



**RAFFLES GIRLS' PRIMARY SCHOOL**  
**SEMESTRAL ASESMENT (1)**  
**2012**

Name : \_\_\_\_\_ Index No: \_\_\_\_\_ Class: P 6 \_\_\_\_\_

2 May 2012

**SCIENCE**

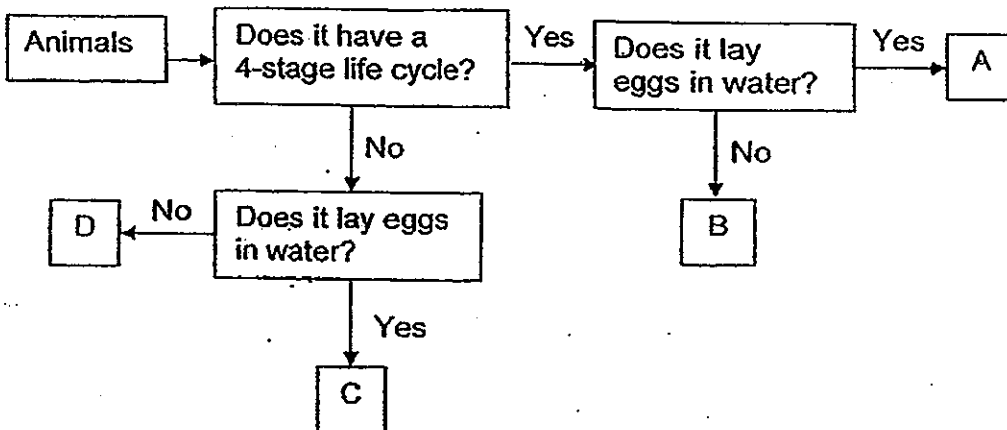
Att: 1 h 45 min

**SECTION A (30 X 2 marks)**

For each question from 1 to 30, 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) provided.

Section A	60	
Section B	40	
Your score out of 100 marks		
	Class	Level
Highest score		
Average score		
Parent's signature		

1 The diagram below shows a flow chart.

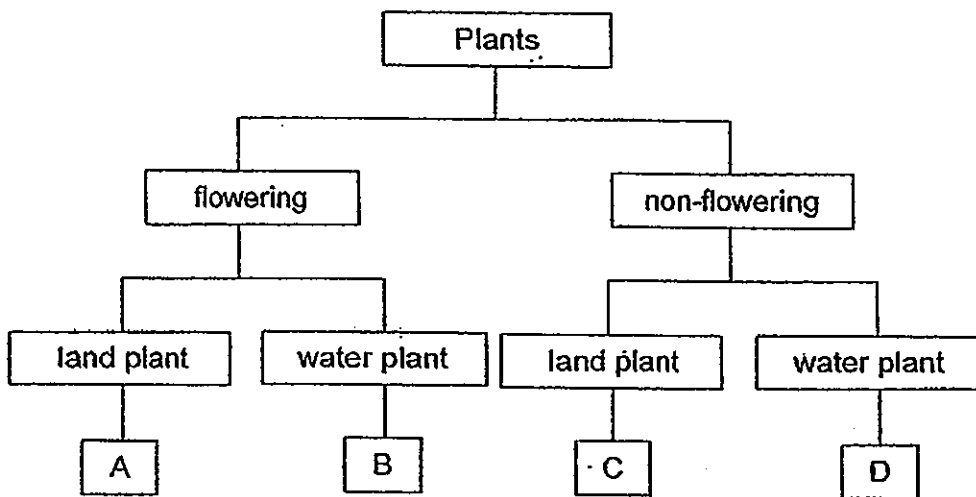


Which of the following organisms best represent A, B, C and D respectively?

	A	B	C	D
(1)	frog	chicken	mosquito	mealworm beetle
(2)	chicken	frog	mealworm beetle	mosquito
(3)	mosquito	mealworm beetle	frog	chicken
(4)	mealworm beetle	mosquito	chicken	frog

- 2 The following table gives information on four plants: P, Q, R and S. A tick (✓) shows that the plant has the characteristic.

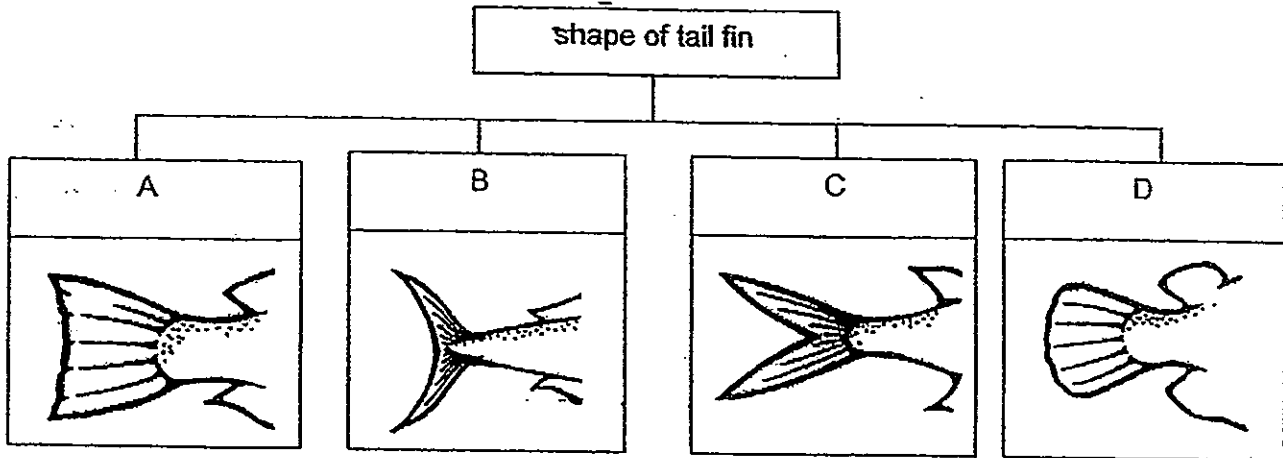
Plant \ Characteristic	P	Q	R	S
has seeds		✓		✓
has spores	✓		✓	
takes in dissolved oxygen		✓	✓	



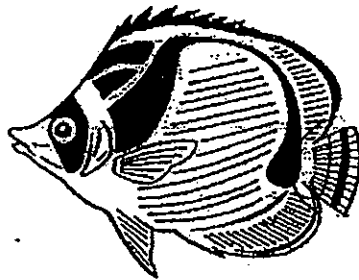
Based on information above, which one of the following best represents plants P, Q, R and S respectively?

	Plant P	Plant Q	Plant R	Plant S
(1)	A	D	B	C
(2)	B	C	A	D
(3)	C	B	D	A
(4)	D	A	C	B

- 3 The diagram below shows how the tail fins, A, B, C and D, of 4 different fish are classified according to their shape.



Peter found a fish as shown below.



Which group, A, B, C or D, does the above fish most likely belong to?

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

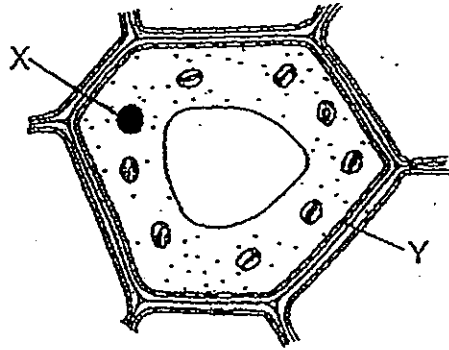
- 4 Peter wanted to find out if overcrowding affects the germination of seeds.

Variables	Set-up A	Set-up B	Set-up C	Set-up D	Set-up E
Duration of experiment	3 days	5 days	5 days	3 days	5 days
Location	In the room	In the room	In the field	In the field	In the room
Number of seeds	10	10	30	10	30
Amount of water given daily (ml)	10	20	10	10	20
Amount of soil (g)	500	300	500	500	300

Which set-ups should Peter choose to ensure that his experiment is a fair test?

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

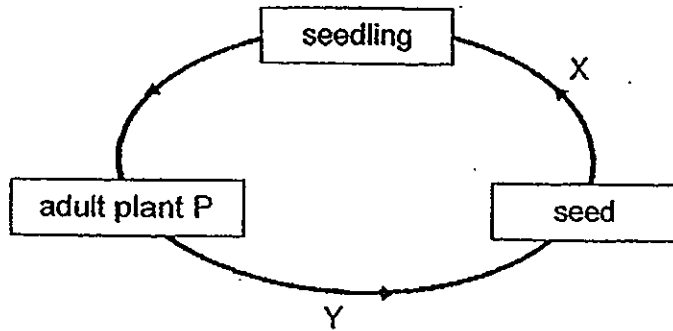
- 5 The diagram below shows a cell with its labelled parts, X and Y.



Which one of the following states the correct functions of these labelled parts?

	X	Y
(1)	provides the support for the cell	produces the chlorophyll
(2)	allows cell division to take place	provides the support for the cell
(3)	controls activities within the cell	controls the movement of materials in and out of the cell
(4)	controls the movement of materials in and out of the cell	provides the support for the cell

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

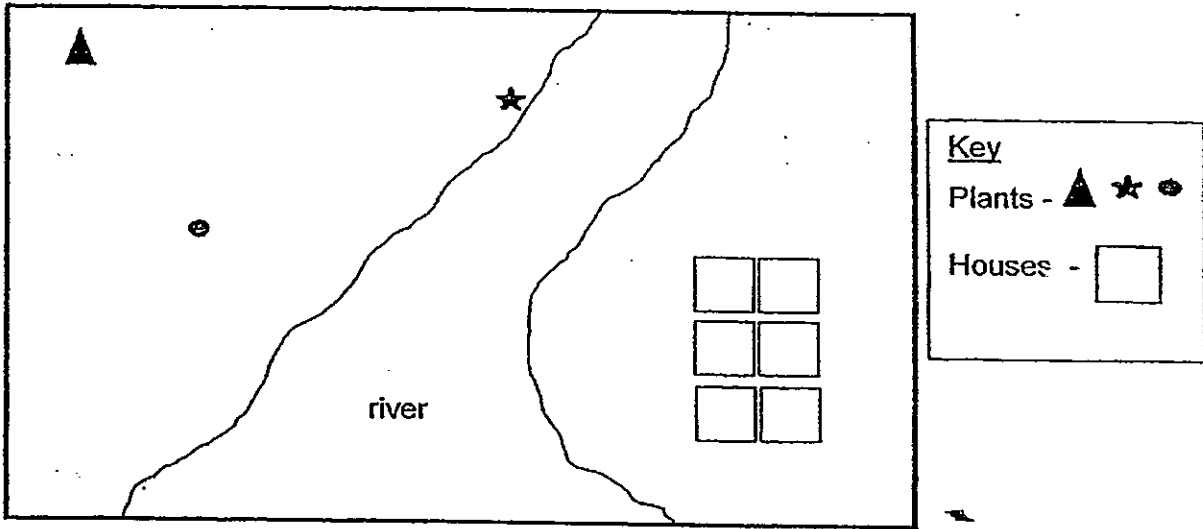


Which of the following processes take place at X and Y respectively?

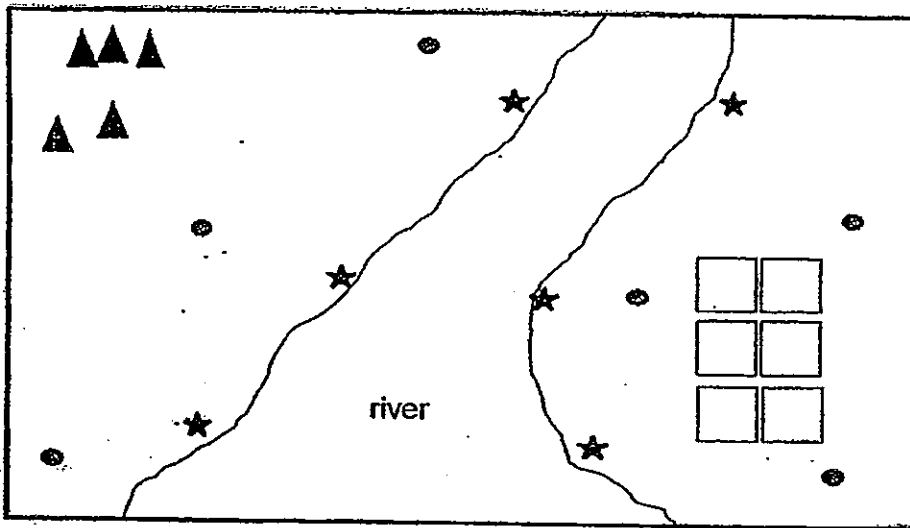
- A Pollination of flower
- B Germination of seed
- C Dispersal of fruits/ seeds
- D Fertilisation of female sex cell

	Process(es) at X	Process(es) at Y
(1)	B only	D only
(2)	A and D only	C only
(3)	B and C only	A and D only
(4)	C and D only	A only

7 The diagram below shows part of an island where some plants are growing.-



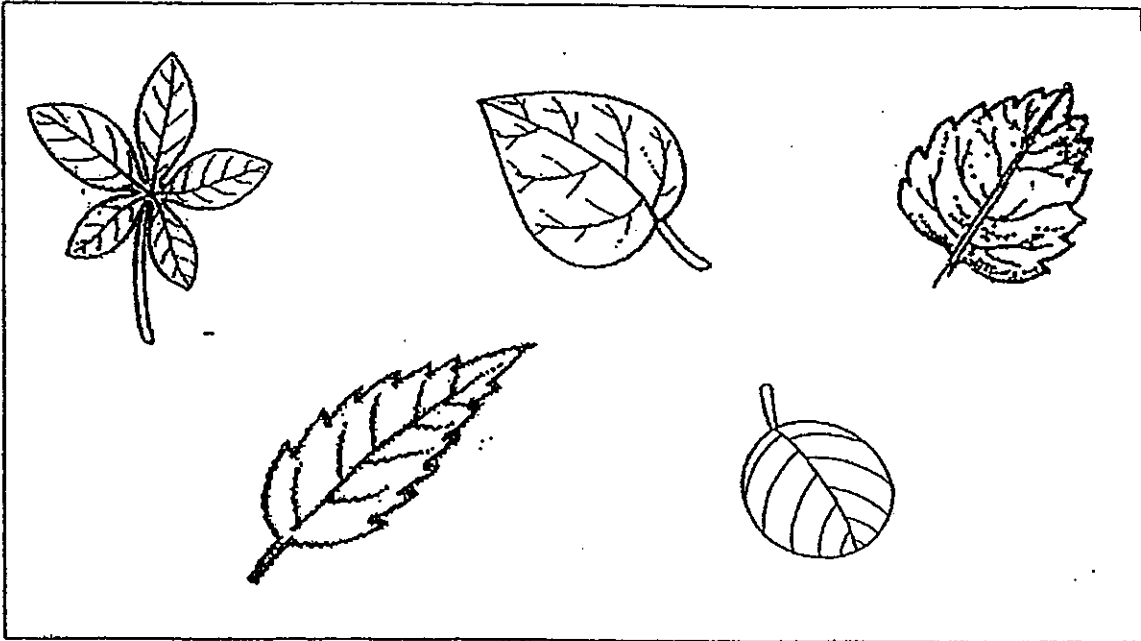
After a few months more plants were found growing on the island as shown below.



Which of the following best represents the method of dispersal of the three plants?

	▲	★	●
(1)	wind	animal	water
(2)	water	splitting action	wind
(3)	animal	wind	splitting action
(4)	splitting action	water	animal

8 The diagram below shows different types of leaves.



Three pupils recorded their observations of the leaves in their Science journal as shown below.

Mark : All the leaves have veins.

Luke : All the leaves have the same shape.

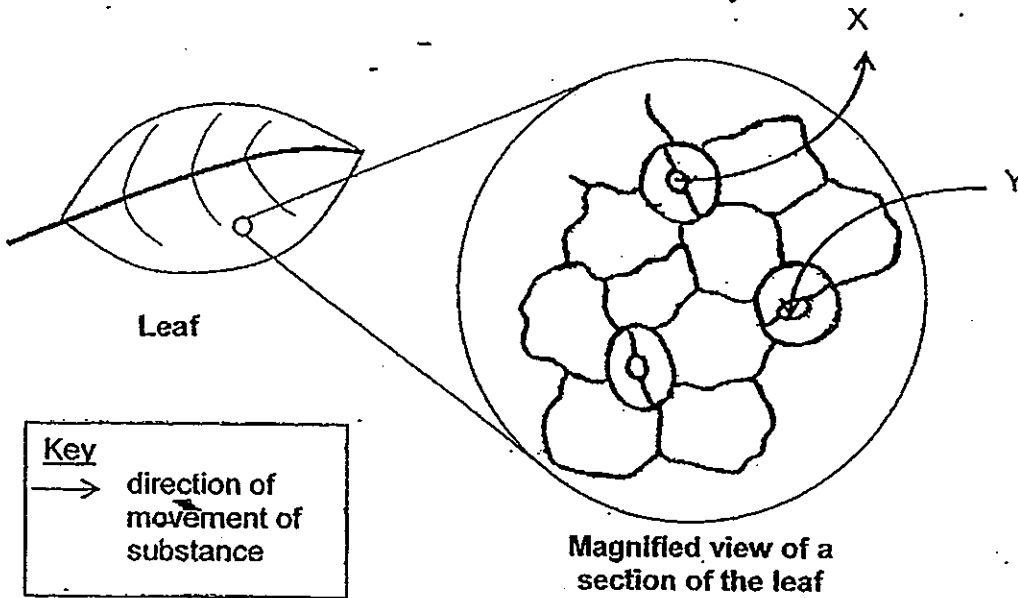
John : The leaves can be grouped according to their type of edge.

Which of the following pupils' observations were correct?

- (1) Mark and John only
- (2) Mark and Luke only
- (3) Luke and John only
- (4) Mark, Luke and John only



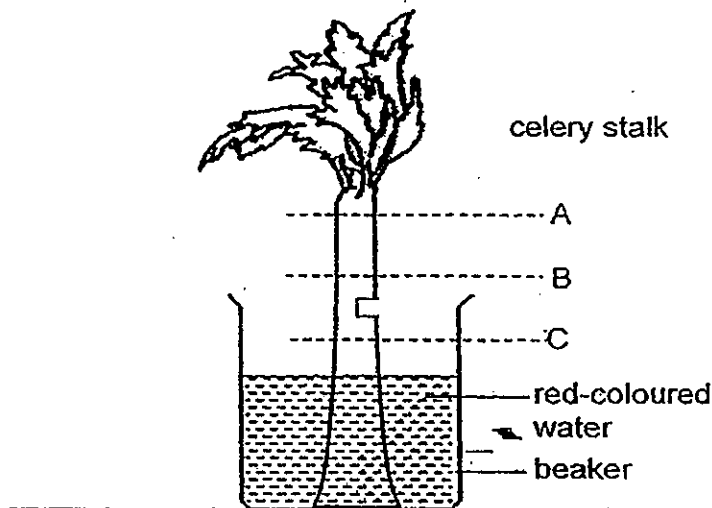
- 9 The diagram below shows the movement of substances X and Y in and out of the leaf at night.



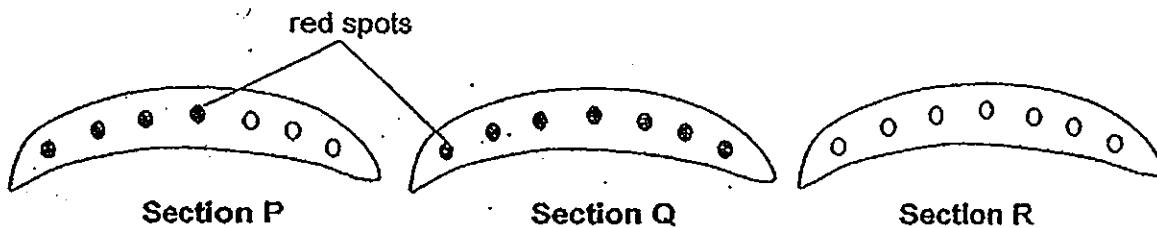
Which one of the following best represents substances X and Y?

	X	Y
(1)	carbon dioxide	oxygen
(2)	oxygen	carbon dioxide
(3)	oxygen	water vapour
(4)	water vapour	carbon dioxide

- 10 Kelly conducted an investigation with the set-up as shown below. She lowered a stalk of a celery plant, with a part cut out, into a beaker containing some red-coloured water.



After some time, she removed the stalk from the beaker and cut three sections at A, B and C. She observed some red spots on the cut sections as shown below.

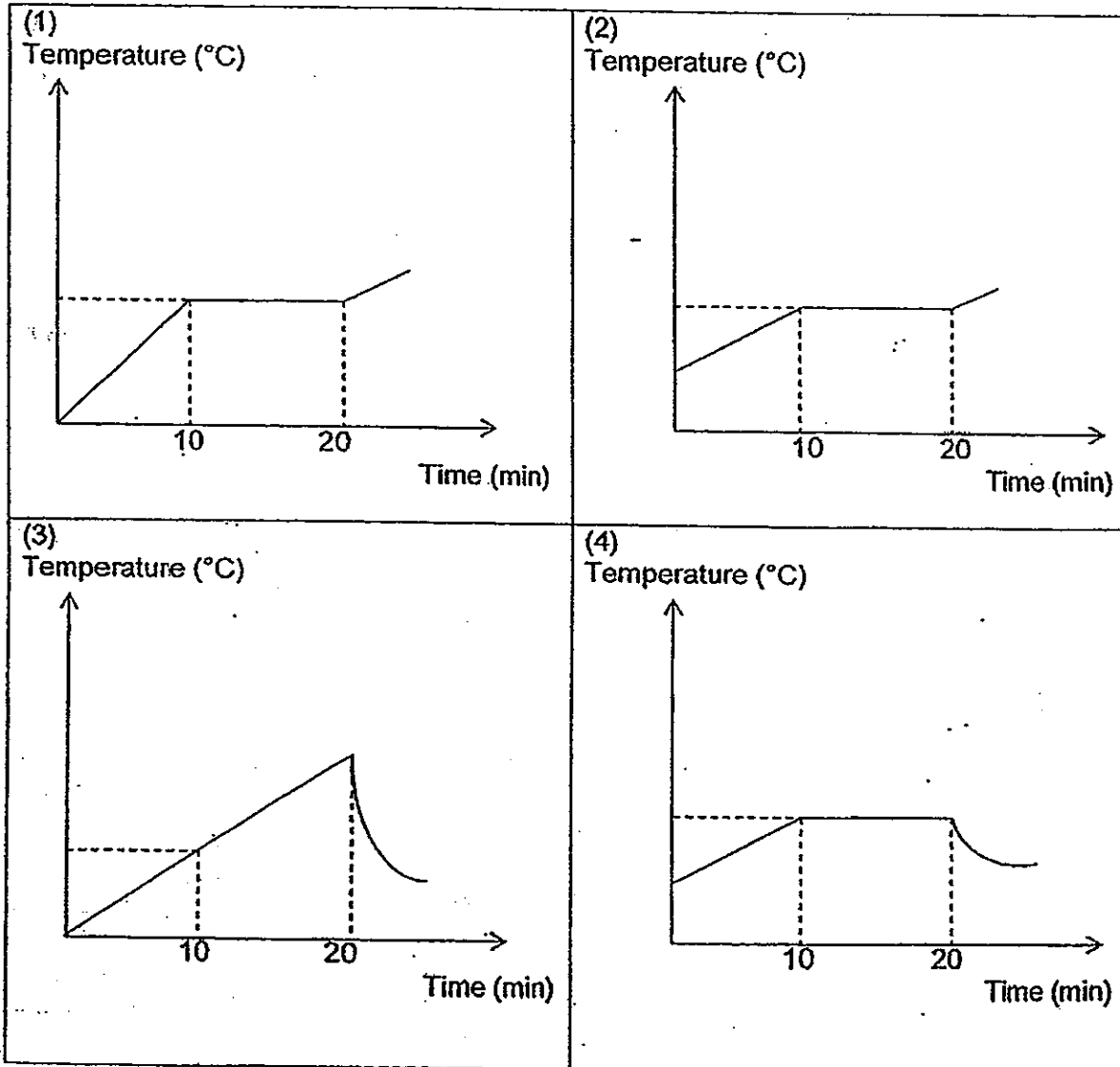


Which one of the following best matches the observations on P, Q and R to the cut position on the stalk at A, B and C?

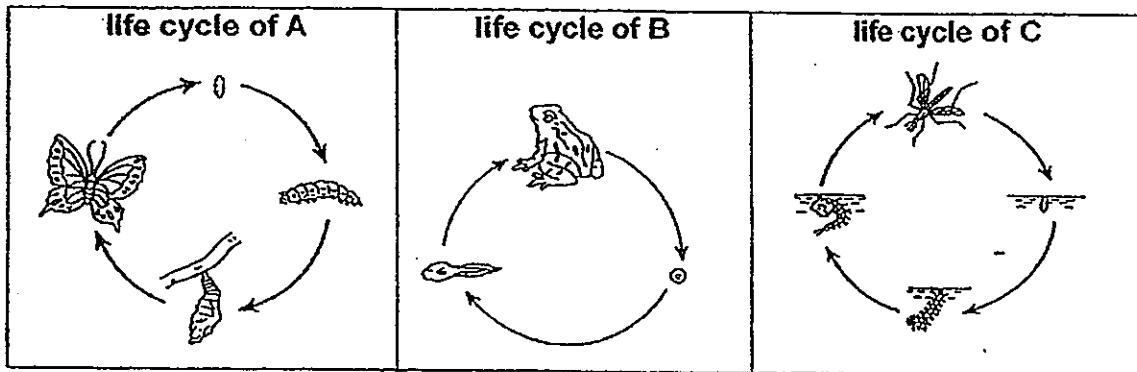
	A	B	C
(1)	P	Q	R
(2)	Q	P	R
(3)	Q	R	P
(4)	R	P	Q

- 11 Linda heated a pot of tap water in her kitchen for 10 minutes until it started boiling. She continued boiling it for another 10 minutes before adding a packet of instant noodles into the water.

Which one of the following graphs shows the changes in the temperature of water?



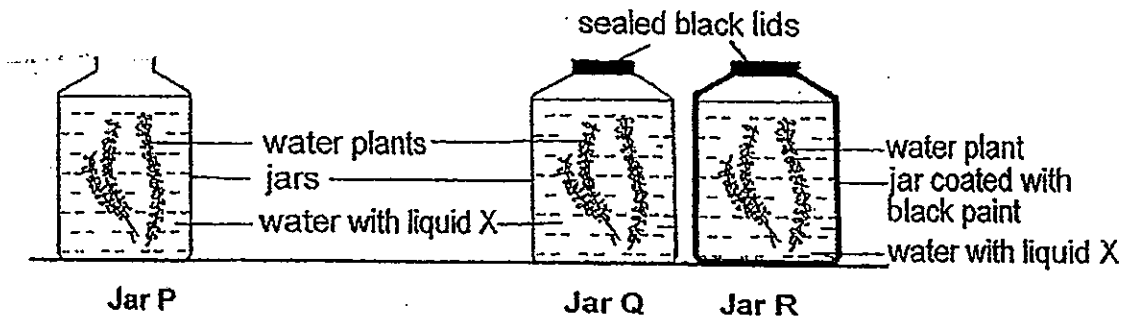
- 12 Ravi studied the life cycles of three different types of organisms, A, B and C, and drew the following diagrams as shown below.



Which one of the following statements about the life cycles of these organisms is NOT true?

- (1) All the organisms A, B and C have the egg stage.
- (2) Only organisms A and C have larval and pupal stages.
- (3) At least one stage in each of the life cycles of organisms A, B and C takes place in water.
- (4) The number of stages in the life cycles of organisms A and C is the same unlike that of B.

- 13 Janet set up an experiment to compare the amount of carbon dioxide produced by water plants using glass jars, P, Q and R, of the same shape, size and material as shown in the diagram below. Jar R was coated with black paint.



An equal amount of liquid X was added to each jar of water. All the set-ups were placed near a window on a sunny day from 10am to 4pm.

Liquid X will change colour as shown below.

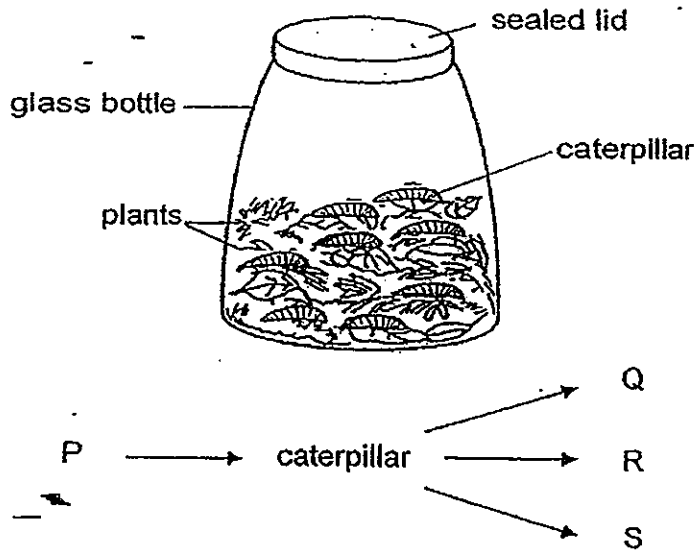
Amount of carbon dioxide in water	less than normal	normal	higher than normal
Colour of water with liquid X	purple	red	yellow

Which one of the following best identifies the colour of water with liquid X in the jars?

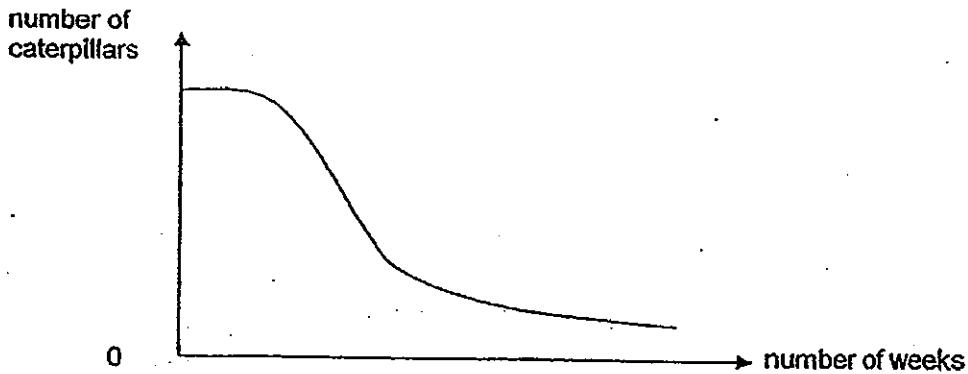
	Jar P	Jar Q	Jar R
(1)	red	red	purple
(2)	yellow	purple	red
(3)	yellow	yellow	purple
(4)	purple	purple	yellow



- 16 The diagrams below show a terrarium and the energy pathway between the caterpillar and other organisms in the terrarium.



The population of the caterpillars in the enclosed terrarium changed over a period of time as shown in the graph below.



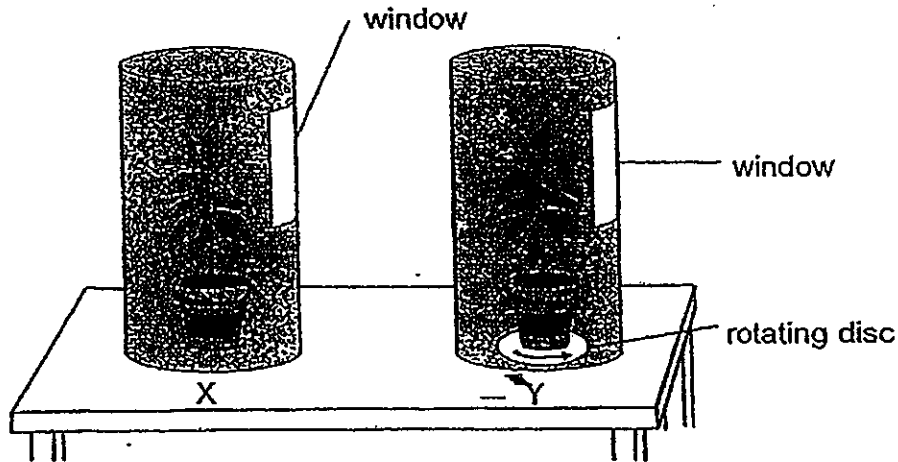
Which of the following could possibly be the causes affecting the population of the caterpillars?

- A There is an increase in the number of P.
- B There is an increase in the number of Q.
- C There is a decrease in the number of R.
- D The caterpillars developed into the next stage of their life cycle.

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

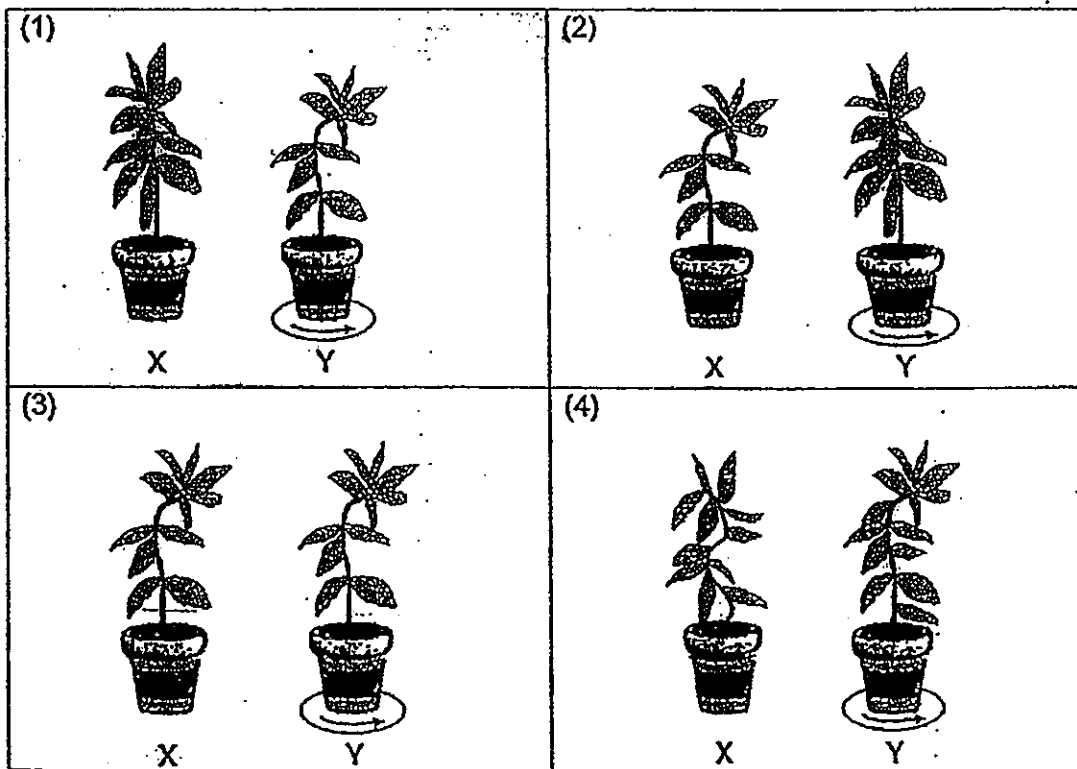
- 17 Leela set up an experiment using similar plants, X and Y, of the same species and placed each of them in identical cylinders, each with a window at one of its sides.

In each cylinder, plant X remained still while plant Y was turned continuously at a constant rate in one direction as shown in the diagrams below.



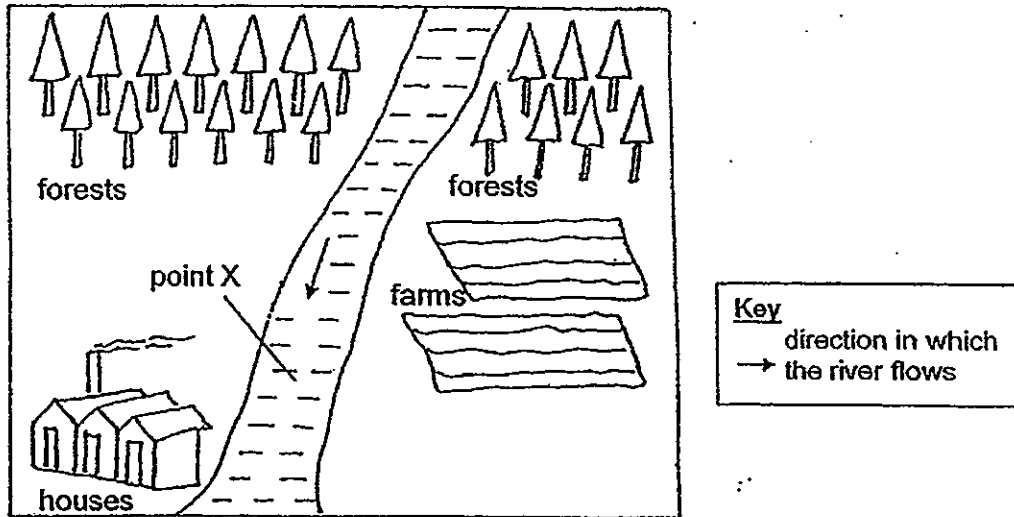
After a month, Leela removed both cylinders. She observed and compared both plants X and Y.

Which one of the following sets of plants matched the ones Leela observed?





18 A river runs through a forest as shown in below.

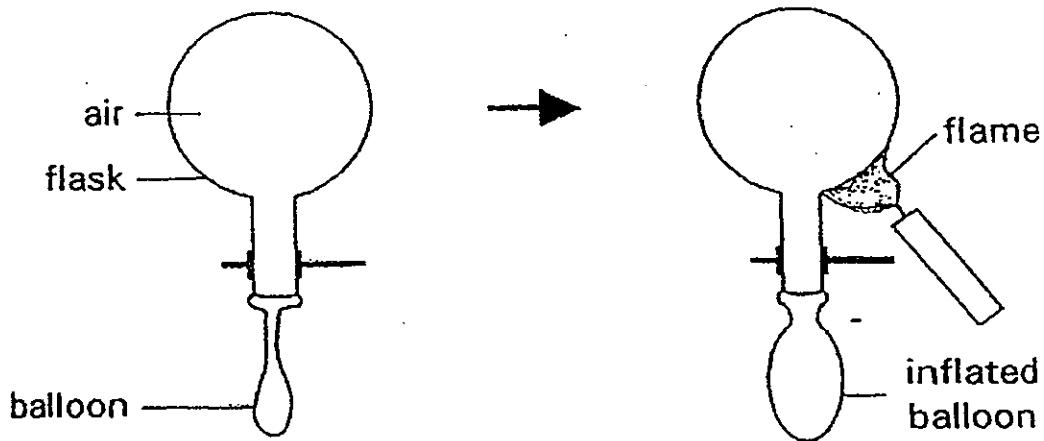


Which of the following will most likely increase the amount of pollutants in the river at point X?

- A deforestation
- B spraying of pesticide in the farm
- C dumping of sewage from the houses into the river

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

19 Chloe used the set-up below to study the property of air.

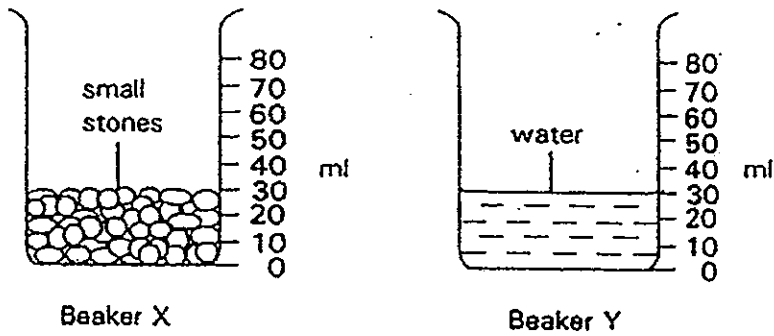


What property / properties must the flask possess such that the balloon could be inflated quickly?

- A transparent
- B painted silver
- C a good conductor of heat.

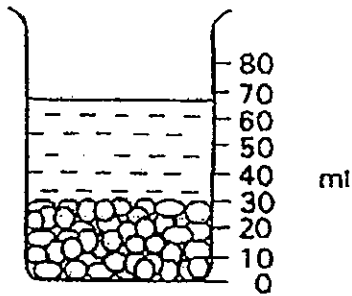
- (1) A only
- (2) C only
- (3) A and B only
- (4) B and C only

20 Michelle filled beaker X with small stones and beaker Y with 30 ml of water.

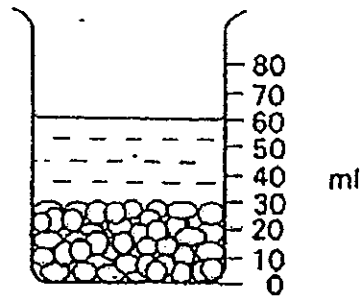


Which one of the following diagrams most likely shows the water level in Beaker X after the water from beaker Y has been poured into it?

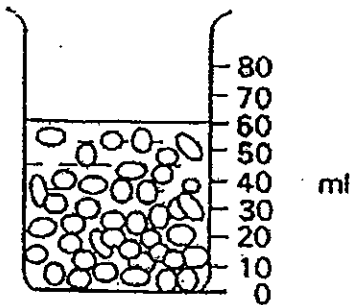
(1)



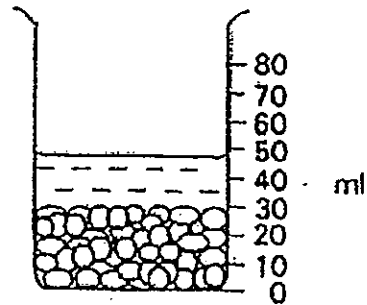
(2)



(3)



(4)



21 The table below shows the boiling and melting points of three substances, P, Q and R.

Substances	P	Q	R
Boiling point (°C)	20	125	80
Melting point (°C)	7	40	20

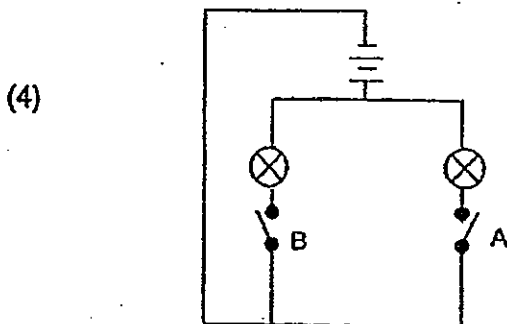
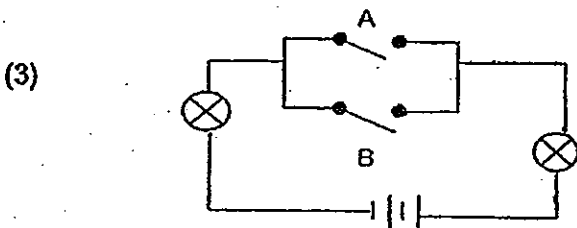
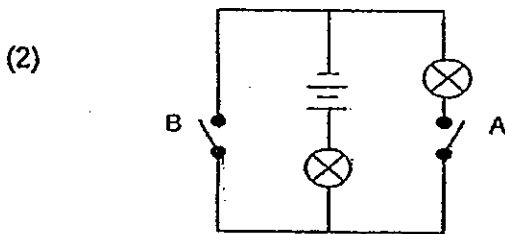
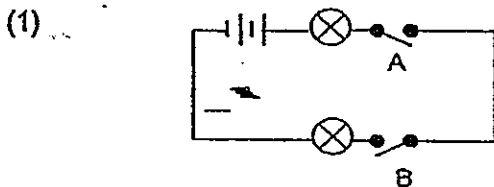
Which one of the following is most likely to be the state of the substance P, Q and R at 28 °C?

	P	Q	R
(1)	gas	liquid	solid
(2)	gas	solid	liquid
(3)	solid	liquid	gas
(4)	liquid	solid	gas

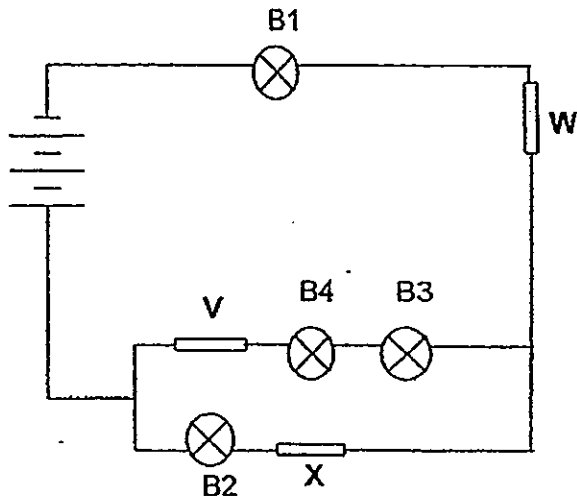
- 22 Celeste recorded the results obtained when she tested two switches, A and B, in an electrical circuit.

Switch A	Switch B	Number of bulbs lighted up
Open	Open	0
Closed	Open	2
Open	Closed	1

Based on the results shown in the table above, which one of the following electrical circuit is most likely used by Celeste?



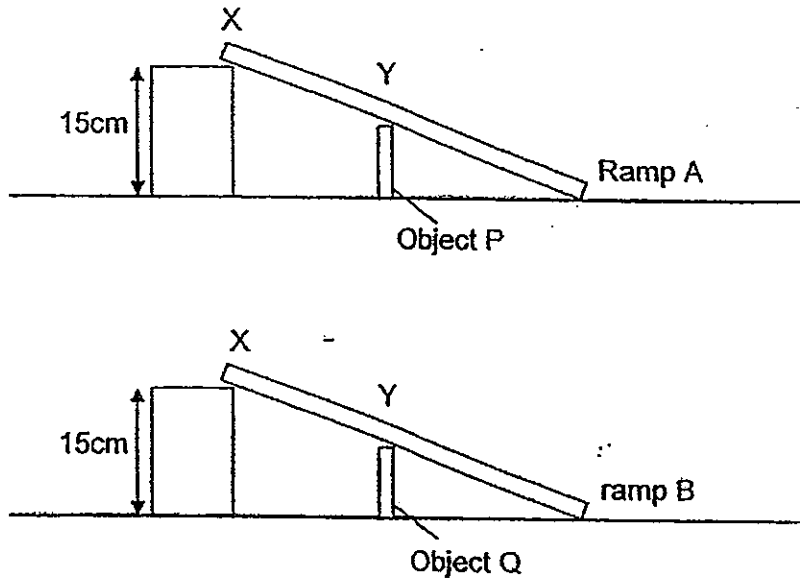
- 3 Study the circuit diagram below carefully. Material X, V and W were connected to the circuit below.



Which one of the following most likely represents material X, V, W?

	V	W	X	Bulbs that light up
(1)	iron	plastic	aluminium	B2,B3,B4
(2)	aluminium	steel	plastic	B3,B4
(3)	plastic	nickel	steel	B1,B2
(4)	nickel	iron	plastic	B1,B2,B3,B4

- 24 Shuxian released two identical toy cars, made of steel, down two identical ramps, A and B. Each ramp had an object directly below it as shown in the diagrams below.



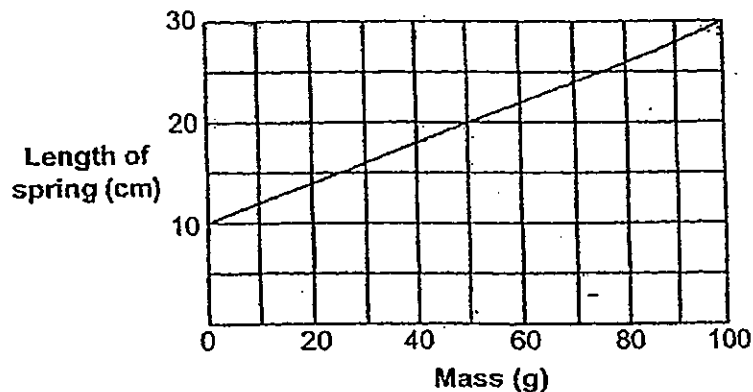
She recorded the time taken for the cars to roll down the ramps in the table shown below.

Ramp	Time take for car to move down the ramp from X to Y (s)
A	1.5
B	2.8

Which one of the following best explains the difference in the time taken for the cars to move down the ramps?

- (1) P is a magnet but Q is not a magnet.
- (2) Both P and Q are magnets but Q is a stronger magnet than P.
- (3) The surface of ramp B was rougher than the surface of ramp A.
- (4) The car on ramp A is made of steel and the car on ramp B is made of iron.

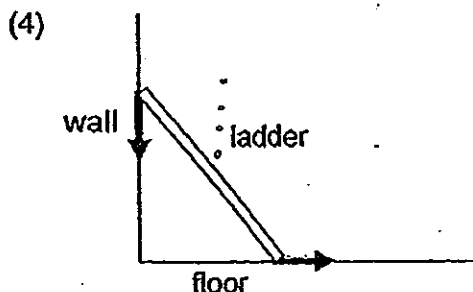
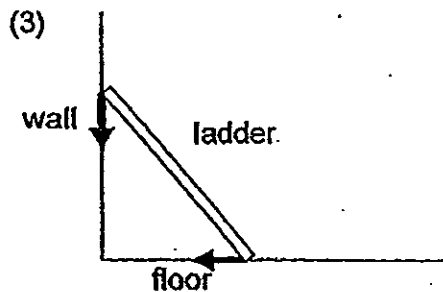
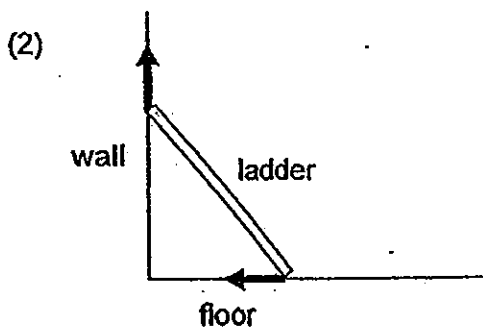
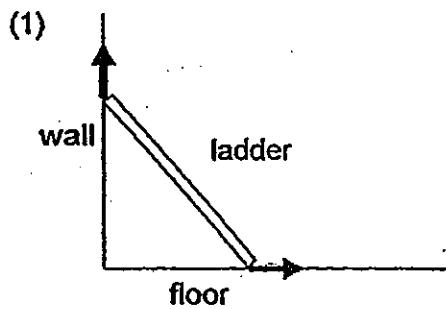
- 25 The graph below shows how the length of a spring changes as different masses were hung on it.



If the spring extends proportionately until 200 g, which of the following shows the extension of the spring when a load of 150 g is hung on it?

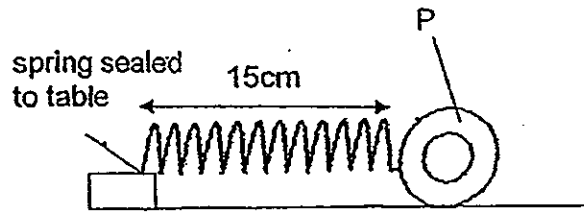
- (1) 20 cm
- (2) 30 cm
- (3) 40 cm
- (4) 50 cm

- 26 Which one of the following shows the direction of frictional force acting on a ladder when the ladder is sliding down from the wall?

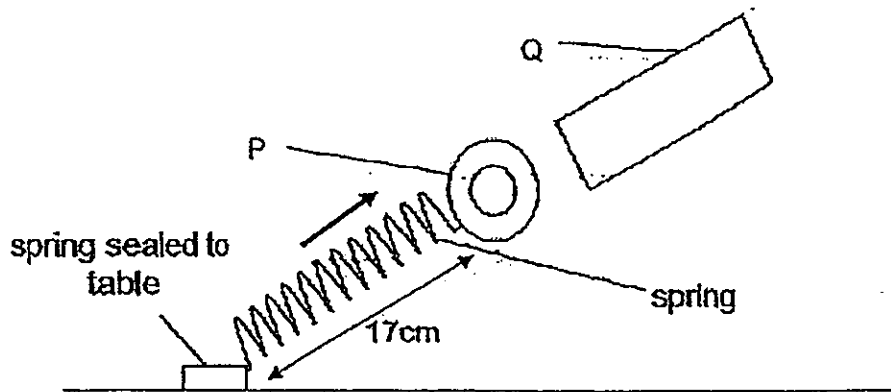




27 The diagram below shows object P attached to a spring.



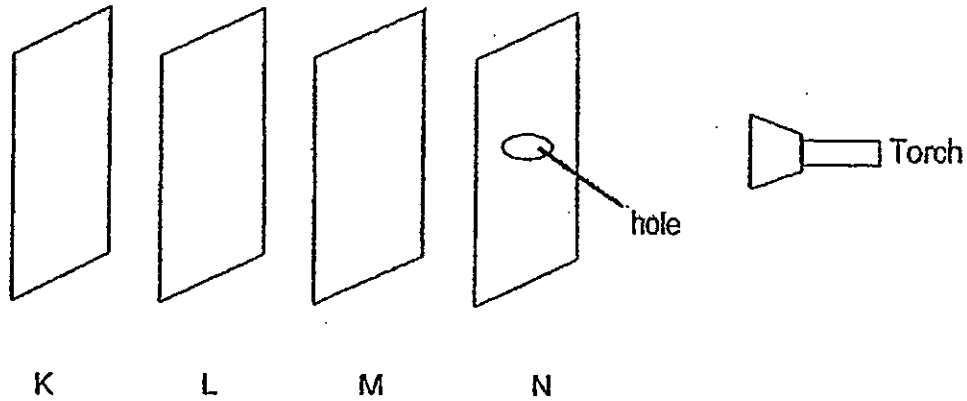
When object Q was brought near to P, P moved in the direction as indicated by the arrow in the diagram below.



Which of the following statements best explains why P moved towards Q?

- (1) Magnetic force of repulsion exists between P and Q.
- (2) The elastic spring force decreases when Q was brought near to P.
- (3) Magnetic force is able to overcome the gravitational force acting on P.
- (4) The gravitational force acting on P decreases when Q was brought near to P.

28 Darren carried out the experiment shown below in a dark room.

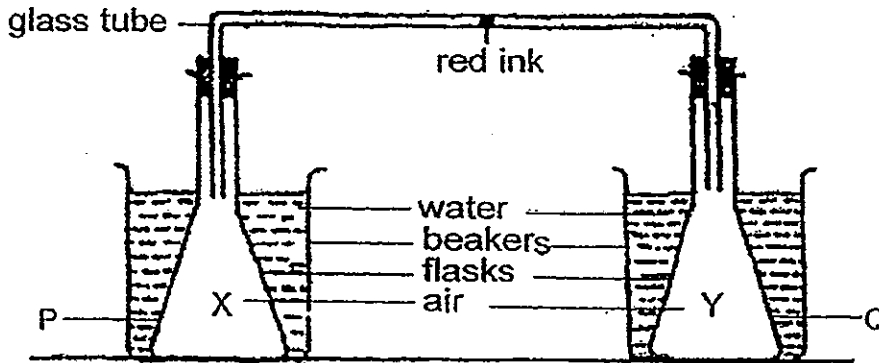


He arranged sheets K, L, M and N in a straight line. When he switched on the torch, he could see a bright oval patch of light on sheet L only.

Which one of the following correctly describes the properties of sheets K, L, M and N?

	allow(s) most light to pass through	do(es) not allow light to pass through	not possible to tell
(1)	K	L	M and N
(2)	M	L and N	K
(3)	M and N	K	L
(4)	M and N	L	K

- 29 In the following set-up, a drop of red ink is placed in the glass tube connecting the two flasks, P and Q. Each flask is placed in a basin of water.



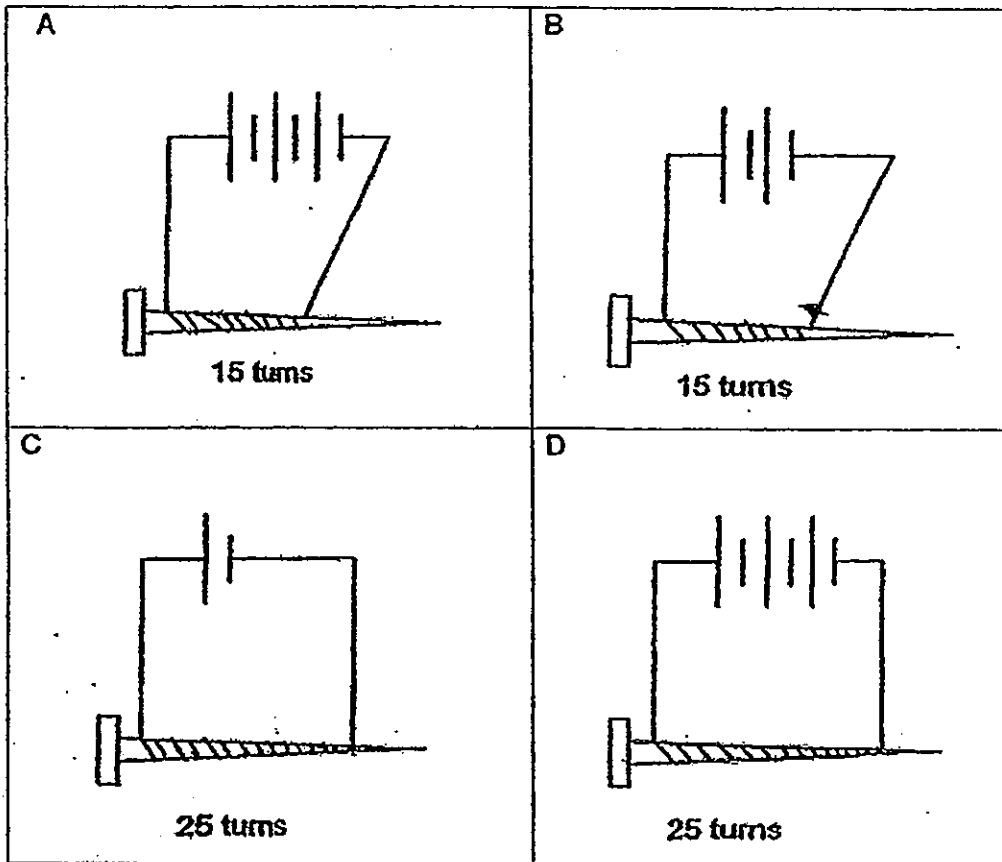
Which one of the following arrangements will cause the drop of red ink to move the longest distance towards Flask P?

P is placed in a basin of ....	Q is placed in a basin of ...
(1) ice water	water at 80°C
(2) ice water	water at room temperature
(3) water at 70°C	water at room temperature
(4) water at room temperature	ice water

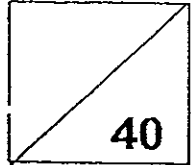
- 30 Julia wants to find out whether the number of turns of the wire affects the strength of the magnet. She sets up two arrangements.

For each arrangement, she tests the strength of the magnet by counting the number of metal paper clips it can pick up.

Which two arrangements below should she set up to conduct a fair test?



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



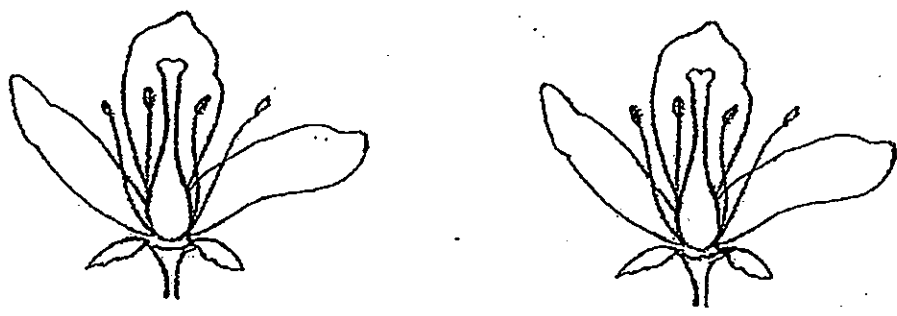
Name : \_\_\_\_\_ Index No : \_\_\_\_\_ Class : P6 \_\_\_\_\_

**SECTION B (40 marks)**

For questions 31 to 44, 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.

- 31 (a) In the diagram below, draw an arrow ( → ) to show how pollination takes place between two flowers of the same species. [1]



- (b) Name the process that takes place after pollination. [1]

\_\_\_\_\_

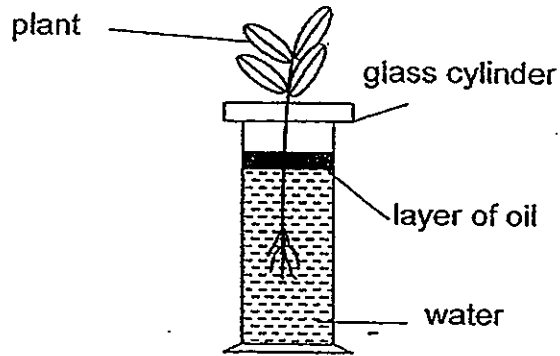
- (c) Based on your observations of the flowers above, name one of its agents of pollination.

State one characteristic of the flowers to support your answer. [2]

agent of pollination	characteristic of flowers
. . . .	

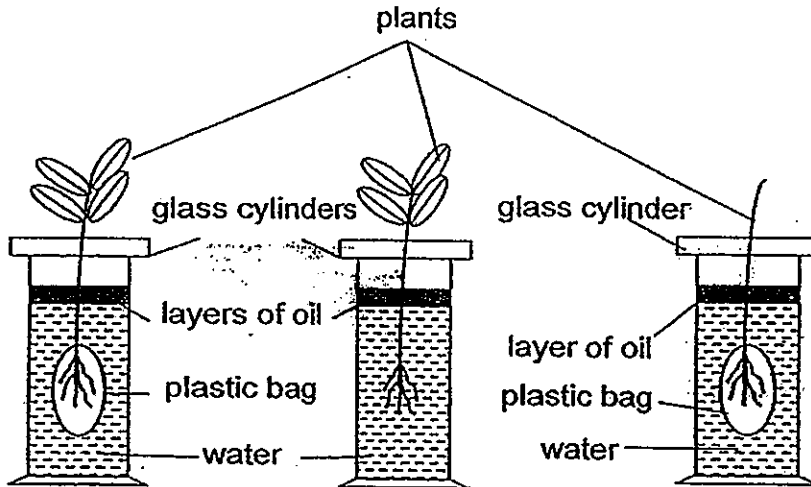
Score	
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32. Mary set up an experiment to show that plants take in water through its roots as shown below.



A

Her teacher commented that she needed a control set-up for her experiment.



B

C

D

Which one of the above set-ups, B, C or D, should Mary choose as her control set-up? Give a reason for your answer. [2]

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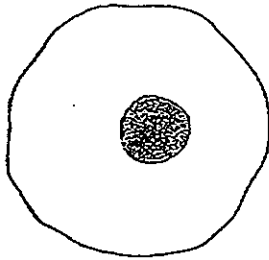
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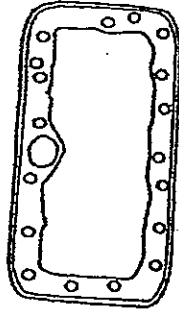
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Score	2
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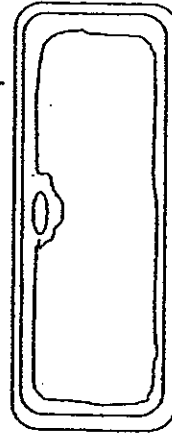
33 The diagram below shows cells-X, Y and Z.



cell X



cell Y



cell Z

- (a) Based on the above diagrams, state one similarity among cells X, Y and Z.  
(Do not mention size or shape.)

[1]

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- (b) Which cell, X, Y or Z, can be found in the roots of a typical plant?  
Give reasons for your answer.

[2]

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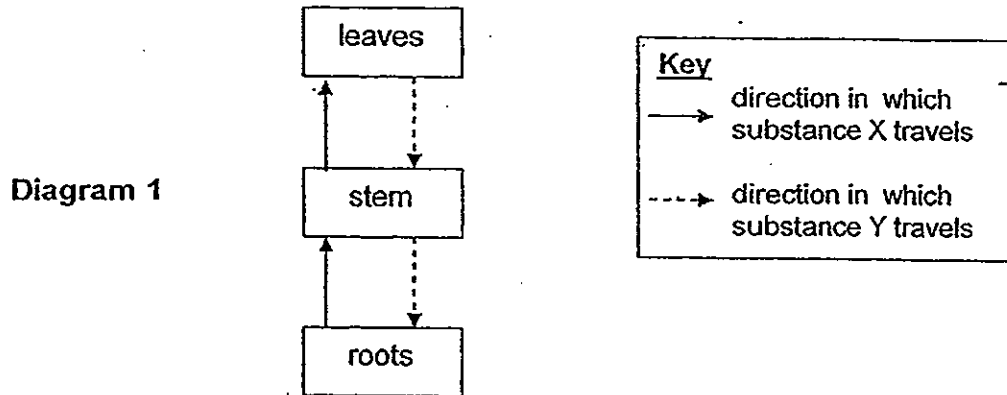
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Score	3
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- 34 The diagram below shows the transport of 2 substances from one part of the plant to another.



- (a) Identify substance Y. [1]

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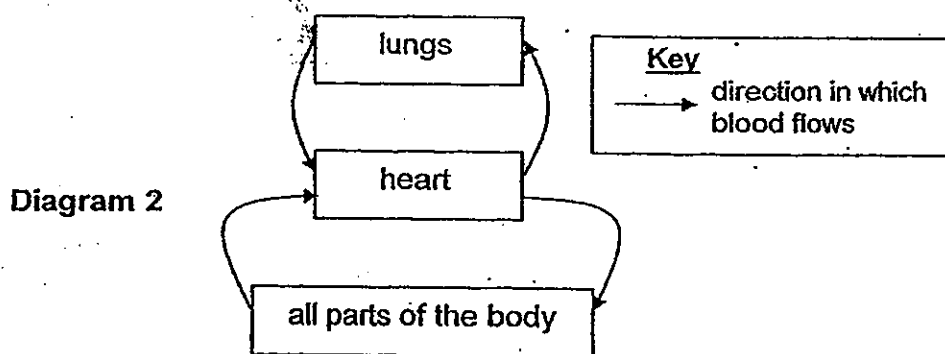
- (b) What happens to substance X when it reaches the leaves? [1]

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The diagram below shows the human circulatory system.



Compare the plant and human circulatory systems in diagrams 1 and 2 respectively.

- (c) State the difference in the direction in which food is transported in plants and in humans. [1]

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 .....

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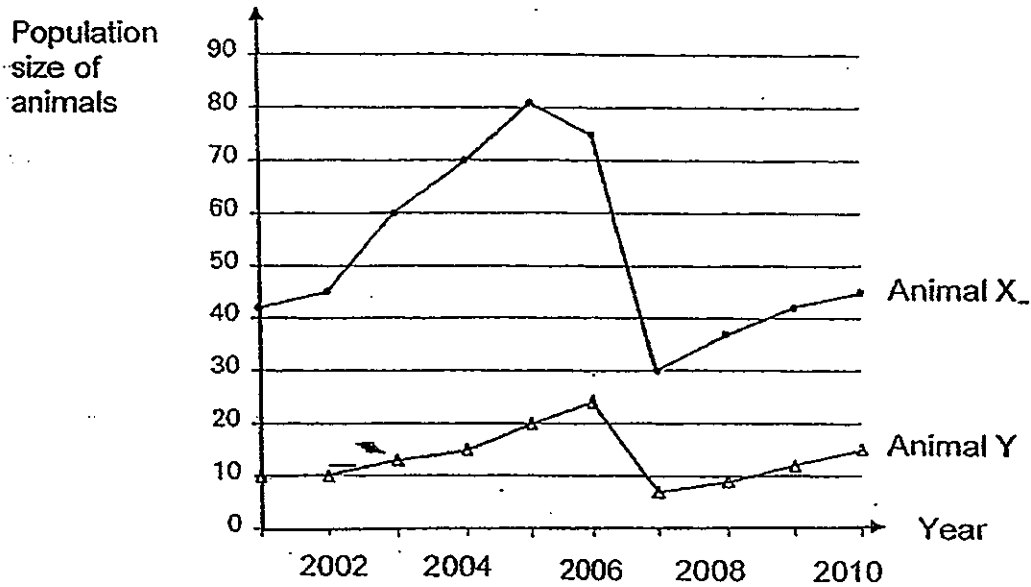


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Score	3
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- 35 The graph below shows the changes in the population size of animals, X and Y, in a certain habitat. A group of scientists studied the relationship between these two animals and recorded their population size annually for a period of ten years.



- (a) Identify the role of each animal, X and Y.  
Write "prey" and "predator" on the correct lines below. [1]
- (i) Animal X : \_\_\_\_\_
- (ii) Animal Y : \_\_\_\_\_

X was infected by a disease and the population size of X started to decrease.

- (b) Would the decrease in the population size of animal X affect animal Y?  
Explain your answer. [2]

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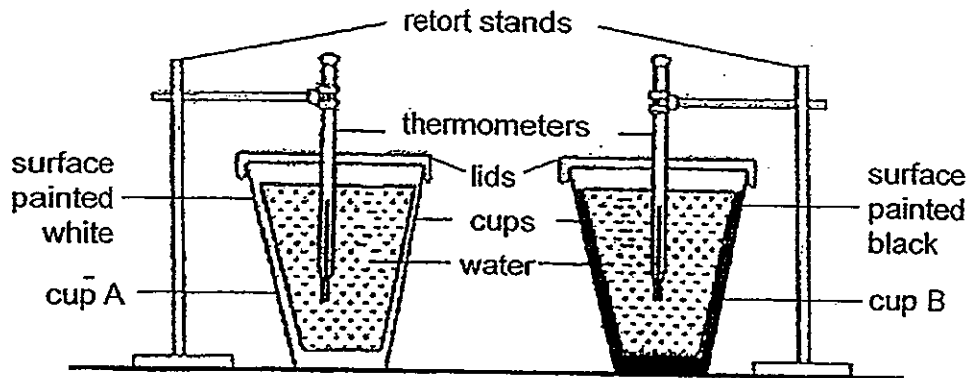


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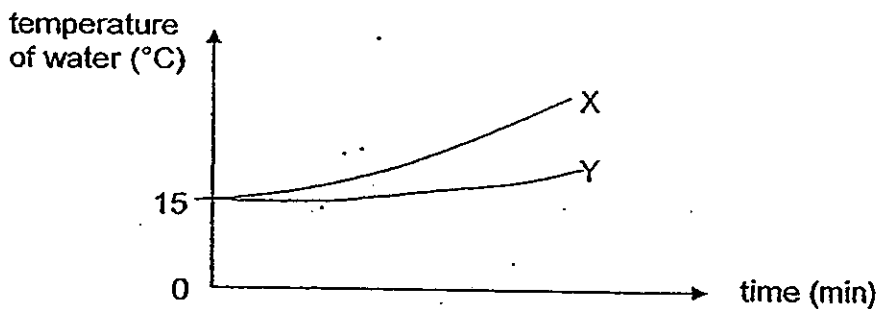
Score	3
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- 37 Beth prepared two set-ups using two cups, A and B, of the same size and material, as shown in the diagram below. The outer surface of cup A was painted white and the outer surface of cup B was painted black.



An equal amount of water at 15 °C was poured into each cup, A and B. The two set-ups were placed in a room with a constant temperature of 32 °C. Beth recorded the change in the temperature of water in each cup as shown in the graph below.



- (a) In the graph above, which line, X or Y, represents the change in the temperature of water in cup B? Explain your answer clearly. [2]

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to be continued on the next page

Score	2
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continue from the previous page

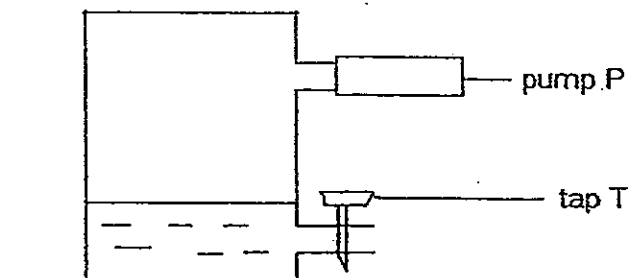
In the Arctic region, polar bears have black skins beneath their thick coat of fur.

- (b) Explain how each of the following structural adaptations of the polar bears help them to survive in the cold Arctic region. [2]

<b>black skin</b>	
<b>thick fur</b>	

Score	2
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- 38 The volume of the container below was 400 cm<sup>3</sup> and the volume of water in the container was 100 cm<sup>3</sup>.



- (a) What was the volume of air in the container? [1]

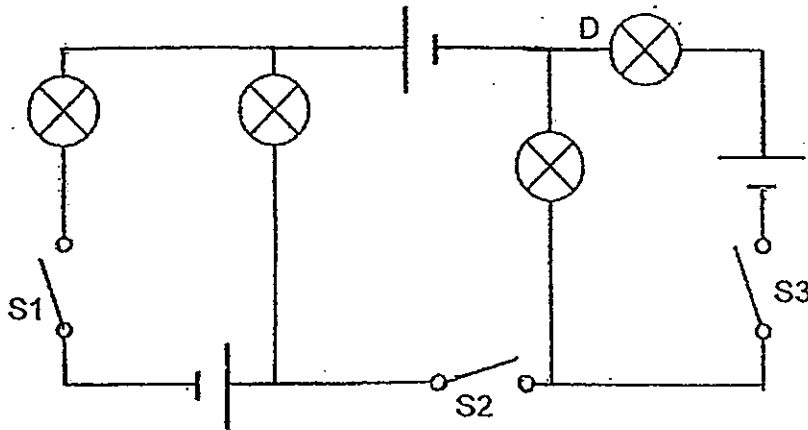
50 cm<sup>3</sup> of water was released from the container through the tap T and 100 cm<sup>3</sup> of air was then pumped in using P.

- (b) What would be the final volume of water and air in the container? [2]

volume of water (cm <sup>3</sup> )	
volume of air (cm <sup>3</sup> )	

Score	3
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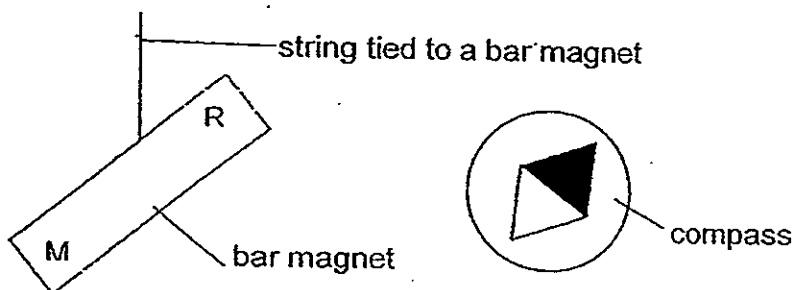
39 Joshan sets up an electrical circuit as shown below.



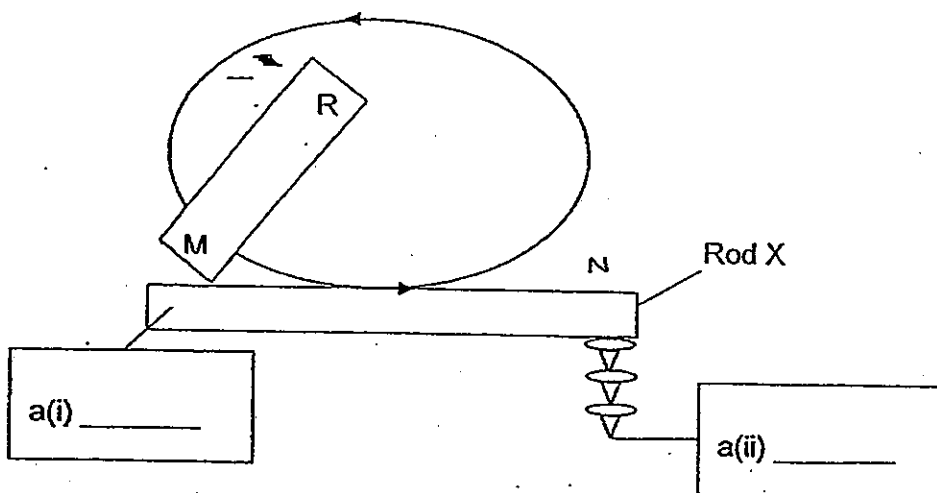
- (a) When all the given switches in the circuit diagram are closed and bulb D is fused, how many bulbs will still be lighted up? [1]
- 
- (b) When all the bulbs are functioning, what is the greatest number of bulbs that can light up when 2 switches are closed? [1]
- 
- (c) Joshan wants to install an additional switch such that only 2 bulbs light up when 2 of the switches, S1, S2 and S3, are closed at the same time. All the bulbs are functioning. Mark a cross (X) on the circuit diagram above to indicate the position of the additional switch. [1]

Score	3
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- 40 The diagram below shows the final resting position of a freely suspended magnet.



Meili used the same bar magnet to stroke rod X many times. When she placed one end of rod X near some pins, three pins were attracted to it as shown in the diagram below.



- (a) In the diagram above, identify the pole of the magnetised rod X and the tip of the pin by writing 'N' or 'S' in each of the given boxes. [2]
- (b) Then Meili dropped the magnetised rod X on the floor a few times. Next, she placed the same end of rod X near some pins again. She observed that rod X picked up a different number of pins. Predict how many pin(s) would rod X pick up. Explain your answer. [1]

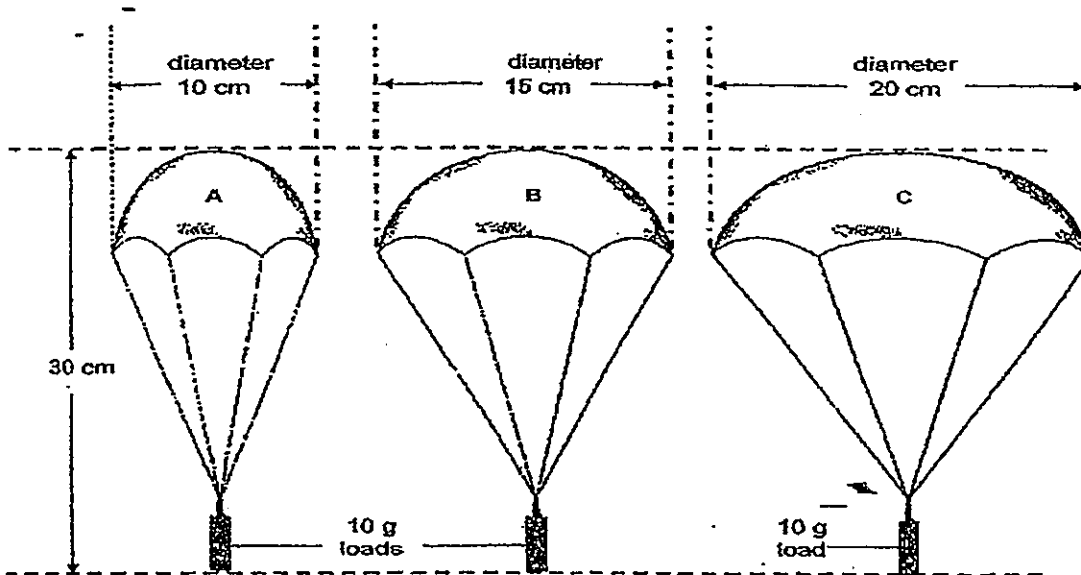
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Score	3
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- 41 Jaime carried out an experiment using three parachutes, A, B and C, each of a different diameter, as shown in the diagram below.



In an enclosed hall, she dropped the parachutes from a height and measured the time taken for each parachute to land on the ground. She recorded her results in the table below.

Parachute	Time taken to land on the ground (s)		
	1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> try
A	6.1	6.0	6.2
B	8.0	8.1	8.2
C	12.1	12.0	12.1

Based on the results above, how does the surface area of the parachute affect the time taken for it to reach the ground? Explain your answer in terms of the force(s) acting on the parachute as it falls freely to the ground. [2]

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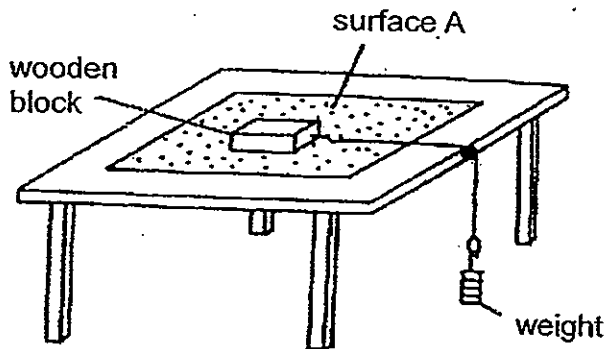


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Score	2
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- 42 In the experiment below, weights were added, one at a time, till the wooden block just started to move over surface A.



The experiment was repeated by replacing surface A with the surfaces, B, C and D, one at a time. The minimum weight required to move the wooden block was recorded in the table shown below.

type of surface	minimum weight required to move wooden block (g)
A	135
B	190
C	180
D	160

Whenever a driver steps on the brakes, there is a distance the car will continue to travel before it stops completely. This is called the 'braking distance'.

- (a) Based on the information provided above, arrange the length of the 'braking distance' of the car when it travelled on all the surfaces, A, B, C and D, in the order from the shortest to the longest. [1]

shortest  longest

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- (b) Explain your answer in (a) for the identified surface with the shortest braking distance. [2]

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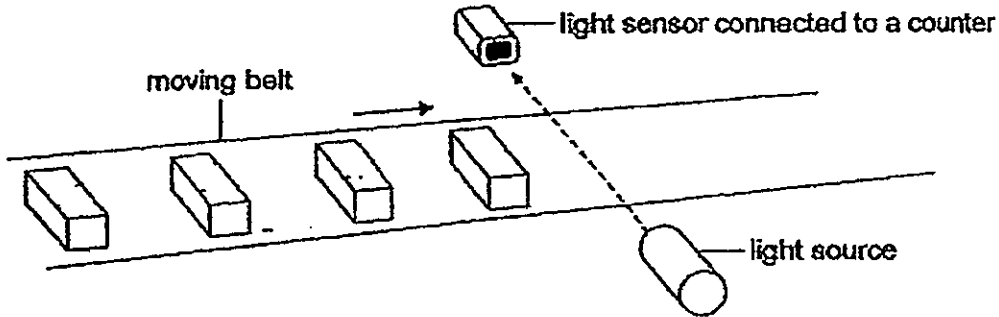


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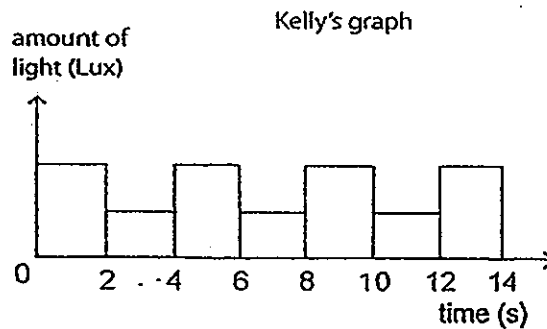
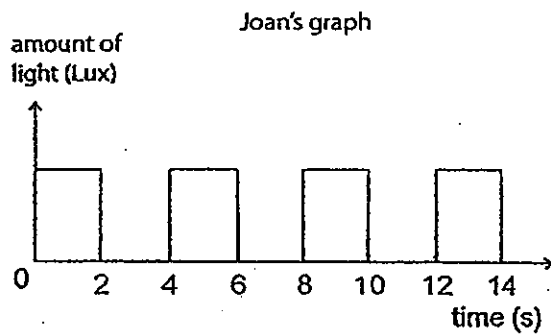
Score	3
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43 Joan and Kelly were each given a number of objects of the same shape and size.

They took turns to count the number of objects given to them on a moving belt using a light sensor as shown in the diagram below.



The belt moved at the same speed. The girls plotted the results of their experiments in the graphs shown below.



Based on the graphs above, answer the following questions:

(a) How many objects passed the sensor in Joan's set-up in 14s? [1]

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(b) List the difference in the properties between the two objects used by Joan and Kelly. [1]

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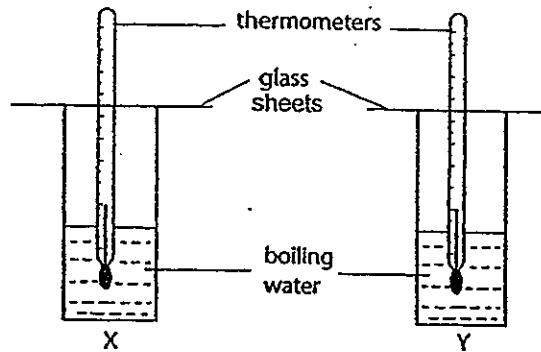
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Score	2
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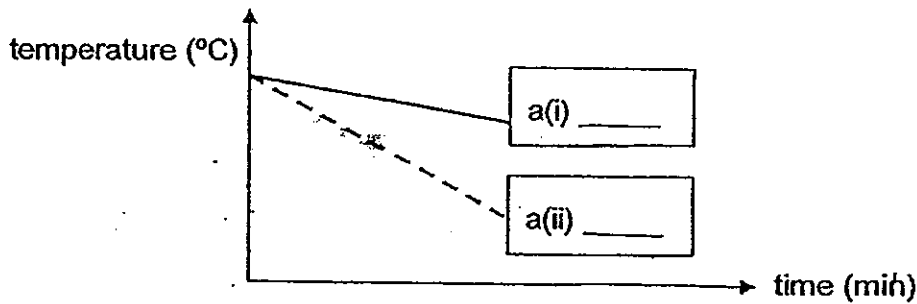
44 Sally has two containers, X and Y, which are of similar size and thickness but made of different materials.

When she touched both containers with her hands, she found that container X was colder to touch than container Y.

Next, she filled each container with 500 ml of boiling water and covered each container with identical sheets of glass. She left the two containers in a room at 29° C.



Sally plotted a graph to show the changes in the temperature of water in the two containers over a period of time as shown below.



(a) In the graph above, label the lines, 'X' and 'Y', in the boxes provided to show the corresponding temperature change of water in containers X and Y. [1]

(b) Explain your answers in (a) clearly. [2]

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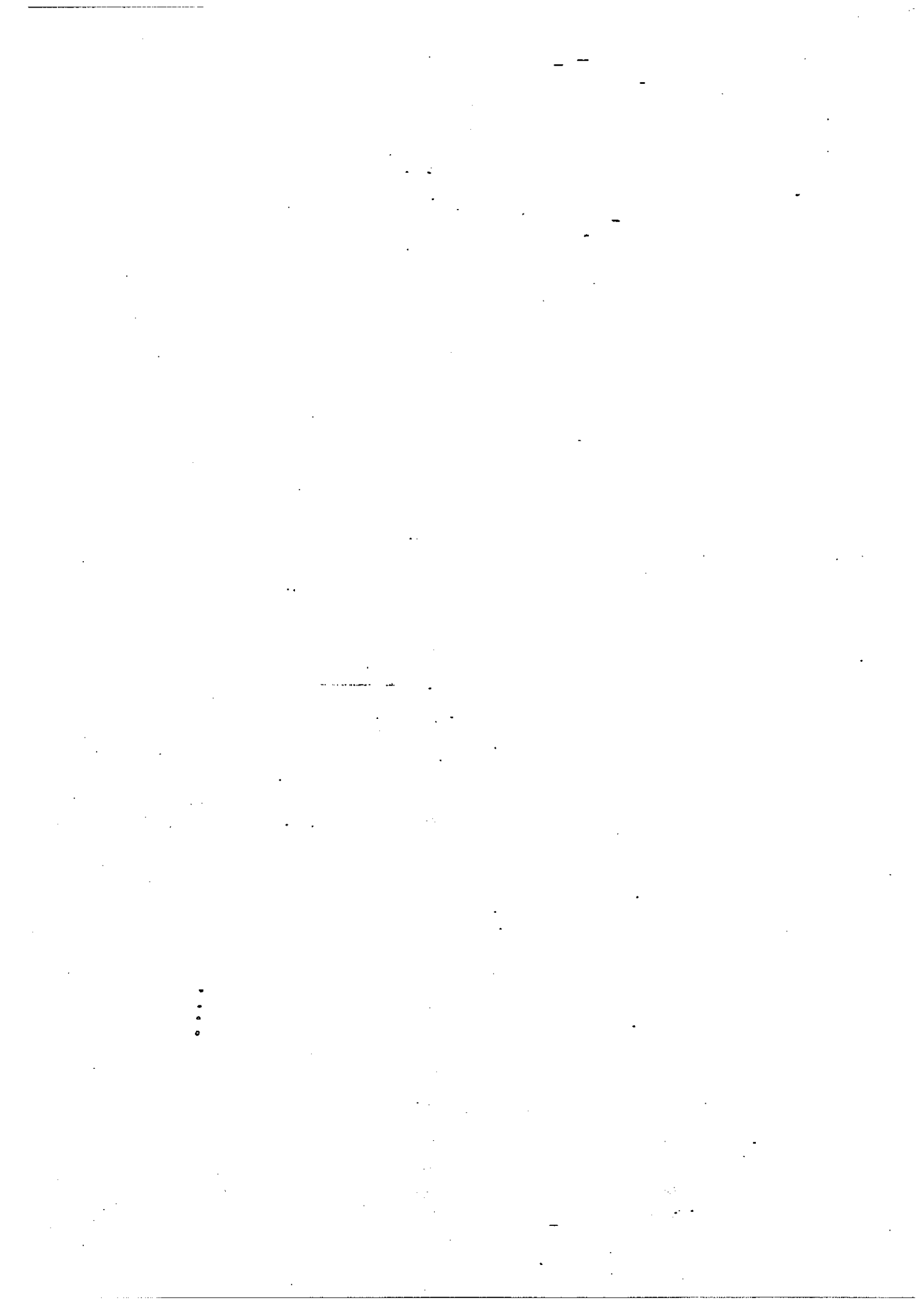


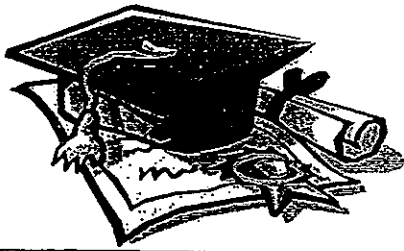
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- END OF PAPER -

Setters : Mdm Jane Woon, Mrs Sharon Seet, Mrs Christina Lim

Score	3
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# ANSWER SHEET

**EXAM PAPER 2012**

**SCHOOL : RAFFLES GIRLS'  
SUBJECT : PRIMARY 6 SCIENCE**

**TERM : SA1**

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	3	4	2	3	3	4	4	1	4	4	3	4	2	3	2	2

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	4	2	2	3	3	3	2	3	2	1	2

31)a)



b)Fertilisation.

c)animals --- The anthers are not hanging outside the petals and are lower than the stigma.

32)Set-up B. The plastic bag in set-up B prevents the roots from taking in water in the glass cylinder. By comparing the water levels between two set-ups, the amount of water taken in by the plants through their roots and not by any other variables can be determined so one set-up must have all identical except that the roots of a similar plant have to be wrapped with a plastic bag to show that without its roots, the plant cannot take in water.

33)a) All of them have a nucleus.

b) Cell Z. Cell Z does not have chloroplasts but it has a cell wall. Roots do not need chloroplasts to photosynthesise in the presence of light to make food for the plant.

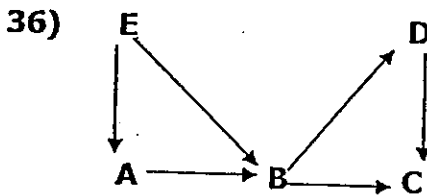
34)a) Sugar.

b) Transpiration takes place at the leaves and the water is lost through the stomata as water vapour.

c) Food is transported by plants in one direction while food is transported in the blood in human in a circulation.

35)a) i) prey    ii) predator

b) Yes. Animal Y depends on X for energy. Without X, animal Y's population would decrease as most of animal Y will die of hunger as they cannot find X to eat.



37)a) Line X. Black absorbed heat better than white. Water in B gained heat from the cup more quickly. The temperature of water in B increased more quickly.

b) Black skin → absorbed more heat from the sun.

Thick fur → Traps air to retain body heat for a longer time.

38)a) 300cm<sup>3</sup>.

b) 50cm<sup>3</sup> . 350cm<sup>3</sup>.

39)a) 3 bulbs.

b) 4 bulbs.

c)

40)a)i)S ii)N

b)0 pins. Dropping rod X resulted in it losing its magnetism.

41)The smaller the surface area of the parachute, lesser air resistance will act on the parachute, so it will take a shorter time to reach the ground than a parachute with a bigger exposed surface area.

42)a)B, C, D, A

b)B was the roughest so the friction was the greatest between the wheels of the car and the ground.

43)a)3 objects.

b)Joan's objects were opaque while Kelly's objects were translucent.

44)a)i)Y ii)X

b)X was a better conductor of heat so heat from the boiling water in X was lost to the surroundings more quickly than that in Y.

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