
CATHOLIC HIGH SCHOOL
PRIMARY 6
PRELIM 2
EXAMINATION 2011

SCIENCE
EM 1 / EM 2

Name: _____( )

Class : Primary 6 ____

Date : 26 August 2011

BOOKLET A

30 Questions
60 Marks

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

Instructions to Candidates

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

Section A: Multiple Choice Questions (60 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) on the Optical Answer Sheet.

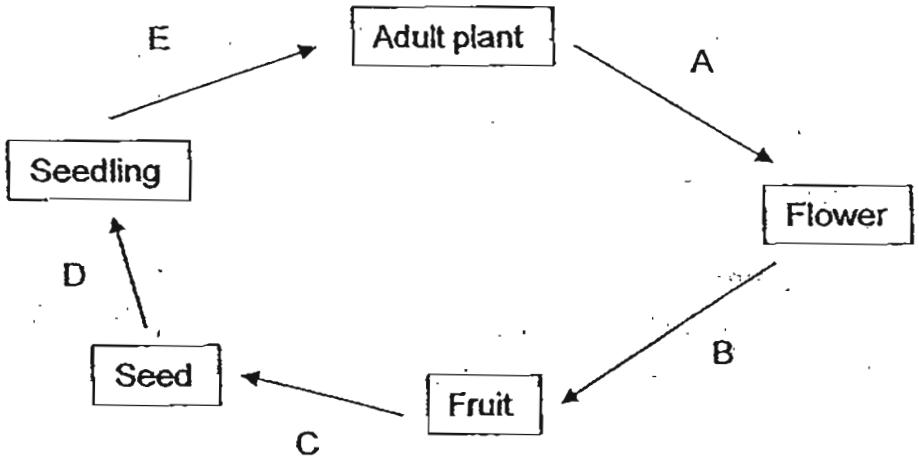
1. The table below shows the classification of some insects.

Insects			
P		Q	
Lay eggs on land	Lay eggs in water	Lay eggs on land	Lay eggs in water
Cockroach	Dragonfly	Butterfly	Mosquito

Which one of the following pairs of sub-headings best represents P and Q respectively?

	P	Q
(1)	Lay eggs on land	Lay eggs in water
(2)	Has two body parts	Has three body parts
(3)	Has a 3-stage life cycle	Has a 4-stage life cycle
(4)	Young resembles adult	Young does not resemble adult

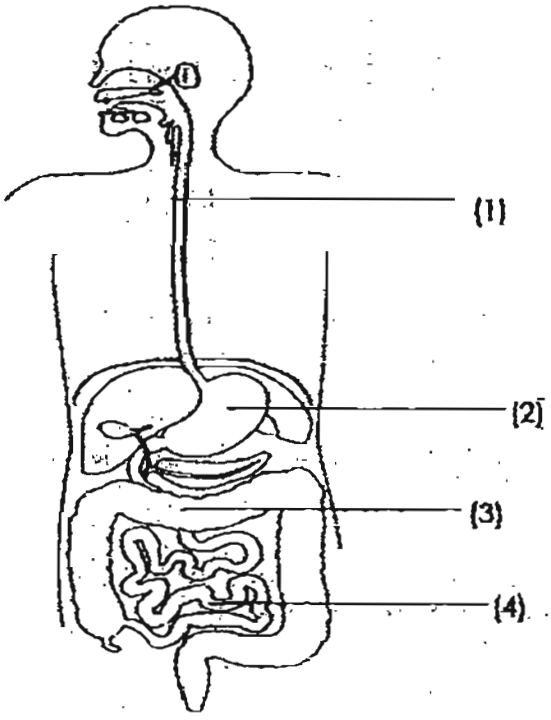
2. The diagram below shows the stages of growth of a plant.



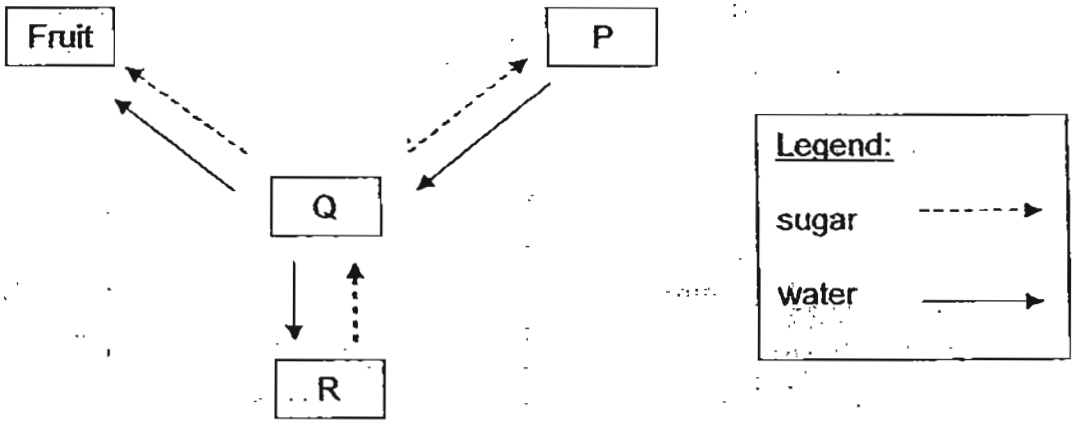
At which stages do the processes of germination and fertilisation occur?

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

3. The diagram below shows the human digestive system. At which part of the human digestive system would digestion of food be completed?



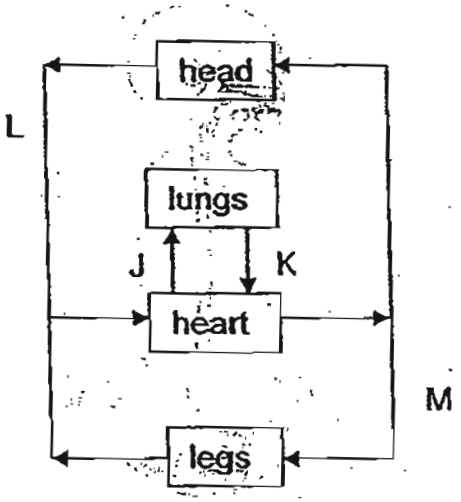
4. The diagram below shows how sugar and water are transported to and from different parts of a plant.



Which one of the following correctly shows the parts of the plant that are represented by P, Q and R?

	P	Q	R
(1)	stem	leaves	roots
(2)	roots	stem	leaves
(3)	roots	leaves	stem
(4)	leaves	roots	stem

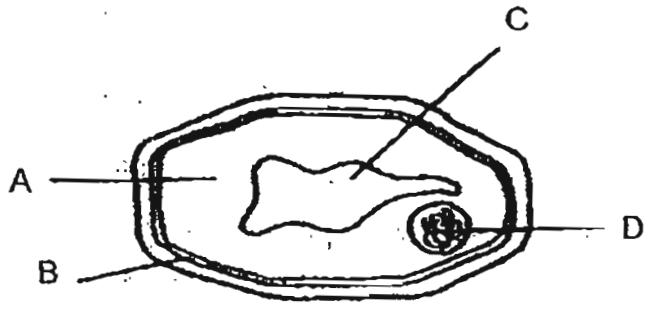
5. The diagram below represents the human circulatory system. The arrows represent blood vessels carrying blood to and from the head, lungs, heart and legs.



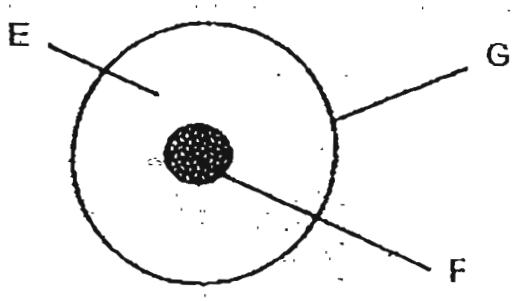
Which one of the following correctly matches the amount of oxygen in the blood with the blood vessels that are carrying it?

	More oxygen in the blood	Less oxygen in the blood
(1)	J and K	L and M
(2)	J and M	K and L
(3)	K and M	J and L
(4)	K and L	J and M

6. A group of researchers used cells from an animal and a plant, as shown in the diagrams below, to study the information that can be passed on from the parents to their offsprings.



Plant Cell

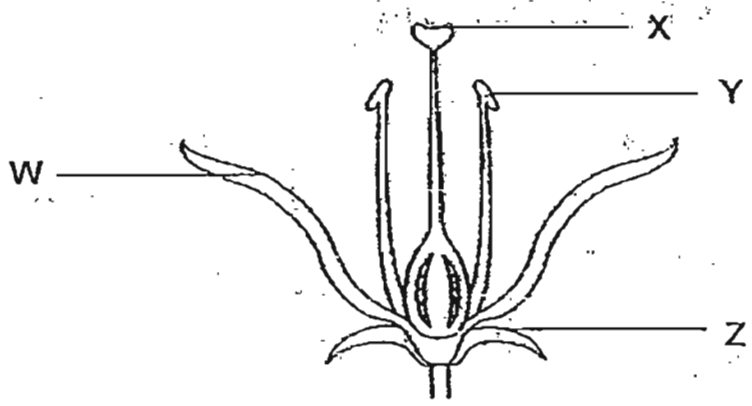


Animal Cell

Which parts of the animal and plant cells should the researchers focus on for their research?

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

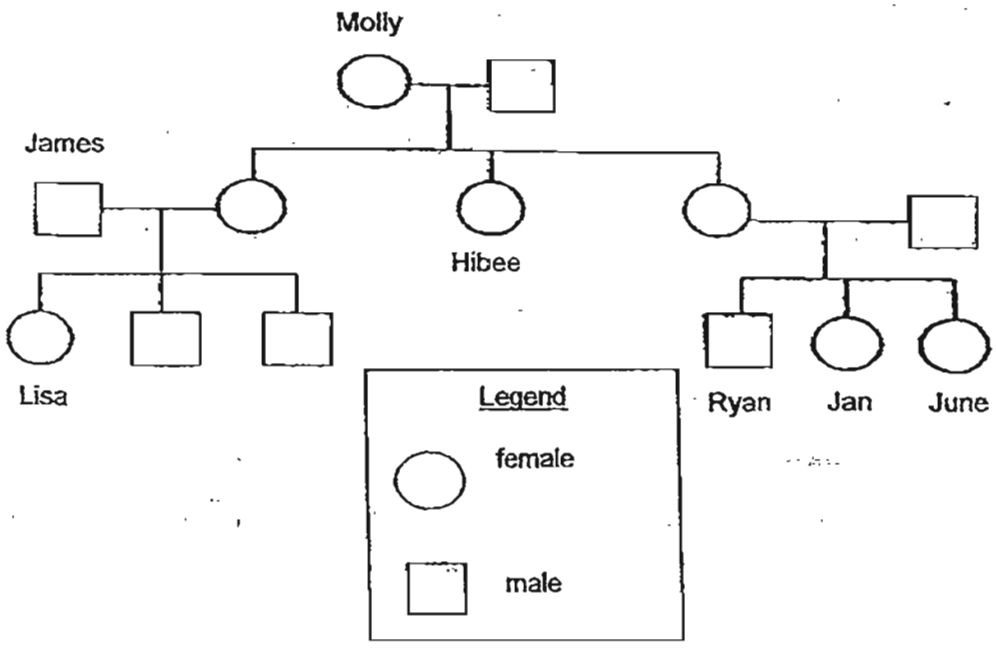
7. The diagram below shows a cross-section of a flower.



On which part of the flower must the pollen grain land in order for pollination to take place?

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

8. The diagram below shows Ryan's family tree.

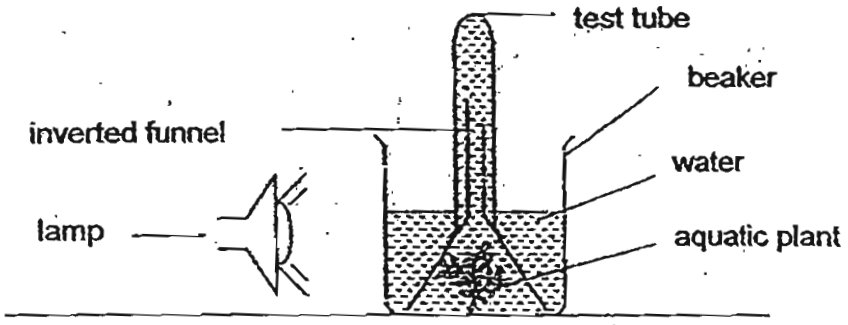


Based on the diagram above, which of the following statements is/are true?

A Lisa and Ryan are cousins.
B Molly has three grandsons.
C June has 3 aunts altogether.
D James and Hibee are siblings.

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

9. Arif conducted an experiment to find out how different light intensities affect the rate of photosynthesis of a plant. He repeated the experiment with lamps of similar bulbs placed at different distances from the beaker. An example of the set-up is shown in the diagram below.



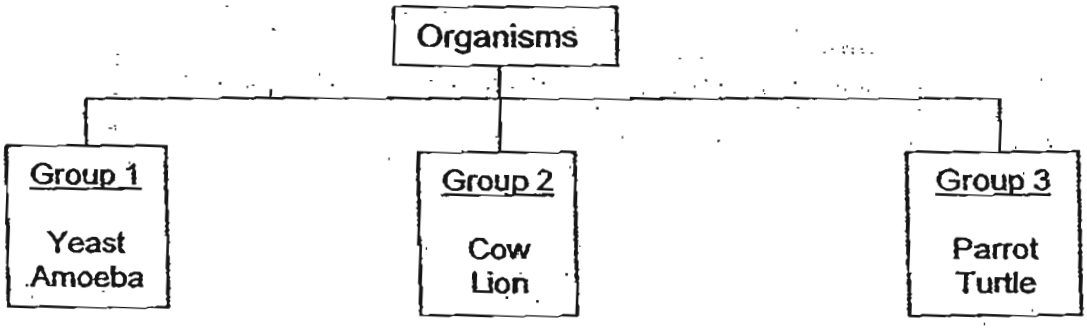
He left the various set-ups in a Science lab for 24 hours and recorded the height of the column of air collected in the test tube in a table as shown below.

Test tube in set up	Height of the column of air in test tube / cm
A	3.0
B	0.5
C	1.6
D	2.4

Which one of the following shows the correct order of the set-ups according to the distance between the light source and the beaker, starting with the closest?

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

10. The classification table below shows how some organisms are classified.

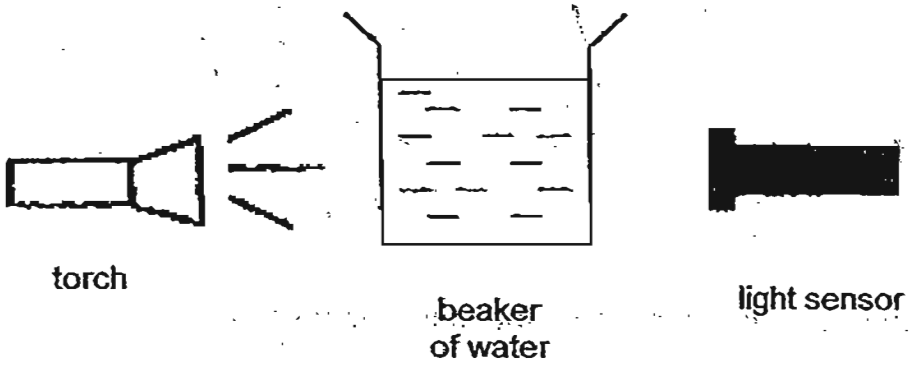


The organisms in the table above are classified according to _____.

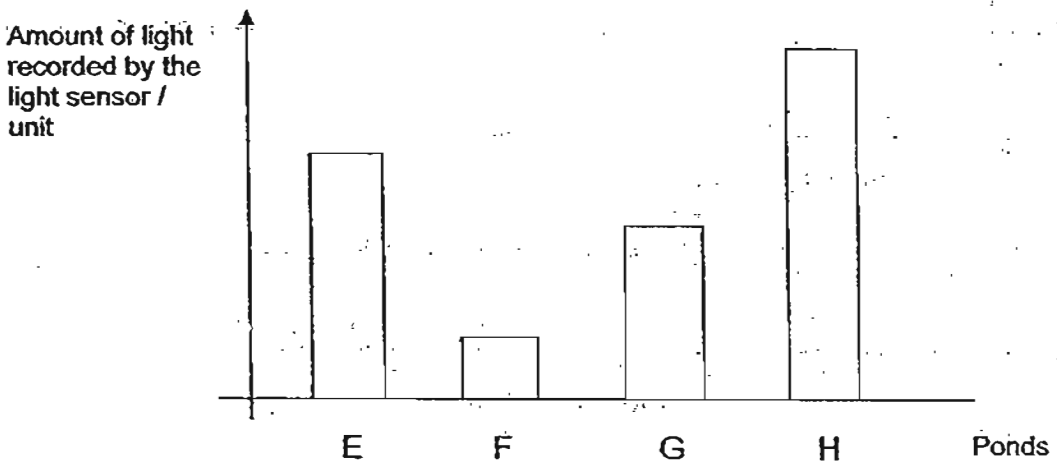
(1) their habitats
(2) the way they move
(3) their body covering
(4) the way they reproduce

Use the information provided below to answer Questions 11 and 12.

Jasmine collected four beakers of water from four different ponds, E, F, G and H. Using the set-up below, she measured the amount of light that passed through each beaker of water using a light sensor.



She then plotted a graph as shown below based on the amount of light recorded by the light sensor.



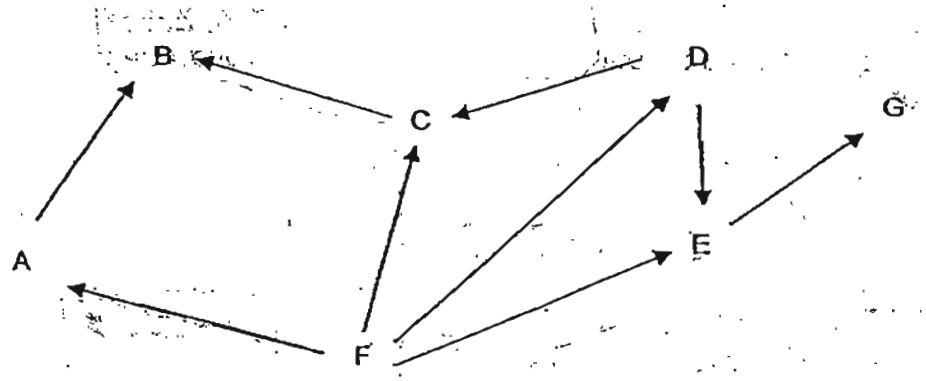
11. Which pond would be the most suitable for totally submerged plants to thrive in?

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

12. Which one of the following shows the correct order of the clarity of water in ponds E, F, G and H in ascending order?

(1) Ponds H, E, G, F
(2) Ponds H, G, E, F
(3) Ponds F, G, E, H
(4) Ponds F, E, G, H

13. The diagram below shows a food web among several organisms.



How many food chains make up the food web above?

(1) 5
(2) 6
(3) 7
(4) 8

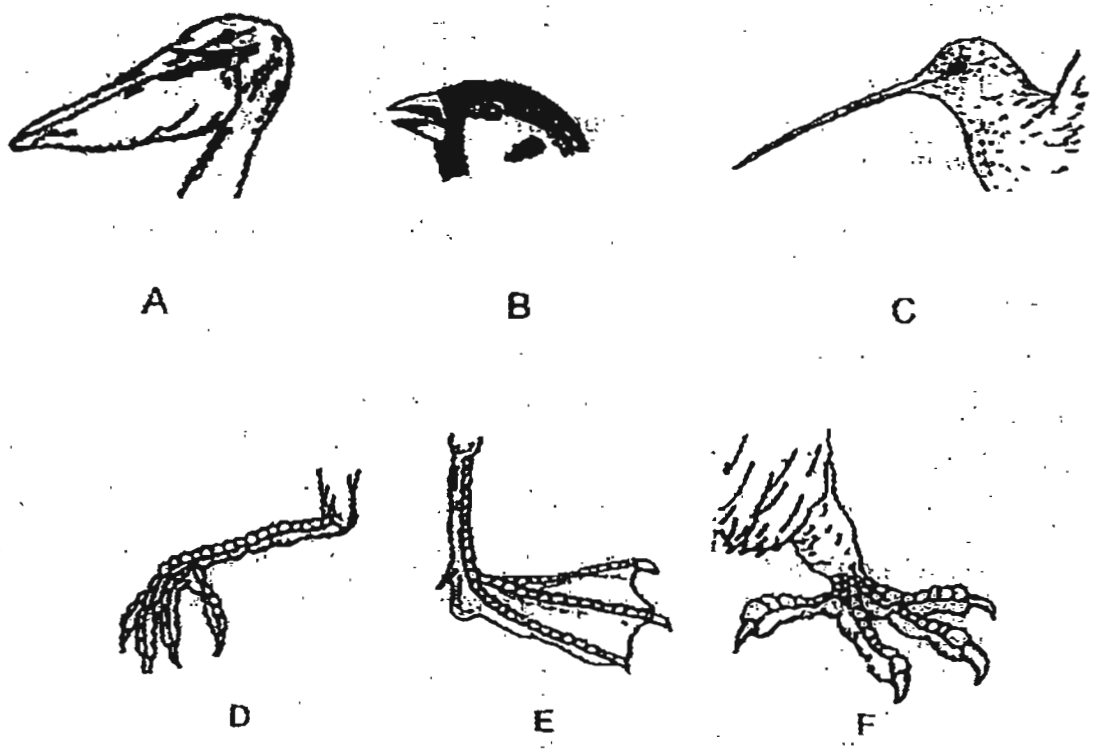
14. The table below provides some information on three different types of organisms, K, L and M.

Organism	Information
K	- Has a weak stem - Birds help to pollinate its flowers
L	- Walks on sand - breathes both on land and in water
M	- Feeds on small animals - Hunts only at night

Which one of the following shows the correct adaptations of organisms, K, L and M?

	Organism K	Organism L	Organism M
(1)	- Has tendrils - Presence of nectar	- Has thin, pointed legs - Presence of gills and gill chamber	- Has sharp claws - Has good night vision
(2)	- Has tendrils - Absence of nectar	- Has padded feet - Presence of lungs	- Has a curved beak - Has good night vision
(3)	- Has thorns on stem - Has brightly coloured flowers	- Has thin, pointed legs - Has moist skin	- Has sharp claws - Has streamlined body
(4)	- Has clasping roots - Has dull-coloured flowers	- Has padded feet - Presence of lungs	- Has a curved beak - Has hollow bones

15. The diagrams below show the different types of beaks and feet that birds have to help them survive in different environments.



Which one of the following beaks and feet is correctly matched to the diet of the bird and the type of habitat where it is found?

	Beak	Foot	Type of food the bird eats	Habitat
(1)	A	E	Fruit	Aquatic
(2)	B	D	Grains	Land
(3)	C	F	Nectar	Land
(4)	B	F	Meat	Aquatic

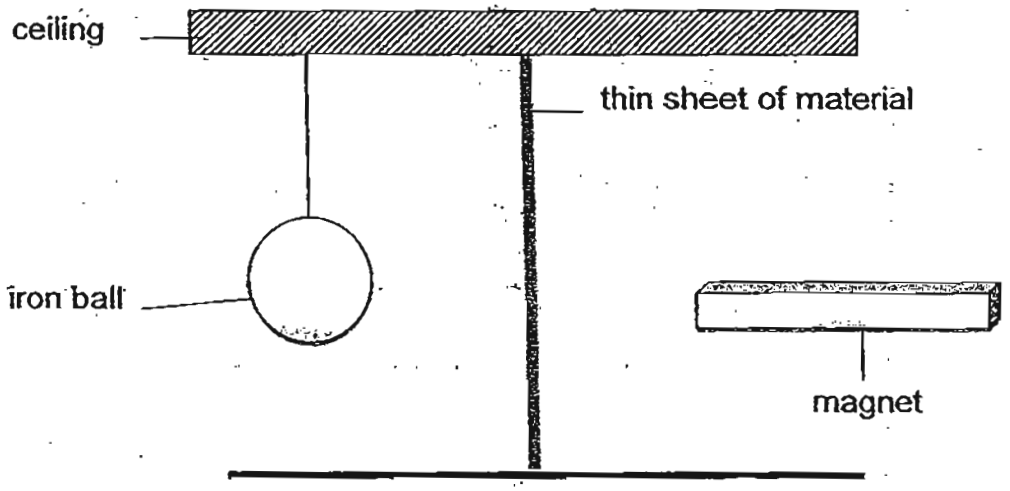
16. Susan conducted several tests on materials A, B, C and D. She recorded her results in the table below. A tick (√) indicates the presence of the property and a (X) indicates the absence of the property.

Property	Materials			
	A	B	C	D
Is it flexible?	X	✓	X	✓
Does it break easily when dropped?	✓	X	X	X
Is it waterproof?	✓	✓	✓	X

Which material bests represents the swimming cap that Susan uses to keep her hair dry?

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

17. Ali hung an iron ball from the ceiling. He placed a thin sheet of material as shown in the diagram below. He then brought a strong magnet close to the material without touching it.



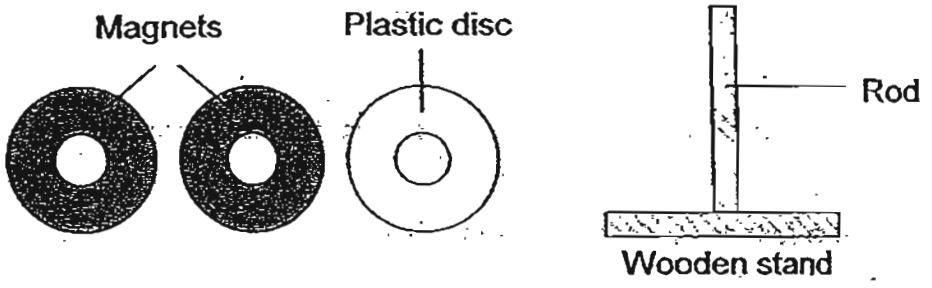
He observed what happened and recorded his observations in the table below. He repeated the experiment with another material and recorded his observations.

Material	Iron ball moved
A	No
B	Yes

Based on his observations, what is Material A most likely to be?

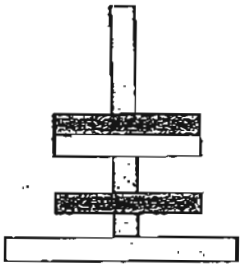
(1) glass
(2) copper
(3) cobalt
(4) aluminium

18. The diagrams below show three discs, each with a hole in the centre. Two of the discs are magnets and one is a light plastic disc. All three discs could pass through the rod of the wooden stand.

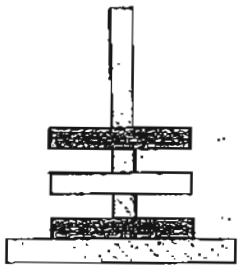


When the 3 discs are slotted through the rod, which of the following observations of the discs would not be a possible arrangement? (only the side view of discs and stand are shown.)

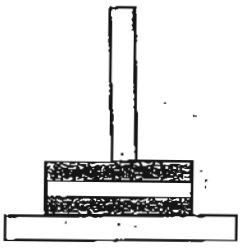
A



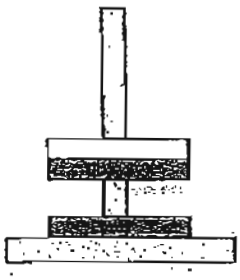
B



C

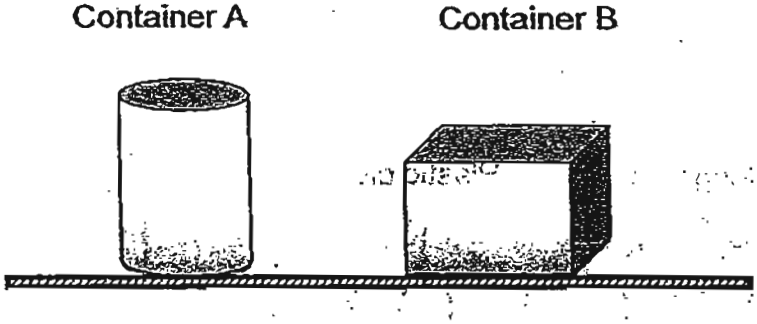


D



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

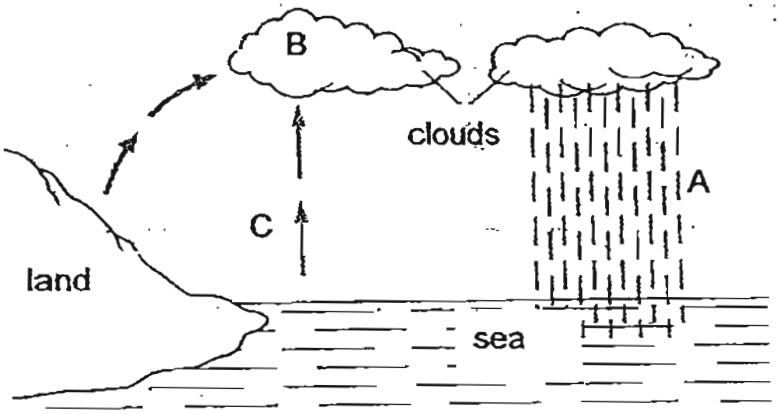
19. Sam filled Container A with water to the brim. He then poured all the water from Container A into Container B without spilling.



Which one of the following statements is false?

(1) The mass of the water has changed in Container B.
(2) The shape of the water has changed in Container B.
(3) The water level in Container B is different from the water level in Container A.
(4) The volume of water in Container B is the same as the volume of Container A.

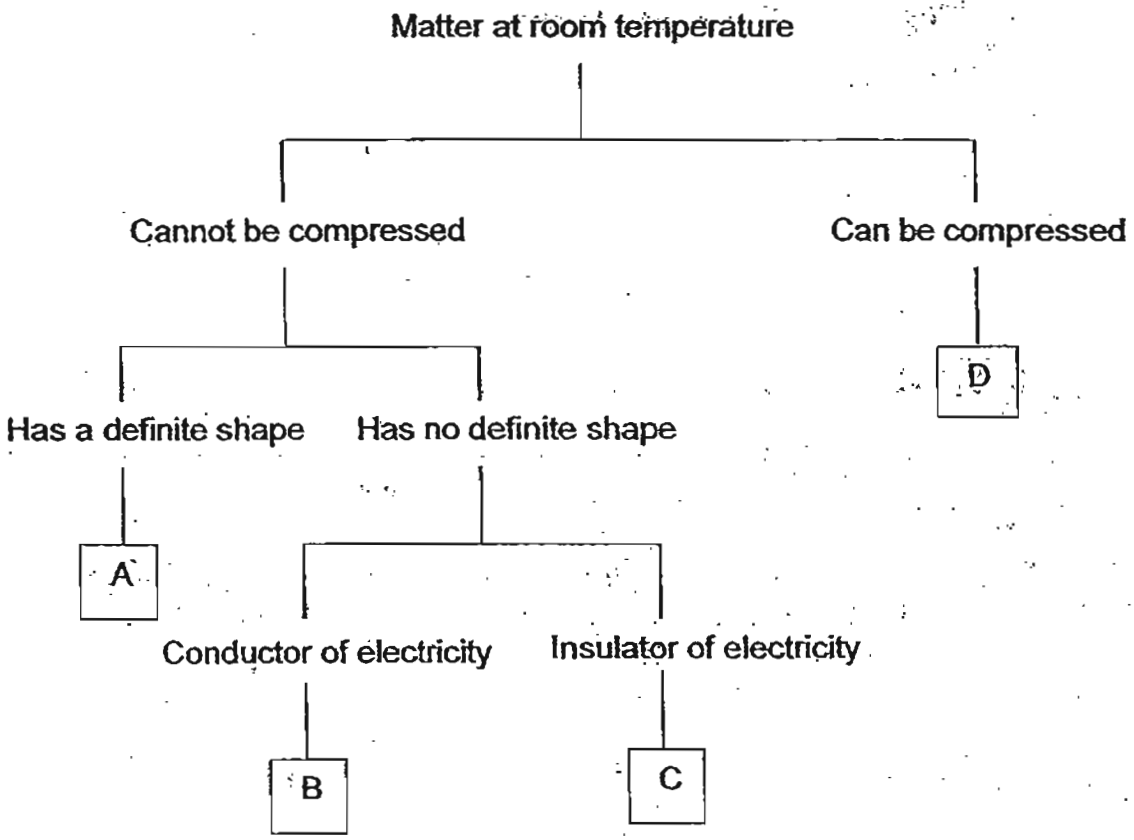
20. The diagram below represents the water cycle.



Which one of the following is correct?

	State of matter		
	A	B	C
(1)	Gas	Liquid	Gas
(2)	Solid	Liquid	Gas
(3)	Liquid	Gas	Liquid
(4)	Liquid	Liquid	Gas

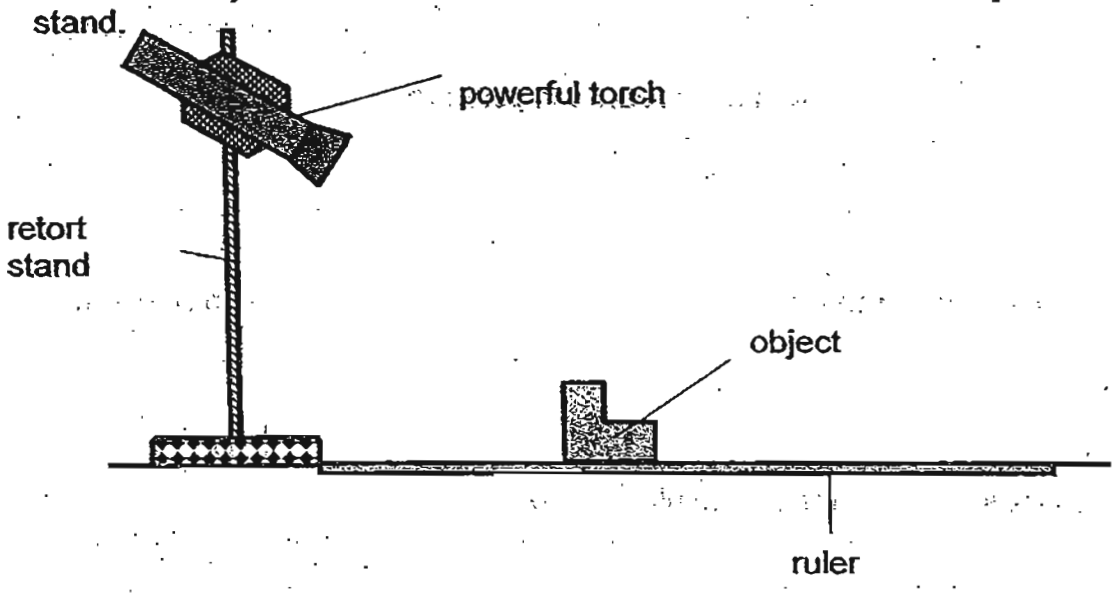
21. The chart below shows the properties of some matter.



Some marbles of total volume 100cm^3 were placed into a 1-litre bottle. The bottle contains 700cm^3 of Substance D (as described in the information above) and 200cm^3 of Substance B was poured in. If another 100cm^3 of Substance D is added to the bottle, what is the volume of Substance D in the bottle now?

(1) 700cm^3
(2) 750cm^3
(3) 800cm^3
(4) 850cm^3

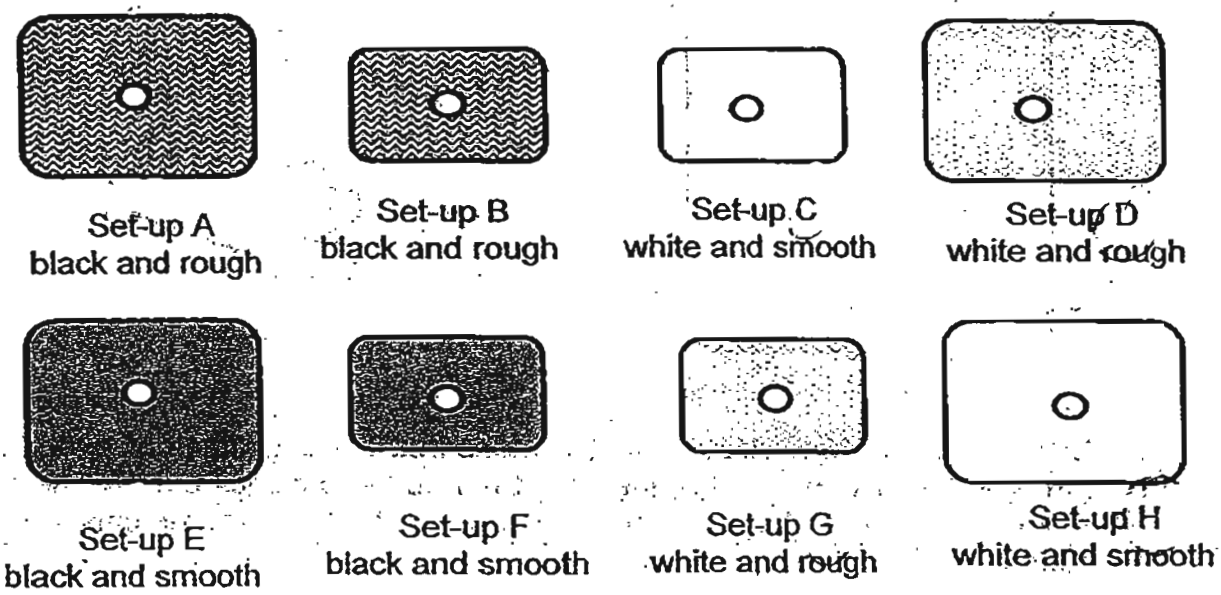
22. David used a powerful torch to shine at an object as shown below. He measured the size of the object's shadow for different distances between the object and the retort stand.



Which one of the following shows a possible aim of the experiment and the variables which should be kept constant?
(A tick (✓) indicates that the variable is kept constant.)

	Aim of experiment	Position of torch	Height of object	Distance between the object and light source
(1)	How does the angle of the torch affect the size of the object's shadow?		✓	✓
(2)	How does the angle of torch affect the height of the object?	✓		✓
(3)	How does the height of the object affect the size of the object's shadow?	✓		✓
(4)	How does the distance of object from the light source affect the size of the object's shadow?	✓	✓	

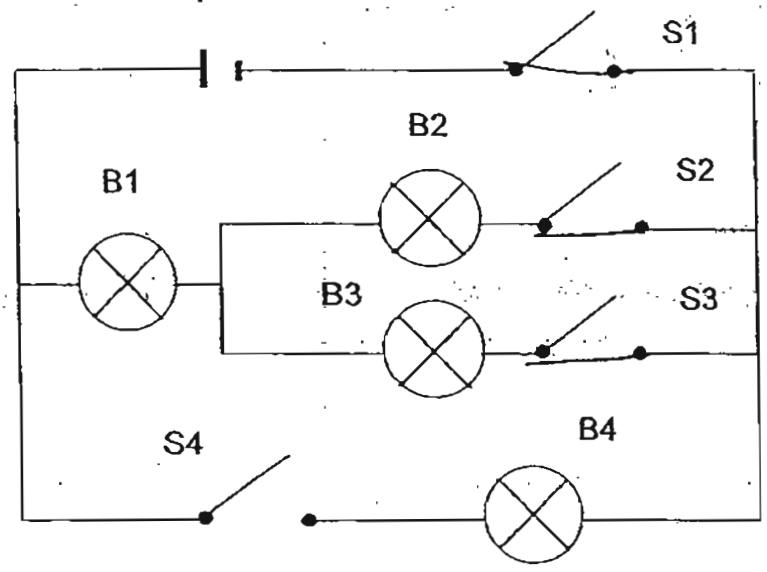
23. The diagram below shows 8 tiles with different surfaces. Alan wants to find out whether the size and texture of the tile affects the amount of heat that is absorbed.



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

(1) Set-ups A, D, E and H
(2) Set-ups B, C, F and G
(3) Set-ups C, E, F and H
(4) Set-ups C, D, G and H

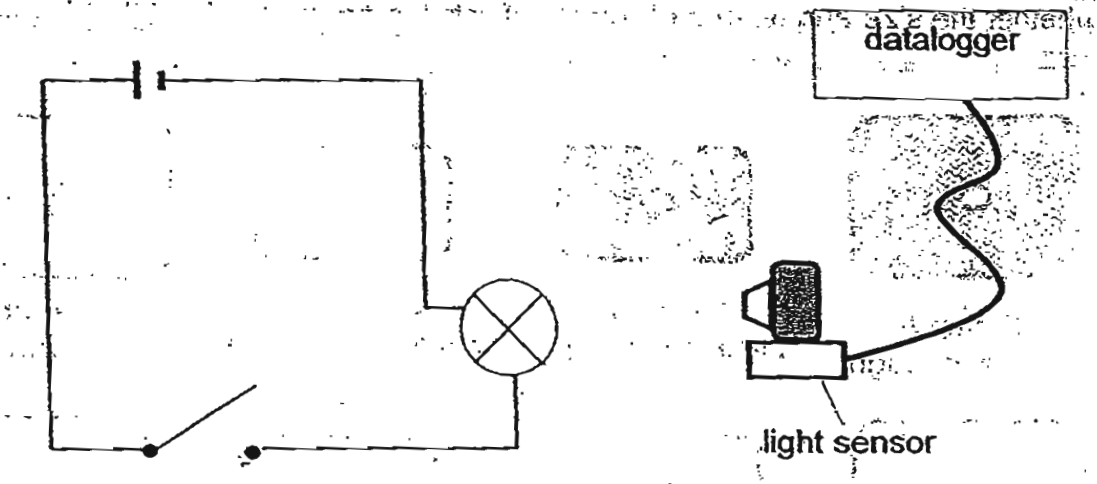
24. Sharon conducted an experiment as shown below.



Which of the following switches should Sharon close so that only 2 bulbs will light up?

(1) S1 / S4
(2) S1 / S3
(3) S2 / S4
(4) S1 / S2 / S3

25. Dennis connected a circuit as shown below.



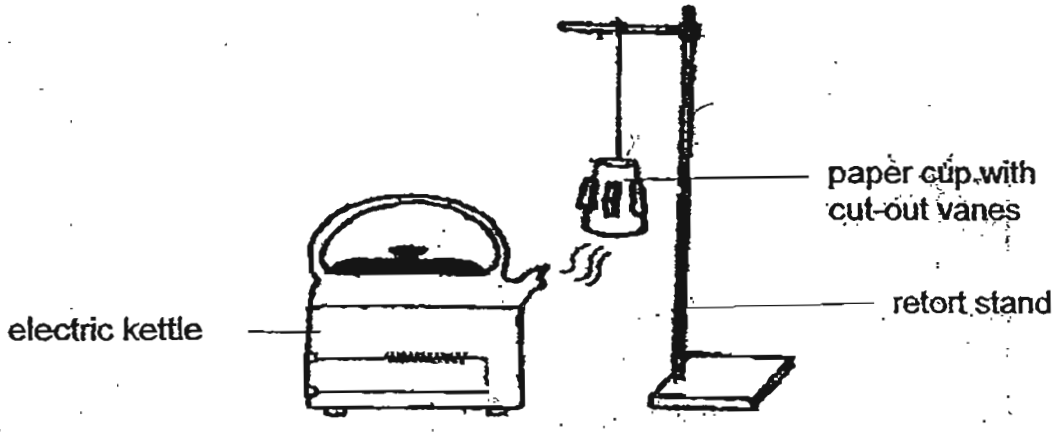
When the switch was closed, Dennis measured the brightness of the bulb with a light sensor and datalogger. He then added batteries one by one in series to the circuit and repeated his experiment. His measurements were recorded in the following table.

Number of batteries	Brightness of bulb /units
1	70
2	125
3	160
4	230
5	0

What observation could be made about the bulb when 5 batteries were used?

(1) The bulb fused.
(2) The bulb glowed dimmer.
(3) The bulb glowed brighter.
(4) The bulb remained the same.

26. The diagram shows an electric kettle of boiling water. Its spout is placed under a paper cup with cut-out vanes.

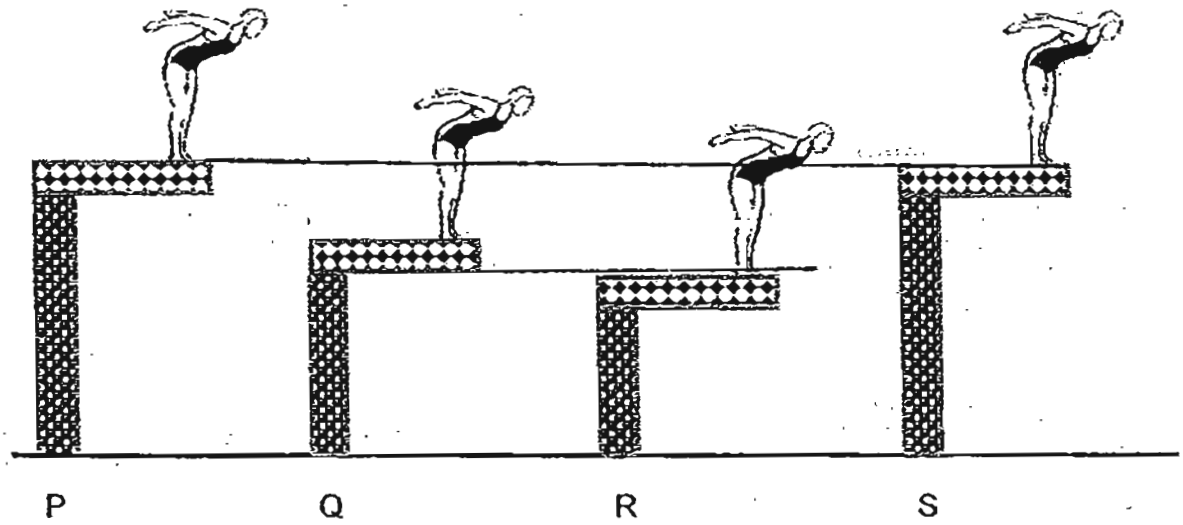


Which one of the following shows the energy conversions that allows the paper cup to spin?

(1) electrical energy → kinetic energy → heat and kinetic energy
(2) electrical energy → heat energy → sound and kinetic energy
(3) electrical energy → heat energy → kinetic energy → kinetic energy
(4) electrical energy → kinetic energy → heat energy → kinetic energy

27. 4 girls of different weights stood on diving platforms of different heights as shown below.

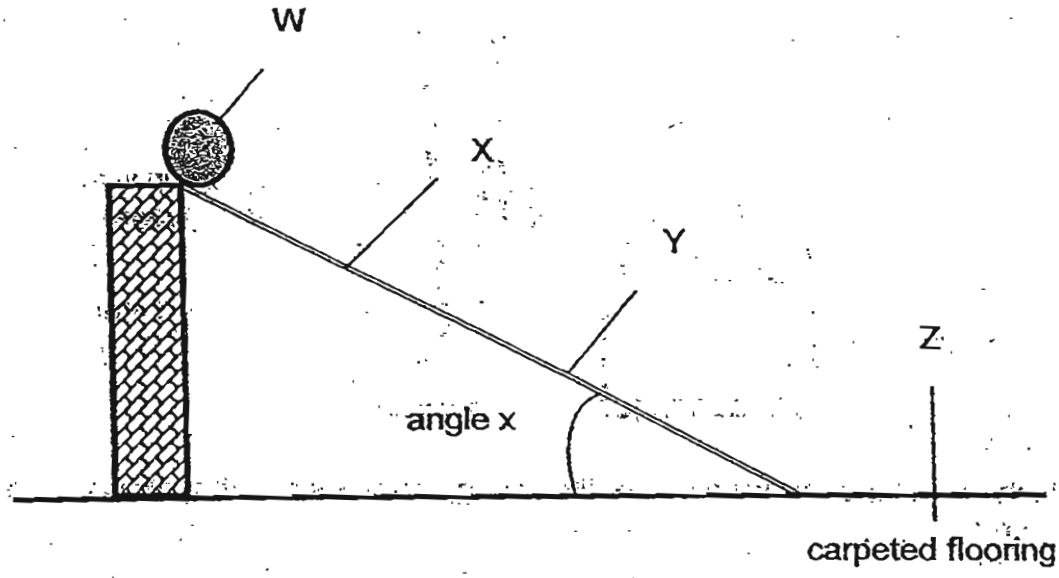
Susan(35kg) Daisy (20kg) Helen(20kg) Tanny (25kg)



Arrange the gravitational potential energy possessed by the girls in ascending order.

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

28. 4 pupils released a ball at Point W as shown in the diagram below. It rolled down the slope, moved along the floor and stopped at Point Z.



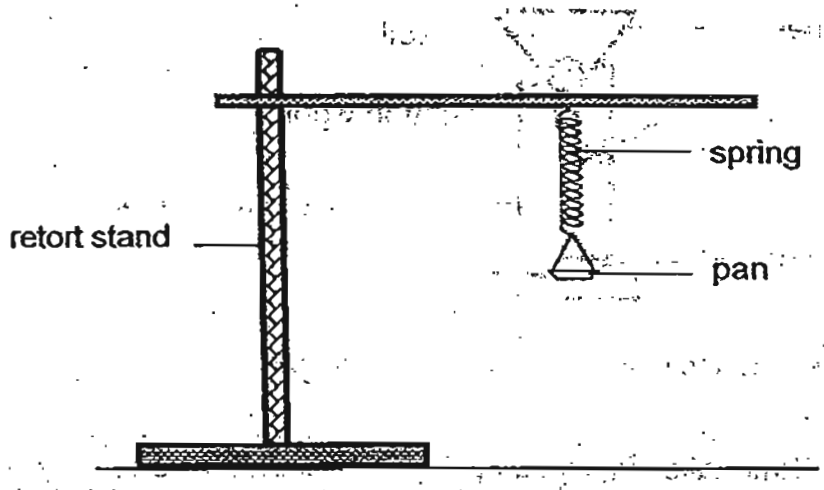
The 4 pupils made the following conclusions.

David:	At Points X and Y, the ~~marble~~ only has kinetic energy.
Ravi :	The ball has the greatest amount of gravitational potential energy at Point W.
Sue :	The ball would have rolled further if the experiment had been done on a marbled floor.
Kim :	The ~~marble~~ would have rolled faster if the angle of inclination had been larger.

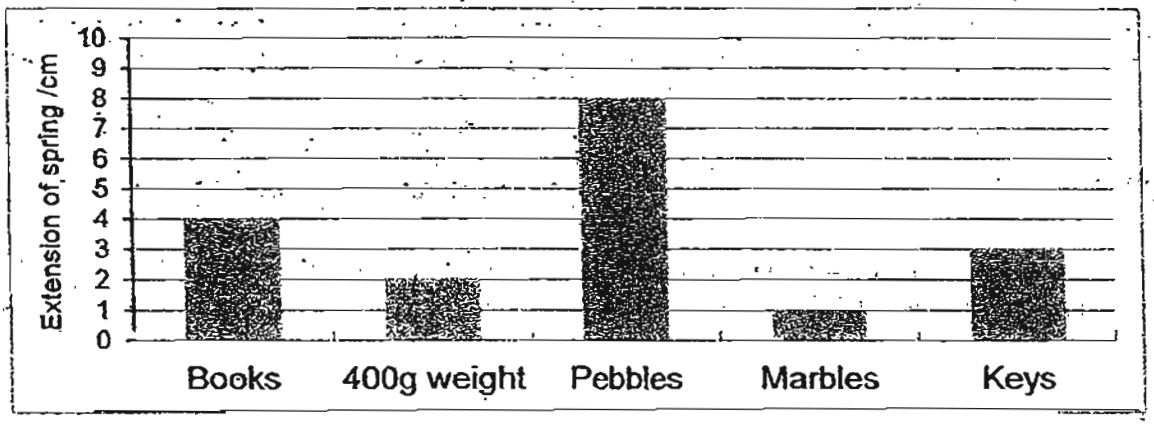
Who has made a correct conclusion?

(1) Ravi and Sue only
(2) David and Ravi only
(3) Ravi, Sue and Kim only
(4) David, Sue and Kim only

29. May wanted to determine how much a spring extends when different objects are placed in the pan as shown below.



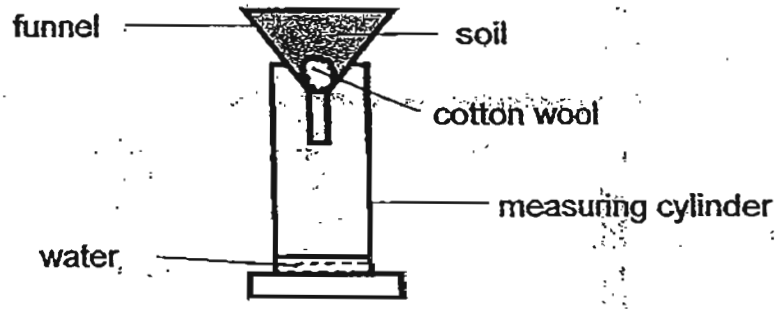
The bar graph shows the results she obtained.



Which one of the objects weighs about 800g?

(1) keys
(2) books
(3) pebbles
(4) marbles

30. Joshua collected soil samples, A, B and C. He prepared the set-up below and poured 300ml of water onto each soil sample during the experiment.



He recorded his findings in the table as shown below.

Soil sample	Time taken for first drop of water to fall into cylinder / s	Amount of water in cylinder after 20 minutes / ml
A	6	200
B	27	60
C	17	100

Based on the data given above, which one of the following correctly describes the type of soil sample?

	Soil sample A	Soil sample B	Soil sample C
(1)	Sandy	Clayey	Garden
(2)	Sandy	Garden	Clayey
(3)	Clayey	Sandy	Garden
(4)	Garden	Sandy	Clayey

CATHOLIC HIGH SCHOOL
PRIMARY 6
PRELIM 2
EXAMINATION 2011

SCIENCE
EM 1 / EM 2

Name: _____ ( )

Class : Primary 6_____

Date : 26 August 2011

BOOKLET B

14 Questions
40 Marks

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

Instructions to Candidates

Follow all instructions carefully.
Answer all questions.

Parent's Signature: _____

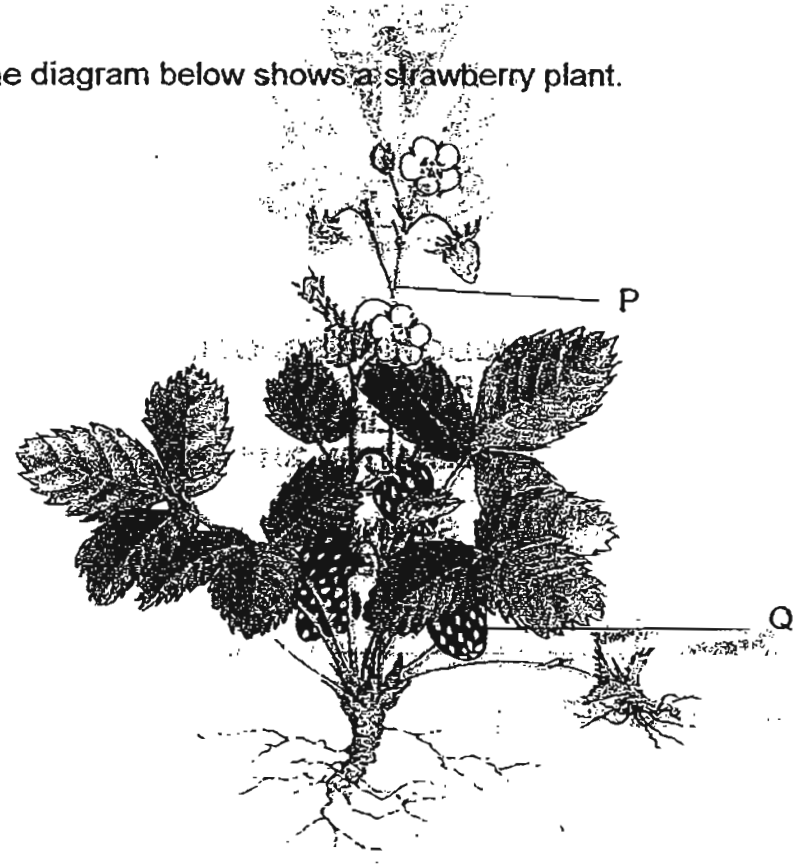
Date: _____

Score	
Section A	/60
Section B	/40
Total	/100

Section B: Open-ended Questions (40 marks)

Read the following questions carefully and write your answers in the space provided. The maximum marks that can be awarded are shown at the end of each question or part-question.

31. The diagram below shows a strawberry plant.



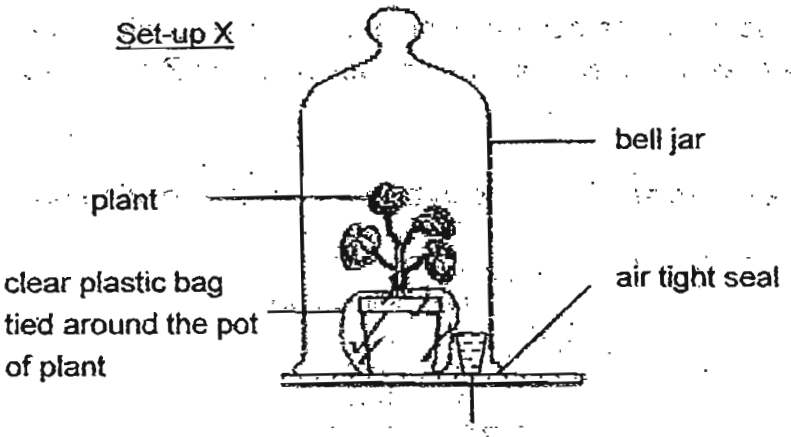
(a) Based on the diagram only, state a function of part P. [1]

(b) If is observed that some small insects and birds feed on Part Q. Based on the diagram only, state one characteristic of Part Q that enables it to attract such animals. [1]

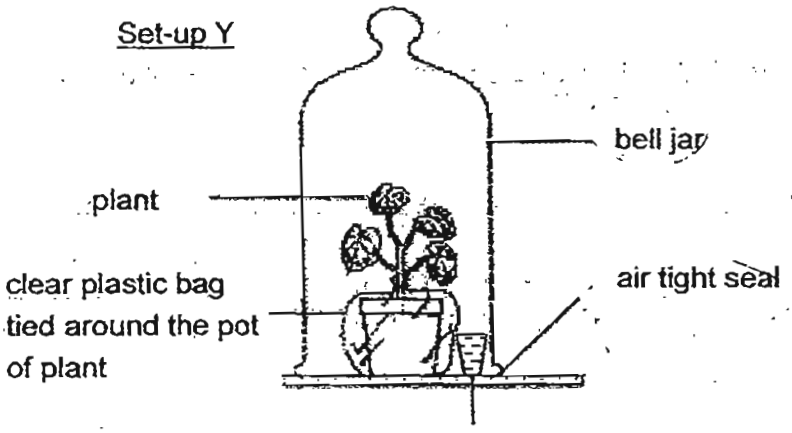
2

32. Richard left three similar pots of plants in a dark room for two days where he watered them daily. He then placed the pots of plants in three set-ups under the sun in the garden as shown below.

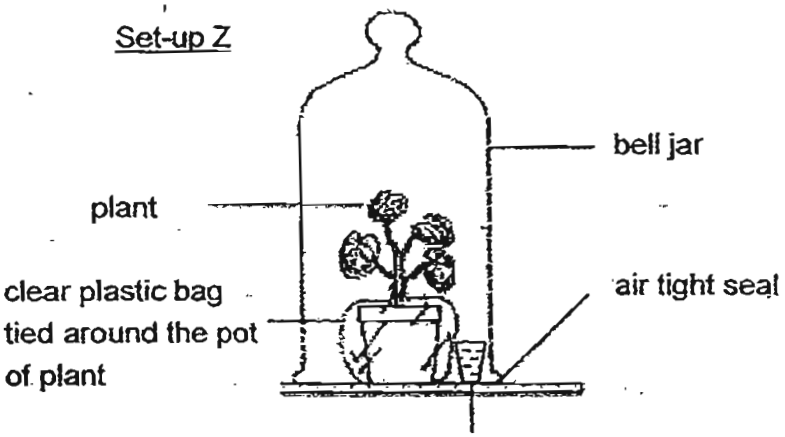
Set-up X



Set-up Y



Set-up Z



Six hours later, he removed a leaf each from the set-ups X, Y and Z and labelled them as X, Y and Z. He then conducted a starch test on each of them.

(a) What would be the observations of the Iodine solution when applied to the leaves removed from the set-ups X, Y and Z respectively? [1]

Leaves from set-up	Observations of Iodine solution on the leaves
X	
Y	
Z	

(b) Why did Richard wrap a plastic bag around the pots of plant? [1]

_____

_____

2

33. Three plants, Q, R and S, were planted on a piece of land as shown in Diagram 1. Diagram 2 shows the same piece of land a few years later.

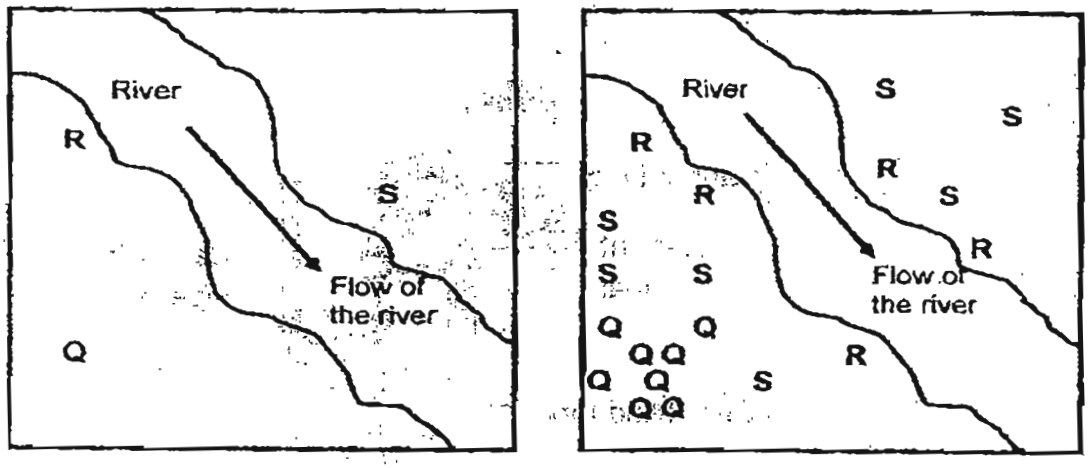


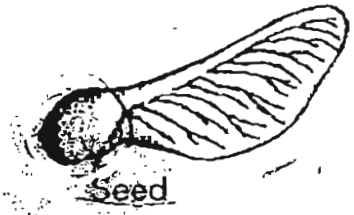
Diagram 1 Diagram 2

(a) Based on the information provided in the diagrams, state the methods of dispersal of fruits/seeds of plants Q and R in which they were most likely to be dispersed. [1]

Plant Q: _____

Plant R: _____

The diagram below shows the fruit of plant S which is dispersed by wind.



(b) Based only on the diagram, identify the feature that enables it to be dispersed by wind. [1]

_____

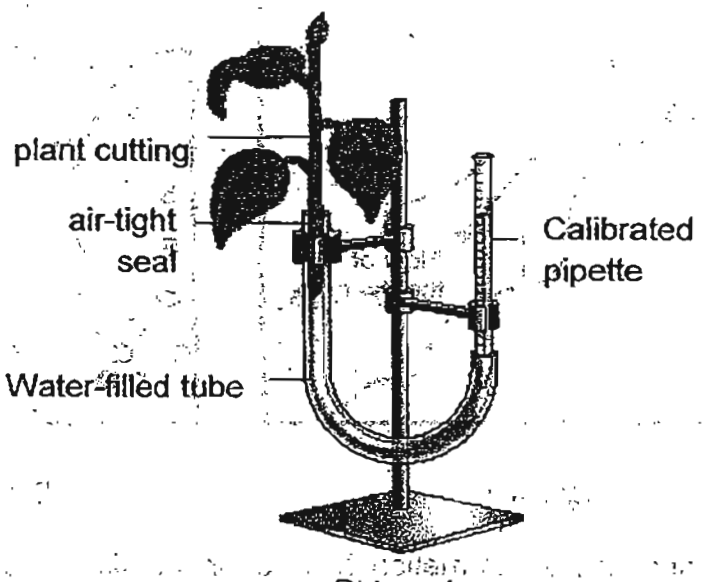
(c) Explain how the feature that you had identified in (b) enables it to be dispersed by wind. [1]

_____

_____

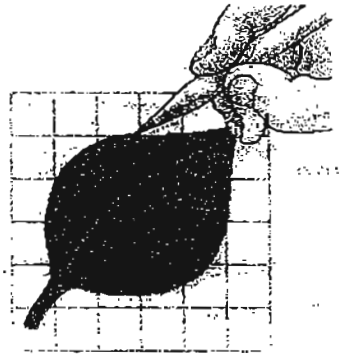
3

34. A group of students used a potometer to measure the rate of water uptake of a cut stem of a plant which indicates the amount of water lost through the stomata of the leaves.



Potometer

They set up four similar potometers as shown in the diagram above. The amount of water loss in each potometer was measured at every 3 minutes for a period of 30 minutes. At the end of the experiment, they cut a leaf from the cut stem and estimated the surface area of the leaf by placing the leaf on a 1-cm grid paper as shown below in the diagram.



1 square = $1cm^2$

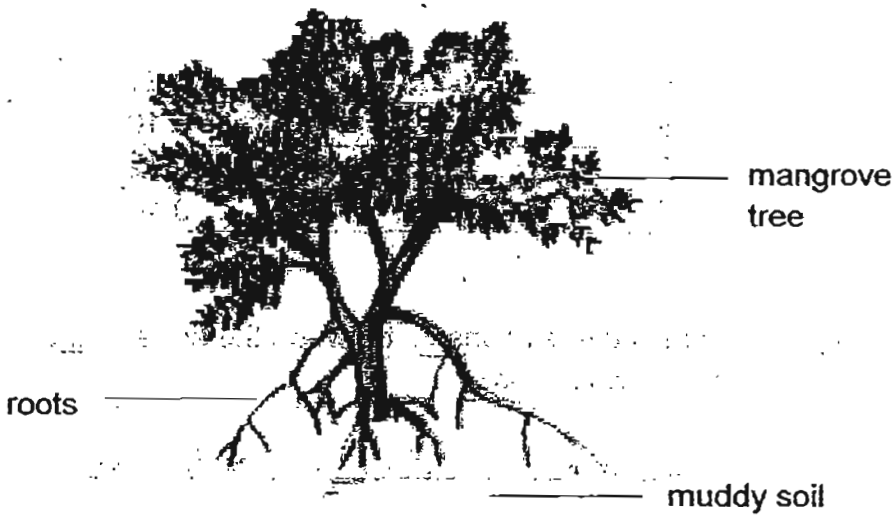
They recorded the results from the experiment in the table below.

Set up	Total loss of water / ml	Leaf surface area/ m^2	Rate of water loss/ ml/m^2
A	1.5	0.20	7.5
B	1.0	0.16	6.25
C	0.6	0.12	5
D	0.2	0.10	2

(a) What is the relationship between the surface area of the leaf and the rate of water loss? [1]

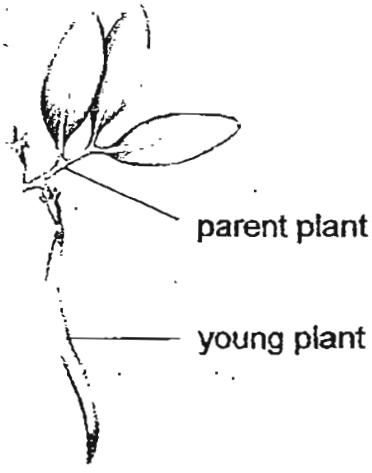
(b) In a desert, plants usually have leaves of small surface area. Based on the information given in the table above, explain how such a feature is beneficial to the plants. [1]

35. Mangrove trees are found in muddy swamps. They have special roots that enable them to survive in the swamps which most species of plants are unable to do so.



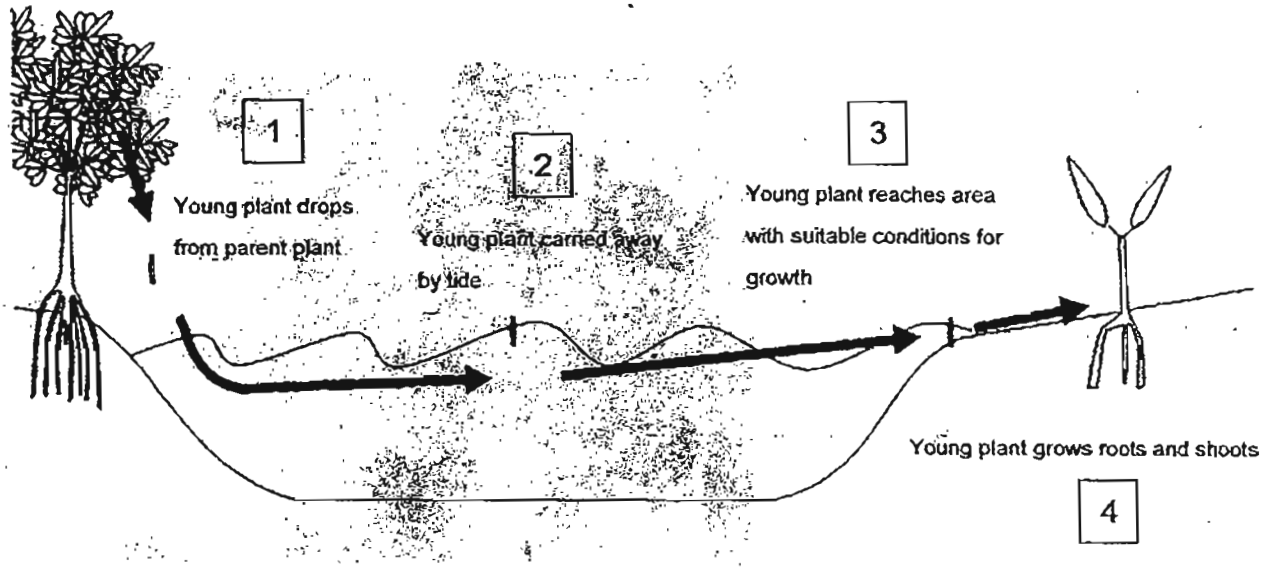
(a) The mangrove trees have roots as shown in the diagram above. These roots are unable to take in oxygen or release carbon dioxide. How do the roots help the trees to survive in such an environment? [1]

(b) Another adaptive feature of the mangrove trees is observed in the way in which it reproduces. Unlike other plants, the seeds of the mangroves start to grow into a young plant while they are still attached to the parent plant as shown in the diagram below.



1

This head start in growth allows the young plant to quickly take root once they are deposited in an area where conditions for growth are suitable. The process is shown in the diagram below.



Based on the information provided, state 2 ways in which the feature described above increases the chances of survival of the young of the mangrove tree. [2]

(i) _____

_____

_____

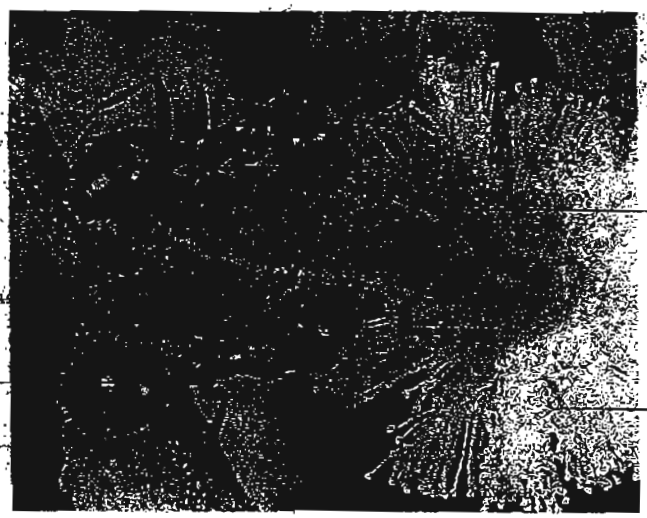
(ii) _____

_____

_____

2

36. The caterpillar of Butterfly X usually attracts ants to feed on a sweet substance that is released by a special gland on its body. The ants tend to fight off attacks from other insects such as wasps that try to come near the caterpillar to lay its eggs in the body of the caterpillar.

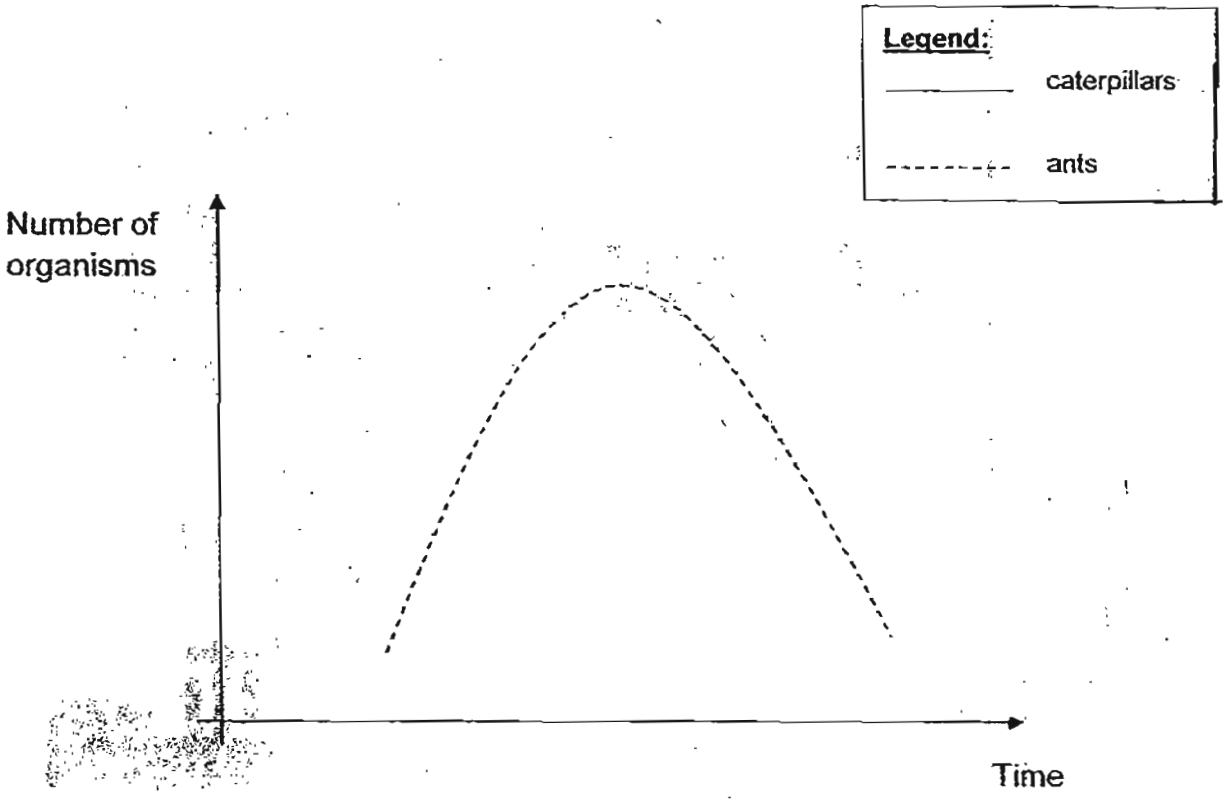


(a) What structural adaptation does the caterpillar have to escape from its predators? [1]

(b) How does the caterpillar and the ant each benefit from this relationship? [1]

2

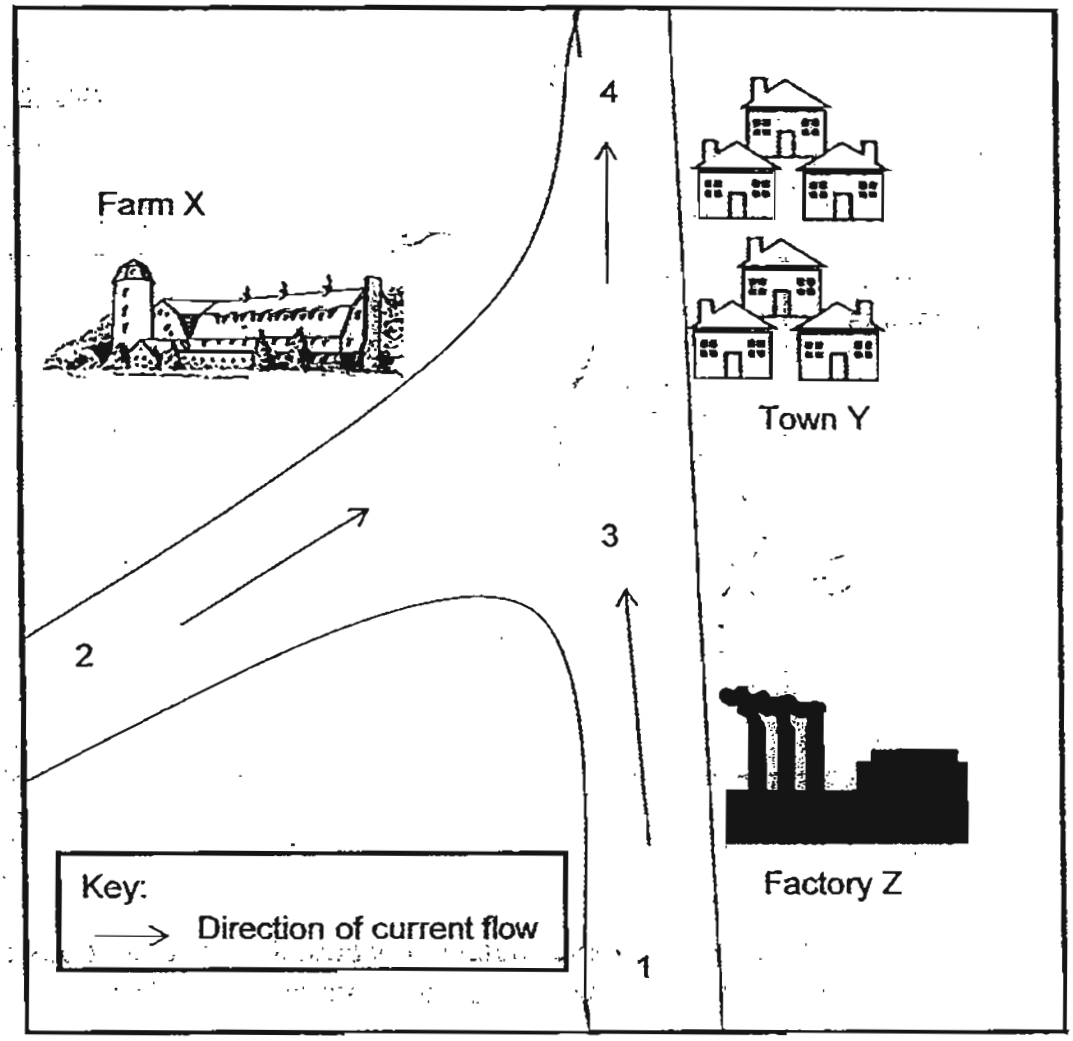
(c) In the space provided below, draw a graph to show how the number of caterpillars changes over time as the number of ants changes. [1]



(d) Based only on the information provided, if a disease struck and killed most of the ants, how would this affect the caterpillars? [1]

2

37. A group of environmentalist did a survey on the amount of pollution in a particular town. A map of the town is shown below.

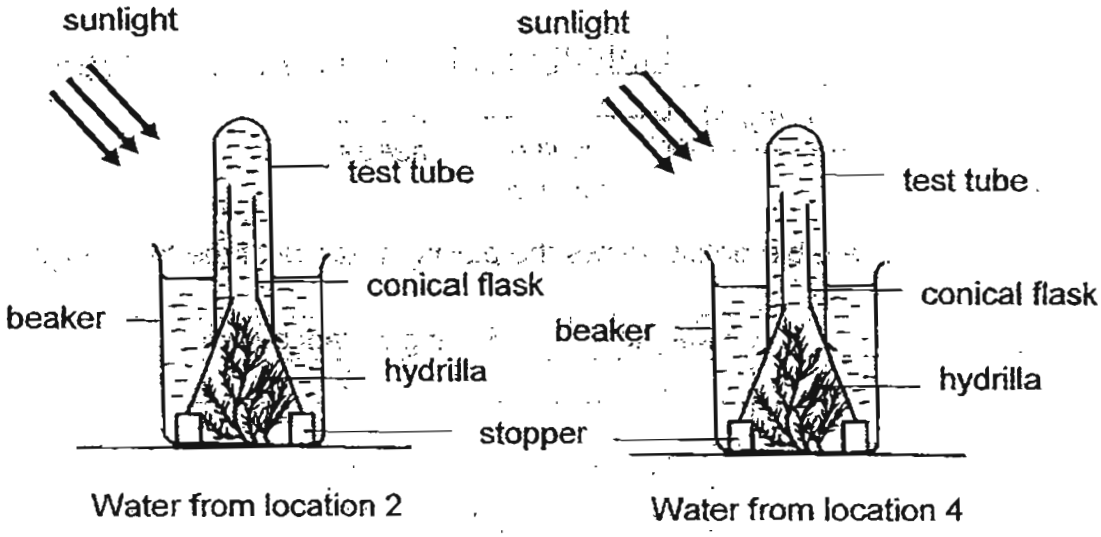


(a) They wanted to find out how much of the pollution of the river was due directly to Factory Z. At which 2 spots should they collect water samples? [1]

(b) If the factory was polluting the waters, suggests a suitable position for a treatment plant. Indicate this by putting a "X" in the diagram above. [1]

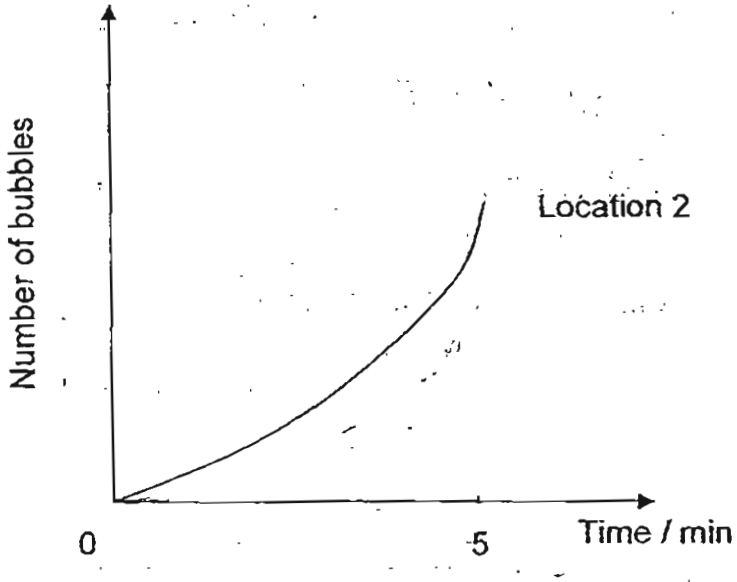
2

The environmentalists wanted to find out whether murky water affects the rate of photosynthesis in aquatic plants. 200ml of water from locations, 2 and 4, was collected. They were placed in a beaker with similar aquatic plants and the set-up was placed under direct sunlight.



The number of oxygen bubbles given out by the plants over a period of 5 minutes was counted. A graph was plotted from the results.

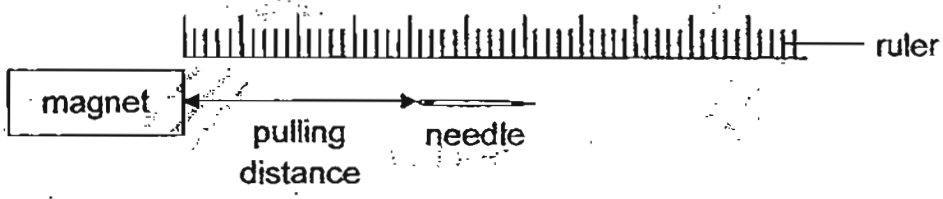
The graph for Location 2 is shown below.



(c) Draw a line graph for Location 4 on the same graph. [1]

(d) Explain the effect of murky water on the rate of photosynthesis. [1]

38. Four magnets E, F, G and H were tested for their strength. A needle was slowly pushed towards each magnet until it was attracted by the magnet as shown in the diagram below. The distance from which the magnet attracted the needle is called the pulling distance.



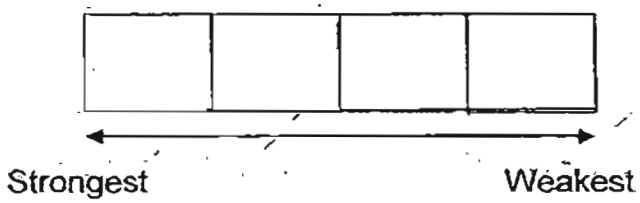
The table below shows the pulling distance of the four magnets.

Magnet	Pulling distance / cm
E	6
F	3
G	8
H	2

(a) Based on the data in the table, it was noticed that the needle was attracted to the magnet before the magnet came into contact with it. What can we conclude about the magnetic force? [1]

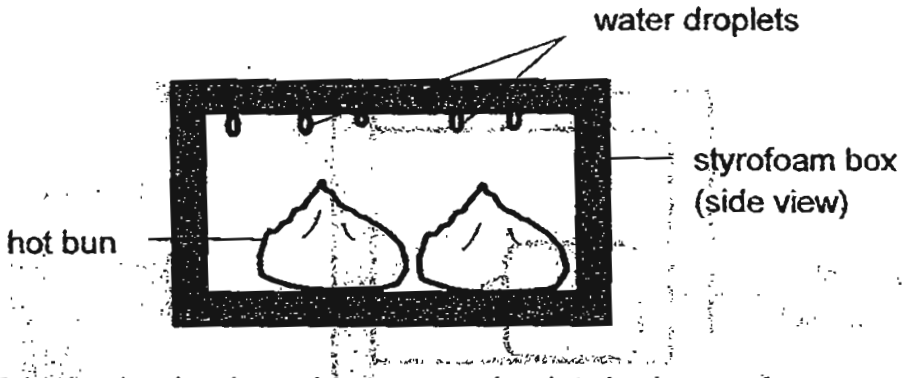
(b) Which magnet is the strongest? Give a reason to support your answer. [1]

(c) In the boxes given below, arrange the magnets E, F, G and H according to their strength from the strongest to the weakest. [1]



3

39. Tom bought some hot plain buns which were placed in an enclosed styrofoam box as shown in the diagram below (side view). When he opened the styrofoam box at home fifteen minutes later, he found that there were water droplets on the top inner surface of the box.

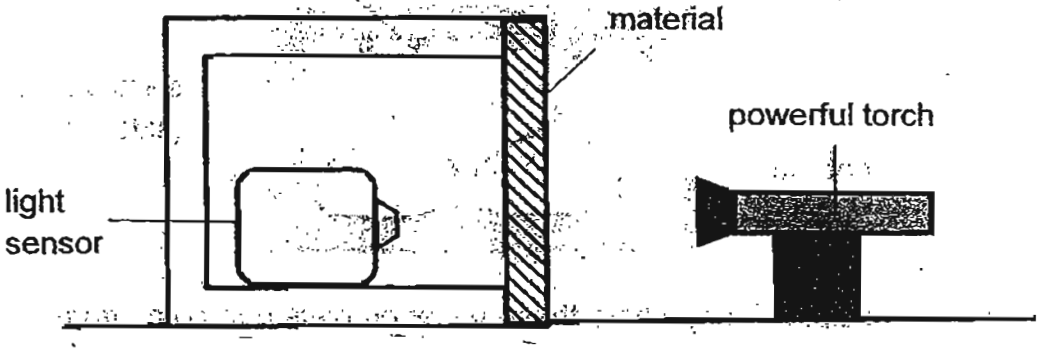


(a) Explain clearly where these water droplets had come from. [2]

(b) The next day, Tom bought similar buns from the same hawker. He observed that the hawker placed a piece of paper over the buns. Give a reason to explain why the hawker did this. [1]

3

40. Anne wanted to find out which material allows the most light to pass through. She set up the experiment as shown below. She covered the open side of a darkened box with different materials each time as shown below. She recorded the amount of light detected by the light sensor.



She repeated the experiment using materials B and C of the same thickness as material A. The table below shows her results.

Materials	Light detected by light sensor / unit
A	50
B	240
C	120

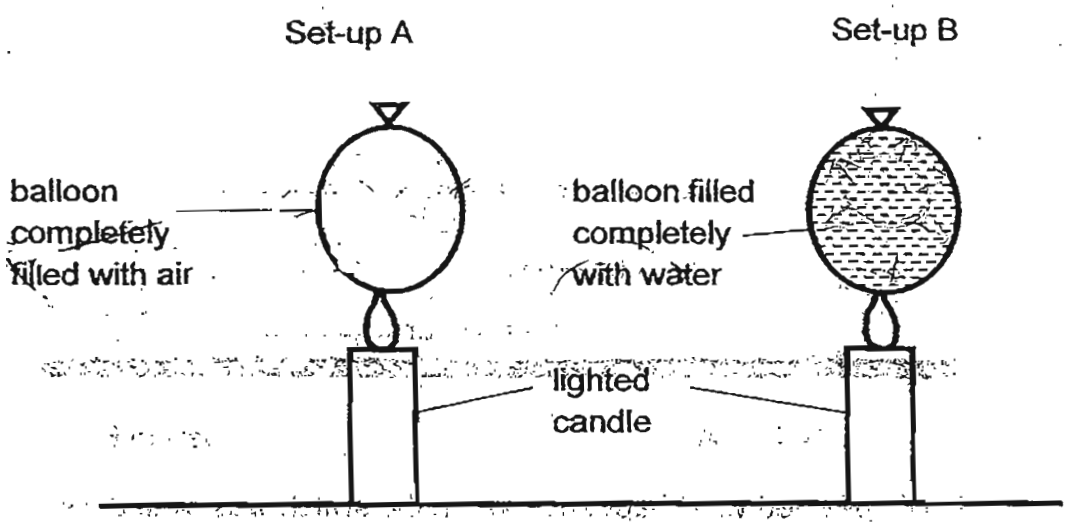
(a) Give a reason why the thickness of materials A, B and C should be the same. [1]

(b) Anne works the night shift. When she returns home after work in the morning, she wants to make her environment conducive for sleep.

Which material, A, B or C, should she use for the windows? Give a reason for your answer. [1]

2

41. Steve wanted to test the properties of water and air. He set up the experiment as shown below in the Science laboratory. He placed 2 balloons of the same type, one completely filled with air only and the other completely filled with water and placed them over a candle flame. He lit the candle and observed what happened.



He recorded the time taken for the balloon to pop in the table below.

Set-up	Time taken for balloon to pop / sec
A	2
B	120

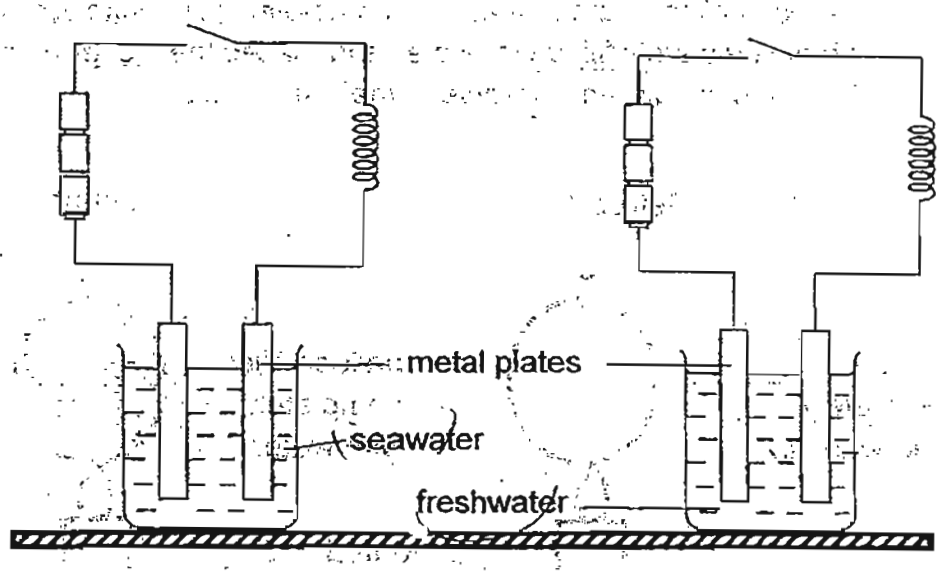
(a) What can you conclude about the property of water based on the experiment above? [1]

(b) Explain the difference in time taken for the balloons to pop. [2]

(c) State a variable that he must keep constant to conduct a fair test. [1]

4

42. Ravi set up the experiment as shown below.



Set-up A Set-up B

Ravi observed what happened when the switch was closed. He recorded his observations in the table below.

Liquid	Nichrome wire
Freshwater	Glows
Seawater	Glows hot and red

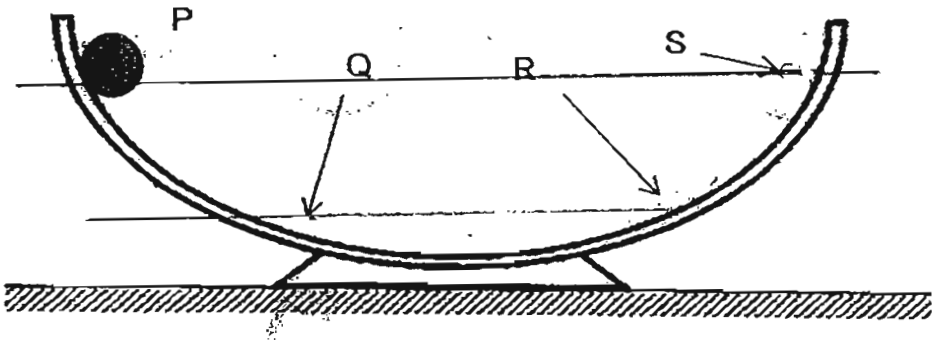
(a) What could Ravi conclude about the two liquids? [1]

(b) Ravi read that electric eels can be found in both freshwater and sea water. They kill their prey by electrocuting them.

Based on his observations in part (a), what would be the difference in the time taken for the seawater eel and freshwater eel to kill their prey? [1]

2

43. The diagram below shows a round glass bowl. A tennis ball was held at P.

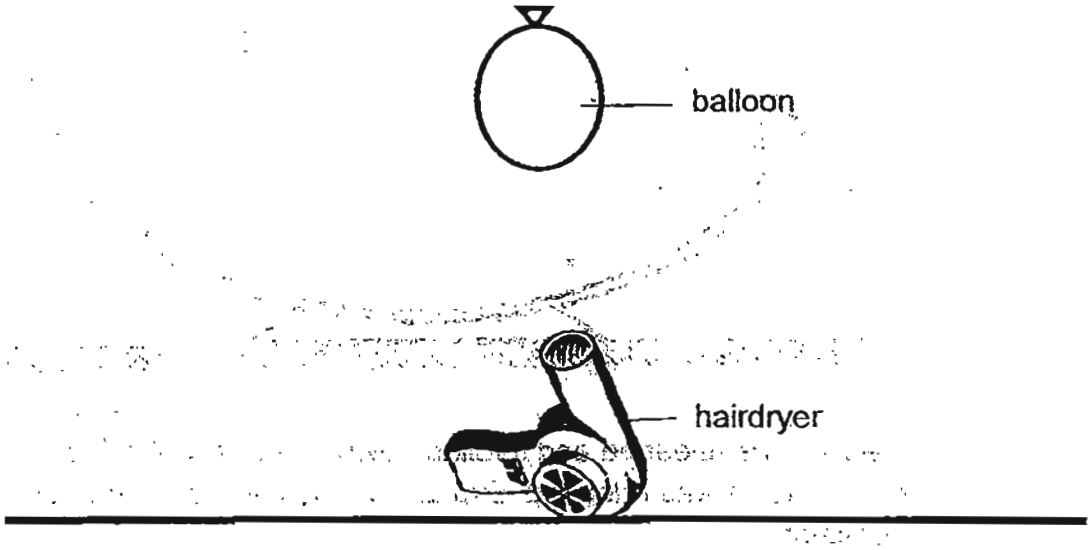


(a) The ball was released and it rolled down. Predict where the ball would roll to when it was released. Explain clearly the reason for your prediction. [2]

(b) What would be the effect of replacing the tennis ball with a glass ball? Give a reason for your answer. [1]

3

44. A hair dryer was used to blow a balloon to keep it suspended in the air as shown below.



The height of balloon from the ground was measured and the results were recorded in the table below.

Height of balloon /cm / Speed of hair dryer	1st reading	2nd reading	3rd reading	Average reading
Low	33	34	32	33
Medium	42	40	44	42
High	57	50	55	54

(a) What is the relationship between the speed of the hair dryer and the height of the balloon? [1]

(b) What force/s is / are acting on the balloon? [1]

(c) When the balloon is blown at low speed for 4 minutes, it bursts. Explain clearly why this happens. [1]

- End of Paper -

Answer Ke

EXAM PAPER 2011

SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIMINARY

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

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

31)a)The function of part P is to keep the plant straight as it grows upwards.
b)Part Q has a bright colour.

32)a)X→dark blue Y→dark blue Z→brown
b)This is to present the release of carbon dioxide as a result respiration from the living organisms in the soil into the air within the bell jar.

33)a)Q→Seeds dispersed by splitting R→Seeds dispersed by water.
b)The wing-like structure of the fruit enables it to be dispersed by wind.
c)The wing-like structure increases the exposed surface area of the fruit thus increasing the time the fruit stays in the air so when there is wind again, the seed will continue to move in the direction of the wind.

34)a)The larger the surface area of the leaves, the higher the rate of water loss.
b)With leaves of a smaller surface area, the rate of water loss slower compared to leaves of a larger surface area as the leaves are smaller, it prevents the plants from loosing water too quickly.

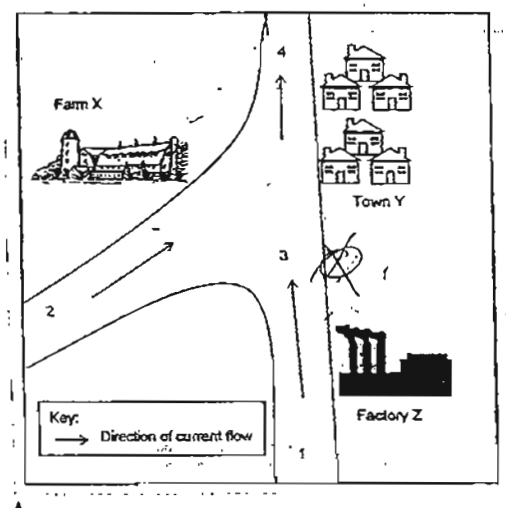
35)a)To cling to the soil and stand upright.
b)i)The chances of survival are higher as the seed has germinated and developed into a young plant before being dispersed away from its parent plant.
ii)It is grown away from the parent plants, allowing it to grow heal their without any competition.

36)a)It uses its body colour to blend in with the surroundings/camouflage with the colour of leaves.
b)The caterpillar is protected by the ant and the ant obtains its food from the caterpillar.
c)

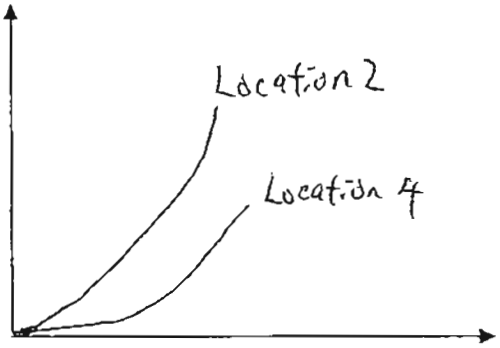
36)d)The caterpillars would be more prone to attacks from the wasps as there one fewer ants to protect them.

37)a)Spots 1 and 3

b)



c)



d)The murky water perverts sunlight/allows less light from reaching the plant so it cannot photosynthesis as well as the plant in water from location.

38)a)Magnetic force can act at a distance.

b)Magnet G. In the experiment, magnet G is able to pull the needle from a pulling distance of 8cm which is the further rest compared to the other magnets.

c)GEFH

39)a)The hot bun had warmed up the air in the box. The hot water vapour comes in contact with the cool inner surface of the Styrofoam box loses heat and condenses into water droplets.

b)Prevent the water droplets from collecting on the bun.

40)a)The thickness of the material may affect the amount of light detected by the light sensor.

b)She should use material A as it allows the least amount of light through keeping her room dark.

41)a)Water is a better conductor of heat than air. Water take a longer time to expand.

b)The balloon with water takes a longer time to pop. The heat from the candle flame is transferred to the balloon.The water in the balloon conducts heat faster than air so the heat is transferred away from the balloon.

c)Volume of air and water must be kept the same.

42)a)Seawater is a better conductor of heat than freshwater.

b)The seawater eel will be able to kill its prey much faster compared to the freshwater eel as shown in the experiment above, seawater is a better conductor of electricity compared to freshwater.

43)a)It will roll to R, beyond R but not S. The ball has gravitational potential energy at P which would be converted to kinetic energy. Since some energy would be converted to sound and heat energy, the ball would not reach the same height.

b)The glass ball will roll to a higher height then the tennis ball as the glass ball is smoother compared to the tennis ball, reducing the friction between the glass ball and the round glass bowl allowing it to reach a higher height.

44)a)The higher the speed of the hair dryer, the higher the height of the balloon.

b)Gravitational force and frictional force.

c)The hair dryer blows out hot air so when the air in the balloon is heated, the air expands and after a while causes the balloon to burst.