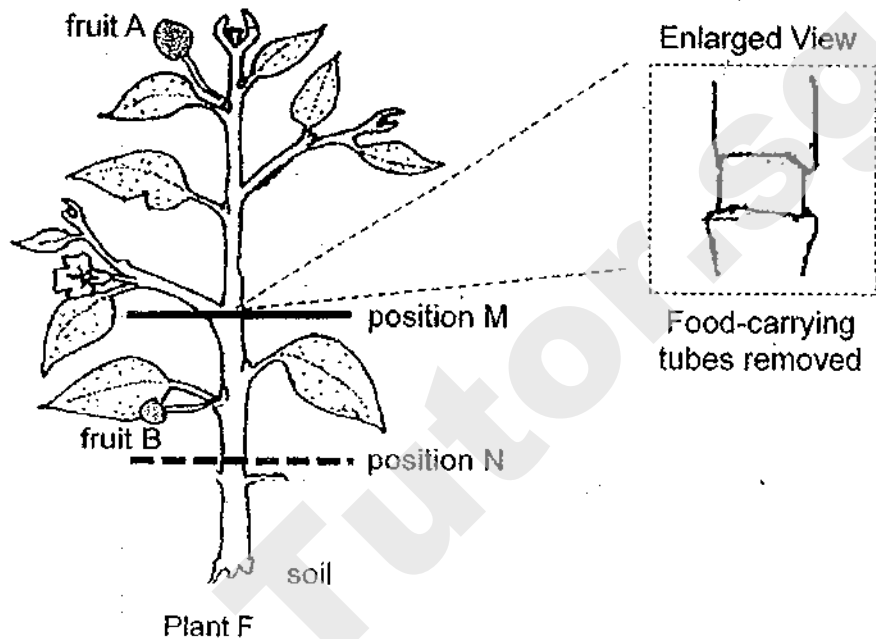
- (c) What are the conditions necessary for it to take place? [1]

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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.



- (d) The farmer observed that after two weeks, fruit A grew bigger than fruit B. Suggest why fruit A was bigger. [1]

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- (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]

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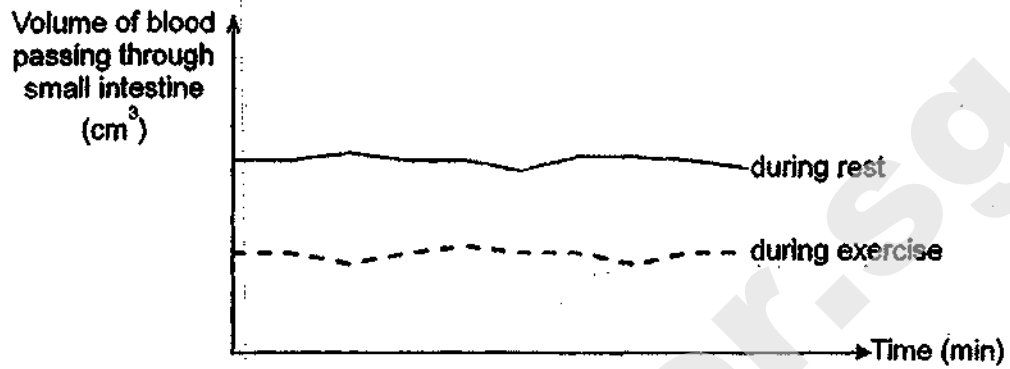
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SCORE	
	5





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]

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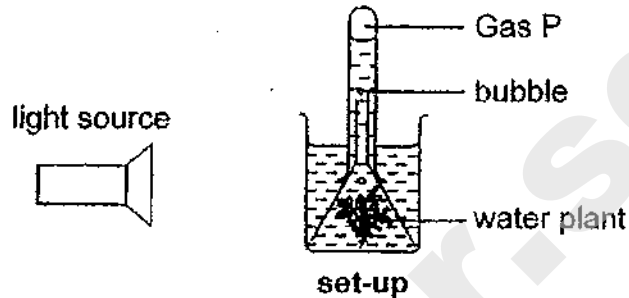
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SCORE	2
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- 32 Muthu wanted to find out how light affects the number of bubbles produced by a water plant. He placed a lamp at different distances from set-up and counted the number of bubbles produced per minute.



His results are shown below.

<b>Distance of lamp from set-up (cm)</b>	25	20	15	10	5
<b>Number of bubbles per minute</b>	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]

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- (b) Name Gas P. How was it produced? [1]

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- (c) Muthu prepared another set-up as above without the light source. Explain the purpose of the set-up. [1]

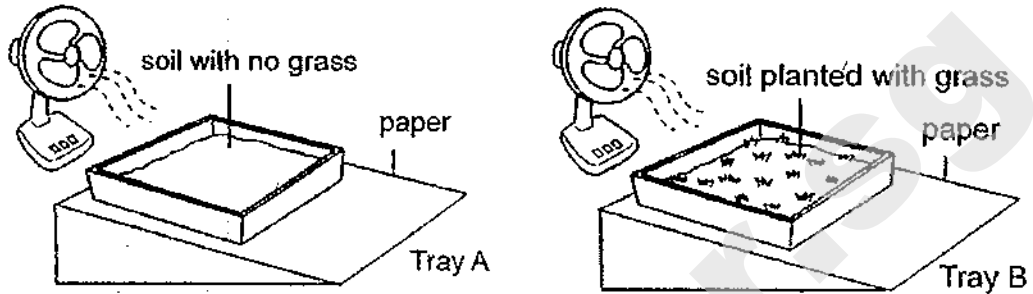
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SCORE	
	4

- 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]

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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]

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- (c) Suggest another negative impact if all the plants on the slope of the highland are cut down. [1]

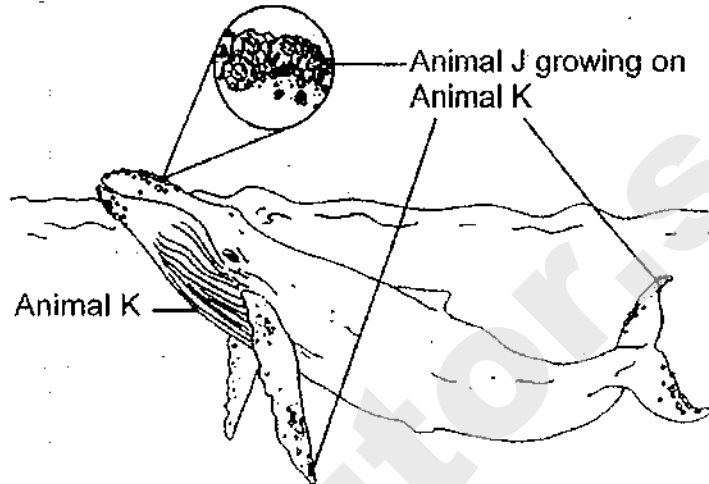
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SCORE	
	3

- 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]

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- (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]

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- (c) Explain how the body shape of Animal K can help in its survival. [1]

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SCORE	
	3

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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: \_\_\_\_\_ (       )

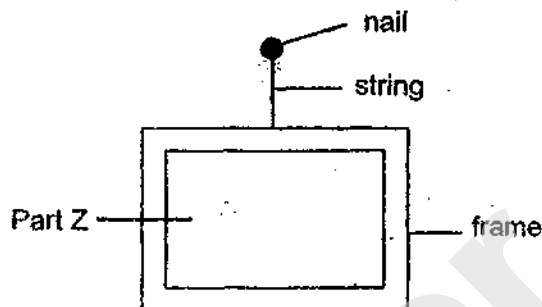
Class: Primary 6, \_\_\_\_\_

Date : 22 August 2019

Booklet B2	22
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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]

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- (b) What property of material is suitable for making part Z of the photo frame? Give a reason for your answer. [1]

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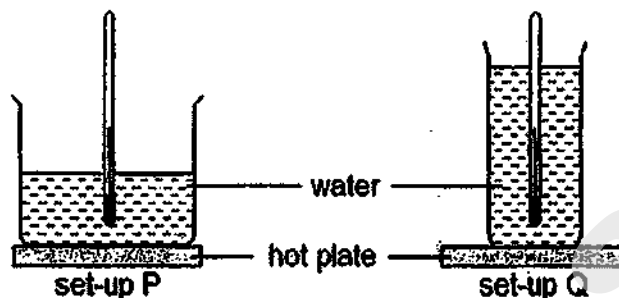


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SCORE	2
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- 36 Mei Li set up an experiment with two setups, P and Q, as shown.



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]

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- (b) Mei Li observed that there was less water left in set-up P at the end of the experiment. Explain the observation. [1]

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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.



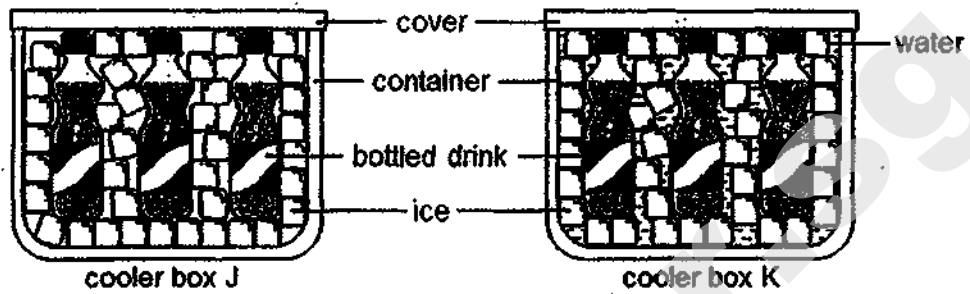
- (c) How does this adaptation help animal H to keep itself cool in the hot desert? [1]

---



---

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]

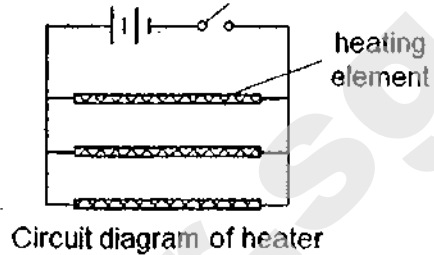
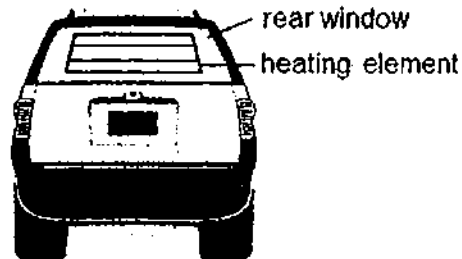
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SCORE	
	4

- 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.



- (a) Are the heating elements arranged in series or parallel? What is the advantage of this arrangement? [1]

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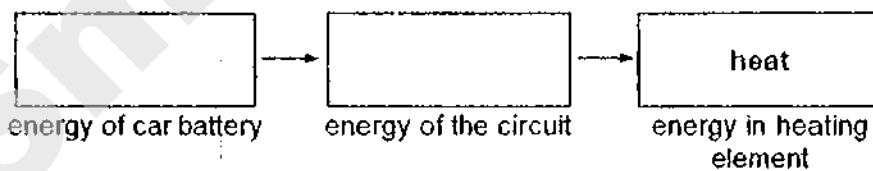
- (b) Explain how the heater prevents forming of mist on the rear window when it is switched on. [1]

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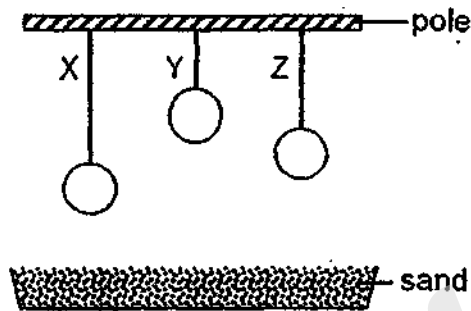
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- (c) Fill in the boxes below to show the energy conversion when the switch is closed. [1]



SCORE	
	3

- 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]

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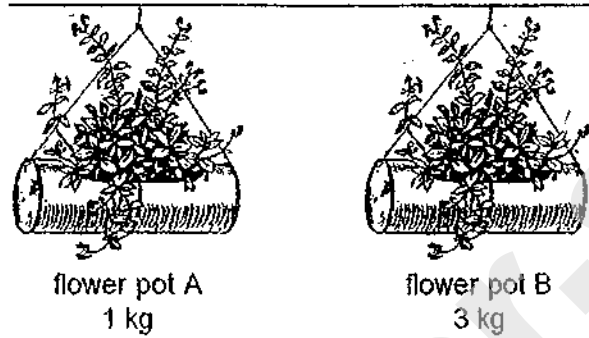
- (c) Why were balls of the same mass used in the experiment? [1]

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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.



- (d) Which flower pot, A or B, would drop to the ground with a greater impact? Explain your answer. [1]

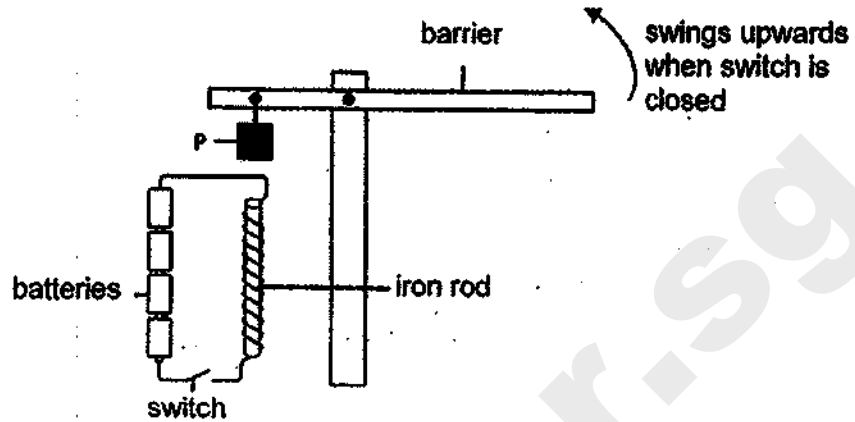
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SCORE	
	5

- 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]

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- (b) What happens if the iron rod is replaced by a copper rod? Explain your answer. [1]

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- (c) Suggest one change to the set-up to decrease the speed of the carpark barrier. [1]

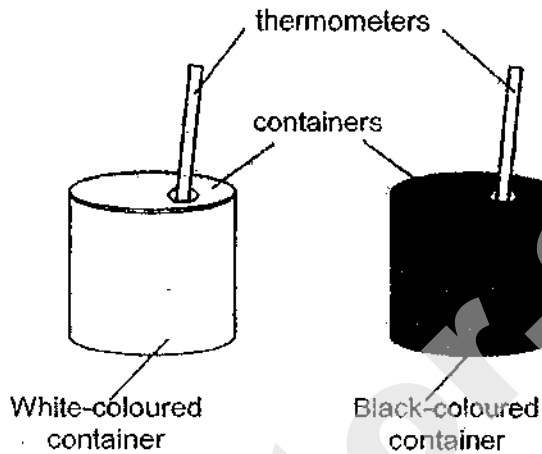
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SCORE	
	4

- 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 ( $^{\circ}\text{C}$ )	28	28
Final Temperature ( $^{\circ}\text{C}$ )	35	40

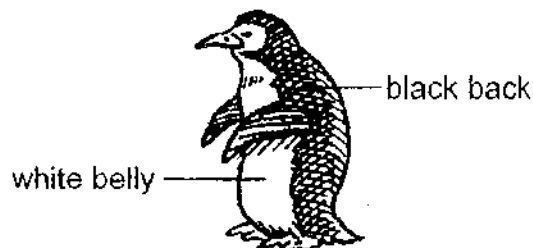
- (a) Based on Jerry's table, explain how the colour of the container affects the final temperature of the air in it. [1]

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- (b) Based on the results in (a), explain why having black back is an advantage for Animal P. [1]




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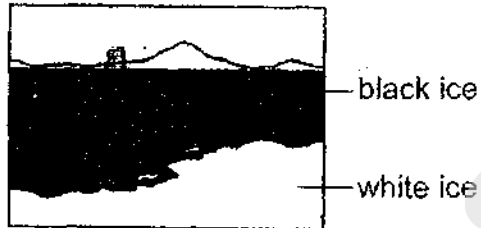


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Air pollution has caused some black carbon to be deposited on ice. This has resulted in the ice turning black in the Polar Regions as shown in the diagram below.



- (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]

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SCORE	
	4



SCHOOL : MGS PRIMARY SCHOOL  
LEVEL : PRIMARY 6  
SUBJECT : SCIENCE  
TERM : 2019 PRELIM

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**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.

37d	<div style="display: flex; align-items: center; justify-content: center; gap: 20px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">(chemical) potential</div> <div style="font-size: 24px;">→</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Electrical</div> <div style="font-size: 24px;">→</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">heat</div> </div> <p style="text-align: center; margin-top: 5px;"> <span style="margin-right: 40px;">energy of car battery</span> <span style="margin-right: 40px;">energy of the circuit</span> <span>energy in heating element</span> </p>																				
38a	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="4" style="text-align: center;">Depth of depression, d (cm)</th> </tr> <tr> <th style="text-align: center;">Ball</th> <th style="text-align: center;">First reading</th> <th style="text-align: center;">Second reading</th> <th style="text-align: center;">Third reading</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Z</td> <td style="text-align: center;">3.2</td> <td style="text-align: center;">3.5</td> <td style="text-align: center;">3.3</td> </tr> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">4.9</td> <td style="text-align: center;">5.1</td> <td style="text-align: center;">5.0</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">1.1</td> <td style="text-align: center;">1.2</td> </tr> </tbody> </table>	Depth of depression, d (cm)				Ball	First reading	Second reading	Third reading	Z	3.2	3.5	3.3	Y	4.9	5.1	5.0	X	0.9	1.1	1.2
Depth of depression, d (cm)																					
Ball	First reading	Second reading	Third reading																		
Z	3.2	3.5	3.3																		
Y	4.9	5.1	5.0																		
X	0.9	1.1	1.2																		
38b	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.																				
38c	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.																				
38d	Flower pot B, B has a greater mass than A so it possesses more (gravitational) potential energy.																				
39a	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.																				
39b	The copper rod cannot not be an electromagnet / magnetised as it is a non-magnetic material so the set-up will not work.																				
39c	Reduce the number of turns of the coil around the rod. / Reduce the number of batteries.																				
40a	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.																				
40b	The black back is able to absorb/ gain more heat from the Sun to keep Animal P warmer.																				
40c	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.																				



**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**

<b>Booklet A</b>		<b>/ 56</b>
<b>Booklet B</b>		<b>/ 44</b>
<b>Total</b>		<b>/ 100</b>

**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

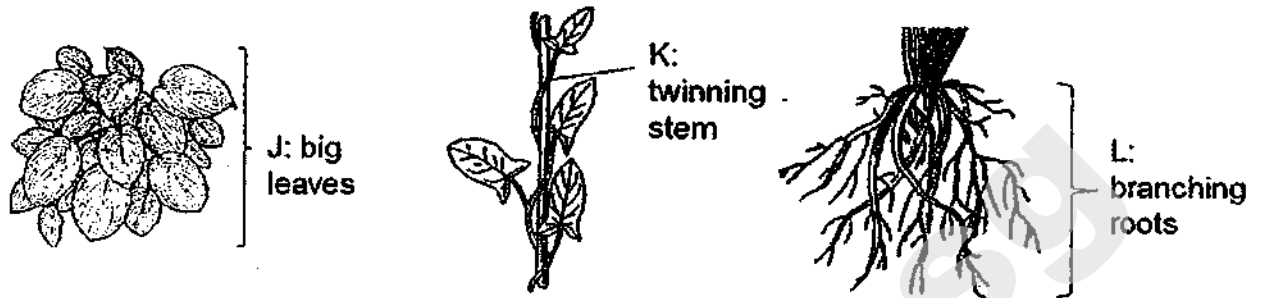
- 2 Ali did a study of two organisms, X and Y. At the end of his study, he recorded his observations in the table below:

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?

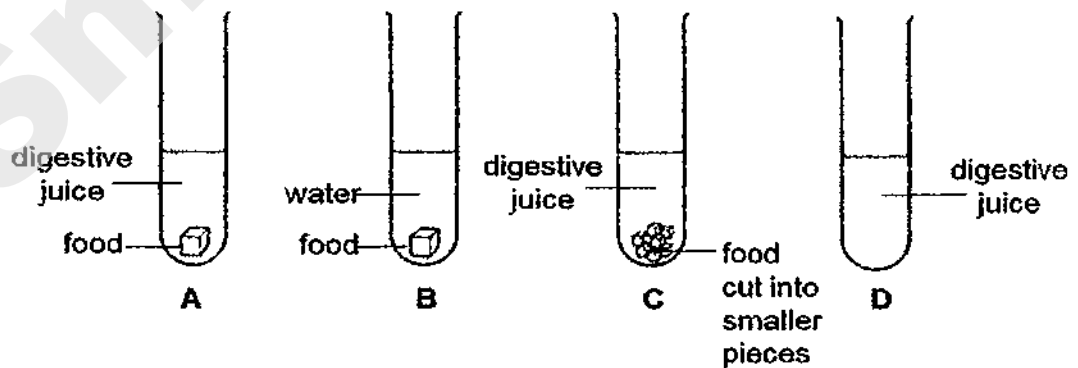
	X	Y
(1)	mosquito	frog
(2)	frog	mosquito
(3)	grasshopper	mosquito
(4)	butterfly	frog

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



- 6 The diagram below shows a plant cell.

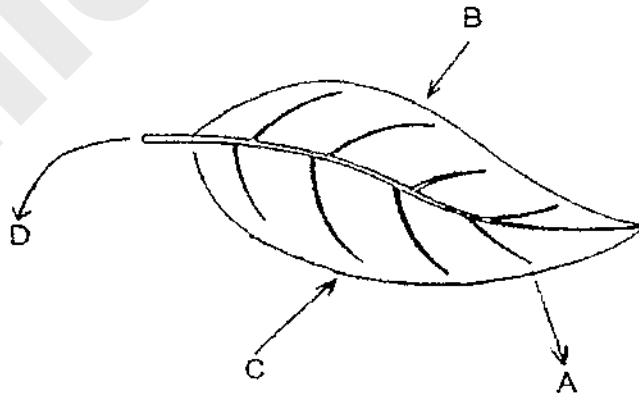


How can you tell that this cell is **not** taken from a root?

- 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

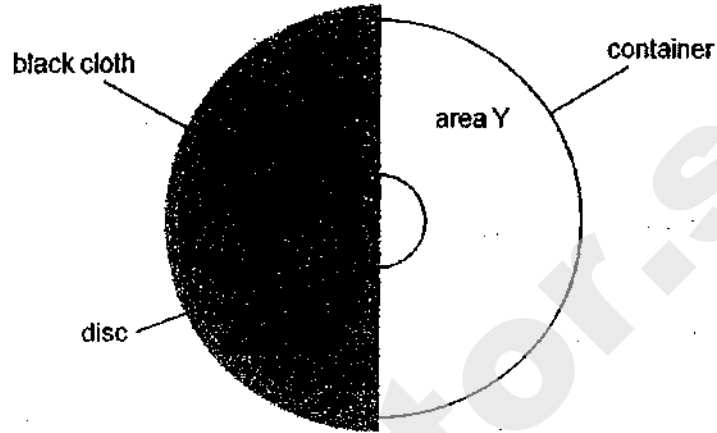
- 7 The diagram below shows a leaf photosynthesising. Arrows A, B, C and D show either the raw materials taken in by the leaf or products of photosynthesis.



Based on the diagram above, which of the following is correct?

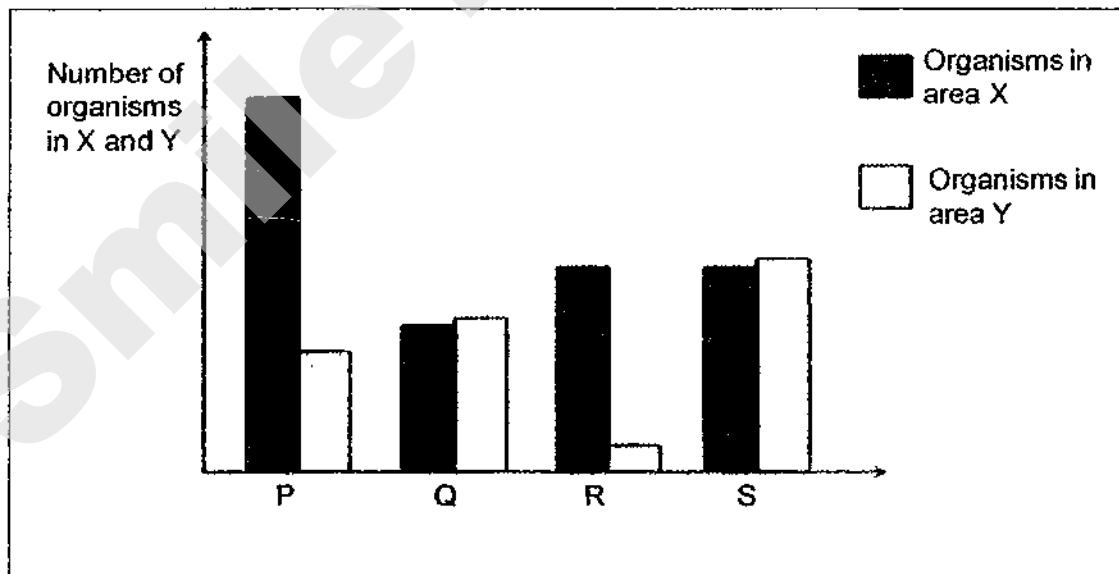
	A	B	C	D
(1)	oxygen	light	carbon dioxide	sugar
(2)	carbon dioxide	light	oxygen	water
(3)	light	carbon dioxide	oxygen	sugar
(4)	light	water	carbon dioxide	oxygen

- 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

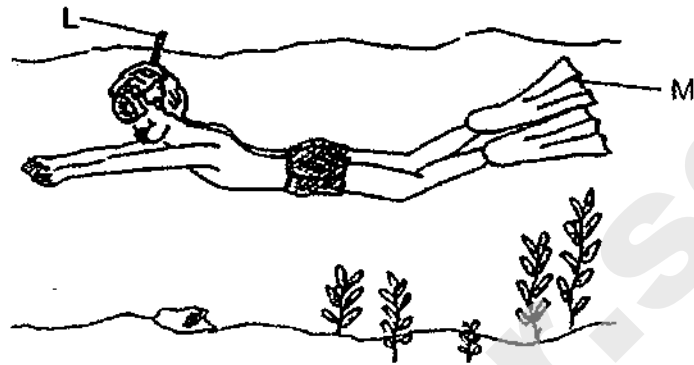
At the end of the experiment, the total number of organisms in each area was counted and recorded in the bar chart below.



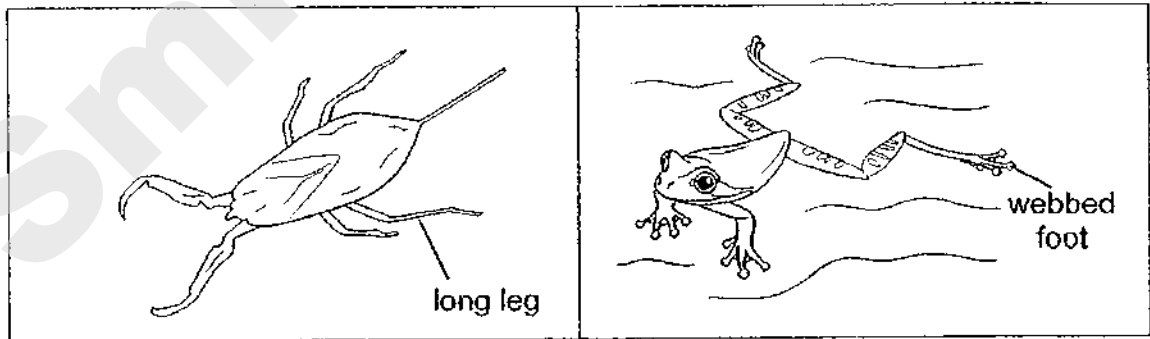
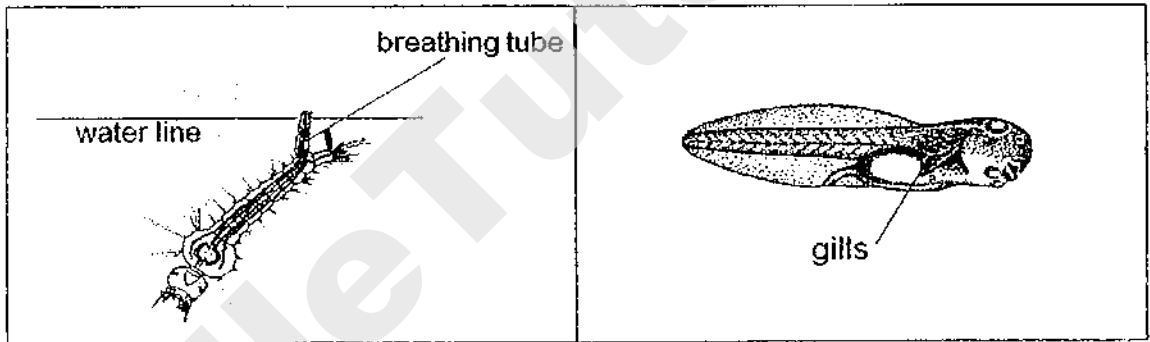
Which of the organisms, P, Q, R and/or S, is/are likely to be found in a leaf litter habitat?

- (1) P only
- (2) P and R only
- (3) Q and S only
- (4) P, R and S only

9 The diagram below shows a man in the sea wearing snorkeling gears, L and M.

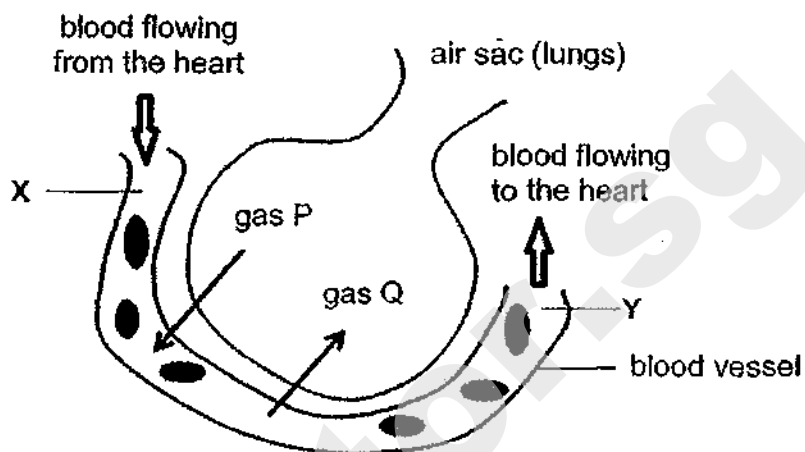


Which of the following animals have parts with similar functions as L and M respectively?



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

- 10 The diagram below shows the exchange of gases between an air sac (found in the lungs) and a blood vessel.

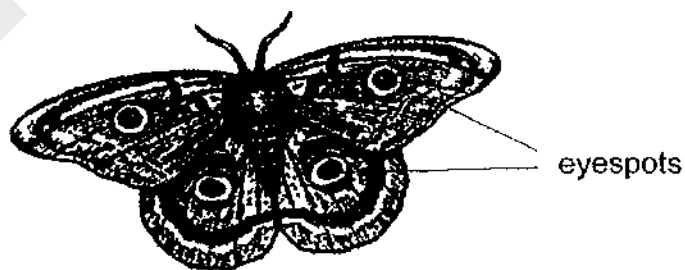


Which of the following statements is/are true?

- 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.

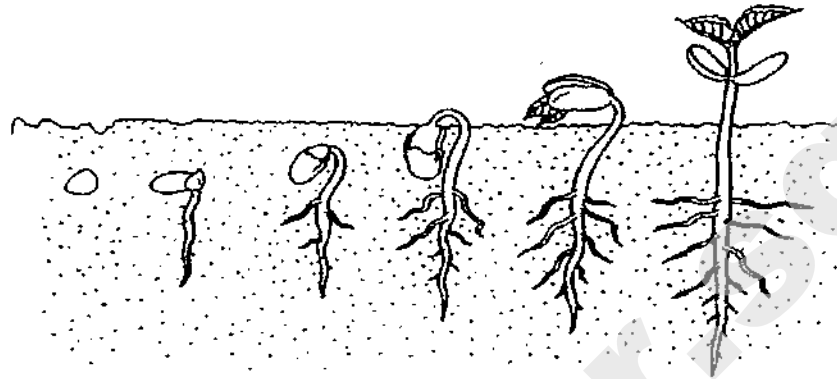


How do the eyespots help butterfly X to survive?

- 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

- 12 The diagram below shows the germination of a seed in a garden.

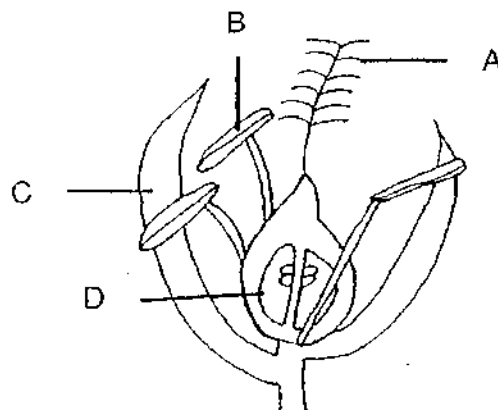


Which of the following statements is/are true?

- 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

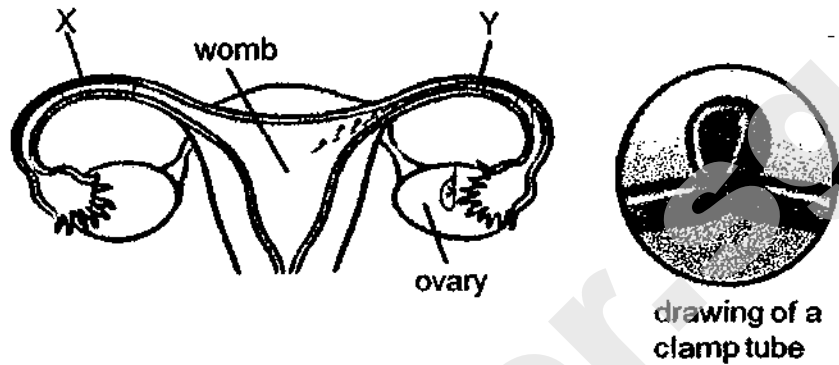
- 13 Kern removed two parts out of the four parts of the flower labelled as A, B, C and D as shown below. He then transferred pollen grains from another flower of the same plant to one of the remaining parts of the flower.



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

- 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.

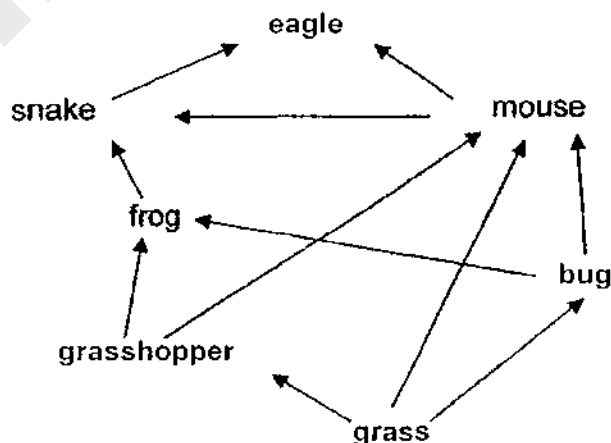


Which of the following statements explain(s) how this procedure helps to prevent pregnancy?

- 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

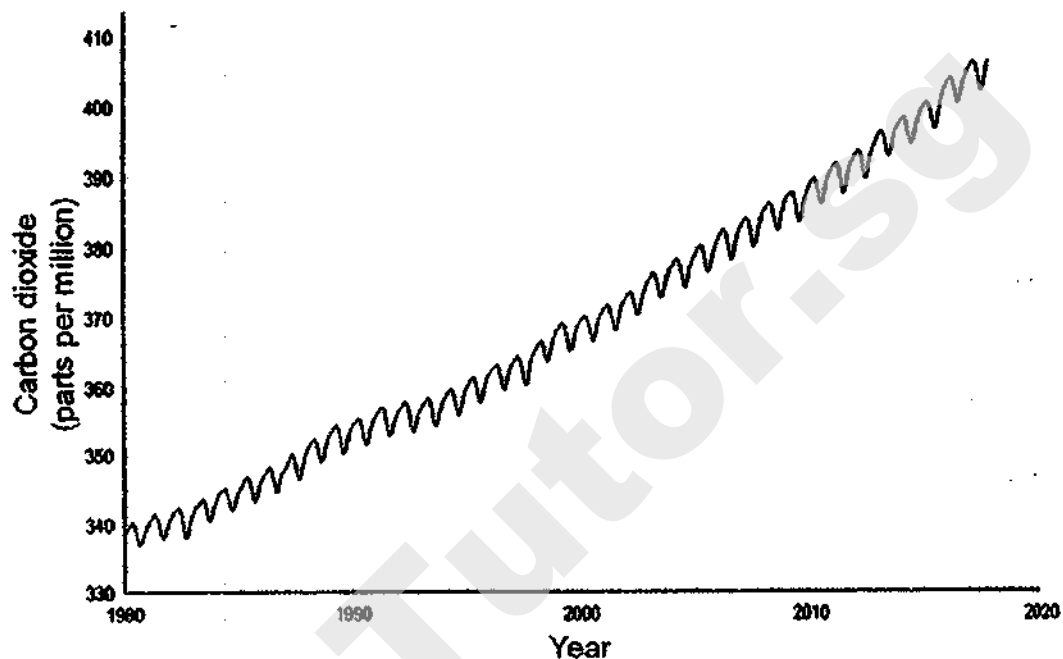
- 15 The diagram below shows a food web.



How many animals in this food web are both a prey and a predator?

- (1) Five
- (2) Two
- (3) Three
- (4) Four

- 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.

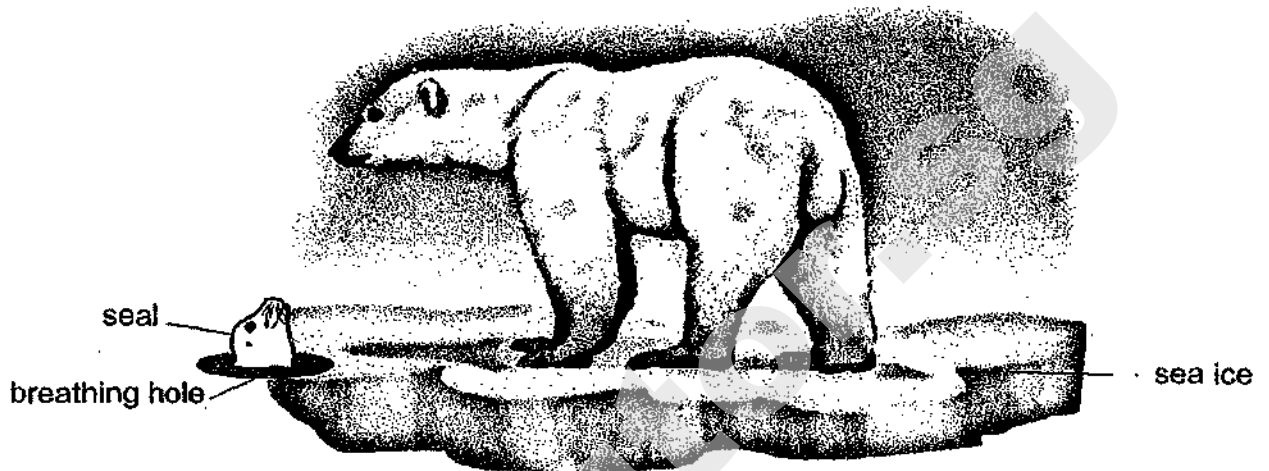


Which of the following are the possible causes of the increased concentration of carbon dioxide in the Earth's atmosphere?

- 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

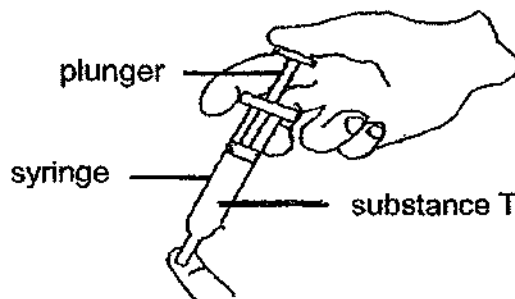
- 17 Polar bears which live in the Arctic rely on seals for food and energy. To catch its prey, a polar bear will stand near a breathing hole on the sea ice and wait for a seal to pop its head out of the water to breathe.



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.

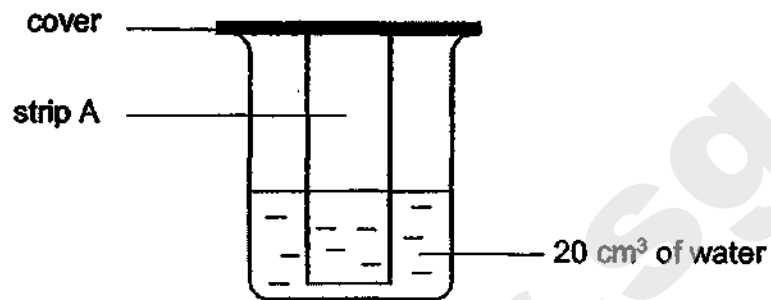


What conclusion can she make about substance T based on her observation?

- (1) It is a gas.
- (2) It has mass.
- (3) It has a definite shape.
- (4) It has a definite volume.



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<sup>3</sup> 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 <sup>3</sup> )
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

20 The diagram below shows a girl about to hit a baseball.

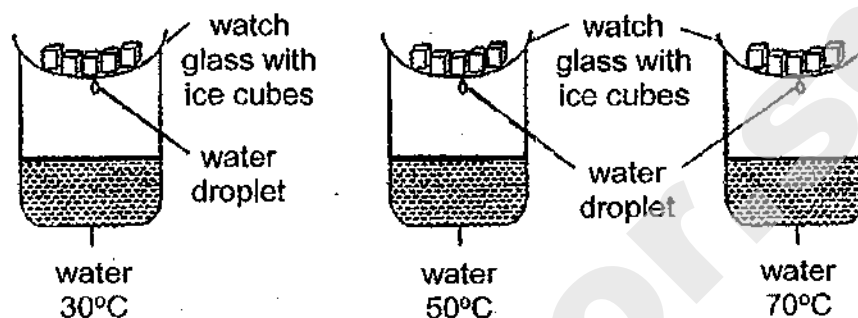


Which of the following are most likely to happen when she hits the baseball?

- 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

- 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.



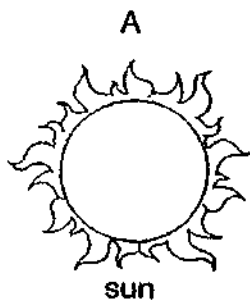
The table below shows the results of his experiment.

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.

22 Which of the following are **not** sources of light?



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

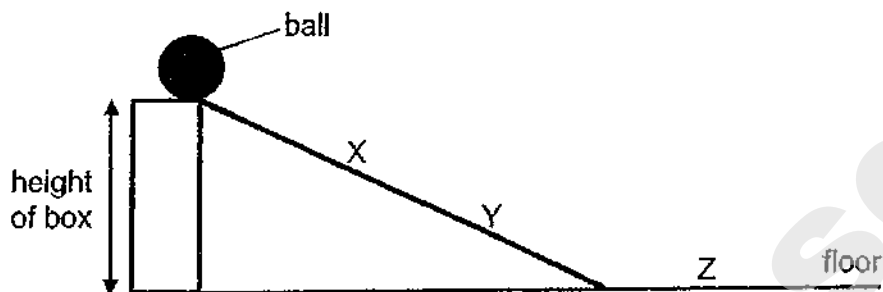
23 The table below shows the melting and boiling points of two substances, A and B.

Substance	Melting point ( $^{\circ}\text{C}$ )	Boiling point ( $^{\circ}\text{C}$ )
A	5	77
B	90	173

Which of the following shows the correct state of substances A and B at  $80^{\circ}\text{C}$ ?

	A	B
(1)	liquid	gas
(2)	gas	solid
(3)	liquid	liquid
(4)	solid	gas

- 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.

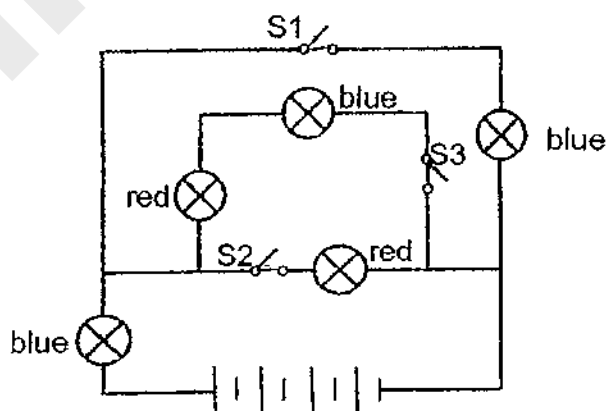


Which of the following statements are correct about the ball?

- 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

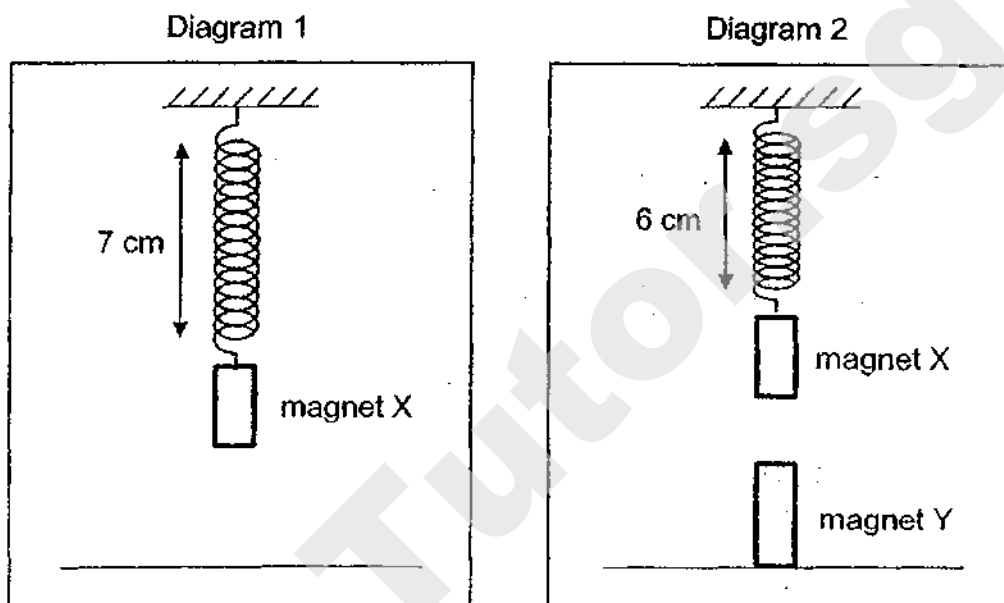
- 25 The diagram below shows some blue and red bulbs in a circuit.



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

- 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.



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)	↑	↓	↓

- 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.

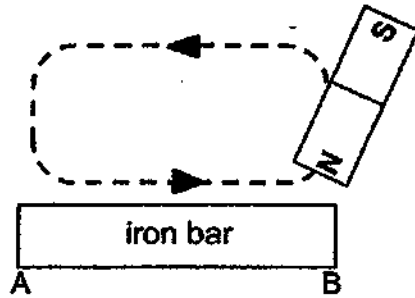
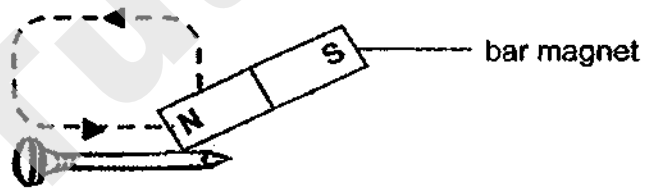


Diagram 1

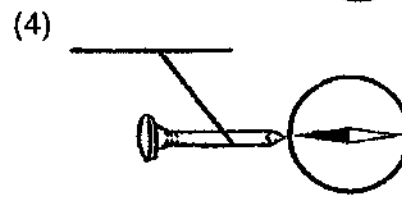
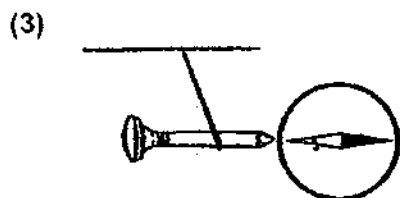
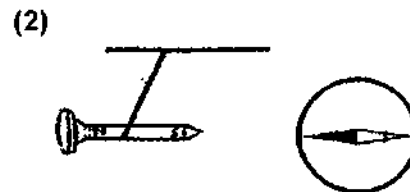
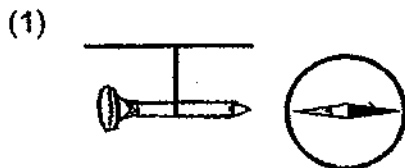
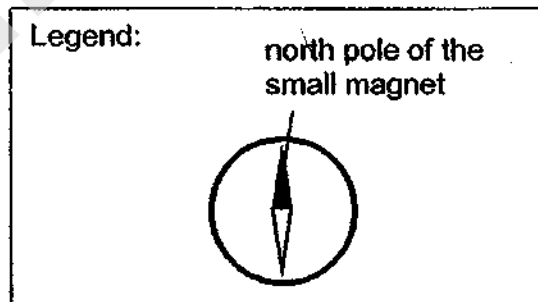


Diagram 2

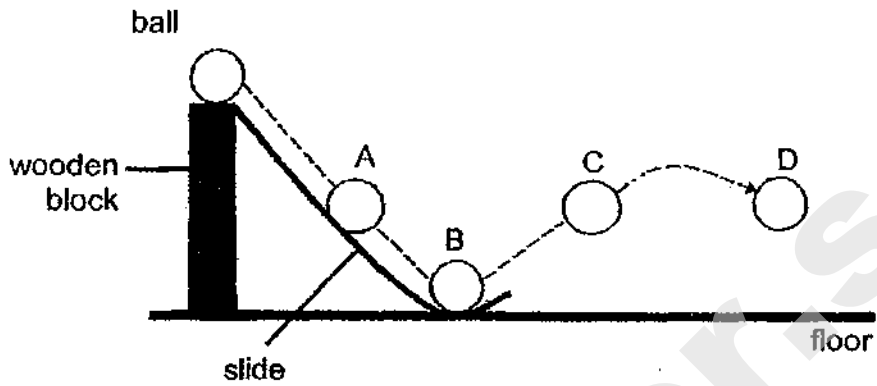
An iron nail is magnetised by using the stroke method as shown below. The nail is then suspended from a string and a compass was brought near the magnetised iron nail.



Which one of the following correctly shows what happened when the compass, which contains a small magnet, was brought near the magnetised iron nail?



- 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?







**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
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**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]

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(ii) Higher heart rate [1]

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(b) Which of the following body parts are found in the respiratory system?  
Tick (✓) the correct boxes. [1]

heart

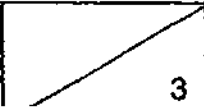
nose

lungs

blood

blood vessels

windpipe

Score	
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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]

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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]

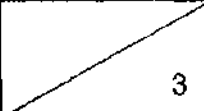
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- (c) What was the purpose of crushing the dead leaves into smaller pieces? [1]

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Score	
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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
<ul style="list-style-type: none"><li>• Dull coloured</li></ul>	<ul style="list-style-type: none"><li>• Brightly coloured</li></ul>
<ul style="list-style-type: none"><li>• Taste sour</li></ul>	<ul style="list-style-type: none"><li>• Taste sweet</li></ul>
<ul style="list-style-type: none"><li>• Immature seed is damaged when the fruit is eaten</li></ul>	<ul style="list-style-type: none"><li>• Mature seed is tough and undamaged when the fruit is eaten</li></ul>
<ul style="list-style-type: none"><li>• Fruits cling tightly to the plant</li></ul>	<ul style="list-style-type: none"><li>• Fruits can be removed from the plant easily</li></ul>

- (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]

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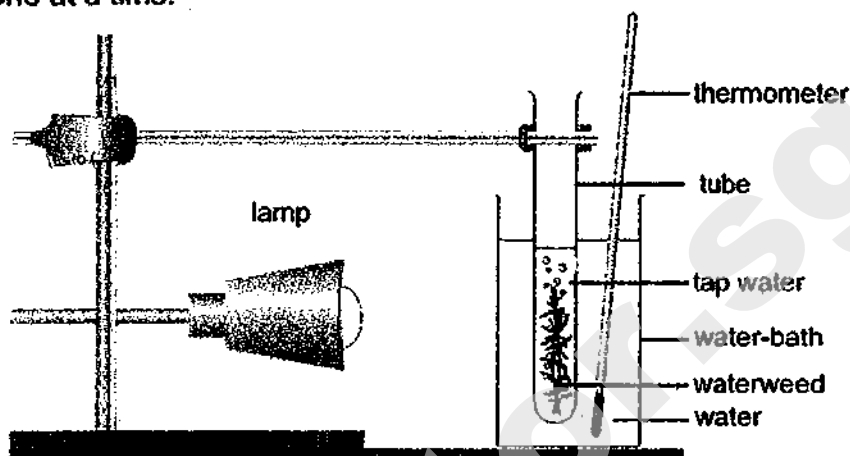
- (b) More of bird K feed on the ripe fruits instead of the unripe fruits. With reference to the information from the table above, state how this benefits plant J. [1]

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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]

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- (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]

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- (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]

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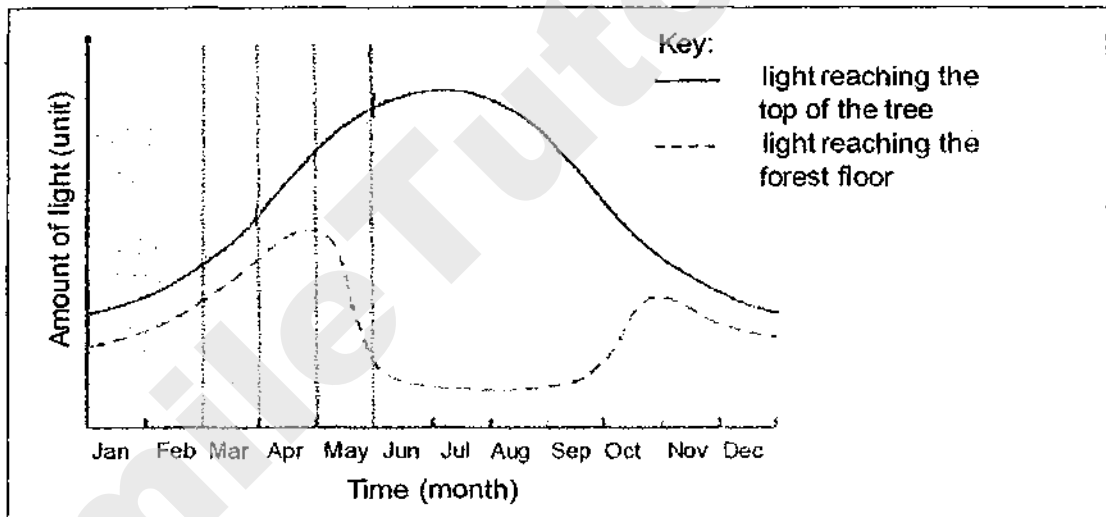


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33 The diagrams below show a forest at the beginning of March and at the end of May.



The graph below shows the amount of light reaching the top of the trees and the forest floor over one year.

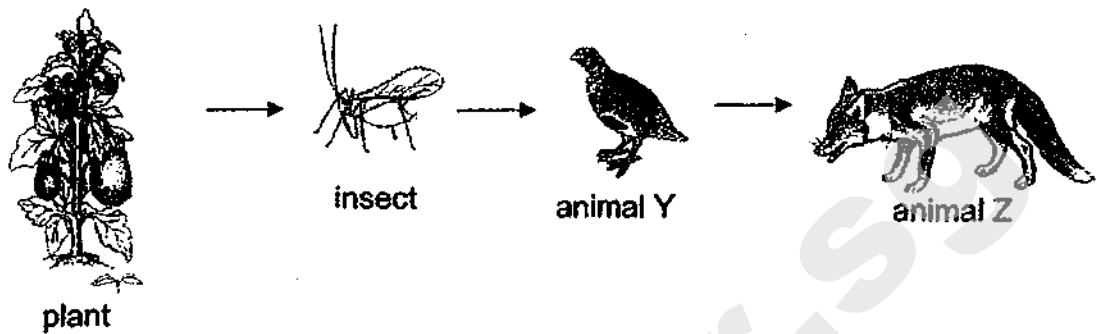


- (a) There was a sharp increase in the amount of light reaching the top of the trees from early March to end of May. Based on the information above, explain how this had caused the amount of light reaching the forest floor to decrease during May. [2]

- (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

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]

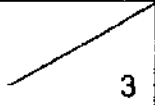
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- (b) Some farmers spray their plants with chemicals to kill the insects. How will this affect the number of animal Z? Explain your answer. [2]

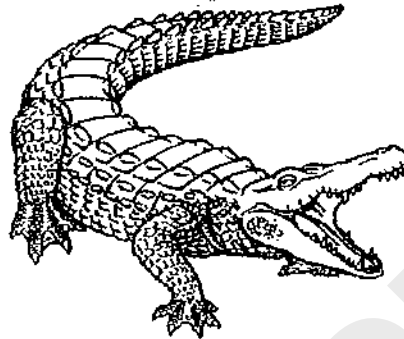
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Score	
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- 35 Animal X is a reptile and it cannot control its body temperature. When it is hot, it stays in the water instead of on land to keep cool. It positions its nose just above the waterline when its body is in the water.



Animal X.

- (a) How does staying in the water help animal X to keep cool? [1]

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- (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]

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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]

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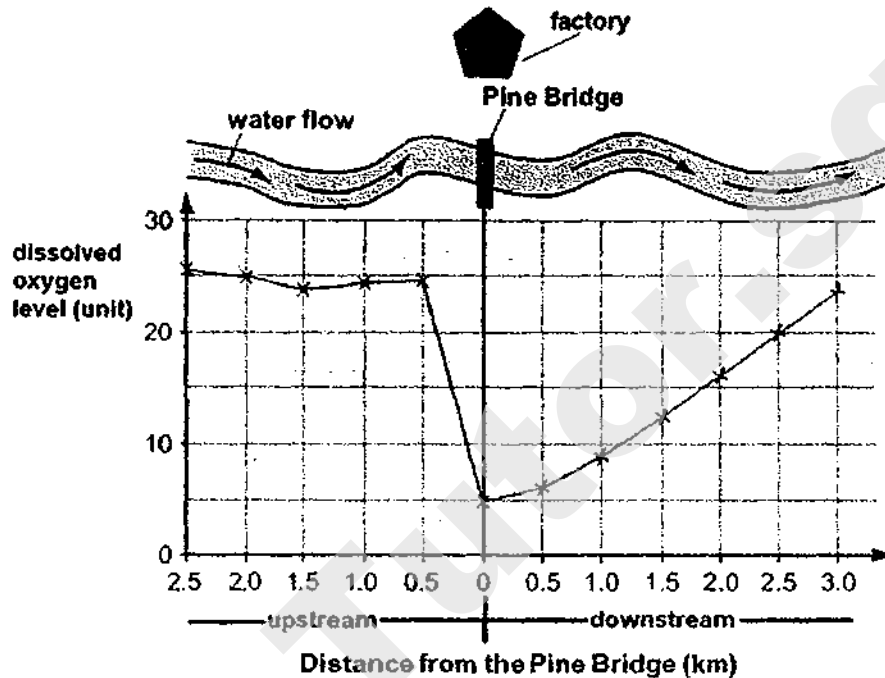
- (d) Based on the information given, why is it dangerous for us to stay too close to the nest of animal X when we are out in nature? [1]

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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	✓	✓	x	✓
B	✓	✓	x	x
C	✓	✓	x	x
D	x	x	✓	✓

- (a) What is the purpose of checking on the type of organisms found upstream of the factory? Explain your answer. [2]

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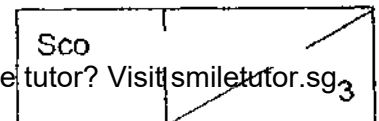
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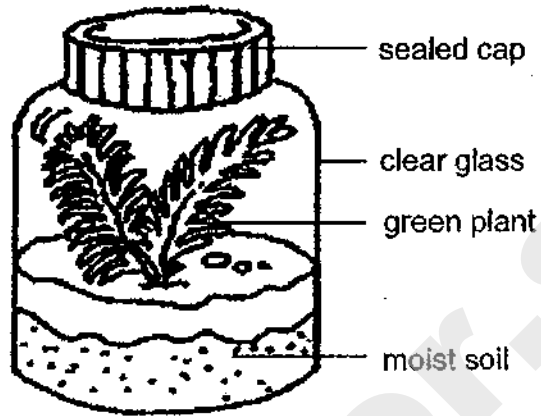
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- (b) Based on the information above, which of the organism(s), other than organism D, is/are able to survive when oxygen level is below 20 units? [1]

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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]

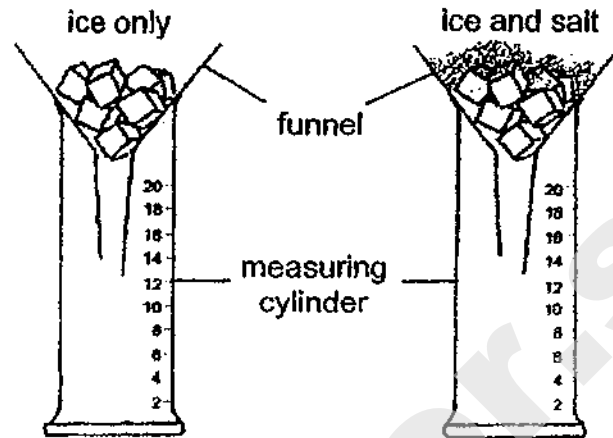
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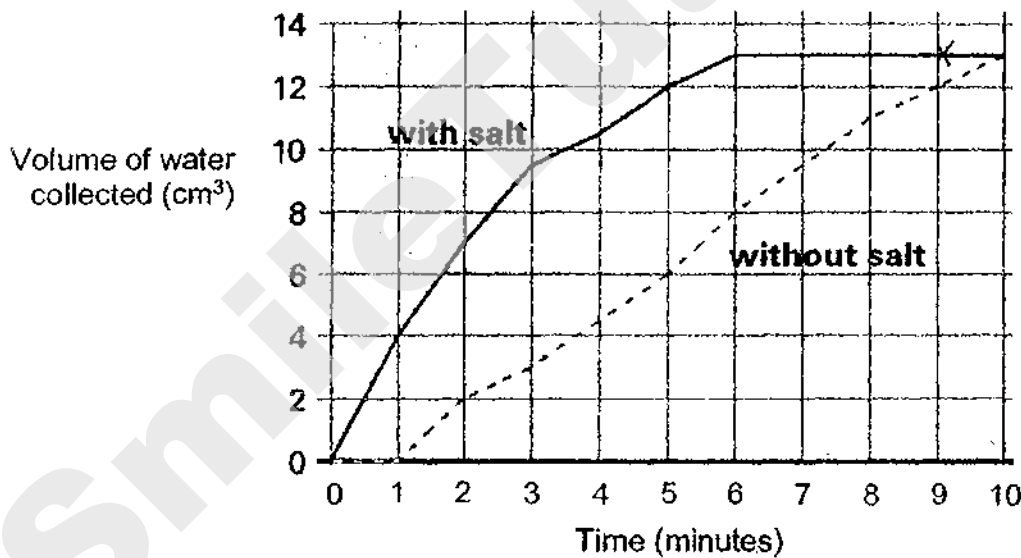
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Go on to the next page for parts (b) and (c) →

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.



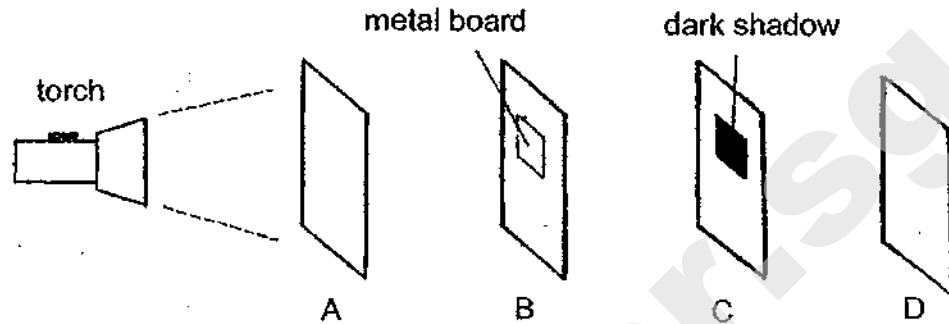
Mandy measured the volume of water collected in the measuring cylinder and recorded the results as shown below.



- (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]

- 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.			

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]

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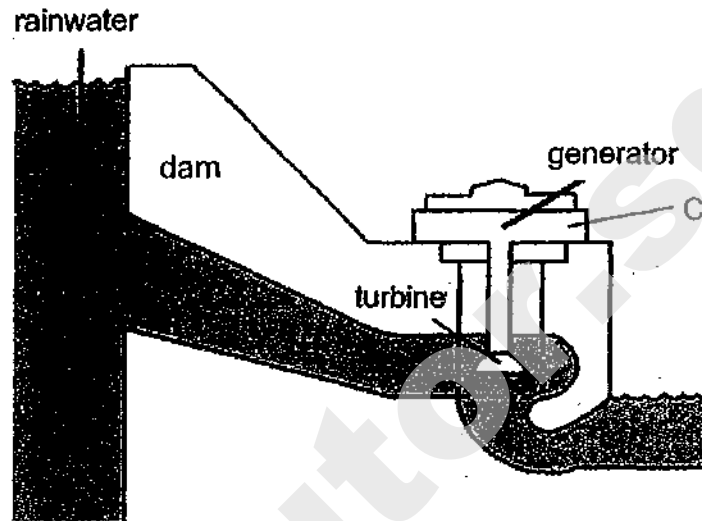
- (c) Using the same set-up, how can Sherman increase the size of the shadow of the metal ball cast on the screen at position X? [1]

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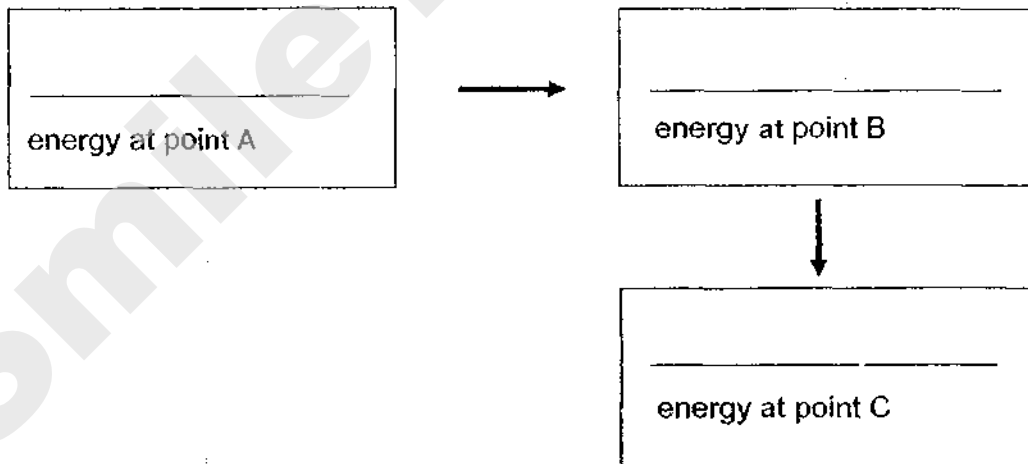
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Score	4
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- 39 A hydroelectric power station makes use of a dam on a river to store water in a reservoir. Water released from the reservoir flows through a turbine, spinning it, which in turn activates 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]



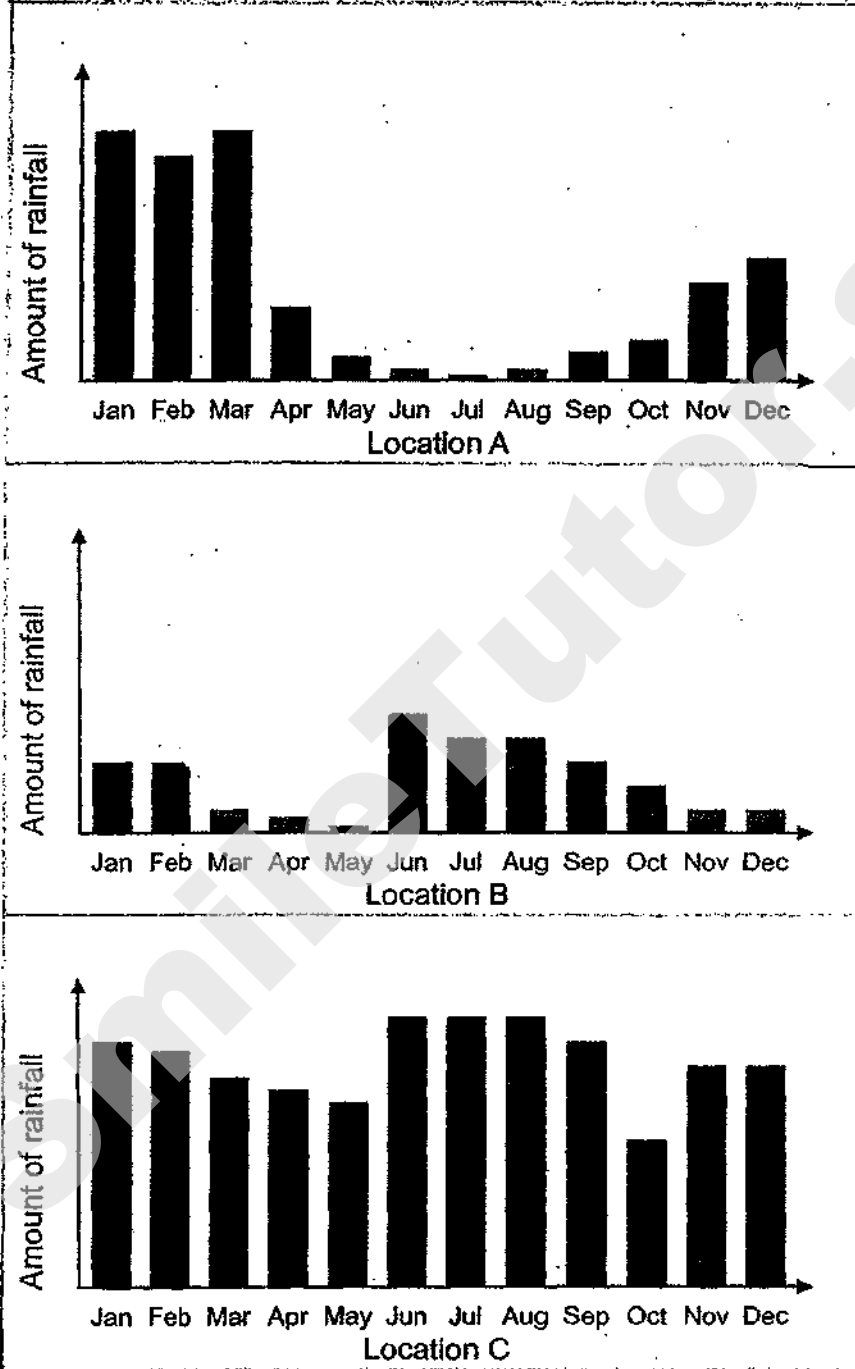
- (b) State one advantage of using a hydroelectric power station to generate electricity. [1]

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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]

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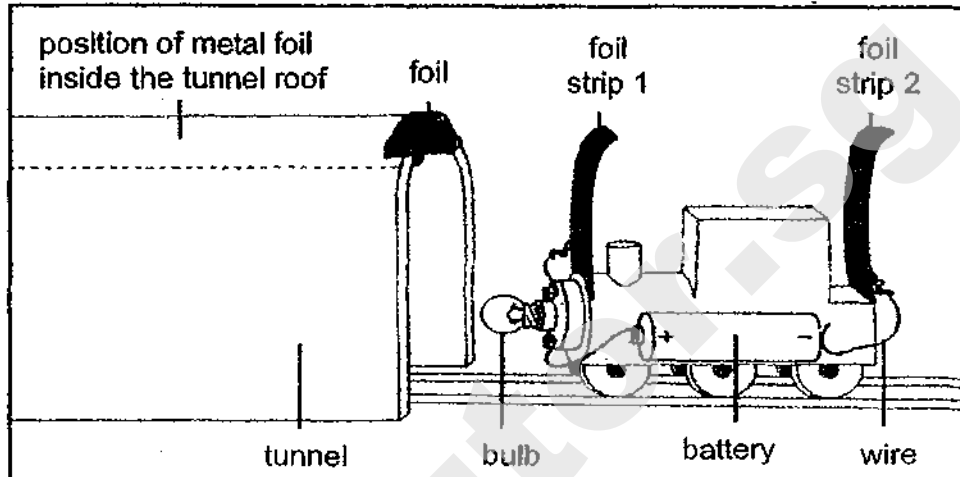
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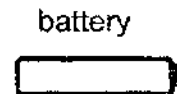
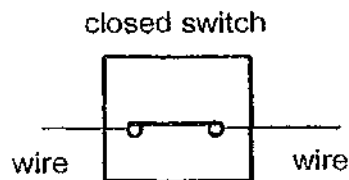
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- 40 Sara wants a light bulb to light up when her toy train is pushed through a tunnel. She makes an electric circuit for her toy train. She makes a tunnel and puts a strip of foil inside the tunnel roof as shown below.



- (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]

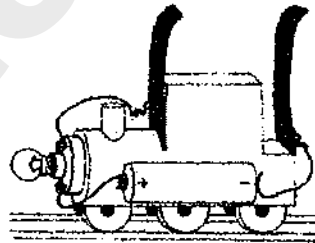
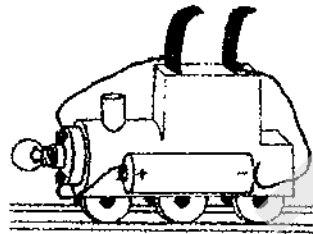
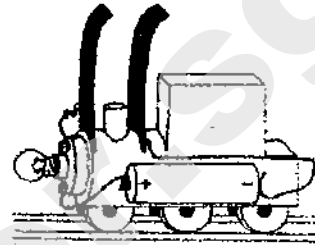
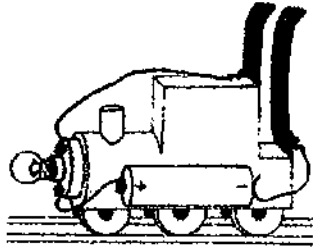
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Sara wants to improve her circuit so that the bulb lights up when the train has only just entered the tunnel.

- (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.

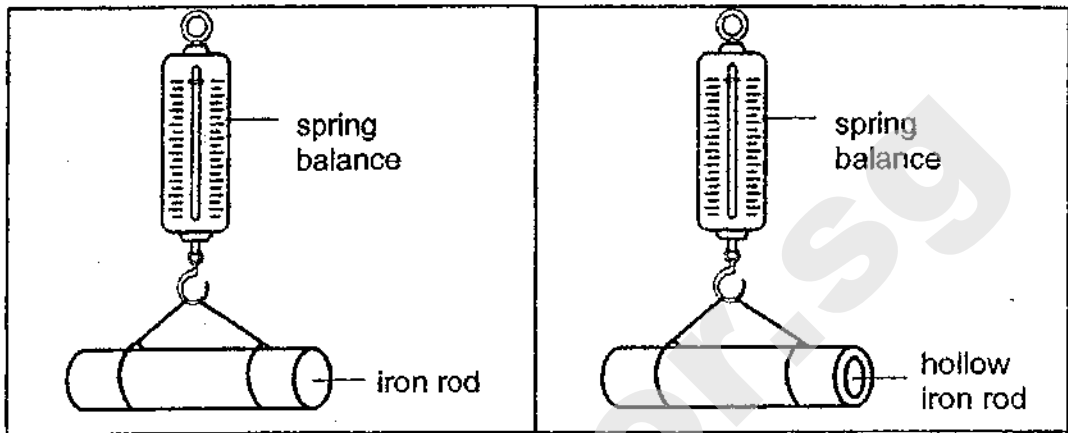


Diagram 1

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]
-

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SCHOOL : NAN HUA PRIMARY SCHOOL  
LEVEL : PRIMARY 6  
SUBJECT : SCIENCE  
TERM : 2019 PRELIM

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**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:

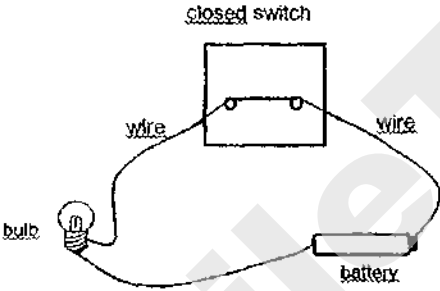
Class:

29	<b>What are the organs that made up our body systems? The body systems work together to carry out life processes.</b>
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	<b>What are the factors required for photosynthesis? What happens when things decompose? What factors affect the rate of decomposition?</b>
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	<b>What are some structural adaptations that enhance plant reproduction?</b>
a	Adaptations: 1. Unripened fruits taste sour whereas ripened fruits taste sweet. 2. Unripened fruits cling tightly to the plant whereas ripened 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.

32	<p><b>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?</b></p> <p><b>In the presence of light, what is the gas given out by plants? What is the gas given out by the animals?</b></p>
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	<p><b>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)?</b></p>
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	<p><b>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)?</b></p>
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.



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	<b>What is the purpose of setting up a control in an experiment? What are some examples of negative impact of man on the environment?</b>
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	<b>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?</b>
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	<b>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?</b>
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

39	<p><b>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?</b></p>
a	(Gravitational) <u>Potential</u> energy at A → <u>Kinetic</u> energy at B → <u>Electrical</u> 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	<p><b>What are the main components of a simple electrical system? Can a current flow in an open circuit?</b></p>
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	<p><b>What are some of the different types of forces and their effects? What are some of the structural adaptations of a bird?</b></p>
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.



**NANYANG PRIMARY SCHOOL**

**PRIMARY 6 SCIENCE**

**PRELIMINARY EXAM  
2019**

**BOOKLET A**

**Date : 23 August 2019  
Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (    )**

**Class: Primary 6**

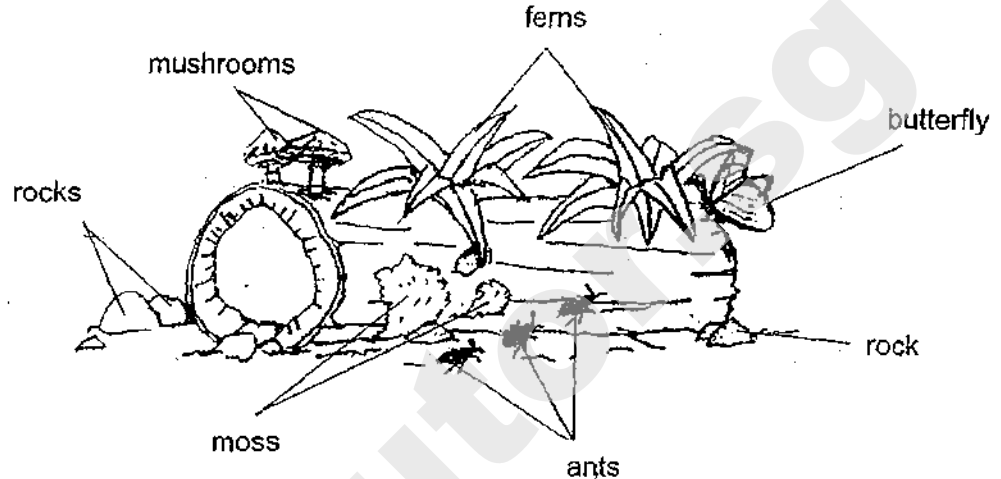
**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

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

**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

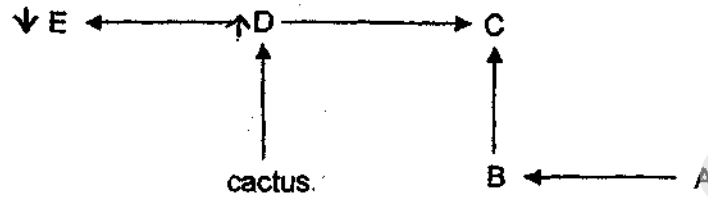
2. The table below shows 3 organisms grouped according to 2 physical factors, X and Y, that are found in the environment they live in.

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

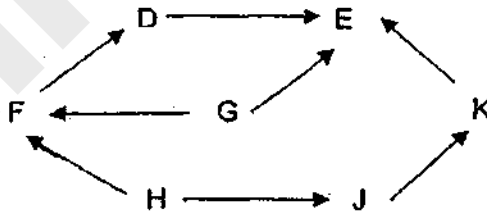
3. The diagram below shows the food relationships among organisms found in the desert. The cactus provides shelter for organism B.



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

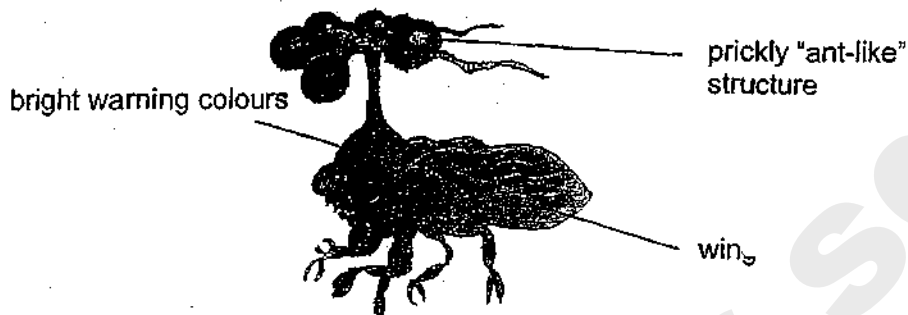
5. A type of dolphins was observed to swim around a school of fish and guide them towards a fisherman's boat. The dolphins feed on the small fish that escape from the fisherman's net.



Based only on the information above, which one of the following correctly states and explains the relationship between dolphins and man?

	<b>Relationship</b>	<b>Reason</b>
(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.

6. The diagram below shows insect X which is a plant-eater.

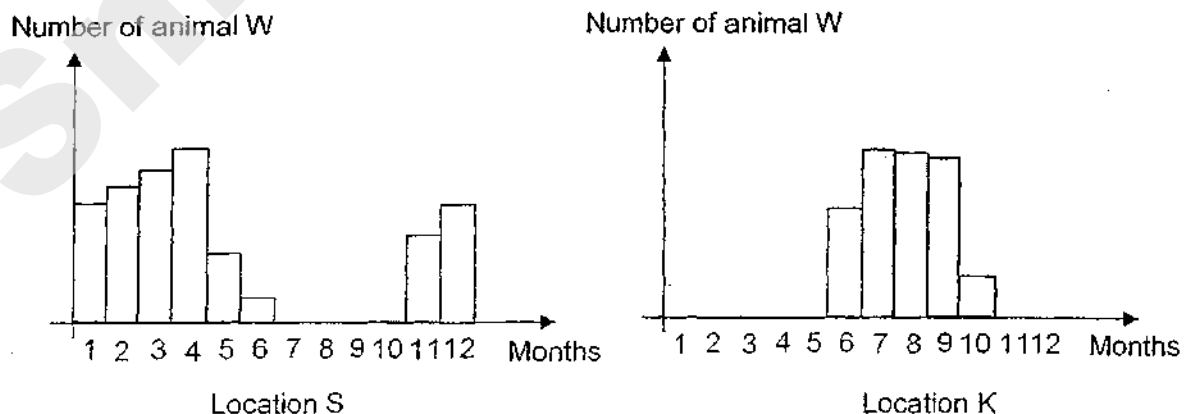


Insect X has a large "ant-like" structure on its head. The "ant-like" structure is light and has prickly spikes.

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

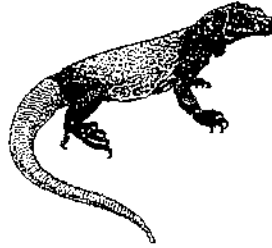
7. The graphs below show a population of animal W. Animal W eats grass grown at either locations S or K over a period of a year.



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.

8. The diagram below shows animal C



The following are adaptations that animal C uses to help it survive in its habitat. Which of these are behavioural 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.

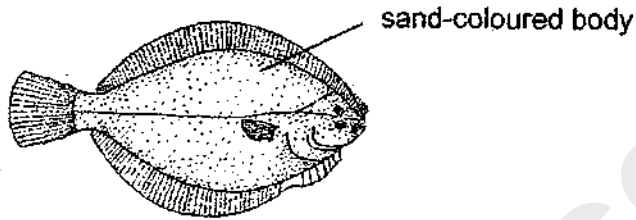
- |                     |                     |
|---------------------|---------------------|
| (1) B and C only    | (2) C and D only    |
| (3) A, B and C only | (4) A, B and D only |

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.



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?

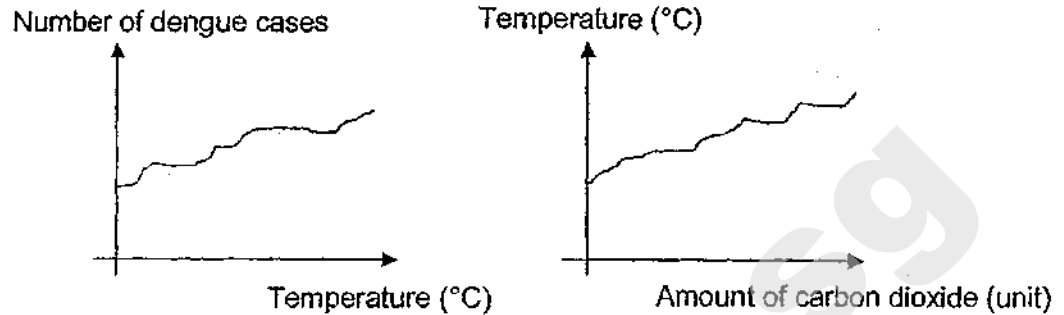
	Adaptation	Reason
A	Has a streamlined body	Swims quickly to catch its prey
B	Has a sand-coloured body	Blends into its environment to prevent its prey from spotting it
C	Covers its body with sand	Anchors it to the bottom of the sea
D	Has both eyes on one side of its body	Keeps it warm

- (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.

12. Some scientists studied the effect of carbon dioxide on the number of mosquitoes in country X. These mosquitoes cause the spread of dengue

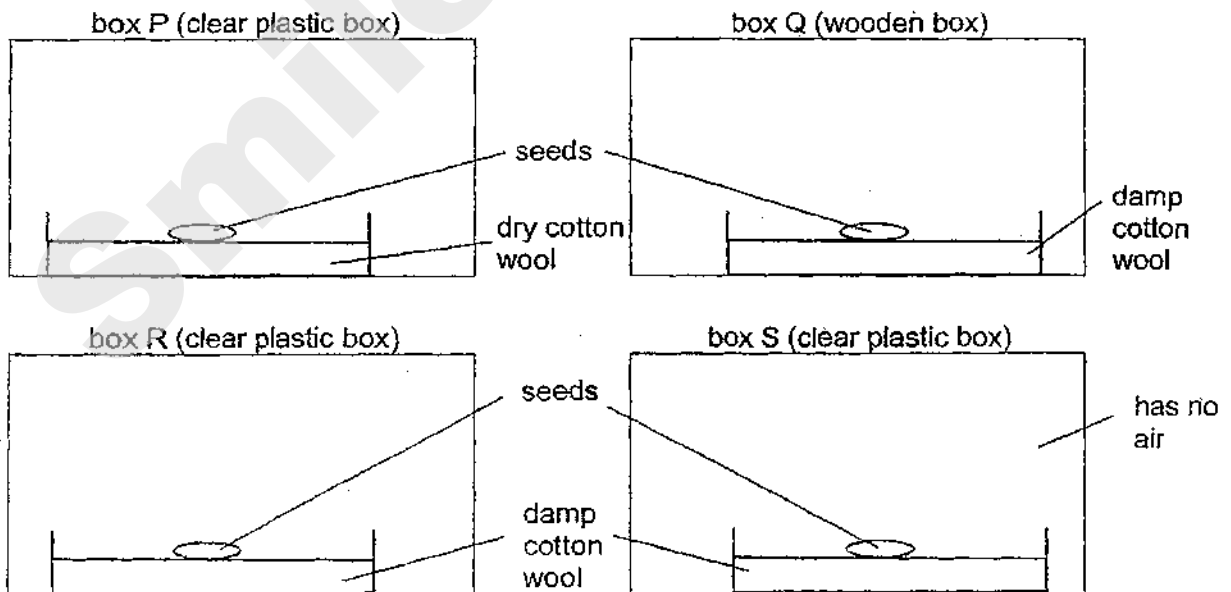


Based on the graphs above, which of the following could have caused the increase in the number of dengue cases?

- 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.



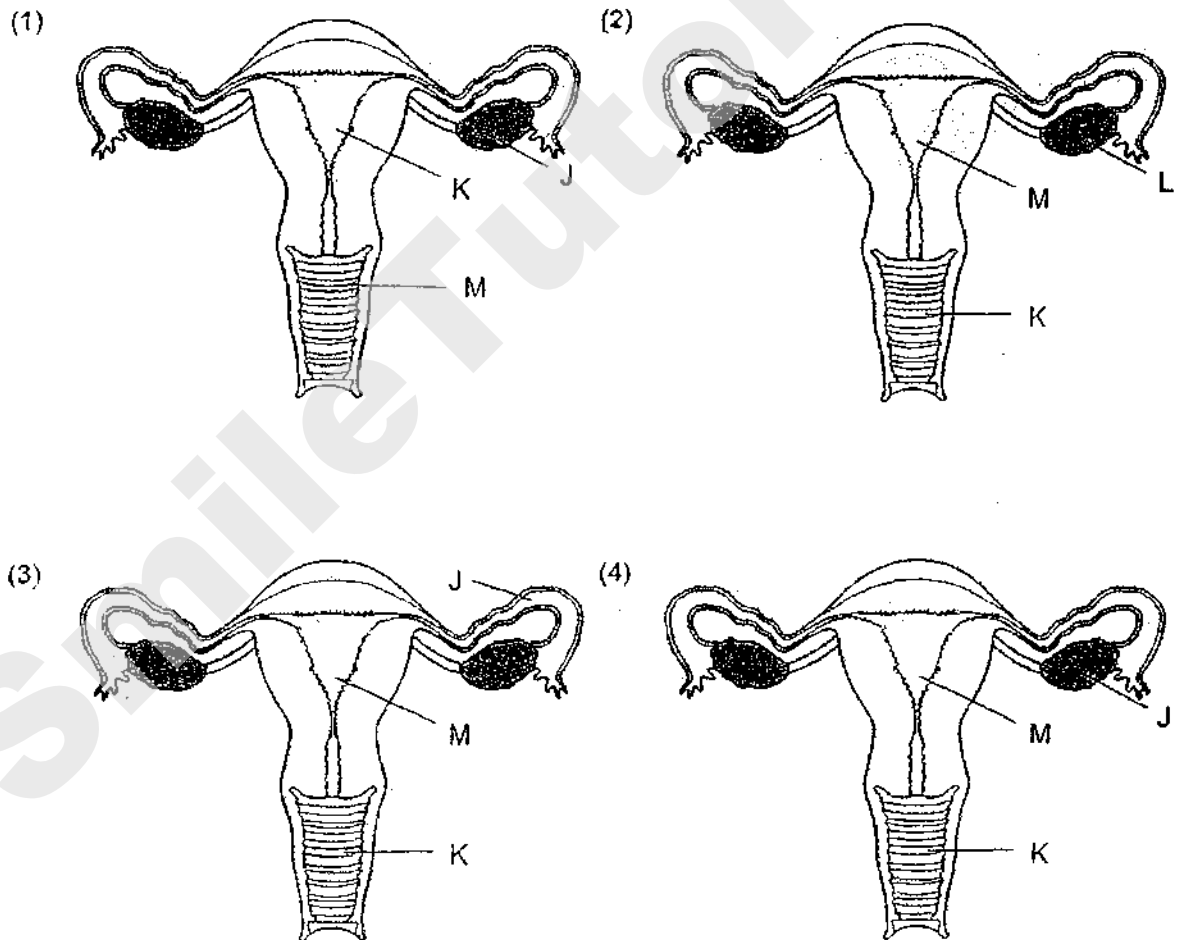
In which box(es) could the seed germinate?

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

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

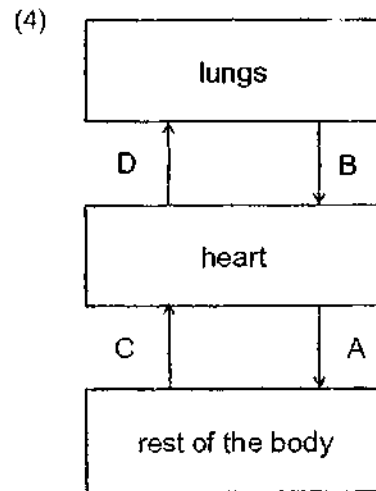
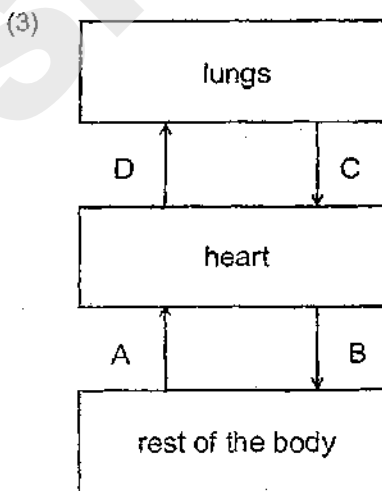
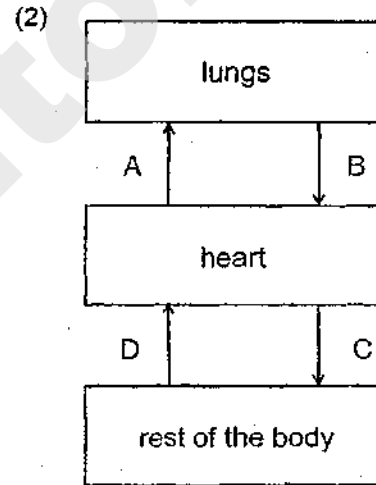
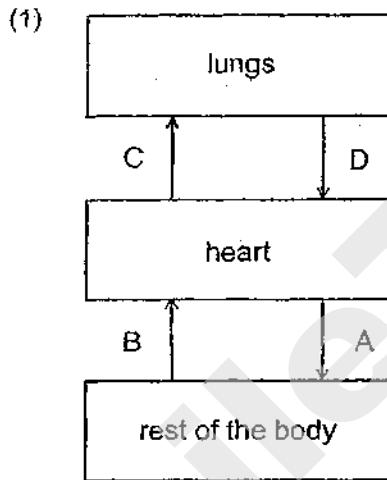
Which one of the following diagrams has been labelled correctly based on the functions above?



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?



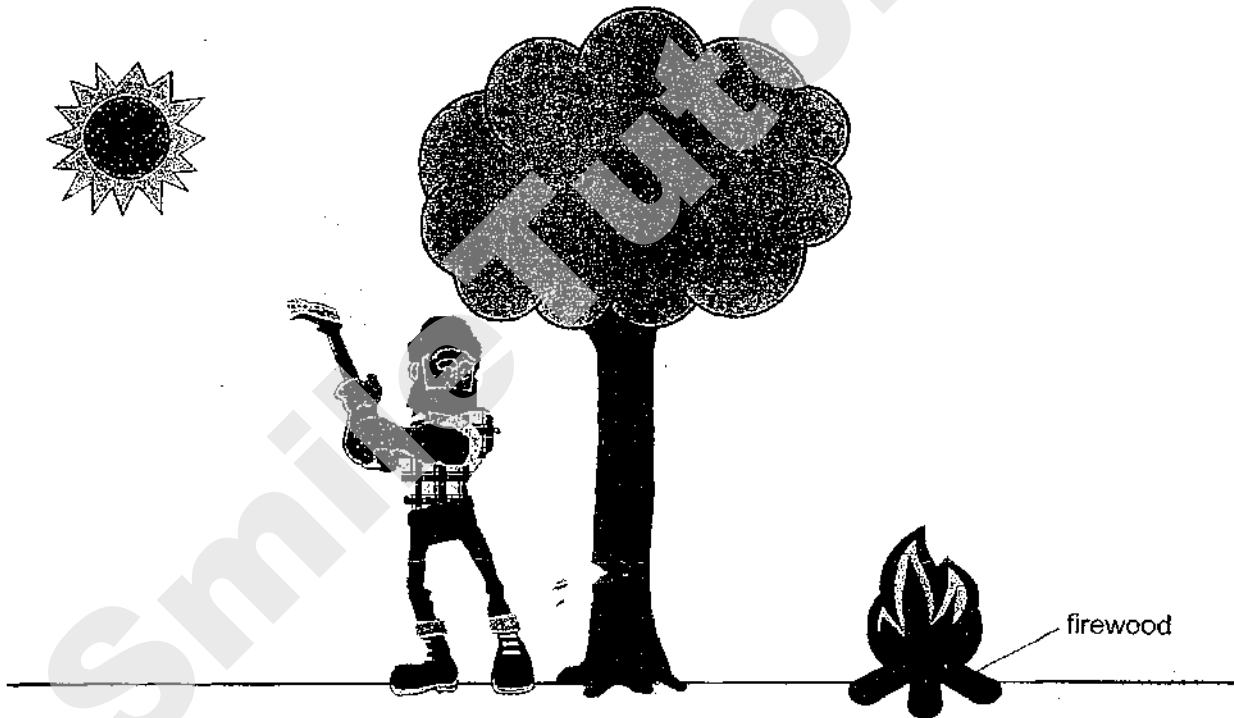
16. Which of the following correctly describes the functions of the digestive system?

- 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
- (3) A, B and C only

- (2) B and D only
- (4) A, B and D only

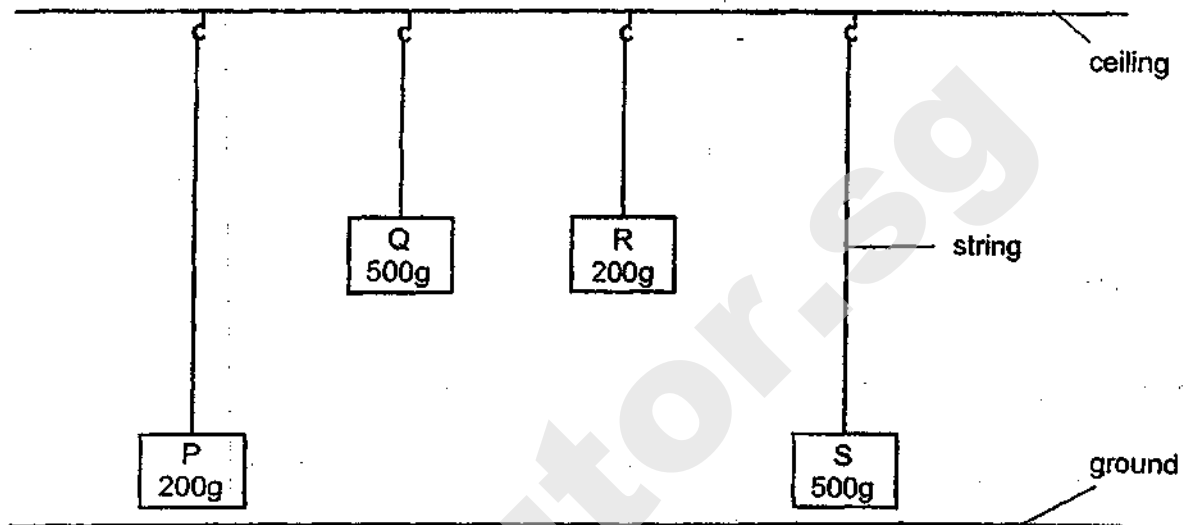
17. John cut down a tree to set up a campfire as shown in the diagram below.



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

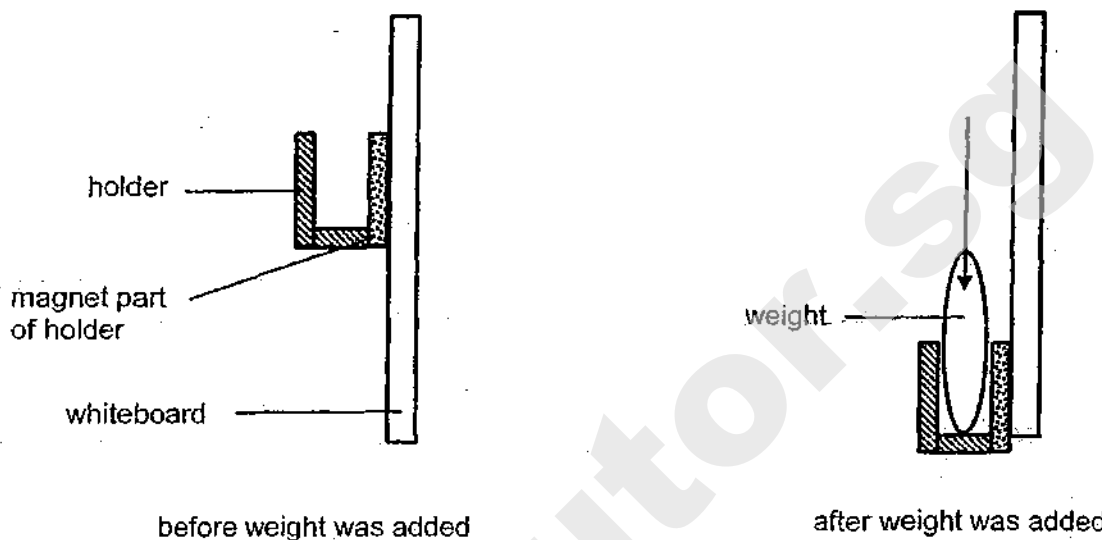
18. Four similar-sized blocks, P, Q, R and S, were set up as shown below.



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.

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.

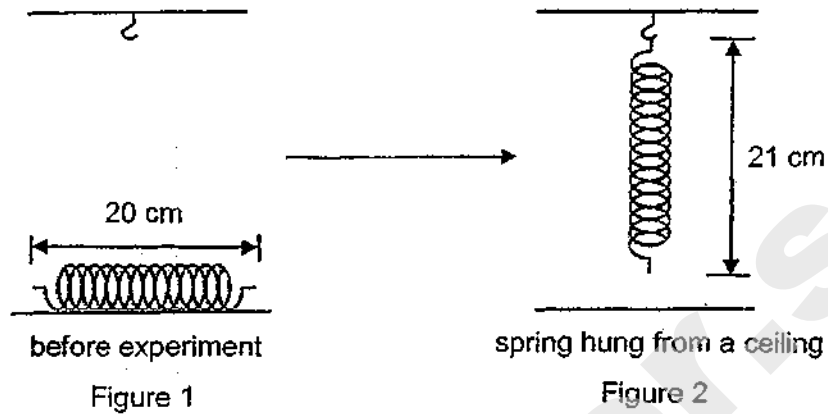


Which of the following forces were present when the holder was sliding down the whiteboard?

- 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

20. A very elastic spring of original length 20 cm was hung from a ceiling and came to rest as shown below.



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

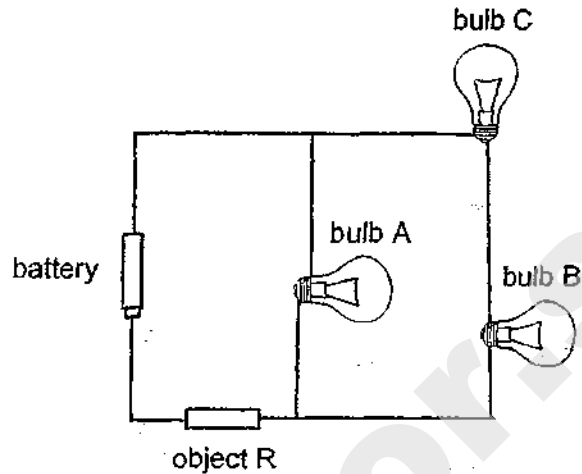
(3) A and C only

(2) A and B only

(4) B and C only



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

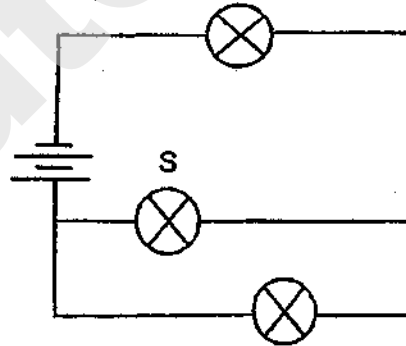
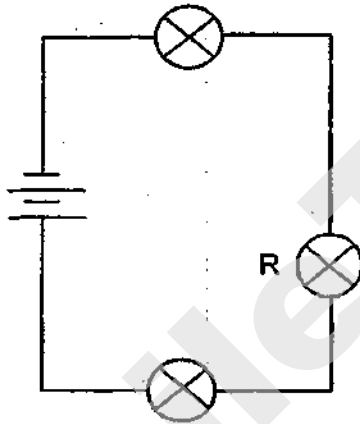
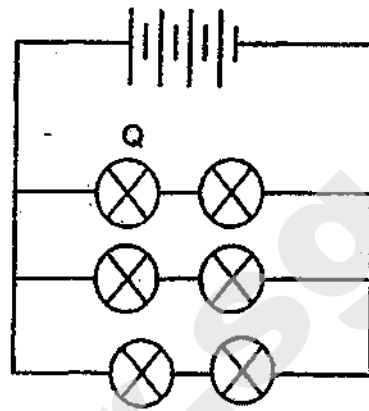
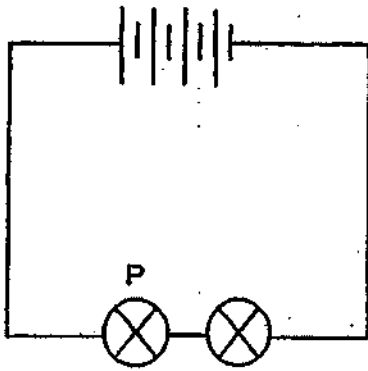
Based on the observations above, which of the following statements are correct?

- 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
- (3) C and D only

- (2) A and C only
- (4) A, B, C and D

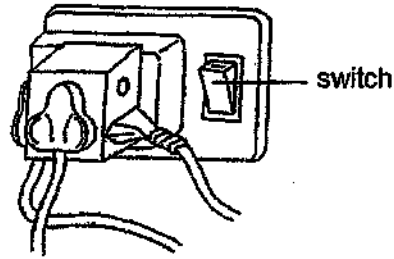
22. Study the four circuit diagrams below.



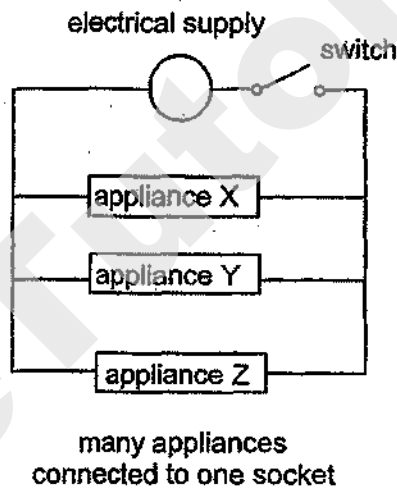
Which two bulbs would have the same brightness?

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

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.



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
- (3) A and C only

- (2) A and B only
- (4) B and C only

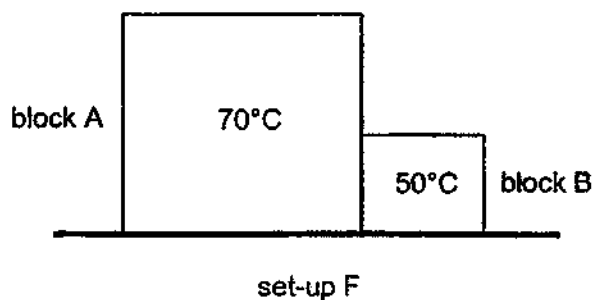
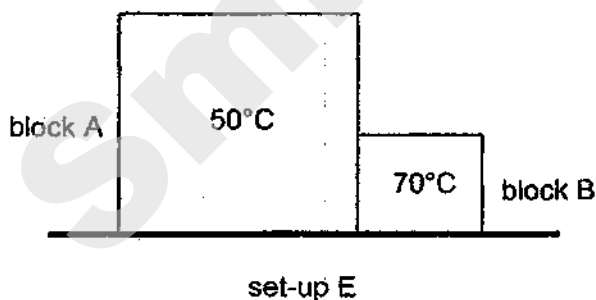
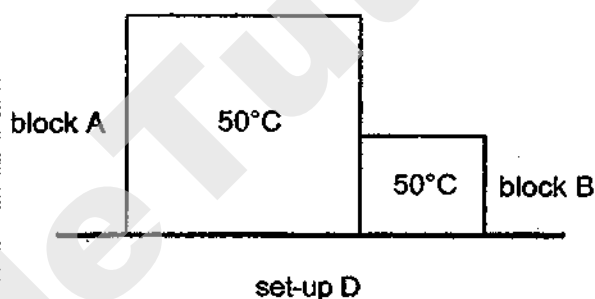
24. Jake is in a completely dark room with several objects. Which of the objects below would he be able to see?

- 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
- (3) A, C and D only

- (2) B and C only
- (4) None of the above

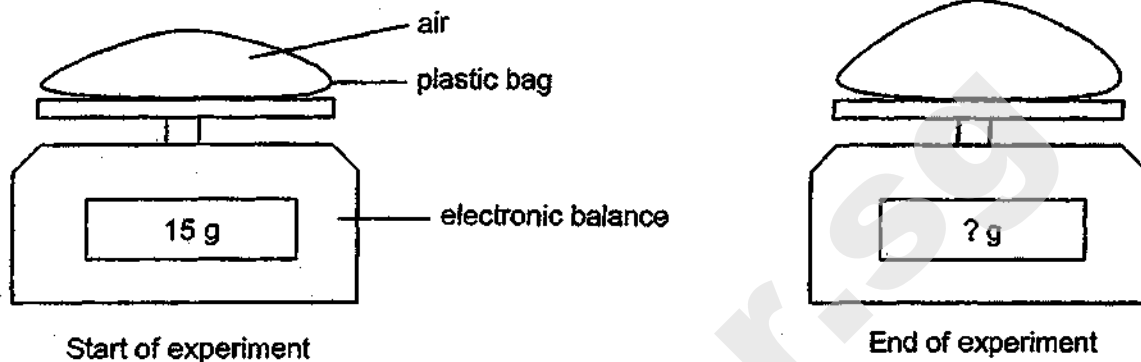
25. Sets of two blocks, A and B, of different sizes were placed side by side. Both blocks A and B are made of the same metal. The temperature of each block at the start of the experiment is indicated in the diagram below.



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

26. A sealed plastic bag of air was left on an electronic balance under the sun for 4 hours as shown below.



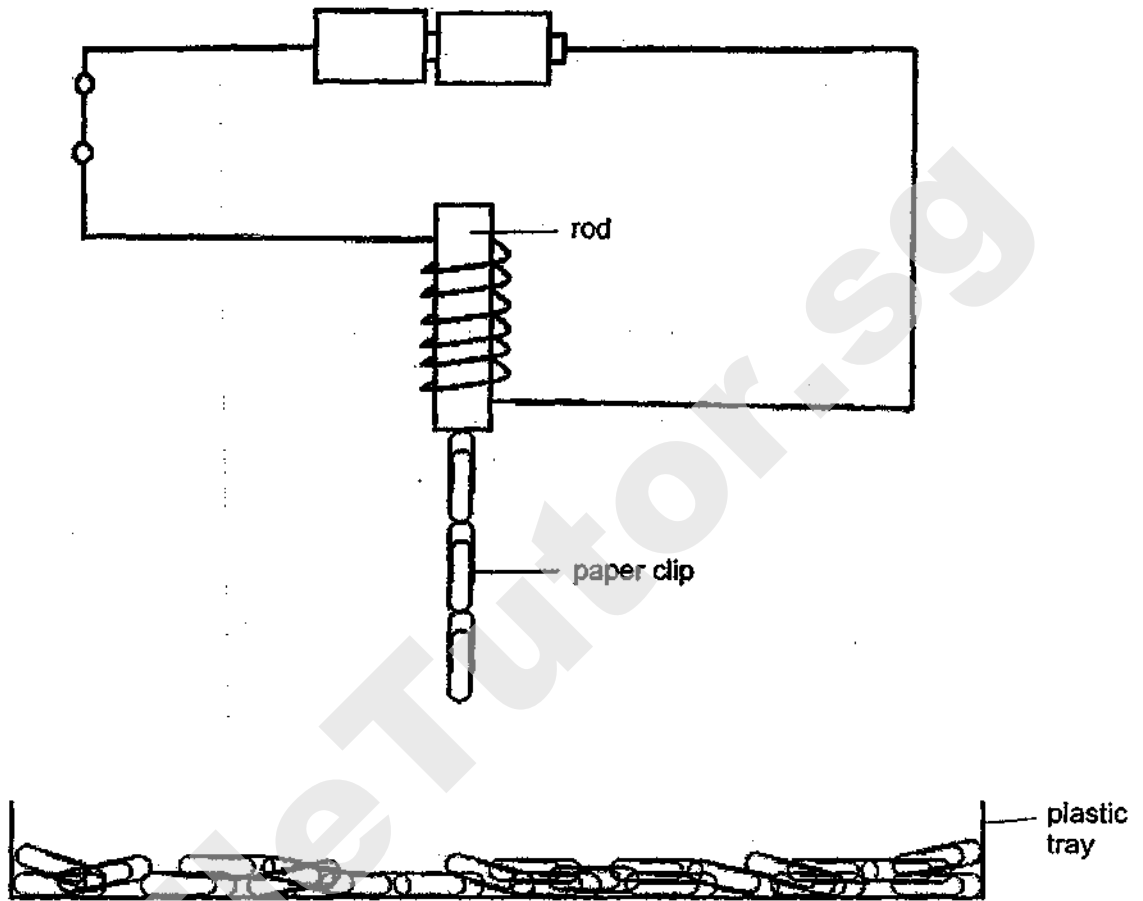
Which of the following statements about the set-up at the end of the experiment are correct?

- 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
- (3) A, B and D only

- (2) B and C only
- (4) A, C and D only

Study the diagram below and answer Questions 27 and 28.



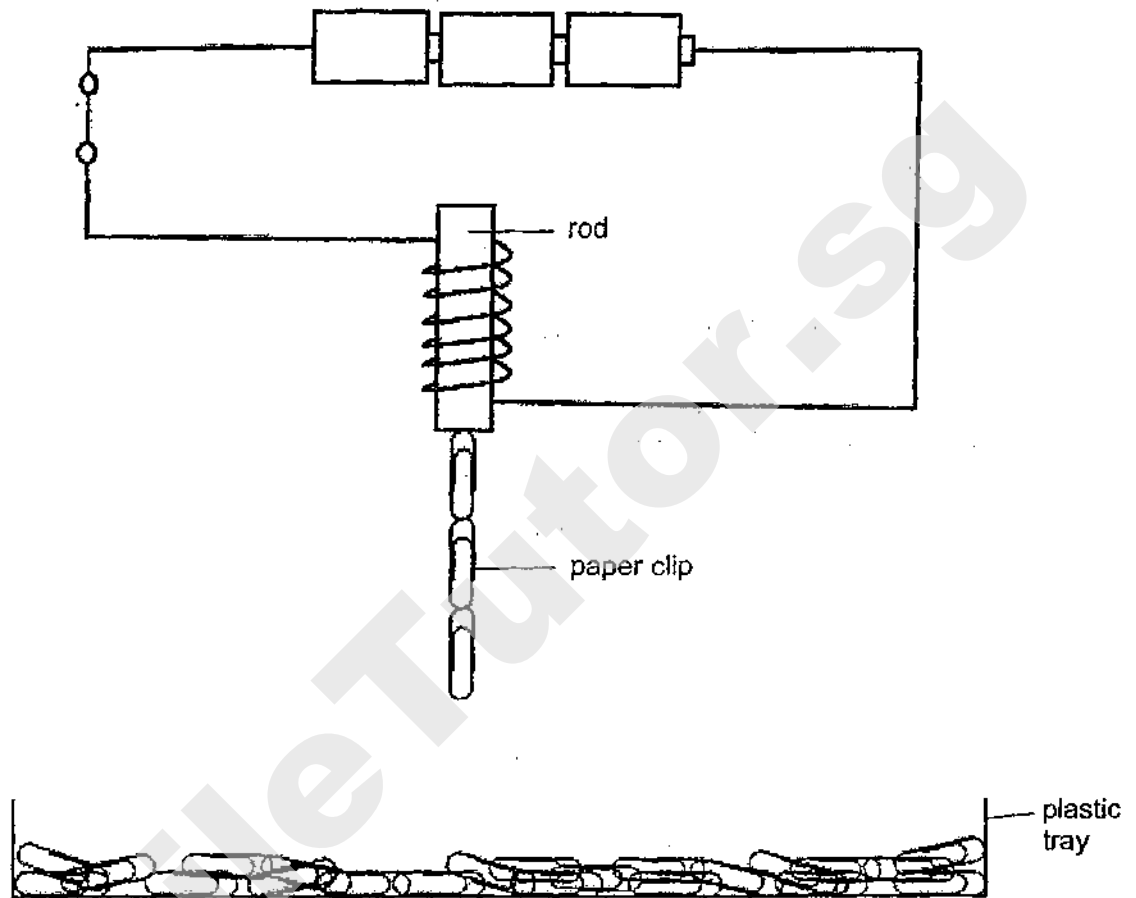
27. Which of the following are materials that the rod can be made of?

- A iron
- B steel
- C wood
- D copper

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

- (2) B and C only
- (4) A, B and D only

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  
(3) B and C only

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

~ END OF BOOKLET A ~

SmileTutor.sg





**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:**

<b>Booklet A:</b>		<b>56</b>
<b>Booklet B :</b>		<b>44</b>
<b>Total :</b>		<b>100</b>

**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.**

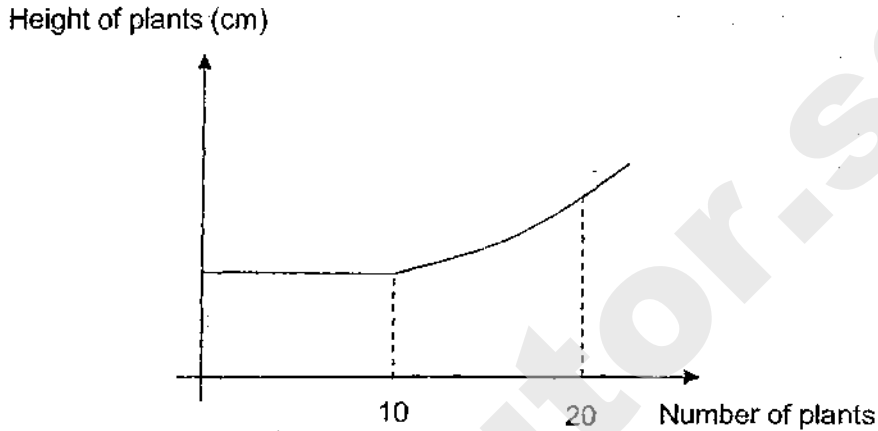
**Booklet B consists of 17 printed pages including this cover page.**

**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.



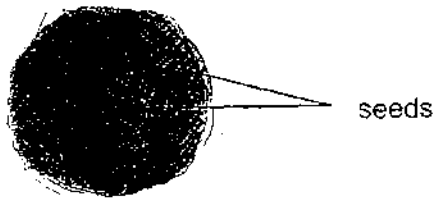
- (a) What is the relationship between the number of plants grown and the height of the plants? [2]

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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.



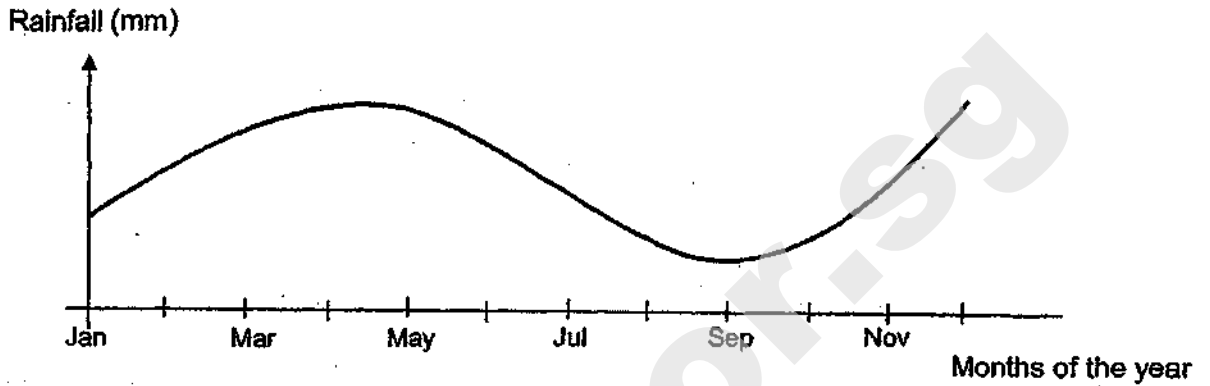
- (b) Explain why using seedballs with more than 10 seeds leads to taller and healthier seedlings. [1]

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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.

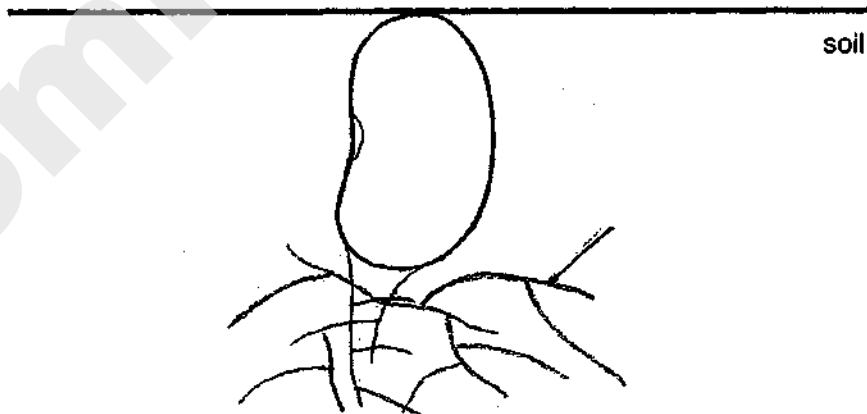


- (c) Based on the graph above, explain why despite releasing a large number of seedballs of plant P in September, the population of plant P remained low. [1]

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- (d) The diagram below shows a seed. Draw and label the part that will appear first when it germinates. [1]



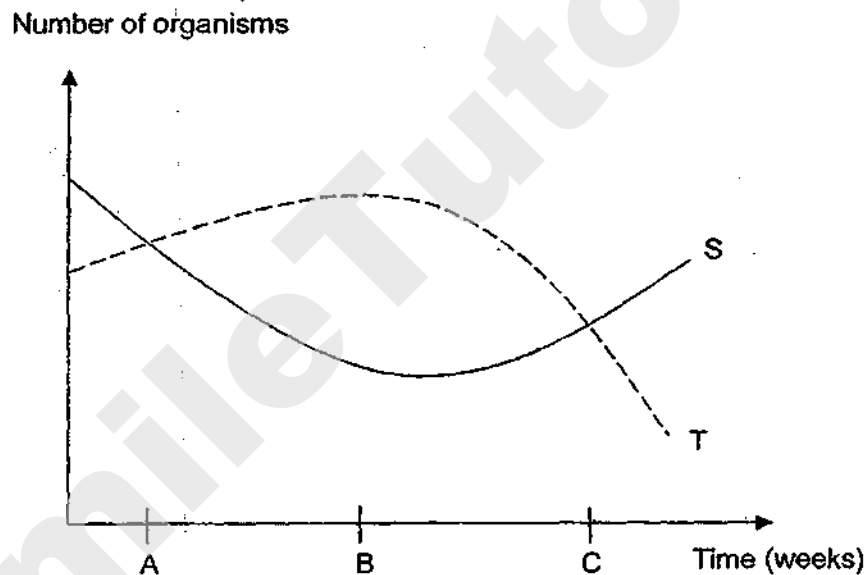
30. The table below shows the food relationships among organisms S, T and U in a habitat.

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 <sup>2</sup> )	Start temperature (°C)	Final temperature (°C)
A	24	80	56
B	28	80	44
C	32	80	36

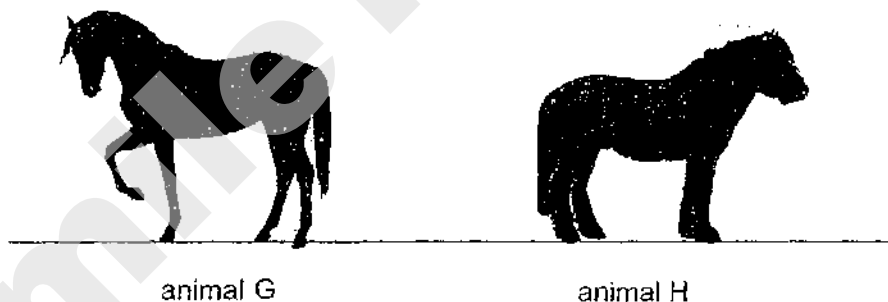
- (a) State the relationship between the exposed surface area of the object and the amount of heat lost by the object. [1]

---



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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.



- (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]

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- (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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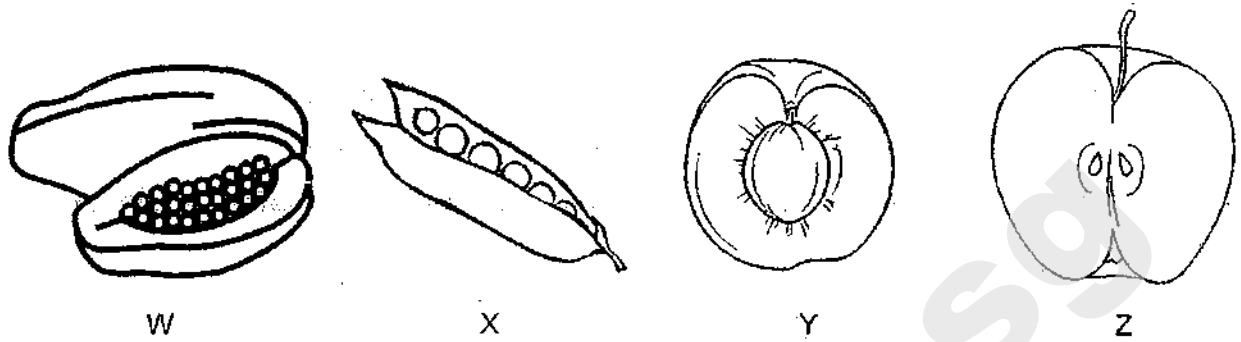


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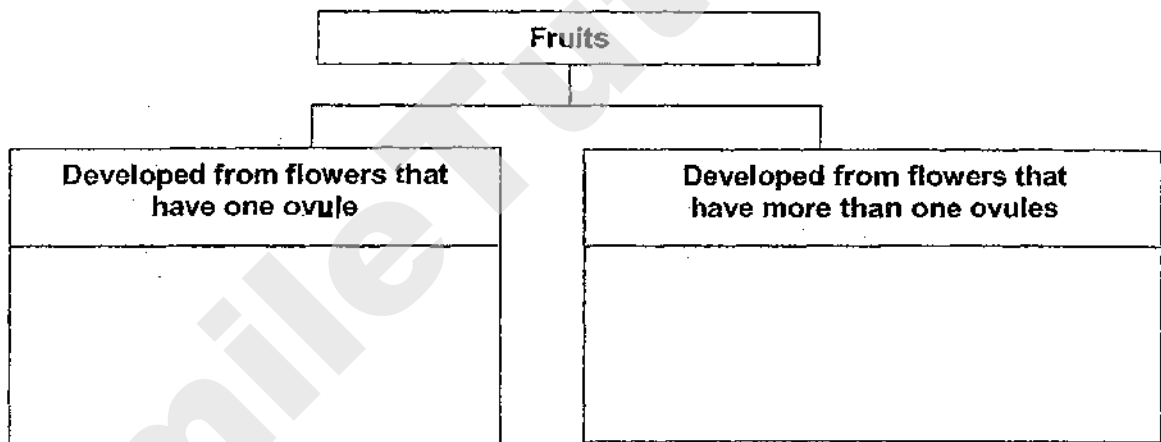
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32. The diagram below shows fruits, W, X, Y and Z, which have been cut open.

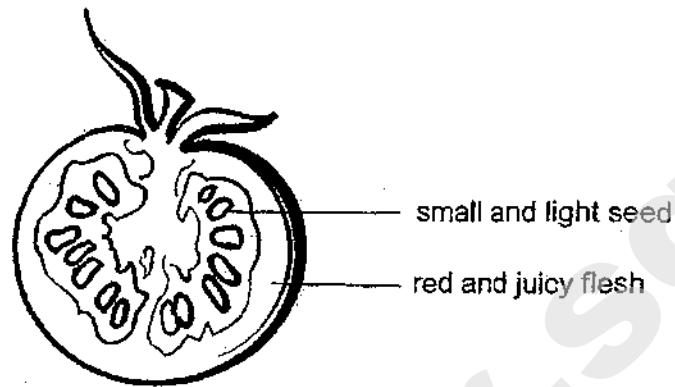


(a) Fill in the classification chart below with fruits W, X, Y and Z.

[1]



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]

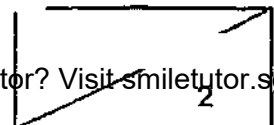
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(b)(ii) Based on the diagram, explain why Fion is wrong. [1]

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33. Aisha was told that she needed to eat food in order to have energy to carry out activities.

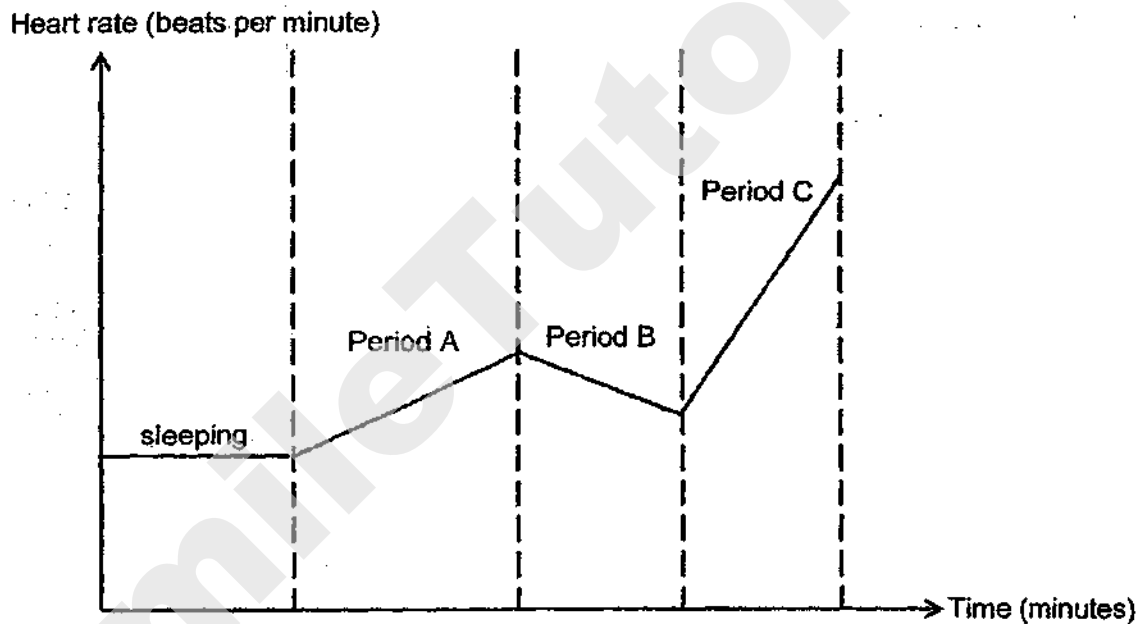
(a) Describe what happens to the digested food after it passes through the walls of the small intestine. [2]

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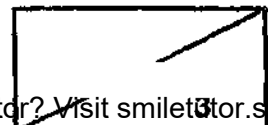
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The graph below shows Aisha's heart rate while she was performing different activities.



(b) Match the following activities to the periods, A, B and C, shown above. [1]

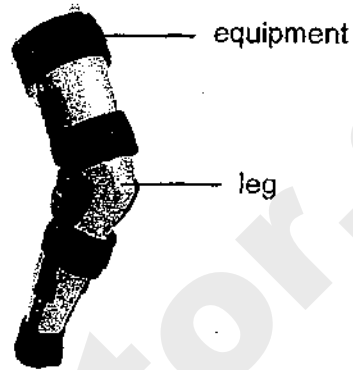
Activity	Period
Running	
Reading	
Sweeping	





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]

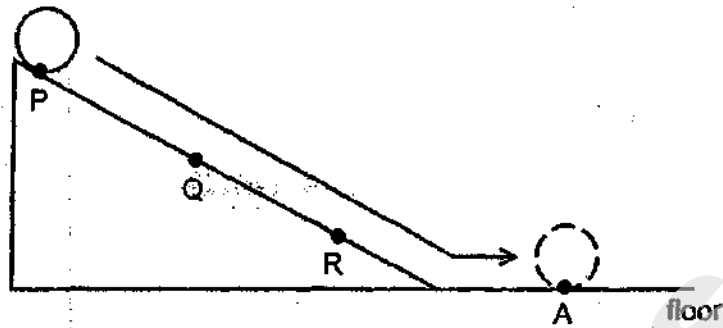
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- (b) What is the similarity in function between the body system mentioned in (a) and the equipment above? [1]

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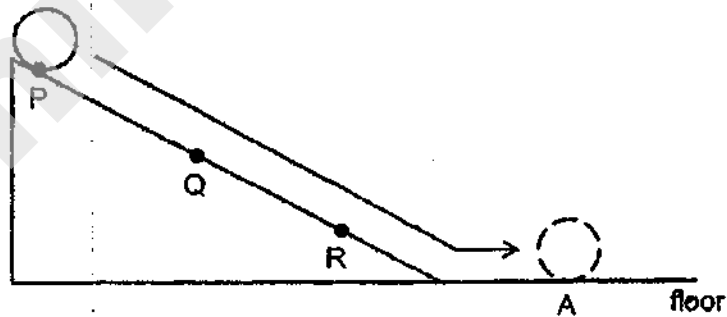
35. A ball was released from point P of a ramp. It rolled down through points Q and R and came to a stop at point A as shown in the diagram below.



- (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]

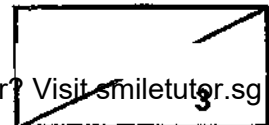
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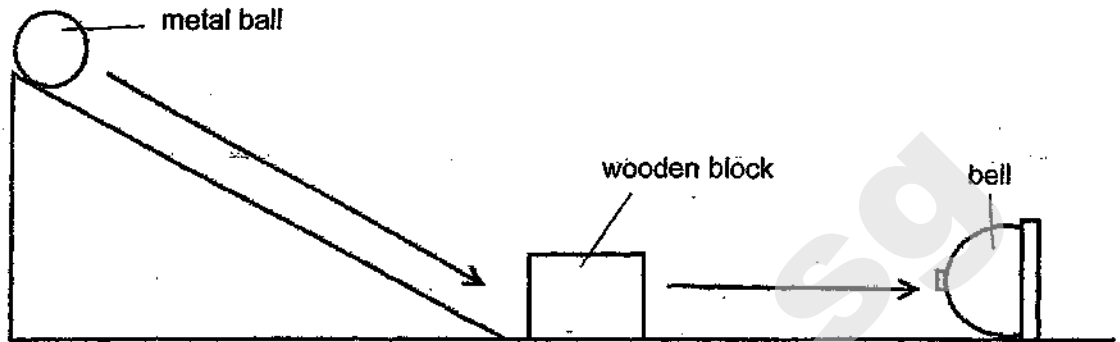
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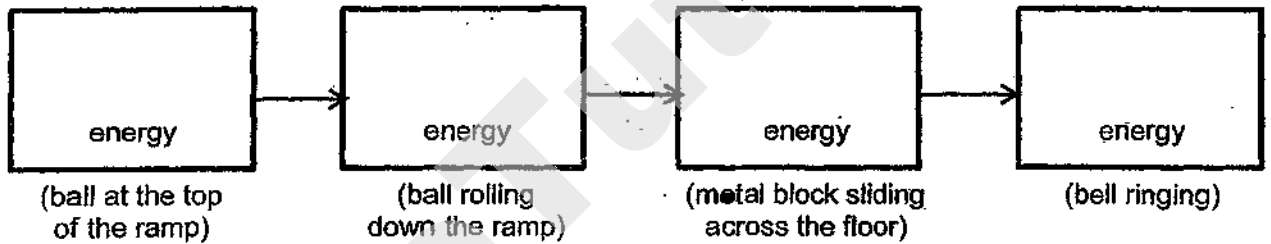
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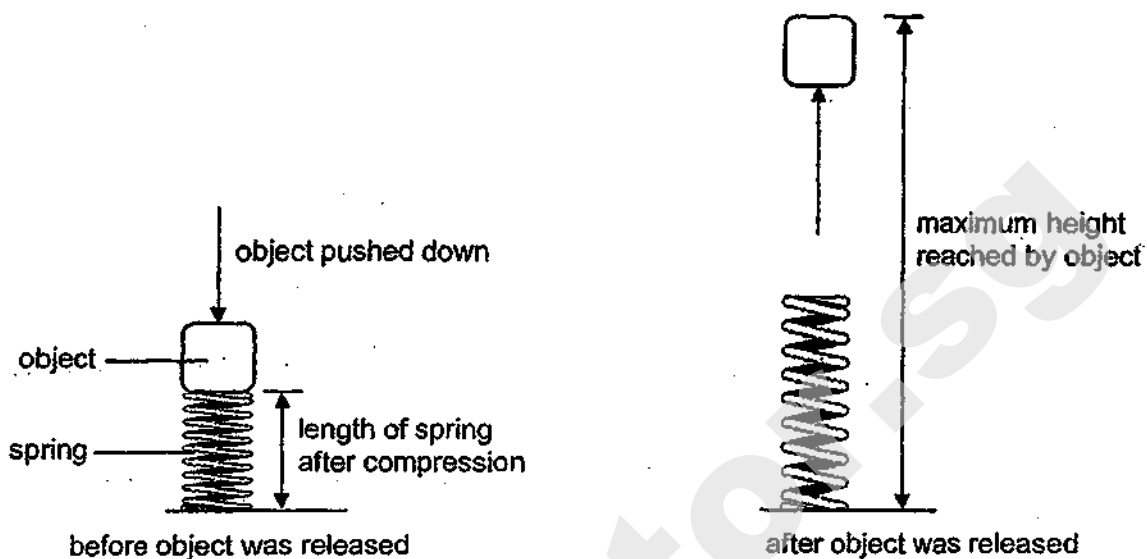
Georgina wanted to show how she could use a metal ball to ring a bell. She arranged the set-up as shown below.



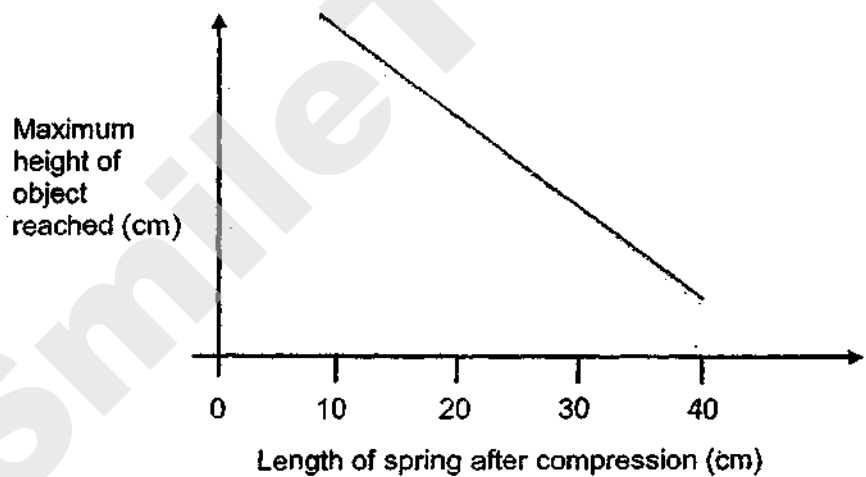
(c) Fill in the boxes below to show the main energy conversion in the set-up above. [2]



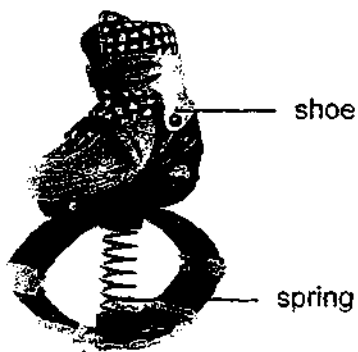
36. An experiment was conducted to find out the height reached by an object using a spring compressed to different lengths as shown below.



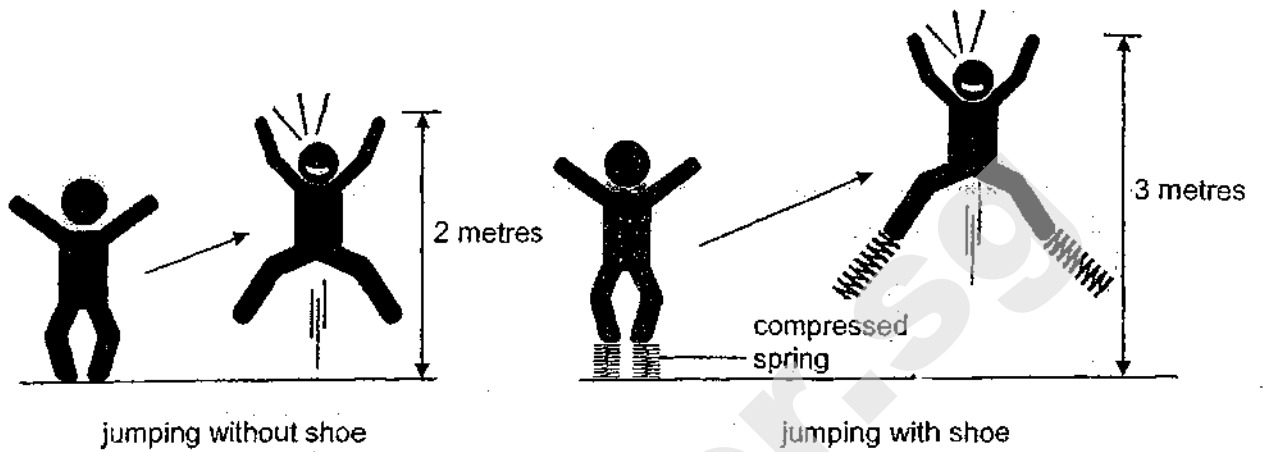
(a) The spring can be compressed to the shortest length of 10 cm. Draw a line graph below to show the most likely results obtained. [1]



The diagram below shows a jumping shoe made up of a shoe and a spring.



The diagram below shows the maximum height reached by the same user when jumping with and without the shoes.



- (b) In terms of forces, explain the effects of jumping with the shoes on. [2]

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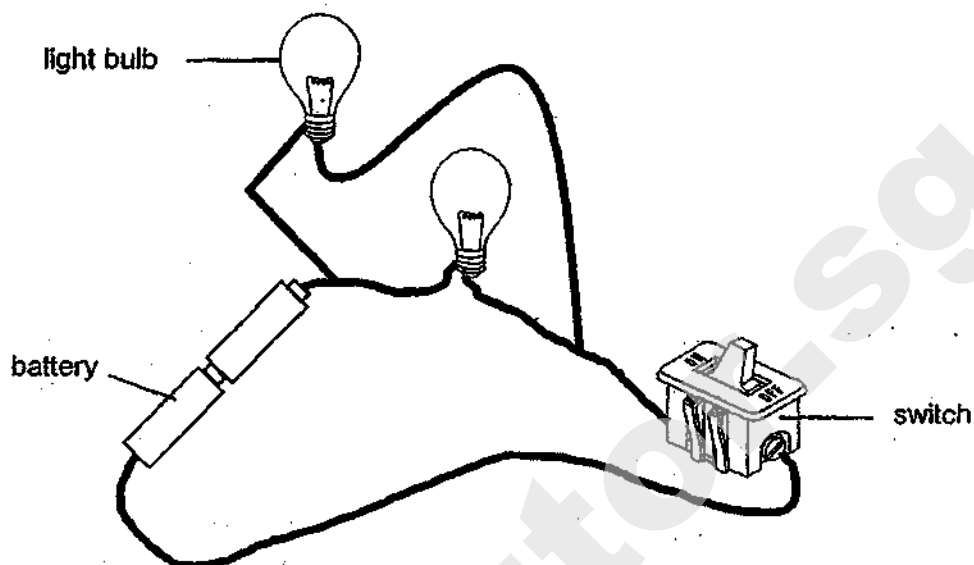
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John bought a new pair of jumping shoes which has a stiffer spring.

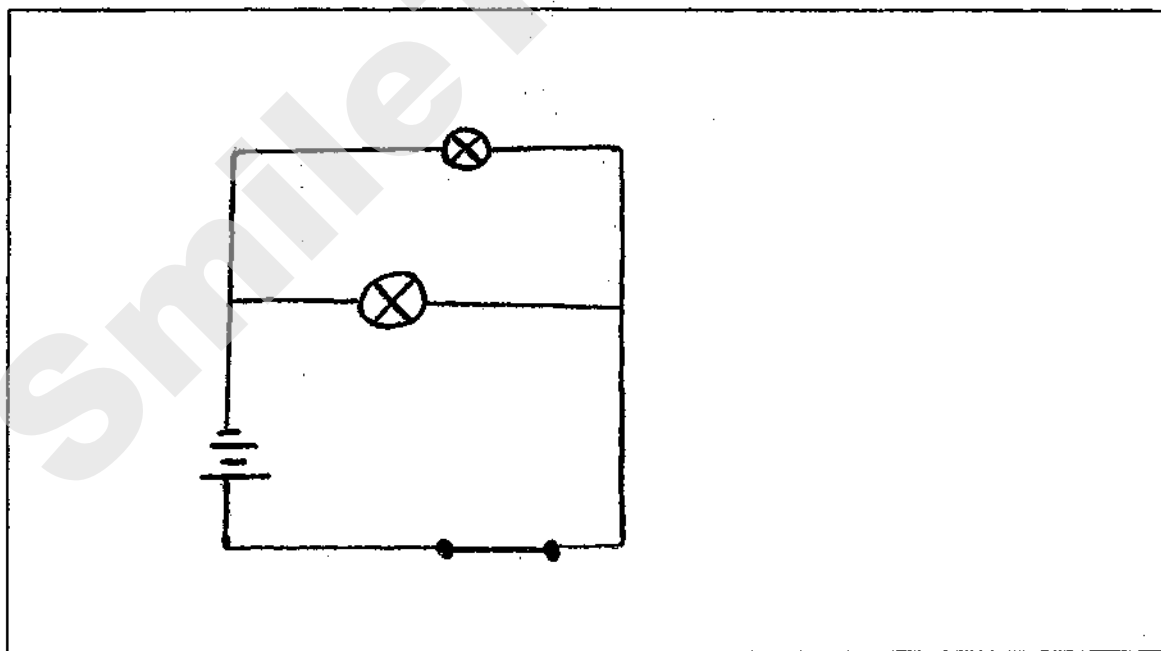
- (c) Complete the table below to show the maximum height reached by the same user when jumping with this new pair of shoes. [1]

Jumping shoe	Maximum height reach (m)
With original spring	3
With stiffer spring	

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]

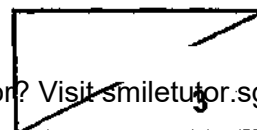


- (b) Glenda added more batteries to the circuit and realised that both bulbs fused. Explain why the bulbs would not light up after they had fused. [1]

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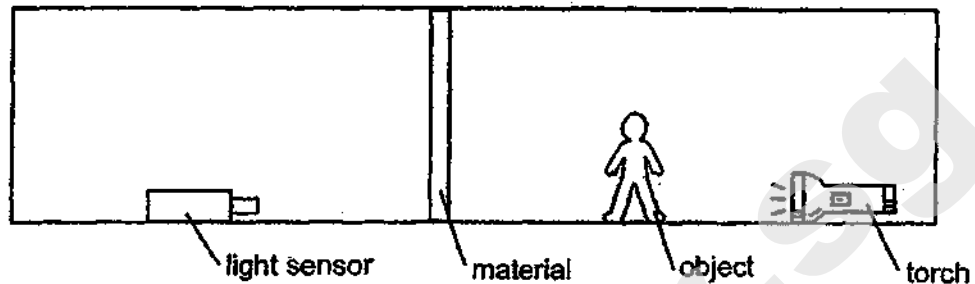


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38. Tim conducted an experiment to find a suitable material to paste over his bathroom window so that no one could see through the window,

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

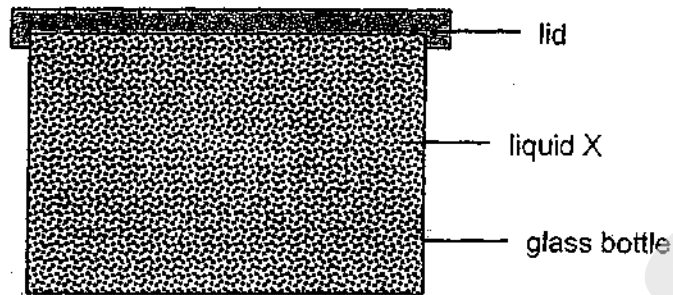
- (a) Based on the table above, which set-ups should Tim use to conduct his experiment? [1]

- (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]

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.

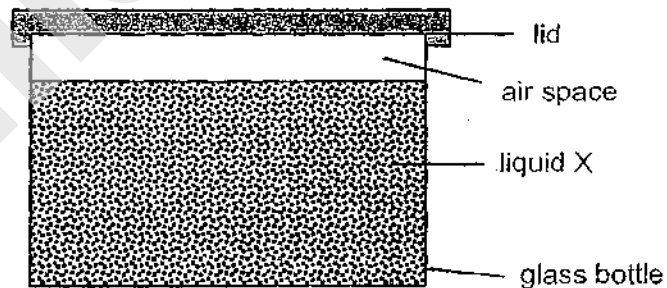
- (a) Explain why liquid X leaked out of the bottle. [2]

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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]

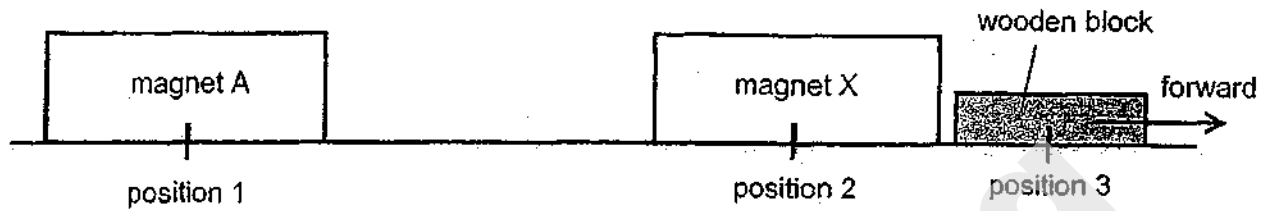
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40. Eddie used the set-up shown below to investigate the effect of magnetic forces.



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]

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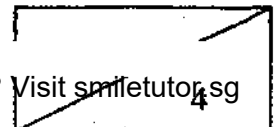
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- (c) Give one possible reason why when magnet D was placed at position 1, the distance travelled by the wooden block was 0 cm. [1]

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~ END OF BOOKLET B ~




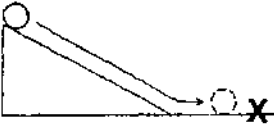
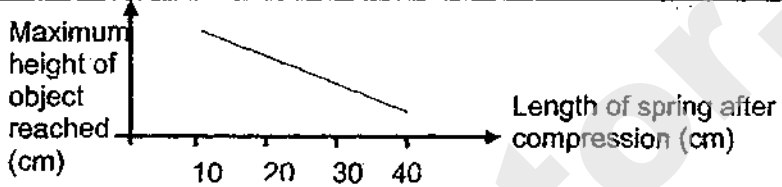
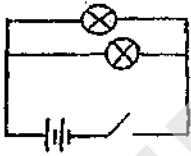
SmileTutor.sg

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 <b>less T to feed on S</b> . There will be <b>more S to feed on U</b> .								
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).	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td colspan="2" style="text-align: center;">Fruits</td></tr> <tr><td style="text-align: center;">Developed from flowers that have one ovule</td><td style="text-align: center;">Developed from flowers that have more than one ovules</td></tr> <tr><td style="text-align: center;">Y</td><td style="text-align: center;">W X Z</td></tr> </table>	Fruits		Developed from flowers that have one ovule	Developed from flowers that have more than one ovules	Y	W X Z		
Fruits									
Developed from flowers that have one ovule	Developed from flowers that have more than one ovules								
Y	W X Z								
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).	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Activity</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>Running</td> <td>C</td> </tr> <tr> <td>Reading</td> <td>B</td> </tr> <tr> <td>Sweeping</td> <td>A</td> </tr> </tbody> </table>	Activity	Period	Running	C	Reading	B	Sweeping	A
Activity	Period								
Running	C								
Reading	B								
Sweeping	A								
34(a).	Skeletal system								
34(b).	Both ensure that the body remain upright. or Both support his body/leg.								

35(a).	<b>Types of Energy</b>	<b>Increase</b>	<b>Decrease</b>	<b>Remains the same</b>
	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 <u>higher</u> . When jumping with the shoes, there is elastic spring force of the spring (together with the push force of the legs), resulting in <b>more</b> 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 <b>opaque</b> / 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.			



# 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)

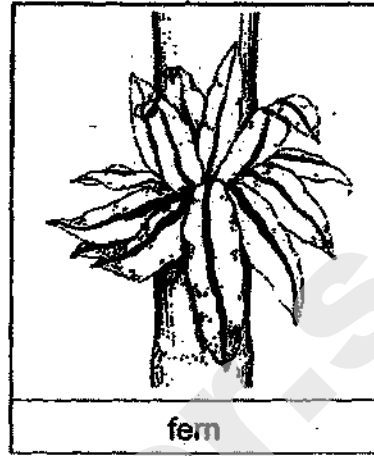
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

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

2. The diagrams below show a mushroom and a fern.

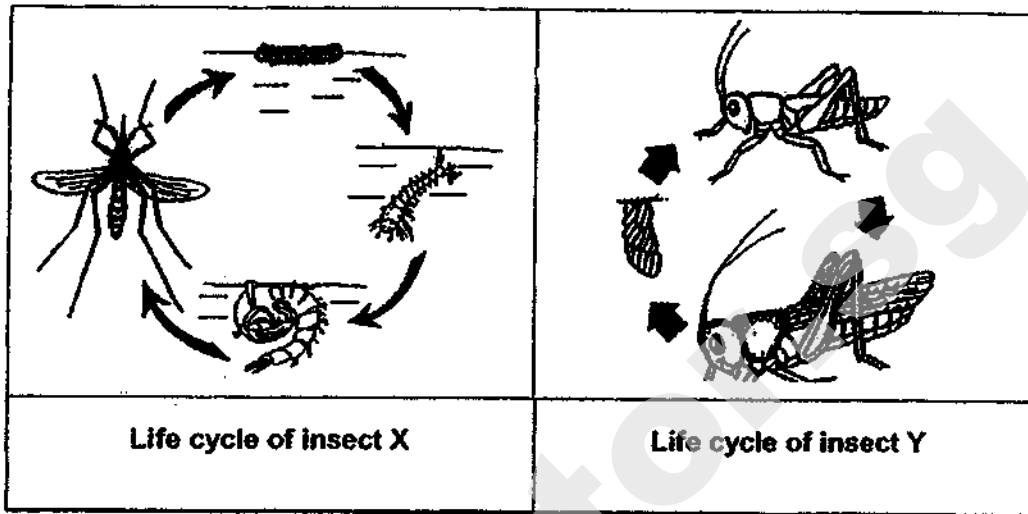


Which of the following comparison(s) between mushroom and fern is/are incorrect?

- 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

3. Study the life cycles of insects, X and Y, as shown below.

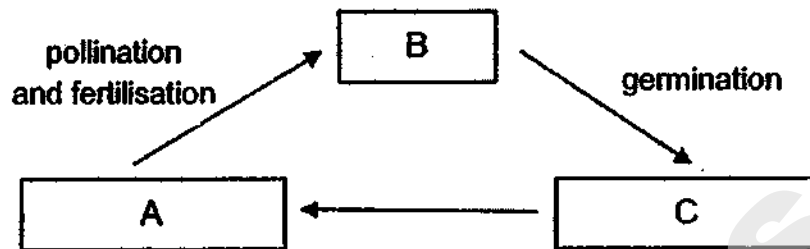


Based on the diagrams above, which of the following statements are true?

- 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

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

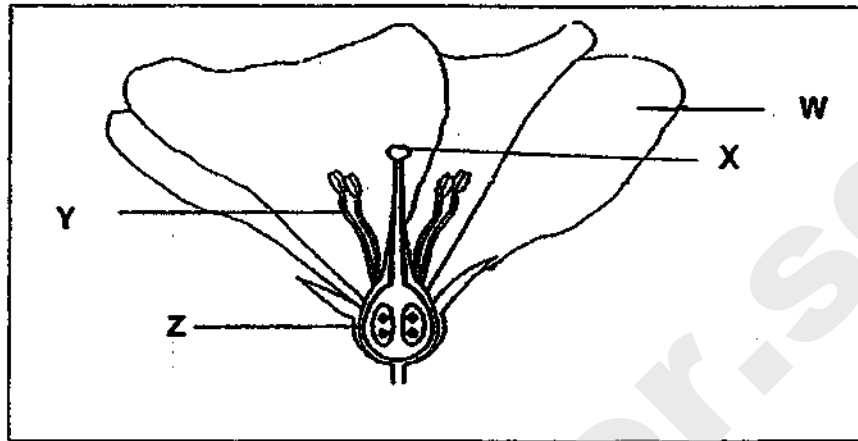
5. Which of the following statements about heredity is/are true?

- 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



6. The diagram below shows the cross-section of a flower.



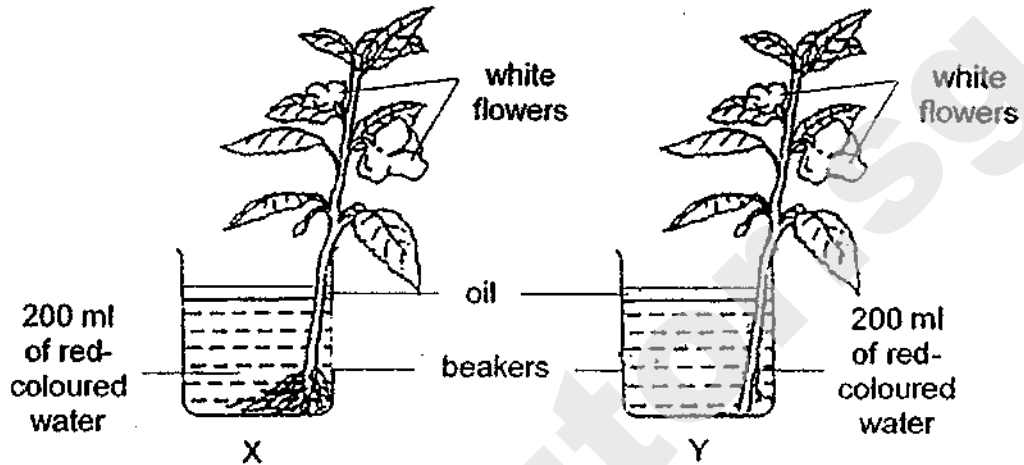
Four similar flowers, A, B, C and D, had some part(s) removed from them as shown in the table below. A cross (x) shows the part(s) removed.

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

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.

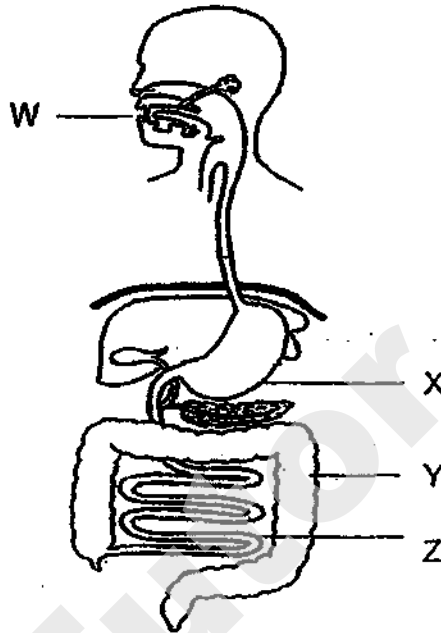


Which of the following observations would allow Amanda to draw conclusion for her experiment?

- 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

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

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.

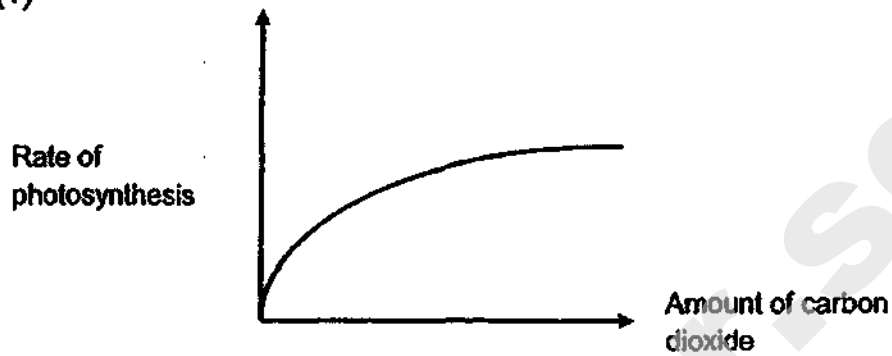
Parts of cell	Cells from Organisms		
	X	Y	Z
nucleus	✓	✓	✓
chloroplast			✓
cell wall	✓		✓
cell membrane	✓	✓	✓

Which one of the following statements is incorrect?

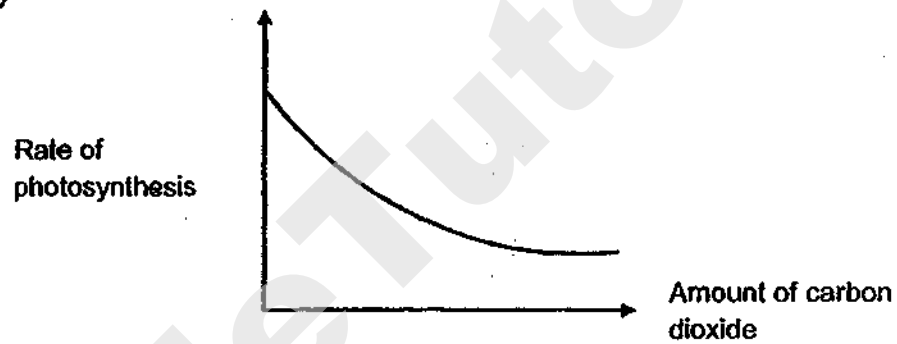
- (1) Organism Y could be an animal.
- (2) Organism Z is able to make food.
- (3) The cells of organisms Y and Z are taken from the same plant part.
- (4) The cells of organisms X, Y and Z allow certain types of substances to move in and out their cells.

10. Which one of the following graphs correctly shows how carbon dioxide affects the rate of photosynthesis ?

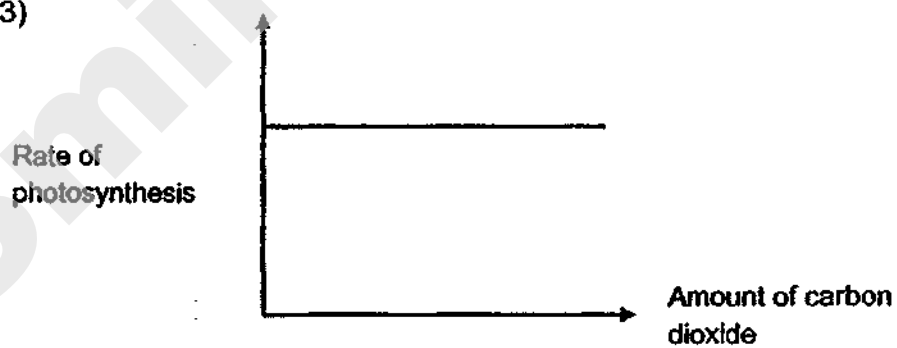
(1)



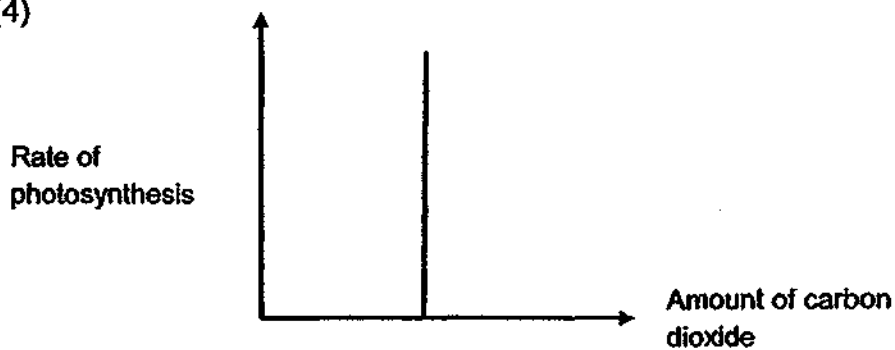
(2)



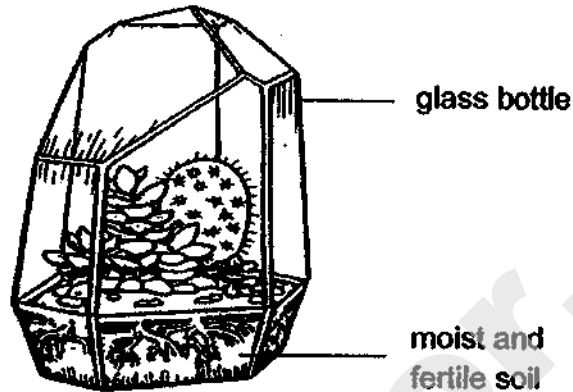
(3)



(4)



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.

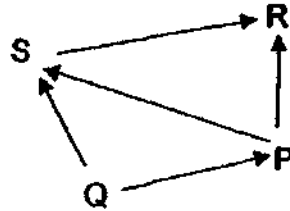


Which of the following statement(s) is/ are correct?

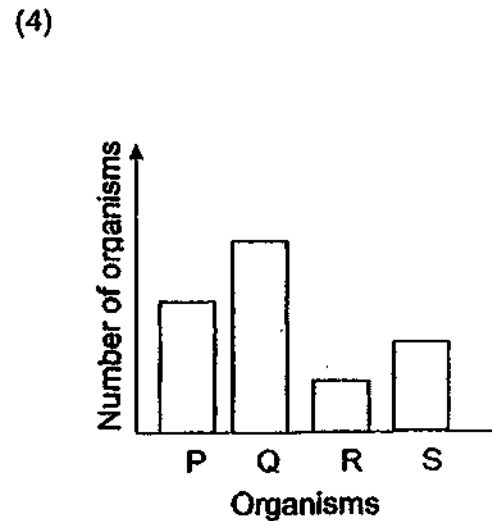
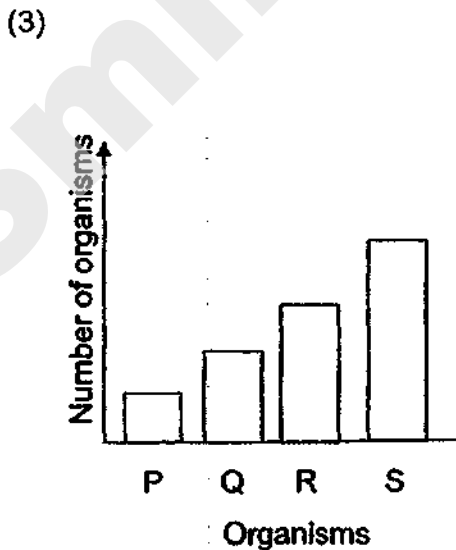
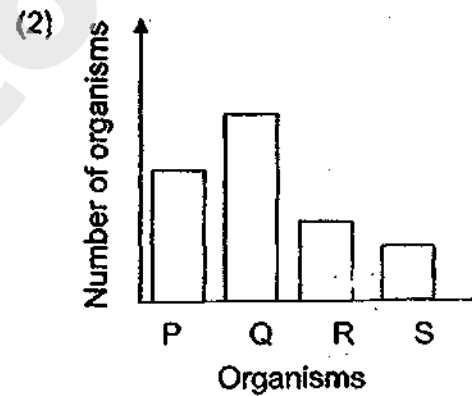
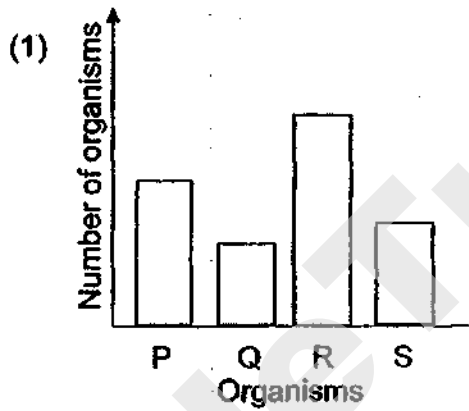
- A The plant would die three days later as there was no air.
- B The plants could only carry out photosynthesis but not respiration.
- C The plants survived as there was a constant supply of air and water.
- D The water in the soil would dry up and the plants would have no water.

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

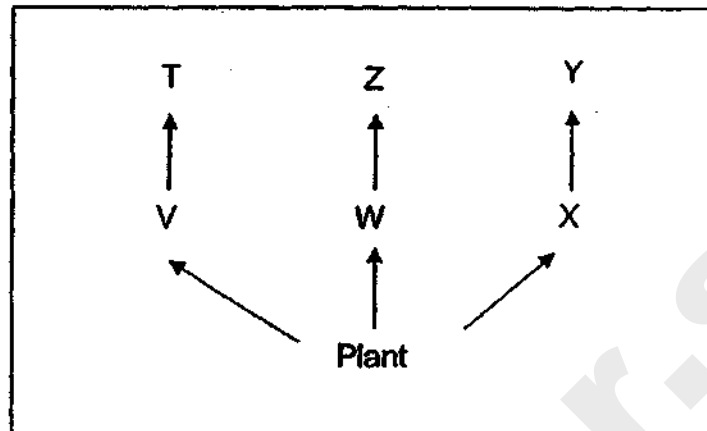
12. The diagram shows a food web. Organisms P, Q, R and S are found in the same community.



Which one of the following graphs correctly represents the number of organisms present in that community?



13. Study the following food web in a field.



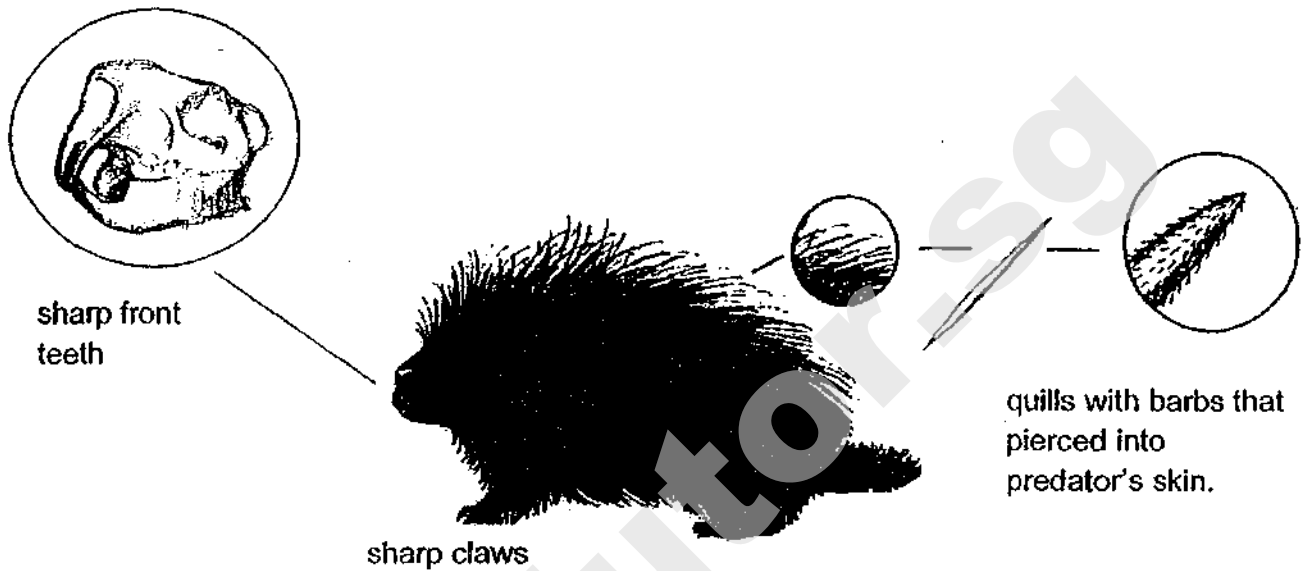
The use of pesticide in the field resulted in the death of most organism V and organism W only.

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



14. Porcupines are very well adapted to live in the forest. They eat leaves, twigs, buds and even barks of trees.



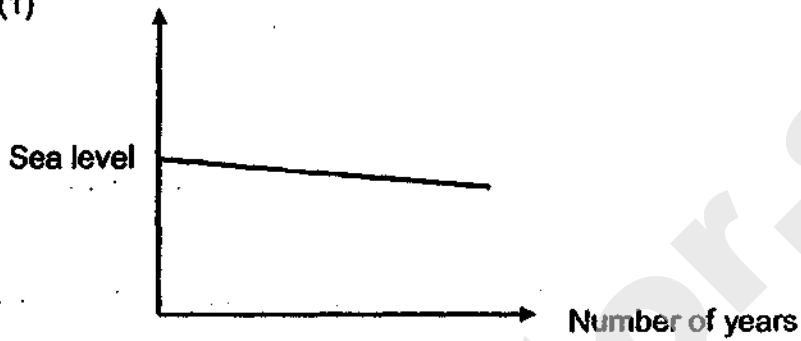
Which one of the following is a behavioural adaptation of the porcupine that enables it to survive well in the forest?

- (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.

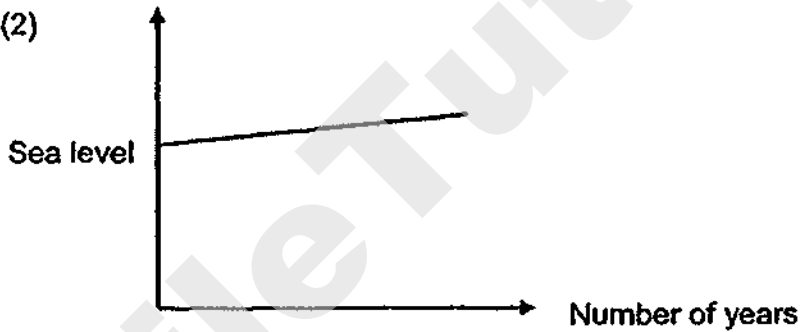
15. The four graphs below show the changes in global sea levels over a period of time.

Which one of the following most likely shows the effect of continual deforestation activities on the sea level over time?

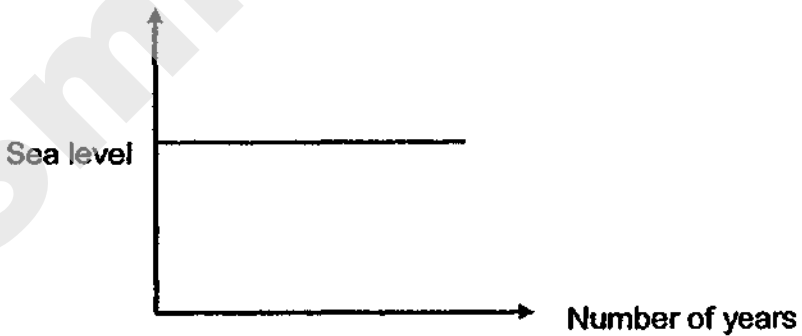
(1)



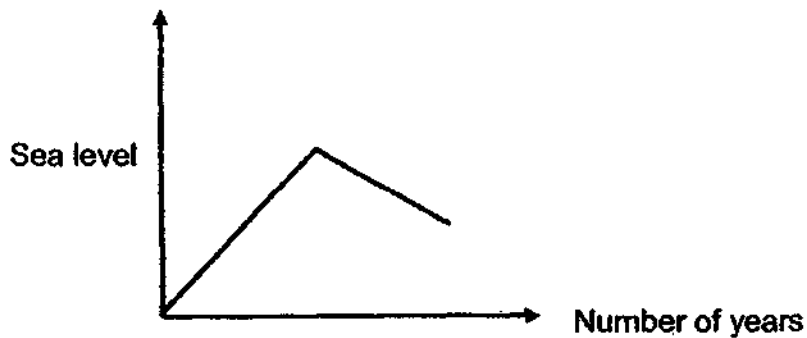
(2)



(3)



(4)

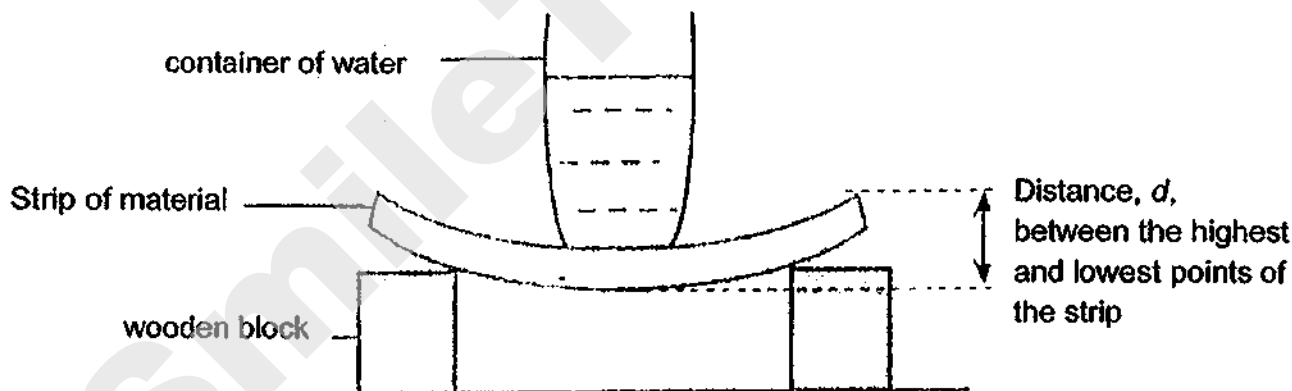


16. The table below shows how the amount of sugar produced by plants is affected by light intensity.

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.



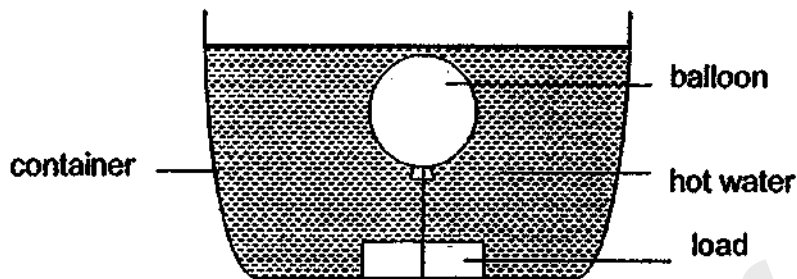
She placed a container containing  $100 \text{ cm}^3$  of water on each strip of material and she recorded the distance,  $d$ , as shown in the table below.

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

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?

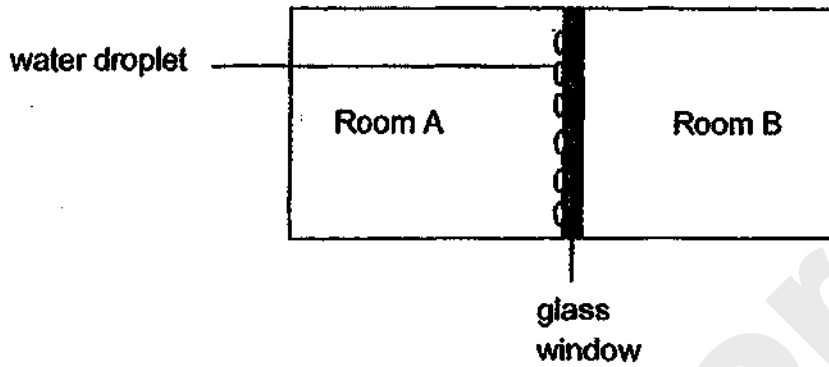
- (1) The balloon expanded and increased in mass.
  - (2) The hot water expanded and occupied more space.
  - (3) The hot water increased in mass and occupied more space.
  - (4) The air in the balloon expanded and occupied more space in water.
19. The table below shows the melting and boiling points 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

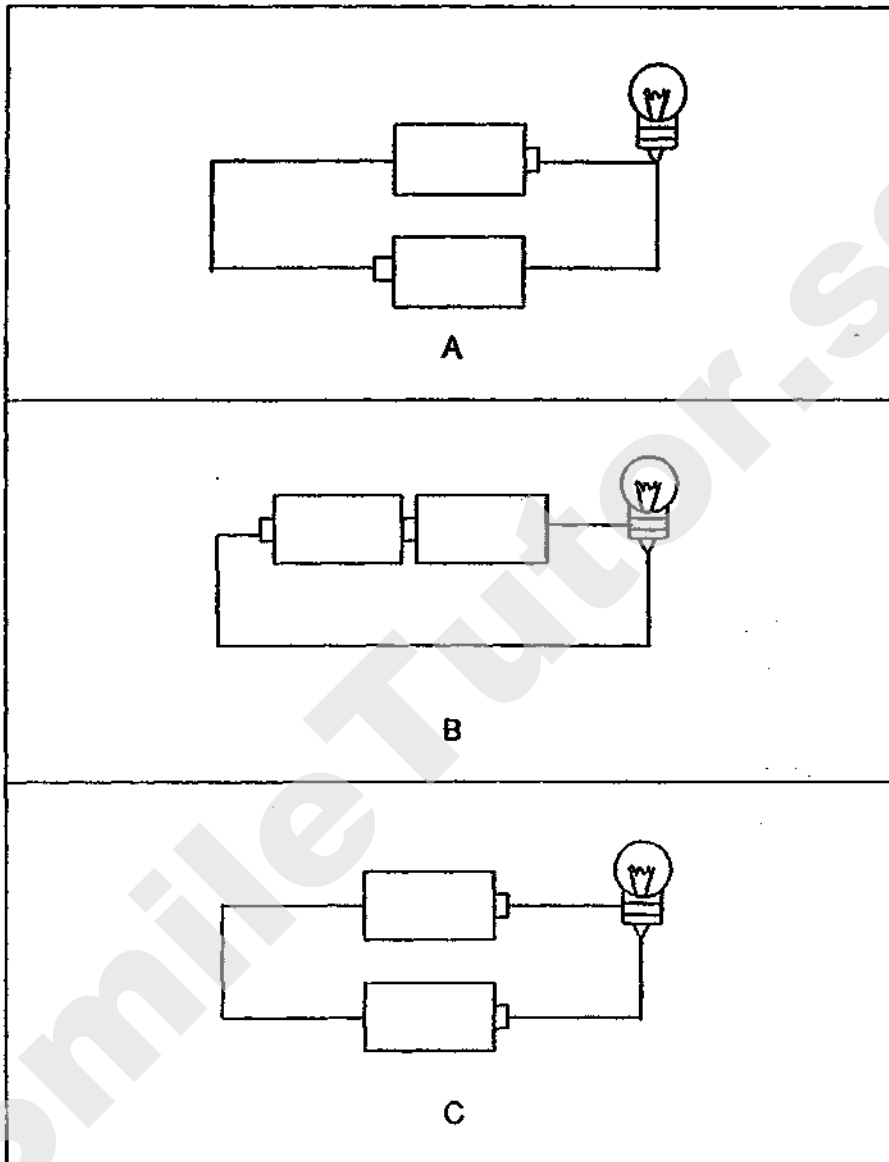
20. Two rooms, A and B, are separated by a glass window. Tiny water droplets are observed on the glass window in room A as shown below.



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

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

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.

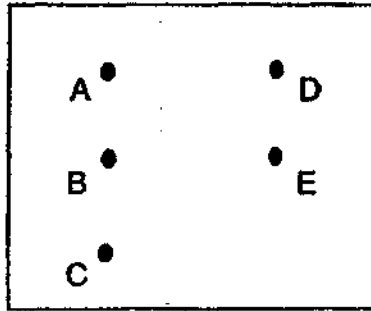


Diagram 1

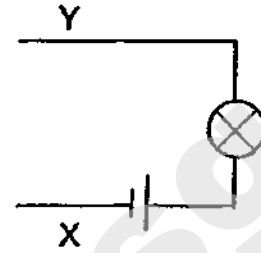
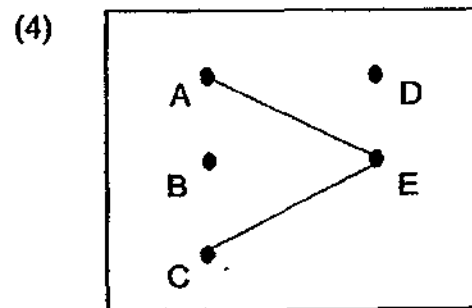
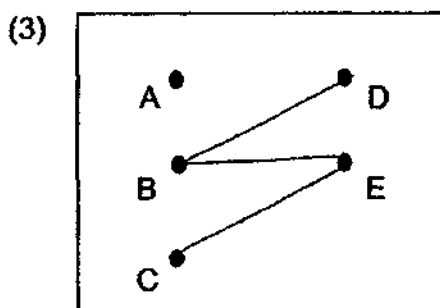
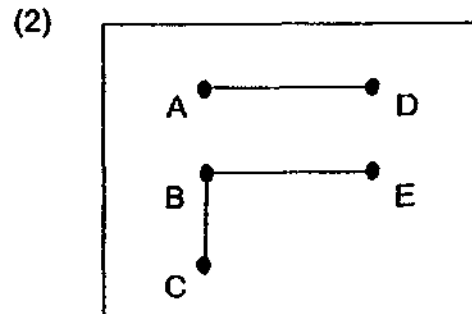
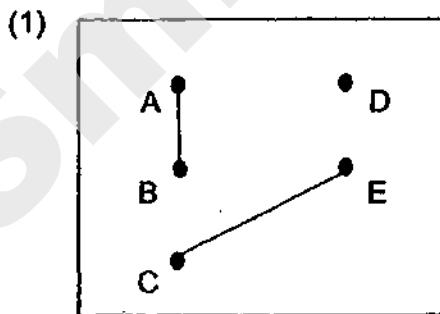


Diagram 2

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?



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.

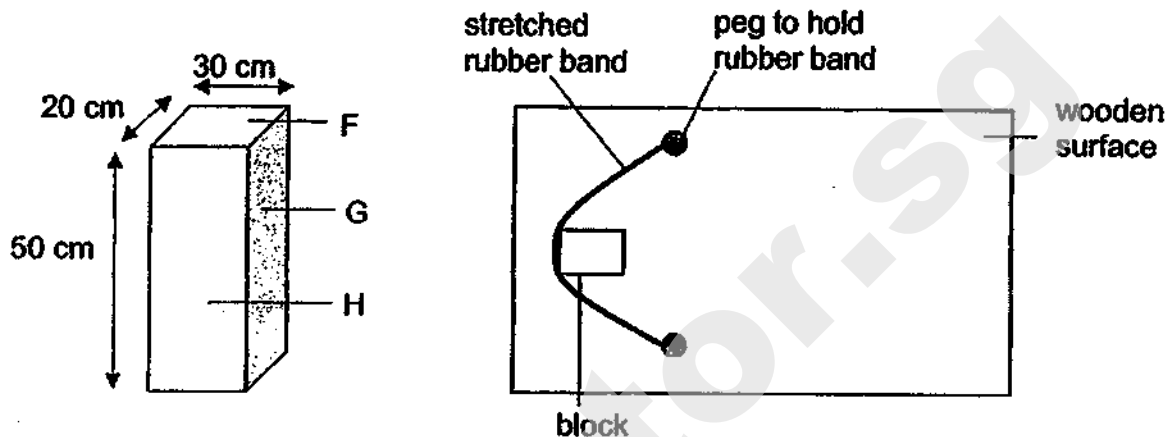
Object	Observation		
	Magnet	Iron Nail	Plastic spoon
P	repel	attract	no interaction
Q	attract	no interaction	no interaction
R	no interaction	no interaction	no interaction

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



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.

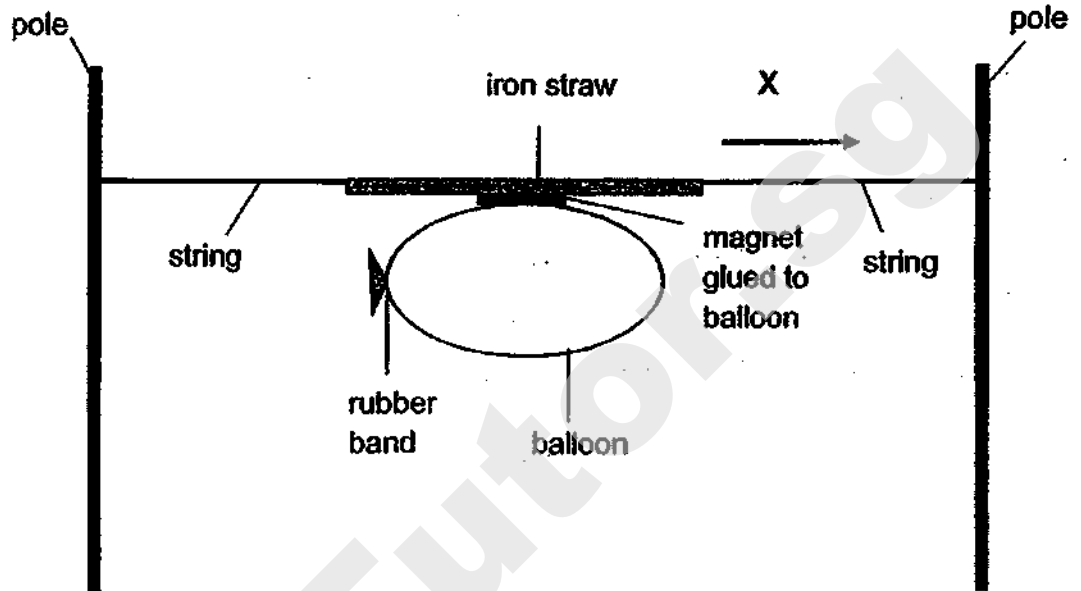
Surface	Area of contact with the wooden surface (cm <sup>2</sup> )	Distance moved by block on wooden surface (cm)
F	600	13
G	1000	13
H	1500	13

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

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.



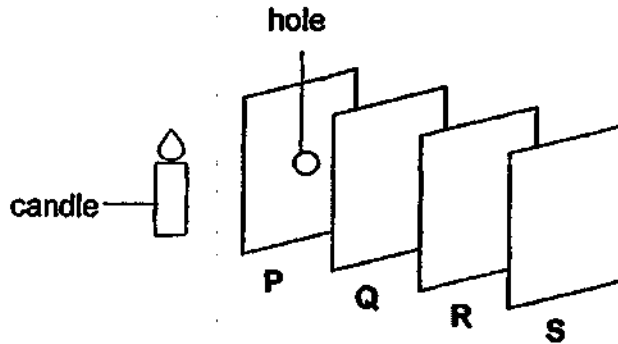
When the rubber band on the balloon was removed to release the air. The balloon and the iron straw moved in direction X.

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

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

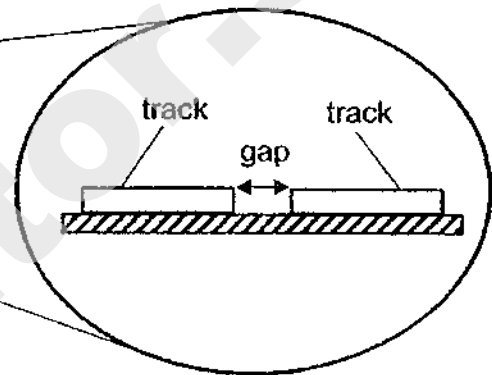
27. William conducted an experiment by heating three rods of identical length made of different metals, P, Q and R, for twenty minutes. He recorded the length of each rod before and after heating.

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

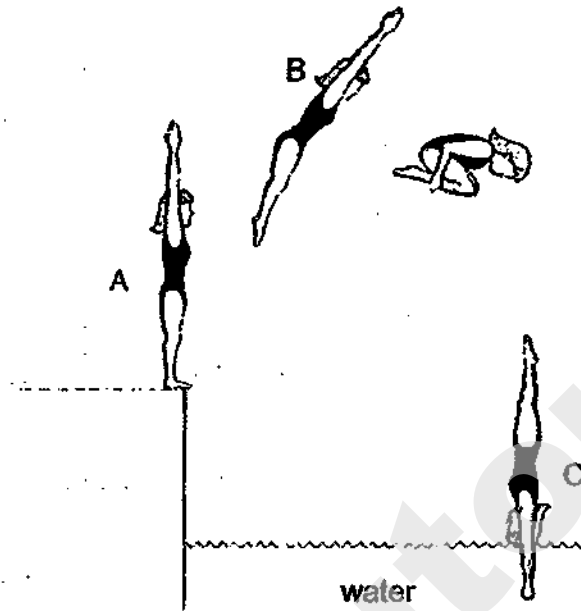


Magnified view of the gap

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

28. The diagram below shows a girl diving into the water.

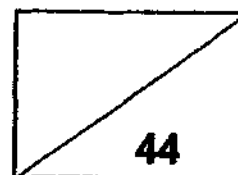


Which of the following shows how the amount of energy changes from A to B to C?

	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 \_\_\_\_\_



**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]

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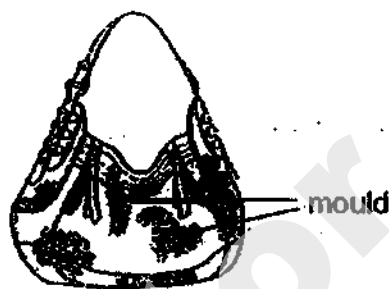
- (b) How did the mould appear since all boxes were sealed? [1]

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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.

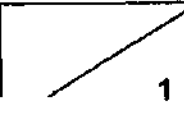


- (c) Sam's mother advised Sam to leave her wet bag under the Sun first before keeping it.

Explain how leaving the wet bag under the Sun helps to reduce the growth of mould. [1]

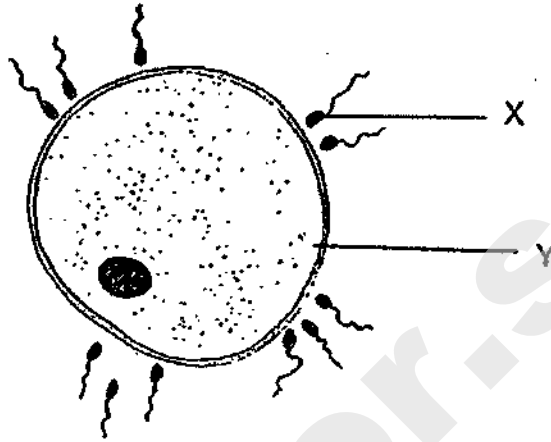
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30. The diagram below shows two types of human reproductive cells, X and Y.



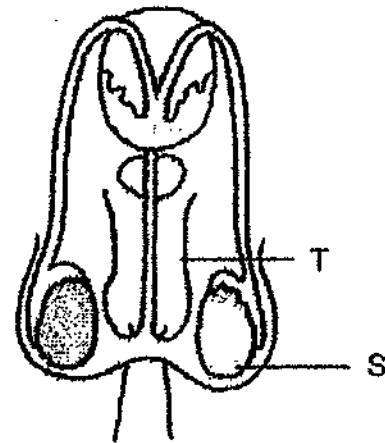
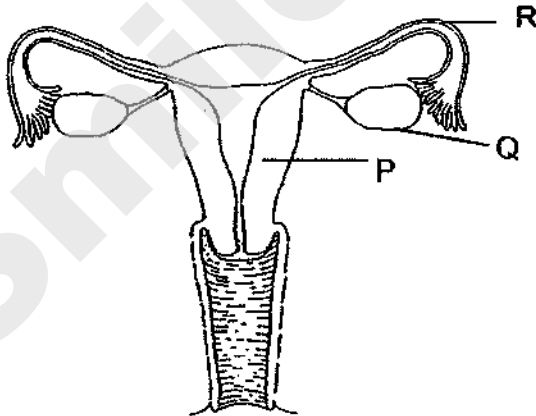
(a) Cell X is produced in large numbers. Give a reason for the observation. [1]

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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 : \_\_\_\_\_

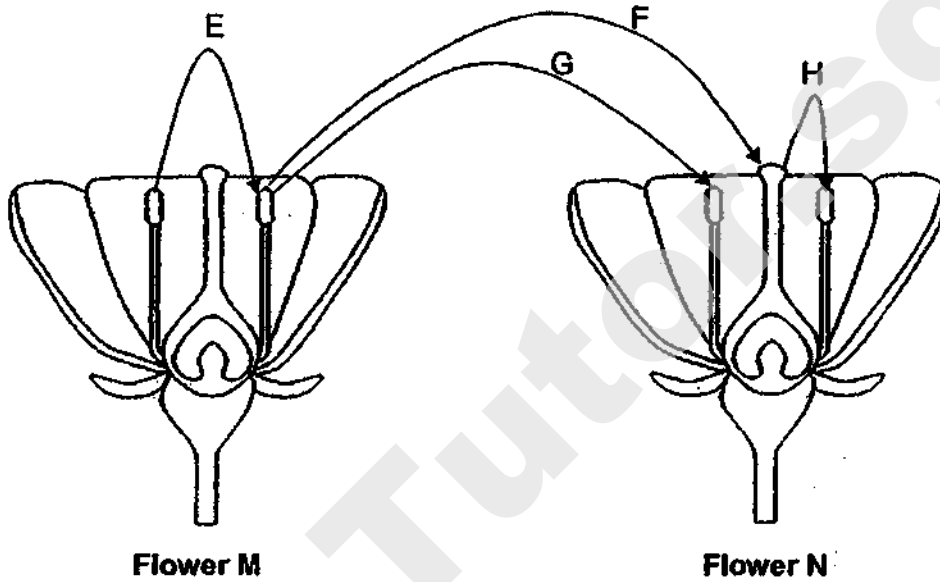
(ii) Cell Y : \_\_\_\_\_

Continue on next page

Score	/
	2

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The diagrams below show two flowers, M and N, from the same type of plant.



- (c) Identify the arrow(s), E, F, G and/or H, that represent(s) the process of pollination. [1]

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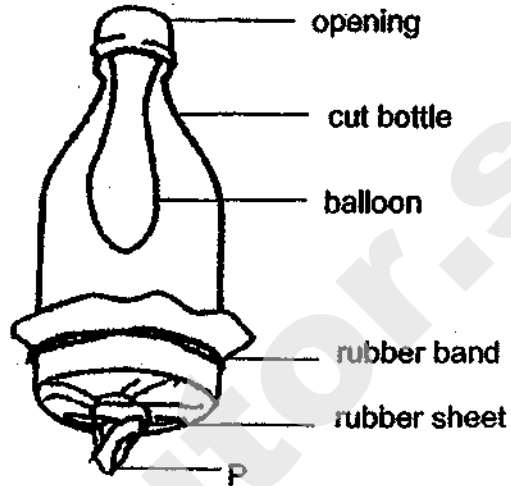
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- (d) State one characteristic of the flower that attracts animals to pollinate it. [1]

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Score	/
	2

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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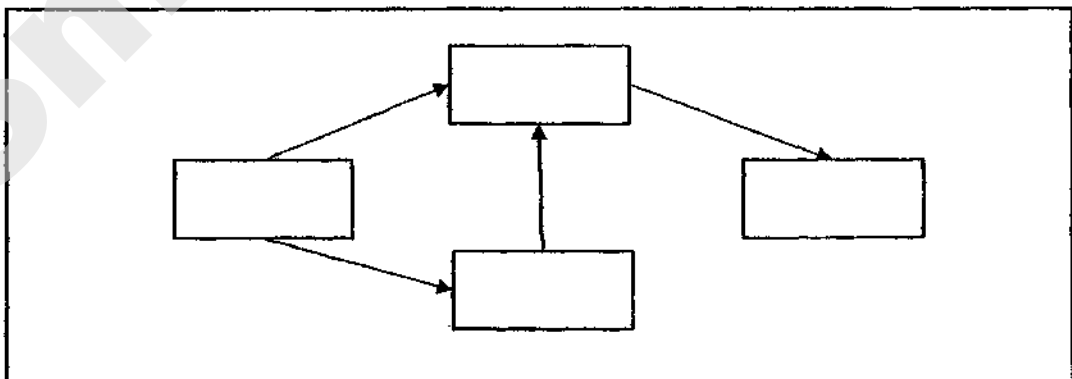
32. Melissa wanted to study the food relationships among organisms J, K, L and plant M. She kept different organisms in identical tanks which have sufficient air and water for one week. After one week, she recorded her results in the table below.

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]

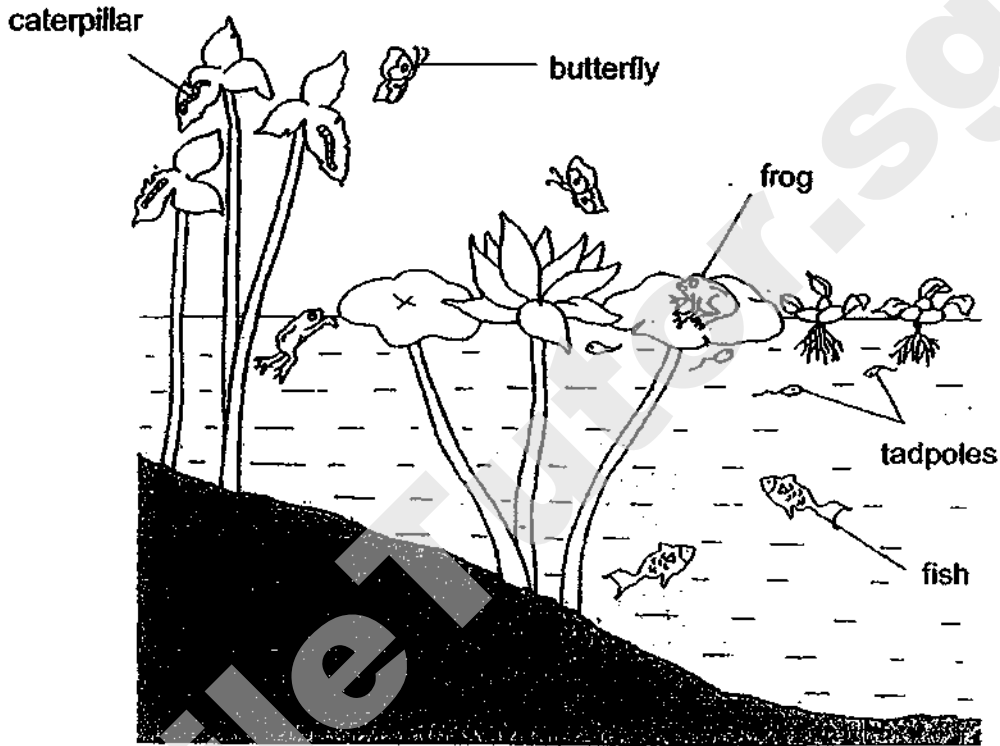


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Score	2
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The diagram below shows a habitat with some organisms.

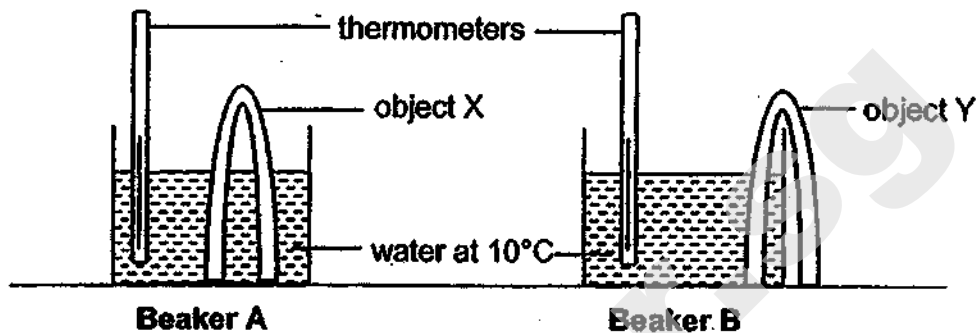


- (b) Based on the diagram above, put a tick (✓) in the correct column on the table below to indicate if the statements are True or False. [2]

	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  $80^{\circ}\text{C}$  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  $10^{\circ}\text{C}$ .



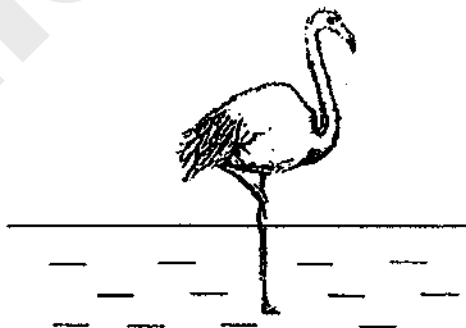
- (a) Sophie observed that the temperature of water in beaker A increased more quickly than that in beaker B. Explain Sophie's observation. [2]

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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]

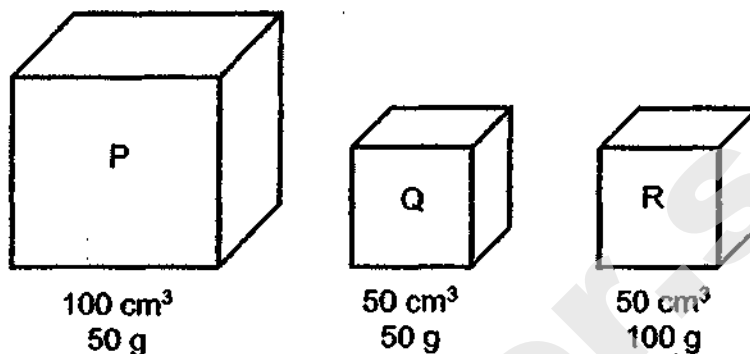
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Score	3
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34. The diagrams below show three waterproof containers, P, Q and R, made of different materials.



The diagram below shows a weighing balance.



Balance

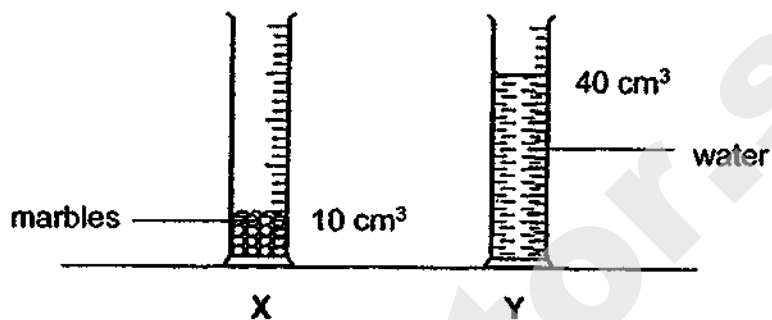
- (a) Which two containers, P, Q or R, should be placed on each pan on the weighing balance so that it remains balanced as shown in the above diagram? [1]

- (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]

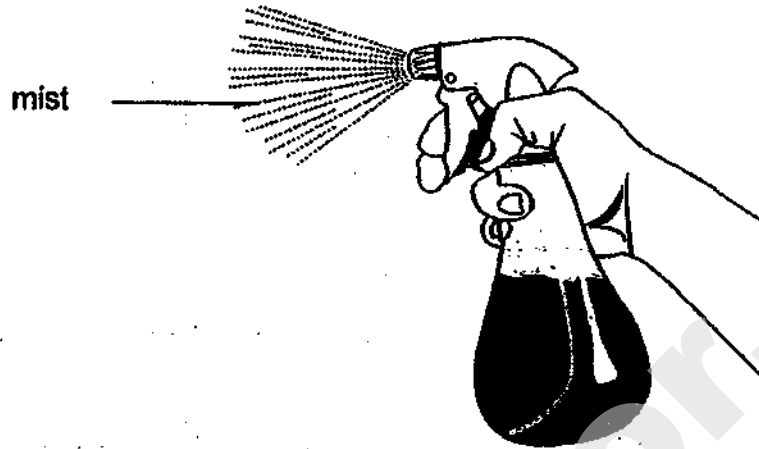
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Score	1
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35. Amin sprays himself with mist to cool himself on a hot day.



(a) Explain how spraying mist on himself helps him to cool down on a hot day. [1]

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(b) Why does Amin feel colder when he is spraying mist on himself on a windy day? [1]

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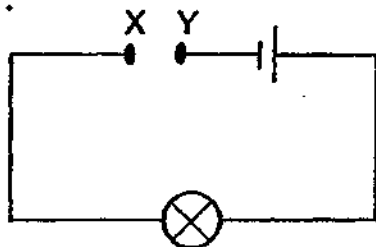
(c) After Amin stepped out from an air-conditioned bus, he found tiny water droplets on his spectacle lens. Explain how the water droplets were formed. [2]

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Score	/
	4

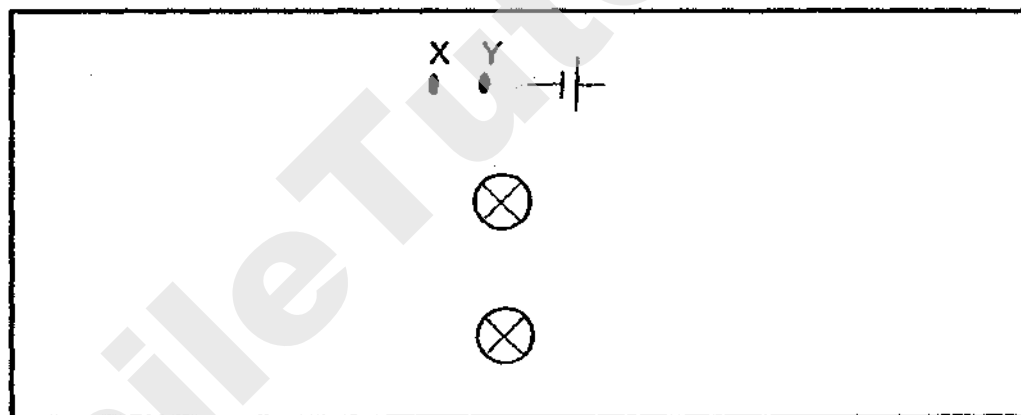
36. The diagram below shows a circuit. The table shows what happened to the light bulb when three different rods, P, Q and R, were connected one at a time to the contact points X and Y.



Rod that connects X and Y	Did the bulb light up?
P	Yes
Q	No
R	Yes

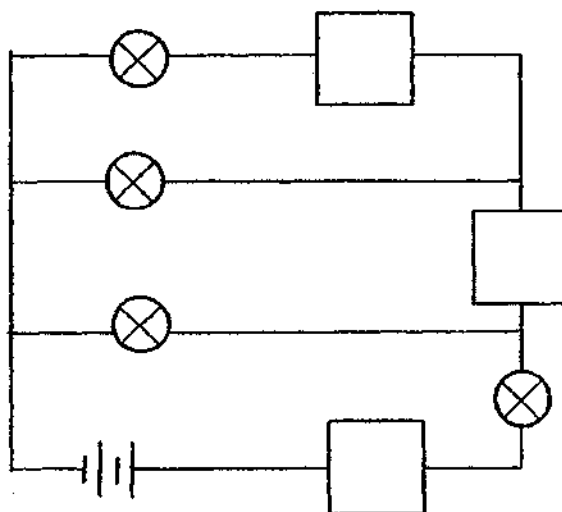
- (a) The diagram below shows another circuit with two bulbs. The same results were obtained when rods P, Q and R were used. The brightness of the each bulb remained the same for both circuits.

Based on the information above, draw wires in the circuit diagram below to show how the two bulbs were connected. [1]



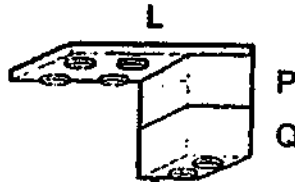
- (b) In another experiment, rods P, Q and R were placed at different positions in the circuit, as shown below.

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]



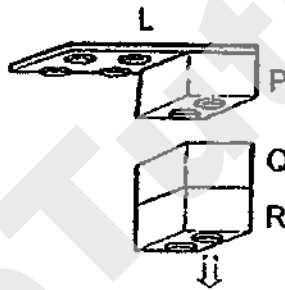
Score	3
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37. David attached Lego blocks Q and P to block L as shown in diagram below.



- (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.



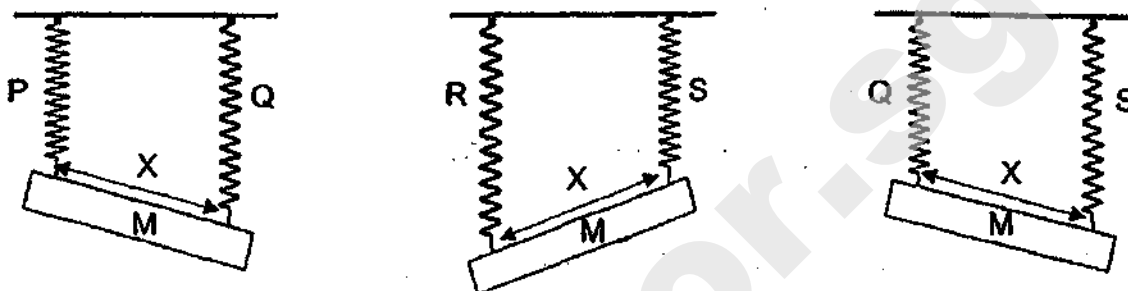
David's friend suggested that he should smear oil on all exposed surfaces of block P and then pull P away from L.

- Do you agree with his friend's suggestion? Explain your answer. [1]
- 
- 

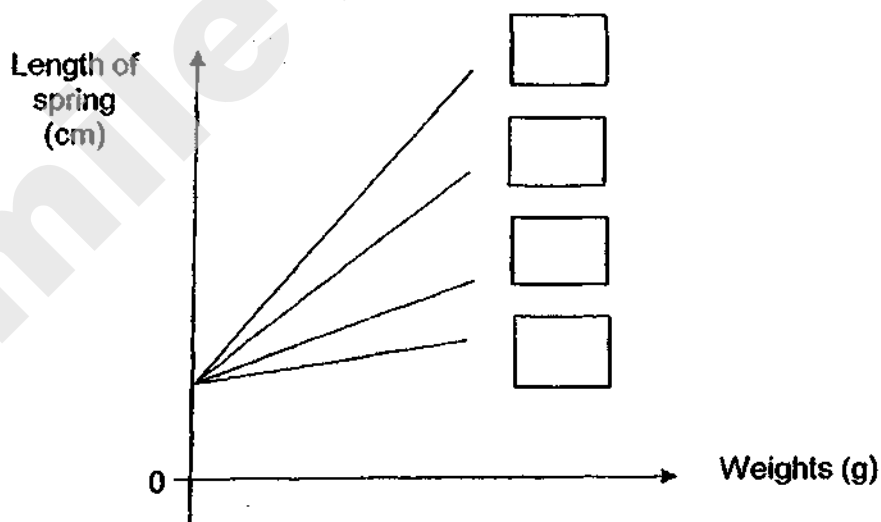
Score	3
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38. Melvin conducted an experiment using four springs, P, Q, R and S, of equal length.

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]



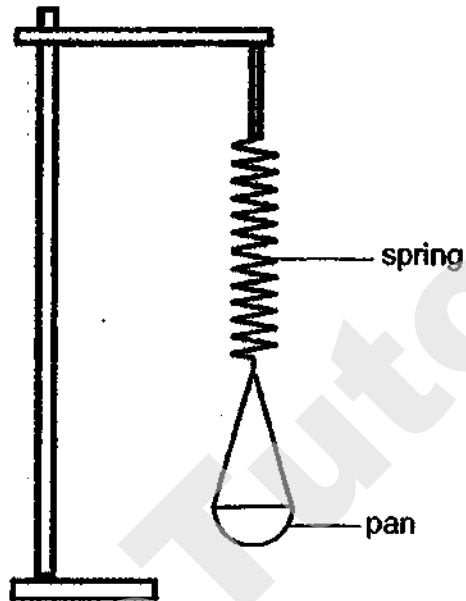
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Score	2
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In another experiment, Melvin used the set-up below to compare the mass of two pears which are of similar size.



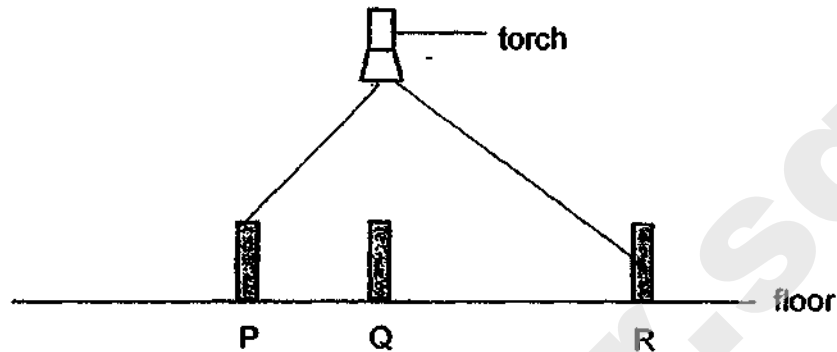
- (b) His mother suggested that spring R is the most suitable to be used for his set-up. Give a reason for her suggestion. [1]

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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]



- (c) Using wooden stick P and without changing its position, suggest one way to increase the length of the shadow cast by it. [1]

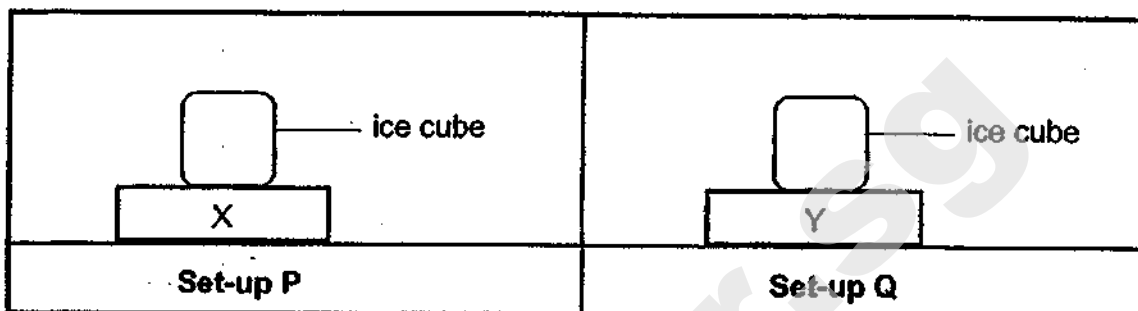
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Score	/
	3

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.



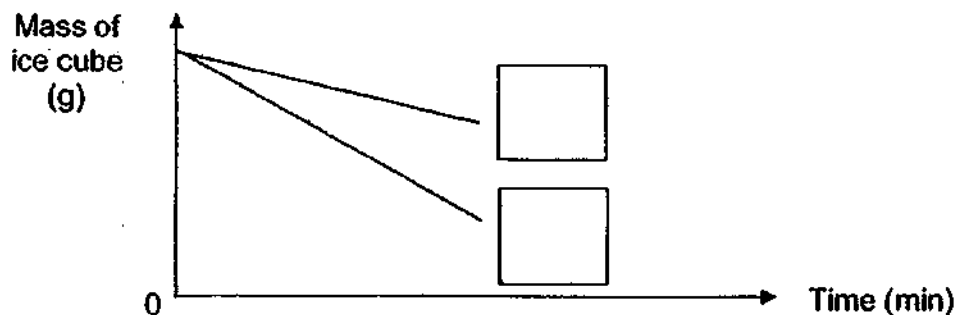
- (a) It was observed that the ice cube on block X took a shorter time to melt completely than that on block Y.

(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.

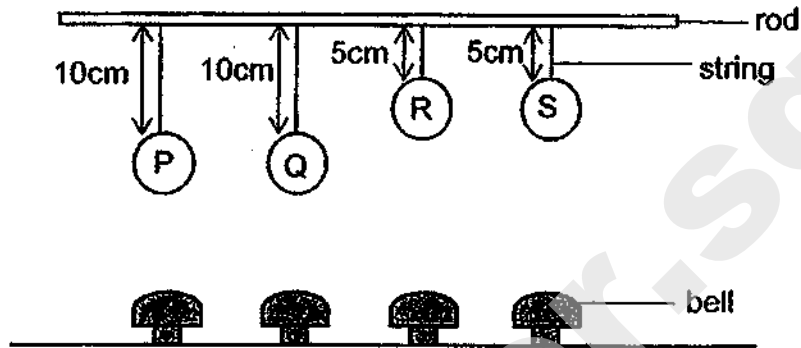
Fill in the boxes with P and Q to show the correct results for each set-up. [1]



Score

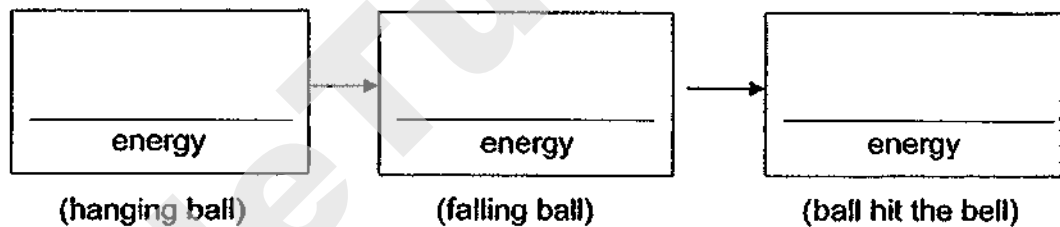
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41. Jenny hung four balls, P, Q, R and S, above identical bells as shown below. The mass of balls P and R, was 100g each and the mass of balls Q and S was 200g each.



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]



- (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]

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- (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]

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Score	/
	5



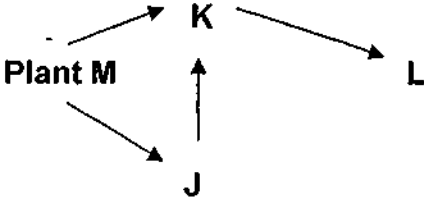
**SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : 2019 PRELIM**

**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		

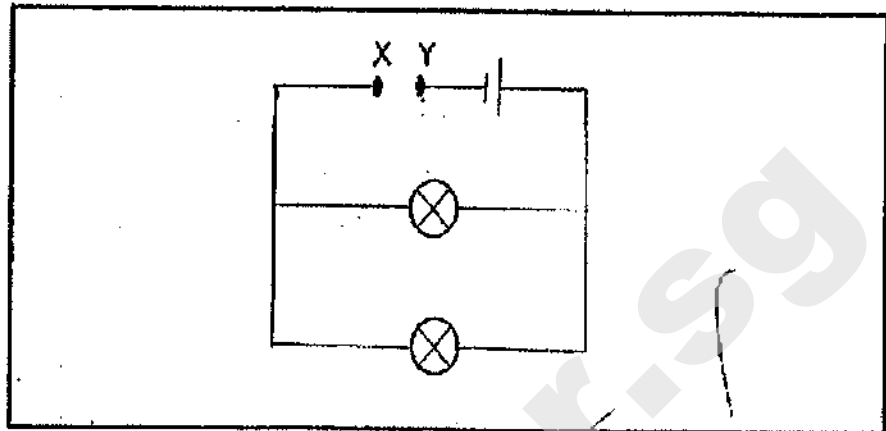
**SECTION B**

Q29)	<p>a) In Box P, there was the presence of water making the environment moist and the surrounding temperature is at 35°C which would provide warmth and allow mould to grow.</p> <p>b) Spores of fungi were already present in the box before sealing the box.</p> <p>c) The heat from the sun would dry up her bag from all the moisture.</p>
Q30)	<p>a) To increase the chance of at least one sperm fertilizing the egg.</p> <p>b) (i) S (ii) Q</p> <p>c) F</p> <p>d) It has large petals</p>
Q31)	<p>a) (i) lungs (ii) Rib-cage</p> <p>b) The balloon will inflate.</p>

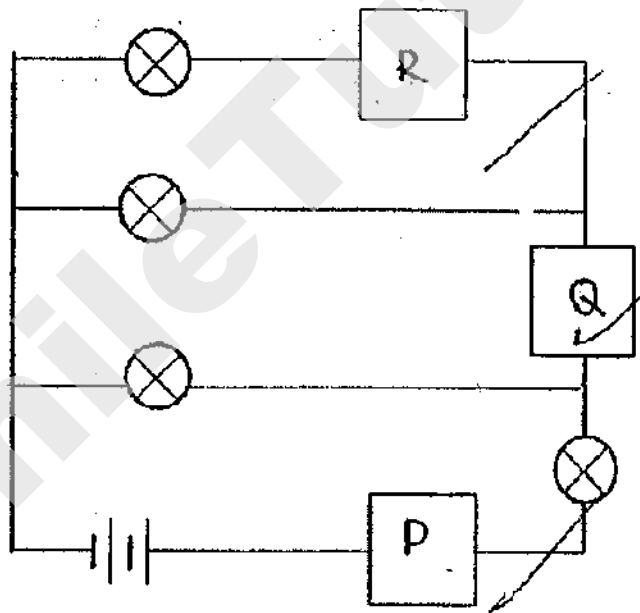
	<p>c) Inhaled air has more oxygen, less carbon dioxide, less moisture and more dust than air leaving the lungs.</p>
Q32)	<p>a)</p>  <pre> graph TD     M[Plant M] --&gt; K     M --&gt; J     J --&gt; K     K --&gt; L   </pre> <p>b) (i) False (ii) True (iii) False (iv) False</p>
Q33)	<p>a) There is more contact surface area of X with water, more heat is conducted from X to the water faster.</p> <p>b) Less contact surface area of the body with the water, hence the body loss heat to the water slower.</p>
Q34)	<p>a) P and Q</p> <p>b) Both of the containers have the same mass of 50g.</p> <p>c) The water occupies the spaces in between the marbles and displaces the air.</p>
Q35)	<p>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.</p> <p>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.</p> <p>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.</p>

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

	<p>b) Spring R. It extends the most when the same weight is hung on the springs.</p>
Q39)	<p>a) Light travels in a straight line.  b) R – P – Q  c) Move the torch further from P to the right.</p>
Q40)	<p>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</p>
Q41)	<p>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</p>

**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

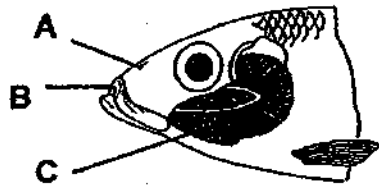
**INSTRUCTIONS TO CANDIDATES**

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.

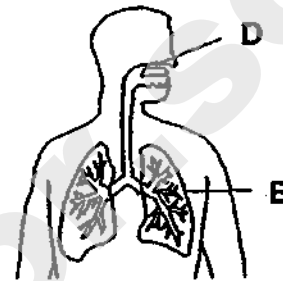
**Section A (56 marks)**

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?

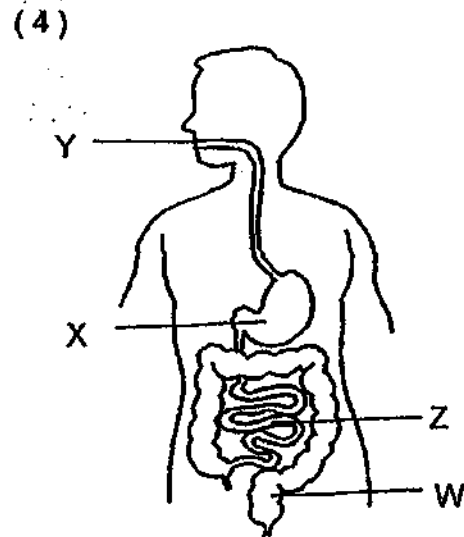
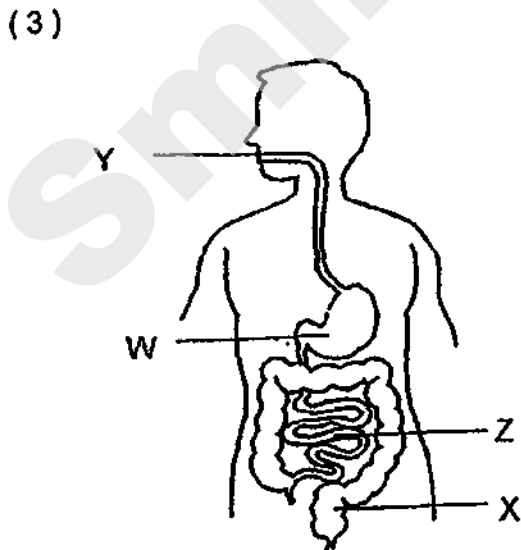
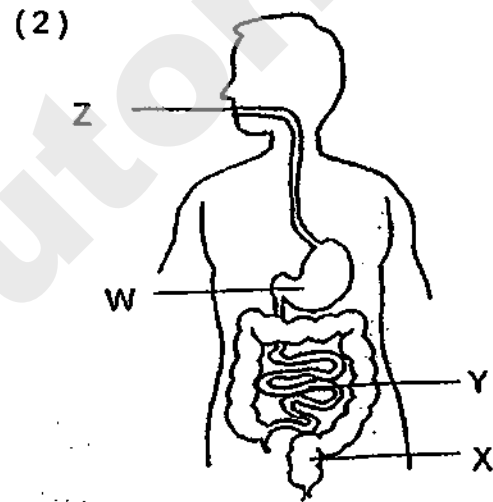
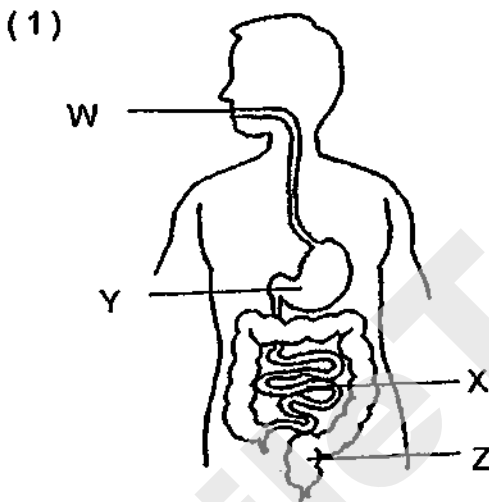
	Organism X	Organism Y
(1)	A	D
(2)	C	D
(3)	C	E
(4)	B	E

2. Study the table below.

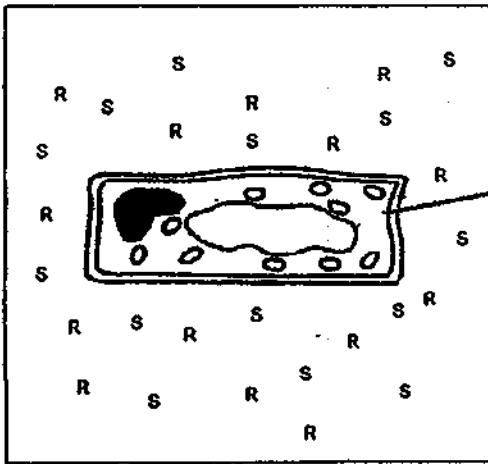
Function	Parts of the digestive system			
	W	X	Y	Z
Food enters the bloodstream				√
Food is mixed with digestive juices	√		√	√
Water is removed from food		√		

Key  
√ : present

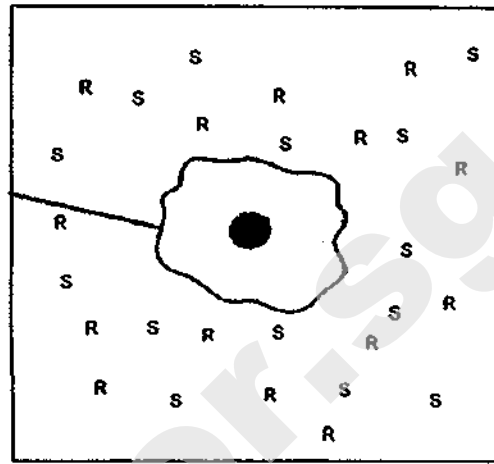
Which of the following correctly shows the parts labelled W, X, Y and Z?



3. Jason placed two cells, X and Y, into separate containers. Each container contains equal amounts of substances R and S.

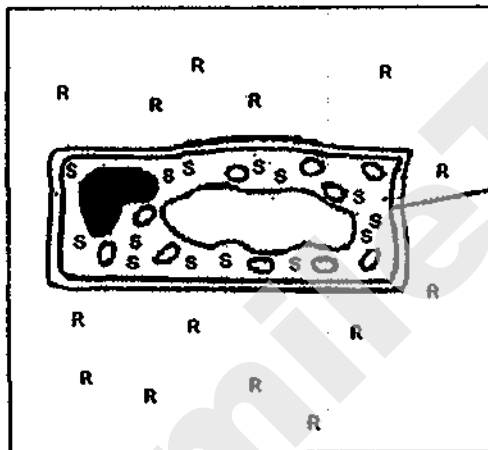


Cell X

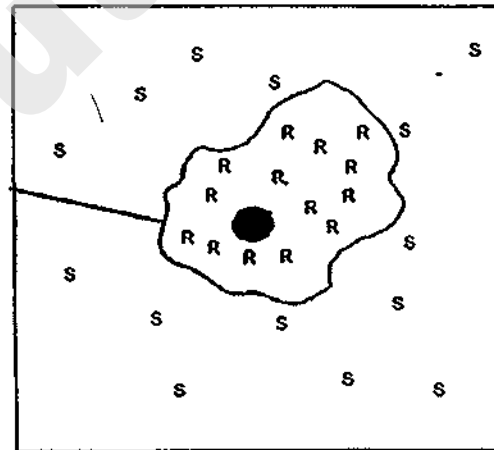


Cell Y

The diagram below shows what happened to the two cells after an hour.



Cell X



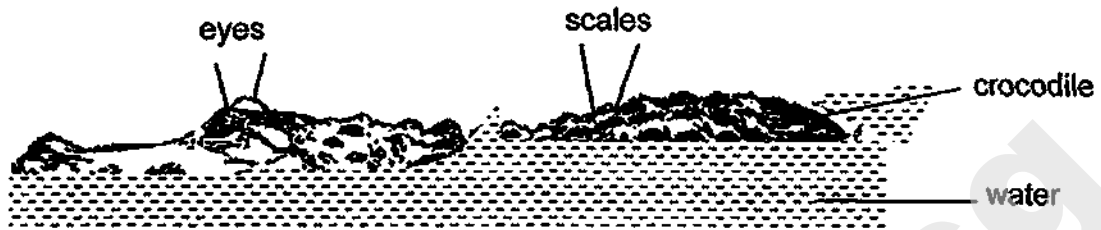
Cell Y

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.



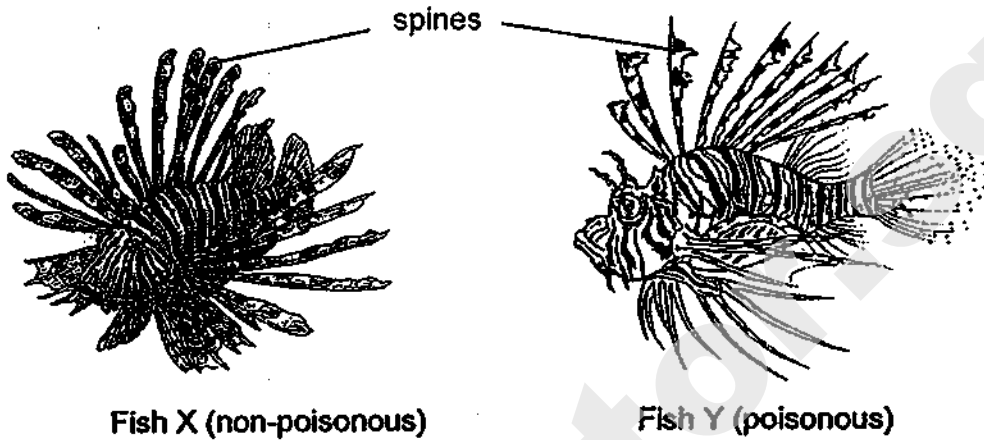
4. The picture below shows a crocodile that is in the water, waiting to catch its prey.



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

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.

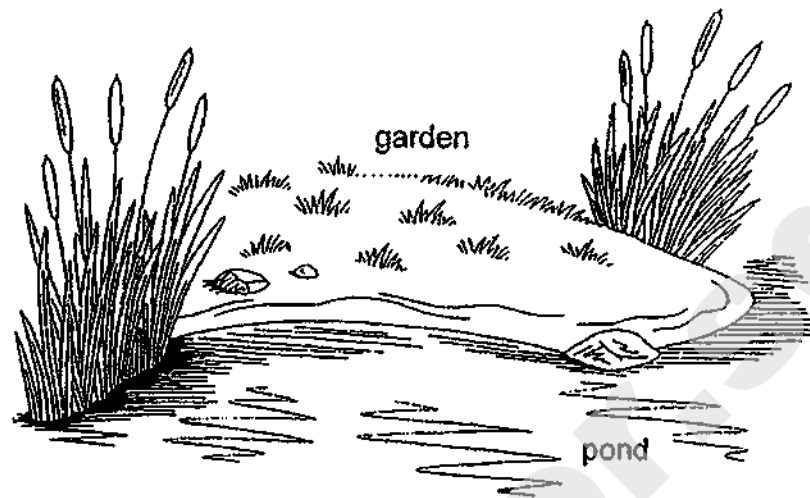


Which of the following statements describe Fish X and Fish Y?

- 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

6. Meiling built a pond beside a garden.



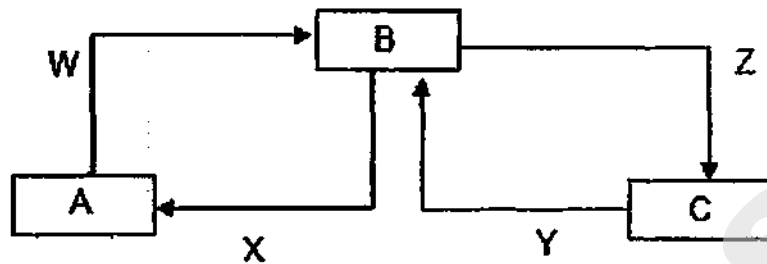
She observed three types of animals - frog, mosquito and butterfly living in the garden. The number of days needed for their eggs to hatch is shown below.

Characteristic	frog	mosquito	butterfly
Number of days needed for eggs to hatch	6	2	4

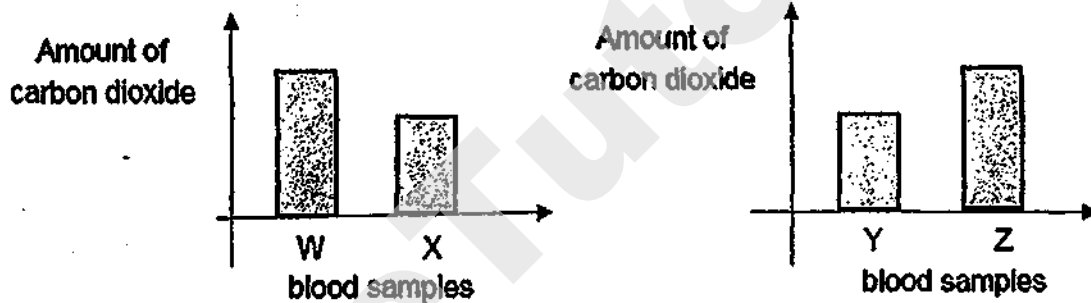
On Day 5, what would Daniel most likely find in the pond?

- (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

7. The diagram shows the direction of blood flow in parts of the human circulatory system.



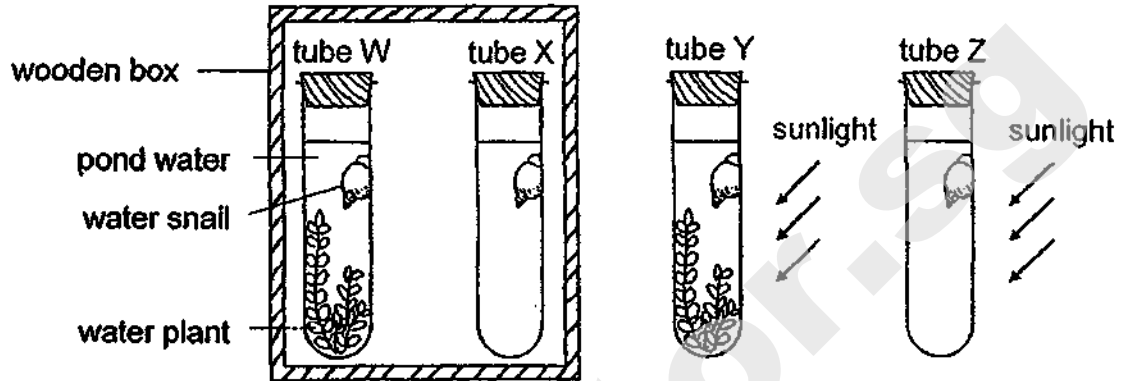
The same amount of blood was taken from W, X, Y and Z. The charts below show the comparison of the amount of carbon dioxide in the blood samples.



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

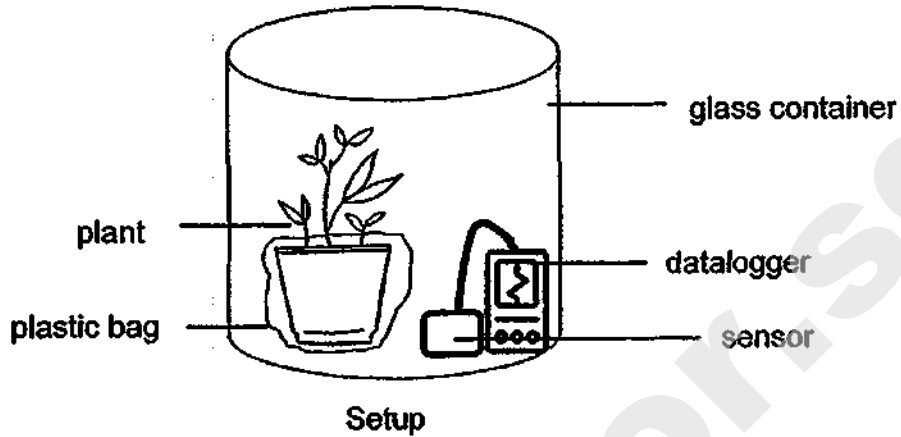
8. The diagram below shows four sealed test-tubes, W, X, Y and Z, placed either in a wooden box or under the sunlight. Each test-tube contained the same amount of pond water.



Which of the following test tubes, W, X, Y or Z, shows the most oxygen and carbon dioxide after three hours?

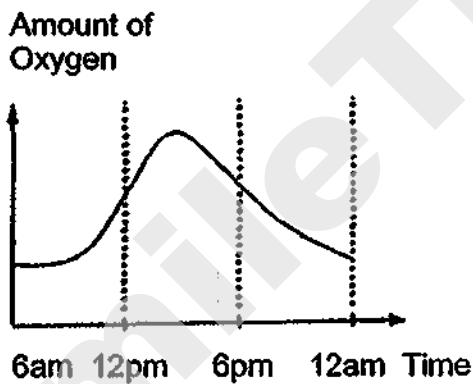
	Most oxygen	Most carbon dioxide
(1)	X	Y
(2)	Y	W
(3)	Z	W
(4)	Y	X

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.

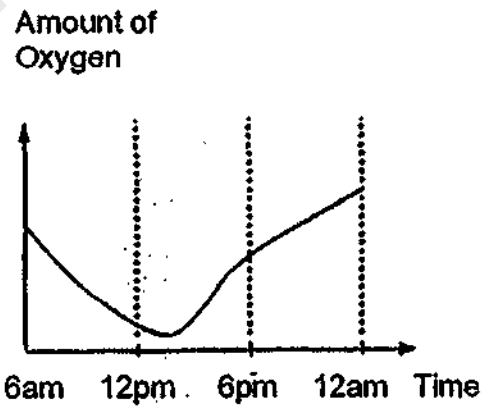


Which of the following graphs shows the amount of oxygen detected?

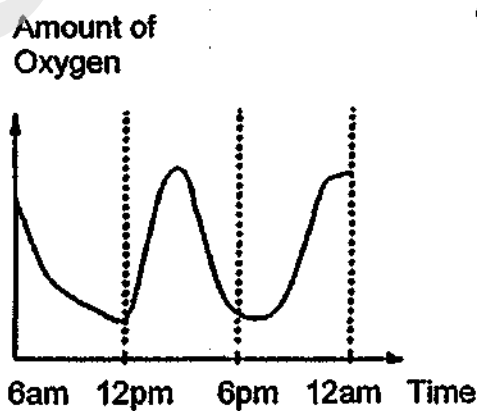
(1)



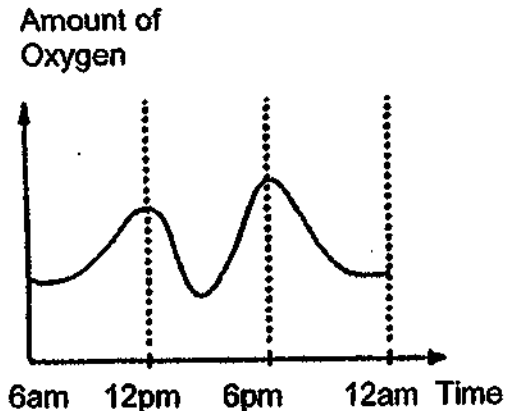
(2)



(3)



(4)



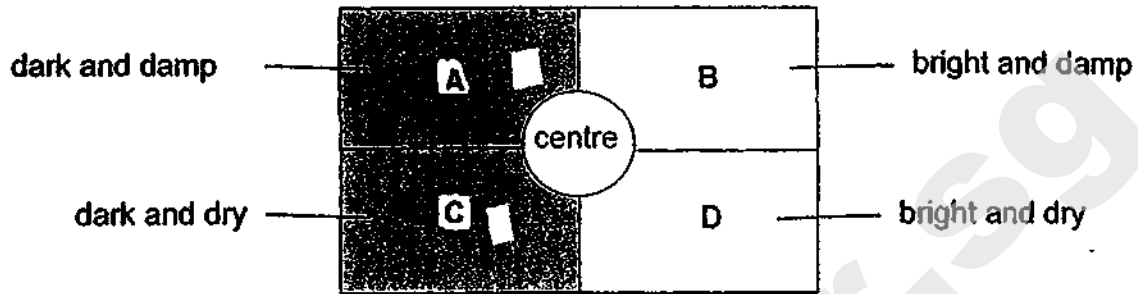
10. Samu observed some organisms at different places in his school. He recorded his observations in the table below.

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?

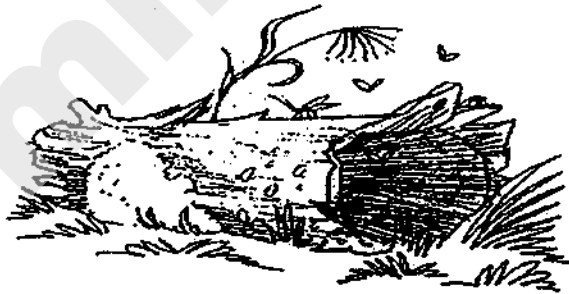
- (1) There is 1 population in the field.
- (2) There are 3 organisms in the pond.
- (3) There are 14 populations altogether.
- (4) There are 4 communities in his school.

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

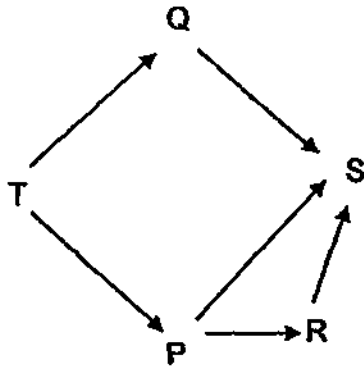


Which organism(s) is/are most likely to be found inside a rotting tree trunk habitat as shown above?

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



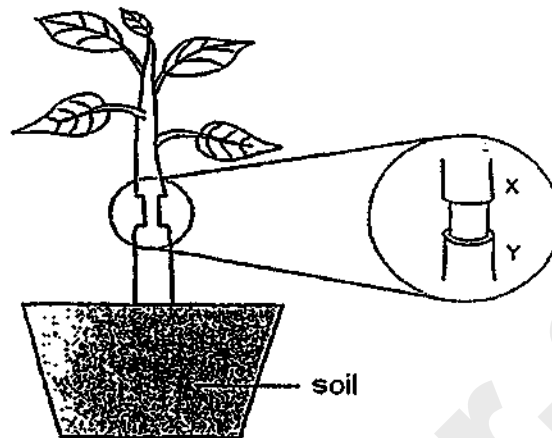
12. The diagram below shows a food web. P, Q, R, S and T represent different living things.



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.

13. The diagram shows a plant. The outer layer of the stem between X and Y is removed.



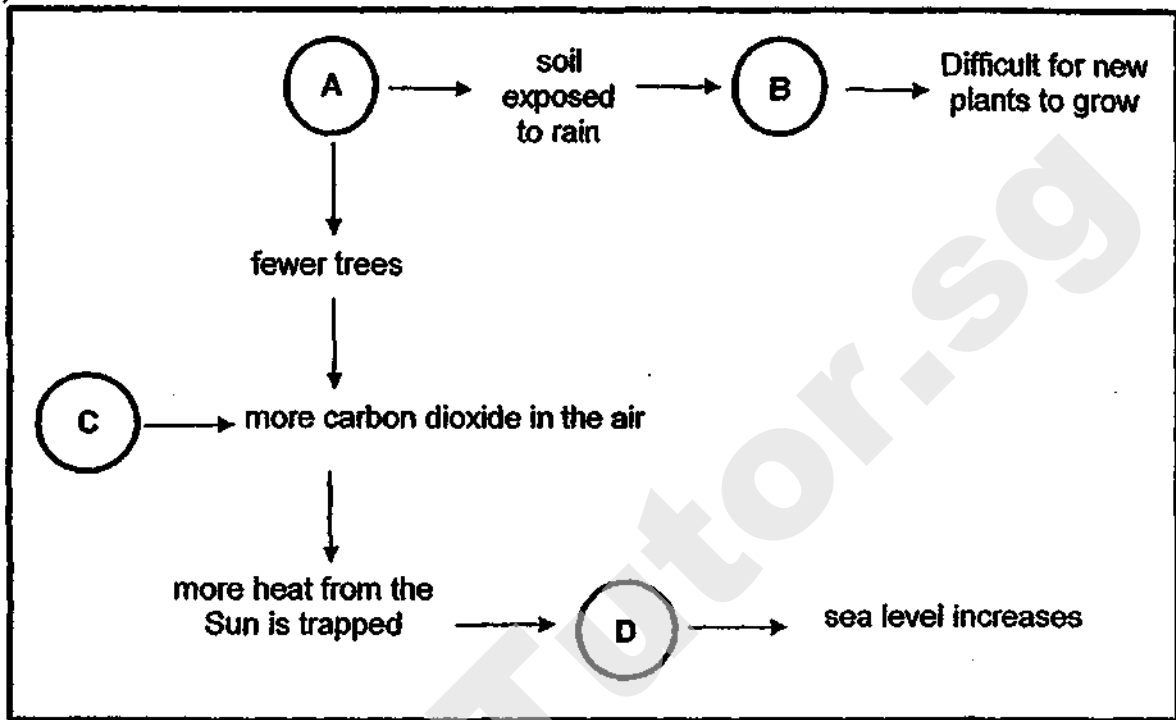
The diagram below shows the stem after a few days.



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.

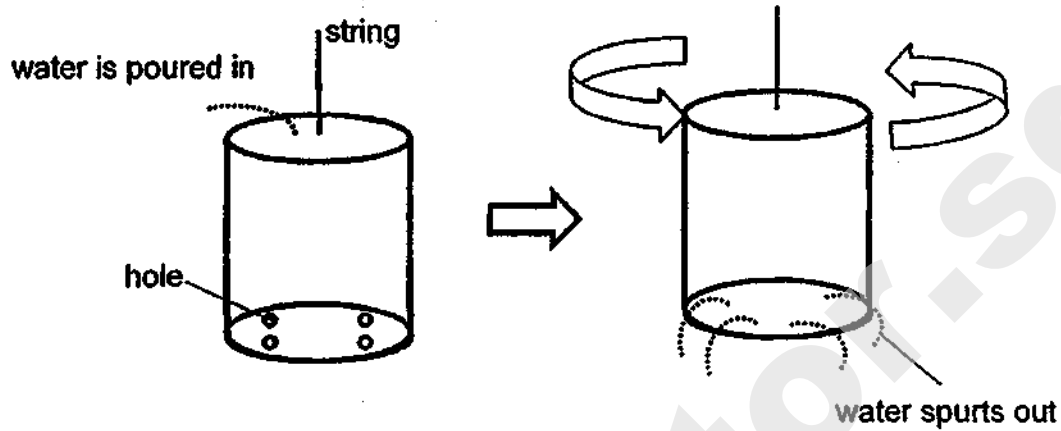
14. The diagram below is a representation of human's activities and the effects on the environment.



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

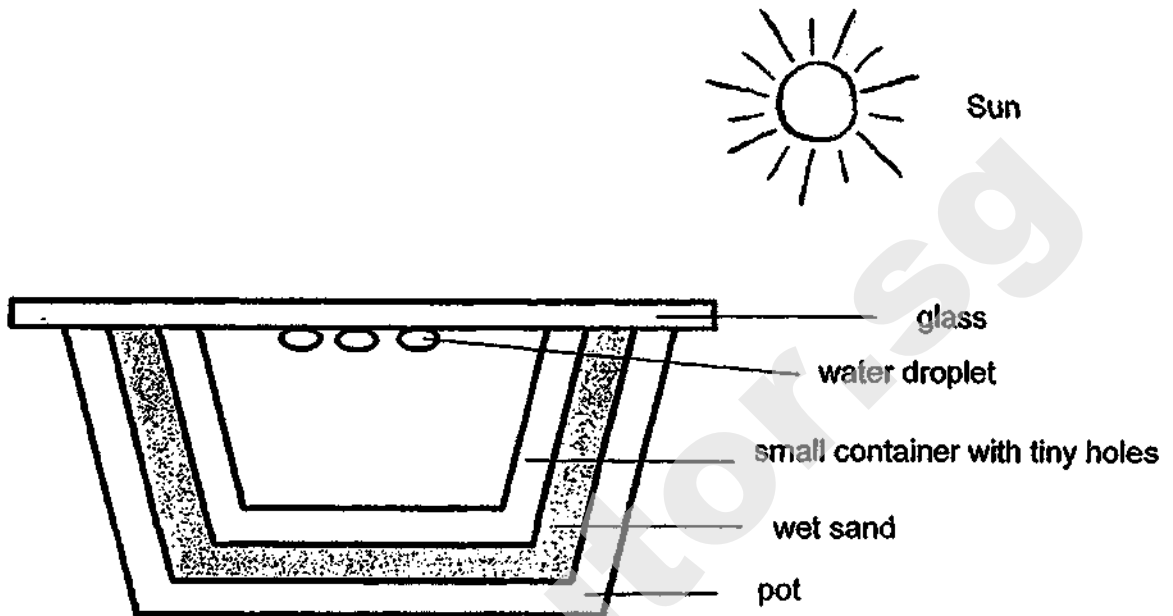
15. Minnie made holes at the base of a can as shown in the diagram below. The can is hung on a string. Water is then poured into the can from the top. As water spurts out of the can, it starts to spin.



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

16. Maria set up the experiment as shown below.



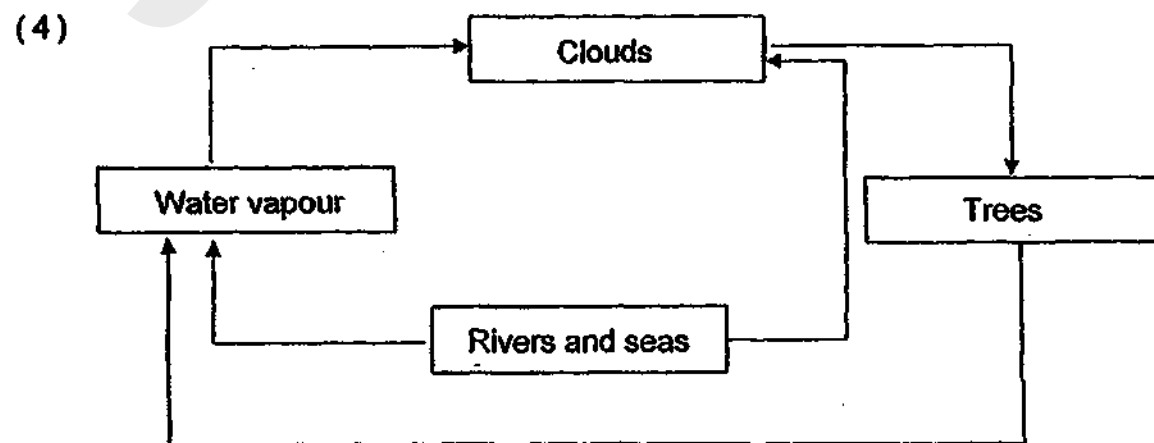
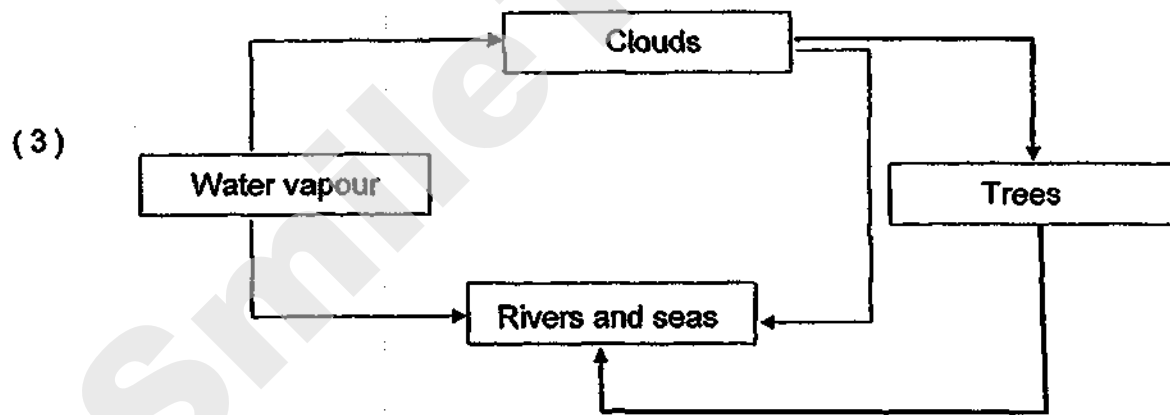
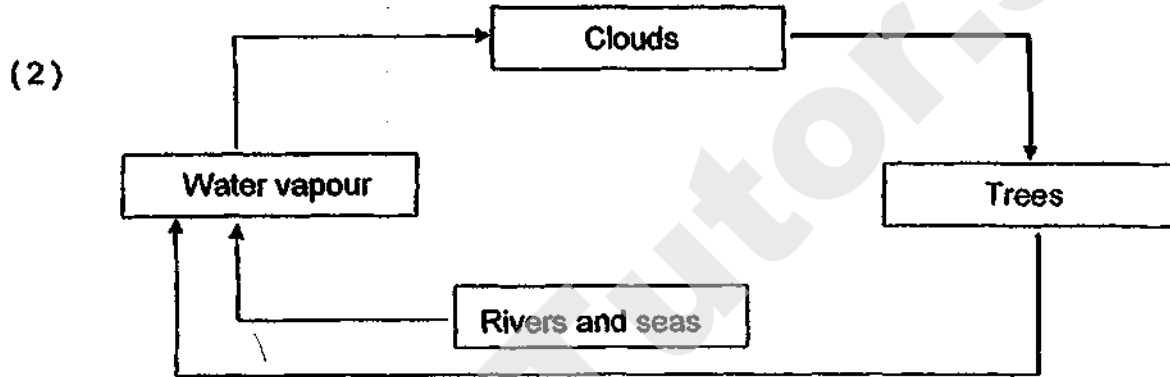
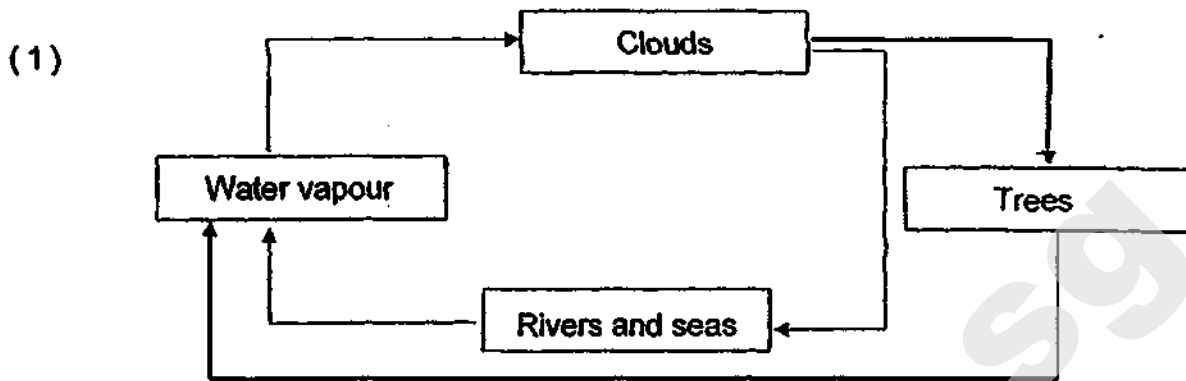
She placed the set-up in a hot place and water droplets can be seen.

Which of the following statements about the set up are true?

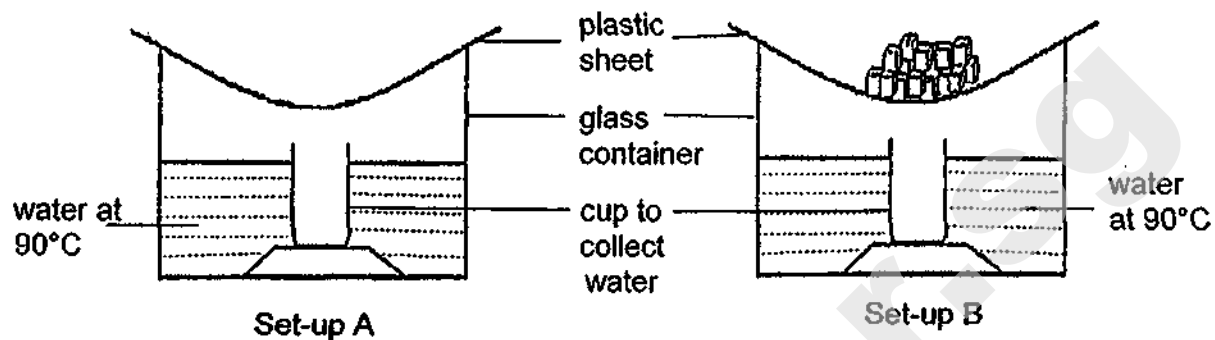
- A: water in the wet sand lose heat
- B: water in the wet sand evaporated
- C: water vapour condensed on the glass

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

17. Which of the following correctly shows how trees play a part in the water cycle?



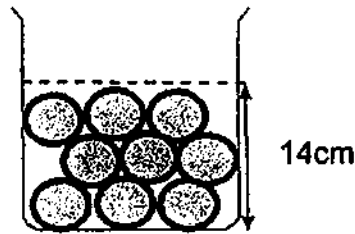
18. Ben placed two similar glass containers with equal amounts of water at  $90^{\circ}\text{C}$  at the same location.



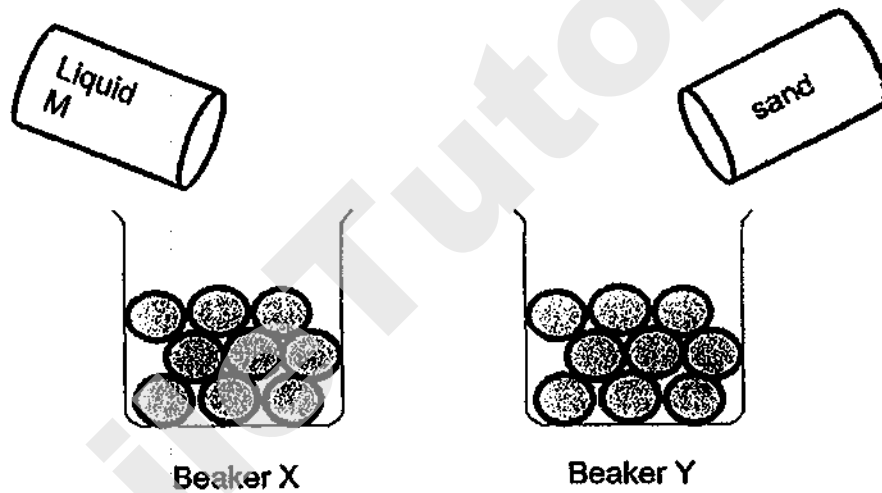
Based on the set-up, Ben wants to find out if \_\_\_\_\_.

- (1) condensation occurs at  $90^{\circ}\text{C}$
- (2) ice melts at a higher temperature
- (3) rate of condensation increases with ice
- (4) rate of evaporation decreases with ice

19. Becky was given a beaker with some balls. She poured  $500 \text{ cm}^3$  of water into the beaker. She measured the height of the water to be at  $14 \text{ cm}$  as shown in the diagram below.



Becky prepared similar beakers, X and Y, with the same number identical balls. She added  $500 \text{ cm}^3$  of Liquid M into beaker X and  $500 \text{ cm}^3$  of sand into beakers Y.

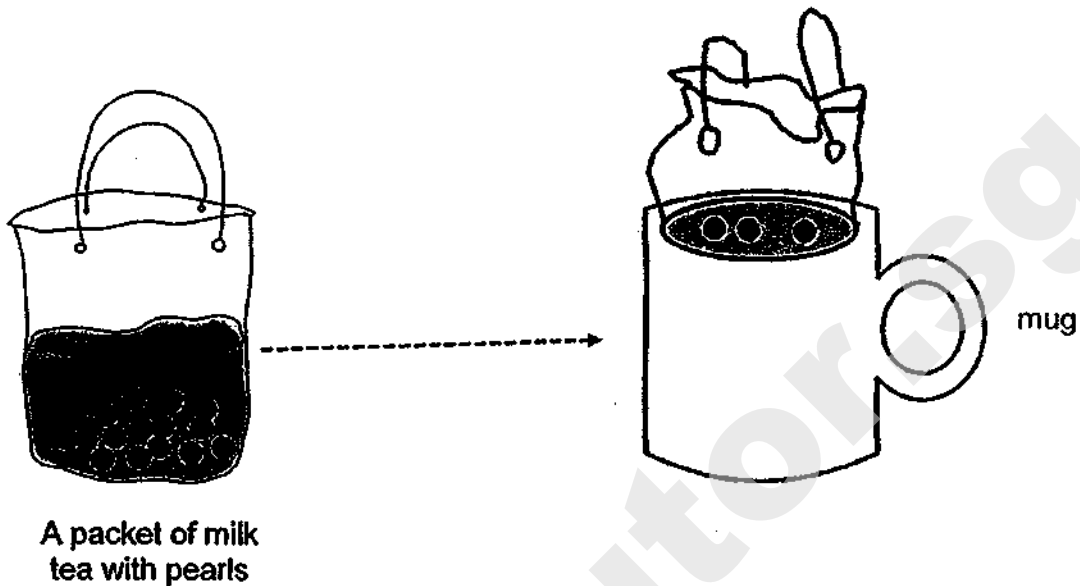


Which of the following could be the final height of Liquid M and the sand in beakers X and Y?

	Beaker X	Beaker Y
(1)	15 cm	13 cm
(2)	14 cm	14 cm
(3)	14 cm	15 cm
(4)	15 cm	14 cm



20. Dinesh bought a packet of milk tea with pearls. He placed it into a mug without overflowing as shown in the diagram below.

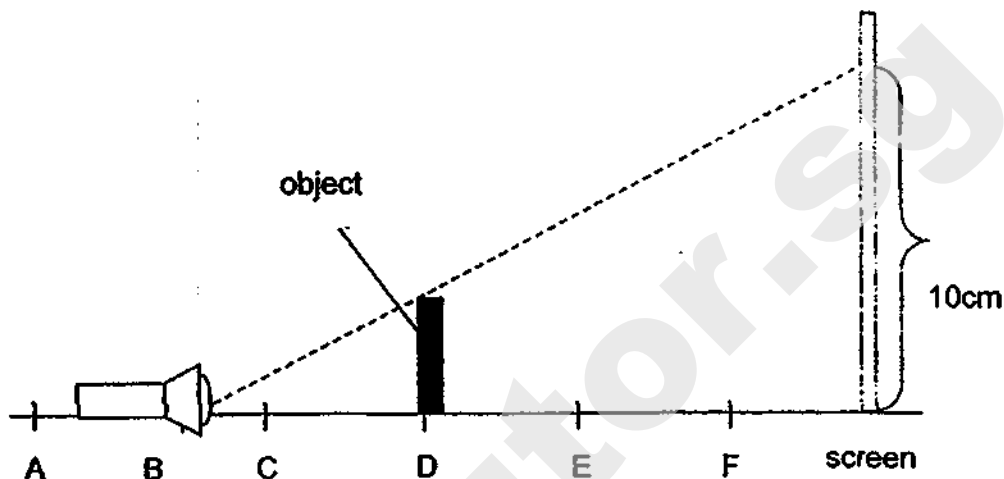


Which of the following statements about the packet of milk tea are correct?

- 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

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.

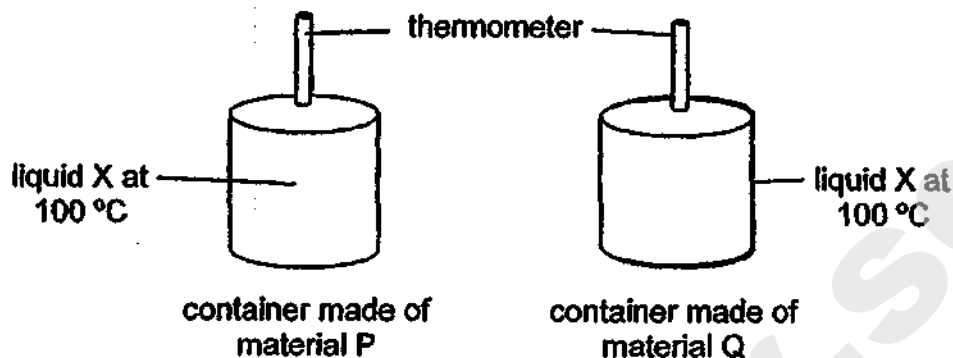


Jenna observed that when she placed the torch at Position B, the object makes a shadow of 10cm. She then placed the torch at different positions and recorded her findings in the table below.

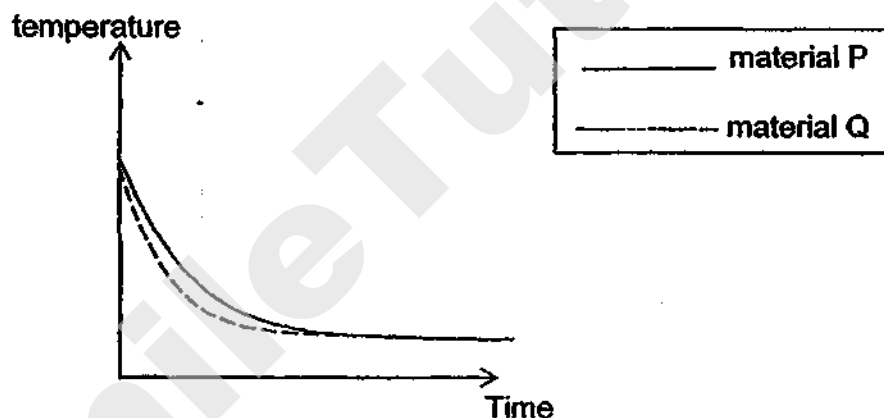
Which set of data is correct?

	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

22. Marie has two containers made of different materials. She filled the containers with the same amount of liquid X.



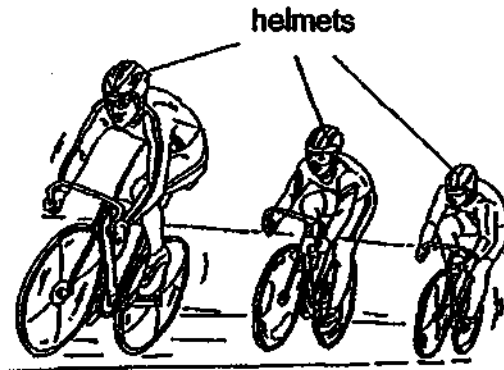
She measured the temperature of liquid X in the two containers over some time and recorded the results in the graph below.



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

23. Cyclists wear helmets to protect their heads when they cycle.

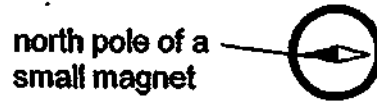


Based on the properties shown below, which material is the most suitable for the helmet to keep cyclists safe?

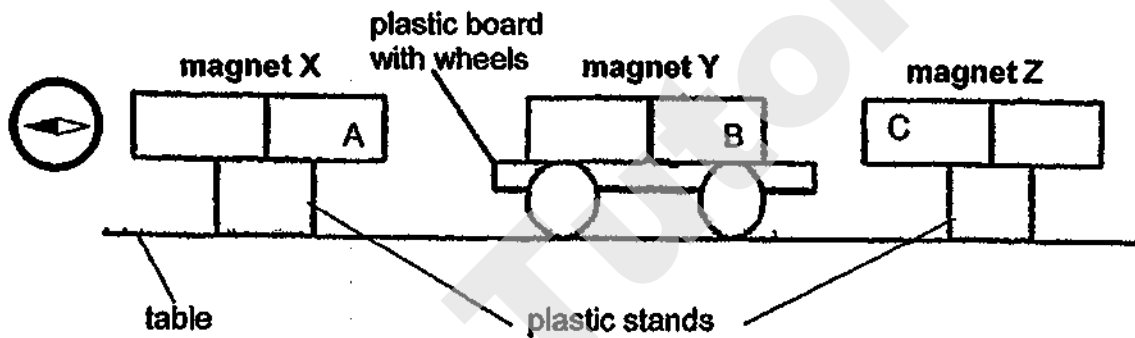
	Material	Property			
		strong	smooth	flexible	ability to float
(1)	A	√	X	√	X
(2)	B	√	√	X	X
(3)	C	√	X	X	√
(4)	D	X	√	√	√

<p>Key          √ : yes          X : no</p>
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24. A compass has a small magnet that can rotate freely as shown.



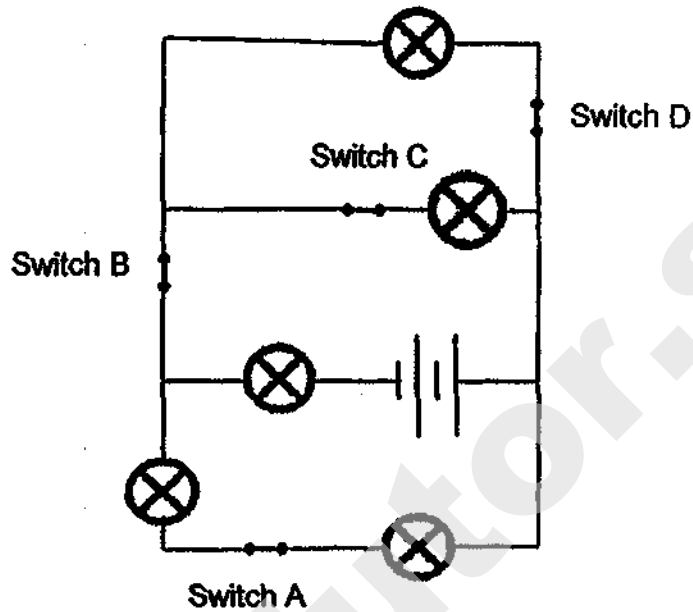
Penny prepared the set-up as shown below. Magnets X and Z were placed on plastic stands, while magnet Y was placed on a plastic board with wheels. Penny pushed magnet Y towards one of the magnets and observed that magnet Y moved between the two magnets continuously.



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.

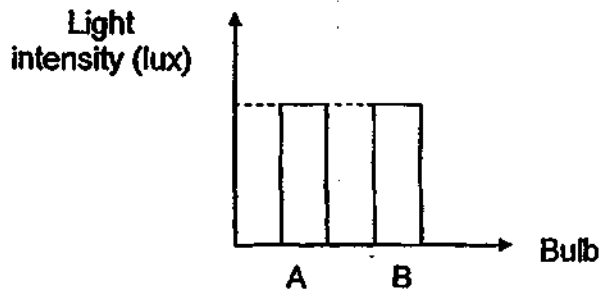
25. Colin set up a circuit as shown below.



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

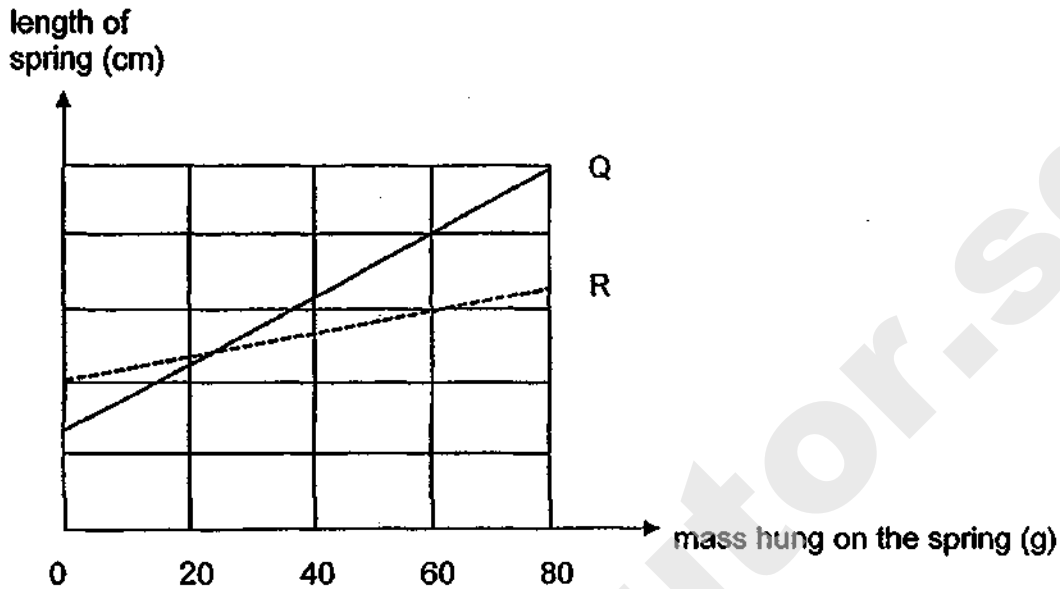
26. Varun constructed 2 electrical circuits, X and Y. He then measured the intensity of Bulb A from Circuit X and Bulb B from Circuit Y. He recorded the intensity of the bulbs as shown.



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)		

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.



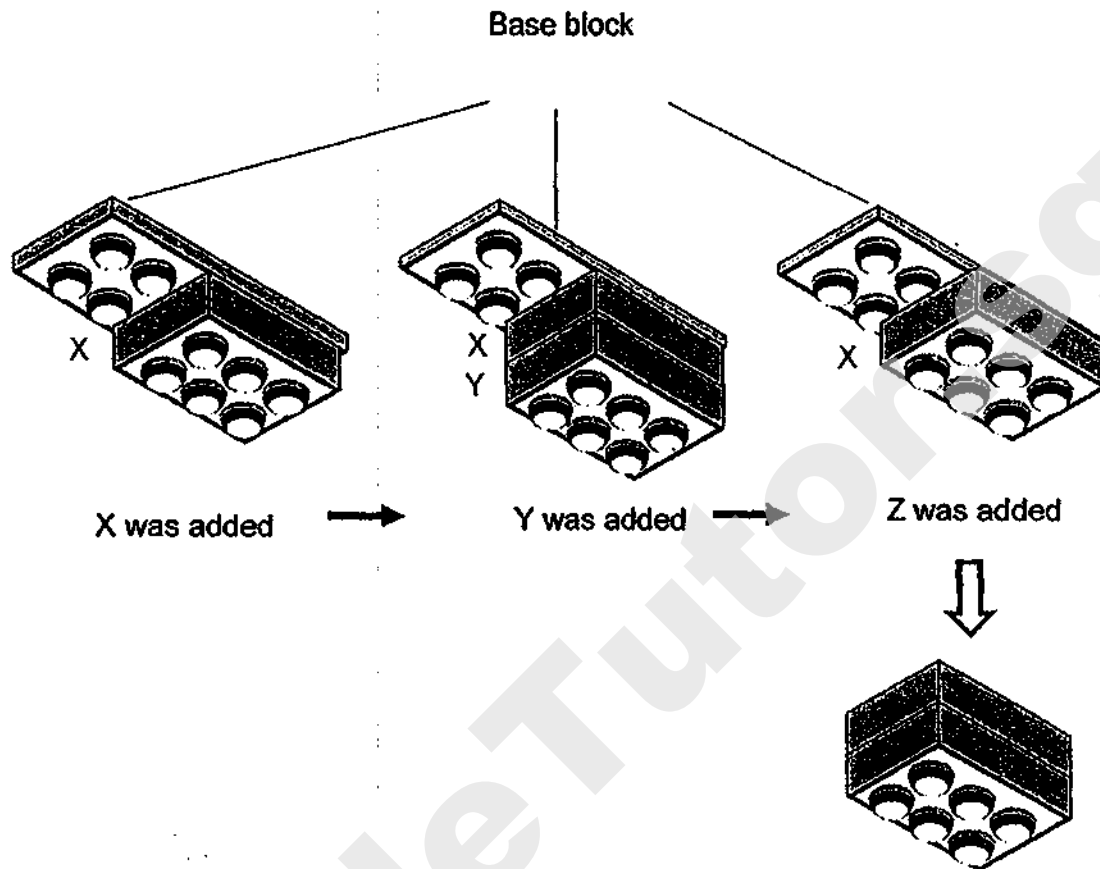
Which of the following statements are correct?

- 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



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	

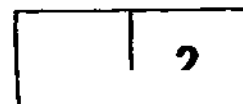
(a) Which two sets of trays should John select if he wanted to find out whether water is required for germination? [1m]

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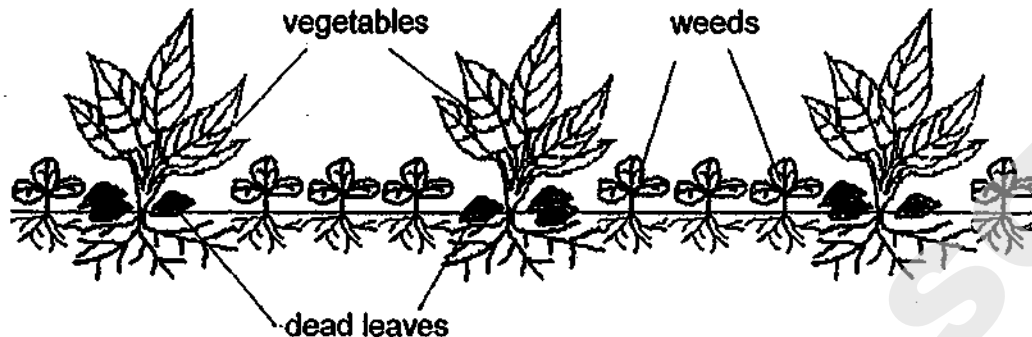
(b) From Day 5 to Day 15, the plants in Tray D grew taller than the plants in Tray B. Explain why. [1m]

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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]

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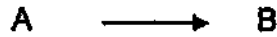
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- (b) The farmer observed that the vegetables decreased as the weeds multiply too quickly. Give a reason for the observation. [1m]

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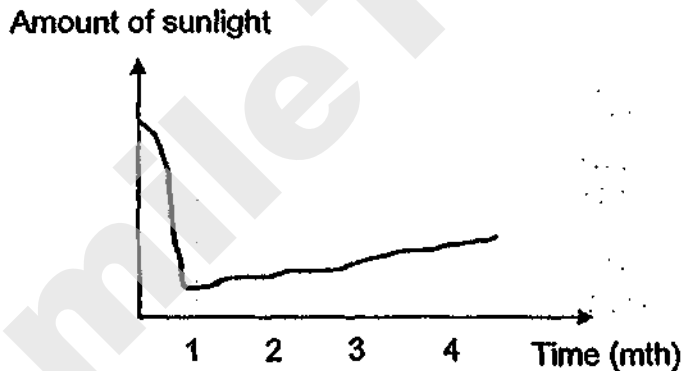
31. Organisms A and B are found on island H and the food relationship is shown below.



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.



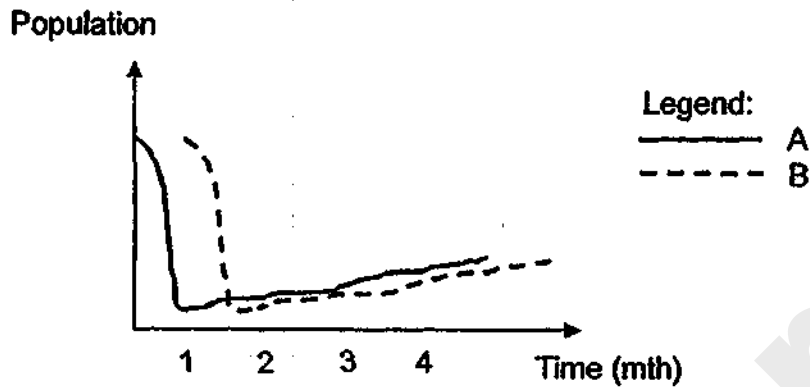
- (a) Predict whether the population of A will increase, remain the same or decrease in the first month after the eruption. Explain your answer. [1m]

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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.



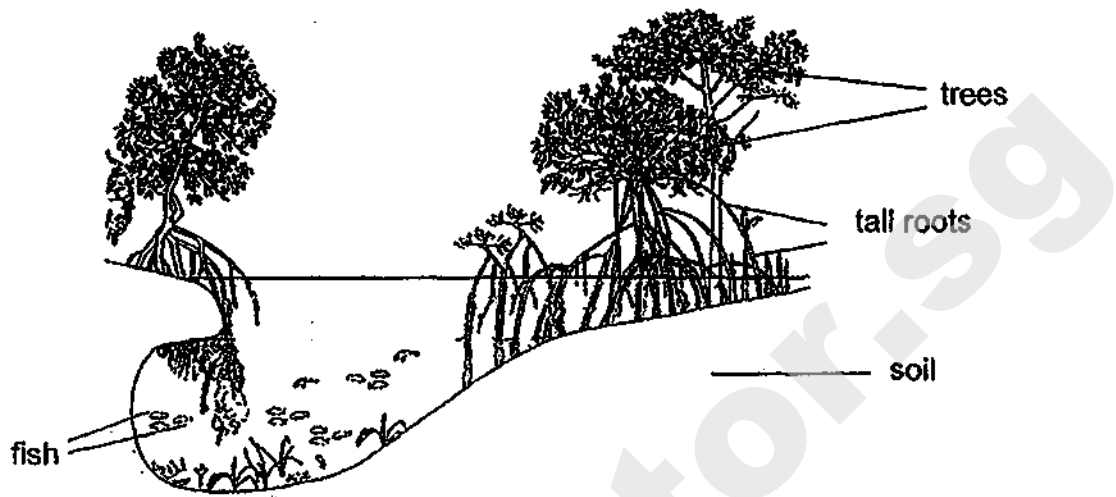
- (b) Explain why the population of B started increasing one month after the population of A increased. [1m]

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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]

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(b) Soil erosion happens when the soil is washed away by water. Explain how the trees help to prevent soil erosion. [1m]

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(c) State how the roots help the fish to escape from their predator. [1m]

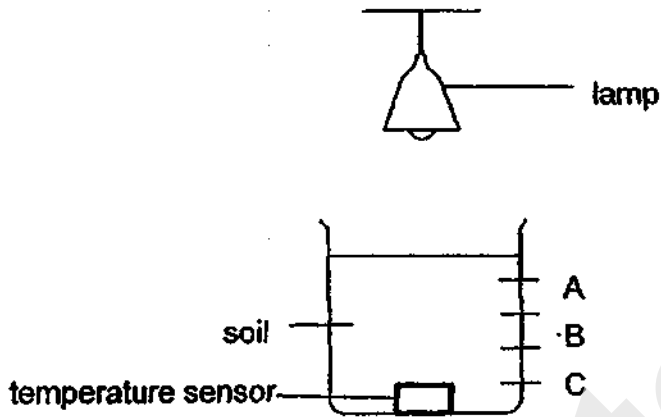
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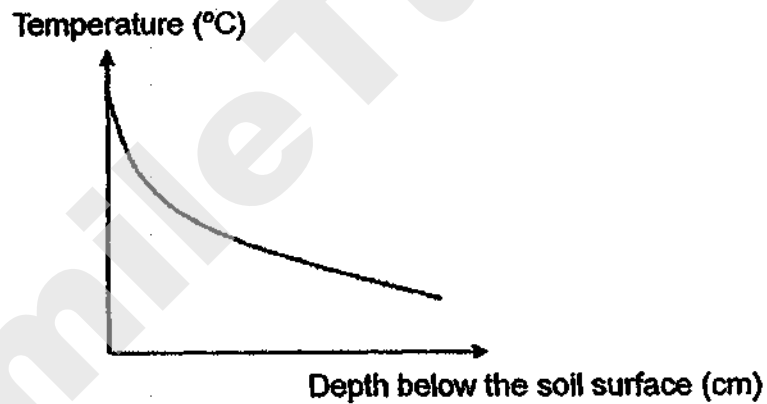
	1
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33. Selma conducted an experiment to see how temperature changes with the depth of soil using the set-up shown below. After the lamp had been turned on for one hour, Selma recorded the temperature of the soil at points A, B and C using a temperature sensor.



The results is shown in the graph below.



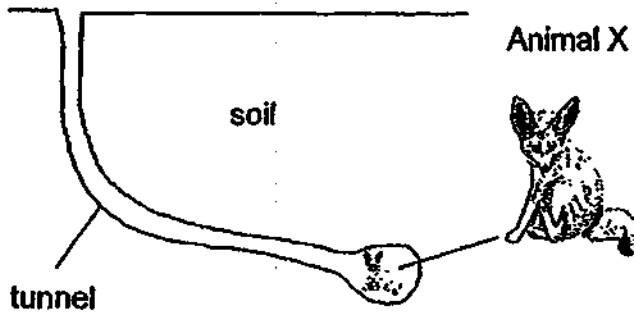
- (a) Based on the graph above, state the relationship of the temperature and the depth of the soil. [1m]

---

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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]

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(c) Describe how a structural adaptation of Animal X helps it to keep cool. [1m]

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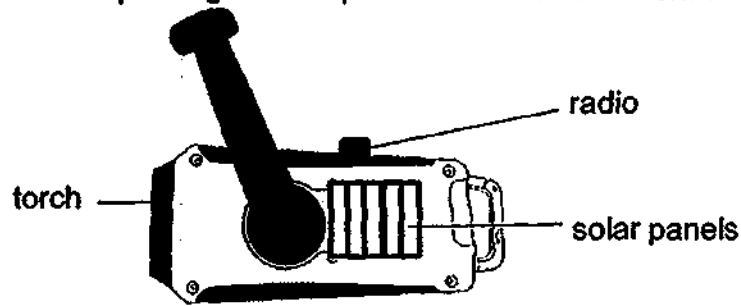
(d) Describe how Animal X keeps warm at night. [1m]

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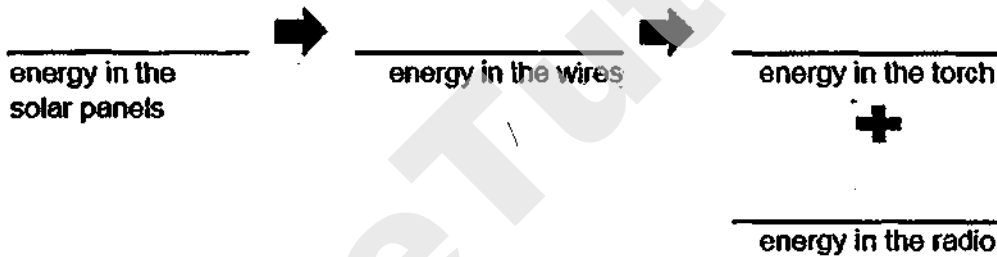
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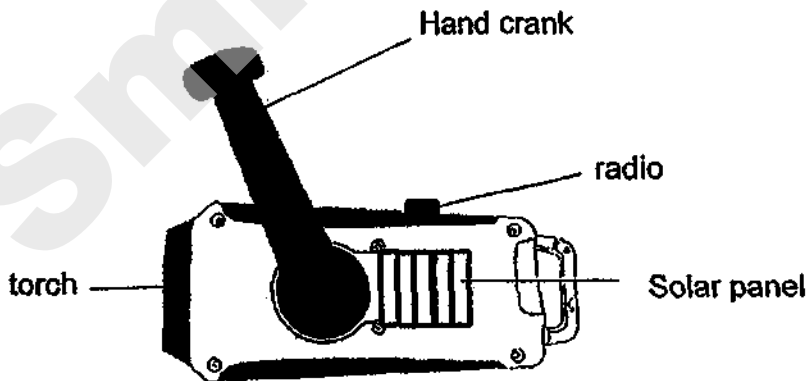
34. Lim Teck received the following device after participating in an emergency exercise.  
The solar panels trap sunlight which powers the device to work as a torch and a radio.



- (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.

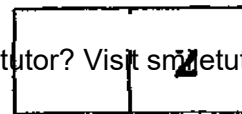


- (b) Lim Teck observed that the torch turned on first before the radio. Explain why. [1m]

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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]

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35 (a) State a difference between evaporation and boiling. [1m]

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Charles filled two identical containers with the same amount of water and left them at two different locations.



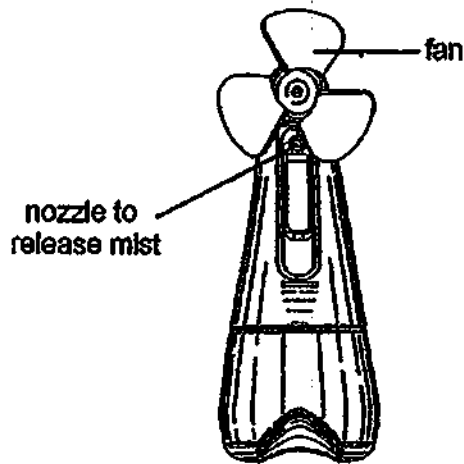
After a few hours, he measured and recorded the amount of water left in each container.



(b) Explain why the changes in the water level in A and B are different. [1m]

---

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]

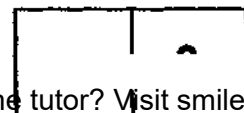
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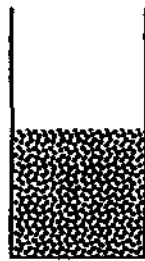
(d) The time taken for the mist to disappear was shorter when Charles' body temperature was higher. Explain why this is so. [1m]

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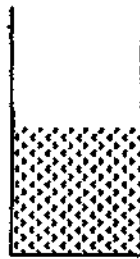
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36. Lim put the same amount of sand A, B and C into three identical containers.



Sand A

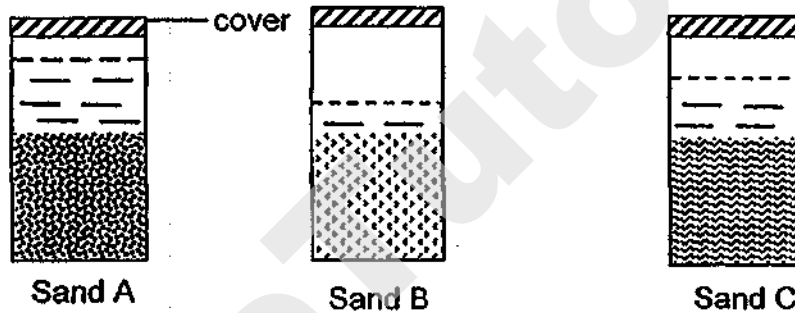


Sand B



Sand C

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]

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(b) Give a reason why the water level in container B is the lowest. Explain your answer. [2m]

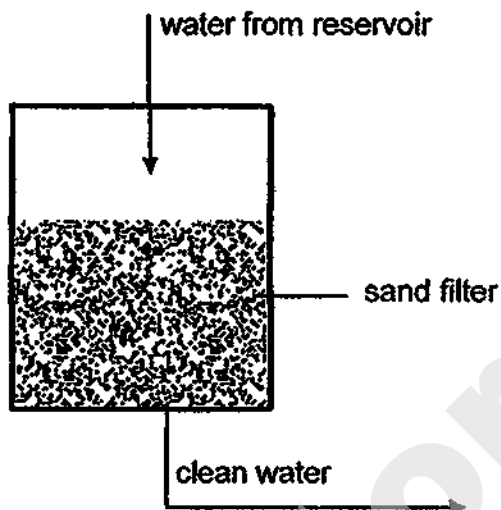
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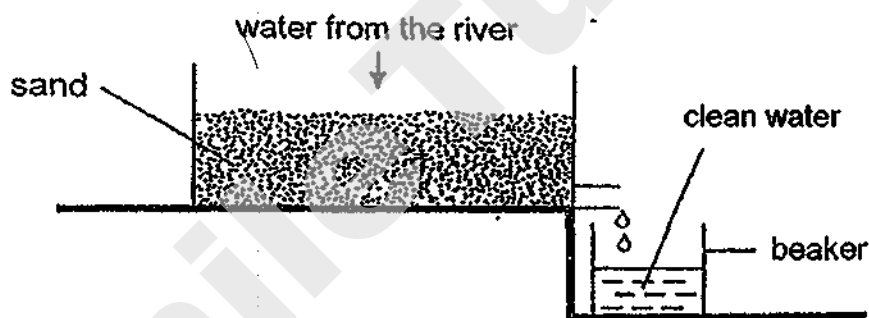
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To get clean water, water from the reservoir is passed through a sand filter so that dirt is trapped in the filter.



Lim wanted to get clean water from a nearby river by creating his own filter system.

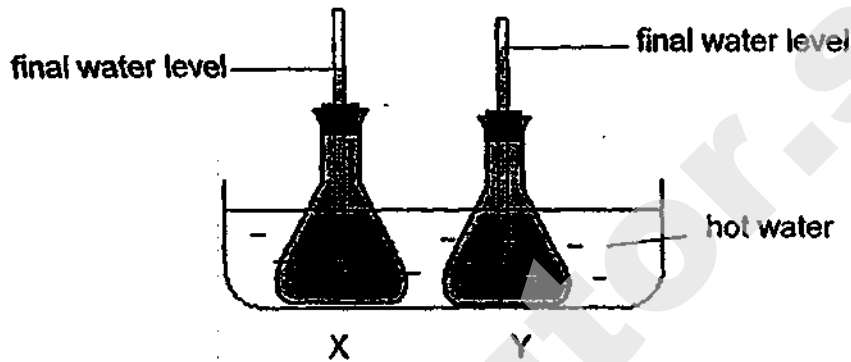


- (c) Which type of sand, A, B or C, should Lim use to get clean water? Explain your answer. [2m]

---

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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 ( $^{\circ}\text{C}$ )	
	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]

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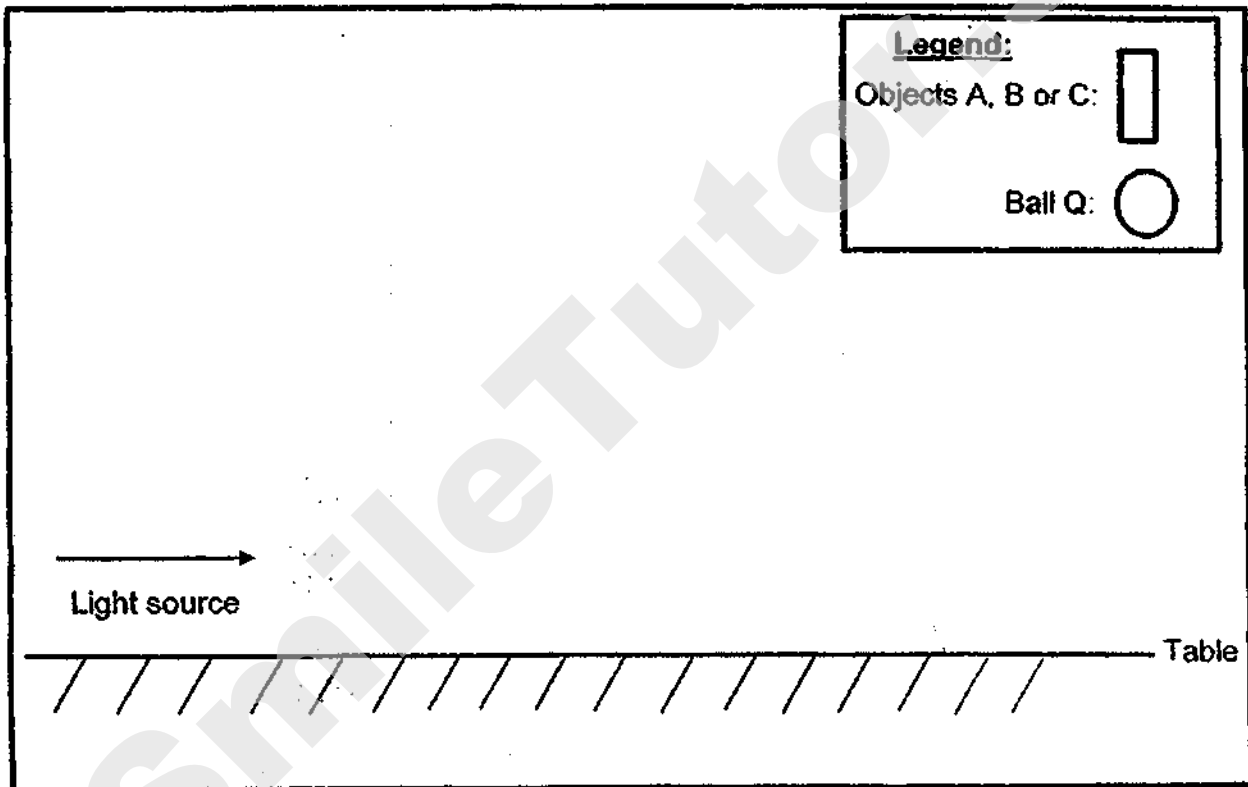
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38. Ariel plans to set up an experiment in a dark room using different objects, A, B, C and Q.

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]

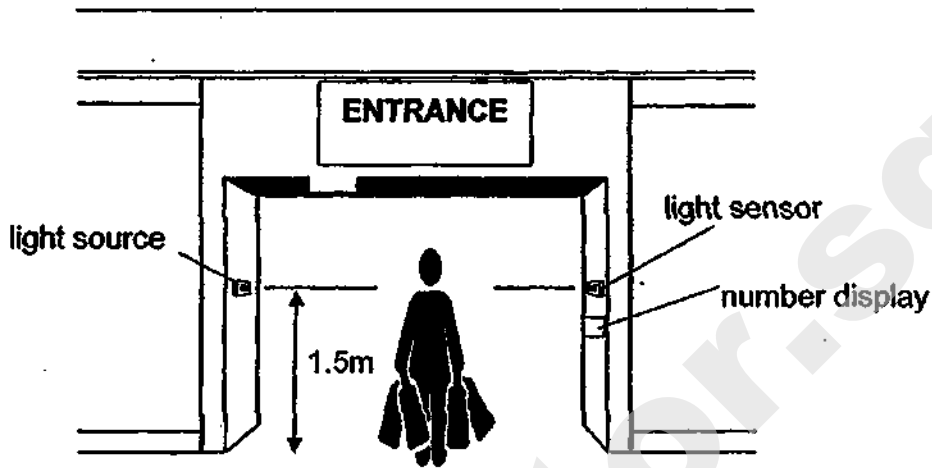
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Ariel observed that a device is installed at the entrance of a shop to count the number of customers entering the shop.



(c) Explain how the device is able to count the number of customers. [1m]

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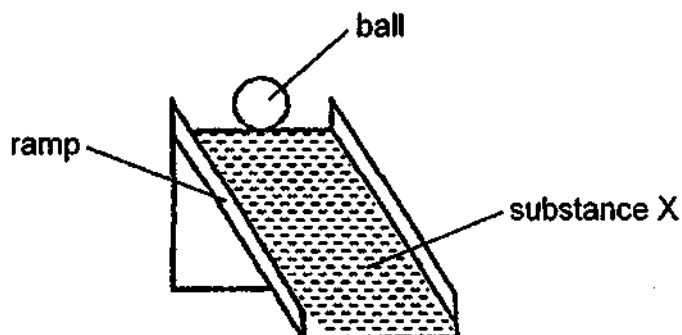
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(d) Ariel noted that the device did not accurately count the number of customers who entered the shop. Suggest one change to the device so that the counting can be accurate. [1m]

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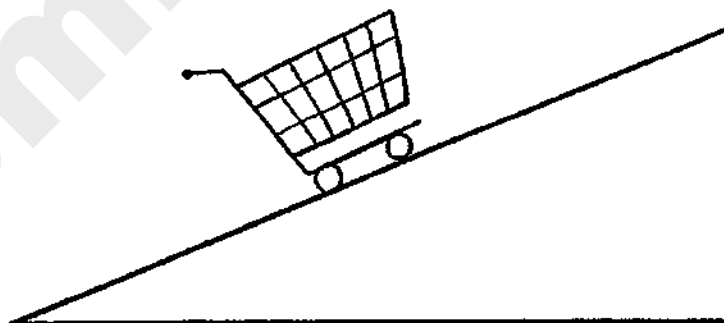
39. Peter did an experiment to find out which type of substance, X, Y or Z, lets the ball roll down the ramp the fastest. He covered the ramp surface with substance X and measured the time taken for the ball to reach the bottom of the ramp.



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.

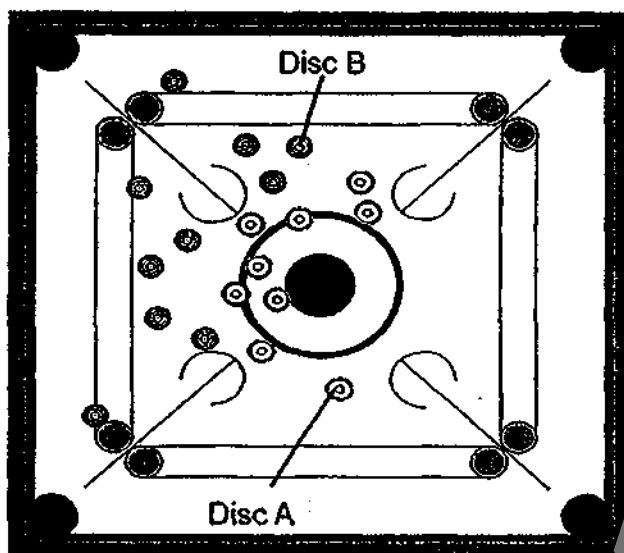


- (a) Based on the results of his experiment, which substance, X, Y or Z, is the most suitable for the trolley to stop halfway on the ramp? Explain your answer. [1m]

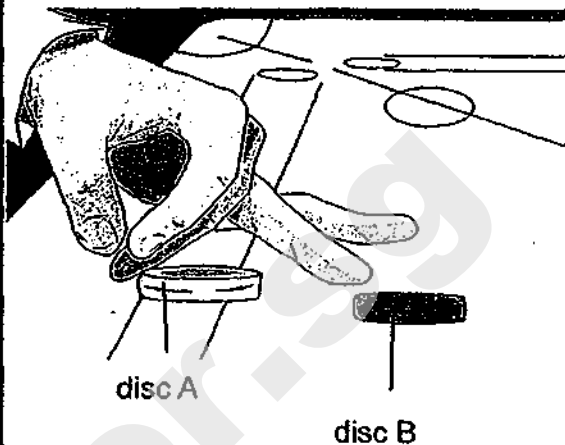
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Carrom is played on a board where players push a disc at other discs as shown below.



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]

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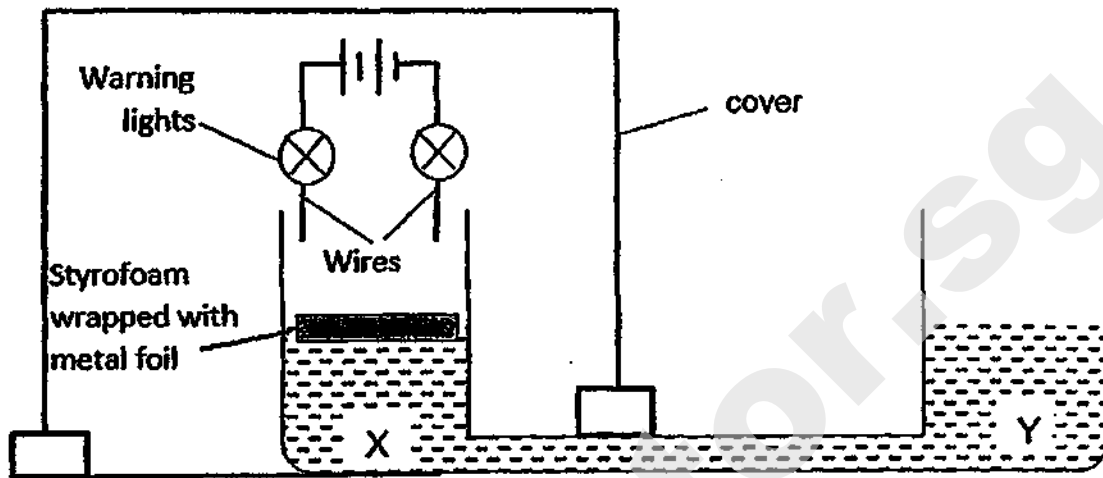
- (c) Peter wanted the discs to move faster on the board. Which substance, X, Y or Z, should Peter use on the board? Explain your answer. [2m]

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	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]

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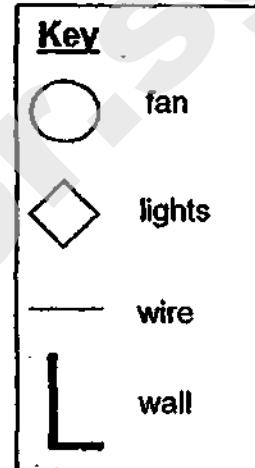
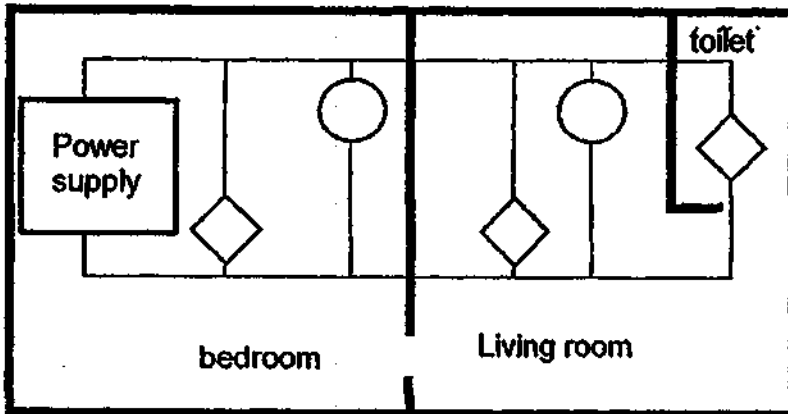
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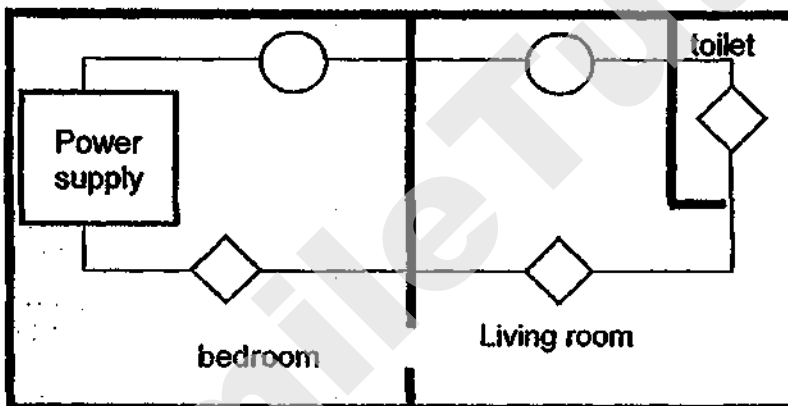


In the diagrams below, the fans and lights are connected in two different ways.

**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]

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	<b>3</b>
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~ End of Paper ~

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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.

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.

**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.**

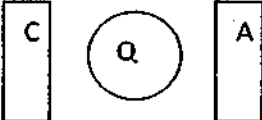
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SCHOOL : RIVER VALLEY PRIMARY SCHOOL  
 LEVEL : PRIMARY 6  
 SUBJECT : SCIENCE  
 TERM : 2019 PRELIM

**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		

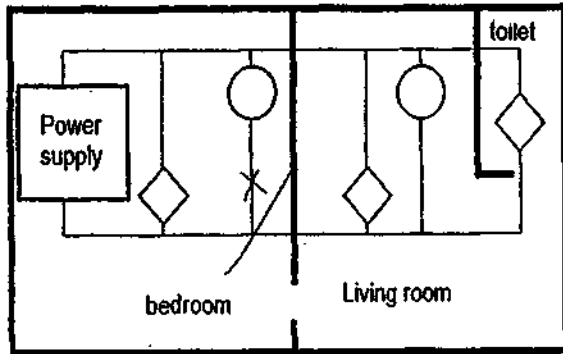
**SECTION B**

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.

Q40)

b)

Diagram 1



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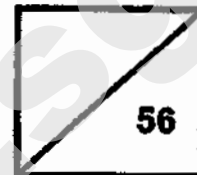




**Rosyth School**  
**Preliminary Examination 2019**  
**SCIENCE**  
**Primary 6**

Name: \_\_\_\_\_

Total  
Marks:



Class: Pr 6- \_\_\_\_\_

Total time for  
Booklets A and B: 1 h 45 min

Date: 29 August 2019

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## **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).

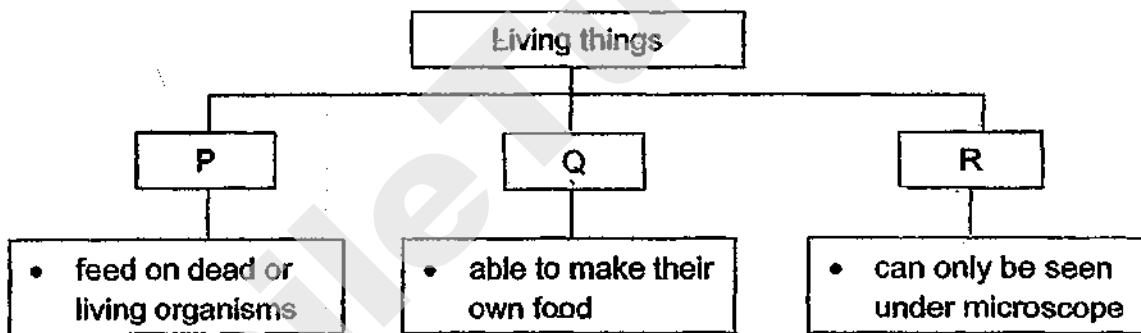
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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **[56 Marks]**

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

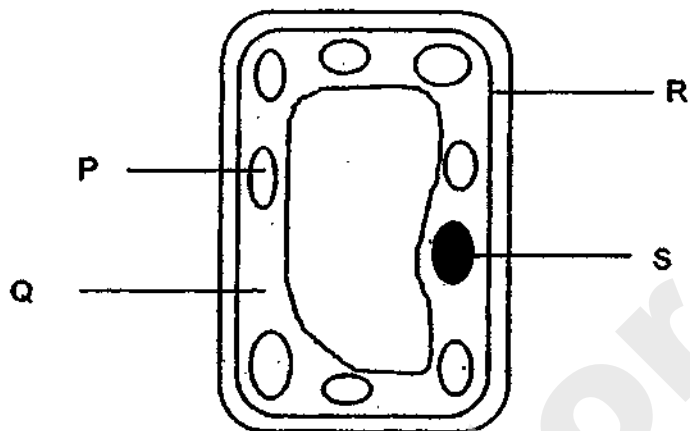
2 Study the classification chart below.



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

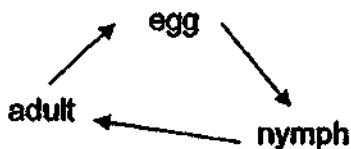
3 Study the plant cell shown below.



Where does photosynthesis take place inside the plant cell?

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

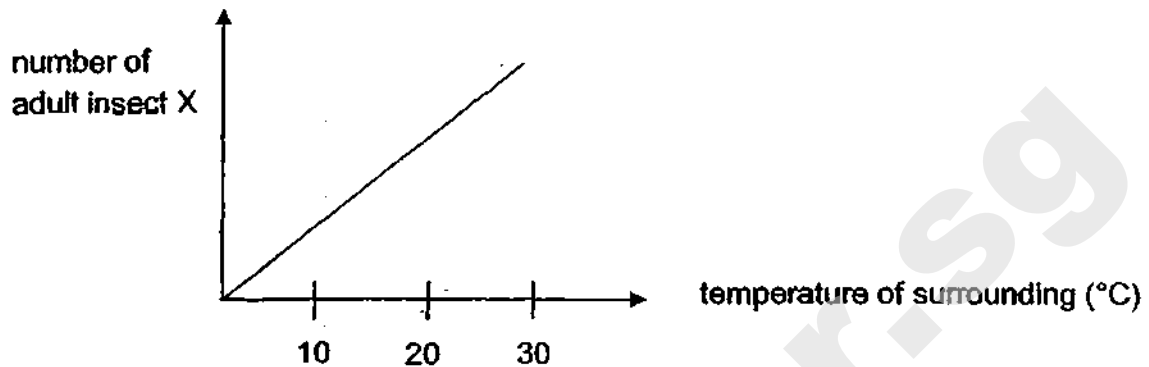
4 Study the life cycle shown below.



Which one of the following animals has a life cycle similar to the one shown above?

- (1) frog
- (2) chicken
- (3) mosquito
- (4) grasshopper

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.

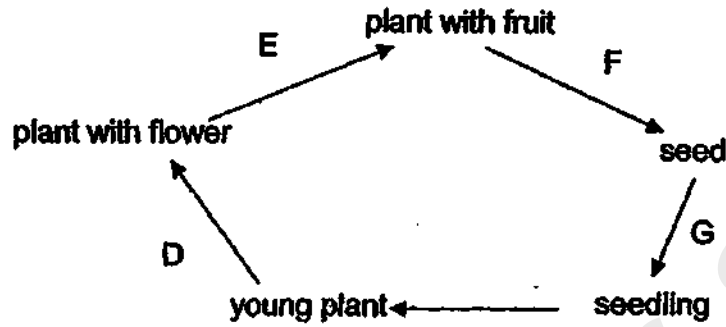
David stated two reasons to explain the relationship as shown in the graph:

- 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

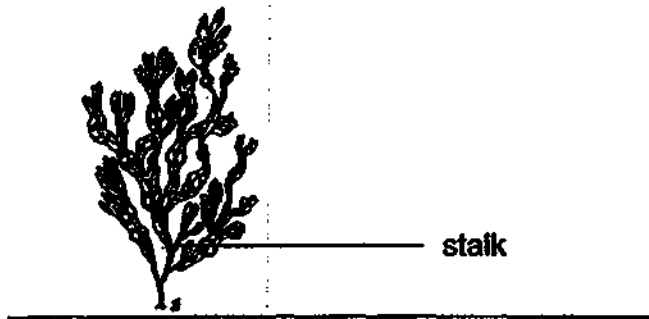
6 The diagram below shows the developmental stages of a flowering plant.



Where do the processes of pollination, fertilisation and germination take place?

	<b>Pollination</b>	<b>Fertilisation</b>	<b>Germination</b>
(1)	E	E	G
(2)	D	E	G
(3)	E	E	F
(4)	D	F	G

- 7 Seaweeds are plants that live in the sea. An example of a seaweed is shown below.

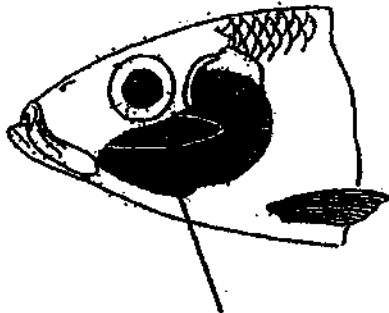


Waves pull the seaweed in different directions and the seaweed is adapted to survive the sea waves.

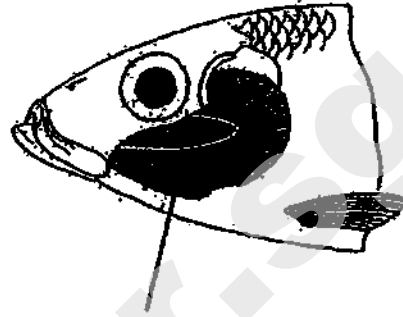
Which properties of the stalk have helped it to adapt in its environment?

- (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

- 9 The diagrams below show the healthy and the infected gills. The infected gills have fungi S growing into them.

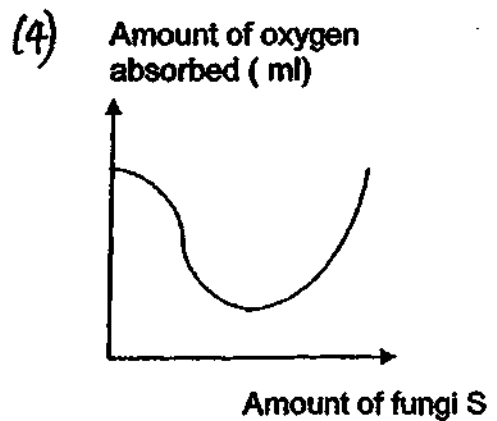
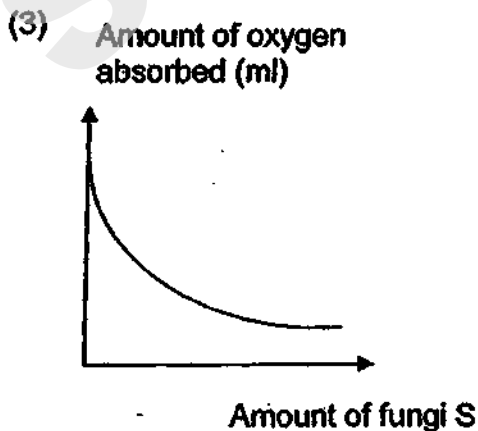
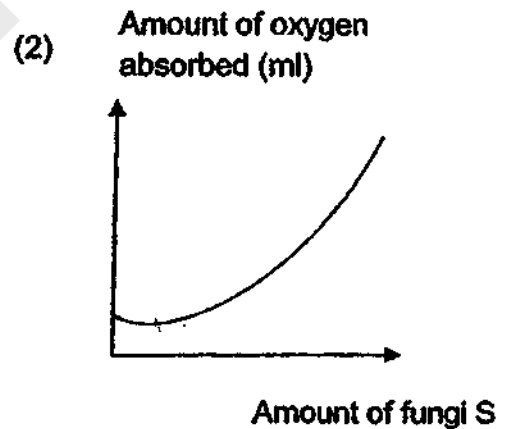
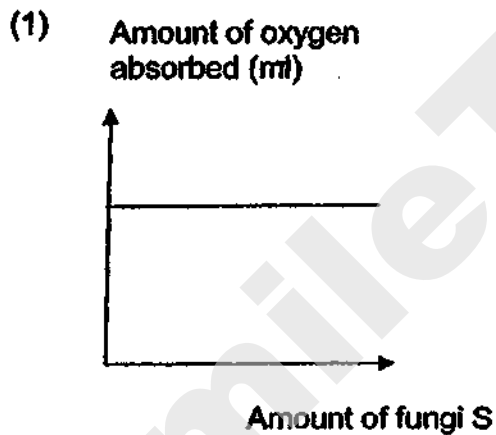


healthy gills

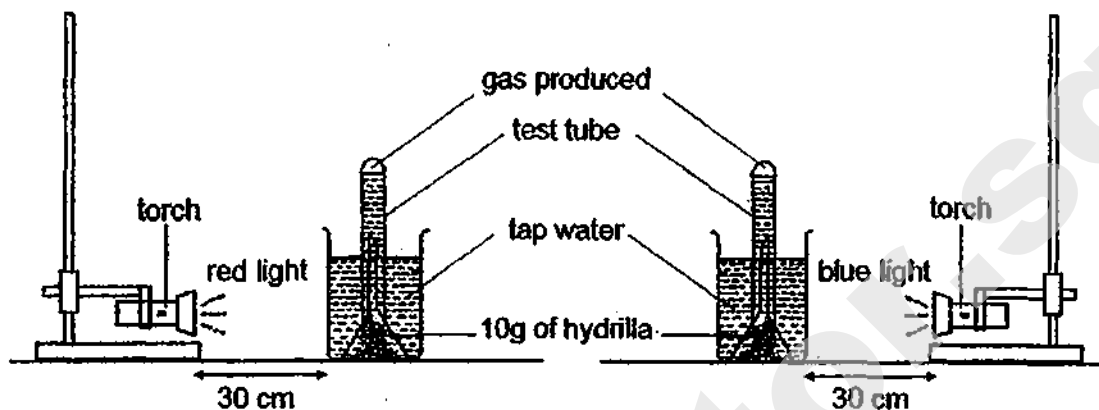


fungi S growing into the gills

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?



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.



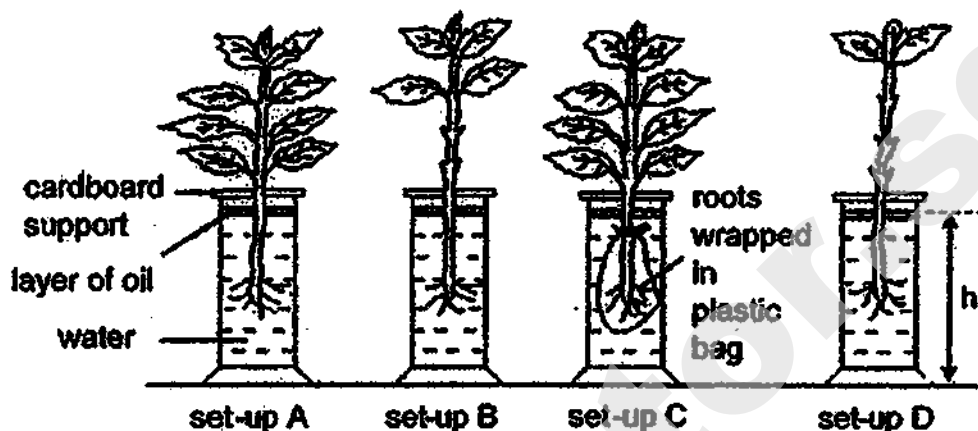
circulatory system of a fish

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



- 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

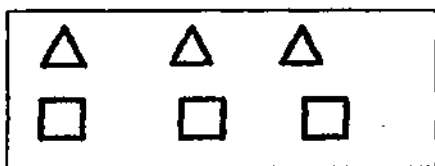
Which one of the following is correct?

	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.

- 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.

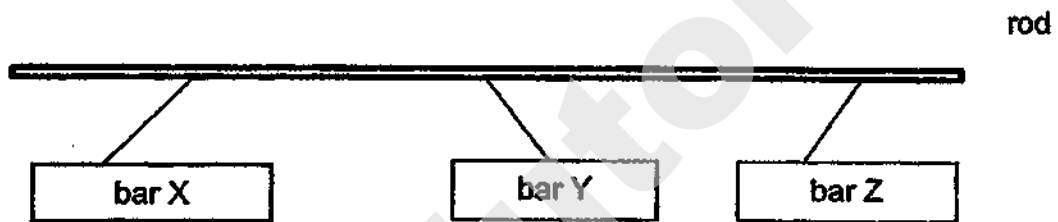
Which one of the following shows a possible result for his conclusion?

	More amount of dissolved oxygen in water than normal	Less amount of dissolved oxygen in water than normal
(1)		
(2)		
(3)		
(4)		

15 Which one of the following is a good conductor of heat?

- (1) metal
- (2) wood
- (3) fabric
- (4) plastic

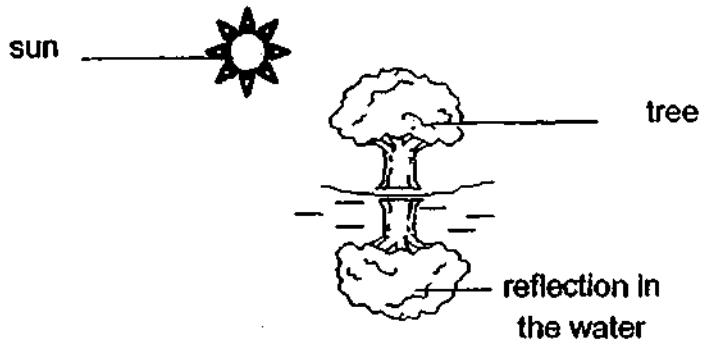
16 Three bars were freely suspended on a rod as shown in the diagram below.



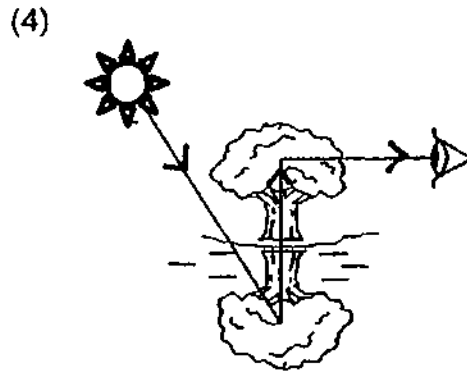
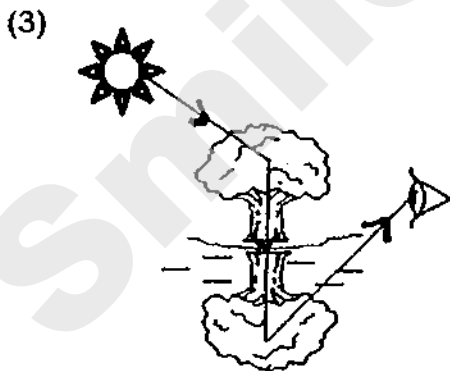
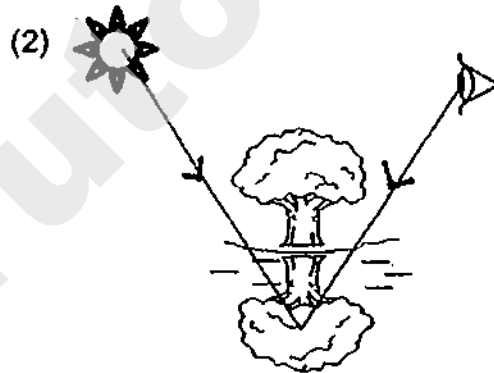
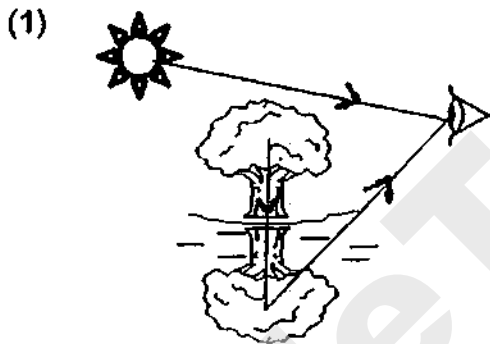
Based on the above observation, which bars are definitely magnets?

- (1) X and Y only
- (2) Y and Z only
- (3) X and Z only
- (4) X, Y and Z

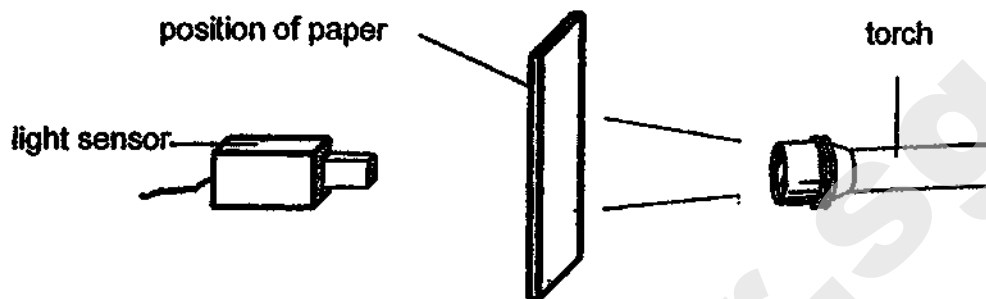
17 The picture below shows a tree and its reflection in the water.



Which one of the following correctly shows the path of light for the reflection of the tree in the water to be seen?



- 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.



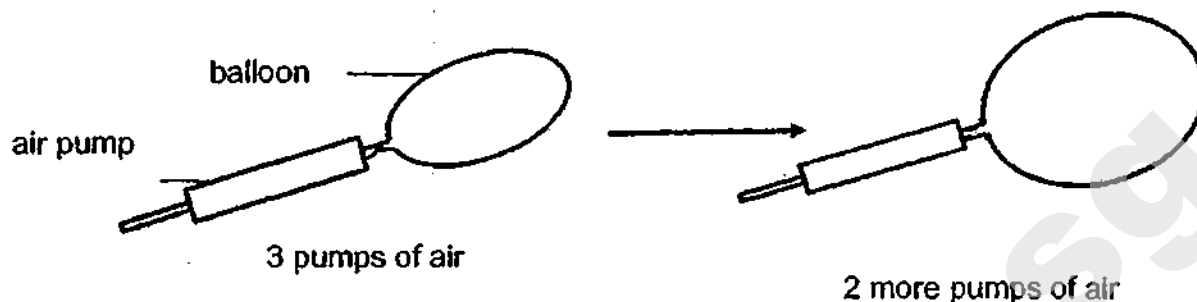
He increased the number of pieces of paper and recorded the amount of light that passed through in the table below.

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.

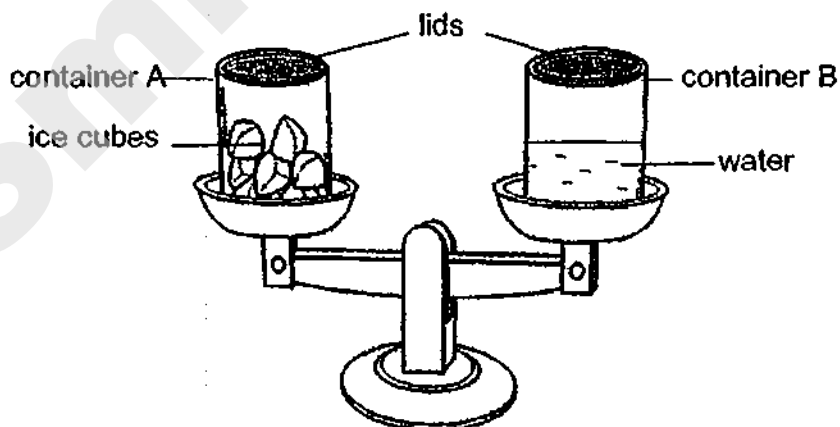
- 19 Air is pumped into the balloon as shown below using an air pump.



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

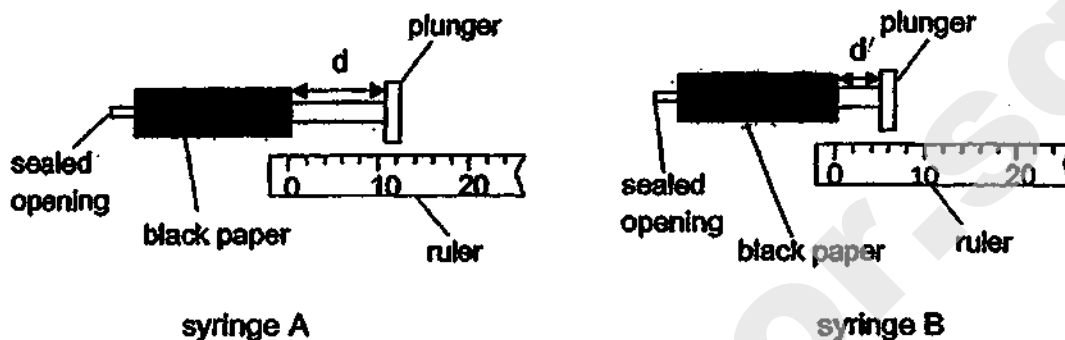
- 20 Two identical containers, A and B, were covered with identical lids. Container A was filled with 250g of ice cubes and Container B was filled with 250g of water at room temperature. They were placed on a balance as shown below.



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.

- 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.



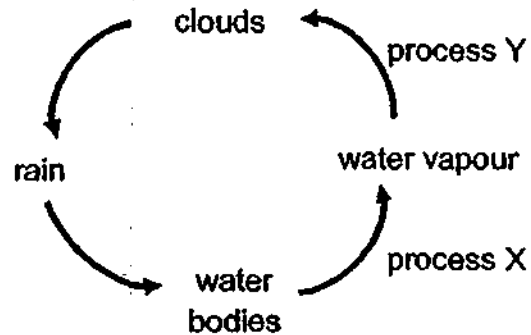
She recorded her results in the table below.

	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

22 The diagram below shows a water cycle.

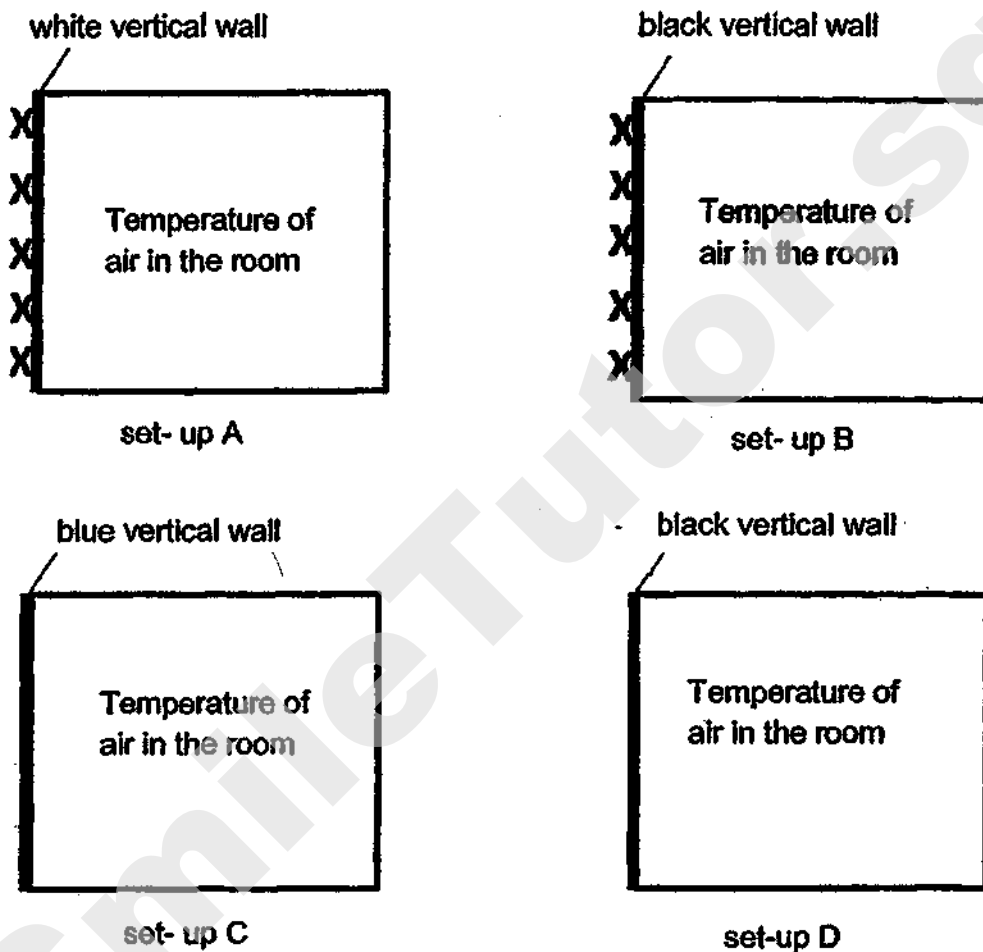


Which of the following statement is correct?

- (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.



- 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 ~~the~~ different coloured walls.

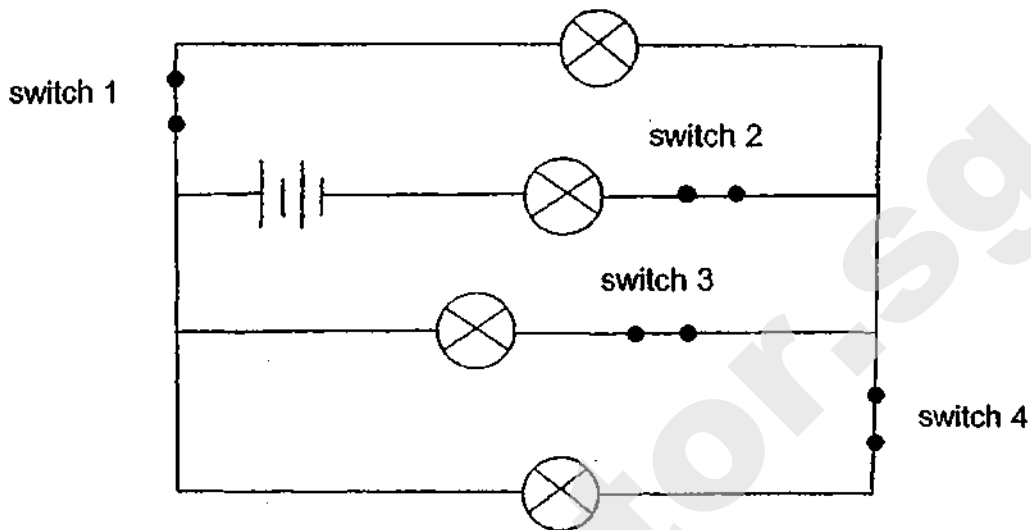


**X** represents plants on the vertical wall.

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

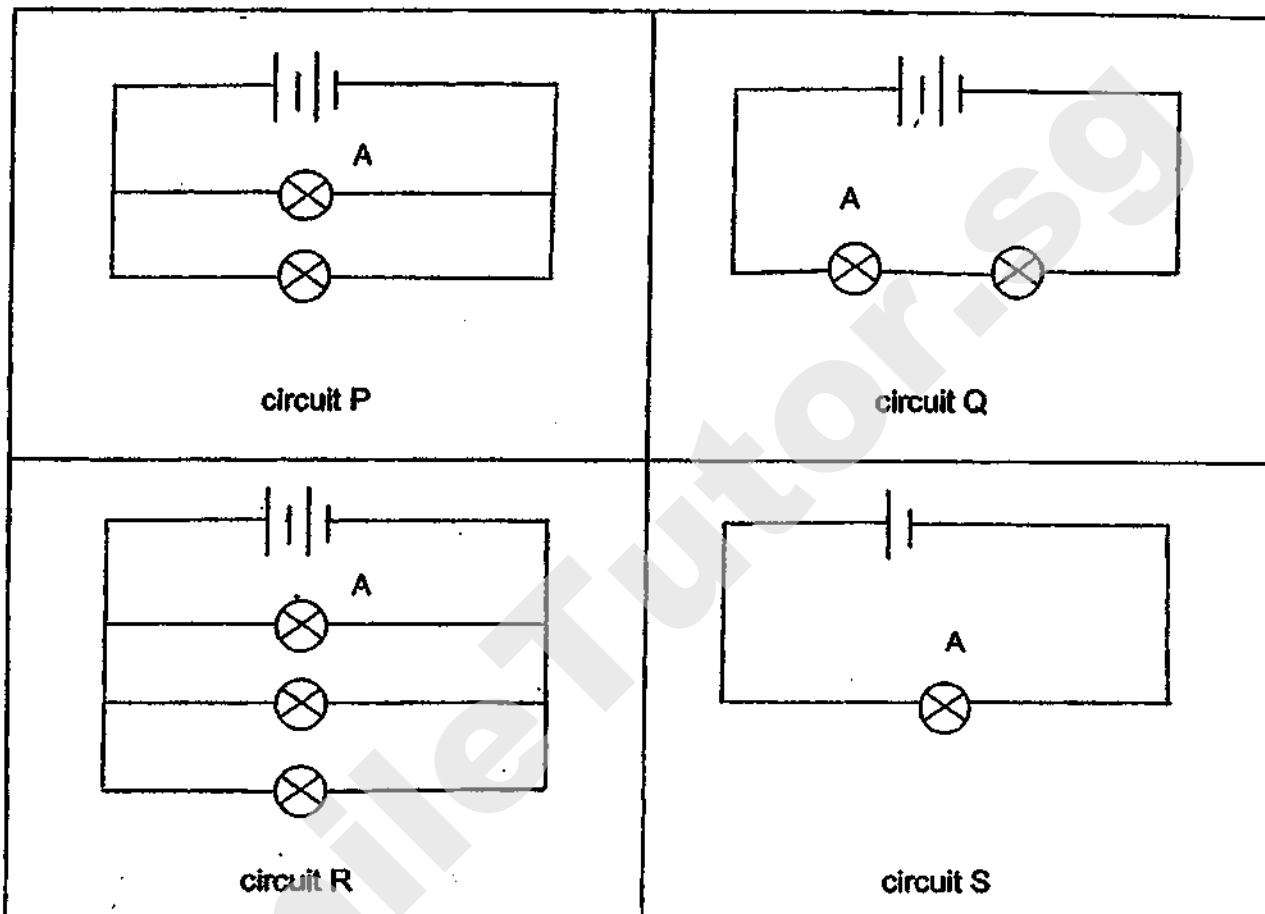
24 Weiling sets up a circuit as shown. All the bulbs and batteries are working properly.



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

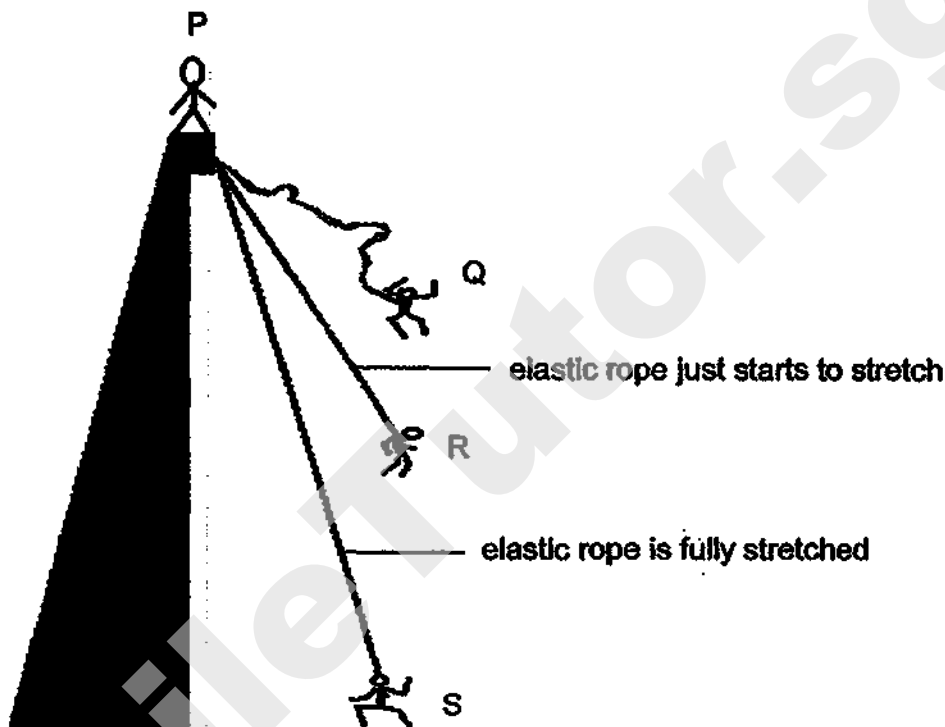
25 Gopal set up bulb A in four different electrical circuits P, Q, R and S using identical batteries and identical bulbs. The batteries and bulbs are all working properly.



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

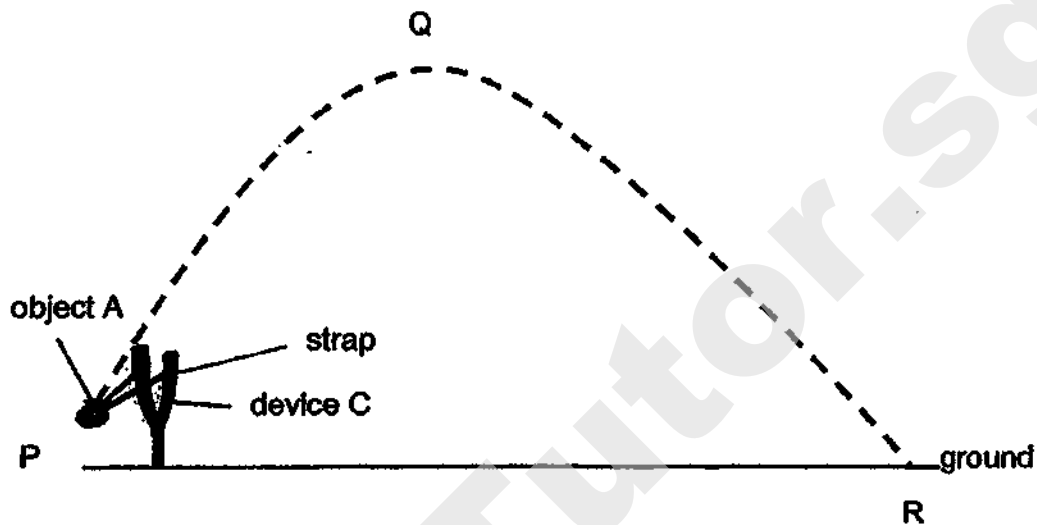
- 26 The diagram below shows the different positions of a bungee jumper who was secured by an elastic rope as he jumped off. At first, the bungee jumper was at the top, position P before he took his jump.



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)

- 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.

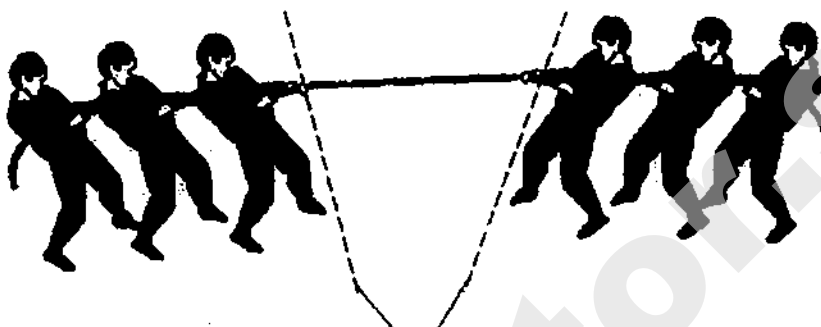
(1) A only

(2) D only

(3) C and D only

(4) B, C and D only

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:



Class: Pr 6- \_\_\_\_\_

Total time for  
Booklets A and B: 1 h 45 min

Date: 29 August 2019

Parent's Signature: \_\_\_\_\_

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## 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).

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]

\_\_\_\_\_

\_\_\_\_\_



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]

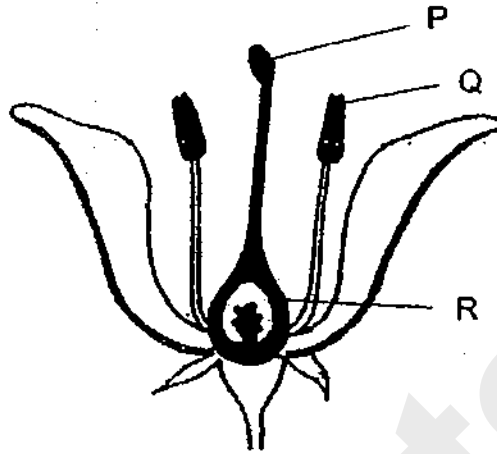
Characteristic 1: \_\_\_\_\_  
\_\_\_\_\_

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]

\_\_\_\_\_  
\_\_\_\_\_

- 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]

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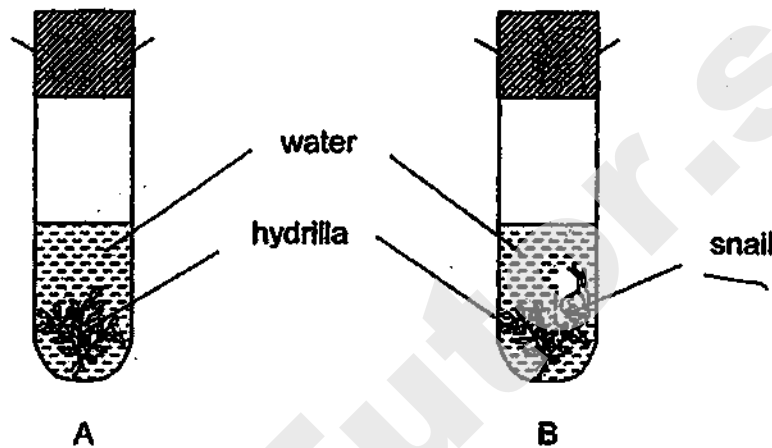
When the above experiment was carried out, the scientists had two groups of flowers. One group was exposed to the sound of bees while the other was exposed to some other sound.

- (d) Do you think the above is a necessary step to take? Explain why. [1]

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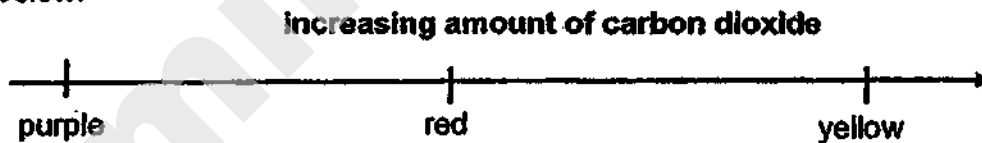
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- 32 A group of students conducted an experiment using two identical tubes as shown. They put the two set-ups, A and B, in the sun for a few hours.



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]

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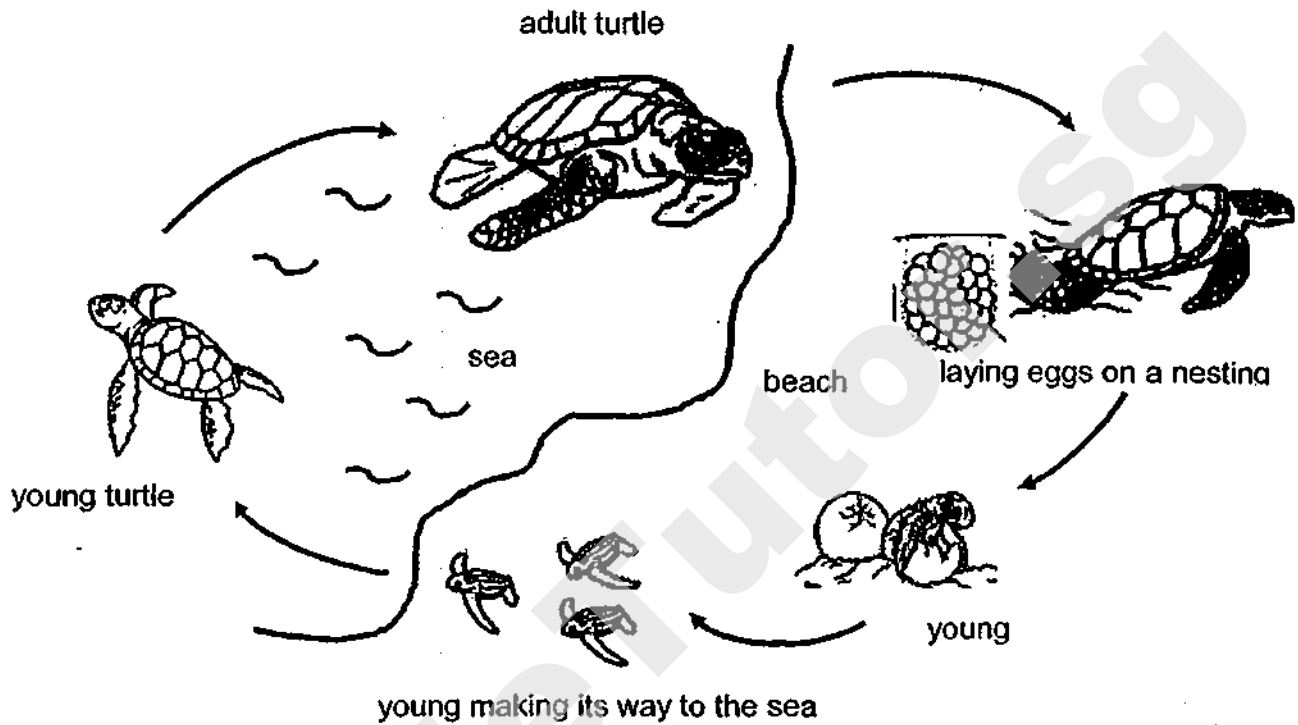


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- (b) Other than what is observed from the experiment above, state one way in which animals benefit from plants in a pond. [1]

---

- 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]

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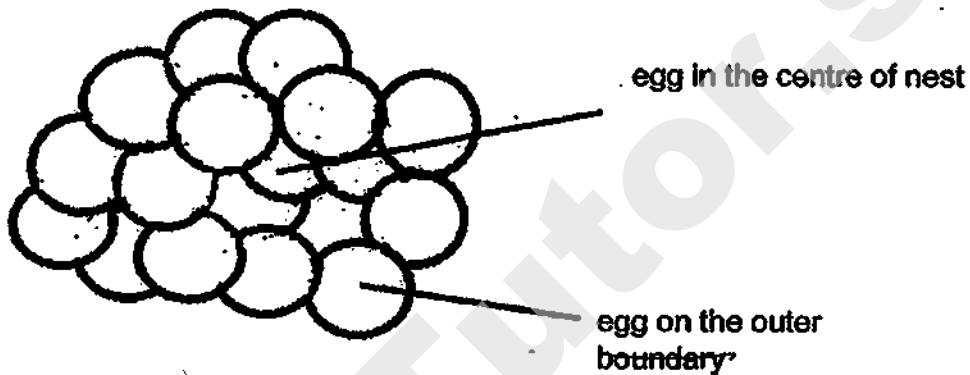
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Question 33 is continued on page 7

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]

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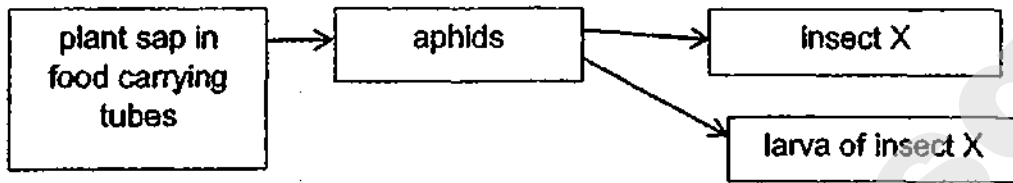
If the temperature of the surrounding becomes too high (above 28°C), only female turtles will be produced. This leads to a decrease in the number of sea turtles over time.

- (d) Explain why the number of sea turtles may decrease. [1]

---

---

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:

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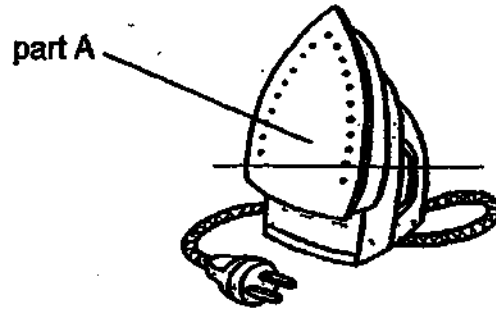
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Lays eggs among the aphids:

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35 The picture below shows an electric iron.

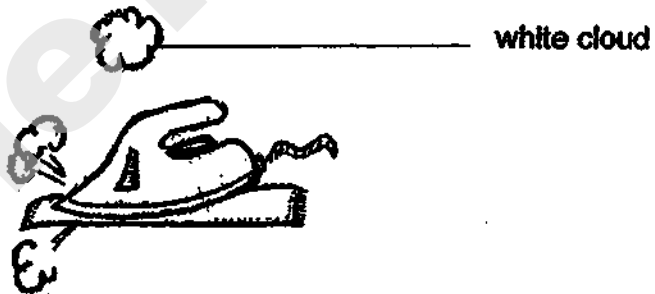


(a) State the material that is used to make part A of the electric iron and one property of the material used. [2]

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



- (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:

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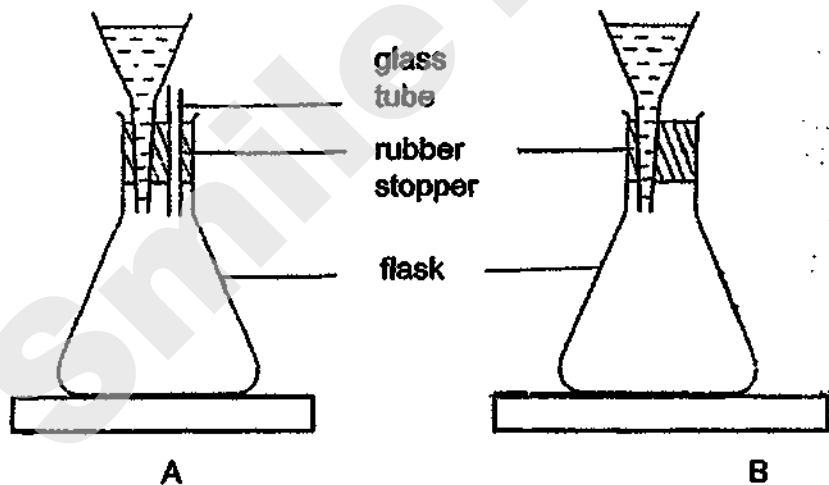
(ii) step 3:

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- 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

In another experiment, John had 4 different types of balls. The four balls are made of different materials C, D, E and 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]

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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:

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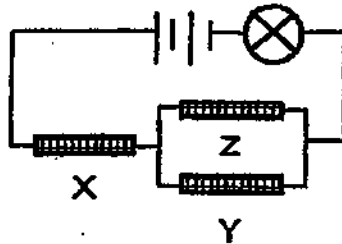
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Result:

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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.

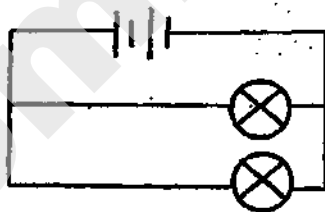
[1]

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---

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]

---



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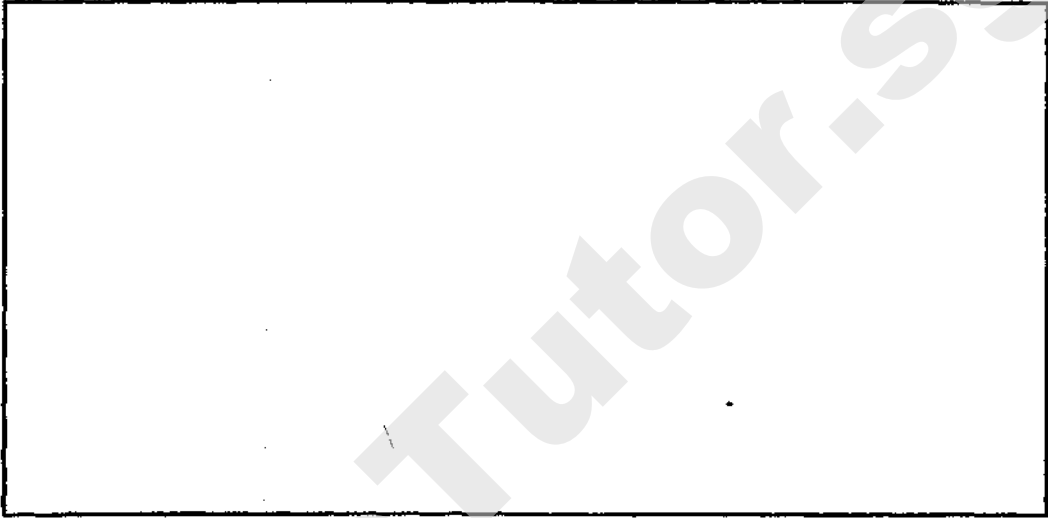
Question 38 is continued on page 14

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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]



- 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.



- (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]

\_\_\_\_\_

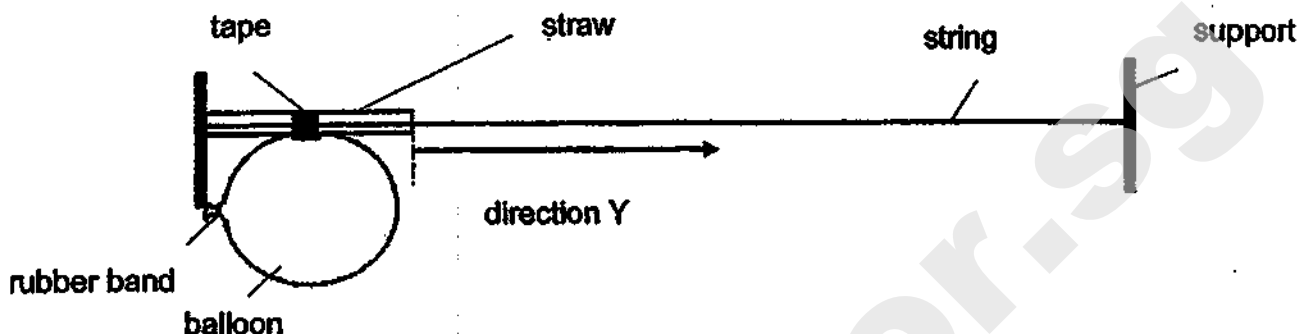
\_\_\_\_\_

- (c) Andy also observed that yo-yo continued to move up and down for a few times before stopping completely. Explain why. [1]

\_\_\_\_\_

\_\_\_\_\_

- 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)	
	1 <sup>st</sup> try	2 <sup>nd</sup> 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]

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- (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]

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End of Paper

**Answer Sheets -**  
**ROSYTH Pri 6 SA2/2019 SCIENCE**

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 than its death rate.

30a. Living 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 the habitat 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 exposure 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 animals to lay eggs / Plants provide oxygen for animals to take in.

33a. As the amount of carbon dioxide increases, more heat is trapped so the temperature of Earth increases. This causes the melting of the polar ice caps which causes the rising of sea levels.

**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 grow. This will reduce plant growth.**

**34b.Insect X feeds 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 :-Good conductor of heat**

**36b.Step 1 : Metal 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.**

**37ai Water flowed into flask quickly**

**37aii. Water flowed into flask slowly**

**37b.C and E. Both balls are of similar size / Volume.**

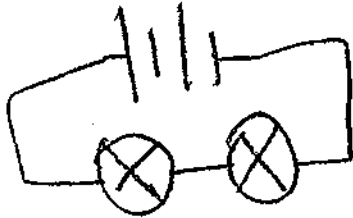
**37c.Method: Place ball C on pan A and ball E on pan B.**

**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.**



**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 yo-yo.

**39c.**Not all of the kinetic energy is converted to heat energy of the spinning yo-yo. 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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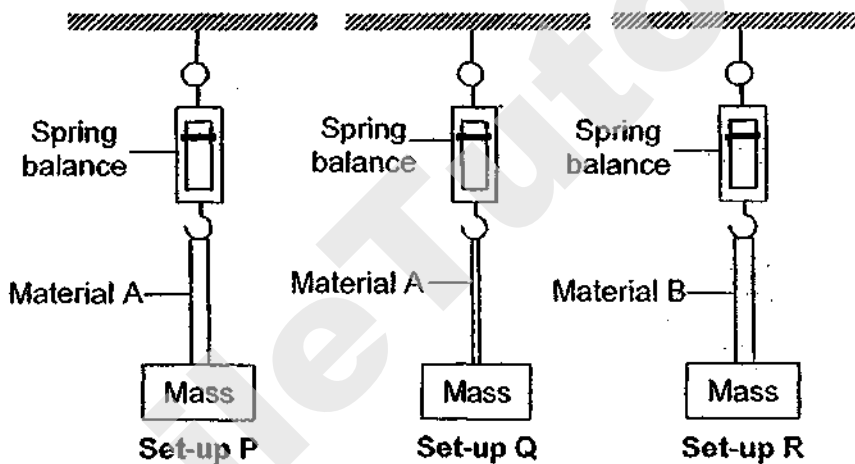
**Booklet A (56 marks)**

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  | 3) Presence of legs  |
| 2) Body temperature | 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      | Z: Q and R      |
| Y: P and R      |                 |
| 1) X only       | 3) Y and Z only |
| 2) X and Y only | 4) X, Y and Z   |

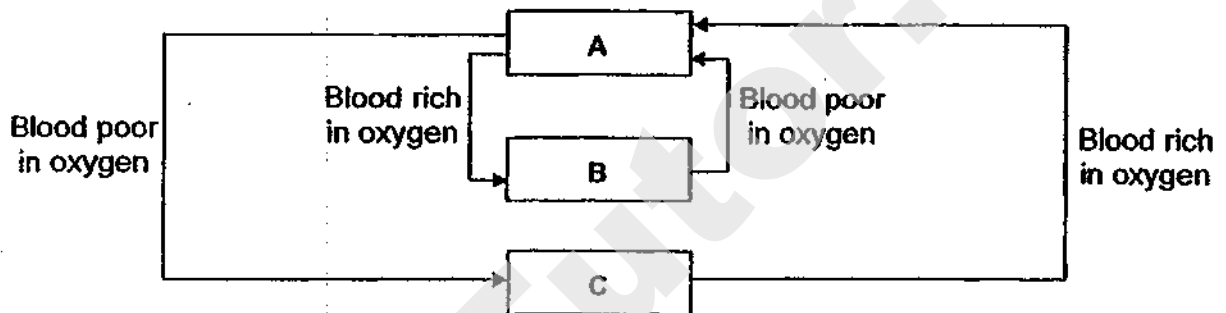
3. Which one of the following about the digestive system is correct?

	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

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.



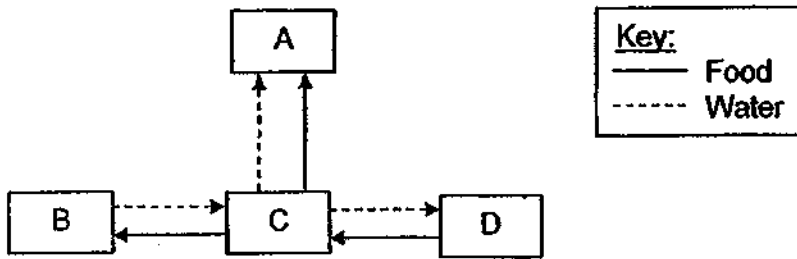
Leaf	Underside coated with oil	Upper side coated with oil
A	✓	✓
B		
C	✓	
D		✓

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

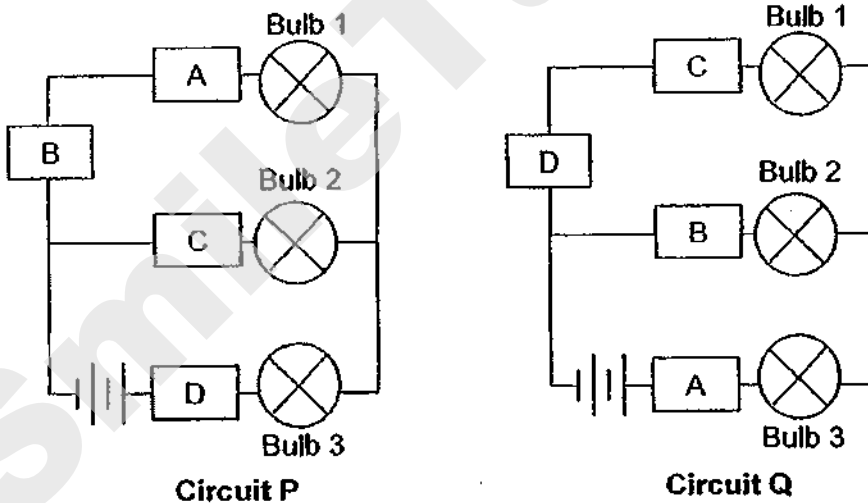
7. The diagram below shows the movement of food and water in a plant.



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:



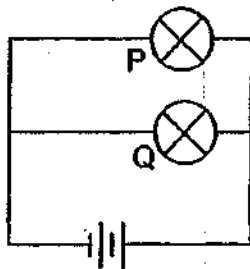
The table below shows the results of her experiment.

	Did the bulbs light up?		
	Bulb 1	Bulb 2	Bulb 3
<b>Circuit P</b>	No	No	No
<b>Circuit Q</b>	No	Yes	Yes

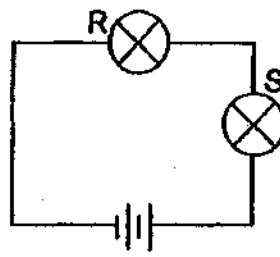
Which one of the following is correct?

	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	

9. Alice set up 2 circuits using similar electrical components as shown below.



Circuit A



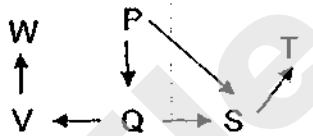
Circuit B

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

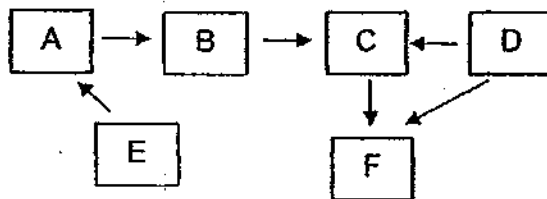
10. Study the food web below.



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?

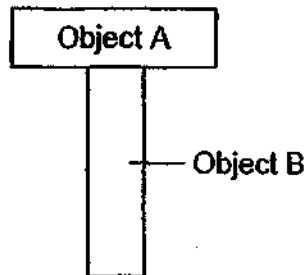
- 1) B only  
 2) B and C only  
 3) A and F only  
 4) A, B, C and F only



12. Aziz observed that Object A and Object B were attracted as shown below.

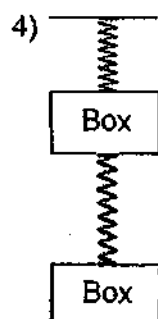
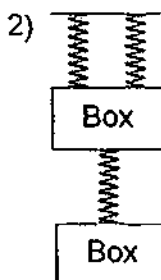
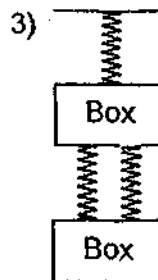
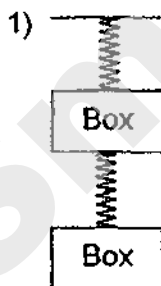


Aziz then placed Object A and Object B in another position as shown below.



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?

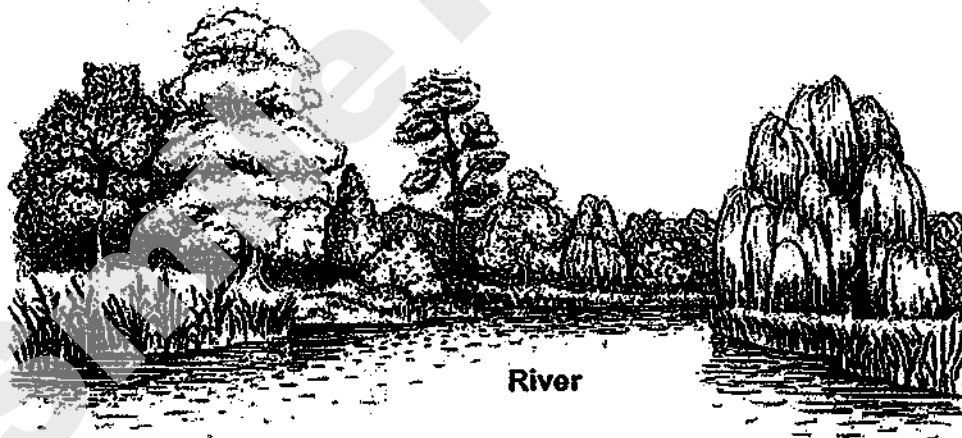


14. The picture below shows a group of polar bears looking for food in a rubbish dump in a town.



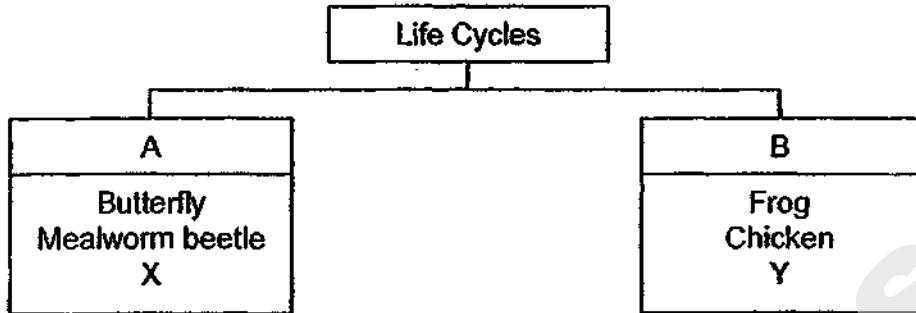
Which one of the following directly drives the polar bears to search for food in the town?

- 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.

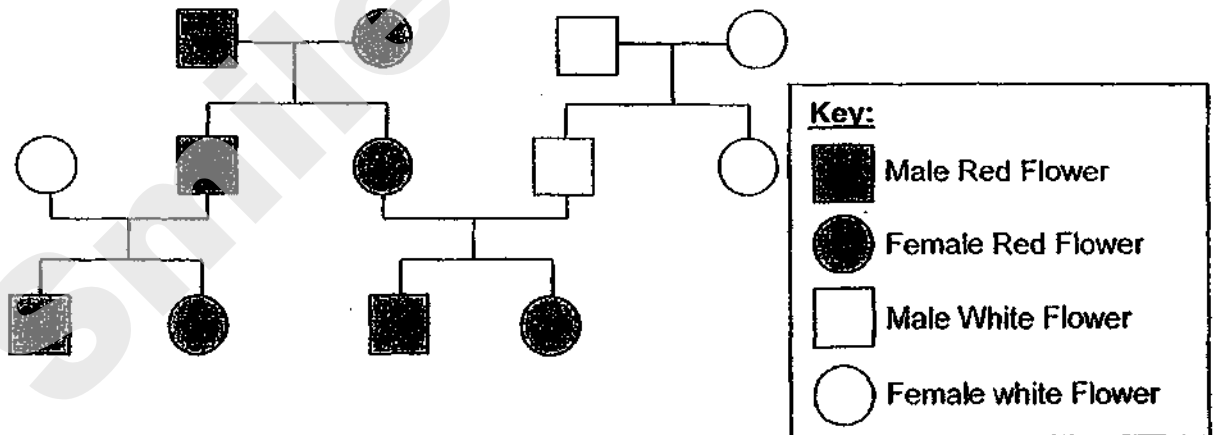
16. Study the classification chart below.



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.



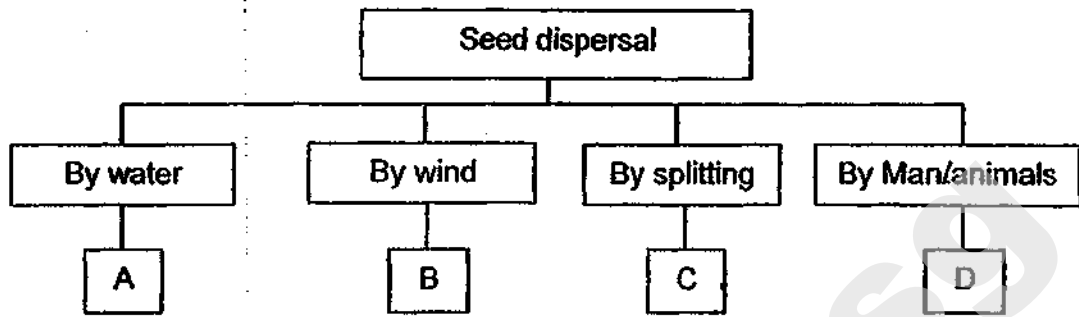
Based on the diagram above, which of the following statements are true?

- 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

18. Study the classification chart below.

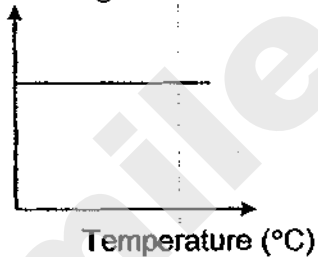


Which one of the following organisms cannot be placed in the classification chart above?

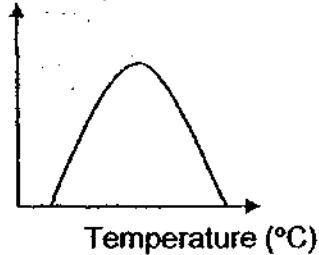
- 1) Mango tree
- 2) Bird's nest fern
- 3) Rubber plant
- 4) Mimosa plant

19. Which one of the following correctly shows the relationship between temperature and the rate of germination?

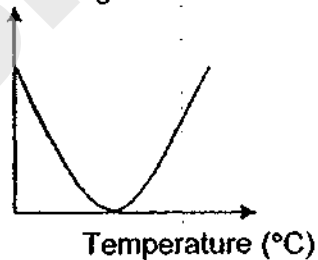
1) Rate of germination



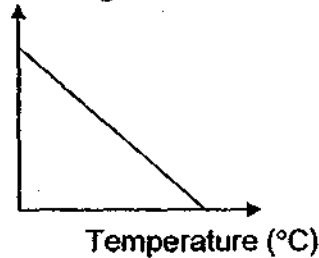
3) Rate of germination



2) Rate of germination



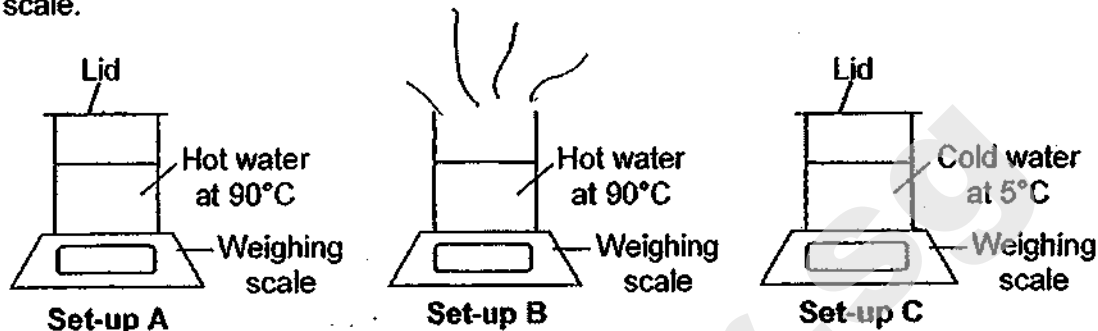
4) Rate of germination



20. Which of the following is required for both germination and decomposition to take place?

- 1) Shade
- 2) Sunlight
- 3) Moisture
- 4) Carbon dioxide

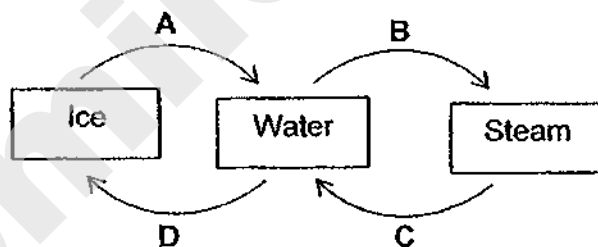
21. Jenny placed 3 containers of water on the weighing scales in the Science room as shown in the diagram below. She noted the mass indicated on each weighing scale.



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.



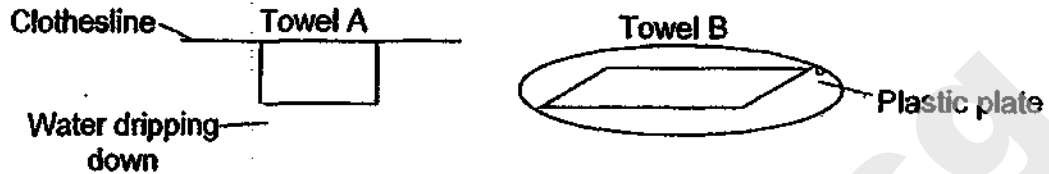
Which processes take place at a fixed temperature?

- 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

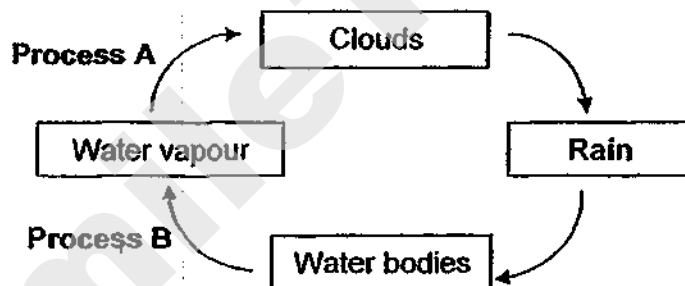
24. Siti wetted 2 identical square towels with the same amount of water. Towel A was folded over a clothesline such that half of it was facing the front and half of it was facing the back. Towel B was laid out flat onto a plastic plate. She then placed them at the same place as shown below.



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.

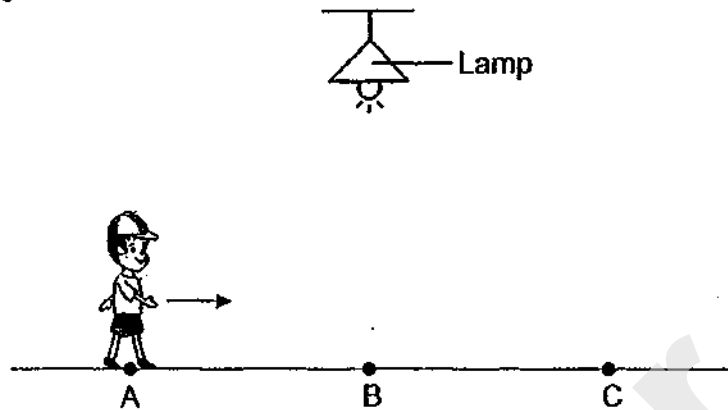
25. The diagram below shows the water cycle.



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

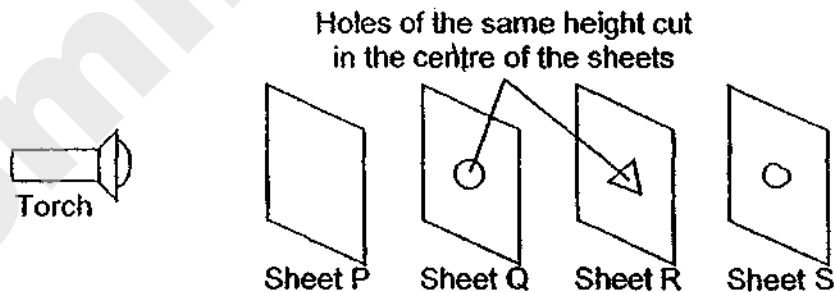
26. David walked in a straight line from A to B and then to C as shown in the diagram below.



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.

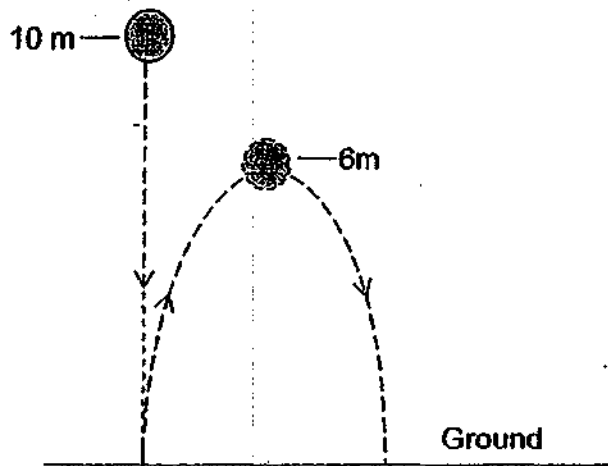


Sheets P, Q, R and S are arranged in a straight line. When the torch is switched on, a bright round patch of light is seen on Sheet S only.

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

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: \_\_\_\_\_ ( )

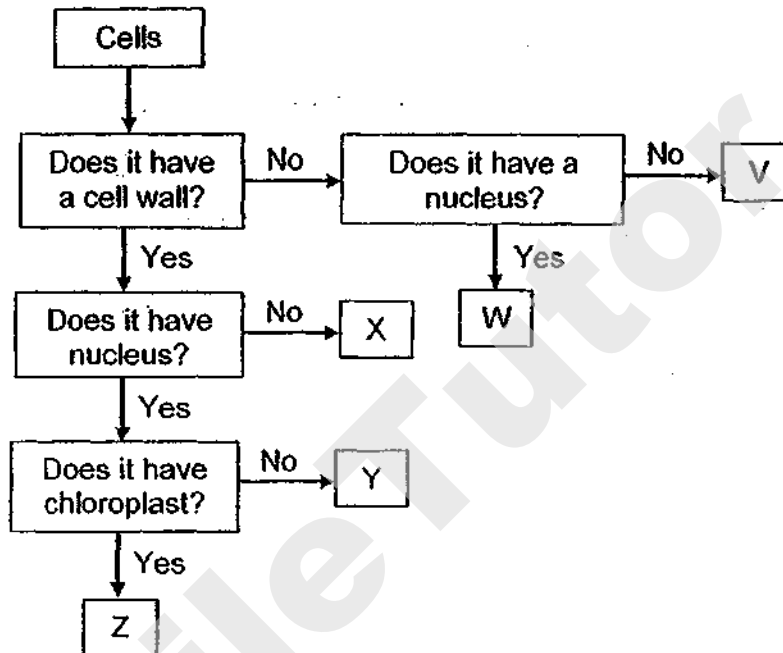
Date: \_\_\_\_\_

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)

\_\_\_\_\_

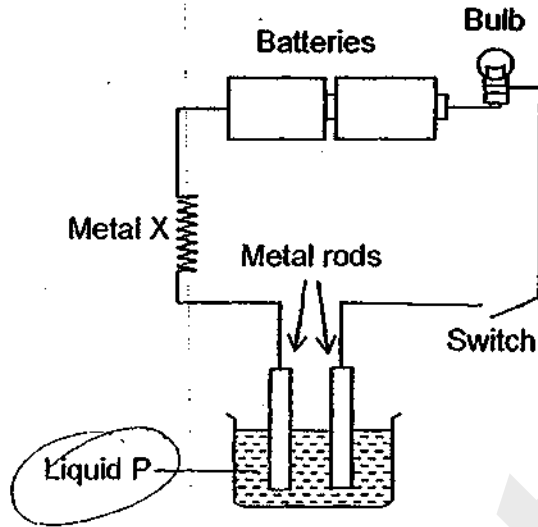
c) Based on the flowchart above, which cell/s above has/have a regular shape? (1m)

\_\_\_\_\_

d) Based on the flowchart above, which cell/s above is/are able to make food? (1m)

\_\_\_\_\_

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)

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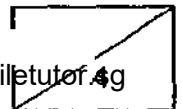
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- b) When another battery was added to the circuit, Metal X produced more heat energy. Explain how Metal X became hotter. (2m)

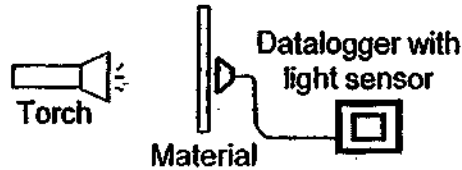
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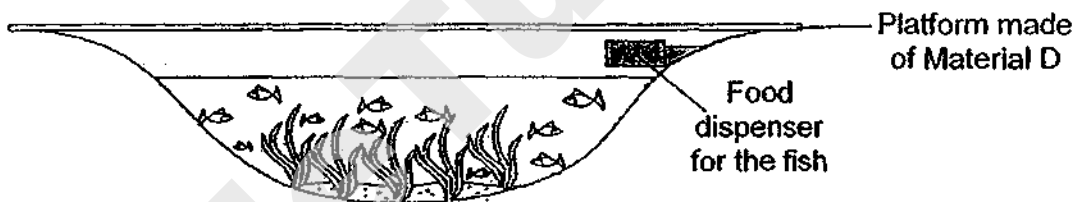
31. Sumin conducted an experiment as shown below. She placed different materials in front of a torch and measured the amount of light that passed through each material.



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: \_\_\_\_\_  
 \_\_\_\_\_

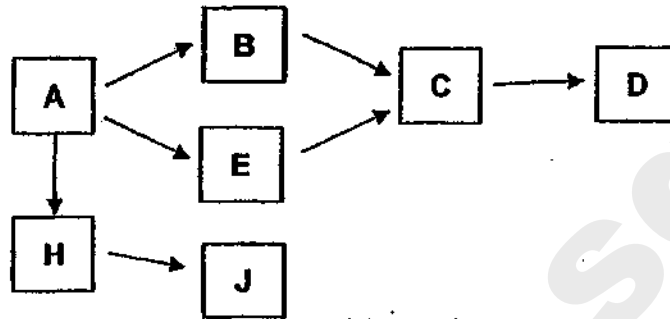
- b) Based on Sumin's experiment, which material should Sumin use to build the platform instead of Material D so that the plants and animals in the pond will not die? Explain your answer. (2m)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- c) State 1 way the plant can benefit from the fish. (1m)

\_\_\_\_\_

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)

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- 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)

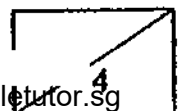
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- ii) Explain why the population of Organism H would then increase. (1m)

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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)

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- 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)

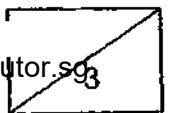
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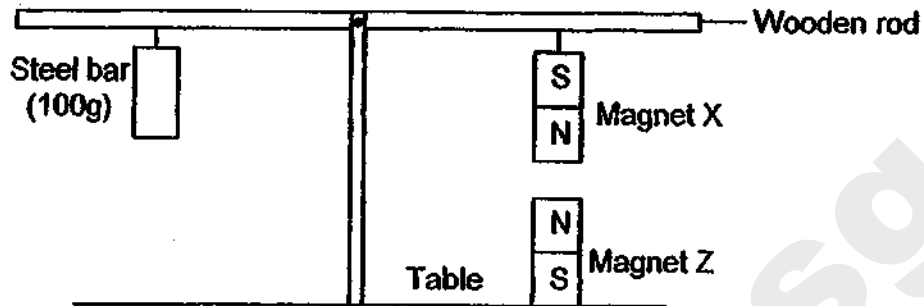
- c) Butterfly B lays green eggs on the leaves of plants. Explain why the eggs are able to avoid being detected by predators. (1m)

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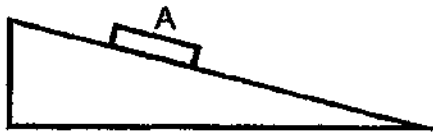
34. Linda set up an experiment as shown below. Magnet Z was fixed to the table below Magnet X to balance the wooden rod.



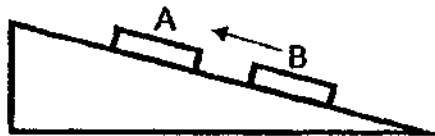
Based on Linda's experiment, indicate if each of the following statements is 'True', 'False' or 'Not possible to tell' by placing a tick (✓) in the correct column. (4m)

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.

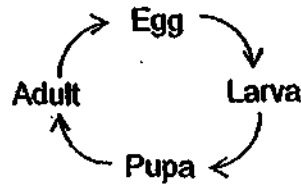


In the table below, indicate the forces that are acting on the magnets by placing ticks (✓) in the appropriate columns. (2m)

	Friction	Gravity	Magnetic force
a) Magnet A in Experiment 1			
b) Magnet B in Experiment 2			



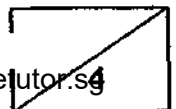
36. The diagram below shows the life cycle of Animal P. Animal P spreads Disease X to humans when it is in the adult stage. After mating, the female of Animal P is able to lay eggs once every 3 days.



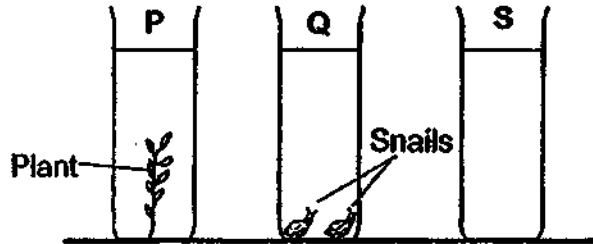
A group of researchers kept some Animal P at different temperatures and observed their life cycles. The results are shown in the table below.

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) \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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		

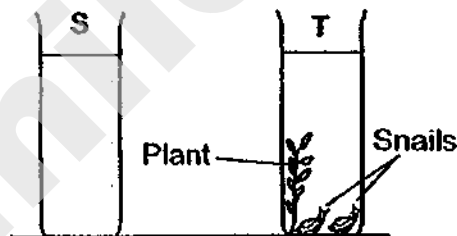
- b) State the purpose of Container S. (1m)

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- 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)

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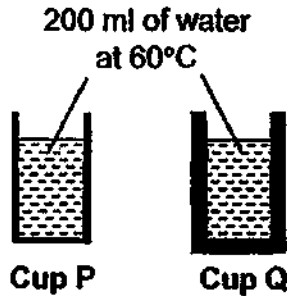


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38. Mohan had 2 cups made of the same material but different thickness. He poured 200 ml of water at 60°C into each cup at the same time as shown below.



- 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)

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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)

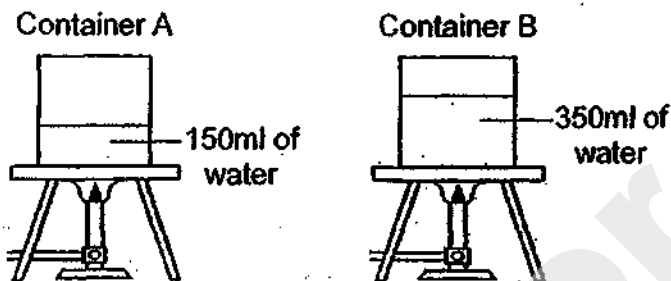
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39a) The amount of heat in a liquid depends on its \_\_\_\_\_  
and \_\_\_\_\_. (1m)

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)

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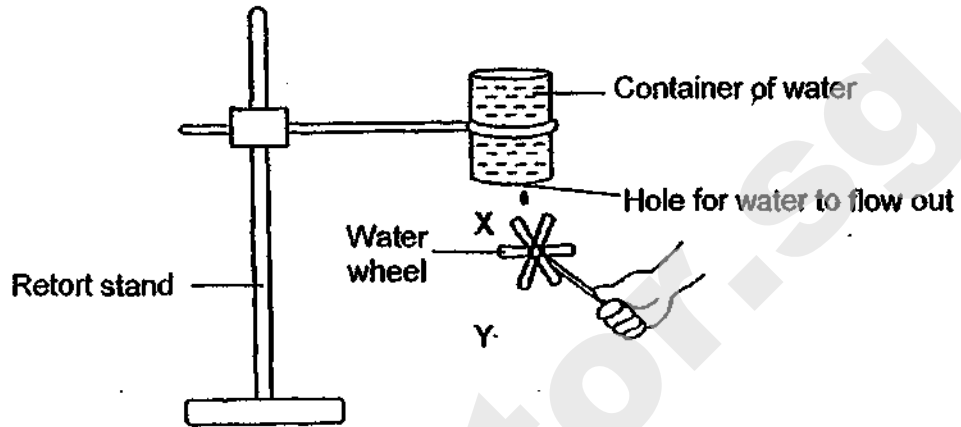
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c) After the water in both containers boiled for 2 minutes, Amin turned off the heat and let the water cool down. Which container of water, A or B, will take a longer time to reach room temperature? Explain your answer. (1m)

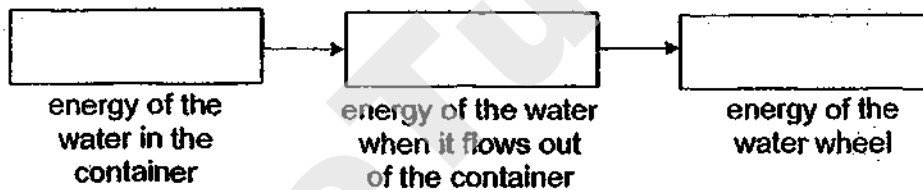
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40. Rajah set up the experiment as shown below. He then filled a container with water and fixed it on a retort stand. He then made a small hole at the bottom of the container and held a water wheel at Position X. When water flowed out of the container, 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)

Situation	Speed of water wheel [please tick (✓)]		
	Increase	Decrease	Remain the same
i) A slightly bigger hole is made at the bottom of the container.			

Situation	Speed of water wheel [please tick (✓)]		
	Increase	Decrease	Remain the same
ii) 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)

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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.
29b	Cell X has a cell wall but Cell Y 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.
30c	The plants did not receive enough light to make food so the plants died. There was not enough oxygen for the animals so the animals died.
30d	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.

32a	A. It is a <u>food producer / plant</u> . 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.				

37a	Containers	Increase	Decrease						
	i) P ii) Q	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
37b	It is a control set-up.								
37c	i.	S has more carbon dioxide	T has more carbon dioxide						
			Not possible to tell <input checked="" type="checkbox"/>						
37cii	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.								
38a	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								
38b	Glass is a poor conductor of heat. The inner glass surface <u>gained heat first / gained more heat and expanded faster/ more than the outer glass surface</u> . NB: Must explain and mention difference in expansion between inner and outer glass								
39a	volume; temperature								
39b	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)								
39c	The water in Container B. The water had a <u>larger volume</u> so it would need to lose <u>more heat</u> than water in Container A to reach room temperature.								
40a	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Potential</td> <td>Kinetic</td> <td>Kinetic</td> </tr> <tr> <td>energy of the water in the container</td> <td>energy of the water when it flows out of the container</td> <td>energy of the water wheel</td> </tr> </table>			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
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							

3

40b	Situations	Speed of water wheel (Please tick <input checked="" type="checkbox"/> )		
		Increase	Decrease	Remain same
40c	i)	A bigger hole is poke at the bottom on the container	<input checked="" type="checkbox"/>	
	ii)	Water wheel is held at Position Y instead of Position X	<input checked="" type="checkbox"/>	
Y is a greater distance down from the container of water. Thus <u>more of the potential energy</u> of water 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.				

4



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.**

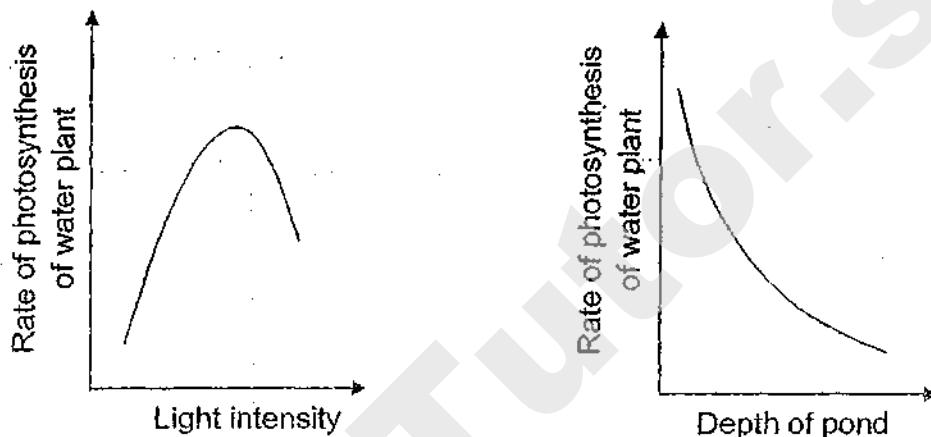
***This booklet consists of 21 printed pages.***

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**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

3. The table below shows the stages of development of a fertilized human egg.

Period	Stages
End of 1 <sup>st</sup> week	Fertilized egg implants itself in the womb
End of 4 <sup>th</sup> week	Brain, spinal cord and nervous system are formed
End of 8 <sup>th</sup> week	Face and limbs are visible
Around 12 <sup>th</sup> week	Foetus starts to move
End of 16 <sup>th</sup> week	Entire body parts are formed
End of 28 <sup>th</sup> week	Head and body are proportionate
End of 38 <sup>th</sup> 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 1<sup>st</sup> week
  - (2) After 8<sup>th</sup> week
  - (3) After 16<sup>th</sup> week
  - (4) After 38<sup>th</sup> 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

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.



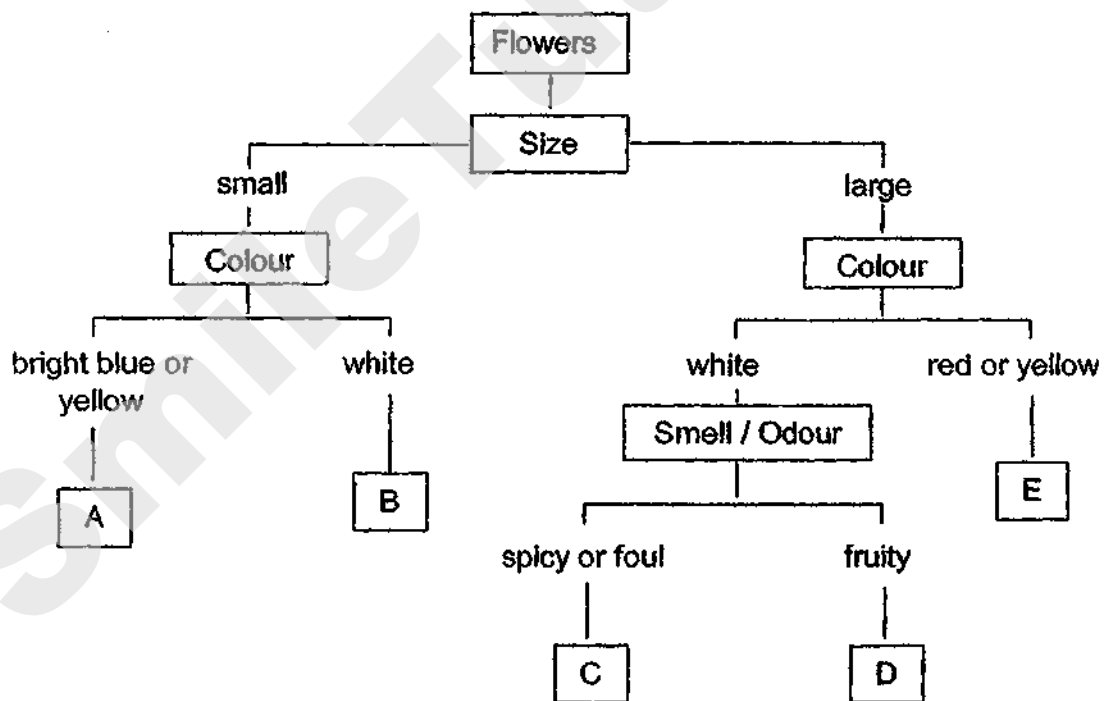
Which one of the following best explains the function of these adaptations?

- (1) Adaptation for pollination.
- (2) Adaptation for reproduction.
- (3) Adaptation for water retention.
- (4) Adaptation for getting sunlight.

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

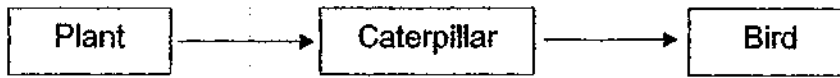
The chart below classifies five flowers A, B, C, D and E.



What animals would be attracted to flowers B and D respectively?

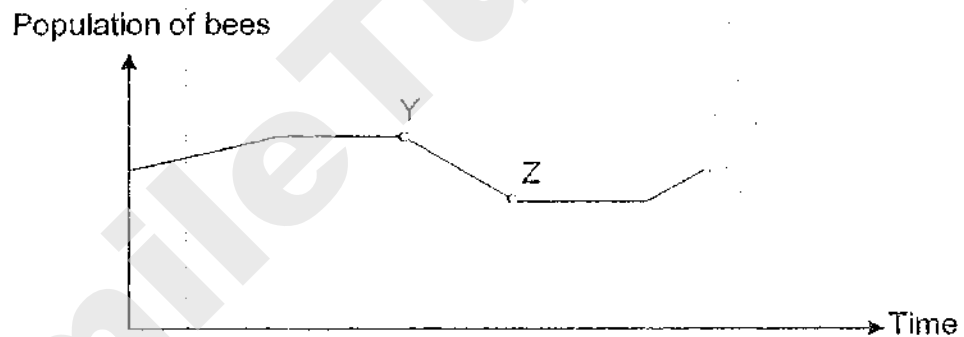
	Flower B	Flower D
(1)	bird	beetle
(2)	moth	bat
(3)	bat	bird
(4)	moth	beetle

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.



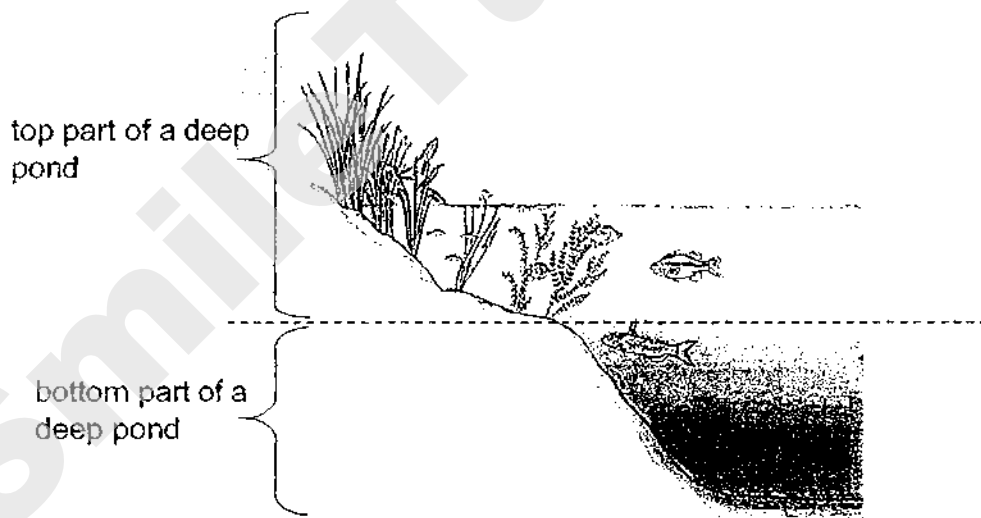
Which of the following explains the change in the population of bees shown by YZ in the graph?

- 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

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?

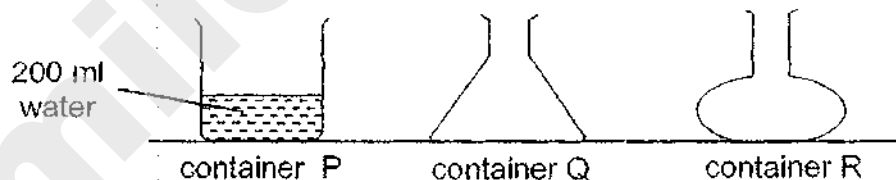
- (1) The aquatic plants can get sufficient nutrients to grow well.
- (2) The aquatic plants can absorb more sunlight for photosynthesis.
- (3) The aquatic plants can take in oxygen from the air above the water.
- (4) The aquatic plants can provide shade and shelter for the aquatic animals living in the pond.

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.

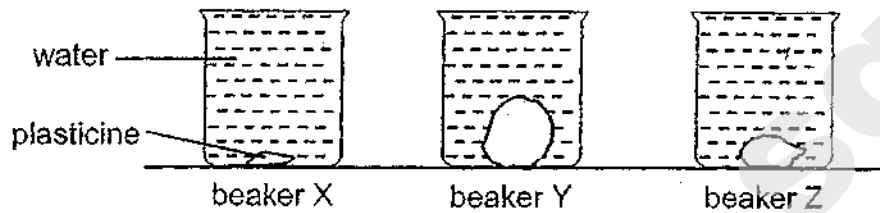


Which of the following best describes what Jody was trying to find out?

- (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.



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?

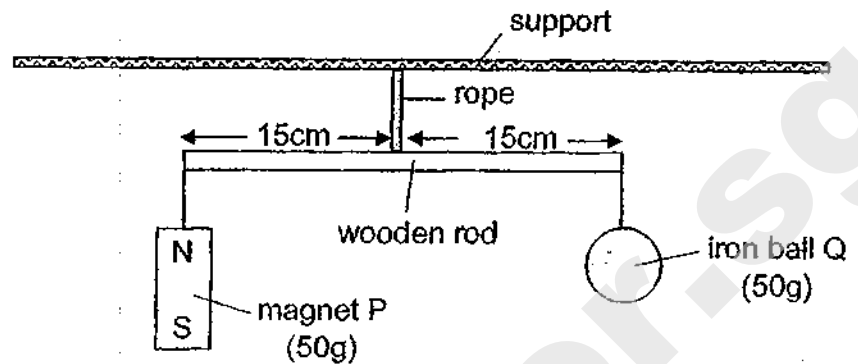
	Amount of water (ml)		
	X	Y	Z
(1)	260	480	390
(2)	480	390	260
(3)	480	260	390
(4)	390	480	260

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

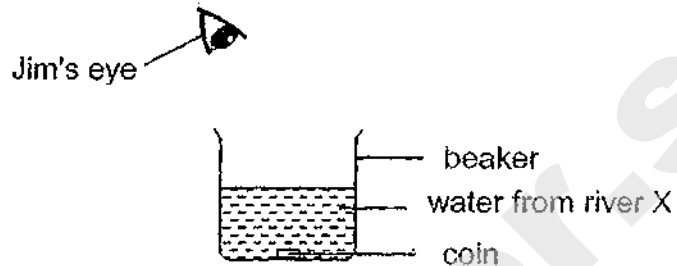
16. The diagram below shows a wooden rod with a magnet P and iron ball Q hanging from a rope.



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.

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.



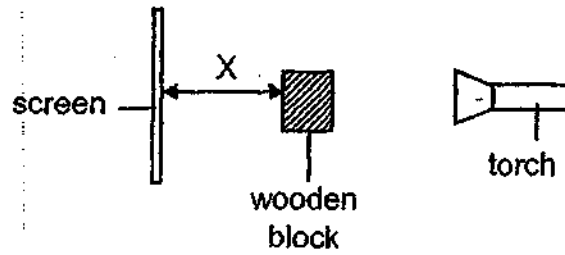
He repeated the same experiment with water from rivers Y and Z. The table below shows the results.

	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?

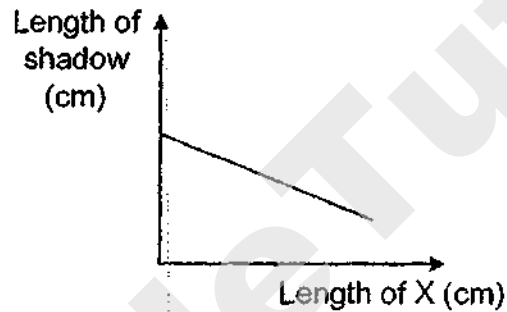
	Clearest	→	Least Clear
(1)	X		Y      Z
(2)	Y		X      Z
(3)	Z		X      Y
(4)	Z		Y      X

18. Study the set-up below.

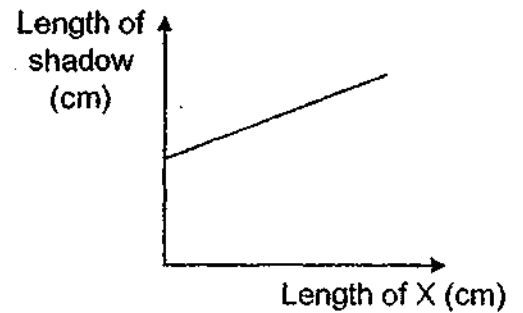


Based on the diagram above, which one of the following graphs shows the relationship between  $X$  and the length of the shadow observed on the screen?

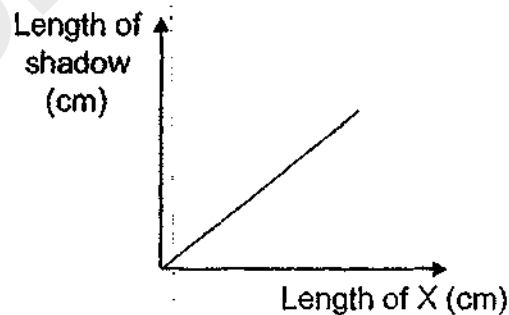
(1)



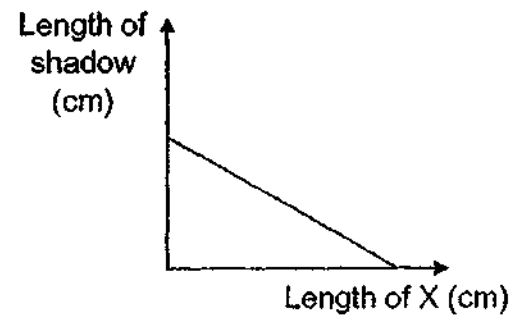
(2)



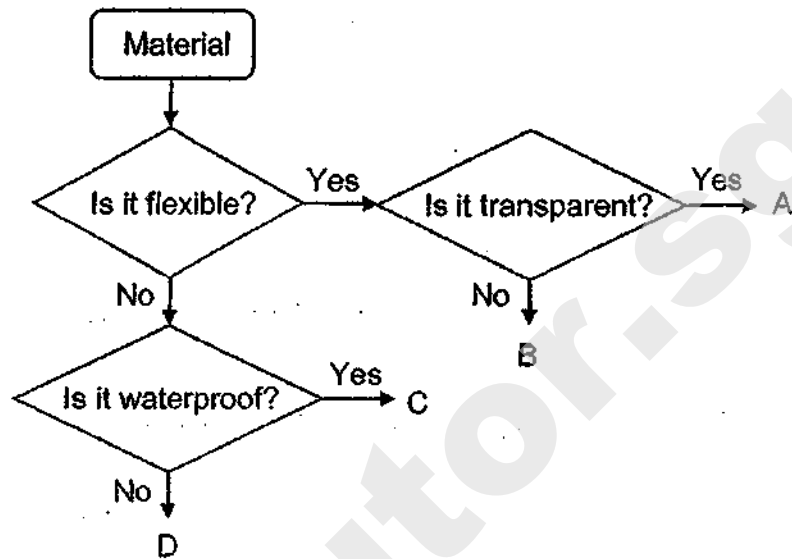
(3)



(4)



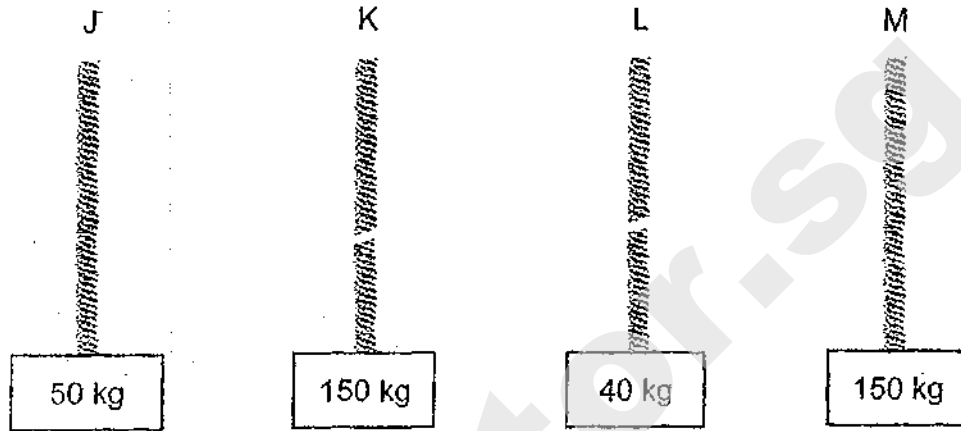
19. Study the flow chart below.



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

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

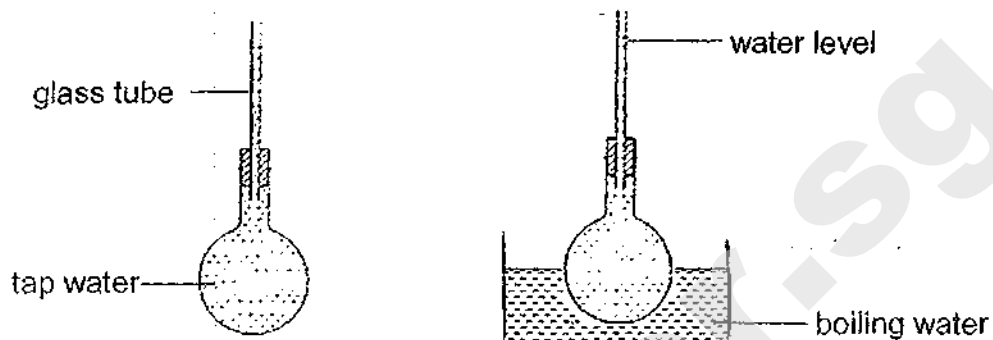
21. A study was conducted to identify the factors that affect the evaporation rate of some liquids. The table below shows the results of the investigation.

Type of liquid	Exposed surface area (cm <sup>2</sup> )	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.

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.

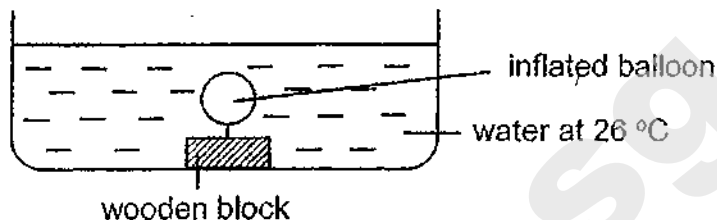


Which one of the following best explains his observation?

- (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.



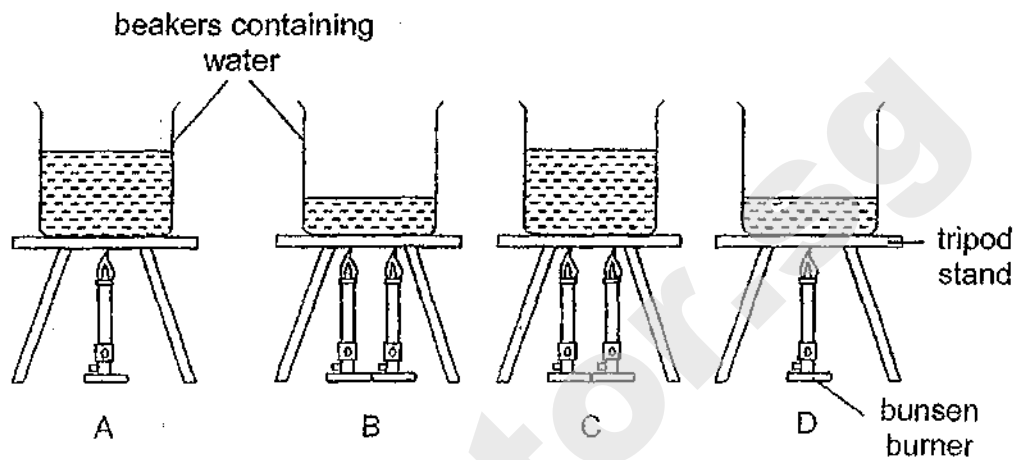
23. An inflated balloon was attached to a wooden block and placed in a container of water at 26 °C as shown in the diagram below.



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.

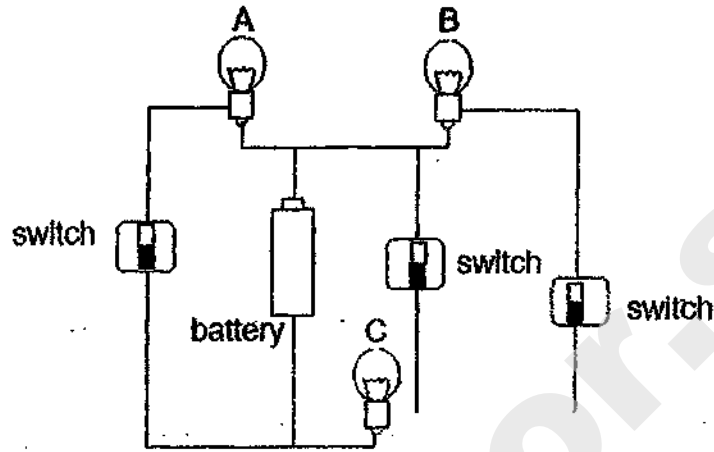
24. Benjamin carried out an experiment using four set-ups A, B, C and D as shown below. The water in all the beakers were at room temperature at first.



In which set-up would the temperature of water be the lowest after 10 minutes of heating?

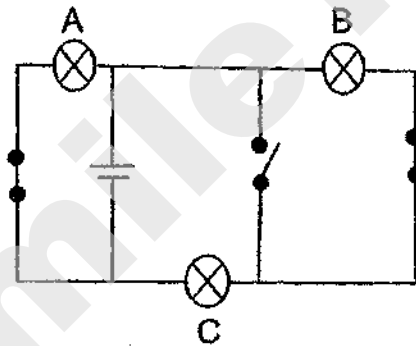
- (1) A
- (2) B
- (3) C
- (4) D

25. The diagram below shows a circuit with three similar bulbs A, B and C.

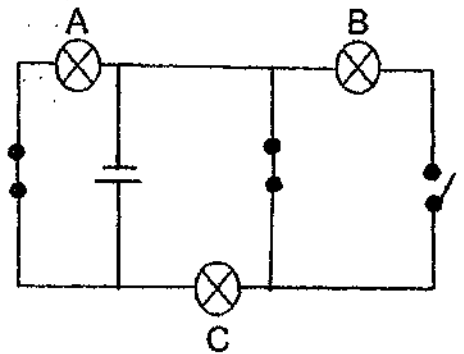


If only bulbs B and C are lit, which one of the following circuit diagrams correctly represents the circuit above?

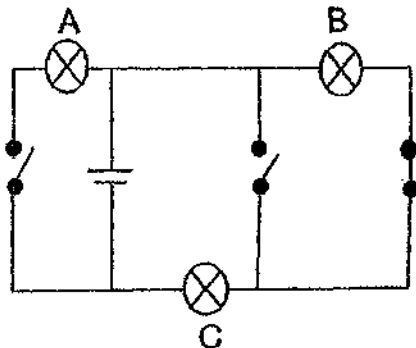
(1)



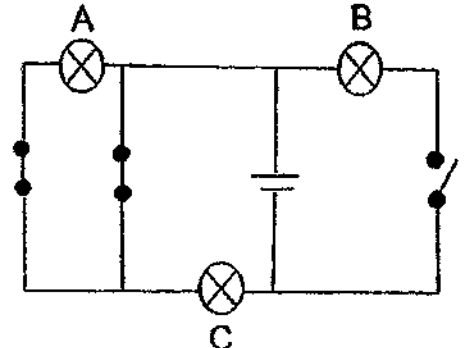
(2)



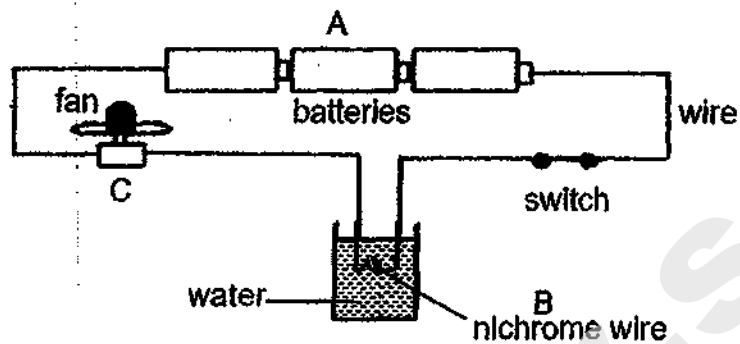
(3)



(4)



26. A fan and a container of water were connected to a circuit as shown below.

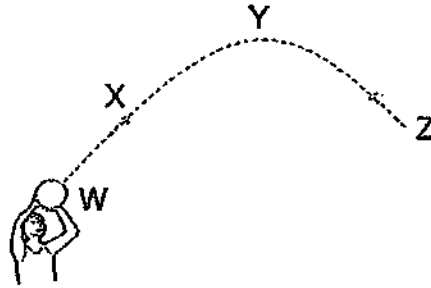


When the switch was closed, the fan started moving and the water in the container was slowly heated up.

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

27. The diagram below shows a man throwing a ball.

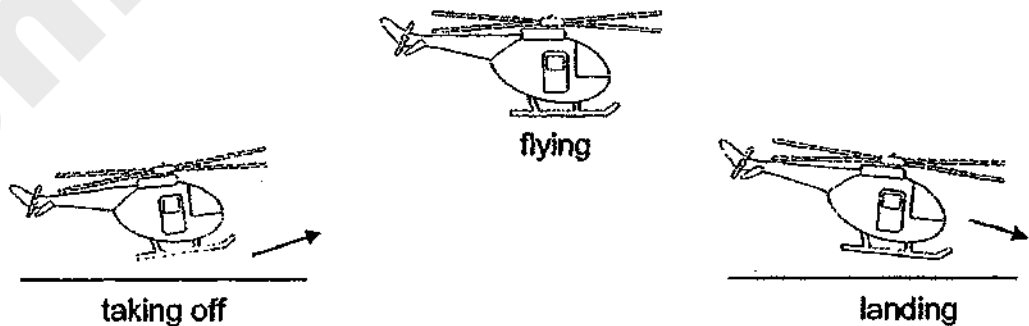


Which of the following statements is / are true?

- 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

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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

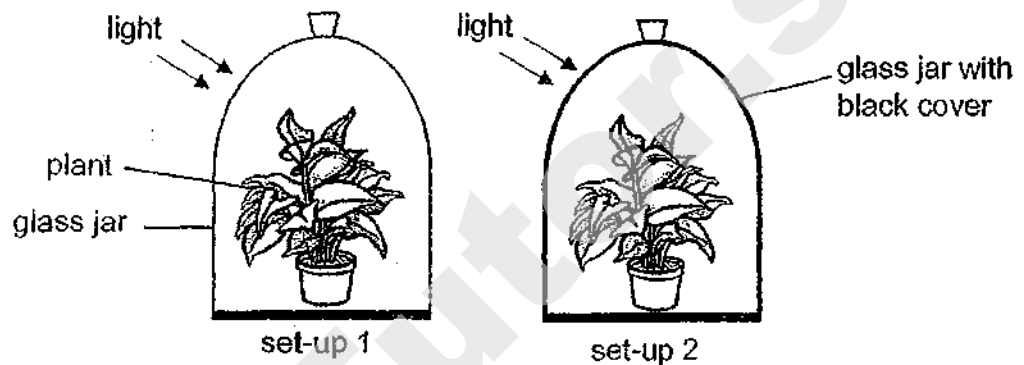
Do not open this booklet until you are told to do so.  
Follow all instructions carefully.  
Answer all questions.

This paper consists of 15 printed pages.

Booklet A	56
Booklet B	44
Total	100

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]

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(b) Based on her experiment, how can Mary confirm that light is needed for photosynthesis? [2]

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(c) What is produced during photosynthesis that is needed by the plant? [1]

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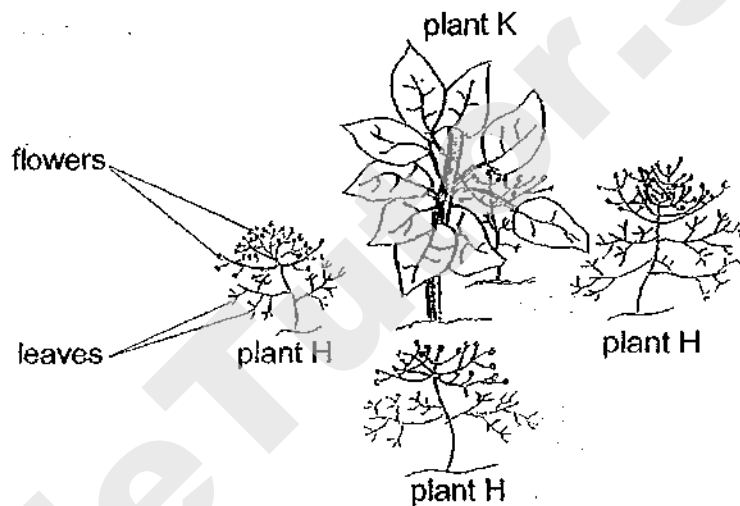
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30. A gardener observed a food relationship in his garden.

plant K  $\longrightarrow$  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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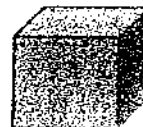


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32. Halim wanted to conduct an experiment to find out if plastic is harmful to the environment. He buried a plastic box and a paper box for a month. Every week, Halim dug out the boxes to observe them.



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]

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- (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.	<input type="checkbox"/>
Plastics cause global warming.	<input type="checkbox"/>
Plastics remain as waste in our environment.	<input type="checkbox"/>
Plastics release harmful gases when they break down.	<input type="checkbox"/>

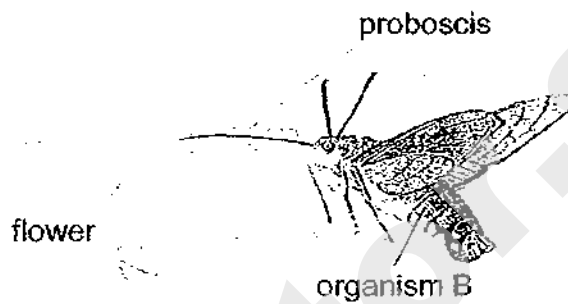
- (c) State one way that we can help to reduce plastic waste in our environment. [1]

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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]

\_\_\_\_\_

- (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]

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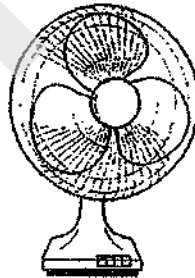
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- (e) Deforestation can also lead to global warming. Explain why. [1]

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34. The diagram below shows a table fan.



- (a) Complete the conversion of energy when the switch is turned on. [1]

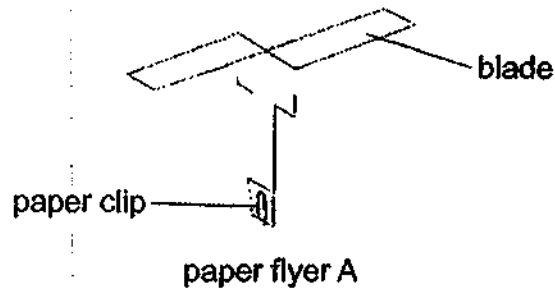
Electrical energy →  energy +  energy +  energy

- (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.



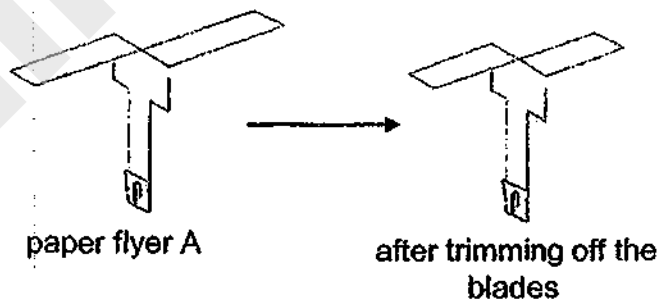
He wanted to find out if the number of paper clips on paper flyer A would affect the time it took to fall to the ground.

- (a) What must Nathan measure to help him draw a conclusion? [1]

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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.



- (b) Would the distance travelled by paper flyer A be affected after the blades were trimmed? Explain your answer. [2]

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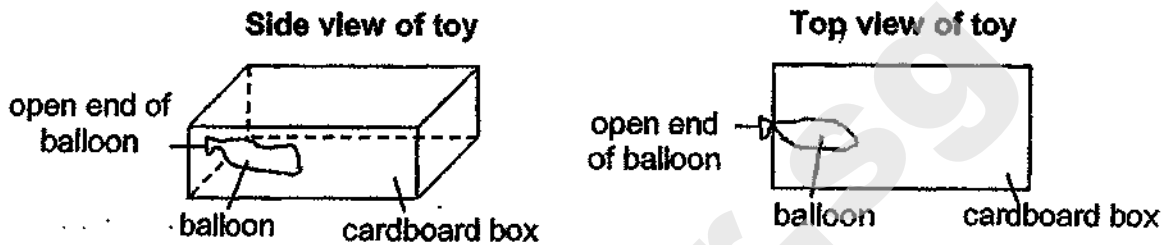
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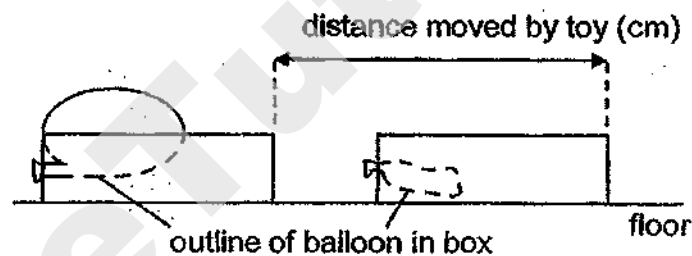
- (c) Name one fruit or seed with a similar structure like paper flyer A. [1]

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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.

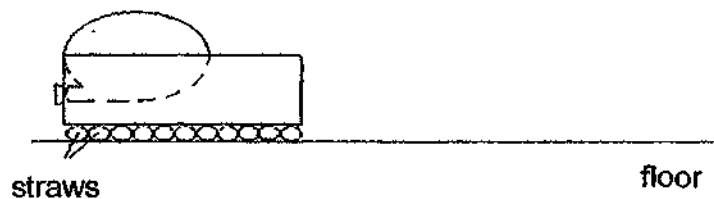
- (a) What can Lennard do to make his experimental results more reliable? [1]

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Lennard made some modifications to his experiment as shown in the diagram below.



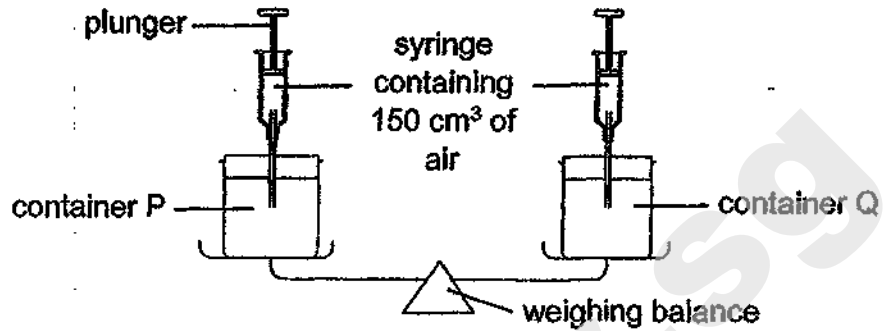
- (b) Would the toy move a shorter or longer distance than before? Explain why. [2]

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37. Study the set-up below.



- (a) What would be observed when 150 cm<sup>3</sup> of air was pumped into container Q? [1]

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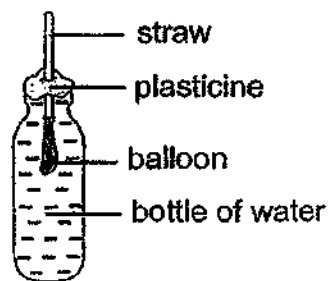
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- (b) State one property of air demonstrated by the experiment above. [1]

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Thomas set up an experiment as shown below.



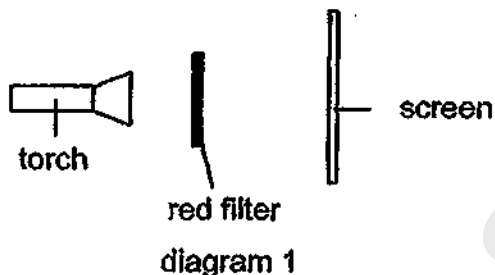
- (c) Thomas tried to inflate the balloon by blowing through the straw. Would the balloon inflate? Give a reason for your answer. [1]

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38. Alisha placed a square piece of red filter in front of a torch as shown in diagram 1.



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

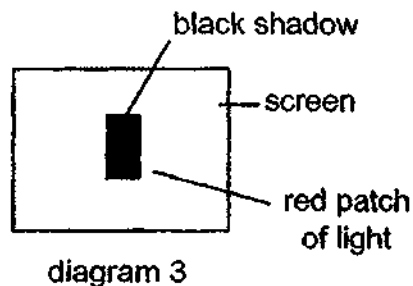
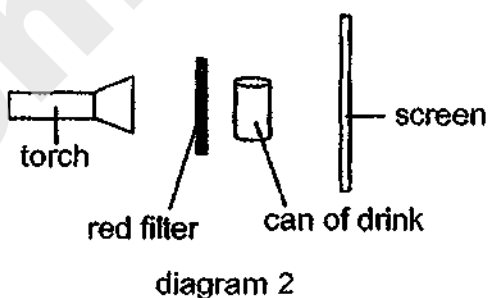
- (a) What was the aim of Alisha's experiment? [1]

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Alisha then placed a can of drink behind a red filter as shown in diagram 2.



- (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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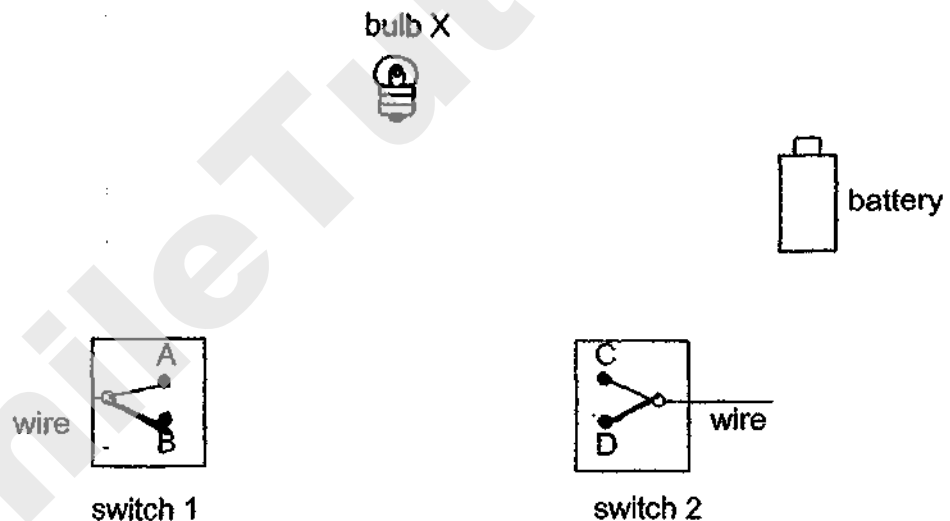


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39. Wen Xiong wanted to set up a circuit to light up a bulb using two special switches. Switch 1 can be turned to positions A or B and switch 2 can be turned to positions C or D. He set up the circuit so that the bulb will be lit as described in the 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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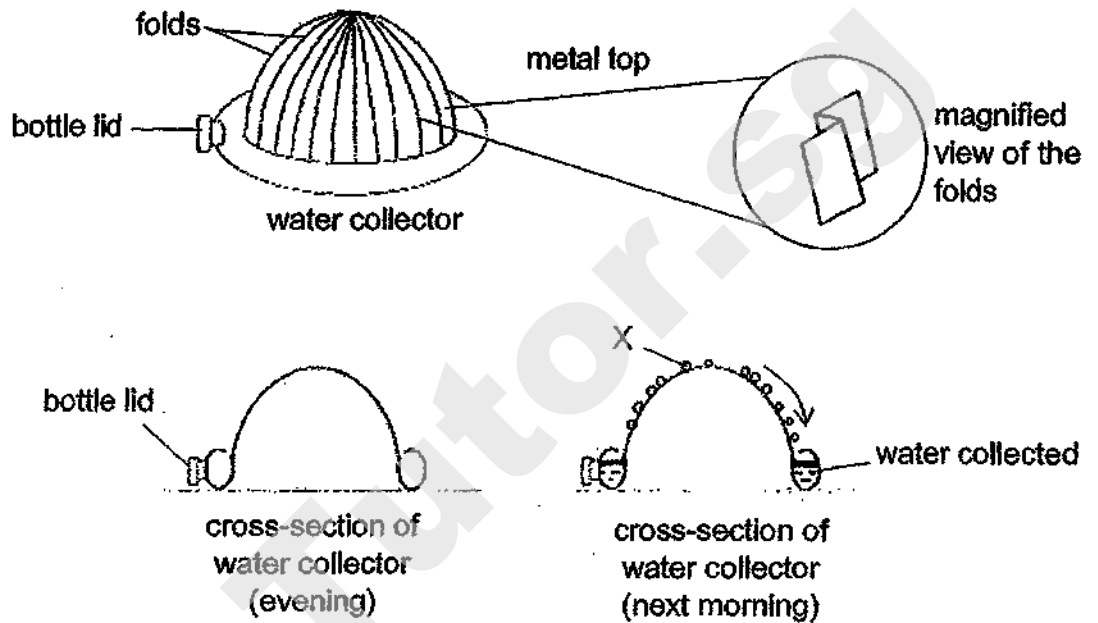


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40. Hussein used a water collector to collect some water while on a trip to a desert. He placed the water collector in an open area in the evening and collected the water in the morning.



- (a) What is X? [1]

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- (b) Explain why metal is used to make the top part of the water collector. [2]

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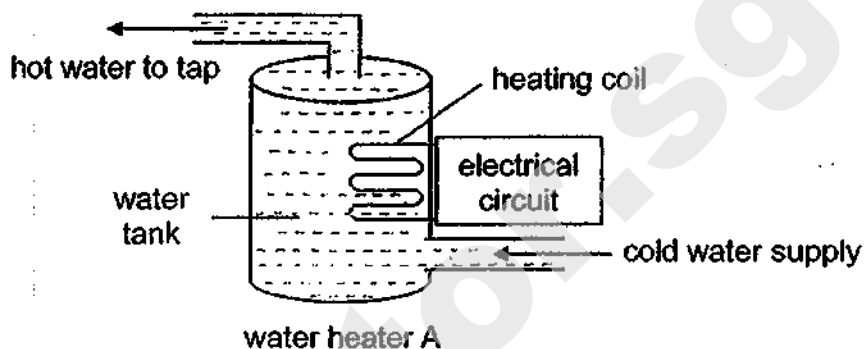
- (c) Explain why there are folds in the metal top. [2]

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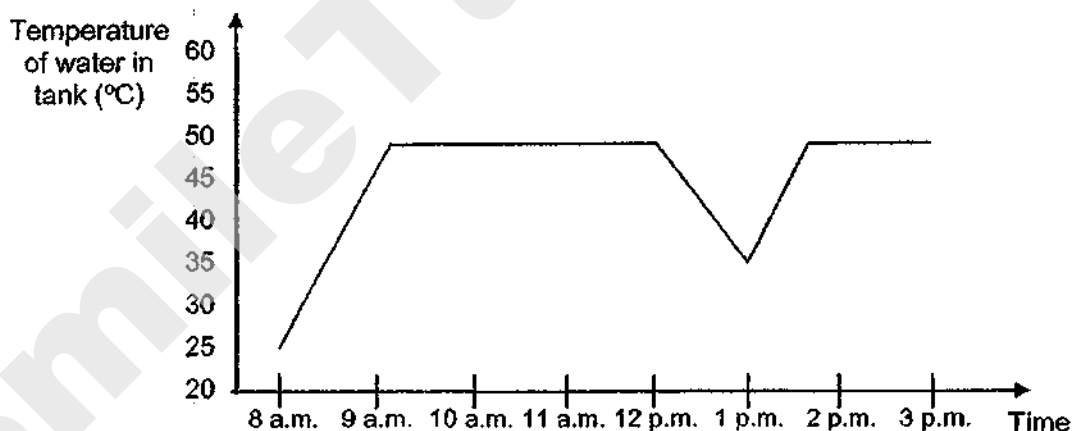


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41. The diagram below shows water heater A. The heating coil inside the tank is able to heat the water up to a temperature of  $49\text{ }^{\circ}\text{C}$  when the heater is turned on. The temperature of the water is then maintained at  $49\text{ }^{\circ}\text{C}$  until the heater is switched off. When the hot water tap is turned on, cold water enters the tank to replace the water used.



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  $49\text{ }^{\circ}\text{C}$ ? [1]

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- (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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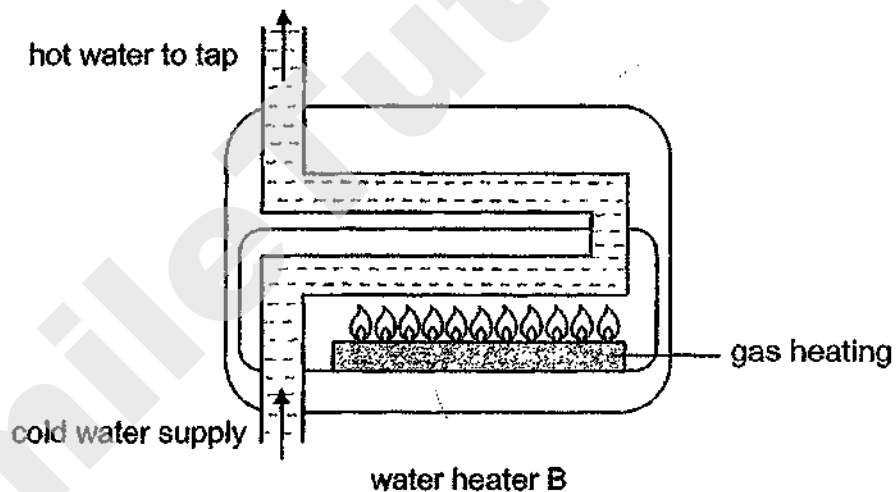
- (c) While bathing, Jia Ming noticed that the temperature of the water was not as hot as when he started bathing. Give a reason why this is so. [1]

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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  $49\text{ }^{\circ}\text{C}$ .



- (d) Which water heater A or B is more energy saving? Explain your choice. [1]

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SCHOOL : CHIJ PRIMARY SCHOOL  
 LEVEL : PRIMARY 6  
 SUBJECT : SCIENCE  
 TERM : 2019 PRELIM

**SECTION A**

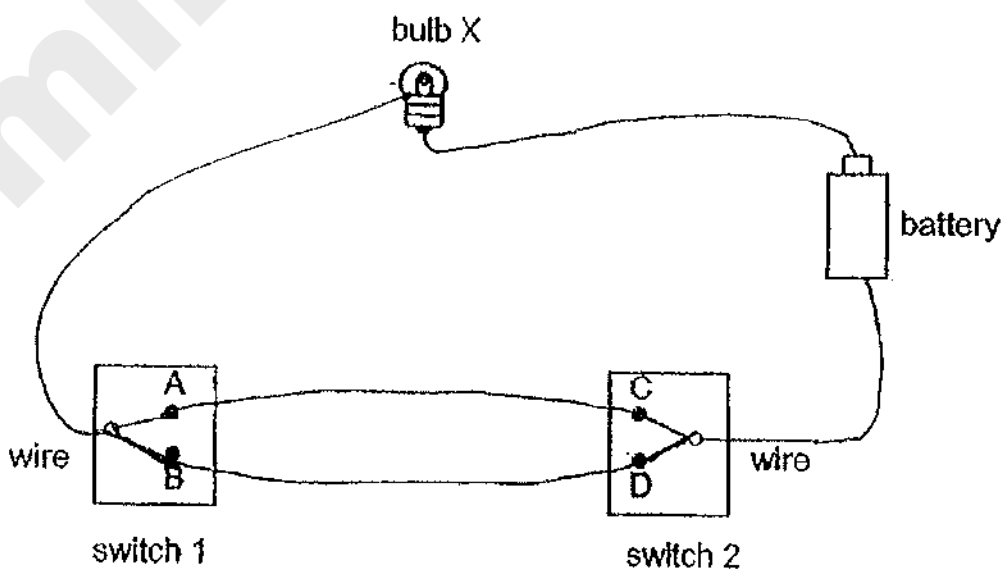
Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	2	3	3	3	3	2	1	4	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	4	2	3	2	2	3	2	3	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	3	4	1	3	3	1	4		

**SECTION B**

Q29)	<p>a)To act as a control set-up to show that light is needed for photosynthesis to take place.</p> <p>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.</p> <p>c)Glucose and oxygen.</p>
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)	<p>a)Prey : G          Predator : F</p> <p>b)2006 to 2007</p>

	<p>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.</p>
Q32)	<p>a)i)The type of soil they are buried in.  ii)The depth of the hole, the boxes are buried.</p> <p>b)Plastic remain as waste in our environment.</p> <p>c)Use lesser things made from plastic. Instead, use recyclable materials such as cloth bags instead of plastic bags.</p>
Q33)	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Q34)	<p>a)Electrical energy→Kinetic energy + sound energy + heat energy</p> <p>b)The kinetic energy of the blades was still converting into sound and heat energy.</p>
Q35)	<p>a)The time taken for the paper flyer A to reach the ground.</p> <p>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.</p>



	c)African tulip.
Q36)	<p>a)Repeat the experiment a few more times and take the average results.</p> <p>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.</p>
Q37)	<p>a)The scale will still be balanced.</p> <p>b)Air can be compressed.</p> <p>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.</p>
Q38)	<p>a)To find out different colour filters would affect the colour of light produced.</p> <p>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.</p>
Q39)	<p>a)</p>  <p>b)The brightness of X would decrease.</p>

Q40)	<p>a)Water droplets.</p> <p>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.</p> <p>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.</p>
Q41)	<p>a)1 hour</p> <p>b)At 12p.m.</p> <p>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.</p> <p>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.</p>



## **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.

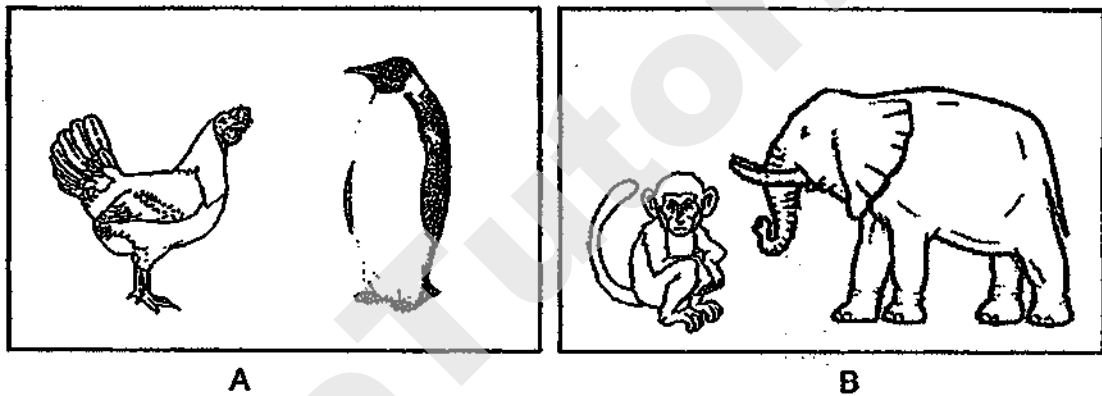
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**Booklet A (28 x 2 marks)**

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)

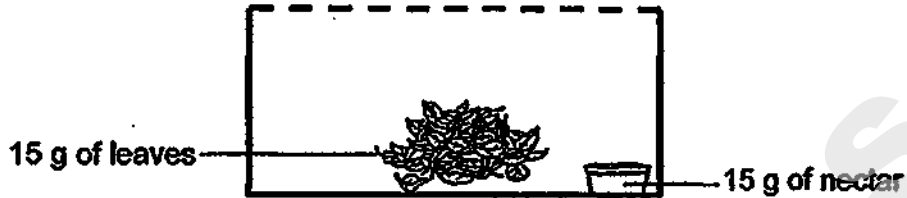
1. Study the animals in group A and B, as shown below.



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

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.



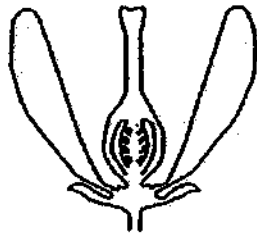
The results after five days are shown in the table below.

Container	Amount of green leaves left (g)	Amount of nectar left (g)
A	15	15
B	5	15
C	15	5

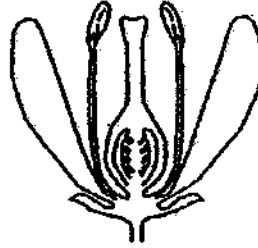
Which of the following shows the correct stage of the butterfly in each container?

	Container A	Container B	Container C
(1)	larva	pupa	adult
(2)	adult	larva	pupa
(3)	pupa	larva	adult
(4)	pupa	adult	larva

3. Study the two flowers as shown below.



Flower A



Flower B

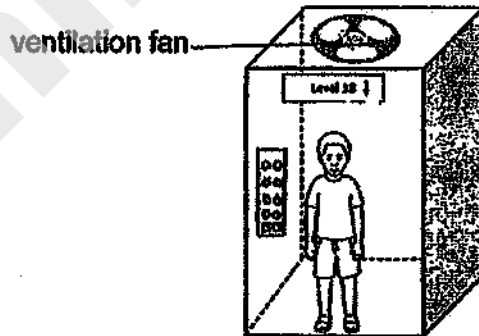
After one month, both flowers A and B developed into fruits.

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.

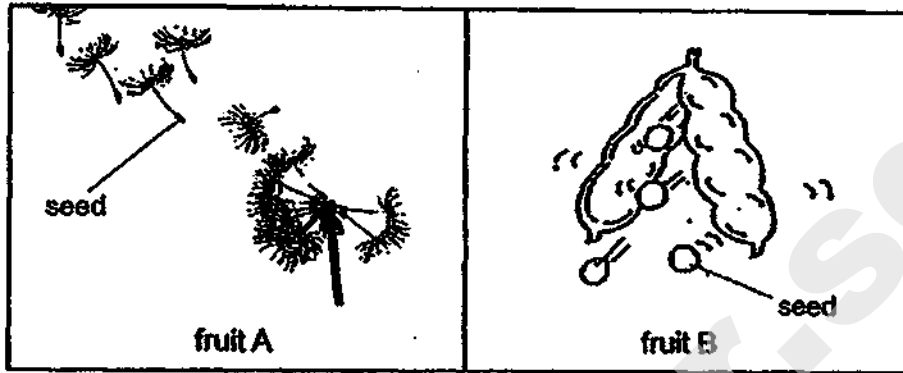


Which of the following statement(s) describe(s) what was happening to Bala?

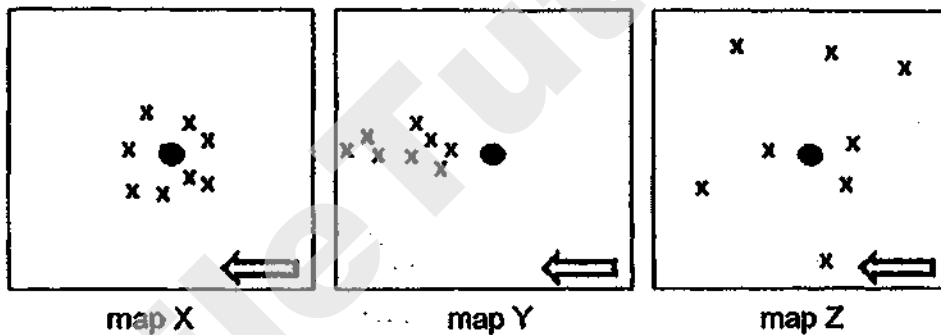
- A Bala's breathing rate increases.
- B The amount of oxygen entering Bala's lungs decreases.
- C The amount of carbon dioxide entering Bala's lungs decreases.



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

5. Study the characteristics of fruit A and B of different plants below.



Below are three maps showing the distribution of seeds.



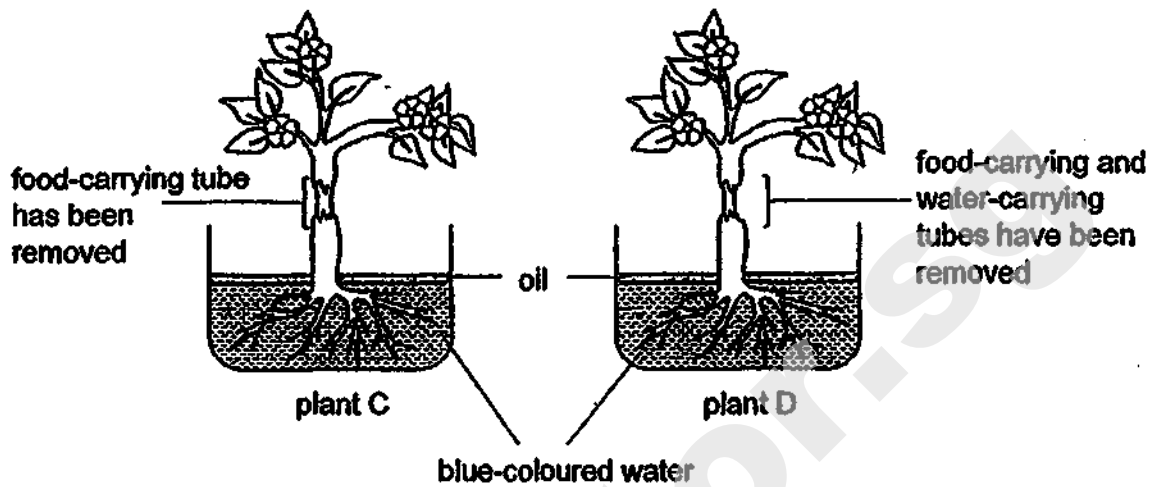
Key  
 : wind direction  
 : parent plant  
 x : seed

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



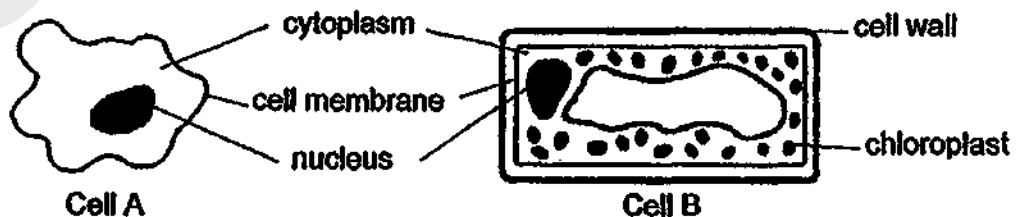
6. Mable prepared two set-ups as shown below.



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

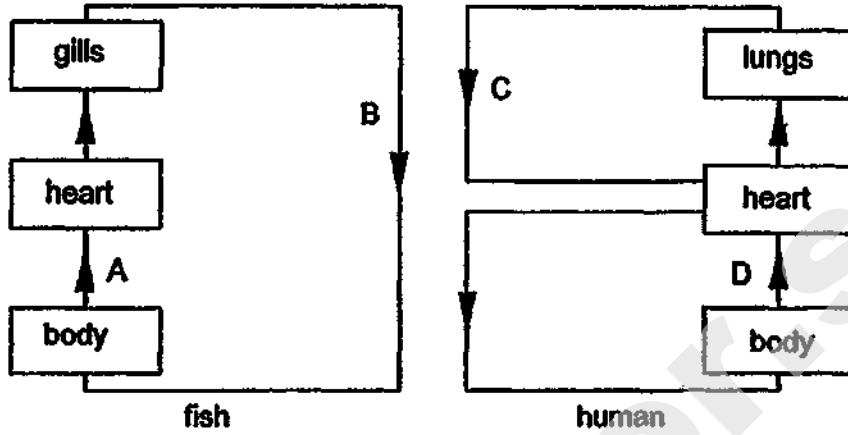
7. The diagrams below show two different cells, A and B.



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.

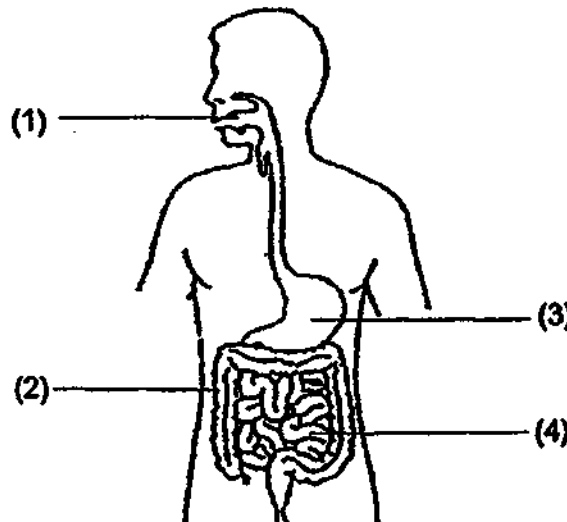
8. The diagrams below shows how blood flows in the body of a fish and a human.



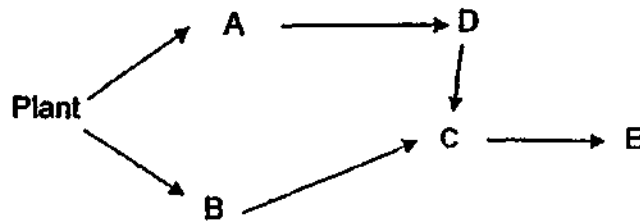
At which parts A, B, C or D, is the blood rich in oxygen in the fish and human respectively?

	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?



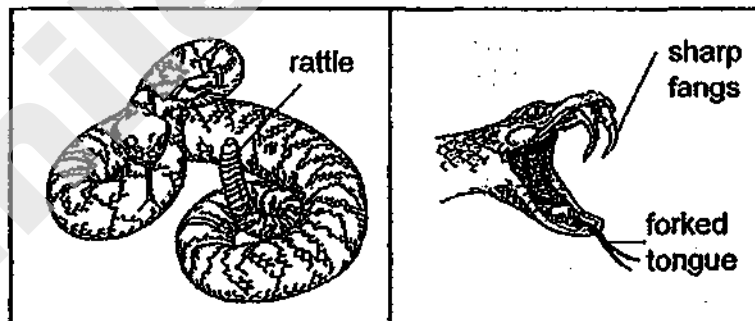
10. Study the food web below.



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

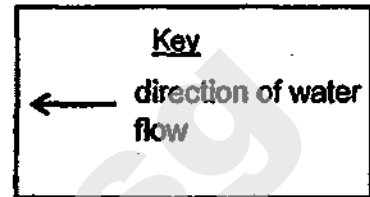
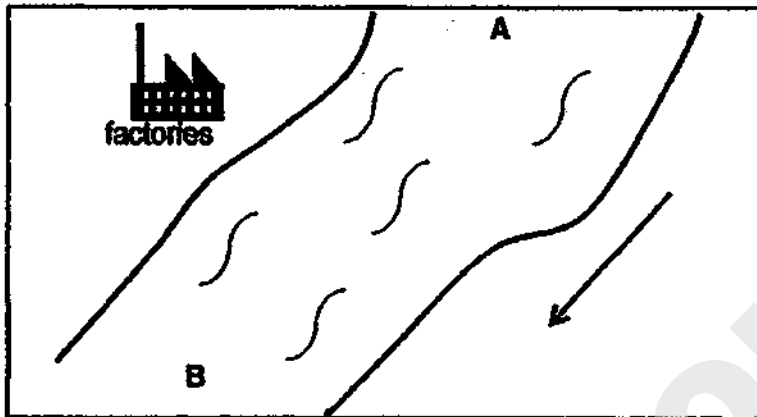
11. Snake R is well-adapted to survive in its habitat. The rattle at its tail will make a sound when it is alarmed.



Which of its adaptations 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

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

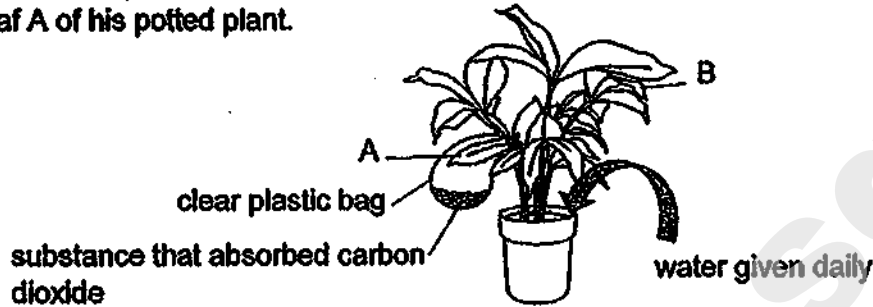
The factories discharged substance W into the river.

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

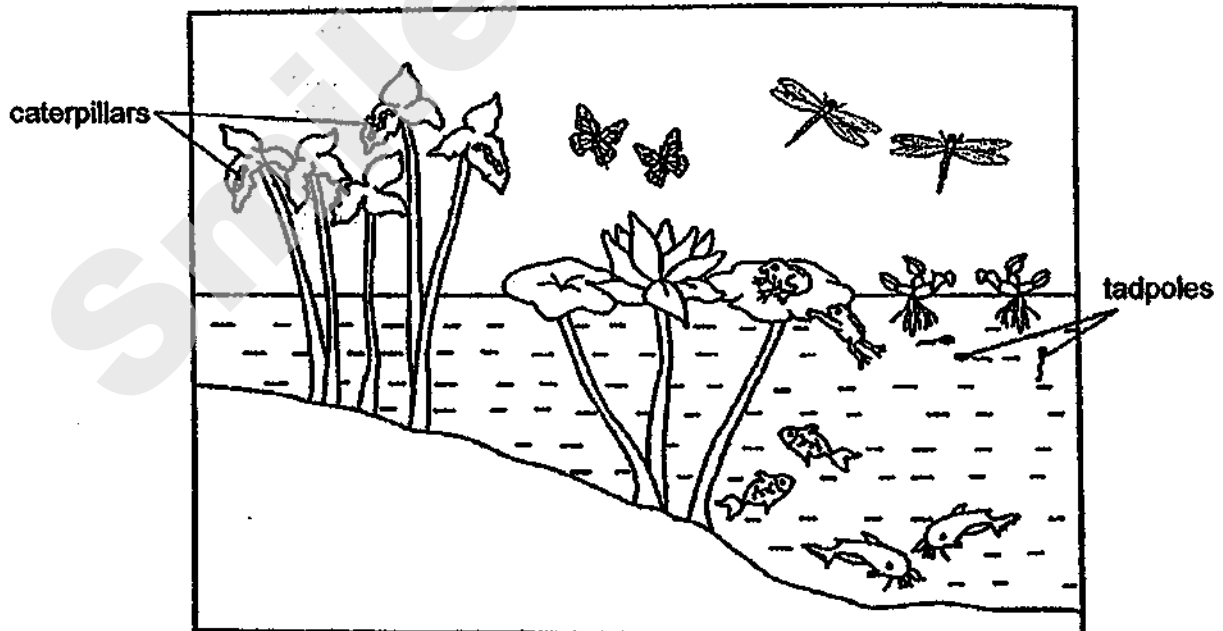
13. Ravi has a potted plant that had been placed in the dark for two days. He then tied a clear plastic bag with a substance which absorbs carbon dioxide around leaf A of his potted plant.



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?

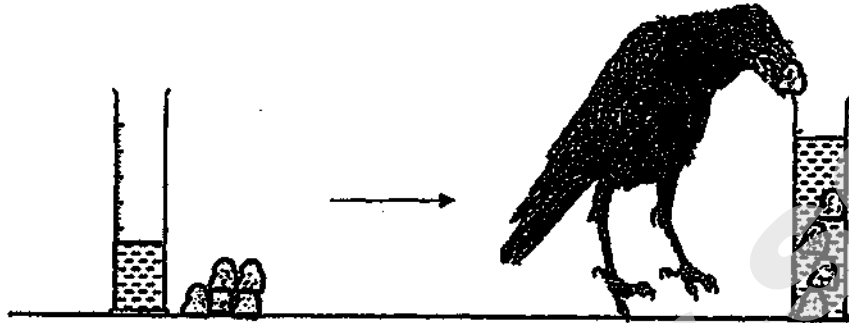
- (1) To find out if sunlight is needed for photosynthesis.
  - (2) To find out if carbon dioxide is needed for photosynthesis.
  - (3) To find out if carbon dioxide is released during photosynthesis.
  - (4) To find out if photosynthesis affects the amount of oxygen produced.
14. The diagram below shows 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.

15. The diagram below shows a crow dropping small pebbles into a cylinder to obtain water to drink.



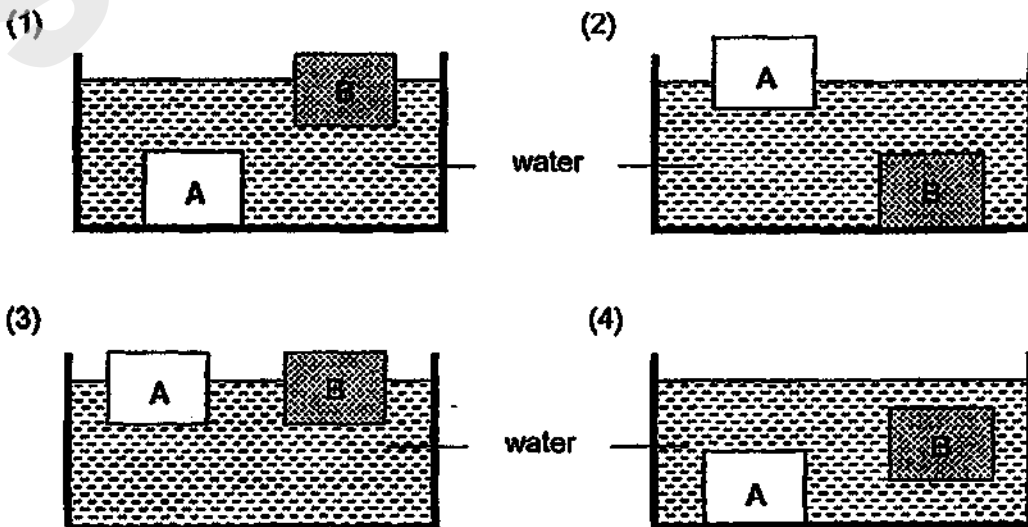
As the pebbles are dropped into the cylinder, the water level increases.

Which of the following is a reason why the water level increases?

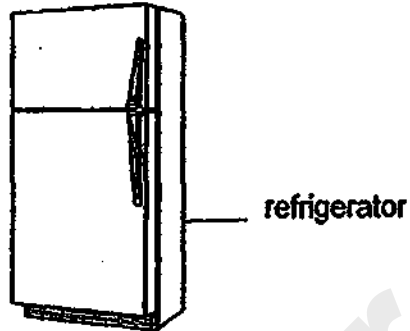
- (1) The pebbles have mass.
  - (2) The mass of the water increases.
  - (3) The volume of the water increases.
  - (4) The pebbles take up the space in the water.
16. Tom placed two sealed containers that were fully filled with air and sand into a swimming pool.



Which of the following diagrams shows the correct positions of containers, A and B, in the swimming pool?



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.

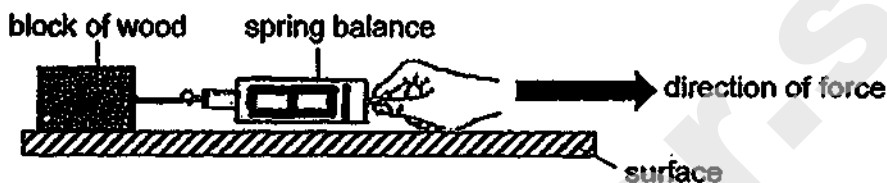


Which of the following statements is incorrect?

- (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.

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?

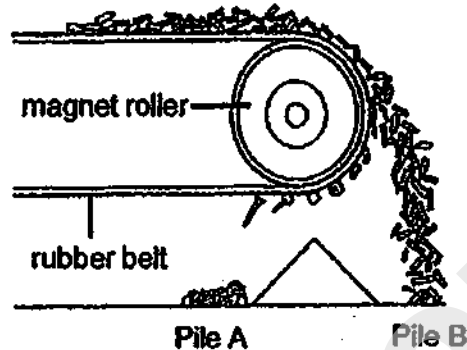
- (1) The type of surfaces
- (2) The mass of the block
- (3) The reading on the spring balance
- (4) The amount of force used to pull the block

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.



21. In a factory, a pile of metal pieces travels along a moving rubber belt. When these pieces reach 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



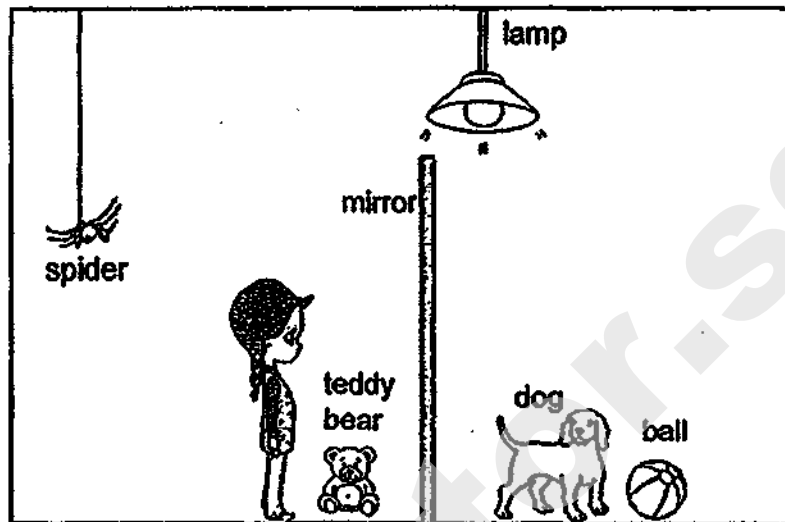
ball B with 40 units of air

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?

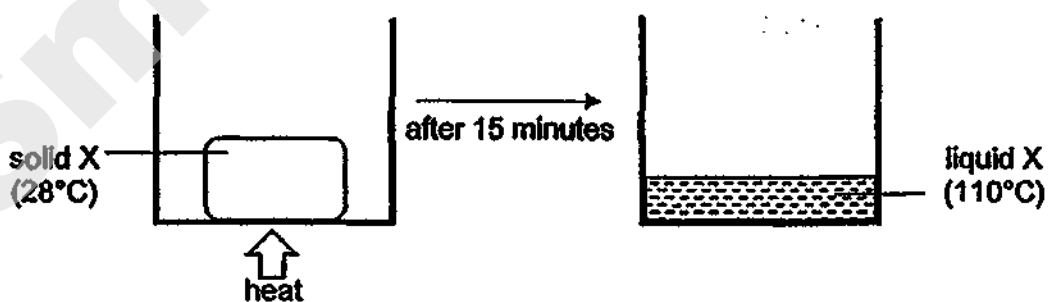
- (1) Air has mass.
- (2) Air is a non-matter.
- (3) Air has definite shape.
- (4) Air can be compressed.

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?

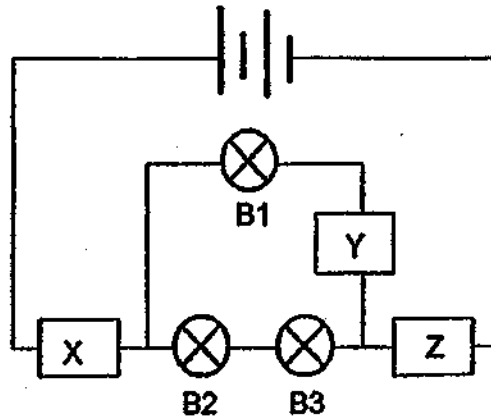
- (1) teddy bear only
  - (2) dog and ball only
  - (3) lamp, dog and ball only
  - (4) teddy bear and spider only
24. Tisha conducted an experiment by heating substance X. At the start, substance X was a solid at  $28^{\circ}\text{C}$ . After 15 minutes of heating, substance X reached a temperature of  $110^{\circ}\text{C}$  as shown below.



Based on Tisha's experiment, which of the following is possible?

	Melting point of X ( $^{\circ}\text{C}$ )	Boiling point of X ( $^{\circ}\text{C}$ )
(1)	20	150
(2)	28	100
(3)	30	100
(4)	60	150

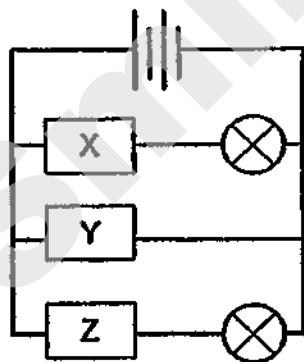
25. Xuan Wen set up a circuit with objects, X, Y and Z as shown.



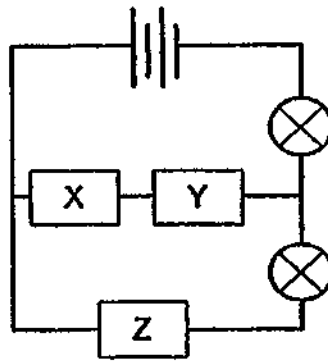
She recorded her observations in the table below.

Does the bulb light up?		
B1	B2	B3
No	Yes	Yes

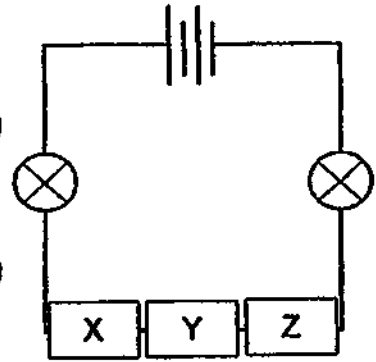
In which of the following circuit(s) will both bulbs remain lit?



circuit A



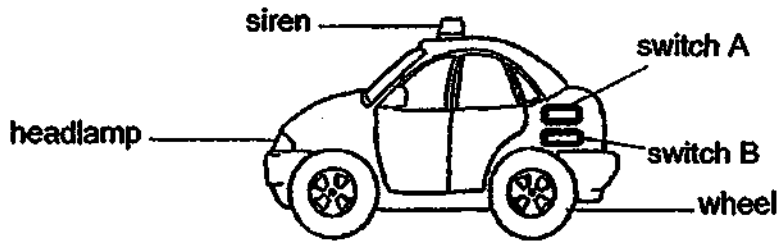
circuit B



circuit c

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

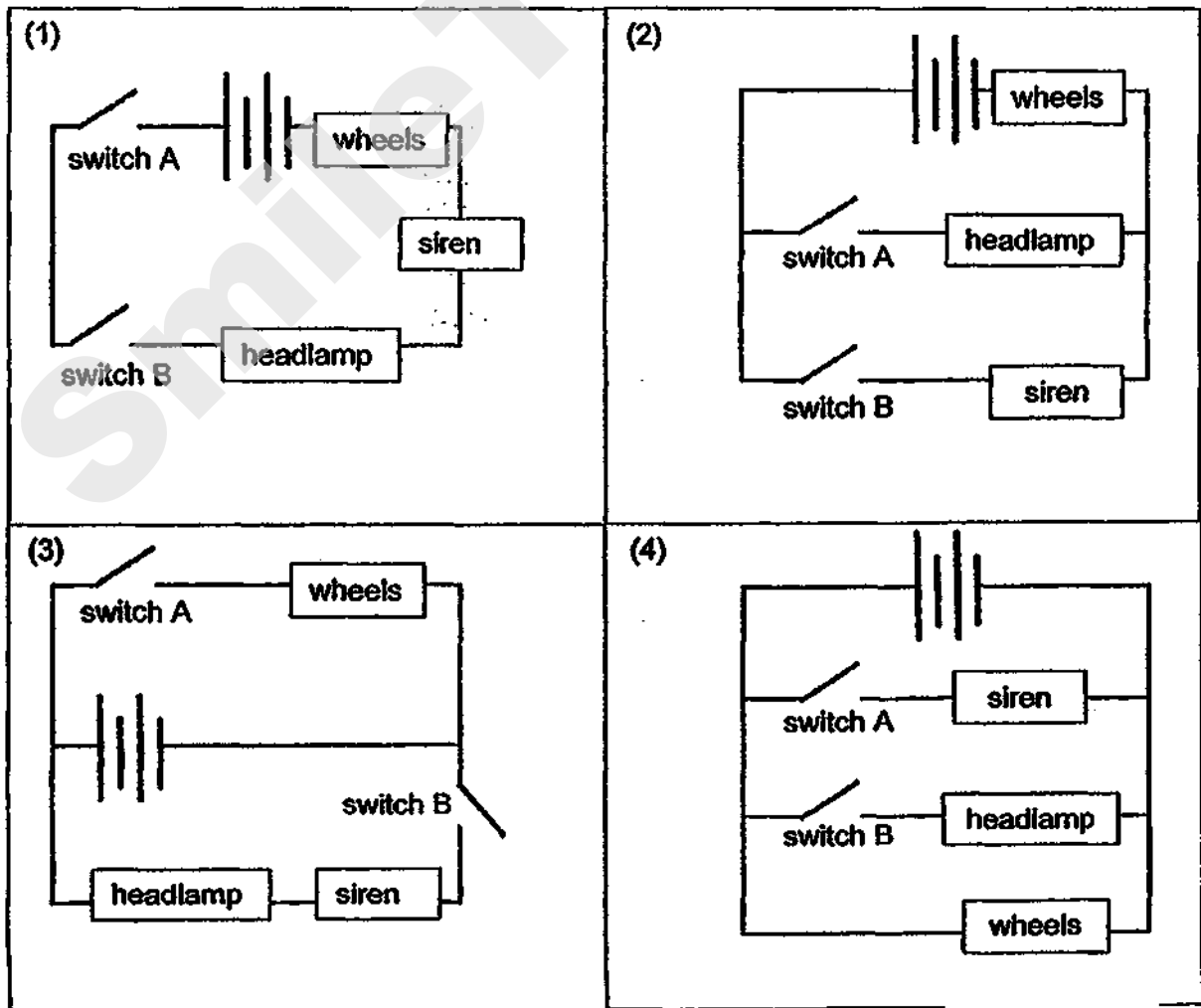
26. All has a toy car that works on batteries.



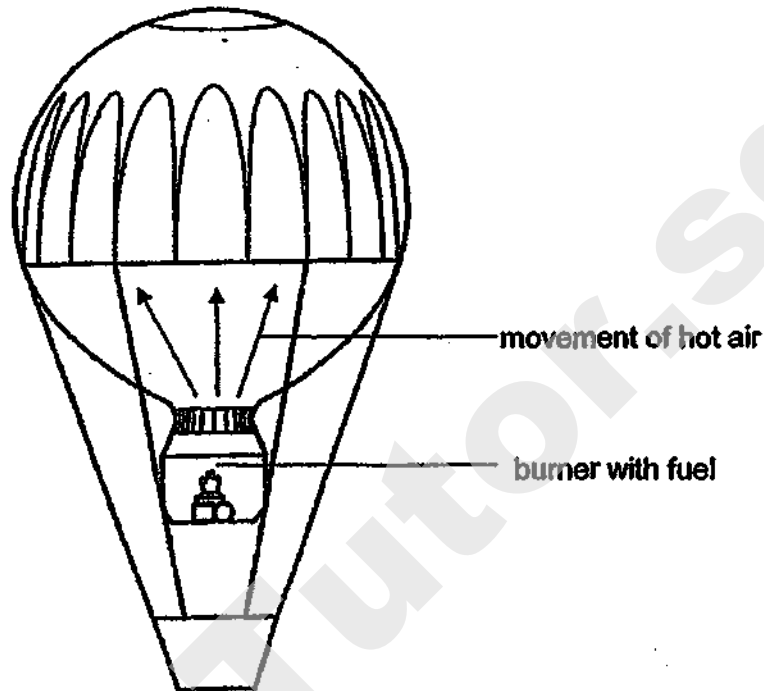
His observations are shown below.

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 Alf's toy car?



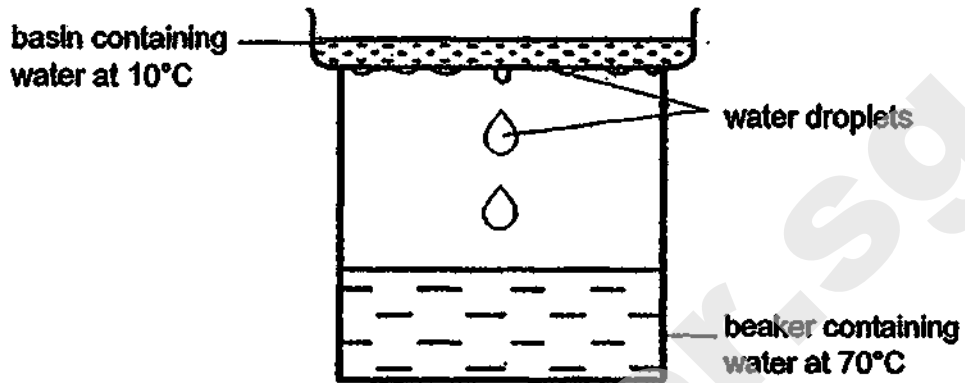
27. A hot air balloon uses hot air to rise. The burner with fuel is lighted. As the fuel burns, the hot air balloon floats up into the sky.



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  $\rightarrow$  kinetic energy  
(balloon) (balloon)
- (2) chemical potential energy  $\rightarrow$  heat energy  $\rightarrow$  kinetic energy  
(fuel) (flame) (moving hot air)
- (3) chemical potential energy  $\rightarrow$  light energy  $\rightarrow$  kinetic energy  
(fuel) (flame) (moving hot air)
- (4) gravitational potential energy  $\rightarrow$  heat energy  $\rightarrow$  kinetic energy  
(balloon) (flame) (balloon)

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



## 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.

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29. The diagram shows a bird's nest fern on a tree.

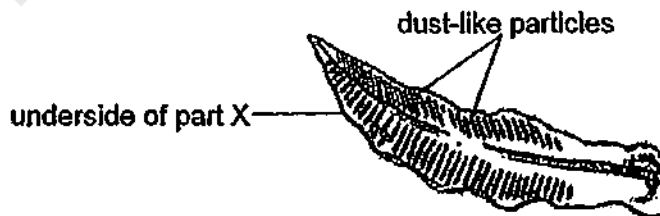


(a) State the function of part X. [1]

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Many rows of small 'bags' containing dust-like particles were observed at the underside of part X as shown in the diagram below.

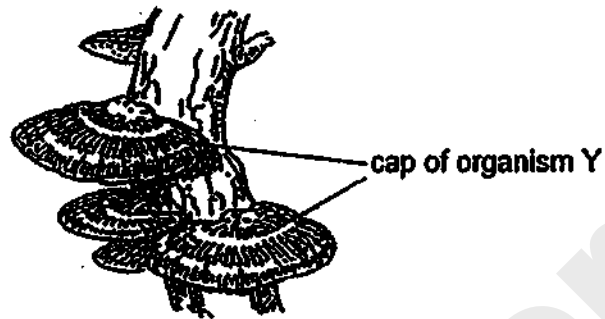


(b) Identify these 'dust-like particles'. [1]

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Score	
	2

Organism Y also grows on the tree trunk. Some 'dust-like particles' are also found on the underside of the cap of organism Y.



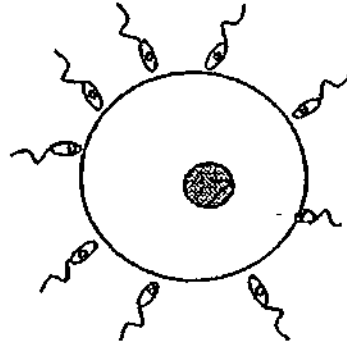
(c) What is the function of these dust-like particles for both the organism Y and the bird's nest fern? [1]

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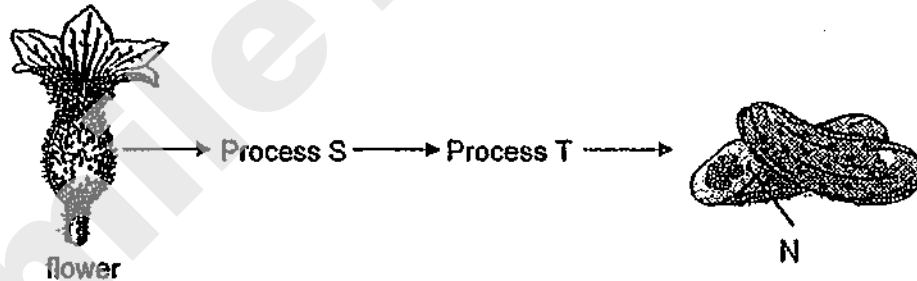
Score	1
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30. (a) The diagram shows two different types of cells in a process T in the reproduction of an animal. Part M controls all the activities in the animal cells.



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]

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- (ii) Describe process T. [1]

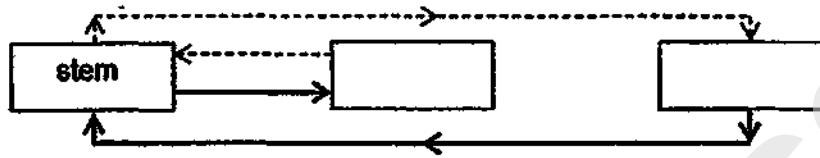
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Score	3
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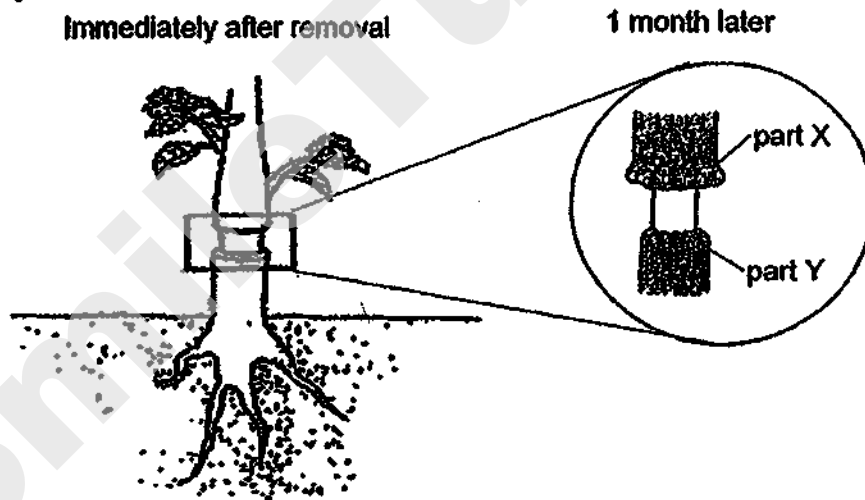
31. (a) The diagram below shows the movement of water and food in a plant.



(---> 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.



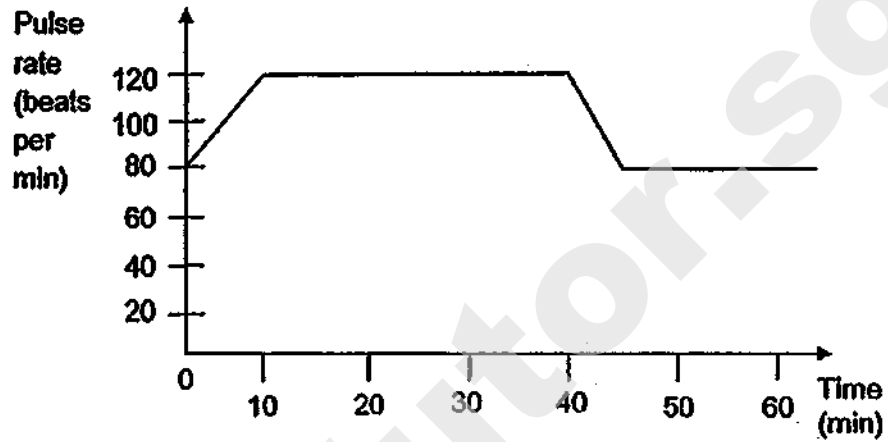
Explain why part X became swollen and part Y had shrunk. [2]

Part X: \_\_\_\_\_  
 \_\_\_\_\_

Part Y: \_\_\_\_\_  
 \_\_\_\_\_

Score	/
	3

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]

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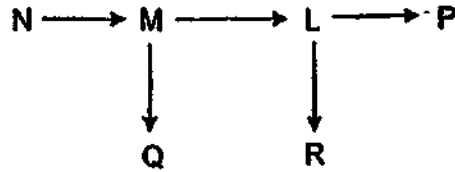
- (b) Explain why Bob's pulse rate increased during his jog. [2]

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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]

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(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]

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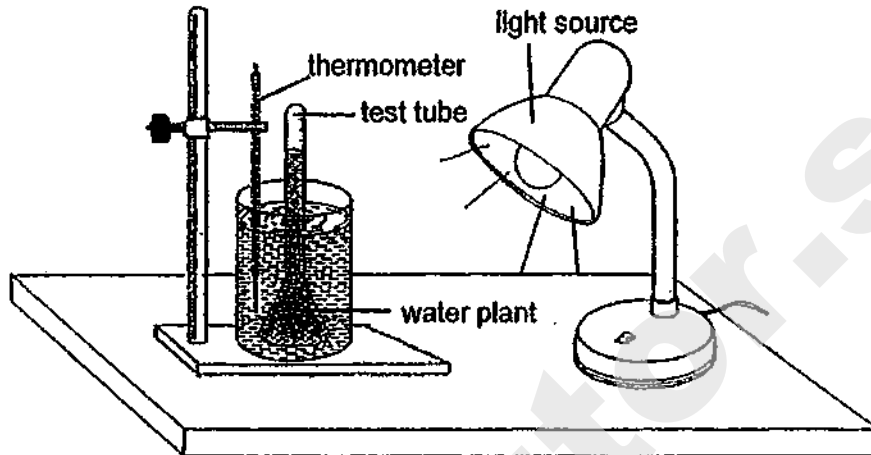
(c) The habitat of the above community experience a shorter daylight from January to May. Explain how this would affect the population of organism M during these few months. [2]

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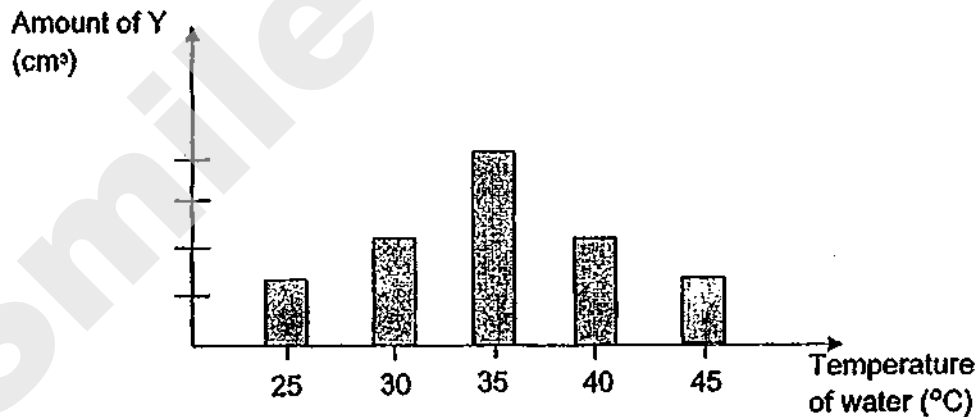
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Score	
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34. Bala wanted to find out how temperature of water affects the rate of photosynthesis of a water plant. He used the set-up as shown below.



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]

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(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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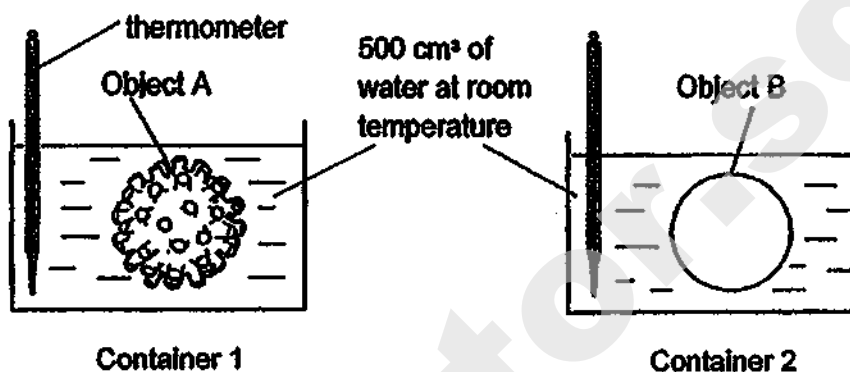
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Score	
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35. Objects, A and B, of similar volume and material, were heated in an oven to a same temperature. They were then placed inside two identical containers of water as shown below.



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]

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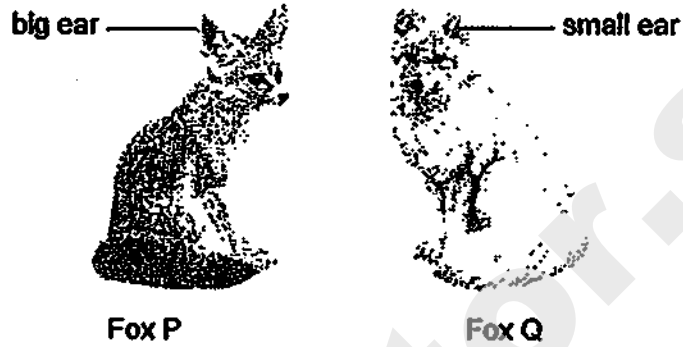
- (b) Give a reason for the answer in (a). [1]

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Fox P and fox Q live in two different places with extreme temperatures.

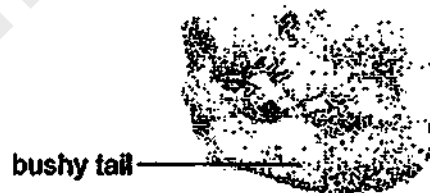


- (c) Based on the results in the table, how does having big ears help fox P to survive better in a hot place? [1]

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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.



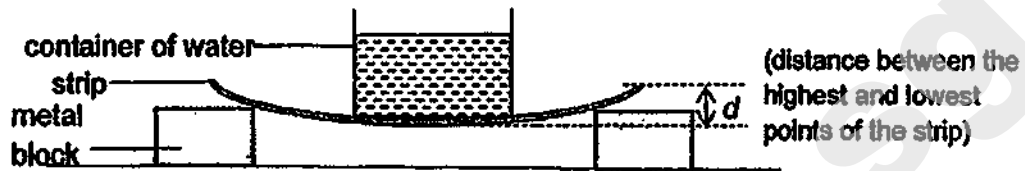
- (d) Explain how this behaviour helps Fox Q to survive in the extreme cold environment. [2]

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Score	/
	3

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<sup>3</sup> of water is placed on it.

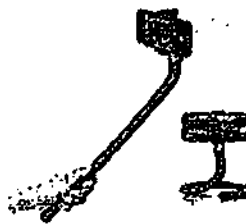


For each strip, he placed a container of 200 cm<sup>3</sup> of water on it and measured the distance  $d$ . His results are shown below.

Strip	Amount of water in the container (cm <sup>3</sup> )	$d$ (mm)
X	200	28
Y	200	12
Z	200	45

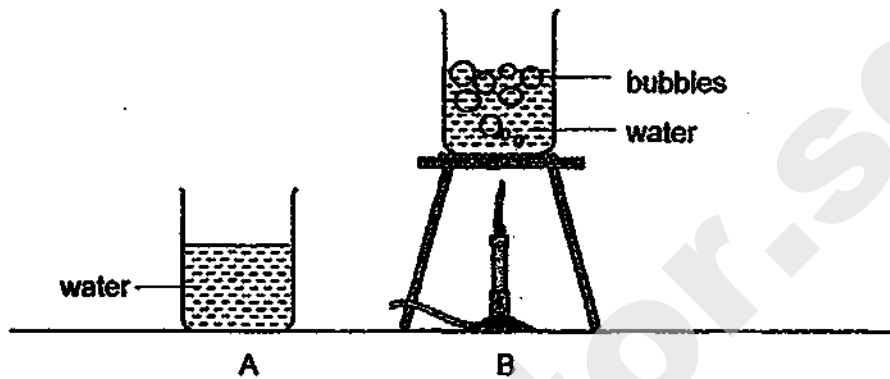
- (a) Based on the results, what property of the materials was Zul trying to find out? [1]

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]

37. The diagrams below show two beakers with same amount of water going through two different processes, A and B.

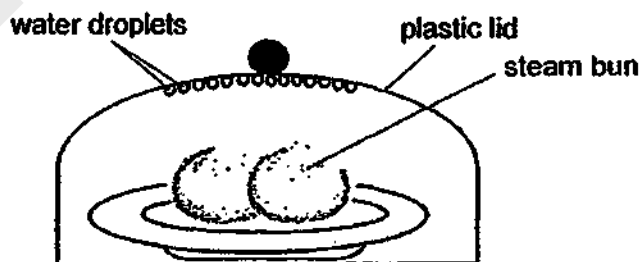


- (a) Identify the processes in A and B and state one difference between the two processes. [1]

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Mei Ling steamed two hot buns and placed a plastic lid over them as shown below.



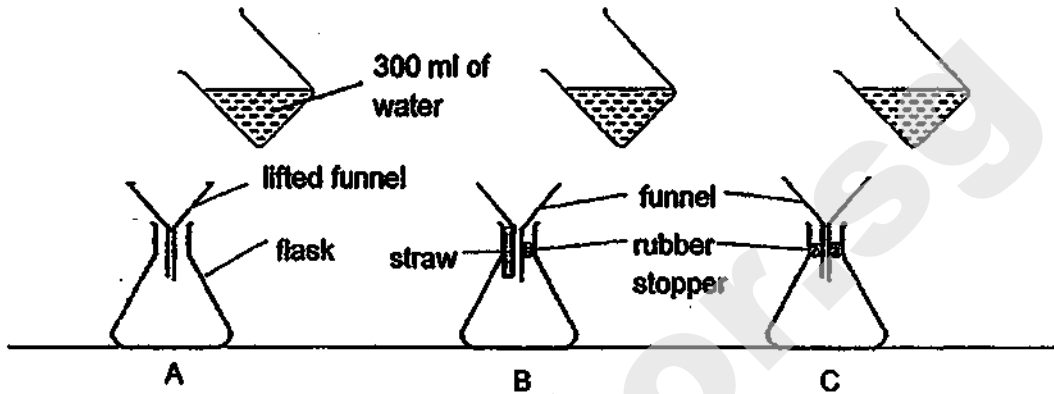
- (b) She observed some water droplets formed immediately at the inner top of the plastic lid. Explain her observation. [2]

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Score	
	3

38. Sam prepared three set-ups as shown below. He then poured 300 ml of water into each flask.



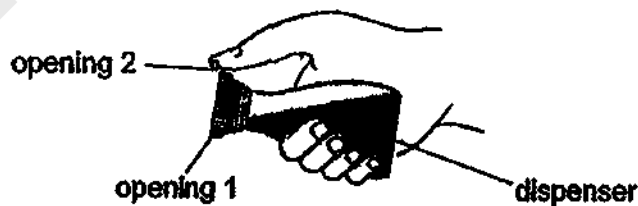
- (a) Based on the diagram above, which flask would he collect the least amount of water in one minute? Explain your answer. [2]

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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]

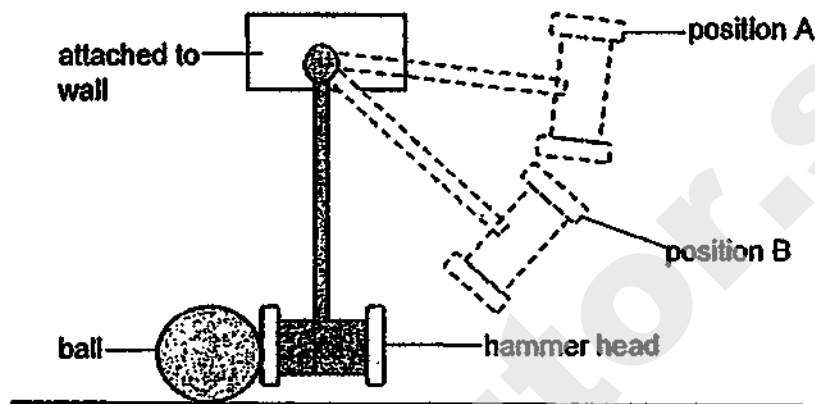
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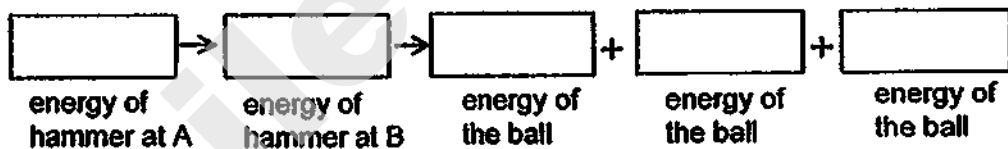
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Score	
	3

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]

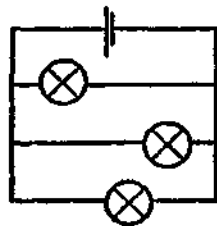
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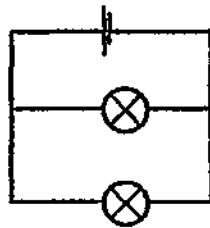
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Score	3
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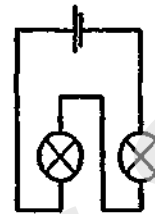
40. Study the circuit diagrams below.



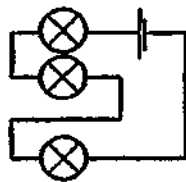
Circuit A



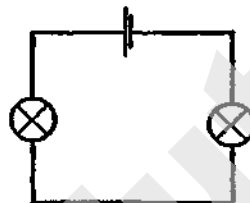
Circuit B



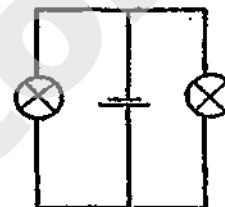
Circuit C



Circuit D



Circuit E



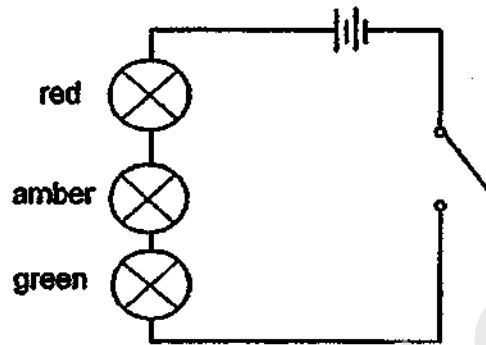
Circuit F

(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

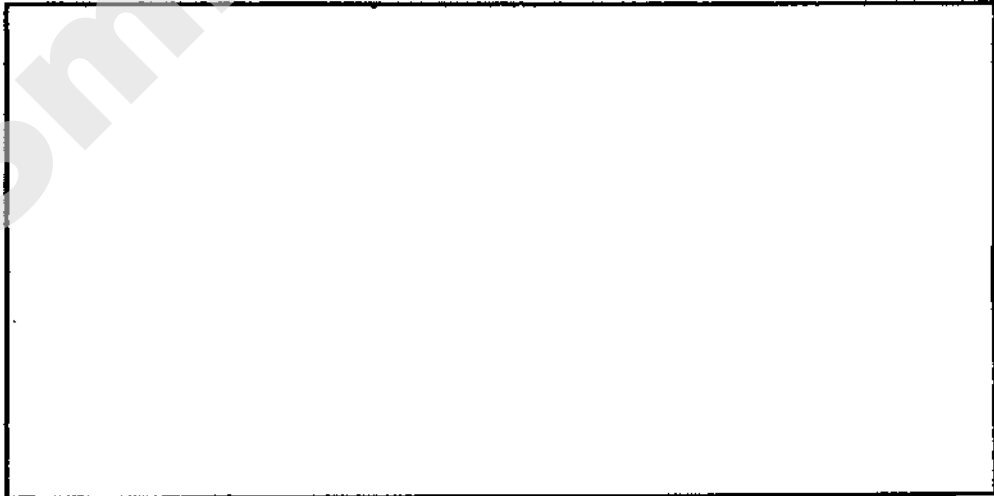
Score	1
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Amal designed and constructed her traffic light circuits using coloured bulbs as shown in the diagram below.



- (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



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.

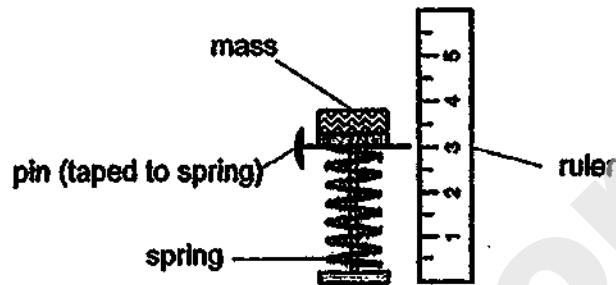


Diagram 1

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]

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- (b) What is the purpose of the pin? [1]

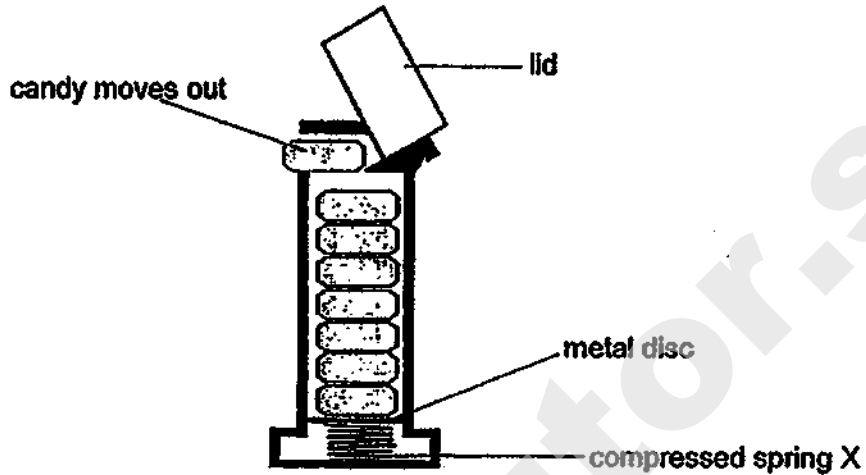
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Score	2
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A spring is used to make a candy dispenser as shown in Diagram 2.



- (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]

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- (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]

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Score	3
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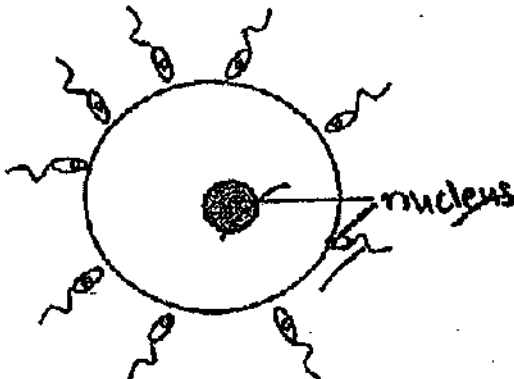
END OF BOOKLET B

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**

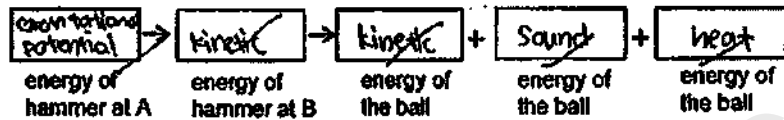
Q29)	<p>a) To trap light and carbon dioxide for photosynthesis to make food for the plant and oxygen to be released.</p> <p>b) Spores</p> <p>c) To allow the organisms to reproduce and the population to survive by dispersing the spores.</p>
Q30)	<p>a)</p> 

	<p>b)i)Ovary</p> <p>ii)The male reproductive cell fuses with the female reproductive cell of the flower.</p>
Q31)	<p>a)</p> <p>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.</p> <p>Part Y : The food carrying tubes in part Y have no more food in them and shrunk.</p>
Q32)	<p>a)80 beats per min.</p> <p>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.</p>
Q33)	<p>a)Organism Q is the predator of organism M.</p> <p>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.</p> <p>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.</p>
Q34)	<p>a)Oxygen</p> <p>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</p>

	<p>temperature of the water increases from 40°C to 45°C, the rate of photosynthesis of the water plant decreases.</p> <p>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.</p>
Q35)	<p>a)The temperature of water in container 1 increased faster than the temperature of water in container 2 over 20 minutes.</p> <p>b)Object A had more surface area in contact with the cooler water so the water gained heat faster.</p> <p>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.</p> <p>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.</p>
Q36)	<p>a)Flexibility</p> <p>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.</p>
Q37)	<p>a)Evaporation and boiling. Evaporation only occurs at the surface of the water but boiling occurs throughout the whole body.</p> <p>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.</p>
Q38)	<p>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.</p> <p>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.</p>

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.

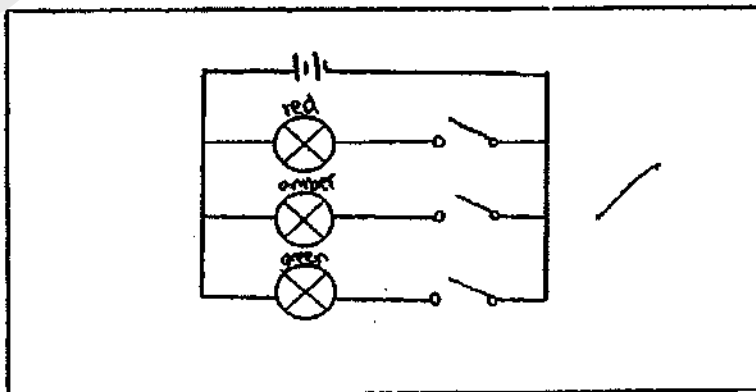
Q40)

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)



<b>Q41)</b>	<p>a)As the mass added increases, the length of the compression of the springs increases.</p> <p>b)To ensure the results of the experiment are accurate as the pin points directly to the marks on the ruler.</p> <p>c)Elastic spring force and gravitational force.</p> <p>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.</p>
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