

RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2017

Name : _____ Index No: _____ Class: P6 _____

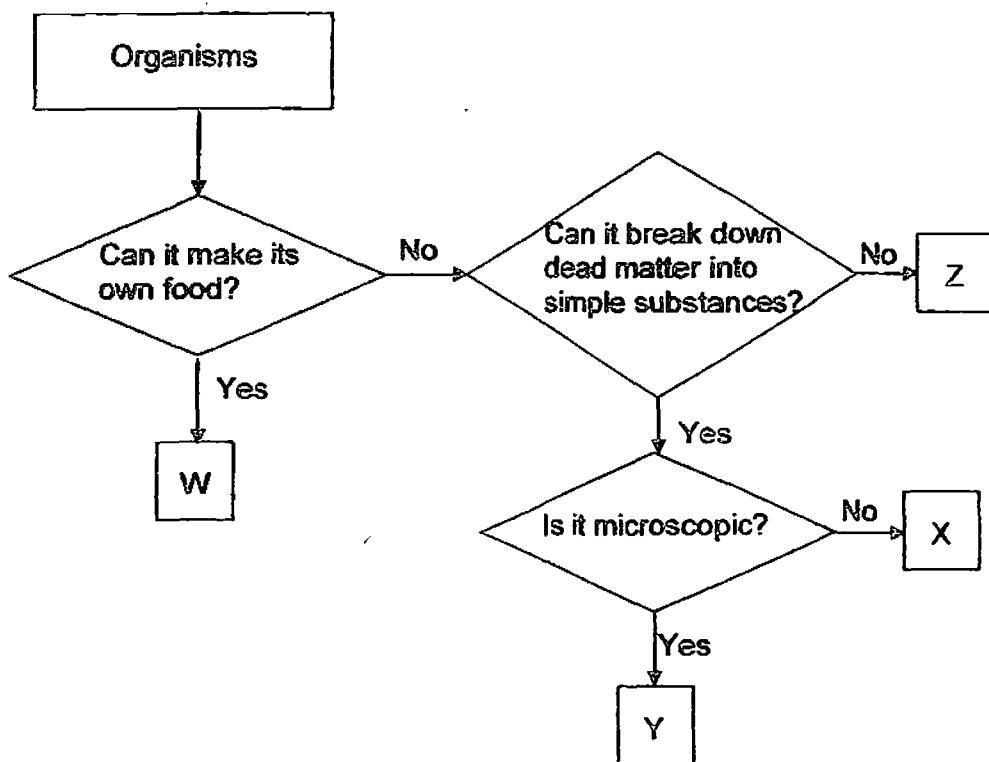
25 Aug 2017 SCIENCE Attn: 1h 45min

Section A	56
Section B	44
Your score out of 100 marks	
Parent's signature	

SECTION A (28 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.

1. Organisms W, X, Y and Z are classified using the chart below.



Which organism(s) is/are most likely to be a decomposer(s)?

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

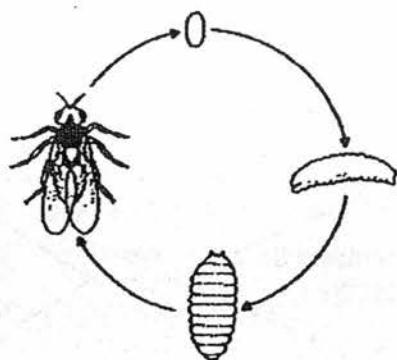
2. Which of the following statements are true for both the fern and mushroom?

- A Fern and mushroom respire all the time.
 - B Fern is able to make its own food but not the mushroom.
 - C Both the fern and mushroom are non-flowering plants.
 - D Fern reproduces from seeds and mushroom reproduces from spores.
- (1) A and B only
(2) C and D only
(3) A, B and C only
(4) B, C and D only

3. The diagrams below show the life cycle of two animals, X and Y.



Life cycle of animal X



Life cycle of animal Y

Based on the diagrams above, which of the following statements is/are correct about the animals?

- A Both adult animals X and Y lay eggs.
 - B The young of animal X resembles its adult.
 - C Animal Y takes a longer time to complete its life cycle than animal X.
- (1) B only
(2) A and B only
(3) A and C only
(4) A, B and C

4. Kaitlyn carried out an investigation to find out the conditions required for seed germination. She prepared four set-ups, A, B, C and D. Each set-up contained eight seeds placed on a petri dish. She exposed the set-ups to different conditions.

She recorded her observations in the table below.

Set-up	Number of germinated seeds
A	8
B	8
C	0
D	0

Which of the following shows correctly the conditions that the set-up(s) was/were exposed to in order to obtain the results above?

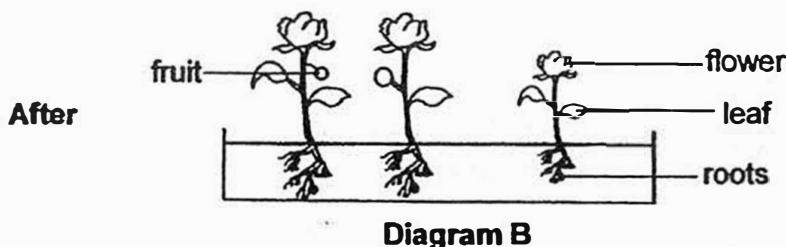
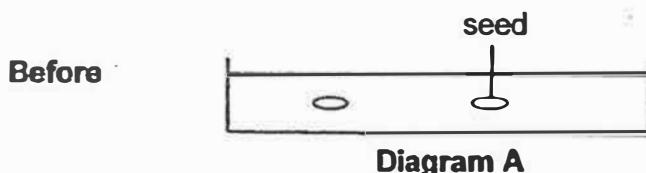
Set-up	Conditions present (✓)		
	Warmth	Water	Light
A	✓		✓
B	✓	✓	
C	✓		✓
D		✓	✓

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

5. Which of the following is not a characteristic that is passed down from parents to their children?

- (1) hairstyle
- (2) eye colour
- (3) type of earlobe
- (4) ability to roll the tongue

6. Two seeds were sown in a container of soil and placed at the balcony. The soil was watered daily as shown in diagram A. Diagram B shows the observations made after a few weeks.

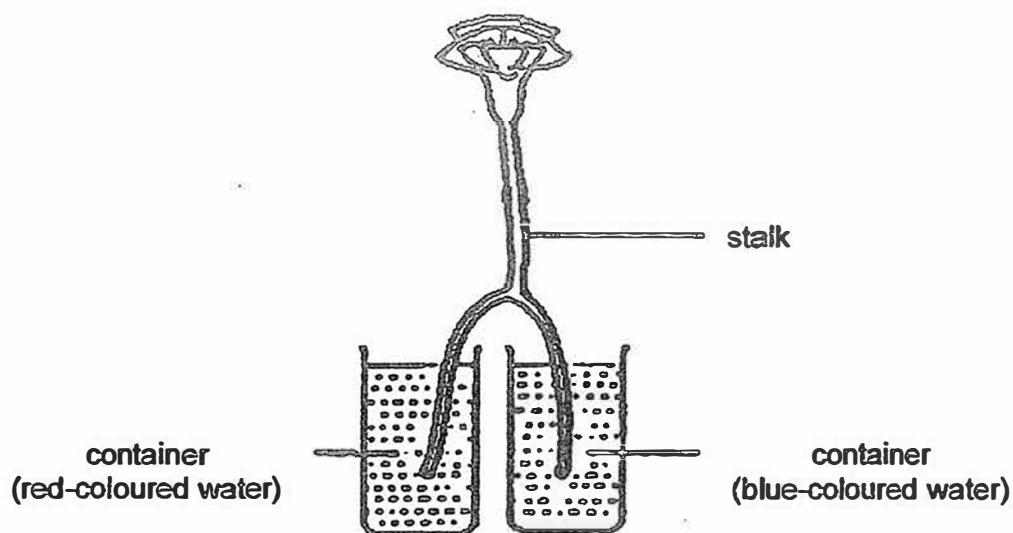


Based on the diagram above, which of the following process(es) have taken place?

- A fertilisation
 - B germination
 - C pollination
 - D seed dispersal
- (1) A and B only
 - (2) B and C only
 - (3) A, B and C only
 - (4) A, B, C and D
7. Which of the following human body systems work together to enable one to run?

- A digestive
 - B muscular
 - C skeletal
 - D reproductive
- (1) A and B only
 - (2) A, B and C only
 - (3) B, C and D only
 - (4) A, B, C and D

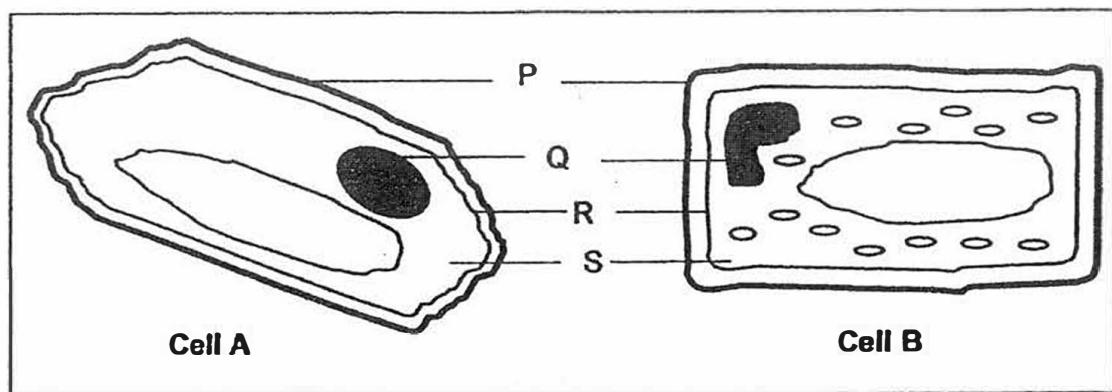
8. Ali split the stalk of a white flower and placed both ends into two different containers of coloured water as shown below.



After one day, Ali observed that there was a change in the colour of the flower. Based on the given information, which of the following statement(s) is/are true?

- A The white flower had turned partially blue and red.
 - B The plant could not take in the coloured water as it had no roots.
 - C The food-carrying tubes transport the coloured water to the flower.
 - D The water-carrying tubes transported the coloured water to the flower.
- (1) D only
(2) A and B only
(3) A and D only
(4) B and C only

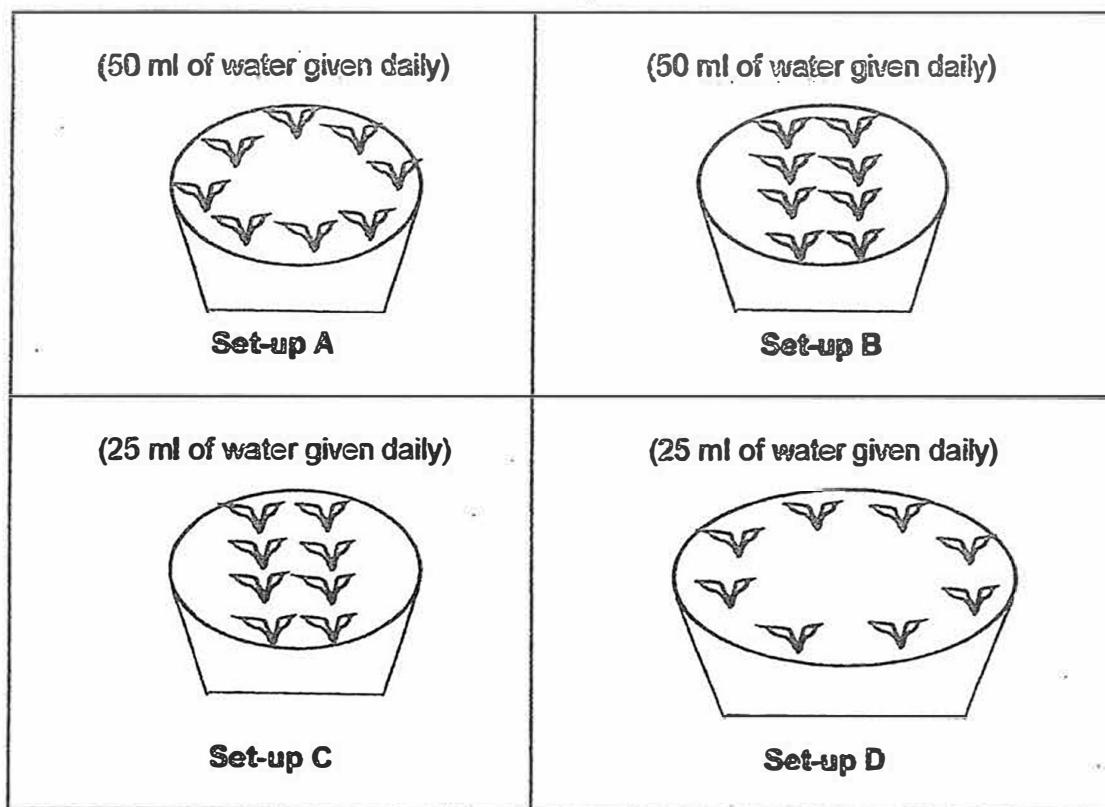
9. The diagrams below show two different cells, A and B, from the same plant.



Which part of the cell, P, Q, R or S, allows substances to move around within the cell?

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

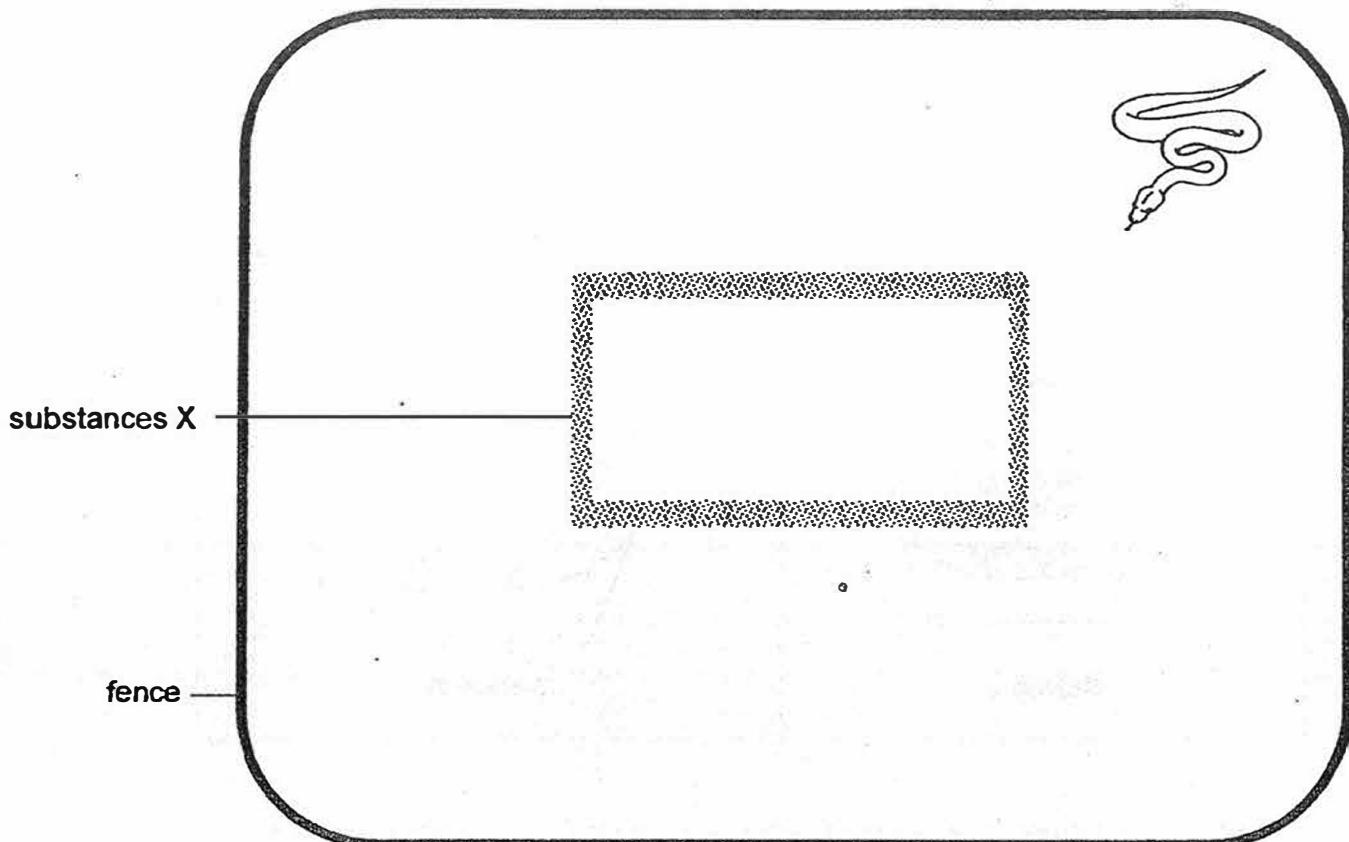
10. Peter wanted to investigate how the amount of water affects the growth of plants. He prepared four set-ups, A, B, C and D, as shown below and placed them in the same location.



Which of the set-ups, A, B, C and D, should he use to compare so as to ensure a fair test?

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

11. Peter wanted to conduct an experiment to investigate the effect of substance X in keeping snakes away from his house. He marked a rectangular area on the ground and sprinkled 100g of substance X along its perimeter. Then a fence was placed around the rectangular area. He placed a snake within the fenced area as shown below and observed if it crossed the substance X and entered the rectangular area.



How much substance X should he use in his control set-up?

- (1) 0 g
- (2) 50 g
- (3) 100 g
- (4) 150 g

12. The table below shows the relationship among five organisms in a community.

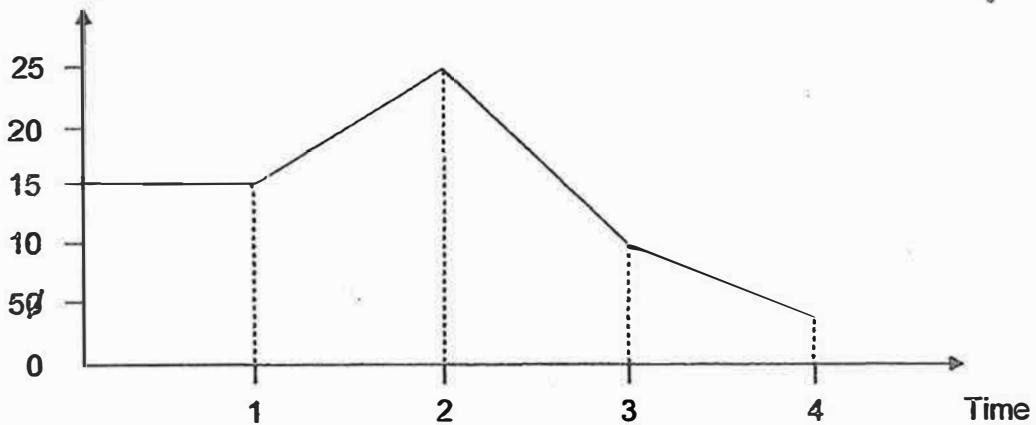
Q feeds on S
S feeds on R and T
P provides food for T and R

Which one of the following classified the roles of the organisms in the community correctly?

	Producer	Prey only	Prey and Predator	Predator only
(1)	P	R	S and T	Q
(2)	P	R and T	S	Q
(3)	R	P	Q	S and T
(4)	T	P and Q	S	R

13. The graph below shows how the number of organism P changed over a period of four weeks.

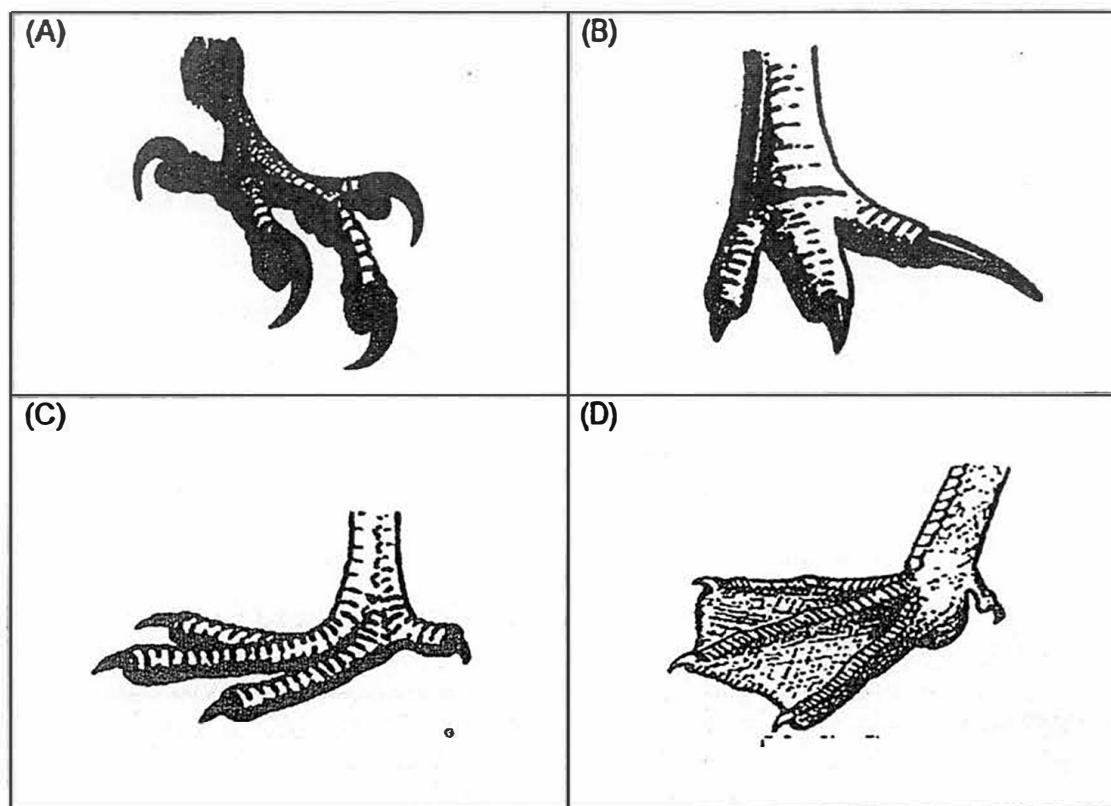
No. of organism P



Based on the graph above, which of the following statement(s) is/are definitely true?

- A Population P would all die eventually after week 4.
 - B The highest number of P was recorded in week 2.
 - C The population of P remained constant in the first week.
 - D Between week one and three, population P increased more than it decreased.
- (1) D only
 (2) A and D only
 (3) B and C only
 (4) A, B and C only

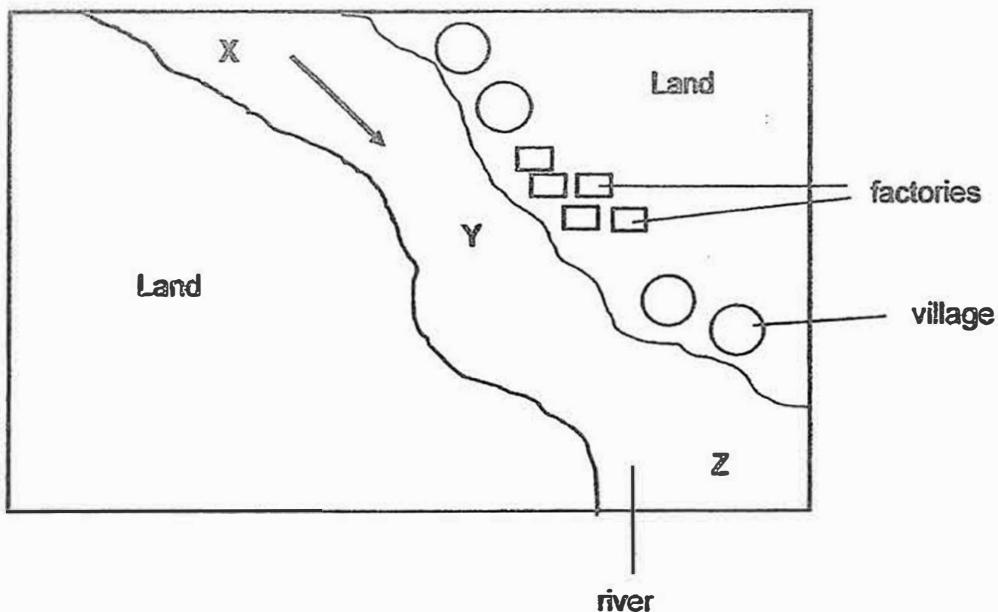
14. The diagram below shows the feet of four animals.



Which one of the following correctly matches the function of the feet?

	Running	Swimming	Grasping	Scratching
(1)	A	C	B	D
(2)	B	D	A	C
(3)	C	B	D	A
(4)	D	A	C	B

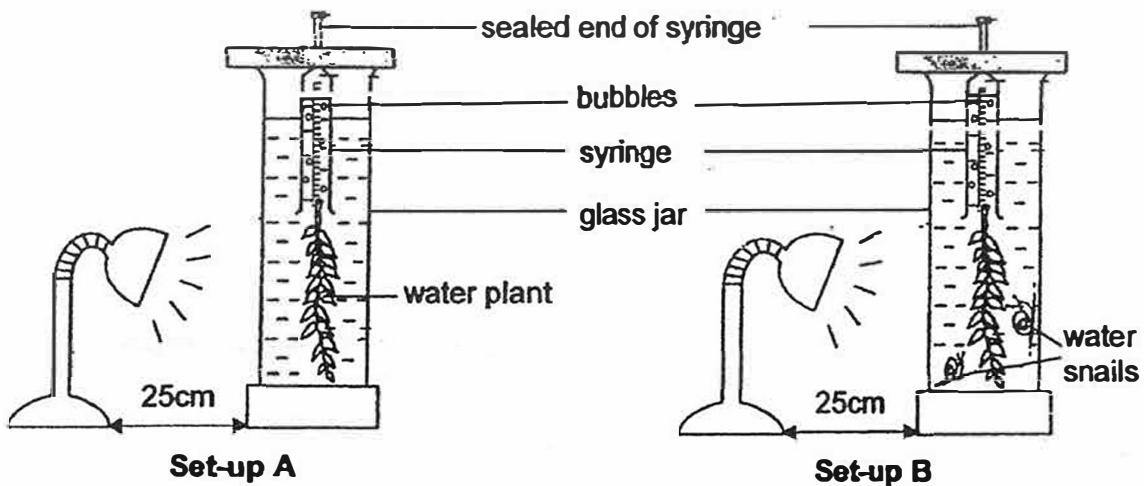
- 15 The factories discharge harmful waste into point Y of the river. The harmful waste kills many of the aquatic organisms. The river is also the main source of water for the villagers. The arrow shows the direction in which the river flows.



Which of the following statement(s) most likely describe(s) the harmful effect(s) of waste discharged in the river?

- A There will be less organisms living at point Y than point X in the river.
 - B The water from the river is safe for drinking for the villagers between point Y and Z.
 - C There is an increase in the amount of carbon dioxide between point Y and Z in the river.
- (1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

16. Kelvin set up two identical set-ups in a dark room as shown below. He added two water snails in set-up B.

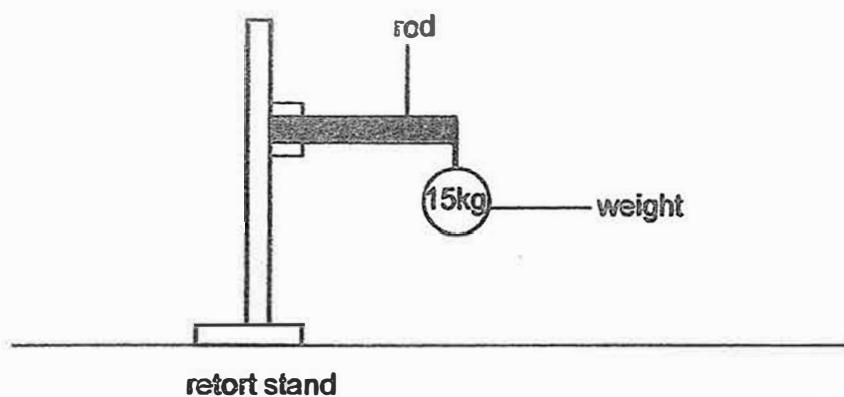


He placed both the table lamps at a distance of 25 cm from the glass jars. After one hour, the syringes in both set-ups collected some gas.

Which one of the following most likely shows the volume of gas collected in each of the set-ups?

	Volume of gas collected in set-up A (cm^3)	Volume of gas collected in set-up B (cm^3)
(1)	5	4
(2)	5	5
(3)	5	7
(4)	7	5

17. Jack wanted to find out which rod, P or Q, would be more suitable to hang heavy weights. He clamped rod P on a retort stand and hang a 15-kg weight on it as shown below.

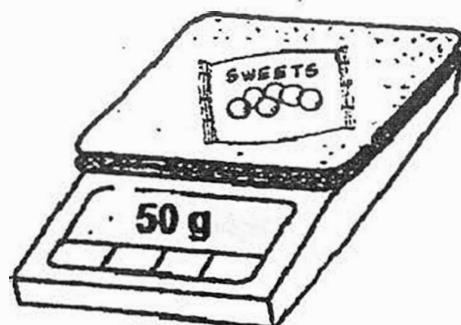


He repeated the experiment by replacing rod P with rod Q. He observed that rod Q broke but not rod P.

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

- (1) Rod P is stronger as it could withstand weights of up to 15kg.
- (2) Rod Q is stronger as it could withstand weights of more than 15kg.
- (3) Rod P is more flexible as it could withstand weights of up to 15 kg.
- (4) Rod Q is more flexible as it could withstand weights of more than 15 kg.

18. Leonard measured the mass of a sealed packet of sweets using an electronic balance as shown below.



He recorded the results as shown below.

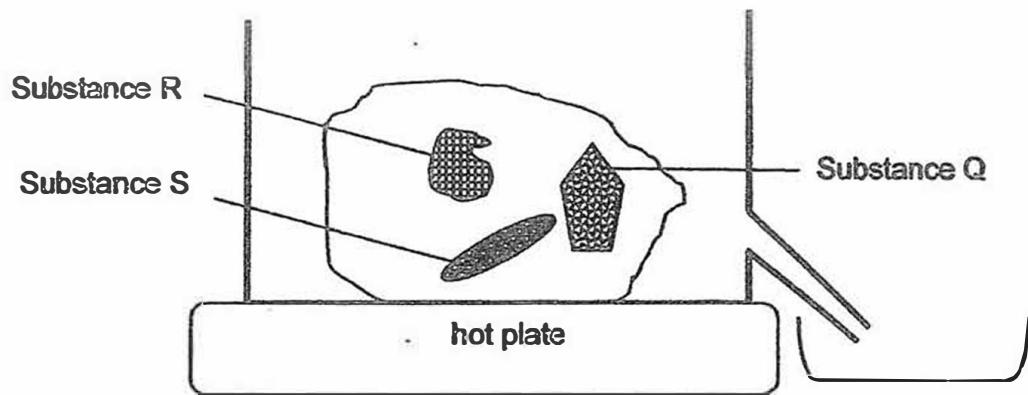
Mass of a sealed packet of sweets =	50 g
Mass of one sweet	= 1 g

He expected to find 50 sweets in the sealed packet. However, he found that there were only 48 sweets in the sealed packet.

Which of the following is/are likely to be the reason(s) for not having 50 sweets in the packet?

- A The wrapper has mass.
 - B Air in the wrapper has mass.
 - C The wrapper has a definite shape.
 - D Air in the wrapper has no definite volume.
- (1) A only
(2) A and B only
(3) B and D only
(4) A, B, C and D only

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

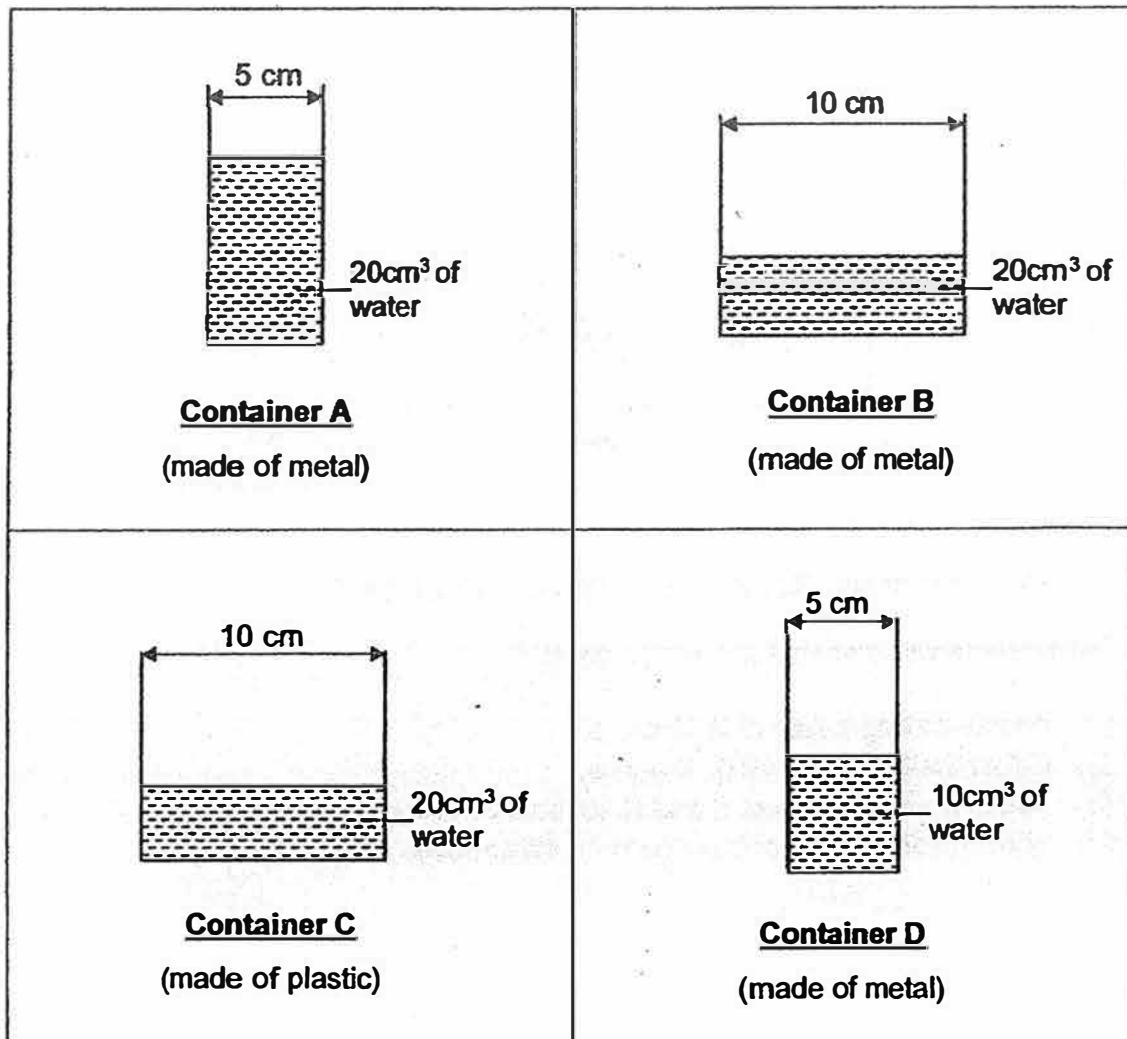


She wanted to ensure that the solid does not contain substance S.

What temperature should she set the heater?

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

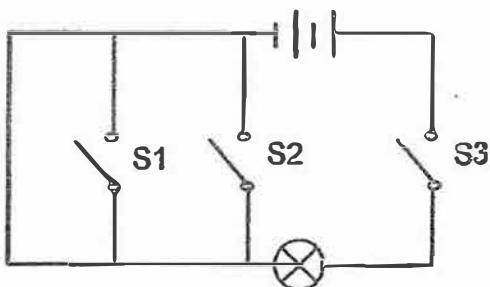
20. Sarah wanted to find out if the exposed surface area of water has an effect on the rate of evaporation of water in the container. The diagram below shows four containers A, B, C and D containing water.



In order to ensure that her experiment is a fair test, which containers should Sarah choose for her experiment?

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

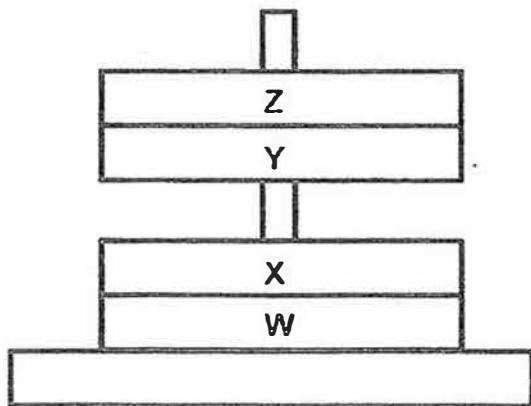
21. A circuit diagram is as shown below.



What is the minimum number of switch(es) that need(s) to be closed for the bulb to light up?

- (1) 0
- (2) 1
- (3) 2
- (4) 3

22. The set-up below is made up of four rings, W, X, Y and Z.

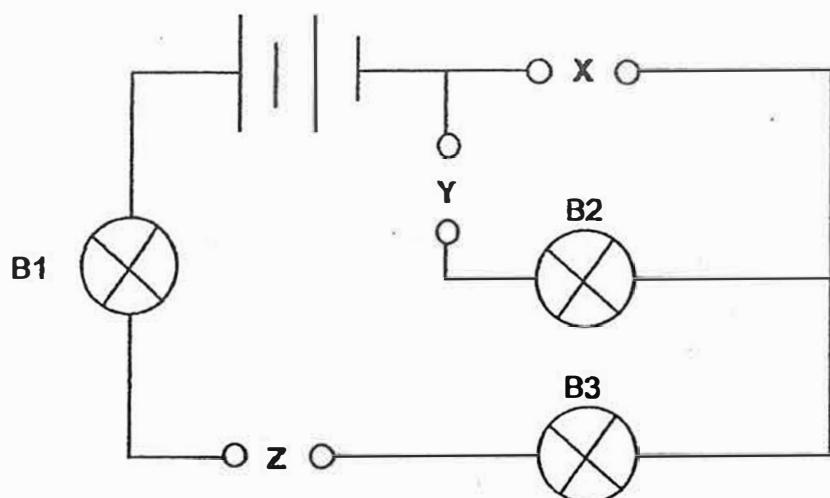


Based on the information above, which of the following are possible materials for W, X, Y and Z.

	W	X	Y	Z
A	magnet	steel	magnet	steel
B	magnet	iron	magnet	magnet
C	iron	magnet	magnet	plastic
D	steel	plastic	iron	magnet

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

23. Sheila wanted to find out the electrical conductivity of 3 rods, A, B and C, made of different materials. She inserted the rods into the circuit at position X, Y and Z as shown below.



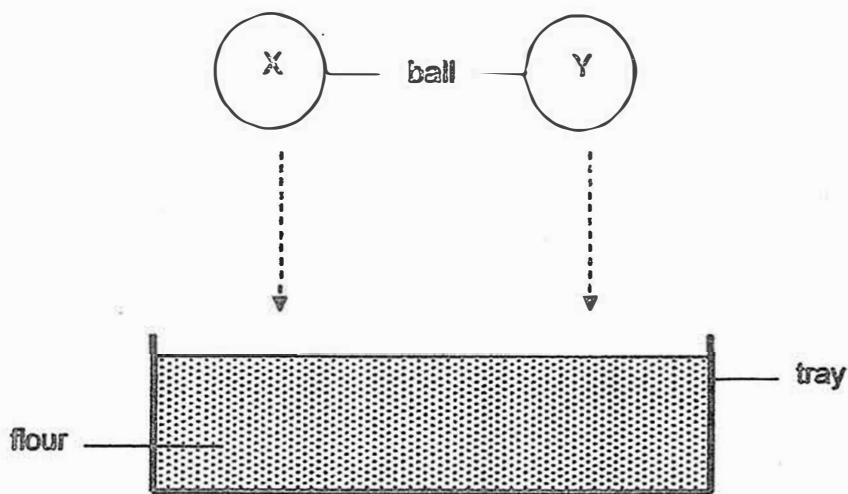
The table below shows the results collected at the end of the experiment.

Positions where rods were placed			Did the bulb light up?		
X	Y	Z	B1	B2	B3
A	B	C	✓	✓	✓
B	C	A			
C	A	B	✓		✓

Based on the data above, which one of the following conclusions is correct?

- (1) Only rod A is a non-conductor of electricity..
- (2) Only rod C is a non-conductor of electricity.
- (3) Only rods B and C are non-conductors electricity..
- (4) Rods A and B are better conductors of electricity than rod C.

24. Helen dropped two balls, X and Y, of the same size but of different mass into a tray of flour from the same height as shown below.



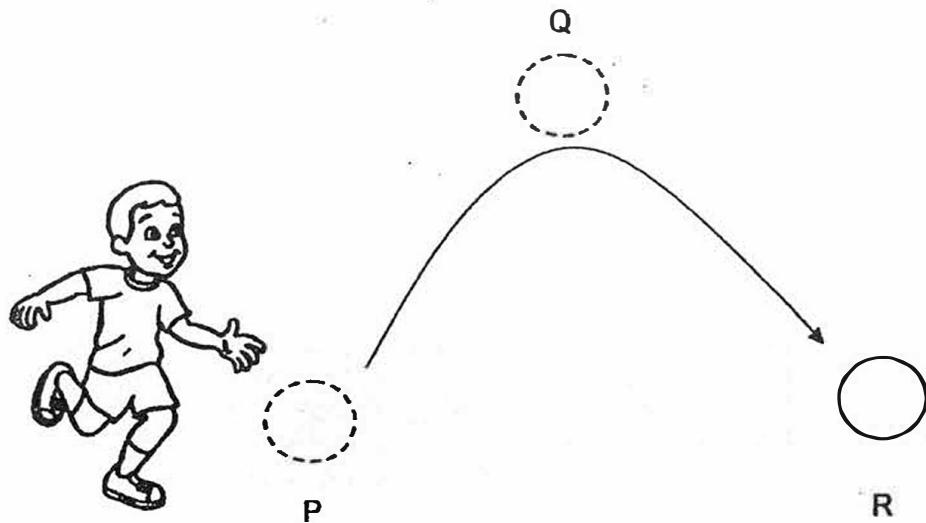
She recorded the depth of the dent made by each ball in the tray of flour in the table below.

Ball	Depth of dent (cm)			
	1 st try	2 nd try	3 rd try	Average
X	1	1.5	1	1.17
Y	3	3.5	3.5	3.33

Based on the results in the table above, which one of the following statements correctly explains her observations?

- (1) More frictional force was acting on X than Y.
- (2) More frictional force was acting on Y than X.
- (3) More amount of gravitational force was acting on X than Y.
- (4) More amount of gravitational force was acting on Y than X.

25. Tim kicked a ball into the air and it travelled in the path as shown below before rolling to a stop.

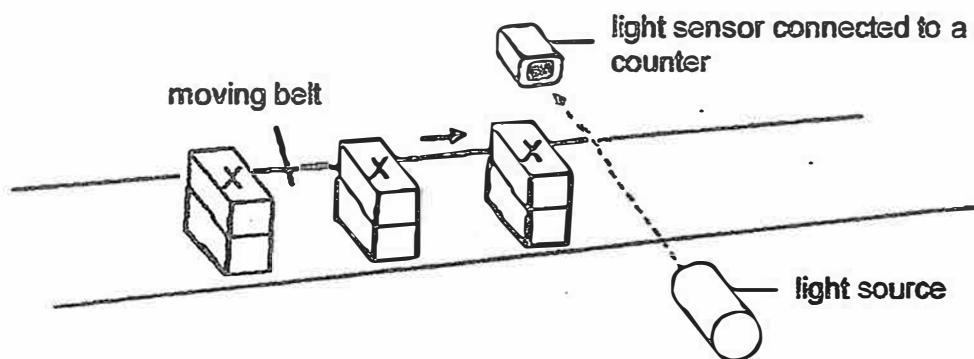


Which one of the following statements is correct?

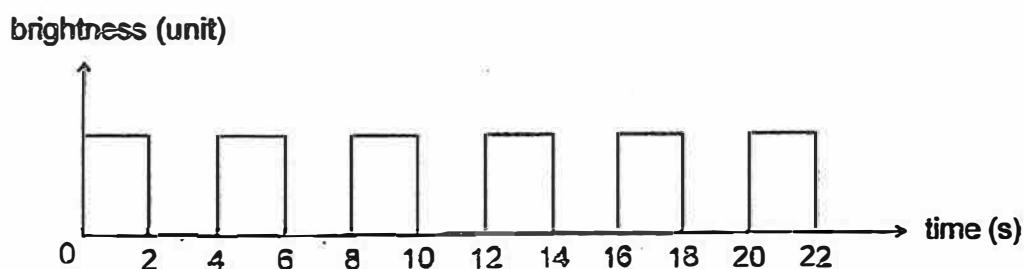
- (1) Gravity acted on the ball only when it travelled from Q to R.
- (2) There are no other forces acting on the ball from P to Q except gravity.
- (3) The amount of gravity acting on the ball when it travelled from P to R is the same.
- (4) The amount of gravity acting on the ball decreased when the ball travelled from P to Q and increased when it dropped from Q to R.

26. The set-up below uses a light sensor to count the number of identical wooden boxes X on a moving belt.

To speed up the counting process, two boxes are stacked on top of each other.



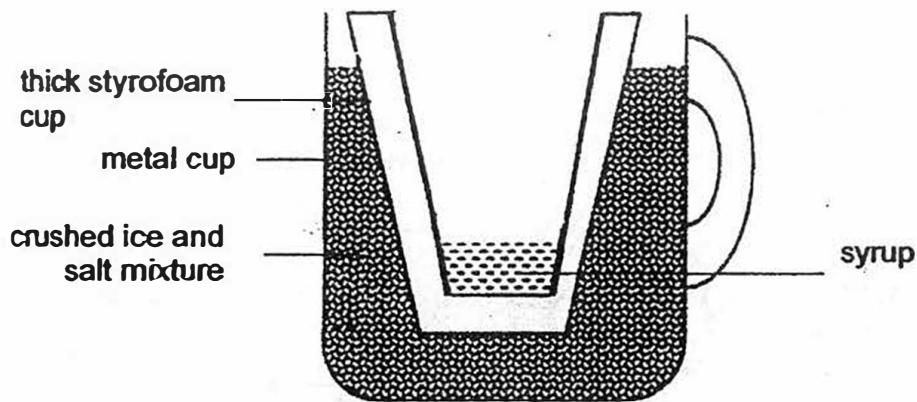
The data obtained is shown in the graph below.



Based on the graph, how many boxes were counted in 22 seconds?

- (1) 5
- (2) 6
- (3) 10
- (4) 12

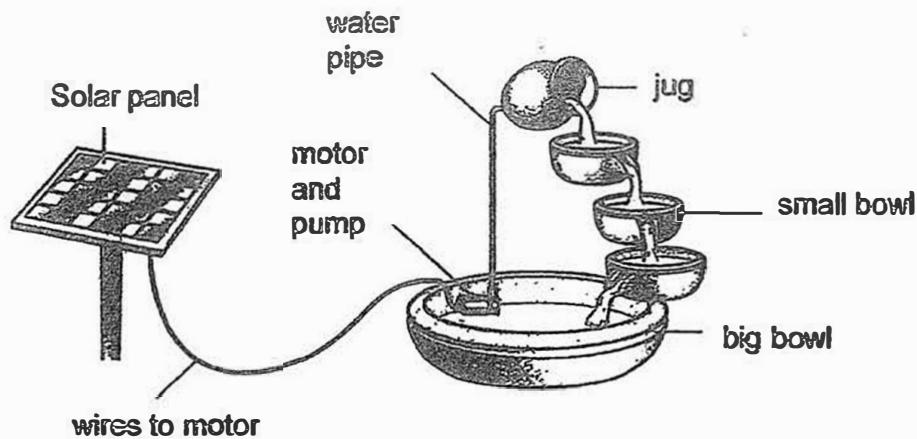
27. Adding salt to water can increase the boiling point and decrease the freezing point of water. James used the set-up below to make his own ice cream.



What would James observe after three minutes?

- A The syrup would be frozen.
 - B The syrup would not freeze.
 - C A thin layer of ice would form on the outer surface of the metal cup.
- (1) A only
(2) B only
(3) A and C only
(4) B and C only

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



Which one of the following is true of the garden feature above?

- (1) The garden feature cannot operate when there is no heat.
- (2) The water in the big bowl has more potential energy than the water in the jug.
- (3) The water flowing out of the jug has both potential energy and kinetic energy.
- (4) Heat energy is converted to potential energy and kinetic energy for the feature to work.

Name : _____

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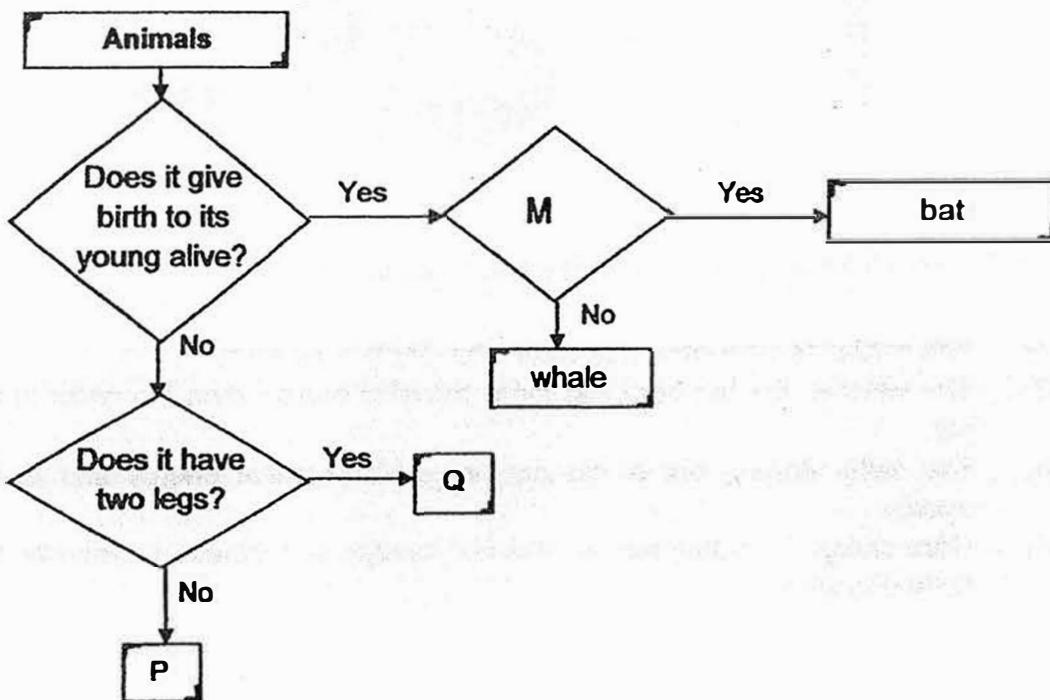
44

SECTION B (44 marks)

For questions 29 to 41, write your answers clearly in the spaces provided.

The number of marks available is shown in the brackets [] at the end of each question or part question.

29. Study the flow chart as shown below.



Based on the information above, answer the following questions:

- (a) What does 'M' represent? [1]

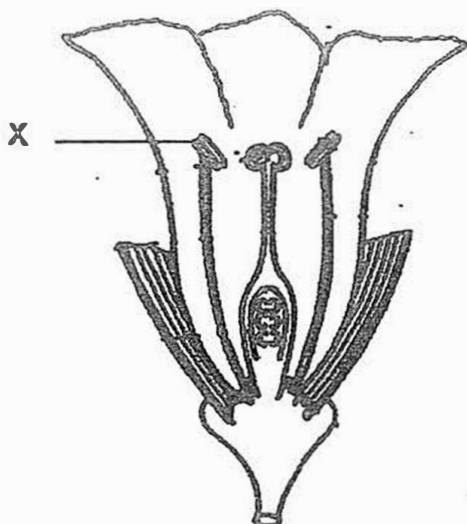
- (b) State one similarity and one difference between animals P and Q. [2]

Similarity: _____

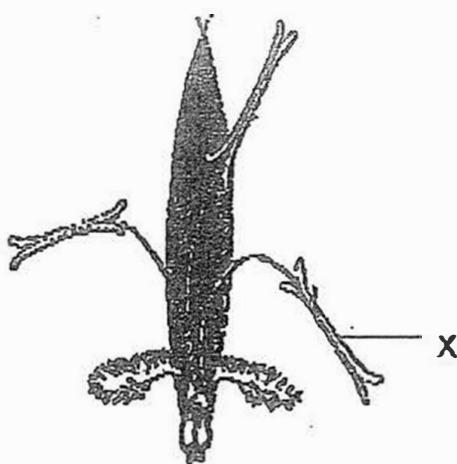
Difference: _____

Score	
3	

30. The diagrams below show the cross-sections of flowers A and B.



Flower A



Flower B

- (a) State the function of part X.

[1]

- (b) Based on the diagrams above, state how each flower is pollinated and give a reason for your answer.

[2]

- (i) Flower A : By _____

Reason : _____

- (ii) Flower B : By _____

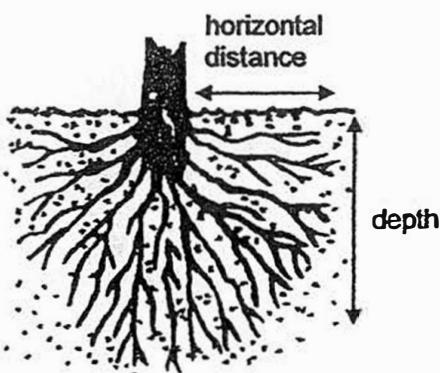
Reason : _____

Score	
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 3 |

31. It was observed that the top layer of the soil is usually washed away by heavy rain. An experiment was conducted to find out which plant, A, B or C, with different kinds of root systems, is most suitable to be planted on hilly regions to hold the soil together.

The diagram below shows how the horizontal distance and the depth of root growth are measured.



The depth and the horizontal distances of the roots growth of plant A, B and C were measured and tabulated in the table below.

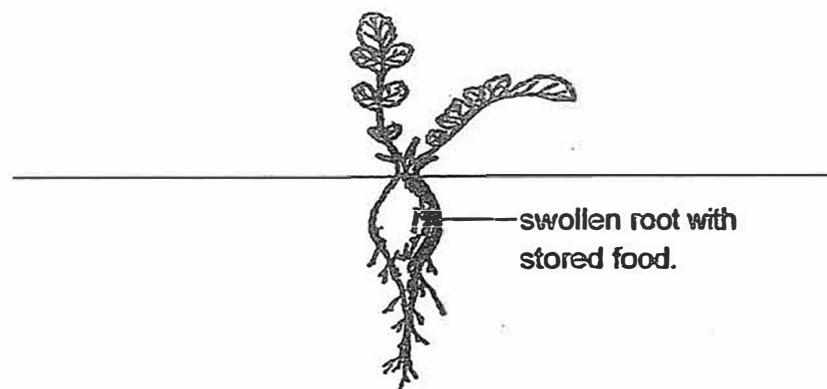
Plant	Number of roots	Depth of root growth (m)	Average horizontal distance of root growth from plant (m)
A	10	2.8	1.4
B	15	1.3	5.1
C	15	2.2	8.7

- (a) Which plant, A, B or C, is most suitable to be planted on the hill slope to hold the soil together? Explain your answer clearly. [2]

Continue on next page

Continued from previous page

It was observed that when another plant D was planted in non-fertile soil, the leaves of the plant remained green and did not wilt.

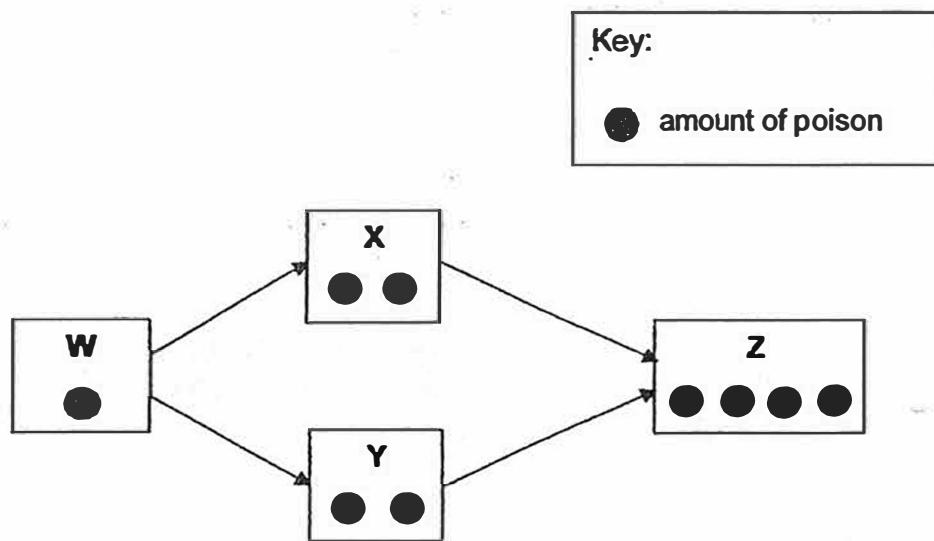


Plant D

- (b) Based on the information above, state the change to be observed in the swollen root with stored food after a week. Give a reason for your answer. [1]

Score	
1	

32. The diagram below shows the transfer of poison in a food web from organisms W to organisms Z. Organisms W, X, Y and Z lived in the same community.



- (a) Based on the information above, identify the food producer and predator. [1]

Food producer: _____

Predator : _____

- (b) If organisms W decreased, explain what would happen to the number of organisms Z. [2]

- (c) Explain why organisms Z accumulated the greatest amount of poison in their bodies. [1]

Score	4
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33. The table below shows some information about animal X.

Habitat	<ul style="list-style-type: none"> ◦ Dry and hot. ◦ Water is scarce. ◦ Has low growing plants and shrubs throughout the year. ◦ Digs burrows to sleep at night to conserve body heat.
Diet	<ul style="list-style-type: none"> ◦ Feeds mainly on low-growing plants and shrubs, such as the cactus ◦ Supplements its diet with insects. ◦ During rainy season, drinks water from pools of water.
Movement	<ul style="list-style-type: none"> ◦ Moves very slowly.
Other facts	<ul style="list-style-type: none"> ◦ Has ticks (parasites) on its body which can spread disease. ◦ Has no structural adaptations to store water. ◦ Its predators are dogs, cats and predatory birds.

Based on the information given in the table above, answer the following questions.

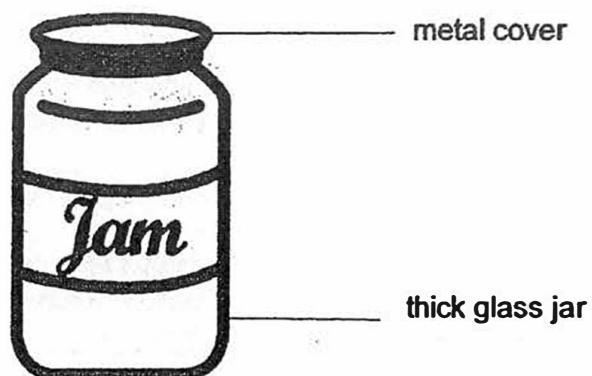
- (a) Animal X needs to drink sufficient water daily. When water is scarce during the drier periods, how does animal X get its supply of water? [1]

- (b) At night, animal X sleeps in burrows to conserve its body heat. Give another reason why it sleeps in burrows at night. [1]

- (c) Bird Y feeds on ticks. Explain how bird Y and animal X benefit each other from this. [1]

Score	
	3

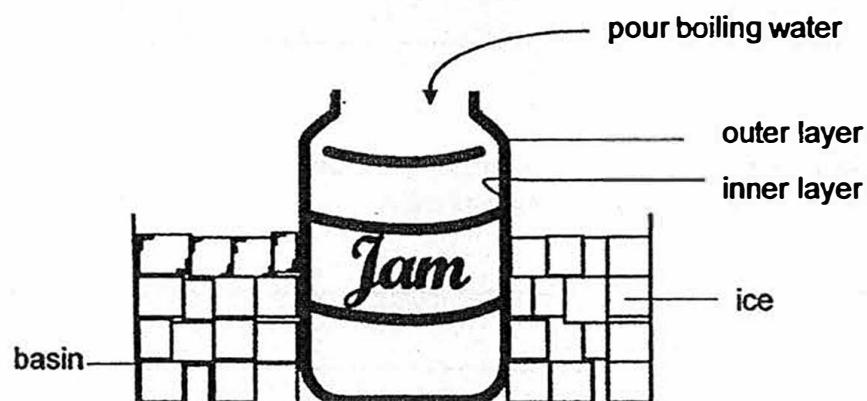
34. Paul took a jar of jam from the refrigerator. He tried to open it but was unsuccessful.



His mother told him to turn the jar over and dip the cover of the jam into a basin of hot water for fifteen seconds. After that, he was able to open the cover.

- (a) Explain clearly why Paul was able to open the cover of the jam jar. [2]

Paul decided to reuse the jam jar. He submerged the empty jar into a basin of ice and poured boiling water into it as shown below.

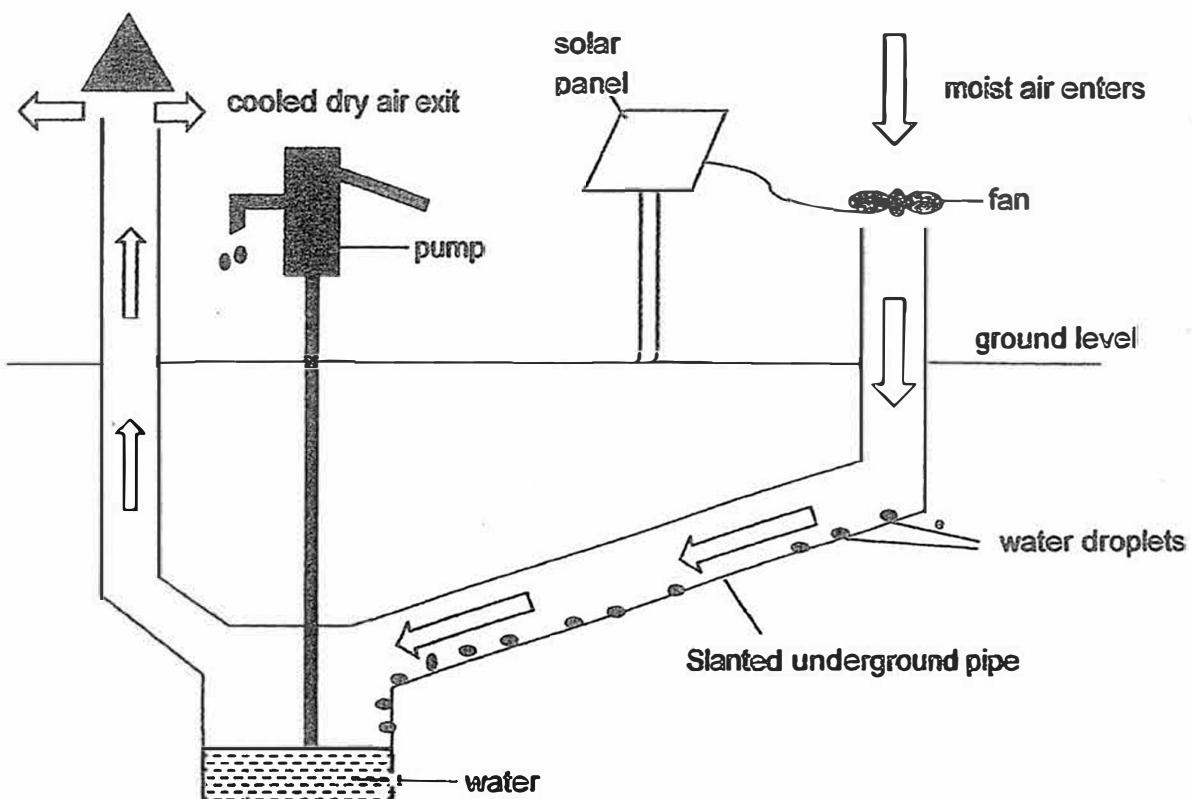


- (b) He noticed that the jar started to crack. Explain his observation clearly. [2]

Score	4
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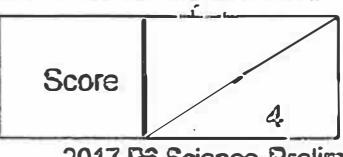
35. The device below is used in some countries to obtain pure drinking water from the surrounding air. The solar panel which is attached to the fan, powers the fan. Air from the surrounding will be drawn underground through the underground slanted pipes when the fan rotates. Pure drinking water obtained by this method could be pumped above the ground with the help of the pump attached.

Buried pipe to obtain pure drinking water

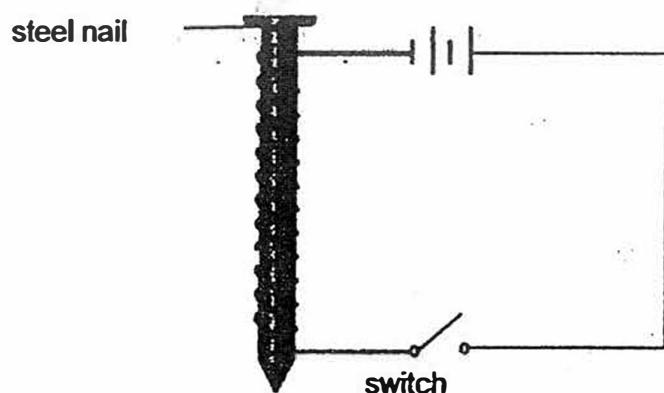


- (a) The temperature of air above the ground ranges from 18°C to 46°C while the temperature underground ranges from 7°C to 18°C . Explain how water can be obtained from the air that passes through the pipes. [2]

- (b) One way to collect more water using this device is to pass more air through the inlet. Suggest two other changes to the device that would enable it to collect more water over a fixed period of time. [2]



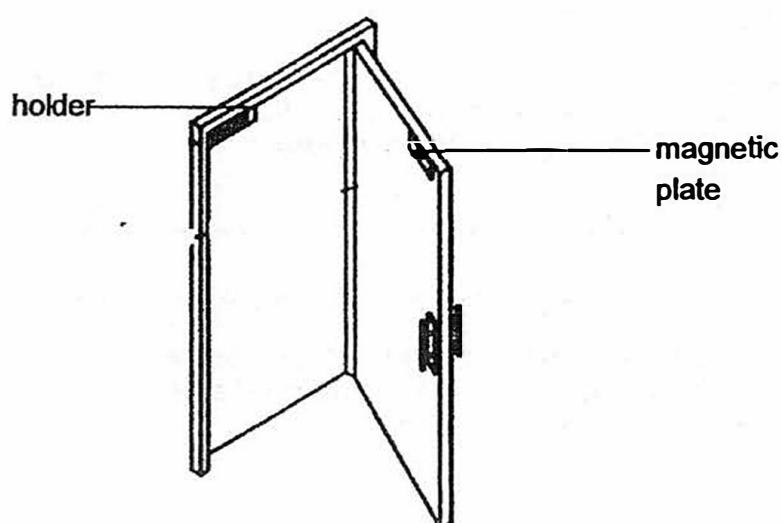
36 Study the following set-up carefully.



- (a) Explain what will happen when the switch is closed.

[1]

Many doors in schools such as the science labs and the computer labs are fitted with an electromagnet as shown in the diagram below to ensure that the doors remain closed.

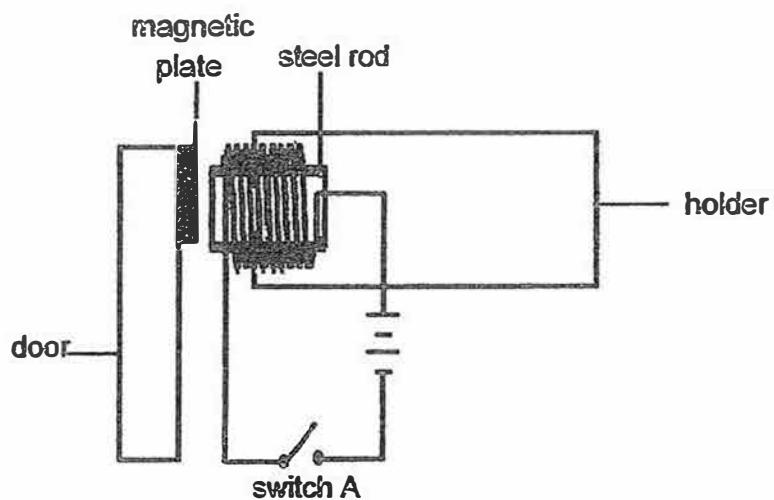


Continue on next page

Score	
	1

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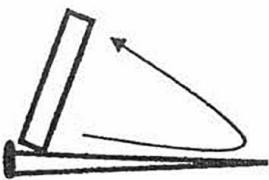
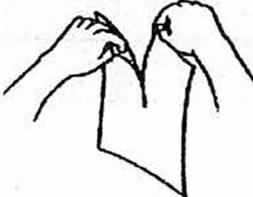
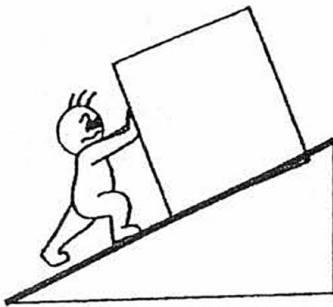
The diagram below shows the circuit and the electromagnetic lock.



- (b) Explain clearly why when switch A is closed, the door will be locked. [2]

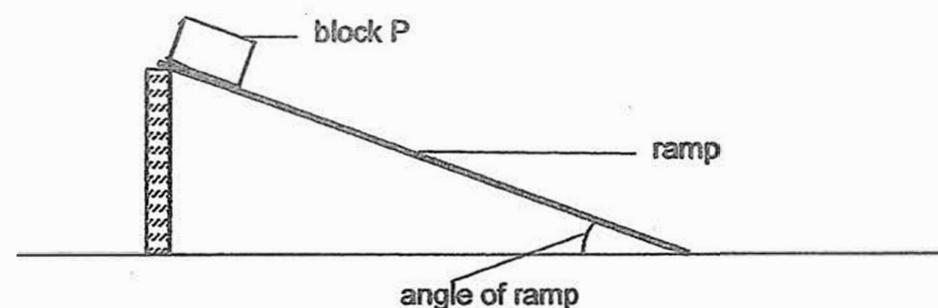
Score	
	2

37. The table below shows action(s) which involve(s) push(es) and/or pull(s). Classify the actions by putting a tick () in the correct column below.

S/N	Actions	Image	Push	Pull
1.	Stroking an iron nail with a magnet.			
2.	Wiping the table with a cloth.			
3.	Tearing a piece of paper.			
4.	Moving the box up the ramp.			

Score	4
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38. Ann wanted to find out how the type of ramp affects the amount of frictional force acting on the object moving down the ramp. She used ramps X, Y and Z made of different materials.



She put block P on ramp X and increased the angle of the ramp until the block started to slide down the ramp. She repeated the experiment by using ramp Y and Z. She recorded her results in the table below.

Ramp	Angle of ramp ($^{\circ}$)
X	40
Y	50
Z	60

- (a) On the diagram above, draw an (\rightarrow) to indicate where the frictional force was acting on the sliding block P. [1]
- (b) On which ramps, X, Y or Z, would there be the least amount of frictional force acting on block P? Give a reason for your answer. [1]

Continued on next page

Score	
	2

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Ann decided to slide block W, which is bigger than block P, down ramp X. Block W was made of the same material as block P and had identical mass as block P.

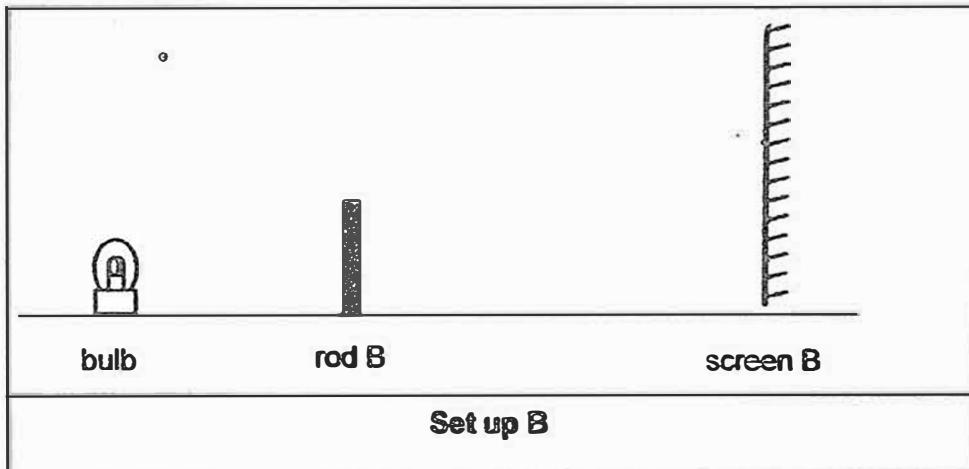
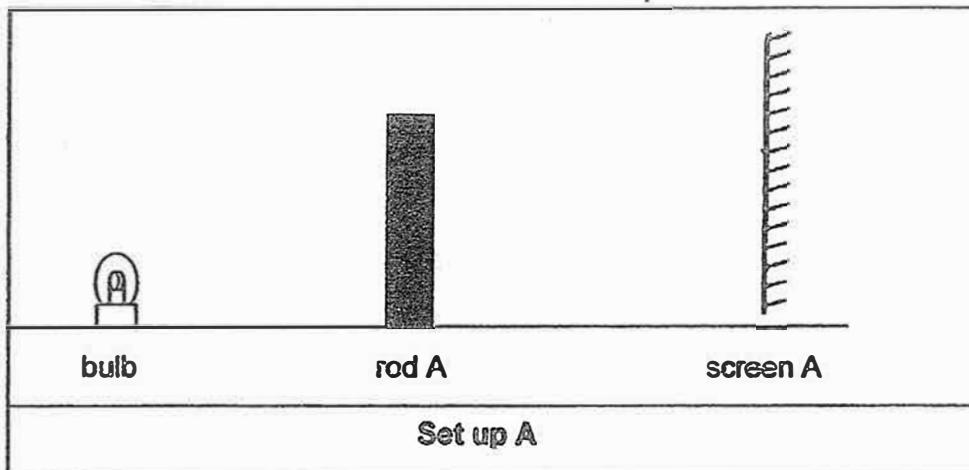
She observed that block W, like block P, started to slide down the ramp when the angle of ramp was 40° .

Block	Mass (g)	Area of contact surface (cm^2)	Angle of ramp ($^\circ$)
P	100	100	40
W	100	150	40

- (c) Based on the information above, did the area of contact of the block with the ramp affect the amount of frictional force acting on the blocks? Give a reason for your answer. [1]

Score	
	1

39. Sarah wanted to find out the type of shadows formed when light was shone at different materials. She prepared set-ups A and B using identical bulbs and rods made of different materials. She placed the two set-ups in the garden as shown below.



- (a) Her classmate told her that she needed to carry out her experiment in a dark room to ensure a fair test. Do you agree? Give a reason for your answer. [1]

Continue on next page

Score	1
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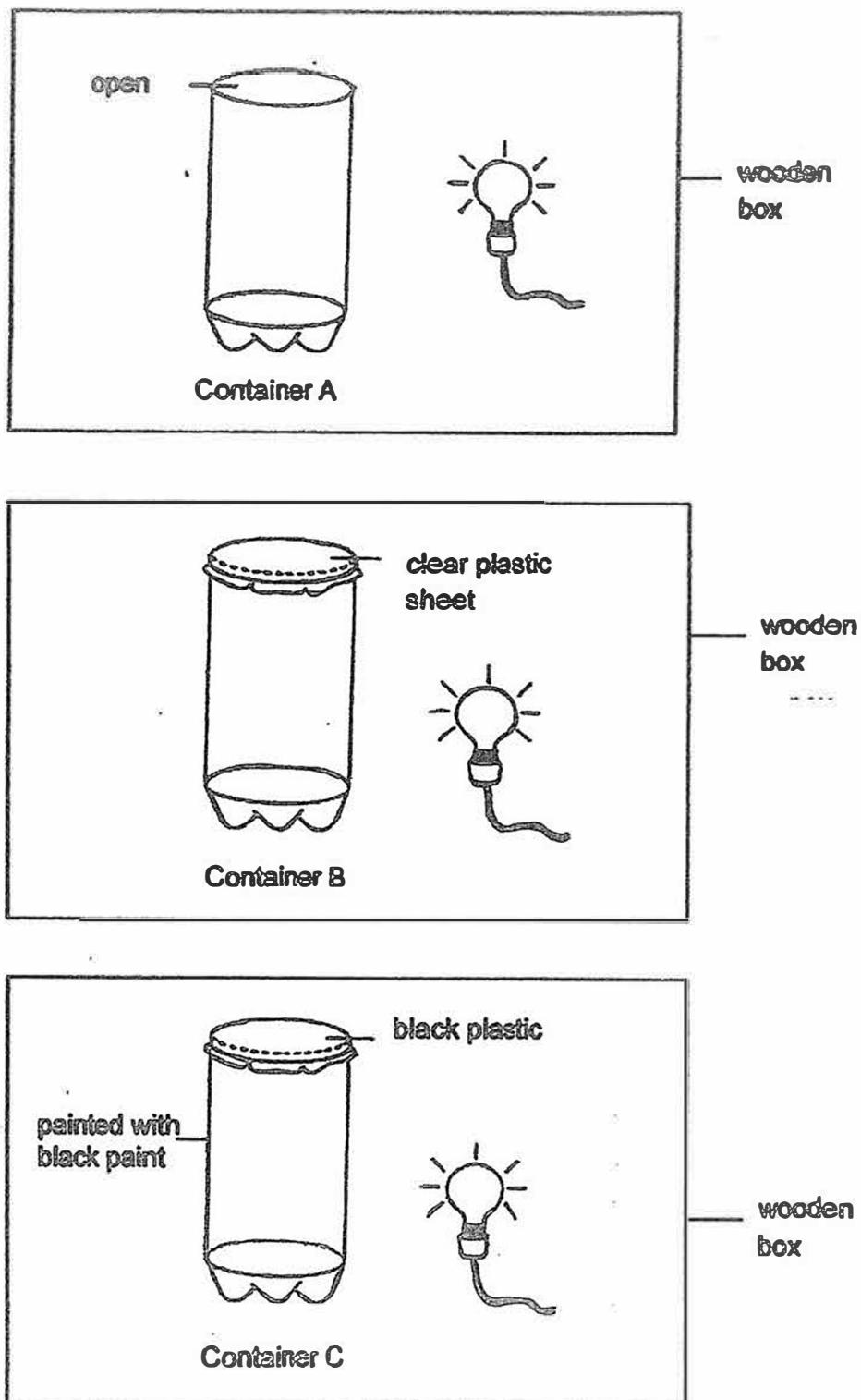
Continued from previous page

- (b) State two other changes Sarah needed to make to the set-up in order to carry out a fair test. [1]

- (c) If rod A was translucent and rod B was opaque, describe the shadows formed by each rod on the screen. [2]

Score	
3	

40. The diagram below shows identical lamps placed at the same distance from the three identical glass containers A, B and C.



Continue on next page

Continued from previous page

The temperatures of the air in the three containers were measured after 20 minutes.

- (a) Arrange the containers A, B and C starting with the one which contained air of the lowest temperature. [1]

Lowest

highest

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- (b) Explain how you arrive at the answer in (a). [2]

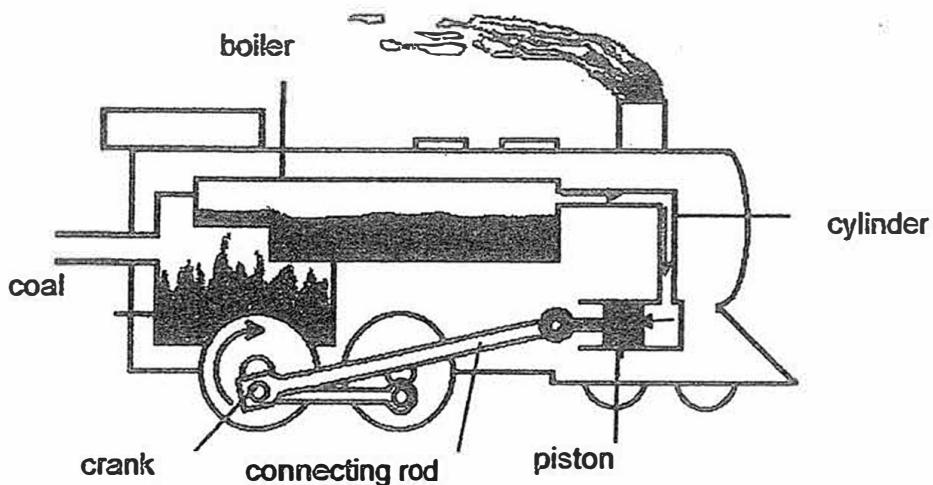
Container A : _____

Container C : _____



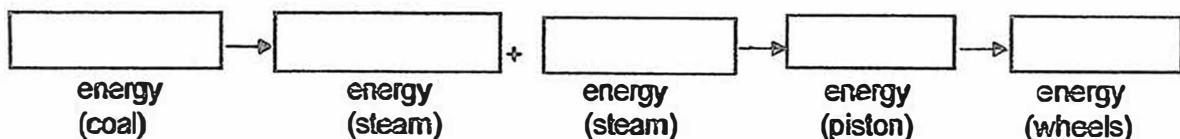
41. The diagram below shows how a train works with the help of steam.

Steam from the boiler is piped into the cylinder, causing the piston to move first one way then the other. As the piston pushes, the crank and connecting rod turn the locomotive's wheels and power the train along.

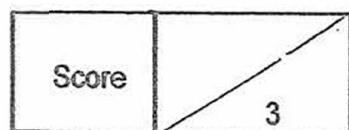


- (a) What is the source of energy for the above train? [1]

(b) Complete the main energy conversion of the moving steam train. [1]



- (c) Explain clearly how the burning of coal leads to global warming. [1]



YEAR : 2017
 LEVEL : PRIMARY 6
 SCHOOL : RAFFLES GIRLS' PRIMARY
 SUBJECT : SCIENCE
 TERM : PRELIMINARY EXAMINATION

Booklet A

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

Booklet B

Q29 (a) Does it live on land?

(b) Similarity : Both do not give birth to their young alive.
Difference : Q has 2-legs while P does not.

Q30 (a) It is the anther, which produces pollen grains containing the male reproductive cell.

(b) (i) Flower A : By insects
Reason : It's stigma and anther are smaller than the petals, thus when the insects lands on the flower to feed on nectar, the pollen grains will stick onto the insects legs and can then be brushed onto the stigma pollinating the flower.

(ii) Flower B : By wind
Reason : The anther hangs out of the flower so that the pollen grains can be blown away at the slightest wind and can land on the stigma of another flower of the same type, which is large and feathery to easily catch the pollen grains.

- Q31 (a) The plant has the most amount of root that spread out the largest area and deepest so can hold the most soil together.
- (b) After a week, the swollen root would no longer be as swollen as before. The roots of the plant absorb mineral salts and nutrients which are needed for growth from fertile soil. However, in non-fertile soil, the mineral salts and nutrients are absent, so the plant has to obtain the mineral salts and nutrients from the stored food in the root. As more stored food is used up, the swollen root would be less swollen.
- Q32 (a) Food producer : W
Predator : Z
- (b) If organisms W decreases, there will be less food for organisms X and organisms Y, resulting in the decrease of both organisms X and organisms Y.
- (c) Organisms Z would have the greatest amount of poison as it had two food sources contaminated with poison.
- Q33 (a) Animal X gets sufficient water from the low-growing plants and shrubs that it eats, and from the insects it eats to supplement its diet.
- (b) Animal X burrows at night to remain hidden from predators.
- (c) Bird Y and animal X have a mutualistic relationship. Bird Y gets food, needed for respiration and life processes from the tick while X can rid its body of ticks, so it will not have many diseases.
- Q34 (a) Heat gains. Metal expands when heated. The metal cover gains heat from the hot water and expanded, thus it would not be very tight and could be opened easily.
- (b) Heat loss. Metal contracts when cooled. Thus, the outer layer lost heat to the ice and contracted. When the boiling water was poured in, the inner layer gained heat from the water and expanded before the heat could be conducted to the outer layer. Hence, the jar started to crack.

Raffles Prelim

Q35 (a) The moist air entering the underground pipes contains water vapour. When the warmer water vapour came into contact with the cooler underground pipe, it lost heat to the pipes and condensed to form water.

(b) Increase the surface area of solar panel and increase fan speed.

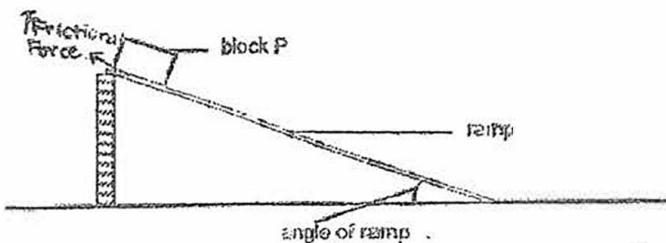
Q36 (a) The steel nail will be electromagnetised as steel is a magnetic material.

(b) When switch is closed, the steel rod will be electromagnetised and will attract the magnetic plate. Thus, the door will not open and will be locked.

Q37

S/N	Push	Pull
1	✓	✗
2	✓	✓
3	✓	✓
4	✗	

Q38 (a)



(b) Ramp X. The block could slide down when the angle of ramp X was the least, as the gravitational potential energy of the block could be converted to kinetic energy to overcome the friction between the block and ramp.

(c) No, it did not. As both blocks slide down when the angle of ramp is 40° they encountered same amount of friction, this shows that the area of contact does not affect the frictional force acting on the blocks.

- 20/16
- Q39 (a) Yes. It is to confirm that the results of the experiment are not affected by any external light source other than the light from the bulb.
- (b) She must use the same screen for both set-ups and the size of rods A and B must be the same.
- (c) The shadow formed by rod A would be lighter than the shadow formed by rod B.

Q40 (a) Lowest  highest



- (b) Container A : Heat gained from the bulb by air in the container is lost to the surroundings most quickly.
- Container C : Container C is covered with black plastic and is painted with black, which absorbs heat, so the heat is trapped in the container causing C's temperature to be heightened.

Q41 (a) The coal

(b)



- (c) Burning of fuels produces more carbon dioxide in the atmosphere that traps more heat from the sun and results in rise in Earth's average temperature.

End



RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)

2017

Name : _____ Index No: _____ Class: P6 _____

9 May 2017

SCIENCE

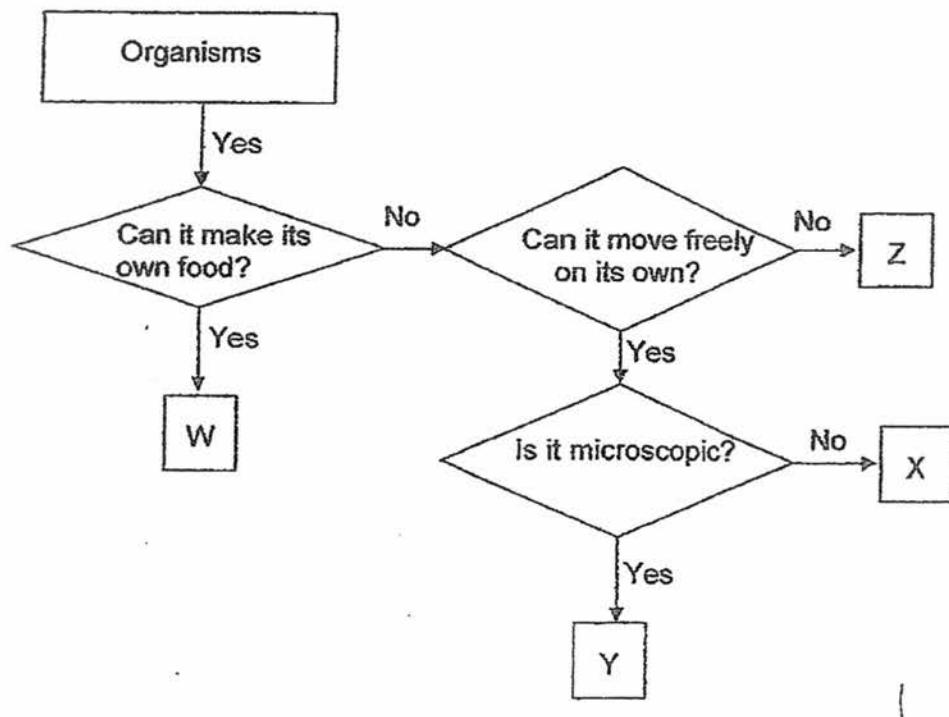
Attn: 1h 45min

Section A	56
Section B	44
Your score out of 100 marks	
Parent's signature	

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.

1. Organisms W, X, Y and Z are classified using the chart below.



Which organism is most likely a fungi?

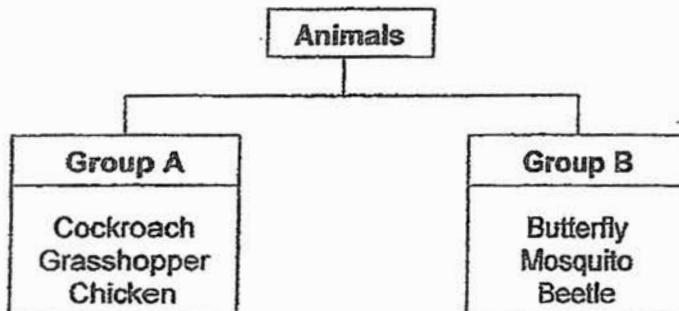
- (1) W
- (2) X
- (3) Y
- (4) Z

2. Which of the following characteristic(s) can be used to differentiate between fish and reptile?

- A Method of breathing
- B Type of body covering
- C Method of reproduction

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

3. Mary classified a group of animals in the table as shown below.



What characteristic of the animals was used by Mary in her classification?

- (1) Ability to fly
- (2) Number of legs
- (3) Place where the eggs are laid
- (4) Number of stages in its life cycle

{

4. Helen prepared four set-ups, P, Q, R and S, as shown in the table below.

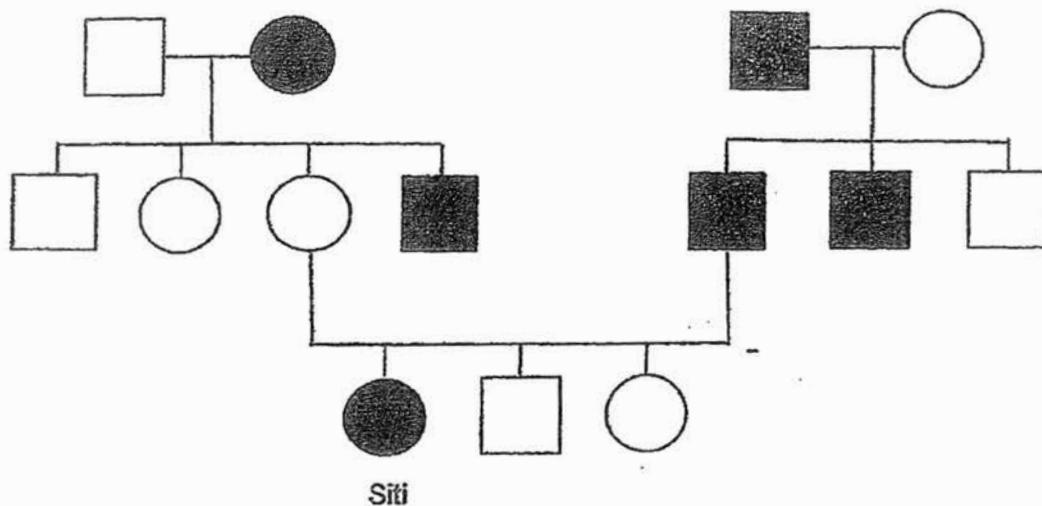
Variables	Set-up	P	Q	R	S
Number of green bean seeds		10	5	5	5
Amount of water added to the seeds everyday (cm ³)		100	100	0	100
Location where the set-up is placed		garden	garden	garden	freezer

Helen selected the following set-ups for each of the following experiment. Which of the following set-ups used will ensure a fair test?

Set-Ups	Aim of experiment
A Q and R	To find out if water is needed for germination
B P and S	To find out if the presence of warmth affects germination
C P and Q	To find out if the number of seeds affects the rate of germination
D R and S	To find out if the amount of water and presence of warmth affects germination

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

5. The diagram below shows Siti's family tree. Some of Siti's family members have attached earlobes while some have detached earlobes.



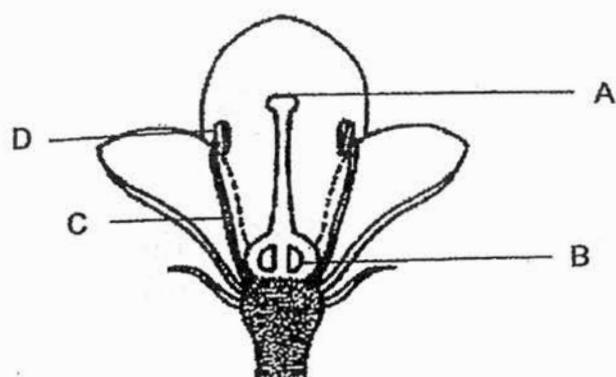
Legend:

	Male with attached earlobes		Male with detached earlobes
	Female with attached earlobes		Female with detached earlobes

Which one of the following statements is correct?

- (1) Siti's brother has attached earlobes.
- (2) Siti's parents have attached earlobes.
- (3) Both Siti's grandmothers have attached earlobes.
- (4) Siti's father has a brother with detached earlobes.

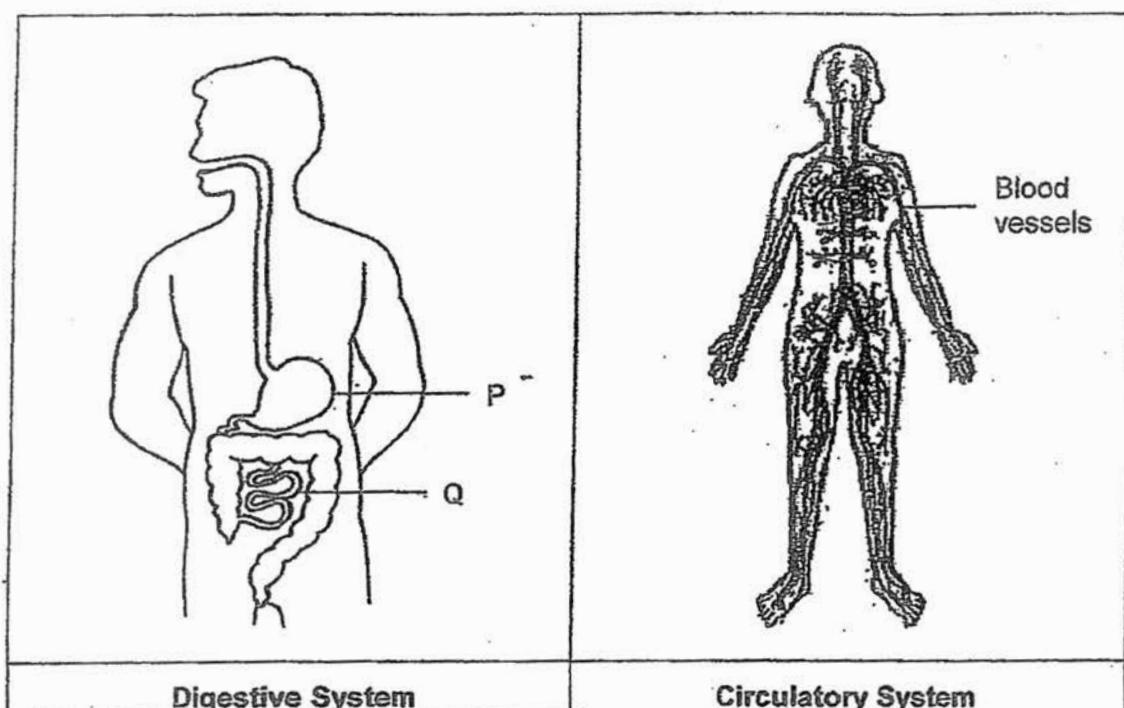
6. The diagram below shows the cross-section of a flower.



Which parts of the flower show where the pollen grains and ovules are produced?

Pollen grains	Ovules
(1) A	B
(2) A	C
(3) C	D
(4) D	B

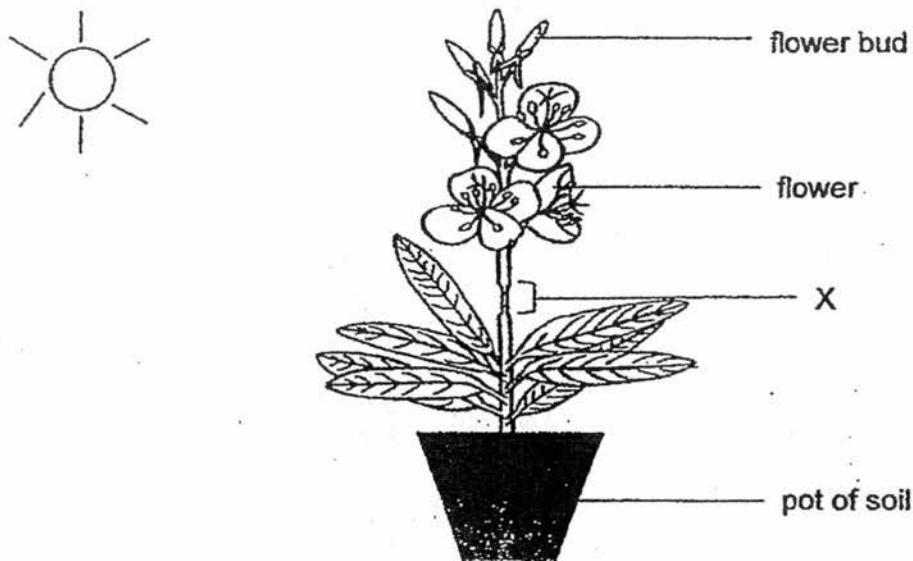
7. The diagram below shows parts of the digestive and circulatory system of a human.



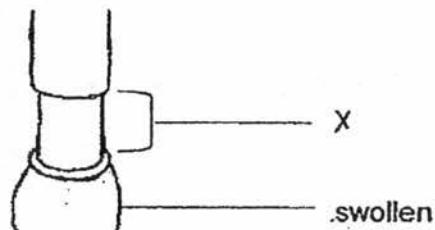
Which of the following statement(s) about the system(s) above is/are correct?

- A Blood transports the undigested food from P to the large intestine.
B Digested food from Q enters the blood vessels and is transported to different parts of the body.
C The circulatory system transports carbon dioxide away from the different parts of the body.
- (1) C only
(2) A and B only
(3) B and C only
(4) A, B and C only

8. Xiao Hui removed the outer ring of the stem of a plant bearing white flowers at X as shown in the diagram below.



She left the plant under the Sun and watered it regularly with water stained with red food colouring.

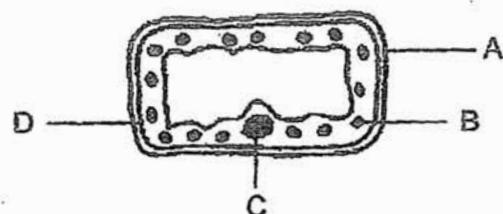


After a few days, Xiao Hui observed that the white flowers and flower buds were withering. However, the part of plant below part X was still alive and was observed to be swollen as shown in the diagram above. She also noticed that the leaves and stem below part X turned red, but not the part of the plant above part X.

Which of the following statement(s) explain(s) her observations?

- A The food-carrying tubes were removed at X.
 - B The water-carrying tubes were removed at X.
 - C The food made by the leaves was accumulated at the swollen part of the stem.
- (1) A only
 (2) A and B only
 (3) B and C only
 (4) A, B and C

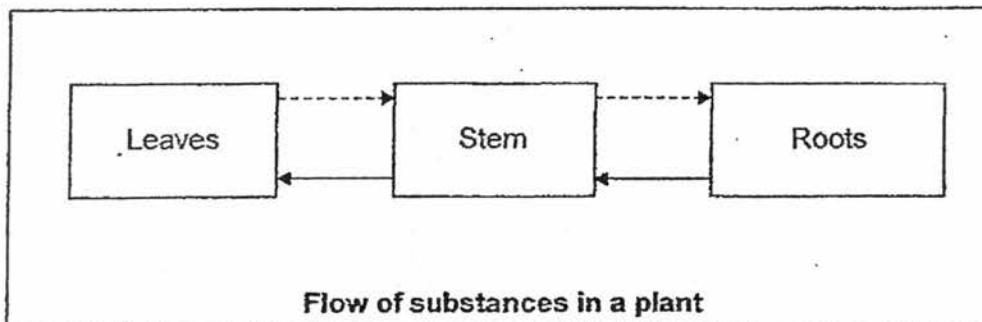
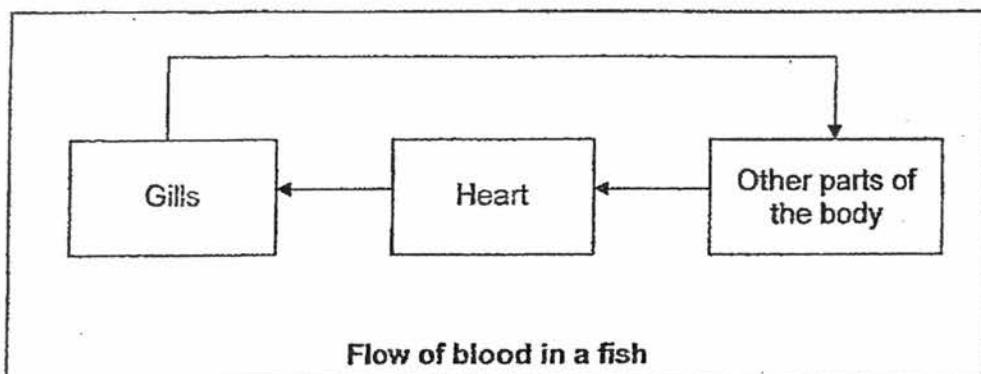
The diagram below shows a cell with its parts labelled A, B, C and D.



Which one of the following correctly describes the functions of parts A, B, C and D of the cell?

	Controls substances that enter or leave the cell	Controls all activities in the cell	Supports and gives the cell a rigid shape	Contains chlorophyll
(1)	A	B	D	C
(2)	D	C	A	B
(3)	C	B	A	D
(4)	B	D	C	A

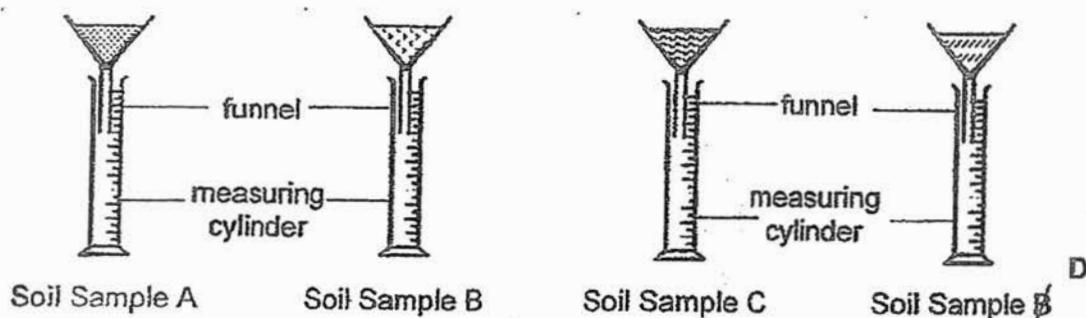
10. The diagram below shows the direction flow of blood in a fish and flow of substances in a plant.



Which of the statements about flow of blood in fish and substances in plant are correct?

- A The plant removes water through the leaves and absorb water through the roots.
 - B The plant allows food and water to flow at the same time in different directions
 - C The flow of the blood in a fish and the flow of water in a plant moves in a circulatory direction.
 - D Oxygen enters the blood vessels through the gills and carbon dioxide in the blood leaves the blood vessels through the gills.
- (1) A and B
(2) A, B and C
(3) A, B and D
(4) A, B, C and D

11. Amy prepared four set-ups by putting identical amount of soil samples, A, B, C and D into each funnel as shown below.



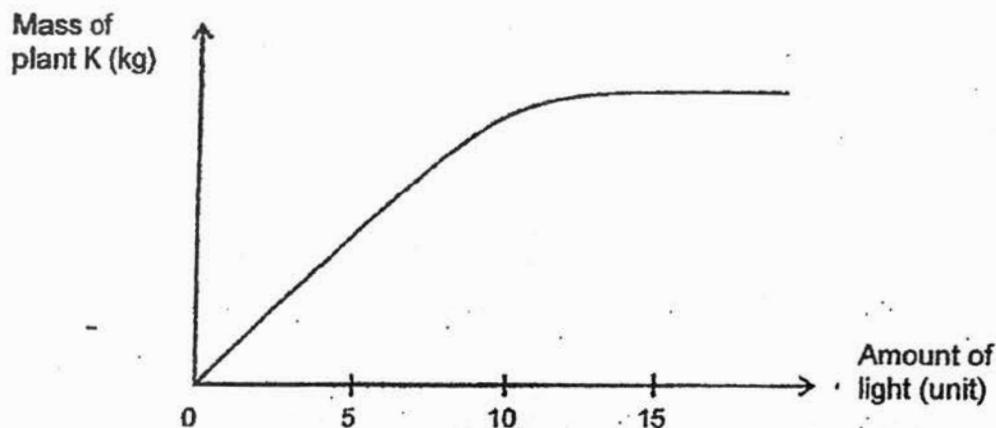
Amy poured 100 ml of water into the funnel of each set-up and recorded the amount of water collected in the measuring cylinders after two minutes in the table below.

Set-up with soil sample	Amount of water collected in the cylinder (ml)
A	60
B	20
C	95
D	80

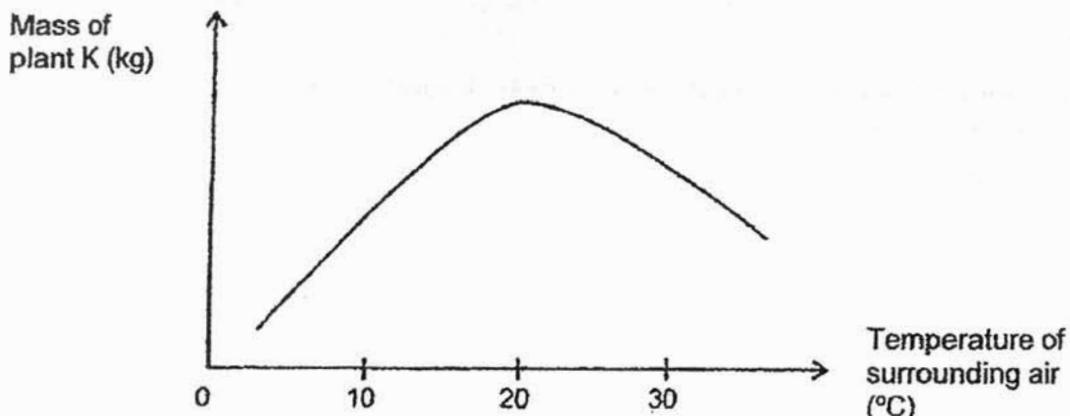
Which one of the following soil samples, A, B, C or D, is able to hold the greatest amount of water?

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

12. Lillian conducted an experiment to investigate the effect of the amount of light on the growth of plant K over a period of time. She recorded her findings in the graph below.



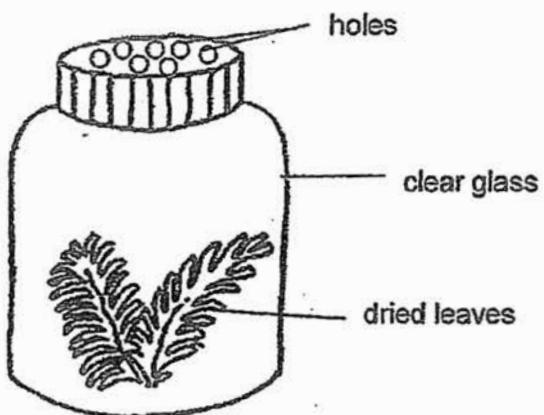
Next she also conducted another experiment on the effect of temperature of the surrounding air on the growth of Plant K over a period of time. The graph below shows the results of her experiment.



Based on the results above, which one of the following statements is definitely correct?

- (1) The ideal temperature for Plant K to produce the most food is 20°C
- (2) The higher the temperature of the surrounding air, the taller Plant K is.
- (3) As the amount of light increases, the temperature of the surrounding air decreases.
- (4) In order for plant K to grow well, Lily needs to expose Plant K to surrounding air temperature of 30°C and 15 units of light.

13. Mavis carried out an experiment to study the decomposition of dead leaves. She placed some dried leaves in container as shown below and placed it in a cupboard.



After 2 weeks, she noticed that no decomposition had taken place.
What change(s) should she make to the set-up so as to speed up the rate of decomposition?

- A Add some water.
 - B Remove the lid.
 - C Add some caterpillars
 - D Add more dead leaves
- (1) D only
(2) C and D only
(3) A and B only
(4) A , B and C only

14. The table below shows the description of some physical factors in four different habitats.

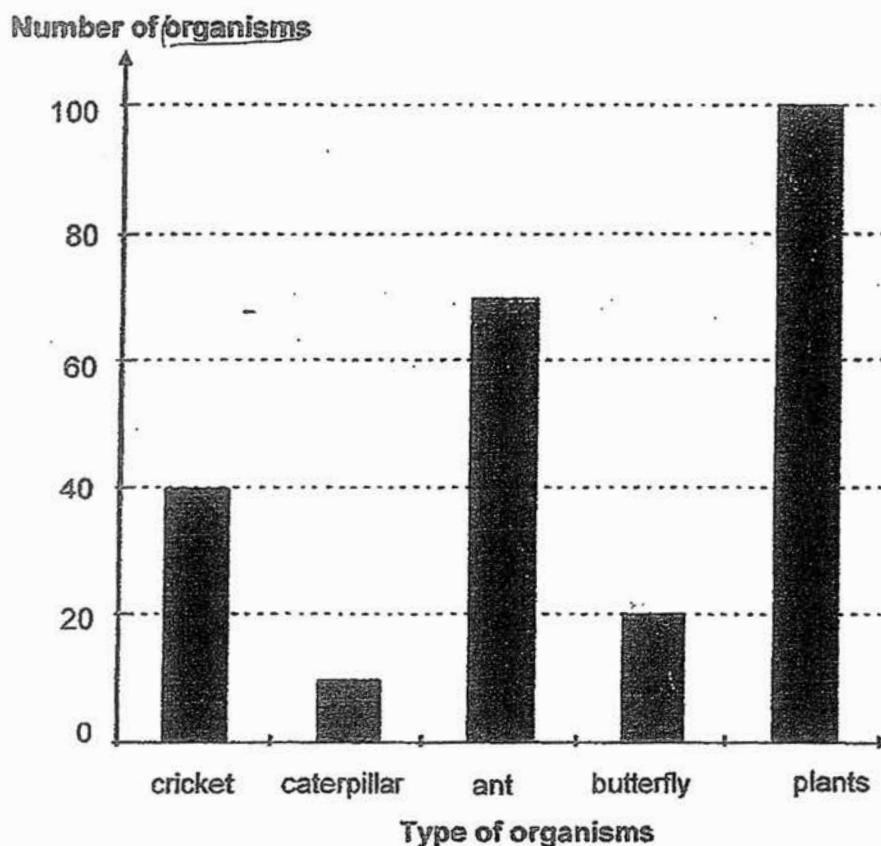
Habitats	A	B	C	D
Physical factors				
Humidity	high	high	low	Low
Average temperature (°C)	20	32	18	23
Light intensity (lux)	low	high	high	Low
Time taken for 25ml of water to flow through soil samples	21	16	13	8

Organisms Y prefer dark and damp places. They are most active when the surrounding temperature ranges from 20°C to 25°C.

Which of the following habitat(s) will most organism Y be found?

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

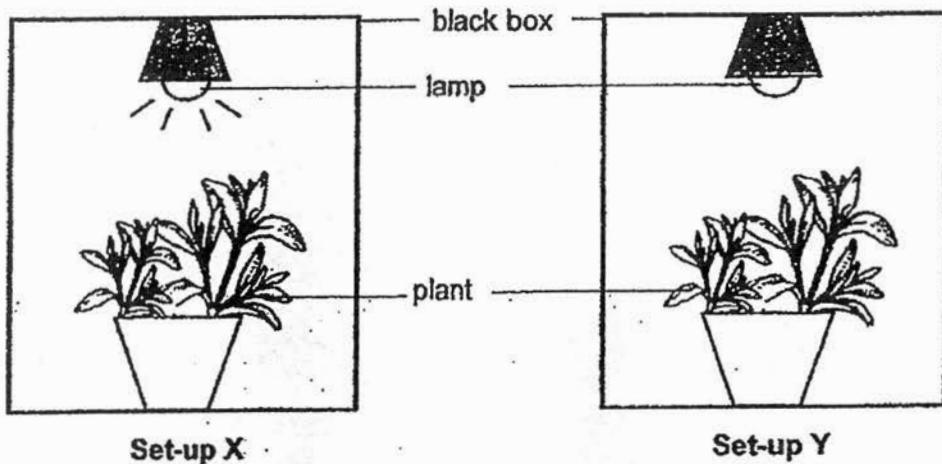
15. Fiona and her classmates counted the number of plants and animals found in a certain part of their school and recorded their findings in the graph shown below.



Based on the information above, which one of the following statements is/are definitely true?

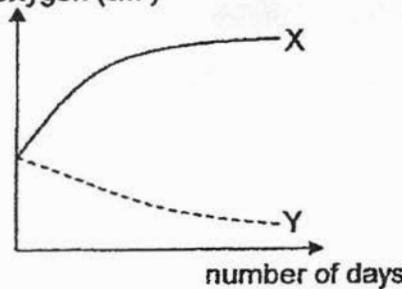
- A The population of butterfly is the smallest.
 - B The total number of populations in the habitat is 240.
 - C The total number of populations in the habitat may be more than five.
- (1) B only
(2) A and C only
(3) A and B only
(4) B and C only

16. Gary prepared two identical set-ups, X and Y, and placed them in the dark enclosed boxes for three days as shown in the diagrams below. Only the lamp in set-up X was switched on over the three days.

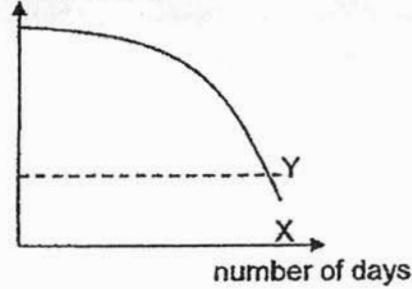


Which one of the following graphs shows the change in the amount of oxygen in the set-ups X and Y over the three days?

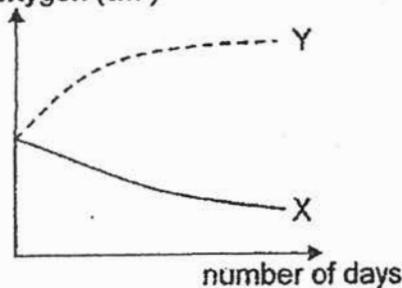
(1) volume of oxygen (cm^3)



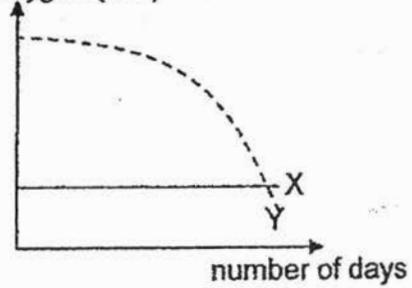
(2) volume of oxygen (cm^3)



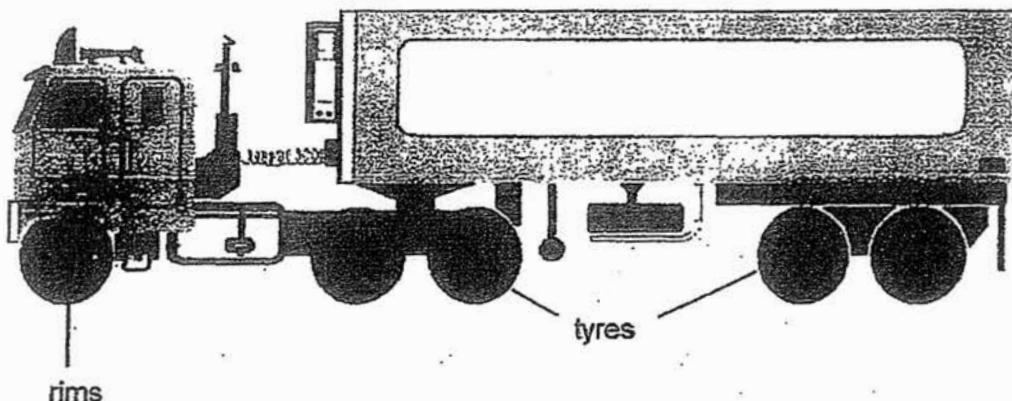
(3) volume of oxygen (cm^3)



(4) volume of oxygen (cm^3)



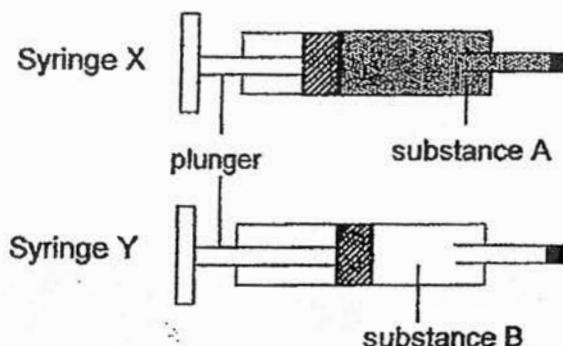
17. Material X is used to make the tyres of the truck as it will not break easily when the tyres roll over stones. It is able to wrap around the rims of the wheels. When it rains, water does not get into the tyres.



Based on the information above, which of the following are the properties of material X taken into consideration when used to make the tyres?

- A strong
 - B flexible
 - C waterproof
 - D able to float on water
- (1) A and B only
(2) A, B and C only
(3) A, C and D only
(4) B, C and D only

18. Two syringes, X and Y, contained substances A and B respectively. Plunger in syringe X could not be pushed in while plunger in syringe Y could be pushed in slightly as shown in the diagram below.



Which of the following statement(s) explain(s) the observations?

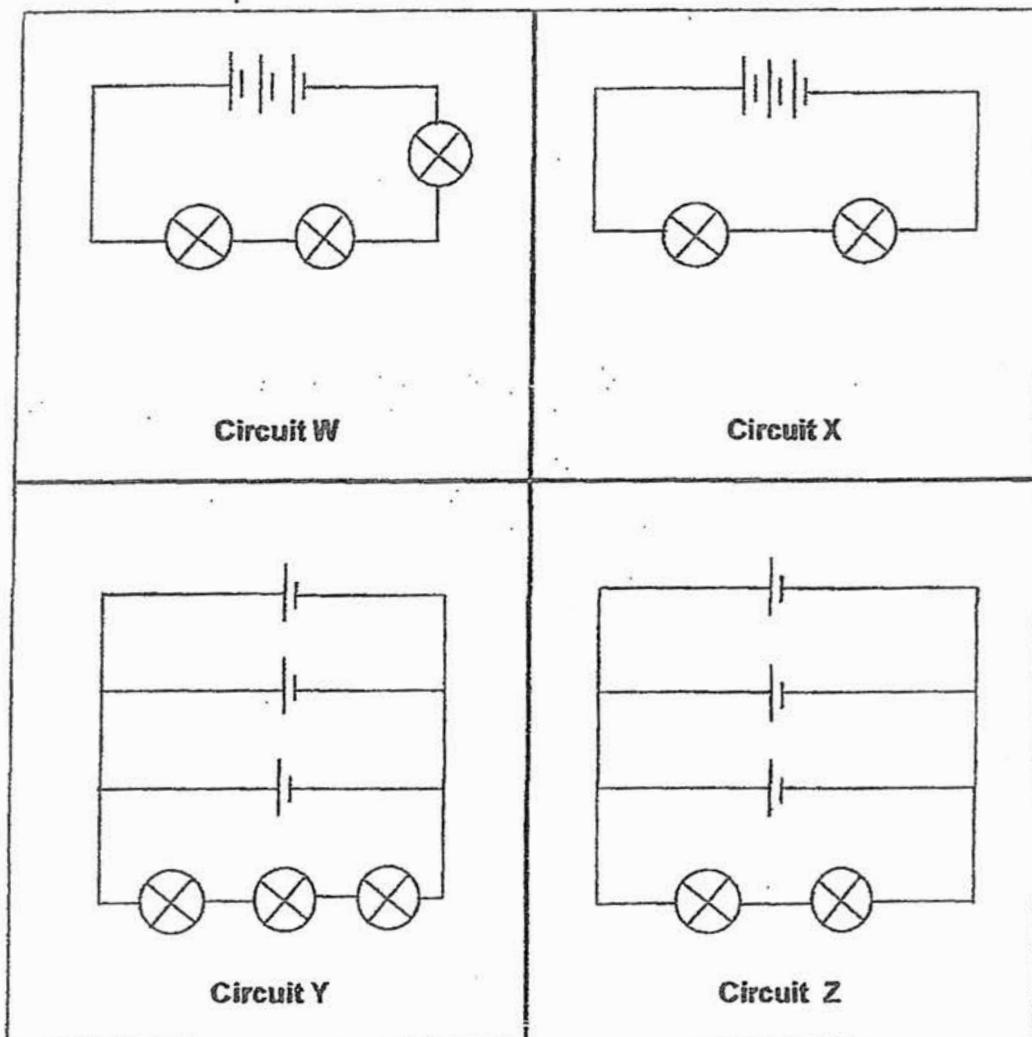
- A Substance A has definite volume.
 - B Both substance A and B have mass.
 - C Substance B can be compressed but not A.
- (1) C only
 (2) A and B only
 (3) A and C only
 (4) A, B and C
19. The table below shows the states of four substances, P, Q, R and S, at different temperatures.

Substances \ State of substance at	10 °C	40 °C	70 °C
Substances			
P	solid	solid	solid
Q	solid	solid	liquid
R	solid	liquid	liquid
S	liquid	liquid	liquid

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

- A The boiling point of substance R is 40°C.
 - B The melting point of substance Q is 40°C.
 - C Substance P has the highest melting point.
 - D Substance S has a boiling point less than 10°C.
- (1) C only
 (2) A and D only
 (3) B and C only
 (4) A, B and D only

20. Study the four circuits W, X, Y and Z shown below.

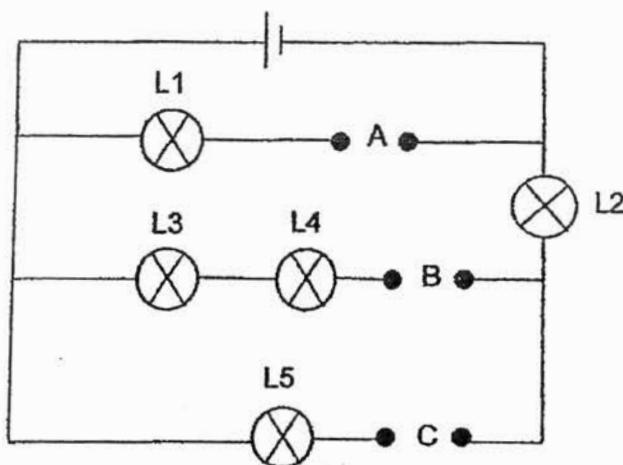


The bulbs and batteries in the circuits are identical and all the bulbs lit up.

Which one of the following statements about the brightness of the bulbs is correct?

- (1) The bulbs in circuit X are the brightest.
- (2) The bulbs in circuit Y is brighter than the bulbs in circuit Z.
- (3) The bulbs in circuit X is as bright as the bulbs in circuit Z.
- (4) The bulbs in circuit W is as bright as the bulbs in circuit X.

21. Ahmad had three materials, X, Y and Z. He placed them in positions A, B and C, of the circuit shown below.



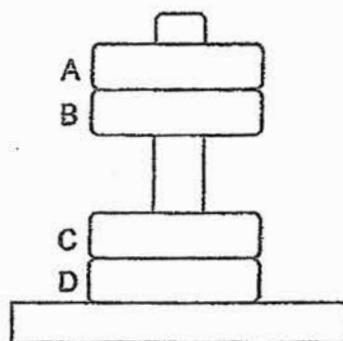
The results of the experiment were shown in the table below. When any of the lamps, L1, L2, L3, L4 or L5, lit up during the experiment, a tick (✓) was placed in the box.

Positions where materials were placed			Lamps				
A	B	C	L1	L2	L3	L4	L5
X	Y	Z	✓	✓	✓	✓	

Which of the following would show the correct result if the materials, X, Y and Z, were placed at different positions?

Positions where materials were placed			Lamps				
A	B	C	L1	L2	L3	L4	L5
(1) X	Z	Y	✓				✓
(2) Y	X	Z	✓		✓	✓	✓
(3) Z	Y	X		✓	✓	✓	
(4) Y	Z	X	✓	✓			✓

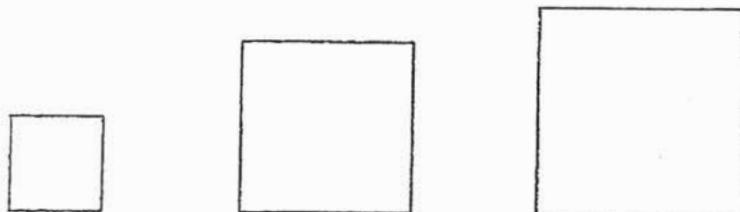
22. The set-up below shows four rings, A, B, C and D, which pass through a plastic rod.



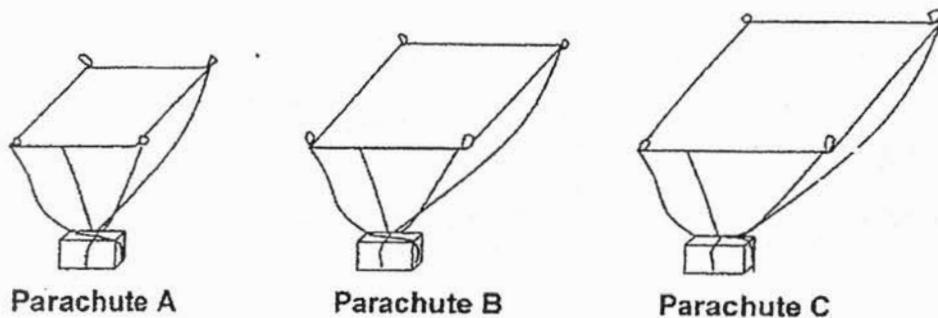
Which one of the following identifies A, B, C and D correctly?

	A	B	C	D
(1)	wood	magnet	steel	magnet
(2)	magnet	steel	wood	magnet
(3)	wood	magnet	magnet	steel
(4)	magnet	steel	magnet	wood

23. The canopies of parachutes, A, B and C were made of the same material but different sizes as shown below.



A 1-kg weight was tied to each parachute. The three parachutes were dropped at different heights above ground.

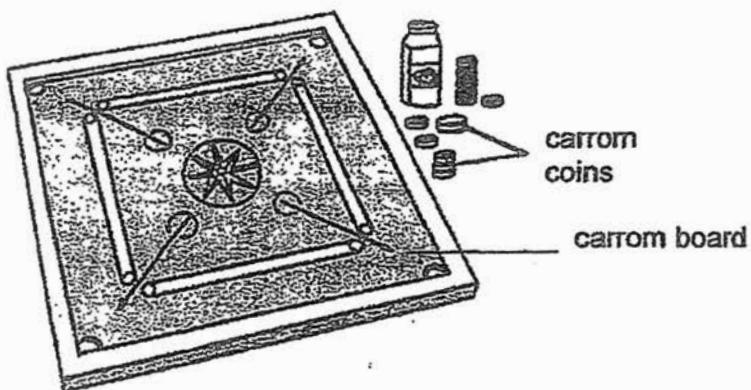


The parachutes were observed to reach the ground at the same time.

Which one of the following could possibly be the heights where parachutes A, B and C were dropped?

	Height for parachute (m)		
	A	B	C
(1)	3	1	2
(2)	1	2	3
(3)	2	3	1
(4)	3	2	1

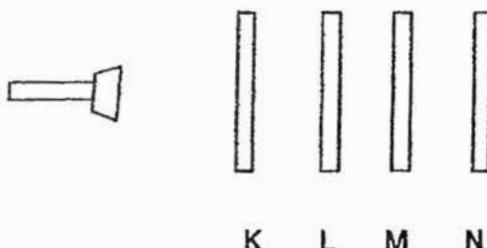
24. Tom and his friends want to play a game of carrom. In the game, the carrom coins need to move over long distance on the carrom board easily.



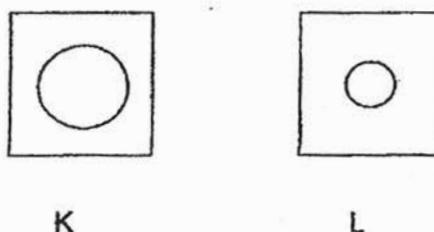
Which of the following should they do before playing the game so that the coins will move a longer distance on the board?

- (1) Spread powder on the surface of the carrom board.
- (2) Place a piece of rubber mat on the surface of the carrom board.
- (3) Paste sandpaper on the surfaces of the carrom coins that are in contact with the board
- (4) Scratch the surfaces of the carrom coins that are in contact with the board.

25. Mabel carried out an experiment in a dark room with the set-up as shown below. She arranged 4 sheets of the same size but of different materials K, L, M and N in a straight line.



Circles of different sizes were cut out from sheet K and sheet L as shown in the diagrams below.

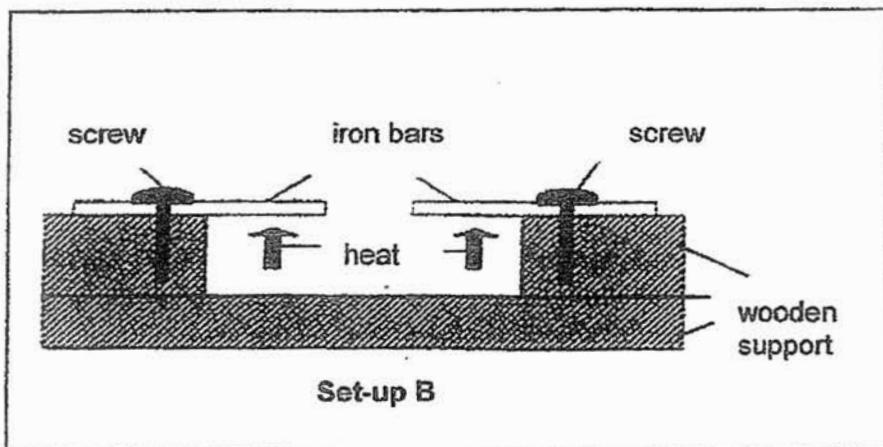
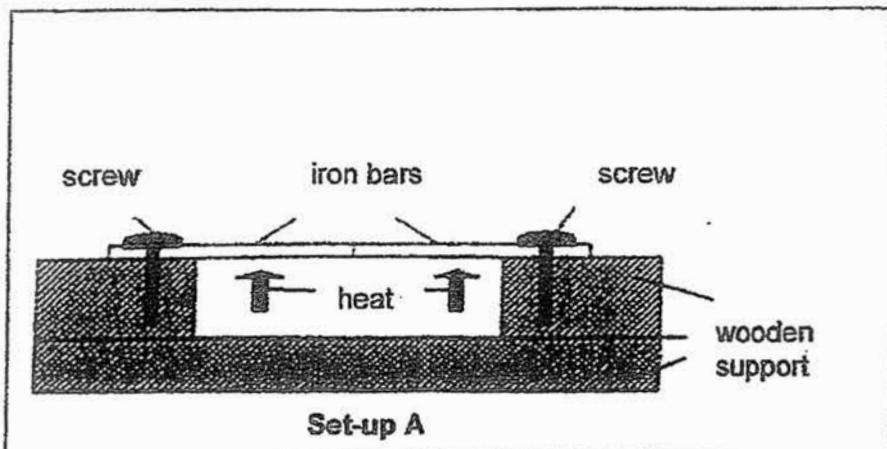


When the torch was switched on, she only observed a bright circular patch of light on sheet M.

Which one of the following is definitely true about the degree of transparency of the sheets used above?

	K	L	M	N
(1)	not possible to tell	opaque	opaque	transparent
(2)	transparent	transparent	not possible to tell	opaque
(3)	transparent	not possible to tell	opaque	transparent
(4)	opaque	transparent	opaque	not possible to tell

26. Wilson carried out an experiment using set-ups, A and B as shown below. The materials used in the set-ups were identical. The iron bars were positioned differently as shown below.



The iron bars attached firmly to a wooden support in both set-ups were heated for twenty minutes over high heat.

Which one of the following shows the correct explanations for his observations after twenty minutes?

- (1) The iron bars in set-up A bend due to expansion,
- (2) The iron bars in set-up A bend due to contraction.)
- (3) The iron bars in set-up B bend as it expanded faster.
- (4) The iron bars in set-up B did not bend as the iron bars lose heat to the surroundings.

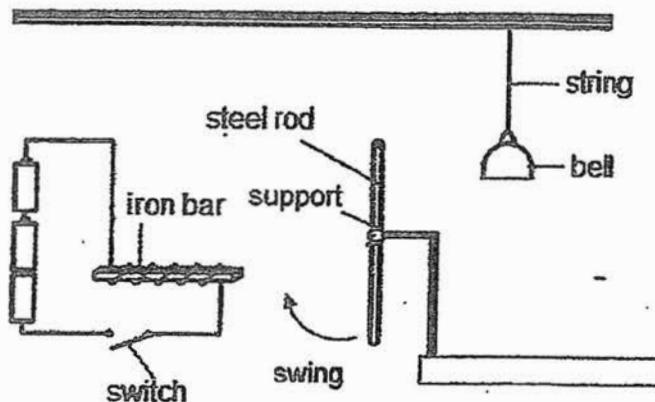
27. Jason, Timothy and Audrey were given the same amount of hot tea of the same temperature at the same time. Jason and Timothy poured their hot tea into a porcelain cup and saucer respectively and left them on the table for one minute before drinking the tea. While Audrey poured the hot tea between two identical porcelain cups repeatedly for one minute before drinking it as shown below.

	Before	After 1 minute
Jason	 Porcelain cup	Drank the tea from the cup.
Timothy	 Porcelain saucer	Drank the tea from saucer.
Audrey	 Porcelain cups Audrey poured the hot tea between the two porcelain cups repeatedly for one minute.	Drank the tea from one of the cups

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

- (1) Timothy's tea cooled down fastest as the tea lost heat to the saucer the fastest.
- (2) The surface area of Aubrey's tea exposed to the surrounding air is the greatest, hence the tea lost heat to the surrounding the fastest.
- (3) The surface area of the cup is the smallest, hence Jason's lips gain heat from the cup the slowest.
- (4) Audrey's cup of tea cooled down the slowest as the tea gained more heat from the surrounding air.

- 28 Hannah designed a doorbell as shown below. She attached the steel rod to a support so that the rod can swing freely. When the circuit is closed, she observed that the steel rod swing and hit the bell.



Which one of the following correctly describes the main energy conversion for the above observation?

	Energy in batteries	Energy in wires	Energy in steel rod	Energy in bell
(1)	potential energy	electrical energy	sound energy	potential energy
(2)	electrical energy	kinetic energy	kinetic energy	sound energy
(3)	electrical energy	electrical energy	electrical energy	kinetic energy
(4)	potential energy	electrical energy	kinetic energy	sound energy

Name : _____ Index No : _____ Class : P6 _____

44**SECTION B (44 marks)**

For questions 29 to 41, write your answers clearly in the spaces provided.

The number of marks available is shown in the brackets [] at the end of each question or part question.

29. Francis counted the number of wild plants P, Q and R on an island. After a few months, he noted down his observations in the diagrams shown below.

Legend:



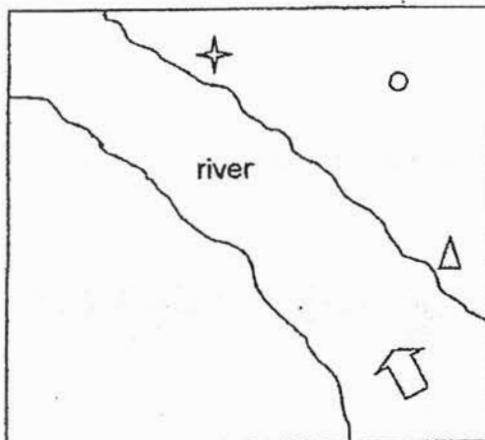
Plant P



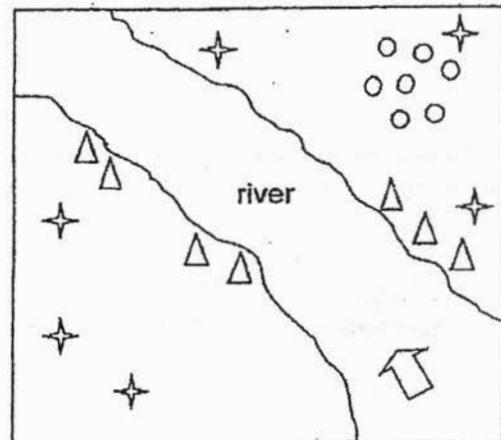
Plant Q



Plant R



Before



After

- (a) Based on the information above, state the method of seed dispersal for plants P, Q and R. [1]

(i) P: _____

(ii) Q: _____

(iii) R: _____

- (b) Based on the observation above, give a reason for your answer in (a)(i). [1]

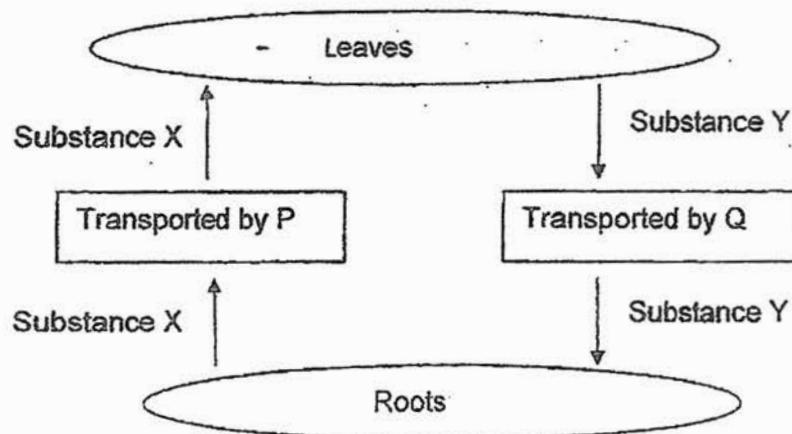
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Score	
	2

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- (c) State one physical characteristic that plant P is likely to have that helps it in its seed dispersal. [1]

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



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

P : _____

Q : _____

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

X : _____

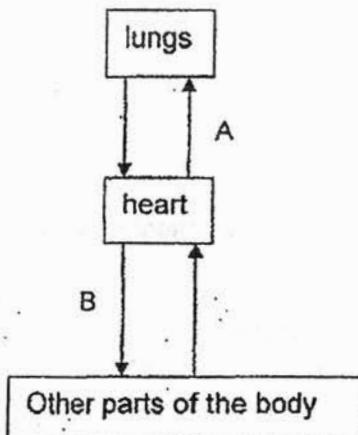
Y : _____

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Score	
3	

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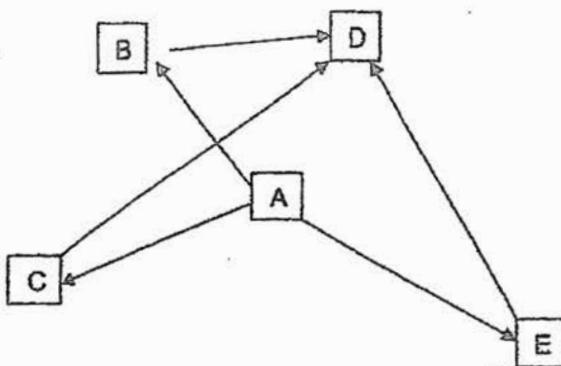
30. The diagram shows the flow of blood in a human body.



- (c) What is the difference between the composition of oxygen and carbon dioxide in the blood flowing at A and B? [1]

Score	
1	

31. Study the food web of some organisms in a habitat below.



- (a) Based on the food web above, use letters, A, B, C, D, E or F, to identify the following: [2]

food producer(s)	
Predator(s) only	

- (b) Based on the food web above, when there is a sharp increase in the population B, the number of C and E remained the same. How would the population of A and D change? Give a reason for your answer. [2]

- (i) Effect of population A and reason:

- (ii) Effect of population D and reason:

Score	
	4

32. A farmer's crops had been destroyed by aphids. He wanted to find out which types of ladybirds, X,Y,Z, is most effective in getting rid of the aphids in his plantation.

He prepared the set-ups by placing 20 ladybirds and 200 aphids in each container. At the end of the experiment, the farmer recorded the number of aphids left in each set-up.

Set-up with	Number of aphids	
	Before	After
Ladybird X	200	194
Ladybird Y	200	107
Ladybird Z	200	48

- (a) Based on the results of his experiment, which type of ladybirds, X, Y or Z, should he use to get rid of the aphids most effectively?
Give a reason for your answer. [1]

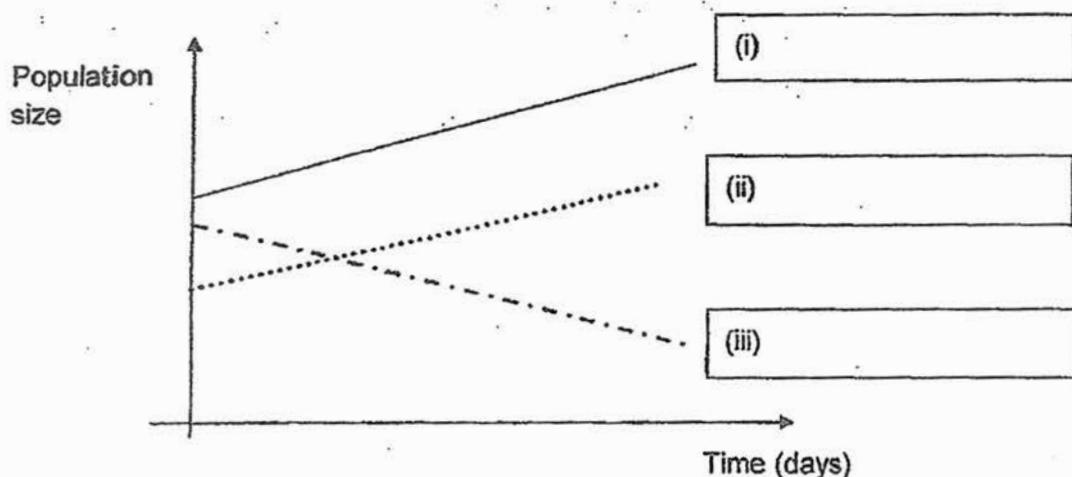
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Score	
	1

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- 32 (b) The graph below shows the change in population size of the plants, aphids and ladybirds after the introduction of the ladybirds into the farmer's plantation over a period of time. There were no other organisms in this habitat.

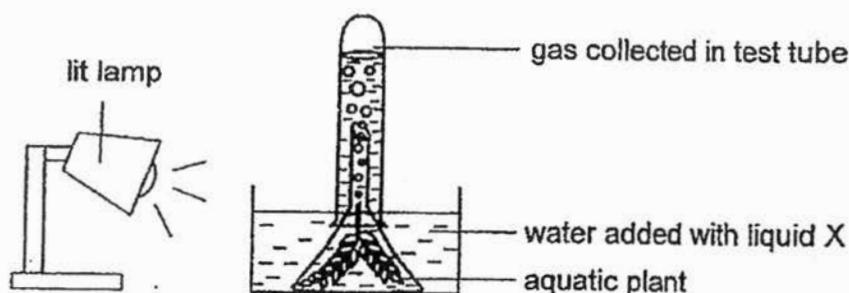
Label the lines correctly using the words, 'plants', 'aphid' and 'ladybird' to show the change in population size over time. [3]



Score	
-------	--

3

33. Dina prepared the following set-up and placed it in a dark room as shown below.



The water in the experiment was added with liquid X. Liquid X changes colour according to the concentration of carbon dioxide as shown in the table.

Amount of carbon dioxide in water	Less than normal	normal	Higher than normal
Colour of water with liquid X	purple	red	yellow

She observed the amount of gas collected in the test tube over three days and the change in the colour of water with liquid X and recorded her observations in the table below.

	Amount of gas collected in test tube (cm ³)	Colour of water with liquid X
Day 0	0	yellow
After 1 day	3	red
After 2 days	5	purple
After 3 days	6	purple

- (a) Name the gas collected in the test tube.

[1]

Continue on next page

Score	
	1

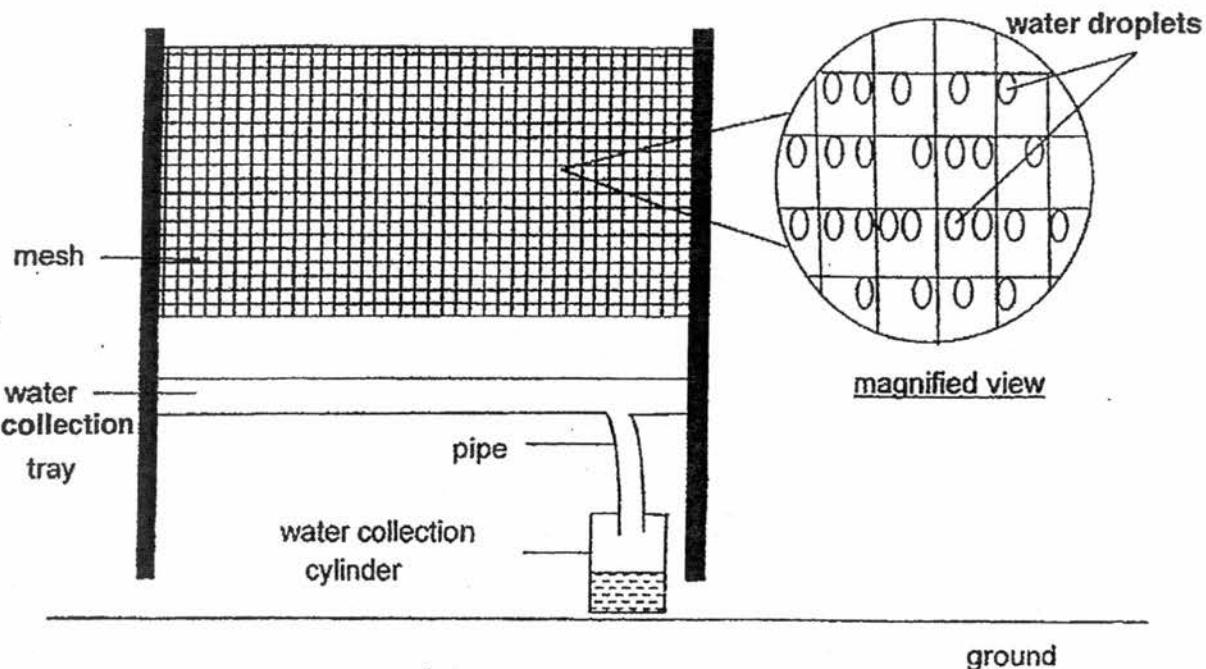
Continue from previous page

- (b) Explain her observations made over the three days. [2]

- (c) State the relationship between the amount of carbon dioxide present and the amount of gas produced by the plant. [1]

Score	
	3

34. The diagram below shows a water collecting device found in countries with little rainfall. The device was left in the open throughout the night. In the morning, tiny droplets of water were found on the mesh. There was no rain throughout the night.



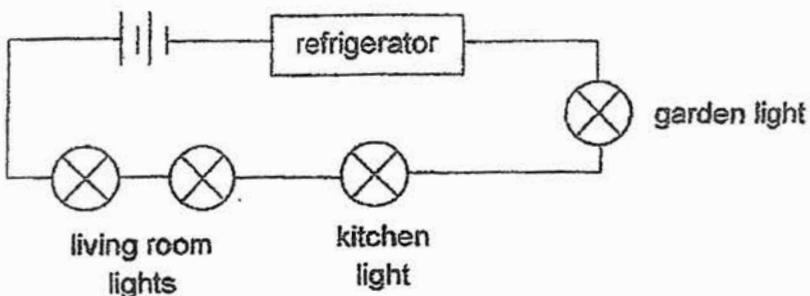
- (a) Explain how the water droplets were formed on the mesh. [2]

- (b) (i) In order to increase the amount of water collected, what can be done to the above set-up without changing the type of materials used in the device? [1]

- (ii) Give a reason for your answer in (b)(i). [1]

Score	
	4

35. The wiring in Lynn's house was arranged as shown below.



When the garden light was faulty and Lynn turned it on, she observed that the refrigerator and all the other lights would not work.

- (a) How should Lynn arrange the wiring in her house such that if one bulb is not working, the refrigerator and other bulbs would still work?

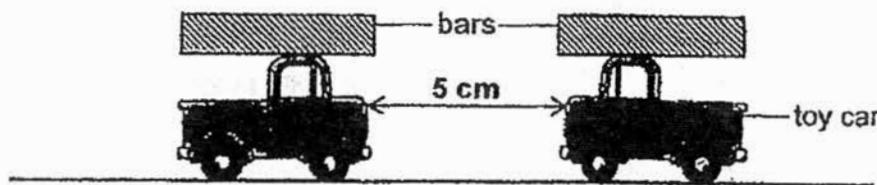
Draw the electrical circuit diagram in the box below.

[2]

A large, empty rectangular box intended for the student to draw the corrected electrical circuit diagram.

Score	
2	

36. Jenny attached two bars on top of each toy car. She placed the toy cars 5 cm apart from each other as shown in the diagram below.



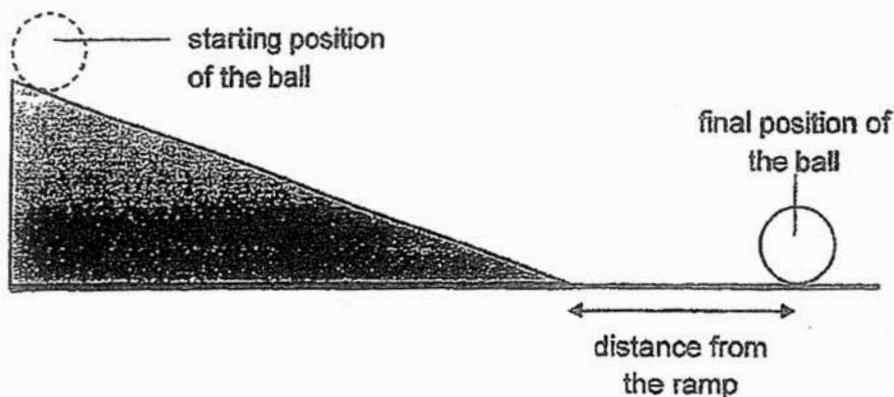
She noticed that the toy cars moved away from each other and ended up 10 cm apart from each other.

- (a) Based on the above observations, what could she conclude about the two bars placed on top of the toy cars? Give a reason for your answer. [2]

- (b) Without changing any objects used in the experiment, suggest what Jenny could do such that the toy cars could move from their original positions and ended up more than 10 cm apart from each other. [1]

Score	
3	

37. Tom released a ball from the top of a ramp. He noticed that the ball rolled down the ramp, across the floor and stopped some distance from the ramp as shown in the diagram below.



Tom measured the distance of the ball from the ramp and repeated the experiment but changed the surface of the ramp using different materials.

Material of the surface of the ramp	Distance from the ramp where the ball came to a stop (cm)
A	20
B	15

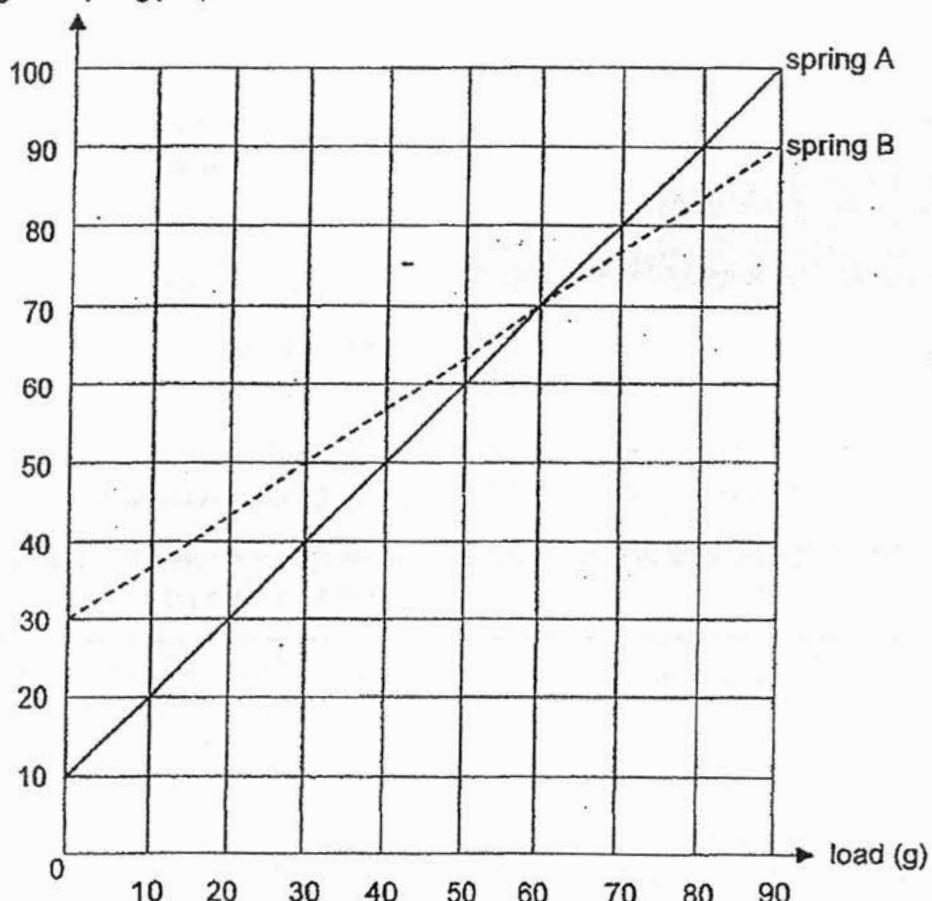
- (a) Explain the difference in the distance travelled by the ball on the ramp made of different materials. [1]

- (b) What can Tom do so that the ball moving on ramp with surface B could travel a longer distance without replacing any items from the set-up.
Give a reason for your answer. [2]

Score	
	3

38. Siti conducted an experiment on springs A and B. She hung various loads one at a time and recorded the length of the spring. Her results are shown in the graph below.

length of spring(cm)



- (a) Name the force(s) that acted on the loads in this experiment. [1]

- (b) Which spring, A or B, is more elastic? Give a reason for your answer. [1]

Continue on next page

Score	
2	

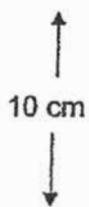
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- (c) After Ali hung 100 g of load on spring A, he removed all the loads and observed that spring A was 20 cm long.

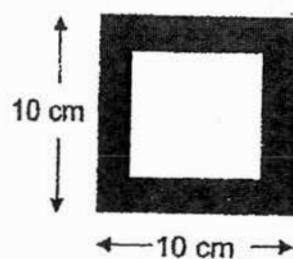
Give a reason for his observation. [1]

Score	
	1

39. Mabel used the three wooden objects, A, B and C, below in her experiment.

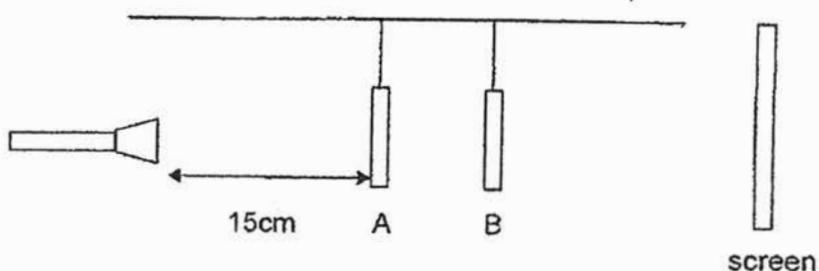


A

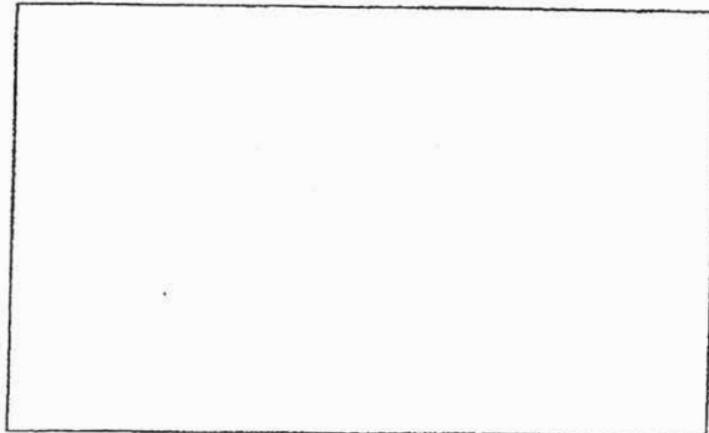


B

²
She hung the 3 wooden objects at different distances from the lighted torch as shown below.



- (a) In the box below draw the shadow of the objects Mabel would observe on the screen. [2]



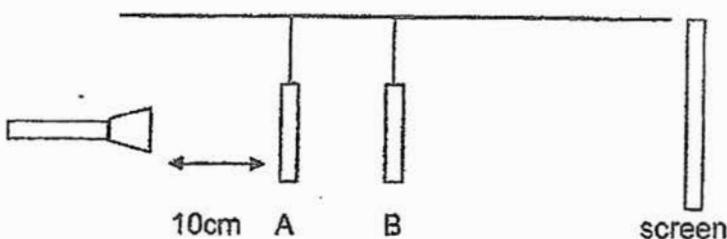
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Score	
	2

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- (b) Explain how you arrive at your answer in (a). [2]

- (c) Mabel moved the torch nearer to objects A and B.

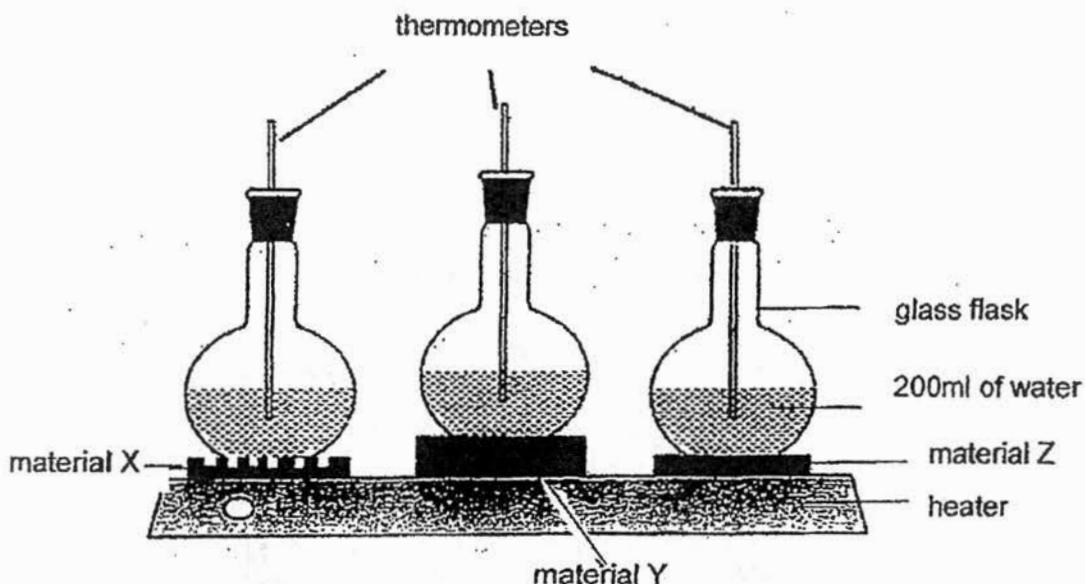


What change would she observe in the shadows formed on the screen?

[1]

Score	
3	

40. Sam heated three identical glass flasks containing 200 ml of water on materials X, Y, Z.
He placed the three materials, X, Y and Z on the heater and positioned the three glass flasks containing 200 ml of water on each of the materials as shown below.



- (a) List two variables Sam must keep the same, in order to conduct a fair test.
[2]

- (b) After making the changes to ensure his experiment was a fair test, Sam recorded the time taken for the water to boil as shown below

Material	Time taken for the water to start boiling (min)
X	4
Y	15
Z	8

Based on Sam's results, which material, X, Y or Z would you use to make an ice box? Give a reason for your answer.
[1]

Score	
	3

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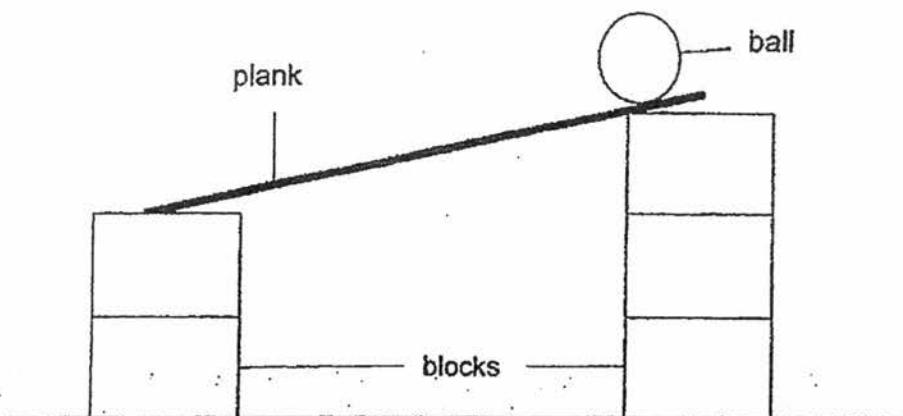
- (b) Explain your answer in (a). [1]

- (c) Describe what Johnson has to do to ensure that the data collected is reliable? [1]

- END OF PAPER -

Score	
	2

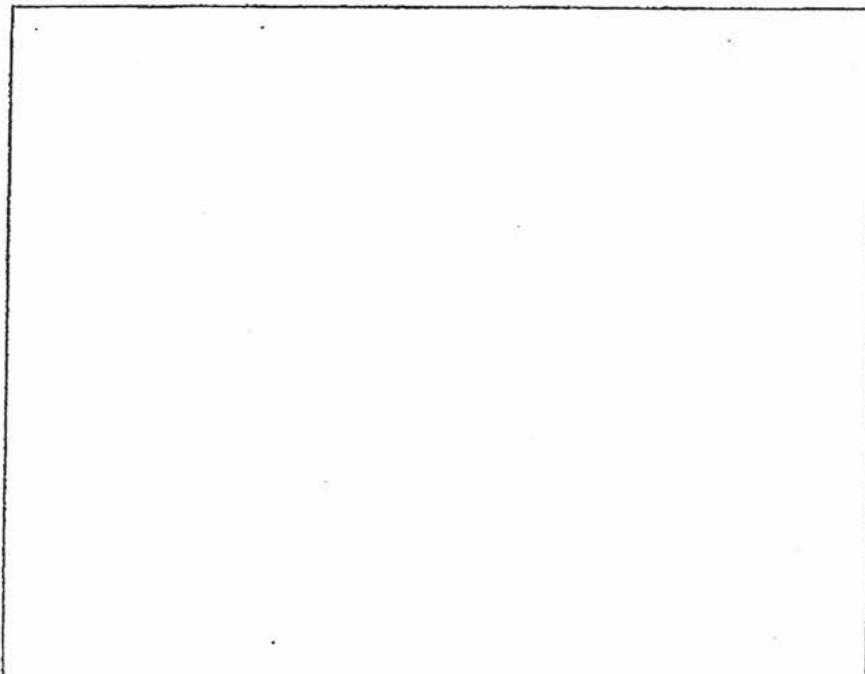
41. Johnson set up the ramp below using five identical blocks.



Johnson released the ball down the ramp. The time taken for the ball to roll down the ramp is approximately four seconds.

- (a) Johnson wanted to rearrange the five blocks such that the ball will roll down the ramp in less than four seconds.

Draw the new set-up using all the objects provided in the box below. [1]



Continue on next page

Score	
1	

YEAR : 2017 
 LEVEL : PRIMARY 6
 SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL
 SUBJECT : SCIENCE
 TERM : SEMESTRAL ASSESSMENT (1)

SECTION A

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

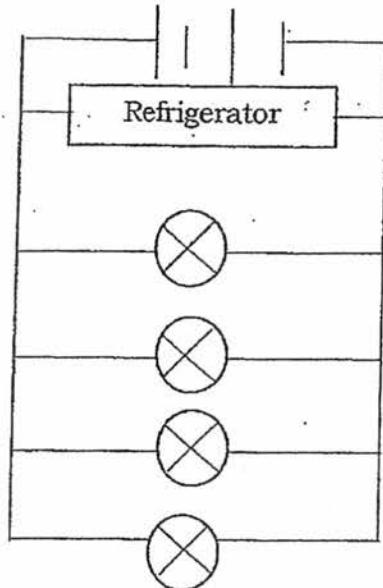
SECTION B

- Q29. a) (i) By water
 (ii) By splitting / explosive action
 (iii) By animal / wind
- b) The plants P were found growing along / near / beside the river.
- c) . Fibrous husk
 . Water proof outer-covering
- Q30. a) (i) Water carrying tube / xylem
 (ii) Food carrying tube / phloem
- b) (i) Water
 (ii) Food
- c) The blood flowing at A is richer in carbon dioxide and poorer in oxygen than the blood in B.
- Q31. a) (i) A (arrows pointing outward only).
 (ii) D (arrows pointing towards only).
- b) (i) Population A would decrease as more B would feed on A.
 (ii) Population D would increase as D would have more food, B , to feed on.
- Q32. a) Z, the number of aphids left in the setup was the least / there was a greatest decrease in the number of aphids. (use superlative)
- b) (i) Plants (ii) ladybirds (iii) Aphids

- Q33. a) Oxygen
 b) The aquatic plant used carbon dioxide to carry out photosynthesis and produce oxygen.
 c) The smaller the amount of carbon dioxide, the smaller the amount of oxygen produced by the plant.

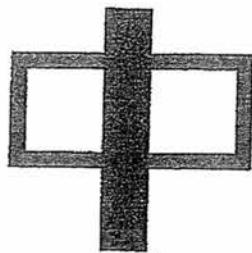
- Q34. a) The water vapour in the air lost heat and condensed on the cooler surface of the mesh to form tiny water droplets.
 b) (i) A larger amount of mesh can be used.
 (ii) The greater the surface area of the mesh, the greater the amount of water vapour that come in contact and lost heat to and condense on the mesh.

Q35.



- Q36. a) The two bars are magnets. The like poles of magnet were facing other such that the Magnets repelled.
 b) Apply lubricant such as water on the ground.
- Q37. a) The ball travelled a longer distance on A as there is less friction between the surface A and the ball.
 b) Put oil, powder, water on the ramp. This will reduce the friction between the ball and Surface B.
- Q38. a) Gravity, elastic spring force.
 b) A. For the same amount increase in load, spring A increase more in length than B.
 c) Spring has been overstretched, reached its elastic limit.

Q39. a)

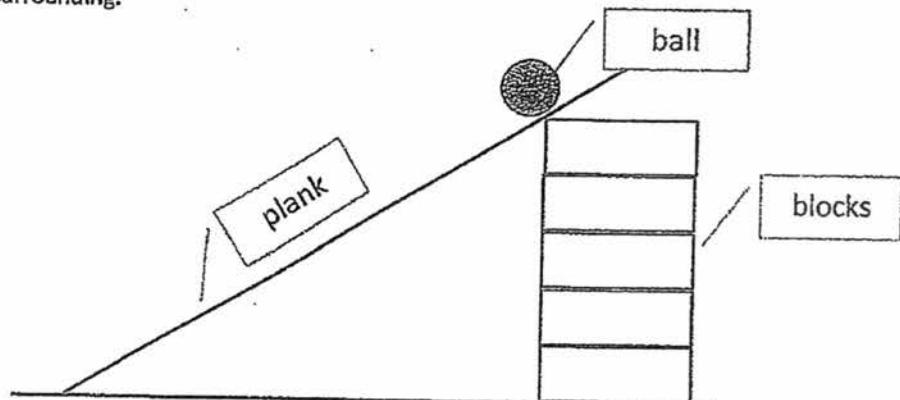


- b) A is nearer to the torch, hence the shadows is bigger.
- c) The shadows formed will be bigger.

Q40. a) (i) The thickness of material.
(ii) Initial temperature of water.

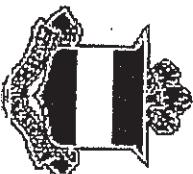
- b) Y. It is the poorest conductor of heat. It will take the longest time to conduct heat from surrounding.

Q41.



- b) The higher the ball is placed, the more GPE it has, hence more GPE is converted to more KE , resulting the ball roll down faster.
- c) Repeat the experiments 2 times and find the average time taken.

**RAFFLES GIRLS' PRIMARY SCHOOL
SEMESTRAL ASSESSMENT (1)
2010**



Name : _____

Index No: _____ Class: P 6 _____

7 May 2010

SCIENCE

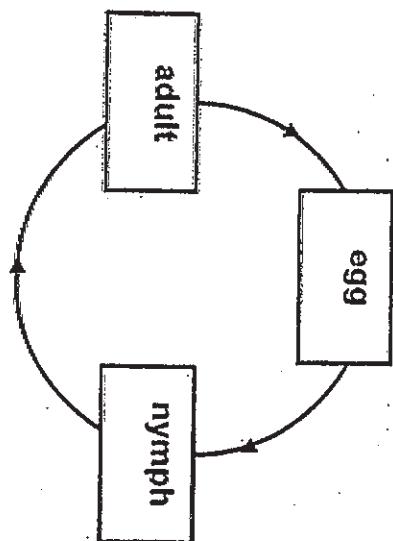
Att: 1 h 45 min

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).

1. The diagram below shows the life cycle of an animal.



Which of the following animals go(es) through the life cycle as shown above?

- A frog
 - B butterfly
 - C mosquito
 - D grasshopper
- (1) D only
 - (2) B and C only
 - (3) C and D only
 - (4) A, B and C only

Your score out of 100 marks		Class	Level
Highest score			
Average score			
Parent's signature			

2.

Sam described his father, mother and his physical characteristics below.

father

- has dimples
- has no widow's peak
- has short nails
- has short hair
- has detached earlobes

mother

- has dimples
- has widow's peak
- has long nails
- has long hair
- has attached earlobes

Sam

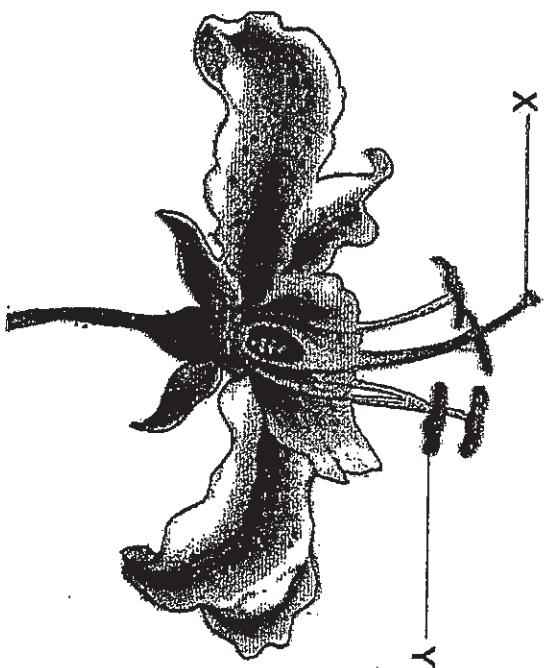
- has no dimples
- has widow's peak
- has long nails
- has short hair
- has detached earlobes

Which of the following traits did Sam inherit from his parents?

- (1) dimples and long nails
- (2) widow's peak and detached earlobes
- (3) widow's peak, short hair, detached earlobes
- (4) widow's peak, long nails, short hair and detached earlobes

3.

Parts X and Y of a flower are shown in the diagram below.



Based on the diagram above, which one of the following pairs of statements about X and Y is true during the process of pollination?

X	Y
(1) male part of the flower where pollen grains are transferred to	female part of the flower where pollen grains are
(2) male part of the flower where pollen grains are	female part of the flower where pollen grains are transferred to
(3) female part of the flower where pollen grains are transferred to	male part of the flower where pollen grains are
(4) female part of the flower where pollen grains are	male part of the flower where pollen grains are transferred to

4. Sally carried out the following steps to find out how plants grow under certain conditions.

Step 1 : She filled five flower pots made of the same material but of different sizes with the same amount of garden soil.

Step 2 : She planted the same number of the same type of seeds in each pot.

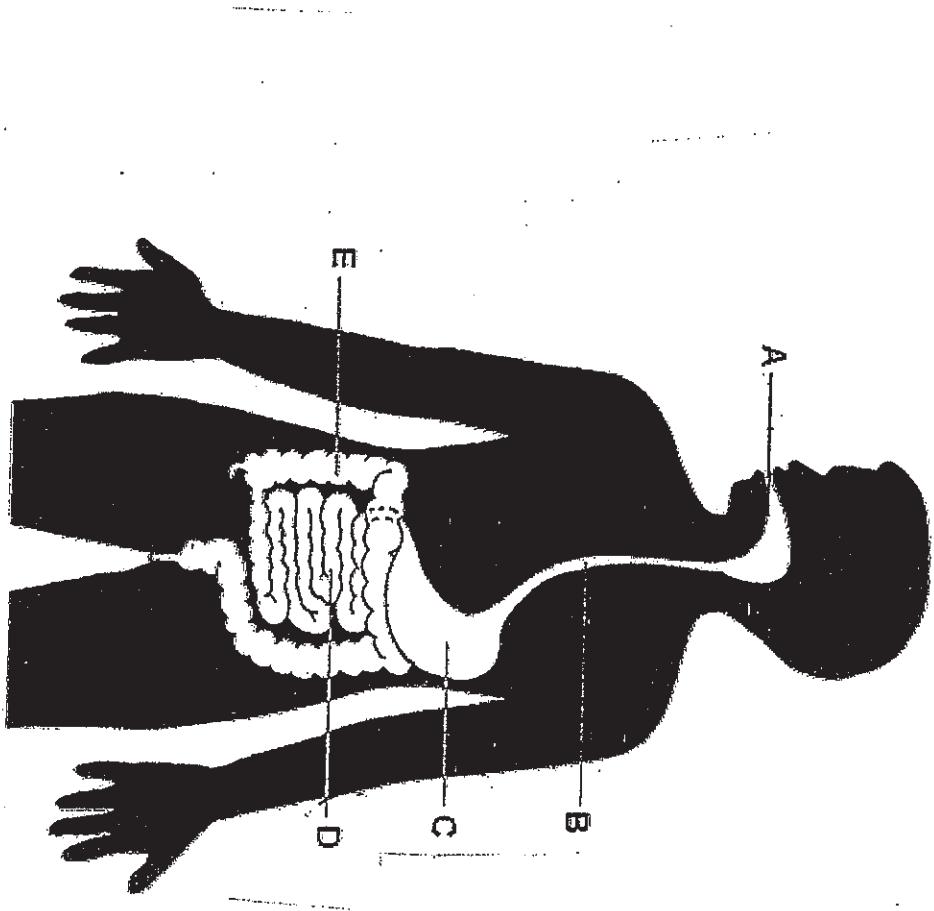
Step 3 : She placed the pots side by side in the garden.

Step 4 : She watered each of the pots with the same amount of water daily.

Which one of the following could possibly be the aim of Sally's experiment?

- Sunlight is necessary for photosynthesis.
- Overcrowding affects healthy plant growth.
- Water is necessary for healthy plant growth.
- Garden soil is necessary for healthy plant growth.

5. The diagram below shows the human digestive system.



At which parts of the digestive system are digestive juices produced?

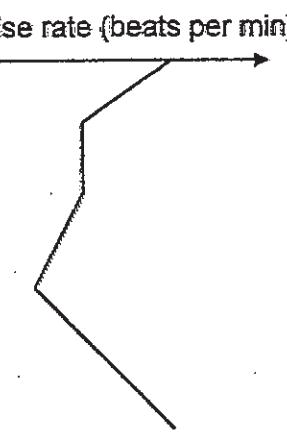
- (1) A, B, C
- (2) A, C, D
- (3) B, D, E
- (4) C, D, E

6. On a morning run, Henry ran up a hill, rested for 15 minutes at the top of the hill and ran down again.

He ran at a constant speed. The duration of his run lasted for 40 minutes.

Which one of the following graphs could possibly represent Henry's pulse rate during the 40 minutes?

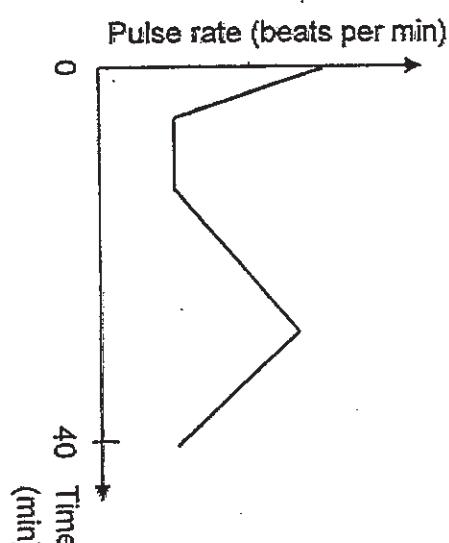
(1)



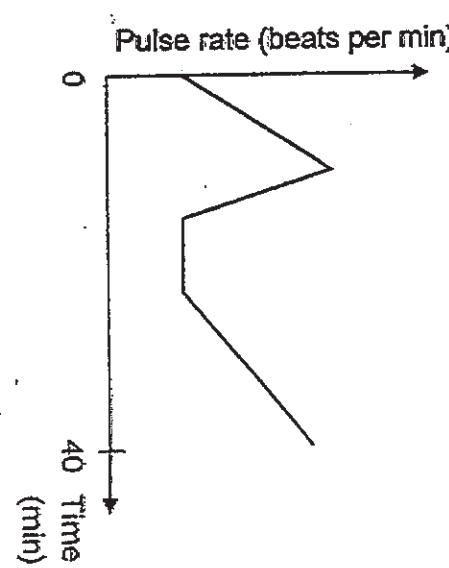
(2)



(3)

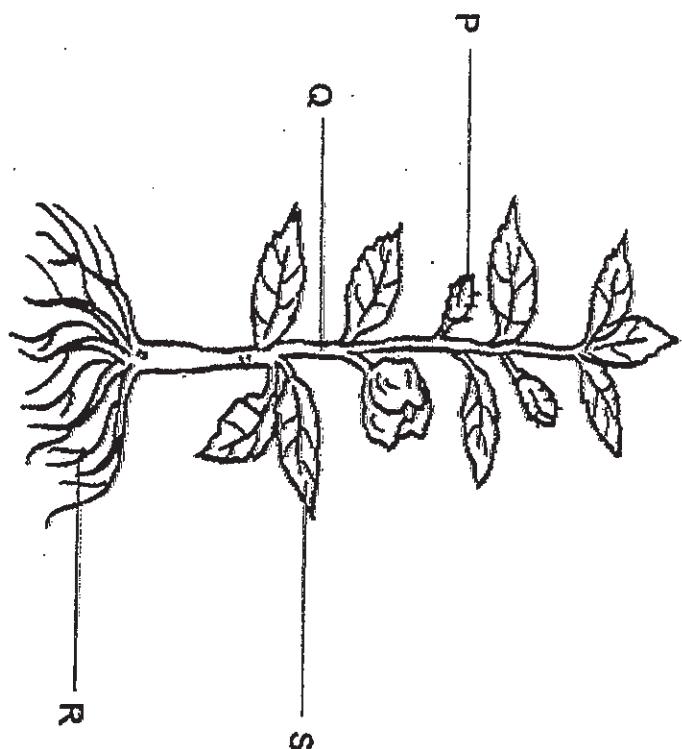


(4)



7.

The diagram below shows parts of a plant.

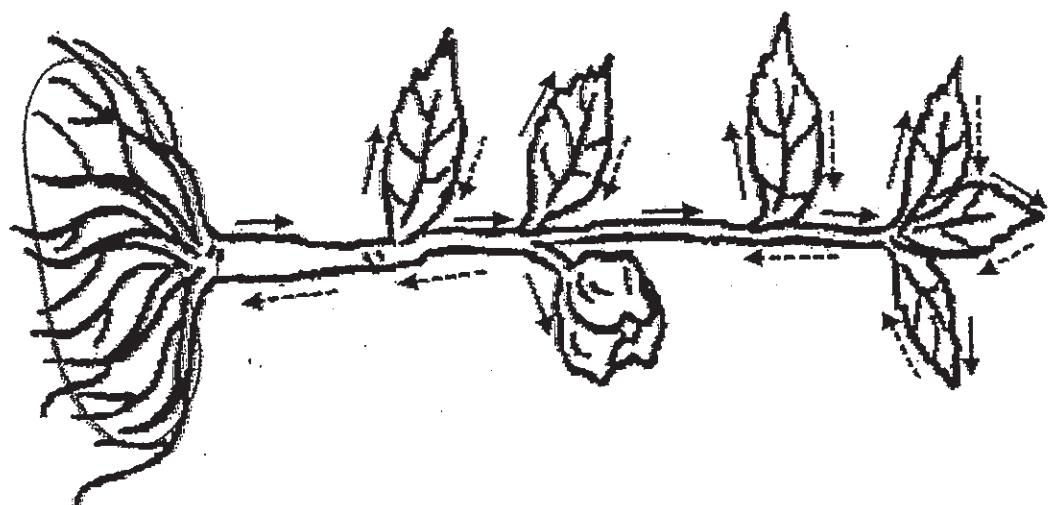


Which one of the following gives the correct functions of the parts P, Q, R and S in the diagram above?

P	Q	R root	S
(1) attracts animals to help in seed dispersal	transports food, water and mineral salts	holds plant firmly to the ground	takes in water and mineral salts
(2) contains water and mineral salts	holds plant firmly to the ground	takes in water and mineral salts	contains small openings for the exchange of gases
(3) takes in water and mineral salts	makes food	holds plant firmly to the ground	attracts animals to help in seed dispersal
(4) contains seeds for reproduction	supports leaves	takes in water and mineral salts	allows gaseous exchange during photosynthesis

8.

The diagram below shows the flow of substances, X and Y, within a plant.

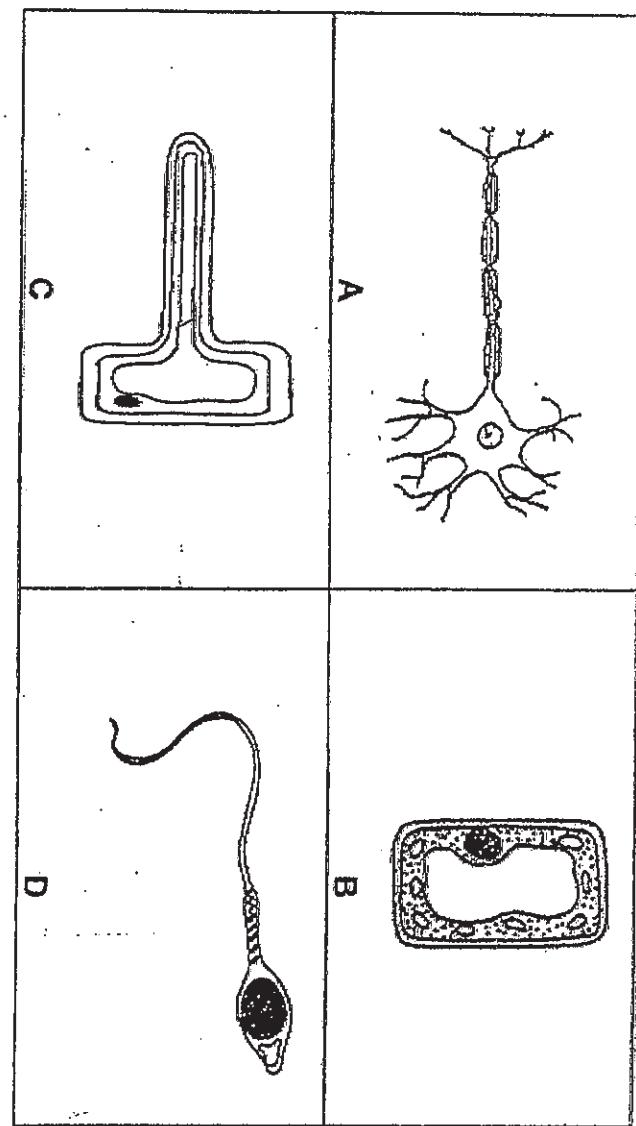


Which one of the following pairs describes arrows correctly?

(1) shows the movement of food and mineral salts	shows the movement of air
(2) shows the movement of food	shows the movement of water and mineral salts
(3) shows the movement of air	shows the movement of food and mineral salts
(4) shows the movement of water and mineral salts	shows the movement of food

9.

The diagrams below show four different types of cells.

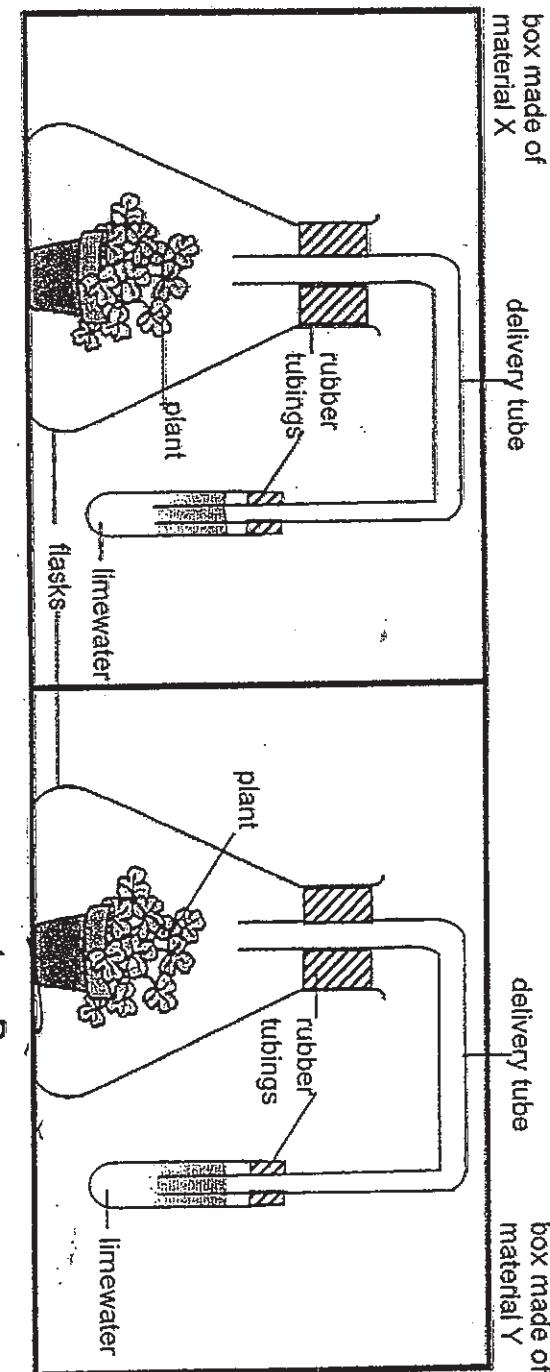


Based on the diagrams above, which one of the following is a correct classification of these cells?

animal cell(s)	plant cell(s)
A and D	B and C
B and C	A and D
C and D	A and B
A, B and C	D

10. Tom's teacher told him that limewater turned chalky in the presence of carbon dioxide.

Tom used two similar plants in different set-ups, A and B, as shown below, to find out what would happen to the limewater.



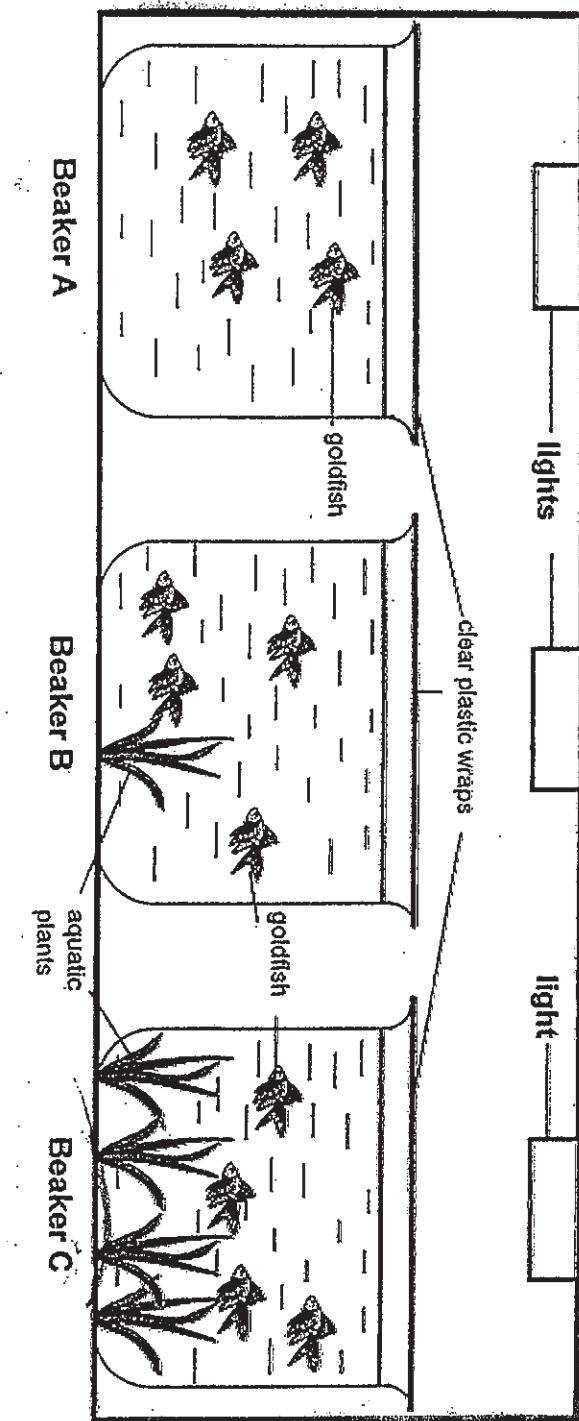
Tom placed both set-ups near an open window. After a day, he observed that the limewater in set-up A remained colourless, while the limewater in set-up B had turned chalky.

What could possibly be the materials of X and Y?

set-up A	set-up B
wood	cardboard
cardboard	frosted glass
wood	clear glass
clear glass	wood

11. Sandy set up an experiment using the apparatus and similar type of goldfish and aquatic plants.

She sealed each set-up with a clear plastic wrap and placed them in a room under lights as shown in the diagrams below.

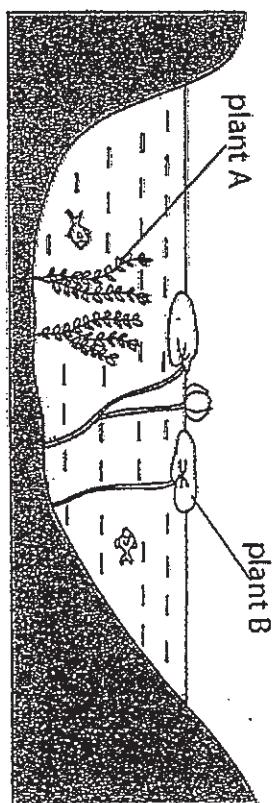


Sandy recorded her observations of each beaker as follows:

- | | |
|----------|-----------------------------|
| Beaker A | All the fish died on day 1. |
| Beaker B | All the fish died on day 2. |
| Beaker C | All the fish died on day 3. |

Which of the following could be the likely reason(s) to explain why the fish in Beaker C died on day 3?

12. The diagram below shows the types of plants, A and B, found in a pond.



A group of pupils found that as the number of plant B in the pond increased, the number of plant A growing at the bottom of the pond decreased.

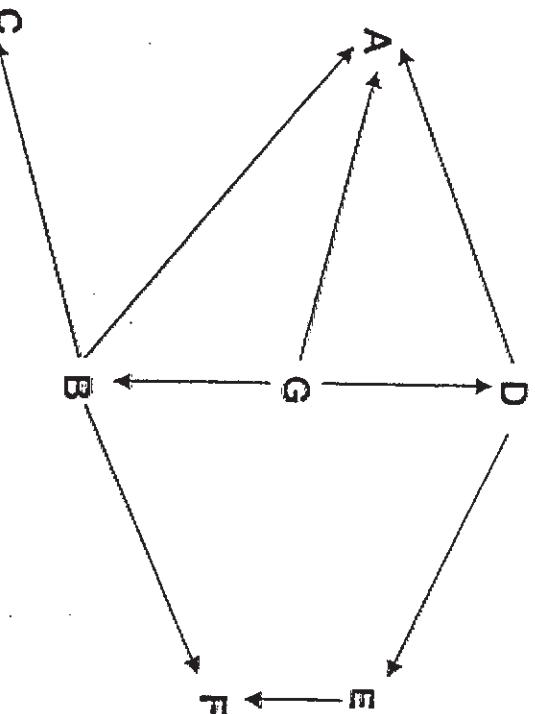
Based on the information above, each of these pupils gave his/ her explanation.

- Joshua : Dissolved oxygen cannot reach plant A.
Jenny : Less light reaches the deeper parts of the pond.
Mei Yin : Less nutrients are found in the deeper parts of the pond.
Mustafa : Plant A competes for space in the deeper parts of the pond.

Which one of these pupils gave the most likely explanation(s)?

- (1) Jenny only
(2) Joshua only
(3) Mei Yin and Mustafa only
(4) Joshua, Mei Yin and Mustafa only

13. The following food web shows the food relationships among some organisms: A, B, C, D, E, F and G.



Which one of the following describes the roles of these organisms correctly?

a food producer	a predator	a prey only	both a predator and prey
(1) A	C	D	B
(2) B	A	C	D
(3) G	C	E	F
(4) G	C, F	B, D	E

14. Which of the following statements is/ are true about decomposers?

- A They cause decay.
- B They feed on dead matter.
- C They are all microscopic organisms.

15. Fish have structural adaptations which help them to move in water.

Which of the following are structural adaptations which help the fish to move in water?

- A Their tail fins enable them to propel forward in water.
 - B They move close to the water surface to take in oxygen.
 - C Their gills help them to take in dissolved oxygen in the water.
 - D They have streamlined bodies to overcome water resistance.
- (1) A and B only
 - (2) A and D only
 - (3) B, C and D only
 - (4) A, B, C and D

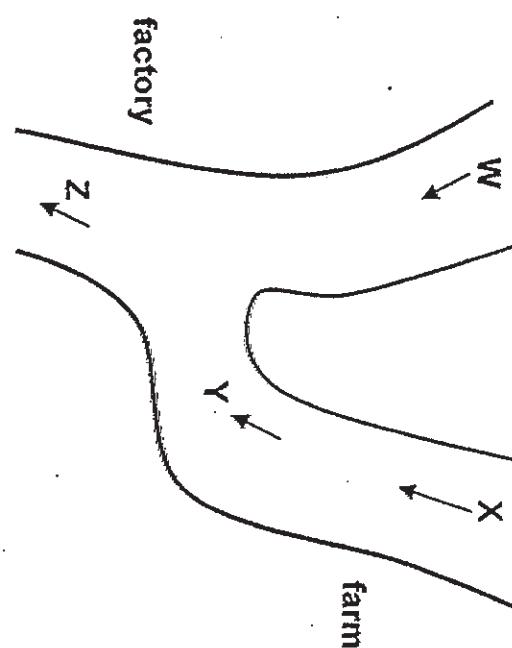
16. The table below provides some information on three different types of organisms, X, Y and Z.

organism	information
X	<ul style="list-style-type: none"> • feeds only at night • feeds on small animals
Y	<ul style="list-style-type: none"> • has a weak stem • insects help to pollinate its flowers
Z	<ul style="list-style-type: none"> • lives in the hot desert • walks on sandy ground

Which one of the following shows the correct adaptations of these organisms, X, Y and Z?

	X	Y	Z
(1)	<ul style="list-style-type: none"> • has a curved beak • has hollow bones 	<ul style="list-style-type: none"> • has needle-like leaves • has a swollen stem 	<ul style="list-style-type: none"> • has padded feet • sweats very little
(2)	<ul style="list-style-type: none"> • has good night vision • has hollow bones 	<ul style="list-style-type: none"> • has thorns on its stem • has sweet-smelling flowers 	<ul style="list-style-type: none"> • has sharp claws • drinks a lot of water
(3)	<ul style="list-style-type: none"> • has sharp claws • has good night vision 	<ul style="list-style-type: none"> • has brightly coloured flowers • has tendrils 	<ul style="list-style-type: none"> • drinks and urinates very little • has padded feet
(4)	<ul style="list-style-type: none"> • has a streamlined body • has sharp claws 	<ul style="list-style-type: none"> • has small dull-coloured flowers • has tendrils 	<ul style="list-style-type: none"> • sweats very little • has webbed feet

17. Ali obtained an equal amount of water sample from the different parts of the river, W, X, Y and Z, as shown in the diagram below.



All put an equal number of duckweeds into each water sample and recorded his observations in the table shown below.

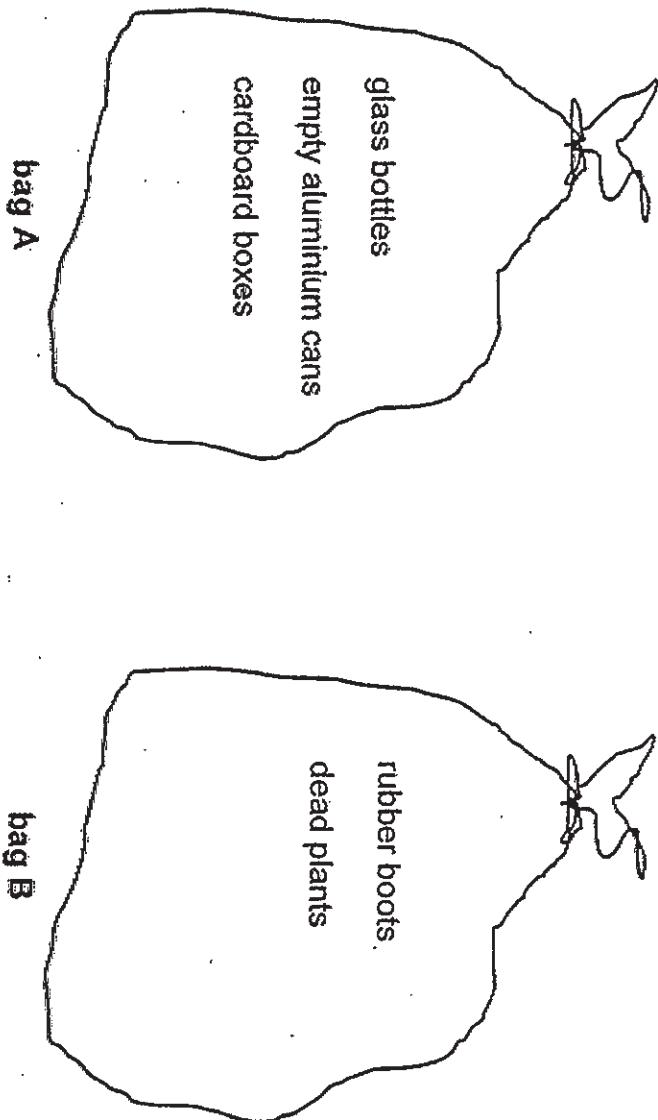
water sample taken from different parts of river	appearance of water	number of duckweeds at the beginning of the experiment	number of duckweeds after 6 days of experiment
W	clear	15	28
X	clear	15	25
Y	chalky	15	8
Z	muddy	15	0

What could Ali conclude from his observations?

18.

A group of pupils during a beach clean-up event found lots of rubbish along the beach.

Rubbish was sorted into two separate trash bags as shown below.



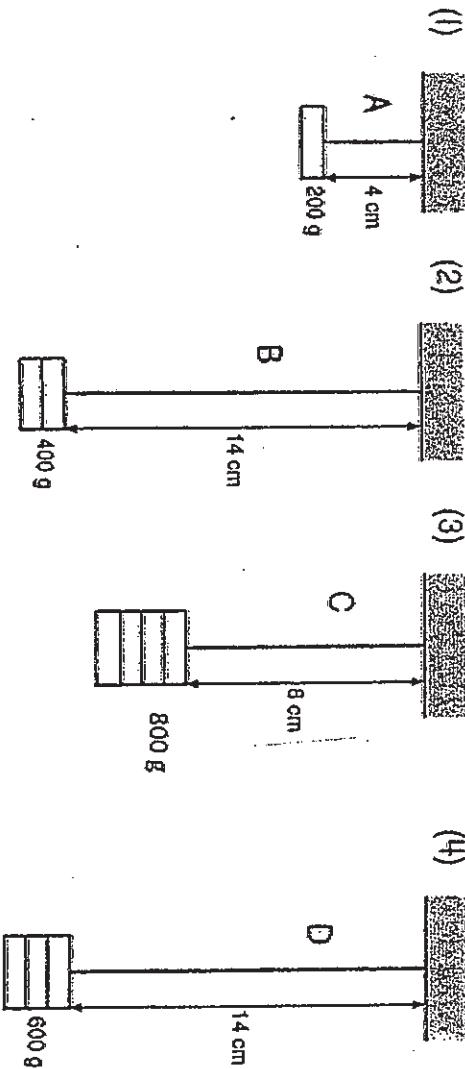
Which one of the following shows how these pupils sorted the rubbish?

bag A	bag B
items that could be recycled	items that could not be recycled
items that could decompose	items that could not decompose
items that were biodegradable	items that were non-biodegradable
items that could cause land pollution	items that could not cause land pollution

19.

David used four different types of strings of equal length and thickness for his experiment.

The diagrams below show David's observations of the effect of the different mass on each string.



The different mass attached on each string was the maximum weight that each string could bear before it snapped.

Which one of these strings is made of the strongest material?

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

20. Substance H melts at 15 °C and boils at 110 °C.

At which one of the following temperatures is substance H a solid?

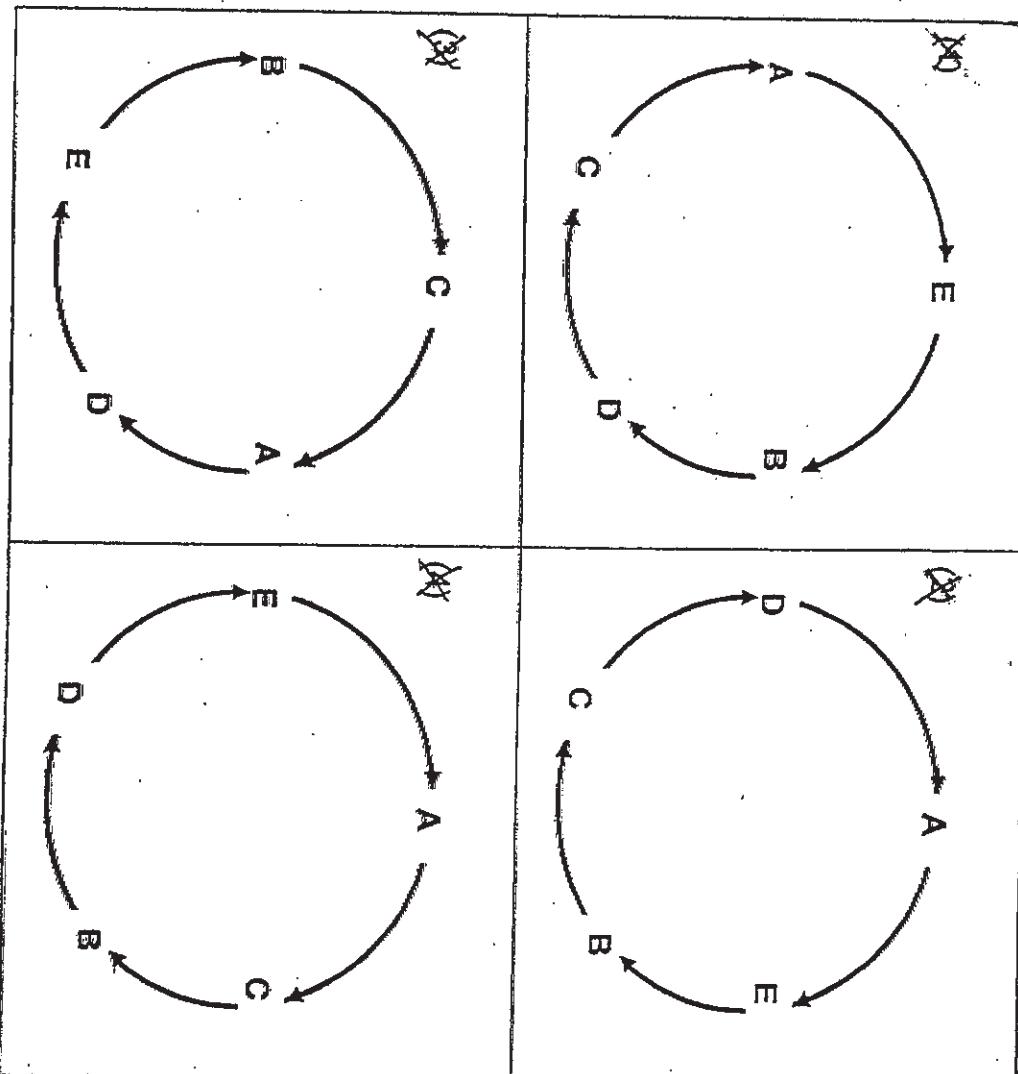
- ~~(1)~~ 10 °C
- ~~(2)~~ 40 °C
- ~~(3)~~ 65 °C
- ~~(4)~~ 125 °C

21.

The following statements show the different phases in the water cycle. However, they are NOT arranged in the correct sequence.

- A Water vapour rises and cools.
- B The clouds become heavier and heavier.
- C Rain falls to the earth.
- D Water evaporates from the seas, rivers and living things.
- E Water vapour condenses to form small droplets of water.

Which one of the following shows the correct sequence of the water cycle?



22. Diagram 1 and Diagram 2 below show a girl sitting near a tree at 2.00pm and noon respectively.

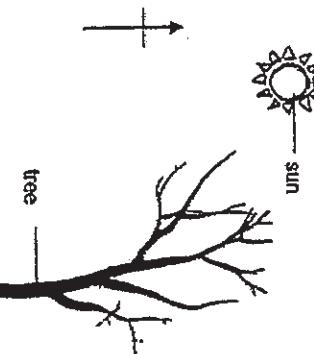


Diagram 1

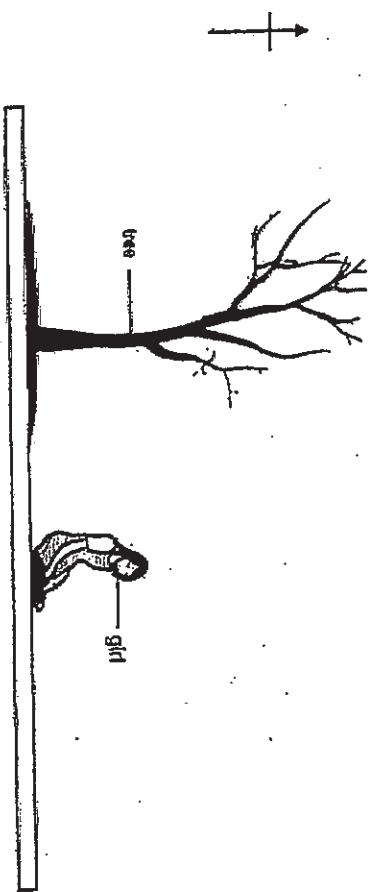
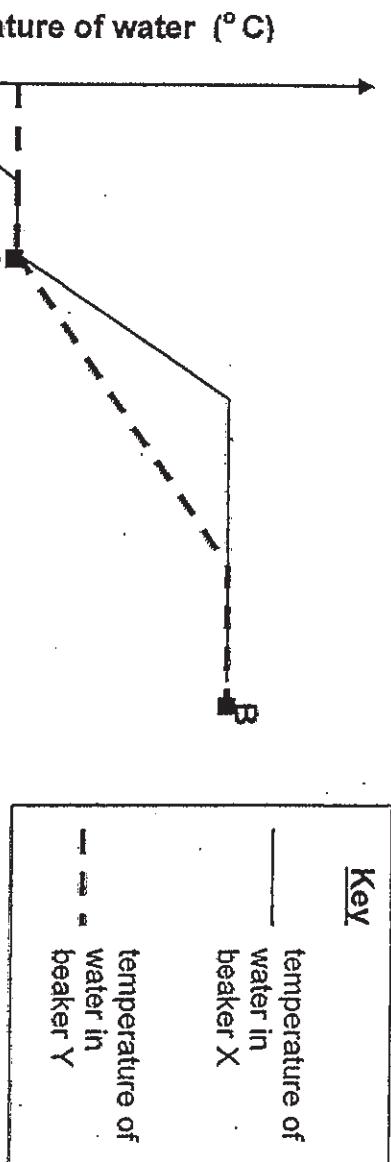


Diagram 2

Based on the diagrams above, which one of the following statements is NOT a correct inference about shadows?

- (1) Both the tree and the girl block the light rays and thus create shadows.
- (2) As the sun rises from morning to noon, the shadow of the tree gets shorter.
- (3) The length of the shadow of the tree is longer than the shadow of the girl at 2.00pm.
- (4) The shadow of the girl will not be formed as all the light rays from the sun is blocked by the tree.

23. The graph below shows how the temperature of water, in each of the two beakers, X and Y, changed over time as the water in both beakers was heated from Point A to Point B.

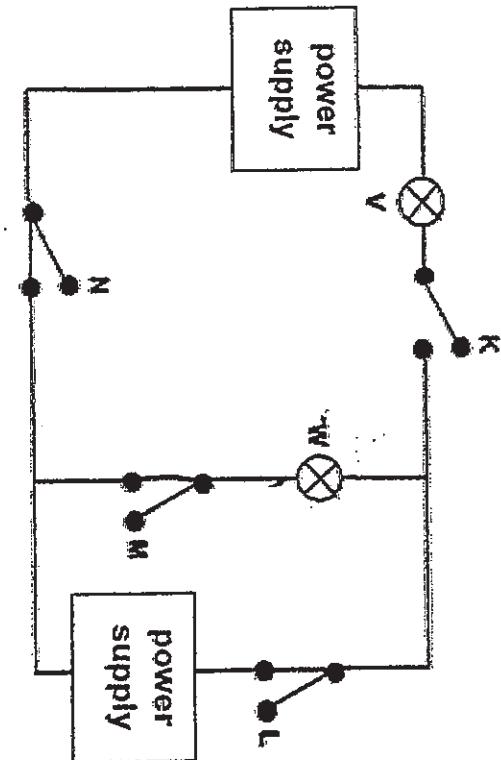


Based on the graph above, which one of the following statements interprets the graph correctly?

- A Both beakers of water were heated at the same time.
- B Beaker X was heated over a stronger flame than beaker Y.
- C Beaker Y was heated over a stronger flame than beaker X.
- D The temperature of water in beaker X took a longer time to reach its boiling point.
- E The temperature of water in beaker Y took a longer time to reach its boiling point.

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

24. The diagram below shows the various components of a circuit.



Which of the switches should be left open and which should be closed so that ONLY bulb W lights up?

switch K	switch L	switch M	switch N
(1) open	closed	open	open
(2) open	closed	closed	closed
(3) closed	open	closed	closed
(4) closed	open	open	open

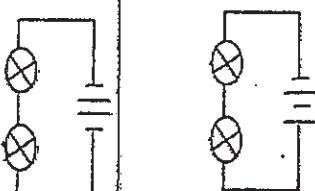
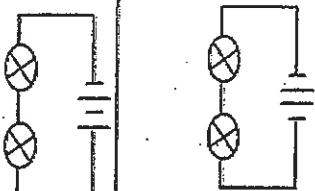
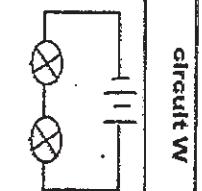
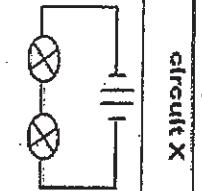
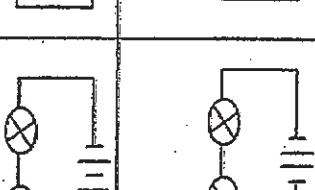
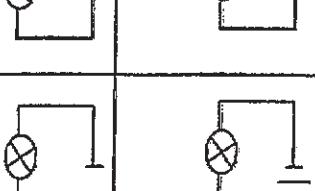
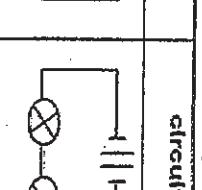
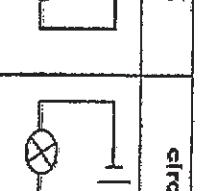
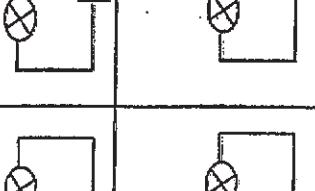
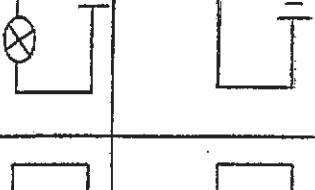
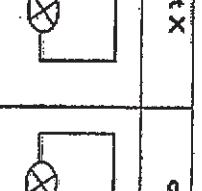
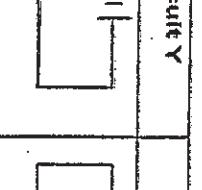
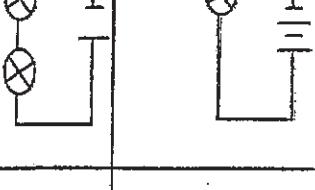
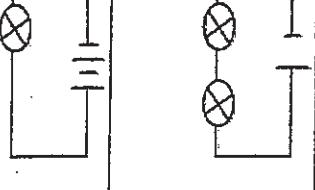
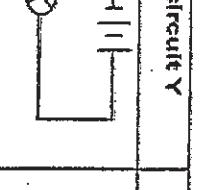
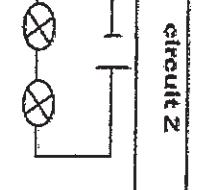
25.

Diana connected four different circuits, W, X, Y and Z, using a combination of identical bulbs and batteries. She recorded her observations of the bulb(s) each time she closed a different circuit.

Her results are shown in the table below.
A tick (✓) in the box below shows the observations made of the bulb(s).

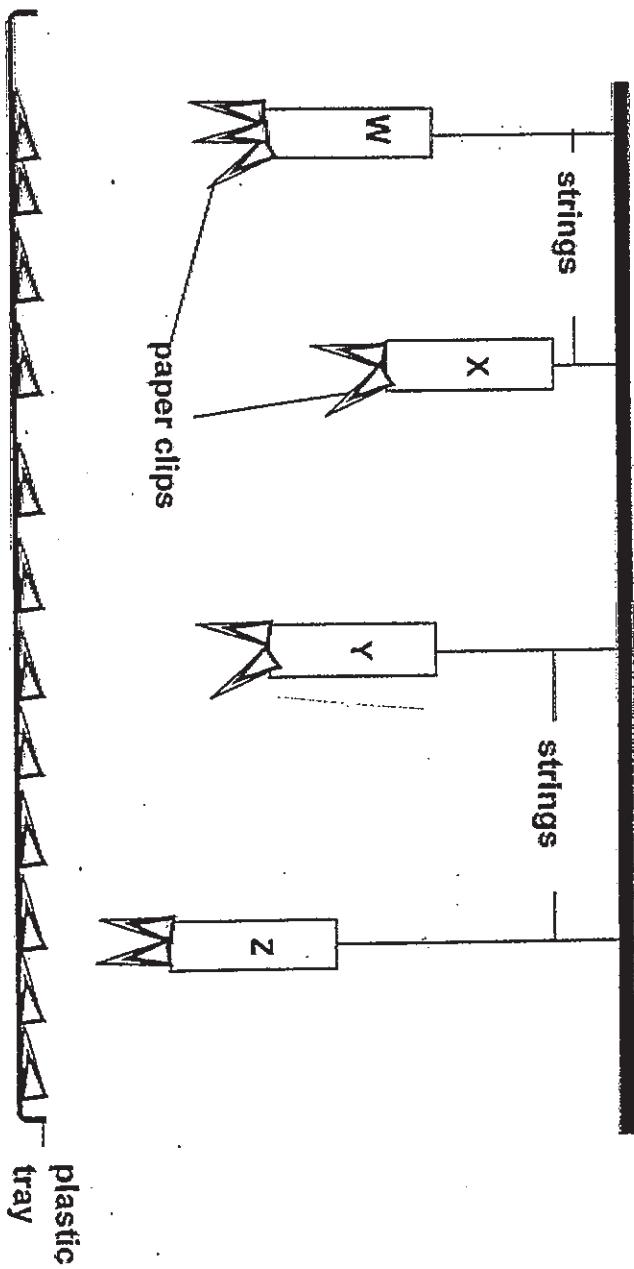
circuit	observations of the bulb(s)			
	not lighted	dim	bright	brightest
W	✓			
X				✓
Y				
Z		✓		✓

Which one set of the circuit diagrams below shows the correct connections of each of these circuits W, X, Y and Z?

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

26. Tom had four magnets of the same size, W, X, Y, Z, which were hung by strings of three different lengths.

A plastic tray filled with evenly spread out iron paper clips was placed directly below the magnets as shown below.

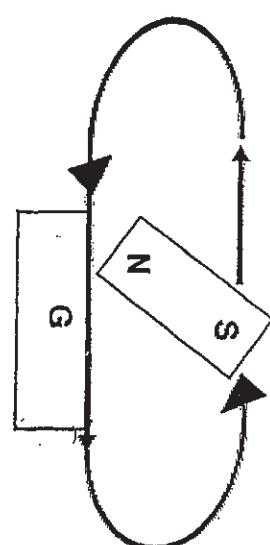


Tom observed that each magnet attracted a different number of paper clips.

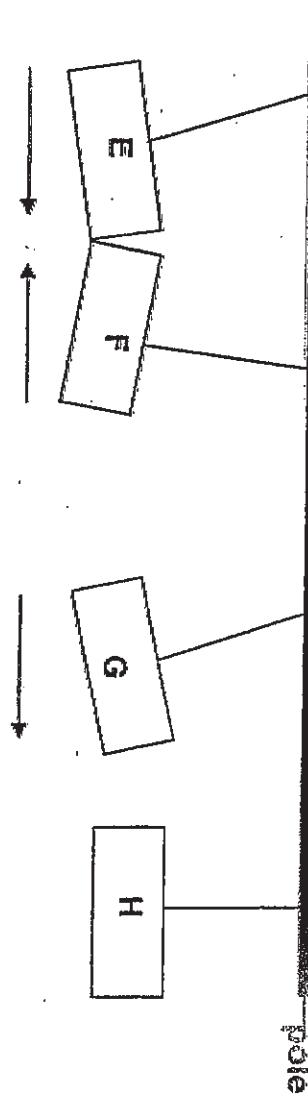
Which one of the following observations made by Tom is definitely true?

- (1) Magnet Y is the weakest.
- (2) Magnet X is as strong as magnet Y.
- (3) Magnet Y is stronger than magnet Z.
- (4) Magnet Z is stronger than magnet X.

27. An iron bar, G, became a temporary magnet after a permanent magnet had stroked it many times as shown in the diagram below.



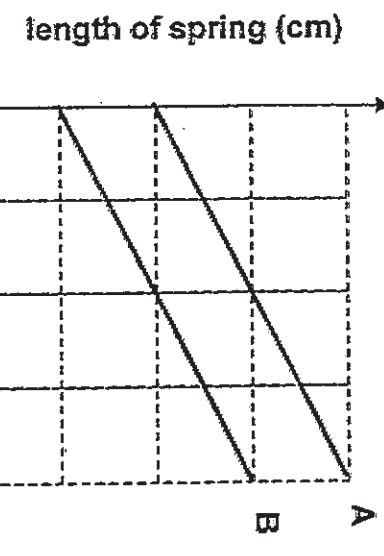
The iron bar, G, was left to hang from a pole with some other bars, E, F and H, as shown below.



The arrow below each specified bar shows the direction in which it moved.

Which of these statements about the bars are definitely true?

28. The graph below shows how the lengths of two springs, A and B, are affected by the mass hung on each of them.



Which of the following statements about the graph is/are true?

- A The original length of spring A is longer than the original length of spring B.
- B For the same amount of mass hung on the spring, spring A extends more than spring B.
- C Gravity acts only on the mass hung on the springs but not on the springs.

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

29. John threw a ball at the wall.

Which one of the following effects of force is illustrated when John threw the ball?

- (1) A force can stop a moving object.
- (2) A force can make a stationary object move.
- (3) A force can change the speed of a moving object.
- (4) A force can change the direction of a moving object.

30.

The diagram below shows the path of the ball travelled when it was kicked during a soccer game.

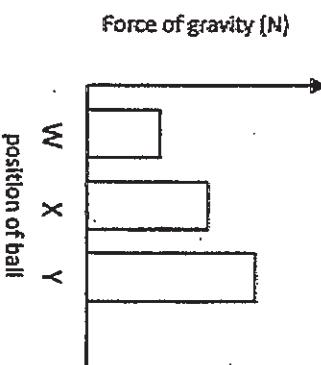
Points W, X and Y are the different positions along the path of the travelling ball.

X

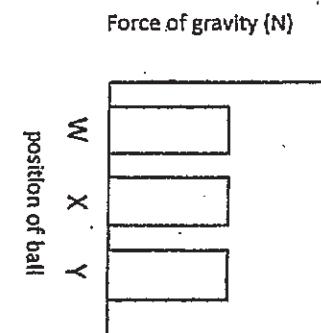


Which one of the following graphs shows the correct amount of force of gravity acting on the ball at points W, X and Y?

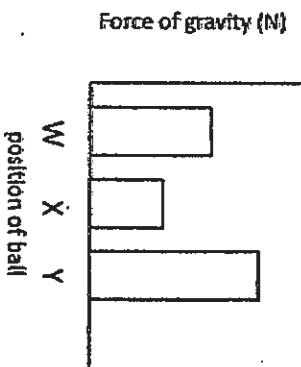
(1)



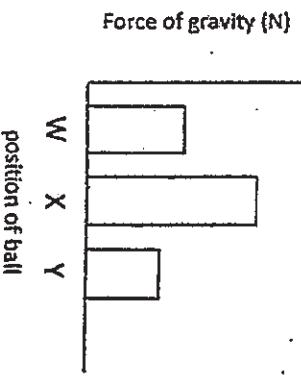
(2)



(3)



(4)



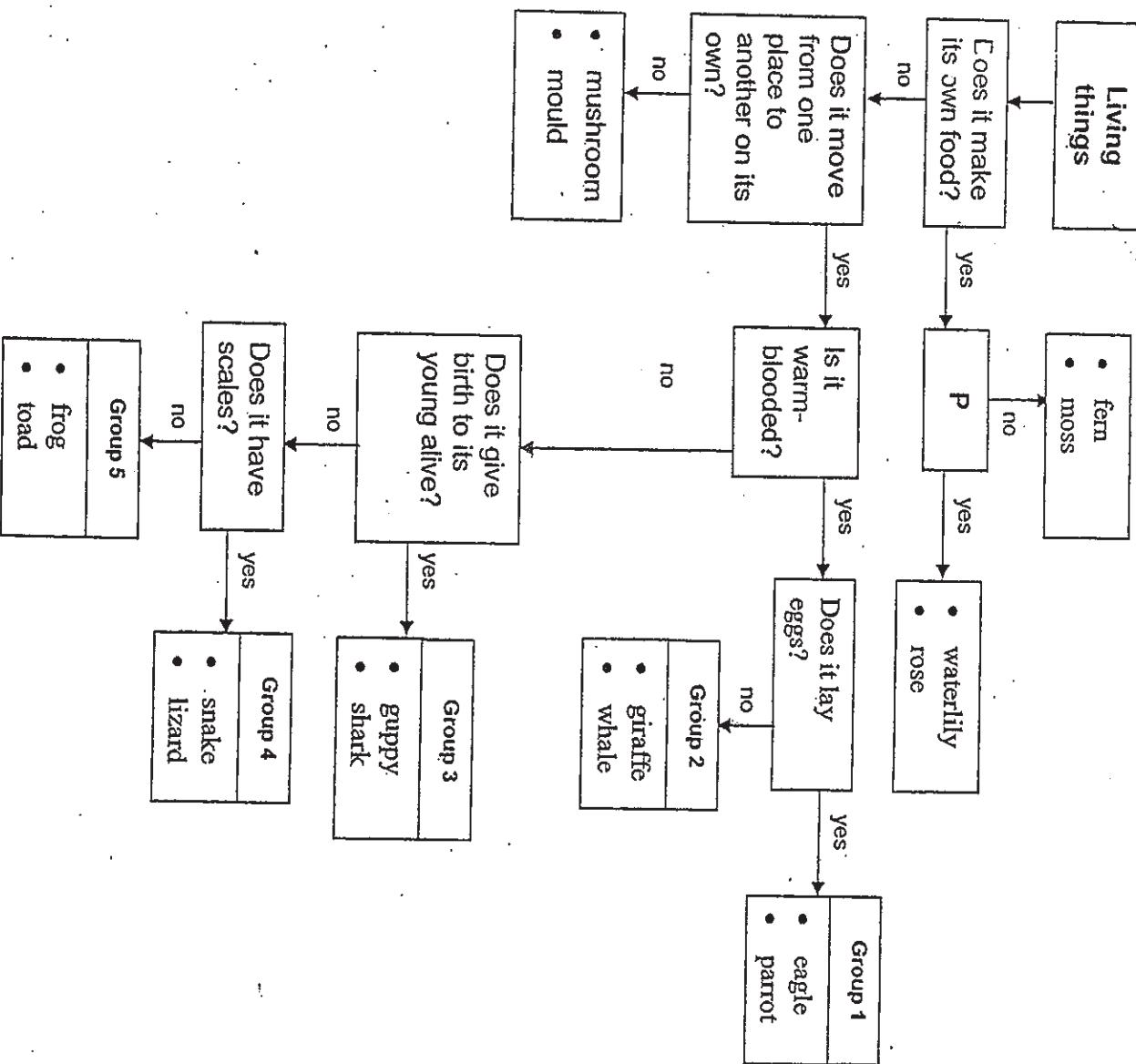
40

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. The classification chart below shows how some living things are being classified.



Based on the information on page 28, answer the questions below:

(a)

[1]

Question
P

(b) State a common characteristic between animals in group 1 and group 2. [1]

(c) The platypus is described as an animal with the following characteristics:

- is warm-blooded
- does not give birth to its young

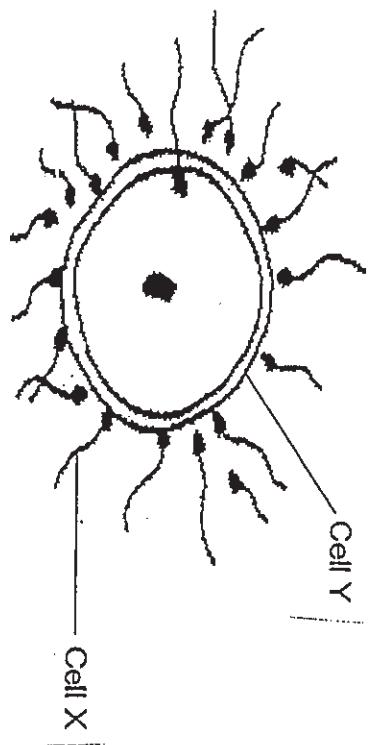
Which group does the 'platypus' belong to?
Write number 1, 2, 3, 4 or 5 only.

[1]

Group

32.

The diagram below shows two types of reproductive cells, Cell X and Cell Y.



(a)

State the process as seen in the diagram above.

[1]

(b) State the reproductive organs of human where Cell X and Cell Y are produced.

[1]

reproductive organs of human	
Cell X	
Cell Y	

33. In year 2000, Helen discovered and noted the locations where three species of plants, X, Y and Z, were found on an island as shown in Diagram A. Helen returned to the same island in 2002 and noted the locations of the three species of plants again as shown in Diagram B.

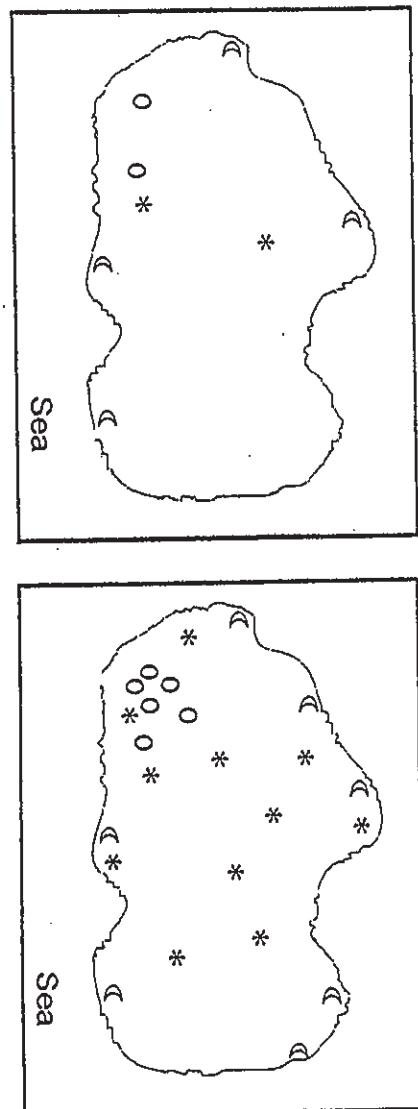
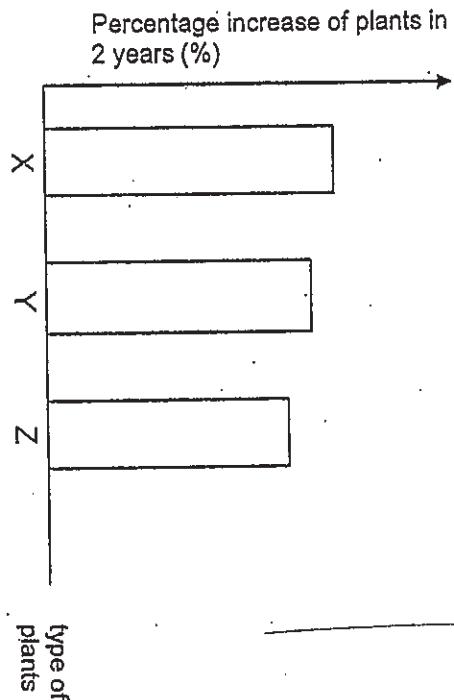
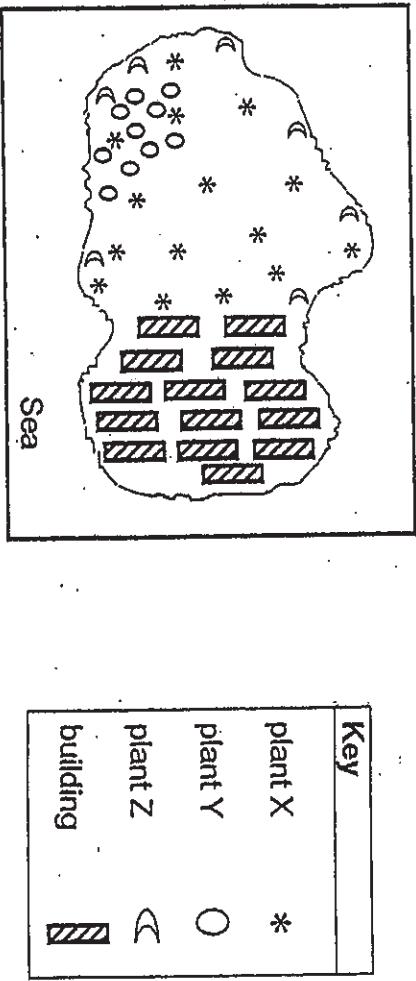


Diagram B

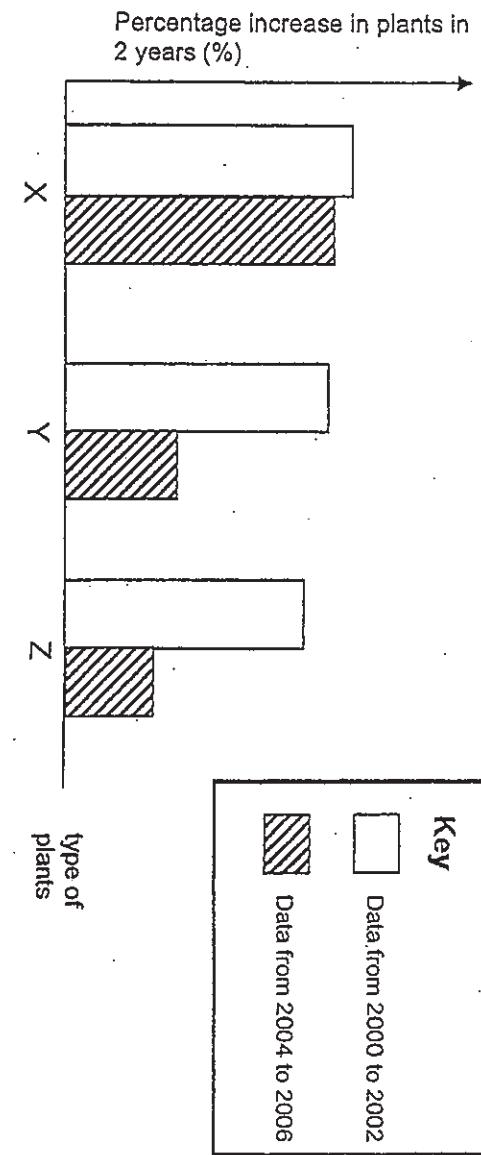
Helen calculated the percentage increase for each species of plants between 2000 to 2002 and recorded her findings in the graph below.



When Helen returned to the same island in 2004, tall buildings were built as shown below.



Helen observed that there were more plants and they were growing nearer to each other.
Helen calculated the percentage increase for each plant species from 2004 to 2006 and made a comparison with the old data on the graph as shown below.



- (a) State the method of dispersal of fruit/ seed for each of the following plants: [1]

X	
Y	
Z	

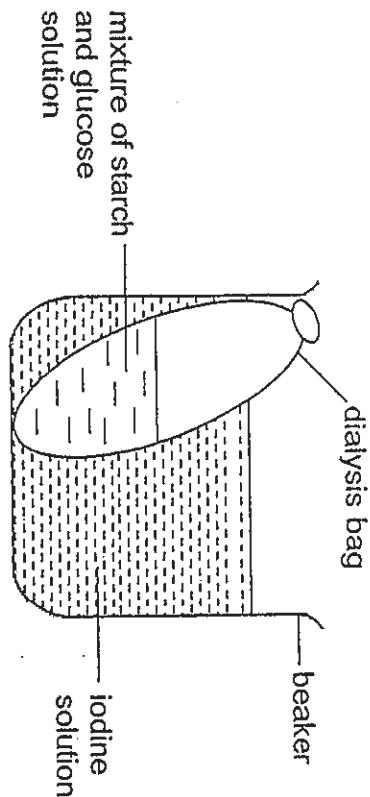
- (b) Helen observed that Plant X had been reproducing much better than Plants Y and Z over the years of her observations and that observation was even more significant after the buildings were built on the island.

Explain how the buildings on the island could have affected the rate of reproduction of Plants Y and Z on the island. [2]

34.

Tom set up the experiment below using the apparatus as shown below.

NOTE: A dialysis bag only allows some substances to pass through it.



In his experiment, Tom observed the colours of the mixture solution in the dialysis bag and the iodine solution in the beaker. He used the iodine solution to test for the presence of starch. Brown iodine solution turns dark blue in the presence of starch.

He also tested for the presence of glucose in the dialysis bag and the beaker at the start and at the end of the experiment.
He recorded the results of his tests and observations in the tables below.

Table 1: Test for starch

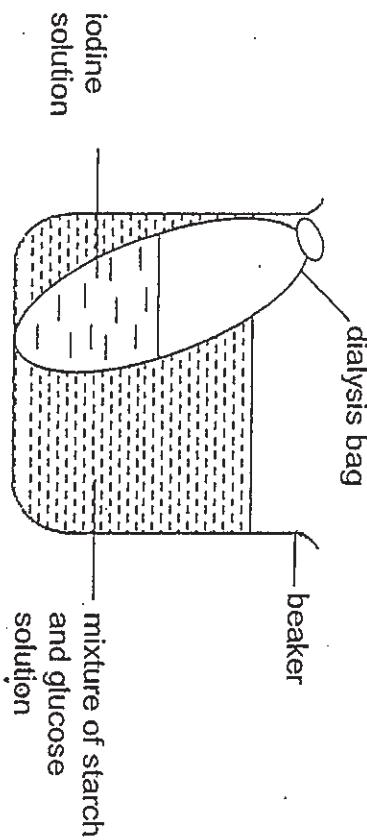
	colour of solution at the start of experiment	colour of solution an hour later
solution in dialysis bag	white	dark blue
solution in beaker	brown	brown

Table 2: Test for glucose

	presence of glucose at the start of experiment	presence of glucose an hour later
solution in dialysis bag	present	present
solution in beaker	absent	present

- (a) Which part of an animal cell has a similar function as the dialysis bag? [1]

Tom decided to place the iodine solution in the dialysis bag and the mixture of starch and glucose solution in the beaker as shown in the diagram below.



(b) Predict the results of his test and observations in the tables below. [2]

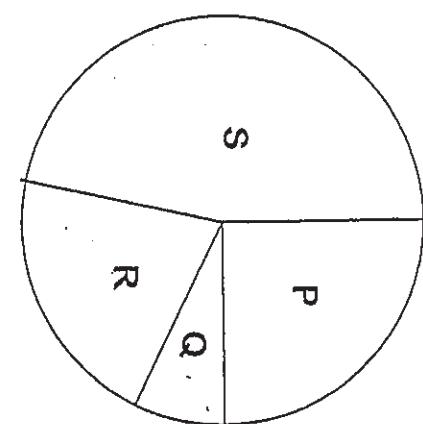
Table 3: Test for starch

	colour of solution at the start of experiment	colour of solution an hour later
solution in dialysis bag		
solution in beaker		

Table 4: Test for glucose

	presence of glucose at the start of experiment	presence of glucose an hour later
solution in dialysis bag		
solution in beaker		

35. The pie chart below shows the population size of each organism, P, Q, R and S, in a certain community.



(a) Write down a food relationship involving organisms P, Q, R and S. [1]

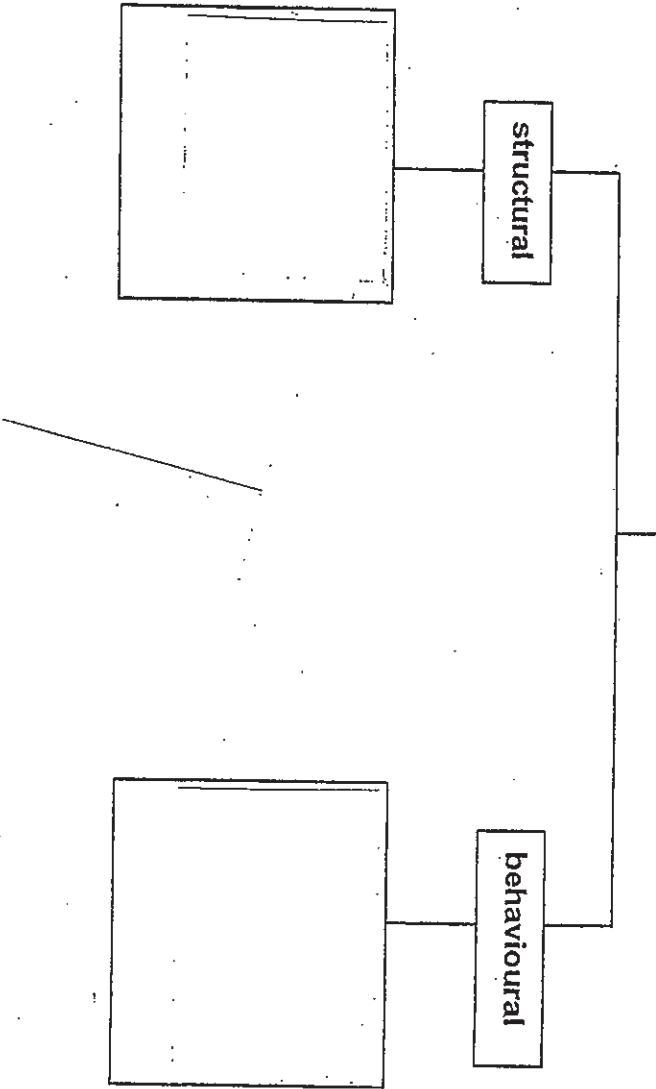
(b) When the population of organism S was wiped out suddenly by a type of disease, state the effect(s) on each of the other organisms. [1]

36. The table below shows how some animals adapt to survive in their habitats.

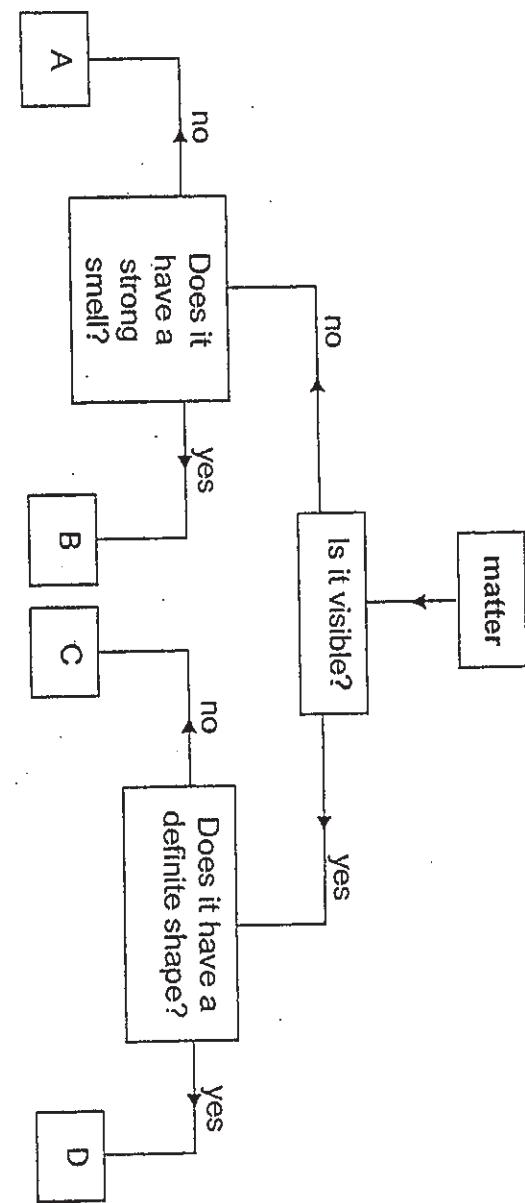
animal	adaptation	how adaptation enables animal to survive in its habitat
P	has a long neck	can eat leaves of tall trees
Q	flies south in winter	gives animal warmth
R	hibernates	can avoid food shortages in winter
S	has sharp, stiff quills	can defend itself against its enemies
T	climbstrees	can escape from its predators
U	produces very little sweat and urine	reduces water loss from its body

Based on the information above, classify the animals given using the diagram below.
Write letters *P*, *Q*, *R*, *S*, *T* and *U* in the correct boxes ONCE only [3]

Adaptations of animals



37. The following flow chart shows how some matter at room temperature are differentiated based on their properties.



Based on the information above, answer the following questions:

- (a) Identify each of the following matter.
Write **A**, **B**, **C** and **D** ONCE only.

[2]

- (i) milk : _____
- (ii) pebble : _____
- (iii) oxygen : _____
- (iv) alcohol vapour : _____

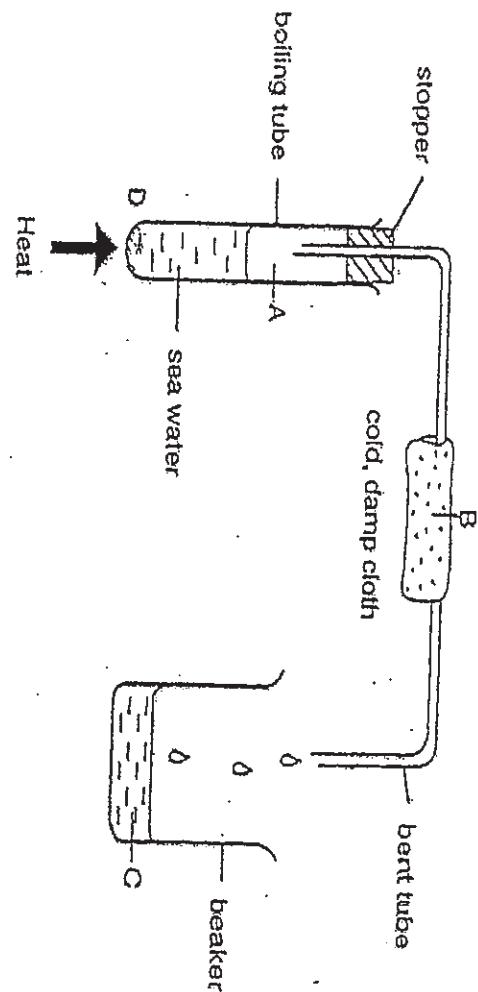
- (b) A 1-litre bottle contains 900 cm³ of matter A and 100 cm³ of olive oil.

Another 100 cm³ of matter A is added to the same bottle.
What is the volume of matter A in the bottle now?

[1]

The new volume of matter A is _____ cm³.

38. The diagram below shows a model of how desalination is carried out.



(a) In the table below, write down the process that is taking place at A and B. [2]

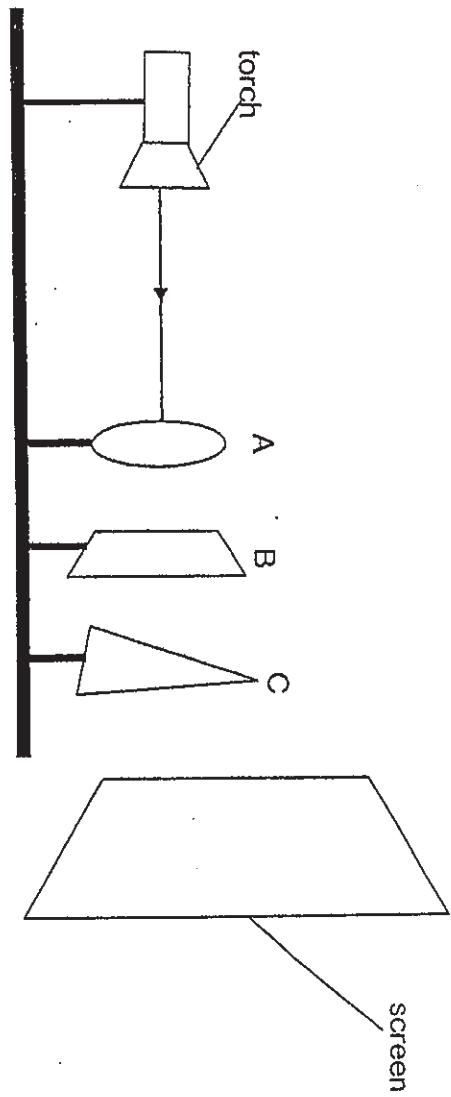
	process
A	
B	

(b) Explain how the cold, damp cloth that covers the bent tube helps in the process of obtaining C in the beaker. [1]

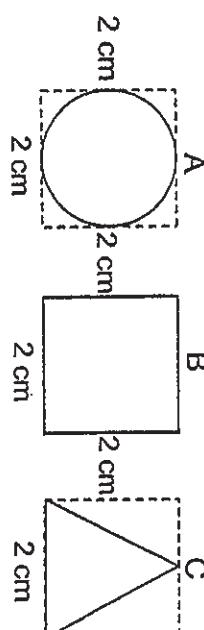
(c) Identify the useful substances that are collected at the end of this desalination process. [2]

liquid C in beaker	
substance left in the boiling tube, D	

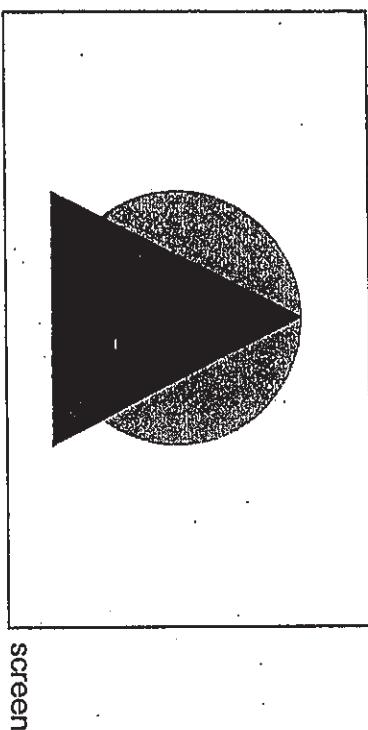
39. The diagram below shows three objects, (A, B and C) each made of a different material placed between a lighted torch and a screen.



The dimensions of the three objects are given below.



Tom turned on the torch and observed the shadows of the different objects formed on the screen as shown below.



(a)

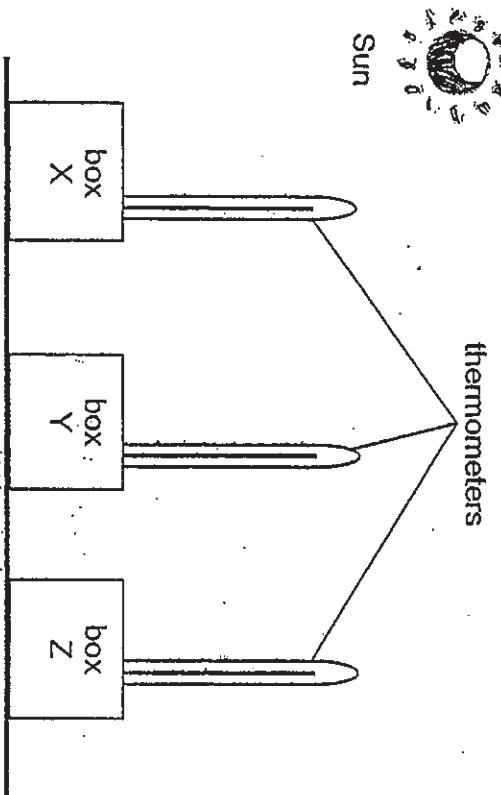
Tom used a datalogger to measure the amount of light passing through each of these objects A, B and C.

In the table below, identify the object that most likely matches to each of the following readings from the datalogger. [1]

reading from the datalogger (Lux)	object
2000	
13	
1280	

The diagram below shows three boxes, X, Y and Z, of the same size made of the same material, painted in three different colours: white, blue and black.

A thermometer was inserted into each box and all the boxes were placed under the sun for one hour.



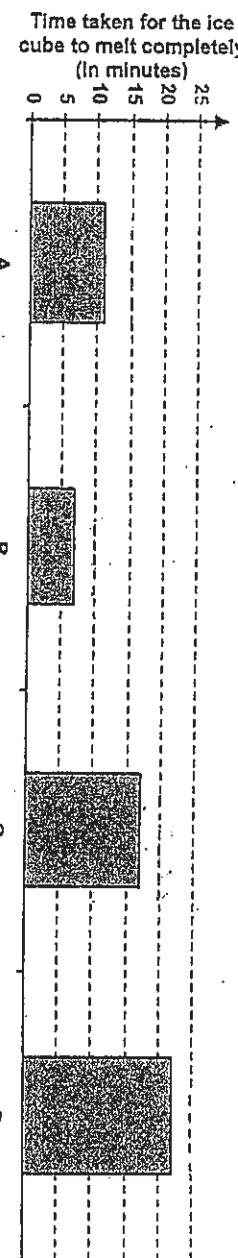
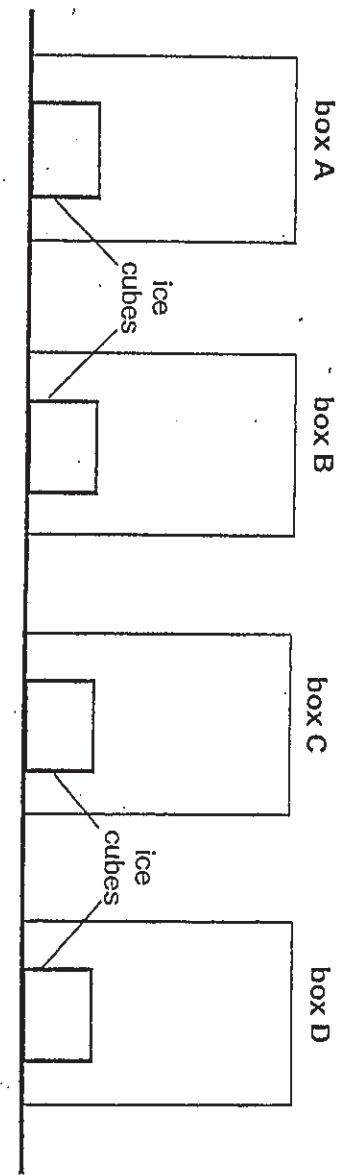
Tom recorded the temperature of each box in the table below.

	box X	box Y	box Z
temperature of each box ($^{\circ}\text{C}$)	38	49	25

(b) What was the most likely colour of box Y? Explain your answer based on the comparisons made with the other boxes. [2]

40.

Identical ice cubes were each placed in sealed boxes (A, B, C and D) as shown in the set-ups below. Each box was made of a different material of the same thickness.



The bar graph below shows the time taken for each ice cube in each box to melt completely.

Based on the information above, answer the following questions:

Which one of these materials, A, B, C or D, is most suitable for storing ice-cream?
Explain your answer.

[2]

41. In the diagrams below, a ceiling fan, a fluorescent light and a water heater are connected in two different ways in a house.

- (a) MARK a cross, (X), on the electrical circuit in Diagram 1 to show the position of a switch that only causes water heater to stop working when it is turned off. (Do NOT draw the switch.)

[1]

Diagram 1

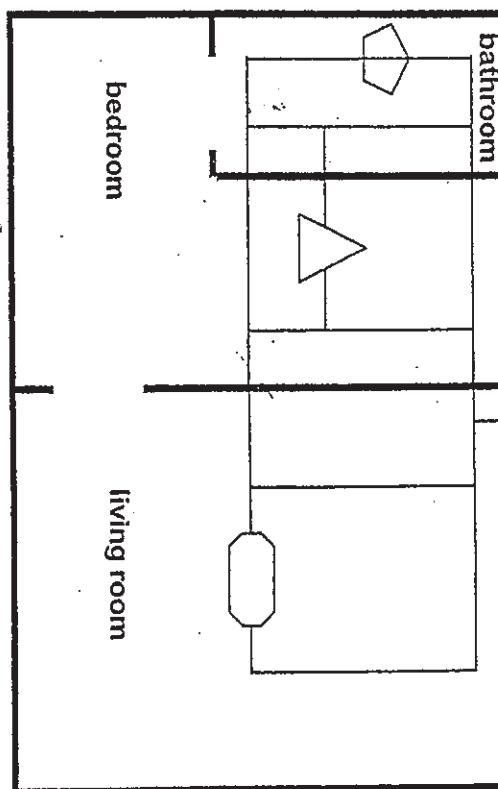
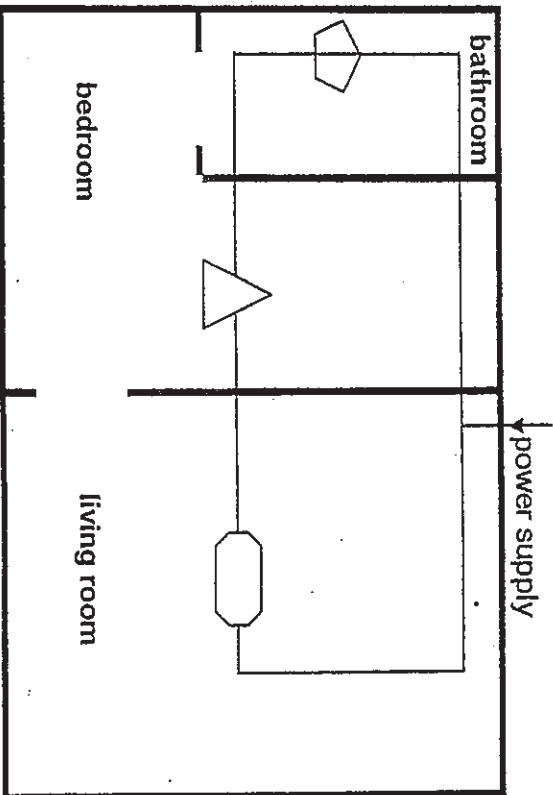


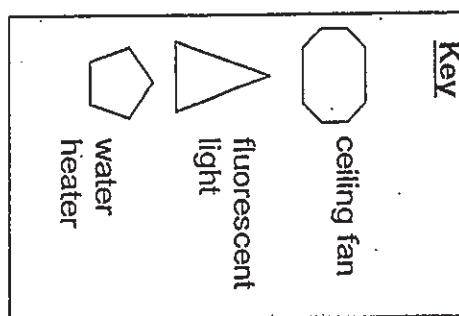
Diagram 2



- (b) Compare Diagrams 1 and 2.

Which is a better way to connect the fluorescent light, the ceiling fan and water heater in a house? Explain your answer.

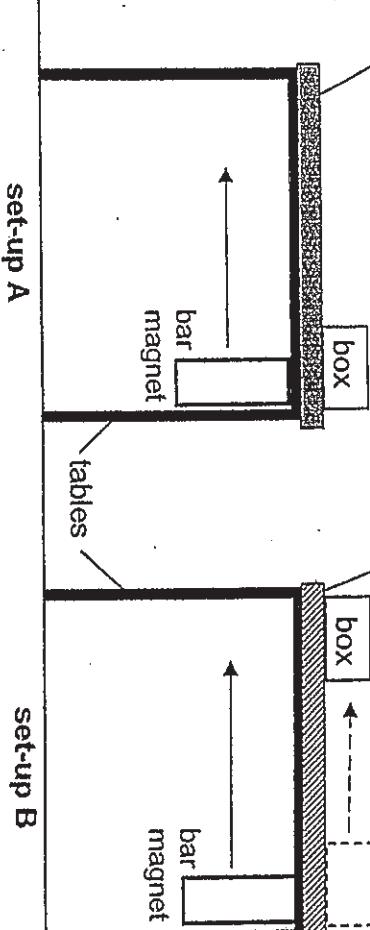
[2]



42. Jesse set up her experiment as shown below.

material X on table top

material Y on table top



Jesse used the same equipment in both set-ups A and B. Only the material put on each table top was different.

Jesse placed a strong bar magnet under each table, ONE at a time, and slid it in the direction indicated by the arrows.

She observed that only the box in set-up B moved while the box in set-up A remained in its original position.

Jesse knew one of the reasons for her observations made was that the box in set-up B was made of a magnetic material.

(a) What caused the main difference in Jesse's observations?

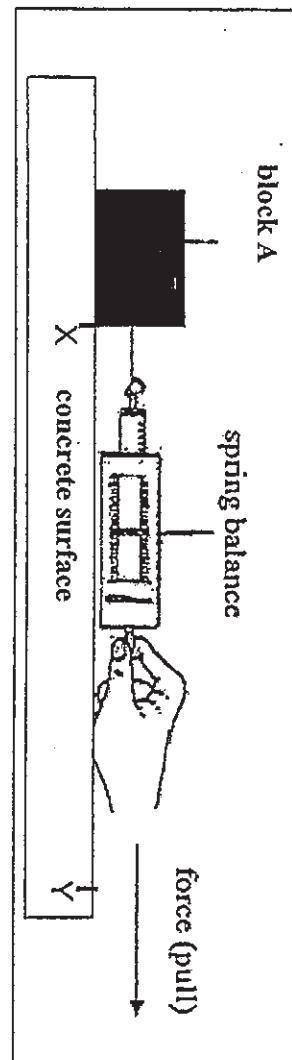
Explain your answer.

[2]

(b) Name a material that was used to make the boxes in both set-ups.

[1]

43. Five identical blocks each made of a different material were pulled across a concrete surface from Point X to Point Y, ONE at a time, as shown below.

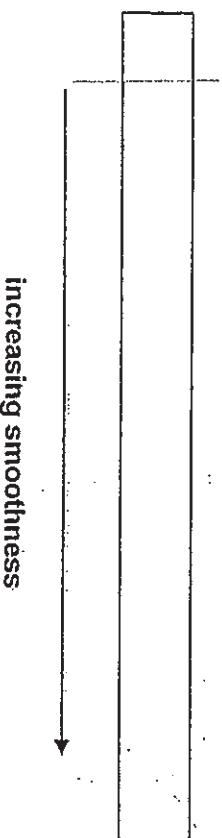


The force needed to pull each block across the concrete surface was measured and recorded in the table below.

material of block	force needed to move each block (N)
A	15
B	25
C	13
D	22
E	19

- (a) Arrange in the correct order, the texture of the surface of the block in the boxes below.

Write the letter A, B, C, D and E ONCE only. [1]



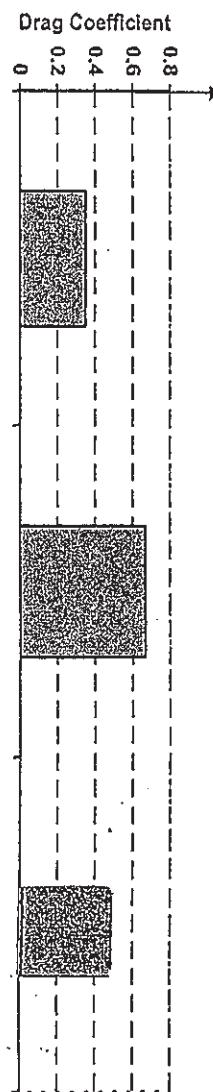
increasing smoothness

Based on the information above, which material is most suitable to be used in the construction of non-slip mats placed in the bathrooms? [1]



44. The drag coefficient measures how well a shape "cuts" through air resistance. The lower the drag coefficient, the faster an object can move against air resistance.

The graph below shows the drag coefficients of two different shapes, A and B



Based on the information above, answer the following questions:

- (a) Put a tick (\checkmark) in the correct box below the car that best represents shape B.



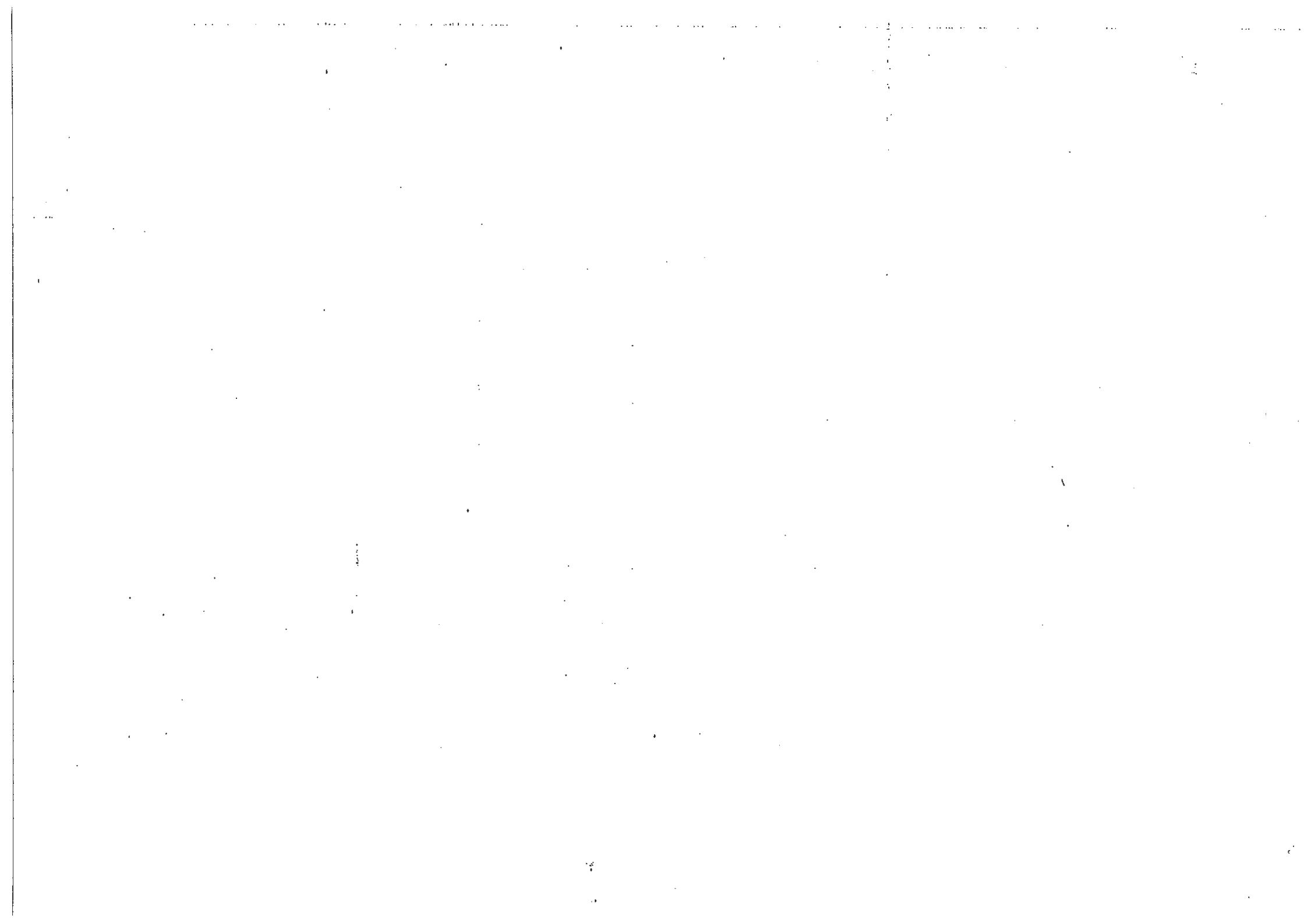
- (b) **ANOTHER** car, Z, of shape C, moved faster than car X but slower than car Y. Suggest a possible drag coefficient of car Z and DRAW the column of shape C in the graph above.

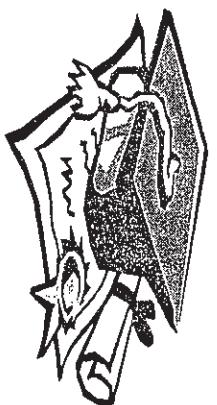
[1]

- (c) Name **TWO OTHER** forces which each car will experience when it moves along a road.

[1]

- END OF PAPER -





ANSWER SHEET

EXAM PAPER 2010

SCHOOL : RAFFLES GIRL'S PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	2	3	2	2	4	4	4	1	4	2	1	4	2	2	3	1
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30				
1	3	1	2	4	3	2	4	3	3	1	2	2				

- 31)a)Is it a flowering plant?
b)The animals in group 1 and 2 both are warm-blooded.
c)1

- 32)a)Fertilisation.
b)X: testes Y: ovaries

33)a)X: wind Y: splitting Z: water

b)Plant Y and plant Z is not reproducing as well as plant X.

The building occupied some space on the island, leaving less space for plants to be dispersed. The plants had to compete for nutrients, water and sunlight.

34)a)The cell membrane.

b)Table 3: brown, brown
white, dark blue

Table 4: absent, present
present, present

35)a)S→P→R→Q

b)All the other organism would reduce in numbers.

36)structural: P S U

behavioural: Q R T

37)a)i)C ii)D iii)A iv)B

b)900cm³

38)a)A: evaporation

B: condensation

b)When the sea water is heated, the water in the sea water will evaporate, leaving the salt in the boiling tube while forming into water vapour, the hot water vapour will then rise and condense on the cool surface of the inner tube covered by the cool damp cloth, forming into tiny water droplets, which will then flow into the beaker as C.

c)water , salt

39)a)2000: B

13 : C

1280 : A

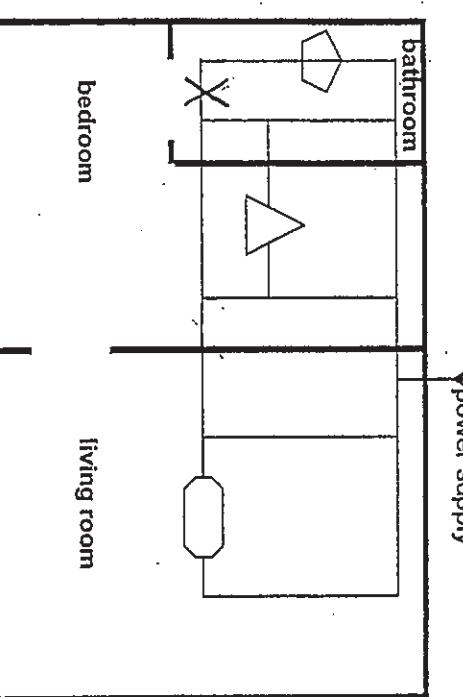
b)Box Y gains heat faster as compared to box X and Z. It has the highest temperature recorded as compared to the other boxes.

Black absorbs the most heat, causing the temperature to rise the fastest.

40)The ice cube in D took a longer time to melt compared to A, B and C.

The ice cube in D took a longer time to melt as compared to A, B, C as it is the poorest conductor of heat, causing D to gain heat slowly.

41)a)



b)The electrical circuit in diagram 1. It is because the fluorescent light, the ceiling fan and water heater are arranged in parallel, allowing each of them to have an individual circuit. Hence, if the fluorescent light fuses in diagram 1, the water heater and ceiling fan will not be affected. However if the fluorescent light in diagram 2 fuses, it will cause the water heater and ceiling fan to stop working as they are arranged in series, hence diagram 1 is arrangement is a better way.

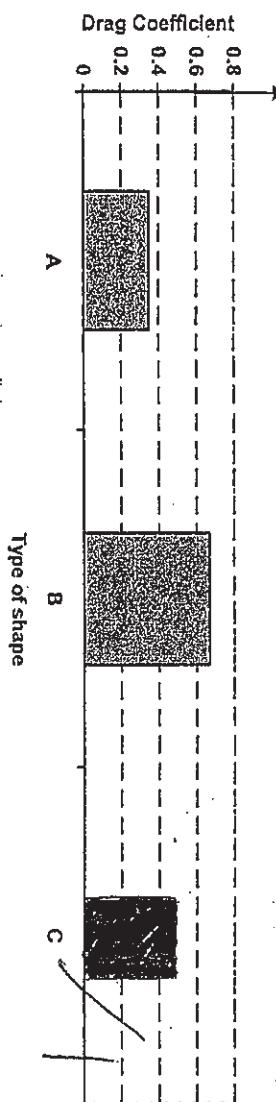
42)a)It is because material X way be a magnetic material, this present magnetism from passing through it , hence the box will not be attracted even through it is an magnetic material. However material Y may be a non magnetic material, this allows magnetism to pass through, causing the box to be attracted and moved along with the strong bar.

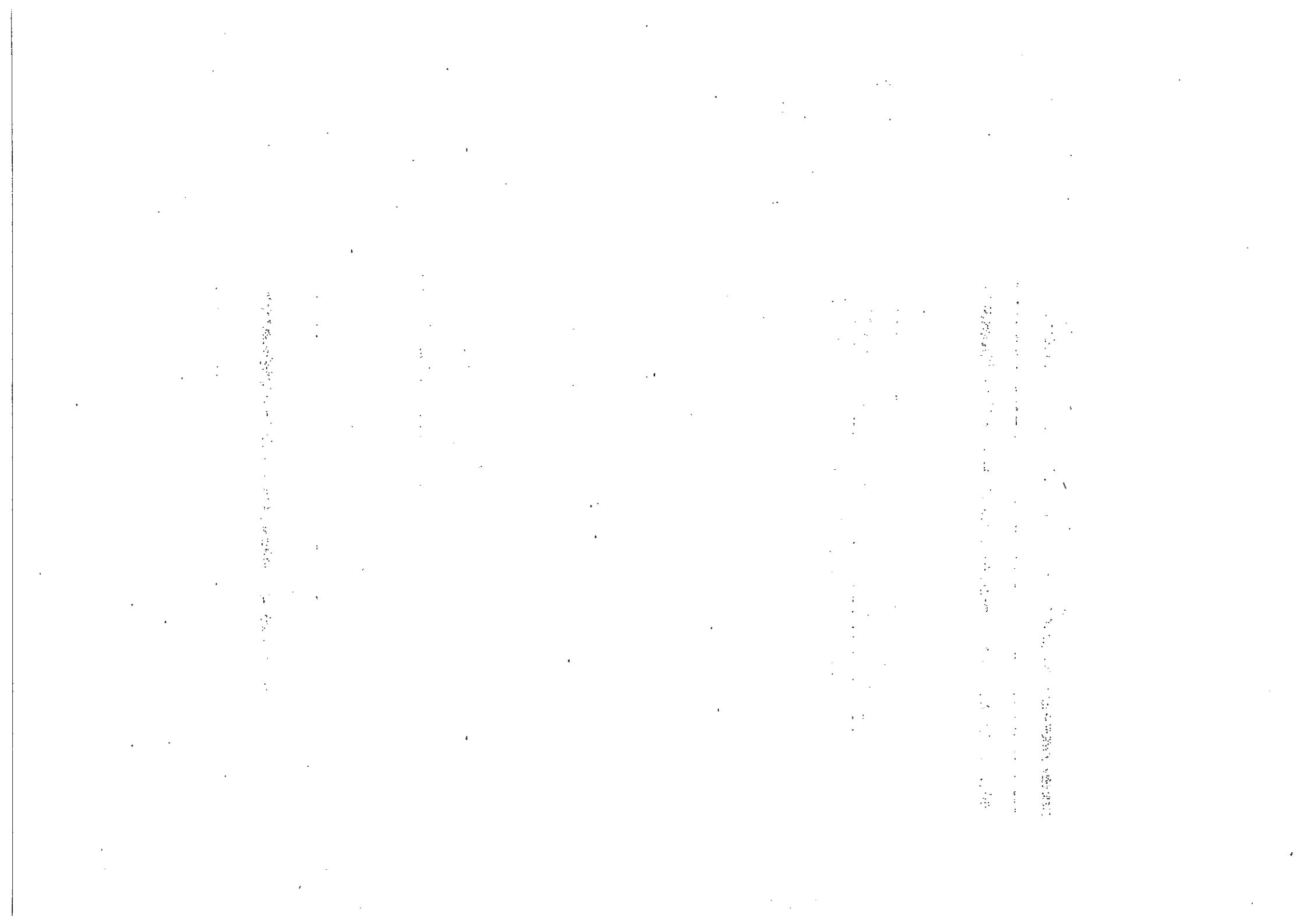
b)Steel.

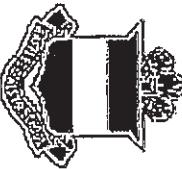
- 43)a)B, D, E, A, C
b)B

- 44)a)X
b)C

c)Gravitation force and frictional force.







RAFFLES GIRLS' PRIMARY SCHOOL
PRELIMINARY EXAMINATION

2010

Name : _____ Index No: _____ Class: P 6 _____

26 August 2010 SCIENCE Att : 1h 45min

Your score out of 100 marks	Class	Level
Highest score		
Average score		
Parent's signature		

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.

- 1 Which of the following statements is/are true about ferns, mushroom and mould?

- A They are decomposers.
- B They need to grow in soil.
- C They reproduce from spores.
- D They are able to photosynthesise.

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

- 2 The table below shows the characteristics of plants W, X, Y and Z. A tick (✓) in the box indicates the characteristic of the plant.

Characteristic	Plant W	Plant X	Plant Y	Plant Z
It bears fruit.	✓		✓	✓
It grows on land.		✓	✓	

Based on the information above, which one of the following shows the correct classification of the plants W, X, Y and Z?

plants			
flowering	land	non-flowering	land
aquatic		aquatic	
W	Y and Z		X
	X		Y and Z
(1)			
(2)			
(3)	Z	X	Y
(4)	W and Z	Y	X

3

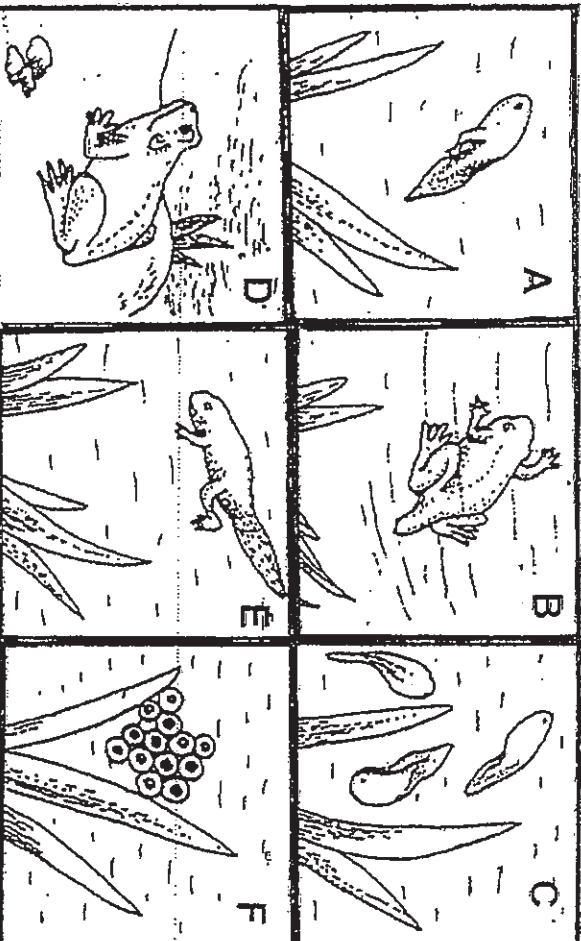
The table below describes the stages in the life cycles of four animals, P, Q, R and S. A tick (✓) in the box indicates that the animal fits the description given.

Description	Animal P	Animal Q	Animal R	Animal S
Its young resembles the adult.	✓		✓	
There are three stages in its life cycle.	✓	✓		
Its young goes through moulting.		✓		✓

Which one of the following animals is likely to be a butterfly?

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

4 The diagram below shows the different phases in the life cycle of a frog. Each phase is represented by the letters A, B, C, D, E and F.

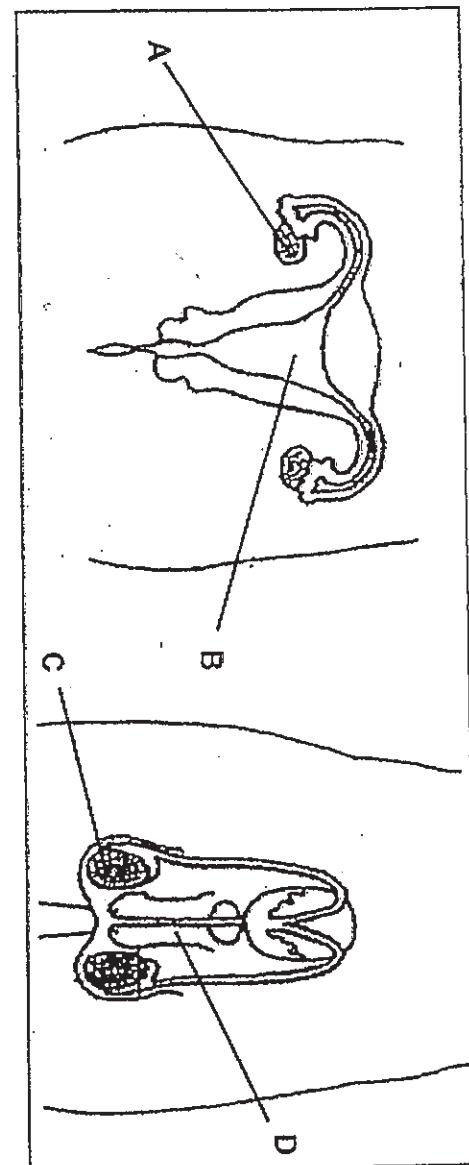


Which one of the following arrangements shows the correct sequence in the development of the frog?

- (1) F, A, E, C, D, B
- (2) F, C, A, E, B, D
- (3) F, C, A, B, E, D
- (4) F, E, A, C, D, B

5

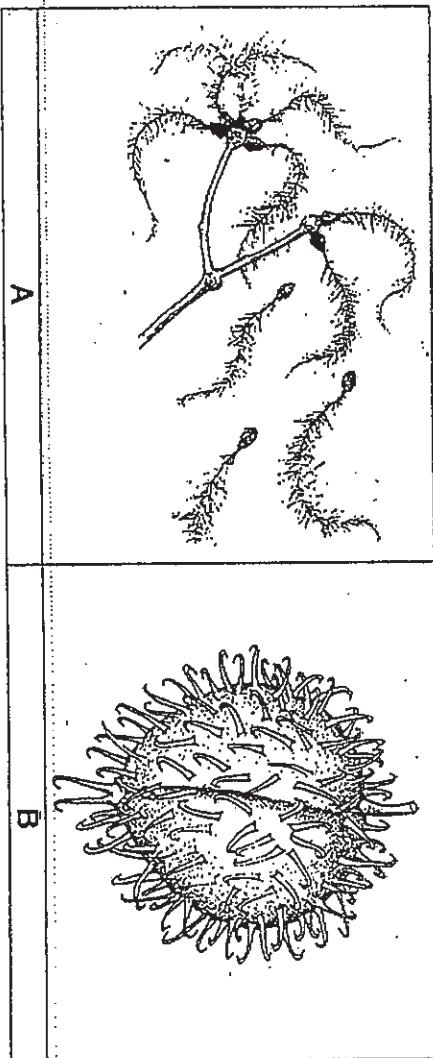
The diagrams below show the human reproductive systems.



Which parts of the reproductive systems produce cells that can be fused together to develop into a baby?

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

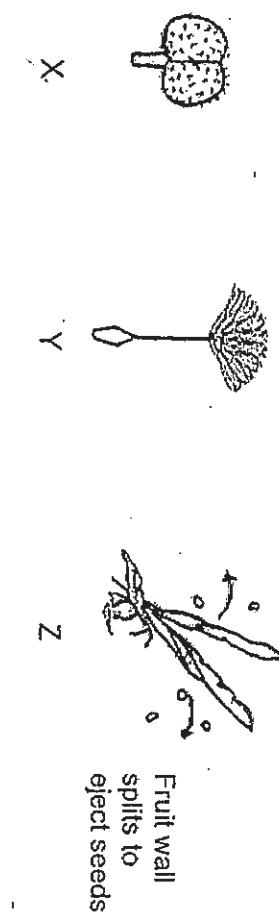
6 The diagrams below show two seeds / fruits, A and B.



Based on the diagrams, which one of the following shows a correct match of the method of dispersal of the seeds / fruits to its characteristic?

seed / fruit	method of dispersal	characteristic of seed / fruit
A	by wind	has feathery structures
B	by wind	has a wing-like structure
A	by splitting	has hooks
B	by animals	is fleshy and juicy

The diagrams show the fruits/seeds of three species of plants, X, Y and Z.



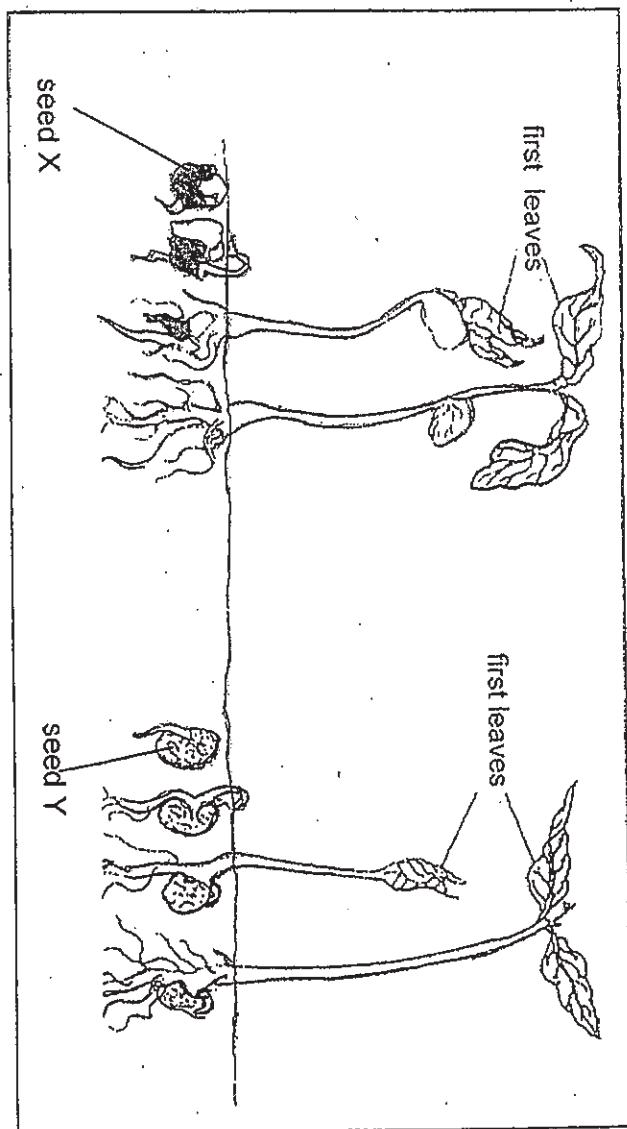
The following diagrams, P, Q, R, show the positions of the parent plants and their respective seedlings over an area of 1km².



Which one of the following represents the positions of the parent plants and their respective seedlings correctly?

X	Y	Z
P	Q	R
P	R	Q
Q	R	P
R	Q	P

The diagrams below show the stages in the germination of 2 different types of seeds, X and Y.



Which of the following statements is/are true about the germination of these seeds?

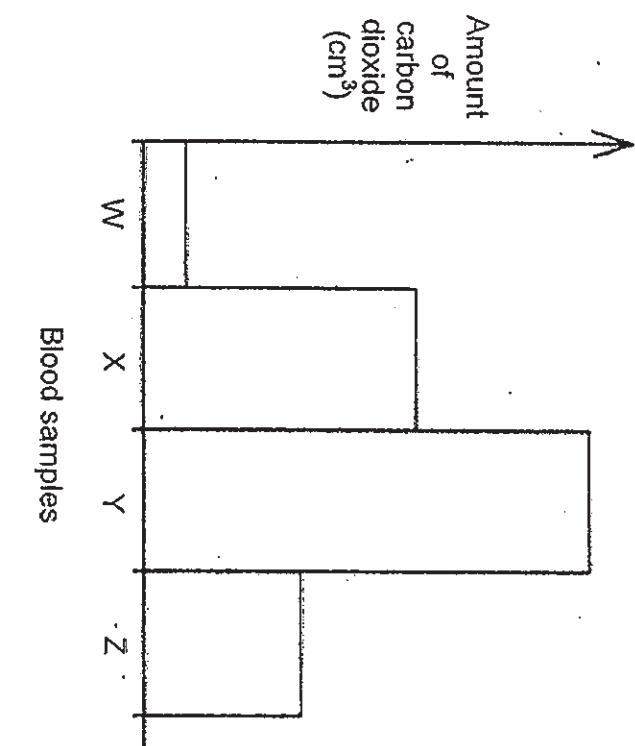
- A The roots appear before the shoots.
- B Only the seed leaves of X emerge above the ground when its first leaves appear.
- C There is no change in the size of the seed leaves as the seedlings develop.

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

9

Four blood samples W, X, Y and Z were taken from different blood vessels in the body.

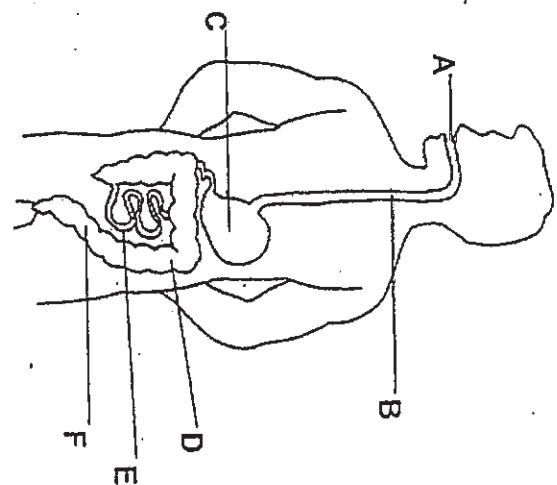
The following graph shows the amount of carbon dioxide present in each of these blood samples.



Which blood sample was most probably taken from the blood vessel carrying blood from the heart to the lungs?

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

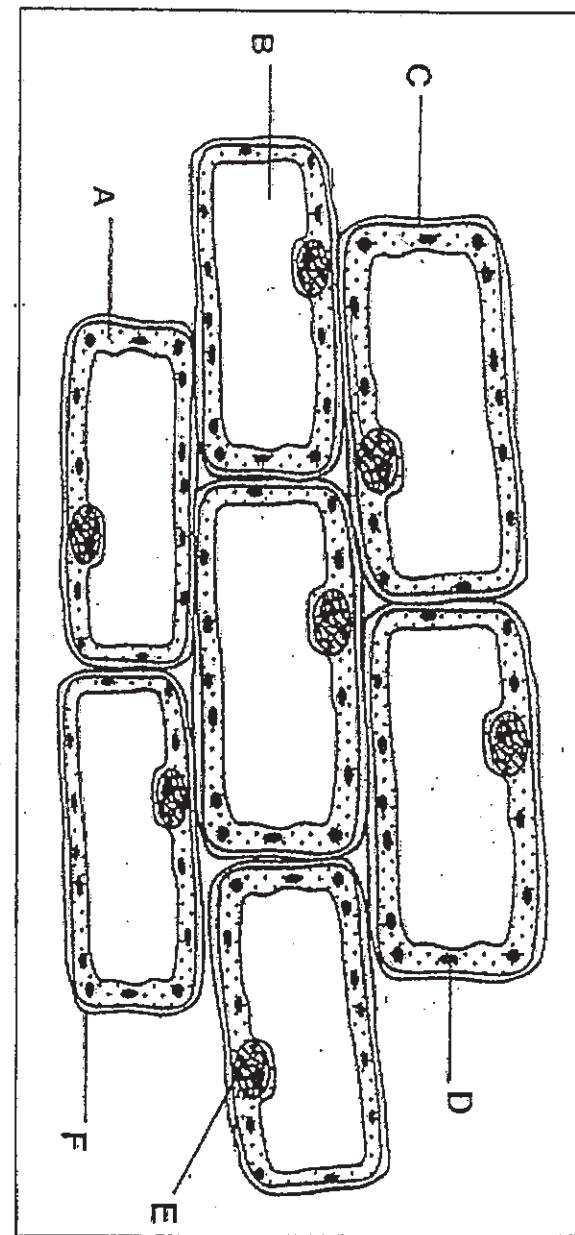
- 10 The diagram below shows parts of the digestive system of a human.



Which one of the following shows the correct pathway in which food travels through the digestive system before it enters the blood stream?

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

11 Julia observed some cells using a microscope. The cells are shown in the diagram below.



Different parts of the cell are labelled A, B, C, D, E and F.

Which one of the following identifies the parts of the cells correctly?

where light energy is trapped	controls the entry of substances into the cell	can also be found in animal cells
(1) A	F	A, C, F
(2) B	C	B, D, E
(3) D	C	A, C, E
(4) D	F	B, E, F

12

All conducted an experiment to find out if the addition of fertiliser affects the growth of plant Q.

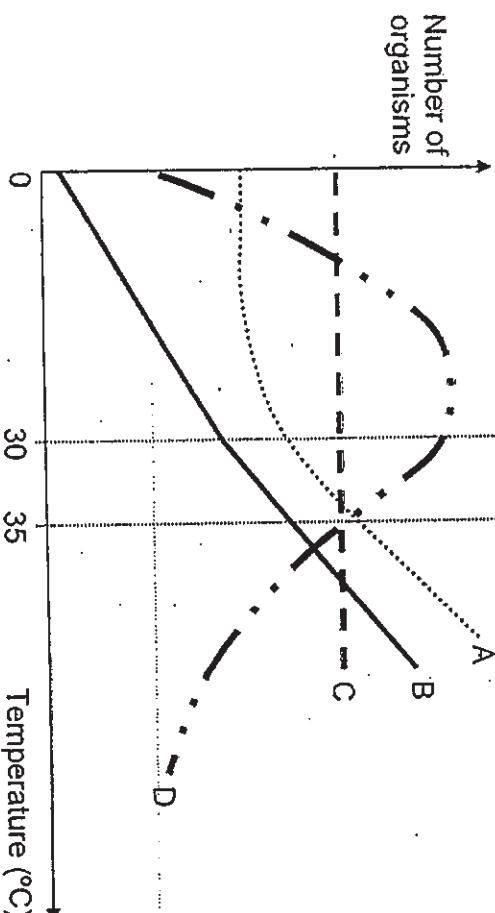
He used two identical pots, X and Y, for his experiment. Pot Y was set up as a control. The variables for his experiment are shown in the table below.

Pot	Amount of fertiliser (g)	Number of plant Q in pot	Number of times the plants were watered per day
X	15	6	2
Y	A	B	C

Which one of the following gives the most suitable set of values for Ali to conduct a fair test?

	A	B	C
(1)	0	2	3
(2)	0	6	2
(3)	15	1	2
(4)	15	6	1

13 The graph below shows the effect of temperature on the populations of four different organisms, A, B, C and D.



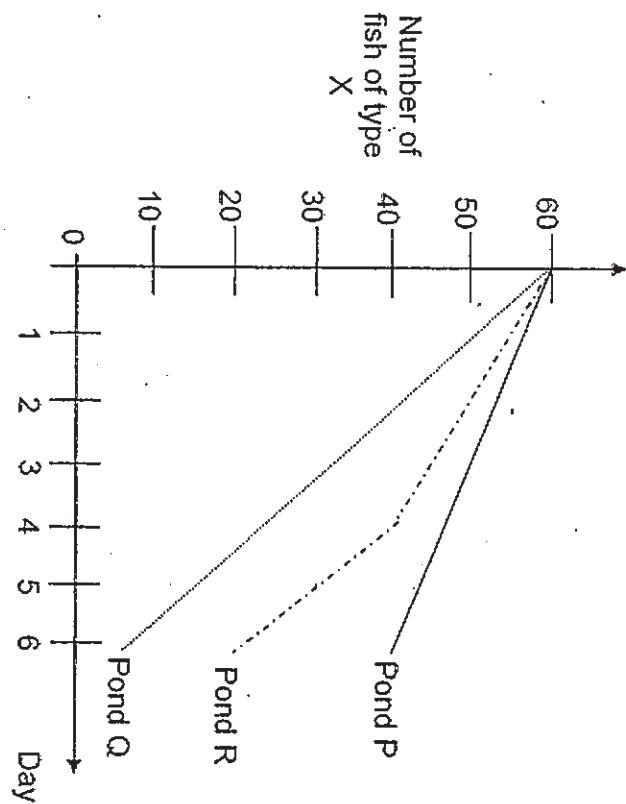
Which of these organisms will continue to thrive when the temperature of the environment is between 30°C to 35°C?

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

14

There were some organisms in Pond P, Q and R. James introduced 60 fish of type X into each pond, P, Q and R. He counted the number of fish that was still alive in each pond over a period of 6 days.

The graph below shows the changes in the population of fish of type X in pond P, Q and R.



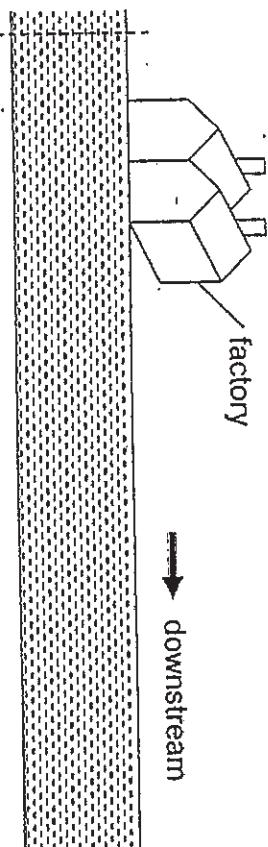
What possible conclusion(s) could James make about the three ponds?

- A Pond P had the most number of fish of type X on day 6.
- B Pond R had more predators of fish of type X than Pond Q.
- C Ponds P and R had fewer fish of type X than Pond Q on day 3.
- D Pond Q had more prey than Pond P for the fish of type X to feed on.

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

15

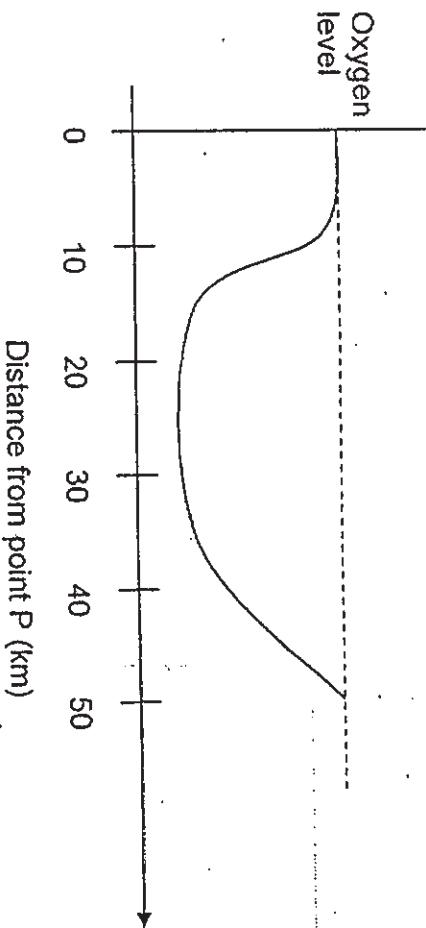
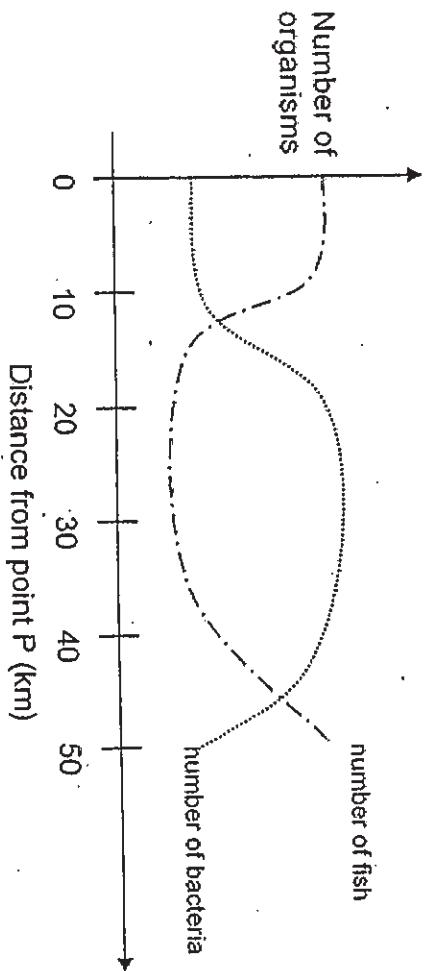
The picture below shows a river flowing downstream towards the sea.



Situated near the river is a factory which is suspected to be a source of water pollution that causes a particular type of fish to die.

Water samples are collected at various points in the river starting from point P.

The graphs below show the oxygen level present in the river at various points in the river starting from point P and how the oxygen level in the river can affect the population size of the fish and the bacteria.

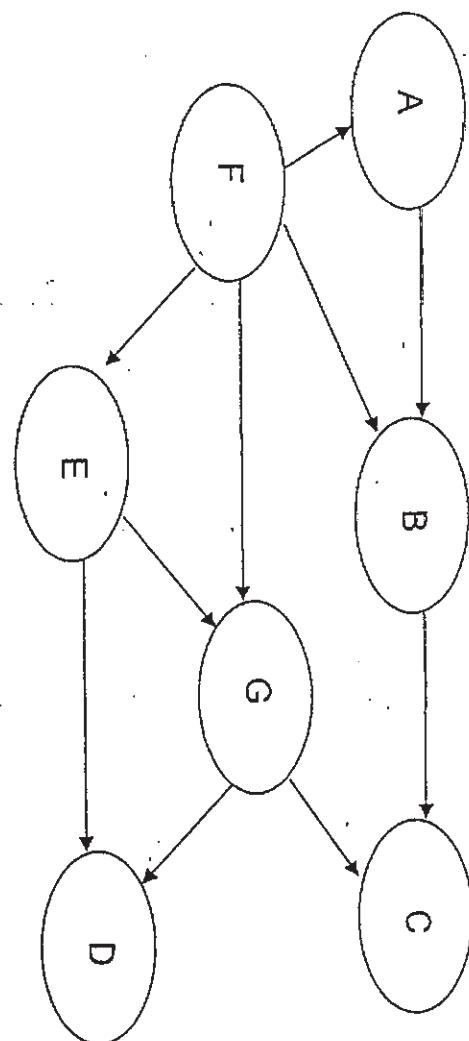


Based on the graphs, which of the following is/are true?

- A The river became polluted only after 20 km.
- B The oxygen level in the river was returned to its original level at 50 km.
- C Pollution caused the number of bacteria to increase, hence reducing the oxygen level in the river.

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

- 16 The food web shows the food relationships among 7 organisms, A, B, C, D, E, F and G.



Based on the information above, organisms A, B, C, D, E, F and G are classified as shown below.

living things

plants



herbivore



animals

carnivore



omnivore

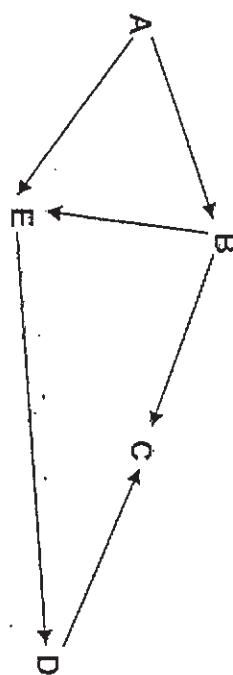


Which one of the following identifies the organisms for each of these symbols, \blacktriangleleft , \square , \odot and \blacktriangledown , correctly?

\blacktriangleleft	\square	\odot	\blacktriangledown
(1) A	E	D	B
(2) E	B	C	G
(3) F	A	D	C
(4) F	E	C	G

17

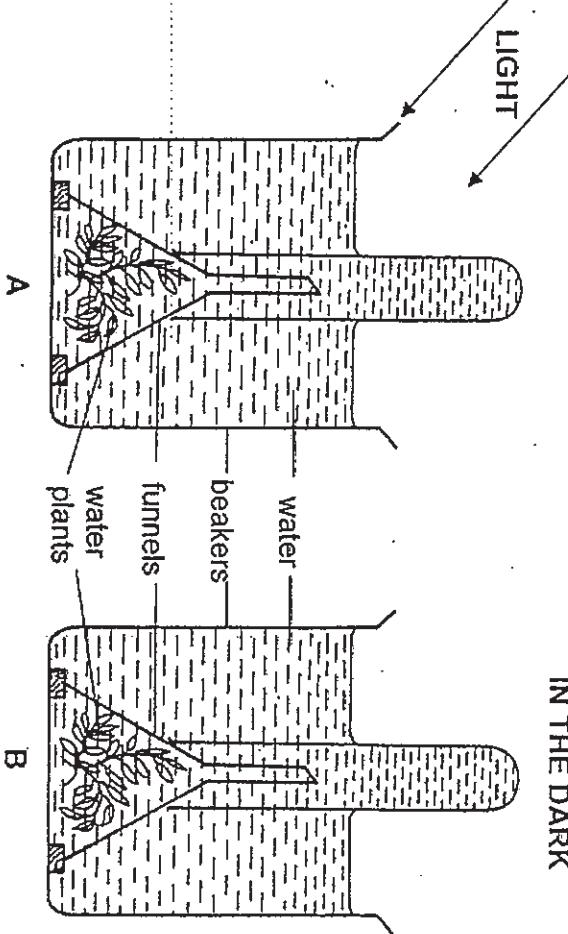
The diagram below shows a food web involving 5 organisms, A, B, C, D and E.



Which of these organisms is/are both a prey and a predator?

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

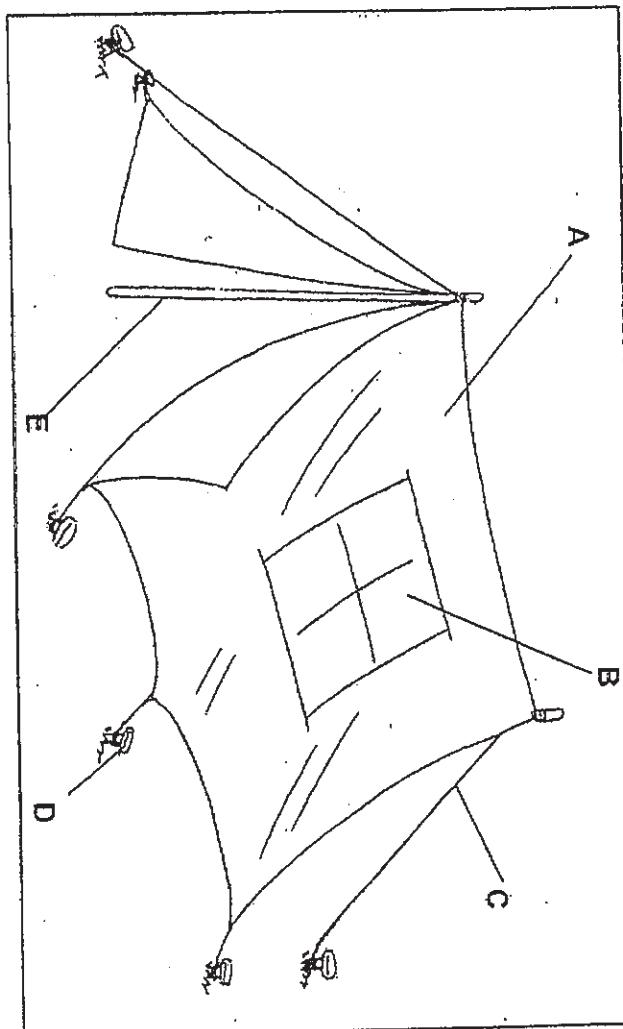
18 Wenwu set up an experiment to demonstrate how light affects the rate of photosynthesis of plants. He prepared set-ups A and B as shown below.



Which one of the following should Wenwu do to obtain his results?

- (1) Add more water plants to set-up B
- (2) Place set-up A in the cupboard for two days
- (3) Measure the temperature of water in both set-ups
- (4) Compare the remaining water left in the test tubes after two days

Some pupils in Mrs Wong's class came up with the following sketched design for their camping tent which included a 'window', B.



They chose these five different materials based on their properties indicated in the table below.

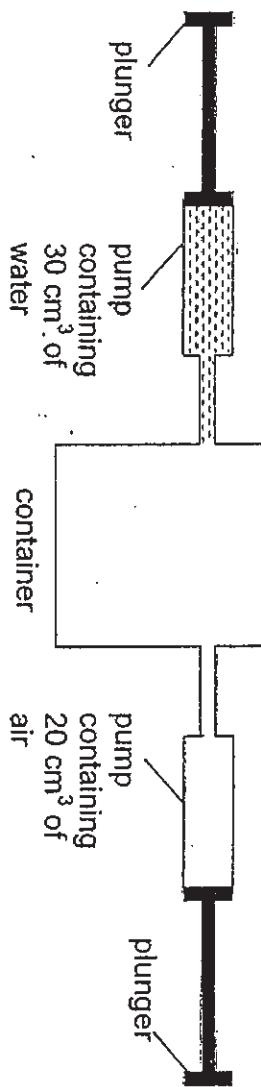
material	properties
P	<ul style="list-style-type: none"> • waterproof • transparent
Q	<ul style="list-style-type: none"> • hard • durable • does not rust
R	<ul style="list-style-type: none"> • waterproof • is not transparent
S.	<ul style="list-style-type: none"> • strong • flexible
T	<ul style="list-style-type: none"> • hard • strong

Which one of the following shows the best material used for each labelled part of the tent?

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

20

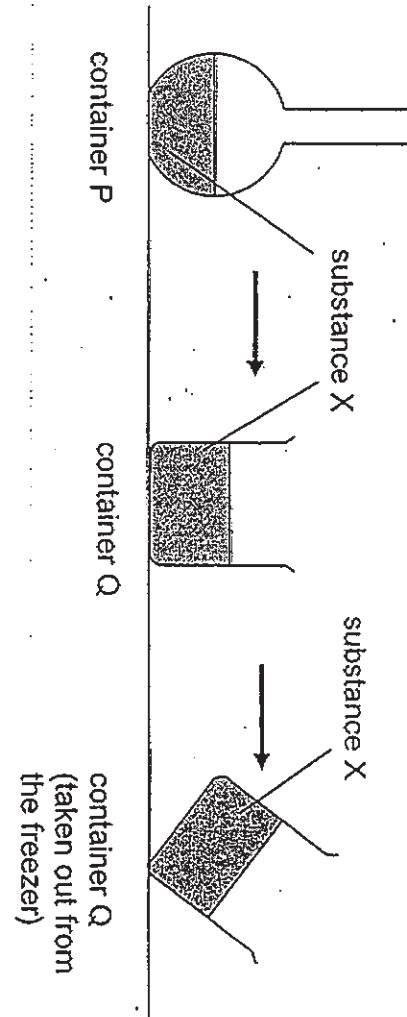
Two identical syringes were fitted to a container with a capacity of 150 cm^3 as shown in the diagram below.



What was the total volume of air in the container when the plungers were completely pushed into the pumps?

- (1) 100 cm^3
- (2) 120 cm^3
- (3) 150 cm^3
- (4) 170 cm^3

21 Chloe transferred substance X from container P to container Q. Then she placed container Q in the freezer until substance X changed its state. Next, Chloe removed the container Q from the freezer and tilted it as shown in the diagram below.

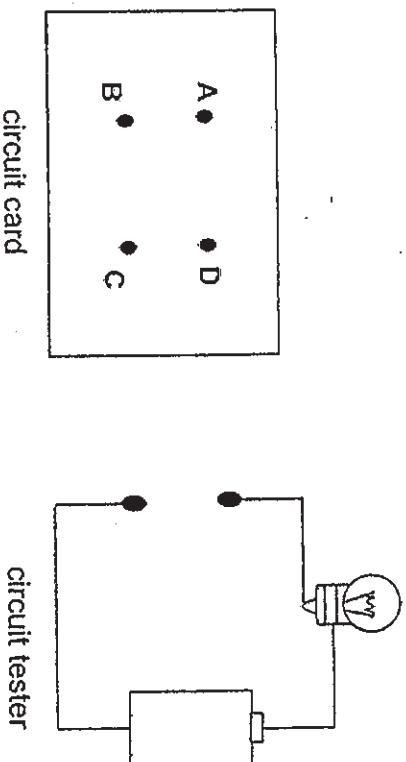


Based on the information above, what could substance X possibly be?

- A oil
- B sand
- C water

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

The circuit card shown below has a metal thumbtack at each point, A, B, C and D. Some of the thumbtacks are connected by wires behind the card.

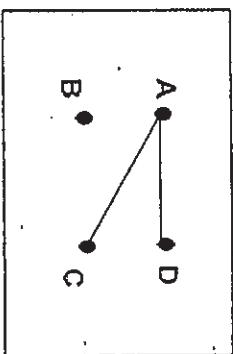


A circuit tester is used to test the circuit cards. The results are recorded in the table below.

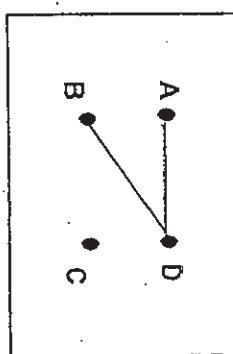
Circuit tester connected to thumbtacks at	Does the bulb light up?
A and C	yes
B and D	no
B and C	yes

Which one of the following circuit cards shows the correct connections of the wires?

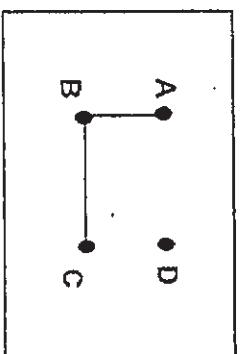
(1)



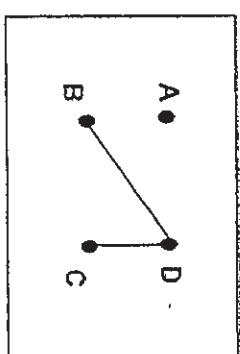
(2)



(3)

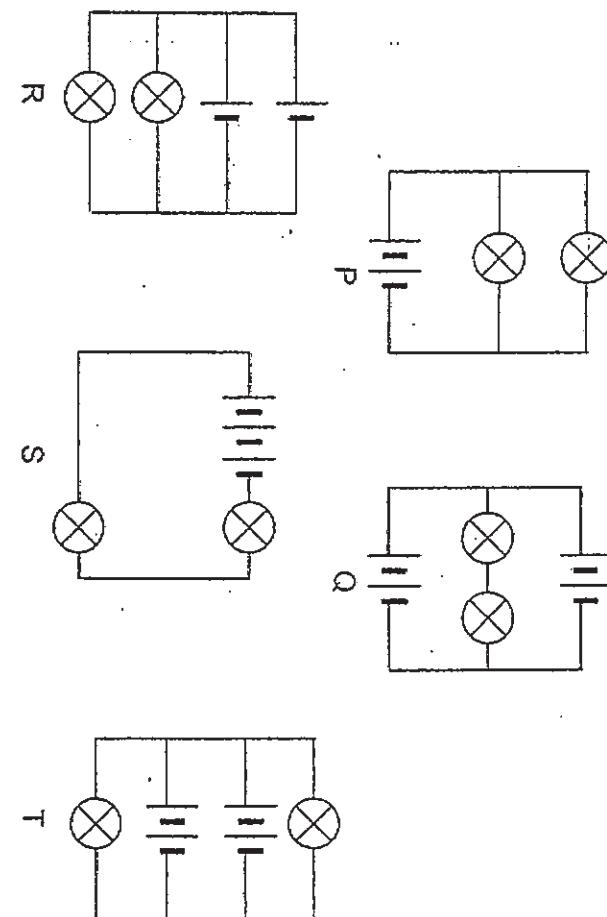


(4)



23

Sandy wanted to find out if the arrangement of dry cells in a circuit affects their brightness. She set up the following circuits using identical components.

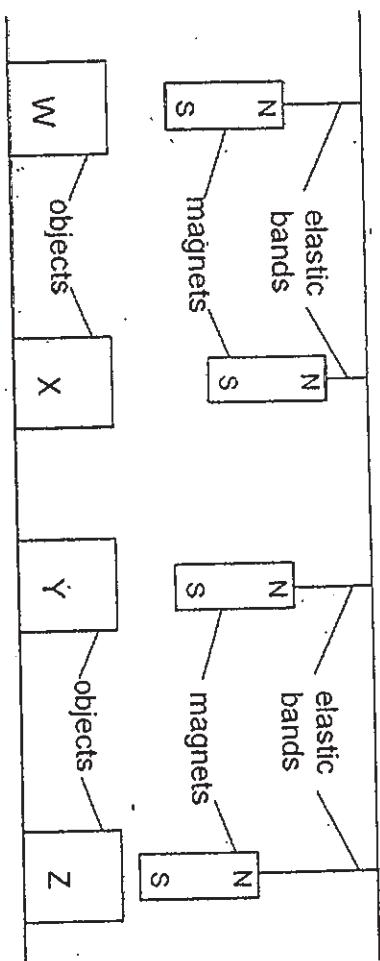


Which of these two circuits should Sandy use to ensure a fair test?

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

24

Alan placed objects W, X, Y and Z below identical magnets, which were attached to identical elastic bands, as shown in the diagrams below.



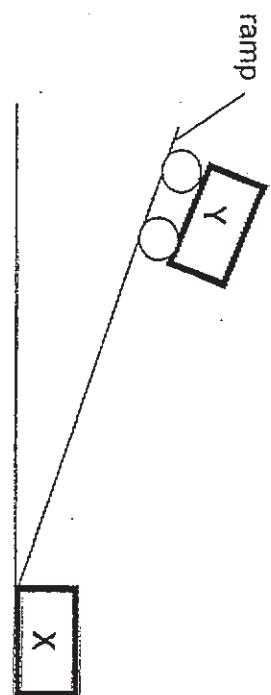
Based on the information above, which of the following statements is/are true?

- A Z was a magnet.
- B W and Y were not made of magnetic materials.
- C Unlike poles of X and the magnet were facing each other.

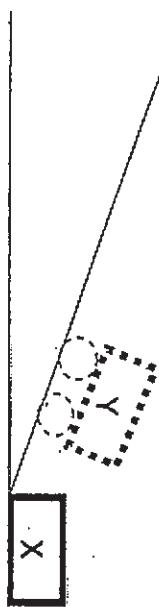
- (1) A only
- (2) B only
- (3) B and C only
- (4) A, B and C

25

Object X was placed at a fixed point at the bottom of the ramp with a rough surface.



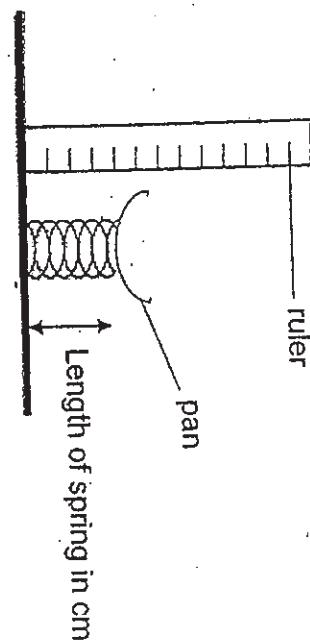
Object Y, with wheels attached to it, was released from the top of the ramp. It rolled down the ramp and stopped close to object X suddenly as shown in the diagram below.



Which of the following could possibly explain why Y stopped close to X?

- A Friction prevented X from moving forward.
 - B Like poles of magnets X and Y were facing each other.
 - C Gravity acting on X was greater than gravity acting on Y.
 - D Friction prevented Y from reaching the bottom of the ramp.
- (1) B only
(2) C only
(3) A and B only
(4) A, B, C and D

The original length of the spring was 7 cm. John used the spring to make a weighing machine as shown in the diagram below.

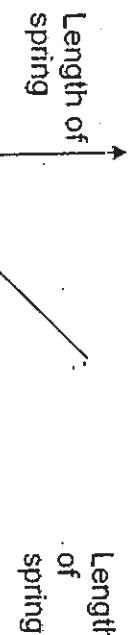


John added weights, 10 g at a time, to the pan and measured the length of the spring. Each time a weight was added, he measured the length of the spring.

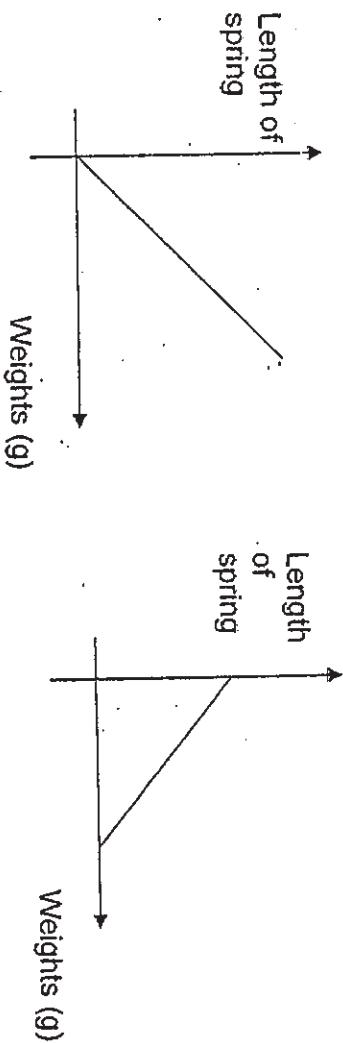
Next, he removed the weights, one at a time, till all the weights were removed. He also measured the length of the spring each time a weight was removed.

Which one of the following graphs shows the results of John's experiment?

(1)



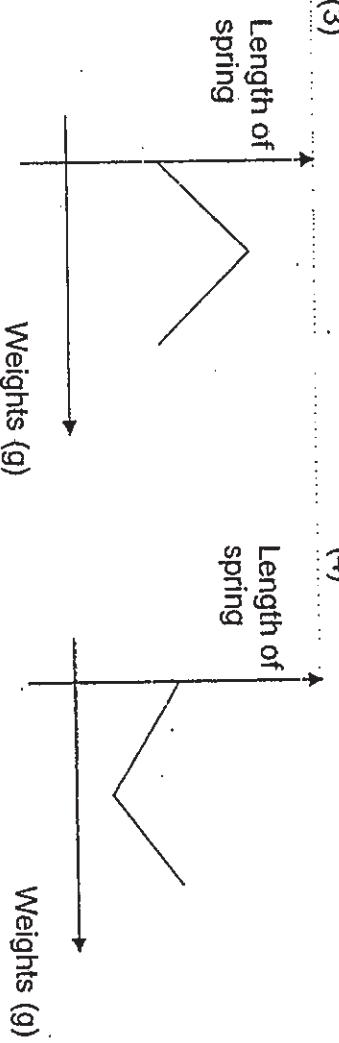
(2)



(3)

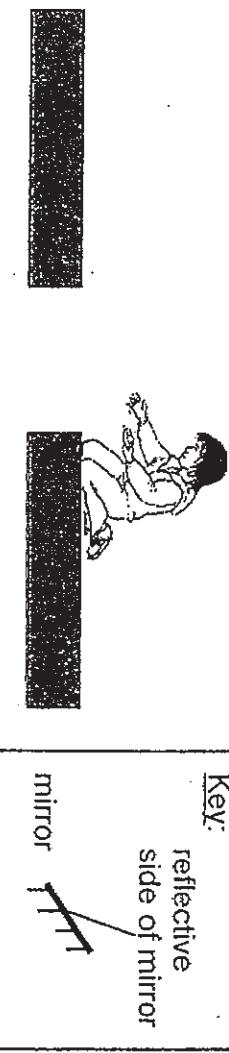


(4)



27

Sally dropped her ball that glowed in the dark into the deep drain. She wanted to retrieve her ball but she could not see it.



drain _____ R _____ O

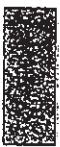
Sally lowered a mirror into the drain and placed it at position R.

At which angle should Sally place the mirror to see the ball in the drain?

(1)



(2)



drain _____ R _____

(3)

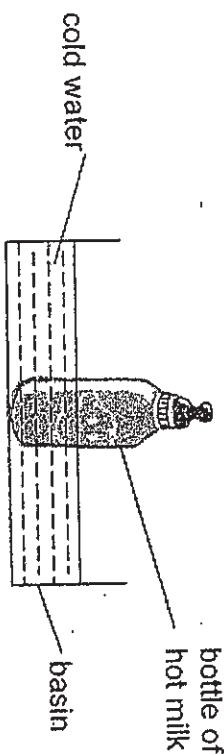


(4)



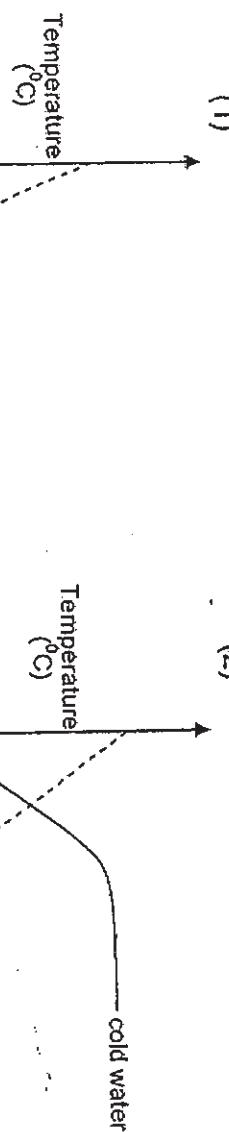
drain _____ R _____ drain

Mrs Tan placed a bottle of hot milk into a basin of cold water as shown in the diagram below.

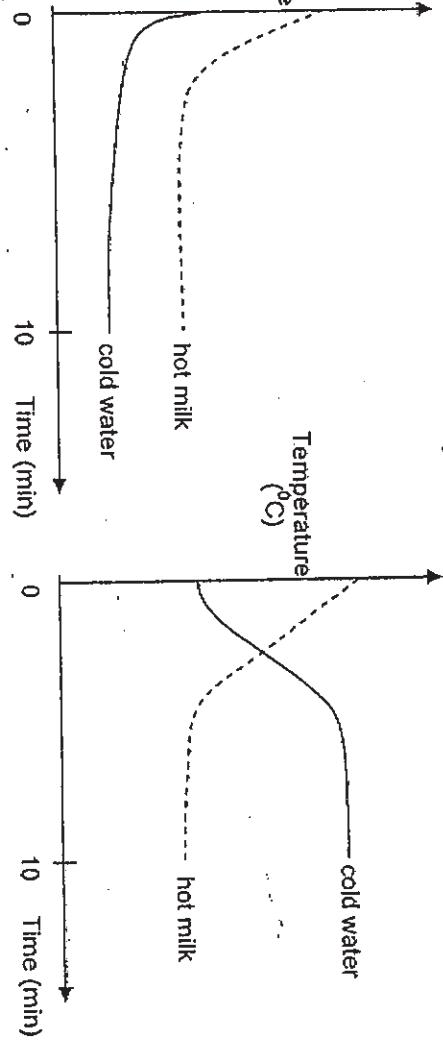


Which one of the following graphs shows the temperatures of the hot milk and the cold water after ten minutes?

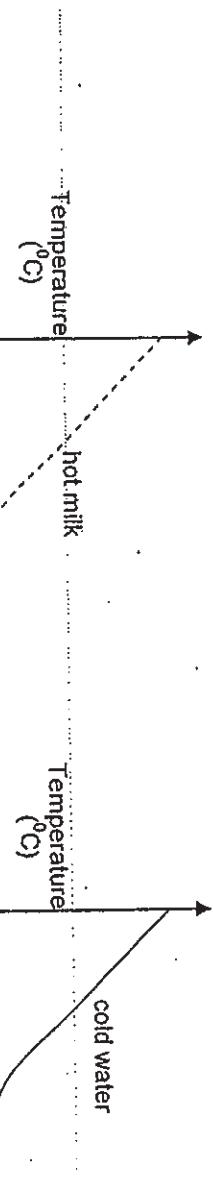
(1)



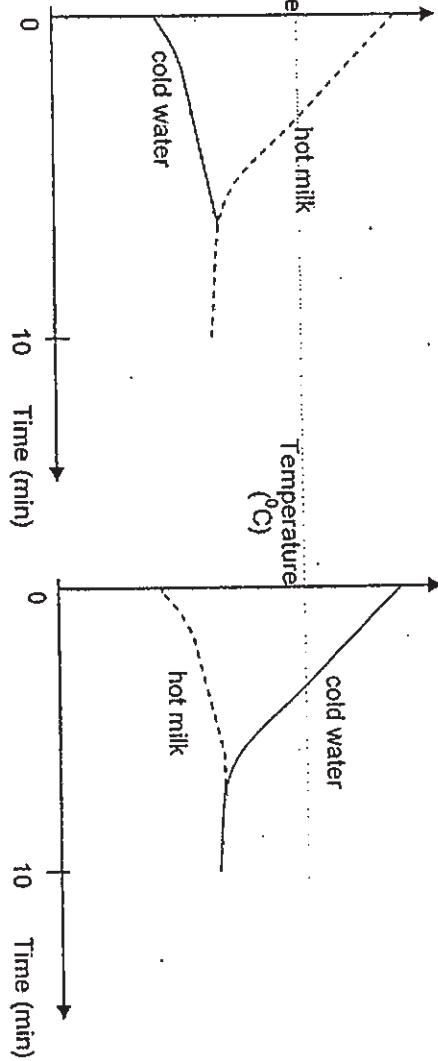
(2)



(3)

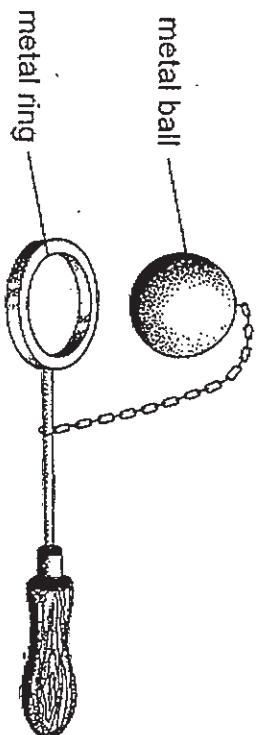


(4)



29

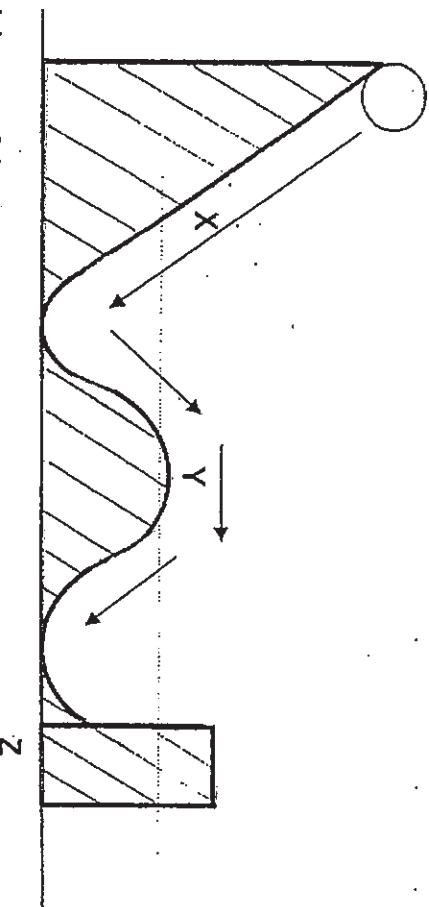
John wanted to put the metal ball to pass through the metal ring. However, the size of the metal ball was bigger than the metal ring.



What should John do to allow the metal ball to pass through the metal ring?

- (1) A only
 - (2) B only
 - (3) A and D only
 - (4) B and C only
- A Heat the ball over a flame
 - B Heat the ring over a flame
 - C Dip the ball into the cold water
 - D Dip the ring into the cold water

30 Sally released a tennis ball from the top of ramp X. The ball rolled downwards, travelled up and down ramp Y and was finally stopped by a wooden block Z, as shown in the diagram below.



Which one of the following statements is correct?

- (1) When the ball was stopped by Z, its energy was destroyed.
- (2) When the ball was released, it gained gravitational potential energy.
- (3) The ball gained more kinetic energy when it was rolling down X than when it was rolling down Y.
- (4) There was no friction between the surfaces of the ball and the ramps when the ball was rolling down the slope.

Name: _____ Index No: _____ Class:P6 _____

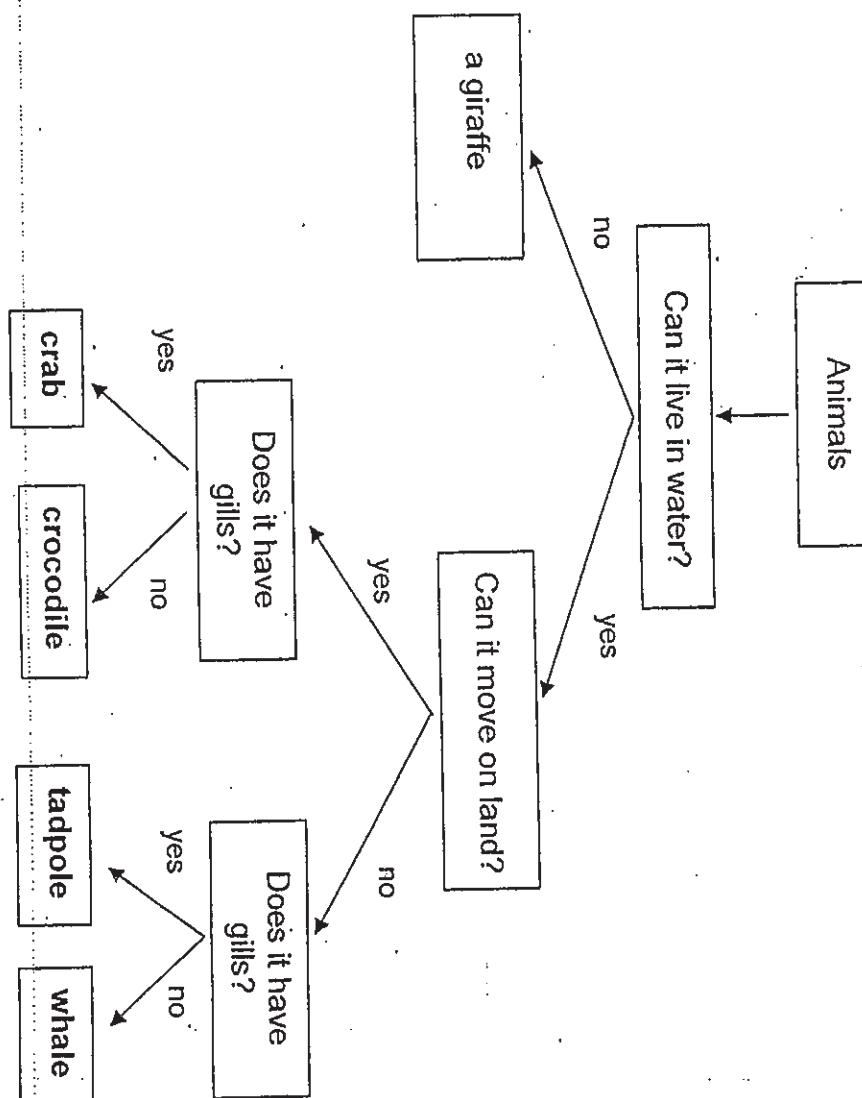
40

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 brackets [] at the end of each question or part question.

- 31 The flow chart below classifies some organisms.



Based on the information above, answer the following questions:

- (a) State a similarity between 'crab' and 'whale'. [1]

- (b) List two characteristics of the crocodile. [2]

CHARACTERISTIC 1	
CHARACTERISTIC 2	

The table below shows some characteristics that Jason and his family members possess.

family member	characteristics		
	eye colour	eyelids	hair length
Jason's grandfather	black	single	long
Jason's grandmother	brown	double	short
Jason's father	brown	double	short
Jason's mother	brown	single	long
Jason	black	?	long

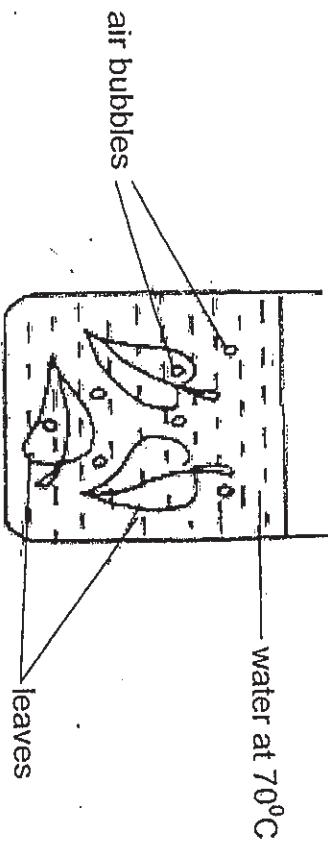
Based on the information above, answer the following questions:

- (a) Would Jason have single or double eyelids?
Explain your answer.
[1]
-
-

- (b) Why does Jason have black eyes although his parents have brown eyes?
[1]
-
-

33

Michelle placed a few leaves in a beaker of water at 70°C . After a short while, she observed some air bubbles formed on both sides of each leaf.

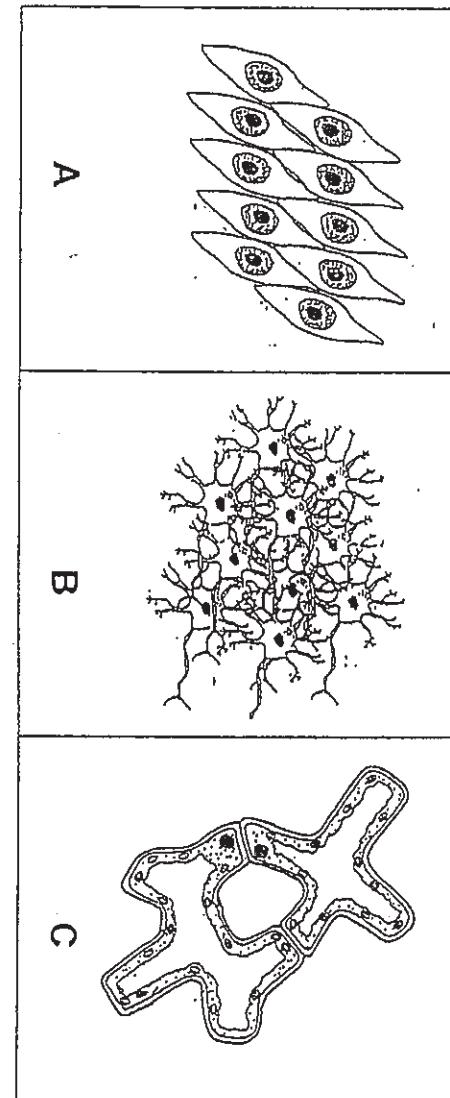


- (a) Name the part of the leaf where the bubbles escaped from. [1]
-

- (b) Michelle observed that there were more bubbles on the underside of the leaves.
What could she conclude from her observation? [1]
-

34

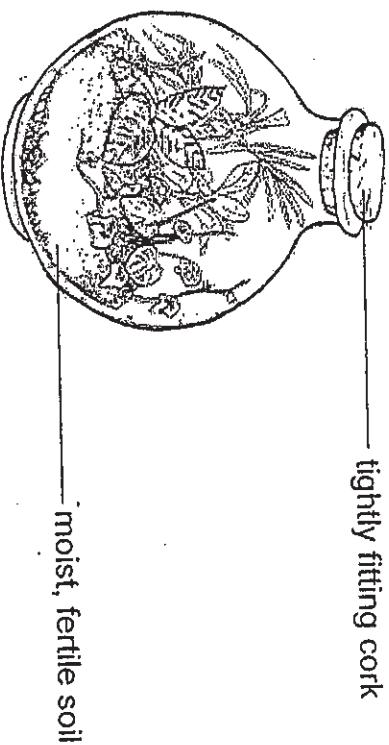
The diagram below shows three different groups of cells.



Which of these cells (A, B and/ or C) is a /are plant cell(s)?
Give a reason for your answer.

[2]

Kimberly set up a 'bottle garden' and placed it outside the classroom near the windows.



- (a) Kimberly did not water the 'bottle garden'.

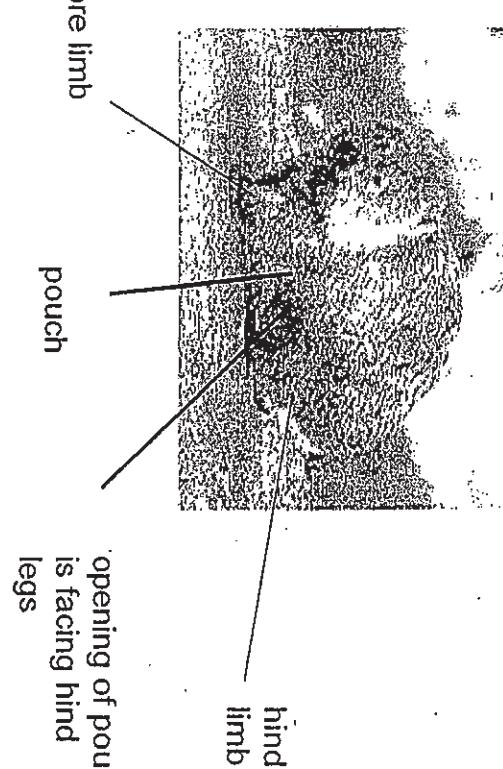
Explain why the plants in the 'bottle garden' were still able to obtain a continuous supply of water. [2]

Kimberly introduced a carnivorous animal X in the bottle garden and it continued to survive for the next 3 days.

The bottle garden supplied sufficient water for animal X and the plants.

- (b) Explain how animal X and the plants were interdependent on each other. [2]
- _____
- _____
- _____
- _____

36 The picture below shows a wombat.



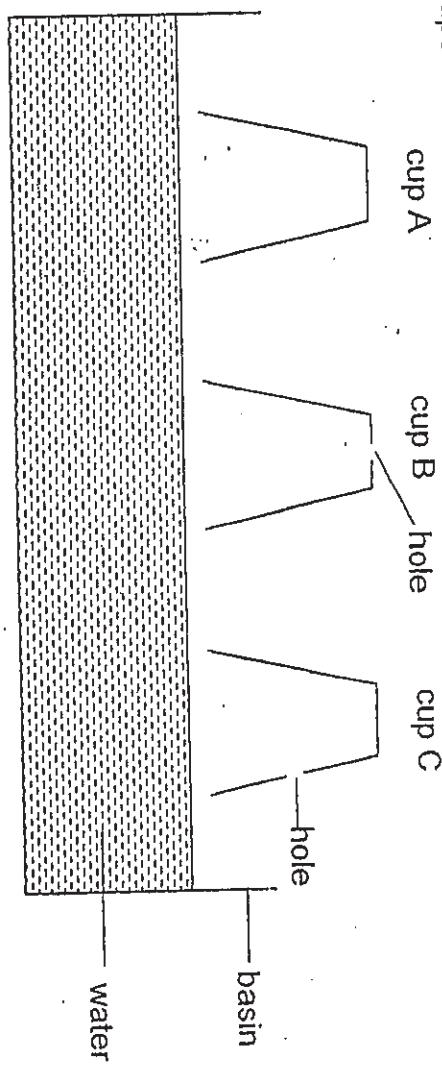
Wombats are Australian marsupials. They dig and burrow into the ground. The females carry their young in pouches which face backwards.

- (a) Explain how having such a pouch helps its young when the wombat burrows into the tunnel. [1]

- (b) Besides its rodent-like front teeth, name **ANOTHER** structural adaptation a wombat has to enable it to dig tunnels or burrow easily. [1]

37

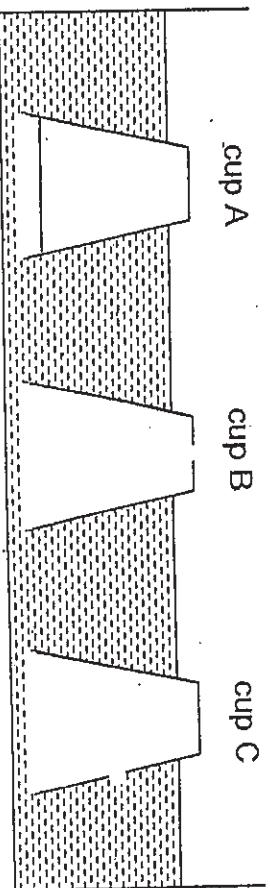
Susan carried out an investigation on the property of air using three identical plastic cups, A, B and C, and a basin of water. A hole was made in each of cups B and C.



The cups were pushed vertically downwards into the basin of water as shown in the diagram below.

- (a) Complete the diagram by drawing in the correct water levels in cups B and C when they were held in the positions as shown below.

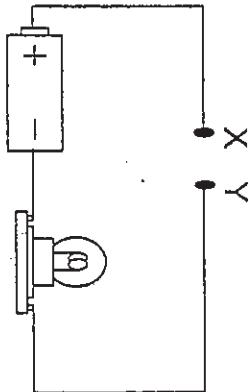
The water level in cup A has been drawn for you. [2]



- (b) Explain your answer in part (a) for cup B. [2]

38

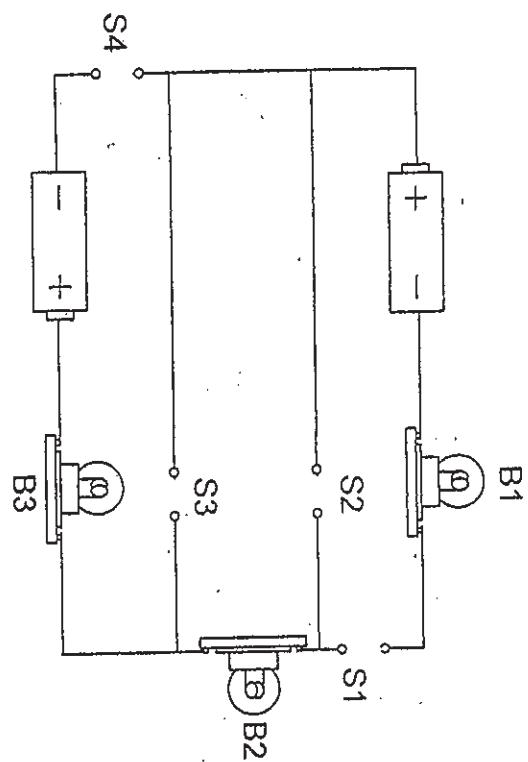
The diagram below shows a circuit. The table shows what happens to the light bulb when four different rods, A, B, C and D, were connected, one at a time, to the contact points X and Y.



rod across XY	Did the bulb light up?
A	yes
B	no
C	no
D	yes

- (a) What can be said about the rods from the results above? [1]

In another experiment, the same four rods, A, B, C and D, were placed at different positions, S₁, S₂, S₃ and S₄, in the following circuit.



- (b) Complete the following table.
Put a tick (✓) in the appropriate box to show that the bulb lit up.
[1]

position where each rod was placed				bulbs		
S1	S2	S3	S4	B1	B2	B3
B	D	C	A			

- (c) All the 3 bulbs, B₁, B₂ and B₃, lit up.

Write letters A, B, C or D in each appropriate box below.
Each letter can be written ONCE only.
A tick (✓) in the box shows that the bulb lit up.

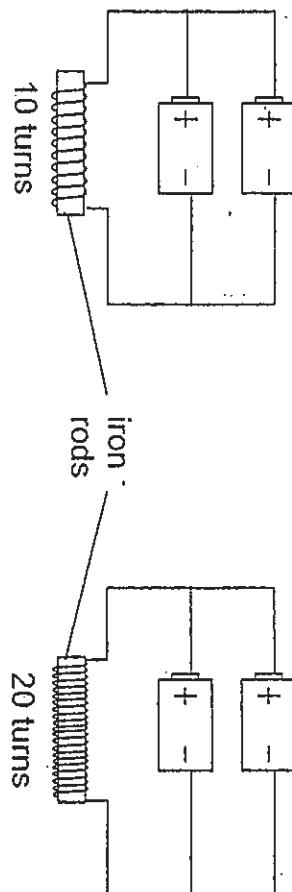
[1]

position where each rod was placed				bulbs		
S1	S2	S3	S4	B1	B2	B3
				✓	✓	✓

39

An iron rod becomes a magnet when it is placed in a coil of wire connected to the dry cells.

Sally wanted to find out whether the number of turns of the coil affects the strength of a magnet. Using two identical iron rods, some identical wires and some identical dry cells, she set up two arrangements as shown below.



arrangement A

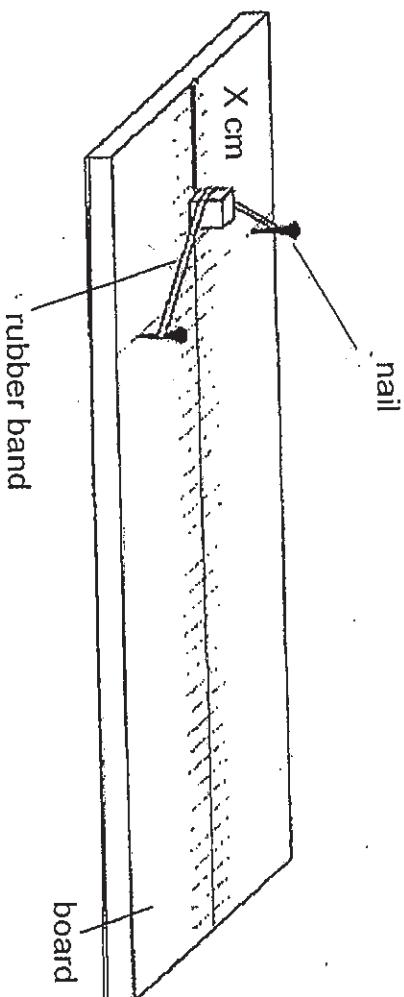
arrangement B

- (a) What should Sally measure to find out the strength of the magnetised iron rod in each arrangement using ONLY a paper clip and a ruler? [2]
-
-

- (b) Besides increasing the number of turns of coils, suggest ANOTHER method to increase the strength of the magnetised iron rod for each arrangement. [1]
-
-

- (c) How can Sally improve the reliability of her results? [1]
-
-

Karen stretched a strong rubber band between 2 nails on a board as shown below.



She pulled back a wooden cube against the rubber band. When she released it, the cube shot forward. She did this several times, each time pulling the rubber band back at a different distance.

She recorded her results in the table below.

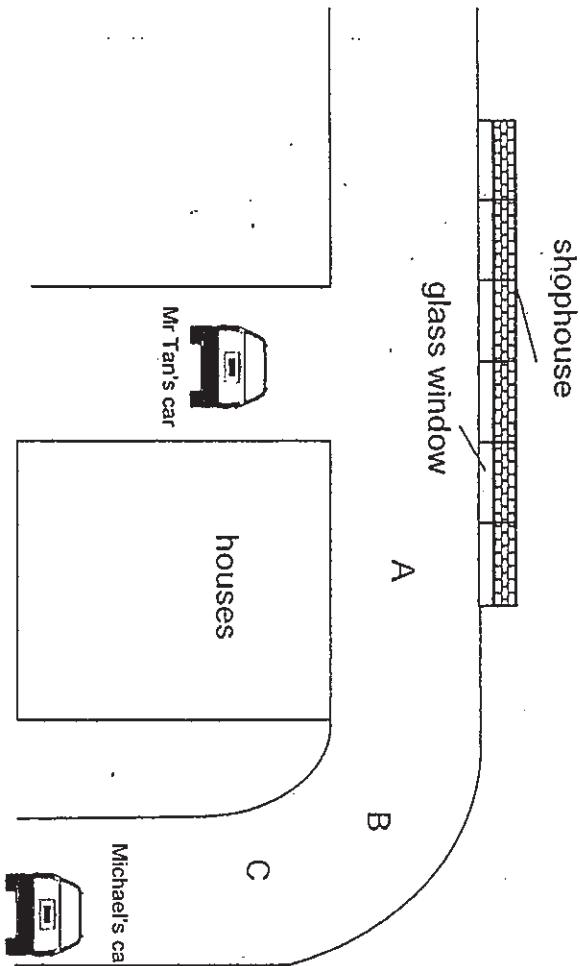
length of X (cm)	2	3	4	5	6
distance the cube travelled (cm)	63	55	42	(a)	15

- (a) Predict the distance moved by the cube when length of X was 5 cm. [1]
-
-

- (b) If Karen were to repeat the experiment using a bigger and heavier cube of the same material, predict the relationship between the mass of the cube and the distance it would travel. [1]
-
-

41

A row of shophouses with glass windows were built opposite the road junction:



Michael is driving his car round the bend. The houses blocked Mr Tan's view of Michael's car round the bend.

- (a) At which position, A, B or C, will Michael's car be when Mr Tan first sees it? [1]
-
-

- (b) Explain how the glass windows on the shophouses help Mr Tan to see Michael's car. [2]
-
-

- (c) State the property of light illustrated in the above situation. [1]
-
-

42

A company made a new material called 'Keepwarm' to make winter coats.

A scientist tested 'Keepwarm' to find out how well it can retain heat. She tested 'Keepwarm' and three other materials. She poured 50 ml of water in each of the 4 identical beakers and wrapped each beaker with a different material.

She recorded her observations in the table below:

In beaker

time (minutes)	temperature of water ($^{\circ}\text{C}$) wrapped with			
	material A	material B	material C	material D
0	80	80	80	80
20	68	60	58	62

Based on the information above, answer the following questions:

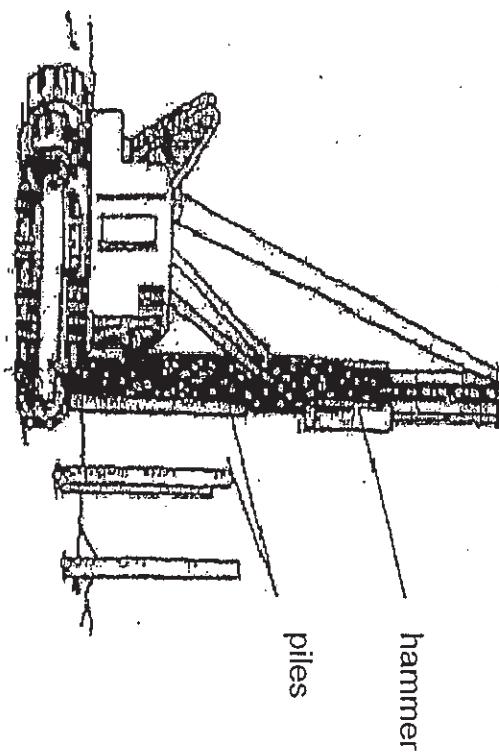
The scientist said that 'Keepwarm' was the best material to make coats.

Which material, A, B, C or D, was 'Keepwarm'?

Explain why the scientist made the above comment.

[2]

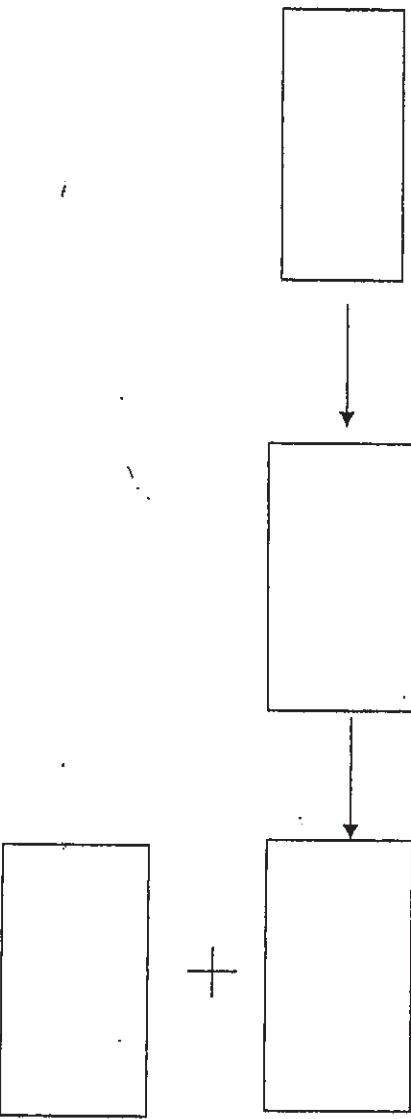
- 4.3 The diagram below shows a piling machine used in construction sites. A hammer drives piles into the ground.



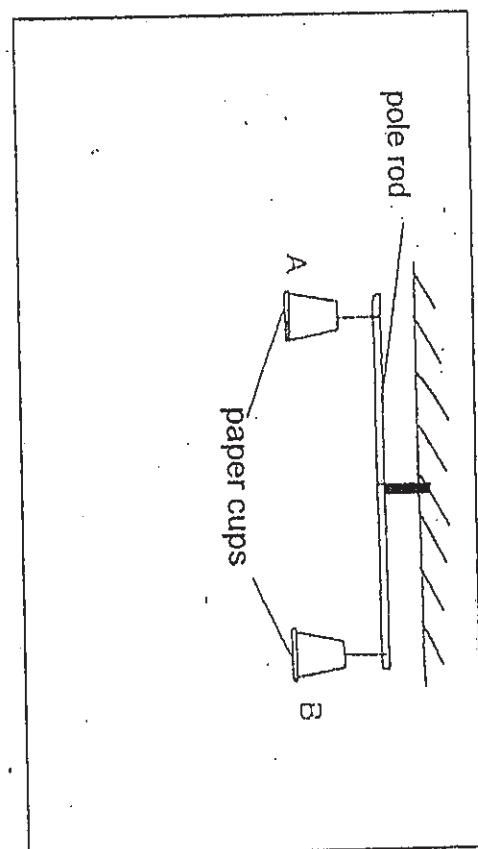
(a) State the relationship between the height from which the hammer is

dropped and the depth of the pile driven into the ground. [1]

(b) State the energy change that takes place when the hammer is
dropped on the pile. [2]



Mathilda balanced two paper cups, A and B, on a rod as shown in the diagram below.

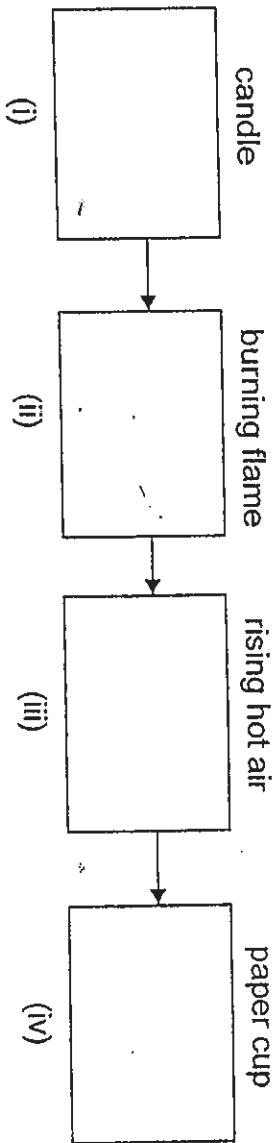


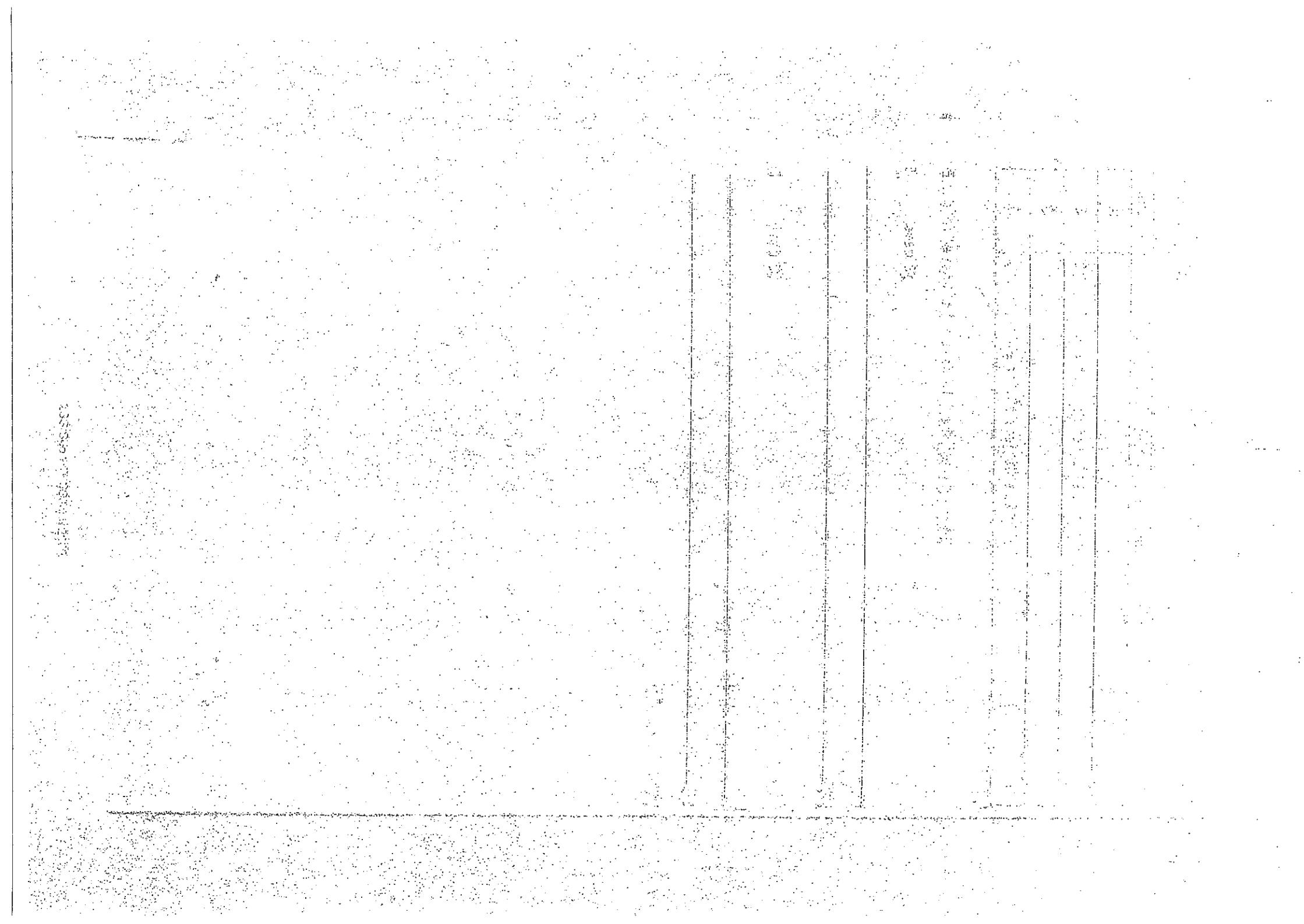
Next, she placed a lighted candle directly below paper cup A and made some observations.

- (a) In the space below, DRAW how the set-up would look like when the candle was lit. [1]



(b) Complete the boxes below.
Trace the energy transfer that took place from the burning candle.





Answer Ke

EXAM PAPER 2010

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

TERM : PERLIMINARY

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

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

31)a)They both can live in water.

b)1)can live in water. 2)can move on land.

32)a)Jason may have single or double eyelids. It is because he inherited both genes from father who has double eyelids and his mother who has single eyelids, however one of the genes may be masked.

b)He inherited them from his parents who have genes for black eyes which are "masked".

33)a)Stomata.

b)She can conclude that stomata are found on the underside of leaves.

34)Cells A and B have regular shapes, we can conclude that cell A and C are plant cells. However animal cell do not have cell walls, hence as cell B has an irregular shape, we can conclude that it is not a plant cell but an animal cell.

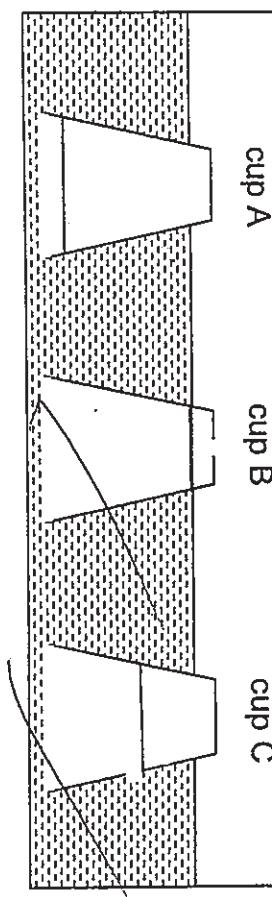
35)a)It is because moisture and air cannot escape the bottle, hence the water in the fertile soil will evaporate when it is being heated by the sun, forming into water vapour, then the water vapour will rise and condense on the cool inner surface of the bottle, forming into tiny water droplets, finally when the water droplets get too big, it will drip back into the soil, thus this ensures a continuous supply of fresh water for the plants to take in through the roots during photosynthesis where by carbon dioxide is taken in and oxygen is given out.

35)b)When animal X respire, it will take in oxygen & give out carbon dioxide, thus the carbon dioxide produced by animal X will be used by the plants during photosynthesis. During photosynthesis, the plants will replenish the oxygen by taking in carbon dioxide and giving out oxygen for animal X to use during respiration, therefore this shows animal X & the plant were interdependent on each other.

36)a)Its young will not be hit by the soil/drop out of the pouch when the adult wombat digs or burrow into the soil.

b)Sharp and hook claws to allow it to dig tunnels or burrow easily.

37)a)



b)Air escape through the hole in cup B to occupy the space/displace the escaped air.

38)a)A and D are conductors of electricity while B and C are insulators of electricity.

- b)B2, B3
- c)ABCD

39)a)Sally should measure the maximum distance the magnetised iron can attract the paperclip from by using a rule.

- b)Use more dry cells./arrange dry cells in series.

c)She could repeat the experiment at least 3 times and record the distances before finding the average distance of which the magnetised iron rod can attract the paperclip from.

40)a)33cm.

b)The greater the mass of the cube the shorter the distance it would travel.

41)a)Position C.

b)Glass has a smooth surface, hence it reflects light very well, thus when Michael's car was at A, the car reflects the light from a light source to the glass windows before being reflected by the glass window into Mr Tan's eyes, there Mr Tan could see Michael car.

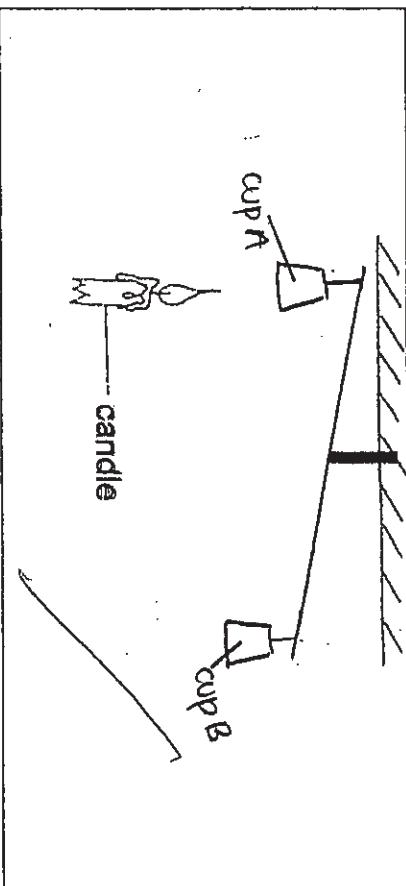
c)Light can be reflected.

42)Material A. It is because material A retained the most heat compared to the three other materials B, C and D, hence it has the highest temperature among, the materials, making it suitable and the best material to make coats so as to keep us warm. "keep warm" conducted heat away the slowest/conducted heat slowly poorest conductor of heat.

43)a)The greater the height from which the hammer is dropped, the greater the depth of the pile driven into the ground.

b)gravitational potential energy \rightarrow kinetic energy \rightarrow heat energy + sound energy.

44)a)



- b)i)chemical potential energy ii)heat energy + light energy
iiii)kinetic energy + heat energy iv)kinetic energy





RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION
2009

Name: _____ Index No: _____ Class: P 6 _____

28 August 2009

SCIENCE

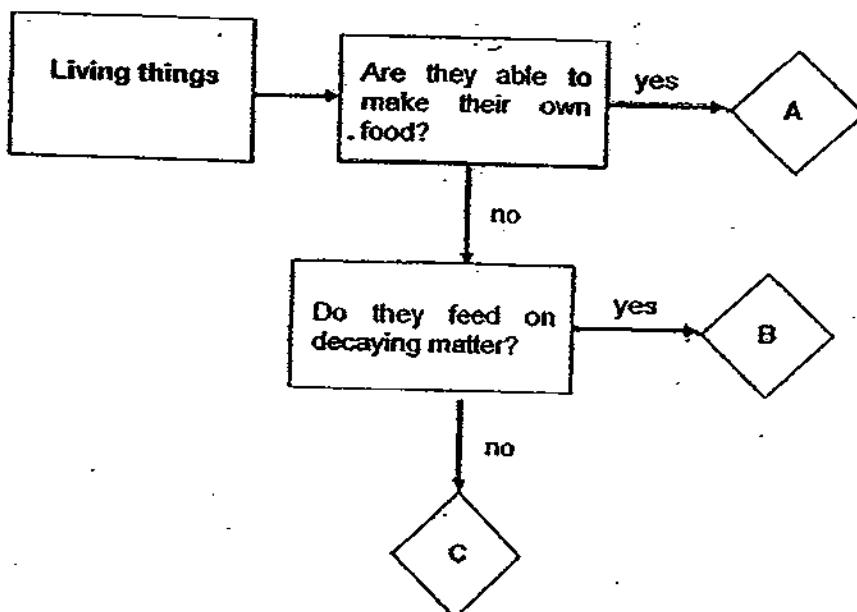
Alt: 1 h 45 min

SECTION A (30 X 2 marks)

Your score out of 100 marks	
Highest score	
Average score	
Parent's signature	

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.

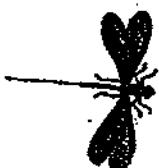
- 1 The flow chart below shows how some living things are classified.



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

	A	B	C
(1)	mouse	mushroom	toad
(2)	grass	mould	frog
(3)	yeast	toadstool	staghorn fern
(4)	bird's nest fern	grasshopper	lizard

- 2 The table below shows the classification of some insects.

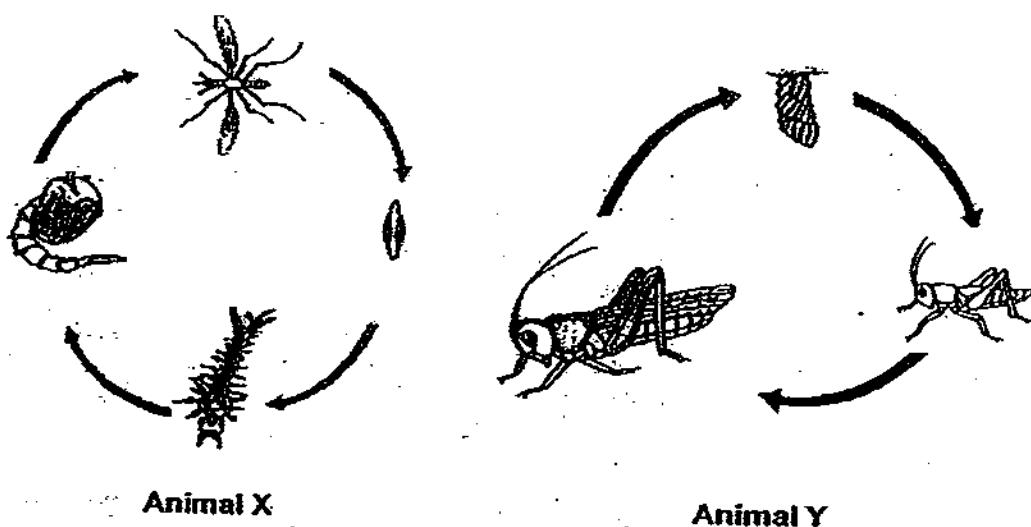
Insects			
X		Y	
has two pairs of wings	does not have wings	has two pairs of wings	has a pair of wings
A	B	C	D
			
butterfly	ant	dragonfly	mosquito

Which one of the following sets of sub-headings best represents X and Y?

	X	Y
(1)	has 3-stage life cycle	has 4-stage life cycle
(2)	lay eggs on land	lay eggs in water
(3)	has two body parts	has three body parts
(4)	cannot fly	can fly

3

The diagrams below show the life cycles of animals X and Y.



Animal X

Animal Y

Based on the diagrams above, which of the following statements about animals X and Y is / are true?

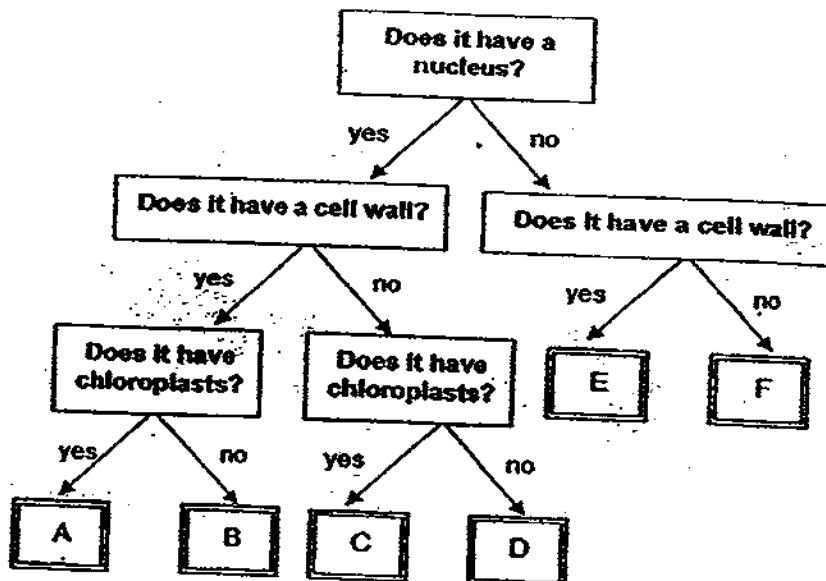
- A Both the adults do not have wings.
- B Both the young do not live in water.
- C Both the adults do not give birth to their young alive.
- D Both are pests in at least one stage of their life cycles.

- (1) D only
(3) B and C only

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

4

The diagram below shows a flow chart to differentiate some cells.



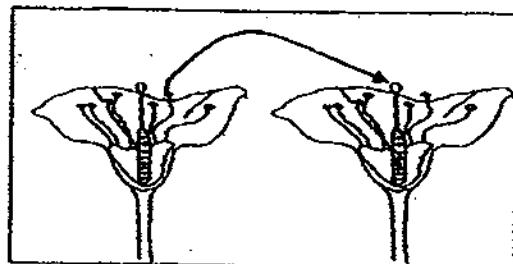
Based on the information above, four pupils made the following statements:

- Alica : Cells D and F can be animal cells.
- Bernice : Cells A, B and E can be plant cells.
- Christel : Cells A and C are able to photosynthesise.
- Daisy : Cells E and F are not cells as they do not have a nucleus.

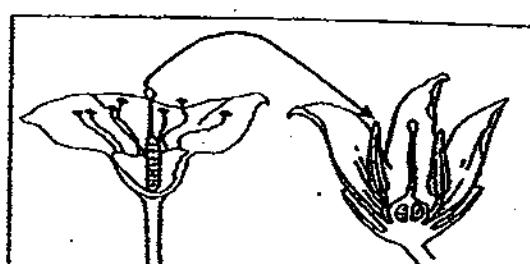
Which of these pupils made (an) incorrect statement(s)?

- (1) Daisy only
- (2) Alica and Bernice only
- (3) Alica and Daisy only
- (4) Bernice and Christel only

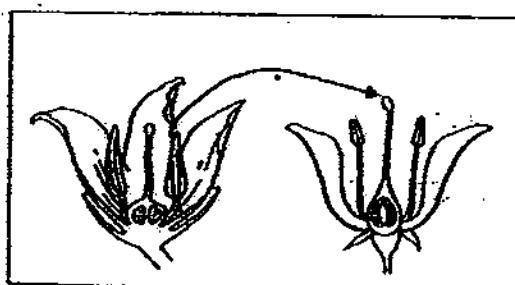
- 5 The arrows in each of the following diagrams show the transfer of pollen grains between 4 pairs of flowers, A, B, C and D.



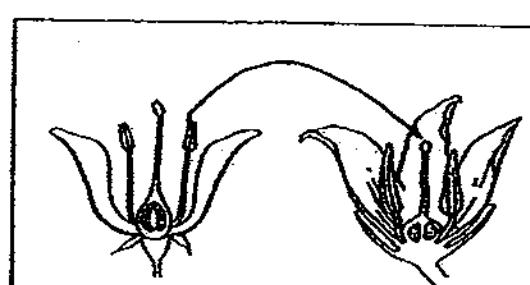
pair A



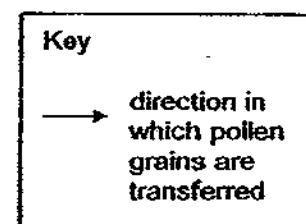
pair B



pair C



pair D

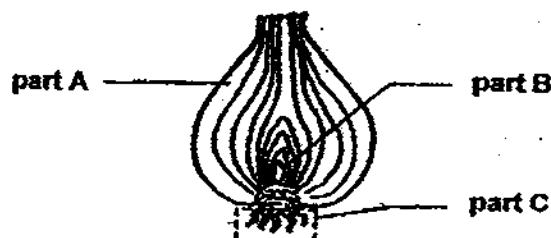


Which pair(s) of flowers would most likely develop into fruit(s)?

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

- 6 An experiment was set up using four onions, W, X, Y and Z.
At the start of the experiment, one or two different part(s) of the onions was / were removed.

The different parts of the onion are shown in the diagram below.



A cross-section of an onion

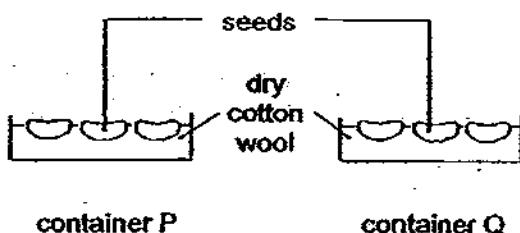
The table below shows the different part(s) of each onion, W, X, Y and Z, that was / were removed.

onion	part A	part B	part C
W	removed	present	removed
X	removed	present	present
Y	present	removed	present
Z	present	removed	removed

Which one of these onions, W, X, Y or Z, would most likely grow a shoot first?

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

- 7 Sarah placed an equal number of similar seeds in containers P and Q.



After one week, Sarah observed that only the seeds in container Q had germinated.

Based on Sarah's observations, which one of the following pairs describes correctly the conditions in which the seeds were exposed to in each container?

	container P	container Q
(1)	<ul style="list-style-type: none">• placed under the sun• no water given	<ul style="list-style-type: none">• placed in a dark cupboard• no water given
(2)	<ul style="list-style-type: none">• placed in a dark room• watered daily	<ul style="list-style-type: none">• placed under the sun• watered daily
(3)	<ul style="list-style-type: none">• placed in the freezer• watered daily	<ul style="list-style-type: none">• placed in a dark room• watered daily
(4)	<ul style="list-style-type: none">• placed in an air-tight container• watered daily	<ul style="list-style-type: none">• placed under the sun• no water given

- 8 Gaseous exchange takes place in the leaves of plants.

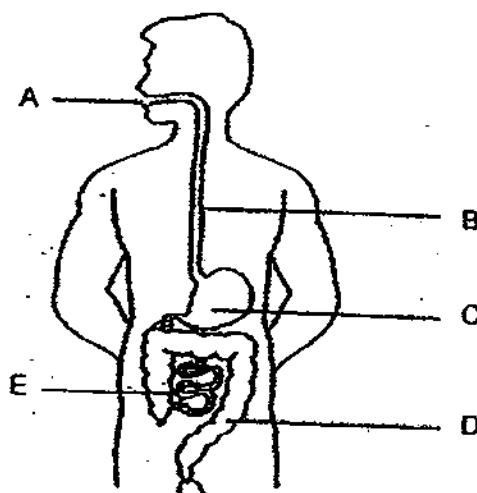
The table below shows the gases, A, B, C and D, involved during the 2 processes carried out by the leaves of plants.

process	gas taken in by the leaves	gas given out by the leaves
respiration	A	B
photosynthesis	C	D

What are A, B, C and D likely to be?

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

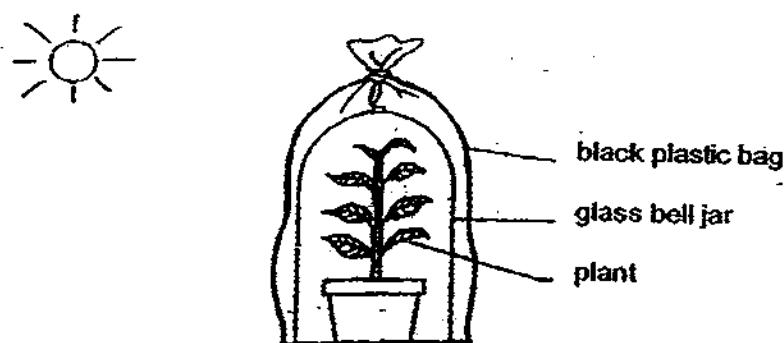
- 9 The diagram below shows parts of the human digestive system.



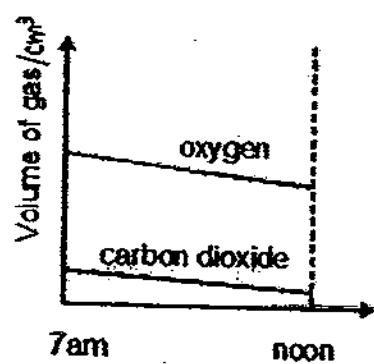
Which of these parts, A, B, C, D and E, produce digestive juices?

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

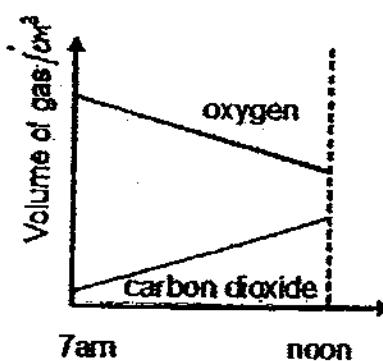
- 10 Tiara put a bell jar over a well-watered plant. She covered it with a layer of black plastic bag and placed it under the sun from 7 am to noon. The diagram below shows her experimental set-up.



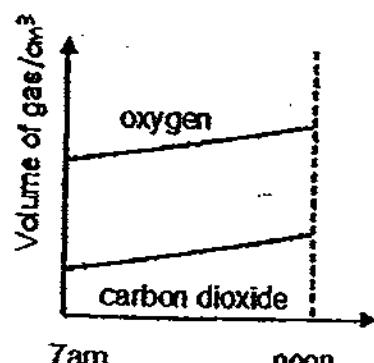
Which one of the following graphs shows correctly the changes in the levels of carbon dioxide and oxygen in the bell jar during this period of time?



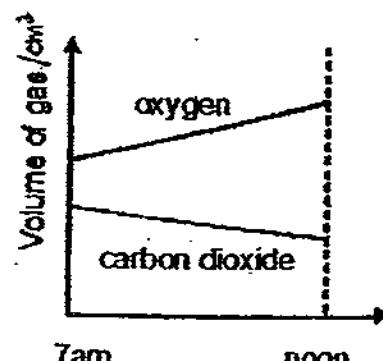
(1)



(2)

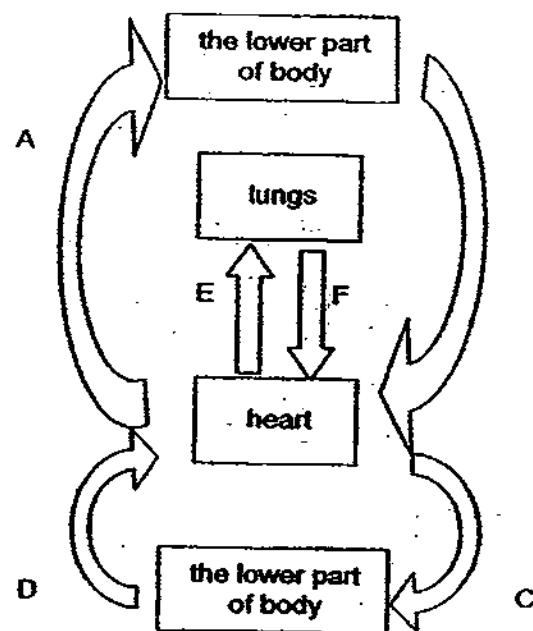


(3)



(4)

- 11 The diagram below shows the flow of blood from one part of the body to another.

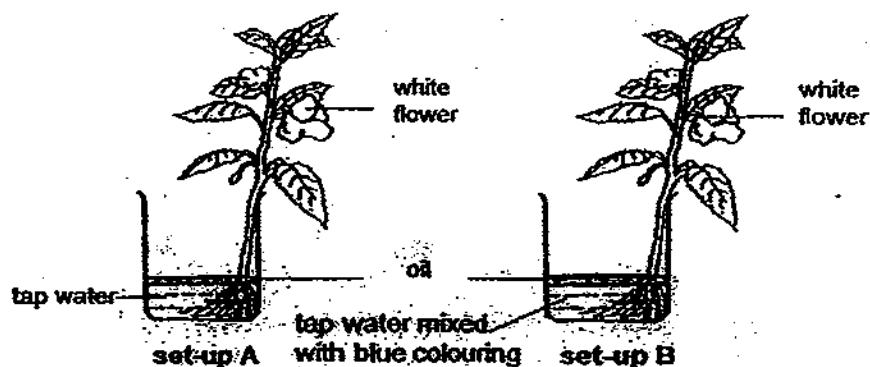


A, B, C, D, E and F represent the blood vessels in the body.

Which one of the following identifies correctly the type of blood found in these blood vessels?

	blood rich in oxygen	blood rich in carbon dioxide
(1)	A, C and E	B, D and F
(2)	A and C	B, D, E and F
(3)	A, C and F	B, D and E
(4)	A, D and E	B, C and F

- 12 To conduct an experiment, Susan prepared set-ups A and B using 2 similar plants as shown below.

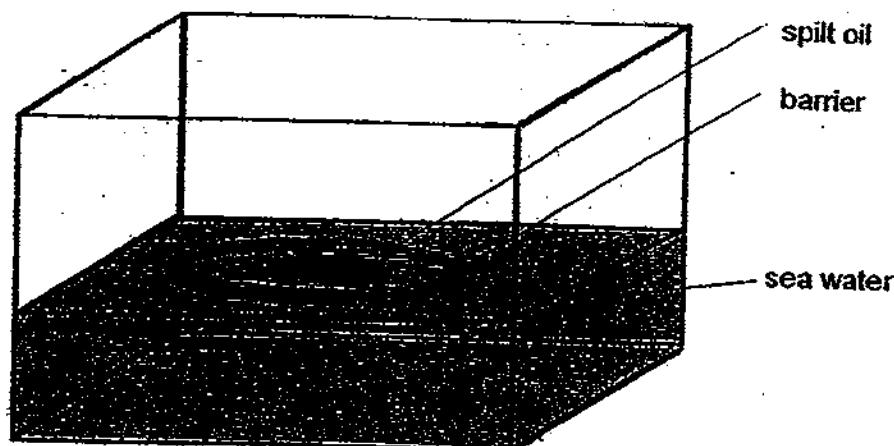


After a few days, she observed that the flowers and some parts of the leaves in set-up B had turned blue while the flowers in set-up A remained white.

Based on Susan's observations, what could she conclude from her experiment?

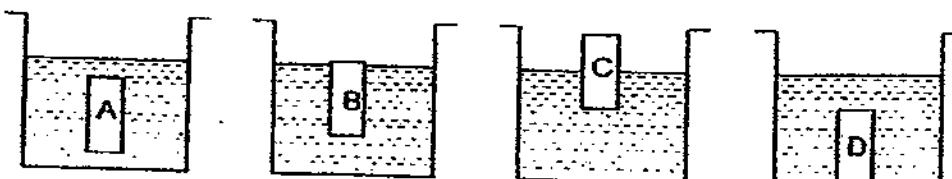
- (1) Water is transported throughout the plant by its xylem tubes.
- (2) Food is transported throughout the plant by its phloem tubes.
- (3) Water that is taken in by the roots is transported to other parts of the plant.
- (4) Food is produced in the leaves and transported to all parts of the plant.

- 13 One of the methods of controlling oil spill in the ocean is to surround the spillage with a barrier. The barrier prevents the oil from spreading to other parts of the ocean.



Professor Thamin conducted an experiment using 4 different blocks of the same volume, each made of a different material, A, B, C or D.

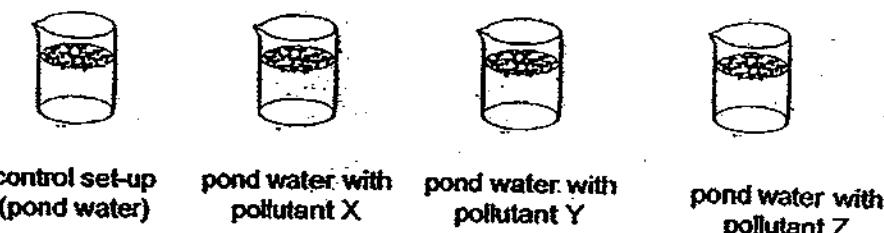
She took 4 identical beakers and filled each of them with an equal amount of sea water. Then she placed each block into each beaker, as shown in the diagrams below.



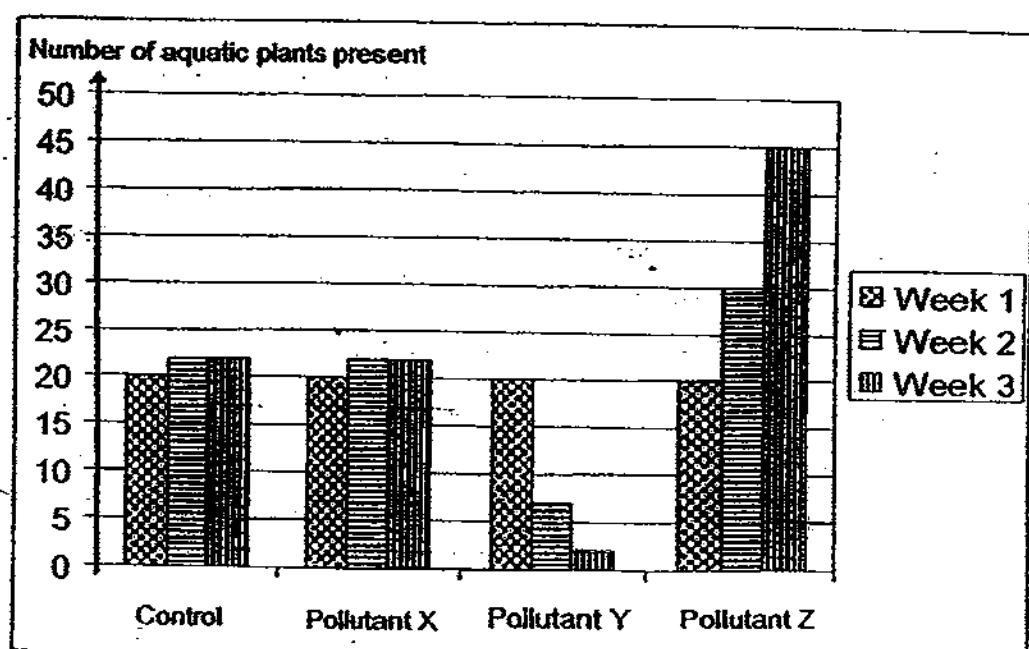
Which one of these materials, A, B, C or D, is the most suitable for making the barrier?

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

- 14 A group of students conducted the following experiment to find out the effects of pollutants, X, Y and Z, on a particular type of aquatic plant.



After 3 weeks, they constructed a graph with the data that they had collected.



The students made the following statements :

- | | |
|----------|---|
| Alia | : Pollutant X had no observable effect on the plant. |
| Beatrice | : Pollutant Y was not as harmful to the plant as pollutant Z. |
| Castlyn | : Pollutant Z was harmful to this species of plant. |
| Daphn | : All pollutants tested caused harm to this species of plant. |

Who made the correct statement(s)?

- 15 The diagram below shows parts of organism X found on a small island.

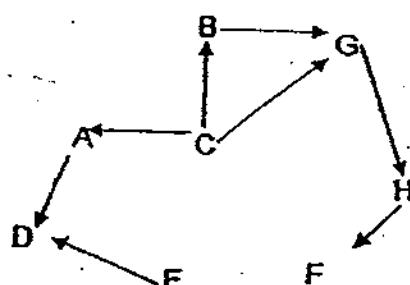


X is pollinated by organism Y.

One day, organism Z, which feeds on X, invaded the island.

How will the presence of Z affect X in the next four rows?

- 16 The diagram below shows a food web involving 8 organisms, A, B, C, D, E, F, G and H.

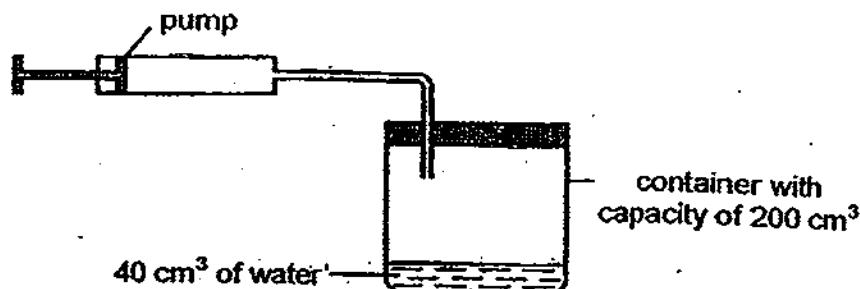


Based on the food web above, John constructed four different food chains.

Which one of the following food chains best illustrates the concept of energy flow?

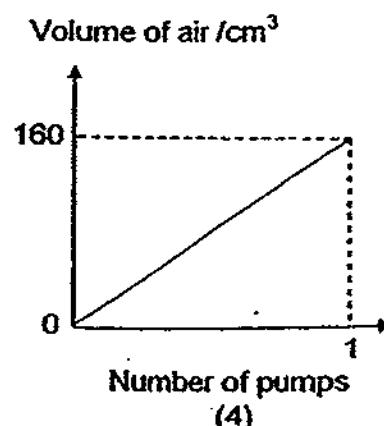
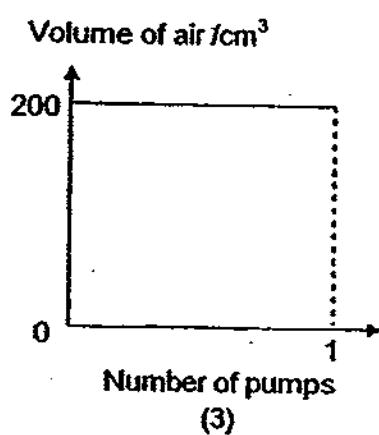
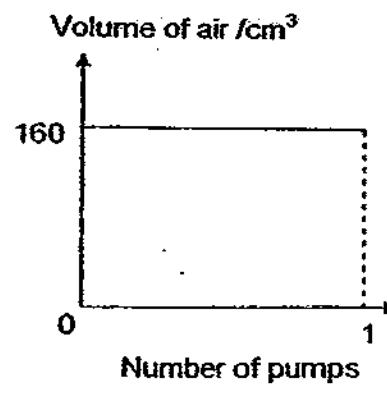
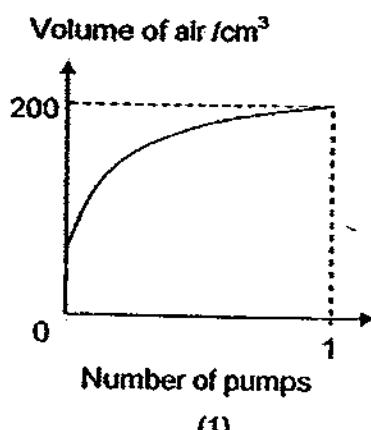
- (1) E → D
 - (2) A → D ← E
 - (3) C → G → B
 - (4) B → G → H → E

- 17 The diagram below shows a pump fitted to a container which has a capacity of 200 cm^3 .

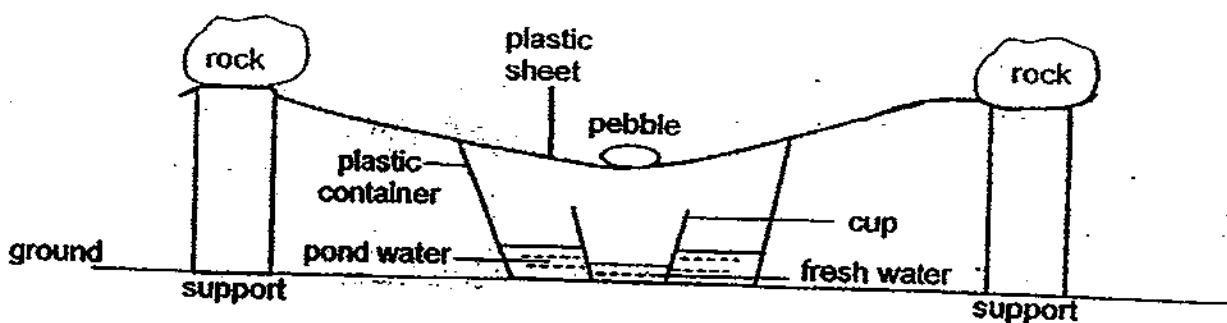


Each time the pump was pushed in completely, 100 cm^3 of air would enter the container.

Based on the information above, which one of the following graphs represents correctly the changes in the volume of air inside the container after the pump was pushed in completely once?



- 18 Chloe prepared the following set-up to collect fresh water from pond water.



She placed the set-up in an open field on a sunny day. After a few hours, she managed to collect some fresh water in the cup.

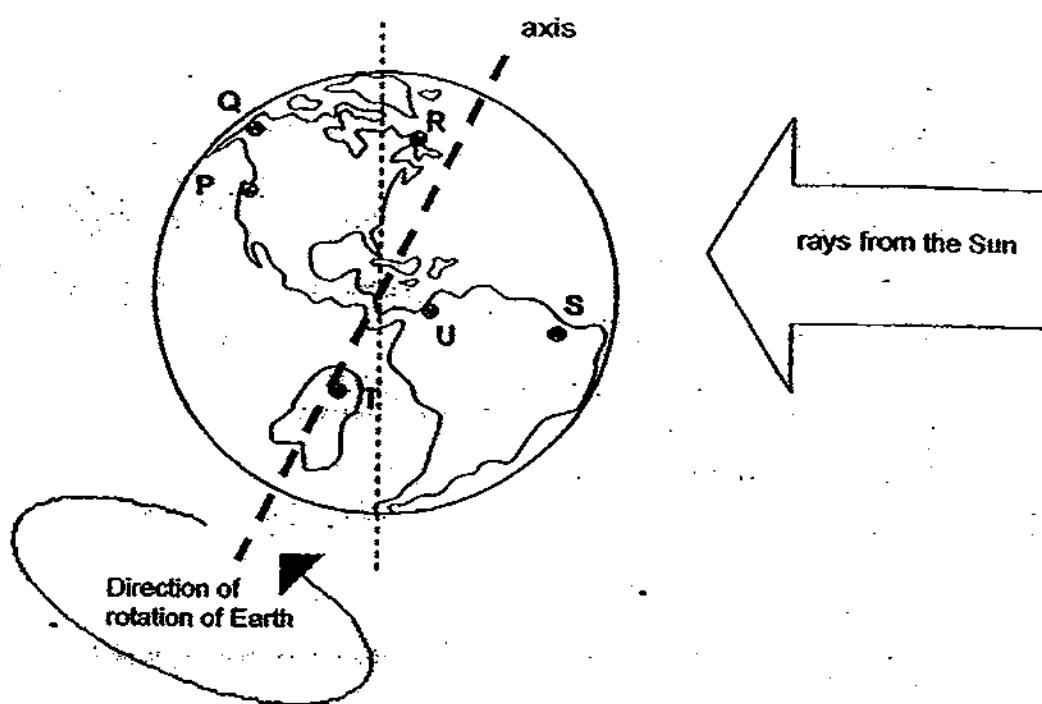
Chloe felt that the amount of fresh water she had collected was too little.

Which one of the following changes should Chloe make to the set-up so that more fresh water could be collected in the cup?

She should use _____

- (1) a smaller cup
- (2) a smaller pebble
- (3) a smaller plastic container
- (4) sea water instead of pond water

19 P, Q, R, S, T and U represent different locations on the Earth.



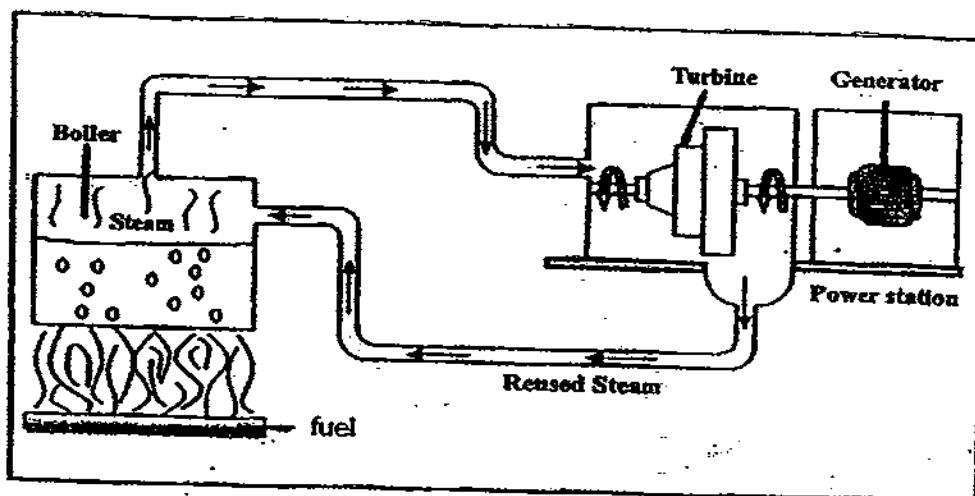
3 children located at different parts of the Earth made the following statements at the same time :

- | | |
|-----------|---|
| Abigail | : I can see the stars in the night sky. |
| Beeling | : The Sun is going to rise soon. |
| Catherine | : It is going to be noon soon. |

Based on the information above, which one of the following shows correctly where the children are on the Earth?

	Abigail	Beeling	Catherine
(1)	P	T	U
(2)	P	R	S
(3)	Q	T	S
(4)	Q	R	U

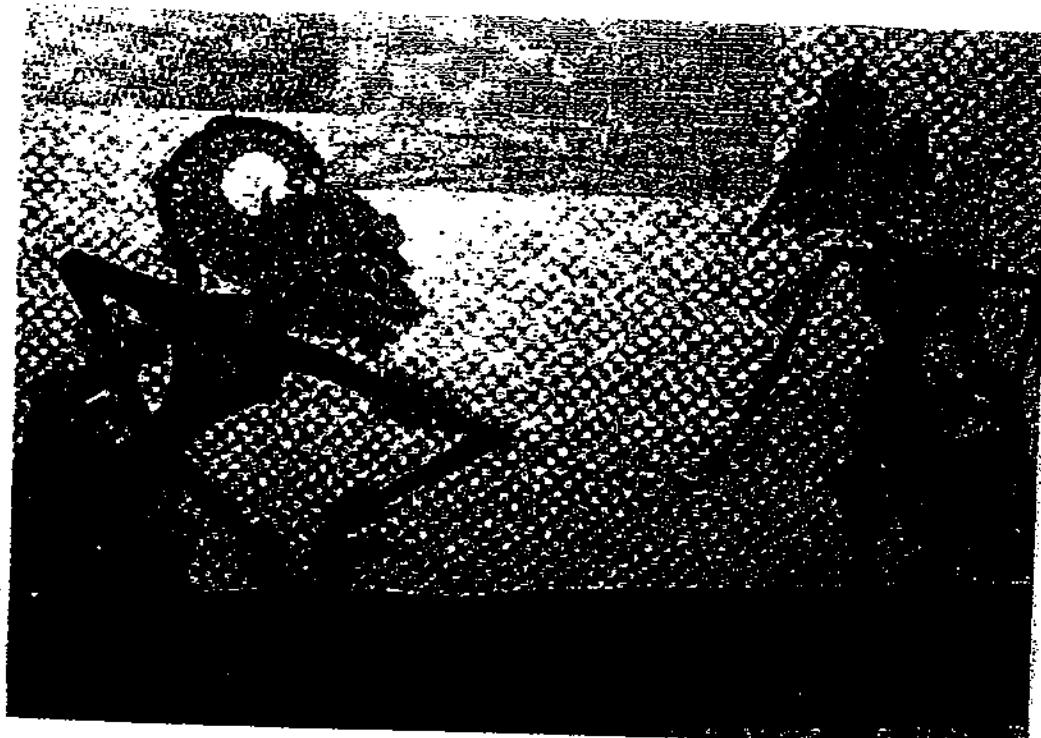
- 20 The diagram below shows how electrical energy is produced in a power station.



Which one of following shows correctly the energy conversions that take place in the production of electrical energy?

- (1) heat energy \longrightarrow kinetic energy \longrightarrow electrical energy
- (2) potential energy \longrightarrow heat energy \longrightarrow electrical energy
- (3) heat energy + light energy \longrightarrow kinetic energy \longrightarrow electrical energy
- (4) potential energy \longrightarrow heat energy \longrightarrow kinetic energy \longrightarrow electrical energy

- 21 The diagram below shows the use of shadows in 'Wayang Kulit', a puppetry art.

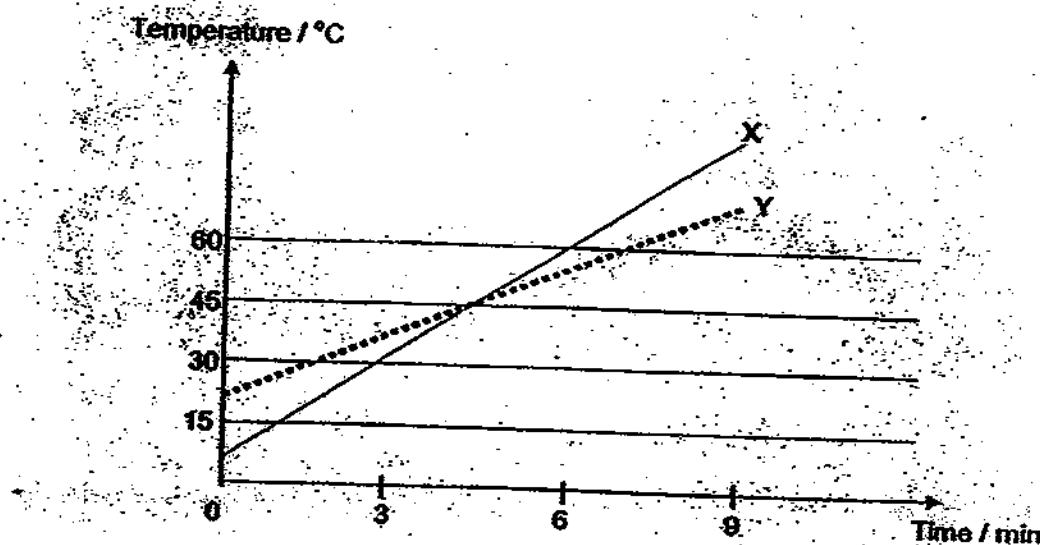


Which of the following statement(s) explain(s) how the shadows are formed clearly on the screen?

- A A transparent cloth is used as a screen.
 - B The puppets are made of opaque materials.
 - C A light source is placed before the screen while the puppets are behind the screen.
- (1) B only
(2) A and B only
(3) B and C only
(4) A, B and C

- 22 Peter had two identical beakers, X and Y, each filled with an equal amount of water. He heated the water in the beakers for 20 minutes until the water boiled.

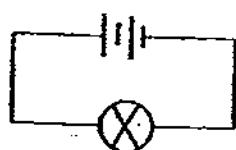
The graph below shows the changes in the temperature of the water in both beakers for the first 9 minutes.



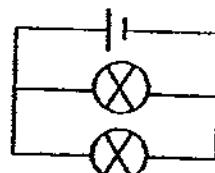
Which of the following statements is / are true?

- A The water in beaker X was heated with a stronger flame.
 - B Both beakers of water would reach the same temperature at the end of 20 minutes.
 - C Both beakers had water at room temperature at the start of the experiment.
- (1) A only
(2) B only
(3) A and B only
(4) B and C only

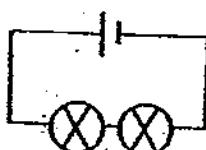
- 23 James set up four circuits, S, T, U and V, using identical batteries and bulbs as shown in the diagrams below.



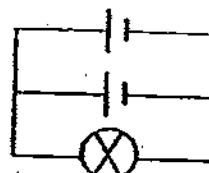
circuit S



circuit T



circuit U

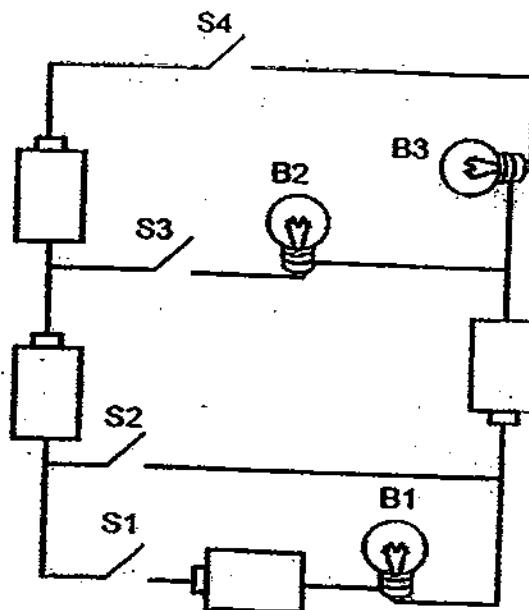


circuit V

In which one of the following circuits, S, T, U or V, will the bulb(s) remain lit for the longest period of time?

- | | |
|---------------|---------------|
| (1) Circuit S | (2) Circuit T |
| (3) Circuit U | (4) Circuit V |

- 24 The circuit below consists of four identical batteries, four identical switches, S1, S2, S3 and S4, and three identical bulbs, B1, B2 and B3.



Which of the following pairs of switches should be closed such that only ONE bulb will light up for each pair of switches?

A: S1 and S3

B: S1 and S4

C: S2 and S3

D: S2 and S4

E: S3 and S4

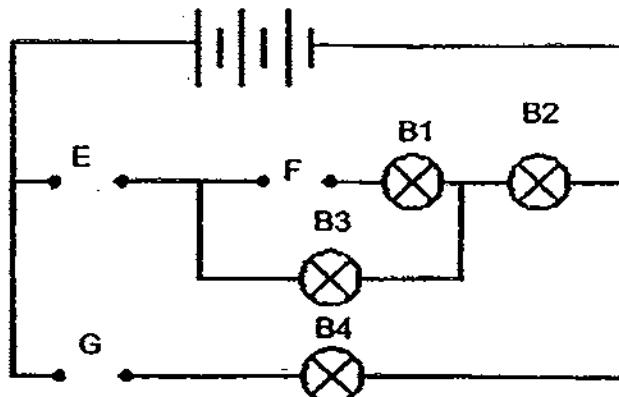
(1) A and E only

(3) A, B and D only

(2) C and D only

(4) B, C and E only

- 25 The diagram below shows a circuit with three gaps, E, F and G, where different objects could be connected to.



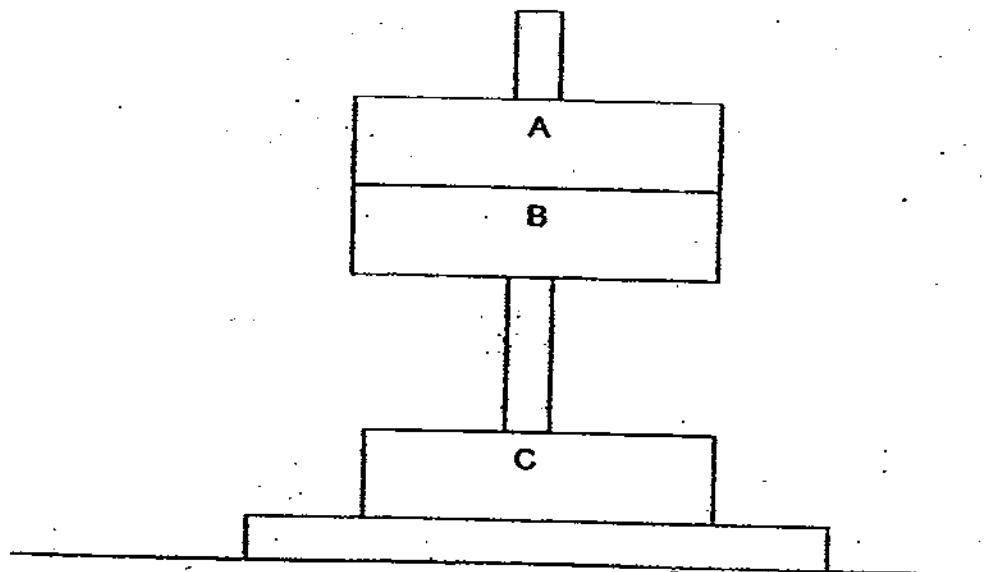
Wei Lin had three rods, X, Y and Z. She connected the ends of each rod to each of the gaps at E, F and G respectively. She recorded her observations in the table below. A tick (✓) in the box indicates that the bulb lit up.

position of rod			bulb(s) that lit up			
E	F	G	B1	B2	B3	B4
X	Y	Z		✓	✓	✓

Which one of the following shows the correct observations made of the bulbs for rods X, Y and Z placed at the various positions?

	position of rod			bulb(s) that lit up			
	E	F	G	B1	B2	B3	B4
(1)	X	Z	Y		✓	✓	✓
(2)	Y	Z	X			✓	✓
(3)	Z	Y	X	✓	✓	✓	
(4)	Y	X	Z				✓

- 26 The set-up below consists of three rings A, B and C. Two of them are ring magnets and one is a plastic ring. Ring B "floats" above ring C.

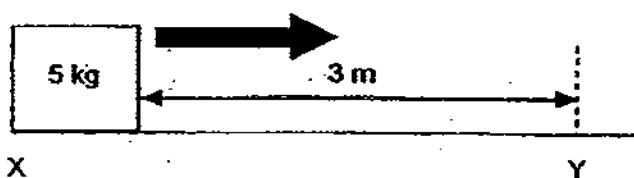


Based on the information above, which of the following statements is/ are most likely to be true?

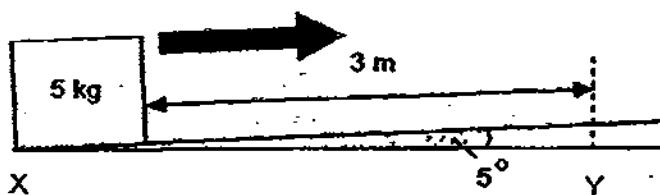
- A Ring A is a magnet.
 - B Ring B is the plastic ring.
 - C Unlike poles of rings A and B are facing each other.
 - D Like poles of rings B and C are facing each other.
- (1) C only
(2) D only
(3) A and B only
(4) A and C only

- 27 Which one of the diagrams below would require the greatest effort to move the 5 kg box from point X to Y?

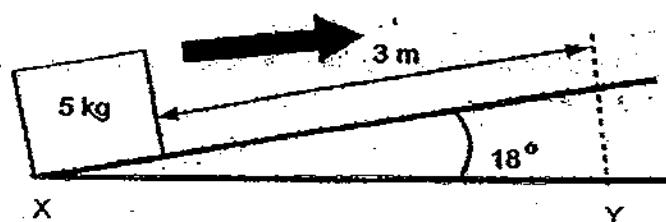
(1)



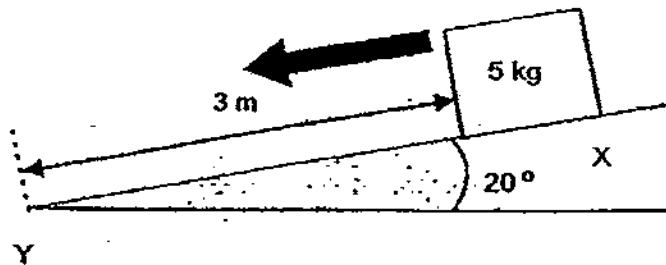
(2)



(3)



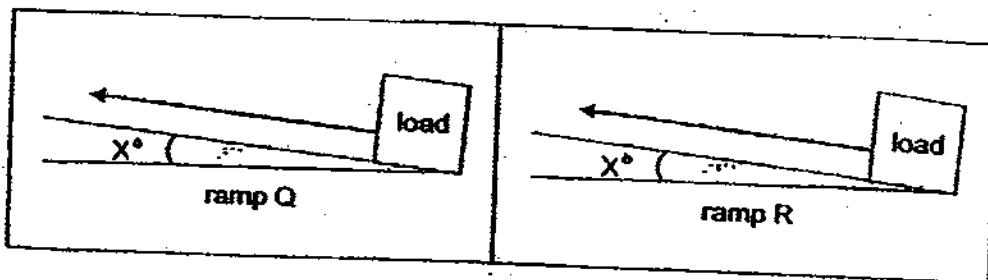
(4)



Key

→ direction in
which the
box moves

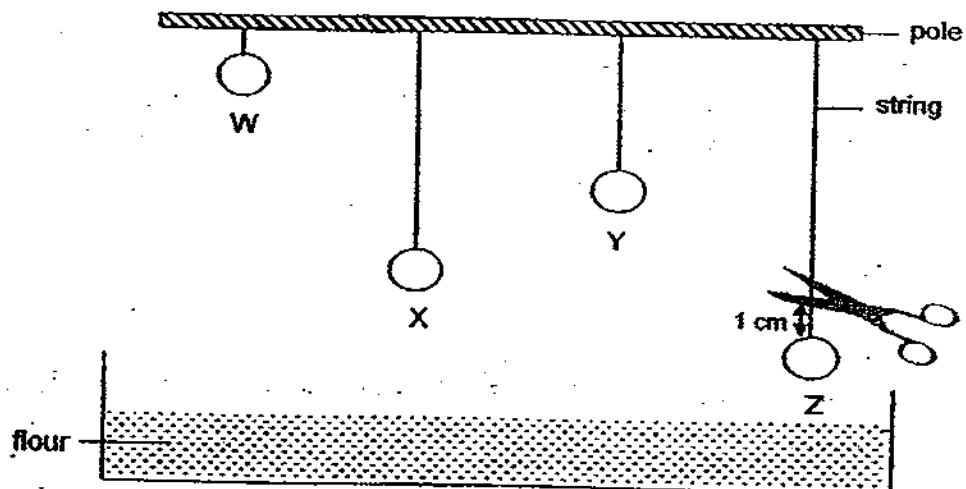
- 28 Sam pushed loads of the same mass up to the same height using two ramps, Q and R, which had the same angle of inclination, X° . He noticed that he required more effort to push the load up ramp R than Q.



What possible conclusions could Sam make about the two ramps, Q and R?

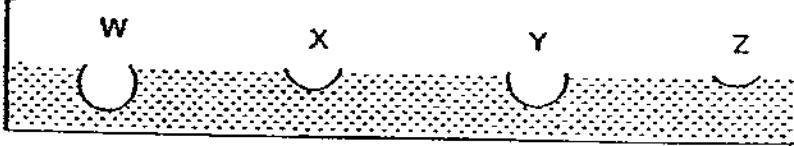
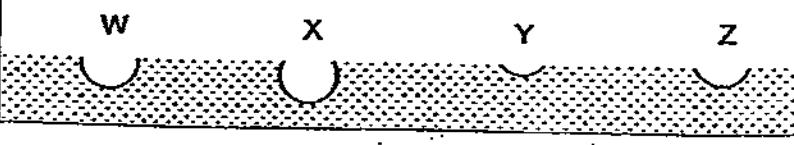
- A The surface of ramp R was rougher than ramp Q.
 - B There was less friction between the load and the surface of ramp Q than the surface of ramp R.
 - C The distance moved by the effort up ramp Q was greater than the distance moved by the effort up ramp R.
 - D The distance moved by the load up ramp R was greater than the distance moved by the load up ramp Q.
- (1) C only
(2) A and B only
(3) A and C only
(4) B and D only

- 29 Four identical balls, W, X, Y and Z, were hung from a pole using strings of different lengths as shown in the diagram below.

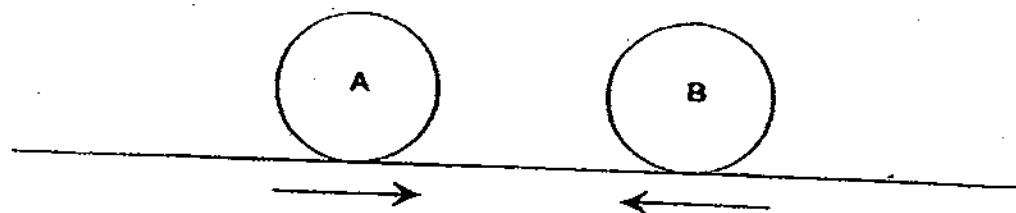


Each string was cut 1 cm above each ball. The balls landed in a container of flour placed directly below. Four dents of different depths were created in the flour by the four balls:

Which one of the following diagrams shows correctly the four dents in the flour made by the four balls respectively?

- (1) 
- (2) 
- (3) 
- (4) 

- 30 The diagram below shows two identical iron balls, A and B, moving towards each other at the same speed.



Which one of the following describes correctly what will happen when the two balls collide?

- (1) Balls A and B will move back in opposite directions at the same speed.
- (2) Balls A and B will move back in opposite directions at different speeds.
- (3) Ball A will move back in the opposite direction while Ball B will stop moving upon hitting Ball A.
- (4) Ball A will stop moving upon hitting Ball B while Ball B will move back in the opposite direction.

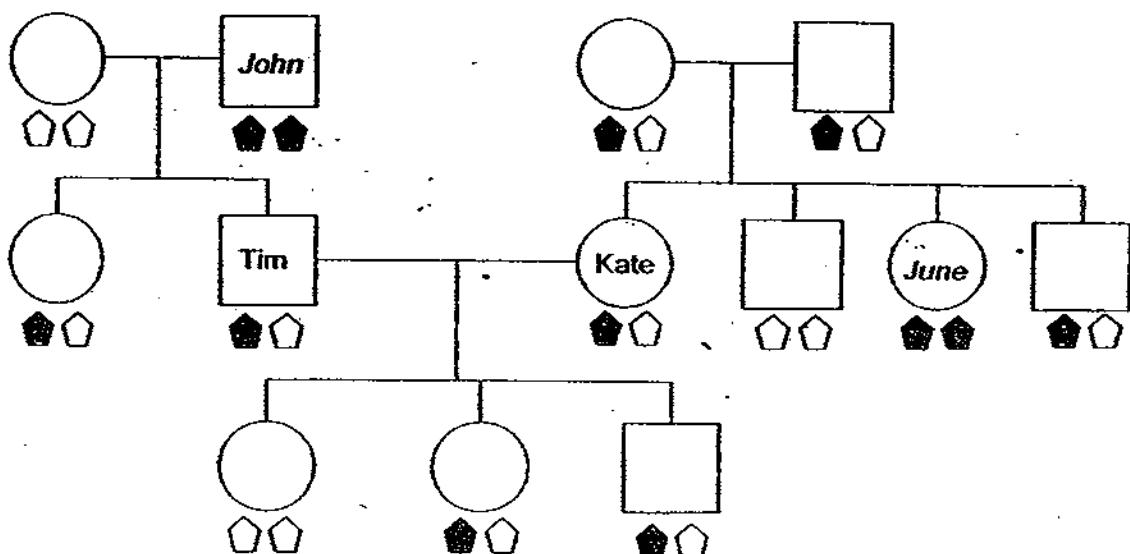
Name: _____ Index No: _____ Class: P6 _____

SECTION B (40 marks)

For questions 31 to 46, write your answers clearly in the spaces provided.

The number of marks available is shown in brackets [] at the end of each question or part question.

- 31 The diagram below shows Tim and Kate's family tree for the inherited characteristic of eye colour.

**Key:**

○ = female

□ = male

◆◆ = blue eyes

○◆ = genetic information for non-blue eyes

◆○ = non-blue eyes

◆○ = genetic information for blue eyes

○○ = non-blue eyes

◆○ – The genetic information for blue eyes remains hidden if it is paired with that for non-blue eyes.

◆◆ – Only John and June have blue eyes because they have inherited both pieces of genetic information for blue eyes from each of his/her own parents.

Based on the information on page 29, answer the following questions:

- (a) How many of Kate's siblings have blue eyes?

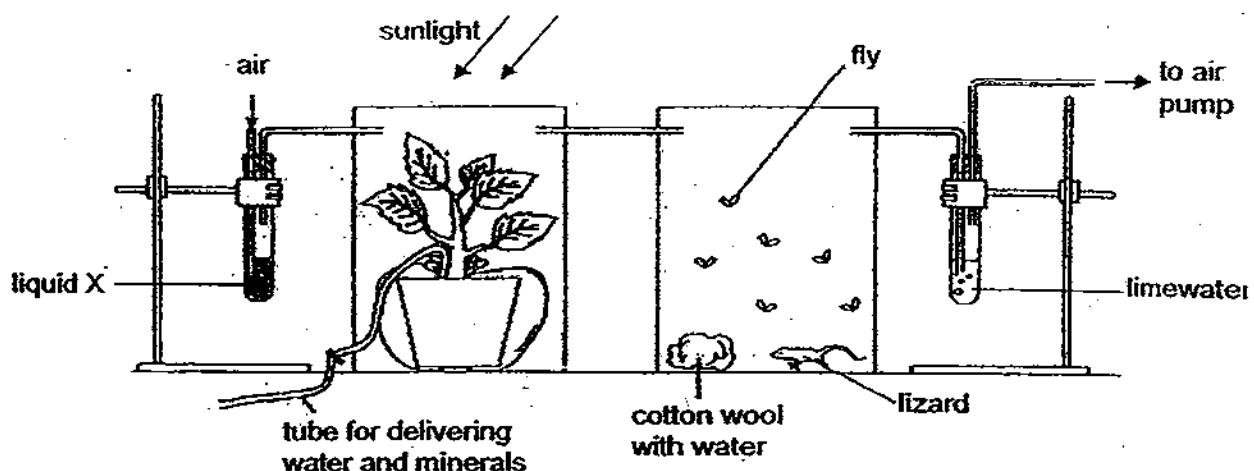
[1]

- (b) Tim and Kate's son got married and his wife gave birth to a daughter with blue eyes.

Complete the family tree on page 29 by DRAWING the following: [2]

- (i) the two new members in the family AND
(ii) the genetic information for each of the two new family members

- 32 Hillary used the following set-up to conduct an experiment.



Based on the diagram above, answer the following questions:

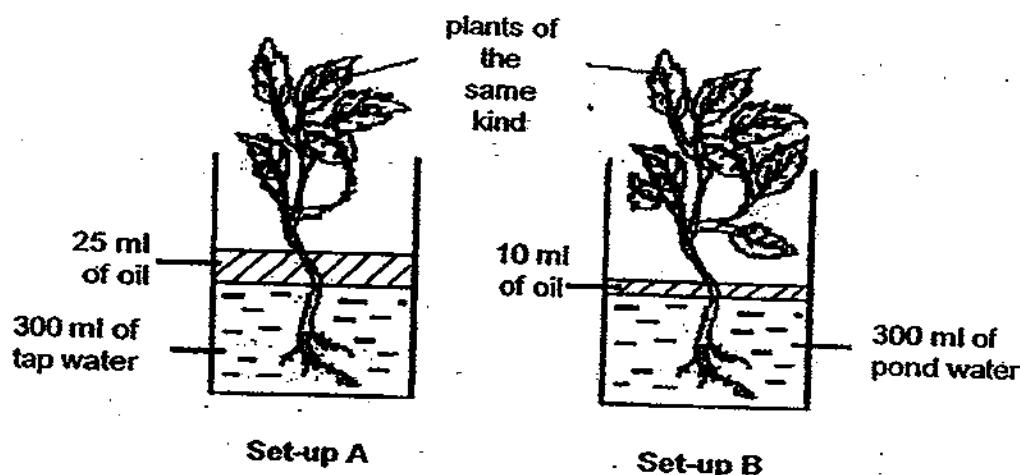
- (a) To show that the lizard was dependent on the plant for its survival, Hillary placed liquid X to remove a substance from the air.

State the function of liquid X in Hillary's set-up. [1]

- (b) Explain how the lizard was dependent on the plant for its survival. [1]

- (c) After some time, what would Hillary observe about the limewater? Give a reason for your answer. [1]

- 33 Trixie conducted an experiment using identical beakers to find out if the number of leaves on a plant affects the amount of water that it loses to its surrounding.



- (a) From the information provided above, suggest 2 ways to ensure that a fair test was conducted for the experiment. [2]

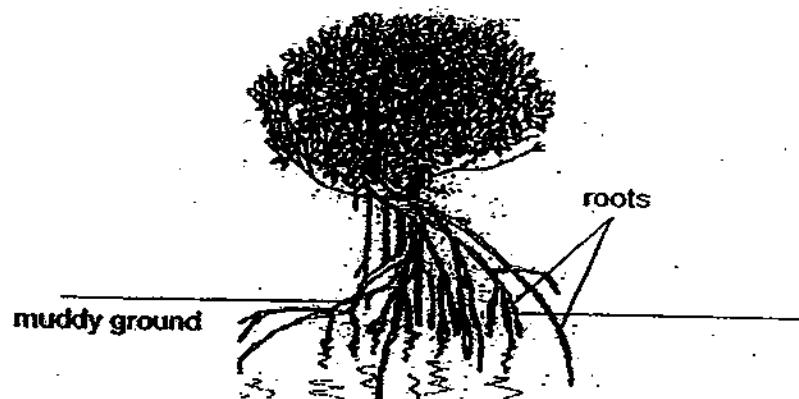
(i) _____

(ii) _____

- (b) If Trixie had conducted a fair test as you suggested in (a), Set-up A would act as a control set-up for the experiment.

Suggest why set-up A was required for her experiment. [1]

- 34 Mangrove trees are found in muddy swamps. They have special roots and other structural adaptations that enable them to survive in the swamp which most species of plants are unable to do so.



- (a) Other than having plenty of water, suggest ANOTHER advantage that the mangrove trees have for growing in the swamp compared to other species of plants. [1]

- (b) The mangroves trees have roots as shown in the diagram above. These roots are unable to take in oxygen or release carbon dioxide. Suggest why such roots are necessary for such trees to survive in the muddy ground. [1]

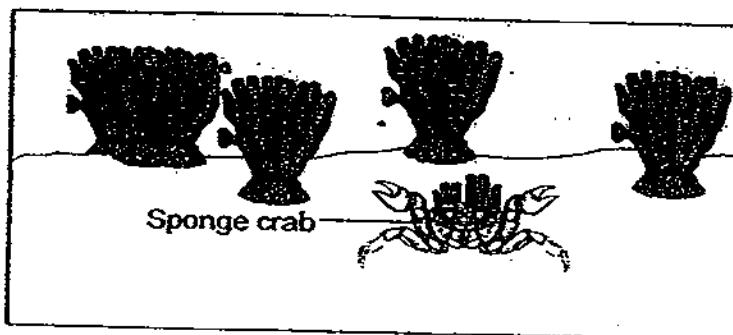
- 35 The food chain below shows the food relationships among the planktons, sponges and nudibranchs.



Sponges are found in water that is slightly further away from the seashore. Only a few types of organisms feed on them as they are normally poisonous.

Nudibranchs are slug-like creatures, without shells, that feed on sponges.

A sponge crab will cut out pieces of the sponge and attach them on itself. The pieces of sponges on the crab survive well.



Based on the information provided, answer the following questions:

- (a) Suggest why the sponge crab attaches pieces of sponge to itself. [1]

- (b) Suggest how the pieces of sponge that are attached on the crab benefit from the relationship. [1]

55 Now the plates or sponge that are attached on the crab benefit from the relationship.

- 36 Kerri wanted to compare the hardness of four different materials, A, B, C and D. She scratched them, one at a time, with rods each made from a different material; plastics, wood or metal.

She recorded her observations in the table below.

A tick (✓) indicates the presence of a scratch mark made by each rod on the material.

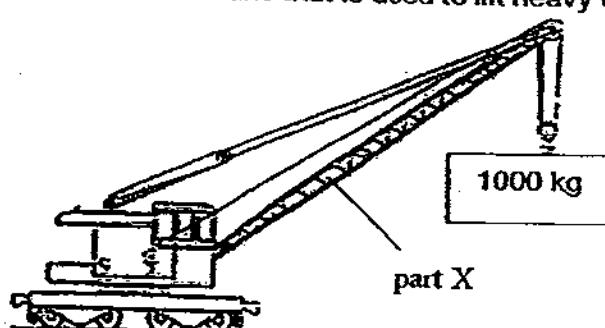
material	presence of scratch marks made by		
	plastic rod	wooden rod	metal rod
A			✓
B	✓	✓	✓
C			
D		✓	✓

Based on the information above, answer the following questions:

- (a) Arrange the materials, A, B, C and D, in order according to their hardness. Write letters A, B and D only in the boxes provided below. The letter C has been written for you. [1]

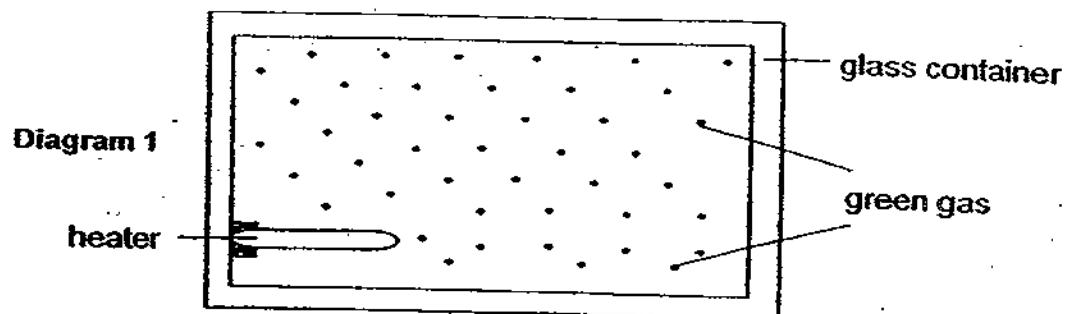
hardest

The diagram below shows a crane that is used to lift heavy objects.

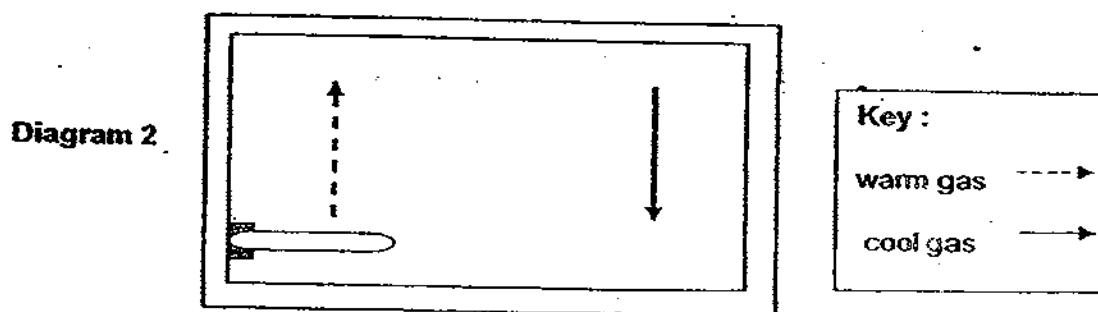


- (b) Even though material C is the hardest material, explain why it may NOT be the most suitable material to make part X of the crane. [2]

- 37 Aastha had a glass container with a heater installed in it. She filled the container with some green gas as shown in Diagram 1 below.



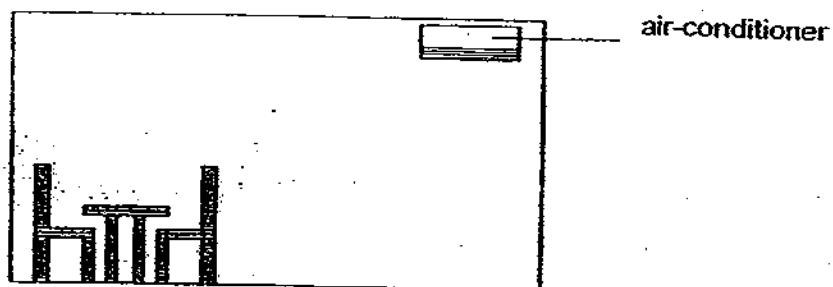
She switched on the heater and after some time, she saw the green gas moving in the directions as shown in Diagram 2 below.



- (a) Based on the information above, what could Aastha infer about air?

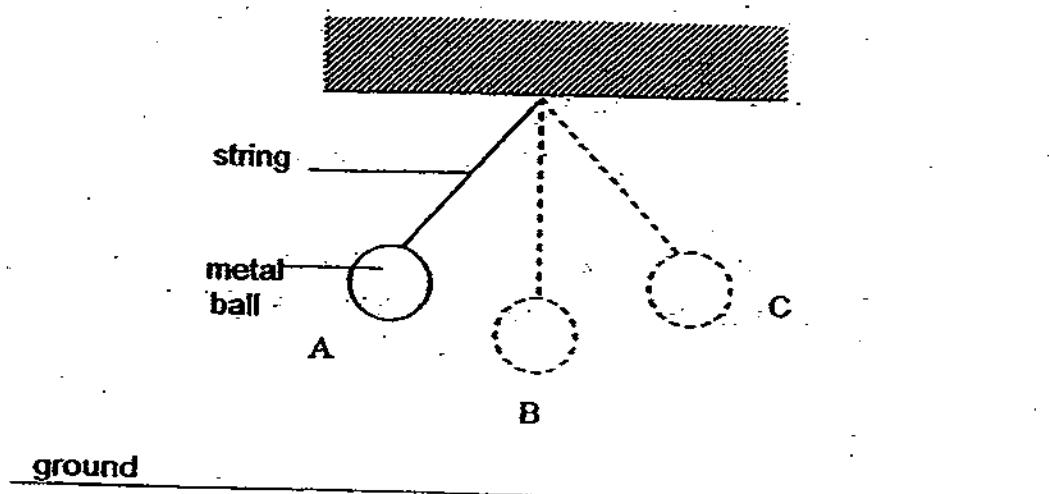
[1]

The diagram below shows the layout of Aastha's dining room.



- (b) Based on part (a) on page 36, give a reason why an air-conditioner is usually placed near the ceiling and not near the floor. [1]

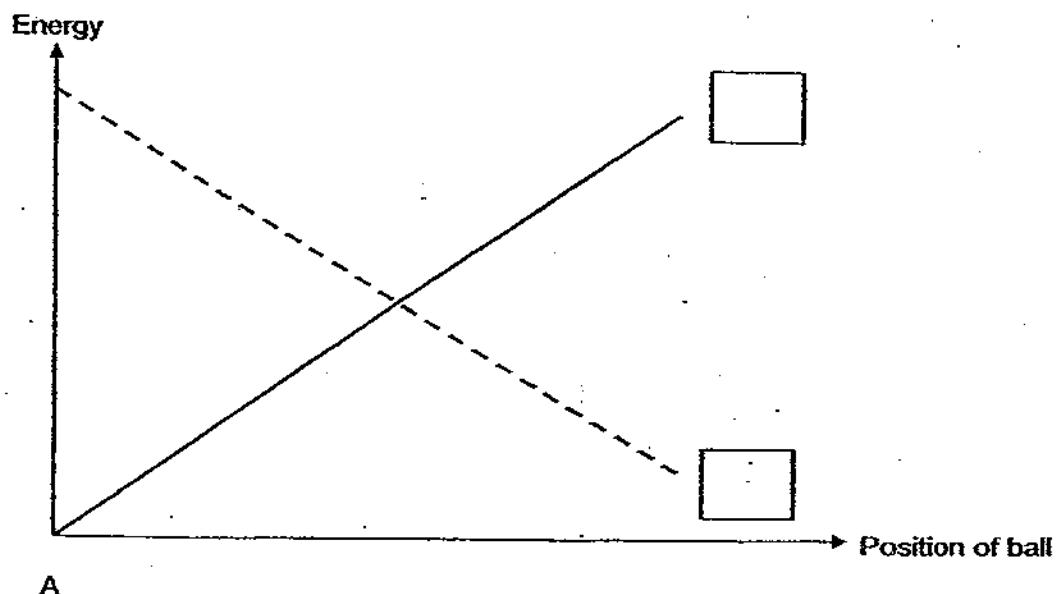
- 38 The diagram below shows the various positions of a metal ball when released from point A.



- (a) State the energy changes of the metal ball from points A to C through B.
[1]

- (b) Based on the diagram on page 38, which one of the following graphs best represents the change in potential energy of the metal ball?

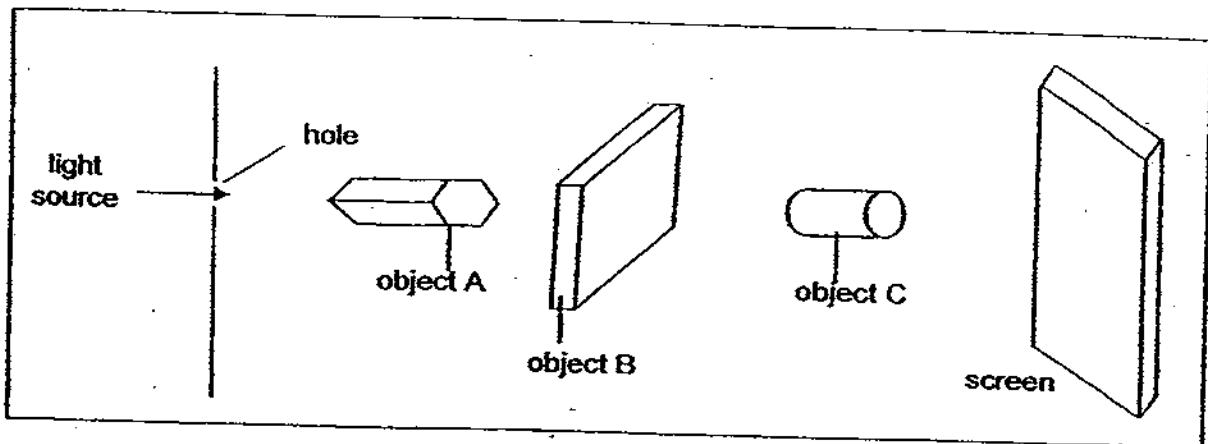
LABEL the correct graph with a letter, P, in the appropriate box given below. [1]



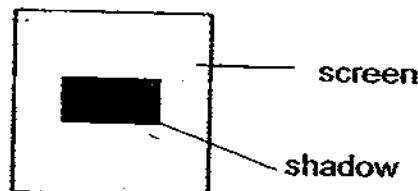
- (c) Explain your choice of the graph in (b) above.

[1]

- 39 Huiming arranged 3 objects, A, B and C, in a straight line as shown in the following set-up.



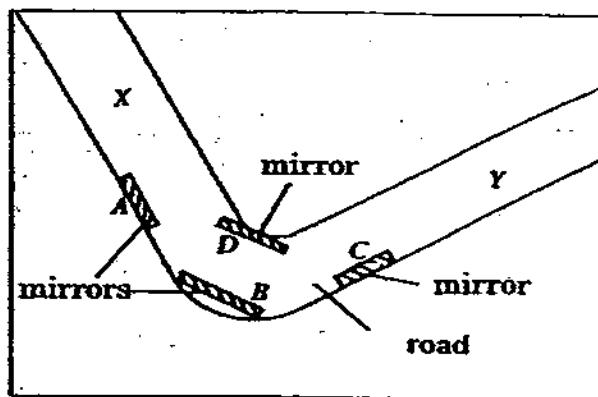
Huiming shone light at objects A, B and C. She saw a shadow cast on the screen as shown below.



- (a) Based on the information above, put a tick (✓) in the correct box for each of the following statements: [11/2]

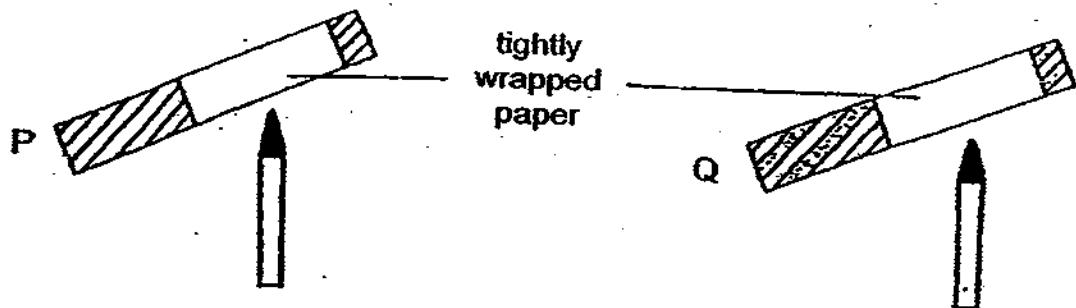
	Statement	true	false	not possible to tell
(i)	Object A is transparent.			
(ii)	Object B is opaque.			
(iii)	Object C is translucent.			

The diagram below shows the positions of the mirrors, A, B, C, and D, placed near / at the bend of a 2-way road.



- (b) Which one of these mirrors will enable motorists coming from X and Y to see each other before they meet at the sharp bend?
-
- (c) In the diagram above, DRAW arrows (\rightarrow) to indicate how the reflection of light allows the motorist at X to see the motorist at Y before they meet.

- 40 Two bars, P and Q, of the same diameter, were wrapped tightly with paper of the same size and thickness as shown below.



Each bar was heated over a flame for the same duration. After some time, the paper on bar P was burnt but NOT the paper on bar Q.

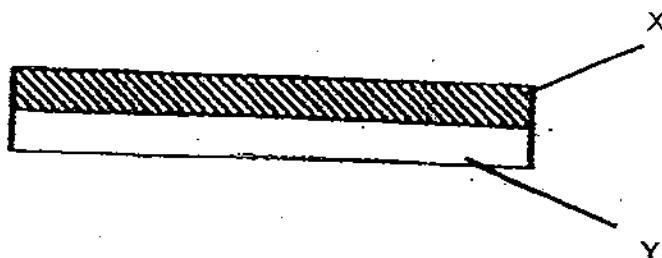
- (a) Which of the two materials below are most likely to be P and Q? [1]

Iron _____

Wood _____

- (b) Explain your answers in part (a) above. [1]

- 41 Ali had a bimetallic strip, made of two different metals, X and Y, as shown in the diagram below.



He heated it for 10 minutes. After 10 minutes, Ali observed that the bimetallic strip looked different, as shown in the diagram below.



- (a) Explain Ali's observations. [1]

The table below shows the relative expansion rate of four different materials: glass, iron, brass and aluminium.

material	glass	iron	brass	aluminium
relative expansion rate	3	4	6	8

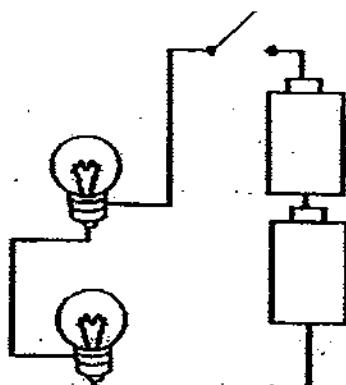


- (b) Based on the above information, suggest a possible combination of materials X and Y for the bimetallic strip that Ali used. [1]

X - _____

Y - _____

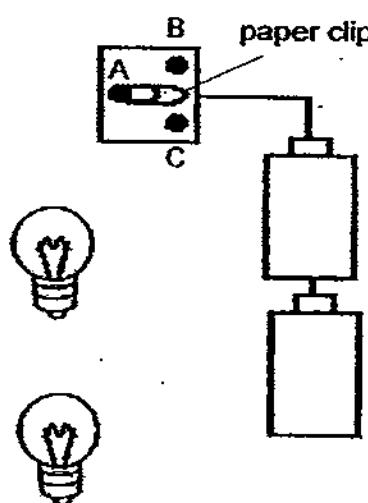
- 42 Ruiyi set up circuit W as shown in the diagram below.



circuit W

Her friend, Esther, told her that she had a two-way switch that could improve Ruiyi's set-up such that when one bulb fused, the other bulb could remain lit.

Esther connected the two-way switch to form part of circuit Y as shown in the diagram below. The two-way switch was made up of three metal contacts, A, B, and C, fixed on a small piece of wood. A steel paper clip was fixed at A such that it was able to touch either B or C to close the circuit.

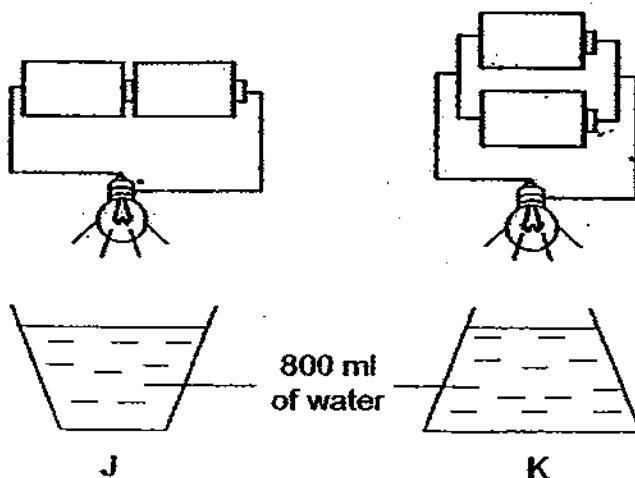


circuit Y

- (a) In circuit Y above, DRAW lines to complete the circuit such that when one bulb fused, the other bulb would remain lit. [1]

- (b) Compare circuits W and Y on page 44. State ANOTHER advantage of circuit Y over circuit W. [1]

- 43 Fidessa used identical batteries and light bulbs in 2 different electrical set-ups to compare the rate of evaporation of water in 2 different containers, J and K. Each container was initially filled with 800 ml of water.



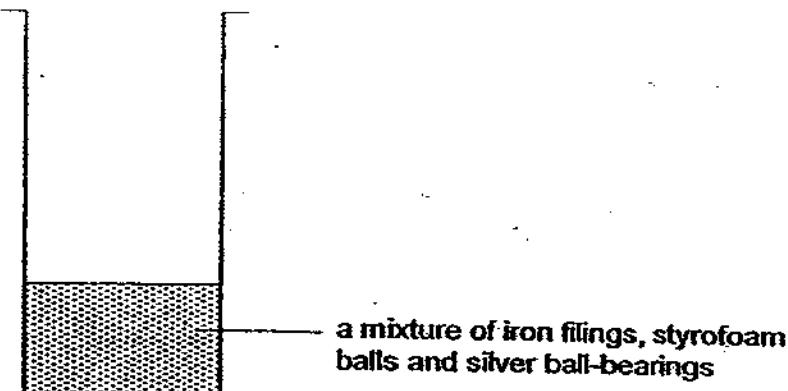
After an hour, Fidessa measured the volume of water left in each container and noticed that the volume of water left in container J was less than that in container K.

Based on the information above, answer the following questions:

- (a) Give two reasons to explain why the volume of water left in container J was less than that in container K. [2]

REASON 1	
REASON 2	

- 44 Mary had a tall beaker containing a mixture of iron filings and similar sizes of styrofoam balls and silver ball-bearings.



Mary was also given the list of items: a small fish net, a strong U-shaped magnet and 500 ml of water to separate the mixture in the beaker.

- (a) Using ALL the items given above, describe how Mary could separate the three items in the mixture without pouring out the items or getting her fingers wet. [2]

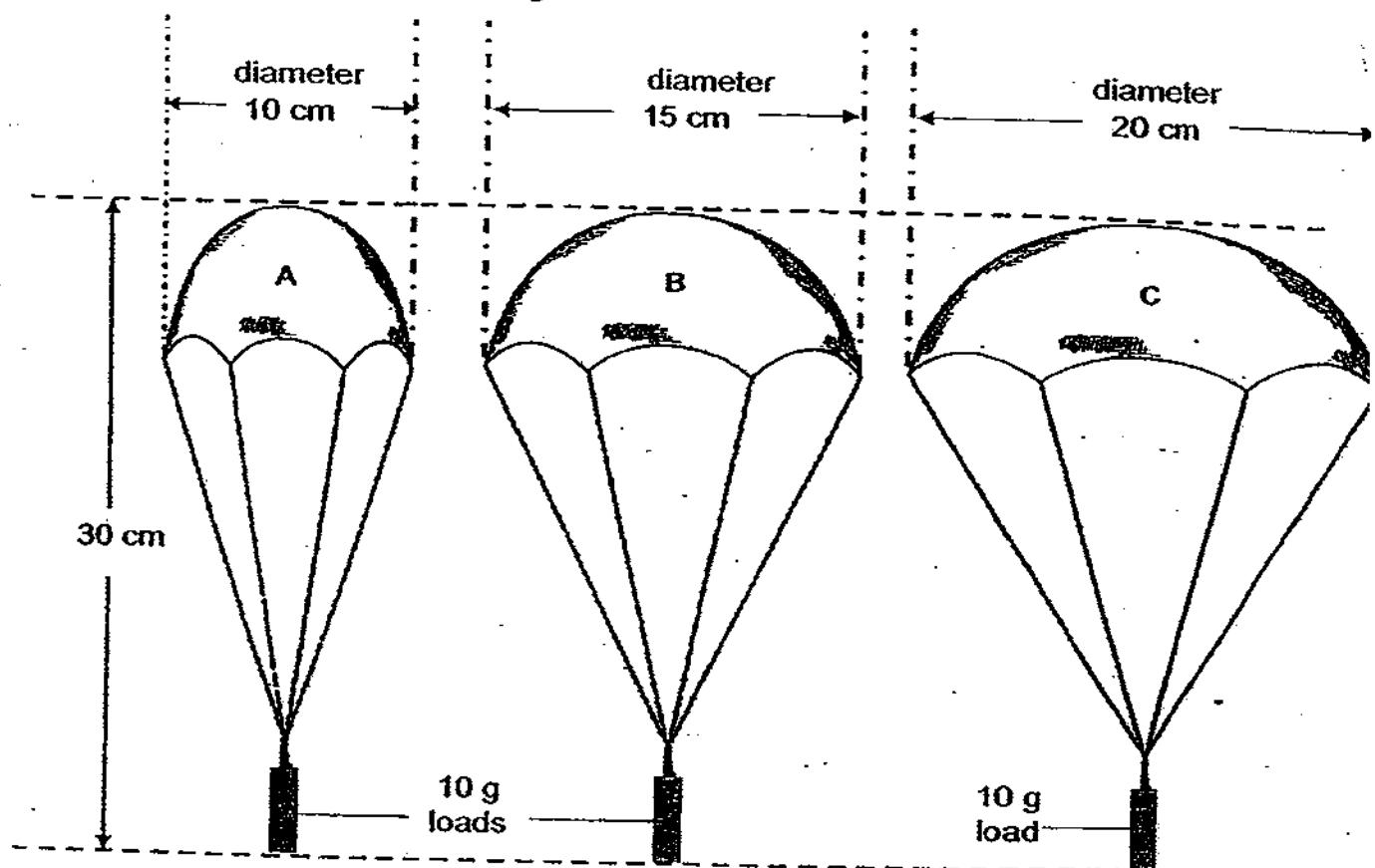
Step	Procedure
1	

- (b) Explain why Mary used only the ends of the U-shaped magnet to attract an object.

[1]

45

Joe conducted an experiment using 3 parachutes of different diameters, A, B and C, as shown in the diagram below.



He dropped all 3 parachutes from the same height at the same location. He measured the time taken for each parachute to land on the ground and recorded his results as shown in the table below.

parachute	number of trials	time taken to land on the ground / s	average time taken to land on the ground / s
A	1	4.7	5
	2	5.2	
	3	5.1	
B	1	8.0	8
	2	8.2	
	3	7.8	
C	1	12.0	12
	2	11.8	
	3	12.2	

Based on the information given on page 48, answer the following questions:

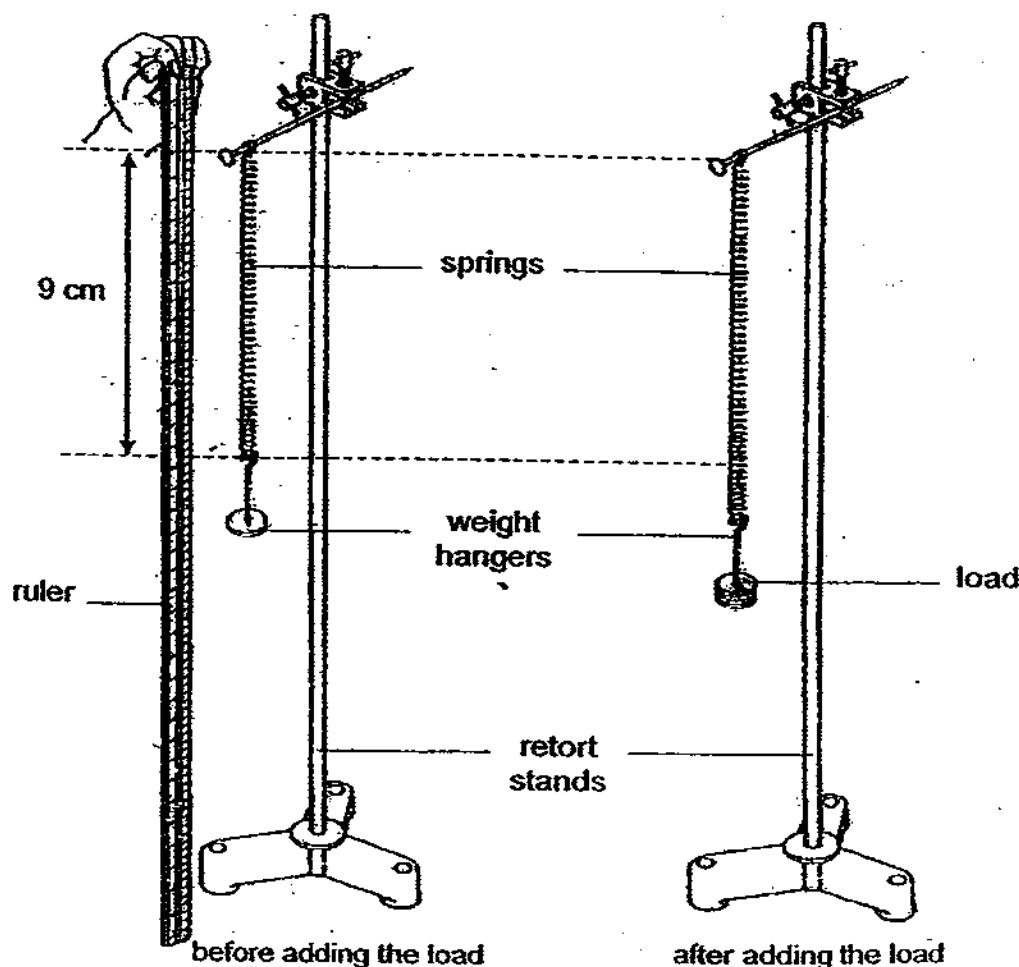
- (a) What was the aim of Joe's experiment?

[1]

- (b) In order to conduct a fair test, state one OTHER variable that Joe must keep the same.

[1]

- 46 Fahmy used the set-up as shown in the diagram below to find out how the mass of the load affects the extension of the spring.



He conducted the experiment using load of a different mass, ONE at a time, and recorded part of his results in the table below.

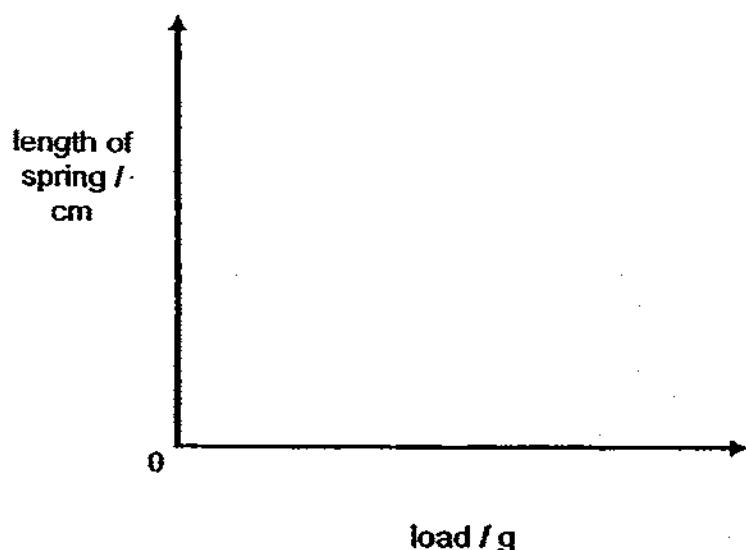
mass of loading	extension of spring / cm
0	0
10	2
20	4
30	6
40	8
50	10
60	12

Based on the information on page 50, answer the following questions:

- (a) What would the extension of the spring be when a 90 g load was placed on the weight hanger? [1]

- (b) State the relationship between the extension of the spring and the mass of the load on the weight hanger. [1]

- (c) SKETCH a line graph to show the relationship between the length of the spring and the mass of the load on the weight hanger. [1]



- END OF PAPER -



RAFFLES GIRLS' PRIMARY SCHOOL

2009 Primary 6 SCIENCE Preliminary Examination

Setters: Aishah Aris, Kar Fong, Shueh Nee, Siew Whatt

ANSWER KEY

SECTION A (30 X 2 marks)

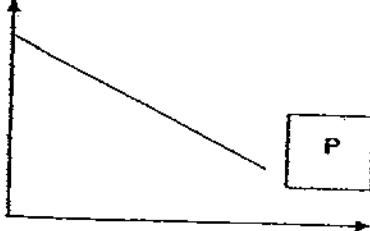
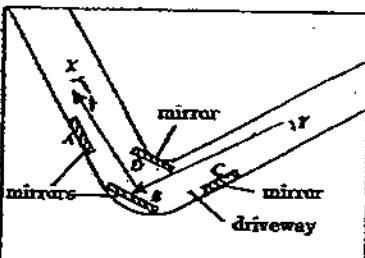
Multiple Choice questions

1.	2	6.	2	11.	3	16.	1	21.	1	26.	2
2.	2	7.	3	12.	3	17.	2	22.	3	27.	3
3.	4	8.	4	13.	3	18.	1	23.	4	28.	2
4.	1	9.	2	14.	1	19.	3	24.	2	29.	1
5.	1	10.	2	15.	1	20.	4	25.	4	30.	1

SECTION B (40 marks)

No.	Marks	Answers	Remarks
31.	a 1	one	
	b 2	<p></p> <p>OR</p> <p></p>	<p>1m for correct drawing of wife & daughter</p> <p>1m for correct indication of genetic information</p> <p>minus [1/2] for any line not correctly joined</p>
32.	a 1	To remove oxygen from the air	
	b 1	The plant photosynthesised in the presence of sunlight to produce oxygen [1/2] that the lizard needs for respiration [1/2]	

No.	Marks	Answers	Remarks
32	c 1	<p><u>Carbon dioxide that is given out by the lizard during respiration turned the limewater chalky.</u> [1]</p> <p>Partial ans:</p> <ul style="list-style-type: none"> - The <u>limewater turned chalky</u> [1/2]. - <u>Carbon dioxide is released by the lizard during respiration</u> [1/2]. 	[0] carbon dioxide is released by the lizard
33	a 2	<ul style="list-style-type: none"> - Use an equal amount of oil [1] - Use (equal amount of) pond water / tap water in both beakers [1] 	[0] If did not specify the type of liquid used in beakers
	b 1	To compare and confirm that the difference in the amount of water lost is due to the different number of leaves.	
34	a 1	<p>Less competition for light/space since the other species of trees are unable to survive in such ground condition. OR</p> <p>The mud in the swamp is rich in nutrients.</p>	
	b 1	They enable the trees to be firmly rooted to the ground.	
35	a 1	<p>Having sponges on itself helps it to blend with the surrounding [1/2], hence not easily attacked by predator [1/2].</p> <p>OR</p> <p>As the sponges on it are toxic [1/2], having these sponges prevented predators of the crab from attacking it [1/2].</p>	
	b 1	<p>The crab protects the sponges from the nudibranchs. OR</p> <p>As the crab carries the sponges with it, the sponges can move around to escape from the nudibranchs / move around to feed on the planktons.</p>	
36	a 1	A, D and B	No partial mark
	b 2	<ul style="list-style-type: none"> - The hardest material does not mean that the material is the strongest [1] - The strength of the material to lift heavy loads is more important than its hardness [1] 	1m for concept of hardest not directly proportion to strength

No.	Marks	Answers	Remarks
			recognizing that its strength is more important than its hardness. Concept marking
37	a 1 b 1	<p>Warm air rises, cold air sinks</p> <p>It is more energy efficient to place the air-conditioner near the ceiling as the room would be cooled down faster as compared to if it is placed near the floor. OR</p> <p>Warm air near the floor rises and is cooled by the air-conditioner. If the air-conditioner is placed near the ceiling, it can give out cool air that sinks to keep the entire room cold faster as compared to if it is placed near the floor.</p>	<p>Hot air that rises is cooled by the air-conditioner. This cool air then sinks and keeps the room cool.</p>
38	a 1 b 1	<p>Potential energy → Kinetic energy → Potential energy</p> 	
	c 1	At position A, the potential energy of the ball is the highest as it is at the greatest distance away from the ground. [1]	
39	a 1 1/2 b 1/2 c 1	<p>(i) Not possible to tell (ii) True (iii) Not possible to tell</p> <p>Mirror B</p> 	[1/2] each 1 or 0

No.	Marks	Answers	Remarks											
40.	a 1	Iron- Q Wood – P	[1/2] each											
	b 1	(Iron) Q was a better conductor of heat than P (wood) so heat would be conducted away faster from the paper on Q than on P before the paper got burnt.	Must compare; otherwise [0]											
41.	a 1	<ul style="list-style-type: none"> • Y expands more than X when heated. OR • The rate of expansion of Y is greater than the rate of expansion of X. 												
	b 1	<table border="1"> <thead> <tr> <th>Alt.</th> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>brass</td> <td>aluminium</td> </tr> <tr> <td>(2)</td> <td>iron</td> <td>aluminium</td> </tr> <tr> <td>(3)</td> <td>iron</td> <td>brass</td> </tr> </tbody> </table>	Alt.	X	Y	(1)	brass	aluminium	(2)	iron	aluminium	(3)	iron	brass
Alt.	X	Y												
(1)	brass	aluminium												
(2)	iron	aluminium												
(3)	iron	brass												
42	a 1		1 or 0 Note: The bulbs are connected in parallel.											
	b 1	The bulbs in circuit Y are brighter than the bulbs in circuit W.												
43	a 2	<p>Reason 1 <u>The greater exposed surface area of water in container J enabled the water in it to evaporate faster [1] than that in container K.</u></p> <p>Reason 2 <u>The batteries connected in series in the circuit above container J provided more heat energy to enable the water in container J to evaporate faster than that in container K.</u></p>	1 each Must compare											

No.	Marks	Answers	Remarks						
44	a 2	<p>1. Slide the strong U-shaped magnet along the sides of the beaker to attract and remove all the iron filings.</p> <p>2. Pour water into the mixture so that the styrofoam balls will float.</p> <p>3. Scoop up the floating styrofoam balls with the fish net.</p> <p>4. Pour away the water leaving behind only the silver ball-bearings.</p> <p>(Steps need not be in order; steps must be logical)</p> <p>Mark question as a whole, if there are illogical steps.[0]</p>	[1/2] for each correct idea. Accept other relevant answer.						
	b 1	Magnetism is the strongest at the poles of a magnet.							
45	a 1	To find out if the diameter of the parachute will affect the time the parachute takes to land on the ground.							
	b 1	Materials used to make the parachutes must be the same.							
46	a 1	18 cm	-[1/2] for no units / wrong units.						
	b 1	The greater the mass of the load on the weight hanger, the greater the extension of the spring.							
	c 1	<table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Load (g)</th> <th>Length of spring (cm)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>9</td> </tr> <tr> <td>10</td> <td>18</td> </tr> </tbody> </table>	Load (g)	Length of spring (cm)	0	9	10	18	Note: If graph starts from 0, [0]
Load (g)	Length of spring (cm)								
0	9								
10	18								

- END OF PAPER -



RAFFLES GIRLS' PRIMARY SCHOOL
PRELIMINARY EXAMINATION
2012

Name: _____ Index No: _____ Class: P 6 _____

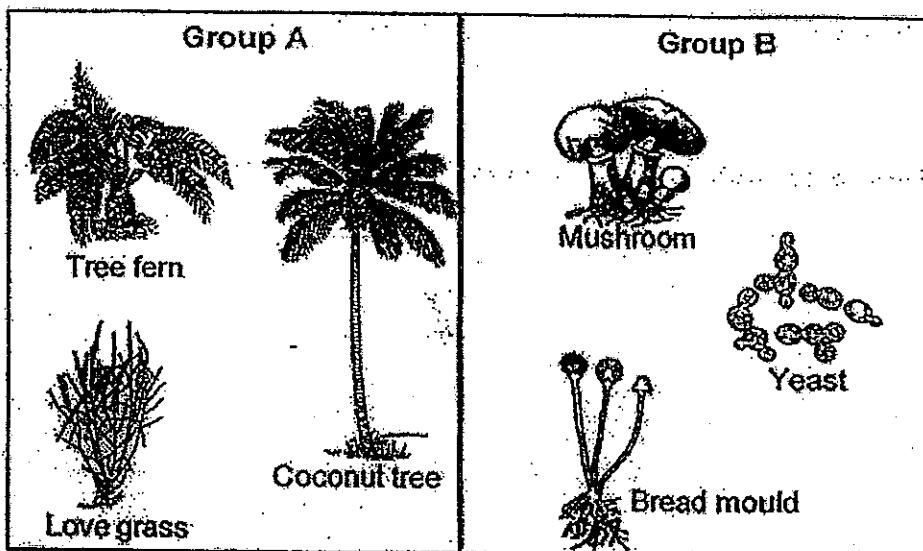
2 August 2012 SCIENCE Attn: 1 h 45 min

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.

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

1. The diagram below shows how some organisms (*not drawn to scale*) are grouped.

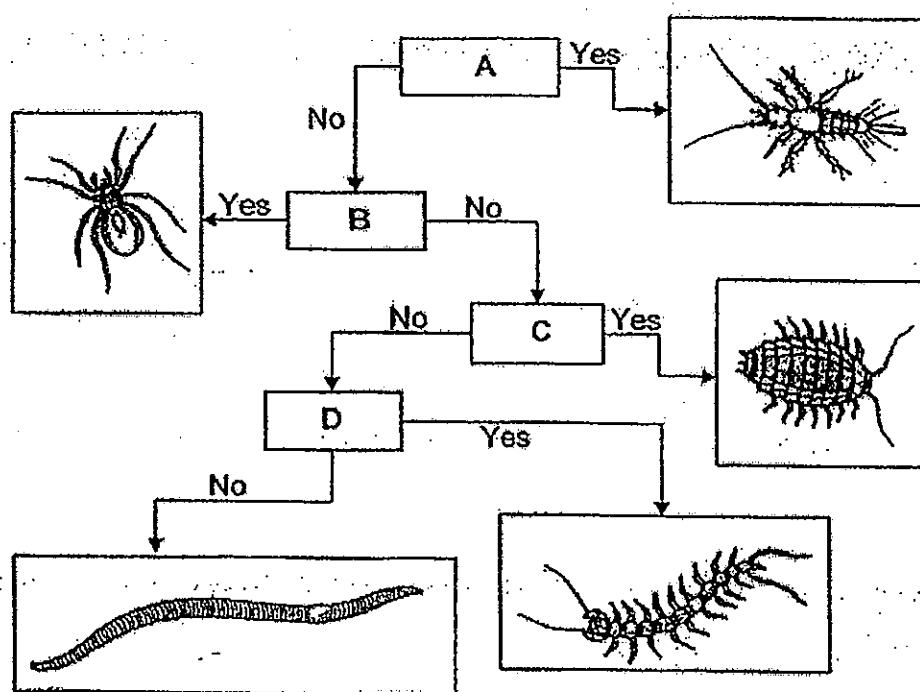


Which of the following statement(s) is/are correct?

- A The organisms in Group A and Group B reproduce by spores.
- B The organisms in Group A and Group B are non-flowering plants.
- C The organisms in Group A contain chlorophyll but not those in Group B.
- D The organisms in Group B are micro-organisms but not those in Group A.

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

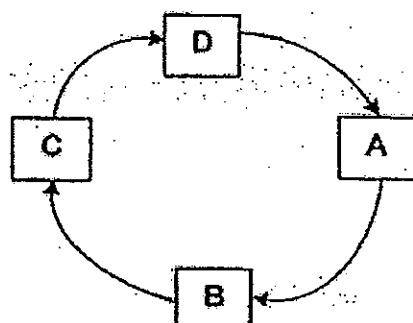
2. Study the flow chart shown below.



Which of the following shows the correct criteria for classification represented by A, B, C and D respectively?

	A	B	C	D
(1)	Has 3 body parts	Has 8 legs	Has broad body	Has 2 legs per segment
(2)	Has 2 body parts	Has 3 body parts	Has 2 legs per segment	Has broad body
(3)	Has 8 legs	Has 2 legs per segment	Has 2 body parts	Has 6 legs
(4)	Has 6 legs	Has broad body	Has 8 legs	Has 2 legs per segment

3. Each letter in the diagram below represents a stage in the life cycle of a butterfly.



Which of the following statements is true if B represents the adult stage?

- (1) At Stage A, it has wings to fly around.
- (2) At Stage C, it spends most of its time eating.
- (3) At Stage D, it molts several times as it grows.
- (4) At Stage D, it does not eat and does not move around.

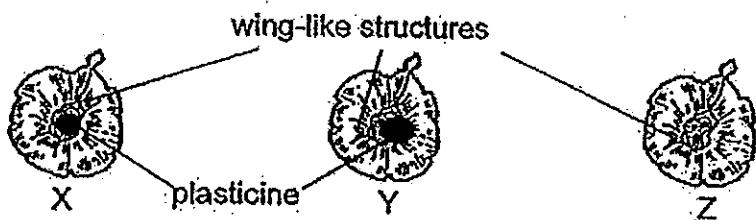
4. Mary placed identical number of seeds over cotton wool in 5 identical 10-litre jars namely A, B, C, D and E. The seeds in each jar are exposed to the conditions as shown in the table below.

Jar A	Jar B	Jar C	Jar D	Jar E
• Sealed	• Sealed	• Open	• Open	• Open
• Damp cotton wool	• Damp cotton wool	• Damp cotton wool	• Damp cotton wool	• Dry cotton wool
• Placed in the garden	• Placed in the garden	• Placed in the freezer	• Placed in the cardboard	• Placed in the garden
• Contained substance to absorb carbon dioxide	• Contained substance to absorb oxygen	-	-	-

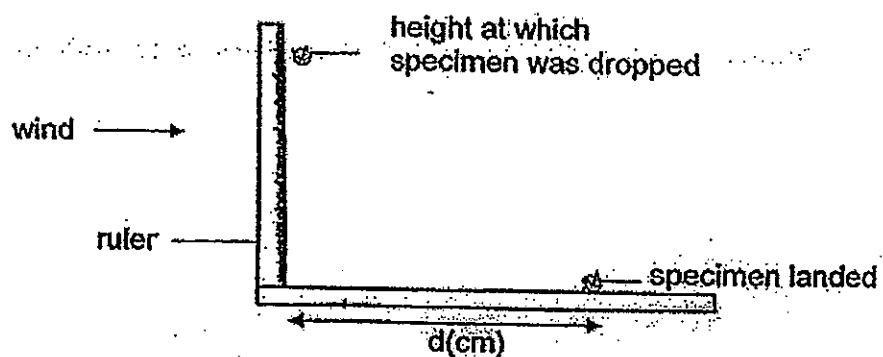
In which of the jars would the seeds most likely to germinate?

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

5. Ramah conducted an experiment in an enclosed hall, using identical specimen X, Y and Z of the same type and size. He attached a 5-g plasticine to X and a 20-g plasticine to Y as shown in the diagrams below.



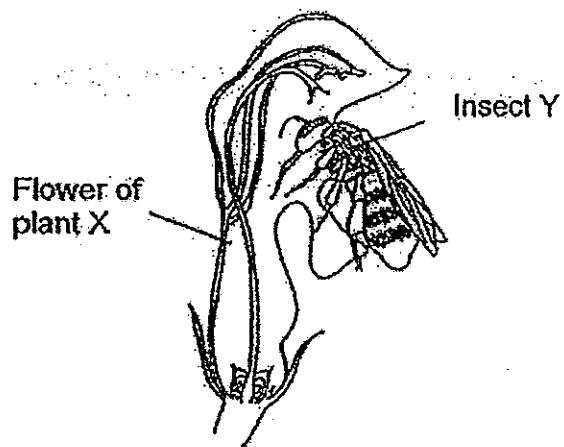
Ramah dropped each specimen, one at a time, from a fixed height above the ground and recorded the distance, d (cm), travelled by each specimen, as shown in the diagram below.



Which one of the following most likely shows Ramah's results?

Distance moved by specimen, d (cm)			
	X	Y	Z
(1)	23.9	56.7	89.0
(2)	56.7	23.9	89.0
(3)	56.7	89.0	23.9
(4)	89.0	56.7	23.9

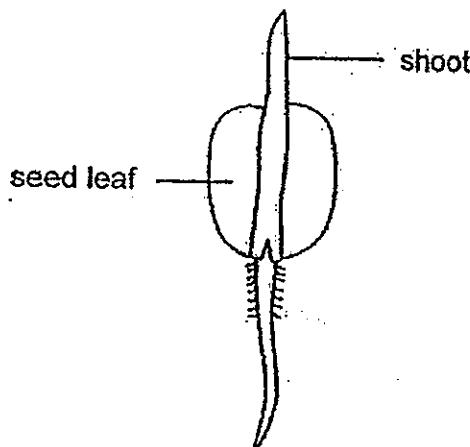
6. The diagram below shows the flower of plant X and insect Y.



Which one of the following statements best describes the relationship between plant X and insect Y?

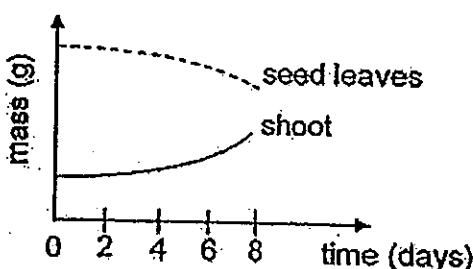
- (1) Plant X helps insect Y to hide from its prey.
- (2) Insect Y depends on plant X to find its mate.
- (3) Insect Y helps plant X to pollinate its flowers.
- (4) Plant X depends on insect Y to produce its nectar.

7. Alexis observed a seed which developed into a seedling over 8 days to compare the mass of its seed leaves, as shown in the diagram below.

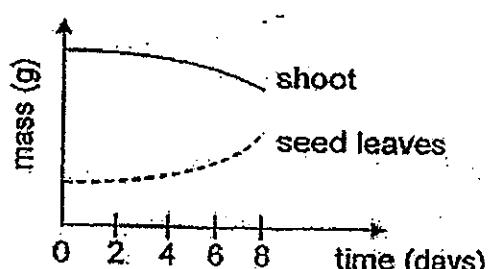


Which one of the following graphs best represents the results of her experiment?

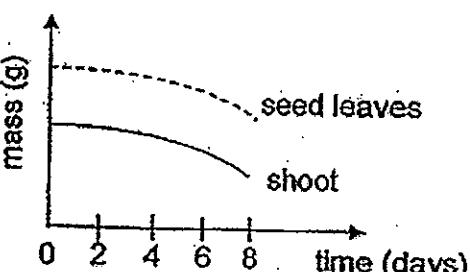
(1)



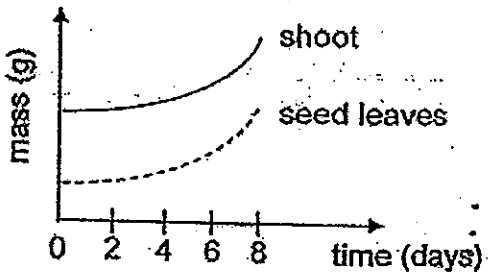
(2)



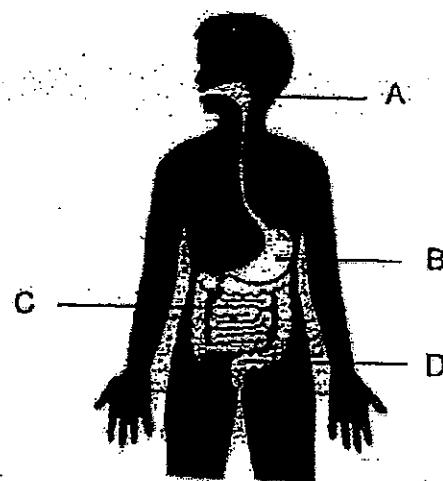
(3)



(4)



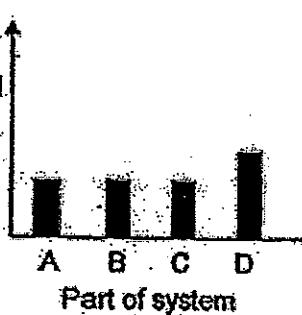
8. The diagram below shows parts of the digestive system, labeled A, B, C and D.



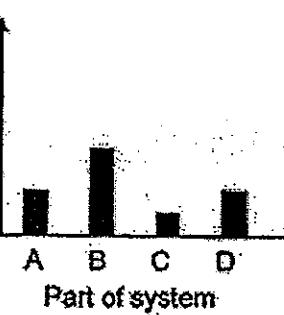
A man ate fish porridge at 6 am on an empty stomach.

Which one of the following graphs most likely shows the correct amount of undigested food left in each part of his digestive system at 11 am?

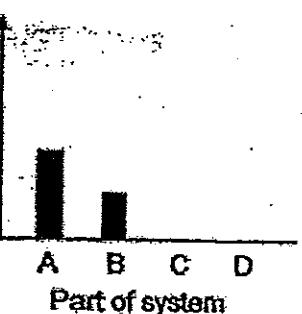
(1) Amount of undigested food (mg)



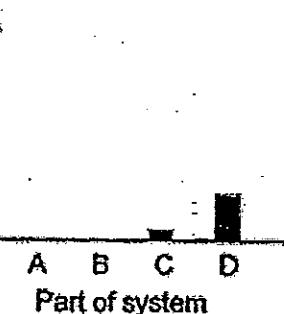
(2) Amount of undigested food (mg)



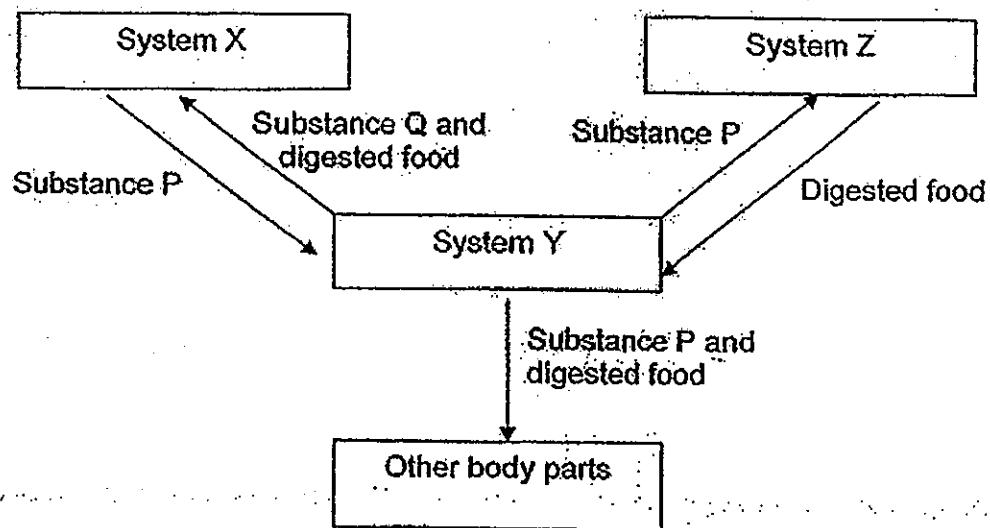
(3) Amount of undigested food (mg)



(4) Amount of undigested food (mg)



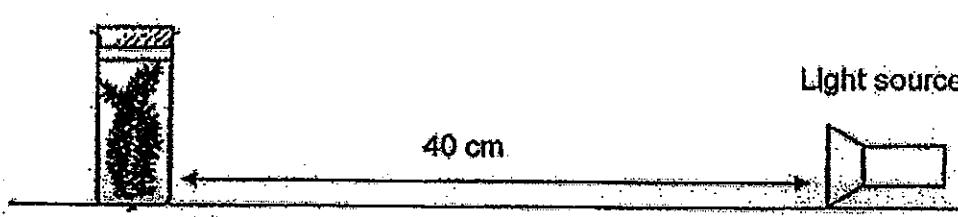
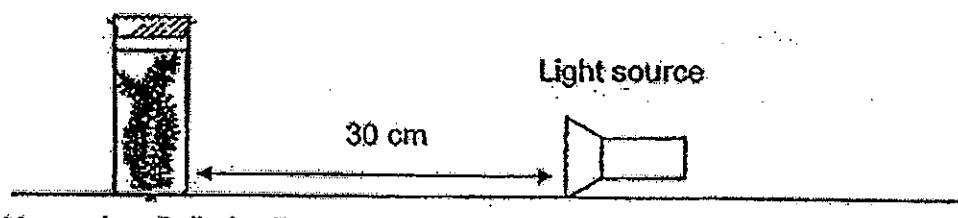
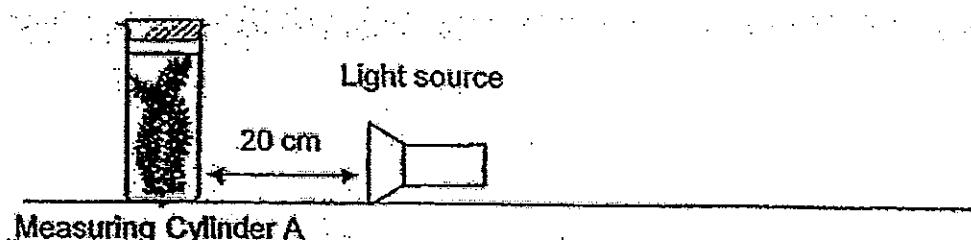
3. The chart below shows how some substances are transported in the human body.



Which one of the following correctly identifies substances P and Q, and systems X, Y and Z?

	Substance P	Substance Q	System X	System Y	System Z
(1)	Carbon dioxide	Oxygen	Circulatory system	Digestive system	Respiratory system
(2)	Carbon dioxide	Oxygen	Digestive system	Circulatory system	Respiratory system
(3)	Oxygen	Carbon dioxide	Digestive system	Respiratory system	Circulatory system
(4)	Oxygen	Carbon dioxide	Respiratory system	Circulatory system	Digestive system

10. Harry wanted to investigate how the light intensity affects the rate of photosynthesis of the fully-submerged aquatic plant, Elodea. He placed two Elodea in each of the three measuring cylinders containing identical amount of water as shown in the diagrams below. The set-ups were placed in a pitch dark room.



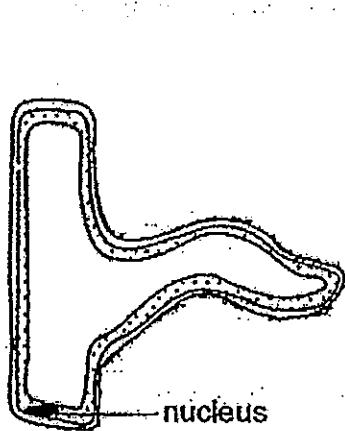
The table below shows four sets of results, W, X, Y and Z.

Distance of plant from light source (cm)	Number of bubbles counted			
	W	X	Y	Z
20	10	20	40	40
30	20	20	20	10
40	40	40	10	20

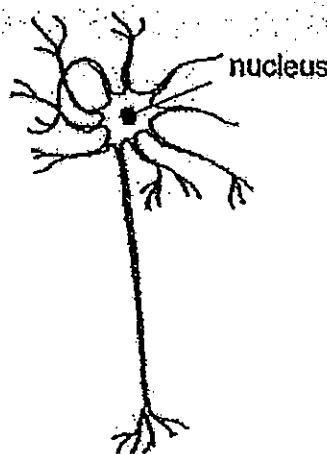
Which of the following is most likely to be the set of results collected by Harry?

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

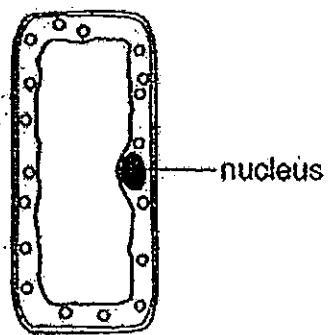
11. The diagrams below show three different types of cells, P, Q and R.



P



Q



R

Which of the following statements are most likely true?

- A Only Q is found in animals.
 - B All the cells are found in plants.
 - C Only R is able to carry out photosynthesis.
 - D Only Q and R are able to carry out cell division.
- (1) A and C
(2) B and D
(3) A, B and C
(4) A, C and D

12. Due to the extensive logging activities in a forest, it causes soil erosion in the area. As a result, large quantity of soil has been washed into the nearby lake during torrential rains.

Based on the above information, which of the following statements about the effect of soil erosion on the lake is/are likely to be true?

- A The soil particles settle on the bottom of the lake will cause the lake to become increasingly shallow.
 - B The amount of dissolved oxygen in the lake will decrease due to the lower rate of photosynthesis of aquatic plants.
 - C The population of the fully submerged plants in the murky lake will increase due to increased light availability below the surface.
- (1) B only
 - (2) C only
 - (3) A and B only
 - (4) A and C only

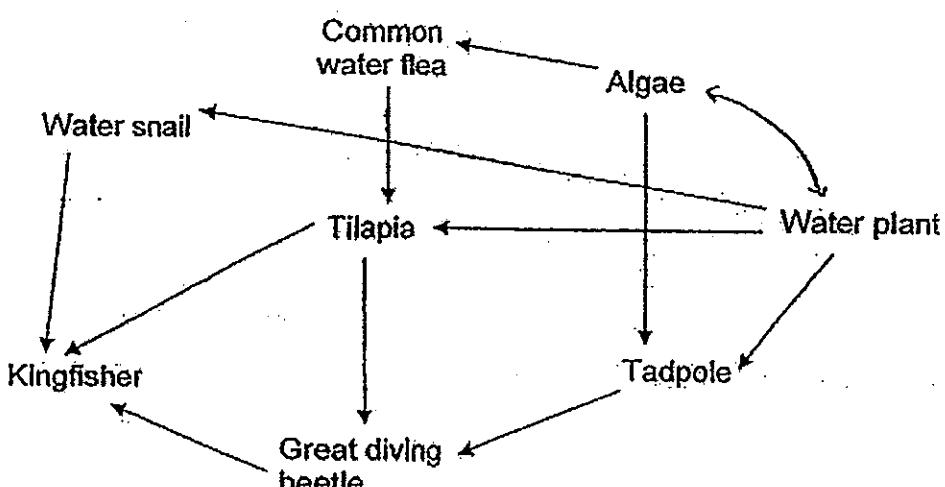
13. Nurul wanted to find out if the presence of fertilizer affects plant growth. She prepared 4 set-ups, W, X, Y and Z, using 4 similar plants. The table below shows the amount of fertilizer and water given to each set-up.

	Set-up W	Set-up X	Set-up Y	Set-up Z
Amount of fertilizer added (ml)	5 ml every four days	5 ml daily	0	0
Amount of water added daily (ml)	70	70	70	50

Which of the following set-ups should Nurul use in order to carry out a fair test?

	Set-up
(1)	W, Z
(2)	W, X
(3)	X, Y
(4)	Y, Z

14. The food web below shows the food relationships among some organisms in a pond community.

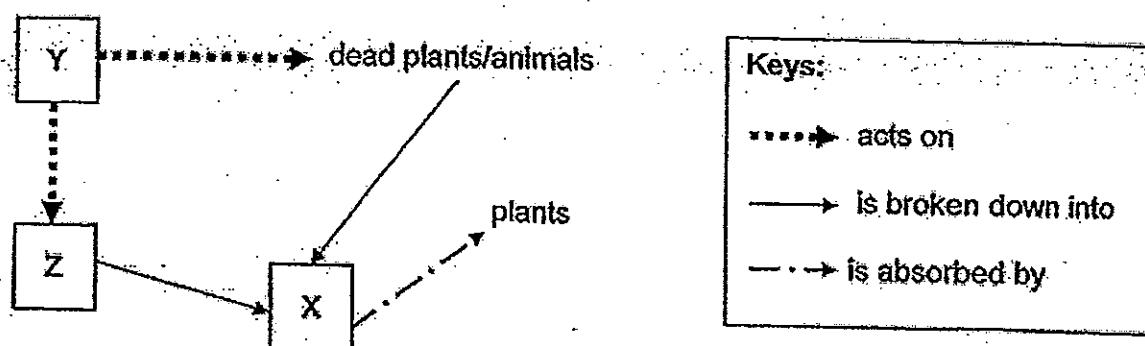


Based on the above food web, which of the following statements are true?

- A There are two omnivores.
- B There are six food chains.
- C There are three predators.
- D There are three herbivores.

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

15. Decomposers enrich the soil with nutrients for the plants to grow well. The diagram below shows how decomposers act on dead matter and change them into simple substances.



Which of the following best represent X, Y and Z respectively?

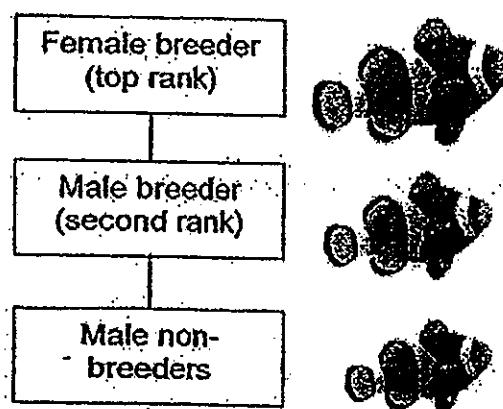
	X	Y	Z
(1)	carbon dioxide	predators	nutrients
(2)	water	fungi	nutrients
(3)	mineral salts	prey	animal waste
(4)	mineral salts	bacteria	animal waste

16. Clownfish live in groups among sea anemones as they depend on the sea anemones stinging tentacles for protection.

It is a unique species of fish due to its ability to switch sexes. In each host anemone, there is only one female breeder which will mate with the only male breeder. The rest of the clownfish are male non-breeders which are sexually immature. The size of the clownfish gets smaller as their rank decreases.

If the female breeder in the group dies, the male breeder will change sex and increase in size to become the female breeder. The largest male non-breeders will become the male breeder.

The diagram below shows the social hierarchy system of clownfish.



Which of the following statements are most likely true about the clownfish's ability to change sex?

- A It allows them to be protected by the sea anemones without having to move around to search for a mate.
 - B It ensures that there will always be a female breeder and a male breeder in the group to allow them to continue breeding.
 - C It ensures that any male non-breeders within the group can take over the role of the female breeder in the absence of female clownfish.
 - D It allows the male non-breeder to take over the role of the female breeder once they have grown to a larger size than the female breeder.
- (1) A and B only
 - (2) C and D only
 - (3) A, B and C only
 - (4) B, C and D only

17. Compost is rich black soil which is used as fertilizers by farmers. It can be produced by simply recycling waste materials and allowing them to decompose naturally and quickly.

The table below shows four groups of waste materials.

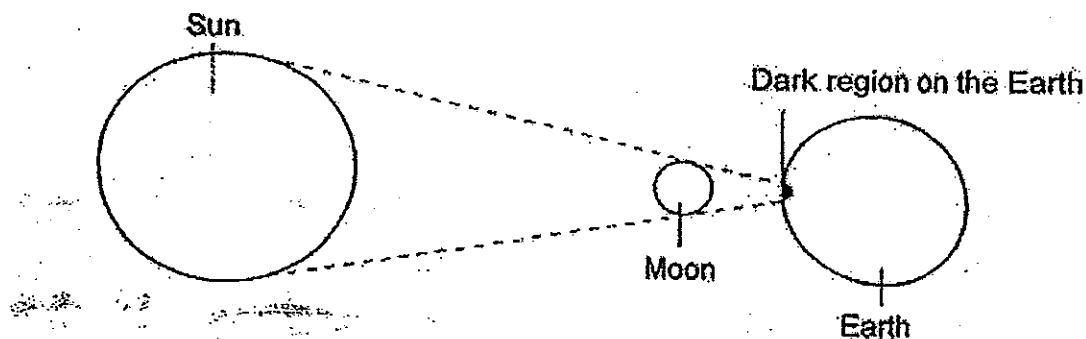
Group A	Group B	Group C	Group D
Tea leaves	Syringes	Metal rings	Paper
Egg shells	Glass bulbs	Leather belts	Cotton rags
Orange Peels	Styrofoam boxes	Woolen socks	Wooden toothpicks
Coffee powder		Plastic hairclips	

Which of the following groups of waste materials are suitable to be used to make the compost?

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

18. During a solar eclipse, the sky becomes dark for a short period of time during the day.

The diagram below shows the positions of the Sun, the Moon and the Earth when the solar eclipse occurs (Not drawn to scale).

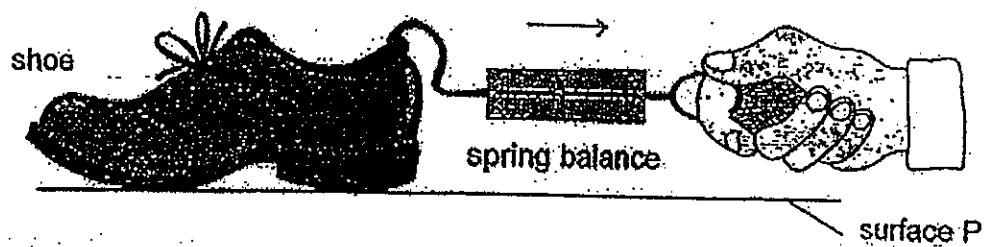


Using the information above, which one of the following statements best explains why a particular region of the Earth becomes dark when the Moon is between the Earth and the Sun?

- (1) The Moon absorbs the Sun's light.
- (2) The Sun reflects light to the Moon only.
- (3) The Earth does not allow the Sun's light to pass through.
- (4) The Moon blocks the Sun's light from reaching the Earth.

19. Jim conducted an experiment to compare the texture of four different surfaces, P, Q, R and S.

He placed a shoe on surface P and pulled it in the direction as indicated by the arrow (→) shown in the diagram below.



He recorded the amount of force needed to pull the shoe over a fixed distance.

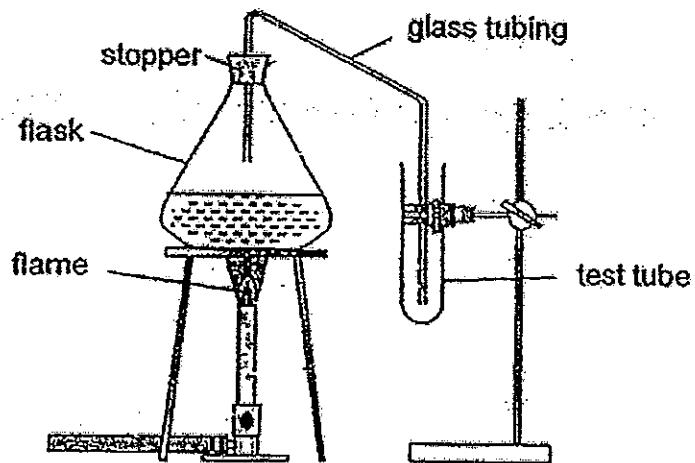
Next, Jim placed the same shoe on the other surfaces, Q, R and S, one at a time and recorded his results for each type of surface. His results are shown in the table below.

Type of surfaces	Amount of force (N)
P	30
Q	60
R	45
S	90

Based on the results above, which one of the following conclusions is correct?

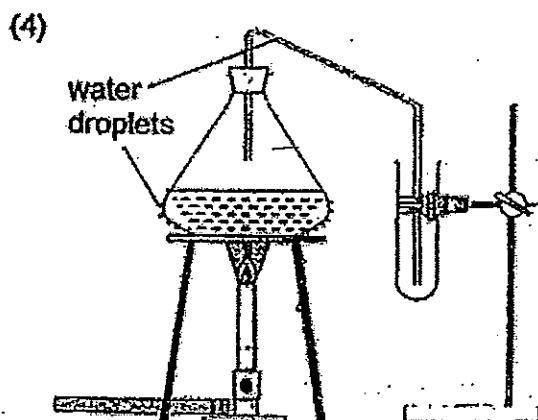
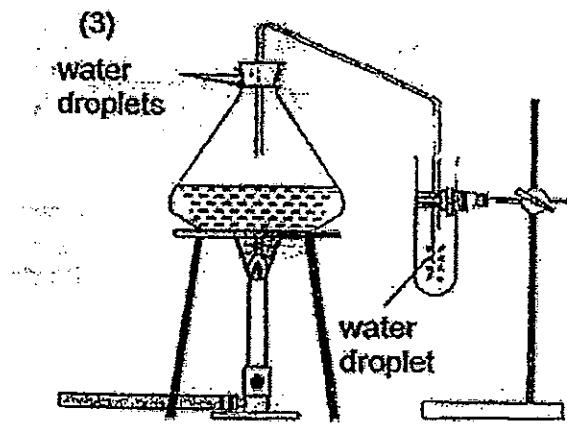
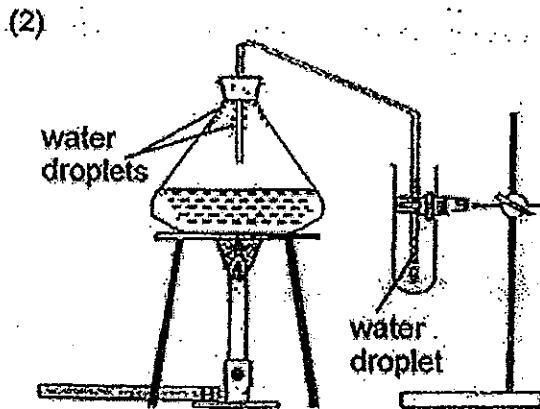
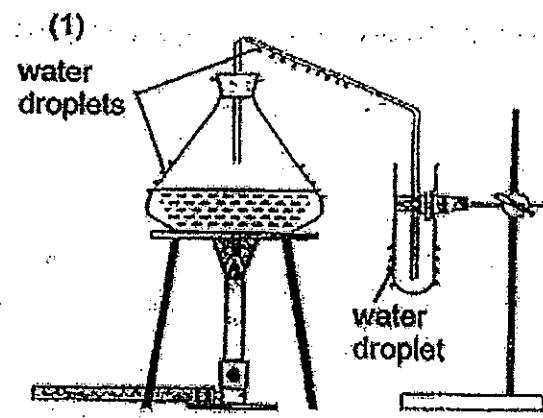
- (1) Surface R was the roughest and surface S was the smoothest.
- (2) Surface Q was smoother than surface R but rougher than surface S.
- (3) There was least friction between the shoe and surface R, as compared to other surfaces.
- (4) The friction between the shoe and surface P was greater than between the shoe and surface Q.

20. Raja heated a flask of water over a flame as shown below.

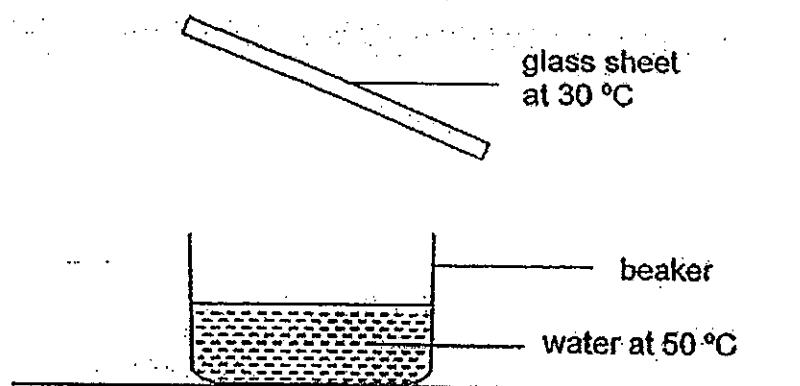


After a while, Raja observed that water droplets were formed.

Which one of these diagrams shows the parts where Raja saw these water droplets?



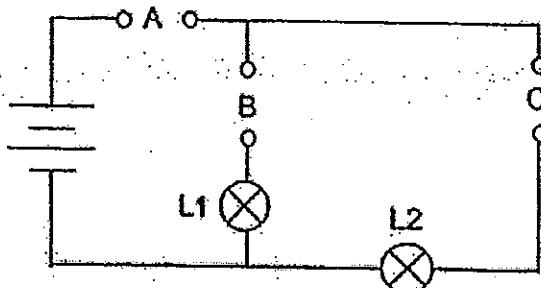
21. The diagram below shows a set-up in which water changes from one state to another.



Which one of the following will most likely result in an increase in the amount of water droplets formed on the glass sheet?

- A Add ice into the water
 - B Use a colder glass sheet
 - C Increase temperature of water
 - D Place a fan in front of the set-up
- (1) B and C only
(2) A and D only
(3) B, C and D only
(4) A, B and D only

22. Betty had three rods, P, Q and R, made of different materials. She placed them in various positions, A, B and C, in the circuit shown below.



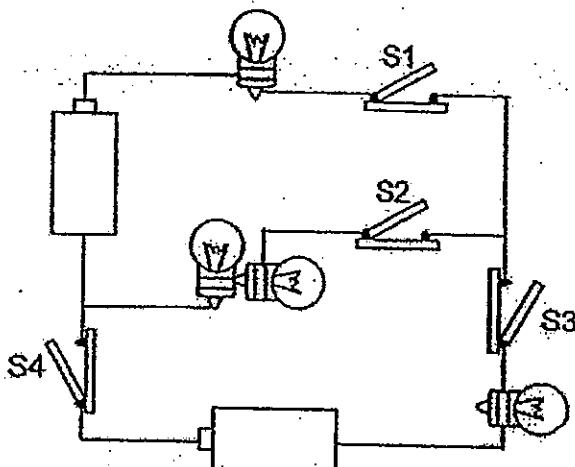
The results of the experiment were shown in the table below. A tick (✓) in the box indicates the lamp was lit up.

Positions where rods were placed			Lamp lit up	
A	B	C	L1	L2
P	Q	R		
Q	R	P	✓	
R	P	Q		✓

Which one of the following statements is most likely to be true?

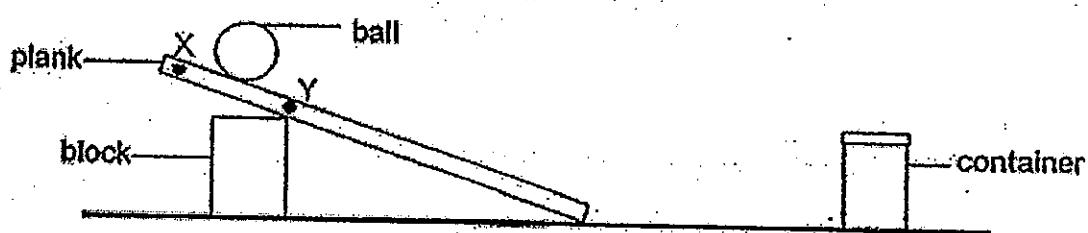
- (1) Only rod Q is a conductor of electricity.
- (2) Only rods Q and R are conductors of electricity.
- (3) Only rods P and R are non-conductors of electricity.
- (4) Only rods P and Q are non-conductors of electricity.

- 23 The diagram below shows a circuit arrangement with identical dry cells, switches and bulbs.



Which of the following switches must be closed to light up at least three bulbs?

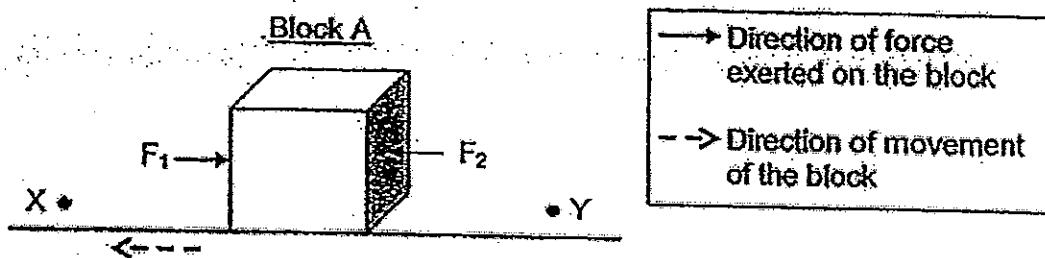
- (1) S1 and S2 only
 - (2) S2 and S3 only
 - (3) S1, S3 and S4 only
 - (4) S2, S3 and S4 only
24. Sally set up the following experiment. Point Y of the plank was in contact with the edge of the block, as shown in the diagram below. When she released the ball, it travelled down the ramp but was unable to hit the container.



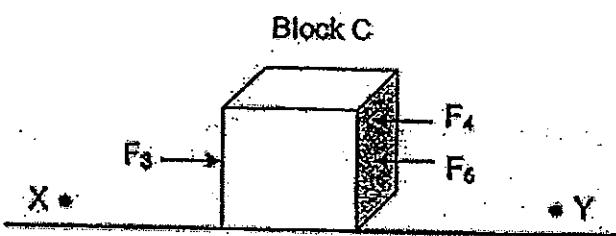
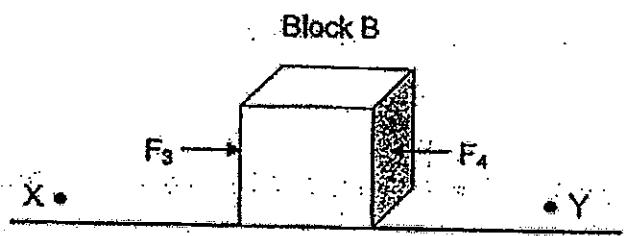
Which of the following would most likely allow the ball to travel further in order to hit the container?

- A Apply oil on the ball.
 - B Wrap the plank with sandpaper.
 - C Exert a push on the ball when releasing it.
 - D Shift the block such that point X of the plank is resting on the block.
- (1) B only
 - (2) B and C only
 - (3) A and C only
 - (4) A, C and D only

25. Two forces, F_1 and F_2 , were exerted on Block A at the same time, as shown in the diagram below. When F_2 is greater than F_1 , Block A moves towards point X.



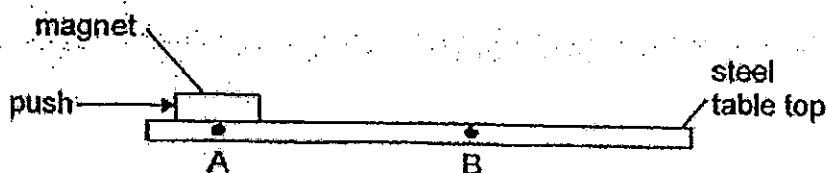
Forces, F_3 to F_6 , were exerted on two other identical blocks at the same time, as shown in the diagrams below.



Which one of the following shows the correct amount of forces, F_3 , F_4 and F_6 , exerted on each block such that Block B will move towards point Y while Block C will remain stationary?

	F_3 (N)	F_4 (N)	F_6 (N)
(1)	10	30	20
(2)	20	10	20
(3)	20	20	10
(4)	30	10	20

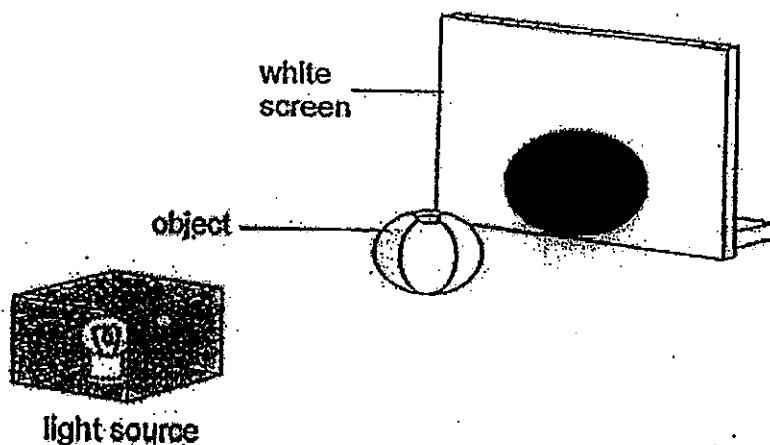
26. A magnet was placed on a steel table top. A push was exerted on the magnet to move it horizontally across the table from point A to point B as shown in the diagram below.



Which of the following force(s) must the push overcome such that the magnet moved from point A to point B?

- (1) Frictional force only
- (2) Gravitational force only
- (3) Frictional force and magnetic force only
- (4) Frictional force, magnetic force and gravitational force

27. When Ian placed an object between the light source and the white screen, a shadow of the object was cast on the white screen as shown below.

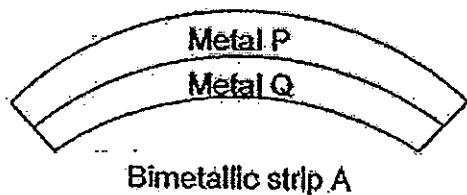


Which of the following changes should Ian make to the set-up such that he could observe a bigger shadow of the object?

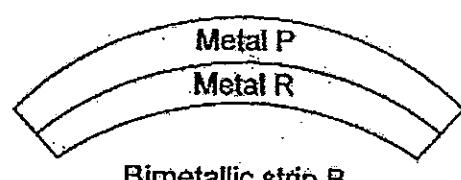
- A Use a brighter light source.
 - B Move the screen further from the object.
 - C Move the light source nearer to the object.
 - D Move the light source further from the object.
-
- (1) A and D only
 - (2) B and C only
 - (3) A, B and D only
 - (4) B, C and D only

28. Cindy had 4 different bimetallic strips, A, B, C and D, of the same length. Each bimetallic strip was made up of two different metals joined together.

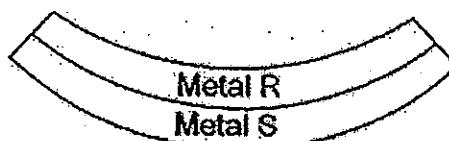
Cindy heated each strip, A, B, C and D, with the same amount of heat for the same period of time. She recorded her observations as shown in the diagrams below.



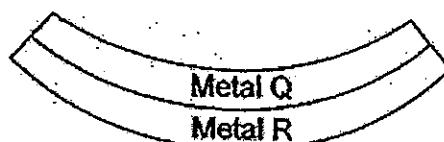
Bimetallic strip A



Bimetallic strip B



Bimetallic strip C

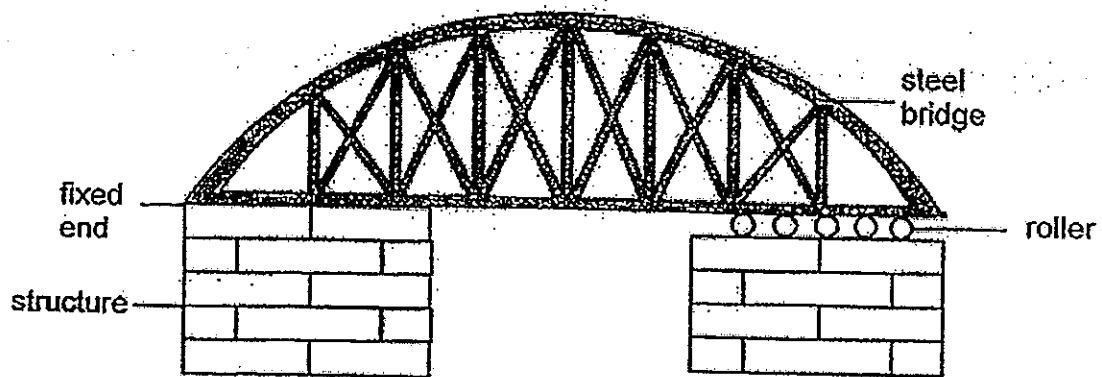


Bimetallic strip D

Based on the information above, which of the following shows the correct arrangement of the metals, P, Q, R and S, in order of increasing rate of expansion?

	least		greatest
(1)	P	R	Q
(2)	Q	R	S
(3)	S	Q	R
(4)	S	P	R

29. The diagram below shows a steel bridge.

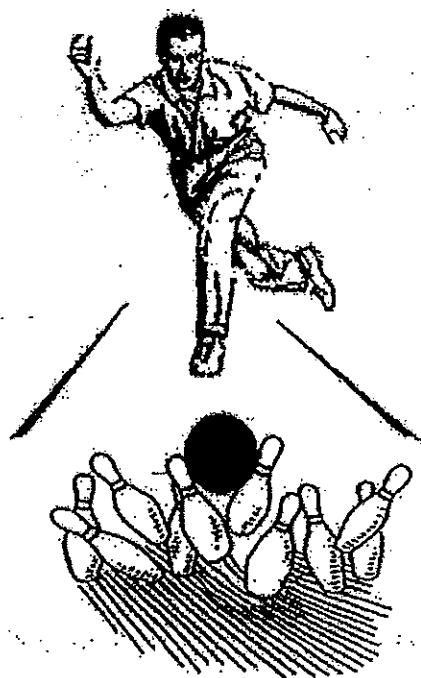


One end of the bridge is fixed securely to the structure unlike the other end which is resting on rollers as shown above.

Which of the following statement(s) explain(s) why one end of the bridge is resting on the rollers?

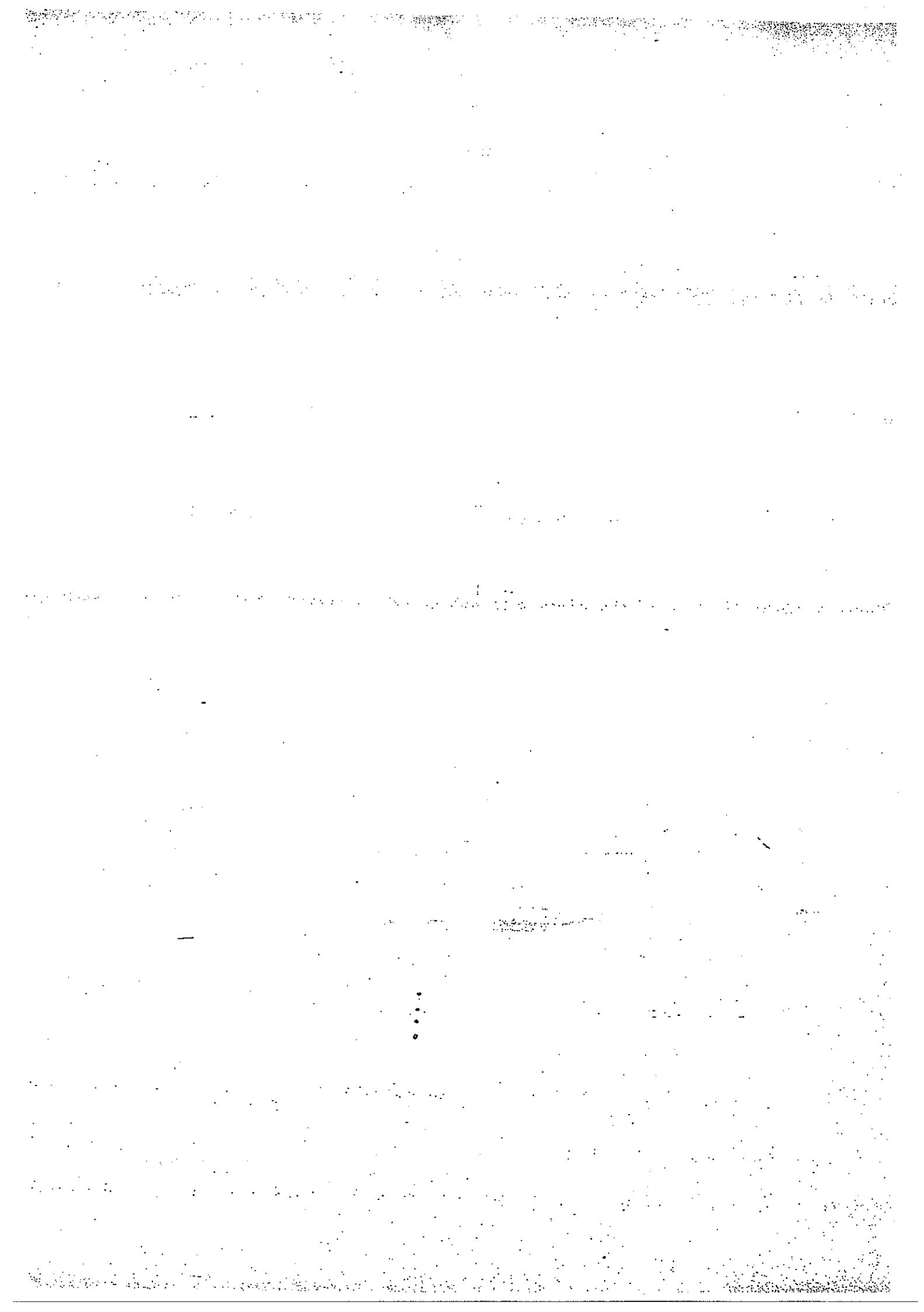
- A To reduce friction between the structure and the bridge.
 - B To allow the bridge to expand on hot days without damaging the structure.
 - C To allow the rollers to contract on cold days without damaging the structure.
- (1) B only
(2) A and B only
(3) B and C only
(4) A and C only

30. The diagram below shows Mr Wong playing bowling.



Which one of the following best shows the energy conversions when the bowling ball rolls and hits the pins?

(1)	kinetic energy (bowling ball)	\rightarrow	heat energy (pins)	\rightarrow	kinetic energy (pins)		
(2)	gravitational potential energy (man)	\rightarrow	kinetic energy (bowling ball)	\rightarrow	sound energy + heat energy (pins) (pins)		
(3)	kinetic energy (bowling ball)	\rightarrow	kinetic energy (pins)	\rightarrow	sound energy + heat energy (pins) (pins)		
(4)	chemical potential energy (bowling ball)	\rightarrow	gravitational potential energy (man)	\rightarrow	kinetic energy (bowling ball)	\rightarrow	sound energy + heat energy (pins) (pins)



Name : _____

Index No : _____ Class : P6 _____

40**SECTION B (40 marks)**

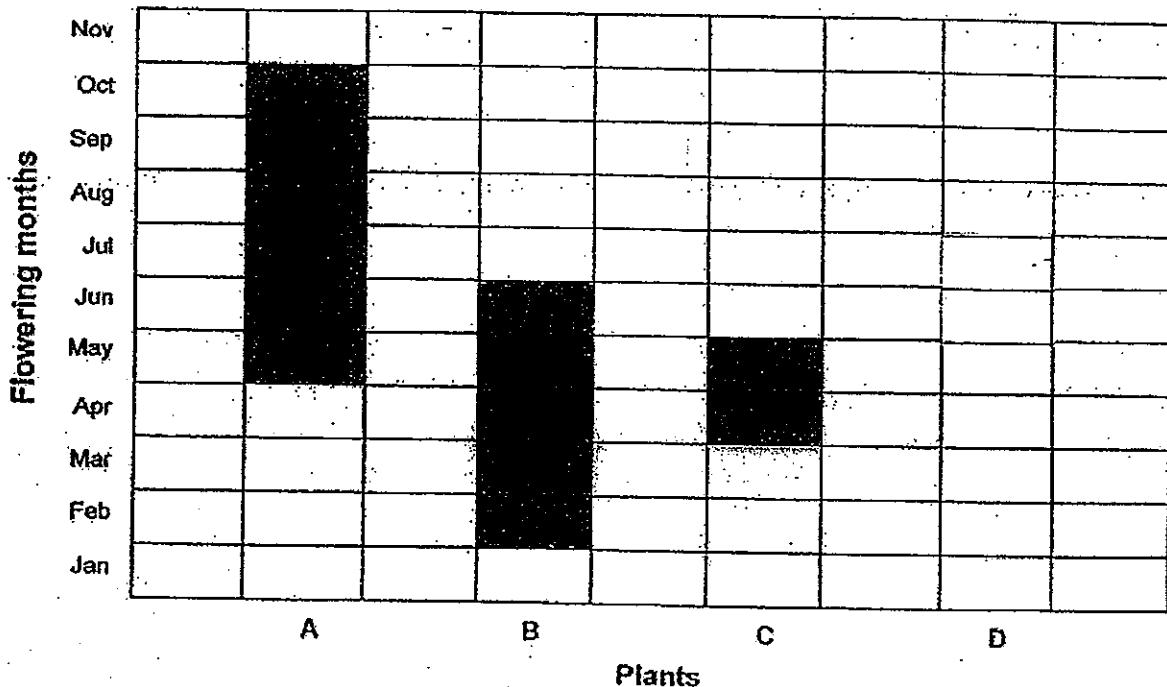
For questions 31 to 44, write your answers clearly in the spaces provided.

The number of marks available is shown in the brackets [] at the end of each question or part question.

31. The table below shows the flowering months for plants A, B, C and D.

Plant	Flowering begins in	Number of flowering months
A	May	6
B	February	2
C	April	2
D	June	2

The following is a graphic representation of the data above:



- (a) Based on the information above, for how many months did Plant B flower? [1]

- (b) Use the data in the table above, complete the graph for Plant D by shading the appropriate box(es) in the above graph. [1]

Score	
	2

32. Hannah placed 5 identical pots of seedlings, A, B, C, D and E in the field and watered them with different amount of water. She recorded the daily average increase in height of each seedlings at the end of one week as shown in the table below.

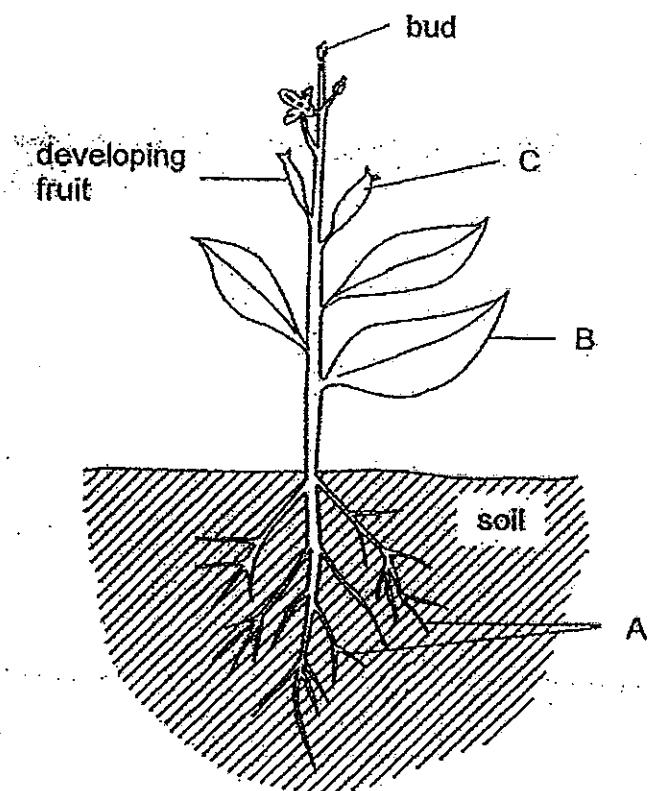
Pot	Amount of water given daily (ml)	Daily average increase in height of seedlings (cm)
A	25	2.0
B	30	2.5
C	50	3.0
D	65	4.0
E	95	4.0

- (a) Based on the information above, how did the amount of water given to the seedlings daily affect their growth? [1]

- (b) For the seedlings to grow well, their average increase in height have to be at least 4.0 cm in one week. From the table above, suggest the least amount of water to give to the seedlings per day to ensure that they grow well. [1]

Score	
	2

33. The diagram below shows a plant.



(a) Identify the substances that were transported from A to B and from B to C.

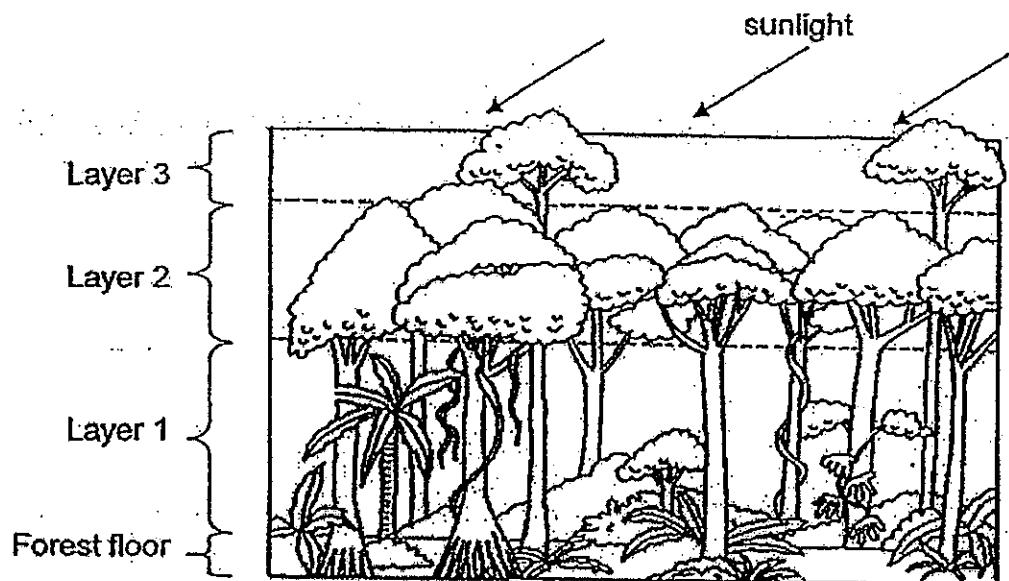
[1]

(i) A to B : _____

(ii) B to C : _____

(b) Besides transporting substances, suggest another function of the roots. [1]

34. The diagram below shows four different layers of a typical rainforest.



Ivan went trekking in a rainforest and he observed that there are fewer plants found on the forest floor than the upper layers, 1, 2 and 3.

Based on the information above, explain Ivan's observations.

[2]

Score	
2	

35. Kelvin wants to investigate the effect of pollutant X on the survival of aquatic plant A using all the materials provided in the table below.

- 10 similar aquatic plant A
- 1 dropper
- 2 identical beakers
- 1 container containing 400 ml of pond water
- 1 bottle containing pollutant X

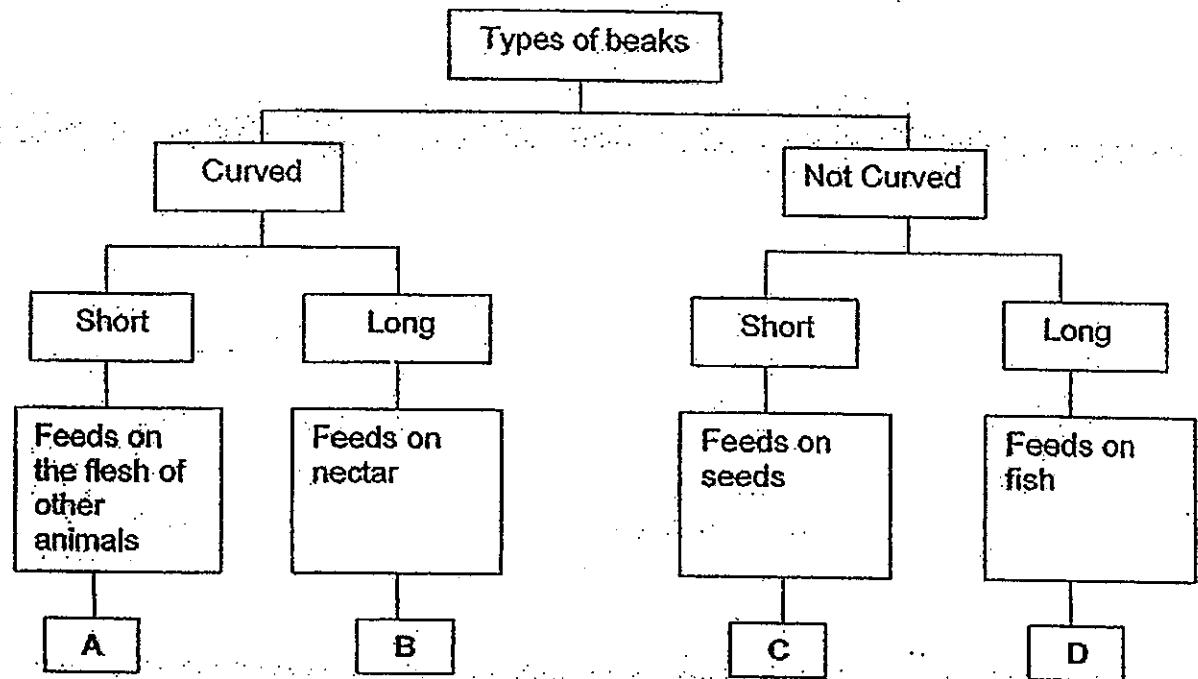
- (a) Write down the steps that Kelvin should carry out in his experiment [3]

Step	Procedure
1	

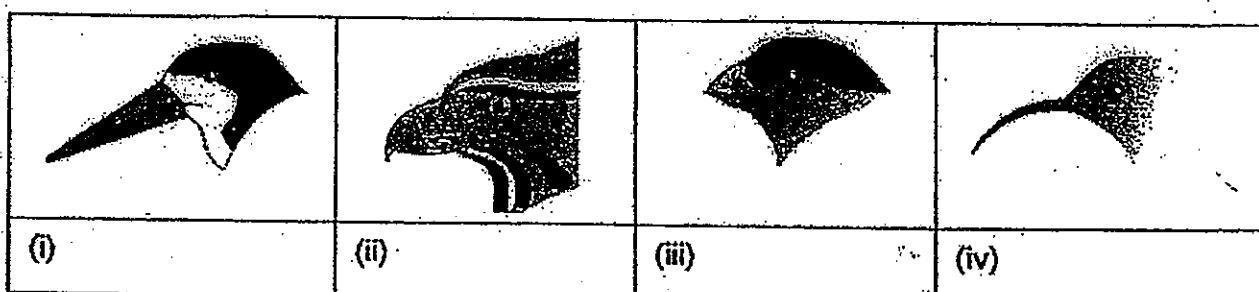
- (b) Describe what Kelvin would observe in order to conclude that Pollutant X has a harmful effect on the aquatic plant. [1]

Score	
	4

36. The classification chart below shows how the beaks of four species of birds and their diet are grouped.



- (a) Based on the information provided above, writing the letters (A to D) in the correct boxes to match each beak shown in the diagrams below. [2]



Score	
	2

The diagrams below show the nests built by Bird X and Y.



Nest of Bird X



Nest of Bird Y

- (b) Based on the diagrams above, which bird has built a nest that benefits its young during rainy seasons? Explain your answer. [1]

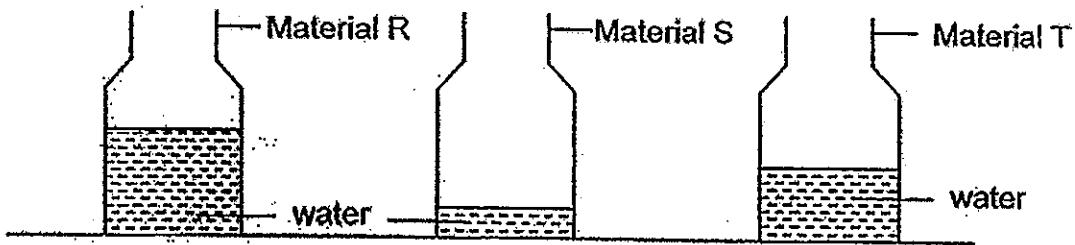
- (c) Predatory birds possess keen eyesight to spot prey on the ground while flying from a great height.

Why is the structure of the nest of Bird Y a disadvantage compared to the nest of Bird X in the presence of predatory birds? Explain your answer. [1]

Score	
	2

37. Ravi had three containers of the same size, colour and thickness, each made of different materials, R, S and T.

He filled all the containers with equal amount of water and left them in a room with a constant temperature of 35°C for 3 days. After 3 days, Ravi observed that the water level in each container decreased as shown in the diagram below.

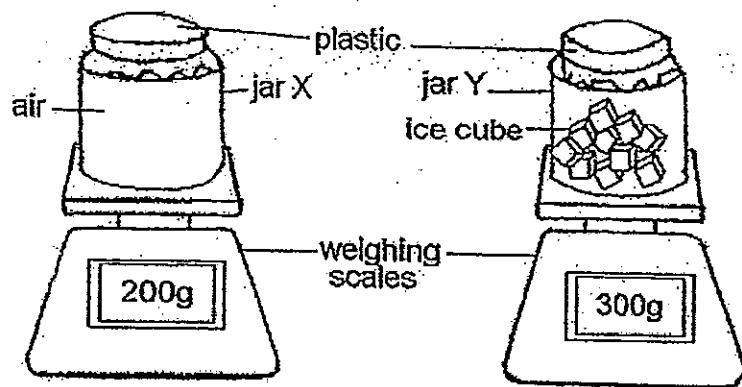


- (a) Based on the observations above, what can you infer about the properties of materials, R, S and T? [1]

- (b) Ravi repeated the experiment by placing the containers in an air-conditioned room at a temperature of 20°C for 3 days. Would there be any difference in the change of water level in the three containers compared to the earlier experiment? Explain your answer. [2]

Score	
3	

38. Hamidah had two identical jars, X and Y. Some ice cubes were put into jar Y. Each jar was sealed tightly with identical plastic sheet and then placed on a weighing scale as shown in the diagrams below.

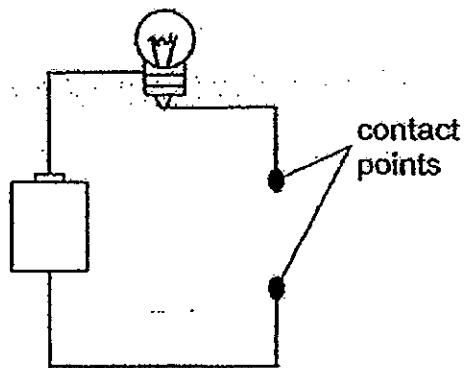


Next, Jar X was heated while jar Y was left in a room. After 15 minutes, each jar was placed on the weighing scale again.

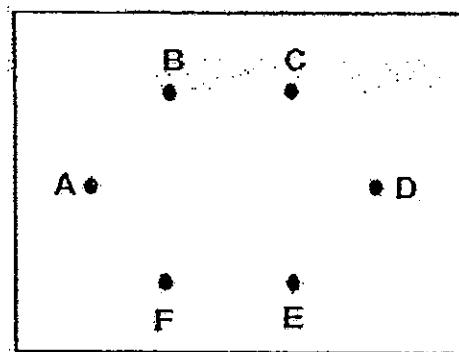
- (a) Would Hamidah observe an increase, a decrease or no change in the mass of each jar? [1]
- (i) Mass of Jar X : _____
- (ii) Mass of Jar Y : _____
- (b) Explain your answer in (a) for Jar Y. [2]

Score	
	3

39. Mandy set up a circuit tester and a circuit card as shown in the diagrams below.



Circuit tester



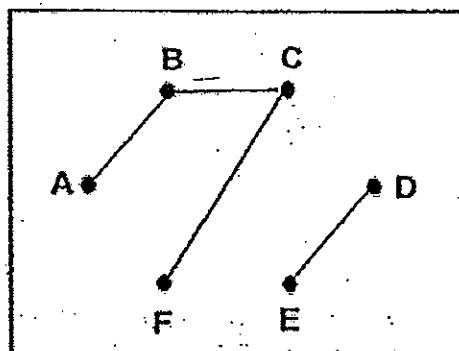
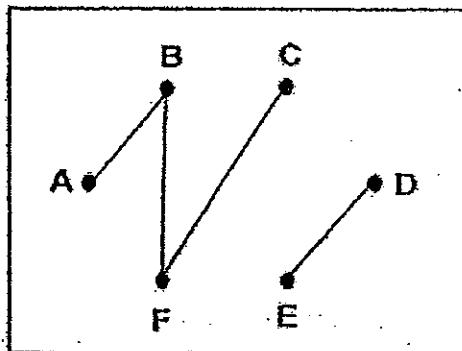
Circuit card

The circuit tester is used to test the circuit card. The circuit card has a metal thumbtack at each point, A, B, C, D, E and F. The thumbtacks are connected by wires behind the card.

The results are recorded in the table below.

Contact points of circuit tester connected to thumbtacks at	Did the bulb light up?
A and B	Yes
B and F	Yes
C and D	No
C and F	Yes
D and E	Yes

- (a) Draw lines in the circuit cards below to show two possible ways of connecting the thumbtacks to achieve the results as shown in the table above. [2]



Score	
	2

In a dark room, Mandy conducted another experiment in which different number of dry cells was added in a series arrangement to the same circuit tester. When the circuit is closed, the brightness of the bulb was measured using a light sensor attached to a datalogger.

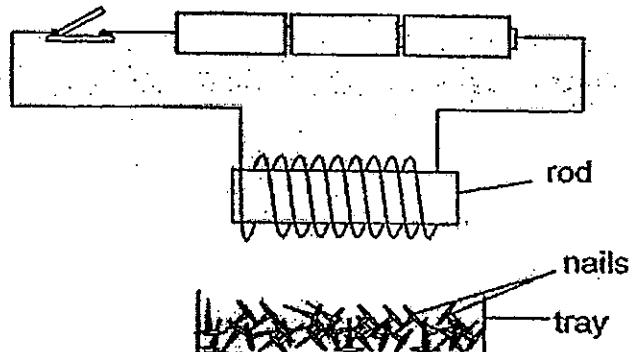
- (b) Predict the results of her second experiment and complete the table below.

[1]

Number of batteries	Brightness of the bulb (units)
1	
2	800
3	0
4	

Score	
	1

40. Sophia had four rods, P, Q, R and S, each made of different materials. She wanted to investigate the magnetic strength of each rod using the following set-up.



When the switch was opened, the number of nails in the tray was 60. When the switch was closed, the rod attracted some of the iron nails. The number of nails left in the tray was recorded in the table below.

Rod	Number of nails left in the tray
P	36
Q	30
R	33
S	23

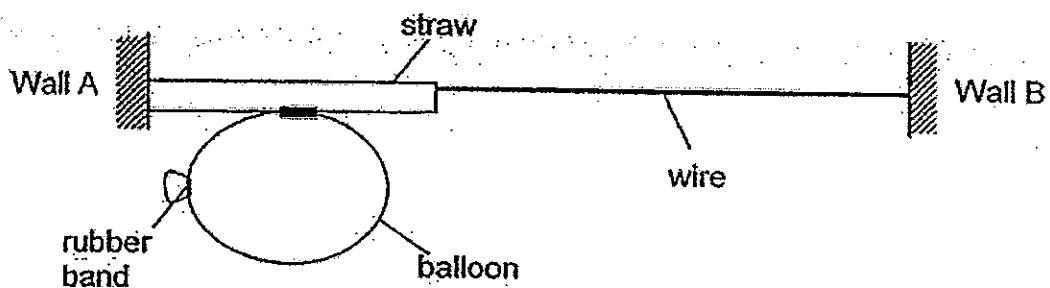
- (a) Based on the table above, which rod was the strongest electromagnet when the switch was closed? Explain your answer. [1]

- (b) Identify a variable that should be kept constant in order to ensure a fair test was carried out. [1]

- (c) When Sophia replaced the rod with rod T, she observed that the number of nails left in the tray was 60. Based on this observation, what can you infer about the property of rod T? [1]

Score	
	3

41. Minah prepared the set-up below to move the balloon and the straw from wall A to wall B. In the set-up, she passed a wire through a straw, which had a balloon attached firmly to it.

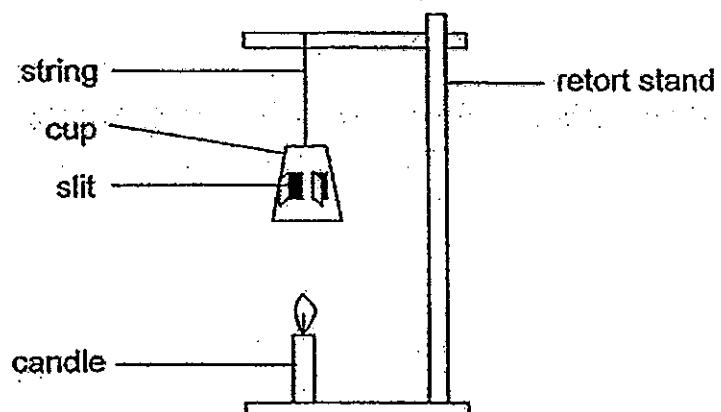


- (a) When the rubber band was removed, air rushed out of the balloon. However, she observed that the balloon and the straw remained stationary. Explain this observation using concepts on forces. [1]

- (b) Without changing the materials in the set-up, suggest what can be done to move the balloon and the straw to wall B when the rubber band was removed. [1]

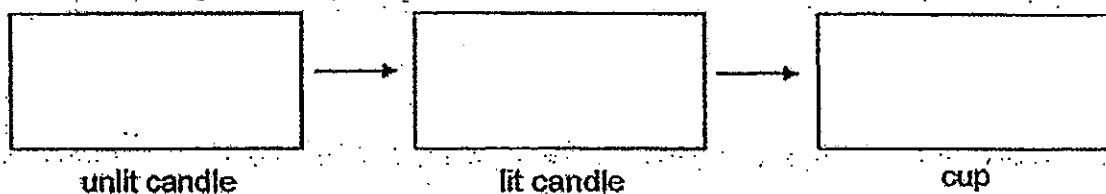
Score	
2	

42. Betty prepared the set-up as shown below. She observed that the cup started to spin after a while.

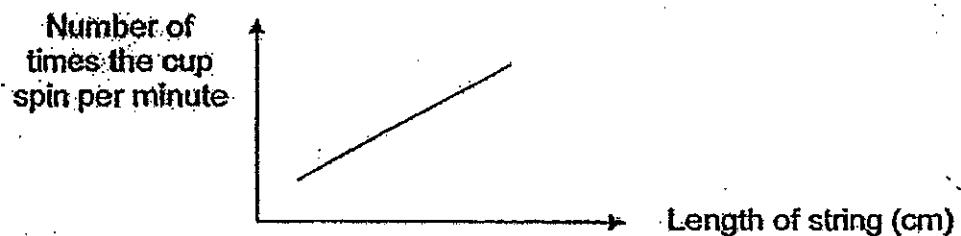


- (a) State the main energy change in the set-up above.

[1]



Betty repeated the experiment using strings of different lengths. She measured the number of times the cup spun per minute. She presented her results in the graph shown below.



- (b) What is the relationship between the spinning rate of the cup and the distance between the candle flame and the cup?

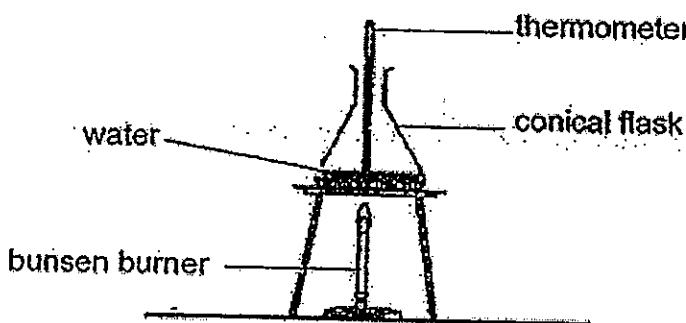
[1]

Score	
	2

- (c) Betty observed that the cup spun at a different rate when she used two candles instead of one candle. Explain her observation. [2]

43. Tom wanted to investigate how the amount of water affects the time taken for it to boil.

Tom prepared three set-ups, X, Y and Z, as shown in the diagram below. The flask in each set-up was filled with a different amount of water at identical temperature before same amount of heat was applied to each of the flask.



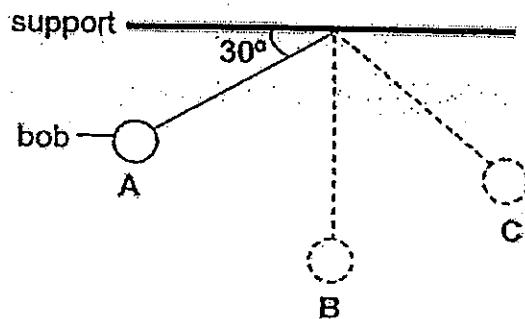
He recorded his results in a table shown below.

Set-up	Time taken for the water to boil (min)
X	13
Y	17
Z	15

- Which set-up, X, Y or Z, had the greatest amount of water at the beginning of the experiment? Explain your answer. [2]

Score	
	4

44. The diagram below shows set-up X which consists of a metal bob attached to a string hung from a support.



Set-up X.

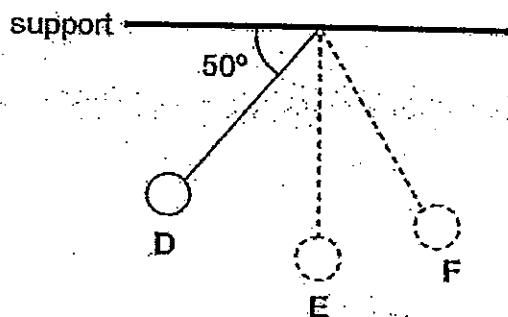
When the metal bob is released from point A, it swings to point B and then to point C.

- (a) At which point, A, B or C, does the metal bob possess the most amount of gravitational potential energy? Give a reason for your answer. [1]

- (b) Give a reason why the metal bob is unable to move back to the same height at point A after the first swing. [1]

Score	
	2

The diagram below shows another identical set-up, Y. The metal bob is released at position, D.



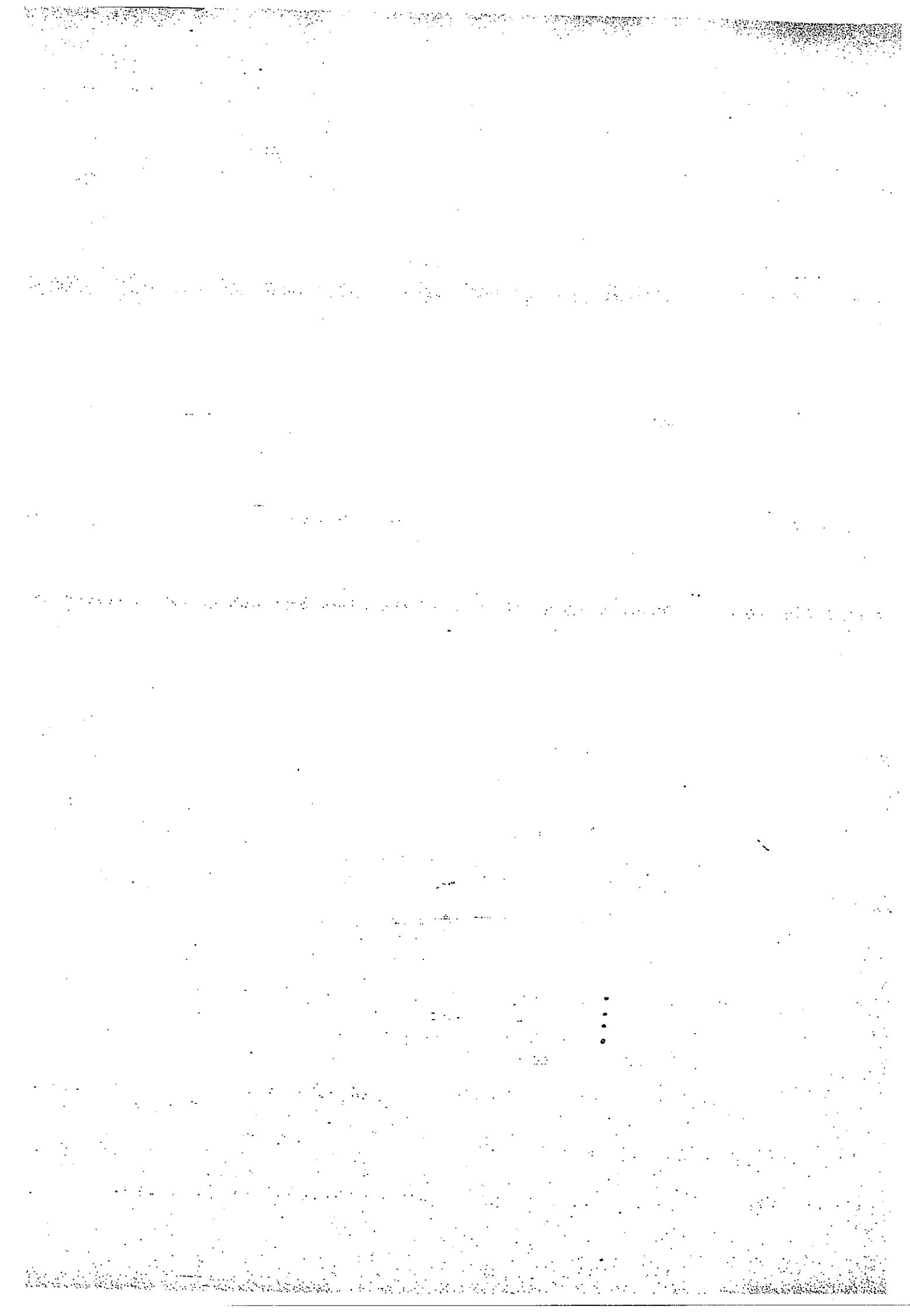
Set-up Y

- (c) In which set-up, X or Y, would the metal bob possess a greater amount of kinetic energy at the lowest point of the swing, point B or point E, respectively? Explain your answer. [2]

- END OF PAPER -

Setters : Ms Lee Suhah Khim, Mdm Lim Sok Yen, Ms Loo Ching Yee, Mrs Sharon Seet

Score	2
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Answer Ke

EXAM PAPER 2012

SCHOOL : RAFFLES GIRLS'
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

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

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

31)a)5 months.

b)D/ Jun, Jul

32)a)The seedlings watered with more water grew taller than the ones watered with lesser water until the seedlings that were watered 65ml or more's daily average increase remained at 4.0cm.

b)9ml.

33)a)i)water and mineral salts. ii)sugar.

b)The roots anchor the plant firmly to the ground.

34)Most of the sunlight was blocked by the plants found in the upper layers. Hence, the plants growing on the forest floor lacked sufficient sunlight to make food.

35)a)1)Pour 200ml of pond water from the container into the beaker.

2)Put 5 aquatic plant A into each beaker.

3)using the dropper, drop a few drops of pollutant X into one of the beakers.

4)Place beakers in a sunny area for 1 week.

5)Observe the number of aquatic plant A that remained alive after one week.

35)b) The aquatic plant X will die/ while the aquatic plants without pollutant will still be alive.

36)a)i)D ii)A iii)C iv)B

b) Bird X. The nest's entrance is at the bottom so rainwater cannot get in the nest, unlike the nest of Y which is exposed to the rain.

c) Top of X is covered up but the top of nest of Y is exposed so predators can spot them all easily.

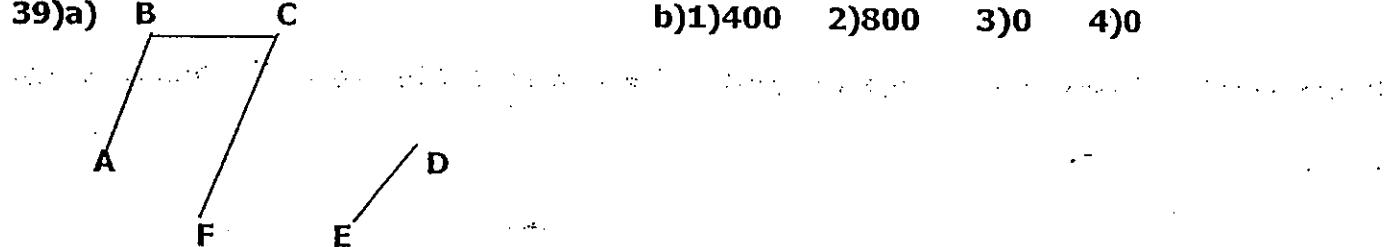
37)a) S is the best conductor of heat among all the containers.

b) The water levels in the containers will be higher. The temperature difference between the water and the surrounding air is smaller, so water in the containers evaporate slower.

38)a)i)no change. ii)increase.

b) When water vapour in the surrounding air loses heat to the cooler outer surface Y, and condenses to form water droplets on the outer surface of Y. This results in an increase in mass of Y.

39)a) B C
b) 1) 400 2) 800 3) 0 4) 0



40)a) Rod S. The number of nails left in the tray was the least among all other set-up, showing that Rod S attracted the most nails.

b) The number of batteries in every set-up.

c) T is a non-magnetic material and cannot be magnetized into an electromagnet.

41)a) The force exerted by the air rushing out of the balloon was not enough to overcome the friction between the wire and the straw.

b) Blow more air into the balloon.

42)a) Chemical potential energy → heat energy → kinetic energy

b) The shorter the distance between the candle flame and the cup, the faster the spinning rate of the cup.

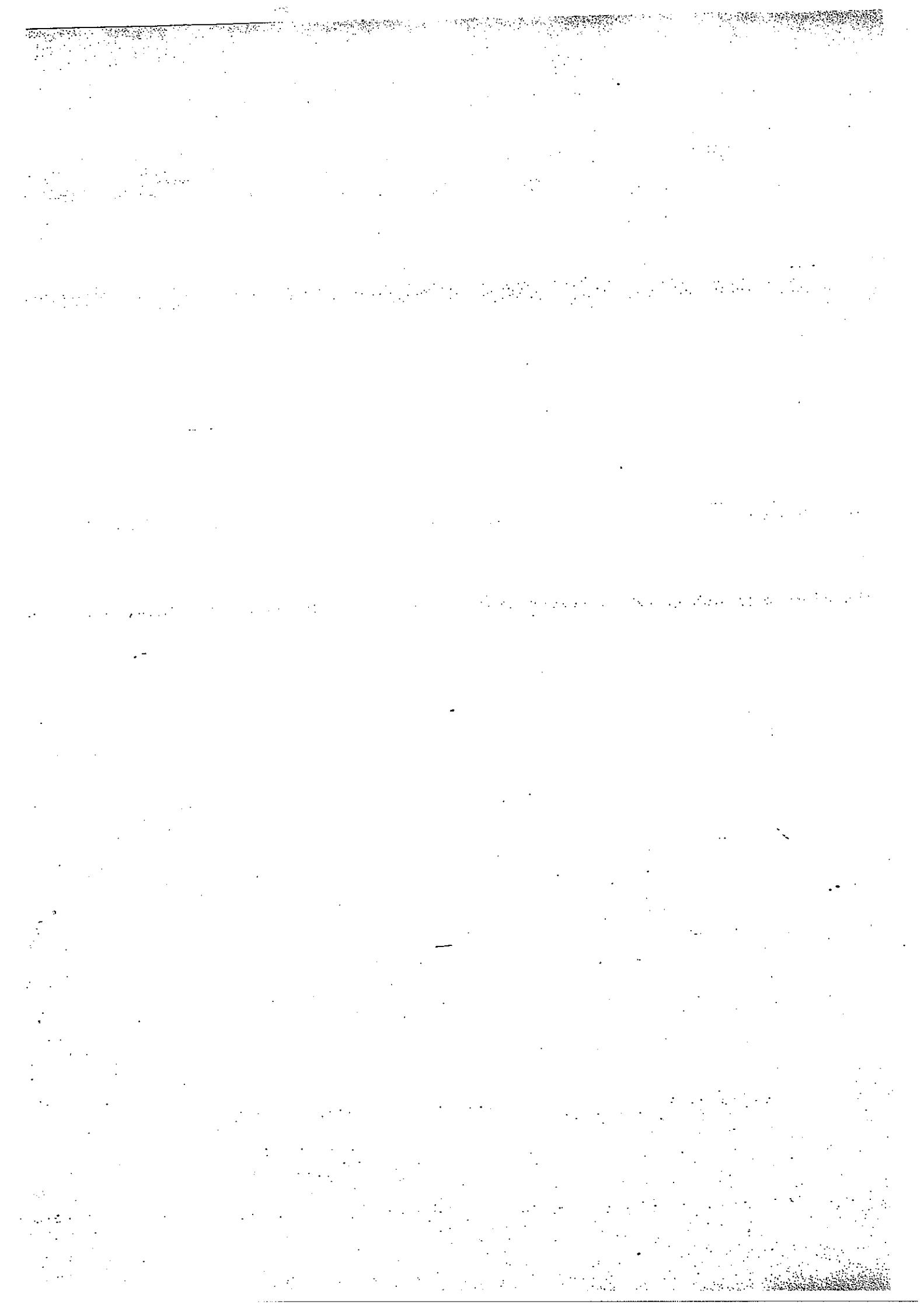
c) Two candle take in more oxygen and produce more carbon dioxide than one candle, resulting in more kinetic energy of the cup as the carbon dioxide will push the cup side ways due to the slits. Warm air rises and cool air sinks.

43) Y has most water which needs to gain more heat to reach the boiling point. Hence, it took the longest time to boil.

44)a) Point A. At A, the bob is at the highest point before swinging down to B. The metal bob not swing higher than its starting position at C.

b) All the gravitational potential energy is converted to kinetic energy, sound energy and heat energy.

c) There is more gravitational potential energy in the bob at point A than the bob at point D, so more gravitational potential energy was converted to more kinetic energy.



**PRELIMINARY EXAMINATION
2016**

Name : _____ Index No: _____ Class: P 6

25 Aug 2016 **SCIENCE** Attn: 1h 45min

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

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.

1. The table below provides some information on organisms X, Y and Z.

A tick (✓) in the box indicates the presence of the characteristics.

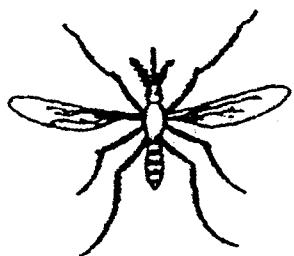
Organisms	Makes its own food	Feeds on dead matter	Reproduces from spores
X	✓		✓
Y		✓	✓
Z		✓	

What are X, Y and Z most likely to be?

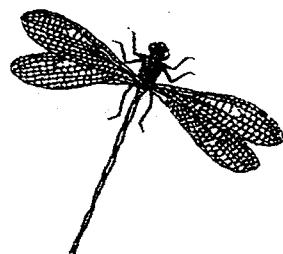
	X	Y	Z
(1)	mushroom	bacteria	bird's nest fern
(2)	bird's nest fern	mushroom	bacteria
(3)	bacteria	mushroom	bird's nest fern
(4)	bird's nest fern	bacteria	mushroom

2. Which one of the following animals is not an insect?

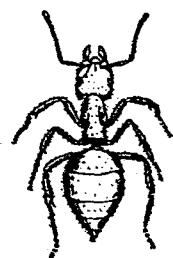
(1)



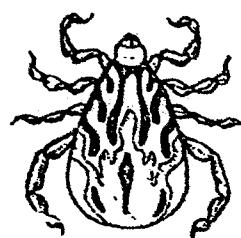
(2)



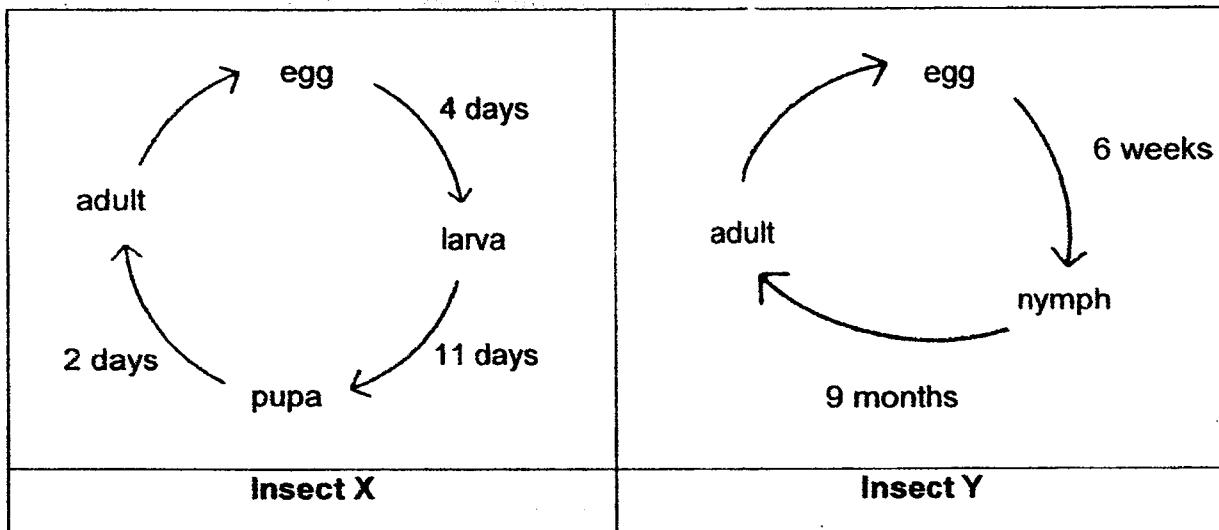
(3)



(4)



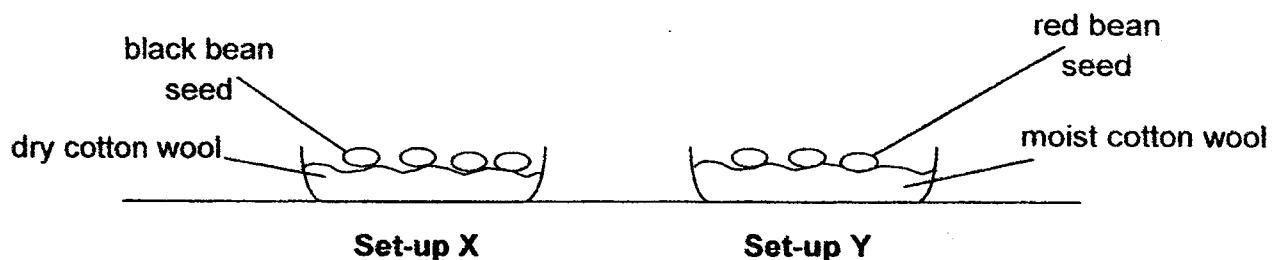
3. Study the life cycles of insects X and Y below.



Based on the diagrams above only, which of the following statements are true?

- A X and Y do not give birth to their young alive.
 - B X and Y have different number of stages in their life cycles.
 - C The young of Y resembles its adult but the young of X does not.
 - D The young of X takes a longer time to develop into the adult stage than the young of Y.
-
- (1) A and B only
 - (2) C and D only
 - (3) A, B and C only
 - (4) A, B and D only

4. Jenny conducted an experiment to find out if the presence of water would affect seed germination. She prepared the experimental set-ups as shown below.

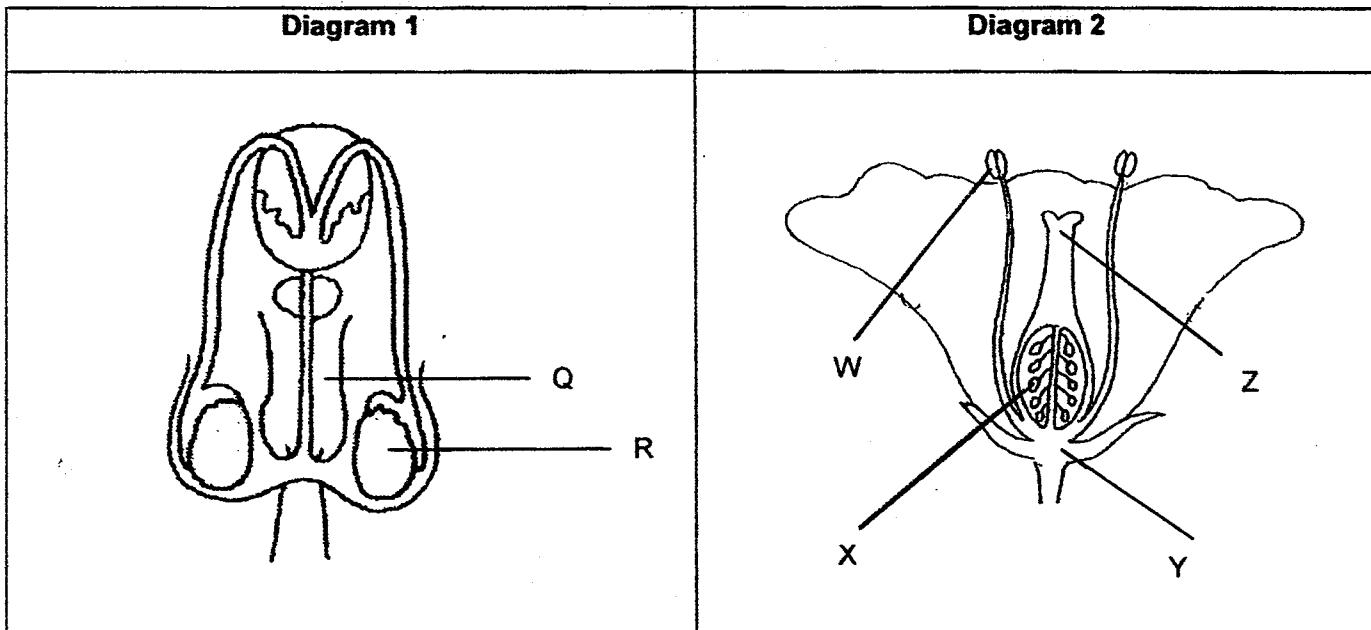


Her classmates commented that her experimental set-ups were incorrect.

Which of the following should she do to ensure a fair test?

- A Add one more seed to set-up Y.
 - B Add water to the cotton wool in set-up X.
 - C Reduce the amount of cotton wool in set-up X.
 - D Replace the black bean seed in set-up X with red bean seeds.
-
- (1) A and B only
 - (2) A and D only
 - (3) B and D only
 - (4) C and D only

5. Diagrams 1 and 2 show the reproductive parts of a human and a plant respectively:



Identify the part where the male sex cells are produced in the reproductive system of a human and plant respectively.

	Reproductive system of human	Reproductive system of plant
(1)	Q	X
(2)	Q	Z
(3)	R	W
(4)	R	Y

6. The diagrams below show the parts of a river bank. Diagram 1 shows the areas where two different types of plants, A and B, were introduced in 2015, while Diagram 2 shows the same river bank and the growth of the plants in some other areas of the land in 2016.

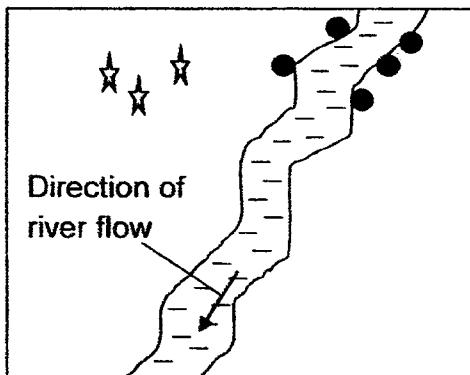
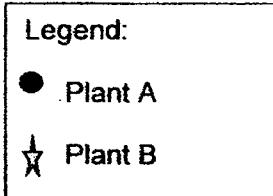


Diagram 1
(Year 2015)

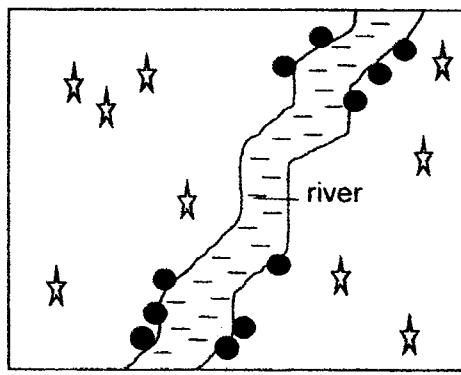
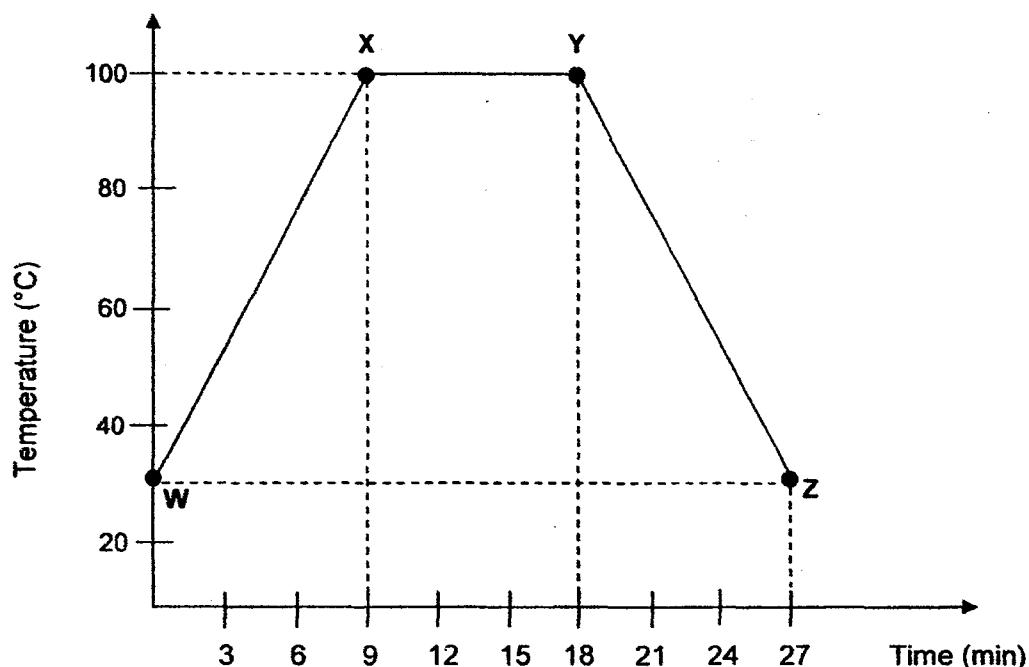


Diagram 2
(Year 2016)

Based on the diagrams above, which one of the following shows the possible characteristics of the fruits of Plants A and B?

	A	B
(1)	Has hooks	Has fibrous husk
(2)	Has wing-like structure	Is brightly coloured and juicy
(3)	Has stiff hairs	Has wing-like structure
(4)	Has fibrous husk	Is small and light

7. Mary heated some water in a beaker until it boiled. The results of her experiment are recorded in the graph below.



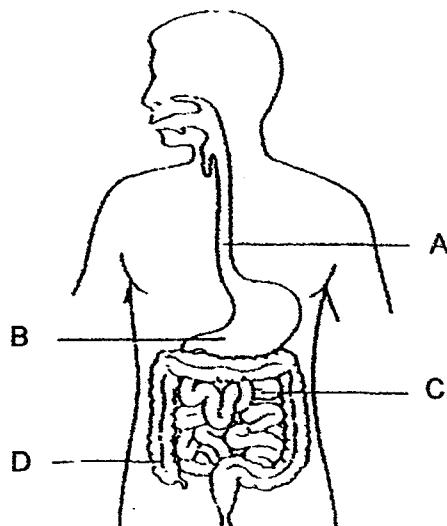
Based on the information above, which of the following statements correctly describes what happened to the water at the different stages?

- A Evaporation takes place only from Y to Z.
 - B The water in the beaker gained heat energy from W to X.
 - C Mary heated the water in the beaker for more than 20 minutes.
 - D The water in the beaker started to boil after it had been heated for 18 minutes.
- (1) A only
(2) B only
(3) A and D only
(4) B and C only

8. The lungs and heart are two organs in the human body. Which one of the following statements on the function of the lungs or heart is correct?

- (1) The heart removes carbon dioxide from the lungs.
- (2) The heart takes in oxygen from the surrounding air into the body.
- (3) The lungs remove carbon dioxide from the body when we breathe out.
- (4) The lungs transports oxygen from the heart to the other parts of the body.

9. The diagram below shows the digestive system of a human body.



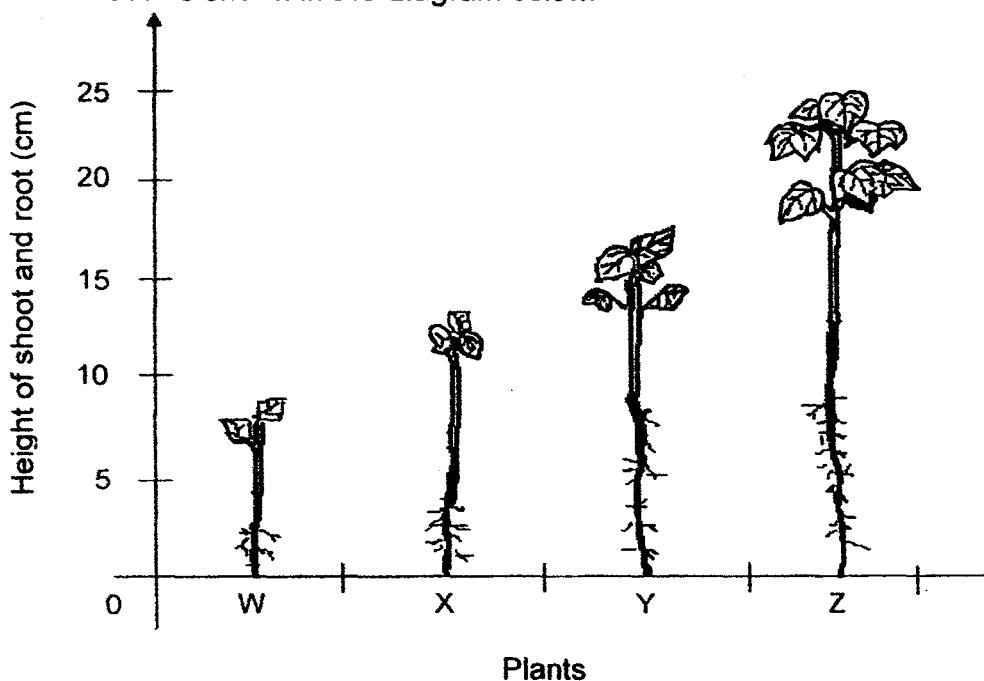
Digestion is completed at _____.

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

10. Peter wanted to find out how the length of the root affected the growth of plants. He planted four similar plants, W, X, Y and Z. He added the same amount of water to the plants. The table below shows when each plant was harvested.

Plant	Day on which the plant was harvested
W	10 th
X	20 th
Y	30 th
Z	40 th

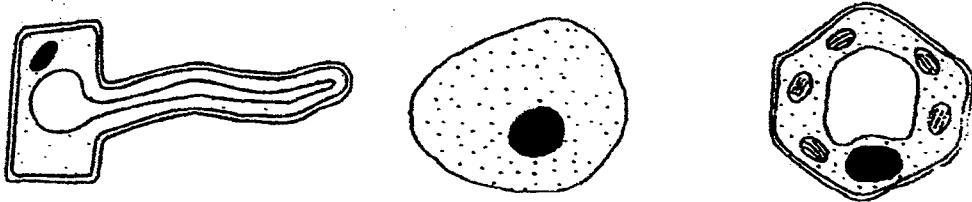
He then recorded the height of the plant, number of leaves and the length of the root as shown in the diagram below.



Based on the information above, which of the following conclusions are correct?

- A As the length of the root increases, the height of the plant increases.
 - B As the length of the root increases, the number of leaves increases.
 - C The longer the length of the root, the greater the volume of water the plant was able to absorb.
- (1) A and B only
 (2) B and C only
 (3) A and C only
 (4) A, B and C only

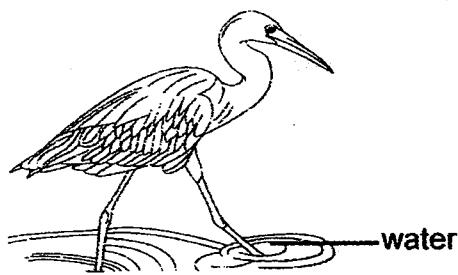
11. Study the three cells below.



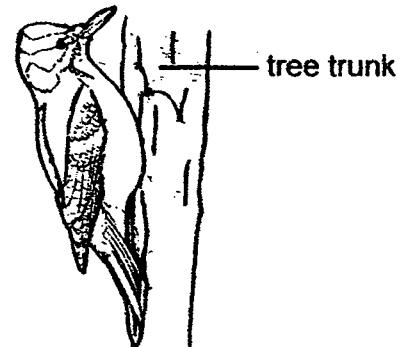
Which of the following cell parts are found in all three cells?

- (1) cell wall and nucleus only
- (2) nucleus and cell membrane only
- (3) cytoplasm and cell membrane only
- (4) cytoplasm, nucleus and cell membrane only

12. Jack saw two different types of birds, Y and Z. Bird Y was seen feeding in the pond while bird Z was seen feeding on the tree trunk. Bird Y waddled through shallow waters and does not swim. Bird Z perched on the tree trunk and feed on tiny organisms.

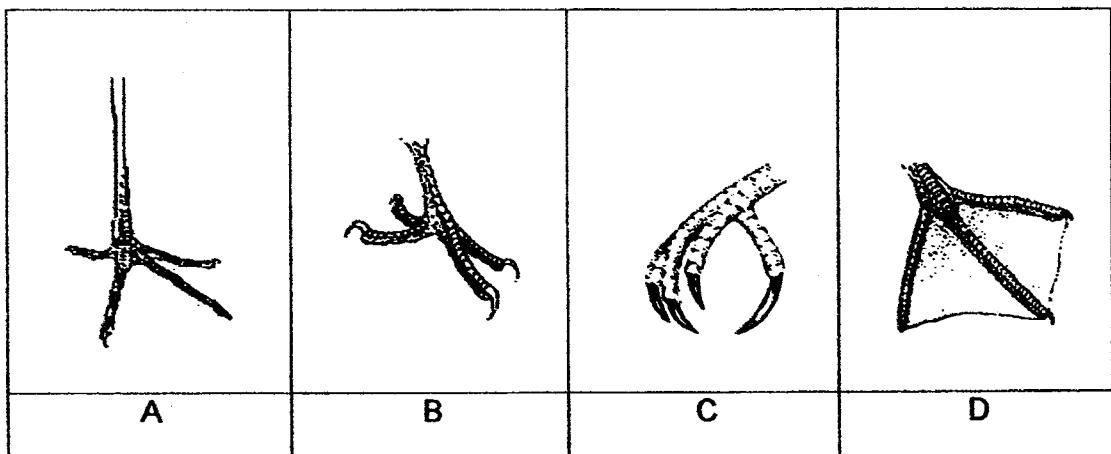


Bird Y



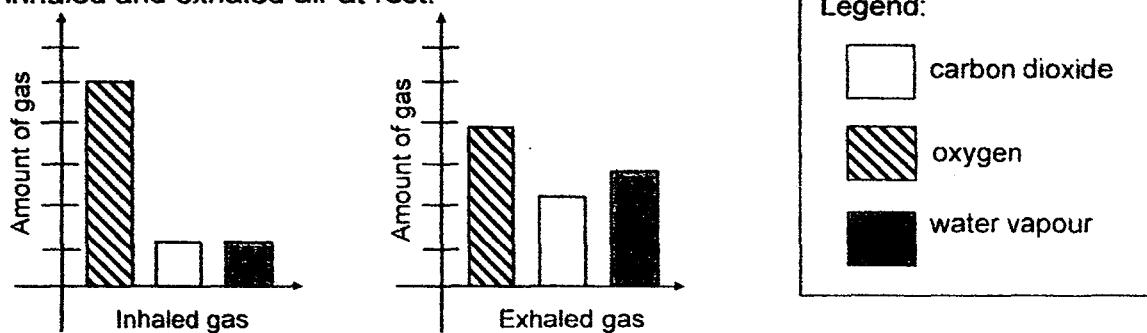
Bird Z

Which of the bird feet, A, B, C and D shown below represents the feet of bird Y and Z?

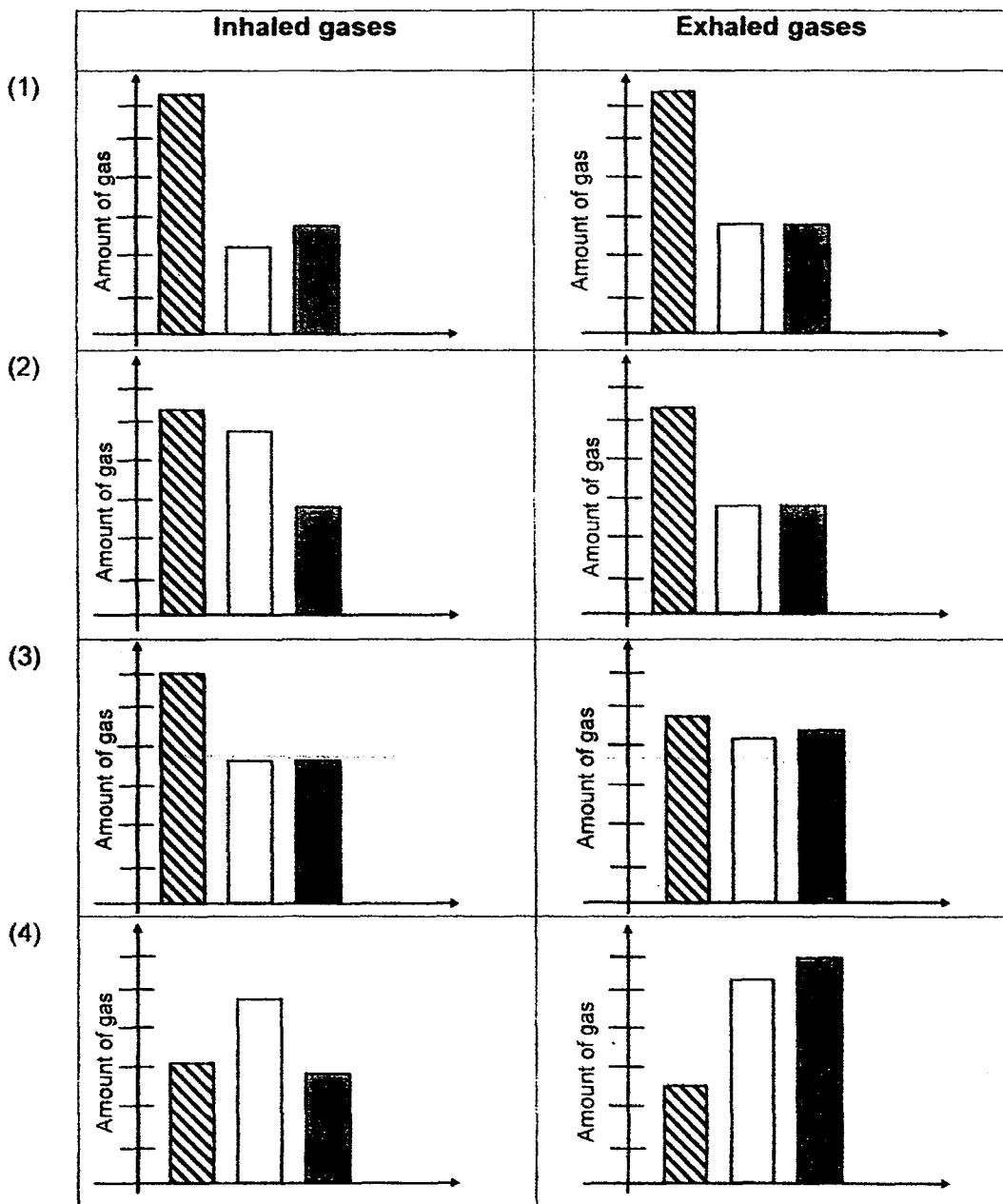


	Bird Y	Bird Z
(1)	A	B
(2)	A	C
(3)	D	C
(4)	B	D

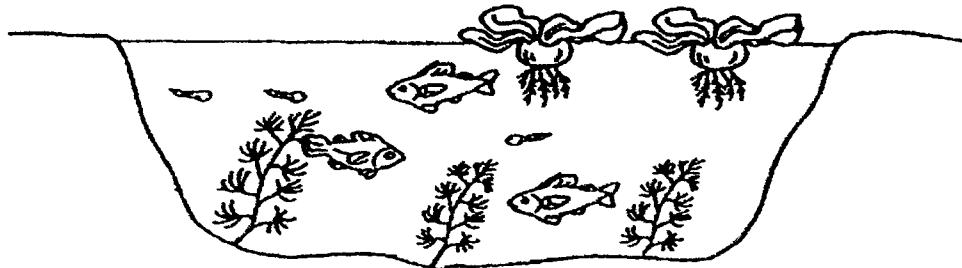
13. Mary was trapped in a small lift. She started to kick the lift door and shout for help continuously. The graph below shows the percentage of gases in Mary's inhaled and exhaled air at rest.



Which one of the following graphs below shows the percentage of gases in Mary's inhaled and exhaled air after 15 minutes in the lift?



14. The diagram below shows an aquatic habitat.



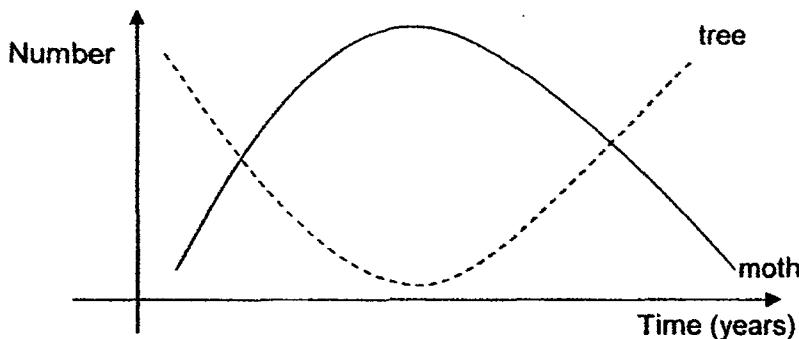
Four friends made the following statements about the aquatic habitat.

- A There are a total of two different populations in the aquatic habitat.
- B The fishes and the tadpoles form two communities in aquatic habitat.
- C The tadpoles, fishes and aquatic plants ^t form one community in the aquatic habitat.
- D The tadpoles, fishes and aquatic plants form three different populations in the aquatic habitat.

Which of the above statements is/are correct?

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

15. The table below shows the changes between the number of moths and the number of trees in the forest over a period of 5 years.



Based on the table above, which of the following reasons possibly explain for the changes in the population of moths and trees over a period of 5 years?

- A The trees provides food for the moths.
 - B The number of trees decreased due to a fire in the forest.
 - C The number of moths increases faster than the number of trees.
 - D As the number of moths decreases, the number of trees increased.
- (1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

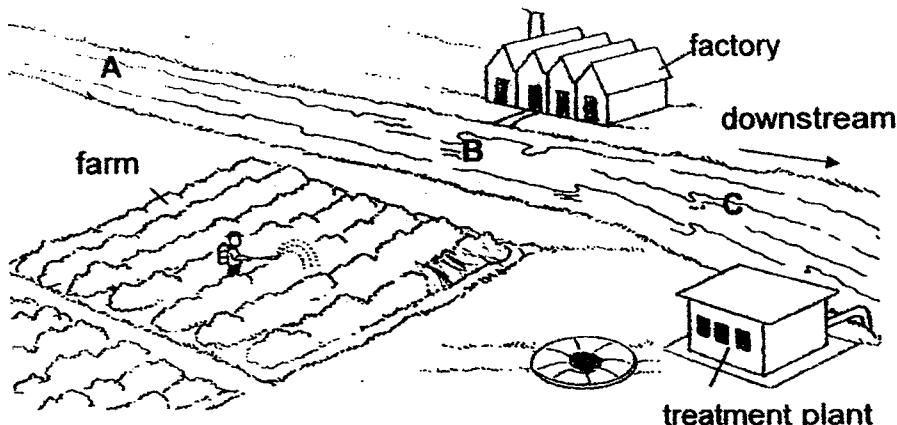
16. The characteristics of a desert frog are listed below:

- feeds in the day
- hides in its burrow at night.
- stays in the burrow when the temperature rises above 40°C.

Which of the following statements explain the above behaviour of the desert frog?

- A Availability of water in the burrow.
B Availability of prey above the ground in the day.
C Availability of shelter to hide from predators in the burrow.
- (1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

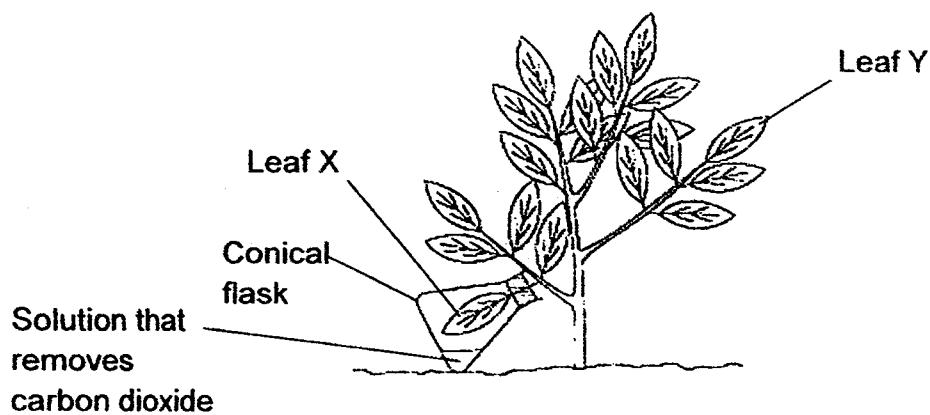
17. Pollution affects the environment. The diagram below shows three points, A, B and C, of the river.



Which points, A, B and/or C will be the most polluted?

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

18. Siti set up an experiment to find out if carbon dioxide is needed for photosynthesis. She placed a plant in a dark room for two days and then moved it to the school garden. She inserted one of its leaves, Leaf X, in a conical flask containing a solution that removes carbon dioxide as shown in the diagram below.



After 6 hours, Siti removed leaves X and Y from the plant, discoloured the leaves and then tested them for starch using iodine.

Which one of the following correctly shows the results of Siti's experiment?

Colour of iodine on leaves		
	Leaf X	Leaf Y
(1)	yellowish-brown	yellowish-brown
(2)	blue-black	blue-black
(3)	yellowish-brown	blue-black
(4)	blue-black	yellowish-brown

19. Marie conducted an experiment using three rods, A, B and C and four bars made of materials W, X, Y and Z. She used each rod to scratch each bar. Her observations are shown in the table below.

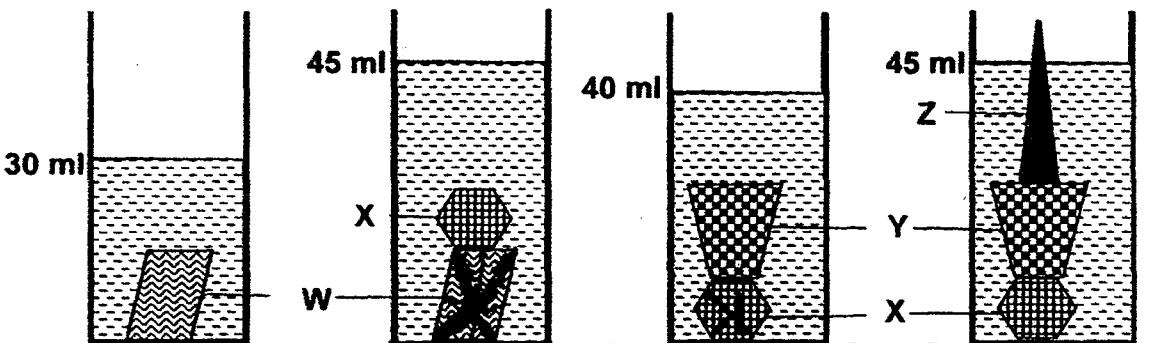
A tick (✓) indicates the presence of scratch marks on the bar.

Rod	Scratch marks observed on bar			
	W	X	Y	Z
Material of Bar				
A	✓		✓	✓
B				✓
C			✓	✓

Based on Marie's experiment, which material, W, X, Y or Z, is most suitable for making a safety helmet?

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

20. Germaine poured an equal amount of water into four similar measuring cylinders. She then placed four blocks, W, X, Y and Z, in the cylinders in the following order.



Which of the following statements are definitely correct?

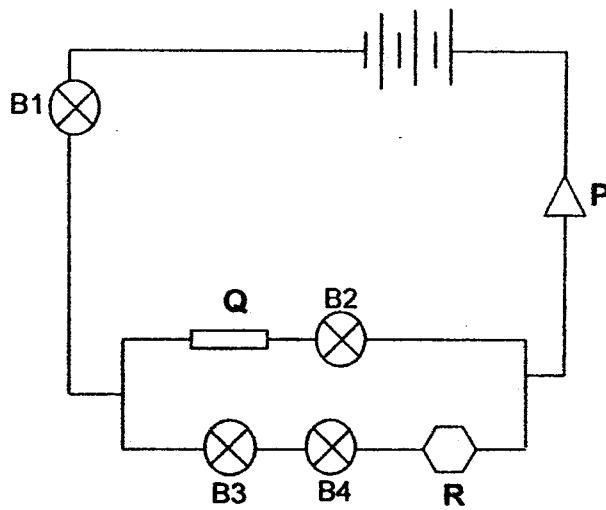
- A The volume of block Z is 5 ml.
 - B The volume of block X is 15 ml.
 - C The original volume of water was 20 ml.
 - D The volume of block W is greater than the volume of block Y.
- (1) A and C only
(2) B and D only
(3) C and D only
(4) A, B and D only
21. Cheryl has a container filled with a mixture of two substances, X and Y. The table below shows the melting point and boiling point of the substances.

Substance	Melting point (°C)	Boiling point (°C)
X	217	700
Y	420	900

At what temperature should Cheryl heat the mixture such that one substance becomes a liquid and the other substance becomes a solid?

- (1) 300 °C
(2) 500 °C
(3) 800 °C
(4) 900 °C

22. Study the circuit diagram below carefully. Materials P, Q and R were connected to the circuit below.

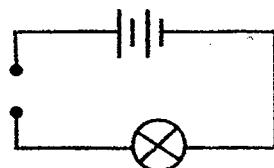


Which one of the following most likely represents the materials, P, Q and R, and the number of bulbs that lighted up?

	P	Q	R	Number of bulbs that lighted up
(1)	steel	glass	aluminium	4
(2)	aluminium	iron	glass	3
(3)	glass	copper	steel	2
(4)	copper	glass	iron	3

23. A circuit card with six metal pins, A, B, C, D, E and F, are connected by wires on its underside. It is tested with a circuit tester and the results are recorded below.

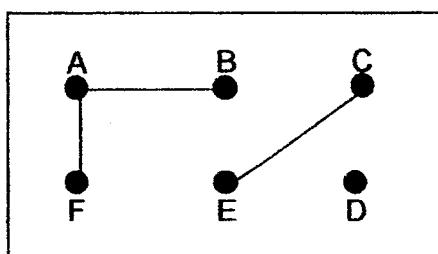
Metal pins connected to the circuit tester	Did the bulb light up?
A and B	no
A and F	yes
B and D	no
C and E	no
D and E	yes



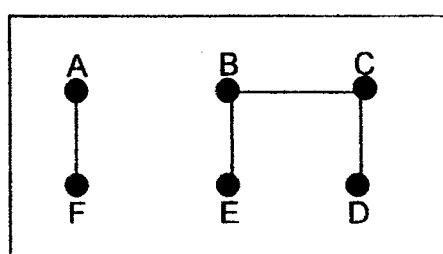
Circuit tester

Which one of the following correctly identifies the circuit card used?

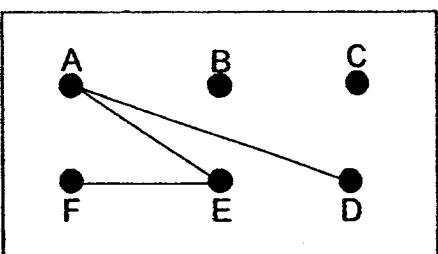
(1)



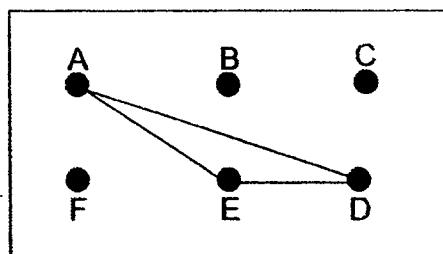
(2)



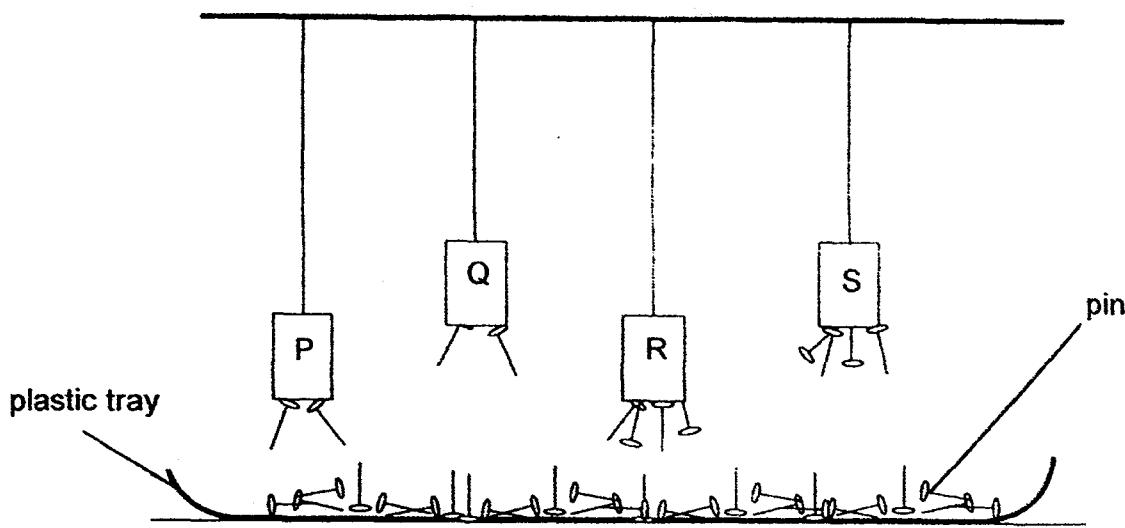
(3)



(4)



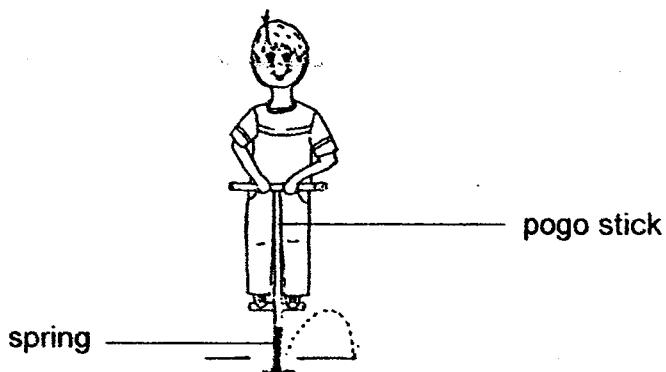
24. Wendy hung four magnets, P, Q, R and S, above a tray of identical iron pins. Her observation is shown below.



Which of the following statements are correct?

- A Magnet S is the strongest magnet.
 - B Magnet P is weaker than Magnet R.
 - C Magnet R is stronger than Magnet Q.
 - D Both Magnets P and Q have the same strength.
-
- (1) A and B only
 - (2) B and D only
 - (3) A, B and C only
 - (4) A, C and D only

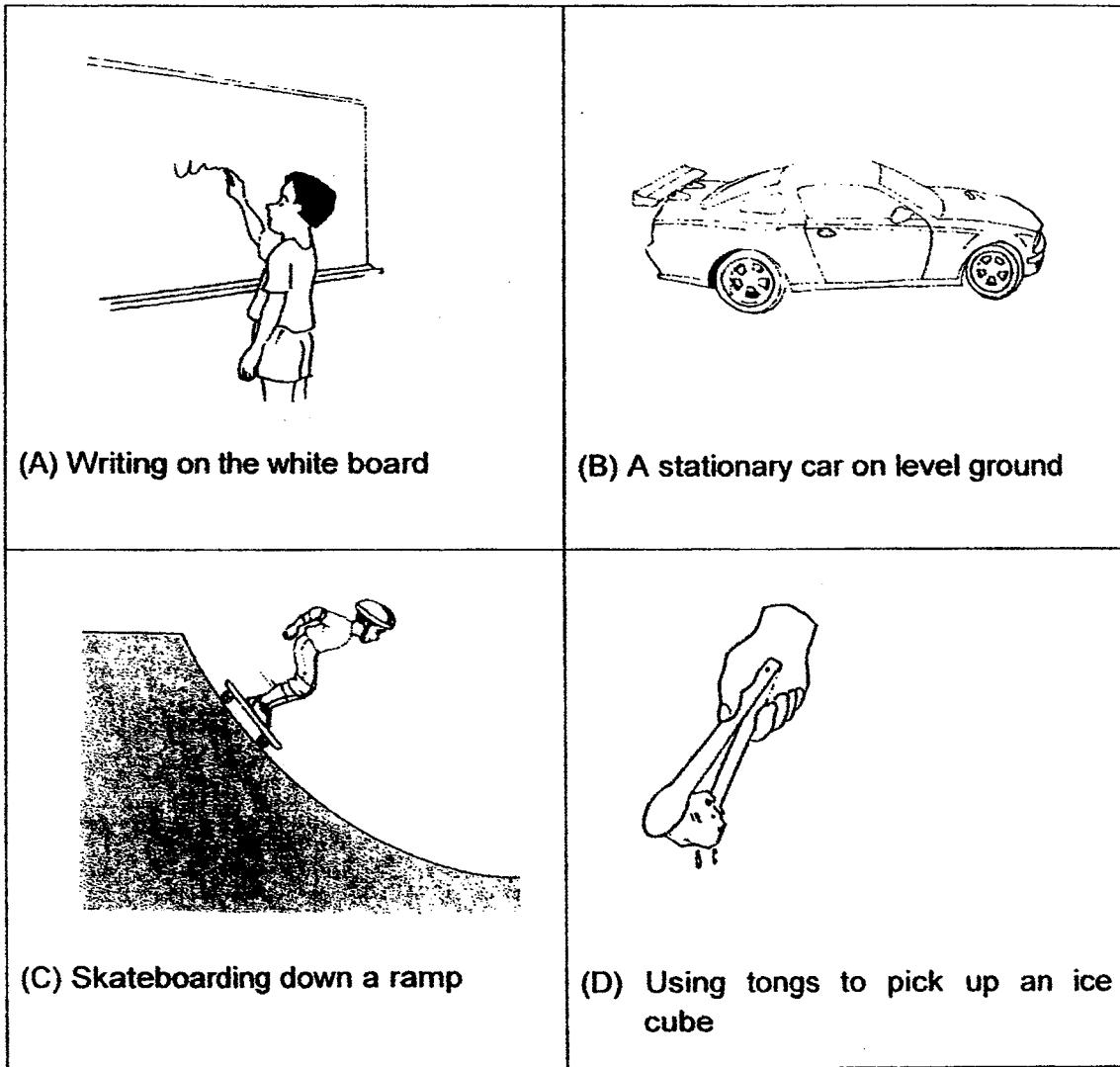
25. Tom is riding on his pogo stick as shown below.



Which of the following statements is/are correct?

- A Gravitational force increases as Tom jumps into the air.
 - B There is gravitational attraction between Tom and the Earth.
 - C Only elastic spring force is needed for Tom to move over a distance.
-
- (1) B only
 - (2) C only
 - (3) A and C only
 - (4) B and C only

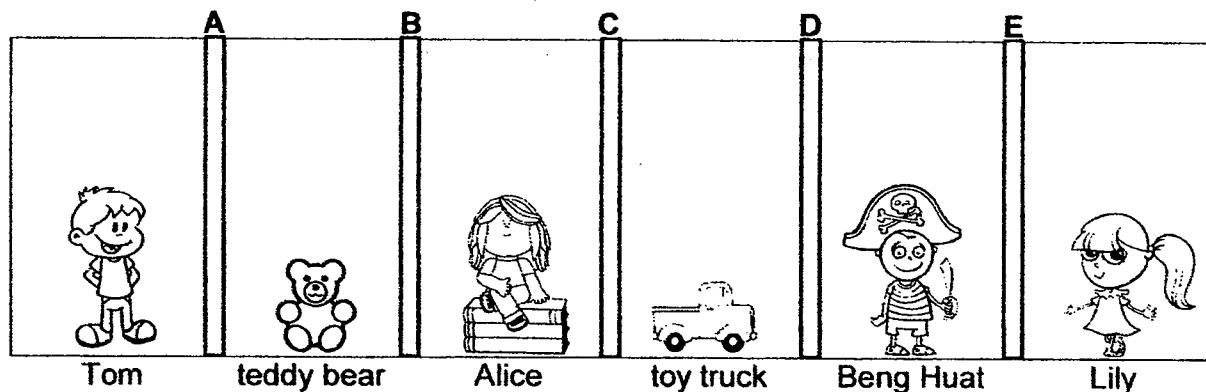
26. The diagrams below show four examples of forces in our daily life.



Which of the following has friction acting on it?

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

27. Study the diagram below.



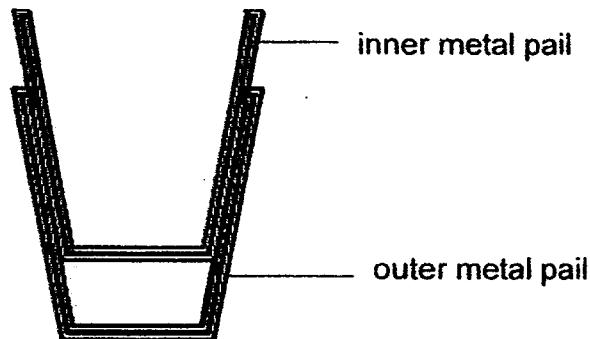
Four children and two of their toys are separated by screens, A, B, C, D and E. Given that the screens are made of different materials,

- Tom is unable to see Alice.
- Lily is unable to see the toy truck.
- Alice can see both the teddy bear and the toy truck.

Based on the information above, which one of the following could possibly be the materials which have been used to make the screens?

	A	B	C	D	E
(1)	clear plastic	metal	clear plastic	wood	clear glass
(2)	wood	clear plastic	clear glass	metal	clear plastic
(3)	clear plastic	clear glass	metal	wood	clear glass
(4)	metal	metal	wood	clear plastic	clear glass

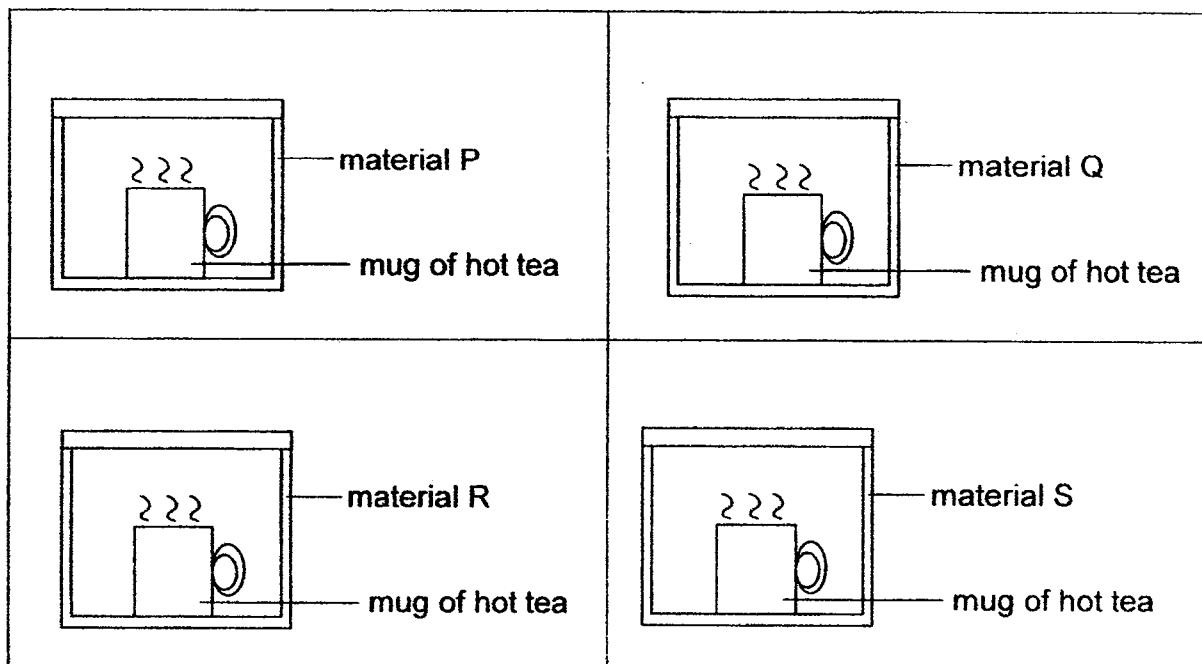
28. Gopal always has difficulty separating two metal pails which are stacked together as shown in the diagram below.



Which one of the following ways is the best in separating the two pails easily?

- A Pour hot water into the inner pail.
 - B Pour cold water into the inner pail.
 - C Place the outer pail in a tub of hot water.
 - D Place the outer pail in a tub of cold water.
-
- (1) A and C
 - (2) A and D
 - (3) B and C
 - (4) B and D

29. Four mugs of hot tea of the same temperature were placed inside four boxes which were made of different materials, P, Q, R and S, as shown in the diagrams below.



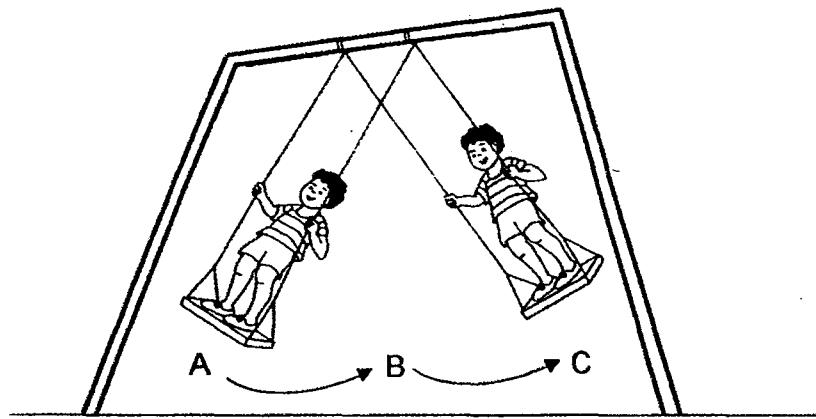
The time taken for the hot tea to reach room temperature of 30°C was recorded in the table below.

Materials	Time taken to reach room temperature (min)
P	25
Q	51
R	38
S	46

Which one of the materials is the most suitable to be used to make a container which can keep a bottle of water cold for the longest time?

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

30. Denny was playing on a swing as shown in the diagram below.



Which one of the following statements is true when Denny swung from position A to B and then to C?

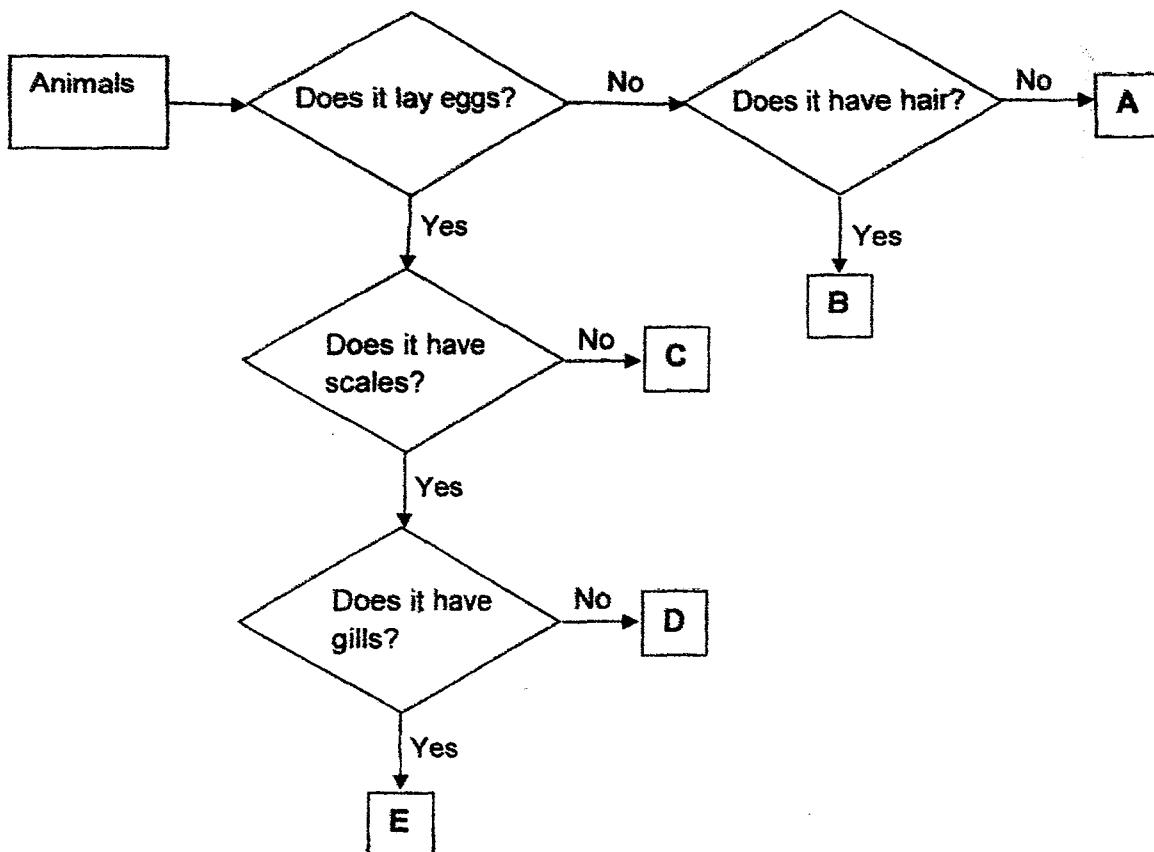
- (1) The potential energy at A, B and C are the same.
- (2) Potential energy was the highest at A and was lost at B.
- (3) Kinetic energy increased from A to B and again from B to C.
- (4) Kinetic energy increased from A to B and decreased from B to C.

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. The flowchart below shows the characteristics of five different animals represented by letters A, B, C, D and E.



Based on the flowchart, answer the following questions.

- (a) Name one difference between Animals A and D.

[1]

continue on the next page

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- (b) State two characteristics of Animal C.

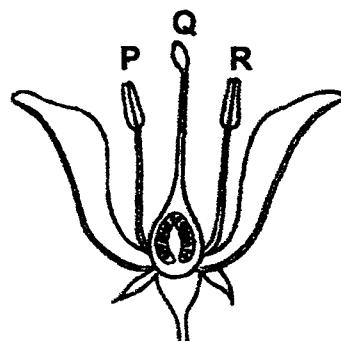
[1]

- (c) Which group of animals does Animal E belong to?

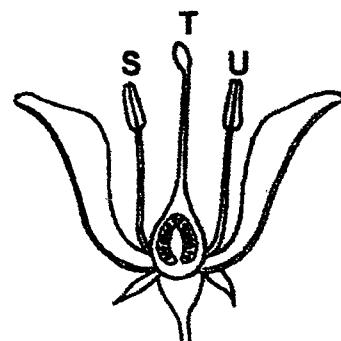
[1]

Score	
	2

32. The diagram below shows two flowers, X and Y, growing on a plant.



Flower X



Flower Y

Mary studied the flowers and wrote down the following in the table below.

Pollination takes place when pollen grains are transferred from
P to Q
T to P
R to Q
U to T
S to T
Q to U

Mary's teacher told her that she had made two mistakes.

Which two mistakes did Mary make in the table above?

- (a) Pollination does not take place when pollen grains are transferred from

_____ to _____ and _____ to _____.

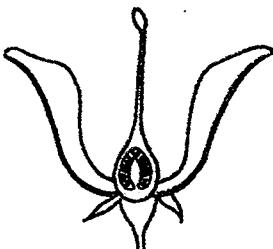
[1]

continue on the next page

Score	
	1

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Mary wanted to find out if a fruit can be developed from a flower when a certain part of the flower is removed. She removed only a certain part from flower X on the plant as shown below.

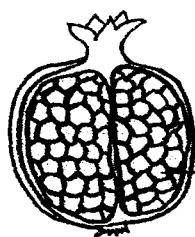


Flower X with a missing part

Mary then dusted pollen grains from the same type of flower over flower X on the plant. She observed the flower over a few weeks.

- (b) Is flower X likely to develop into a fruit? Explain your answer. [2]

The diagrams below show two fruits, S and T, that Mary has cut open.



Fruit S



Fruit T

- (c) Based on the diagrams above, what can Mary infer about the number of ovules in the flower of fruit S and fruit T respectively? [1]

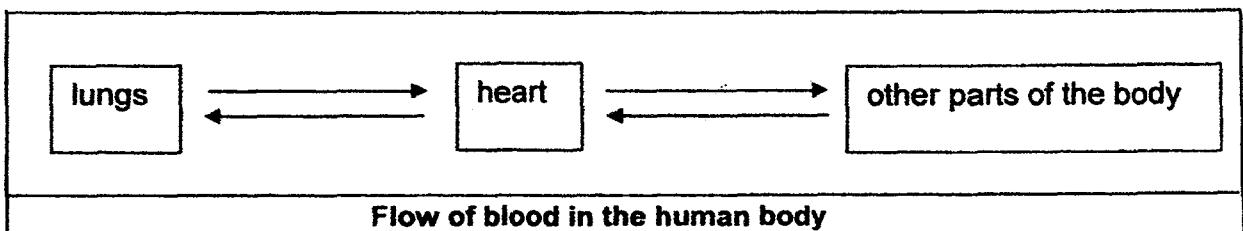
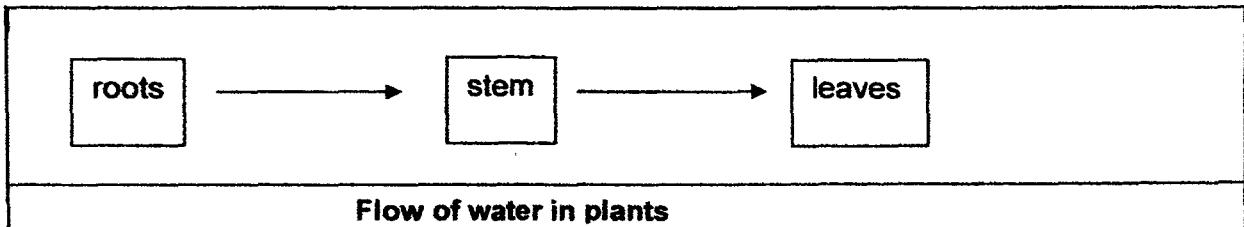
Score	
3	

33. Sarah made the following observations on different plant parts, A, B, C and D on a plant.

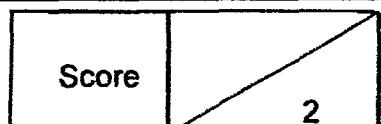
Parts of a plant	Observations
A	contains starch
B	absorbs water and dissolved mineral salts
C	holds the plant upright and has two types of tubes to transport substances
D	traps light and makes food

- (a) Describe how part C helps in the growth of the plant. [1]

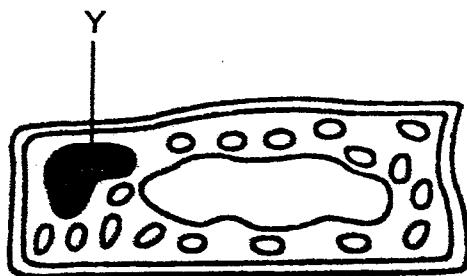
- (b) The diagrams below show the movement of water in a plant and the movement of blood in a human body.



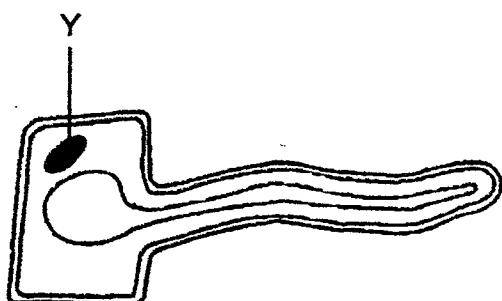
State a difference between the direction of the movement of water in the plant and the direction of movement of blood in the human body. [1]



34. Siew Qi observed the two different types of cells, A and B, as shown in the diagrams below.



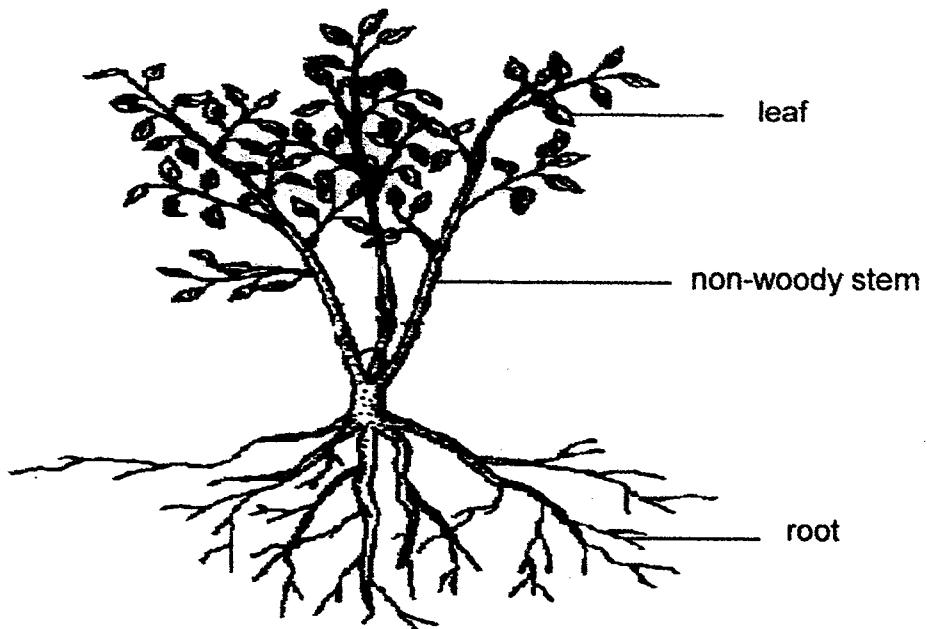
Cell A



Cell B

- (a) What is the function of Y?

[1]

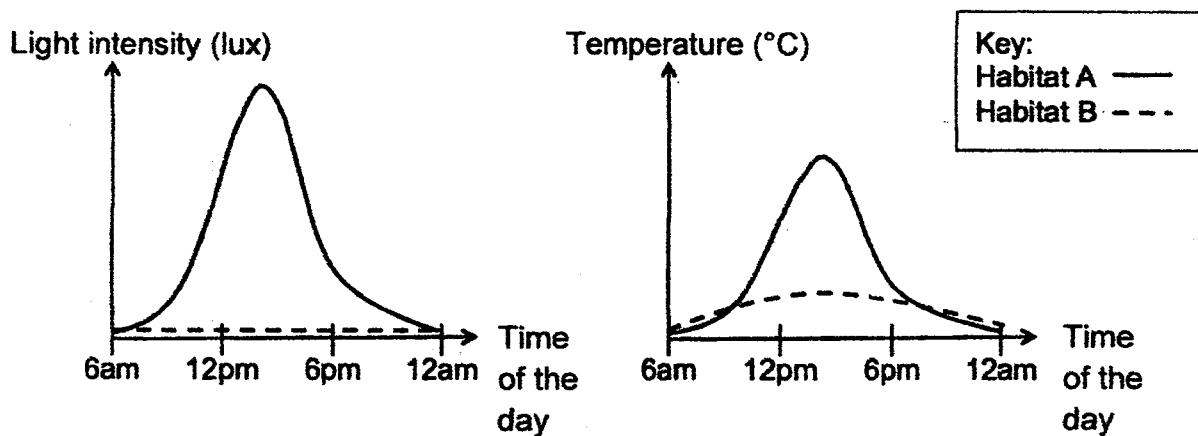


- (b) In which part of the plant shown above are you most likely to find cell B? Give a reason for your answer.

[1]

Score	
2	

- 35 Kathy used a data logger to measure the light intensity and temperature of the surrounding air in two different types of habitat, A and B, in her school. She then plotted her data as shown below.



- (a) Based on the graph above, suggest a possible habitat for A and B. [1]

Habitat A: _____

Habitat B: _____

- (b) Based on the graph above, what is the relationship between the light intensity and temperature for habitat A? [1]

Score	
2	

continue on the next page

continue from the previous page

- (c) Kathy then counted and recorded the number of organisms X, Y and Z in two areas in one of the habitats at 1pm. She also observed that both organisms X and Y fed mainly on dead leaves while organism Z fed on small organisms. None of the organisms left the habitat.

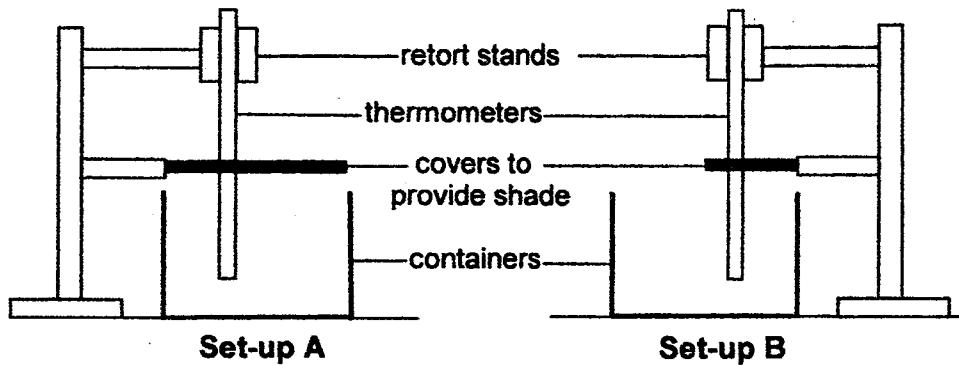
	Number of organisms		
	X	Y	Z
Area 1	15	25	1
Area 2	3	10	5

- (i) Based on the information above, what is the most possible reason for the difference in the number of organisms X and Y in the two areas in the same habitat. [1]

- (ii) Write a possible 3-linked food chain involving organisms X and Z. [1]

Score	
	2

36. Ben prepared set-ups A and B as shown in the diagrams below. He placed both set-ups under the sun. The temperature of the air within the containers in both set-ups were measured using a thermometer and recorded at different times of the day.



Ben's results are shown in the table below.

Part of the day	Average temperature of the surrounding (°C)	Temperature of air in the container (°C)	
		Setup A	Setup B
Morning	25-30	25	29
Afternoon	31-38	32	37
Evening	26-29	26	28

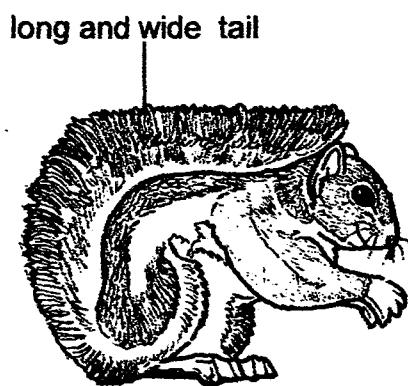
- (a) Based on the data above, compare the temperature of the air in the containers of set-ups A and B. [1]

Score	
	1

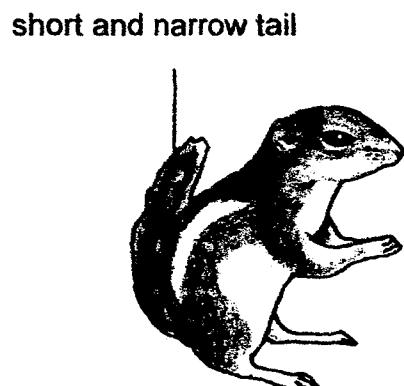
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- (b) Animal Q and Animal R live in a very hot and dry habitat. The temperature in the day can be higher than 40°C with little water all year round. Both animals come out of their burrows in the day to search for food.



Animal Q



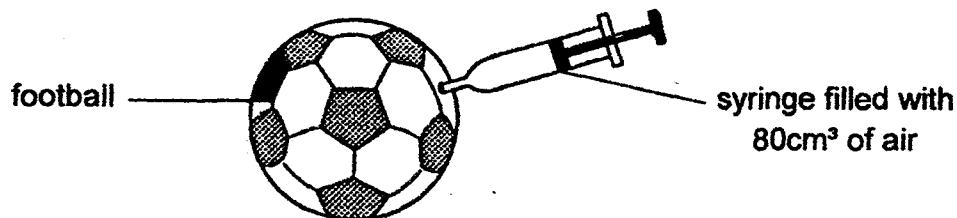
Animal R

Based on Ben's findings, explain which animal has an advantage to survive in the hot and dry habitat. Explain your answer clearly. [2]

Score	
	2

37.

Ashlyn has a football which can hold 350cm^3 of air. She used a 100-cm^3 syringe and removed 80cm^3 of air from the football as shown in the diagram below.



- (a) What is the volume of air in the football after the air is removed from the ball? [1]

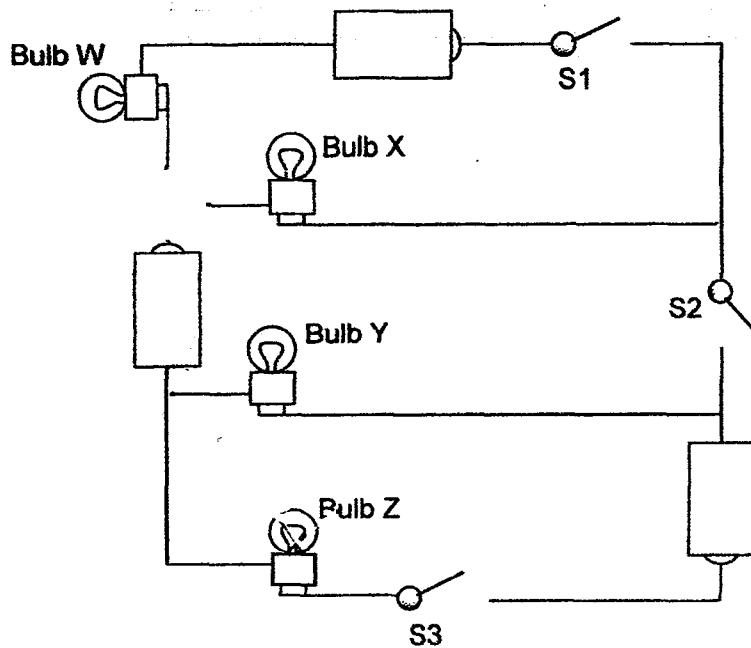
Volume of air in the football: cm^3

- (b) What property of air did you use to obtain your answer in (a)? [1]

- (c) Did the mass of the football increase, decrease or remain the same? Give a reason for your answer. [1]

Score	3
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38. Ming Ming set up an electrical circuit as shown below.



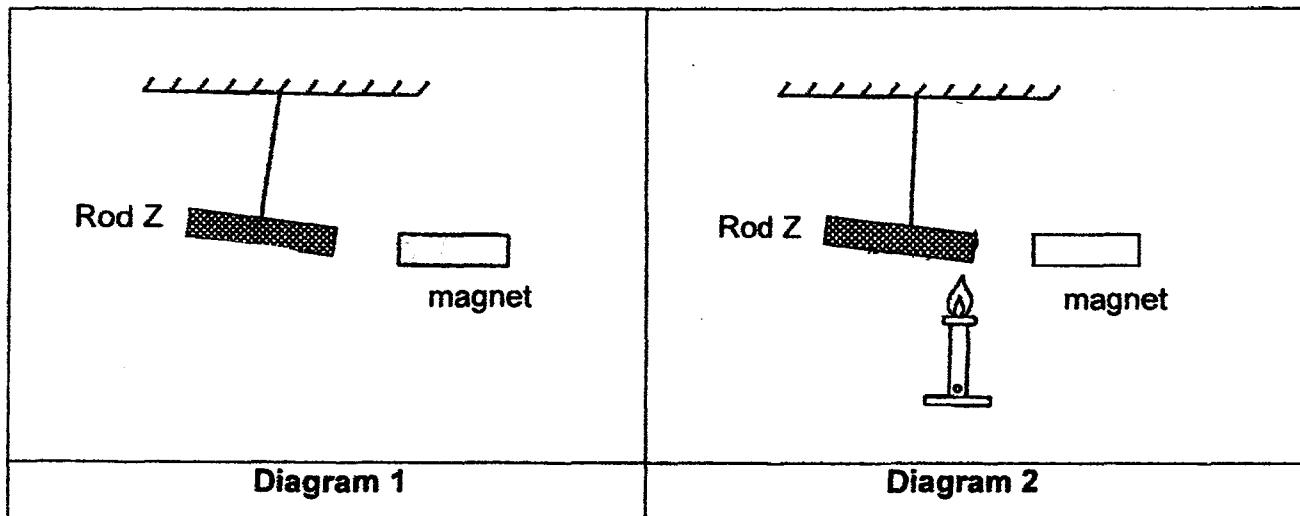
- (a) Which bulb(s) will be lighted up when all the switches in the circuit above are closed and bulb Z has fused? [1]

- (b) Given that all the bulbs are working, what is the greatest number of bulbs that can light up when any 2 of the switches, S1, S2 and S3, are closed? [1]

- (c) Ming Ming wants to add one more switch to the circuit above such that only 2 bulbs will light up when all the switches, S1, S2 and S3, are closed at the same time. Given that all the bulbs are working, draw a cross (X) on the circuit diagram above to show the position of the additional switch. [1]

Score	3
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39. Chris brought a magnet near Rod Z which is tied to a string as shown in Diagram 1. She then placed a flame at one end of Rod Z as shown in Diagram 2. After a while, Rod Z started to move towards the magnet.

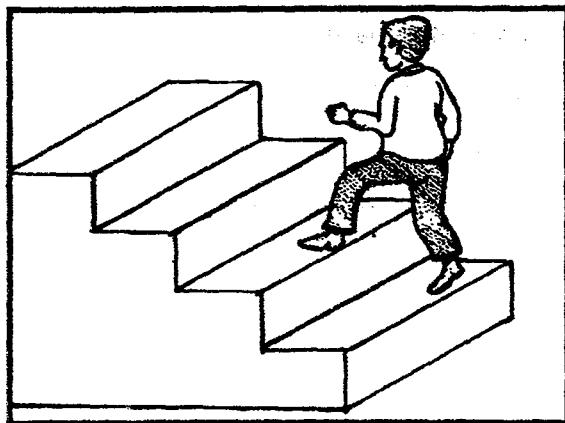


- (a) Explain why Rod Z moved away when a magnet is brought near it in Diagram 1. [1]

- (b) Explain why Rod Z started to move towards the magnet in Diagram 2. [1]

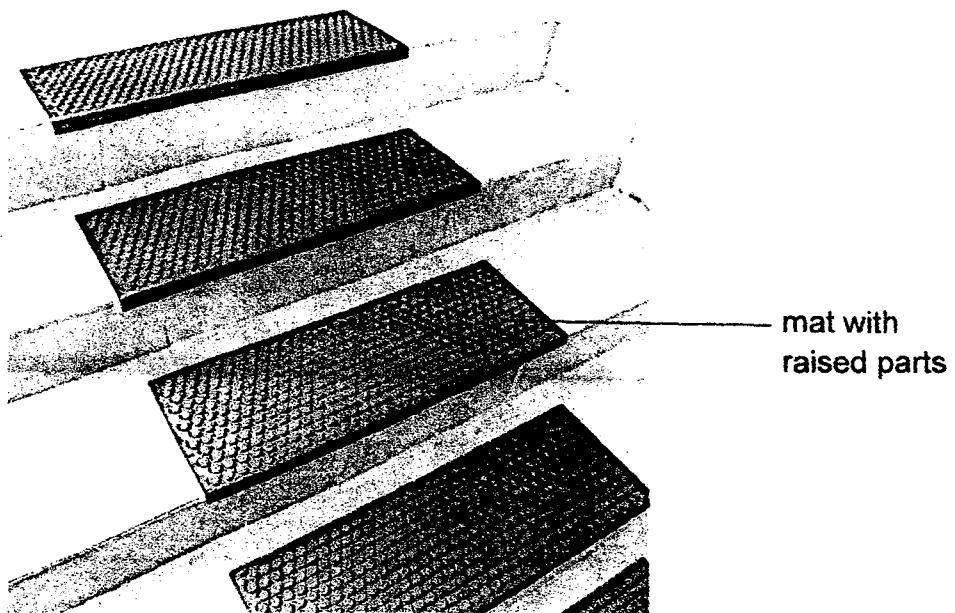
Score	
	2

40. The diagram below shows Raymond walking up the stairs.



- (a) Explain why more energy is needed to walk up than walk down the stairs. [1]

Raymond put some mats on the stairs as shown in the diagram below.



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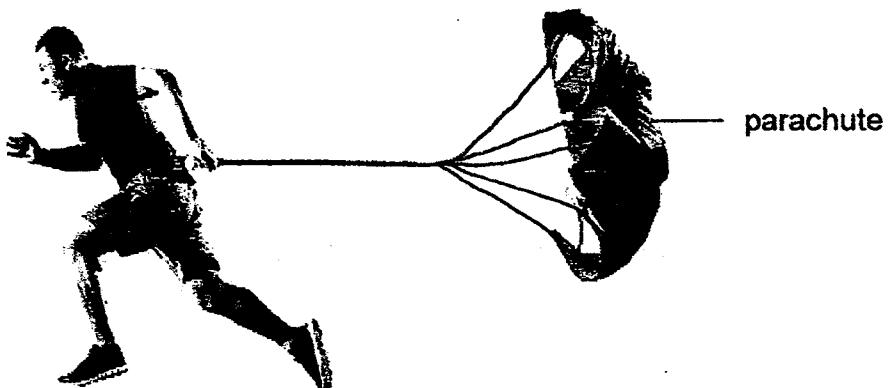
The mat has a surface made up of raised parts.

- (b) Suggest a reason for using such mats on the stairs. Explain your answer. [1]

Score	
1	

41. Peter wanted to find out how the surface area of a parachute affected the time taken for him to run five metres with it.

The diagram below shows Peter running with the parachute.



Peter recorded his readings in the table below.

Surface area of parachute (cm ²)	Time taken to complete five metres (s)
900	20
1000	28
1100	34
1200	45
1300	59

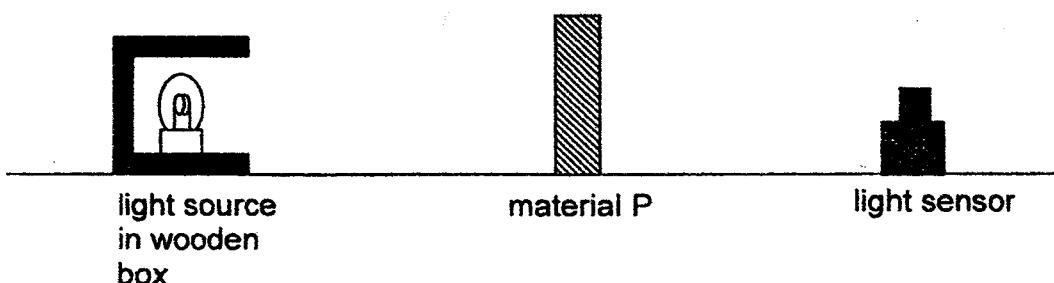
- (a) Based on the information above, what is the relationship between the surface area of the parachute and the time taken to complete the five-metre run? [1]

Peter cut a few holes on the 1300-cm² parachute and then ran with it.

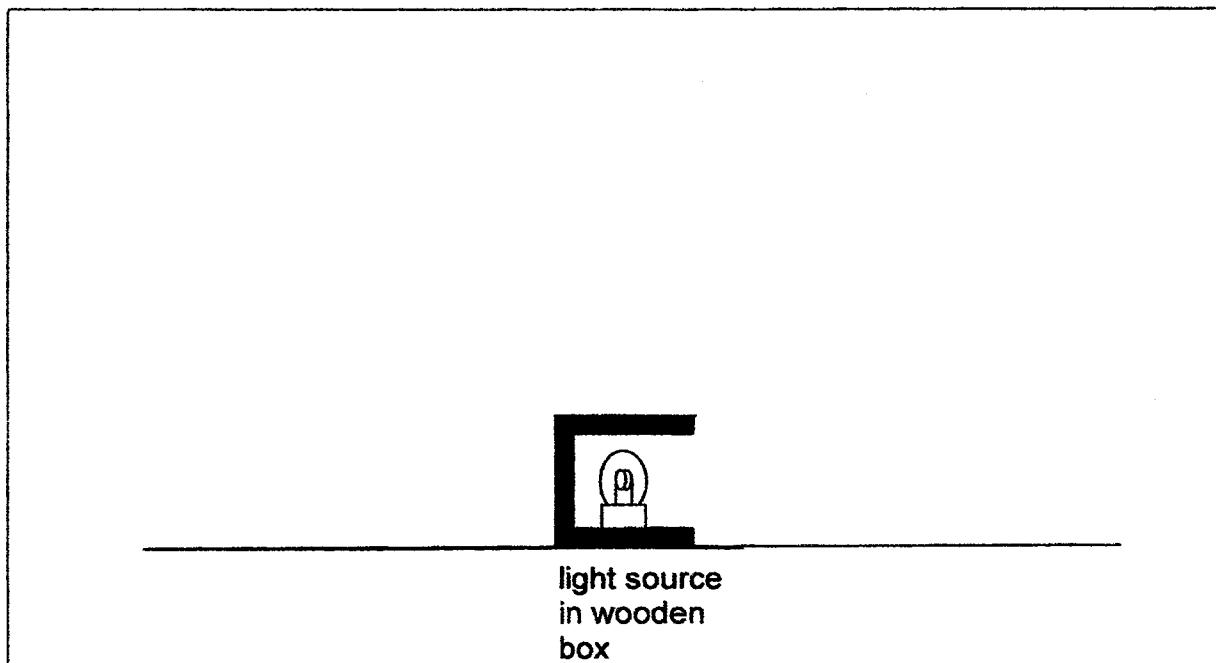
- (b) Would the time recorded for Peter to complete running 5 metres be "more than", "less than" or "the same" as 59 seconds? Explain your answer clearly. [2]

Score	
	3

42. Tristan set up the experiment below in a dark room to find out which material, P, Q, R and S, reflect the most amount of light.



- (a) Tristan's teacher said that his set-up is incorrect. Using the same apparatus as above, draw and label the correct set-up in the box below. [1]



- (b) Name one variable he should keep constant in his experiment. [1]

Score	2
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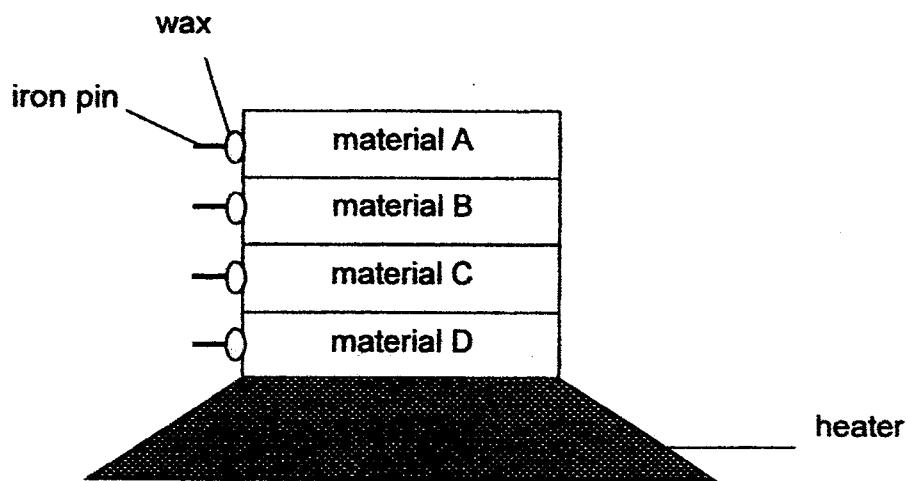
Tristan measured the amount of light reflected from each material and recorded the results of his experiment in the table below.

Material	Amount of light reflected (lux)
P	2250
Q	1670
R	980
S	2750

- (c) From the results in the experiment, which material is the most suitable to be made into a safety vest for traffic police officers who have to work at night? Explain your answer. [1]

Score	
	1

43. Ahmad set up the experiment shown below to find out the heat conductivity of four different materials, A, B, C and D.



Ahmad recorded the results of his experiment in the table below.

Material	Time taken for iron pin to drop (min)	Put a cross (X)
A	13	
B	9	
C	15	
D	2	

- (a) Ahmad's sister said that he had recorded ONE of the results wrongly. Put ONE cross (X) in the table above to indicate the mistake he had made. [1]

continue on the next page

Score	
	1

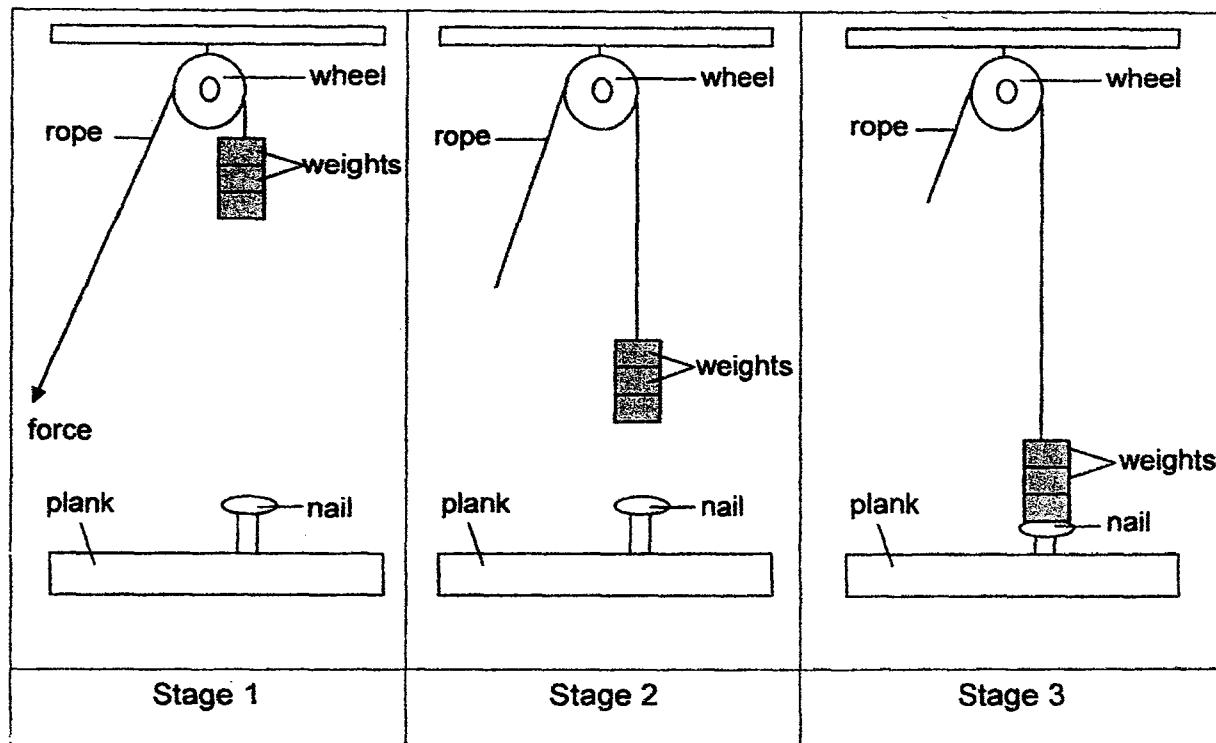
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- (b) Explain your answer in part (a). [1]

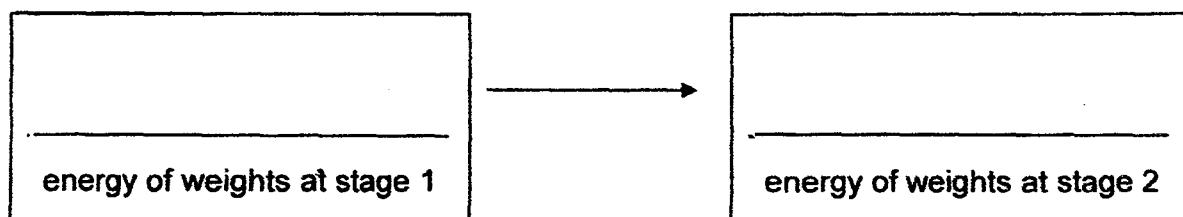
- (c) Ahmad's sister also said that he did not conduct a fair test. Suggest what Ahmad can do to the set-up to ensure a fair test. [1]

Score	
2	

44. Jia Xin designed a simple machine to drive a nail into a plank. She pulled the rope to lift some weights. She then released the rope so that the weights hit the nail into the plank. The diagrams below show the different stages of how the machine works.



- (a) Fill in the blanks below to show the main energy conversion from stage 1 to stage 2. [1]



Score	
	1

continue on the next page

continue from the previous page

- (b) Suggest two changes that can be made to Jia Xin's machine to reduce the time taken to drive the nail into the plank. [2]

Suggestion 1	
Suggestion 2	

- End of Paper -

Score	
2	

PRELIMINARY EXAM PAPER 2016

**SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION 2016**

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	3	2	3	4	2	3	1	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	1	3	1	2	3	2	3	2	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	4	3	1	1	3	2	3	2	4

Q31a. Animal A does not lay eggs while animal D does.

Q31b. C lays eggs and does not have scales.

Q31c. Fish

Q32a. T to P and Q to U

Q32b. The male sex cells from the pollen grain can fertilise with the egg cell in the ovule.

Q32c. S has many small ovules while T has one big ovule.

Q33a. C helps to hold the plant higher for D to receive more sunlight and make more food then transport it around the plant and hence help ith its growth.

Q33b. Water moves only in one direction from the roots to the stems and the leaves in plants, but blood is pumped from the heart to the lungs and back to the heart again before being pumped into other parts of the body. Blood passes around the whole body and all directions.

Q33b. Tom put some cotton wool to prevent the soil from being collected in the beaker.

Q34a. Y controls the activity of the cell and contains generic information.

Q34b. B has an elongated protrusion which increase the exposed surface area of roots to absorb water more efficiently.

Q35a. Habitat A: field, Habitat B: leaf litter

Q35b. The greater the light intensity the higher the temperature for Habitat A.

Q35c. (i) There were more leaves at Y than at X.
(ii) Dead leaves → organism X → organism Z

Q36a. The temperature in A is lower than temperature in B.

Q36b. The tail helps to shade the squirrel from the sun. It is longer and covers most of its body / to help it reduce heat gain from the sun.

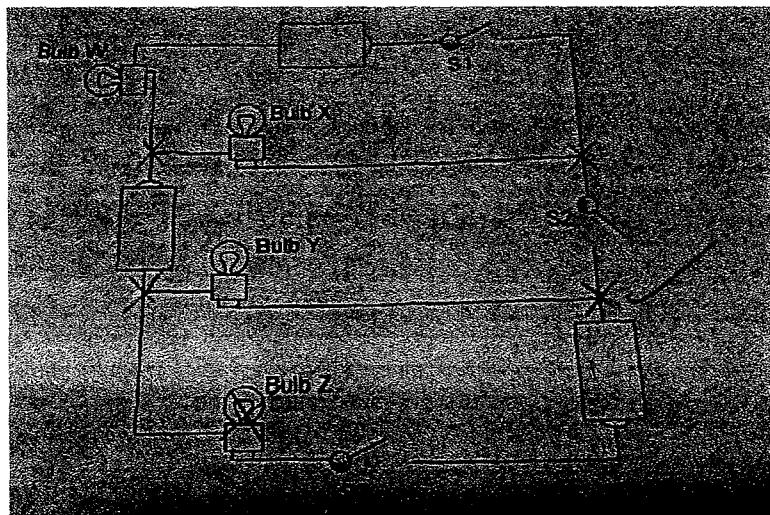
Q37a. 350

Q37b. Air has no definite volume.

Q37c. Decrease, as air has mass when it is removed, the mass of the football will decrease.

Q38a. W, X and Y **Q38b.** Answer: 3

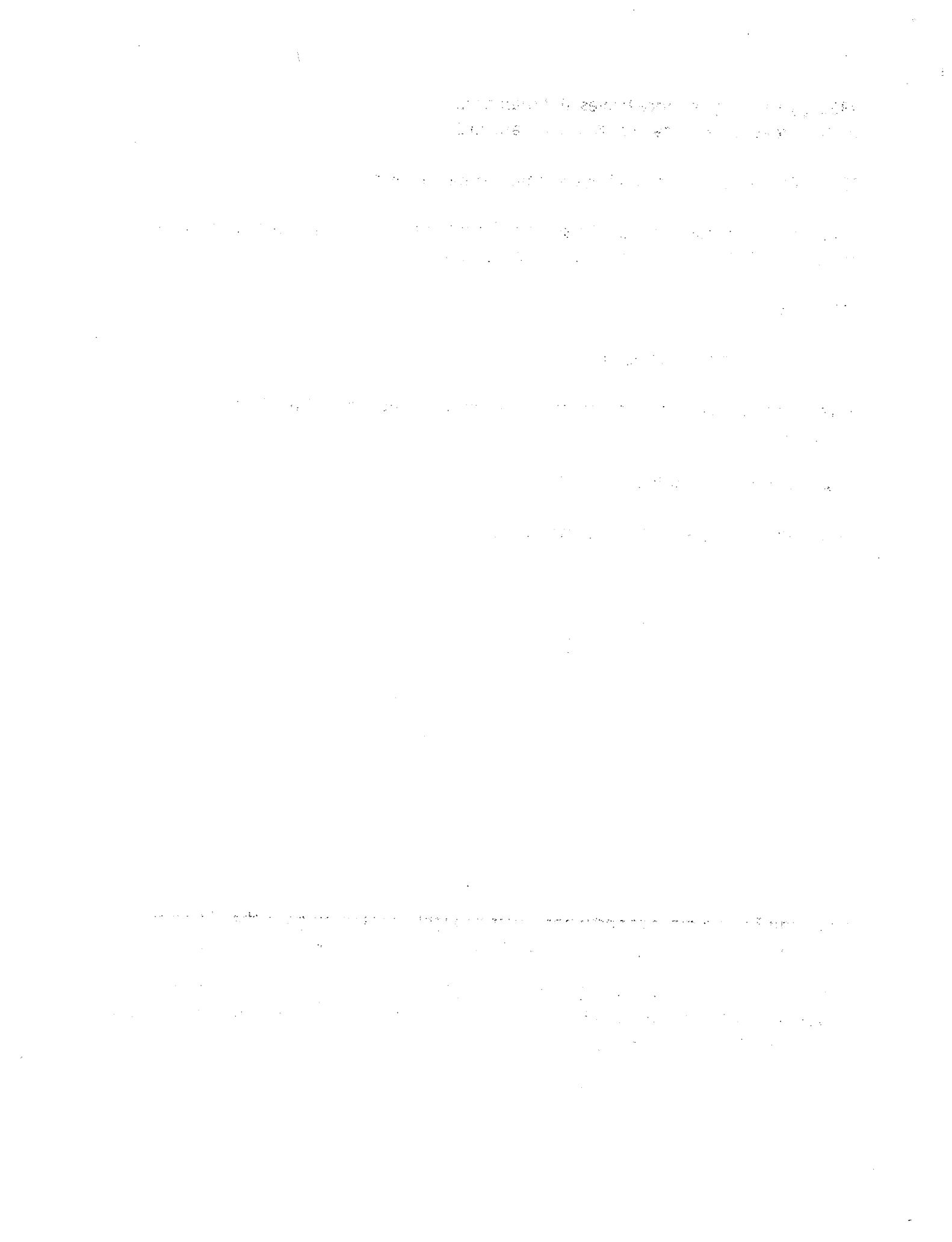
Q38c. Liquid W expanded and formed vapour.



Q38c.

Q39a. Rod Z was a magnet and when Z was brought near the magnet, their like poles were facing each other, causing Z to repel the magnet and hence, moved away.

Q39b. When heated rod Z lost some of its magnetic force and was pulled downwards by gravity. OR When heated rod Z's magnetic force weakened and was overcome by the gravitational force acting on it.



Q40a. Walking up the stairs goes against the pull of gravity.

Q40b. The mats are rough and increases friction between the ground and the feet, so as to prevent slipping.

Q41a. The larger the surface area of parachute, the longer the time taken to complete the 5 meter run.

Q41b. Less than with the holes. There would be lesser amount of surface area in contact with the air, causing lesser friction and allowing Peter to run faster.

Q42a. Draw on your own.

Q42b. The size of the material.

Q42c. Material S. It reflected the most amount of light so it would allow the police officer to be seen the most clearly at night.

Q43a. Answer: Material C, Put a cross X in the box.

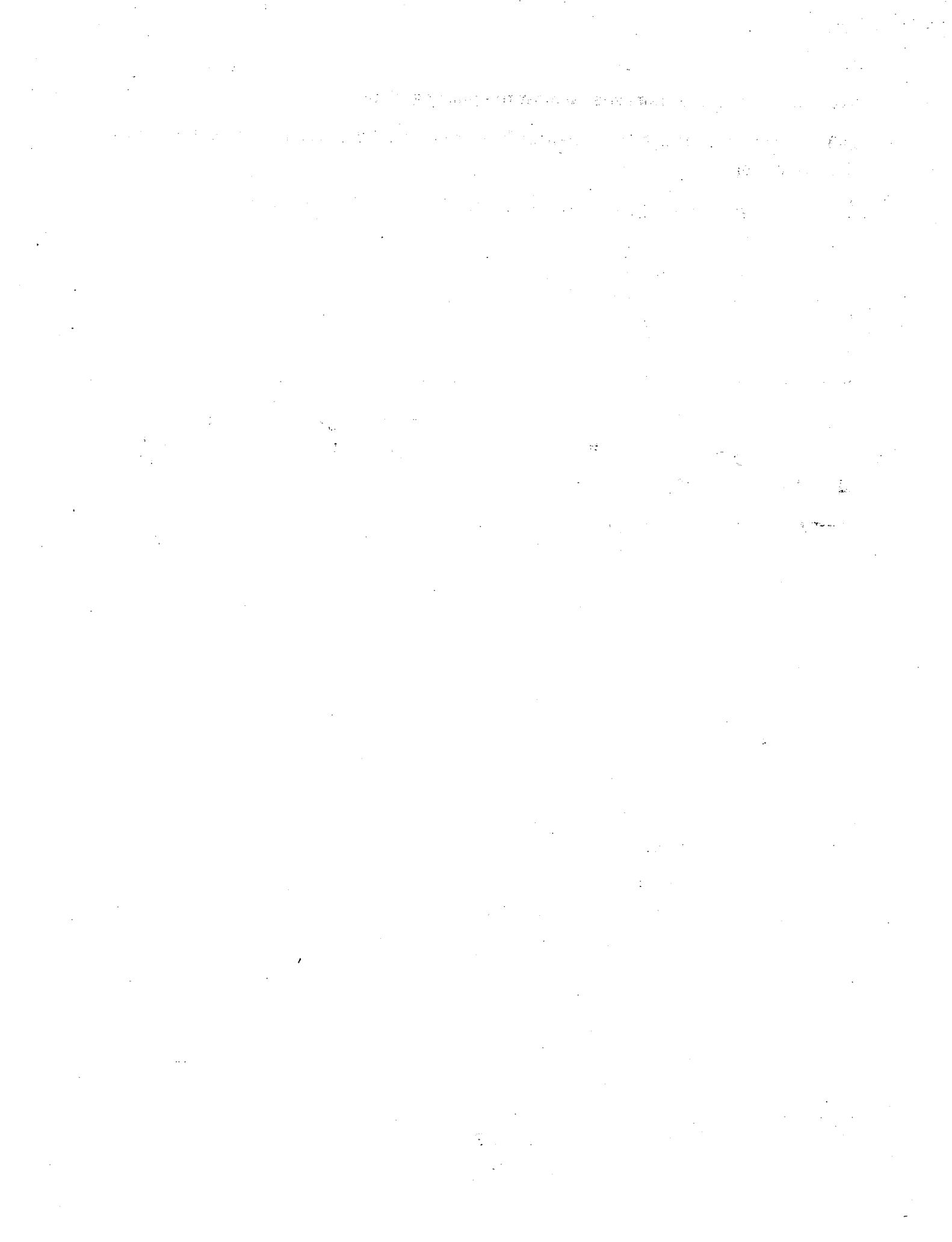
Q43b. C was closer to the heat source than A and B, so it should take a shorter time for the pin to drop, not longer.

Q43c. He should let all the materials to have an equal amount of area in contact with the heater.

Q44a. Gravitational Potential → kinetic

Q44b. Suggestion 1 – Apply oil onto the wheel and nail.

Suggestion 2 - Add more weights.





RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)
2009

Name: _____ Index No: _____ Class: P 6 _____

7 May 2009

SCIENCE

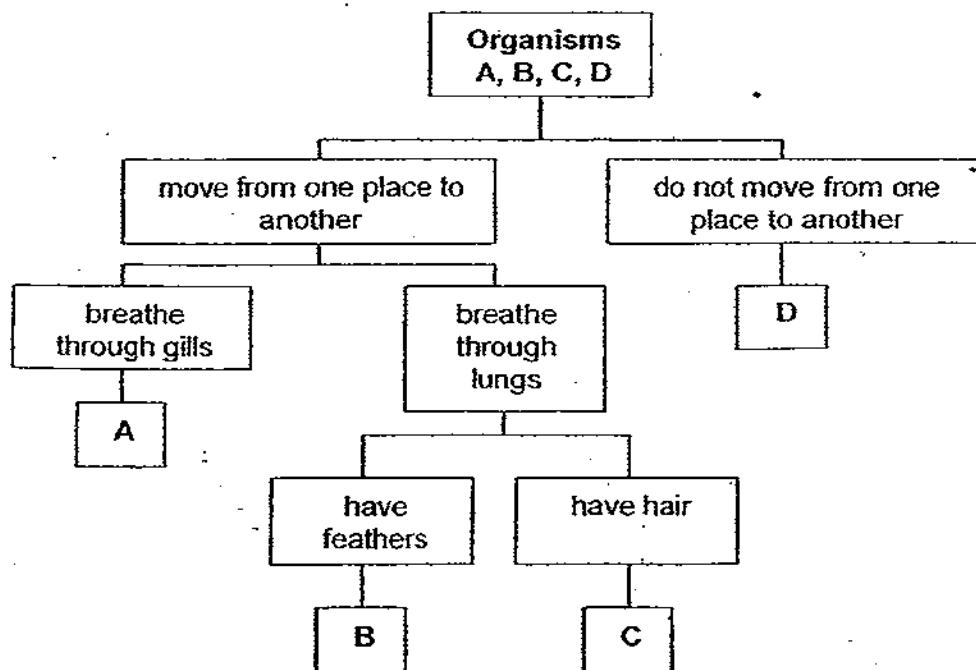
Att. 1 h 45 min

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.

Your score out of 100 marks	100	
Class	Level	
Highest score		
Average score		
Parent's signature		

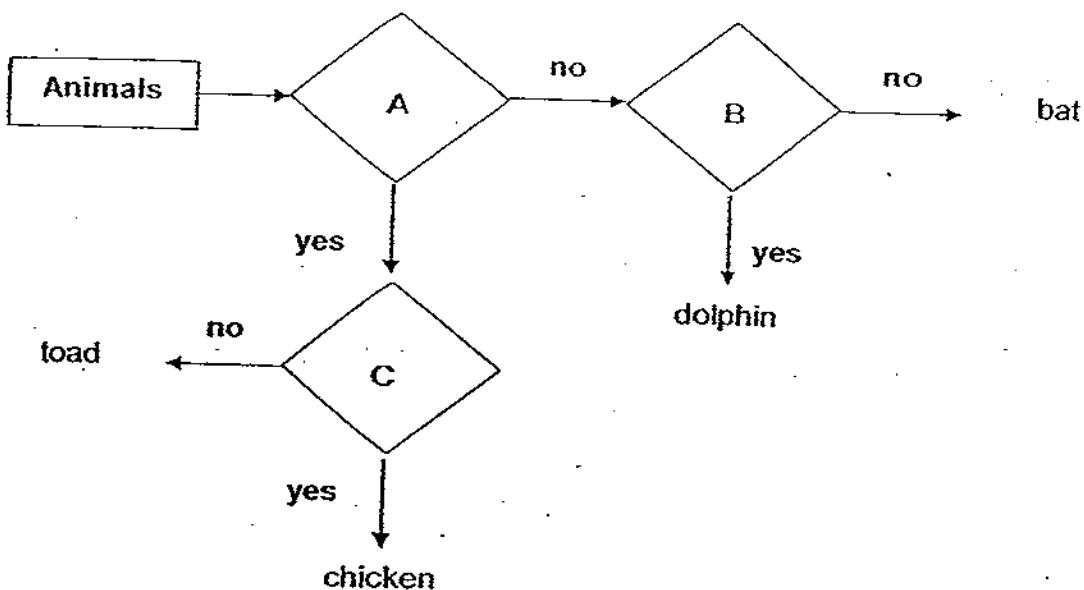
- 1 The chart below shows how organisms A, B, C and D are classified.



Which one of the following groups, A, B, C or D, does a penguin belong to?

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

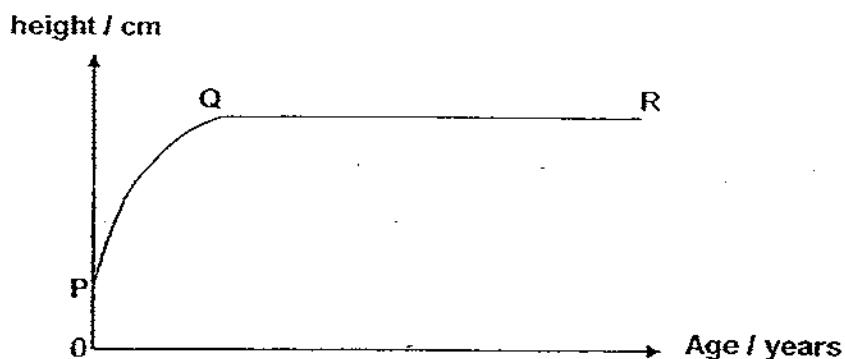
- 2 The flow chart below compares the characteristics of four animals.



Based on the flow chart above, which one of the following correctly represents A, B and C?

	A	B	C
<input checked="" type="checkbox"/>	Can it swim?	Does it give birth to its young alive?	Does it live on land?
<input checked="" type="checkbox"/>	Does it live on land?	Does it lay eggs?	Can it fly?
<input checked="" type="checkbox"/>	Does it lay eggs?	Does its young live in water?	Does it have wings?
<input checked="" type="checkbox"/>	Does it have hair?	Can it swim?	Does it have feathers?

- 3 The graph below shows the changes in the height of a pupil over a period of time.



After studying the graph, each of the 3 pupils made a statement as shown below:

Ishak: From P to Q, there is an increase in height as the number of cells in the body increases.

Jena: From Q to R, there is no change in height because there is no cell division.

Kathy: There is an increase in height from P to Q as the size of the cells in the body grows bigger.

Which of the following pupils had made the correct conclusion(s)?

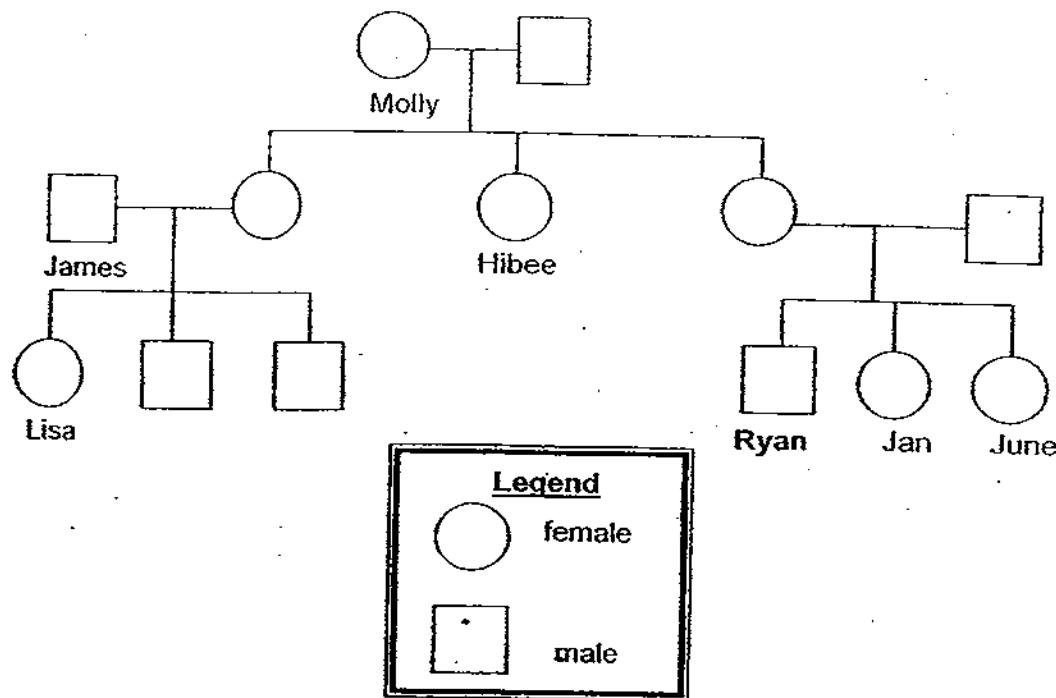
Ishak only

Ishak and Jena only

Jena and Kathy only

Ishak, Jena and Kathy

- 4 The diagram below shows Ryan's family tree.

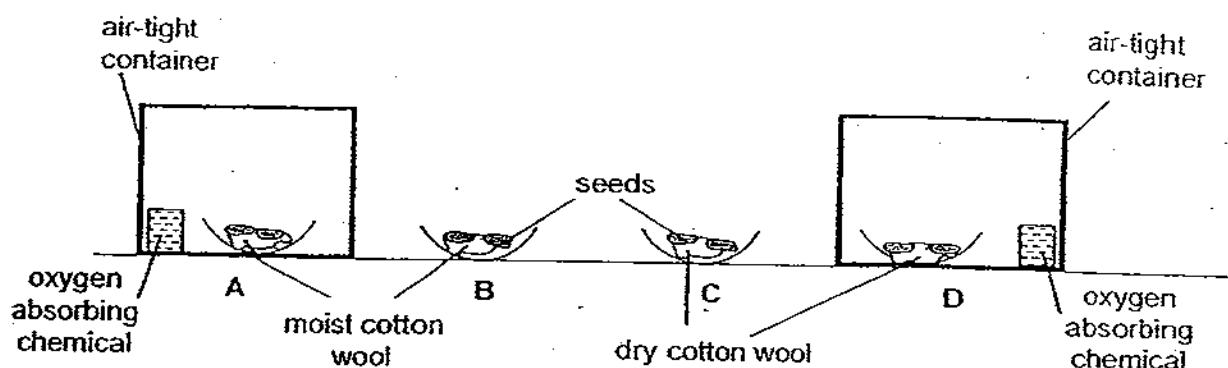


Based on the diagram above, which of the following statements is / are true?

- A Jan and June are sisters.
 - B Lisa has 3 aunts altogether.
 - C James and Hibee are siblings.
 - D Molly has a total of 6 grandchildren.
-
- | | |
|--|--|
| <input checked="" type="checkbox"/> E A only | <input checked="" type="checkbox"/> F C only |
| <input checked="" type="checkbox"/> G A and D only | <input checked="" type="checkbox"/> H B and C only |

- 5 Miku had four petri dishes, A, B, C and D. She placed 2 seeds in each of the petri dish.

The four set-ups (as shown below) were then placed near the window.



Miku observed the seeds over the next few days.

In which of the following set-ups would the seeds germinate?



B only



A and B only

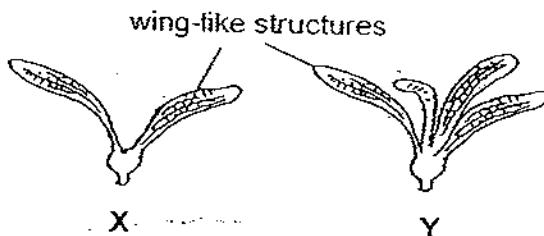


A and D only



A, B, C and D

- 6 The diagrams below show two fruits, X and Y, which have wing-like structures.



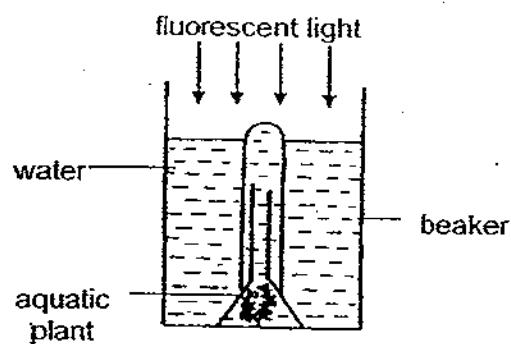
Daniel conducted an experiment using fruits X and Y. He released each fruit, ONE at a time, from a height of 10 m from the ground and measured the time taken for each fruit to reach the ground.

Which one of the following sets of readings correctly represents the time taken for fruits X and Y to reach the ground?

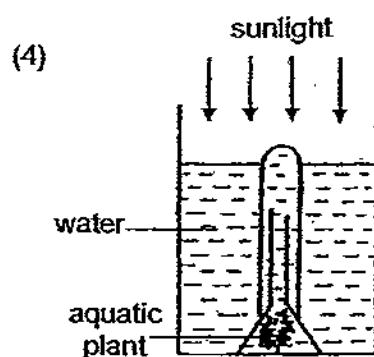
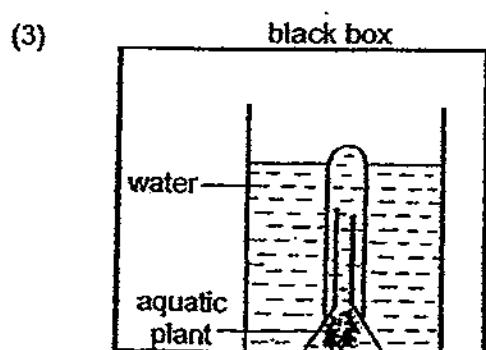
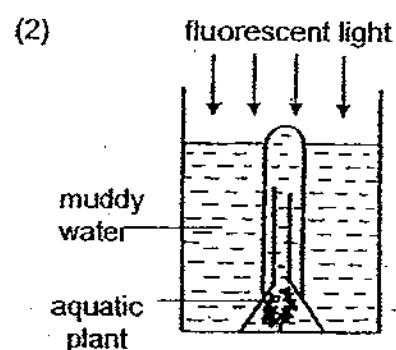
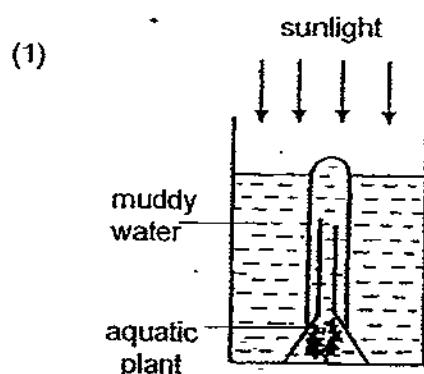
time taken for X (s)	time taken for Y (s)
2.9	2.7
3.5	3.5
4.5	4.0
4.8	5.2

- 7 Sam wanted to find out if an aquatic plant can photosynthesise better under fluorescent light or sunlight.

He prepared the following set-up for his experiment.

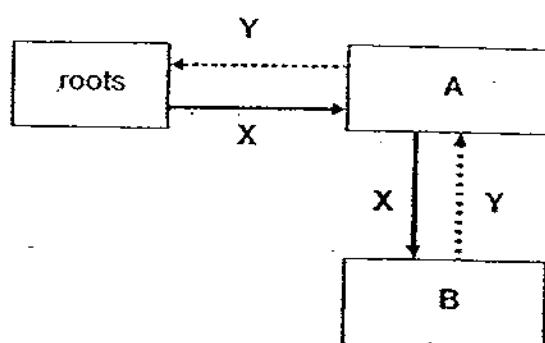


Which one of the following set-ups should Sam prepare in order to conduct a fair test?



- 8 Arrows X and Y in the diagram below represent the transportation of water and food from one part of a plant to another.

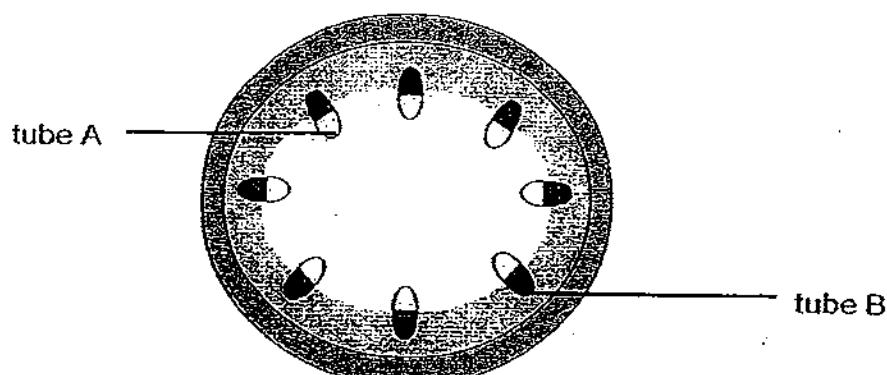
A and B represent different parts of the plant.



Which one of the following correctly represents A and B and arrows X and Y?

A	B	X	Y
<input checked="" type="checkbox"/>	leaf	water	food
<input checked="" type="checkbox"/>	leaf	food	water
<input checked="" type="checkbox"/>	stem	water	food
<input checked="" type="checkbox"/>	fruit	food	water

- 9 3 pupils left plant X in a beaker of red-coloured water. 5 hours later, they cut a cross-section of plant X and observed that tube A (as shown below) had turned partially red but NOT tube B.



cross-section of plant X

Based on their observations, the pupils made the following statements:

~~Jeremy~~ : The plant depended on tube A to transport food to all its other parts.

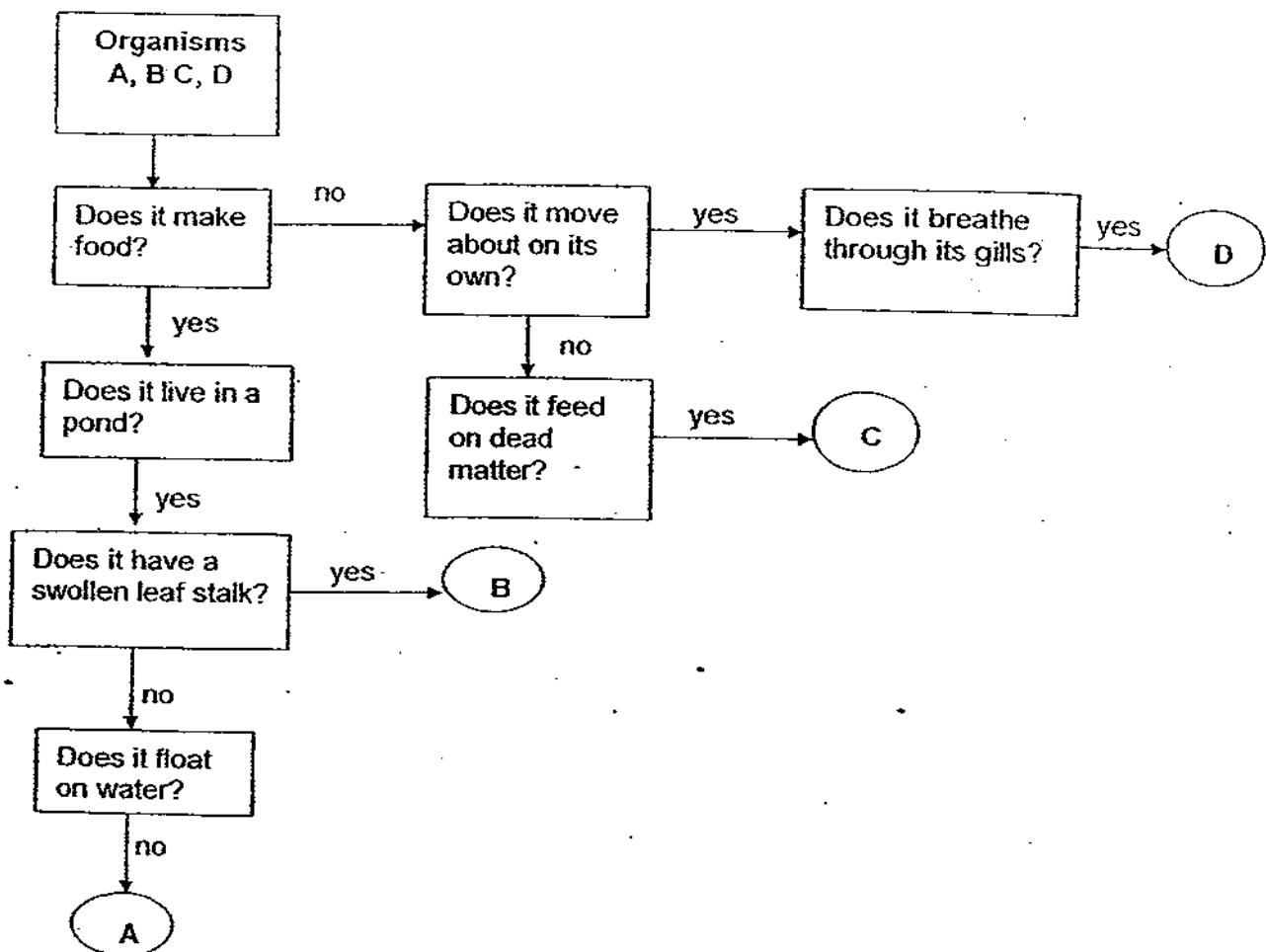
Miranda : Tube A ensured that water from the roots were transported to all parts of the plant.

~~Randy~~ : The plant depended on tube B to transport food from its leaves to its roots only.

Based on the above experiment, which of the following pupils made the correct inference(s)?

- Jeremy only
- Miranda only
- Jeremy and Miranda only
- Jeremy, Miranda and Randy

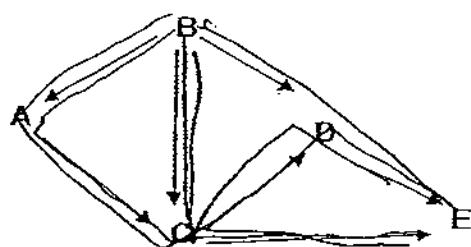
- 10 The flow chart below shows how organisms A, B, C and D are classified.



Based on the flow chart above, which one of the following could organisms A, B, C and D be?

	organism A	organism B	organism C	organism D
✗	water lily	hydrilla	bacteria	mudskipper
✗	hydrilla	water hyacinth	toadstool	dragonfly nymph
✗	cattail	water lotus	millipede	water scorpion
✗	cabomba	water lettuce	bracket fungus	crab

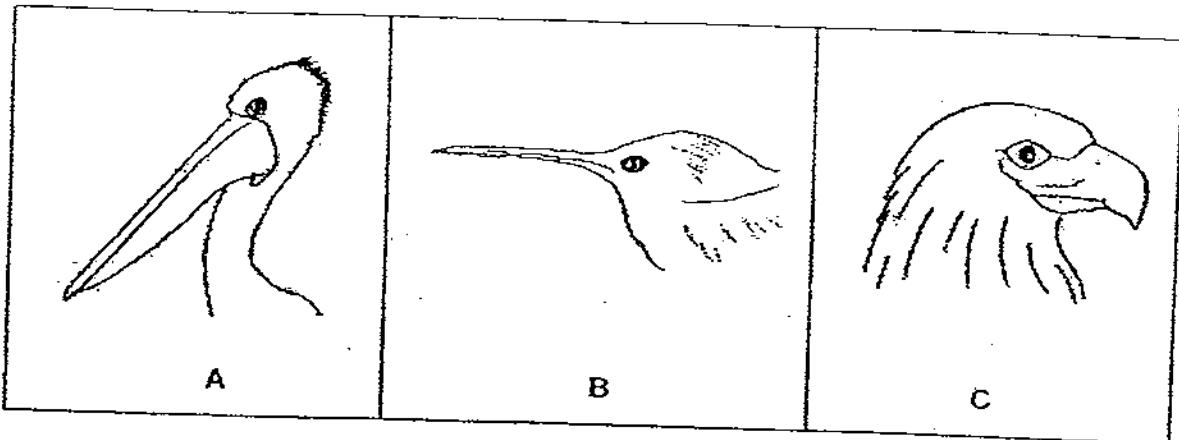
- 11 The food web below shows the transfer of energy among 5 populations of organisms, A, B, C, D and E, in an environment.



Based on the food web above, which one of the following statements is true?

- C and D are predators.
- There are a total of 6 food chains that end with organism E.
- An increase in the population of organism C will cause an increase in the population of organism A.
- Organisms A, C, D and E would be wiped out eventually if organism B was removed from the environment.

- 12 The diagrams below show the beaks of 3 different types of birds, A, B and C.



Based on the type of beak that each bird has, four pupils made the following statements:

- Anne : Bird B is a producer.
Brad : Only bird C is a predator.
Cindy : Birds A, B and C are consumers.
Dave : Only birds A and C are carnivores.

Which of these pupils made the correct statements?

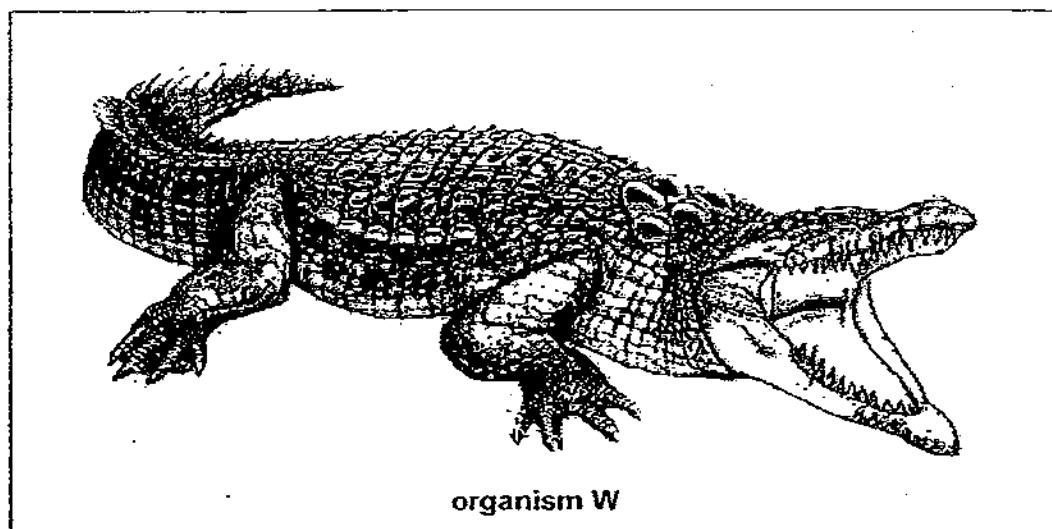
Anne and Cindy only

Brad and Cindy only

Brad and Dave only

Cindy and Dave only

- 13 The diagram below shows organism W, which is an efficient swimmer.



Which of the following adaptations of organism W enable it to be an efficient swimmer?

- A long powerful tail
- B razor sharp teeth
- C streamlined body shape
- D sharp and powerful claws

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

- 14 Which of the following are behavioural adaptations of animals?
- Some animals have scents to attract mates.
 - Male peacocks display their feathers to attract mates.
 - Owls have large eyes to help them see better in low light environments.
 - African hunting dogs hunt in packs to catch their prey more easily.

A and D only

B and C only

B and D only

A, B and C only

- 15 Which of the following are possible ways to reduce pollution?

Buy biodegradable soap and detergent.

Buy items that are sold in reusable containers.

Bring your own bag when you go shopping for groceries.

Turn off main switches of electrical appliances only at the end of each day.

(1) A and D only

(2) B and C only

(3) A, B and C only

(4) B, C and D only

- 16 The table below shows the melting points and boiling points of 4 substances, P, Q, R and S.

substance	melting point (°C)	boiling point (°C)
P	35	78
Q	52	87
R	49	91
S	24	69

At which one of the following temperatures are the four substances, P, Q, R and S, in the same state?

 28°C 50°C 61°C 89°C

- 17 The table below shows information of some planets, E, F, G and H.

planet	E	F	G	H
distance from the Sun (millions of km)	57.91	149.60	2870.97	4498.25
diameter of planet (km)	4879	12756	51118	49528
mass of planet (number of times of planet F's mass)	0.055	1.00	14.37	17.15

Data source: www.nasa.gov

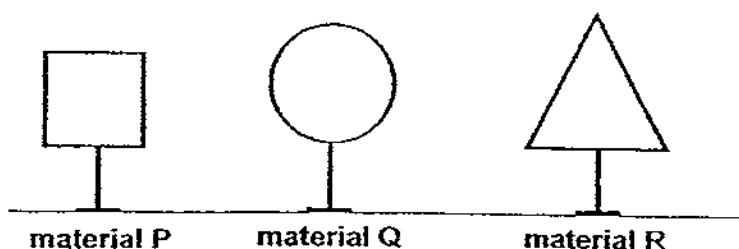
Information of another 2 planets, X and Y, is given below:

Planet X	<ul style="list-style-type: none"> is located between Planets E and F is about the same size as Planet H
Planet Y	<ul style="list-style-type: none"> is located between Planets G and H has about the same mass as Planet H

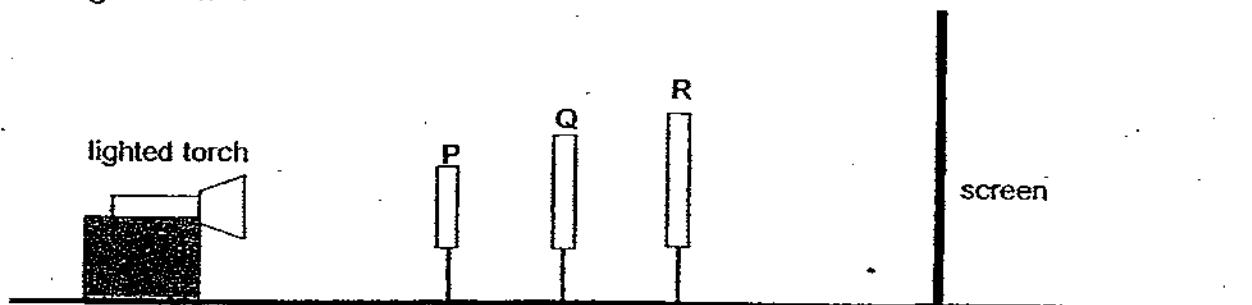
Based on the information given above, which one of the following statements is true?

- Planet X is hotter than Planet Y.
 Planet X is smaller than Planet Y.
 Planet Y is heavier than Planet H.
 Planets X and Y have the same mass.

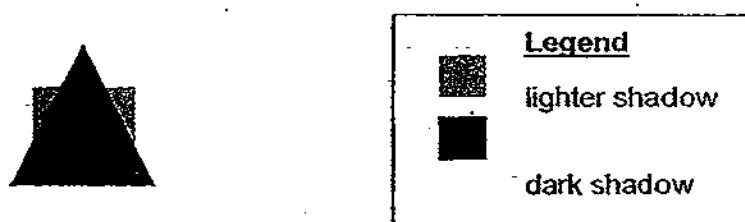
- 18 Jiaqi used 3 different materials, P, Q and R, to make the following cut-outs.



He placed the cut-outs between a screen and a lighted torch as shown in the diagram below.



The diagram below shows the shadows which were cast on the screen.



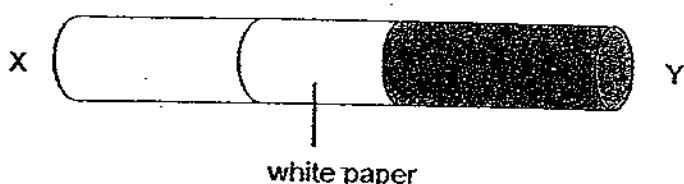
Which one of the following identifies materials P, Q, and R correctly?

	Material P	Material Q	Material R
(1)	translucent	not possible to tell	transparent
(2)	not possible to tell	opaque	translucent
(3)	translucent	transparent	opaque
(4)	translucent	not possible to tell	opaque

- 19 Mrs Chen had a rod made of 2 different materials, X and Y, as shown in the diagram below.

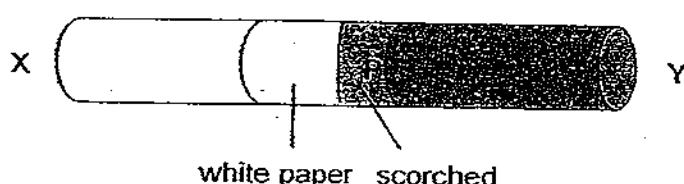


She wrapped the centre of the rod with a piece of white paper as shown below.



Mrs Chen passed the flame of a candle over the white paper several times.

After a while, Mrs Chen observed that only P (the end of the piece of white paper nearer to Y) was scorched as shown in the diagram below.

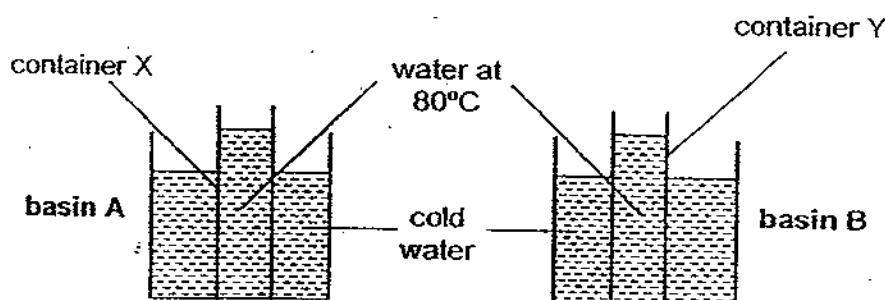


Which one of the following reasons best explains why P was scorched?

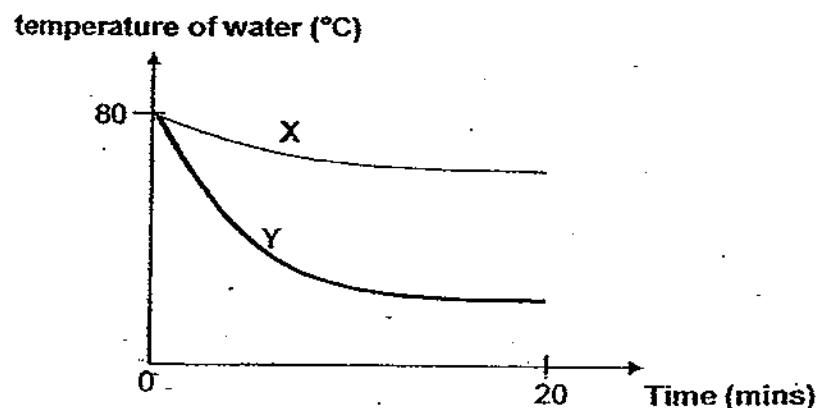
- A Heat travelled from X to Y, so P retained more heat.
- B X trapped more heat than Y, so less heat was transferred to P.
- C Y was a better conductor of heat than X, so more heat was absorbed by P.
- D Y was a poorer conductor of heat than X, so heat was conducted slowly away from P.

- 20 Khalid had 2 containers, X and Y, of the same size but each made of a different material.

He poured an equal amount of water at 80°C into each container. Next, he placed X and Y into two identical basins, A and B, each filled with an equal amount of cold water, as shown in the diagram below.



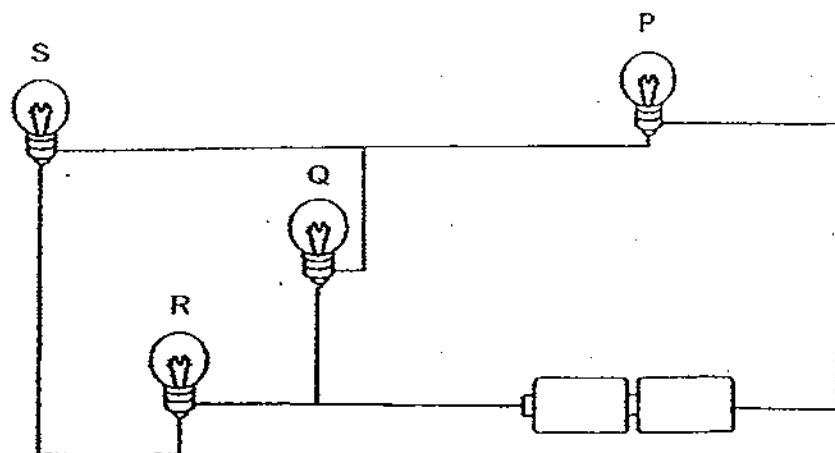
Khalid recorded the temperature of the water in each container, X and Y, every 2 minutes for 20 minutes and plotted the graph below.



Based on the information above, which one of the following statements is true?

- (1) Container Y is more suitable to keep drinks cool for a longer time.
- (2) The cold water in basin A gained heat faster than the cold water in basin B.
- (3) Container X would be able to keep food warm for a longer time than container Y.
- (4) The water in container X would gain heat faster than the water in container Y if both containers were heated.

21 John set up the electric circuit below to conduct an experiment.

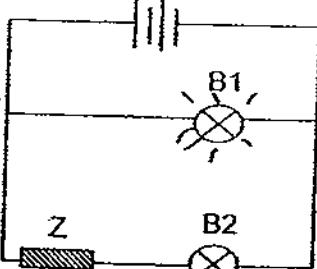
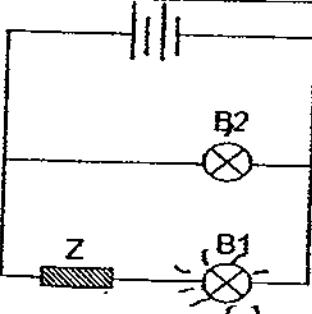


Which one of the following bulbs, P, Q, R or S, will cause all the OTHER bulbs to go out when it fuses?

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

- 22 4 pupils set up 2 closed circuits, X and Y, to conduct two experiments.

They recorded their observations in the table below.

set-up	observations
 <p>X</p>	<ul style="list-style-type: none"> B1 lit up B2 did NOT light up
 <p>Y</p>	<ul style="list-style-type: none"> B1 lit up B2 did NOT light up

Based on their observations above, each pupil gave a reason to explain why B2 did NOT light up.

Alice: The filament in B2 had melted.

Bala: Z was NOT properly connected to the circuit.

Chun: Z was a non-conductor of electricity.

Dolah: B1 was NOT properly connected to the circuit.

Which of the following pupils made the correct observation(s)?



Alice only



Bala and Chun only



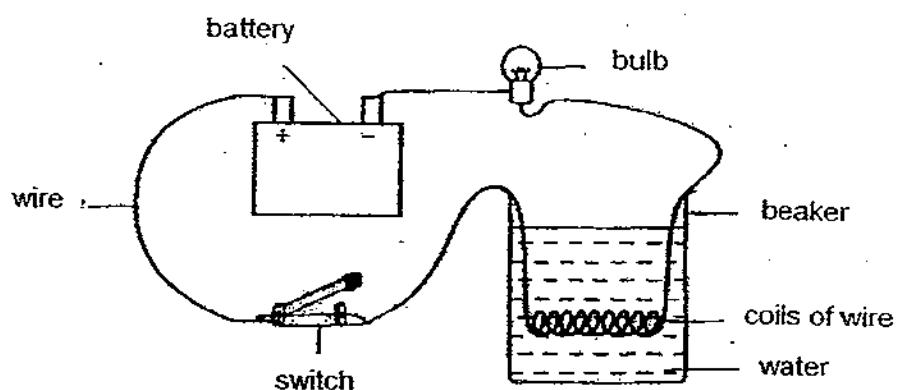
Alice and Dolah only



Bala, Chun and Dolah only

- 23 Priya set up an experiment as shown below.

When she closed the switch, the bulb lit up and the water boiled after 10 minutes.



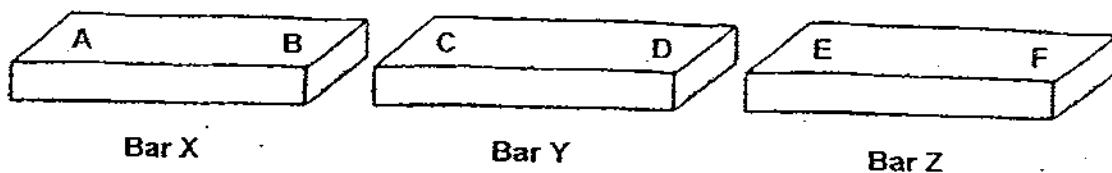
What could Priya do to speed up the rate at which the water would boil?

- A Remove the bulb from the circuit.
- B Connect another bulb to the circuit.
- C Connect another switch to the circuit.
- D Connect another battery in series to the circuit.

- A A and C only
- B B and C only
- C A and D only
- D C and D only

- 24 Jim had 3 bars, X, Y and Z. Their ends were labelled A, B, C, D, E and F respectively.

He drew the ends of Bar X, Bar Y and Bar Z close to one another as shown in the diagram below to find out if they would repel or attract.



The table below shows the results of Jim's experiment.

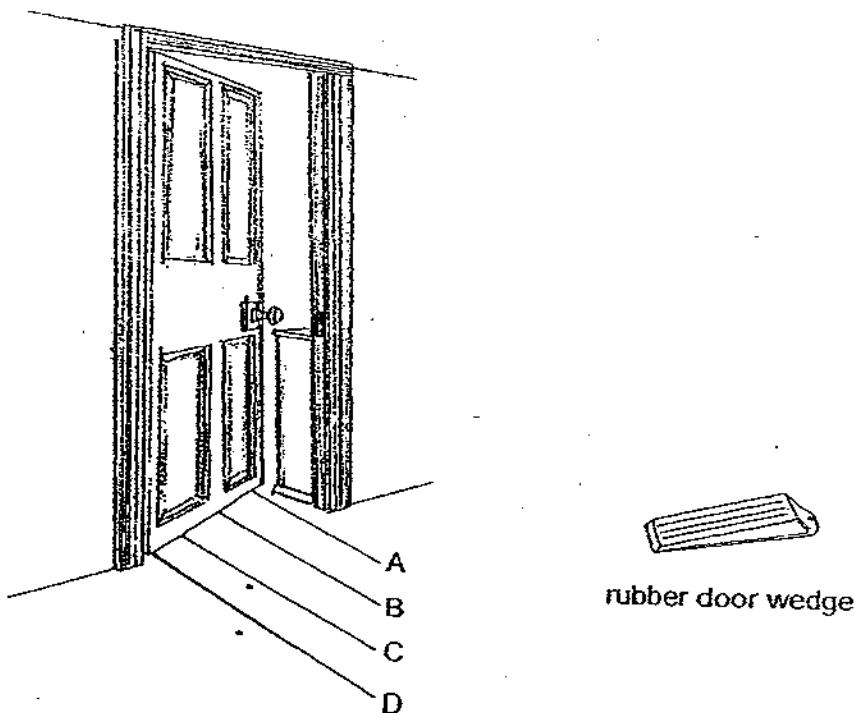
		Bar Y		Bar Z	
		C	D	E	F
Bar X	A	attract	attract	attract	attract
	B	attract	attract	attract	attract
Bar Y		C		attract	repel
Bar Y		D		repel	attract

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

- Only Bar Y is a magnet.
- Bars X, Y and Z are magnets.
- Only Bars Y and Z are magnets.
- Bars X, Y and Z are made of a magnetic material.

- A only
- B only
- C and D only
- D and E only

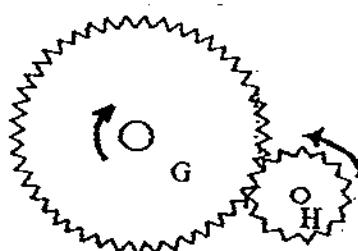
- 25 Priscillia wants to use a rubber door wedge to prevent a door from slamming due to the wind.



At which one of the above positions, A, B , C or D, of the door should Priscillia place the door wedge such that the door can withstand the strongest wind **WITHOUT** slamming?

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

- 26 The diagram below shows 2 gears, G and H, used in a clock.



Gear G has 45 teeth and gear H has 15 teeth

When gear H makes 6 complete turns, how many complete turns does gear G make?

- | | |
|--------|--------|
| (1) 12 | (2) 2 |
| (3) 3 | (4) 18 |

- 27 Mr Seah was driving his car uphill. He observed that his car slowed down when it was going uphill.

Which of the following forces caused Mr Seah's car to slow down?

- A frictional force
- B magnetic force
- C gravitational force

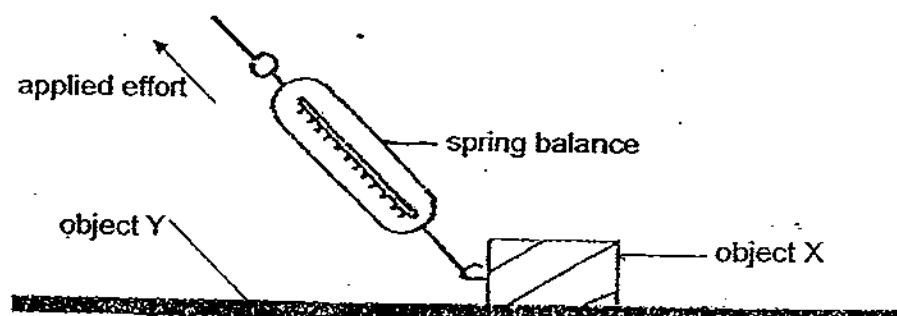
A only

A and C only

C only

A, B and C

- 28 A group of pupils pulled object X across the surface of object Y as shown in the diagram below.



The group of pupils made the following statements:

Aishah : More force was required to move object X when the surface of object Y was rougher.

Beatrice : The reading on the spring balance would be smaller when the surface of object Y was oiled.

Cleo : As the mass of object X increased, the amount of applied effort would remain the same.

Which of the following pupils made the correct statement(s)?

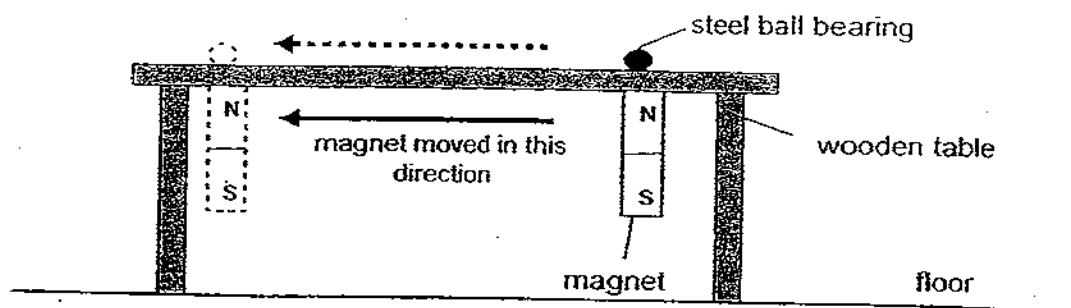
Beatrice only

Aishah and Beatrice only

Aishah and Cleo only

Aishah, Beatrice and Cleo

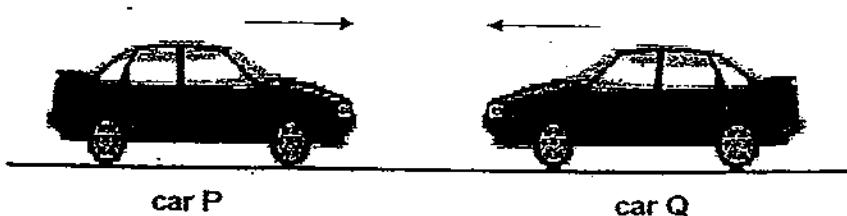
- 29 Carene set up an experiment as shown in the diagram below.



As Carene slid the strong magnet beneath the wooden table, the steel ball bearing followed the movement and direction of the magnet.

What did Carene's experiment show?

- Magnetic force can pass through wood.
 - NOT all metals are attracted to a magnet.
 - Magnetic force can pass through non-metallic materials.
 - Frictional force prevents the ball bearing from moving faster.
- 30 The diagram below shows two identical cars, P and Q, moving at the same speed and heading directly towards each other.



When the two cars collide, which one of the following changes is NOT possible?

- The shape of car P changes.
- The speed of car Q increases.
- The direction of car Q changes.
- The volume of car P decreases.

Name: _____ Index No: _____ Class: P6 _____

SECTION B (40 marks)

For questions 31 to 46, write your answers clearly in the spaces provided.

The number of marks available is shown in brackets [] at the end of each question or part question.

- 31 (a) Complete the table below to compare the male and female reproductive systems of animals. [1]

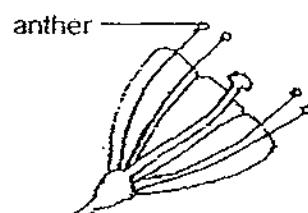
	female reproductive system	male reproductive system
type of reproductive cells produced	(i) _____	(ii) _____
organ that produces the reproductive cells	(iii) _____	(iv) _____

- (b) Sexual reproduction takes place in both plants and animals.

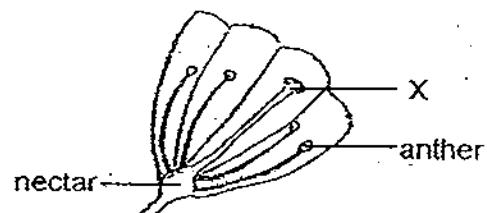
State a similarity between the sexual reproduction in plants and in animals.

[1]

- 32 The diagrams below show two flowers, P and Q.



flower P



flower Q

Based on the diagrams above, answer the following questions:

- (a) Which flower, P or Q, is more likely to be pollinated by wind?

Flower _____

State 2 reasons to support your answer.

[2]

1 st REASON	
2 nd REASON	

- (b) If part X of flower Q was removed, could flower Q develop into a fruit?

Explain your answer.

[1]

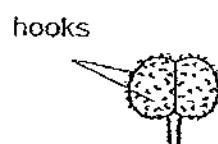
33 The diagrams below show three fruits, D, E and F.



fruit D

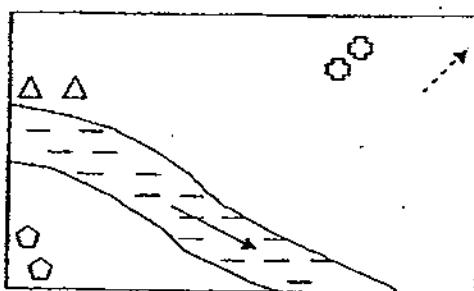


fruit E

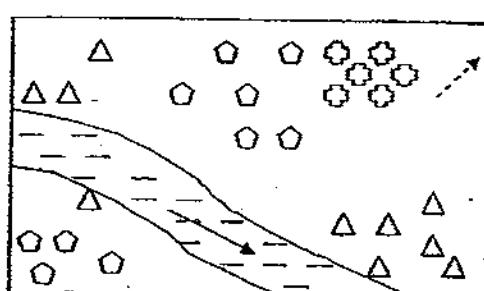


fruit F

The maps below show the locations of three types of plants, W, X and Y, in a town in Years 2006 and 2008.



Year 2006



Year 2008

Legend:	
○	plant W
○	plant X
△	plant Y
→	direction of river flow
--->	direction of wind

Based on the information above, answer the following questions:

(a) Which plant, W, X or Y, is the parent plant of fruit E?

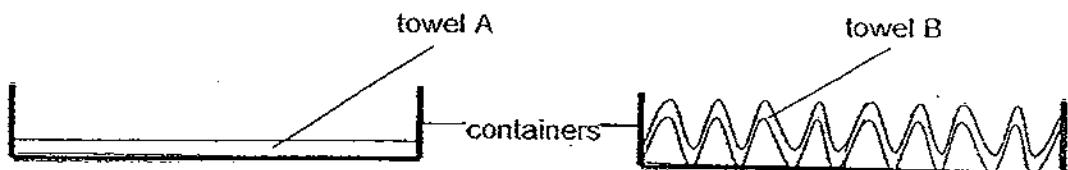
Explain your answer.

[1]

(b) How is Fruit F dispersed? Give a reason for your answer.

[1]

- 34 Ken was given two towels, A and B, of the same material and thickness. He laid towels A and B in a container each. The containers were of the same size and material.

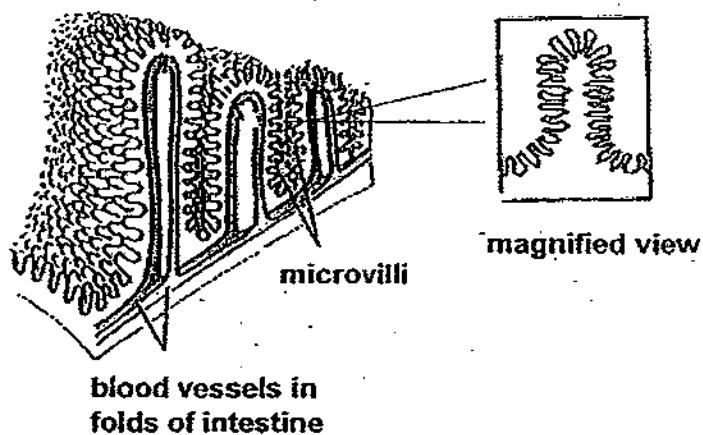


- (a) Ken poured 500 ml of water onto each towel and found out that towel B absorbed more water than towel A.

Explain why this is so.

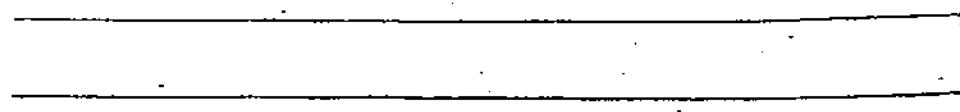
[1]

The diagram below shows part of a small intestine found in a human digestive system.



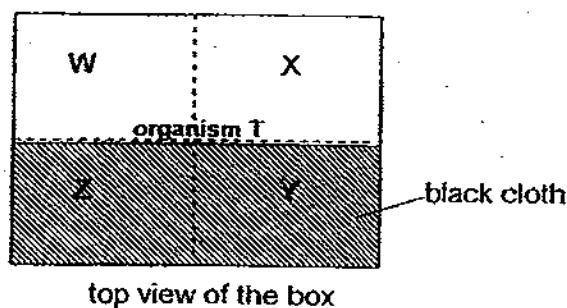
Microvilli are finger-like structures found in the small intestine and digested food is absorbed into them for respiration to be carried out.

- (b) Based on the information above, explain how having so many tiny structures, microvilli, aid digestion in the human body. [1]



- 35 Oliver set up an experiment as shown below to find out what kind of living conditions organism T preferred.

He took a box and divided it into 4 equal sections, W, X, Y and Z. He poured an equal amount of water on sections W and Z and covered sections Y and Z with a black cloth. He left the box on a window sill.



Oliver used the following checklist to note down the conditions of each section.

A tick (✓) shows the condition present in the section.

condition section	wet	dry	dark	bright
W	✓			✓
X		✓		✓
Y		✓	✓	
Z	✓		✓	

He placed 50 such organisms onto the centre of the box. 3 hours later, he recorded the number of organisms in each section in the table below.

section	W	X	Y	Z
number of organism T	6	0	2	42

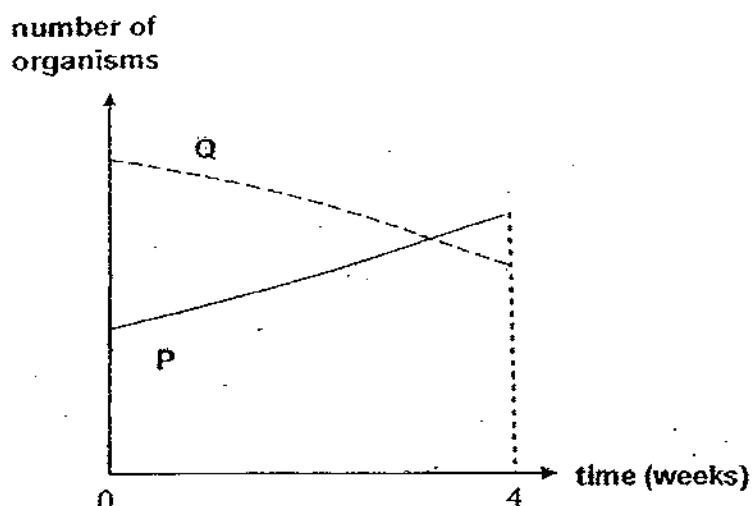
Based on the information above, answer the following questions:

- (a) What would happen to organism T when Oliver put the box in an open field? Explain why. [1]

- (b) What could organism T be?

- 36 John set up a terrarium and put organisms P and Q into it.

The graph below shows the populations of organisms P and Q in a terrarium over a period of 4 weeks.



Based on the graph above, answer the following questions:

- (a) What is the relationship between organisms P and Q?

Explain your answer.

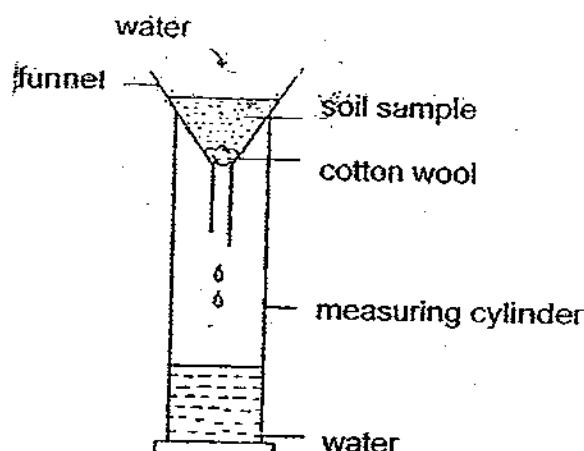
[1]

- (b) 4 weeks later, organism R was added to the terrarium. The number of organism P declined while the number of organism Q increased.

Explain the changes in the population sizes of organisms P and Q. [1]

- 37 Jon was given 3 different soil samples, garden soil, clayey soil and sand. Each soil sample was of the same amount. Each soil sample was labelled as W, X and Y.

He set out to identify what the soil sample was. He placed a soil sample in a funnel and poured 50 ml of water into it as shown in the set-up below.



Jon measured the amount of water collected in the measuring cylinder at the end of 10 minutes. He repeated the experiment **ANOTHER** two times for each soil sample.

The table below shows the amount of water that Jon had collected at the end of 10 minutes for each try.

number of tries	amount of water collected for each soil sample at the end of 10 minutes (ml)		
	W	X	Y
1 st	18	40	25
2 nd	20	39	24
3 rd	17	41	23

Based on the information above, answer the following questions:

- (a) Which soil sample, W, X or Y, was sandy soil?

Explain your answer.

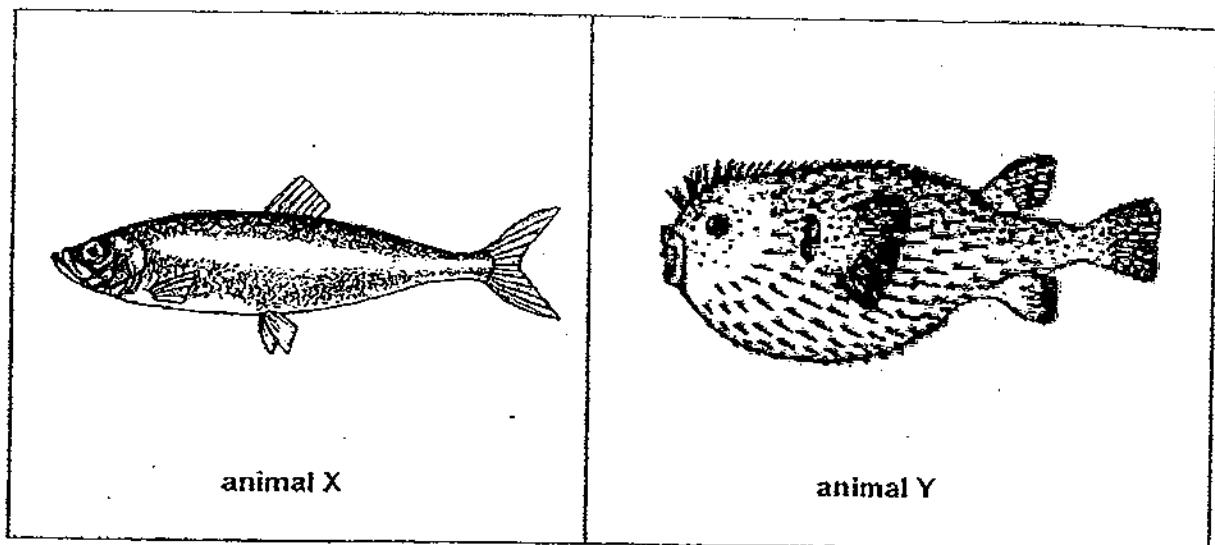
[1]

- (b) Jon carried out the experiment with each soil sample 3 times.

State a reason why he did that.

[1]

38 The diagrams below show animals X and Y.

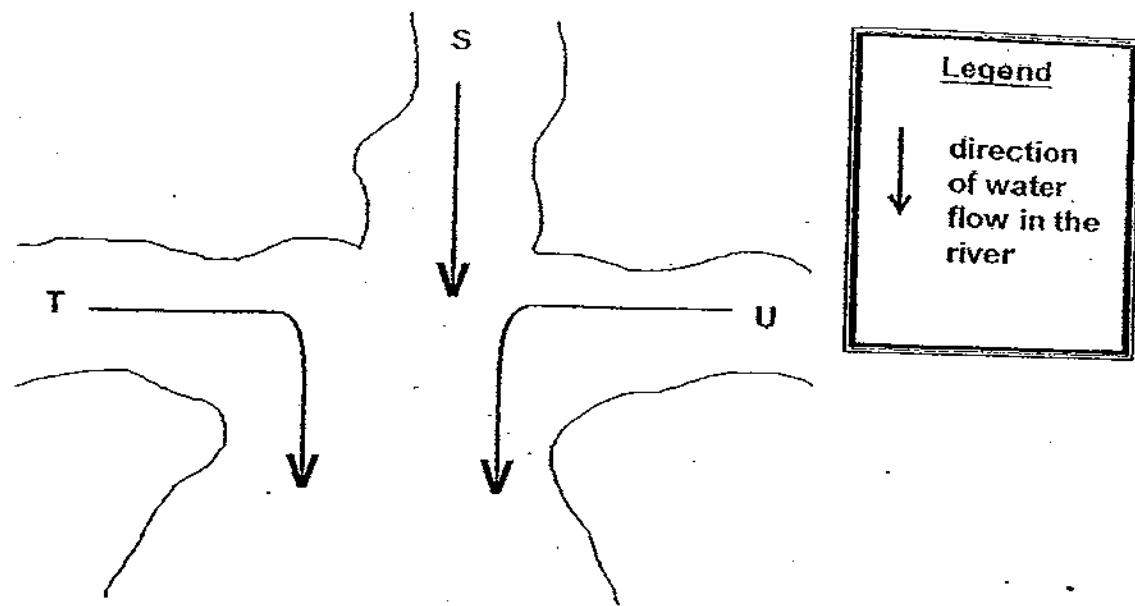


Which animal, X or Y, is structurally adapted to swim faster in water?

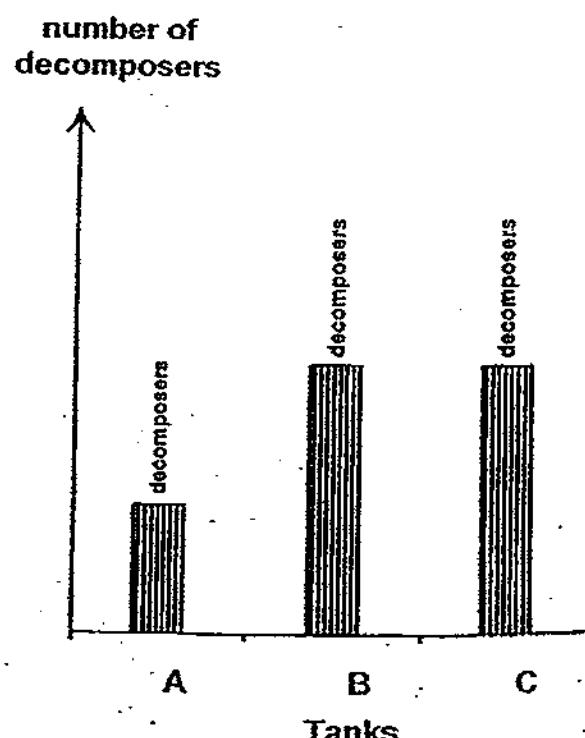
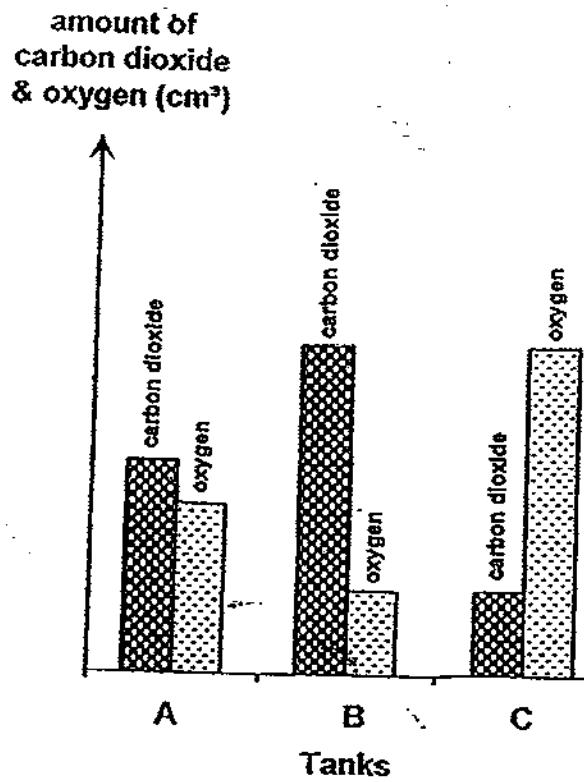
Explain your answer.

[2]

- 39 Mathew collected water samples from different parts of a river, S, T and U, as shown in the diagram below.



Mathew placed the water sample from S, T and U into Tanks A, B, and C respectively. He analysed the contents of the water in each of these tanks. Then he plotted the following graphs to show the amount of oxygen, carbon dioxide and the number of decomposers in each water sample.



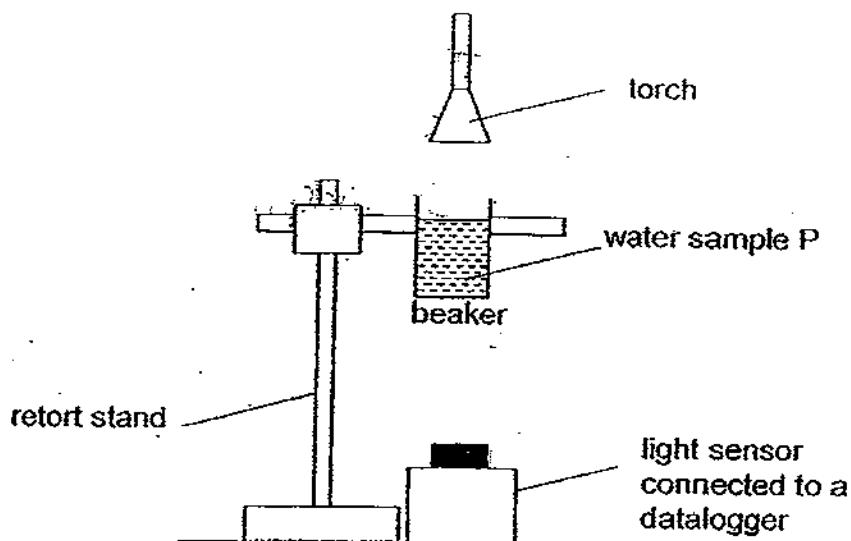
Based on the information given on page 34, answer the following questions:

Which part of the river, S, T, or U, was the most polluted?

Explain your answer.

[2]

- 40 Shaun collected 4 water samples, P, Q, R and S, from 4 different ponds. He placed 50 mL of water sample P into a small beaker and set up the experiment as shown below.



Shaun lit his torch and shone it over water sample P in the beaker. He used a datalogger to measure how much light is able to pass through water sample P in the beaker. He recorded three sets of readings for water sample P.

Shaun repeated the **SAME** experiment for the **OTHER** 3 water samples, Q, R and S, **ONE** at a time. He recorded his observations in the table below.

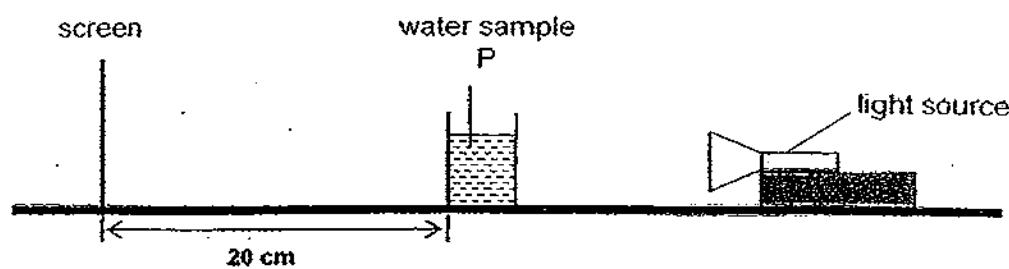
number of readings	reading on the light sensor for each water sample (Lux)			
	P	Q	R	S
1 st	500	800	60	1105
2 nd	480	805	64	1100
3 rd	495	810	58	1007

- (a) In which water sample, P, Q, R or S, will an elodea plant grow best?

Explain your answer.

[2]

Using the **SAME** water samples P, Q, R and S, Shaun set up **ANOTHER** experiment as shown below.

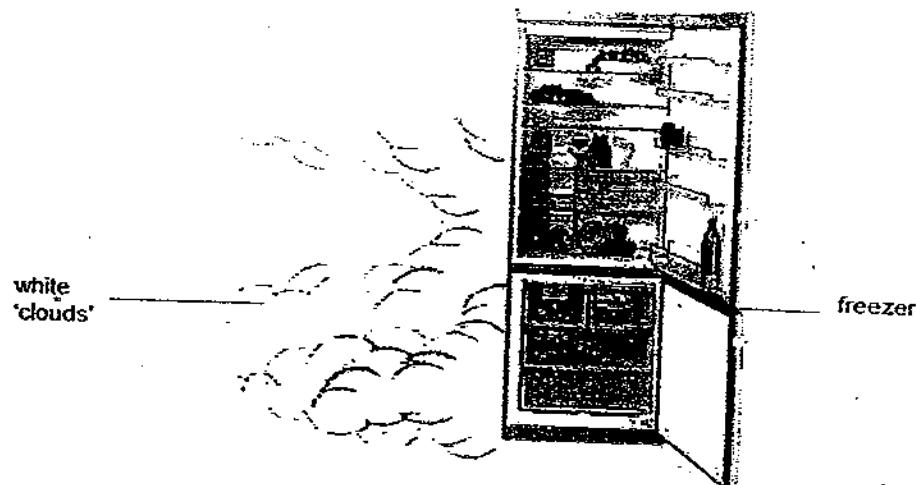


Each water sample, P, Q, R, and S, was placed between a white screen and a light source, **ONE** at a time, and the shadow cast on the screen was noted.

- (b) Shaun observed that water sample R cast a darker shadow than water sample P.

Give a reason for his observation. [1]

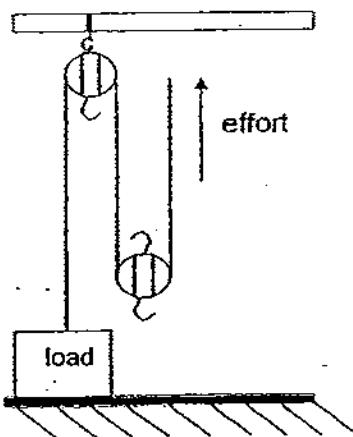
- 41 Danial opened his freezer door and observed white 'clouds' escaping from the freezer.



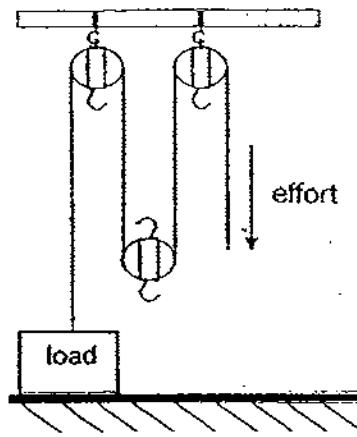
Explain how the white 'clouds' were formed.

[2]

- 42 The diagrams below show pulley systems A and B.



pulley system A



pulley system B

- (a) State 2 advantages of pulley system A. [2]

- (b) WITHOUT considering friction and mass of the pulleys, state how the amount of effort in pulley system A above would be affected by adding another fixed pulley into the system (as shown in pulley system B). [1]

- 43 Diagrams A and B show two different ways in which a screwdriver can be used.

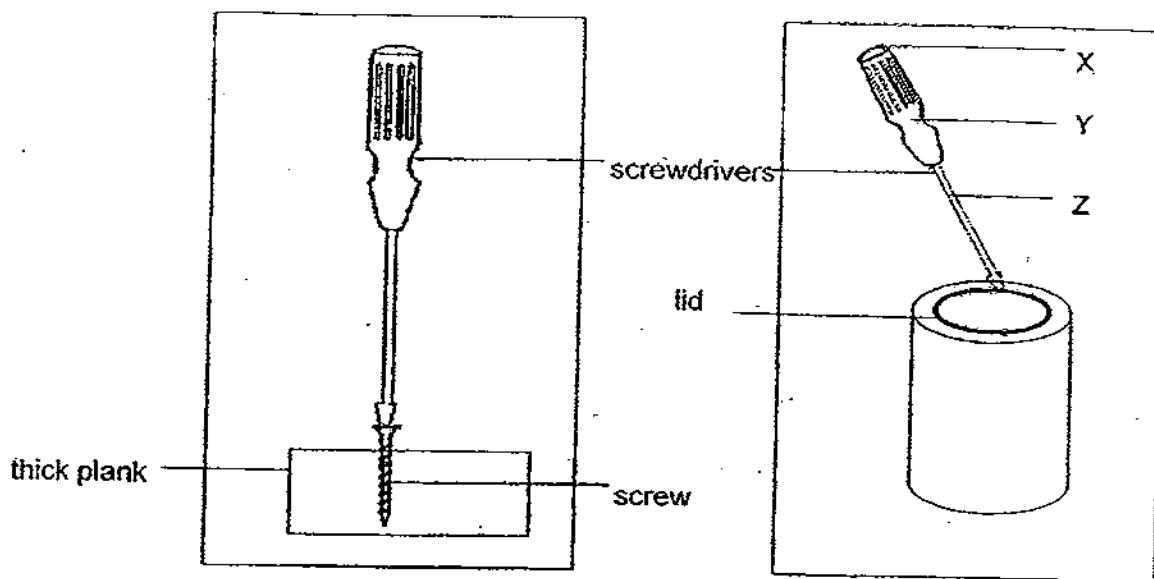


Diagram A

Diagram B

- (a) State the type of simple machine that the screwdriver is used as in each of the diagrams above: [1]

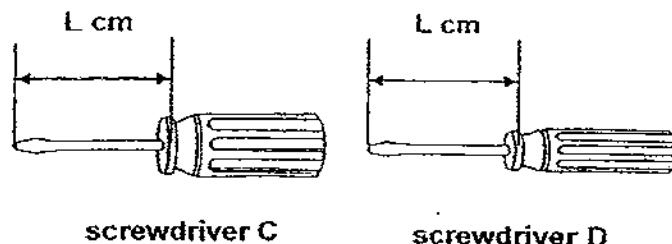
Diagram A	
Diagram B	

- (b) At which position, X, Y or Z, would the least force be required to open the lid in Diagram B?

Explain your answer.

[1]

The diagrams below show two screwdrivers, C and D, which are of the same length, L cm.

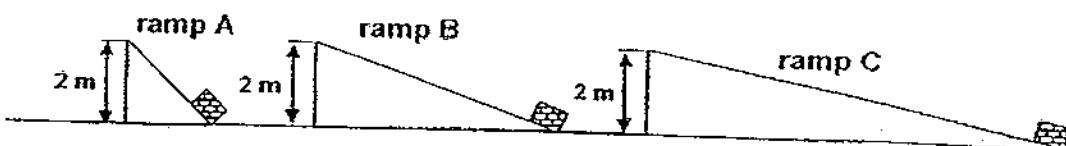


- (c) Which screwdriver can loosen a screw with less effort?

Give one reason for your answer.

[1]

- 44 Tatum prepared the following set-ups to find out which one of these ramps, A, B or C, would enable her to move the SAME box to a height of 2 m above the ground using the least effort.

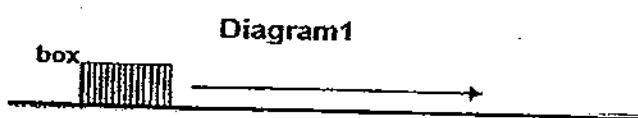


- (a) In which one of the ramps, A, B or C, would Tatum use the least effort to lift the box?

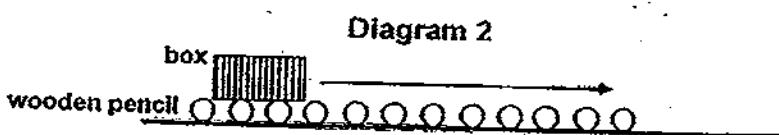
Explain your answer.

[1]

In another experiment, Tatum pushed a box across a wooden floor as shown in Diagram 1 below.



She placed some cylindrical wooden pencils under the SAME box as she pushed it across the same stretch of wooden floor shown in Diagram 2 below.

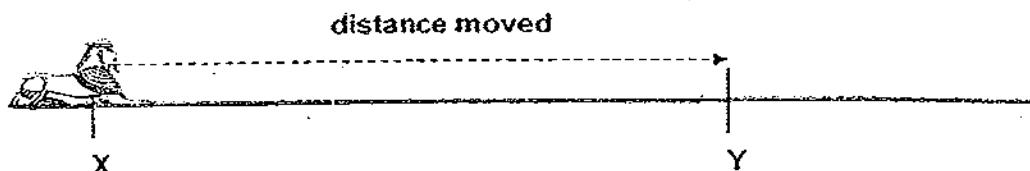


- (b) In which Diagram, 1 or 2, would Tatum require less effort to move the box across the same stretch of wooden floor?

Explain your answer.

[1]

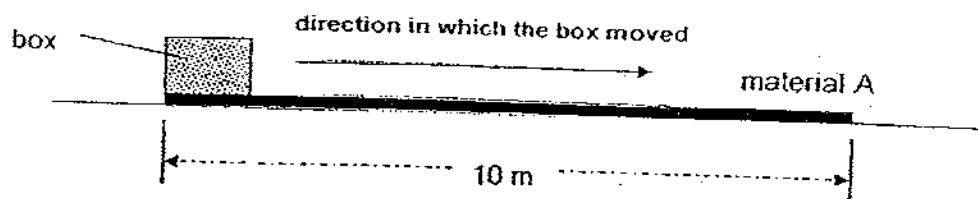
The ancient Egyptians needed to move a huge heavy sphinx statue over a distance.



- (c) State the two forces acting on the sphinx when it was moved from X to Y. [1]

- (d) Suggest why the Egyptians should use rollers instead of the ramp to move the sphinx from X to Y. [1]

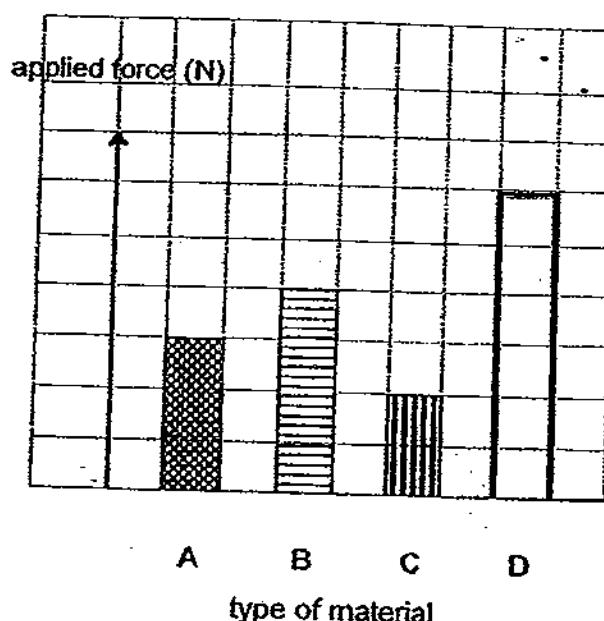
- 45 Rebecca pushed a heavy box over a distance of 10 m on material A.



She used another 3 identical boxes and repeated the experiment using materials B, C and D, ONE at a time.

The graph below shows the force (N) required to move the box on different materials over the 10 m distance.

Rebecca also measured the temperature of the contact surface of each box immediately after each of the boxes had been pushed over the 10 m distance.



material	temperature increase from the start of the experiment ($^{\circ}\text{C}$)
A	2
B	5
C	1
D	8

Based on the information given on page 44, answer the following questions:

- (a) Suggest what Rebecca could infer regarding the texture of material D in comparison to the other 3 materials. [1]

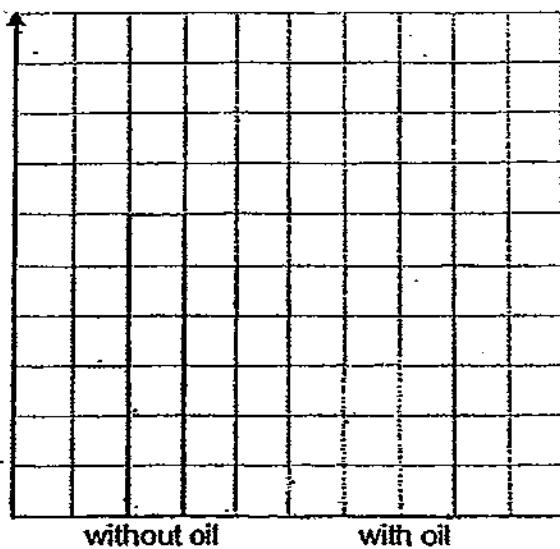
- (b) State the relationship between the texture of the materials and the amount of heat gained by the box when it moved over the SAME distance. [1]

- (c) Some oil was applied on the surface of material D and the experiment was conducted again.

Predict the amount of applied force required to move the box over the SAME distance on the oiled surface of material D.

DRAW it in the graph given below. [1]

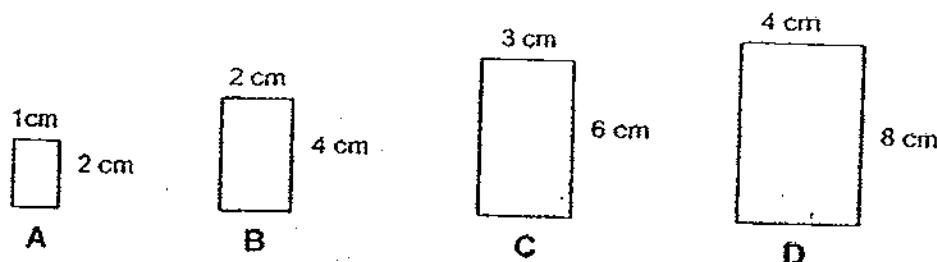
applied force (N)



surface of material D

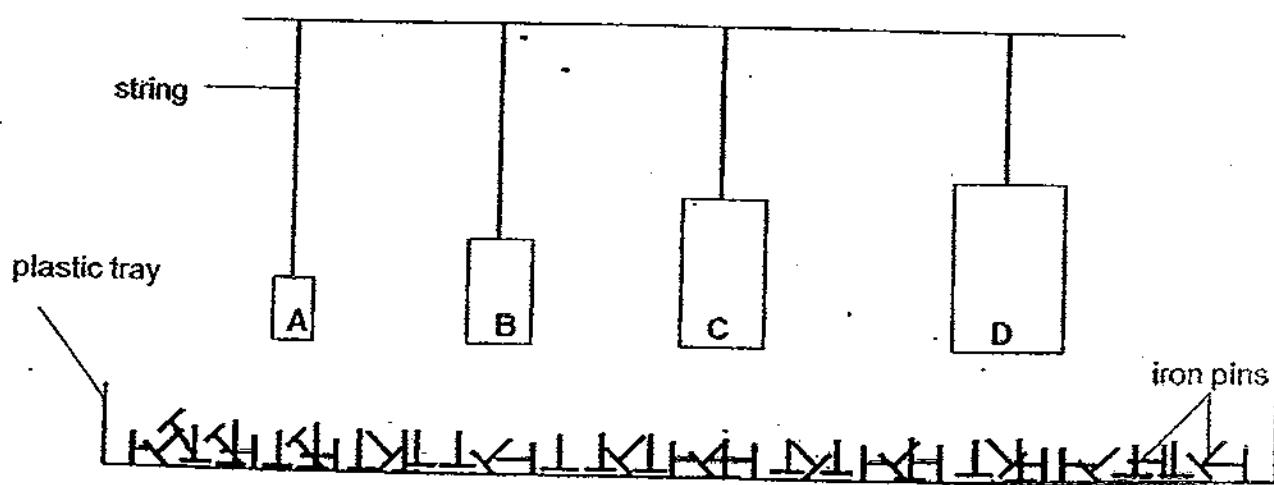
- 46 Kimberly had 4 different magnets, A, B, C and D, as shown in Diagram 1 below.

Diagram 1



She hanged each of these magnets an equal distance away from a tray of pins as shown in Diagram 2 below.

Diagram 2



Kimberly carried out the experiment 3 times and recorded her observations in the following table:

magnet	number of pins attracted to the magnets		
	1 st time	2 nd time	3 rd time
A	18	17	19
B	7	6	7
C	12	14	11
D	5	3	3

Based on the information given on page 46, answer the following questions:

- (a) What was the aim of Kimberly's experiment?

[1]

- (b) From the data collected, what could Kimberly conclude about the magnets?

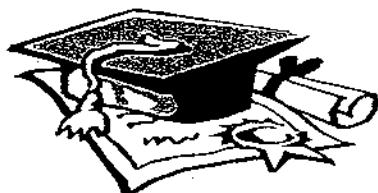
[1]

- (c) Kimberly suggested cutting magnet D into two equal parts, X and Y.
Predict how many pins Part X would be able to attract.

[1]

- END OF PAPER -

Setters: Ms Aishah Aris, Mdm Ong Shueh Nee, Ms Pek Xue Yan, and Mr Tan Siew Whatt



ANSWER SHEET

EXAM PAPER 2009

SCHOOL : RAFFLES GIRLS' PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

31)a)i)ovum ii)sperm iii)ovaries in)testis
b)Both require the fusion of male and female sex cells.

32)a)P

1)The anther and stigma are located above the petal.
2)Flower P does not have nectar to attract animals for pollination.
b)No, since there is no stigma to receive the pollen grains, pollination dose not occur, fertilization not take place either. Hence the flower cannot develop into a fruit.

33)a)plant W. The seeds is dispersed in a circular manner and it is not very far away from the parent plant so it it the parent plant of fruit E which dispersed by splitting.

b)Fruit F is dispersed by animals. It has hooks on the fruit to cling on the hair of the animals to allow the animals to help disperse it when the animals walks around.

34)a)Towel B is larger in size than Towel A.

b)Microvilli have a greater surface area, thus increasing the rate of digestion.

35)a) More organism T will go to part Z. Since the open field is normally bright and dry, organism T will gather at part Z of the box as they prefer dark and wet conditions.

b) Millipede.

36)a) P is a predator of Q. There are only two animals in the tank and P increases so the number of Q will decrease as it is eaten and P will increase.

b) R preyed on P and due to the decrease in population P, Q's birthrate could have exceeded the death rate as less P fed on them. Hence, population for Q increased.

37)a) Soil sample X. As sandy soil does not retain as much water as garden or clayey soil, it would allow the most amount of water to be collected in the measuring cylinder within the given time period of 10 minutes.

b) He wanted to obtain more reliable and valid results.

38) Animal X. Animal X has a streamlined body to reduce water resistance while animal Y does not have so it will swim slower as it cannot reduce water resistance as better as animal X.

39) Part T of the river. Since the highest amount of decomposers were found in two parts of the river, the largest amount of carbon dioxide produced would indicate that there was a higher rate of decomposition due to large quantity dead organic matter in the river.

40)a) Water sample S. Elodea is a submerged plant and water sample S enables the most amount of light to go through which is essential for the plant to carry out photosynthesis.

b) Sample R is murkier than sample P. Hence, the amount of light able to pass through sample R is less than sample P.

41) Warmer water vapour in the surrounding air condenses on the cooler air from the freezer forming the "white clouds".

42)a) Less effort will be needed and the effort and the load move in the same direction.

b) The amount of applied effort would not be affected.

43)a) A: Wheel and axle. B: Lever

b) Position X. At position X, the effort is the furthest away from the fulcrum, making the effort used lesser.

c) Screwdriver C. The bigger the wheel, the lesser the effort. The wheel of screwdriver D, so the effort used will be lesser.

44)a) Ramp C. The smaller the angle, the less effort used. The angle of ramp C is the smallest so less effort will be needed.

b) Diagram 2. The pencils acted as rollers to reduce friction.

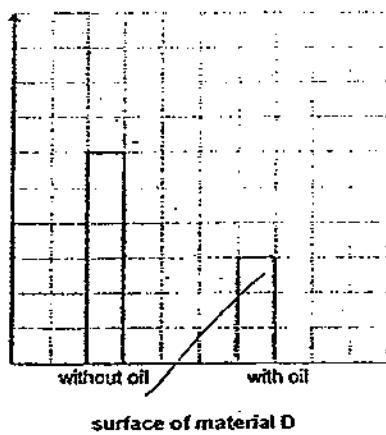
c) Frictional force and gravitational force.

d) Using rollers will reduce friction but using a ramp would cause more friction than the rollers when pushed so the Egyptians used rollers instead.

45)a) The texture of material D is rougher than the rest.

b) The rougher the texture of the material, the more heat gained.

c) applied force (N)



46)a) To find out if the size of the magnet would affect the number of iron pins collected.

b) The size of the magnet does not affect number of iron pins attracted.

c) 3, 4 or 5

SEMESTRAL ASSESSMENT (1) **2016**

Name : _____ Index No: _____ Class: P6 _____

10 May 2016

SCIENCE

Attn: 1h 45min

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

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.

1. Which one of the following characteristic's can be used to differentiate between birds and insects?

P number of legs
Q type of body covering
R method of reproduction

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

2. Which of the following statements is/are true about ferns, mushrooms and mould?

A They only grow in soil.
B They reproduce from spores.
C They are able to make their own food.
D They break down dead and organic matter into simple substances.

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

3. Erwin conducted a study on two animals, P and Q. He recorded his observations in the table below.

A tick (✓) in the box indicates the observation made of the animal.

Observations	Animal P	Animal Q
There are 4 stages in its life cycle.	✓	✓
Its eggs are laid on land.	✓	
Its young do not have wings.	✓	✓

Which one of the following sets identifies animals P and Q correctly?

	Animal P	Animal Q
(1)	butterfly	mosquito
(2)	mosquito	butterfly
(3)	cockroach	butterfly
(4)	mosquito	cockroach

4. Nadia wanted to find out how different factors affect the germination of balsam seeds. She listed the variables below.

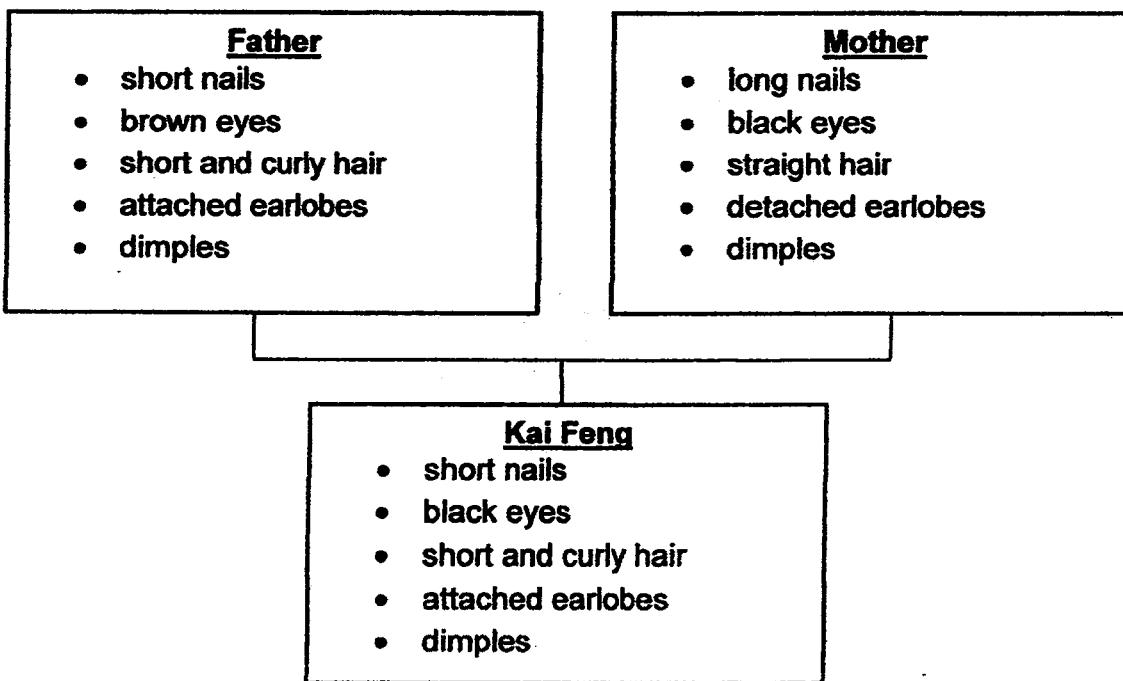
- A location of experiment
- B type of soil in each pot
- C amount of soil in each pot
- D number of balsam seeds in each pot
- E amount of water given to balsam seeds

She made a list of the aim of the experiment and the variables to be kept constant respectively in the table below.

Which one of the following will enable her to conduct a fair the experiment fairly?

	Aim of the experiment	Variables to be kept constant
(1)	To find out if the amount of water affects the germination of balsam seeds.	A, B, D and E only
(2)	To find out if temperature affects the germination of balsam seeds.	B, C, D and E only
(3)	To find out if the presence of light affects the germination of balsam seeds.	B, C and E only
(4)	To find out if the type of soil affects the germination of balsam seeds.	A, D and E only

5. Kai Feng recorded the physical characteristics of his parents and himself as shown below.



Which of the following are traits inherited from his parents?

- (1) length of hair and attached earlobes
- (2) dimples, curly hair and length of nails
- (3) eye colour, dimples and attached earlobes
- (4) length of nails, curly hair and attached earlobes

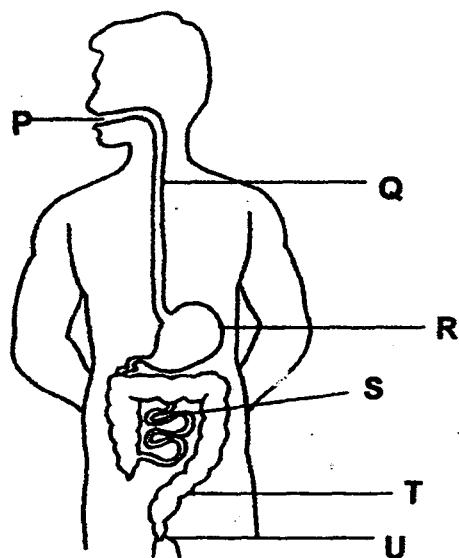
6. Mingli wants to find out whether a fruit which she has picked up is dispersed the same way as the coconut.

Which of the following investigations should she carry out?

- A Find the mass of the fruit by weighing it.
- B Cut open the fruit to check if it has a fibrous husk
- C Place the fruit in a pail of water to see if it can float.
- D Cut open the fruit to check if it contains water and is fleshy.

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

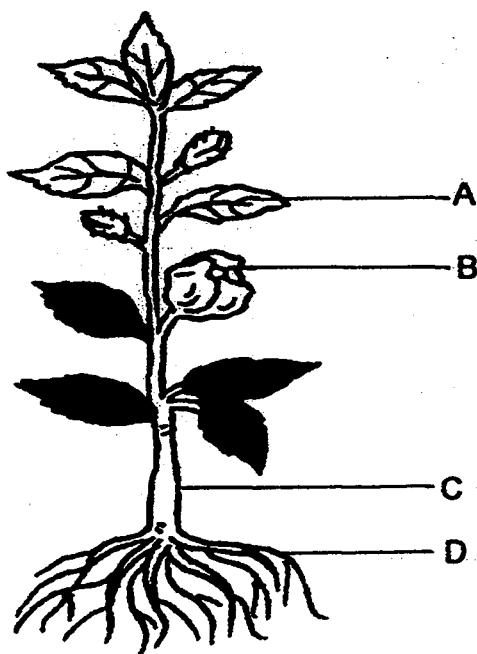
7. The diagram below shows parts of the digestive system of a human.



Which of the following statements about the system above is/are correct?

- A Food is broken into smaller pieces in part P
 - B Digestive juices in part R help to digest the food further.
 - C Digested food in part S is absorbed into the bloodstream.
 - D Parts T and S remove water from the undigested food.
-
- (1) A only
 - (2) B and D only
 - (3) C and D only
 - (4) A, B and C only

8. The diagram below shows a plant.



Four children made statements about the functions of the parts of the plant.

- | | |
|---------|---|
| Peiling | : Part C transports water and dissolved mineral salts. |
| Qiuping | : Part D absorbs water and dissolved mineral salts from the soil. |
| Ray | : Part A makes food for the plant during respiration. |
| Stanley | : Part B attracts animals which help in seed dispersal. |

Whose descriptions of the functions of the parts of the plant are correct?

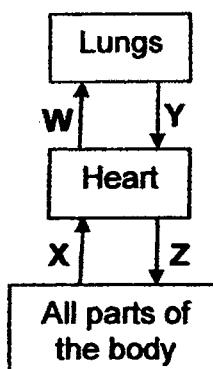
- (1) Peiling and Qiuping only
- (2) Qiuping and Ray only
- (3) Ray and Stanley only
- (4) Peiling, Qiuping and Stanley

9. Ahmad observed two cells under a microscope and he recorded his observations in the table below. A tick (✓) shows the part(s) that the cell has.

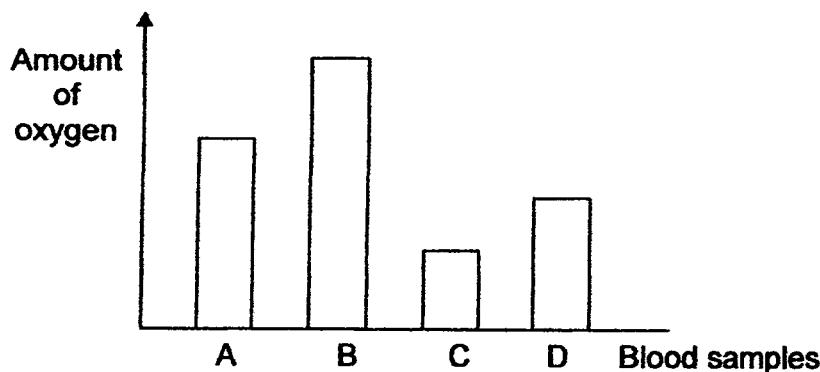
Part of Cell	Cell X	Cell Y
Nucleus	✓	✓
Cell wall		✓
Chloroplast		✓
Cytoplasm	✓	✓
Cell membrane	✓	✓

Which of the following statements is correct?

- (1) Cell X can make food but Cell Y cannot.
 (2) Cell X can trap light energy but Cell Y cannot.
 (3) Cell Y has a regular shape but Cell X does not.
 (4) Cells X and Y could have been taken from the leaves of different plants.
10. The arrows below show the flow of blood in a human body.



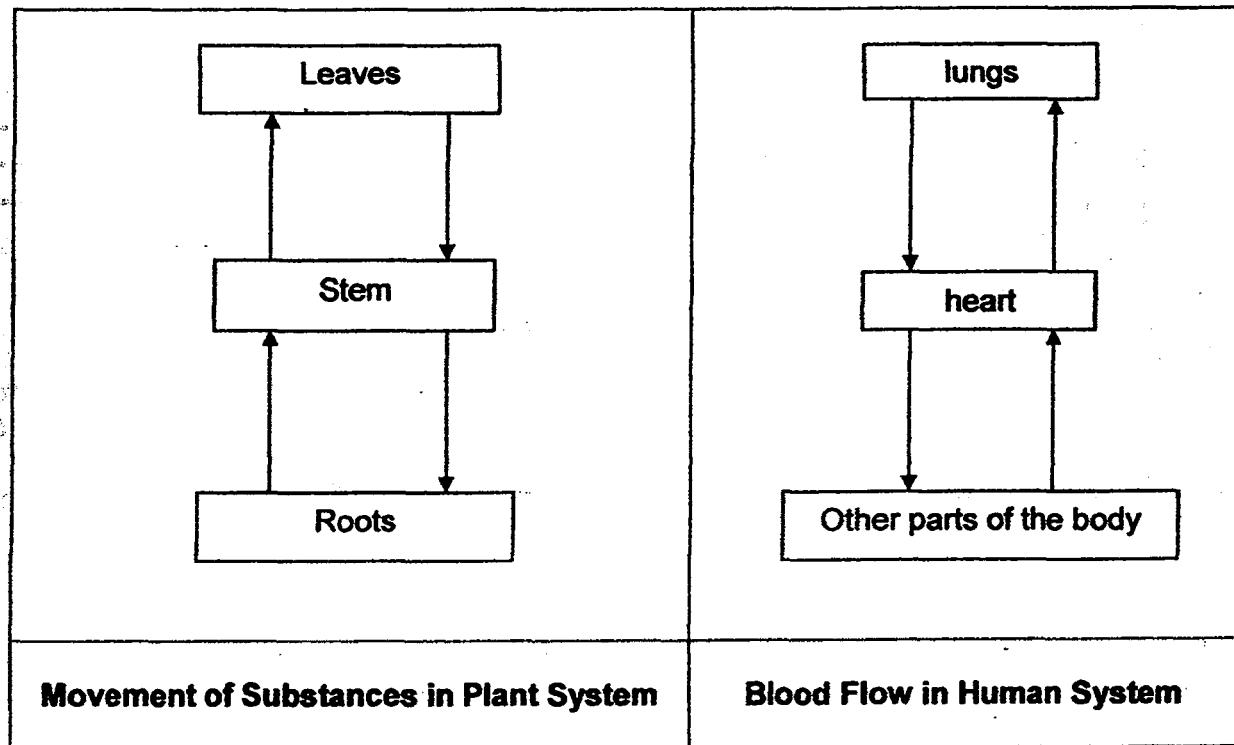
The bar chart below shows the amount of oxygen in the 4 blood samples taken from W, X, Y and Z in the human circulatory system.



Based on the information provided above, where was blood sample B likely to be taken from?

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

11. The diagrams below show the movement of substances in a plant and a human.



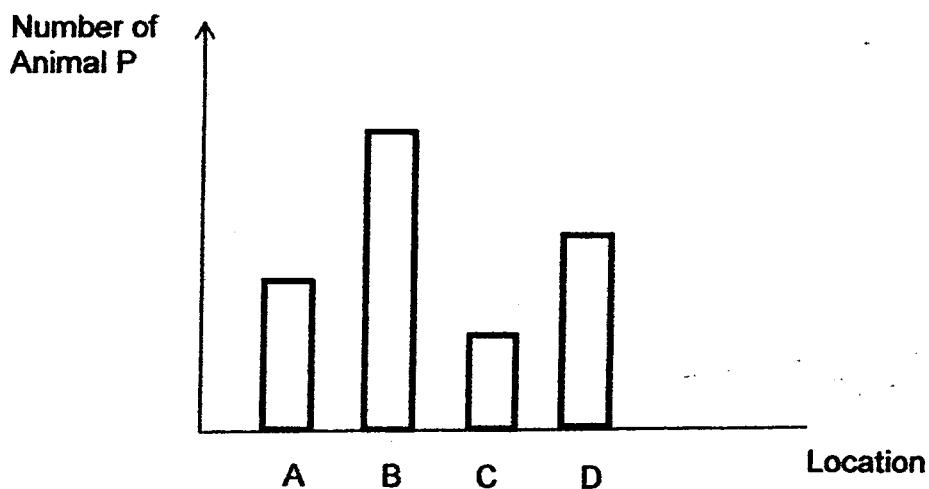
Which of the following statements about the plant and human systems is/are true?

- P Food is being transported from the roots to other parts of the plant.
 - Q The water in the plant moves in one direction only, from the roots to other parts of the plant.
 - R The blood is being pumped by the heart and circulated to all parts of the body.
 - S Blood flows from the lungs to the heart and then back to the lungs again.
- (1) P and Q only
(2) Q and R only
(3) R and S only
(4) P, Q and R only

12. Animal P prefers the following conditions in its surroundings in the following order:

Conditions	
bright and dry	prefers most
bright and damp	
dark and dry	
dark and damp	prefers least

The graph below shows the number of Animal P found in different locations, A, B, C and D, in a garden.

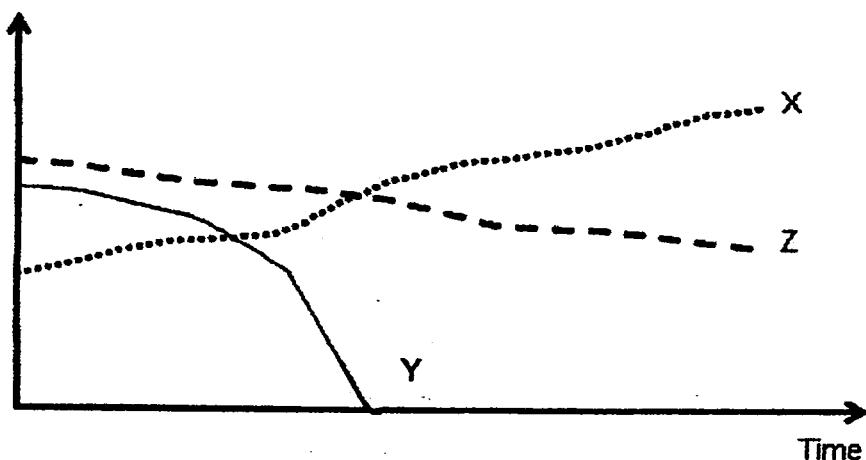


Based on the above information, which one of the following statements is definitely correct?

- (1) Location B is most likely dark and dry.
- (2) The likely condition for location C is dark and damp.
- (3) Location D has the least preferred conditions for Animal P.
- (4) Animal P most likely belongs to the leaf litter community.

13. The graph below shows the changes in the population of animals X, Y and Z in a particular community over a period of time.

Population



Which is/are the possible reason(s) for the change in the populations of animals X, Y and Z over that period of time?

- A Animal X is a predator of Animal Y.
- B Animal Z feed on Animal X only.
- C There was a drought during the period of time.
- D There was a disease outbreak in Animal Y population.

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

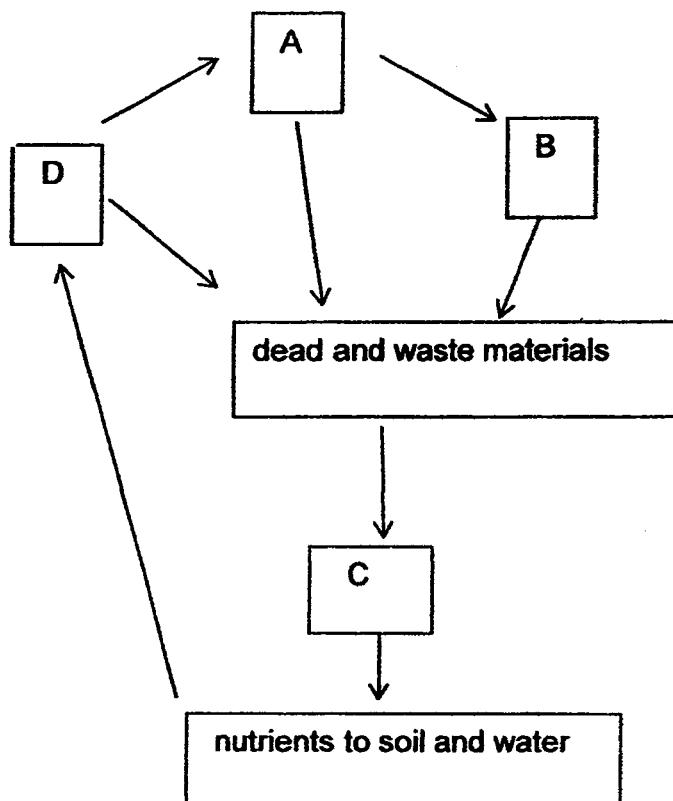
14. Pamela wanted to find out the effects of carbon dioxide on the organisms living in a pond over a period of time. She recorded her observations in the table below.

Concentration of Carbon dioxide (mg/l)	Population size			
	Organism P	Organism Q	Organism R	Organism S
1	60	95	137	105
5	43	72	152	86
10	21	55	174	50
15	6	30	199	27

Based on her observation, which organism is likely to be a food producer?

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

15. The diagram below represents the nutrient cycle. Letters A, B, C and D represent 4 organisms in a community. The arrow (→) represents the direction of flow of energy.

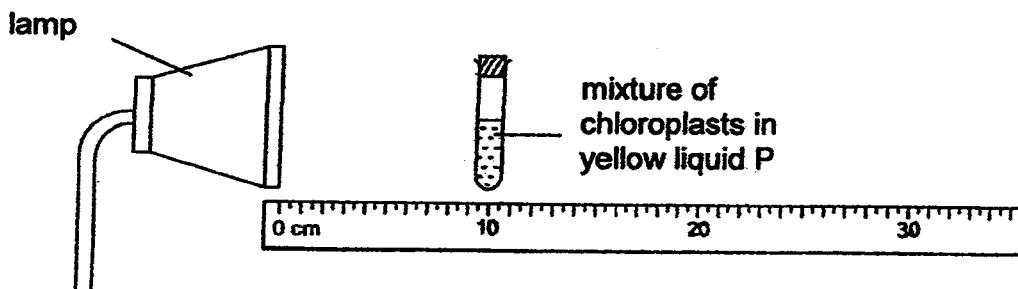


Which one of the following correctly represents A, B, C and D in this community?

	A	B	C	D
(1)	decomposer	producer	animal eater	plant eater
(2)	producer	animal eater	plant eater	decomposer
(3)	plant eater	animal eater	decomposer	producer
(4)	producer	plant eater	animal eater	decomposer

16. Jessica had three tubes, X, Y and Z, containing an equal amount of chloroplasts mixed in the same amount of yellow liquid P. This yellow mixture turns green after photosynthesis has taken place.

Jessica placed tube X at a distance of 10 cm from the lamp.

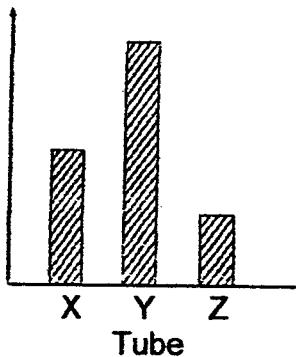


She switched on the lamp in a dark room and recorded the time taken for the mixture to turn green. She repeated the experiment with tubes Y and Z at various distances from the lamp and recorded the results as shown in the table below.

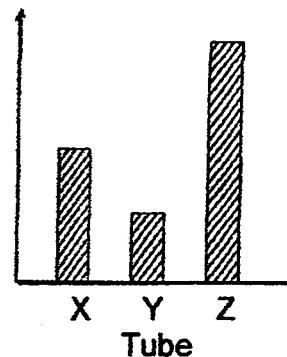
Tubes	Time taken for mixture to turn green (s)
X	17
Y	9
Z	28

Which graph correctly represents the distance tubes X, Y and Z are from the lamp?

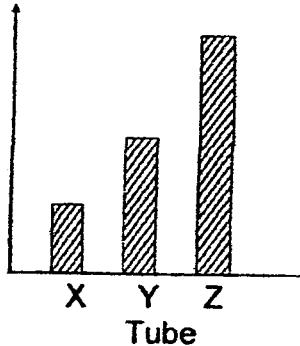
(1) Distance



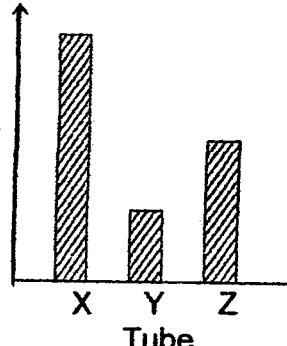
(2) Distance



(3) Distance



(4) Distance



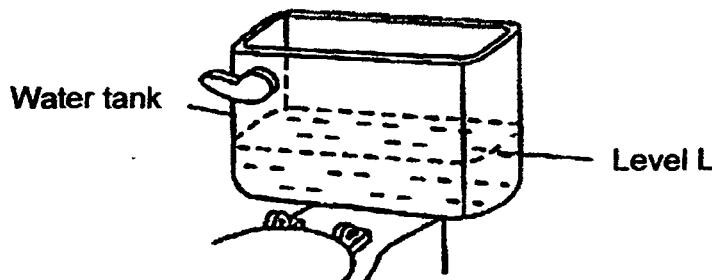
17. Imran wanted to choose a suitable material for making the base of an electric iron.

Which of the following properties of the material must Imran take into consideration when making his choice?

- A heavy
- B magnetic
- C high melting point
- D smooth and cools down quickly when heated.

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

18. Below is a water tank used for flushing a toilet bowl. After each flush, water enters and re-fills the tank. The re-filling will stop when the water reaches the level L mark.

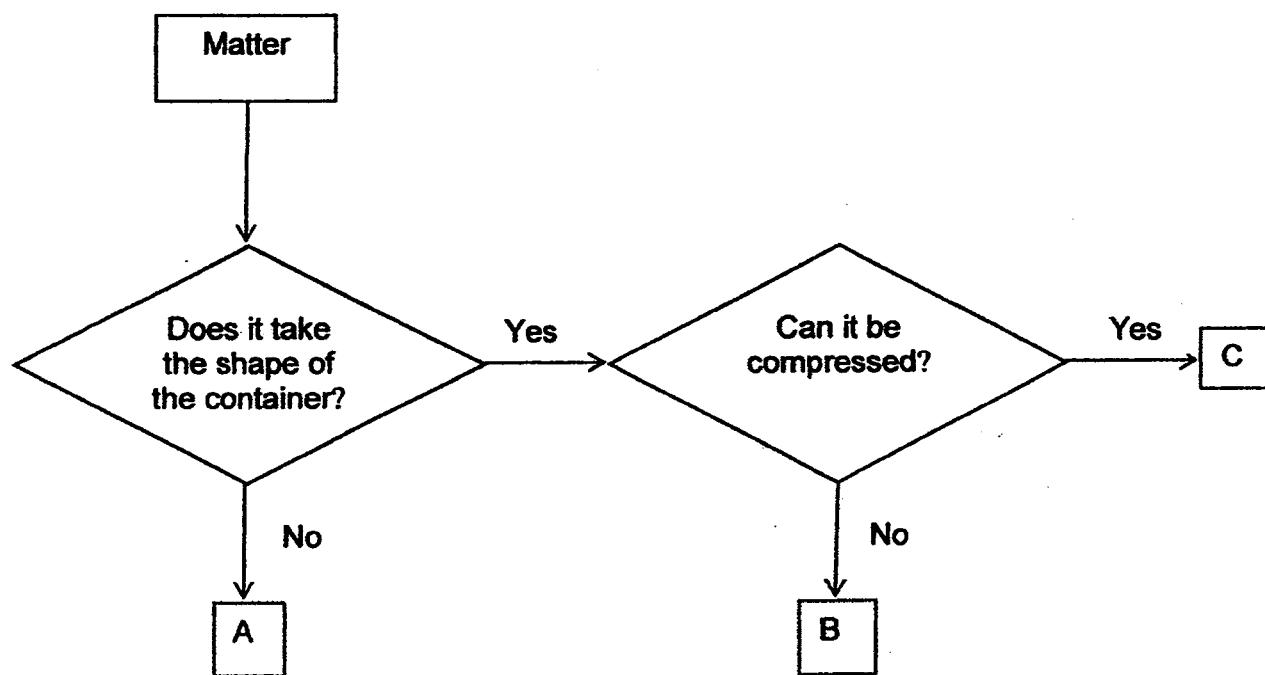


Mabel made use of the properties of matter to use less water to flush the toilet bowl. She put a plastic bottle filled with pebbles into the water tank. Which of the following properties of matter was Mabel's method based on?

- A Solids have mass.
- B Solids occupy space.
- C Liquids have no definite volume.
- D Liquids take the shape of any container.

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

19. The flow chart below identifies the characteristics of three different substances, A, B and C at 39°C.



Which one of the following correctly matches the melting points and boiling points of the three substances A, B and C?

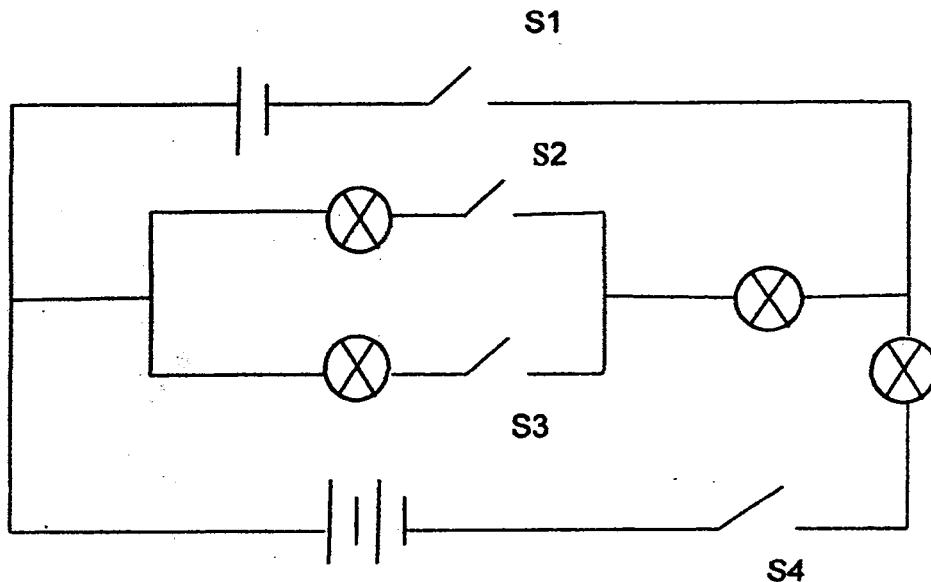
(1)	Substances	Melting point (°C)	Boiling point(°C)
	A	36	45
	B	28	189
	C	5	28

(2)	Substances	Melting point (°C)	Boiling point(°C)
	A	45	87
	B	28	189
	C	5	28

(3)	Substances	Melting point (°C)	Boiling point(°C)
	A	31	200
	B	45	87
	C	20	50

(4)	Substances	Melting point (°C)	Boiling point(°C)
	A	45	87
	B	50	180
	C	5	28

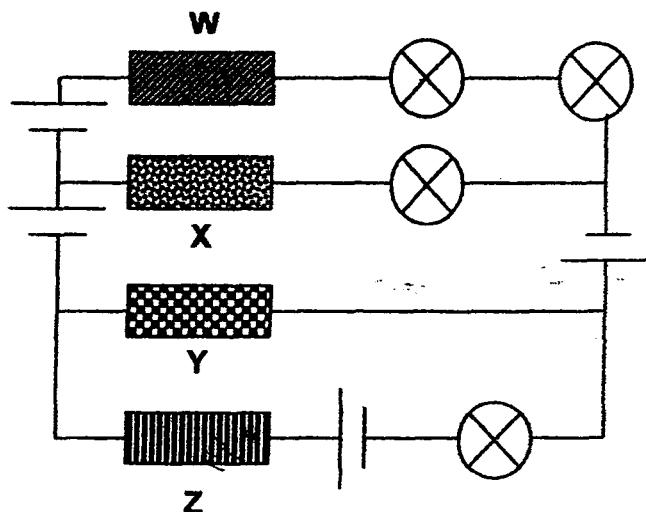
20. In the circuit below, the bulbs and batteries are working properly.



Which one of the following shows the correct number of bulbs lit when the respective switches are closed?

	Switches closed	No of bulbs lit
(1)	S1 & S4	4
(2)	S2 & S3	3
(3)	S2 & S4	4
(4)	S3 & S4	3

21. The circuit below, consists of four similar batteries, four similar bulbs and four bars, W, X, Y, Z, which are made of different materials.



Which one of the following classifications of the 4 materials is correct if only ONE bulb in the circuit is lit?

(1)

Conductors of electricity	Non-conductors of electricity
X	W
Z	Y

(2)

Conductors of electricity	Non-conductors of electricity
X	W
Y	
Z	

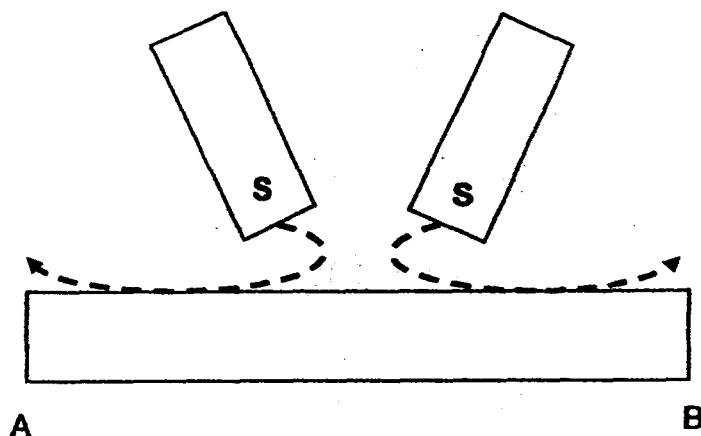
(3)

Conductors of electricity	Non-conductors of electricity
Y	W
Z	X

(4)

Conductors of electricity	Non-conductors of electricity
W	X
Z	Y

22. Serene used the "stroke" method to magnetise an iron bar AB with the South poles of two magnets as shown in the diagram below.



Which one of the following could explain why iron bar AB could not be magnetised by Serene's method?

- (1) Iron bar AB is a magnetic material.
- (2) Both magnets used are of the same poles.
- (3) Both magnets should point in the north-south direction.
- (4) The magnetic force of the magnets was not strong enough.

23. Which of the following statements about forces are correct?

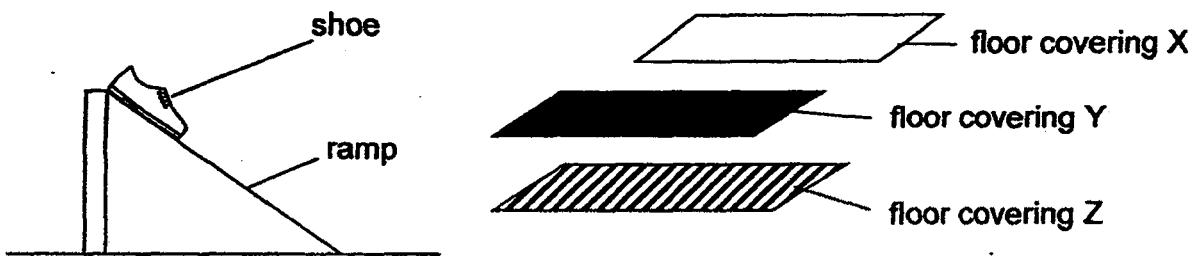
- A The further an object is from the Earth, the smaller is its mass.
 - B An object with a smaller mass has a smaller gravitational force acting on it.
 - C An object which is thrown upwards will eventually fall down due to the pull of gravity.
 - D The amount of force needed to lift an object depends on the size of the object.
- (1) A and B only
 - (2) B and C only
 - (3) C and D only
 - (4) A, B, C only

24. Mingli conducted an experiment to find out which type of floor covering, X, Y or Z, provides the best grip when someone walks on it. She set up the experiment and came up with the following steps:

Step 1: Place one type of floor covering on the ramp.

Step 2: Tilt the ramp at an angle until the shoe started to slide down the ramp.

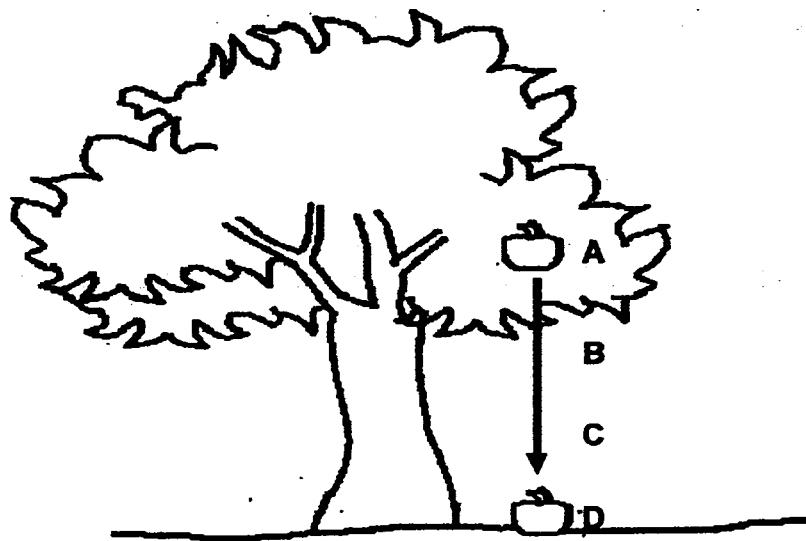
Step 3: Record the height of the ramp at which the shoe started to slide down.



Which of the variables below should be kept the same to ensure a fair test?

- A Type of shoe
 - B Type of floor covering
 - C Initial height of the ramp
 - D Length of ramp

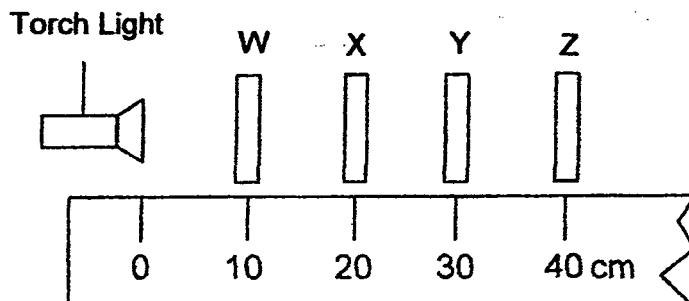
25. The diagram below shows a fruit falling from a tree to the ground.



At which point(s) does/do gravity act on the fruit?

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

26. Daniel set up an experiment using four different objects, wood, tracing paper, clear glass and a cardboard. He arranged the objects in different positions, W, X, Y and Z as shown below.

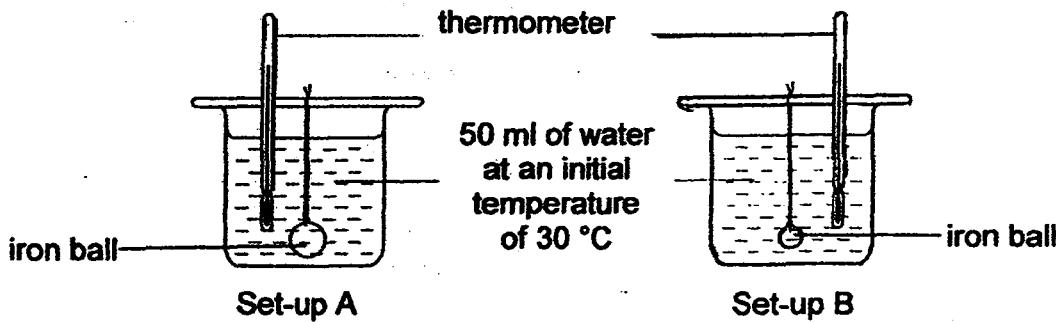


He observed that the distance travelled by the light was 30 cm.

Which one of the following correctly shows the positions of the objects?

	W	X	Y	Z
(1)	wood	tracing paper	clear glass	cardboard
(2)	cardboard	clear glass	tracing paper	wood
(3)	tracing paper	cardboard	wood	clear glass
(4)	clear glass	tracing paper	cardboard	wood

27. Zoe heated up two iron balls of different sizes to 100 °C. She then put each iron ball into Set-up A and Set-up B and measured the rise in the temperature of water as shown below.

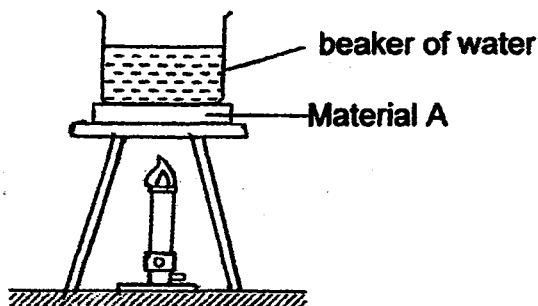


Which of the following statements are correct?

- A The water lost heat to the iron ball.
- B The iron balls expanded after being heated.
- C The iron balls have the same amount of heat at 100 °C.
- D The water in Set-up A has a greater increase in temperature than the water in Set-up B.

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

28. Roy wanted to find out if the thickness of Material A affects the conduction of heat. He set up the experiment below.



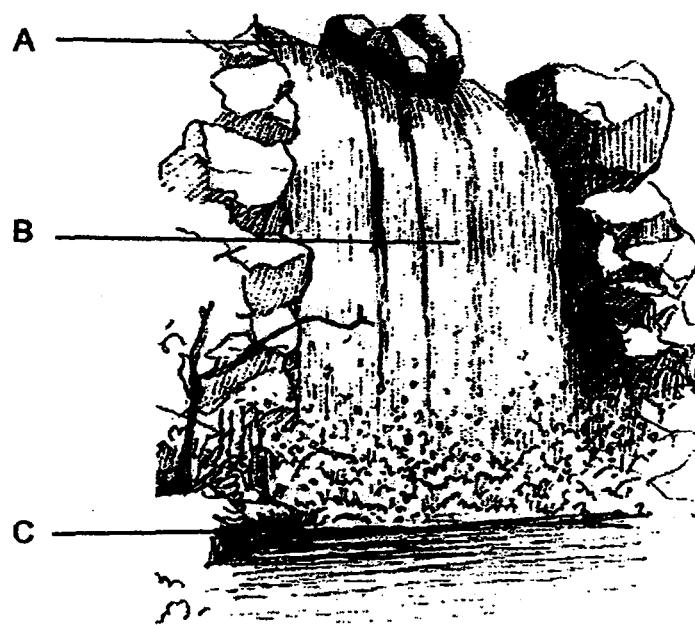
The table below shows the different conditions in Roy's four experiments set-ups, W, X, Y and Z as well as the results.

Variables	Experiment Set-ups			
	W	X	Y	Z
Thickness of material A (cm)	9	8	6	6
Amount of water (ml)	100	120	100	150
Results				
Time taken for water to start boiling (min)	4	3.5	2.5	3.5

Which of the following two experiment set-ups should Roy compare?

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

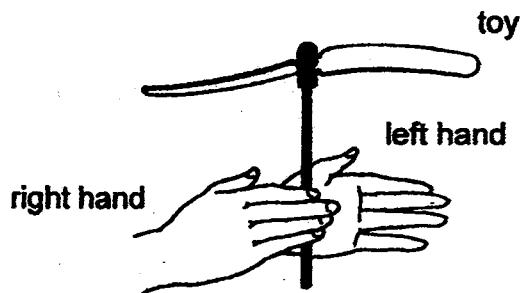
29. The diagram below shows a waterfall.



Which one of the following correctly describes the energy of the water at A, B and C?

	A	B	C
(1)	kinetic energy	potential energy	kinetic energy
(2)	kinetic energy	potential energy and kinetic energy	kinetic energy and heat energy
(3)	potential energy and kinetic energy	potential energy and kinetic energy	kinetic energy and sound energy
(4)	potential energy and kinetic energy	kinetic energy and sound energy	heat energy

30. Ashlyn held a toy between her hands as shown. She rotated the toy by sliding her right hand forward and her left hand backwards before releasing it. The toy flew to a certain height after it left her hands.



She rotated the same toy at the same starting position again. However, the toy flew to a higher height than it did before.

Which one of the following could explain why the toy flew to a higher height?

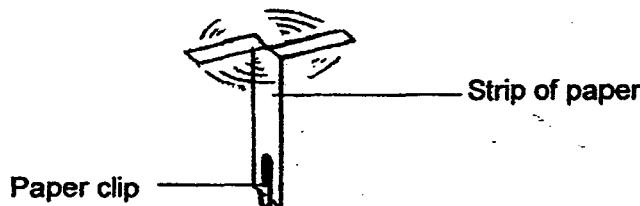
- (1) The weight of the toy was lesser.
- (2) The toy used up more heat energy.
- (3) The kinetic energy of the toy was greater.
- (4) The potential energy of the toy was lesser.

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. Gary made a paper flyer using a strip of paper and a paper clip as shown below.



He wanted to find out if the number of paper clips on the paper flyer would affect the time it took for the paper flyer to fall to the ground.

Below were the steps he took in his experiment.

- Step 1: Cut a piece of paper and fold it into a paper flyer.
- Step 2: Attach one paper clip to the paper flyer.
- Step 3: Drop the paper flyer from a height of 5 metres.

- (a) What did Gary have to measure after dropping the paper flyer? [1]

- (b) Name one variable which Gary must keep constant in his experiment. [1]

- (c) Explain why Gary had to keep the variable in (b) constant. [1]

Score	
3	

32. Two pupils, X and Y, carried out an experiment to investigate how running could affect their pulse rates. They measured their pulse rates before the run. After 15 minutes of running, they measured their pulse rates immediately and again at every 2-minute interval for 10 minutes.

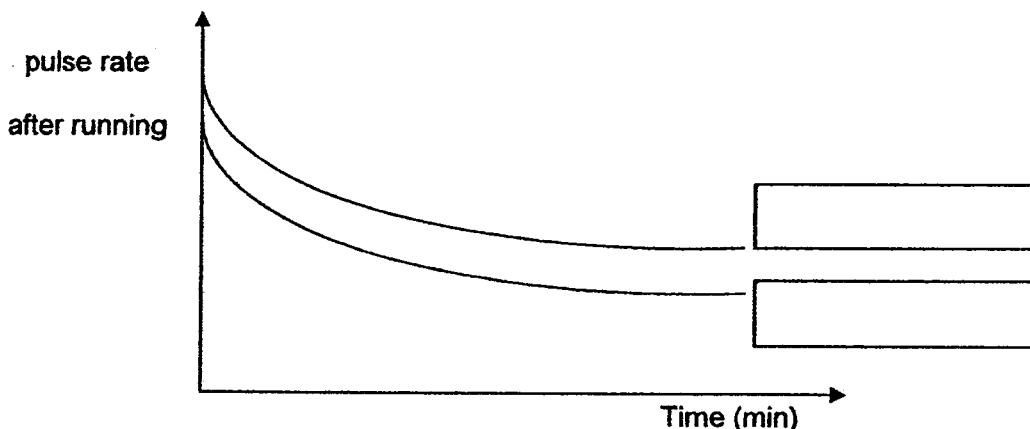
They recorded their pulse rates before and after the run in the table below.

Pupil	pulse rate <u>before</u> running (beats per minute)	Pulse rate <u>after</u> running (beats per minute)					
		Number of minutes					
		0	2	4	6	8	10
X	72	139	119	85	79	75	74
Y	74	135	117	82	76	72	70

- (a) The graph below shows the pupils' pulse rate after running.

Label the graph by filling in the boxes with X and Y.

[1]

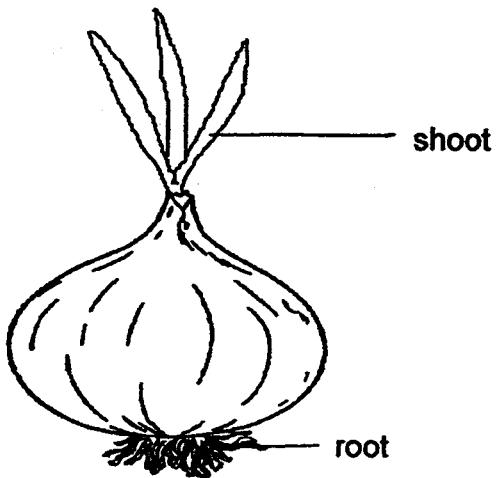


- (b) Explain why the boys' pulse rates increased after exercising.

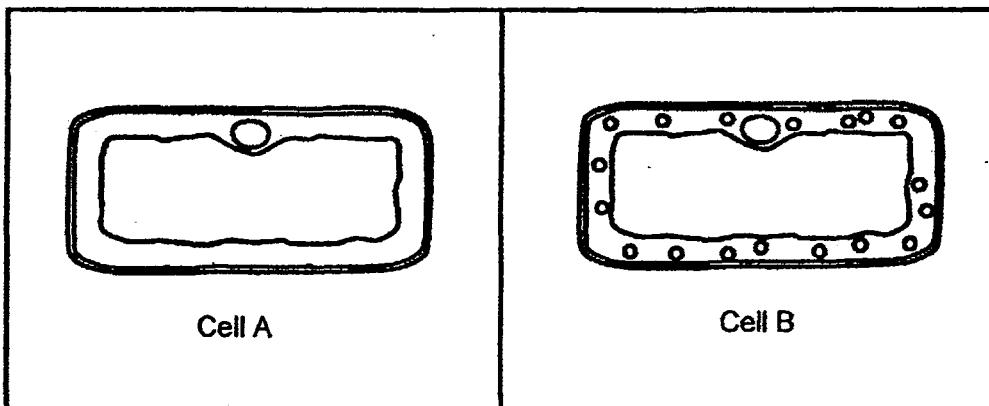
[1]

Score	
	2

33. The diagram below shows a plant.



The following cells, A and B, were taken from two different parts of the plant which are labelled above.



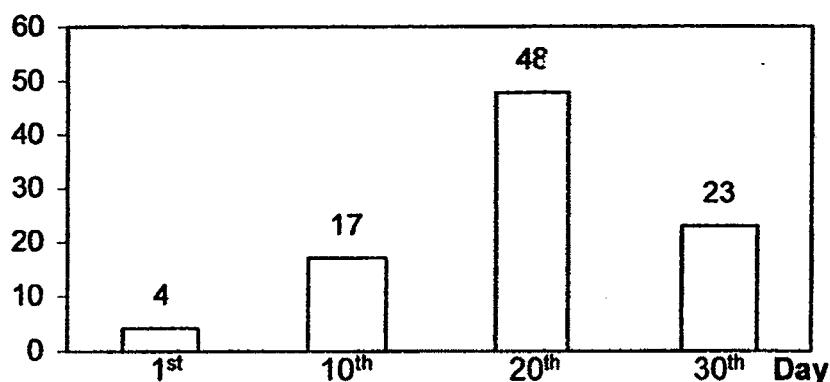
In the table below, identify and write down the cells, A and B, to show where they were taken from the plant and give reasons for your answer. [2]

Cell	Part of plant the cell is taken from	Reason
	shoot	
	root	

Score	
	2

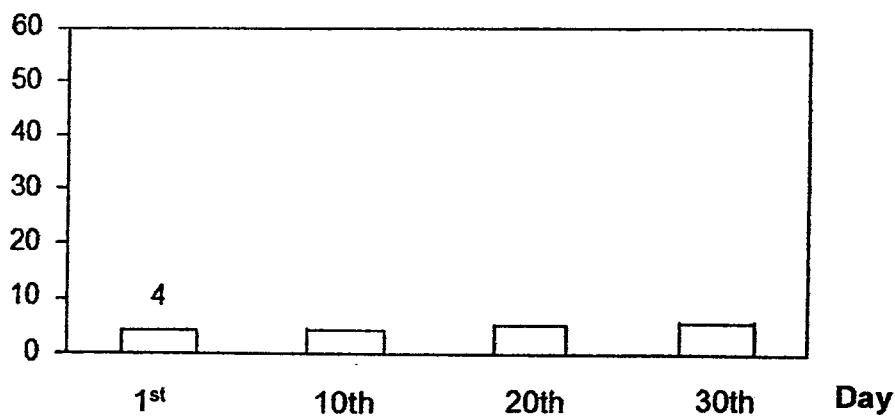
34. Alexis conducted an experiment to study the changes in the population of fruit flies over a period of about one month.
The life cycle of a fruit fly from an egg to an adult is approximately 10 days at room temperature of 30°C.
Alexis placed a piece of banana, a live plant on some damp soil and 4 fruit flies in a closed glass container.
Alexis recorded her observations in the graph below.

Number of Live Fruit Flies



Alexis' classmate, Tom, carried out a similar experiment, but he noticed the number of fruit flies on the 30th day in his experiment still remained the same, as shown in the graph below.

Number of Live Fruit Flies



- (a) Explain why there is a difference in the number of fruit flies in both experiments.

[1]

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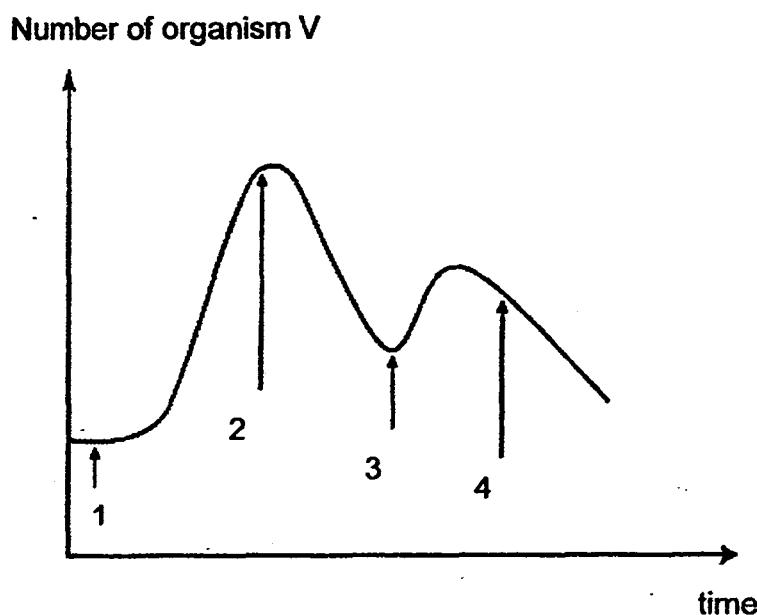
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- (b) Explain clearly how the fruit flies can have a constant supply of water and air in the closed container in both experiments? [2]

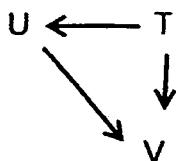
- (c) There was a decrease in the population of fruit flies after the 20th day in ~~both~~ experiments. Give a reason for ~~his~~ ^{her} observation. [1]
Alexis'

Score	
	3

35. The graph below shows the number of organism V in their habitat over a period of time.



- (a) Animal K, which eats both plants and animals, was first introduced to the habitat at point 2.
Complete the food web below to show the food relationships between Animal K with the rest of the organisms T, U and V. [1]



- (b) Based on the food web, which organism(s) K, T, U, V, is/are both a prey and predator? [1]

- (c) Which organism is a food producer? [1]

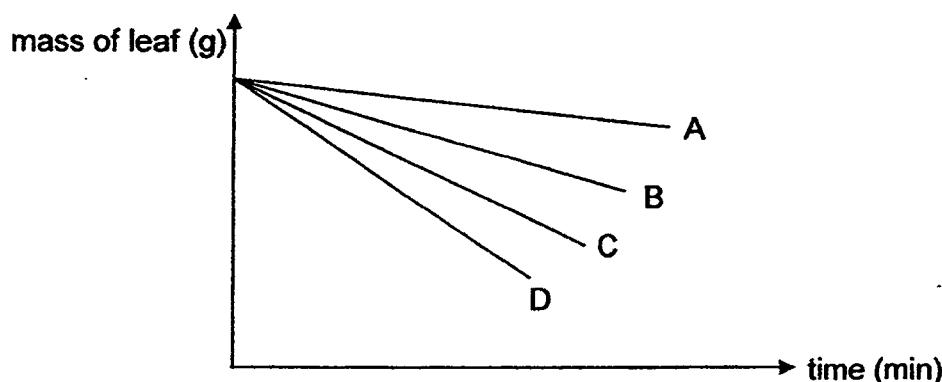
Score	3
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36. Lissy set up an experiment using four similar leaves A, B, C and D of a plant. She coated some surfaces of the leaves on the plant with oil as shown in the table.

A tick (✓) shows the surface of the leaf coated with oil.

Leaf	Coated with oil	
	Upper surface	Lower surface
A	✓	✓
B	✓	
C		✓
D		

The leaves were put in an open area for five hours. Lissy measured the mass of the leaves at regular time intervals. Her results are shown in the graph below.



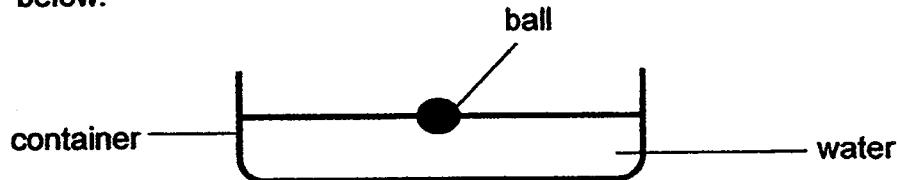
Lissy used her results to compare the difference between the stomata on the upper and lower surface of the leaves.

- (a) What can Lissy conclude about the number of stomata on the surfaces of the leaves of this plant? [1]

- (b) Explain the purpose of Leaf D in the experiment. [1]

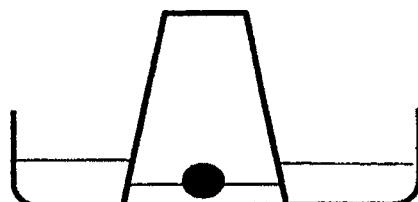
Score	2
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37. Edwin placed a small ball in a container with water as shown in the diagram below.



Next he lowered an empty glass into the container of water with the small ball in the glass.

Below is what Edwin observed.



- (a) State two reasons for his observation.

[2]

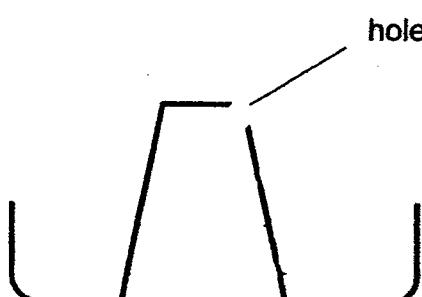
(i) _____

(ii) _____

- (b) Next, he made a hole at the top of the cup.

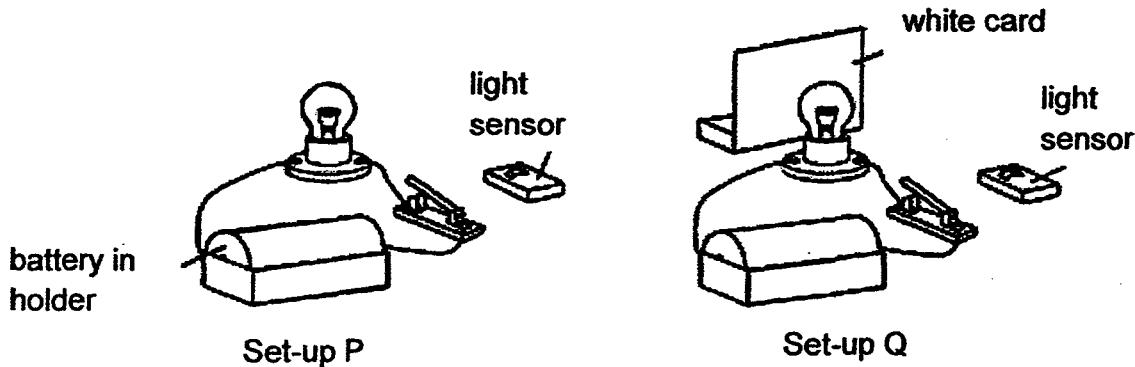
In the diagram below, draw the water level and the ball which Edwin would observe.

[1]

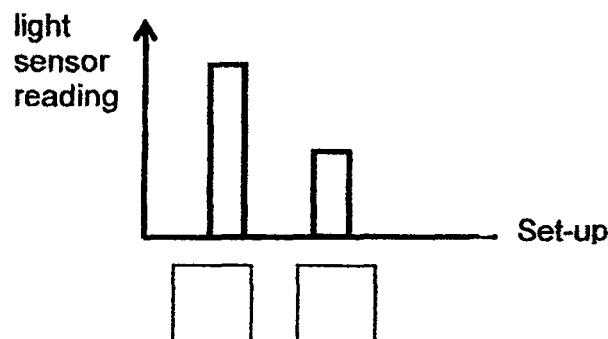


Score	3
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38. Tiffany conducted an experiment using identical bulbs and batteries with the set-ups below. The light sensor is used to measure the brightness.



- (a) Fill in the boxes below with P and Q to show Tiffany's results of the experiment. [1]



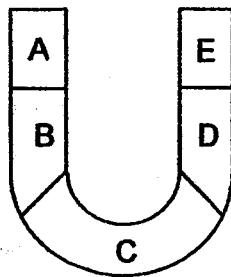
- (b) Explain your answer in (a). [1]

- (c) In another set-up, R, Tiffany connected another identical bulb in series to the bulb in set-up Q.

What will be the reading on the light sensor in set-up R as compared to that in set-up Q? [1]

Score
3

39. Ali and Siti tested the strength of the different parts of a horseshoe magnet. They divided the magnet into five parts, A, B, C, D and E, as shown in the diagram below.



They used the horseshoe magnet to attract iron nails and recorded their results in the tables below.

Ali's results	
Part	Number of iron nails attracted
A	2
B	5
C	3
D	4
E	1

Siti's results	
Part	Number of iron nails attracted
A	4
B	1
C	0
D	1
E	3

- (a) Whose results are more likely to be correct?

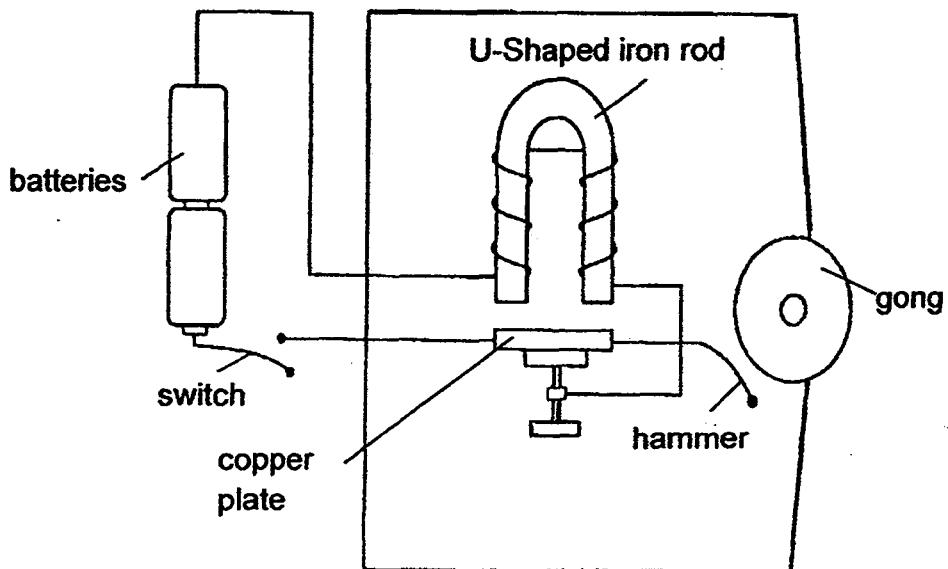
Give a reason for your answer.

[1]

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Ali set up the circuit below.



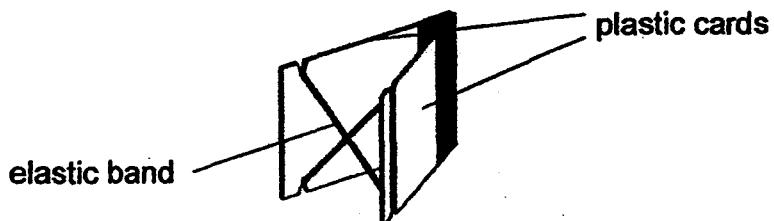
- (b) Would the hammer hit the gong when the switch is closed?
Give a reason for your answer.

[1]

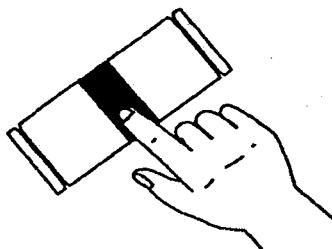
- (c) Suggest one way for the hammer to hit the gong faster if the circuit works.
[1]

Score	2
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40. June made a jumping toy using two pieces of strong plastic cards and an elastic band as shown in the diagram below.



She wanted to find out how the number of elastic bands used to make the toy would affect the height it jumped to. She stretched the elastic band and pressed it down before releasing the toy.



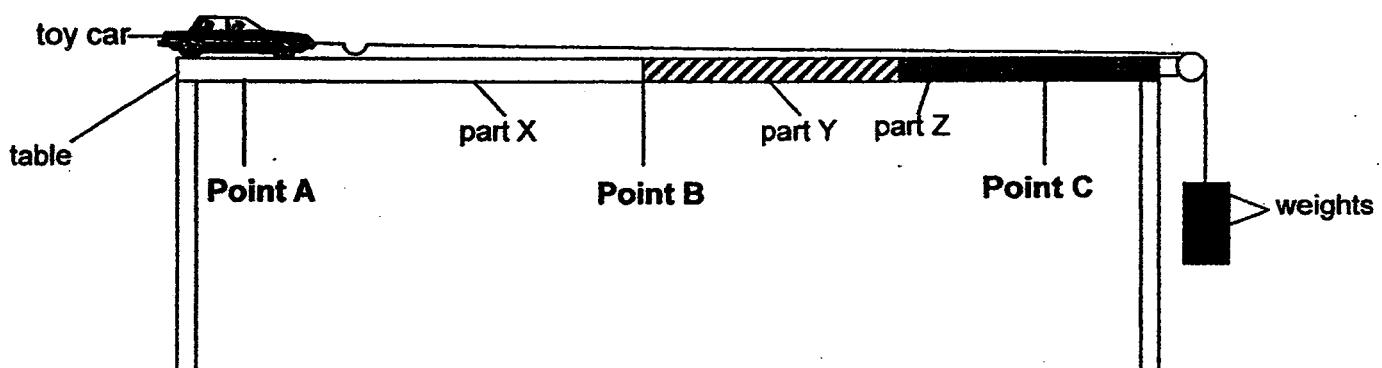
The toy snapped and jumped to a certain height which June measured and recorded in the table below. She repeated the activity by increasing the number of elastic bands used each time.

Number of elastic bands used	Height toy that the jumped (cm)	Put a cross (X)
1	6	
2	9	
3	5	
4	13	
5	16	

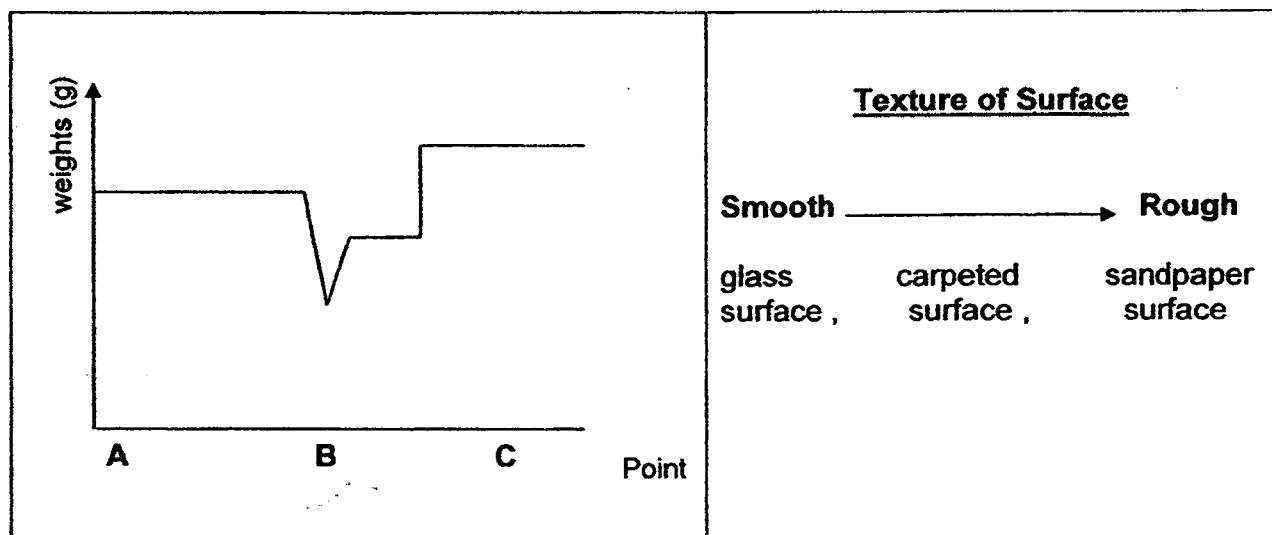
Based on the information above, answer the following questions:

- (a) June recorded ONE of the results wrongly.
Put ONE cross (X) in the box above to indicate the mistake she had made. [1]
- (b) Suggest what June could do to ensure that her results were reliable. [1]

41. Tom set up the experiment below to find out if the type of surface would affect the amount of weights needed to move a toy car. He covered parts X, Y and Z of the table with three different types of surfaces and measured the amount of weights needed to move the toy car from point A to point B and finally to point C.



Tom recorded his observations below.



Based on the information above, answer the following questions:

- (a) Identify the type of surfaces that parts X, Y and Z could have been covered with in the experiment above. [1]

Type of Surface	Parts of the Table
glass	
carpeted	
sandpaper	

continued on next page

Score	1
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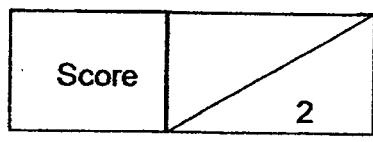
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- (b) Tom discovered that fewer weights were needed to move the toy car when he poured some water on the glass surface. Explain why this was so.

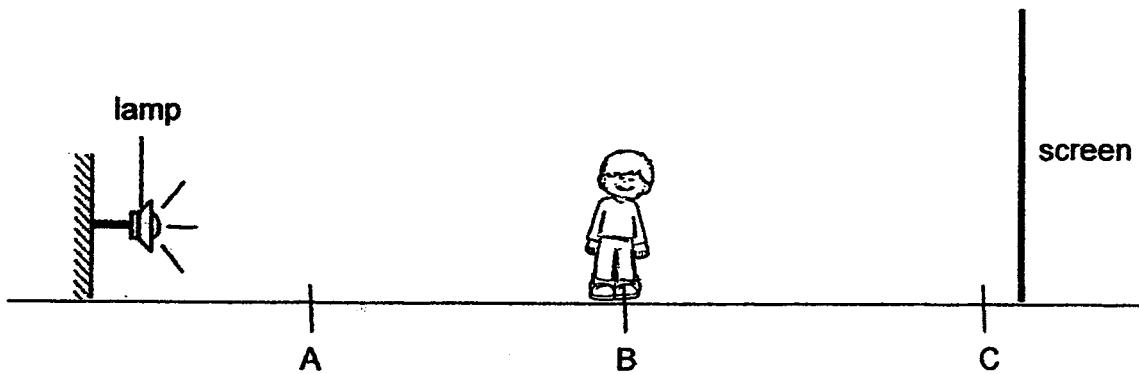
[1]

- (c) Name the force(s) acting on the toy car when it was moving.

[1]



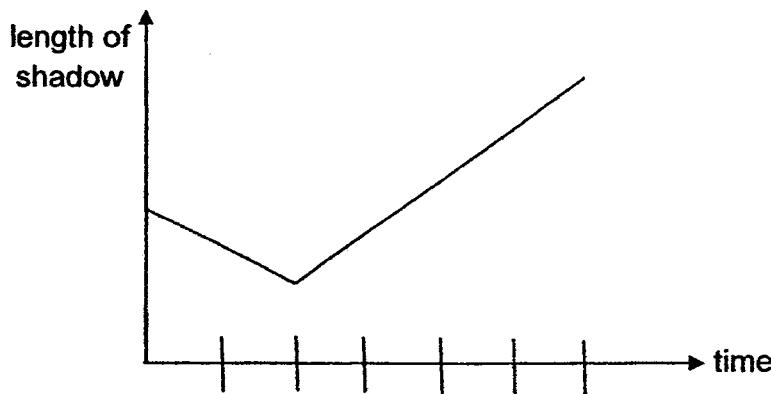
42. Jerry was standing in front of a lamp in a dark room as shown below.



- (a) State a property of light resulting in Jerry's shadow to be formed on the screen? [1]

Jerry was standing at Position B and he walked in a straight line between Positions A and C. The distance between A and B is the same as the distance between B and C.

The graph below shows how the length of Jerry's shadow on the screen changed during his walk.



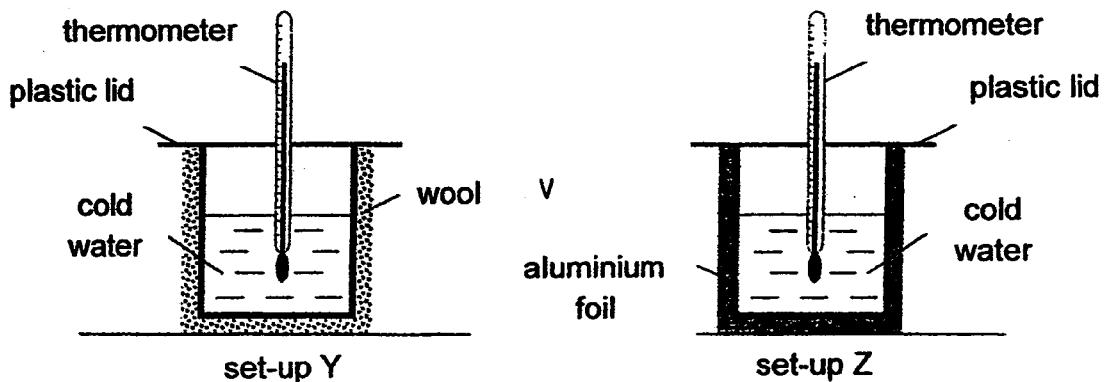
- (b) Fill in the boxes below to show the path Jerry took between Position A and Position C that caused the change in the length of his shadow. [1]

Jerry walked from to and then from to

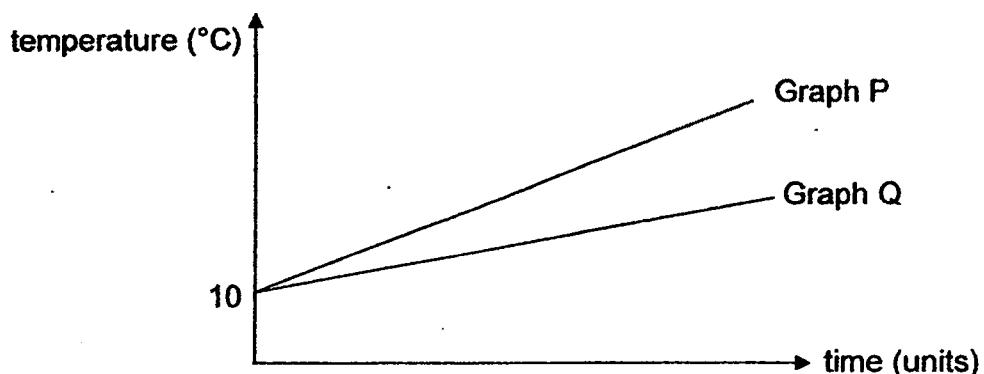
- (c) Explain why Jerry was able to see the lamp in the dark. [1]

Score	3
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43. Amanda conducted an experiment using set-ups Y and Z as shown below. She wrapped a glass beaker with wool and another identical glass beaker with aluminium foil. She filled both beakers with the same volume of cold water at 10 °C.



Amanda measured the temperature of the water at different times and plotted her results in the graph shown.



- (a) Based on the graph above, what is the relationship between the temperature of the water and time? [1]

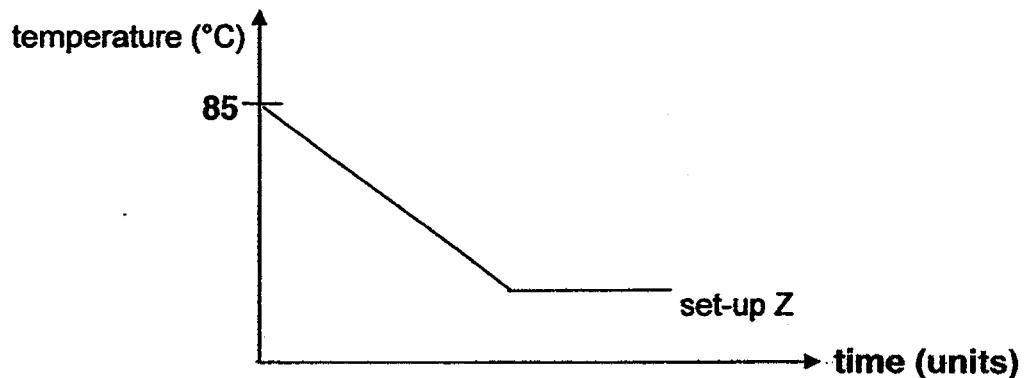
- (b) Which graph, P or Q, shows the change in the temperature of water in set-up Z after some time? Give a reason for your answer. [1]

Score	
2	

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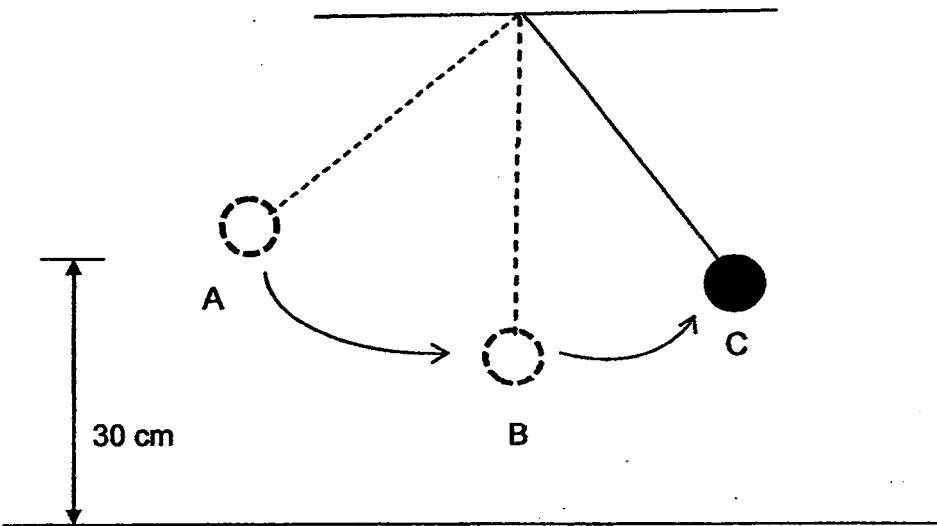
- (c) Next, Amanda used hot water at 85°C in the glass beakers of set-ups Y and Z instead.

Complete the graph below to show the change in temperature of the water in set-up Y. Label your graph set-up Y. [1]



Score	
1	

44. A metal ball which is tied to a string swings from A to B and then to C as shown below.



- (a) Describe the energy change for the metal ball as it moved from position A to B and then to C. [2]

- (b) At which position, A, B or C, did the ball have the greatest kinetic energy and the least gravitational potential energy? [1]

The ball had the greatest kinetic energy at : _____

The ball had the least gravitational potential energy at : _____

- (c) Why was the height of the ball at C less than 30 cm? [1]

- END OF PAPER -

ANSWER KEY

YEAR : **2016**
LEVEL : **PRIMARY 6**
SCHOOL : **RAFFLES GIRLS' PRIMARY**
SUBJECT : **SCIENCE**
TERM : **SA1**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	1	2	3	2	4	1	3	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	2	2	3	3	2	1	1	2	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	2	2	4	4	4	3	2	3	3

Booklet B

Q31a The amount of time the paper flyer took to reach the ground.

Q31b The type of paper clip used.

Q31c This is to ensure that the time taken for the paper flyer to reach the ground was solely due to the number of paper clips used and not any other reason.

Q32a

 X

 Y

Q32b This is because when they exercise they need more energy. Thus their hearts beat at a faster rate to pump oxygen and digested food to the other cells of the body faster to release more energy. Resulting in the boys' pulse rates increase.

Q33

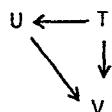
Cell	Part of plant the cell is taken from	Reason
B	shoot	Cell B contains chloroplast which enables the shoot to trap light energy and photosynthesise.
A	root	Cell A does not contain chloroplast, indicating that it is a root cell since the roots do not need to trap light energy to photosynthesise, as it is not exposed to light.

Q34a The fruit flies Alexis used in her experiment were male and female and they reproduced. However, the flies in Tom's experiment were all female/male, thus they did not reproduce.

Q34b The live plant would take in carbon dioxide and release oxygen during photosynthesis, oxygen is needed by the fruit flies for respiration, thus there will be a constant supply of air. The live plant would absorb the water in the soil and the water is lost through the stomata. The water in the damp soil would gain heat from the warmer surrounding and evaporate into water vapour. The water vapour would rise and lose heat and condense into water droplets when it comes in contact with the cooler inner surface of the glass.

Q34c There was insufficient food and food is needed for the survival of the fruit flies.

Q35a



Q35b Organism V.

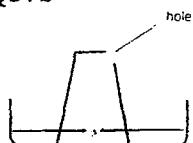
Q35c Organism T.

Q36a There is more stomata on the upper surface of the leaf.

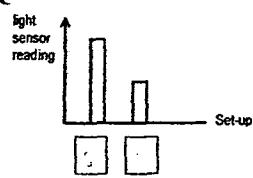
Q36b It acts as a control set-up to ensure that any changes in mass is due to the oil clogging the stomata.

Q37a (i) There was air which occupies space in the glass and could not escape.
(ii) Air can be compressed so a little water could enter.

Q37b



Q38a



Q38b Light emitted from the light bulb in Set-up Q is reflected onto the white card and into the light sensor, thus more light is reflected into the light sensor in Q.

Q38c The reading on the light sensor in Set-up R would be lower than in Set-up Q.

Q39a Siti's results. The magnetic strength of a magnet is strongest at its poles at the end of a magnet in her results, part A and E which were the ends of the magnet and the poles of the magnet attracted the greatest number of iron nails.

Q39b No. Copper is a non-magnetic material. Thus when the switch was closed, electricity flowed through the circuit and electromagnetised the iron rod, the copper plate would not be attracted to the electromagnet and the hammer would not hit the gong.

Q39c Add more batteries in series to the circuit.

Q40a

3	5	X
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Q40b She could repeat the experiment 3 more times for every experiment and find the average results for each experiment.

Q41a

Type of Surface	Parts of the Table
glass	Y
carpeted	X
sandpaper	Z

Q41b Water acted as a lubricant and reduced the friction between the wheels of the toy car and the glass surface, thus less force was needed to overcome the frictional force between the wheels of the toy car and glass surface.

Q41c Frictional force and gravitational force.

Q42a Light travels in a straight line.

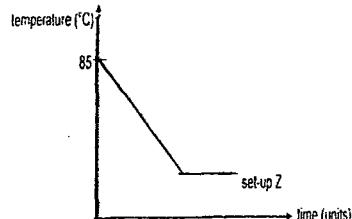
Q42b Jerry walked from B to C and then from C to A.

Q42c Light from the lamp entered Jerry's eyes.

Q43a As the time increases, the temperature of the water increases.

Q43b Graph P. Aluminium is a good conductor of heat and will conduct heat from the warmer surrounding to the cold water at a faster rate. The temperature of the water in Graph P rose at a faster rate, indicating that the water gained heat at a faster rate.

Q43c



Q44a From point A to B, gravitational potential energy is converted to kinetic energy. From point B to C, kinetic energy is converted to gravitational potential energy.

Q44b The ball had the greatest kinetic energy at : B
The ball had the least gravitational potential energy at : B

Q44c Some of the kinetic energy of the ball had been converted into heat and sound energy and the ball did not have enough kinetic energy to reach 30cm again.





RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2014

Name : _____ Index No: _____ Class: P 6 _____

21 Aug 2014 **SCIENCE** Attn: 1h 45min

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

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.

1. The table below shows how some living things are classified into groups P and Q.

Group P	Group Q
Hibiscus plant Bird's nest fern	Bread mould Bracket fungus

Which one of the following correctly describes groups P and Q?

	Group P	Group Q
(1)	Flowering plants	Non-flowering plants
(2)	Reproduce from seeds	Reproduce from spores
(3)	Do not have chlorophyll	Have chlorophyll
(4)	Able to make their own food	Unable to make their own food

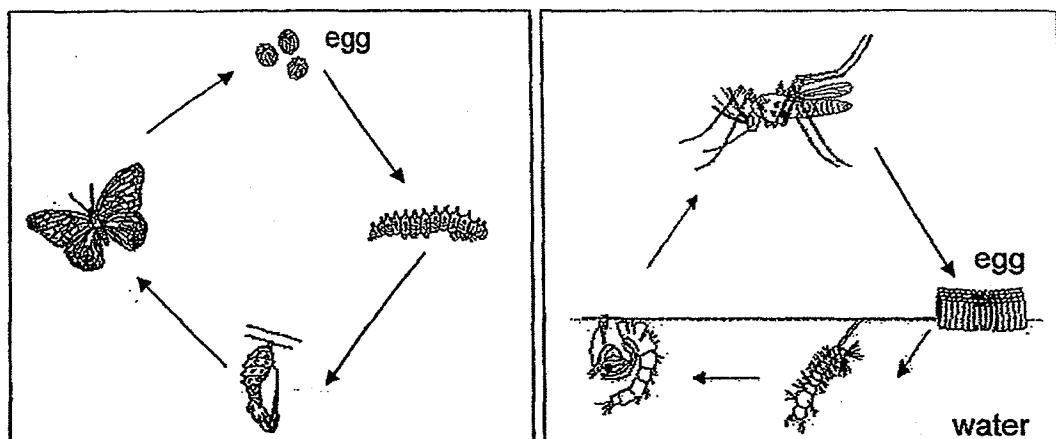
2. Rachel wanted to find out if the type of soil affects the growth of seedlings. She prepared five pots of seedlings of the same type, as shown in the table below.

	Pot P	Pot Q	Pot R	Pot S	Pot T
Number of seedlings planted	10	10	10	20	20
Type of soil	Clayey	Clayey	Garden	Garden	Clayey
Amount of water given to seedlings daily (ml)	20	10	20	10	20
Average height of seedlings at beginning of experiment (cm)	20	15	20	20	15

Which of the following setups should she use to ensure a fair test?

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

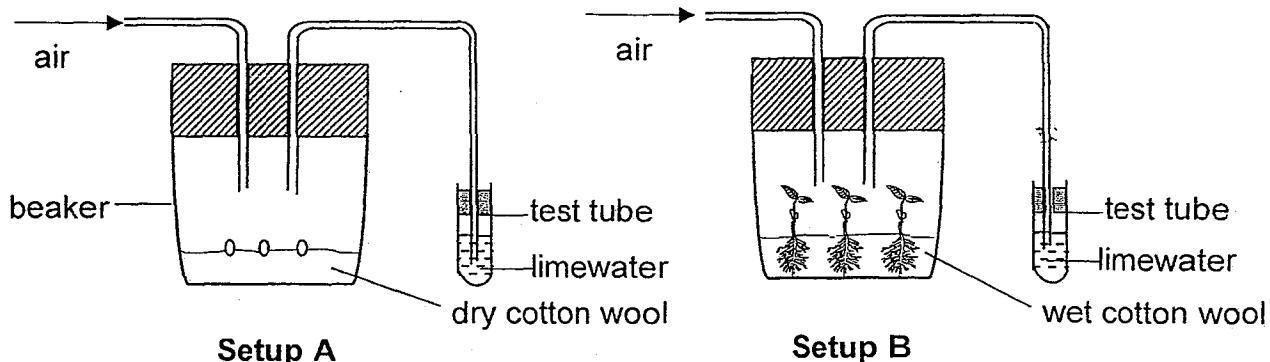
3. The diagrams below show the life cycles of two animals.



Based on the diagrams above, in what way(s) is/are the life cycles of the two animals similar?

- A Each life cycle has an egg stage.
 - B The young does not resemble the adult.
 - C The animal spends at least one stage of its life cycle in water.
- (1) A only
 - (2) A and B only
 - (3) B and C only
 - (4) A, B and C

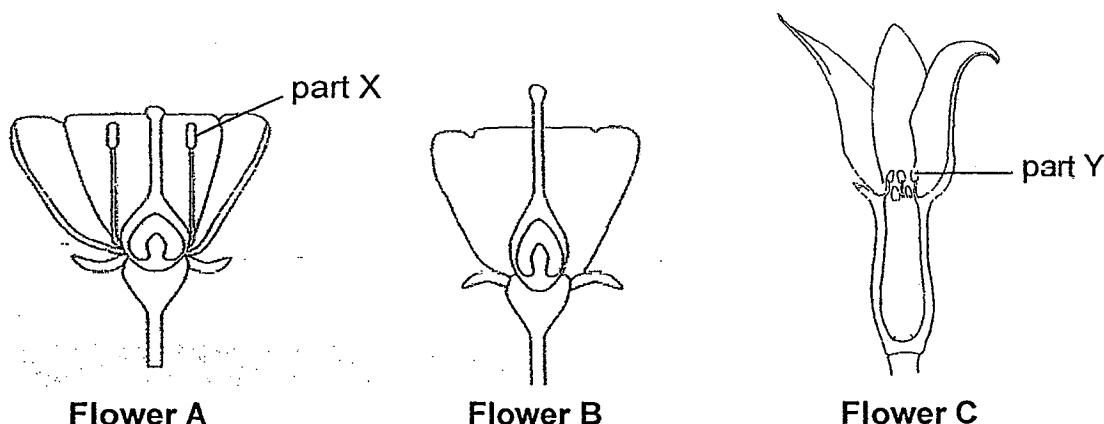
4. Jill set up an experiment as shown in the diagrams below. In setup A, she placed three seeds from plant X in the beaker. In setup B, she placed three seedlings with young leaves from plant X in the beaker.



Both setups were placed in a dark cupboard for two hours.
Limewater will turn chalky in the presence of carbon dioxide.

What will Jill most likely observe after ^{two} five hours?

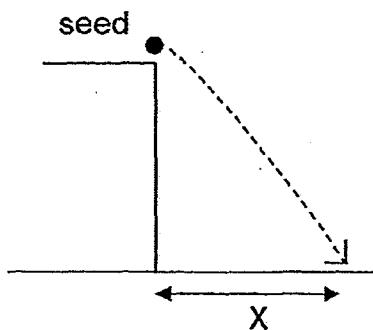
- (1) The seedlings in setup B will wither and die.
(2) Only the limewater in setup B will turn chalky.
(3) The limewater in both setups, A and B, will remain clear.
(4) The seeds in setup A will germinate and young leaves will appear.
5. The diagrams below show the cross-sections of flowers A, B and C. Flowers A and B are of the same species. Part X and part Y carry out the same function.



Which one of the following statements is correct?

- (1) Flower C can be fertilised.
(2) Only flower B can develop into fruit.
(3) Pollen grain can be transferred from flower A to flower B.
(4) Each fruit developed from flowers A and B will have many seeds.

6. Elsa has four different types of fruits, P, Q, R and S. She dropped them at the same time from 5th storey of her school building.



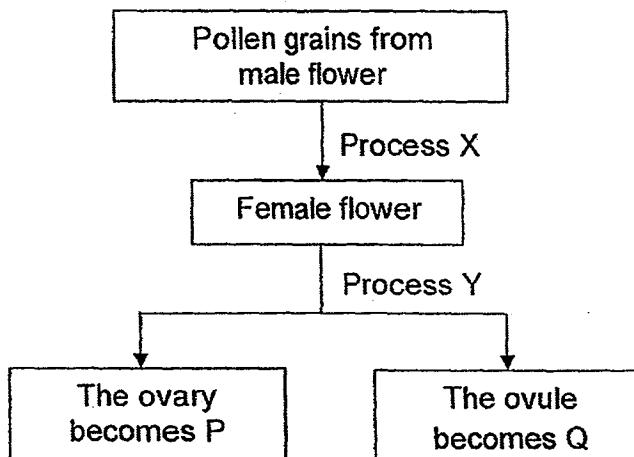
Elsa recorded the distance, X, that each seed travelled in the air before reaching the ground in the table below.

Type of seed	P	Q	R	S
X (cm)	50	250	60	700

Which one of the following statements is definitely true?

- (1) Fruits P and R must be dispersed by water.
- (2) Fruit P will travel further than fruit S in a more windy condition.
- (3) Fruit Q stayed in the air for a shorter period of time than fruit R.
- (4) Fruit S stayed in the air for the longest period of time before reaching the ground.

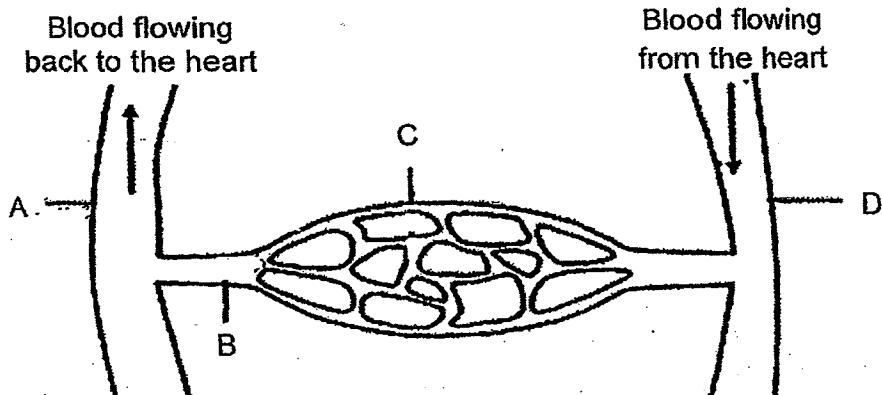
7. Study the diagram below.



Which one of the following correctly identifies X, Y, P and Q?

	Processes		Parts of the plant	
	X	Y	P	Q
(1)	fertilisation	pollination	seed	fruit
(2)	pollination	fertilisation	fruit	seed
(3)	pollination	fertilisation	seed	fruit
(4)	fertilisation	pollination	fruit	seed

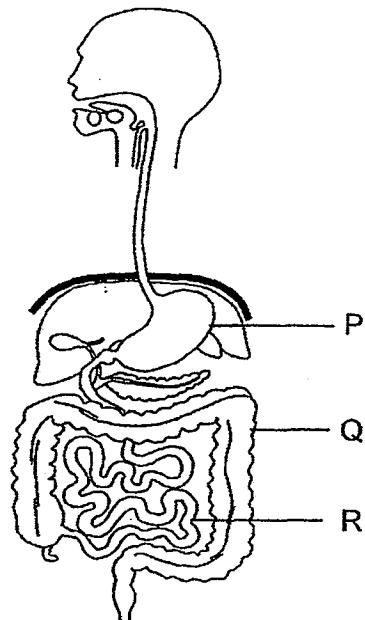
8. The diagram below shows some blood vessels in a human circulatory system. Blood samples were taken from different blood vessels A, B, C and D. The direction of blood flow is represented by the arrows in the diagram.



Which one of the following comparisons is correct?

- (1) Blood sample in A has more oxygen than that in C.
- (2) Blood sample in D has more oxygen than that in B.
- (3) Blood sample in C has more carbon dioxide than that in B.
- (4) Blood sample in D has the greatest amount of carbon dioxide.

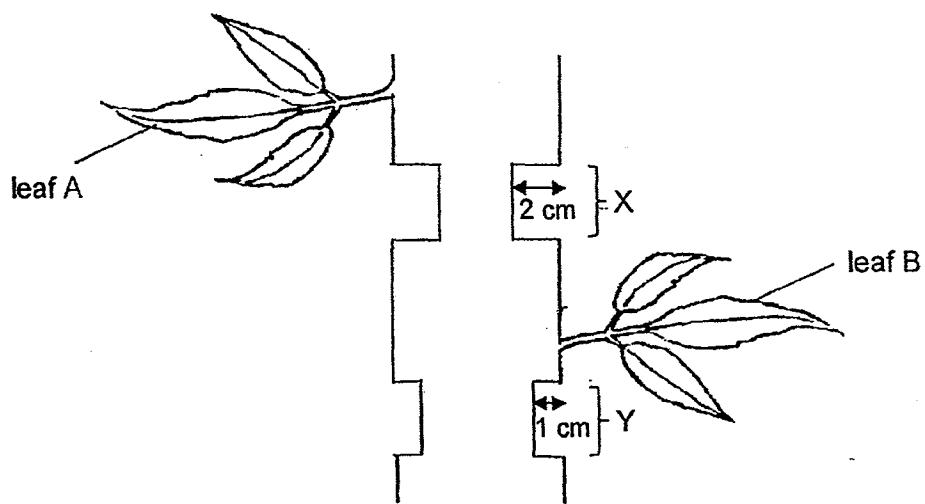
9. The diagram below shows the human digestive system.



Which one of the following correctly indicates the change in the amount of undigested food in parts P, Q and R, of the above digestive system?

	P	Q	R
(1)	Increases	Increases	No change
(2)	Decreases	Decreases	No change
(3)	Increases	No change	Increases
(4)	Decreases	No change	Decreases

10. Ahmad used a knife to cut away the outer ring of the stem at part X and part Y of a plant as shown below.



After 5 days, Ahmad noticed that leaf A withered while leaf B survived.

Which of the following statements is/are correct?

- A The water-carrying tubes at Y were removed.
 - B The water-carrying tubes at X were removed.
 - C The food-carrying tubes at both X and Y were still present.
-
- (1) B only
 - (2) A and B only
 - (3) B and C only
 - (4) A, B and C

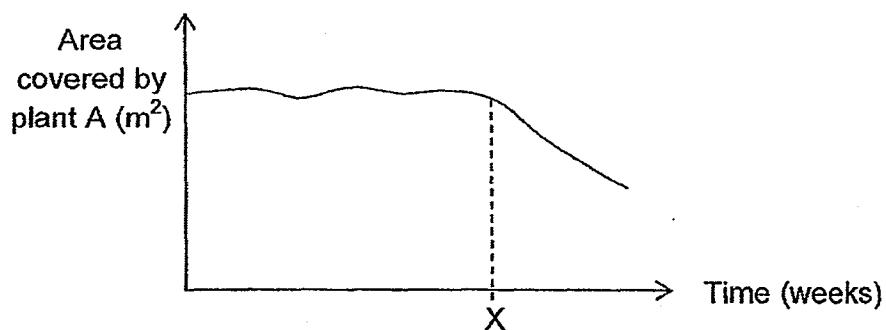
11. Aisha observed two cells under a microscope. She recorded the cell parts that are present in each cell in the table below. A tick (✓) indicates the presence of the cell part.

Cell Parts	Cell P	Cell Q
Cell wall	✓	
Cell membrane	✓	✓
Chloroplast		
Cytoplasm	✓	✓
Nucleus	✓	✓

Which one of the following statements is correct?

- (1) Cell Q could be a root cell.
- (2) Cell P could be a cheek cell.
- (3) Only cell P can carry out photosynthesis.
- (4) Cell P is a plant cell while cell Q is an animal cell.

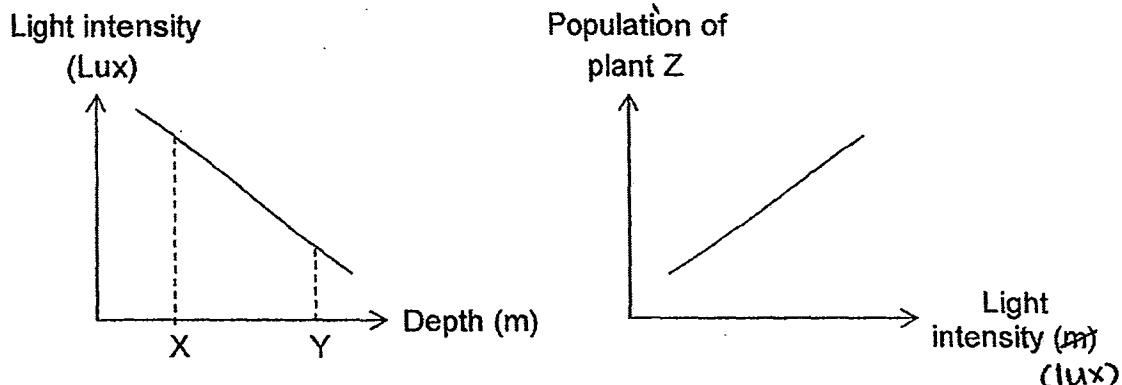
12. The graph below shows the change in the area covered by plant A in a garden. Animal B was introduced into the garden community at point X.



Which one of the following best explains the change in the area covered by plant A?

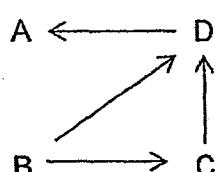
- (1) Animal B feeds on plant A.
- (2) Plant A provides shelter for animal B.
- (3) Plant A and animal B compete with each other for food.
- (4) The waste matter of animal B helps plant A to grow better.

13. The graphs below show how light intensity changes with depth of the pond and how the population of plant Z changes with light intensity. Plant Z is a submerged plant found in the pond.



Based on the information above, which of the following statement(s) is/are most likely true?

- A The depth of the pond does not affect the intensity of light.
 - B More plant Z will be found in part X than in part Y of the pond.
 - C Part X of the pond will receive more light than part Y of the pond.
- (1) B only
 (2) A and B only
 (3) B and C only
 (4) A, B and C
14. The diagram below shows a food web involving organisms A, B, C and D in a certain habitat.



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

	A	B	C	D
(1)	carnivore	producer	herbivore	omnivore
(2)	herbivore	producer	carnivore	omnivore
(3)	producer	carnivore	herbivore	carnivore
(4)	producer	omnivore	carnivore	herbivore

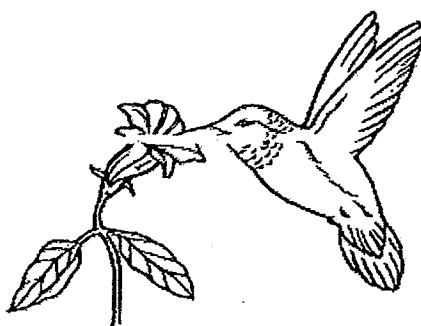
15. The diagram below shows a food chain.

$$X \longrightarrow Y \longrightarrow Z$$

Which of the following would cause a decrease in population of organism Y?

- A Hunters kill most of organisms Z.
 - B Disease outbreak which kills all organisms X.
 - C Introduction of new organisms which organisms Y feed on.
- (1) A only
 - (2) B only
 - (3) A and C only
 - (4) B and C only

16. The diagram below shows bird Q and flower A.



Bird Q has several adaptations to enhance its survival. It depends on flower A and some insects for food. During cold weather, its body temperature drops. During non-breeding months, its reproductive organs shrink.

Which one of the following explanations of the adaptations of bird Q is most likely to be incorrect?

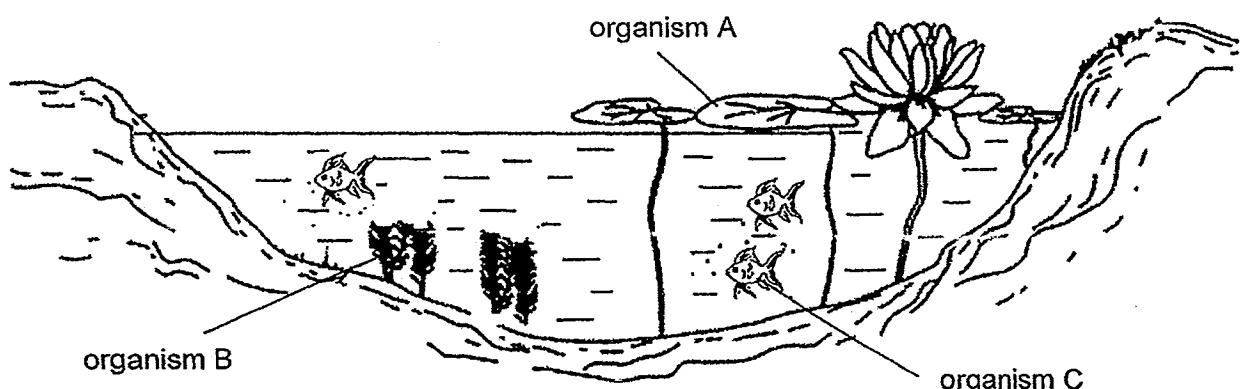
- (1) It has a long and narrow beak to reach for nectar deep in the flowers.
- (2) It feeds on more than one type of food source to ensure sufficient food supply.
- (3) Its reproductive organs shrink during non-breeding months to decrease its body mass for flight.
- (4) Its body temperature drops during cold weather to reduce heat gain by its body from the surrounding.

17. Reforestation is the planting of trees on lands where there used to be forests.

Which of the following are most likely benefits resulting from reforestation?

- A More soil would be eroded.
 - B More oxygen would be released into the air.
 - C More carbon dioxide would be absorbed from the air.
 - D More food and shelter would be available for animals.
- (1) A and C only
 - (2) B and C only
 - (3) A, B and D only
 - (4) B, C and D only

18. The diagram below shows three organisms, A, B and C in a pond at the beginning of February. Organism C feeds on organisms A and B.



By the end of April, the population of organisms A and C had increased rapidly. However, the population of organism B decreased and eventually died out.

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

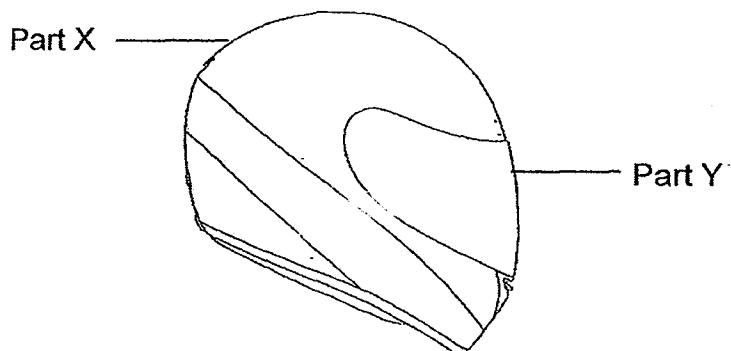
- A Organism C gets its energy from organisms A and B.
 - B There is a transfer of energy from organism B to organisms A and C, causing it to die.
 - C When organism B eventually died out, there will be no transfer of energy among the other organisms in the pond.
- (1) A only
 - (2) C only
 - (3) A and B only
 - (4) B and C only

19. The table below shows some information on the properties of materials J, K, L, and M.

A tick (✓) indicates the presence of the property.

Material	Flexible	Waterproof	Does not break easily	Does not allow light to pass through
J		✓	✓	✓
K		✓		
L	✓			✓
M		✓	✓	

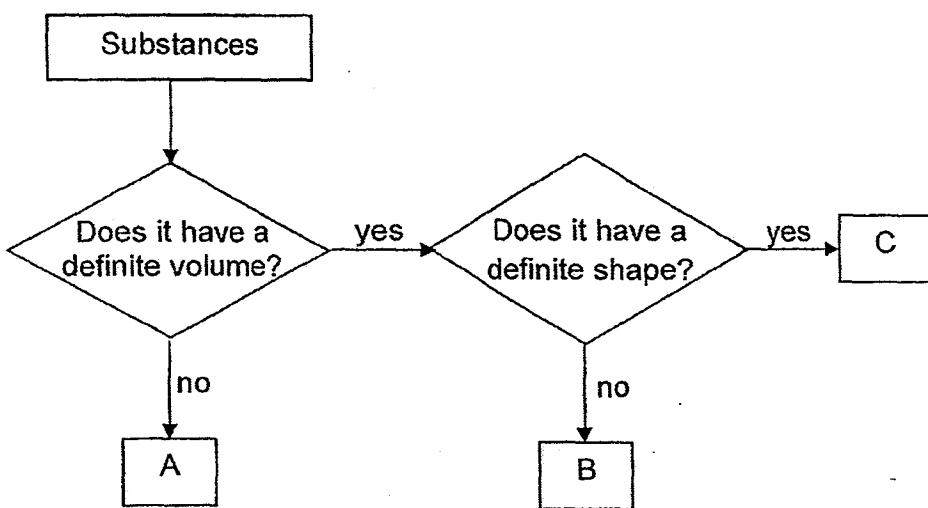
The helmet shown below is used by motorcycle riders to protect their heads from impact. Part X is the outer-casing of the helmet and Part Y is the clear face shield.



Which one of the following shows the most suitable materials for making parts X and Y of the helmet?

	Part X	Part Y
(1)	J	M
(2)	M	J
(3)	L	K
(4)	K	L

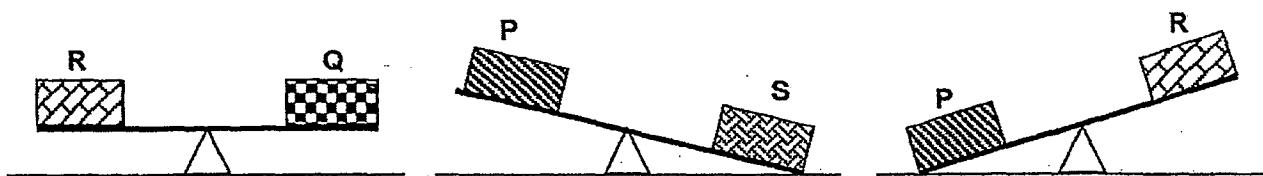
20. The flow chart below shows how some substances are classified.



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

	A	B	C
(1)	oxygen	eraser	oil
(2)	nitrogen	glass	oxygen
(3)	cloud	milk	ruler
(4)	steam	water	eraser

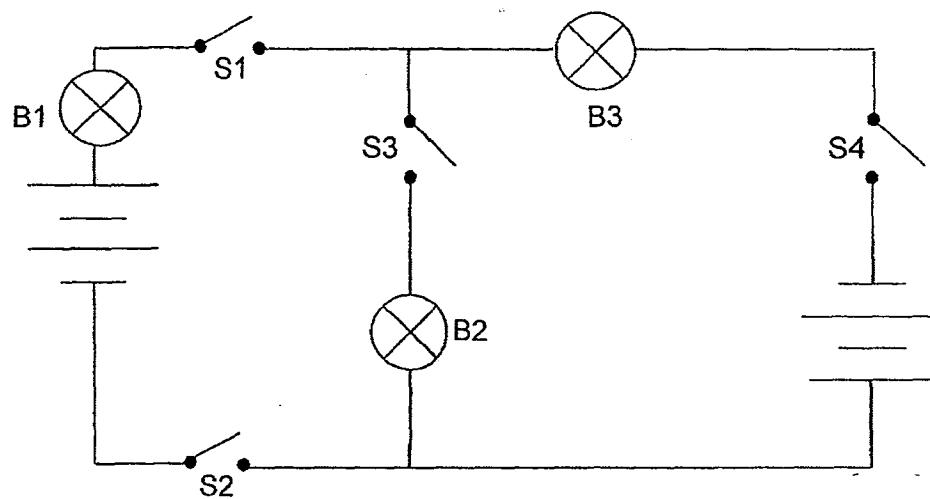
21. Matthew found four objects, P, Q, R and S, of identical shape and volume but each made of a different material. He compared the masses of the objects as shown in the diagrams below.



Which one of the following observations made by Matthew is definitely true?

- (1) Object R is the lightest.
- (2) Object S is the heaviest.
- (3) Object Q is lighter than object R.
- (4) Object Q is heavier than object P.

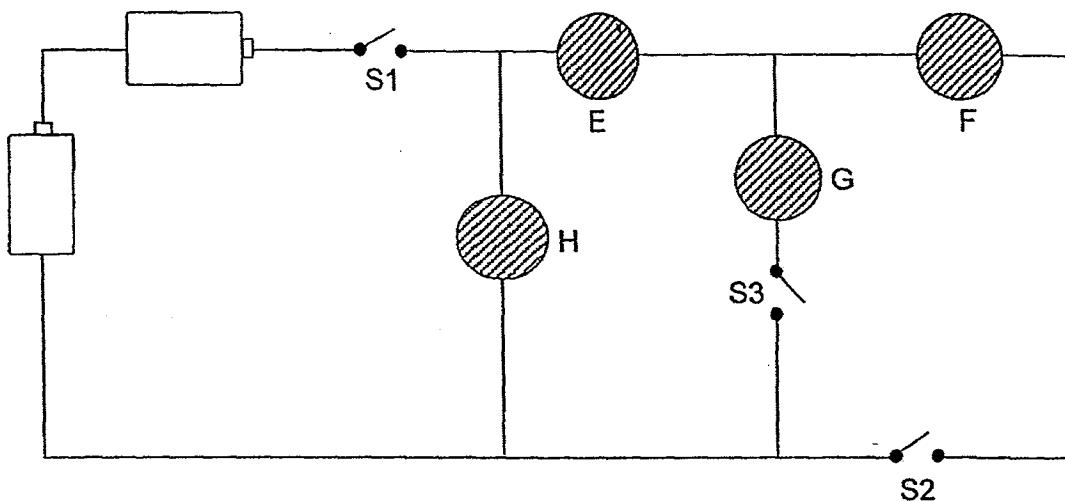
22. The circuit below consists of four identical batteries, four identical switches, S1, S2, S3 and S4, and three identical bulbs, B1, B2 and B3.



Which of the switches should be open or close such that only bulbs B1 and B3 light up?

	S1	S2	S3	S4
(1)	close	open	close	close
(2)	close	close	open	close
(3)	open	close	close	open
(4)	open	open	close	close

23. Paul constructed a circuit using wires, two identical batteries, three identical switches, S₁, S₂ and S₃, and four objects, E, F, G and H, as shown in the diagram below. One of the objects is a light bulb.



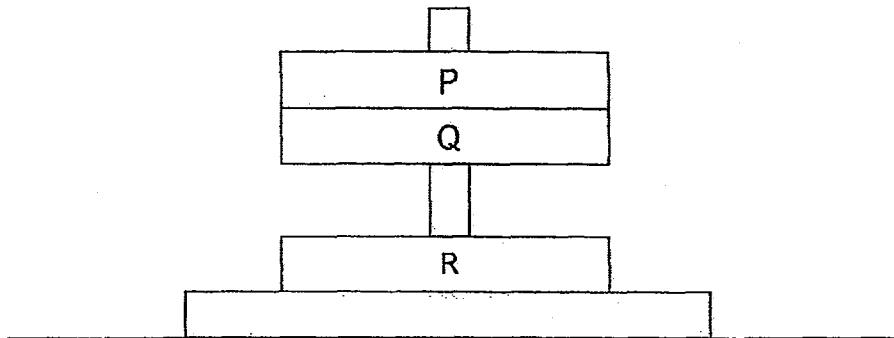
Paul made the following observations when he closed certain switches.

Switches that are closed	Observations
S ₁ and S ₃	Bulb lighted up
S ₁ and S ₂	Bulb did not light up

Which one of the following correctly represents objects, E, F, G and H?

	E	F	G	H
(1)	iron ball	glass marble	bulb	rubber ball
(2)	bulb	rubber ball	iron ball	glass marble
(3)	glass marble	iron ball	rubber ball	bulb
(4)	rubber ball	iron ball	bulb	glass marble

24. In the setup below, P, Q and R are three metal rings which pass through a smooth plastic rod.



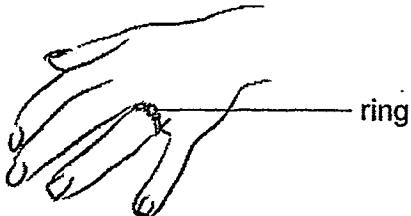
Based on the above observation, three pupils made the following conclusions:

- Sandra : Rings Q and R are definitely magnets.
Andrea : Unlike poles of rings Q and R are facing each other.
Mary : Rings P, Q and R are definitely made of magnetic materials.

Which of these pupils has/have made the correct conclusion(s)?

- (1) Sandra only
(2) Andrea and Mary only
(3) Andrea and Sandra only
(4) Sandra and Mary only

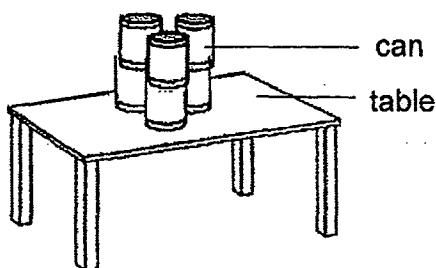
25. Mrs Wong wanted to remove the ring which was stuck on her finger of her left hand.



Which of the following methods will allow Mrs Wong to use her right hand to remove the ring from her finger easily?

- A Immerse the left hand into a basin of cold water to allow the ring to contract.
B Pour some oil onto the finger with the ring to increase friction between the finger and the ring.
C Pour some liquid soap onto the finger with the ring to reduce friction between the finger and the ring.
- (1) B only
(2) C only
(3) A and B only
(4) A and C only

26. Nathan used a slingshot to hit the cans as shown in the diagram below.

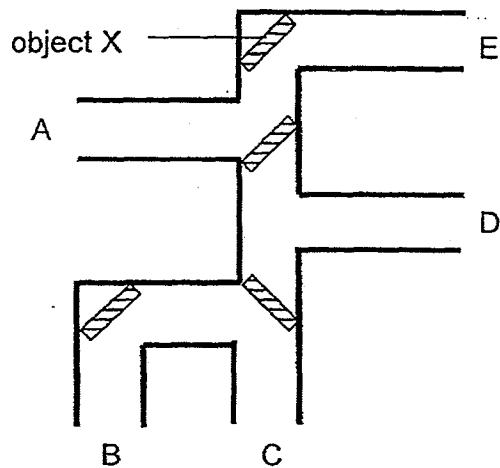


When Nathan pulled back the elastic band and then released the stone, the stone flew forward but it dropped to the ground before it could hit the cans.

Which of the following is/are possible explanation(s) for his observation?

- A Gravity pulled the stone down to the ground.
 - B The elastic band was not stretched far enough.
 - C Friction between the stone and the elastic band prevented the stone from reaching the cans.
- (1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

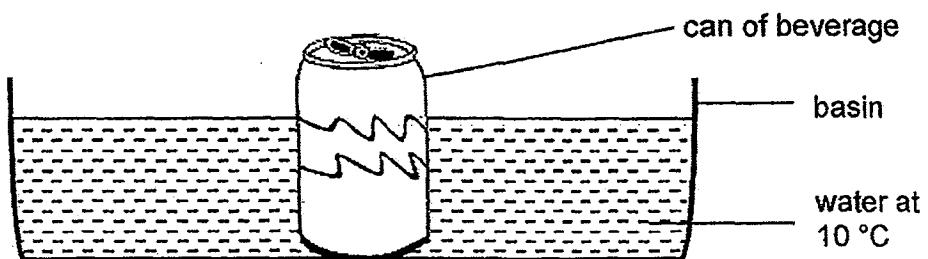
27. Sally constructed a setup shown in the diagram below. The setup consists of a connection of pipes with openings at A, B, C, D and E. Four identical objects X are placed inside the pipes. Both sides of each object X are smooth and reflects light well.



If Sally wanted to see another object Y through the pipes, which one of the following shows the positions of object Y and her eye that would enable her to see the object Y?

	Position of object Y	Position of eye
(1)	A	E
(2)	B	E
(3)	C	D
(4)	C	A

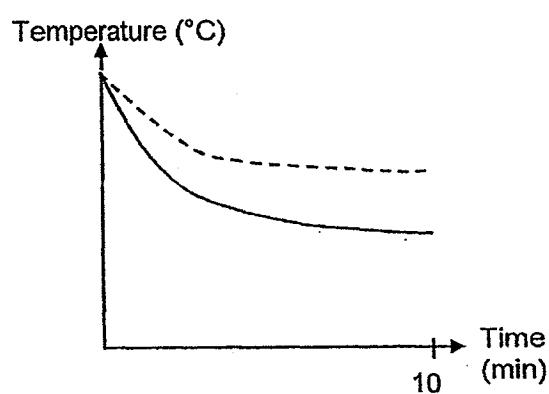
28. A can of beverage, at room temperature, is placed into a basin of water as shown in the diagram below.



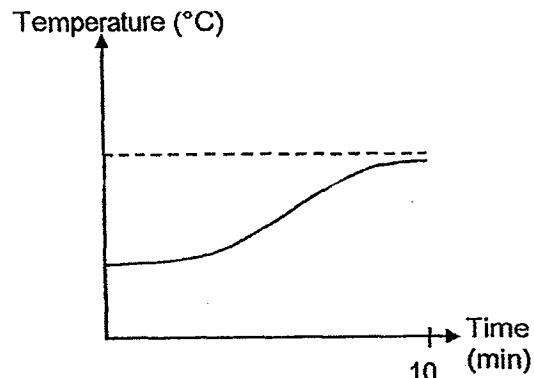
Which of the following graph represents the changes in the temperatures of the water in the basin and the beverage in the can respectively?

Key	
—	water
- - -	beverage

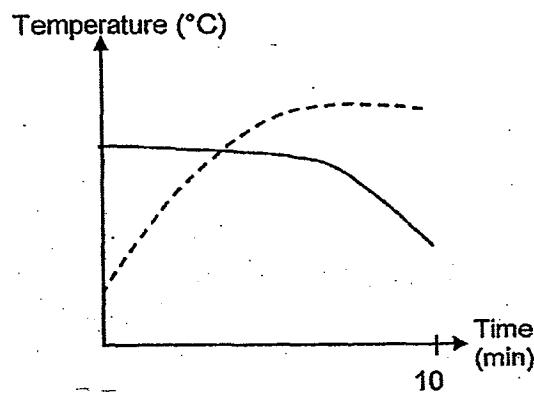
(1)



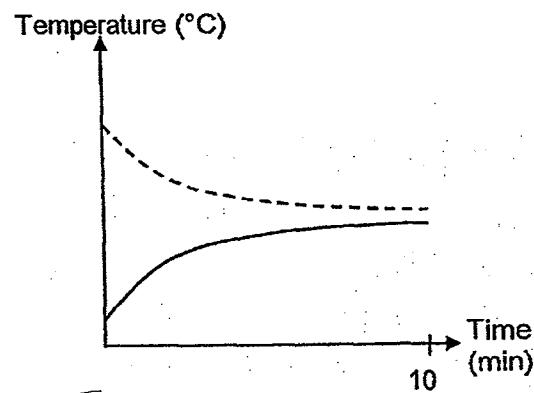
(2)



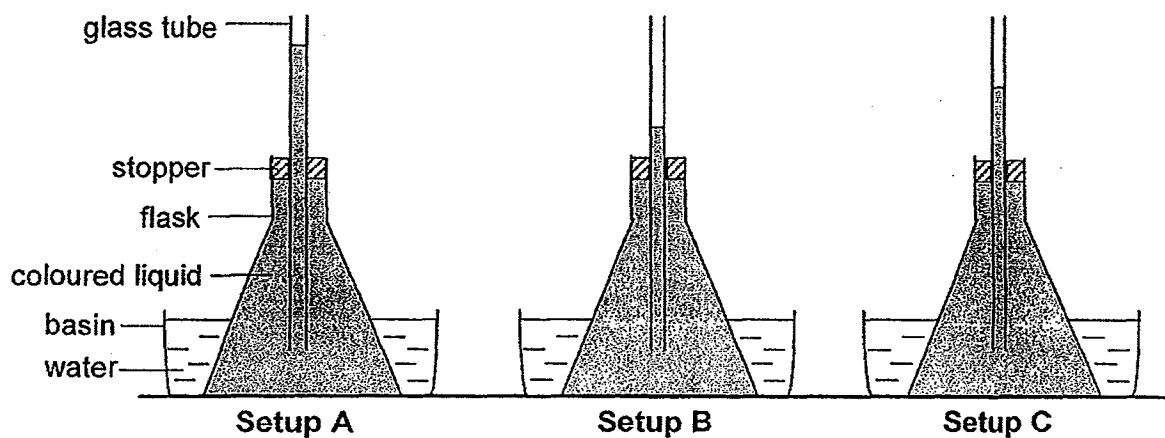
(3)



(4)



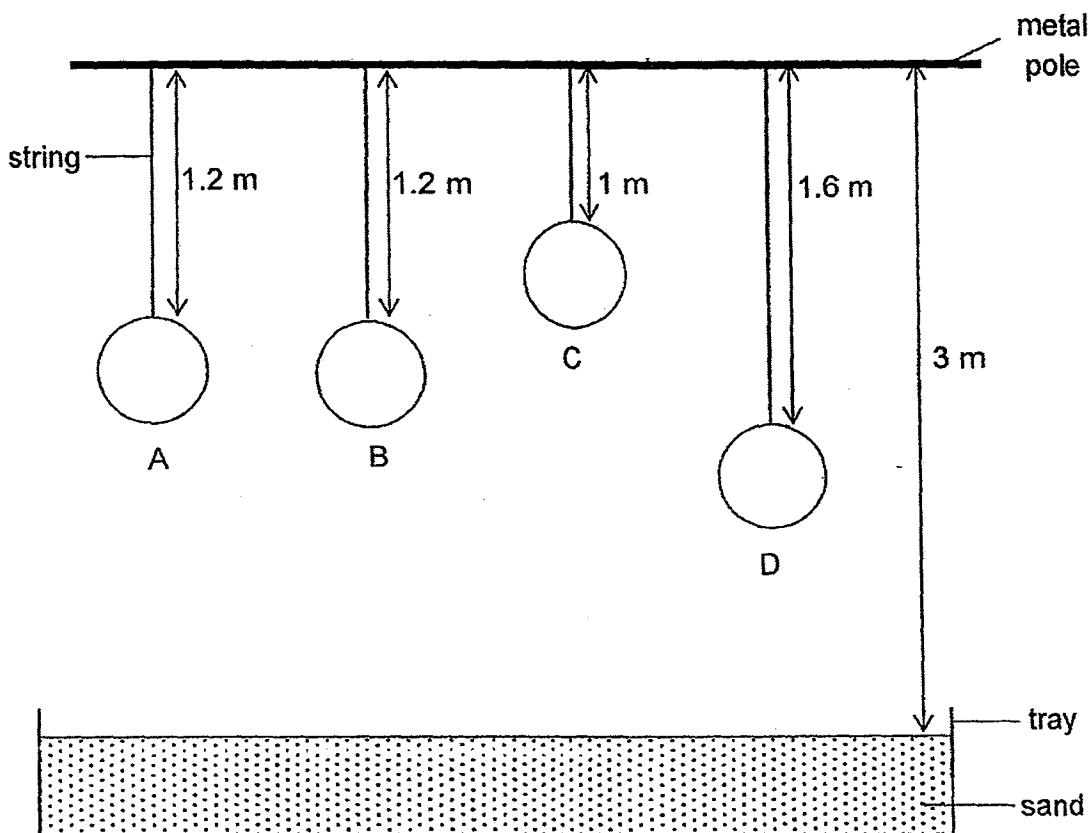
29. David set up an experiment using three identical flasks. He filled each flask with coloured water and fitted them with a narrow glass tube. The flasks were then placed in basins that had been filled with water of different temperatures at the same time. His observations on the liquid levels in the glass tubes after 5 minutes were shown below.



Which of the following shows the correct arrangement of the three basins of water, A, B and C, starting from the one with the highest temperature of water in the basin?

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

30. The diagram below shows four identical 300-g iron balls, A, B, C and D, hung from a metal pole.



When the strings were cut, each ball created a dent in the sand.

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

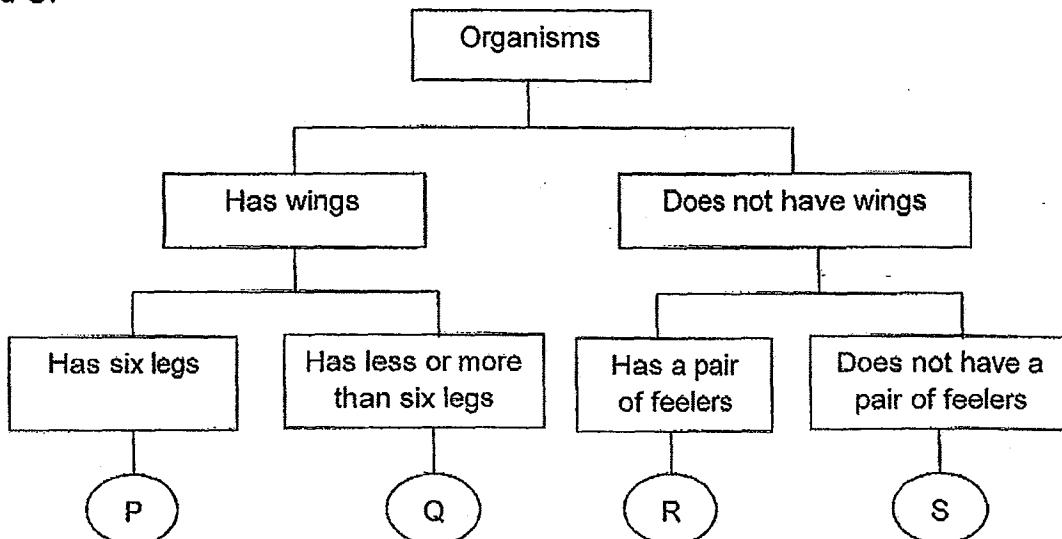
- A Ball C will create the deepest dent in the sand.
 - B Ball D has the least amount of gravitational potential energy.
 - C Balls A and B have the same amount of gravitational potential energy.
- (1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

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. The chart below shows how organisms are being classified into groups P, Q, R and S.

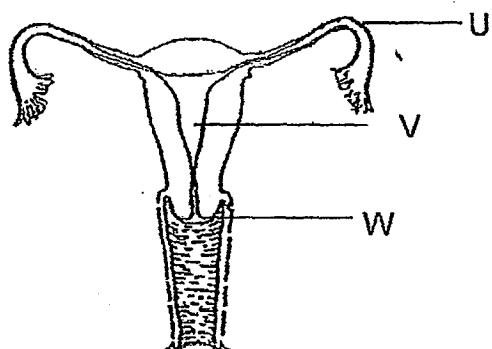


- (a) Based on the information above, describe the difference(s) between organisms P and R. [1]

- (b) Identify the group, P, Q, R or S, where the following organisms should be placed. [2]

	Organism	Group
(i)		
(ii)		

32. Susan drew a female human reproductive system as shown below. However, one part of it has been removed.

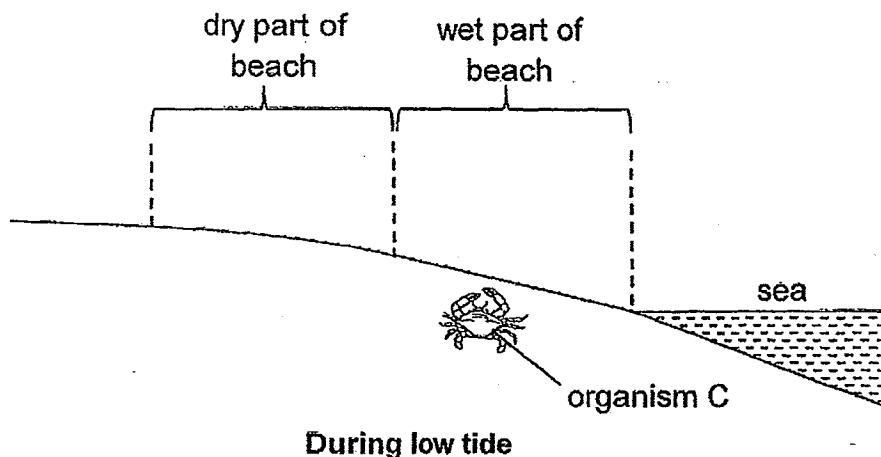


- (a) At which part, U, V or W, would the normal development of the foetus take place if fertilisation has occurred? [1]

- (b) Susan's friend told her that fertilisation will not be able to take place in the above reproductive system naturally even in the presence of sperms. Explain why.

[1]

33. Organism C lives in large colonies. It is commonly found in the sea and wet part of the beach during low tide, as shown in the diagram below. A variety of other types of organisms are also found on the wet beach, including the predators of organism C.



During low tide

When on land, organism C will often bury itself underneath the wet part of the beach. Organism C breathes through gills that have to be kept moist at all times. It is able to breathe on land without the need to go back into the sea for a short period of time.

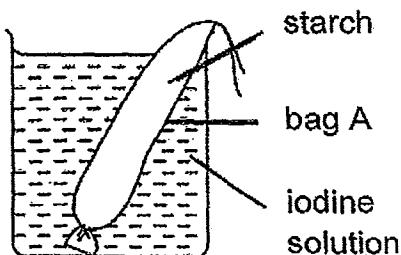
Based on the information above, identify and explain one behavioral adaptation of organism C that helps to enhance the chance of its survival on land. [2]

Adaptation : _____

Explanation : _____

Score	
	2

34. Becky filled bag A with starch solution and immersed it in iodine solution as shown below.



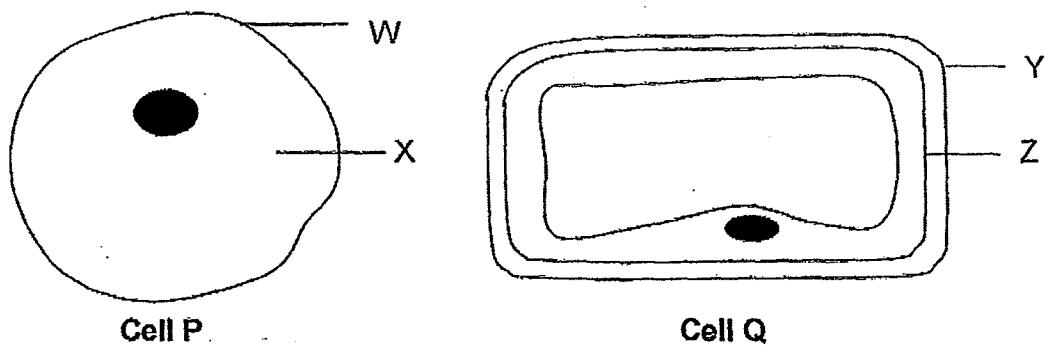
When the iodine solution comes into contact with starch, the iodine solution would change from brown to dark blue.

After one day, she observed that the content in bag A turned dark blue while the content in the beaker remained brown.

- (a) Explain her observations.

[1]

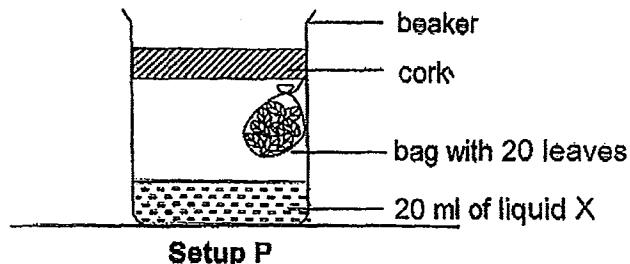
The diagrams below show two cells, P and Q, which were taken from different organisms.



- (b) Which part(s), W, X, Y or/and Z is/are similar in function to bag A? [1]

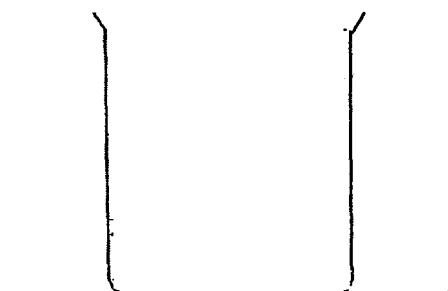
- (c) Becky placed cells P and Q in a dish of water. After some time, one of them burst. Which cell, P or Q, will remain intact? Give a reason for your answer. [1]

35. Diana wanted to investigate the effect of dead leaves on liquid X. She wrapped 20 fallen leaves in a bag with tiny holes and then hung it in a beaker as shown below. Liquid X is red in colour. It turns yellow when the amount of carbon dioxide increases.



- (a) Diana's teacher commented that she needed a control setup for her experiment.

Draw and label the control setup for Diana's experiment below. The beaker has been drawn for you. [1]



Control setup

Diana left both setup P and the control setup in a room with a temperature of 25 °C for 5 days. She observed that liquid X in setup P turned yellow on day 5 but not in the control setup.

- (b) Explain why there was a change in the colour of liquid X in setup P. [1]

- (c) Diana prepared another two setups, Q and R, which were similar to setup P, except that :

- Setup Q was placed in a room of temperature 35 °C
- Setup R has 10 leaves wrapped in the bag with tiny holes

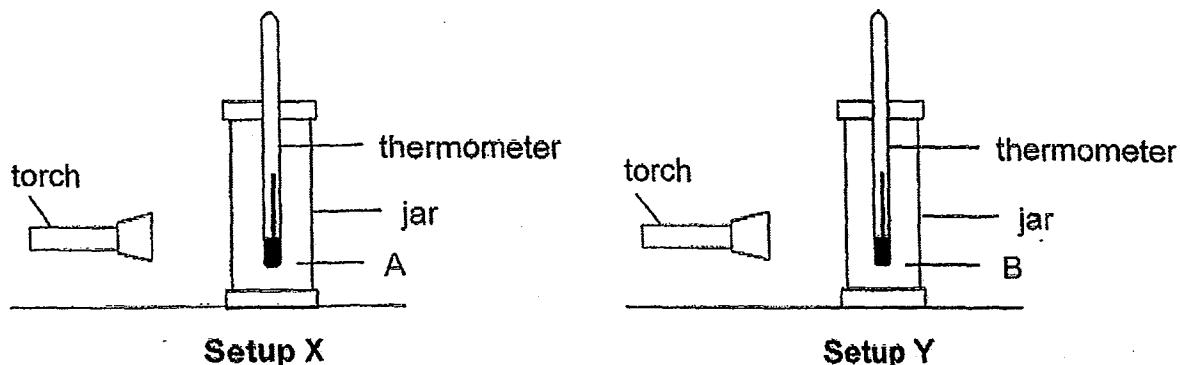
Would liquid X take 'less than 5 days' or 'more than 5 days' to turn yellow for each setup? [2]

(i) Setup Q : _____

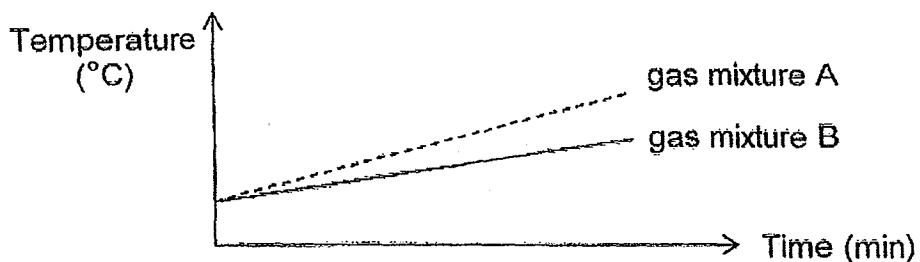
(ii) Setup R : _____

Score	
	4

36. Winnie carried out an experiment on two different gas mixtures A and B in a dark room as shown below. Gas mixtures A and B contain the same type of gases. However, one of the gas mixtures has a greater amount of carbon dioxide.



Winnie switched on the torch and recorded the temperature in each jar over a period of time. Her results are shown below.

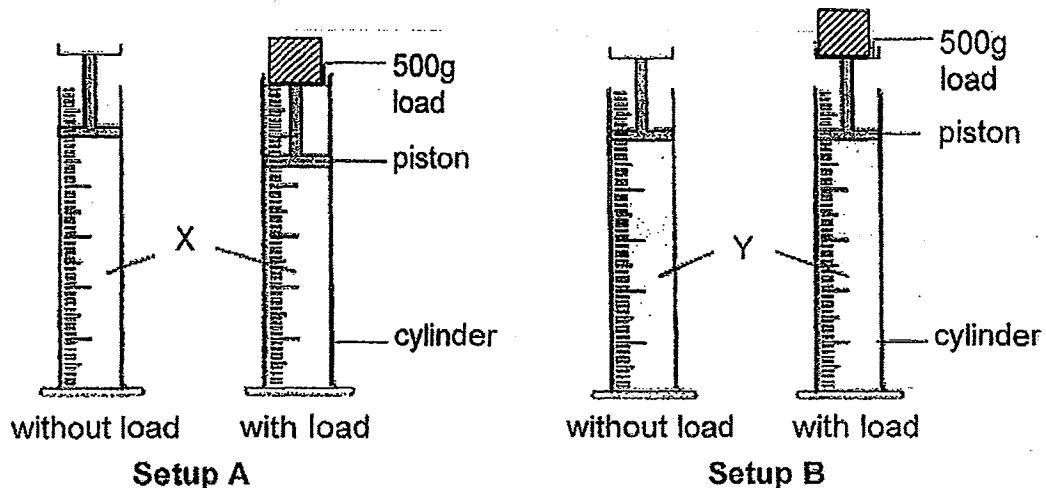


- (a) Which gas mixture, A or B, contains more carbon dioxide? Explain your answer. [2]

- (b) Explain how does the burning of large amount of fossil fuels lead to an increase in the Earth's temperature. [1]

37. Ryan filled up two identical cylinders with same amount of substance X and Y respectively. He placed a 500 g load on the piston of each setup.

The diagrams below show setups A and B, before and after a 500 g load was placed on the piston.

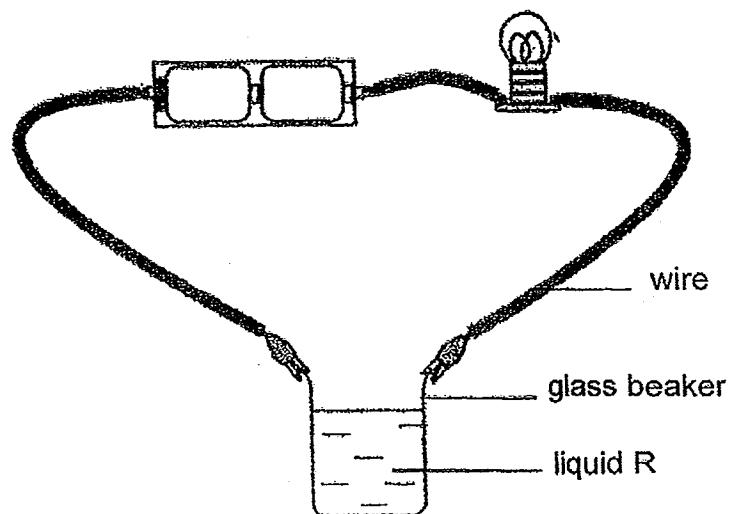


Based on the above observations, state one similarity and one difference between substances X and Y. [2]

Similarity : _____

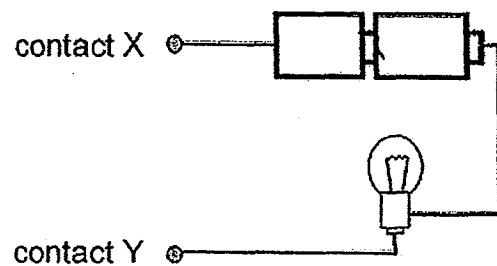
Difference : _____

38. Steven used the setup below to find out if liquid R is a conductor of electricity.



- (a) Steven observed that the bulb did not light up in the circuit. He concluded that liquid R is not a conductor of electricity.
Do you agree with him? Explain your answer. [1]

In another experiment, Steven constructed a circuit card with six metal paper clips, A, B, C, D, E and F, which were connected on the underside of the card by wires. He used the circuit tester below to find out how the clips on the circuit card were connected.



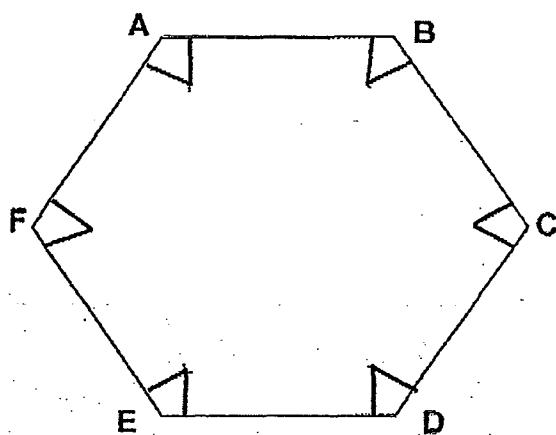
Circuit Tester

Steven connected different pairs of the metal paper clips to contacts X and Y and recorded the results in the table below.

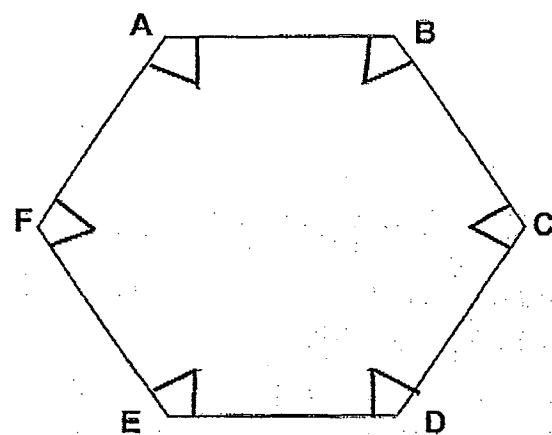
Paper clips that are connected to contacts X and Y	Did the bulb light up?
A and E	yes
B and C	yes
B and D	no
F and C	no
E and D	yes

- (b) Based on Steven's results, draw two different ways of connecting the wires in the circuit cards below. You can only use 3 wires for each way.
[2]

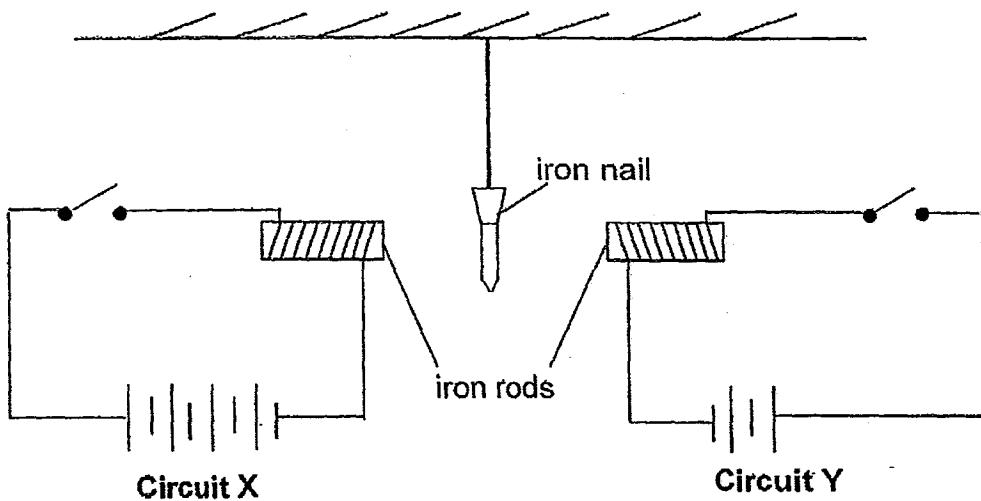
(i)



(ii)



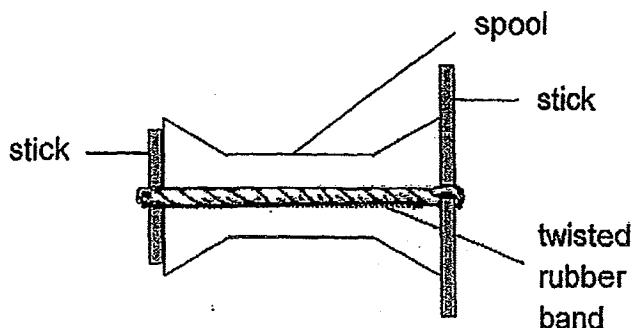
39. Joshua set up the experiment shown below. The iron nail was suspended at an equal distance from the two iron rods. The number of turns of wires around each iron rod is the same.



- (a) What will happen to the iron nail when both switches in circuits X and Y are closed at the same time? Explain your answer. [2]

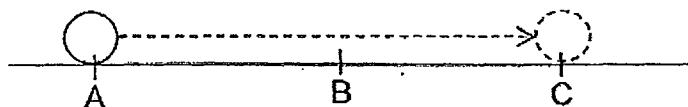
- (b) What will Joshua observe if he replaced the iron rod with an aluminium rod in both circuits? Explain your answer. [2]

40. Sam constructed a toy by inserting a rubber band through a hole in the spool. The rubber band was held in place by two sticks. He turned the longer stick several times to twist the rubber band, as shown in the diagram below.

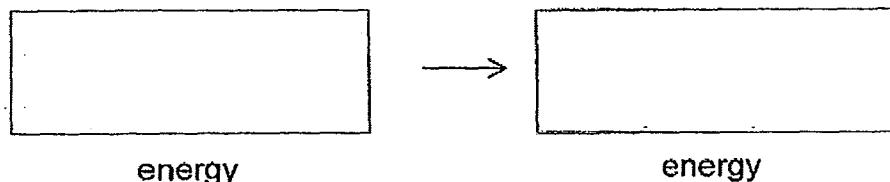


Cross section of toy

When Sam released the toy at point A on the floor, the rubber band unwound and the toy moved across the floor from point A to point B eventually came to a stop at point C, as shown in the diagram below.



- (a) Fill in the boxes to show the energy change that took place when the toy was released on the floor at point A and moved to point B. [1]



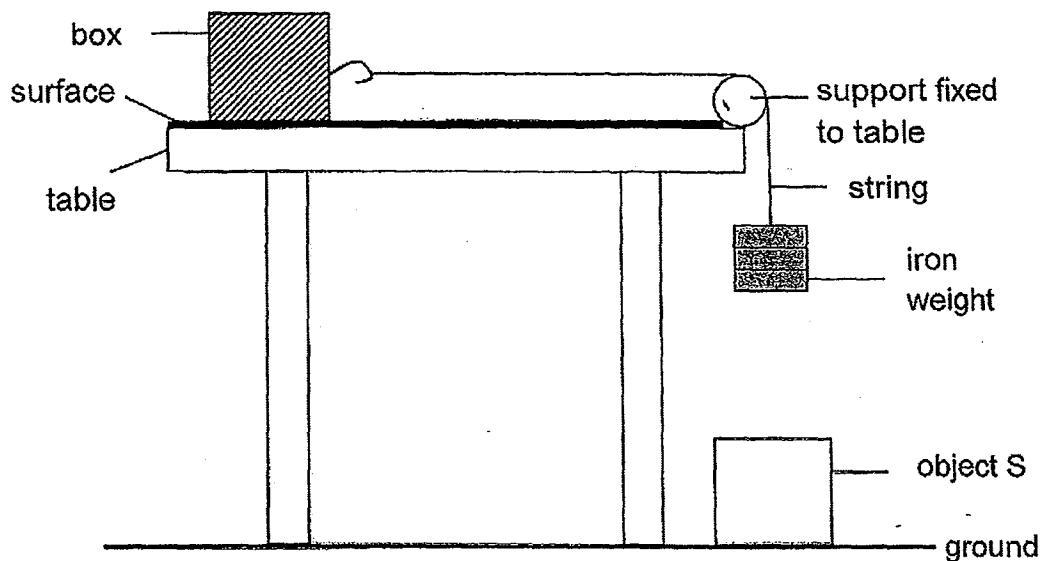
energy

energy

- (b) Name one force acting on the toy at point B. [1]

(b)

41. Nicholas used the setup below to investigate the number of iron weights needed to move the box across three different surfaces, X, Y and Z.



Nicholas recorded his results in the table below.

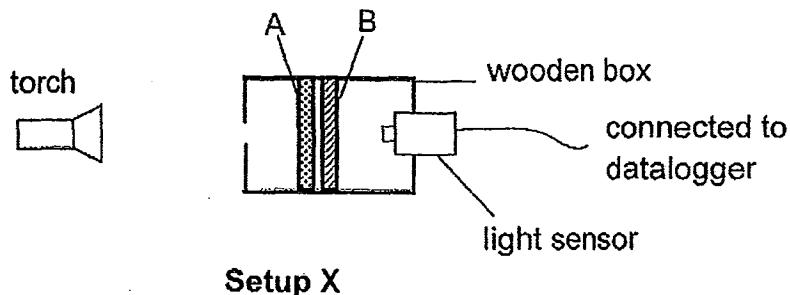
Surface	Number of iron weights
X	8
Y	5
Z	3

- (a) Explain why the number of iron weights used were the least to move the box across surface Z. [1]

- (b) Without lifting the box, suggest one way to move the box across each surface using less iron weights than the number of weights recorded in the above table. [1]

- (c) When Nicholas removed object S from the setup, he noticed that the box moved more slowly across the surface. What could object S be? Give a reason for your answer. [1]

42. Justin has three materials, A, B and C, of the same thickness. She placed materials A and B in the setup shown below and recorded the amount of light detected by the light sensor.



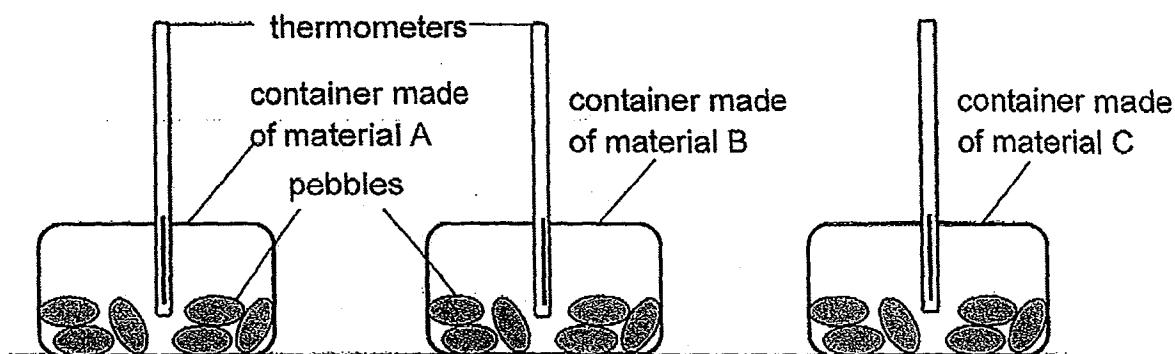
Justin repeated the experiment with different pairs of materials and recorded the amount of light detected by the light sensor in the table below.

Setup	Materials placed in the box	Amount of light detected (units)
X	A and B	200
Y	B and C	60
Z	A and C	30

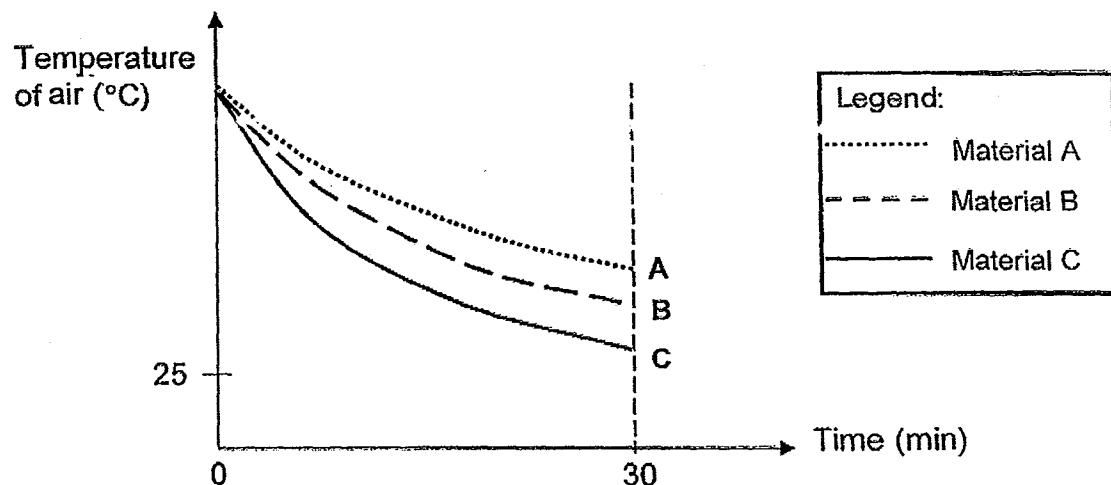
- (a) Without replacing any parts of setup X, suggest one way to increase the amount of light detected by the light sensor in setup X. [1]

- (b) Justin wants to use one of the materials to make a shadow puppet such that it will cast the darkest shadow on the screen when light is shone on it. Which material, A, B or C, should she use for the shadow puppet? Explain your answer. [1]

43. Siti heated the same number of identical pebbles to the same temperature and placed them in three containers of equal size and thickness. The three containers are made from different materials, A, B and C.



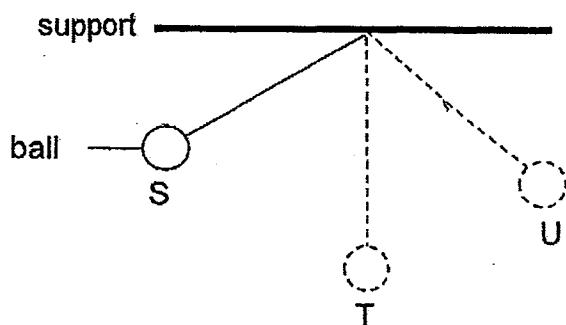
Siti recorded the temperature of the air in each container over 30 minutes. She plotted the results in the graph below. The room temperature was 25°C.



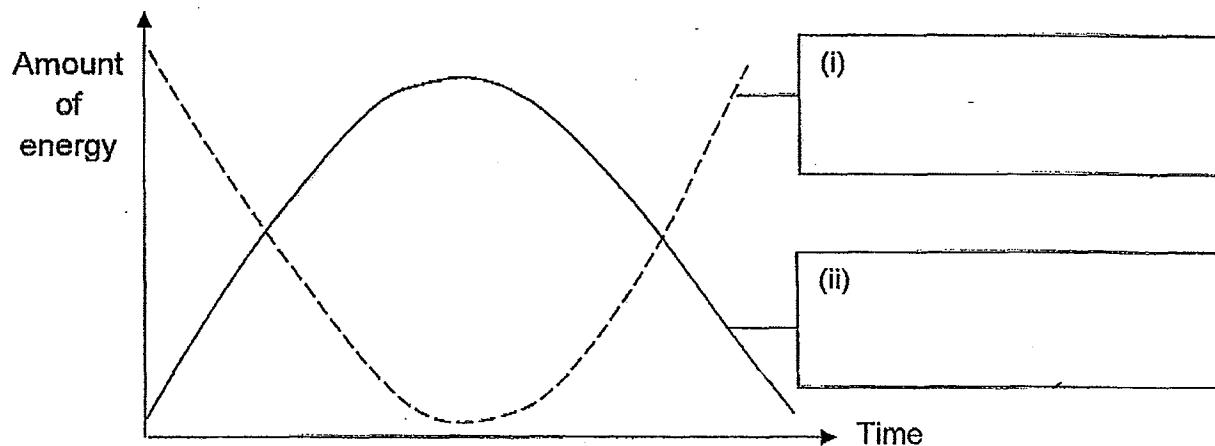
- (a) Based on the graph above, which one of the materials, A, B or C, would be most suitable to be used for making the base of a cooking pot such that food can be cooked in the shortest period of time? Give a reason for your answer. [2]

- (b) Siti left the setups in the room for another one hour. She observed that the temperature of the air in all the containers stopped decreasing after some time. Explain her observation. [1]

44. Alan hung a metal ball to a support using a piece of string as shown in the diagram below. When the metal ball was released from point S, it swung to point T and then to point U.



The graph below shows how the amount of energy changes as the ball swing from S to U.



- (a) Label in the above graph the form of energy represented by each curve.[1]
- (b) When Alan released the ball at a position higher than point S, he observed that the ball swung to a position higher than point U. Explain his observation. [2]

- (c) Alan observed that the metal ball swung to and fro a few times and eventually came to a stop. Why did the metal ball eventually came to a stop? [1]

- END OF PAPER -

Setters : Ms Lim Siew Hoon, Ms Lee Suan Khim & Mdm Lim Sok Yen

Score	4
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Answer Ke

EXAM PAPER 2014

SCHOOL : RAFFLES GIRLS'

PRIMARY : P6

SUBJECT : SCIENCE

TERM : SA2

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

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

39)a)The iron nail will move towards the iron rod circuit X. When both switches are closed, both circuit becomes closed circuits. Circuit X has a greater number of batteries than in circuit Y. Thus, more electricity passes through the iron rod in X than in Y. Both iron rods are magnetised but iron rod in X has a greater magnetic strength than the iron rod in Y. Thus it attracts the iron no.

b)The iron nail will not move. Aluminium is a non-magnetic material. The aluminium iron rods would not be magnetised and would not be able to attract the iron nail.

40)a)Elastic potential energy→kinetic energy

b)Frictional force.

41)a)There is least friction between surface Z and box the compared to X and Y.

b)He could add water onto the surface.

c)Object S is a magnet. It attracts the iron weights and pulls it downwards. Thus the box moved more slowly across the surface when S was removed.

42)a)Place the torch nearer to the box.

b)Material C. The amount of light detected with materials was the least. Thus, it could block the most light to cast the darkest shadow.

43)a)Material C. The temperature of air in C was the lowest. Material C could lose the most heat to its surroundings. Thus, C is the best conductor of heat and can gain heat most quickly.

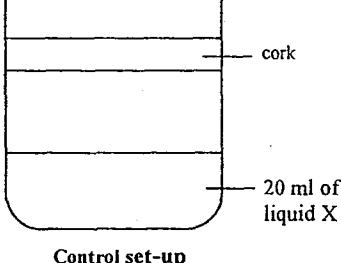
b)They have reached room temperature after losing heat to its surroundings.

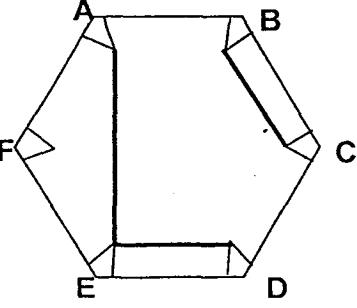
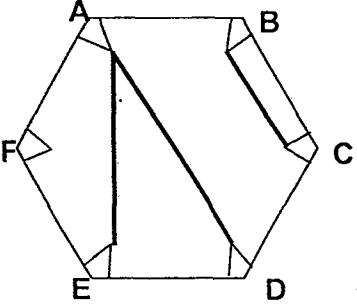
44)a)i)Gravitational potential energy. ii)Kinetic energy

b)The metal ball at a higher position possesses more gravitational potential energy which can be converted to more kinetic energy and then converted back to more gravitational potential energy.

c>All the kinetic energy was converted other forms of energy.

SECTION B (40 marks)

No		Suggested answers
31	a	P has wings but R does not have wings.
	b	i) Q ii) S
32	a	V
	b	There is no ovary so no egg can be released and fertilization cannot take place.
33		Adaptation: Burying itself in wet part of the beach. Explanation: To avoid detection by predators.
34	a	Bag A allows iodine solution to pass through to react with starch but it does not allow starch to pass through.
	b	W and Z
	c	Cell Q. It has cell wall to prevent it from bursting.
35	a	 <p>Control set-up</p>
	b	Decomposition of the dead leaves release carbon dioxide which turned liquid Y yellow.
	c	i) Less than 5 days ii) More than 5 days
36	a	A, more carbon dioxide will trap more heat in the jar, which results in a greater increase in temperature.
	b	Burning of large amount of fossil fuels release more carbon dioxide into the atmosphere, which traps more heat and lead to an increase in the Earth's temperature.
		Similarity: Substance X and Y in each set-up occupies space.
37		Difference: Substance X can be compressed while substance Y cannot be compressed.
38	a	No, I disagree. The crocodile clip was not in contact with liquid R, hence electricity cannot be conducted to R.

	b		
39	a	The iron nail will move towards the iron rod in set-up X.	
	b	In set-up X, there are more batteries, the magnetic force of attraction is stronger compared to set-up Y.	
	b	The iron nail will remain stationary. Aluminium is a non-magnetic material. Hence, the aluminium rod will not become an electromagnet.	
40	a	Elastic potential energy → kinetic energy	
	b	Gravity	
41	a	There is least friction between surface Z and the base of the box compared to surface X and Y.	
	b	Apply lubricants on each surface.	
	c	Object S is a strong magnet. It attracted the iron weights which in turn pulled the box faster across the surface.	
42	a	Move the torch nearer to the box.	
	b	Material C. Most amount of light will be blocked by C, allowing it to cast the darkest shadow.	
43	a	Material C. The temperature of the air in the container, made of material C decreased the fastest. C is the best conductor of heat, allowing the food to gain heat the fastest.	
	b	The temperature of the air in the containers reached the same temperature as the room after some time.	
44	a	(i) gravitational potential energy (ii) Kinetic energy	
	b	The metal ball possesses more gravitational potential energy which can be converted to more kinetic energy.	
	c	All the kinetic energy has been converted to heat and sound energy.	



RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2015

Name : _____ Index No: _____ Class: P6 _____

24 Aug 2015

SCIENCE

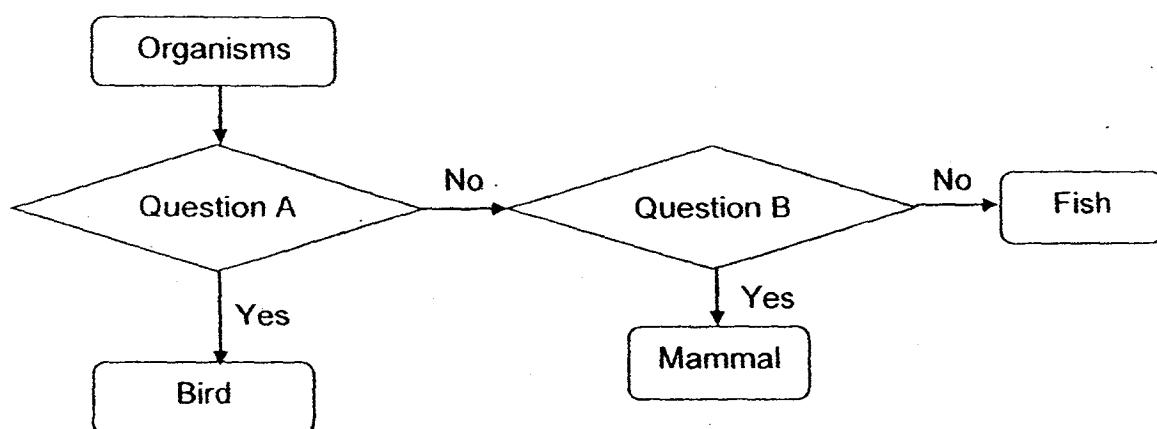
Attn: 1h 45min

Section A	
Section B	
Your score out of 100 marks	
Parent's signature	

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.

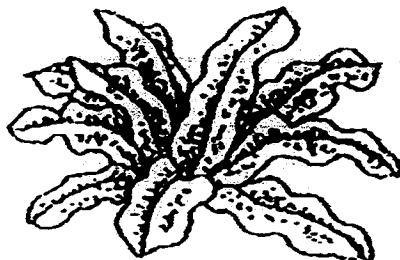
1. The flowchart below shows how some organisms are classified.



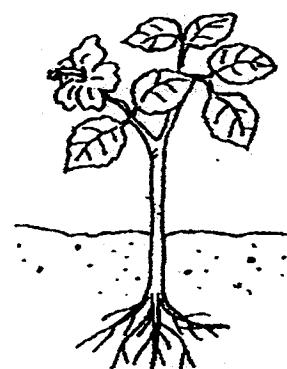
Which one of the following correctly identifies questions A and B?

	A	B
(1)	Does it have six legs?	Does it lay eggs?
(2)	Does it have wings?	Does it breathe through gills?
(3)	Does it breathe through lungs?	Does it have scales?
(4)	Does it have feathers?	Does it breathe through lungs?

2. The diagrams below show a fern and a hibiscus plant.



Fern

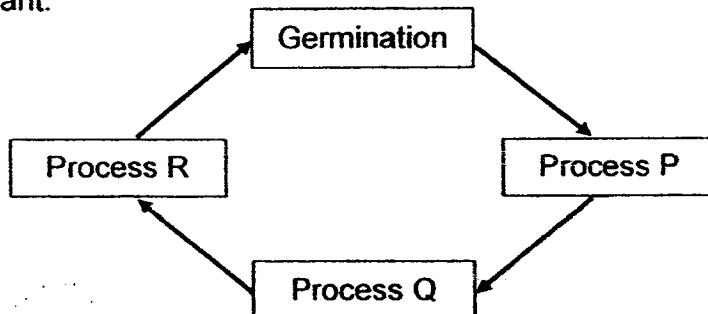


Hibiscus plant

Which of the following comparison(s) between the fern and the hibiscus plant is/are correct?

- A Only the hibiscus plant can bear fruits.
 - B Both the fern and hibiscus plant can make their own food.
 - C Both the fern and hibiscus plant can reproduce from seeds.
-
- (1) A only
 - (2) B only
 - (3) A and B only
 - (4) B and C only

3. The diagram below shows the processes involved in the reproduction of a flowering plant.



Which of the following correctly identifies processes P, Q and R?

P	Q	R
(1) Fertilisation	Seed dispersal	Pollination
(2) Fertilisation	Pollination	Seed dispersal
(3) Pollination	Fertilisation	Seed dispersal
(4) Seed dispersal	Pollination	Fertilisation

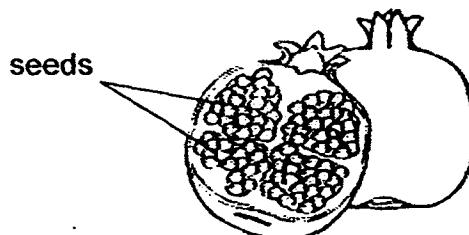
4. The table below shows the characteristics of organisms A and B. A tick (✓) indicates the presence of the characteristic.

Characteristics	Organism A	Organism B
Lays eggs	✓	✓
Has six legs	✓	✓
Has a pupal stage	✓	
Has wings in adult stage	✓	✓

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

- A Both organisms give birth to their young alive.
 - B Organism B lays more eggs than organism A.
 - C Organism A has a 4-stage life cycle while Organism B has a 3-stage life cycle.
- (1) A only
(2) C only
(3) A and B only
(4) B and C only

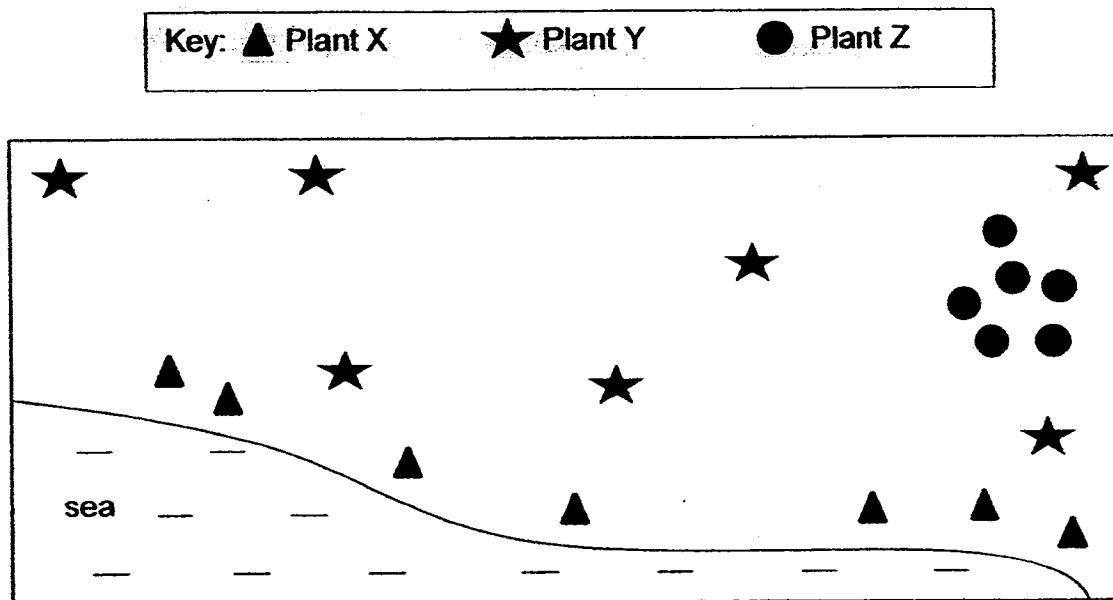
5. Sophia cut a brightly coloured fruit in half and observed that it contained many seeds as shown in the diagram below.



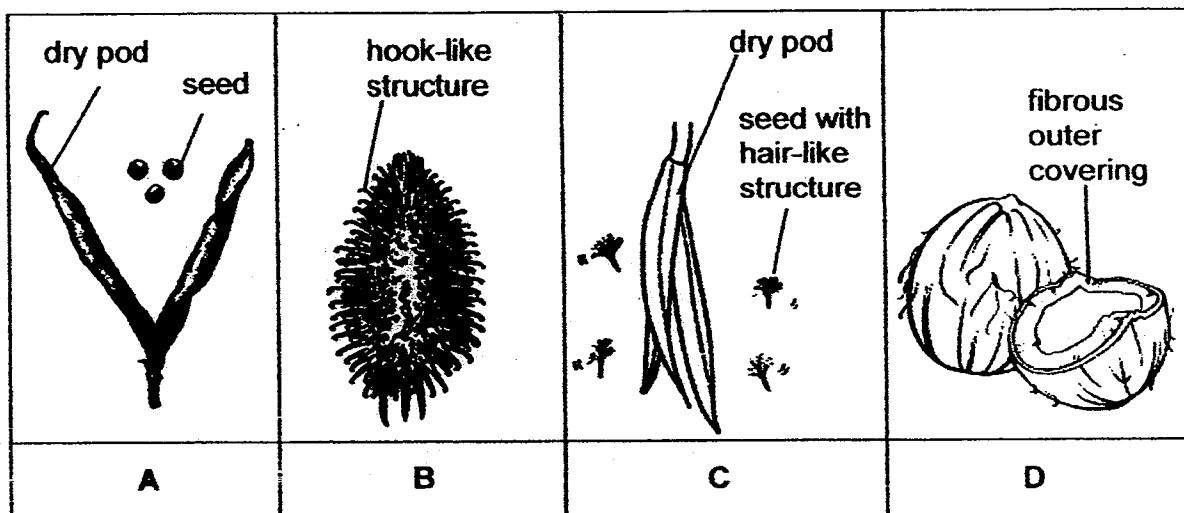
Based only on her observation, which one of the following statements is definitely true about the flower that this fruit has developed from?

- (1) The flower has many ovules.
(2) The flower has many ovaries
(3) The flower produced many pollen grains.
(4) The flower has been pollinated by animals.

6. The diagram below shows part of an island where three types of plants, X, Y and Z, are growing.



The diagrams below show the characteristics of fruits A, B, C and D.



Which of the following fruits most likely belong to plants, X, Y and Z?

	Plant X	Plant Y	Plant Z
(1)	A	C	D
(2)	D	C	B
(3)	C	A	B
(4)	D	B	A

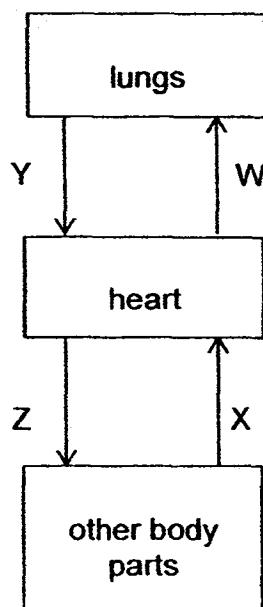
7. Neutering is the process of removing an animal's reproductive organ. This is a safe and quick procedure done by a veterinarian (animal doctor).

In some countries, due to the lack of space in animal shelters, millions of stray cats and dogs are killed each year.

Which of the following correctly explain how neutering helps to prevent the killing of stray animals?

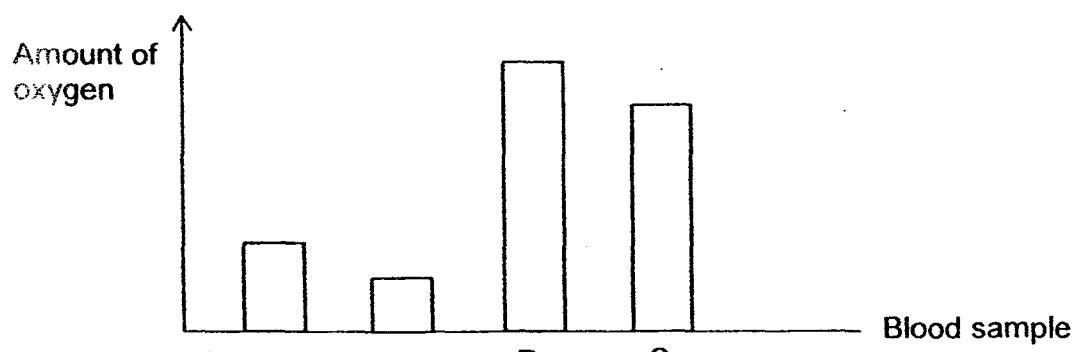
- A Neutering of animals enables the animals to reproduce faster.
 - B The ovaries are removed so that fertilisation will not occur in the female body.
 - C The ovaries are removed so that fertilisation will only occur outside the female body.
 - D The testes are removed to prevent the release of male reproductive cells into the female body.
- (1) A and B only
 - (2) A and C only
 - (3) B and D only
 - (4) C and D only

8. The diagram below shows how blood flows through the blood vessels, W, X, Y and Z, in the human body.



Four blood samples, P, Q, R and S were taken from the different blood vessels in the above diagram.

The following graph shows the amount of oxygen in each of these blood samples.



Which one of the following blood samples, P, Q, R or S, was most likely taken from the blood vessel W?

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

9. The diagram below shows the different parts of human digestive system.

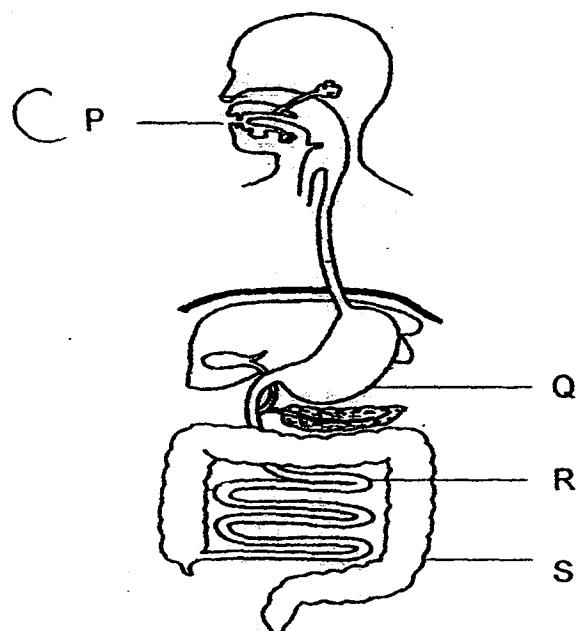
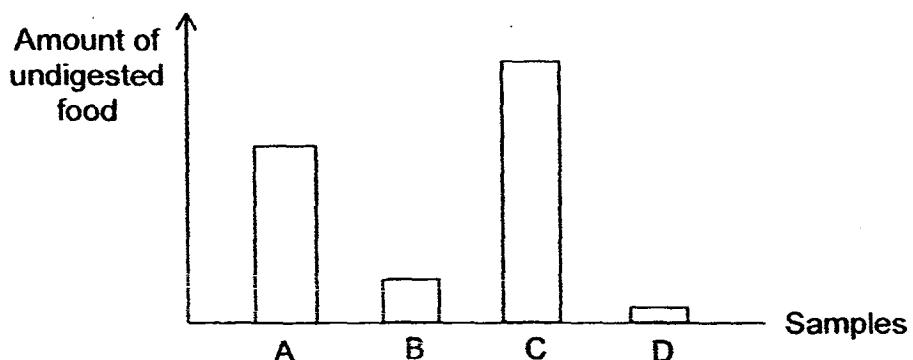


Diagram 1

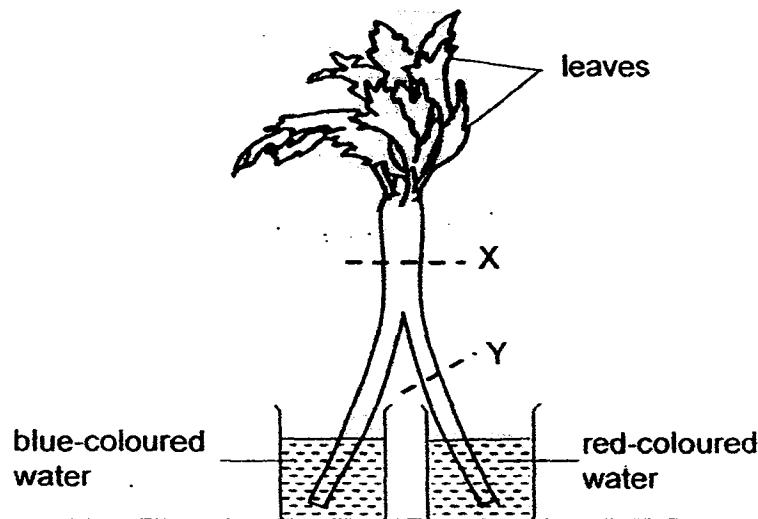
The graph below shows the amount of undigested food in the samples A, B, C and D obtained from different parts of the human digestive system in Diagram 1.



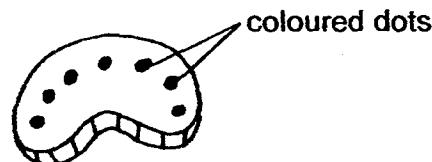
Which one of the following correctly matches the parts P, Q, R and S, in Diagram 1 to the samples A, B, C and D, in the graph?

	Parts in Diagram 1	Samples in Graph
(1)	P	C
(2)	Q	D
(3)	R	A
(4)	S	B

10. Alice placed a partially split celery stalk into two beakers of coloured water as shown below. After half an hour, she cut across the stalks at positions X and Y, as shown in the diagram below.



She observed that the cut sections, X and Y, had coloured dots.



Cut section of celery stalk

Which of the following observations is/are not possible?

- A All the leaves appeared blue.
 - B All the dots on cut section Y were stained red.
 - C Cut section X had a mixture of red dots and blue dots.
-
- (1) A only
 - (2) C only
 - (3) A and B only
 - (4) B and C only

11. Sarah observed three cells and recorded her observations in the table below. A tick (✓) indicates the presence of the cell structure.

Cell Structure	Cell W	Cell X	Cell Y
Nucleus	✓		✓
Cell wall	✓		✓
Chloroplast	✓		
Cell membrane	✓	✓	✓

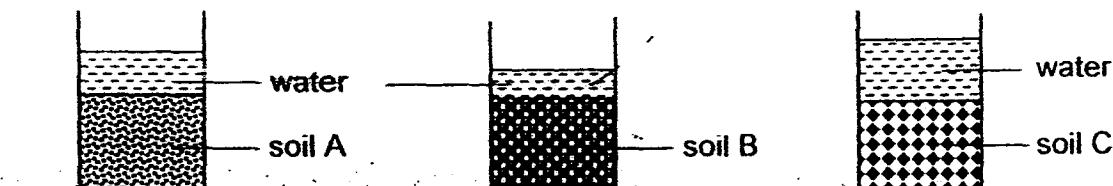
Which one of the following statements about the cells is correct?

- (1) Only cells W and Y have fixed shape.
- (2) Only cell W cannot carry out photosynthesis.
- (3) Only cell X allows all substances to enter the cell.
- (4) Cells W and X are plant cells and cell Y is an animal cell.

12. The table below shows the average size of soil particles suitable for growing plants X, Y and Z respectively.

Plant	Average size of soil particles
X	small
Y	medium
Z	large

Natalie put equal amounts of soil samples, A, B and C, into 3 identical beakers. Then, she poured an equal amount of water into each beaker of soil at the same time. The diagrams below show the set-ups after the water was added.



Based on the observations above, which one of the following shows the soil sample that is most suitable for growing plants X, Y and Z respectively?

	Plant X	Plant Y	Plant Z
(1)	A	B	C
(2)	A	C	B
(3)	B	A	C
(4)	C	A	B

13. The diagram below shows 4 types of organisms living in a pond.

Key:



Plant P



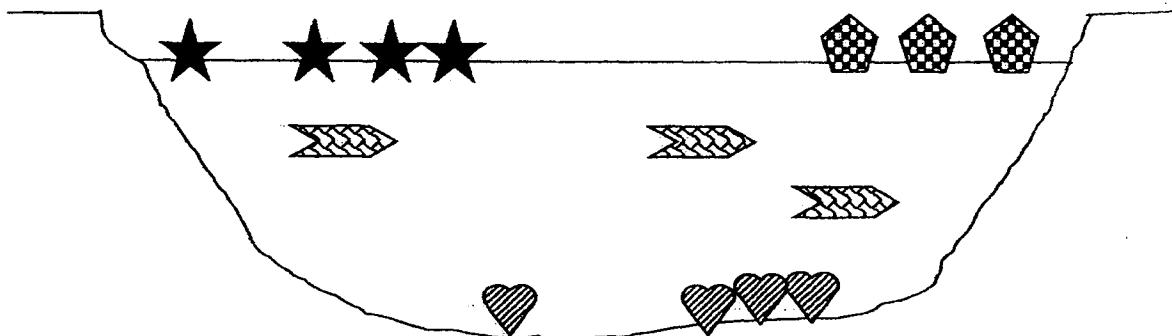
Plant Q



Plant R

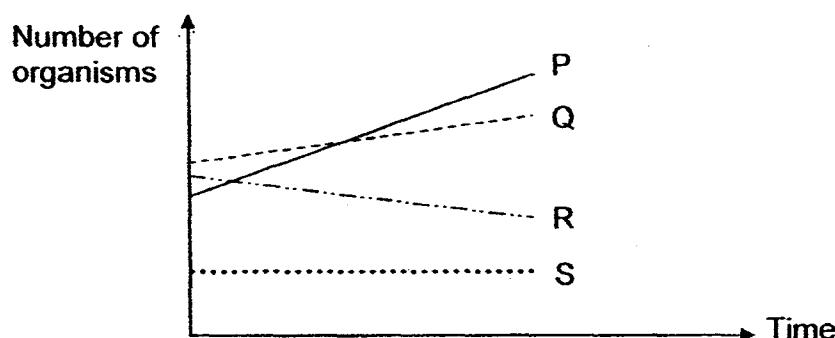


Fish S



A farmer sprayed fertilizer on his vegetable farm which is just next to the pond.

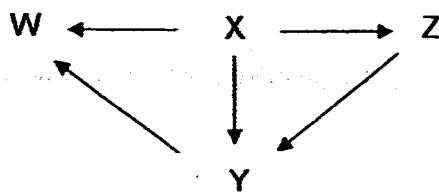
The graph below shows the change in the number of the 4 types of organisms living in the pond over one month due to the runoffs and soil erosion from the fertilised vegetable farm during raining seasons.



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

- (1) Fish S depended on plants P and Q for food.
- (2) The fertilizer from the vegetable farm harmed all the organisms in the pond.
- (3) The amount of light received by Plant R increased over the one month period.
- (4) The fertilizer from the vegetable farm helped plants P and Q to grow well but not plant R.

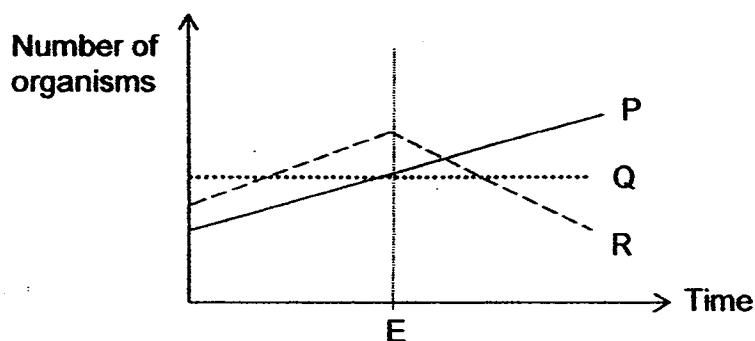
14. The diagram below shows a food web in a community.



Which one of the following correctly identifies organisms W, X, Y and Z?

Producer	Prey	Prey and predator	Predator
(1) X	Z	Y	W
(2) X	W	Z	Y
(3) W	X	Y	Z
(4) W	Y	Z	X

15. The graph below shows how organisms P, Q and R in a habitat are affected when organism F is introduced at point E.



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

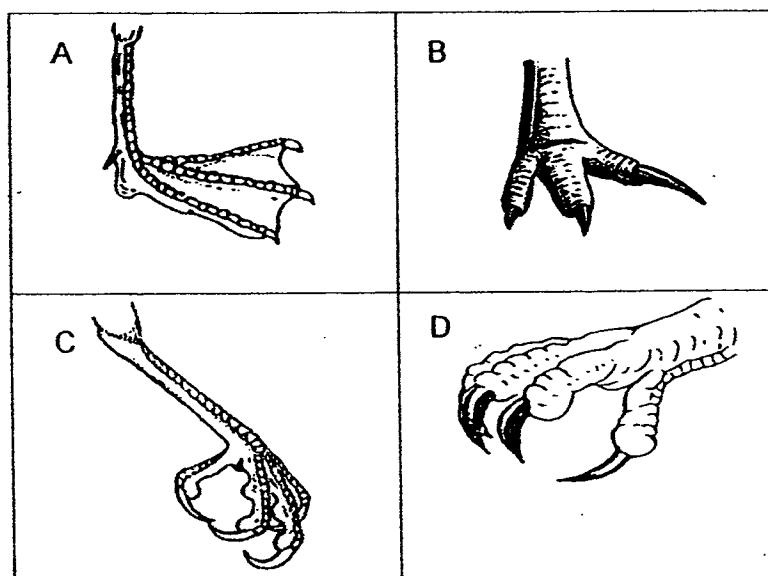
- A R is eaten by F
- B F is a food producer.
- C P and Q compete with each other for food.

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

16. Susan recorded some information about the feet of birds X and Y as shown below.

- Bird X has muscular and powerful feet with sharp and curved claws to grab its prey firmly.
- Bird Y has webbed feet with a large surface area to help it paddle through water efficiently.

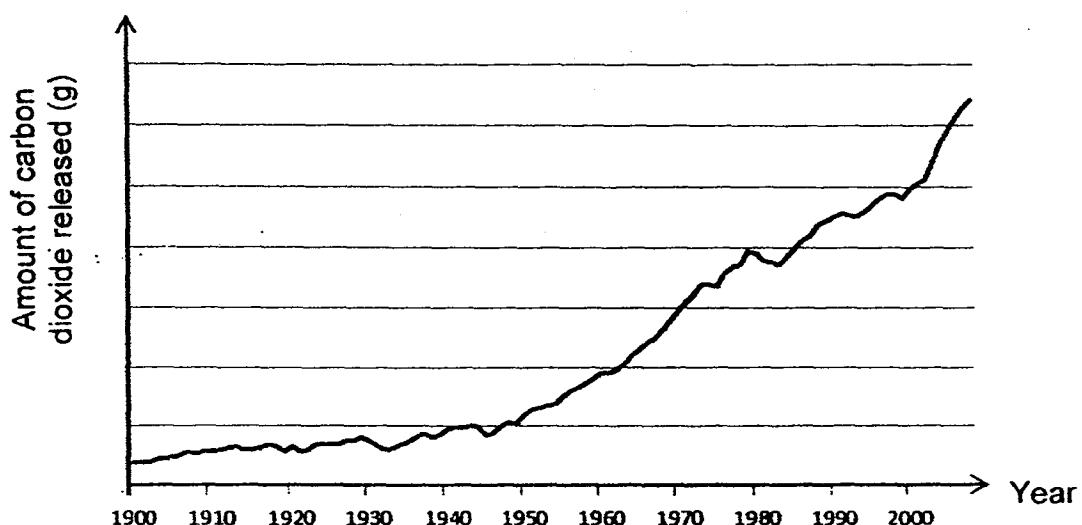
The diagrams below show different types of feet, A, B, C and D.



Which one of the following correctly matches the feet to birds X and Y?

	Bird X	Bird Y
(1)	A	D
(2)	B	C
(3)	C	B
(4)	D	A

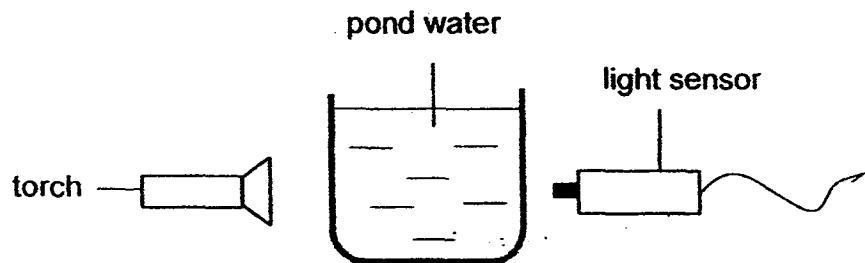
17. The graph below shows the amount of carbon dioxide released into the atmosphere from the burning of fossil fuels since the year 1900



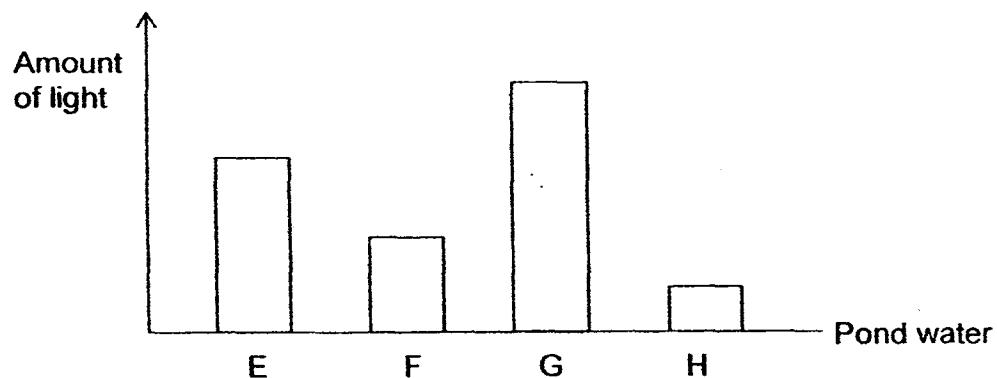
Which one of the following is a consequence of the change in the amount of carbon dioxide released into the atmosphere?

- (1) Drop in sea level
- (2) Melting of polar ice caps
- (3) Cutting down of more trees
- (4) Increase in number of vehicles on the road

18. Jasmine collected four beakers of water from four ponds E, F, G and H. Using the set-up below, she measured the amount of light that passed through each beaker of pond water using a light sensor.



Jasmine presented her results on a graph as shown below.



Which one of the following pond water would be most suitable for fully submerged plants to grow well in?

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

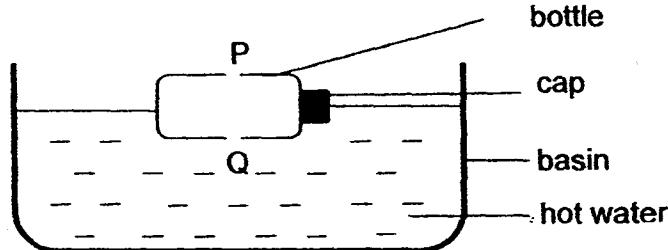
19. Siti was given a beaker containing a mixture of four substances P, Q, R and S. These substances cannot be dissolved in water. A tick (✓) indicates the presence of the property.

Substance	Float in water	Magnetic	Good heat conductor
P	✓		
Q			
R		✓	✓
S			

Based only on the above information, which two substances will Siti not be able to separate?

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

20. Megan placed an empty bottle with two holes at points P and Q into a basin of hot water as shown below.



Which of the following would Megan observe?

- A The cap popped out.
- B Air entered the bottle through P.
- C Water entered the bottle through Q.

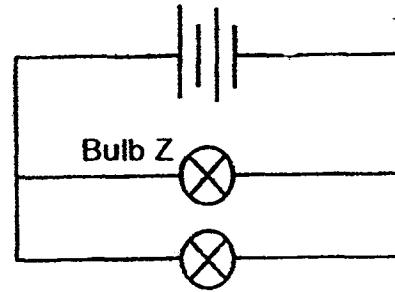
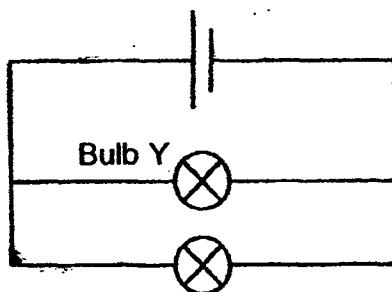
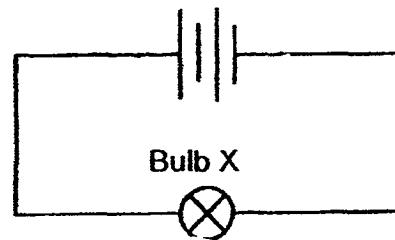
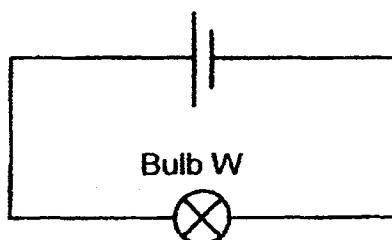
- (1) A only
- (2) C only
- (3) B and C only
- (4) A, B, and C

21. At 30°C , substance Z has a definite volume and does not take the shape of the container. However, at 200°C , substance Z can be compressed.

Which one of the following is most likely the melting point and boiling point of substance Z?

	Melting point of Z	Boiling point of Z
(1)	15	200
(2)	25	120
(3)	35	180
(4)	45	300

22. Vishnu set up four electrical circuits using identical batteries and identical bulbs. The batteries and bulbs are working properly.

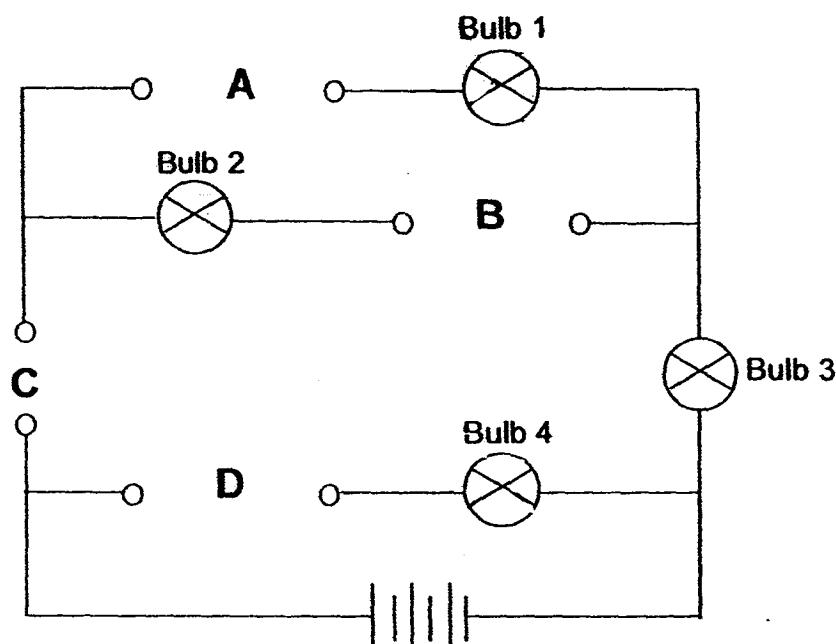


Which of the following statement(s) is/are correct?

- A. Bulb W is the brightest.
- B. Bulb Z is dimmer than Bulb W.
- C. Bulb Z is brighter than Bulb Y.
- D. Bulb X and Bulb Z have the same brightness.

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

23. Ethan set up the circuit below.

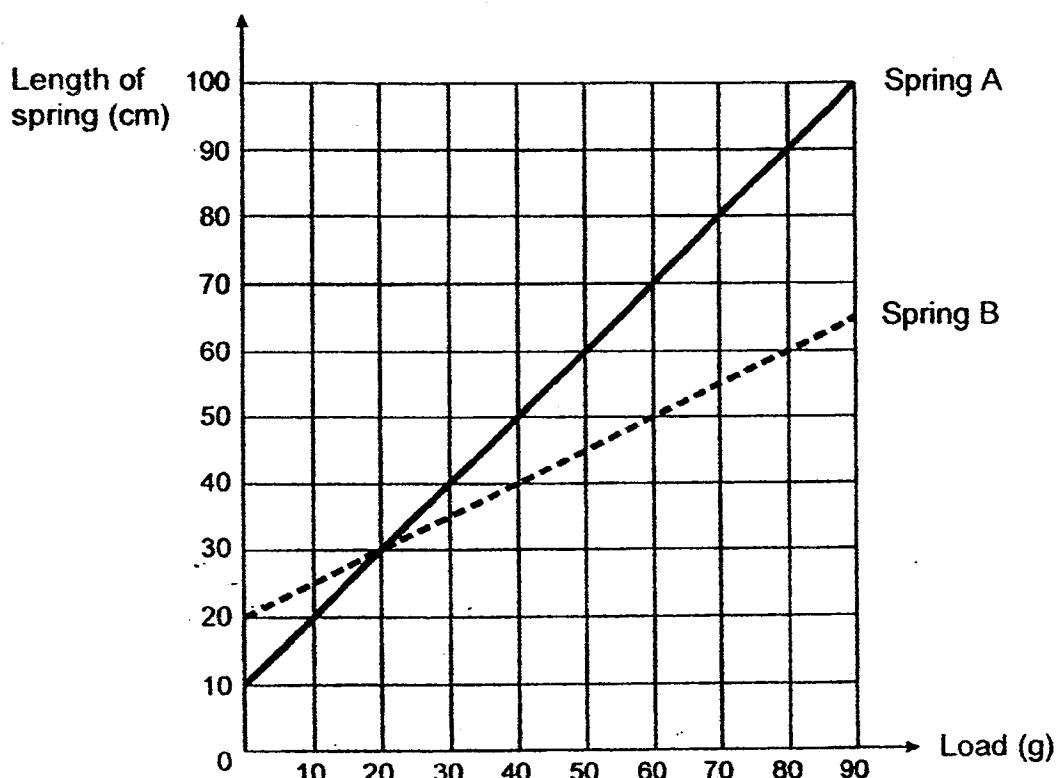


Ethan has 3 rods made of iron, copper and plastic respectively.

At which position, A, B, C or D, should Ethan place each rod respectively so that only Bulb 2 and Bulb 3 will light up?

	Copper rod	Iron rod	Plastic rod
(1)	B	A	D
(2)	C	A	B
(3)	C	B	A
(4)	D	B	C

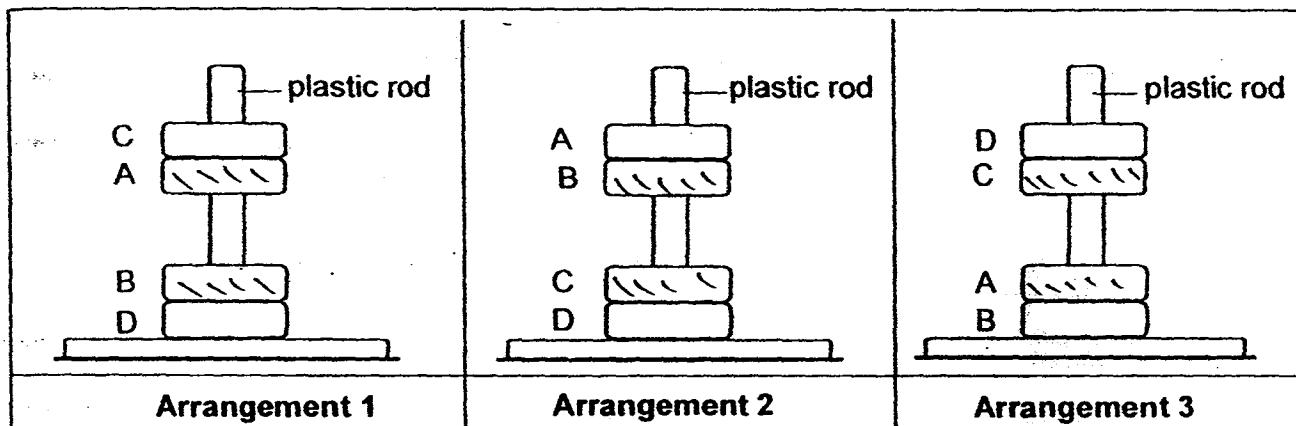
24. Serene conducted an experiment on springs A and B. She hung different loads one at a time and recorded the length of the spring. Her results are shown in the graph below.



Which one of the following statements is true?

- (1) Spring B extended by 50 cm when the load is 80 g.
- (2) Spring B stretched more than Spring A for the same load.
- (3) Spring A is longer than Spring B before the start of the experiment.
- (4) Spring A and Spring B have the same length when the load is 20 g.

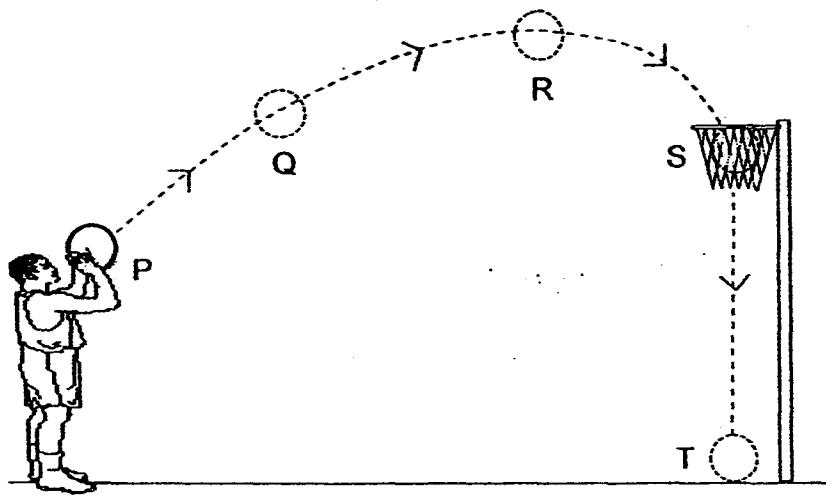
25. Chloe put four metal rings A, B, C and D through a smooth plastic rod in three different arrangements as shown below.



Based on the observations above, which of the following metal rings are definitely magnets?

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

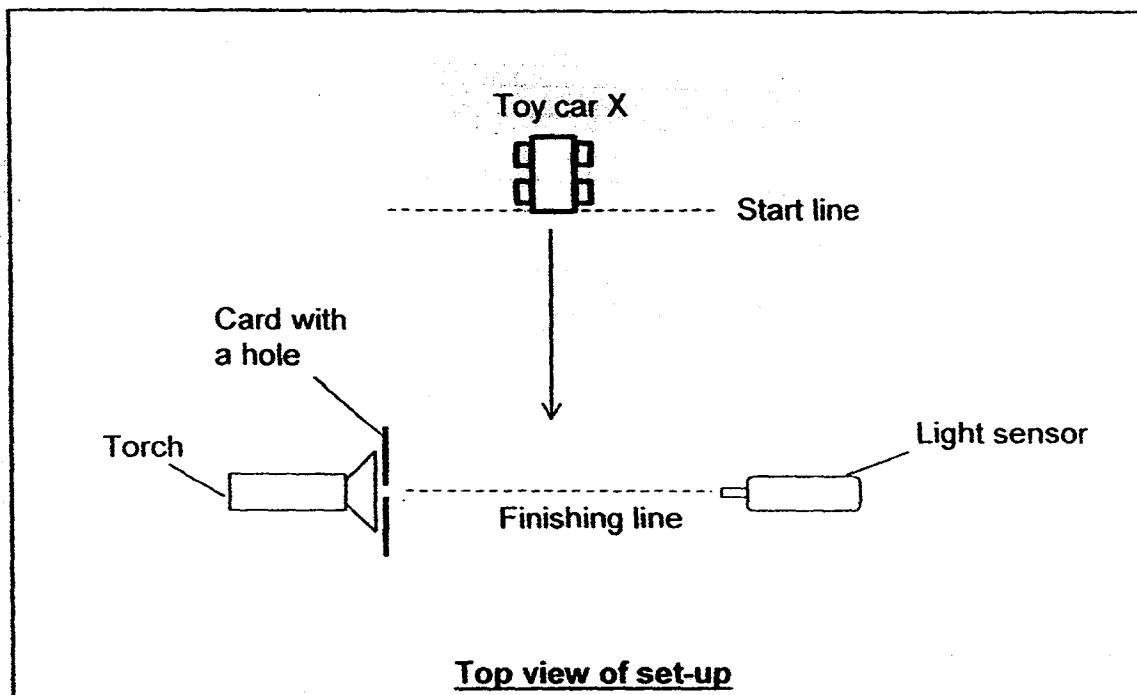
26. Kim Huat threw a ball into the net as shown in the diagram below.



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

- A There are no forces acting on the ball at T..
 - B Kim Huat exerted a force on the ball at P to move the ball.
 - C There is more gravitational force acting on the ball at R than at Q.
 - D The gravitational potential energy of the ball decreases from R to S only.
-
- (1) B only
 - (2) A and C only
 - (3) A, B and D only
 - (4) B, C and D only

27. Chloe conducted the experiment in a completely dark room as shown below. She exerted a force on toy car X , such that it moved past the finishing line.



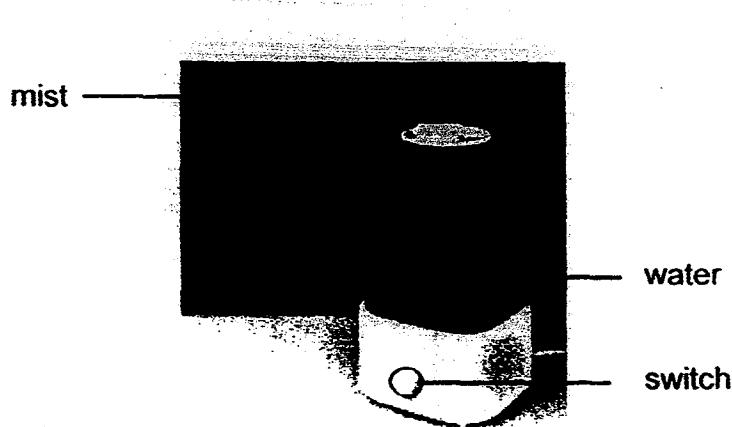
Chloe repeated the procedure with toy car Y, using the same amount of force. She recorded the amount of light detected by the light sensor over a period of time in the table below.

Time (s)	Amount of light detected by light sensor (Lux) after exerting a force on	
	Toy car X	Toy car Y
0	2000	2000
1	2000	2000
2	0	2000
3	2000	2000

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

- A Toy car X is opaque.
 - B Toy car Y is transparent.
 - C Toy car Y travels at a greater speed than Toy car X
- (1) A only
 (2) A and B only
 (3) B and C only
 (4) A, B and C

28. Jasmine's mother bought a humidifier which releases tiny water droplets in the form of mist into the air, as shown below.



Jasmine advised her mother to switch off the humidifier when she mops the floor.

Which one of the following is the correct explanation for switching off the humidifier when mopping the floor?

- (1) The water on the floor will gain more heat from the surrounding mist to evaporate faster.
- (2) This will lower the temperature of the air, increasing the rate of evaporation of water on the floor.
- (3) This will lower the amount of water vapour in the air, increasing the rate of evaporation of water on the floor.
- (4) This will increase the amount of water vapour in the air, increasing the rate of condensation of water vapour on the floor.

29. David filled 4 containers, P, Q R and S, with equal amount of water at 75°C. The 4 containers are of the same size and shape but made of different materials. He left the 4 containers on a table in the Science laboratory with a constant room temperature.

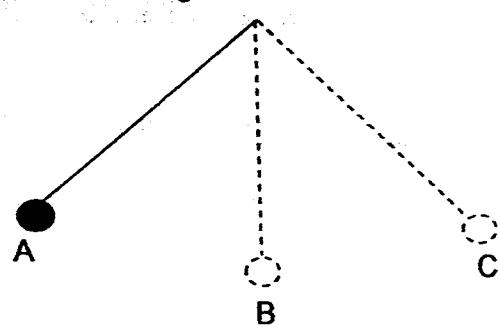
He recorded the time taken for the water in the containers to reach room temperature in the table below.

Material of the container	Time taken for water to reach room temperature (min)
P	28
Q	14
R	66
S	42

Based on the results above, which one of the following materials, P, Q, R or S, would be most suitable to make a mug to keep drinks cold for the longest time?

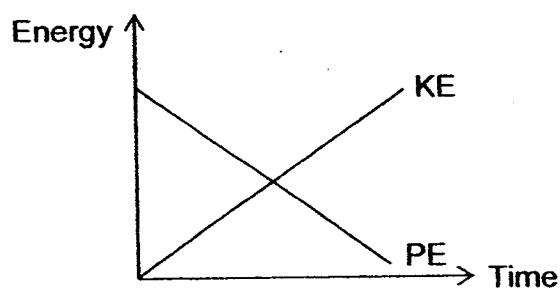
- (1) P
- (2) Q
- (3) R
- (4) S

30. Prithi released a bob at position A, which moved to position B and then to position C, as shown in the diagram below.

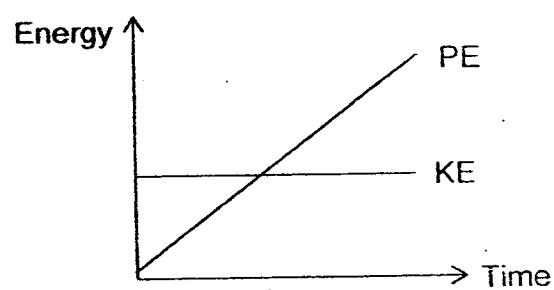


Which one of the following graphs correctly shows the change in kinetic energy (KE) and potential energy (PE) of the bob as it moved from B to C?

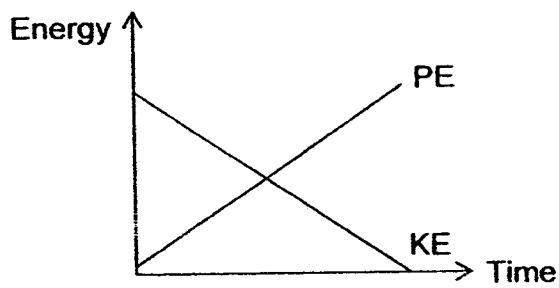
(1)



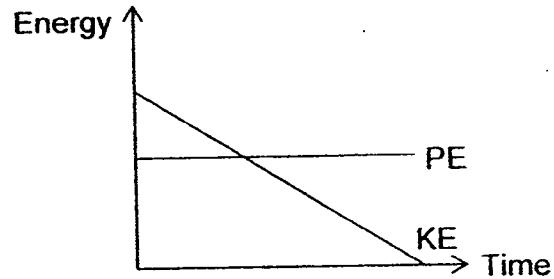
(2)



(3)



(4)



SECTION B (40 marks)

For questions 31 to 44, write your answers clearly in the spaces provided.

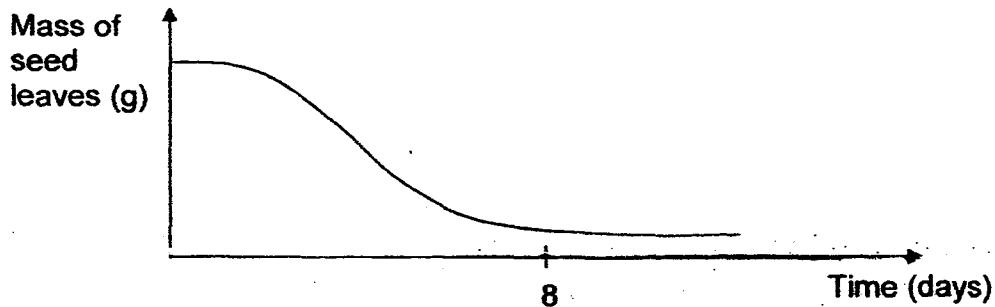
The number of marks available is shown in the brackets [] at the end of each question or part question.

31. Sally prepared three identical set-ups by burying 20 seeds in the same amount of moist soil. Then she placed the three set-ups at different temperatures. She recorded her observations over a period of 6 days in the table below.

Temperature (°C)	Total number of seeds germinated					
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
5	0	0	?	0	1	1
15	0	0	0	1	?	9
25	0	2	8	13	17	19

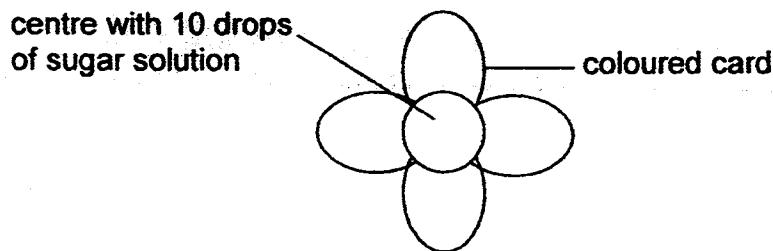
- (a) Predict the total number of seeds germinated: [1]
- (i) at 5°C, on Day 3 : _____ (ii) at 15°C, on Day 5 : _____
- (b) Based on the above information, what can Sally conclude about the effect of temperature on germination? [1]
-
-

The graph below shows the changes in the mass of the seed leaves of a seed during germination.



- (c) How did the seedling get its food after day 8? [1]
-
-

32. Wendy wanted to find out the colour of the flowers that insects X, Y and Z prefer. She used flowers made from different coloured cards. She put 10 drops of sugar solution in the centre of each flower. The flowers were left in the open field.



Wendy then counted the number of each type of insects that visited the flowers over 2 hours. The results were recorded in the table below.

Colour of flower	Number of insect visiting the flower		
	Insect X	Insect Y	Insect Z
Red	12	2	1
Yellow	4	16	3
White	3	2	11

- (a) Based on Wendy's results, which colour attracted most insects? [1]
-

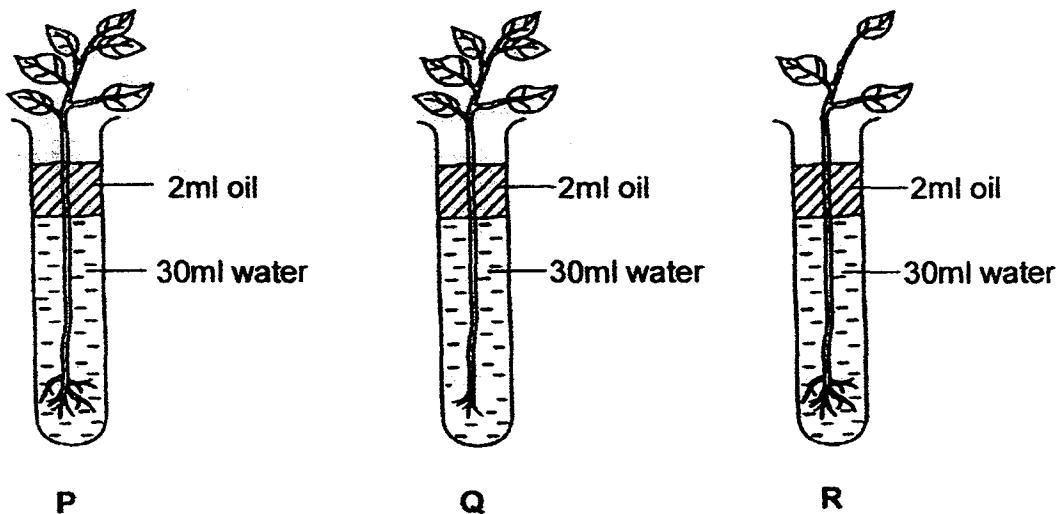
- (b) Using the same materials, what could Wendy do to ensure reliability of her results? [1]
-
-

- (c) Wendy also wanted to find out the relationship between the size of the flowers and the number of the insect Z visiting the flowers.
Put a tick () beside the variable(s) that should be kept constant to ensure a fair test. [1]

	Variables	To be kept constant
(i)	Size of flower	
(ii)	Colour of flower	
(iii)	Number of insect Z visiting each flower	
(iv)	Amount of sugar solution added to each flower	

Score	3
-------	---

33. Cathy prepared three set-ups, P, Q and R, using the same type of plants as shown below. Some roots were removed from the plant in set-up Q while some leaves were removed from the plant in set-up R.

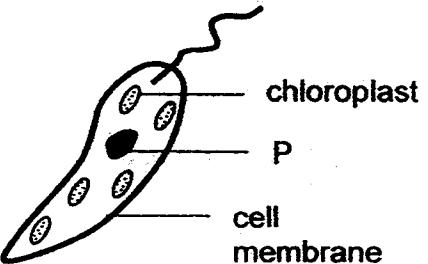
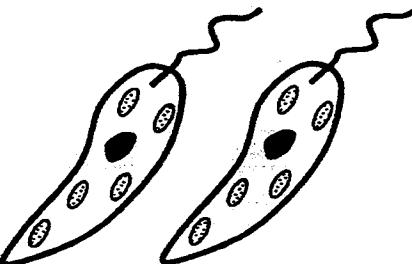
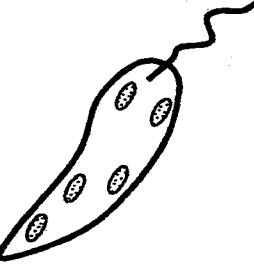
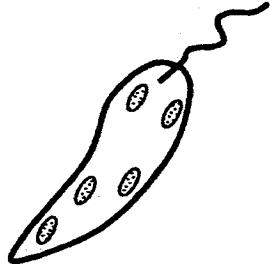


Cathy placed all the set-ups in the open field for 4 hours.

Which set-up, P, Q or R would she observe the greatest decrease in the water level? Explain your choice clearly. [2]

Score	
2	

34. Jack was given two single-celled organisms, X and Y, of the same species. Part P of organism Y has been removed. He observed the organisms for the same period of time and recorded his observations below.

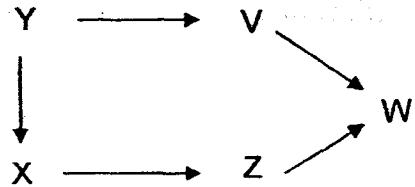
Organism	At the start	After some time
X		
Y		

- (a) Based on Jack's observation above, what can he conclude about the function of part P? [1]

- (b) Identify one difference between organism X and a leaf cell. [1]

Score	
	2

35. The diagram below shows a food web in a certain community.



- (a) State two benefits that tree Y could provide for animal X. [1]

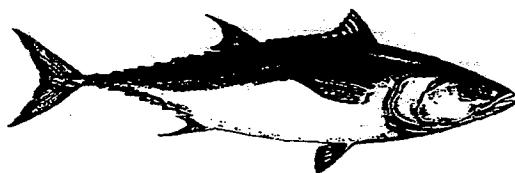
Both animals X and V are found on Tree Y. Animal X lives in a large group but not animal V.

- (b) What advantage does animal X have over animal V by living in a large group? [1]

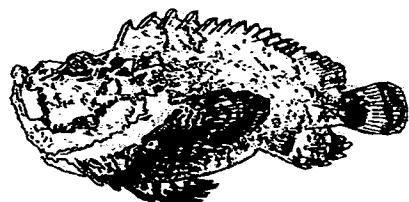
- (c) A disease wiped out the whole population of animal Z. Explain how this would affect the population of animal V. [2]

Score	
4	

36. The diagrams below show 2 fishes, A and B.



Fish A



Fish B

- (a) Based on the diagrams above, explain why Fish A is a faster swimmer than Fish B. (Do not compare the texture of the body.) [1]

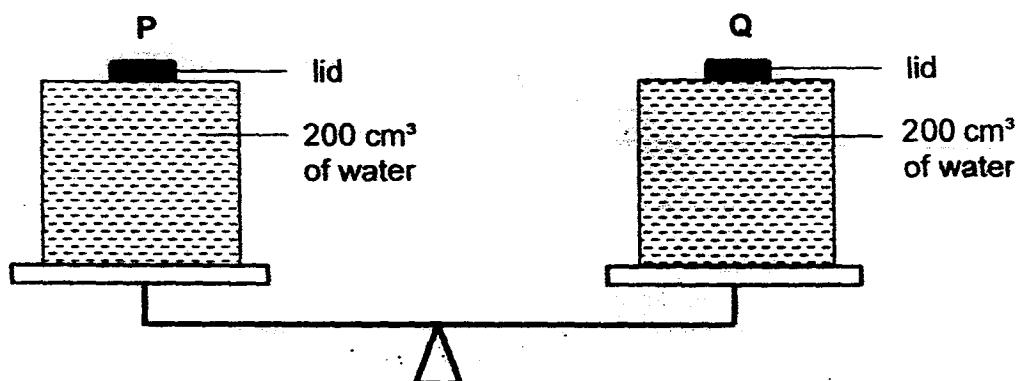
Fish B has a rough, brown-greenish body. Its diet consists of small fish and shrimps. It is normally found among corals, sand and rocks.

- (b) Explain how having a rough, brown-greenish body helps Fish B in their survival. [1]

- (c) Fish B is a slow swimmer. Suggest a behaviour of Fish B that can help it to increase its chance of catching its prey. [1]

Score	3
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37. Jason placed two identical containers, P and Q, on a balance as shown in the diagram below.



Jason poured away all the water in both containers. Then he pumped 300 cm³ of air into P and 100 cm³ of air into Q.

- (a) Describe clearly what Jason would observe of the balance. [1]

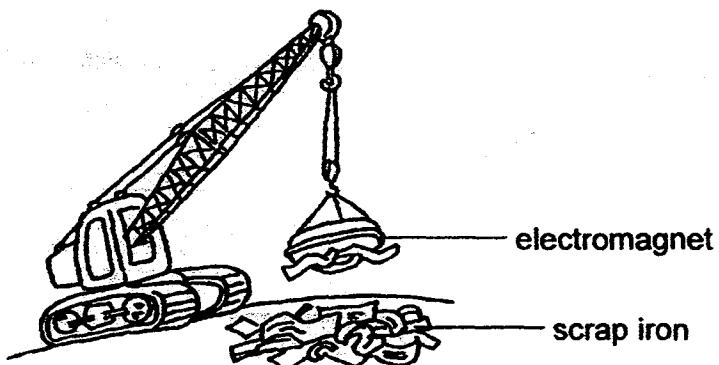
- (b) Give a reason for your answer in (a). [1]

- (c) Fill in the table below to indicate the final volume of air in both containers. [1]

Volume of air (cm ³)	
Container P	Container Q

Score	
	3

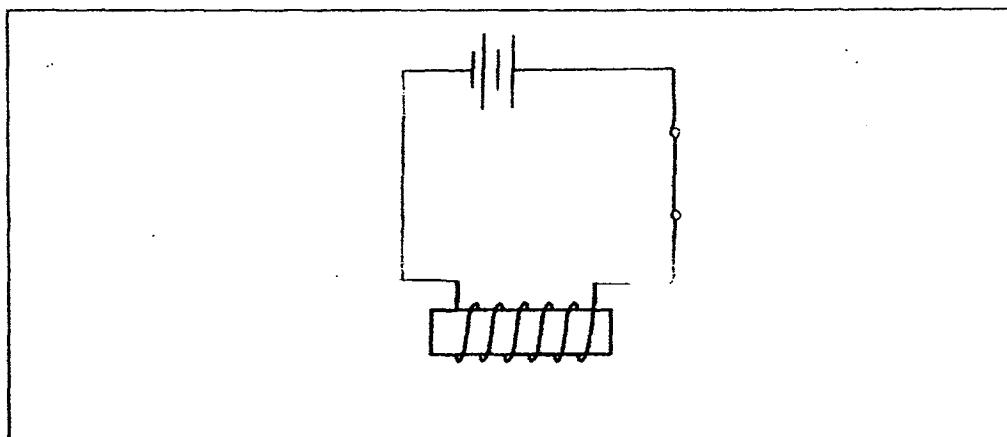
38. The diagram below shows a crane that is used to transfer heavy scrap iron from one place to another.



When the switch is closed, the electromagnet picks up the scrap iron. The crane will then transfer the scrap iron to another location. When the switch is opened, the scrap iron drops to the ground.

- (a) Complete the circuit diagram below to show how the electromagnet works, using 2 batteries, 1 switch and wires.

An iron rod with a piece of insulated wire coiled around it, which forms part of the circuit, has been drawn for you. [1]



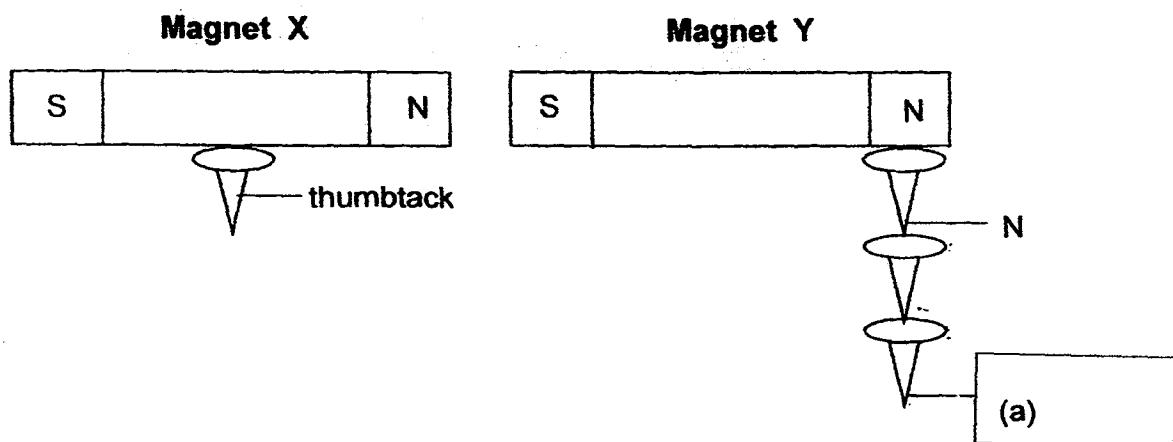
- (b) Using the same type of batteries, switch, iron rod, wires and circuit arrangement in part (a), suggest 2 ways to enable the electromagnet to attract more scrap iron. [2]

(i) _____

(ii) _____

Score	3
-------	---

39. Angie wanted to find out which magnet, X or Y is stronger. She set up the experiment below.



- (a) Label 'N' for north-seeking pole or 'S' for south-seeking pole in the box in the above diagram. [1]
- (b) Angie observed that Magnet Y attracted more thumbtacks than Magnet X. She concluded that Magnet Y is stronger than Magnet X.

Explain why Angie cannot conclude that Magnet Y is stronger than Magnet X. [2]

Score	
	3

40. Jane's mass is 40kg. The table below shows how much Jane weighs on different planets.

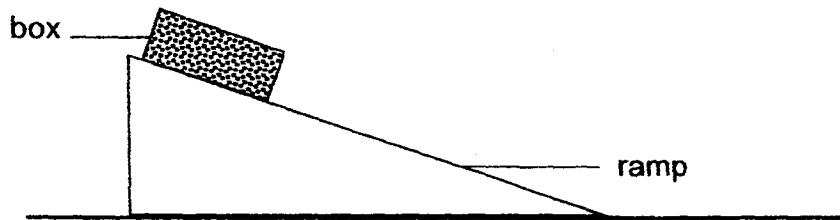
Planets	Jane's weight (N)
Earth	400
Venus	362
Mars	150
Saturn	425
Jupiter	945

- (a) Based on the information above, what can Jane conclude about the gravitational force acting on objects on different planets? [1]

- (b) What is Jane's mass on planet Mars? Give a reason for your answer. [1]

Score	
	2

41. Siti wanted to find out if the surface texture of a box affects the time taken for it to slide down a ramp. She pushed 3 boxes, P, Q and R, made of different materials, down a ramp one at a time as shown in the set-up below.



Siti recorded her results in the table below.

Box	Time taken for box to reach the ground (s)			
	1st try	2nd try	3rd try	Average
P	5.5	6.2	4.9	5.53
Q	2.3	3.1	2.9	2.77
R	8.9	9.7	9.3	9.30

- (a) Which box, P, Q or R, is the smoothest? Explain your answer. [2]

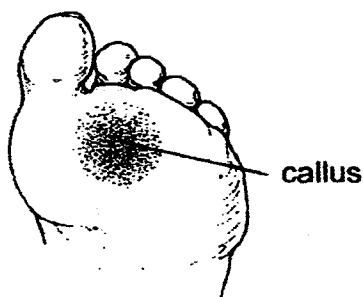
- (b) Siti kept the starting point of the box sliding down the ramp constant in her experiment.
How did this make her experiment a fair test? [1]

Score	
3	

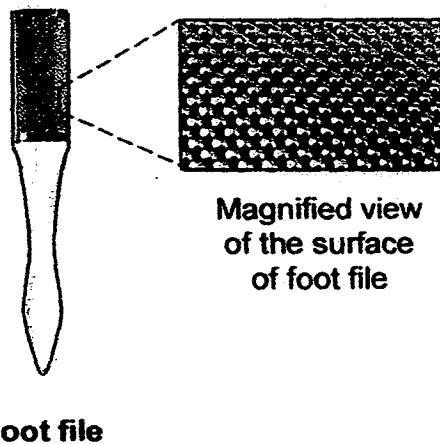
Continue on Pg 36

Continue from Pg 35

The diagram below shows the callus, a layer of hardened skin, on the sole of Siti's foot.



Siti wanted to remove the callus by rubbing it with a foot file, as shown in the diagram below.



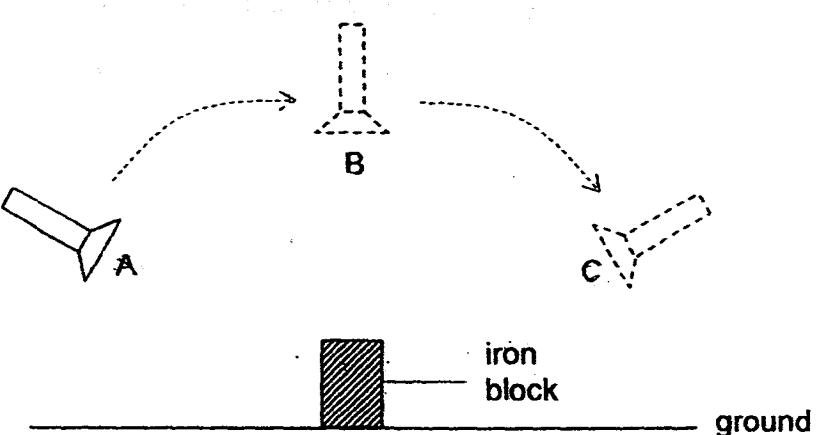
Foot file

Siti has two foot files, X and Y. X has a rougher surface than Y.

- (c) Which foot file, X or Y, should she use to remove the callus more quickly? Explain your answer. [1]

Score	
1	

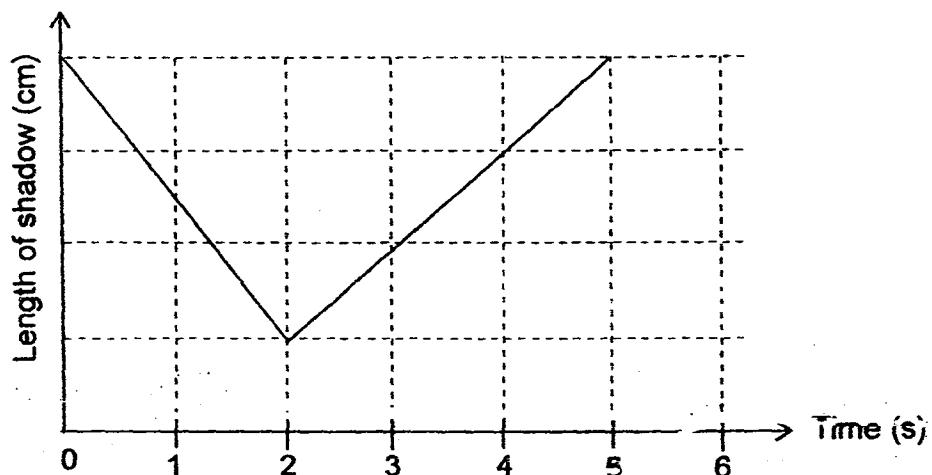
42. Monica conducted the experiment as shown below.



Monica took 2 seconds to move the torch from A to B, and then another 3 seconds to move the torch from B to C. She measured the length of the shadows cast by the iron block at the different positions of the torch.

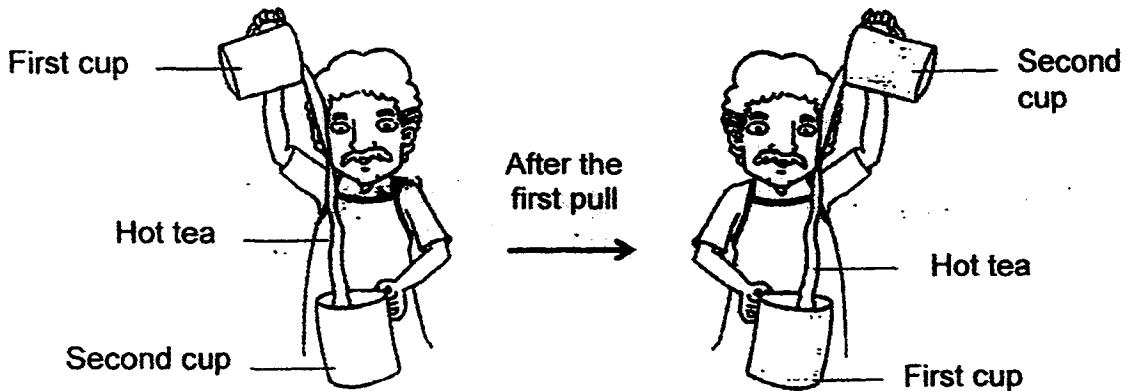
The distance between the torch and the iron block were kept the same at the different positions of the torch. Positions A and C have the same height from the ground.

Draw a line graph below to show how the length of the shadow changes when the torch moves from A to B and then to C. [2]



Score	
	2

43. Esther noticed that her father poured hot tea from one cup to the other continuously for a few times as shown in the diagrams below. Her father explained that the hot tea will cool down more quickly after it was "pulled" several times.



- (a) Explain why the hot tea will cool down more quickly this way. [2]

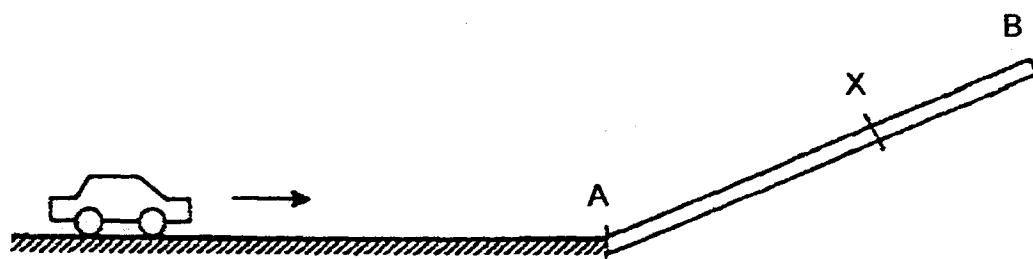
Esther carried out another experiment using two cups of hot tea of the same temperature. She had two cubes of ice, X and Y, of the same mass. She placed ice cube X into a cup and crushed ice cube Y before putting it into another cup.

- (b) Esther observed that the hot tea with crushed ice cube Y cool more quickly than the hot tea with ice cube X.

Give a reason for her observations. [1]

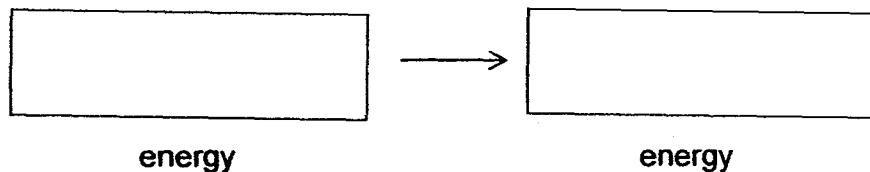
Score	
3	

44. Joanna pushed a toy car towards a wooden plank AB as shown in the diagram below.



The toy car moved up the plank, stopped at X and then it rolled down the plank.

- (a) State the energy conversion that took place when the car moved from A to X. [1]



- (b) Explain why the toy car stopped at X clearly. [1]

- (c) Explain why the toy car rolled down from point X. [1]

- END OF PAPER -

Setters : Mrs Christina Lim, Mdm Lim Sok Yen & Miss Ho Win Nie

Score	3
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EXAM PAPER 2015**LEVEL : PRIMARY 6****SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL****SUBJECT : SCIENCE****TERM : PRELIMINARY EXAMINATION****BOOKLET A**

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10
4	3	3	2	1	4	3	2	1	1
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
1	4	4	1	1	4	2	3	3	2
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q 29	Q 30
3	2	3	4	3	1	1	3	3	3

BOOKLET B

Q31a. i) 0 ii) 4 Q31b. The higher the temperature, the more the number of seeds germinated.
 Q31c. The seedling had developed leaves. The chlorophyll in its leaves trapped light and the leaves made food for the seedling.

Q32a. Yellow Q32b. Repeat the experiment thrice and take the average of number of insects visiting the flowers. Q32c. Colour of flower, Amount of sugar solution added to each flower.

Q33. P. The plant in P has more roots than the plant in Q to take in more water and more leaves than the plant in R for increased rate of transpiration. Thus, more water vapor will escape through the stomata.

Q34a. Part P controls cell division in cells. Q34b. A leaf cell has cell wall but organism X does not.
 Q35a. It could provide food and shelter for animal X.

Q35b. Animal X has a better chance of fighting off other predators than Animal V.

Q35c. Animal V's population will decrease. Since animal Z has been wiped out, Animal V will have less source. Hence, it will rely on its other food source and will prey on a greater number of animal V, hence animal V's population will decrease.

Q36a. Fish A has a streamlined body to help it to reduce water resistance and so it can swim faster. Fish B, however does not have a streamlined body shape.

Q36b. Fish B is able to camouflage as its body is similar to the texture and colour of the corals, rocks and sand it is normally found in. Therefore, fish B is less visible to predators and prey.

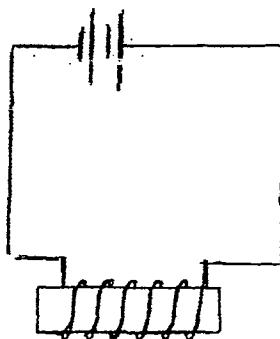
Q36c. It can stay still to blend in with its surroundings which are the corals, sand and rocks, to avoid detection by their prey.

Q37a. The side of the balance holding container P will tip downwards, lower than the other side holding container Q.

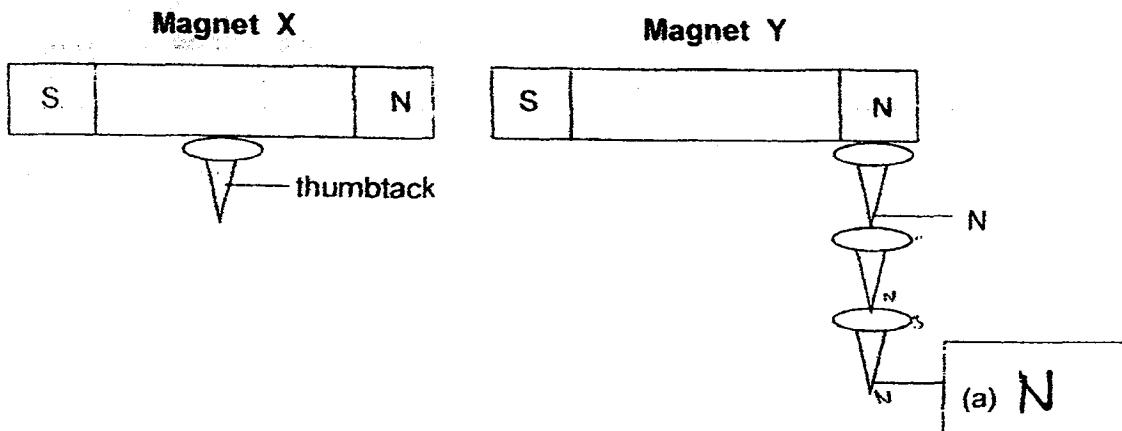
Q37b. More air is pumped into container P than container Q, hence container P contains more mass of air thus it will tip towards the ground.

Q37c. Mass: Amount of matter / substance in an object. Volume: Amount of space a matter occupies.

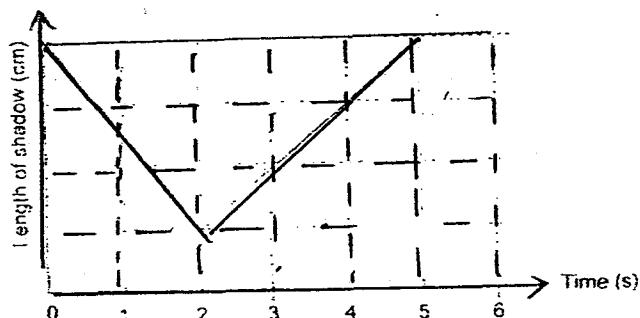
Q38a. SEE PICTURE Q38bi) Increase the number of coils around the iron rod. Q38bii) Add more batteries to the circuit.



Q39a. SEE PICTURE Q39b. The thumbtack on Magnet X is placed in the middle of it, while the 3 thumbtacks on the Magnet Y are placed at the magnet's north pole as that is where the magnet is strongest. The thumbtacks should all be placed at the same part of the magnet, which are the poles, which are the strongest to ensure a fair test is carried out.



- Q40a. The gravitational forces acting on objects on different planets are different.
 Q40b. 40kg. Jane's mass, which is the amount of substance or matter she contains, remains constant wherever she goes, and whichever planet she is on.
 Q41a. Box Q. It took the shortest time to reach the ground which means that the least amount of friction between the box Q and the camp. This shows that box Q was the smoothest.
 Q41b. This ensures that the time taken for the box to reach the ground is only affected by the box surface and not affected by other factors.
 Q41c. Foot file X. There is more friction between X and the callus and thus result in more wear and tear. Q42. SEE PICTURE



- Q43a. The hot tea has more amount of exposed surface area to the surrounding air, when it is "pulled", so it will lose heat at a faster rate. Therefore, the hot tea will cool down more quickly this way. Q43b. There was more exposed surface areas of the crushed ice cube Y than ice cube X, allowing the cup of hot tea containing crushed ice cube Y to lose more heat to the crushed ice cube Y, thus losing heat at a faster rate.
 Q44a. Kinetic energy → Gravitational Potential Energy
 Q44b. All the kinetic energy has been converted to other forms of energy, which are, sound, heat, and gravitational potential energy.
 Q44c. Gravitational force pulled the toy car down.

THE END



RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2013

Name : _____ Index No: _____ Class: P 6 _____

23 Aug 2013

SCIENCE

Attn: 1h 45min

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

SECTION A (30 X 2 marks)

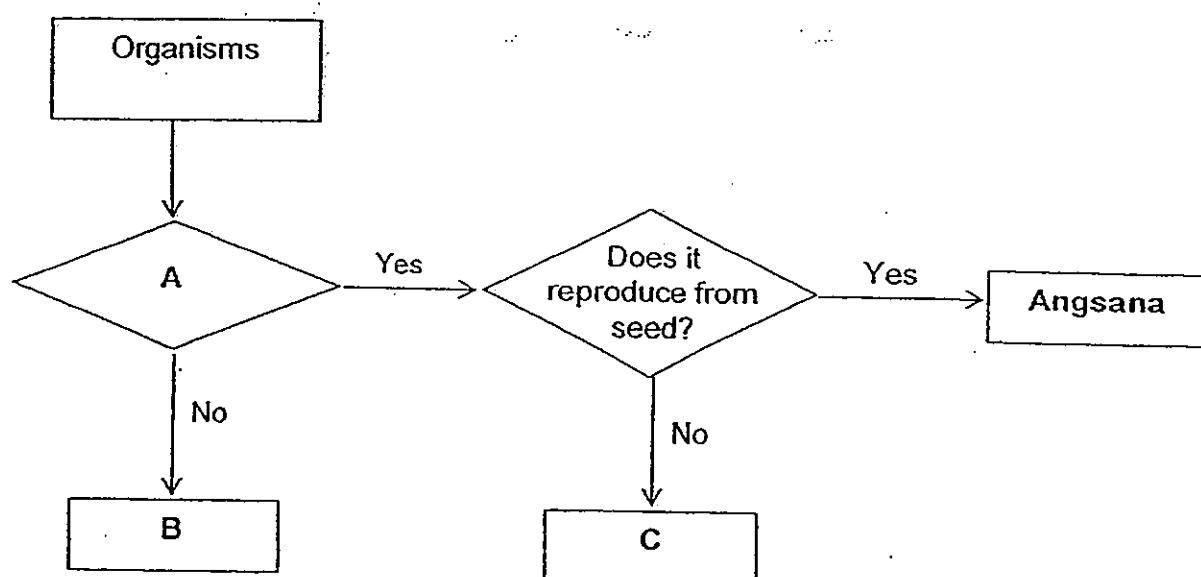
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

1. Rachel found animal X near the river and recorded her observations on animal X as shown below.
- Has fur
 - Lays eggs
 - Suckles their young

Which one of the following groups of animals does animal X belong to?

- (1) Birds
- (2) Fishes
- (3) Insects
- (4) Mammals

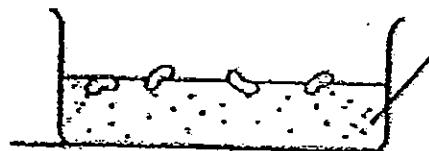
2. The flow chart below shows how some organisms are classified.



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

	A	B	C
(1)	Does it have spores?	bracket fungus	bird's nest fern
(2)	Does it bear flowers?	lady's finger	mangrove
(3)	Does it make its own food?	mushroom	moss
(4)	Are its fruits scattered by animals?	coconut	staghorn fern

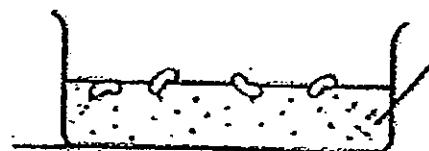
3. Randy carried out an experiment on the germination of green beans using set-ups A, B, C and D as shown below. All the green beans are placed in identical containers.



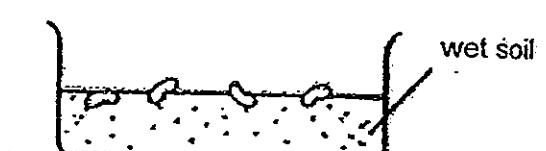
Set-up A
Beside an open window



Set-up B
In the freezer



Set-up C
In the room

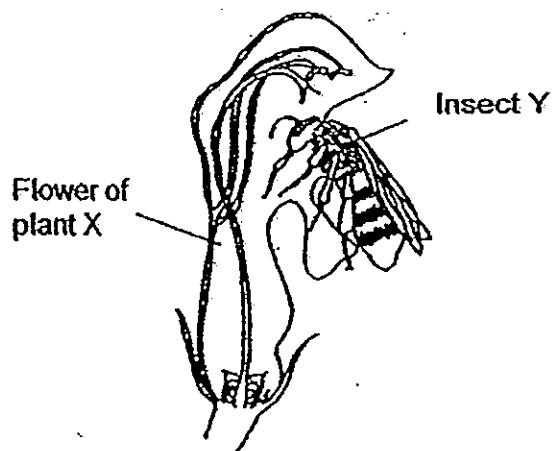


Set-up D
In a cupboard

In which set-ups, A, B, C and D, would Randy observe the beans germinating after a week?

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

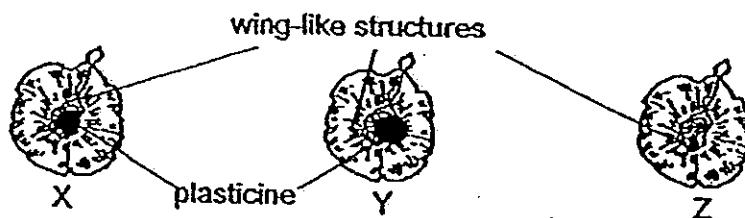
4. The diagram below shows the flower of plant X and insect Y.



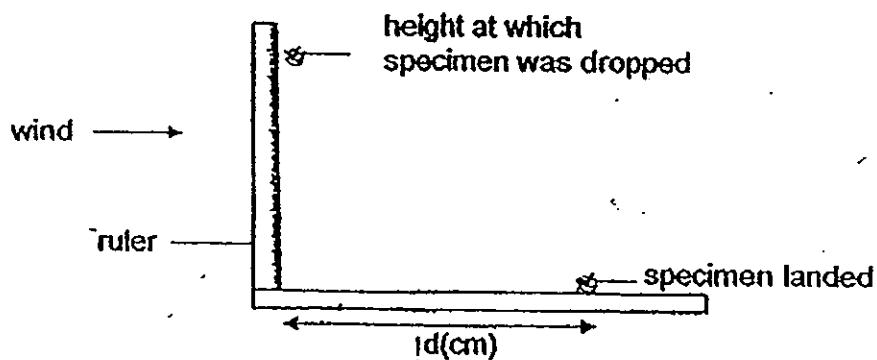
Which one of the following statements best describes the relationship between plant X and insect Y?

- (1) Plant X helps insect Y to hide from its prey.
- (2) Insect Y depends on plant X to find its mate.
- (3) Insect Y helps plant X to pollinate its flowers.
- (4) Plant X depends on insect Y to produce its nectar.

5. Ramah conducted an experiment in an enclosed hall, using identical specimen X, Y and Z of the same type and size. He attached a 5-g plasticine to X and a 20-g plasticine to Y as shown in the diagrams below.



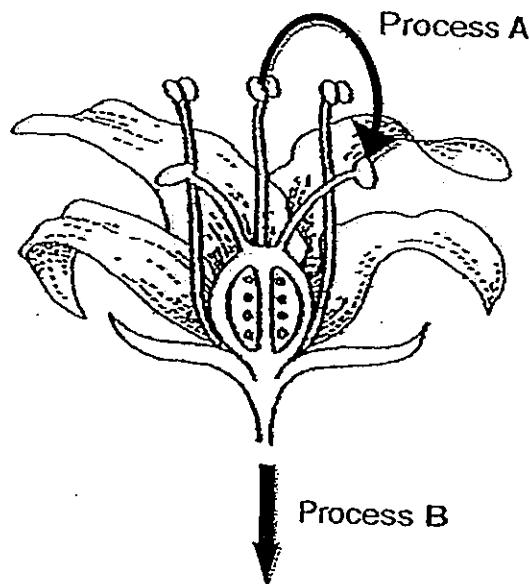
Ramah dropped each specimen, one at a time, from a fixed height above the ground and recorded the distance, d (cm), travelled by each specimen, as shown in the diagram below.



Which one of the following most likely shows Ramah's results?

Distance moved by specimen, d (cm)			
	X	Y	Z
(1)	23.9	56.7	89.0
(2)	56.7	23.9	89.0
(3)	56.7	89.0	23.9
(4)	89.0	56.7	23.9

6. Study the diagram below.

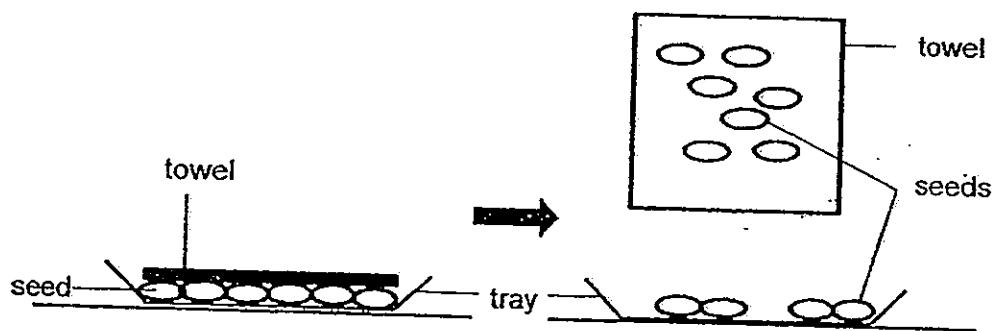


- The ovary develops into W
- The ovule develops into X

Which one of the following correctly represents processes A and B and parts W and X?

	A	B	W	X
(1)	fertilisation	seed dispersal	seed	fruit
(2)	fertilisation	germination	fruit	seed
(3)	pollination	fertilisation	fruit	seed
(4)	pollination	seed dispersal	seed	fruit

7. Minah conducted an experiment as shown below to find out which type of seeds, W, X, Y or Z, is most likely to be dispersed by animals. She placed 20 seeds of each type on a tray. Next, she placed a woolen towel on the seeds and then lifted the towel. She counted the number of seeds left on each tray.



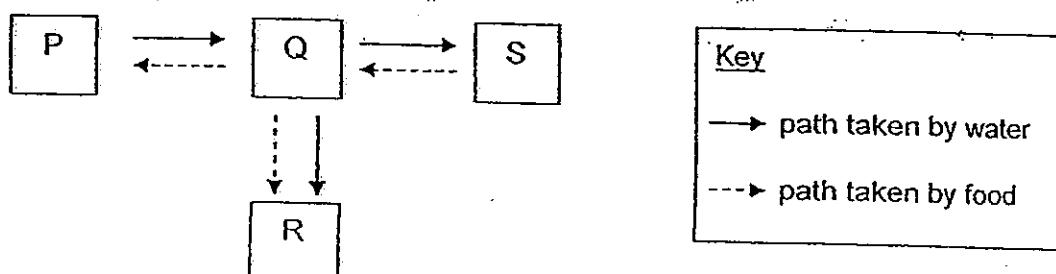
She repeated the experiment twice and recorded her results in the table below.

Types of seeds	Number of seeds left on the tray			
	1 st try	2 nd try	3 rd try	Average
W	18	16	17	17
X	4	2	3	3
Y	10	9	8	9
Z	20	20	20	20

Which of the following seeds, W, X, Y or Z, is/are most likely dispersed by animals?

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

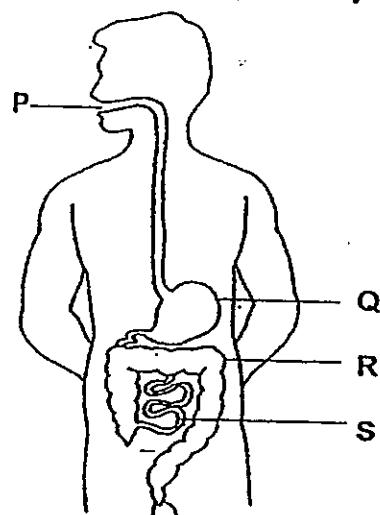
8. The diagram below shows the different paths taken by water and food in plant X. P, Q, R and S represent the various parts of plant X.



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

	P	Q	R	S
(1)	roots	leaves	flowers	stem
(2)	leaves	flowers	stem	roots
(3)	roots	stem	fruits	leaves
(4)	leaves	roots	stem	flowers

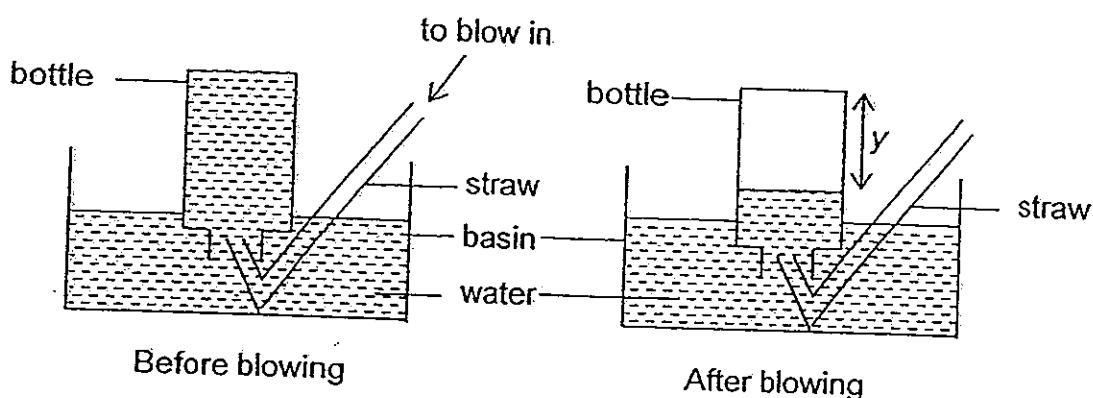
9. The diagram below shows the digestive system of a human.



Which of the following statements is/are correct?

- A Digestive juices are released at P and Q only.
 B Food is broken down into simpler substances at Q and R.
 C Absorption of water into the blood stream occurs at S only.
 D Absorption of digested food into the blood stream occurs at S.
- (1) D only
 (2) A and C only
 (3) B and D only
 (4) A, B and D only

10. Susan set up the experiment as shown below to compare the lung capacity of three of her classmates. Lung capacity refers to the maximum amount of air in the lungs after taking the deepest breath.



Each pupil took a deep breath and blew as much air as she could into the straw. Susan measured and recorded the decrease in the height of the water level in the bottle after each pupil had blown into the straw, as shown in the table below.

Name of pupil	Height, y (cm)
Wei Wei	17
Mei Mei	25
Bin Bin	21

Which of the following statements is/are correct?

- A Wei Wei has the greatest lung capacity.
 - B Mei Mei displaced more water in the bottle in one breath than Bin Bin.
 - C Mei Mei has the smallest amount of air in the lungs after taking a deep breath.
- (1) B only
 (2) C only
 (3) A and B only
 (4) A and C only

11. Sam wanted to study the food relationships among three different types of aquatic organisms, X, Y and Z. He set up two identical aquariums, P and Q, of similar physical conditions and placed different organisms into each aquarium.

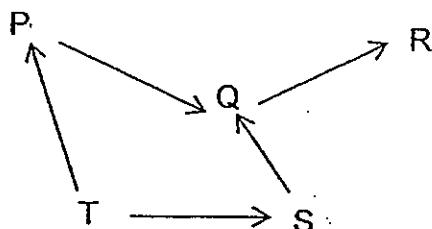
He recorded the number of organisms in the aquariums at the beginning of the experiment and at the end of one week, as shown in the table below. He did not observe any dead organisms in the aquariums.

Set-up	Organisms placed together	Number of organisms	
		At the start of the experiment	At the end of the experiment
P	X	10	5
	Y	10	10
Q	X	10	10
	Z	10	3

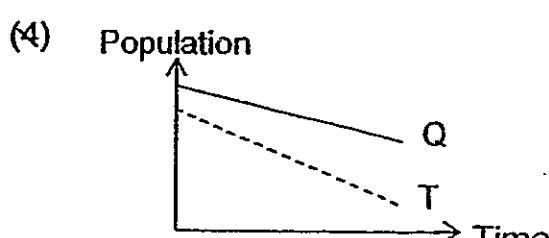
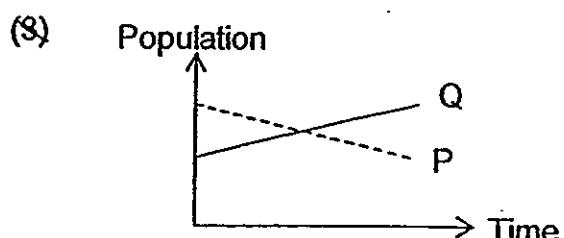
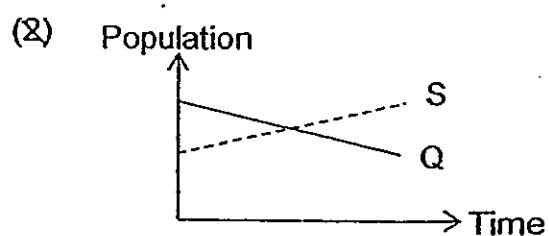
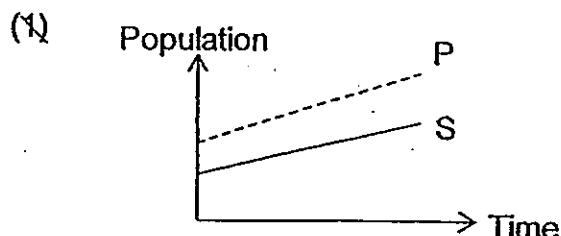
Which one of the following shows the correct food chain?

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

12. The diagram below shows a food web in habitat X.

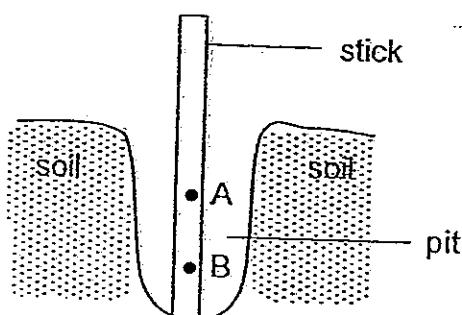


A disease killed all of organisms R. Which one of the following graphs shows the possible changes in the populations of the organisms?



Answer questions 13 and 14 based on the information below.

Jenny dug four pits, P, Q, R and S, at different parts of a park. She placed a stick, marked with points A and B, into each pit, as shown in the diagram below.



Next, she poured some water into each pit and recorded the time taken for the water to drop from point A to point B. She repeated the procedures twice at each pit and recorded the average readings in the table below.

Pit	Average time taken for water level to drop from A to B (seconds)
P	14
Q	35
R	29
S	41

13. Which of the following variables should Jenny keep constant to conduct a fair test?
- A Size of each pit
 - B Position of A and B on each stick
 - C Rate of water flowing from A to B
 - D Amount of water poured into the pit
 - E Rate at which water was poured into each pit
- (1) A and D only
(2) A, B and C only
(3) A, B, D and E only
(4) B, C, D and E only
14. Jenny collected four soil samples, W, X, Y and Z, from each pit and recorded the average size of the particles in the four soil samples. She observed that soil sample Y has the largest average particle size, followed by W, X and then Z.
- Based on the information above, which soil sample, W, X, Y or Z was most likely taken from Q?
- (1) W
 - (2) X
 - (3) Y
 - (4) Z

15. Organism P lives in burrows near the seabed and feed on other animals in the sea. Organism P has some unique adaptations that help it to survive in its environment, as shown in the diagrams below. Both of its eyes are mounted on eyestalks which allow them to move independently. It also has a pair of appendages with hammer-like bulge which can spring outwards at great speed and great force.

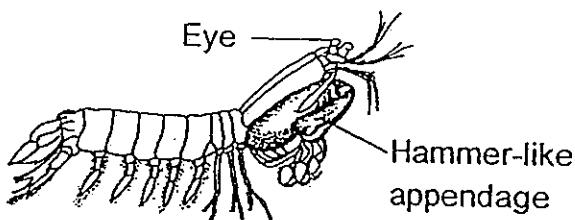


Diagram 1

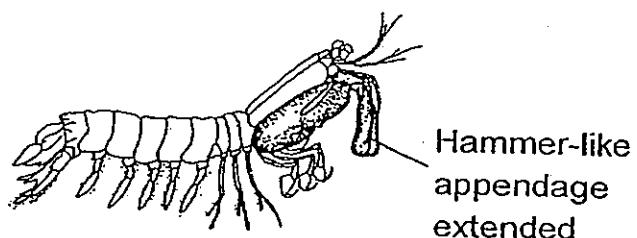
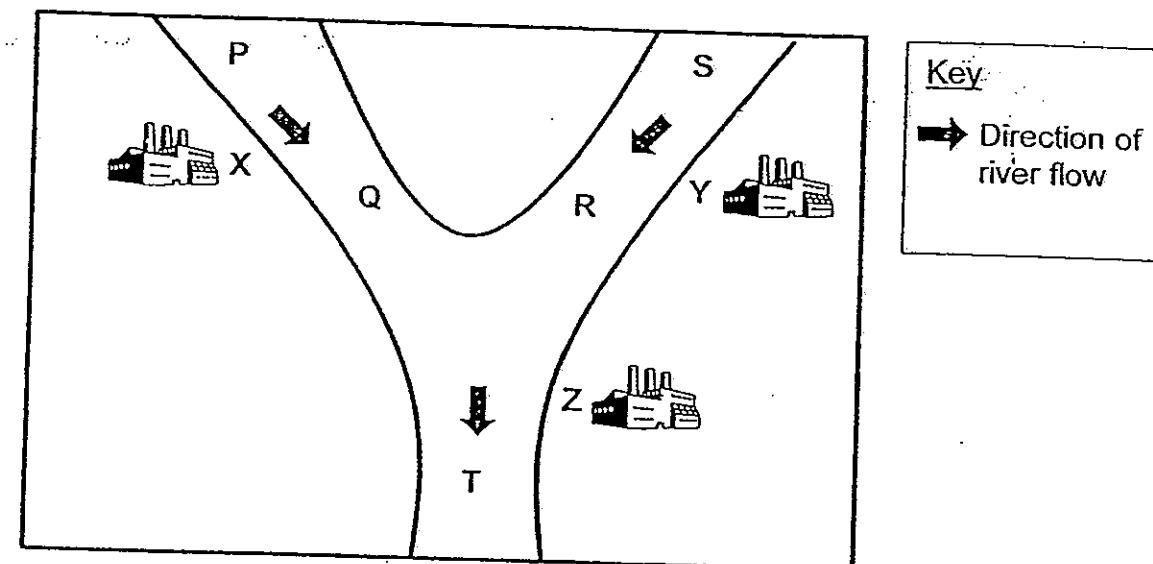


Diagram 2

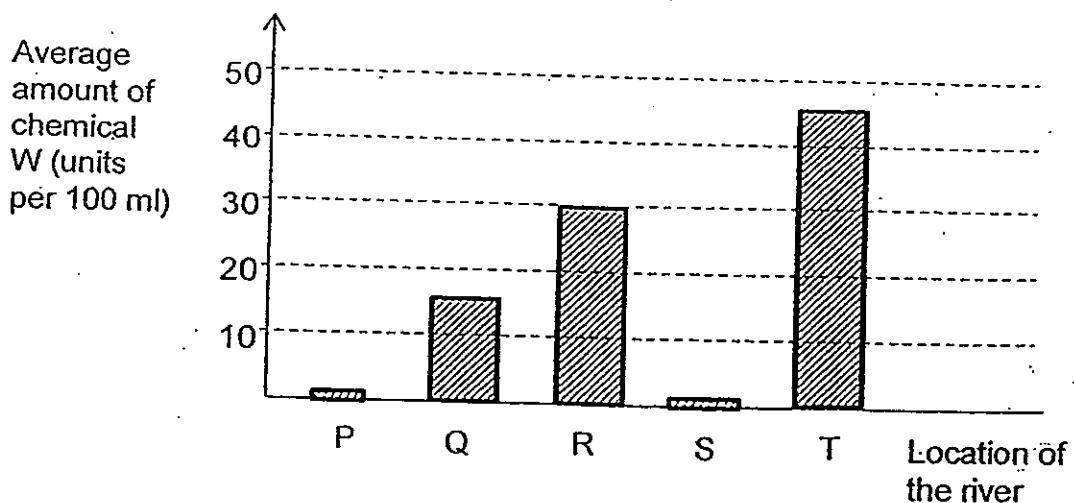
Based on the information above, which of the following statements describe(s) how the adaptations of organism P enhance its survival?

- A The hammer-like appendages move at great force to smash hard-shelled prey.
 - B The eyes are able to move independently to obtain a wide visual field to detect prey.
 - C The hammer-like appendages move at great speed for it to swim away quickly from predators.
 - D The eyes are mounted on eyestalks to allow it to see its surroundings more clearly at night than in the day.
- (1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

16. The diagram below shows a river flowing downstream towards the sea. Situated near the river are factories X, Y and Z.



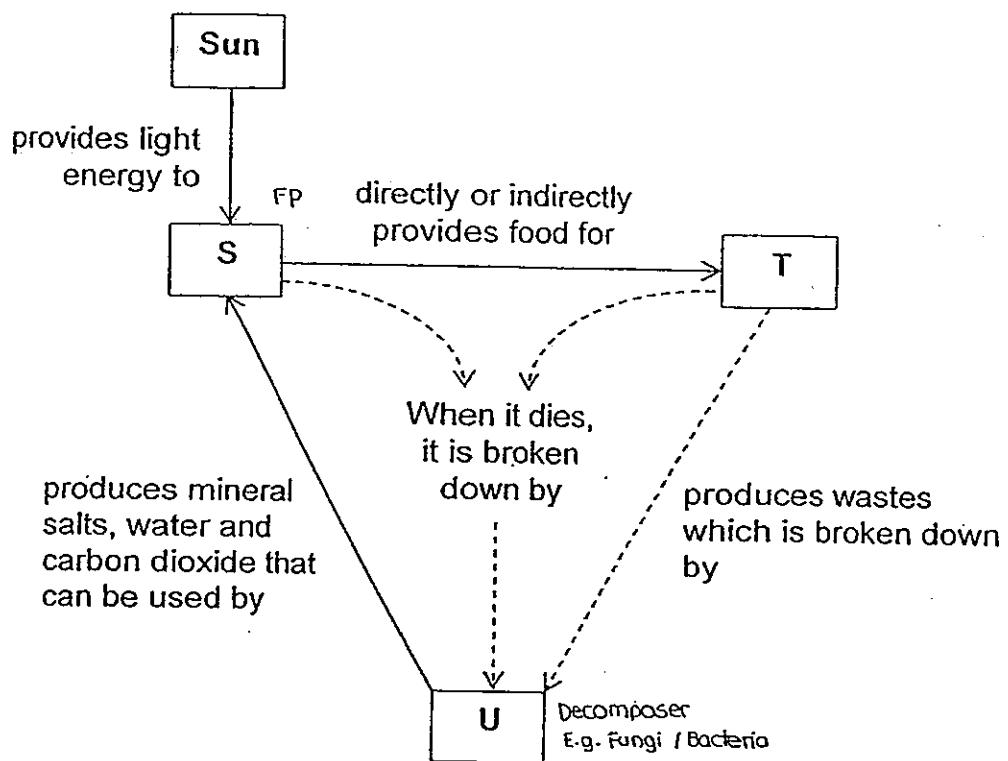
It was suspected that these factories discharged chemical, W, into the river. Water samples were collected from five locations of the river, P, Q, R, S and T for analysis. The results were shown in the graph below.



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

- A Most amount of chemical W was found at T.
 - B Factory Z discharged most amount of chemical W into the river.
 - C Factory Y discharged more chemical W into the river than factory X.
- (1) A only
 (2) A and C only
 (3) B and C only
 (4) A, B and C

17. The diagram below shows how the energy from the Sun is transferred to organism S, T and U.

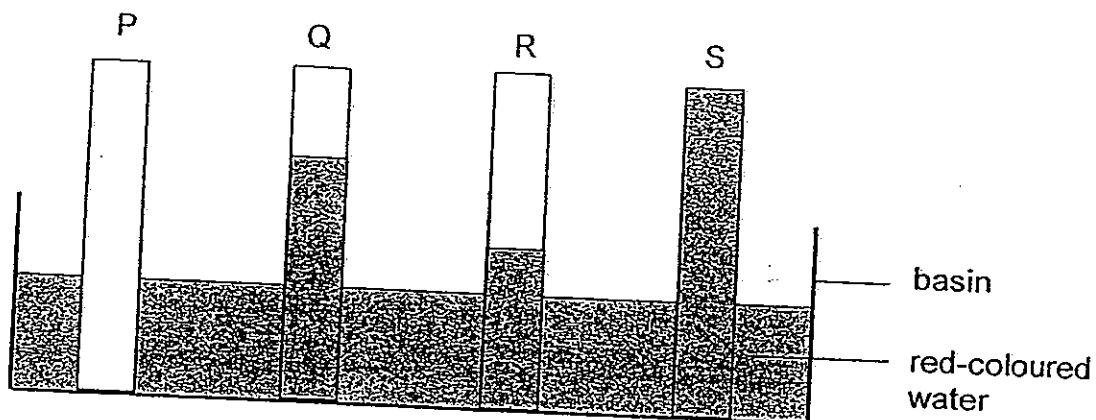


Based on the information given above, which of the following statements is/ are true?

- A S is a food producer.
- B U can be an earthworm.
- C T is a prey and a predator.

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

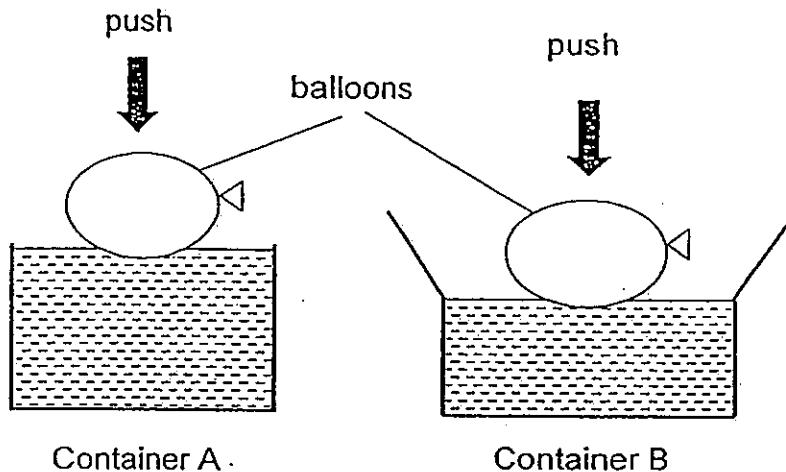
18. Jasmine conducted an experiment to compare the degree of absorbency of different types of materials. She placed 4 materials, P, Q, R and S, of identical size into a basin of red-coloured water for 10 minutes. Jasmine recorded her observations as shown in the diagram below.



Based on the information above, which one of the following correctly identifies the material for making each object?

	Raincoat	Towel	Cup
(1)	S	P	R
(2)	P	Q	X
(3)	R	Q	S
(4)	P	S	P

19. Marie filled two containers, A and B, with equal amounts of water. Using the same amount of force, she pushed an inflated balloon into each container, as shown in the diagrams below.



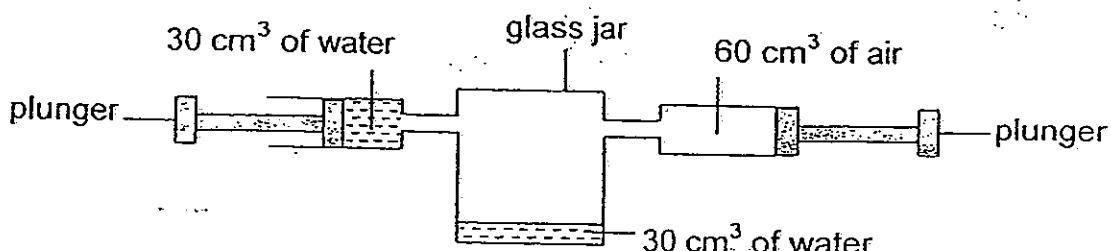
The water in container A overflowed while the water level in container B rose.

Which of the following statements can be inferred from the experiment?

- A Air has mass.
- B Air occupies space.
- C Water has no definite shape.
- D Water has no definite volume.

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

20. A glass jar with a capacity of 300 cm^3 was filled with 30 cm^3 of water. Two syringes were connected to the glass jar as shown in the diagram below.



When the plungers were pushed in completely, 30 cm^3 of water and 60 cm^3 of air were pumped into the jar.

Which one of the following shows the correct volume of the air in the jar?

- (1) 240 cm^3
- (2) 270 cm^3
- (3) 300 cm^3
- (4) 360 cm^3

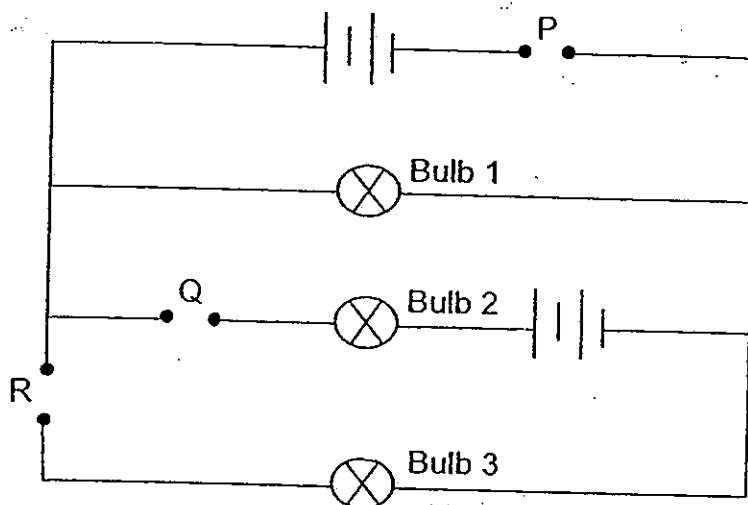
21. Cheryl poured equal amounts of water into three identical beakers A, B and C. She placed the three beakers at different locations in a room of temperature 30°C for 24 hours. She recorded her results in the table below.

Beakers	Volume of water left in the beaker after 24 hours (ml)
A	50
B	45
C	37

Which one of the following best matches A, B and C to the locations where the beakers were placed for 24 hours?

	In the cupboard	In front of a fan	In the refrigerator
(1)	A	B	C
(2)	B	C	A
(3)	B	A	C
(4)	A	C	B

22. Simon used the circuit below to test if objects A, B, C and D are conductors of electricity.



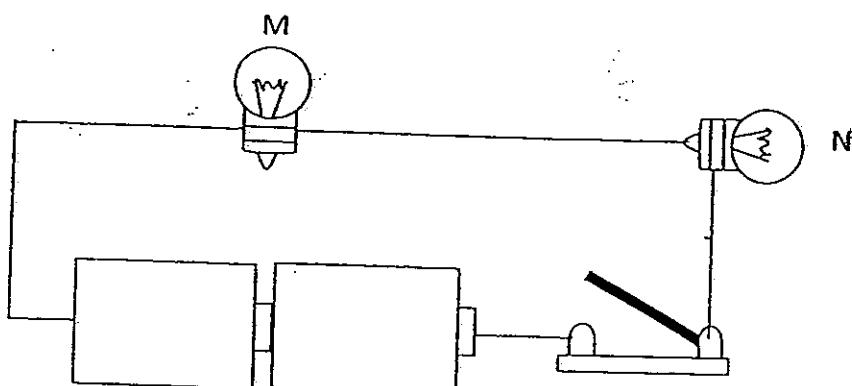
He connected different objects to the circuit at various positions, P, Q and R, and recorded his findings in the table below.

Objects at			Did the bulb light up?		
P	Q	R	Bulb 1	Bulb 2	Bulb 3
A	C	D	yes	no	yes
D	A	B	yes	yes	no
C	B	A	no	no	no

Which of the following materials is/are non-conductor(s) of electricity?

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

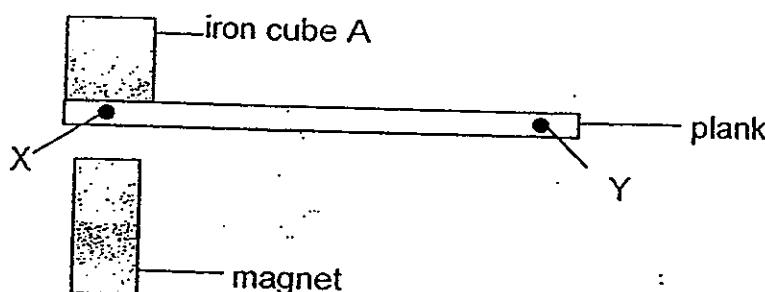
23. Study the electrical circuit below.



When bulb M is fused and the switch is closed, only bulb N lights up. Which of the following is/are possible reason(s) for this observation?

- A The batteries are flat.
 - B Bulbs M and N are connected in series.
 - C The wires are only connected to the metal casing of bulb M.
- (1) B only
(2) C only
(3) A and B only
(4) A and C only

24. Winston placed a magnet directly under the plank as shown in the diagram below.



When he moved the magnet from point X to point Y of the plank, he observed that the iron cube A did not move.

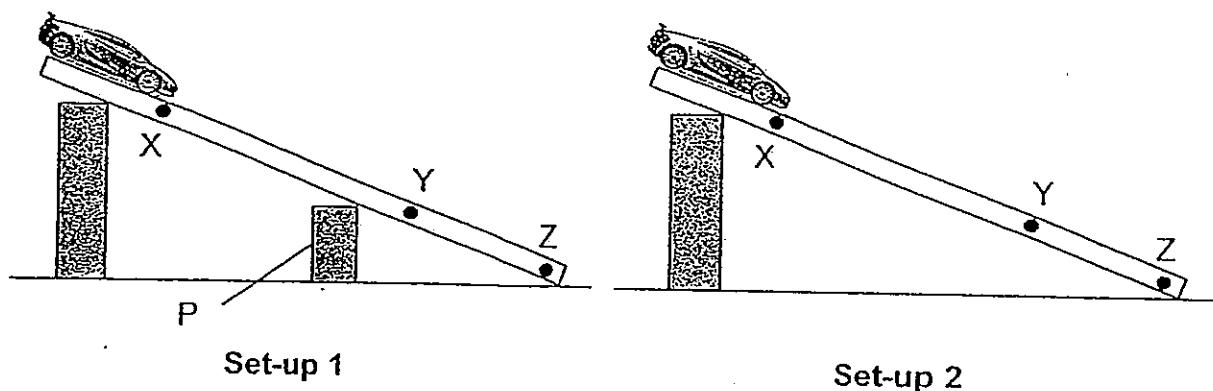
Which of the following is/are possible reason(s) for his observation?

- A Cube A is made of a non-magnetic material.
 - B The plank is made of a non-magnetic material.
 - C The magnet is not strong enough to attract iron cube A.
- (1) A only
(2) C only
(3) A and B only
(4) A, B and C

25. A toy car, made of nickel, was released at position X of the ramp with an object P placed under the ramp.

The same experiment was repeated with object P removed from the set-up.

The set-ups for both experiments are shown below.



The table below shows the time taken for the toy car to travel from X to Y and then from Y to Z for each set-up.

Set-up	Time taken for the toy car to travel (s)	
	from X to Y	from Y to Z
1	12	11
2	16	7

Based on the above information, which of the following can be inferred?

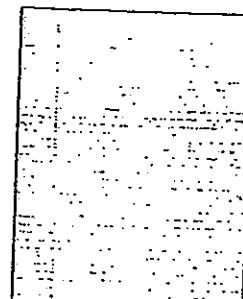
- A P could be made of steel.
- B The ramp could be made of a non-magnetic material.
- C The amount of friction between the toy car and the ramp was greater in set-up 1 than set-up 2.

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

26. Tim carried out an investigation with two identical pieces of paper, X and Y. Paper X was crushed into a ball while paper Y was flat as shown below.



X



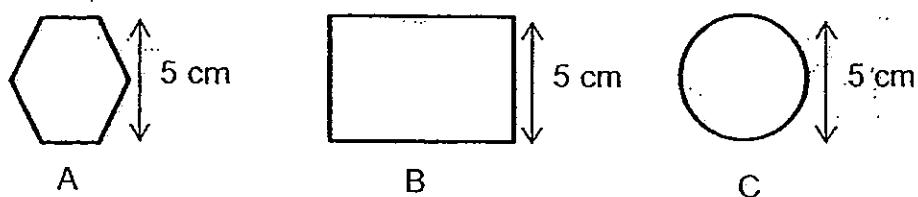
Y

In an enclosed room, Tim dropped paper X and paper Y from the same height at the same time. He observed that X reached the ground earlier than Y.

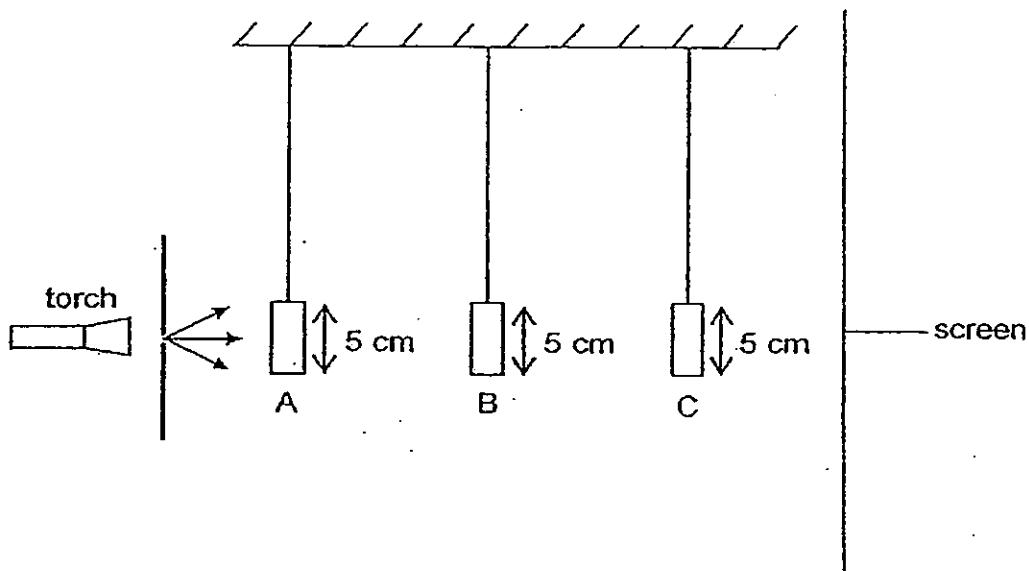
Which of the following is/are the possible explanation(s) for his observations?

- A More gravitational force acted on X than Y.
 - B Y experienced greater air resistance than X.
 - C X possessed more gravitational potential energy than Y.
- (1) A only
(2) B only
(3) A and B only
(4) B and C only

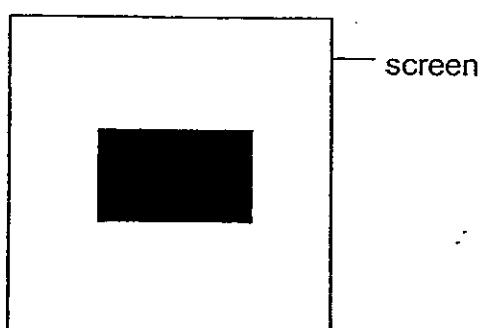
27. Mary cut out three shapes, A, B and C which are made of different materials as shown below.



She conducted an experiment by shining light on the three shapes using the set-up below.



The diagram below shows what was seen on the screen when she switched on the torch.



Which one of the following correctly matches shapes A, B and C to the properties?

	Transparent	Translucent	Opaque
(1)	C	A	B
(2)	B	C	A
(3)	C	-	A, B
(4)	A	C	B

28. Mandy conducted an experiment by cooling four metal rods made of different materials, P, Q, R and S in the fridge for a fixed period of time. He recorded the lengths of each rod before and after cooling in the table below.

Metal	Length before cooling (mm)	Length after cooling (mm)
P	200	195
Q	200	197
R	200	190
S	200	193

Based on the results of her experiment, which one of the following shows the correct order of the materials, starting from the greatest rate of contraction to the smallest rate of contraction?

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

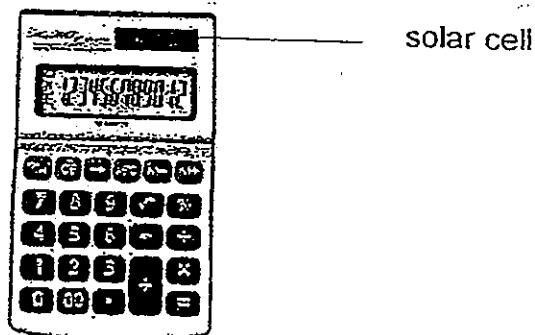
29. The diagrams below show a single-wall cup Y and a double-wall cup Z.



Which of the following statements compared cups Y and Z correctly?

- A Z will keep hot water hot for a longer period of time than Y.
 - B Y will keep cold water cold for a longer period of time than Z.
 - C Y will allow cold water to reach the surrounding temperature in a shorter period of time than Z.
-
- (1) A only
 - (2) A and B only
 - (3) A and C only
 - (4) B and C only

30. The solar cells on calculators enable the calculator to function even when its battery runs out.



Which one of the following best describes the energy conversion that takes place in the solar cell?

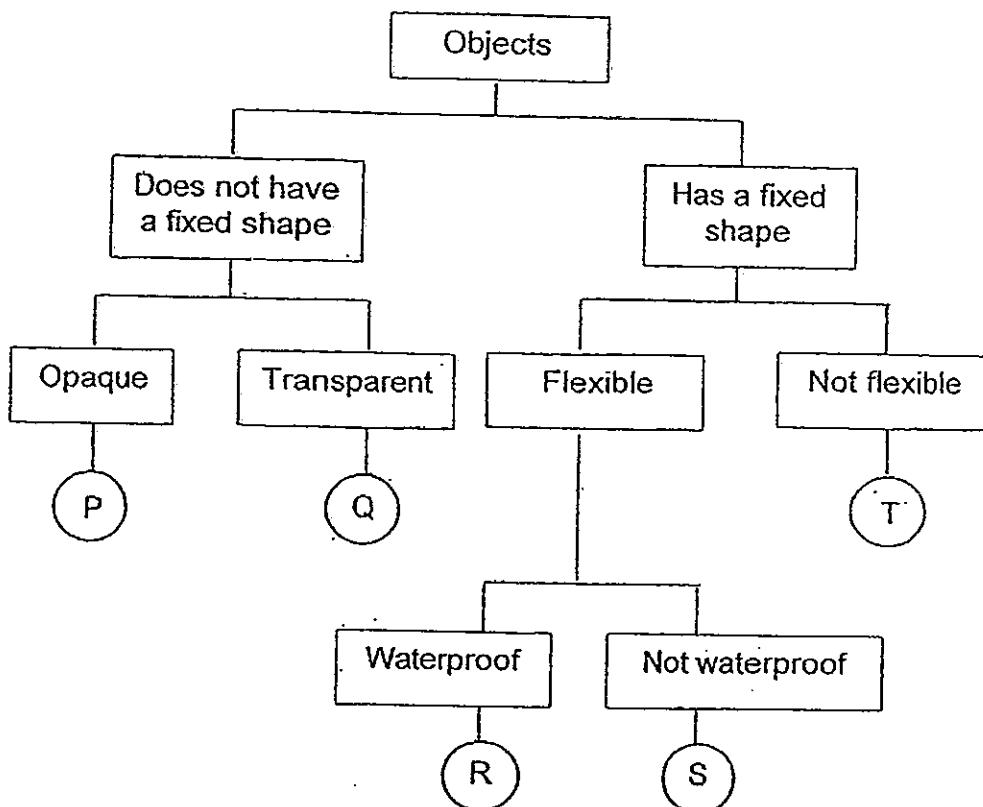
- (1) Potential energy → Light energy
- (2) Heat energy → Electrical energy
- (3) Light energy → Electrical energy
- (4) Light energy → Kinetic energy

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. The chart below shows how objects are being classified.



Answer the following questions based on the above information.

- (a) State the difference(s) between P and T.

[1]

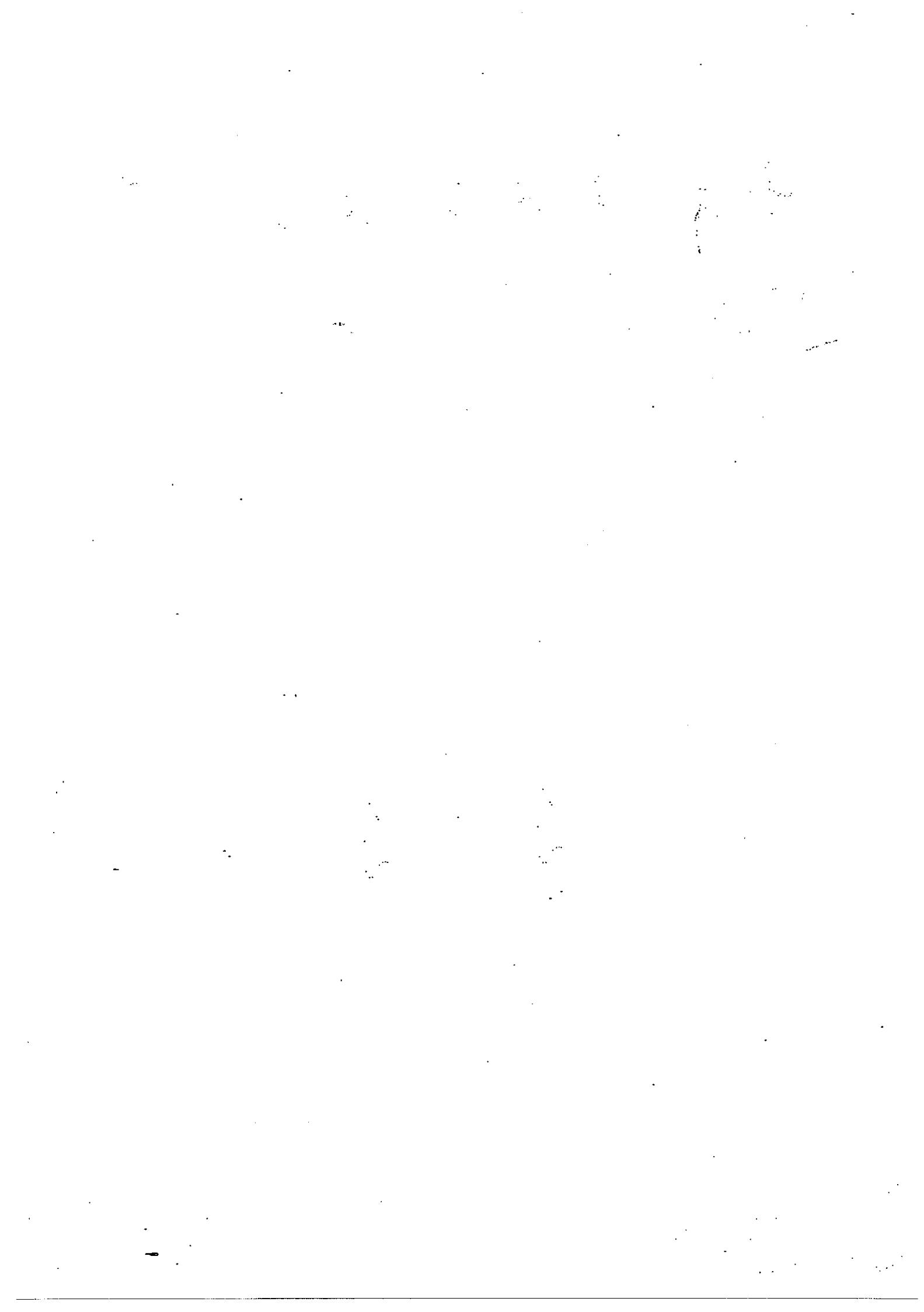
- (b) Identify the group, P, Q, R, S or T, where the following items can be placed.

[2]

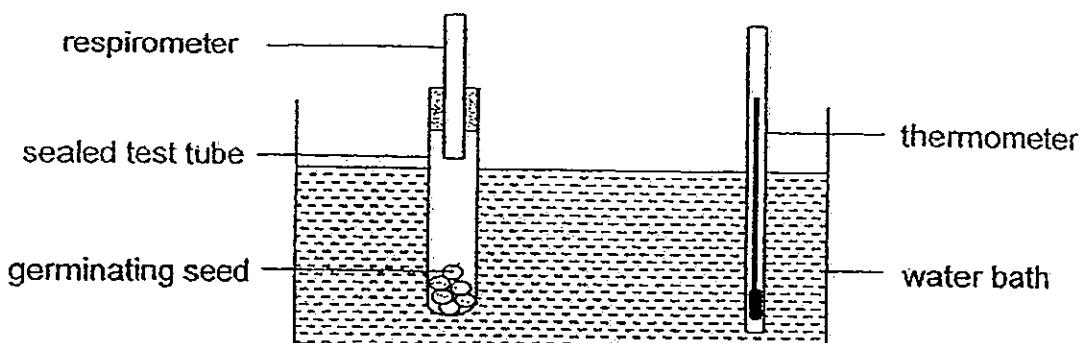
(i) Rubber boots _____

(ii) Tap water _____

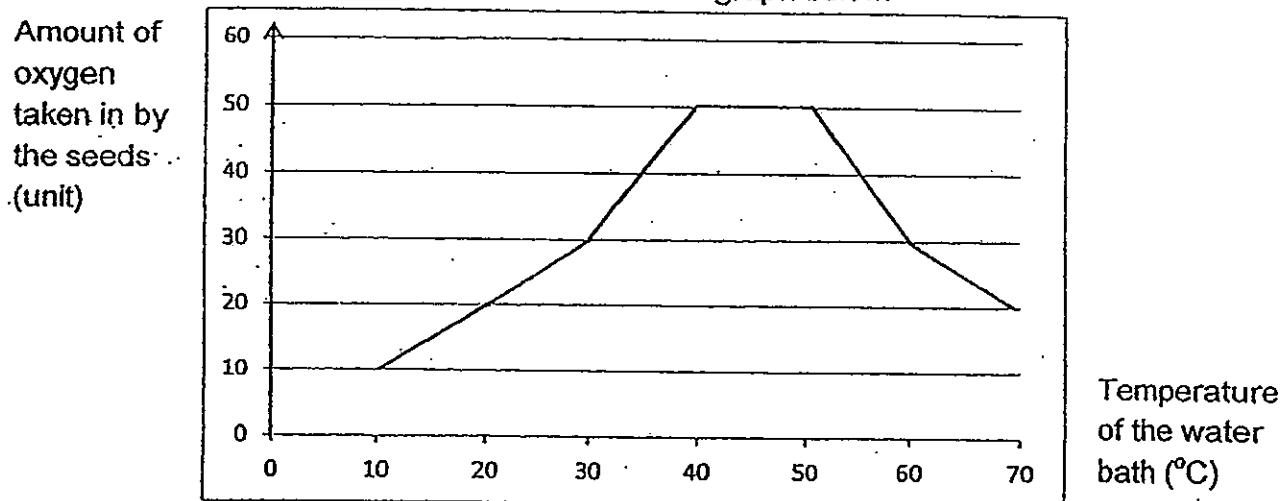
Score	
	3



32. Rajesh wanted to find out how temperature affects the rate of respiration in germinating seeds using the set-up shown below. He placed germinating seeds in a sealed test tube attached to an instrument called the respirometer. He then placed the test tube in a water bath of a certain temperature. The respirometer measures the amount of oxygen taken in by the seeds.



He repeated the experiment using identical set-ups with water baths of different temperatures. His results were shown in the graph below.

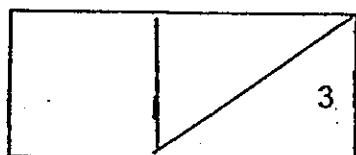


- (a) Why did Rajesh seal the test tube?

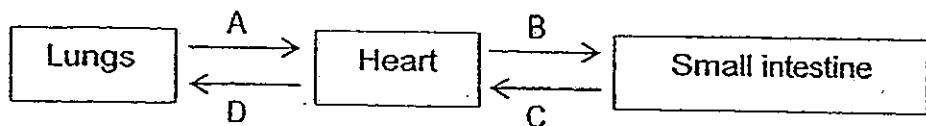
[1]

- (b) State the relationship between the amount of oxygen taken in by the germinating seeds and the temperature of the water bath from 10°C to 70°C.

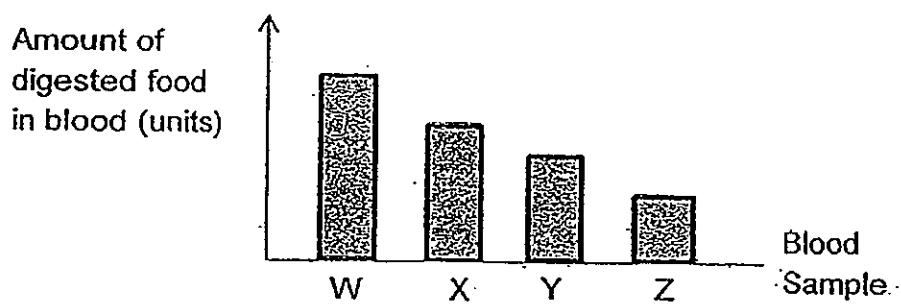
[2]



33. The diagram below shows how blood flows from the one organ to another through blood vessels A, B, C and D in a human body.



Blood samples, W, X, Y and Z, were collected from the blood vessels shown above. The graph below shows the amount of digested food present in each blood sample.



Which blood vessel, A, B, C or D, was the blood sample W mostly likely taken from? Explain your answer clearly. [2]

Score	
	2

34. Jane used a microscope to observe a cheek cell and a leaf cell. She recorded her observations in the table below.

Part of a cell	Types of cell	
	Cheek cell	Leaf cell
Nucleus	Present	Present
Cell wall	Present	Present
Cytoplasm	Present	Absent
Chloroplast	Absent	Present
Cell membrane	Present	Absent

Her classmate, John, checked her observations and spotted errors in the table above. He circled one of the errors as shown above.

- (a) In the table above, circle 2 other errors that John spotted. [1]

John gave her another cell, Z, from a tree to observe. She observed that all the parts of the cell listed in the above table are present in cell Z except

- (b) Which part of a tree could Cell Z be taken from? Explain your answer. [1]
-
-

35. John carried out a study on the organisms in two habitats, A and B, and recorded the results in the tables below.

Habitat A

Type of organism	Population (%)
P	5
Q	25
R	30
S	40

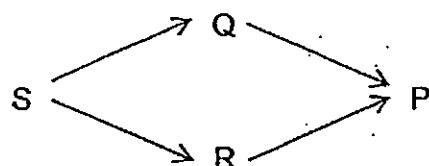
Habitat B

Type of organism	Population (%)
P	10
Q	25
R	25
S	35
Others	5

- (a) Based only on the information above, put a tick (\checkmark) in the correct boxes for each statement. [2]

	Statement	True	False	Not possible to tell
i	Habitats A and B have an equal number of organisms Q.			
ii	There are more types of organisms in habitat B than in habitat A.			
iii	Organism P is the smallest population in both habitats A and B.			
iv	The largest number of organisms in both habitats A and B is organism S.			

- (b) Food relationships among the organisms in habitat A are shown in the food web below.



When John introduced organism T into habitat A, he observed that there was a sharp decrease in population P, followed by a change in populations Q and R over a period of time. Explain his observations. [2]

Score	
	4

36. The Health Advisory provides advice for the public on the preventive measures that can be taken to reduce the health impact of haze based on PSI, as shown in the table below.

PSI (Pollution Standards Index) is Singapore's main indicator of air quality.

PSI	Description of air quality	Preventive measures for children
0 to 100	Good / moderate	Normal activities
101 to 200	Unhealthy	Minimise prolonged or strenuous outdoor physical exertion
201-300	Very unhealthy	Minimise all outdoor exposure

The PSI readings on 23 June 2013 for various regions of Singapore were recorded in the table below.

Time	PSI				
	North	South	East	West	Central
9 am	115	121	112	112	108
12 pm	96	98	91	94	88
3 pm	88	94	81	94	82

Answer the following questions based on the above information.

- (a) Which region has the highest average PSI reading recorded on 23 June throughout the day? [1]

-
- (b) At which of the following time should prolonged outdoor activities be minimised for children on 23 June in all regions of Singapore? Put a tick (✓) in the correct box(es). [1]

9 am

12 pm

3pm

Score	
	2

Continue from Question 36.

Shirley's mother bought three different brands of air purification machines, X, Y and Z, to improve the air quality in the three bedrooms in the house. The three bedrooms are identical in size and layout.

Shirley conducted an experiment to find out which machine is most effective in removing dust particles. She placed all the three machines in bedroom 1. She switched on machine X for one hour and used a counting instrument to record the amount of dust particles in the air in the enclosed room at the end of 1 hour. She repeated the experiment with Y and then Z, one at a time. She kept all the windows and door in the bedroom closed throughout the 3 hours.

The table below shows the results of her experiment. The reading on the counting instrument at 9 am was 6000 unit per m^3 .

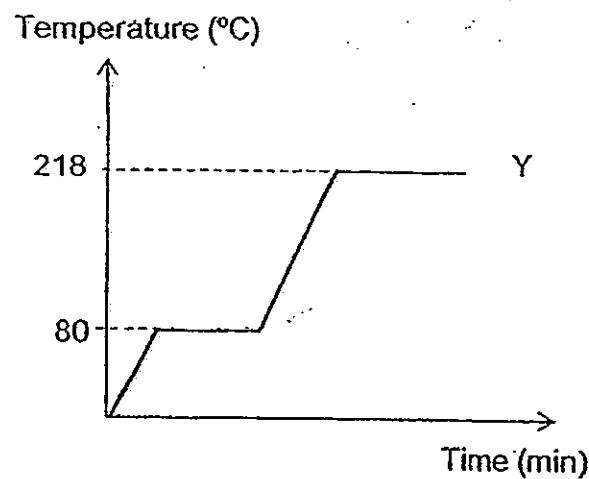
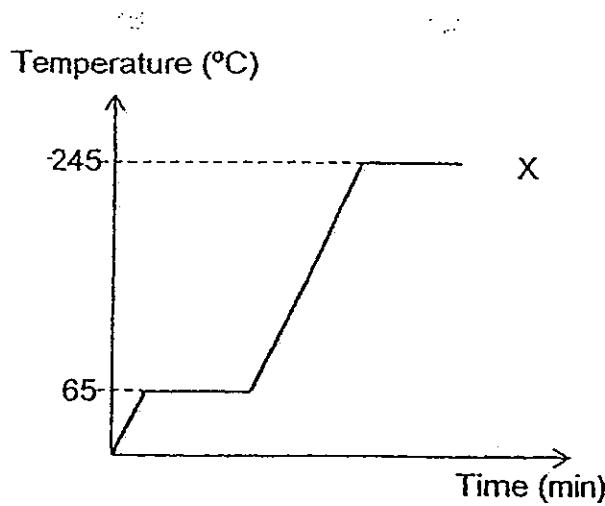
Machines	Period during which the machine was switched on	Reading on counting instrument at the end of one hour period (unit per m^3)
X	9 am to 10 am	4000
Y	10 am to 11 am	3000
Z	11 am to 12 pm	2000

- (c) Shirley's mother told Shirley that her experiment was not a fair one. Explain why her experiment was not a fair one. [1]

- (d) What could Shirley do to make her experiment a fair one? [1]

Score	
	2

37. Two solid substances X and Y were heated over a period of time. The graphs below show the change in temperature of substances X and Y.



- (a) Identify the states of substances X and Y when the temperature is at 70 °C. [1]

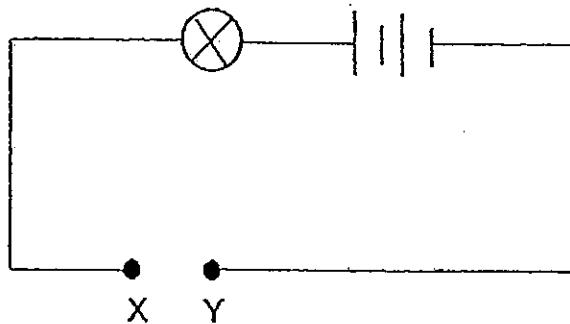
(i) Substance X : _____

(ii) Substance Y : _____

- (b) Based on the above information, what would happen to the temperature of substance X if it was removed from the heat source at 100 °C and placed on a table in the room for one day? Explain your answer. [2].

Score	3
-------	---

38. Wendy's teacher gave her four wires, P, Q, R and S, which are made of the same material but of different lengths and thickness. She set up the circuit below and connected each wire to point X and Y, one at a time and observed the brightness of the bulb.



She recorded her observations in the table below.

Wire	Length of wire (cm)	Thickness of wire (mm)	Brightness of bulb
P	10	1	bright
Q	10	2	Very bright
R	50	1	Dim
S	50	2	bright

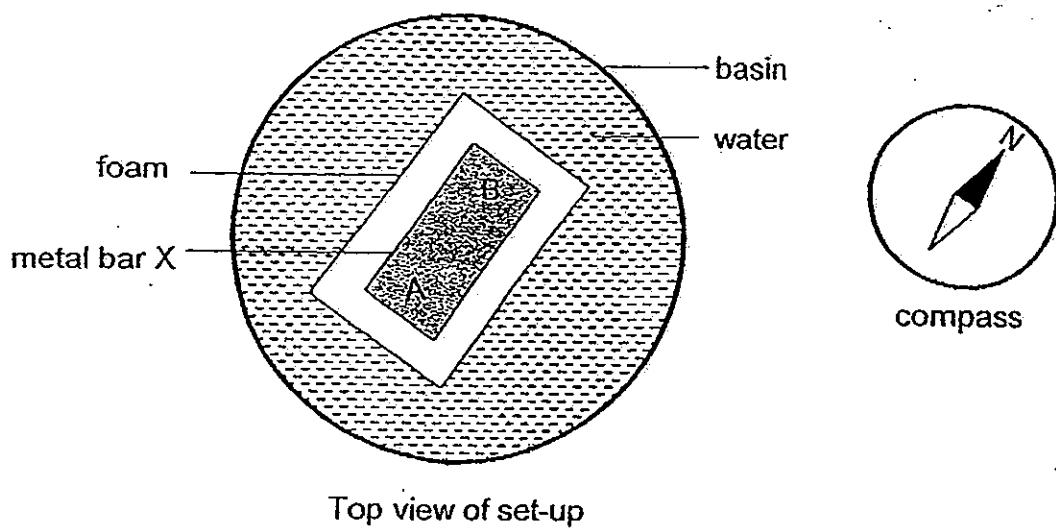
- (a) What conclusions can Wendy draw from her results? [2]

- (b) Her teacher suggested that she should use a light sensor for her experiment.

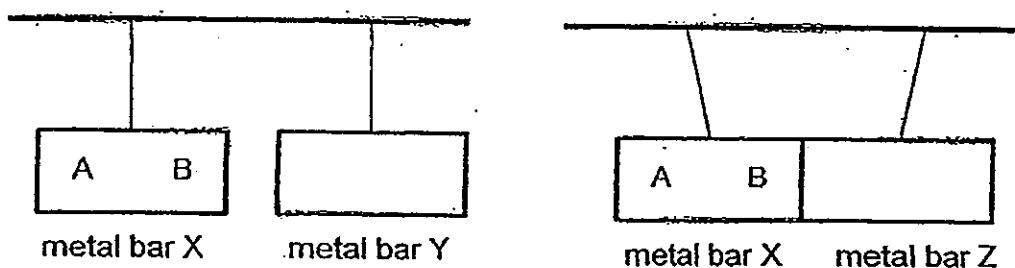
How does using a light sensor help to improve her experiment? [1]

Score	
	3

39. Patricia placed a metal bar X, labelled AB, on a piece of plastic foam in a basin of water. She observed that the free floating metal bar X came to rest with part B pointing to the North as shown in the diagram below.



Next, Patricia hung metal bar X at the same distance from metal bars, Y and Z, in two separate set-ups, respectively. She recorded her observations as shown below.



- (a) Based on the observations above, what can she conclude about the properties of metal bars, Y and Z? [1]
- (i) Metal bar Y : _____
- (ii) Metal bar Z : _____
- (b) Explain your answer in (a)(i). [1]

40. Mary wanted to find out if sliding down the wet water slide at her swimming pool takes a shorter time than sliding down the slide at her playground. Both slides were made of the same material and were of the same height. The distance from the top to the bottom of both slides was also the same.

She recorded the time taken for her to slide down from the top to the bottom of each slide in the table below.

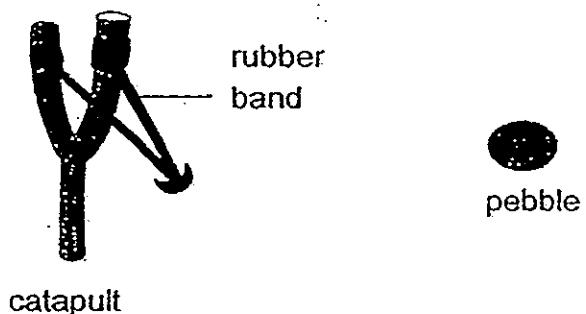
Types of slide	Time taken to reach the bottom of the slide (s)			
	1 st reading	2 nd reading	3 rd reading	Average
Playground	7	6	5	6
Wet water slide	4	4	4	4

Explain the difference in the results obtained.

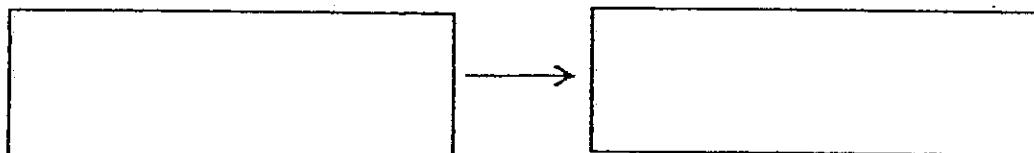
[2]

Score	
	2

41. Peter's ball was stuck on the branch of a tall tree. His friend suggested that Peter could use his newly-bought catapult and a pebble to bring his ball down.



- (a) Fill in the boxes below to show the energy conversion that took place when Peter stretched and released the rubber band to hit the ball on the tree. [1]

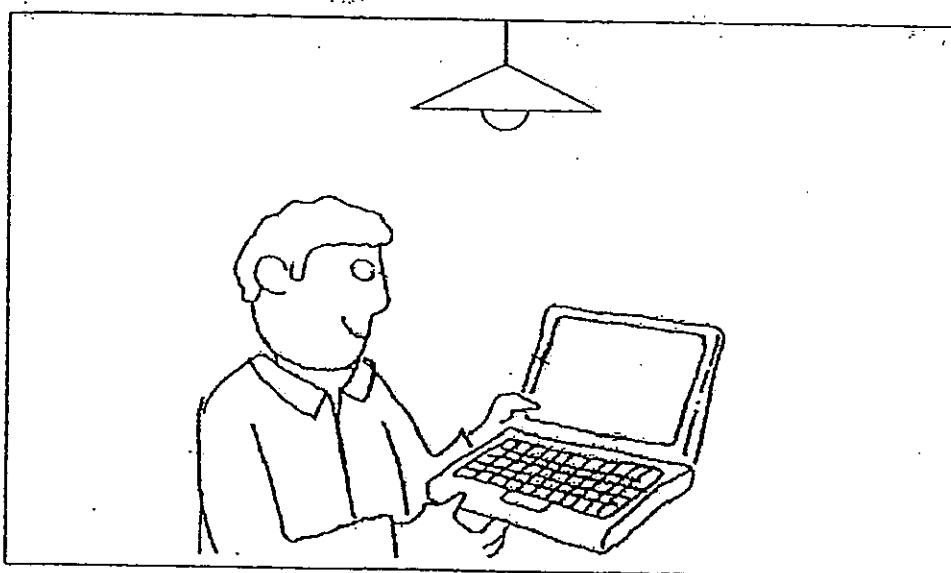


Peter observed that his pebble could not travel far enough to reach the ball.

- (b) Using the same catapult and standing at the same position, what could he do to make sure that the same pebble would reach the ball on the tree? Explain your answer. [2]

Score	
3	

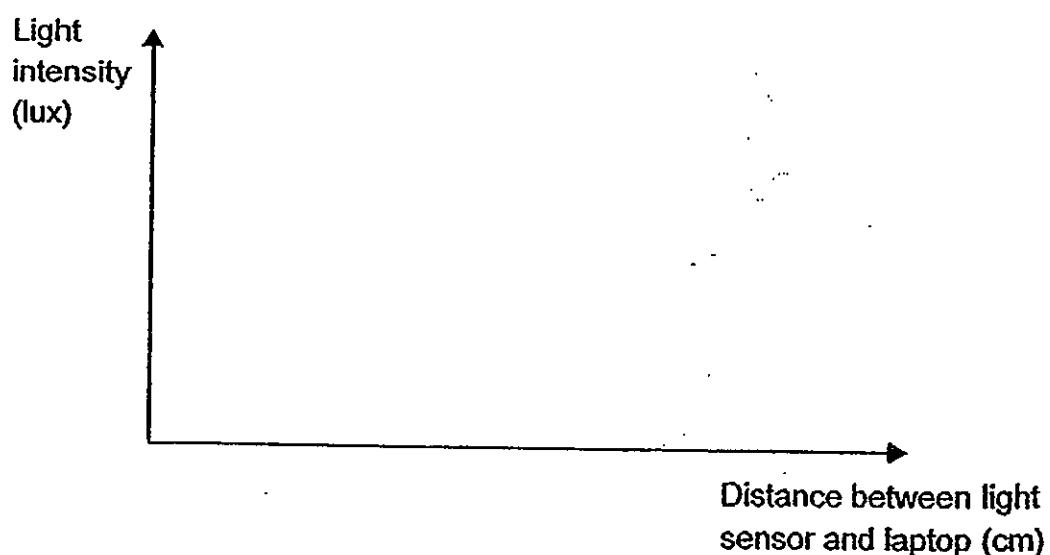
42. Mr Tan wanted to check his email on his laptop at night in his enclosed pitch dark room. He did not want to wake up his wife who was sleeping in the same room, so he did not switch on the lamp in the room.



- (a) In the above diagram, draw the path of light ray to show how Mr Tan was able to read his email in the dark room. [1]

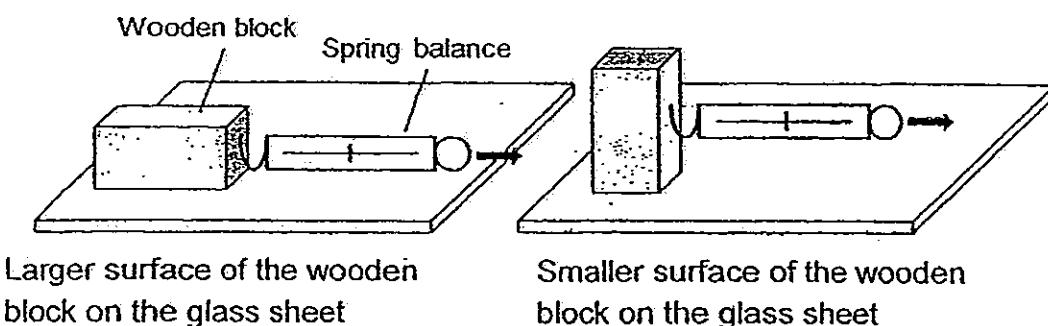
- (b) Mr Tan's daughter, Kathy, carried out an experiment using a light sensor to find out how the distance between the laptop screen and the light sensor affects the light intensity recorded by the light sensor.

Draw a line graph below to show the results of her experiment. [1]



Score	
2	

43. Sarah carried out an investigation as shown below. She pulled the wooden block by placing its larger surface on the glass sheet. She measured the minimum force needed to keep the block moving along the glass surface. Then, she repeated the experiment with the smaller surface of the wooden block on the glass sheet.



She recorded her results as shown below.

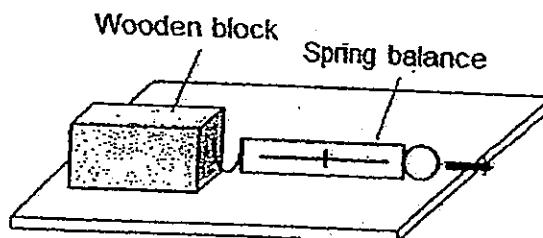
Surface area of the wooden block resting on the glass sheet	Minimum force needed to keep the block moving (N)			
	1 st try	2 nd try	3 rd try	Average
Smaller	4.3	4.5	4.4	4.4
Larger	4.5	4.5	4.2	4.4

- (a) What can Sarah conclude from the experiment?

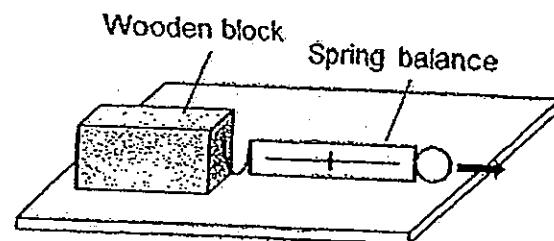
[1]

Score	
	1

Sarah wanted to choose a suitable type of floor tiles for the living room in her new flat. She repeated the earlier experiment using the same set-up, only replacing the glass sheet with floor tiles A and B as shown below.



Floor tile A



Floor tile B

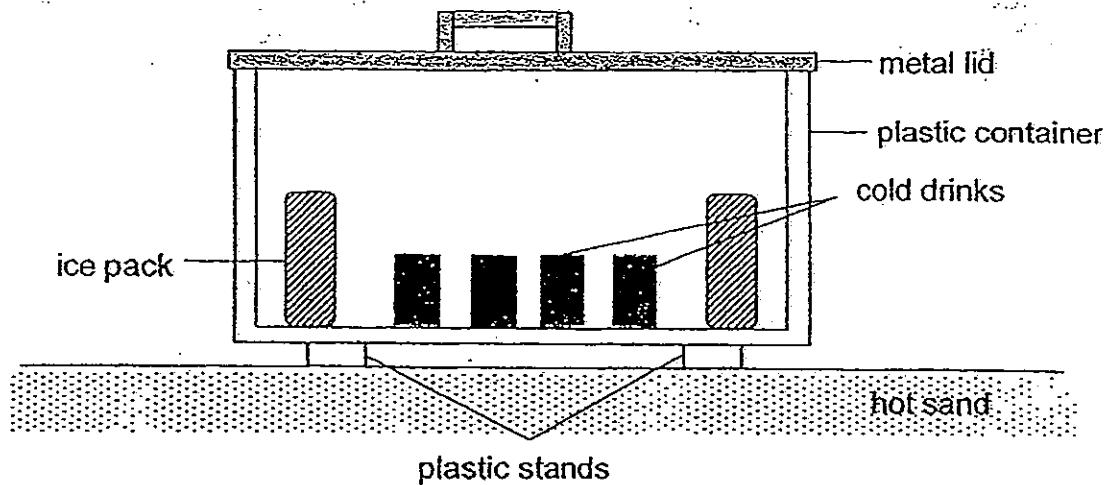
She recorded her results as shown below.

Floor Tile	Minimum force needed to keep the block moving (N)			
	1 st try	2 nd try	3 rd try	Average
A	5.3	5.5	5.4	5.4
B	8.5	8.5	8.2	8.4

- (b) Which type of floor tiles, A or B, should Sarah use for the living room so that it is easier for her to mop the floor? Explain your choice. [2]
-
-
-

Score	
	2

44. Irene designed and constructed a storage box to keep cans of cold drinks cold for a long period of time at the beach on sunny days. The box has plastic stands as shown in the diagram below.

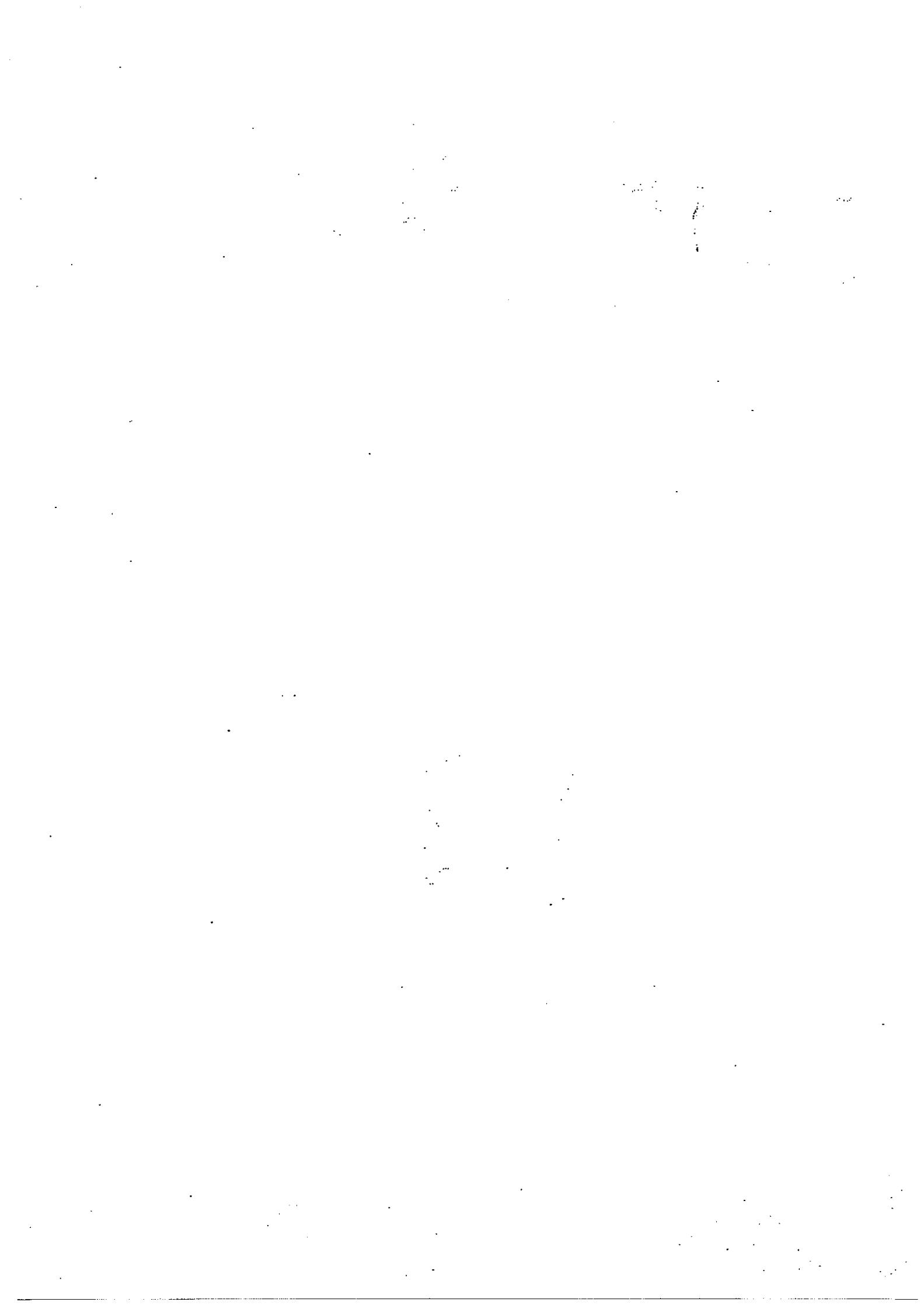


- (a) How does adding the plastic stands help to keep the drinks cold for a longer period of time? [2]

- (c) After the storage box was left at the beach for five minutes, Irene observed more water droplets formed on the outer surface of the metal lid than on the outer surface of the plastic container. Explain her observation. [2]

Score	
4	

- END OF PAPER -



Exam Paper 2013 Answer Sheet

**School: RAFFLES GIRLS' PRIMARY SCHOOL
Subject: PRIMARY 6 SCIENCE
Term: PRELIM**

1) 4	6) 3	11) 4	16) 2	21) 2	26) 2
2) 3	7) 4	12) 3	17) 1	22) 3	27) 4
3) 2	8) 3	13) 3	18) 4	23) 2	28) 3
4) 1	9) 1	14) 2	19) 3	24) 2	29) 3
5) 4	10) 1	15) 2	20) 1	25) 2	30) 3

31. (a) P has fixed shape but T does not have a fixed shape.
 (b) i. R
 ii. Q
32. (a) It is to ensure that the germination seeds will only be affected by the oxygen taken in the test tube.
 (b) From 10°C to 40°C, the amount of oxygen taken in increases with temperatures. However, from 40°C to 50°C, the amount of oxygen taken in remains constant. From 50°C to 70°C, the amount of oxygen taken in decreases.
33. C. The blood in C has just left the small intestine where digested food enters the blood stream at C. Hence C would have the most digested food as shown in W.
34. (a) Cytoplasm – Circle Absent
 Cell membrane – Circle Absent
 (b) The roots. The root cell does not have chloroplast which is needed to trap light for photosynthesis because chlorophyll from the chloroplast is not needed for photosynthesis.
35. (a) i. Not possible to tell
 ii. True
 iii. False
 iv. True
 (b) T is the predator of P therefore P decreases and when P decreases, Q and R will increase over a period of time as P which is their predator is decreasing.
36. (a) South region
 (b) 9 am
 (c) The amount of dust particles at the beginning of each period was different.
 (d) Place one air purification in each of the three bedrooms.
37. (a) i. Liquid

ii. Solid

(b) Substance X will lose heat to the surrounding air.

38. (a) The shorter the length of the wire and the thicker the thickness of the wire, the brighter the brightness of the bulb.

(b) Using a light sensor improves the accuracy of the results.

39. (a) i. Non-magnetic material

ii. Magnetic material

(b) X is a magnet but Y was not attracted to it.

40. Water is a lubricant so friction between Mary and the slide decreased when she was on the wet water slide and as friction decreased she slide down faster on the wet water slide than the playground slide.

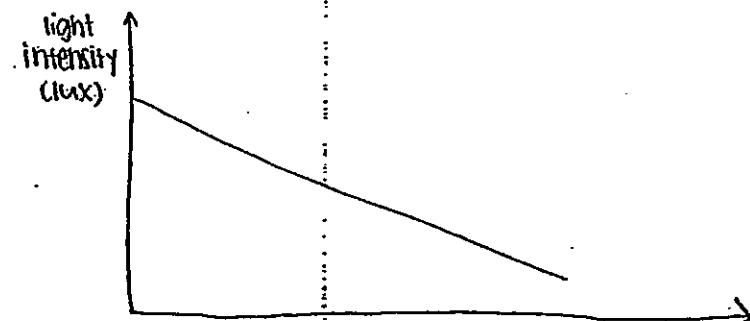
41. (a) Elastic potential energy \rightarrow kinetic energy

(b) He could stretch the rubber band further. When the rubber band was stretched further, there was more elastic potential energy converted to more kinetic energy so the pebble would travel more further.

42. (a)



(b)

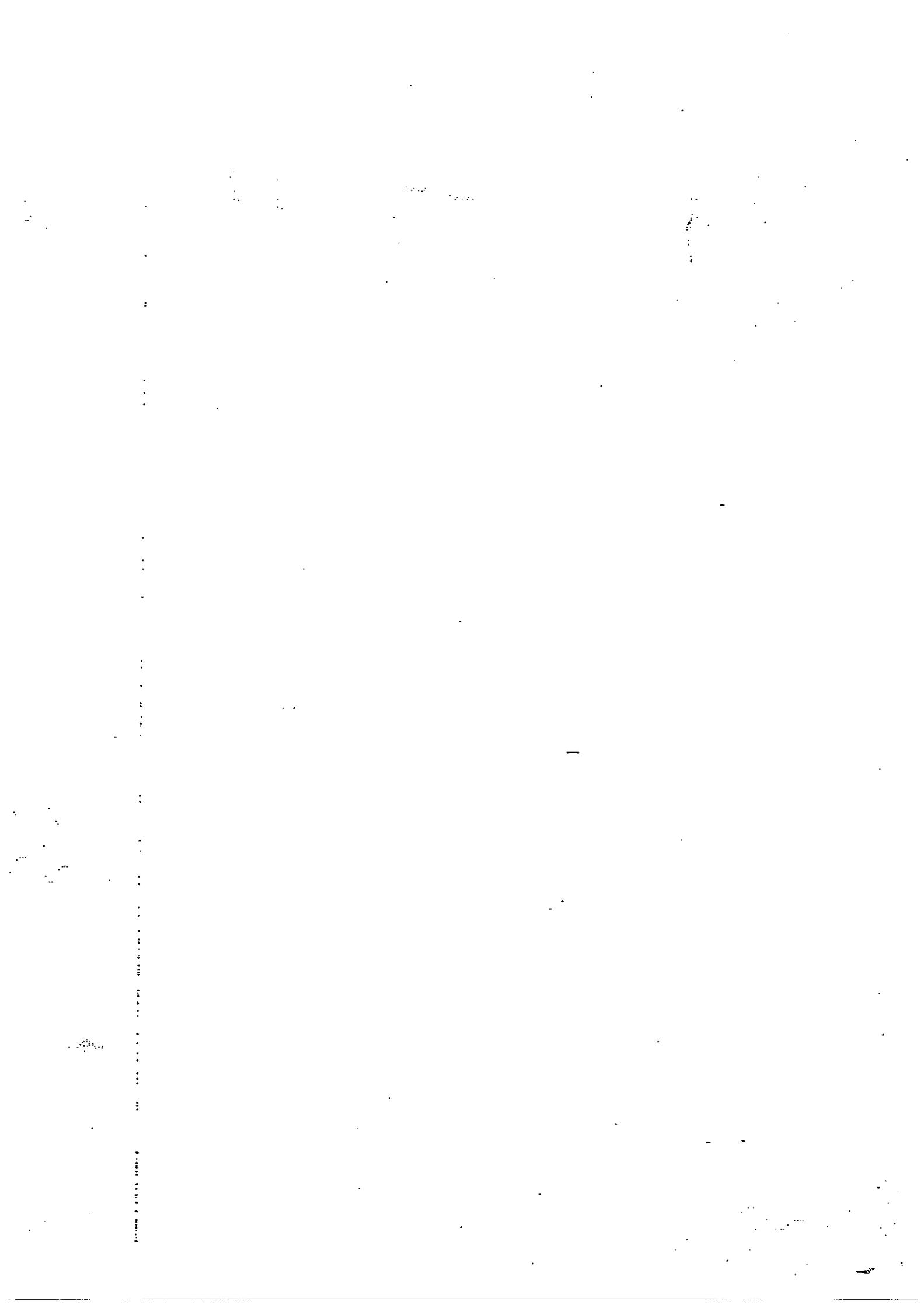


43. (a) The surface area of the wooden block resting on the glass sheet does not affect the minimum force needed to move the block.

(b) A. Less force is needed to keep the block moving when floor tile A is used because there is less friction between floor tile A and the block, therefore when floor tile A is used, it is easier for Sarah to mop the floor because less effort is used.

44. (a) The plastic stands reduce the surface area of the container in contact with the hot sand, thus slowing down heat gain by the drinks from the hot sand.

(b) Water vapour in the air lost heat more quickly to the metal lid than to the plastic lid, hence water vapour condensed to water droplets during the 10 minutes.





RAFFLES GIRLS' PRIMARY SCHOOL
PRELIMINARY EXAMINATION
2011

Name: _____ Index No: _____ Class: P 6 _____

Your score out of 100 marks	Class	Level
Highest score		
Average score		
Parent's signature		

22nd Aug 2011

SCIENCE

Att: 1 h 45 min

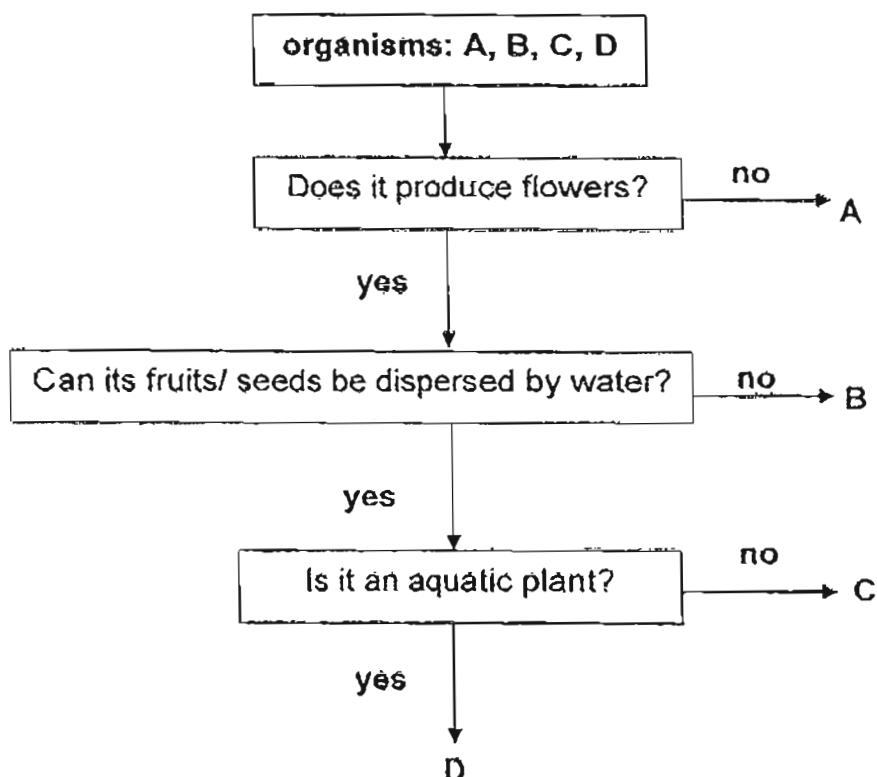
SECTION A (30 X 2 marks)

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.

1. The flow chart below helps to differentiate organisms A, B, C and D.



	A	B	C	D
(1)	moss	mimosa	angsana	lotus
(2)	toadstool	shorea	nipah	bougainvillea
(3)	ladder fern	mango	pong pong	balsam
(4)	bread mould	durian	coconut	water lily

2. The table below shows some characteristics which animals X, Y and Z have.

A tick (✓) in the box indicates the characteristic which the animal has.

animal	lays eggs	has feathers	has gills
X	✓	✓	
Y			✓
Z	✓		

Which one of the following identifies these animals correctly?

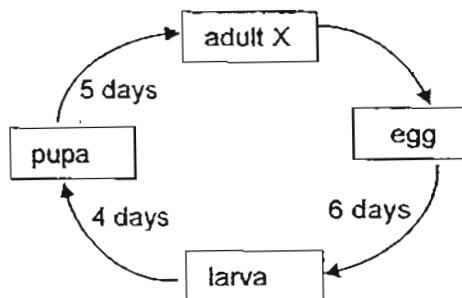
	X	Y	Z
(1)	crow	spider	guppy
(2)	crow	guppy	platypus
(3)	penguin	spider	dolphin
(4)	platypus	dolphin	penguin

3. The bar graphs below show that certain temperatures can affect organism X in the following ways:

- number of eggs laid by the female X each time
- length of its life cycle
(i.e. from the time the eggs are laid to the end of its pupal stage)

temperature of the surroundings (°C)	number of fertilised eggs laid	length of life cycle of X (days)
18	50	25
22	110	15
26	140	13
30	225	10

At a certain time of the year, the life cycle of X in a farm is shown below.

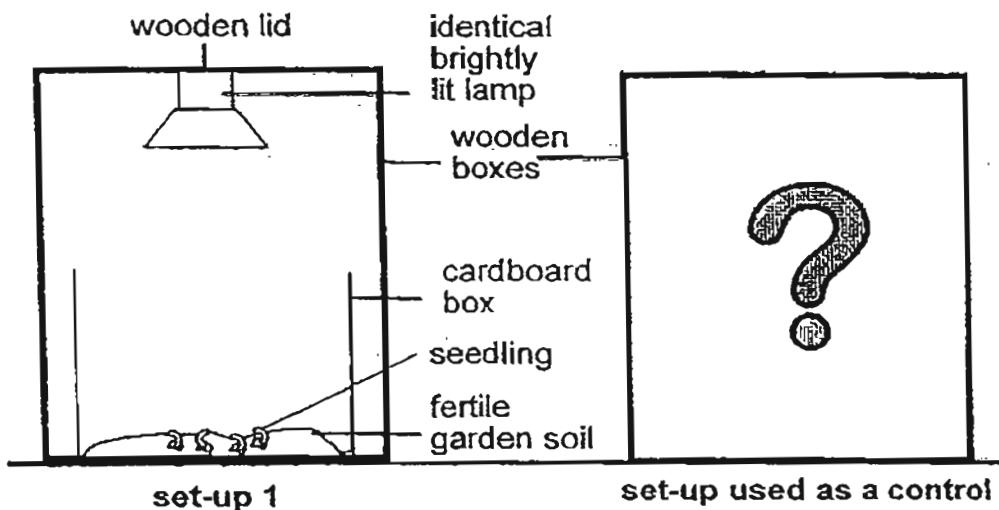


Based on the information above, what could possibly be inferred about X in the farm during the observation period?

- A The surrounding temperature in which X lived was 22°C.
 - B It took 10 days for X to change from its larval to pupal stage.
 - C Without predators, X could multiply quickly when it lived in warm surroundings of 22°C to 30°C.
- | | |
|------------------|------------------|
| (1) A and B only | (2) A and C only |
| (3) B and C only | (4) A, B and C |

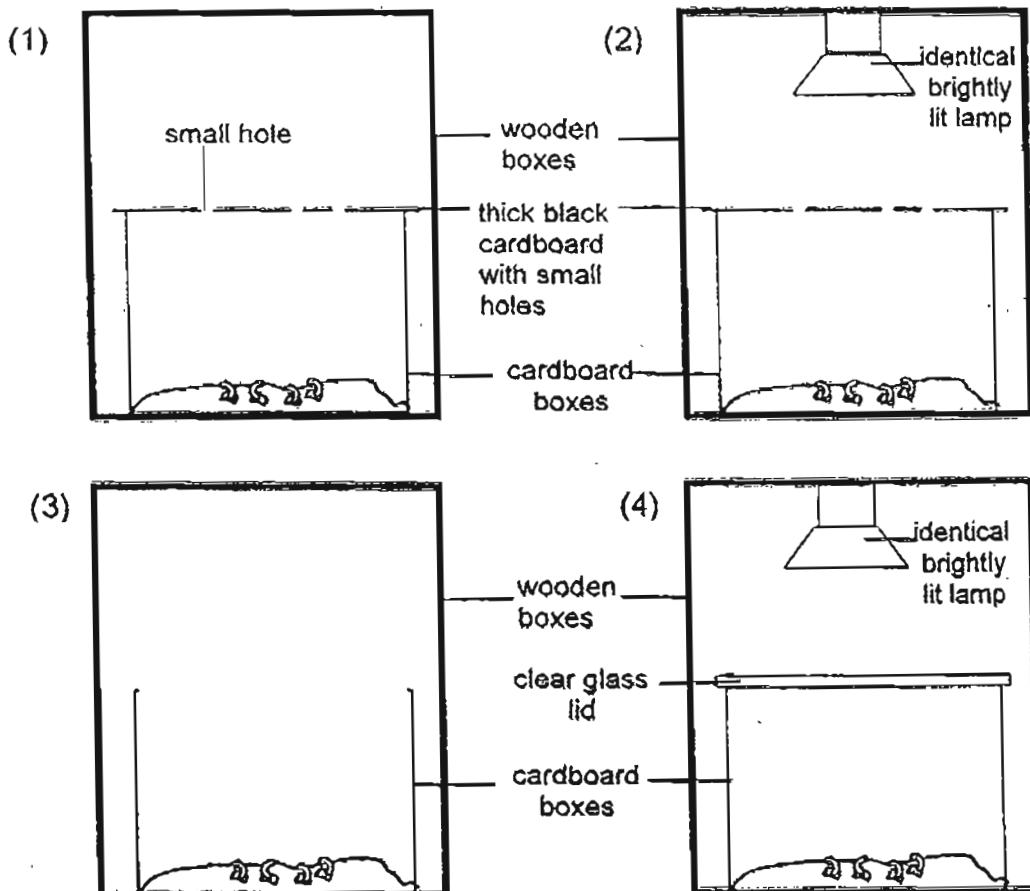
4. Sally carried out an experiment to find out if light from a brightly lit lamp can affect the growth of seedlings of type X.

She placed seedlings of type X in set-up 1 as shown below.

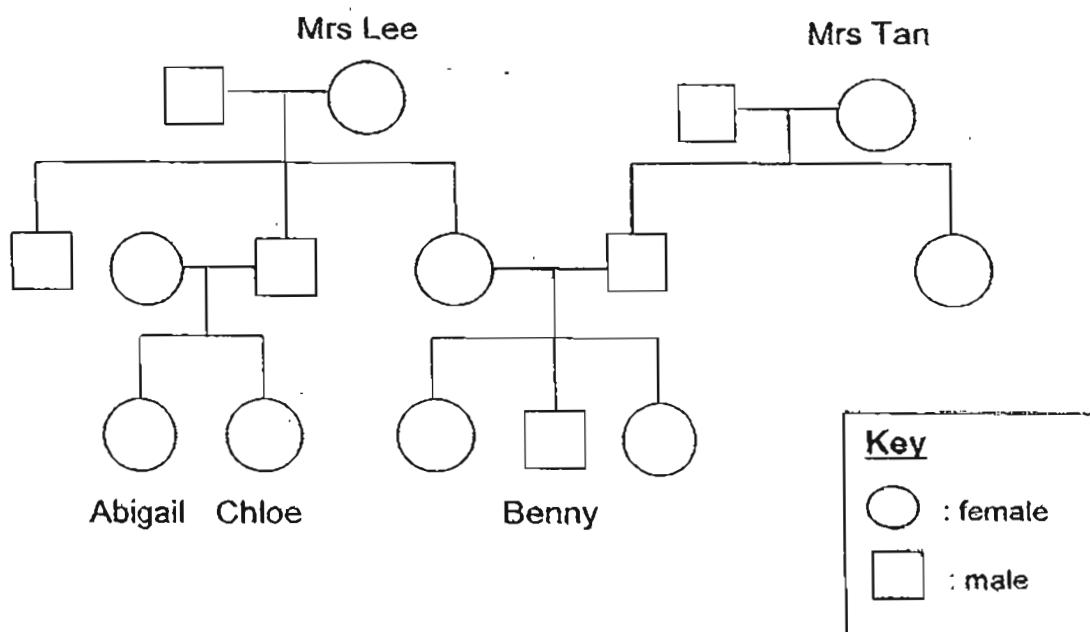


The same type of seedlings was put in another set-up containing fertile garden soil. The seedlings in both set-ups were given the same amount of water daily.

Which one of the following set-ups is most suitable for Sally to use as a control for her experiment?



5. The diagram below shows the family tree of Abigail, Chloe and Benny.

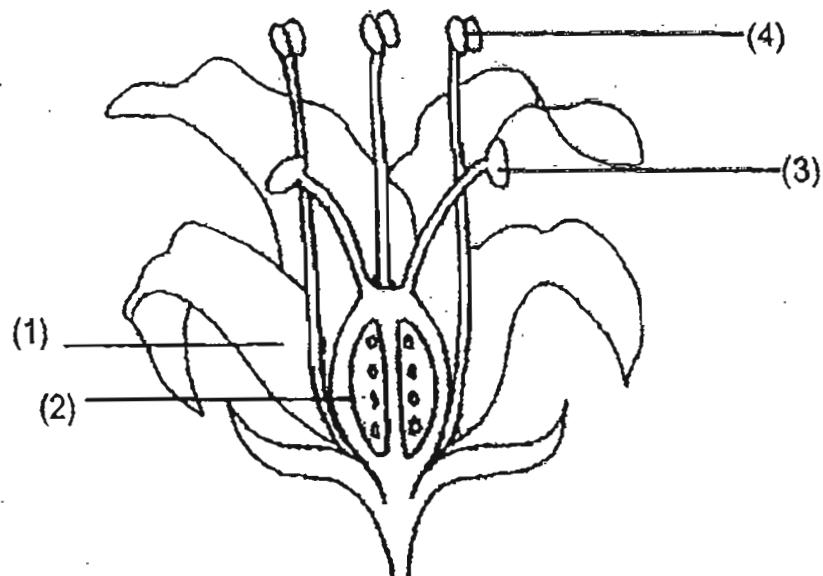


Based on the information above, which one of the following statements is correct?

- A Chloe has a sister.
 - B Abigail and Chloe are twins.
 - C Benny's mother has 4 nieces.
 - D Abigail and Benny's mothers are sisters.
- (1) A only
- (2) A and D only
- (3) B and C only
- (4) C and D only

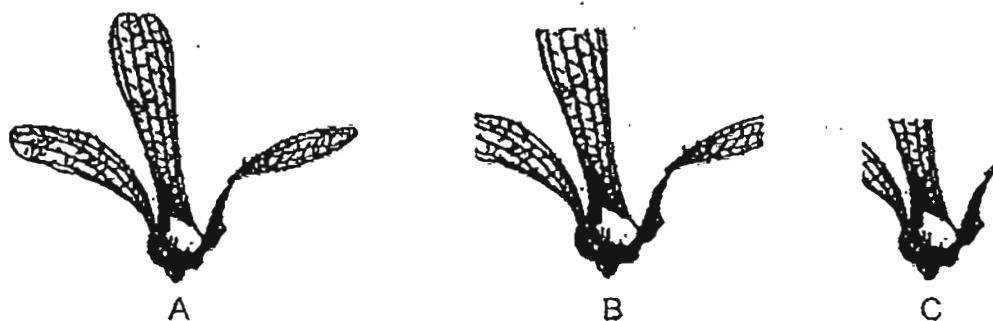
6. The diagram below shows some labelled parts of a flower.

Which one of these labelled parts develops into a fruit after pollination and fertilisation of the flower have taken place?



7. Three fruits, A, B and C, from a plant were used in this experiment.

Part of the wing-like structures of fruits B and C were cut away as shown in the diagrams below.



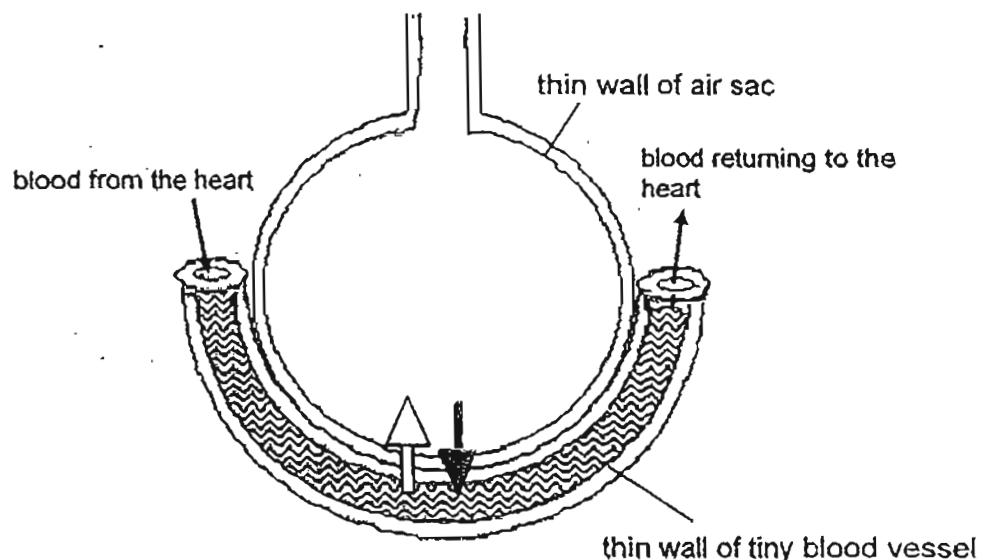
Fruits A, B and C were released, one at a time, from the same height.

The time taken for each fruit to land on the ground was recorded in the table below.

Which one of the following sets of readings was most likely correct?

time taken for each fruit to reach the ground (s)			
	A	B	C
(1)	6.5	10.2	8.3
(2)	8.3	6.5	10.2
(3)	10.2	6.5	8.3
(4)	10.2	8.3	6.5

8. The picture below shows a magnified cross-section of an air sac in Jon's lungs.



Key	
→	direction in which gas A flows
←	direction in which gas B flows
hatched area	blood

The air sac had just been filled with air when Jon ~~exhaled~~ inhaled.

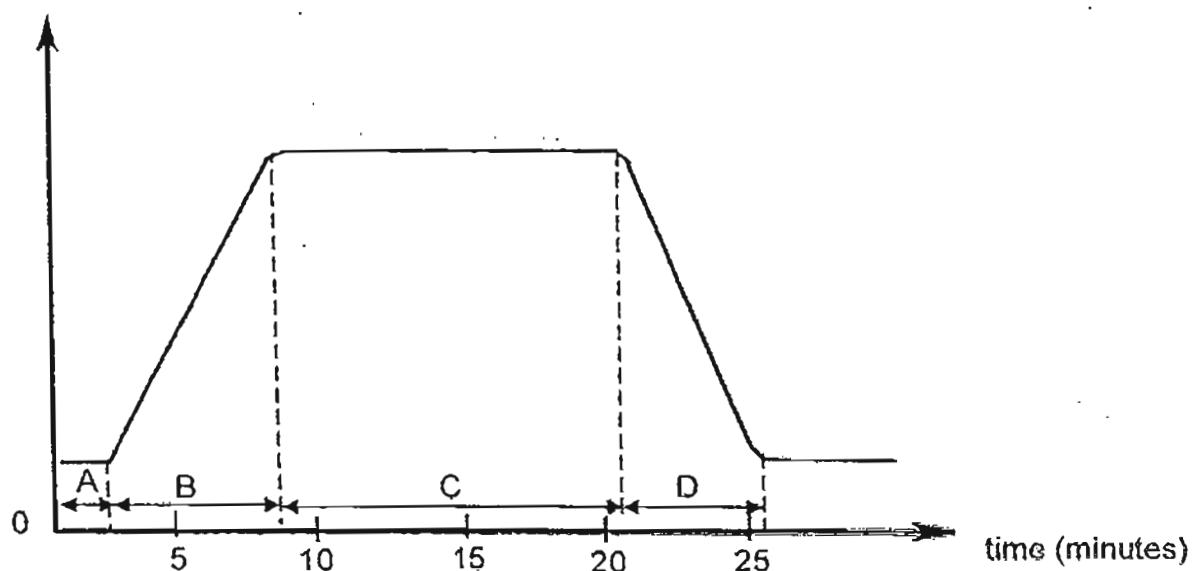
The transfer of gases was occurring continuously between the air sac and the tiny blood vessel.

Which one of the following identifies the correct gases moving in and out of the air sac when Jon inhaled?

	gas A	gas B
(1)	oxygen	water vapour
(2)	oxygen	carbon dioxide
(3)	water vapour	carbon dioxide
(4)	carbon dioxide	oxygen

9. The graph below shows how Ahmad's heartbeat rate changed during each period of time, A, B, C and D.

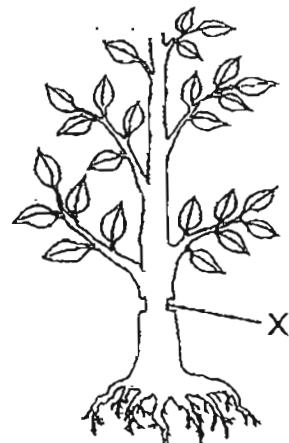
heartbeat rate (beats / minute)



Based on the graph above, in which period was the greatest amount of carbon dioxide being given out by Ahmad?

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

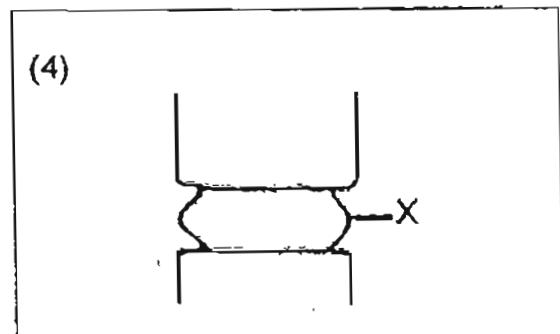
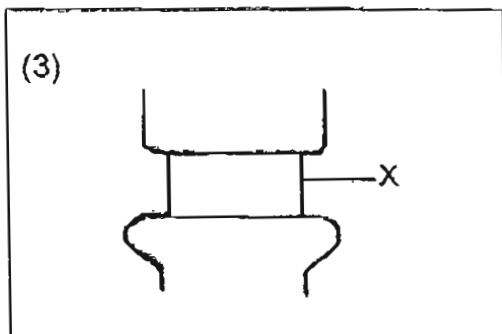
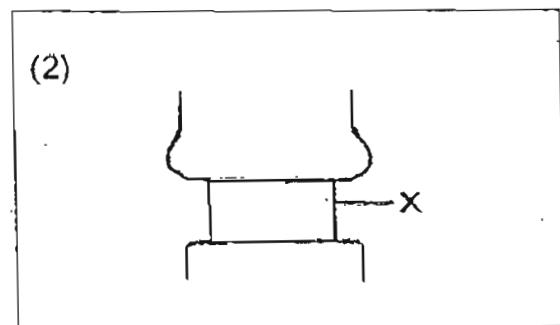
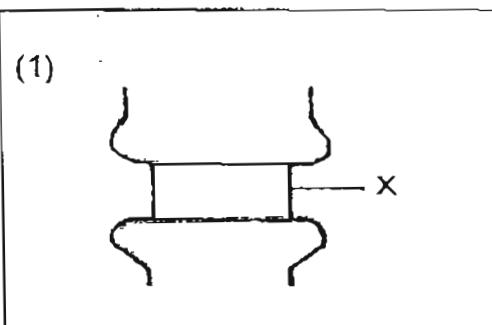
10. A small ring-like layer that contained ~~food-carrying tubes~~, was carefully removed from the outer part of the stem at part X, leaving the water-carrying tubes behind.



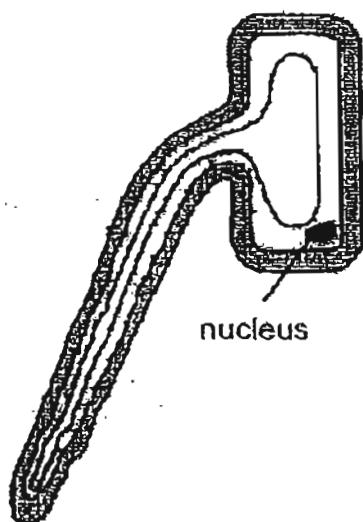
The enlarged view of part X of the stem is shown below.



Which diagram shows the most likely change on the stem at part X after a period of time?



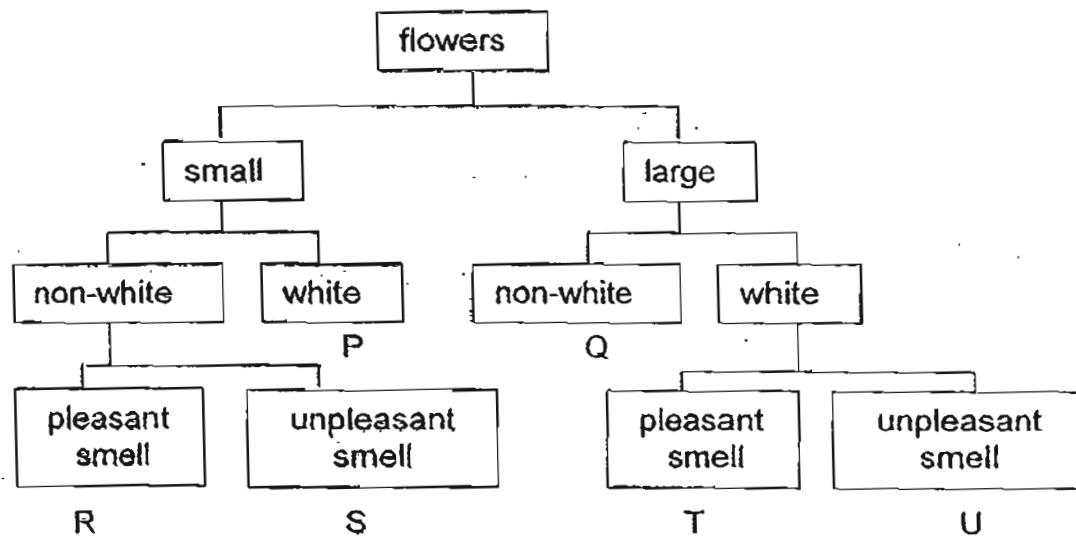
11. The following cell is taken from an organism, Z.



Based on the diagram above, which one of the following about organism Z and its cell is correct?

Z is ...	The above cell has...
(1) a plant	a cell wall but does not contain chloroplasts
(2) a plant	a cell wall and contains chloroplasts
(3) an animal	a cell wall and contains chloroplasts
(4) an animal	no chloroplasts and no cell wall

12. The six types of flowers, P, Q, R, S, T and U, are classified as shown below.



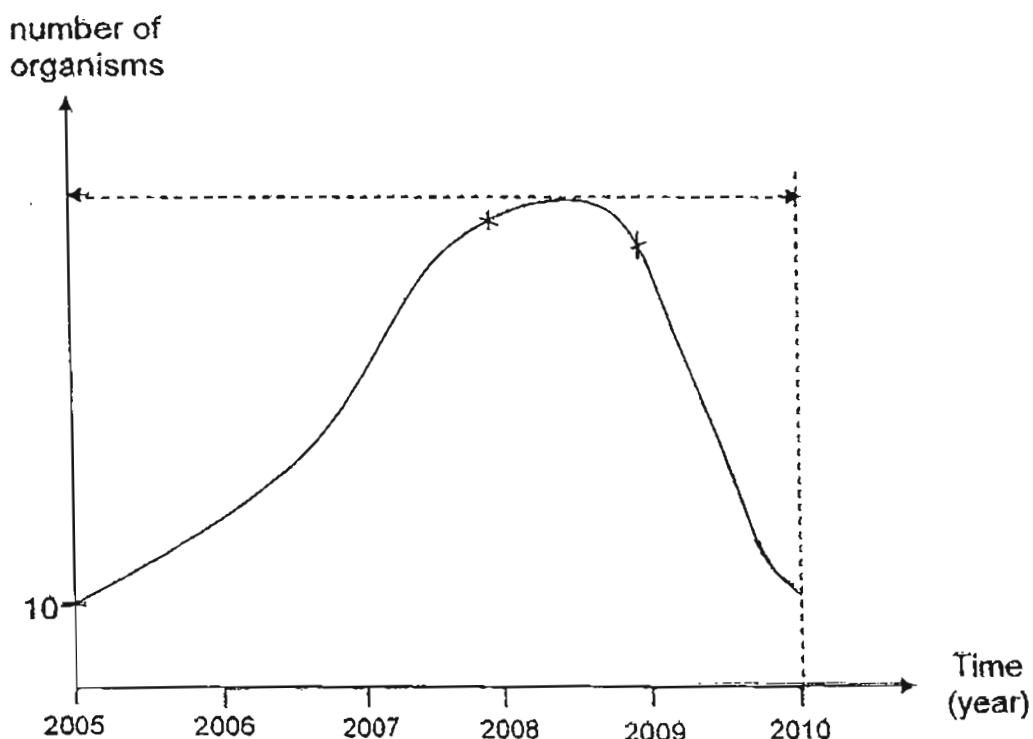
The table below shows the characteristics of some flowers that attract specific animals.

animal	characteristics of flower that attract the animal
A	is small, red or yellow, has a pleasant smell
B	is large, is white, has a pleasant smell

Which type of flowers will attract animals A and B?

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

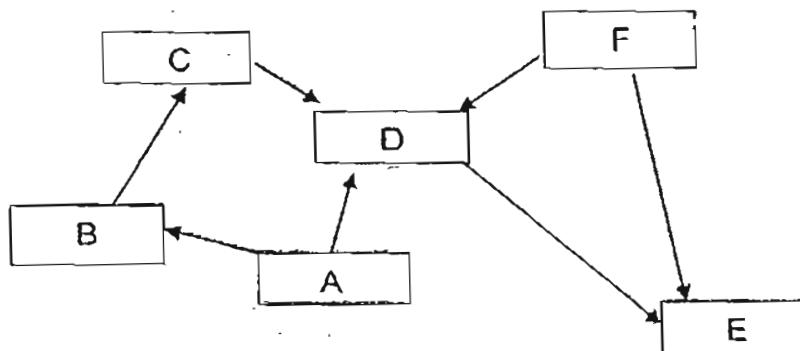
13. The graph below shows changes in the population size of an organism in a certain habitat during the observation period, 1 Jan 2005 – 1 Jan 2010.



Based on the graph, which one of the following statements ~~cannot~~ be true?

- (1) The organisms are dying from a disease in 2009.
- (2) From 2008 to 2009, there was no change in the population size.
- (3) The largest population size was reached between 2007 and 2009.
- (4) The birth rate of the organism could be greater than its death rate between 2006 and 2007.

Natasha constructed a food web consisting of plants and animals to show the relationships between and/ or/ among some organisms in a particular community.



Based on the information given above, answer questions 14 and 15.

14. Which one of the following statements is ~~correct~~?

- (1) B is a predator and prey.
- (2) This food web consists of only 3 food chains.
- (3) There is only a food producer in this food web.
- (4) Only 2 organisms feed on both plants and animals.

15. ~~To reduce the population of~~ C, Natasha's friends made the following suggestions:

Ally : Introduce more organisms E to the habitat

Megan: Introduce more organisms D to the habitat

Claire : Reduce the number of organisms A in the habitat

Tara : Reduce the number of organisms E in the habitat

Which of Natasha's friends suggested ~~correctly~~?

- (1) Ally only
- (2) Ally and Megan only
- (3) Megan, Claire and Tara only
- (4) Ally, Megan and Tara only

16. Nicole researched on the Internet and tabulated the information gathered in the table below.

organism	average mass of foetus (g)	average number of days a foetus takes to develop in its mother's womb
A	1000	180
B	4500	270
C	25000	240
D	1500	120
E	45	193

Nicole's friends made the following conclusions:

Ashley : The foetus of organism B remained in the mother's womb for the longest period of time.

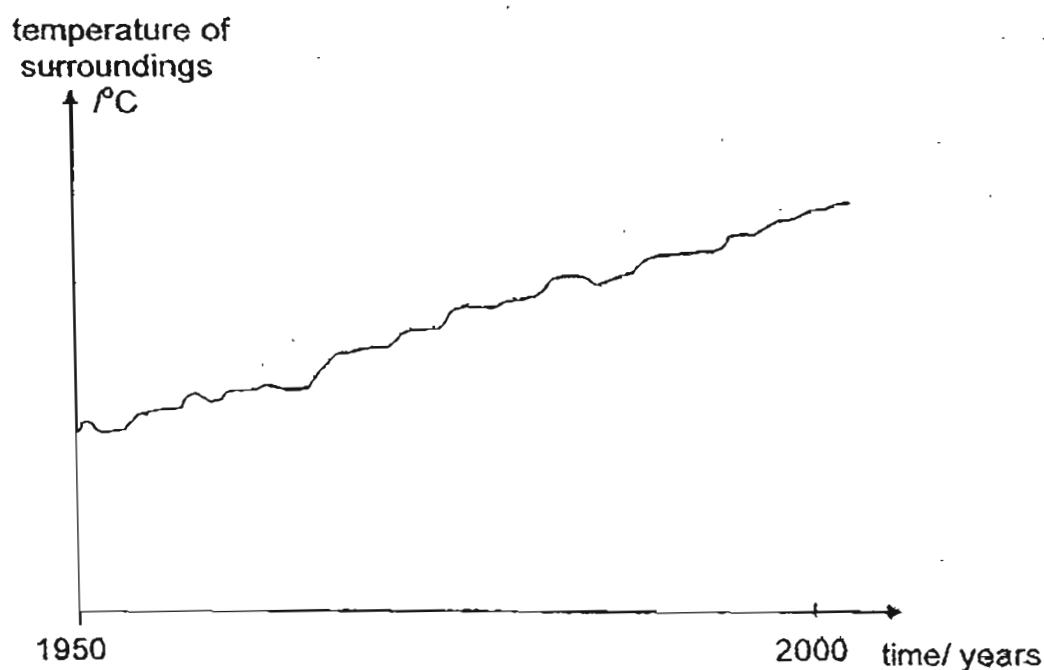
Christine : The larger the mass of the foetus, the longer it will remain in its mother's womb.

Gladys : The offspring of an organism with a larger mass may not require a longer period of time to develop in its mother's womb than the offspring of another organism with a smaller mass.

Which of Nicole's friends made the correct statement(s)?

- (1) Gladys only
- (2) Christine only
- (3) Ashley and Gladys only
- (4) Ashley , Christine and Gladys

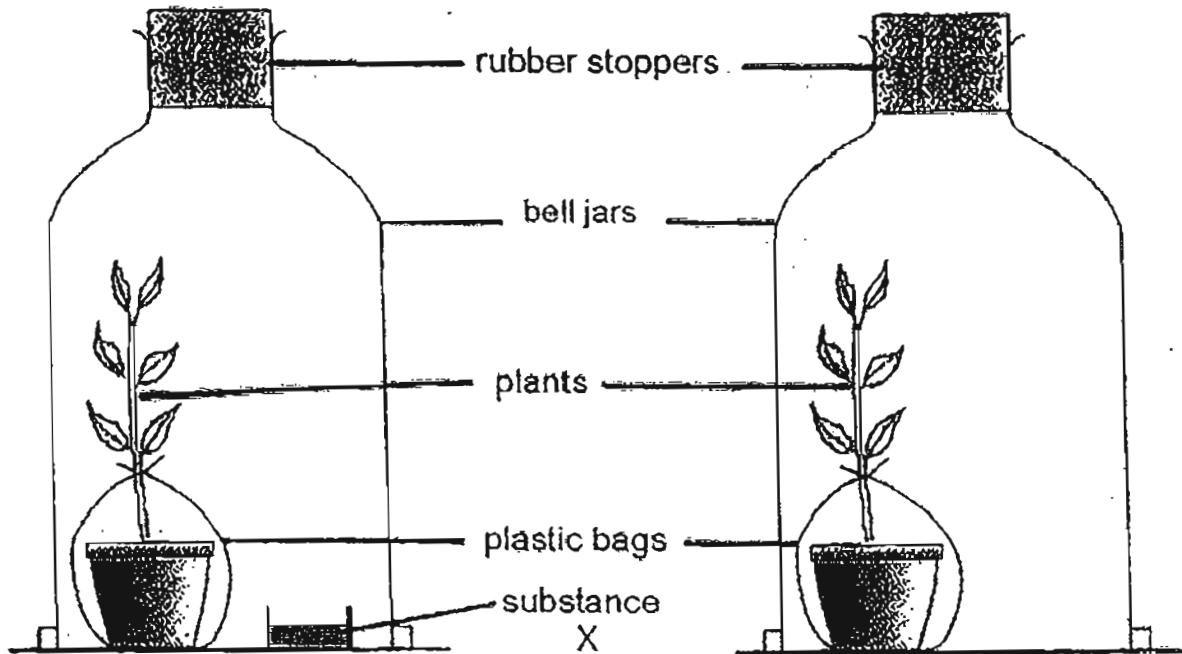
17. The graph below shows the changes in the temperature of the surroundings in a place, X, over a period of time.



Based on the graph above, which of the following activities could have contributed to the change in temperature?

- A an increased number of forest fires
 - B more recycling activities were conducted
 - C an increased number of vehicles on the road
 - D a decreased usage of energy from burning coals
-
- | | |
|------------------|---------------------|
| (1) A and B only | (2) A and C only |
| (3) C and D only | (4) B, C and D only |

18. Jane used the following set-ups as shown below to find out if plants need carbon dioxide to carry out photosynthesis.



What were the purposes of the plastic bag and substance X in the set-up?

	plastic bag	substance X
(1)	to prevent water vapour from escaping from the soil in the pot	to allow carbon dioxide to enter the jar
(2)	to allow the plants to take in carbon dioxide	to allow water vapour to enter the jar
(3)	to prevent carbon dioxide produced by the organisms in the soil from escaping	to remove carbon dioxide in the jar
(4)	to ensure that the water droplets formed on the inner surface of the jar is not from the soil in the pot	to allow carbon dioxide to leave the jar

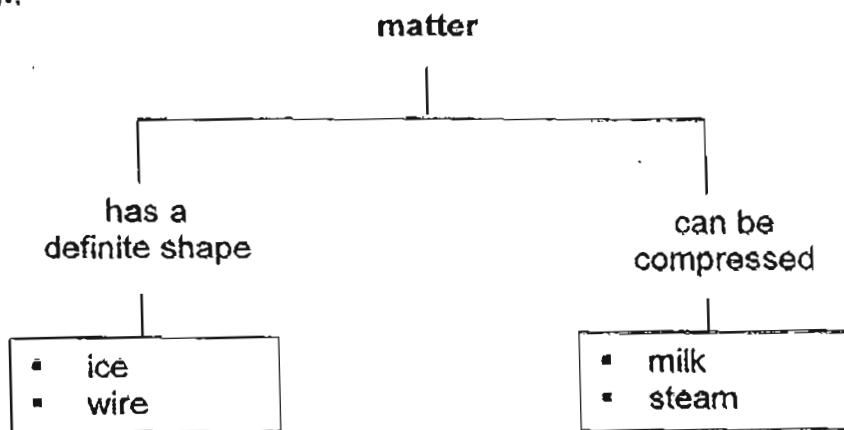
19. The properties of a new man-made material are listed below:

- It is inflexible.
- It is waterproof.
- It does not get scratched easily.
- It can withstand heating at 200°C.
- It breaks when dropped from a height.

This material is most suitable for making _____.

- | | |
|----------------|-----------------|
| (1) crayons | (2) raincoats |
| (3) test tubes | (4) basketballs |

20. Some forms of matter have been classified using the classification chart below.

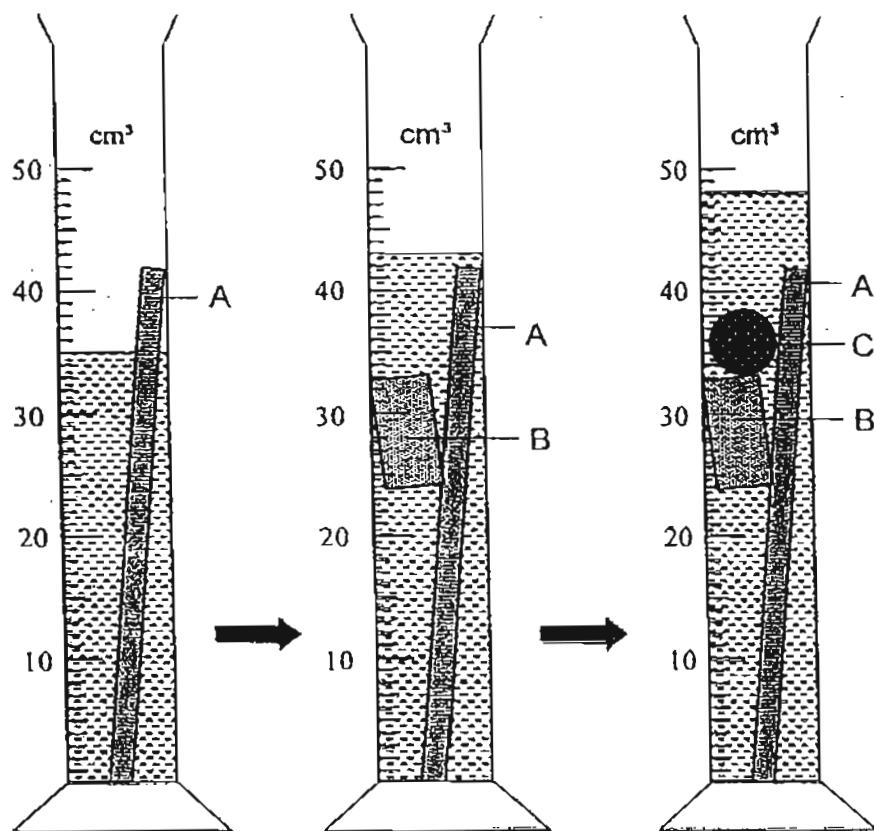


Based on the chart above, which one of the following is classified correctly?

- | | |
|------------------------------|-------------------------------|
| (1) steam only | (2) wire and milk only |
| (3) ice, wire and steam only | (4) ice, wire, milk and steam |

21. Peter had 3 objects, A, B and C. He put A in a measuring cylinder containing some water. Then, he put B in, followed by C.

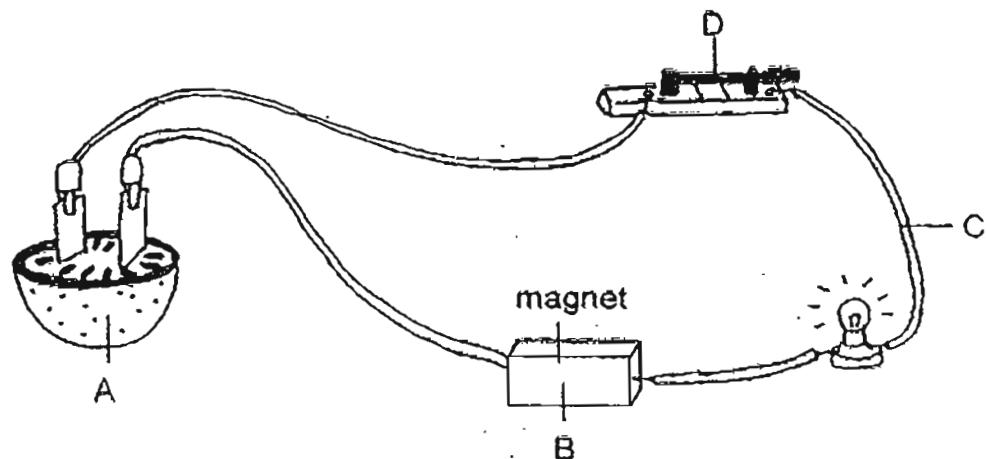
The diagrams below show how the water level changed after each object was put in.



Which of these objects would Peter be able to find its/ their volume(s)?

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

22. Caroline set up a circuit as shown below.

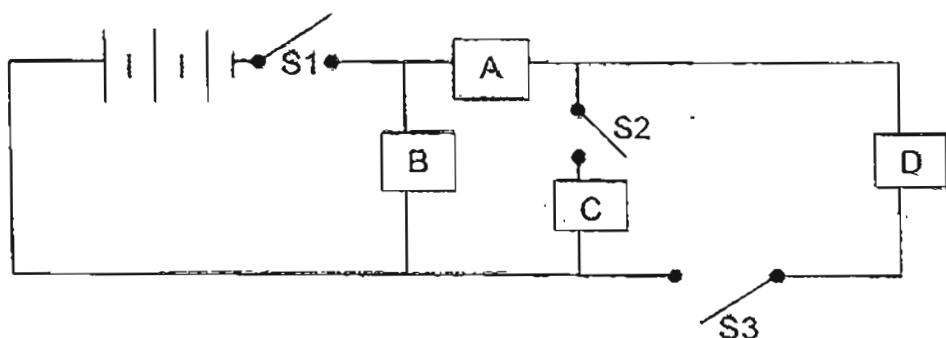


When the switch was closed, the bulb lit up.

Based on the circuit above, which one of the following provided the source of electricity?

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

23. Peter constructed a circuit as shown below.



A wooden ruler, a bulb, a metal paper clip and an eraser were placed at various points, A, B, C and D, in the circuit. S1, S2 and S3 were switches.

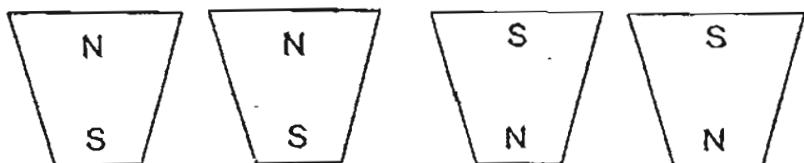
Peter closed some switches and recorded his observations in the table below:

closed switches	Did the bulb light up?
S1 and S2	yes
S1 and S3	no

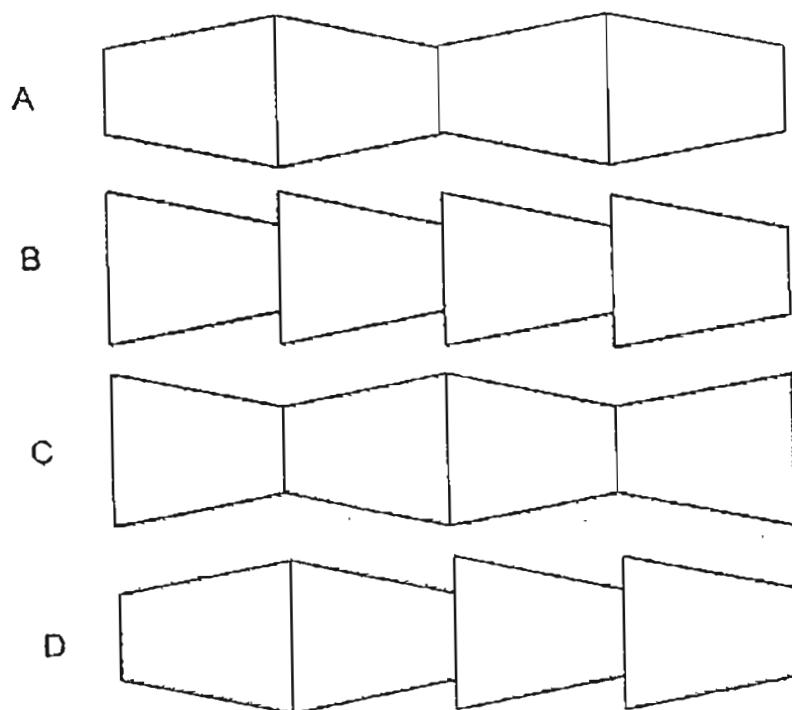
Based on Peter's observations, which one of the following identifies A, B, C and D correctly?

	A	B	C	D
(1)	bulb	paper clip	wooden ruler	eraser
(2)	bulb	wooden ruler	eraser	paper clip
(3)	eraser	wooden ruler	bulb	paper clip
(4)	paper clip	eraser	bulb	wooden ruler

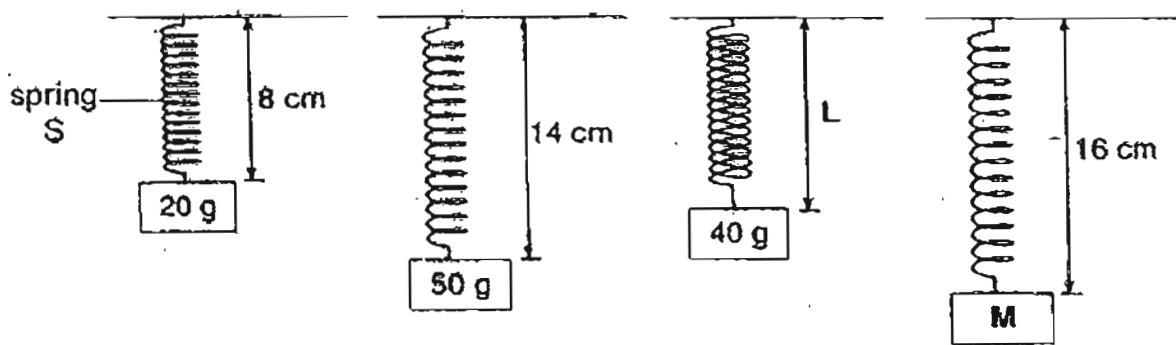
24. Rani labelled the poles of four magnets as shown below.



Which of these arrangements of the magnets are correct?



25. The diagrams below shows the length of spring S when a different load is hung from it , one at a time.



Which one of the following shows the correct values of L and M?

	L (cm)	M (g)
(1)	10	60
(2)	10	70
(3)	12	60
(4)	12	70

26. Two solid steel balls hit each other while rolling in the directions shown by the arrows.

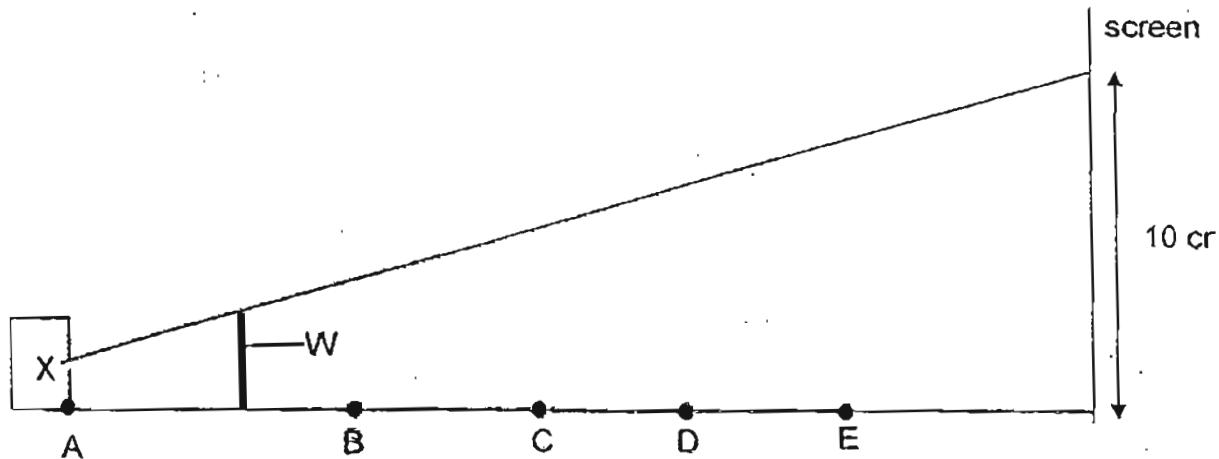


Which of the following changes could have been observed after the balls hit each other?

- (1) mass and shape of the balls
- (2) shape and volume of the balls
- (3) direction and speed of movement of the balls
- (4) direction of movement and volume of the balls

27. Alex wanted to find out the effect of the positions of a light source and an object, W, on the length of the shadow cast by the object, W.

He marked A, B, C, D and E on a table before the screen. Object W was placed between the light source, X, and the screen as shown below.

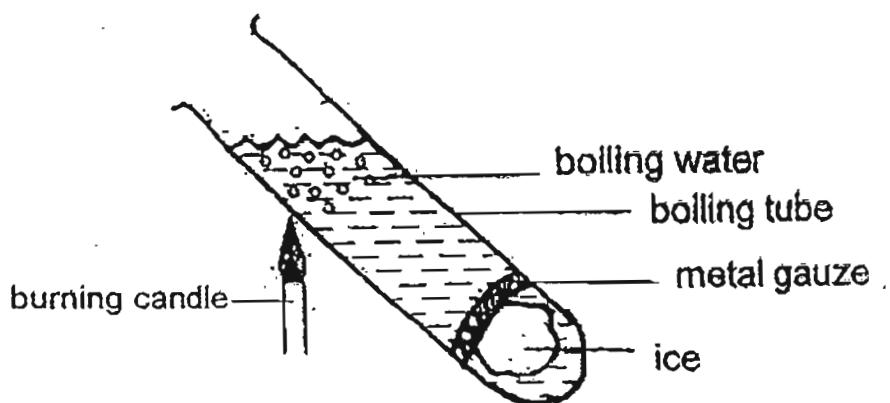


When Alex switched on the torch, he observed a 10 cm long shadow of object W was cast on the screen. Next, he placed the light source, X, and object W at different positions and recorded his observations.

Which one of the following sets of observations was correctly made by Alex?

	position of light source X	position of object W	length of shadow/cm
(1)	A	C	6
(2)	A	D	10
(3)	B	D	12
(4)	B	E	15

28. The diagram below shows water boiling near the water surface.

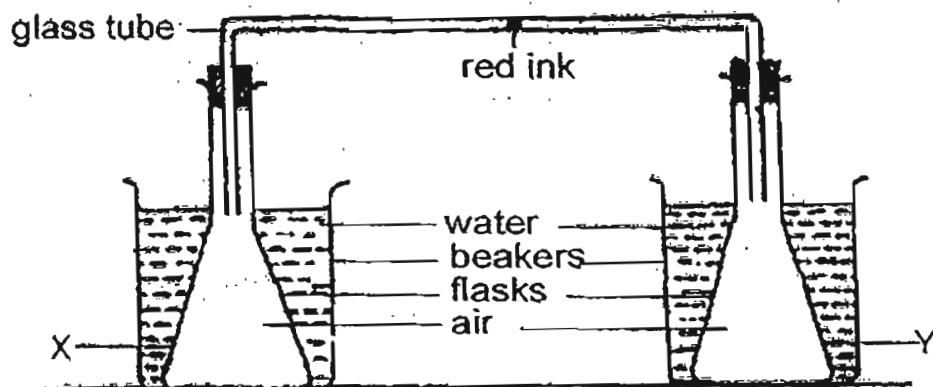


Which one of the following best explains why ice at the bottom of the boiling tube takes a longer time to melt?

- (1) Heat is transferred to the flame.
- (2) Heat cannot travel through water.
- (3) Water conducts heat away slowly.
- (4) The metal gauze prevents heat from reaching the ice.

29. In the set-up below, each of the two flasks, X and Y, was placed in a beaker of water at a different temperature.

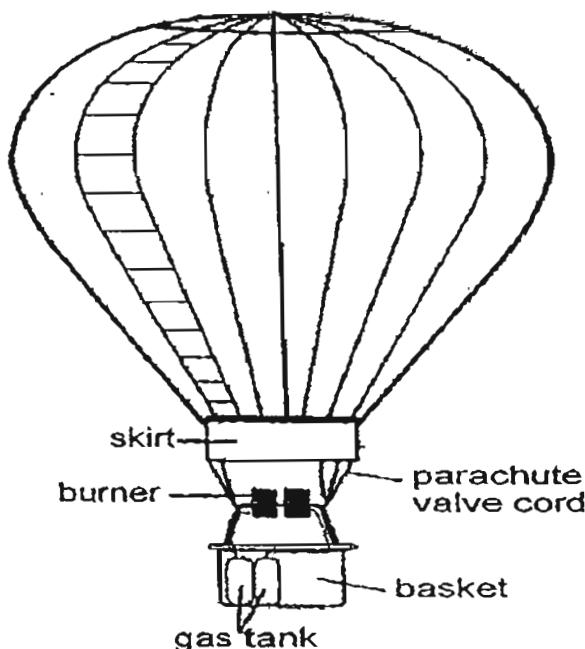
A drop of red ink was placed in the middle of the glass tube connecting the 2 flasks.



Which one of the following would allow the drop of red ink to move the longest distance towards flask Y?

	When X was placed in a beaker of water at	When Y was placed in a beaker of water at
(1)	5 °C	25 °C
(2)	5 °C	90 °C
(3)	25 °C	5 °C
(4)	90 °C	5 °C

30. The hot air balloon shown in the diagram below started to float up from the ground when a flame was created just beneath the balloon.



Which one of the following best represents the energy conversion involved in making the hot air balloon float into the sky when the fuel was burnt?

- (1) heat energy → kinetic energy → sound energy + light energy
- (2) heat energy → light energy → kinetic energy + potential energy
- (3) potential energy → light energy → kinetic energy + heat energy
- (4) potential energy → heat energy → kinetic energy + potential energy

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. The picture below shows organism Z which reproduces in the same way as bread mould.



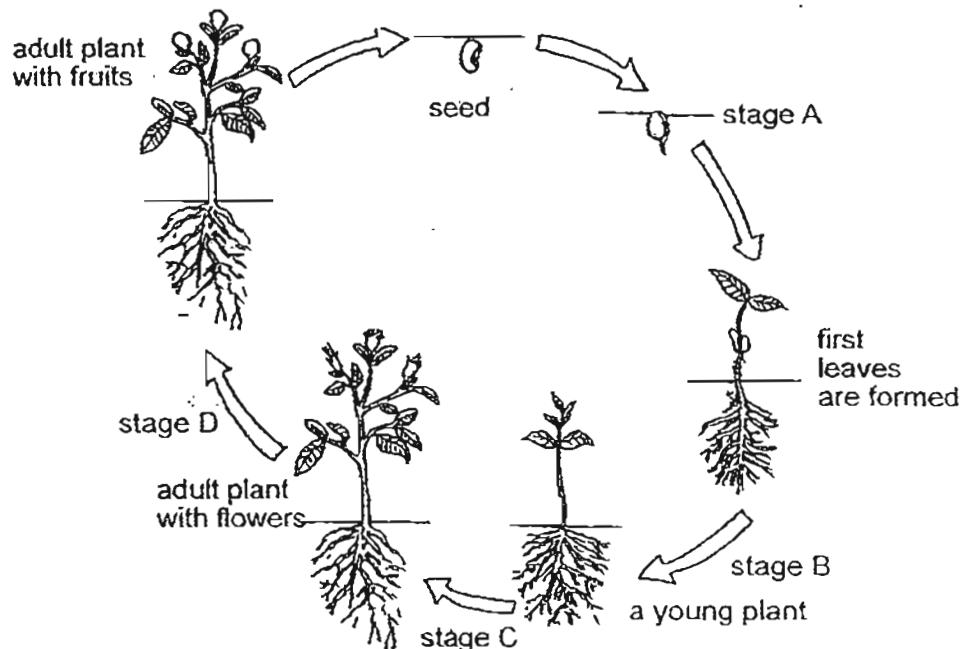
organism Z

Several clusters of organism Z were found growing on a wooden plank left under a fruit tree.

- (a) Besides providing organism Z with a place to grow on, describe another way the wooden plank helps the growth of organism Z. [1]

- (b) Explain how the presence of organism Z on the wooden plank helps to make the soil better for the fruit tree to grow on. [1]

32. The diagram below shows the various stages, A, B, C, D and E, in the life cycle of a flowering plant.



- (a) Name the process(es) that occur(s) at each of the following stages : [2]

stage	process(es)
A	
D	

- (b) Name the part(s) of a flower involved at stage D. [1]

33. On a hot day, a plant wilted as shown below.



When a plant wilts, the stomata close or reduce the size of their openings.

- (a) How does "wilting" help a plant on a hot day?

[1]

- (b) Does "wilting" increase or decrease the rate of photosynthesis of the plant?

Give a reason for your answer.

[1]

34. The table below shows the parts of cells A, B and C. Each of these living cells has been taken from different organisms.

A tick (✓) in a box indicates a part which is found in the cell.

cell	nucleus	cell membrane	cell wall
A		✓	
B		✓	✓
C	✓	✓	✓

One of the above cells is described as follows:

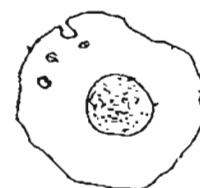
It is ~~unable to reproduce itself~~ and ~~does not have a rigid shape~~

Based on the information above, answer the following questions:

The above description matches cell A.

- (a) How does the information in the table above help you to identify cell A? [1]

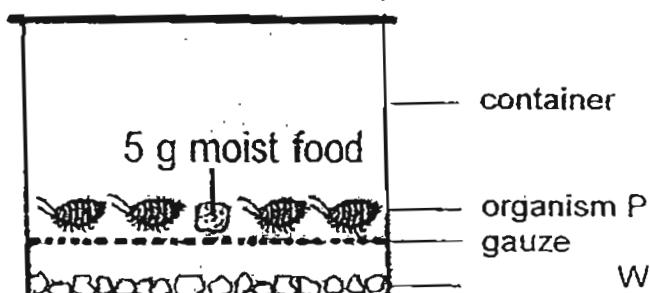
Zachery identifies the cell shown below as cell C.



- (b) Based on your observation of the cell above, do you agree with Zachery? Give a reason for your answer. [1]

35. Tessa used the following set-up ~~to find out if pesticide was able to kill organisms~~

~~10mL~~



- (a) To set up a control, what items should Tessa place in ANOTHER identical box? [1]

- (b) ~~Describe in details what Tessa must do to ensure that her results were reliable.~~ [1]

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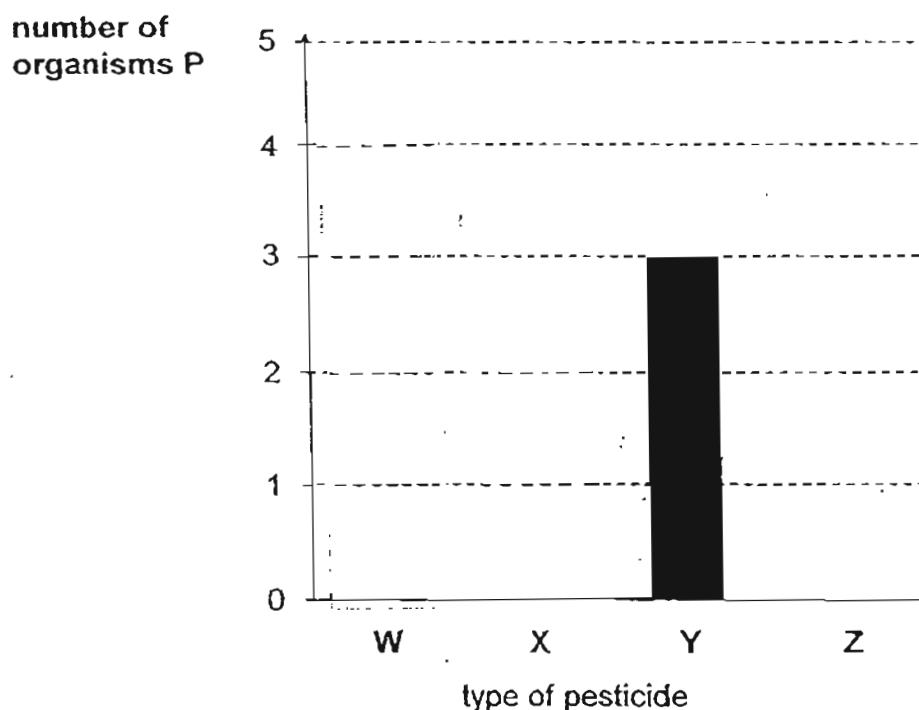
Tessa wanted to compare the effectiveness of pesticide W with three other types of pesticides: X, Y and Z.

Using 5 of such organisms P for three other identical boxes at the start of the experiment, Tessa recorded the number of organisms P which were still alive in these boxes at the end of her experiment.

She found that pesticide X was more effective than pesticides Y and W. However, pesticide W was the least effective. All organisms P died in the box with pesticide Z.

- (c) Based on the information above, complete the bar graph below.

Indicate clearly the number of organisms P which were still alive in the boxes, each with a type of pesticide: W, X and Z. [1]



36. In the table below, Priya recorded her observations of fruit X based on her findings.

description of fruit X	observation of fruit X
has a fibrous husk	no
has a wing-like structure	no
is juicy and fleshy	yes
is bright red when ripe	yes
is edible	yes

Based on the information above, answer the following questions:

- (a) Suggest the most likely method of dispersal of fruit X.
Explain your answer.

[1]

method of dispersal of fruit X	explanation

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Priya took the seeds of fruit X and attempted to germinate them under identical conditions.

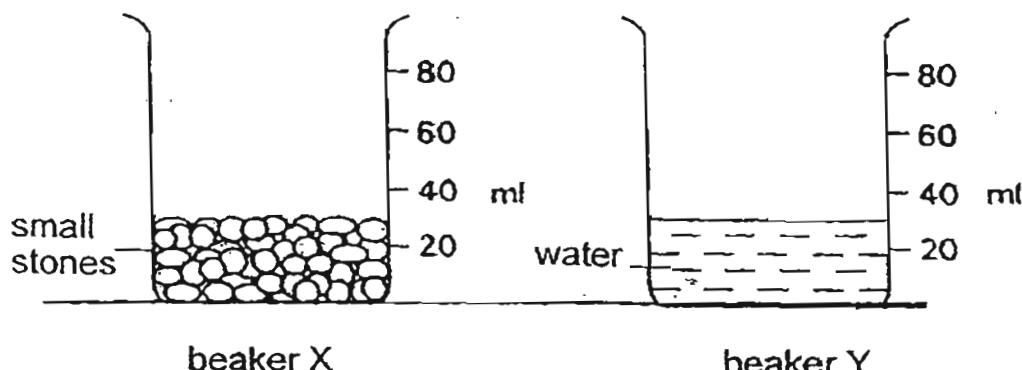
The table below shows the results of her investigations:

seeds taken from	number of seeds germinated		
	1 st try	2 nd try	3 rd try
fruit X that was green and not ripe	0	1	0
fruit X that was partially red and partially green	5	3	4
fruit X that was red and ripe	9	10	10

Fruit X at its early stage of development is green in order to blend in with its surroundings. However, fruit X turns bright red when it is fully developed.

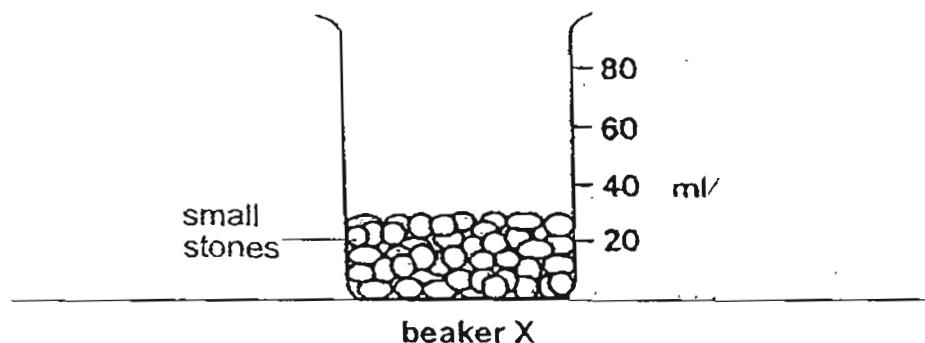
- (b) Explain how this adaptation enhances the chances of germination of its seeds. [2]

37. The diagrams below show two beakers, X and Y.
Beaker X contained small stones and beaker Y contained water up to 30 ml mark.



The water in beaker Y was poured into beaker X.

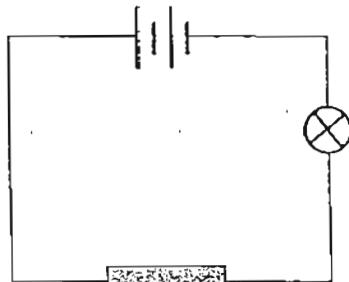
- (a) (i) In the diagram below, draw a line to show the final volume in beaker X after water from beaker Y had been poured into it. [1]



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

- (b) Explain why the water level increased when the small stones were replaced by the same amount of clayey soil. [1]

38. Ali set up a circuit tester as shown below. ~~To find out if object A is a conductor of electricity~~



object A

The bulb in the circuit did NOT light up.

Ali believed that object A was NOT the cause of the bulb failing to light up.

- (a) ~~using all or some of the components from the existing set-up only,~~ design a modified version of Ali's circuit to verify his hypothesis.

In the box below, use the appropriate electrical symbols to draw your set-up. [1]

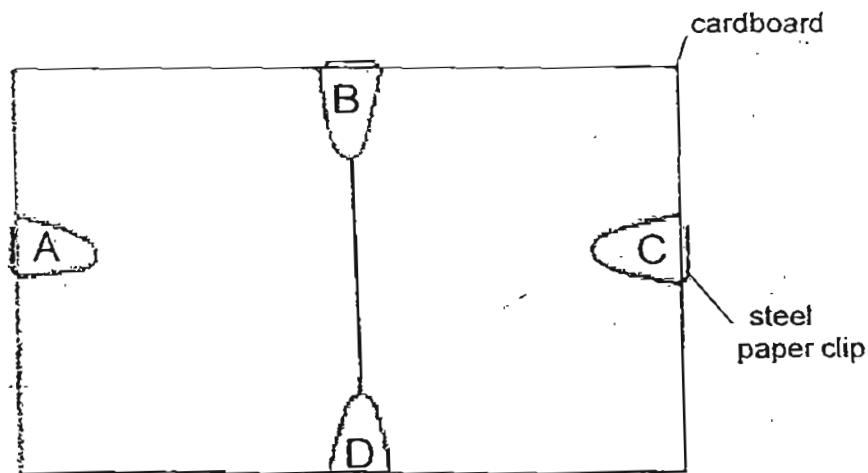
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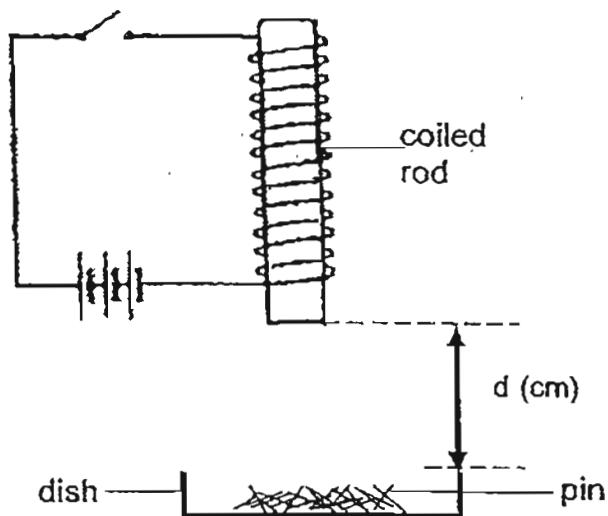
Using a circuit tester, Ali recorded his results in the table below :

clips connected to paper clips on circuit tester	Did the bulb light up?
A and B	no
A and C	no
A and D	no
B and C	yes
B and D	yes
C and D	yes

- (b) Based on the information above, draw two lines in the diagram below to show how the wires were connected in the circuit tester. [1]



39. James used the set-up shown in the diagram below to conduct his experiment.



When James closed the switch, the coiled rod made of material Q was able to attract some tiny steel pins at d (cm) distance from the dish.

James moved the dish away from the coiled rod and recorded the number of pins attracted to the rod when the switch was closed.

He tabulated his results in table 1 as follows:

table 1

d (cm)	number of pins attracted to coiled rod
6	12
4	42
2	71

- (a) Give a reason for the change in the number of pins attracted as d decreased.

[1]

1

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James observed that when coiled rod made of material Q was 4 cm from the dish of pins, many pins fell off from the coiled rod immediately once the switch was open.

After the switch was left open for 30 seconds, James recorded the number of pins remaining on the coiled rod in table 2.

James replaced the coiled rod of material Q with ANOTHER similar rod made of ANOTHER material R and P one at a time. He carried out the experiment using the same procedure.

Table 2 below shows James' observations and results:

table 2

coiled rod of material	number of pins attracted to the coiled rod	
	when switch was closed	when switch was open
Q	42	29
R	80	8
P	0	0

Based on the information in table 2, answer the following questions:

- (b) Which coiled rod lost its magnetism the most easily?
Give a reason for your answer.

[1]

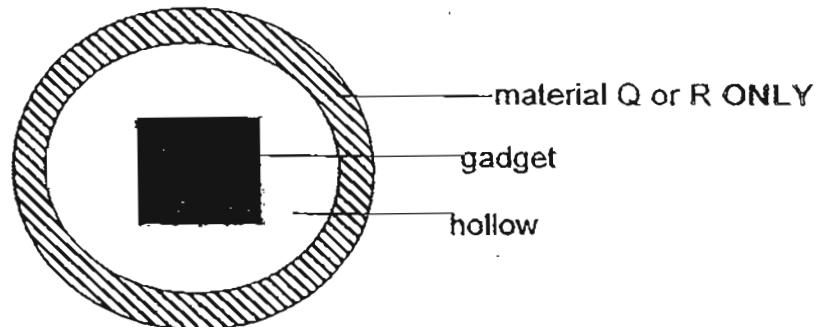
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James bought an electronic gadget which was unable to give accurate readings whenever a strong magnet was brought close to it.

The gadget was placed in a closed container made of ONLY material Q or R to prevent it from giving inaccurate readings when used.

top view of the closed container



- (c) Give a reason why material P is NOT suitable to make the container.

[1]

40. Ianni used a magnet and a piece of nickel to investigate ~~the effect of heat on~~
Nickel, a magnetic material. She recorded her observations in the table below.

temperature of nickel ($^{\circ}\text{C}$)	observation
at room temperature	Magnet attracted nickel piece.
above 50	Magnet did not attract nickel piece.
at room temperature	Magnet attracted nickel piece.

The table below shows the procedures for her experiment but the steps were NOT in order:

step	procedure
A	Bring the magnet towards the nickel piece. Record observation(s).
B	Cool the nickel piece to room temperature.
C	Heat the nickel piece for 1 minute.
D	Bring the magnet towards the heated nickel piece immediately. Record observation(s).
E	Bring the magnet towards the cooled nickel piece.
F	Record observation(s).

- (a) Complete the table below.

Write the correct sequence of the steps required for Ianni's experiment.
 Write letters A, B, C, D and E ONCE only.

Letter F has been filled in for you.

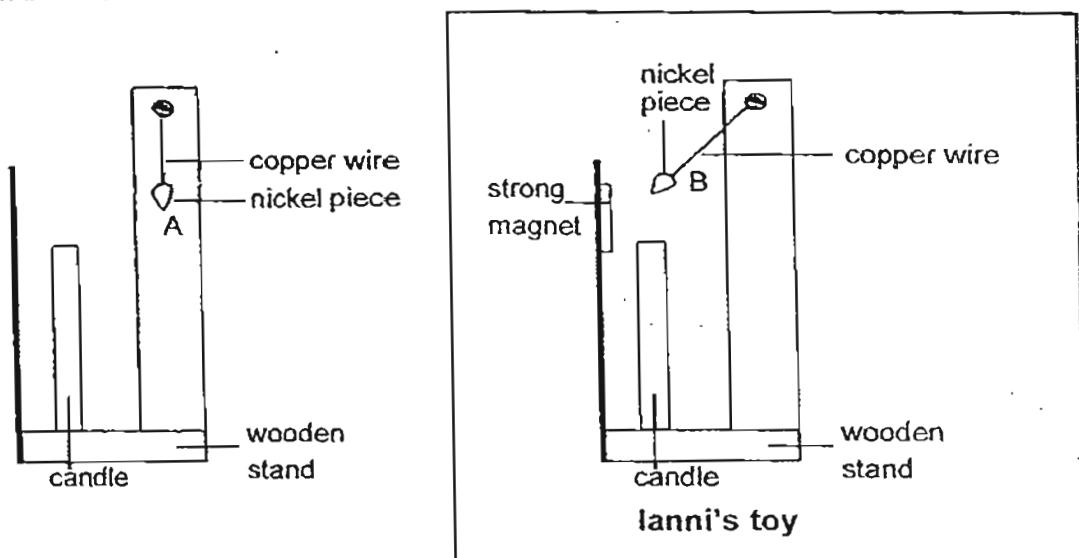
[1]

step	letter
1	
2	
3	
4	
5	
6	

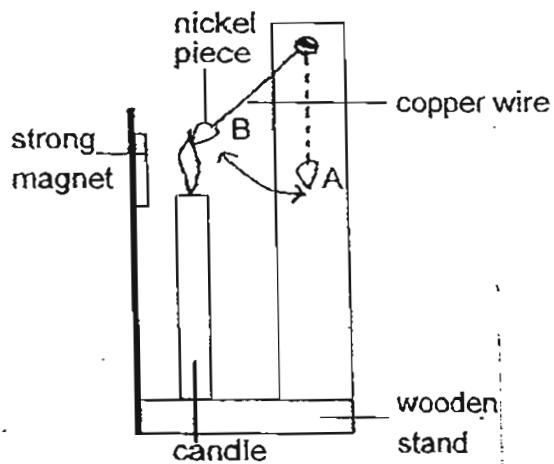
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Based on Ianni's earlier observations, she built a toy using the apparatus as shown below.



In the presence of the strong magnet when Ianni lit the candle, the nickel piece swung continuously to and fro, from B to A. When the candle flame was blown out, the nickel piece remained suspended at B.



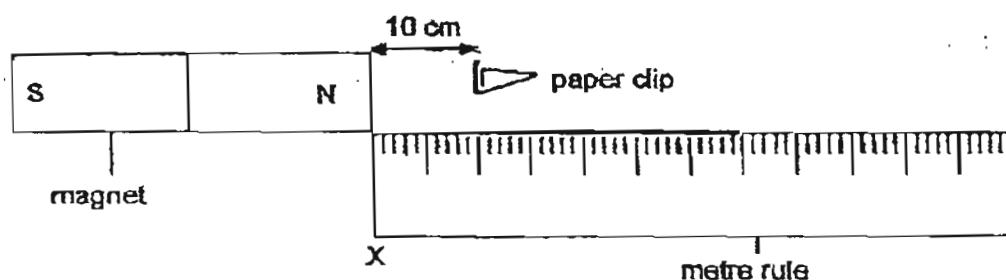
- (b) Explain how Ianni's toy worked when the candle was lit.

[2]

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Ianni removed the magnet from her toy. She observed that the magnet was able to attract the paper clip at a greatest distance of 10 cm as shown below:



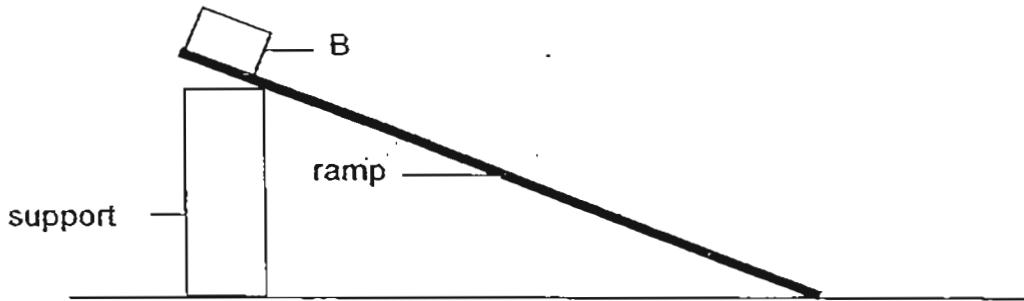
Next, Ianni heated the magnet over the candle flame after a minute.

- (c) Would the heated magnet be able to attract the paper clip from the same distance of 10 cm?

Explain your answer.

[1]

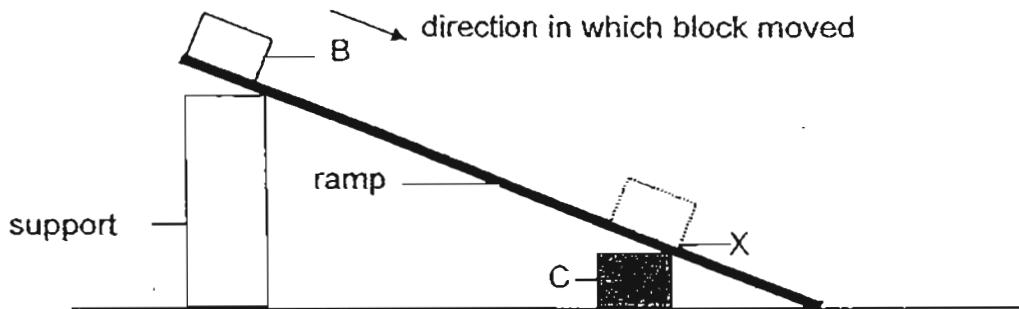
41. Alex placed an ~~iron~~ block B at the top of the ramp as shown below.



When Alex let go of block B, it slid down the ramp.

- (a) Other than air resistance, name two forces acting on block B. [1]

When object C was placed at a point below the ramp as shown in the diagram below, block B took a shorter time to move down the ramp and come to rest at point X on it.



- (b) Suggest what object C could be and how it affected the time taken for block B to reach point X on the ramp. [1]

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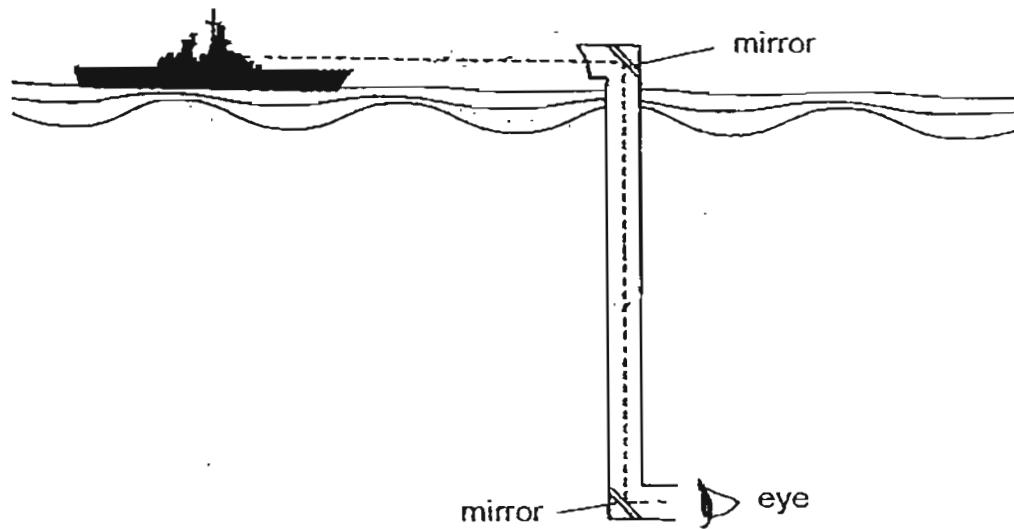
- (c) If Alex would like to further reduce the time block B took to reach point X on the ramp, suggest what could be done **WITHOUT** removing object C and changing the ramp.

Give a reason for your answer.

[2]

suggestion	reason

42. The diagram below shows how a sailor in a submarine made use of a periscope to detect the presence of the enemy's vessel.



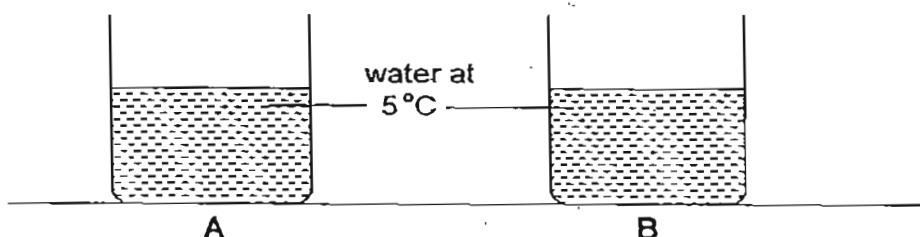
- (a) In the diagram above, draw 3 arrowheads (→) on the dotted lines to illustrate how the light ray enabled the sailor to see the enemy's vessel. [1]
- (b) Explain why the sailor was able to see the image of the enemy's vessel more clearly during the day than at night. [1]

- (c) When two mirrors of the periscope were replaced with 2 pieces of thin clear glass, would the sailor be able to see the enemy's vessel clearly?

Give a reason for your answer. [1]

43. Containers A and B, each made of a different material, were filled with the same amount of water at 5°C at the same time.

Container A felt colder than B when touched and water vapour condensed on container A more quickly than on B.



Both containers were left in a classroom at 25°C. The temperature of the water in both containers was measured after every five minutes.

The table below shows the changes in the temperature of water in container B over a period of 20 minutes.

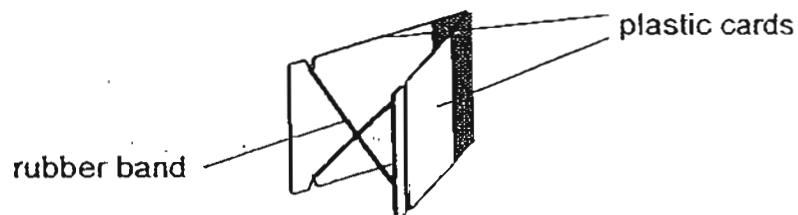
time / min	0	5	10	15	20
temperature of water / °C	5	8	11	14	18

- (a) Predict the temperature of the water in container A at the 20th minute.
Explain your answer. [2]

- (b) Which container, A or B, would be more suitable to use it as a lunchbox for keeping food warm?

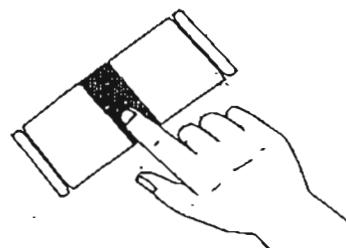
Explain your answer. [1]

44. Shannan made a jumping toy using two pieces of strong plastic cards and a rubber band as shown in the diagram below.



She wanted to find out how the number of rubber bands used to make the toy affects the height it jumps to.

Shannan stretched the rubber band and pressed it down before releasing the toy.



The toy snapped and jumped to a certain height which Shannan measured and recorded in the table below.

She repeated the activity by increasing the number of rubber bands used at one time.

number of rubber bands used	1	2	3	4
maximum height toy reached / cm	7	12	18	23

Based on the information above, answer the following questions:

- (a) Why would Shannon use only the same plastic cards and same type of rubber bands ? [1]

To be continued on the next page

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- (b) When the jumping toy reached the greatest height before falling back to the ground, what type of energy did it possess? [1]

- (c) What could Shannan conclude from her experiment? [1]

- END OF PAPER -

Setters: Miss Ho Hsien Lin, Mdm Thong Kar Fong, Mr Tan Siew Whatt

Answer Ke

EXAM PAPER 2011

SCHOOL : RAFFLES GIRL'S
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIMINARY

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

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

31)a)The wooden plank is a decaying matter and organism Z feeds on it.

b)When the wooden plank is decomposed by organism Z, organism Z breaks it down into simple substances such as carbon dioxide, water and nutrients, carbon dioxide helps the fruit tree photosynthesize and the roots can absorb water and nutrients to grow healthily.

32)a)A: Germination D: Pollination and fertilization
b)Anther, stigma, ovules, ovary

33)a)By closing the stomata, it reduces the plant's water loss, thus keeping it cool.

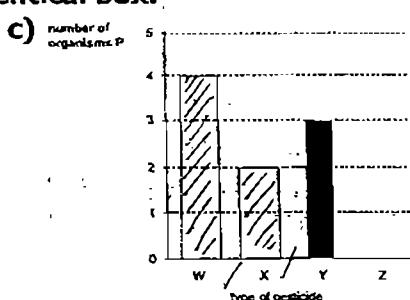
b)Less carbon dioxide enters the plant for photosynthesis to take place./The plant receives less sunlight as the leaves have less exposed surface area.

34)a)A cell must have a nucleus for reproduction and a cell wall for a rigid shape, cell A does not have a nucleus or a cell wall.

b)No. cell C has nucleus, cell membrane and cell wall but the cell above does not have a cell wall.

35)a)Tessa should place a gauze, 5g moist food and the same number of organism P in another identical box.

b)Tessa must repeat the experiment at least 3 more times and take the average of all the results, using a new batch of similar 4 organism P at one time in another identical box.

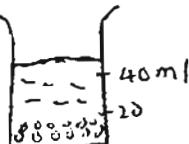


36)a) Animal / It is juicy and fleshy, bright red when ripe and is edible, thus animals will be attracted to eat it.

b) When fruit X is green to blend in with its surroundings, animals will not eat it as they will not spot it, fruit X is left to turn red then the animals will eat it, if it is eaten when it is fully developed, it increases its chance of survival.

When the fruit is green, they are not fully developed. When the fruit is red, they are fully developed.

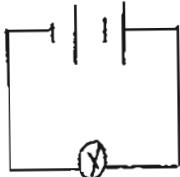
37)a)i)



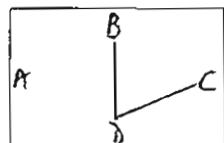
ii) Stone is a solid and does not take the shape of the container, when water is poured in, it occupies the space in the air spaces between the stones.

b) There is very little air spaces in clayey soil, thus water cannot occupy much space in them.

38)a)



b)



39)a) The magnetism is stronger, when the distance between the coiled rod and pins decrease thus more pins will be attracted to the coiled rod.

b) Rod R. The difference in the pins attracted in Q is 13 while the difference in the pins attracted in R is 72 thus the most number of pins dropped from R.

c) Material P is made of a nonmagnetic material, magnetism can pass through non-magnetic material but cannot pass through magnetic materials like Q and R.

40)a) A C D B E F

b) Heated nickel could not be attracted by magnet, nickel pieces move back to position A due to gravitational force. Nickel piece cooled and was attracted to the magnet and moved back to position B.

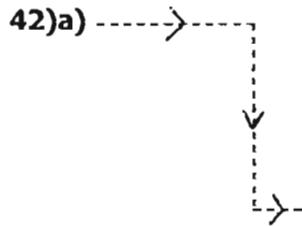
c) No. Heating a magnet causes it to lose its magnetism, the heated magnet will only be able to attract the paper clip at a distance shorter than 10cm.

41)a) Gravitational force and frictional force.

b) Object C is a magnet. It attracted B, which is an iron block, towards it, when there is magnetic force pulling block B, it slides down the ramp faster.

c) Add lubricant on the ramp. / It can reduce friction between block B and the ramp thus allowing it to slide faster.

(page 2)



b) During the day, a greater intensity of light can reflect the mirror into the enemy's vessel into the sailor's eyes but there is lesser light during the night.

c) No. Glass does not reflect light but lets it pass through.

43)a) 22°C. Container A is a better conductor of heat than B thus it can gain heat from the surroundings faster, so it reached a higher temperature than B at 20th minute and finally reached equilibrium with the room temperature.

b) Container B. It is a poorer conductor of heat thus heat passes through it slowly, the food will lose heat slower.

44)a) It is to ensure a fair test as the only changed variable is the number of rubber bands used.

b) Gravitational potential energy.

c) The more number of rubber bands used the greater the maximum height the toy reached.



RAFFLES GIRLS' PRIMARY SCHOOL
SEMESTRAL ASSESSMENT (1)
2011

Name: _____ Index No: _____ Class: P 6 _____

6th May 2011

SCIENCE

Att: 1 h 45 min

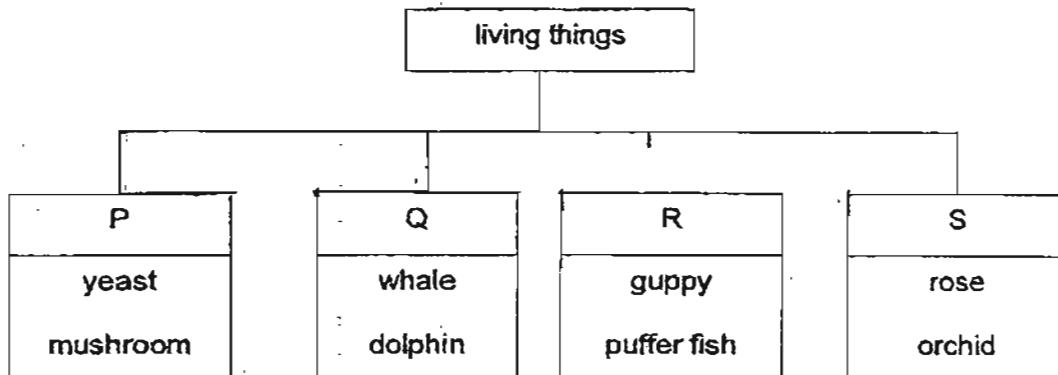
SECTION A (30 X 2 marks)

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.

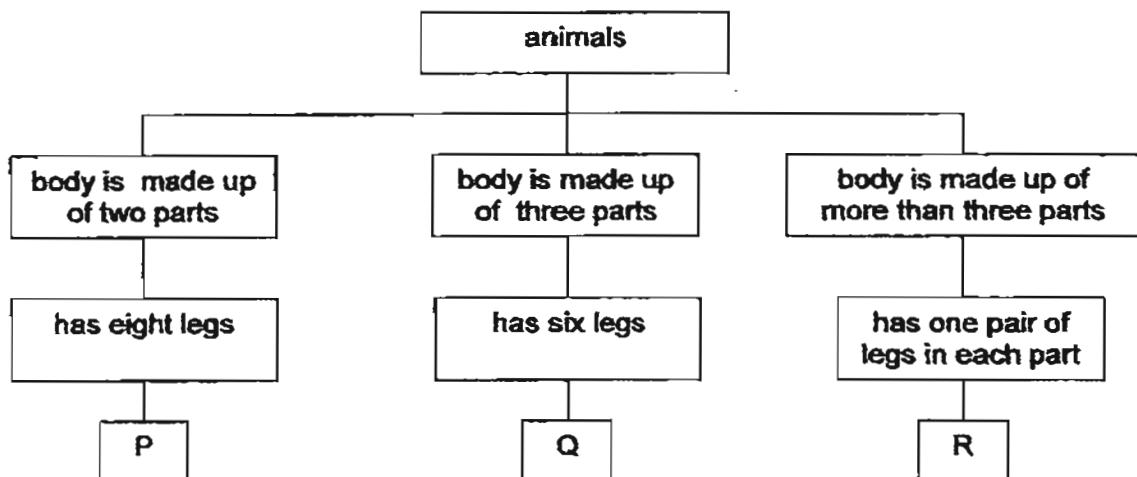
1. The table below shows how some living things are classified.



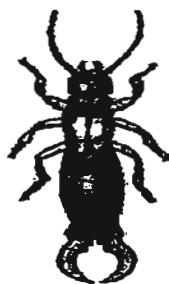
Based on the table above, which one of the following sets of organisms is classified correctly?

	P	Q	R	S
(1)	cactus	shark	spiny anteater	bread mould
(2)	cactus	spiny anteater	shark	bread mould
(3)	bread mould	shark	spiny anteater	cactus
(4)	bread mould	spiny anteater	shark	cactus

2. Some organisms are differentiated using the table below.



Cindy found two animals and noticed that each had a hard body covering.



X

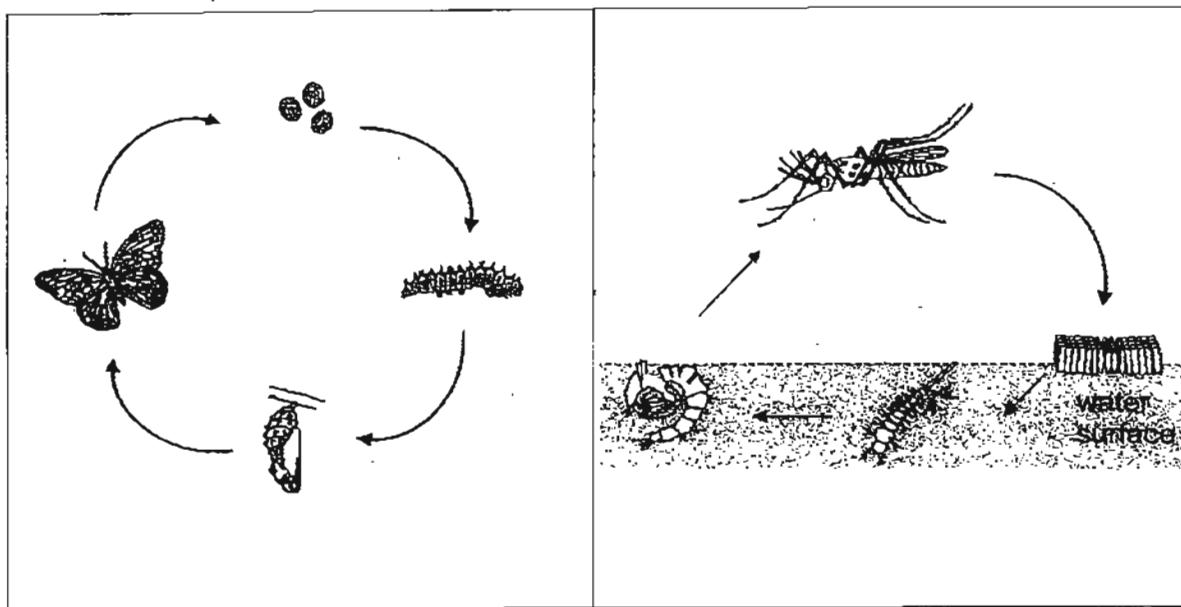


Y

Which group, P, Q or R, does each animal, X and Y, belong to?

	animal X	animal Y
(1)	P	Q
(2)	P	R
(3)	Q	P
(4)	Q	R

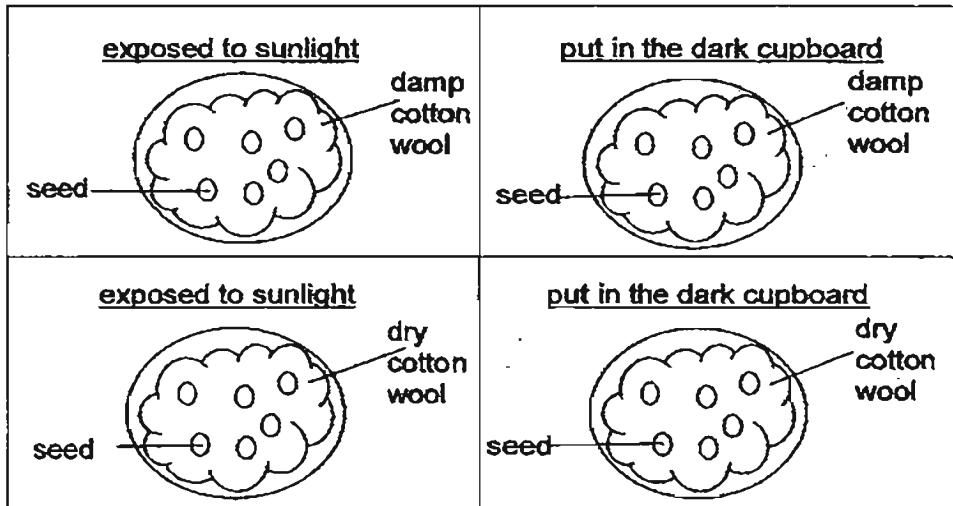
3. The diagrams below show the life cycles of 2 animals.



Based on the diagrams above, in what way(s) is/ are the life cycles of the animals similar?

- A Both give birth to live young.
 - B Both their young do not resemble the adults.
 - C Both need to live in water before the adult stage.
 - D Both have to go through the pupal stage before they become adults.
-
- (1) A only
 - (2) C only
 - (3) B and D only
 - (4) B, C and D only

4. David set up an experiment using four different set-ups below.

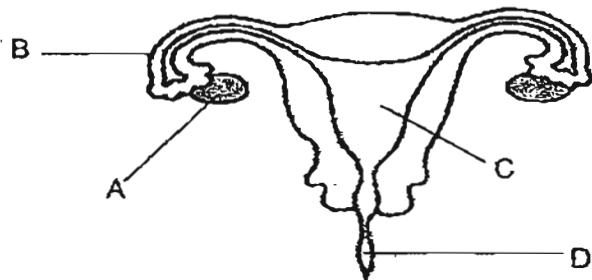


At the end of the experiment, David observed that the seeds grew into seedlings in some dishes but not in others.

What was David trying to find out from his experiment?

- (1) whether seedlings can grow in cotton wool
- (2) whether seedlings need light for photosynthesis
- (3) whether seeds need water and light to grow into seedlings
- (4) whether seeds need water, light and cotton wool to grow into seedlings

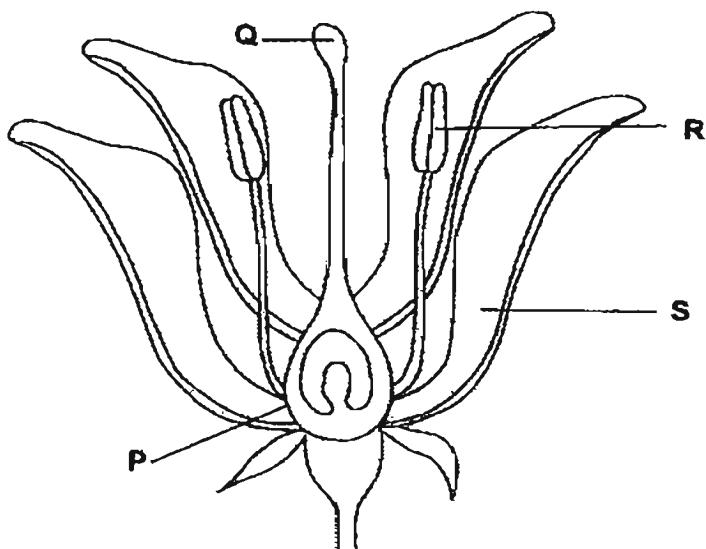
5. The diagram below shows the labelled parts of a human female reproductive system.



Which one of these parts, A, B, C or D, produces the female sex cells?

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

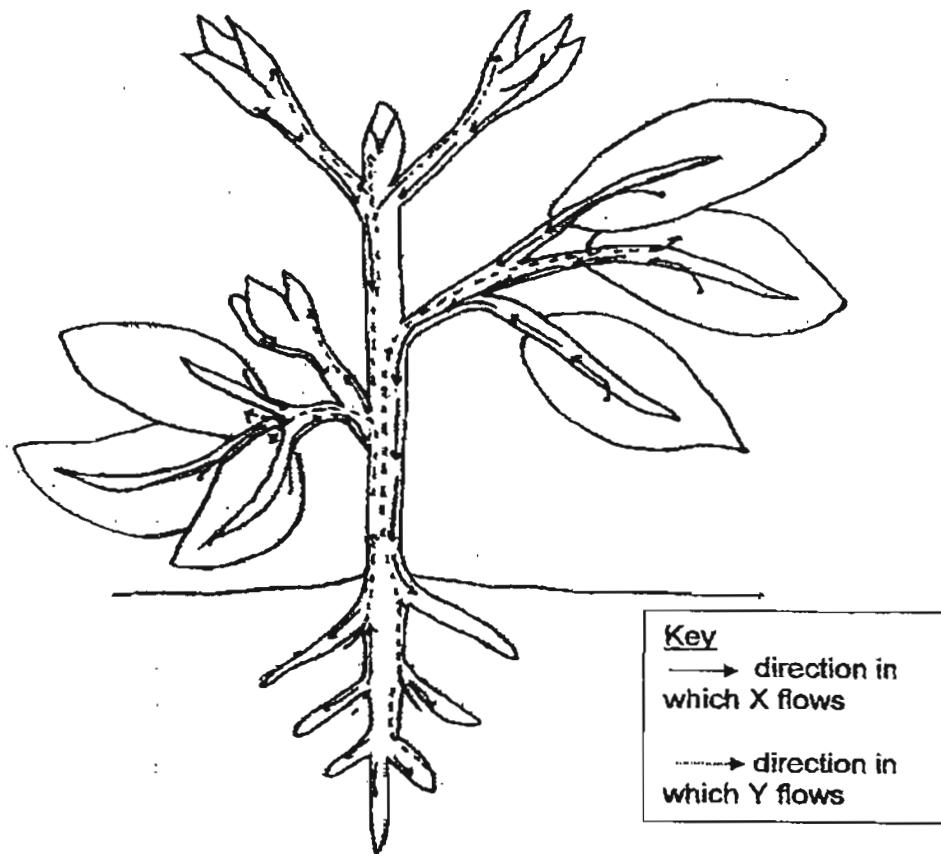
6. The diagram below shows the cross section of a flower.



Which part of the flower becomes a fruit after fertilisation has taken place?

- (1) P
 - (2) Q
 - (3) R
 - (4) S
7. The lungs and the heart are two organs in the human body.
- Which one of the following statements about the functions of the lungs and/or heart is true?
- (1) The lungs remove carbon dioxide from the body.
 - (2) The heart removes carbon dioxide from the lungs.
 - (3) The lungs transport oxygen produced to the heart.
 - (4) The heart takes in oxygen from the surroundings directly into the body.

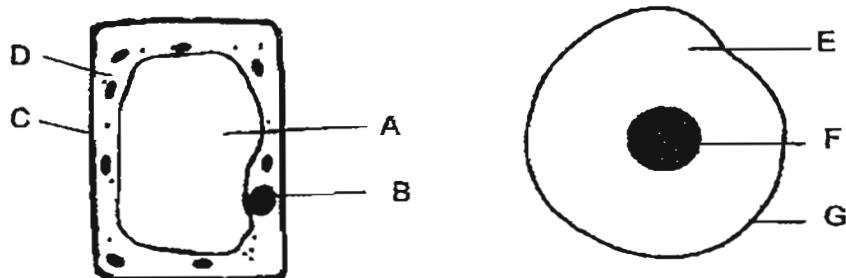
8. The diagram below shows how substances X and Y are transported from one part to another in a plant.



Which one of the following identifies substances X and Y correctly?

	X	Y
(1)	water	nutrients
(2)	water	sugar
(3)	sugar	dissolved mineral salts
(4)	dissolved mineral salts	water

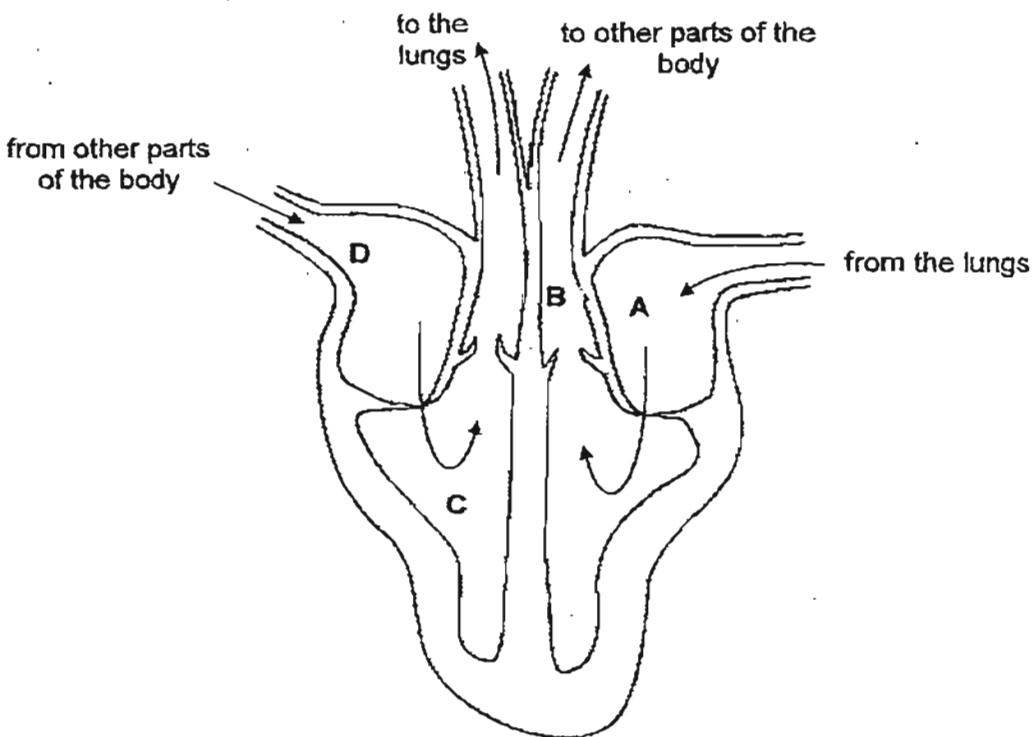
9. The two cells shown below are examined under a microscope.



Which one of the following parts matches correctly to their functions?

	parts of the cell	function
(1)	A, F	The jelly-like substances allow food and oxygen to move around within the cells.
(2)	B, F	They control everything that happens inside the cells.
(3)	C, G	They keep the cells firm.
(4)	D, E	They hold the cytoplasm inside the cells and control substances that go in or out of them.

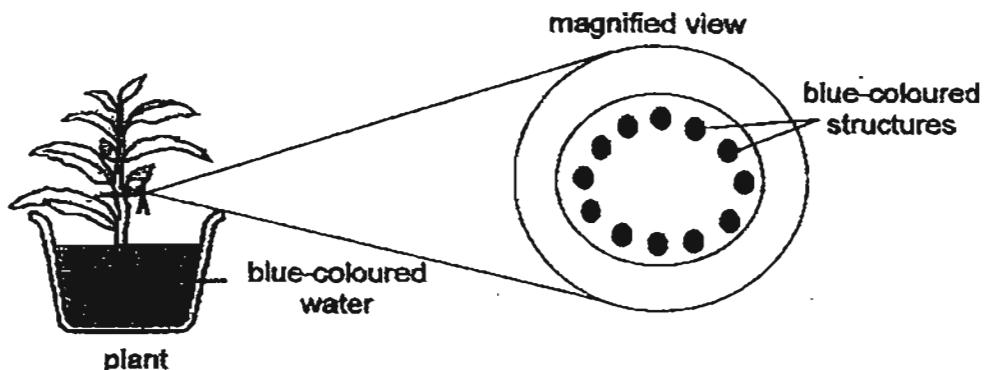
10. The diagram below shows how blood flows within a human heart.



Which one of the following describes correctly the blood found in each of these parts?

	A	B	C	D
(1)	oxygen-rich blood	oxygen-rich blood	carbon dioxide-rich blood	carbon dioxide-rich blood
(2)	oxygen-rich blood	carbon dioxide-rich blood	carbon dioxide-rich blood	oxygen-rich blood
(3)	carbon dioxide-rich blood	carbon dioxide-rich blood	oxygen-rich blood	oxygen-rich blood
(4)	carbon dioxide-rich blood	oxygen-rich blood	oxygen-rich blood	carbon dioxide-rich blood

11. Susan put a healthy plant in a beaker of blue-coloured water. The next day, she cut a cross section of the stem at position A.



Susan saw that parts of the stem had turned blue.

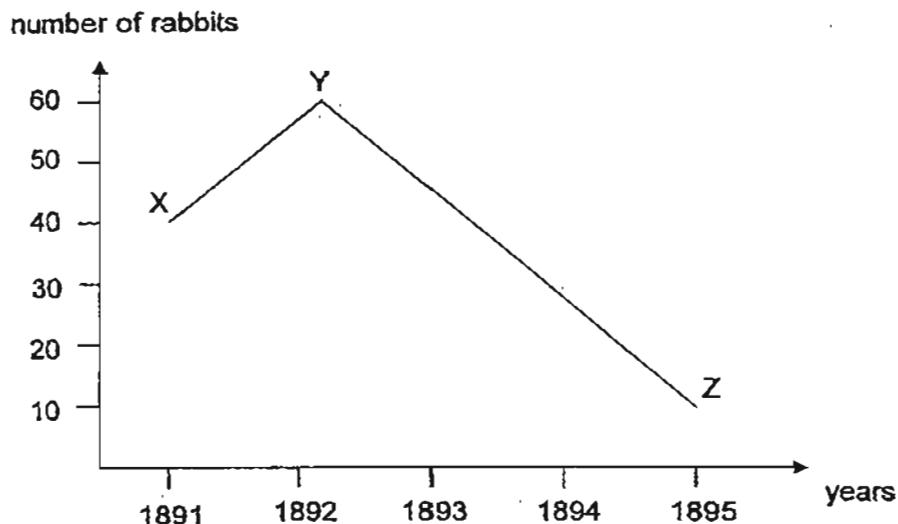
Susan made the following conclusions:

- A Only food-carrying tubes were found in the stem.
- B Only water-carrying tubes were found in the stem.
- C The blue-coloured structures were food-carrying tubes.
- D The blue-coloured structures were water-carrying tubes.

Which of the above conclusions is/ are correct?

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

- 12) In 1891, forty rabbits of the same species were introduced on an island with an abundant supply of grass. There were only some migratory birds on the island that did not prey on these rabbits. The graph below shows the change in population size of rabbits over the years.



Based on the information above, which of the following could possibly explain the part(s) of the graph correctly?

- A From X to Y, the birth rate of the rabbits was the same as its death rate.
 - B From X to Y, the birth rate of the rabbits was greater than its death rate.
 - C From Y to Z, the number of rabbits decreased due to a drought.
 - D From Y to Z, many rabbits died because the migratory birds spread diseases to them.
- (1) A and C only
(2) B and D only
(3) C and D only
(4) B, C and D only

13. Wai Yin wanted to conduct an experiment to find out if detergent has an effect on the growth of duckweeds. She collected some water from ponds S and T and prepared four different set-ups, A, B, C and D, as shown below.

set-up	water from pond	number of duckweeds	amount of pond water (mL)	amount of detergent added (mL)
A	S	15	100	15
B	S	15	100	0
C	S	20	200	15
D	T	20	200	0

Which of these set-ups should Wai Yin use to conduct a fair test for her experiment?

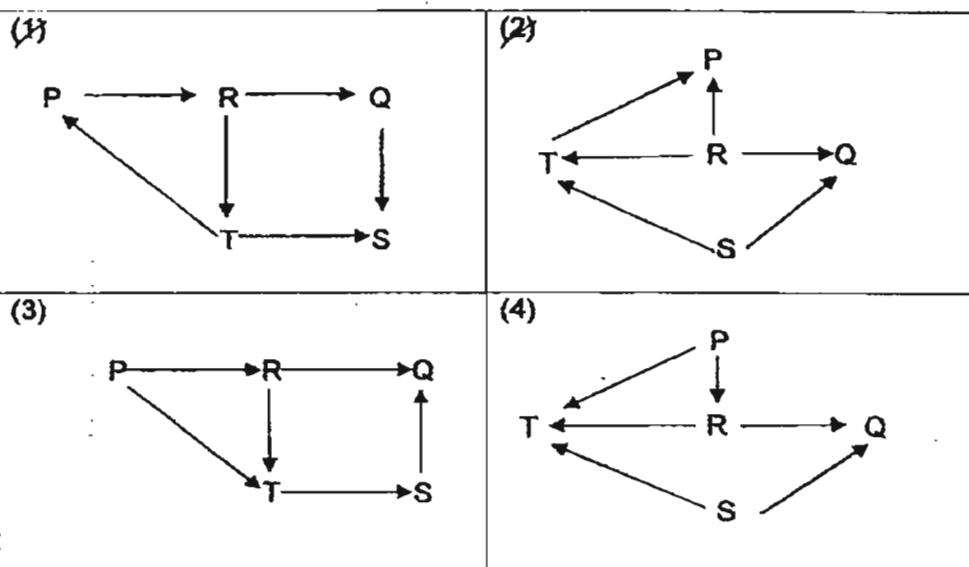
- (1) A and B only
- (2) A and C only
- (3) B and C only
- (4) C and D only

14. P, Q, R, S and T are five types of organisms.

The following statements describe the food relationships between these organisms.

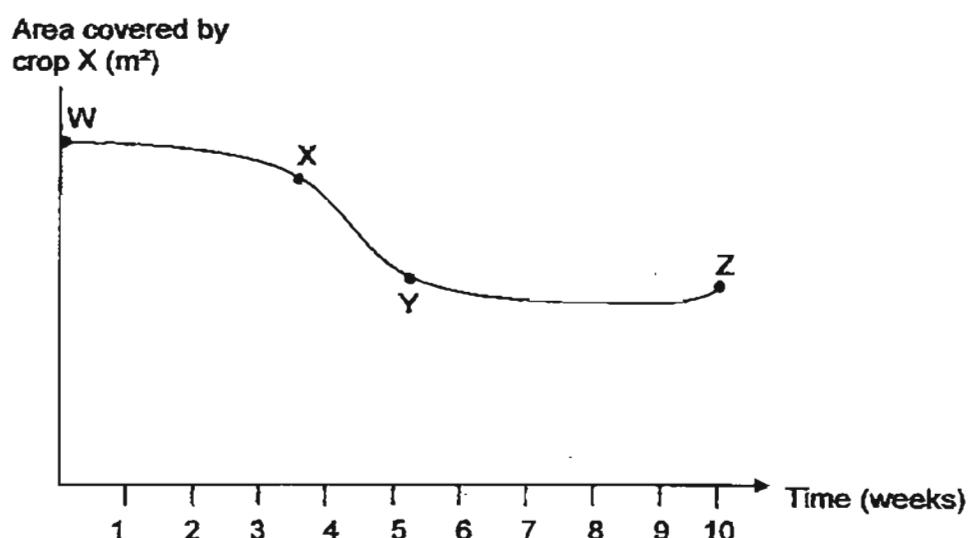
P is a producer and is eaten by R and T.
Q is a predator of both R and S.
S preys on T.
T preys on R.

Which one of the following food webs shows the correct food relationships of these organisms?



15. A farmer planted crop X on his farm. After some time, he realised that aphids had attacked his crop. The farmer then introduced some ladybirds to his farm.

The graph below shows the changes in the area covered by crop X.



At which point, W, X, Y or Z, did the farmer introduce the ladybirds to his farm?

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

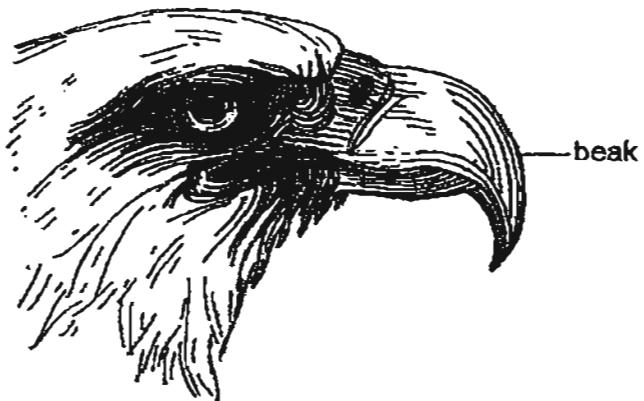
- 16 Some pupils took photographs of the following plants and animals from the same community.

Animals	Plants
ant	clovers
spiders	lallang
butterfly	mimosa
caterpillar	love grass
grasshopper	angsana tree

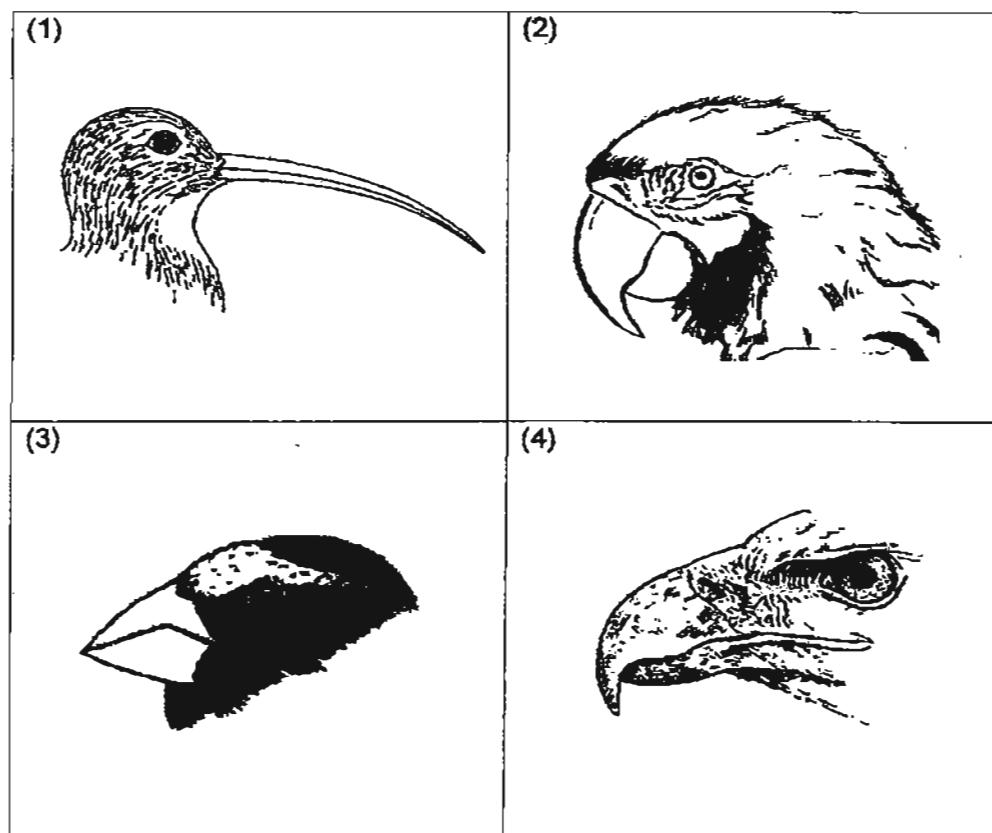
Based on the table above, which one of the following statements is true?

- (1) The pupils studied a field community.
- (2) The pupils studied a single tree community.
- (3) The pupils found an equal number of plants and animals.
- (4) The pupils collected five populations of animals and five populations of plants.

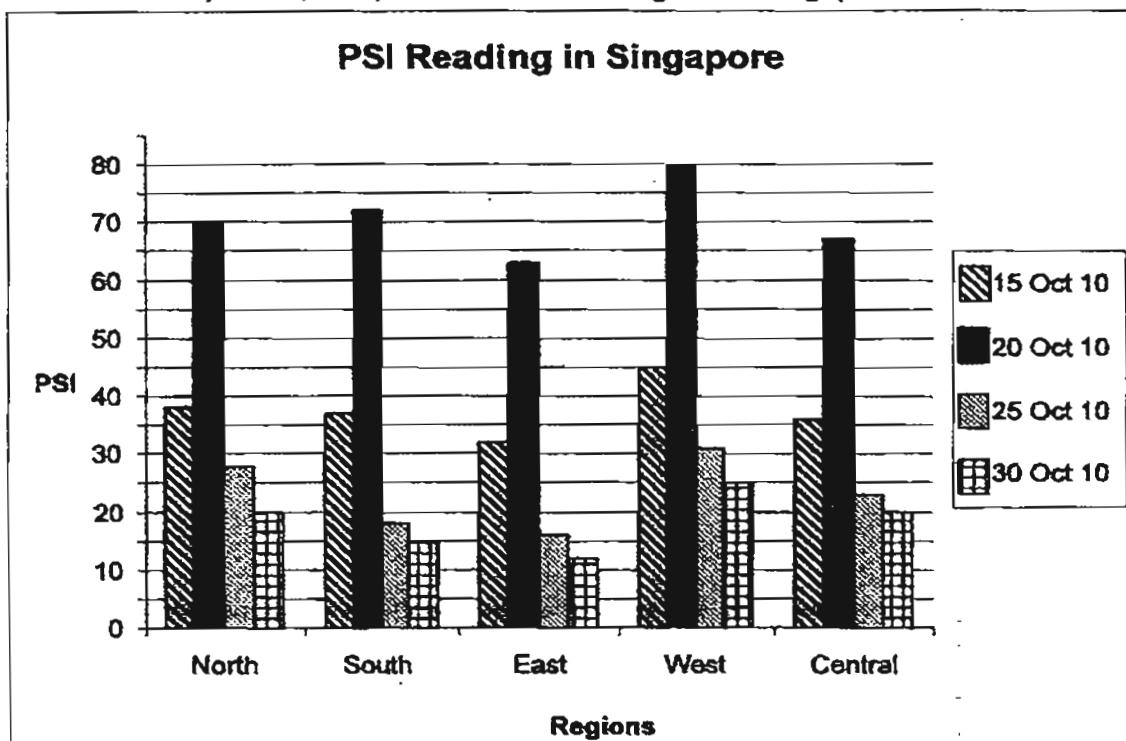
17. The diagram below shows the beak of a bird.



Which one of the following birds has a similar method of feeding as the bird shown above?



18. The graph below shows the Pollutant Standards Index (PSI) readings of the North, South, East, West and Central regions in Singapore.



PSI	Up to 50	51 - 100	101 - 200
PSI descriptor	good	moderate	unhealthy

[Note: PSI is a measure of concentrations of pollutants in the air.]

Based on the information above, which of the following statements are likely to be true?

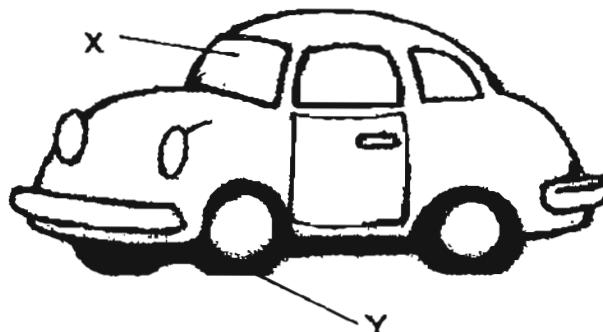
- A The PSI on all 4 days were within the good range.
 - B The PSI on all 4 days was lower in the East than in the West.
 - C The winds could possibly carry smoke particles from the forest fires in the neighbouring countries.
- (1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

19. John observed four materials, P, Q, R and S, based on the following properties:

A tick (✓) in the box indicates the property which the material has.

material	waterproof	transparent	flexible	floats on water
P	✓		✓	
Q			✓	✓
R	✓	✓		
S	✓	✓	✓	✓

Based on his observations, which one of the following is most suitable to make parts X and Y of the car as shown below?



	X	Y
(1)	P	Q
(2)	Q	S
(3)	R	P
(4)	S	R

20. Which of the following statements about matter are true?

- A Wind is matter.
- B Sound is matter.
- C Some matter can be compressed.
- D Some matter has mass but does not occupy space.

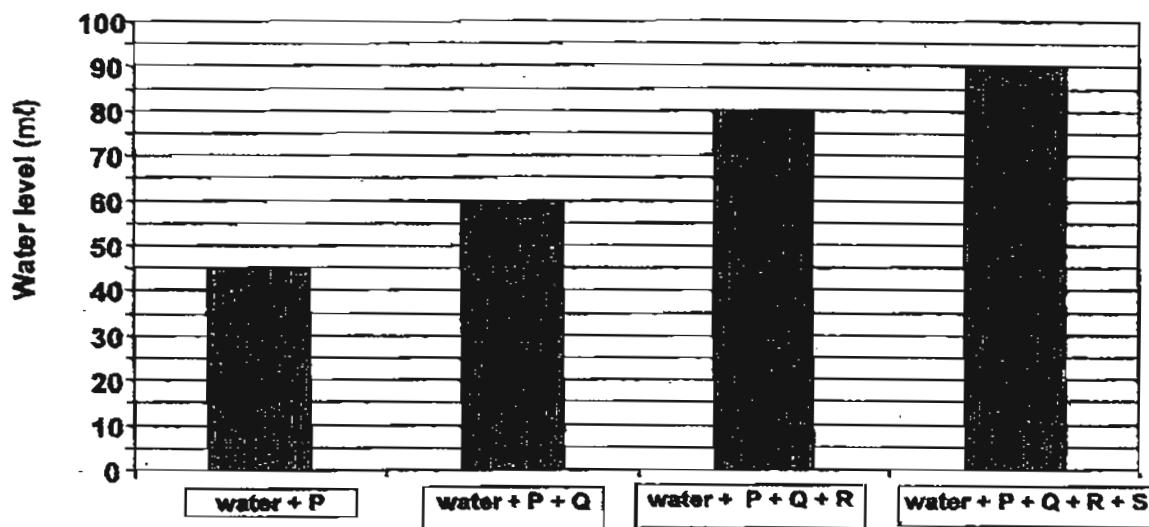
- (1) A and B only
- (2) A and C only
- (3) C and D only
- (4) B and C only

21. Zara conducted an experiment to find out the volume of some objects.

First, she filled up a measuring cylinder with 30 mL of water. Next, she lowered P completely into the water in the measuring cylinder and recorded the new water level.

She repeated the same steps for Q, R and S.

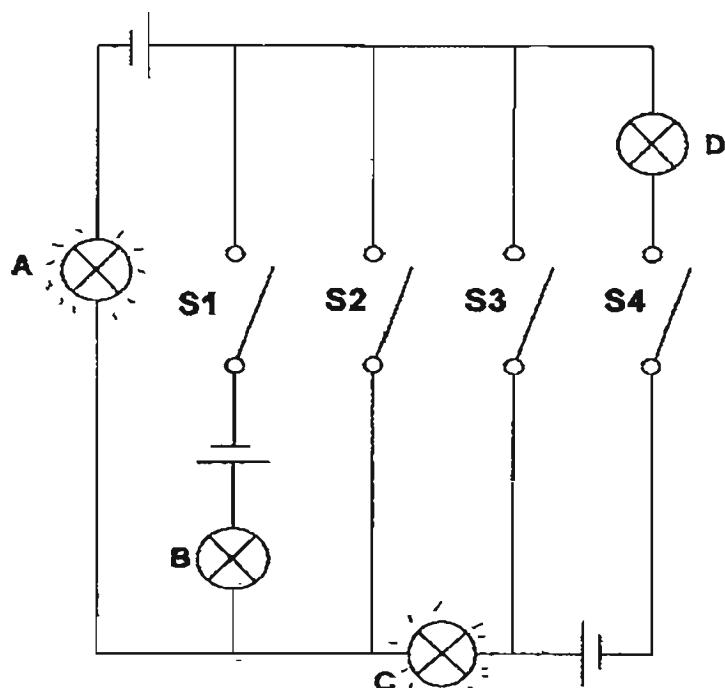
Zara drew the bar graph below to represent her findings.



From the graph shown above, which 2 objects were of the same volume?

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

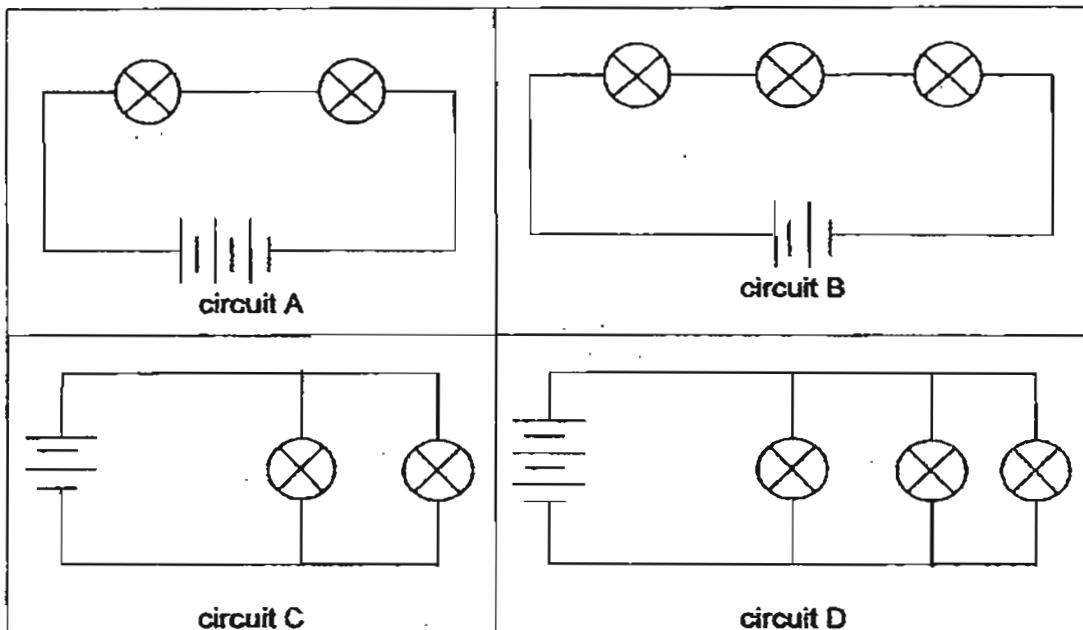
22. Andrew set up an electric circuit using identical bulbs A, B, C and D as shown in the diagram below.



Which switch should be closed to light up only bulbs A and C?

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

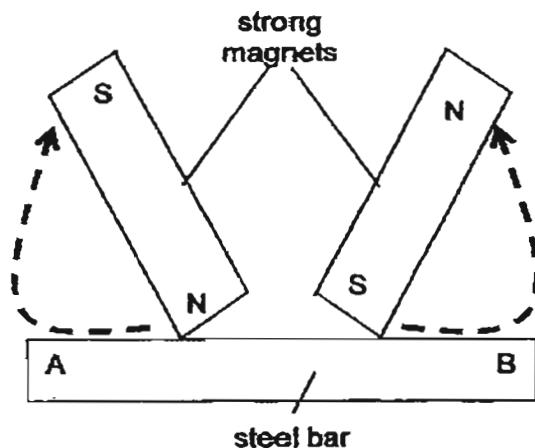
23. The diagrams below show four different circuits, A, B, C and D, using identical batteries, bulbs and wires.



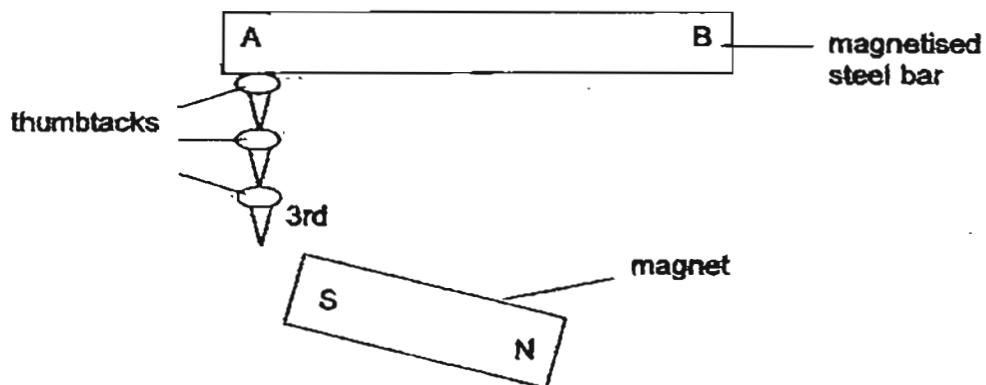
In which one of these circuits do the bulbs glow most brightly?

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

24. Peter magnetised a steel bar, AB, with two strong magnets as shown below.



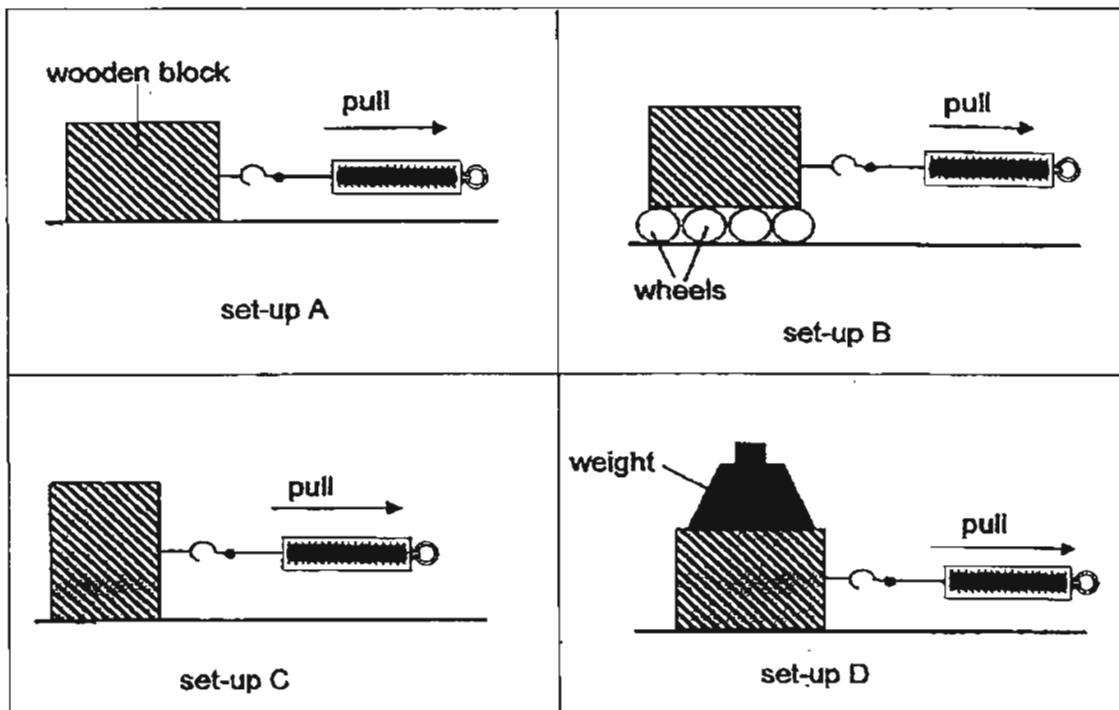
Three thumbtacks were attracted to the magnetised steel bar. Peter brought one end of a strong bar magnet close to the tip of the 3rd thumbtack as shown below.



Which one of the following was possibly observed by Peter?

- (1) The 3rd thumbtack did not move.
- (2) The 3rd thumbtack fell to the ground.
- (3) The 3rd thumbtack moved towards the magnet.
- (4) The 3rd thumbtack moved away from the magnet.

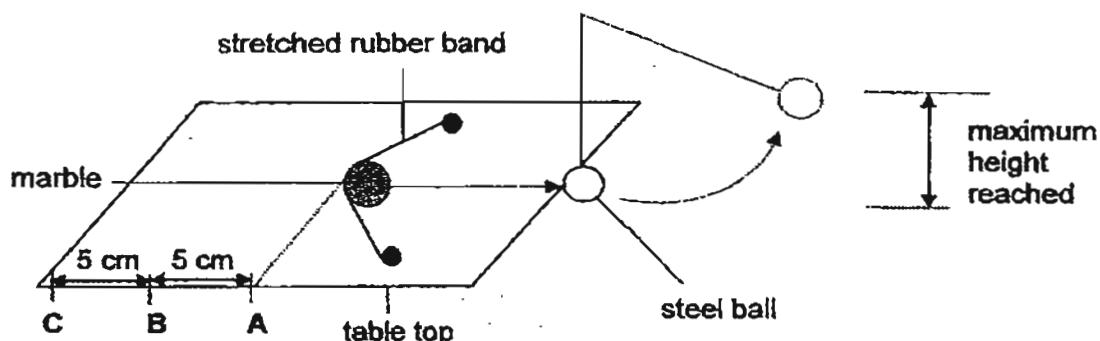
25. The diagrams below show four different set-ups. The same block of wood was pulled across the same table.



Which one of these set-ups, A, B, C or D, would produce the greatest frictional force?

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

26. Raju hung a steel ball at the edge of the table as shown below.



Raju stretched the rubber band to the starting point at A and released a marble to hit the steel ball. He recorded the maximum height reached by the steel ball when it swung away from the edge of the table.

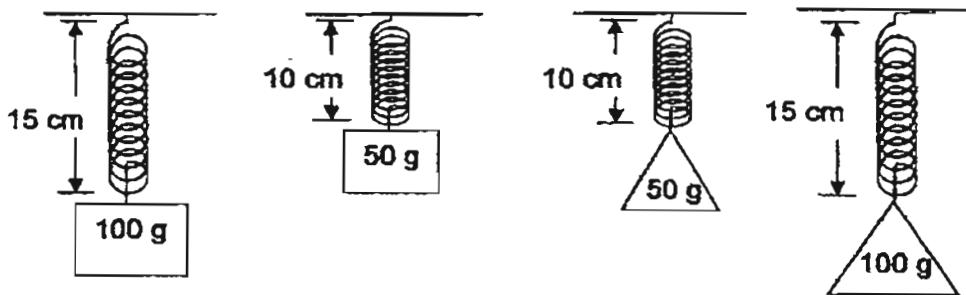
He repeated his experiment with different starting points at B and C, ONE at a time, and recorded his results.

starting point	A	B	C
maximum height reached by steel ball (cm)	?	14	?

Which one of these readings could possibly be the maximum height reached by the steel ball when the starting points were at A and C?

	maximum height reached by steel ball (cm)	
	at A	at C
(1)	10	7
(2)	10	18
(3)	17	20
(4)	20	9

27. Rachel conducted an experiment to compare the extension produced by objects hung on an identical spring. The diagrams show the force required to stretch the spring from its initial length of 5 cm.



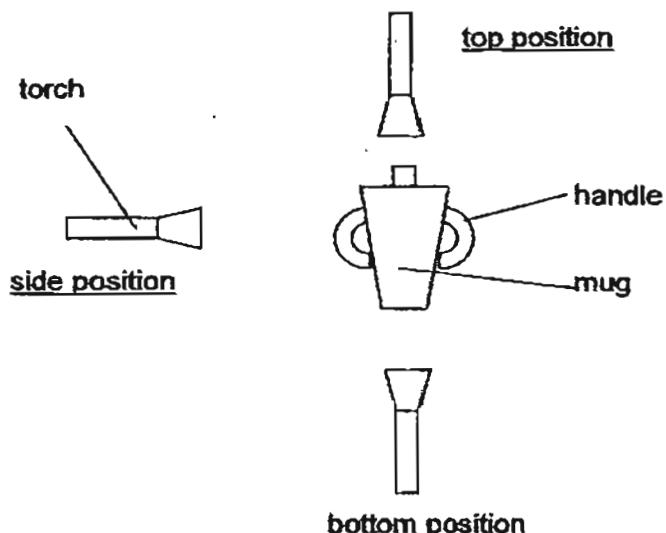
Rachel wrote the following conclusions:

- A The length of the spring increased when the mass of the object increased.
- B Every additional 50 g of mass resulted in an increased length of 5 cm of the spring.
- C The extension of the spring was more when the triangular object was used than when the rectangular object was used.

Which of Rachel's conclusions is/ are correct?

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

28. The set-up below shows a torch shining on a mug from different positions.



Which one of the following sets of shadows was observed?

	top position	side position	bottom position
(1)			
(2)			
(3)			
(4)			

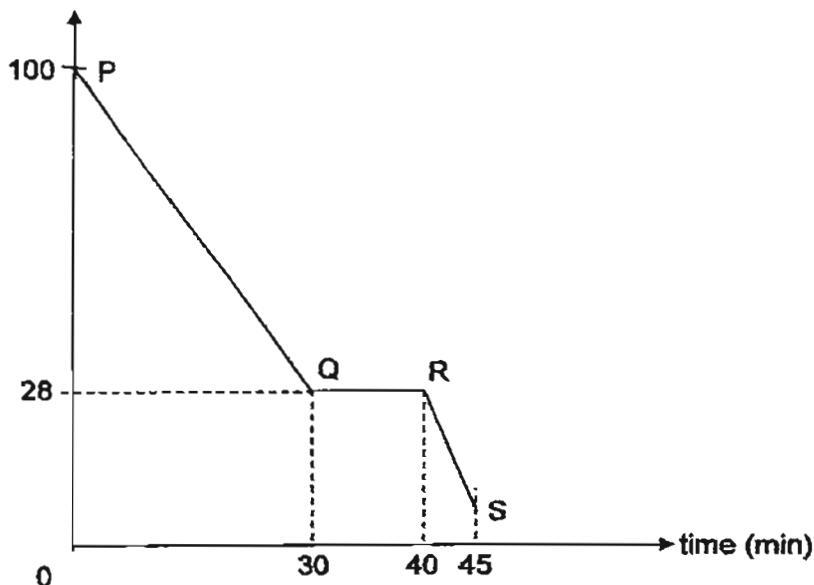
29. An object, X, has a melting point of 60°C and a boiling point of 83°C .

Which one of the following identifies the correct states of matter for X at the specific temperatures?

	at 50°C	at 100°C
(1)	solid	gas
(2)	liquid	gas
(3)	liquid	solid
(4)	gas	liquid

30. Sheryl put a beaker of boiling water on a table to cool down. When the water reached the room temperature for a while, she added some ice cubes to the contents in the beaker. She recorded her results in the graph below.

temperature of water($^{\circ}\text{C}$)



Based on the information above, which of the statements below are correct?

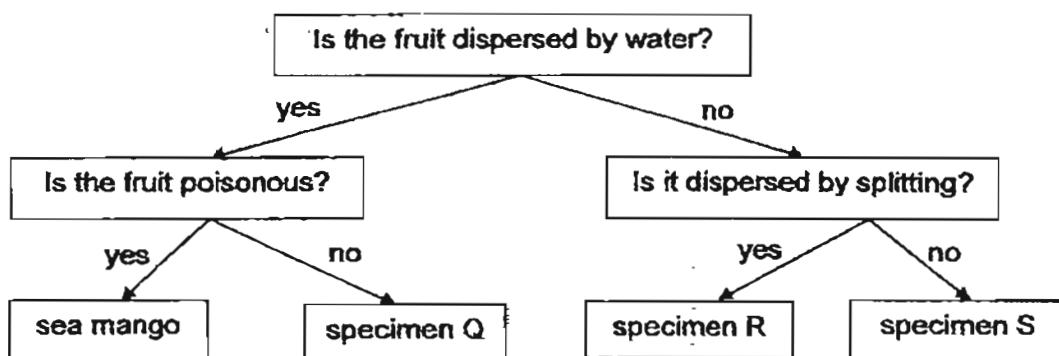
- A Condensation took place in the first 30 minutes only.
 - B The beaker of water took 30 minutes to cool down to room temperature.
 - C Ice cubes were added to the water 40 minutes after the start of the experiment.
 - D The water in the beaker became ice between 40th and 45th minute.
- (1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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. The flow chart below shows how some specimens are distinguished.

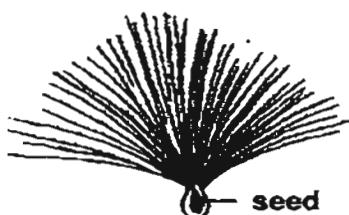


Based on the information above, answer the following questions:

- (a) Identify the specimen below. Write letter Q, R or S ONLY.
State its method of seed dispersal.

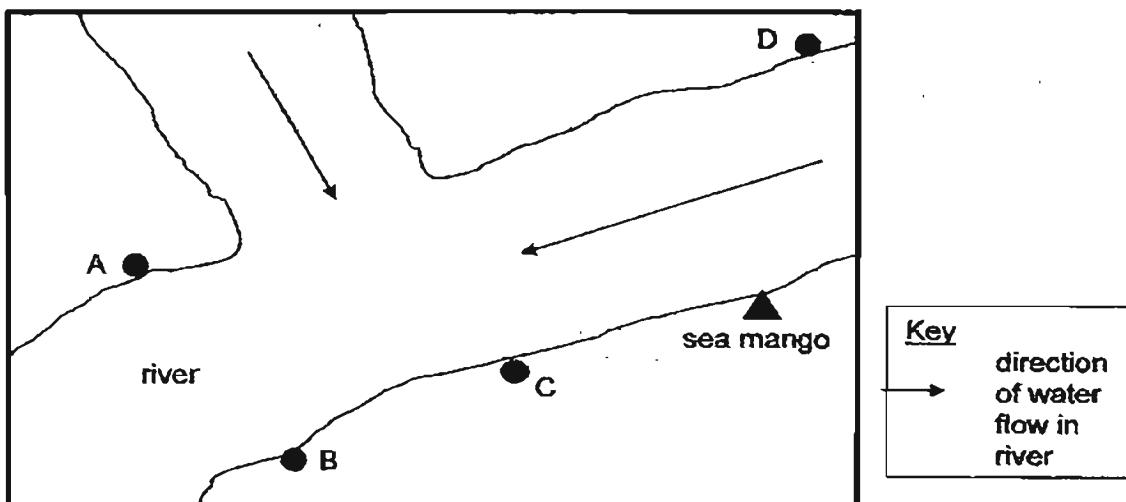
{1}

specimen	method of seed dispersal
	by



To be continued on the next page

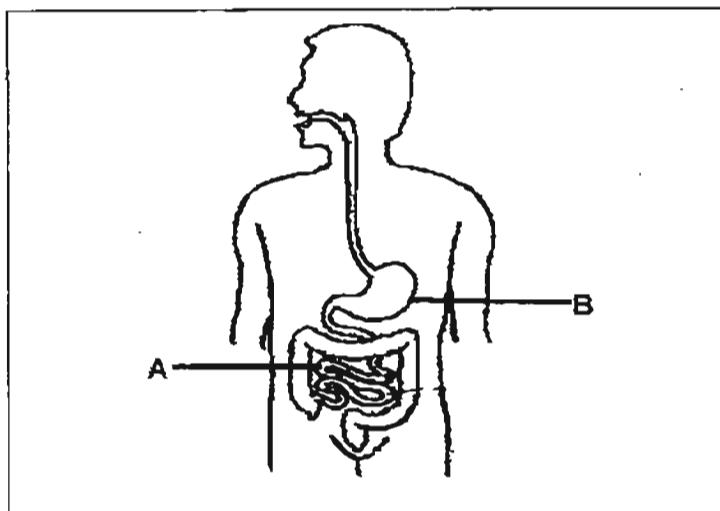
The diagram below shows the different parts, A, B, C and D, of a river where sea mango was found growing.



- (b) Name the most unlikely part of the river where the young of sea mango plant is found. Explain your answer. [2]

- (c) The fruit of the sea mango has a fibrous husk. Explain how this feature enables it to be dispersed by water. [1]

32. The diagram below shows parts of the digestive system of a man.



Based on the diagram above, answer the following questions:

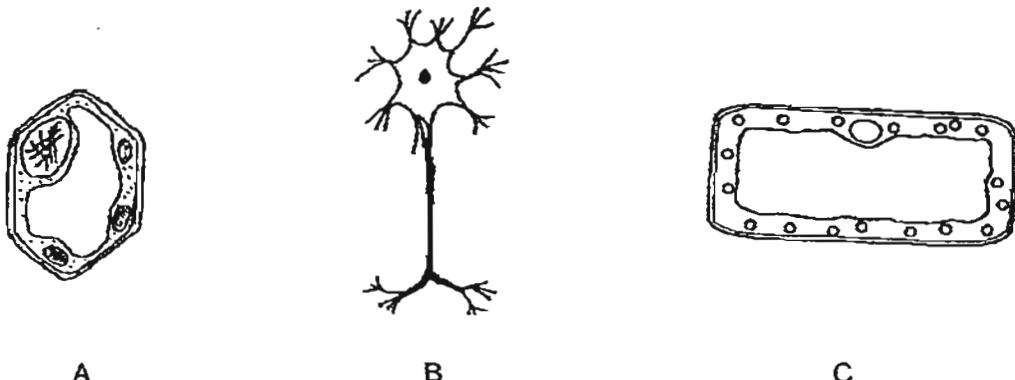
- (a) Name the parts A and B and state one function of each organ. [2]

part	function
A:	
B:	

- (b) MARK and LABEL clearly on the diagram the part(s) of the system where each of the following processes take place: [1]

- (i) X, where digestion starts
- (ii) Y, where digestion ends

33. The diagrams below show different types of cells seen under a microscope.



- (a) Classify the cells, A, B and C. Complete the table below.
Write letters A, B and C ONLY.

[1]

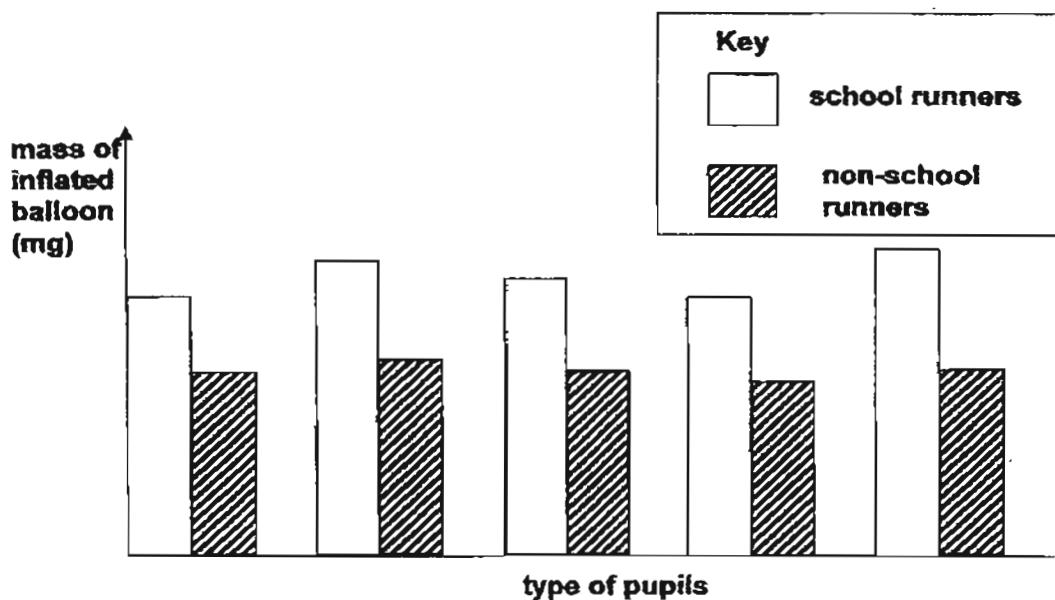
plant cell	animal cell

- (b) Explain your answers in (a).

[1]

34. Khalid wanted to find out if school runners had a bigger lung capacity than those who were not. The term "lung capacity" refers to the amount of air the lungs of a person can hold.

He selected five school runners and five non-school runners of similar age group to conduct his experiment. Each pupil took a deep breath and blew into a deflated balloon in which its initial mass was recorded. The mass of the inflated balloon was measured. Khalid plotted a graph based on his results as shown below.



- (a) Which group of pupils, school runners or non-school runners, has a bigger lung capacity? Explain your answer. [1]

To be continued on the next page

Khalid conducted another experiment using the same groups of pupils. He asked each pupil to stop breathing for 30 seconds by pinching his nose and closing his mouth. He was only allowed to breath after 30 seconds.

- (b) Khalid observed that both groups of pupils breathed much faster after they had stopped breathing for 30 seconds. Explain his observation. [2]

35. The table below shows some facts on an animal X.

physical characteristics of X	has: <ul style="list-style-type: none">• a rounded head• small ears• sharp teeth• a body length of about 42 - 57cm long• short legs• a long tail• soft, thick, brown fur• a slender long tongue (12.7 cm), which is used in reaching for nectar
diet of X	feeds mainly on: <ul style="list-style-type: none">• fruits• nectar of flowers• termites
predators of X	<ul style="list-style-type: none">• P• Q• R• S

Based on the information given above only, answer the following questions:

- (a) Describe how animal X and the flowering plants depend on one another.

Animal X depends on the flowering plants:

[1]

Flowering plants depend on animal X:

To be continued on the next page

(b) Write down two different food chains involving animal X. [2]

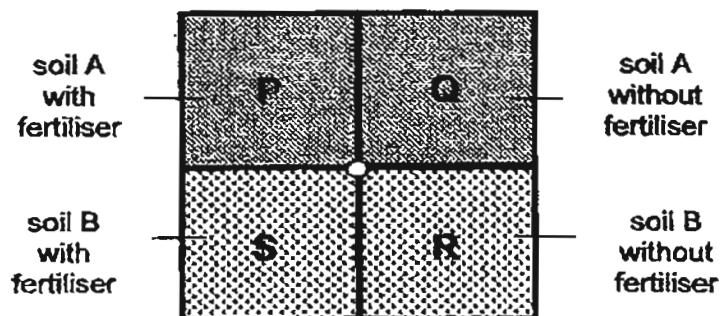
(i)



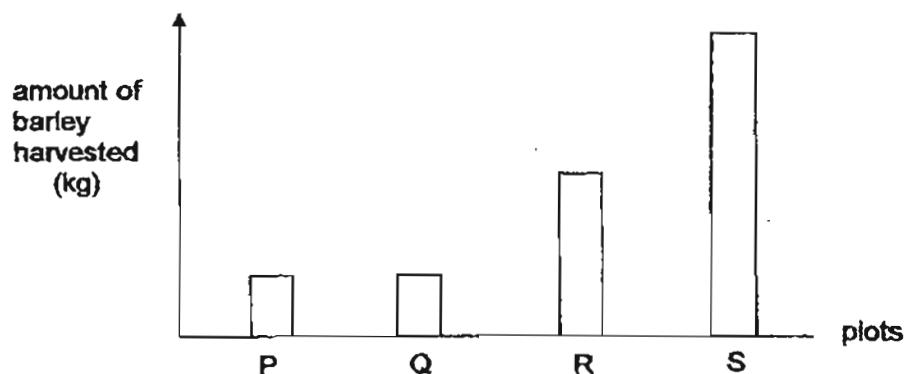
(ii)



36. Ali planted barley of the same variety in four identical plots of land, P, Q, R and S, as shown below.



He measured the amount of barley harvested and recorded the results in the graph below.



Based on the information above, answer the following questions:

- (a) Which type of soil, A or B, was more suitable for planting barley?
Give a reason for your answer. [1]
-
- (b) Compare plots P and S. State one conclusion about each type of soil which Ali could draw from his results. [2]

type of soil	conclusion
A	
B	

37. Bird X does not make her nest but lays her eggs in the nest of another bird known as the 'host'.

The eggs of bird X look very much like the eggs of its host as shown below.

egg of host



egg of bird X

Bird X is able to get the parent host to incubate and rear its offspring.

- (a) Give a reason why the parent host fails to detect the difference. [1]

The young of bird X is much larger than the young of the host. The young of bird X often kicks the host chick from its nest.

- (b) Give a reason why this behaviour is an advantage to the young of bird X when there is limited food supply. [1]

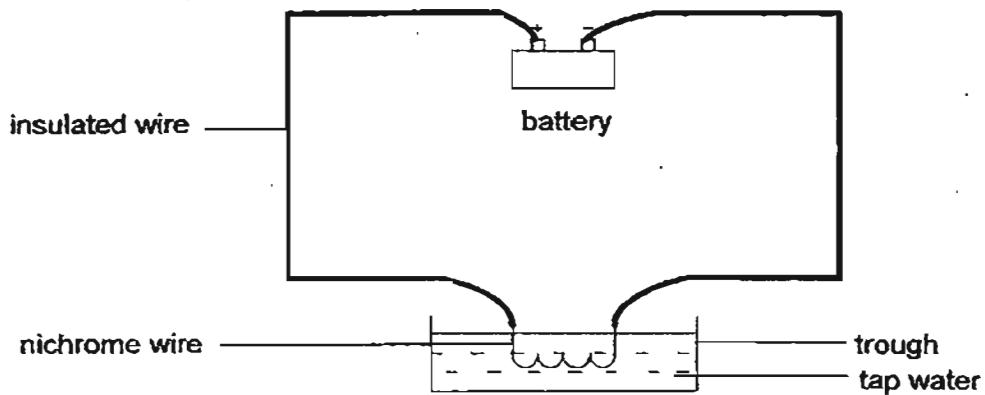
38. Meili took a plastic air-tight container with its lid on to heat it in the microwave oven.

However before she could do so, her mother told her the covered plastic air-tight container would 'explode' in the microwave oven if she were to heat it that way.

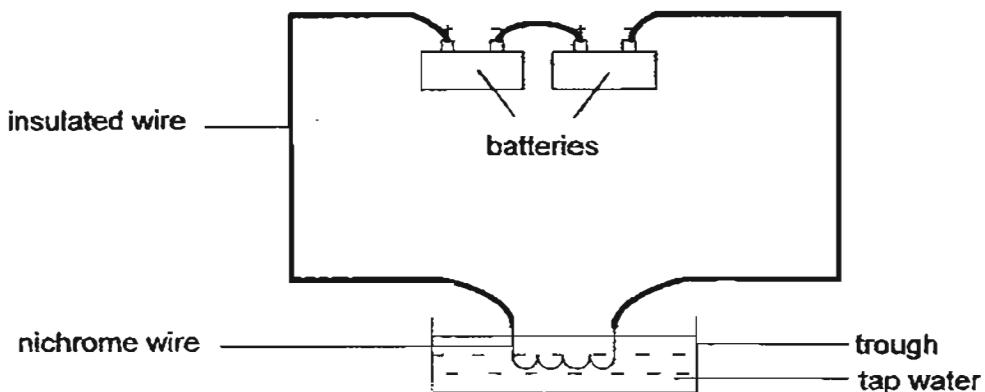
- (a) What would happen to the air in the air-tight container when Meili heated it in the microwave oven? [1]

- (b) What should Meili do to the air-tight container to prevent the 'explosion' as her mother had told her? Explain your answer. [2]

39. Isaac used the following apparatus to find out which set-up would take a shorter time to heat up the same amount of water to 50°C.



set-up A

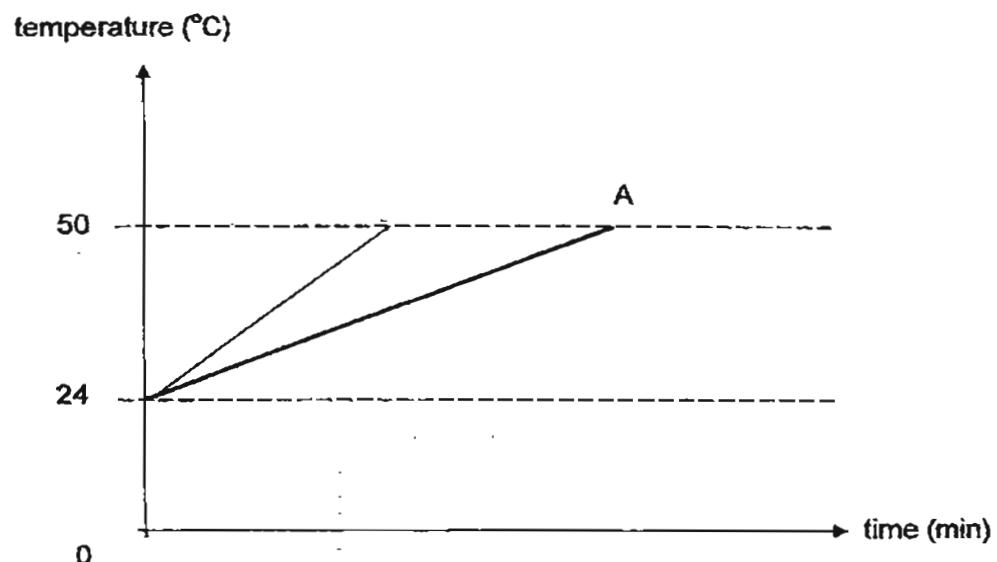


set-up B

To be continued on the next page

Continued from page 40

- (a) DRAW and LABEL the line graph, B, to show the change in temperature of tap water in set-up B. [1]



To be continued on the next page

Continued from page 41

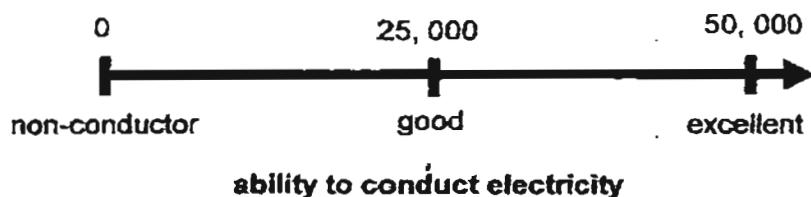
Isaac set up an experiment to test the electrical conductivity of 3 unknown liquids, P, Q and R, and seawater, S.

He used a digital conductivity meter to find out the electrical conductivity of P, Q, R and S, one at a time.

He recorded his observations in the table below.

type of liquid	P	Q	R	S
amount of liquid used (mL)	100	50	100	50
reading on the digital conductivity meter ($\mu\text{S}/\text{cm}$)	0	850	92	43,000

Note: Conductivity is a measure of the ability of a matter to conduct electricity.



To be continued on the next page

Based on the information on page 42, answer the following questions:

- (b) Classify liquids P, Q, R and S using the table below.
Write letters, P, Q, R and S ONLY.
Next, write a suitable sub-heading for each group of liquids. [1]

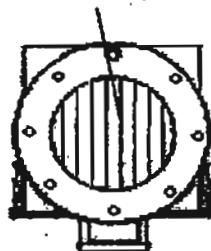
type of liquids	
sub-heading:	sub-heading:

Isaac's teacher told him that he did NOT conduct a fair test for his experiment.

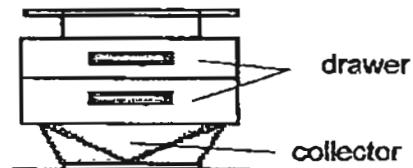
- (c) Suggest what Isaac should do to conduct a fair test for his experiment. [1]

- 40 The diagram below shows a magnetic drawer which is used to remove fine iron and other magnetic substances from products such as sugar, tea and grains.

magnetic stainless steel tubes in opening



top view of magnetic drawer



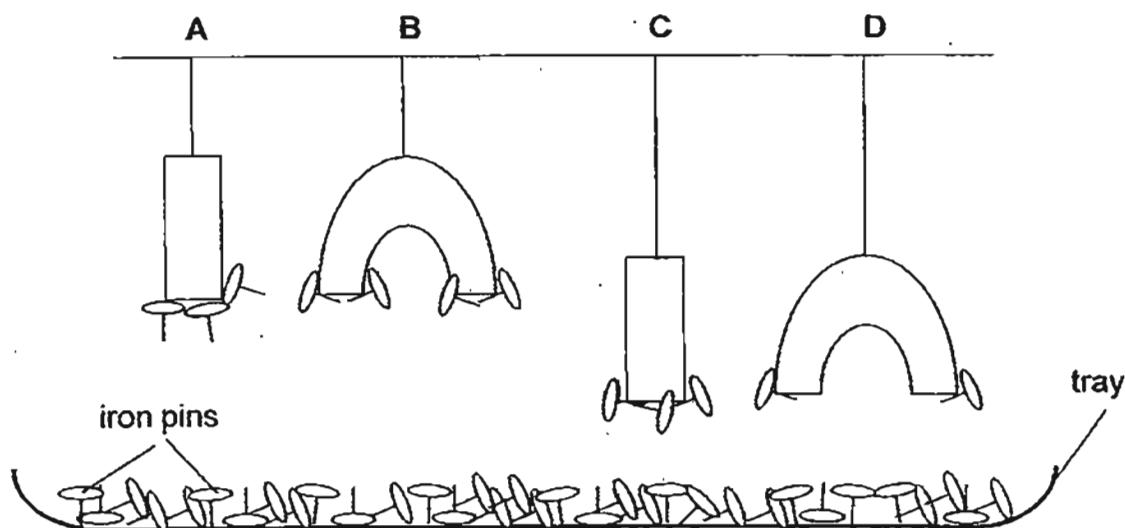
side view of magnetic drawer

A mixture of fine iron and tea leaves are poured through the opening of the magnetic drawer.

Explain how the fine iron and tea leaves are separated.

[2]

41. Jane suspended 4 magnets above a tray of pins. Her observations were shown in the diagram below.



Based on her observations, Jane concluded that magnet B had the greatest magnetic strength.

Do you agree? Explain your answer.

[2]

42. Takashi wanted to find out how different matter on tiled floor affects the friction on the floor.

He pulled a block along each type of floor three times and calculated the average applied force.

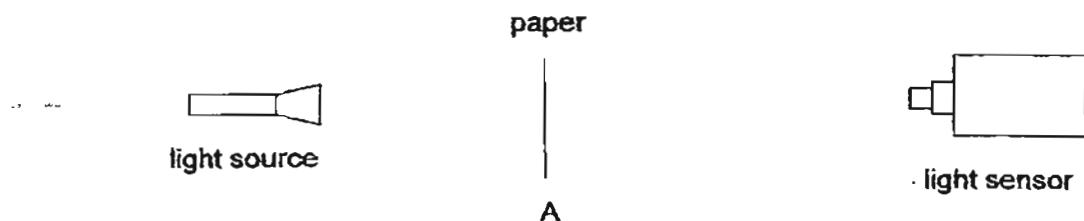
type of floor		average applied force needed to pull the block (N)
A	tiled floor	200
B	tiled floor with a layer of oil	150
C	tiled floor with a layer of sand	250
D	tiled floor with a layer of water	180

- (a) Explain why Takashi used set-up A. [2]

- (b) Which substance on tiled floor created the least friction?

Give a reason for your answer. [1]

43. Dave used a light sensor to detect the amount of light that passes through paper at position A. He repeated his experiment by increasing the number of sheets of the same type of paper at A as shown in the set-up below.



He recorded his observations in the graph below.

number of sheet(s) used	amount of light detected (units)
0	80
1	32
2	13
3	5
4	2
5	1
6	0
7	0
8	0

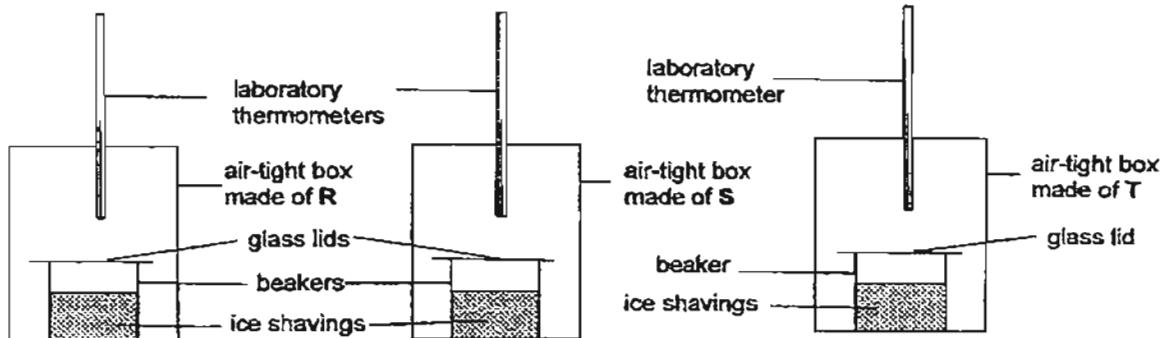
Based on the information above, answer the following questions:

- (a) State the relationship between the number of sheets of paper and the amount of light detected. [1]

Dave moved the light source further away from position A and light sensor.

- (b) What would be the amount of light detected by the light sensor for 3 sheets of paper? [1]

44. Nathaniel placed an equal mass of ice shavings in 3 identical glass beakers. Each beaker was put in an air-tight box, each made of a different material, R, S and T, as shown in the diagrams below.



Based on the information above, answer the following questions:

- (a) Name the object(s) which lost or gained heat.
Use the objects from the box below to complete the following table. [2]

air-tight box	beaker
ice shavings	glass lid

lost heat	
gained heat	

To be continued on the next page

Nathaniel recorded the temperature of air in each box at the beginning and at the end of his experiment in the table below.

box	temperature of air in box (°C)	
	at the start	at the end
R	28	8
S	28	12
T	28	5

- (b) Based on Nathaniel's results above, arrange the materials, R, S and T, of boxes according to how each conducted heat as follows: [1]

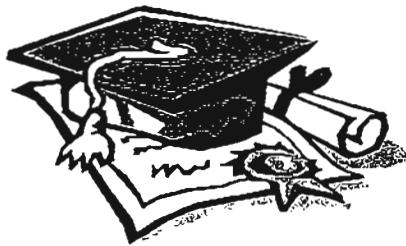


poorest/conductor of heat

- (c) Which material, R, S or T, is most suitable for keeping ice-cream? Explain your answer. [1]

- END OF PAPER -

Setters: Miss Lim Siew Hoon, Mdm Jane Woon, Mrs Jenine Soh

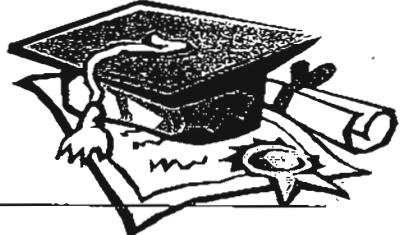


ANSWER SHEET

EXAM PAPER 2011

SCHOOL : RAFFLES GIRLS' PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1



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

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

31)a)S by wind

b)Part D. As the sea mango is found near the river the seeds most likely dispersed by water. The seed will follow the current of the water, but the seed will have to go against the current to get from the parent plant to D.

c)The fibrous husk traps air into its air space to allow the fruits of the sea mango to float on water.

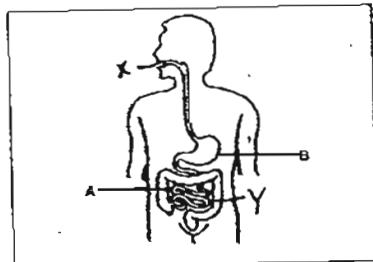
32)a)A: small intestine

allows digested food and nutrients to be absorbed into the bloodstream.

B: stomach

produces digestive juices to break down food into simpler substance.

b)



33)a)plant cell: A, C animal cell : B

b)A plant cell has cell wall and chloroplast but an animal cell does not. A and C has cell wall and chloroplast, thus they are plant cell. B does not have cell wall or chloroplast, thus it is an animal cell.

34)a)School runners. The mass of the inflated balloon the school runners blew into were heavier than the mass of the inflated balloon the non-school runners blew into. Thus meaning that there is more air inside as air has mass and the school runners had blown in more air than the non-school runners.

b)When the pupils stopped breathing, they need more oxygen and thus when they started again, they need to breath much faster to make up for the loss of oxygen.

35)a)Animal X depends on the flowing plants for food as it feeds on the nectar in the flower.

Animal X feeds on the termites that feed on the plant, thus helping it get rid of pests and grow more healthily.

- b)i)part→animal X→Q
- ii)Plant→termites→animal X→P

36)a)Soil B. More amount of barley was harvested on soil B as compared to soil A.

b)A: Soil A with fertilizers is not a suitable soil for the barley to grow in.

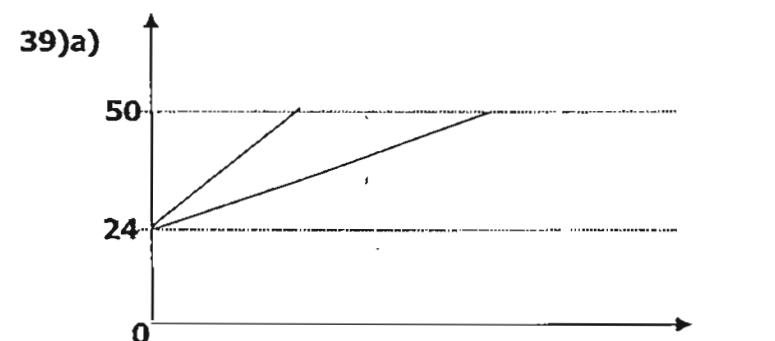
B: Soil B with fertilizers is the best soil for the barley to grow in.

37)a)The egg of host and the egg of bird X look very much alike except that the egg of bird X is only a bit larger.

b)When there is a limited food supply the young of bird X will be able to eat most of the food as when the young of the host is kicked out of the nest, the habitat out of the nest is most likely not favorable for it to survive; it is too young to know how to go back to its nest and the host might not realise it thus most of the food is fed to the young of bird X.

38)a)The air in the air-tight container will expand, until there is no space and will push the container till it 'explodes'.

b)Meili should take out the cover of the container. By doing that the expanded air in the container will be able to move around in the microwave oven and thus the container will not 'explode'.



b)sub-heading: non-conductor of electricity. (P)

sub-heading: conductor of electricity. (Q,R,S)

c)Issac should keep the amount liquid used constant.

40)When the fine iron passes through the magnetic stainless steel tubes, they will get attracted to it, whereas the tea leaves will pass through the tubes into the collector thus all the fine iron is on the tubes while all the tea leaves are in the collector.

41)No. Magnet A has only one pole facing the tray hence it is not a fair test. All the magnets should have both their poles facing the tray.

42)a)Set-up A acts as the control of the experiment to ensure that the matter affects the friction between the floor and the block.

b)A layer of oil. Oil acts as a lubricant to reduce friction between the floor and the block.

43)a)The more number of sheets used, the lesser amount of light detected. However, when there are six or more sheets used the amount of light detected will remain constant at 0 units.

b)3 units.

44)a)lost heat: glass, lid, beaker, air-tight box

Gained heat: ice shavings

b)T R S

c)Material T. It conducts the least heat into the air tight box as the temperature of air in the box is the lowest so it is most suitable for keeping ice-cream.