AI TONG SCHOOL

2013 CONTINUAL ASSESSMENT (1)
PRIMARY SIX SCIENCE

DURATION: 1hr 45 min

DATE: 7 March 2013

INSTRUCTIONS

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

Name : _____ ( )

Class : Primary 6 _____

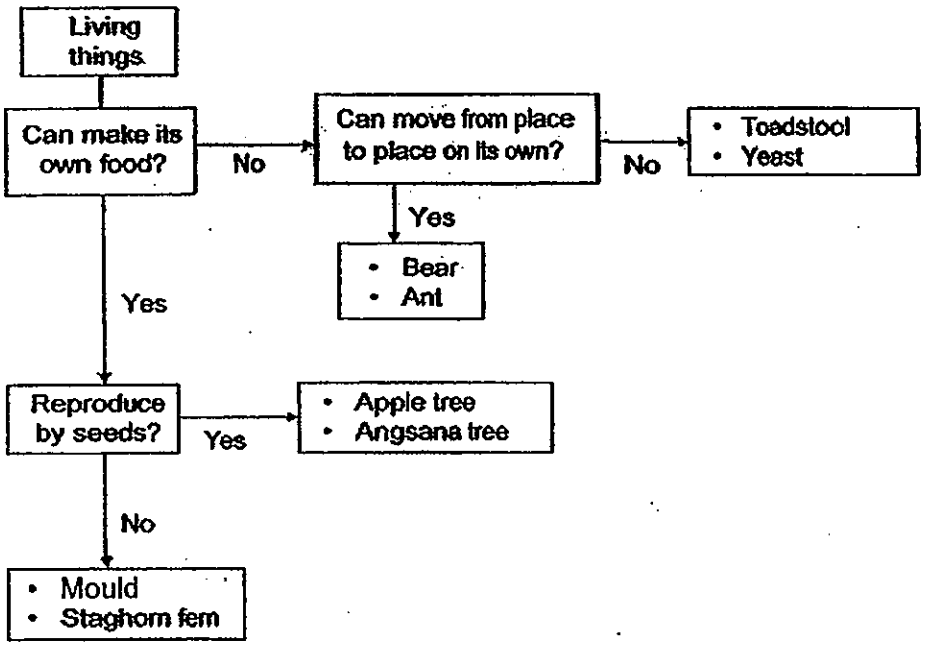
Parent's Signature : _____

Date : _____

Booklet A	/60
Booklet B	/40
Total	/100

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 (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Study the flow chart below carefully.



Based on the flowchart, which living thing has been wrongly placed?

(1) Mould
(2) Yeast
(3) Staghorn fern
(4) Angsana tree

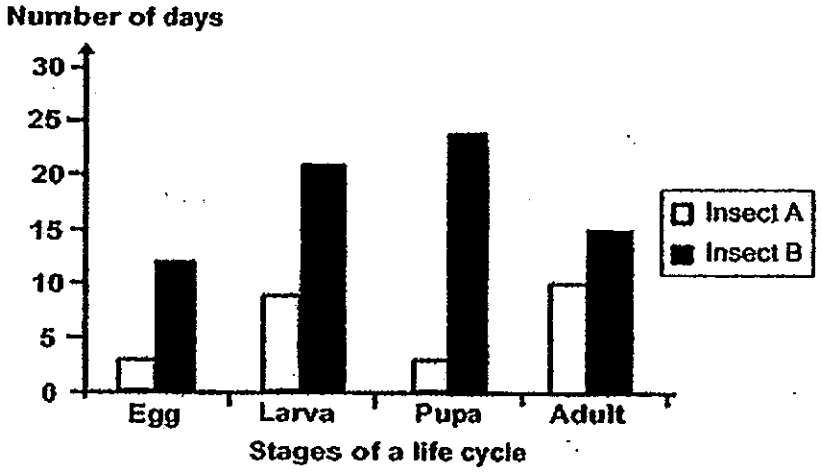
2. Samuel kept four mealworms, A, B, C and D, each at different stages of their life cycles, in four containers. He placed 20 g of food next to each of them. He measured the mass of food left in the containers after 2 days and recorded the results in a table.

Mealworm	Mass of food left
A	7 g
B	12 g
C	10 g
D	20 g

Which mealworm is most likely in the pupa stage?

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

3. Sam compared the life cycle of two insects, A and B. He recorded the number of days each insect took to complete the various stages of their life cycles.

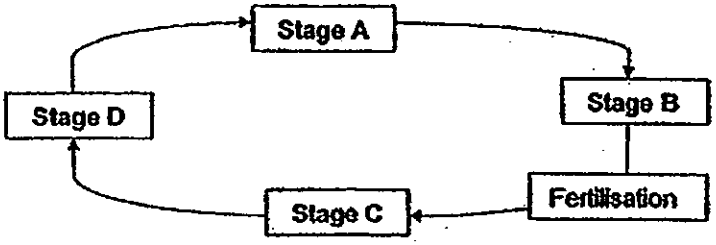


Based on the above graph, which of the following statements is/are correct?

A Insect A eats the most amount of food when it is an adult.
B The two insects have the same number of stages in their life cycles.
C Insect B spent the greatest amount of time as a pupa than in the other stages.
D Each insect took the same number of days to complete each stage of their life cycle.

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

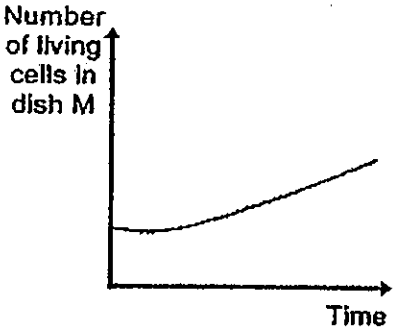
4. The diagram shows the life cycle of a butterfly.

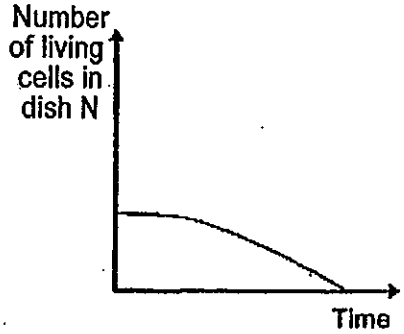


Based on the life cycle as shown above, what is Stage C?

(1) Egg
(2) Larva
(3) Pupa
(4) Adult

5. Naomi placed the same number of a type of single-celled organism in 2 dishes, labelled M and N. She left Dish M under a light source and placed Dish N in the dark. She monitored the number of living organisms in dishes M and N over a few days and plotted a graph as shown below.

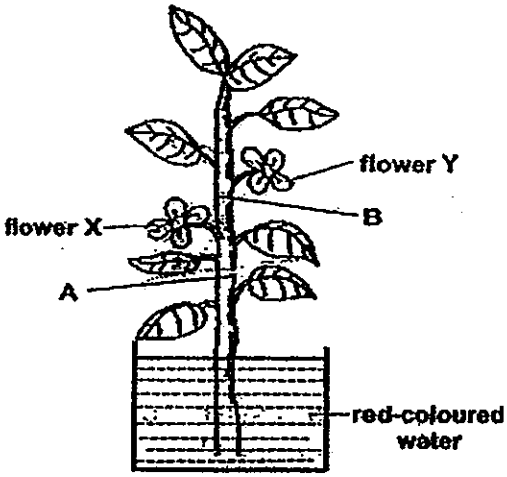




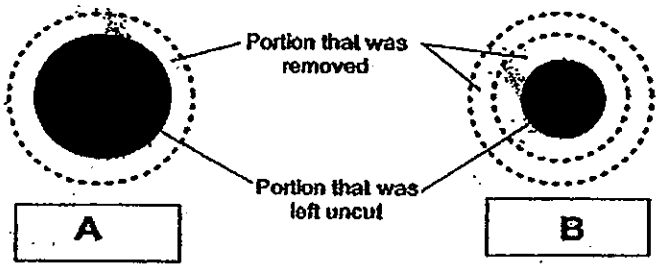
Based on the above information, Naomi aims to find out if _____.

(1) the organisms in dish M can grow better than those in Dish N
(2) the number of organisms in dishes M and N will change with time
(3) light is necessary for the survival of the organisms in dishes M and N
(4) the amount of time the organisms are kept in the dark affect their growth

6. Two rings of the stem were cut off at different depths at A and B as shown below. The plants were then placed in a beaker of red-coloured water. After a while, flower X turned red while flower Y remained white.

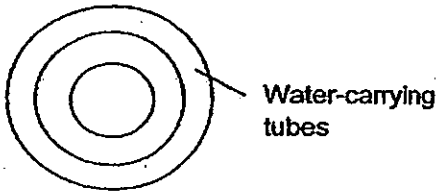


The diagrams below show the cross sections of A and B of the stem. The unshaded regions show the areas that were removed while the shaded regions show the areas that were uncut.



Which one of the following cut-sections correctly shows where the water-carrying tubes are located?

(1)



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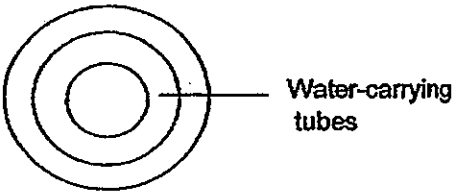

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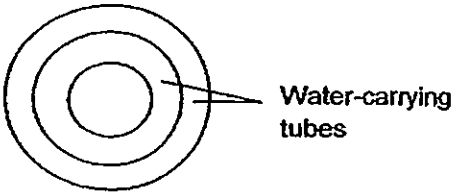

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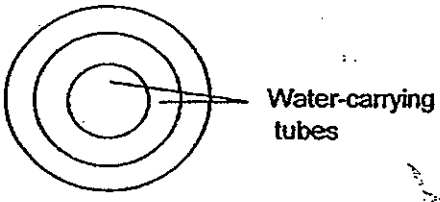
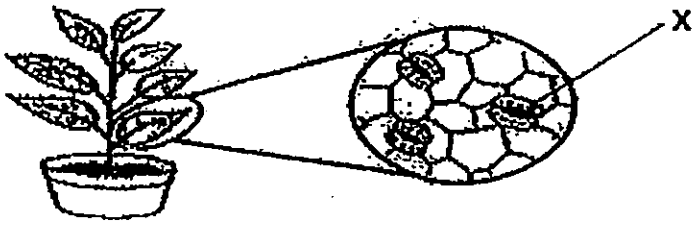
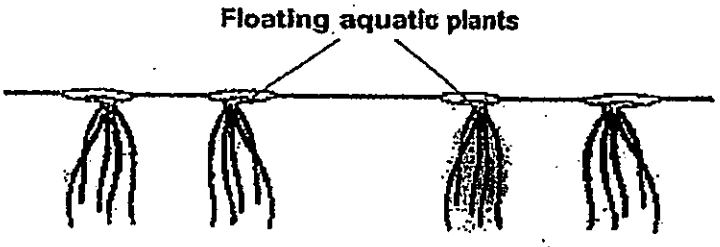


7. Using a microscope, Darren observed the leaf of a potted plant as shown below. He noted that more X could be found on the underside of the leaves than the upper surface of the leaves.



He then used the microscope to observe the leaves of some floating aquatic plants as shown below. He noted that there are more X found on the upper surface of the leaves than the underside of the leaves.



Which one of the following statements best explains why there is a difference in where more X can be found between the potted and the aquatic plant?

(1) The aquatic plant receives less sunlight than the potted plant.
(2) The underside of the leaves of the aquatic plant are in contact with water not air.
(3) The potted plant carries out gaseous exchange at a faster rate than the aquatic plant.
(4) The aquatic plant takes in more atmospheric oxygen than dissolved oxygen in the water.

8. Gordon cut open a watermelon fruit and observed that it contained many seeds.

Based on this observation, he made the following statements about the flower of the watermelon.

Which one of the following statements best supports his observation?

(1) The flowers grow in bunches.
(2) The flower produces many pollen grains.
(3) There are many ovules in the ovary of the flower.
(4) The flower contains a lot of nectar to attract insects.

9. Which of the following statements about sexual reproduction in both plants and animals are true?

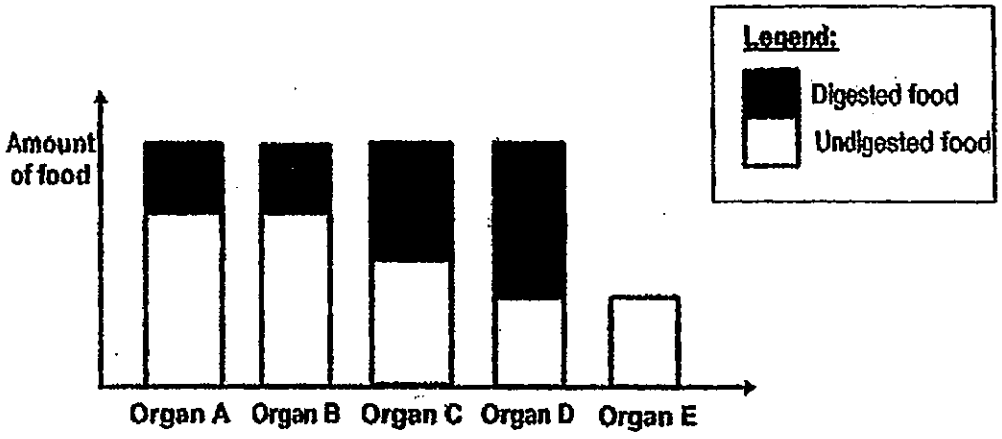
A The female sex cells are produced in the ovary.

B The process of pollination takes place before fertilisation.

C The male sex cells produced are called spores.

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

10. Peter ate Food Q. The bar graph below shows the amount of digested and undigested Food Q in 5 organs, A, B, C, D and E of his digestive system over 3 hours.

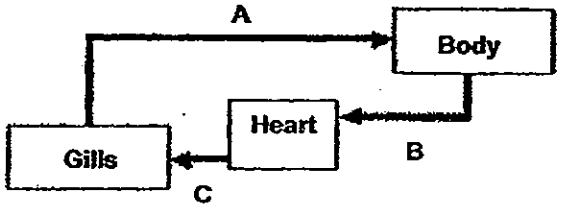


Based on the graph, which of the following organs did not carry out any digestion of Food Q?

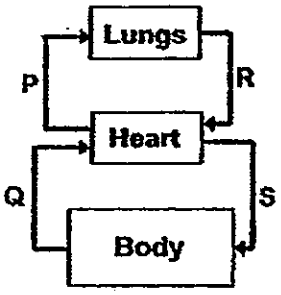
(1) A and B only
(2) B and E only
(3) C and D only
(4) D and E only

For questions 11 and 12, refer to the diagrams below.

A, B and C represent the blood vessels of the fish circulatory system. P, Q, R and S represent the blood vessels of the human circulatory system.



Circulatory system of a fish



Circulatory system of a human

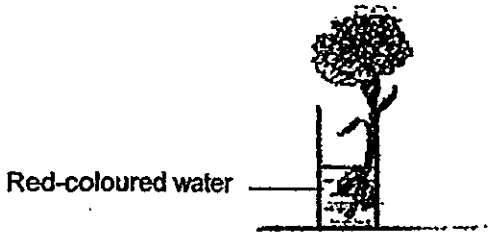
11. Which one of the following pairs of blood vessels carries oxygenated blood?

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

12. Based on the diagrams above, which one of the following statements is incorrect?

(1) Gaseous exchange takes place at the gills and lungs.
(2) In the fish circulatory system, blood passing through the heart will be pumped back to the body.
(3) In the human circulatory system, blood passing through the heart will be pumped back to the lungs and body.
(4) Blood circulates in one direction in the fish circulatory system but blood circulates in two directions in the human circulatory system.

13. Jo plucked 4 stalks of flowers, A, B, C, and D, from the same plant and placed each of them in a beaker of red-coloured water kept at different temperatures as shown in the diagram below.



She recorded the time taken for the flowers to turn red in the table below.

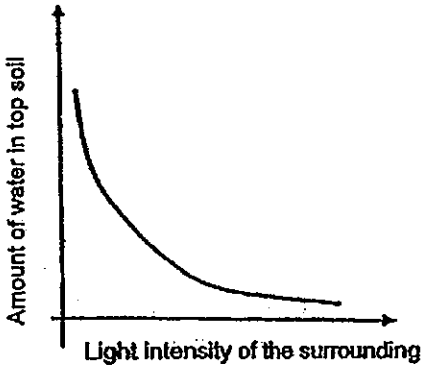
Temperature of water (°C)	20	25	30	35
Time taken for flower to turn red (days)	2	1.5	1	0.5

Based on the experiment, which statement is incorrect?

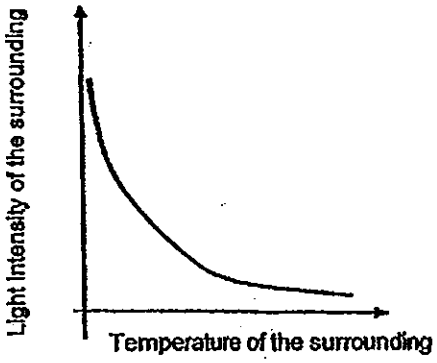
(1) As the time taken for the flower to turn red decreases, the temperature of the water increases.
(2) As the time taken for the flowers to turn red increases, the temperature of the water decreases.
(3) The higher the temperature of water, the faster the red-coloured water travels through the water-carrying tubes.
(4) The higher the temperature of water, the slower the red-coloured water travels through the water-carrying tubes.

14. Which one of the following graphs correctly shows the interaction between the two factors found in a natural environment?

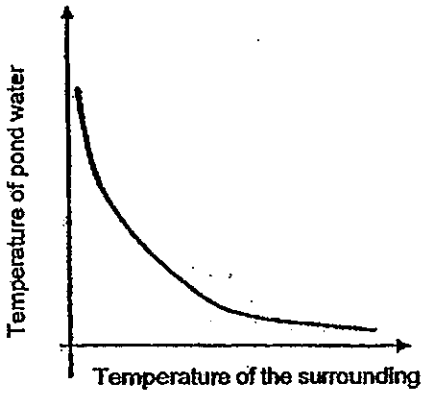
(1)



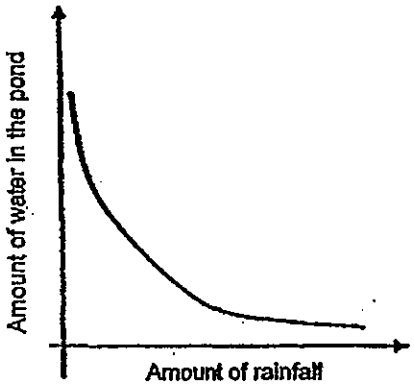
(2)



(3)

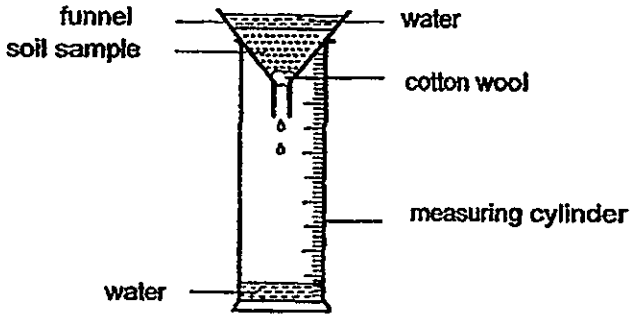


(4)



15. Andy was told that the more air spaces a type of soil had, the faster the soil would allow water to flow through. Andy collected 4 soil samples, E, F, G and H.

He put 50 g of soil sample E in the set-up as shown below.



He poured 100ml of water into the funnel and measured the time taken for 30ml of water to be collected in the measuring cylinder. Then he repeated the experiment for soil samples F, G and H.

The student recorded the time taken to collect the water for each soil sample in the table below.

Soil sample	Time taken to collect 30ml of water (s)
E	37
F	14
G	67
H	128

Based on the information above, which one of the following shows the correct arrangement of the soil samples, starting from the one with the greatest amount of air spaces in it to the one that has the least?

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

16. Organisms H, J, K and L belong to the same community and are interdependent on each other for food. The table below shows the food of Organisms J, K and L.

Organisms	Food
J	H, K
K	H
L	J, K

Based on the information above, which of the following are possible food chains among the four organisms found in this community?

A H → J → L

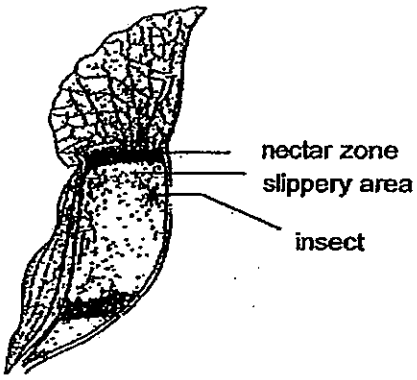
B K → L → J

C H → K → J → L

D J → L → K → H

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

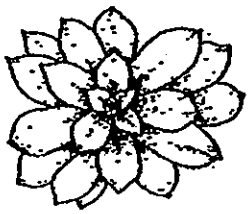
17. The diagram below shows the leaf of plant X which grows in soil that lacks nutrients and is thus adapted to trap insects to obtain more nutrients.



How does the presence of nectar help the pitcher plant to trap insects?

(1) Traps the insects and digest them.
(2) Causes the insects to slip and fall.
(3) Attracts insects to the pitcher plant.
(4) Absorbs nutrients of the digested insect.

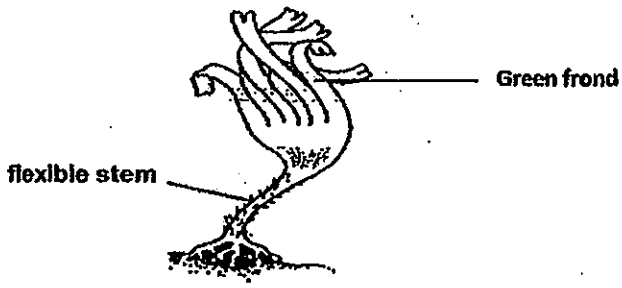
18. The diagram below shows the arrangement of leaves of a plant from the top view. It has been adapted to grow in this manner to benefit the plant.



How does this adaptation help the plant to survive?

(1) It helps the plant to bear more flowers.
(2) It helps the plant to get more sunlight.
(3) It helps to prevent water loss through the leaves.
(4) It helps the plant to attract more insects to pollinate its flowers.

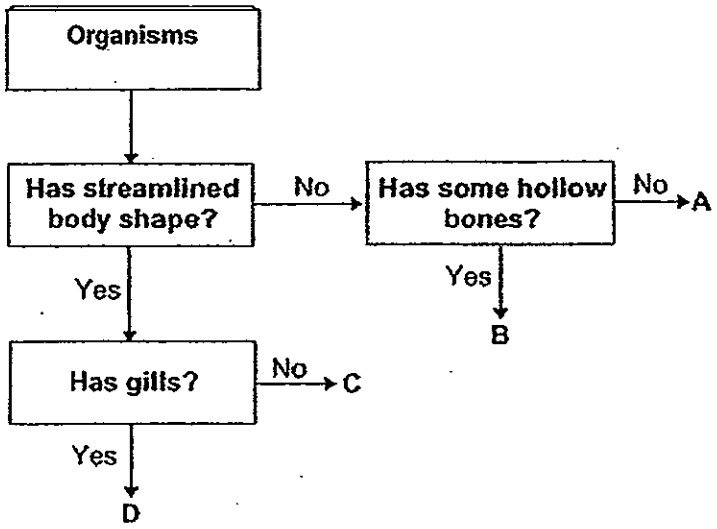
19. The diagram below shows Organism T which grows in the sea. It has a flexible stem. Its green fronds enable it to photosynthesize. Waves often pull Organism T in different directions.



How does having a flexible stem enable Organism T to survive the sea waves?

(1) It holds Organism T upright and attaches it firmly to the seabed.
(2) It enables Organism T to move with the waves to prevent it from breaking at its stem.
(3) It enables Organism T to stretch upwards and trap more sunlight for photosynthesis.
(4) It enables Organism T to transport food from the frond to all parts of the organism.

20. Study the following flowchart carefully.



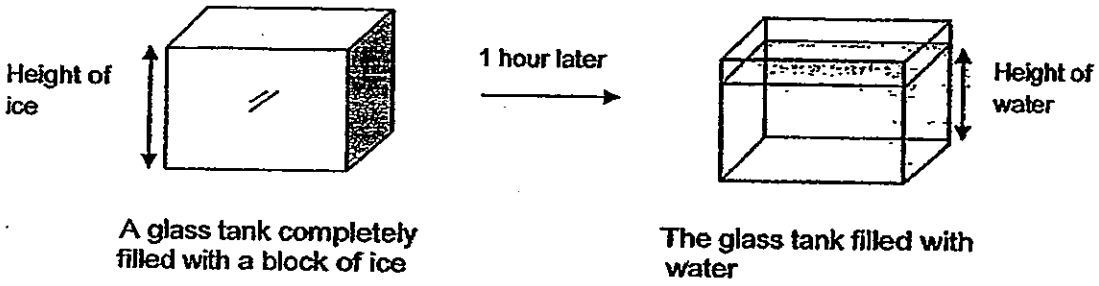
Organism P was discovered living in the pond habitat. The following observations were made about P.

- P cannot fly.
- P is a predator and moves very fast to catch its prey.
- P swims in the water but sticks its head out of the water occasionally to take in air.

Which one of the following best represents Organism P?

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

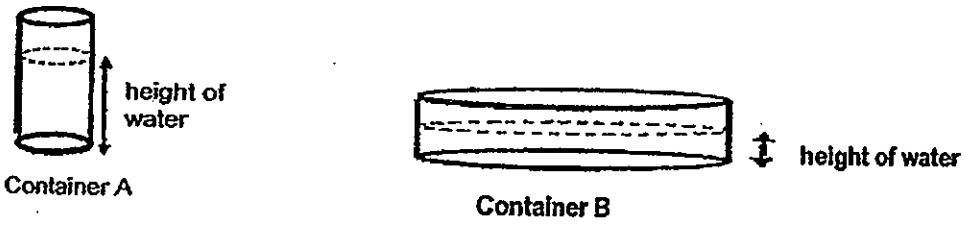
21. The diagram below shows a glass tank completely filled with a block of ice. After 1 hour, it was noticed that the block of ice had melted as shown in the diagram below.



Which one of the following best explains the above observation?

(1) The melted ice has a smaller mass than the ice cube.
(2) The melted ice has a smaller volume than the ice cube.
(3) The melted ice can be compressed to fit the volume of the glass.
(4) The melted ice has definite shape and takes the shape of the glass.

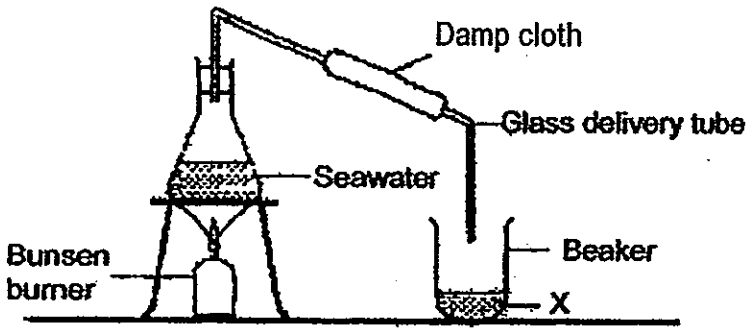
22. Meng poured 250 cm^3 of water at 85°C into each of the two styrofoam containers, A and B, as shown below. The containers of water were left in a room with a temperature of 25°C.



Which one of the following is a likely observation that Meng would make at the end of 15 minutes?

(1) The temperature of water in Containers A and B are the same.
(2) There is no difference in the height of water in Containers A and B.
(3) There is a greater decrease in the height of water in Container B than in A.
(4) There would be water droplets on the outer surface of Containers A and B.

23. Siew Yan set up an experiment as shown below.

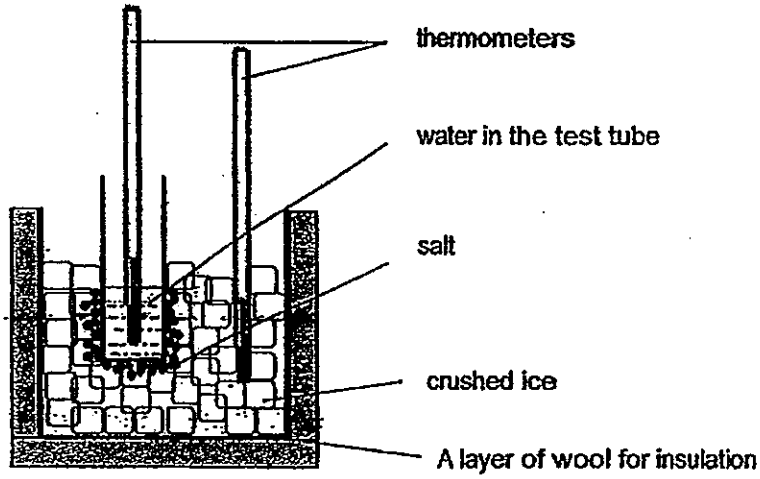


After some time, some water is seen dripping from the glass delivery tube into the beaker.

What can Siew Yan do to slow down the rate of water dripping from the delivery tube?

(1) Use a warmer damp cloth.
(2) Use a longer delivery tube.
(3) Increase the amount of seawater to be heated.
(4) Increase the number of Bunsen burners used to heat the seawater.

24. Sam set up the experiment shown below to find out the effect of adding salt into the crushed ice on the water in the test tube.



He measured the changes in the temperature of the crushed ice and water at a 1 minute interval and tabulated the results in the table below.

Time (min)	Temperature of crushed ice (°C)	Temperature of water (°C)
0	0	30
1	-1	10
2	-5	0
3	-5	0
4	-7	-1
5	-8	-2

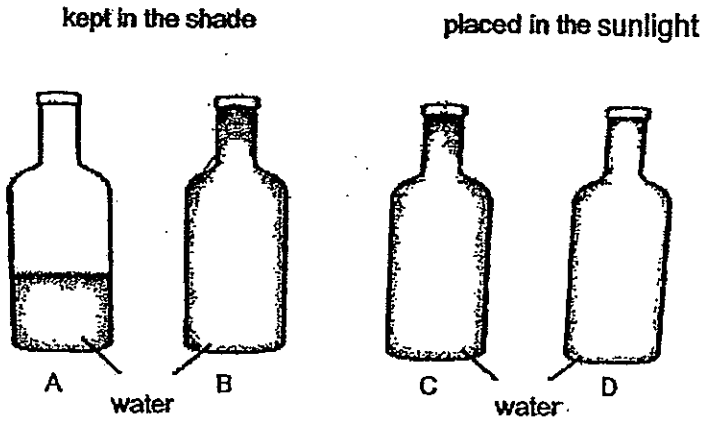
Based on the results, in what state is the water in the test tube at the 2nd min?

(1) gas only
(2) solid only
(3) liquid only
(4) solid and liquid

25. Peiling wanted to find out if water kept in the shade will be less hot than water left in sunlight. She prepared 4 bottles of water, A, B, C and D as shown in the table below.

Bottle	Material of bottle	Initial temperature of water (°C)
A	Glass	40
B	Plastic	25
C	Glass	40
D	Plastic	25

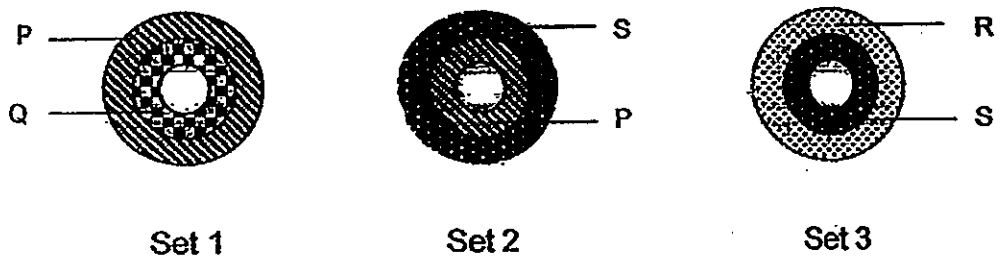
She placed bottles A and B in the shade and bottles C and D in sunlight.



Which of the following set-ups should she compare to arrive at the correct conclusion?

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

26. Four different types of metals, P, Q, R and S, were used to make three sets of rings as shown below. All the sets of rings were similar in size.



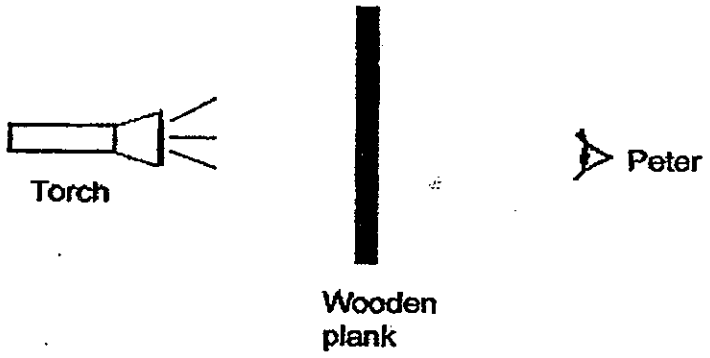
At 25°C, the inner ring of each set fits into the outer ring and could still be pulled out without much effort. After heating the 3 sets of rings to about 60°C, the observations were recorded in the table below.

Observations at 60°C		
Set 1	**Set 2**	**Set 3**
Ring Q fell out of Ring P.	Ring P fell out of Ring S.	Ring S could not be pulled out of Ring R even with a lot of effort.

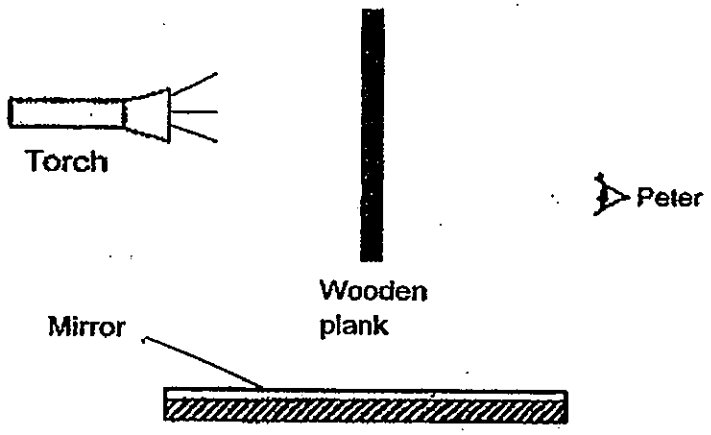
Based on the observations above, which one of the following is true about the metals?

(1) Metal Q expanded the most.
(2) Metal R expanded the least.
(3) Metal S expands more than Metals P and Q.
(4) Metal P expands more than Metals S and R.

27. Peter placed a wooden plank between him and the torch. He realised that he could not see the light from the torch when it was switched on.



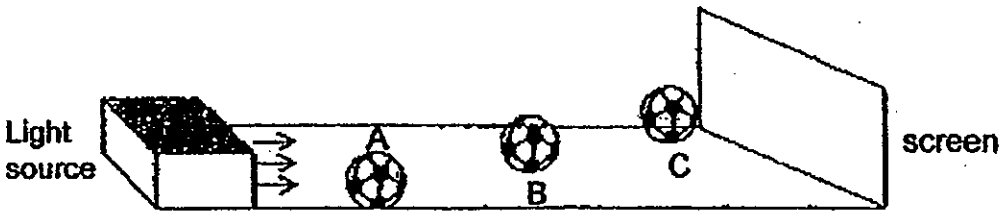
Peter then added a mirror to the set-up as shown below.



Which one of the following correctly explains why Peter can now see the light from the torch?

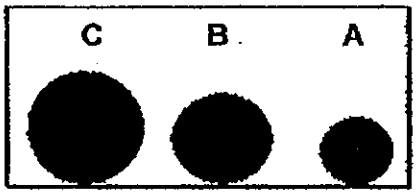
(1) The mirror reflects light from his eyes to the torch.
(2) The mirror reflects light from the torch into his eyes.
(3) The mirror absorbs light from the torch and reflects it into his eyes.
(4) The mirror gives out light so that light from the torch can reach his eyes.

28. The diagram below shows three similar soccer balls, A, B and C, placed at different distances in front of a screen. A light source was switched on and the shadows of A, B and C were cast on the screen.

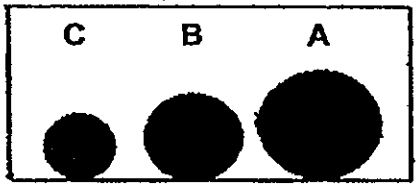


Assuming the soccer balls do not block one another, which one of the following diagrams correctly shows the shadows of the soccer balls A, B and C on the screen?

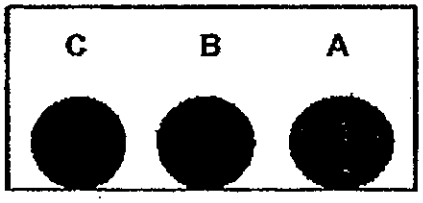
(1)



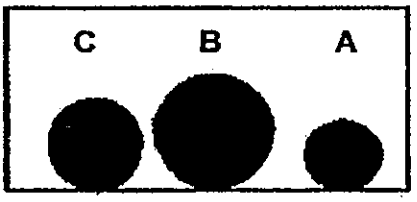
(2)



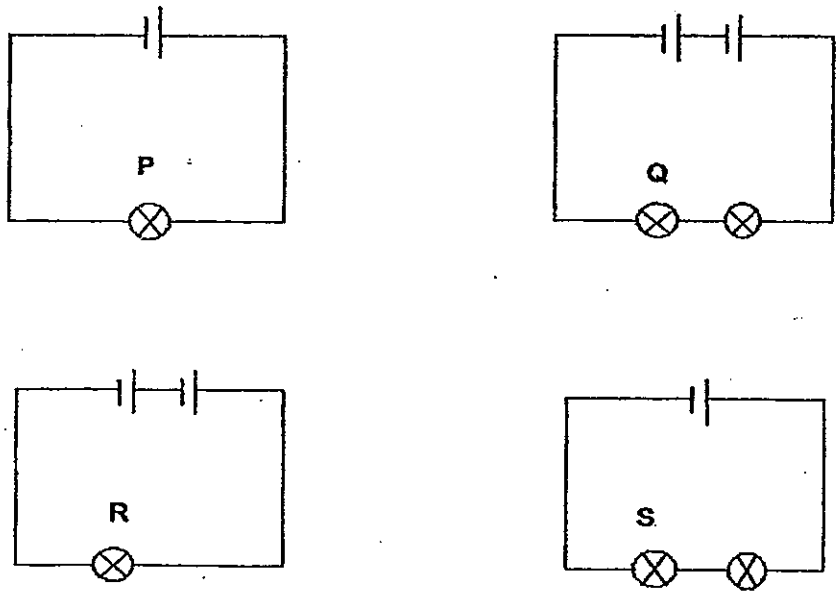
(3)



(4)



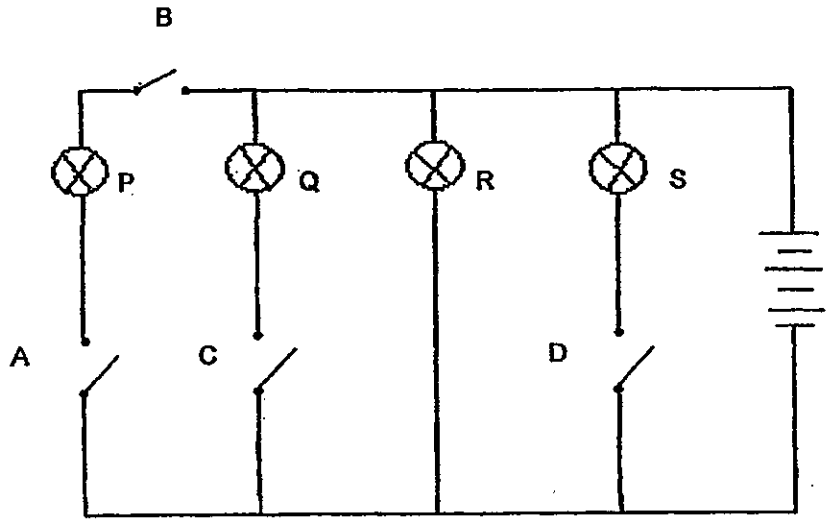
29. The diagram below shows 4 circuits with different arrangements of identical batteries and identical bulbs. The bulbs in all circuits light up.



Which one of the following gives the correct degree of brightness of the respective bulbs P, Q, R and S?

	Brightness of bulb		
	Low	Medium	High
(1)	S	P	Q
(2)	S	Q	R
(3)	Q	R	S
(4)	Q	P	R

30. The diagram below shows a circuit diagram.



The table below shows the number of bulbs that would light up when each switch is turned on.

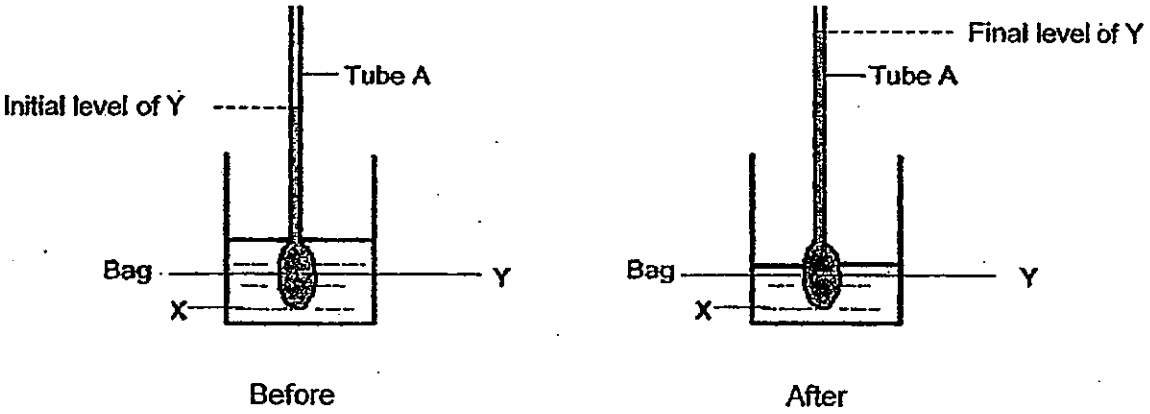
Which one of the following information is incorrect?

	Switch	Number of bulbs lighted up
(1)	A	0
(2)	B	1
(3)	C	2
(4)	D	2

Name:_____ ( )
Class P6 ( )

Section B: 40 marks
Read the questions carefully and write down your answers in the spaces provided.

31. The set-up below shows a bag that contains Liquid Y at room temperature before and after an hour. The bag was immersed in a beaker filled with Liquid X also at room temperature. After an hour, it was observed that the liquid level for Liquid Y increased in Tube A.

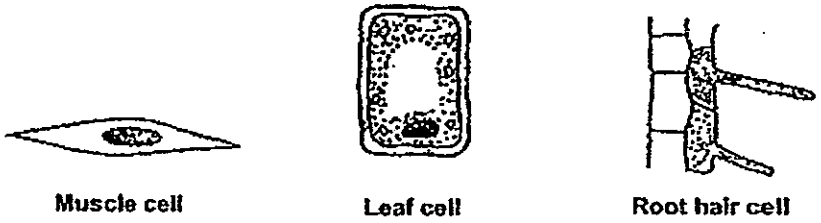


(a) Give a reason for the increase in liquid level of Y in Tube A. [1]

_____

_____

An equal amount of liquid X was then poured into three petri dishes containing a muscle cell, a leaf cell and a root hair cell respectively.



It was observed that some of the cells expanded and burst in Liquid X after a while.

(b) Which cell(s) would expand and burst in Liquid X? Give a reason for your answer. [2]

_____

_____

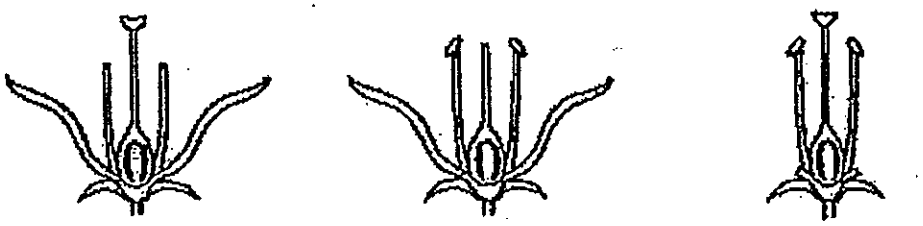
3

32. James carried out an experiment with 3 brightly coloured flowers, A, B and C from the same plant. He removed a certain part from each flower as shown in the diagram below.

Flower A: The anthers were removed.

Flower B: The stigma was removed.

Flower C: The petals were removed.



Flower A anther removed | Flower B stigma removed | Flower C petals removed

(a) James dusted pollen grains on the top of each flower. Which flower A, B or C would not be able to bear fruit? Give a reason for your answer. [1]

_____

_____

_____

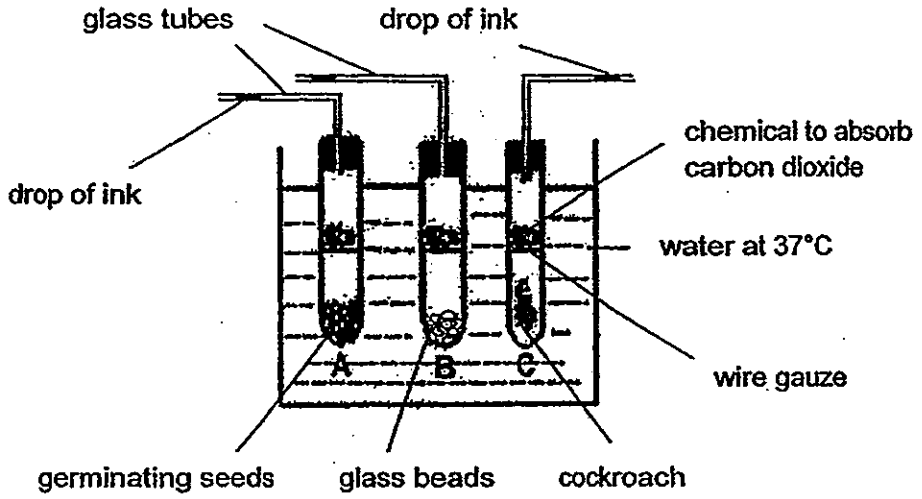
(b) How does removing only one part from each flower make it a fair test? [2]

_____

_____

3

33. Mr Tan set up an experiment using some germinating seeds and a cockroach as shown in the diagram below. In the set-up, the drop of ink prevents air from entering each of the test tubes, A, B and C. Each test tube also has the same amount of a chemical that absorbs carbon dioxide placed on top of a wire gauze.



(a) It is observed that the drop of ink in glass tubes A and C moved towards the tube. Give a reason for this observation. [2]

_____

_____

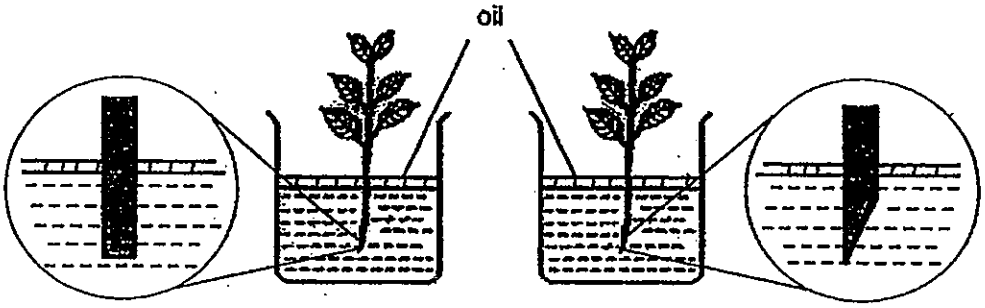
(b) Would the ink drop in the glass tube for test tube B move? Give a reason for your answer. [1]

_____

_____

3

34. Keng Li placed 2 similar plants in Beaker A and Beaker B as shown below. The stem of the plant in Beaker A was left uncut while the stem of the plant in Beaker B was cut at an angle before they were put in the respective beakers as shown in the magnified views below.



Magnified view of uncut stem soaked in water — A — B — Magnified view of cut stem soaked in water

Beakers A and B were left in the open for a week.
The table below shows the volume of water in A and B on Day 1 and Day 7 of the experiment.

Beaker	Volume of water (ml)	
	Day 1	Day 7
A	1500	1450
B	1500	1300

(a) State the volume of water absorbed by

(i) plant in Beaker A:_____ [0.5]

(ii) plant in Beaker B:_____ [0.5]

(b) Explain the difference in the volume of water absorbed by both plants after 7 days. [1]

_____

_____

2

35. 4 new organisms, A, B, C and D were discovered in a particular habitat. Scientists found out the following information about them.

A is a plant eater.
B is a predator and a prey.
C is a food producer.
D is a plant and meat eater that eats B and C.

(a) Use the above information to draw a food web in the space below showing the food relationships among these 4 organisms. [2]

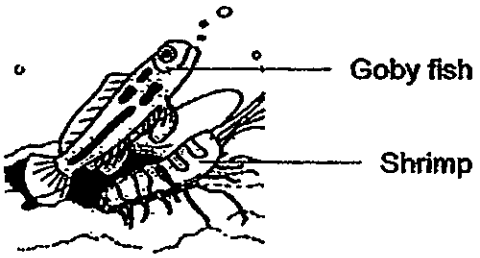
(b) What would happen to the population of B if Organism C was removed from the habitat? [1]

_____

_____

3

36. The Goby fish and its partner, the shrimp, live together in the same burrow on the bottom of the seabed.



	Goby fish	Shrimp
Characteristics	• Feed at the bottom of the sea • Eyes are set high on the top of its head • Bury themselves in the mud	• Feed at the bottom of the sea • Almost blind
Behaviour	• Touches the shrimp with its tail when it sees danger	• Dig and clean up the burrow

The Goby fish and the shrimp help each other to survive.

(a) Based on the given information, state the benefit the following organism receive from its partner: [2]

(i) Goby fish: _____

_____

(ii) Shrimp: _____

_____

(b) How does the position of the Goby fish's eyes help them to survive? [1]

_____

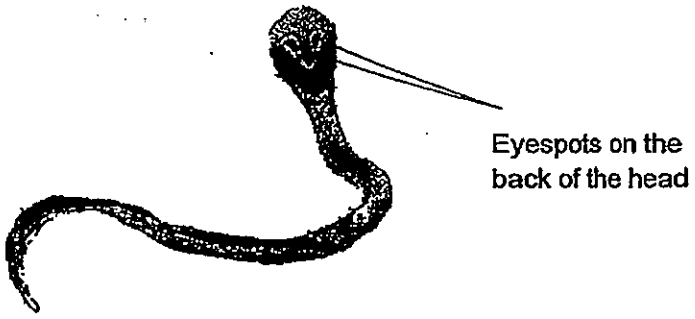
_____

3

37. The diagram below shows a foureye butterfly fish that has eyespots on each side of the body near its tail. An eyespot is an eye-like marking. Its predators are often confused about which is the front end of the fish. Thus the predator does not attack its head and it can survive.

(a) Give a reason why the foureye butterfly fish's eyespot is bigger than its real eye. [1]

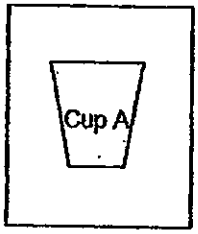
The Indian cobra shown below also has eyespots on the back of its head. It holds up the back of its head, hisses and spits when it is threatened by its predator.



(b) Give a reason why the Indian cobra holds up the back of its head when threatened. [1]

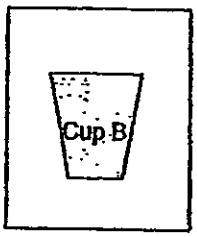
2

38. Cups A and B, made of similar materials, contain an equal volume of water at 90 °C. The cups are placed in Room 1 and Room 2 respectively as shown in the diagram below.



Room 1

Surrounding temperature: 28 °C



Room 2

Surrounding temperature: 16 °C

The temperature of the water in the cups was measured every 5 minutes and recorded in the table below.

	Temperature of water in the cup (°C)						
Cup	**0 min**	**5 min**	**10 min**	**15 min**	**20 min**	**25 min**	**30 min**
A	90	83	75	67	60	52	43
B	90	79	68	59	49	37	27

(a) Which cup of water, A or B, loses heat faster? Explain your answer. [1]

_____

_____

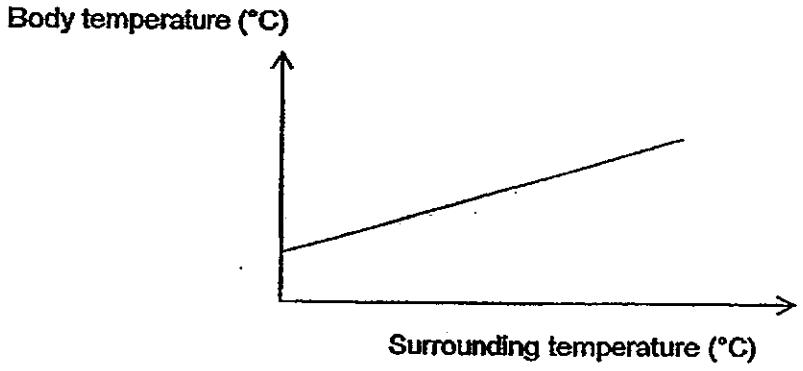
(b) How will the temperature difference between the water in the cup and the room affect the rate of heat loss of the water? [1]

_____

_____

2

38. The graph below shows how the body temperature of animal X changes with temperature of its surrounding in the cold sea.



(c) Explain how the above adaptation helps Animal X survive in the cold sea. [2]

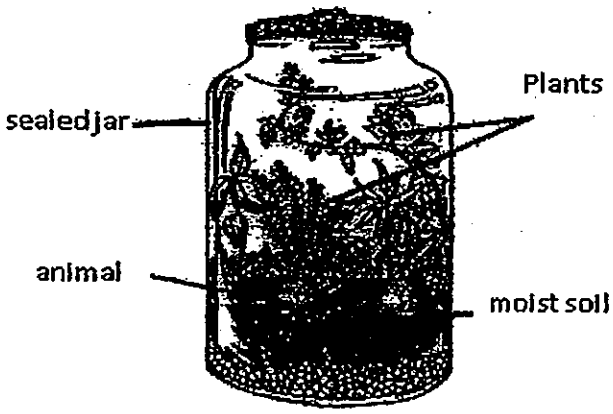
_____

_____

_____

2

39. Gary set up a self-sustaining terrarium as shown below.



Gary commented that since it is a self-sustaining terrarium, the container can be sealed. He does not need to feed the animals or water the plants at all. However, the terrarium needs energy from the sun which provides warmth for the living things in the terrarium.

Give 2 more reasons how the sun's energy helps the terrarium to be self-sustaining. [4]

Reason 1: _____

_____

_____

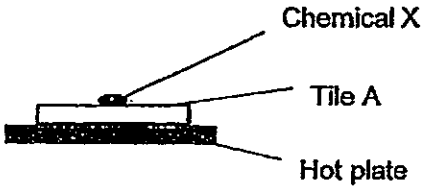
Reason 2: _____

_____

_____

4

40. Henry carried out an experiment to find out the heat conductivity of 4 types of tiles, A, B, C and D of the same size with different surfaces. He placed a drop of Chemical X on Tile A before heating the tile on a hot plate as shown below.



Chemical X is white at room temperature and its colour would change when there is a change in temperature. The diagram below shows how the colour of Chemical X changes.

increasing temperature →

white	light yellow	yellow	yellow orange	orange

After Tile A was heated for 5 minutes, Henry recorded his observations and repeated the experiment with similar sized tiles, B, C and D. His observations were recorded in the table below.

Tile	Colour of Chemical X after 5 minutes
A	yellow orange
B	light yellow
C	yellow
D	orange

(a) Which type of tile, A, B, C or D is the best conductor of heat? Explain your answer. [1]

_____

_____

(b) Which type of tile, A, B, C or D, should Henry use on a roof so that the house would not be hot during the day? Give a reason for your answer. [2]

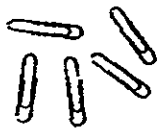
_____

_____

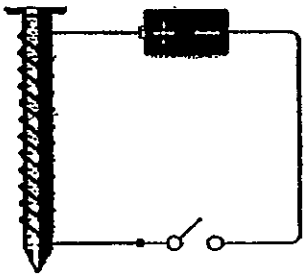
_____

/3

41. Andy was given an iron nail coiled in a wire and joined to a battery as shown below. He wanted to find out if the number of coils around the nail affects the strength of the electromagnet.



paper clips



(a) Help Andy by writing down the steps he should take during the experiment in the space below. [2]

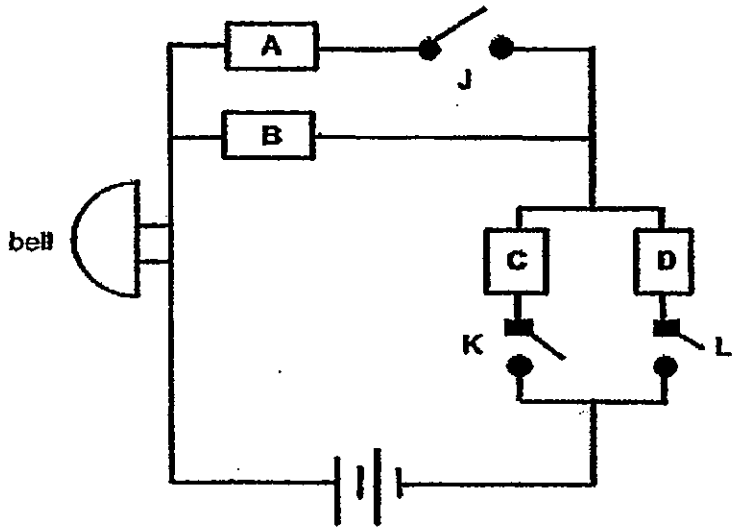
Steps	Description of step
1.	Turn on the switch.

2

41 (b) Draw the expected results of the experiment described above in the space below. Use suitable axes. [2]

2

42. Jun Feng connected a bell to the electric circuit shown in the diagram below to find out if object(s), A, B, C or D allow(s) electricity to pass through it easily.



Jun Feng recorded his observations as shown in the results table below.

Test	Switch J	Switch K	Switch L	Did the bell ring?
1	Closed	Open	Open	No
2	Open	Closed	Open	Yes
3	Open	Open	Closed	Yes
4	Closed	Closed	Open	Yes

(a) What is the purpose of the bell in the circuit? [1]

_____

(b) Jun Feng's teacher commented that Test 1 was not necessary as it would not help him find out if Object A will allow electricity to pass through it easily. Explain why the teacher said so. [2]

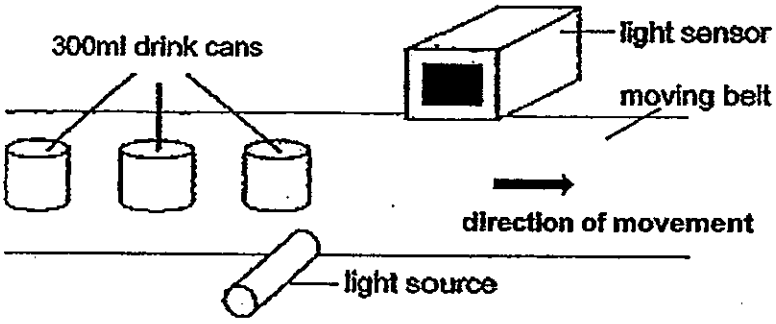
_____

_____

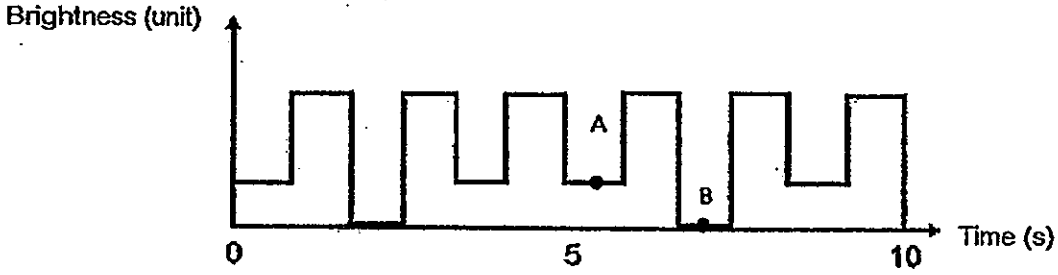
_____

3

43. Alex set up a light sensor to count the number of 300 ml drink cans on a moving belt.



The belt moves at the same speed. As the cans pass between the light source and the sensor, they block light from reaching the sensor. The data recorded is shown in the graph below.



(a) Based on the graph, how many cans could be counted in 10 seconds? [1]

(b) From the graph, points A and B are results obtained from 2 different cans. State whether these cans are translucent or opaque. Explain your choice. [2]

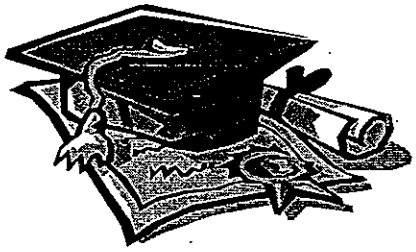
Point A: _____

_____

Point B: _____

_____

3



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : AITONG
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

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

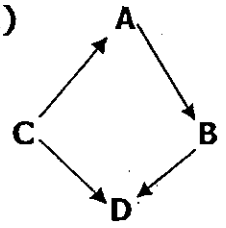
31)a)Liquid X entered the bag.
b)Muscle cell. It does not have a cell wall which maintains the shape of the cell.

32)a)Flower B. The stigma is removed, pollen could not land on it for pollination to take place. Thus, fertilization cannot take place as well.
b)By doing so, only one variable is changed. He can compare and conclude that whether the flowers bear fruit or not is due to the part of the flower that is removed and not any other variables.

33)a)Both the cockroaches and germinating seeds respire and during the process, they take in oxygen and give out carbon dioxide. Since carbon dioxide is being absorbed by the chemical in the test-tube, less air is present to take up the space.
b)No, it would not move. Glass beads are non-living things and they do not respire.

34)a)i)50ml ii)200ml
b)The water-carrying tubes of the plant in Beaker B has an increased exposed surface area to water than the one in Beaker A. Thus, the plant in Beaker B absorbed water at faster rate.

35)a)



b)The population of B would decrease. As organism D eats organism B and C, a decrease in population of C would result in a decrease in population of B since D would eat more of B.

36)a)i)Has a clean environment. ii)Alerted of danger.
b)It helps them to see their predators and preys who are above them even when they are buried in the mud.

37)a)The bigger eyespots can attract its predators' attention more than the real eyes and make them think that those are their real eyes.
b)The eyespots are more obvious so the predators might think those are the real eyes. The predator will think that the eyespots are the real eyes and they will be frightened by them.

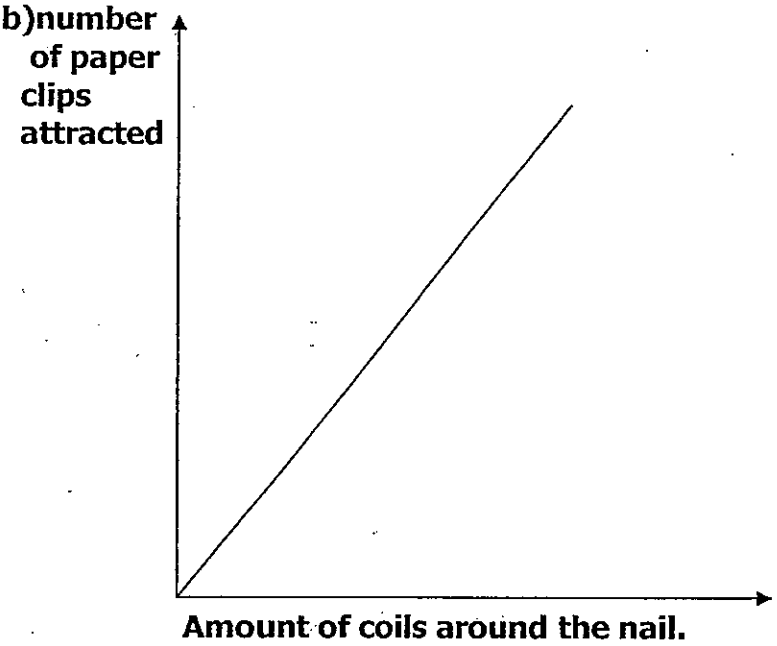
38)a)Cup B. After 30 minutes, the temperature of the water in cup B is lower than the temperature of water in Cup A.
b)When the temperature difference between the water in the cup and the room is larger, the rate of heat loss of the water will be faster.
c)This reduces the temperature difference between the animal and the surrounding so as to reduce heat loss from the animal's body to the surrounding.

39)1)It lets the plants photosynthesis to provide oxygen for the animals living in the jar.
2)The plants produce oxygen for the animals to respire.

40)a)Tile D. Its increase in temperature is the most.
b)Tile B. Its increase in temperature is the least. Thus it will conduct heat the slowest from the sun to the house.

41)a)2)Place it near some paper clips and record the number pf paper clips it attracts.
3)Use the wire to coil more coil around the nait and turn on the switch.
4)Repeat step 2.
5)Repeat the experiment a few more times to calculate the average reading. Compare and conclude the results.

41)b)



42)a)To find out if electricity is passing through the wires.

b)Opening switches K and L would cause the circuit to be open. Therefore, the bell would not ring even if A allows electricity to pass through it easily.

43)a)6 cans.

b)A: Translucent. Some light was detected.

B: Opaque. No light was detected.

METHODIST GIRLS' SCHOOL

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CONTINUAL ASSESSMENT 2013
PRIMARY 6
SCIENCE

BOOKLET A1

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

INSTRUCTIONS TO CANDIDATES

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

Name:_____ ( )

Class: Primary 6._____

Date: 7 March 2013

This booklet consists of 9 printed pages including this page.

For each question from 1 to 15, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided. (30 marks)

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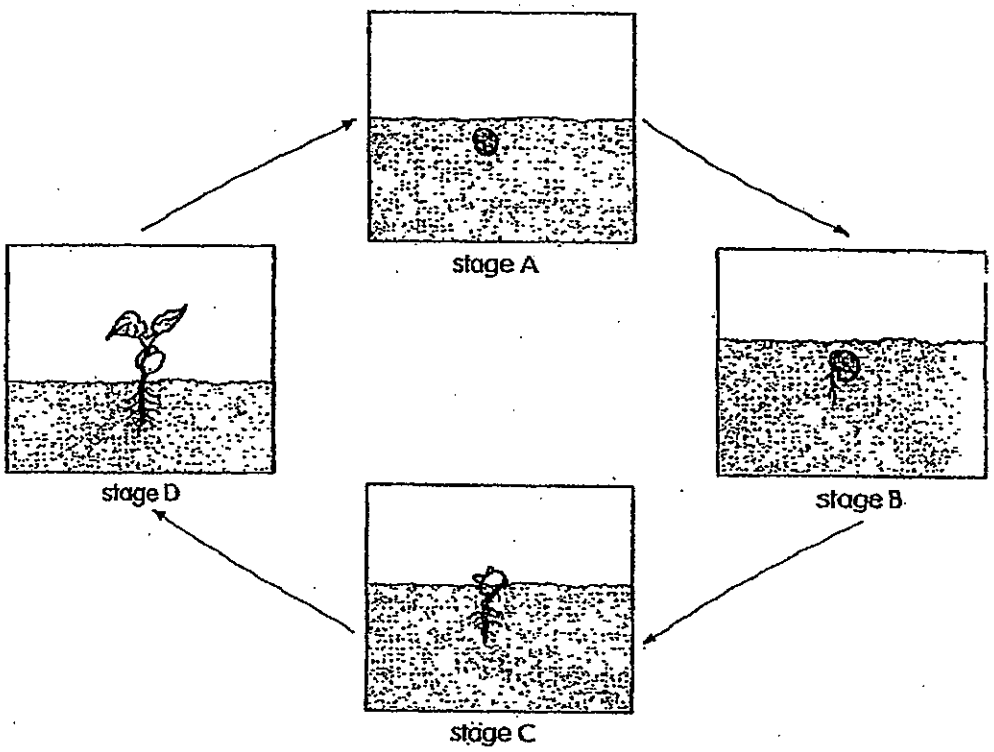
1 The diagram below shows the life cycle of a plant.

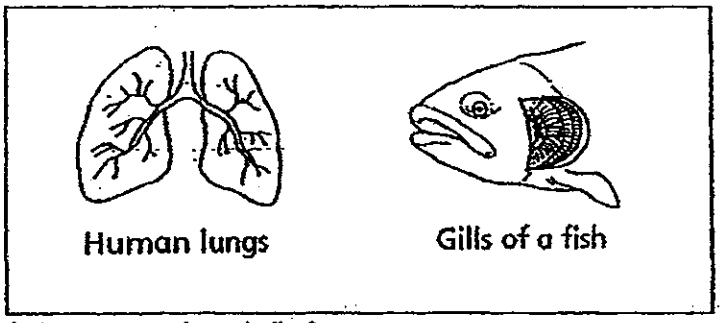


Which of the following statements are true?

A: Sunlight is needed at stage B.
B: Photosynthesis takes place at stage D.
C: Stage D is not affected by what happens at stage C.
D: The seed at stage A needs air, water and warmth to reach stage B.

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

2 Study the diagrams carefully. It shows the lungs of a human and the gills of a fish.

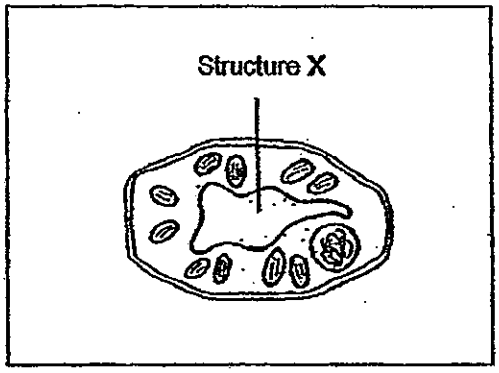


In what ways are they similar?

A: They have large surfaces for gases exchange.
B: They have moist and thin respiratory surfaces.
C: They have a rich supply of blood vessels.
D: They take in oxygen from the air.

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

3 The diagram below shows a plant cell.



Besides being found in plant cells, structure X is also found in animal cells.

Which of the following describes the function of structure X in animal cells?

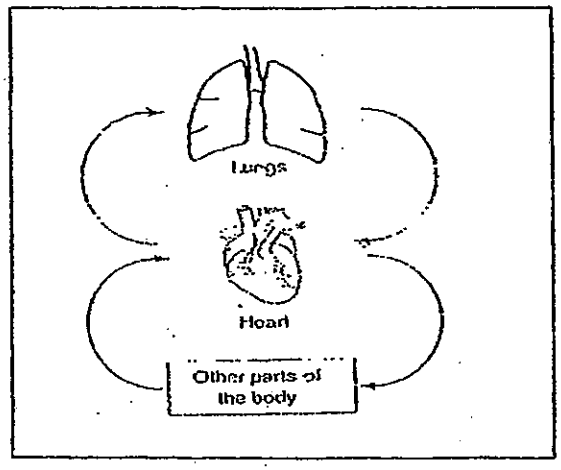
(1) Stores cell sap
(2) Keeps the cell firm
(3) Stores air and food
(4) Forms largest part of the cell

4 Which of the following statements is/are correct about a cell wall?

A It protects the plant cell from bursting when the cell loses water.
B It contains cellulose to maintain the regular shape of the plant cell.
C It is restrictive as it allows only some substances to pass through it.
D It functions like the skeleton of the animal cell, giving it movement.

(1) B only
(2) A and B only
(3) A, C and D only
(4) None of the above

5 The diagram below shows the circulatory system in humans.



Which of the following shows the correct information about P, Q, R and S?

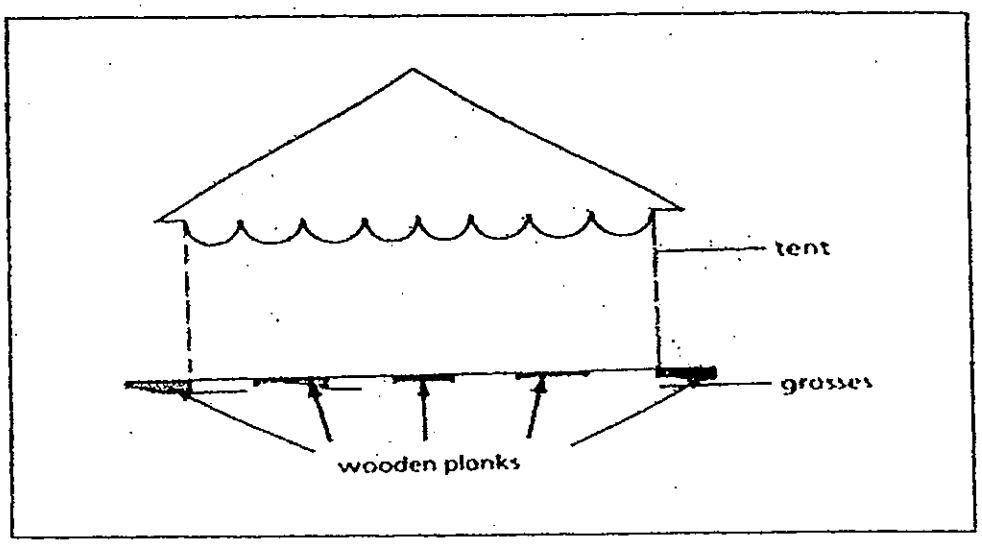
	P	Q	R	S
(1)	Carries deoxygenated blood	Carries oxygenated blood	Carries deoxygenated blood	Carries oxygenated blood
(2)	Carries oxygenated blood	Carries oxygenated blood	Carries deoxygenated blood	Carries deoxygenated blood
(3)	Carries deoxygenated blood	Carries deoxygenated blood	Carries oxygenated blood	Carries oxygenated blood
(4)	Carries oxygenated blood	Carries deoxygenated blood	Carries oxygenated blood	Carries deoxygenated blood

6 Generally, athletes have a lower heart rate when they are at rest.

Which of the following statements best explains this?

(1) Exercise makes their blood thinner and easier to circulate.
(2) Exercise strengthens the athletes' circulatory system and makes it more efficient to supply blood to the other parts of the body.
(3) Exercise produces more muscles which will help the vein to transport the blood back to the heart.
(4) Exercise produces more red blood cells to transport more oxygen.

7 A tent was set up in a field as shown below. Wooden planks were laid on top of the grass.



What could the observation be when the wooden planks are lifted after one month and what was the reason for such an observation?

	Observation	Reason
(1)	Grass turned brown.	Insufficient water
(2)	Grass turned brown.	Insufficient sunlight.
(3)	Grass turned yellow.	Insufficient space to grow.
(4)	Grass turned yellow.	Insufficient carbon dioxide

8 Which of the following statements about saliva are true?

A Saliva is a liquid.
B Saliva helps to digest food.
C Saliva makes food easier to swallow.
D Saliva helps food to be absorbed in the stomach.

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

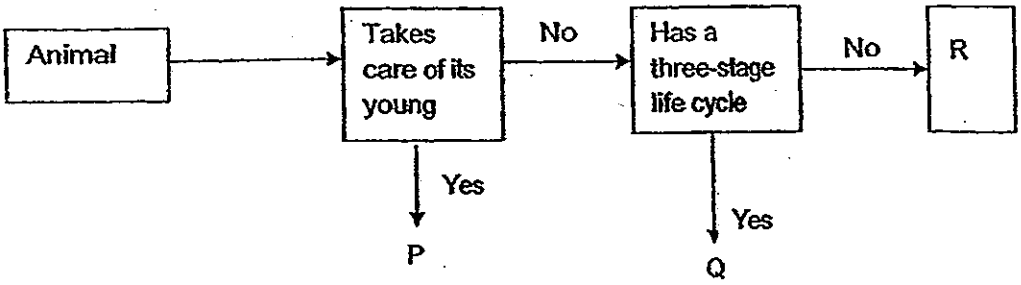
9 Jenny is going to use two set-ups to investigate the effect of the amount of carbon dioxide on the rate of photosynthesis.

Which of the following variables must she keep constant so that a fair comparison can be made?

A The amount of carbon dioxide received by the plants
B The amount of light received by the plants
C The amount of water received by the plants
D The type of plants used in the two set-ups

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

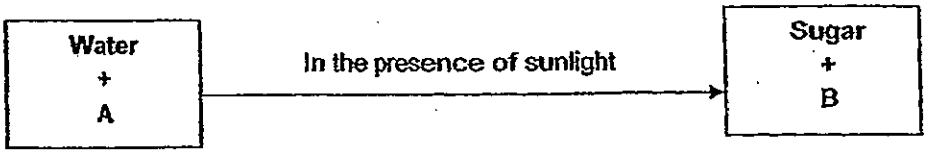
10 Study the flowchart carefully.



What animals can P, Q and R be?

	P	Q	R
(1)	Duck	Beetle	Butterfly
(2)	Chimpanzee	Grasshopper	Mosquito
(3)	Crocodile	Deer	Chicken
(4)	Deer	Cockroach	Human

11 The diagram below represents a process that occurs in plants.



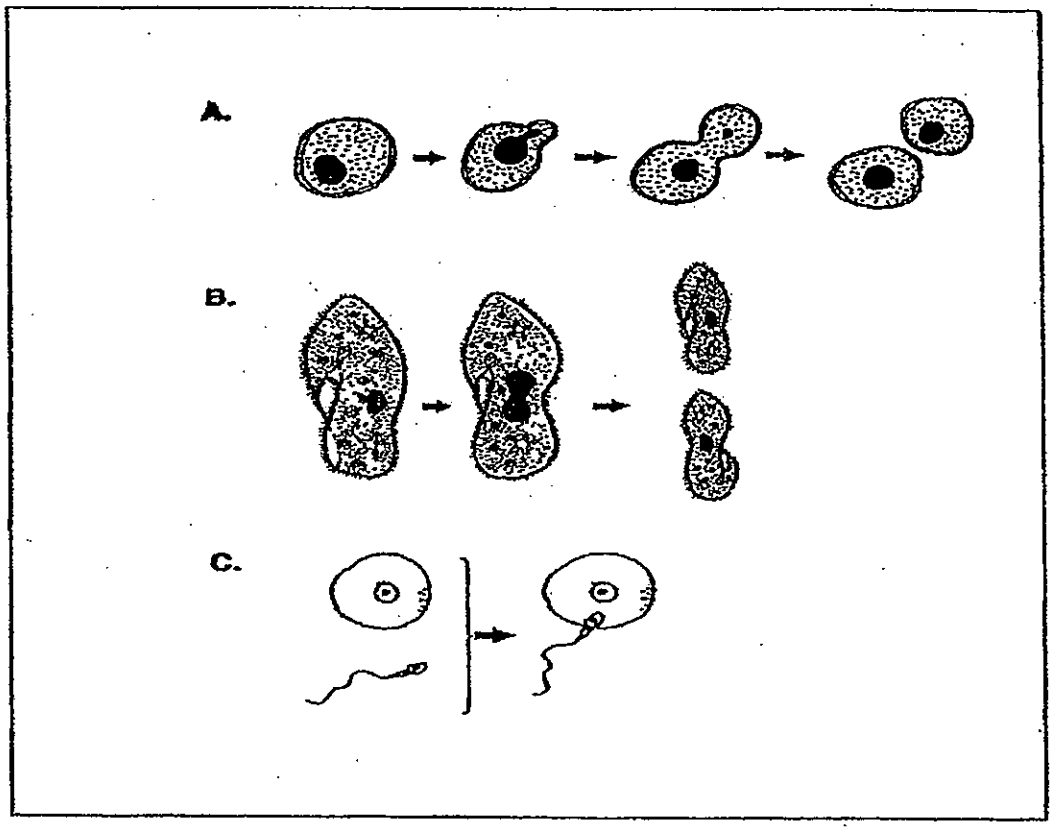
What do A and B represent?

	A	B
(1)	Chlorophyll	Nutrients
(2)	Nutrients	Chlorophyll
(3)	Oxygen	Carbon dioxide
(4)	Carbon dioxide	Oxygen

12 Jane cut open a fruit and observed that it contained many seeds. Based on this observation, she made the following inferences about the flower that produced this fruit. Which one of the inferences is best supported by her observation?

(1) There was self pollination.
(2) There were many ovules.
(3) The flowers grew in bunches.
(4) The flower had many pollen grains.

13 Study the following diagrams.



Which of the above diagrams show(s) sexual reproduction?

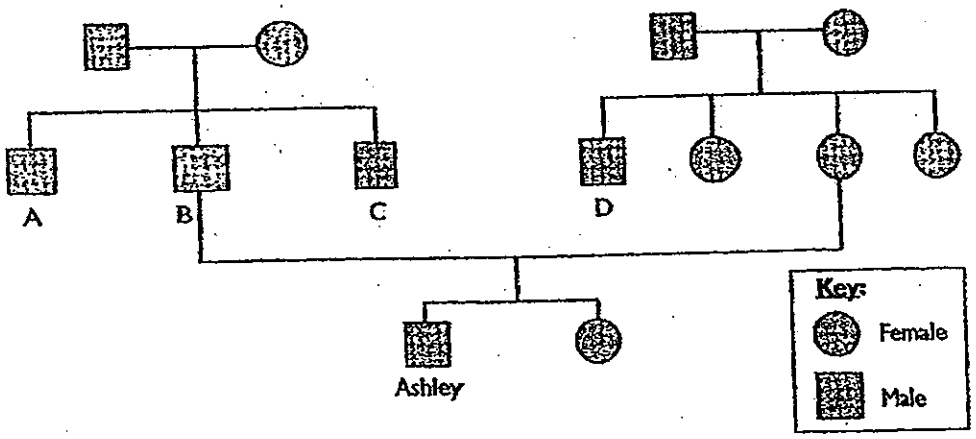
(1) C only
(2) A and C only
(3) B and C only
(4) A, B and C

14 Which of the following are characteristics of ferns?

A They live on land in moist and shady places.
B They contain chlorophyll.
C They reproduce by spores.
D They have no roots.

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

15 Study the diagram below.



Which of the following statements is true?

(1) Ashley is A's niece.
(2) C and D are married.
(3) Ashley has 3 aunts and 4 uncles.
(4) There are two children in B's family.

METHODIST GIRLS' SCHOOL

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CONTINUAL ASSESSMENT 2013
PRIMARY 6
SCIENCE

BOOKLET A2

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

INSTRUCTIONS TO CANDIDATES

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

Name:_____( )

Class: Primary 6._____

Date: 7 March 2013

This booklet consists of 14 printed pages including this page.

For each question from 16 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 (1, 2, 3 or 4) on the Optical Answer Sheet provided. (30 marks)

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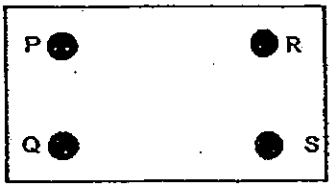
16. Betty set up a circuit board with 4 metal buttons P, Q, R and S as shown. Some metal buttons were connected to one another by wires under the board. She then used a circuit tester to find out which metal buttons are connected by the wires.

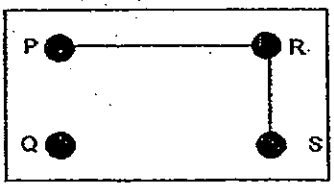


The results of the test are shown in the following table.

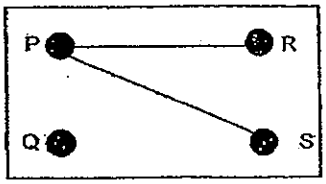
Metal buttons tested	Did the bulb light up?
P and Q	No
P and R	Yes
P and S	Yes
Q and R	No
Q and S	No
R and S	Yes

Which of the following is/are possible connections of the wires between the metal buttons?

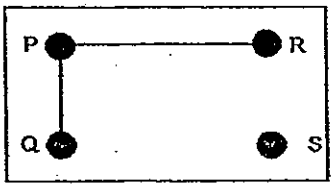
(A)



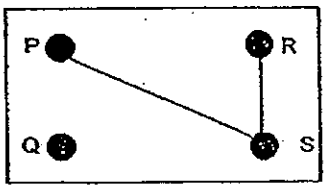
(B)



(C)



(D)



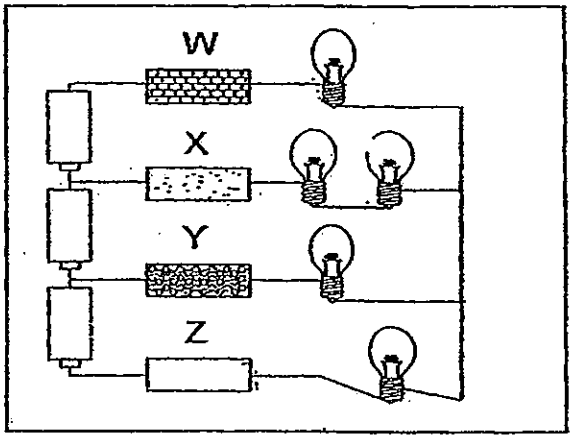
(1) A and B only

(2) C and D only

(3) A, B and C only

(4) A, B and D only

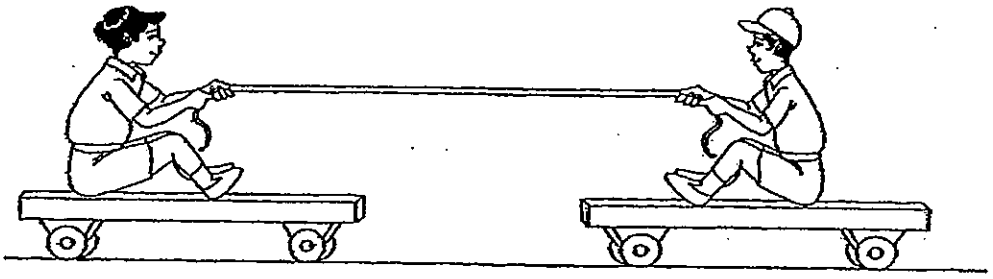
17. Jenny set up the electrical circuit as shown.



Which one of the following represents the materials W, X, Y and Z correctly when only three bulbs light up?

	Materials			
	W	X	Y	Z
(1)	brass	iron	nickel	glass
(2)	clay	brass	lead	wood
(3)	ceramic	wood	iron	brass
(4)	lead	nickel	brass	iron

18. Two boys, Wei Feng and Darren of similar mass sat on a wooden plank mounted on wheels as shown in the following diagram. They each held on to the ends of a rope.



Wei Feng Darren

Which one of the following would be observed if Wei Feng pulled the rope?

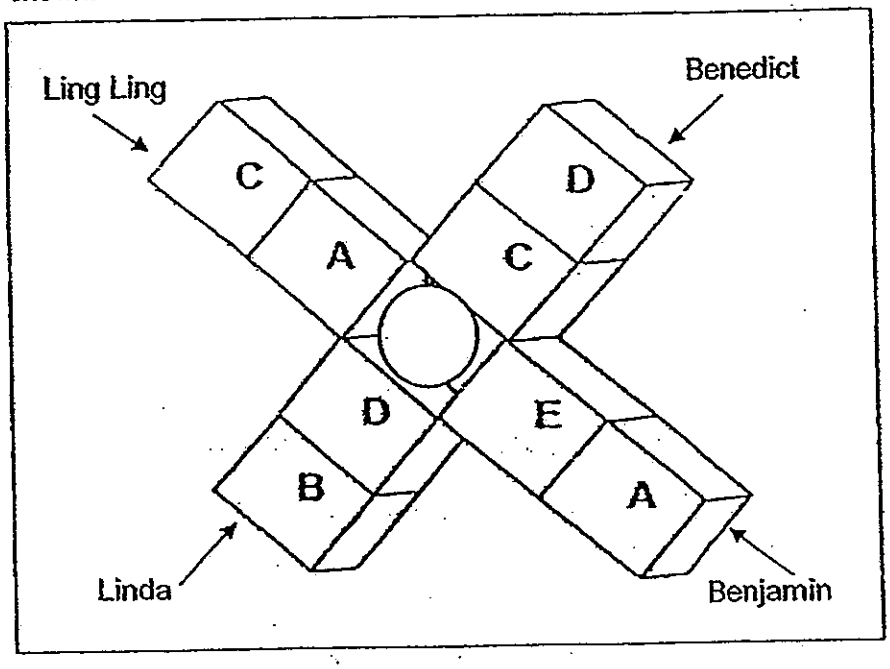
(1) Both Wei Feng and Darren would move towards each other.

(2) Wei Feng would move towards Darren while Darren remained on the spot.

(3) Darren would move towards Wei Feng while Wei Feng remained on the spot.

(4) Wei Feng would move backwards away from Darren while Darren moves towards Wei Feng.

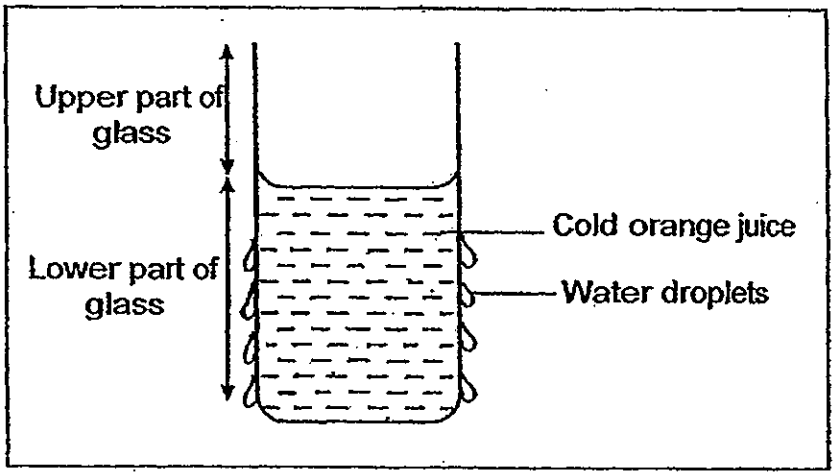
19. The following structure is made up of 8 blocks of the same size. They are, however, made of different materials, A,B,C, D and E. A tennis ball was placed in the center. 4 children attempted to look through the various blocks from four different positions as shown.



If **only** Linda and Benedict **could not** see the tennis ball at all, which one of the following correctly show the material each block is made of?

	Material A	Material B	Material C	Material D	Material E
(1)	Clear plastic	Frosted glass	Clear plastic	Clear coloured plastic	Frosted glass
(2)	Clear coloured plastic	Clear plastic	Clear glass	Ceramic	Clear glass
(3)	Clear coloured plastic	Ceramic	Wood	Metal	Clear plastic
(4)	Frosted glass	Ceramic	Clear coloured plastic	Clear plastic	Wood

20. Xiao Lin filled a glass with some cold orange juice as shown in the diagram. She observed that water droplets only appeared on the lower part of the glass.



What one of the following could be a possible reason for her observation?

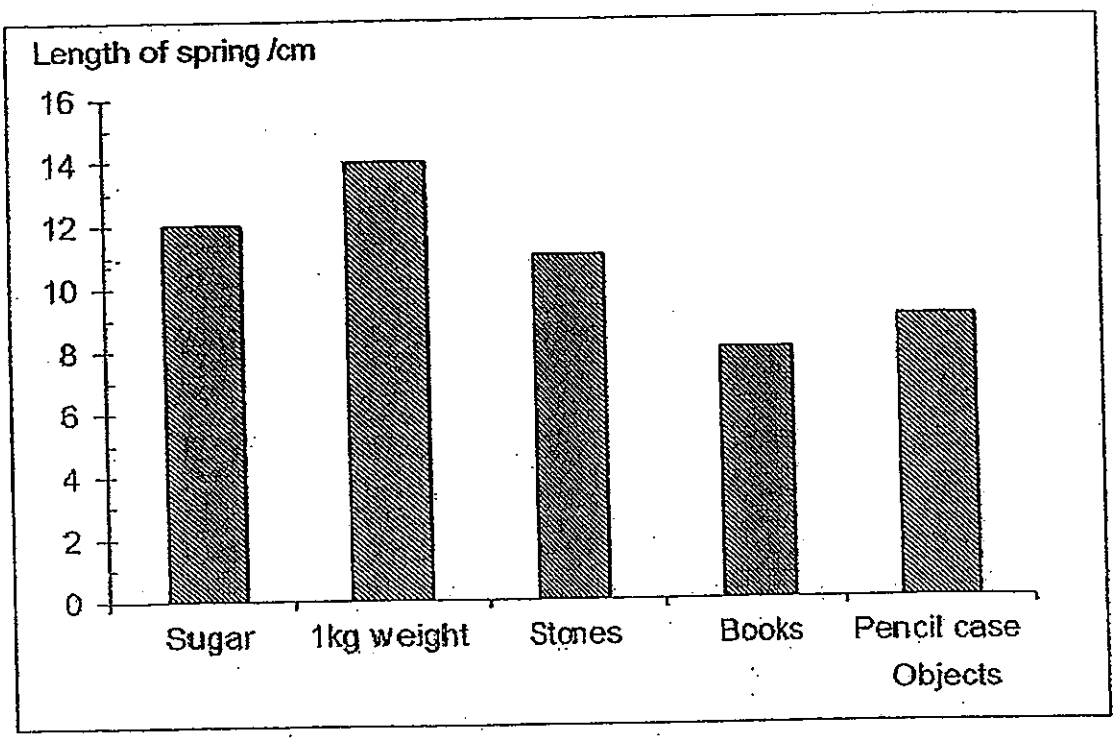
(1) There is no heat loss for both the upper and lower part of the glass.

(2) There is less heat loss at the upper part of the glass than the lower part of the glass.

(3) There is less heat loss at the lower part of the glass than the upper part of the glass.

(4) The amount of heat loss is the same for both the upper and lower part of the glass.

21. Bernice conducted an experiment by weighing different objects using a spring balance. She measured the length of the spring for each object weighed. The results were then presented in the following bar graph.



Given that the original length of the spring is 6cm, which one of the following object weighs about 250 g?

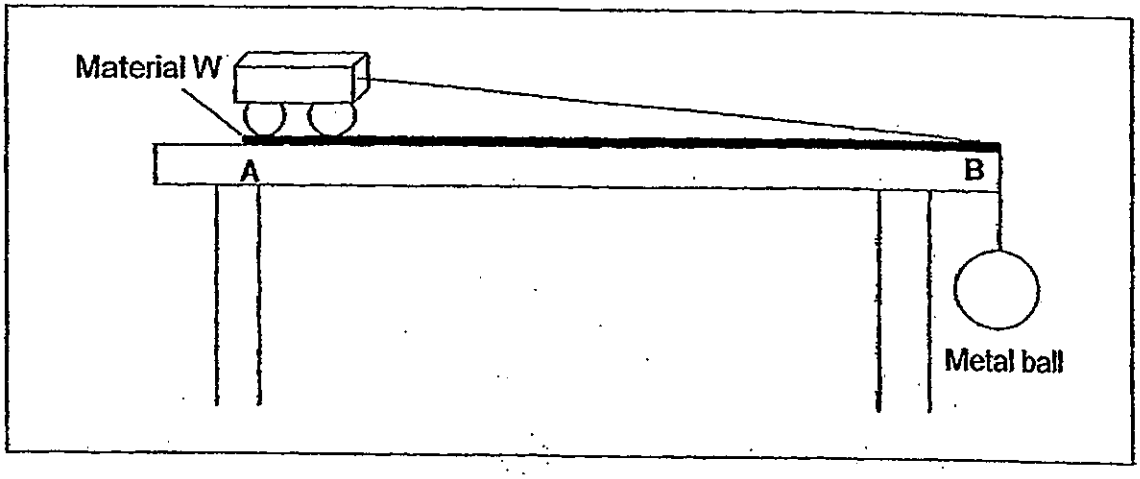
(1) Sugar

(2) Books

(3) Stones

(4) Pencil case

22. Jenny attached a metal ball to a wooden cart as shown below. The time the wooden cart took to reach B from A was recorded. The whole experiment was repeated using different materials, W, X, Y and Z on which the wooden cart moved across.



The results were recorded as shown below.

Material	Time taken to reach Point B (secs)
W	20
X	15
Y	17
Z	21

Which one of the following materials will be the most suitable to make the sliding surface of a children slide in a playground?

(1) Material W

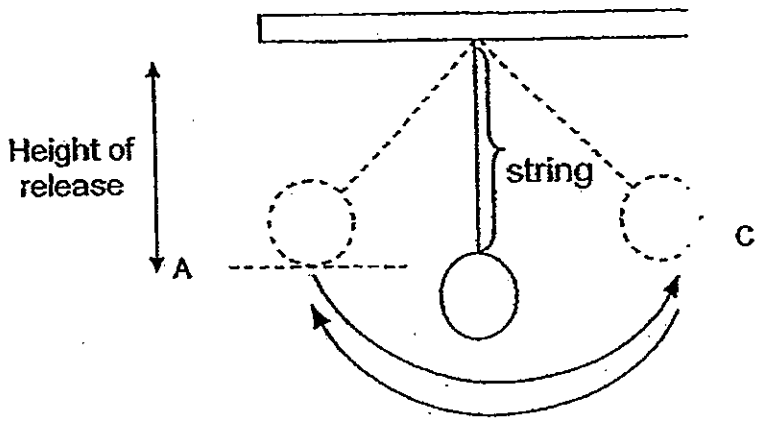
(2) Material X

(3) Material Y

(4) Material Z

23. Read the following and answer question 23 and 24.

Helen set up the experiment below to find out the amount of time taken for the pendulum to make a complete swing (i.e.: From position A to C and back to A). She arranged set ups P, Q, R, S and T as shown below.



Set up	Height of release (cm)	Length of string (cm)	Mass of pendulum bob (g)
P	2	6	25
Q	4	8	35
R	4	6	35
S	2	8	35
T	2	6	20

She wanted to find out if the mass of the pendulum bob affects the time taken for it to make a complete swing. Which two set–ups should she use?

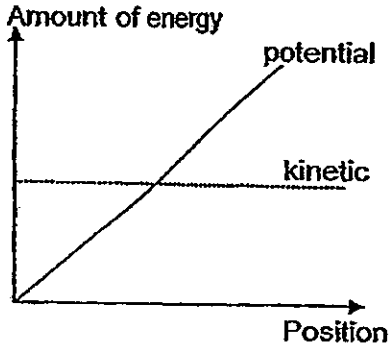
(1) Set-ups Q and R

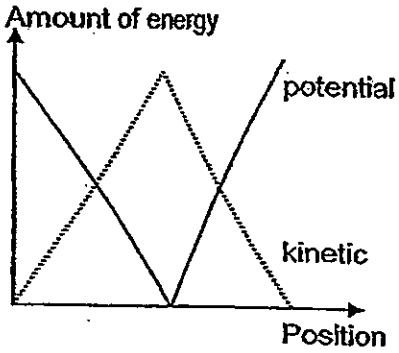
(2) Set-ups P and T

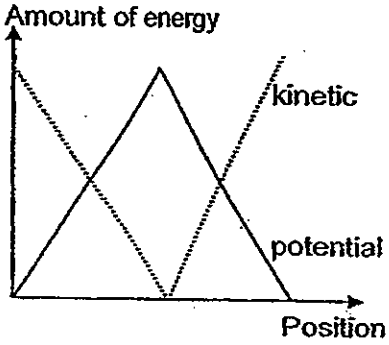
(3) Set-ups Q and S

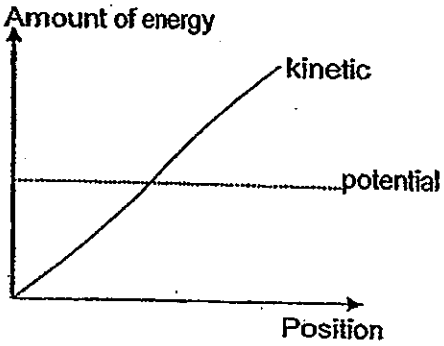
(4) Set- ups R and T

24. Which of the following graphs shows the change of energy of one complete swing from position A to C correctly?

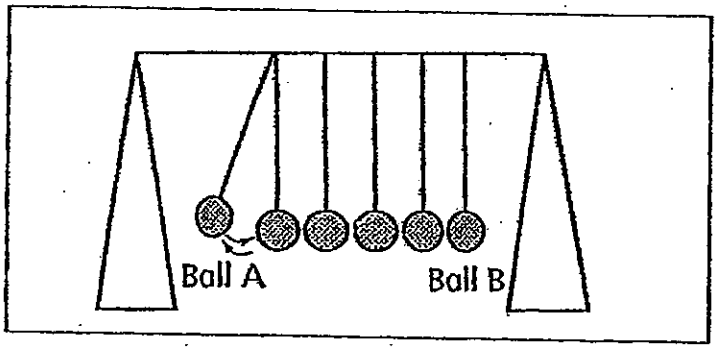
(1)


(2)


(3)


(4)


25. The figure below shows a Newton's cradle.



Which of the following statement is correct when Ball A is raised and released?

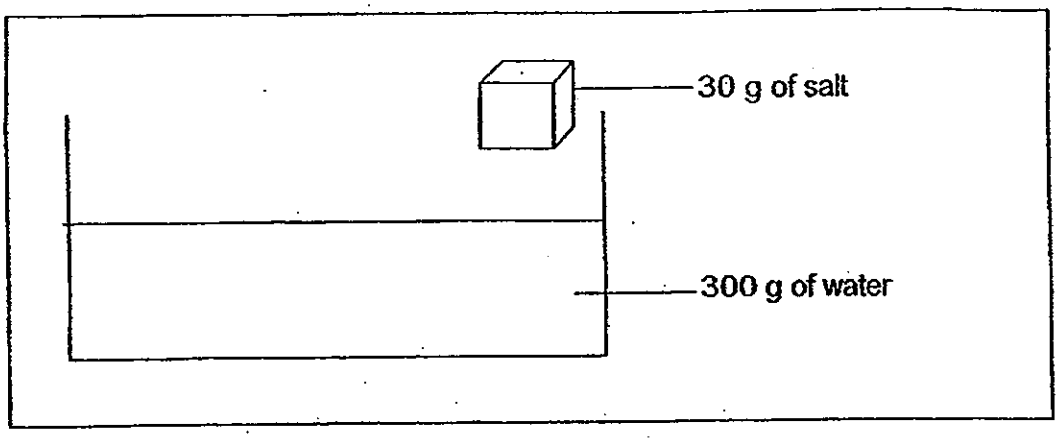
(1) The balls will eventually stop moving because of friction only.

(2) Kinetic energy will be transferred to Ball B through the other balls, and cause Ball B to be raised.

(3) The experiment shows that energy cannot be destroyed or created but converted from one form to another.

(4) All the kinetic energy will be converted to heat and sound energy.

26. Casey set up the following experiment as shown. He dissolved 30 grams of salt in 300g of water in a trough. He left the trough in the room for 2 days.



After 2 days, he found out that only 310g of salt solution was left in the bowl. Which one of the following correctly shows the composition of the solution?

(1) 310g of water

(2) 300g of water and 10g of salt

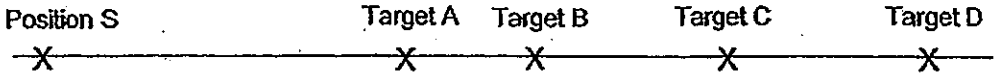
(3) 290g of water and 20g of sat

(4) 280g of water and 30g of salt

27. In the popular mobile game "Angry Birds", Bird X, Y and Z can be launched from a catapult one at a time to hit the desired target labelled A, B, C and D of increasing distances from the catapult.

The weight of Bird X, Y and Z are shown in the table below.

Bird X	Bird Y	Bird Z
Weight= 3.5kg	Weight = 5kg	Weight= 6kg



After playing a few rounds by launching Bird Y at position S, Wei Lin tabulated her observations as shown in the table.

Length of extension of elastic band/cm	Target hit			
	Target A	Target B	Target C	Target D
2	X	X	X	X
4	√	X	X	X
6	X	√	X	X
8	X	X	√	X
10	X	X	√	X
12	X	X	√	X

Wei Lin realised that she is unable to hit target D and her friends gave her some suggestions. Assuming the bird is launched from the same angle, which of the following suggestions could help Wei Lin hit target D?

Jie Xin: Replace Bird Y with Bird X

Jeffrey: Replace Bird Y with Bird Z

Samantha: Increase the time taken to stretch the elastic band

Ravidan: Increase the length of extension of the elastic band

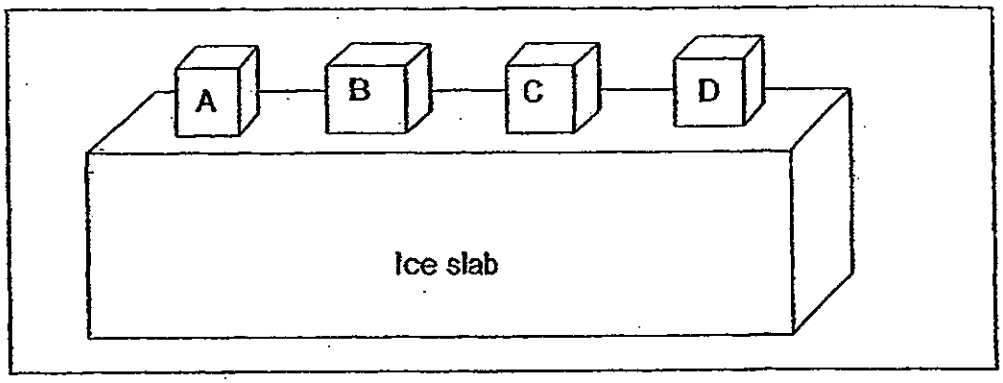
(1) Jie Xin

(2) Jeffrey and Samantha

(3) Jeffrey and Ravidan

(4) Jie Xin and Samantha

28. Jacy set up the following experiment. She placed four cubes of different materials that have similar sizes and masses on a slab of ice at different positions as shown in the following diagram. The set up was placed at room temperature for 3 hours.



The indentations that the different cubes made on the ice were measured and recorded in the following table.

Cube	Depth of indentation/cm
A	5.2
B	4.9
C	5.4
D	4.5

Which of the cubes above is the best conductor of heat?

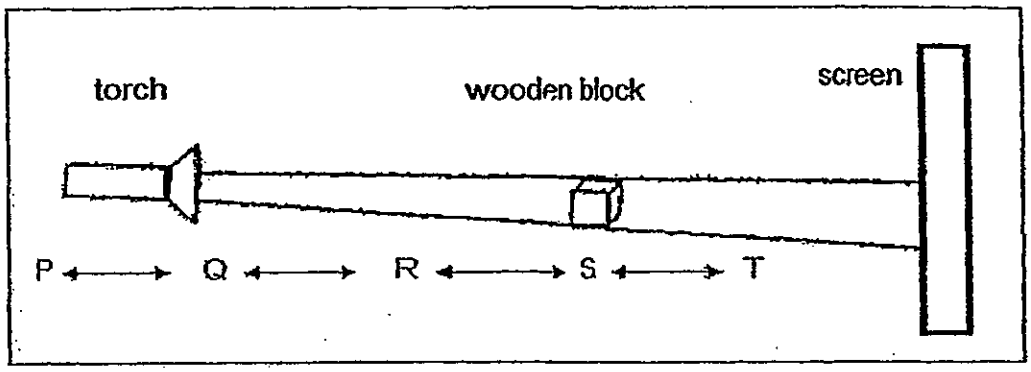
(1) Cube A

(2) Cube B

(3) Cube C

(4) Cube D

29. The diagram below shows a torch at position Q and it was shone on a wooden block at position S. A shadow was then cast on the screen. Position P, Q, R, S and T are equal in distance from each other.



5 students suggested different positions to place the torch and wooden block to obtain a larger shadow. Which of the following students' suggestions are correct?

Student	Position of torch	Position of wooden block
Ariel	Q	T
Benny	P	Q
Cathy	R	S
Dorothy	P	T
Eugene	Q	R

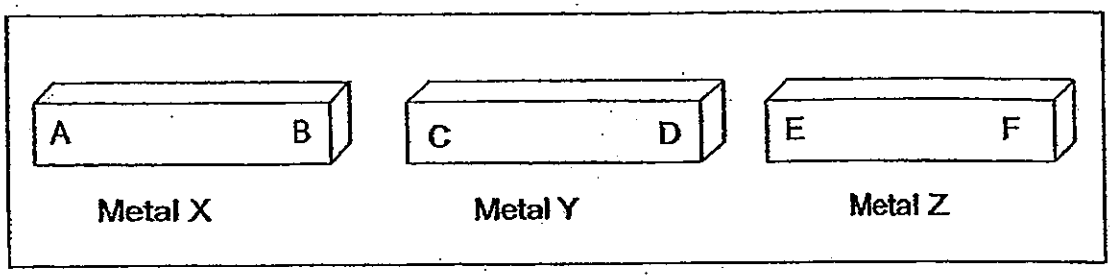
(1) Ariel and Benny only

(2) Benny and Cathy only

(3) Cathy, Dorothy and Eugene only

(4) Benny, Cathy and Eugene only

30. Andrea has 3 pieces of metals X, Y and Z. She wanted to find out which metal (s) is/are magnets. She brought the ends of the metal close to one another to test if they attract or repel each other. The table below shows the results.



		Metal X		Metal Y	
	Points	A	B	C	D
Metal Y	C	Attract	Repel	-	-
	D	Repel	Attract	-	-
Metal Z	E	Attract	Attract	Attract	Attract
	F	Attract	Attract	Attract	Attract

Based on the results above, which of the following statement is correct?

1) Metal X and Y are magnets.
2) Metal Y and Z are magnets.
3) Metal X and Z are magnets.
4) All of the above statements.

End of Booklet A

METHODIST GIRLS' SCHOOL

Founded in 1887

CONTINUAL ASSESSMENT 2013
PRIMARY 6
SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date: 7 March 2013

Booklet A	/ 60
Booklet B1	/ 20
Booklet B2	/ 20
Total	/ 100

This booklet consists of 9 printed pages including this page.

Booklet B1: 20 marks

Read the questions carefully and write your answers in the space provided.

31 The table below records the breathing rates (average number of times of breathing per minute) of Peter and Simon when they are resting, walking and swimming.

	Breathing rate(average number of times of breathing per minute) when		
	Resting	Walking	Swimming
Peter (45 years old)	15	25	38
Simon (10 years old)	24	35	45

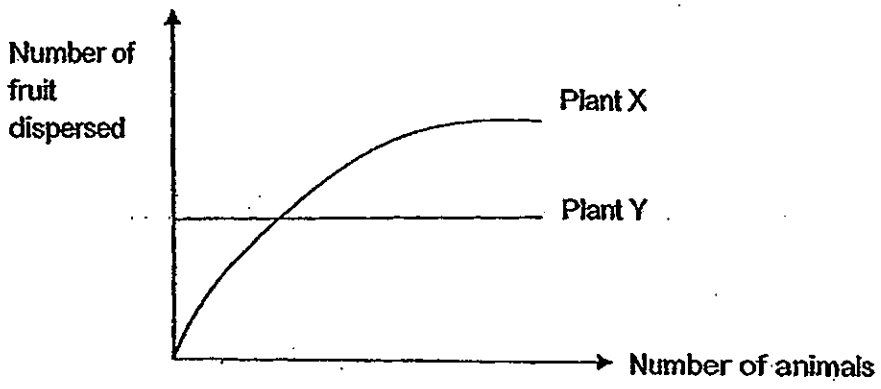
(a) Compare the breathing rates of Peter and Simon when they are resting. (1m)

_____

(b) Based on the information given, what are the two factors that can affect a person's breathing rate. (2m)

_____

32 The graph below shows the number of fruits dispersed by animals for Plant X and Y.



(a) Based on the graph above, how does the number of animals affect the fruit dispersal of the two plants? (2 m)

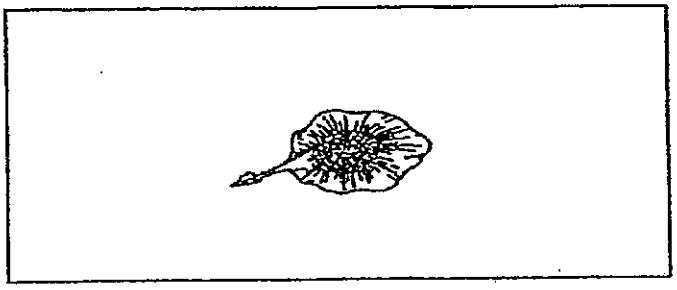
Plant X: _____

Plant Y: _____

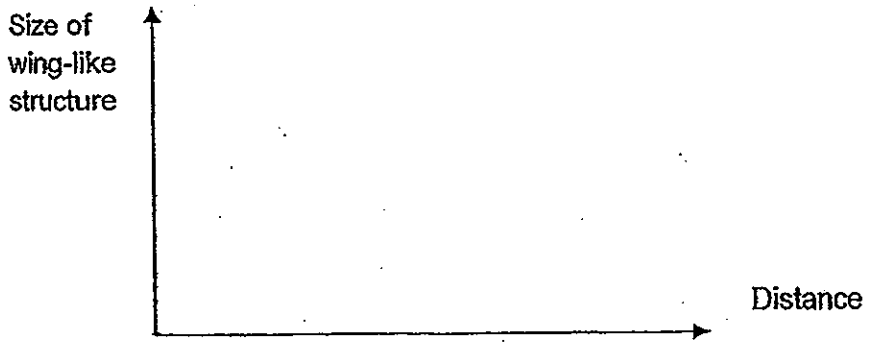
(b) What can you conclude about the characteristics of the fruit of Plant Y? (1m)

_____

The diagram below shows an angsana fruit.



(c) Draw a line graph to show the relationship between its wing-like structure and the distance it can travel. (1m)

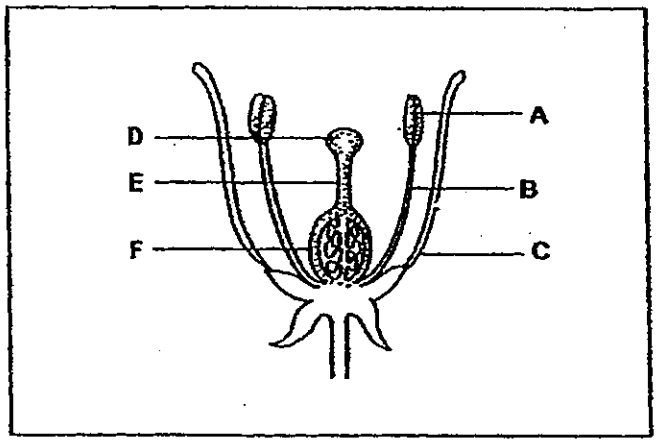


(d) State how the size of the wing-like structure affects the time taken for the fruit to reach the ground. Explain your answer. (1m)

_____

_____

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



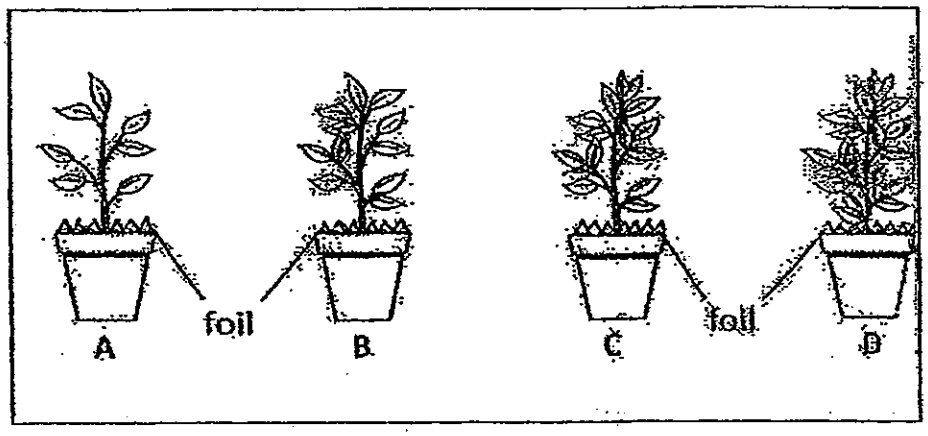
(a) Which part of the flower can be compared to the "testes" of a human reproductive system? (1m)

_____

(b) What does the part mentioned in (a) produce? (1m)

_____

34 Sally carried out an experiment to find out if the number of leaves affects the amount of water taken in by plants.



She chose four similar plants with different number of leaves in her set-ups.
She placed them in 4 similar containers filled with 100 *ml* of water each.
After 3 days, she observed that the water level has decreased.
She recorded the results for her set-ups in the following table below.

Set-up	A	B	C	D
Number of leaves	7	11	15	19
Initial volume of water/ml	100	100	100	100
Volume of water left/ml	90	86	82	78

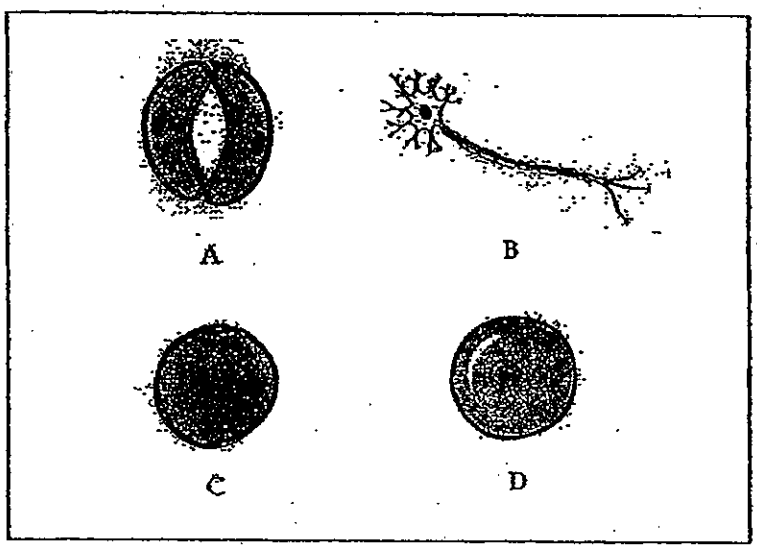
(a) Suggest why Sally decided to use the foil. (1m)

_____

(b) What does the experiment show? (1m)

_____

35 The diagrams below show four different cells.



(a) Which of the cells shown above are animal cells? (1m)

_____

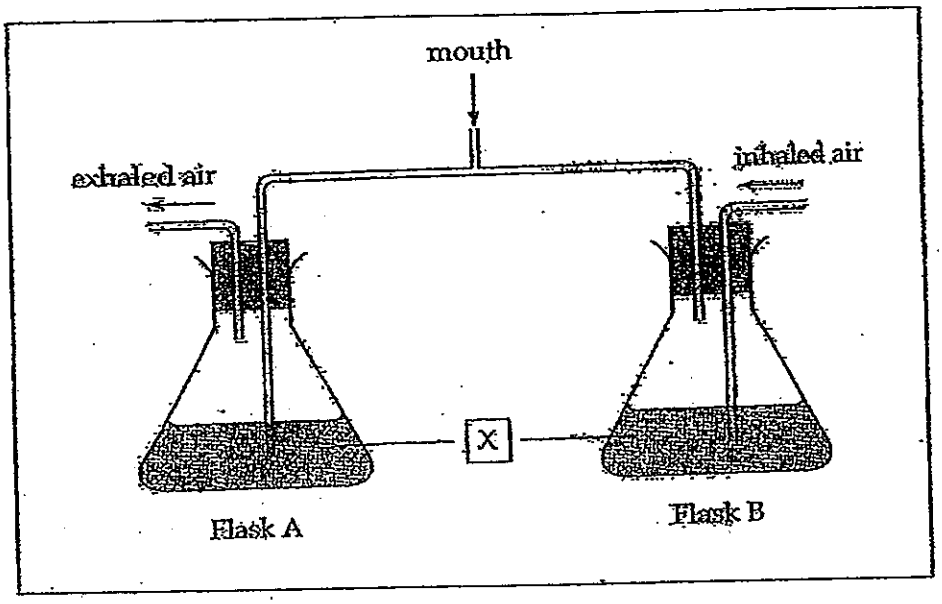
(b) Which of the cells shown above are plant cells? (1m)

_____

(c) Explain how you distinguish the plant cells from the animal cells shown above. (1m)

_____

36 Jesper carried out an experiment to investigate the presence of carbon dioxide in inhaled and exhaled air. He set up the experiment as shown below.



(a) What is the liquid X that Jesper has filled the flask with? (1m)

_____

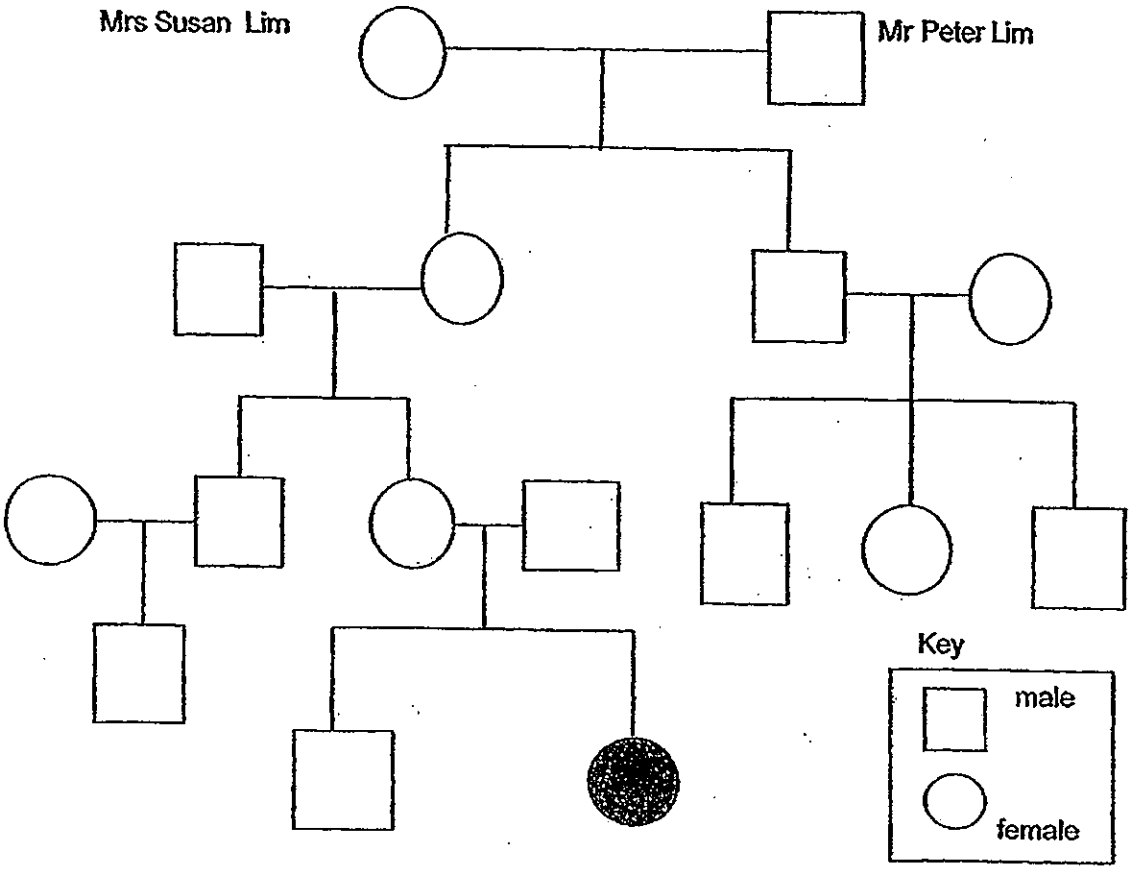
(b) Explain why it has been used in the experiment? (1m)

_____

(c) What change is he likely to observe and explain why it happened? (1m)

_____

37 The diagram below shows the family tree of Cheryl.



(a) Cheryl is Mr Peter Lim's great granddaughter. Identify and shade the ◯ representing Cheryl in the family tree. (1m)

(b) Cheryl has been told by many people that she has her father's eyes and her mother's nose.

Suggest an explanation as to why she has such features. (1m)

_____

_____

METHODIST GIRLS' SCHOOL

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CONTINUAL ASSESSMENT 2013
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date: 7 March 2013

Booklet A	/ 60
Booklet B1	/ 20
Booklet B2	/ 20
Total	/ 100

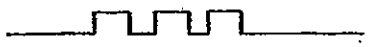
This booklet consists of 8 printed pages including this page.

Section B2: 20 marks

Read the questions carefully and write your answers in the space provided.

38. According to the Land Transport Authority of Singapore, speeding has been a problem in the past few years. In order to solve this issue, the authority has decided to place speed regulating strips and road humps to slow down the vehicles on roads, especially before a zebra crossing.

The cross sections of a road hump and speed regulating strips are shown in the following diagram.

Cross section of a road hump	Cross section of speed regulating strips
	

a) Explain how a speed regulating strip or a road hump can slow down a vehicle. (2 m)

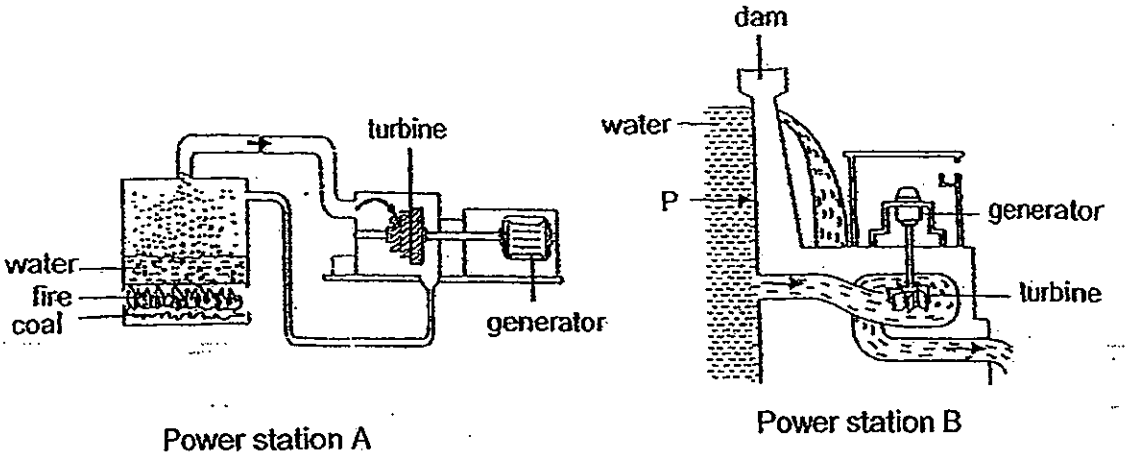
_____

_____

b) Apart from using speed regulating strips and road humps, suggest one change which can be made on the road surface to slow down vehicles. (1m)

_____

39) The diagram below shows two different power stations, A and B.



a) Write the energy conversions for power station A and B. (2 m)

Power station A:

_____ energy → _____ energy → _____ energy → _____ energy
(In coal) (In steam) (In turbine) (In generator)

Power station B:

_____ energy → _____ energy → _____ energy → _____ energy
(Water in dam) (Falling water) (In turbine) (In generator)

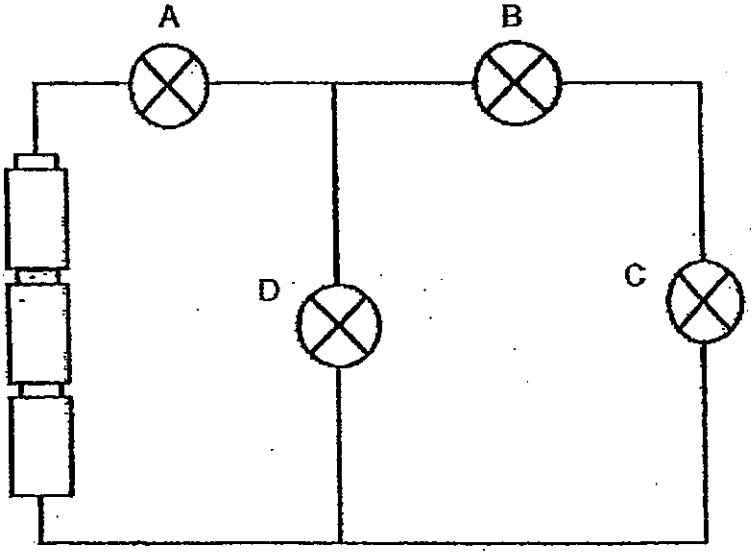
b) It is found that both generators in the power stations A and B are able to produce the same amount of energy. However, a recent drought caused the water level of power station B to drop to point P.

What would be the effect on the amount of energy produced by the generator in power station B? Explain your answer. (1 m)

_____

_____

40. Study the following circuit.



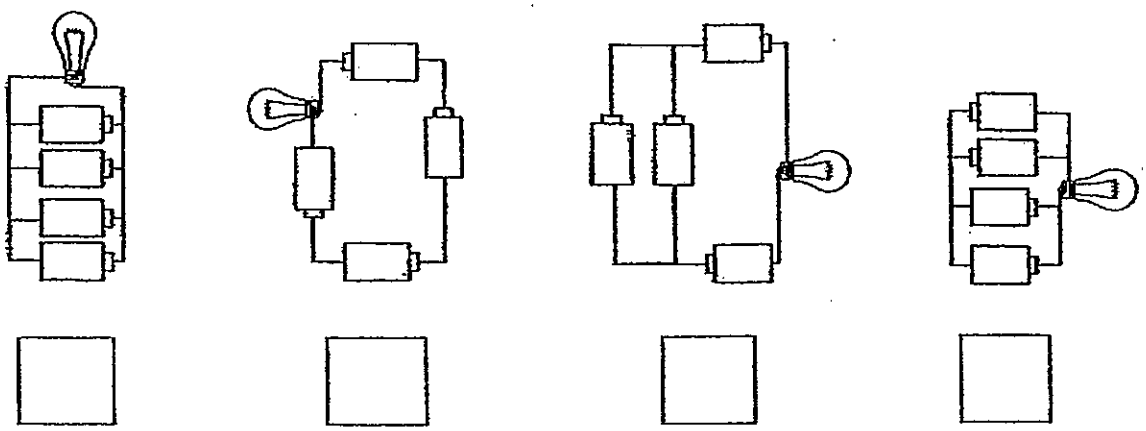
(ai) Mark an "X" on the circuit above to represent a switch which is able to turn off the bulbs at the same time (1m)

(ii) What will happen to the rest of the bulbs if Bulb D is removed and replaced with a wire?

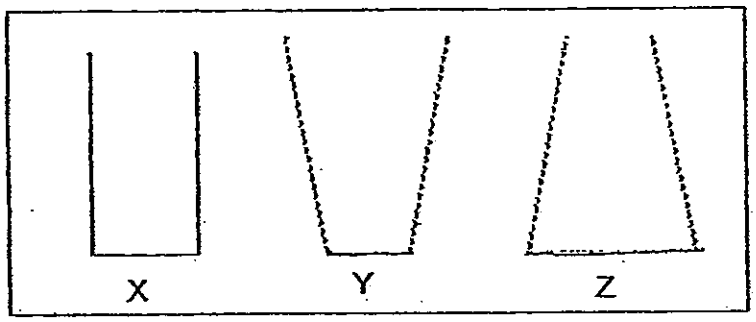
(1m)

(b) Jon set up the following electrical circuits. The batteries, wires and bulb used are identical. Arrange the circuits according to the brightness of the bulb with 1 being the brightest and 4 being the least bright.

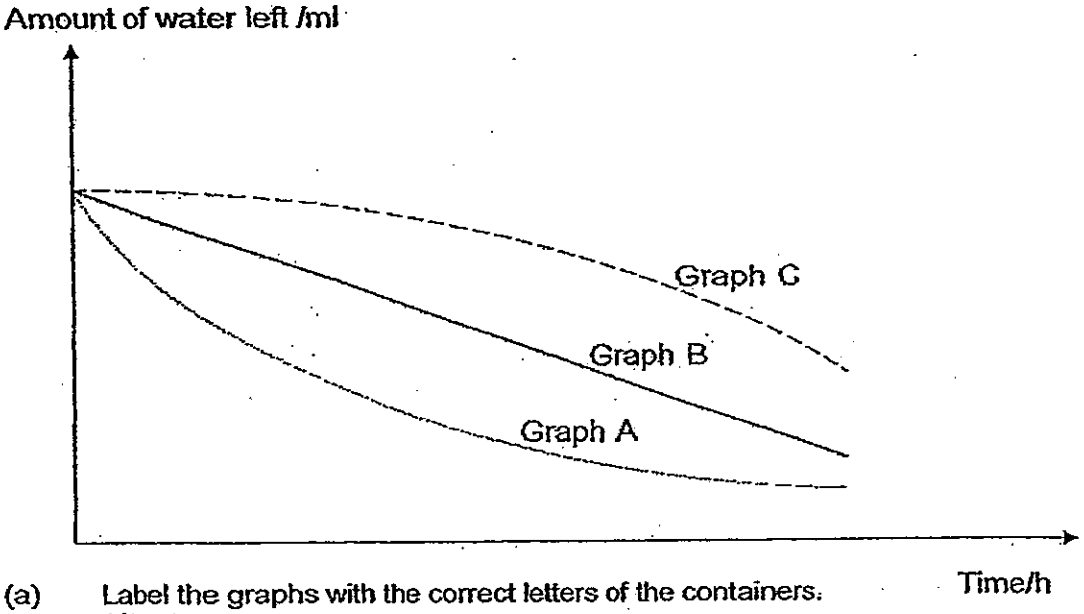
(2m)



41. Daphne conducted an experiment to find out the rate of evaporation of water for the different containers X, Y and Z as shown in the following diagram. An equal amount of water was poured into each of the containers and left in a room with no windows for a period of time.



Daphne measured the amount of water left in the containers at regular intervals and plotted the following graphs.



(a) Label the graphs with the correct letters of the containers. (1/2m)

Graph A: Container _____

Graph B: Container _____

Graph C: Container _____

(b) Explain your answer for **all the 3 containers** in (a) (1 ½ m)

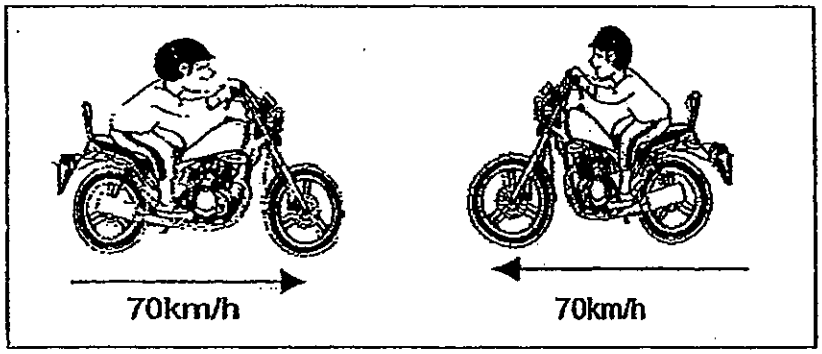
_____

_____

_____

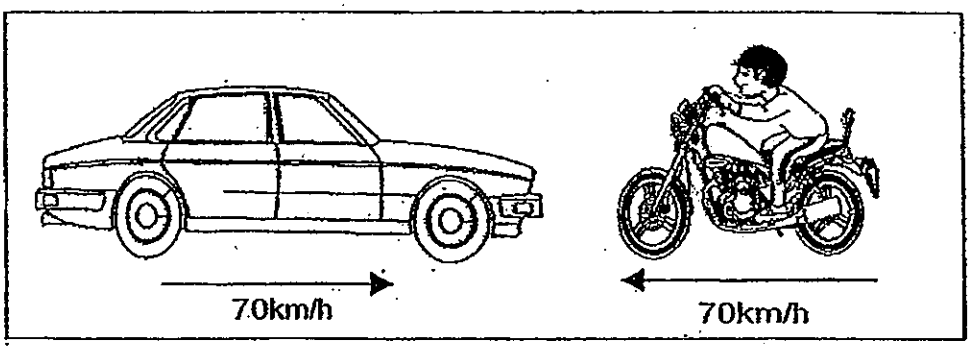
42. A motorcycle company carried out a crash test as shown below. Two similar motorcycles with dummies were made to perform a head-on collision. The extents of damage for both motorcycles were similar.

Scenario 1



In another test, the same motorcycle collided with a car. It was found that the extent of damage to the motorcycle is greater than that to the car.

Scenario 2



a) Explain why the motorcycle was damaged to a greater extent in the second scenario?

(2m)

_____

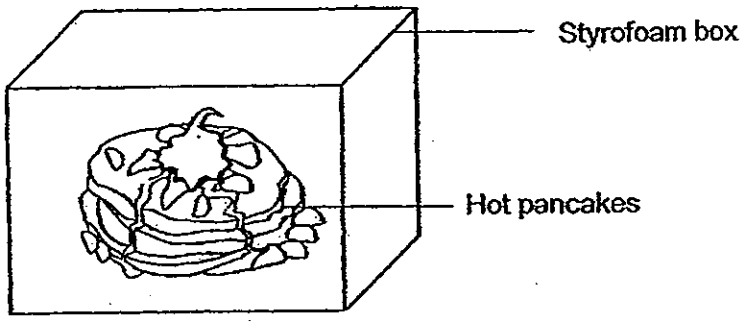
_____

b) How would wearing a seat belt reduce the amount of injuries sustained by the car driver? (1m)

_____

_____

43. The diagram below shows some hot pancakes in an enclosed styrofoam box.



(a) Water droplets were seen on the top inner surface of the Styrofoam box after some time. Why? (2m)

_____

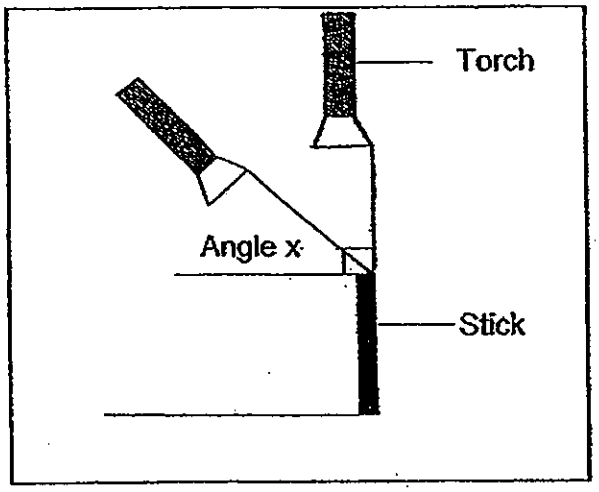
_____

(b) Suggest a modification to be made to the box to reduce the amount of water droplets from forming. (1 m)

_____

_____

44. Ron carried out an experiment to find out if the position of the torch affects the length of the shadow formed. He positioned his torch at an angle, X as shown in the diagram. The torch was shone at a stick and the length of the shadow was measured.



He recorded the data as shown in the following table.

Size of angle, x (°)	Length of shadow (cm)
60	10
70	8
80	6
90	4
100	6
110	8
120	10

a) Based on the results above, estimate the length of the shadow when angle x is 95° (1m)

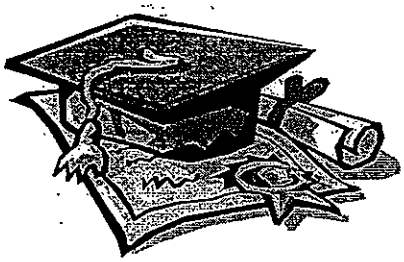
_____

b) What is the relationship between the angle x and the length of the shadow formed? (2m)

_____

_____

End of Paper



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : MGS
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

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

31)a)The breathing of Simon is higher than the breathing rate of Peter.
b)Age and Activity that they are engaged in.

32)a)X: The more the number of animals, the more the number of fruit dispersal.
Y: The more the number of animals, the number of fruit dispersal will still remain the same.
b)Light, dry wing-like structure.
c)

d)The larger the size of the wing-like structure, the longer the time taken for the fruit to reach the ground. A larger wing-like structure results in a greater resistance which slows down its speed of falling and increases the time taken to reach the ground.

33)a)Part A.

b)It produces pollen grains which contains the male sex cells of the flower.

34)a)To prevent the loss of water by evaporation.

b)The experiment shows that the greater the number of leaves on the plant, the more the amount of water taken in by the plant.

35)a)Cells B, D and C.

b)Cell A.

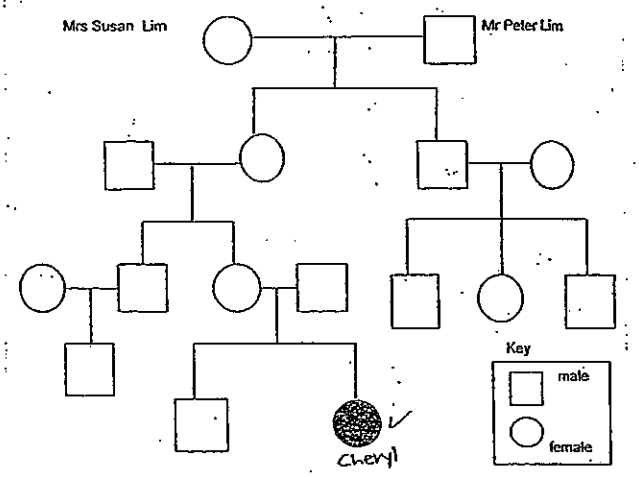
c)Plant cells have cell walls and chloroplasts where as animal cells do not have cell walls and chloroplasts.

36)a)Lime water.

b)If the lime water turns chalky, this will mean that there is a presence of carbon dioxide in inhaled or exhaled air.

c)He will observe that the lime water in flask A has turned chalky as there is a presence of carbon dioxide in the exhaled air.

37)a)



b)The genetic information in the nucleus of her cells have been passed down to her from her parents.

38)a)Both speed regulating strip and road hump increase the surface area of contact between the wheels of a vehicle. Hence, this increases the amount of friction which the motion of the vehicle slows it down.

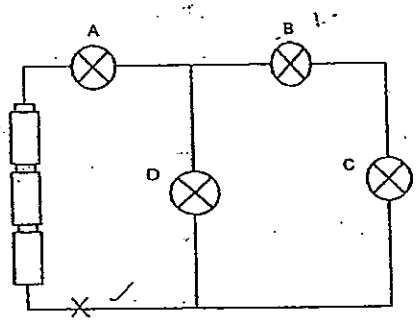
b)Make the road surface rougher.

39)a)Chemical potential energy→Heat energy→Kinetic energy→Electrical energy.

Gravitational Potential energy→Kinetic energy→Kinetic energy→Electrical energy.

b)The amount of energy produced in power station will decrease. Due to the drought water will flow from a lower height which reduces the amount of gravitational energy to be converted to kinetic energy and electrical.

40)a)i)



ii)Bulb A will light up Bulb and C will remain unlit.

b)4 1 2 3

41)a)A: Y B: X C: Z

b)As the area of exposed surface of water in container Y is the greatest, more water will evaporate from it and lesser water will be left in it. The area of exposed surface area in container X is neither great nor small, so the amount of water that will evaporate from it will be more than container Z but less than container Y so the amount of water left in container will be more then container Y and lesser than container Z. The area of exposed surface of water in container Z is the least, so lesser water will evaporate from it and more water will be left in it.

42)a)Its mass is much smaller to that of a car and the front of the motorcycle is much smaller than that of a car.

b)When the car breaks to a halt, the driver will be flung forwards and then back wards if he did not wear a seat belt. But if the car breaks to a halt and the driver is wearing a seat belt, the impact on the driver is much lesser and the driver will only move forward a few centimeters and then backwards a few centimeters.

43)a)When the pancakes were hot, the surrounding air will also gain heat and turn hot. So when the warm air comes into contact with the cool surface of the Styrofoam box, the warm air will lose heat and condense into water droplets on the top inner surface of the Styrofoam box.

b)Holes can be made on the top of box to allow the hot water vapour to escape.

44)a)5cm.

b)As the angle X increases, the length of the shadow until 90° . However, for angles larger than 90° the length of the shadow becomes longer.

NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2013
PRIMARY SIX
SCIENCE

Name : _____

Class : Primary 6 /_____

Date : 1 March 2013

Duration : 1 hr 45 min

MARKS	
Sect A:	/ 60
Sect B:	/ 40
Total	**/ 100**

Parent's Signature : _____

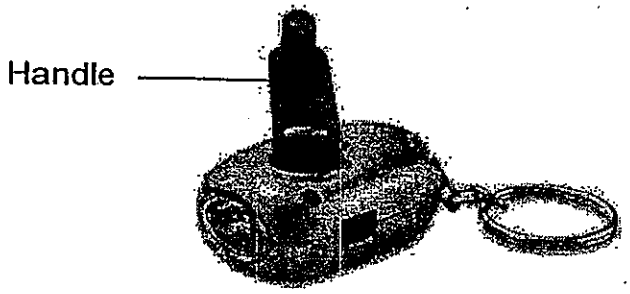
Section A: (30 x 2marks = 60marks)

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 (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Which of the following is not a source of energy?

   (1) Rain
   (2) Sea water
   (3) Water in a river
   (4) Water in a puddle

2. John is using a handheld dynamo torch as shown in the picture below. To use it, he will rotate the handle, which drives the dynamo found within the torch. Electricity is generated and the bulb lights up. The faster he rotates the handle, the brighter the bulb.



Which of the following shows the energy conversion that is taking place?

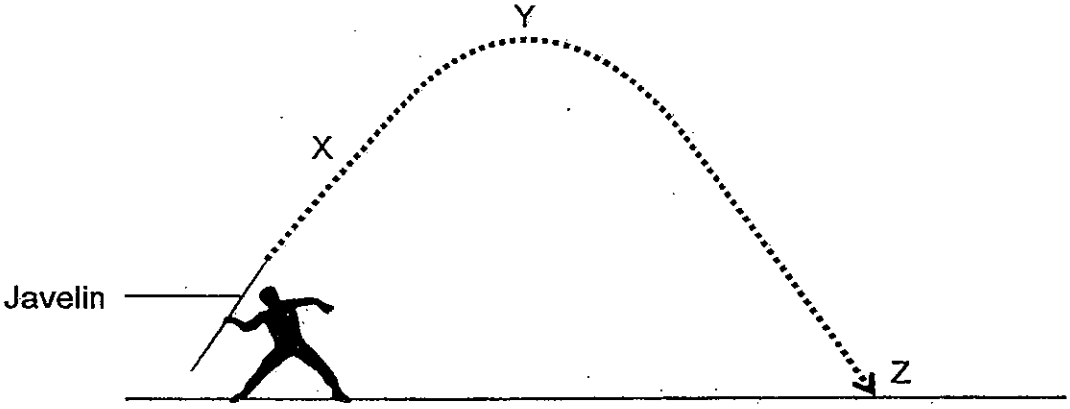
(1) Kinetic energy → heat and light energy
(2) Chemical potential energy → heat energy → light energy
(3) Kinetic energy → electrical energy → heat and light energy
(4) Chemical potential energy → kinetic energy → heat and light energy

3. Which of the following force(s) can act from a distance?

A Gravity
B Friction
C Magnetic Force
D Elastic Spring Force

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

4. A man is throwing a javelin up into the air in a competition. The dotted line shows the path the javelin will travel through the air.



At which point(s) is gravitational force acting on the javelin?

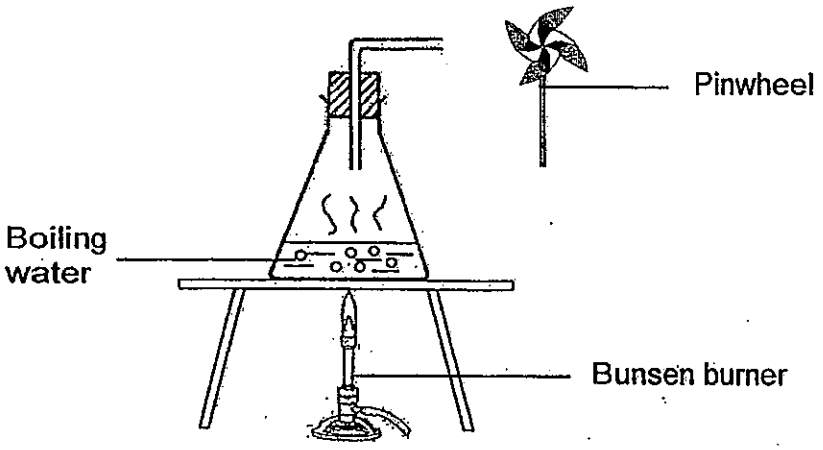
(1) Y only
(2) X and Y only
(3) Y and Z only
(4) X, Y and Z

5. Study the following statements about elastic spring force.

A Elastic spring force can be a pushing or pulling force.
B Elastic spring force only acts on any object that is stretched.
C Elastic spring force has the tendency to cause the object to go back to its original size.

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

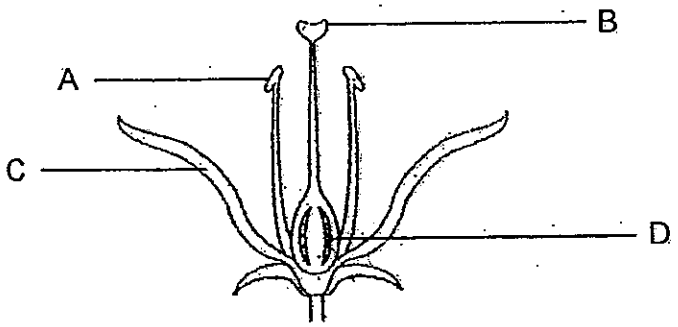
6. Study the set-up below carefully.



Which of the statements below about the set-up is correct?

(1) Heat energy from the boiling water causes the pinwheel to spin.
(2) Kinetic energy from the boiling water causes the pinwheel to spin.
(3) Kinetic energy from the hot water vapour causes the pinwheel to spin.
(4) Heat energy from the flame of the bunsen burner causes the pinwheel to spin.

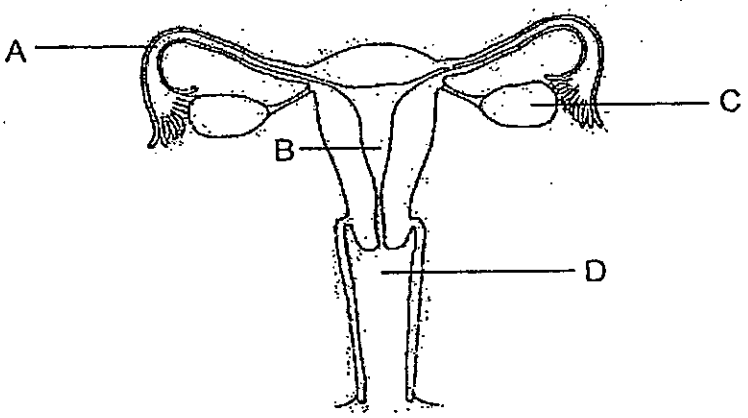
7. The diagram below shows the cross-section of a flower.



Which of the following shows correctly what will happen if the specified part is removed.

	Part Removed	Consequence
(1)	A	Pollination will not take place
(2)	B	Fertilization will not take place
(3)	C	Fertilization will not take place
(4)	D	Pollination will not take place

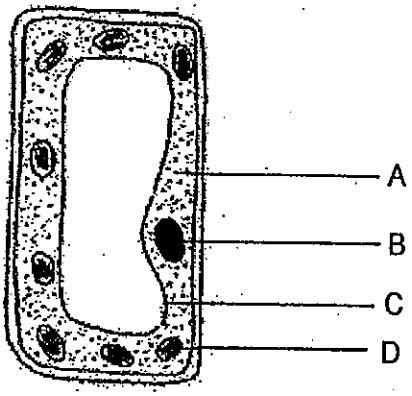
8. The picture below shows the reproductive system of a female human being.



In which part of the system are the eggs stored?

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

9. Genetically modified foods are foods that have their genes modified so that certain desirable features are enhanced. To do so, food scientists have to modify certain part of the cell.



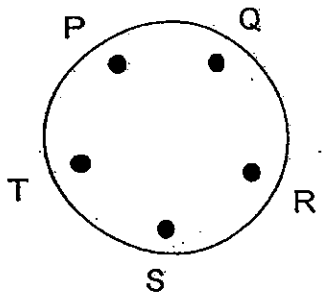
Which one of the following parts, A, B, C or D should the food scientists modify?

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

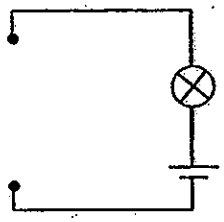
10. Mr Tan created a circuit card below and told his pupils that out of the 5 contact points on the circuit card, only one of them is not a conductor of electricity. He painted all the contact points black.

He then set up a circuit tester as shown for his pupils to test out the card. He also gave them some wires to connect the points to test the points.

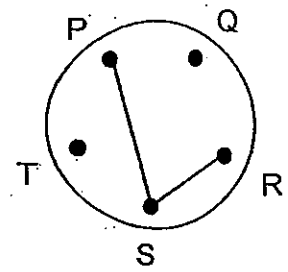
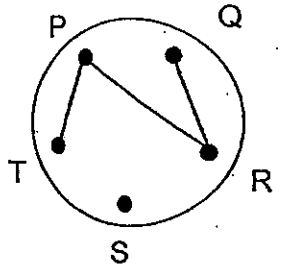
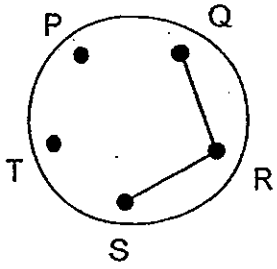
Circuit Card



Circuit Tester



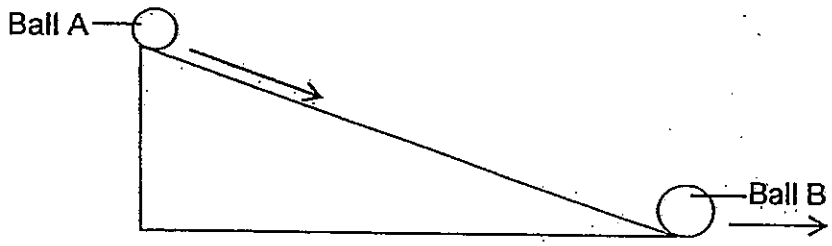
His pupils tested the card for three rounds before discovering the contact point that is not a conductor of electricity. The result of their tests is shown below.

		
Did the bulb in the circuit tester light up?		
Yes	No	No

Based on the results in the above table, which point of contact is not a conductor of electricity?

(1) Q
(2) R
(3) S
(4) T

11. Susan released Ball A from the top of a ramp as shown in the diagram below.



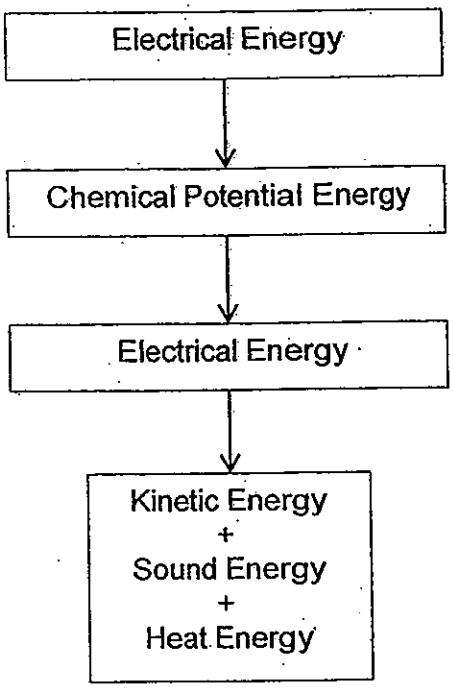
Ball A rolled down the ramp and hit Ball B at the bottom. Ball B moved 100cm away from its original position.

Susan wants Ball B to travel a shorter distance instead. Which of the following can she do to ensure that Ball B would fulfill her requirement?

A Use a lighter Ball A
B Use a heavier Ball B
C Increase the height of the ramp
D Decrease the height of the ramp

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

12. Study the energy conversion below carefully.

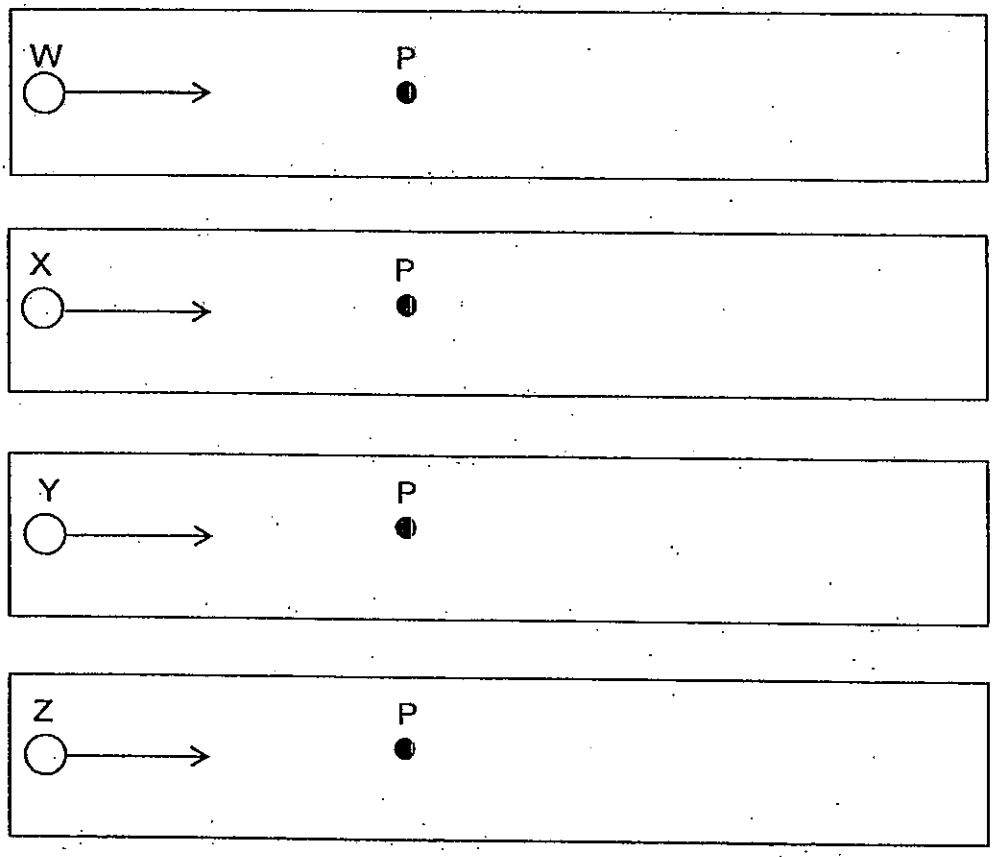


Which of the following will result in the energy conversion shown above?

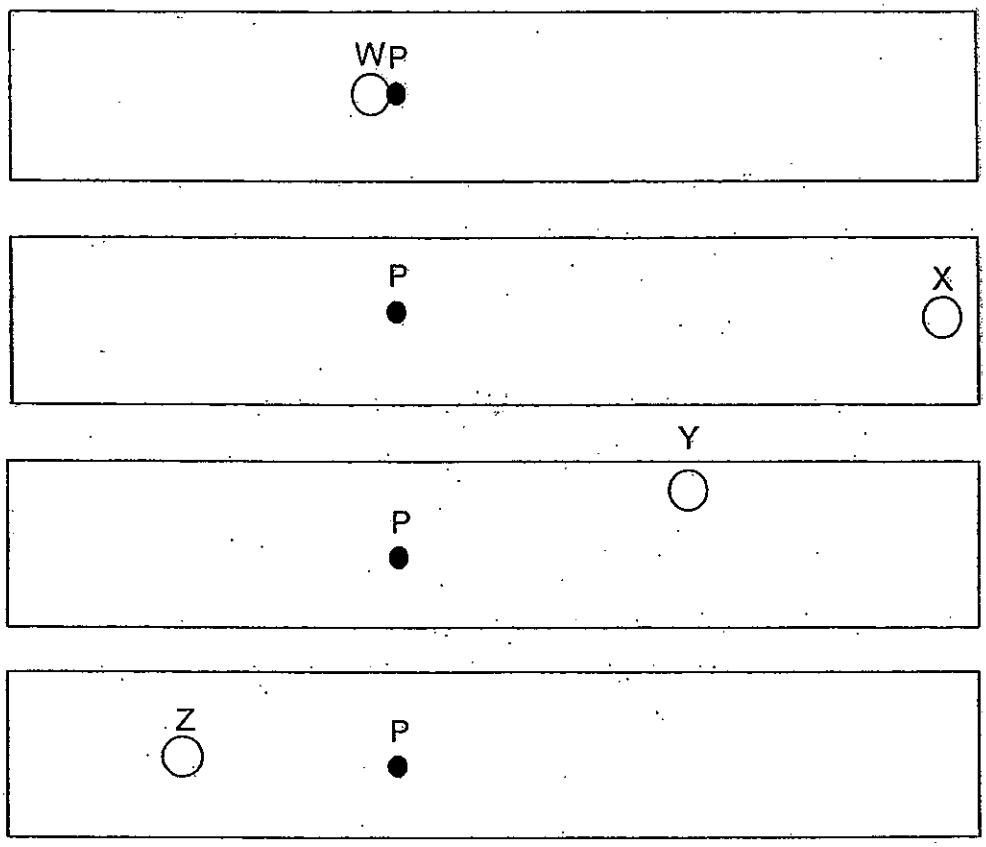
(1) Plugging in and turning on the table fan.
(2) Plugging in and turning on the television.
(3) Charging of a vacuum cleaner and then using it.
(4) Charging of a mobile phone and then using it to make a call.

13. Ali set up an experiment below to find out how the direction and amount of force applied on a moving ball can affect the ball.

All the four balls, W, X, Y and Z in the set up are identical and they travelled at the same speed and direction. At point P, a force is applied to the ball.



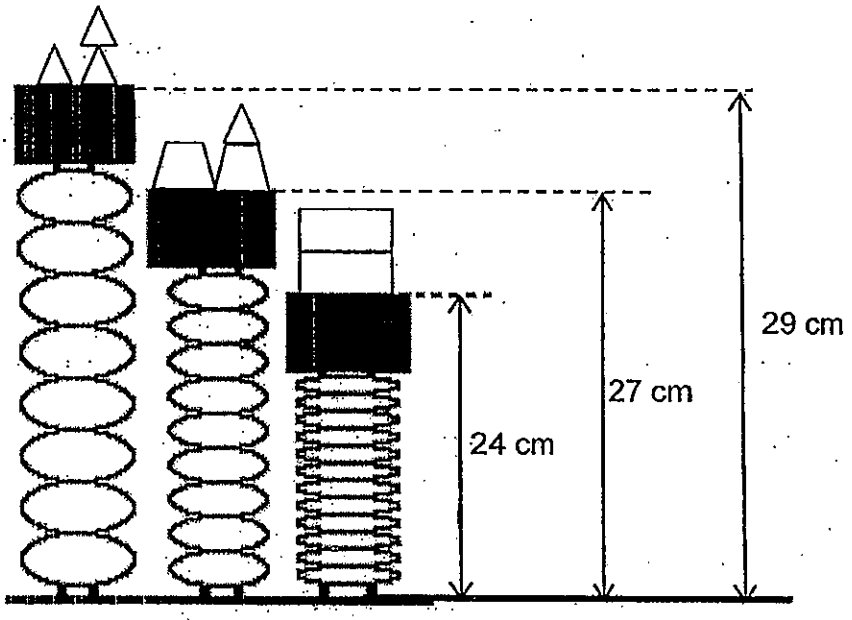
Their final positions are recorded in the pictures below.



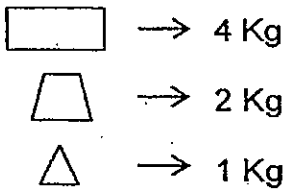
Which of the following correctly shows the direction of the force that is applied on the moving balls?

	Direction of force applied			
	W	X	Y	Z
(1)	←	←	↗	→
(2)	→	↗	←	←
(3)	←	→	↗	←
(4)	↗	←	→	→

14. The diagram below shows what happened when weights of different mass are placed on the same spring.



Key:



What is the length of the spring when it is not compressed?

(1) 16 cm
(2) 24 cm
(3) 32 cm
(4) 35 cm

15. Mike conducted an experiment to find out if the area of contact between two surfaces affects the frictional force between them.

He attached a spring balance to a block as shown in Diagram 1. He pulled the spring balance and noted down the force taken for it to just start to move.

He then placed the same block in the position as shown in Diagram 2. He pulled the spring balance again and noted down the force taken for it to just start to move.

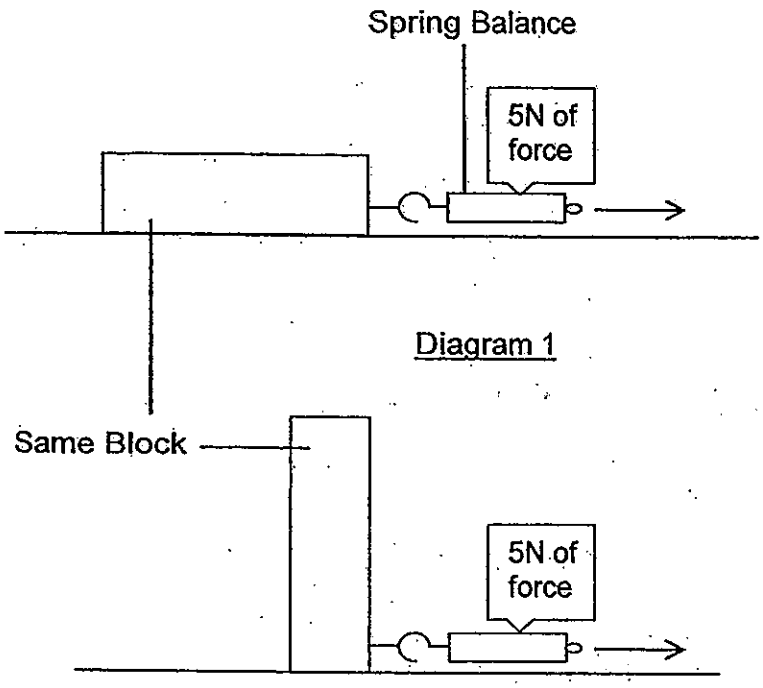


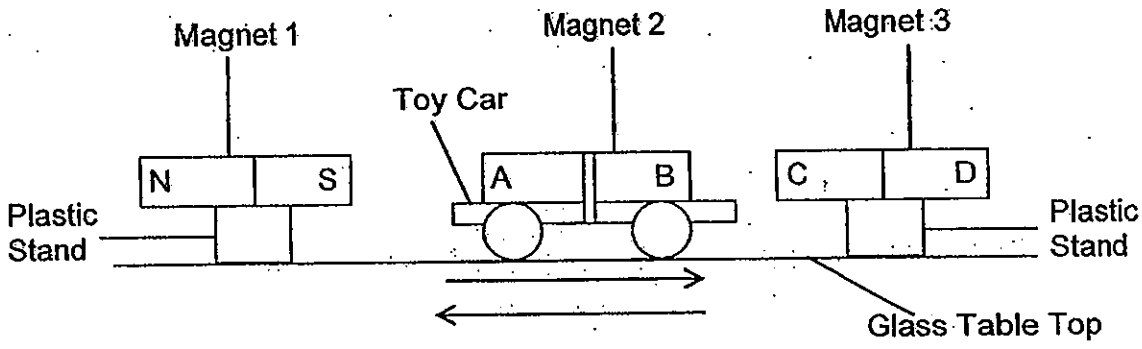
Diagram 1

Diagram 2

Based on the results above, what conclusion can Mike make?

(1) The greater the area of contact between the block and the table, the greater the frictional force between the two surfaces.
(2) The greater the area of contact between the block and the table, the smaller the frictional force between the two surfaces.
(3) The area of contact between the block and the table does not affect the amount of frictional force between the two surfaces.
(4) The area of contact between the block and the table affect the amount of frictional force between the two surfaces only for the first few seconds the block moves across the surface.

16. Oliver made a toy car as shown in the diagram below. The car was a piece of wood attached with four wheels. He then tied a piece of magnet to it and placed it in between two magnets which were mounted on plastic stands.

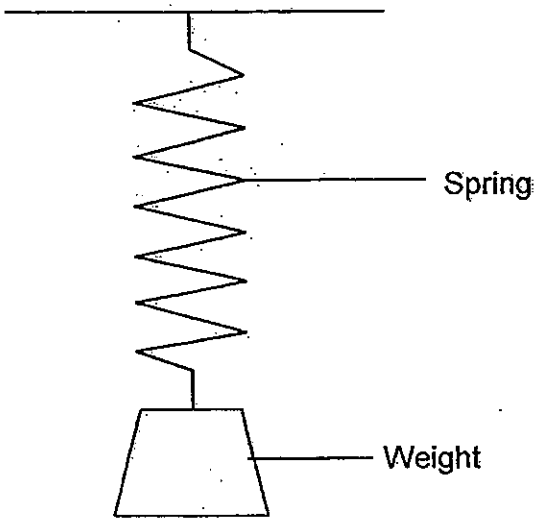


He then pushed the toy car towards one of the magnets and observed that the toy car travelled to and fro the two magnets continuously without touching either one of the magnets. The poles of Magnet 1 are shown in the diagram above.

Which of the following conclusions can Oliver make with regards to the set-up above?

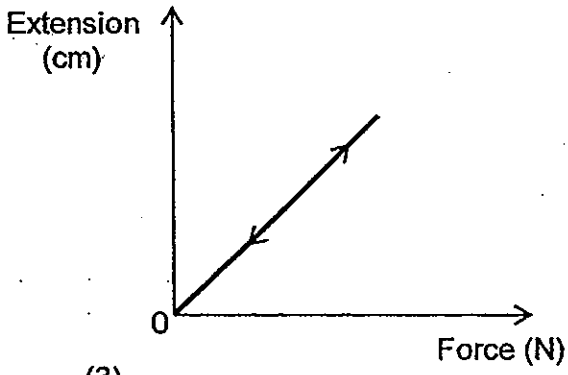
(1) Pole D of Magnet 3 is a North Pole.
(2) The toy car is running on battery as it is moving non-stop.
(3) Magnetic force of repulsion is causing the car to move non-stop between Magnet 1 and 3.
(4) There is no frictional force acting between the wheels of the car and the glass table top since the car is moving non-stop.

17. Alice hung a heavy weight on a spring such that it stretches beyond its elastic limit and could not return to its original length when the weight is removed.

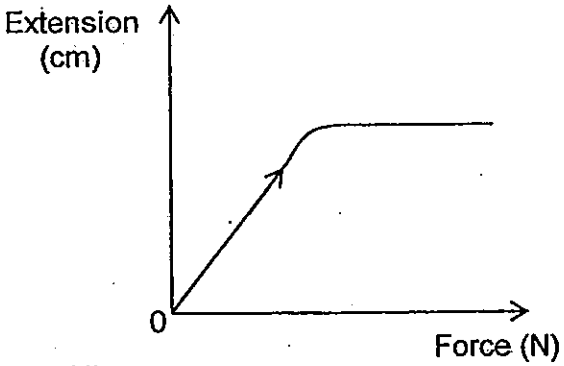


Which of the following graph shows what happened when the spring is stretched beyond its elastic limit and then the weight is removed?

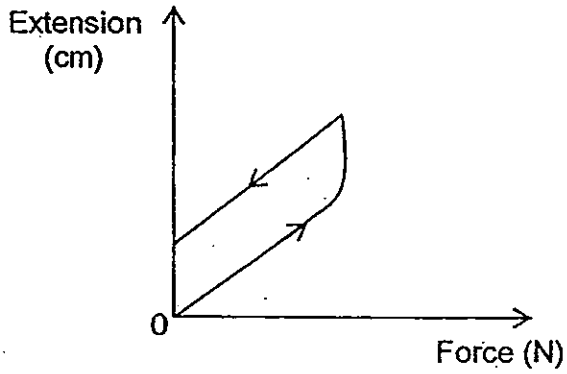
(1)



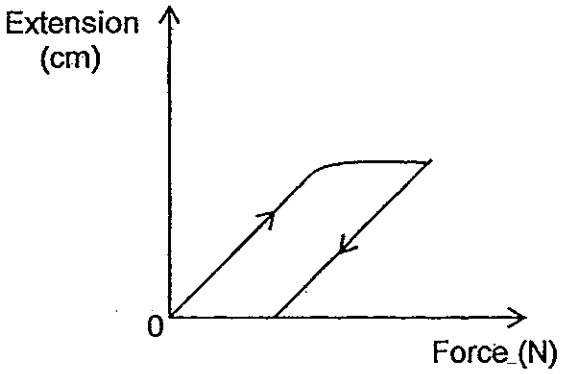
(2)



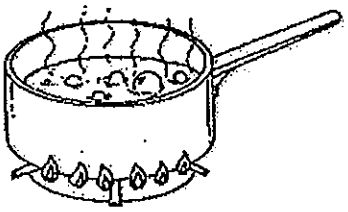
(3)



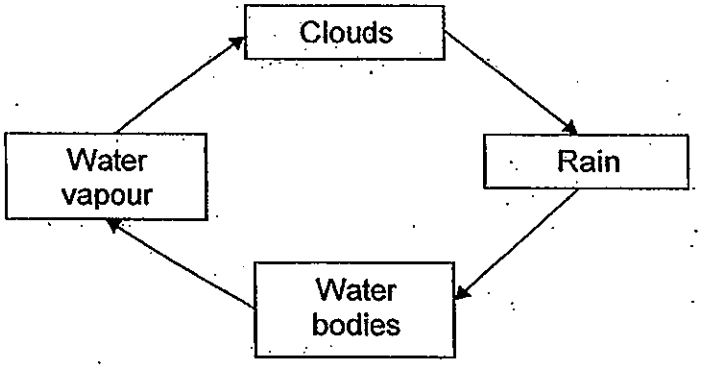
(4)



18. Aaron was boiling some water in a pot when he observed some white mist above the pot of boiling water.



Which part of the water cycle is the white mist most similar to?



(1) Rain
(2) Clouds
(3) Water bodies
(4) Water vapour

19. The table below compares the sexual reproduction of flowering plants and humans.

	Flowering Plants	Humans
The part where the male reproductive cell is stored	A	B
The part where the male reproductive cell fuses with female reproductive cell	Ovary	C
The process whereby the male reproductive cell fuses with the female reproductive cell	D	Fertilisation

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

	A	B	C	D
(1)	Stigma	Testis	Womb	Pollination
(2)	Anther	Testis	Fallopian tube	Fertilisation
(3)	Anther	Ovary	Fallopian tube	Pollination
(4)	Stigma	Ovary	Womb	Fertilisation

20. Diagram 1 shows the movement of substances P and Q in a human system. Diagram 2 shows the movement of substances R and S in a plant system during the day.

Diagram 1(Human System)

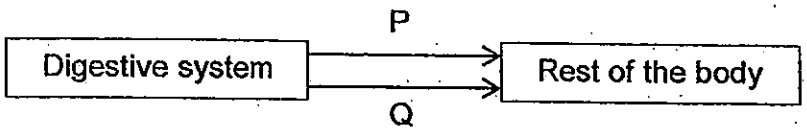
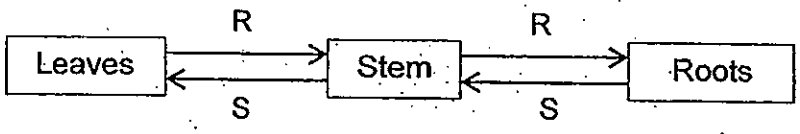


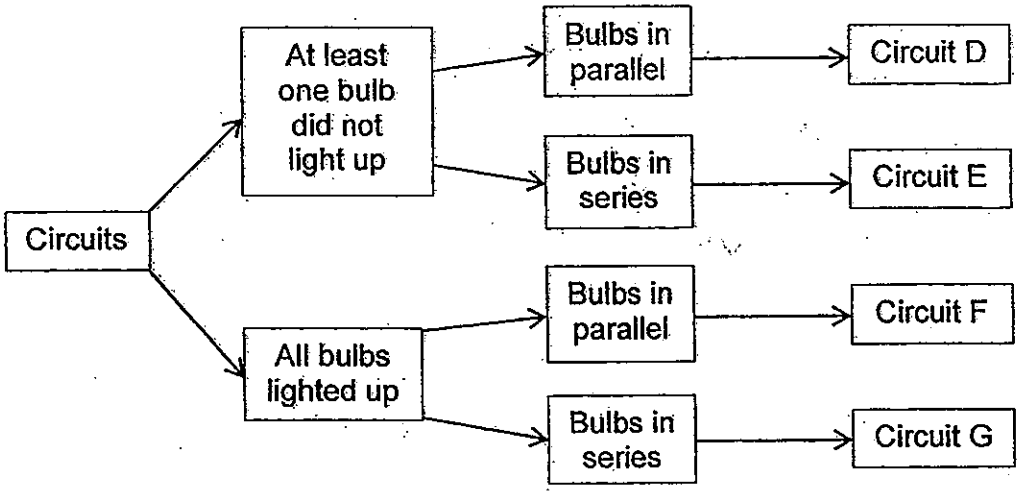
Diagram 2 (Plant System)



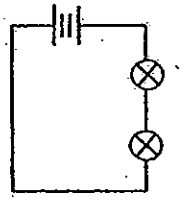
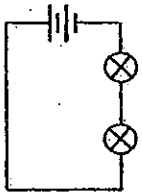
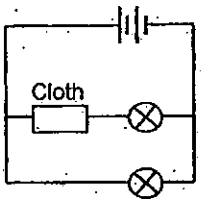
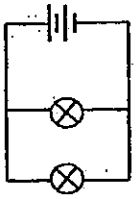
From the diagrams above, identify substances P, Q, R and S.

	P	Q	R	S
(1)	Oxygen	Water	Carbon dioxide	Water
(2)	Water	Food	Oxygen	Carbon dioxide
(3)	Oxygen	Carbon dioxide	Oxygen	Carbon dioxide
(4)	Food	Water	Food	Water

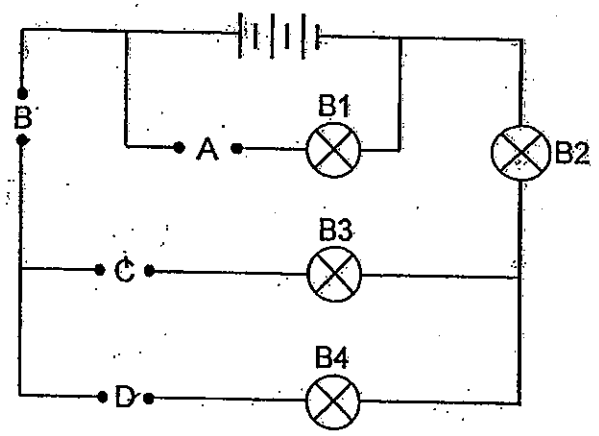
21. Study the flow chart below.



Which of the following circuits matches the circuits shown in the chart above?

				
(1)	D	F	G	E
(2)	G	E	F	D
(3)	E	G	D	F
(4)	F	D	E	G

22. Mrs Tan passed Sarah 4 rods, W, X, Y and Z of different materials and asked her to test if they are conductors of electricity. Sarah set up a circuit as shown in the diagram below.



The table below shows the positions where the rods were placed to connect the circuit and the results of the experiment.

Position at which the rod was placed				Did the bulb light up?			
A	B	C	D	B1	B2	B3	B4
Rod W	Rod X	Rod Y	Rod Z	No	Yes	Yes	No

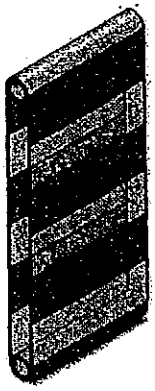
She then rearranged the rods and placed them in a new arrangement as shown in the table below.

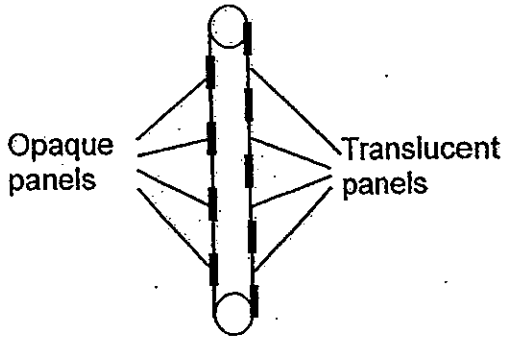
Position at which the rod was placed			
A	B	C	D
Rod Y	Rod Z	Rod W	Rod X

Which of the following shows the correct set of bulbs that will light up?

	Did the bulb light up?			
	B1	B2	B3	B4
(1)	Yes	Yes	No	No
(2)	Yes	No	No	No
(3)	No	No	Yes	No
(4)	Yes	No	Yes	Yes

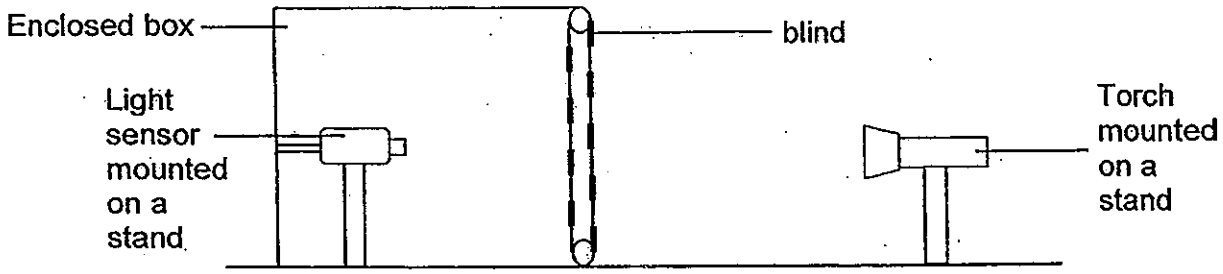
23. Mr Lee recently came across a new type of blind for his windows, as shown in the diagram below. The blind consisted of alternating opaque and translucent panels. When the blind was rolled up or down, the opaque and translucent panels moved up or down. When that happened, it allowed the user to control the amount of light entering the house.





Side view of blind

Mr Lee decided to conduct an experiment to find out how effective the blind is. He prepared the following set up.



He put a light sensor inside an enclosed box. Then, he put the blind in front of the box such that it covered the entire opening of the box. He then shone a torch at the blind and used the light sensor to record the amount of light that passed through the blind.

After that, he tested the blind again when the panels of the blind were in 3 other positions. The result of his experiment is shown in the table below.

Set-up	Amount of light received by the light sensor (lux)
W	156
X	403
Y	685
Z	920

Which of the following shows the position of the panels of the blind for Set-up Y?

(1)

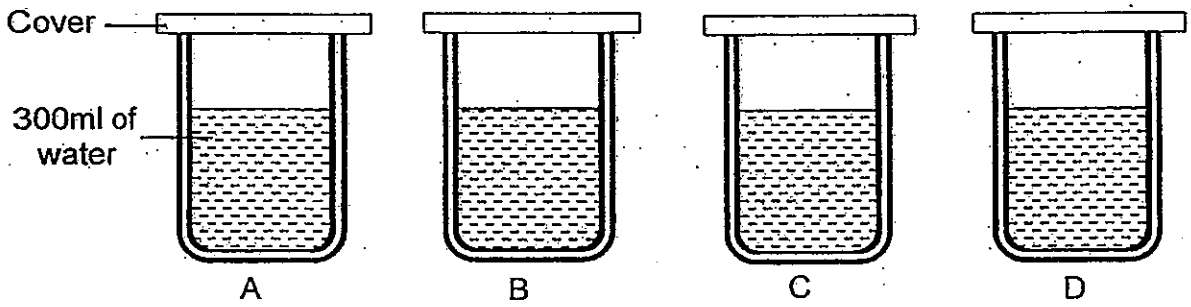
(2)

(3)

Blind is fully rolled up

(4)

24. Gina bought 4 containers, A, B, C and D, of the same size, shape, thickness and colour. They are made of 4 different materials. She filled each container with 300ml of water and covered them with a cover. The temperature of the water is at 90°C. She then left the containers at the same place and recorded the time for the water in the container to reach a temperature of 30°C.



Gina recorded the results in the table below.

Container	Time taken to reach 30°C
A	3 hours 15 min
B	2 hours
C	7 hours 30 min
D	5 hours

Based on the results above, which container should Gina use as a food container to bring hot food to work in the morning such that the food will be the warmest at lunch time?

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

25. Julia conducted an experiment as shown in Diagram 1 below.

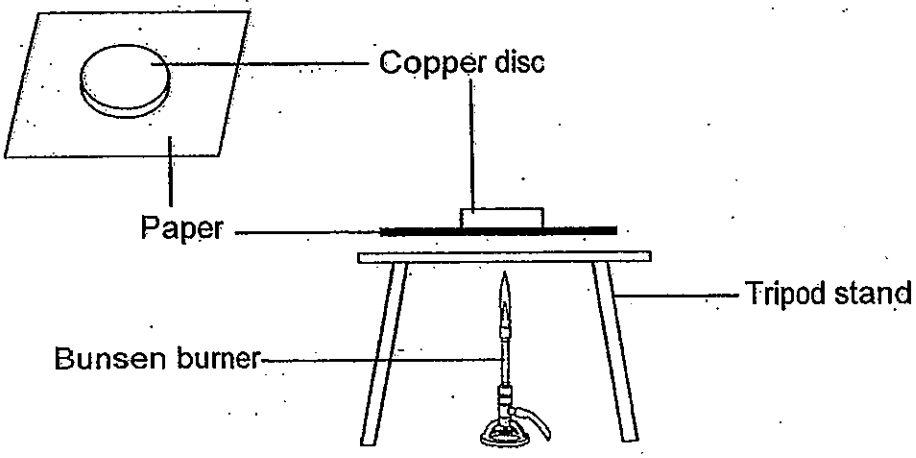


Diagram 1

She placed a copper disc on a piece of paper and held it over the burner for 3 minutes. She then moved the paper away from the flame. She observed that after removing the copper disc, the paper had a scorched surface as shown in Diagram 2 below.

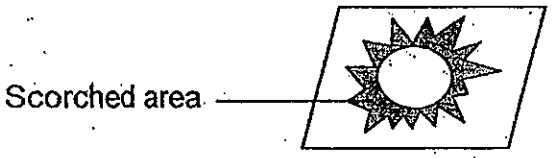
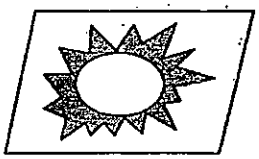


Diagram 2

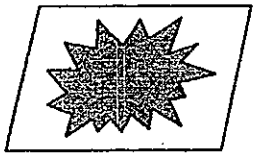
She repeated the experiment with a wooden disc on a new piece of paper. What would be the outcome of the paper?

(1)

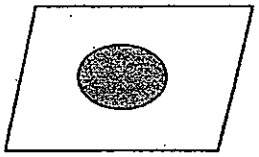
(2)



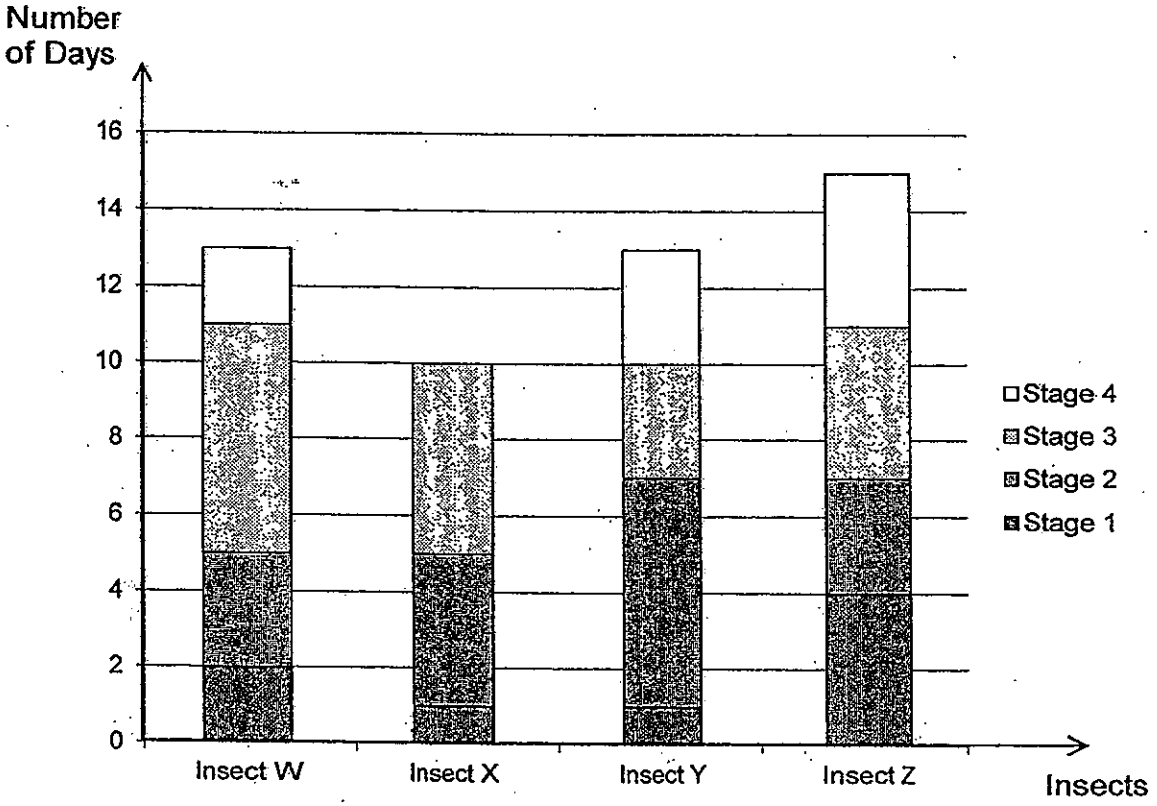
(3)



(4)



26. Study the graph below carefully. It shows the number of days for each stage in the life cycle of 4 Insects, W, X, Y and Z.



Mary studied the graph above. Based on the graph above, she made the following inferences:

A Insect W has the longest Pupa Stage
B All insects have 4 stages in their life cycle.
C The eggs of Insect Z take the longest time to hatch.
D Insect X spent more time as a young than as an adult.

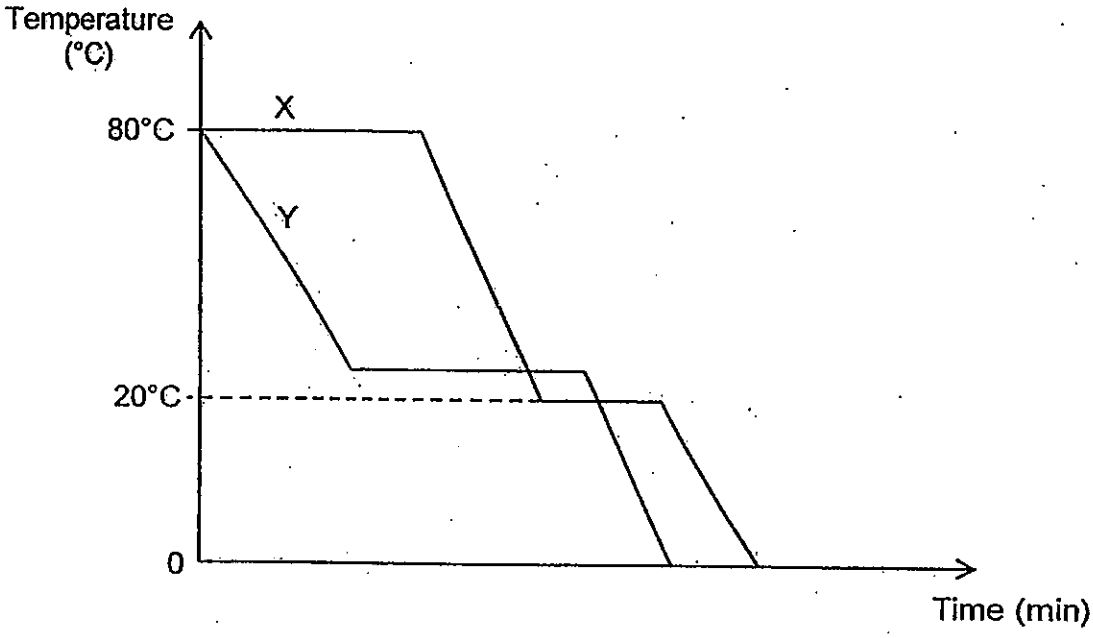
Her friend, Susan, commented that some of her inferences were not correct. Which of Mary's inferences is/are correct?

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

27. Mrs Lim heated 2 substances, X and Y, to a temperature of 80°C. She then provided her pupils with the following 2 pieces of information.

Information 1	The freezing point of Substance X is 20°C.
Information 2	Y is in the liquid state at 80°C.

The graph for the time taken for both substances to reach 0°C is plotted below.



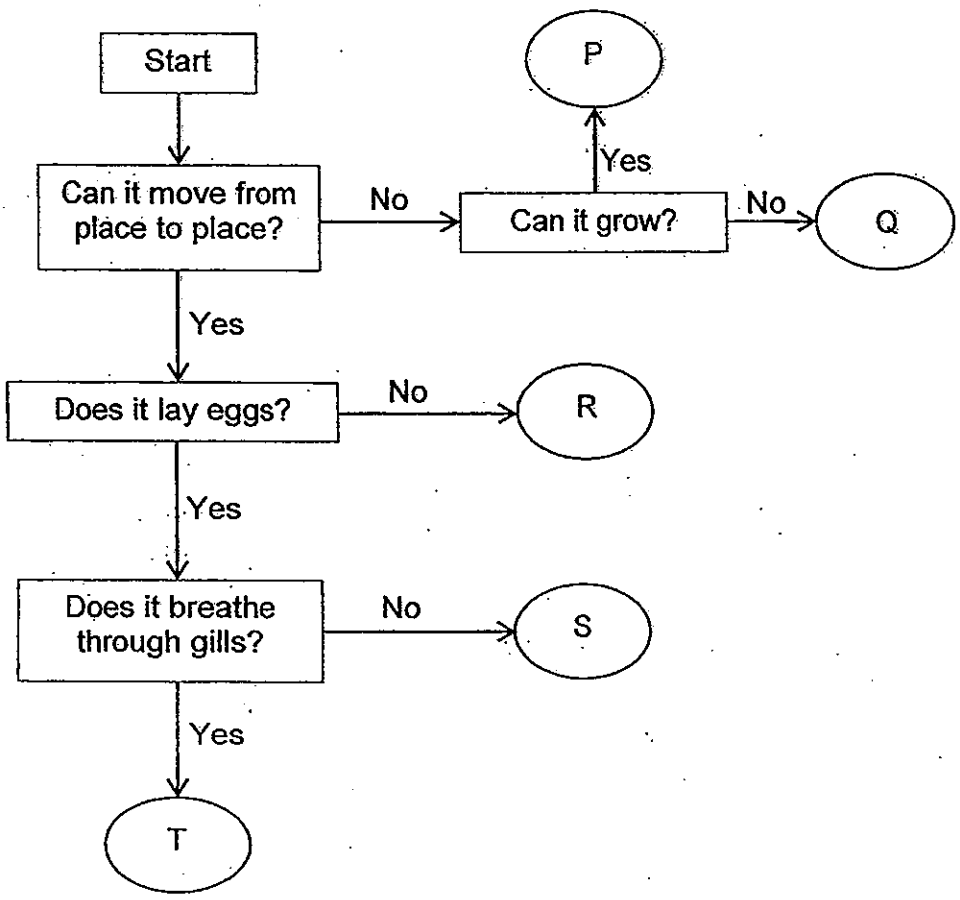
Based on the 2 pieces of information given by Mrs Lim and the graph above, 4 pupils came up with the following inferences.

Andy	X reaches freezing point earlier than Y.
Benny	80°C is the boiling point of Substance X.
Crystal	Y freezes at a lower temperature than X.
Dan	It takes a longer time for X to experience a change of state from liquid to solid as compared to Y.

Out of the four pupils, who has made a correct inference?

(1) Andy
(2) Benny
(3) Crystal
(4) Dan

28. The diagram below shows how some things have been classified.



Which of the following statements can you infer from the flow chart above?

A Q could be a mushroom.
B R and S could be mammals.
C P and S require air to survive.
D R and T have different method of reproduction.

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

29. The table below shows the characteristics of four animals, W, X, Y and Z.

	Number of legs				
Animal	**0**	**2**	**4**	**6**	**Wings**
W				√	√
X			√		
Y		√			√
Z	√				

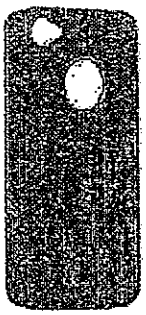
After looking at the table, the following pupils made some observations.

Ali Animal W will most likely have a pair of feelers.
Ben Animal Y could be a human since it has two legs
Carl Animal Z could be an animal that breathes through gills.

Whose observation is most likely correct?

(1) Ali only
(2) Ben only
(3) Ali and Carl only
(4) Ben and Carl only

30. Mr Pang bought 3 mobile phone casings to his Science class. He told his pupils that he would like to conduct a test to find out which of the 3 casings is the hardest. The 3 casings are of the same shape, size, colour and design. However, they are made of different materials.



Mobile phone casing

Mr Pang then requested his pupils to give suggestions on tests to test for hardness in the 3 different mobile phone casings.

4 pupils made the following suggestions:

Pupil	Test suggested	Reason given
Lily	Bend Test	If the casing can withstand large forces without bending and breaking, it is hard.
June	Drop Test	If the casing can be dropped from a high location without breaking, it is hard.
Nancy	Scratch Test	If the casing can withstand large forces used to scratch its surface without any scratches to the surface, it is hard.
Susan	High Temperature Test	If the casing can withstand high temperature without melting or deforming, it is hard.

Which pupil has suggested the correct test?

(1) Lily
(2) June
(3) Nancy
(4) Susan

NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2013
PRIMARY SIX
SCIENCE

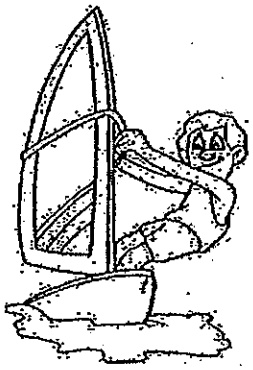
MARKS
40

Name : _____( )

Class : Primary 6 / ____

Section B: (40marks)
Write your answers to question 31 to 44.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. The picture shows a windsurfer.



(a) What is the source of energy for the sport? [1]

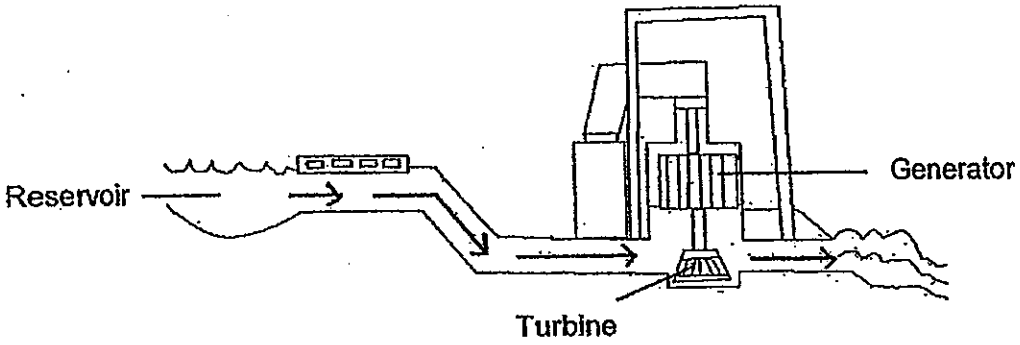
_____

(b) Name another object that make use of the energy source in (a) to work. [1]

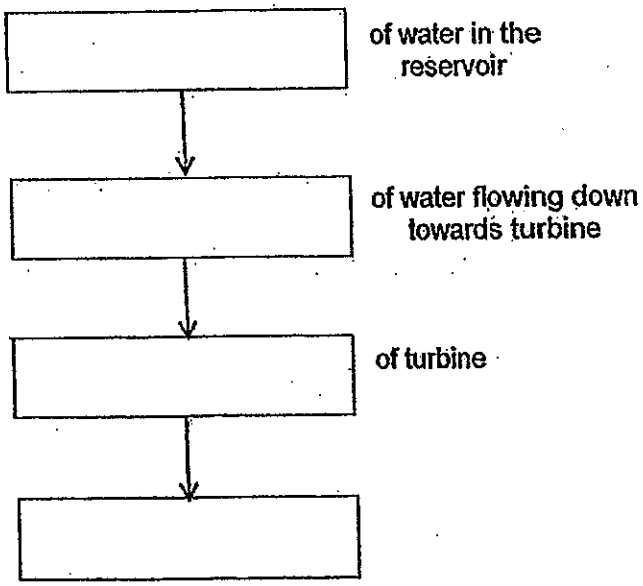
_____

Score	2

32. The diagram below shows a hydroelectric power station.



(a) State the energy conversion from the water in the reservoir to the electricity produced. [2]

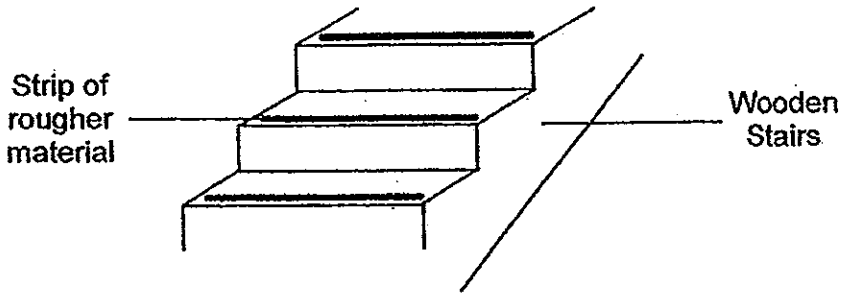


(b) State one environmental advantage a hydroelectric power station has over a power station that burns fossil fuels to generate electricity. [1]

_____

Score	/ 3

33. Julie's new house has a flight of wooden stairs. On every step, there is a strip of material pasted near the edge of the step. Upon feeling it, Julie felt that it was very much rougher than the wood used to make the stairs.



(a) What purpose does the strip of rougher material serve? Explain your answer clearly. [2]

_____

_____

_____

_____

(b) After a few years of use, Julie noticed that she would slip on the steps occasionally as she went up and down the stairs. What do you think is the reason for this to happen? [2]

_____

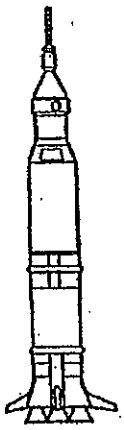
_____

_____

_____

Score	/ 4

34. The picture below shows a rocket flying into the sky.



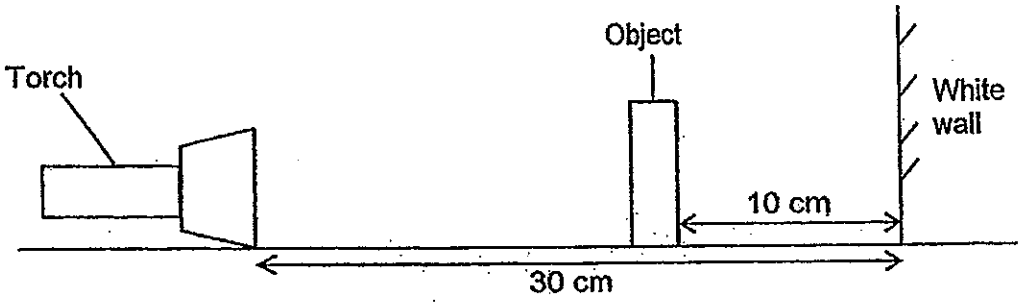
(a) What is/are the force(s) acting on the rocket when it is travelling up into the sky? [1]

_____

(b) In the diagram above, indicate the force(s) acting on the rocket with an arrow. Label the arrow(s) clearly. [1]

Score	/ 2

35. Jacob set up the experiment as shown below. He wanted to find out how changing the distance between the torch and the white wall affect the height of the shadow formed on the white wall. The initial distance between the torch and the white wall is 30 cm. The same torch is used throughout the experiment.



(a) Identify one controlled variable for this experiment. [1]

_____

(b) Write down the steps that he needs to take to conduct the experiment in the space given below. [3]

_____

_____

_____

_____

_____

_____

_____

_____

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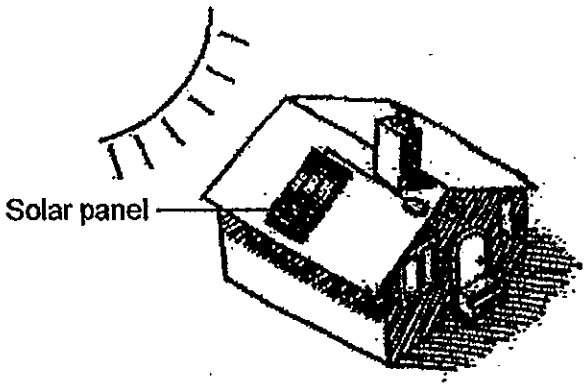
_____

_____

_____

Score	/ 4

36. The diagram below shows a house with solar panels installed on the roof.



(a) State one change that could be made to the solar panels on the roof so that more light energy could be harnessed and used. [1]

_____

(b) Explain clearly how the change suggested in (a) could help the people staying in the house [1]

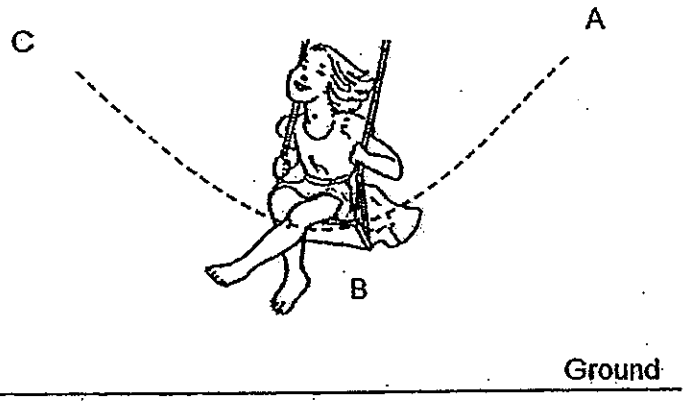
_____

_____

_____

Score	/ 2

37. The picture below shows a girl on a swing. She swings from point A to B to C and back again.

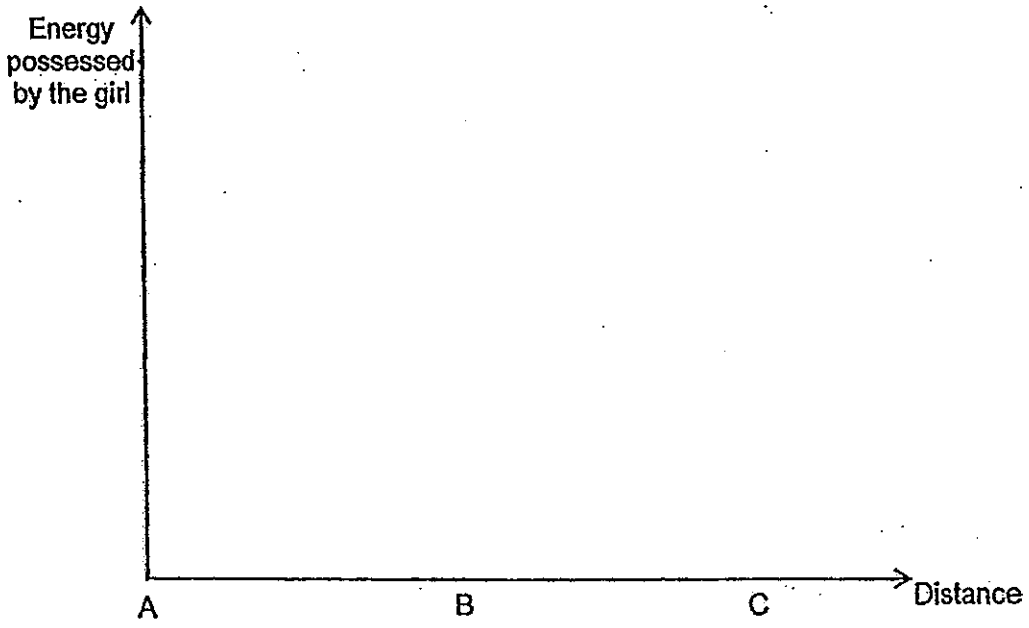


(a) Write down the energy conversion as she swings from A to B to C. [1]

_____

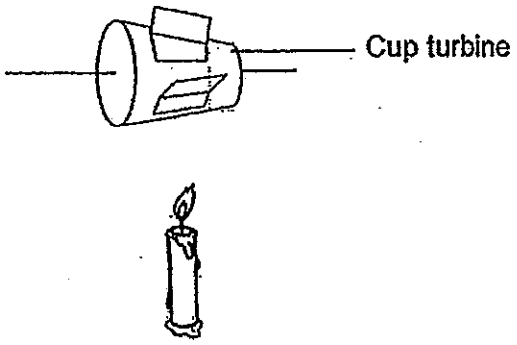
_____

(b) In the graph below, draw in the lines that show how the two forms of energy mentioned in (a) change with the time. Label the lines clearly. [2]



Score	/ 3

38. Jessie set up an experiment as shown below.



She conducted one round of the experiment and recorded down her reading. She then repeated her experiment with two and three candles.

No. of Candles	Speed of Cup Turbine (rounds per minute)
1	5
2	8
3	10

(a) Write down the independent variable in this experiment. [1]

_____

(b) How can she ensure the reliability of her results? [1]

_____

_____

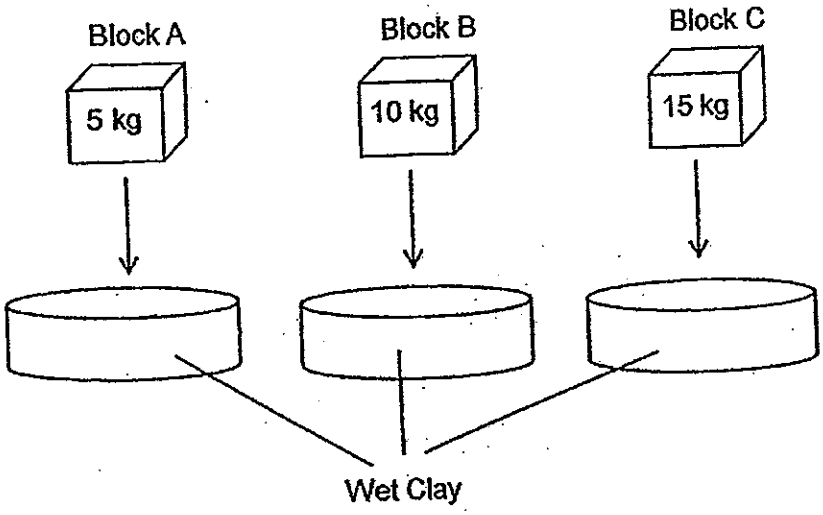
(c) Without any changes made to the physical appearance of the cup, state another way to increase the speed at which the cup rotates. [1]

_____

_____

Score	/ 3

39. Jane set up an experiment below.



Blocks A, B and C were of the same size. However, they had different mass. They were placed on the slabs of wet clay which had the same size and shape. After 10 minutes, the depth of the depression made by each of the blocks were measured and recorded in the table below.

Blocks	Depth of Depression (cm)
A	2
B	5
C	9

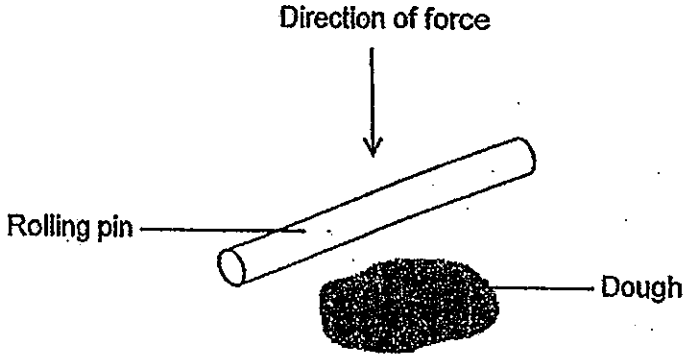
(a) Based on the table above, which block exerted ~~a greater~~ the greatest force on the wet clay? Explain your answer. [1]

_____

_____

Score	/ 1

(b) Mrs Lim recently bought a new rolling pin to help her to roll out the dough for her pies.



However, she realized that she actually needed to use a lot of force to flatten the dough. Her husband passed her another rolling pin which made her job easier. The new rolling pin is of the same size as the previous one.

Why do you think the new rolling pin made rolling out the dough easier? Explain your answer clearly. [2]

_____

_____

_____

_____

_____

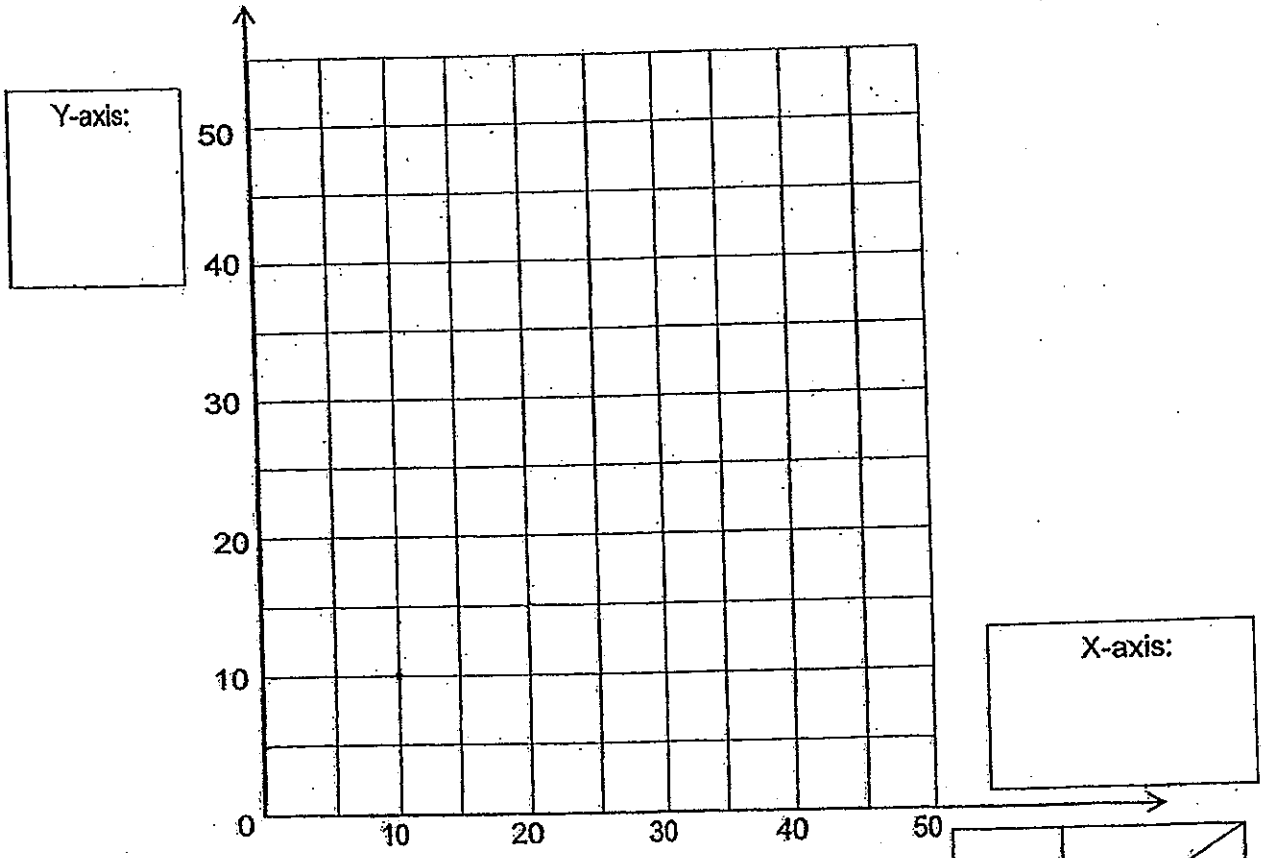
Score	/ 2

40. Tom wanted to find out the relationship of the extension of a spring with each additional weight added to the set-up below.

He conducted the experiment and recorded the readings in the table below. The original length of the spring is 5cm.

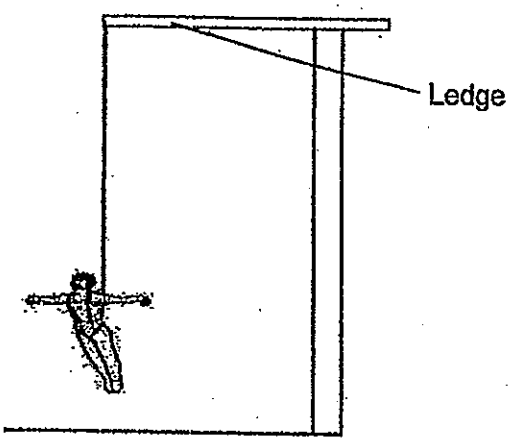
Mass of weight added (g)	Length of spring (cm)
10	10
20	15
30	20
40	25

Plot the readings in the graph provided below. Label the axis in the boxes clearly. [2]



Score 2

41. The picture below shows a person enjoying bungee jumping.



(a) What makes the person fall towards the ground when he jumps off the ledge? [1]

_____

_____

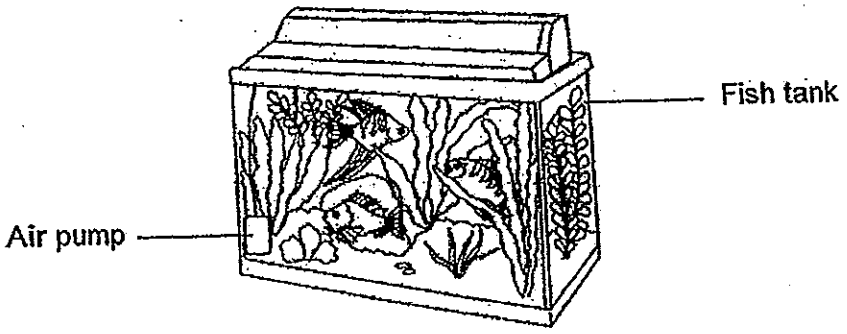
(b) When the person reaches the bottom of the jump, what pulls him up again? [1]

_____

_____

Score	/ 2

42. Peter bought a fish tank to rear some fish. He kept it in his balcony where it is exposed to a lot of sunlight.



(a) Recently, he went on a holiday and forgot to get someone to feed his fish during his absence. At the end of a week, he came back and found that all his fish had died but his water plants were still thriving. Explain clearly why. [2]

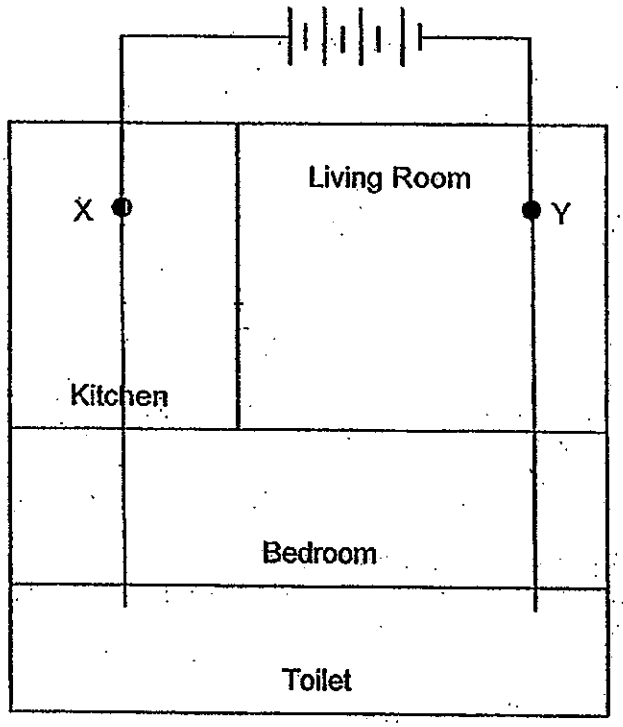
(b) He then bought new fish to add to his tank. At the same time, he bought an automatic fish food feeder so that his fish would be fed at 8a.m. every day without fail. However, he shifted his fish tank to a place which did not receive much light throughout the day. He was sent overseas for a week for work. When he came back, he found that the air pump that he had installed in the fish tank was spoilt. Also, his fish and water plants were all dead. Why do you think this had happened? Explain clearly. [2]

Score	/ 4

43. Pat received a new dollhouse for her birthday. Her father decided to help her install some lighting in her dollhouse.

Each room should have a light. Each light should be able to be turned on independent of the rest of the lights, except for the living room and kitchen lights. The lights in the living room and kitchen have to be switched on together.

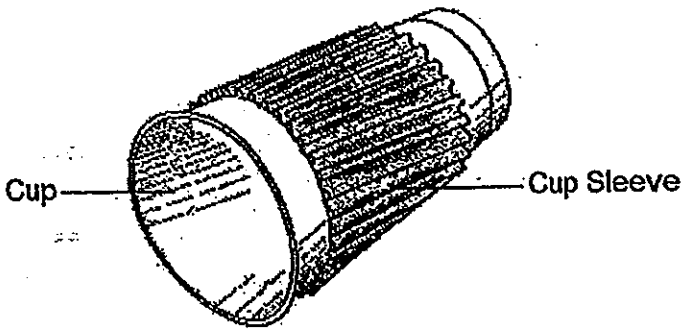
Construct a circuit diagram to show the position of the bulbs and switches. Connect your circuit diagram to points X and Y. [2]



Score	/ 2

44. A cup sleeve is something that wraps around a cup so that the user can comfortably hold a cup of hot drink. There are many different materials used to make a cup sleeve.

In the diagram below, the cup sleeve is made up of corrugated cardboard wrapped around the cup.



(a) Explain clearly how a cup sleeve helps a user hold a hot drink comfortably. [2]

_____

_____

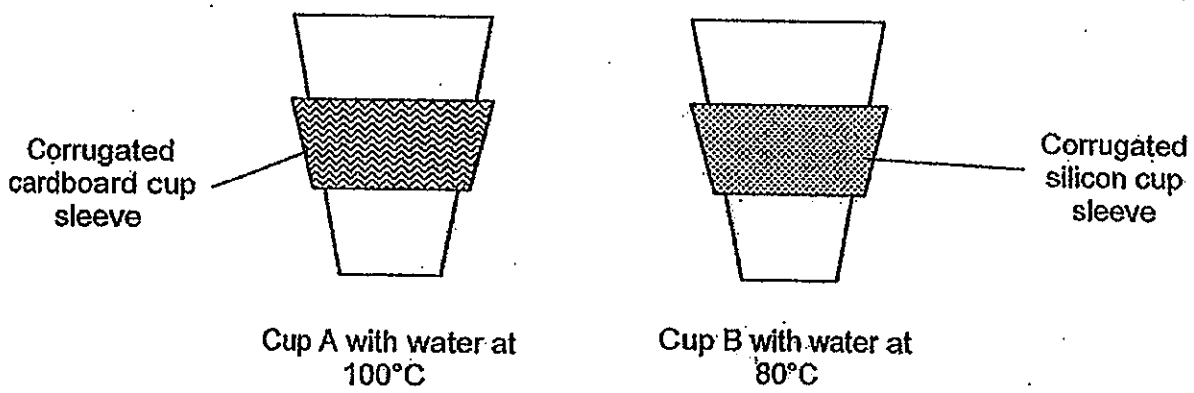
_____

_____

_____

Score	/ 2

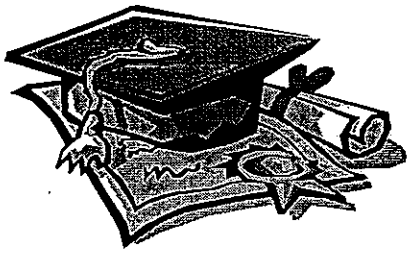
Gina wanted to compare the efficiency of a corrugated cardboard cup sleeve to a corrugated silicon cup sleeve. She set up an experiment as shown below using a temperature logger to find the time taken for the surface of both the cup sleeves to reach a specific temperature.



(b) Her teacher said that her experiment is not a fair test. Do you agree? Explain your answer clearly. [2]

End of paper

Score	/ 2



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : NAN HUA
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

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

31)a)Wind b)Windmills

32)a)Gravitational Potential energy→Kinetic energy→Kinetic energy→Electrical energy
b)It is a renewable source of energy.

33)a)It prevents the user from slipping. When the surface is rougher, the friction between the strip of material and the user feet would be the greatest, allowing the user to have a better grip on the stairs.
b)The strip of rougher material become smoother due to wear and tear, so, there is less friction between the soles of the feet and the step.

34)b)Air resistance ↓ ↑ Gravitational Force

a)Gravitational Force and Air resistance.

35)a)The size of the object.

b)1)Place the torch at a distance of 30cm from the white wall.

2)Switch on the torch.

3)Measure and record the size of the shadow in the table.

4)Repeat the experiment at least twice and take the average and record it in the table.

5)Repeat steps 1-4 by decreasing the distance between the torch and the white wall to 20cm.

6)Compare the results.

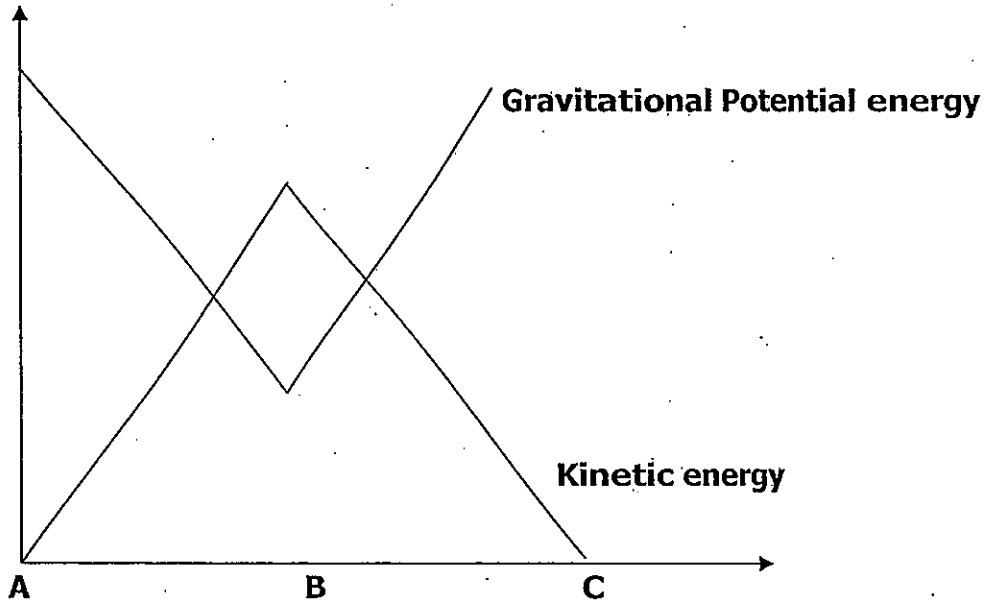
7)Conclude the experiment.

36)a)Increase the number of Solar panels on the roof.

b)With more solar panels, more light can be harnessed and converted to other forms of energy.

37)a)Gravitational Potential energy→Kinetic energy→Gravitational Potential energy.

b)



38)a)The number of candles.

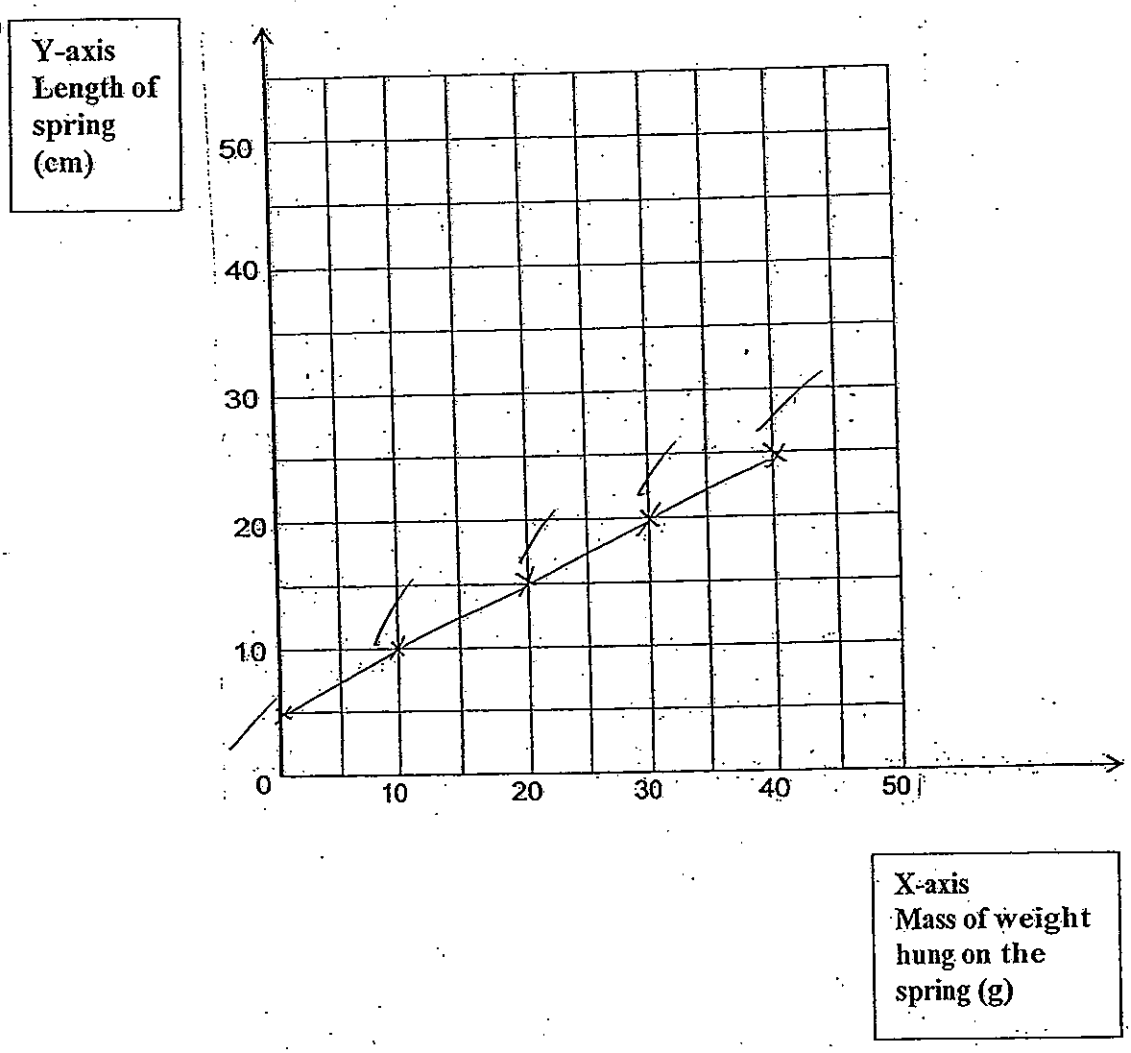
b)She can repeat her experiment at least twice and take the average reading.

c)Move the cup nearer to the candle.

39)a)Block C. The depth of the depression it made was the greatest among the three block.

b)The new rolling pin might have a greater mass. The greater the mass of the rolling pin, the greater the force to roll out the dough even if you use the same force to roll the rolling pin.

40)



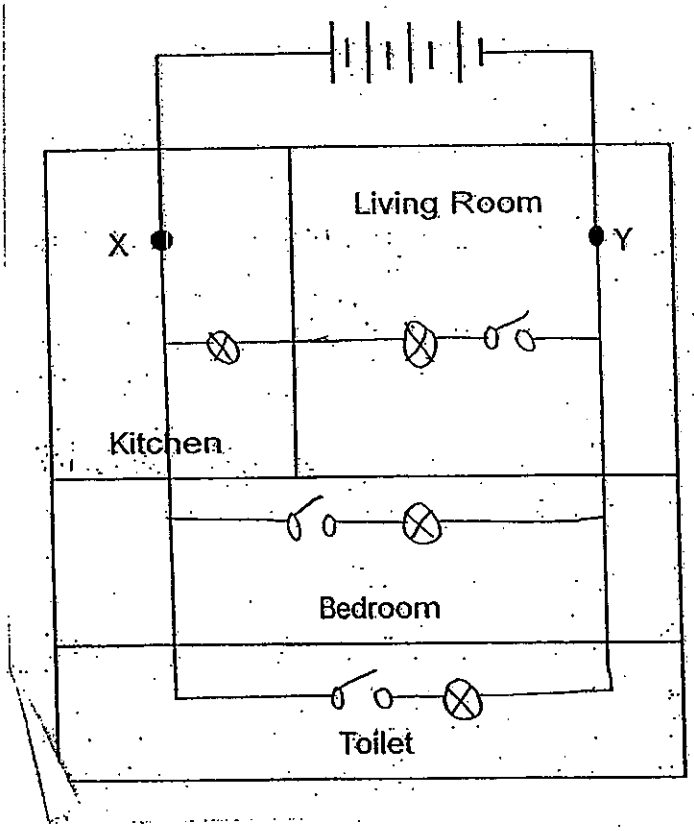
41)a)Gravitational Force.

b)Elastic spring force due to the bungee cord acting on the person will pull the person up.

42)a)The fish were not fed any food and had starved to death. The water plants were able to make their own food as they receive ample sunlight for photosynthesis to take place.

b)The water plants did not receive enough sunlight for photosynthesis to take place and so died, with the air pump spoilt and without the plants to photosynthesis to produce oxygen the fish can not get enough oxygen to respire and died as well.

43)



44)a)The cup sleeve helps to reduce the contact surface area between the hand and the cup, thus slowing down the heat transfer from the hot drink to the outer surface of the cup sleeve and from the cup sleeve to hand.

b)Yes, I agree with her teacher. In an-experiment, there should only be one independent variable, and in this experiment, it should be the material of the cup sleeve, not the temperature of the water. Changing the temperature of the water would affect the results of the experiment.

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2013

BOOKLET A

Date : 7 March 2013
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Parent's signature: .....

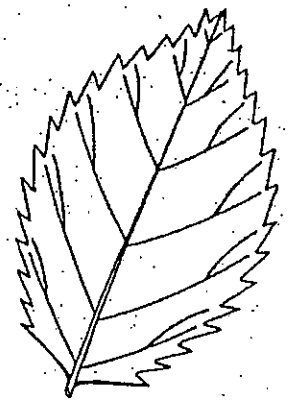
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 28 printed pages including this cover page.

Section A **(15 x 2 marks = 30 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 (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

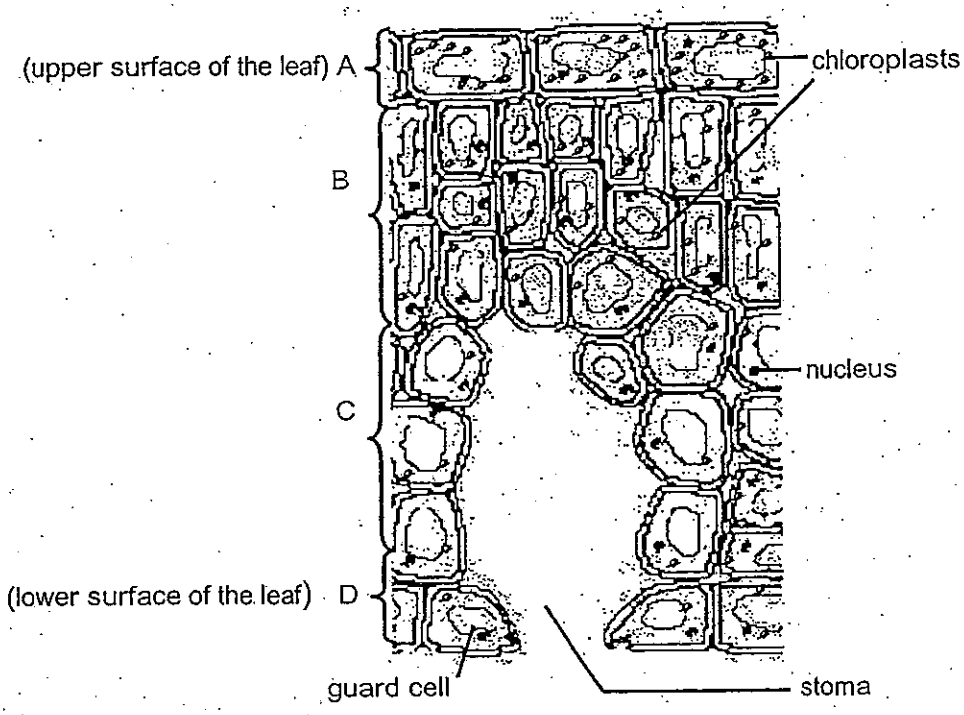
1. Study the diagram below carefully.



Which one of the following describes the leaf correctly?

	Leaf Shape	Leaf Edge	Vein Pattern
(1)	oval	jagged	network
(2)	oval	entire	parallel
(3)	round	jagged	network
(4)	round	entire	parallel

2. The diagram below shows the cross-section of a leaf. A, B, C and D represent the four layers that could be seen under the microscope.



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

A The cells in layer A contain many chloroplasts to enable the leaf to make food.

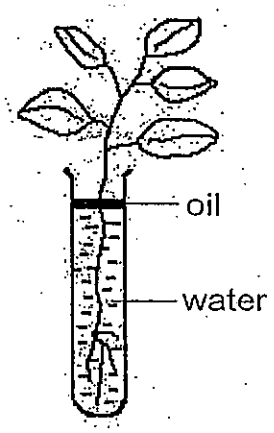
B All the cells in the four layers have a cell wall to prevent some substances from entering the cells.

C The guard cells in layer D control the size of the stoma to trap sunlight in order to carry out photosynthesis.

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

3. Da Ren put four similar plants in four different boiling tubes labeled A, B, C and D. He poured the same volume of water in each tube and marked the water level. He then added an equal amount of oil on the water surface for each tube.

Next, he coated the leaves of 3 of the plants with oil, as indicated below, and placed the four tubes under the sun.



Tube A	Tube B	Tube C	Tube D
oil is coated on both upper and lower surfaces of leaves	oil is coated only on upper surface of leaves	oil is coated only on lower surface of leaves	no oil is coated on the surfaces of the leaves

After six hours, he observed the water level in the four tubes.

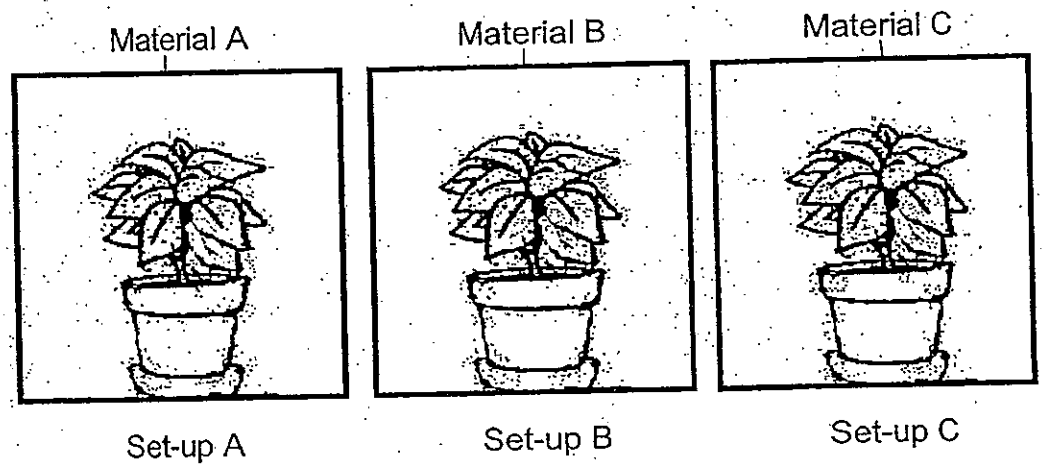
Which one of the following correctly shows the expected volume of water that would be left in the tubes, from the most to the least?

most ⟶ least

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

4. Mai wanted to find out how the material of a box affects the rate of photosynthesis in a plant.

She had set-ups, A, B and C, each with a box of the same dimension but made of different materials, A, B and C respectively. In each box, she put a similar well-watered plant. She measured the amount of carbon dioxide in the boxes at the start of the experiment.

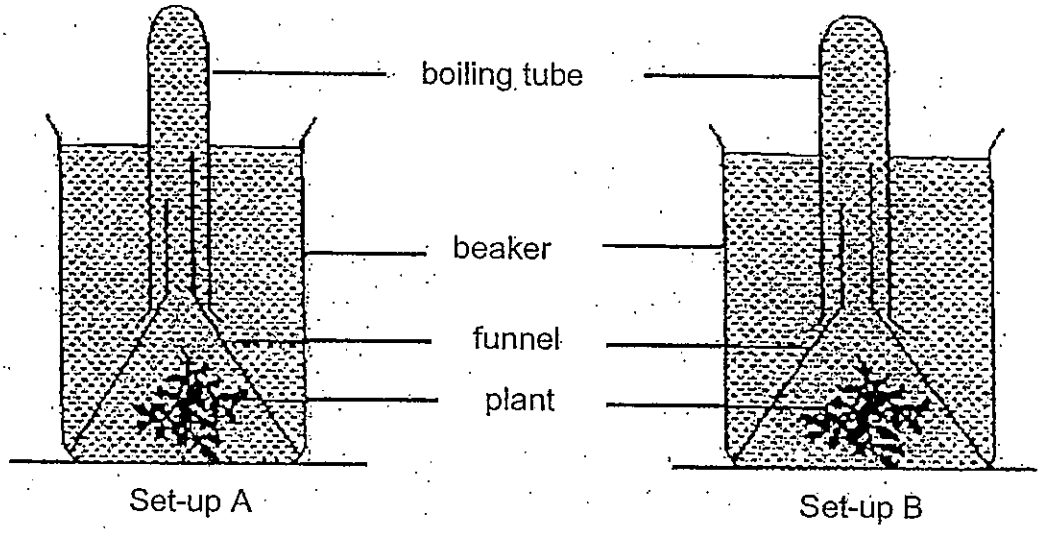


Four hours later, she found that the level of carbon dioxide in set-up A was the highest, followed by B, then C.

Which one of the following shows the most likely material of the boxes?

	Set-up A	Set-up B	Set-up C
(1)	clear plastic	frosted glass	wood
(2)	cardboard	tracing paper	glass
(3)	wood	clear plastic	frosted glass
(4)	glass	cardboard	tracing paper

5. Julian placed two similar aquatic plants in an inverted funnel and boiling tube, fully submerged in a beaker of water. He added baking soda to only one set-up, to increase the concentration of carbon dioxide in the water.



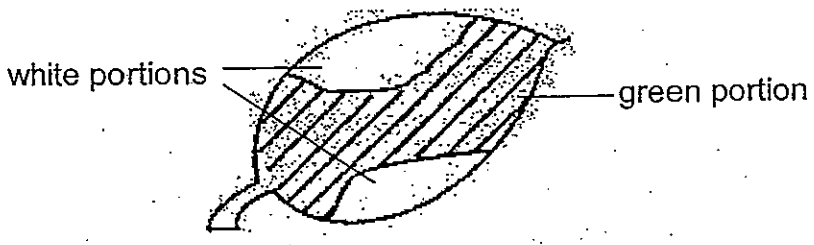
He placed the two set-ups in the sun and measured the height of the column of gas collected in the inverted boiling tube for each plant after 20 minutes. He recorded his readings in the table below.

	Set-up A	Set-up B
Height of column of gas collected (cm)	2	6

Which one of the following statements correctly identifies and explains the set-up which contained baking soda?

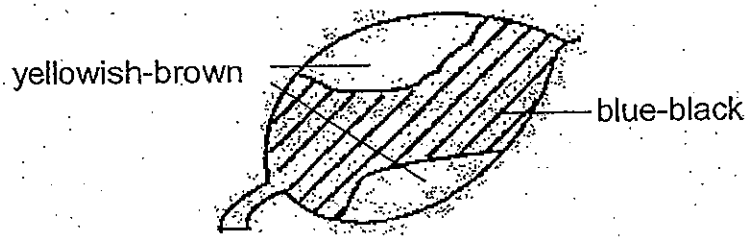
	Set-up	Explanation
(1)	A	The plant was able to photosynthesise at a faster rate because more carbon dioxide was supplied.
(2)	A	The plant respired at a faster rate because more carbon dioxide was supplied and had to be released.
(3)	B	The plant was able to photosynthesise at a faster rate because more carbon dioxide was supplied.
(4)	B	The plant photosynthesise at a slower rate because there was too much carbon dioxide.

6. A variegated leaf containing green and white portions was freshly plucked from a plant which had been left in the sun for a few hours.



A few drops of iodine solution were placed on the different portions of the leaf. When the yellowish-brown iodine solution comes into contact with starch, it would turn blue-black.

The following result was observed.

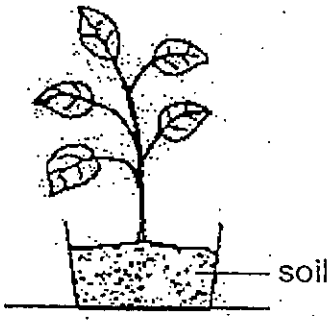


Which of the following give the correct explanation for the result obtained?

A Starch is absent in the white portions of the leaf.
B Starch is present in the green portions of the leaf.
C The green portions of the leaf contain chlorophyll that can trap sunlight.
D The starch in the leaf reacts with the iodine solution, turning it blue-black.

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

7. Bing Enn wanted to find out if the growth of plants would be affected when they are exposed to different coloured lights.



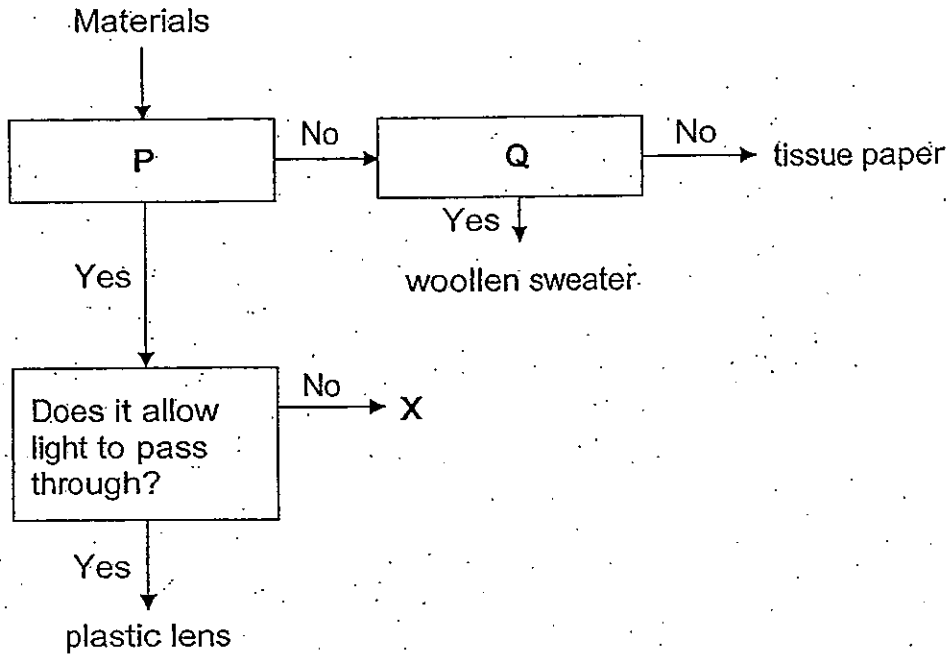
He set up four pots of plants with varying conditions as shown in the table below.

	Potted Plant			
	A	B	C	D
Water	40 ml	20 ml	40 ml	40 ml
Type of soil	loamy	sandy	loamy	sandy
Colour of light	~~green~~ white	white	green	~~white~~ green
Fertilizer added	none	5g	none	5g

Which one of the following plants should he use in his experiment?

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

8. In the flowchart below, P and Q represent questions while X represents an object.



Which of the following best represent questions P and Q and object X?

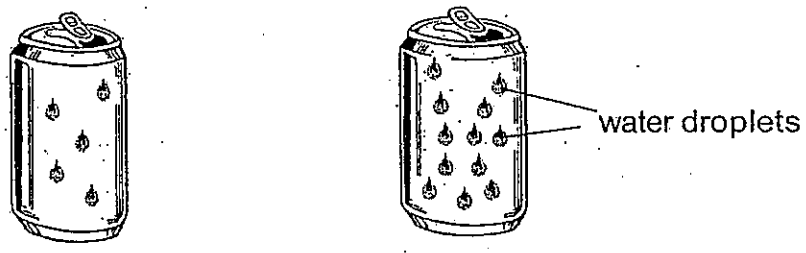
	P	Q	X
(1)	Is it man-made?	Is it flexible?	silver coin
(2)	Does it sink in water?	Can it be stretched?	handkerchief
(3)	Is it strong?	Is it flexible?	cotton shirt
(4)	Is it waterproof?	Can it be stretched?	ceramic pot

9. The table below shows the two processes, evaporation and condensation.

Which one of the following differences is **correct**?

	Evaporation	Condensation
(1)	causes the formation of dew	causes the formation of steam
(2)	requires heat gain by the liquid	requires heat loss by the gas
(3)	takes place when liquid is changed to gas	takes place when solid is changed to liquid
(4)	increases in rate when there is more water vapour in the air	increases in rate when there is less water vapour in the air

10. Two cans, X and Y, are placed side by side on a table. The diagram below shows the appearance of the cans after 5 minutes.

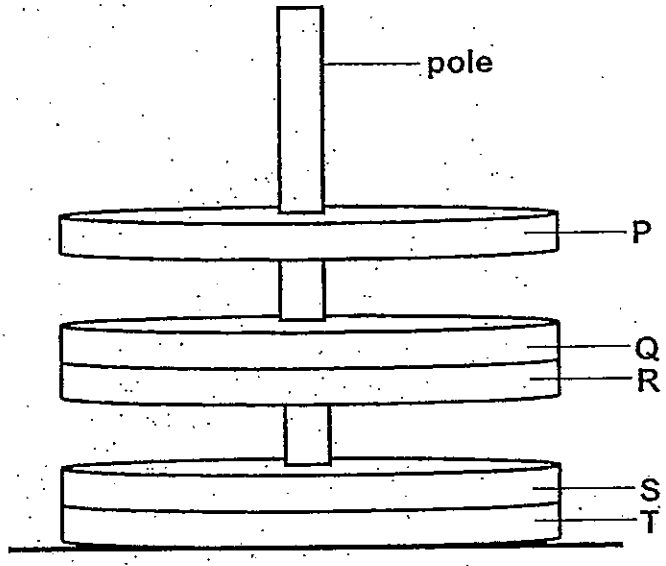


Can X Can Y

Which one of the following explains **correctly** why there are more water droplets on can Y than can X?

(1) The liquid in can Y is cooler so more water vapour from the surrounding condensed on the can.
(2) The liquid in can Y is warmer so more water vapour from the surrounding condensed on the can.
(3) The liquid in can X is warmer so more evaporation took place and less water droplets can be seen.
(4) The liquid in can X is cooler so more evaporation took place and less water droplets can be seen.

11. Five rings, P, Q, R, S and T were slotted through a pole as shown in the diagram below.

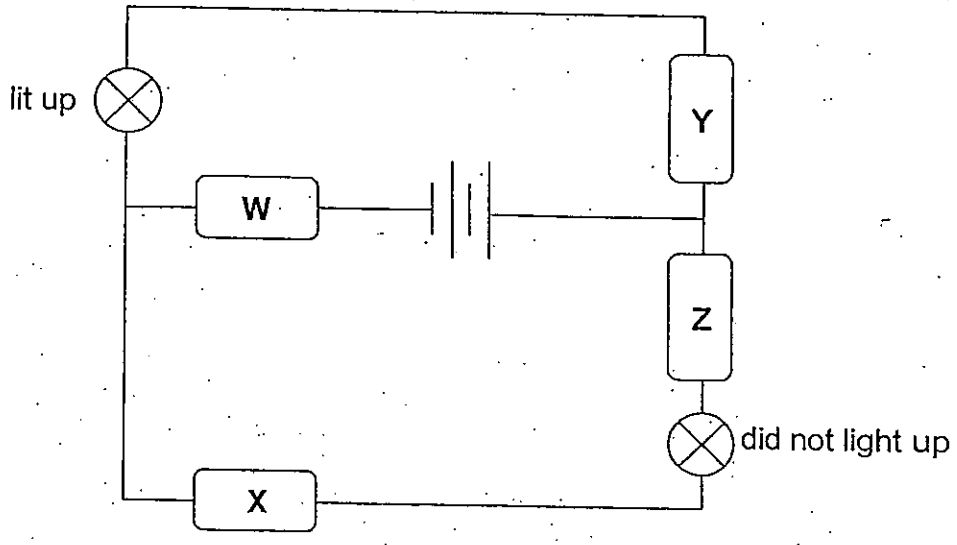


Based on the set-up, which of the following conclusions have been matched correctly?

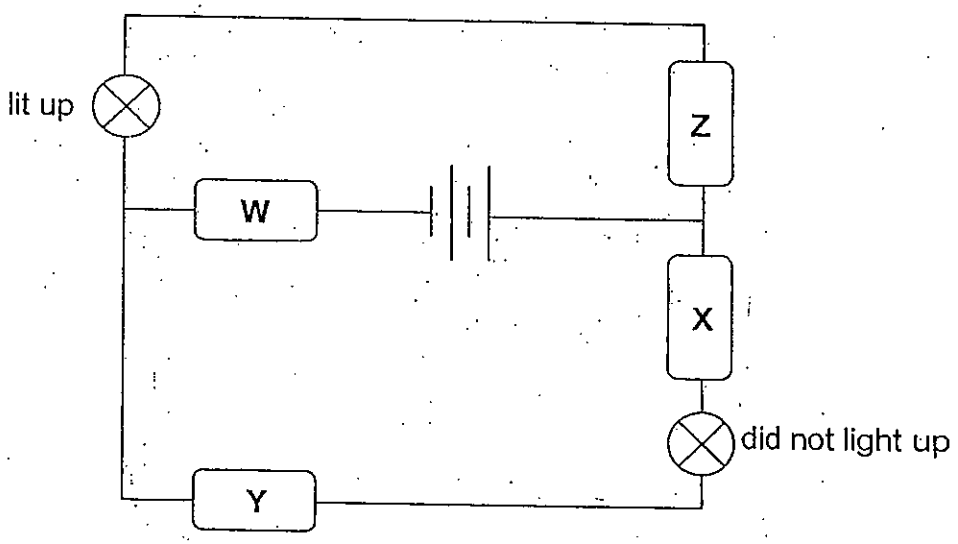
	Conclusion	True	False	Not possible to tell
A	Ring R is a magnet.	√		
B	All five rings are made of magnetic material.			√
C	The like poles of ring Q and ring R are facing each other.		√	
D	If rings Q and R are removed, ring P will be attracted to ring S.		√	

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

12. Esther had 4 bars of different materials, W, X, Y and Z.
She connected them in a circuit and recorded her observations as shown in the diagram below.



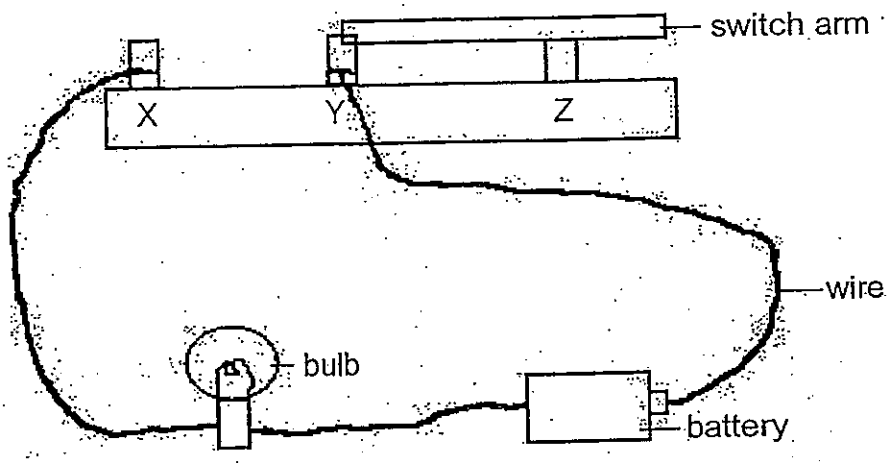
She then rearranged the positions of the 4 bars and recorded her observations again.



Based on her results, which one of the following shows the possible materials that bars W, X, Y and Z could be made of?

	Bar W	Bar X	Bar Y	Bar Z
(1)	aluminium	glass	copper	silver
(2)	plastic	rubber	glass	aluminium
(3)	glass	plastic	wood	silver
(4)	copper	wood	silver	rubber

13. Kenneth connected the circuit as shown below using a battery, a working bulb, a switch and some wires which are all in working condition. He observed that the bulb did not light up.

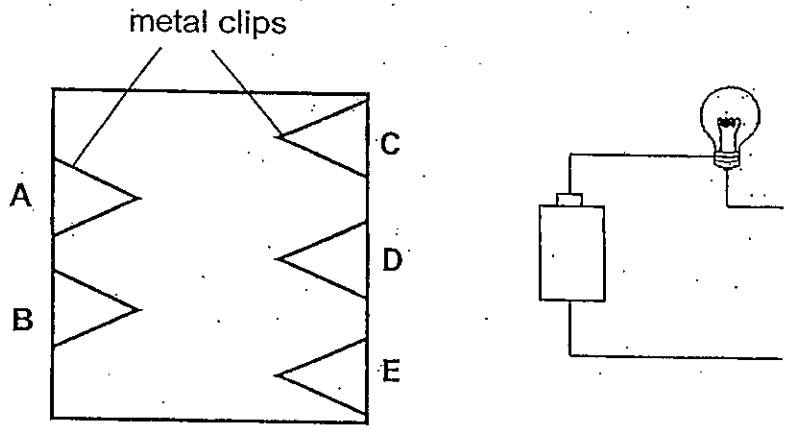


Which of the following should be done to get the bulb to light up?

A Swing the switch arm from point Z to X.
B Connect the wire from point Y to point Z.
C Connect one of the wires to the metal tip of the bulb instead of the metal casing.

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

14. Yi Xin made a circuit card as shown in the diagram below. Some of the metal clips are connected with wires on the underside of the card.



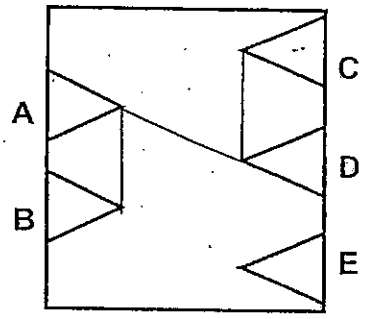
Top side of the circuit card circuit tester

She connected the ends of a circuit tester to different paper clips and recorded the observations in the table as shown below.

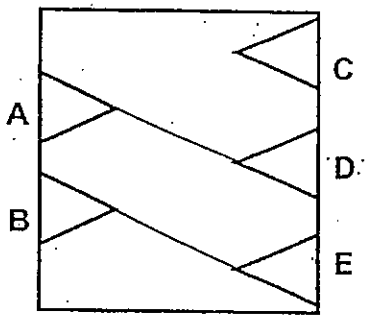
Connecting		Lit up?
A	E	No
B	C	Yes
D	B	Yes
E	A	No

Which one of the following shows the possible wire connection on the underside of the circuit card?

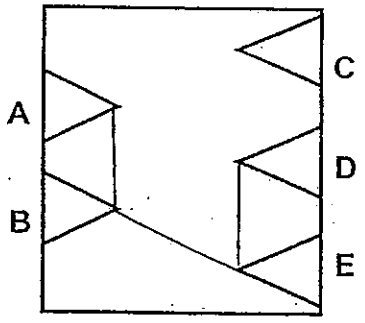
(1)



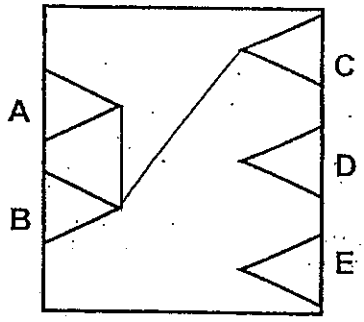
(2)



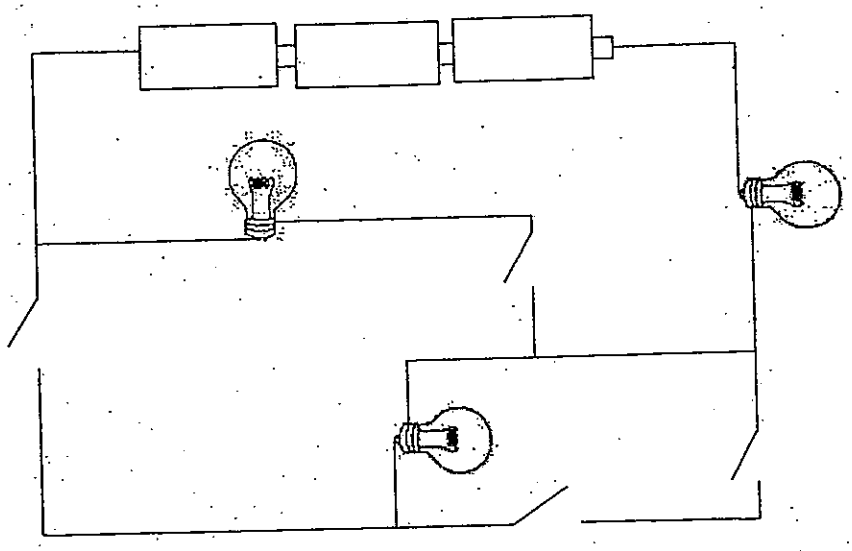
(3)



(4)



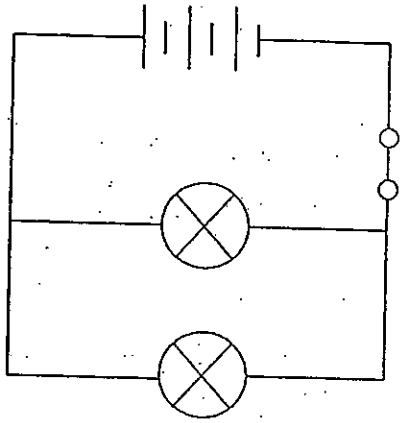
15. Study the circuit shown below.



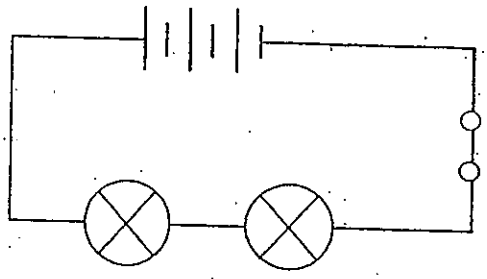
What is the least number of switches that must be closed for **all** the bulbs to light up?

(1) 1 switch only
(2) 2 switches only
(3) 3 switches only
(4) 4 switches

16. Two circuits, X and Y, are set up as shown in the diagram below. The bulbs in both circuits are both lit.
All the batteries, bulbs and wires used are identical and are in proper working condition.



Circuit X



Circuit Y

Which one of the following will **not** be observed in the two circuits when the switches are closed.?

(1) The two bulbs in Circuit Y have the same brightness.
(2) Each bulb in Circuit X is brighter than each bulb in Circuit Y.
(3) If one bulb was removed from Circuit X, the other bulb can continue to light up.
(4) If one bulb was removed from Circuit Y, the other bulb can continue to light up.

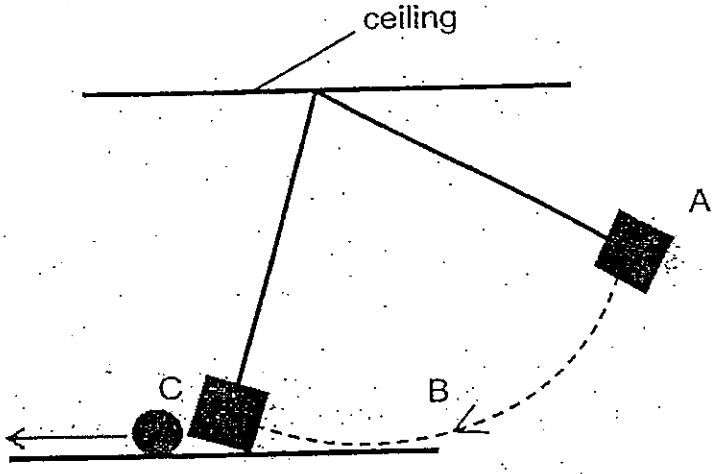
17. The following describes different situations to show forces in action.

A Wringing of clothes
B A child writing on a piece of paper
C A person stepping on a pedal to cycle
D Construction workers picking up sandbags from the ground

Which one of the above situations involves **both** a push and pull force?

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

18. Tommy set up the experiment as shown below. When the square block was released from point A, it hit the metal ball, causing the ball to move in the direction as shown.



Which one of the following shows the correct main energy conversion that took place in the experiment?

	Point A		Point B		Point C
(1)	Gravitational potential energy of the block	→	Kinetic energy of block	→	Sound energy of ball
(2)	Elastic potential energy of the block	→	Kinetic energy of block	→	Kinetic energy of ball
(3)	Elastic potential energy of the block	→	Kinetic energy of block	→	Sound energy when the ~~bob~~ block hits the ball
(4)	Gravitational potential energy of the block	→	Kinetic energy of block	→	Kinetic energy of ball

19. Rui Cong dropped 4 balls of the same size but of different masses onto 4 trays containing the same amount of fine sand. The balls were dropped from different heights as shown in figure A below.

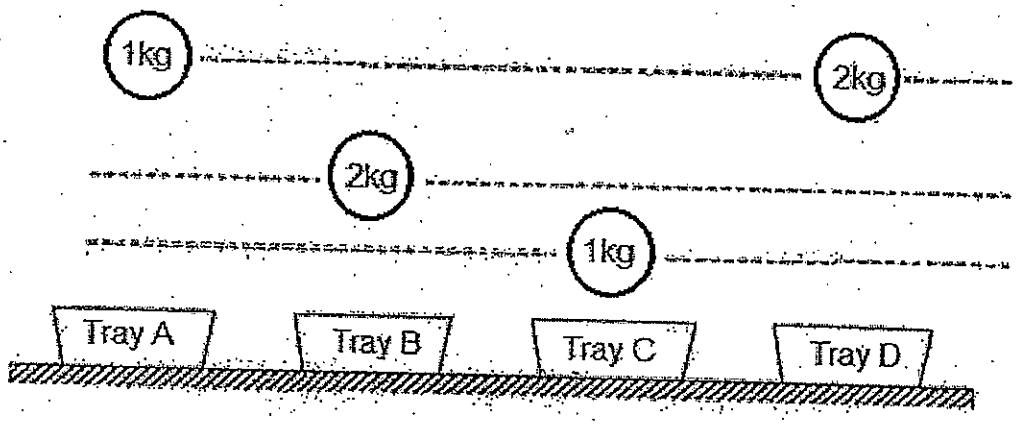


Figure A

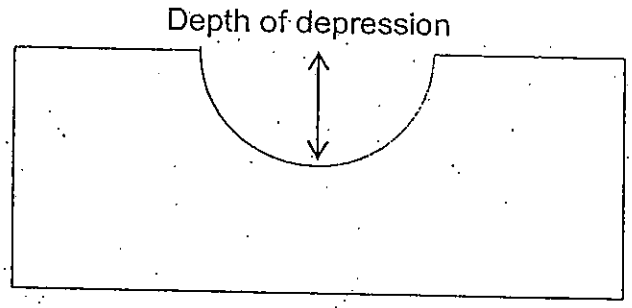
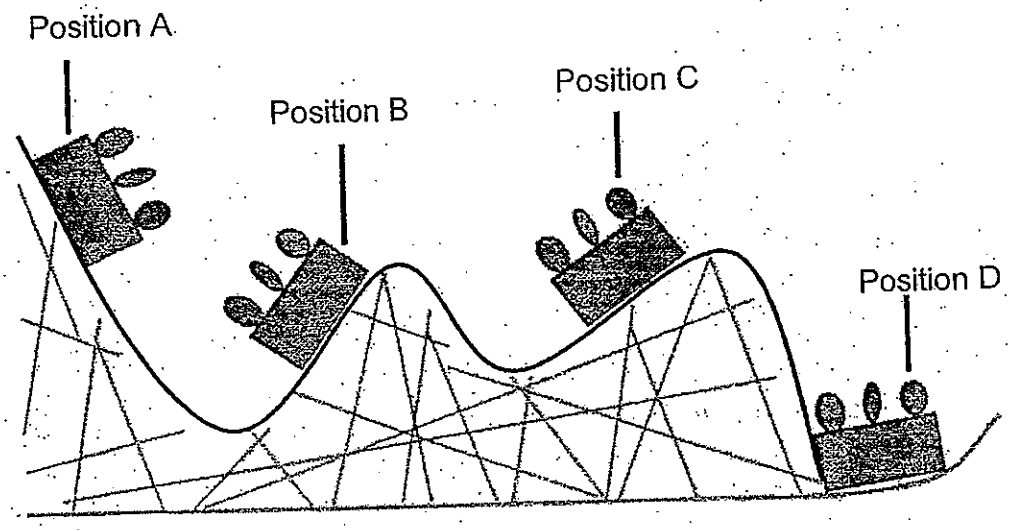


Figure B

Rui Cong measured the depths of the depression as shown in Figure B of each tray. Which one of the following correctly matches the depth of depression?

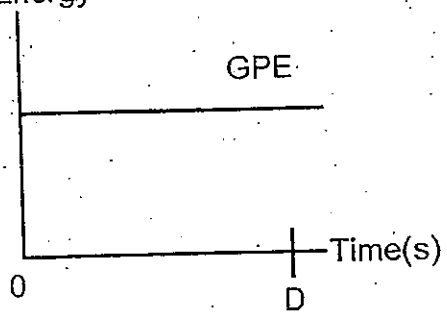
	Tray A	Tray B	Tray C	Tray D
(1)	2.0 cm	1.5 cm	1.0 cm	2.0 cm
(2)	2.5 cm	1.0 cm	0.8 cm	2.0 cm
(3)	2.0 cm	1.5 cm	1.0 cm	2.5 cm
(4)	2.0 cm	2.0 cm	1.0cm	2.0 cm

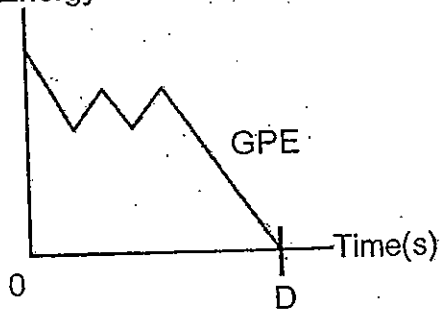
20. The diagram below shows part of a roller coaster ride. The roller coaster travels from position A to B to C and eventually comes to a stop at D.

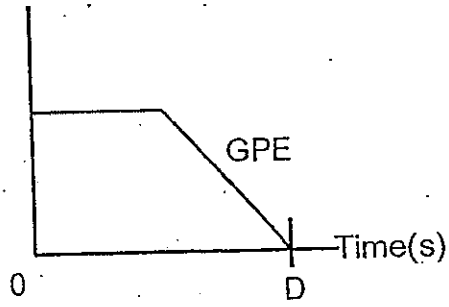


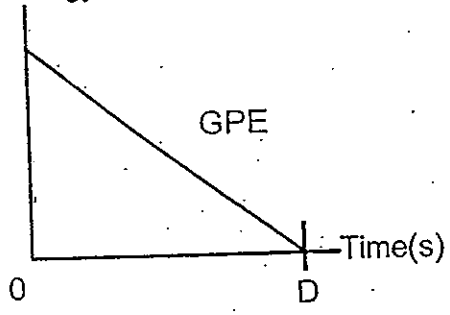
Marcus started recording the gravitational potential energy (GPE) ~~and the kinetic energy (KE)~~ of the roller coaster. ~~Marcus added the values together~~ and plotted a graph.

Which one of the following graphs correctly shows ~~the sum~~ of gravitational potential energy ~~and kinetic energy~~ from position A to D?

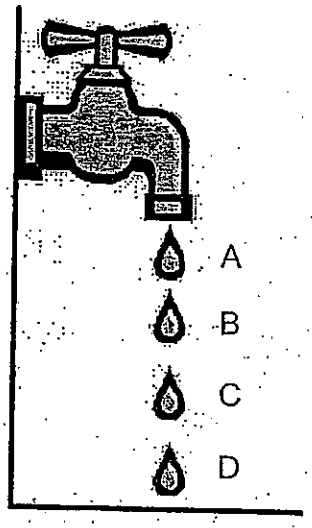
(1)


(2)


(3)


(4)


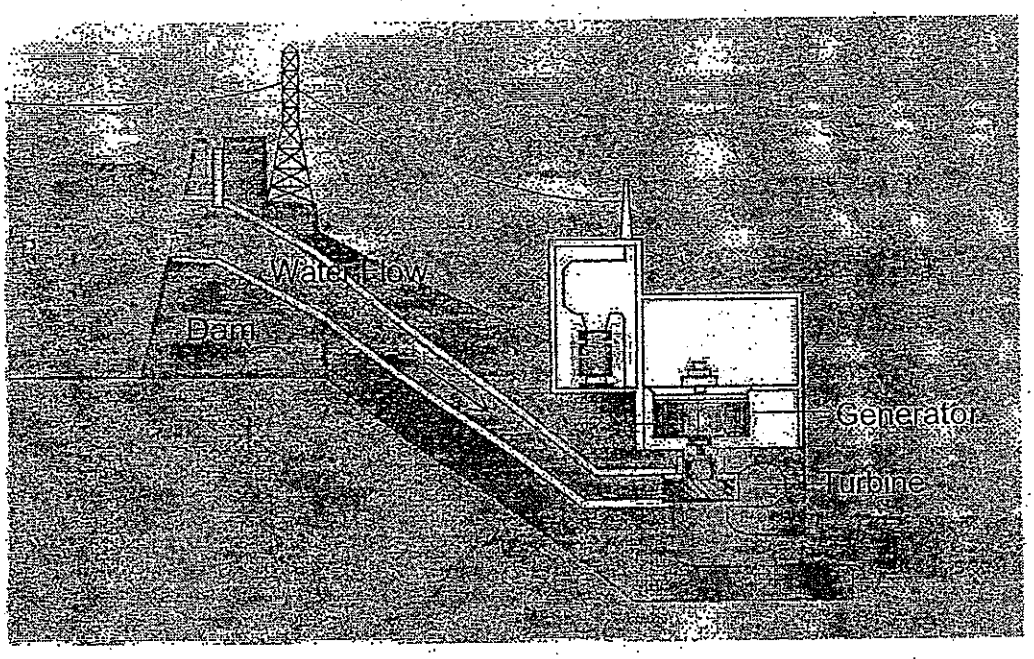
21. A droplet of water falls through the path as shown in the diagram below.



Based on the diagram, which position of the droplet possesses the greatest amount of kinetic energy?

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

22. The diagram below shows a hydroelectric power station.

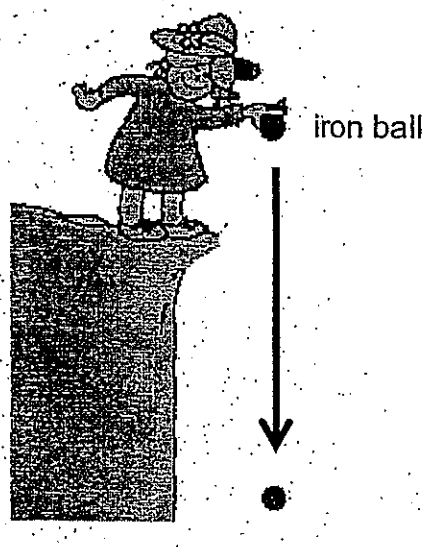


What is the advantage of using a hydroelectric power station instead of coal to generate electricity?

A The usage of coal depends on the weather
B This process can continue to sustain itself without the Sun
C The usage of water in generating electricity does not cause pollution.

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

23. During a science lesson, Miss Huang showed her students a picture of a person releasing an iron ball from a cliff.



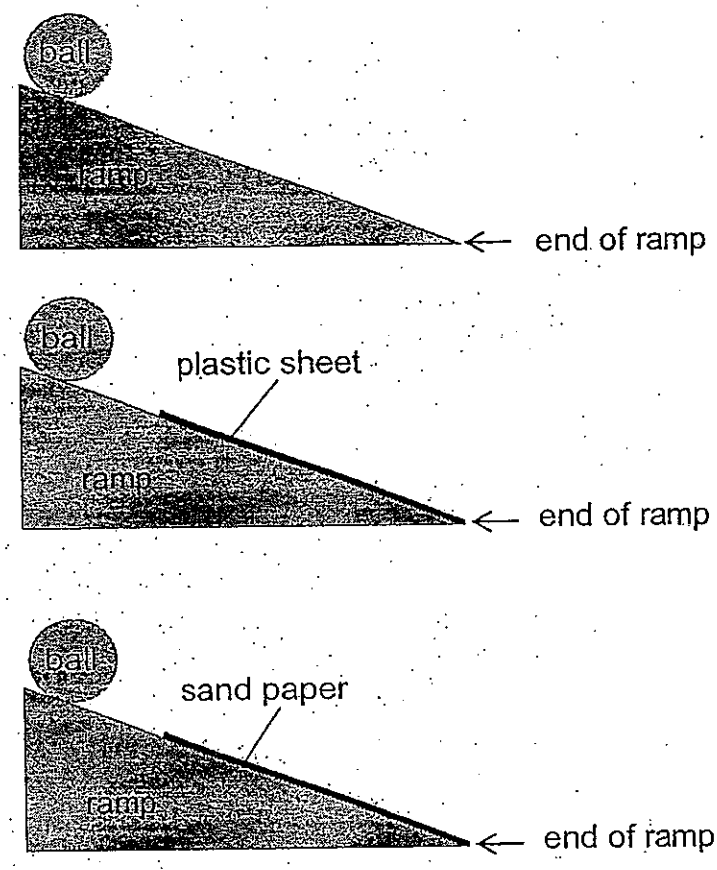
Her students gave the following reasons to explain why the ball dropped downwards:

A The iron ball has mass
B The iron ball dropped downwards due to Earth's gravity
C The earth's magnetic field exert a force pulling the iron ball downwards.

Which of the following reasons is/are true?

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

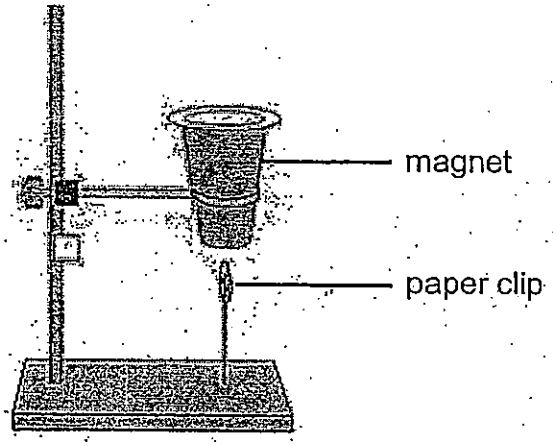
24. A group of students set up the experiment as shown in the diagram below. They wanted to find out how the different surfaces of the ramp affect the time taken for the ball to reach the end of the ramp. A ball is released from the top of the ramp and the students timed how long it took for the ball to reach the end of the ramp.



Which one of the following is most likely the correct timing recorded by the students?

	Time (normal surface) seconds	Time (plastic sheet) seconds	Time (sand paper surface) seconds
(1)	2.3	1.9	1.7
(2)	1.9	2.3	1.7
(3)	1.9	1.7	2.3
(4)	1.7	2.3	1.9

25. The picture below shows a paper clip being suspended in mid-air by a magnet.

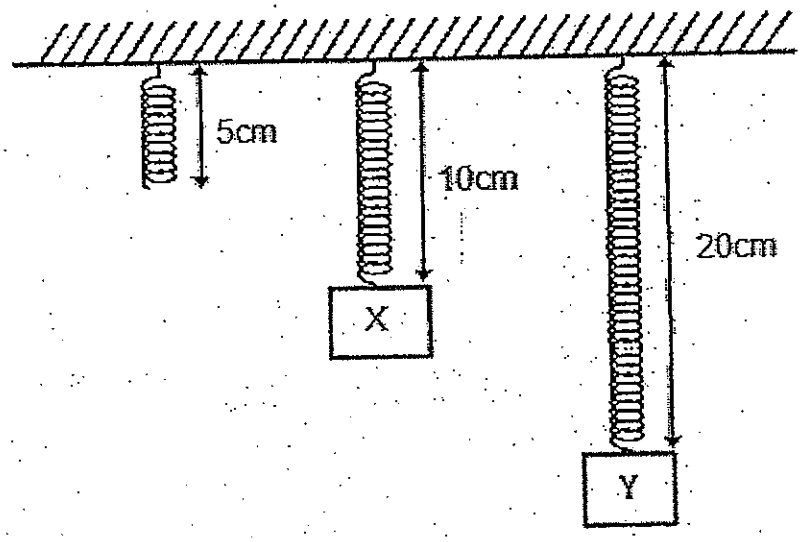


Which of the following statements about the paper clip is/are correct?

A The paper clip was pulled by the magnet
B The paper clip was pushed by the magnet
C A weaker gravitational force is acting on the paper clip.
D The magnetic force acting on the paper clip was greater than the gravitational force

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

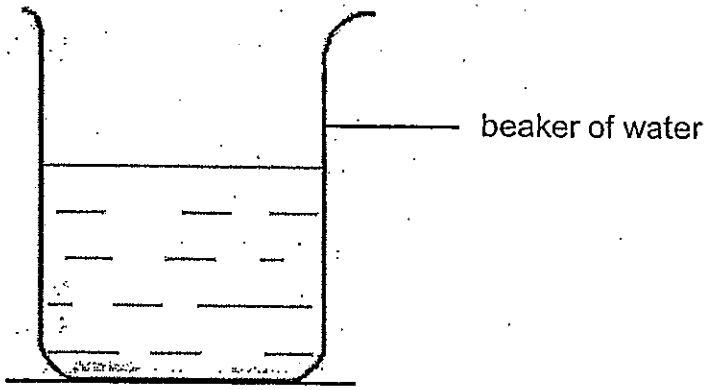
26. Judy wanted to find out how the length of a spring varies with different weights hung on it.



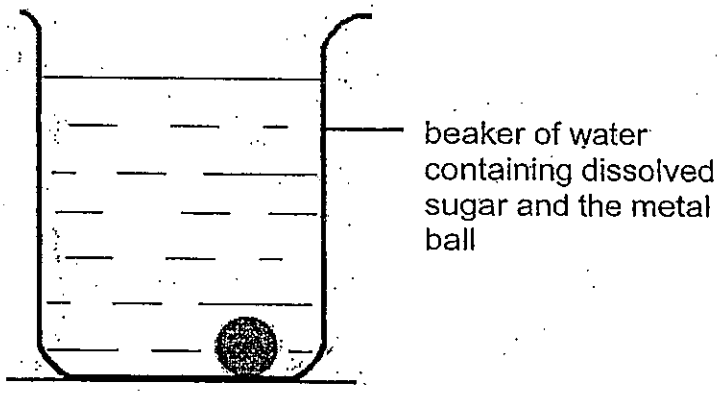
Based on the diagram above, which one of the following statements is true?

(1) The mass of Y is the same as X.
(2) The mass of Y is twice of X.
(3) The mass of Y is thrice of X.
(4) The mass of Y is four times of X.

27. The following diagram shows a beaker containing water and the total mass is 200 grams.



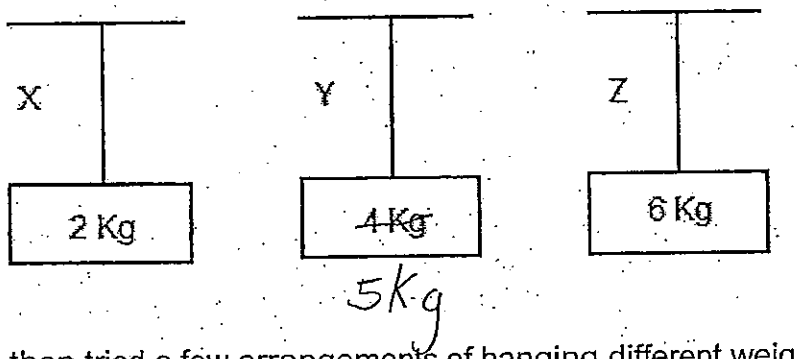
Mason poured 20 grams of sugar into the water and stirred it until it is completely dissolved. He also placed a metal ball which has a mass of 40 grams into the water as shown in the diagram below.



Which one of the following correctly shows the total mass of the beaker of solution and the metal ball?

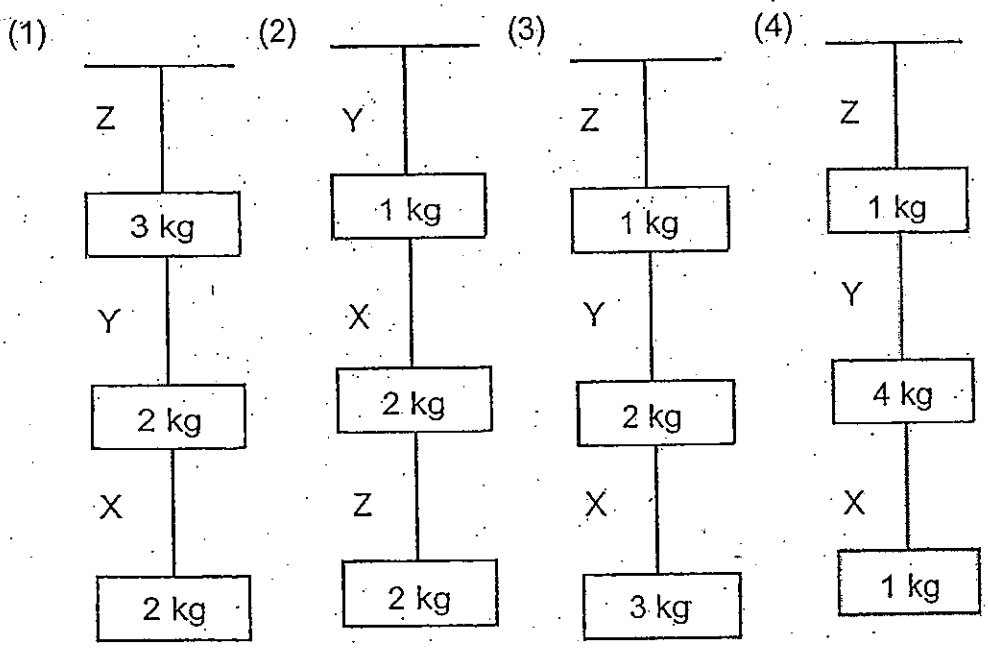
(1) 200 grams
(2) 220 grams
(3) 240 grams
(4) 260 grams

28. Jonathan tested three types of string X, Y and Z by hanging weights from each string. He increased the weights until the string broke. The maximum weight that the strings could hold before breaking is shown below.



Jonathan then tried a few arrangements of hanging different weights.

Which one of the following arrangements would be possible?

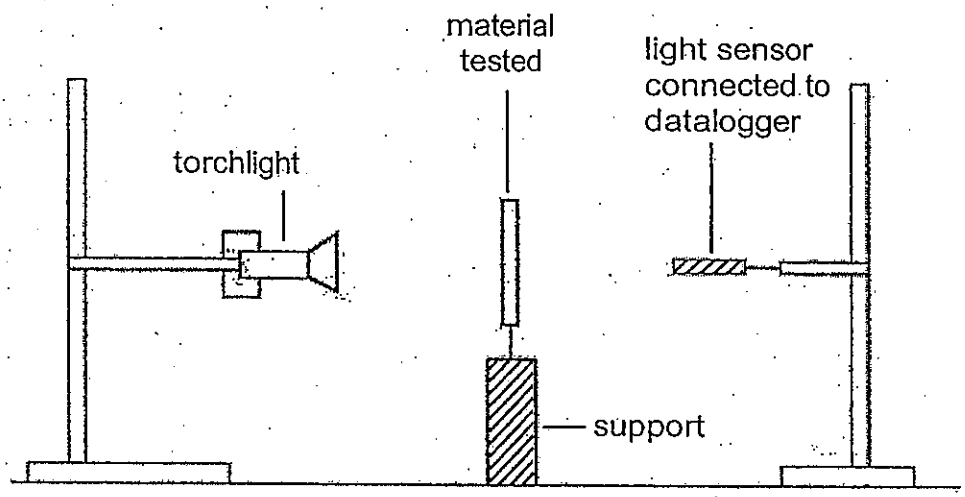


29. Substance X has a freezing point of 25°C and boiling point of 180°C.

Which one of the following correctly shows the state(s) of substance X at 30°C and at 200°C?

	30°C	200°C
(1)	solid	gas
(2)	solid	liquid
(3)	liquid	gas
(4)	liquid	liquid

30. Jamie set up the experiment below to find out how different materials allowed different amount of light to pass through. The torchlight was switched on and the datalogger recorded the results picked up by the light sensor.



The experiment was carried out in a lighted room which has a brightness of 80 lux.

Which one of the following set of results was possibly recorded by Jamie?

	Transparent material (lux)	Translucent material (lux)	Opaque material (lux)
(1)	220	320	65
(2)	320	220	80
(3)	310	80	220
(4)	300	195	40

-----End of Booklet A-----

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2013

BOOKLET B

Date : 7 March 2013

Duration : 1 h 45 min

Name :_____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

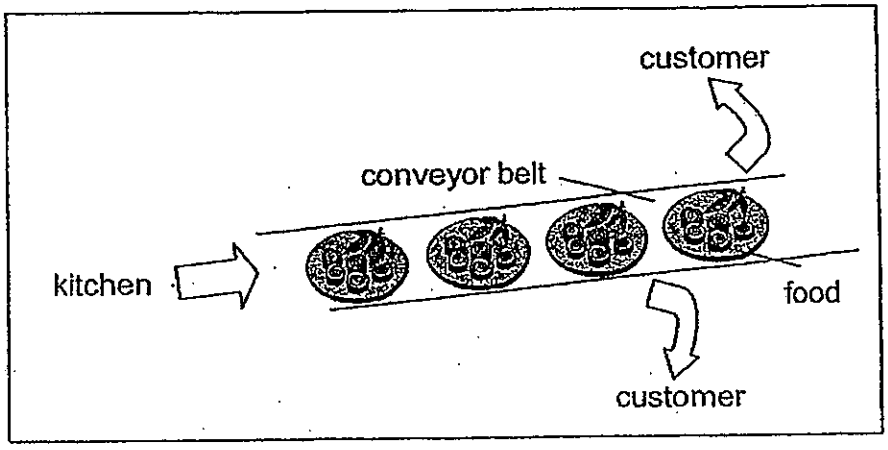
Parent's signature: .....

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

Booklet B consists of 18 printed pages including this cover page.

Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.
Marks will be deducted for misspelt key words.

31. In some restaurants, there is a system where food from the kitchen is placed on a conveyor belt that moves past every table so that all the customers can be served.

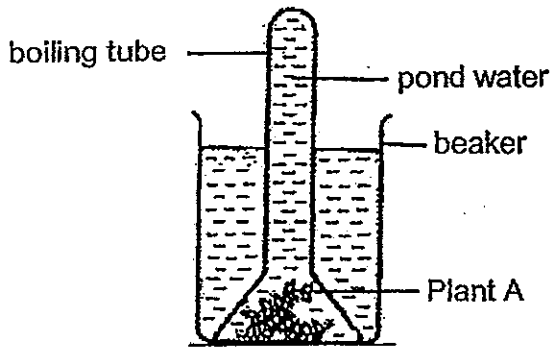


In plants, there is a similar system that has two separate tubes (Tube 1 and Tube 2) transporting essential substances to the entire plant.

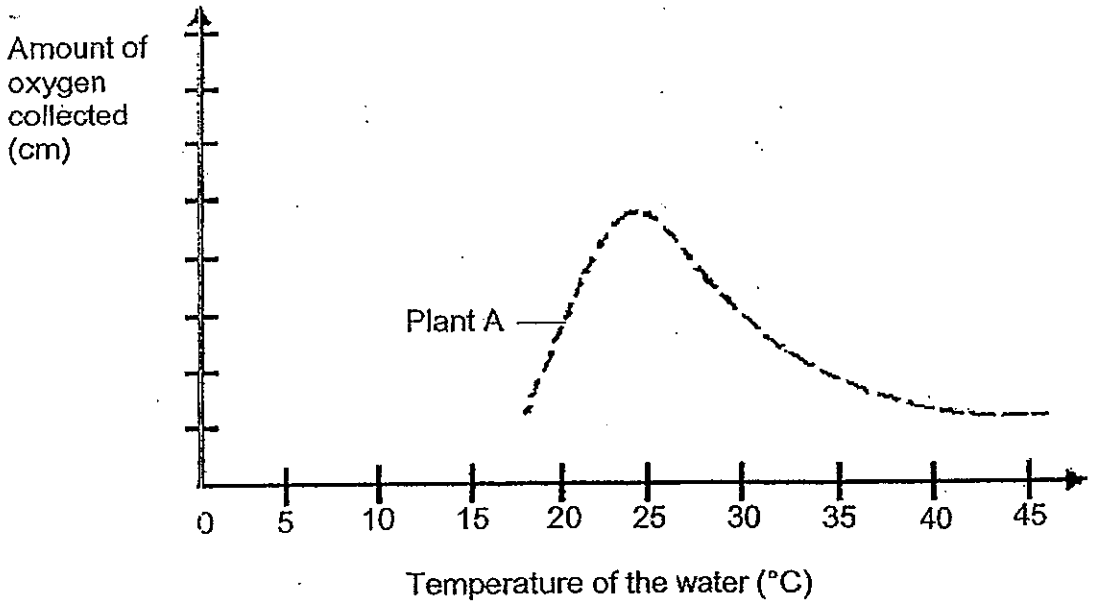
Fill in the table below to show the similarity between the transport system of the plant and the conveyor belt of the restaurant. [2]

Restaurant	Plant System	
Conveyor Belt	Tube 1	Tube 2
Kitchen		
Item being transported	water and mineral salts	
Customers		other parts of the plant

32. Wen Jin carried out an experiment to find out how the temperature of water affects the rate at which plant A carried out photosynthesis.



She prepared similar set-ups as above by varying the temperature of pond water at 5°C interval from 20°C to 40°C. She recorded the amount of oxygen collected in the boiling tube after 2 hours and plotted a graph to show the effect of the temperature of pond water on the rate of photosynthesis.



(a) Describe the relationship between the temperature of the water and the rate of photosynthesis for plant A. [1]

_____

_____

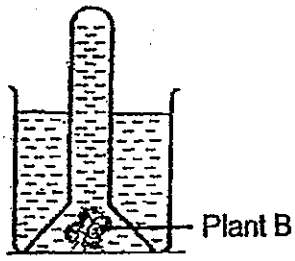
(b) State two other variables she should keep the same to ensure that it is a fair test. [1]

_____

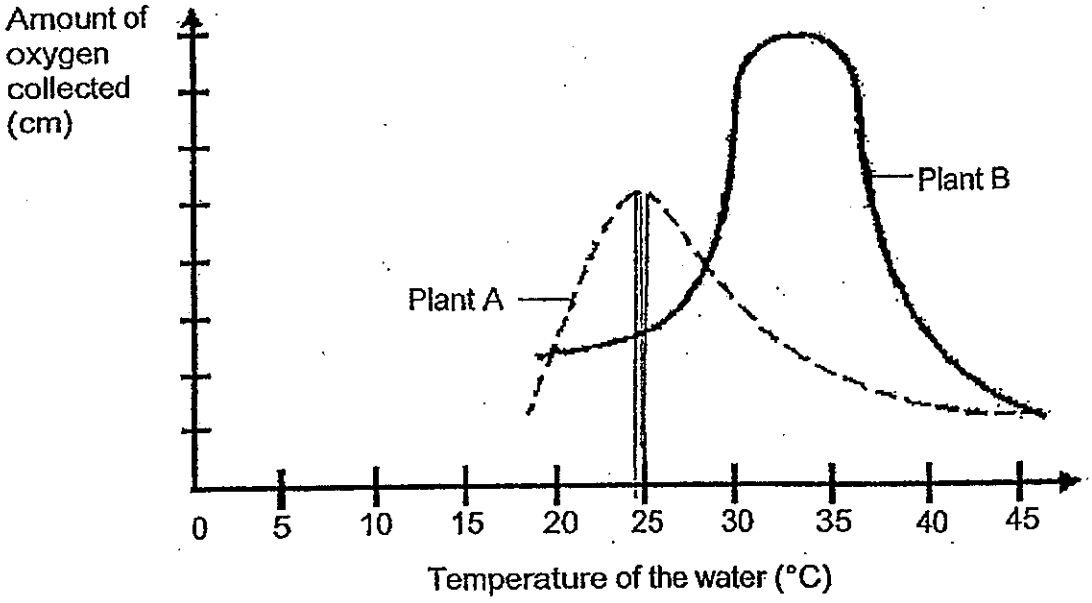
_____

(c) Draw a control set-up that she can use for this experiment. [1]

Wen Jin set up another experiment, similar to the one she conducted with plant A. This time, she used plant B.



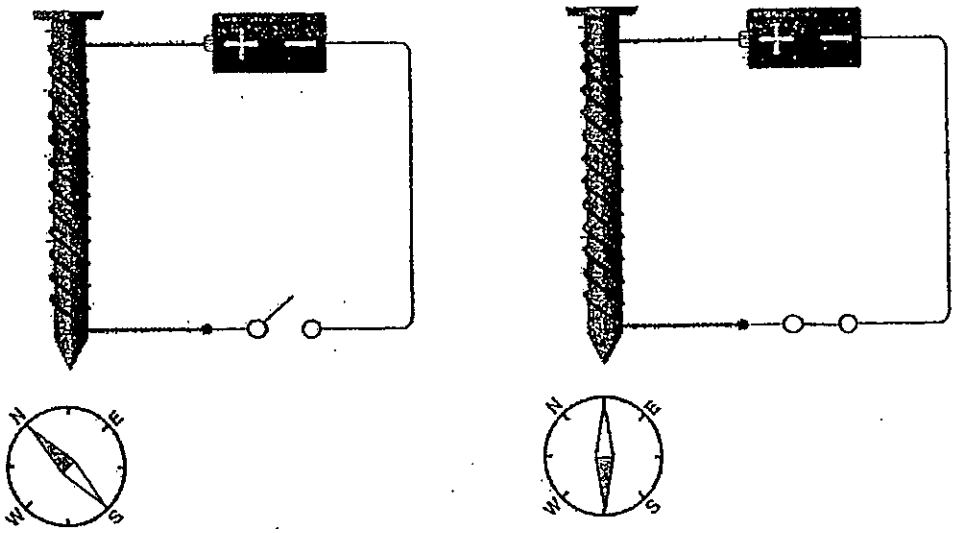
She recorded the amount of oxygen collected in the boiling tube after 2 hours and plotted a graph to show the effect of the temperature of pond water on the rate of photosynthesis for the two plants, plant A and B.



(d) State the temperature of water which the plant has the highest rate of photosynthesis. [1]

Plant A : _____ Plant B : _____

33. An electrical circuit was set up as shown in the diagram below. The copper wire was wound around a steel nail.
When the switch was closed, the compass needle moved.



Explain why closing the switch could cause the compass needle to move in that direction. [2]

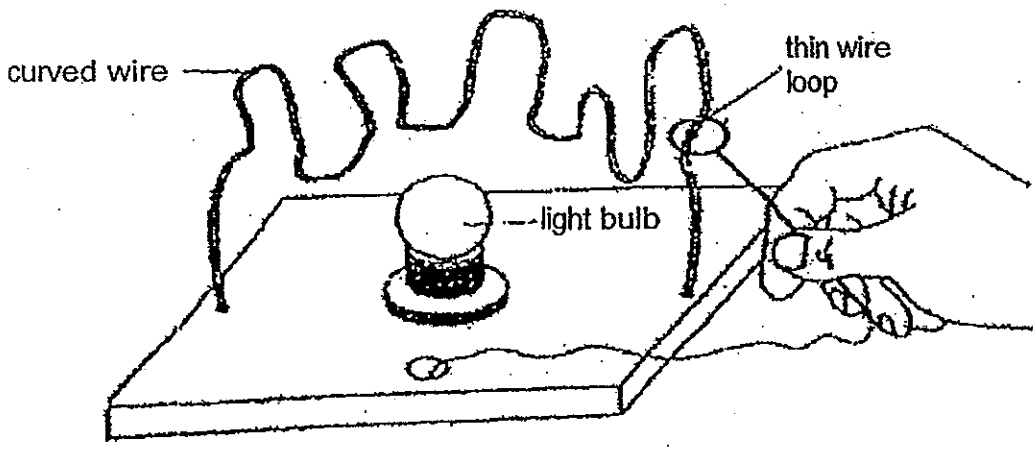
_____

_____

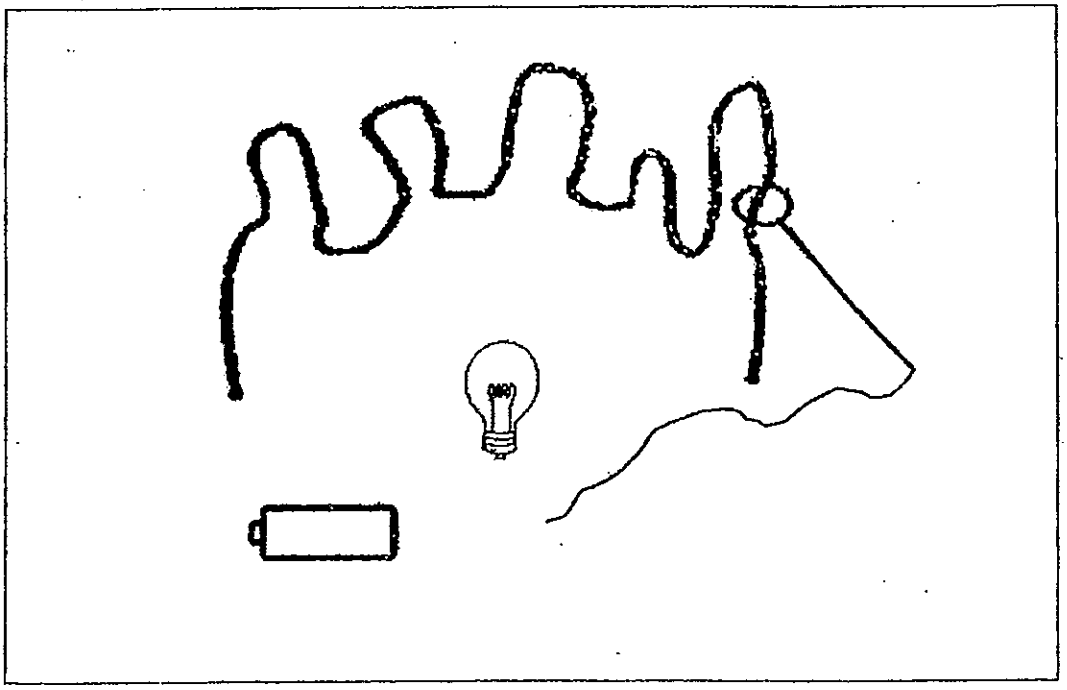
_____

34. The diagram below shows a game where the player has to guide the wire loop steadily along a curved wire from the starting point to the ending point, while making as little contact between the wire loop and the curved wire as possible.

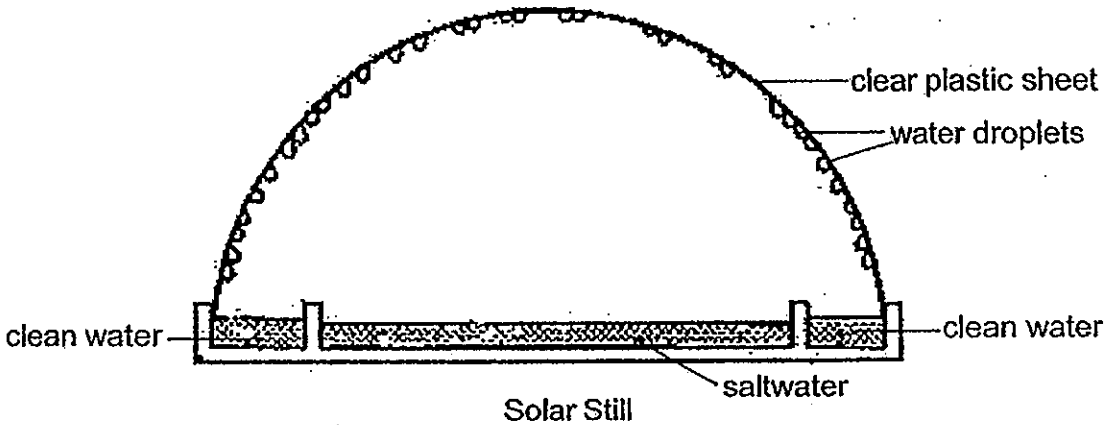
If contact is made between the wire loop and the curved wire, the bulb will light up.



(a) Draw in the diagram below how the wires are connected to the electrical components in order for the game to work. [2]



35. A 'solar still' can supply freshwater in countries where drinkable water is not available.



Solar Still
(placed in the open)

(a) Based on the diagram above, explain how clean water is obtained from the saltwater using the solar still. [2]

_____

_____

_____

_____

(b) Suggest how the volume of clean water produced using the solar still can be increased. [1]

_____

_____

_____

36 Mr Yusof set a task for his pupils. He gave them two sets of materials as shown below.

Set 1	Set 2
• 2 batteries • 2 bulbs • some wires	• 4 batteries • 4 bulbs • some wires

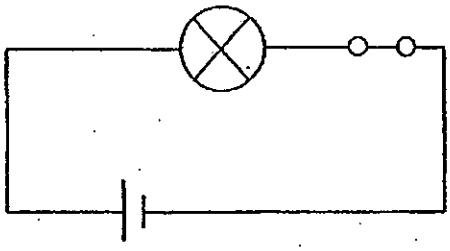
Using all the batteries and bulbs provided, they had to complete a circuit and ensure that the bulbs in Set 1 have the same brightness as those in Set 2.

The batteries in both circuits are connected in series.

Draw two **circuit diagrams** to show how the class should connect the electrical components given in each set. [2]

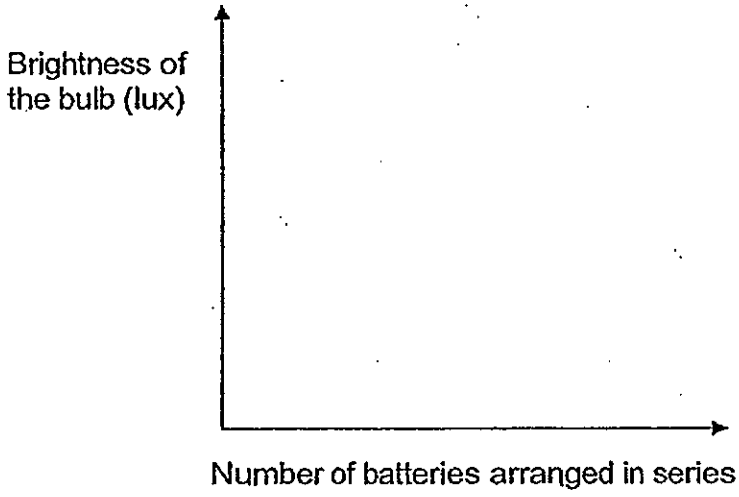
Set 1	Set 2

37. Keshia set up the circuit as shown below.



She added one battery at a time, in series, to the circuit, and measured the brightness of the bulb until she had used 4 batteries in total.

(a) Complete the graph below to show the relationship between the number of batteries arranged in series in the circuit and the brightness of the bulb. [1]



(b) When she addedthe 5th battery, the brightness of the bulb became zero. Explain why. [1]

_____

_____

38. Sharon used a pinwheel (diagram 1) to setup the experiment as shown in diagram 2. The ~~stove is turned on~~ and the pinwheel starts to spin after sometime. candle is lighted up

Pinwheel

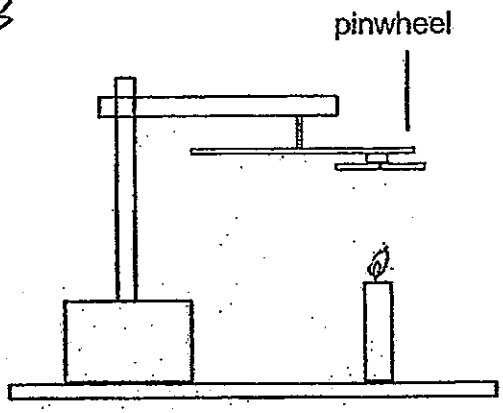
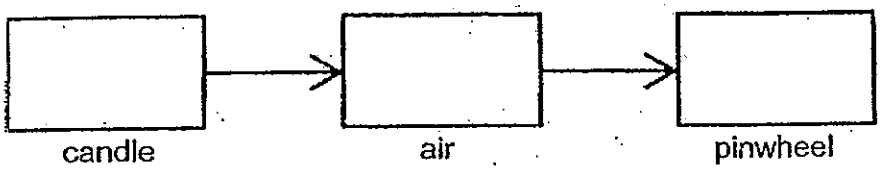


Diagram 2

(ai) State the energy conversion that took place when the candle is lighted [1]



(aii) Explain why the pinwheel started to spin after some time. [2]

_____

_____

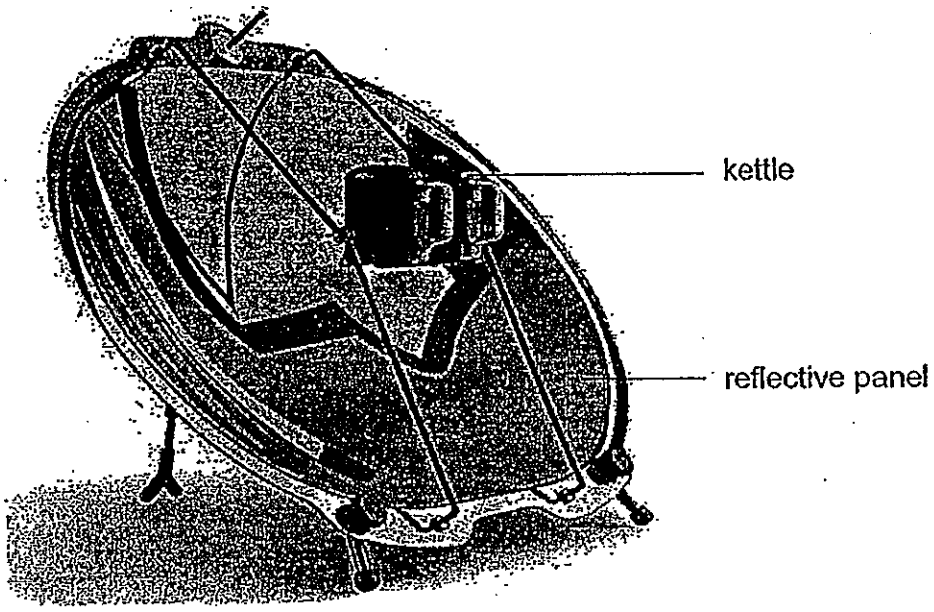
_____

(b) Using the same set-up, suggest a change that Sharon could make to the set-up to make the pinwheel spin faster. [1]

_____

_____

39. In some parts of Argentina where temperatures could reach as high as 40 degrees Celsius, engineers developed a simple tool to tap energy from the sun to boil water. An example of the tool is as shown in the diagram below.



Tommy conducted an experiment by changing the surface area of the reflective panel. He recorded the results of his experiment as shown in the table below.

Surface area of reflective panel (cm^2)	Time taken for the water to boil (minutes)
500	27
600	23
700	17
800	10
900	10

a) State the aim of his experiment? [1]

_____

b) Based on the results in the table above, what is the relationship between the surface area and the time taken for the water to boil? [1]

_____

ci) What is the advantage of painting the kettle black? [1]

_____

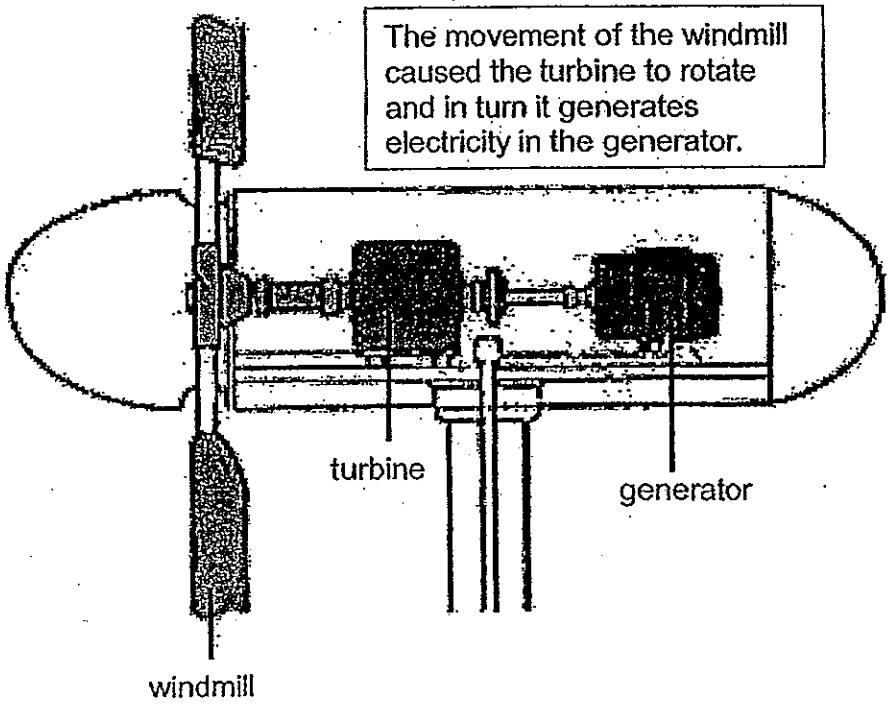
_____

cii) State one disadvantage of using this tool to boil water. [1]

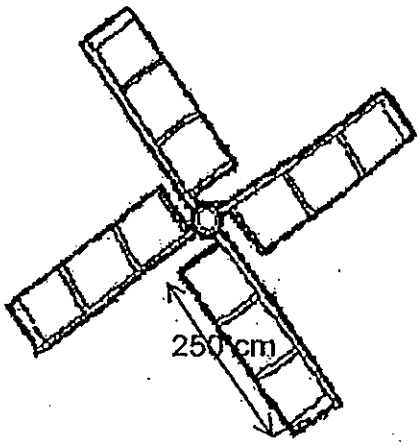
_____

_____

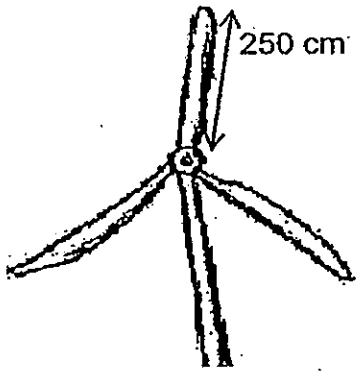
40. Scientists are constantly looking for various ways of making use of renewable source of energy. One form of making use of renewable energy is to make use of the windmill. The designs of the blades determine the efficiency of the windmill. The diagram below shows how a windmill generates electricity.



Two designs of the wind blade are as shown below.



Design A
Mass of each blade = 20 kg



Design B
Mass of each blade = 15 kg

(a) Based on the design and information for each blade, which design should be used such that each windmill can generate as much electricity as possible within a specific time frame? Explain your choice. [2]

_____

_____

_____

(b) State two reasons apart from the high cost why it is not ideal to generate electricity using windmills in Singapore. [2]

Reason 1:

_____

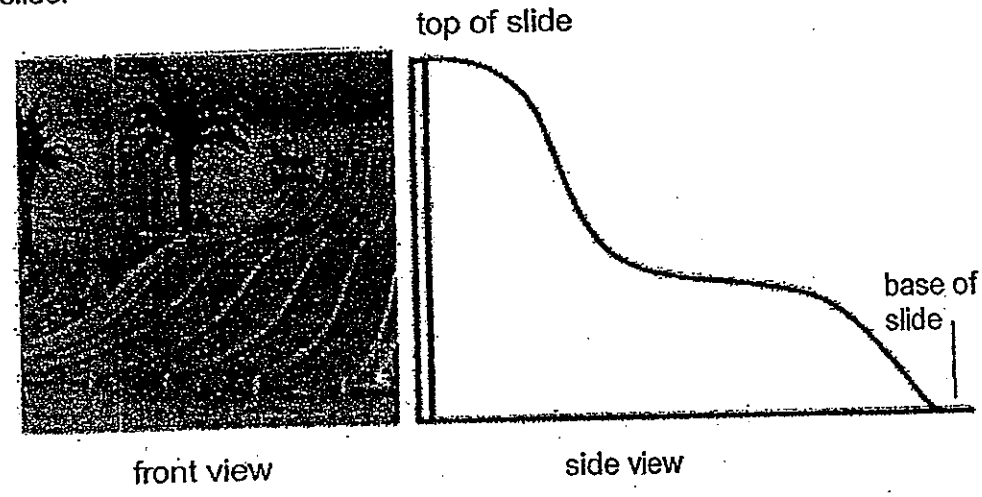
_____

Reason 2:

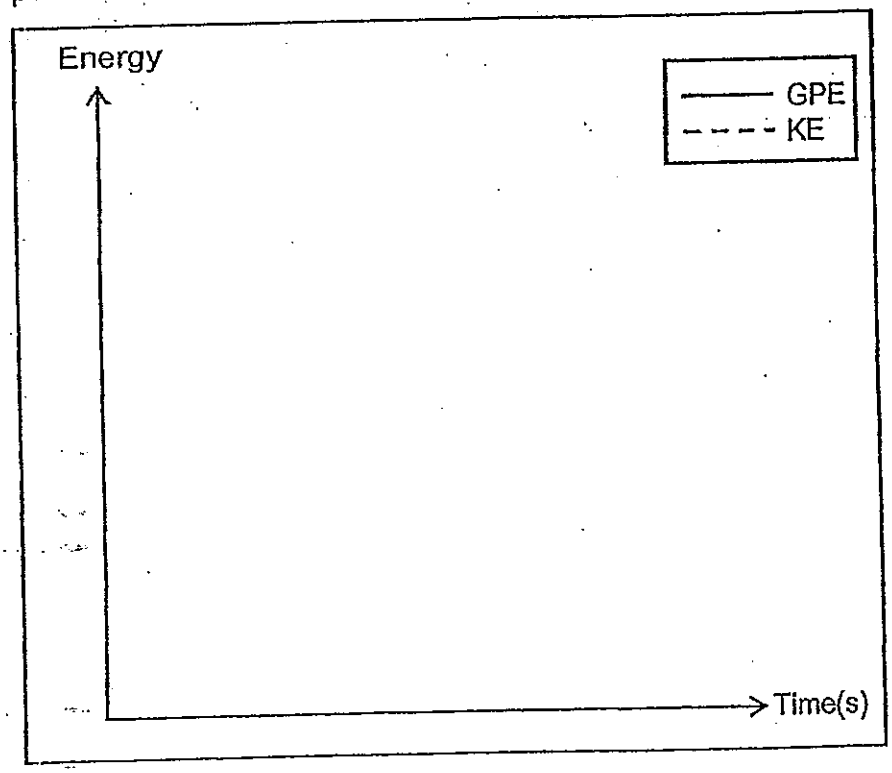
_____

_____

41. The following diagram shows the front view and the side view of a water slide. A child will sit at the top of the slide and slide to the base of the slide.



(a) Based on the diagram above, draw a graph in the space provided to show how the gravitational potential energy and kinetic energy of a boy varies as he slides down the slide over a period of time. Label the graph completely. [2]



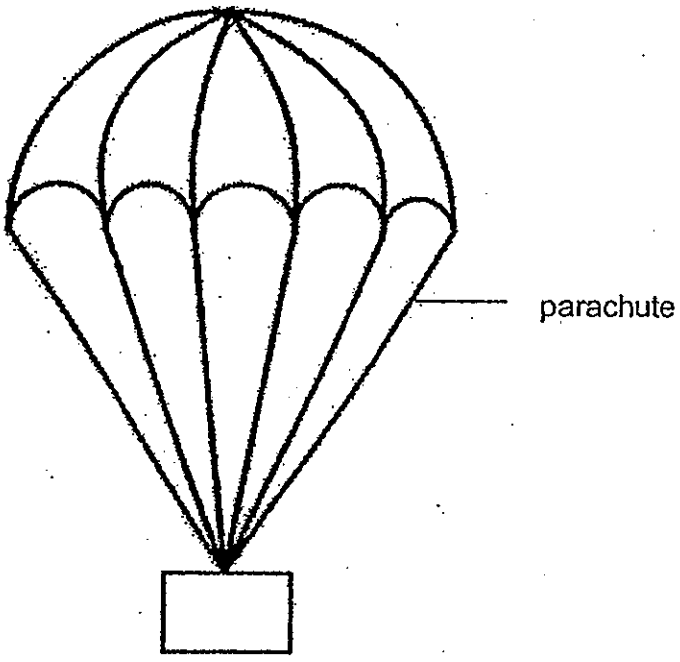
(b) Explain why children splash themselves wet before going down the slide. [2]

_____

_____

_____

42. The diagram below shows an object held on by a parachute in the air.



(a) In the diagram above, **draw and label** the main force(s) experienced **by the object**. [2]

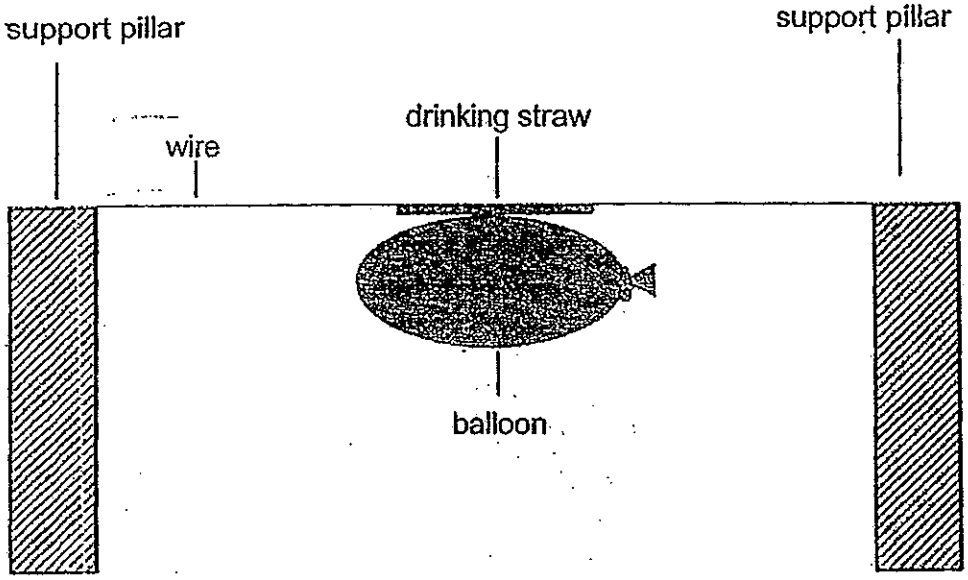
(b) Janel wanted to find out the time taken for the object with parachute to land on the ground. She released the object from a fixed height and recorded the time taken for the object to land on the ground.

Without changing the object, suggest a change that Janel can make such that the object could stay in the air for a longer period of time. [1]

_____

_____

43. Study the set-up shown in the diagram below.



Yiwei inflated a balloon and attached it to the drinking straw. The straw allows the set-up to move freely along the string. The clip on the balloon was released allowing the air to escape, producing force X

(a) In the diagram above, **use an arrow to indicate the direction** in which the balloon will move. [1]

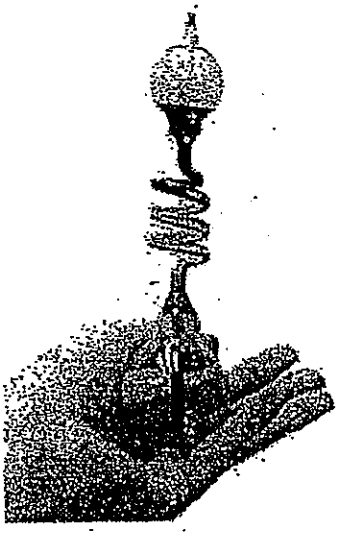
(b) Using the concept of forces, briefly explain the movement of the balloon. [1]

_____

_____

_____

44. The diagram below shows a "hand boiler". When a person touches the glass, the liquid starts to rise up.



The manufacturer of the "hand boiler" has to choose between two types of glass to use. The thickness of the glass is as shown in the table below.

	Glass X	Glass Y
Thickness of glass (mm)	2	3

Based on the information above, which glass should the manufacturer use to make the liquid rise up as fast as possible? Explain your answer.

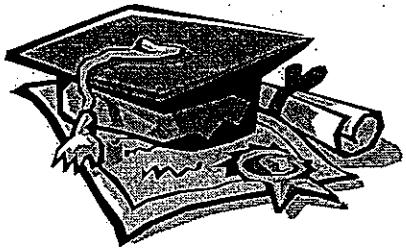
[2]

_____

_____

_____

-----End of Booklet B-----



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : NANYANG
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

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

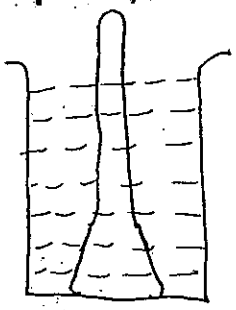
31)

Roots	Leaf
	Food
Other parts of the plant	

32)a)The rate of photosynthesis increased as the temperature of water increase. There after 25℃ the rate of photosynthesis is decreased.

b)Moss of plants, number of leaves.

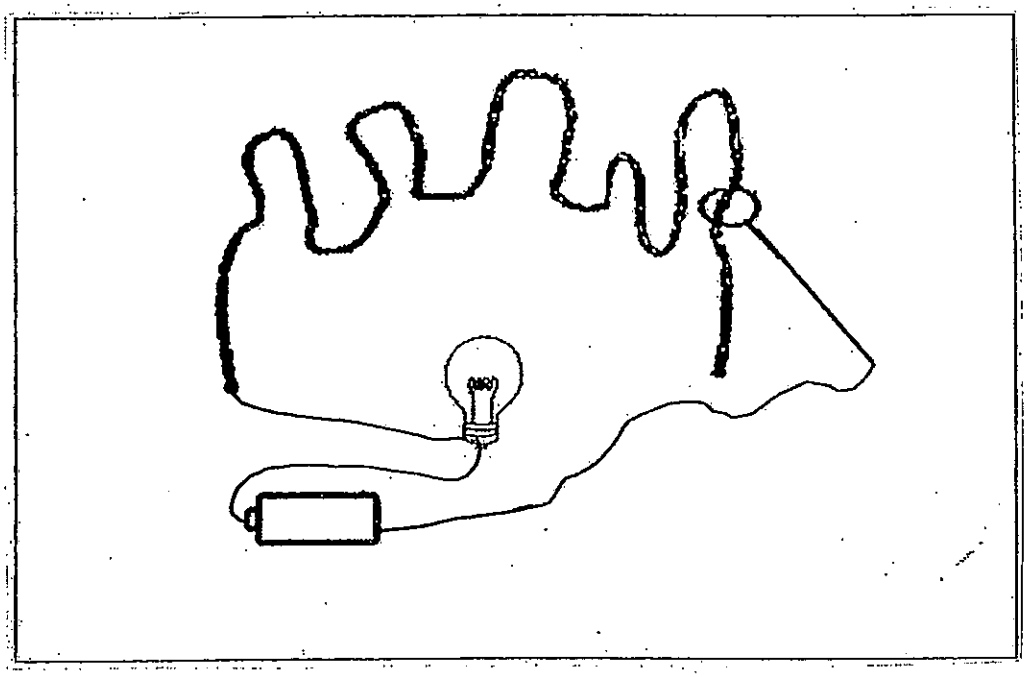
c)



32)d)A: 25℃ B: 32℃

33)When the switch closed the steel nail will become an electromagnet. The compass needle also an magnet would get attracted to the electromagnet thus, the the compass needle would move towards the steel nail when the switch is closed.

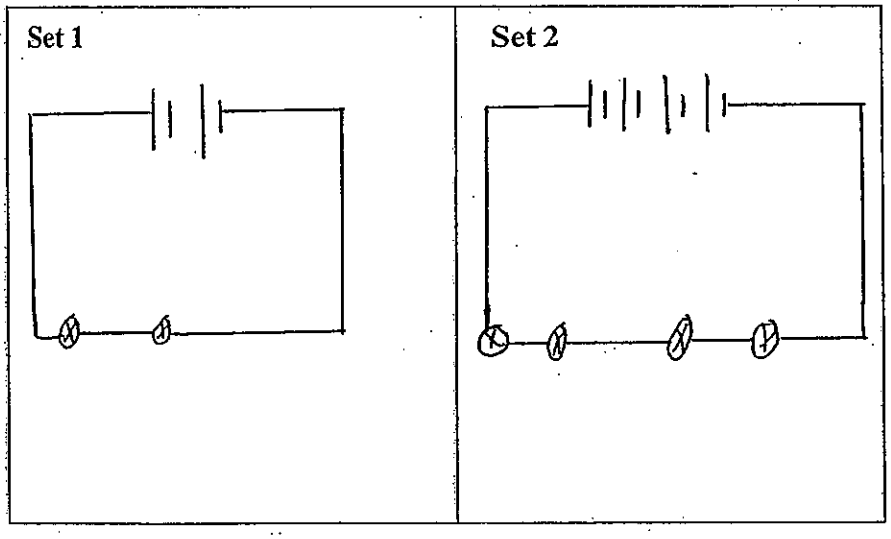
34)a)



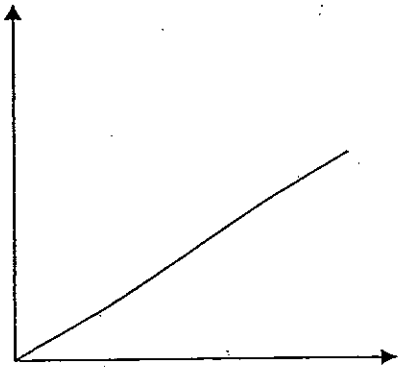
35)a)Water from the salt water evaporate and condenses. When it comes into contact with the cool clear plastic sheet, forming water droplets. These droplets slide down the plastic sheet into the side trough for clean water.

b)Place some ice cubes on the clear plastic sheet.

36)



37)a)



b)The bulb has fused.

38)a)i)Heat energy→Chemical energy→Kinetic energy

ii)The air above the candle gain heat and move upwards as hot air rises.

b)Move the pinwheel to the candle.

39)a)To see how the surface area of the reflective panel affects the time taken for the water to boil.

b)The larger the surface area of the reflective panel, the shorter the time taken for the water boil until 800cm ^{2} of the reflective panel.

c)i)The colour black absorbs more heat that other colours.

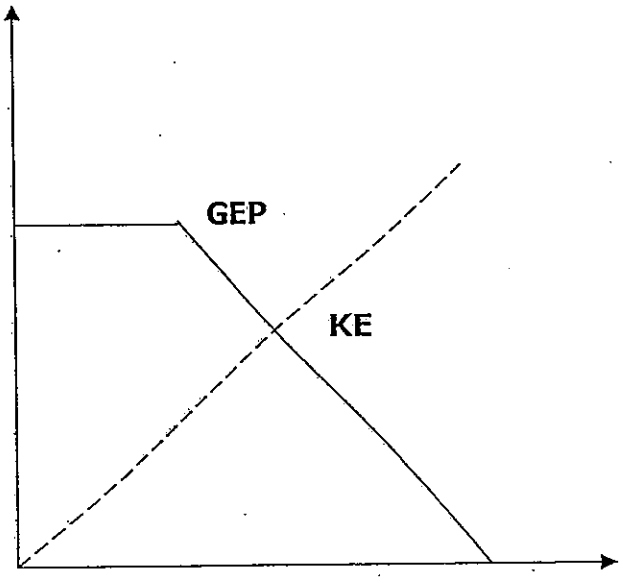
ii)It only works in the day.

40)a)Design B. The weight of the blade is lighter therefore it is able to spin faster generating more electricity.

b)1)Singapore does not have enough space.

2)Singapore does not have much wind.

41)a)



41)b)Reduce friction between the slide and the body so that they can slide further.

42)a)gravitational force ↓ ↑ Frictional force

b)She could increase the surface area of the parachute.

43)a) ←——— balloon

b)Force X push the balloon forward. Force X is greater than the frictional force between the movable case and the wire as such it move towards the left.

44)Glass X. It is less thick and heat can pass through more easily, thus, the manufacturer should use glass X.

Rosyth School
First Continual Assessment for 2013
SCIENCE
Primary 6

Name: _____ Total Marks: /100

Class: Pr 6_____ Register No. _____ Duration: 1 h 45 min

Date: 4 March 2013 Parent's Signature:

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 30 in Booklet A, write your answers in the OAS provided
5. For questions 31 to 44, write your answers in the spaces given in the Booklet B.

	Maximum	Marks Obtained
Booklet A	**60 marks**	
Booklet B	**40 marks**	
Total	**100 marks**	

* This booklet consists of 18 pages.

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Part 1 (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). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

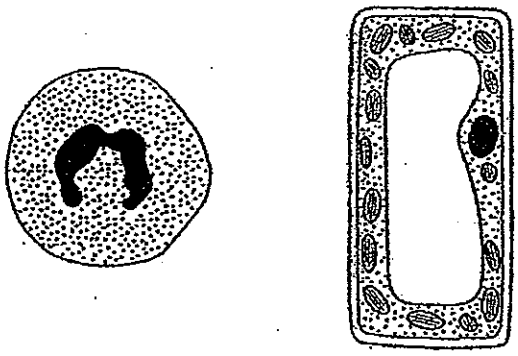
1. Study the characteristics of organism A, B, C and D below.

Organism	Respond to changes	Can move from one place to another	Can reproduce	Can produce its own food
A	√			
B	√	√	√	
C	√		√	√
D	√		√	

Which of the things above are correctly classified as plants, animals and fungi?

	Plants	Animals	Fungi
(1)	C	A	B
(2)	A	C	B
(3)	C	B	D
(4)	D	A	C

2. The diagrams below show two cells.

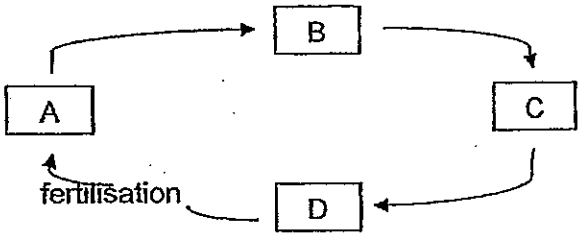


Which of the following process/es take/s place in both cells?

A: fertilisation
B: digestion
C: cell division
D: photosynthesis

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

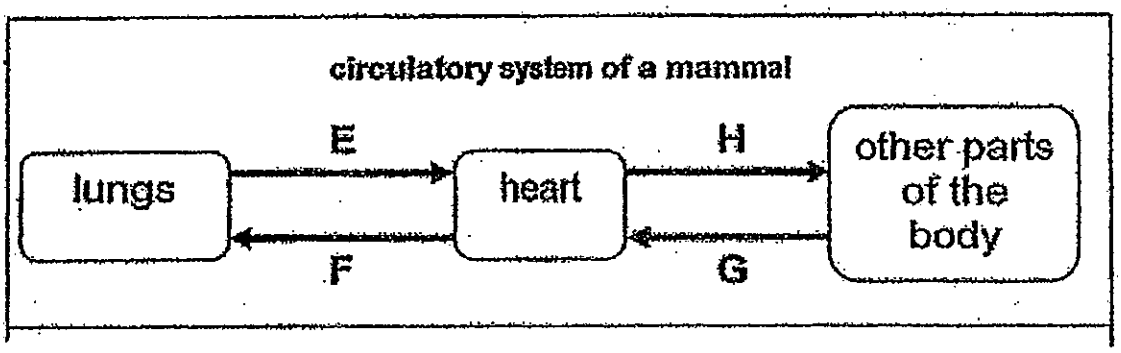
3. The diagram below shows the life cycle of an insect and the point at which fertilisation occurs.

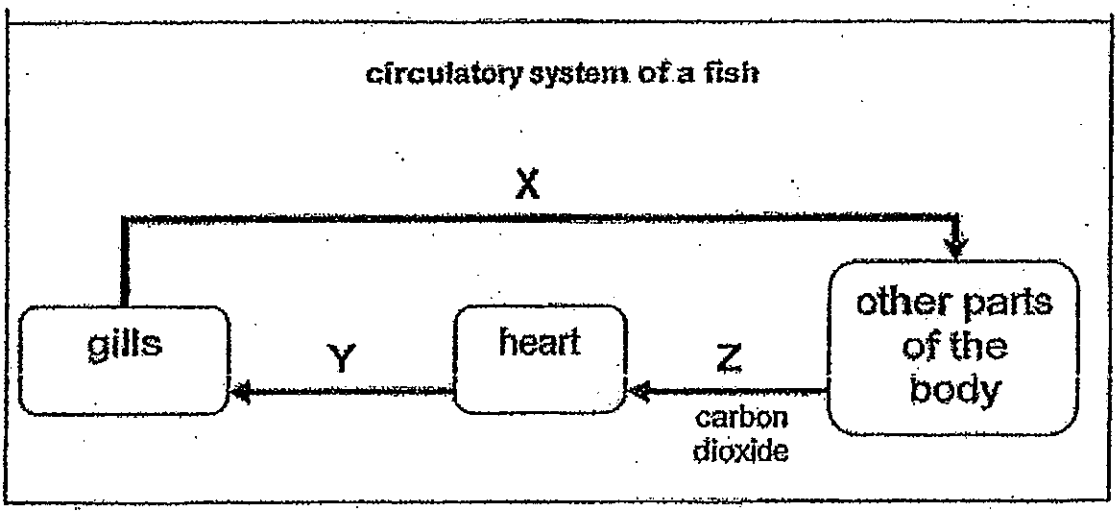


Which one of the followings shows the correct stages of an insect in the diagram above?

	A	B	C	D
(1)	larva	pupa	adult	egg
(2)	pupa	adult	egg	larva
(3)	adult	egg	larva	pupa
(4)	egg	larva	pupa	adult

4. The diagrams below show the circulatory system of two organisms, a mammal and a fish respectively.
The arrows represent the blood vessels that carry blood from the lungs or gills to the other parts of the body.



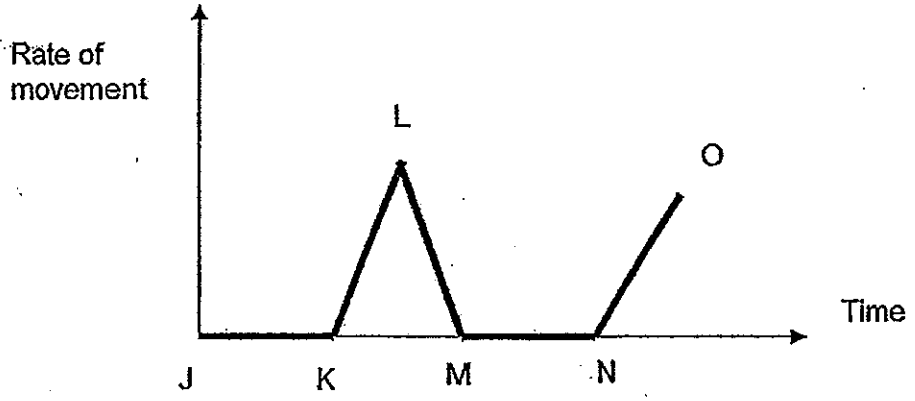


Based on the diagrams above, which of the following statement/s is/are correct?

A: Only G, Y and Z carry blood rich in carbon dioxide.
B: Only E, H and X carry blood rich in oxygen.
C: Blood rich in oxygen goes to the heart directly from the lungs and gills respectively.

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

5. During its life cycle, a mealworm beetle will undergo changes. J to O show the rate of movement from an egg to an adult.



At which stage of the graph above is the mealworm a pupa?

(1) JK
(2) KL
(3) LM
(4) MN

6. Why do some animals lay large number of eggs at a time?

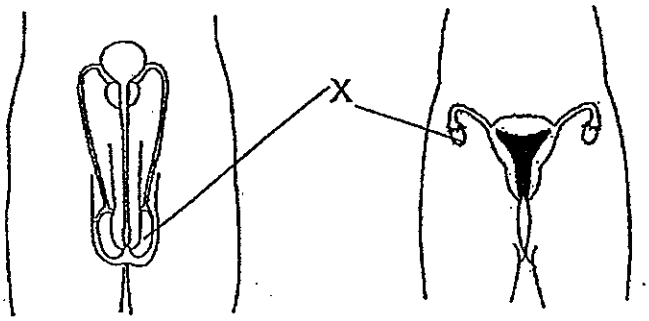
A: The animals have many predators.
B: This prevents overcrowding from happening.
C: It can increase the chances of survival of the young.
D: This ensures that each sperm cell from the male animals has an egg to fertilise.

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

7. In which part of the human body does the fertilised egg develop to become a baby?

(1) Fallopian Tube
(2) Ovary
(3) Stomach
(4) Uterus

8. The diagram below shows the reproductive systems of a man and a woman.



In what way(s) is/are the part(s) labelled X similar?

A: X stores the reproductive cells.
B: X produces the reproductive cells.
C: Cells stored in X only contain half the amount of genetic information.
D: Cells stored in X are genetically identical to any other cells found in the body.

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

9. The table below shows the characteristics of Ali and his parents.

	Physical Characteristics			
	Earlobes	Eyelids	Hair	Hair Length
Ali	Attached	Double	Curly	Short
Father	Detached	Single	Curly	Short
Mother	Attached	Double	Straight	Long

How many characteristics did Ali inherit from his parents?

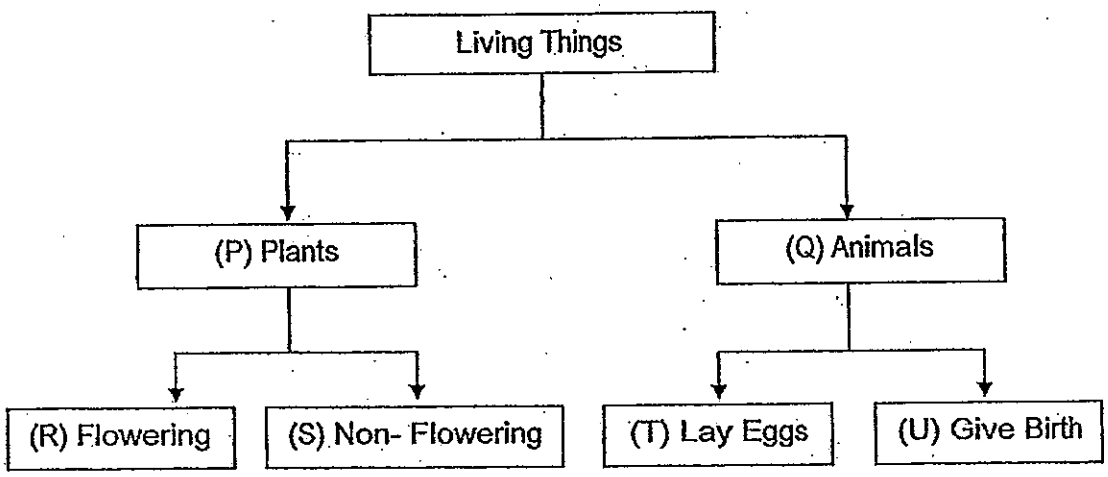
(1) He inherited one from each parent.
(2) He inherited two from each parent.
(3) He inherited two from his father and one from his mother.
(4) He inherited one from his father and two from his mother.

10. Which of the following statements are true of plants?

A: All young plants grow only from seeds.
B: A germinating seed first gets its food from the seed leaves.
C: The seeds found inside the fruits can grow into new plants.
D: Each new plant goes through the same life cycle as the parent plant.

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

11. Study the classification chart below carefully.



Which of the statements below best describe the organisms in the respective groups?

A: All S reproduce by spores.
B: An insect can be placed under T.
C: R and S contain chlorophyll to make food.

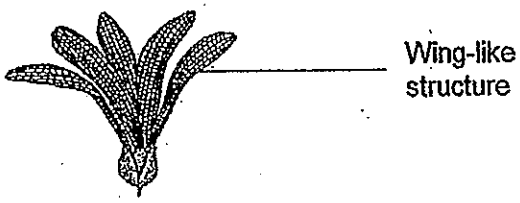
(1) A and B only
(2) B and C only
(3) A and C only
(4) A, B and C

12. Vivian conducted an experiment to determine how the duration of light exposure affects the rate of germination.

From the options below, which two set-ups, A and B, should Vivian use for her experiment?

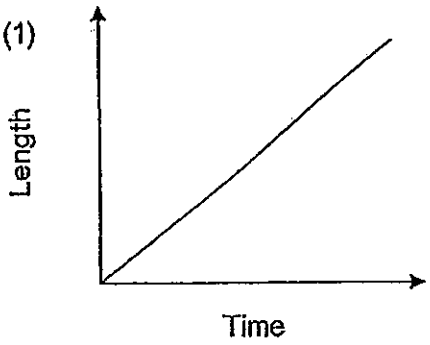
	Set-up A			Set-up B		
	Amount of water (ml)	Duration of light exposure (hr)	Type of soil	Amount of water (ml)	Duration of light exposure (hr)	Type of soil
(1)	30	3	sandy	50	3	sandy
(2)	50	3	garden	50	6	garden
(3)	30	6	garden	30	6	sandy
(4)	50	3	sandy	50	3	sandy

13. The diagram below shows a shorea fruit.

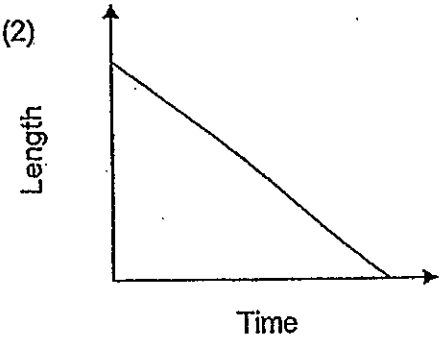


Which one of the following graphs below shows the relationship between the length of the shorea's wing-like structure and the duration of time the shorea fruit can remain floating in the air?

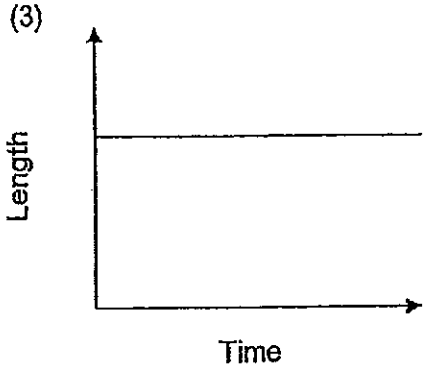
(1)



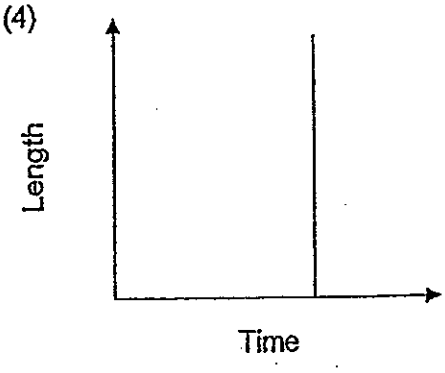
(2)



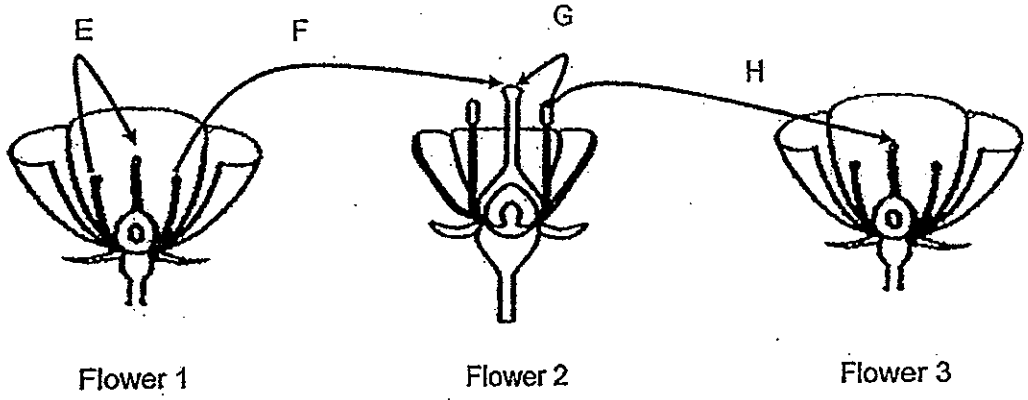
(3)



X (4)



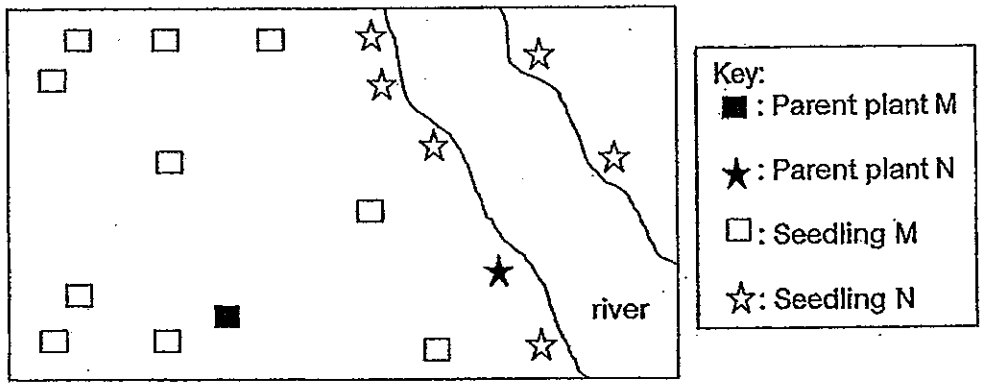
14 The diagram below shows the cross-section of 3 flowers. The arrows show the movement of the pollen grains during pollination.



Which of the following arrow(s) show(s) how the wind could have pollinated Flower 2?

(1) F only
(2) E and H only
(3) F and G only
(4) F, G and H only

15. Two plants, M and N were planted on a plot of land near a river. After a period of time, their seedlings were found to be scattered on the land as shown in the diagram below.



Which of the following characteristics would the fruits or seeds of Plant M and N most likely have?

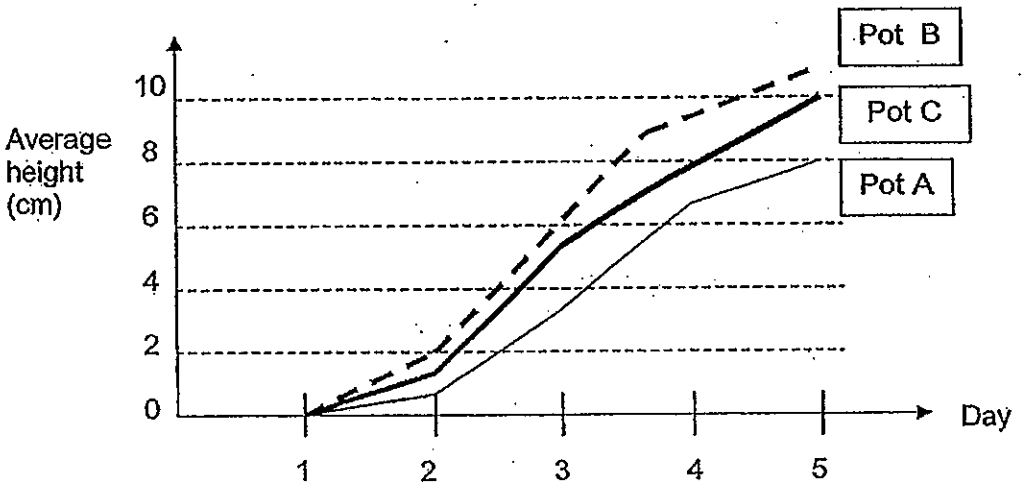
	Fruit / Seed M	Fruit / Seed N
(1)	Has wing- like structure	Has stiff hairs
(2)	Is pod-like	Is fleshy with small seeds
(3)	Is fleshy with small seeds	Has fibrous husk
(4)	Has fibrous husk	Has wing-like structure

Use the information below to answer Questions 16 and 17.

Gopal planted some tomato seeds in 3 different pots of similar size in his garden. He watered the pots of seeds daily with the same amount of water. The table below shows the number of seeds planted in each pot.

Pot	A	B	C
Number of seeds	2	10	6

After 5 days, he plotted the average height of the seedlings for each pot as shown in the graph below.



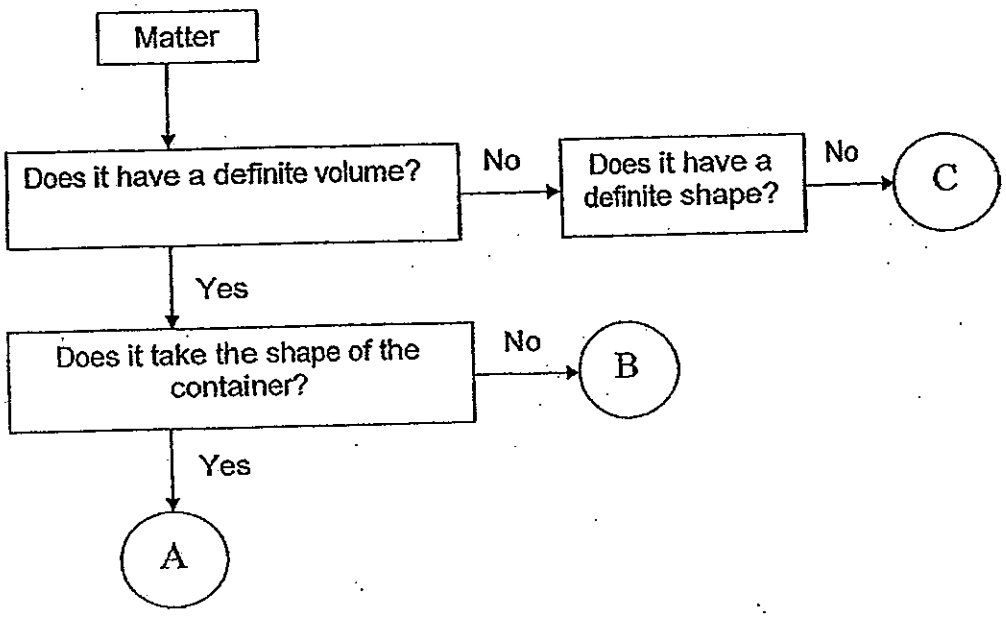
16. What do you think is the aim of Gopal's experiment?

(1) He wanted to find out if the type of seeds affects the height of the seedlings.
(2) He wanted to find out if the size of the pots affects the height of the seedlings.
(3) He wanted to find out if the number of seeds affects the height of the seedlings.
(4) He wanted to find out if the amount of water given to the seeds affects the height of the seedlings.

17. Why are the plants in pot B taller and thinner than the plants in pot A and C?

(1) The plants in pot B have more space.
(2) The seeds in pot B are of better quality.
(3) The plants in pot B have more water and nutrients.
(4) The plants in pot B are competing to obtain more sunlight.

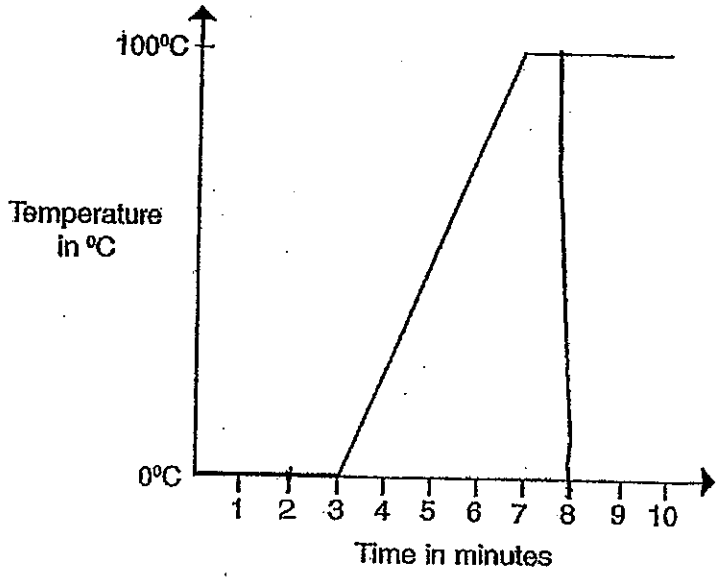
18. The flow chart below shows the properties of Matter A, B and C.



How is Matter C similar to Matter A?

(1) They have definite shape.
(2) They have indefinite shape.
(3) They have definite shape and volume.
(4) They have indefinite shape and volume.

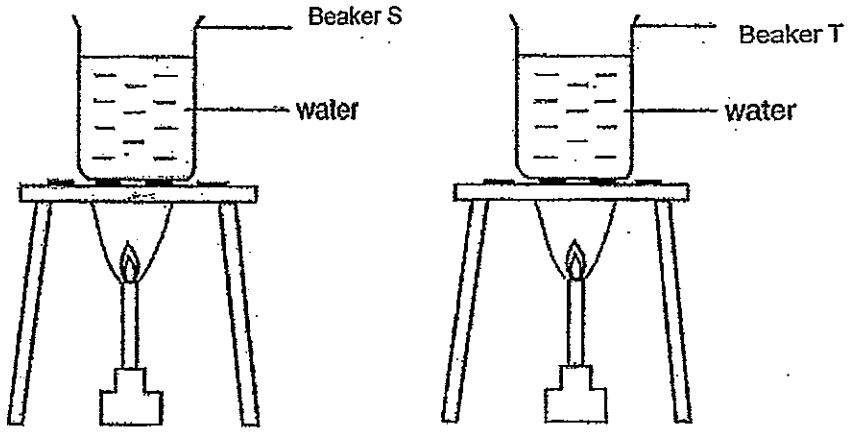
19. An enclosed container filled with ice completely was heated over a period of time. The graph below shows how the temperature of the contents changed with time.



Which one of the following most likely shows the contents in the container at the 2nd and 8th minute?

	2nd minute	8th minute
(1)	ice only	water only
(2)	ice and water	steam only
(3)	ice only	water and steam
(4)	ice and water	water and steam

20. Two beakers, S and T, containing 500ml of water each, were heated as shown in the diagrams below. The water in S was heated 5 minutes earlier than in T.



It was observed that the water in Beaker T reached the boiling point earlier than the water in Beaker S. Which of the following could be possible reasons for this observation?

A: The flame used in heating Beaker T was stronger.
B: Some salt had been added to the water in Beaker T.
C: The initial temperature of the water in Beaker T was higher.

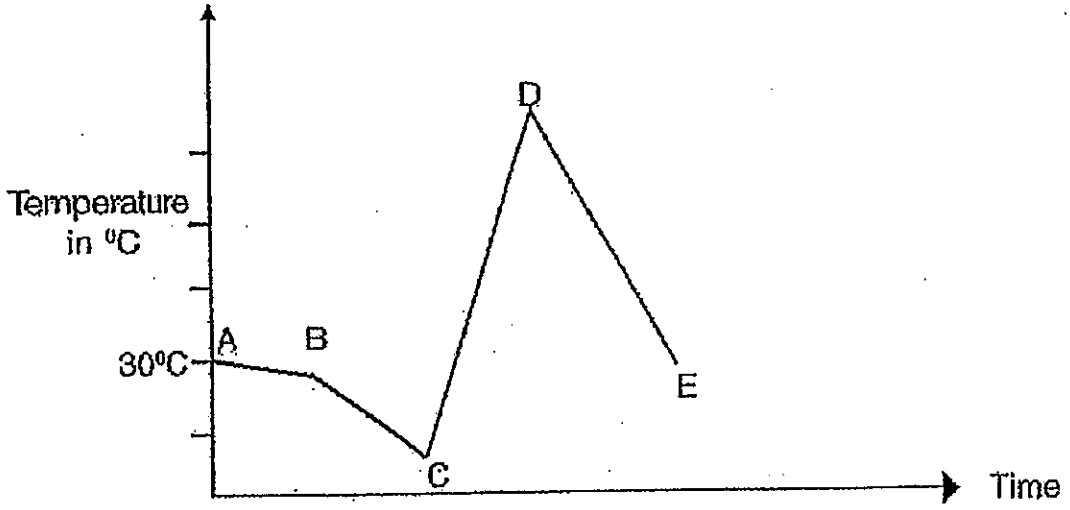
(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

21. Which of the following statements about the water cycle is/are true?

A: The water cycle is a continuous movement of water on Earth.
B: The sun is the source of energy and the driving force of the water cycle.
C: The water cycle can take place because water can change from one state to another.
D: The water cycle ensures that there is a never-ending supply of fresh water for the survival of Man and animals only.

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

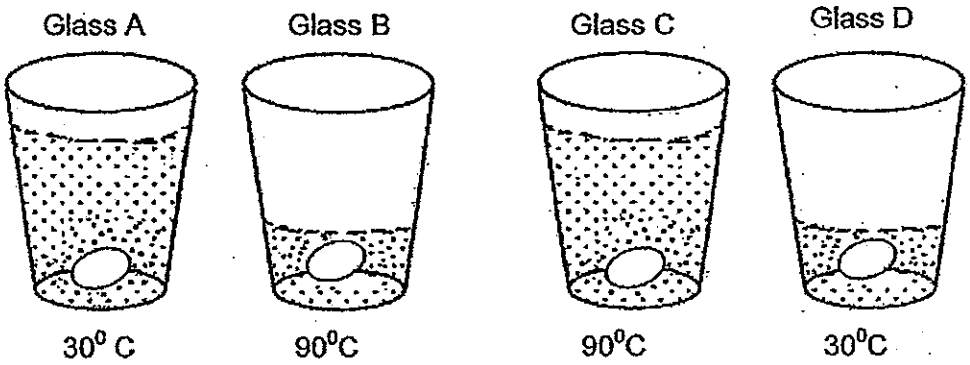
22. Gary conducted a few activities using a beaker of 600ml of tap water. He recorded the temperature of the water as shown in the graph below.



Which one of the following activities is wrongly matched with the result indicated on the graph?

	Line	Activity
(1)	AB	Stirring the water with a spoon
(2)	BC	Adding some ice cubes into the water
(3)	CD	Putting a hot iron ball into the water
(4)	DE	Pouring away 400ml of the tap water

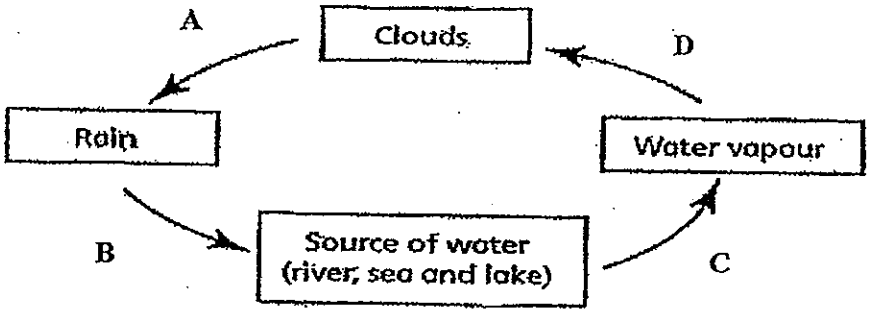
23. Kathy put four eggs into four different glasses of water as shown below. After 5 minutes, she observed that only two of the eggs, X and Y, were cooked and Egg X was more cooked than Egg Y.



In which glasses had the two eggs, X and Y, been placed respectively?

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

Study the water cycle below to answer Questions 24 and 25.



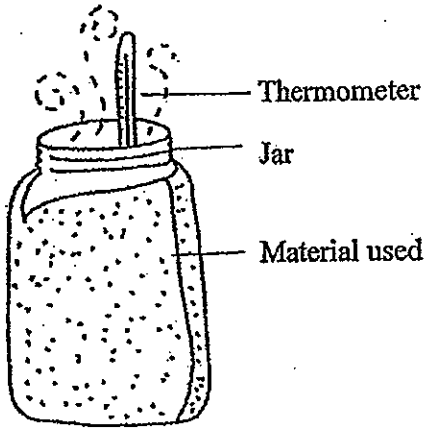
24. At which point in the water cycle will the surrounding air gain heat?

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

25. At which point in the water cycle will there be a change of state from a liquid to a gas?

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

26. Kim carried out an experiment using four different materials. She used four similar-sized jars, each filled with the same amount of water at 60 °C. She then wrapped each of the jars with a different kind of material. After 10 minutes, she took the temperature of the water in each jar and recorded it in the table below.



Material Used	Temperature of water after 10 minutes
W	40°C
X	45°C
Y	50°C
Z	55°C

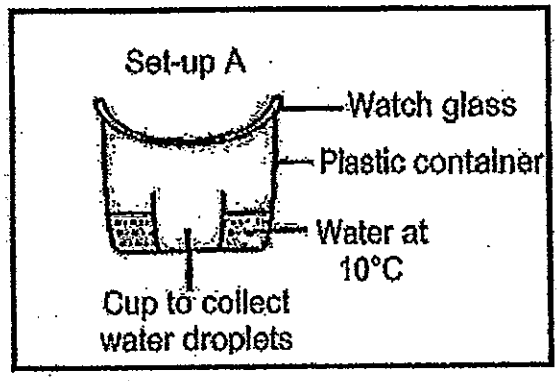
Based on her findings, which material should she use to wrap an ice cream container so that the ice cream inside will melt the slowest?

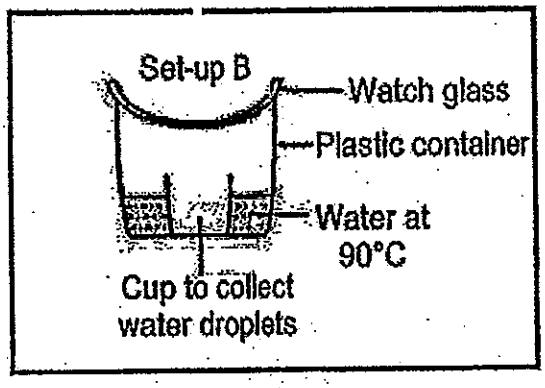
(1) W
(2) X
(3) Y
(4) Z

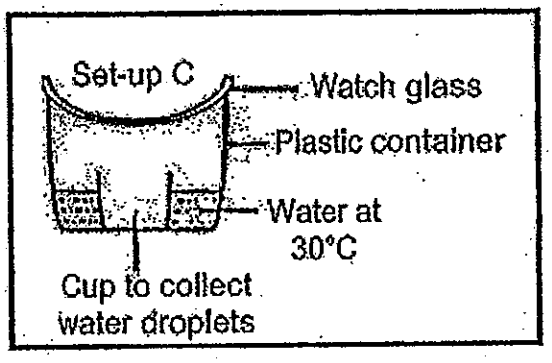
27. Which one of the following processes requires heat loss?

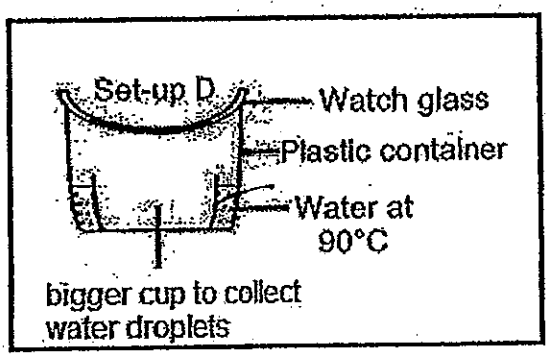
(1) Boiling
(2) Melting
(3) Freezing
(4) Evaporation

28. Study the experimental set-ups below. Four similar plastic containers with equal amounts of water at different temperatures were set up.







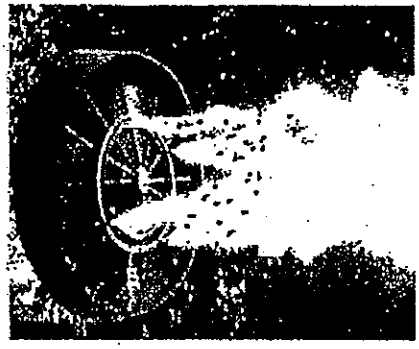


If the room temperature is 30°C, in which set-up will there be the most water in the cup at the end of 30 minutes.

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

29. When Peter stood in front of a misting fan on a hot day, he felt cooler than when he stood in front of a normal fan. The misting fan releases water droplets which are propelled by the air flow from the fan.

Misting fan

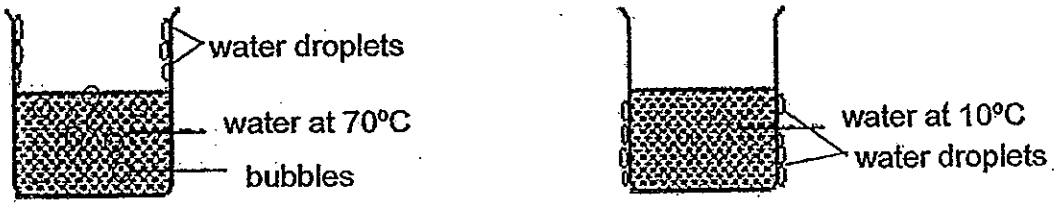


Which one of the following statements explains why the misting fan caused him to feel cooler?

(1) The water droplets lost heat to his skin.
(2) The water droplets gained heat from his skin.
(3) The water droplets cooled the sweat on his skin.
(4) The surrounding air lost heat and condensed to form more water droplets.

30. Siti set up Beaker G and Beaker H as shown below.

	Beaker G	Beaker H
Volume of water	500ml	500ml
Temperature of water	70°C	10°C



Beaker G Beaker H

Both beakers were then placed in a room at a temperature of 30°C. After some time, Siti observed some water droplets on both beakers as shown in the diagram above.
Which of the following statement/s explain/s why the water droplets appear on different parts of the beakers?

	Beaker G	Beaker H
A:	The bubbles rise to the surface of the beaker and gather on the top inner surface of the beaker.	The water in the beaker condenses on the outer surface of the beaker.
B:	The water vapour from surrounding air condenses as water droplets on the cooler surface of the beaker.	The water vapour from the surrounding air gains heat from water to form water droplets.
C:	The water vapour rises and condenses on the cooler surface of the beaker.	The water vapour from the surrounding air loses heat to the cooler surface of the beaker.

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

End of Part I

Rosyth School
First Continual Assessment for 2013
SCIENCE
Primary 6

Name: _____ Total Marks: /40

Class: Pr 6- Register No. _____ Duration: 1 h 45 min

Date: 4 March 2013 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, write your answers in the spaces given in this booklet.

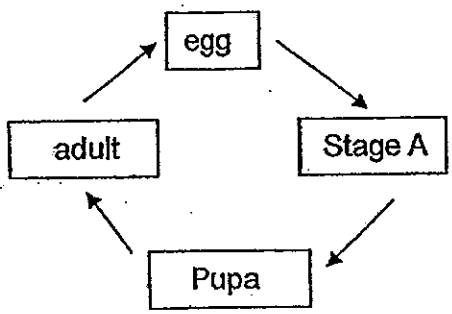
* This booklet consists of 15 pages.

This paper is not to be reproduced in part or whole without the permission of the Principal.

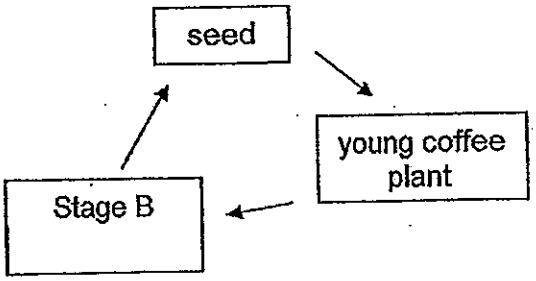
Part II (40 marks)

For questions 31 to 44, write your answers in this booklet.

31. Tom studied the life cycle of a bee and a coffee plant as shown below.



bee



coffee plant

(a) Name the stages A and B in the above life cycles. (1m)

Stage A: _____

Stage B: _____

Farmers who grow coffee plant want the bee keeper to place the bee hives in their farms.

(b) Describe how the presence of bees is useful for the coffee farmers. (2m)

_____

_____

_____

_____

32.

(a) Draw the human male and female reproductive cells in the space provided below. (1m)

Male Reproductive cell	Female Reproductive cell

(b) State a difference between the two cells and give a reason for it. (2m)

(i) Difference:

_____

_____

(ii) Reason :

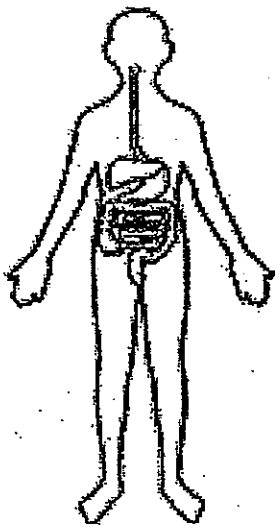
_____

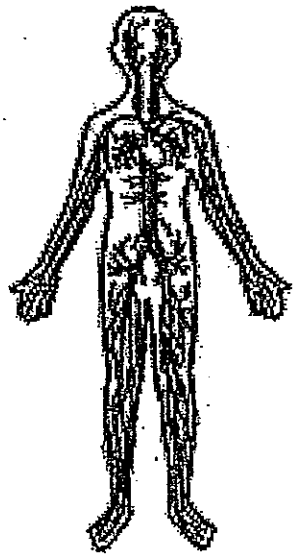
_____

(c) When the sperm fuses with the egg, the fertilised egg is formed which will begin to divide to form many cells.
Which part of the cell controls the above activity? (1m)

_____

33. Study the two systems shown below.





_____

(a) Name the systems in the blanks provided above. (1m)

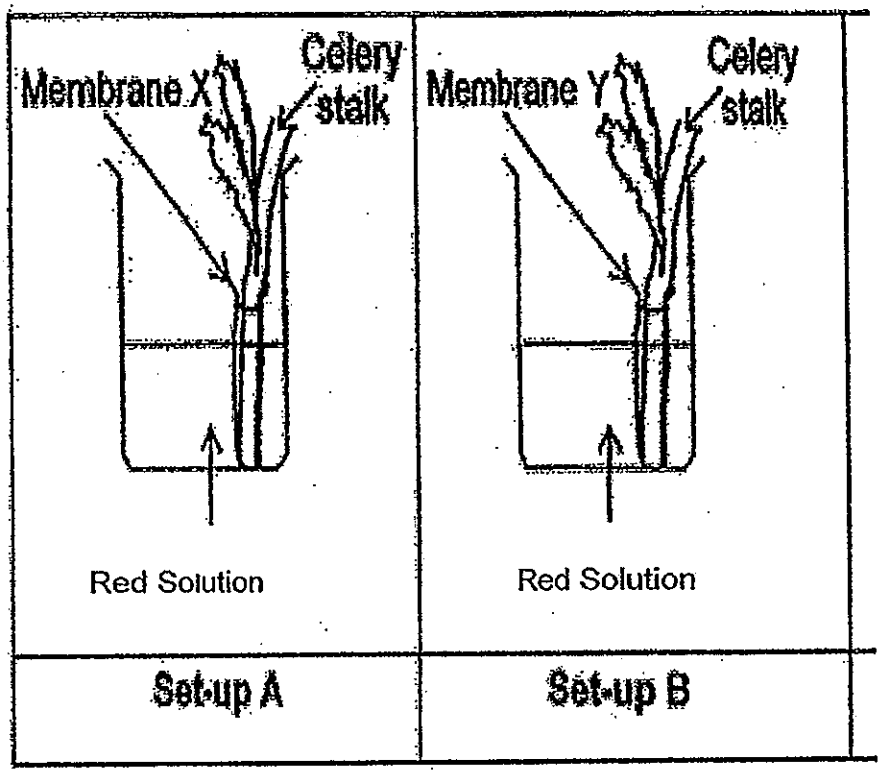
(b) Describe how the two systems in a pregnant female body help the foetus to obtain food for its development. (2m)

_____

_____

_____

34. The base of the celery stalks in set-ups, A and B, were wrapped with membranes, X and Y, respectively. They were then placed into a beaker of red solution.

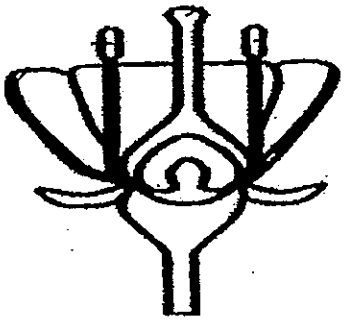


Three days later, the observations were recorded in the table as shown below.

Set-up A	Set-up B
Leaves are red and firm	Leaves are yellowish and wilted

Question 34 is continued on page 5.

35. David observed the stigma and the anthers of a certain type of flowers in his garden.



(a) Label the stigma and the anther of the above flower. (1m)

(b) i State the function of a stigma. (2m)

_____

_____

(b) ii State how the stigma is adapted to carry out its function as stated in (b) (i).

_____

_____

(c) He observed that the anthers ripened and released their pollen grains before the stigma of the same flower is ripened.

Give an explanation for the above observation. (1m)

_____

_____

(a) Explain what has caused the observations in the two set-ups. (2m)

Set-Up A:

_____

_____

Set-Up B:

_____

_____

(b) Which part of a cell do membranes, X and Y, represent? Explain why. (1m)

_____

_____

36. Vivian planted two seeds in a container. She observed the growth and development of the roots and shoots. She measured and recorded the lengths of the roots and shoots in the table below.

Day	Part A (mm)		Part B (mm)	
	Seed 1	Seed 2	Seed 1	Seed 2
1	0	0	0	0
2	0	0	0	0
3	0	0	2	1
4	0	0	3	3
5	3	4	7	6
6	5	6	9	10
7	9	8	12	11

(a) Which part, A or B, is the shoot? Support your choice. (1m)

_____

_____

(b) Vivian noticed that the seedlings did not have any green leaves. Where did the seedlings get their nutrients for growth? (1m)

_____

_____

(c) State how Vivian can make her experimental results to be reliable. (1m)

_____

_____

37. In a plot of land, there were two plants of the same kind, A and B, with different characteristics as shown below in the table.

Plant A	Plant B
Flowers are bright red	Flowers are yellow
Fruits are sweet	Fruits are sweet
Seeds are small	Seeds are big

After a certain period of time, young plants of the same kind were found in the plot. Soon after, the young plants became new adult plants with the following characteristics.

Flowers are yellow
Fruits are sweet
Seeds are small

(a) Do you think the new adults plants were produced through sexual reproduction by the two plants, A and B? Give a reason for your choice. (1m)

_____

_____

(b) State the four processes of plant reproduction in a correct sequence. (1m)

i _____

ii _____

iii _____

iv _____

38. Hazel selected four potted plants of the same kind for her experiment. She placed the four pots in an individual enclosed space.

She used the flowers from plant E to act as a control to prove that the presence of anther is needed for pollination to take place. She then removed one part of the flowers in plants F, G and H as shown below.

Flower E (control)

Flower F

Flower G

Flower H

Question 38 is continued on page 10.

(a) Which plant above should Hazel observe for her experiment? Explain your choice. (1m)

_____

_____

(b) Why do you think the experiment was carried out in an individual enclosed space? (1m)

_____

_____

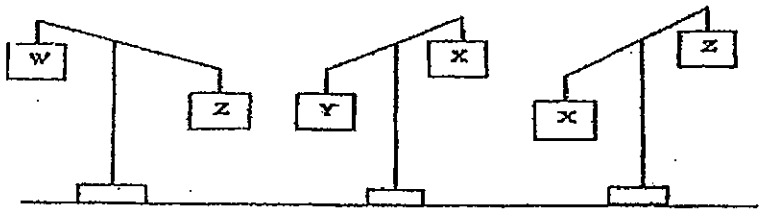
(c) Describe what happens when a suitable pollen grain lands on the stigma. (2m)

_____

_____

_____

39. Ben hung four boxes, W, X, Y and Z on a lever balance as shown in the diagram below and compared their masses.



(a) Complete the following: (1m)

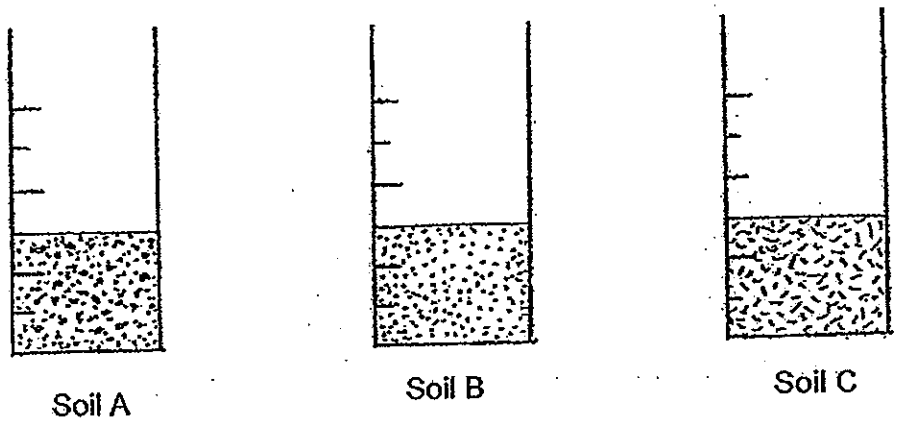
(i) Box_____ has the smallest mass.

(ii) Box_____ has the biggest mass.

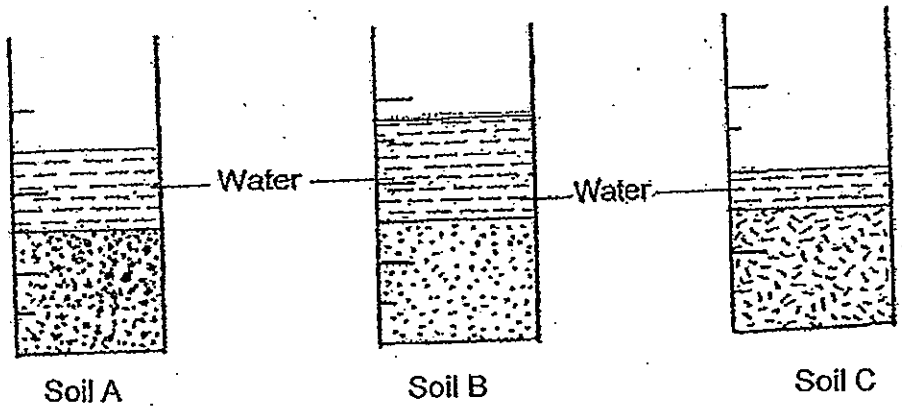
(b) Give a reason why the boxes have different masses although they have the same volume. (1m)

_____

40. David had same amount of soil in three cylinders as shown below.



He poured equal amount of water into each of the cylinder. As he poured the water, he saw bubbles escaping from the soil. He observed the volume of soil and water as shown below in the measuring cylinders.



(a) In which soil would the roots of a plant grow the best? Explain why. (1m)

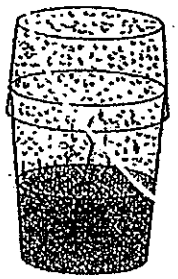
_____

_____

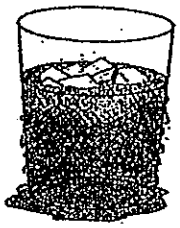
(b) State the property of matter that can be deduced from this experiment? (1m)

_____

41. The diagram below shows two containers filled with water at different temperatures. The containers were left on a table in the classroom for the next hour.



Container A with water at 60°C



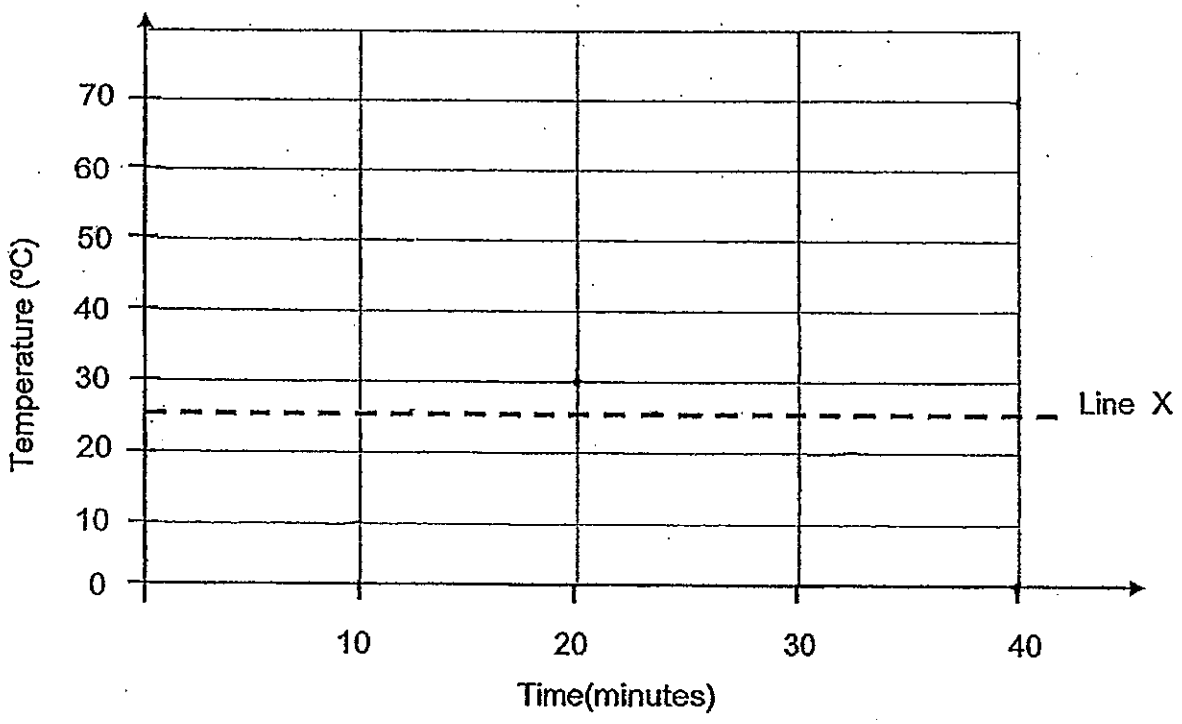
Container B with water at 5°C

(a) State the process(es) that is/are taking place in the above set-ups? (1m)

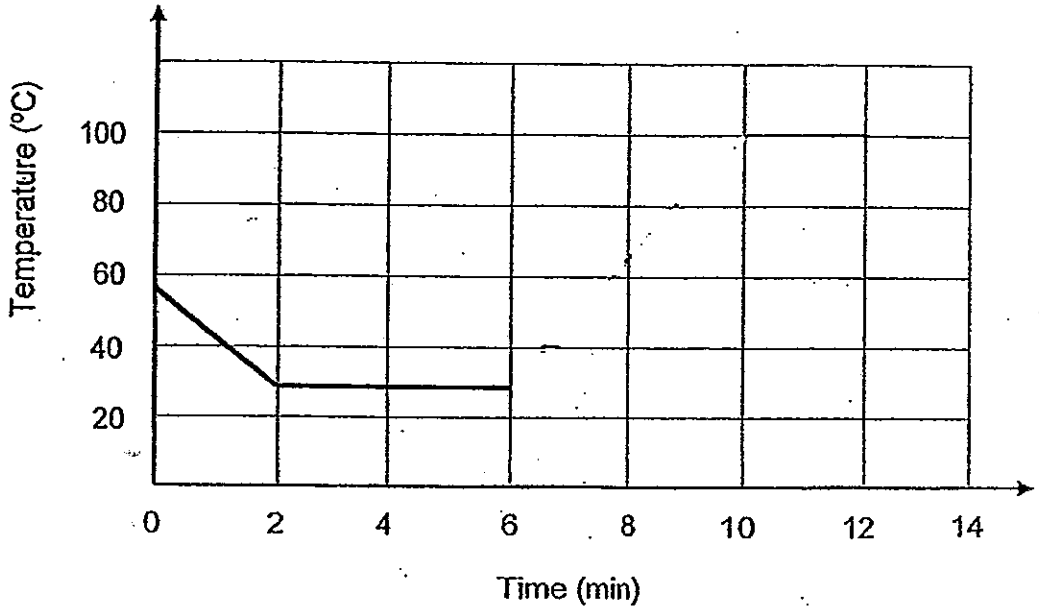
_____

_____

(b) **Draw** and **label** the graphs for containers A and B below, to show the change in temperature of the two containers of water over 40 minutes. Line X denotes the room temperature of the classroom. (1m)



42. The graph below shows the temperature change of pure water in a beaker that was left on a table in a room over a period of time.



Based on the graph above, answer the following questions:

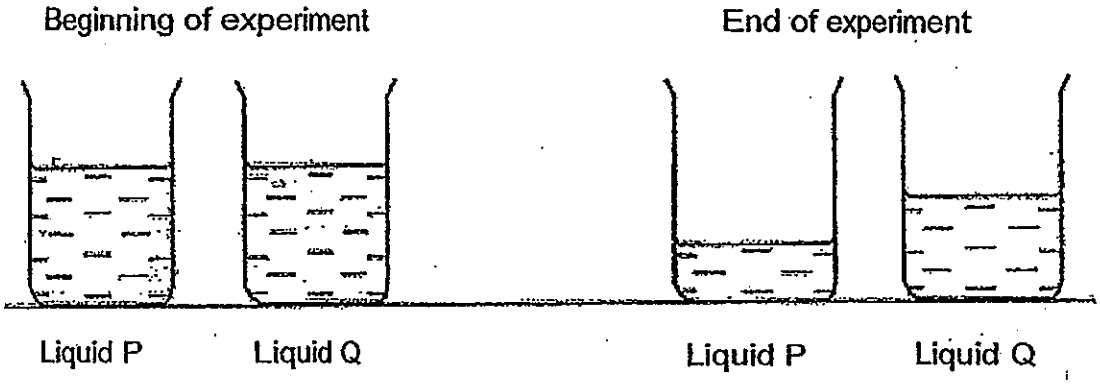
(a) Explain why the temperature of water stopped decreasing after the 2nd minute. (1m)

_____

_____

(b) A heat source was introduced at the 6th minute. The water boiled after heating for four minutes. Complete the graph until the 12th minute. (1m)

43. Zailani filled two similar beakers, each with 100ml of liquid P and Liquid Q respectively. He left the beakers in the sun. Three hours later, he observed the amount of liquid left in each beaker.



(a) What do you think is the aim of Zailani's experiment? (1m)

_____

_____

(b) What conclusion can he draw from the results of his experiment? (1m)

_____

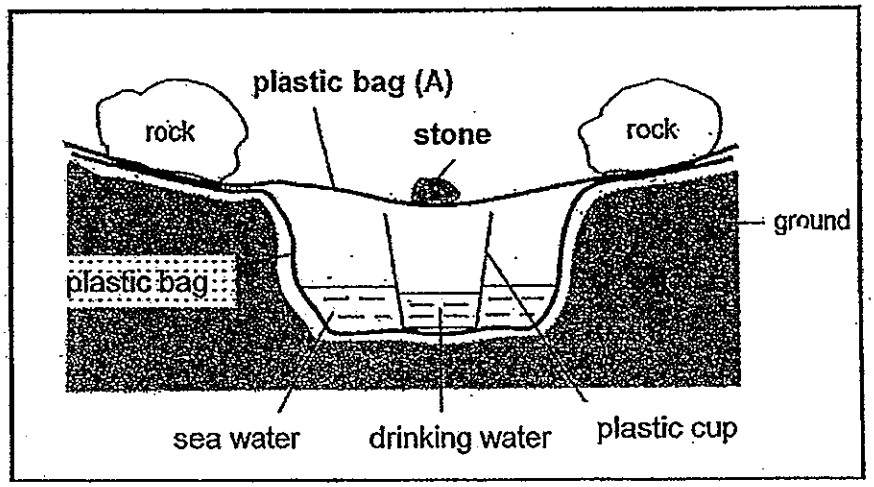
_____

(c) Which of the above liquids should Zailani apply on his arm in order to feel a cooling sensation faster. Explain why. (1m)

_____

_____

44. A shipwrecked sailor was trapped on a hot, deserted island that had no rivers. He needed to get drinking water from the sea water. He dug a hole on the ground and set up some items as shown below to obtain drinking water.



(a) State the purpose of the plastic bag A. (1m)

A: _____

(b) Using the above set-up, explain how drinking water was obtained. (2m)

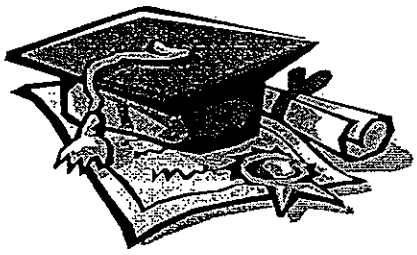
_____

_____

_____

_____

End of Paper



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : ROSYTH
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

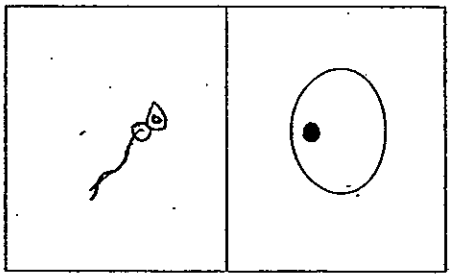
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	2	4	1	4	2	4	3	4	3	2	2	1	3	3	3	4

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

31)a)A: Larva B: Adult coffee plant

b)The bees will increase the chance of pollination which allows fertilization to take place to form coffee seeds.

32)a)



b)i)The male reproductive cell has a tail while the female reproductive cell does not have a tail.

ii)The sperm needs to have a tail in order for it to swim towards the egg.

c)Nucleus.

33)a)Digestive system Circulatory system

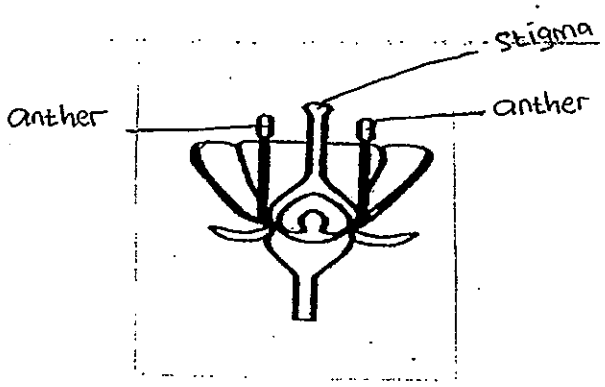
b)Digestive system digest the food and the digested food is absorbed into the blood. Circulatory system transports the blood to the foetus.

34)a)Set-up A: The red solution was able to pass through membrane XZ and be transported to the leaves through the celery stalks, causing the left cells to be firm and stained red.

Set-up B: The red solution was not able to pass through membrane Y to reach the leaves. The leaf cells became dehydrated causing them to wilt and turn yellow.

b)Cell membrane. The cell membrane controls the substances to enter and exit the cell.

35)a)



b)i)The stigma receives pollen grains from the anther.

ii)It has a sticky surface to catch the pollen grains from the air.

c)To prevent pollens to pollinate the same flower.

36)a)Part A is the shoot as it only starts to grow after part B which is the roots start to grow and obtain enough water for the shoot to grow.

b)The seedlings got their nutrients from the seed leaves.

c)Repeat the experiment to obtain average results.

37)a)Yes. The new plants have inherited the characteristics from both plants A and B as in sexual reproduction inheritance is from both parents.

b)i)Pollination ii)Fertilization iii)Dispersal iv)Germination

38)a)In G, the anther is removed and she can find out if the anther is needed for pollination.

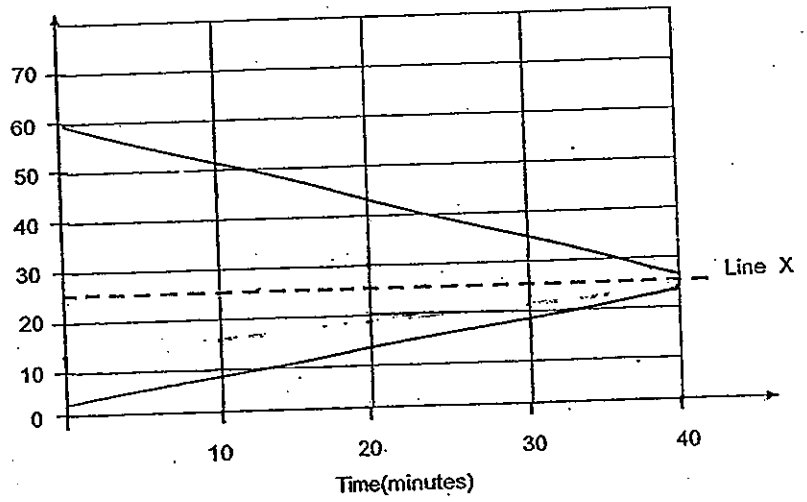
b)To prevent cross pollination from happening.

c)The pollen will develop a pollen tube and travel through the style to the ovary. The pollen grain will enter the ovules for fertilization.

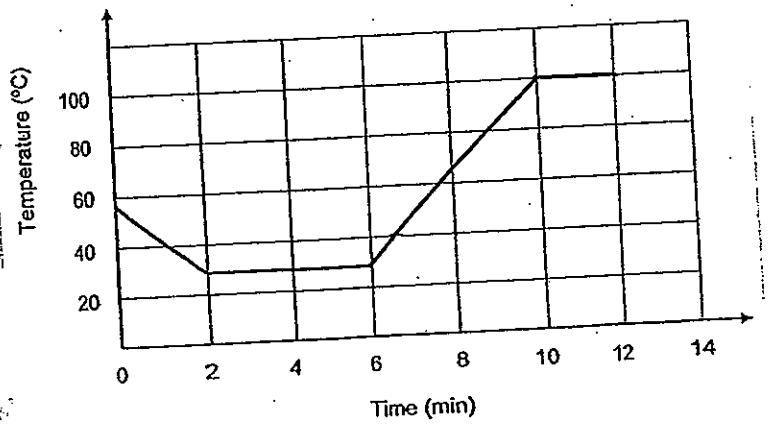
39)a)i)W ii)Y
b)They are made of different materials.

40)a)Soil C. It contains the most amount of air spaces for healty root growth.
b)Matter occupies space.

41)a)Evaporation, condensation and Melting.
b)



42)a)It to room temperature.
b)



43)a)To find out if the type of liquid affects the rate of evaporation.

b)Liquid P had evaporated the most.

c)Liquid P. P evaporates faster and thus will remove heat faster from the arm.

44)a)To gain heat from the water vapour in order to allow for condensation to occur.

b)Water from sea water in the hole gained heat and evaporated. Water vapour rose to the cooler surface of the plastic A and lost heat to condense into water droplets.

ANGLO-CHINESE SCHOOL
(JUNIOR)

SEMESTRAL ASSESSMENT 1 (2013)
PRIMARY 6

SCIENCE

BOOKLET A

THURSDAY

Name : _____ ( )

Class : P6 _____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

ıere are 15 questions in this booklet.

Answer ALL questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 30.

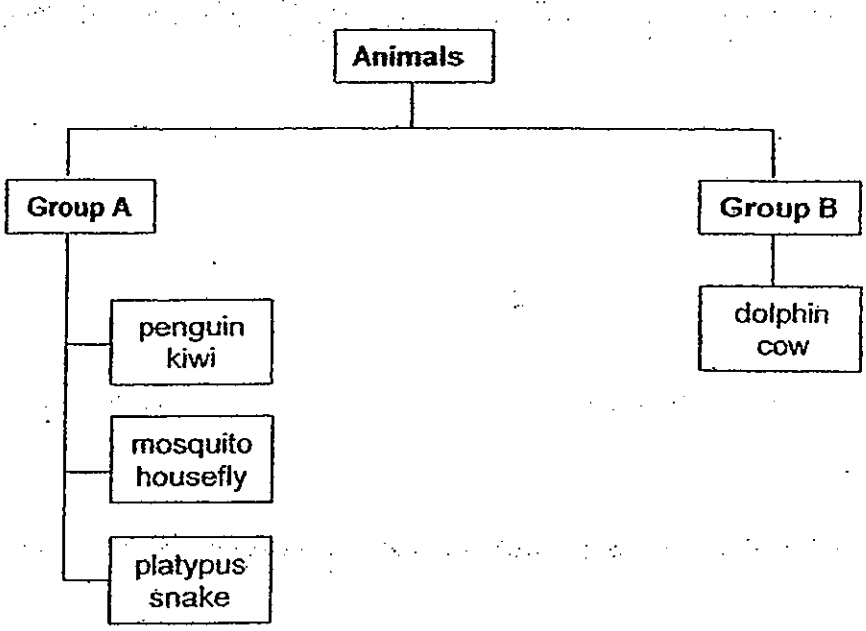
The total time for Booklets A and B is 1 hour.

This question paper consists of 8 printed pages. (Inclusive of cover page)

Section A (60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Choose the correct option (1, 2, 3 or 4) and shade the correct oval on the Optical Answer Sheet (OAS) provided.

1 The animals below are classified into two groups, A and B.



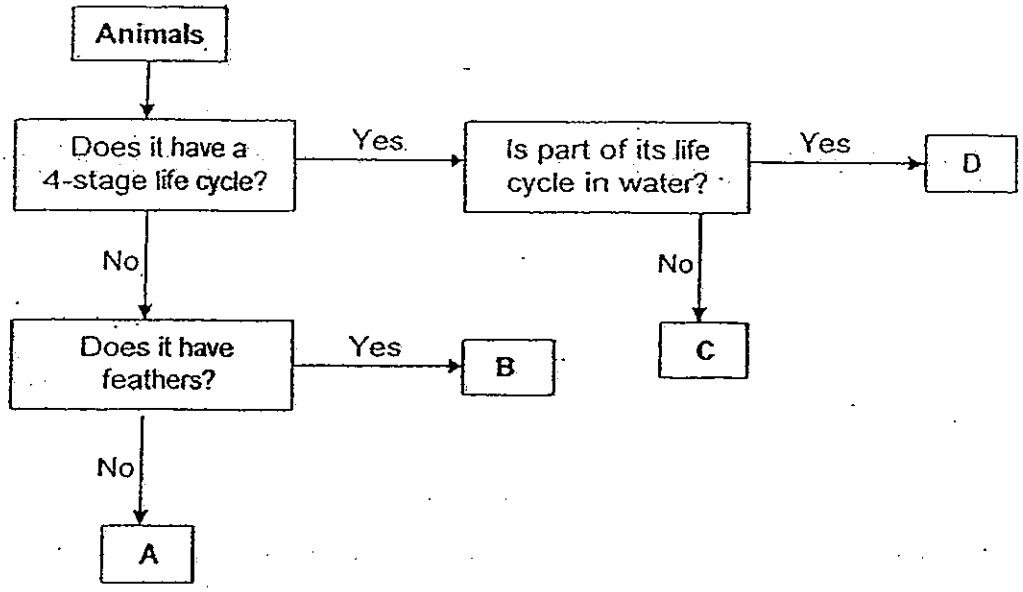
Based on the classification chart shown above, the animals are grouped according to _____.

(1) their diet
(2) how they breathe
(3) their body covering
(4) the method of reproduction

2 Substance W melts at 15°C and boils at 110°C. Substance W is a solid at _____.

(1) 10°C
(2) 40°C
(3) 65°C
(4) 125°C

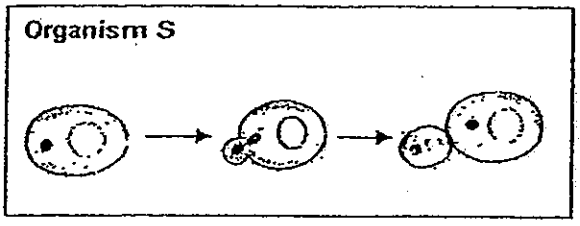
3 Look at the flow chart below carefully.

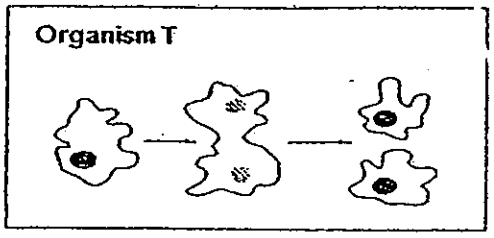


Which of the following correctly identifies the animals that the letters A, B, C and D represent?

	A	B	C	D
(1)	whale	penguin	housefly	mosquito
(2)	butterfly	eagle	dragonfly	guppy
(3)	cockroach	moth	snake	dragonfly
(4)	spider	sparrow	butterfly	tubifex worms

4 The diagrams below show two organisms reproducing themselves.

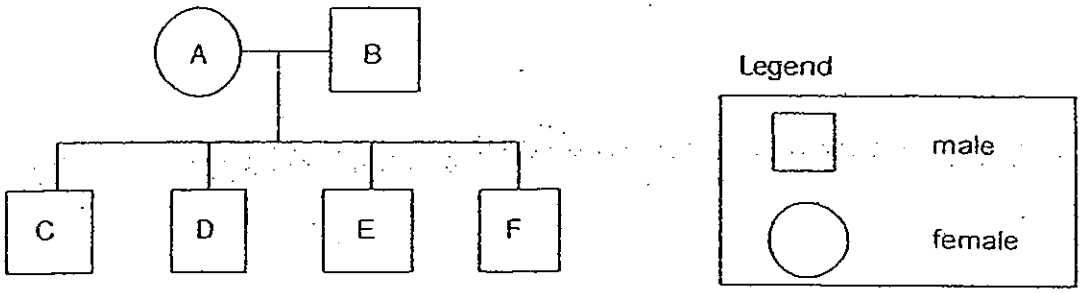




Which one of the following statements best describes Organisms S and T in the diagrams?

(1) They are both single-celled organisms.
(2) They reproduce through sexual reproduction.
(3) Fertilisation has taken place in both organisms.
(4) Each cell that is produced has different characteristics.

5 The following diagram shows the family tree of Wayne and his brothers.



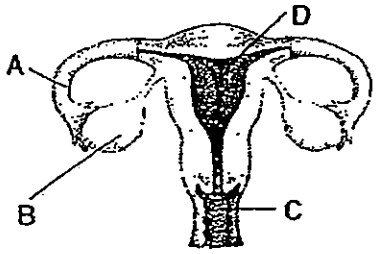
The table below shows the characteristics of his family members and a tick (✓) indicates that the person has that characteristic. Wayne is the one in the family who most resembles his father.

Family member	Characteristics			
	Single eyelids	Round face shape	Straight hair	Detached earlobe
A		✓	✓	✓
B	✓			✓
C	✓	✓	✓	
D		✓		✓
E	✓			✓
F	✓		✓	

Which letter in the family tree represents Wayne?

(1) C
(2) D
(3) E
(4) F

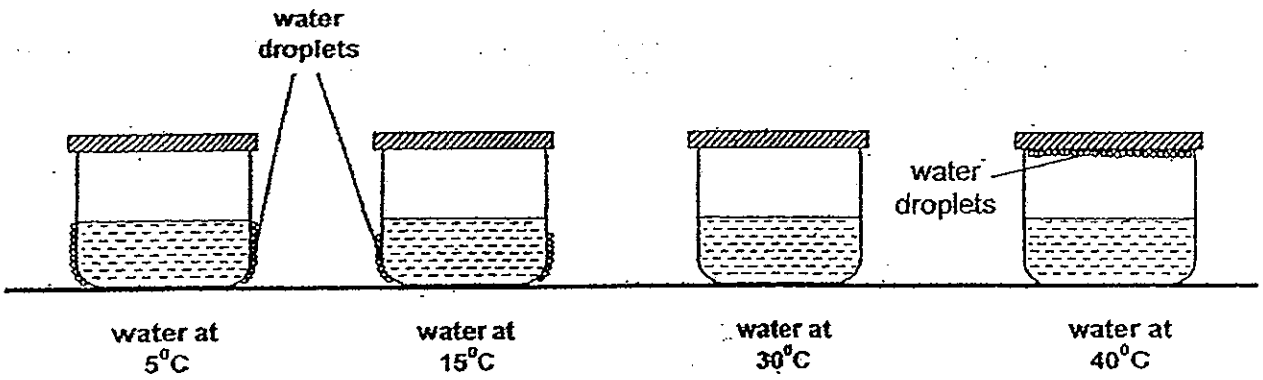
6 Doctors are able to fertilise a woman's egg in a test-tube before implanting the embryo into the woman's reproductive system.



In which part of the woman's reproductive system should the embryo be implanted?

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

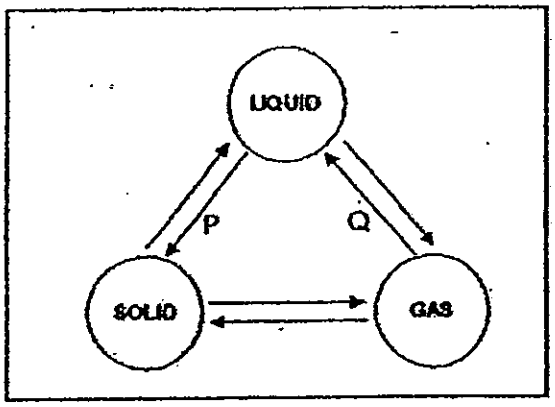
7. Haiqal prepared four containers filled with equal amounts of water at 5°C, 15 °C, 30°C and 40°C. He capped the containers and placed them in a special room. After 15 minutes, he observed the following.



What is the most likely temperature of the special room?

(1) 10°C
(2) 18°C
(3) 32°C
(4) 50°C

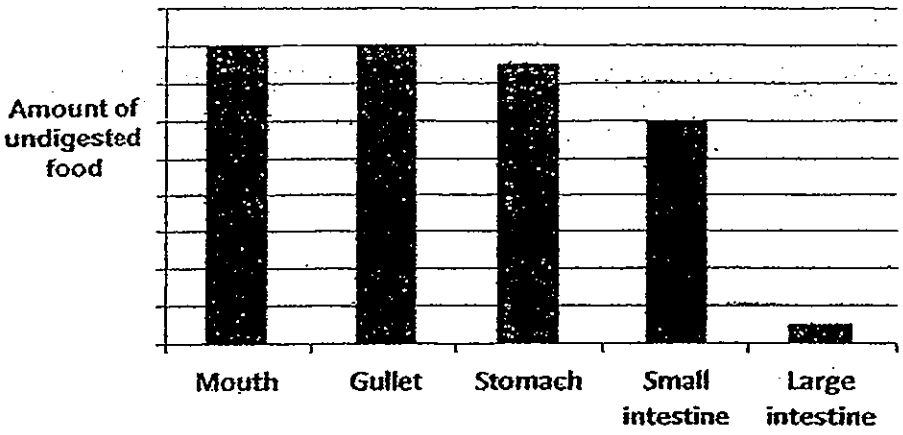
8 Water can change from one state to another as shown below.



P and Q represent the processes in which water changes from one state to another. Which of the following is true about heat loss or heat gain during processes P and Q?

	P	Q
(1)	gained heat	gained heat
(2)	lost heat	lost heat
(3)	gained heat	lost heat
(4)	lost heat	gained heat

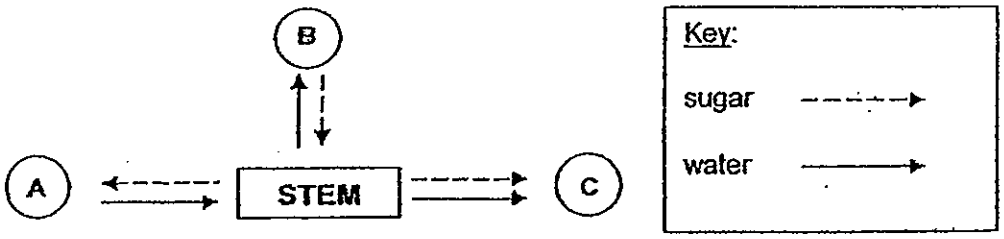
9 The graph below shows the amount of undigested food in the organ as it enters that organ in the digestive system.



Based on the graph shown, in which organ did most of the digestion take place?

(1) Mouth
(2) Stomach
(3) Small intestine
(4) Large intestine

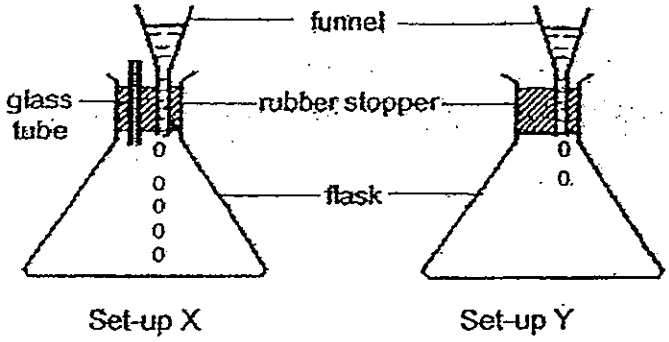
10 The diagram below shows how sugar and water are transported to and from different parts of a plant. The different parts of the plant are represented by the letters A, B and C.



Which of the following best represents the parts of the plant A, B and C?

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

11 Aaron prepares two set-ups as shown below.

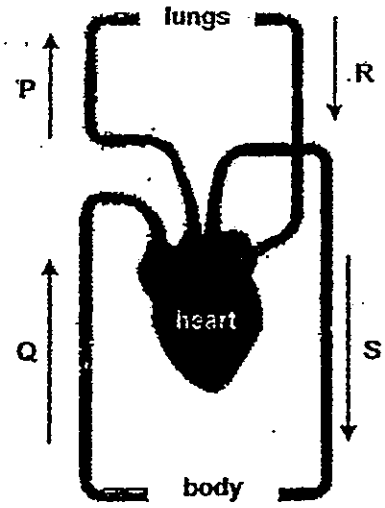


He pours water into the funnels of both set-ups. He observes that the water flows easily through the funnel in set-up X but only a few drops flow through the funnel in set-up Y.

Which of the following best explains his observation?

(1) There is more water in set-up X.
(2) The air in set-up X could escape.
(3) The funnel in set-up Y is smaller.
(4) The rubber stopper in Set-up Y was too big.

12 The diagram below depicts the human circulatory system.



P, Q, R and S are blood vessels that connect the various organs. Which of the blood vessels carry oxygen-rich blood?

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

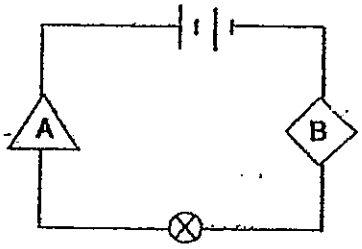
13 Zachary observed two cells and recorded the observations in the table below. A tick (✓) indicates that the part is present in the cell.

Cell part	Cell M	Cell N
Nucleus	✓	✓
Cell membrane	✓	✓
Cell wall		✓
Cytoplasm	✓	✓
Chloroplasts		✓

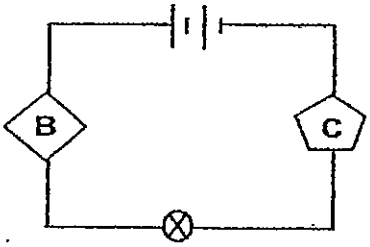
Based on the table above, what can Zachary conclude about Cells M and N?

	M	N
(1)	From an animal	From a plant
(2)	From the root of a plant	From the leaf of a plant
(3)	Is a red blood cell	Is a white blood cell
(4)	From a plant	From an animal

14 Dylan set up the circuits below using a bulb, 2 batteries and 3 objects A, B and C.

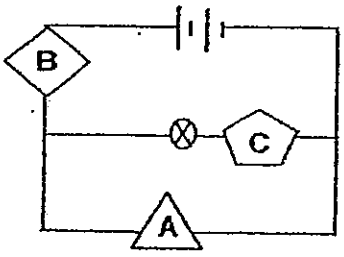


Circuit 1

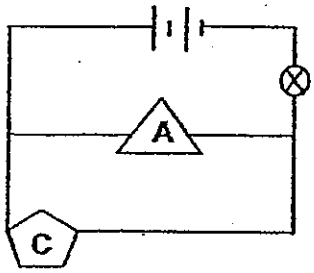


Circuit 2

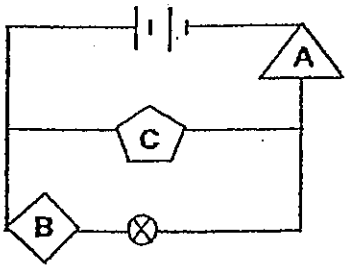
He observes that Circuit 2 lights up but Circuit 1 does not light up. He uses the same objects A, B and C to form the circuits below.



Circuit 3



Circuit 4



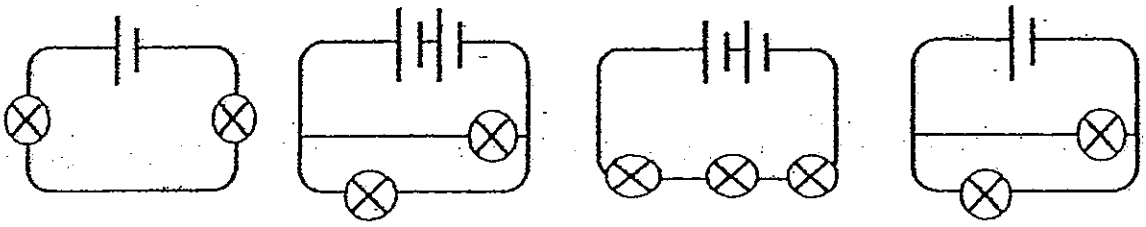
Circuit 5

~~He used the objects A, B and C again to set up the circuits below.~~

Dylan would see the bulb lighting up in circuit(s) _____.

(1) 4 only
(2) 3 and 4 only
(3) 4 and 5 only
(4) 3, 4 and 5

15 Raju wanted to find out if the arrangement of bulbs would affect the brightness of the bulbs.



Set-up S Set-up T Set-up U Set-up V

If the bulbs are similar and the batteries are of equal voltage, Raju should use set-ups _____ to ensure a fair test.

(1) S and T
(2) S and V
(3) T and V
(4) U and V

16 Gabriel has three magnets, A, B and C, of the same size and mass. He set up an experiment as shown in diagram 1 using magnets A and B and repeated his experiment with magnets B and C.

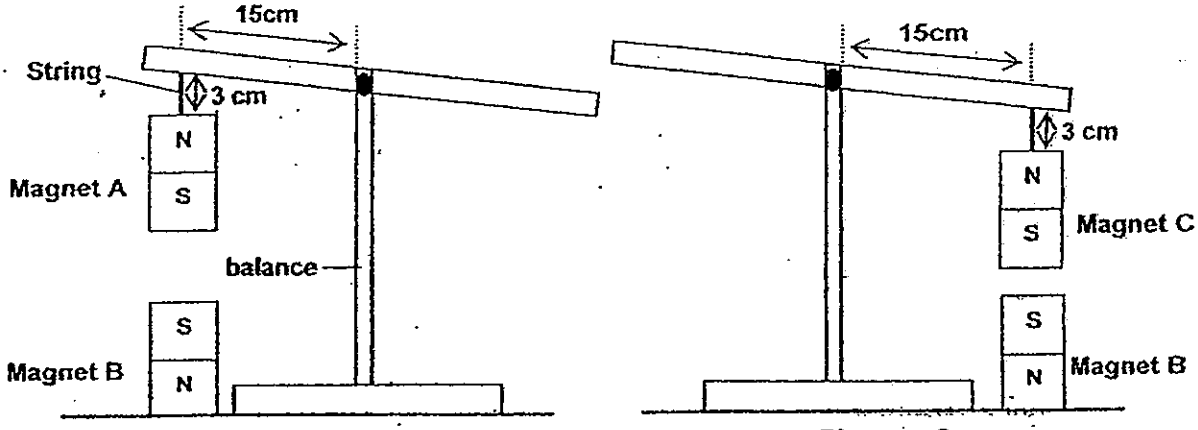


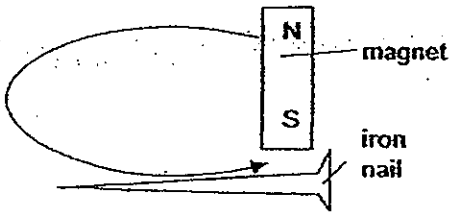
Diagram 1 Diagram 2

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

A All the magnets are of equal strength.
B A force is present between the magnets in the set up above.
C Magnet A would be able to attract more steel paperclips than C.

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

17 Jane used the stroking method shown below to turn her iron nails into temporary magnets. She then tried to pick up as many paper clips as she could with her magnetised nails. The table below shows the number of paper clips each magnetised nail managed to pick up.

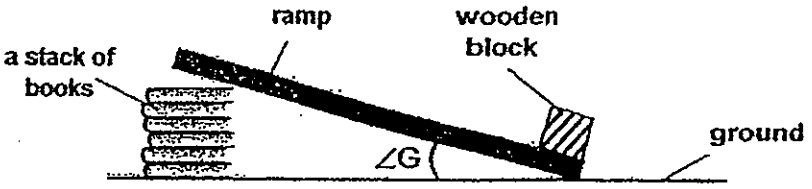


	Nail A	Nail B	Nail C	Nail D
Number of paper clips picked up	2	7	5	10

Arrange the strength of the magnetised nails from the weakest to the strongest.

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

18 Zavier conducted an experiment as shown below to investigate how the angle of a ramp, (∠G), affects the amount of force needed to move a wooden block up the ramp.

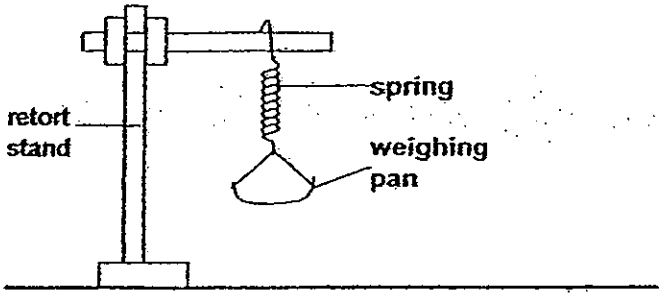


Which of the following variables must he keep the same to ensure that his experiment is fair?

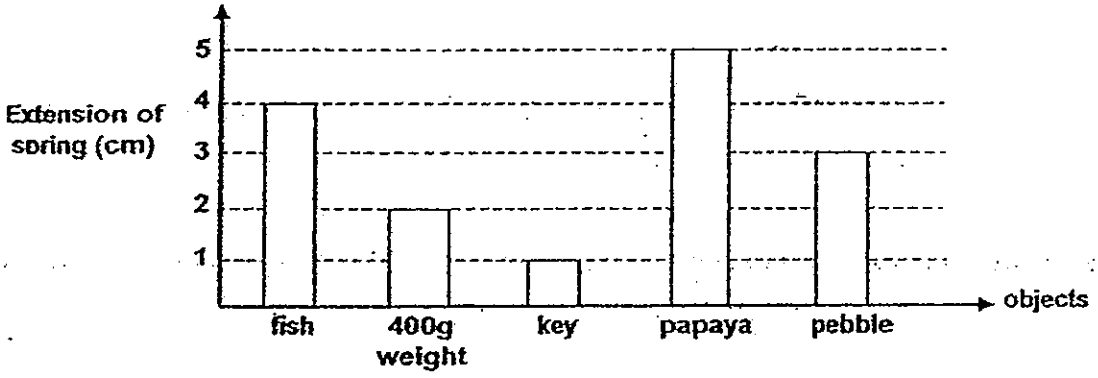
A Number of books
B Material of the ramp
C Size of the wooden block
D Mass of the wooden block

(1) A, B and C only
(2) A, C and D only
(3) B, C and D only
(4) All of the above

19 William conducted an experiment to determine how much a spring would stretch when different objects were placed in the weighing pan. He set up the apparatus as shown below.



He plotted the results of his experiment in the graph below.



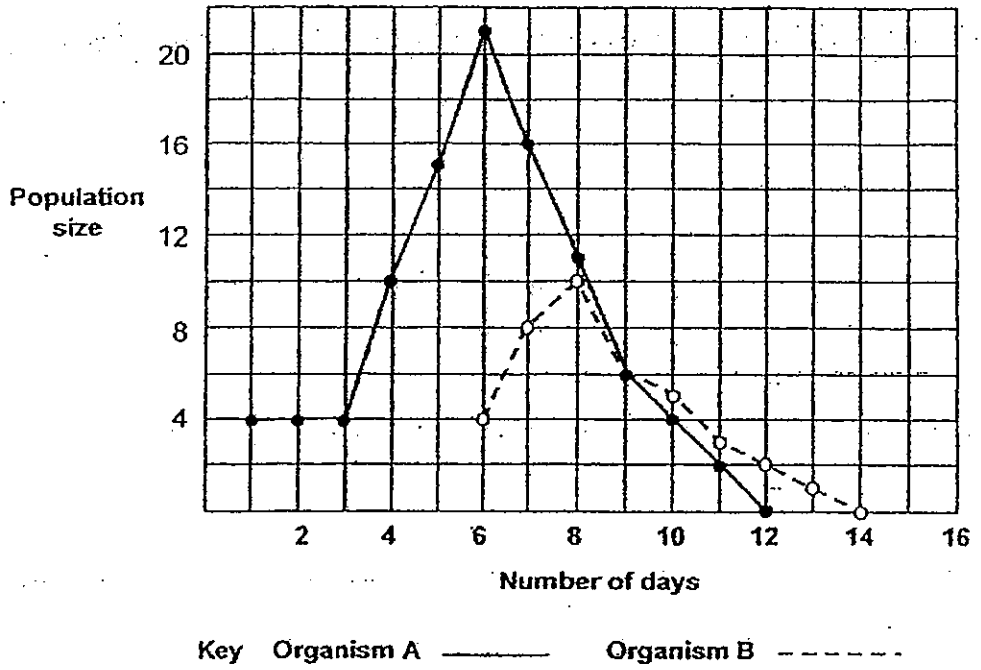
Which object is likely to weigh 600g?

(1) key
(2) fish
(3) pebble
(4) papaya

20 An Angsana tree along Winstedt Road has two bird's nest ferns and some dragon scale ferns growing on it. Ants, squirrels and some mynahs live on the tree too. There are some chicks in the mynahs' nest. How many populations are sustained by the tree?

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

21 Andy and his friends placed some organisms A in an aquarium. A few days later, they placed some organisms B into the same aquarium. They observed how the number of organisms A and B changed over two weeks and plotted their observation in the graph below. The living condition in the aquarium was favourable for both types of organisms.



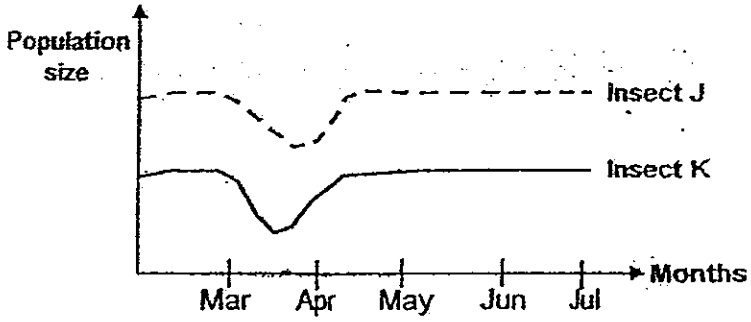
The children made the following statements at the end of their investigation.

John : Organism A was the predator of organism B.
Kumar : There were no more organisms A and B at the end of the two weeks.
Alice : The population size of both organisms was the same on one of the days.
Andy : The largest population size of organism A was 20 while that of organism B was 10 during the two weeks.

Based on the information from the graph only, whose statements are correct?

(1) Andy and Alice
(2) Andy and John
(3) Alice and Kumar
(4) John and Kumar

22 Farmer Lee sprayed insecticide in March to prevent insects J and K from destroying his crops. He monitored how the population of both insects changed before and after he sprayed the insecticide and recorded his observation in the graph below.

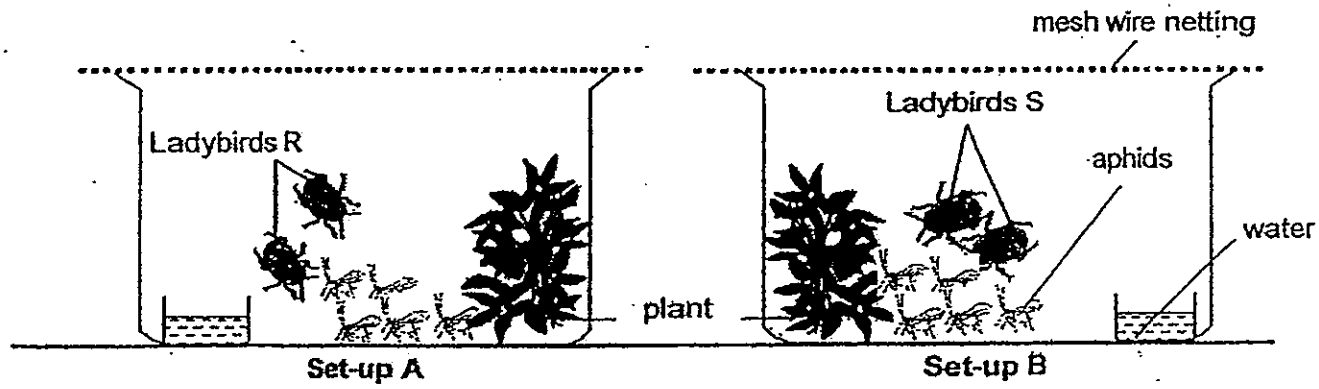


Which of the following are possible reasons for insects J and K to return to their original numbers after some time?

A The farmer stopped spraying insecticide.
B Heavy rain washed away the insecticide.
C Other types of insects joined the community.
D The insects were not affected by the insecticide.

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

23 Ian conducted an experiment to find out which species of ladybird, R or S, can better control the population of aphids in his plantation. He put 2 Ladybirds R in Set-up A and 2 Ladybirds S in Set-up B. He also placed an equal number of aphids in each set-up and left them undisturbed for a day.



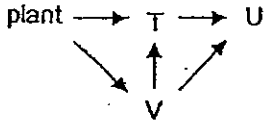
To determine which specie of ladybird to use to control the aphids, he should choose the set-up which has the _____.

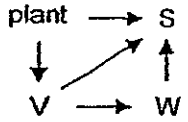
(1) most amount of water left
(2) least amount of leaves left
(3) least number of aphids left
(4) most number of ladybirds left

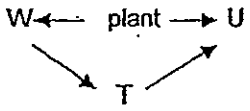
24 The table below shows how some animals have been grouped.

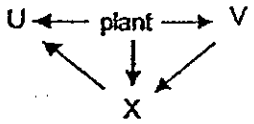
Herbivore	Carnivore	Omnivore
S V	T W	U X

Which of the following is a possible food web based on the above information?

(1)


(2)


(3)


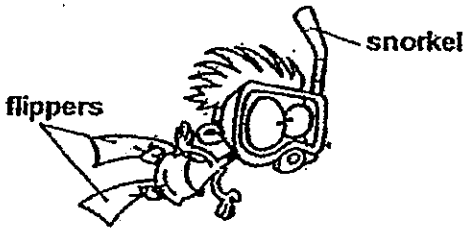
(4)


25 Which of the following examples are behavioural adaptations of animals?

A Wolves hunt in packs to catch their prey more easily.
B Some animals have a special smell to attract their mates.
C Some birds move from one place to another to avoid winter.
D Some butterflies have eyespots on their wings to scare their predators.

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

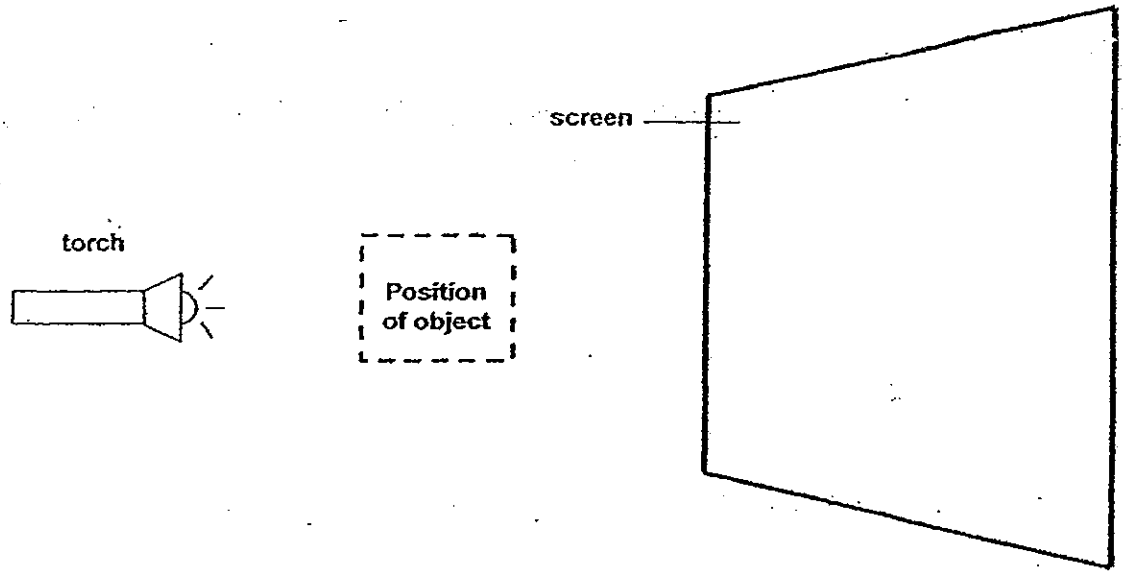
26 Some inventions imitate the adaptations of animals. The diagram below shows a girl wearing snorkelling gears and flippers under water. Which of the following animals could flippers and snorkelling gears have been imitated from?



A Turtle
B Dragonfly nymph
C Water stick insect
D Great diving beetle

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

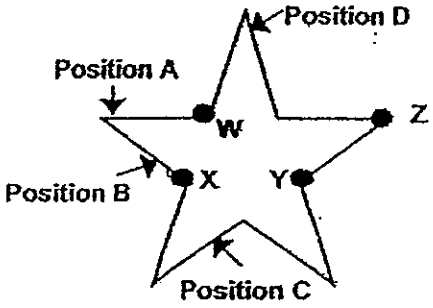
27 The diagram below shows a torchlight shining at an object.



Which one of the following objects would cast the darkest shadow when light is ~~shown~~ shone at it?

(1) glass beaker
(2) frosted glass
(3) tracing paper
(4) five-cent coin

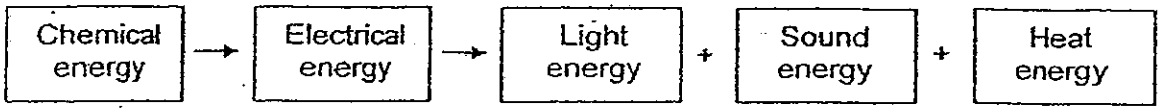
28 W, X, Y, and Z are 4 similar blobs of wax on a piece of copper wire that was bent into the shape of a regular star. When the copper wire was strongly heated at a certain point, the blobs of wax began to melt in the order of W, X, Z, Y.



At which position, A, B, C or D, was the wire most likely to be heated?

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

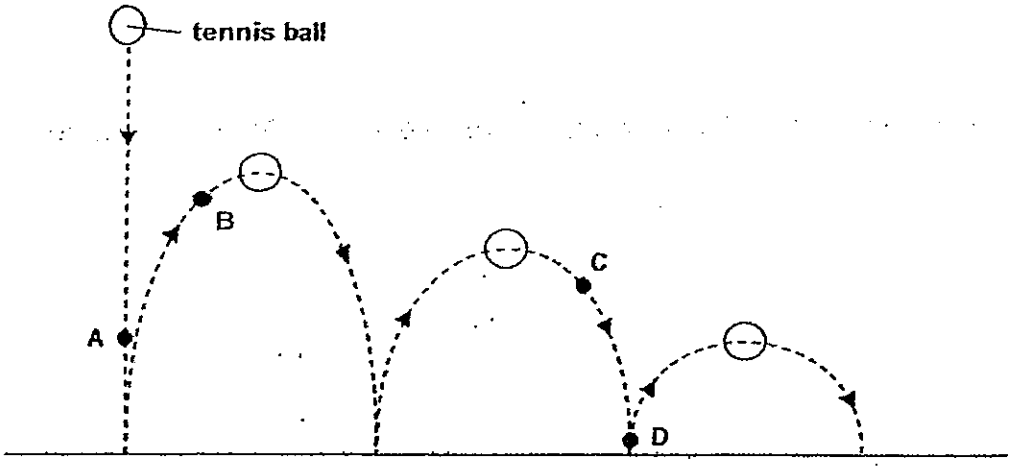
29 Study the energy conversion below.



The energy conversion shown above is most **unlikely** to be found in a _____.

(1) Radio
(2) Television
(3) Street lamp
(4) Mobile phone

30 Winston dropped a tennis ball from a certain height. The ball bounced to a lower height each time it hit the ground as shown below.



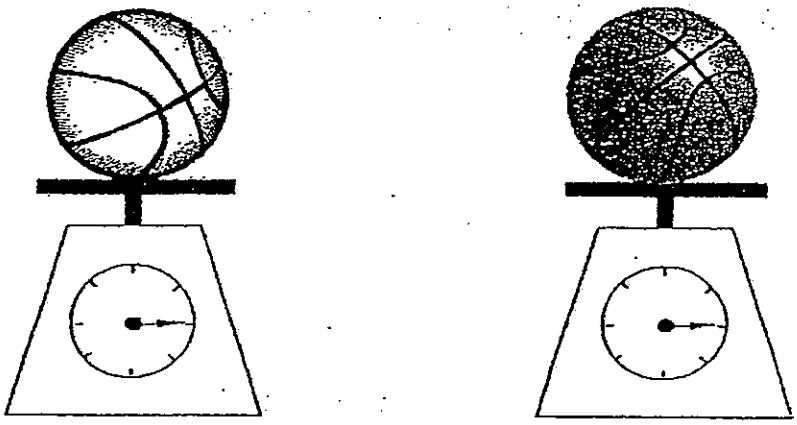
At which points does the tennis ball have more kinetic energy than gravitational potential energy?

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

Section B (40 marks)

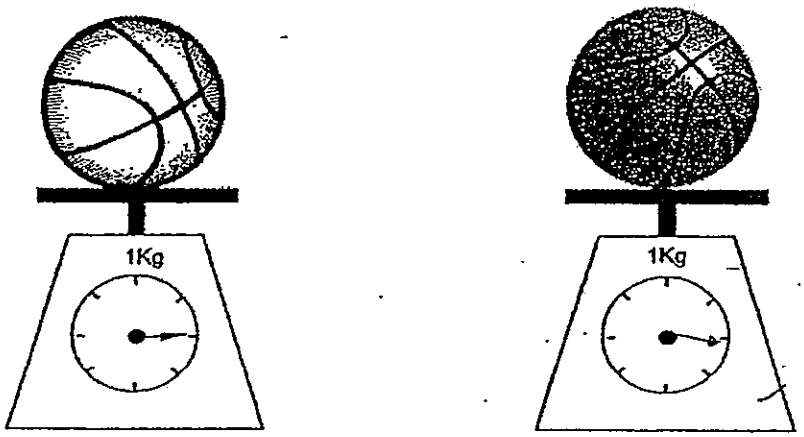
For questions 31 to 44, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. Jonathan placed two similar basketballs, A and B, on weighing scales as shown below. The basketballs have equal volumes of 6 000 cm^3



Basketball A **Basketball B**

(a) Jonathan pumped 500 cm^3 of air into basketball B and placed both basketballs on the weighing scales again. In the space below, draw the needle of the weighing scale to show what Jonathan would observe about the reading. [1]



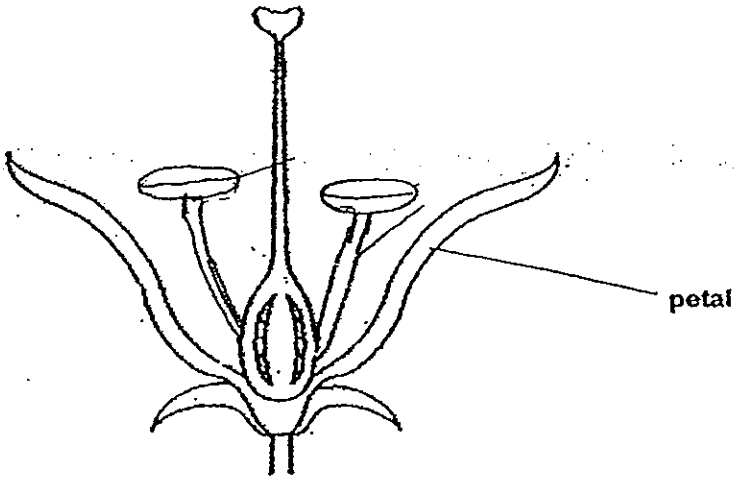
Basketball A **Basketball B**

(b) After 500 cm^3 of air was pumped into basketball B, what would be the total volume of air in basketball B? Explain your answer. [1]

_____

_____

32. The diagram below shows a bisexual flower (having both male and female parts) with missing parts.



(a) Will the flower shown in the diagram be able to develop into a fruit? Give a reason for your answer. [1]

_____

_____

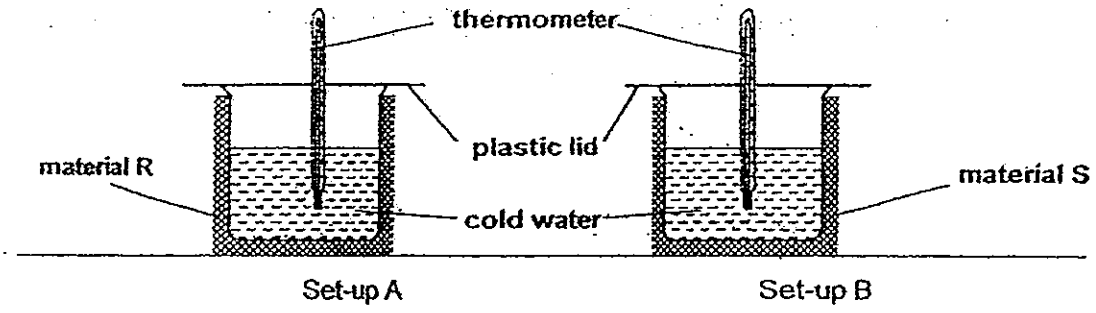
(b) The flower in the diagram has large petals. Explain what might the flower not be able to do if the petals were removed. [1]

_____

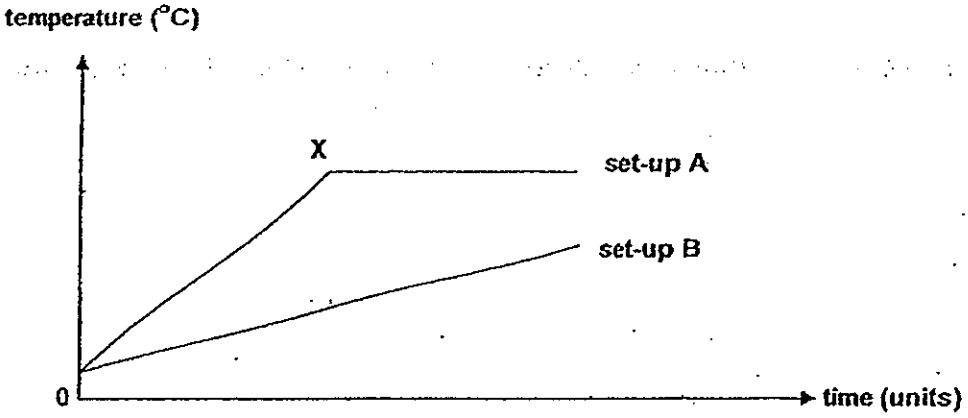
_____

(c) In the diagram above, **draw and label** the missing parts of the flower. [1]

33. Lukas conducted an experiment using set-ups A and B as shown below. He wrapped a glass beaker with material R and another identical glass beaker with material S. He filled both beakers with the same volume of cold water at 5°C.



Lukas measured the temperature of the water at regular intervals over an hour and plotted his results in the graph below.



(a) What happened at point X of the graph of set-up A that caused the temperature to remain constant after that? [1]

_____

_____

(b) Compare the rate of heat gain between the water in set-up A and set-up B. [1]

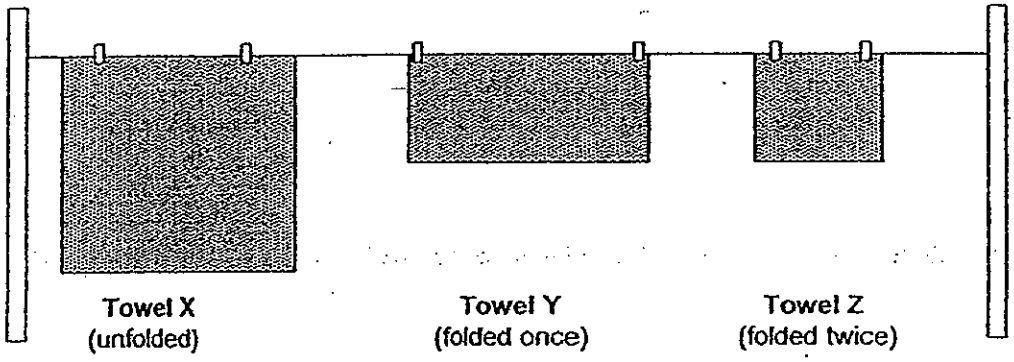
_____

_____

Sub-total

(c) Which material is better suited for making a frying pan? Explain your choice. [1]

34. Nicholas carried out an experiment using three towels, X, Y and Z, which are of the same size. He soaked each of the towels in water and weighed them to ensure that each of them weighed 200g. He folded Towel Y once and Towel Z twice. Towel X was unfolded. He then hung them out to dry in the open. Nicholas wanted to prove that Towel X would weigh the least at the end of 60 minutes since it had the biggest exposed surface area.



He weighed the towels at 15-minute intervals and recorded the mass of the towel in the table below.

Towel	Start of experiment	15 min	30 min	45 min	60 min
X	200g	185g	172g	158g	140g
Y	200g	160g	130g	95g	57g
Z	200g	170g	142g	118g	90g

(a) What was the aim of Nicholas' experiment? [1]

(b) Towel X did not weigh the least at the end of 60 minutes. Suggest a reason why this might be so. [1]

(c) How would the results have been different if the towels had been hung indoors?

_____

_____

35. The table below describes the various stages of the growth of a bean seed.

Stage Number	Description
	The seed leaves drop off.
	The root grows downwards.
	The shoot grows upwards.
1	Seed coat breaks.
	The young leaves appear.

(a) Arrange them in the correct order by writing its stage number, 1 to 5, in the box next to the description. Stage 1 has been indicated for you. [1]

(b) What conditions are necessary for the seed to reach Stage 1? [1]

_____

_____

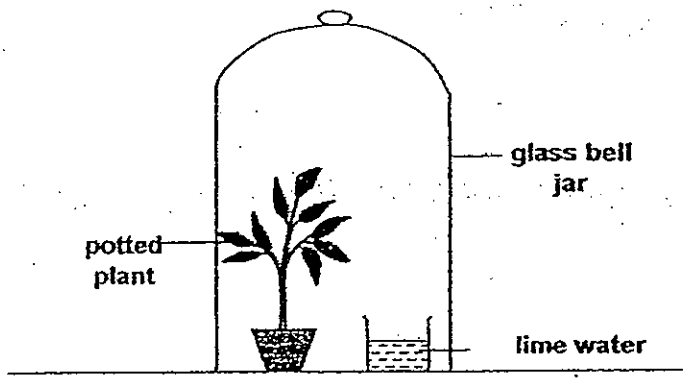
(c) What is the source of energy for the seed at Stage 1? [1]

_____

_____

Sub-total

Zavier set up the experiment shown below and left the set-up in a darkened room.



After two days, he observed the set-up and made the conclusion that carbon dioxide is given out during respiration.

(a) Why did Zavier have to put the set-up in a darkened room? [1]

_____

_____

(b) In the space provided below, draw and label a control experiment to confirm the result of his experiment. [1]

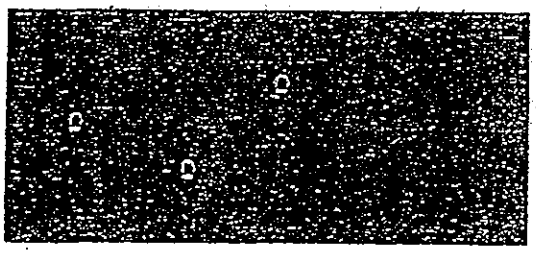
(c) What difference should Zavier observe between the two set-ups after two days to confirm the results of his experiment? [1]

_____

_____

Sub-total

37. Alex set up a circuit with a switch, two batteries and three identical bulbs X, Y and Z. The circuit was hidden in a box while the bulbs were exposed. The diagram below shows the position of the bulbs.



(a) When the switch was closed, all three bulbs lit up. Alex then removed the bulbs X, Y and Z one at a time while the switch remained closed. He made the following observations. (Only one bulb was removed from the circuit each time.)

Bulb removed	Observations
X	Y and Z remained lit
Y	Z went off but X remained lit
Z	Y went off but X remained lit

In the space provided below, draw how the circuit has been connected. Label the bulbs. [1]

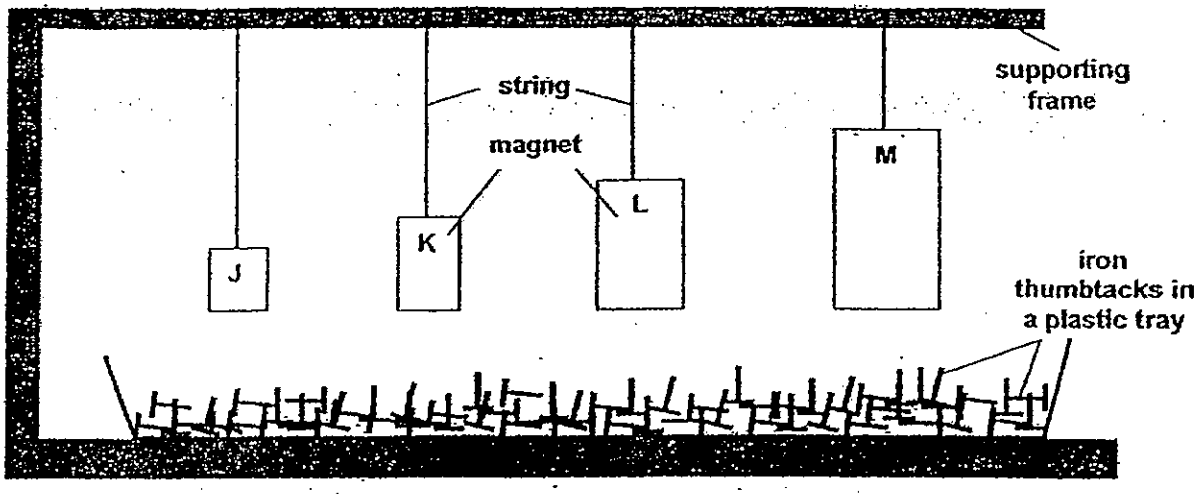
(b) Alex wanted the other 2 bulbs to stay lighted up when any one of the bulbs is removed while the circuit is closed. Draw how he should connect the circuit in the space provided below. Label the bulbs. [1]

(c) Without moving or changing the bulbs, what could he do to the circuit in part (b) if he wanted the bulbs to glow brighter? [1]

_____

_____

38. Fred hung four different magnets, J, K, L and M, an equal distance from a tray of thumbtacks as shown below.



He recorded the number of pins each magnet was able to attract in the table below.

Magnet	Number of pins attracted to the magnet			
	1st try	2nd try	3rd try	Average
J	18	17	19	18
K	7	5	6	6
L	12	13	14	13
M	3	2	4	3

(a) Based on the results of Fred's experiment, what could he be trying to find out? [1]

_____

_____

(b) From the data collected, what could Fred conclude about the strength of the magnets and its size? [1]

_____

_____

(c) Based on the result of Fred's experiment, arrange the magnets according to their strength. Begin with the weakest magnet. [1]

_____

39 Georgina planted long bean plants in four similar flower beds A, B, C and D. The table below shows the conditions of the flower beds.

Bed	Presence of weeds	Presence of dead plants
A	Absent	Absent
B	Absent	Present
C	Present	Present
D	Present	Absent

(a) If Georgina wanted to find out if the presence of dead plants would affect the growth of the long bean plants, which 2 flower beds should she use to conduct her investigation in order to get the best conclusion? [1]

_____

_____

(b) Based on the above information, which flower bed would grow the best long bean plant? Explain your choice. [1]

_____

_____

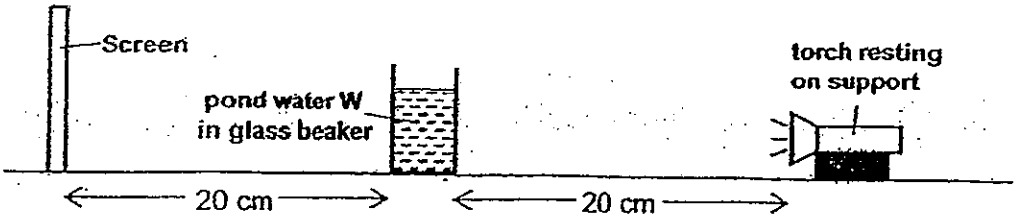
(c) How does the presence of weeds affect the growth of the long bean plants? [1]

_____

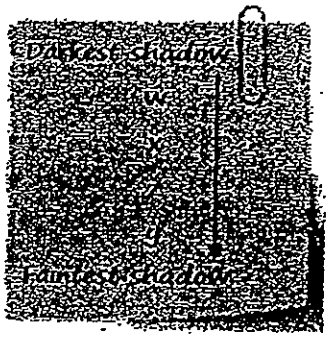
_____

Sub-total

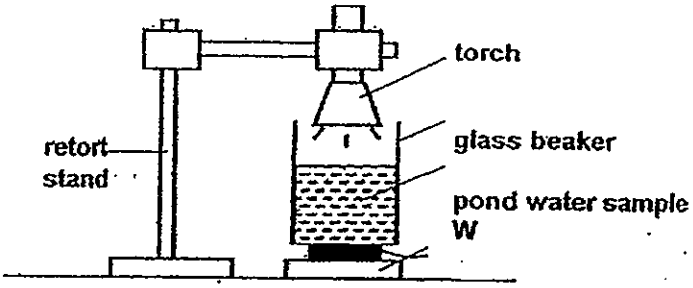
40. Gareth collected four samples of pond water, W, X, Y and Z. He first set up the experiment as shown below. Each sample of pond water was placed 20cm from the screen and 20cm from the torch.



He noted the darkness of the shadow cast by each sample of pond water on a piece of paper as shown below.



Using the same samples of pond water, Gareth set up another experiment as shown below.



He shone light through 100ml of pond water W. Using a light sensor which is attached to a datalogger, he measured the amount of light that was able to pass through the beaker of pond water. He repeated the same experiment with pond water samples, X, Y and Z, and recorded his observation in the table below.

Pond water sample	Amount of light detected for each sample of pond water (lux)			
	1st reading	2nd reading	3rd reading	Average reading
	501	498	486	495
	800	802	810	804
	62	58	63	61
	1103	1112	1106	1107

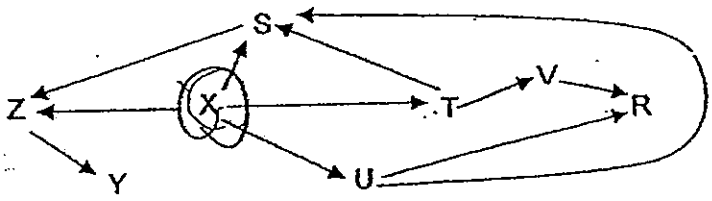
(a) In his hurry to complete the experiment, Gareth forgot to indicate the pond water samples in his table. Using information from the first experiment, write "W", "X", "Y" and "Z" **in the table above.** [1]

(b) Based on the results of Gareth's investigation, which pond water sample will expect the fully-submerged aquatic plants to grow best? Give a reason. (1)

_____

_____

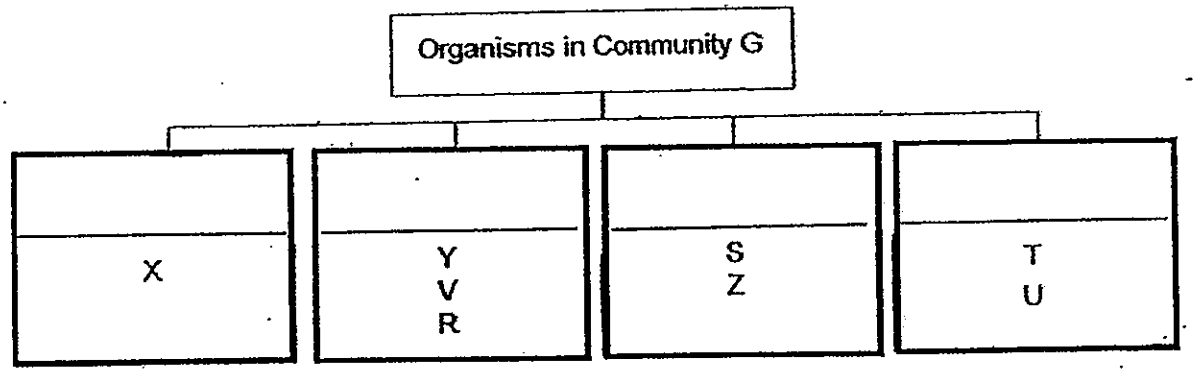
41 The diagram below shows a food relationship in Community G.



(a) Write down a 4-organism food chain that involves organism Y. [1]

_____

(b) The organisms were classified into 4 groups as shown below. Write suitable sub-headings for each group in the blanks below. [1]



(c) Explain how the population of V will be affected if the population of S were to decrease. [2]

_____

_____

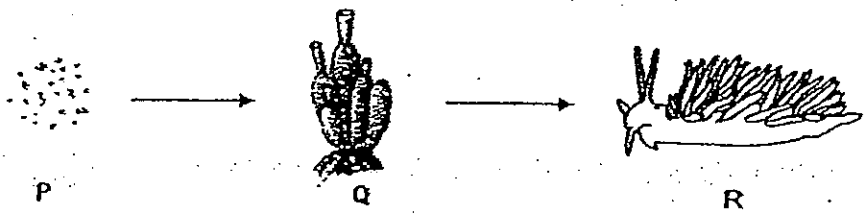
_____

_____

_____

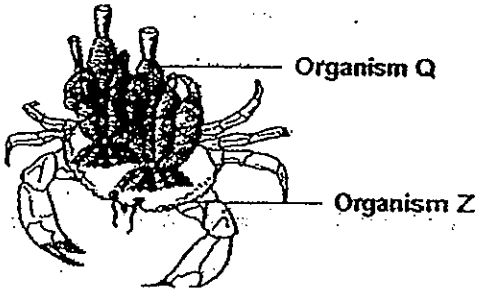
Sub-total

42. The food chain below shows the food relationship among three organisms, P, Q and R.



Organism Q can be found in water that is slightly further away from the seashore. It has only a few types of predators as it is usually poisonous.

The diagram below shows how two organisms, Q and Z, depend on each other. Organism Z cuts out pieces of Organism Q and attaches them onto itself. The pieces of Organism Q which are attached on Organism Z can survive well.



(a) Give a reason for Organism Z to attach pieces of Organism Q onto itself. [1]

_____

_____

(b) State 2 ways in which the pieces of Organism Q that are attached to Organism Z may benefit from the above relationship. [2]

_____

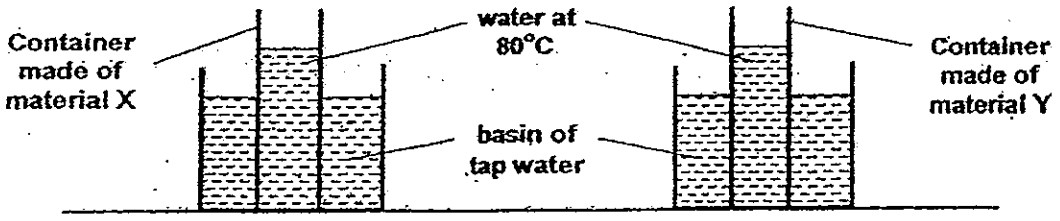
_____

_____

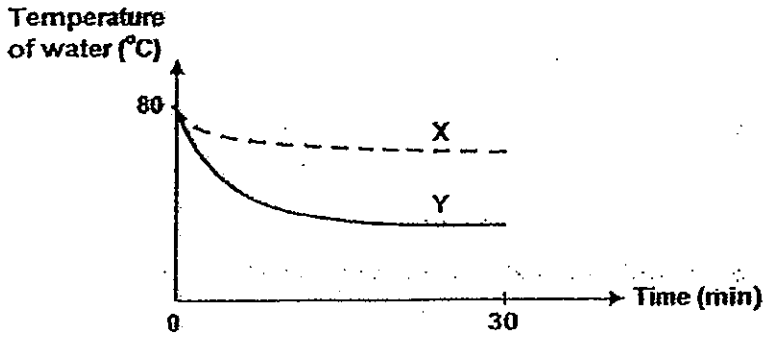
_____

_____

43 Ivan wanted to investigate the thermal conductivity of two materials, X and Y. Using two similar-sized containers made of X and Y, he poured water of 80°C into each of them. He then placed the two containers into two identical basins each filled with an equal amount of tap water as shown in the diagram below and left both set-ups in the same room.



Ivan measured the temperature of the water in both containers every 2 minutes for 30 minutes and plotted his observation in the graph below.



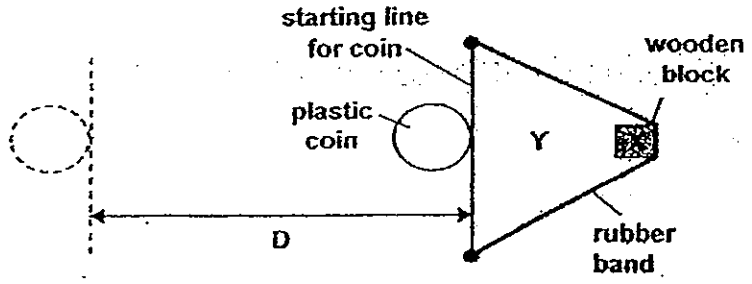
(a) State a variable which Ivan has to keep constant to ensure that his investigation is fair. [1]

_____

(b) Based on the results of Ivan's investigation, compare the ability of materials X and Y to conduct heat. [1]

_____

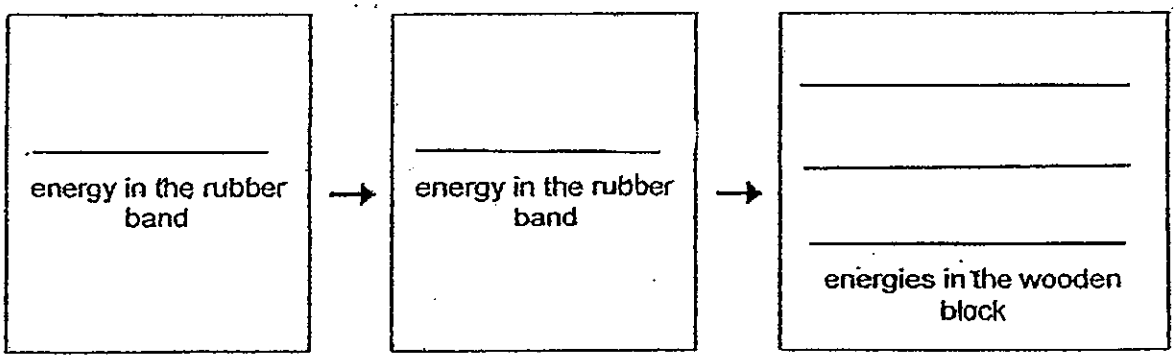
44 James conducted an investigation to find out how the mass of a plastic coin would affect the distance it will move when it is pushed by a wooden block. He placed the coin at the starting line and then pulled the wooden block with a rubber band attached to it to point X as shown below.



James observed that when he released the wooden block, it moved forward and pushed the coin. The distance moved by the coin, (D), was measured and recorded in the table below. He repeated the experiment using plastic coins of different mass.

Mass of plastic coin (g)	Distance moved (D) / (cm)		
	1st try	2nd try	Average
20	32.3	30.7	31.5
30	23.7	22.1	22.9
40	15.2	13.8	14.5

(a) Fill in the blanks to show the energy conversion from the time the rubber band was pulled to point X to the time when the plastic coin stopped moving. [1]



(b) Based on the results of James' investigation, what is the relationship between the mass of the plastic coin and the distance moved by the coin? [1]

(c) James repeated the experiment by pulling the same wooden block with the same rubber band to point Y this time. Explain how the distance moved would be affected. [1]

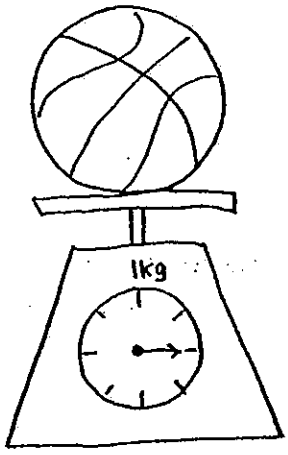
Sub-total

Exam Paper 2013 Answer Sheet

School: ANGLO-CHINESE SCHOOL (JUNIOR)
Subject: PRIMARY 6 SCIENCE
Term: SA1

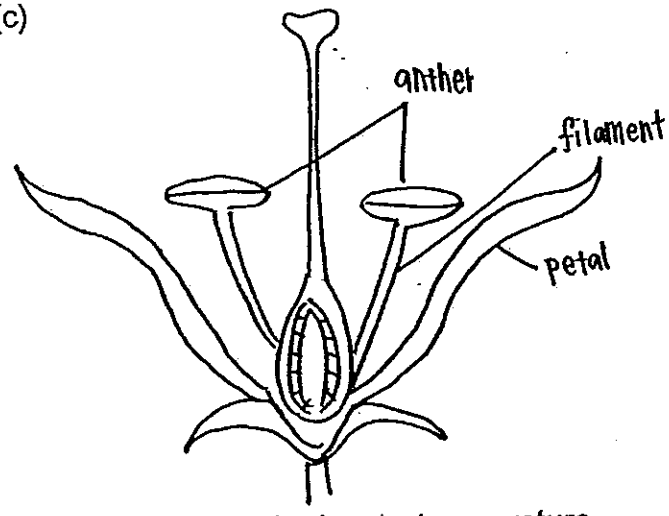
1) 4	6) 4	11) 2	16) 3	21) 3	26) 1
2) 1	7) 3	12) 4	17) 1	22) 1	27) 4
3) 1	8) 2	13) 1	18) 3	23) 3	28) 1
4) 1	9) 3	14) 2	19) 3	24) 4	29) 3
5) 3	10) 3	15) 2	20) 2	25) 1	30) 2

31. (a)



(b) The total volume of air is still 6000 cm^3 because air can be compressed.

32. (a) Yes, it will. The flower is pollinated by insects. It has the needed parts, the stigma, style, the ovary and the ovules to develop into a fruit.
(b) It might be able to attract insects to help it with pollination.
(c)



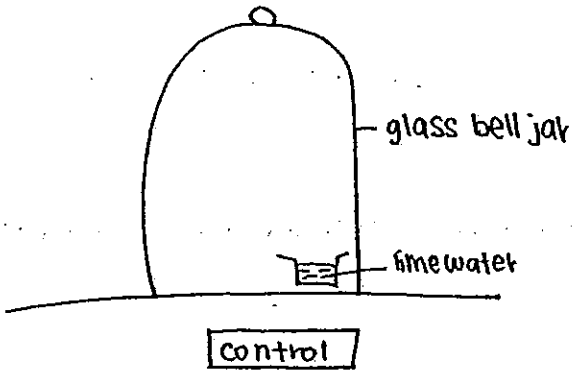
33. (a) The water reached room temperature.
(b) The cold water in set-up A gained heat faster than the cold water in set-up B.

(c) Material R. It is a good conductor of heat thus it will cook the food in a frying pan faster.

34. (a) He wanted to find out if the amount of surface area affects the rate of evaporation.
(b) Towel X was made of a different material.
(c) There would be a smaller decrease in the mass.

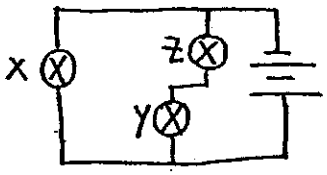
35. (a) 5, 2, 3, 1, 4
(b) Water, warmth, air.
(c) They stored food in the seed leaves.

36. (a) So that the plant would not use up the carbon dioxide to photosynthesis.
(b)

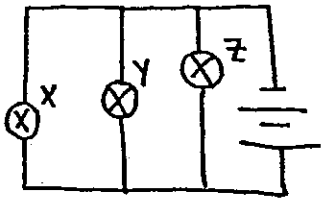


(c) Zavier would observe the limewater in the set-up with the potted plant turn chalky while the limewater in the control set-up would not turn chalky.

37. (a)



(b)



(c) He could add more batteries.

38. (a) Fred was trying to find out how the different magnets can affect the number of pins attracted.

(b) The bigger the magnet does not mean the magnet is strong, the smaller the magnet does not mean the magnet is weak.

(c) M, K, L, T

39. (a) A and B.

(b) Flower bed B. When other organisms decompose the dead plant; the nutrients of the decomposed plant would seep into the soil thus allowing the long bean to take in the nutrients.

(c) When there are weeds, they will fight with the long bean plants for water, sunlight and mineral salts.

40. (a) X, Z, W, Y

(b) Pond water sample Y. Most of the light can pass through it and reach the fully submerged aquatic plants thus allowing them to photosynthesis.

41. (a) X → S → Z → Y

(b) Food producer; Carnivores; Omnivores; Herbivores

(c) When the population of S decreases, the population of T increases, as there is more X for T to feed on. With more T, there will be more prey for organism V to feed on and the population of V will increase.

42. (a) As Q is usually poisonous, organism Z uses it to scare away its predators.

(b) As Z carries Q around with it, Q can get to move around to feed on more food. Q can also escape from its predators.

43. (a) The amount of basin water.

(b) X conducts heat away slower than Y.

44. (a) Elastic potential → Kinetic → Kinetic + Sound + Heat

(b) The heavier the mass of the plastic coin, the lesser the distance moved buy it.

(c) There is lesser elastic potential energy in the rubber band thus it would be converted into lesser kinetic energy in the moving rubber band thus the distance moved by the plastic coin would be shorter.

AI TONG SCHOOL

2013 SEMESTRAL ASSESSMENT (1)
PRIMARY SIX SCIENCE

DURATION: 1hr 45 min

DATE: 17 May 2013

INSTRUCTIONS

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

Name : _____ ( )

Class : Primary 6 _____

Parent's Signature : _____

Date : _____

Booklet A	/60
Booklet B	/40
Total	/100

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 (1, 2, 3 or 4) on the Optical Answer Sheet.

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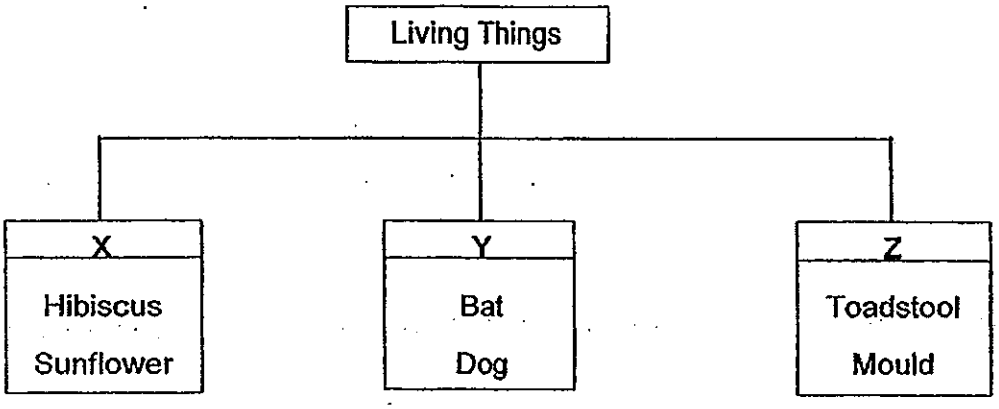
1. Some living things are classified as shown below.



Which of the following can 'X', 'Y' and 'Z' represent?

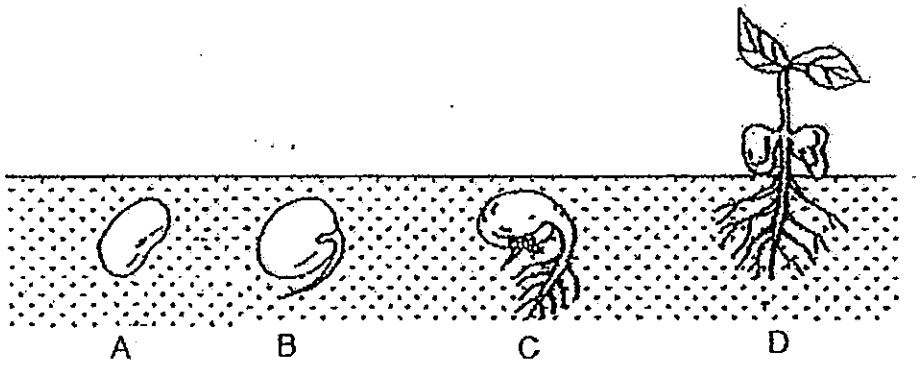
	X	Y	Z
(1)	Plants	Animals	Non-flowering plants
(2)	Plants	Reptiles	Micro-organisms
(3)	Flowering plants	Mammals	Fungi
(4)	Non-flowering plants	Animals	Fungi

2. Which of the following descriptions about the life cycle of the cockroach and butterfly is/are correct?

	Cockroach	Butterfly
A	It has a 3-stage life cycle.	It has a 4-stage life cycle.
B	The young moults.	The young does not moult.
C	It lays eggs on land.	It lays eggs in water.
D	The young resembles the adult.	The young does not resemble the adult.

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

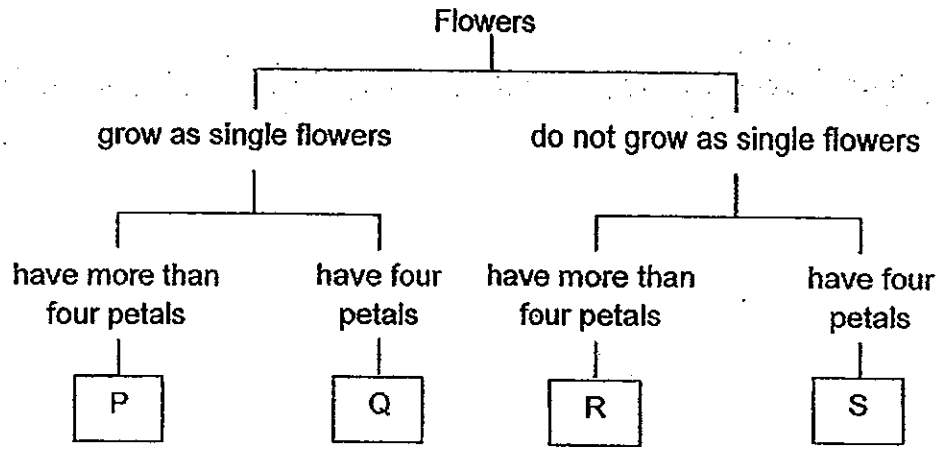
3. The diagram below shows a seed germinating into a young plant.



At which stage(s) does the germinating seed need to take in oxygen?

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

4. Study the classification table below.



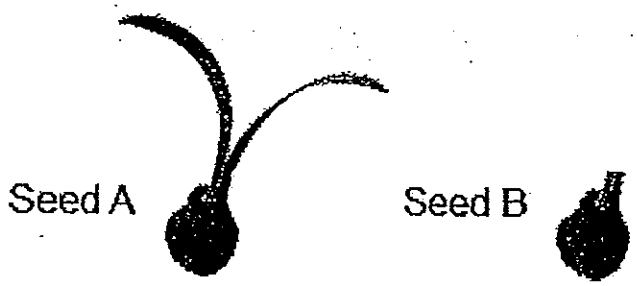
Which groups do the flowers shown below belong to?

Flower A

Flower B

	Flower A	Flower B
(1)	Group P	Group S
(2)	Group Q	Group P
(3)	Group P	Group R
(4)	Group Q	Group S

5. Nancy carried out an experiment with 2 identical seeds A and B. She removed the wing-like structure of Seed B but **NOT** Seed A.



She dropped both seeds from a height of 10 m at the same time. She observed and recorded the time taken for the seeds to reach the ground.

The aim of Nancy's experiment is to find out if the wing-like structure of the seed _____.

(1) affects the rate of germination of the seed
(2) is needed to prevent the seed from being damaged
(3) enables the seed to stay in the air for a longer period of time
(4) affects the distance the seed is dispersed from its parent plant

6. Farmers sometimes use a method called stem cutting to reproduce new plants.
Diagram 1 shows how a part of the stem of a parent plant is cut off.
Diagram 2 shows the same stem that was cut and planted in a small pot.
After a few weeks, new roots will emerge at the end of the branch.
The branch with its new roots will then grow on its own.

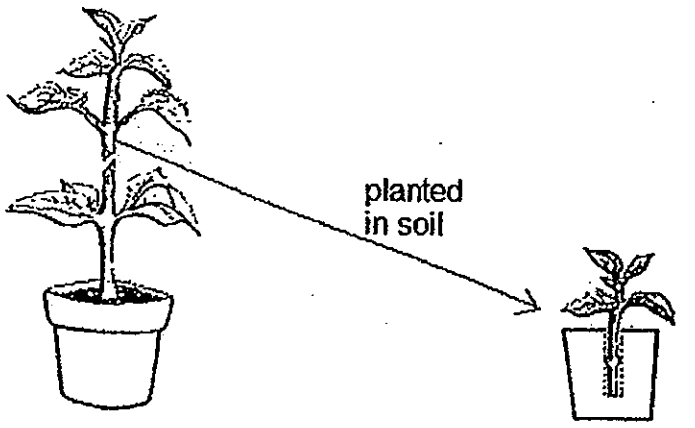


Diagram 1 Diagram 2

Which of the following can be inferred from this reproduction method?

A The new plant will not have the same characteristics as its parent plant.

B This method shortens the time needed for the plant to grow into an adult plant.

C The new plant produces the same quality of fruit as the parent plant since it inherited the genetic information from its parent plant.

D The quality of the fruit produced may not be the same as the parent plant as genetic information may not be passed on from parent to its young.

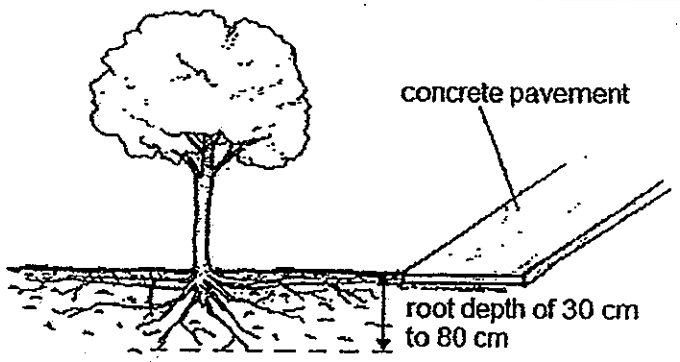
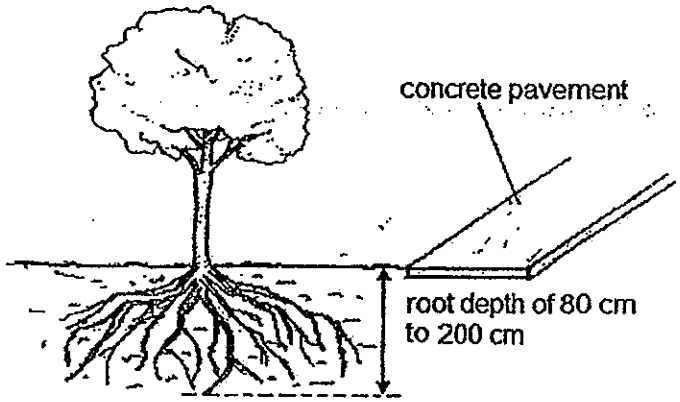
(1) A and B only

(2) B and C only

(3) A and D only

(4) B and D only

7. A student studied Tree Z over a period of time and made the following observations about the roots of Tree Z and the condition of its environment.

Time	Condition of its environment	Cross-sectional sketch of roots of Tree Z
Now	• Frequent heavy rainfall • Floods occur often	
10 years ago	• Little heavy rainfall • Floods do not occur often	

The student noticed that the roots of Tree Z have changed structurally over time. He made some statements from his observation:

A The roots of Tree Z are shallower now because there is more water in the ground surface.

B Now, Tree Z will be anchored more firmly to the ground and will not be uprooted easily.

C The pavement around Tree Z was less damaged by the roots 10 years ago.

D The roots of Tree Z grew deeper 10 years ago because it needed less water.

Which of the following statements made by the student is/are <u>incorrect</u>?

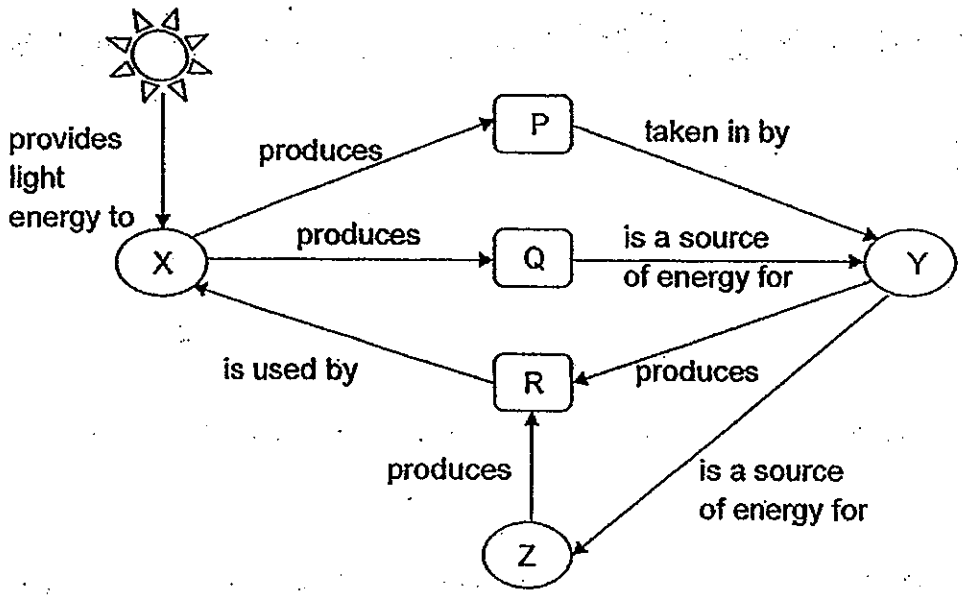
(1) A only

(2) B and D only

(3) A and C only

(4) B, C and D only

8. Study the concept map shown below.

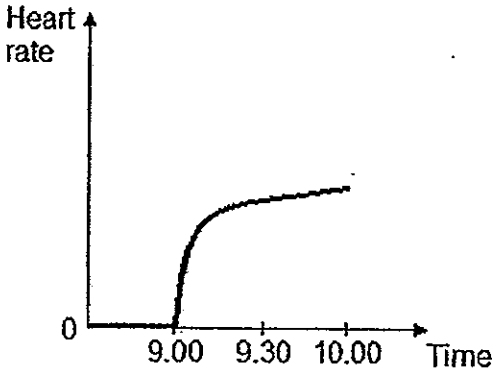


If X, Y and Z represent some organisms found in a garden, what do letters P, Q and R represent in the concept map?

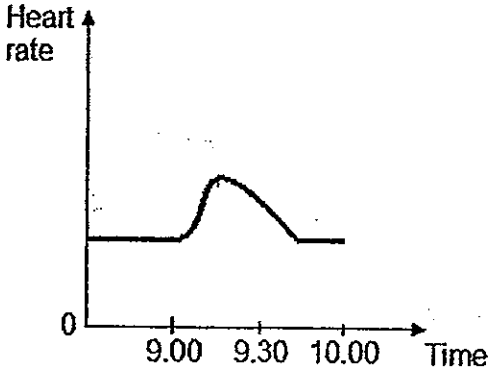
	P	Q	R
(1)	energy	carbon dioxide	water
(2)	food	oxygen	carbon dioxide
(3)	oxygen	food	carbon dioxide
(4)	oxygen	water	food

9. Sean started his 2.4 km run at 9.00 am and completed it at 9.15 am. He then rested in the canteen till 10.00 am.
Which of the following graphs is most likely to show the correct changes in his heart rate?

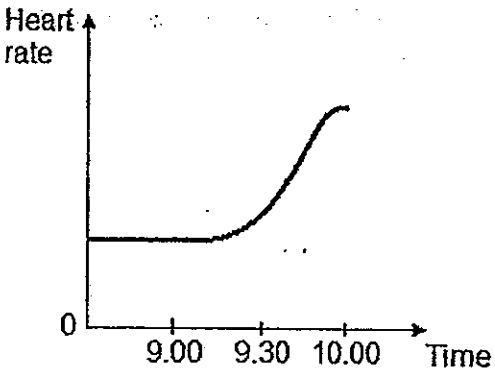
(1)



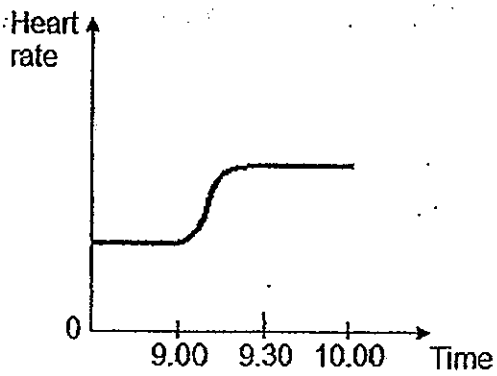
(2)



(3)



(4)

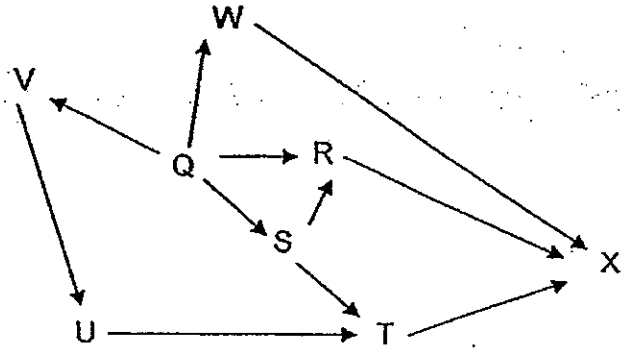


10. Which of the statements about the digestive system is correct?

A The saliva helps to break down the food into smaller pieces.
B The gullet is a passage for all the partly digested food to travel to the stomach.
C Digestive juices are added to completely digest the food in the small intestine.
D Digestion ends at the large intestine and water is absorbed into the bloodstream.

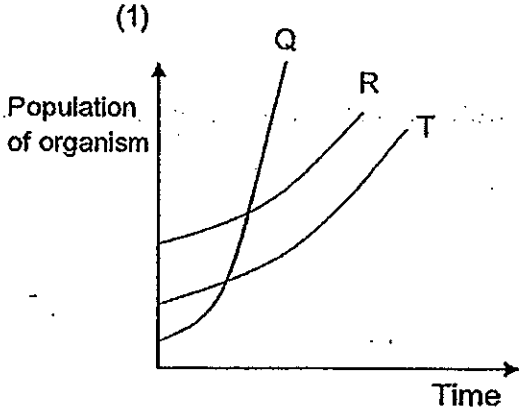
(1) A and D only
(2) B and C only
(3) A, C and D only
(4) B, C and D only

11. Study the food web below.

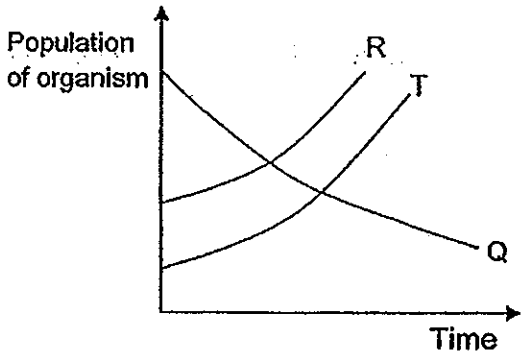


Which of the following graphs show the immediate changes in the populations of Q, R and T if S were completely removed from the habitat?

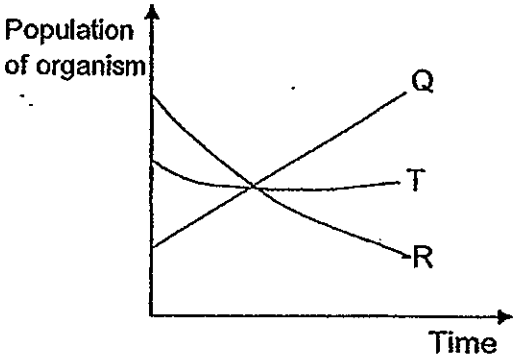
(1)



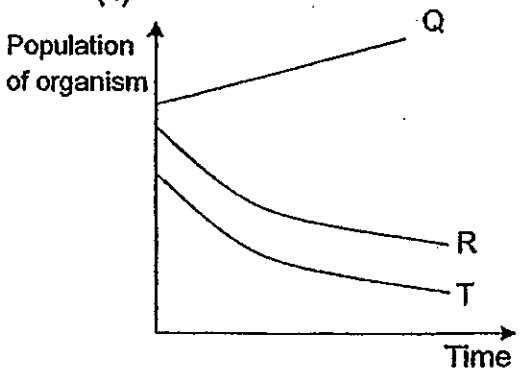
(2)



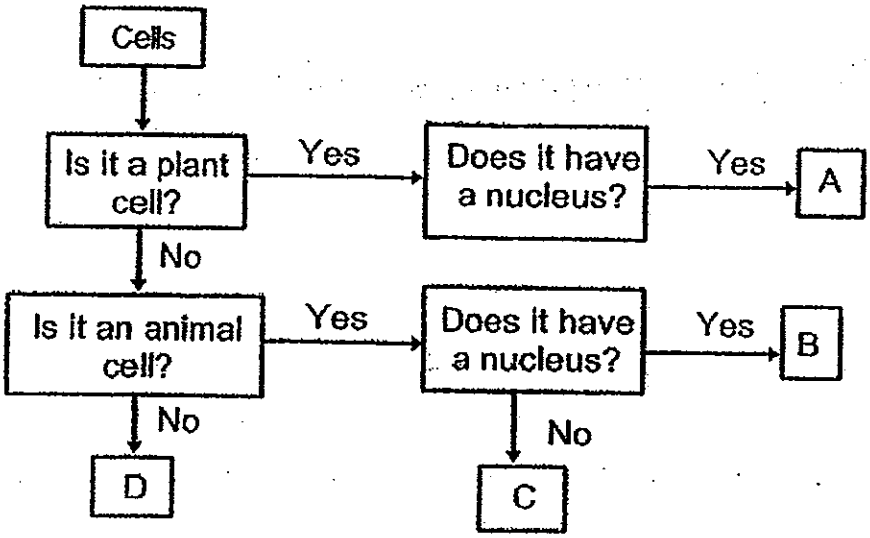
(3)



(4)



12. Study the flow chart carefully.

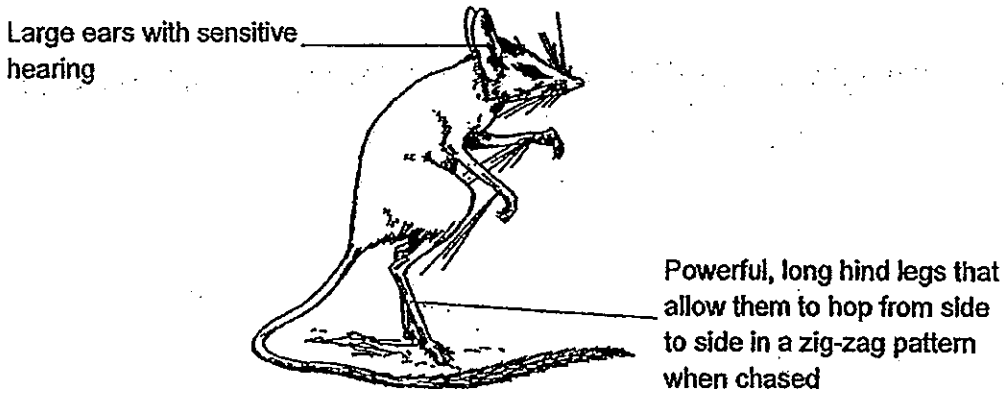


Based on the flow chart above, which of the following statements is/are correct?

A Cell B has no cell wall.
B Cell A can definitely make food.
C Cell C contains genetic materials.
D Cell D needs light to carry out its function

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

13. The diagram below shows what animal P looks like.



Animal P lives in the hot desert and feeds on small insects only at night.

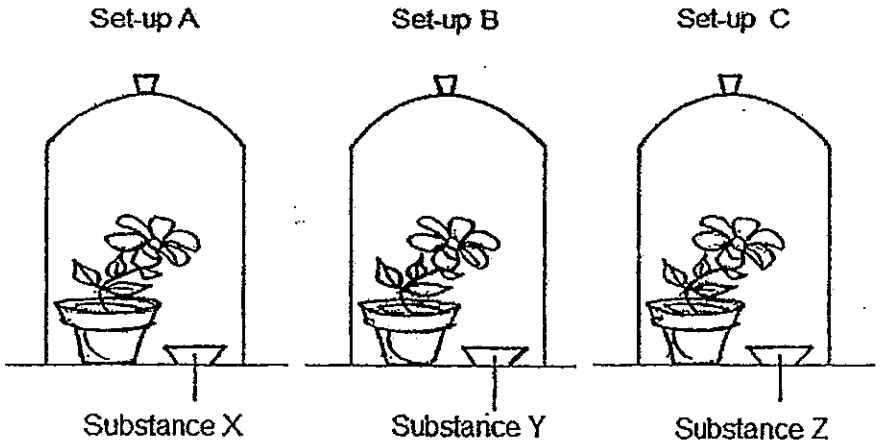
Based on the information above, 4 children wrote the following in a table created by their teacher below.

Child	Characteristic	Type of adaptation	Benefit to Animal P
Michael	Large ears	Structural Adaptation	To help them lose body heat quickly
Simon	Sensitive hearing	Behavioural Adaptation	To help them hear for prey and predator at night
James	Hop from side to side in a zig-zag pattern	Behavioural Adaptation	To help them run away from predators more easily
David	Feeds only at night	Behavioural Adaptation	To eat less so as to conserve energy

Which child/children made an error in what he wrote?

(1) David only
(2) Simon and David only
(3) Michael and James only
(4) Michael, Simon and David only

14. Kathy conducted an experiment on photosynthesis. She left 3 similar pots of plants in a dark room for 3 days and watered them daily.
After 3 days, the pots of plants were placed in Set-ups A, B and C containing different substances as shown below.
All the set-ups were placed under sunlight.



After 6 hours, Kathy removed a leaf each from set-ups A, B and C. She conducted a starch test on each of them. The iodine will turn dark blue when starch is present. The results are shown in the table below.

	Results of starch test
Leaf from Set-up A	Iodine turned dark blue.
Leaf from Set-up B	Iodine turned dark blue.
Leaf from Set-up C	Iodine remained brown

Which of the following is most likely to be substances X, Y and Z?

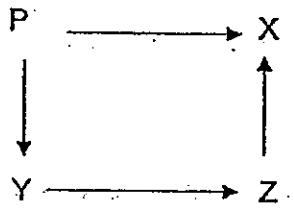
	Substance X	**Substance Y**	**Substance Z**
(1)	water	substance that produces carbon dioxide	chemical that absorbs carbon dioxide
(2)	chemical that absorbs water vapour	chemical that absorbs oxygen	substance that produces carbon dioxide
(3)	chemical that absorbs carbon dioxide	water	chemical that absorbs oxygen
(4)	substance that produces carbon dioxide	chemical that absorbs water vapour	water

15. The table below shows how some organisms are classified.

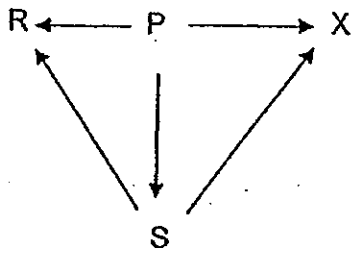
Plant	Herbivore	Carnivore	Omnivore
P	X and Y	Z	R and S

Which one of the following food webs shows a possible way energy is transferred between some of the organisms in the table above?

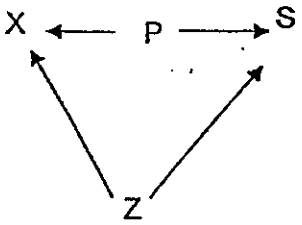
(1)



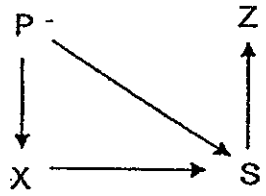
(2)



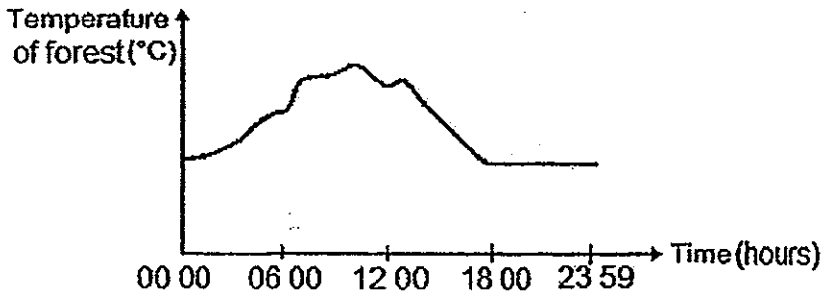
(3)

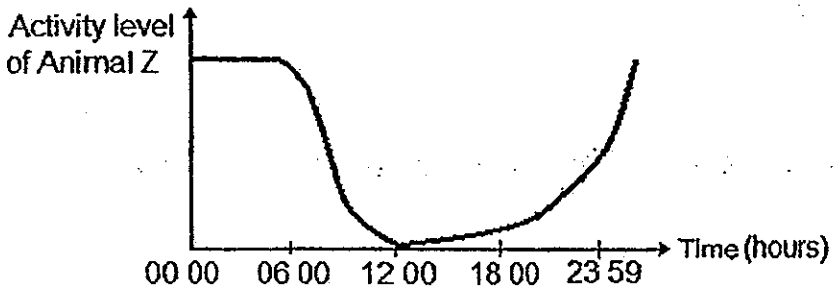


(4)



16. Calvin came upon two graphs which show the relationship between the behavioural pattern of Animal Z, which lives in the forest, and the temperature changes of the forest in 24 hours.



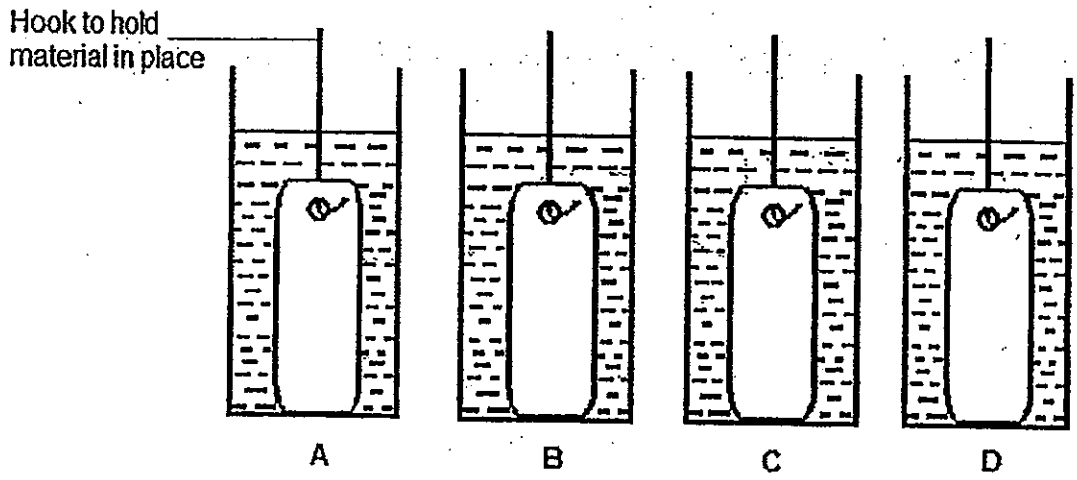


What conclusion can Calvin make about Animal Z based on the graphs?

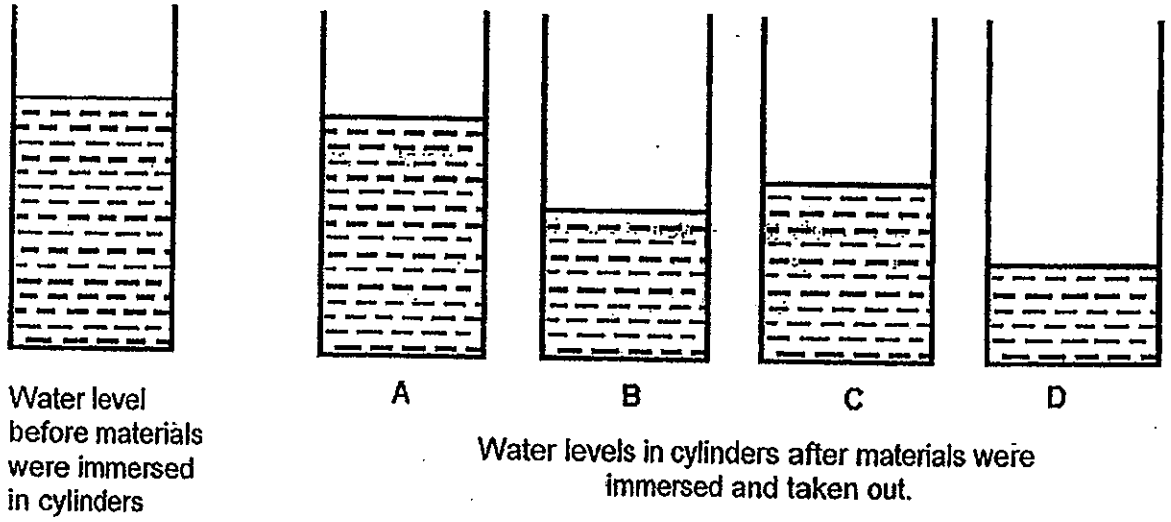
A It is likely to see well in the dark.
B It is most likely to hunt for food at night.
C It is only active as the temperature increases.

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

17. Gordon immersed four different materials, A, B, C and D, of the same size into cylinders containing equal amounts of water as shown in the diagrams below.



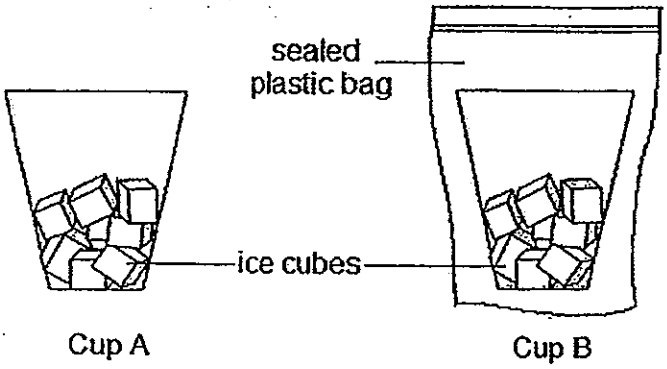
After leaving the materials inside for two minutes, he removed them from the cylinders. The diagrams below show the water level after the materials were removed from the cylinders.



Based on the results of the above experiment, which material, A, B, C or D, is most suitable for making a raincoat?

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

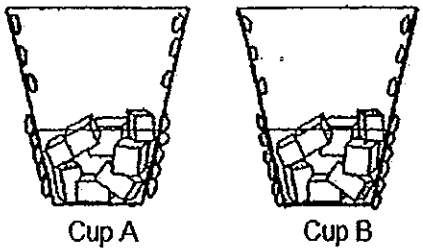
18. Roy carried out an experiment on two similar plastic cups, A and B, containing equal volume of ice as shown below.
Cup B was sealed in a plastic bag. Both cups were left on the table for 3 minutes.



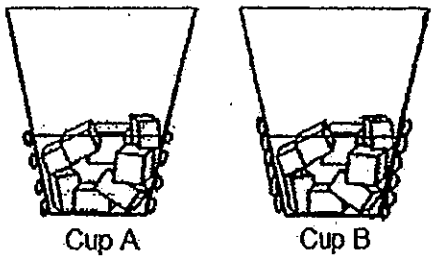
After 3 minutes, Roy removed the plastic bag from Cup B and observed that some ice had melted and water droplets had formed on both Cups A and B.

Based on the information given above, which of the following would Roy observe?

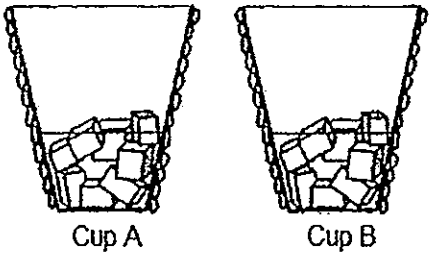
(1)



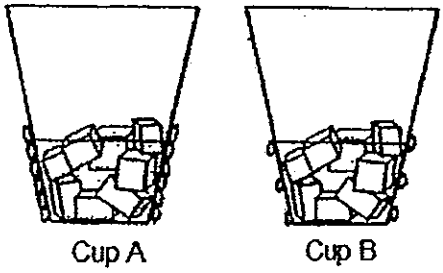
(2)



(3)



(4)



19. A group of students carried out an experiment to study the factors that affect the rate of evaporation. They recorded the conditions in the table below.

Set-up	Exposed surface area of the water (cm^2)	Temperature of water (°C)	Amount of water used (ml)
A	60	50	200
B	50	80	250
C	60	70	200
D	80	50	150

Which two set-ups must they use to conduct a fair test?

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

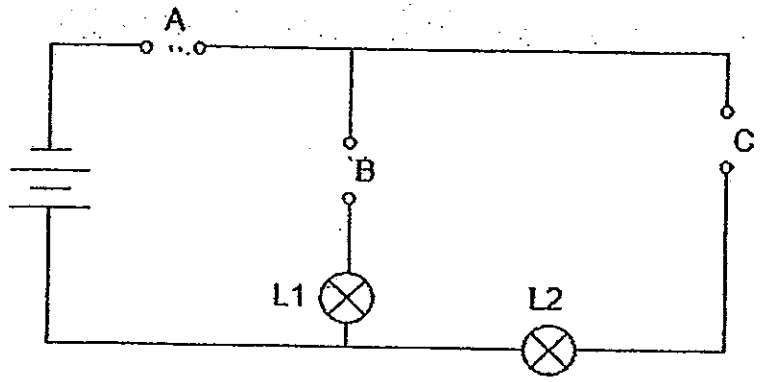
20. Substance X is a liquid at 20 °C. It becomes a gas at 75 °C.
Based on these observations, some statements about substance X were made and recorded in the table below. Zack was asked to decide if each statement was true, false or impossible to tell by putting a tick in the correct column.

	Statements	True	False	Impossible to tell
A	Substance X is a gas at 80 °C.			✓
B	Substance X is a solid at 0 °C.		✓	
C	Substance X is a liquid at 40 °C.	✓		
D	Substance X is a liquid at 87 °C.		✓	

For which of the above statements was Zack's answer correct?

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

21. Derrick had three rods, X, Y and Z, made of different materials. He placed them in various positions, A, B and C, in the circuit shown below.



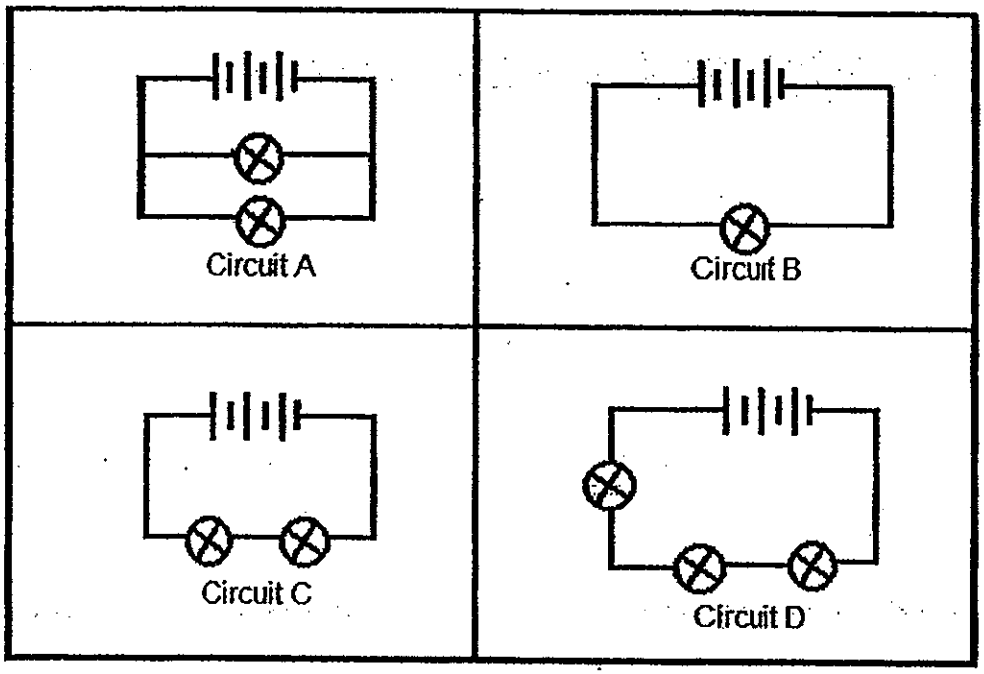
The results of the experiment are shown in the table below. A tick (✓) in the box indicates that the light bulb lit up.

Positions where rods were placed			Light bulbs	
A	B	C	L1	L2
Z	X	Y		
Y	Z	X		✓
X	Y	Z	✓	

Based on the results above, which of the following shows correctly how rods X, Y and Z could be classified?

	Electrical Conductor	Electrical Insulator
(1)	X and Z	Y
(2)	X	Z and Y
(3)	Y and Z	X
(4)	X and Y	Z

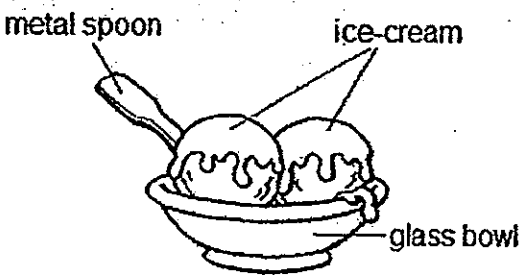
22. Ali set up four circuits, A, B, C and D, using identical batteries, wires and bulbs.



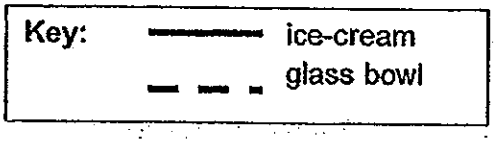
Which one of the following is correct?

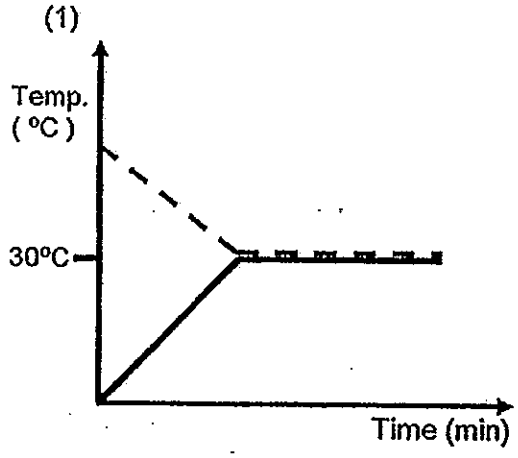
	Circuit(s) with brightly lit bulb(s)	Circuit(s) with dimly lit bulb(s)
(1)	D	A, B and C
(2)	B	A, C and D
(3)	A and B	C and D
(4)	A and C	B and D

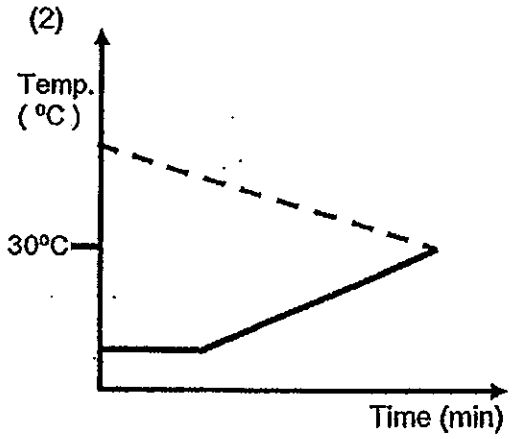
23. Mrs Tan left a bowl of ice-cream on the kitchen table at room temperature of 30°C.

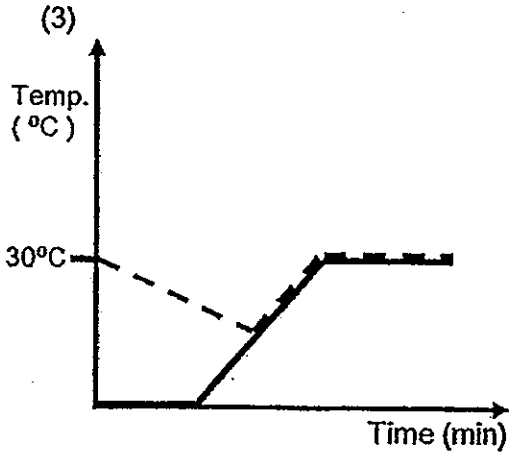


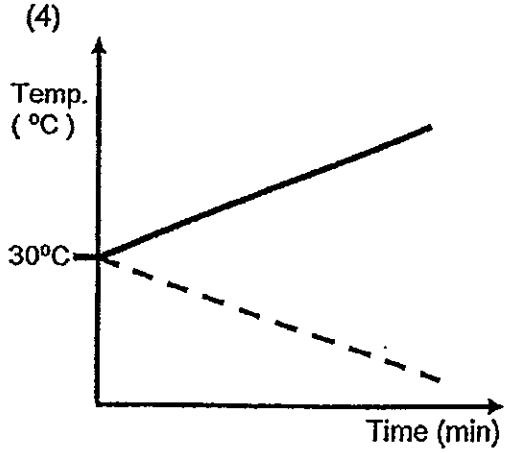
Which of the following graphs correctly shows the changes in temperature of the glass bowl and ice-cream over time?



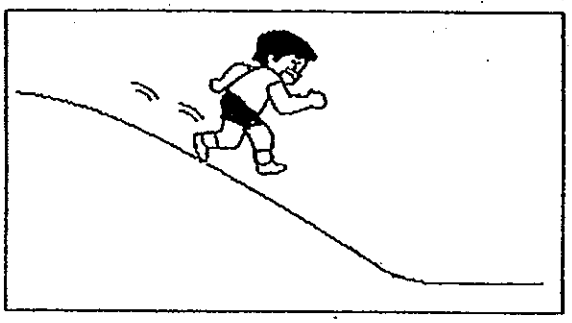






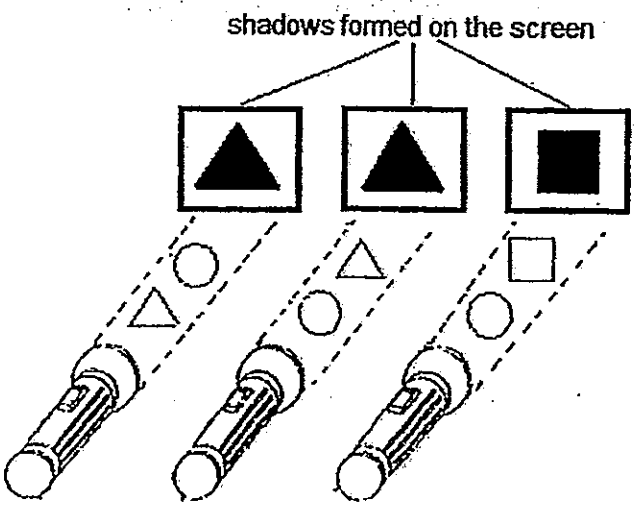


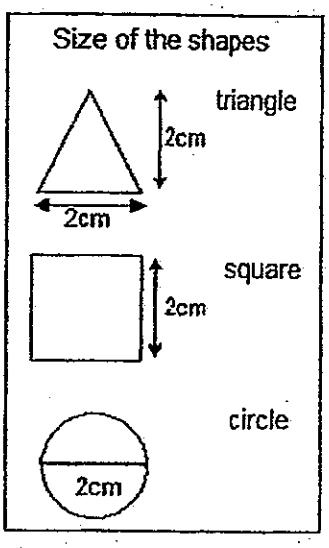
24. Jon starts to run down a slope. What happens to the amount of gravitational potential energy and kinetic energy he possesses?



	Kinetic energy	Gravitational Potential energy
(1)	Decreases	Increases
(2)	Increases	Decreases
(3)	Remains unchanged	Decreases
(4)	Increases	Remains unchanged

25. The diagram below shows the shadow produced when two different objects were placed at different positions between a screen and a torch at any one time.





A hole is then cut from the square object. The square, triangular and circular objects are then set up as shown in the diagram below.

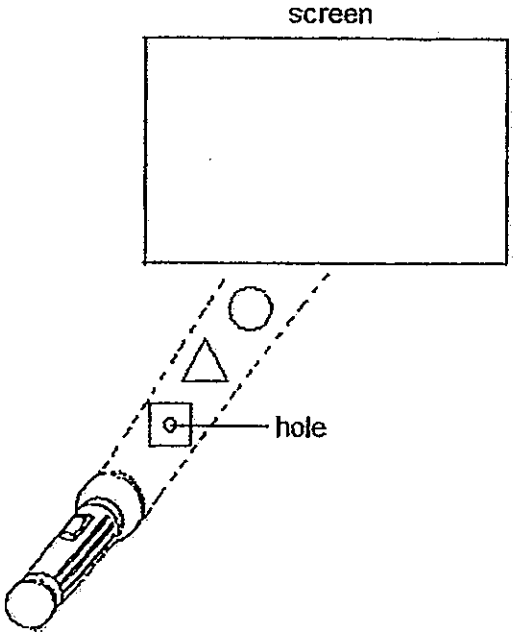
Which one of the following shadows will appear on the screen?

(1)

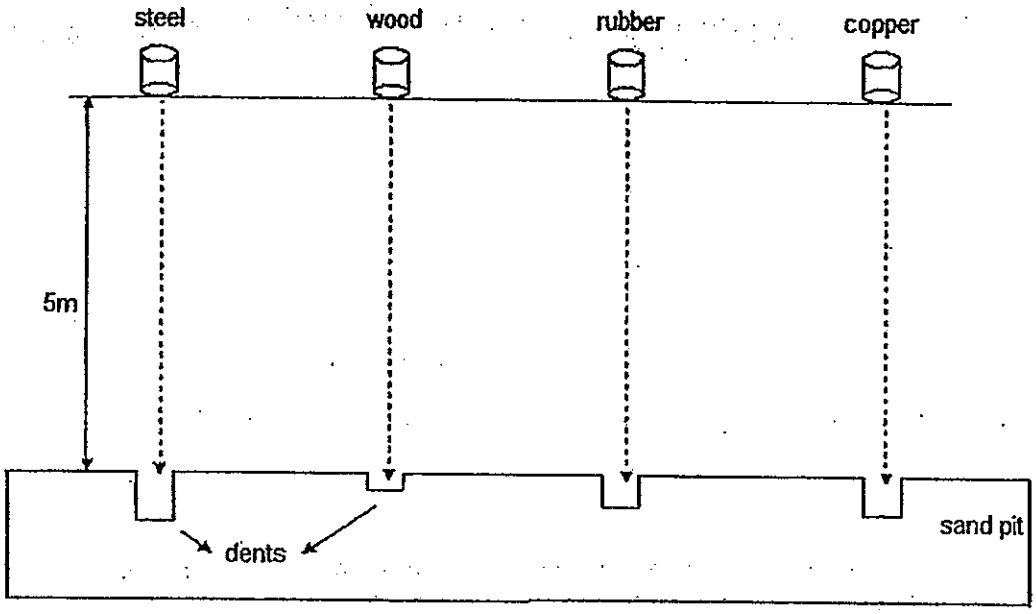
(2)

(3)

(4)



26. John dropped four cylindrical blocks of the same size but made of different materials from the same height as shown in the diagram below.



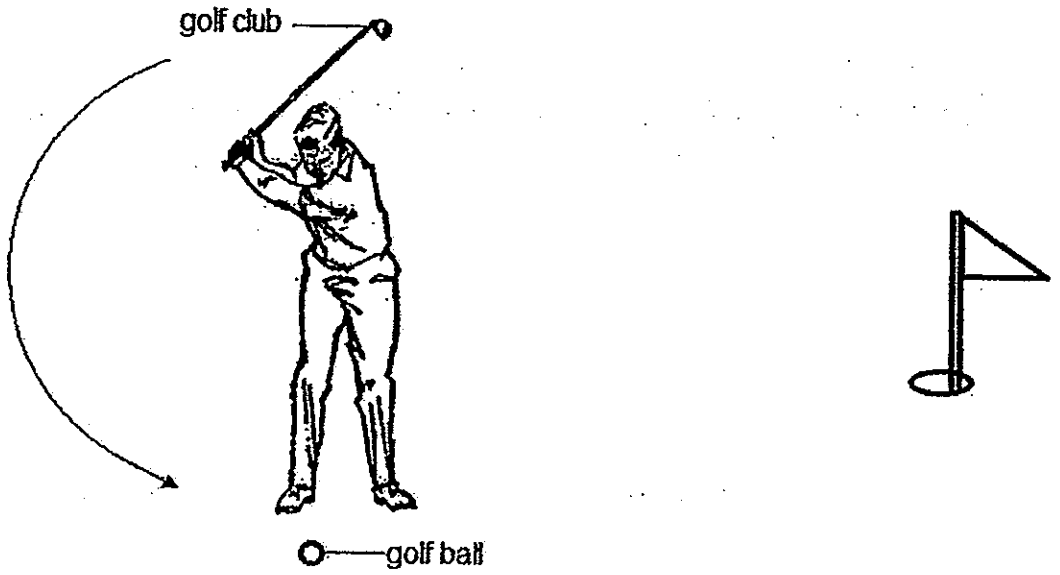
Based on their observations, four of his friends, Alan, Bob, Cal and Dan made the following inferences.

Alan: The wooden block has the least potential energy.
Bob: The rubber block has more potential energy than the steel block.
Cal: The steel block has the most potential energy to be converted to kinetic energy.
Dan: The copper block has more potential energy than the rubber block.

Who made the correct inferences?

(1) Alan only
(2) Bob and Cal only
(3) Alan, Cal and Dan only
(4) All of them

27. Mr Tham is about to swing his golf club down to hit the golf ball into the hole.



Which of the following shows the conversion of energy that will take place as he swings the golf club down to hit the golf ball?

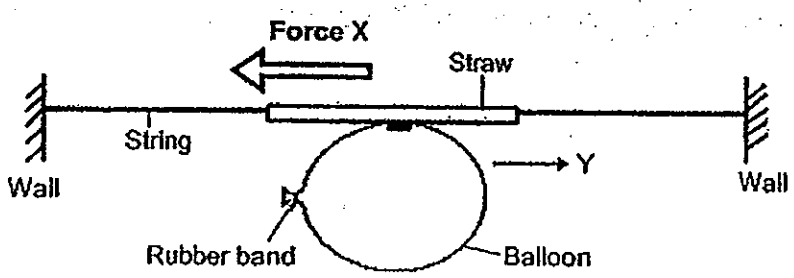
(1) Gravitational potential energy of golf club → kinetic energy of golf club → gravitational potential energy of golf ball → sound energy of golf ball when it is hit

(2) Gravitational potential energy of golf club → kinetic energy of golf club → sound energy of golf club when it hits the golf ball + gravitational potential energy of golf ball

(3) Gravitational potential energy of golf club → kinetic energy of golf club → sound energy of golf club when it hits the golf ball + kinetic energy of golf ball

(4) Gravitational potential energy of golf club → kinetic energy of golf club when it hits the golf ball + kinetic energy of golf ball

28. James carried out an experiment using a balloon, a straw and a string. The string is passed through the straw and the balloon is then glued firmly to the straw as shown below.

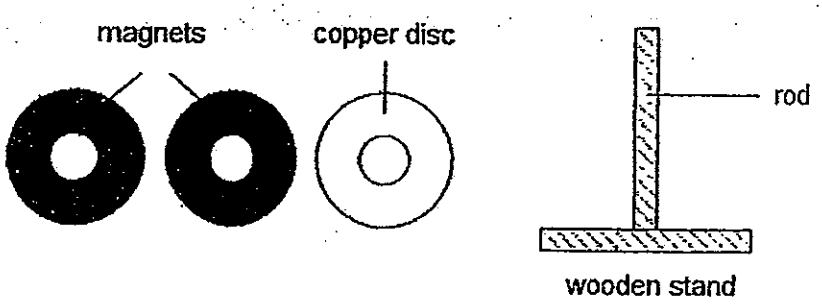


When the rubber band is removed, air rushed out of the balloon, producing a force of 12 units. This force caused the balloon and the straw to move in the direction of Y. There is also an opposing force X acting on the straw.

What type of force is Force X and what is the most likely amount of this force?

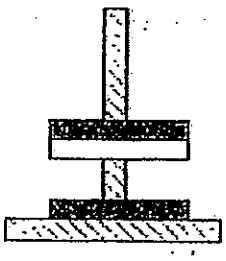
	Force X	Amount (units)
(1)	Friction	Less than 12
(2)	Gravity	Less than 12
(3)	Friction	More than 12
(4)	Gravity	More than 12

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

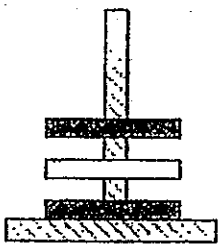


When the 3 discs are slotted through the rod, which of the following observations of the discs would be **impossible**?
(The side view of discs and stand are shown.)

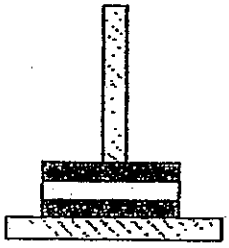
A



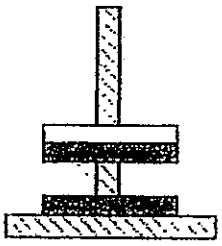
B



C



D



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

30. Tom carried out an investigation to measure the distance travelled by a battery operated car in 30 seconds on different tracks. The results were recorded in the table below.

Track	Distance travelled by toy car (cm)
A	280
B	160
C	200
D	230

The energy conversion in the toy car as it moves along the track is as follows:

Chemical potential energy → Electrical energy → Kinetic energy + Heat energy + Sound energy

On which track would the greatest amount of heat energy and sound energy be produced?

(1) Track A

(2) Track B

(3) Track C

(4) Track D

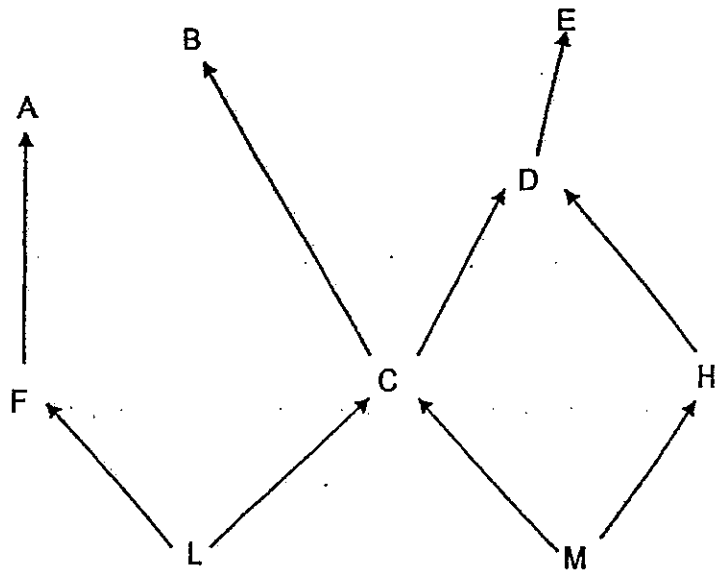
Name : _____ ( )

Class : P6 ( )

Section B: 40 marks

Read the questions carefully and write down your answers in the spaces provided.

31. The diagram below shows a food web.



(a) From the food web, identify one organism that is both a prey and a predator. [1]

_____

(b) If Organism G was completely wiped out due to a disease, which organism's population would be most affected? Explain your answer. [2]

_____

_____

_____

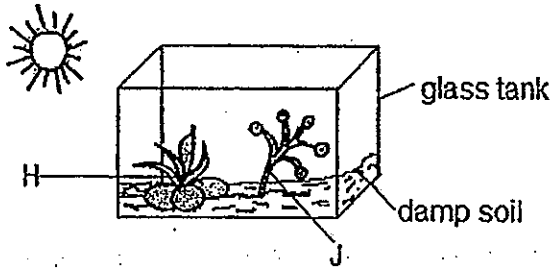
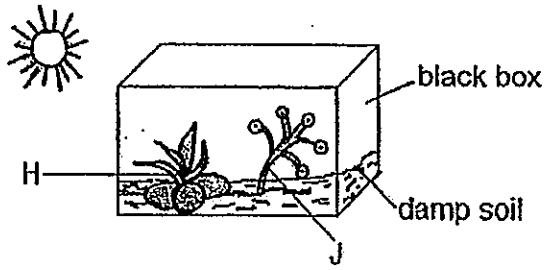
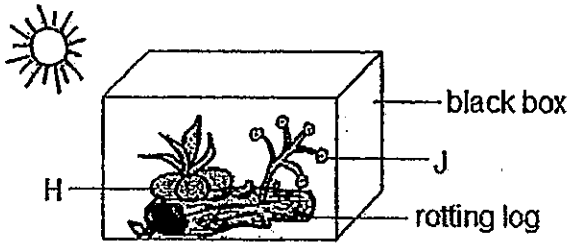
3

32. Betty found two organisms, H and J.

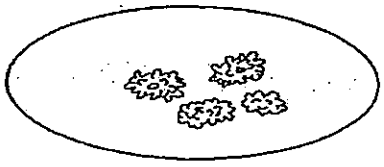
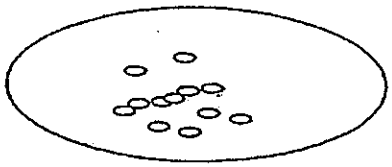
Organism H

Organism J

She carried out the following experiments to find out the characteristics of organisms H and J and recorded down the results of the experiment in the table below.

	Experimental Set-up	Results / Observations of Experiment
1		Organism H died but J continued to grow healthily
2		Both Organisms H and J died.
3		Organism H continued to grow healthily but J died

Continued on next page

4	Microscopic view of a part of Organism H 	Brown spore bags were observed
5	Microscopic view of a part of Organism J 	Ovules were observed

(a) Based on the results of the experiment above, is Organism J a fungi, flowering or non-flowering plant? Give **two** reasons for your choice. [2]

_____

_____

_____

(b) Based on the results of the experiment above, what can you conclude about how Organism H obtains its food? Explain your answer. [2]

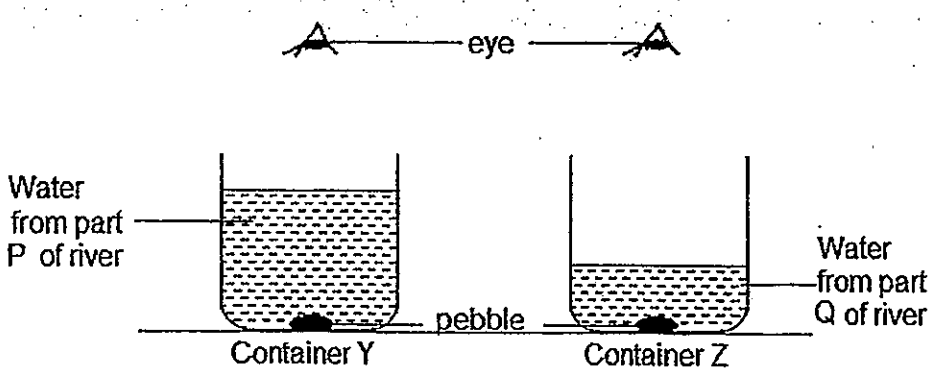
_____

_____

_____

4

33. Sara collected some water from two different parts of a river, P and Q. She put a pebble at the bottom of two identical containers Y and Z. Then she poured water taken from P into container Y until the pebble could no longer be seen from the top. She did the same for water from Q with container Z. The results are shown below.

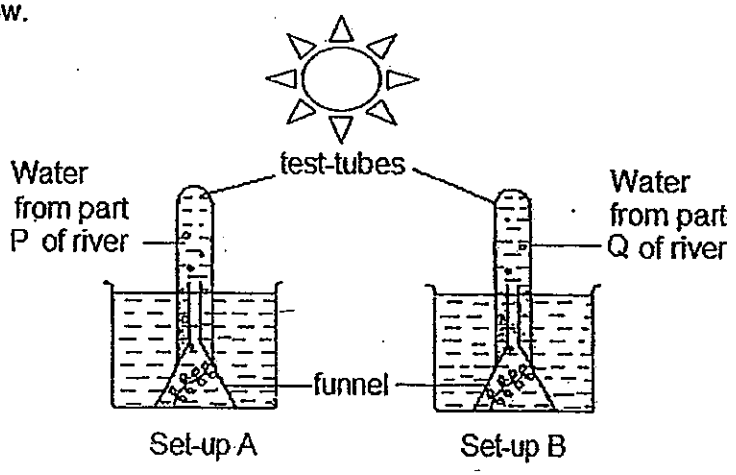


(a) Based on the results shown above, which part of the river, P or Q, is more polluted? Explain your answer. [1]

_____

_____

Sara then used the same water from part P and Q of the river to carry out an experiment. She used similar aquatic plants and placed them in set-ups A and B as shown below.

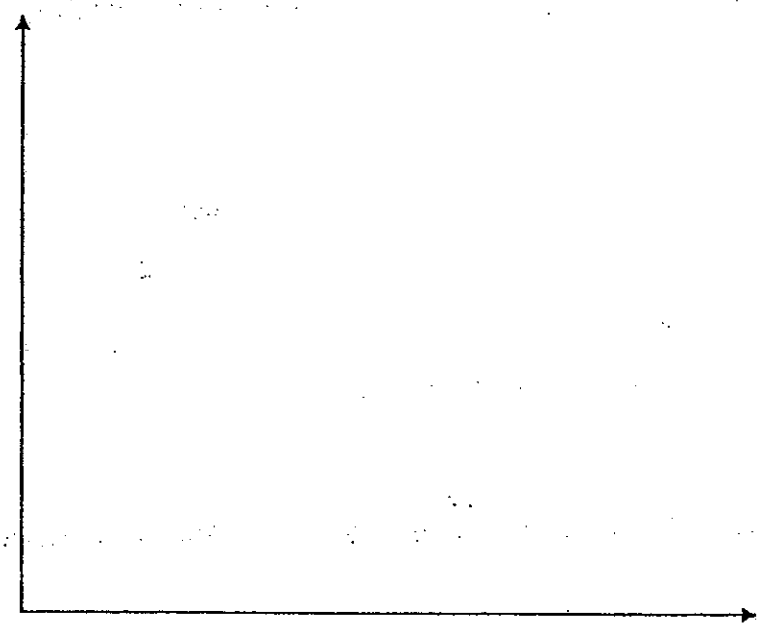


Bubbles of gas were produced and collected in the test-tubes. The amount of gas collected in the test-tubes in both set-ups A and B were measured over a period of one hour.

Continued on next page

1

(b) Using the axes below, draw two line graphs to show how the amount of gas collected in the test-tubes for set-ups A and B would change over time. Label the axes and label your line graphs as A and B for each set-up. [2]



(c) Explain why the amounts of gas collected in the test-tubes for set-up A and B were different after one hour. [2]

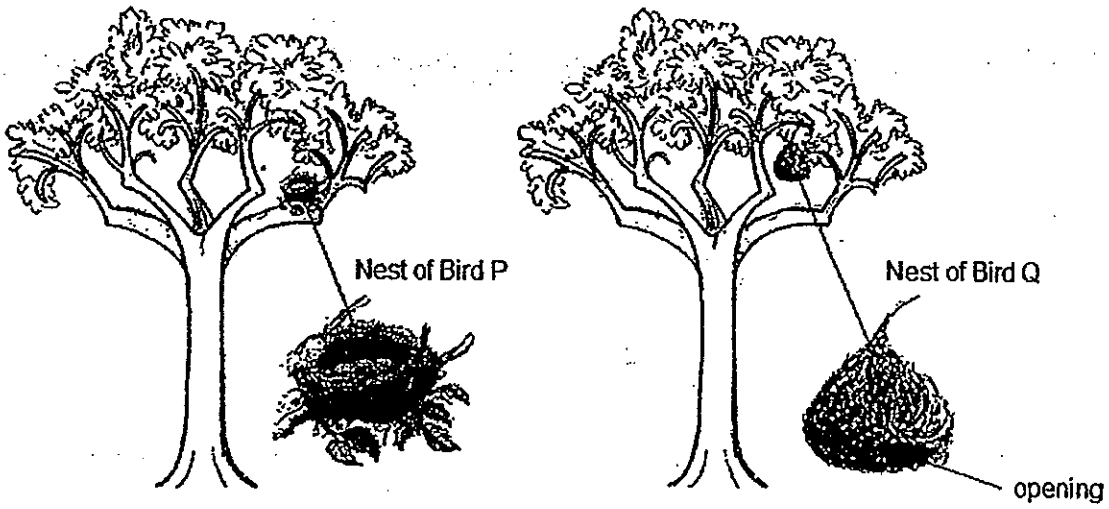
_____

_____

_____

4

34. The diagrams below show the nests built by Bird P and Bird Q.



(a) Based on the diagrams above, whose nest, bird P or Q, offers better protection to its young from the rain? Explain your answer. [1]

The predators of the young of birds P and Q are usually larger birds flying in the sky. The young of bird Q usually has a higher survival rate than the young of bird P.

(b) Explain how the structure of the nest of bird Q helps ensure that its young have a higher survival rate. [1]

2

35. James had been observing and studying the characteristics of Organism X. The following are some notes James made about Organism X:

- Both the young and adult Organism X eat animal waste.
- Organism X shapes fresh animal waste into a large ball which can be 50 times its weight.
- Organism X rolls the ball of animal waste over the ground with its legs.
- The ball of animal waste is buried in soft soil.
- The female Organism X lays eggs inside the ball of animal waste.
- Predators of Organism X are birds and bats.

(a) Based on the information above, explain how the following behavioural adaptations of Organism X help to increase the chances of survival of its young.

(i) Burying the ball of animal waste in soft soil: [1]

_____

_____

(ii) Laying eggs inside the ball of animal waste: [1]

_____

_____

When Organism X feeds on the animal waste, it breaks the waste into smaller pieces.

(b) How does breaking the animal waste into smaller pieces help in the process of decomposition? [1]

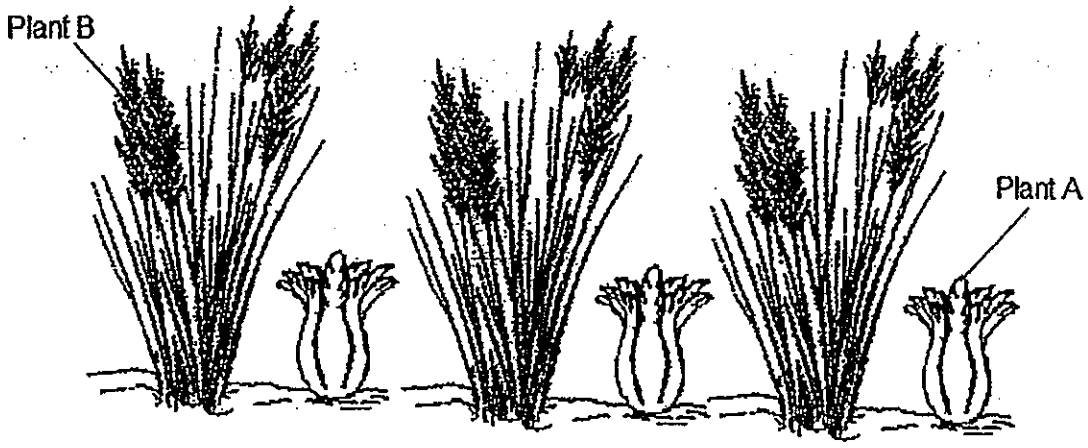
_____

_____

_____

3

36. The diagram below shows two types of plants growing in a vegetable farm.



Plant A is the vegetable that the farmer planted while Plant B was not planted in the farm by anyone.

(a) How could Plant B grow in the farm when it was not planted by anyone? [1]

_____

_____

(b) Give a reason why it is important for the farmer to get rid of Plant B quickly. [2]

_____

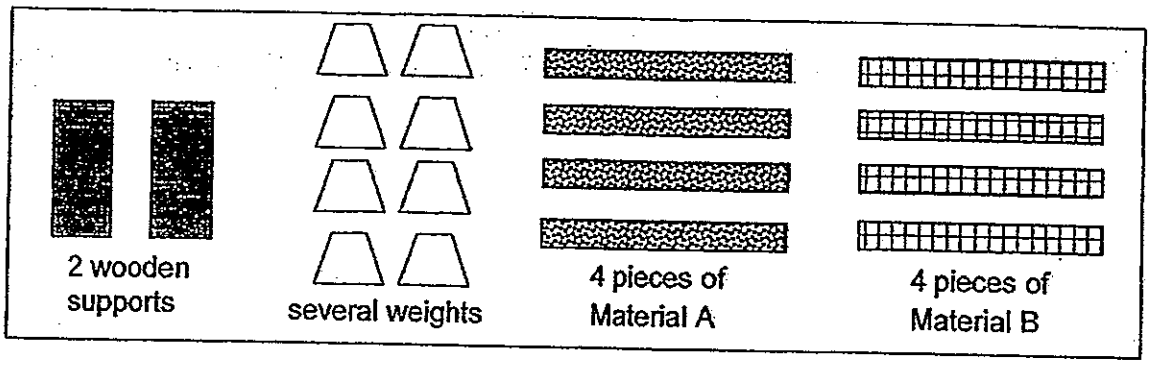
_____

_____

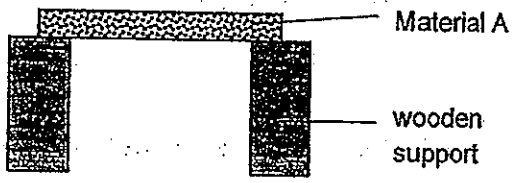
_____

3

37. Sam wanted to find out which material, A or B is stronger. He had the following items:



The diagram below shows how Sam set up his experiment with Material A.



(a) Describe the steps that Sam should take to conduct his experiment. Step One has been written for you. [2]

1. Place a piece of Material A onto two wooden supports as shown in the diagram above.

2. _____

_____

_____

_____

_____

_____

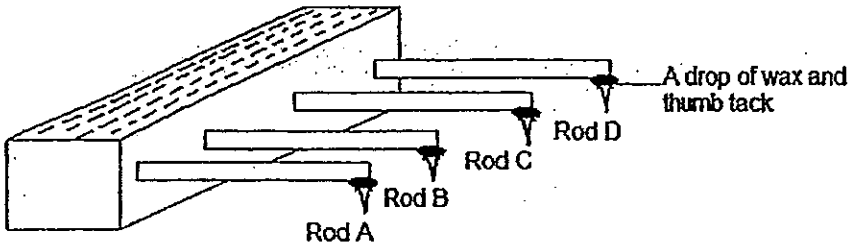
(b) If Material A were the stronger material, what results would Sam observe? [1]

_____

_____

3

38. Irene carried out an experiment on 4 rods A, B, C and D. The rods are made of different materials and were placed in a container of boiling water. At the end of each rod was a thumbtack stuck to it with a drop of wax.

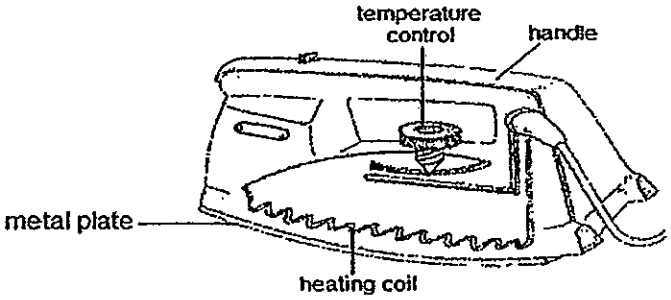


In the table below, Irene recorded the time taken for each thumbtack to fall off the rod.

	Time taken for thumbtack to fall off the rods (sec)
Rod A	10
Rod B	7
Rod C	11
Rod D	20

(a) Based on the results shown in the table above, which material is the worst conductor of heat? Explain your answer. [1]

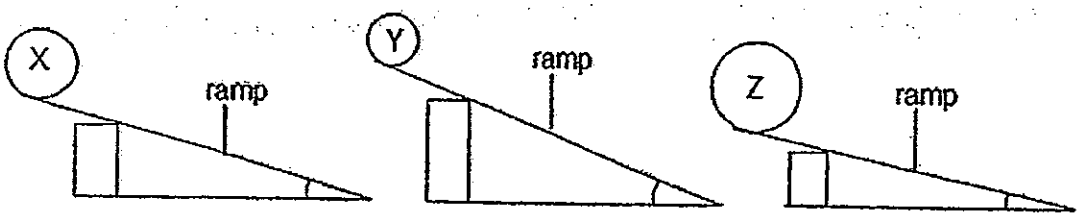
The diagram below shows an electric iron.



(b) Which one of the four materials, A, B, C or D is best suited to be used for making the metal plate of the iron? Explain your choice. [2]

3

39. Wei Jie set up an experiment as shown below to find out how the angle of inclination of a ramp would affect the distance travelled by a ball along the floor after it leaves the ramp. He used three balls X, Y and Z to carry out the experiment.



Wei Jie's brother told him that his experiment was not a fair test.

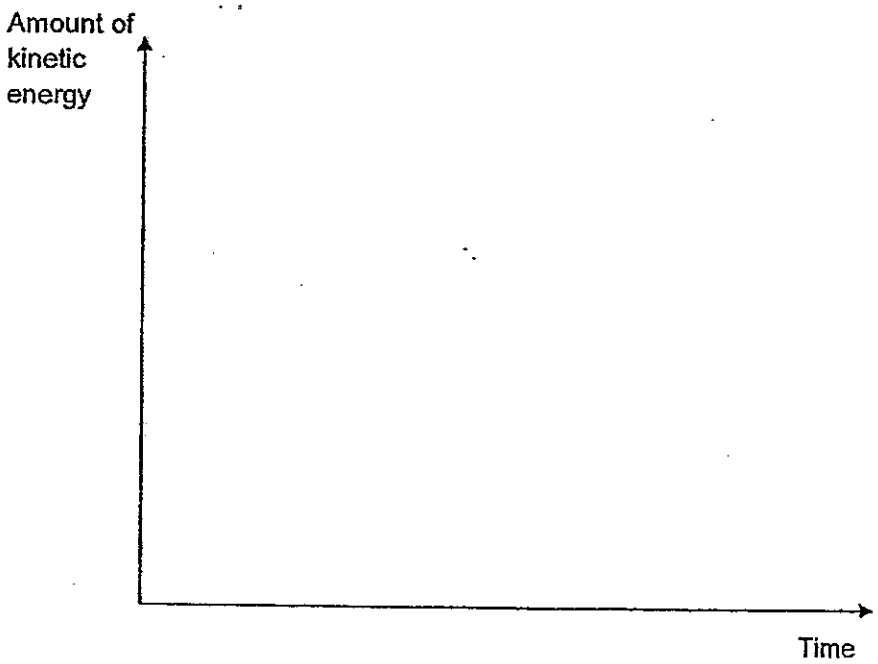
(a) Do you agree with Wei Jie's brother? Explain your answer. [2]

_____

_____

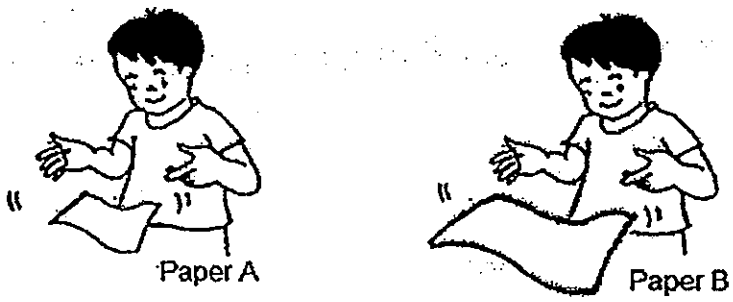
_____

(b) Using the axes below, draw a graph to show the changes in the amount of kinetic energy for Ball Y, from the time Wei Jie releases it from the top of the ramp until it stops. [1]



3

40. Andrew had two similar pieces of paper, A and B. He folded Paper A into half. Then he dropped the papers as shown in the diagram below.



He recorded the time taken for them to reach the ground in the table below.

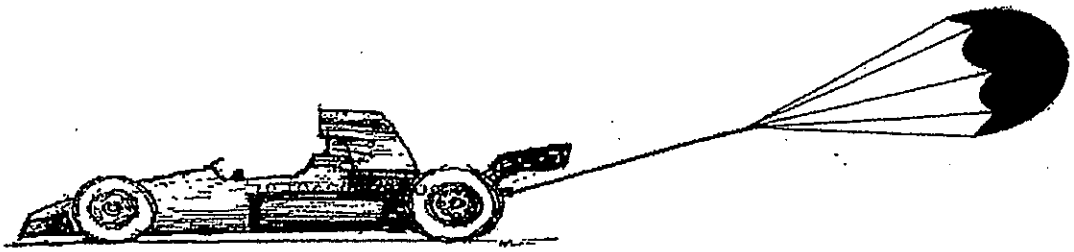
	Paper A	Paper B
Time taken to reach ground (s)	2	4

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

_____

_____

Andrew has a toy car with a parachute attached to the back. The parachute is automatically released when the toy car reaches a certain speed.



(b) How does the parachute affect the speed of the toy car? Explain your answer. [2]

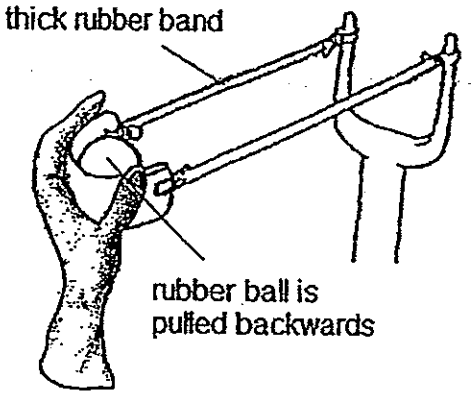
_____

_____

_____

3

41. Ali used a catapult to shoot a small rubber ball towards the ground as shown in the diagram below.



(a) Where did Ali get the energy to pull the rubber ball backwards? [1]

_____

(b) State the energy conversions from the point when the ball was released to the point when the ball hits the ground. [1]

	→		→		+	
of stretched rubber band		of rubber ball				

(c) Using the same set-up (without changing anything), what can you do to increase the distance travelled by the rubber ball? Explain your answer. [2]

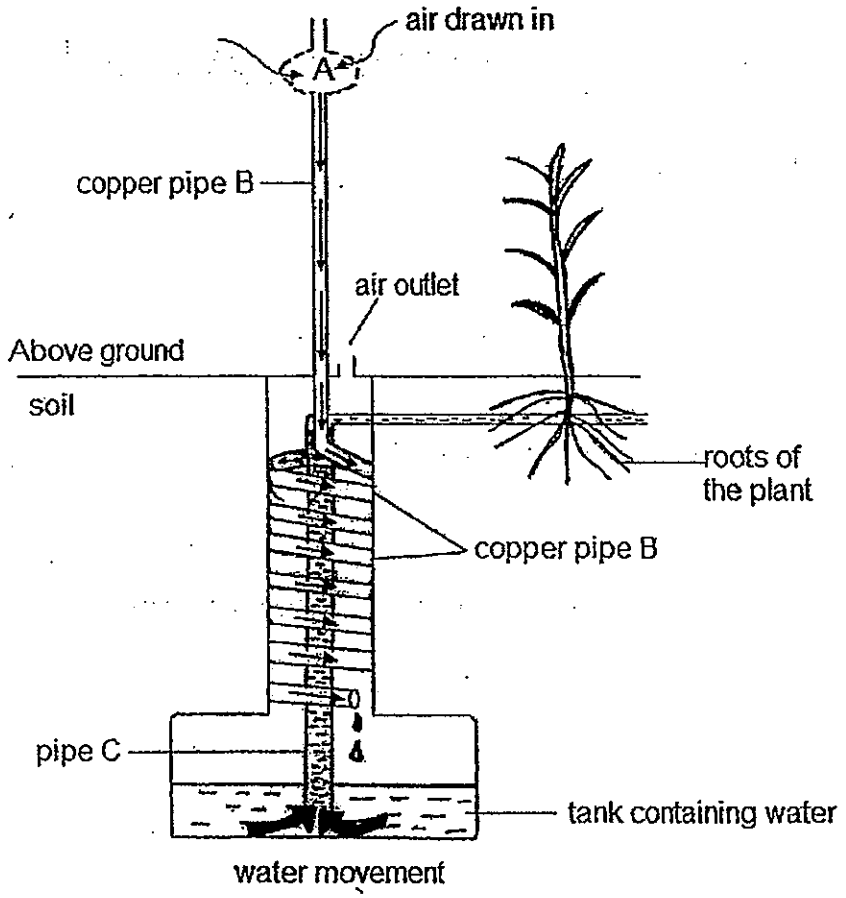
_____

_____

_____

4

42. The diagram below shows System K, which will be able to extract water from the air. System K is commonly used in very dry areas where the soil condition is also dry.



System K draws air into part A and air is transported down copper pipes B where condensation takes place. Water droplets are collected in a large underground tank. Water from the tank is then pumped up through pipe C and transported directly to the roots of plants.

The system works well when it is buried under the ground where it is always cooler than the air above ground.

(a) Based on the information above, explain why System K must always be cooler than the air temperature for it to work well? [2]

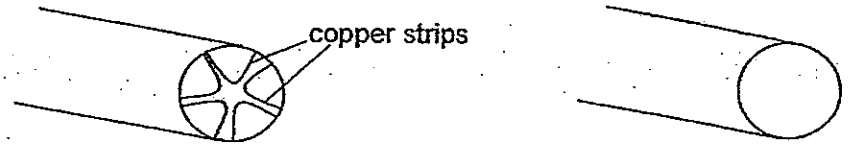
_____

_____

_____

2

A cross-sectional view of copper pipe B shows that the inner surface of the pipe is lined with copper strips as shown below.



copper pipe B lined with copper strips

copper pipe not lined with copper strips

(b) Explain how the presence of the copper strips in the pipes help speed up the rate of collection of water in the tank. [1]

_____

_____

_____

(c) With the use of system K in dry areas, farmers can grow crops throughout the year. How is this so? [1]

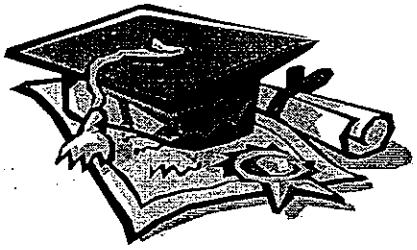
_____

_____

2

End of paper

Please check your work carefully.



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : AITONG
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

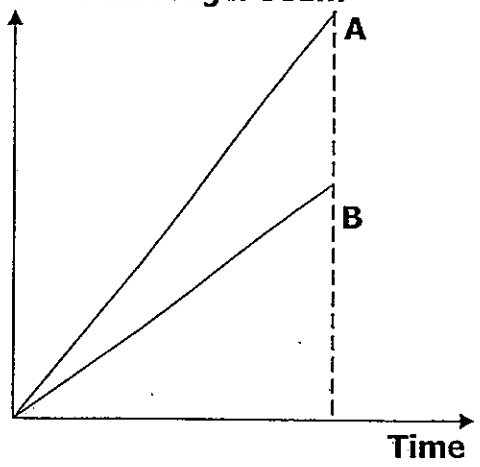
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	2	4	3	3	2	2	3	2	2	4	1	2	1	4	2	1

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

31)a)Organism D.
b)Organism B. It feeds only on organism G and if it was wiped out, organism B could not survive as it had no food to eat.

32)a)Organism J is a flowering plant. It can photosynthesis when there is light and has ovules.
b)Organism H obtains its food from the decaying matter.

33)a)Part Q of the river is more polluted. Less water from Part Q can be poured in until the pebble is no longer seen.
b)



33)c)The water in set-up A is less murky than the water in set-up B so more light can pass through the water in set-up A. With more light, the plant in set-up A can photosythesise faster and hence the amount of oxygen produced after one hour would be more than that in B.

34)a)Bird Q. The opening of the rest is at the bottom and rain cannot get in easily. However, the nest of bird P has an opening that faces upwards, and rain can get collected there.

b)The structure of the nest blocks the babies from the predators and predators cannot see the babies. Also, the opening of the nest is small and it is harder for predators to eat the babies.

35)a)i)Their young are not easily seen by their predators.

ii)Predators would not easily fins the eggs in the ball of waste.

b)When organism X feeds on the animal waste, it increases the exposed surface area of the waster, hence more decomposers can act on the waste at any one time.

36)a)The seeds of plant B could be dispersed by animal or wind that allows to be planted in the farm.

b)Plant B would compete with plant A for water, space, sunlight and mineral salts, causing Plant A to grow unhealthily.

37)a)2)Place the most number of weight on material A until it breaks and record the number of weight.

3)Repeat steps 1 and 2 for material B.

4)Repeat the experiment a few more times and calculate the average result.

5)Compare and conclude the results.

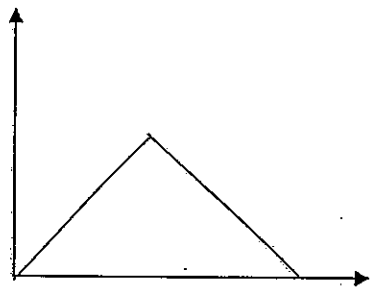
b)It would take more weight to break material A.

38)a)Rod D. It took the longest time for the thumbtack to fall off the rods.

b)B. It took the fastest time for the thumbtack wax to fall off Rod B. Thus, it id the best conductor of heat. If it is the metal plate for the iron, it would allow heat transfer from the heating to the clothes to be the fastest.

39)a)Yes. More than are variable has been changed. Hence Wei Jie cannot compare and conclude that the distance traveled by the ball along the floor is solely due to the angle of inclination. It could be due to the different sizes of balls used.

b)



40)a)To find out if the size of paper would affect the amount of air resistance against the paper.

b)The parachute slows down the speed of the toy car. The parachute provided a greater exposed surface area and increases the air resistance acting against the toy car, thus slowing it down.

41)a)He gets the energy from the food he etas.

b)Elastic potential energy→Kinetic energy→Sound energy + Heat energy

c)Stretch the rubber band back more. Stretching the rubber band more increases the amount of elastic potential energy stored in the rubber band which will be converted into more kinetic energy of the rubber ball, causing in to travel further.

42)a)To ensure that the pipes will always be cooler than the air for condensation to take place.

b)The copper strips increase the amount of surface area in contact with the air hence it speeds up rate of condensation.

c)As there is always water vapour in the air which can be condensed into water, there will always be enough water to water theplants.

Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2013
SCIENCE

BOOKLET A

15 May 2013

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

30 questions
60 marks

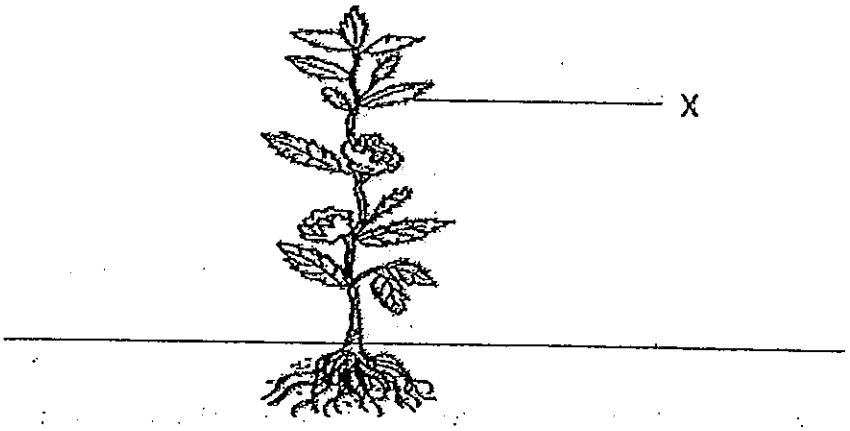
Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This paper consists of 21 printed pages.

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 (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Study the diagram given below.



Which of the following is/are not the fuction(s) of part X?

A To make foodfor the plant

B To provide shade for the plant

C To control the amount of water in the plant

D To allow for the intake of carbon dioxide during photosynthesis

(1) A only

(2) B only

(3) B and C only

(4) A, C and D only

2. The following statements describe what happens after the food we eat has travelled down the gullet into the stomach. They are not in the correct order.

A Water is removed from the undigested food.
B Nutrients from the digested food is absorbed.
C Waste is stored in a muscular bag before discharge.
D A large amount of digestion occurs but not completed.

Which one of the following shows the correct order?

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

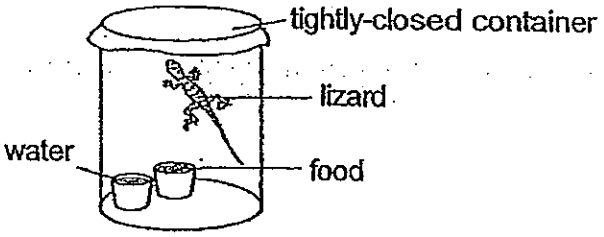
3. The table below shows the characteristics of 4 organisms A, B, C and D. A tick (√) indicates that the organism has the characteristic.

Organism	Has fur / hair	Lives in water	Has 4 legs
A	✓	✓	
B		✓	
C	✓		✓
D			

Which one of the following statements about organisms A, B, C or D is **incorrect**?

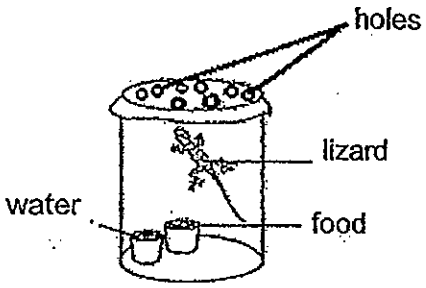
(1) Organism B is possibly a fish.
(2) Organism D is definitely not a bird.
(3) Organism A is definitely a mammal.
(4) Organism C is definitely not an insect.

4. Devi prepared the following set-up to show that living things need air to survive.

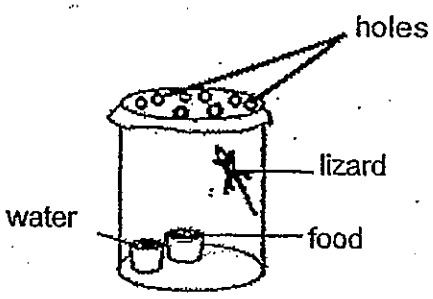


Which one of the following set-ups should Devi use as a control for the experiment?

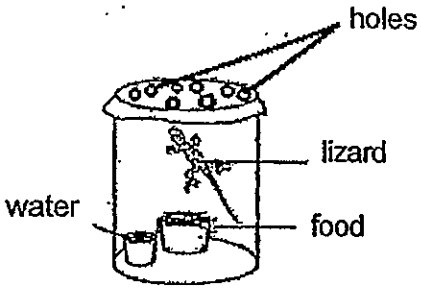
(1)



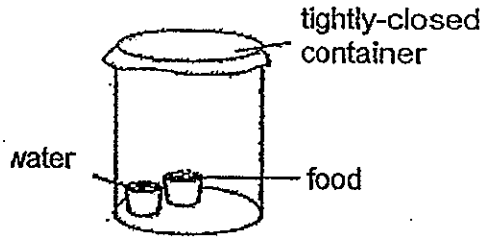
(2)



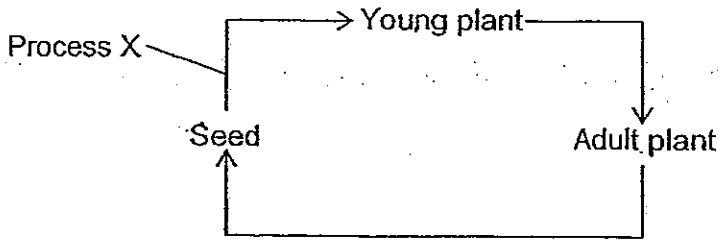
(3)



(4)



5. Study the life cycle of a flowering plant shown below carefully.

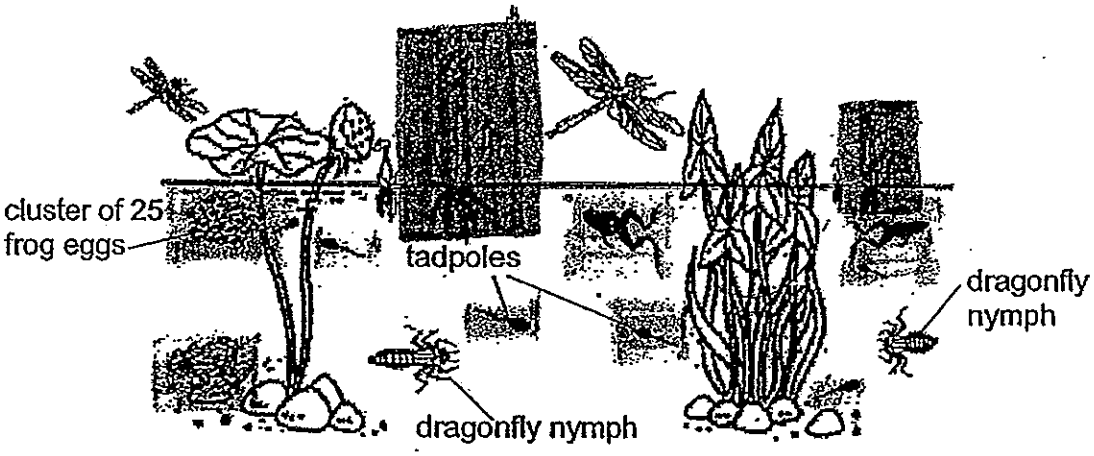


Which of the following conditions are necessary for process X to take place?

A Air
B Water
C Warmth
D Sunlight

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

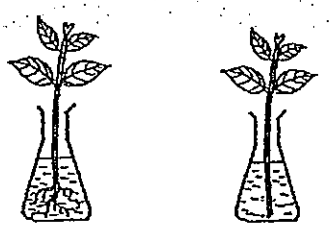
6. The diagram below shows a pond community.



How many populations are there in the community above?

(1) 4
(2) 5
(3) 12
(4) 37

7. Sarah set up an experiment as shown below with two similar flasks of plants and an equal amount of coloured water in each flask. She then observed the colour of the leaves after a few hours.



Set-up A Set-up B

Which of the following is/are possible aims of her experiment?

A To find out whether plants can make food without water.

B To show that water can be absorbed by the stem of a plant.

C To find out how the roots of the plant affects the growth of plants.

D To find out if water can be transported to the leaves without the roots.

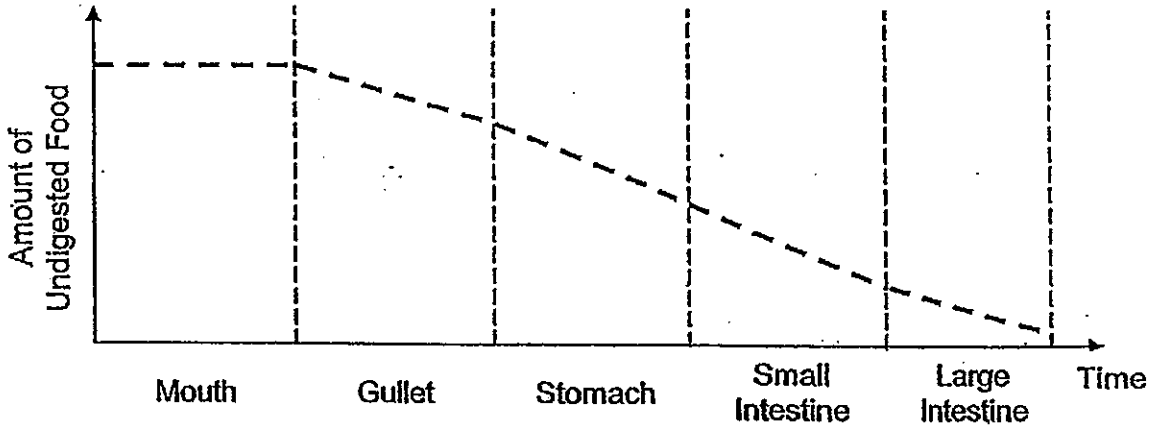
(1) D only

(2) B and D only

(3) A, B and C only

(4) A, B, C and D

8. The line graph below is drawn to represent the amount of undigested food in various parts of the human digestive system.



Which part(s) of the digestive system is/are **wrongly** represented above?

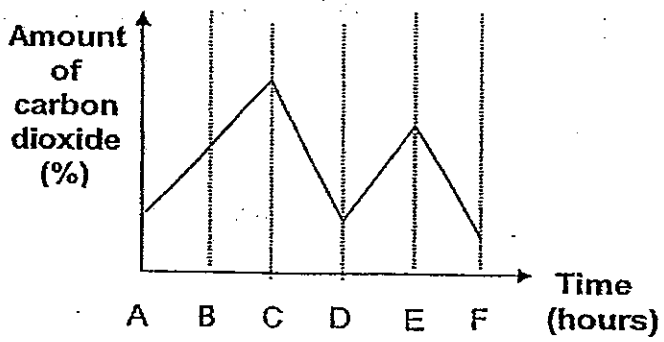
(1) Gullet only

(2) Mouth and Gullet Only

(3) Stomach and Small Intestine only

(4) Mouth, Gullet and Large Intestine only.

9. A pot of plant was placed in an enclosed glass jar. A light was shone on it at certain periods of time and switched off at other periods. The graph below records the amount of carbon dioxide in the glass jar over the duration of the experiment.



Which one of the following tables correctly shows whether the light is switched on or off over this time period?

(1)

Time period	Light is
A to B	switched on
B to C	switched on
C to D	switched off
D to E	switched on
E to F	switched off

(2)

Time period	Light is
A to B	switched off
B to C	switched off
C to D	switched on
D to E	switched off
E to F	switched on

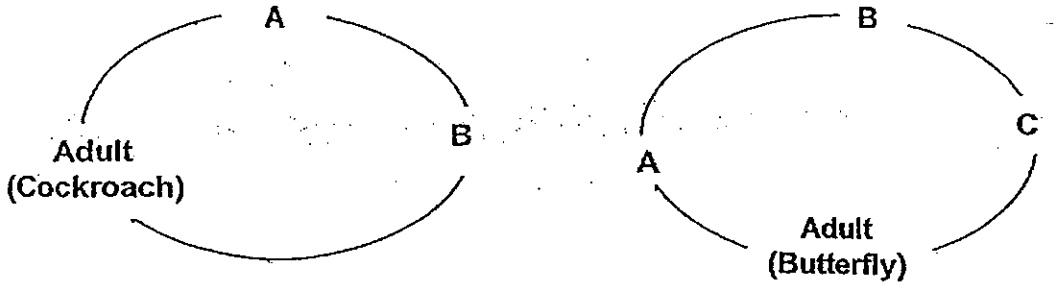
(3)

Time period	Light is
A to B	switched on
B to C	switched on
C to D	switched on
D to E	switched off
E to F	switched off

(4)

Time period	Light is
A to B	switched on
B to C	switched off
C to D	switched on
D to E	switched on
E to F	switched off

10. Study the life cycles below



Which of the following statements about the 2 life cycles above is/are true?

A Both adult animals can fly.

B Stage B of both animals moult.

C Stage A of both animals occur in water.

D Stage B of both animals resemble their adult.

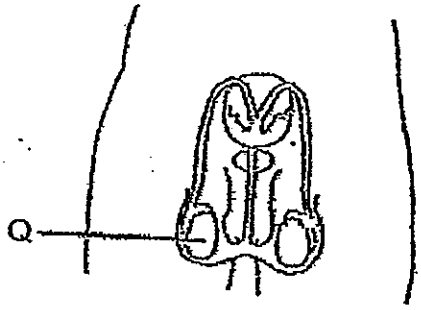
(1) A and B only

(2) C and D only

(3) A and D only

(4) A, B and D only

11. Study the diagram below.



Which one of the following parts of a flower performs a similar function to the part labelled 'Q' above?

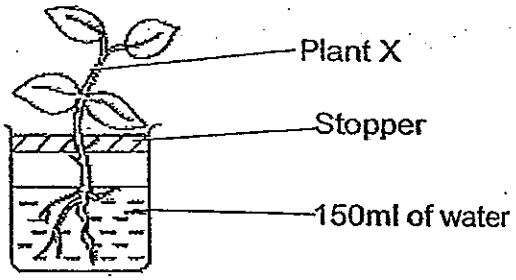
(1) Ovary

(2) Stigma

(3) Anther

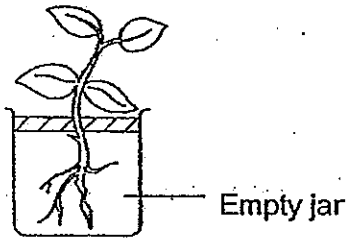
(4) Pollen Tube

12. David wants to find out if water is lost by a plant through the leaves. He puts plant X into a container containing 150ml of water and a stopper as shown below.

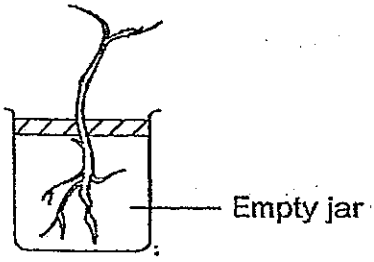


Which set-up should he compare it with in order to ensure that he conducts a fair test?

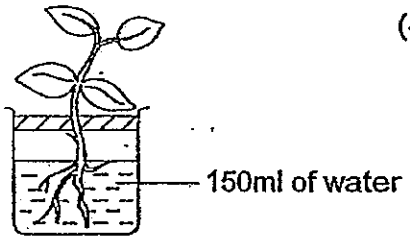
(1)



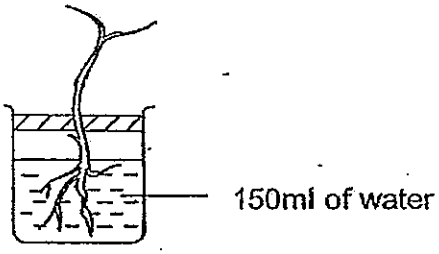
(2)



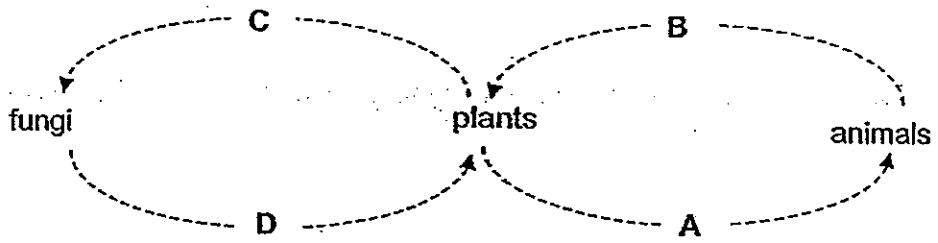
(3)



(4)



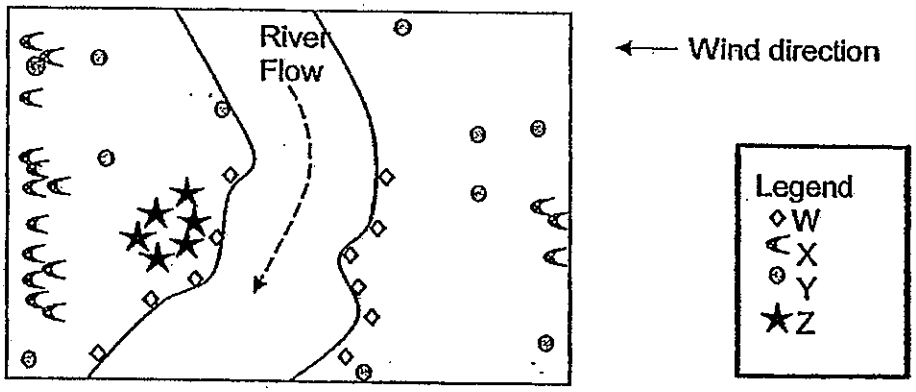
13. The diagram below shows the exchange of gases between plants, animals and fungi in the day.



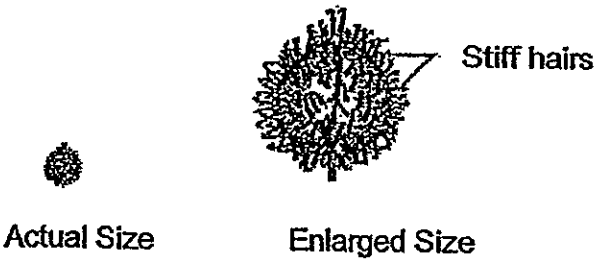
What do A, B, C and D represent?

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

14. The diagram below shows the patterns of fruit dispersal of four plants W, X, Y and Z. The wind blows mainly from the East.

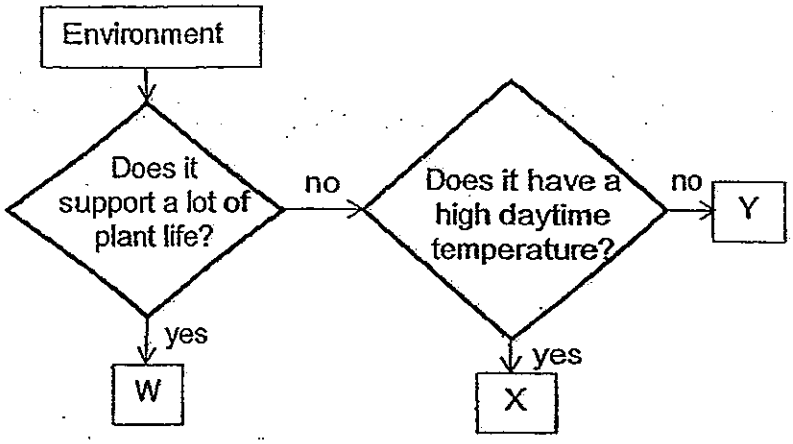


Based on the diagram above, from which plant would the fruit below most likely be taken?



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

15. Study the chart below carefully.



What could W, X and Y represent?

	W	X	Y
(1)	Field	Jungle	Garden
(2)	Jungle	Desert	Arctic
(3)	Seashore	Pond	River
(4)	Rotting Log	Desert	Leaf Litter

16. The food chain below can be found in a naturally occurring environment where organisms X, Y and Z can be found.

Based on the food chain above, which one of the following statements is <u>incorrect</u>?

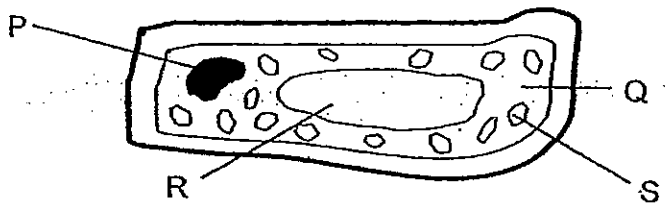
(1) X is not a food consumer.

(2) When Y increases in number, both X and Z will get affected.

(3) The population of organism Z is smaller than the population of organism X.

(4) The amount of energy Z obtains from consuming one unit of Y is less than the amount of energy Y obtains from consuming one unit of X.

17. The diagram below shows a plant cell.



In which part of the cell P, Q, R or S can genetic materials of the plant be found?

(1) P

(2) Q

(3) R

(4) S

18. The table below records the observations when 4 pieces of materials were stretched with loads hung on them.

Material	Load hung (g)	Original length (cm)	New length (cm)
E	20	2	3
F	40	4	5
G	10	2	4
H	50	5	6

Which one of the materials above is the most elastic?

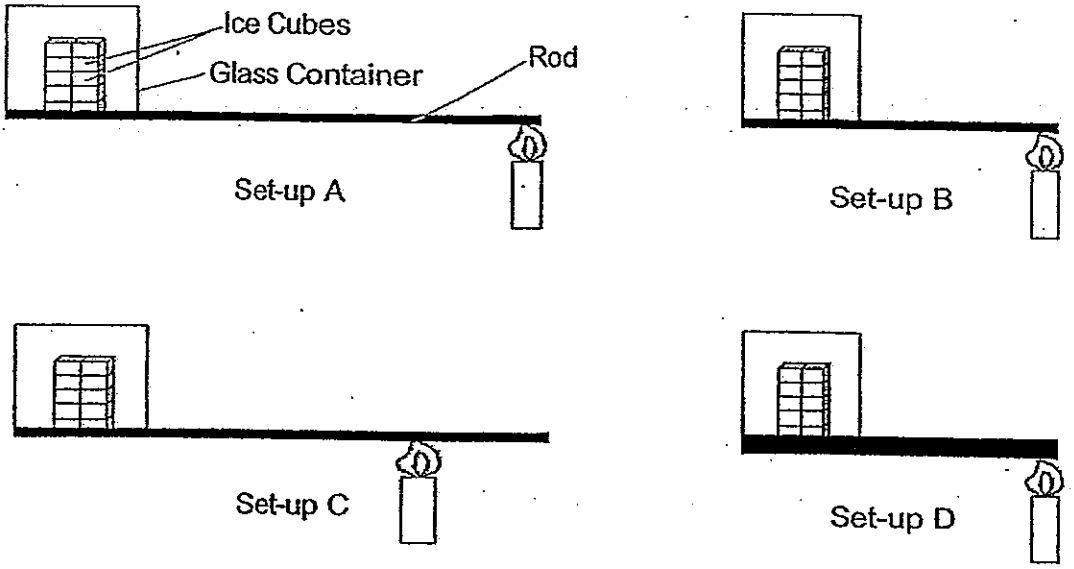
(1) E

(2) F

(3) G

(4) H

19. The diagram below shows 4 set-ups using rods of the same materials.



If you were to record the time taken for the ice cubes to melt completely, what can you use the set-ups to find out?

A To find out how the length of a material affects its heat conductivity.

B To find out if the type of materials affects the rate of heat conductivity..

C To find out how the thickness of a material affects the heat conductivity.

D To find out how the distance between the ice and the heat source affects the time taken for it to melt.

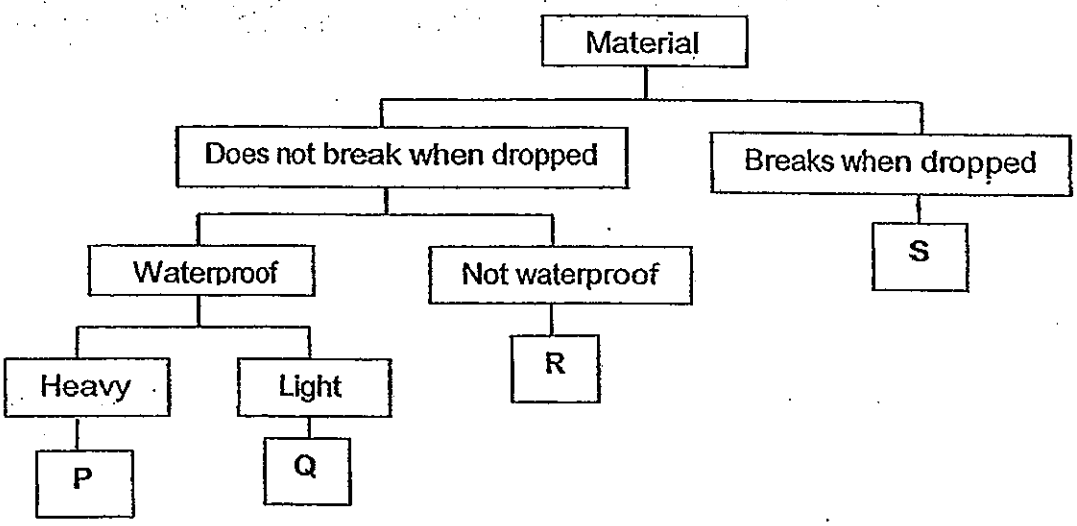
(1) A only

(2) A, B and C only

(3) A, C and D only

(4) B, C and D only

20. The classification chart below shows the properties of 4 different materials P, Q, R and S.



Which one of the following best represents materials P, Q, R and S respectively?

(1) Iron, Silk, Leather, Plastic

(2) Wood, Paper, Clay, Glass

(3) Steel, Plastic, Wool, Porcelain

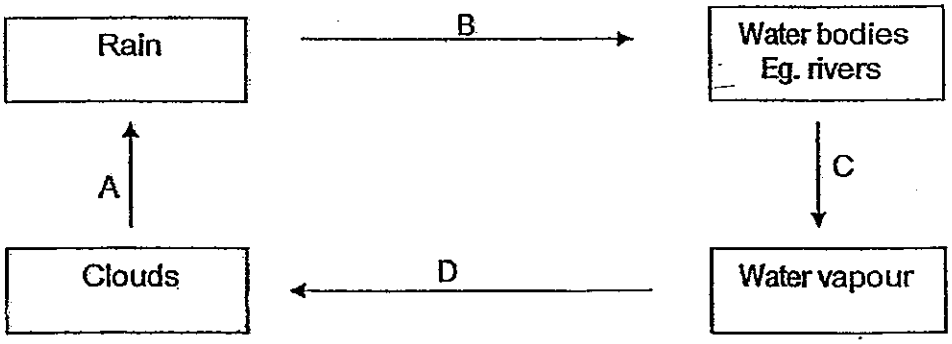
(4) Rubber, Aluminum, Ceramic ,Styrofoam

21. The diagram below shows a cup.

Mary shone a torch at the cup from various positions. Which one of the following shows the correct set of shadows formed for the various positions of the torch?

	Direction of light				
	From the left	From the top	From the front	From the right	
(1)					Shadows Formed
(2)					
(3)					
(4)					

22. Study the diagram of the water cycle below.

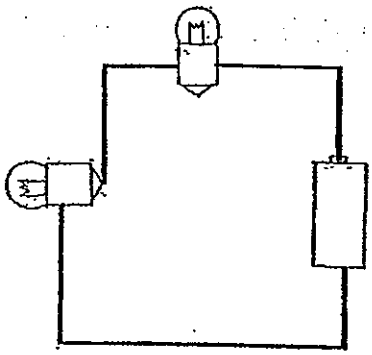


At which stage A, B, C or D is the change of state from gaseous to liquid?

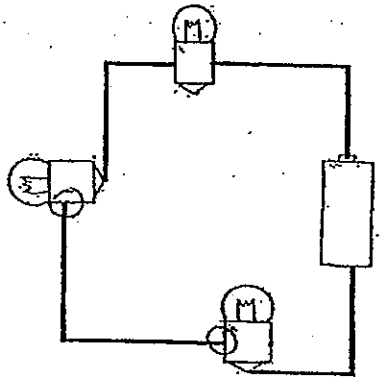
(1) A
(2) C
(3) B
(4) D

23. In which of the circuits below will only one bulb light up?

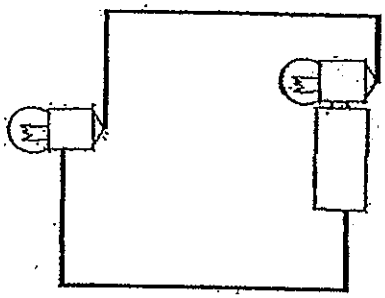
A



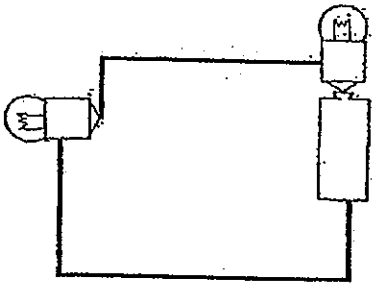
B



C

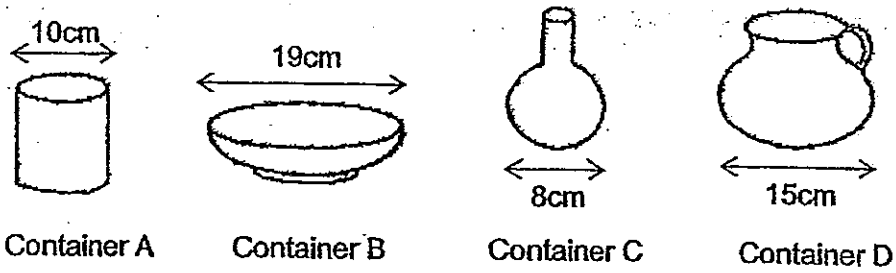


D

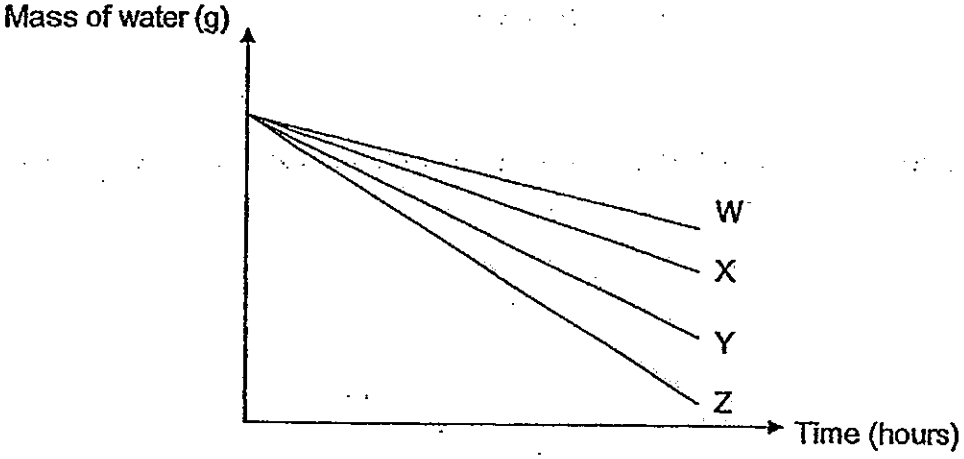


(1) A only
(2) A and B only
(3) B and C only
(4) C and D only

24. The diagram below shows 4 glass containers A, B, C and D of different shapes and sizes. The same amount of water was poured into each container. They were then left in the same room for a day.



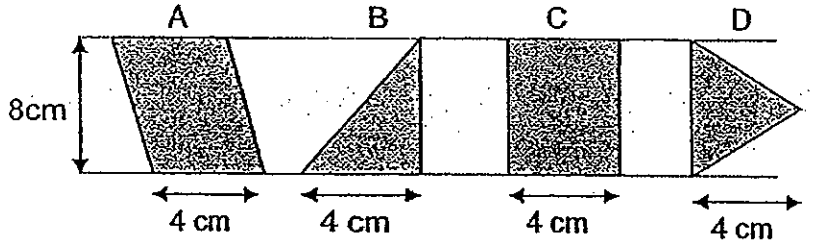
The amount of water left in each container was observed and the graphs were plotted as shown below.



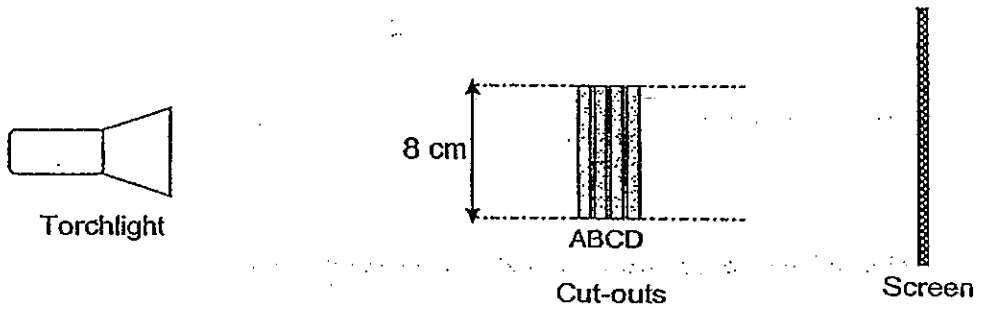
Which one of the above graphs W, X, Y and Z best matches the containers shown?

	Container A	Container B	Container C	Container D
(1)	X	Z	W	Y
(2)	Y	W	Z	X
(3)	Z	X	W	Y
(4)	X	Y	W	Z

25. Jimmy made 4 cut-outs A, B, C and D from different materials as shown below.



Jimmy then aligned all the cut-outs in a straight row as shown below, without changing their orientation.



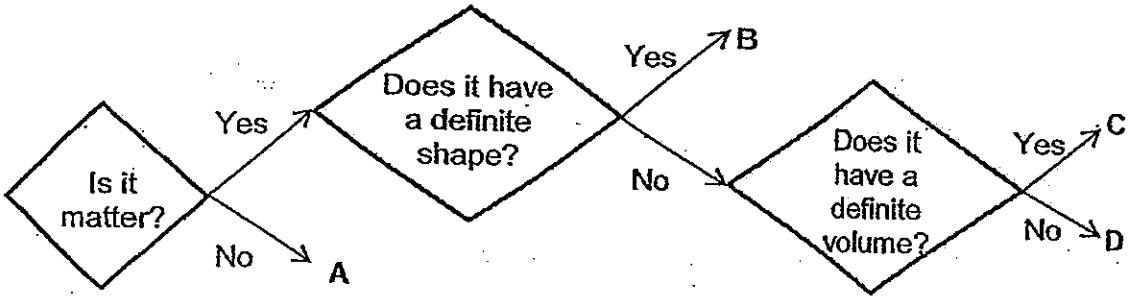
The shadow formed on the screen was shown below.

Based on the shadow formed on the screen, which 2 cut-outs were made from opaque materials?

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

26. The table below provides information about P, Q and R. A tick (√) indicates the presence of the property.

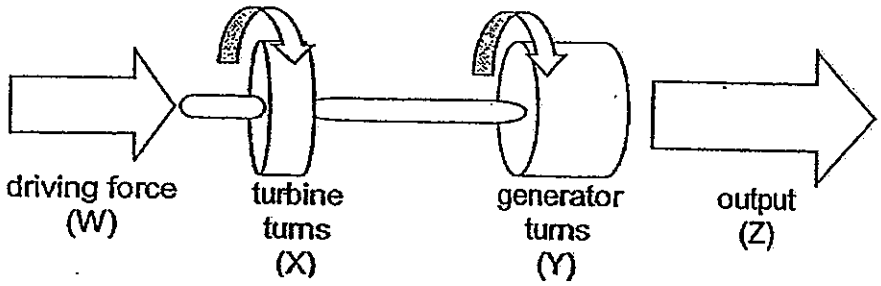
Property	P	Q	R
Occupies space	√	√	
Can be compressed		√	
Takes the shape of the container it is in	√	√	



Using the flowchart above, which letter A, B, C or D would best represent P, Q and R respectively?

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

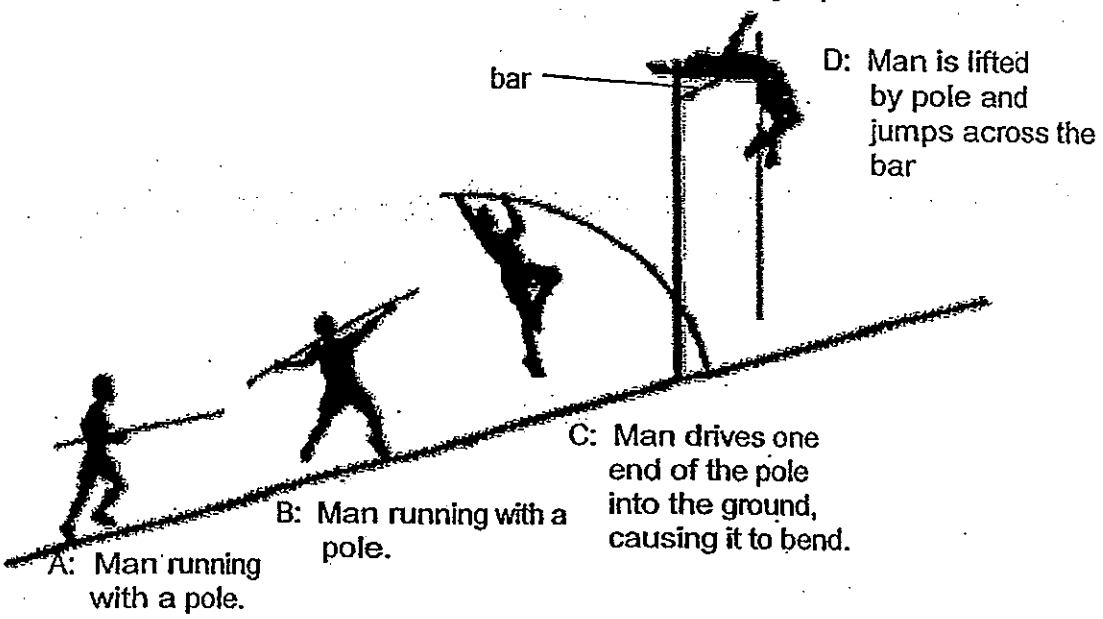
27. The diagram below shows the mechanism found in a power station.



Identify the forms of energy at stages W, X, Y and Z.

	W	X	Y	Z
(1)	Water energy	Movement Energy	Kinetic and Electrical Energy	Electrical and Heat Energy
(2)	Movement Energy	Chemical Potential Energy	Kinetic Energy	Electrical and Sound Energy
(3)	Heat Energy	Movement Energy	Heat and Electrical Energy	Heat and Sound Energy
(4)	Kinetic Energy	Kinetic Energy	Kinetic and Electrical Energy	Electrical Energy

28. The illustrations below show the various stages of a pole vault jump.



Based on the above illustrations, which one of the following best represents the energy change from B to D?

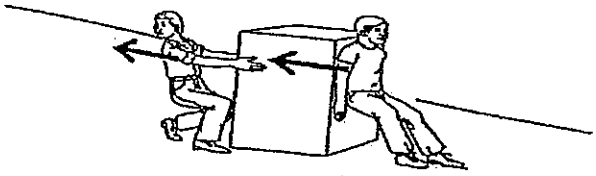
(1) Movement Energy → Elastic Potential Energy → Movement Energy

(2) Chemical Potential Energy → Kinetic Energy → Elastic Potential Energy

(3) Kinetic Energy → Elastic Potential Energy → Gravitational Potential Energy

(4) Kinetic Energy → Elastic Potential Energy → Kinetic Energy + Gravitational Potential Energy

29. The diagram below shows two boys trying to move a box up a slope. The arrows show the direction of their forces.



Which of the following statements about the forces involved are correct?

A Both boys are exerting a push force on the box.

B The angle of the slope will affect the amount of forces needed.

C The surface of the slope will affect the amount of forces needed.

D The force needed to move the box must be equal to the gravitational force acting on the box.

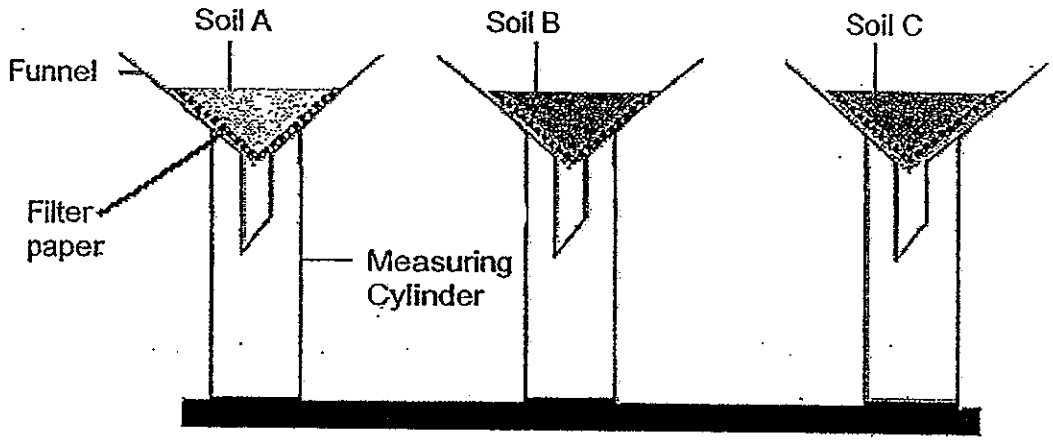
(1) A and D only

(2) B and C only

(3) A, B and C only

(4) A, B, C and D

30. Mark collected three soil samples A, B and C, from different locations. He weighed equal amount of each type of soil and poured them into funnels lined with similar filter papers as shown below. He then poured equal amount of water into each funnel and left the set-ups to drain.



After 10 minutes, he removed each filter paper and all its content from the funnel and weighed them on a weighing scale. The mass of each filter paper and its content are recorded in the table below.

	Soil A	Soil B	Soil C
Mass of filter paper and content (g)	50	70	90

If the soil tested are of different types, what could soil A, B and C be based on the results of the experiment?

	A	B	C
(1)	sandy	garden	clayey
(2)	garden	clayey	sandy
(3)	garden	sandy	clayey
(4)	sandy	clayey	garden

End of Booklet A

Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

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Primary 6
Semestral Assessment 1 – 2013
SCIENCE

BOOKLET B

15 May 2013

Booklet A	60
Booklet B	40
Total	100

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

14 questions
40 marks

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

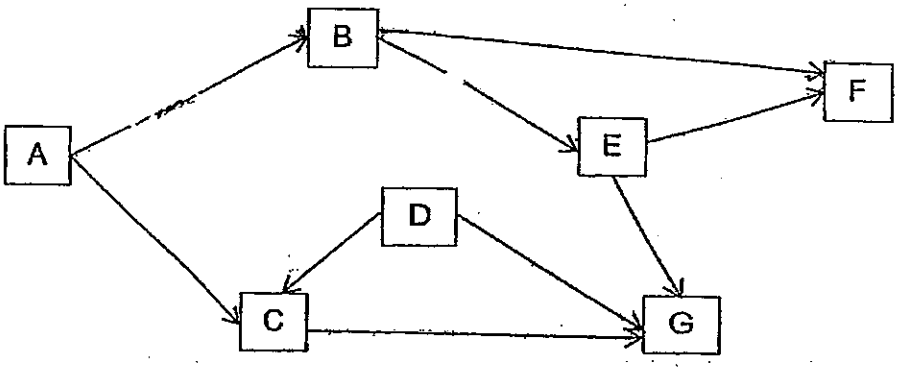
This paper consists of 15 printed pages.

_____
Parent's Signature/Date

Section B (40 marks)

For questions 31 - 44, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. Study the food web below carefully.



(a) In the food web above, identify the herbivores and carnivores. [2]

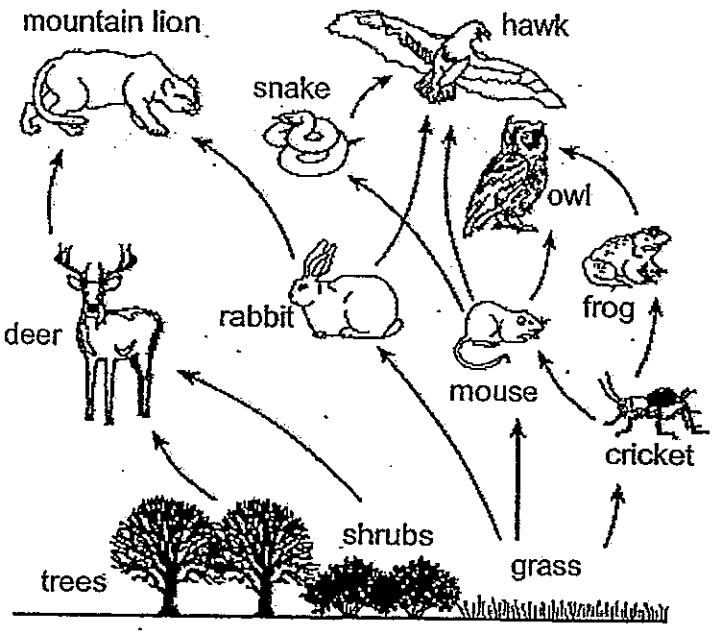
Herbivores:_____

Carnivores:_____

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

_____

32. The diagram below shows a food web.



(a) Based on the above food web, list two similarities between the hawk and owl in terms of their diet. [1]

_____

(b) Based on the food web, what will happen to the population of the mountain lion when there is a period of drought in this environment? [½]

_____

(c) Explain your answer in (b). [1½]

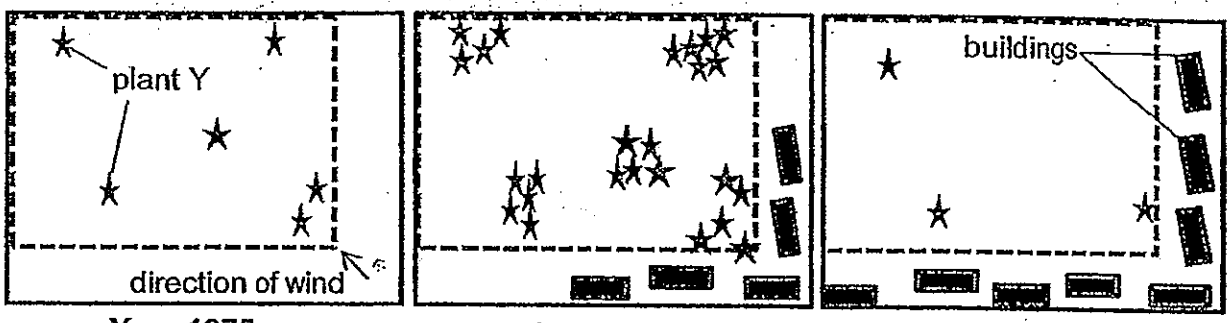
_____

_____

_____

_____

33. The maps below show the number of plant Y found on a piece of protected land (marked with the dotted lines) over a period of time. From 1977 to 1979, there were many buildings constructed around the edges of this plot. No activities or construction was allowed on the protected land at all. Study the maps carefully and answer the questions below.



Year 1975 **Year 1977** **Year 1979**

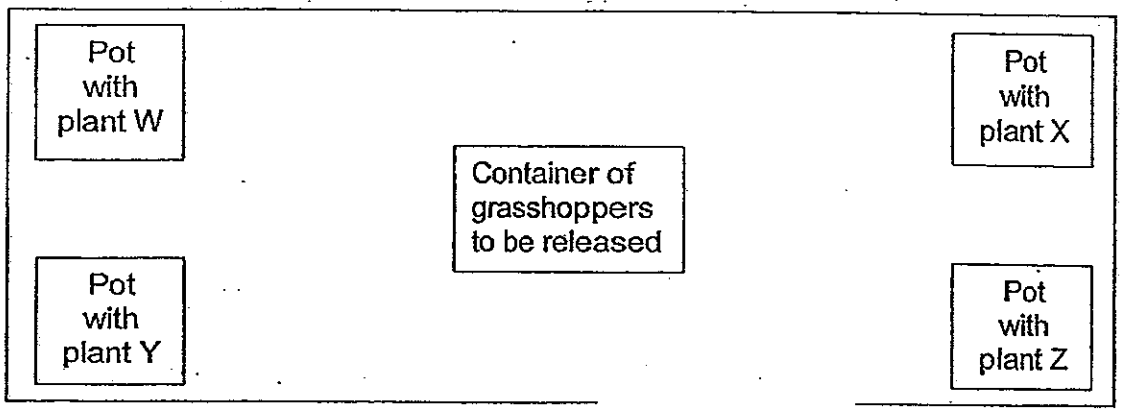
(a) Based on the above maps, if the fruits of plant Y are dispersed by wind only, explain how its dispersal appeared the way it was as shown in 1977. [1]

(b) Between 1977 and 1979, how did the population of Y change? [½]

(c) Explain your answer in (b) based on the method of dispersal for plant Y. [1½]

34. John noticed many grasshoppers in his garden. He hypothesized that plant X in his garden was attracting all the grasshoppers. He set up an experiment to investigate this.

In an empty room, John took 4 pots of plants W, X, Y and Z from his garden and placed them in each corner. In the middle of the room, he released a container of grasshoppers. He left the room and returned 1 minute later to make his observation.

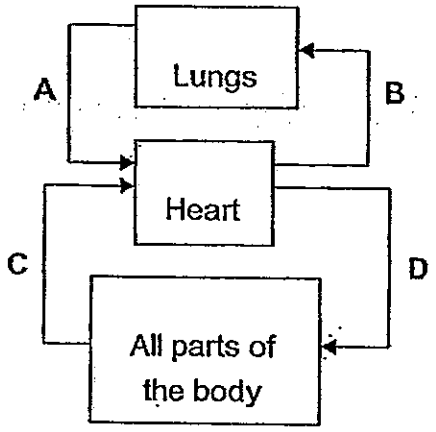


(a) What was John observing in this experiment? [½]

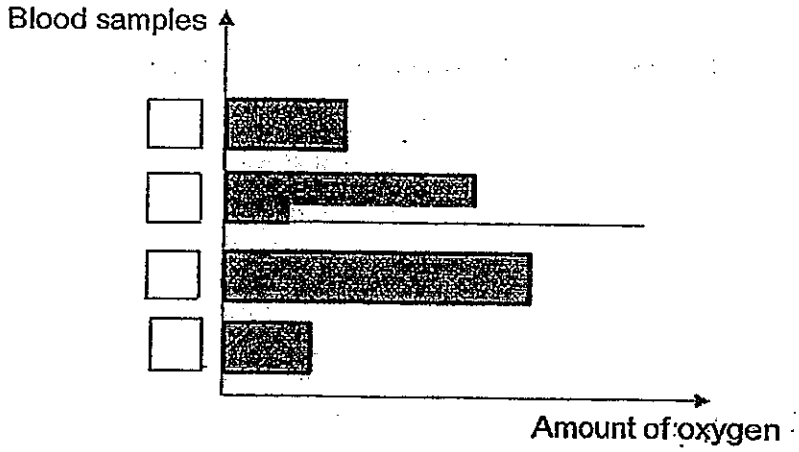
(b) After he had made his observation, John concluded that none of the plants was attracting the grasshoppers. Do you agree with his findings? Why? [1]

(c) Name one other variable to do with the plants that must be kept constant so that the test is a fair one. Explain your answer. [1½]

35. The diagram below shows the flow of blood in our circulatory system.



Blood samples are taken from A, B, C and D and the amount of oxygen present in each sample is recorded in the graph shown below.



(a) In the graph above, label the blood samples by writing the letters A, B, C or D in the boxes provided. [2]

(b) Besides gases, name two other things our blood transports in the body. [1]

36. Sally was given three bar magnets A, B and C. She wanted to investigate which magnet had the greatest magnetism. She carried out her experiment as follows.

1. Place a paperclip at one end of a ruler.
2. Place magnet A at the opposite end.
3. Slide magnet A slowly towards the paper clip until the paper clip is attracted.
4. Stop and record the distance between the magnet and the original position of the paper clip.
5. Repeat steps 1 to 4 using magnet B and then C.

(a) What is the relationship between the distance recorded and the magnetic strength of the magnets? [½]

_____

_____

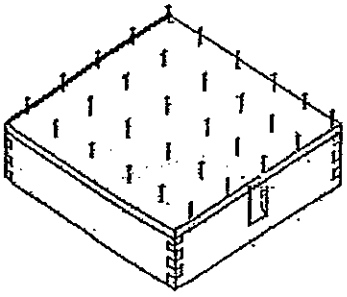
(b) If you were given the same bar magnets and a box of paper clips only, how would you find out which magnet is the strongest. In the space below, record the steps you would take for your investigation. [2]

1. Put the box of paper clips on the table.
2. Place magnet A _____
3. Remove _____
4. Record the _____
5. Put all the clips _____
6. Repeat steps 1 to 4 using magnet B and then C.

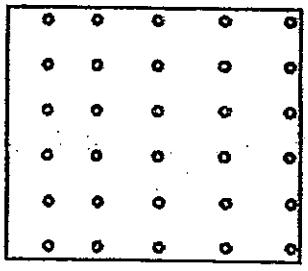
(c) Based on the experiment, how do you find out which is the strongest magnet? [½]

_____

37. The diagrams below show a board full of nails viewed from an angle as well as from the top.



Angled view



Top view

With the board, similar rubber bands were then stretched over the nails to form various shapes as shown below.

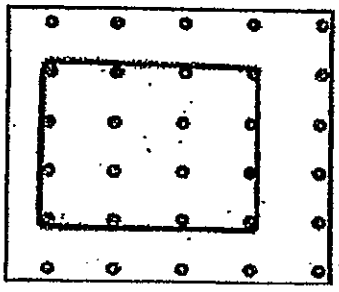


Figure X

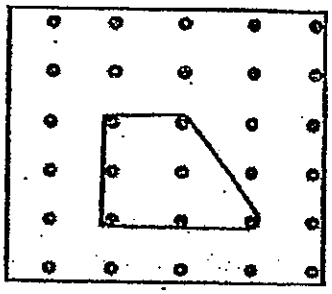


Figure Y

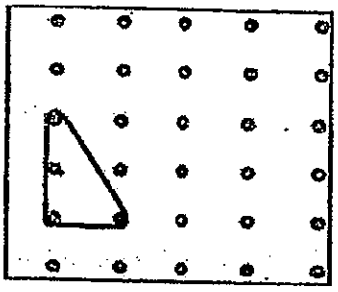


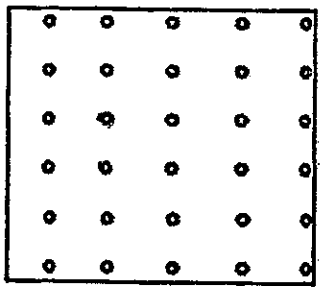
Figure Z

(a) What kind of force (push, pull or both push and pull) are the rubber bands exerting on the nails involved? [½]

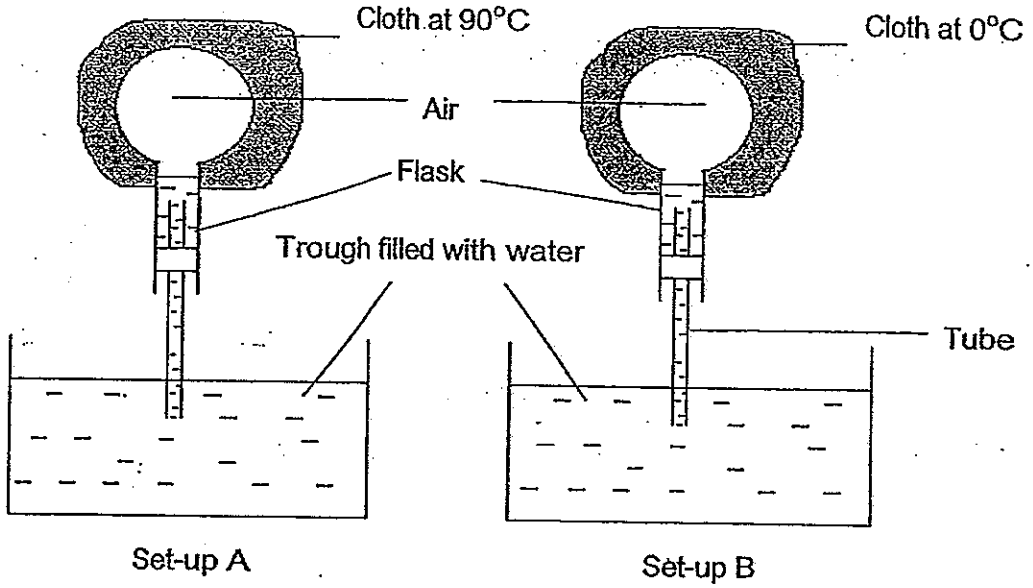
(b) Which figure above would require the greatest amount of force to create? [½]

(c) Explain your answer in (b). [1]

(d) On the board below, draw lines stretching over the nails to show the figure you would create with a rubber band that would require the least force as compared to X, Y and Z. [1]



38. Two flasks containing some water were inverted into a trough of water and two pieces of cloth, of different temperatures, were wrapped around them as shown below. Observations were made of both set-ups at regular intervals.

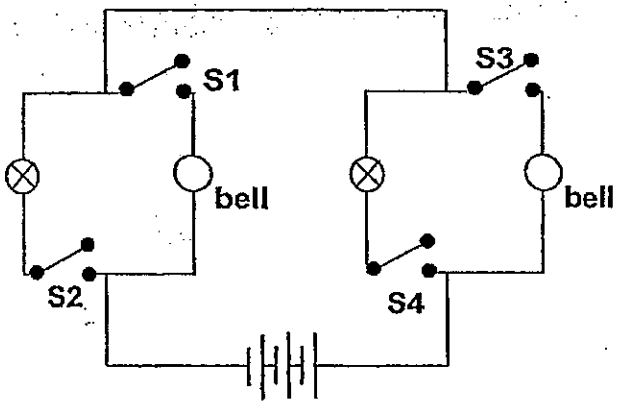


(a) After a while, it was observed that the water levels in both troughs had changed. How did the water levels in the troughs change? [1]

(b) Explain your observationfor set-up A. [1½]

(c) Based on your answer in (b), identify the property of matter that is demonstrated. [½]

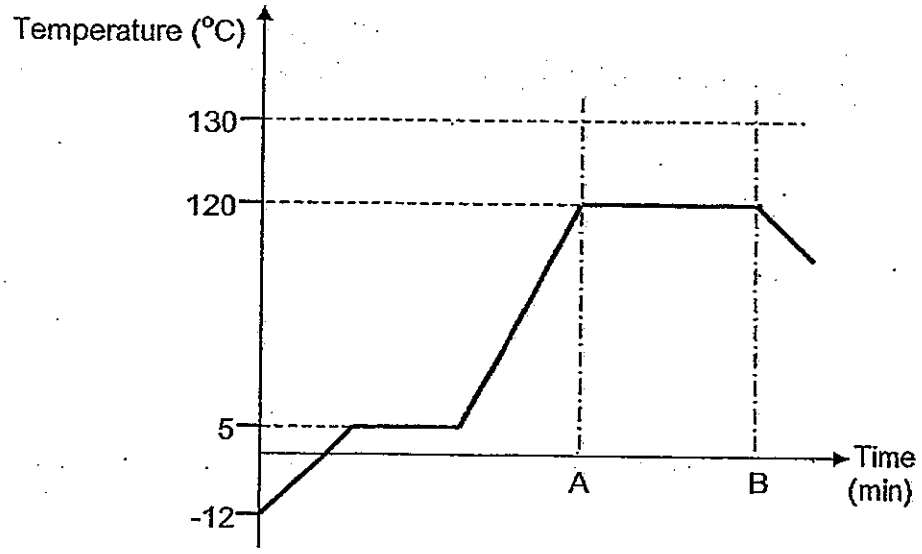
39. The diagram below shows a simple circuit. As the switches are opened and closed in various combinations, the number of light bulbs lighting up and the bells ringing will change accordingly.



For each of the switches combination shown in the table below, put a tick (√) to indicate the number of light bulbs that will light up and the bells that will be ringing. The first one has been done for you. [2]

S1	S2	S3	S4	0 bulb lighted	1 bulb lighted	2 bulbs lighted	0 bell rang	1 bell rang	2 bells rang
open	open	open	open	√			√		
open	closed	open	closed						
closed	open	open	closed						
closed	closed	open	open						
closed	closed	closed	closed						

40. A substance was heated consistently over a period of time and its temperature recorded in the graph below.



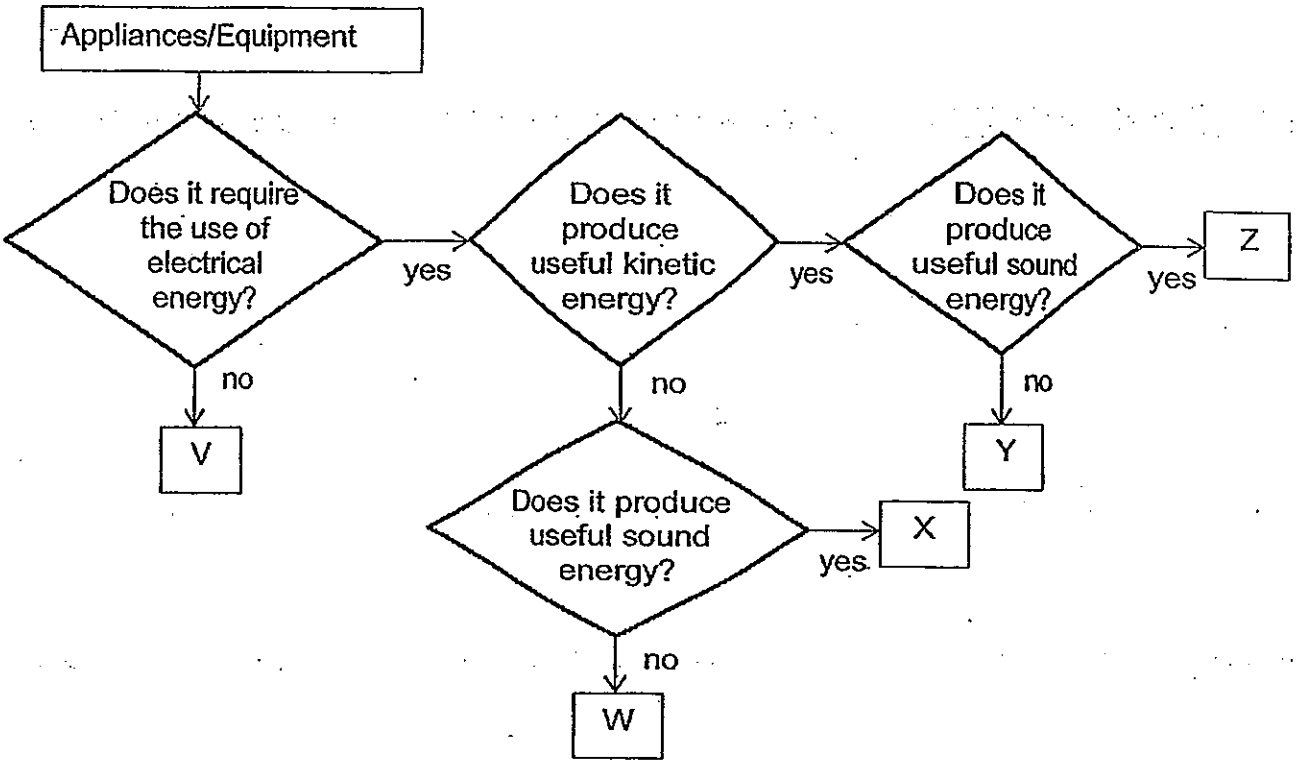
(a) Based on the graph above, what is the melting point of the substance? [1]

_____

(b) Between time period A and B, what changes in state can be observed of the substance? [1]

_____

41. Study the flowchart below:



(a) Based on the graph above, what do W and Y have in common? [1]

_____

(b) In the chart above, which letter best represents the ceiling fan and the mechanical pencil? [1]

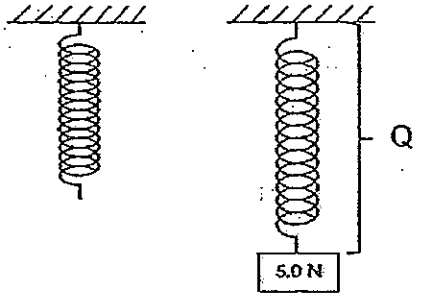
Ceiling Fan : _____

Mechanical Pencil: _____

(c) Based on the flowchart above, write down the energy conversion for ceiling fan in the space below. [1]

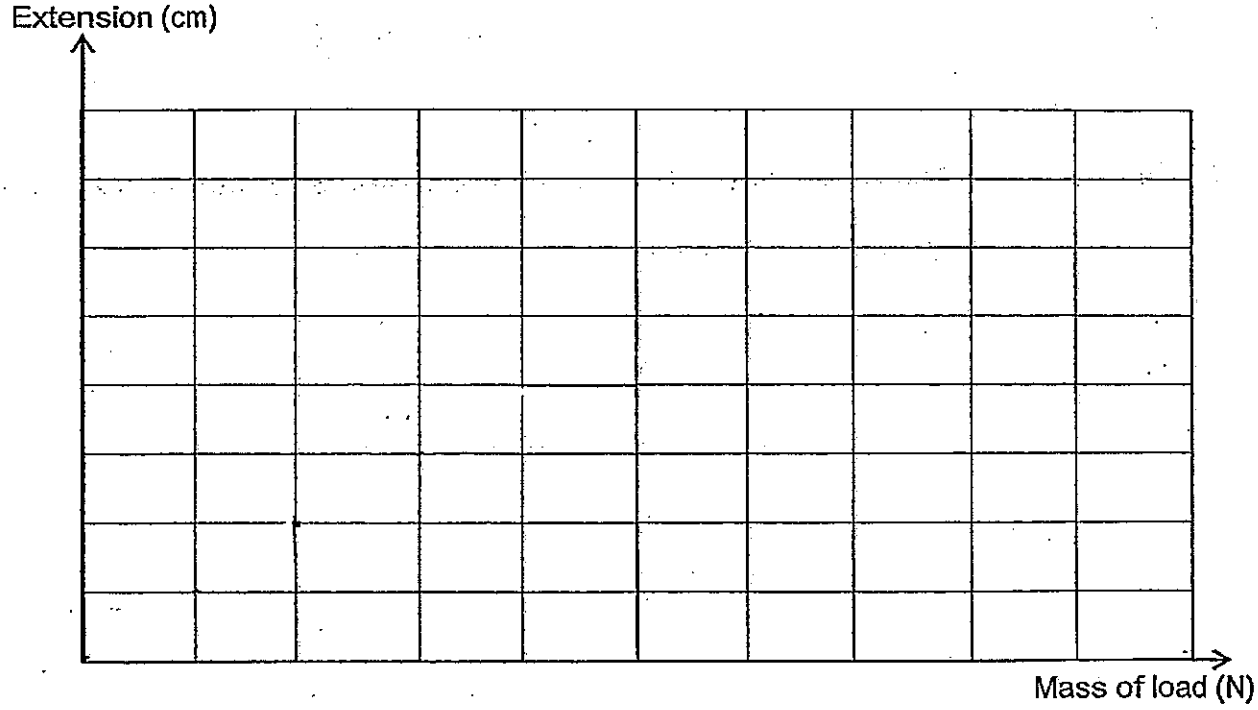
_____

42. A piece of spring was hung and a load is added onto it. The length of the spring (Q) is recorded in the table below.



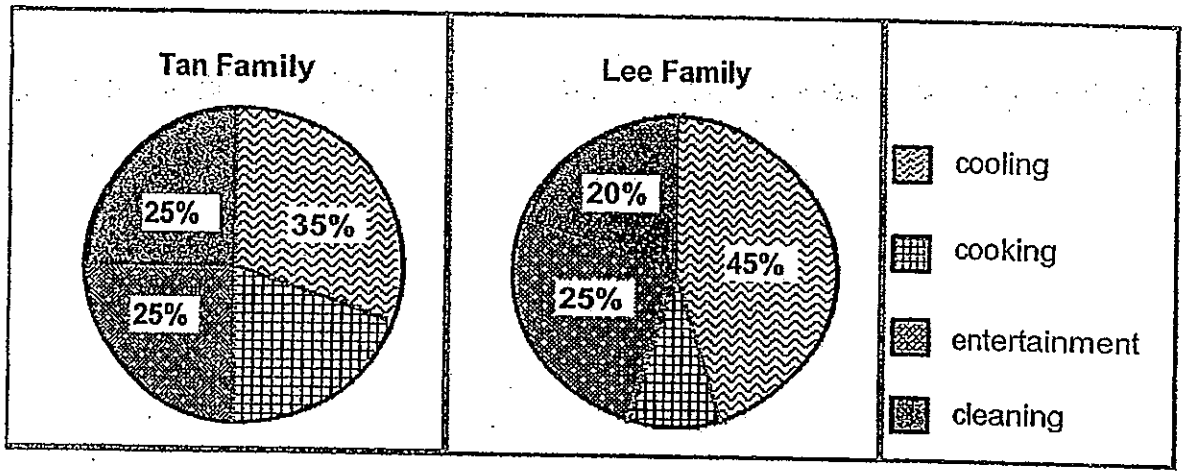
Mass of load (N)	Q (cm)
5	8
10	10
15	12
20	14
25	14

(a) In the space provided below, draw the extension graph for the spring. [2]



(b) What is the relationship between the mass of load hung and the extension of the spring? [2]

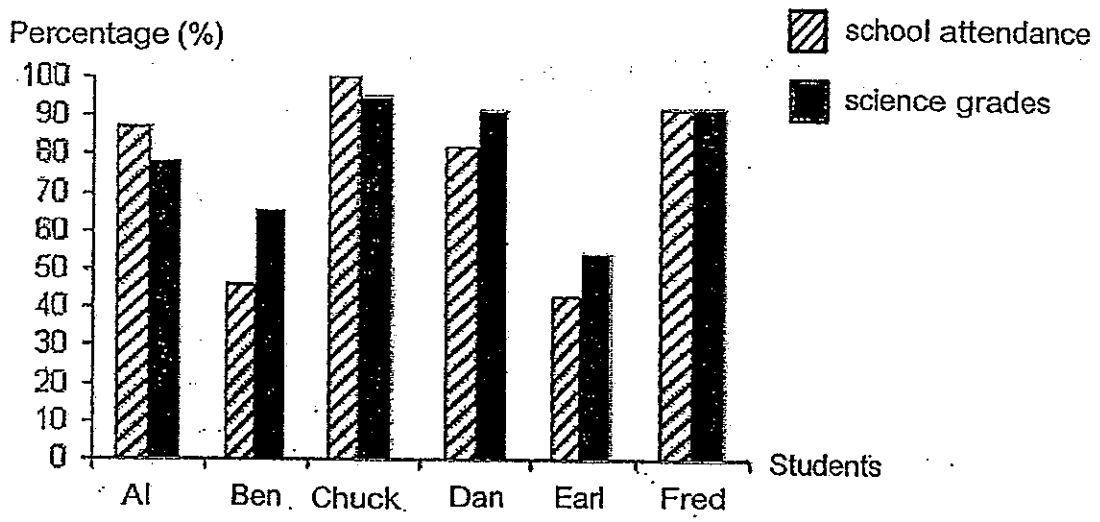
43. The charts below compare 4 main areas of household electricity consumption of two families.



Based on the charts above, put a tick (√) in the respective boxes to indicate if the statement is "True", "False" or "NP: Not Possible to Tell". [2]

Statements	True	False	NP
The amount of electricity the Lee Family consumes for cooling is more than that consumed by the Tan Family.			
The proportion of total household electricity consumption for entertainment is the same for both families.			
The Tan Family is larger as they do a lot more cooking.			
Less than half of the Lee Family's electricity consumption is for cleaning, entertainment and cooling.			

44. A simple study was conducted on a class of students over a period of time to find out how the attendance of a student affects his Science grades. The results of the study are recorded in the table below.



(a) Based on the data collected, who are the top 2 boys and bottom 2 boys in terms of attendance? [½]

Top 2 in attendance: _____

Bottom 2 in attendance: _____

(b) Based on the data collected, who are the top 2 boys and bottom 2 boys in terms of Science grades. [½]

Top 2 in grades: _____

Bottom 2 in grades: _____

(c) Based on the data collected, what can you conclude from the study? Explain. [2]

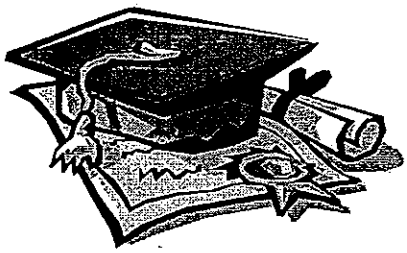
_____

_____

_____

_____

End of Paper



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : CHIJ
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	2	1	3	2	2	4	2	1	3	4	1	3	2	4	1

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

31)a)Herbivores : B **b)6**
Carnivores : E, F

32)a)They both eat mice, and get their energy indirectly from the grass.
b)It will decrease.
c)The drought cause a decrease in population of the trees, shrubs and grass, which will then result in a decrease in population of the deer and rabbit due to lack of food and in turn there will be lesser food for the mountain, and its birth rare will be lower than the death rate, resulting in a decrease in the population of the mountain lion.

33)a)The buildings block the wind and hence, there will be no would to disperse the seeds, forcing the seeds to fall and germinate near the parent plant.
b)It decreased.
c)The buildings had surrounded the land, not allowing any wind to enter and disperse the seeds, thus more seeds had fallen and germinated near the parent plant. After a period of time, overcrowding occurred, and there was no enough nutrients for all plants, causing decrease in the population of Y.

34)a)The number of grasshoppers attracted to each plant.

b)No, as he had only waited for 1 minute before checking the experiment, thus there might not be enough time for the grasshopper to move to a plant before John made his observation.

c)Size of plant. A bigger plant may attract more grasshoppers.

35)a)C D A B

b)Blood also transports digested food and waste.

36)a)The further the distance or which paperclip is attracted, the stronger the magnet.

b)2) Into the box of paperclips.

3) the magnet.

4) number of paperclips attracted.

5) back in the box.

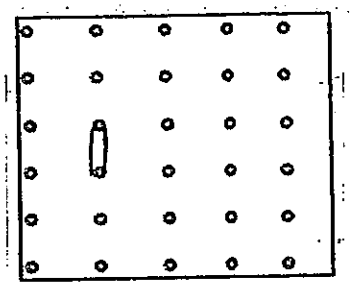
c)The magnet that attracts the most paperclips in the strongest.

37)a)Pull

b)X.

c)X is the biggest so the rubber band is stretched the most.

d)



38)a)The water level in A lose while the water level in B decreased.

b)The air in A gained near and expanded hence water in the flask was pushed down into the trough and replaced by air.

c)Matter expands when heared.

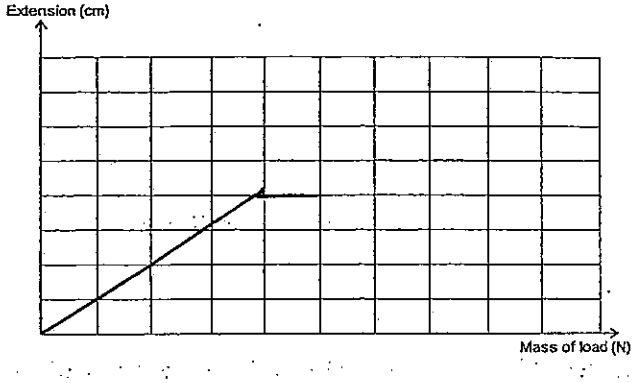
39)

S1	S2	S3	S4	0 bulb lighted	1 bulb lighted	2 bulbs lighted	0 bell rang	1 bell rang	2 bells rang
open	open	open	open	√			√		
open	closed	open	closed			✓	✓		
closed	open	open	closed		✓			✓	
closed	closed	open	open	✓			✓		
closed	closed	closed	closed			✓			✓

40)a)5℃
b)Liquid to gas.

41)a)They both require use of electrical energy and does nor produce useful sound energy.
b)Y
V
c)Electrical energy→Kinetic energy→Sound energy

42)a)



b)The greater the mass of the load hung, the greater the extension of the spring until it reaches 20w. After which the extension of the spring remains constant as the mass of the load increases.

43)NP
True
Np
False

44)a)Chuck, Fred
Ben, Earl
b)The higher the attendance, the higher the grades the top 2 in attendance is also the top 2 in grades while the bottom 2 in attendance are the bottom 2 in grades.

METHODIST GIRLS' SCHOOL

Founded in 1887

MID – YEAR EXAMINATION 2013
PRIMARY 6
SCIENCE

BOOKLET A1

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

INSTRUCTIONS TO CANDIDATES

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

Name:_____ ( )

Class: Primary 6._____

Date: 16 MAY 2013

This booklet consists of 10 printed pages including this page.

For each question from 1 to 15, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

---

1 Which of the following statements describe the similarities between the damselfly and the great diving beetle?

A Both lay eggs in water.

B Their young look like adults.

C Both are prey to fish and frogs.

D Both have four stages in their life cycles.

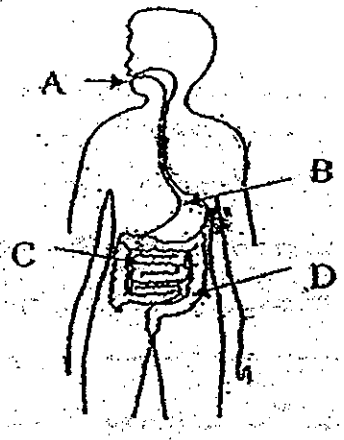
(1) A and C only

(2) B and C only

(3) A, C and D only

(4) B, C and D only

2 The diagram below shows the human digestive system. In which parts of the digestive system, A, B, C and D do digestion of meat take place?



(1) A and D only

(2) B and D only

(3) A, B and C only

(4) A, C and D only

(Go on to the next page)

3 Which of the following statements describe the circulatory system <u>correctly</u>?

A The circulatory system consists of lungs, heart, blood vessels and blood.

B It increases the rate of blood flow to meet the demands of exercise.

C It transports the clotting cells to help to stop the bleeding and promote healing should there be any injury.

D It transports oxygen in the form of oxyhaemoglobin and nutrients to different parts of the body

(1) B and C only

(2) A, B, and C only

(3) B, C and D only

(4) A, B, C and D

4 The relationships between the organisms, P, Q, R, S and T are described in the box below.

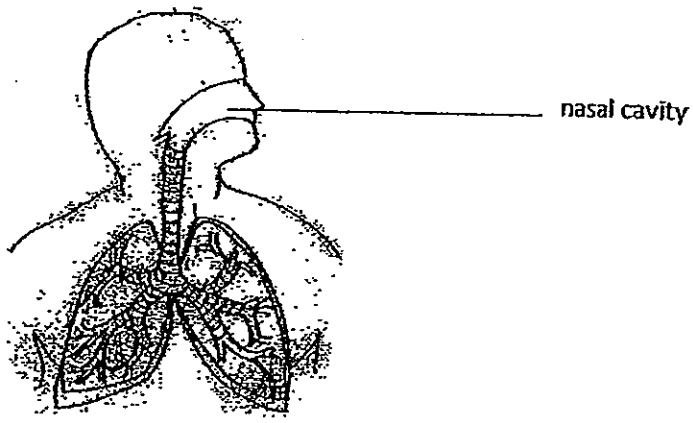
Q feeds on P.
R feeds on Q.
S feeds on Q but not on R.
T feeds on Q and S.

What are the relationships among the organisms, P, Q, R, S and T?

	Producer	Primary consumer	Prey and predator	predator
(1)	Q	P	T	S
(2)	P	Q	S	T
(3)	S	T	R	Q
(4)	P	S	S	T

(Go on to the next page)

5 The diagram below shows part of the human respiratory system.



Tiny hairs and mucus are found in the nasal cavity. What is the most likely function of the tiny hairs?

A They moisten and warm the inhaled air.

B They help the person to breathe in more air.

C They help to filter out the foreign particles from the air

D They keep the windpipe clean by preventing food or water from entering the air passage.

(1) A and C only

(2) A and B only

(3) B and C only

(4) C and D only

6 Which one of the following statements describes **correctly** what happens when blood enters the lung?

(1) Only carbon dioxide passes from the blood stream to the air sacs.

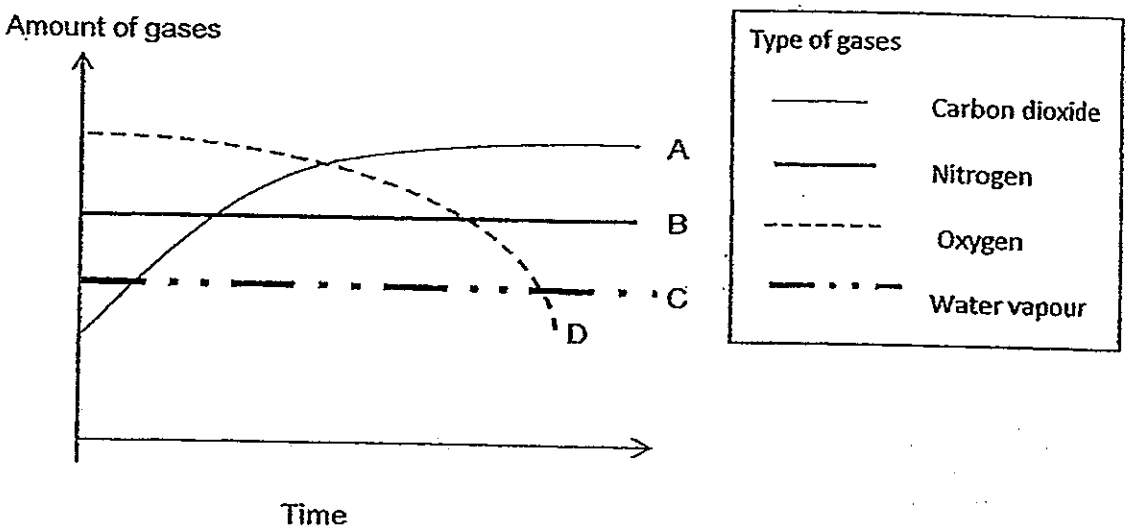
(2) Only oxygen passes from the air sacs into the blood stream.

(3) Carbon dioxide from the blood stream passes into the air sacs and oxygen from the air sac passes into the blood stream.

(4) Carbon dioxide from the lungs passes into the blood and oxygen from the blood passes into the air sacs.

(Go on to the next page)

7 A group of children were trapped in a poorly ventilated room for four hours. The graph below shows the changes in the amount of gases in the room.



Which line graph is most likely to be **incorrect?**

(1) A

(2) B

(3) C

(4) D

8 Liana wanted to find out if plants need sunlight to carry out photosynthesis. She placed two similar pots of plant in a dark room for 48 hours before she carried out the experiment. The purpose of placing the plants in the dark room is to _____.

(1) de-starch the plants

(2) remove the carbon dioxide from the plants.

(3) find out if the plants can make food in the dark

(4) ensure that the plants conserve the water for making food

(Go on to the next page)

9 Which of the following controls the movement of substances passing through the cells?

(1) Nucleus

(2) Cell wall

(3) Cytoplasm

(4) Cell membrane

10 Study the classification table below.

Group R	Group S
crab	tadpole
prawn	dragonfly
mussels	fish

The organisms are grouped according to

(1) their habitats

(2) how they move

(3) their breathing methods.

(4) the food they feed on

11 Which of the following organisms are decomposers?

(1) Woodlouse and bacteria

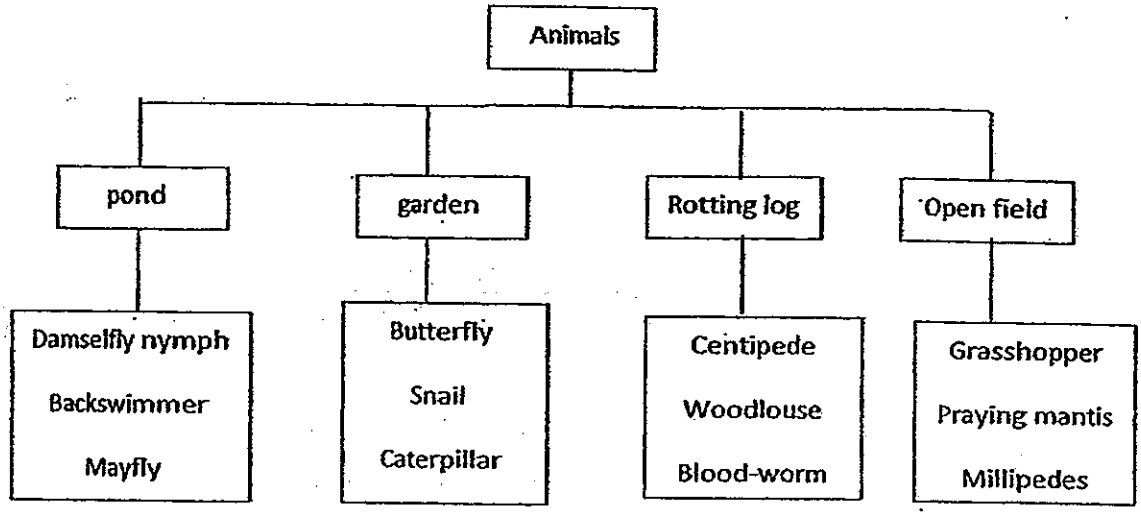
(2) Mushroom and termites

(3) Mushroom and bacteria

(4) Woodlouse and termites

(Go on to the next page)

12 Lilian and her classmates had an outdoor Science lesson at the garden with a pond nearby. They caught some animals from different spots of the garden and took them to the Science laboratory to examine the animal specimens. The girls identified and classified the animal specimens according to the four different habitats, A, B, C, and D, where they could be found, as shown below.



Which one of the following animals were wrongly grouped by the girls?

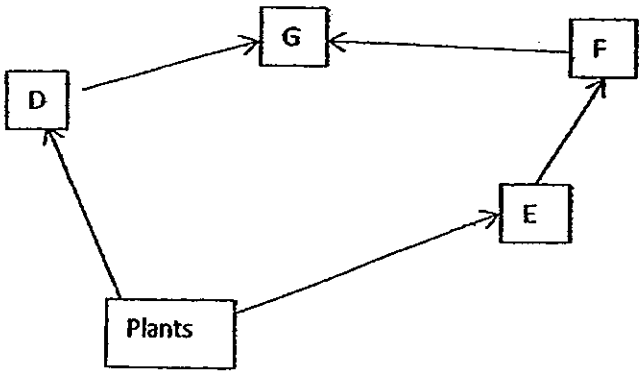
(1) Mayfly and snail

(2) Snail and woodlouse

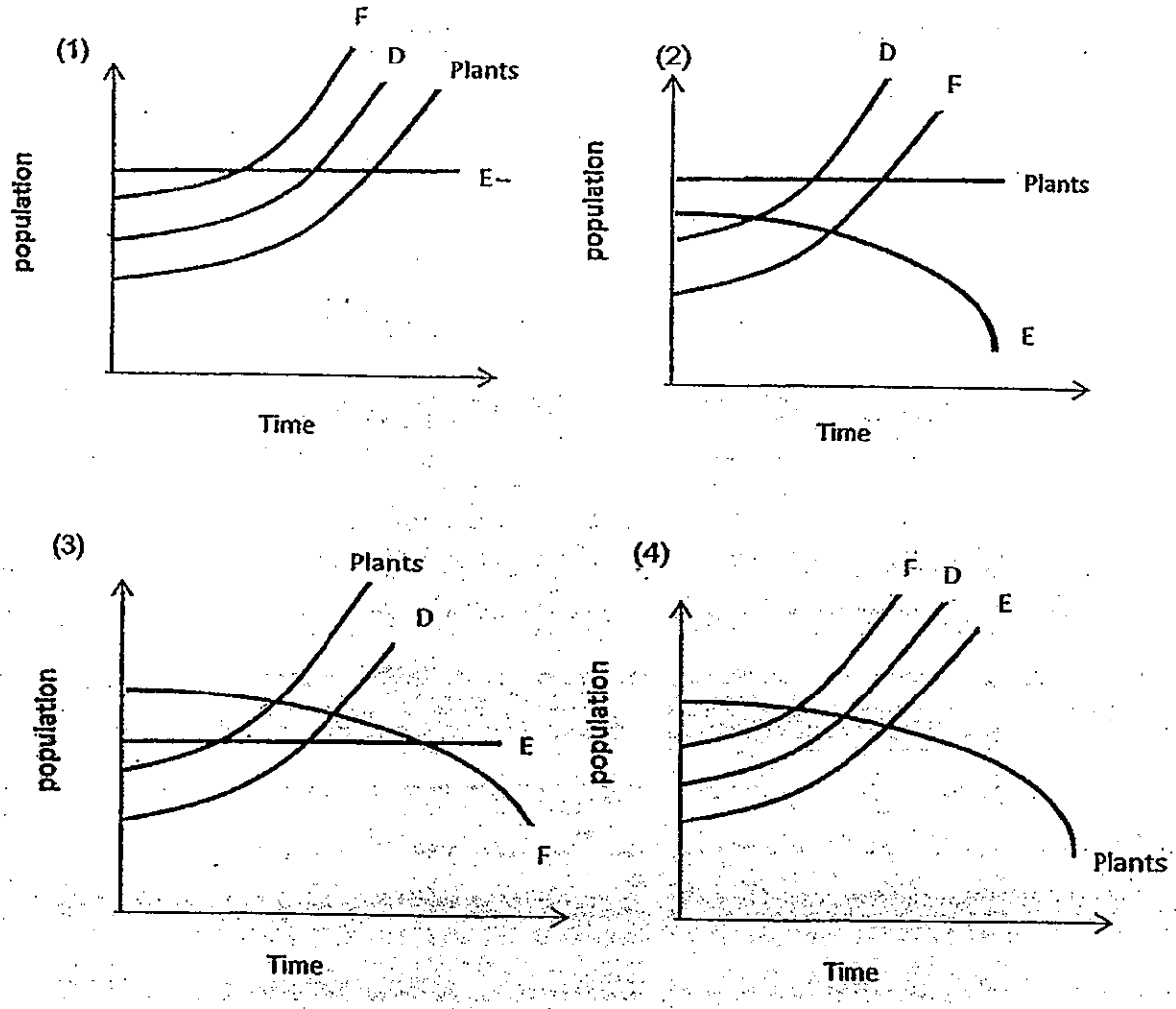
(3) Blood-worm and millipedes

(4) Damselfly nymph and grasshopper

13 The diagram below shows a food web in a community. D, E, F and G are animals

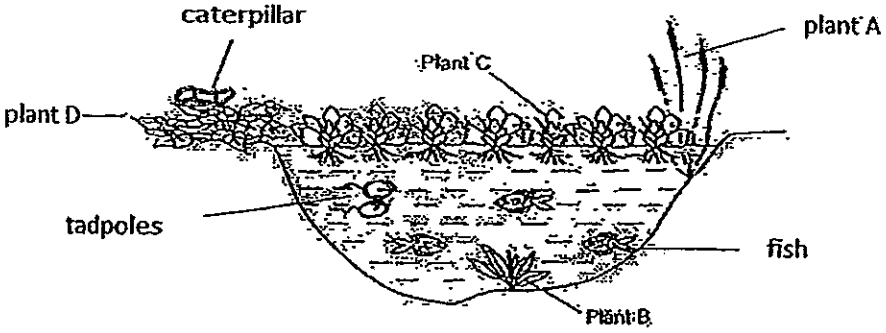


Which one of the following graphs shows how the populations of plants, D,E, and F are affected if animal G migrates to another place.



(Go on to the next page)

14 The diagram below shows a habitat with some plants and animals co-existing interdependently.



Which of the following statements describes the habitat **correctly**?

A The aquatic plants provide a hiding place for the aquatic animals.

B There are six populations in one community.

C The aquatic plants are a source of food for the aquatic animals.

D The submerged plants and the aquatic animals are interdependent on each other for their gaseous exchange.

(1) A and B only

(2) A and D only

(3) A, C and D only

(4) A, B, C and D

15 Simon wanted to find out if the oxygen level in the pond water is affected by the aquatic plants at different times of the day. He collected similar amounts of pond water from the same spot of the pond at different times of the day. For each pond sample that he collected, he added a few drops of liquid Y into the water and recorded the change in colour.

Amount of oxygen in the pond water	Below optimum level	Optimum level	Higher than optimum level
Colour of water with liquid Y	yellow	green	purple

Which of the following results show the change in the colour of liquid Y **correctly**?

	Midday (12 pm)	Evening (8 pm)
(1)	green	yellow
(2)	Purple	yellow
(3)	Yellow	Green
(4)	Purple	Green

METHODIST GIRLS' SCHOOL

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MID – YEAR EXAMINATION 2013
PRIMARY 6
SCIENCE

BOOKLET A2

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date: 16 MAY 2013

This booklet consists of 14 printed pages including this page.

16 Justin conducted several tests on four materials A, B, C and D.

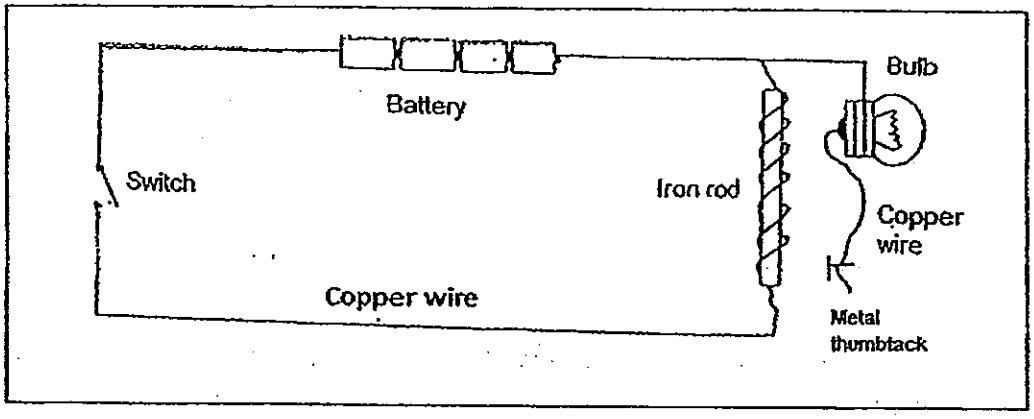
He recorded the results in the table below.

	A	B	C	D
Is it flexible?	No	Yes	Yes	Yes
Is it durable?	No	Yes	Yes	No
Does it conduct electricity?	Yes	No	No	No
Is it absorbent?	Yes	No	Yes	Yes

Which material would be most suitable for making a sleeping bag?

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

17

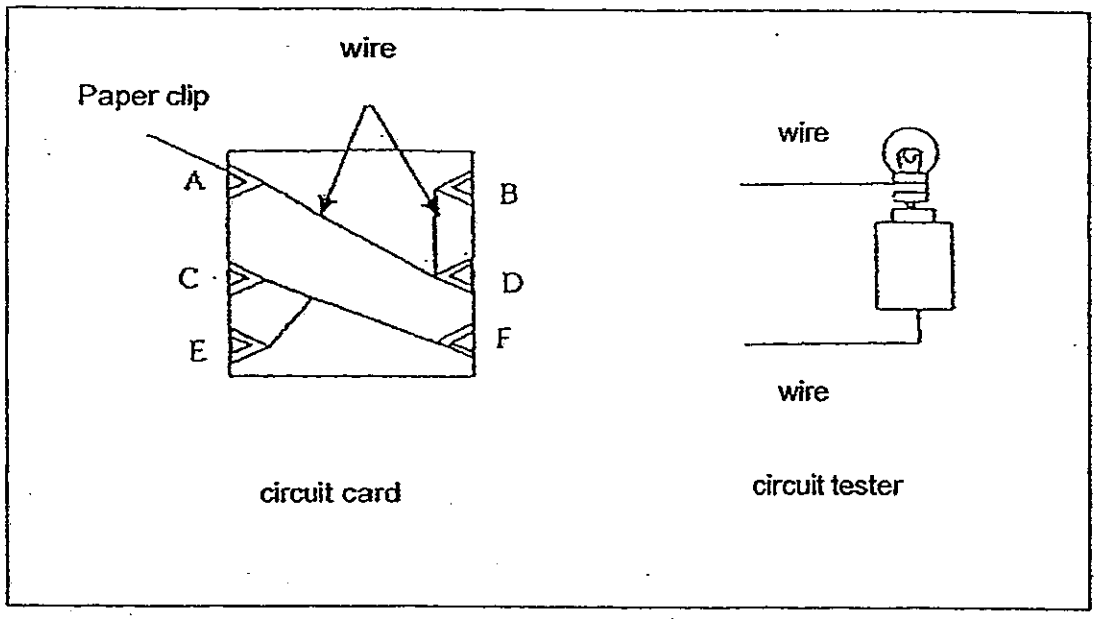


Ali sets up the electric circuit as shown above. What observation will he make when the switch is turned on?

(1) The iron rod becomes a strong and permanent magnet.
(2) Nothing will be observed as the circuit is an open circuit.
(3) The bulb lights up before the thumbtack moves towards the iron rod.
(4) The thumbtack moves towards the iron rod before the bulbs lights up

(Go to next page)

18 Mrs Tan prepared a circuit tester to test a circuit card with the connections as shown below.



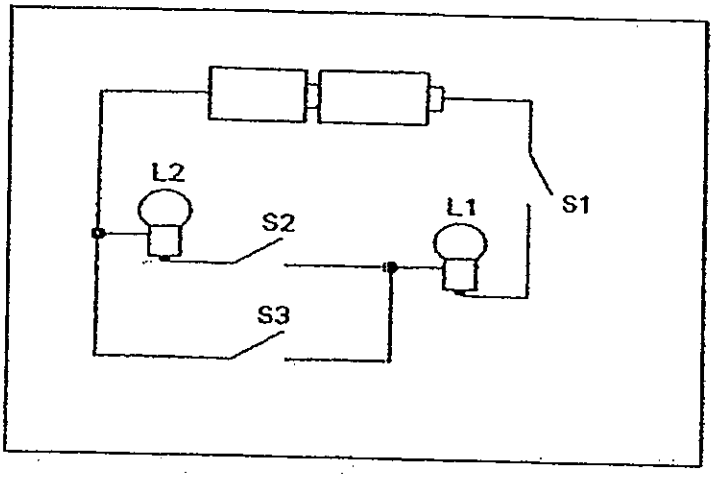
Her pupils Lynn, Ann, Min and Lydia were asked to predict whether the bulb in the circuit tester would light up when they were given the 4 combinations of contact points on the above circuit card.

Who made the correct prediction?

		Will the bulb light up at these points of contact?			
No	Name of pupil	A and D	D and F	C and E	E and F
(1)	Lynn	Yes	Yes	Yes	No
(2)	Ann	Yes	No	Yes	No
(3)	Min	Yes	No	No	Yes
(4)	Lydia	Yes	No	Yes	Yes

(Go to next page)

19 A circuit is set up using two bulbs, L1 and L2, and three switches, S1, S2 and S3.

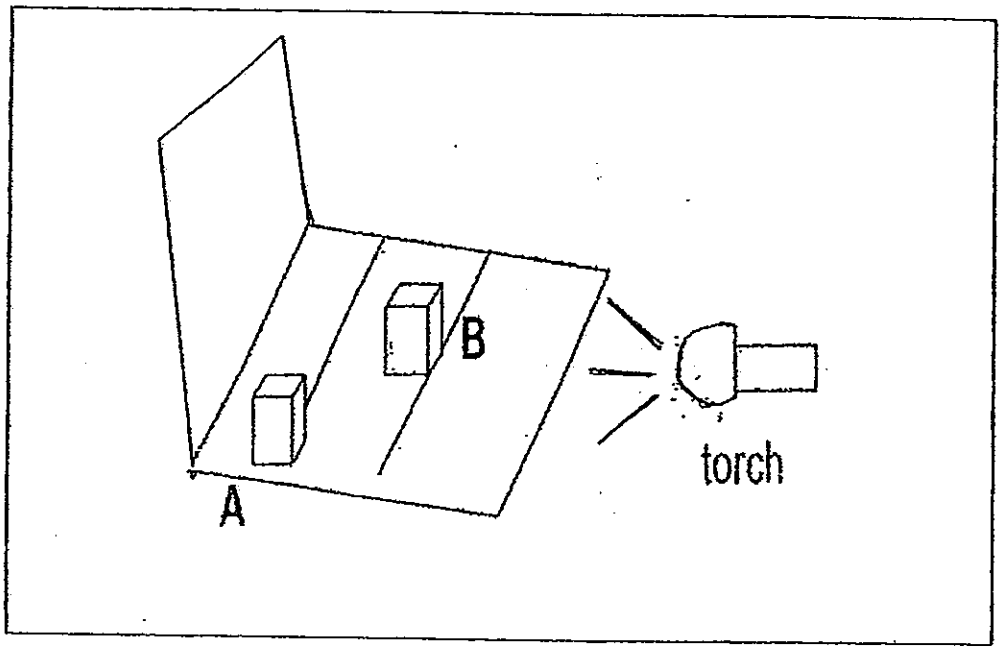


Which of the following is correct?

	S1	S2	S3	L1	L2
(1)	Open	Open	Open	Lighted up	Not lighted up
(2)	Open	Closed	Closed	Not lighted up	Lighted up
(3)	Closed	Closed	Closed	Lighted up	Not lighted up
(4)	Closed	Open	Open	Not lighted up	Lighted up

(Go to next page)

20 The diagram below shows an experimental set-up in a dark room.
A torch was then shone at two similar wooden cubes from one side of the board as shown in the diagram below.



Which one of the following statements is correct about the shadows formed on the screen?

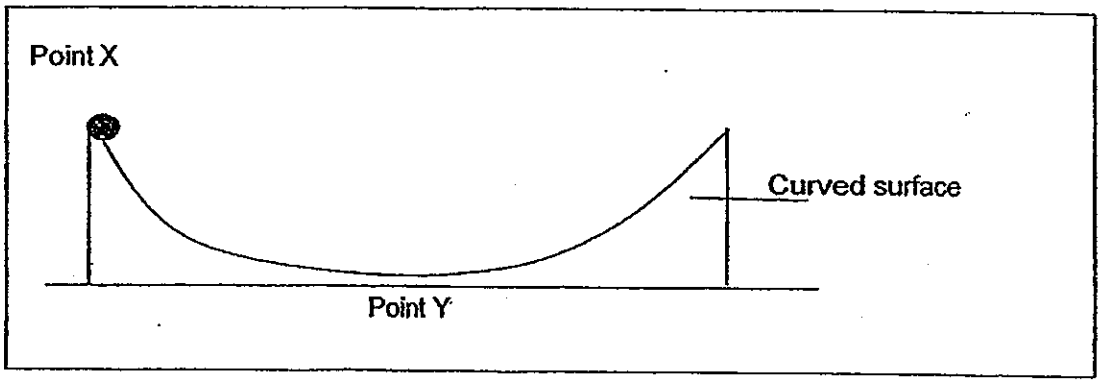
A Cube A's shadow is larger than cube B's.
B Cube A's shadow is smaller than cube B's.
C Cube A's shadow is not as sharp as cube B.
D Cube A's shadow is of the same size as cube B.

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

(Go to next page)

21 An investigation was conducted to find out which of the liquids, Q, R, S or T is the most effective lubricant.

An equal amount of each type of liquid was applied on identical curved surfaces as shown in the diagram below. An identical metal ball was then released from point X and it was allowed to roll up and down along the surface for a few times before it became stationary at Point Y. The time taken for the ball to come to rest was recorded.



Liquid	Time taken for the ball to come to rest (s)
Q	5
R	11
S	15
T	9

Based on the information given in the table above, which liquid is ranked most effective from the least to the most?

Effectiveness as a lubricant

	Least →			Most
(1)	S	R	T	Q
(2)	R	S	T	Q
(3)	T	Q	S	R
(4)	Q	T	R	S

(Go to next page)

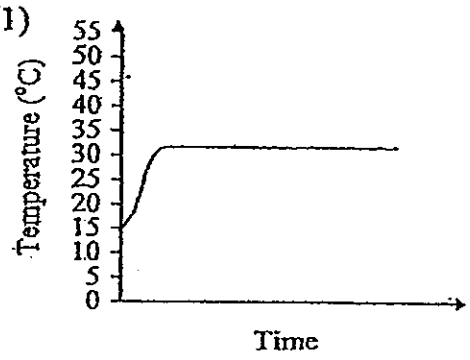
22 While using a fast moving escalator in an air-conditioned shopping mall, Alice felt that the handrail of the escalator was very warm.
Which one of the following statements is the best explanation for the warm handrail?

(1) The temperature of the day was above 30°C.
(2) As the handrail was moving fast, friction between the air and the handrail produced heat energy.
(3) The heat energy from the hands of many users who were holding on to the handrail for support was transferred to the handrail.
(4) Friction between the moving parts in the escalator produced heat which was transferred to the handrail.

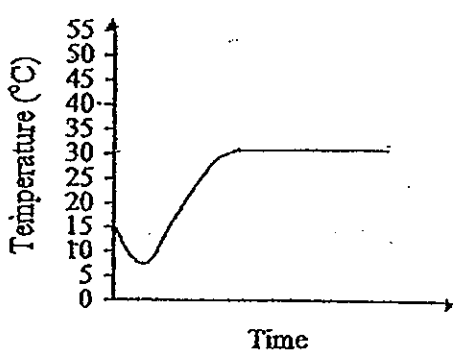
(Go to next page)

23 John took a can of cold orange juice from the refrigerator and poured it into a jug. He put some ice cubes in the jug and left the jug on the table. He then went for a jog and forgot all about the orange juice for five hours. Which one of the following graphs correctly represents the temperature changes of the orange juice on his return?

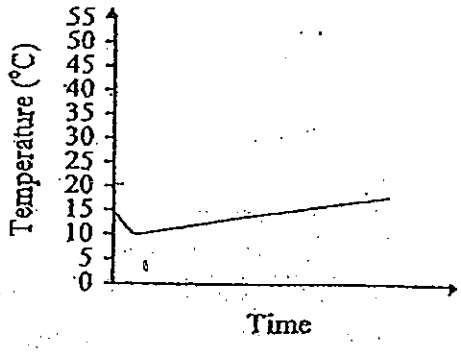
(1)



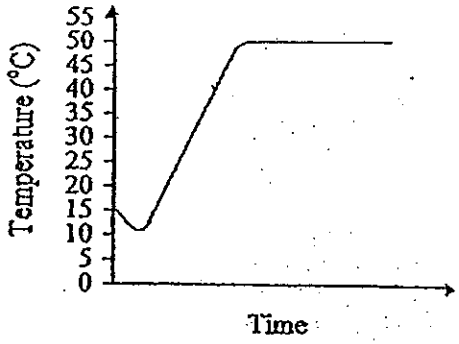
(2)



(3)



(4)



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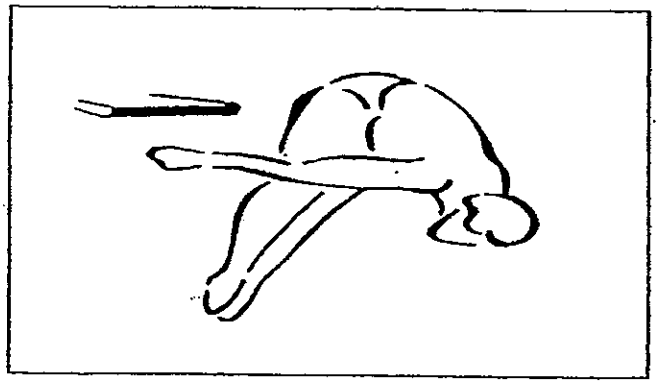
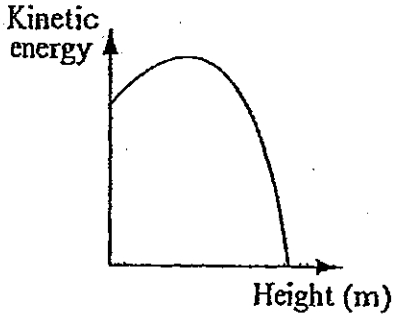
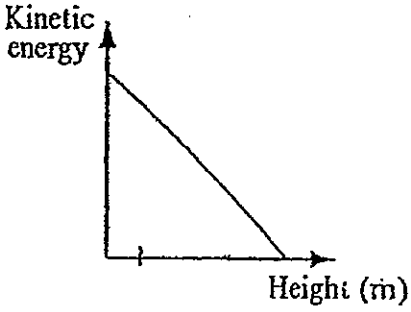
24 A swimmer jumps from a diving board as shown in the diagram below. Which graph correctly shows the change in the kinetic energy of the swimmer above the ground?



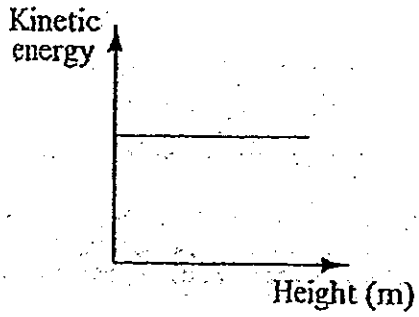
A



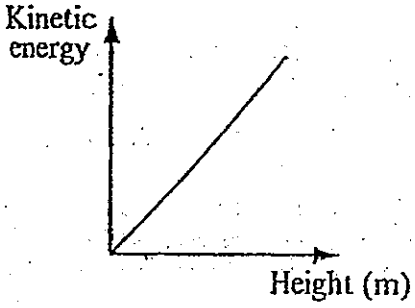
B



C



D



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

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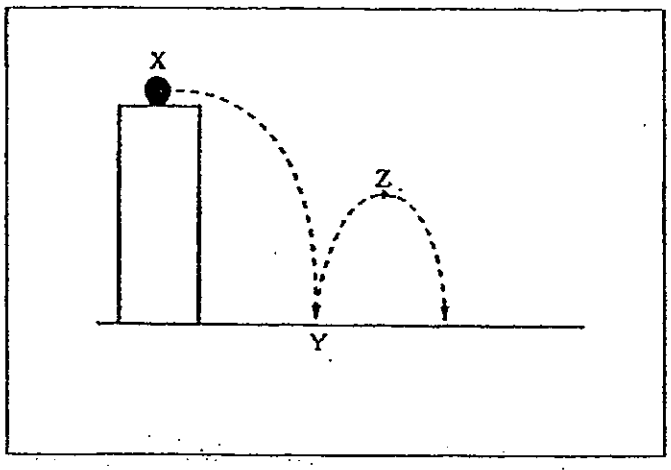
25 The diagram below shows a ball dropped from a height at Point X. It reached the ground at Point Y and then bounced to Point Z. The ball bounced a few times before it stopped.



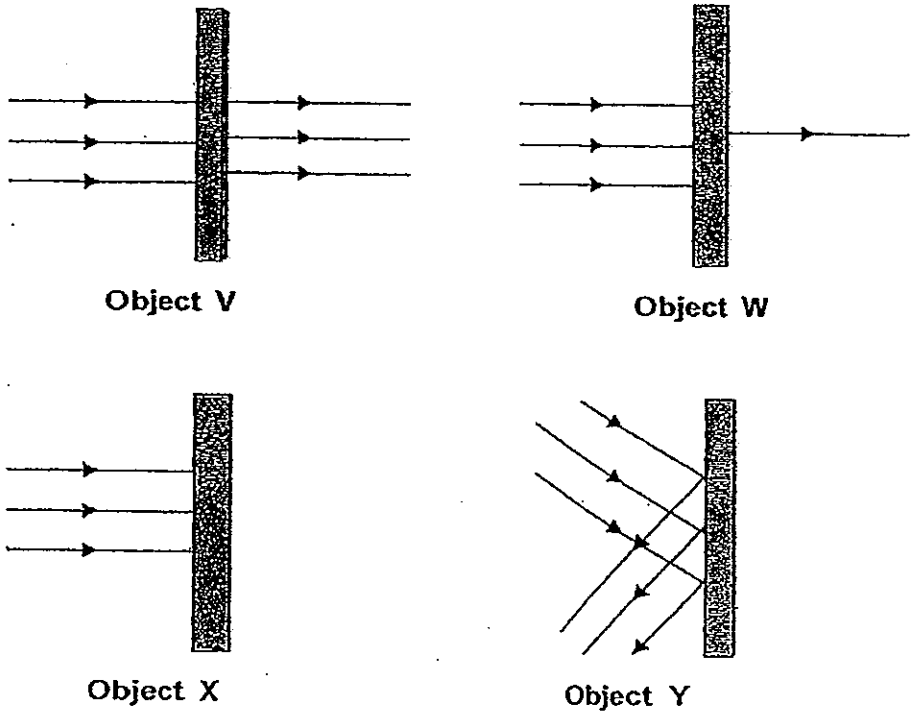
Which of the following statements are true?

A At Y, the ball possesses minimum gravitational potential energy.
B From Y to Z, the kinetic energy of the ball increases.
C From X to Y, the kinetic energy of the ball increases.
D At Z, the kinetic energy of the ball is equal to its gravitational potential energy.

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

(Go to next page)

26 The diagram below shows rays of light shining on four objects, V, W, X and Y.

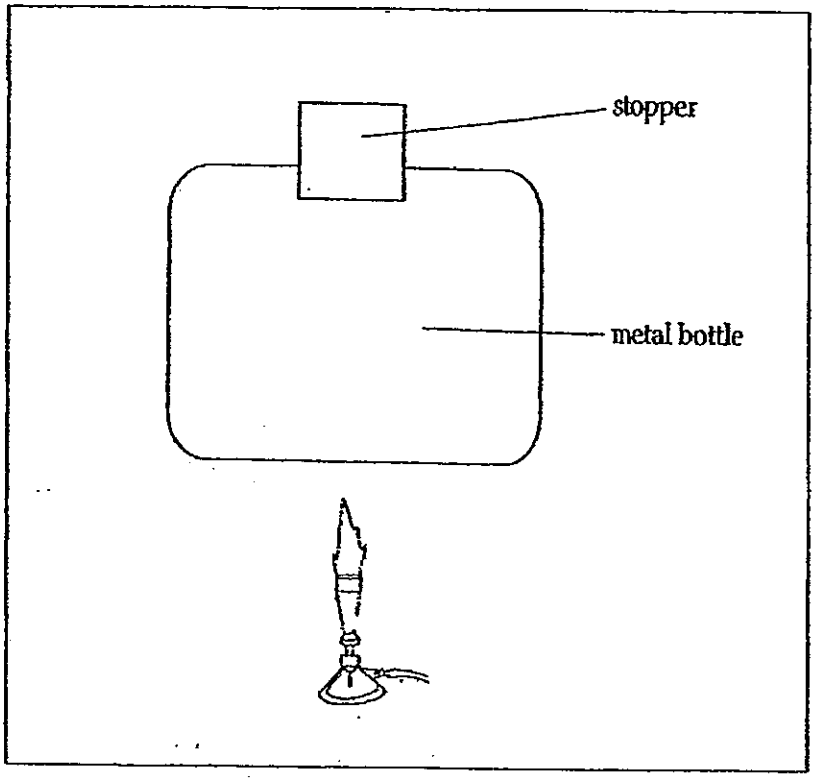


Based on the information given in the diagrams, what do you think objects **V, W, X** and Y are?

	Object V	Object W	Object X	Object Y
(1)	Clear glass	Mirror	Wood	Frosted glass
(2)	Frosted glass	Clear glass	Wood	Mirror
(3)	Clear glass	Frosted glass	Wood	Mirror
(4)	Frosted glass	Clear glass	Mirror	Wood

(Go to next page)

27 The figure below shows a metal bottle with a wooden stopper in it. When the bottle is heated, the stopper falls inside the container. Which of the statements below explains this observation?

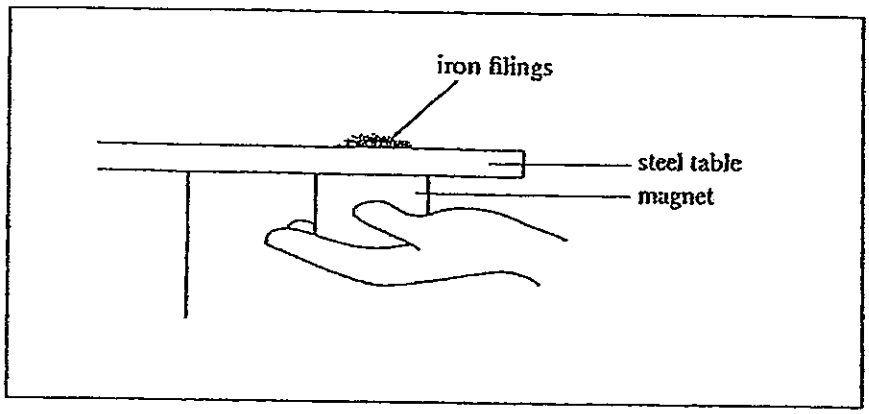


A The metal bottle expands, causing the opening of the bottle to also expand.
B The stopper does not expand as much as the metal container and falls into the container.
C The air around the stopper, being cooler, caused the stopper to contract, decrease in size and fall into the container.
D The metal bottle contracts and causes the opening to get bigger.

(1) C only
(2) A and B only
(3) A and C only
(4) None of the above

(Go to next page)

28 In the experiment shown below, Andrew placed some iron filings on a steel table and held a strong magnet under the table to make the iron filings move. However, the iron filings did not move when he moved the strong magnet under the table.



Which of the following explain(s) why the iron filings were not moving?

A The magnet is not big enough.
B The iron filings are attracted by the steel table top
C Magnetic force cannot pass through magnetic material such as steel.
D The total mass of the iron filings is too heavy for the magnet to move them about.

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

29 Karen wanted to find out if the direction of wind affects the time taken for a wet towel to dry. She used four identical towels and four identical fans. She carried out an experiment with closed windows in the same room and made sure that each towel received wind from one fan only.
Which variable should she change?

(1) Position of the fan
(2) Speed at which the fans blew
(3) Amount of moisture in the towel
(4) Distance of the fans from each towel

(Go to next page)

30 A car is travelling at a constant speed along a road and it goes over a large patch of oil. The driver decides to step on the brakes to stop the car. What will happen compared to braking on a dry road?

(1) The car slows down more quickly because of the greater friction between the tyres and the car.
(2) The car speeds up at first because of the increased friction between the tyres and the road.
(3) The car takes longer to slow down because of the reduced friction between the tyres and the road.
(4) The car takes shorter time to slow down because of the braking distance of the driver is shorter.

(Go to next page)

METHODIST GIRLS' SCHOOL

Founded in 1887

MID – YEAR EXAMINATION 2013
PRIMARY 6
SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

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

Name:_____ ( )

Class: Primary 6._____

Date: 16 MAY 2013

Booklet A	/ 60
Booklet B	/ 40
TOTAL	/ 100

This booklet consists of 8 printed pages including this page.

For questions 31 to 37, write your answers in the spaces provided.

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

---

31 Jane planted five seedlings of similar size into five similar pots which are filled with similar amounts of garden soil. She watered the seedlings with the same amount of water every day and put different amounts of fertilizer to each pot of seedling. After 2 weeks, Jane measured and recorded the increase in the height of the seedlings and the results are shown in the table below.

Pot	Amount of fertilizers given (ml)	Average increase in height of seedlings (cm)
1	0	5
2	10	15
3	20	30
4	30	38
5	40	30

(a) State the amount of fertilizers that Jane should give in order to obtain maximum growth of the seedlings. [1 m]

_____

(b) Write two variables which are <u>not</u> mentioned in the above experiment that must be kept constant. [1 m]

_____

_____

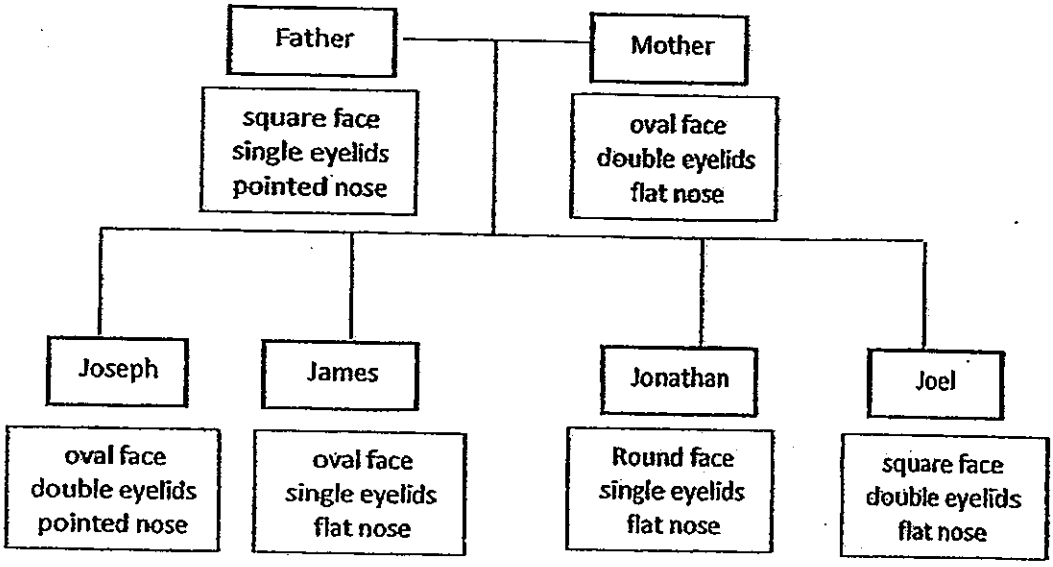
(c) Explain why there was an average increase in the height of the seedling in pot 1 even though no fertilizer was added. [1m]

_____

_____

(Go on to the next page)

32 Study the hereditary chart below and answer the following questions.



(a) Name two children who have inherited at least 2 characteristics from one parent? [1m]

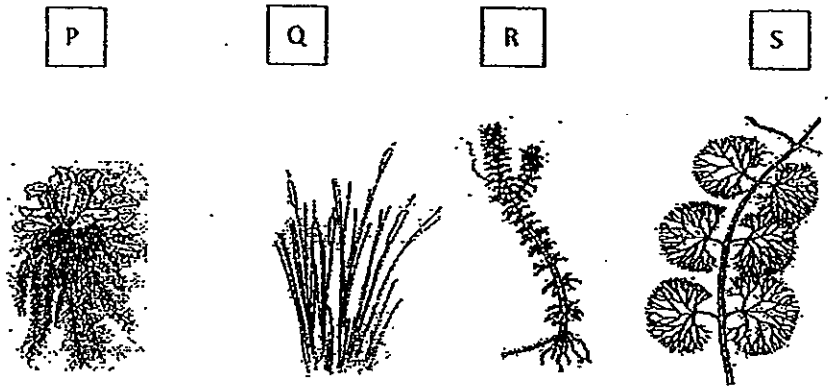
_____

(b) If Jonathan is the biological son of his parents, from whom could he have possibly inherited his round face? [1 m]

_____

(Go on to the next page)

33 The pictures below show 4 plants P,Q, R and S.



(a) In which habitat would you most likely find these plants? [1m]

_____

(b) Plant P is a floating plant. What type of plants are Plant R and S? [1 m]

_____

(c) How would plants R and S be affected in the habitat if Plant P multiplies rapidly? [2 m]

_____

_____

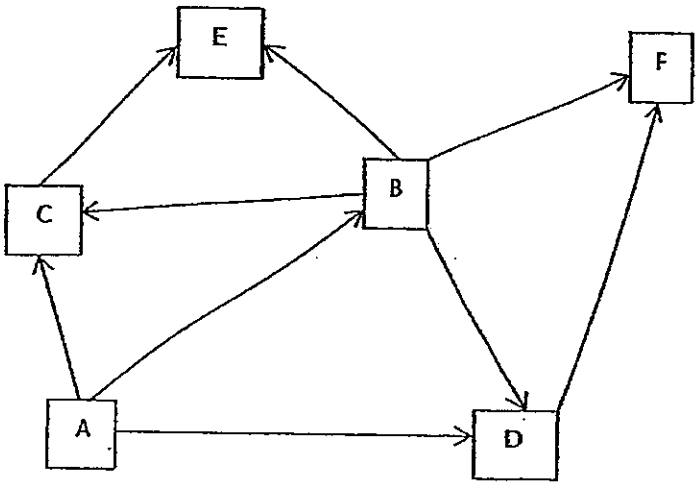
(Go on to the next page)

34a) What are the two differences in the physical characteristics between the leaf litter community and the garden community? [2m]

_____

_____

(b) The diagram below shows a food web in a community.



Based on the food web, name two omnivores found in it. [1 m]

_____

(Go on to the next page)

35 Jane and three of her classmates went to an open field for a picnic during the school holidays in March. While they were there, they sat under a mature tree R and played under another mature tree S. The positions of the Tree R and S were marked out. When the girls returned to the open field again in December, they noticed a number of young plants in the field and their positions are shown in the figures below.

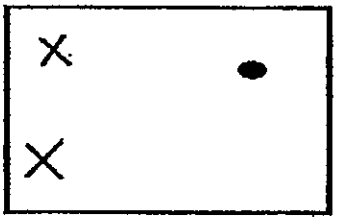


Figure 1

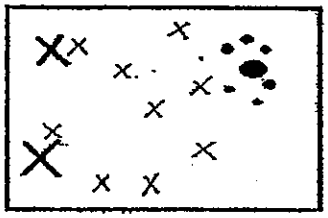


Figure 2

Legend

X — Mature tree R X — Young tree

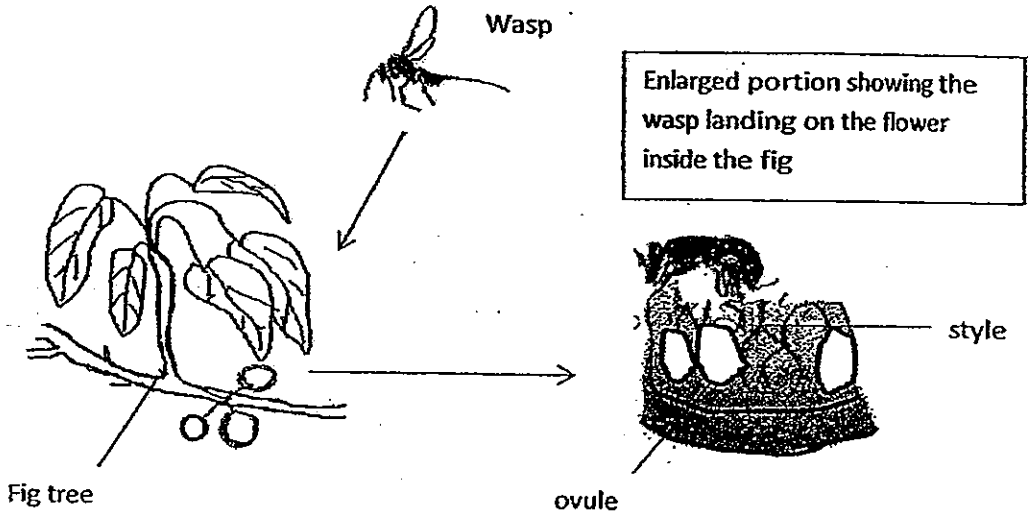
● — Mature tree S ● — Young

(a) State how the fruits of Tree R and Tree S dispersed. [1m]

Tree R is dispersed by _____

Tree S is dispersed by _____

(b) The diagram below shows the relationship between a fig tree and the wasp. The flowers are completely hidden in the figs and wasps are known to lay their eggs in the figs. A Singaporean researcher spent two years studying the relationship between the wasp and fig trees in Kent Ridge during the hot season. The results of the study show that if wasps die out due to global warming, there will be a great decrease in the population of fig species.



In what way does the fig tree and the wasp benefit from each other? [2m]

i) Fig tree

_____

_____

ii) Wasp

_____

_____

36 The box below provides some information about six organisms (A, B, C, D, E, F). Complete the food web in the space provided below using the information given in the box. [3 m]

1. A is a primary producer.
2. Two of the animals are herbivores
3. Animal D eats one of the herbivores.
4. Animal E eats D and one herbivore.
5. Animal F eats D and one of the herbivores.

37 A group of scientists went to a coral reef near the southern islands to search for the giant clam which was once abundant in Singapore **but now rarely seen**. Giant clams depend on the sugars and proteins produced by the algae which live on the giant clam. The objective of the search was to re-populate the coral reefs with the giant clams.

(a) Give one possible reason which had contributed to the **fall in** population of the giant clams. [1m]

_____

_____

(b) Name the food producer which supplies energy to the giant clam. [1m]

_____

METHODIST GIRLS' SCHOOL

Founded in 1887

MID – YEAR EXAMINATION 2013
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

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

Name:_____ ( )

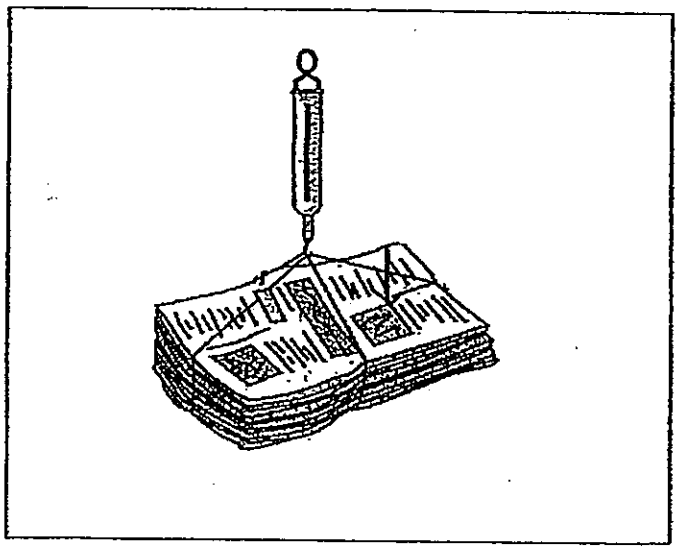
Class: Primary 6._____

Date: 16 MAY 2013

Booklet A	**/ 60**
Booklet B	**/ 40**
TOTAL	**/ 100**

This booklet consists of 9 printed pages including this page.

38 Once a month, a man who collects old newspapers drops by Jen's home to collect her old newspapers. Jen noticed that the man weighs the newspapers using a spring balance shown below.



(a) What is/are the force/s that is/are acting on the bundle of newspapers? (1m)

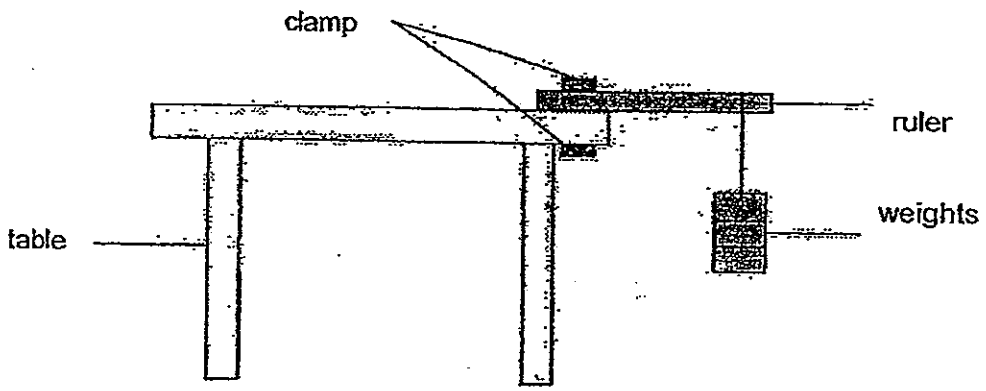
_____

(b) Draw and show in the diagram above, the direction of force acting on the newspaper. (1m)

(c) Suggest how the man can make it easier to move the bundle of newspapers by himself? (1m)

_____

39 Rina, Vani, Lulu and Lily each had a ruler made of different materials.
They conducted an experiment to test the flexibility of their rulers. The diagram below shows the set-up which is not drawn to scale.



Name	Material	Length of the ruler (cm)
Rina	Wood	15
Vani	Plastic	20
Lulu	Metal	18
Lily	Glass	30

(a) Based on the results recorded in the table above, their teacher who was observing the experiment told the girls that their experiment was not a fair one. Explain why the teacher said that. (1m)

(b) If the mistake pointed out by the teacher was corrected by the girls, how can the girls make their results more reliable? (1m)

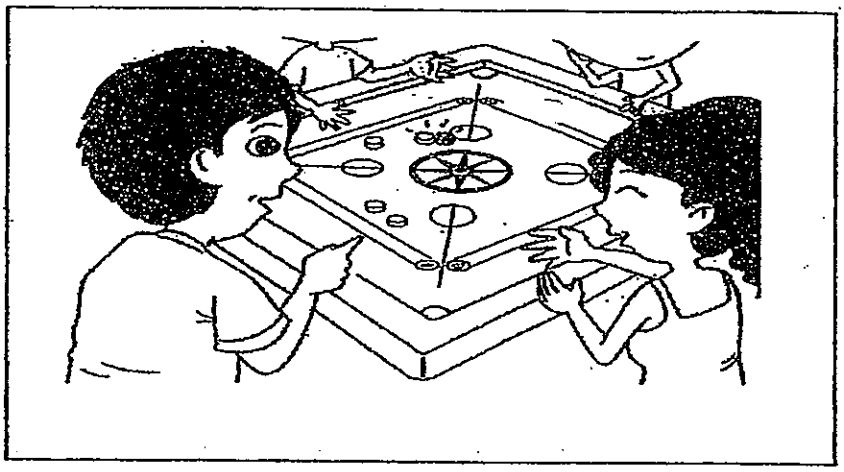
_____

(c) What measurement must be recorded by the girls in order to achieve the aim of the experiment? (1m)

_____

(Go to next page)

40 A group of children was playing a game of carom. A striker is a disc of another colour that is used to hit the other discs into the hole. When it was Peter's turn to hit, he realized that the striker stopped even before it could hit the disc.



(a) What caused the striker to stop moving? (1m)

_____

(b) Suggest what he could do to continue his game. (1m)

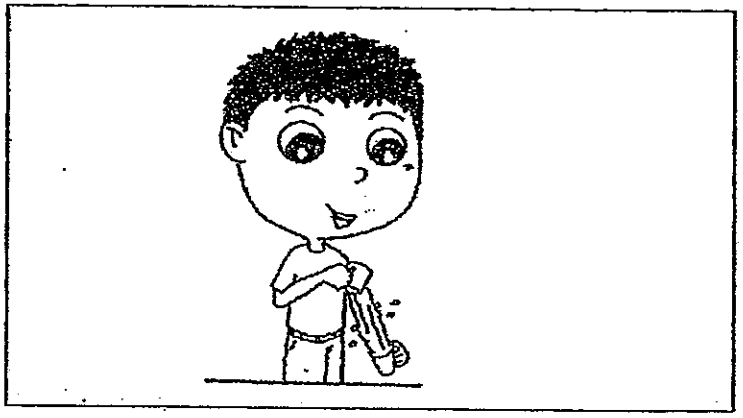
_____

(c) Give a reason for his actions. (1m)

_____

(Go to next page)

41 Muthu and Samy were having breakfast at a coffee house when they noticed the man make tea tarik by pouring and "stretching" the tea between two cups repeatedly for a few seconds. Muthu commented that by doing this, volume of tea would be increased.



(a) Do you agree with Muthu? Why? (1m)

_____

_____

(b) What would happen to the hot tea if the man continued with his action of "stretching" the hot tea for longer than a few seconds? (1m)

_____

_____

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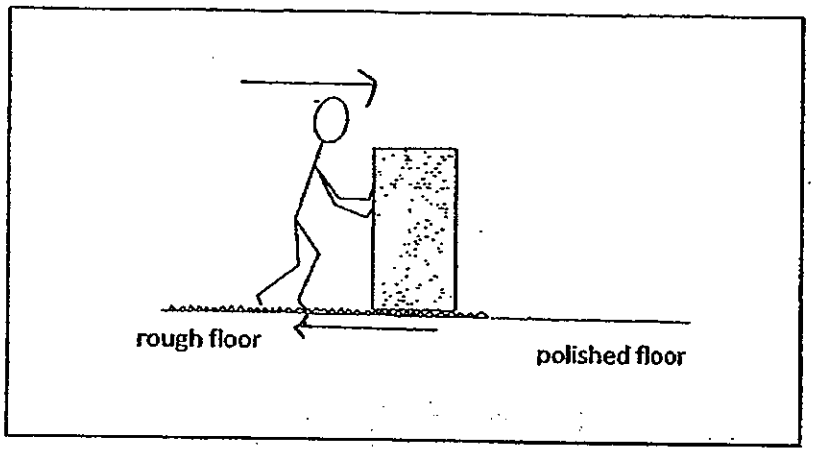
42 The figure below shows a man pushing a heavy box across a floor. The box slides without tipping.



(a) In the diagram above,
   (i) Draw and
   (ii) Label

   all the forces that are acting on the box by using " ⟶ " (11/2 m)

(b) On which floor will the box slide easily? Why? (1/2m)

_____

_____

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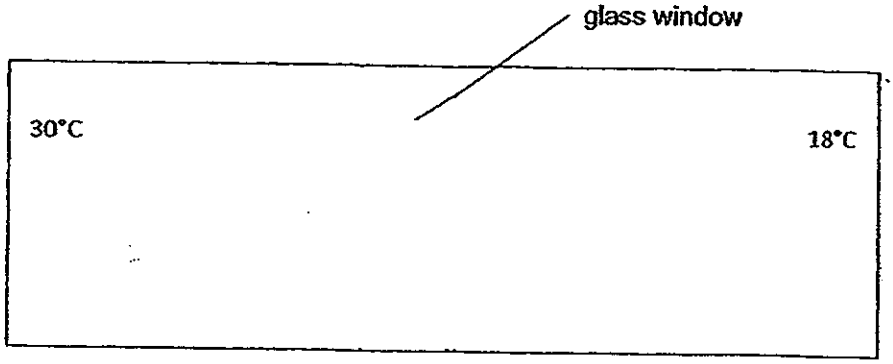
43 The diagram below shows the top view of two rooms that are next to each other. These two rooms are separated by a glass window. One of these glass window becomes misty when the temperature in the two rooms are different.



(a) Draw in the diagram to show the formation of the water droplets correctly. Explain why this takes place. (1m)

(b) To solve this problem of the formation of water droplets, a fan was placed blowing directly at this window.
Explain how adding this fan would help to get rid of the water droplets. (1m)

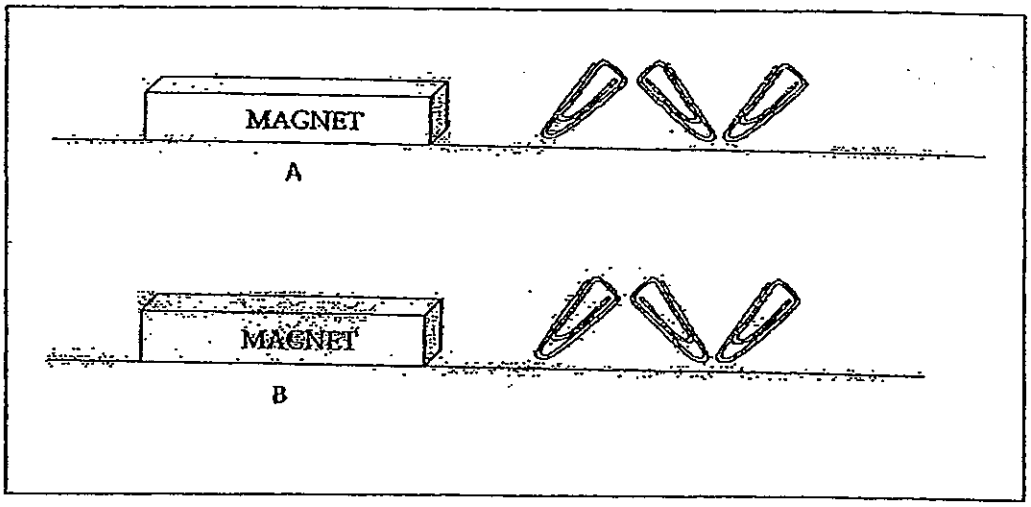
_____

_____

_____

(Go to next page)

44 William conducted an experiment with magnets, A and B and some steel paper clips.



(a) Draw and indicate the force that acts on the paper clips. (1m)

The observations made during the experiment are shown in the table below.

Distance between magnet and clips (cm)	1	2	3	4
No of clips attracted to magnet A	10	7	4	2
No of clips attracted to magnet B	15	11	8	5

(b) Based on the results of his experiment, what could William conclude about magnets A and B? (1m)

_____

_____

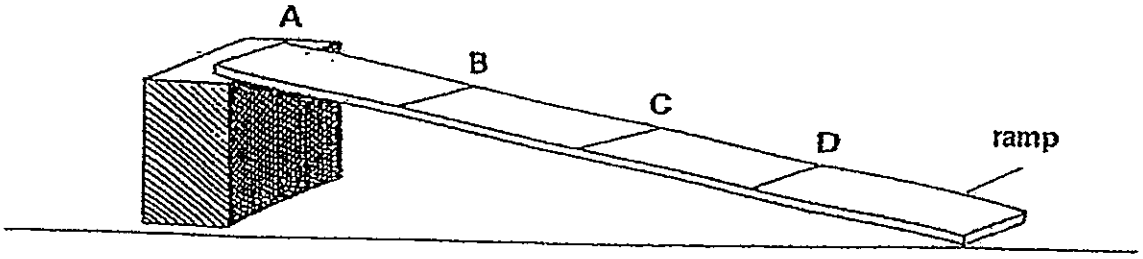
(c) Another magnet bigger than B was used and the experiment was repeated. However, the results were similar to B's. Suggest a reason for this. (1m)

_____

_____

(Go to next page)

45 Jaslin placed a toy car on top of a ramp and let it roll down from rest. Then she measured the distance the toy car travelled along the floor after leaving the ramp. She did this 3 times. She then repeated the activity several times, each time placing the toy car at a different point along the ramp. She recorded the results in the table below.



Position of the car on the ramp	Distance travelled along the floor in cm			
	1st try	2nd try	3rd try	Average
A	105	100	107	104
B	64	68	66	66
C	30	35	37	34
D	18	20	16	18

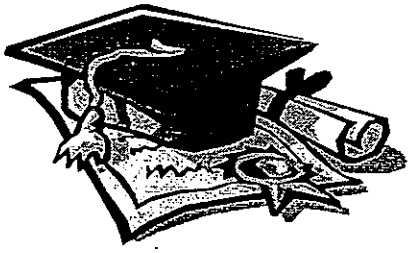
(a) Name two variables that could have affected the distance travelled by the toy car. (1m)

_____

_____

(b) Where would you place the toy car on the ramp if you wanted it to travel about 50 cm along the floor? (1m)
Mark the position with a cross (X) in the diagram.

END OF PAPER



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : MGS
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

31)a)30ml of fertilizers.
b)1)The type of fertilizers.
2)The place where the experiment is conducted.
c)The seedlings could make their own food for its own growth but not as much as when there is fertilizers.

32)a)Joseph and Joel.
b)His grandmother.

33)a)The pond.
b)Plants R and S are both completely submerged plan.
c)The populations of plants R and S will decrease as plant P will block out the sunlight from reaching plants R and S. Without sunlight, plants R and S cannot photosynthesis and make food.

34)a)1)The temperature in the garden community is higher than the ieaf litter community.
2)The leaf litter community does not receive as much sunlight as the garden community.
b)Animals D and C.

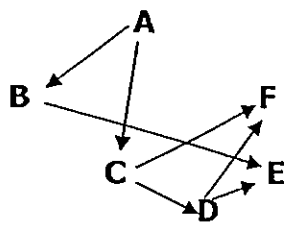
35)a)R: wind

S: explosive action

b)i)The wasps help to pollinate the flowers of the fig tree, so the flowers of the fig tree will turn into fruits and after seed dispersal, the population of the fig tree will increase.

ii)As the flowers of the fig tree are completely hidden in the figs, no predators or enemies will be able to spot the wasp's eggs after they were laid. So no predators will eat up the wasp's eggs, thus the population of wasps will also increase.

36)

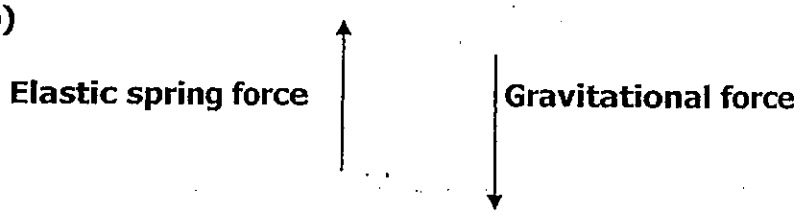


37)a)The people in Singapore had caught the giant clams, cooked them and ate them.

b)The algae.

38)a)Elastic Spring Force and Gravitational Force.

b)



c)He can put the newspapers into a trolley and push the trolley to wherever he wants to go.

39)a)The length of their rules were not the same. In an experiment, only one variable can be changed, since they are testing the flexibility of the ruler, only the material of the rulers can bend changed, whereas the length of the rulers be kept the same.

b)The girls can repeat the experiment two or more times.

c)They must measure and record how far the ruler can bend.

40)a)Frictional Force.

b)He could hit the disc even harder.

c)This will reduce the friction between the striker and the board surface.

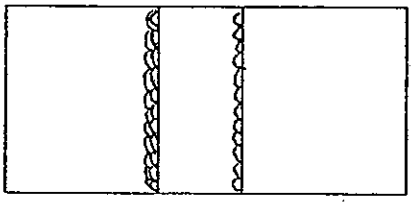
41)a)No. The tea is a liquid. Liquid has a definite volume, so the tea will not increase.

b)More heat from the hot tea would be lost the surrounding, and the temperature of the tea will be lowered.

42)a)pushing force (force of motion) ⟶ | Gravitational Force ↓

b)The polished floor. There will be lesser surface of contact on the polished floor and since the polished floor is smooth, there will be lesser frictional force, so the box will slide easily on the polished floor.

43)a)



a) When the water vapour in the room of 30℃ touches the glass window, it loses heat and condenses into tiny droplets of water. Hence, glass window becomes misty.

b) The fan helps evaporation to take place.

44)a)Magnet B⟵

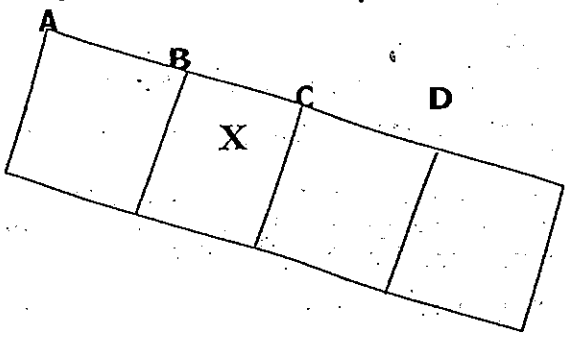
b)Magnet B is a stronger magnet compared to magnet A.

c)The size of the magnet will not affect the magnetic force of attraction in the magnet.

45)a)1)mass of the car.

2)The position of the ramp.

b)



NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2013
PRIMARY 6

SCIENCE

BOOKLET A

30 Multiple Choice Questions (60 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		**/ 60**
Booklet B		**/ 40**
Total		**/100**

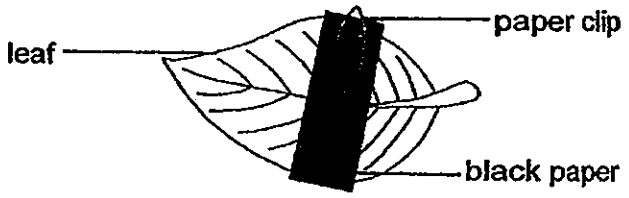
Name:_____( ) Class: P6_____

Date : 10 May 2013 **Parent's Signature:**_____

Section A: (30 x 2marks = 60marks)

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 (1, 2, 3 or 4) on the Optical Answer Sheet.

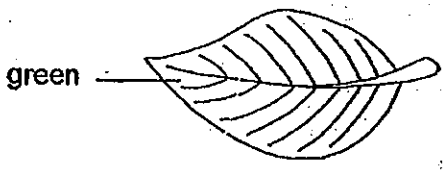
1. Amy conducted an experiment as shown below. She fastened a piece of black paper on a leaf of a plant with a paper clip.



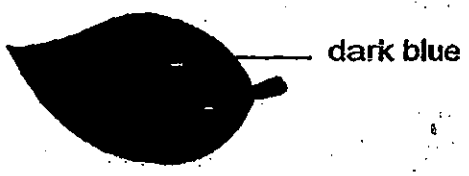
The plant was then placed under the Sun for a day. Amy then removed the paper and tested the leaf for the presence of starch using iodine solution.

Which of the following diagrams shows what Amy would see when the iodine solution was added to the leaf?

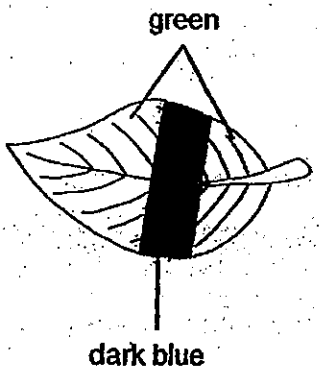
(1)



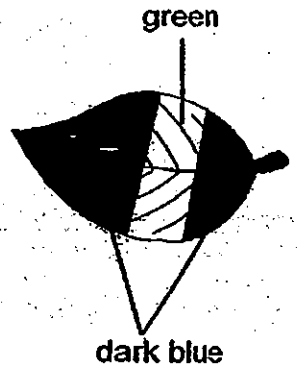
(2)



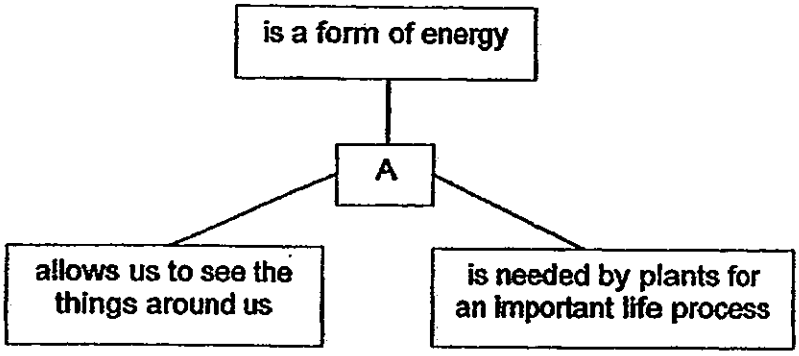
(3)



(4)



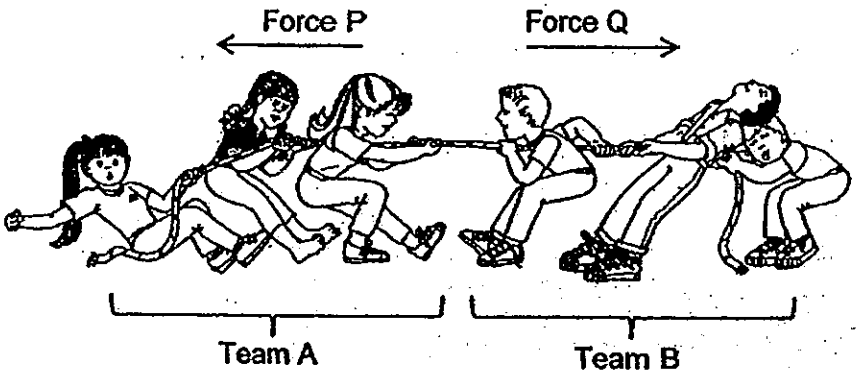
2. Study the concept map below carefully.



What will happen to a plant if A is missing?

(1) It cannot carry out photosynthesis.
(2) It cannot take in water from the soil.
(3) It cannot undergo pollination and fertilisation.
(4) It cannot exchange gases with the surroundings.

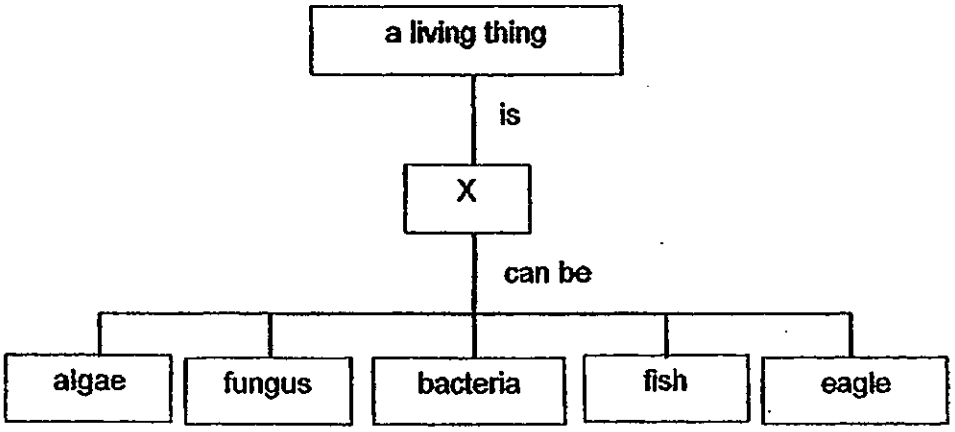
3. 6 children were playing a game of tug of war. They were divided into Team A and Team B as shown in the diagram below.



Based on the diagram above, which one of the following observations and corresponding conclusions is **incorrect**?

	Observations	Conclusions
(1)	Team A moved forward	Force P is smaller than Force Q
(2)	Team A moved backwards	Force P is greater than Force Q
(3)	Team B moved forward	Force P is smaller than Force Q
(4)	Both teams remained stationary	Force P is equal to Force Q

4. Study the concept map below carefully.



Based on the concept map above, what can X be?

(1) Habitat
(2) Organism
(3) Population
(4) Community

5. Four pupils were asked to give one example of an organism that lives in each of the three habitats given in the table below.

Pupil	Leaf litter	Pond	Garden
Ben	woodlouse	water snail	grass
Carl	millipede	clam	ant
Dan	centipede	duckweed	mimosa
Eric	termite	frog	earthworm

Out of the four pupils, which of them has/have given correct examples of organisms for all the three habitats?

(1) Ben only
(2) Carl and Dan only
(3) Carl and Eric only
(4) Ben, Dan and Eric only

6. Fanny conducted an experiment to find out how the amount of sunlight falling on an area affects the temperature of the area. She picked four locations in a park that were exposed to different amount of sunlight. The locations were:

Beside a bush
Under a big, shady tree
Inside a covered dustbin
In the middle of a big field

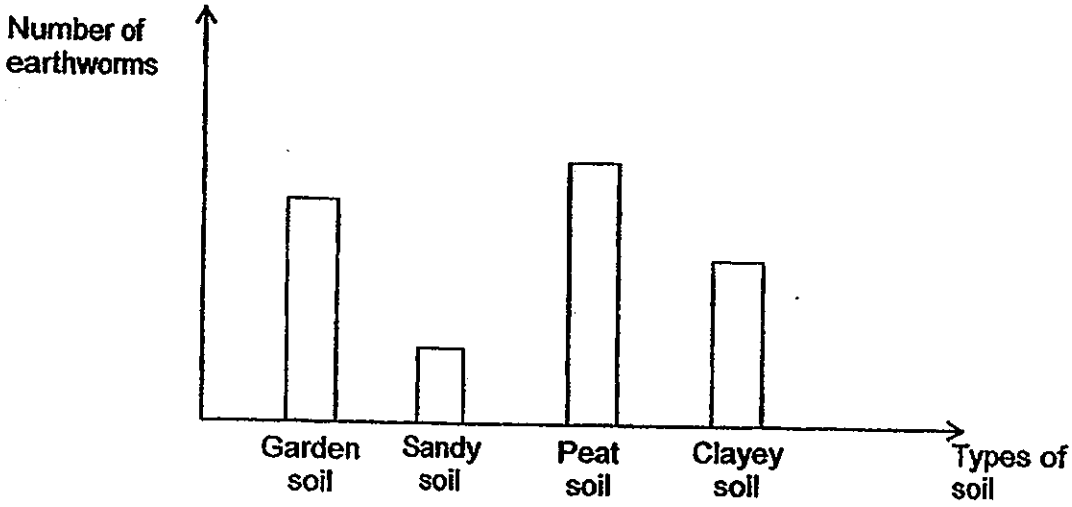
She then measured the temperature of these locations on a sunny day and on a cloudy day. She took the temperature at noon on each day and recorded the findings in the table shown below.

	Temperature taken	
Locations	**Sunny day**	**Cloudy day**
W	32°C	29°C
X	26°C	26°C
Y	31°C	28°C
Z	28°C	27°C

Which of the above locations is most likely to be under a big, shady tree?

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

7. Study the graph below carefully. It shows the number of earthworms found in different types of soil collected from different places.



From the graph above, which of the following soils is the most suitable for rearing earthworms?

(1) Peat soil
(2) Sandy soil
(3) Clayey soil
(4) Garden soil

8. The diagram below shows how energy from the Sun is transferred from one organism to another in an eco-system.

Plant ⟶ P ⟶ Q ⟶ R ⟶ S

Based on the diagram above, which of the following matches the roles the different organisms play in the food chain correctly?

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

9. Gina filled four cups with equal amount of water at 90°C. Each cup is of the same shape and size but is made of different materials. She then left the four cups at the same place and took down the time taken for the water in the cup to reach the room temperature.

Material the cup is made of	Time taken for water to reach room temperature (min)
A	15
B	30
C	65
D	110

Based on the results shown above, which material is the best conductor of heat?

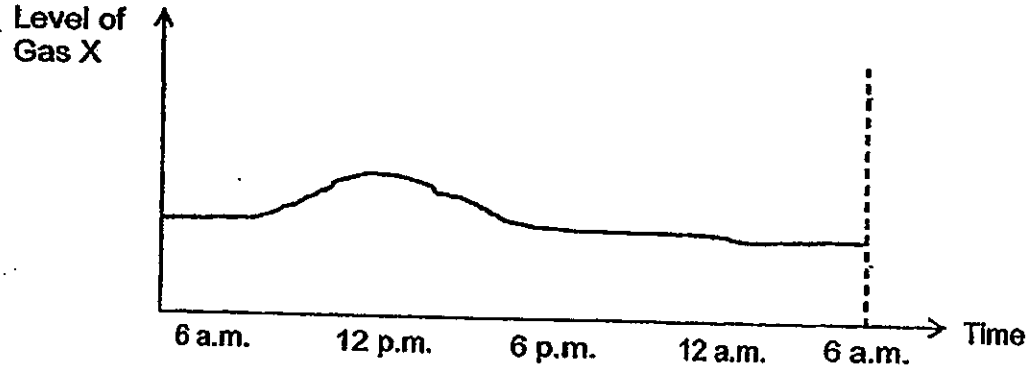
(1) A
(2) B
(3) C
(4) D

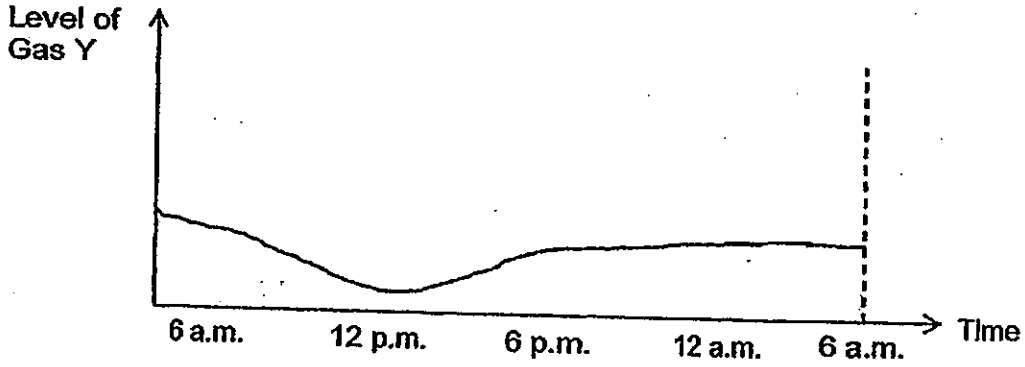
10. Which of the following is/are matter?

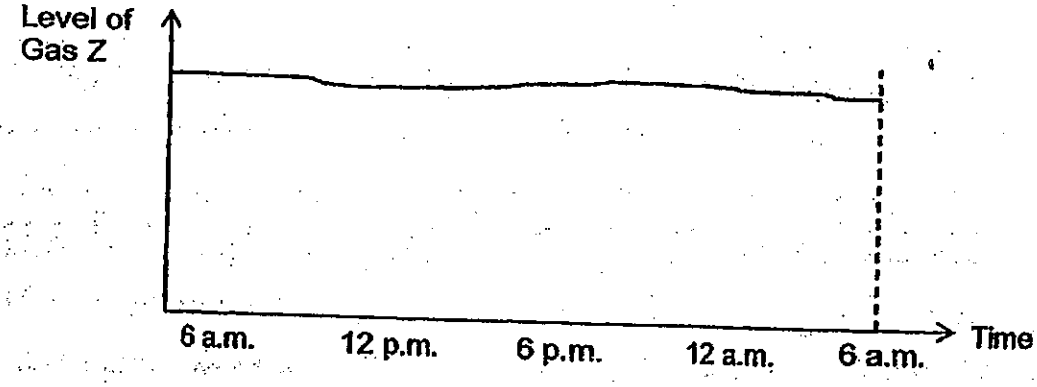
A Air
B Heat
C Shadow
D Water vapour

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

11. Henry placed a pot of plant in a covered glass box and left it in his garden for one day. He recorded the level of the different gases in the container and plotted the readings in three graphs as shown below.







His friends saw his graphs and made some comments.

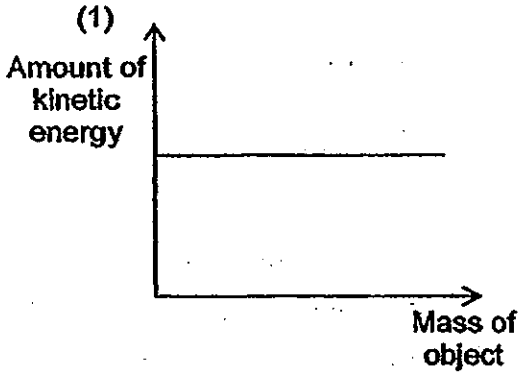
Irene	Gas X should be oxygen as the rate of photosynthesis is highest at 12 p.m.
Jerry	Gas Y should be oxygen as the rate of photosynthesis is lowest at 12 p.m.
Kelly	Gas X should be carbon dioxide as the rate of photosynthesis is highest at 12 p.m.
Larry	Gas Z should be nitrogen as nitrogen is not required in the process of photosynthesis.

Out of the four comments, which one is/are correct?

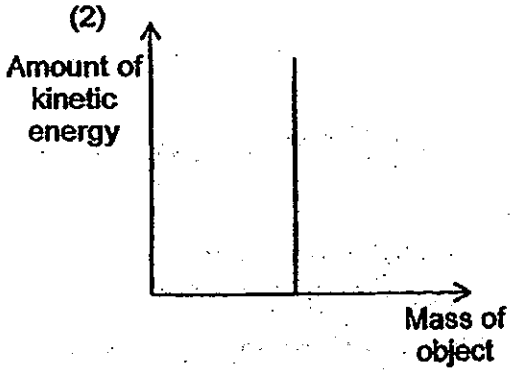
(1) Irene only
(2) Irene and Larry only
(3) Jerry and Kelly only
(4) Jerry, Kelly and Larry only

12. Which one of the following graphs correctly shows the relationship between the mass of an object and the amount of kinetic energy the object has?

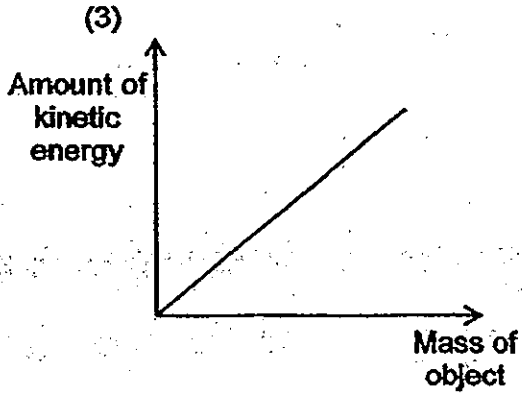
(1)



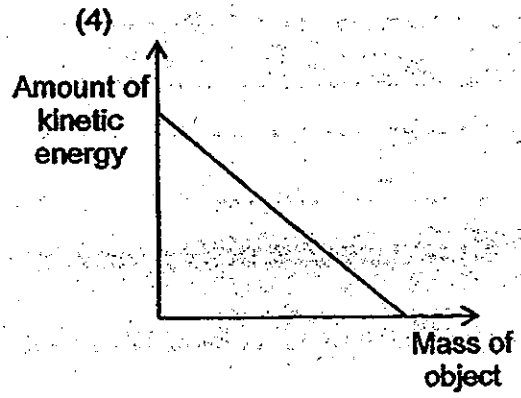
(2)



(3)



(4)



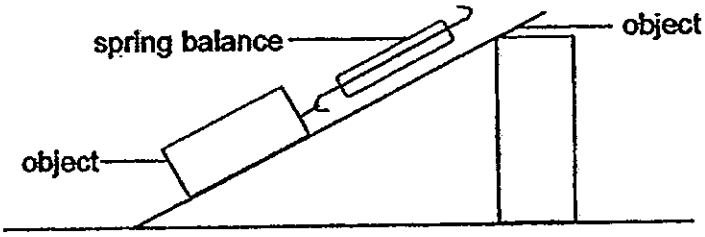
13. The diagram below shows what happens in pole vaulting, a competitive sport.

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

A The man has kinetic energy at Point X.
B At Point Y, most of the man's kinetic energy has been converted to elastic potential energy of the pole.
C The man has no kinetic energy at Point Y.
D The man has the greatest amount of gravitational potential energy at Point Z.

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

14. Minah conducted an experiment to find out how the mass of an object affects the amount of force needed to move it up a ramp as shown in the diagram below.



In order to conduct a fair test, which of the following tables correctly shows the independent, dependent and controlled variables of this experiment?

(1)

Variables	Independent	Dependent	Controlled
the force used			√
the mass of the object		√	
the spring balance used			√
the steepness of the slope	√		
the type of surface of the ramp			√

(2)

Variables	Independent	Dependent	Controlled
the force used		√	
the mass of the object	√		
the spring balance used		√	
the steepness of the slope			√
the type of surface of the ramp			√

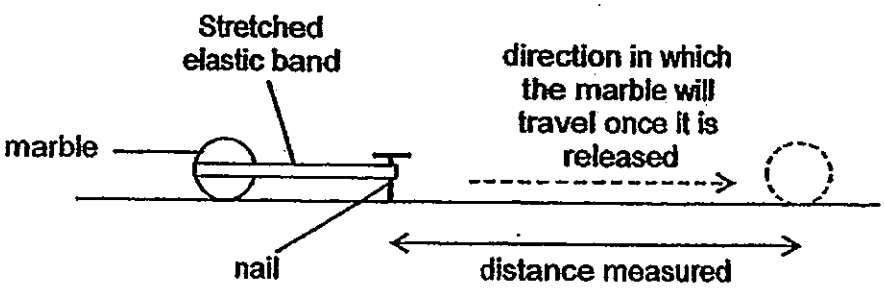
(3)

Variables	Independent	Dependent	Controlled
the force used	√		
the mass of the object		√	
the spring balance used			√
the steepness of the slope			√
the type of surface of the ramp			√

(4)

Variables	Independent	Dependent	Controlled
the force used		√	
the mass of the object	√		
the spring balance used			√
the steepness of the slope			√
the type of surface of the ramp			√

15. Ned prepared the set-up below.



He wanted to find out how the distance travelled by the marble is affected by how much the elastic band is stretched.

He recorded the results in the table below.

Length of the stretched elastic band (cm)	Distance measured (cm)					
	1st Try	2nd Try	3rd Try	4th Try	Average	
10	8	9	7	9	8.25	(A)
15	16	26	15	14	17.75	(B)
20	25	27	24	27	25.75	(C)
25	37	34	36	37	36	(D)

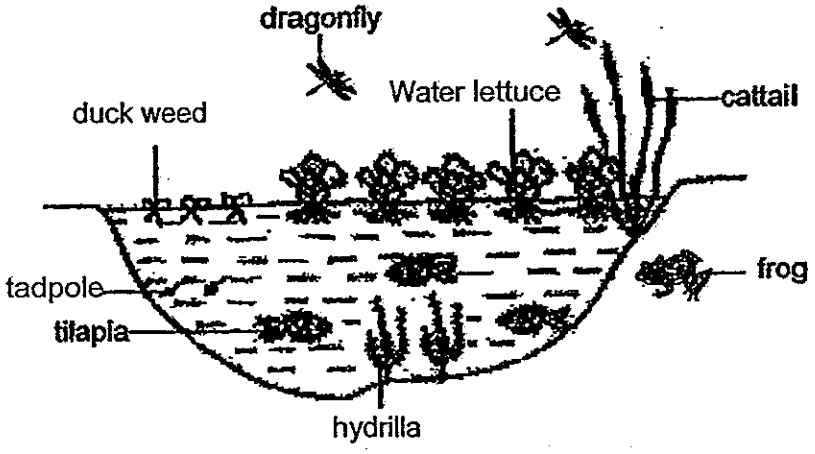
After his experiment, he decided to plot a graph using the results. His teacher looked over his findings and commented that he should not use one of the average readings as one of the readings was not consistent.

He needs to remove the inconsistent reading and recalculate the average.

Which one of the average readings, A, B, C or D should he recalculate?

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

16. Study the diagram below carefully.



A disease wiped out the entire population of tilapia in this community. What was the number of populations of organisms that was left over, if there were no other changes to this pond community?

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

17. Some pupils counted the number of some organisms in their school garden and recorded their findings in the table shown below.

Type of organisms	Number of organisms found in the garden
Grasshoppers	4
Grasshopper nymphs	3
Caterpillars	5
Butterflies	3
Plants found on plants	4
Plants found on ground	12

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

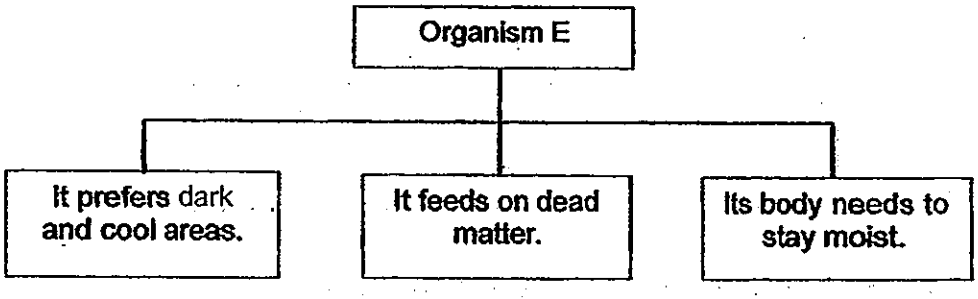
A There is only one garden population.
B There are at least two populations of plants in their garden.
C The population size of grasshoppers in their garden is four.
D There are at least four populations of animals in their garden.

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

18. Some scientists were studying four different habitats, A, B, C and D. The table below shows the characteristics of four different habitats.

Characteristics of habitat	Habitat			
	A	B	C	D
Amount of light falling on the area	Low	Medium	High	Low
Moisture level of soil	High	Very high	Low	High
Average temperature of the area	High	Medium	Very Low	Low

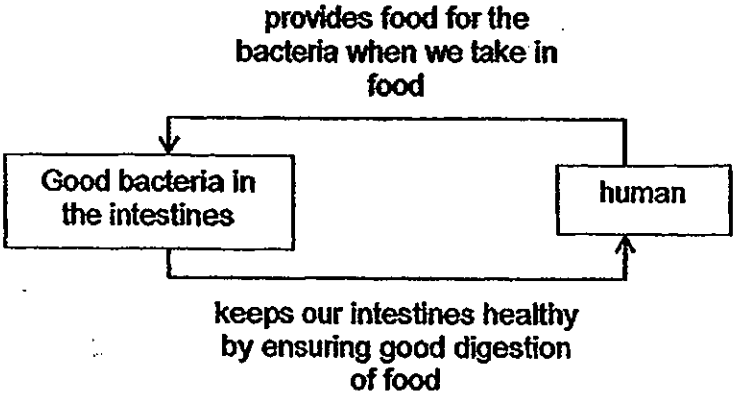
The scientists found an organism, E, in one of the habitats above. Organism E has the following characteristics:



Based on the information given above, where would Organism E be most likely found?

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

19. Study the diagram below carefully.

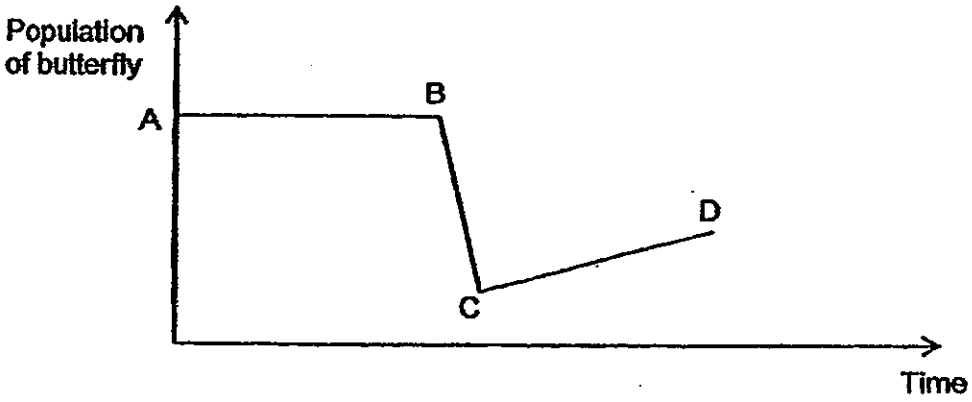


The diagram above shows a special type of relationship between two different organisms. Both organisms benefit from each other in this sort of relationship.

Which one of the following relationships is most similar to the one shown above?

(1) A whale eating planktons
(2) Birds living in holes in trees
(3) Weeds growing around a plant
(4) Bees feeding on nectar of flowers

20. The graph below shows the population of a species of butterfly in a habitat over a period of time.



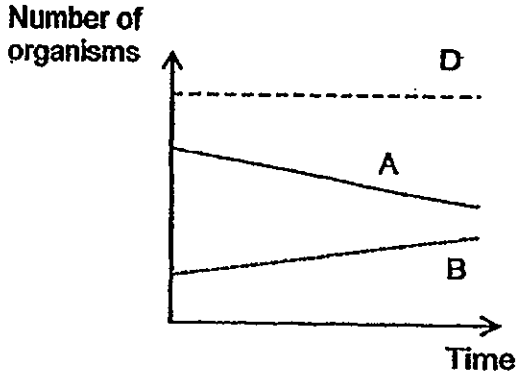
What could have happened at Point B?

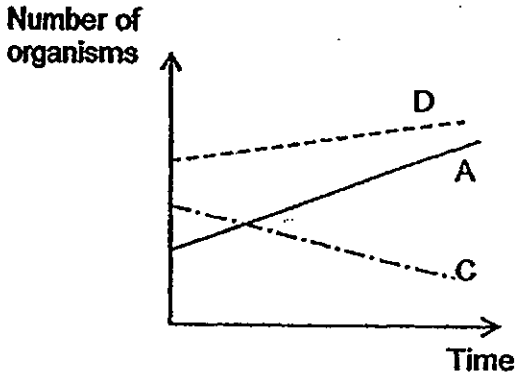
A There was an increase in rainfall over a period of time.
B A predator of caterpillars was introduced into the habitat.
C A disease infected the plants that the caterpillars were feeding on.
D Another pollinator of the plant that the butterflies were feeding on was wiped off by a disease.

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

21. Pat placed four different types of organisms, A, B, C and D into two tanks and monitored their populations over a period of two weeks. She placed Organisms A, B and D into Tank 1 and Organisms A, C and D into Tank 2.

She counted and recorded the populations of the four organisms every day and plotted two graphs as shown below.





Based on the graphs above, which of the following shows the correct food chain linking the four organisms above?

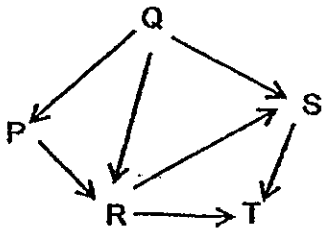
(1) D → C → A → B
(2) A → B → D → C
(3) B → A → C → D
(4) C → D → B → A

22. There are five organisms, P, Q, R, S and T, in a particular community. After observing these organisms, Susan came up with a list of information about them.

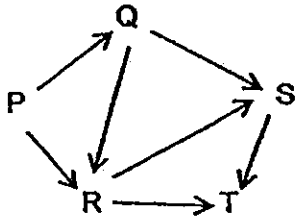
- P converts light energy from the Sun into chemical potential energy.
- Q is a herbivore and has 2 predators.
- R eats meat and plant.
- S has 2 food sources
- T feeds on R and has no predators.

Which of the following food webs matches the information given above?

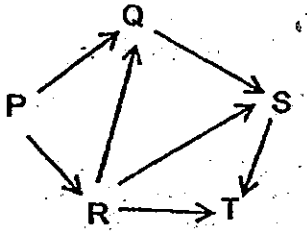
(1)



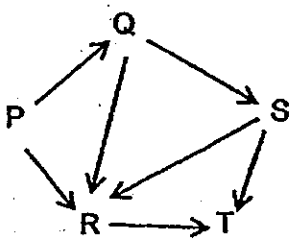
(2)



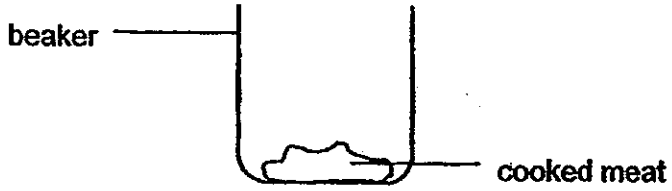
(3)



(4)



23. Tammy prepared a set-up as shown below and left the set-up in a room for a week.

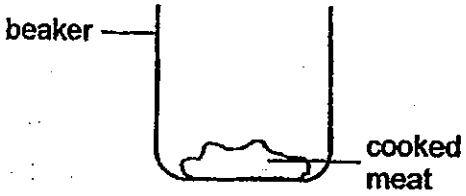


After a week, she noticed some maggots, which are the young of houseflies, on the piece of cooked meat.

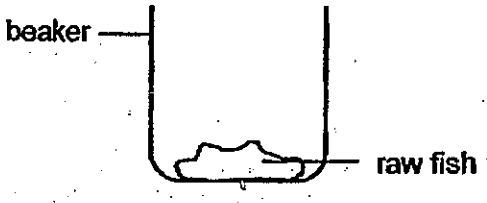
Her sister commented that the maggots came from the cooked meat. Tammy then decided to prove that the maggots did not come from the cooked meat.

Out of the four set-ups shown below, which one should Tammy use as a control to prove her point?

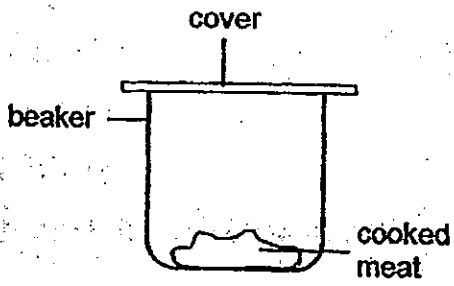
(1)



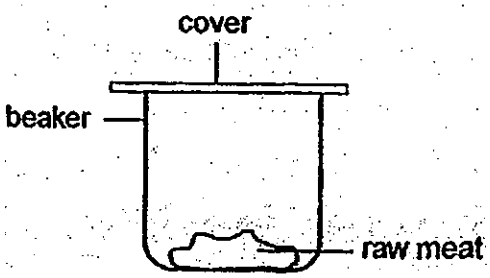
(2)



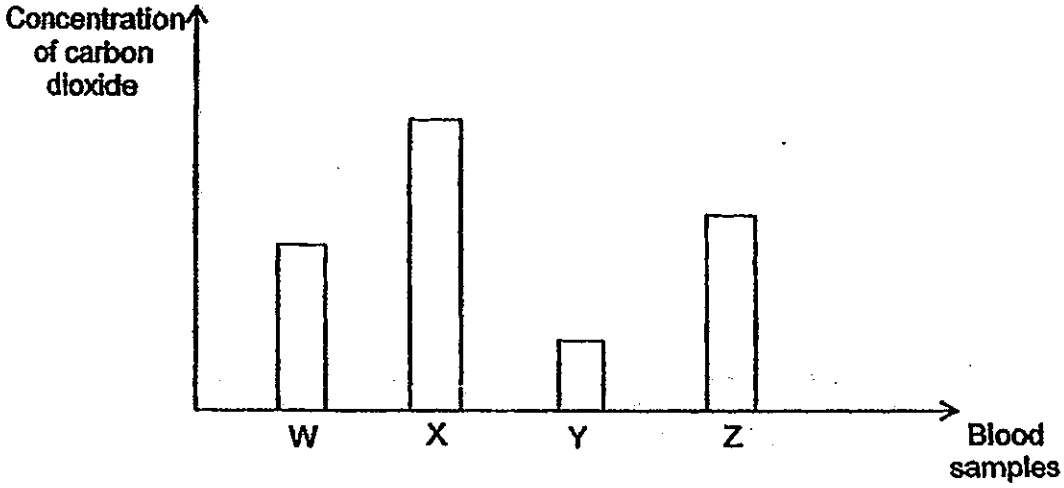
(3)



(4)



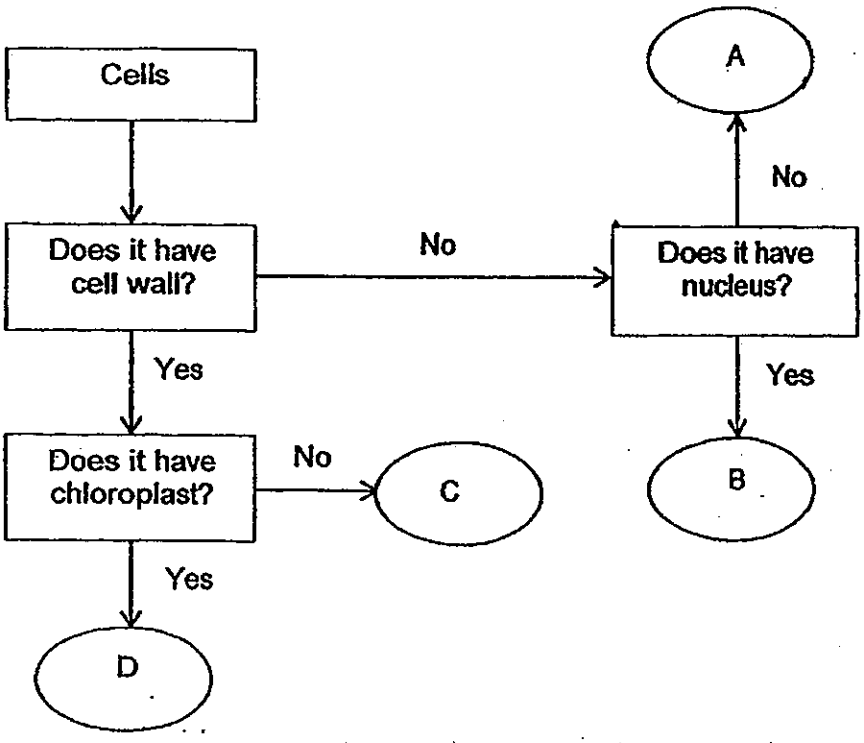
24. Study the bar graph below carefully. The graph shows the concentration of carbon dioxide in 4 blood samples taken from different part of the body.



Out of the four samples, which one is most likely to be taken from the blood vessel which carries blood from the heart to the lungs and which one is most likely to be taken from the blood vessel which carries blood from the lungs to the heart?

	Samples of blood	
	From heart to lungs	From lungs to heart
(1)	X	Y
(2)	Y	X
(3)	W	Z
(4)	Z	W

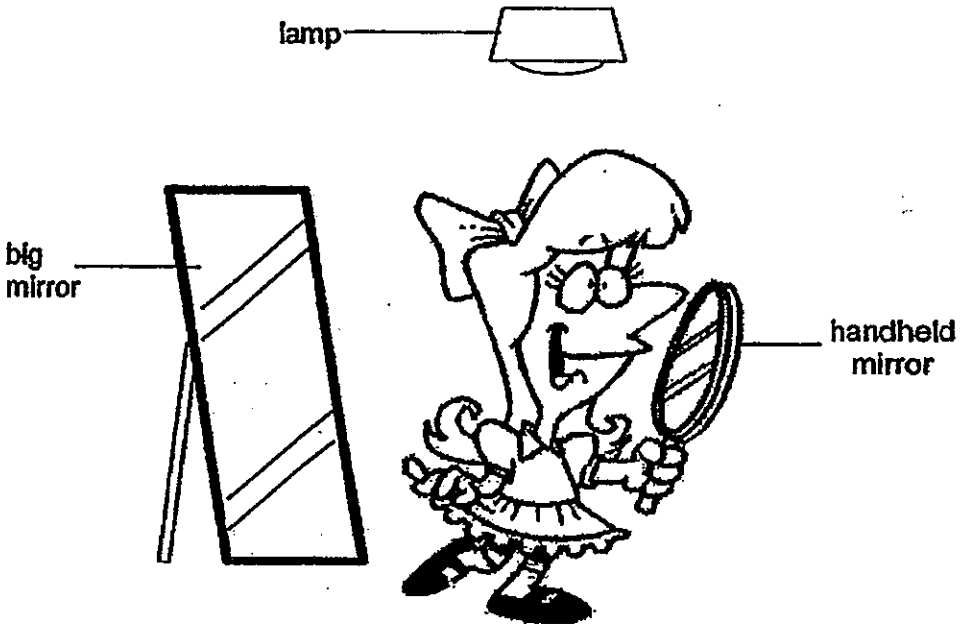
25. Study the flow chart below carefully.



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

	A	B	C	D
(1)	root cell	leaf cell	cheek cell	red blood cell
(2)	cheek cell	red blood cell	leaf cell	root cell
(3)	leaf cell	root cell	red blood cell	cheek cell
(4)	red blood cell	cheek cell	root cell	leaf cell

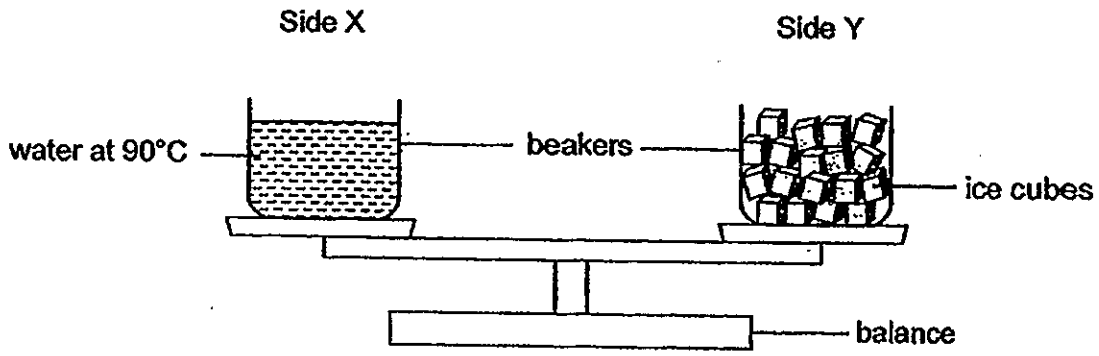
26. Alice had just done up her hair and wanted to check if the back of her head is neat. She decided to make use of a small handheld mirror and a larger mirror to do so as shown in the picture below.



Which of the following shows the path of light that allowed her to see the back of her head?

(1) Lamp → big mirror → head → handheld mirror → eyes
(2) Big mirror → lamp → head → eyes → handheld mirror
(3) Lamp → head → big mirror → handheld mirror → eyes
(4) Eyes → handheld mirror → big mirror → head → lamp

27. Mr Lee placed two beakers on each side of a balance. In one beaker, he poured in water with a temperature of 90°C. In the other beaker, he poured in ice cubes. Both beakers have the same mass at the beginning of the experiment as shown in the diagram below.



Mr Lee placed the balance in a room for 30 minutes.

What could be the likely observations he would make after 30 minutes?

A Side X would become lighter as some of the water in the beaker had evaporated.
B Side X would become heavier as the water had more heat than the ice in another beaker.
C Side Y would become heavier as water vapour in the surrounding air had condensed on the outer surface of the beaker.
D Side Y would become heavier as the ice had gained heat and melted.

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

28. The diagrams below show four different set-ups in an experiment.

A

B

C

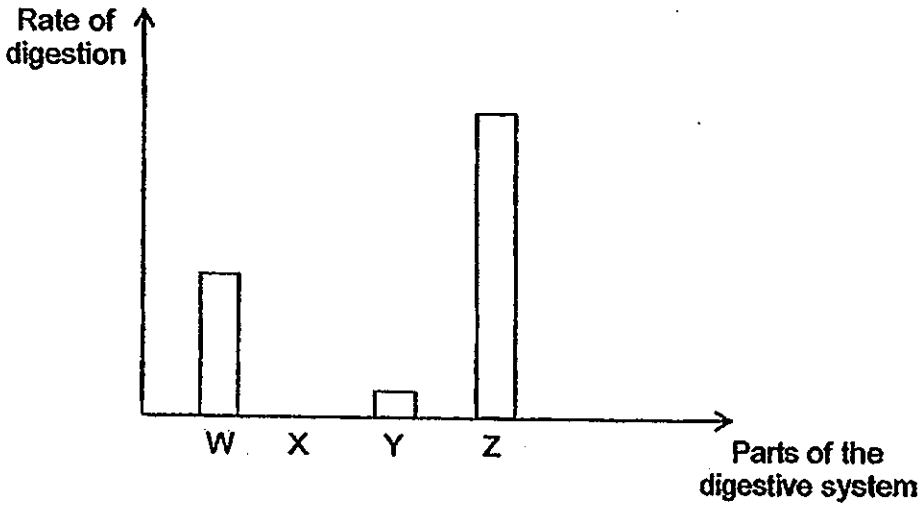
D

Annie wanted to find out how the number of leaves on a plant will affect the amount of water taken in by the plant.

Which set-ups should she use?

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

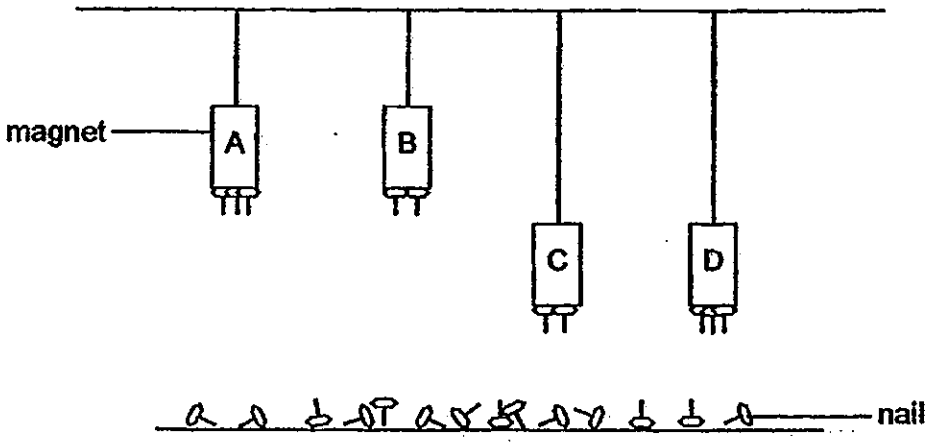
29. The graph below shows the rate of digestion of food that takes place at four different parts of the human digestive system.



Based on the graph above, which of the following correctly matches the letters, W, X, Y and Z to the correct part of the human digestive system?

	W	X	Y	Z
(1)	stomach	large intestine	mouth	small intestine
(2)	gullet	stomach	large intestine	small intestine
(3)	large intestine	gullet	mouth	stomach
(4)	mouth	small intestine	stomach	large intestine

30. Jason recently purchased four magnets. In order to find out which is the strongest magnet, he prepared the set-up shown below.



From the results shown in the set-up, which one of the following best describes the strength of the magnets above?

	Strongest	Weakest	Not possible to tell
(1)	C	D	A, B
(2)	A	C	B, D
(3)	B	A	C, D
(4)	D	B	A, C

NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2013
PRIMARY 6

SCIENCE

BOOKLET B

14 Open-ended questions (40 marks)

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

INSTRUCTIONS TO CANDIDATES

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

Marks Obtained

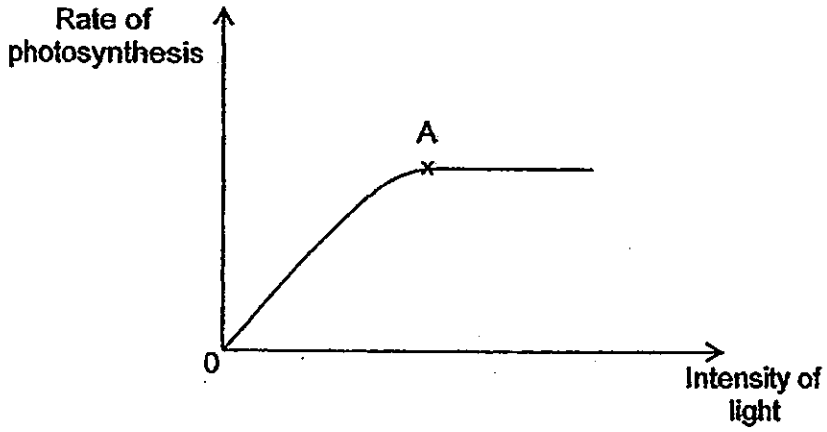
Section B		/40

Name:_____( ) Class: P6_____

Date : 10 May 20013 Parent's Signature:_____

Section B: (40marks)
Write your answers to question 31 to 44.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. The graph below shows how the rate of photosynthesis is affected by the intensity of surrounding light.



(a) Based on the graph above, what is the relationship between the intensity of light and the rate of photosynthesis? [2]

_____

_____

_____

_____

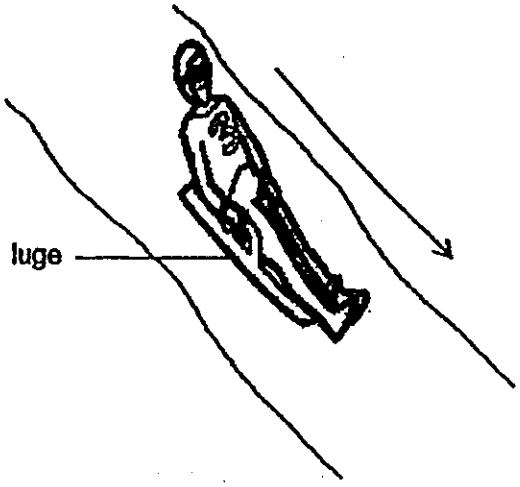
(b) Kelvin wants the plants in his garden to grow up fast and healthy. Other than ensuring that the plants get enough light, name two other factors that he should take note of. [1]

_____

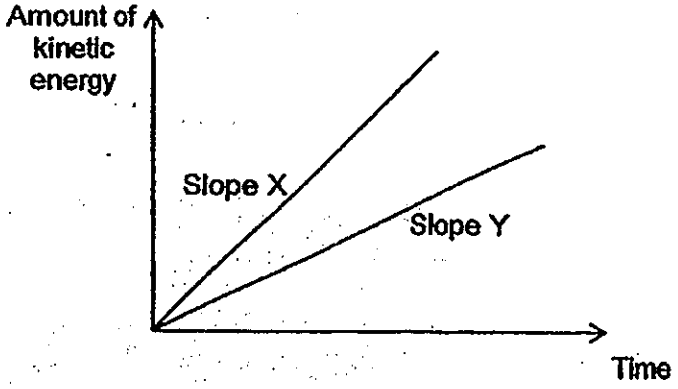
_____

Score	/ 3

32. A luge is a small one or two person sled on which one sleds facing up and feet first. In the Winter Olympics, luge is a popular competitive sport. The picture below shows a luge athlete on a luge going down a slope.



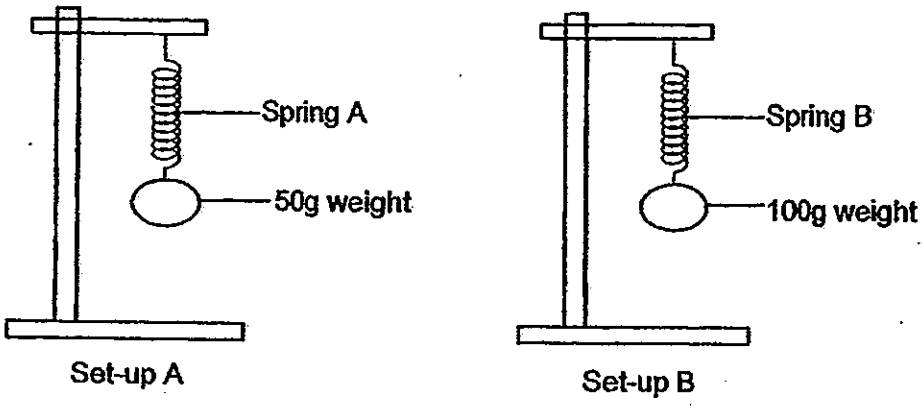
Jim sled down two different slopes, X and Y, on a luge. Slopes X and Y are of the same length. The graph below shows the kinetic energy he possessed as time passes while he sled down the slope.



Which slope is steeper? Explain your answer clearly. [2]

Score	/ 2

33. Ben set up an experiment as shown in the diagram below to find out which of the two springs that can stretch more. The springs were of the same length.



(a) Mr Tan told him that his experiment was not fair. Why do you think Mr Tan said so? [2]

_____

_____

_____

_____

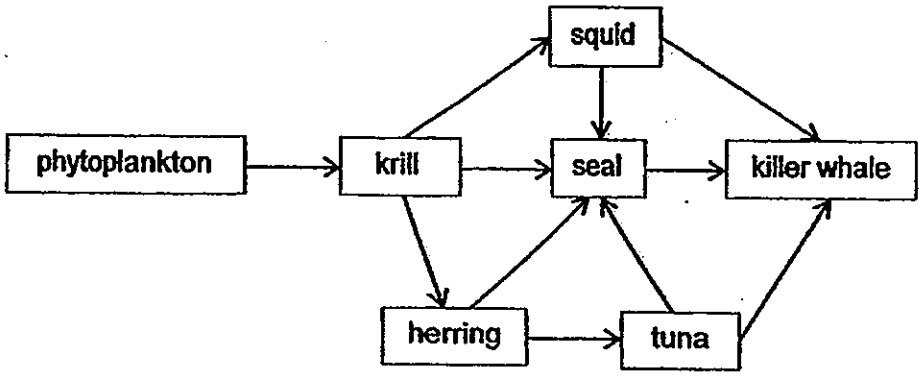
(b) What can he do to make it a fair experiment? [1]

_____

_____

Score	/ 3

34. Study the food web below.



(a) Name the habitat where the organisms in the above food web can be found. [1]

_____

(b) If an organism from the above habitat is transferred to a pond habitat, what will happen to it? Why? [1]

_____

_____

_____

(c) Name 2 conditions that are different between the pond habitat and the habitat in (a) [1]

_____

_____

Score	/ 3

35. A scientist made observations of a certain community and noted the interdependence of 4 organisms, W, X, Y and Z living in the community:

A If population of W decreases, population of X will also decrease.
B If population of Z increases, population of W will also gradually increase.
C If population of Y dies, all the other populations will eventually die as well.

(a) Based on the above observations, write down a possible food chain linking all the organisms. [1]

_____

(b) From the food chain you created, did organism X obtain energy directly or indirectly from the Sun? Explain your answer clearly [1]

_____

_____

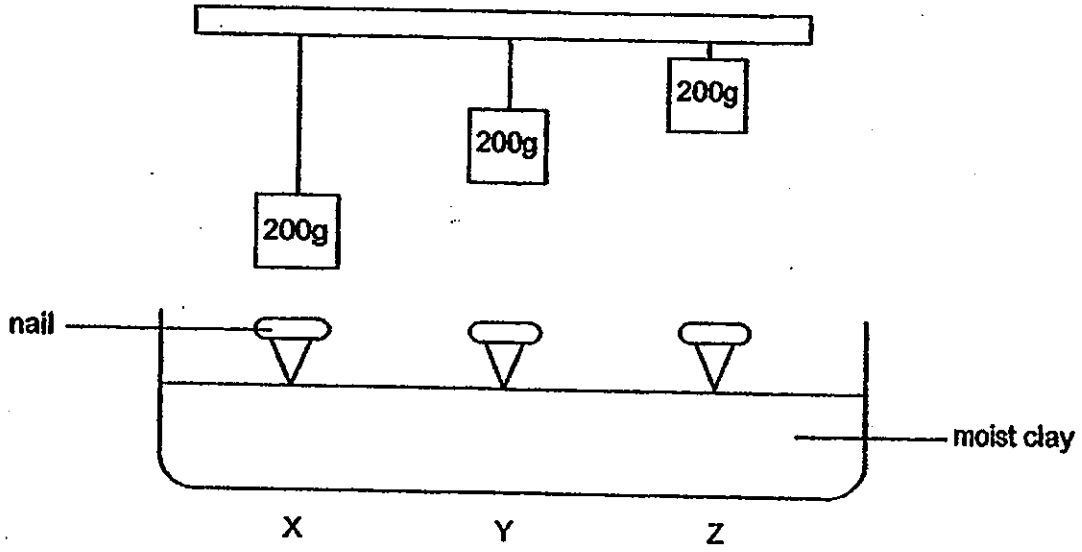
(c) Why must a food chain be kept at not more than 4 or 5 organisms? [1]

_____

_____

Score	/ 3

36. Three cubes of 200g each were suspended using three strings to a support as shown in the picture below. Three nails are placed directly underneath the three cubes at position X, Y and Z. The nails are placed on top of some moist clay.



Each string is then cut, allowing the cube to drop onto the nail, driving it into the moist clay, creating a depression. The table below shows the depression made by the nails once all the three cubes have landed on the nails.

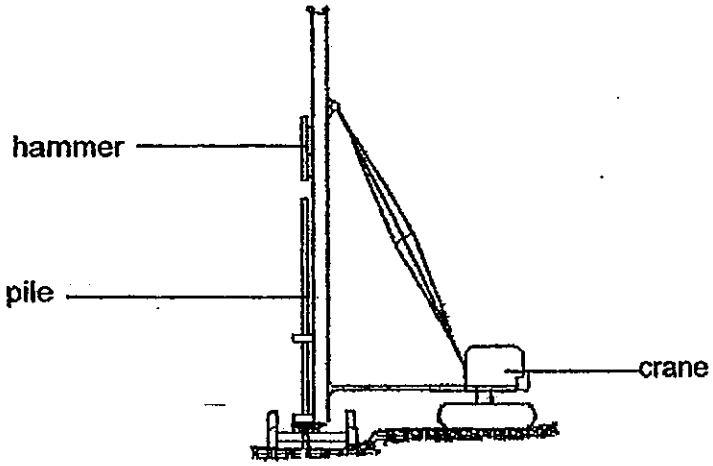
(a) In the table below, fill in the blanks with positions X, Y and Z to match them to the depression created. [1]

Position	Depth of depression (cm)
	15
	8
	4

Score	/ 1

The picture below shows a pile driver, commonly used during construction of buildings. The hammer is raised to a height above the pile before being released. The hammer will then drop and land on the pile, driving it into the earth.

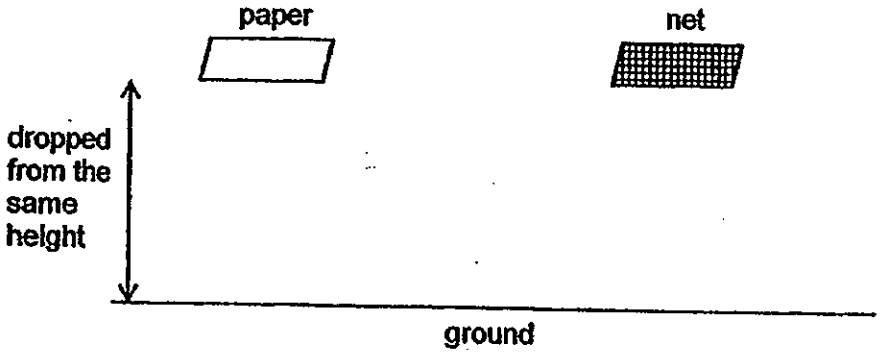
It is important for construction companies to complete their projects as fast as possible so that it will be more cost-saving.



(b) Explain clearly why it is necessary to raise the hammer to a height before releasing it. [2]

Score	/ 2

37. Jaden conducted an experiment as shown below. He dropped two items of the same size and thickness from the same height. The first item is a piece of paper. The second item is a piece of net. Both items have the same mass.



He recorded his findings in a table as shown below.

Items	Time taken for item to drop to the ground (Seconds)
Paper	7
Net	3

He showed his teacher the table but his teacher commented that his findings are not reliable.

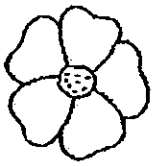
(a) What can Jaden do to improve on the reliability of his experiment? [1]

_____

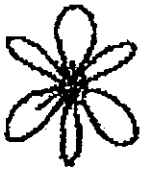
_____

Score	/ 1

Jaden then took a walk in his garden and spotted two flowers from different trees dropping down. The flowers have the same mass. The pictures of the flowers are as follows.



Flower A



Flower B

(b) Predict which flower, A or B, would reach the ground first if they were dropped from the same height. [1]

_____

(c) Explain your prediction in (b). [1]

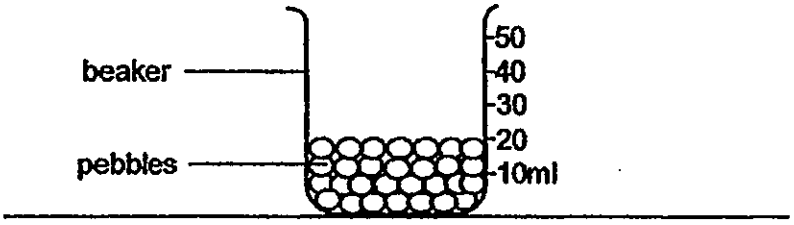
_____

_____

_____

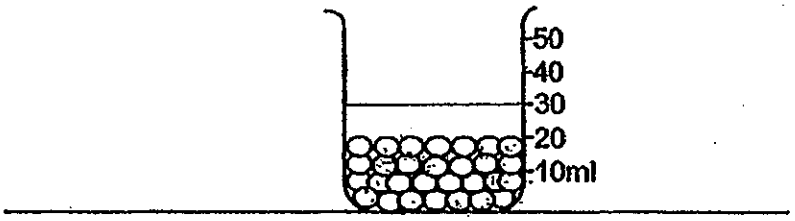
Score	/ 2

38. Jane filled a beaker with some pebbles.



She then poured 30ml of water into the beaker.

(a) In the diagram below, draw a line to show the estimated final volume of water in the beaker. [1]

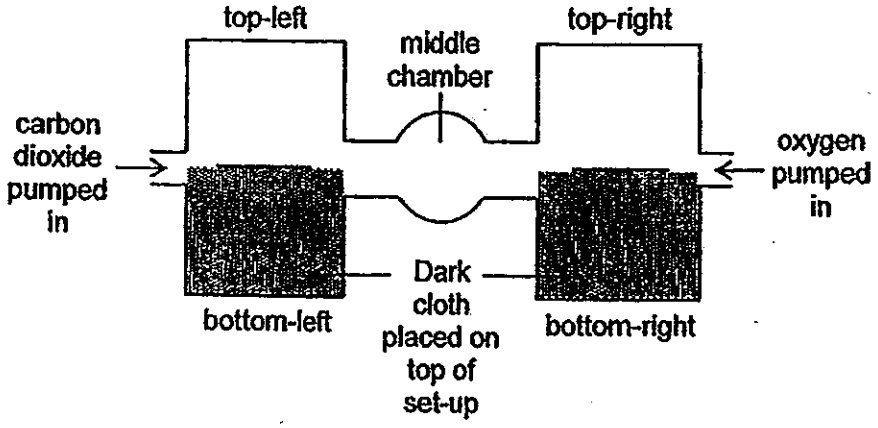


(b) Explain your answer in (a). [1]

(c) Explain clearly what change you will see in the water level if the pebbles were replaced by the same amount of clayey soil. [1]

Score	/ 3

39. Mark set up an experiment to find out the preferred living conditions of bed bugs as shown below. The left chambers had increased amount of carbon dioxide gas pumped in. The right chambers had increased amount of oxygen gas pumped in. The set-up was left in a bright room.



The bed bugs were firstly placed in the middle chamber. After one hour, the number of bed bugs found in each chamber was counted and recorded in the table below.

Chamber	Number of bed bugs
Top-left	2
Bottom-left	8
Top-right	0
Bottom-right	0

(a) Based on the results shown in the table, what are the preferred living conditions of bed bugs? [1]

_____

_____

(b) Mark's uncle told him that to prevent being bitten by bed bugs, he could install a fan in his room to circulate the air. Explain how that idea could help to reduce the chances of being bitten by bed bugs. [1]

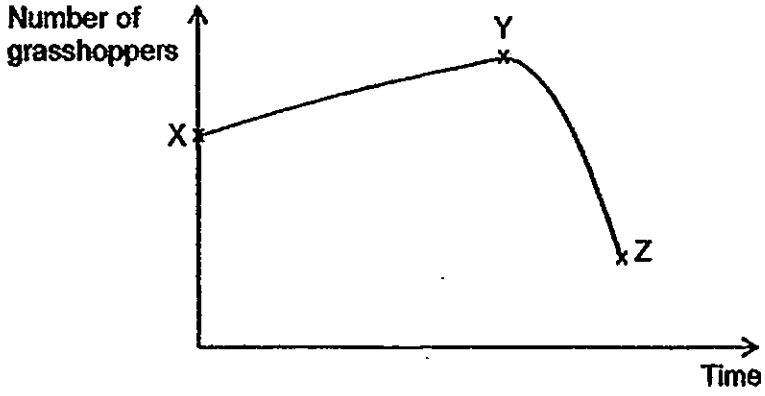
_____

_____

_____

Score	/ 2

40. The graph below shows the population of grasshoppers in a plot of land.



It was noted that at some point in time, a developer started construction of an estate of houses on that plot of land.

(a) At which point, X, Y or Z on the graph do you think the development started? [1]

_____

(b) Clearly explain your answer in (a). [2]

_____

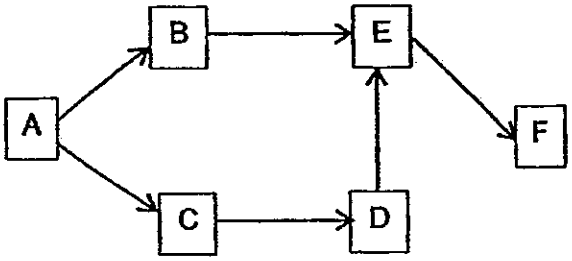
_____

_____

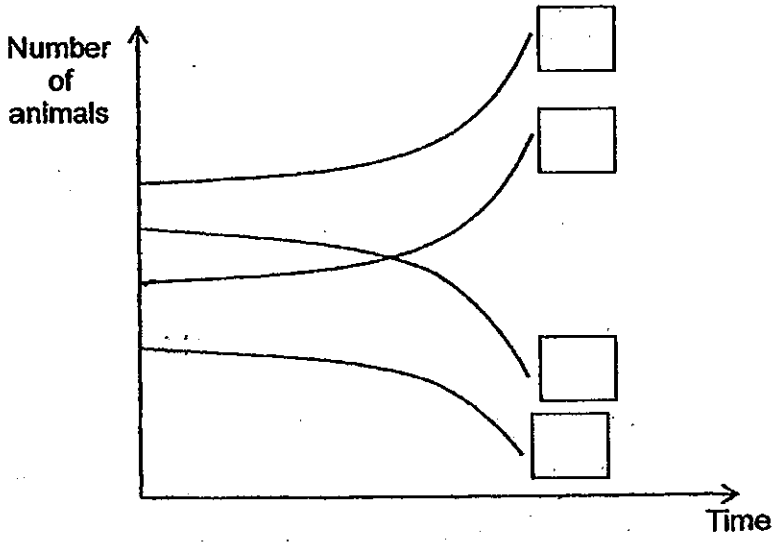
_____

Score	/ 3

41. The diagram below shows a food web.



(a) A disease caused the population of E to decrease sharply. How will the population of B, C, D and F be affected immediately? Put in the labels, B, C, D and F in the graph shown below. [2]



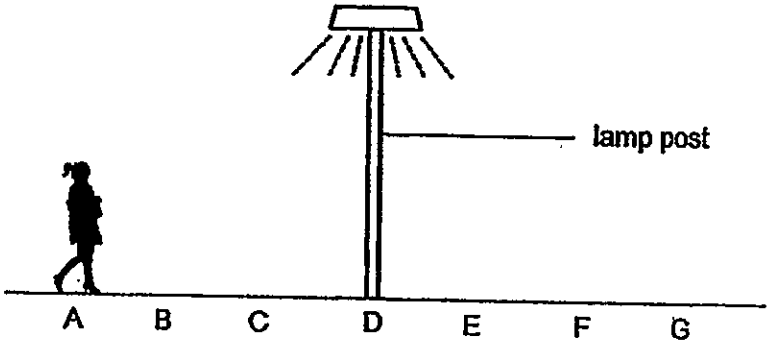
(b) What is the reason for your choice of answer for animal F in (a)? Explain your answer clearly. [1]

_____

_____

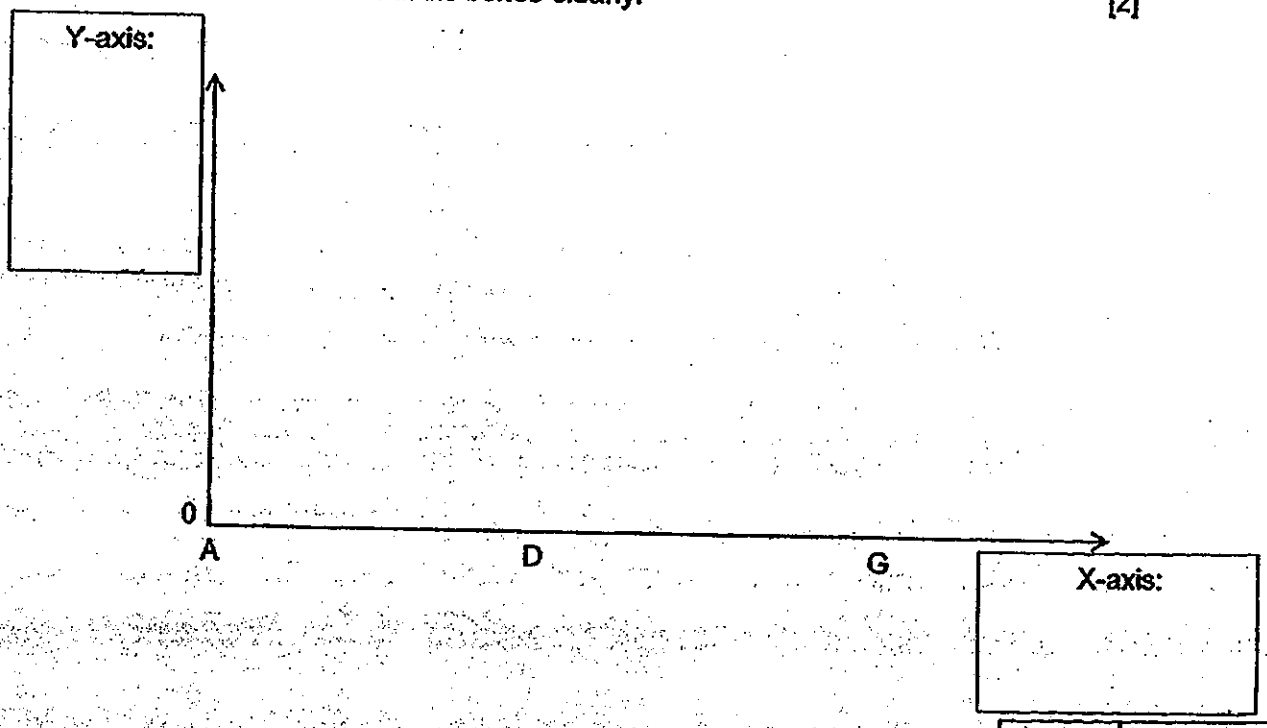
Score	/ 3

42. Miss Jamie was walking from point A to point G passing a lamp post at D as shown in the diagram below.



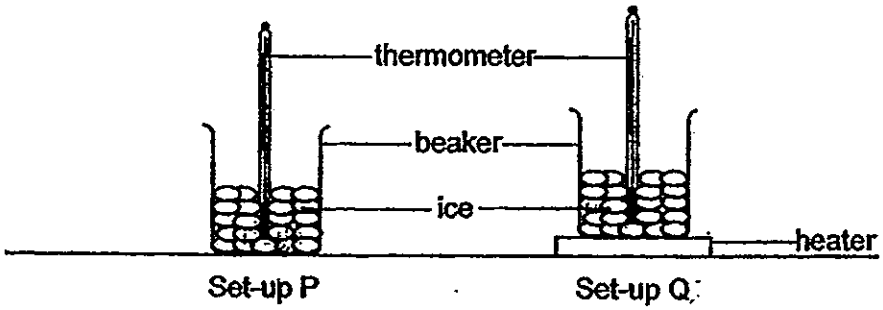
(a) What is the relationship between the distance between Miss Jamie and the lamp post and the length of her shadow as Miss Jamie walks from Point A to Point G? [2]

(b) Based on the above result, sketch the graph in the space provided below. Label the axis in the boxes clearly. [2]

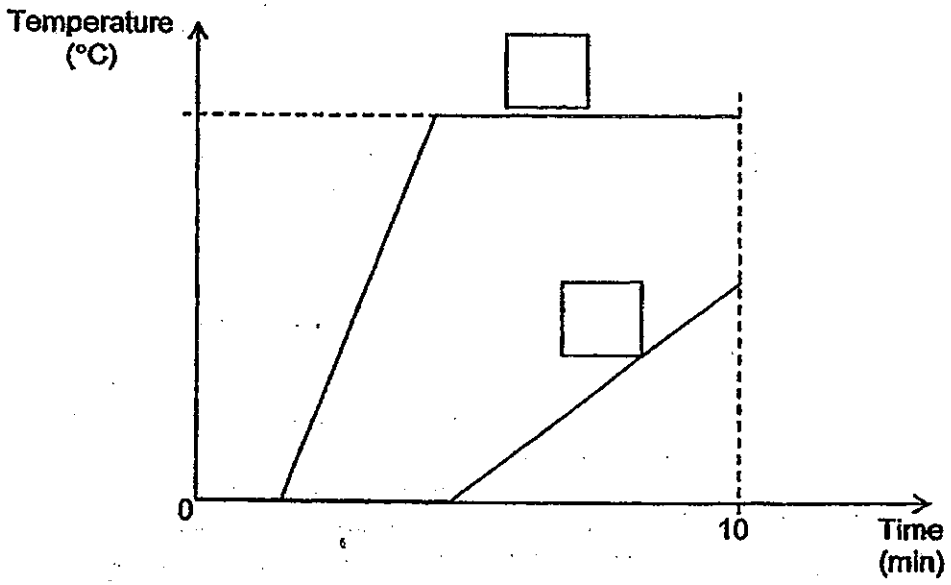


Score / 4

43. Jeremy prepared the set-up shown below.



He monitored the temperature of the ice in both set-ups for 10 minutes and plotted the graph shown below.



(a) Fill in the labels, P and Q, for the graphs in the box provided. [1]

(b) Based on the diagrams and results above, what is the aim of the experiment? [1]

_____

_____

_____

Score	/ 2

After all the ice in both set-ups had melted, Jeremy measured the volume of water in both set-ups. He found out that one of the set-ups had lesser water than the other.

(c) Which set-up had lesser water and what do you think is the reason for it?

[1]

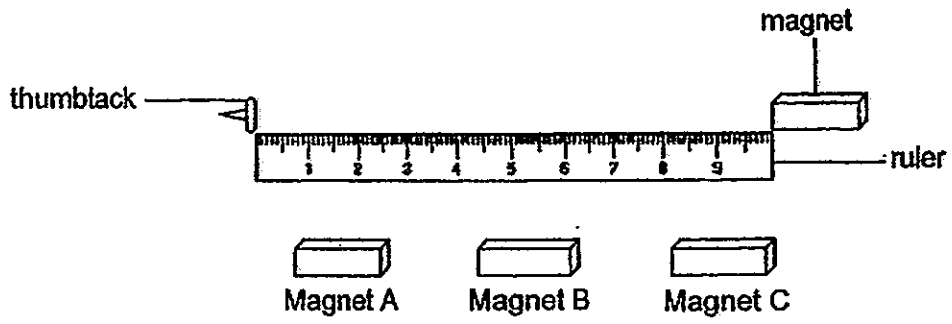
_____

_____

_____

Score	/ 1

44. David prepared the following set-up for an investigation as shown below.



D is the maximum distance between the magnet and the thumbtack where the magnet will attract the thumbtack.

He conducted the investigation with three different magnets of different strengths. They were of the same size and shape.

He followed the following procedure to conduct his investigation.

Steps	Procedure
1	Place the thumbtack against the ruler at the 0 mark.
2	Move the first magnet along the ruler from the other end of the ruler till the thumbtack gets attracted to it.
3	Record the distance, D, in the table.
4	Repeat the experiment two more times and calculate the average.
5	Record the average in the table.
6	Repeat Steps 1 to 5 with the other two magnets.
7	Compare the average distance, D, in the table to find out how the strength of the magnet affects D.

(a) What is the independent and dependent variables for this investigation? [1]

Independent variable - _____

_____

Dependent variable - _____

_____

Score	/ 1

The table below shows the results of his investigation.

Magnet	Distance, D (cm)			
	1st Try	2nd Try	3rd Try	Average
A	3	4	3	3.33
B	5	5	6	5.33
C	8	9	9	8.66

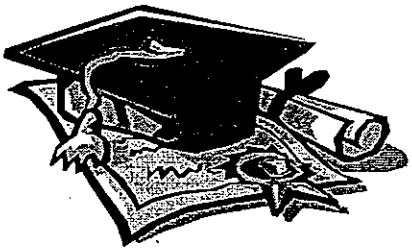
(b) Based on the results, what conclusion can you draw? [1]

_____

_____

End of paper

Score 1



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : NAN HUA
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

31)a)As the intensity of light increase, the rate of photosynthesis increases. But from point A onwards, as the intensity of light increases the rate of photosynthesis remains the same.
b)Water, fertilizers or air, nutrients, oxygen or carbon dioxide.

32)Slope X is steeper as he had greater kinetic energy when going down slope X so he took a shorter time to reach the end of the slope.

33)a)In an experiment, there should only be one independent variable. In this experiment, it should be the type of spring. Changing the mass of the weight hung on it will affect the results of the experiment.
b)Change the 50g weight in set-up A to a 100g weight.

34)a)Ocean habitat.
b)It will die. The environment conditions will be suitable for the organism. Organism that live in the sea are accustomed to the salinity and temperature of the sea.
c)The sea water is saltier than the pond water. The temperature of the sea water is lower than the pond water.

35)a)Y→Z→W→X

b)Indirectly. Organism X is a carnivore and feeds on animals and do not make its own food as it not a plant.

c)During the energy transfer of animals, most of the energy that the organism get is lost, therefore if a food chain has more than 4 or 5 animal the last organism may not survive ad it gets very little energy.

36)a)Z Y X

b)When the hammer is raised to a height above the pile, the hammer possessed greater gravitational potential energy. As the hammer drops towards the pile the gravitational potential energy will be converted to greater amount of kinetic energy and thus there will be more energy to drive the pile deeper into the earth so less time will be needed.

37)a)Repeat the experiment at least three times and take the average.

b)Flower B.

c)Flower B has a lesser exposed surface area in contact with the air just like the net, therefore, reducing the air resistance acting on it, and hence taking a faster time for it to reach the ground.

38)a)40ml

b)The pebbles has air spaces in between them, allowing the water to enter and take up the space, therefore the water level would not reach 50ml.

c)The water level will be higher. There are fewer air spaces in clayey soil so less water can flow into occupy the air spaces. So, more of the water will remain above the soil.

39)a)The beg bugs prefer to live in dark and high level of carbon dioxide surroundings.

b)A fan will help to disperse the carbon dioxide that he breathed out as he sleeps so it will reduce the chances that the beg bug is attracted.

40)a)Point Y.

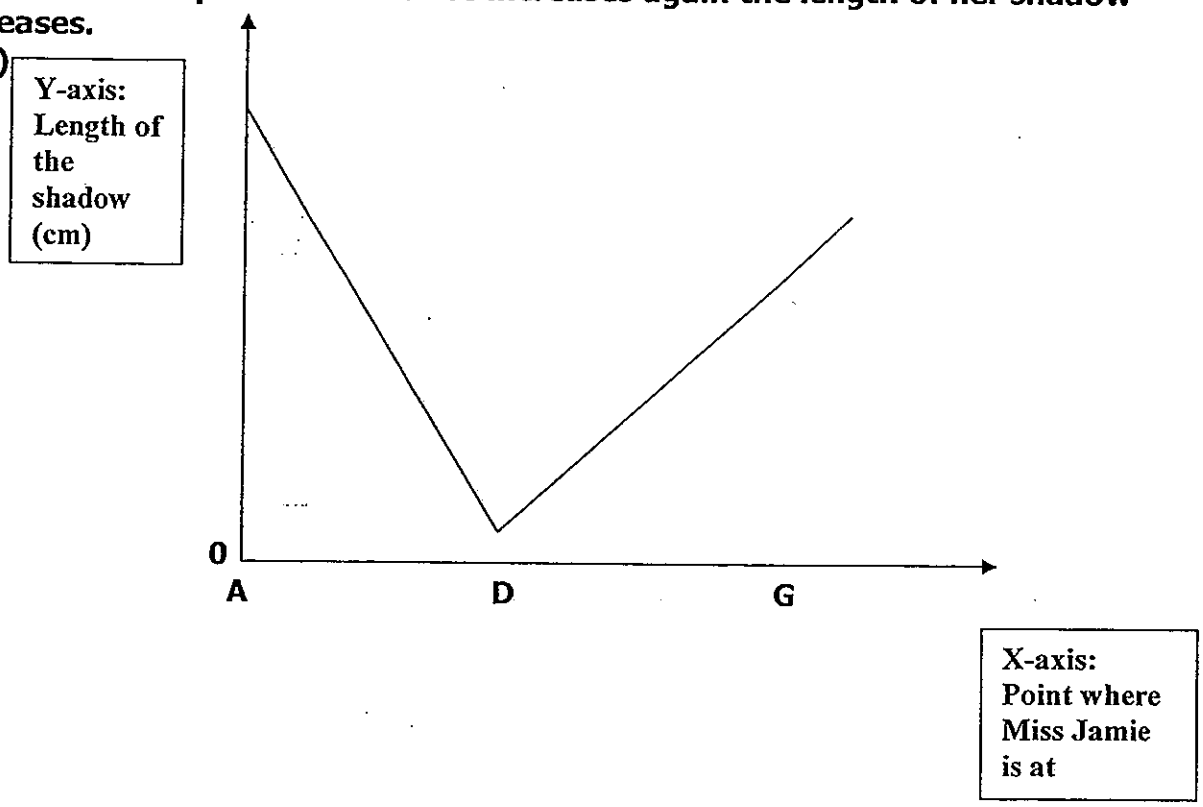
b)From point Y, there is a decrease in the population of grasshopper. The grasshoppers habitat is being destroyed by the development and the grasshoppers had either moved away of died.

41)a)B D
C F

b)Animal F is E's predator. When the population of E decreases there will be less food for F and so some off to decrease F is at the end to the food web so the number of F should be the least.

42)a)As the distance between Miss Jamie and the lamp post decreases the length of her shadow decrease so the length of her shadow decreases until she is below the lamp. As the distance increases again the length of her shadow increases.

b)



43)a)Q P

b)To find out how the presence of a heater will affect the time taken for the ice to melt completely.

c)Set-up Q. The water has reached boiling point and some of the water had turned into steam.

44)a)The different magnets with different strength.

Distance D.

b)Magnet C is the strongest magnet followed by Magnet B and Magnet A is the weakest magnet.

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2013

BOOKLET A

Date : 14 May 2013
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Parent's signature: .....

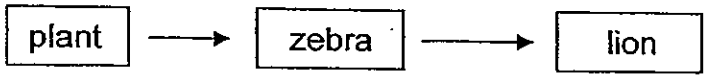
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 16 printed pages including this cover page.

Section A **(30 x 2 marks = 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). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

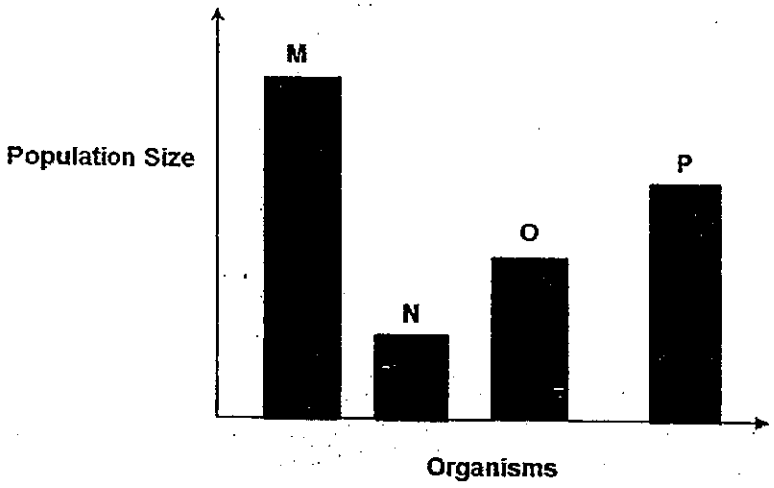
1 The diagram below shows a food chain.



What is the main source of energy for this food chain?

(1) sun
(2) plant
(3) soil
(4) light

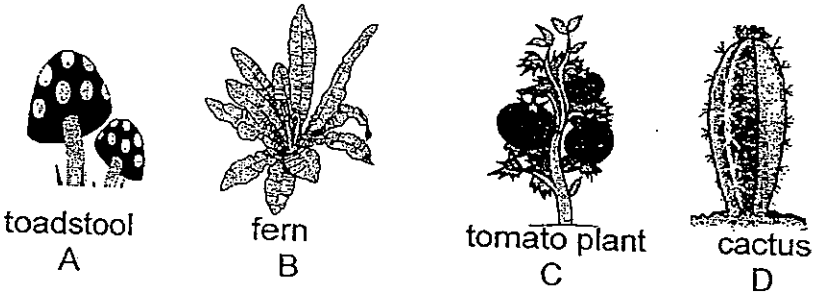
2 The graph below shows the population of four groups of organisms, M, N, O and P, in a community.



Which letters would most likely represent a producer and a carnivore in the community?

	Producer	Carnivore
(1)	N	M
(2)	N	O
(3)	M	N
(4)	M	P

3 The diagram below shows four organisms.

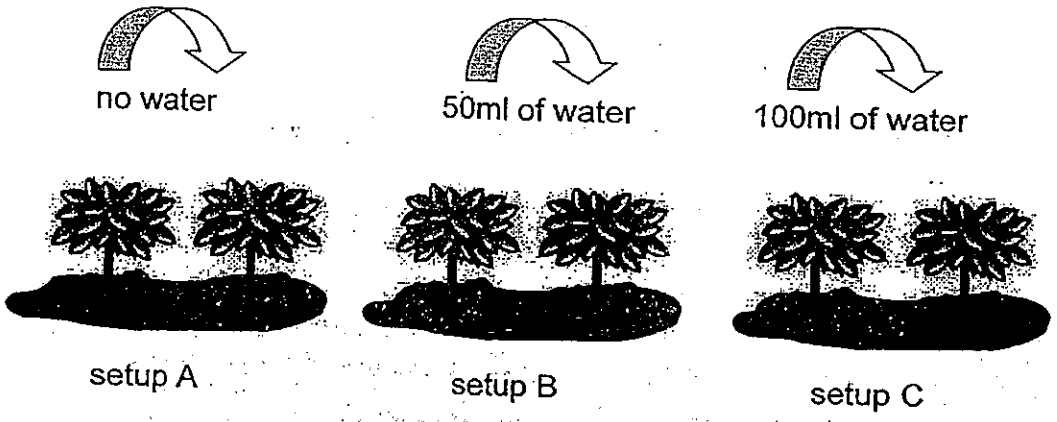


Each organism was kept in a glass tank, A, B, C and D, with the same amount of carbon dioxide in it. The tanks were sealed up and kept outdoors from 12 noon to 5 p.m.

In which tanks would there be an increase in the amount of oxygen after 5 hours?

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

4 Christopher used the setup below to conduct an experiment.

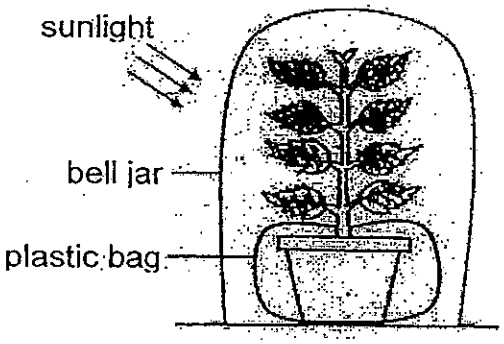


He watered the plants in set-ups B and C every day for a week and observed the three set-ups. The leaves in set-up A were yellow and dry. The leaves in set-up B looked healthy and the leaves in set-up C dropped off easily.

What was the aim of the experiment?

(1) To find out the effect of different types of water on plants
(2) To find out how the amount of water affects plant growth
(3) To find out if water is needed for germination to take place
(4) To find out if the presence of water affects the growth of plants

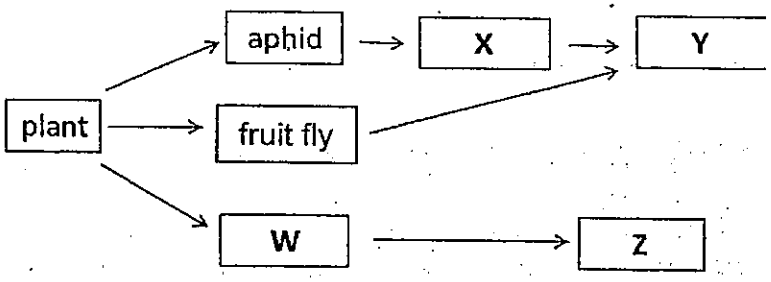
5 Sammy applied a layer of clear nail polish varnish on the upper side and underside of every leaf of a well- watered plant. She placed the plant in an airtight bell jar and left the set-up at her brightly-lit balcony.



Which of the following correctly describes the changes in the volume of the different gases in the bell jar after 8 hours?

	Carbon Dioxide	Oxygen	Water Vapour
(1)	remains the same	remains the same	remains the same
(2)	decrease	increase	remains the same
(3)	decrease	increase	increase
(4)	increase	decrease	remains the same

6 The diagram below shows a food web.



Which of the following organisms could correctly represent W, X, Y and Z in the food web?

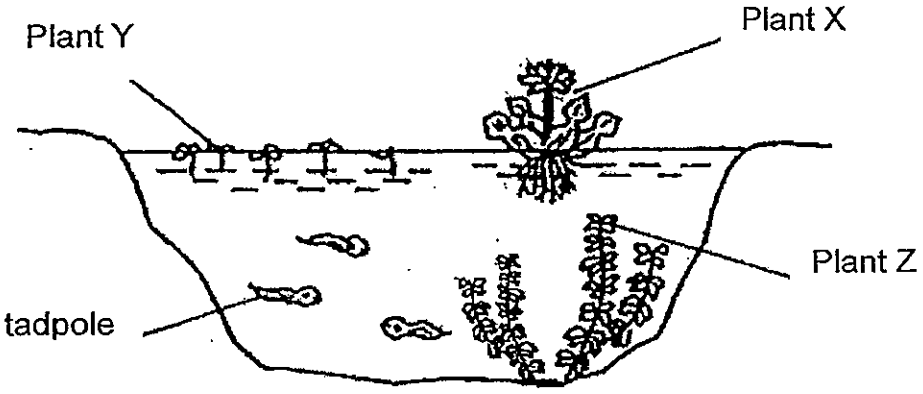
	W	X	Y	Z
(1)	grasshopper	millipede	ladybird	praying mantis
(2)	caterpillar	butterfly	spider	sparrow
(3)	grasshopper	frog	lizard	woodlouse
(4)	butterfly	ladybird	spider	chameleon

7 Which of the following factors will affect the survival of deers in a grassland?

A Deforestation
B Long period of drought
C Increase in number of lions in the grassland
D Increase in number of horses in the grassland

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

8 Study the diagram below.



Which of the following may be observed after some time if Plant X increased in number rapidly and covered the surface of the pond completely?

A A decrease in the number of Plant Z.
B A decrease in the number of Plant Y
C An increase in the number of tadpoles
D An increase in the amount of dissolved oxygen in the water

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

9 The following food relationships were observed among four living things, P, Q, R and S.

- P is eaten by S
- P feeds on R
- S feeds on R but not on Q
- R gets its food from Q

Which one of the following identifies the roles of P, Q, R and S?

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

10 Larry set up an experiment on tomato plants as described below.

Pot	Location	Type of soil	Size of pot	Amount of water	Number of seedlings	Number of earthworms
A	window ledge	garden soil	large	800ml	10	5
B	window ledge	garden soil	small	800ml	10	5

What was he trying to investigate regarding the growth of the seedlings?

(1) The effects of overcrowding.
(2) The effects of water on the growth of the plants.
(3) The effects of earthworms on the growth of the plants.
(4) The effects of the type of soil on the growth of the plants.

11 Andrew collected some samples of organisms from a pond near his school. He identified and classified them in the table below.

Aquatic Plants	Aquatic Animals
water moss fern	dragonfly nymph
arrowhead	water boatman
duckweed	pond skater
cabomba	tadpole
hydrilla	guppy
elodea	frog

How many populations of organisms did Andrew collect altogether?

(1) 10
(2) 12
(3) 11
(4) 13

12 Which of the following changes to the conditions in a habitat is **not** correctly matched to how the organisms in that habitat will be affected?

	Changes in the conditions of the habitat	How organism(s) is/are affected
(1)	Forest fire	Decrease in the populations of plants only
(2)	Long periods of dry weather	Decrease in the population of aquatic animal
(3)	Decrease in plant population	Plant eaters compete for food
(4)	Rapid increase in population of animal eaters	Less food is available for animal eaters

13 The table below shows the population sizes of Organisms X, Y, and Z over a period of 4 months. The figures were recorded at the end of each month.

Organism	April	May	June	July
X	3800	900	800	479
Y	13000	6500	6300	6400
Z	153	168	170	350

A drought occurred in May. Which of the following statements are **true**?

A The drought had the least effect on the population of organism Z.

B Organism X and Y were not able to thrive when there was a drought.

C The population of organism Y was able to recover faster than that of organism X from the drought.

D The drought caused the temperature to increase drastically and this led to the decrease in all the populations of organisms.

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

14 Xiao Bo kept several potted plants in his room. At night, he switched off all the lights and closed all the windows and the door to his room. There was no fresh air entering his room.

Which of the following shows the changes in the amount of gases in his room after 5 hours?

	Oxygen	Carbon dioxide	Water vapour
(1)	increase	increase	no change
(2)	increase	decrease	no change
(3)	decrease	increase	increase
(4)	decrease	decrease	decrease

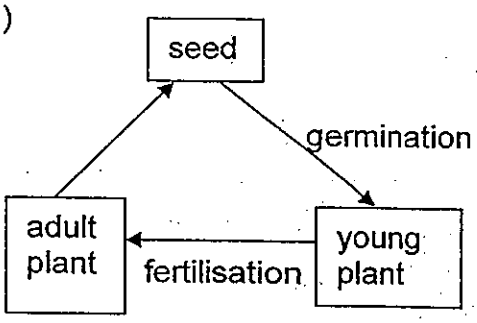
15 Which of the following statements about cells is/are **correct**?

A Some cells do not have nucleus.
B Cells increase in size as the organism grows.
C Cells of the same organism are of the same size.

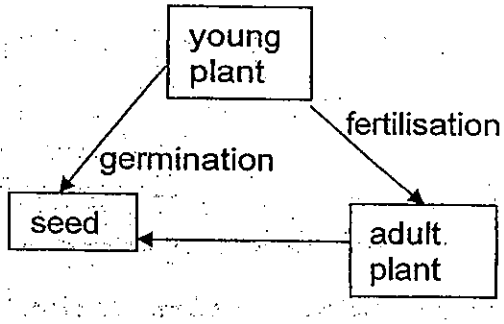
(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C only

16 Which one of the following shows the order of stages and processes in the life cycle of a plant?

(1)



(2)



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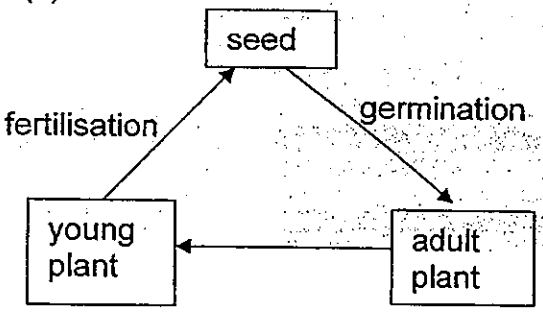
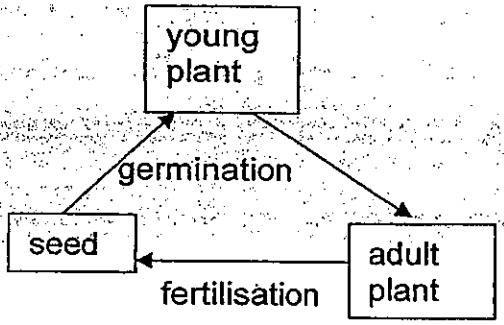


(4)



17 Which of the following best describe the importance of seed dispersal?

A To reduce overcrowding
B To reduce competition for food
C To increase the seedling's chances of survival
D To obtain enough mineral salts from the parent plant

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

18 Which of the following statements describe the functions of roots?

A Roots take in water
B Roots take in mineral salts
C Roots anchor the plant firmly to the ground
D Roots store excess food made by the plant

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

19 Which of the following statements about saliva are true?

A Saliva is only released in the mouth.
B Saliva makes it easier to swallow food.
C Saliva helps in breaking down of food.
D Saliva breaks down food into smaller pieces

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

20 The table below shows the freezing points of 4 substances, W, X, Y and Z.

Liquid	Freezing point (°C)
W	0
X	30
Y	8
Z	15

Which one of the following substances is a solid at 28°C?

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

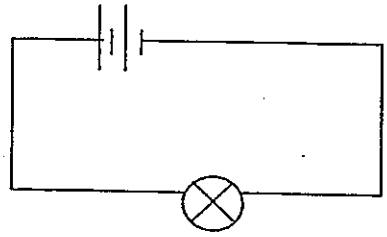
21 Joshua placed 2 identical open bottles at the basketball court. He filled one bottle completely with liquid M and the other bottle completely with liquid N. The next day, he observed that the bottle containing liquid M was half-filled but the bottle containing liquid N was completely empty.

Which of the following can he conclude from his observation?

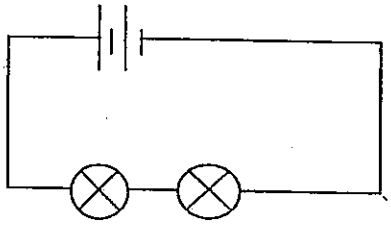
A Both liquids evaporated.
B There was a layer of oil on liquid M.
C Liquid N evaporated faster than liquid M.
D The temperature of liquid M and N are the same throughout the experiment.

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

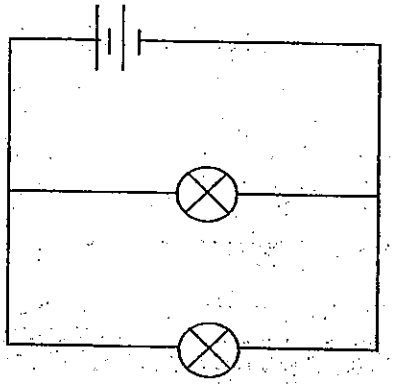
22 Study the four circuit diagrams, A, B, C and D, below. The batteries are identical and all the bulbs are lit up.



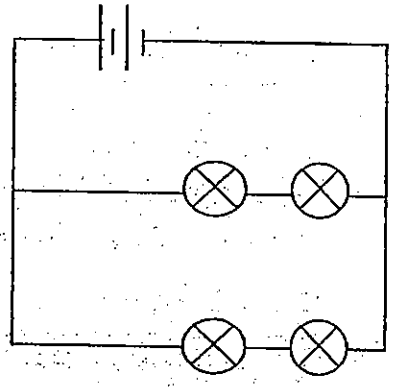
circuit A



circuit B



circuit C

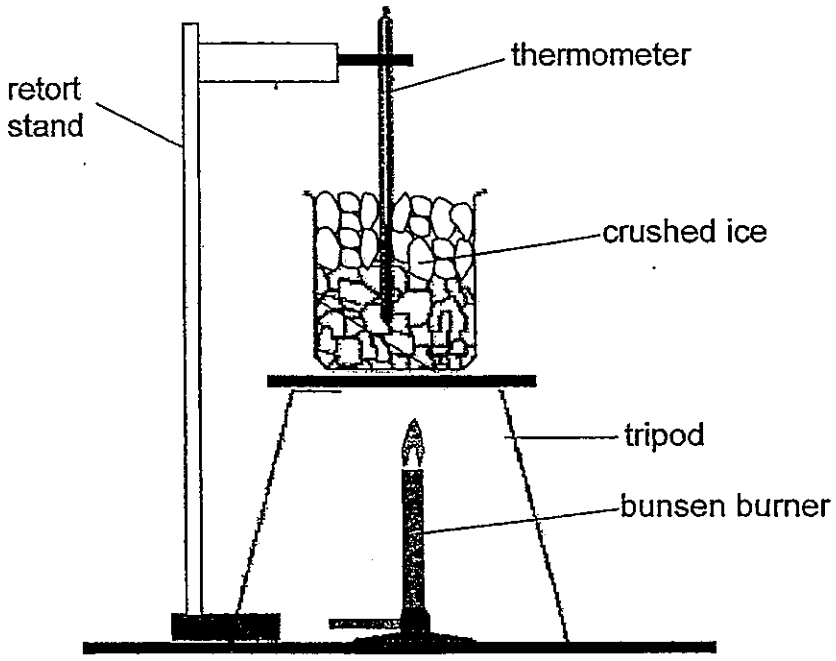


circuit D

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

(1) Each bulb in circuit D is brighter than the bulb in circuit A.
(2) Each bulb in circuit B is as bright as each bulb in Circuit C.
(3) Each bulb in circuit C is brighter than each bulb in circuit D
(4) The bulb in circuit A is brighter than each bulb in circuit C.

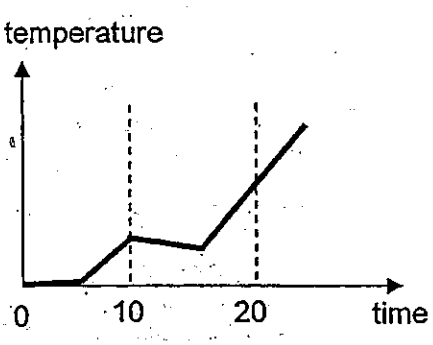
23 Darrius heated up half a beaker of crushed ice for 10 minutes. He then filled up the beaker with more crushed ice. He continued heating the beaker for another 10 minutes.



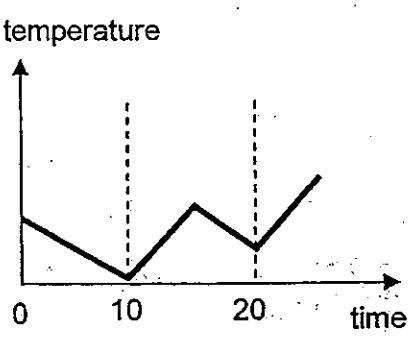
He measured the temperature in the beaker throughout the experiment.

Which one of the following graphs below shows the reading that he would observe?

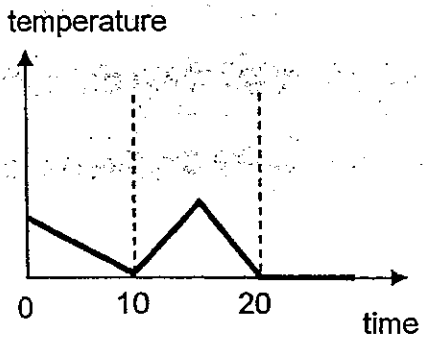
(1)



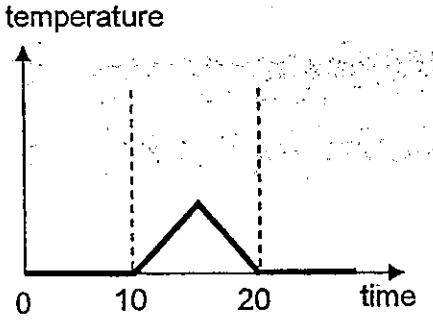
(2)



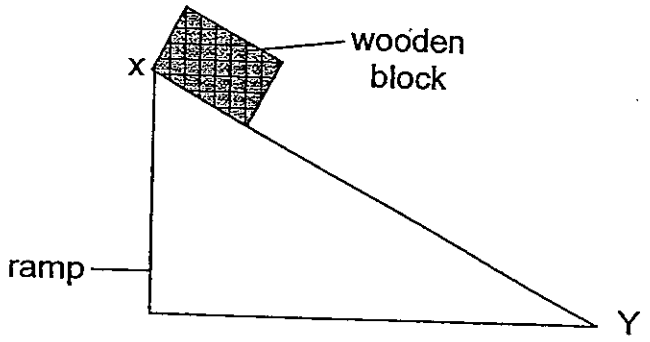
(3)



(4)



24 A wooden block was released at point X on a ramp.



The time taken for the box to reach point Y was recorded. The experiment was repeated with the ramp coated with four different lubricants.

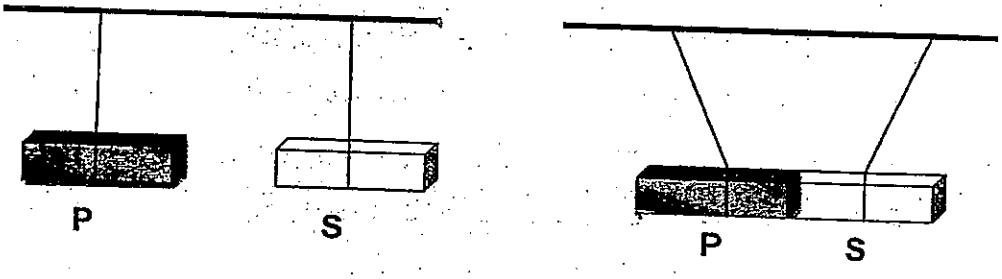
The results are shown in the table below.

Lubricant	Time taken to reach point Y(s)
A	15
B	6
C	25
D	13

Which one of the lubricants resulted in the least amount of friction between the box and the surface of the ramp?

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

25 In the diagram below, when object P was brought closer to object S, object P and S were pulled towards each other.

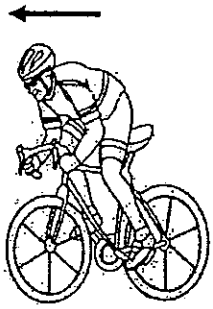


Which of the following can be concluded from the experiment?

A Both objects are magnets.
B Both objects are made of magnetic material.
C One object is made of a magnetic material while the other is not
D One object is a magnet while the other is made of a magnetic material.

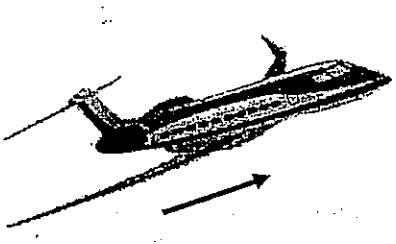
(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B and D only

26 The diagrams below show four activities.

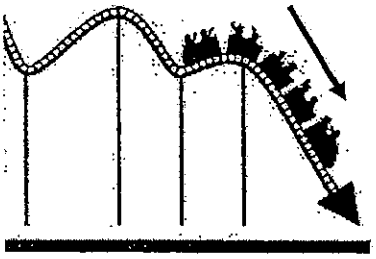


K

L



M

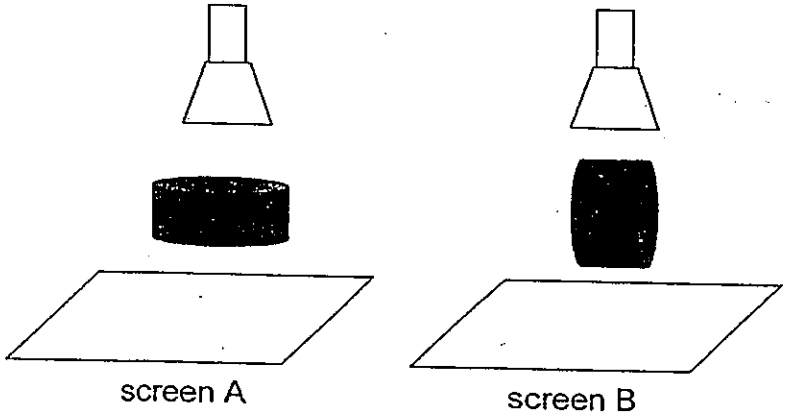


N

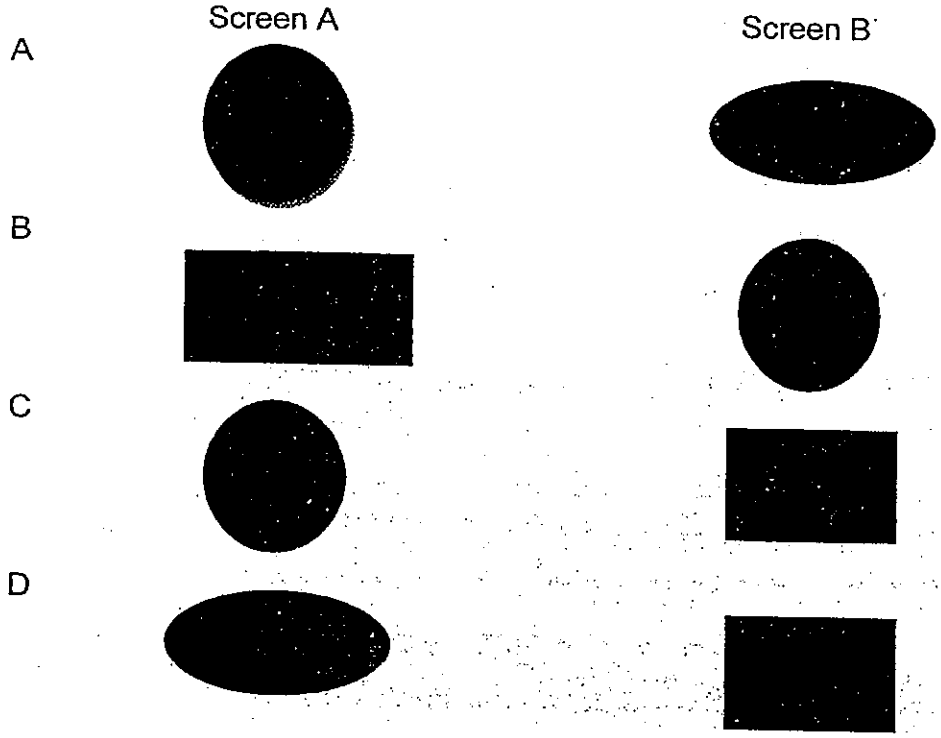
Which activities involve an increase in gravitational potential energy?

(1) K and L only
(2) K and N only
(3) L and M only
(4) M and N only

27 Jun Ming wanted to study the shadows formed by 2 identical objects. The objects were placed in different positions directly under identical light sources in a dark room. Shadows were formed on screens A and B as shown below.



Which of the following are possible shadows that could have been observed on each screen?

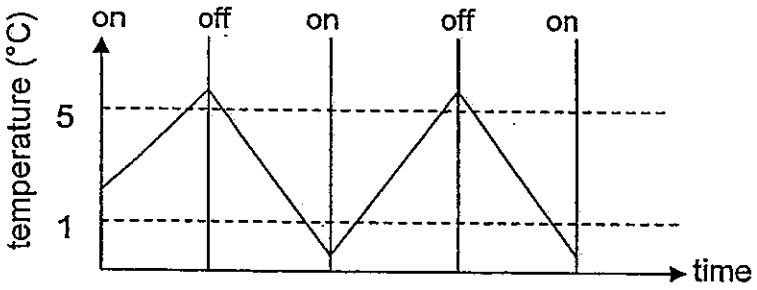


(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

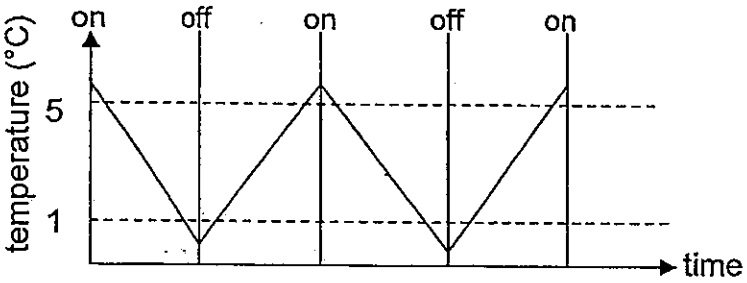
30 A special switch called a thermostat is used in a refrigerator to control its temperature. It turns on the cooling system in the refrigerator when the temperature rises above 5°C and turns off the system when the temperature falls below 1°C. The following test is carried out when the refrigerator is first switched on.

Which one of the following graphs shows how the temperature in the refrigerator changes over time?

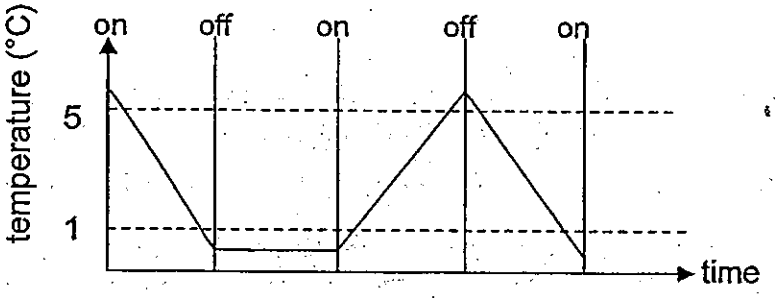
(1)



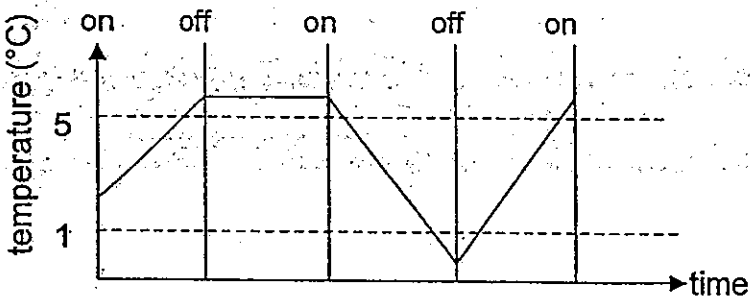
(2)



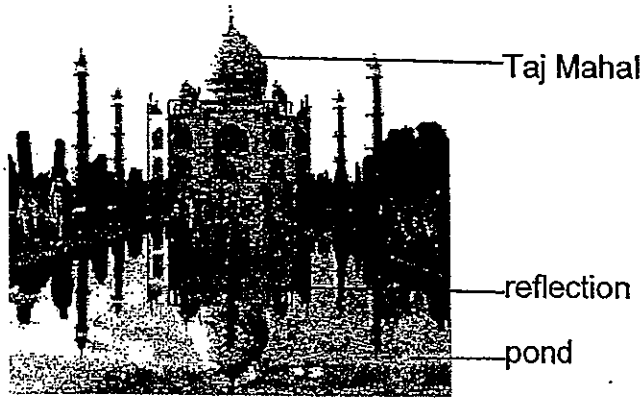
(3)



(4)



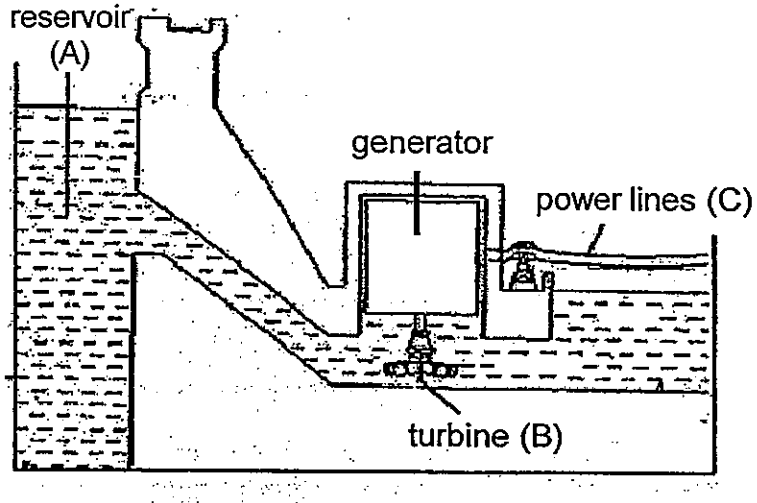
28 The image below shows the Taj Mahal and its reflection in the pond.



Which of the following statements explains how the reflection on the pond can be seen?

(1) The pond reflects the shadow of the Taj Mahal to our eyes.
(2) Taj Mahal gives out light which was reflected into our eyes.
(3) The pond reflected light onto the Taj Mahal and the light was reflected into our eyes.
(4) The Taj Mahal reflected light onto the pond and the light was reflected into our eyes.

29 The diagram below shows a hydroelectric power station.



Which of the following shows the forms of energy at positions A, B and C?

	A	B	C
(1)	Gravitational Potential Energy	Kinetic Energy	Electrical Energy
(2)	Kinetic Energy	Electrical Energy	Electrical Energy
(3)	Chemical Potential Energy	Electrical Energy	Gravitational Potential Energy
(4)	Gravitational Potential Energy	Kinetic Energy	Chemical Potential Energy

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2013

BOOKLET B

Date : 14 May 2013

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Any query on marks awarded should be raised by 22 May 2013. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

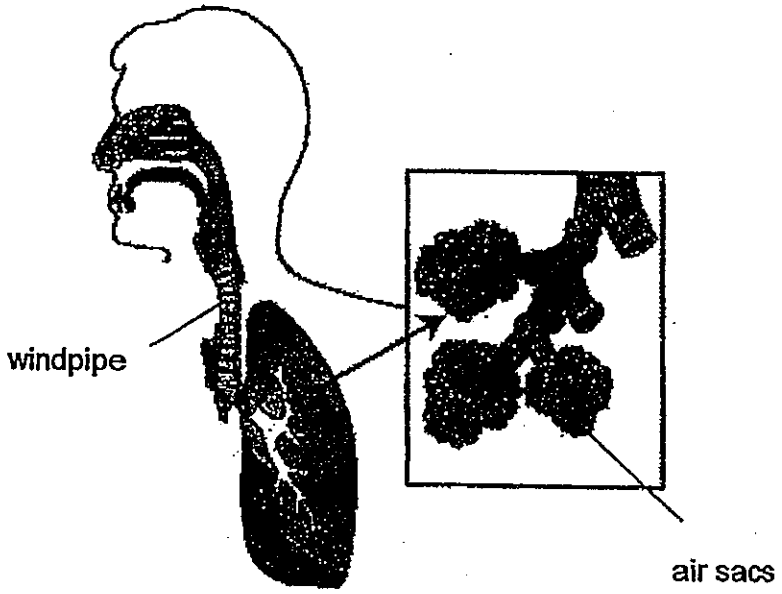
Parent's signature: ... .

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

Booklet B consists of 17 printed pages including this cover page.

Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.
Marks will be deducted for misspelt key words.

31. The diagram below shows parts of a human respiratory system.



The windpipe branches into 2 air tubes in the lungs which further divide into many similar tubes that end in numerous air sacs.

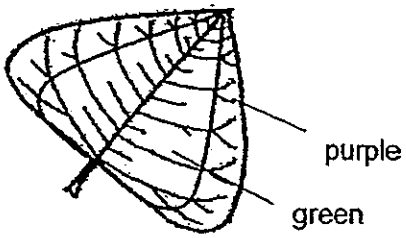
Explain how having so many of these tiny air sacs affects gaseous exchange in the human body. [2]

_____

_____

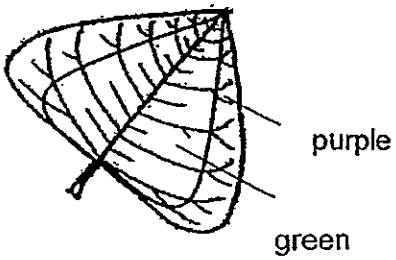
_____

32. The diagrams below show two leaves, A and B.



Leaf A

Leaf A was plucked from a plant which had been left in a cupboard for 2 days.



Leaf B

Leaf B was plucked from a plant which had been left in a brightly-lit room for 2 days.

Immediately after plucking, the colours of these leaves were first removed by boiling the leaves and soaking them in alcohol. Then, they were tested for the presence of starch using iodine solution. Iodine, a yellow-coloured solution, turns dark blue when it comes into contact with starch.

(a) Name the part in a leaf cell which enables it to make food. [1]

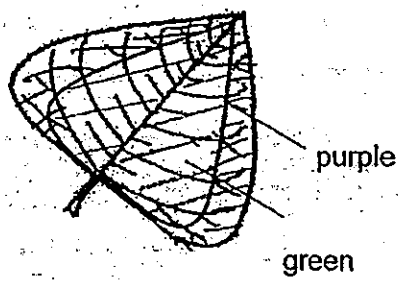
_____

(b) A few drops of iodine were added to leaf A, the iodine remained yellow. Explain this observation. [1]

_____

_____

(c)i) Shade the part(s) of leaf B that will turn iodine dark blue. [1]

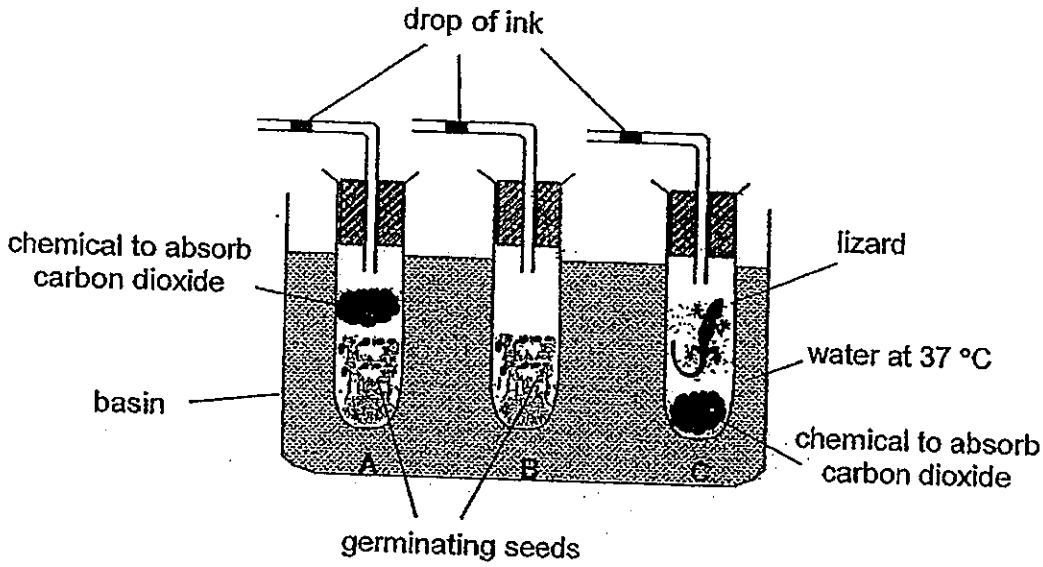


(c)ii) Explain your answer for (i). [1]

_____

_____

33. Mrs Lee set up an experiment using some germinating seeds and a lizard, as shown in the diagram below. In the set-up, the drop of ink prevents air from entering each of the test tubes A, B and C.



It was observed that when the tubes were first placed into the basin of warm water, all the 3 ink drops moved away from the test tubes immediately.

(a) Explain this observation. [1]

_____

_____

Three days later, the ink drops moved towards the test tubes in **tubes A and C.**

(b) Explain the observation for each tube. [2]

Tube A: _____

_____

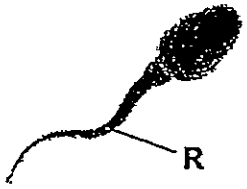
_____

Tube C: _____

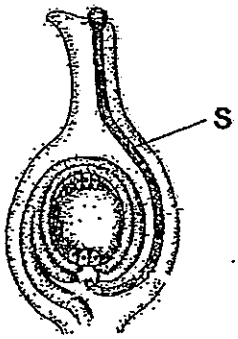
_____

_____

34. P and Q show the structures (not drawn to scale), produced by the male reproductive organs of an animal and a plant respectively.



P (animal)



Q (Plant)

(a) Complete the table below with the correct information about the structures shown in the diagrams. [1]

Structure	Name of Structure	Male organ which produces the structures
P	(i) _____	testes
Q	pollen	(ii) _____

(b) Part R is a tail and part S is the pollen tube. Explain how parts R and S enable reproduction to take place in each of these organisms. [2]

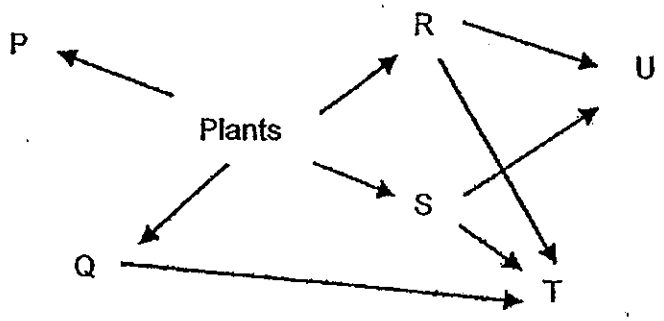
(i) R: _____

_____

(ii) S: _____

_____

35. The food web below shows six types of animals, P, Q, R, S, T and U, in a particular community.

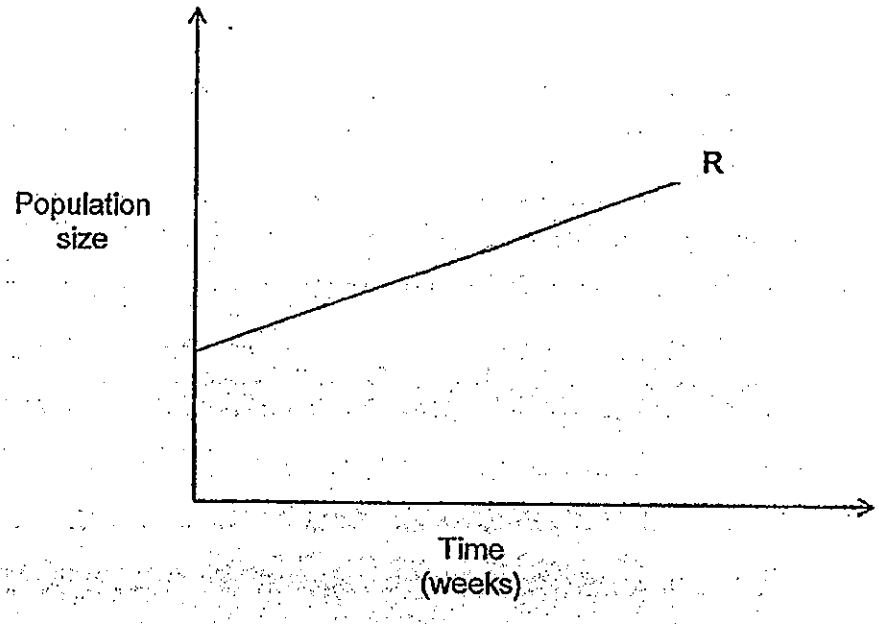


(a) What will likely happen to the population of P when there is a disease that wiped out only the population of T in the habitat? Explain your answer. [2]

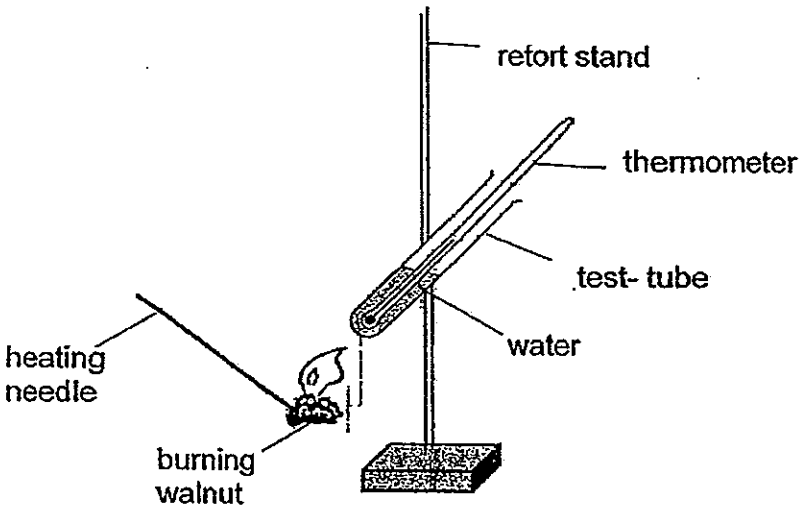
_____

_____

(b) In the graph provided below, **complete the graph** by drawing and labeling a line graph which best represents how the population of U is likely to be affected when the entire population of T was removed from the habitat. The graph showing how population R would be affected has been drawn for you. [1]



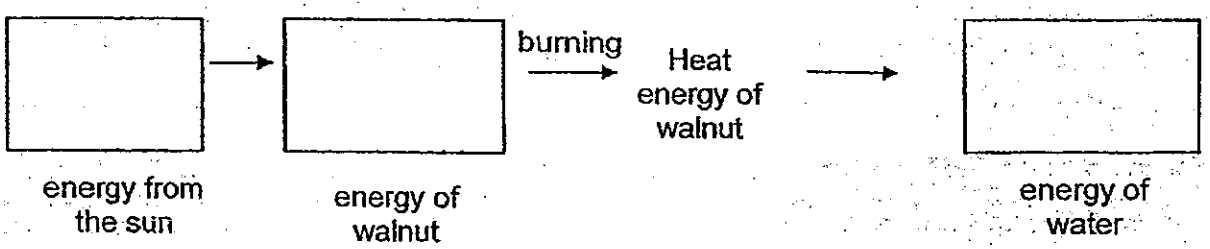
36. The diagram below shows the set-up of a test that could be used to find out the amount of energy released when food, such as the walnut is burnt.



Procedure of the test

- Record the temperature of the water in the test tube.
- Use a heating needle to hold a walnut in a strong flame until it catches fire.
- Place the burning walnut immediately beneath the large test tube until the flame goes out.
- Record the temperature of the heated water

(a) State the energy conversion that takes place from the sun to the walnut and lastly to the water in the above test. [1]



(b) The set-up was used to test 3 types of food, A, B and C. The data obtained is shown below.

Food	Temperature of water (°C)	
	Before heating	After heating
A	25	32
B	25	40
C	25	34

Using only the data shown above, which food, A, B or C must be consumed in the largest quantity to obtain as much energy as the others? Explain why. [2]

_____

_____

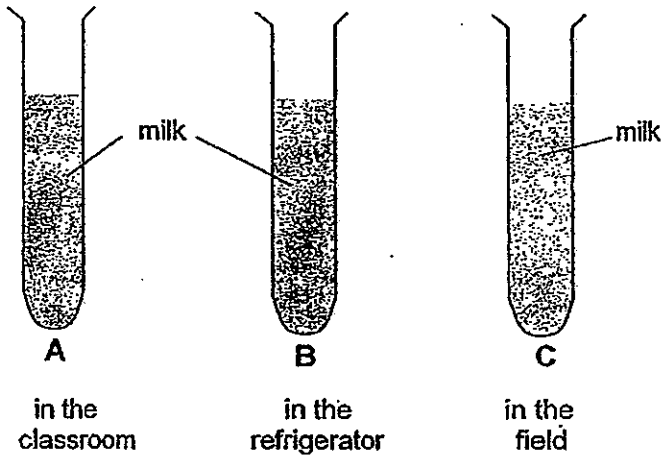
_____

(c) Explain how the distance between the burning food and the test tube affects the result of the experiment. [1]

_____

_____

37. Pei Pei carried out an experiment as shown below.



She put the same amount of milk in each of the test tubes and left them at different places. After a few days, she noticed that the milk in test tubes A and C had turned bad.

(a) Name the organism that could have caused this change in the milk. [1]

_____

(b) Name and explain the process that had caused this change in the milk. [1]

_____

_____

_____

(c) Explain why this process did not happen in test tube B. [1]

_____

_____

38. Judy placed 3 aquatic organisms, P, Q and R, in an aquarium and recorded the number of each type of organism in the table below. The conditions in the aquarium were favourable to the survival of all the 3 organisms. The number of each organism present after 1 week was recorded in the table below.

Then, she added some organism X into the aquarium. After 1 week, she observed that there were fewer organism X in the aquarium and also noted the change in the population of the other organisms.

	P	Q	R
Number of organisms at the beginning	10	20	10
Number of organisms before Organism X was put into the aquarium	10	20	10
Number of organisms after Organisms X was put into the aquarium	10	10	15

(a) Based on the information provided in the table above, describe the food relationship among organisms X, Q and R. [1]

_____

_____

_____

(b) When Judy removed all of Organism P from the aquarium, she noticed that organism X, Q and R started to swim near the surface of the water.

What could Organism P most likely be? Give a reason for your answer. [2]

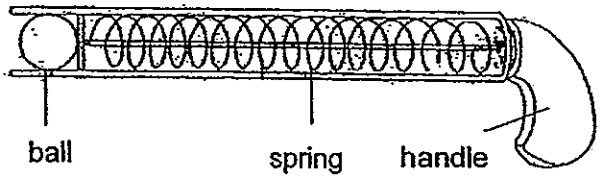
_____

_____

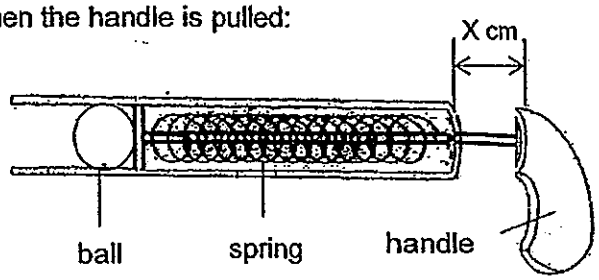
_____

39. The diagrams below show a popgun that works using a spring. When the handle is pulled back at a distance of 'X' cm and released, the ball will shoot out of the popgun.

When the handle is not pulled:



When the handle is pulled:



The table below shows the distance travelled by the ball when the handle is pulled back at different lengths.

Length of X (cm)	Distance travelled by the ball (cm)
2	6
5	12
8	18
11	24
14	29
17	35
17	35

(a) Describe the relationship between the length of 'X' and the distance travelled by the ball. [1]

_____

_____

_____

(b) Name the force that enables the ball to shoot out of the popgun. [1]

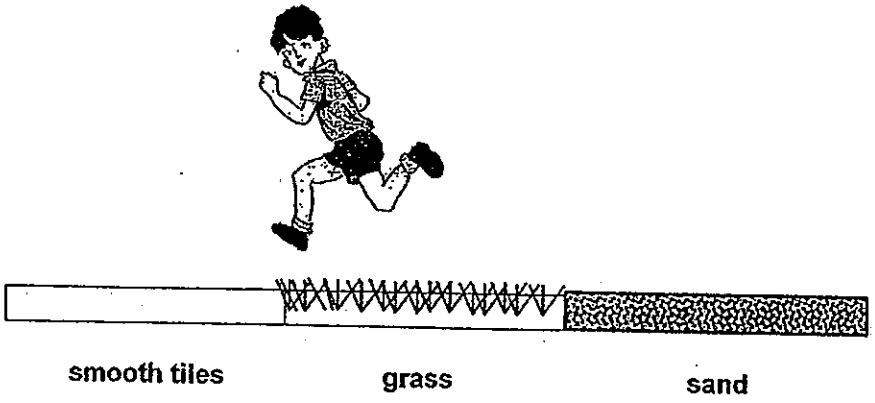
_____

(c) Explain why length of X cannot be greater than 17cm. [1]

_____

_____

40. Jack ran along a path on a rainy day as shown in the diagram below.



(i) On which part of the path is Jack most likely to fall? [1]

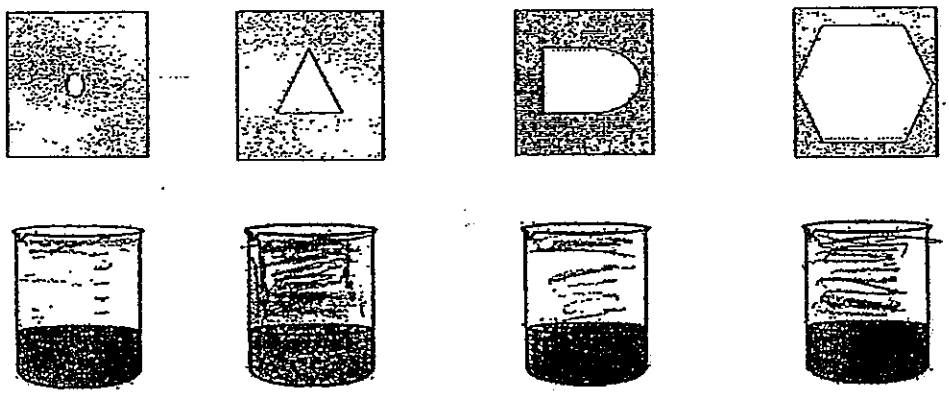
_____

(ii) Give a reason for your answer. [1]

_____

_____

41. Fiona wanted to confirm her hypothesis that the rate of evaporation of water is higher when the exposed surface area is bigger. She filled four beakers, A, B, C and D as shown in the diagram, with equal volume of water, and covered the beakers with the cards she had prepared. Different shapes had been cut out from the cards as shown. She placed three of the beakers on a table in the science room and another one at the balcony.



A B C D

Two days later, she measured the volume of water left in each beaker using a measuring cylinder. The readings are shown in the table below.

	Volume of water (ml)			
	Beaker A	Beaker B	Beaker C	Beaker D
Day 1	100	100	100	100
Day 2	85	65	71	57

Her father told her that she had not carried out a fair test as she must keep the location of all the beakers the same.

(a) Based on the results above, which beaker was most likely left at the balcony? Explain your answer. [2]

_____

_____

_____

(b) State two **other** factors that could affect the rate of evaporation. [1]

Factor 1: _____

Factor 2: _____

42. Four flasks were filled with different liquids, A, B, C and D and placed into a basin of water at room temperature as shown in figure 1 below. The liquid in each flask was adjusted to the same level.

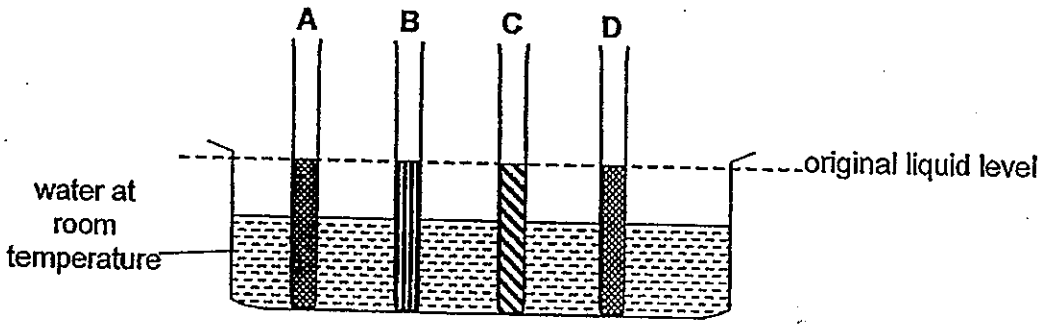


Figure 1

The four flasks were then placed into another basin filled with hot water. After 5 mins, the liquid levels in each flask rose, as shown in the figure 2.

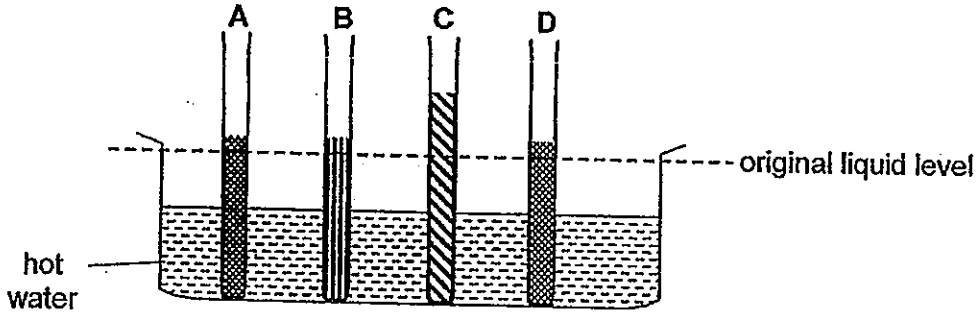
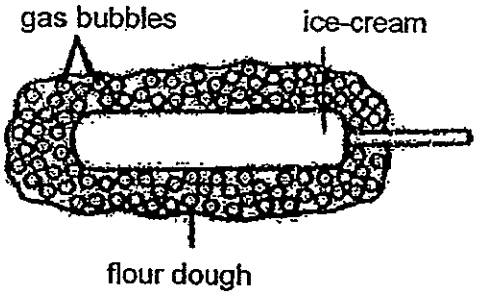


Figure 2

(a) State the aim of the experiment. [1]

(b) Which of the liquids, A, B, C or D, is the most suitable to be used to fill a laboratory thermometer? Explain your answer. [1]

43. The diagram below shows a fried ice cream.



Flour is mixed with substance X and water to make a special dough. The ice cream is then dipped into this special dough before being fried in hot oil. The special dough will produce gas bubbles when it interacts with hot oil.

Explain why the ice cream did not melt in the hot oil during deep frying. [2]

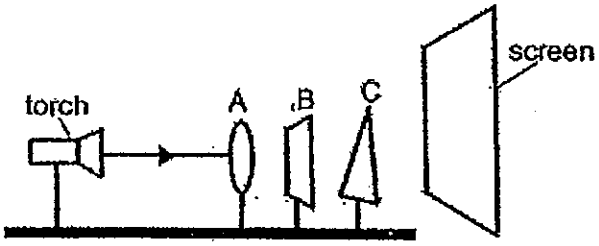
_____

_____

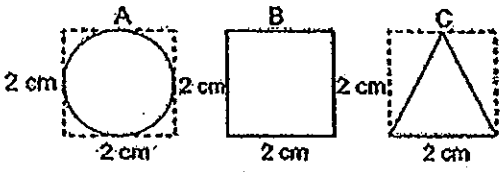
_____

_____

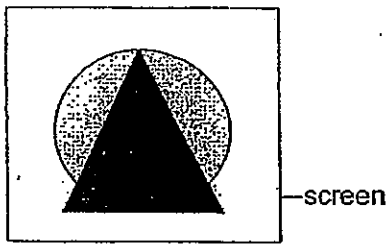
44. The diagram below shows three objects, A, B and C, each made of a different material placed between a torch and a screen in a room.



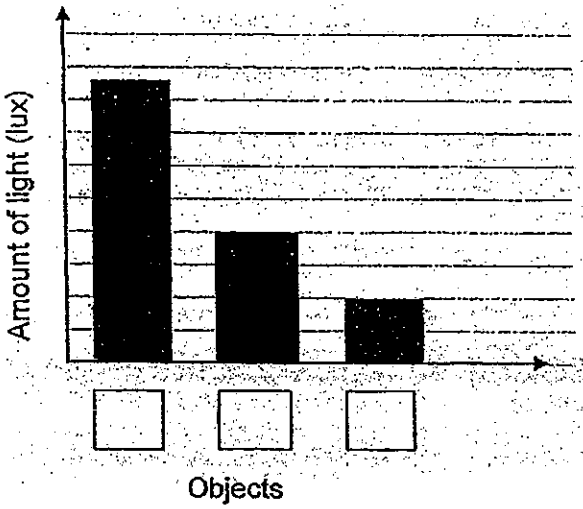
The dimensions of the three objects are given below.



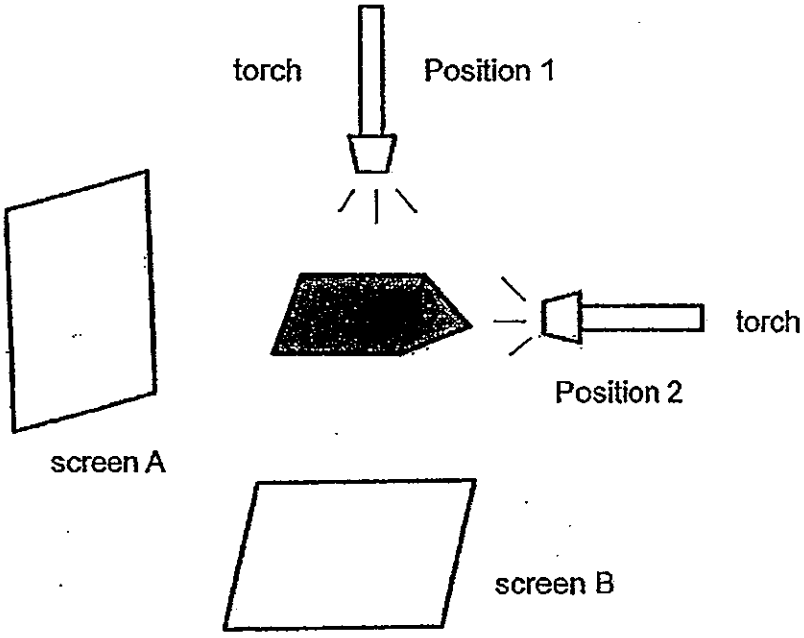
Mr Tan turned on the torch and observed the shadows that the different objects formed on the screen. The shadows appeared as shown below.



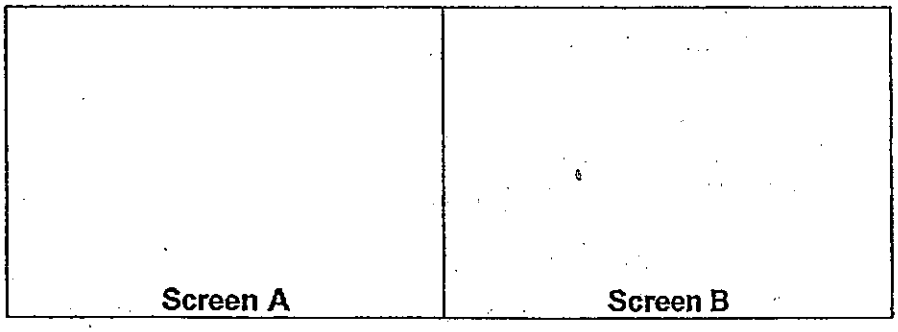
(a) Mr Tan used a datalogger to measure the amount of light passing through each of these objects individually. Based on the images formed on the screen above, identify the graphs which represent the light that passed through each object. Write the letters representing the objects in the boxes below. [1]



(b) Shirley shone a torch on an object made of opaque material from two different positions as shown in the diagram below. The shadows were cast on two screens, A and B.



(i) Draw the shape of the shadows formed on the two screens, A and B, respectively. [1]



(ii) Shirley noticed that the shadows formed on both the screens were very small. Suggest how she could make the shadows appear bigger. [1]

_____

_____

_____

ANSWER SHEET

EXAM PAPER 2013
SCHOOL : NANYANG
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

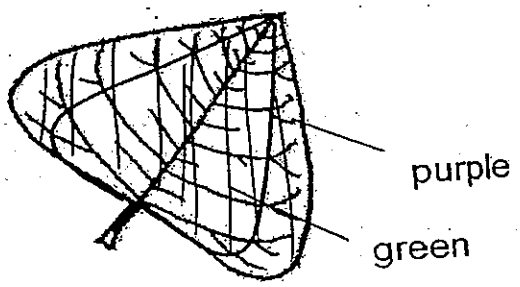
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	3	2	4	3	1	2	2	3	4	4	1	2

31)It increases the exposed surface area of the air sacs and the amount of oxygen taken in is increased.

32)a)Chloroplasts.

b)As leaf A was placed in cupboard, where there is no light, it could not photosynthesis and thus, leaf A will not make glucose, which us stored as starch.

c)i)



ii)The chlorophyll is a green pigment that traps sunlight to make food.

33)a)The water heat the air, which then expanded and pushed the ink drop away.

b)A: Germinating seeds take in oxygen and give out carbon dioxide than the chemical absorbs the carbon dioxide resulting in a decrease of air.

C: The lizard took in oxygen and give out carbon dioxide then the chemical absorbs the carbon dioxide resulting in a decrease of air.

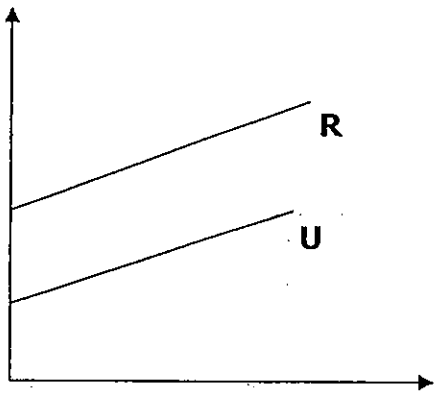
34)a)i)sperm ii)anther

b)i)It enables the sperm to move to the egg.

ii)It allow male cells to travel to the ovary.

35)a)The population Q, R, S will increase, plant population will decrease and P will have lesser plants to feed on.

b)



36)a)Light energy→Chemical energy→Heat energy

b)A. Since temperature of water increased the least, it gives off the leas amount of energy.

Or) Since the temperature of water increased the least, it has lesser chemical potential energy to be converted to heat energy.

c)Distance between the burning food and tube will affect the temperature of water.

37)a)Bacteria.

b)Decomposition. The bacteria broke down the milk, causing it to go bad.

c)Test tube B is left in the refrigerator, temperature is too low for the bacteria.

38)a)X eats Q but gets eaten by R.

b)When P is removed, no photosynthesis is available, thus, organism swim nearer to the water surface to take in more dissolved oxygen.

39)a)As the length of 'X' increases the distance travelled by the ball increases.

b)Elastic spring force.

c)The spring has already been compressed to its fullest length.

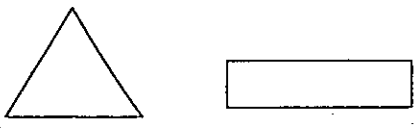
40)i)Smooth tiles.
ii)Smooth tiles has the least friction between Jack's shoes and the smooth adding water makes the smooth tiles even smoother.

41)a)Beaker B. It had a smaller exposed surfaced compared to C but still managed to have less water left after the experiment.
b)1: Humidity.
2: Wind.

42)a)To find out which liquid expands the most when heated.
b)C. It was the most sensitive to the temperature.

43)Air bubbles are poor conductors of heat and prevented ice cream gaining heat quickly.

44)a)B A C
b)i)



ii)She could decrease the distance between the torch and the object.

RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)
2013

Section A	60
Section B	40
Your score out of **100** marks	
Parent's signature	

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

7 May 2013 **SCIENCE** **Attn: 1h 45min**

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.

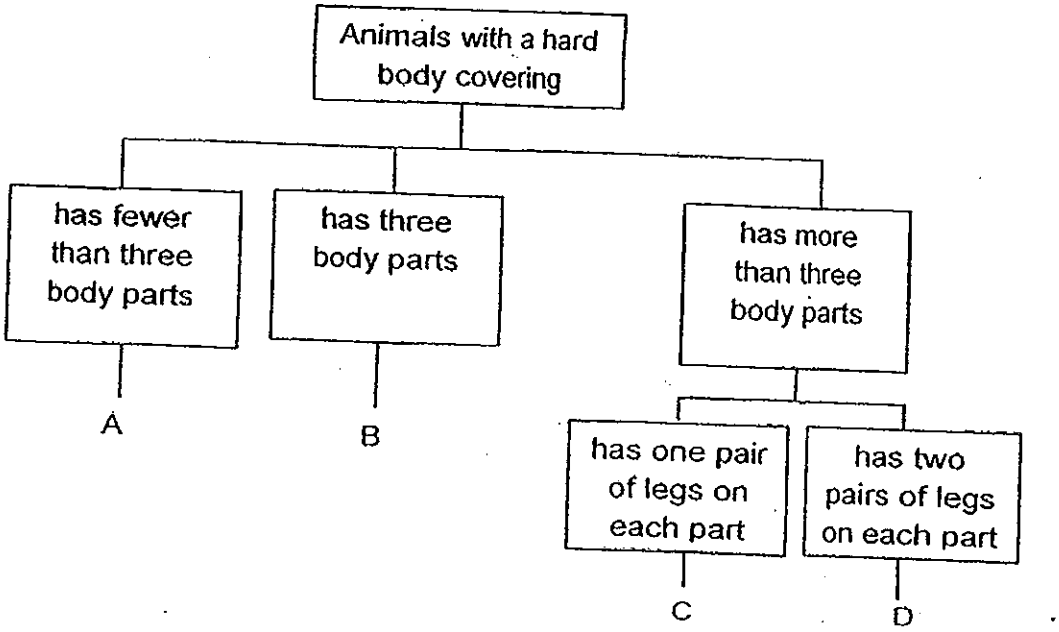
1. Plants W, X, Y and Z, have common characteristics as shown in the table below. A tick (✓) shows the presence of the characteristics of the plant.

Characteristics \ Plants	W	X	Y	Z
Bears fruit	✓			✓
Grows in water		✓	✓	✓

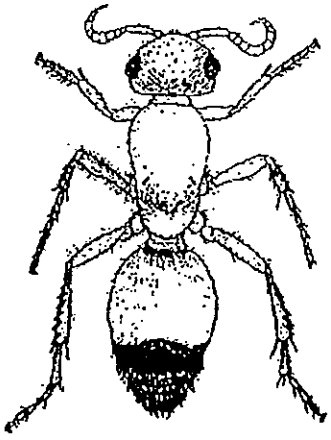
Based on the given information above, which one of the following shows the correct classification of the plants?

	Flowering Plant	Aquatic plant
(1)	W	X
(2)	X	Y
(3)	Y	Z
(4)	Z	W

2. The diagram below shows how organisms A, B, C and D are classified.



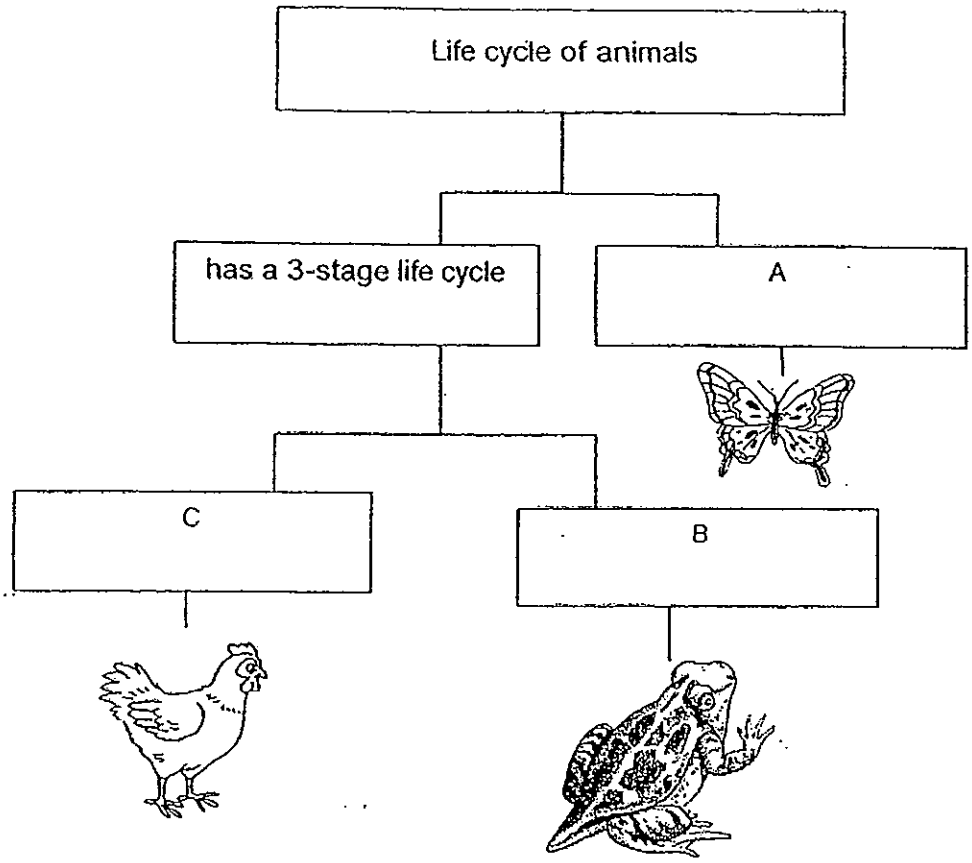
Randy found an animal which has a hard body covering as shown below.



Which one of the following, A, B, C or D, best represents the above organism?

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

3. The classification below shows how animals can be classified according to their life cycles.



Which one of the following best represents the sub-headings for **A**, B and C?

	A	B	C
(1)	has 2 stage life cycle	its young looks like the adult	its young does not look like the adult
(2)	has 2 stage life cycle	its young does not look like the adult	its young looks like the adult
(3)	has 4 stage life cycle	its young does not look like the adult	its young looks like the adult
(4)	has 4 stage life cycle	its young looks like the adult	its young does not look like the adult

4. John carried out an experiment to find out how the temperature of the surroundings affects the germination of seeds. He planted the same number of seeds of the same type in five identical pots of soil. The pots were exposed to different temperatures. He observed the seeds over a period of 5 days and recorded his results in the table shown below.

Temperature (°C)	Total number of seeds germinated				
	Day 1	Day 2	Day 3	Day 4	Day 5
0	0	0	0	0	0
10	0	0	0	1	5
20	0	2	5	10	13
30	0	6	11	14	18
40	0	0	0	0	0

Based on the information in the table above, John made the following statements.

A Most seeds germinated at 30°C.

B At 10°C, germination of seeds started at day 3.

C The average number of seeds germinated increases as the surrounding temperature increases from 10°C to 40°C.

Which of John's conclusion(s) is/are definitely true?

(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

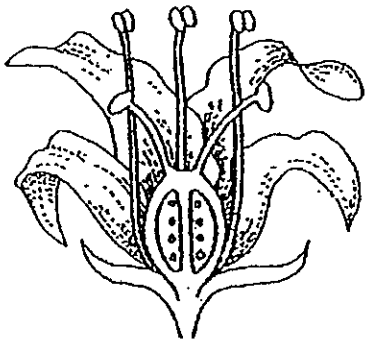
5. The table below shows the comparison between the male and female reproductive systems in a human.

	Reproductive organs	Reproductive cells
Female	**W**	Eggs
Male	Testis	**X**

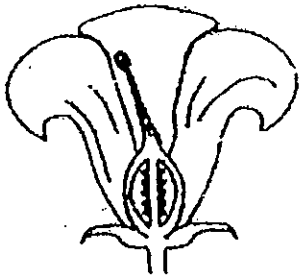
Which of the following correctly represents **W** and **X**?

	W	X
(1)	Ovary	Womb
(2)	Sperms	Ovary
(3)	Ovary	Sperms
(4)	Womb	Sperms

6. The diagrams below show the cross-sections of two different types of flowers, W and X.



W



X

Which of the following are true about flowers, W and X?

A Both flowers have female parts.

B Both flowers can be pollinated by insects.

C Pollen can be transferred to the stigma within flower W.

D After fertilisation, only flower W can develop into a fruit.

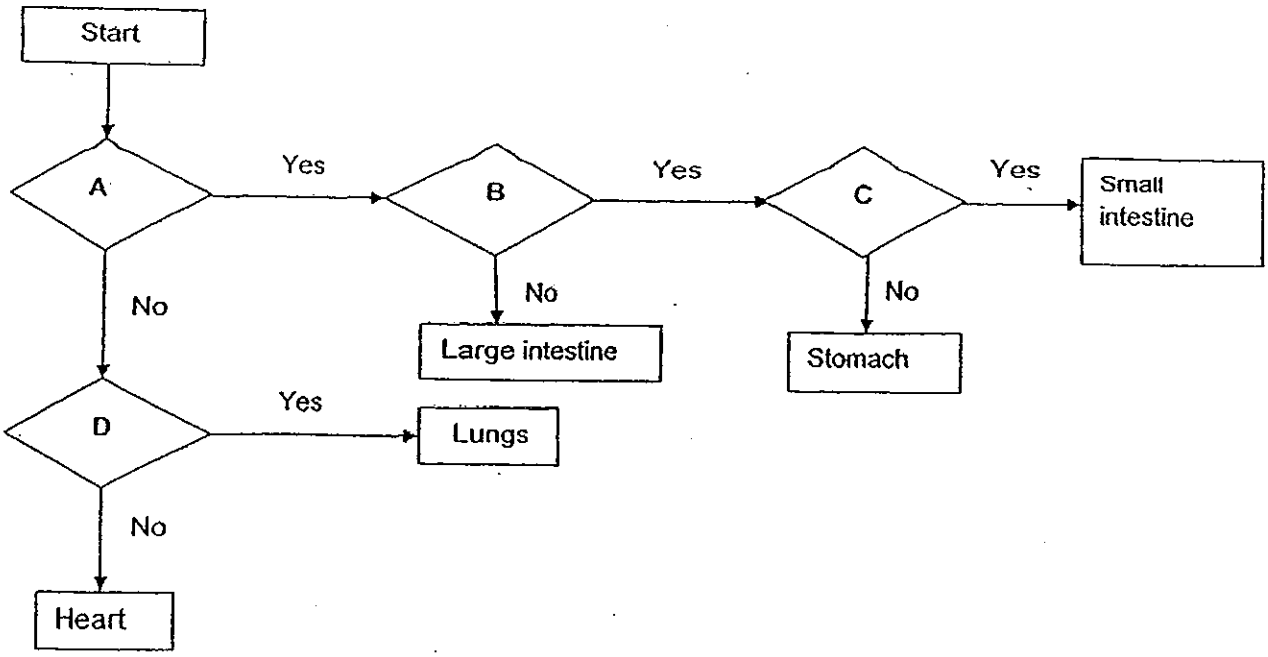
(1) A and D only

(2) B and D only

(3) A, B and C only

(4) B, C and D only

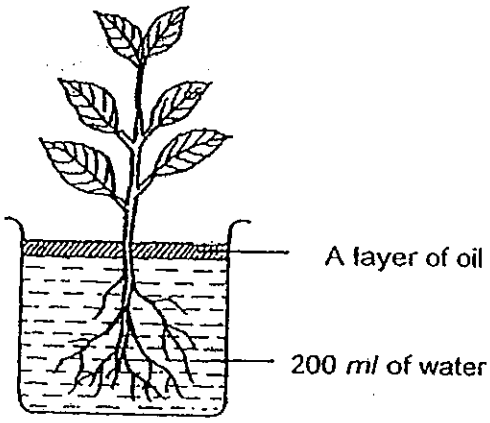
7. Study the flow chart shown below carefully.



With reference to the above table, which of the following best represents A, B, C and D?

	A	B	C	D
(1)	Is it part of the respiratory system?	Does it break down food?	Does it absorb digested food into the bloodstream?	Is it part of the digestive system?
(2)	Is it part of the respiratory system?	Does it absorb digested food into the bloodstream?	Does it break down food?	Is it part of the digestive system?
(3)	Is it part of the digestive system?	Does it absorb digested food into the bloodstream?	Does it break down food?	Is it part of the respiratory system?
(4)	Is it part of the digestive system?	Does it break down food?	Does it absorb digested food into the bloodstream?	Is it part of the respiratory system?

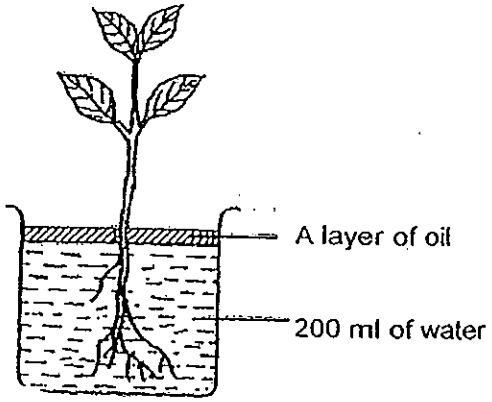
8. John set up an experiment as shown below to find out if the amount of roots affects the rate of absorption of water from the roots.



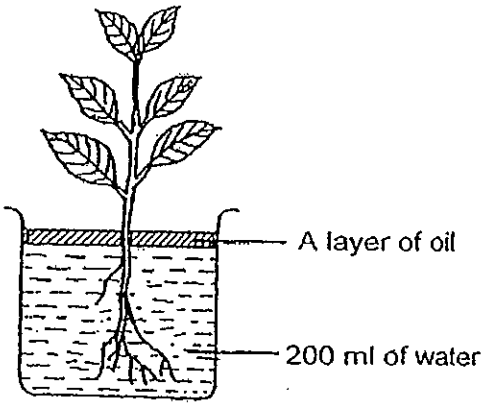
His friend, Jake, told him to prepare another set-up so that he can compare his findings.

Which one of the following set-ups should John use in order to ensure a fair test?

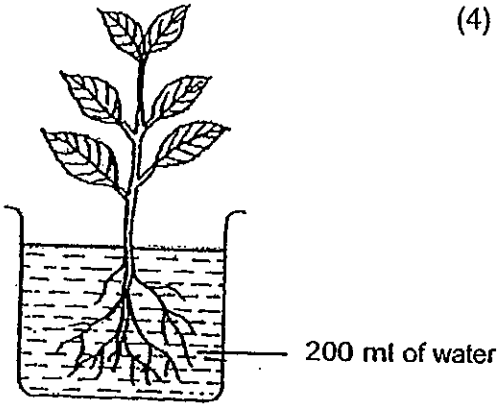
(1)



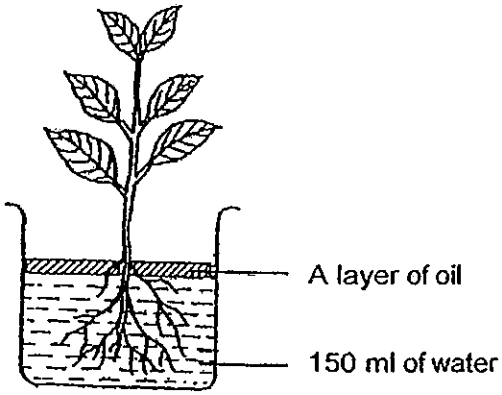
(2)



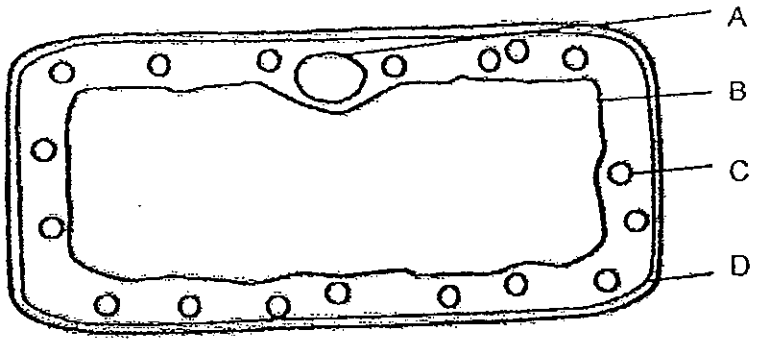
(3)



(4)



9. The diagram below shows a cell.



When one part of the cell was removed, the cell was not able to undergo cell division.

Which part of the cell, A, B, C or D, was removed?

(1) A

(2) B

(3) C

(4) D

10. Tom took a slow walk for 10 minutes just before he started running continuously for 20 minutes. His heartbeat was increasing while he was running.

Which of the following statement(s) is/are most likely to be correct?

A His pulse rate was higher during running than during walking.

B The air he inhaled contained more oxygen during running than during walking.

C His heart pumped blood more quickly to the lungs during running than during walking.

(1) A only

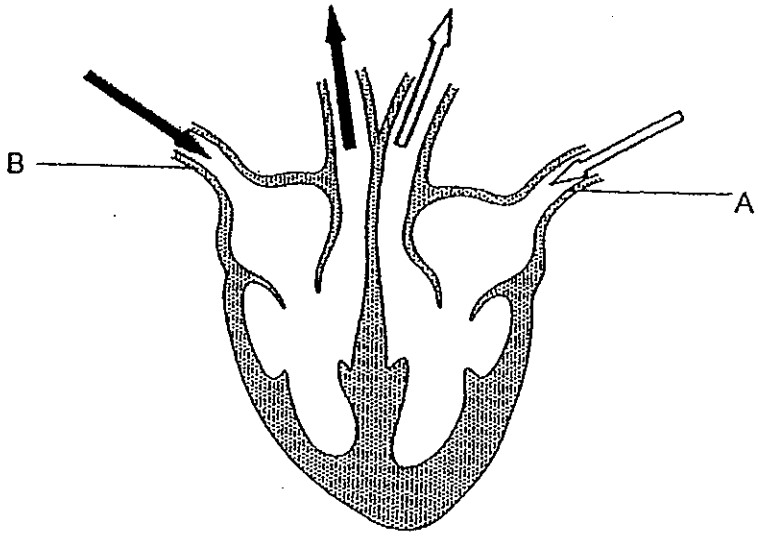
(2) A and C only

(3) B and C only

(4) A, B and C only

11. The diagram below shows the cross-section of a human heart with arrows showing the direction of blood-flow.

A and B are blood vessels transporting blood to the heart.



Key	
⇨	blood rich in oxygen
➡	blood rich in carbon dioxide

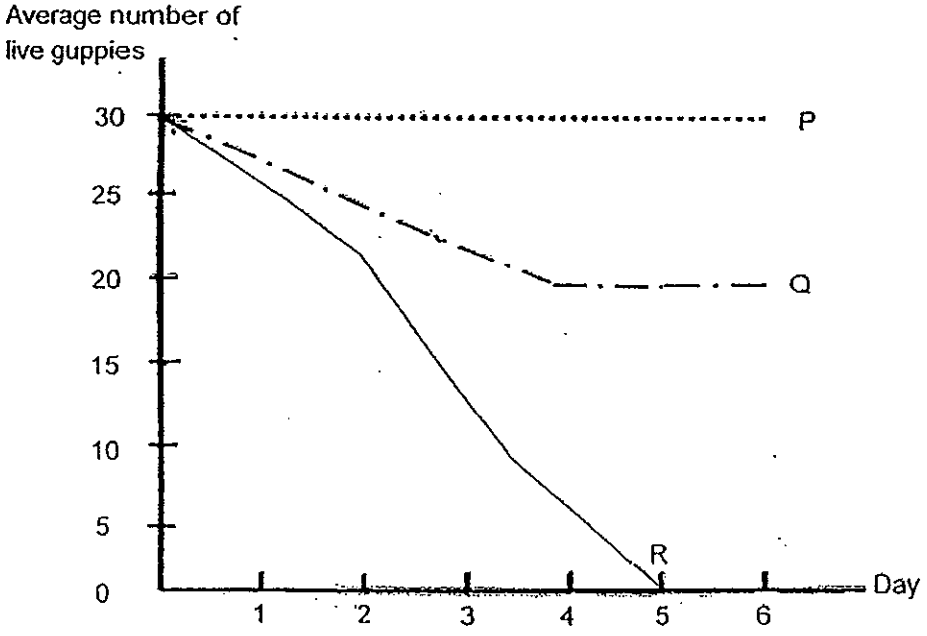
Which of the following correctly identifies the blood vessels, A and B, that receives the blood flowing from the head, lungs and legs respectively?

	Blood vessel that receives blood from		
	Head	Lungs	Legs
(1)	A	B	A
(2)	A	A	B
(3)	A	B	B
(4)	B	A	B

12. Pollutant X is known to be harmful to aquatic organisms. Hence, Ryan wanted to find out how the amount of pollutant X affects the survival rate of guppies.

He released 30 healthy male guppies into 3 identical aquariums, P, Q and R. Then he added different amounts of pollutant X into two of the aquariums. He counted the number of guppies in each aquarium over a period of six days.

He repeated the experiment and plotted the results as shown in the graph below.



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

A R has a larger amount of pollutant X than Q.

B The number of live guppies in Q remains constant on Day 4 onwards.

C The death rate of guppies is the same as the birth rate of guppies in P.

D The death rate of guppies in Q is higher than the death rate of guppies in R.

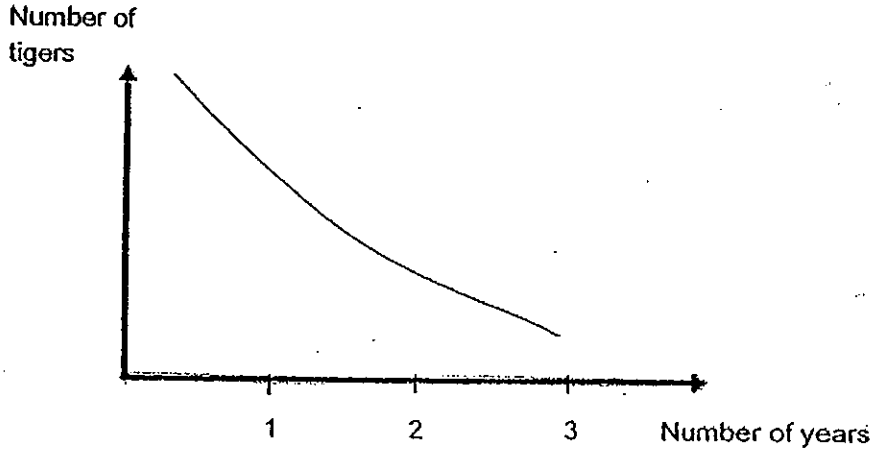
(1) B only

(2) A and B only

(3) C and D only

(4) A, C and D only

13. Mr Tan studied a population of tigers in a habitat over a period of three years. The graph below shows the change in the tiger population over a 3-year period.



Which of the following could possibly explain the change in the population of tigers?

A There was a natural disaster in the habitat.

B The number of zebras in the habitat increased.

C The number of tiger hunters in the habitat increased.

D The number of flowering plants in the habitat increased.

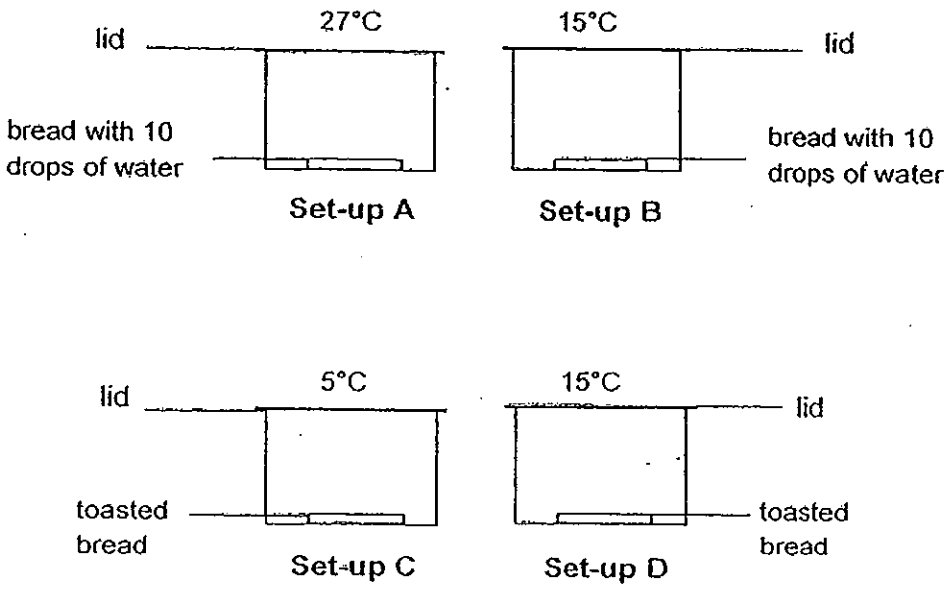
(1) A and B only

(2) A and C only

(3) B and D only

(4) C and D only

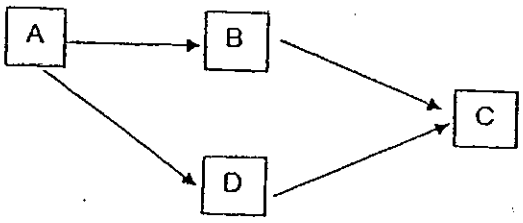
14. Ahmad wanted to find out how different conditions affect the growth of mould. He placed an identical slice of bread in each of the 4 sealed containers A, B, C and D. Each slice of bread was exposed to different conditions and observed over 3 days.



Which of the following correctly identifies the set-ups with the greatest amount and the least amount of mould on the bread?

	Set-up with the most amount of mould on the bread	Set-up with the least amount of mould on the bread
(1)	A	B
(2)	A	C
(3)	B	D
(4)	C	D

15. Organisms A, B, C and D were being kept in an enclosed man-made habitat. One of the organisms is a plant. The diagram below shows a food web involving organisms A, B, C and D.



When a new organism, E, was introduced into the habitat, the following observations were made:

- an increase in the populations of B and D
- a decrease in the populations of A and C

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

(1) E is a plant

(2) E preys on A only

(3) E preys on C only

(4) E preys on D only

16. The table shows some animals found on a plant and the food they eat.

Animals	Food
P	plant sap
Q	Animal P
R	leaves
S	fruit

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

A Q is a predator.

B S can help the plant to disperse its seeds.

C There are 4 populations of plant-eaters on the plant.

D An increase in the number of R on the plant will help the plant to make more food.

(1) A and B only

(2) B and C only

(3) A, B and D only

(4) A, C and D only

17. X and Y are two different types of foxes living in different natural habitats. X lives in a habitat, which is warm in summer. However, it is covered in snow during winter. Y lives in a desert.

Which one of the following shows the structural adaptation of the fox and its purpose correctly?

	Adaptation	Purpose
(1)	X has small ears.	To help it lose heat to its surroundings more quickly
(2)	X has fur on soles of feet.	To help it to reduce heat gain from the snow during winter
(3)	Y has large ears.	To help it to gain heat from its surroundings more quickly
(4)	Y has fur on soles of feet.	To help it to reduce heat gain from the hot sand.

18. Scientists have predicted that the average temperature of the Earth will continue to rise in the next ten years.

~~Which of the following can help to slow down the rate of the rising Earth's temperature?~~

A An increase in reforestation activities

B An increase in the number of vehicles owned by people

C A decrease in the use of paper for making disposable utensils

D A decrease in the amount of rubbish being sent to incinerators

~~Which of the above items can be sent to a factory for recycling?~~

(1) B and C only

(2) B and D only

(3) A, B and C only

(4) A, C and D only

19. Ali carried out a scratch test to compare the hardness of material A, B, C and D. He recorded his findings below.

- C leaves a scratch mark on D.
- A leaves a scratch mark on B.
- B leaves a scratch mark on C.

Which one of the following conclusions is correct?

(1) B is harder than A.

(2) A is the softest material.

(3) B is the softest material.

(4) C is harder than D but softer than A.

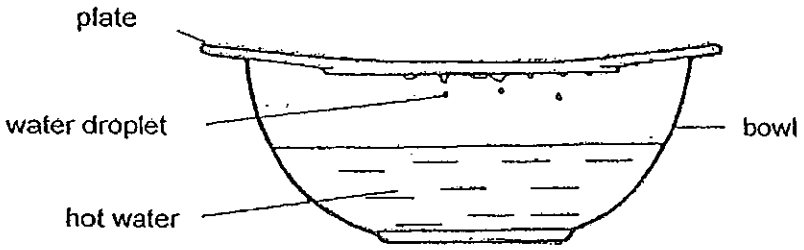
20. Mike poured an equal amount of water into three rectangular containers, P, Q and R, which were made of the same material.

Mike left all the three containers in direct sunlight from 8am to 4pm.Then he recorded the amount of water left in each container. He observed that Q had the greatest amount of water left in it, followed by R, and then P.

Which one of the following shows the correct arrangement of the exposed surface area of water in increasing order?

			container with the largest exposed surface area of water →
(1)	P	Q	R
(2)	P	R	Q
(3)	R	P	Q
(4)	Q	R	P

21. Chi Keong placed a cold metal plate over a bowl of hot water. After some time, he saw water droplets on the underside of the metal plate but he observed that the rate at which the water droplets were formed changed over time.



Which one of the following shows the correct observation and explanation?

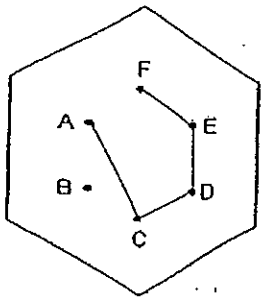
	Observation	Explanation
(1)	Amount of water droplets formed increased over time.	The plate gained heat from the water vapour outside the bowl and became warmer.
(2)	Amount of water droplets formed increased over time.	The plate lost heat to the surrounding air and became cooler.
(3)	Amount of water droplets formed decreased over time.	The plate gained heat from the water vapour in the bowl and became warmer.
(4)	Amount of water droplets formed decreased over time.	The plate lost heat to the surrounding air and became cooler.

22. 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.

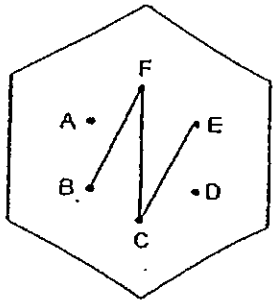
Metal pins connected to the circuit tester	Did the bulb light up?
A and B	no
A and F	yes
B and D	no
C and E	yes
D and E	yes

Which one of the following identifies the circuit card used?

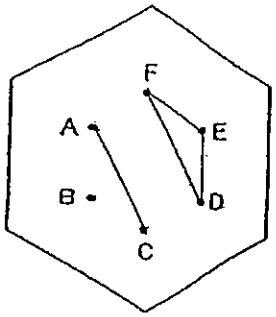
(1)



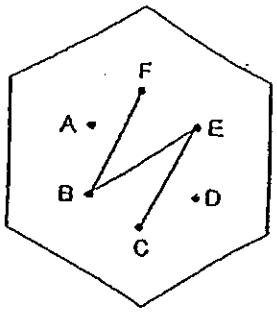
(2)



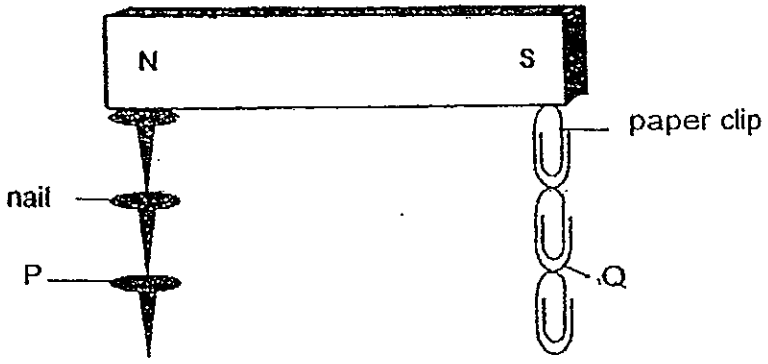
(3)



(4)



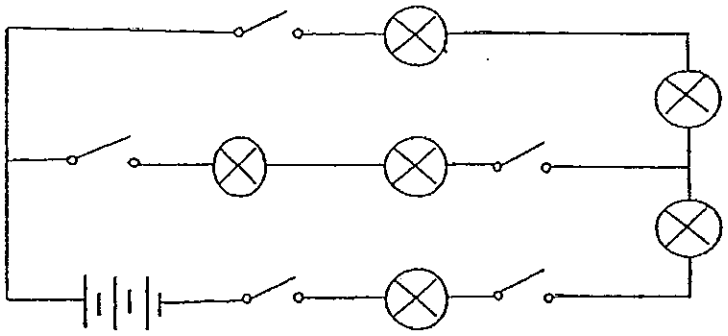
23. A strong bar magnet was able to attract a string of iron nails at one end and a string of steel paper clips at the other end as shown in the diagram below.



Which one of the following correctly identifies the poles of the iron nail at P and steel paper clip at Q?

	P	Q
(1)	N-pole	N-pole
(2)	N-pole	S-pole
(3)	S-pole	S-pole
(4)	S-pole	N-pole

24. The diagram below shows an electrical circuit.



What is the minimum number of switches which need(s) to be closed to light up **only** four bulbs?

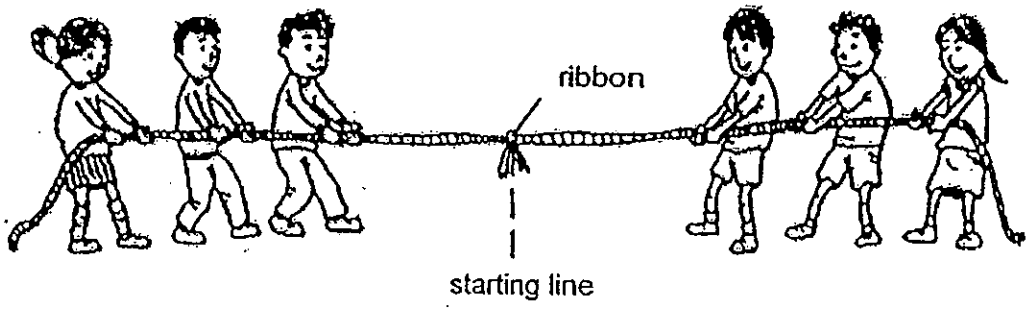
(1) one

(2) two

(3) three

(4) four

25. The diagram below shows two groups of children playing tug-of-war. The group, which gets the ribbon on the rope over to their side, wins the game.



The ribbon remained at the starting line even though both groups had been pulling the rope for some time.

Which one of the following explains why the ribbon on the rope remained at the starting line?

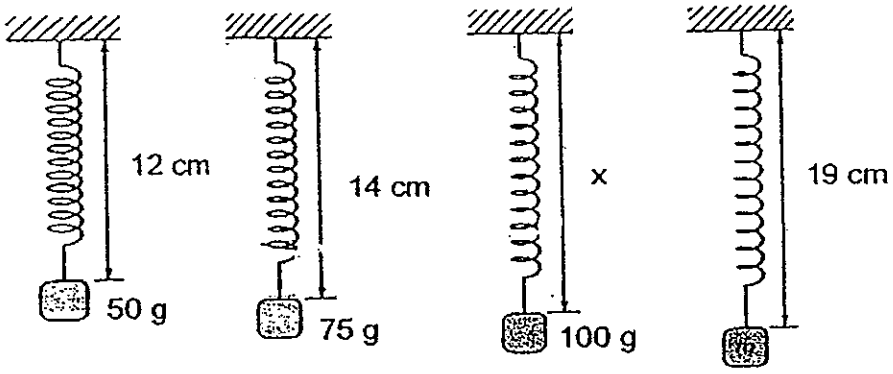
(1) No force was acting on the rope.

(2) Both groups exerted the same amount of force.

(3) One group did not exert as much force as the other group.

(4) Gravity acting on the rope prevented the ribbon on it from moving.

26. The diagram below shows four identical springs with different masses attached.

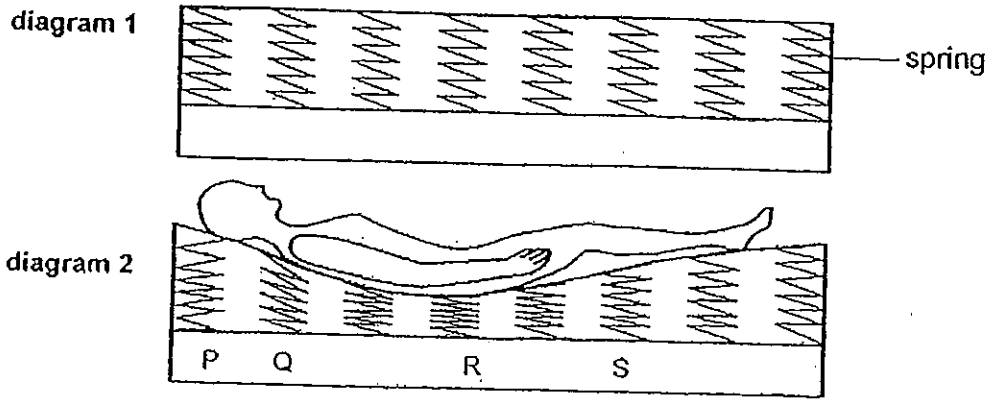


Which one of the following correctly identifies the values of x and m respectively?

	x (cm)	m (g)
(1)	16	125.0
(2)	16	137.5
(3)	18	125.0
(4)	18	137.5

27. The mattress of a bed contains identical springs spread evenly over a hard surface as shown in diagram 1.

Diagram 2 below shows the change that takes place when a person lies on the bed.



Which of the following statements about the forces acting on the springs in diagram 2 are true?

A R compresses the most as the greatest force is acting on it.

B P extends more than S as more force is acting on P than R.

C Q compresses less than R as less force is acting on Q than R.

D All springs have the same extension as an equal amount of force is acting on each spring.

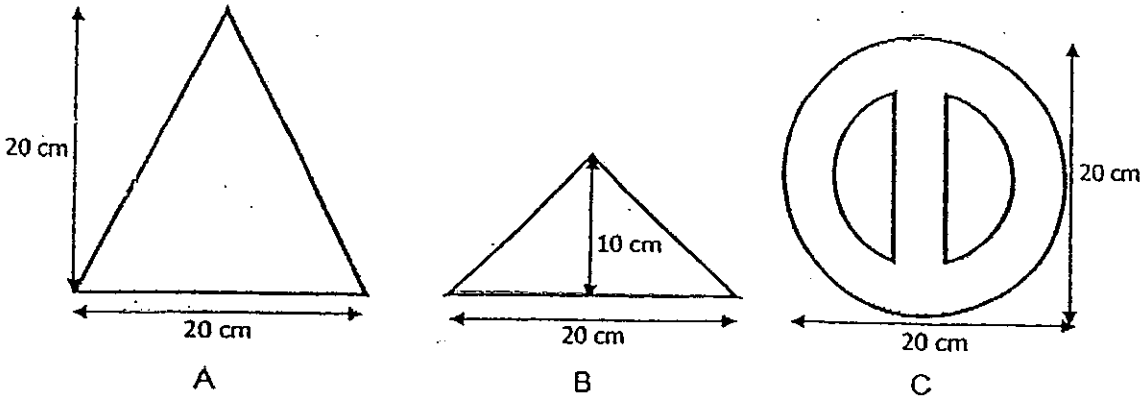
(1) A and C only

(2) B and D only

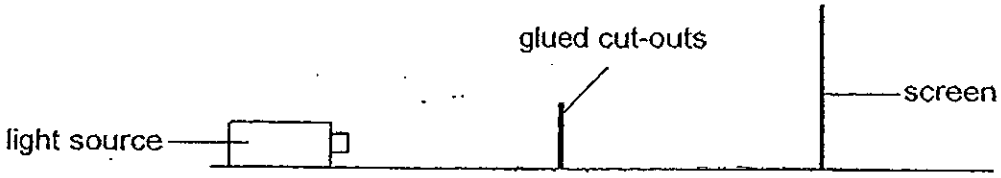
(3) A, B and C only

(4) A, B and D only

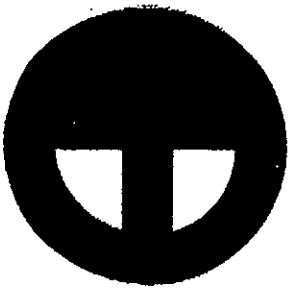
28. The diagrams below show three cut-outs, each from a different material.



The three cut-outs were glued together and then placed between a light source and a screen as shown below.



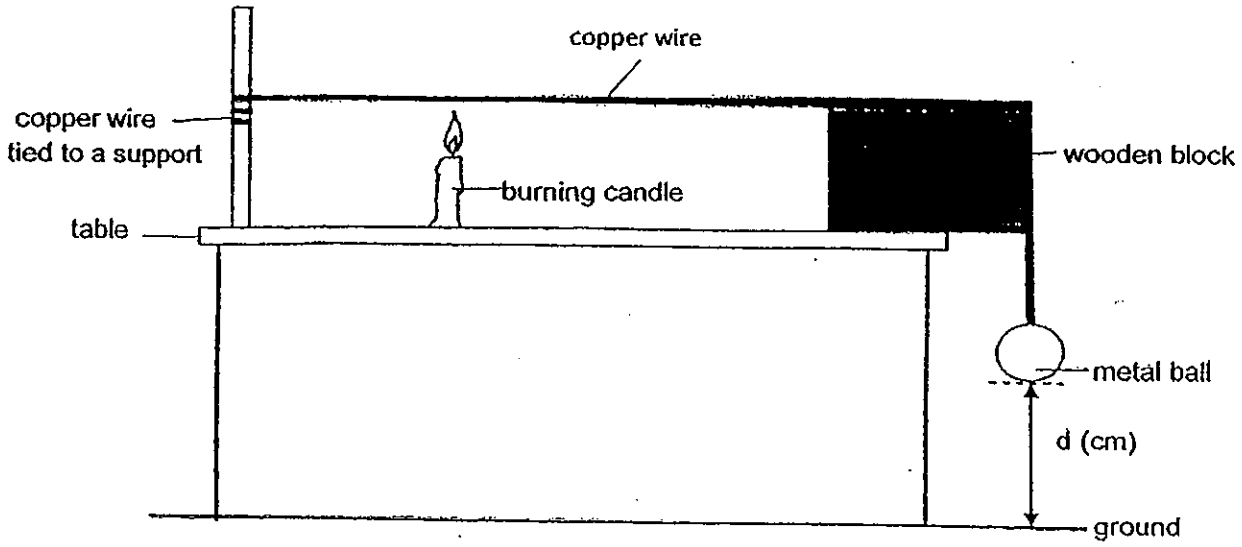
The diagram below shows the shadow shown on the screen.



Which one of the following correctly identifies the material for each cut-out?

	A	B	C
(1)	cardboard	clear glass	aluminium foil
(2)	cardboard	aluminium foil	clear glass
(3)	clear glass	aluminium foil	cardboard
(4)	aluminium foil	clear glass	cardboard

29. Kumar placed a burning candle flame just below a copper wire with one of its end attached to a metal ball as shown in the diagram below.



Which of the following took place when the lighted candle continued to burn under the copper wire for some time?

A The copper wire gained heat and expanded.

B The wooden block gained heat and contracted.

C The copper wire contracted and shortened slightly.

D The distance between the metal ball and the ground, d (cm), decreased.

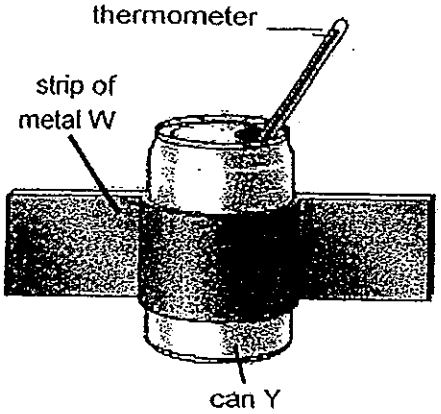
(1) A and D only

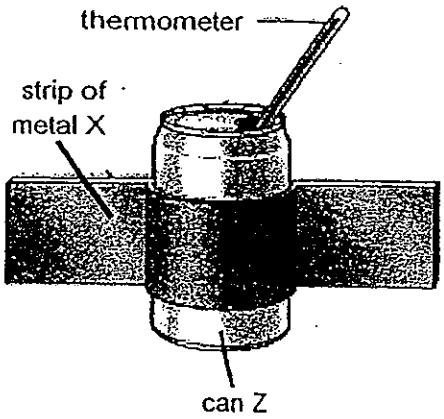
(2) B and C only

(3) A, C and D only

(4) B, C and D only

30. Ben filled two identical metal cans, Y and Z, with 150 cm^3 of water at 80°C. Next, he wrapped a strip of metal W around can Y and another strip of metal X around can Z, as shown in the diagrams below. The metal strips, which extended out of the cans, were made of a different material but of the same length and thickness.





Ben recorded the temperature of the water in each can every 5 minutes as shown in the table below.

Time (min)	Temperature of the water in can (°C)	
	Y	Z
0	80.0	80.0
5	64.0	60.0
10	53.0	49.0
15	51.0	48.0
20	48.5	43.5

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

A Metal X is a better conductor of heat than metal W.

B The temperature of water in can Y drops more quickly than that in can Z.

C The water in can Z loses heat more quickly to the surroundings than the water in can Y.

(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

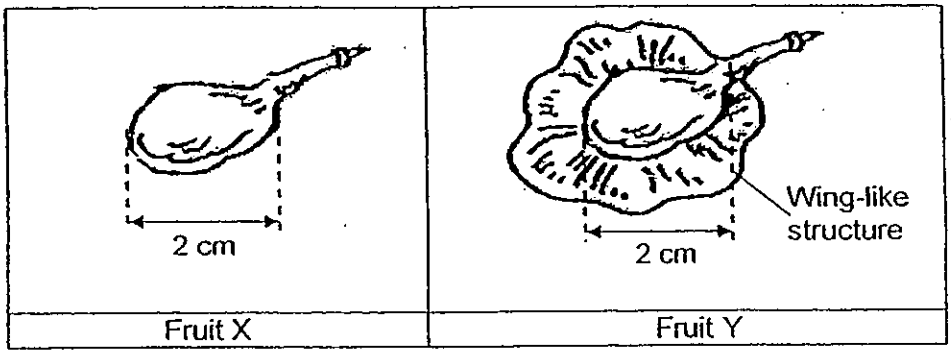
Name : _____ Index No : _____ Class : P6 ____

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. Ali wanted to find out if the presence of the wing-like structure of a fruit affects the time the fruit stay afloat in the air. He had two fruits, X and Y, of the same species. The wing-like structure of fruit X was removed as shown in the diagram below.



Ali dropped each fruit from the fourth storey and measured the time taken for each fruit to reach the ground. He repeated his experiment twice.

Fruit	Time taken for each fruit to reach the ground (s)			
	1st try	2nd try	3rd try	Average
X	6.2	6.5	6.3	6.3
Y	7.5	7.4	7.1	7.3

(a) What conclusion can Ali draw from the results? [1]

_____

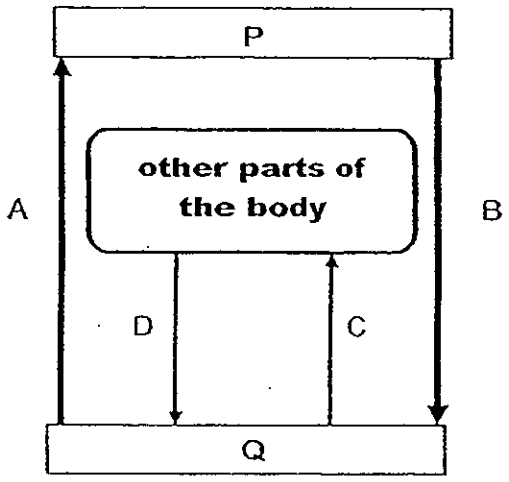
_____

(b) Name one force which was acting on the falling fruits, X and Y. [1]

_____

Score ____ / 2

32. The diagram below shows how the blood flows from one part to another part in the human body. The directions of blood flow are indicated by arrows A, B, C and D.



(a) What do organs P and Q represent? [1]

(i) P : _____

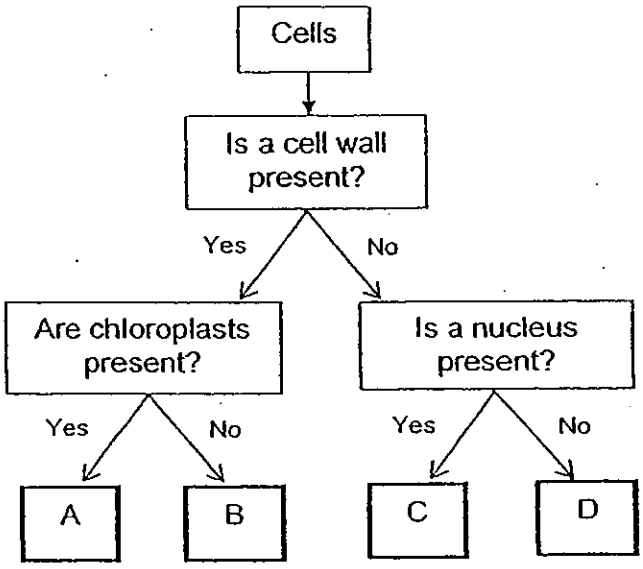
(ii) Q : _____

(b) Name the part of the skeletal system which protect(s) organ P and Q. [1]

_____

Score	/ 2

33. The diagram below shows how cells A, B, C and D are classified.



(a) Which of these cells, A, B, C and/or D, is an /are animal cell(s)? Give a reason for your answer. [1]

_____

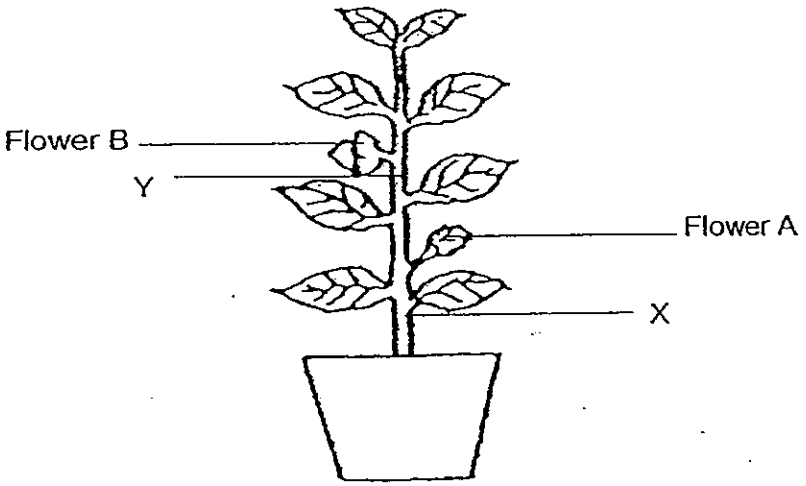
_____

(b) Which of these cells, A, B, C and/or D, can be found in the leaf of a balsam plant? [1]

_____

Score	/ 2

34. The diagram shows a potted plant with white flowers, A and B. Blue-coloured water was poured into the soil. After some time, Flower A was stained blue but Flower B remained the white.



(a) Name one substance needed by the plant that was transported from the roots towards point X in the stem. [1]

_____

The plant was removed from the pot and a cross-sectional cutting was made at points X and Y of the stem. Diagrams 1 and 2 below show the cross-sections of the 2 cuttings.

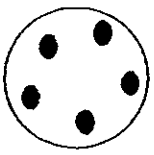


Diagram 1

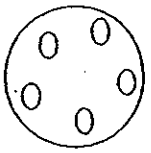
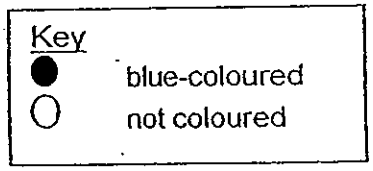


Diagram 2



(b) Which diagram, 1 or 2, shows the cross-section at point X? Explain your answer. [2]

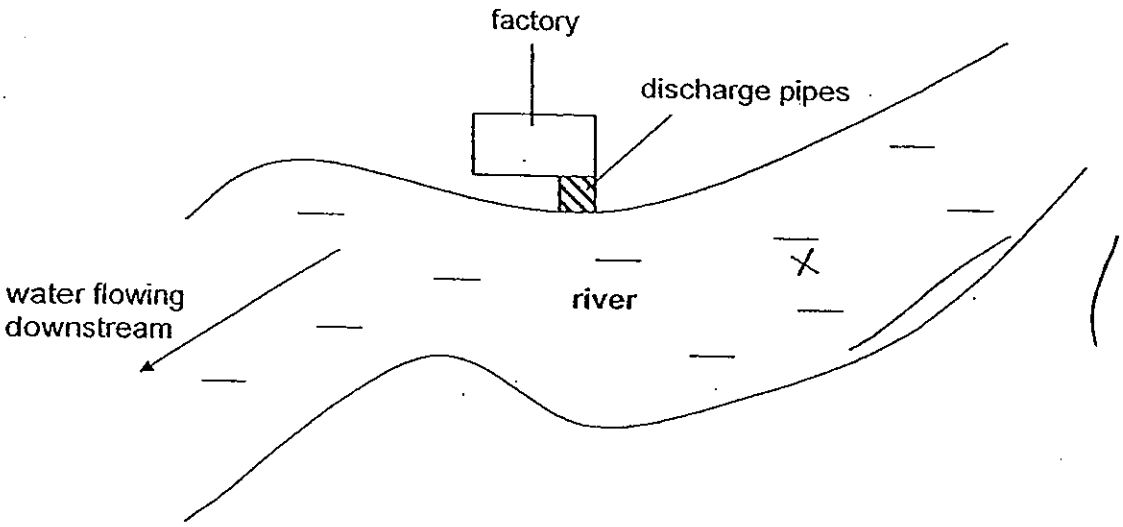
_____

_____

_____

Score	/ 3

35. The diagram below shows a newly-built factory which releases chemical Z through the pipes into a river. Chemical Z is harmful to the reproductive organs of living things. The river is the habitat for trouts, which are freshwater fish often eaten by bears and humans.



(a) Draw an 'X' to mark a spot in the river where the water is least likely to be polluted by chemical Z. [1]

(b) An environmentalist predicts that several years later, the population of bears living near the river will decrease. Give 2 possible reasons for his prediction. [2]

_____

_____

_____

(c) Along a certain part of the river bank, soil erosion has increased rapidly after the grass growing near the water began dying due to unknown causes.

How does the decrease in the grass population in that part of the river increase the rate of soil erosion? [1]

_____

_____

Score	/ 4

36. A, B, C and D are organisms found in a pond community. They interact with one another in the following ways:

- B preys on D
- D is a herbivore
- C is an omnivore
- C feeds on A and D

(a) Based on the information above, draw a food web involving organisms A, B, C and D. [1]

b
(~~c~~) Explain how organism D depends on the aquatic plant in ANOTHER way. [1]

_____

_____

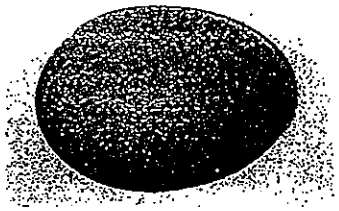
Score	/ 2

37. The following two case studies show how organisms adapt to their environment to increase their chance of survival.

Case 1

Sally's teacher gave her two eggs as shown in the diagrams below.

Egg X



Egg Y

She wanted to compare the way the two eggs roll when a force is exerted on each of them. She placed them on a table at the same distance from the edge of the table. She then exerted same amount of force on each egg in the same direction. She observed that Egg X spun around in a small circle on the table while Egg Y rolled off the table.

Sally's teacher told her that one of the eggs was laid on the edge of narrow and steep cliffs.

(a) Based on Sally's observations on the movement of the egg after a force is exerted on them, which egg, X or Y, was laid on the edge of narrow and steep cliffs? Explain your choice. [1]

_____

_____

(b) How does laying eggs on narrow and steep cliffs increase the chance of survival of an organism? [1]

_____

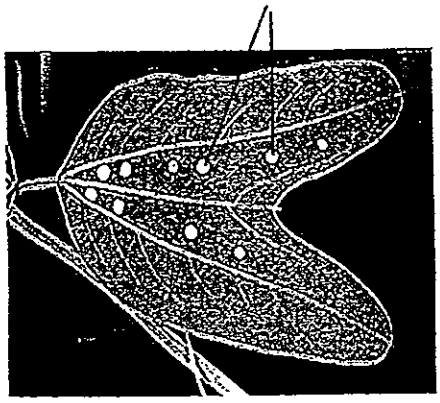
_____

Score	/ 2

Case 2

Plant P has egg-like structures on its leaves as shown in the diagram below.

egg-like structures



Leaf of plant P

These egg-like structures on the leaves look like the eggs of Butterfly Q, which usually lays its eggs on Plant P.

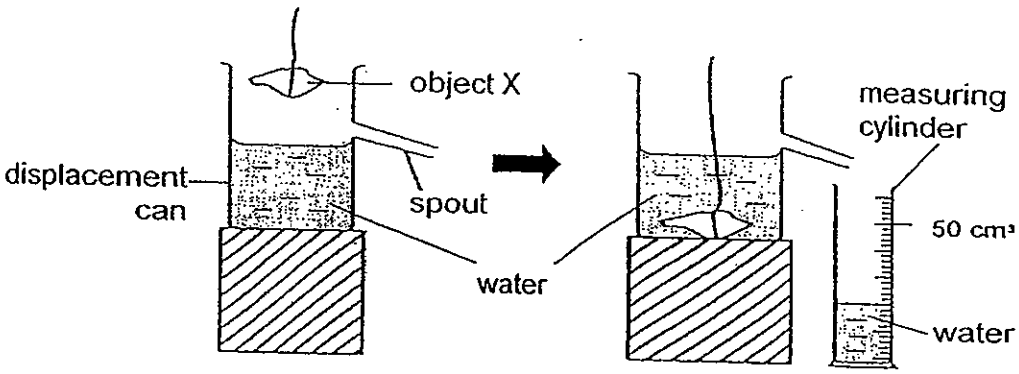
(c) Explain clearly why Butterfly Q avoids laying eggs on Plant P when it sees the egg-like structures of the plant. [1]

_____

_____

Score	/ 1

38. Peng Hui used the following set-up to find out the volume of an irregular object X.



(a) What property of matter did the experiment show? [1]

_____

_____

Using the same set-up and object X, Peng Hui decided to measure the volume of a cork.

(b) Describe what Peng Hui should do to find the volume of the cork. [2]

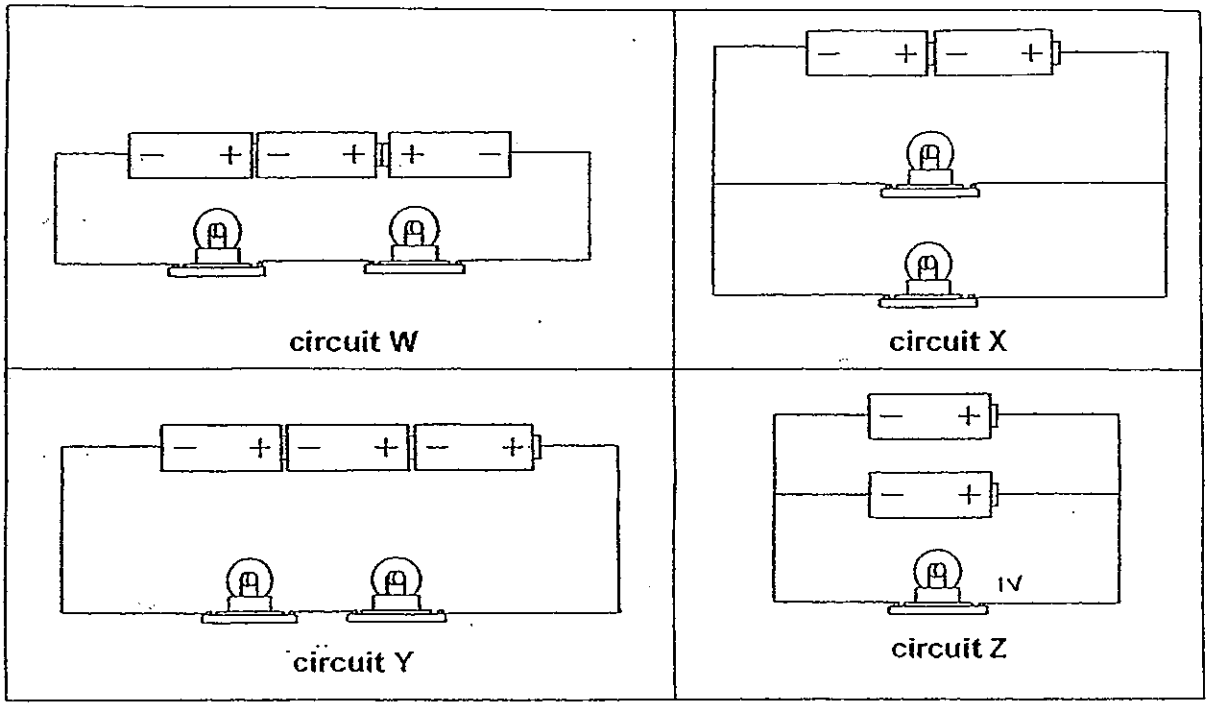
_____

_____

_____

Score	/ 3

39. Identical bulbs, batteries and wires were connected to form the following circuits, W, X, Y and Z.



(a) Arrange the circuits above according to the brightness of the bulb(s) in descending order. [1]

			W

brightest ⟶ least bright

(b) In the box below, draw lines to connect the electrical components to show how the bulb can light up when either one of the switches is closed. [2]

Score	/ 3

40. Ali placed a thin piece of material M between two strong bar magnets. The diagram below shows the interaction between the magnets.

(a) Based on your observation above, give an example of material M. Explain your answer. [1]

_____

_____

When Ali removed the thin piece of material M, he observed that the two strong bar magnets repelled from each other.

(b) Explain Ali's observations. [1]

_____

_____

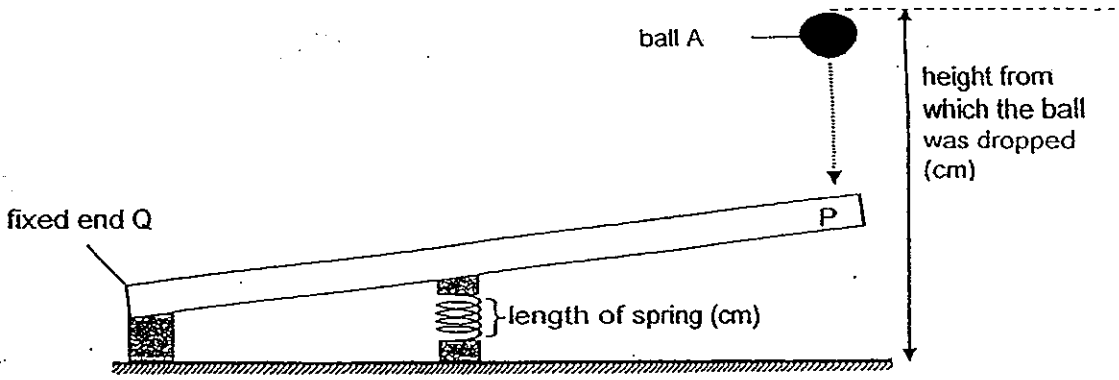
(c) What would happen to the bar magnets when Ali replaced the piece of material M with a piece of plastic sheet of the same thickness? [1]

_____

_____

Score	/ 3

41. A wooden plank, fixed at Q, was placed on a flexible spring on the underside at its centre as shown below.



Lawrence dropped ball A from a height. He measured the length of the compressed spring when the ball hit the plank just before it bounced off at P.

He tabulated the results of his experiment as shown below.

Height from which the metal ball was dropped (cm)	Length of compressed spring (cm)			
	1st try	2nd try	3rd try	Average
120.0	8.5	8.3	8.2	8.33
125.0	7.9	7.8	7.7	7.80
130.0	7.2	7.0	6.9	7.03
135.0	6.2	6.5	6.4	6.37
140.0	5.8	6.0	5.5	5.77

(a) State the relationship between the extent to which the spring was compressed and the height from which the ball was dropped. [1]

_____

_____

Using the same apparatus, Lawrence repeated his experiment using ball B, which was of a greater mass. He dropped ball B at 120 cm from the ground.

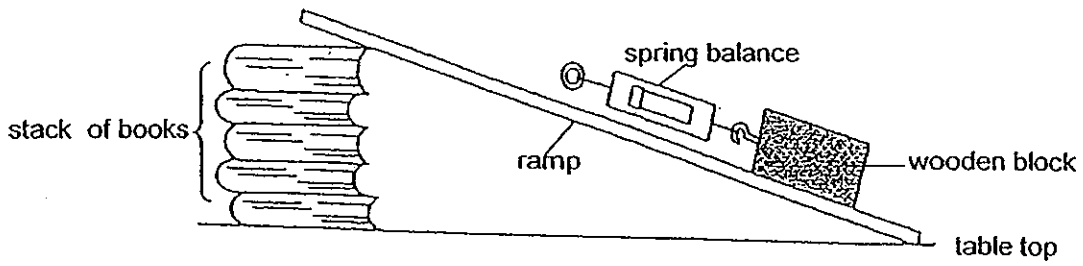
(b) Based on the information above, predict the length of the compressed spring when Lawrence dropped ball B at 120 cm from the ground. Give a reason for your answer. [2]

_____

_____

Score	/ 3

42. Jason pulled a wooden block using a spring balance up the ramp as shown in the diagram below.



He recorded the amount of force needed to pull the wooden block up the ramp. As he increased the number of books, he found it more difficult to pull the wooden block.

(a) What was the effect of the increased number of books on the reading shown on the spring balance? [1]

_____

_____

Using the same stack of books, Jason measured the amount of force needed to pull the wooden block up the ramp and then down the ramp. He recorded the amount of forces as 45 N and 54 N.

(b) Complete the table below by writing '45' and '54' in the correct blanks.

Amount of force needed to pull the wooden block up the ramp (N)	Amount of force needed to pull the wooden block down the ramp (N)

Explain your answers. [2]

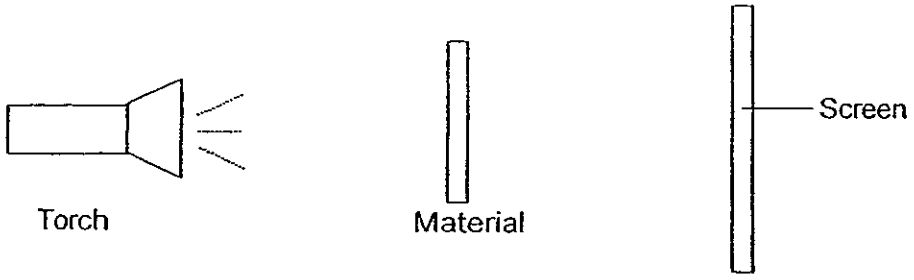
_____

_____

_____

Score	/ 3

43. In a pitch dark room, Samy conducted an experiment as shown below. He used 3 different pieces of materials of identical size and thickness. He shone a torch at each of the materials one at a time. The same torch and screen were used throughout the experiment.



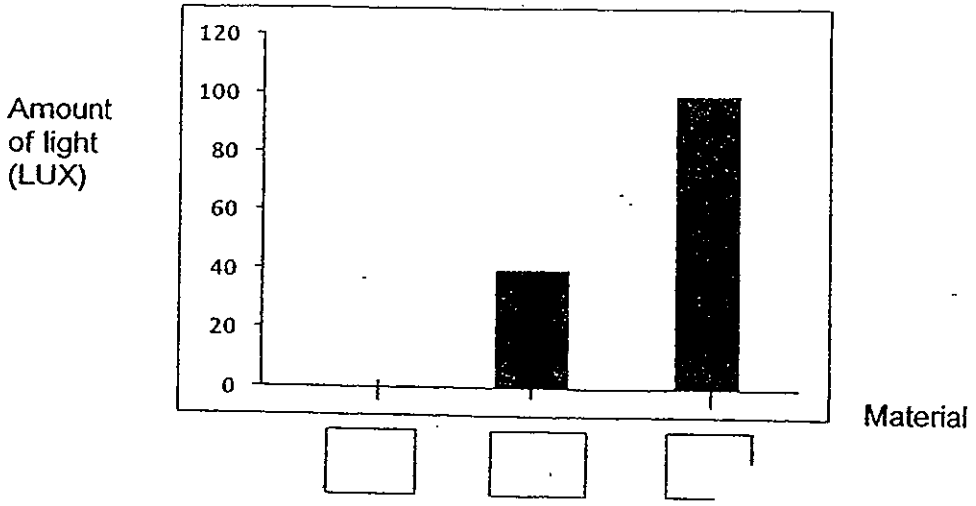
He observed the shadow cast by the materials and recorded his results as shown below.

Material	Observation
A	Dark shadow
B	Very faint shadow
C	Faint shadow

(a) Name another variable that is to be kept constant to ensure that Samy's experiment is a fair test. [1]

_____

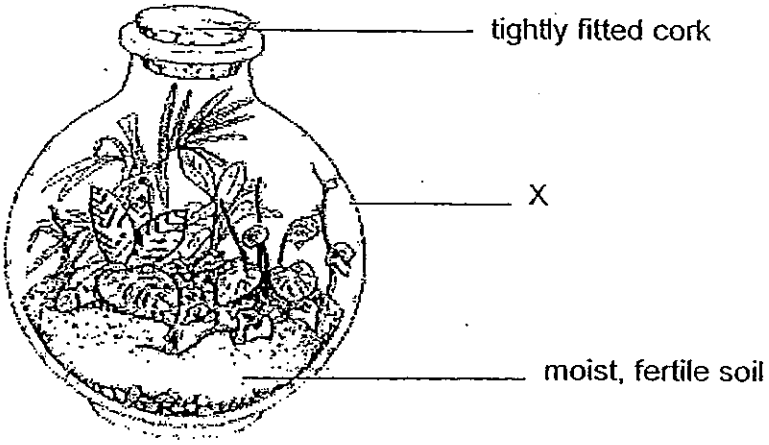
Samy repeated the experiment by replacing the screen with a light-sensor. He represented the results in a bar graph as shown below.



(b) Based on Samy's observations on the shadows cast on the screen, label the material, A, B and C in the boxes provided in the above graph. [1]

Score	/ 2

Samy decided to build his own terrarium using plants that thrives in a sunny and warm climate as shown below.



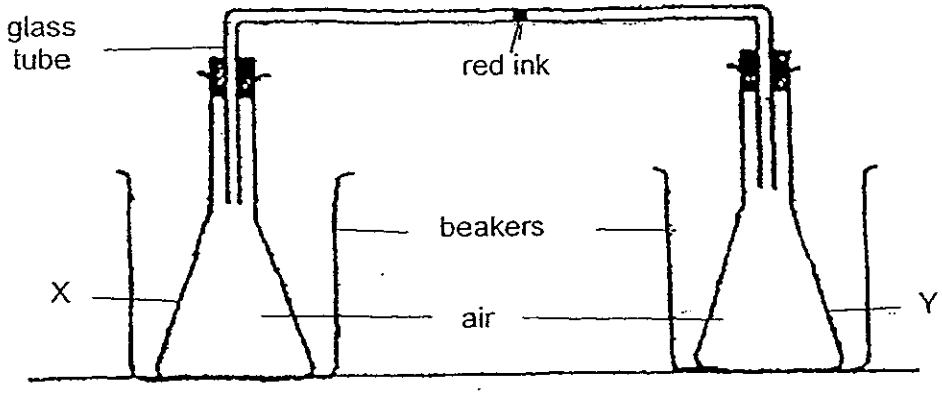
(c) Which material, A, B or C, would be the most suitable for X? Explain your answer. [2]

_____

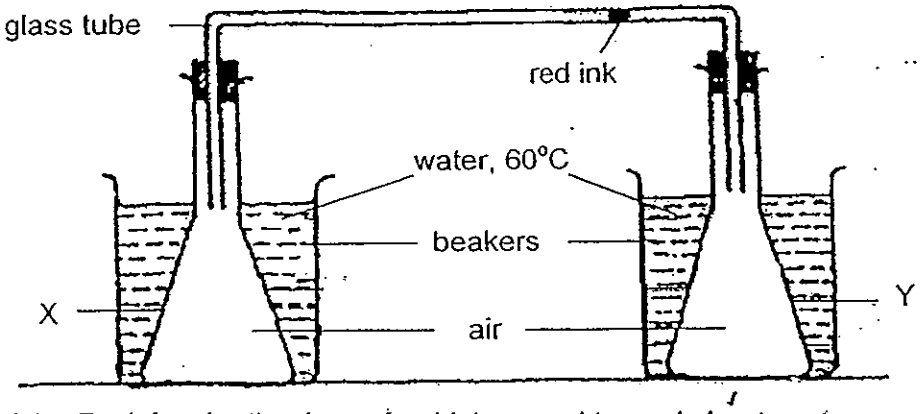
_____

Score	/ 2

44. The diagram below shows two flasks, X and Y, connected by a glass tube with a drop of red ink at the centre. Flasks X and Y were identical in size but each made of a different material.



When an equal amount of water at 60 °C was poured into the beakers at the same time, the drop of red ink moved towards ~~beaker~~ Y as shown in the diagram below.



(a) Explain why the drop of red ink moved towards ~~beaker~~ Y. [2]

(b) What would happen to the drop of red ink in the glass tube when both beakers of water reach the same temperature as the surrounding? [1]

-END OF PAPER-

Score	/ 3

Exam Paper 2013 Answer Sheet

School: RAFFLES GIRLS' PRIMARY SCHOOL
Subject: PRIMARY 6 SCIENCE
Term: SA1

1) 1	6) 3	11) 4	16) 1	21) 3	26) 2
2) 2	7) 4	12) 2	17) 4	22) 1	27) 1
3) 3	8) 2	13) 2	18) 4	23) 3	28) 3
4) 1	9) 1	14) 2	19) 4	24) 3	29) 1
5) 3	10) 2	15) 3	20) 4	25) 2	30) 2

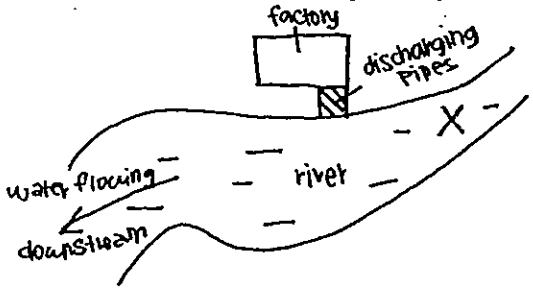
31. (a) The wing-like structure of the fruit enables the fruit to stay afloat in the air for a longer time.
(b) Gravitational force.

32. (a) i. P: Lungs
ii. Q: Heart
(b) Ribcage

33. (a) C and D are animal cells. All animal cells do not have a cell wall but most, unlike the red blood cells for example, have a nucleus.
(b) A

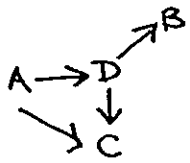
34. (a) Water.
(b) Diagram 1. The water was transported from the roots to the part of the stem up to flower A passing through X by the water carrying tubes.

35. (a)



(b) 1. The bears drink the water from the river and eat the trouts containing chemical Z and were not able to reproduce.
2. The reproduction rate of the trouts will decrease due to chemical Z. Hence, the bears will have lesser trouts to eat so their population will decrease (starvation).
(c) The river bank's water is also polluted so when the grass growing near the river take in water from the river, the grass population will decreases, there is no roots to hold onto the soil, increasing the rate of soil erosion.

36. (a)



(b) The aquatic plant gives out oxygen dissolved in water from organism D to take in during respiration.

37. (a) Egg X. Egg X has a rougher shell texture than Egg Y, so when Egg X is laid on the edge of narrow and steep cliffs there will be more friction between the egg and the cliffs so that Egg X will not roll off the cliff so easily.

(b) Not many predators can reach and eat the eggs.

(c) Butterfly Y will think that another butterfly has already laid its eggs on plant P and when the eggs hatch into caterpillars, they will need to complete for food with the others.

38. (a) Matter has volume.

(b) 1. Tie the cork to object X using a string.

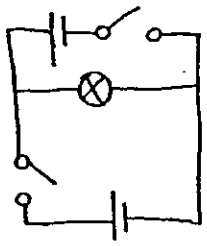
2. Submerge them gently into the water completely.

3. Record the total volume of object X and the cork.

4. Find the difference in volume between the total volume of cork and X and X only. (Vol. of cork + X) – (Vol. of X)

39. (a) X, Y, Z, W

(b)



40. (a) Iron. Iron is a magnetic material so the magnetic force cannot pass through and the strong bar magnets will not repel each other but will attract the thin piece of material M.

(b) When M was removed, the magnetic force could pass through and the magnets repelled each other as the like poles were facing each other.

(c) They would still repel each other because plastic is a non-magnetic material and it is not thick enough so the magnetic force can still pass through.

41. (a) The greater the height from which the metal ball was dropped, the shorter the length of the compressed spring.

(b) 6.6 cm. ball B experienced more gravitational force thus pushing P further down.

42. (a) When the number of books increased, the reading shown on the spring balance increased as well.

(b) 54N, 45N

When the block was pulled up the ramp, the force needed was more as the block is going against gravity. However when the block is going down the ramp, it was acting in the same direction as gravity.

43. (a) The distance from the torch to the material must be the same.

(b) A, C, B

(c) Material B. B allows the most amount of light to pass through and light is needed for the plants to photosynthesis. Hence most light would likely increase the rate of photosynthesis for the plants to thrive in the terrarium.

44. (a) Air in X gained heat from the water more quickly and expanded more quickly, pushing the ink drop towards Y.

(b) The drop of red ink would return to its original position at the start of the experiment.

Rosyth School
First Semestral Examination for 2013
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: 60

Class: Pr6 _____ Register No. _____ Duration: 1 h 45 min

Date: 15 May 2013 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

* This booklet consists of 19 pages.

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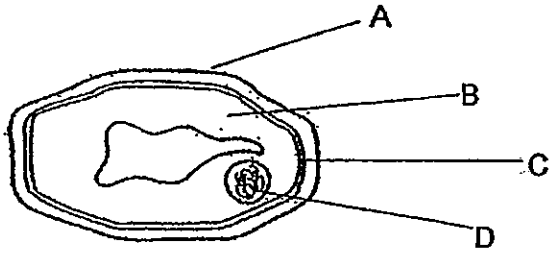
Part I (60 Marks)

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). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

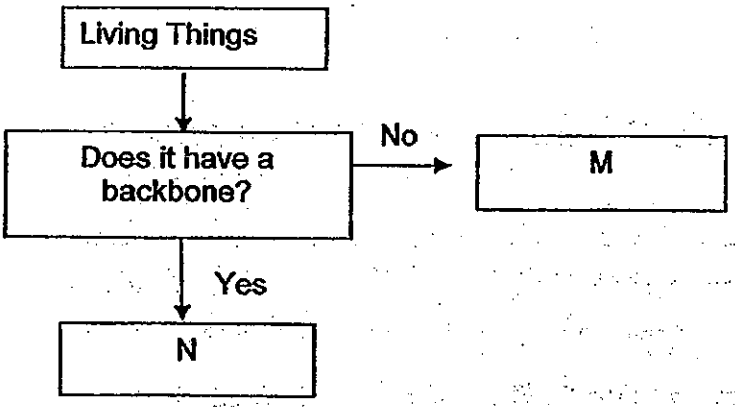
1. Study the typical cell given below.



In which part of the cell does life processes take place?

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

2. Study the flowchart below.



Which group of living things can M most possibly be?

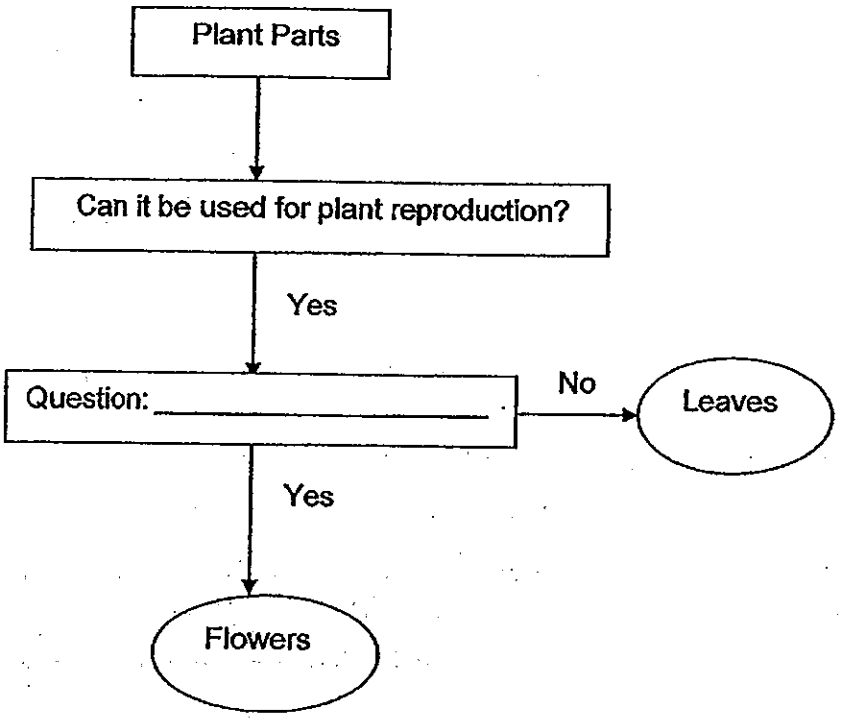
(1) Fish
(2) Birds
(3) Insects
(4) Mammals

3. Which one of the following statement is correct about the transport system of a plant?

A: Food made at the leaves is transported to all parts of the plants.
B: Food made at the leaves is transported to the roots for storage only.
C: Water is absorbed by the roots and transported to the rest of the plants.
D: Water is absorbed by the leaves directly to carry out photosynthesis to make food for the plant.

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

4. Study the flowchart of a flowering plant below.



Which one of the following is the correct question for the above flowchart?

(1) Does it make its own food?
(2) Does an adult plant have this part?
(3) Does it go through sexual reproduction?
(4) Does it go through asexual reproduction?

5. Study the diagram below.

Tree Fern

Mushroom

Which of the following statements state both the similarity and difference between the two organisms correctly?

	Similarity	Difference
(1)	Both reproduce by spores.	Mushrooms can make their own food while ferns cannot.
(2)	Both reproduce by seeds.	Mushrooms can obtain energy from animals while plants cannot.
(3)	Both have spores found between the gills.	Mushrooms reproduce asexually while ferns reproduce sexually.
(4)	Both have spores that can be carried by wind.	Mushrooms are decomposers while ferns are producers.

6. Priya observed some mould growing on a bread. What are the conditions necessary for the mould to grow?

A: Light
B: Water
C: Oxygen
D: Carbon dioxide

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

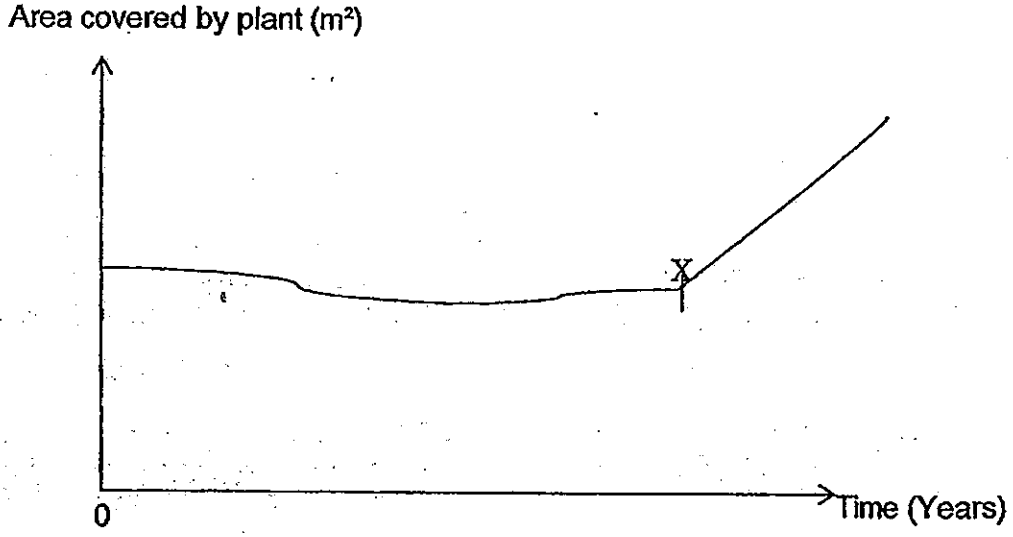
7. Wei Xiang put four different set-ups as shown in the table below. Each set-up received same amount of water.

Set-up	Type of condition	Presence of air
Set-up T	Cold and Dark	Yes
Set-up U	Cold and Dark	No
Set-up V	Warm and Dark	Yes
Set-up W	Warm and Dark	No

What is/are the possible aim/s of his experiment?
A: To find out if warmth is needed for seeds to germinate.
B: To find out if air is needed for seeds to germinate.
C: To find out if the amount of light will affect germination of seeds.

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

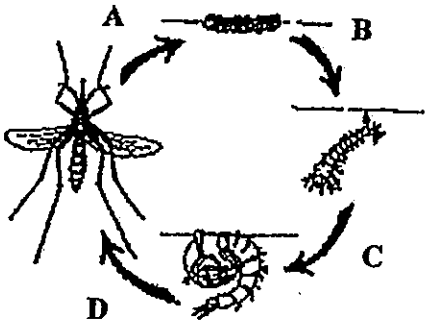
8. David observed a type of plant growing in a park over a period of time. An animal population was introduced into the park at point X. The graph below shows the change in the area covered by the plant although its population size remained the same in the park.



Which of the following states correctly the reason why the area covered by the plants changed?

(1) The animal population helped to pollinate the plant.
(2) The animal population helped to disperse the seeds.
(3) The animal population helped to provide warmth for the seeds to germinate.
(4) The animal population helped to provide nutrients for healthy growth of the plants.

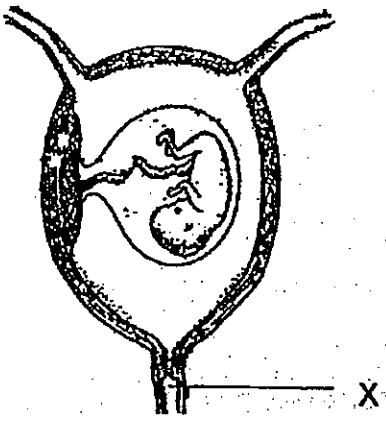
9. The diagram below shows the life cycle of a mosquito.



At which period does fertilization takes place?

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

10. The diagram below shows a developing foetus.

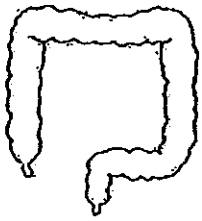


What is the function of the part labelled X?
A: It is sealed to hold the foetus in place.
B: It stretches to function as a passage for delivery.
C: It is the channel through which the sperm travels up to fertilize an egg.

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

11. Refer to the four parts of the digestive system shown below.
In which part is most of the water being removed from the undigested food?

(1)



large intestine

(2)

small intestine

(3)

gullet

(4)

stomach

(4)

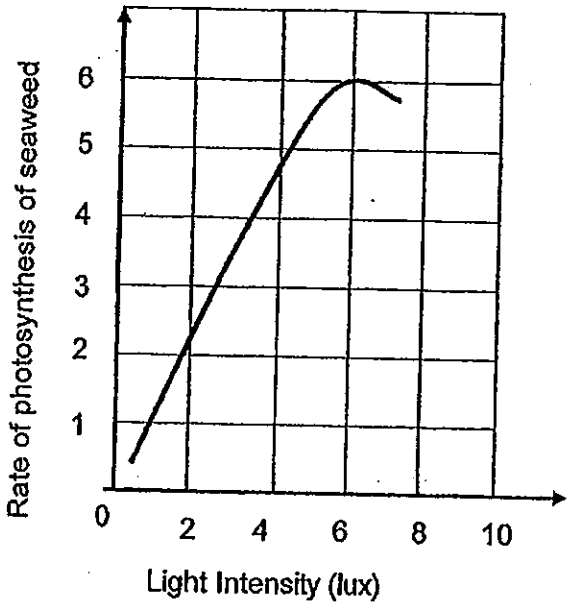
12. Which of the following activity takes place in the uterus?

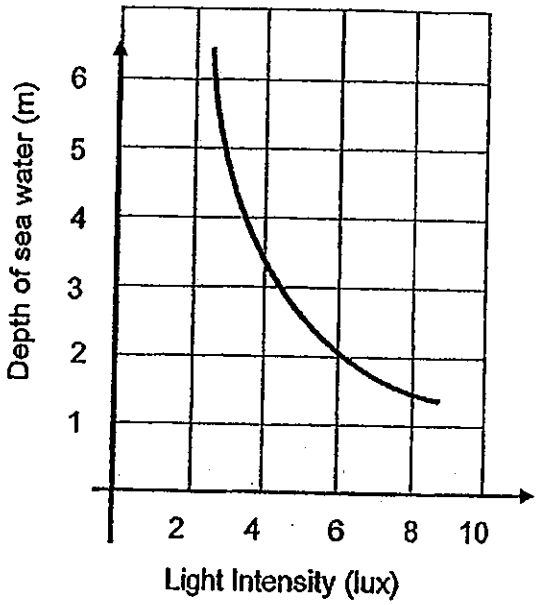
(1) Production of eggs
(2) Deposition of eggs
(3) Fertilisation of eggs
(4) Development of an unborn baby

13. Which of the following shows correctly what plants need and make during photosynthesis?

	Raw Materials	Products
(1)	Carbon dioxide and Water	Starch and Oxygen
(2)	Carbon dioxide and Water	Sugar and Oxygen
(3)	Oxygen and Water	Carbon dioxide and Sugar
(4)	Oxygen and Water	Carbon dioxide and Starch

14. The two graphs below show the relationship between the rate of photosynthesis of seaweed and depth of sea water.



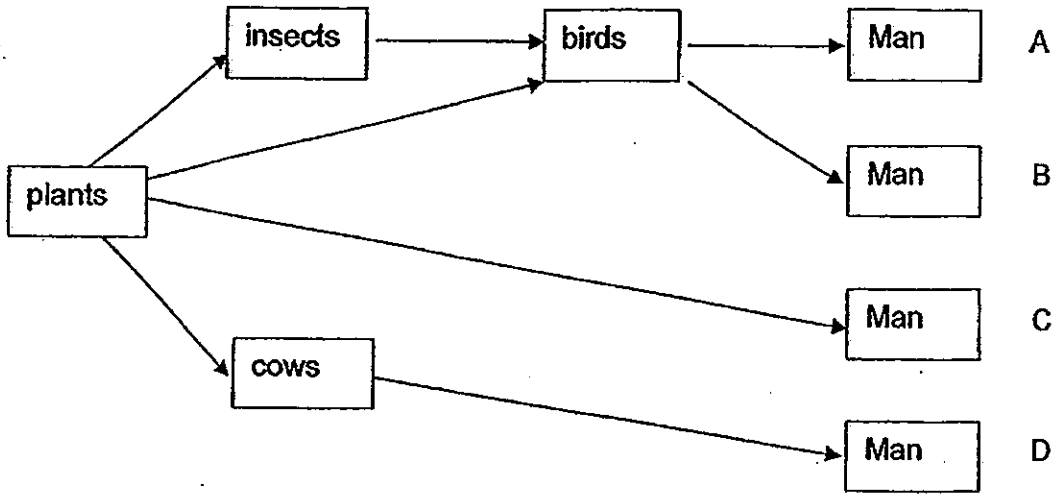


Based on the given graphs, what can be deduced about the seaweeds?

A: The greater the light intensity, the higher the rate of photosynthesis.
B: The rate of photosynthesis does not depend on the depth of sea water.
C: The highest rate of photosynthesis of seaweed occurs at a depth of 2m.
D: The greater the light intensity, the higher the rate of photosynthesis until it reaches a maximum after which it drops.

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

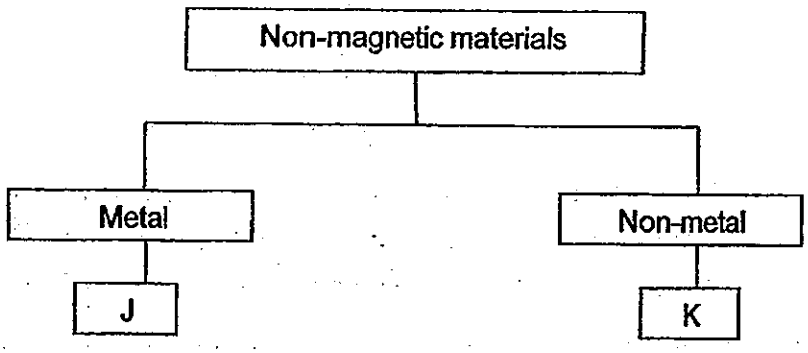
15. The diagram below shows four possible pathways for the transfer of energy from plants to Man.



Which pathway transfers most energy to Man?

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

16. The following shows how two materials J and K can be grouped.



Which of the following materials should be grouped under J?

A: Iron
B: Gold
C: Copper
D: Aluminium

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

17. Mr Tan has a factory that produces handphones. He tested the materials that were available and listed their properties in the table below:

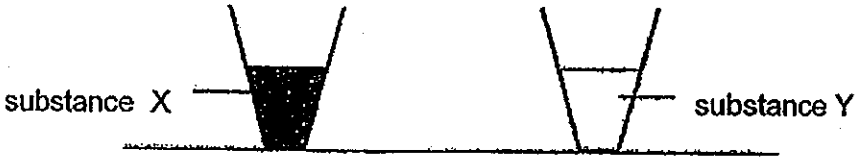
Material	Is it light?	Does it absorb water?	Is it hard?
W	No	No	W can scratch X
X	Yes	Yes	X can scratch Y
Y	Yes	No	W can scratch Y
Z	Yes	No	Z can scratch W

Which material would be the best choice for the screen used in a handphone?

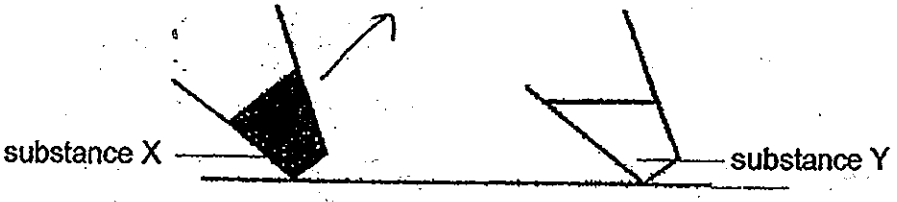
(1) W
(2) X
(3) Y
(4) Z

18. Ravi observed the difference when a beaker of ice and a beaker of water were tilted as shown below.

He then poured an equal amount of substance X and substance Y at 50°C into two similar cups. The cups were left on the table in a room as shown below.



After a few hours, he tilted the cups and observed the contents as shown in the diagram below.

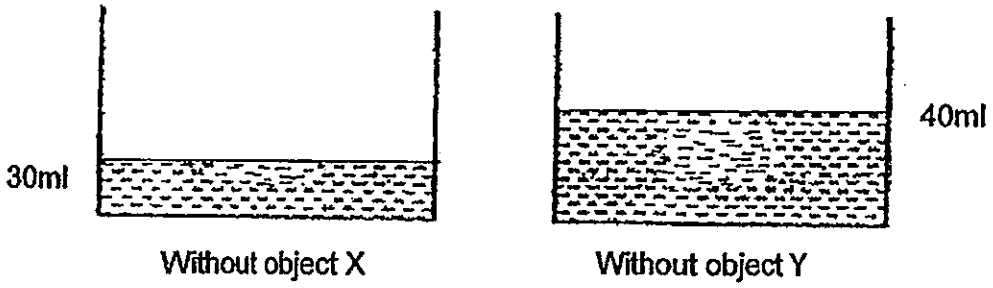


Which one of the following is the most likely deduction from his observation?

(1) Substance Y conducts heat better than substance X.
(2) Both substances remain as a liquid at room temperature.
(3) Substance Y is most likely to be water and substance X is oil.
(4) Substance X freezes at room temperature while substance Y does not.

19. Two objects, X and Y, were put into different beakers of water. The final water levels in both beakers were 50ml.

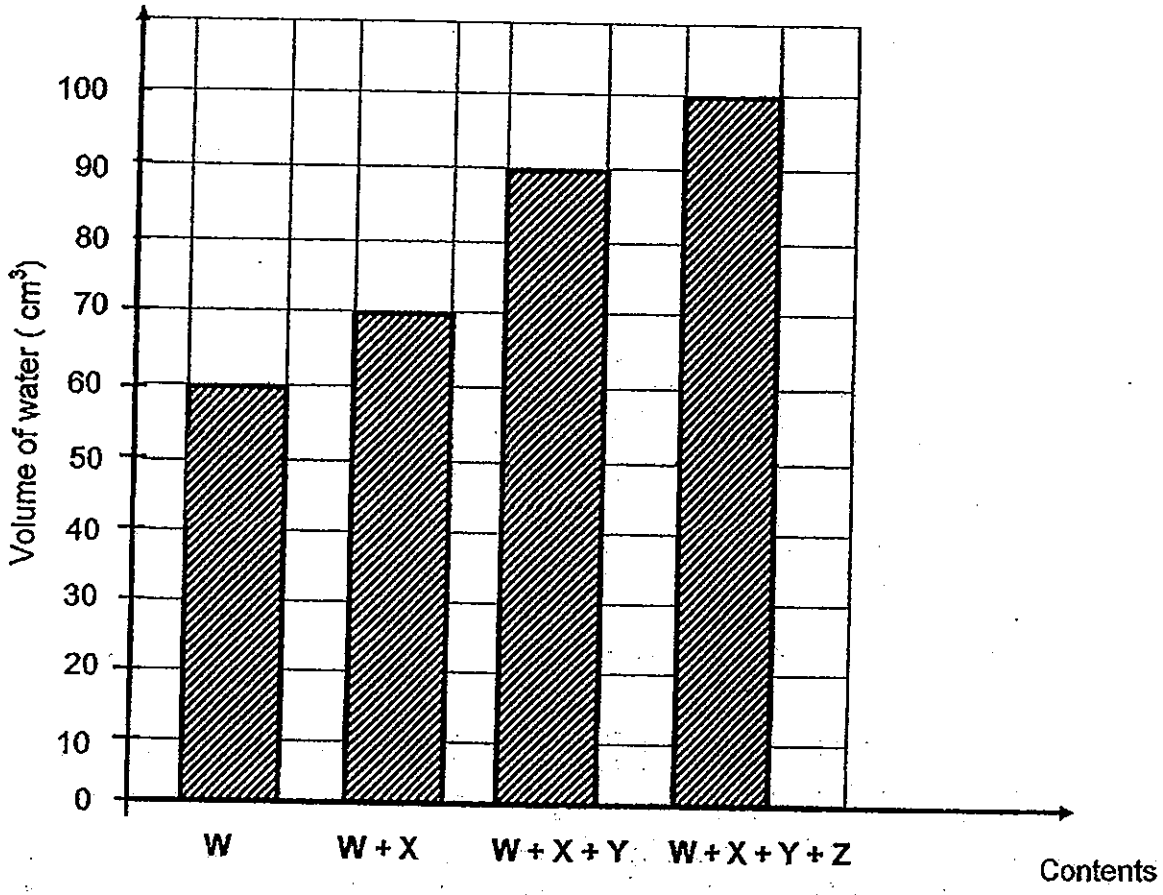
When objects X and Y were taken out of the water, the water levels in the containers dropped, as shown below.



Based on the above observations, which one of the following statements is true?

(1) X has a larger mass than Y
(2) Y has a larger mass than X
(3) X has a larger volume than Y
(4) Y has a larger volume than X

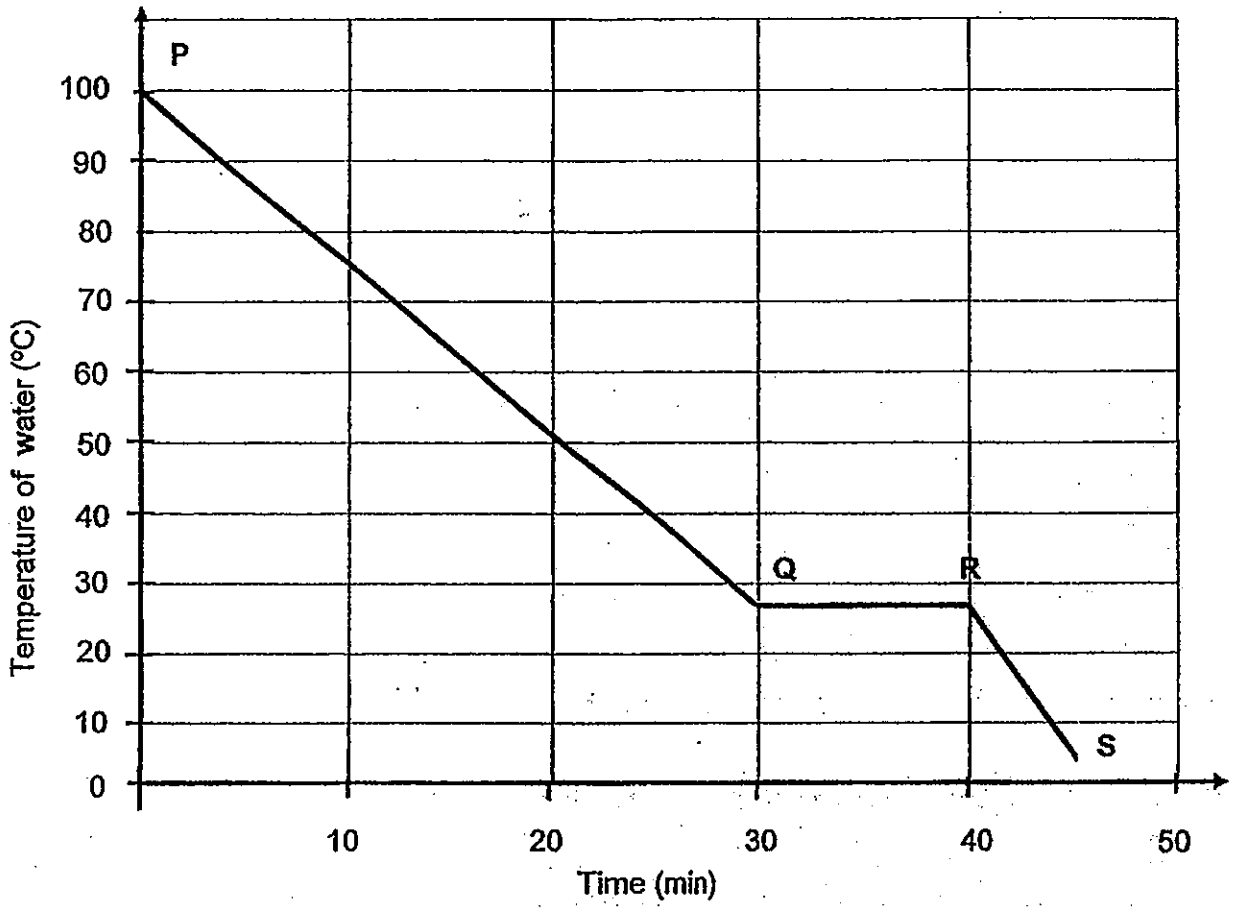
20. Four solid objects, W, X, Y and Z are immersed, one at a time, into a measuring cylinder containing $50cm^3$ of water. The graph below shows the water level after each object has been added into the cylinder.



Which object, W, X, Y or Z has the greatest volume?

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

21. A beaker of boiling water was placed on the table to cool down. After a while, the water reached the room temperature of 28°C. Mary then added some ice cubes to the contents of the beaker. She measured the temperature changes for the first 45 minutes and plotted the results in the graph as shown below.

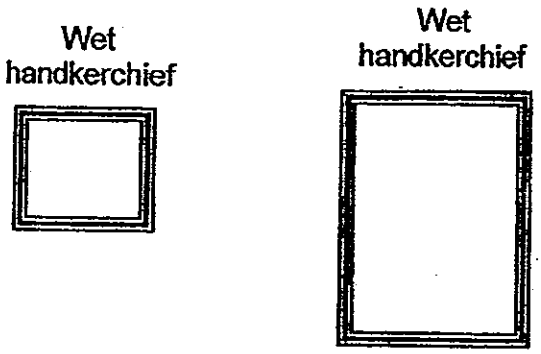


Based on the graph above, which of the statements below are correct?

A: Condensation took place in the first 30 minutes only.
B: The water in the beaker became ice after the 45th minute.
C: The beaker of water took 30 minutes to cool down to room temperature.
D: Ice cubes were added to the contents after the water had remained at room temperature for 10 minutes.

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

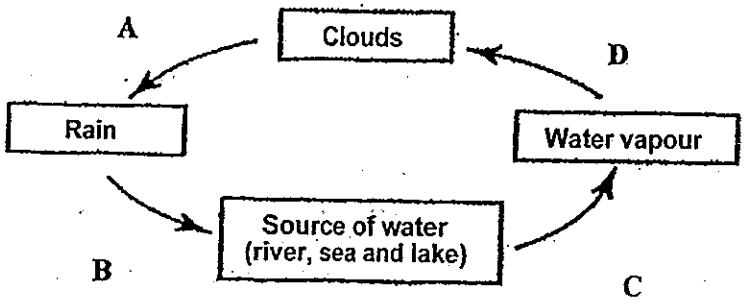
22. Refer to the two handkerchiefs shown below.



Using the two handkerchiefs above, which one of the factors can be investigated to find out its effect on the rate of evaporation?

(1) Amount of heat
(2) Speed of wind
(3) Exposed surface area
(4) Amount of water vapour in the air

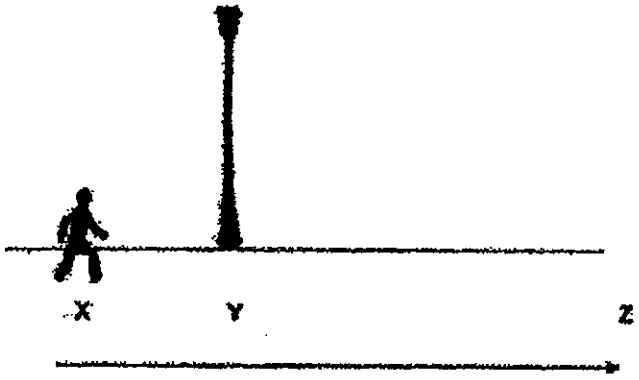
23. Study the water cycle below.



At which point in the water cycle will the surrounding air lose heat for a change of state to take place?

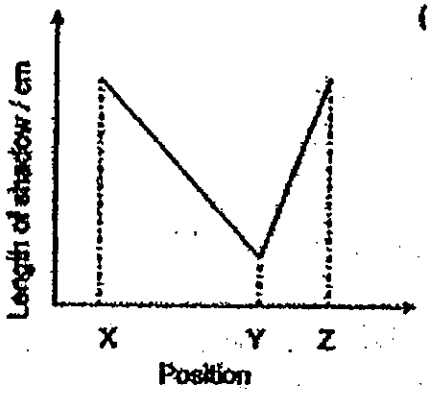
(1) A
(2) B
(3) C
(4) D

24. Mr Tan was walking along a street one night. He noticed that his shadow changed in length as he walked along the pavement.

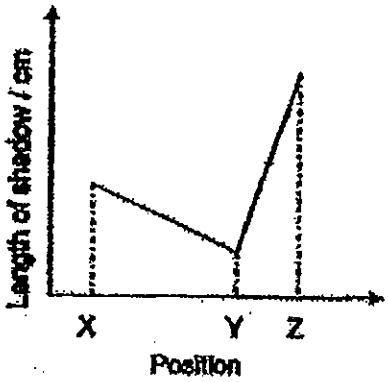


Which one of the following graphs shows the change in the length of his shadow in proportion to the distance from X to Z?

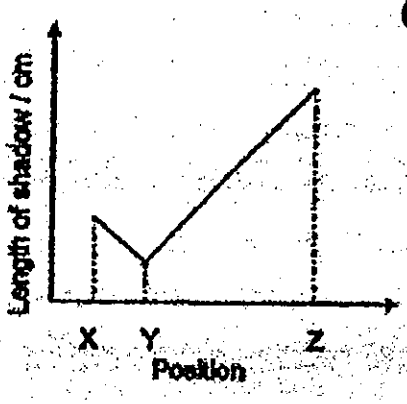
(1)



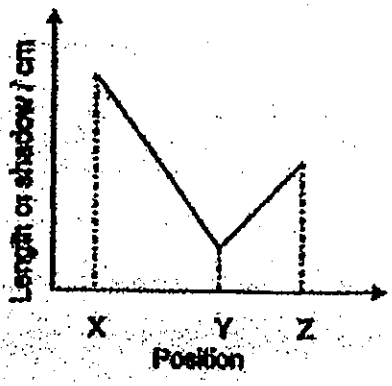
(2)



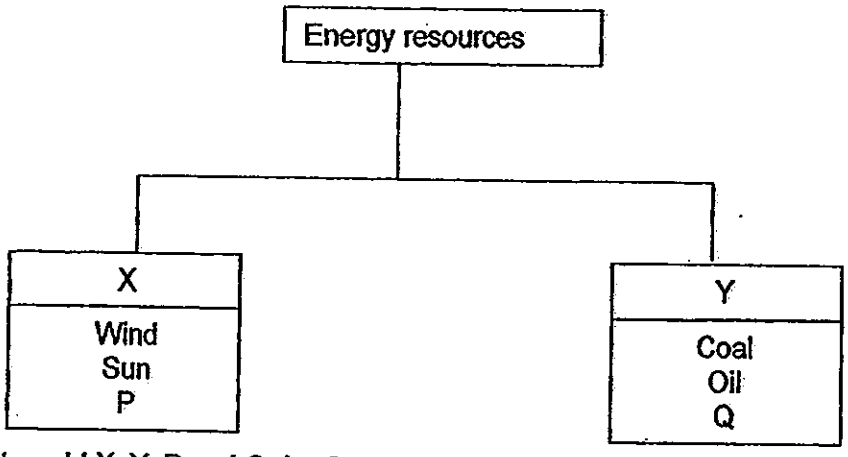
(3)



(4)



25. Study the classification table below.



What could X, Y, P and Q be ?

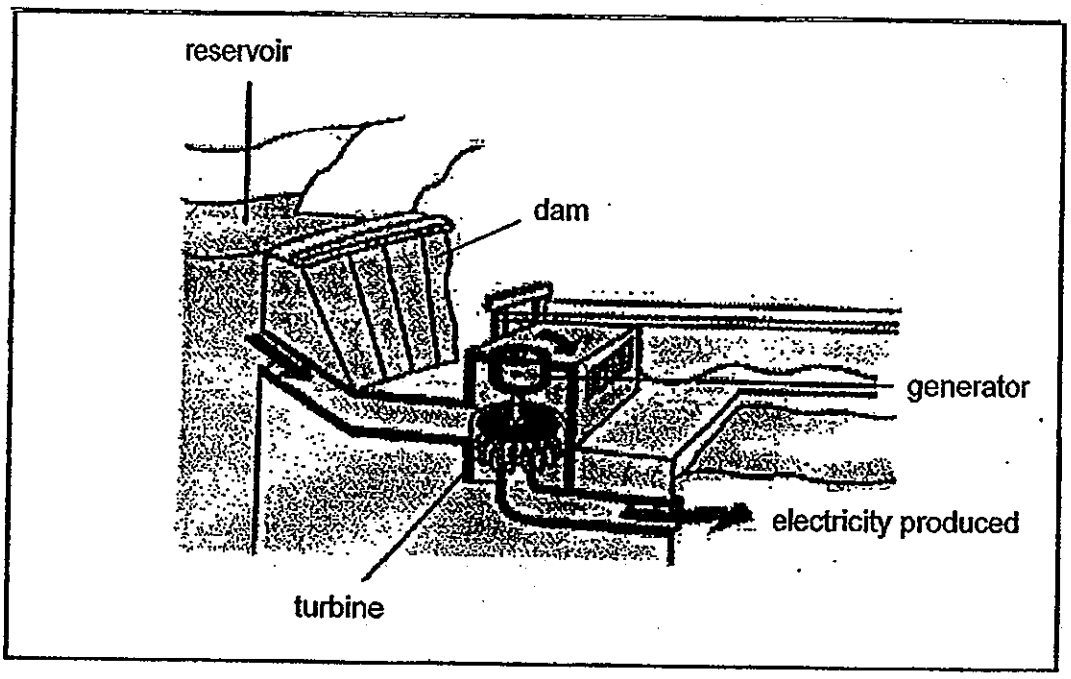
	X	Y	P	Q
(1)	Natural resources	Fossil fuels	Petrol	Natural gas
(2)	Non-renewable	Renewable	Moon	Wave
(3)	Renewable	Non-renewable	Hydroelectric power	Natural gas
(4)	Primary	Secondary	Wood	Electricity

26. Which one of the following is not a resource of energy?

(1) Water
(2) Petroleum
(3) Biomass
(4) Moon

27. Study the hydropower station below.

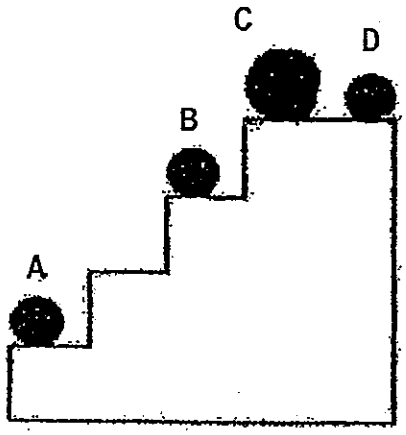
Hydropower Station



Which one of the followings shows the correct energy conversion starting from the reservoir?

(1) Potential Energy to Electrical Energy
(2) Kinetic Energy to Electrical Energy
(3) Kinetic Energy to Potential Energy to Electrical Energy
(4) Potential Energy to Kinetic Energy to Electrical Energy

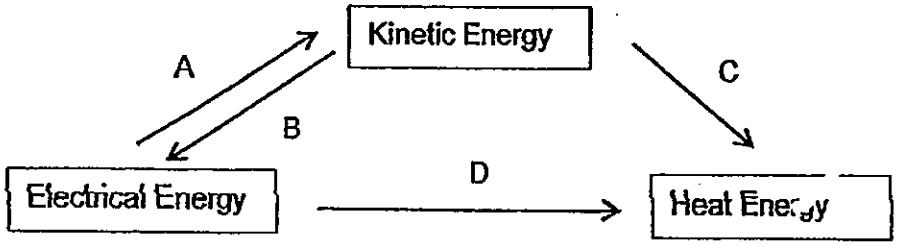
28. Four iron balls are placed on the steps of a stairway as shown below. The mass of the balls A, B and D is 500g and that of ball C is 1 kg.



Arrange these iron balls starting with the one which has the least potential energy to the one that has the most potential energy.

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

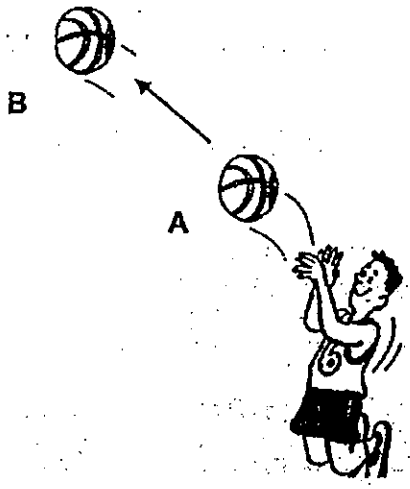
29. The diagram below shows how energy can be converted from one form to another.



Which set of activities best represents the conversion of energy above?

	A	B	C	D
(1)	Using an electric motor	Turning a wind turbine	Rubbing your hands together	Using an electric iron
(2)	Rubbing your hands together	Using an electric iron	Using an electric motor	Turning a wind turbine
(3)	Using an electric iron	Using an electric motor	Turning a wind turbine	Rubbing your hands together
(4)	Turning a wind turbine	Rubbing your hands together	Using an electric iron	Using an electric motor

30. Rudy threw his basketball from A to B as shown below.



Which one of the following statements is not correct?

(1) The force exerted by Rudy made the ball move.
(2) The potential energy of the ball increased from A to B.
(3) The gravitational force acting on the ball increased from A to B.
(4) The mass of the ball remained the same throughout its motion.

End of Part I

Rosyth School
First Semestral Examination for 2013
STANDARD SCIENCE
Primary 6

Total Marks: 100

Name: _____

Class: Pr6____ Register No.____ Duration: 1 h 45 min

Date: 15 May 2013 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, give your answers in the spaces given in this Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 16 pages.

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Part II (40 Marks)

For questions 31 to 44, write your answers in this booklet.

31. Rohan classified the following animals into two groups, X and Y, with regard to the types of fertilisation, internal and external.

X	Y
Fish	Bird Insects Mammal

(a) State the correct groups (X or Y) below: (1m)

i) External fertilisation: _____

ii) Internal fertilisation: _____

He reclassified the same animals into another two groups, P and Q, using another characteristic as shown below. (1m)

P	Q
Fish Bird Insects	Mammal

(b) State the headings of P and Q.

P: _____

Q: _____

32. Wei Han wanted to find out how temperature affects the growth of plants. He prepared several similar potted plants and put them in various locations of different temperatures for three weeks. The results were recorded in the table below.

Temperature of area (°c)	Amount of Water (ml)	Height of plant at the beginning (cm)	Height of plant at the end (cm)
25	200	100	125
36	200	90	130
44	200	80	130
50	200	100	120
60	200	110	120

(a) What relationship can you observe between the temperature of the area and the height of the plant ? (1m)

_____

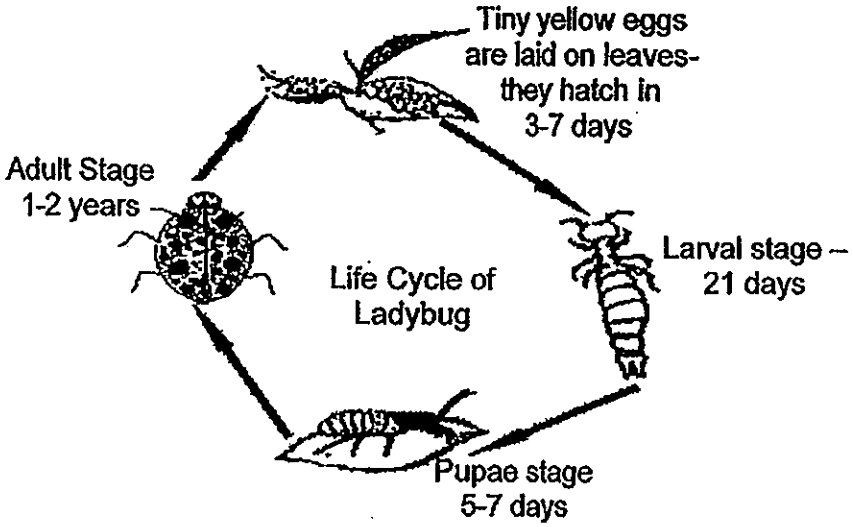
_____

(b) Explain why the plant at 44°C was able to grow the most? (1m)

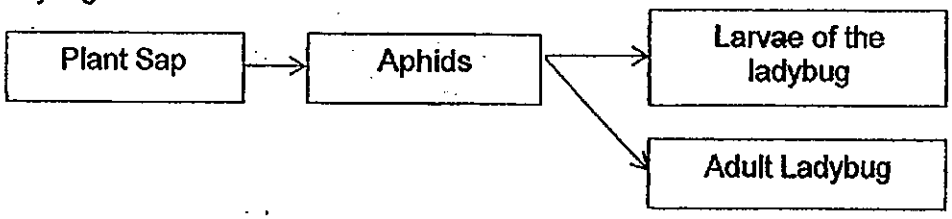
_____

_____

33. The diagram below shows the life cycle of a ladybug.



The diagram below shows the food relationship between plants, aphids and the ladybug.



(a) Explain why the larva of the ladybug is more effective as a pest control than the adult ladybug. (1m)

_____

_____

(b) The adult ladybug can lay 100 eggs at a time and among the aphids on the leaves. How are the above two actions of the ladybug helpful to the farmers? (1m)

Lays 100 eggs: _____

_____

Lays eggs among the aphids: _____

_____

34. Study the diagram below.

(a) State the dispersal method of both seeds: (1m)

i) _____

ii) _____

(b) Which seed, X or Y, would be able to be dispersed further from the parent plant? Explain your choice. (1m)

_____

_____

(c) Why are there many seeds in both X and Y? (1m)

_____

_____

35. Below is a table showing the nutrition information on three different food labels.

	Food Labels		
Nutrition Information	A	B	C
Carbohydrates	62g	32g	9g
Total fats	2.5g	3.5g	1.6g
Protein	3.2g	1.8g	10g
Dietary Fibre	10g	0	5g
Vitamins	15mg	5mg	0

(a) State all the similarities among the 3 food labels. (1m)

_____

(b) Which food would you eat if you want to have the most amount of energy? Explain your answer. (1m)

_____

_____

Refer to the energy chain below.

Sun → Plant → Chicken

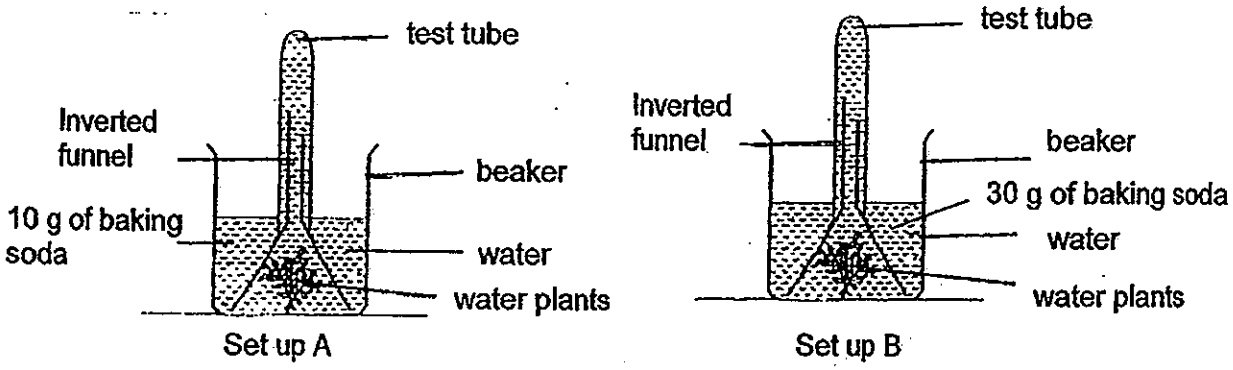
(c) Describe how the chicken obtains its energy from the sun. (2m)

_____

_____

_____

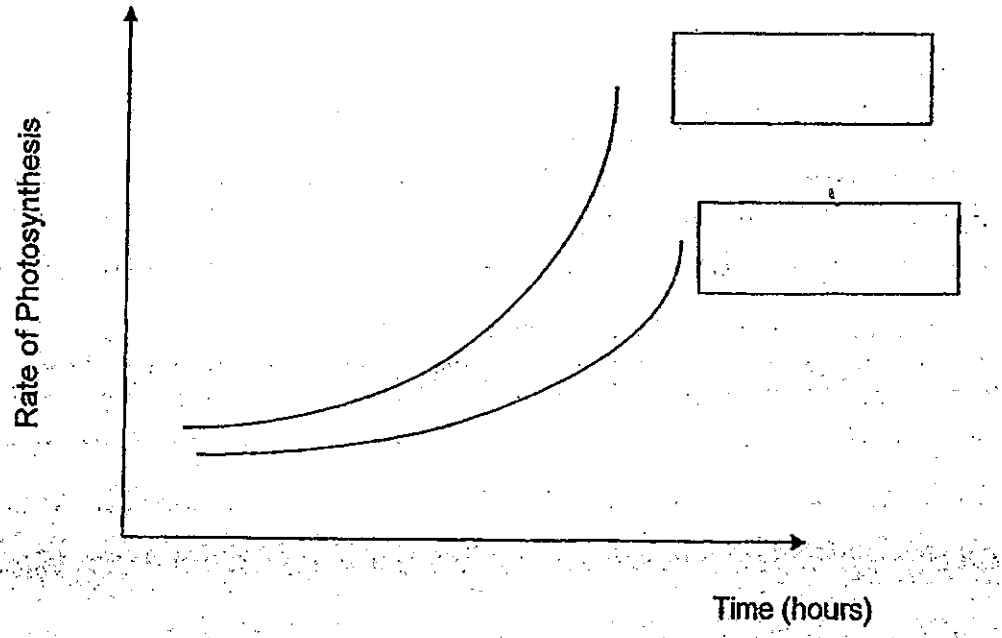
36. Jason carried out an experiment on photosynthesis for 4 hours. He wanted to find out if the amount of baking soda would affect the rate of photosynthesis of the hydrilla plant. He was told that baking soda releases carbon dioxide when mixed in water.
He set up the following experiment as shown below and left the 2 set-ups next to an open window.



(a) What result should he collect to measure the rate of photosynthesis? (1m)

_____

(b) Based on his results obtained, the graphs as shown below were plotted. Label the graphs, set-up A and set-up B, to show which one represents the result for set-up A and set-up B. (1m)



Question 36 continues on page 7

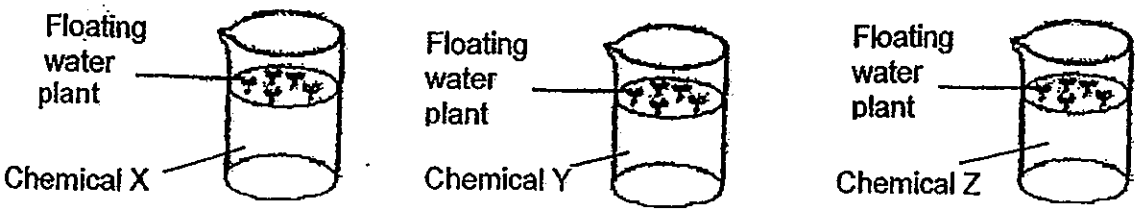
(c) His teacher advised him that his experiment could be further improved by adding an experimental control set-up.
Draw and label the experimental control set-up in the box below. (1m)

(d) State the purpose of the experimental control set-up. (1m)

_____

_____

37. A group of pupils set up an experiment as shown below. They added 5 drops of Chemicals X, Y and Z into the containers as shown below. Then, they left the containers near a window for a few days.



They counted the number of duckweeds that remained alive at the end of each day for a week as shown in the table below.

	Number of duckweeds alive at the end of						
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Chemical X	30	22	17	14	9	5	2
Chemical Y	30	20	15	9	4	0	0
Chemical Z	30	32	36	44	52	64	75

(a) What effect has Chemical Z on the duckweeds over the 7 days? (1m)

_____

_____

(b) What is the changed variable in their experiment? (1m)

_____

Alga blooms in lakes are caused by excessive nutrients in the water. They turn lakes green and cause the death of fish.

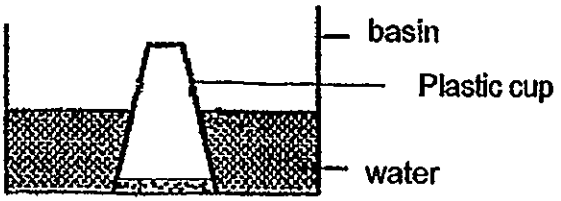
(c) Explain how alga blooms cause the fish in the lakes to die? (2m)

_____

_____

_____

38. Study the diagram below. A plastic cup was inverted into a basin of water. It was observed that only a little water entered into the cup.



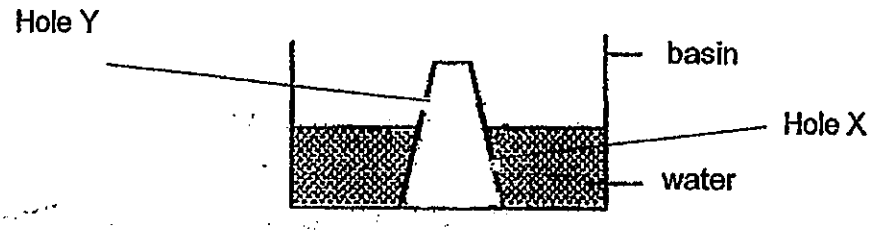
(a) Explain why only some water enters into the cup. (1m)

_____

_____

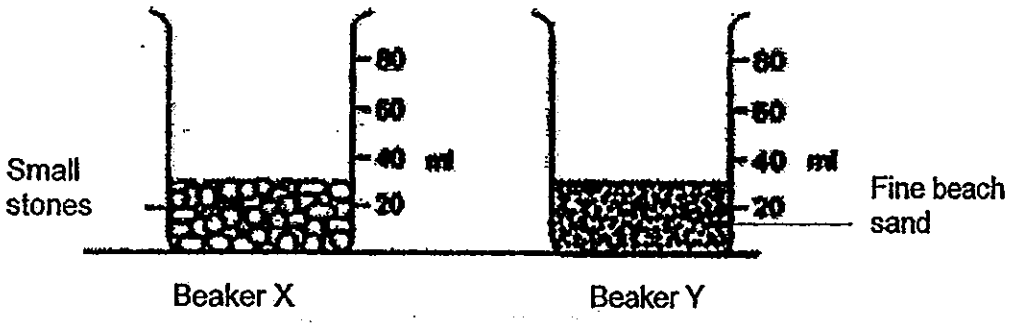
Two small holes, X and Y, were made on the plastic cup. It was then inverted into the basin water again, as shown below.

(b)

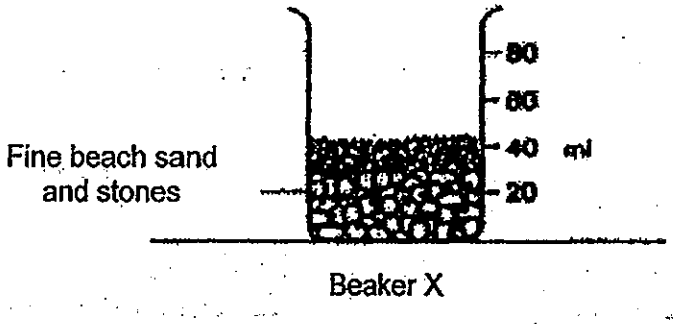


In the diagram above, draw the water level in the plastic cup. (1m)

39. The diagram below shows two beakers, X and Y.
Beaker X contained small stones and Beaker Y contained fine beach sand up to the 30 ml mark.



The 30ml of fine beach sand in Beaker Y was poured into the Beaker X containing 30ml of small stones, as seen in the diagram below.



(a) Explain why the contents in Beaker X did not reach the 60ml mark? (1m)

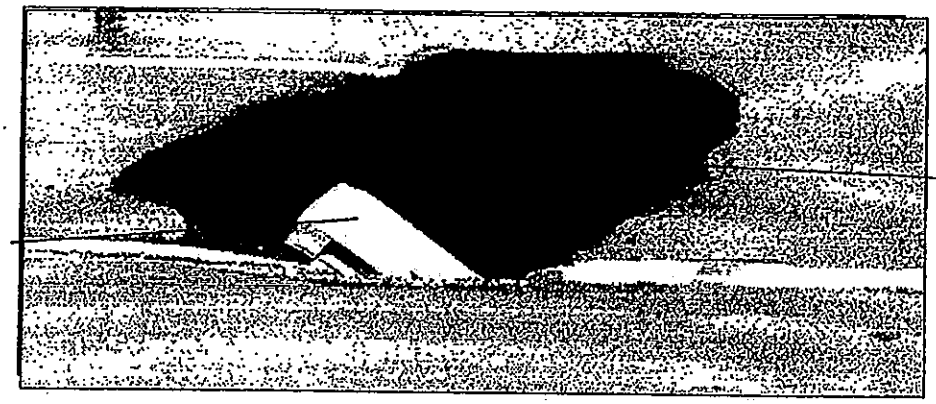
_____

_____

_____

Question 39 continues on page 11

Recently there have been sinkholes appearing along various roads in Singapore. As shown in the diagram below, a sinkhole appears above the ground when there is erosion of the soil underground.



(b) Explain how soil erosion underground causes roads to cave in and form sink holes? (1m)

_____

_____

_____

(c) Which property of matter is shown by the appearance of sinkholes? (1m)

_____

40. Ali and Tommy had a competition to find out whose cup of hot tea would cool faster. The same amount of tea at the same temperature was given to them. Ali drank his tea from his cup while Tommy poured his tea onto a saucer and drank it from there, as shown in the diagram below.

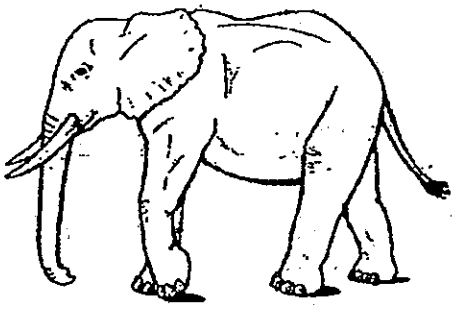
Ali's tea Tommy's tea

(a) Whose tea would cool faster? Support your choice. (1m)

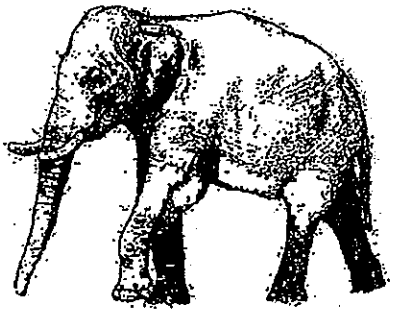
_____

_____

Below is a diagram of an African and Asian elephant.



African elephant



Asian elephant

(b) The African elephant has bigger ears than an Asian elephant. Explain why. (1m)

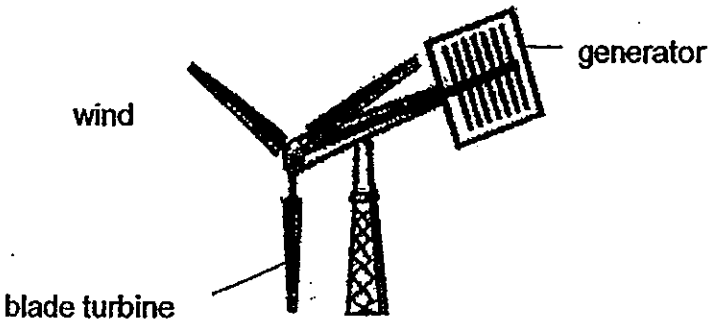
_____

_____

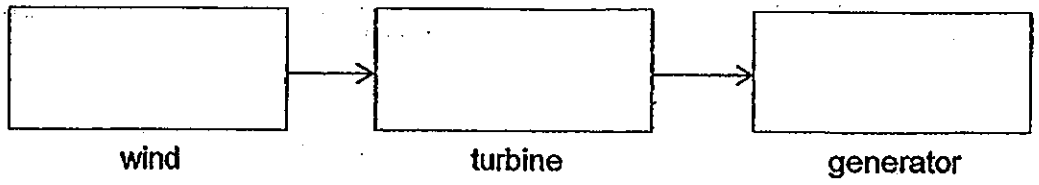
_____

41. Energy from wind can be used to produce electricity.

Energy from wind



(a) State the energy conversion for the above activity. (1m)



(b) State an advantage and a disadvantage of the above way of producing electricity. (2m)

Advantage:

_____

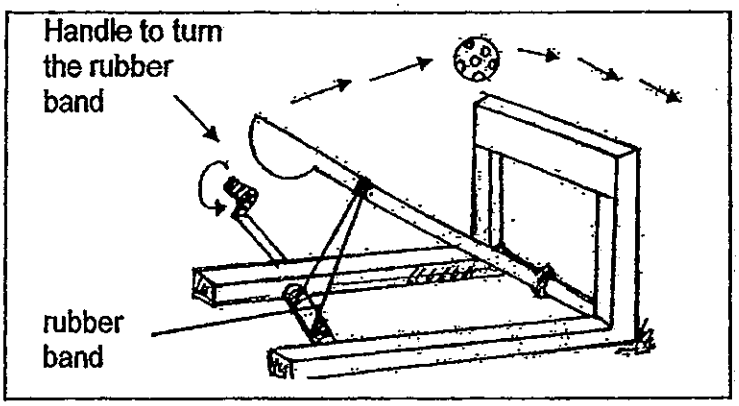
_____

Disadvantage:

_____

_____

42. Look at the diagram below.



Steve wanted to test how the number of turns of the rubber band affects the distance travelled by the air-flown ball.

(a) What is the likely relationship between the number of turns of the rubber band and the distance travelled by the air-flown ball? (1m)

_____

_____

(b) Explain how the above relationship in (a) was possible. (1m)

_____

_____

_____

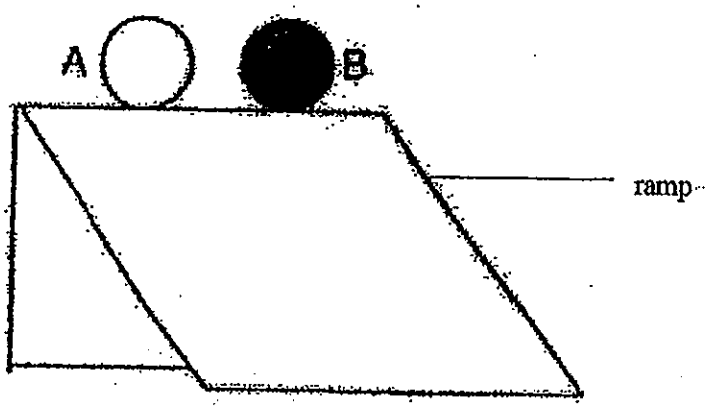
_____

(c) What is the source of energy in the above diagram? (1m)

_____

_____

43. Two balls of the same weight and size but of different surface textures were released from the top of a wooden ramp as shown in the diagram below. Ball A moved a greater distance along the ground than Ball B.



(a) Which ball has a rougher surface? Support your choice. (1m)

_____

(b) What would you observe if the height of the ramp is increased? (1m)

_____

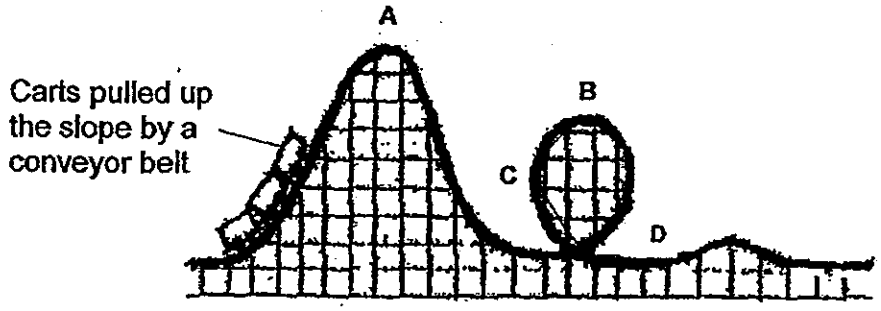
_____

(c) Explain the reason for the observation in (b). (1m)

_____

_____

44. The diagram below shows a roller coaster ride at an amusement park.



(a) Explain why the first hill (point A) must be the tallest part of the roller coaster. (1m)

_____

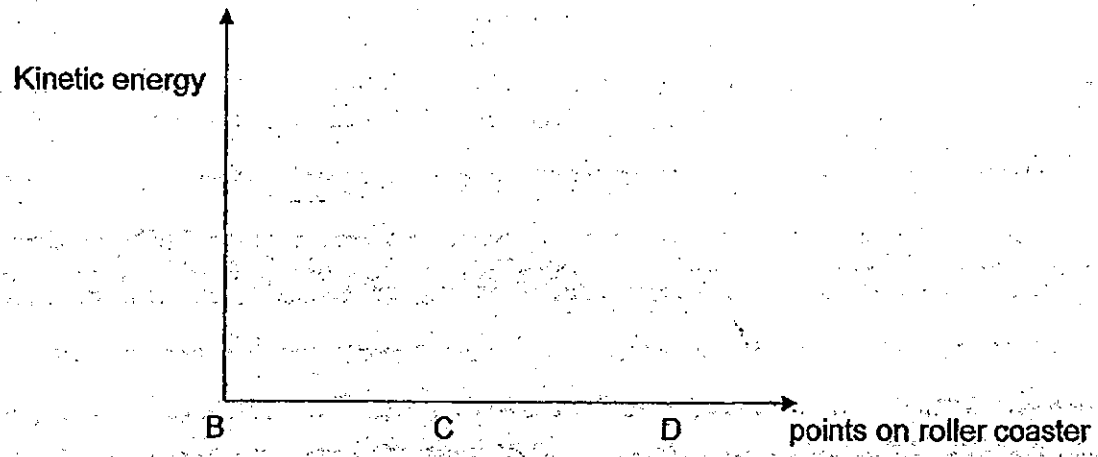
_____

(b) The roller coaster will come to a stop even without the application of brakes. Explain why. (1m)

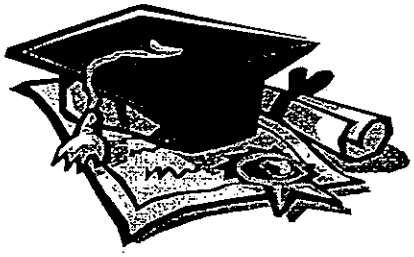
_____

_____

(c) In the graph below, draw the line graph to show the conversion of kinetic energy as the cart of the roller coaster goes through the loop (point B to D). (1m)



End of Paper



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : ROSYTH
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	4	2	3	2	1	4	1	4	2	4	3	3	4

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

31)a)i)Group X. ii)Group Y.
b)P: Lay eggs. Q: Give birth to young alive.

32)a)As the temperature increases, the height increases until it reaches a maximum of which the height drops.
b)In 44℃,the plant's rate of photosynthesis is the greatest to provide the most food.

33)a)During the larval stage ladybugs tend to eat more. Therefore they would eat more of the aphids.
b)There would be more ladybugs to eat the aphids.
It is so when the ladybug is immediately born it is easier for it to eat the aphids.

34)a)i)X→wind dispersal. ii)Y→ splitting.
b)Seed X. The wind can carry it further from the plant as it has wing-like structures.
c)When some seeds does not have the suitable conditions to grow, other seeds at different places which has suitable conditions can grow. This ensure the continuity of their own wind.

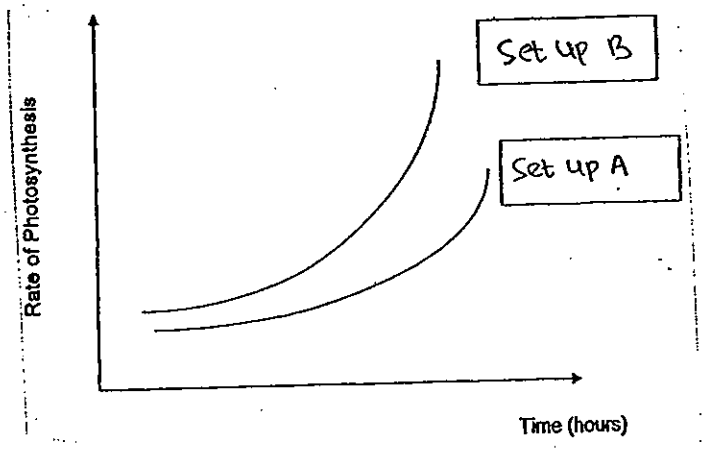
35)a)All the 3 food labels have carbohydrates, Total fats and Protein.

b)A. It has the most amount of carbohydrates which, gives me the most amount of energy.

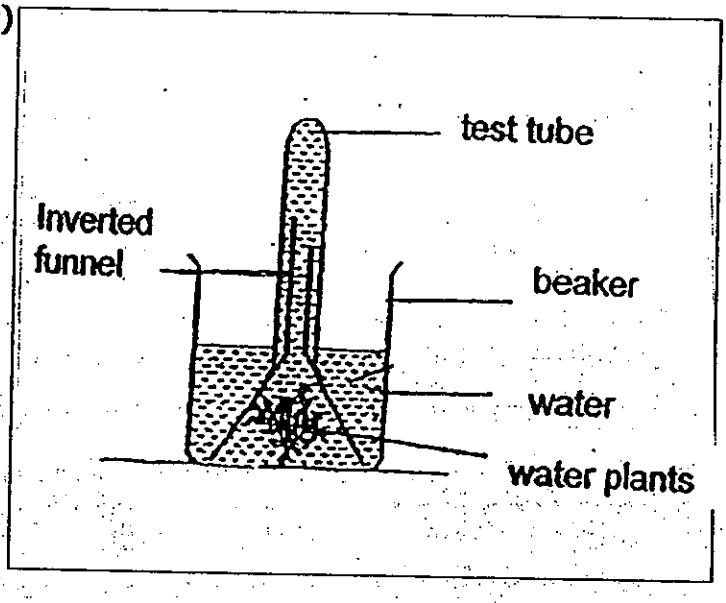
c)When the plant captures the light from the sun to photosynthesize, it stores some energy from the sun as starch. When the chicken eats the plant, the energy from the sun is transffered to it.

36)a)The number of bubbles produced by the plant.

b)



c)



d)To find out if the baking soda is the only factor affecting the rate of photosynthesis.

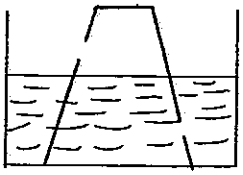
37)a)Chemical Z has increased the population of duckweeds.

b)The type of chemical.

c)When alga blooms it covers the surface of the water. When this happens, sun cannot enter the water and the plants cannot make food. This cause a lack of oxygen for fish and when they try to come up to the surface of the water to breathe, the alga does not let oxygen enter the water. Therefore fish die due to lack of oxygen.

38)a)There is air in the cup taking up space and only some can be compressed.

b)



39)a)The small stones had gaps in between. The fine beach sand filled up the gaps. Therefore the contents did not reach the 60ml mark.

b)When soil erosion takes place the place would be empty. The sink hole appears so as to fill up the space which was previously occupied by the soil.

c)Matter occupies space.

40)a)Tommy. It has a larger exposed surface area for more heat to be lost to the surrounding air.

b)African elephants live in a hotter place so it needs bigger ears to loose more heat.

41)a)Kinetic energy→Kinetic energy→Electrical energy

b)Wind is a renewable source of energy and it can be always available. When the winds are low, less electricity would be produced.

42)a)The greater the number of turns of the rubber band, the further the distance travelled by the air-flown ball.

b)As the number of turns of the rubber band increases, the potential energy is converted to more kinetic energy.

c)The stretched rubber band.

43)a)Ball B. When the ball has a rougher surface, more friction would act on it. This causes it to move a lesser distance.

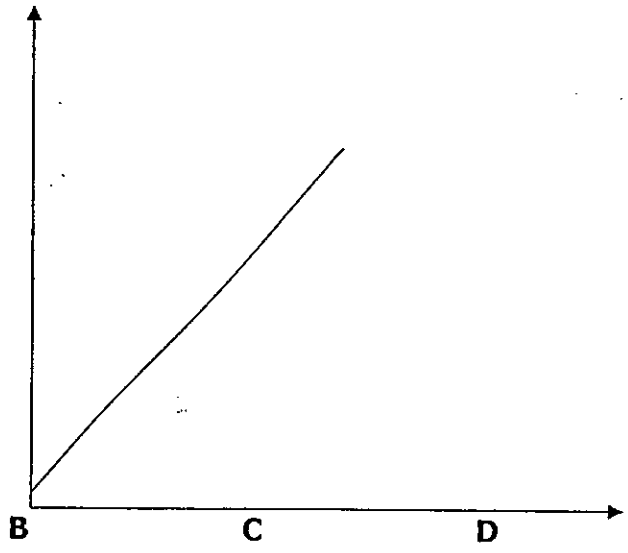
b)A and B will move a greater distance

c)The greater the height the more potential energy. More potential energy is converted to more kinetic energy.

44)a)To gain most potential energy to convert to most kinetic energy in order to complete the ride.

b)Kinetic energy has all been converted to heat energy and sound.

c)



SINGAPORE CHINESE GIRLS' SCHOOL
FIRST SEMESTRAL ASSESSMENT 2013
PRIMARY 6 SCIENCE

Name:_____ ( ) Date:_____

Class: Primary 6 SY / C / G / SE / P

SCIENCE

BOOKLET A

30 questions

60 marks

Total Time For Booklets A & B: 1 h 45 min

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

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Part I (60 marks)

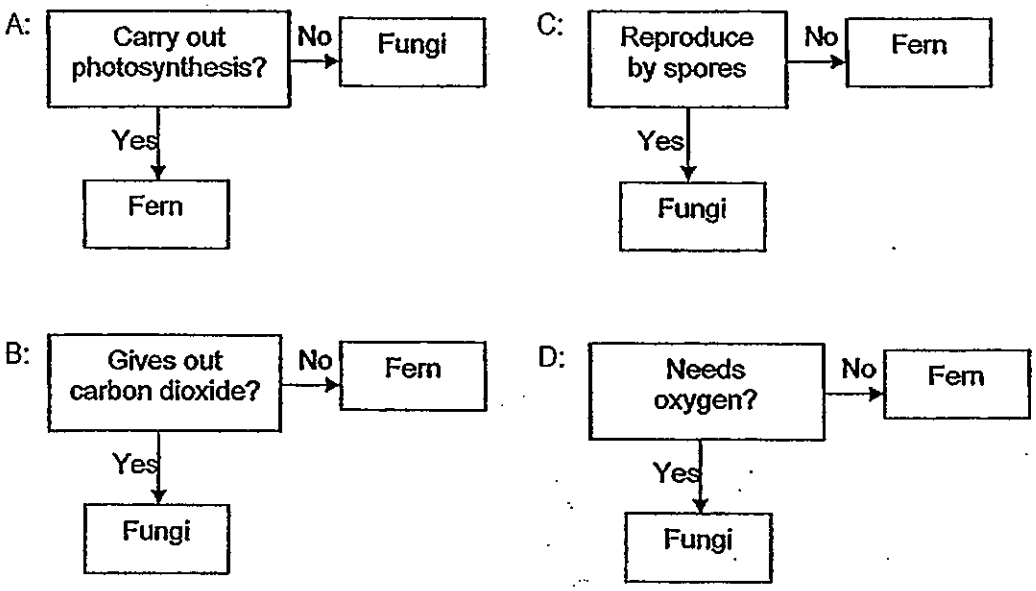
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. The following are the characteristics of Organism X.
   - Can swim
   - Warm blooded
   - Have backbone

   Which of the following is most likely to be Organism X?

   1) Frog
   2) Penguin
   3) Shark
   4) Crocodile

2. Which of the following chart/s is/are suitable for classifying ferns and fungi?

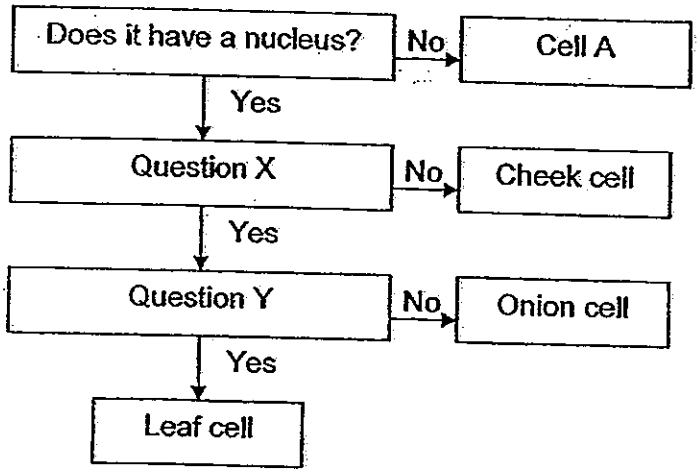


   1) A only
   2) A and C only
   3) B and D only
   4) A, B and D only

3. Which of the following correctly shows the path that food takes in the human digestive system?

   1) Mouth → gullet → stomach → large intestine → small intestine → anus
   2) Mouth → gullet → stomach → small intestine → large intestine → anus
   3) Mouth → windpipe → stomach → small intestine → large intestine → anus
   4) Mouth → windpipe → stomach → large intestine → small intestine → anus

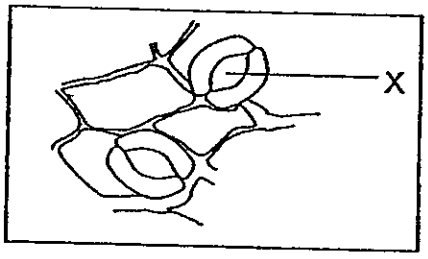
4. Study the flow chart below.



Which of the following correctly shows Question X and Question Y?

	Question X	Question Y
1)	Does it have cell membrane?	Does it have cell wall?
2)	Does it have chloroplast?	Does it have cytoplasm?
3)	Does it have cytoplasm?	Does it have cell membrane?
4)	Does it have cell wall?	Does it have chloroplast?

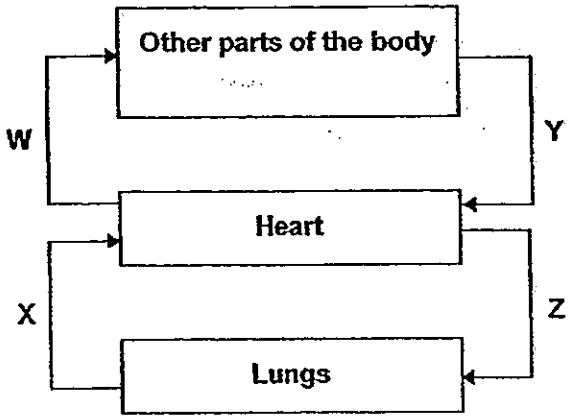
5. The diagram below shows the magnified image of part of a leaf. Which of the following are the functions of the part labelled X in the diagram below?



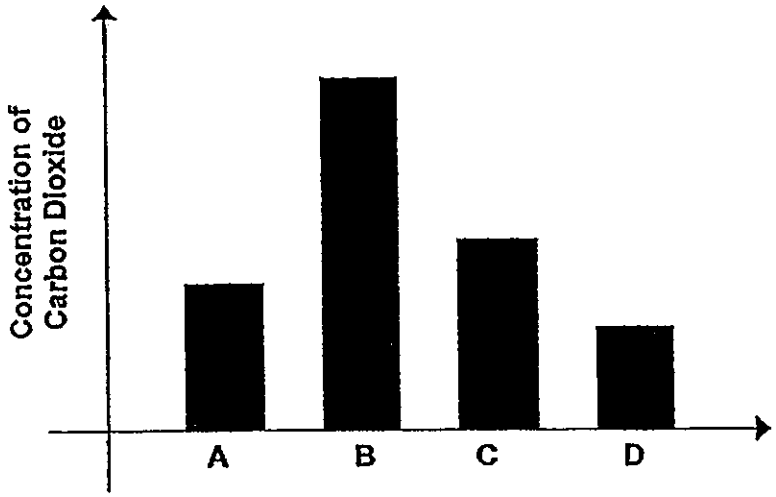
A: Trap sunlight
B: Take in oxygen
C: Take in carbon dioxide
D: Make food for the plant

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

6. W, X, Y and Z in the diagram below represent the blood vessels in the human body.



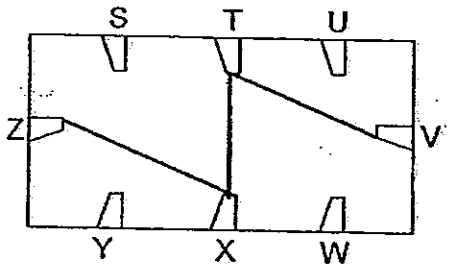
The graph below shows the concentration of carbon dioxide in 4 blood samples taken from different blood vessels in the human circulatory system.



Which sample is most likely to be taken from the blood vessel Z?

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

7. Lynn used a circuit tester to test the circuit card below.



Circuit Card

Which one of the following table below correctly shows the results of her test?

1)

Clips tested	Did the bulb light up?
S and T	No
T and X	Yes
U and W	No
V and Z	No
W and Z	No
T and Z	Yes

2)

Clips tested	Did the bulb light up?
S and U	No
T and V	Yes
U and W	Yes
V and X	Yes
W and Z	No
X and S	No

3)

Clips tested	Did the bulb light up?
S and Z	No
T and V	No
U and V	Yes
V and T	Yes
W and Y	No
X and Y	No

4)

Clips tested	Did the bulb light up?
S and T	No
T and U	No
U and V	No
V and X	Yes
W and Y	No
X and Z	Yes

8. The table below shows the conditions of 4 different habitats.

	Habitat			
	W	X	Y	Z
Amount of light	Low	High	Low	High
Amount of moisture	Low	High	High	Low
Temperature	17°C	28°C	32°C	24°C

Which of the habitats is the most suitable for the growth of bread mould?

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

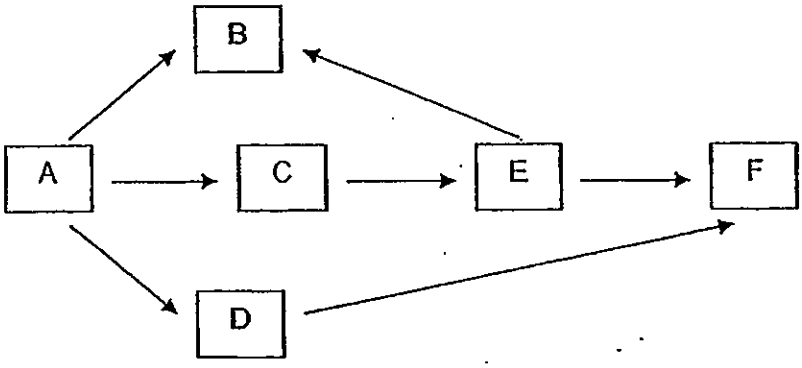
9. Substance P is given out by Organism Q. Ming Hua measured the amount of Substance P at 3 different locations. He also counted the number of Organism Q found in each location and recorded the information in the table below.

Location	Amount of Substance P	Number of Organism Q
X	15g	37
Y	24g	64
Z	9g	11

Based on the information in the table above, what can Ming Hua conclude about the relationship between the number of Organism Q and the amount of Substance P?

1) The lower amount of Substance P resulted in the smaller number of Organism Q.
2) The higher amount of Substance P resulted in the greater number of Organism Q.
3) The smaller number of Organism Q resulted in the higher amount of Substance P.
4) The greater number of Organism Q resulted in the higher amount of Substance P.

10. Study the food web below.



If all of the Organism C is removed from the food web, which organism will be the most greatly affected?

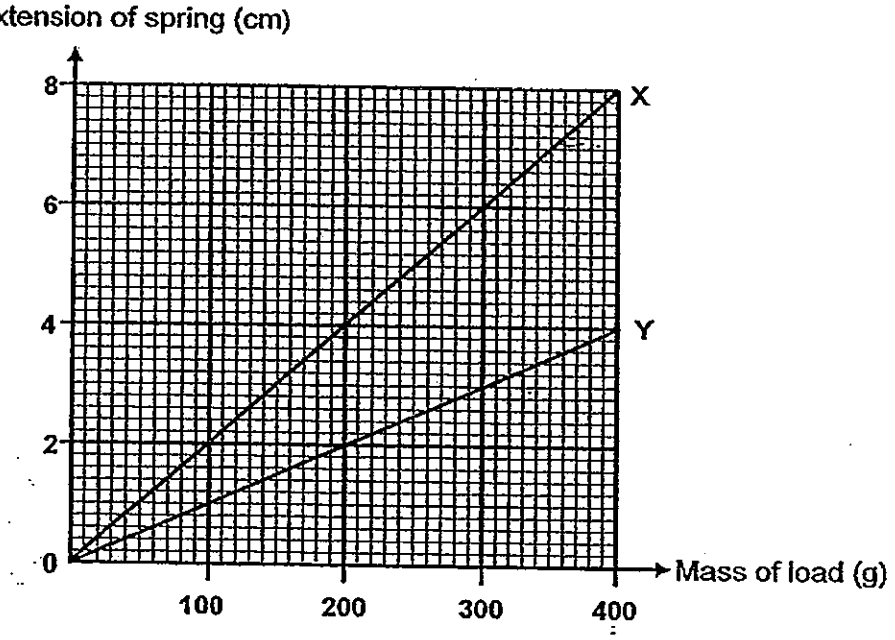
1) A
2) B
3) D
4) E

11. Which of the following adaptations and functions of birds have been matched correctly?

	Adaptations	Functions
A:	Feathers	Keep warm
B:	Webbed feet	Catch prey
C:	Hollow bones	Reduce body weight
D:	Streamlined body shape	Reduce frictional force during flight

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

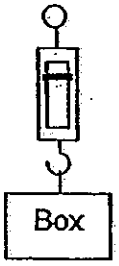
12. The original length of Spring X and Spring Y was 5cm. After loads of various mass were hung on them, Tim recorded the extension of each spring and plotted the graph below.



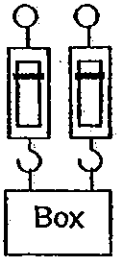
Which of the following correctly shows the length of each spring when a load of 200g was hung on each of them?

	Spring X	Spring Y
1)	2cm	4cm
2)	4cm	2cm
3)	9cm	7cm
4)	7cm	9cm

13. When the box is hung on the spring balance, the reading on the spring balance is 300g.

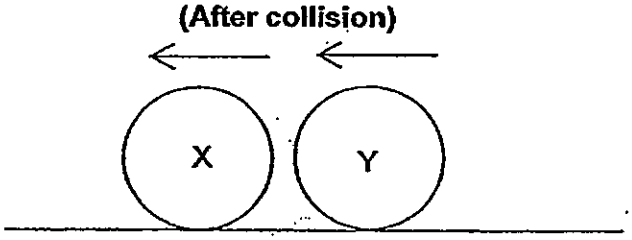


The same box is then hung on 2 similar spring balances. Which one of the following is the most likely reading of each of the spring balance?



1) 150g
2) 300g
3) 450g
4) 600g

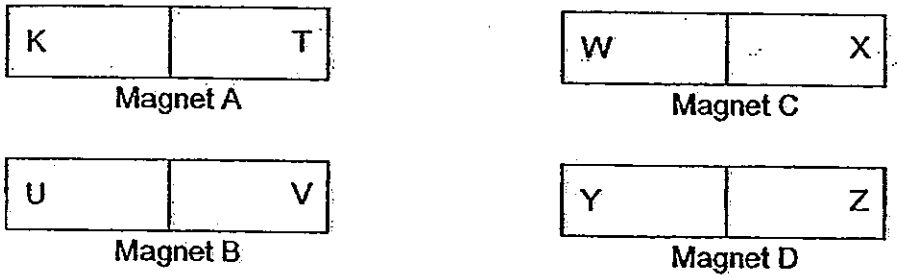
14. 2 balls moving in opposite directions collided with each other and moved in the direction as shown below.



What one of the following is the most likely reason for both balls to be moving in the same direction after colliding with each other?

1) Ball Y has the same mass as Ball X.
2) Ball X has a greater mass than Ball Y.
3) Ball X was moving faster than Ball Y before the collision.
4) Ball Y was moving faster than Ball X before the collision.

15. The diagrams below show 4 magnets, A, B, C and D.
T repels X and Y. W repels V.



Which one of the following will attract each other?

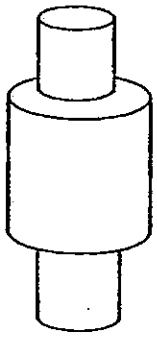
1) K and U
2) W and Z
3) X and Y
4) V and Z

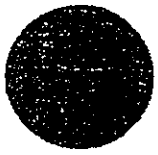
16. Which of the following is produced by the plant during photosynthesis?

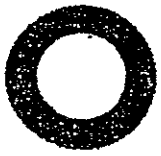
A: Water
B: Sugar
C: Starch
D: Oxygen
E: Carbon dioxide

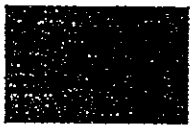
1) A and E only
2) B and D only
3) A, C and D only
4) B, C and D only

17. Which of the following are possible shadows cast by the solid wooden object shown below?



A: 

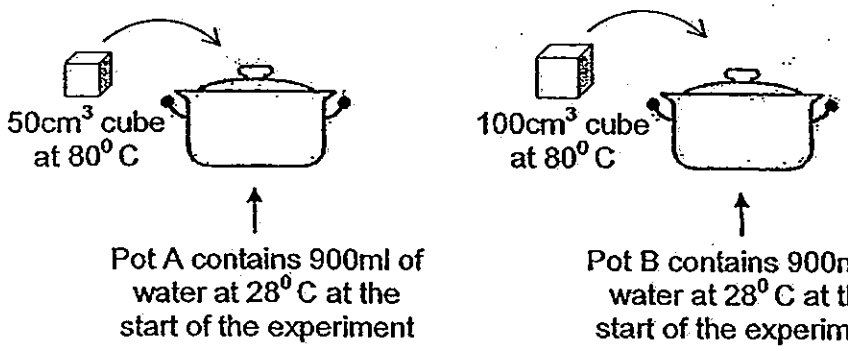
C: 

B: 

D:

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

18. Alicia placed 2 metal cubes of the same temperature but different volumes into 2 pots of water.



After 3 minutes, Alicia measured the temperature of water in each pot. What is the most likely result of Alicia's experiment?

	Observation	Reason
1)	The water in Pot A has a higher temperature than the water in Pot B.	The water in Pot A gained more heat.
2)	The water in Pot B has a higher temperature than the water in Pot A.	The water in Pot B gained more heat.
3)	Both pots of water will have the same temperature.	The amount of heat gained by both pots of water is the same as both cubes were placed in the water for the same duration.
4)	Both pots of water will have the same temperature.	The amount of heat gained by both pots of water is the same as both cubes were of the same temperature.

19. Minmin poured hot water into 2 cups made of the same size but of different materials. She measured the temperature of the water in each cup after 15 minutes. The results of her experiment are as shown in the table below.

	Temperature of water in the cup (°C)	
Time	**Cup A**	**Cup B**
0 mins	95	95
15 mins	60	89

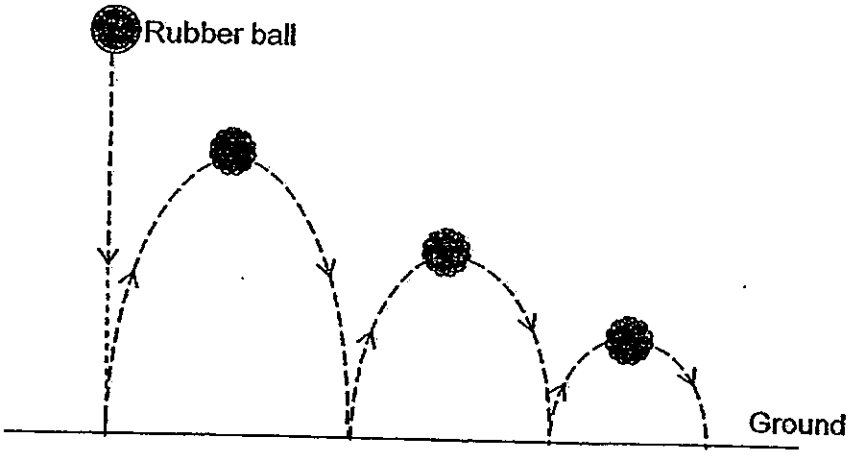
Which material is the most suitable for making a container to transport ice and a container to keep food warm respectively?

	Material most suitable to make a container to transport ice	Material most suitable to make a container to keep food warm
1)	A	A
2)	A	B
3)	B	A
4)	B	B

20. Which one of the following correctly shows the main energy changes that will take place when a battery-operated fan is switched on?

1) electrical energy ⟶ potential energy ⟶ light energy
2) electrical energy ⟶ potential energy ⟶ heat energy
3) potential energy ⟶ electrical energy ⟶ kinetic energy
4) potential energy ⟶ kinetic energy ⟶ electrical energy

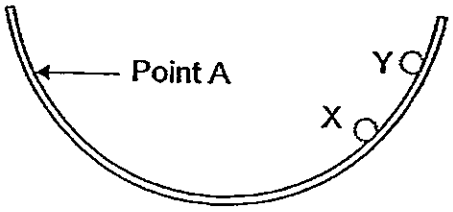
21. Sammy dropped a rubber ball from a height above the ground. Each time the rubber ball hit the ground, it bounced up but to a lower height.



Which one of the following best explains the reason for the decreasing height?

1) Gravitational force was acting on the rubber ball.
2) Frictional force was acting against the rubber ball.
3) Some of the energy in the rubber ball was destroyed as the ball bounces.
4) Some of the energy in the rubber ball was converted to heat and sound energy.

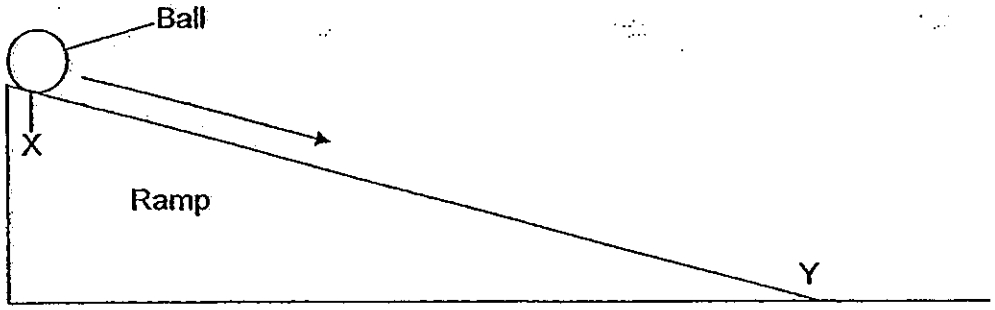
22. Ali released a metal ball from Point A in a bowl. The metal ball could only reach Position X. If Ali wants the metal ball to reach Position Y, which of the following solution/s will enable it to happen?



A: Use a bigger metal ball.
B: Use a smaller metal ball.
C: Apply oil on the inner side of the bowl.
D: Release the metal ball from a higher position.

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

23. Kumar carried out an experiment as shown below. He recorded the time taken for the ball to travel from X to Y after he released the ball at X.



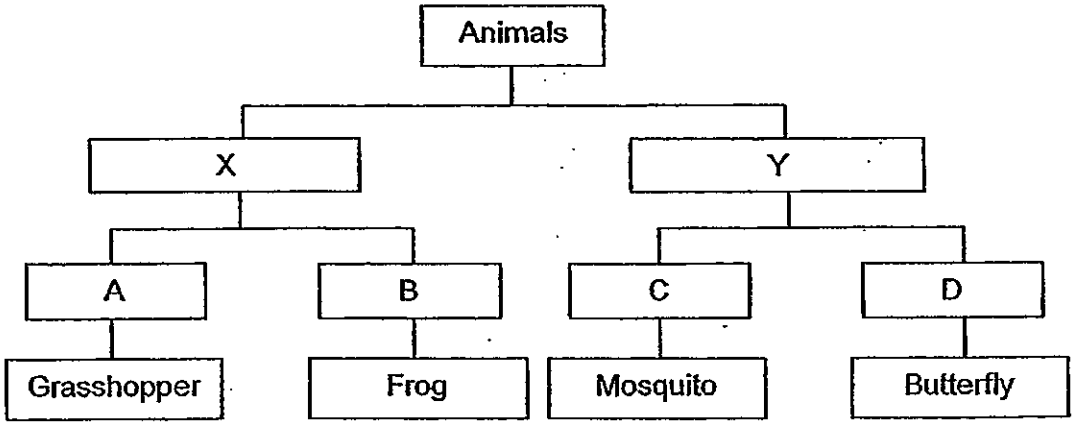
He then repeated the experiment 2 more times, each time only changing the height of the ramp.

Which of the following are possible aims of Kumar experiment?

A: To find out if the height of ramp affects the speed the ball travels.
B: To find out if the height of the ramp affects the distance moved by the ball.
C: To find out if the weight of the ball affects the distance travelled by the ball.
D: To find out if the height of the ramp affects the time taken for the ball to travel.

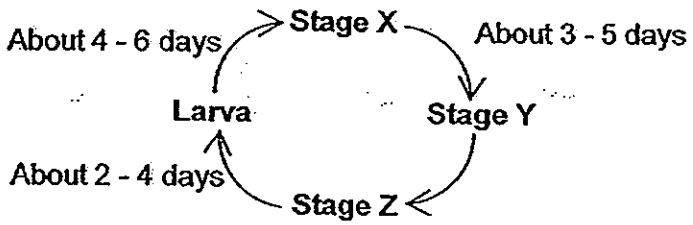
1) D only
2) A and D only
3) B and C only
4) B and D only

24. Study the classification chart below. What do X and D represent respectively?



	X	D
1)	Cannot fly	Can fly
2)	Lay eggs in water	4 stages in life cycle
3)	3 stages in life cycle	Lay eggs on land
4)	Lay eggs on land	Lay eggs in water

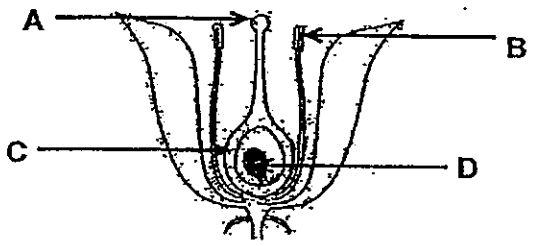
25. The diagram below shows the life cycle of Organism P.



What is the least possible number of days Organism P can develop from a larva to the adult stage?

1) 6
2) 7
3) 9
4) 11

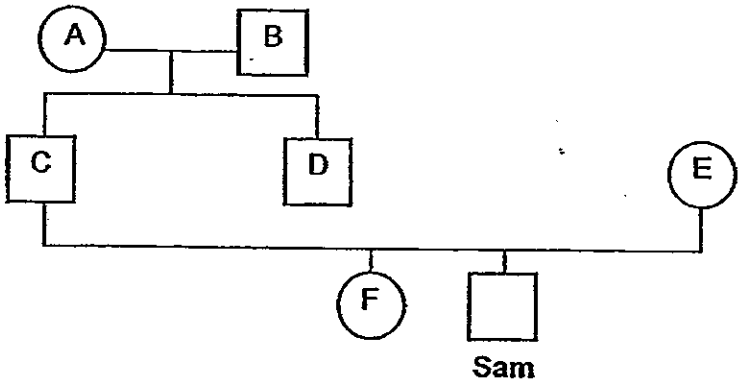
26. The diagram below shows the cross-section of a flower.



Which part/s of the flower are essential for pollination?

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

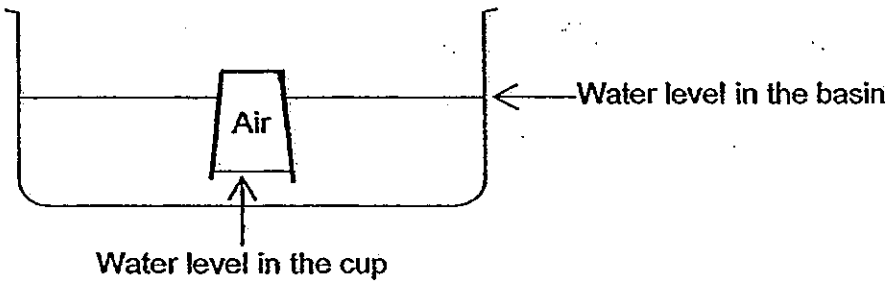
27. The diagram below shows Sam's family tree.



Sam has attached earlobes. Which of the following family members could have passed down this trait to him?

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

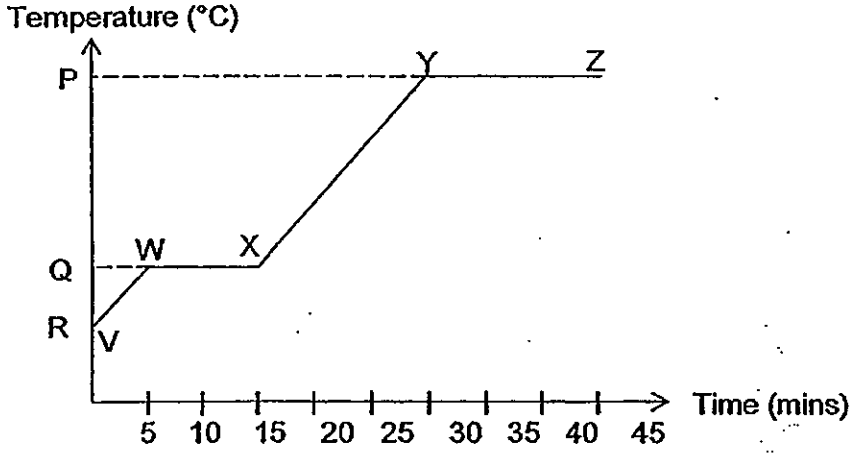
28. A cup was inverted and lowered vertically into a basin of water. Which property/properties of air allow the water to enter the cup?



A: Has mass
B: Has a definite volume
C: Can be compressed
D: Has a definite shape

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

29. The graph below shows the change in temperature of Substance S which was being heated from the solid state till it reached its boiling point.

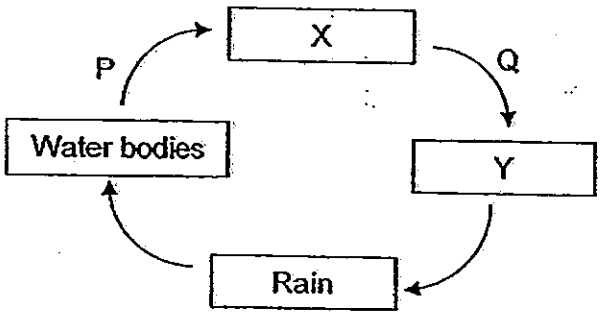


Based on the graph, which of the following statements are true?

A: Substance S melted at Q°C.
B: R°C was the room temperature.
C: Substance S started to boil at Point Y.
D: Substance S started melting at Point V.

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

30. Water exists in 3 states. The diagram below shows the water cycle.



Which of the following statement/s about the diagram above is true?

A: X represents water vapour.
B: Y represents tiny water droplets.
C: Water loses heat during Process P.
D: Water gains heat during Process Q.

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

SINGAPORE CHINESE GIRLS' SCHOOL
FIRST SEMESTRAL ASSESSMENT 2013
PRIMARY 6 SCIENCE

Name:_____( ) Date:_____

Class: Primary 6 SY / C / G / SE / P

Components	Marks Obtained	Total Marks
Booklet A		60
Booklet B		40
Total		100

_____
Parent's Signature

SCIENCE

BOOKLET B

14 questions

40 marks

Total Time For Booklets A & B: 1 h 45 min

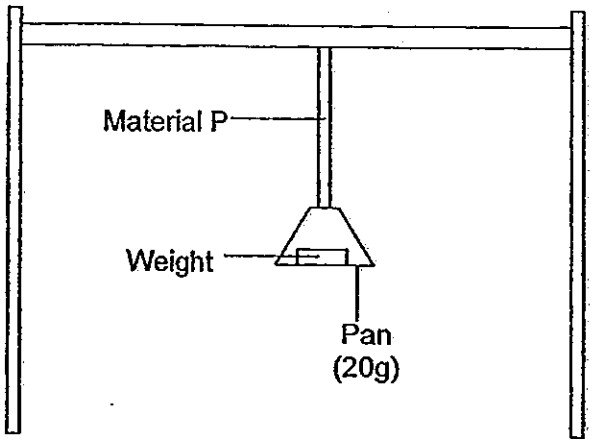
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY

Name:_____( )
Class: Primary 6 SY / C / G / SE / P

Part II (40 marks)
Answer all the following questions.

31. Nathan conducted an experiment as shown in the diagram below.



He wanted to test if adding Substance X to Material P will change the strength of Material P. He fixed Material P to a support and attached a pan to it. He then placed weights onto the pan until Material P breaks. He then repeated the experiment by adding Substance X to Material P. The table below shows the results of his experiment.

	Mass of weight added to the pan before Material P breaks
Material P without Substance X	141g
Material P with Substance X	108g

a) Nathan said that the total mass needed to break Material P without Substance X is 141g. Do you agree with him? Explain your answer. (1m)

_____

_____

b) Explain why keeping the width of Material P the same for each try will make it a fair test. (1m)

_____

_____

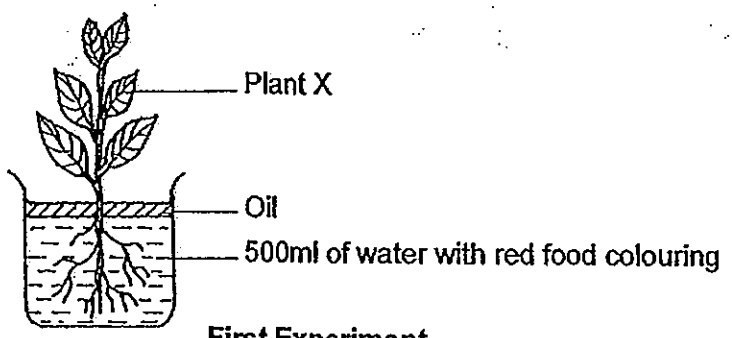
c) What can Nathan conclude from his experiment? (1m)

_____

_____

3

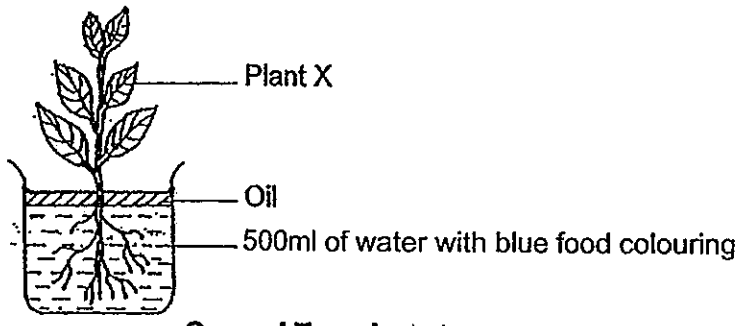
32. Mrs Tan wanted to find out if the temperature of the surroundings will affect the rate plants take in water. She set up an experiment as shown below.



First Experiment

Mrs Tan added a layer of oil in the water and placed the set-up in a room of 35°C. Then she recorded the time taken for the top 2 leaves of the plant to turn red.

Immediately after the first experiment, Mrs Tan used the same plant and another beaker of water with blue food colouring. She placed the set-up in a room of 25°C. Then she recorded the time taken for the top 2 leaves of the plant to turn purplish blue.



Second Experiment

a) Besides observing the time taken for the leaves of the plant to turn colour, state another observation Mrs Tan can make in her experiment in order to draw a conclusion? (1m)

_____

_____

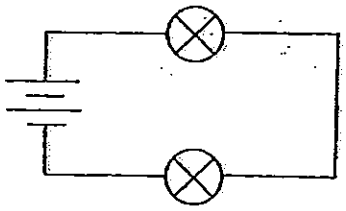
b) A friend told Mrs Tan that she should not have used the same plant for the experiment. Do you agree with her friend? Explain your answer. (1m)

_____

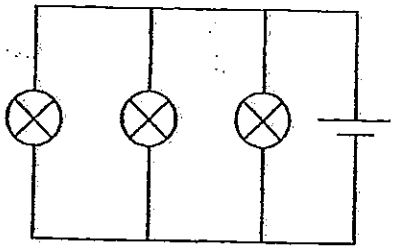
_____

2

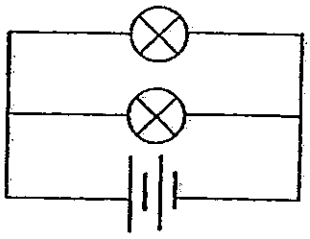
33. Study the 4 circuits below.



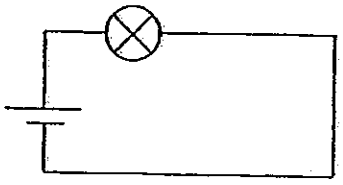
Set-up P



Set-up R



Set-up Q



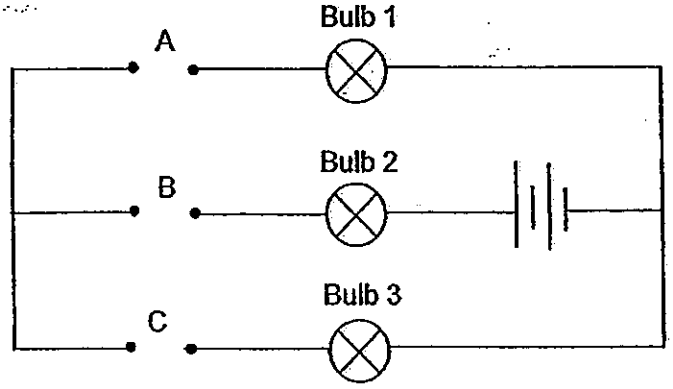
Set-up S

Based on the set-ups above, put a tick (✓) in the appropriate column to indicate if each of the following statement is **'True'** or **'False'**. (4m)

	Statements	True	False
a)	If one of the bulbs in Set-up R is fused, the other 2 bulbs will still light up.		
b)	Each bulb in Set-up Q is brighter than the bulb in Set-up S.		
c)	Each bulb in Set-up S is dimmer than the bulb in Set-up R.		
d)	The bulbs in Set-up P, Q and R are arranged in parallel.		

4

34. Muthu used the circuit below to conduct an experiment. He connected 6 different objects, P,Q, R, S, T and U to the circuit at positions A, B and C and recorded his findings in the table below.



Objects placed at			Does the bulb light up?		
A	B	C	Bulb 1	Bulb 2	Bulb 3
P	Q	R	✓	✓	
S	R	T			
U	Q	P		✓	✓
T	P	S		✓	✓
Q	U	P			

a) Which object/s is/are conductors of electricity? (1m)

_____

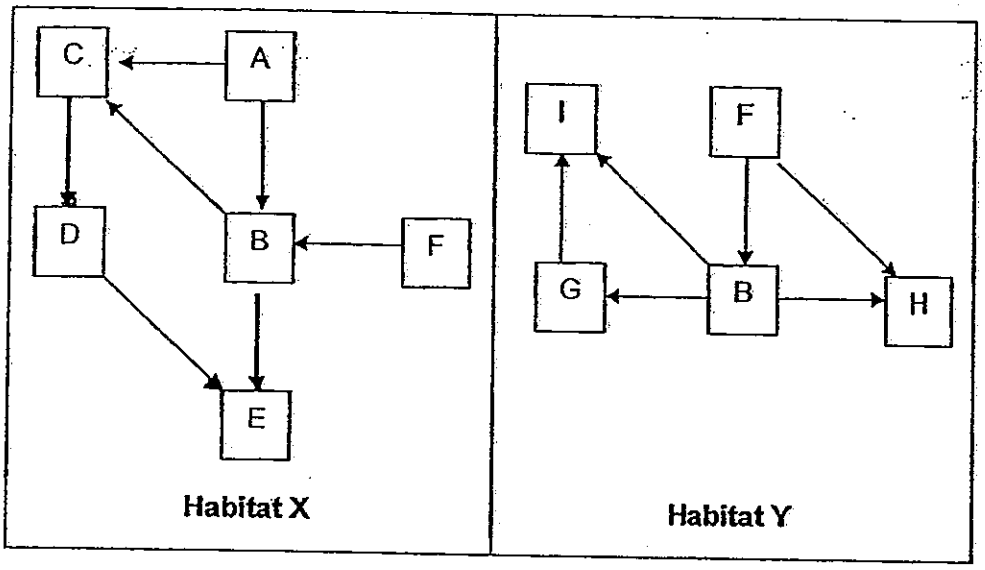
b) If a toothpick, magnet and glass rod are placed at A, B and C respectively, which of the bulb/s in the circuit will light up? (1m)

Objects placed at		
A	B	C
Toothpick	Magnet	Glass rod

_____

2

35. The diagram below shows the food webs in 2 different habitats.



a) How many food chains are there in Habitat X? (1m)

_____

b) In Habitat X and Habitat Y, what is the total number of organisms that are both a prey and a predator? (1m)

_____

c) Tom moved one of the animal populations from Habitat X to Habitat Y but it was unable to survive. Which animal population did he move? (1m)

_____

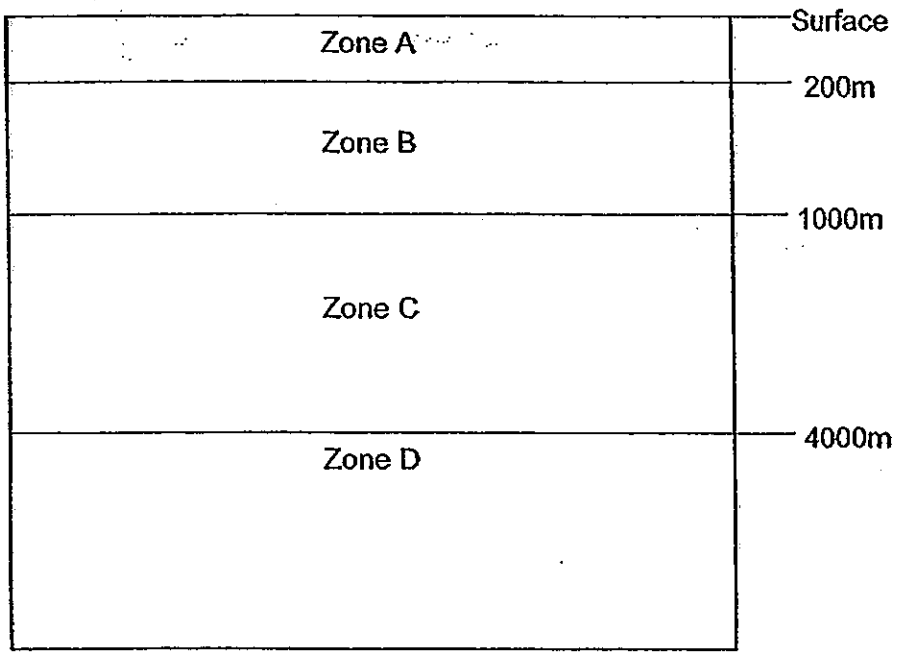
d) If Tom move Population H to Habitat X, will it be able to survive? Give a reason for your answer. (1m)

_____

_____

4

36. The diagram below shows the different zones of the ocean according to their depths.



Zones	Description
A	• Top layer of the ocean zone • Supports 90% of ocean life
B	• Very little sunlight can pass through • Some animals that live here are able to move between this zone and Zone A
C	• No sunlight reaches this zone • Very few animals live here
D	• No sunlight reaches this zone • Very few animals live here

a) Explain why plants are not found in Zone B. (1m)

_____

_____

b) If the animals in Zone B are able to survive with little oxygen, what is the purpose of them moving up to Zone A? (1m)

_____

_____

2

37. Animal X feeds on other mammals, birds, eggs, lizards and tree frogs. It is able to imitate the distress call of the young of Animal Y. The adult of Animal Y takes care of its young.

Animal X

Animal Y

a) How is the ability of imitating the distress call of the young of Animal Y an advantage to Animal X? (1m)

_____

_____

b) The non-poisonous king snake looks like the poisonous coral snake.

Coral snake

King snake

i) State whether looking like the coral snake is a structural or behavioral adaptation of the king snake.(1m)

_____

ii) How does looking like the coral snake an advantage to the king snake? (1m)

_____

_____

c) The picture below shows a fish with an eyespot.

Eyespot

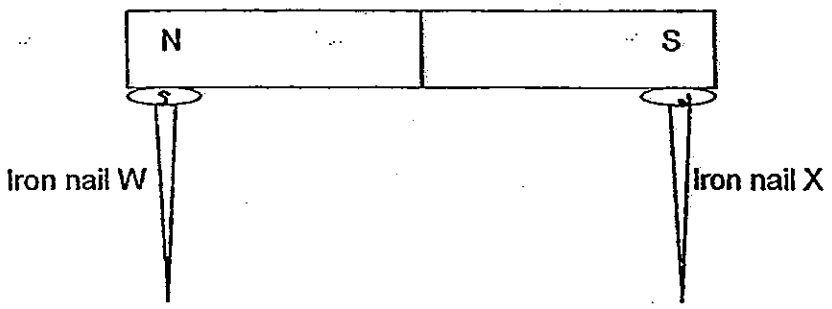
How does having an eyespot reduce the chances of the fish being eaten? (1m)

_____

_____

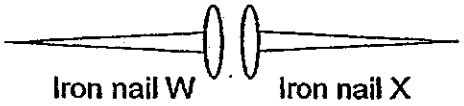
4

38. Jane placed 2 iron nails at each end of the magnet as shown in the diagram below.



She noticed that both the iron nails were able to attract a few paper clips after she removed them from the magnet.

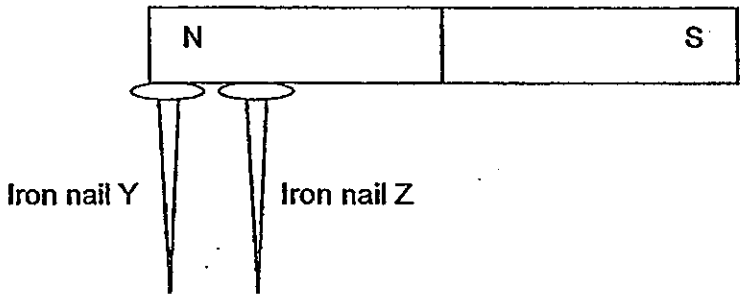
a) What will happen to the iron nails when she then placed them near each otl r as shown in the diagram below? Give a reason for your answer. (1m)



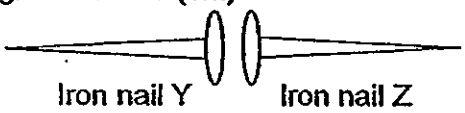
_____

_____

Jane then placed another 2 iron nails at the same end of the magnet as shown in the diagram below.



b) What will happen to the iron nails when she then placed them near each other as shown in the diagram below? (1m)



_____

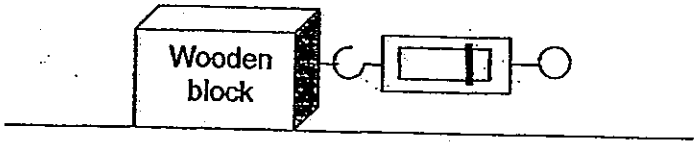
c) After the experiment, Jane does not want the iron nails to have the ability to attract the paper clips. State 2 different ways where Jane can make the iron nails lose their ability to attract paper clips. (1m)

_____

_____

3

39. John dragged a wooden block across a table with 4 different surfaces and the results of the experiment are shown in the table below.



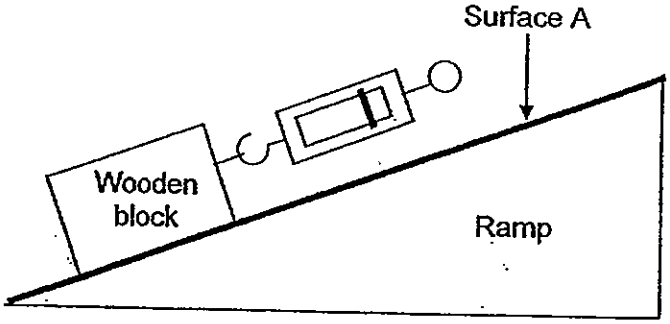
Table

Type of Surface	Average force needed (N)
A	105
B	88
C	127
D	94

a) Arrange in order, starting from the smoothest surface to the roughest surface. (1m)

_____

In another experiment, John glued Surface A from the first experiment onto a ramp and pulled the same wooden block up the ramp.



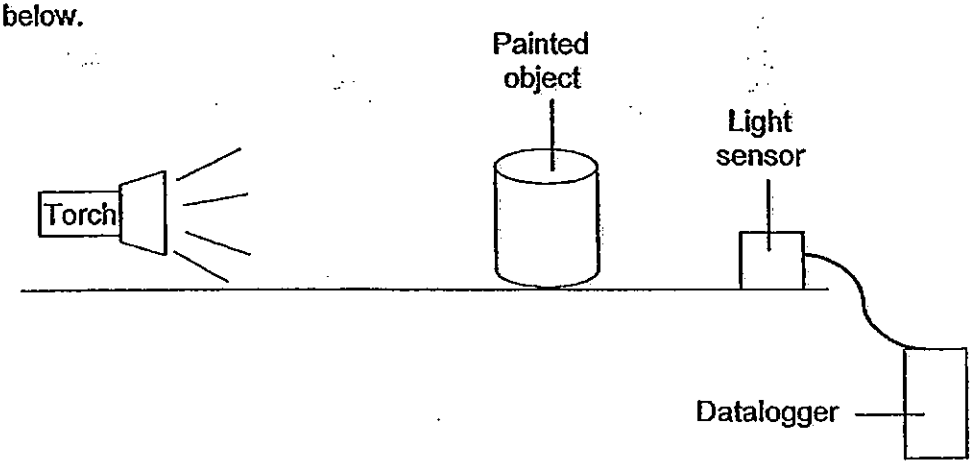
b) Will the force needed to pull the wooden block up the ramp be more than, less than or the same as 105N? Explain your answer. (1m)

_____

_____

2

40. Lily wanted to find out which is the most suitable paint to be painted onto the lower part of the tree trunks along dimly-lit roads. She set up an experiment as shown below.

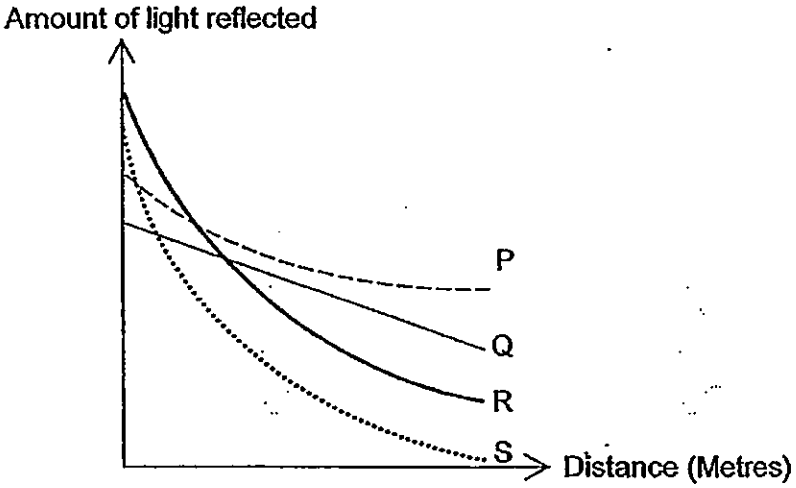


a) Explain why the light sensor should not be placed behind the painted object in Lily's experiment. (1m)

_____

_____

After Lily has corrected her experiment, she collected the results and plotted the graph as shown below.

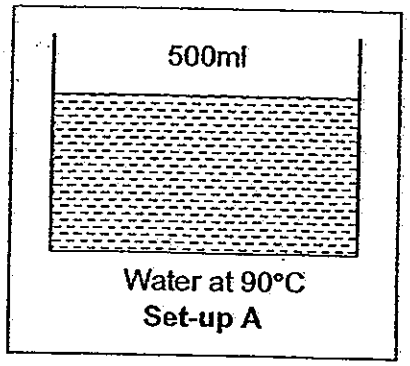


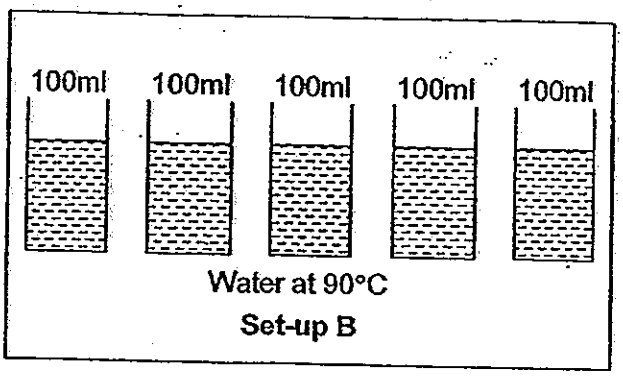
b) Based on Lily's graph, which is the most suitable paint to be painted onto the lower trunks of the trees on roads that are dimly lit? (1m)

_____

2

41. Jimmy poured 500ml of water at 90°C into a large container and another 500ml of water at 90°C into 5 separate containers as shown in the diagrams below.





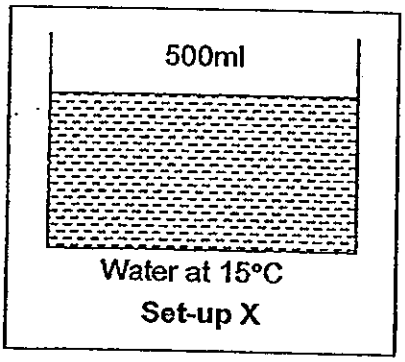
a) Jimmy placed all the containers at the same location. What variable was kept the same by placing all the containers at the same location? (1m)

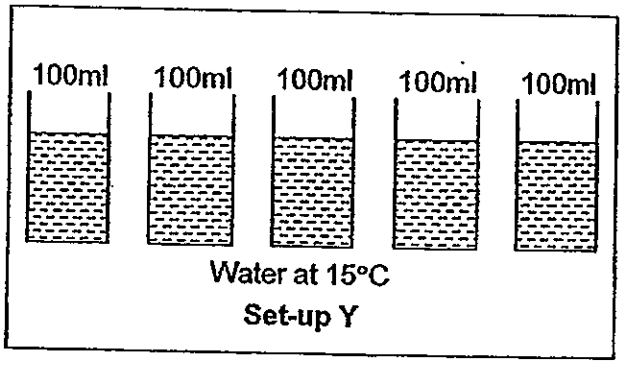
_____

b) Explain why the water in Set-up B has a lower temperature than the water in Set-up A after a few minutes. (1m)

_____

_____



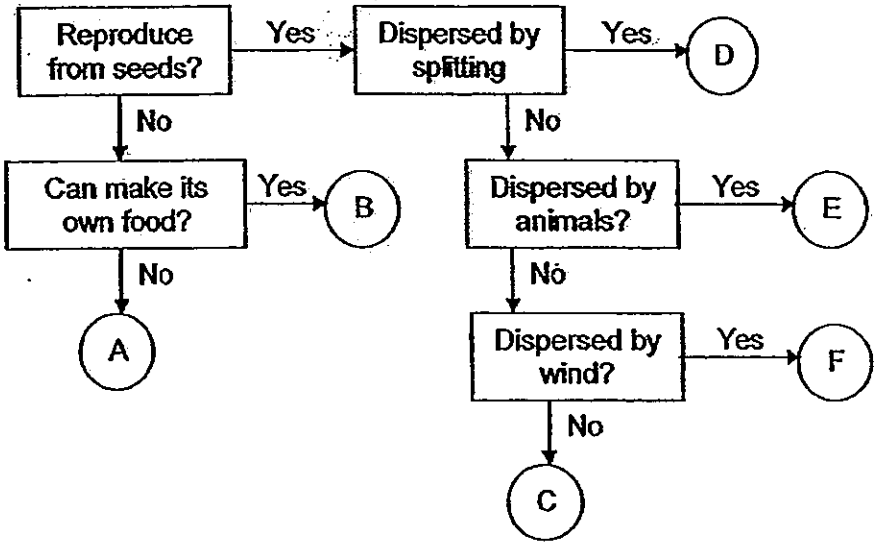


c) Jimmy conducted a similar experiment but this time, he used water at 15°C. In which set-up would the water reach the room temperature first? (1m)

_____

3

42. Study the flowchart carefully.



a) Based on the flow chart, what is the difference between B and D? (1m)

_____

_____

b) Based on the flow chart, describe the charateristics of E. (1m)

_____

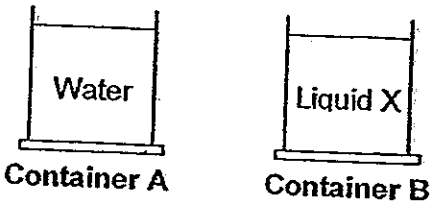
_____

c) In which group does the coconut belong to? (1m)

_____

3

43. Liquid X evaporates much faster than water. When the same amount of water and Liquid X at room temperature are poured into 2 containers of the same size, it was observed that water droplets were formed on the outer surface of Container B. However, water droplets were not formed on the outer surface of Container A.

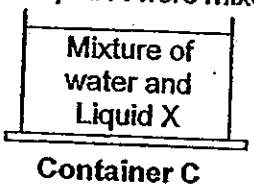


a) Explain why water droplets were formed on the outer surface of container B. (2m)

_____

_____

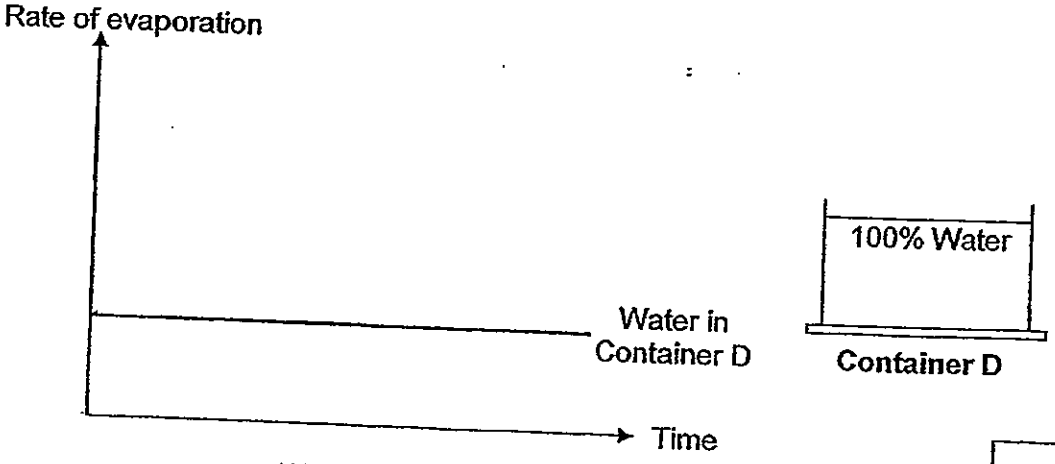
Equal amounts of water and Liquid X were mixed together and poured into Container C.



The table below shows the percentage of water and Liquid X in the mixture left in the container as it evaporates.

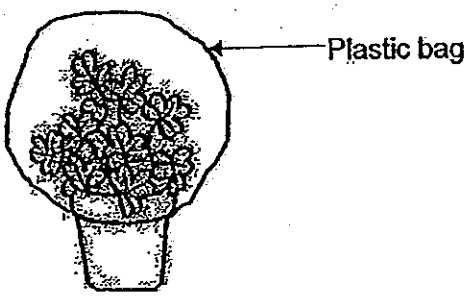
Time	Percentage of water in Mixture	Percentage of Liquid X in Mixture
0 hour	50%	50%
2 hour	65%	35%
4 hour	80%	20%
6 hour	95%	5%
8 hour	100%	0%

b) The graph below shows the rate of evaporation of water over 8 hours in Container D which has the same size as Container C.
Draw another line in the graph to show the rate of evaporation of the mixture in Container C over 8 hours. (1m)



3

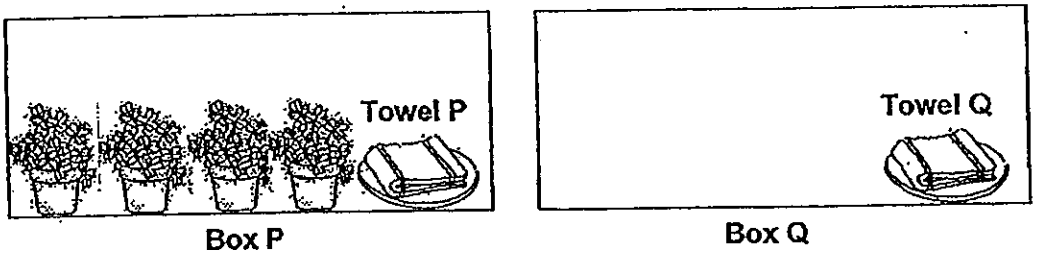
44. Mrs Lee wrapped the leaves of a plant with a plastic bag.



a) What will she observe in the plastic bag after a few days? (1m)

_____

Mrs Lee then carried out an experiment as shown in the diagram below.



b) She placed 2 towels that are equally wet in 2 boxes of the same size. Box P has many plants while Box Q does not have any plant. She noticed that Towel P dried more slowly than Towel Q. Explain why this happened. (2m)

_____

_____

3

SCGS Primary P6 SA1 Answers

Booklet A

1) 2	6) 2	11) 3	16) 2	21) 4	26) 3
2) 1	7) 4	12) 3	17) 1	22) 1	27) 3
3) 2	8) 3	13) 1	18) 2	23) 2	28) 2
4) 4	9) 4	14) 4	19) 4	24) 3	29) 2
5) 2	10) 4	15) 1	20) 3	25) 2	30) 2

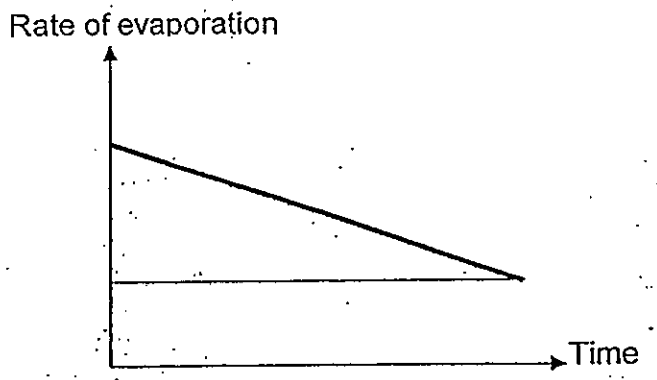
Booklet B

Qn	Suggested Answer *(does not include all possible answers)*
31a.	No. The pan has weight/mass (20g) so the total mass needed to break Material P without Substance X is 161 g / more than 141g
31b.	The width of Material P will affect the results of the experiment.
31c.	Adding Substance X causes Material P to become **weaker**.
32a.	She could observe the amount of water left in the beaker after a fixed period of time.
32b.	Yes. The plant has taken in water in the first experiment and this will affect the amount of water the plant takes in in the second experiment.

33.

	True	False
a)	✓	
b)	✓	
c)		✓
d)		✓

34a.	P, Q, S
34b.	None
35a.	5
35b.	3
35c.	D
35d.	Yes. It has B and F to feed on./ It still has food sources, B and F.
36a.	There is not enough light for the plants to make food / carry out photosynthesis.
36b.	To look for food
37a.	The calls of Animal X will attract the adult Animal Y to it and Animal X can prey / eat on the adult Animal Y.
37bi.	Structural
37bii.	The predators of the king snake may mistake it for the poisonous coral snake and avoid eating it.
37c.	The predators of the butterfly fish may mistake it for a larger animal and avoid it.

38a.	They will attract as they are unlike poles are facing each other.
38b.	They will repel as the like poles are facing each other.
38c.	Hit the iron nails several times Drop the iron nails several times Heat the iron nails
39a.	B, D, A, C
39b.	More than. The wooden block is being moved in the opposite direction as the pull of gravity/ has to overcome the force of gravity.
40a.	The object will block the light sensor. / The object will cast a shadow on the light sensor.
40b.	P
41a.	The temperature of the surrounding
41b.	The water in Set-Up B has more surface area exposed to the surrounding so it could lose heat faster.
41c.	Y
42a.	D reproduce from seeds but B does not.
42b.	E reproduce from seeds and is dispersed by animals.
42c.	C
43a.	As Liquid X evaporates, Container B loses heat and becomes cooler so the water vapour in the surrounding condensed onto the outer surface to form water droplets.
43b.	
44a.	Water droplets
44b.	There were plants in Box P which gave out water vapour. This increases the humidity of the air in the room and slows down the rate of evaporation of Towel P. / There was more water vapour in the air in the Box P so the rate of evaporation of Towel P is slower.

PRIMARY 6 MID-YEAR EXAMINATION 2013

Name . _____ ( ) Date: 20 May 2013

Class : Primary 6 ( ) Time: 8.00 a.m. – 9.45 a.m.

Duration: 1h 45 min

Parent's Signature : _____ Marks: _____ / 60

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, register number and class.

Do not turn over this page until you are told to do so.

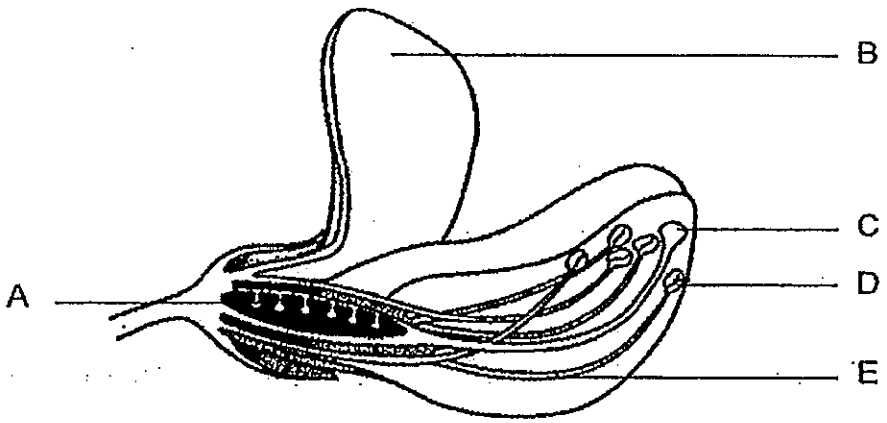
Follow all instructions carefully.

Answer all questions.

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.

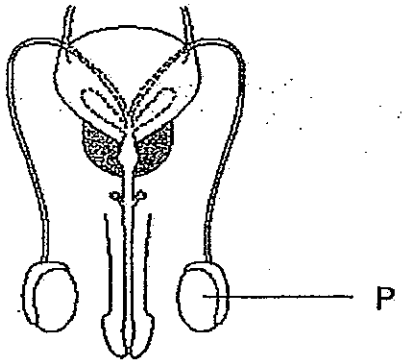
1 The diagram below shows the parts of a flower.



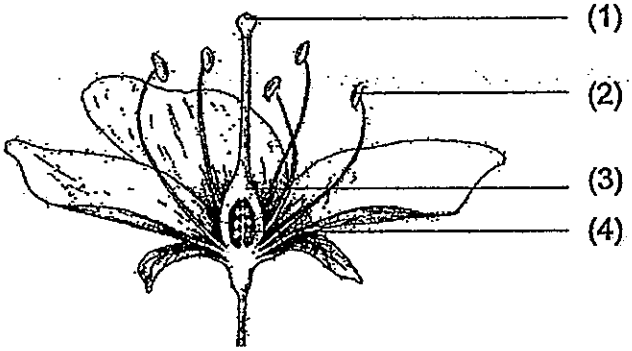
Where does pollination and fertilisation take place?

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

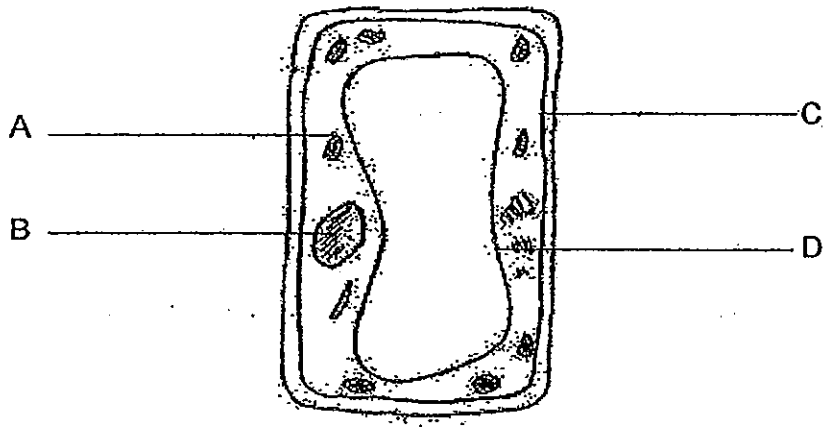
2. The diagram below shows the male reproductive system of a human.



Which part of the reproductive system of a plant below has the same function as P in the male reproductive system of a human above?



3. The diagram below shows a plant cell.



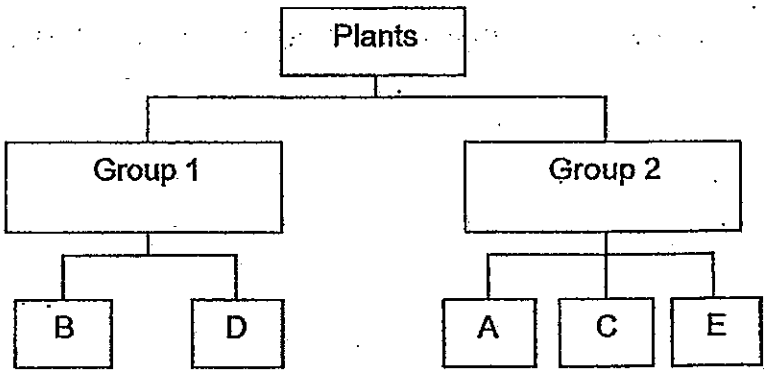
Which of the following part of the plant cell above is correctly matched to its function?

	Part	Function
(1)	A	Allows cell activities to take place within the cell
(2)	B	Controls cell activities
(3)	C	Gives the cell a fixed shape
(4)	D	Makes food for the cell

4. The table below shows the characteristics of 5 plants, A, B, C, D and E.

Characteristics \ Plant	A	B	C	D	E
Texture of leaves	Smooth	Hairy	Waxy	Smooth	Smooth
Type of leaf edge	Lobed	Entire	Toothed	Toothed	Toothed
Vein pattern of leaves	Parallel	Network	Parallel	Network	Parallel
Flowers grow in clusters or singly	Clusters	Singly	Clusters	Clusters	Singly

Joy classified the plants as shown below.



Which of the following characteristic was used to classify the plants?

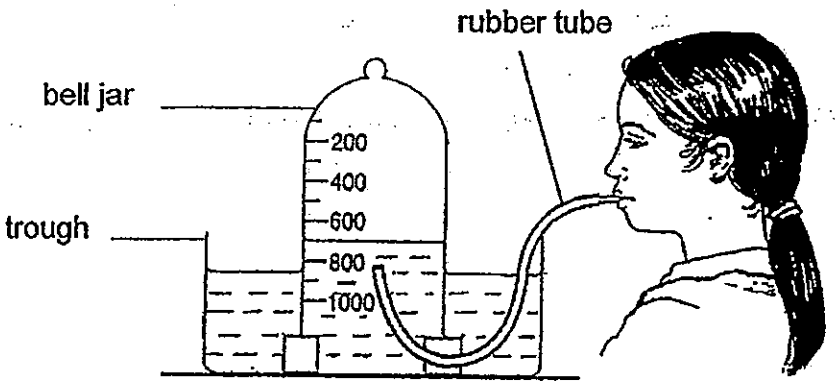
(1) Texture of leaves

(2) Type of leaf edge

(3) Vein pattern of leaves

(4) Flowers grow in clusters or singly

Study the diagram below and use it to answer the questions, 5 and 6.



5. What happens to the respiratory system of the girl when she blows into the rubber tube?

(1) Her lungs expand.

(2) Her ribcage expands.

(3) Her diaphragm relaxes.

(4) Her windpipe contracts.

6. Which of the following would be observed after the girl blows into the rubber tube?

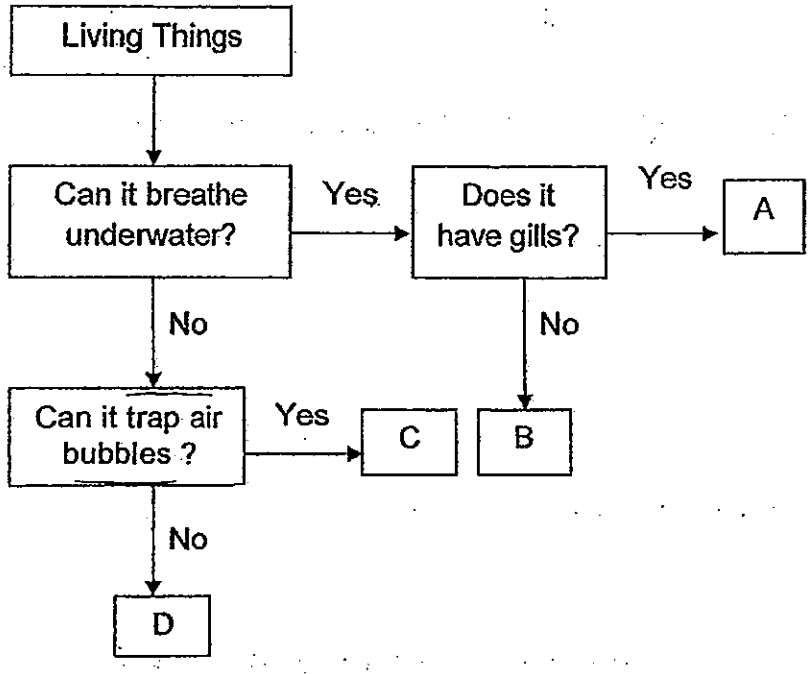
(1) The water level in the bell jar and trough increase.

(2) The water level in the bell jar and trough decrease.

(3) The water level in the bell jar decreases while the water level in the trough increases.

(4) The water level in the bell jar increases while the water level in the trough decreases.

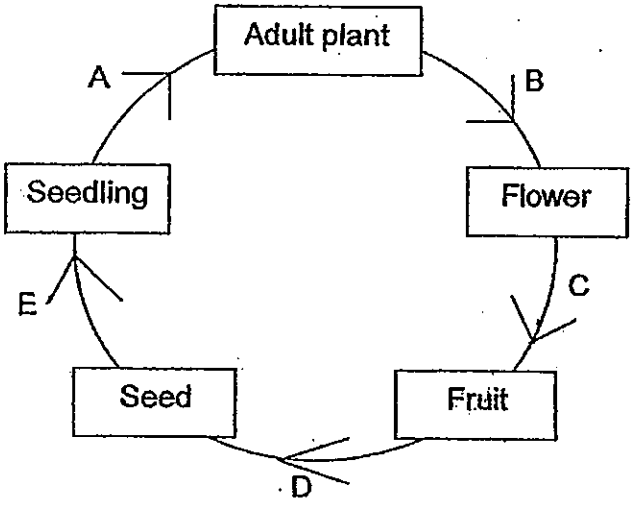
7. Study the flowchart below.



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

	A	B	C	D
(1)	mudskipper	shark	water scorpion	mosquito larva
(2)	dragonfly nymph	frog	water spider	mosquito pupa
(3)	goldfish	dugong	water beetle	dolphin
(4)	tadpole	whale	water stick insect	duck

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



Which of the following is true about the stages of growth of the plant above?

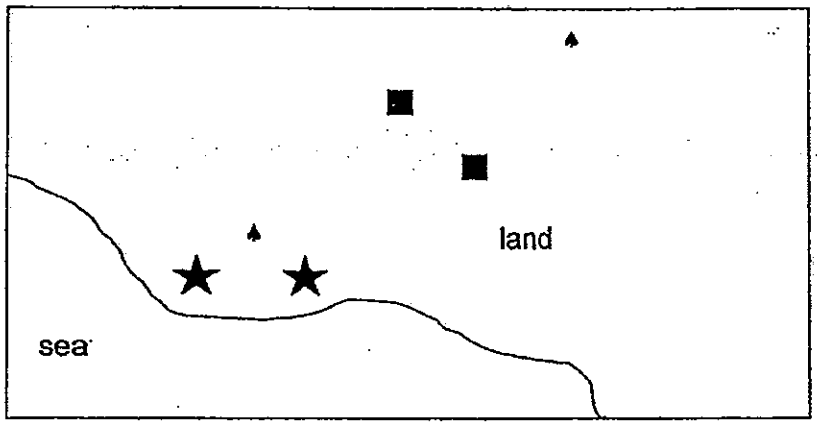
(1) Light is needed at all stages.

(2) Water is needed at all stages.

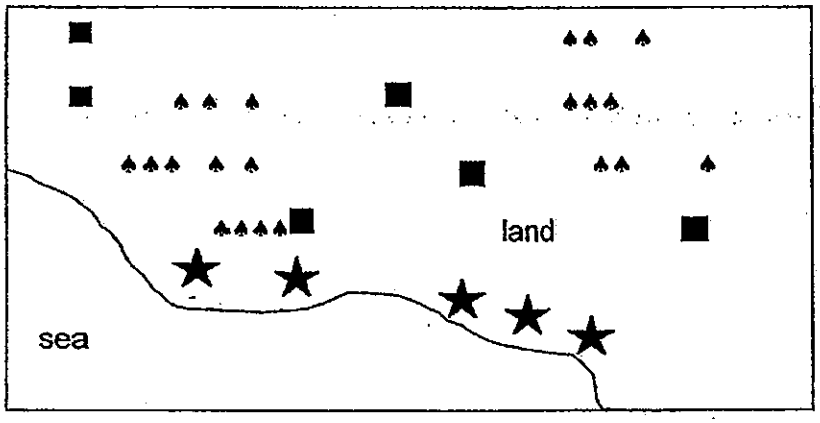
(3) A and E represent the processes of germination and dispersal respectively.

(4) C and D represent the processes of pollination and fertilization respectively.

9. The diagram below shows part of an island where 3 types of plants (♠, ■ and ★) are growing.



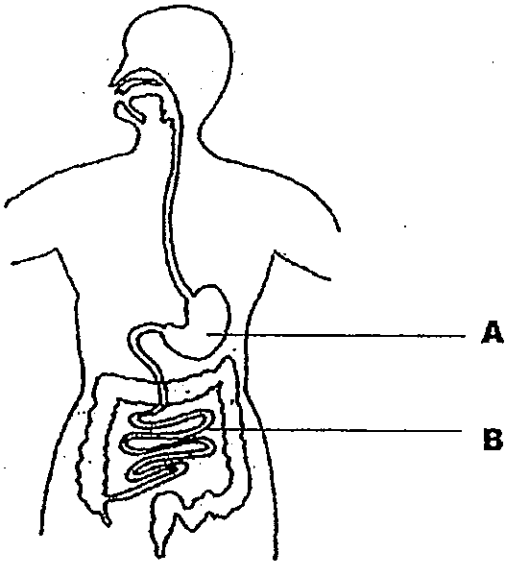
The diagram below shows where the 3 types of plants are located after 3 months.



How are the seeds or fruits of the 3 types of plants dispersed?

	♠	■	★
(1)	explosive action	animals	water
(2)	animals	wind	explosive action
(3)	wind	explosive action	water
(4)	animals	explosive action	wind

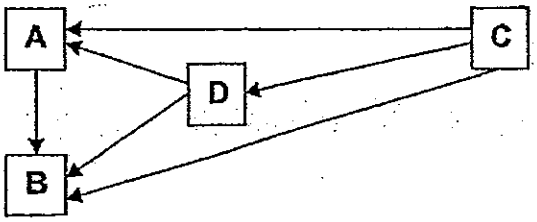
10. The diagram below shows the human digestive system.



Which of the following takes place at the parts labelled A and B?

	A	B
(1)	Digestion of food starts	Absorption of digested food
(2)	Food is digested	Digestion of food ends
(3)	Removal of water from undigested food	Transfers food from the stomach to the rectum
(4)	Storage of undigested food	Passes waste out of the body

Study the food web below and use it to answer the questions, 11 and 12.



11. Which of the following is the food producer?

(1) A

(2) B

(3) C

(4) D

12. Which of the following is both prey and predator?

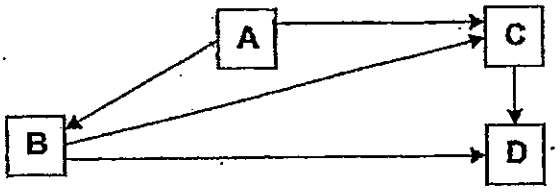
(1) A

(2) B

(3) C

(4) D

13.



Which of the following is definitely true about the food web above?

(1) A is a food consumer.

(2) B is both a predator and prey.

(3) C is a plant-and-animal eater.

(4) D is both a plant and a food producer.

14. Jessica counted the number of different organisms in her garden and recorded the data in the table below.

Organism	Number of organisms
Rose	8
Aphid	6
Hibiscus	5
Butterfly	7
Ladybird	2
Grasshopper	3
Grasshopper nymph	4
Caterpillar of butterfly	4

Based on the table above, which of the following is correct?

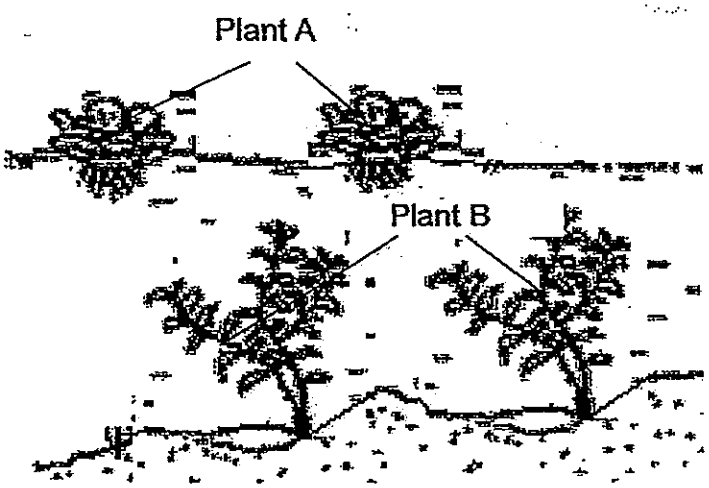
(1) There is one community with six populations.

(2) There is one community with eight populations.

(3) There are two communities with six populations.

(4) There are two communities with eight populations.

15. Study the pond community below.



Which of the following would cause the population of Plant B to decrease when the population of Plant A increases?

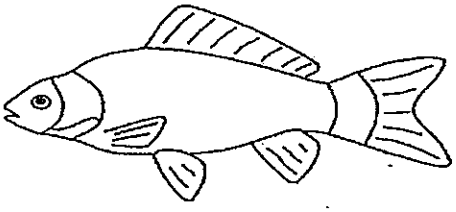
(1) Insufficient sunlight entering the water

(2) Insufficient oxygen dissolving in the water

(3) Insufficient mineral salts from the pond animals

(4) Insufficient carbon dioxide from the pond animals

16. Study the fish below.



Based on what you can observe only, which of the following is its adaptation for survival in water?

(1) It has 4 fins to propel it forward in water

(2) It has gill chambers to store water with dissolved oxygen.

(3) It has a streamlined body shape to reduce water resistance.

(4) It has an outer covering to camouflage it amongst seaweeds.

PRIMARY 6 MID-YEAR EXAMINATION 2013

Name : _____ ( )

Class : Primary 6 ( )

Date: 20 May 2013

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1h 45 min

SCIENCE
BOOKLET A

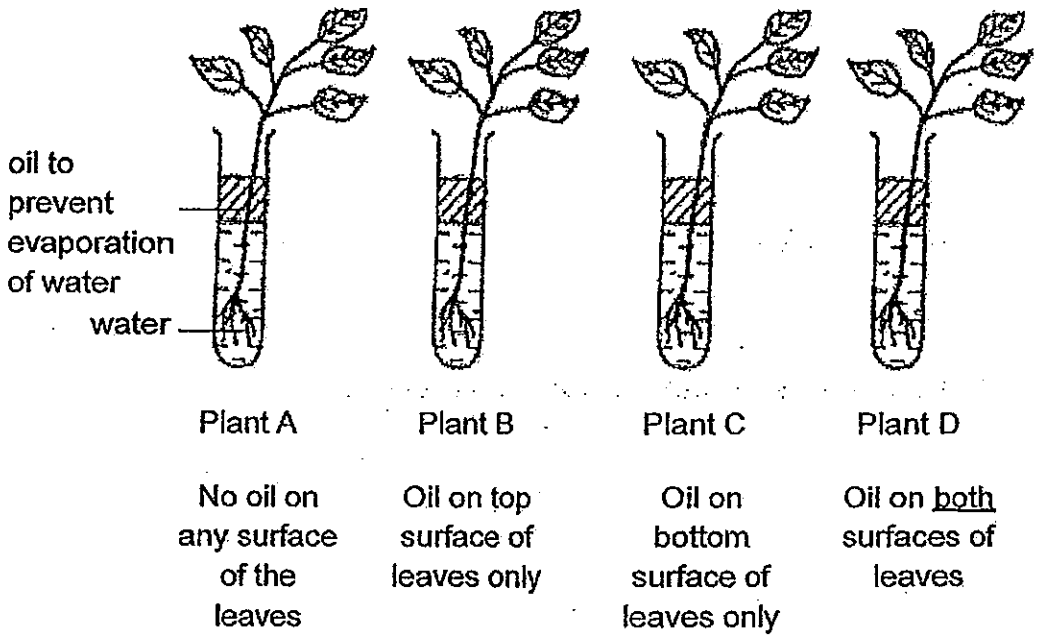
Question 17 to Question 30

INSTRUCTIONS TO CANDIDATES

Write your name, register number and class.

17. Rashim set up an experiment using 4 similar plants, Plant A, Plant B, Plant C and Plant D. The leaves of the plants have more tiny openings on the bottom surfaces than on the top surfaces. Water is lost through these tiny openings.

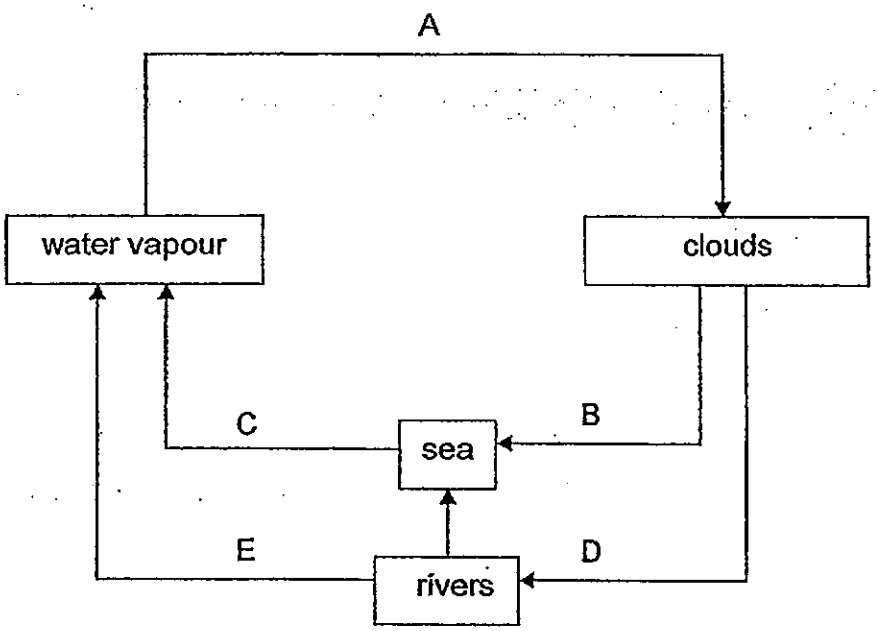
He coated some surfaces of the leaves with oil. Each plant was placed in a test-tube with equal amounts of water. The plants were then placed in an open field.



The amount of water in each test-tube after 5 days was recorded. Which of the following shows the correct order of the amount of water in each test-tube after 5 days?

	Greatest amount of water → Least amount of water			
(1)	A	B	C	D
(2)	A	C	B	D
(3)	D	B	C	A
(4)	D	C	B	A

18. Study the water cycle below. A, B, C, D and E represent the processes in the water cycle.



At which process(es), is there a change from gaseous state to liquid state?

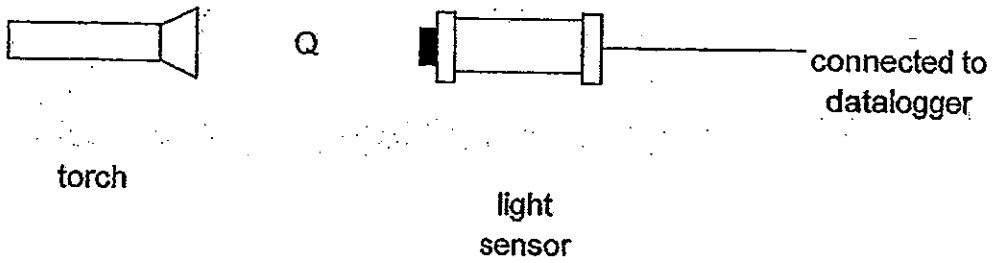
(1) A only

(2) B and D only

(3) C and E only

(4) B, C, D and E only

19. Joshua set up the following experiment.



When nothing was placed at point Q, the light sensor showed a reading of 2 000 lux 4 objects, W, X, Y and Z, were palced at point Q, and the readings are shown in the table below.

Object	Reading (lux)
W	0
X	1 750
Y	800
Z	0

Which of the following is object X?

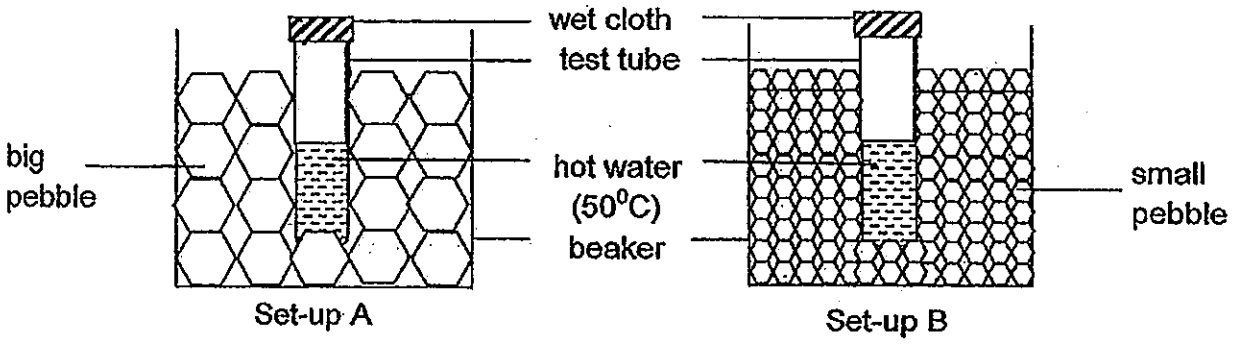
(1) Plastic lens

(2) Frosted glass

(3) Aluminium foil

(4) Wooden board

20. John set up the experiment below to find out if the size of pebbles surrounding a test-tube would affect the temperature of water in the test-tube. After 5 minutes, he measured the temperature of water in both test-tubes and found that the temperature of water in Set-up A was higher than the temperature of water in Set-up B.



Which of the following caused the hot water in Set-up A to lose heat slower?

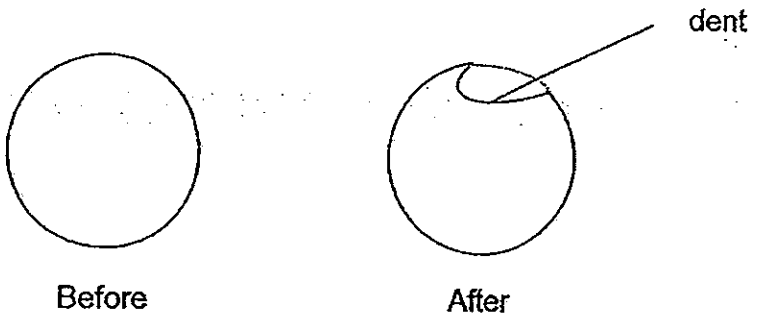
(1) There were fewer pebbles.

(2) There were more air spaces in between the pebbles.

(3) There was more exposed surfaced area of each pebble.

(4) There was more contact between the test-tube and each pebble.

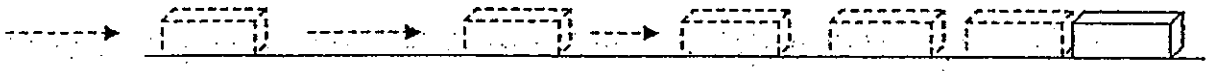
21. A table-tennis ball, before and after it has been dented, is shown in the diagram below. There are no holes in the dent.



Which of the following best shows the changes after the table-tennis ball has been dented based on the headings of the table below?

	Before		**After**	
	Mass of table-tennis ball with air (g)	**volume of air in the table-tennis ball (cm^3)**	**Mass of table-tennis ball with air (g)**	**Volume of air in the table-tennis ball (cm^3)**
(1)	2	8	1.5	6
(2)	2	8	1.5	8
(3)	2	8	2	6
(4)	2	8	2	8

22. The diagram below shows the position of a bar magnet over a wooden surface after it was given a push.



What are the forces acting on the bar magnet during the experiment ?

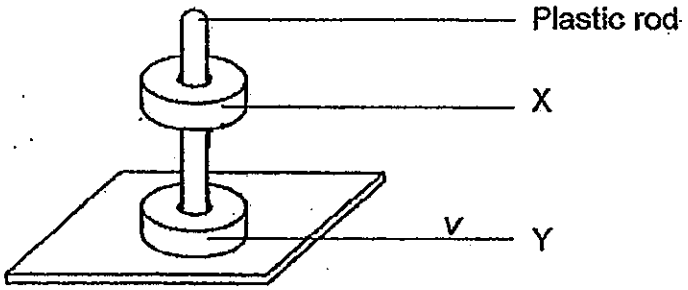
(1) Friction and gravity

(2) Gravity and magnetic force

(3) Friction, gravity and air resistance

(4) Friction, magnetic force and air resistance

23. There are 3 identical ring magnets, X, Y and Z. 2 of the ring magnets, X and Y, are put through a plastic rod as shown below. X is suspended above Y.



What will definitely happen when Z is placed above X?

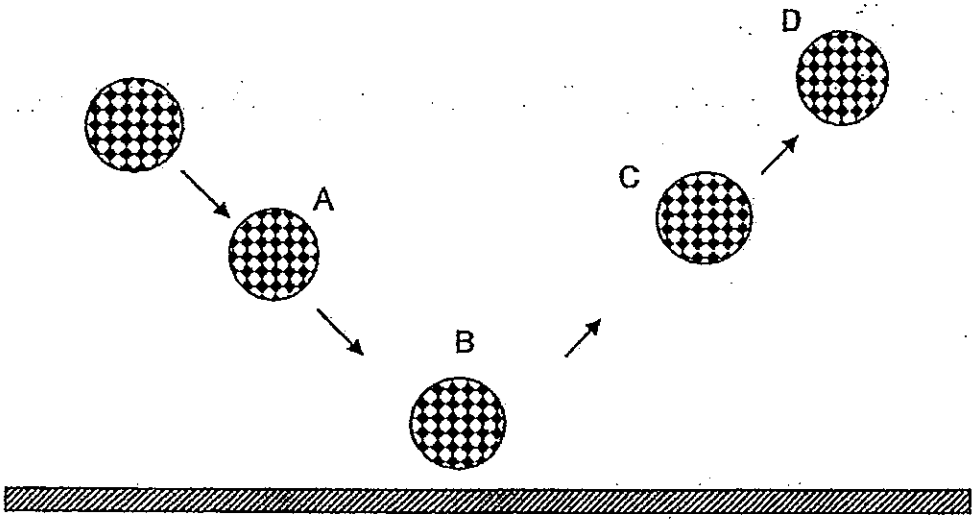
(1) Z will repel X.

(2) Z will attract X.

(3) X will move closer to Y.

(4) X will move further away from Y.

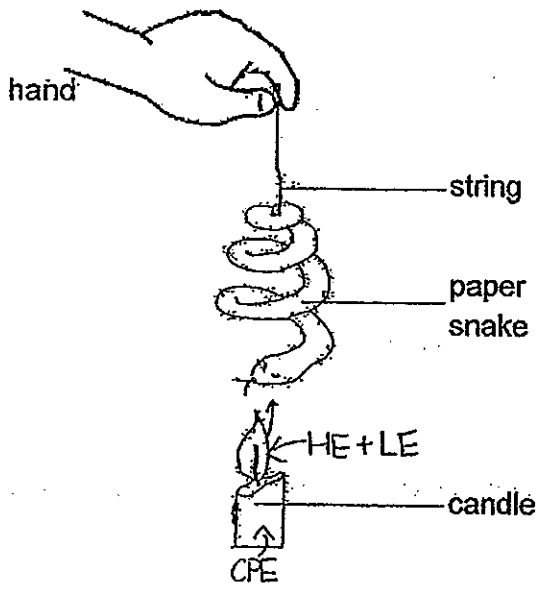
24. The diagram below shows the movement of a ball from the point, A, to the point, D.



Which of the following shows the points with the most amount of gravitational potential energy and kinetic energy of the ball as it moves from point A to point D?

	Most amount of gravitational potential energy	**Most amount of kinetic energy**
(1)	A	B
(2)	B	C
(3)	D	A
(4)	D	B

25. Jess set up an experiment as shown below. The paper snake started spinning after a while.



Which of the following describes the energy change from the candle to the spinning paper snake?

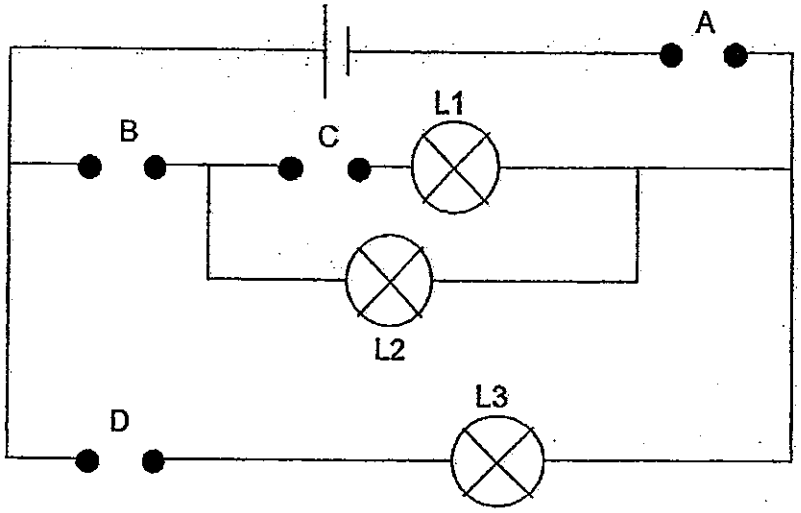
(1) heat energy → kinetic energy

(2) heat energy + light energy → kinetic energy

(3) chemical potential energy → heat energy → kinetic energy

(4) chemical potential energy → heat energy + light energy → kinetic energy

26. Heidi had 4 rods, P, Q, R and S, of unknown materials. She placed them in various positions, A, B, C and D, in the electric circuit below.



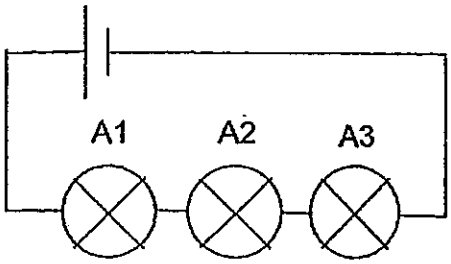
The results of the experiment were shown in the table below. When any of the lamps, L1, L2 or L3, lit up during the experiment, a tick was placed in the box.

Position where the rods were placed				Lamps		
A	B	C	D	L1	L2	L3
P	Q	R	S		√	√

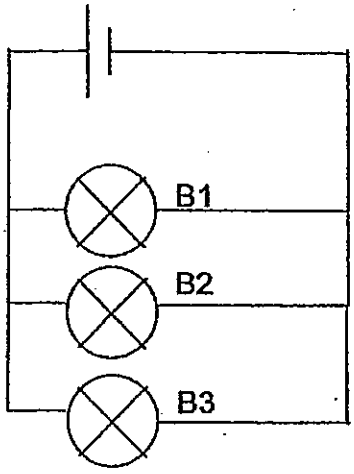
Which of the following shows the result when the rods, P, Q, R and S, were placed at different positions?

Position where the rods were placed					Lamps		
	A	B	C	D	L1	L2	L3
(1)	P	S	Q	R		√	√
(2)	Q	R	P	S			√
(3)	R	Q	S	P	√	√	√
(4)	S	P	R	Q	√	√	

27. Jamie set up 2 electric circuits, Circuit A and Circuit B, with identical components as shown below.



Circuit A



Circuit B

Which of the following is true?

(1) A1 is as bright as B1

(2) B1 is as bright as B2.

(3) A2 is brighter than B3

(4) B3 is dimmer than A3

28. The picture below shows a boy trying to move a giraffe. The giraffe did not move from its position.

Which of the following is true?

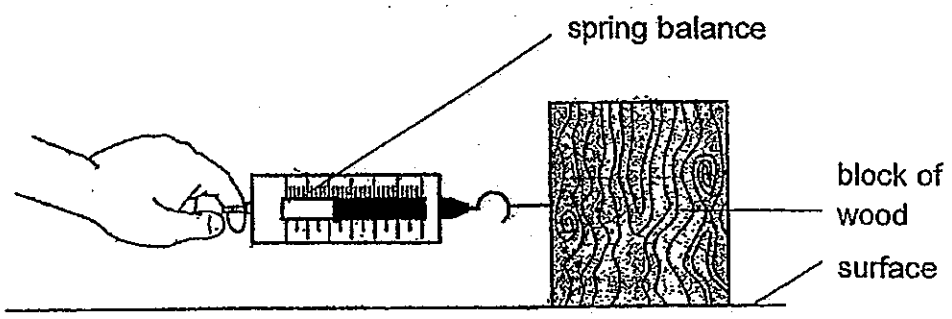
(1) The giraffe is exerting a pull on the boy

(2) The giraffe is exerting a push on the boy.

(3) The boy uses gravitational potential energy to pull the giraffe.

(4) The boy has the same amount of chemical potential energy as the giraffe.

29. A block of wood with a spring balance hooked to it was pulled across the surface, W. The experiment was repeated by replacing the surface, W, with different surfaces, X, Y and Z.



The amount of force required to move the block of wood are shown in the table below.

Surface	W	X	Y	Z
Amount of force required to move the block of wood (units)	110	80	240	180

Which of the following is definitely true?

(1) Surface X is glass.

(2) Surface Y is the roughest.

(3) Surface Z is smoother than Surface W.

(4) Surface Z is most suitable for making anti-slip bathroom floor.

PRIMARY 6 MID-YEAR EXAMINATION 2013

Name : _____ ( )

Date: 20 May 2013

Class : Primary 6 ( )

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1h 45min

Parent's Signature : _____

Marks: _____ / 40

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

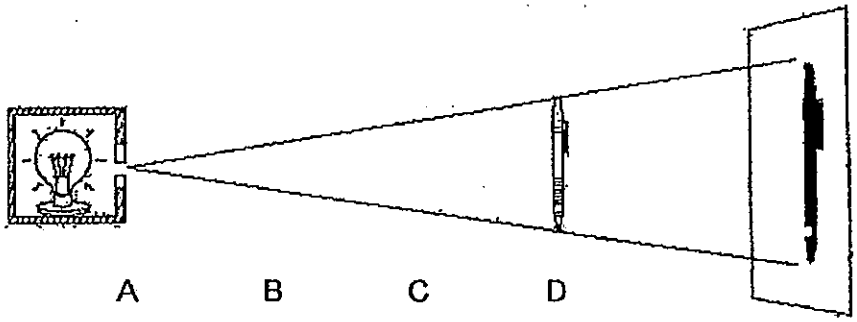
Write your name, register number and class.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

30. Jane wanted to find out how the distance between a light source and a pen would affect the length of shadow cast by the pen. She placed the light source at position A and the pen at position D as shown in the diagram below and observed a 10cm long shadow on a screen fixed on a wall.



She then placed the light source and the pen at different positions, A, B, C and D, as marked in the diagram above and recorded her observations. Which of the following is correct?

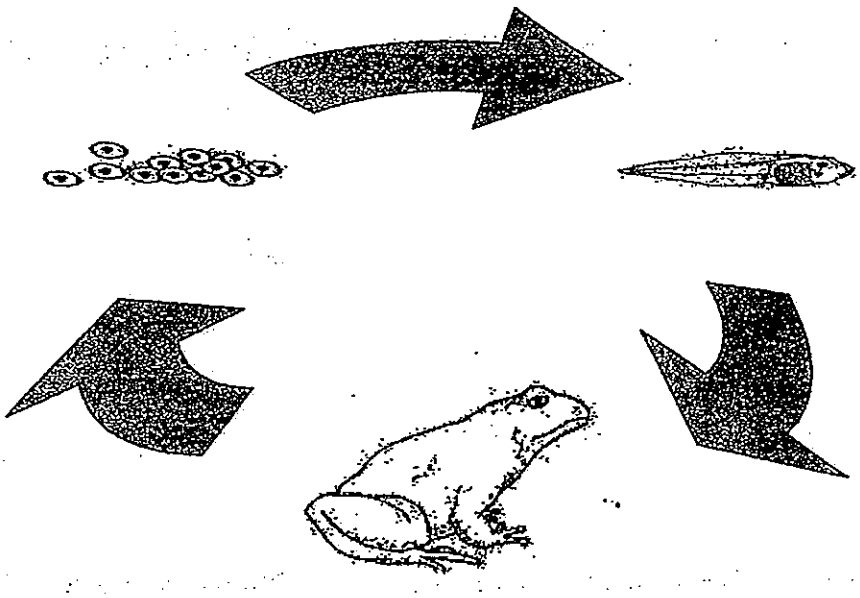
	Position of light source	Position of pen	Length of shadow (cm)
(1)	A	B	15
(2)	A	C	8
(3)	B	C	10
(4)	B	D	7

End of Booklet A

Section B (40 marks)

For the questions, 31 to 44, write your answers clearly in the spaces provided.

31. The diagram below shows the life cycle of a frog.



(a) Why must the frog lay many eggs at one time during reproduction? [1]

_____

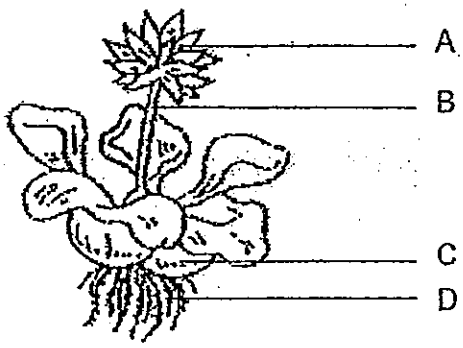
_____

(b) The young of the frog lives in water while the adult lives on land. What is an advantage of them living in different surroundings? [1]

_____

_____

32. The picture below shows a water hyacinth.



(a) Which part of the plant, A, B, C or D, allows it to float on water? [1]

_____

(b) Explain how the part in (a) allows the plant to float on water. [1]

_____

_____

33 The picture below shows part of a bougainvillea plant.

Why are the leaves surrounding the bougainvillea flower big and pink? [2]

_____

_____

34. Figures 1 and 2 show how gases are transported in the circulatory system of a fish and human respectively.

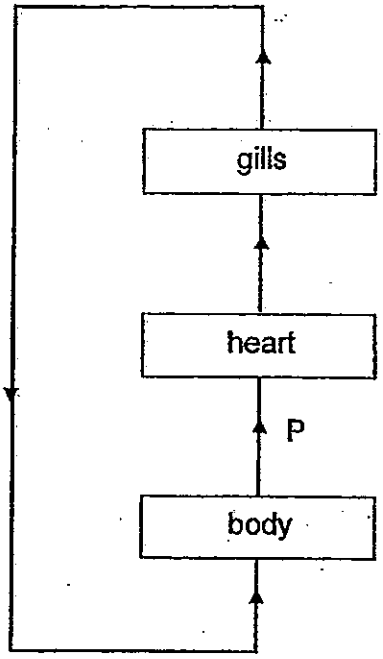


Figure 1 (fish)

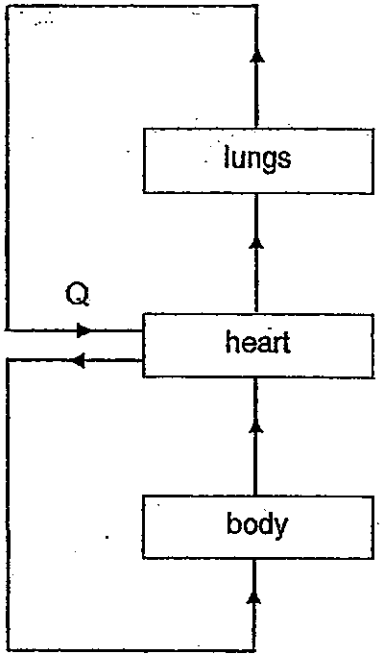


Figure 2 (human)

(a) State one difference between the flow of blood in a fish and in a human. [1]

_____

_____

(b) State one difference between the gases found in the blood flowing at P and Q. [1]

_____

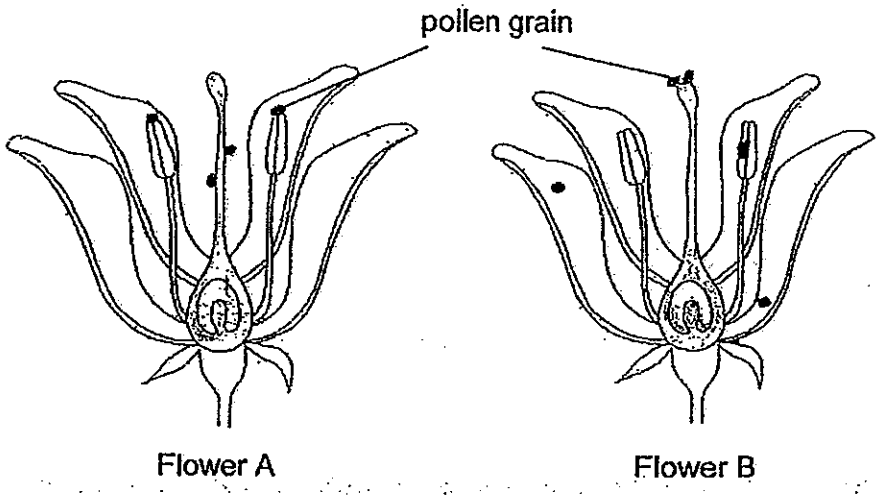
_____

(c) Besides transporting gases, which other materials are transported by the blood?. [1]

_____

_____

35. The diagram below shows Flower A and Flower B, from two different plants of the same type. The black dots represent pollen grains from the same type of plant.



(a) Which flower(s) will most likely develop into a fruit? [1]

_____

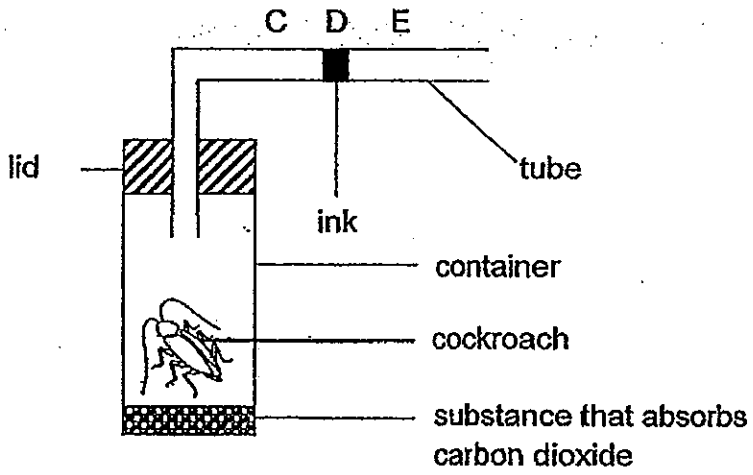
(b) Explain your answers in (a). [2]

_____

_____

_____

36. Study the set-up below. There is a drop of ink at D.



(a) Where would the drop of ink be after one day? [1]

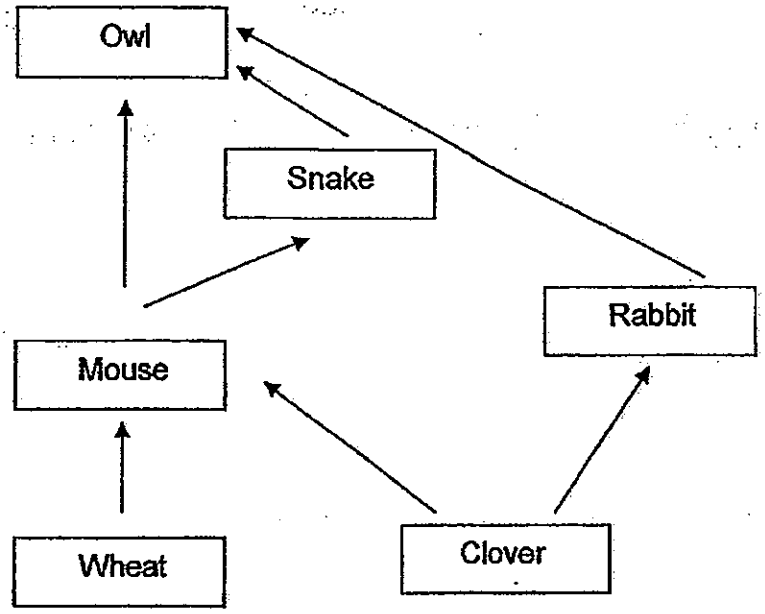
_____

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

_____

_____

37. The diagram below shows a food web.



(a) Construct 2 food chains based on the food web above. [2]

(i) Clover → _____ → _____

(ii) Wheat → _____ → _____ → _____

(b) If all the mice are removed from the food web, what would happen to the population size of the owls? [1]

_____

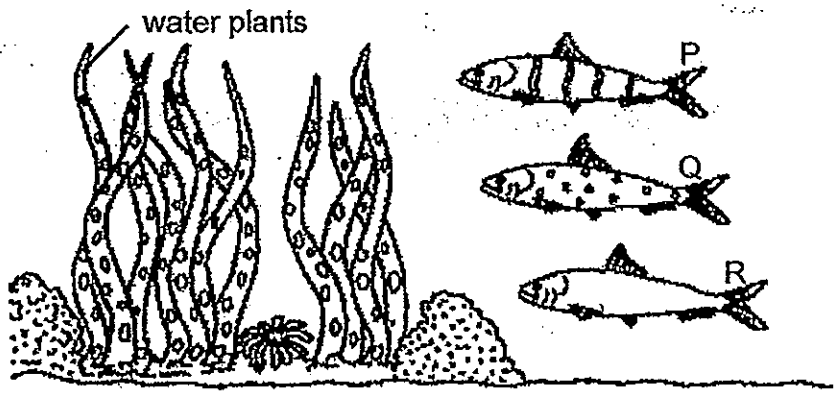
(c) Explain your answer in (b). [1]

_____

_____

_____

38. Study the picture below. Fish, P, Q and R, feed on water plants only.



(a) Besides providing food, suggest another reason why the water plants are important to the fish. R. [1]

_____

_____

_____

(b) A new organism, S, is introduced into the habitat. It feeds on fish, P, Q and R. Which fish, P, Q or R, would have the greatest decrease in population? [1]

_____

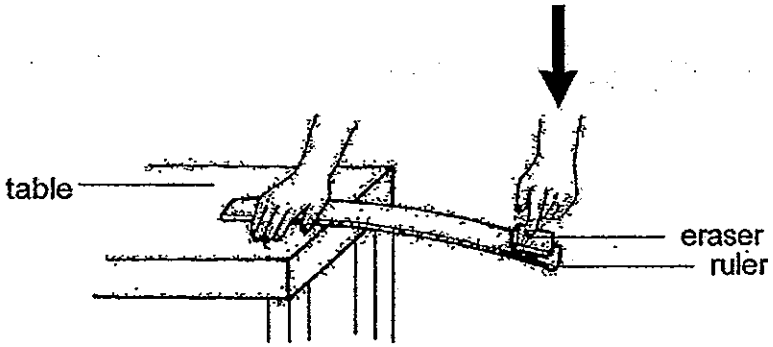
(c) Explain your answer in (b) [1]

_____

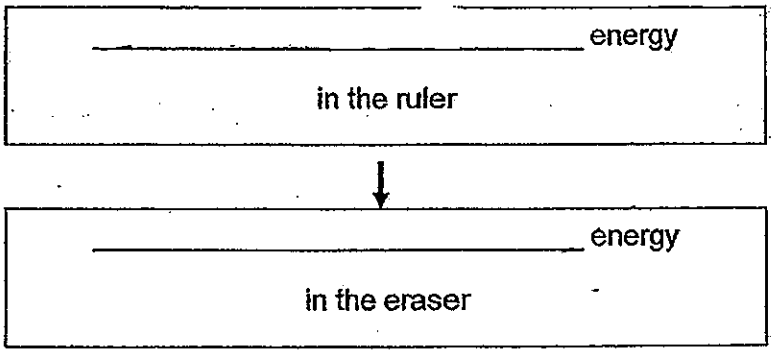
_____

(d) Draw a food web with the fish, P, Q and R, the organism, S, and the water plants in the box below. [1]

39. Bernice conducted the experiment below.



(a) The eraser flew into the air once she moved her finger away. State the energy changes in the diagram below. [1]

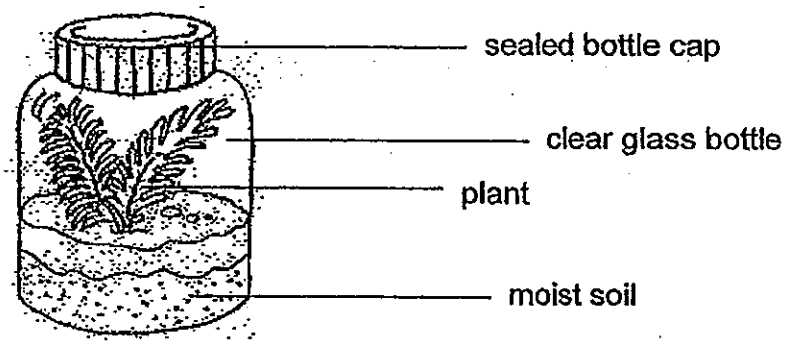


(b) What should she do to increase the distance travelled by the eraser (without replacing the current eraser and ruler)? [1]

_____

_____

40. A bottle garden was sealed tightly and left in an air-conditioned room for an hour. Water droplets were observed on the inner surface of the bottle garden after the hour.



Explain how the water droplets formed on the inner surface of the bottle garden. [2]

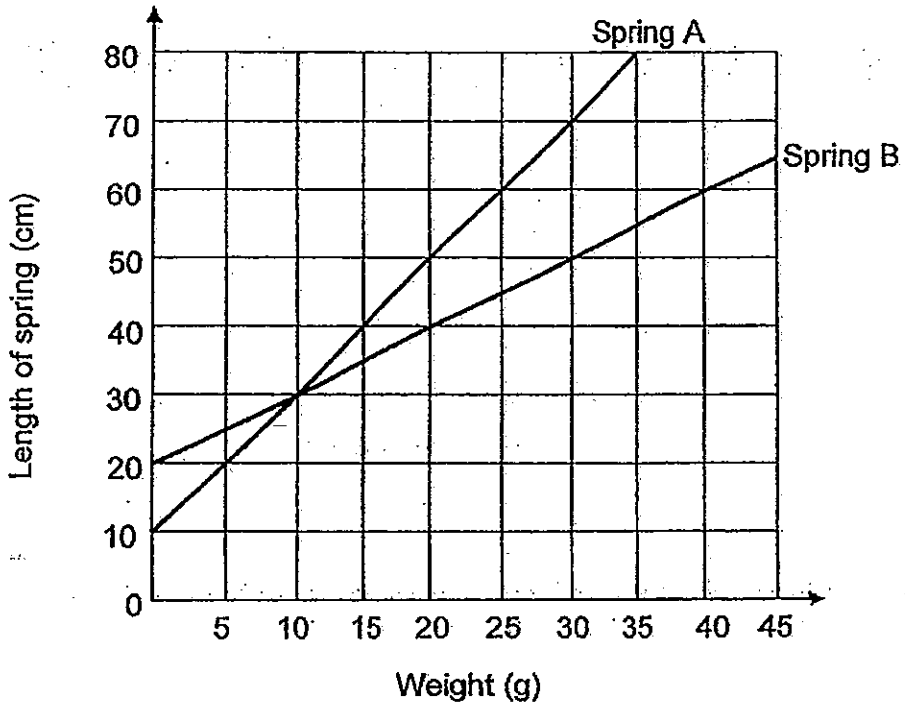
_____

_____

_____

_____

41. Hamid carried out an experiment to find out which spring, Spring A or Spring B, is stronger. He recorded the length of spring when different weights were hung on it and plotted the graph below.



(a) What is the extension of Spring B when a 30g weight is hung on it? [1]

_____

(b) Which spring, Spring A or Spring B, is stronger? [1]

_____

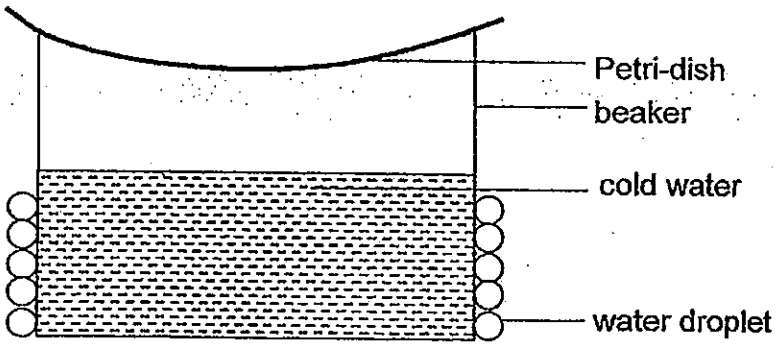
(c) Explain your answer in (b). [1]

_____

_____

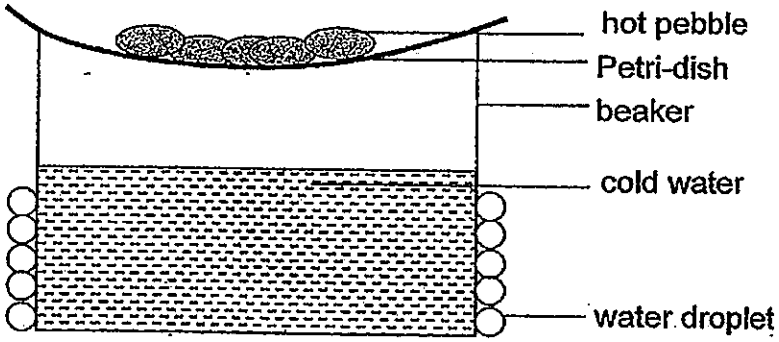
_____

42. Jon set up an experiment. The diagram below shows the results of his experiment.



(a) What should he do to get water droplets in the beaker instead? [1]

Jon then set up another experiment as shown in the diagram below.

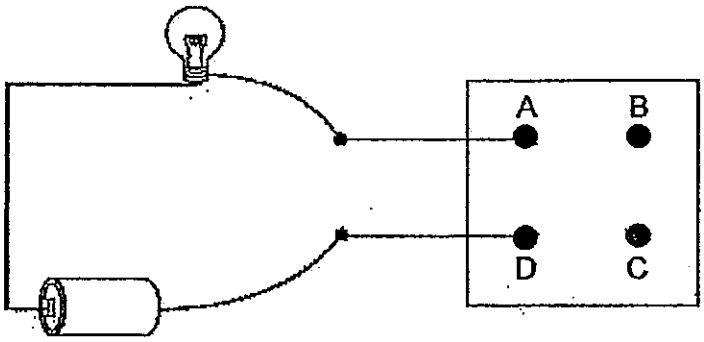


(b) He observed that no water droplet formed on the underside of the Petri-dish. Explain why. [2]

43. A circuit card is tested with a circuit tester. The results are recorded in the table below.

Clips tested	Bulb of circuit tester
A and B	Does not light up
A and C	lights up
A and D	lights up
B and C	Does not light up
B and D	Does not light up
C and D	Lights up

(a) Complete the circuit card below to show how the wires are connected based on the results recorded in the table above. [1]



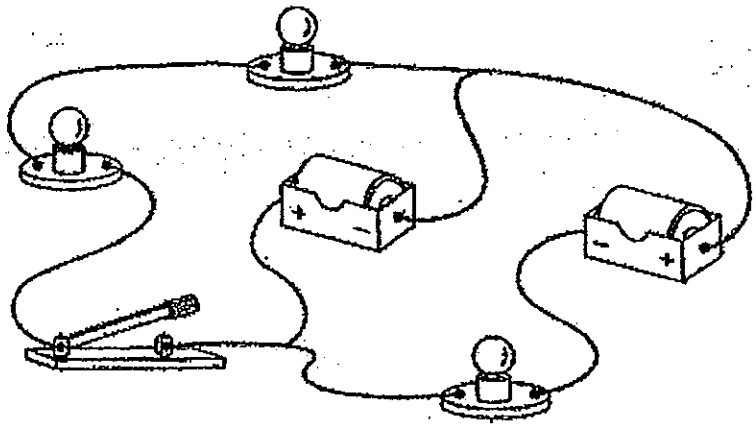
(b) A pupil tried to connect A and D in the electrical circuit with Object X. The bulb did not light up. What can we conclude about Object X? [1]

_____

(c) Name an object that can be used to connect A and D in the electrical circuit so that the bulb lights up. [1]

_____

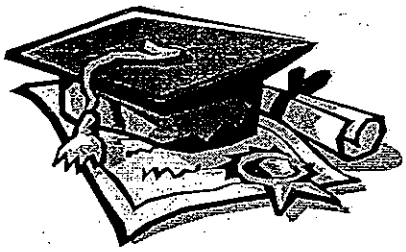
44. Study the electric circuit below.



(a) Draw a circuit diagram of the electric circuit above in the box provided.[2]

(b) Draw another circuit diagram in the box provided using the same components as the electric circuit above such that all 3 bulbs are at their brightest and the switch controls all 3 bulbs at the same time. [2]

End of Paper



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : TAO NAN
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

31)a)The frog does not take care of its young, by laying many eggs, the frog is increasing the chances of the young surviving and also, the continuity of its kind.

b)They well not compete with one another for food.

32)a)Part C.

b)Part C is filled with air to make it light enough to float on water.

33)As the bougainvillea has small and white flowers, which are pollination coloured and small, it cannot attract many insect, which pollinate flowers. The plant has adapted and grows pink and big leaves to attract more insects.

34)a)The blood in the fish flows in one direction, while the blood in humans flows in two directions.

b)At P the mount of carbon dioxide found in the blood is more than the amount of oxygen the opposite of Q.

c)Glucose and waste materials are transported by the blood.

35)a)Flower B.

b)For the flower to develop into a fruit, its egg cell must first be fertilised by a pollen grain Pollen grains enter the flower through the stigma. There are pollen grains stuck on the stigma of B, while there are none on A, hence B will most likely develop into a fruit.

36)a)It would be at C.

b)Even though the cockroach respires and give out carbon dioxide, the substance in the container will absorb it. The cockroach takes in oxygen, which takes up space, hence will be less oxygen in the container and the ink drop will move towards C to fill up the space which was once occupies by the oxygen.

37)a)i)Rabbit , Owl ii)Mouse→Snake→Owl

b)It will decrease.

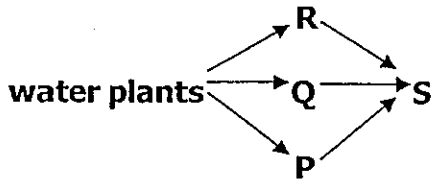
c)Both the snake and owl depends on the mouse for food. When all the mice are removed, both animals will have less food and their population size will decrease. The owls also feeds on the snakes, with less snakes and no mice left the owls will compete for food and some may die of starvation.

38)a)Water plants photosynthesis in the presence of light. They take in carbon dioxide and give out oxygen, which is needed by R for respiration.

b)Fish R.

c)Fish R has no patterns on its body unlike Fish P and Q, making it have a harder time camouflaging around the water plants and thus easily spotted and enter by Fish S.

d



39)a)Elastic Potential

Kinetic

b)She should push the ruler down more before launching the eraser.

40)The clear glass bottle lost heat to the cooler surrounding air in the air-conditioned room. Water from the moist soil evaporated into water vapour. The plant transpired and water vapour was released through the stomata of the plant. Water vapour from both the soil and plant rose and touched the cooler inner surface of the glass bottle, and condensed and formed water droplets.

41)a)It is 30cm.

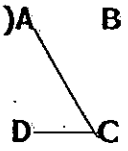
b)Spring B.

c)As with the weight of 30g each hung on them, length of spring B is only 50cm while spring A is 70cm, showing that spring B is strong and harder to be pulled down by the weights.

42)a)He should use hot water instead of cold water.

b)Warm water vapour on a cooler surface to form water droplets. In this experiment, it is cold water vapour touching a warmer surface, hence no condensation took place in the beaker, resulting in no water droplets under the Petri-dish.

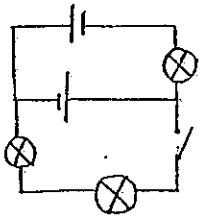
43)a)



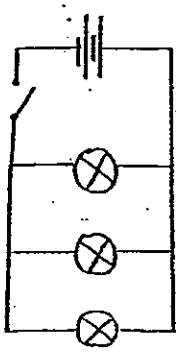
b)Object X is an insulator of electricity.

c)Steel rod.

44)a



b)



Index No. | | | | | | — | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2013

SCIENCE

BOOKLET A

Wednesday 21st August 2013 1 hour 45 minutes

Name :_____ ( )

Class : P6_____

INSTRUCTIONS TO PUPILS

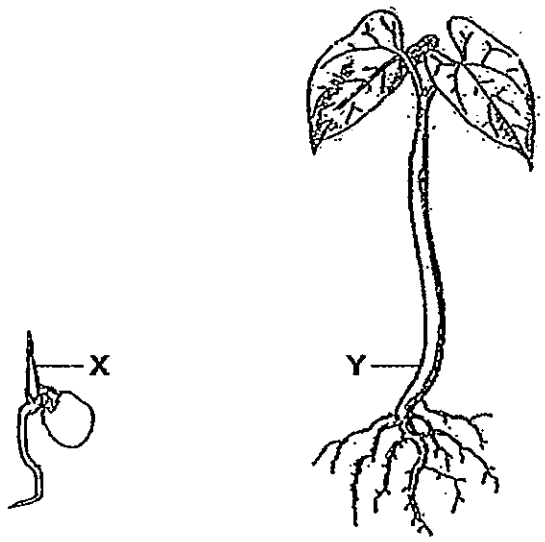
DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO
Follow all instructions carefully.
There are 30 questions in this booklet.
Answer ALL questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 60.
The total time for Booklets A and B is 1 hour 45 minutes.
This question paper consists of 25 printed pages. (Inclusive of cover page)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet. (60 marks)

1 The diagram below shows a plant at different stages of growth.



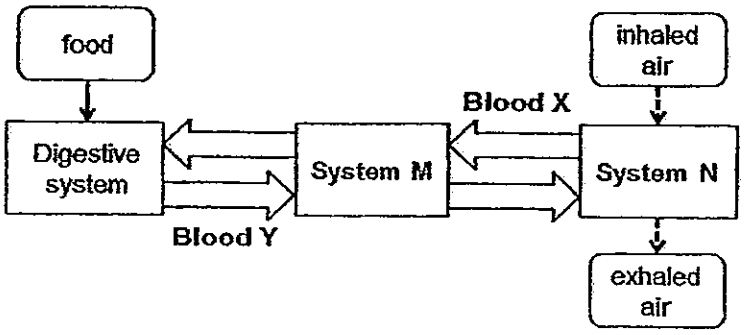
Young plant Adult plant

What is the direction in which food and water are being transported at X and Y?

	X		Y	
	food	**water**	**food**	**water**
(1)	upwards	upwards	downwards	upwards
(2)	upwards	downwards	upwards	downwards
(3)	downwards	upwards	downwards	upwards
(4)	downwards	downwards	upwards	downwards

(Go on to the next page)

2 The diagram below shows how blood transports food and gases between the different systems in the human body.



Which systems do M and N represent and what is blood X and Y rich in?

	System M	System N	Blood X rich in	Blood Y rich in
(1)	respiratory	circulatory	carbon dioxide	digested food
(2)	respiratory	circulatory	oxygen	undigested food
(3)	circulatory	respiratory	carbon dioxide	undigested food
(4)	circulatory	respiratory	oxygen	digested food

3 Four cells taken from different parts of plants and animals were observed under a microscope. The table below shows the parts of the cells that were observed. A tick (✓) indicates the presence of the cell part.

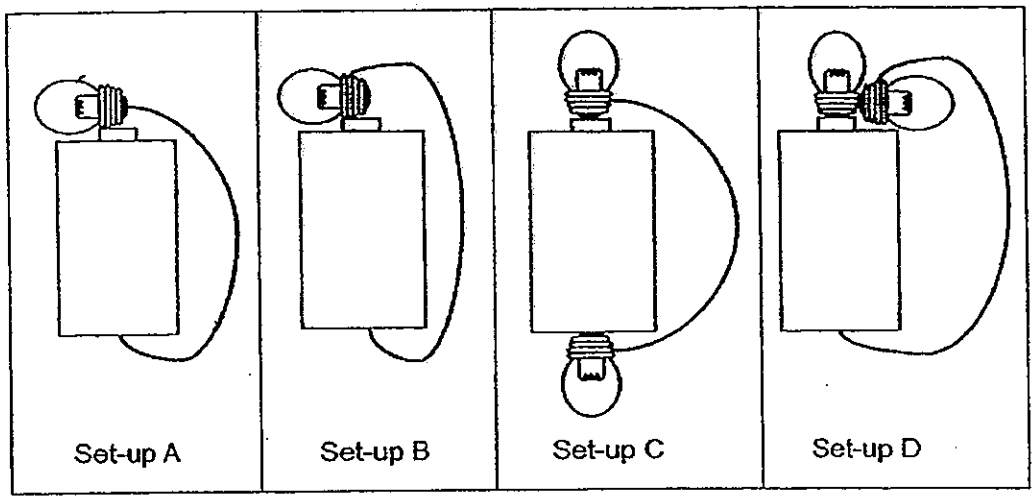
	Cell P	Cell Q	Cell R	Cell S
nucleus		✓	✓	✓
cell membrane	✓	✓	✓	✓
cell wall		✓	✓	
chloroplast			✓	
cytoplasm	✓	✓	✓	✓

Based on the table above, which of the following cells are grouped correctly?

	Animal cells	Plant cells
(1)	P, Q and S	R only
(2)	P and S	Q and R
(3)	R and S	P and Q
(4)	R only	P, Q and S

(Go on to the next page)

4 The diagram below shows four different set-ups of batteries, bulbs and wires.



In which of the following set-ups, A, B, C and D will the bulb(s) not light up?

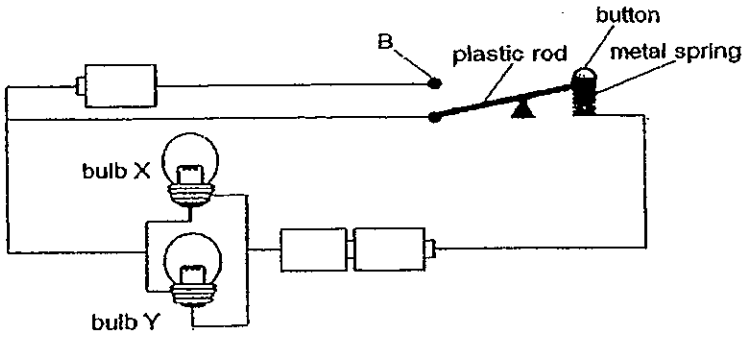
(1) Set-up B only

(2) Set-ups A and C only

(3) Set-ups B and D only

(4) Set-ups A, C and D only

5 Study the diagram below. Bulbs X and Y are identical and the three batteries used are new and identical.



If the button is pressed and held down, the rod will now touch point B. What will happen to bulbs X and Y?

(1) Bulb X will be brighter than bulb Y.

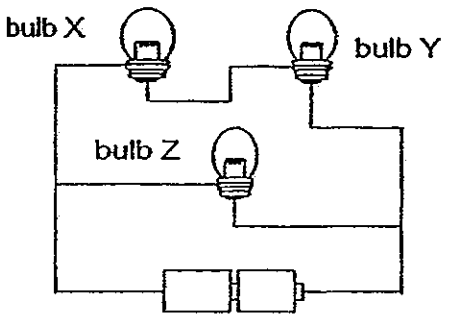
(2) Bulb Y will be brighter than bulb X.

(3) Both bulbs X and Y will not light up.

(4) Both bulbs X and Y will be brighter than before.

(Go on to the next page)

6 The diagram below shows an electric circuit with three bulbs, X, Y and Z and two identical new batteries.



If bulb Y fuses, which of the bulb(s) will remain lit?

(1) X only

(2) Z only

(3) X and Z only

(4) None of the bulbs

7 A pH scale shows how acidic or basic a liquid is. The scale is from 0 to 14. Liquids with pH less than 7 are acidic while liquids above 7 are basic. Water has a pH of 7. The table below shows the pH range of water suitable for animals A, B, C and D to survive.

Animal	pH level
A	6.5 – 8.0
B	5.5 – 7.5
C	7.0 – 8.0
D	7.0 – 9.2

Substance Q can increase the pH level of water according to the table below.

Number of drops	Amount of increase in the pH level
1	0.5
2	1.0
3	1.5
4	2.0

Mel wants to make sure that all the animals A, B, C and D in his aquarium survive. What is the least number of drops of substance Q that Mel should add into his aquarium if the pH level now is 6.1?

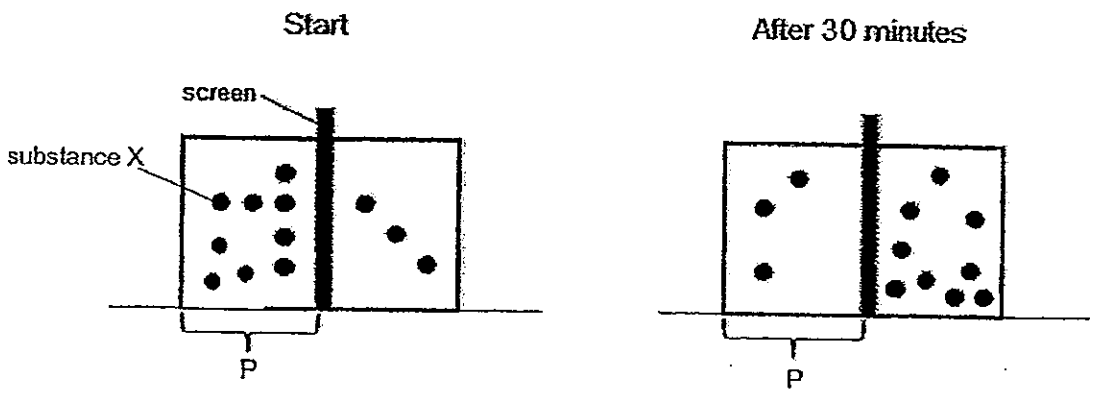
(1) 1

(2) 2

(3) 3

(4) 4

8 John demonstrated what happened at a certain part of the digestive system using his model as shown below.



Which part of the digestive system is represented by part P of his model?

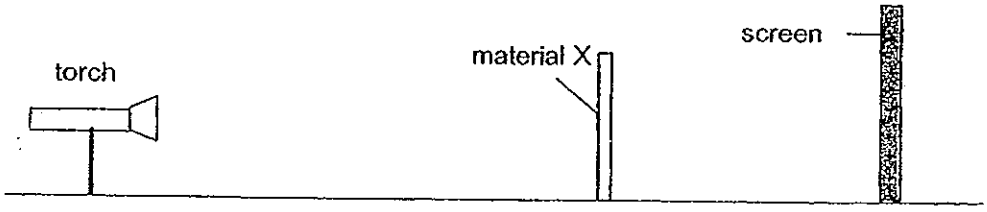
(1) Mouth

(2) Gullet

(3) Stomach

(4) Small intestine

9 Fred wanted to find out how the thickness of a translucent material X affects the amount of light that can pass through it. He placed one piece of material X as shown below and switched on the torch.



What should Fred do next to complete the experiment?

(1) Add another material X.

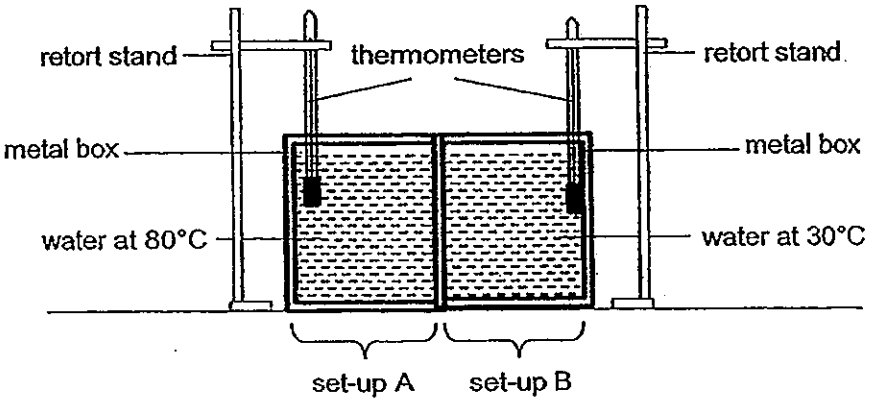
(2) Increase the intensity of light.

(3) Put the torchlight nearer to the material.

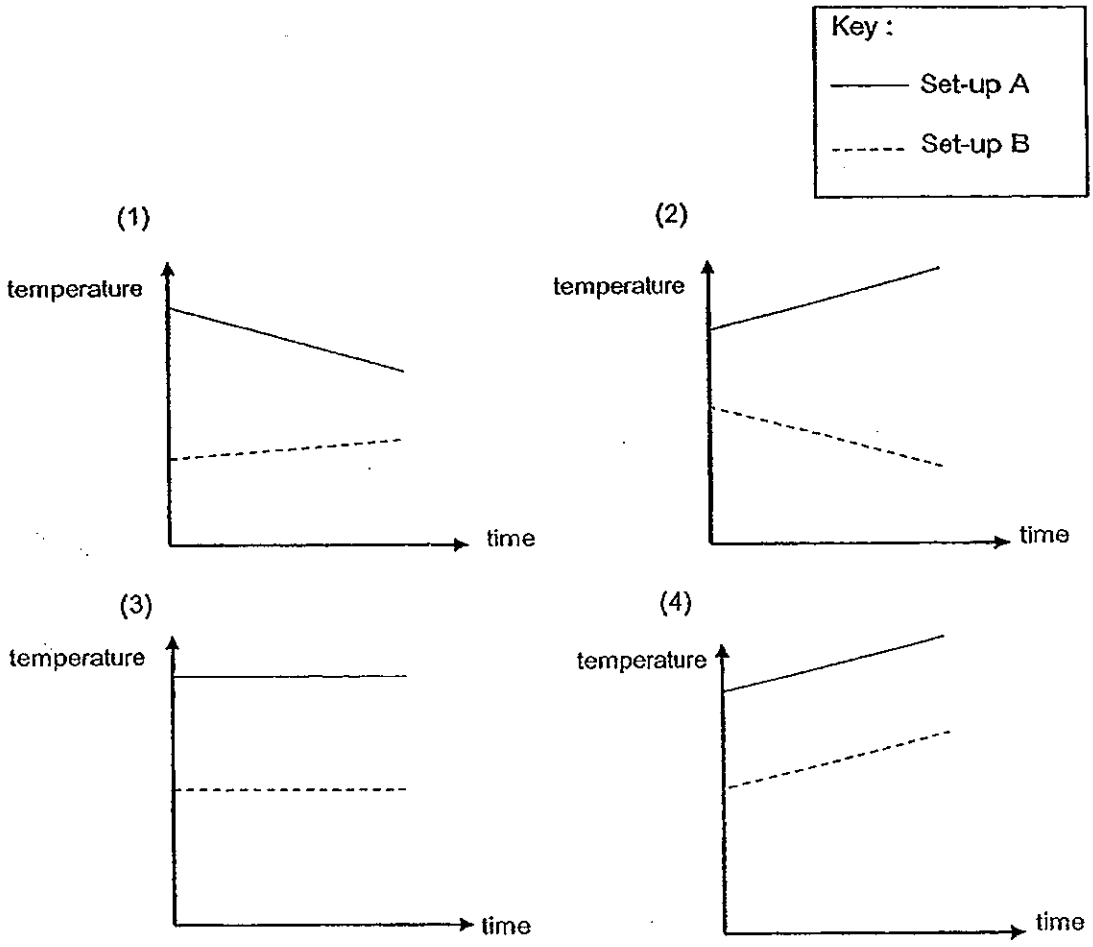
(4) Replace material X with a piece of glass.

(Go on to the next page)

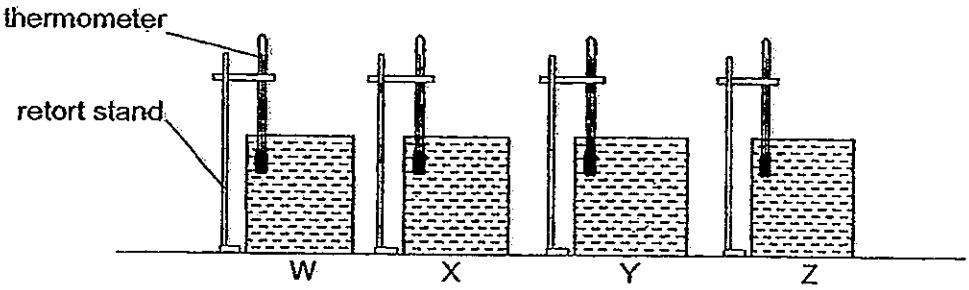
10 Two set-ups are placed beside each other in a room at 30°C as shown below.



Which graph most likely shows the temperature changes for a period of two minutes in each set-up?



11 Four different liquids W, X, Y and Z were placed in identical containers as shown below. They were heated up to a certain temperature and allowed to cool.



The table below shows the record of the temperature change of each liquid.

Time (minutes)	Temperature of liquid (°C)			
	W	X	Y	Z
0	80	80	80	80
30	50	60	55	70

If the liquids are reheated from 30°C, which liquid would most likely take the shortest time to reach 100°C?

(1) W

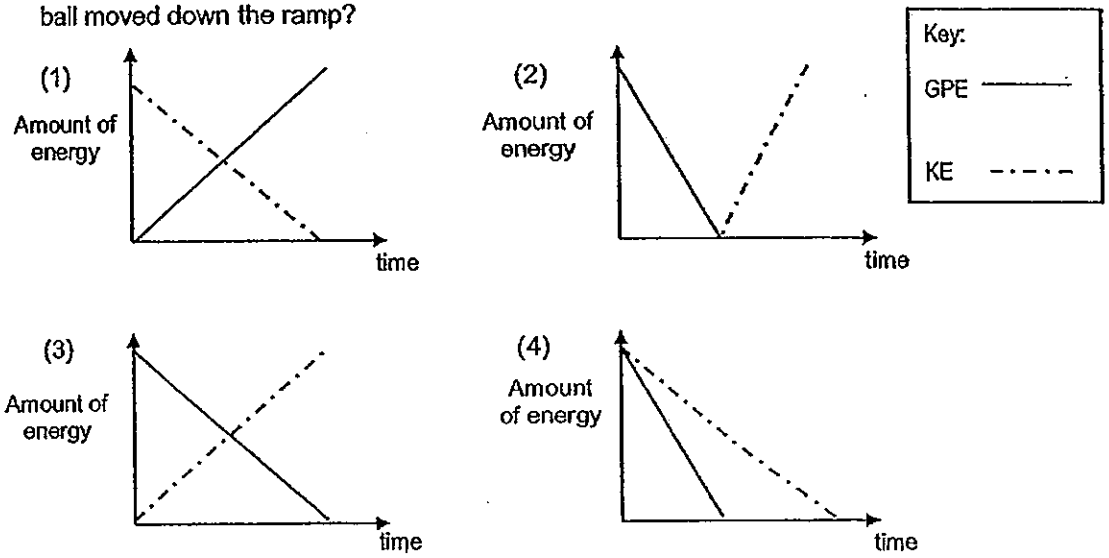
(2) X

(3) Y

(4) Z

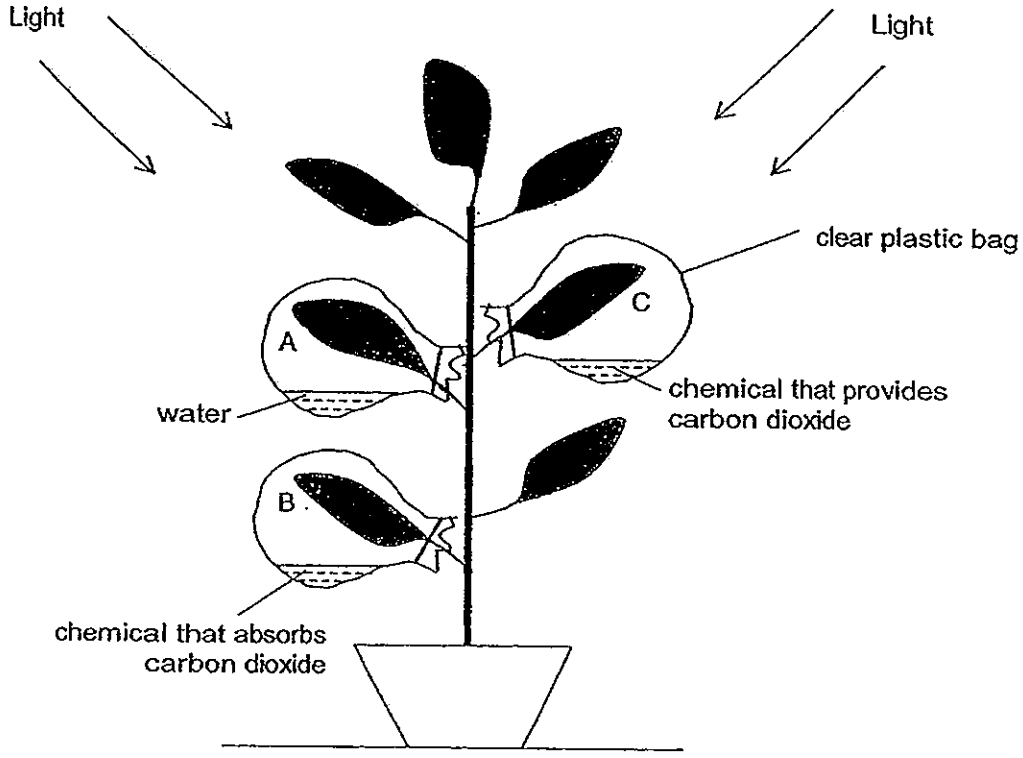
12 The picture below shows a ball rolling down a ramp.

Which one of the following graphs correctly represents the change in the amount of gravitational potential energy (GPE) and kinetic energy (KE) as the ball moved down the ramp?



13 Amy wanted to conduct an experiment on photosynthesis. Before she started her investigation, she left the plant in a dark cupboard for 48 hours.

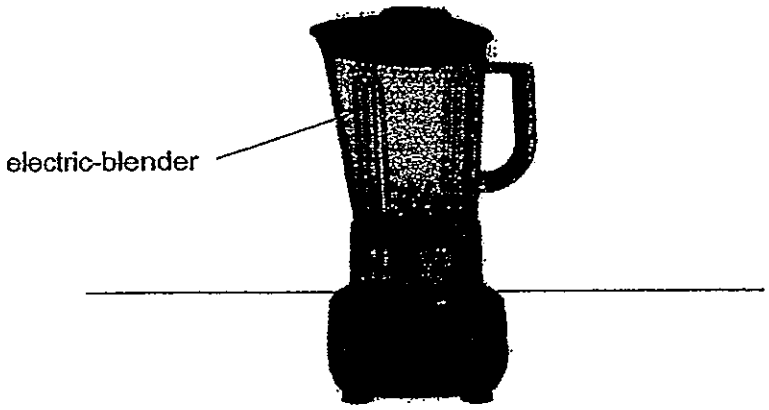
She set up her experiment in the garden as shown in the diagram below with leaves A, B and C wrapped tightly in a clear plastic bag so that no air can enter or escape.



After four hours, Amy removed leaves A, B and C, and conducted a starch test on the leaves. A starch test is a test whereby iodine turns from brown to dark blue in the presence of starch. Which one of the following sets of results would she most likely obtain?

	Colour of iodine on		
	Leaf A	Leaf B	Leaf C
(1)	dark blue	dark blue	brown
(2)	dark blue	brown	dark blue
(3)	brown	dark blue	brown
(4)	brown	brown	brown

14 Cathy mixes fresh mango pieces with cold water in an electric-blender to make mango juice.



Which of the following takes place when the blender is used?

A Electrical energy is converted to kinetic energy of the blades.

B Potential energy of the mangoes is converted to kinetic energy.

C Kinetic energy of the blades is converted to chemical potential energy.

D The temperature of the cold water increases as it absorbs heat energy produced by friction.

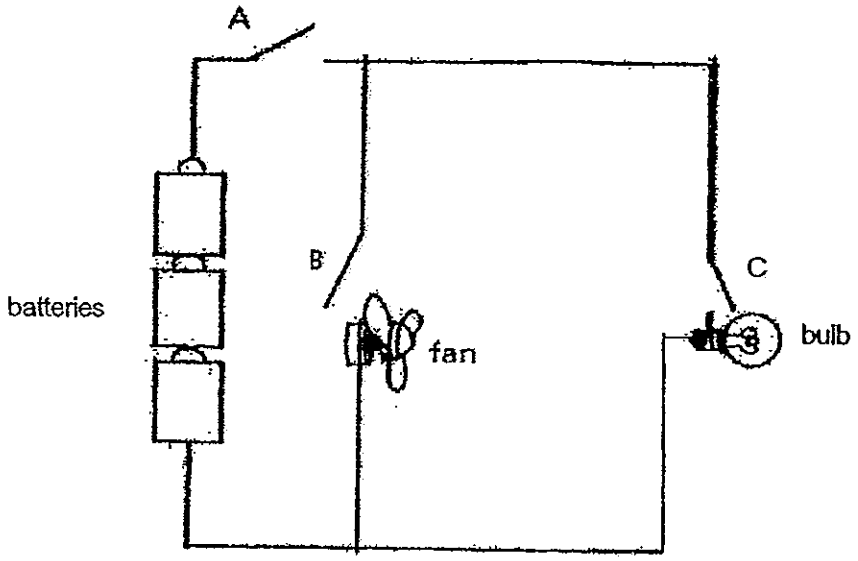
(1) A and B only

(2) A and D only

(3) B and C only

(4) A, C and D only

15 Study the diagram below carefully.



Which of the switches must be closed for the following energy changes to take place?

Chemical potential energy → electrical energy → light energy + heat energy

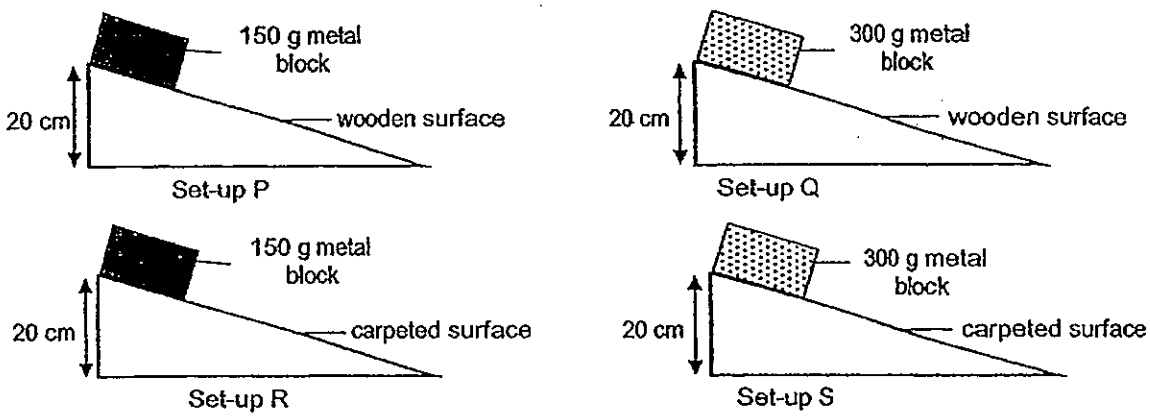
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

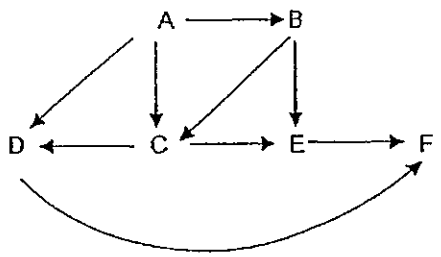
16 Jason conducted an experiment with two metal blocks of the same size but of different mass. He released the blocks from ramps with different surfaces as shown below.



He wanted to investigate how the time taken by the block to slide down the ramp depends on the mass of the block and the surface of the ramp.
Which pairs of set-ups should he use in his investigation?

	Time taken depends on	
	mass of the block	**surface of the ramp**
(1)	P and Q	R and S
(2)	R and S	P and R
(3)	Q and S	P and Q
(4)	P and R	Q and S

17 The food relationships among organisms A, B, C, D, E and F are shown in the food web below.



Based on the above food web, which organisms are both predator and prey?

(1) A and F only

(2) D and F only

(3) C, D and E only

(4) B, C, D and E only

(Go on to the next page)

18 The diagrams below show the skulls of four mammals. No teeth are missing from the skulls. Based on the physical structures of the teeth, which one of the following mammals is most likely a herbivore?

(1)

(2)

(3)

(4)

19 Pollutant Standard Index (PSI) values give an indication of the quality of air. The table below shows the quality of air with the associated range of PSI values.

PSI value	Quality of air
0 – 50	Good
51 – 100	Moderate
101 – 200	Unhealthy
201 – 300	Very unhealthy
Above 300	Hazardous

The table below shows the quality of air in Country A over a few days.

Day	1	2	3	4	5
PSI value	20	78	124	146	163

Which one of the following reasons can best explain the sudden increase of PSI from days 1 to 5?

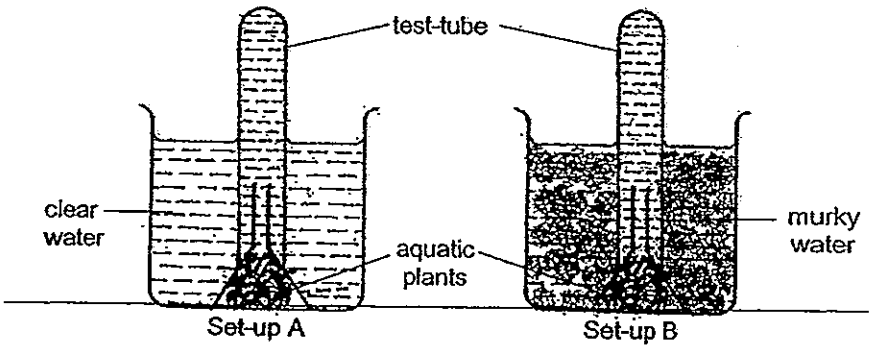
(1) Trees were chopped down in the forests.

(2) There were more smokers in the country.

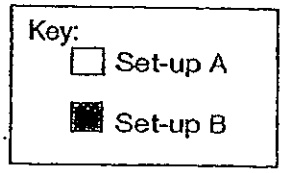
(3) There was an increase of vehicles on the roads.

(4) A forest fire took place in the neighbouring country.

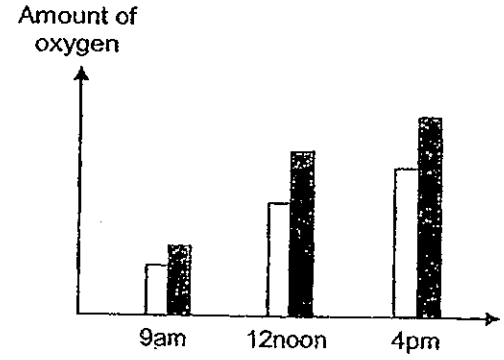
20 Ean set up an experiment as shown below to find out the effect of murky water on the rate of photosynthesis in aquatic plants. Similar aquatic plants and apparatus were used and both set-ups were placed in the school field. Oxygen produced by the aquatic plants was collected in the test tubes and measured at different times of the day.



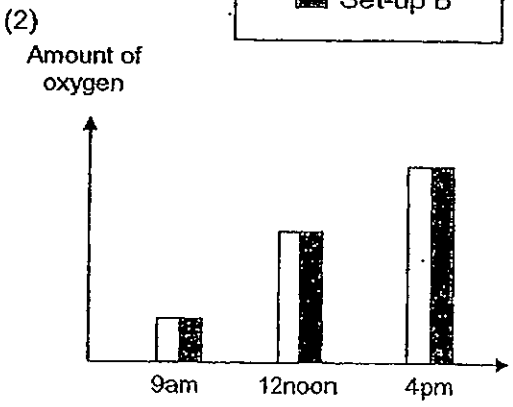
Which one of the following graphs shows the likely amount of oxygen measured at different times of the day?



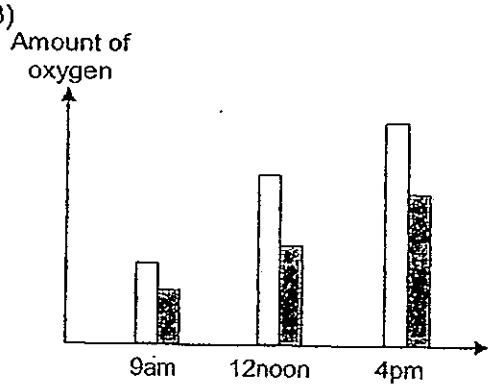
(1)



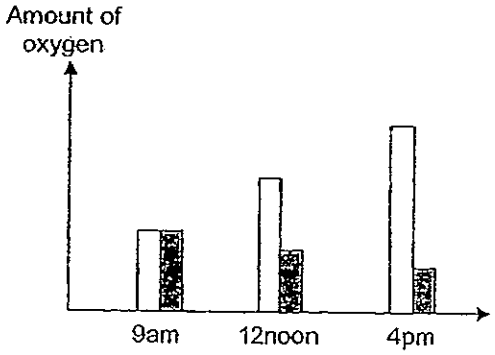
(2)



(3)



(4)



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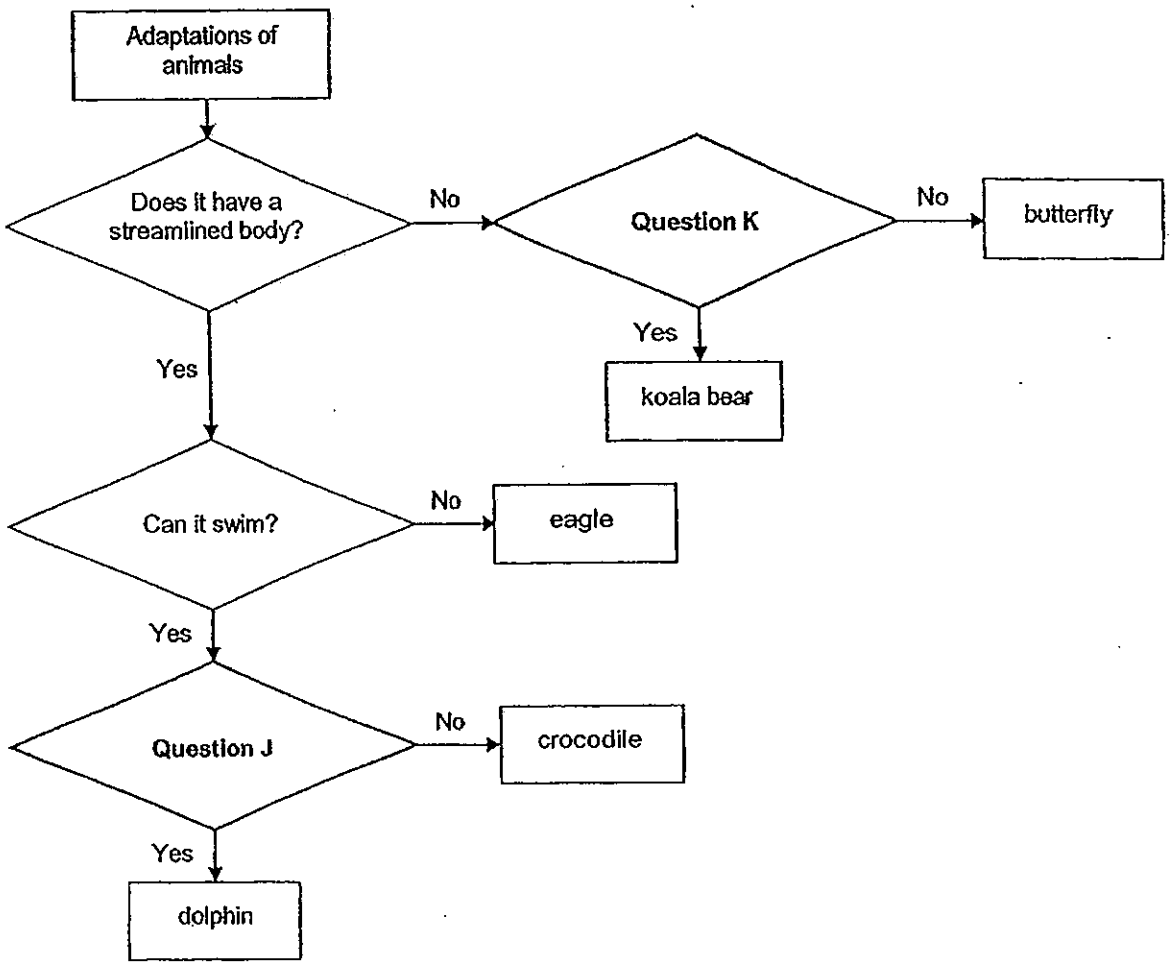
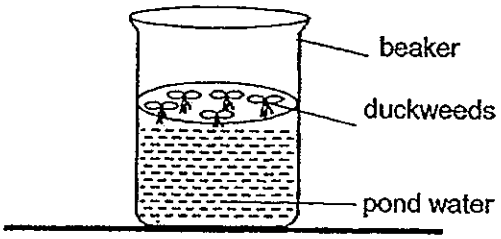
21 Sean classified some animals using the flowchart below.



What were the two questions, J and K most likely to be?

	Question J	Question K
(1)	Does it have gills?	Does it feed on plants?
(2)	Does it live in water?	Can it fly?
(3)	Does it have flippers?	Does it give birth to live young?
(4)	Does it lay eggs?	Does it have fur?

22 Clarence conducted an experiment to investigate the effect of different chemicals on the survival of duckweeds. He put five duckweeds and poured 500 ml of pond water into four identical beakers each. He added 50 ml of each type of chemical, X, Y and Z, only into beakers Q, R and S respectively.



He observed how the number of duckweeds changed over a month and recorded his observations in the table below.

Beaker	Chemical	Number of duckweeds at the end of			
		week 1	week 2	week 3	week 4
P	None added	7	8	10	13
Q	X	12	20	31	45
R	Y	4	3	2	1
S	Z	13	16	19	22

He drew the following conclusions after studying the table. Which one of the following conclusions is correct?

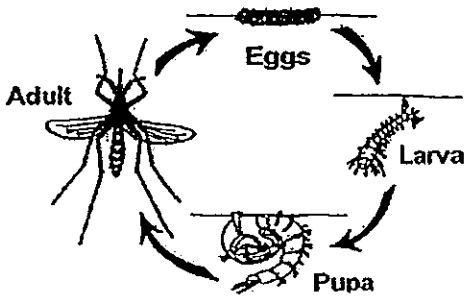
(1) Duckweeds survive best in Chemical X.

(2) Chemical Y has no effect on the survival of the duckweeds.

(3) Duckweeds survive better when chemical Y is added compared to when chemical Z was added.

(4) Duckweeds survive better when chemical Z is added compared to when chemical X was added.

23 The diagram below shows the life cycle of a mosquito.



One way to get rid of the mosquito larvae and pupae in a pond without causing harm to the environment is to _____.

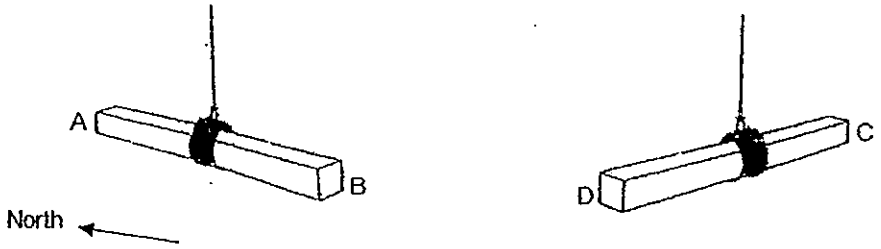
(1) introduce fish that would eat them up

(2) grow more floating plants in the pond

(3) spray a thin layer of oil on the water surface

(4) introduce pondskaters which would lay eggs there

24 A metal bar AB is freely suspended on a string. It was spun and it came to rest with one end of the bar, A, pointing to the North as shown in the diagram below. It was spun a second time and again, end A of the bar came to rest pointing North. Another bar, CD, made of the same metal as AB, was also freely suspended and then spun. However, the bar came to rest in no particular direction.



What would most likely happen if the bars AB and CD are brought near to each other?

(1) End A attracts C but repels D.

(2) End A repels C but attracts D.

(3) End A attracts neither C nor D.

(4) Both ends A and B attract end C.

(Go on to the next page)

25 Three metal bars, X, Y and Z, were freely suspended with strings.

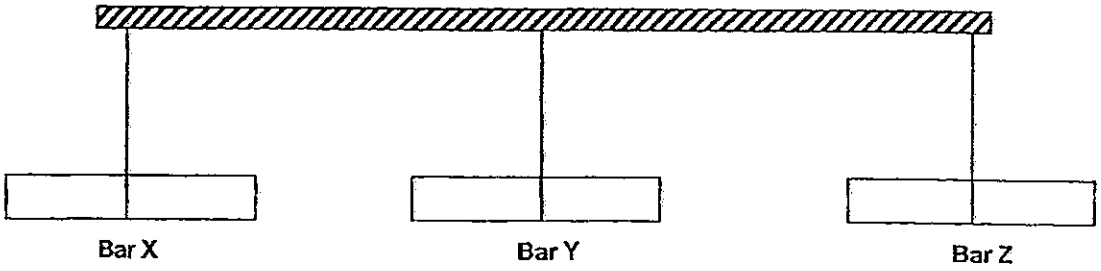


Figure 1 below shows what happened when bars X and Y were brought together.

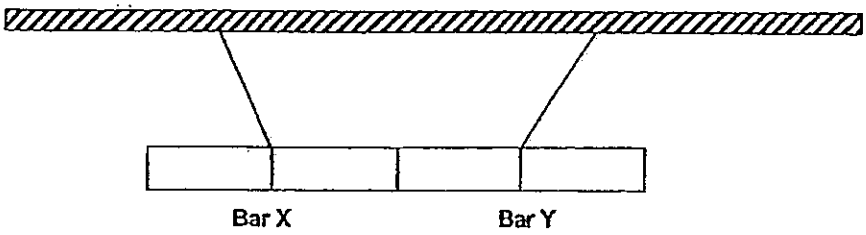


Figure 1

Figure 2 below shows what happened when bars X and Z were brought together.

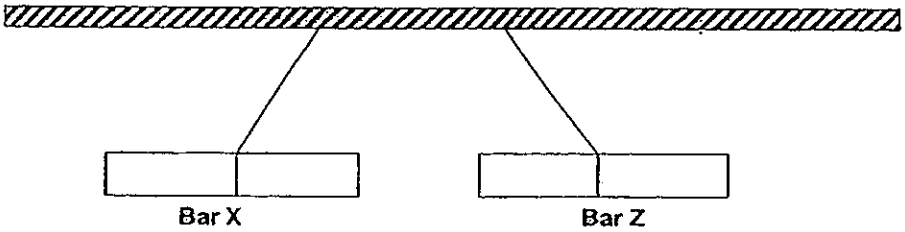


Figure 2

Based on what you can observe in the diagrams, which one of the following inferences is most likely correct?

(1) Bars X and Y are magnets.

(2) Bar Y is definitely made of iron.

(3) Bars Y and Z will repel at one end.

(4) Bar Z is made of a magnetic material.

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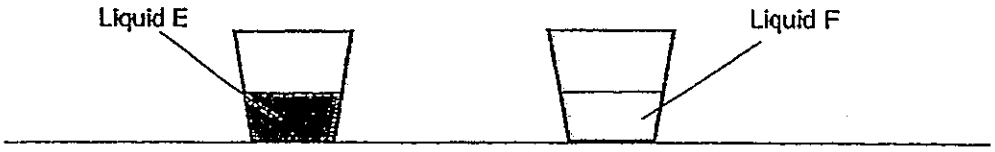
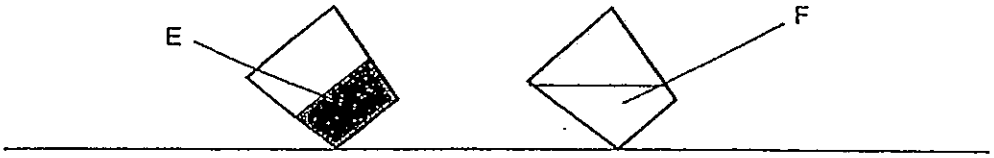
26 Jerome poured equal amounts of liquids E and F at 50^0C into two similar containers, G and H. The liquids were allowed to cool to room temperature.



Container G Container H

After an hour, he tilted the containers as shown in the diagram below.



Container G Container H

Which one of the following can he conclude from his experiment?

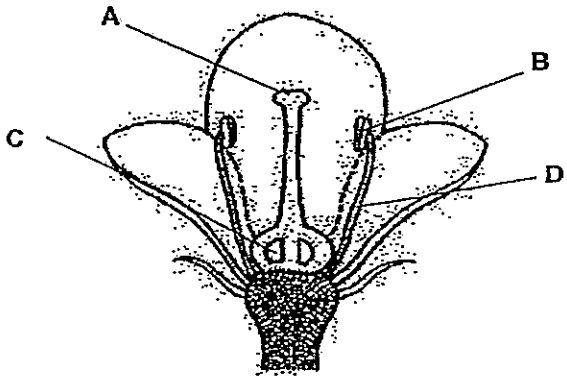
(1) Both liquids E and F have gained heat.

(2) Container G is a poor conductor of heat.

(3) Liquid F has changed its state from liquid to solid.

(4) Liquid E has a higher freezing point than Liquid F.

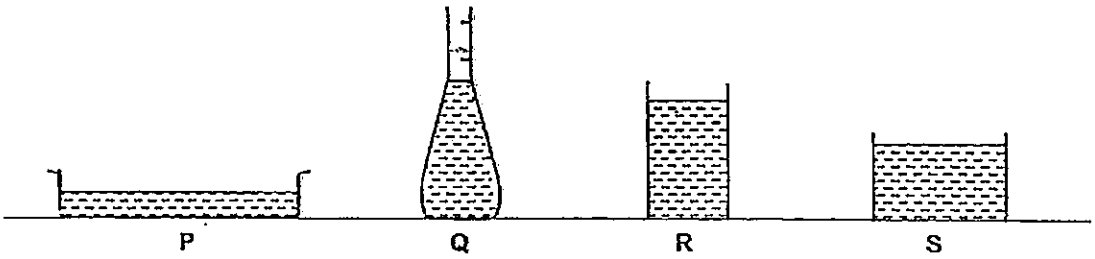
27 The diagram below shows the cross section of a flower which has both male and female parts.



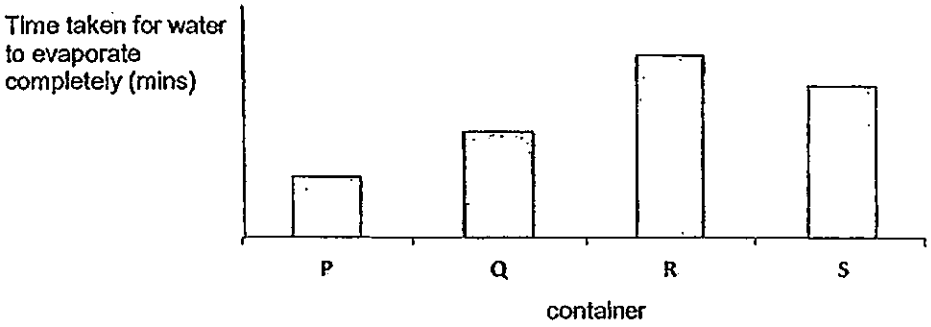
Which one of the following correctly identifies the locations at which pollination and fertilisation occur?

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

28 Ethan carried out an experiment to find out how long it would take for 50 cm^3 of water to evaporate completely in four different containers, P, Q, R and S. They were left in the same corner of a room.



He recorded the data in the form of a bar graph as shown below.



Ethan suspects that he made some mistakes in his recordings.
Which container is correctly represented in the graph shown above?

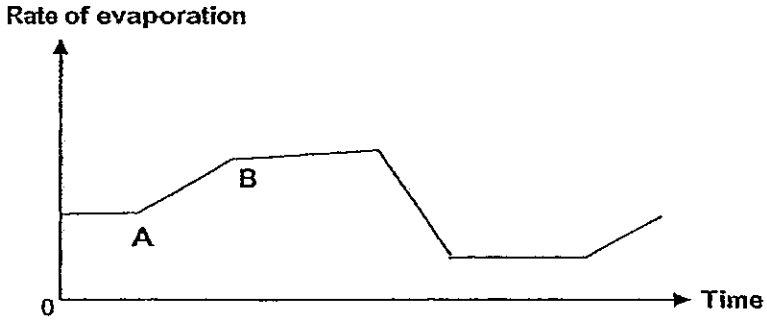
(1) P

(2) Q

(3) R

(4) S

29 The graph below shows the changes in the rate of evaporation of a beaker of water over a period of time. The beaker of water was left indoors (without a fan or air-conditioning) at the start of the experiment.



What do you think most likely happened at line AB of the graph?

(1) Some ice was added to the water.

(2) It was evening and the sun had set.

(3) The temperature of the day increased.

(4) The beaker was shifted to a cooler part of the room.

30 The diagram below shows a kettle of water boiling.

Which one of the following statements is true about the formation of the mist?

(1) It is steam at 100^0C.

(2) The boiling water became gaseous.

(3) Water vapour lost heat to the surrounding.

(4) Water vapour gained heat from the surrounding.

END OF BOOKLET A

Index No. | | | | | | – | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2013

SCIENCE

BOOKLET B

Wednesday **21st August 2013** **1 hour 45 minutes**

Name :_____( )

Class : P6_____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO
Follow all instructions carefully.
There are 14 questions in this booklet.
Answer ALL questions.

INFORMATION FOR PUPILS

The number of marks is given in brackets [ ] at the end of each question or part question.
The total marks for this booklet is 40.
The total time for Booklets A and B is 1 hour 45 minutes.
This question paper consists of 15 printed pages. (Inclusive of cover page)

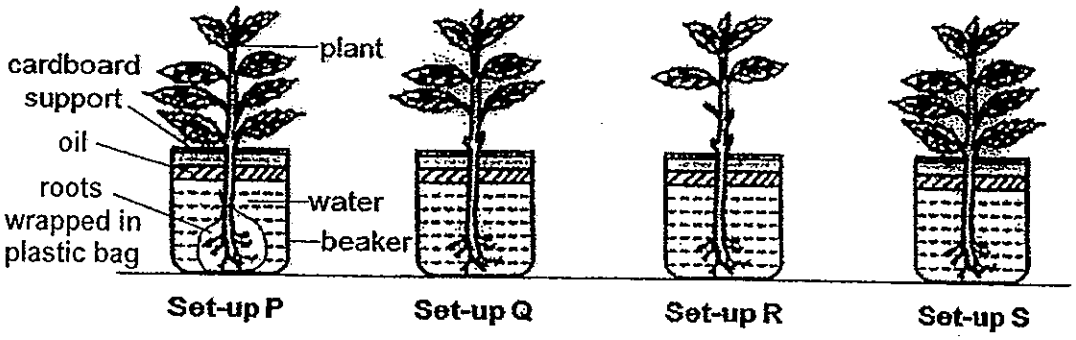
BOOKLET A	/ 60
BOOKLET B	/ 40
TOTAL	/ 100
Parent's signature/ Date:	

For questions 31 to 44, write your answers in the spaces provided in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question. (40 marks)

---

31 The diagram below shows four similar plants in identical beakers, each containing equal amounts of water. The set-ups are labelled P, Q, R and S, and they are placed in a brightly-lit area for three days.



(a) Which set-up has the least amount of water left in the beaker after three days? Give two reasons to explain your answer. [2]

_____

_____

_____

_____

(b) What will happen to the water level in set-up P if it is placed in a dark cupboard for three days? Give two reasons to explain your answer. [2]

_____

_____

_____

_____

(Go on to the next page)

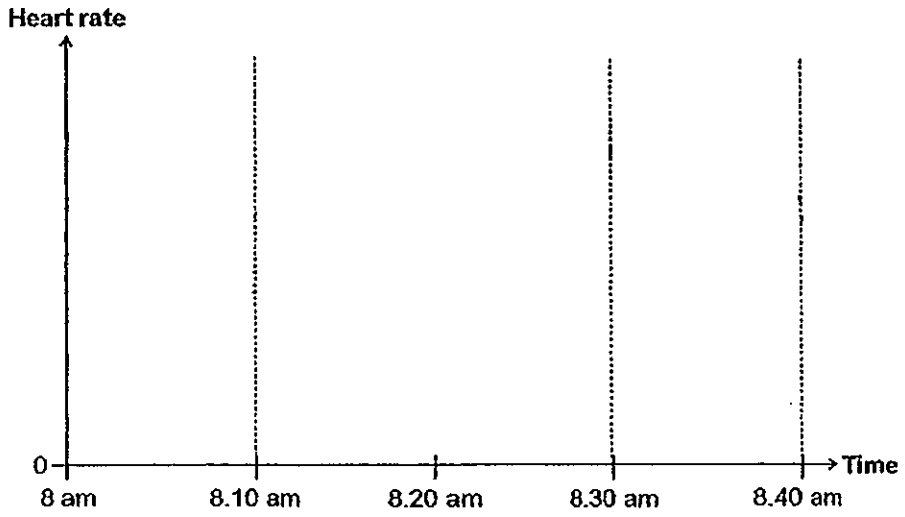
Score	/ 4

32 Felicia recorded some of her morning activities in a table as shown below.

Activity	Time
Walking from home to the park	8 am to 8.10 am
Running around the park	8.10 am to 8.30 am
Walking back home from the park	8.30 am to 8.40 am

Felicia also measured her heart rate during the activities mentioned in the table above.

(a) In the graph below, draw a line graph to represent Felicia's heart rate from 8 am to 8.40 am. Use a ruler and pencil to do this. [1]



(b) State two substances that are being transported in Felicia's blood to her muscles to help her in the activities mentioned above. [1]

_____

(Go on to the next page)

Score	/ 2

33 Tom used one battery, two identical bulbs and some wires to construct a simple electric circuit as shown below.

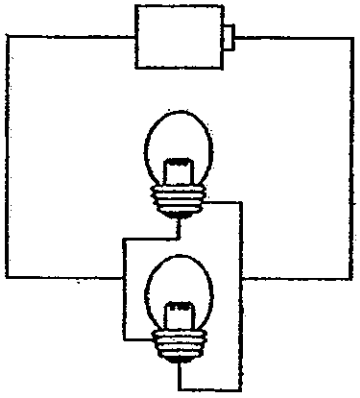


Diagram 1

(a) Tom wanted to add two switches to his set-up so that he can control the light bulbs separately.
Using 'X' to represent a switch, draw in Diagram 1 above to show where he should place the two switches. [1]

(b) In the space below, using two identical batteries, two identical bulbs and some wires, draw a circuit diagram to show how the bulbs can have the same brightness as the bulbs in diagram 1. [1]

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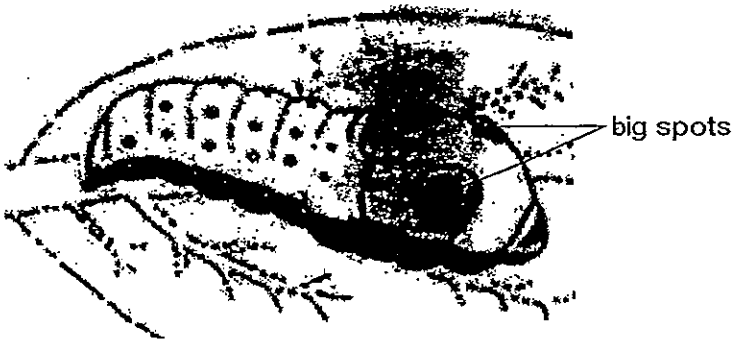
Score	/ 2

34. The diagram below shows one kind of caterpillar.

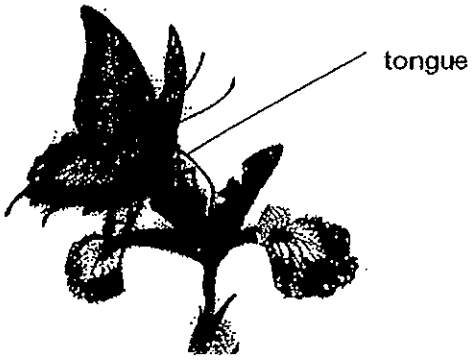


(a) How do the big spots on the caterpillar's head act as a defence against predators? [1]

_____

_____

The butterfly has a long tongue to help it obtain nectar as shown in the diagram below.



(b) What can you infer from the butterfly's adaptation about the location of the nectar in the flower? [1]

_____

_____

(Go on to the next page)

Score	/ 2

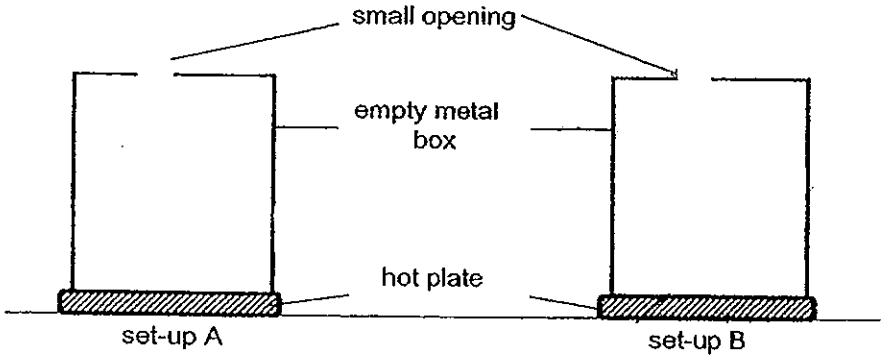
The diagram below shows two similar butterflies. The Viceroy butterfly is said to mimic the Monarch butterfly which is known to taste bad.

(c) How does this adaptation help the Viceroy butterfly? [1]

_____

_____

35 Ali wants to find out if air or water is a better conductor of heat. He has the set-ups below. The hot plates have been heated to the same temperature.



(a) There are some missing parts in the above set-ups. Draw and label the parts in the diagram above. [2]

(b) What must Ali observe for him to conclude that water is a better conductor of heat? [1]

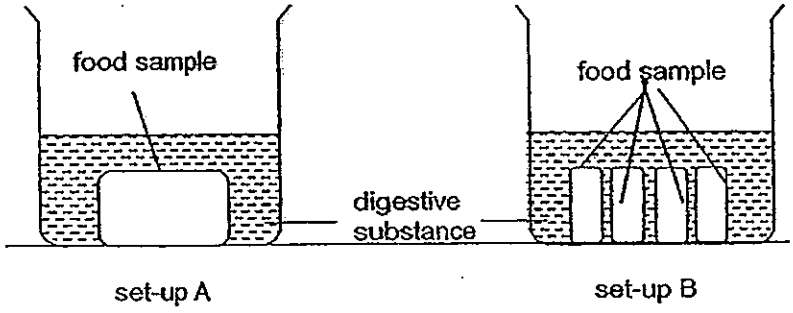
_____

_____

(Go on to the next page)

Score	/ 4

36 Tina put two identical food samples of equal amounts into each beaker containing an equal amount of digestive subtance as shown in the diagrams below. She left both set-ups in a room of 30°C and observed them two hours later.



(a) Which was the variable that was changed in her experiment? [1]

_____

_____

(b) What would Tina observe at the end of the experiment? [1]

_____

_____

(c) State another variable that must be kept constant in the experiment. [1]

_____

_____

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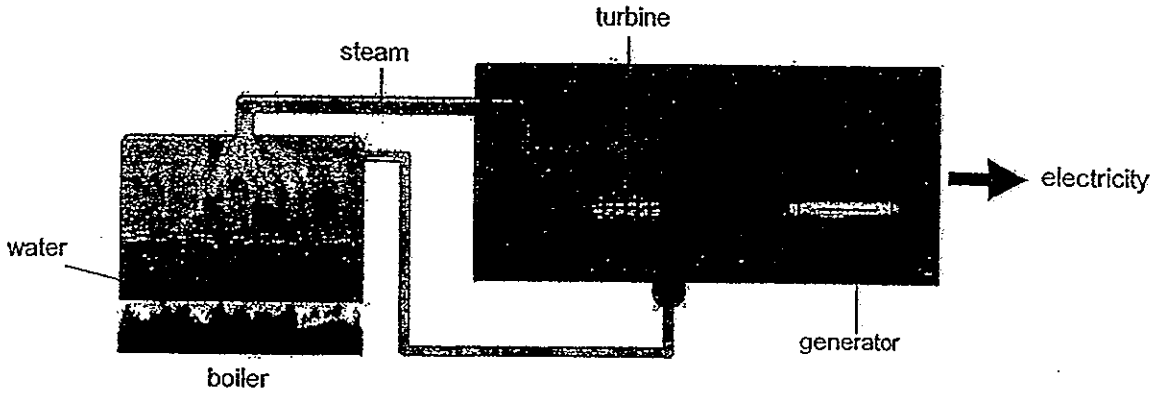
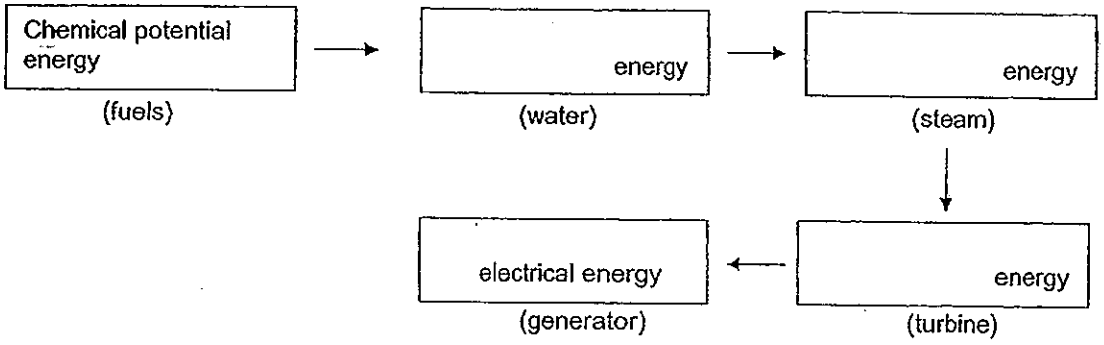
Score	/ 3

37 The diagram below shows a simplified diagram of how electricity is generated in a power station by burning fuels.



(a) Write down the energy changes that take place in the power station when electricity is produced in the boxes below. [1]



(b) State two examples of fuels that are burnt in the power station to produce electricity. [1]

_____

_____

(c) Another method to generate electricity is through hydroelectric power stations. Why is this source of energy not used to provide electricity for homes in Singapore? [1]

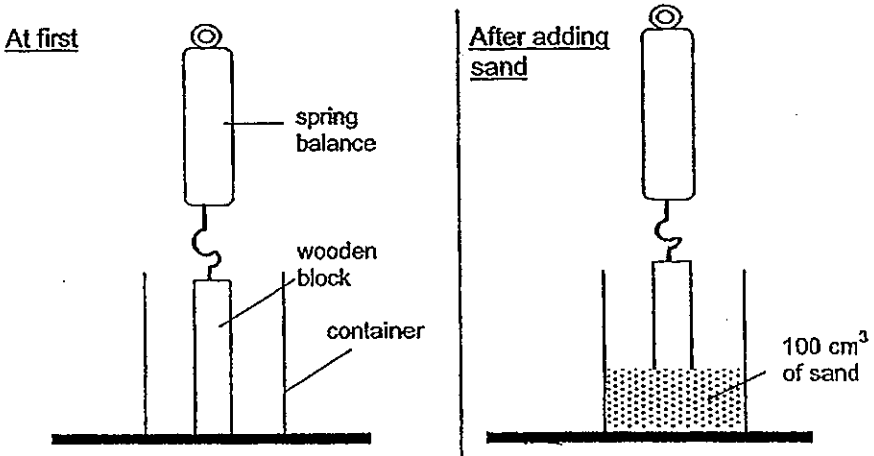
_____

_____

(Go on to the next page)

Score	/ 3

38 Keith set up the experiment as shown below to measure the amount of force needed to lift the wooden block out of the container. He then poured 100 cm^3 of sand into the container and re-measured the force needed to lift the wooden block out of the container. He repeated the experiment after adding another 100 cm^3 of sand into the container.



(a) State the force that caused the spring to stretch before he added sand. [1]

(b) Based on the results of his experiment, Keith concluded that more force would be needed to lift the wooden block out of the container when more sand was used. Explain his conclusion. [1]

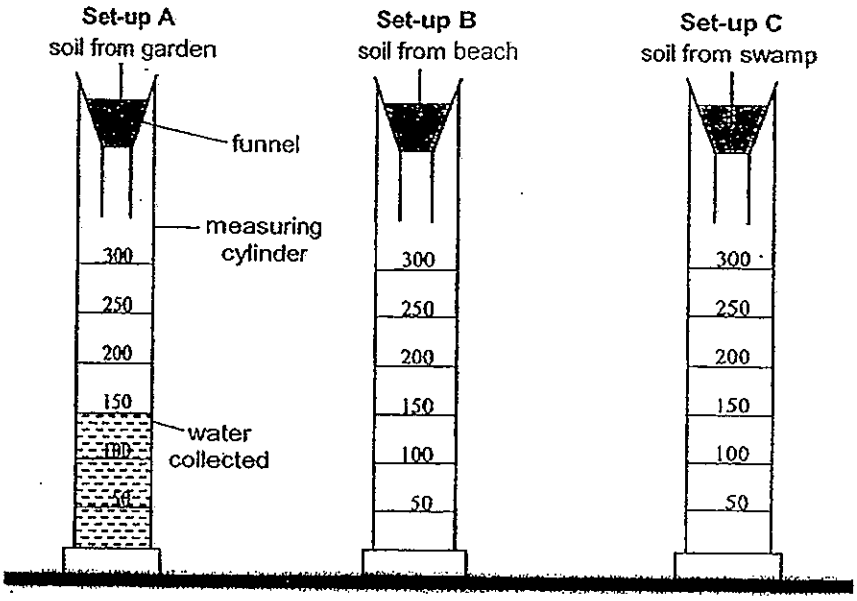
(c) How would the results change if he had used 100 cm^3 of small marbles instead? [1]

(Go on to the next page)

Score	/ 3

39 Wei Jie collected some soil samples from the garden, beach and swamp. He conducted an investigation as shown below to find out which type of soil allows the most amount of water to pass through.

He first poured 250 ml of water into set-up A which contains soil from the garden. He measured the volume of water collected in the measuring cylinder after 5 minutes. He then repeated the experiment with soil samples from the beach and swamp.



(a) The volume of water collected in set-up A was approximately 150 ml. What would be the estimated volumes of water collected for set-ups B and C? Put a tick (✓) in the correct boxes below. [1]

Set-up	More than 150 ml	Less than 150 ml	Equivalent to 150 ml
B			
C			

(b) Wei Jie ensured that all the set-ups used the same amount of soil. How does keeping this variable constant ensure that the test is fair? [1]

_____

_____

(c) Wei Jie found some small pieces of broken and soggy leaves in the garden soil. Explain how their presence in the soil is important to plants. [1]

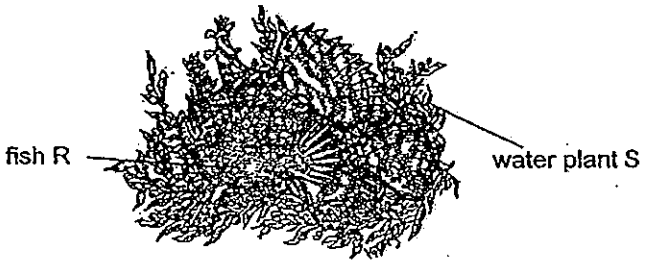
_____

_____

(Go on to the next page)

Score	/ 3

40 The diagram below shows fish R among water plant S in the sea.

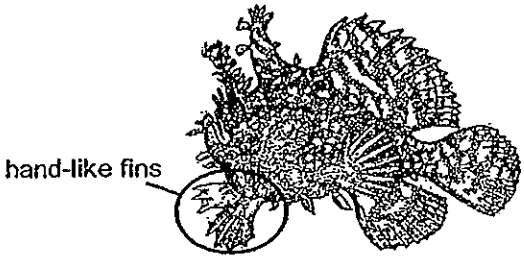


(a) Based on the diagram, how does fish R adapt itself to survive in its environment? [1]

_____

_____

(b) Fish R has modified fins which resembles a human hand.



Explain how this adaptation may help it remain stable among water plant S when the sea is rough. [1]

_____

_____

(c) The food relationships among the organisms are shown below.

- R feeds on U and is eaten by W.
- U is a herbivore.
- W is an omnivore which also feeds on U.

In the space below, draw a food web to show the food relationships among organisms R, S, U and W. [1]

(Go on to the next page)

Score	/ 3

41 Arvin wanted to find out if liquid V could prevent swordtail from reproducing. He conducted an experiment using 100 swordtails which were subjected to different conditions as shown in the table below.

Conditions	Tank S	Tank T
Number of swordtails	25 male 25 female	25 male 25 female
Number of water plants	5	5
Amount of sunlight	moderate	moderate
Amount of food and feeding times	100g, once daily	100g, once daily
Liquid V	present	absent

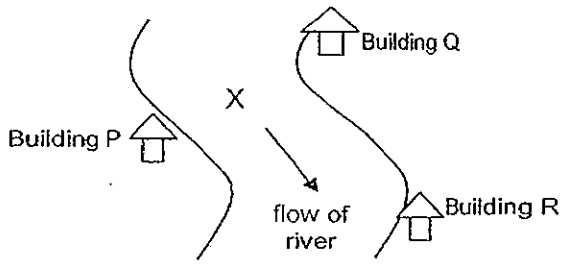
A month later, Arvin noticed fries (baby swordtails) among the water plants in tank T but none was observed in tank S.

(a) What was the purpose of setting up tank T? [1]

_____

_____

(b) Arvin noticed that the population of fish found in a river at point X started to decrease when a factory was set up nearby. It was found that the factory discharges liquid V into the river.



Which building could the factory be? Explain your choice. [1]

_____

_____

_____

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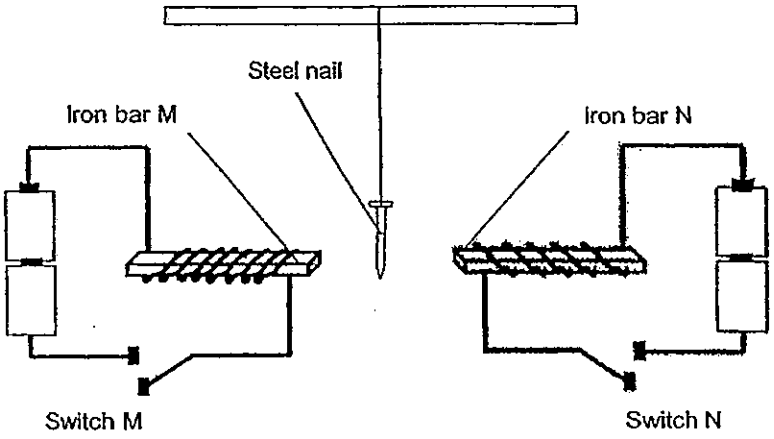
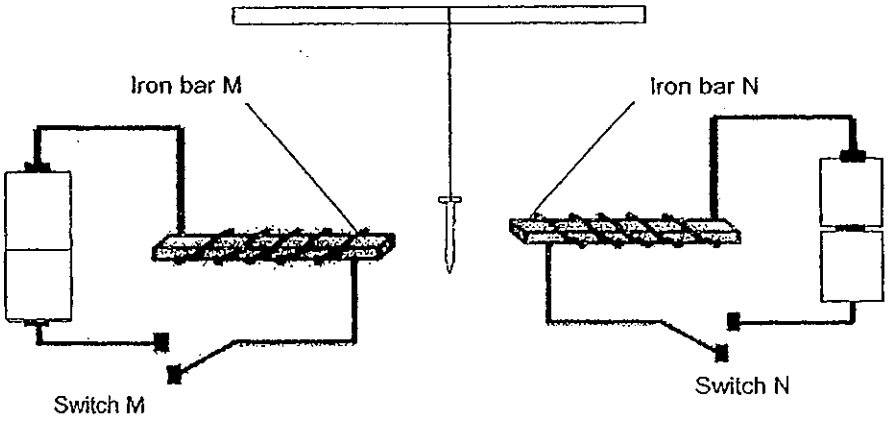
Score	/ 2

42 Aaron set up the experiment below using identical batteries, wires and iron bars. A steel nail is freely suspended at an equal distance between the two iron bars, M and N.



(a) What will happen to the steel nail if both switches M and N are closed at the same time? Explain your answer. [1]

(b) Some changes were made to the set-up as shown in the diagram below.

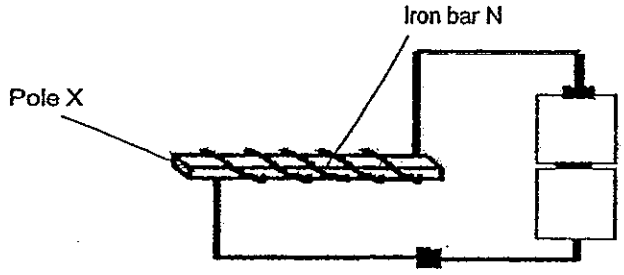


What will happen to the steel nail when both switches M and N are switched on at the same time? Explain your answer. [1]

(Go on to the next page)

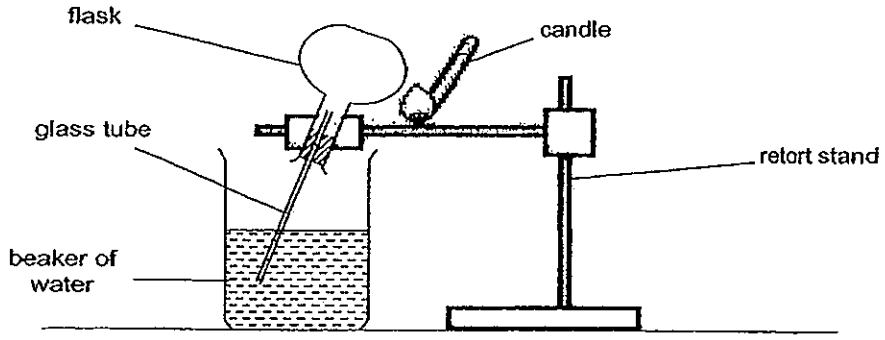
Score	/ 2

(c) The diagram below shows the set-up with iron Bar N.



Without dismantling the set-up, describe what you would do to determine whether Pole X is the North Pole. [1]

43 Timothy set up an experiment as shown in the diagram below. The flask was heated.



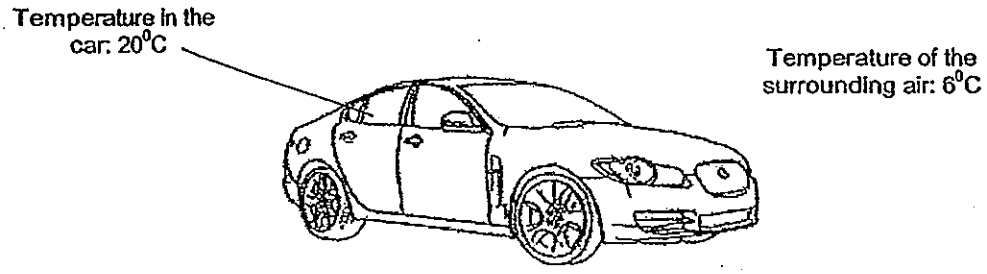
(a) Timothy observes that bubbles were seen coming out of the glass tube. Explain why this happens. [1]

(b) When Timothy stopped heating the flask, he observed that some of the water from the beaker flowed into the flask. Explain why this happens. [2]

(Go on to the next page)

Score	/ 4

44 Jeremiah was driving his car to work when he noticed that the windows of his car had become misty.



(a) He observed that water droplets formed on the inner surface of the car windows. Explain his observation. [2]

_____

_____

_____

_____

(b) After he wound down one of the windows, water droplets stopped forming on the inner surface of the other windows after a while.
Why did the water droplets stop forming when the window was wound down? [1]

_____

_____

END OF BOOKLET B

Score	/ 3

ANSWER SHEET

EXAM PAPER 2013
SCHOOL : ACS
SUBJECT : PRIMARY 6 SCINECE

TERM : PRELEM

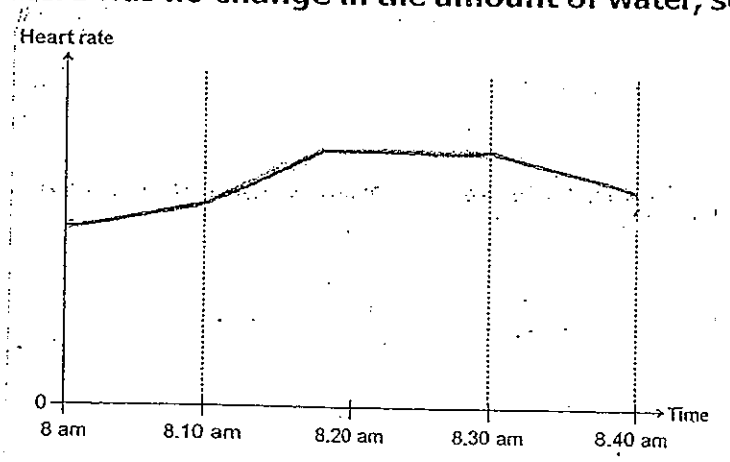
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	4	2	1	3	2	2	4	1	1	1	3	2	2	2	2	3

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

31)a)Set-up S. The plant in S has the most leaves, so its rate of transpiration would be the greatest. Secondly, its roots are not wrapped in a plastic bag, hence the plant is able to absorb water. So, the plant in Set-up S would absorb the most water, leaving the least amount of water left.

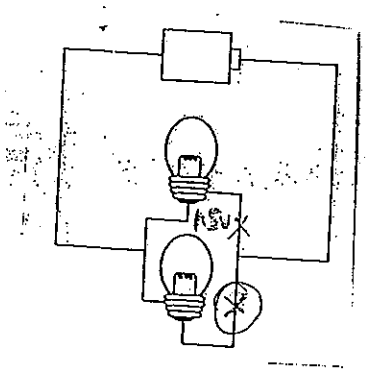
b)The water level in set-up P will remain the same. As the plant in P has its roots wrapped up in a plastic bag, the plant is unable to absorb any water. Secondly the layer of oil prevent evaporation of the water from taking place. Hence, there was no change in the amount of water, so no change to the water level.

32)a)

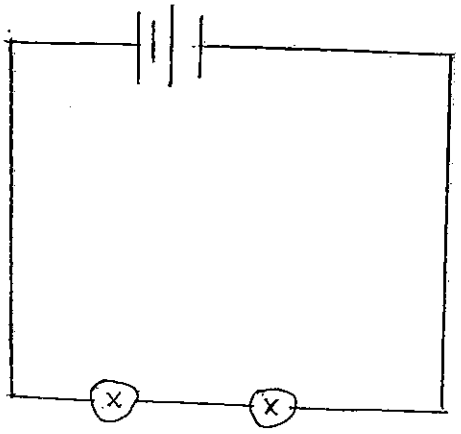


32)b)Sugar and oxygen.

33)a)



b)

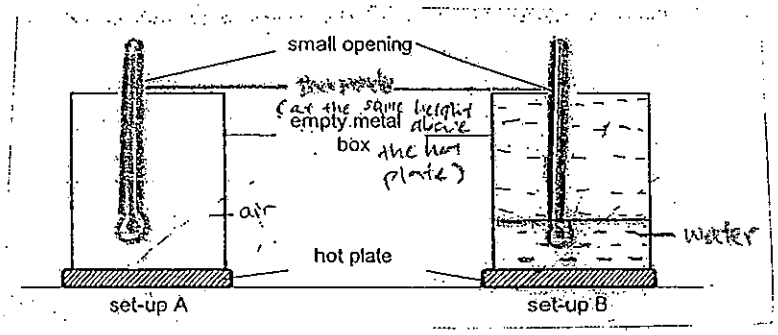


34)a)The big spots look like the eyes of bagger animals.

b)The nectar is deep within the flower.

c)predators of the Viceroy butterfly might mistake it for a Monarch, so they are deterred from feeding on the Viceroy since Monarch are known to taste bed.

35)a)



b)The increase in temperature of the water is greater than that of air after the same period of time.

36)a)The exposed surface area of the food in contact with the digestive substance.

b)Food sample in set-up B and smaller than A.

c)Type of digestive substance.

42)a)It will move towards iron bar M. When both switches are closed, the circuit is closed, so electricity can flow, so the iron bars M and N became electromagnets. Since iron bar M has more coil than N, it is a stronger electromagnet, so it attracted the steel nail.

b)The steel nail will more towards iron bar N. As the batteries for iron bar M have the same sides facing each other, so electricity cannot flow and M will not become an electromagnet. While N can, so N will attract the steel nail towards it.

c)Place a magnet with its pokes known and face each side to pole X. If the magnet repels with its North pole facing X, pole X is the North pole.

43)a)As air in the flask gained heat from the candle it expanded. As air takes up space, it rushes out of the glass tube and emerges as gas bubbles.

b)The air in the flask subsequently lost heat to the surrounding, so it contracted and took up less space, allowing water to displace the space air previously took up.

44)a)The car windows lost heat to the cooler surrounding air. Warmer water vapour in the car touched the inner cooler surface of the car windows, losing heat and condensed on the inner surface of the car windows.

b)This is he cause the temperature of the air inside the car and outside the car becomes the same, so no condensation tucks place.

37)a)Heat energy→Kinetic energy

↓

Kinetic energy

b)Coal and natural gases.

c)Singapore has not enough land to clear to create hydroelectric power stations and does not have the required type of rives that are high enough to possess enough gravitational potential energy.

38)a)Gravitational force.

b)By adding sand, the wooden block would experience more friction, as there is added friction between the sand grains and the wooden block, so more force has to applied to overcome the wooden block's weight and the friction.

c)He would require less force to pull the wooden block up than with sand.

39)a)More than 150ml

Less than 150ml

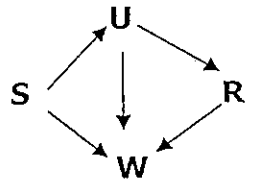
b)As he was only trying to find out which type of soil allows the most amount of water to flow through, he only had to change the type soil used each time, and out the amount of soil, as changing the amount of the soil effaces the experiment so the results would be more accounted and relised.

c)Bacteria decomposes these leaves, returning nutrients back into the soil, so the plants can absorb it and grow heal their.

40)a)The fish in able to blend in with water plant S. so its predators will not be able to easily sport it, hence fish R has a smaller have of being eaten.

b)The modified fins are able to hold onto the water plants to remain stable.

c)



41)a)It is to act as a control and as a comparison to observe if the reproduction rate of the sword tails is affected by the presence of Liquid V.

b)Building Q. It releases liquid V which decreases reproduction rate, so it flowed down stream to X which is after building Q and affected the population of fish.

新加坡福建会馆属下五校小六统一考试

道南 • 爱同 • 崇福 • 南侨 • 光华

SINGAPORE HOKKIEN HUAY KUAN
5-SCHOOL COMBINED PRIMARY 6 PRELIMINARY EXAMINATIONS
TAO NAN • AI TONG • CHONGFU • NAN CHIAU • KONG HWA

2013

科学 SCIENCE

BOOKLET A

Date : 27 August 2013
Total Time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

√ Write your school's name, name, register number and class.
√ Do not open this booklet until you are told to do so.
√ Follow all instructions carefully.
√ Answer all questions.
√ Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 24 printed pages.

School : _____

Name : _____ ( )

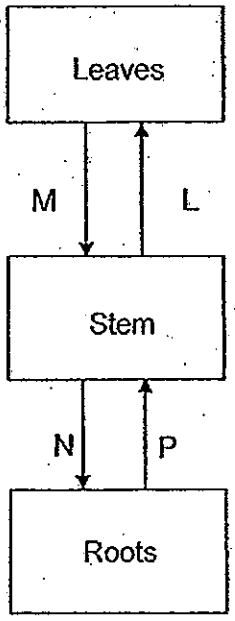
Class : _____

TOTAL	/ 60

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 (1, 2, 3 or 4) on the Optical Answer Sheet.**

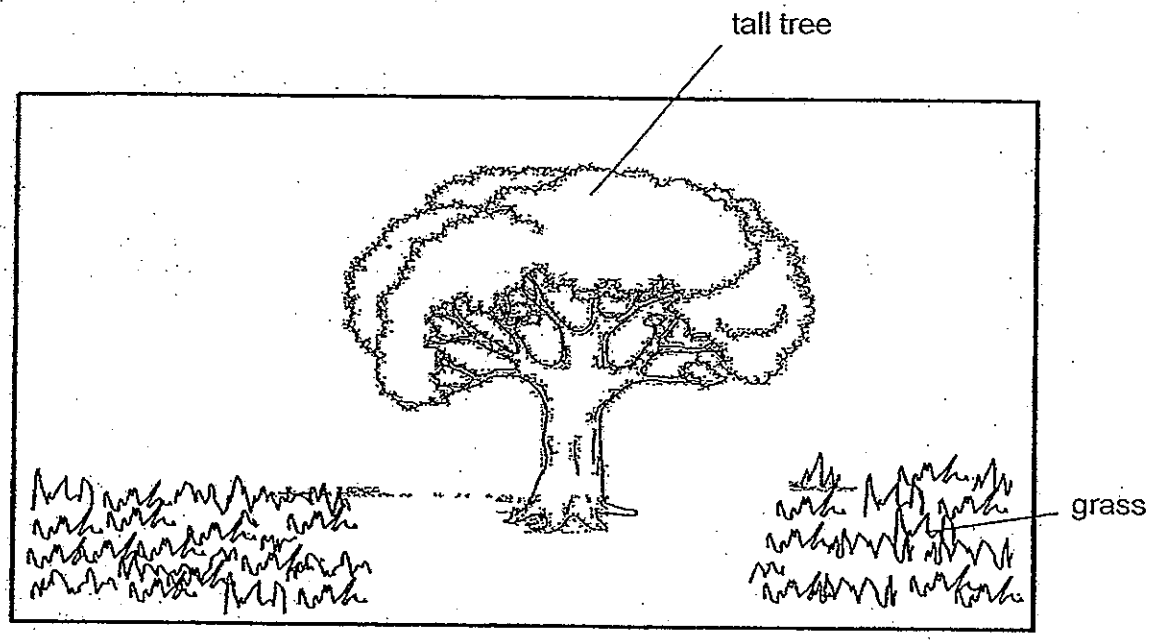
1. Anne drew the diagram below to show how sugar and water are transported to and from different parts of a plant, represented by arrows L, M, N and P.



Which of the following are transported by the arrows?

	M	N	P
(1)	Water	Water	Sugar
(2)	Water	Sugar	Water
(3)	Sugar	Water	Sugar
(4)	Sugar	Sugar	Water

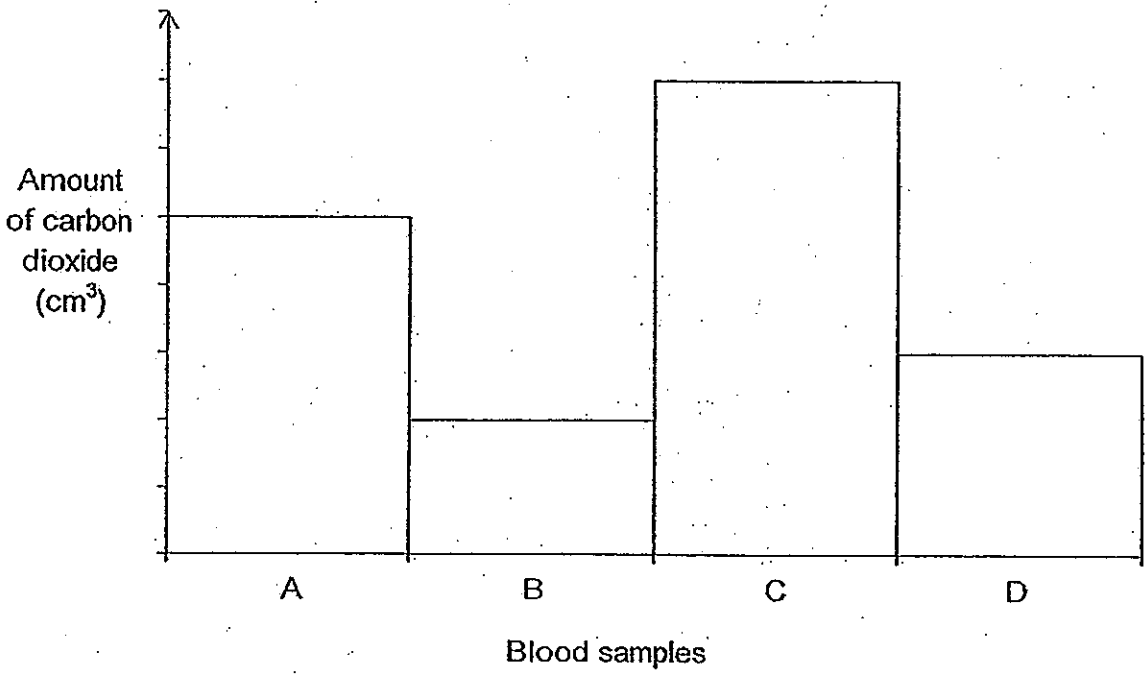
2. Billy observed grass growing everywhere on a patch of field except under a tree as shown in the picture below.



Which of the following explains the absence of grass under the tree?

(1) The grass cannot grow well in the soil at this field.
(2) The leaves of the tree block rainwater from reaching the grass.
(3) The short roots of the grass cannot absorb enough mineral salts.
(4) The tree blocks sunlight from reaching the ground directly under it.

3. Four blood samples, A, B, C and D, were taken from different blood vessels in different parts of the human body. The graph below shows the amount of carbon dioxide found in each of the blood samples.

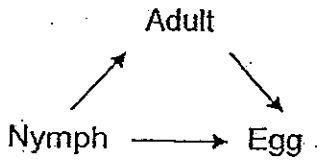


Which blood sample was most likely taken from the blood vessel carrying blood from the lungs to the heart?

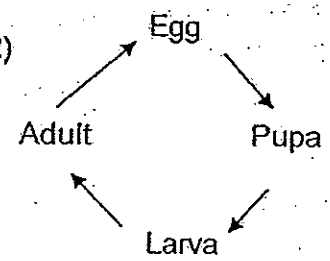
(1) A
(2) B
(3) C
(4) D

4. Which of the following shows the life cycle of a butterfly?

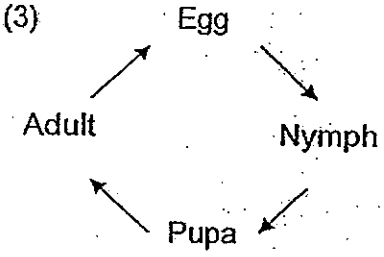
(1)



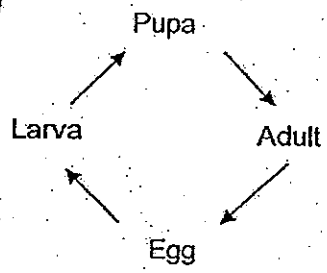
(2)



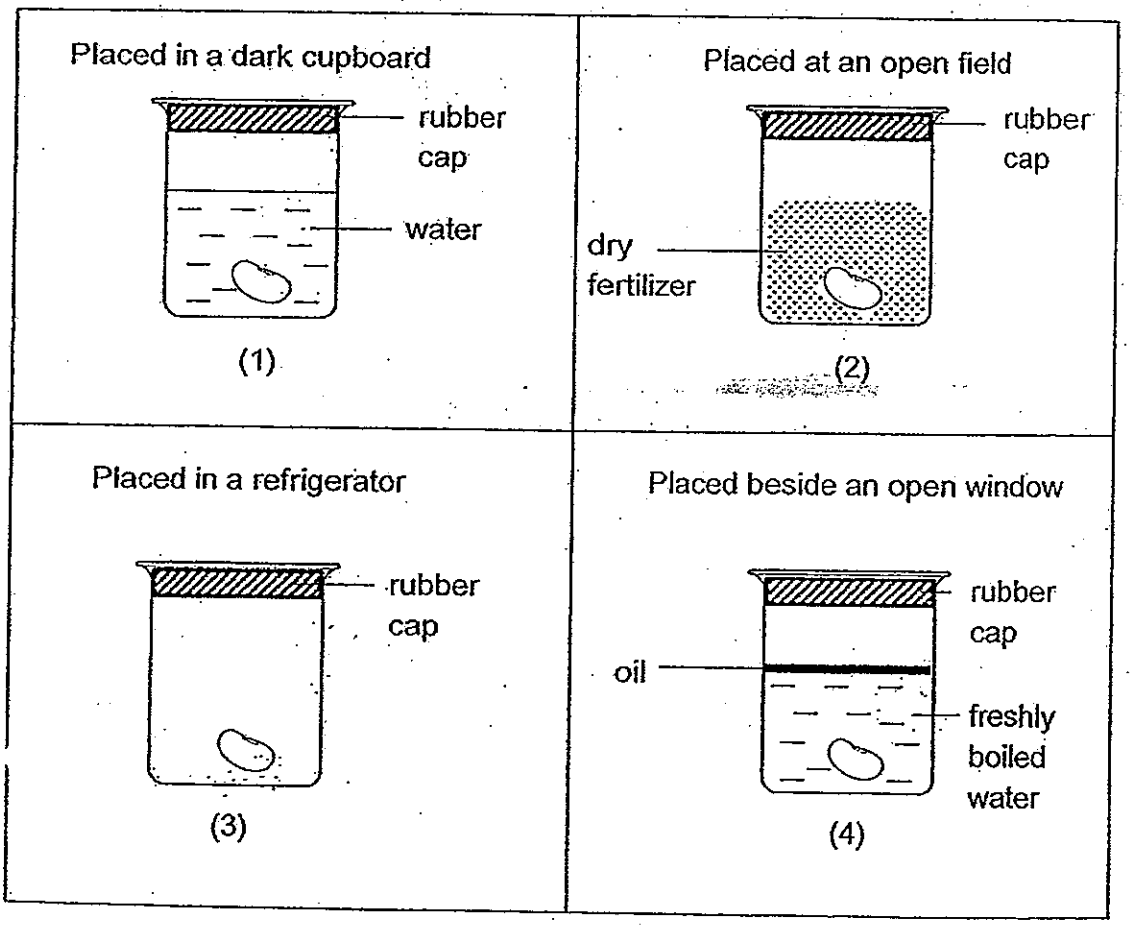
(3)



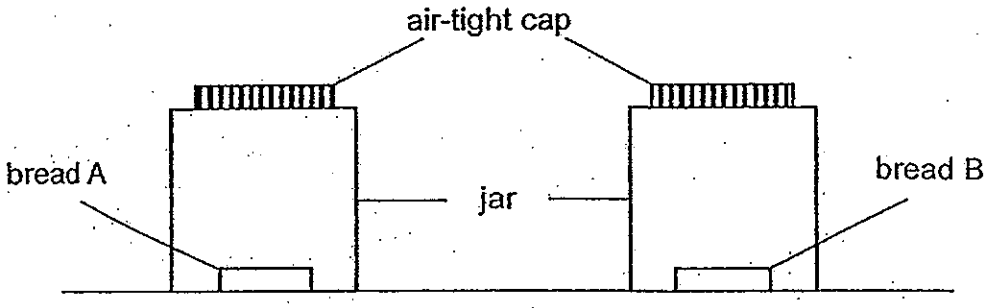
(4)



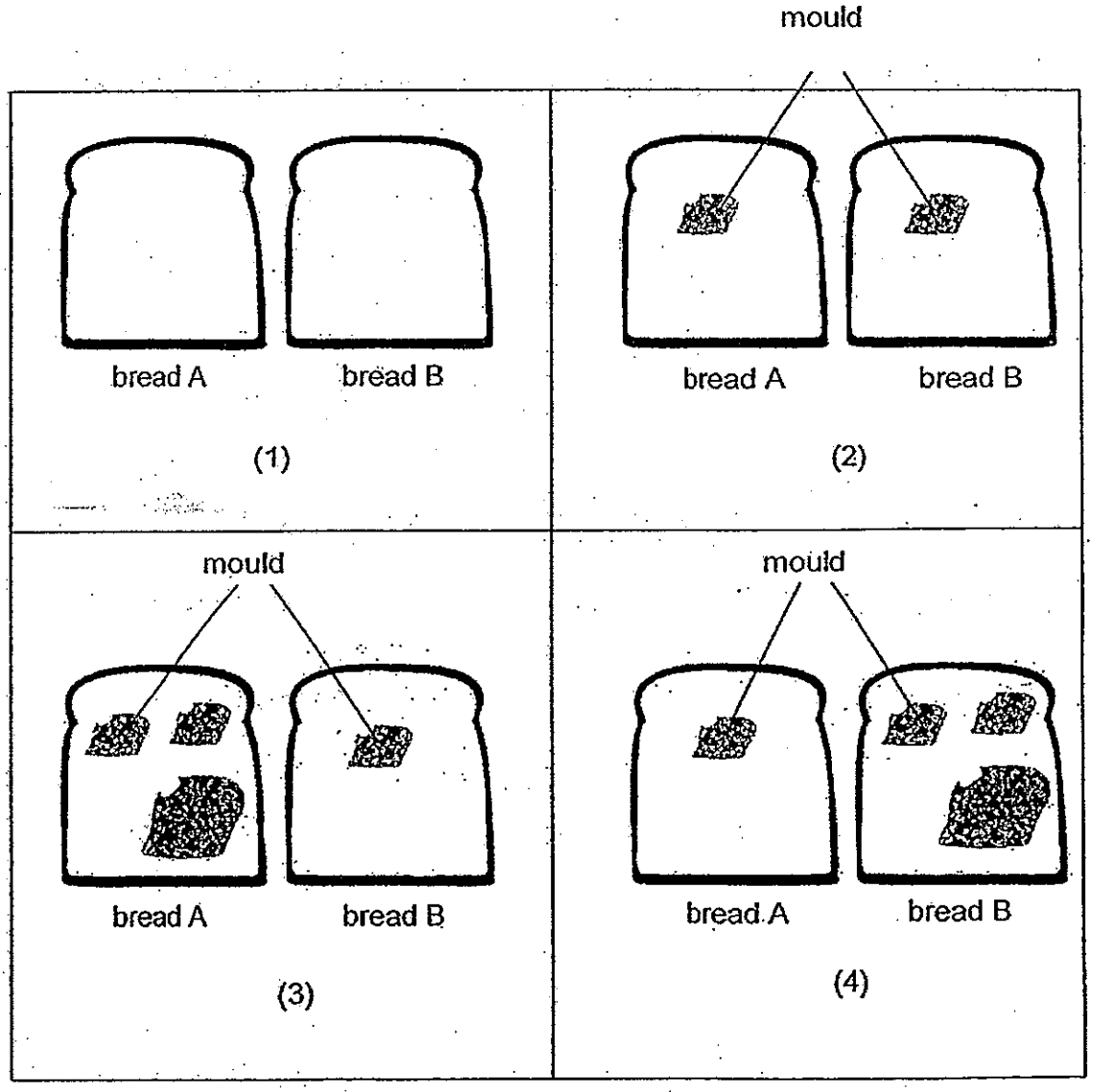
5. Fred placed a dry red bean seed into each of the four beakers as shown below. Which of the seeds will germinate?



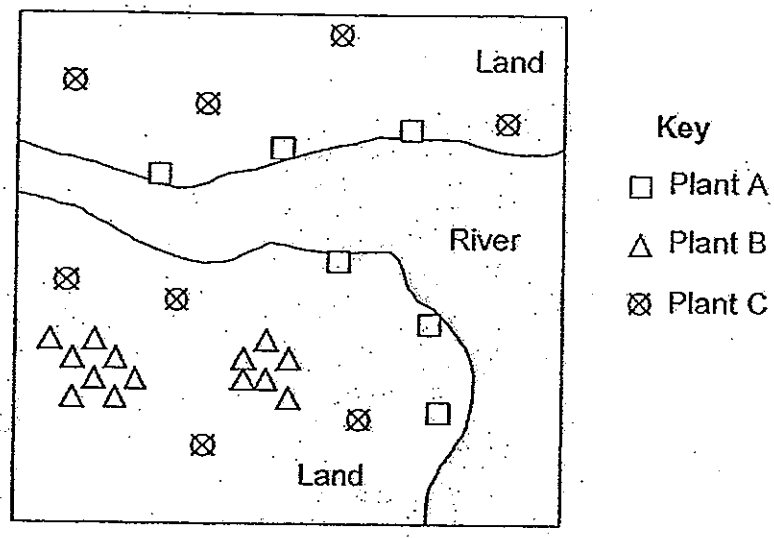
6. Wendy wanted to find out if the amount of moisture affects the amount of mould growing on bread. She left two similar pieces of bread, bread A and bread B, in two identical jars as shown below.



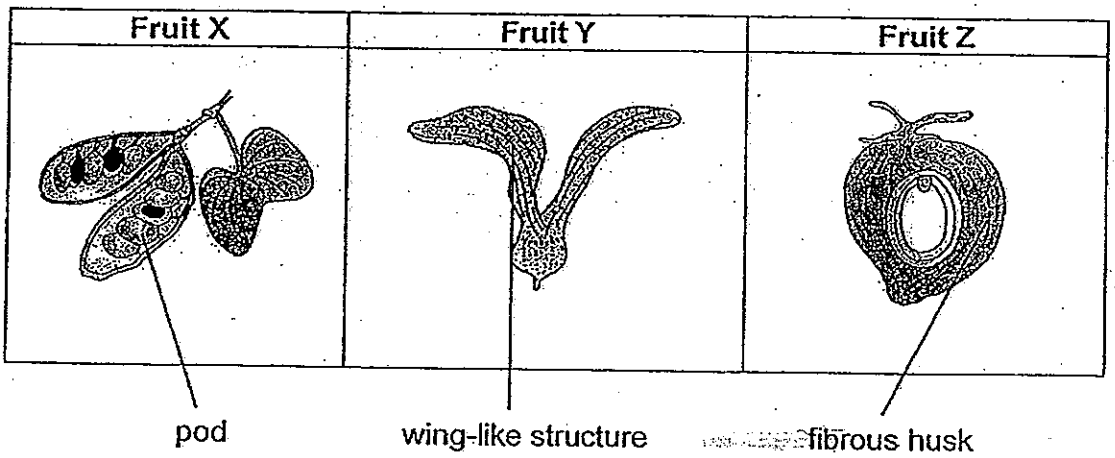
A few drops of water were added to bread B only. Then both jars were capped. After a few days, Wendy removed bread A and bread B from the jars and placed them side by side. Which of the following would be the most likely observation made?



7. A researcher mapped the location of Plant A, Plant B and Plant C in an area as shown below.

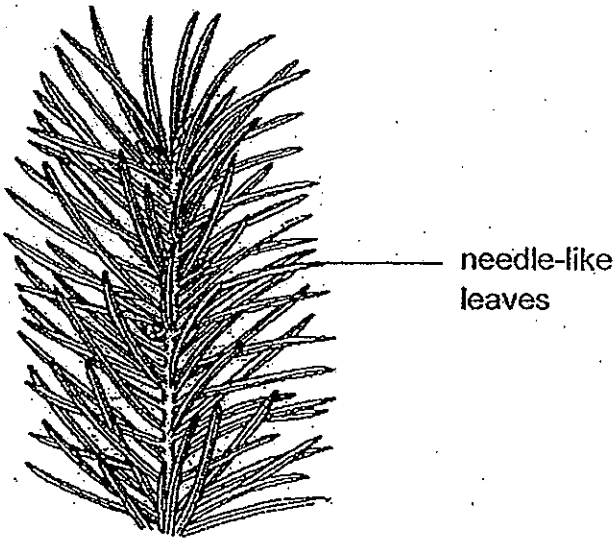


The researcher found the following fruits in the same area.
Which of the following matches the fruits to the parent plants?



	Fruit X	Fruit Y	Fruit Z
(1)	Plant A	Plant B	Plant C
(2)	Plant A	Plant C	Plant B
(3)	Plant B	Plant C	Plant A
(4)	Plant C	Plant B	Plant A

8. Emily studies the leaves of Plant X as shown below.



Plant X

How do the needle-like leaves help plant X survive in its habitat?

(1) They help to increase the rate of photosynthesis.
(2) They help to reduce heat loss to the surroundings.
(3) They help to reduce water loss to the surroundings.
(4) They help to hold the plant upright to obtain sunlight.

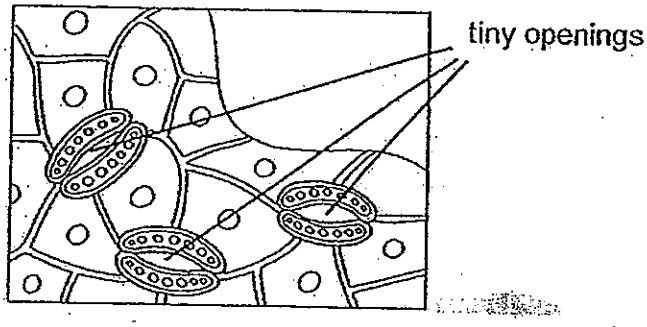
9. Four boys competed in a 100-metre race. The table below shows their breathing rates before and immediately after the race.

Name	Breathing rate (number of breaths per minute)	
	Before the race	Immediately after the race
Malcolm	18	23
Nelson	20	27
Oliver	21	26
Patrick	19	24

Based on the table, which of the following is definitely true?

(1) Malcolm is the fittest boy because his breathing rate after the race is lowest.
(2) The older boys' breathing rates increased more than that of the younger boys'
(3) The increase in the number of breaths per minute is the same for Oliver and Patrick.
(4) Nelson is the fastest runner because his breathing rate after the race is highest.

10. The diagram below shows the underside of a leaf.

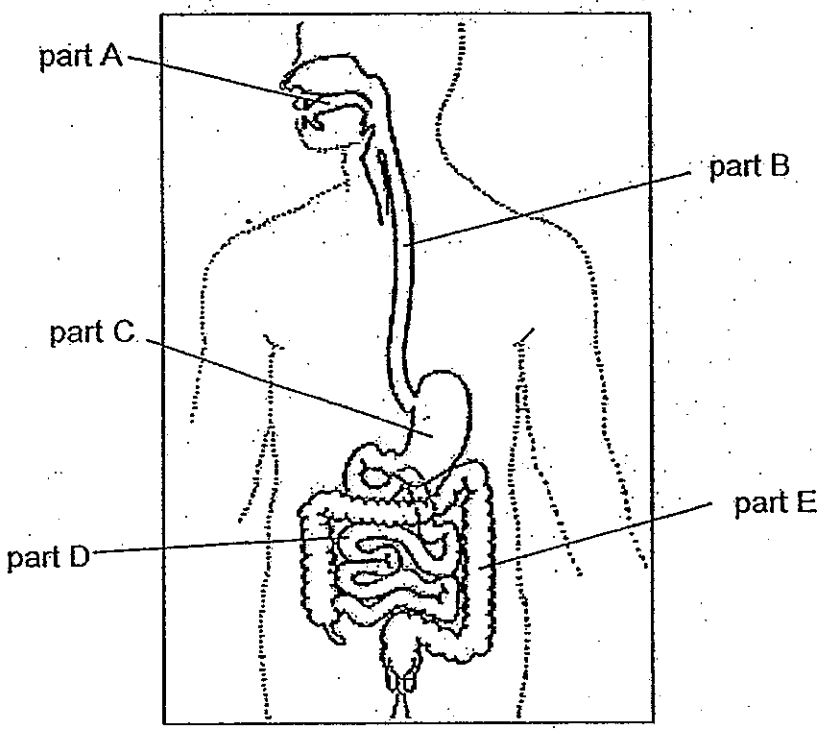


Which of the following are the functions of the tiny openings?

A Take in sunlight to make food
B Allow the plant to remove excess water as water vapour
C Allow the plant to exchange gases with its surroundings
D Transport food made in the leaves to the rest of the plant

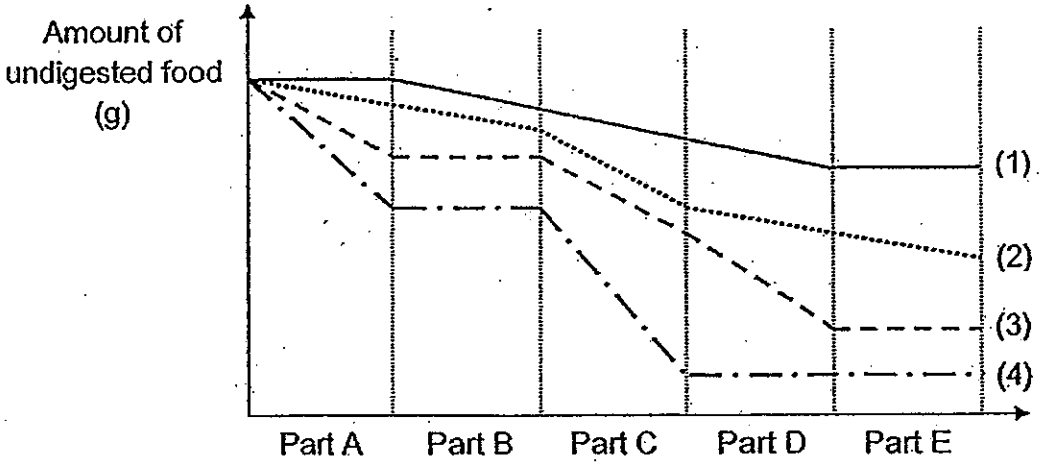
(1) B and C only
(2) C and D only
(3) A, B and D only
(4) A, C and D only

11. A scientist wanted to investigate how digestion takes place in the body. He took samples of food as it passed through five parts, A, B, C, D and E, of the digestive system as shown below.

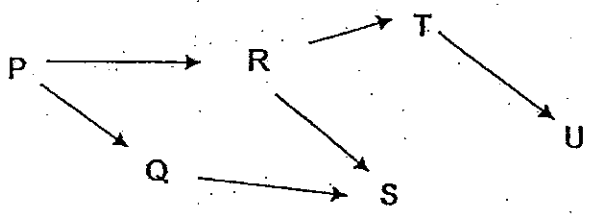


He plotted the amount of undigested food at the five parts on a graph below.

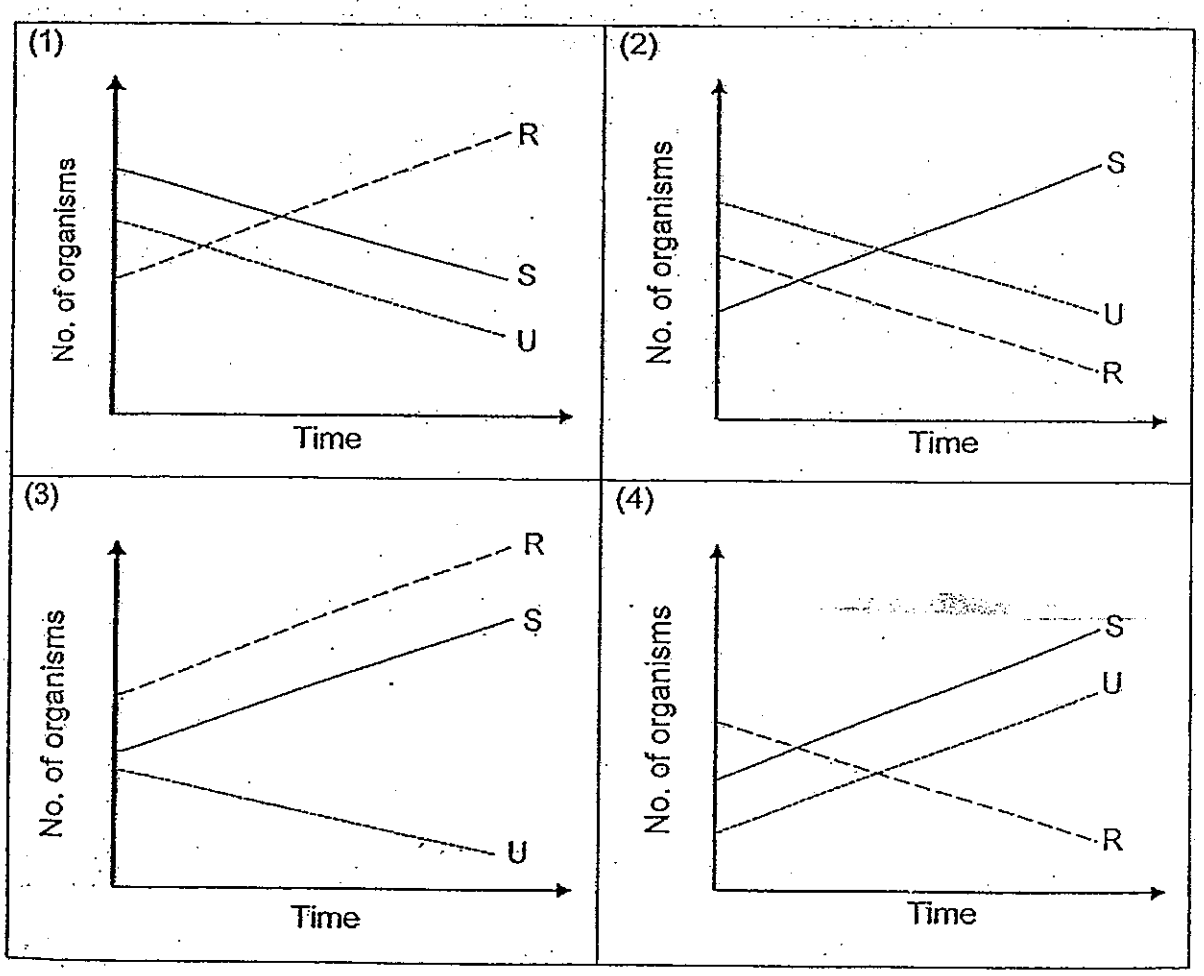
Which line best represents the relative amount of undigested food in the various parts of the human digestive system?



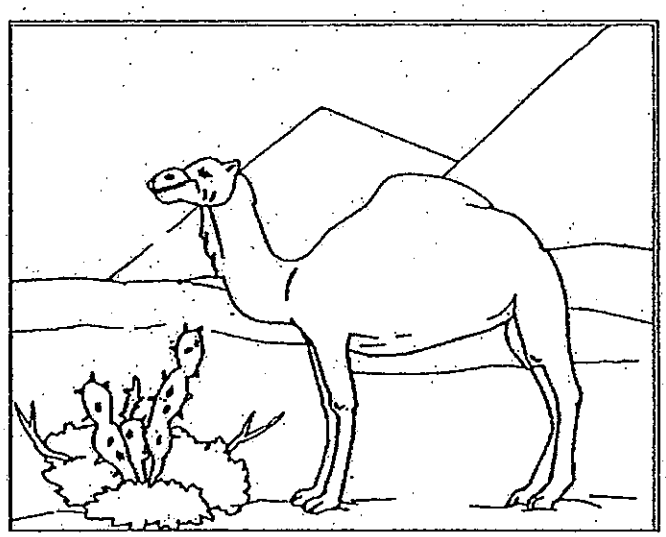
12. Study the food web below.



When animal T migrated out of the habitat, the number of animal Q remains the same.
Which of the following graphs shows how the populations of R, S and U are most likely to be affected?



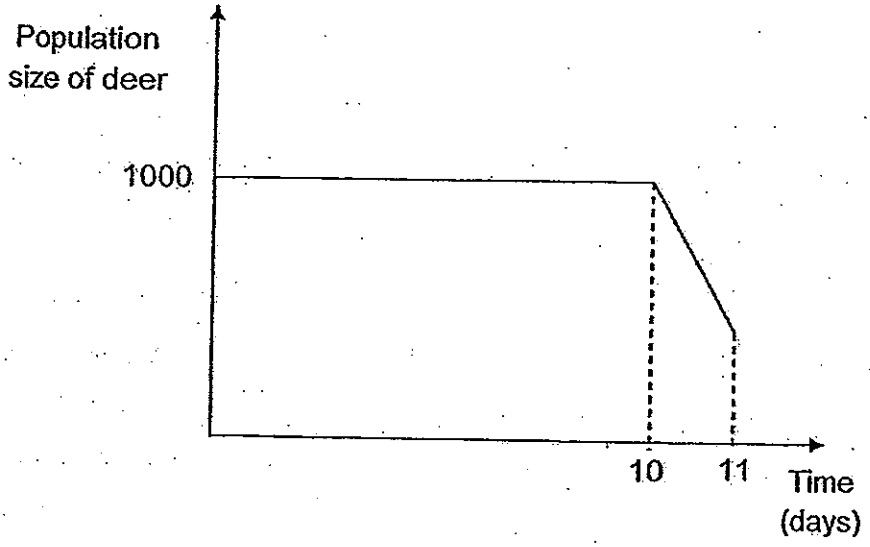
13. As camels live in areas with low rainfall, there is a lack of food so they feed on dried leaves, thorny twigs and cacti.



Which of the following is a structural adaptation that helps the camel feed on its food?

(1) Hard hooves to move on desert vegetation.
(2) A hump to store fat so that it need not feed so often
(3) Bending its neck down to feed on desert plants.
(4) Thick, leathery lips which prevent its mouth from being pierced or cut easily.

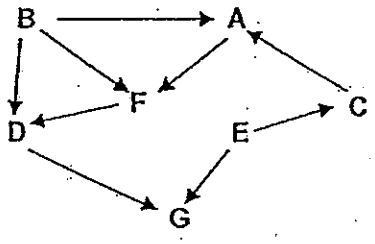
14. A scientist was studying a healthy population of deer in a forest over time. He noticed a sudden change in the population size of deer after the 10th day.



Which of the following explains the change in the population size of deer after the 10th day?

(1) A tiger entered the forest and started to hunt the deer.
(2) A forest fire started by farmers clearing the forest spread out of control.
(3) A disease started to spread among the forest plants from Day 10 onwards.
(4) A species which competes with the deer for food was introduced on Day 10.

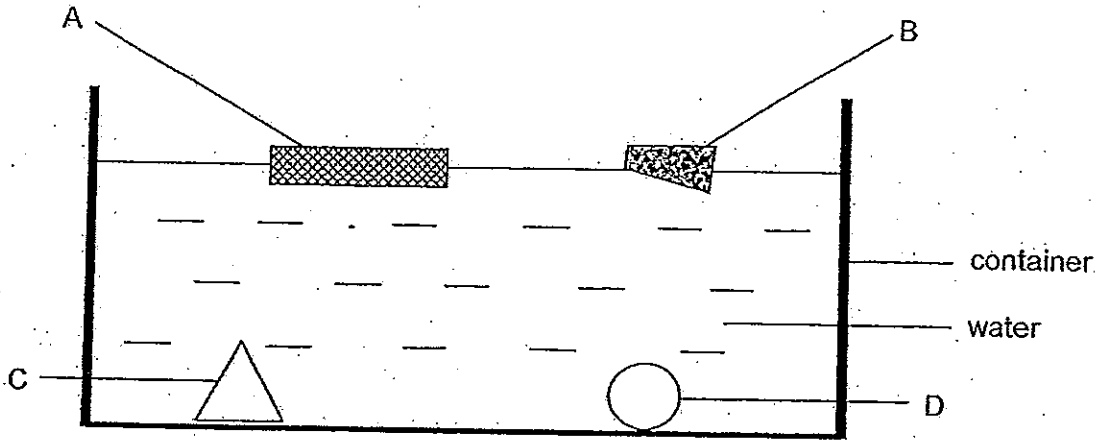
15. The food web below shows the relationship between 7 organisms, A, B, C, D, E, F and G, in a habitat.



Based on the food web, which of the following shows the correct classification of the organisms?

	Producer(s)	Predator(s)	Prey
(1)	B only	A, C, D and G only	A and E only
(2)	B and E only	A, D, F and G only	A, C, D and F only
(3)	B and E only	C, D, F and G only	C, D, F and G only
(4)	B, E and F only	A, C, D and G only	A, C, F and G only

16. The diagram below shows four objects, A, B, C and D, in a container of water. They are made of different materials.



Based on the above diagram, which of the following classification tables correctly represents how the objects, A, B, C and D, are classified?

Objects	
Does not allow any light to pass through	**Allows most light to pass through**
B	A, C, D

Table W

Objects	
Float on water	**Sink in water**
A, B	C, D

Table X

Objects	
With pointed edges	**No pointed edges**
A, B, C	D

Table Y

Objects	
Hard	**Soft**
C, D	A, B

Table Z

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

17. Diagram K shows some crushed ice being heated in a test tube. After all the ice had melted, the water was heated to 60°C. Then the flame was removed and the water was allowed to cool as shown in diagram L.

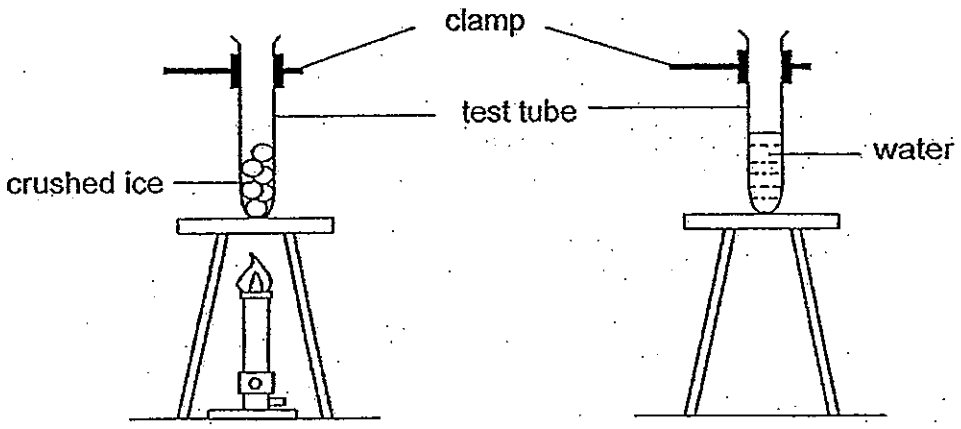
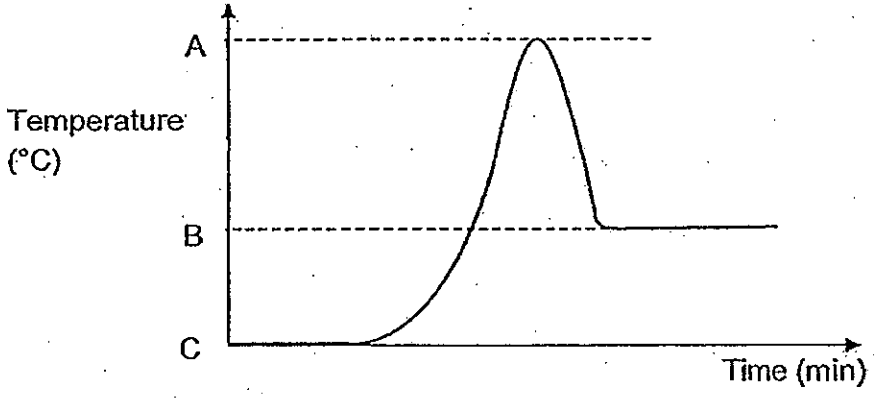


Diagram K Diagram L

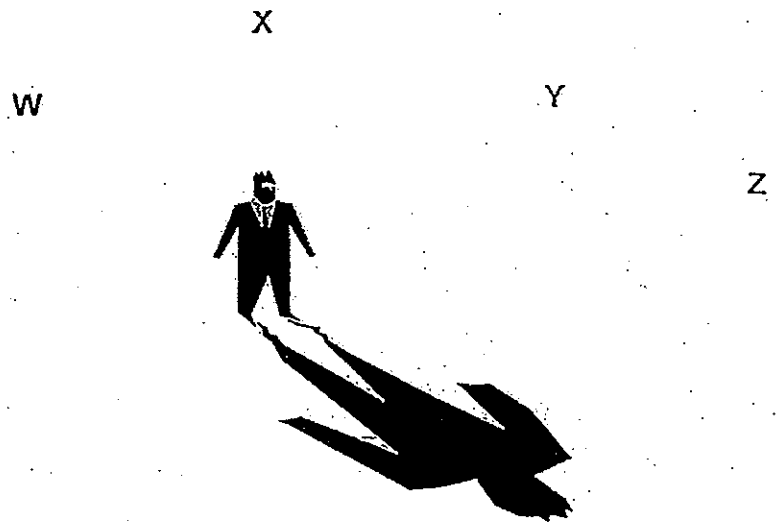
The temperature of the melting ice and heated water over a period of time was plotted in a graph shown below.



Which of the following represents A, B and C?

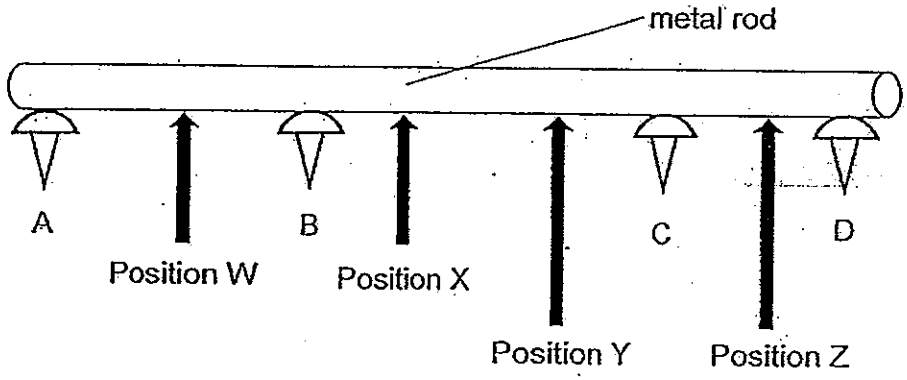
	A	B	C
(1)	Room temperature	Melting point of ice	Water at 60°C
(2)	Boiling point of water	Room temperature	Freezing point of water
(3)	Water at 60°C	Room temperature	Melting point of ice
(4)	Water at 60°C	Melting point of ice	Room temperature

18. A man standing on a flat ground noticed his shadow cast in front of him. At which position, W, X, Y or Z, is the Sun most likely to be found at?



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

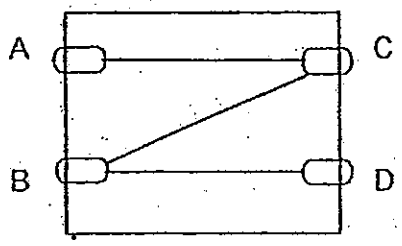
19. Four thumbtacks, A, B, C and D, were attached to a metal rod with some wax. When the metal rod was heated at a certain position with a candle flame, the thumbtacks started to drop in the order of B, C, A and D.



At which position is the flame most likely to be?

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

20. The diagram below shows a circuit card. Four paper clips are used to secure wires onto the card.



A circuit tester is connected to two of the paper clips at a time. The results are recorded below.

Paper clips tested	Bulb of circuit tester
A and B	Does not light up
A and C	Lights up
B and C	Does not light up
B and D	Does not light up
C and D	Does not light up

Which of the paper clips is/are definitely made of plastic?

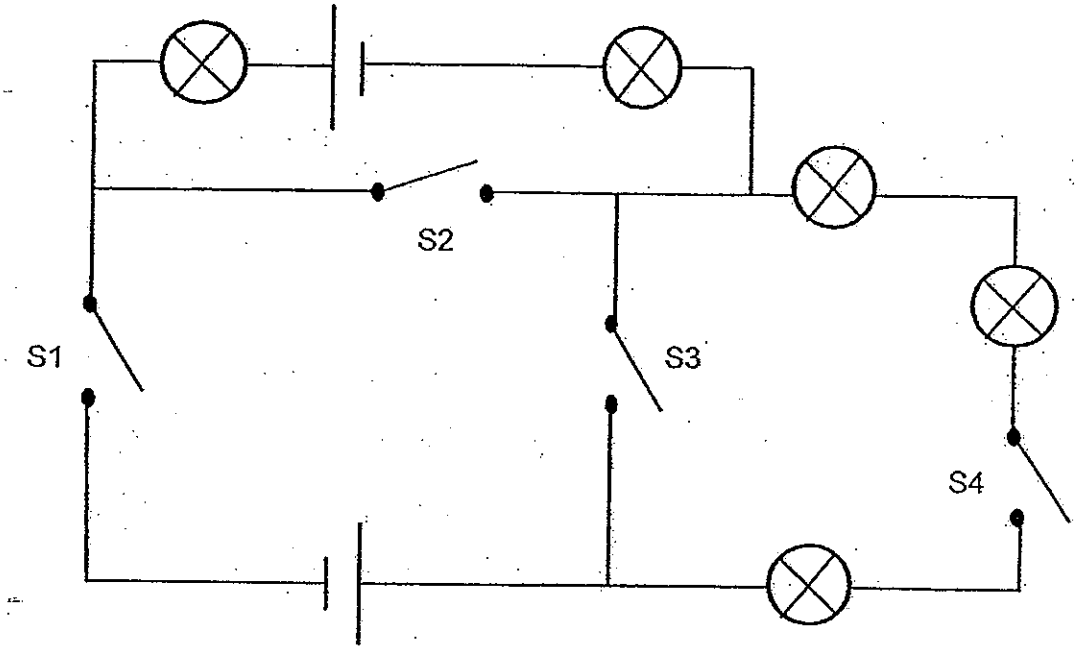
(1) B only

(2) D only

(3) A and C only

(4) A, C and D only

21. The diagram below shows 5 bulbs connected together in a circuit.



Which of the switches, S1, S2, S3 and S4, must be closed for all the bulbs to light up?

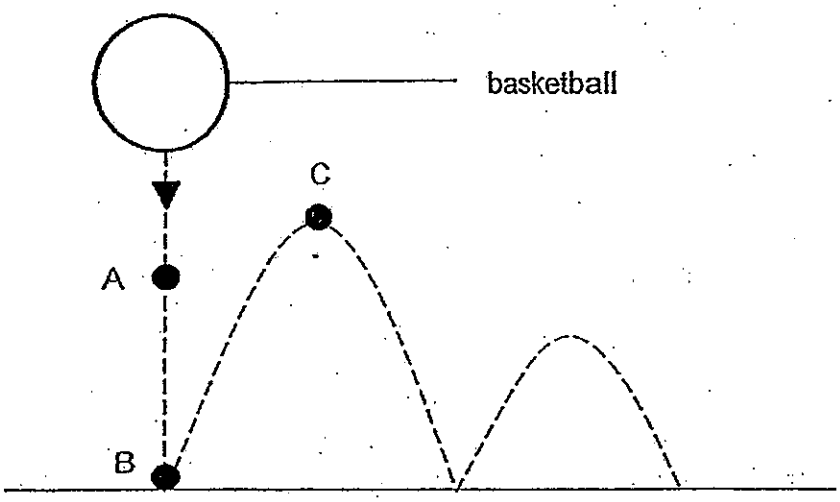
(1) S1 and S4 only

(2) S2 and S4 only

(3) S3 and S4 only

(4) S2 and S3 only

22. Adrian dropped a basketball from a certain height. The ball bounced to a lower height each time it hits the ground as shown in the diagram below.



Which of the following describes the change in kinetic energy and gravitational potential energy from point A to point B and from point B to point C?

	Point A to Point B		Point B to Point C	
	Kinetic energy	**Gravitational potential energy**	**Kinetic energy**	**Gravitational potential energy**
(1)	decreases	increases	decreases	increases
(2)	increases	decreases	increases	decreases
(3)	decreases	decreases	increases	increases
(4)	increases	decreases	decreases	increases

23. Amy set up an experiment using a balance and three magnets, J, K and L. All three magnets have the same mass and size.

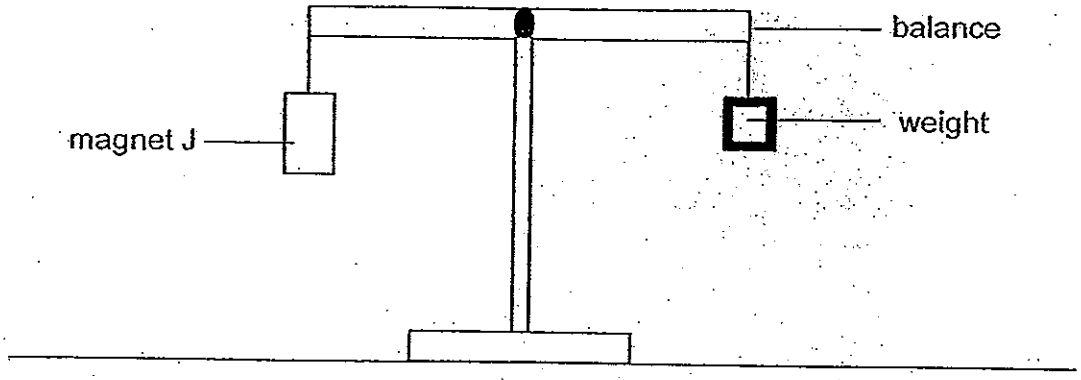


Diagram 1

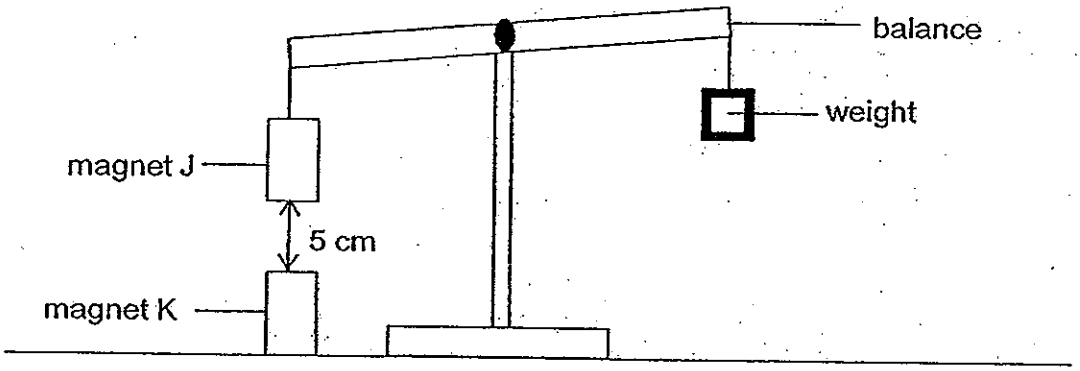


Diagram 2

When magnet K is placed below magnet J as shown in Diagram 2, the distance between the two magnets is 5 cm. When magnet K is then replaced by magnet L, the distance between magnet J and magnet L is 2 cm.

Which of the following statements is/are true?

A There is a force of repulsion between magnet J and magnet K.

B Magnet L can attract more steel paper clips than magnet K from the same distance.

C When magnet K is turned around such that the opposite end faces upward, the balance will tilt downward at the weight.

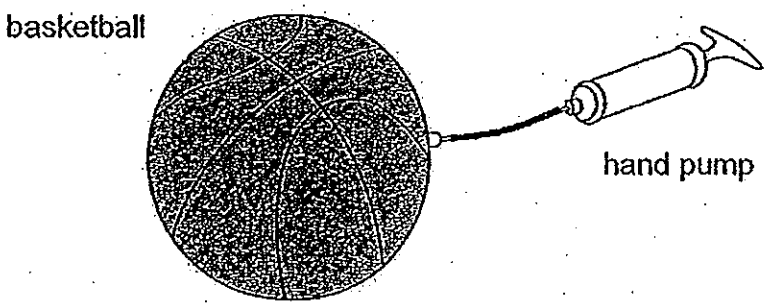
(1) B only

(2) A and C only

(3) B and C only

(4) A, B and C

24. A hand pump was used to pump more air into an inflated basketball.



Which of the following explains why the size of the basketball remained the same?

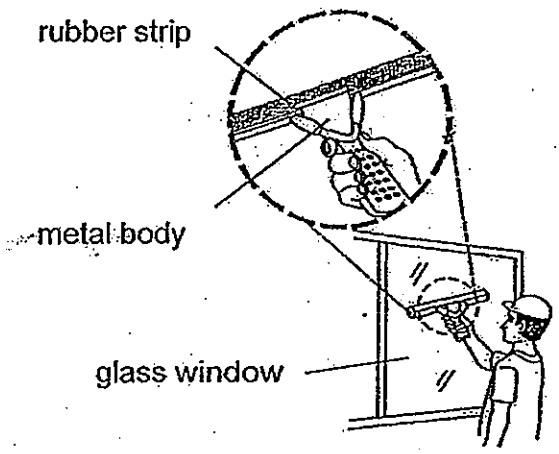
(1) Air occupies space.

(2) Solids have a definite shape.

(3) Gases have no definite volume.

(4) The mass of the basketball remains the same.

25. Irfan noticed a worker using a tool to clean a glass window. He observed that the rubber strip of the tool did not make any scratches on the window.



Which of the following conclusion can Irfan most likely make?

(1) Glass is harder than rubber.

(2) Glass is stronger than rubber.

(3) The glass window is smoother than the rubber strip.

(4) There is no friction between the glass window and the rubber strip.

26. Three pupils each made a statement about the benefit of using paper bags compared to the disadvantage of using plastic bags in terms of their impact on the environment as shown below:

Thomas: Paper bags can be reused while plastic bags cannot be reused.

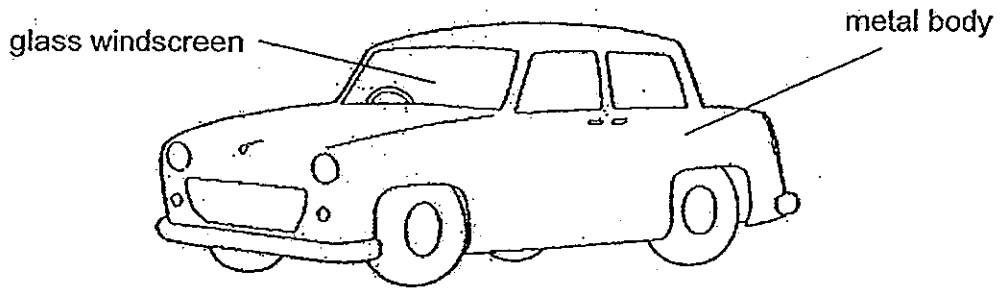
Aisha: Paper bags are biodegradable while most plastic bags are not biodegradable.

Xing Rui: Paper bags are man-made while plastic bags are made from natural resources.

Which of the following pupil/s has/have made a correct statement?

(1) Aisha only
(2) Thomas only
(3) Aisha and Xing Rui only
(4) Thomas and Xing Rui only

27. The picture below shows a car which was parked in the open on a sunny day.



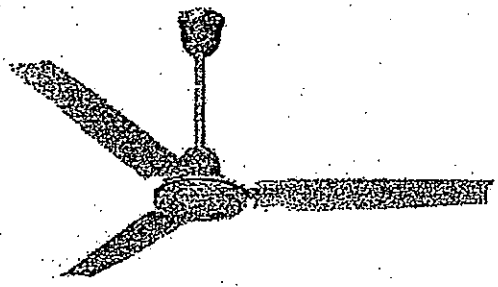
The temperature of the air inside the car and outside the car was measured at 11.00 a.m. and 3.00 p.m.

Time	Temperature of air inside the car (°C)	Temperature of air outside the car (°C)
11.00 a.m.	40	31
3.00 p.m.	60	33

Which of the following explains the above observations?

(1) More heat was trapped in the car due to the greenhouse effect.
(2) The metal body conducted more heat than the glass windscreen.
(3) There was more carbon dioxide inside the car than outside the car.
(4) There was an increase in the amount of greenhouse gases in the car.

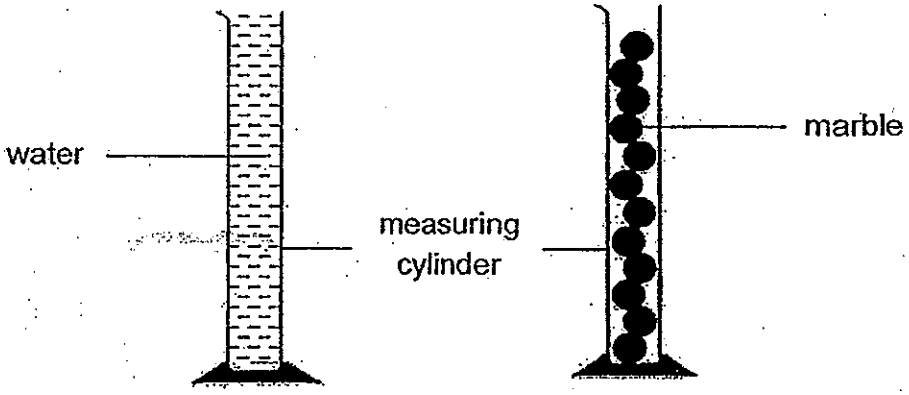
28. The diagram below shows a ceiling fan.



Which of the following correctly shows the energy conversion when the fan is in operation?

(1) Electrical energy ⟶ kinetic energy + sound energy
(2) Electrical energy ⟶ kinetic energy ⟶ sound energy
(3) Chemical potential energy ⟶ kinetic energy + sound energy
(4) Chemical potential energy ⟶ kinetic energy ⟶ sound energy

29. Mani filled a 250 cm^3 measuring cylinder with water. He filled another 250 cm^3 measuring cylinder with only small marbles as shown below. Next, he transferred both the water and the marbles into a 1000 cm^3 measuring cylinder.



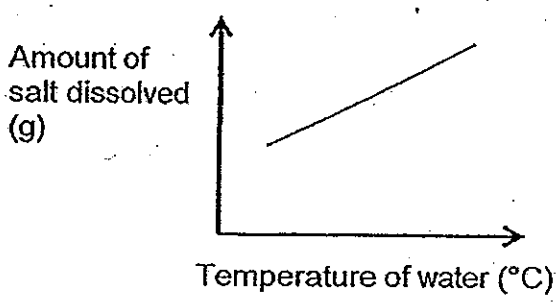
What was the most likely volume occupied by the water and the marbles in the 1000 cm^3 cylinder?

(1) 250 cm^3
(2) 450 cm^3
(3) 500 cm^3
(4) 1000 cm^3

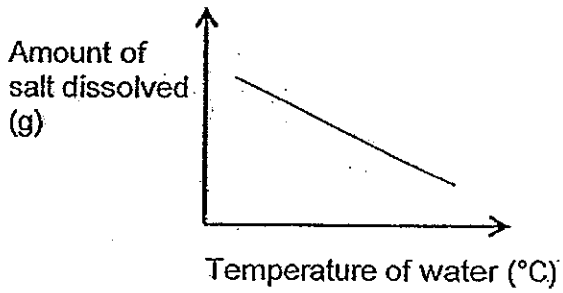
30. Matthew wanted to find out how a change in the temperature of water would affect the amount of salt dissolved in water over a fixed period of time. He recorded his findings in a table shown below.

Temperature of water (°C)	Amount of salt dissolved (g)
80	480
20	120
60	360
40	240

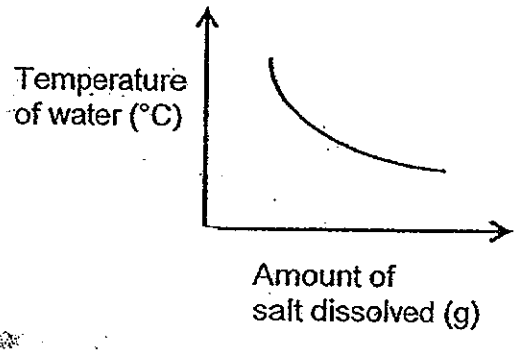
Which of the following graphs shows the correct results?



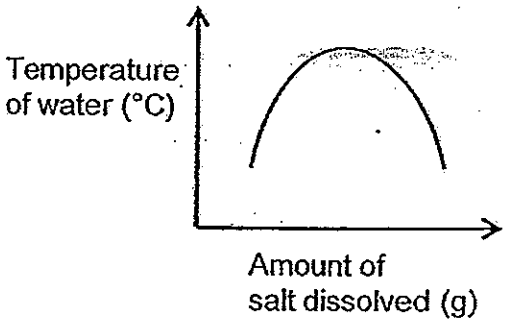
(1)



(2)



(3)



(4)

End of Booklet A

新加坡福建会馆属下五校小六统一考试

道南 • 爱同 • 崇福 • 南侨 • 光华

SINGAPORE HOKKIEN HUAY KUAN
5-SCHOOL COMBINED PRIMARY 6 PRELIMINARY EXAMINATIONS
TAO NAN • AI TONG • CHONGFU • NAN CHIAU • KONG HWA

2013
科学 SCIENCE

BOOKLET B

Date : 27 August 2013
Total Time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

√ Write your school's name, name, register number and class.
√ Do not open this booklet until you are told to do so.
√ Follow all instructions carefully.
√ Answer all questions.

This booklet consists of 19 printed pages.

School : _____

Name : _____ ( )

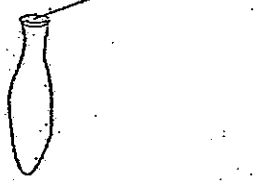
Class : _____

TOTAL	/ 40

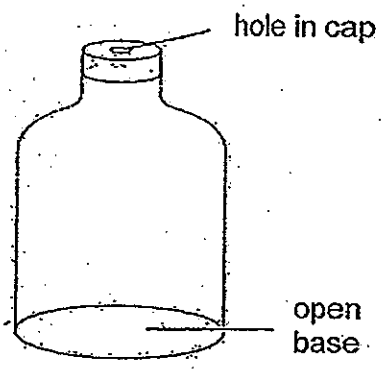
Section B (40 marks)

Write your answers to the questions, from 31 to 44, in the spaces provided.

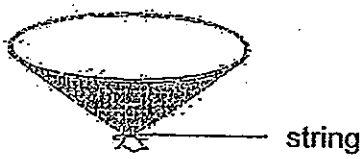
31. Simon made a model of the human respiratory system with four main parts, A, B, C and D.



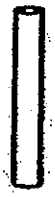
A: balloon



B: plastic bottle



C: rubber sheet



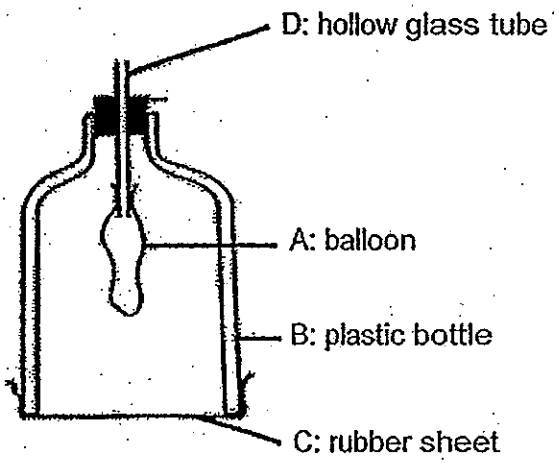
D: hollow glass tube

(a) Match the parts, A, B, C and D, to the parts of the respiratory system in the table below. Part C, has been matched to the diaphragm for you. [1]

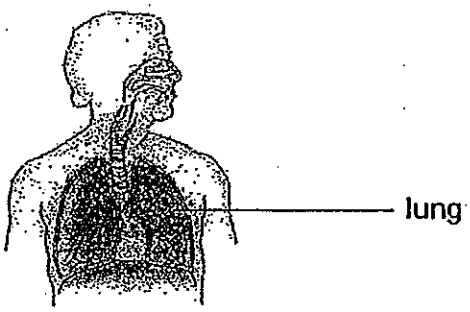
Parts of the respiratory system	Parts
lung	
diaphragm	C
wind pipe	
rib cage	

1

(b) Simon completed constructing the lung model with the parts, A, B, C and D, as shown below.



Simon's teacher showed him the following picture of a human respiratory system and suggested that Simon improve on his current model.

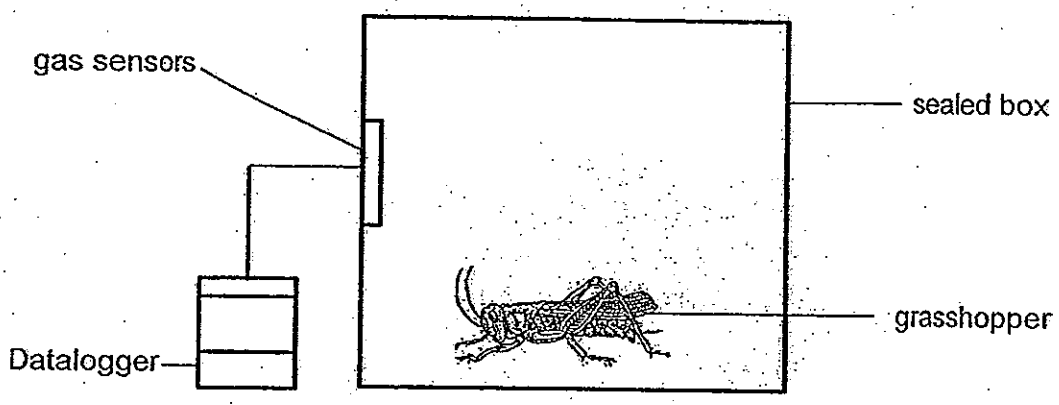


Suggest two ways in which Simon could improve his lung model. Provide a reason for each of the ways. [2]

	Ways to improve the lung model	Reason
1		
2		

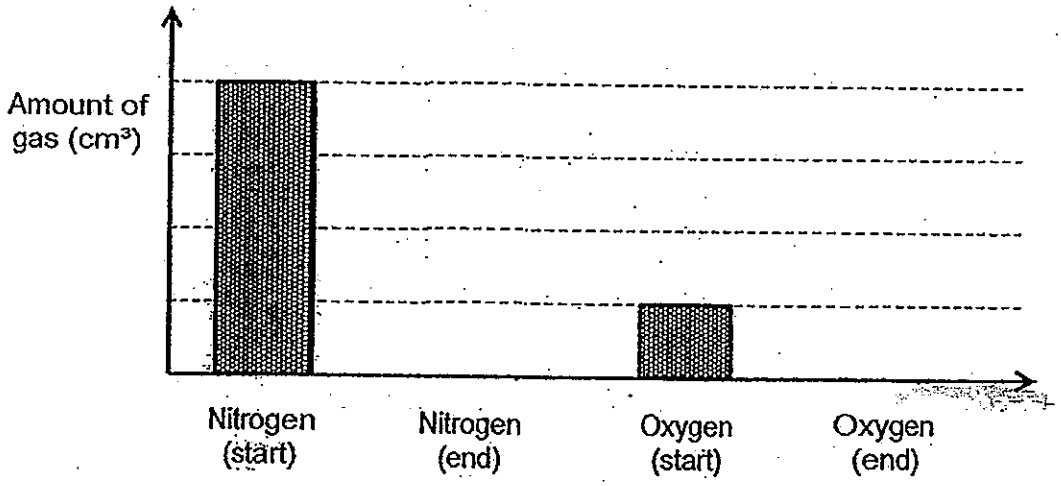
2

32. Daniel carried out an experiment. He placed a live grasshopper into a sealed box as shown below.



He then used a datalogger and gas sensors to record the amount of nitrogen and oxygen in the box over a period of 12 hours.

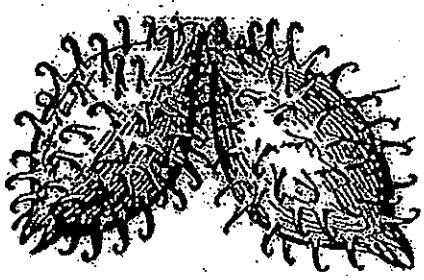
(a) The graph below shows the amount of nitrogen and oxygen in the box at the start of the experiment. Complete the graph by showing the amount of nitrogen and oxygen at the end of the experiment after 12 hours. [2]



(b) Explain the change in the amount of oxygen at the end of the experiment. [1]

3

33. Seeds W are dispersed by animals.



Seeds W

(a) Based on the picture above, describe the adaptation these seeds have that help them in their dispersal by animals. [1]

_____

_____

(b) Label on the diagram, the adaptation in (a) [1]

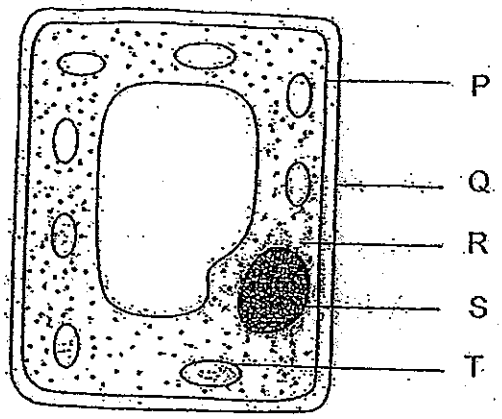
(c) Explain how the adaptation mentioned in (a) helps in the fruit dispersal. [1]

_____

_____

3

34. The diagram below shows a plant cell.



(a) Which part/s, P, Q, R, S and/or T, is/are not found in an animal cell? [1]

_____

(b) The plant cell was soaked in a liquid containing substance X. The cell does not allow substance X to enter. When part Q was removed, substance X still could not enter the cell. Give a reason for this observation. [1]

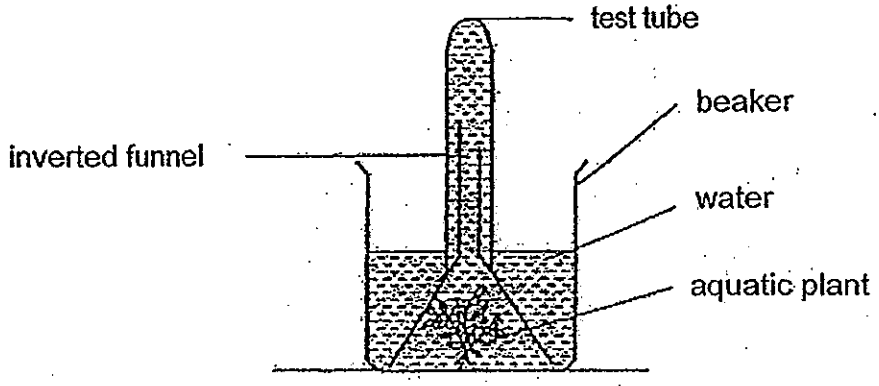
_____

_____

_____

2

35. Alan wanted to find out if different leaf sizes produce different amounts of oxygen during photosynthesis. He set up the experiment below using an aquatic plant with small leaves.



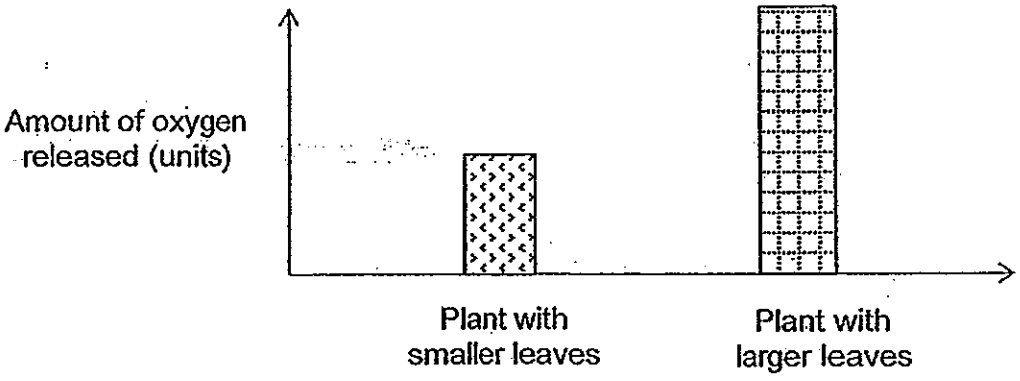
He did not have a gas sensor to measure the amount of oxygen released by the leaves.

(a) Suggest how he could measure the amount of oxygen released by the plant without additional apparatus. [1]

_____

_____

(b) Alan conducted the experiment with another aquatic plant that had the same number of leaves which were larger. He presented his results in the graph shown below.



Based on the graph, what is the relationship between the amount of oxygen released and the size of the leaves [1]

_____

_____

2

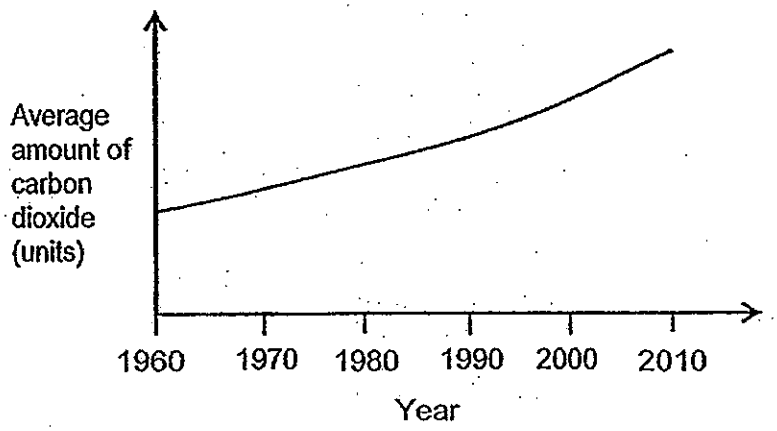
(c) Give a reason for your answer in (b). [1]

_____

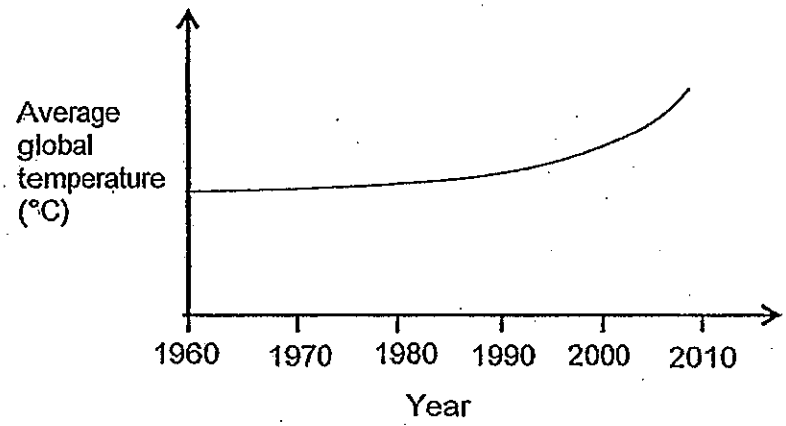
_____

1

36. The graph below shows the average amount of carbon dioxide in the atmosphere from 1960 – 2010.



The graph below shows the average global temperature readings from 1960 – 2010.



(a) What is the relationship between the amount of carbon dioxide in the atmosphere and the average global temperature? [1]

_____

_____

(b) Explain how reforestation (massive planting of trees) could reduce the average global temperature over time [2]

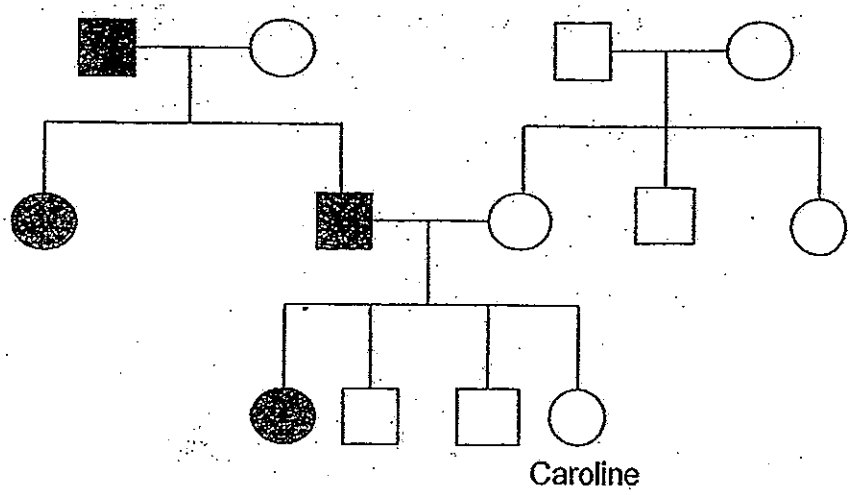
_____

_____

_____

3

37. The diagram below shows Caroline's family tree.



Key

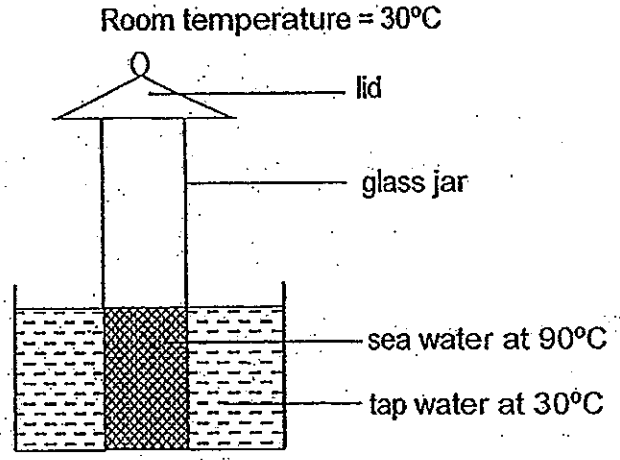
□	Male without attached earlobes	○	Female without attached earlobes
■	Male with attached earlobes	●	Female with attached earlobes

For each of the following statement, put a tick (√) in the correct box, based on the family tree provided. [2]

Statements	True	False	Not possible to tell
(a) Both of Caroline's grandfathers have attached earlobes.			
(b) Caroline's child would have no attached earlobes.			
(c) Caroline's sister inherited the attached earlobes trait from her father.			
(d) Caroline has one uncle.			

2

38. James poured some hot sea water into a glass jar. He placed the jar into a basin containing tap water at 30°C and covered it with a dry lid as shown in the set-up below.



(a) Which liquid, sea water or tap water, would show a decrease in temperature after 15 minutes? Explain your answer. [2]

_____

_____

(b) James removed the lid and collected 10ml of water which was found under the lid. Next, James repeated the experiment by replacing the tap water with ice water at 2°C. With this change, would the amount of water found under the lid be more than 10ml or less than 10ml? Give a reason for your answer. [2]

_____

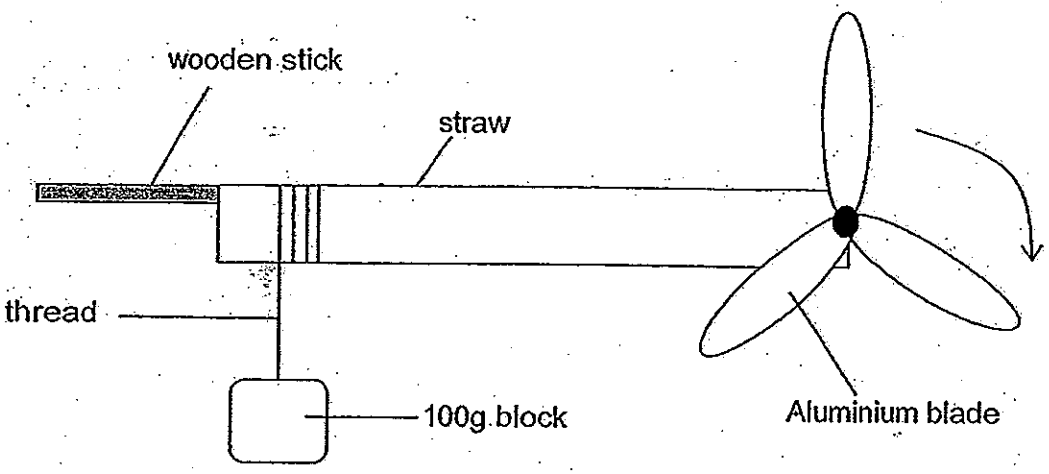
_____

_____

_____

4

39. Kay Wen constructed a home-made fan using a wooden stick inserted into a straw. A thread with a 100g block attached to it was wound around one end of the straw as shown below. The fan spun freely when the 100g block was released. Kay Wen counted the number of turns made by the blade of the fan in 10 seconds.



(a) Write in the boxes provided, the energy change and energy transfer involved when the block was released. [1]

_____ energy	→	_____ energy	→	_____ energy
(in the block)		(in the falling block)		(in the rotating blade)

1

Kay Wen repeated the activity with blocks of different masses, blades of different materials and a different number of blades. She recorded her results in the table below.

Set-up	Mass of block (g)	Material of blade	Number of blades	Number of turns made in 10 seconds
A	100	Aluminium	3	10
B	200	Aluminium	3	15
C	300	Aluminium	5	27
D	100	Copper	4	8
E	200	Copper	4	18
F	300	Copper	5	24

(b) What is the relationship between the mass of the block and the number of turns made in 10 seconds? [1]

_____

_____

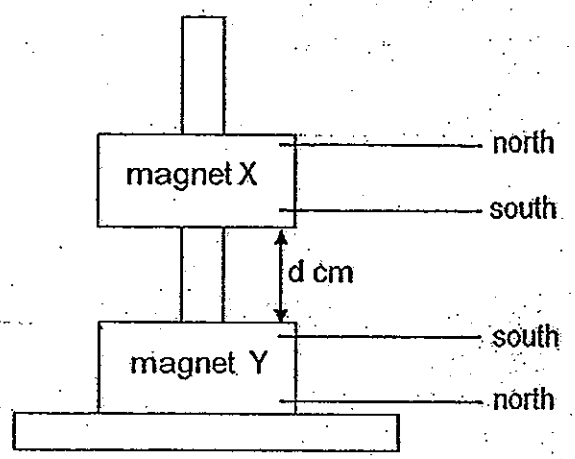
(c) Which two set-ups should Kay Wen choose to find out if blades of different materials affect the number of turns made in 10 seconds? [1]

_____

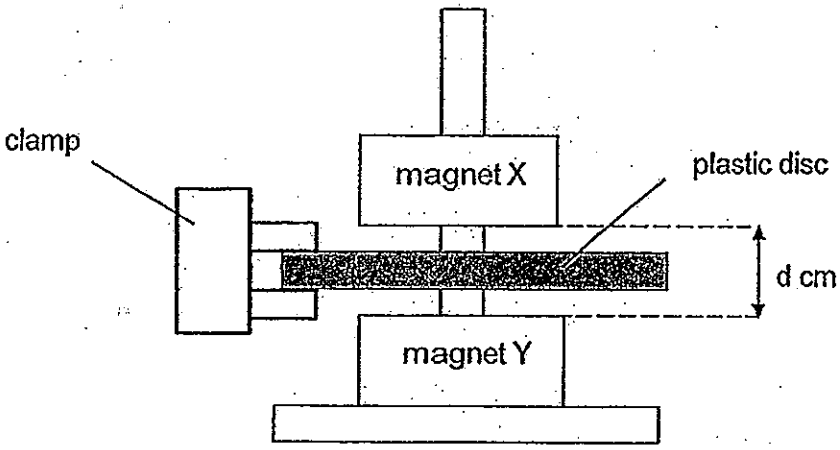
_____

2

40. The set-up below consists of two ring magnets, X and Y.



(a) Explain why ring magnet X is floating above ring magnet Y. [1]



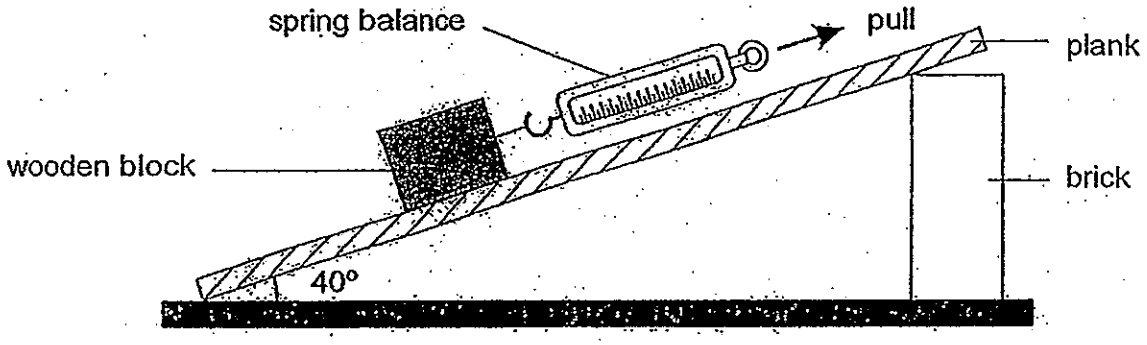
(b) A plastic disc is held in place between ring magnet X and ring magnet Y. The distance, d, remained the same.

(i) Based on your observation, name one property of the plastic disc. [1]

(ii) Explain why the distance, d, remained the same. [1]

3

41. Selvam placed a plank on a brick and measured the angle of inclination. He then used a spring balance to pull a 1-kg wooden block along the plank as shown below.
He measured the force needed to pull the block up the plank and recorded the readings.



(a) Using some powder, describe how he could repeat his experiment if he wanted to find out if adding powder would make the surface of the plank smoother. The steps, 2 and 4, had been written for you. [2]

Step	Experimental Procedure
1	
2	Place the same 1-kg wooden block on the plank
3	
4	Measure and record the amount of force needed to move the wooden block

2

42. Joel conducted an experiment to find out how different materials, A, B and C, affect the amount of light reflected at different distances between the material and the light source (d cm). The set-up is shown in Diagram 1.

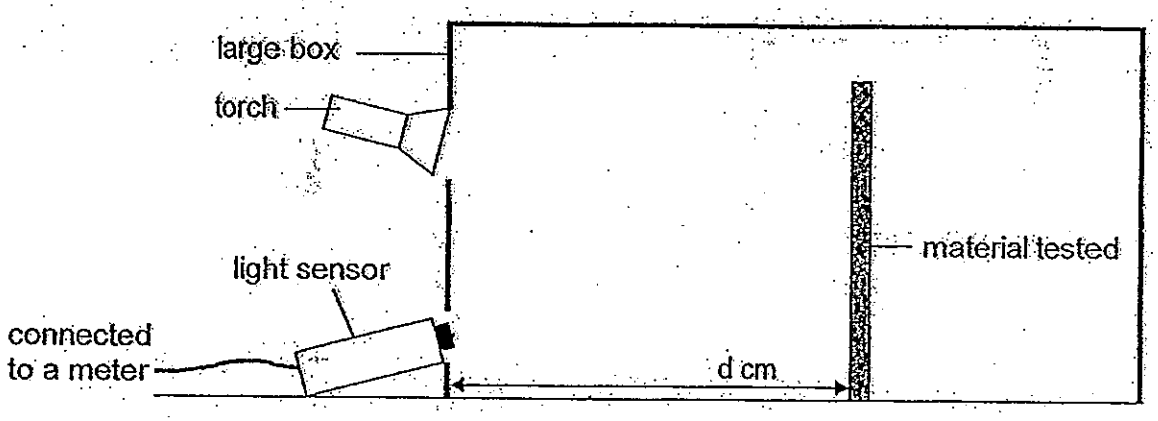
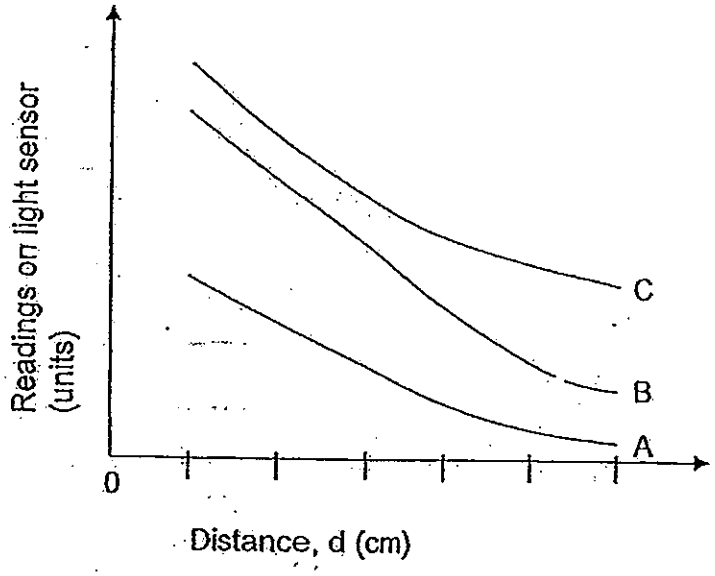


Diagram 1

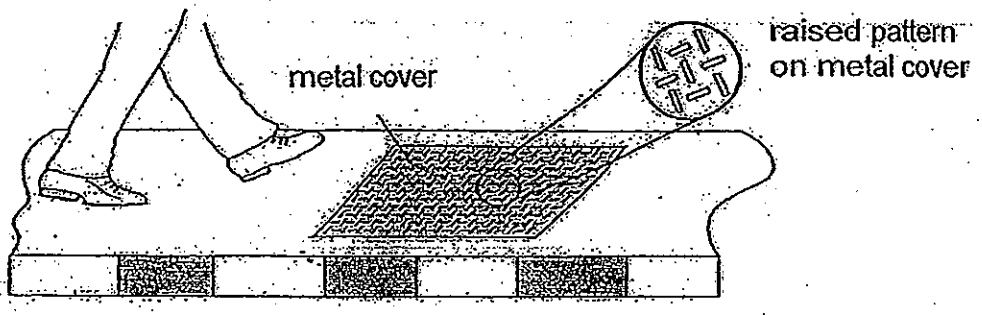
First, he placed material A at different distances away from the light source and each time, he used a light sensor to measure the amount of light that was reflected.
He repeated this activity with material B followed by material C. He recorded the results and plotted the graph below.



(a) Draw on Diagram 1, a ray of light to show how light from the torch is detected by the light sensor. [1]

1

(b) The diagram below shows some raised patterns on the metal cover of a drain.



How does the raised pattern help to prevent people from slipping? [1]

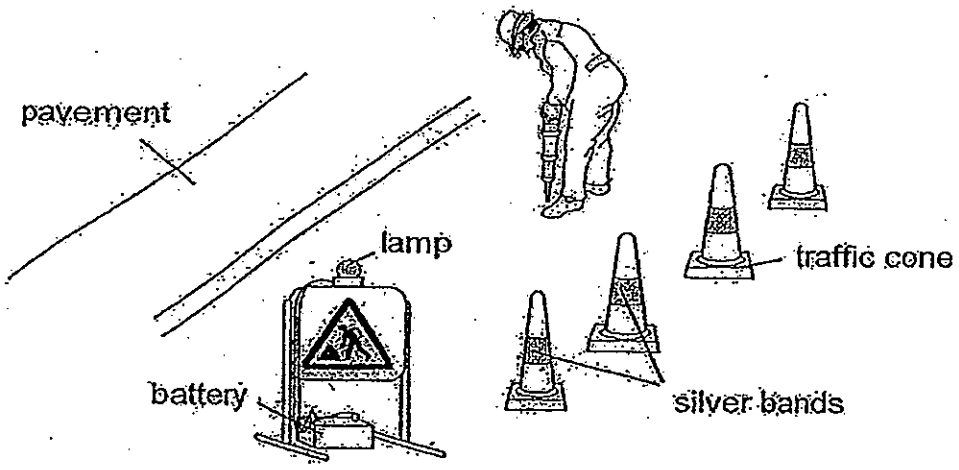
1

(b) Explain why Joel should conduct his experiment in an enclosed, dark box to ensure a fair test. [1]

(c) Put a tick/s in the boxes to indicate the variables that should remain the same to ensure a fair test. [1]

- ☐ Material of the box
- ☐ Position of the light sensor
- ☐ Intensity of the light source

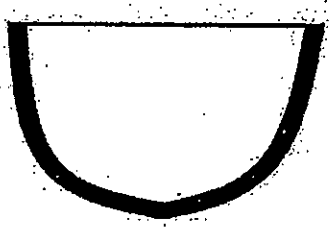
(d) The picture below shows a worker repairing the ground next to a pavement at night.



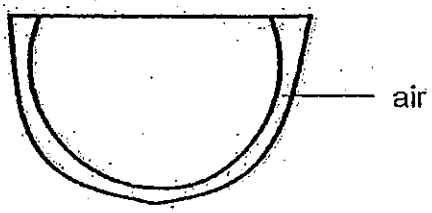
Based on the results of Joel's experiment, which material would be most suitable for making silver bands on traffic cones to warn motorists who travel at night? Explain your answer. [1]

3

43. Mrs Tey poured the same amount of hot tea into a single-layer glass cup and a double-layer glass cup as shown below.



single-layer glass cup



double-layer glass cup

When holding the cup with her hands, Mrs Tey noticed that the double-layer cup felt cooler than the single-layer cup. Explain her observation. [2]

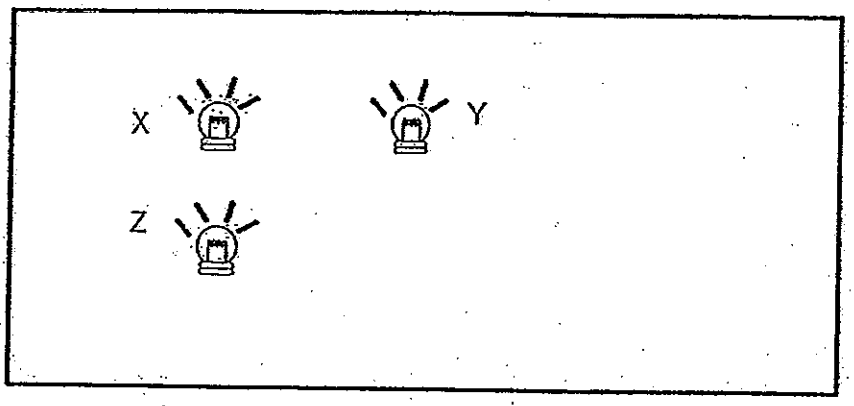
_____

_____

_____

2

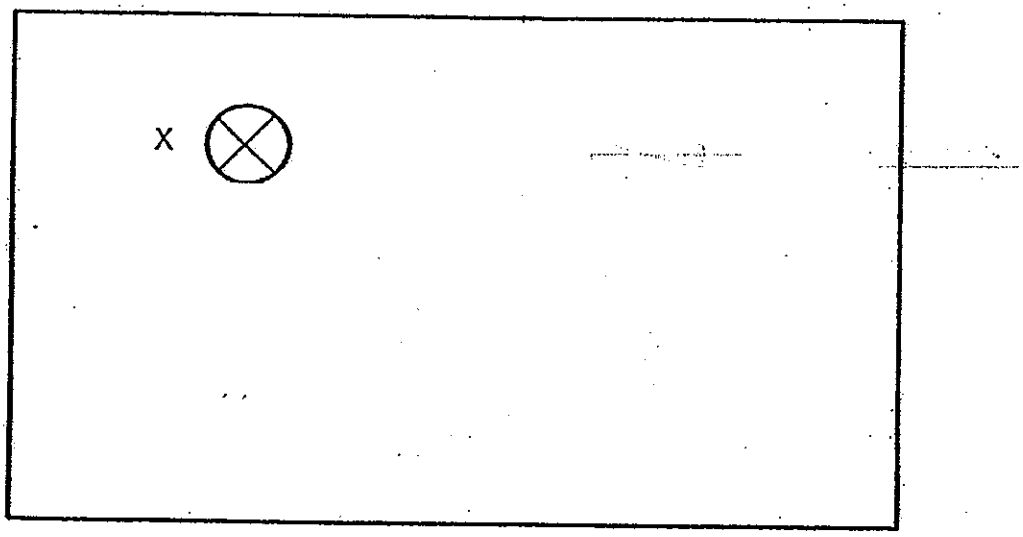
44. Jordan was given a switch, some wires, 2 batteries and 3 similar bulbs, X, Y and Z. He set up a circuit which was hidden in a shoe box, leaving only the bulbs exposed. The diagram below shows the top view of the box and the position of the bulbs.



When the switch was closed, all the bulbs lit up. Jordan then removed the bulbs X, Y and Z one at a time while the switch remained closed. He recorded the following observations when only **one** bulb was removed each time.

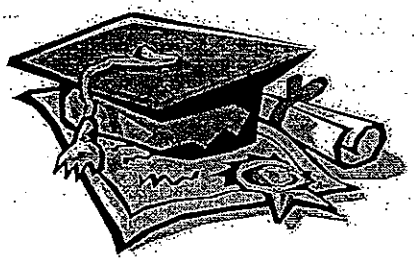
Bulb removed	Observations made on the remaining bulbs
X	Only bulb Y remained lit
Y	Both bulbs X and Z remained lit
Z	Only bulb Y remained lit

In the space provided below, draw the circuit diagram (using symbols) that Jordan had set up. Bulb X has been drawn for you. [2]



End of Booklet B

2



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : HOKKIEN
SUBJECT : PRIMARY 6 SCIENCE

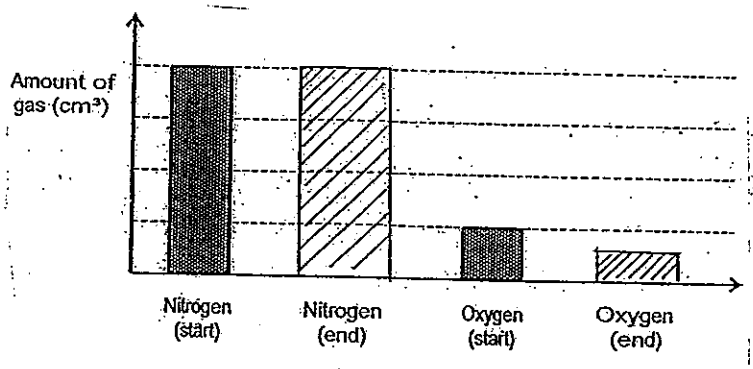
TERM : PRELIM

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

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

31)a)A, C, D, B
b)1)Simon should use two balloons. / To represent 2 lungs.
2)Simon should use a Y-shaped tube./To represent the windpipe and bronchi.

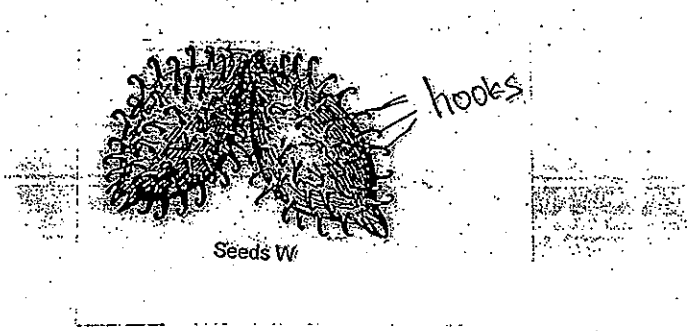
32)a)



b)The amount of oxygen decreased. The grasshopper took in oxygen during respiration.

33)a)The hook-like structures/hooks.

b)



c)The seed has hook-like structures to attach itself the coast of animal.

34)a)Parts Q and T.

b)The cell membrane/part P did not allow any substance/substance X to pass through.

35)a)He can count the number of bubbles give out over a fixed period time/compare the height of the water level in the test tube/compare the amount of air space in the test tube.

b)The greater the size of the leaf, the more the amount of oxygen released by the leaf.

c)A larger leaf has more chlorophyll/ can receive more sunlight/so rate of photosynthesis increases.

36)a)As the amount of carbon dioxide in the atmosphere increase, the average global temperature increases.

b)Reforestation will help reduce the amount of carbon dioxide as trees take in carbon dioxide for photosynthesis and this will result in less heat trapped.

37)a)T b)Not c)T d)T

38)a)Sea water. sea water is hotter than tap water so sea water lost heat to the tap water, so heat traveled from the sea water to the tap water, so there was heat transferred from the sea water to the tap water.

b)The amount of water found under the lid will be less than 10ml as the sea water cooled down more quickly, so less water evaporated and less water vapour condensed under the lid.

39)a)Gravitational Potential→Kinetic energy→Kinetic energy

b)The greater the mass of the block, the greater the number of turns made by the blade in 10 seconds.

c)Set-up C and F.

40)a)The like poles of both ring magnets, X and Y are facing each other so they repel each other and that kept X suspended above Y.

b)i)The plastic disc is made of non-magnetic material.

ii)The plastic disc allows magnetism to pass through and did not a affect the magnetic strength of the magnets, X and Y, so d remains the same.

41)a)1)Add powder on the entire surface of the plank.

3)Use the spring balance to pull the wooden block up the plank.

b)The surface of the metal cover will become rougher and friction between the shoes and the metal cover will increase to prevent people from slipping.

42)a)

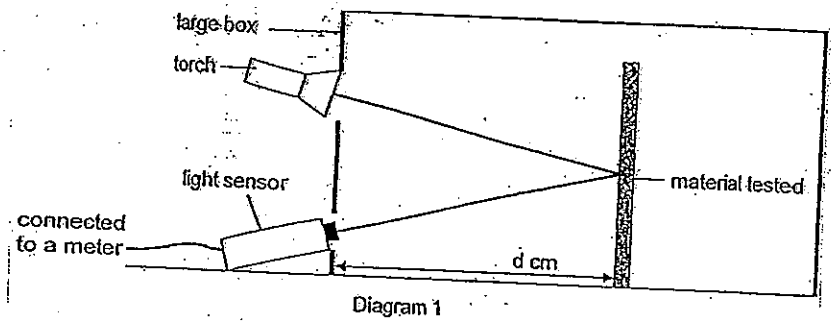


Diagram 1

b)So that light from the surroundings will not interfere with the experiment and cause the readings to be wrong.

c) √

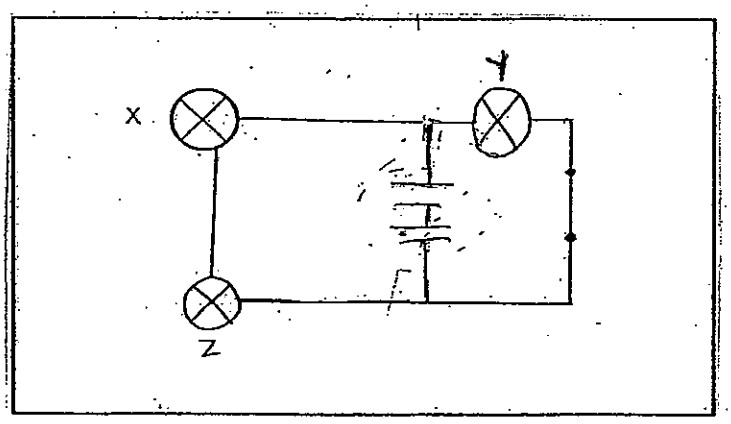
√

√

d)Material C. It is able to reflect the most amount of light compared with the other materials so silver bands from far away.

43)Air is a bad conductor of heat. A single-layer glass cup has no air so it conducts heat from the hot tea to the her hands faster than the double-layer glass cup.

44)



CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 1
2013
PRIMARY SIX

STANDARD SCIENCE

BOOKLET A

Name:_____( )

Class: Primary 6 - _____

Date: 22 May 2013

30 questions

60 marks

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

Instructions to Candidates

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

This booklet consists of 21 printed pages, excluding cover page.

Booklet A (30 × 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 your answer on the Optical Answer Sheet. (60 marks)

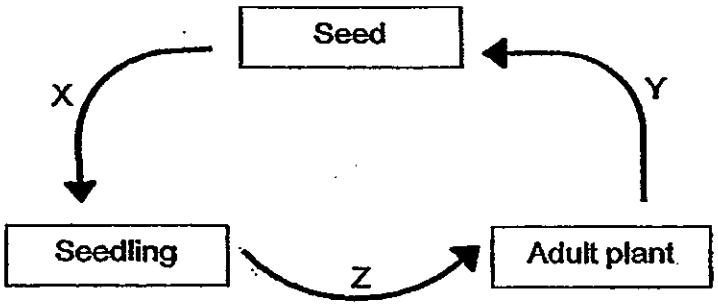
1. Four pupils recorded their observations of an animal they each saw at the Singapore Zoo.

Ezekiel	Its body is covered with hair.
Sue	It reproduces by laying eggs.
Raju	Its young resembles the adult.
Jun Han	It moves by swimming and crawling.

Who gave the correct observations about an orang utan?

(1) Ezekiel and Raju
(2) Ezekiel and Jun Han
(3) Sue, Raju and Jun Han
(4) Ezekiel, Raju and Jun Han

2. Study the reproduction cycle of a plant below.

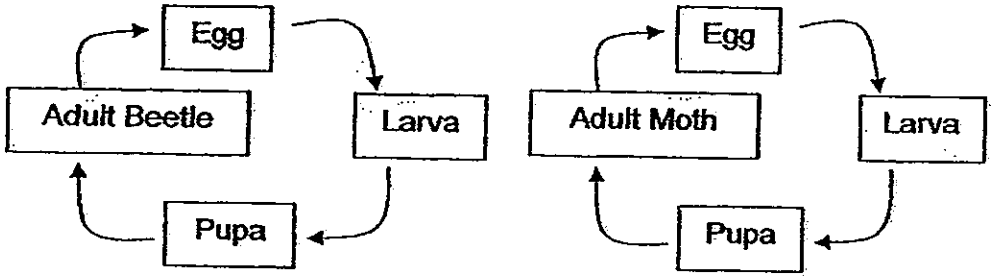


Which of the following processes does Y represent?

A pollination
B fertilization
C germination
D seed dispersal

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

3. The diagrams below show the life cycles of 2 animals.



Which of the following statements about the life cycles of the animals are true?

A Both give birth to young alive.

B Both their young do not resemble the adult.

C The young will only become insects at the adult stage.

D The pupae will remain inactive before reaching the adult stage.

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

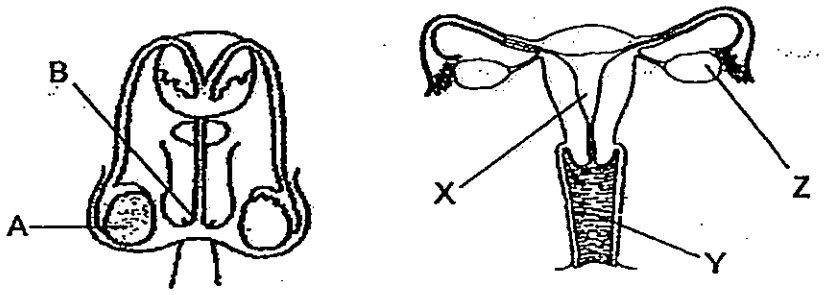
4. Darryl wanted to find out if the colour of flower petals has an effect on the number of pollinators attracted to the flower. He had the following flowers-

Flower	Type of flower	Colour of flower petals	Position of anther
P	Rose	red	within the flower
Q	Rose	white	within the flower
R	Spider lily	white	dangling outside the flower
S	Orchid	white	within the flower
T	Orchid	orange	dangling outside the flower
U	Sunflower	yellow	dangling outside the flower

Which of the flowers above should Darryl use to conduct his investigation?

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

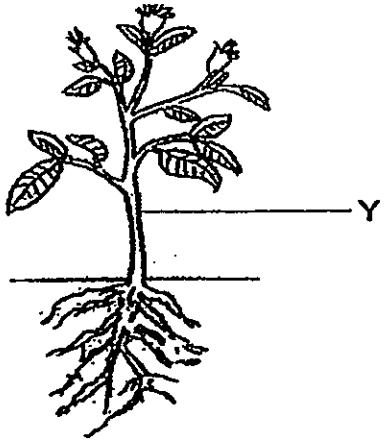
5. The diagram below shows the male and female reproductive systems.



In which parts of the reproductive systems are the reproductive cells produced?

(1) A and X only
(2) A and Z only
(3) B and X only
(4) B and Y only

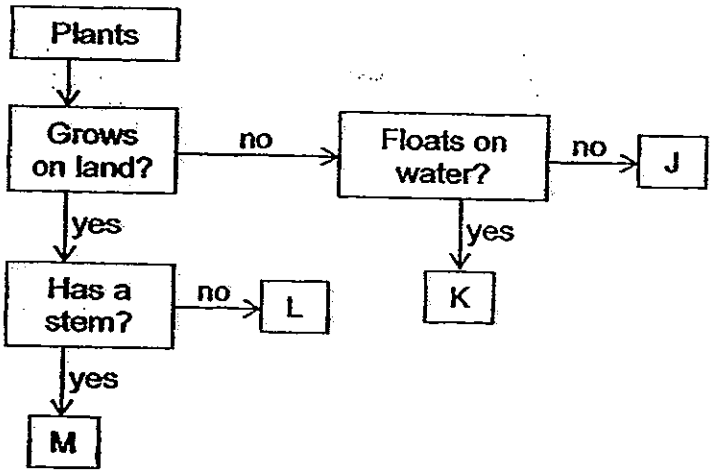
6. The diagram shows a plant.



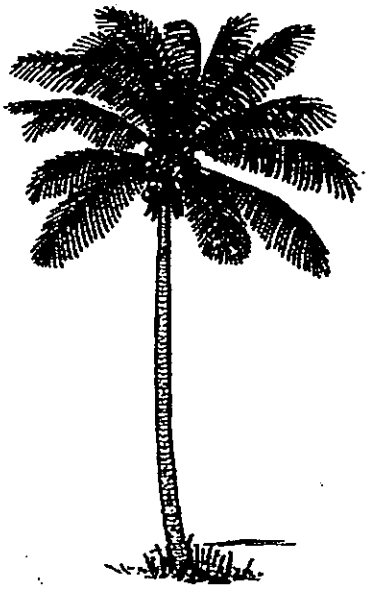
How are food and water being transported at part Y of the plant?

	Direction for the transport of	
	Food	Water
(1)	upwards	upwards
(2)	upwards	downwards
(3)	downwards	downwards
(4)	downwards	upwards

7. Study the flowchart below.



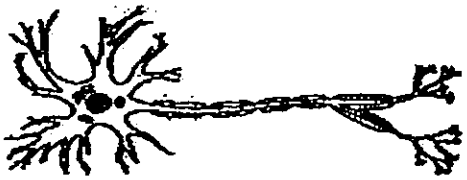
The diagram below shows a coconut plant.



Which plant, J, K, L or M, represents the coconut plant?

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

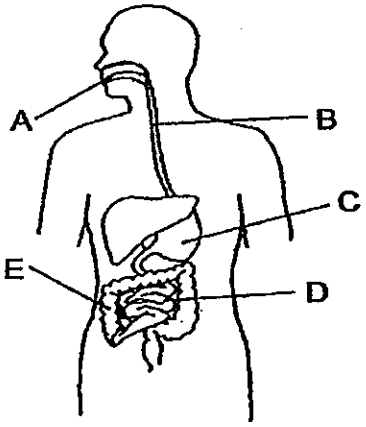
8. Zafir observed the following cell under a microscope and concluded that it is an animal cell.



Based on the diagram above, what characteristic of the cell led Zafir to make his conclusion?

(1) It has a cell wall.
(2) It has a cell membrane.
(3) It is of an irregular shape.
(4) It does not have chloroplasts.

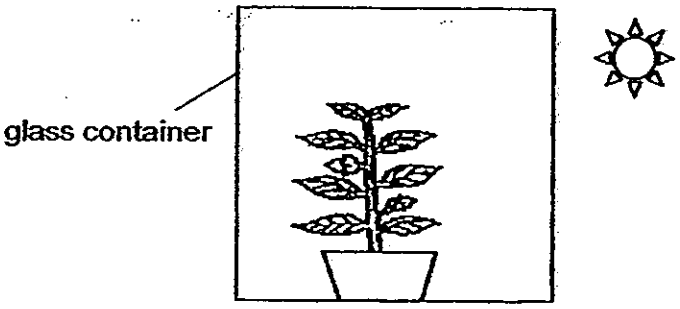
9. The diagram below shows parts of a human digestive system.



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

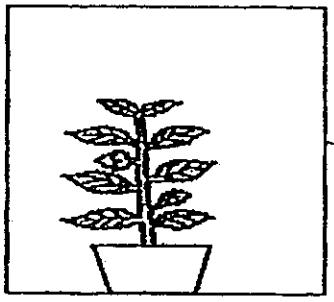
(1) C and D only
(2) A, C and D only
(3) A, B, C and E only
(4) A, B, D and E only

10. Manfred set up the following to investigate if plants need light to photosynthesise. He left the set-up in an open field and ensured that the plant was watered daily.



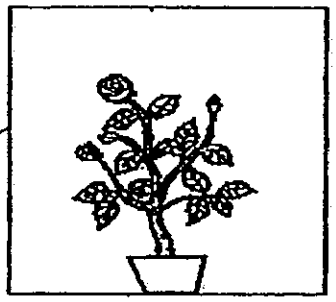
Which of the following should Manfred use as his control set-up?

(1)



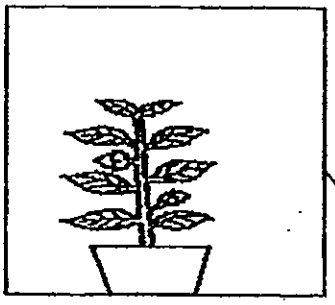
In an open field

(2)



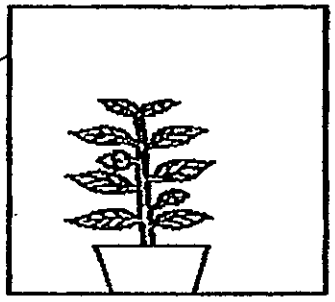
In a cupboard

(3)



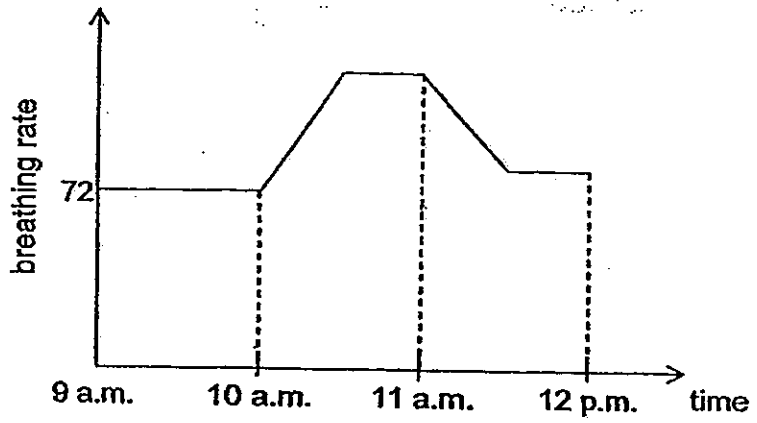
By the window

(4)



In an open field

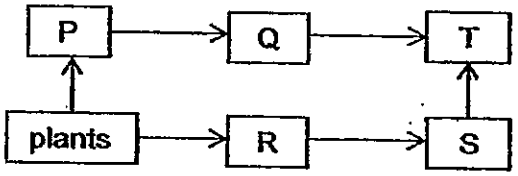
11. Yongzhen engaged in several activities and monitored the changes in his breathing rate. He then plotted his readings in the graph as shown below.



Which of the following can explain why Yongzhen's breathing rate increased between 10a.m. to 11a.m.?

(1) His heart needed to pump faster because he was exercising.
(2) His body needed more oxygenated blood because he was sleeping.
(3) He needed to take in more oxygen because he was mountain-climbing.
(4) He needed less oxygen because he was resting after a vigorous activity.

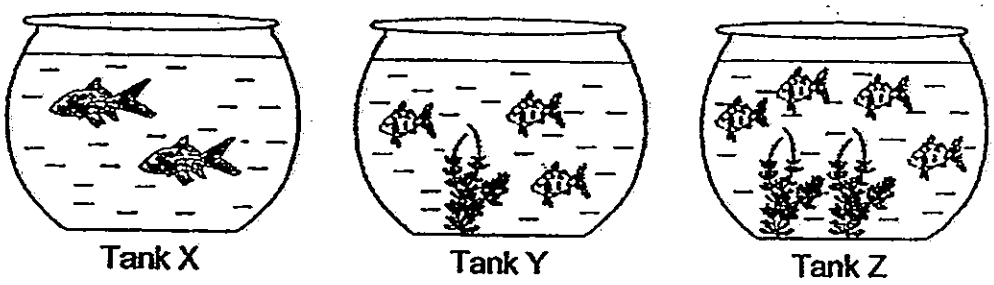
12. Study the food web below. P, Q, R, S and T are animals living in a habitat.



If a predator that feeds on animal T is introduced into this habitat, which of the following shows the effects on the populations of animals P and S after some time?

	Animal P	Animal S
(1)	increase	decrease
(2)	increase	increase
(3)	decrease	decrease
(4)	decrease	increase

13. Sean wanted to find out if the presence of water plants affects the survival of the fish in a tank. He set up the following experiment and left the tanks by the window.



Sean's teacher remarked that his experiment was not a fair one. What should Sean do to make his experiment fair?

A Remove one water plant from tank Z

B Use the same type of fish in each tank

C Add the same type of water plant to tank X

D Keep the number of fish in each tank the same

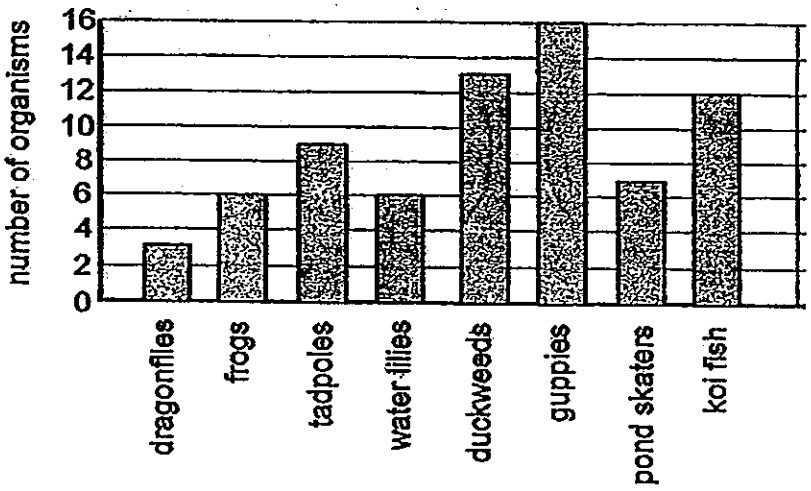
(1) A and B only

(2) B and C only

(3) B and D only

(4) A, C and D only

14. Miss Lim plotted the number of different organisms she saw in a school pond in the bar graph below.



Which of the following conclusions can be made from Miss Lim's graph?

A There are 2 insect populations.

B There are 15 organisms in the frog population.

C There are 8 communities living in the school pond.

D There are more populations of plants than animals.

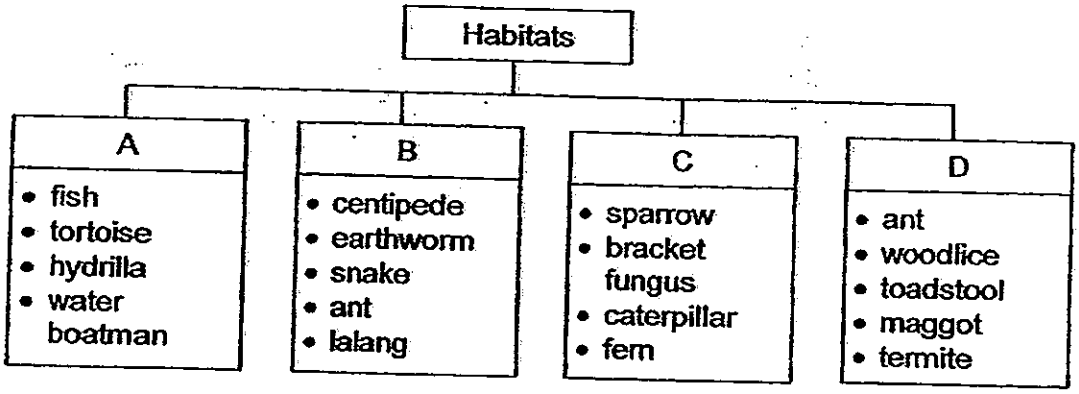
(1) A only

(2) A and B only

(3) B and C only

(4) A, C and D only

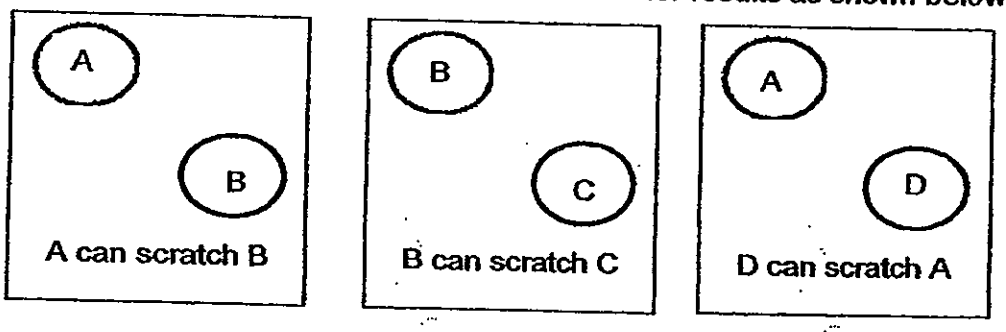
15. Study the classification chart below.



What could habitats A, B, C and D be?

	A	B	C	D
(1)	pond	field	tree	rotting log
(2)	pond	rotting log	mangrove	forest
(3)	lake	forest	field	desert
(4)	sea	tree	rotting log	beach

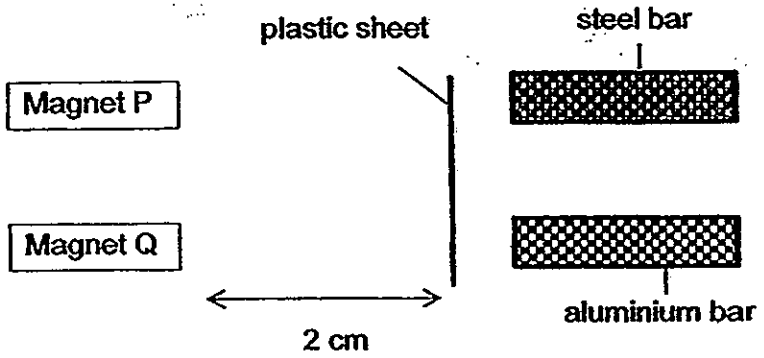
16. Susan had four materials of different hardness. She used some of the materials to scratch each other. She recorded her results as shown below.



Arrange the materials from the softest to the hardest.

	Softest →			Hardest
(1)	D	A	B	C
(2)	A	B	C	D
(3)	B	C	D	A
(4)	C	B	A	D

17. Justin brought two identical magnets, P and Q, near a steel bar and an aluminium bar each 2 cm away. He placed a plastic sheet in between the magnets and the bars as shown in the diagram below.



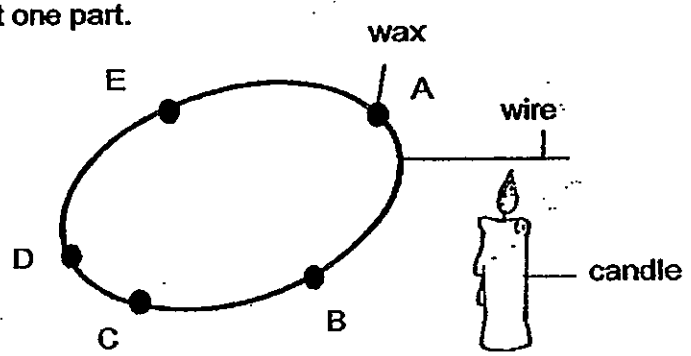
He observed that the steel bar moved towards Magnet P while the aluminium bar remained where it was.

What could Justin conclude from the experiment above?

A Steel can be made into a magnet.
B Magnet P is stronger than Magnet Q.
C Magnetic force can act at a distance.
D Magnetism can pass through non-magnetic substances.

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

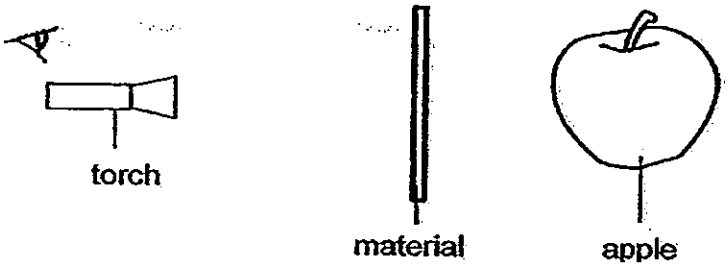
18. Sam placed five blobs of wax at different points on the wire. He then heated the wire only at one part.



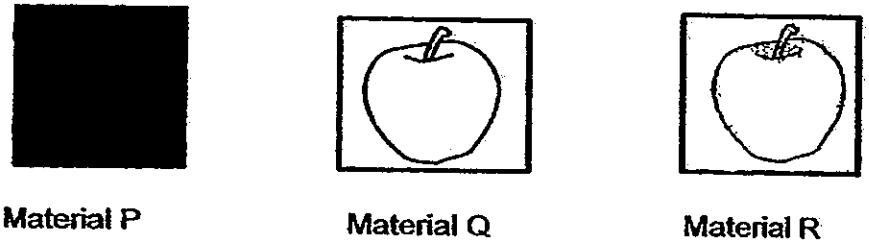
Which blob of wax dropped right after wax B dropped?

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

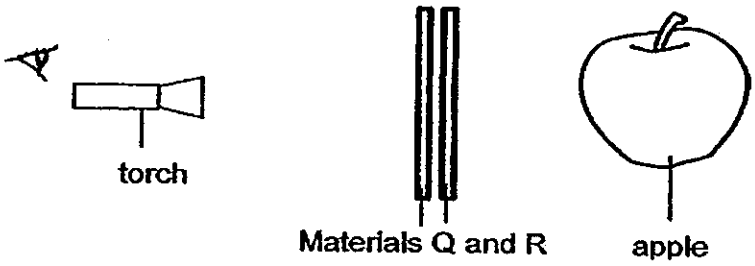
19. Siti placed Material P in front of an apple and shone a light at it. She repeated the experiment using Materials Q and R.



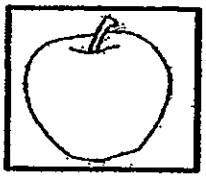
The diagrams below show what Siti would see when the light was shone through each of the materials.

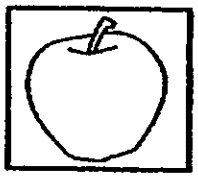


Siti then placed Materials Q and R as shown in the diagram below.

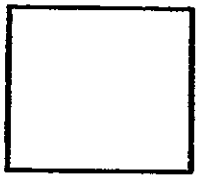


What would Siti see when she looked through both Materials Q and R?

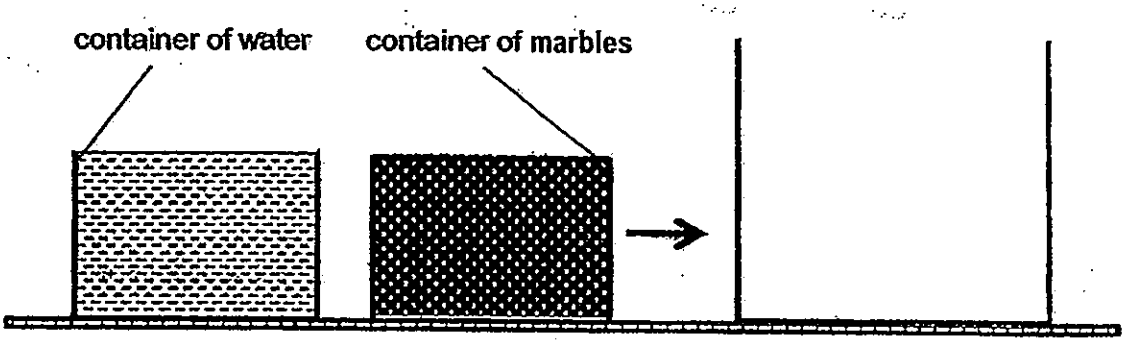
(1) 

(2) 

(3)

(4) 

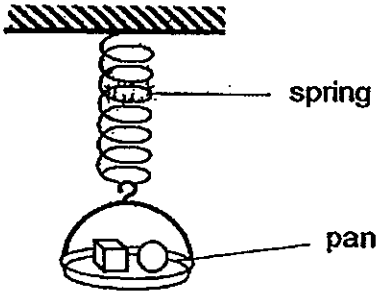
20. Karen filled a 200cm^3 container with water. She filled another 200 cm^3 container with small marbles.



Which of the following is most likely to be the total volume of water and small marbles when they are transferred into the large container?

(1) 100 cm^3
(2) 200 cm^3
(3) 375 cm^3
(4) 400 cm^3

21. Yvonne attached a pan holding a cube and a ball on a spring as shown below. The spring then stretched downwards.

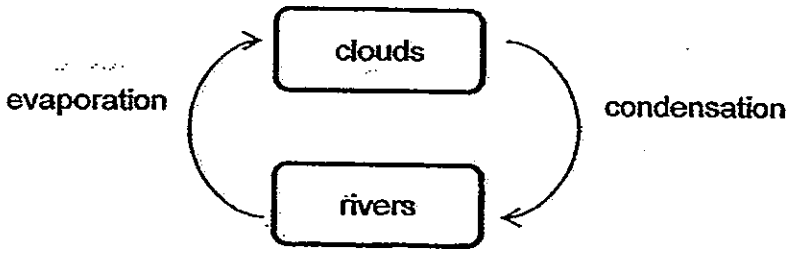


What was the force acting on the spring when it was stretched?

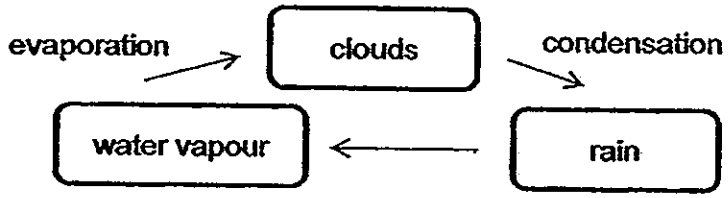
(1) Gravity
(2) Friction
(3) Magnetic force
(4) Elastic spring force

22. Which one of the following diagrams best represents the water cycle?

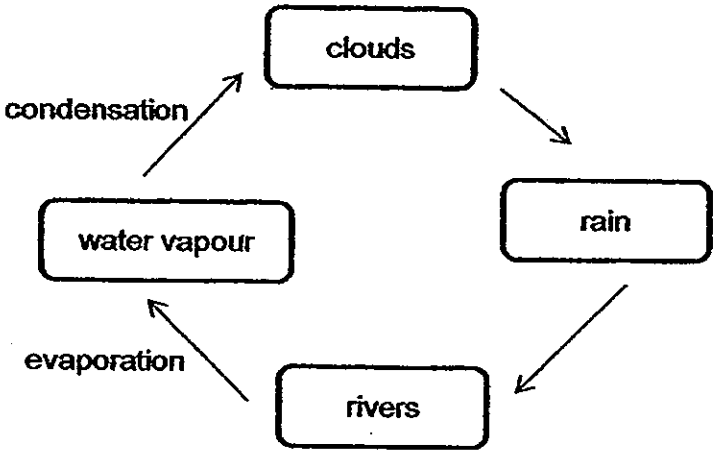
(1)



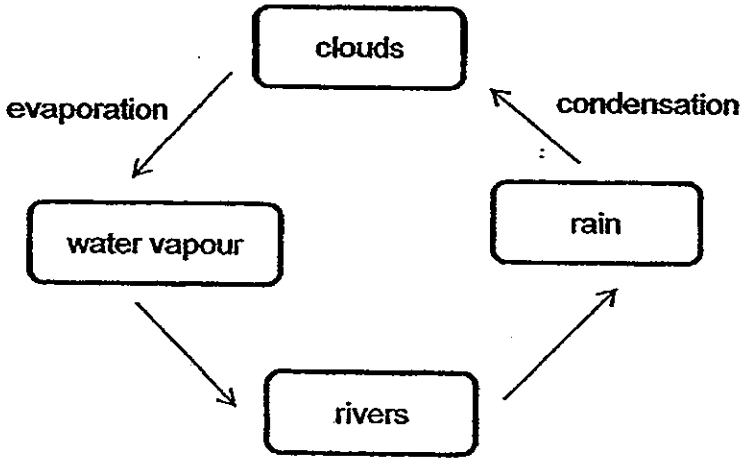
(2)



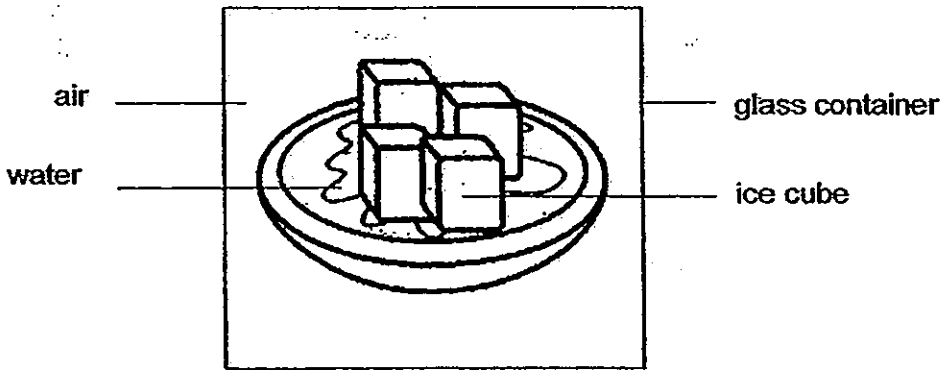
(3)



(4)



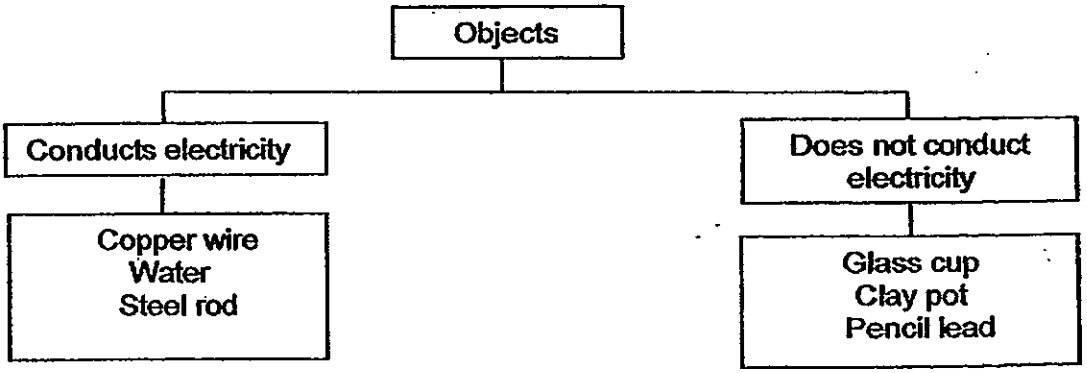
23. The diagram below shows a plate of ice cubes placed in a sealed glass container.



Which of the following correctly represents what happens to the substances inside the glass container after 15 minutes?

	Temperature of			Amount of water vapour
	Air around ice cubes	Water	Melting ice cubes	
(1)	Decreases	Increases	Increases	Increases
(2)	Decreases	Increases	No change	Decreases
(3)	Increases	Decreases	No change	No change
(4)	Increases	Increases	No change	No change

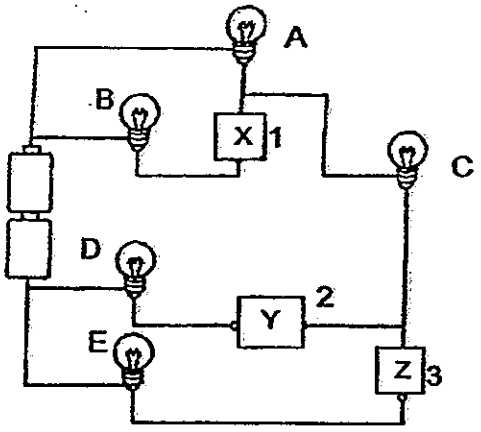
24. The objects below are classified according to whether they can conduct electricity.



Which of the following objects is classified wrongly?

(1) water
(2) glass cup
(3) pencil lead
(4) copper wire

25. Sam carried out an experiment to find out the electrical conductivity of three Materials X, Y and Z. He connected Materials X, Y and Z to the circuit at positions 1, 2 and 3 respectively as shown in the diagram below.

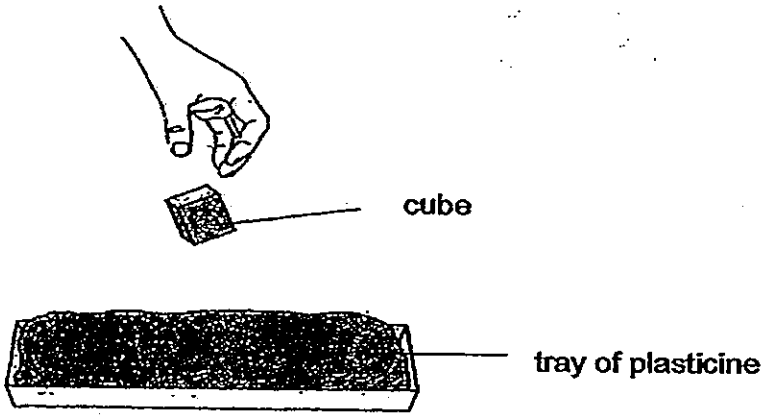


He observed that only bulbs A, C and D lighted up. He then swapped the materials to different positions and recorded his observations.

Which of the following connections and observations are possible?

	Position 1	Position 2	Position 3	Bulbs lit up
(1)	Y	Z	X	A, B and C
(2)	Z	X	Y	A, C and E
(3)	X	Z	Y	B, C and D
(4)	Y	X	Z	A and B

26. Kay dropped four identical cubes vertically into a tray of plasticine from different heights. She measured the depth of the mark made by the cube in the plasticine.



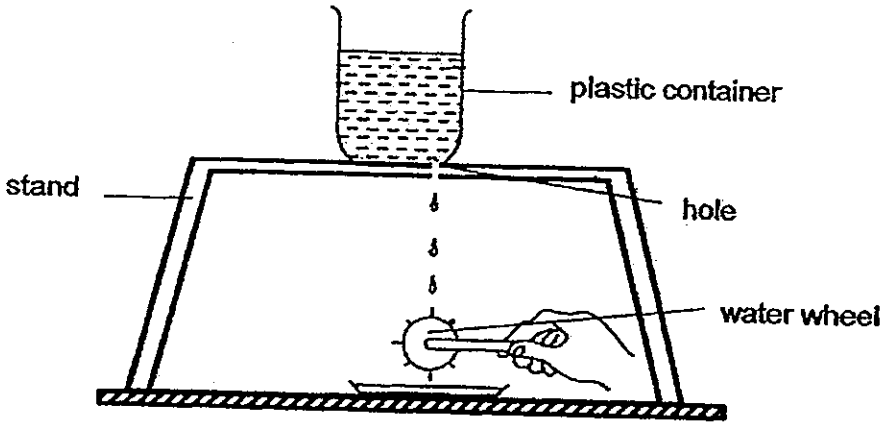
She recorded her observations in the table below.

Cube	Depth of mark in plasticine (cm)
A	0.5
B	1.2
C	0.8
D	1.1

Which of the cubes was dropped from the greatest height?

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

27. Helen placed a plastic container above a water wheel on a stand as shown in the diagram below. Water dripping from a hole in the plastic container caused the water wheel to turn.

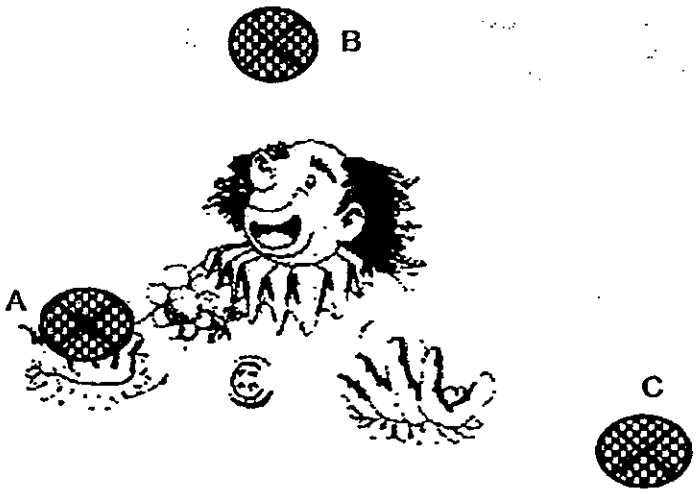


Which one of the following actions would cause the water wheel to turn faster?

A Raise the water wheel.
B Lower the plastic container.
C Raise the plastic container higher.
D Make the hole in the plastic container bigger.

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

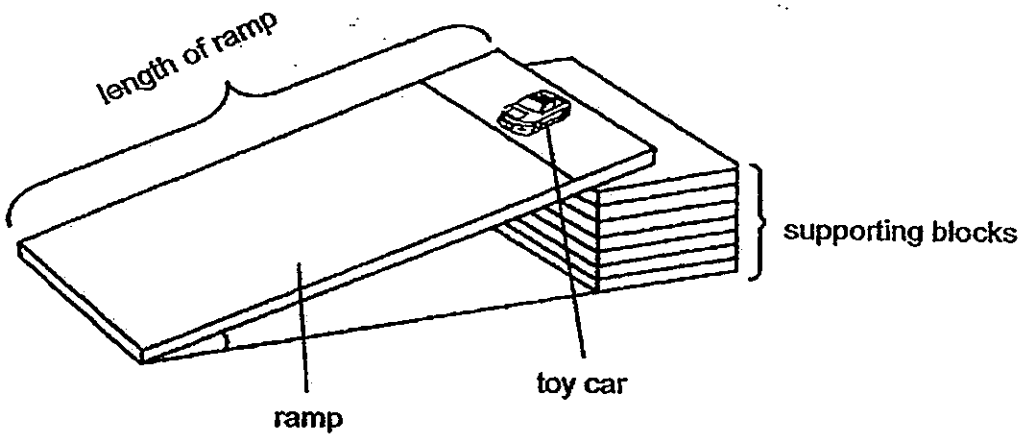
28. **A clown was throwing a ball into the air during a circus show. He missed the ball and the ball started to fall to the ground.**



Which of the following correctly identifies the energy the ball possessed at Positions A, B and C?

	Position A (starting point)	Position B (highest point)	Position C (before reaching the ground)
(1)	gravitational potential energy	gravitational potential energy	gravitational potential energy and kinetic energy
(2)	chemical potential energy	gravitational potential energy and kinetic energy	kinetic energy
(3)	gravitational potential energy and kinetic energy	kinetic energy	gravitational potential energy and kinetic energy
(4)	chemical potential energy and kinetic energy	gravitational potential energy	kinetic energy

29. Brian conducted an experiment to find out if the surface of a ramp would affect the distance travelled by a toy car. He placed the toy car at the same starting point, 5 cm away from the edge and let it slide to the bottom.

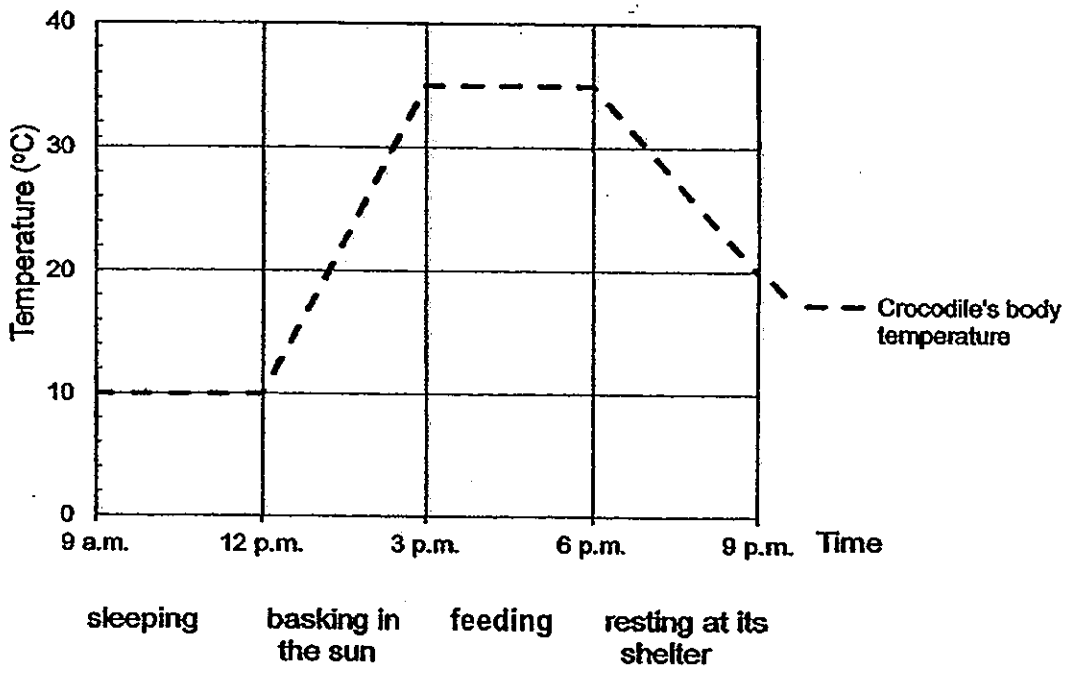


What variables must Brian keep constant in order to conduct a fair test?

A The toy car
B Surface of ramp
C Distance travelled by the toy car
D Number of supporting blocks

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

30. A crocodile lives both on land and in water. The graph below shows the body temperature of a crocodile as it goes through its day.



From the graph, which of the following has the greatest effect on the crocodile's body temperature?

(1) Feeding
(2) Sleeping
(3) Basking in the sun
(4) Resting at its shelter

-End of Booklet A-

CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 1
2013
PRIMARY SIX

STANDARD SCIENCE

BOOKLET B

Name:_____( )

Class: Primary 6 - _____

Date: 22 May 2013

Parent's Signature: _____

Booklet A	60
Booklet B	40
Total	100

14 questions

40 marks

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

Instructions to Candidates

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

This booklet consists of 13 printed pages, excluding cover page.

Booklet B (40 marks)

For questions 31 to 44, write your answers in this booklet.

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

(40 marks)

31. Elgin prepared three containers of water with six frog eggs in each of the containers. He then placed the containers at different locations as shown below.

Container	Location	Temperature of surroundings (°C)
Q	refrigerator	5
R	room	30
S	incubator	50

After 3 weeks, he noticed that only the eggs in container R hatched into tadpoles.

(a) What was Elgin trying to find out in this experiment? [1]

_____

_____

(b) Frogs lay many eggs at one time. Why do they need to lay so many eggs? [1]

_____

_____

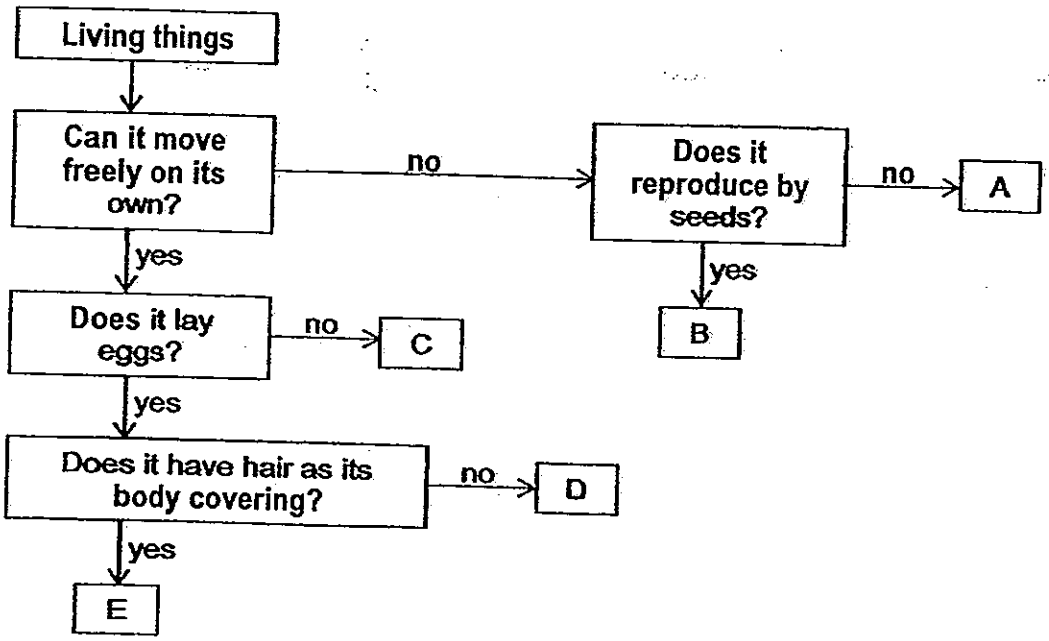
(c) State one similarity between the life cycle of a frog and a mosquito. [1]

_____

_____

3

32. Study the flowchart below.



(a) What are the characteristics of organism A? [1]

_____

_____

(b) Can organism D be a mammal? Explain. [1]

_____

_____

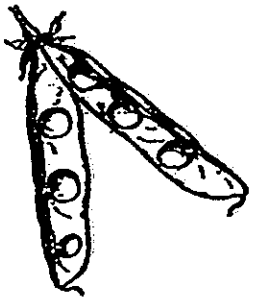
(c) Which organism, A, B, C, D or E, represents the following living things? [1]

(i) Balsam plant: _____

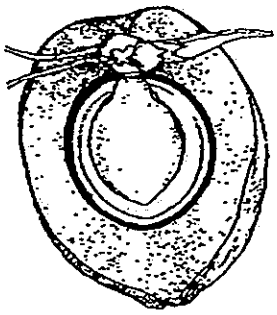
(ii) Butterfly: _____

3

33. The diagram below shows fruits X and Y.



Fruit X



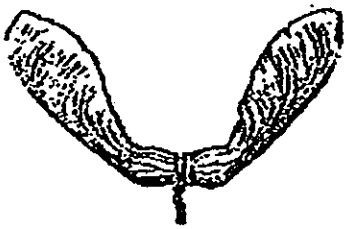
Fruit Y

(a) How are fruits X and Y dispersed? [1]

Fruit X: _____

Fruit Y: _____

(b) Study the fruit below.



Name the structure that helps the fruit above to be dispersed. How does this structure help it to grow healthily? [2]

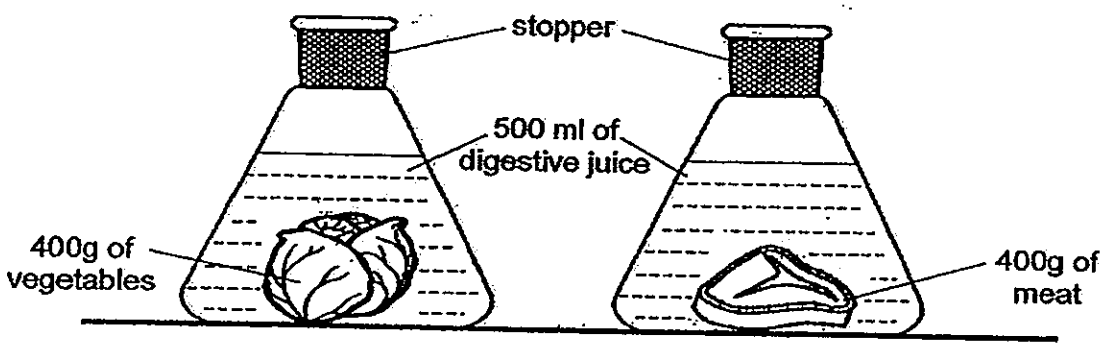
_____

_____

_____

3

34. Salleh wanted to find out if vegetables are digested faster than meat. He placed 400g of vegetables and 400g of chicken meat into identical flasks, each containing 500ml of digestive juice, and left them in the laboratory for 4 hours.



(a) What does Salleh need to measure and record in order to arrive at his experimental conclusion? [1]

_____

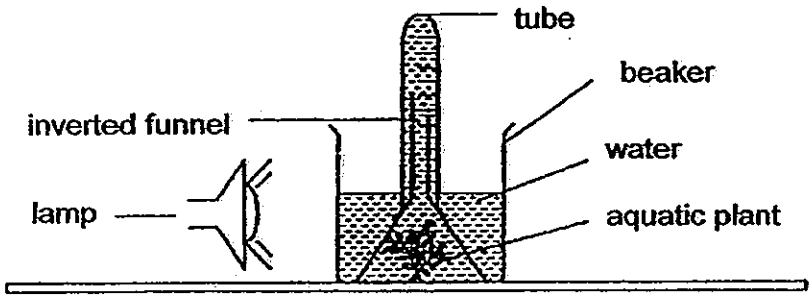
_____

(b) In which part of the human digestive system is water removed from the undigested food? [1]

_____

1/2

35. Peter carried out an investigation to find out how the distance between a light source and the plant affects the rate of photosynthesis of the plant. He set up the following experiment.



(a) At each distance, Peter waited for 30 minutes before recording the amount of gas collected at the top of the test-tube. His results are shown in the table below.

Distance between the light source and plant (cm)	Amount of gas collected in the test-tube (cm^3)
10	10
30	7
50	5
70	2

Based on Peter's results, how is the rate of photosynthesis of the plant affected by the distance between the light source and the plant? [1]

_____

_____

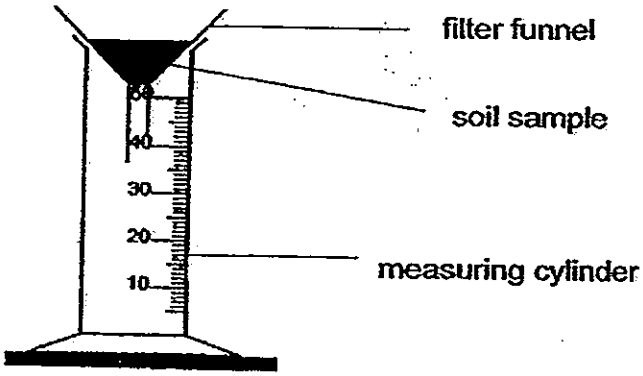
(b) What would Peter observe about his results if he had used a light source of brighter light intensity in his experiment? [1]

_____

_____

2

36. Irene collected soil samples, A, B and C. She prepared the set-up below and poured 35ml of water onto each soil sample during the experiment.



Irene measured the amount of water collected in the measuring cylinder after 2 minutes and recorded it in the table below. She repeated this for all three soil samples.

Sample	Amount of water collected (ml)
A	33
B	5
C	17

(a) Explain what would happen if Irene used sample A for her plants in the garden. [2]

_____

_____

_____

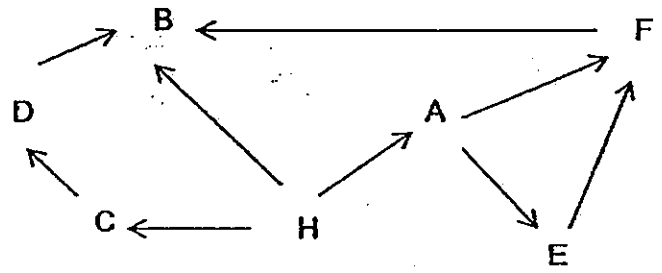
_____

(b) In a rice plantation, a flooded paddy field is needed for the seedlings to grow. Which soil sample, A, B or C, is the most suitable for use in the paddy field? [1]

_____

3

37. Study the food web below.



(a) Which one of the organisms above is a plant and animal eater? [1]

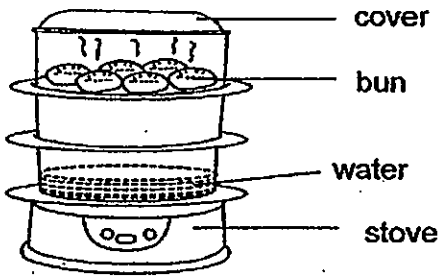
_____

(b) A disease caused the population of organism A to decrease. Explain how this will affect the population of organism F. [1]

_____

_____

38. Mother used a steamer shown below to steam some buns.



(a) What would Mother observe on the underside of the cover after some time? [1]

_____

(b) Explain clearly the reason for your observation. [2]

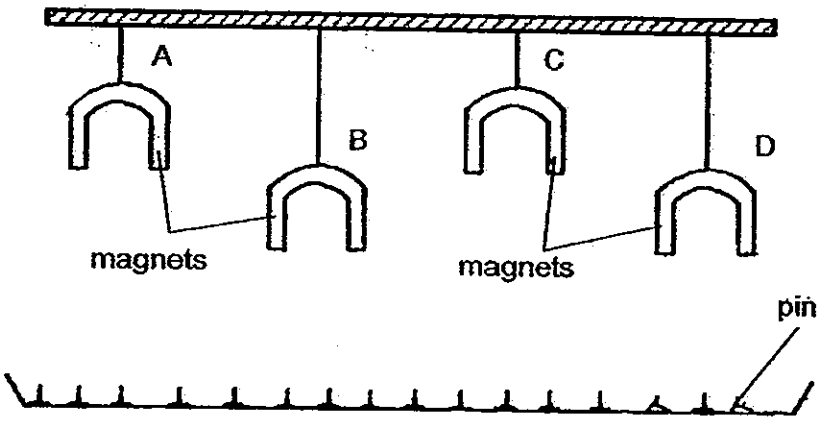
_____

_____

_____

5

39. Kathy conducted an experiment to compare the strength of four U-shaped magnets as shown below. She hung the magnets from strings of different lengths over a tray of pins.



She recorded the number of pins attracted to the magnets in the table below.

Magnet	Number of pins attracted
A	3
B	2
C	5
D	3

(a) Which is the weakest magnet? [1]

_____

(b) Based on the set-up above, why is it difficult to compare the strength of Magnets C and D? [1]

_____

_____

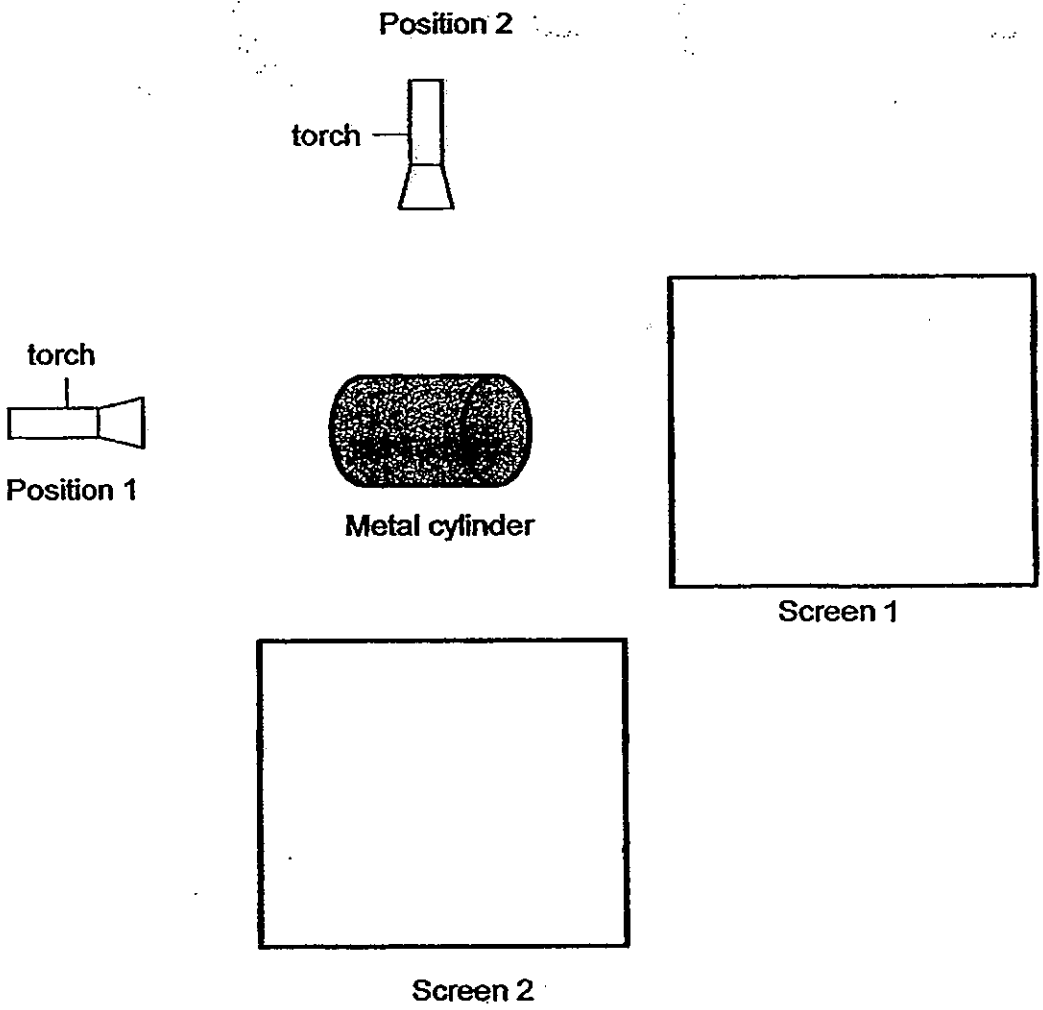
(c) If Magnet A is replaced by a very strong magnet, state two possible observations that will happen. [2]

_____

_____

4

40. Sam shone a torch on a metal cylinder from two different positions as shown in the diagram below.



(a) Draw the shadows that will be formed on the two screens, 1 and 2, respectively. [1]

(b) How is a shadow formed? [1]

_____

_____

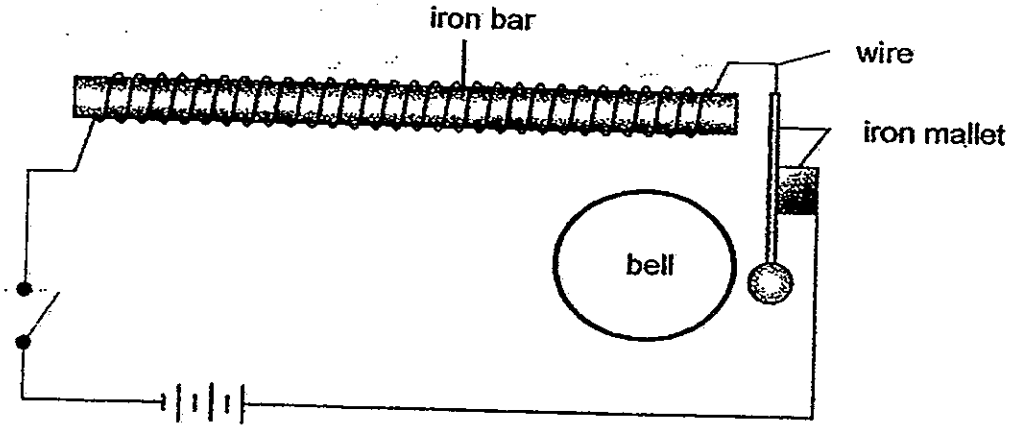
(c) If Sam were to move the metal cylinder closer to the torch in Position 1, what change would he observe about the shadow on screen 1? [1]

_____

_____

3

41. The diagram below shows a simplified version of an electric bell found in homes.

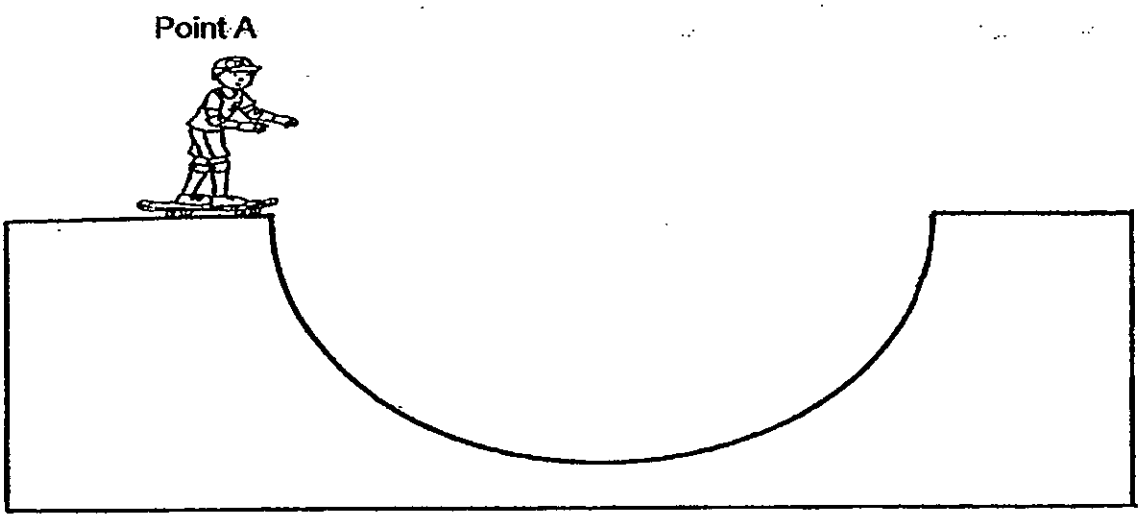


(a) When the switch is closed, the bell will ring. Explain why this happens. [2]

(b) The iron bar is now replaced with a copper bar. Will the bell ring when the switch is closed? Give a reason for your answer. [1]

3

42. Tom is skateboarding down a slope as shown below.



(a) State the form(s) of energy that Tom possesses at Point A. [1]

_____

(b) Mark an X on the other side of the slope to show the height that Tom can reach. [1]

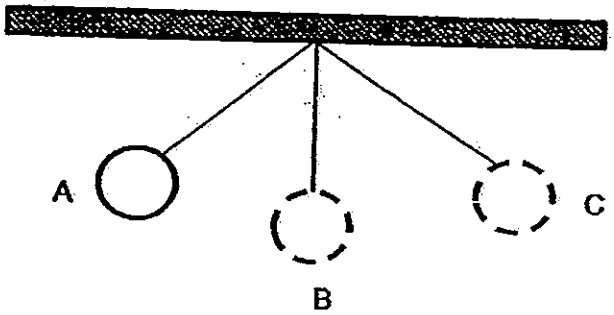
(c) List two things that Tom can do to go higher than Point X without changing the slope. [2]

_____

_____

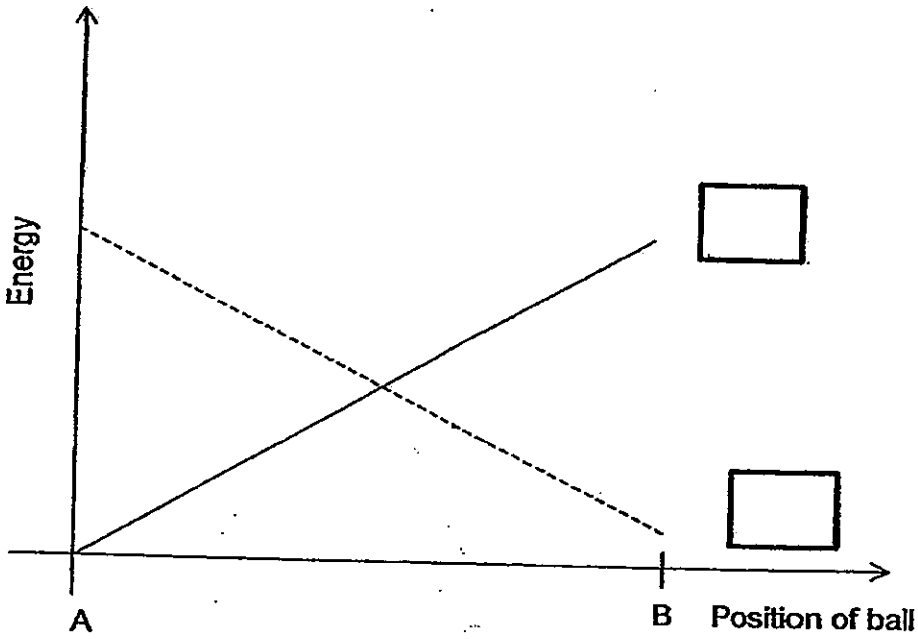
4

43. Sam released a metal ball from Point A. The diagram below shows the various positions of the metal ball.



Based on the diagram above, which one of the following lines in the graph best represents the change in potential energy of the metal ball from positions A to B?

(a) Write the letter 'P', in the appropriate box given below. [1]



(b) Explain your choice in (a) above.

[1]

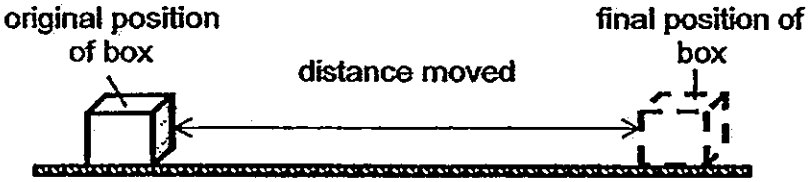
_____

_____

_____

2

44. Mark pushed a box over a surface that was covered with Liquid A. When the box came to a stationary position, the distance it had moved was measured. He repeated the experiment two more times.



He repeated the experiment with Liquids B, C and D. He recorded the results in the table below.

Type of liquids	Distance moved by box (cm)			
	1st reading	2nd reading	3rd reading	Average
A	12.3	12.6	12.3	12.4
B	25.6	25.3	25.9	25.6
C	14.6	14.8	15.3	14.9
D	21.6	22.2	22.5	22.1

(a) Based on the data in the table, which of the four liquids used by Mark helps to reduce wear and tear the most? Explain your answer. [2]

_____

_____

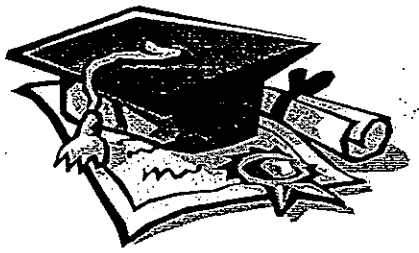
(b) Why did Mark repeat his experiment a few times for each liquid? [1]

_____

_____

-End of Booklet B-

3



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIM (SA1)

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

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

31)a)He was trying to find out if the temperature of the surrounding air affects the growth of a frog egg.
b)So at least some of the eggs will hatch and grow.
c)They both lay their eggs in the water.

32)a)Organism A is a living thing that does not move freely on its and does not reproduce by seeds.
b)No. Organism D does not have hair as its body covering while all mammal have hair as its body covering.
c)i)B ii)D

33)a)X: splitting Y: water
b)It helps to disperse to disperse the seeds further from the parent plant preventing overcrowding so that they do not compete for sunlight, water nutrients and space.

34)a)The mass of vegetables and meat at the end after 4 hours.
b)The large intestine.

35)a)The further the distance between the light source and plant the slower the rate of photosynthesis of the plant.

b)There will be more gas collected in each test tube.

36)a)Her plants will die. Sample A allowed most of the water to pass through, retains the least amount of water as the particles are large and there are many air spaces.

b)Soil sample B.

37)a)Organism B.

b)When organism A decrease, organism E which eats organism A will also decrease, leaving organism F to have lesser food to consume, causing organism F to decrease.

38)a)She would observe some water droplets.

b)The water gets heated and evaporates to form water vapour. The hot water vapour loses heat and touches the cool inner surface of the cover and condensing to from water droplets.

39)a)Magnet B.

b)They are placed at different heights from the tray of pins.

c)More pins will be attracted to the magnet and magnet B might be attracted to magnet A too.

40)a)Screen 1 Screen 2

b)A shadow is formed when a opaque object is blocking the light from traveling in a straight line.

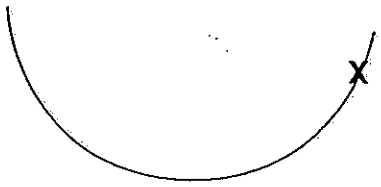
c)The shadow on screen I will increase in size.

41)a)When the switch is closed, the circuit will be a closed circuit,causing the iron bar to become an electro-magnet and attract the iron mallet so that it will hit the bell, causing the bell to ring.

b)No. Copper is a non-magnetic material.

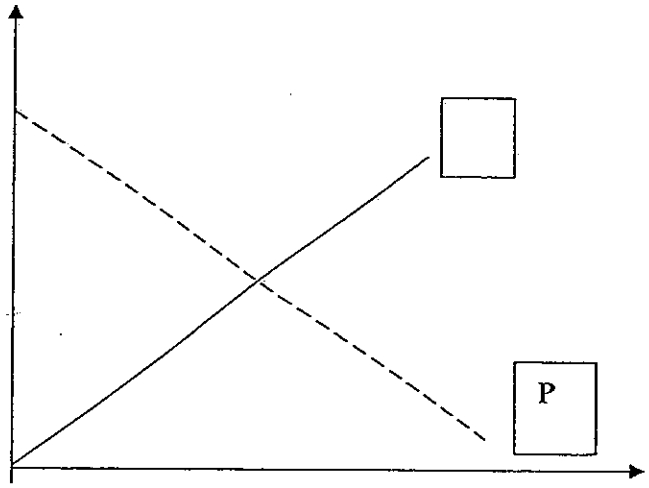
42)a)Gravitational potential energy and chemical potential energy.

b)



c)Put lubricant on the wheels.
Push off with his feet.

43)a)



b)At position A, the gravitational potential energy is the highest as it is of the greatest distance away from the ground and the gravitational potential energy decreases until position B.

44)a)Liquids B. When the box is pushed over liquid B, it travelled the furthest, that means that the friction between liquid B and the box was the least, without much friction, heat will not be produced and it will reduce wear and tear.

b)He wanted to make his test a reliable test and to compare and confirm which liquid produces the least friction.

CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2013
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____( )

Class: Primary 6 - _____

Date: 27 August 2013

30 questions

60 marks

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

Instructions to Candidates

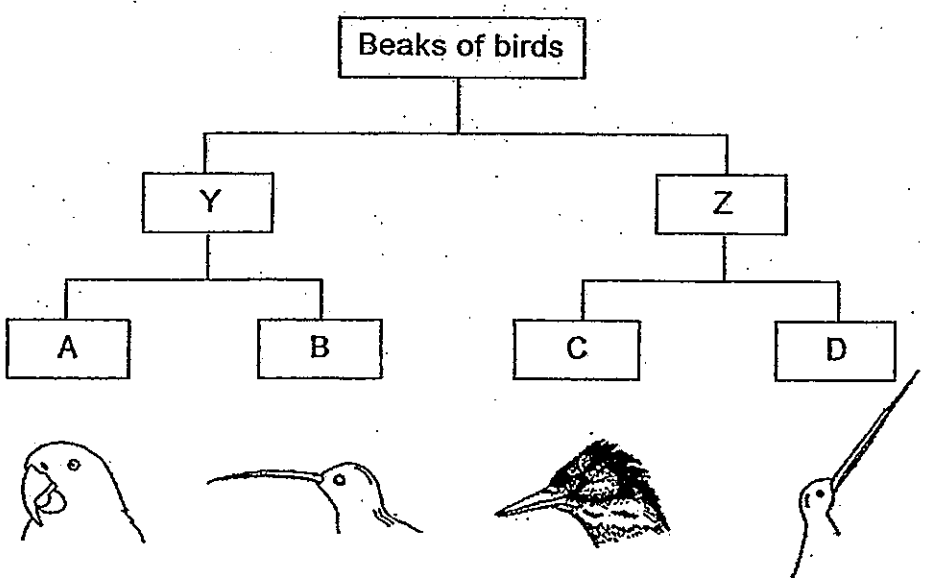
Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 26 printed pages, excluding cover page.

Booklet A (30 × 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 your answer on the Optical Answer Sheet. (60 marks)

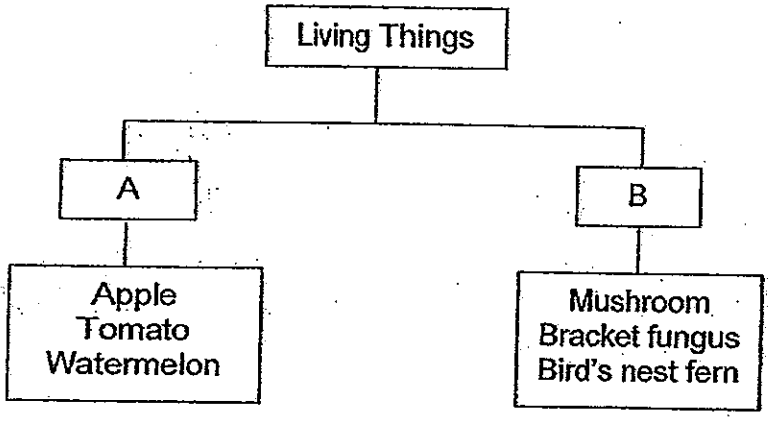
1. The diagram below shows how different groups of birds are classified according to certain characteristics, A, B, C, D, Y and Z.



Which of the following correctly shows the characteristics A and Z?

	A	Z
(1)	Straight beak	Beak longer than head
(2)	Curved beak	Beak shorter than head
(3)	Beak longer than head	Curved beak
(4)	Beak shorter than head	Straight beak

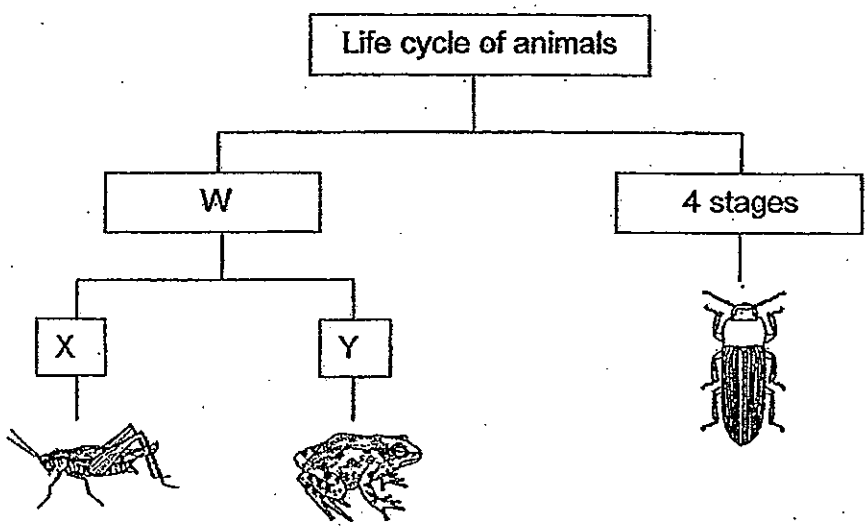
2. The classification chart below shows how some living things can be grouped.



Which of the following represents A and B?

	A	B
(1)	Cannot be eaten	Can be eaten
(2)	Make their own food	Cannot make their own food
(3)	Fruits with many seeds	Fruits with one seed
(4)	Reproduce from seeds	Reproduce from spores

3. Study the diagram below.



Which of the following is represented by W, X and Y?

	W	X	Y
(1)	2 stages	Young looks like the adult	Young does not look like the adult
(2)	2 stages	Young does not look like the adult	Young looks like the adult
(3)	3 stages	Young looks like the adult	Young does not look like the adult
(4)	3 stages	Young does not look like the adult	Young looks like the adult

4. Jane planted similar balsam plants in four pots, P, Q, R and S, with three plants in each pot.

	Pot P	Pot Q	Pot R	Pot S
Material of pot	ceramic	ceramic	ceramic	plastic
Type of soil	garden	sandy	clayey	garden
Size of pot (cm^3)	1500	1500	500	1000
Amount of water used to water the plants daily (ml)	100	100	100	100

If Jane wanted to find out which type of soil is most suitable for growing the balsam plants, which of the two pots must Jane choose in order to conduct a fair test?

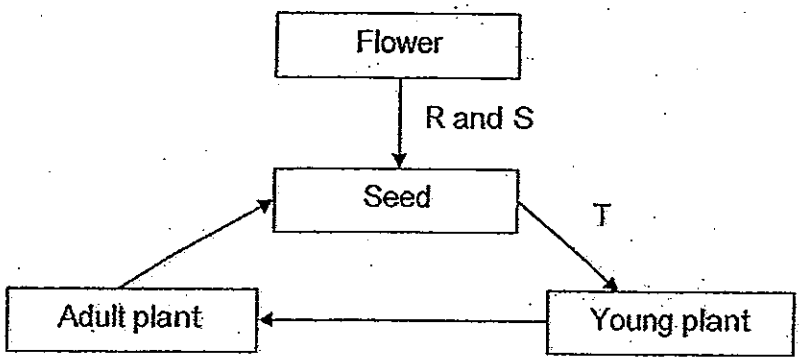
(1) Pots P and Q

(2) Pots Q and R

(3) Pots Q and S

(4) Pots R and S

5. A flowering plant undergoes processes R, S and T as shown below.

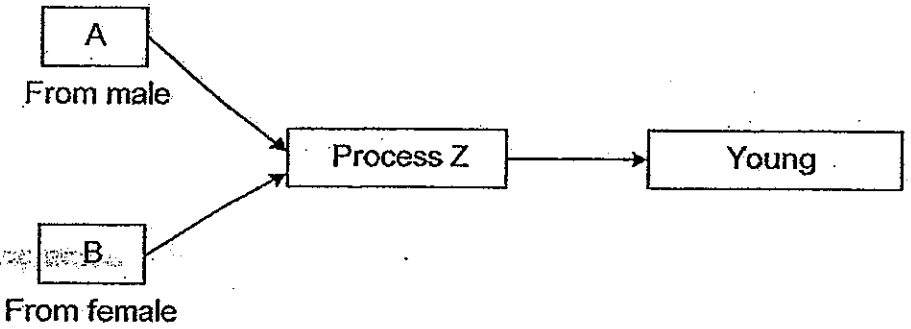


Process R must occur before Process S.

Which of the following correctly represents the processes R, S and T?

	R	S	T
(1)	Fertilisation	Pollination	Germination
(2)	Pollination	Fertilisation	Germination
(3)	Pollination	Fertilisation	Seed dispersal
(4)	Fertilisation	Pollination	Seed dispersal

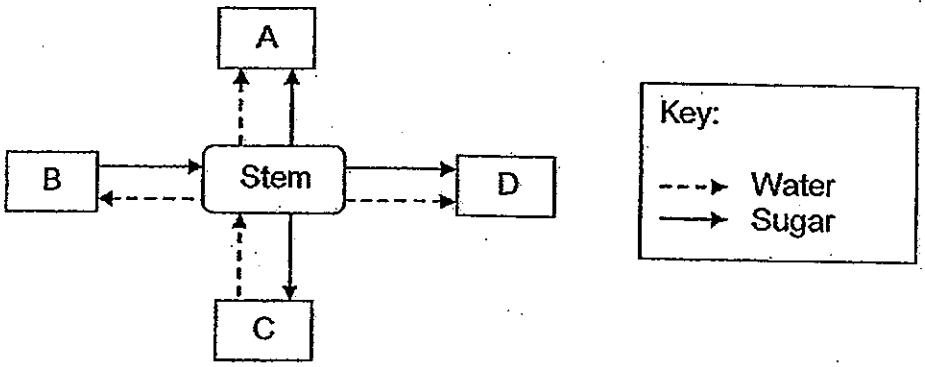
6. Study the diagram below carefully. The diagram can be applied to both the human and plant reproductive systems.



Which of the following represents correctly A, B and Process Z in both the human and plant reproductive systems?

	Human Reproductive System			Plant Reproductive System		
	A	B	Process Z	A	B	Process Z
(1)	Testis	Ovary	Fertilisation	Anther	Stigma	Pollination
(2)	Ovary	Testis	Fertilisation	Stigma	Anther	Fertilisation
(3)	Sperm	Egg	Fertilisation	Pollen grain	Egg	Pollination
(4)	Sperm	Egg	Fertilisation	Pollen grain	Ovule	Fertilisation

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



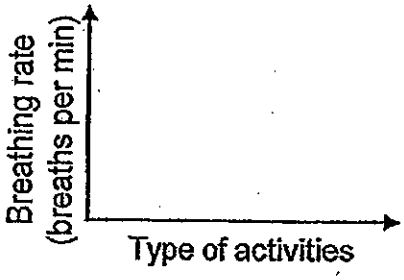
Which one of the following correctly shows the parts of a plant that A, B, C and D represent?

	A	B	C	D
(1)	Roots	Flowers	Fruits	Leaves
(2)	Fruits	Roots	Flowers	Leaves
(3)	Fruits	Leaves	Roots	Flowers
(4)	Leaves	Flowers	Roots	Fruits

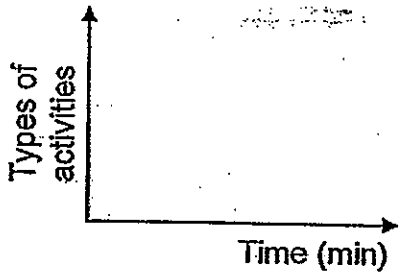
8. Mr Lee wanted to investigate whether his breathing rate increases when he does different types of activities.

Which one of the following axes should he use to show his results?

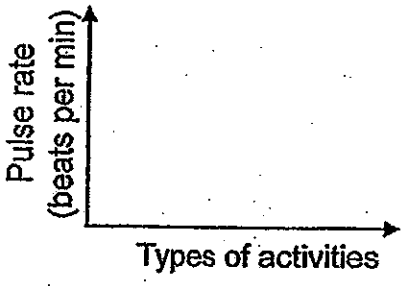
(1)



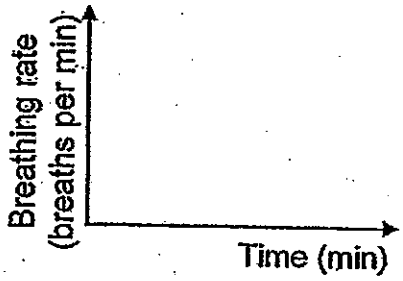
(2)



(3)

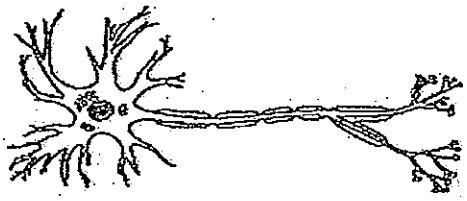


(4)

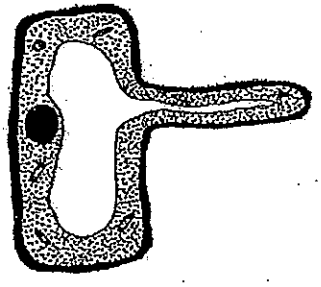


9. Four different types of cells, A, B, C and D, are shown below.

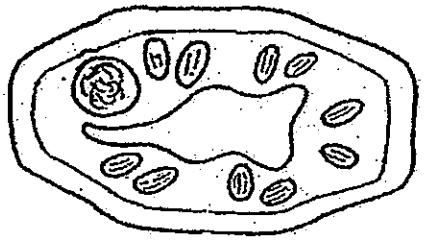
A



B



C



D

Which one of the following is the correct classification of the cells, A, B, C and D?

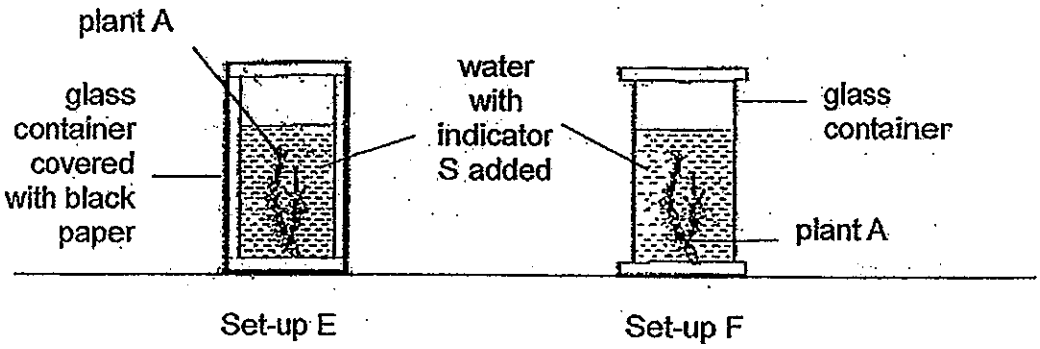
	Animal cells	Plant cells
(1)	A and B	C and D
(2)	B and C	A and D
(3)	A, B and C	D
(4)	A, B and D	C

10. Jun Xiong wanted to find out if the presence of light affects the amount of dissolved carbon dioxide taken in by plant A. He added an indicator solution, S, to his two set-ups.

The colour of the indicator S changes with the amount of dissolved carbon dioxide in the water as shown in the table below.

Colour of Indicator S	Yellow	Green	Blue
Amount of dissolved carbon dioxide in water	More than normal	Normal	Less than normal

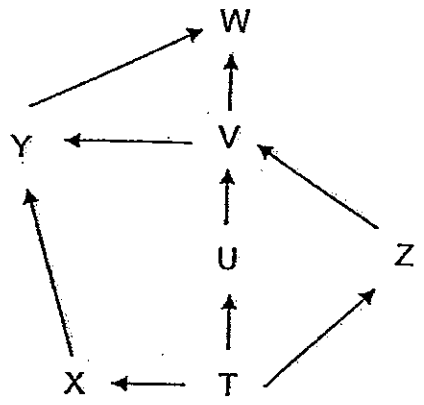
The two set-ups that were used for his investigation are shown in the diagram below. Both set-ups were left in a bright room for an hour.



Which one of the following correctly identifies the colour of indicator S at the end of the investigation in each set-up?

	Colour of indicator S at the end of the investigation in set-up	
	E	F
(1)	Yellow	Blue
(2)	Yellow	Yellow
(3)	Blue	Yellow
(4)	Blue	Green

11. The food web below shows the feeding relationships between organisms T, U, V, W, X, Y and Z.



How many organism(s) is/are both a prey and predator in the food web above?

(1) 1

(2) 2

(3) 3

(4) 4

For Questions **12** and **13**, refer to the information provided in the table below. It provides a description of some physical factors in four different habitats.

Physical factors	Habitats			
	A	B	C	D
Amount of moisture	Low	Low	High	High
Average temperature (°C)	23	18	32	21
Intensity of light (lux)	Low	High	High	Low
Time taken for 20ml of water to flow through soil samples (s)	8	13	15	20

An organism Z was observed to have the following characteristics:

- thrives in a damp environment
- prefers to stay in a dark environment
- most active when the surrounding temperature ranges from 20 – 25 °C

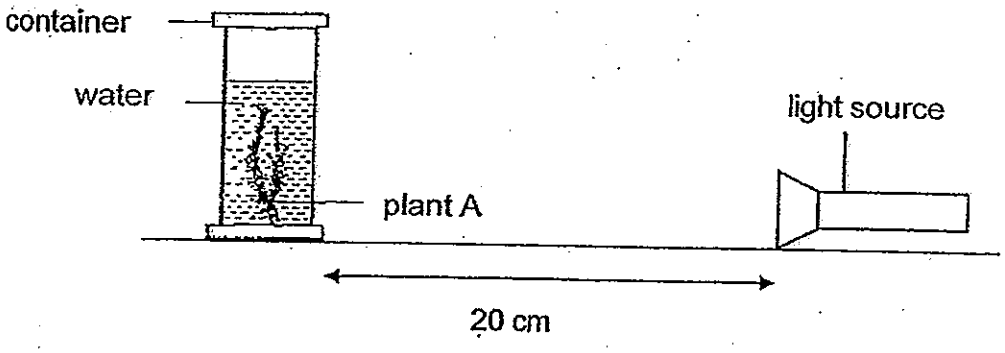
12. In which habitat(s) would there be the greatest number of organism Z?

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

13. Which one of the habitats, A, B, C and D, has the most amount of air spaces present in its soil sample?

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

14. Timothy wanted to investigate how the intensity of light affects the rate of photosynthesis of aquatic plant A.



He set up three similar set-ups as shown above using light bulbs of different light intensities, 20 lux, 60 lux and 100 lux, in a dark room. He counted and recorded the number of bubbles observed in each set-up over a period of 15 minutes.

Light intensity of light bulb (lux)	Number of bubbles			
	E	F	G	H
20	40	20	10	20
60	20	20	20	10
100	10	40	40	40

The table above shows four sets of results, E, F, G and H.

Which set of results, E, F, G or H, is most likely to be the set of results collected by Timothy?

(1) E

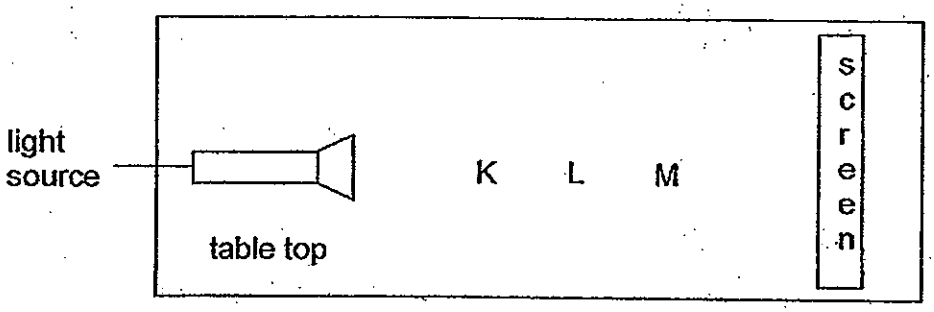
(2) F

(3) G

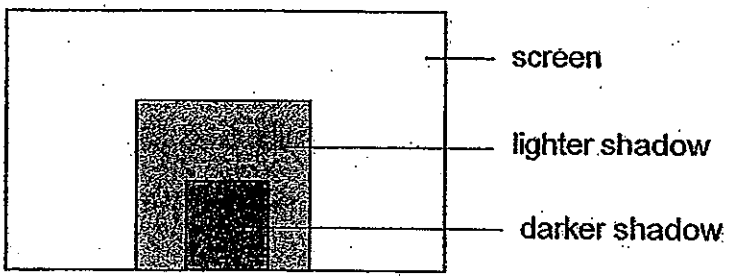
(4) H

15. Three cubes, K, L and M, were placed in a straight line and light was shone on them.

The diagram below shows a top view of the positions of cubes K, L and M, which are placed between the light source and the screen on a table top.



The shadow formed on the screen is shown in the diagram below.



Which one of the following best represents the degree of transparency to light of cubes K, L and M, and their respective sizes?

(1)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K	✓			216
L			✓	27
M		✓		64

(2)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K	✓			216
L		✓		27
M			✓	64

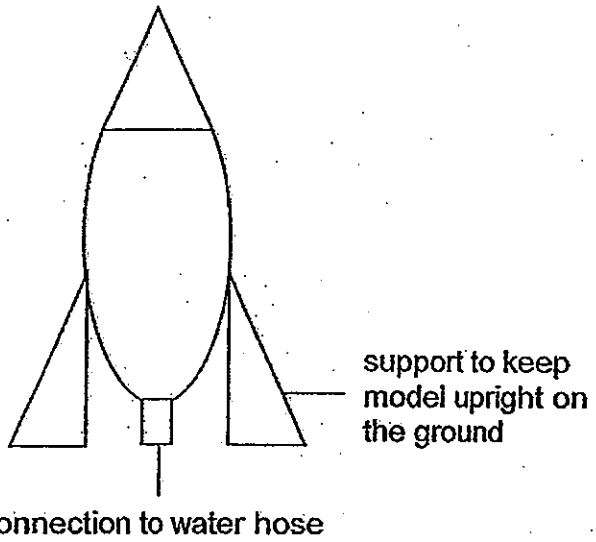
(3)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K			✓	216
L	✓			27
M		✓		64

(4)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K			✓	216
L		✓		27
M	✓			64

16. Ming En wanted to construct a flying model as shown in the diagram below.



He wanted to conduct a test launch where the flying model would fly to a height of at least two metres when filled with water and its parts would still remain intact when it lands on the ground.

Which of the following properties must he take into consideration while selecting the material to construct the flying model?

	Property of material
A	Strength
B	Hardness
C	Waterproof
D	Lightweight
E	Heat resistant

(1) B and D only

(2) A and E only

(3) A, C and D only

(4) B, C, D and E only

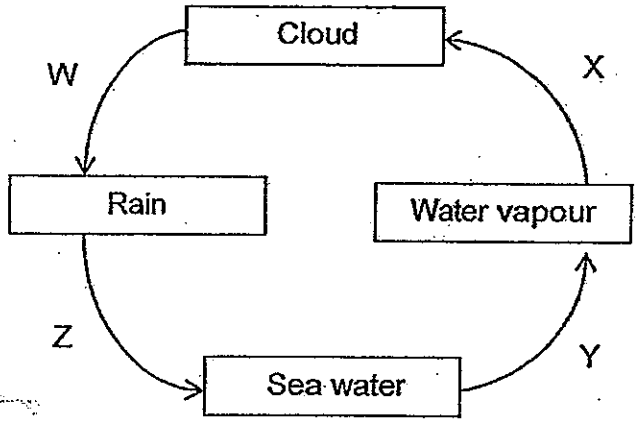
17. The table below shows the melting and boiling points of two substances, X and Y.

Substance	Melting point (°C)	Boiling point (°C)
X	20	200
Y	150	250

Which one of the following shows the correct states of X and Y at 100°C?

	X	Y
(1)	solid	liquid
(2)	solid	solid
(3)	liquid	solid
(4)	liquid	liquid

18. The diagram below represents the water cycle.

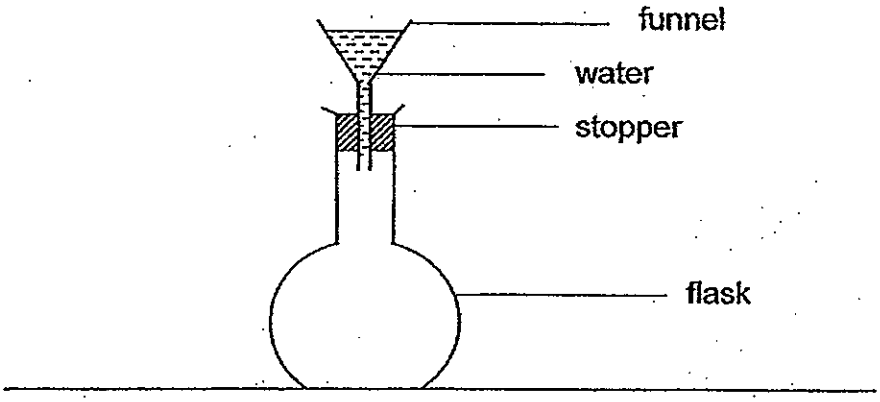


Which of the statement(s) is/are correct?

A Process Y can take place only during the day.
B Heat is lost by the water vapour during process X.
C There is a change in the state of water during processes W and X.

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

19. Ravi's teacher set up the apparatus as shown in the diagram below. When she poured water into the funnel, it did not flow into the flask at all.



Ravi set up a similar experiment as his teacher. When he poured water into the funnel, some of the water flowed into the flask.

What would be a likely reason for Ravi's observations in his experiment to be different from that of his teacher's?

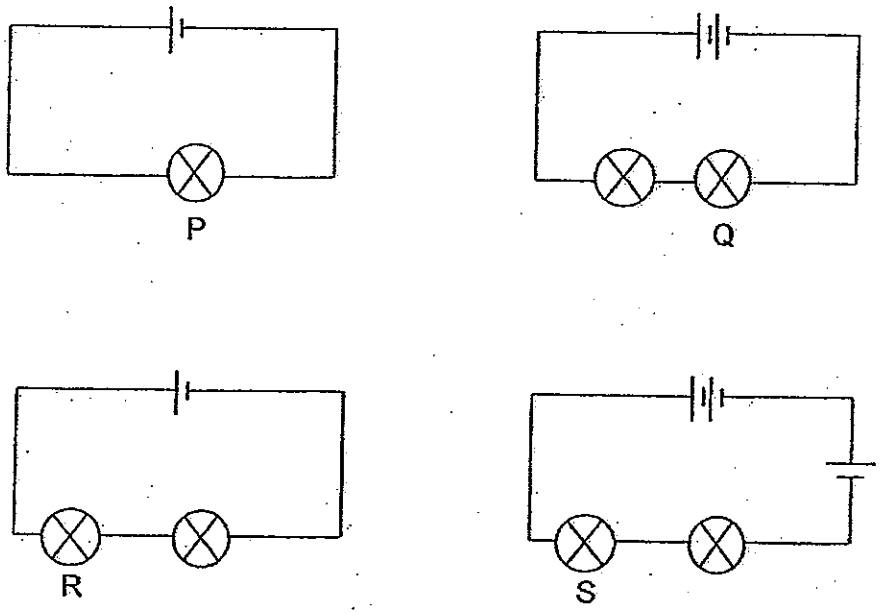
(1) The stopper was loosely fitted.

(2) Ravi poured the water in quickly.

(3) Hot water was used in the funnel.

(4) Ravi placed the flask into a basin of hot water.

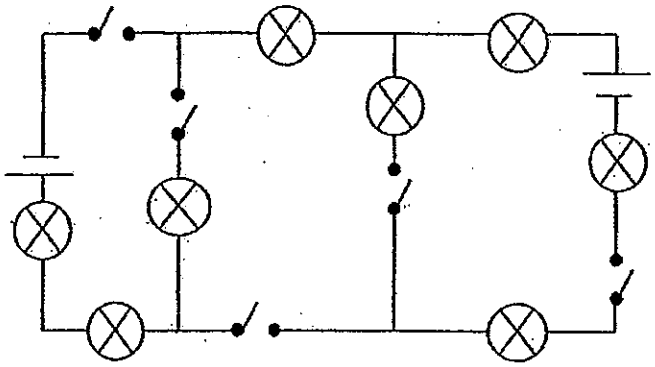
20. The diagram below shows four circuits with different arrangements of similar batteries and similar bulbs. The bulbs in all circuits light up.



Which one of the following shows the brightness of the bulbs?

	Brightness of bulbs		
	Low	Medium	High
(1)	S	P	Q
(2)	P	R	S
(3)	R	P	S
(4)	Q	P	S

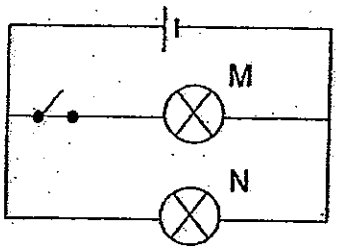
21. Study the electrical circuit below.



In order to have exactly 4 bulbs to light up at the same time, what is the minimum and maximum number of switches that must be closed?

	Minimum number	Maximum number
(1)	1	2
(2)	2	3
(3)	3	4
(4)	4	5

22. Kelvin conducted an experiment using the set-up shown below. He measured the brightness of bulbs M and N.



In his second experiment, he connected another identical bulb O to the circuit. All three bulbs lit up. He measured the brightness of bulbs M, N and O this time.

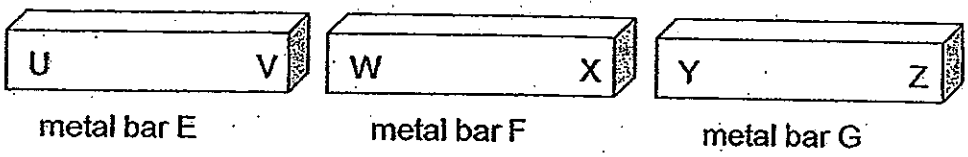
He found that the brightness of bulb M was lower than that in his first experiment and that bulbs M and O had the same brightness in the second experiment. The brightness of N remained the same in both experiments.

Which of the following statements about the circuit in Kelvin's second experiment is/are correct?

A When bulb M fused, bulbs N and O remained lit.
B When the switch was opened, bulb N remained lit.
C All the bulbs in the circuit are arranged in parallel.

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

23. Felicia labelled the ends of three metal bars, E, F and G, as shown in the diagram below.



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

The table below shows the results of Felicia's experiment.

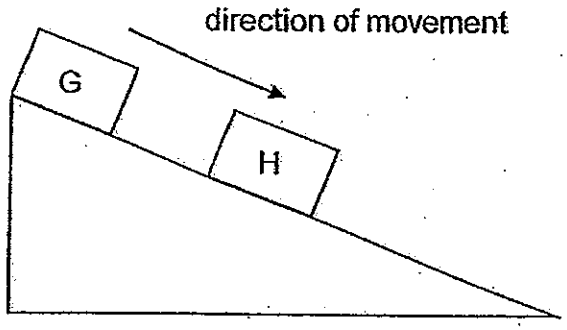
		Metal bar F		Metal bar G	
		W	X	Y	Z
Metal bar E	U	attract	attract	attract	attract
	V	attract	attract	attract	attract
Metal bar F	W			attract	repel
	X			repel	attract

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

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

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

24. The diagram below shows two similar wooden boxes of equal masses, G and H, as they were pushed down a slope.



Three students made the following statements about the above diagram.

Students	Statements
Ashley	The frictional force that is acting on both boxes G and H oppose movement.
Beatty	There is more frictional force between box G and the slope compared to box H and the slope.
Charlie	The amount of frictional force between box G and the slope is the same as that between box H and the slope.

Which of the following students made the correct statements?

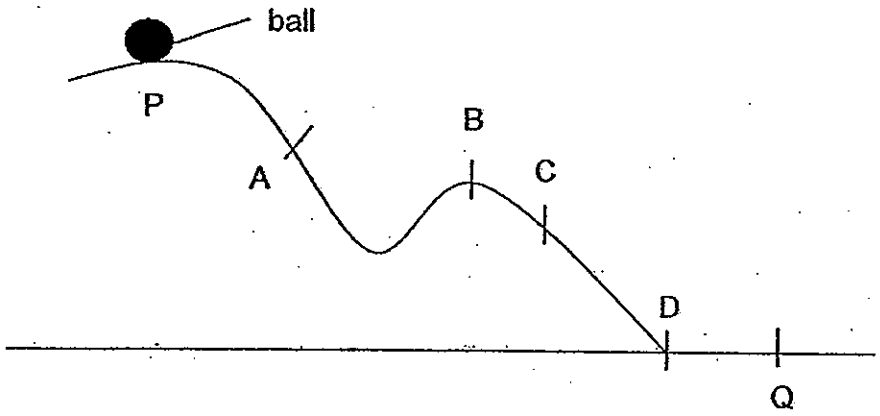
(1) Beatty only

(2) Charlie only

(3) Ashley and Beatty only

(4) Ashley and Charlie only

25. The diagram below shows a ball that is about to roll down a slope from position P to Q.



At which point(s) of the slope would the amount of gravitational force acting on the ball be the same as that at position P?

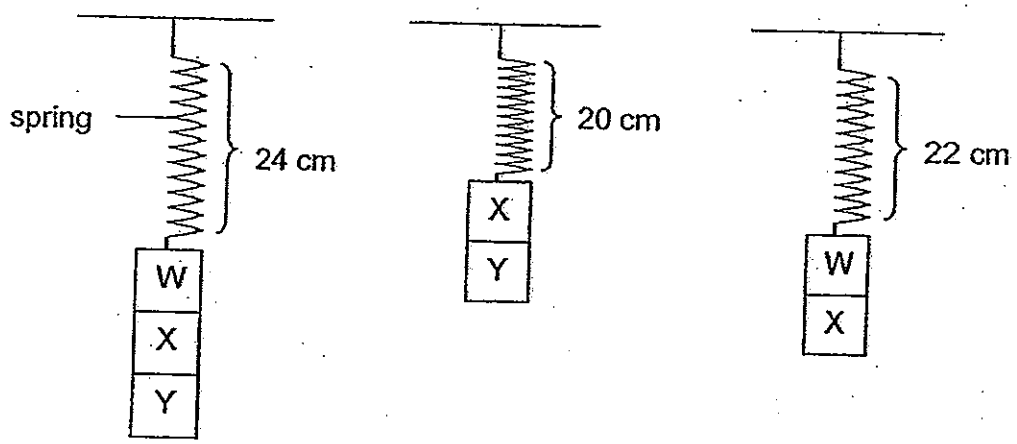
(1) B only

(2) D only

(3) A, B and C only

(4) A, B, C and D

26. The diagram below shows the lengths of a 10 cm spring that was extended when loads, W, X and Y, were placed on it.



What would be the length of the extended spring when only load X was placed on it?

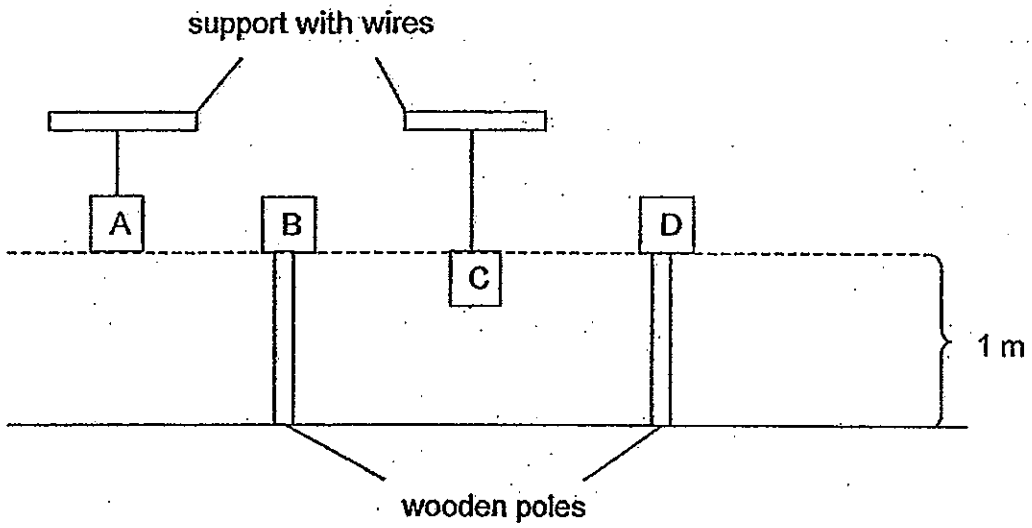
(1) 12 cm

(2) 14 cm

(3) 16 cm

(4) 18 cm

27. Ahmad, Brandon, Claire and Darren placed four cubes of equal mass supported in different ways as shown in the diagram below. Cubes A and C are hung from a support using wires while cubes B and D are placed on wooden poles.



Which of the following statements made by the four students is/are true about the amount of gravitational potential energy that the cubes possess?

Students	Statements
Ahmad	All the cubes possess the same amount of gravitational potential energy.
Brandon	Cube A possesses a greater amount of gravitational potential energy than cube C.
Claire	Cube C possesses a greater amount of gravitational potential energy than cube D.
Darren	Cubes B and D possess the same amount of gravitational potential energy.

(1) Ahmad only

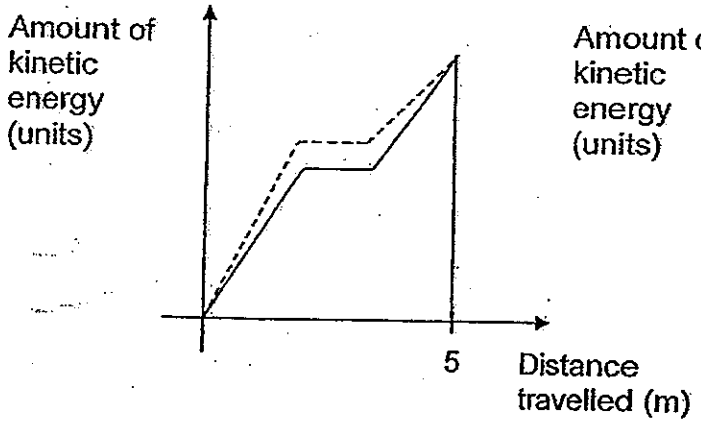
(2) Darren only

(3) Brandon and Claire only

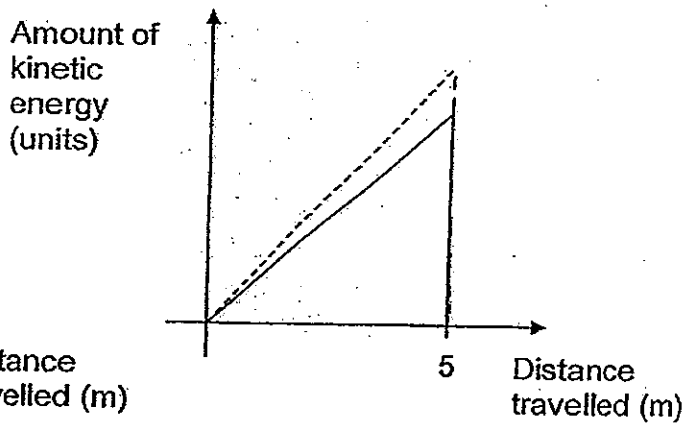
(4) Brandon and Darren only

28. Two objects P and Q of different masses were released from the same height of 5m. Which one of the following graphs best represents how the amount of kinetic energy changes with the distance travelled by the objects?

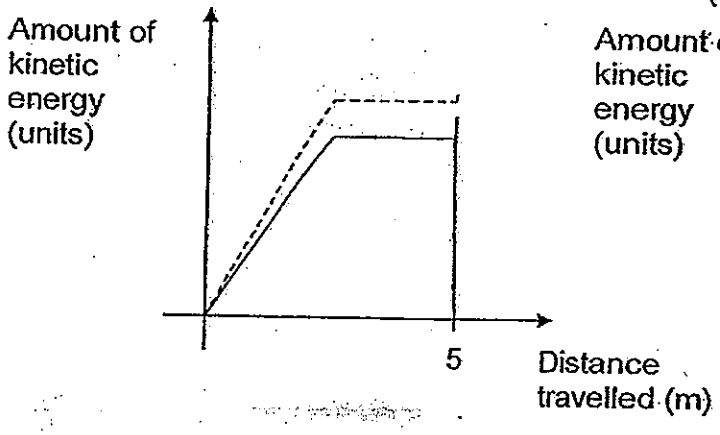
(1)



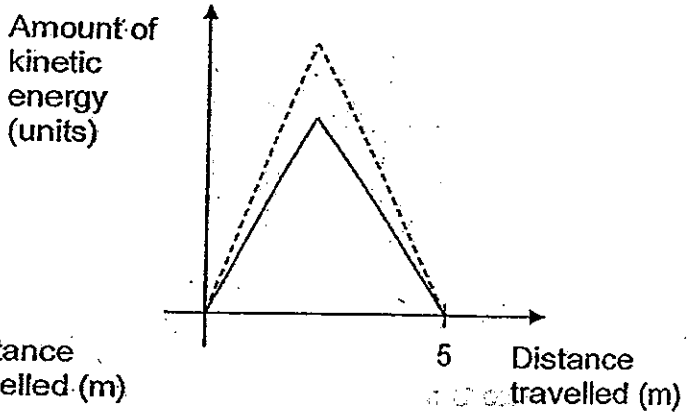
(2)



(3)



(4)



Legend

Object P ————

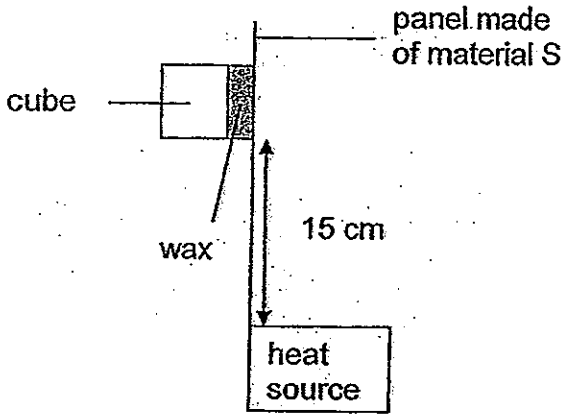
Object Q --------

29. The diagram below shows Mr Wong with his golf club and a golf ball.

Based on the diagram above, which one of the following best represents the type of energy possessed by the golf club and the golf ball?

	Energy possessed by	
	Golf club	Golf ball
(1)	Kinetic energy	kinetic energy
(2)	Kinetic energy	Gravitational potential energy
(3)	Gravitational potential energy	Kinetic energy
(4)	Gravitational potential energy	Gravitational potential energy

30. Emily stuck one cube onto a panel made of material S using wax at a height of 15 cm away from the heat source as shown in the diagram below.



She repeated the experiment with three more panels of equal thickness but made of different materials, T, U and V, one at a time. She recorded the time taken for the same cube to fall off the panels. The results of her experiment are shown in the table below.

Panels made of materials	Time taken for cube to fall off the panel (s)
S	25
T	55
U	37
V	12

Based on the results above, which one of the following shows the correct arrangement of materials, starting with the material that is least able to conduct heat?

(1) T, U, S, V

(2) T, S, U, V

(3) V, S, U, T

(4) V, U, S, T

End of Booklet A

CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2013
PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 27 August 2013

Booklet A	60
Booklet B	40
Total	100

Parent's Signature: _____

14 questions

40 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.

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

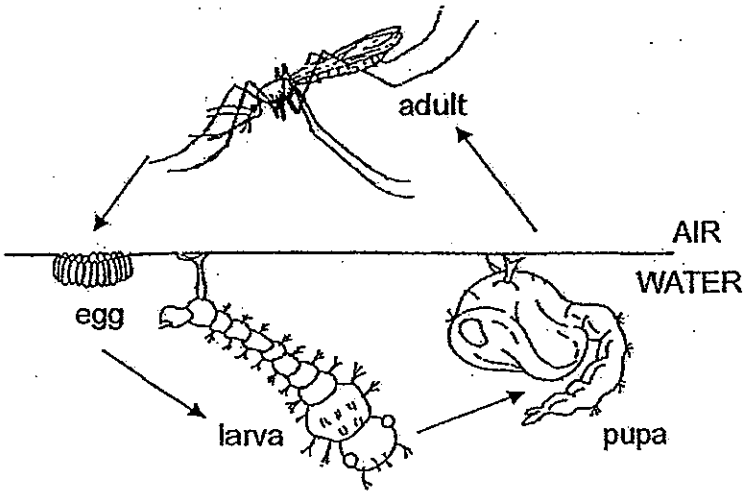
Booklet B (40 marks)

For questions 31 to 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31. The National Environment Agency has observed an increase in the number of Dengue cases recently. To protect yourself from dengue, it is necessary to take preventive steps regularly.

Patrick's teacher gave him a diagram on the life cycle of an Aedes mosquito as shown below.

Life cycle of an Aedes Mosquito



(a) At which stage of a mosquito's life cycle is it most difficult to kill? Explain why. [2]

_____

_____

(b) Patrick's teacher wanted him to think of a way to control the population of Aedes mosquitoes. He suggested spreading a layer of oil on the surface of the water in order to control the population of the Aedes mosquitoes.

Based on the diagram and information given above, why is Patrick's method effective in controlling the population of the Aedes mosquito? Explain your answer. [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

32. Leo took part in the Ironman Marathon Race. His heart rate and breathing rate increased during the race.

(a) Why did Leo's heart rate increase during the race? [2]

_____

_____

_____

_____

(b) There were many water points along the race. Leo took a bottle of water from one of the water points. Other than drinking the water, Leo also poured some of the water over his body to cool himself. Why did Leo do this? [1]

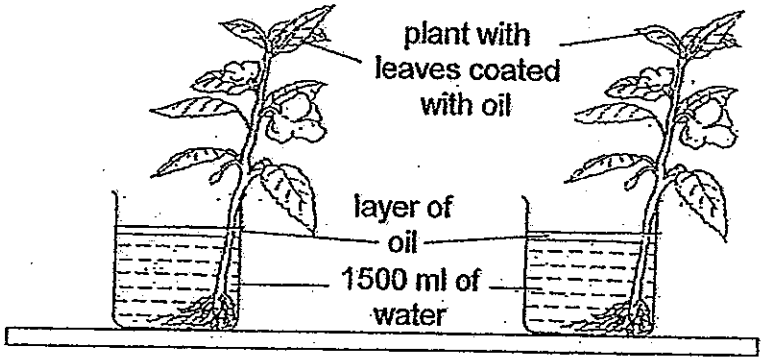
_____

_____

(Go on to the next page)

SCORE	/ 3

33. Mrs Cheng placed 2 similar plants in identical beakers, W and X. She coated one side of all the leaves with oil for the plant in Beaker W and coated the other side of all the leaves with oil for the plant in Beaker X.



Beaker W Beaker X

The table below shows the volume of water in the beakers at the beginning and at the end of the experiment after a day.

Beaker	Volume of water (ml)	
	Start of experiment	End of experiment
W	1500	1250
X	1500	1000

(a) Based on the results above, which beaker contained the plant with leaves that were coated with oil on the underside of the leaves? Explain your answer. [2]

_____

_____

_____

_____

(Go on to the next page)

SCORE	/ 2

33. (b) Mrs Cheng realised that she needed to have a control set-up for her experiment. Draw a control set-up for the above experiment. [1]

(c) What is the purpose of the control set-up? [1]

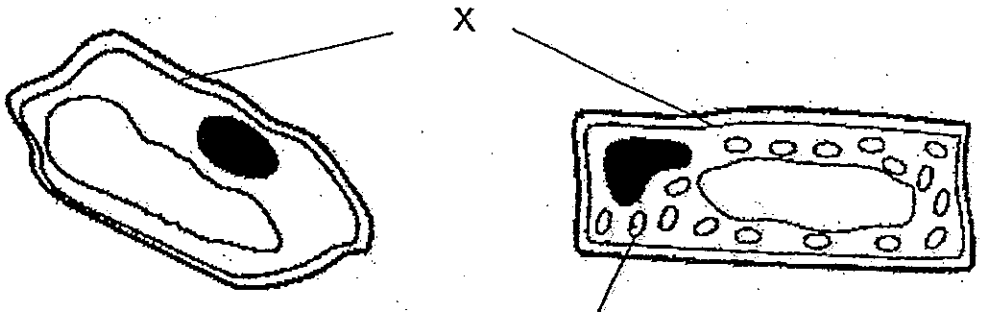
_____

_____

(Go on to the next page)

SCORE	

34. Randy observed two types of cells, A and B, from the same plant, as shown in the diagram below.



Cell A Cell B

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

_____

_____

(b) Mark and label, in the diagram above, the part of the cell that makes food for the plant in Cell B. [1]

(c) State a part of the plant where Cell A is likely to be found.
Give a reason for your answer. [1]

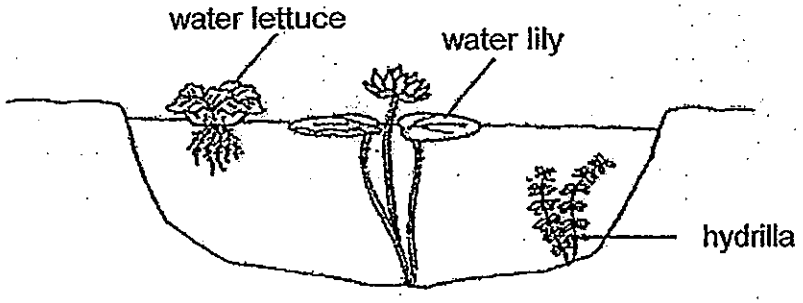
_____

_____

(Go on to the next page)

SCORE	/ 3

35. The diagram below shows a pond with three types of aquatic plants.



After a downpour, a large amount of soil particles was washed into the pond water which resulted in many of these soil particles being suspended in the water.

Which plant would be immediately affected and how? [2]

_____

_____

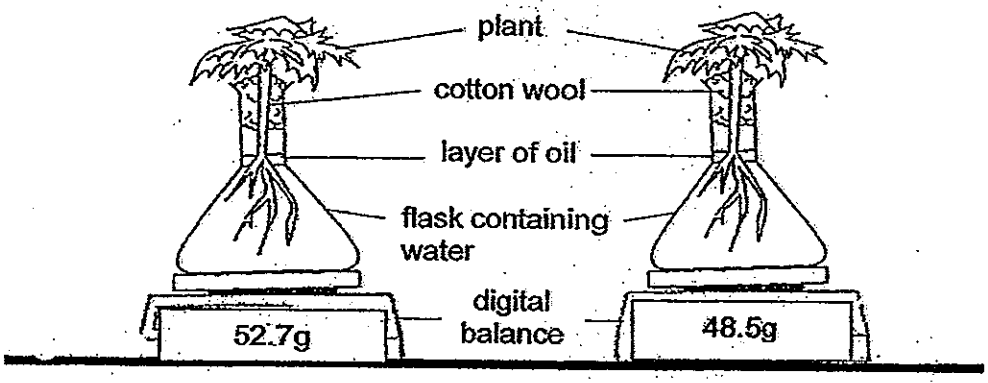
_____

_____

(Go on to the next page)

SCORE	/ 2

36. Melissa placed a plant in a flask of water. She then left the set-up outdoors under bright sunlight where it was warm and windy for six hours as shown in the diagram below.



Start of experiment At the end of six hours

(a) State the energy conversion that took place in the leaves during the experiment. [1]

_____

_____

(b) How does the presence of the layer of oil above the water improve the validity of the results at the end of the experiment? [1]

_____

_____

(c) If Melissa had placed the same set-up in a dark room which was also warm and windy, would the reading on the balance be more or less than 48.5g? Why? [1]

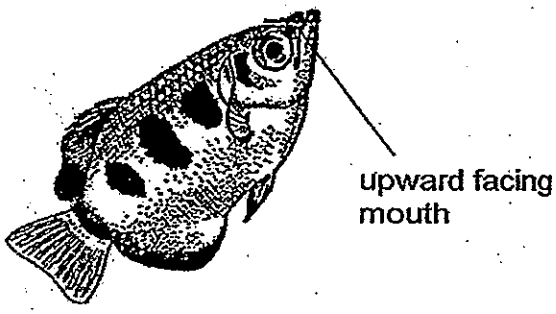
_____

_____

(Go on to the next page)

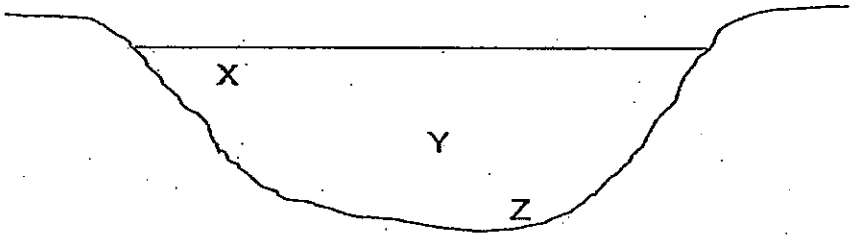
SCORE	/ 3

37. The diagram below shows Fish R which has an upward facing mouth.



Fish R feeds on floating plants which are found in the water and on insects that are found on low, overhanging branches of mangrove trees. These insects fall into the water below after being shot down by a stream of water that Fish R releases from its mouth.

The diagram below shows a cross-section of the habitat where Fish R can be found.



Cross-section of habitat where Fish R can be found

(a) Based on the information above, in which part of the habitat, X, Y or Z, would you most likely find Fish R? Explain your choice. [1]

_____

_____

(b) How does being dependent on two different sources of food enable Fish R to increase its chances of survival? [1]

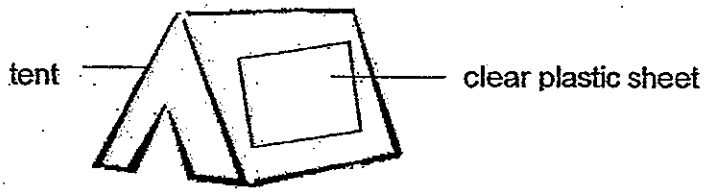
_____

_____

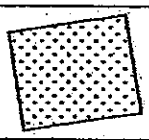
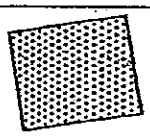
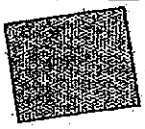
(Go on to the next page)

SCORE	/ 2

38. Harim conducted an experiment to find out the period of the day when the air contained the most amount of dust. He replaced a part of his tent with a piece of clear plastic sheet as shown in the diagram below.



The piece of plastic sheet was neither moved nor cleaned for 24 hours. He recorded the appearance of the clear plastic sheet at different periods of the day as shown in the diagram below.

Appearance on clear plastic sheet			
Period of time	8am – 4pm	4pm – 12 midnight	12 midnight – 8am

He concluded that the air contained the most amount of dust between 12 midnight to 8am. His father told him that it was an incorrect conclusion.

(a) Explain why the conclusion made by Harim was incorrect. [1]

_____

_____

(b) What should Harim do to ensure that he could make a valid conclusion? [1]

_____

_____

(Go on to the next page)

SCORE	/ 2

38. (c) A few days later, Harim observed his father changing the filter for one of the air purifiers in the house. He noticed that the filter was pleated as shown in the diagram below.

State a reason why the filter was pleated. [1]

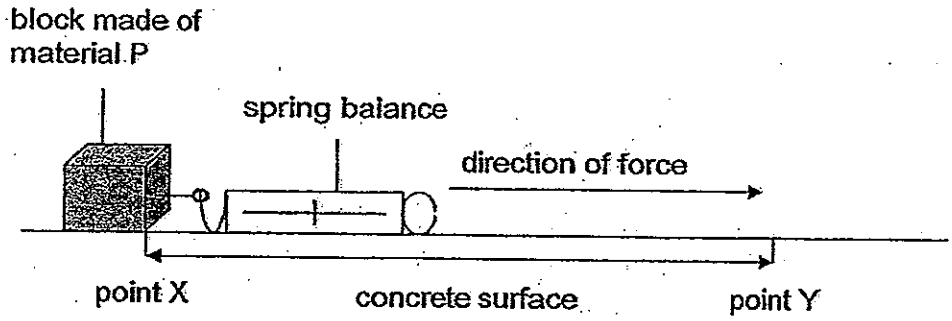
_____

_____

(Go on to the next page)

SCORE	
	1

39. Christopher had five similar blocks where each block was made of a different material. He pulled them one at a time across a concrete surface from point X to Y as shown in the diagram below.



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

Block made of material	Amount of force needed to pull each block (units)
P	15
Q	25
R	13
S	32
T	19

(a) Based on the data collected, arrange the texture of the surface of the blocks starting with the smoothest surface to the roughest surface. [1]

_____

(b) Christopher wanted to use one of the materials above to make the soles of shoes worn by construction workers where they might be walking along surfaces that are covered with grease and water.

Which material should he choose? Explain. [2]

_____

_____

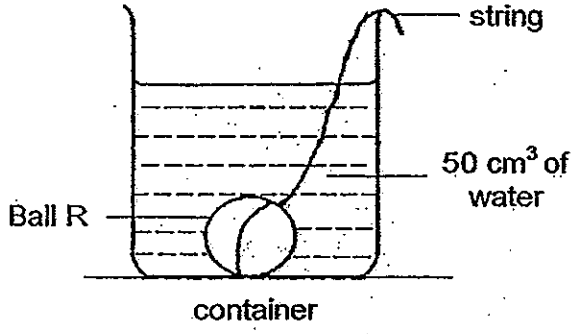
_____

_____

(Go on to the next page)

SCORE	/ 3

40. Jamilah wanted to find out the volume of two metal balls, R and S. First she put Ball R in a container with 50 cm^3 of water and recorded the final volume of water with Ball R. She then removed Ball R carefully and repeated the experiment with Ball S. The results are as shown in the table below.



Final volume of water with Ball R (cm^3)	Final volume of water with Ball S (cm^3)
65	85

(a) Based on the results above, which ball has a bigger volume? Explain. [1]

_____

_____

(b) What is the volume of Ball R? [1]

_____

(c) Based on the experiment above, what property of solids does this experiment show? [1]

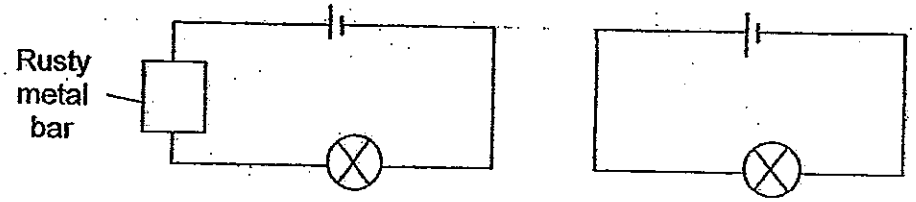
_____

_____

(Go on to the next page)

SCORE	/ 3

41. Joanna set up two similar circuits as shown below.

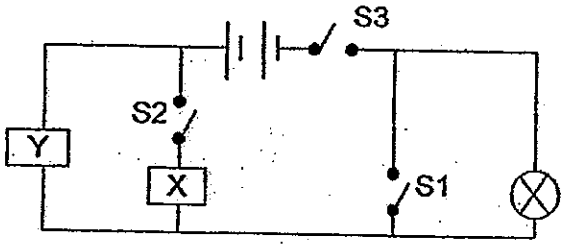


Circuit A Circuit B

She realised that the bulb in the Circuit A did not light up while the bulb in Circuit B lit up.

(a) Based on Joanna's observation, what can she conclude about the property of the rusty metal bar? [1]

She continued to set up another circuit as shown below using the rusty metal bar in Circuit A and a copper wire at positions X and Y in a random order.



Circuit C

She closed some of the switches in the above circuit and her observations were recorded below.

Switches	Did the bulb light up?
S1 and S3	No
S2 and S3	Yes

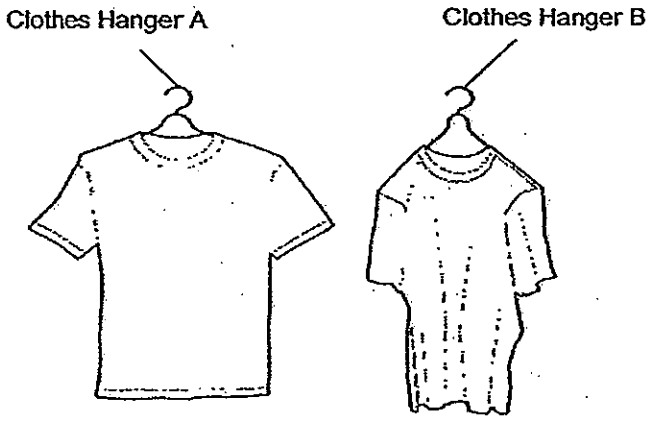
(b) Based on her observations, write down the positions, X and Y, of the two items used in Circuit C. [1]

Items	Position
Copper wire	
Rusty metal bar	

(Go on to the next page)

SCORE	/ 2

42. Sangeetha wanted to dry her wet t-shirts by hanging them on clothes hangers before bringing them out to sun. She managed to find two types of clothes hangers and hanged her t-shirts as shown below.



(a) Which clothes hanger will allow Sangeetha to dry her t-shirts faster? Explain why. [1]

_____

_____

(b) Sangeetha realised that she had spilled some water on the floor while hanging the wet t-shirts. She needed the floor to be dry as soon as possible. Name two things that Sangetha could do to ensure that. [2]

(Note: She did not have any cloth to wipe the water nor any mop around.)

Method 1:

_____

_____

Method 2:

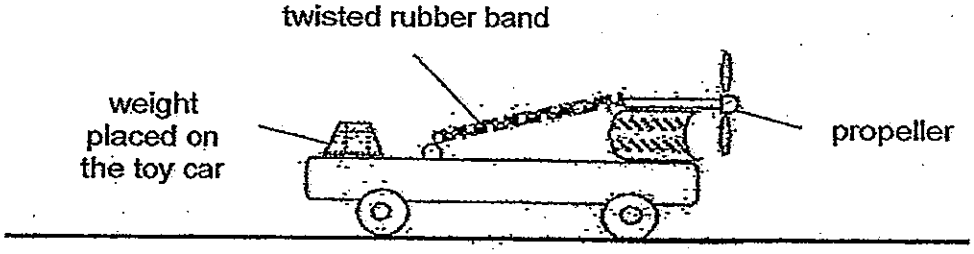
_____

_____

(Go on to the next page)

SCORE	/ 3

43. Ignatius had a toy car which has a propeller attached to a rubber band as shown in the diagram below.



He wanted to find out how the number of weights on the toy car affects the distance it could move on the ground.

In order for the toy car to move, he had to turn the propeller which in turn twist the attached rubber band. He then placed the toy car on the ground before releasing it to measure the distance moved by the toy car on the ground.

(a) State the form(s) of energy possessed by the rubber band as he turns the propeller of the toy car before placing the toy car on the ground. [1]

_____

He recorded the data that he collected in the table as shown below.

Number of weights on the toy car	Distance moved by the toy car (cm)
0	37
1	30
2	26
3	13
4	3
5	0
6	0
7	0

(b)(i) Based on the results collected, how does the number of weights on the toy car affect the distance it could move on the ground? [1]

_____

_____

(Go on to the next page)

SCORE	/ 2

43. (ii) Every time before letting the toy car move on the ground, Ignatius turned the propeller four times.

How does this ensure a fair test? [1]

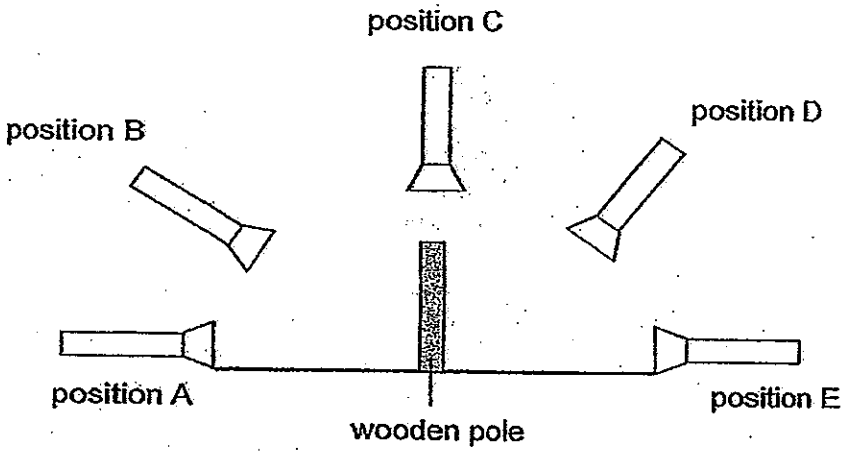
_____

_____

(Go on to the next page)

SCORE	/ 1

44. Joshua conducted an experiment in a dark room as shown in the diagram below.



He kept the distance between the torchlight and the wooden pole constant as he placed the torch at the various positions, A, B, C, D and E. He then observed that the directions and lengths of the shadows cast change with the position where the torch was placed.

(a) Why did Joshua conduct the experiment in a dark room? [1]

_____

_____

(b) What property of light is demonstrated in the above experiment? [1]

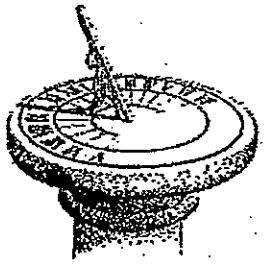
_____

_____

(Go on to the next page)

SCORE	/ 2

44. A sundial is a device that tells the time of the day by the position of the Sun based on the length of the shadows cast as shown in the diagram below.



Joshua wanted to make a sundial using the results that was collected from the experiment as shown in the table below.

Position	Length of shadow formed (cm)
A	50
B	30
C	10
D	30
E	50

(c) Based on the results above, which position(s) of the torch is/are similar to the position of the Sun at noon as seen from Earth? Give a reason for your choice. [1]

_____

_____

-End of Booklet B-

SCORE	/ 1

ANSWER SHEET

EXAM PAPER 2013
SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

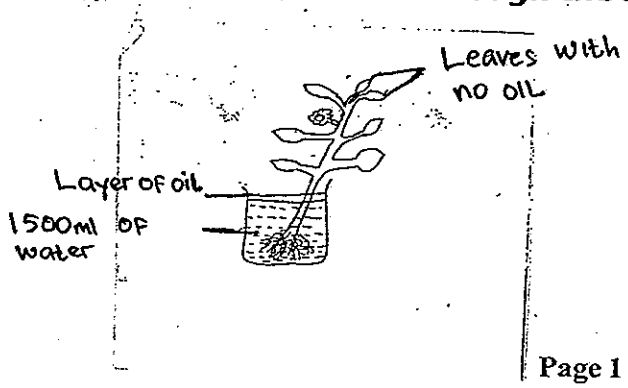
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
4	4	3	1	2	4	3	1	1	1	2	2	1	3	3	3	3

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

31)a)The adult has wings so it can fly while the 3 other stages stay in water.
b)The mosquito larva and pupa uses breathing tubes that stick out of the water for oxygen and by spreading a layer of oil, the tubes will not be able to suck in air.

32)a)His heart beats faster to supply more blood to other parts of the body, therefore, more oxygen and more digested food can be transported to convent to more energy.
b)When the water evaporates, it removes heat from his body/ gains heat from his body.

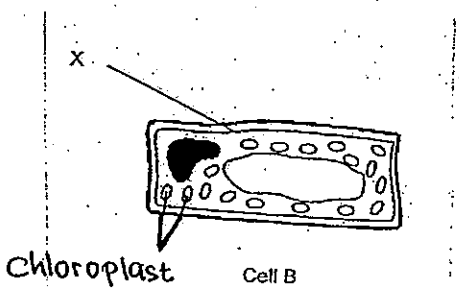
33)a)Beaker W. Volume of water left in beaker W will be more than beaker X. More stomata are found on the underside of the leaves of plant in W was coated in oil, less water was lost through the stomata.
b)



33)c)To compare and confirm that the difference in volume of water left is due to leaves that were coated with oil only.

34)a)It controls the movement of substances in and out of the cell.

b)



c)In the roots of a plant. It does not have chloroplast and has a cell wall meaning that the cell in a part of a plant that close not photosynthesis and make food.

35)The hydrilla. The soil particles suspended in the water will block most sunlight from reaching the hydrilla and the hydrilla would not have sufficient sunlight for it to photosynthesise and make food and would eventually die.

36)a)Light energy→Chemical energy potential energy.

b)This ensures that any decrease in the mass of the set-up left is due to the absorption of water through the roots.

c)In the absence of light photosynthesis will not take place so less water will be used.

37)a)Part X. Fish R has to remain close to the surface to catch its prey/ insect and to feed on the floating aquatic plant.

b)If the insects are eaten by another predator, fish R can feed on floating plants.

38)a)Harim did not clear the mat after the intervals, and the mat would just continue collecting more dust from each time period.

b)

c)So that there would be a larger surface area fur the filter to trap dust.

39)a)R, P, T, Q, S.

b)Material S. The amount of force needed to pull the material was the most and the material has the roughest meaning that the frictional force between material S and ground is the most compared to material P,Q,R,T preventing construction workers from slipping.

40)a)Ball S. The final volume of water with ball S was more than the final volume ball R.

b)15cm3.

c)Solids have a definite volume.

41)a)The rusty metal bar cannot conduct electricity.

b)X

Y

42)a)Clothes Hanger A. It has a larger surface area which increase the rate of evaporation.

b)1)She can spread out the puddle of water.

2)She could use a fan to fan the water.

43)a)Elastic potential energy and kinetic energy.

b)i)The more the number of weights on the toy car, the lesser the distance moved by the toy car until 5 weights where the car cannot move at all.

ii)This is to ensure the number of weight on they toy car is the only variable that a affects the distance moved by the toy car.

44)a)So to ensure that no other light would interrupt the experiment. Conclusions it may affect the direction and length of shadow cast.

b)Light travels in a straight line.

c)Position C. The position of the sun would be the same as position C and the shadow that is cast at noon would be the shortest compared to other times.

Index Number: ☐☐☐☐☐-☐

CHIJ ST. NICHOLAS GIRLS' SCHOOL

PRELIMINARY EXAMINATION

2013

P6 SCIENCE

(BOOKLET A)

22 August 2013

NAME : _____ ( )

CLASS : Primary 6 _____

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

30 questions
60 marks

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 21 printed pages.

Section A (30 x 2 = 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). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Figure 1 below shows the water-carrying tube (xylem) and food-carrying tube (phloem) of a plant.

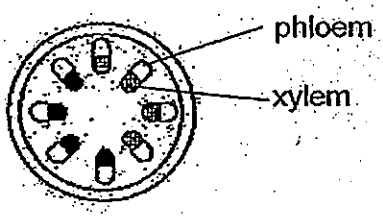


Figure 1

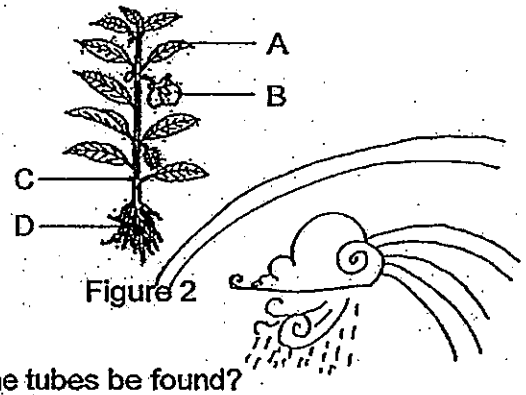
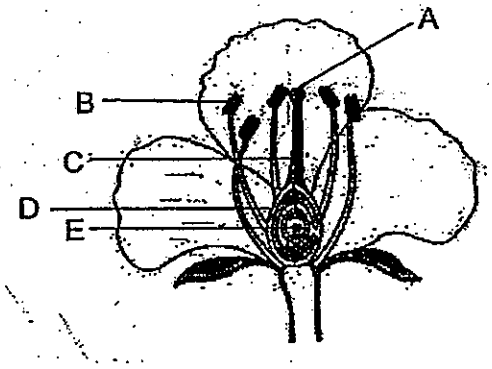


Figure 2

In which part(s) of the plant in figure 2 can the tubes be found?

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

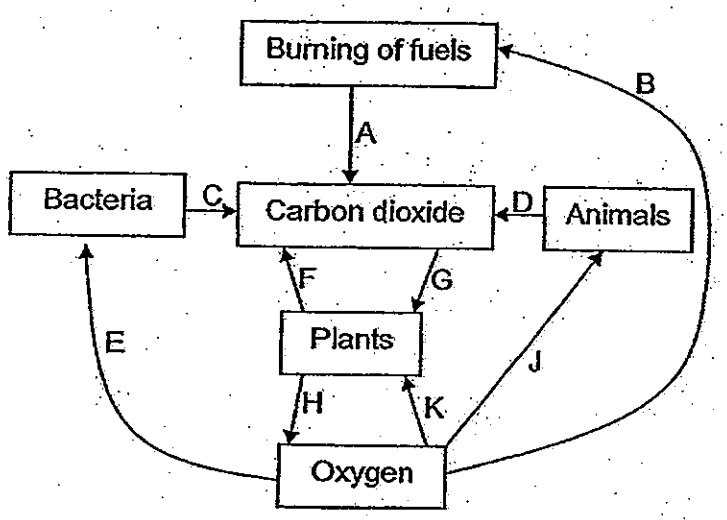
2. The diagram below shows the cross-section of a flower with male and female parts.



Which parts of the flower are directly involved in the pollination process?

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

3. The diagram below shows the exchange of gases in an environment.



Which one of the following sets of arrows represents respiration?

(1) JD and KF only
(2) AB, CE and KG only
(3) CE, KF and JD only
(4) HG, KF and CE only

4. Which one of the following adaptive features of the various organisms is correctly matched with its function?

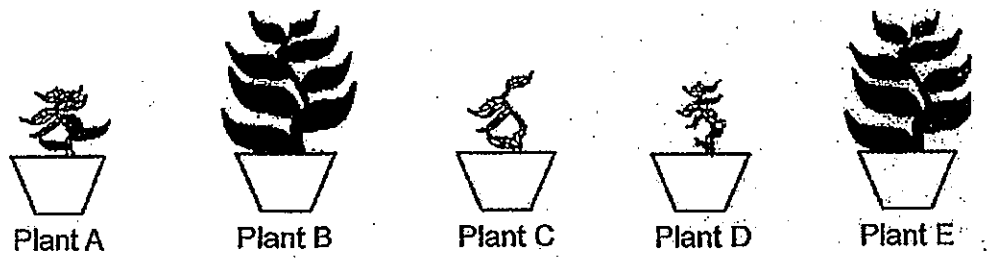
	Name of organism	Adaptive feature	Function of adaptive feature
(1)	Polar Bear	Stiff hairs on underside of paws	To increase friction for movement on ice
(2)	Eagle	Has talons	To catch and tear the flesh of its prey
(3)	Camel	Has hump on its back	To store water and fat
(4)	Pitcher Plant	Leaf modified as pitcher	To trap insects as nutrients

5. Hassan carried out an investigation to find out how different conditions affect plant growth.

He placed five similar small plants into separate pots and grew the plants under the conditions shown in the table. A tick (√) indicates the presence of the condition.

Condition	Plant A	Plant B	Plant C	Plant D	Plant E
light	√	√	X	√	√
sand	√	X	√	√	√
water	√	√	√	X	√
fertilizer	X	√	√	√	√

The diagram below shows the plants after two weeks.



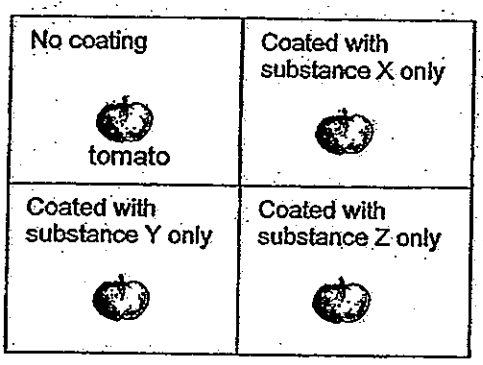
Based on the results above, which condition has the least effect on plant growth?

(1) light
(2) sand
(3) water
(4) fertilizer

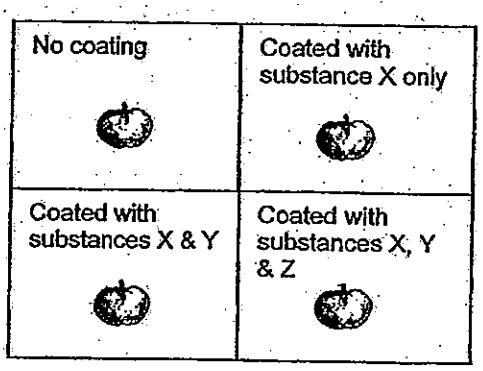
6. John wanted to test if substances, X,Y or Z, could be used to keep fruit flies away from tomatoes. To do this he coated some tomatoes with the substances and left some tomatoes with no coating. He used similar tomatoes for all tests. He counted the number of fruit flies on the tomatoes after two hours.

In order to obtain the most reliable results, which one of the following set-ups should he use to test the effect of the substances?

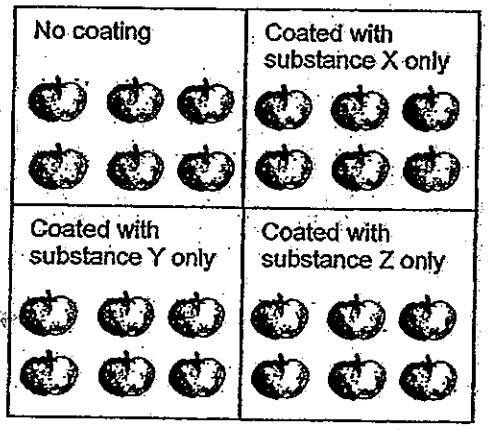
(1)



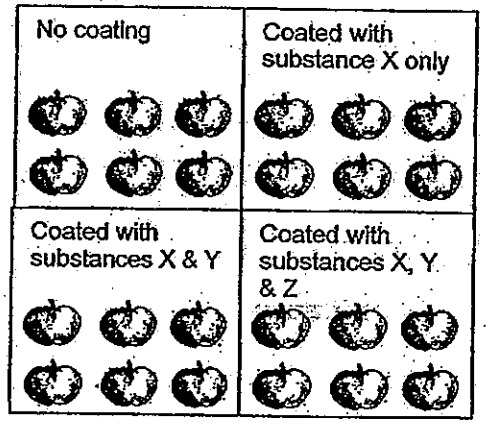
(2)



(3)



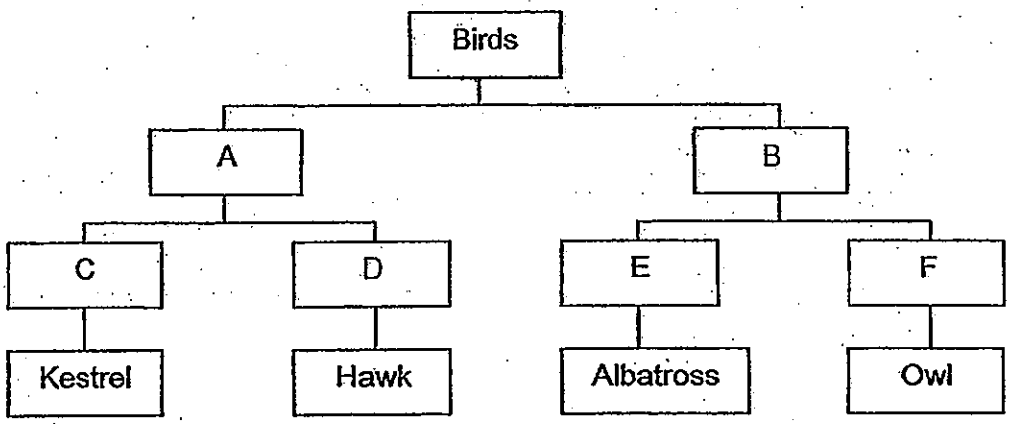
(4)



7. The table below gives some information on four birds.

Characteristics	Birds			
	Albatross	Hawk	Kestrel	Owl
Glides	√			√
Hovers		√	√	
Keen eyesight		√		√
Wide wingspan	√		√	

Based on the table above, the birds can also be classified in the following classification chart. The letters A to F represent characteristics of the birds.



Which one of the following correctly shows the characteristics B and D?

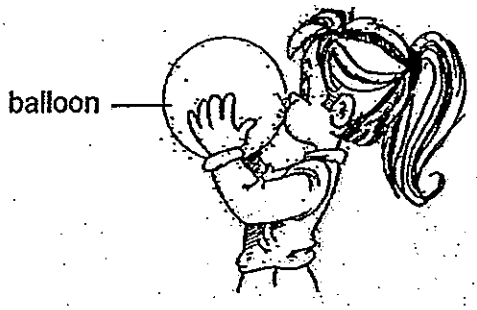
	B	D
(1)	Glide	Does not have wide wingspan
(2)	Hover	Does not have keen eyesight
(3)	Glide	Does not have keen eyesight
(4)	Does not have wide wingspan	Hover

8. A group of scientists found two parts of an animal as shown in the diagram below.

Based on the parts discovered, which one of the following statements about the animal is most likely to be correct?

(1) It was a mammal.
(2) It was an aquatic animal.
(3) It breathed through lungs.
(4) It reproduced by laying eggs.

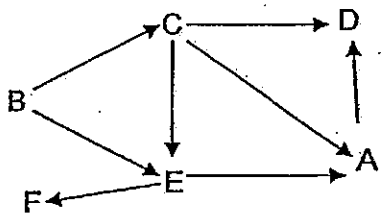
9. The drawing below shows a boy blowing a balloon.



Which one of the following correctly describes what happens to his ribcage, diaphragm and chest when he blows into the balloon?

	Ribcage	Diaphragm	Chest
(1)	Move out and upwards	Move downwards	Bigger
(2)	Move out and upwards	Move upwards	Smaller
(3)	Move in and downwards	Move downwards	Bigger
(4)	Move in and downwards	Move upwards	Smaller

10. Study the food web below carefully.



Based on the food web above, two experiments are carried out. Some of the organisms are kept together in one container over a period of time as recorded in the table below.

Experiment	Organisms that are kept together
1	A, C and D
2	A, B and C

Which one of the following is most likely to be the outcome of the experiments?

	Outcome of experiment 1	Outcome of experiment 2
(1)	C and D are left	A is left
(2)	D is left	C is left
(3)	A and D are left	C is left
(4)	D is left	A and B are left

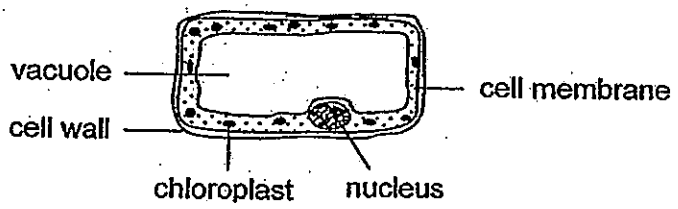
11. The diagram below shows a bird's nest fern growing on the trunk of a rain tree.

The bird's nest fern grows at the base of large branches and can grow in the absence of soil as it has a unique ability to trap water. The rain tree is not damaged by this process and does not benefit from it.

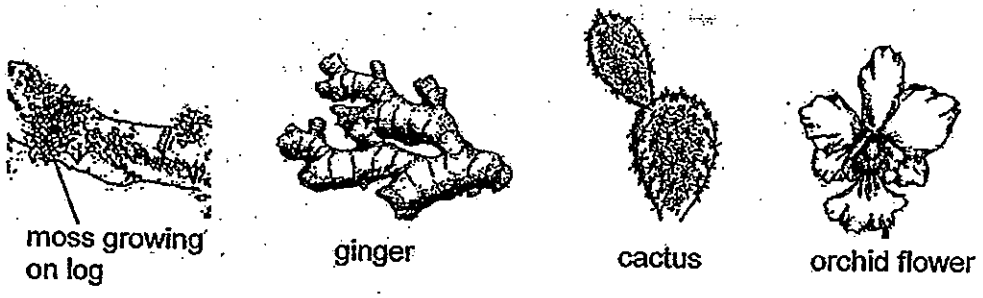
Which one of the following best illustrates a similar type of relationship as the bird's nest fern and the rain tree?

(1) Ladybirds feeding on aphids.
(2) Vultures feeding on the remains of the lions' catch.
(3) Fleas living underneath a dog's fur and feeding on its blood.
(4) Butterflies feeding on the nectar of flowers and pollinating them.

12. Study the cell below carefully.

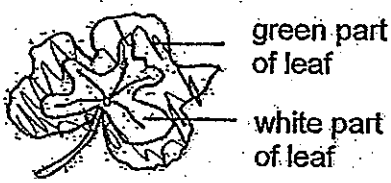


In which of the organisms shown below could the cell above be found?

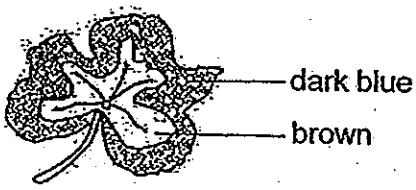


(1) cactus only
(2) moss and cactus only
(3) moss, ginger and orchid flower only
(4) moss, cactus, ginger and orchid flower

13. A group of students carried out an iodine test with a variegated leaf plucked from a plant that had been exposed to sunlight for several hours. The diagram below shows the result of their test.



Before iodine test



After iodine test

What conclusion can they draw from the result of their test?

(1) Sugar is produced during photosynthesis.
(2) Sunlight is needed for photosynthesis to take place.
(3) Chlorophyll is needed for photosynthesis to take place.
(4) The rate of photosynthesis is higher at the outer part of the leaf.

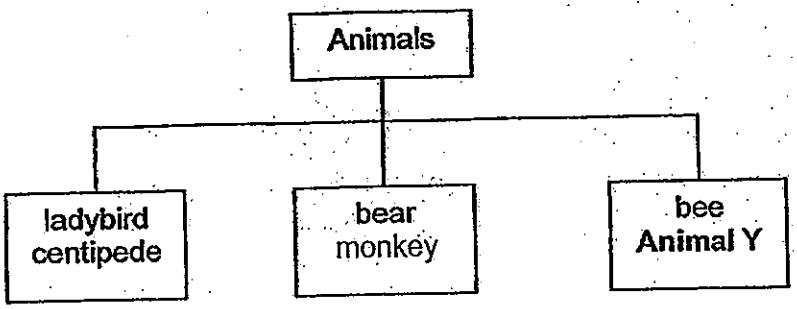
14. The table below shows the characteristics of two animals, X and Y.

Characteristics	Animal X	Animal Y
The life cycle has three stages	No	Yes
The young resembles the adult	No	Yes
It is a pest in one or more of its stages	Yes	Yes

Which one of the following pairs of animals best represents animal X and animal Y respectively?

	Animal X	Animal Y
(1)	Mosquito	Grasshopper
(2)	Butterfly	Mealworm beetle
(3)	Cockroach	Frog
(4)	Moth	Chicken

6. The animals below are classified according to the food they eat.



From the information given in the above chart, which one of the following statements about animal Y is most likely to be true?

(1) It is an insect.
(2) It is able to fly.
(3) It is not a predator.
(4) It reproduces by laying eggs.

16. There are two versions of the gene controlling hair type, curly (C) and straight (c).

Different combinations of the gene versions result in different hair types. A person with curly hair has the combination CC, a person with wavy hair has the combination Cc, and a person with straight hair has the combination cc.

The diagrams below show how gene combinations in parents can result in different combinations in their children. Not all combinations are shown.

Father

Mother	C	C
C	CC	CC
C	CC	CC

Father

Mother	C	C
C	CC	CC
c	Cc	Cc

Father

Mother	C	c
C	CC	Cc
c	Cc	cc

Father

Mother	C	c
c	Cc	cc
c	Cc	cc

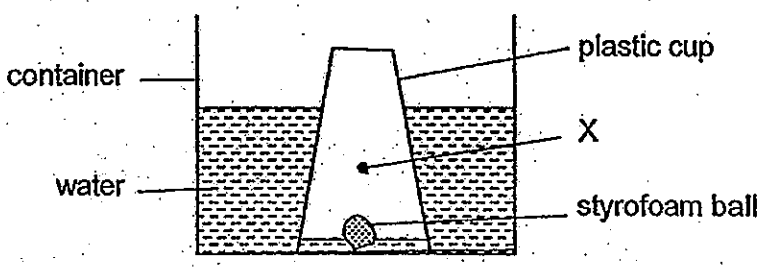
Father

Mother	c	c
c	cc	cc
c	cc	cc

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

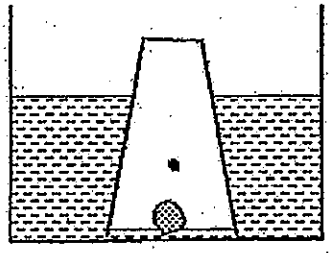
(1) A mother with wavy hair can only give birth to children with wavy hair.
(2) A mother with curly hair cannot give birth to children with straight hair.
(3) Parents cannot give birth to three children each with a different hair type.
(4) Parents who have the same hair as each other can only give birth to children with that hair type.

17. The diagram below shows the position of a styrofoam ball inside an inverted plastic cup.

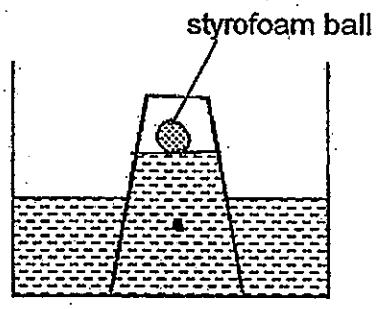


If a hole is pricked at position X of the plastic cup, which one of the following diagrams shows the correct position of the styrofoam ball?

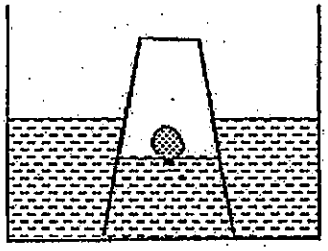
(1)



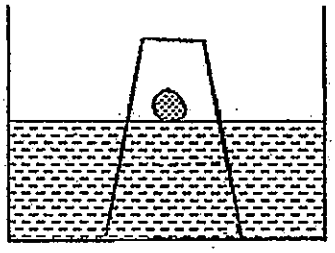
(2)



(3)



(4)



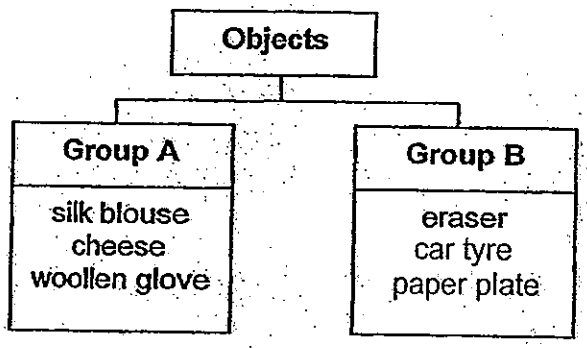
18. The table below shows the melting and boiling points of four different substances W, X, Y and Z.

Substance	W	X	Y	Z
Melting point (°C)	-20	25	32	0
Boiling point (°C)	5	110	80	100

Which substance(s) in the table above would have a definite shape and a definite volume at a room temperature of 30°C?

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

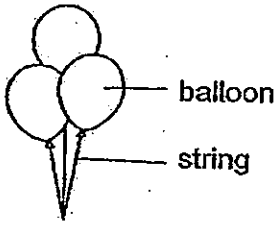
19. Smith classified some objects into two groups as shown in the chart below.



Which one of the following shows the correct headings for the two groups?

	Group A	Group B
(1)	Man-made materials	Natural materials
(2)	Biodegradable	Non-biodegradable
(3)	Not waterproof	Waterproof
(4)	Materials from animals	Materials from plants

20. The diagram below shows some helium-filled balloons being released into the air.

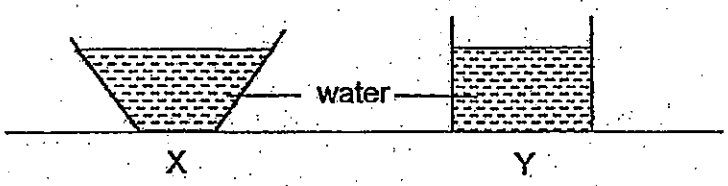


As the balloons are rising, which of the following forces are acting on the balloons?

A air resistance
B magnetic force
C gravitational force
D elastic spring force

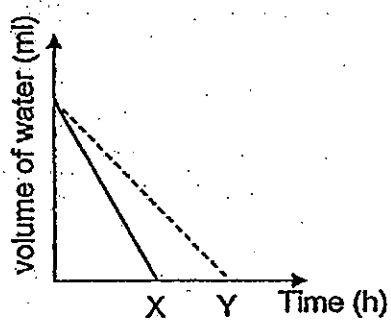
(1) A and C only
(2) B and D only
(3) C and D only
(4) A, C and D only

21. Susie carried out an experiment to investigate the rate of evaporation of water. She filled two containers X and Y with 100 ml of water each. She placed both containers on the same table in her room.

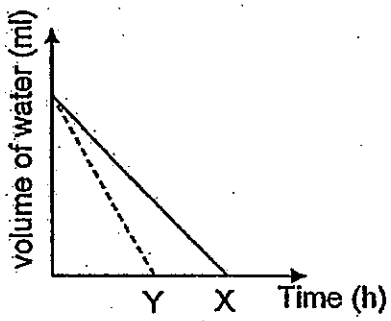


Which one of the following graphs most likely represents the rate of evaporation of the water in both containers X and Y?

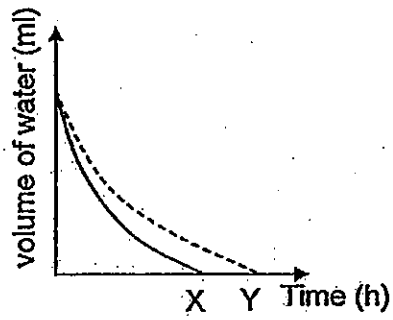
(1)



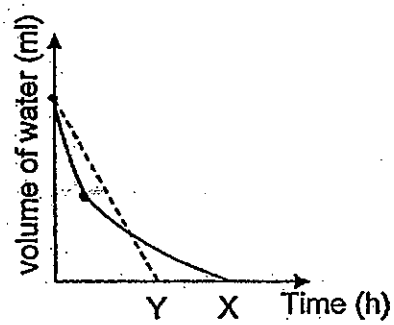
(2)



(3)



(4)



22. Two objects, X and Y, are hung a distance apart as shown in Figure 1 below.

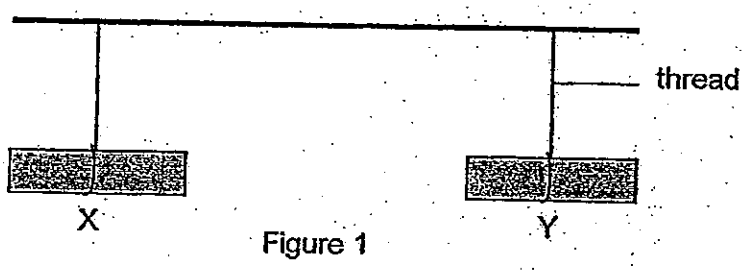


Figure 1

When a magnet is placed between them, object X moves away while object Y moves towards the magnet as shown in Figure 2 below.

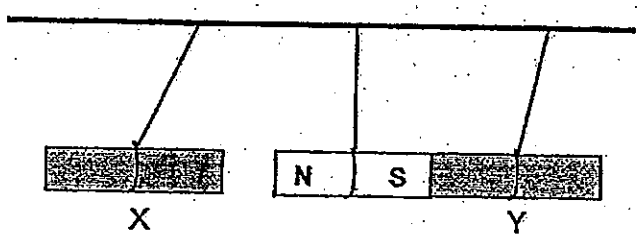


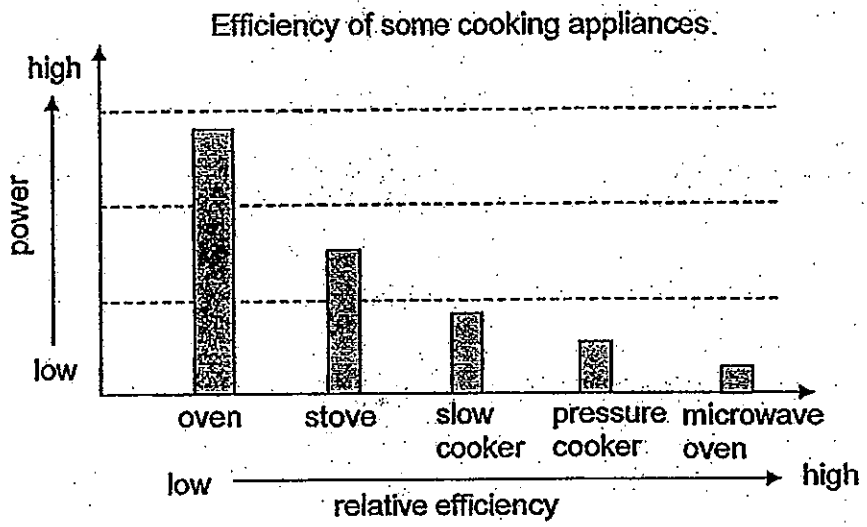
Figure 2

Which of the following statement(s) is/are <u>definitely true</u> about objects X and Y?

A Both X and Y are magnets.
B X is a stronger magnet than Y.
C X is made of iron and Y is made of steel.
D X is a magnet while Y is made of a magnetic material.

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

23. Study the graph below.



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

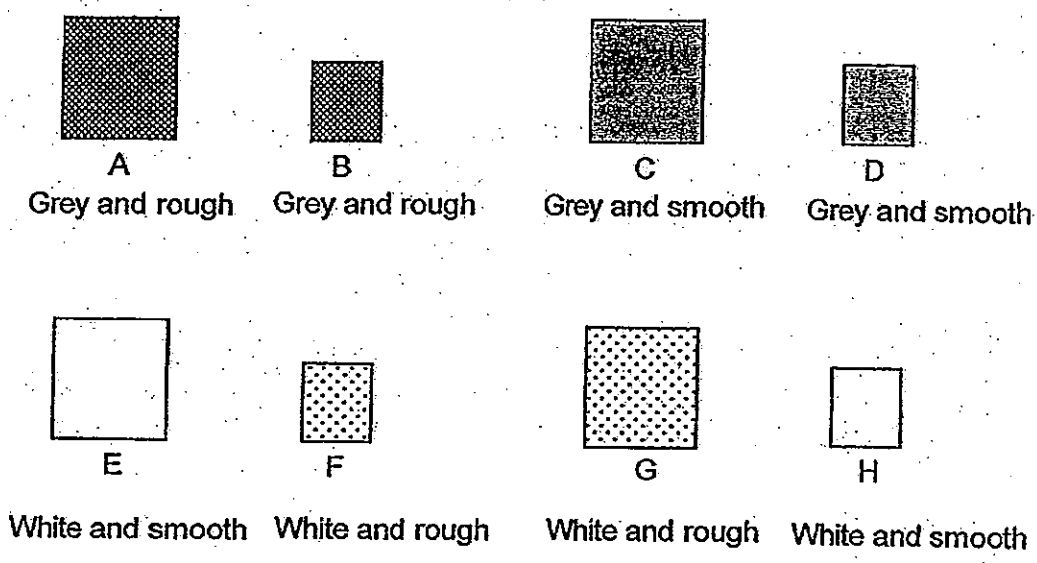
(1) A slow cooker uses more power than a stove.
(2) The pressure cooker is less efficient than the oven.
(3) A microwave oven uses low power and has low efficiency.
(4) An oven uses the most power and has the lowest efficiency.

24. A rock climber is often seen dusting his hands with powder as he makes his way up the rock wall.

How does the powder help him?

(1) It spreads friction evenly and increases contact with the wall.
(2) It dries sweat on his hands so as to increase friction with the wall.
(3) It decreases the surface area in contact and reduces friction with the wall.
(4) It smoothens his hands to increase friction between his hands and the wall.

25. The diagram below shows eight tiles with different surfaces. Lela wanted to find out if the size and texture of the tile would affect the amount of heat that was absorbed.



Which tiles should she use to carry out a fair test?

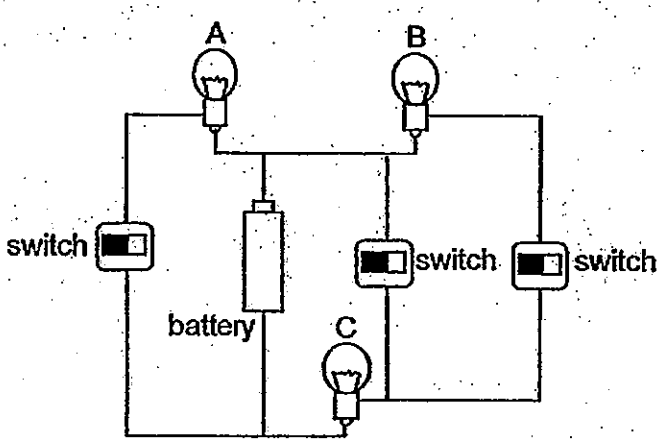
(1) A, C and E
(2) B, D and F
(3) C, D and E
(4) E, G and H

26. Which of the following are possible causes of global warming?

A Acid rain
B Excessive deforestation
C Melting of polar ice caps
D Flooding of coastal towns
E Increased use of fossil fuels

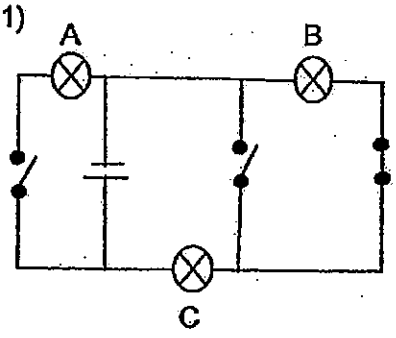
(1) B and E only
(2) C and D only
(3) A, B and D only
(4) A, B and E only

27. The diagram below shows a circuit with three similar bulbs A, B and C.

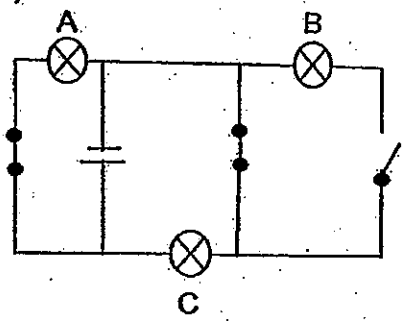


If only bulbs B and C are lit, which one of the following circuit diagrams correctly represents the circuit above?

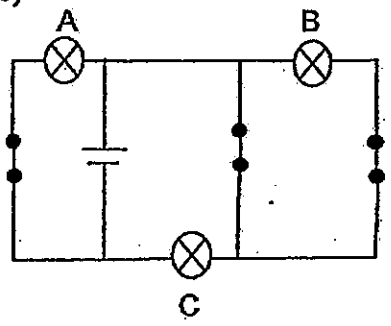
(1)



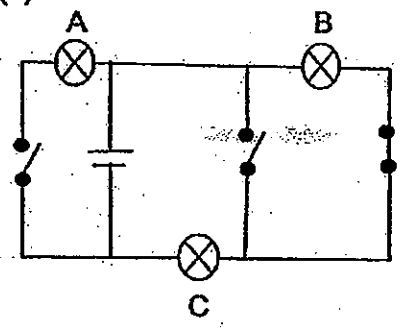
(2)



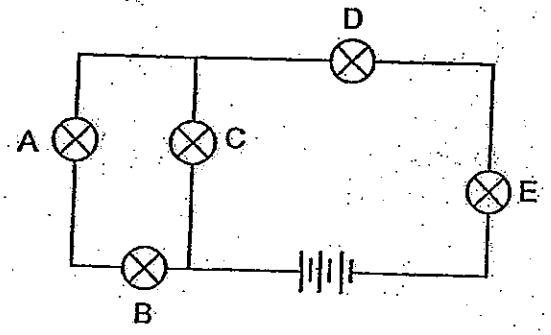
(3)



(4)



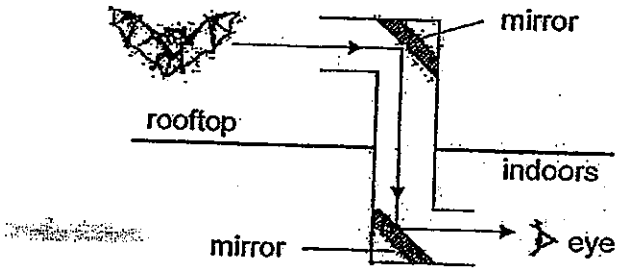
28. John set up the circuit below with three batteries and five similar bulbs A, B, C, D and E. One of the bulbs had fused, resulting in some bulbs being lighted and others not.



Which one of the following describes the bulbs correctly?

	A	B	C	D	E
(1)	lighted	not lighted	fused	lighted	lighted
(2)	not lighted	fused	lighted	lighted	lighted
(3)	lighted	lighted	not lighted	not lighted	fused
(4)	lighted	lighted	lighted	fused	not lighted

29. The diagram below shows how a periscope works.

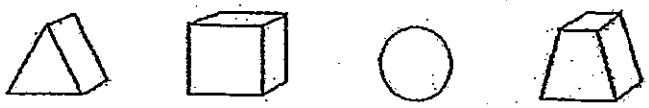


Based on the diagram above, what can we conclude about the properties of light?

A Light can be reflected.
B Light can be absorbed.
C Light travels in a straight line.
D Light can pass through transparent object.

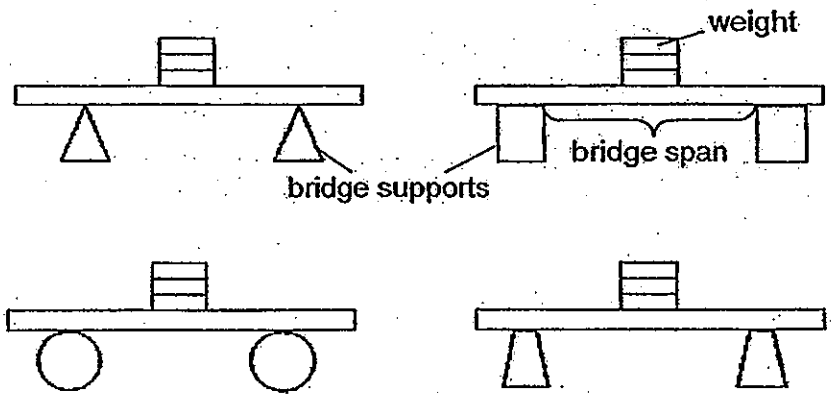
(1) A only
(2) A and B only
(3) A and C only
(4) C and D only

30. A group of students were testing different bridge supports as shown below. The supports were of the same height and made from the same plastic material.



The bridge spans in the experiment did not bend. They added blocks of the same mass to the middle of each bridge span until the plastic supports began to collapse.

The drawings of the bridges below show the tests the students carried out.



What were the students trying to find out in this experiment?

(1) What height should the bridge supports be
(2) What shape makes the strongest bridge support
(3) What material makes the strongest bridge support
(4) What bridge span length makes the bridge the strongest

~~ End of Section A ~~

Index Number: ☐☐☐☐☐-☐

CHIJ ST. NICHOLAS GIRLS' SCHOOL

PRELIMINARY EXAMINATION

2013

P6 SCIENCE

(BOOKLET B)

22 August 2013

NAME : _____ ( )

CLASS : **Primary 6** _____

Total time for booklets A & B: 1 hour 45 minutes

14 questions
40 marks

Booklet A	60
Booklet B	40
Total	100

INSTRUCTIONS TO CANDIDATES

- Do not open this booklet until you are told to do so.
- Follow all instructions carefully.
- Answer all questions and write your answers on this booklet.

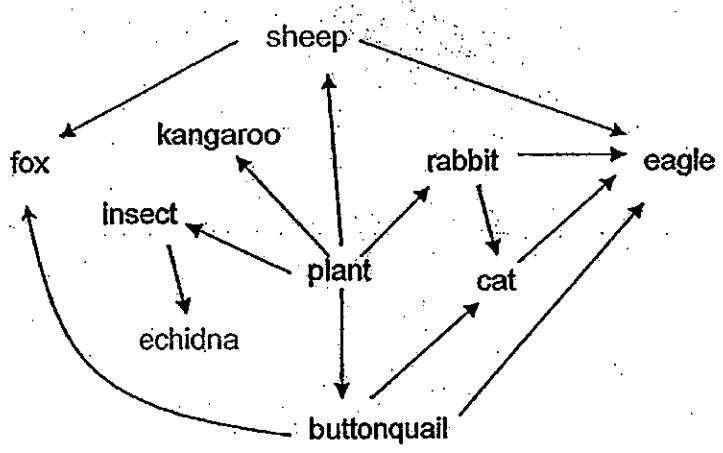
_____
Parent's Signature/Date

This booklet consists of 16 printed pages.

Section B (40 marks)

For questions 31 - 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. The buttonquail is a native animal of a certain island. Foxes, rabbits, cats and sheep are animal species introduced to the island by humans.
The diagram below shows the main food web in the island.



(a) Based on the above food web, which introduced animal(s) compete(s) with the buttonquail for food? [1]

_____

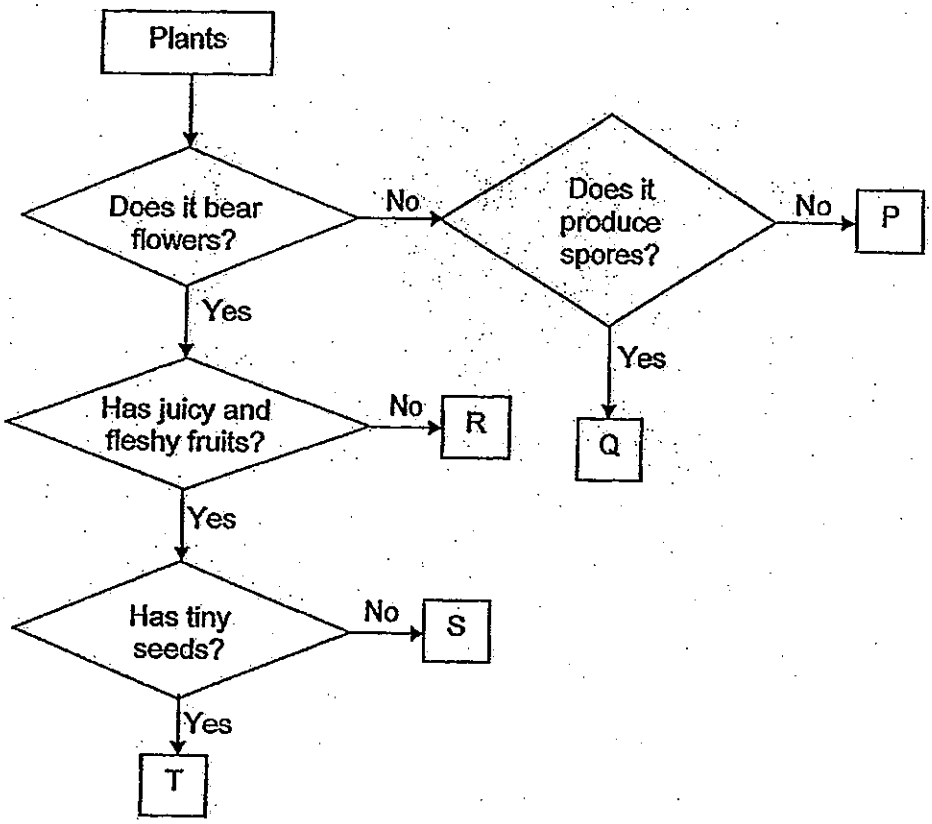
(b) Which introduced animal(s) is/are predator(s) of the buttonquail? [1]

_____

(c) What will happen to the population of echidna when the foxes are wiped out? [½]

_____

32. Study the flowchart below.



(a) Use the flowchart above to identify the following organisms. Write the correct letters, P, Q, R, S or T, in the boxes provided. [2]

Tomato ☐ Moss ☐

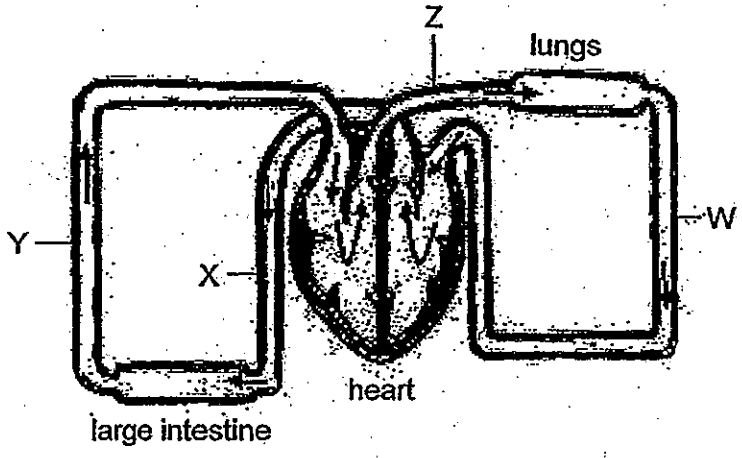
Conifer ☐ Mimosa ☐

(b) Can bracket fungus be represented by letter Q? Explain your answer. [1]

_____

_____

33. The diagram below shows how blood flows in certain parts of the human body. W, X, Y and Z represent blood vessels. The arrows show the direction in which blood flows.



(a) The blood at Y contains a greater amount of carbon dioxide than at X. It also contains a greater amount of a substance A. What is this substance? Give a reason for your answer. [2]

_____

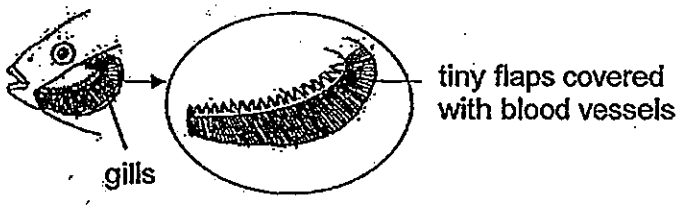
_____

_____

(b) At which part of the circulatory system, W, X, Y or Z, does the blood contain the least amount of oxygen? [1]

_____

The diagram below shows the gills of a fish. The gills have many tiny flaps.

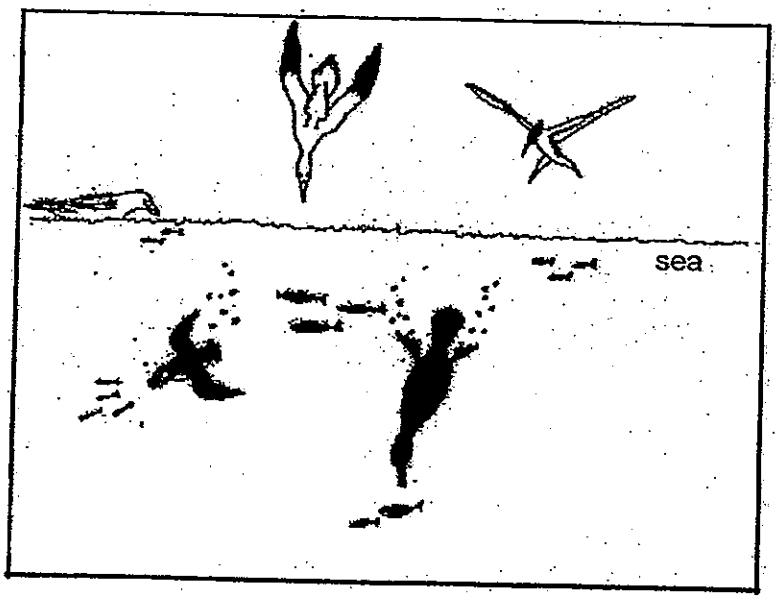


(c) What type of adaptation is this and how does it help the fish to survive? [1]

_____

_____

34. The diagram below shows some birds in their habitat. An oil spill will affect all the organisms in the community.



(a) Explain how the oil spill will affect the birds directly. [2]

(i) _____

_____

(ii) _____

_____

(b) Explain how the oil spill will affect the algae in the sea. [1]

_____

35. Alex was told that seeds need water, oxygen and suitable warmth to germinate. He set up the experiment as shown in Figure1 below to investigate one of the conditions necessary for germination to take place. Chemical K absorbs carbon dioxide in the air. Figure 2 shows the result of his experiment a few days later.

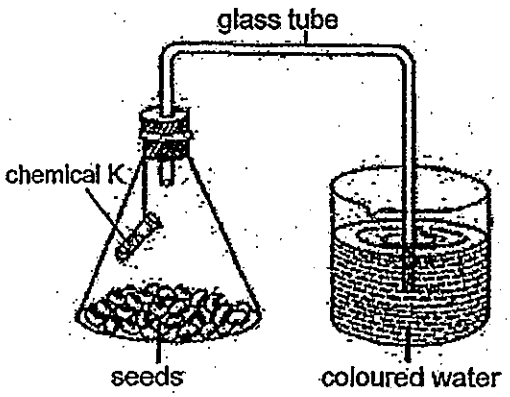


Figure 1

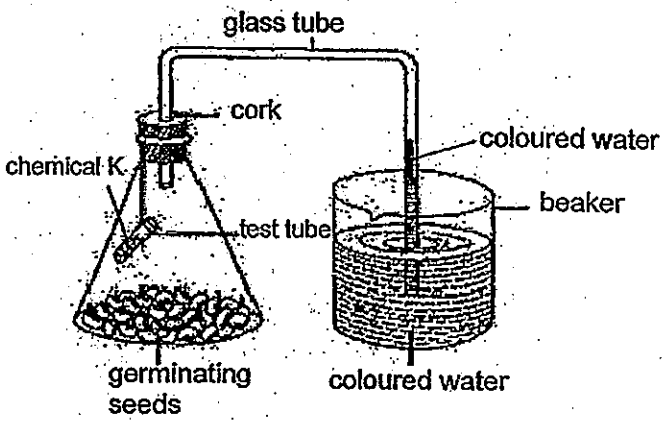


Figure 2

(a) Based on the set-up above, what is the hypothesis of his experiment? [1]

_____

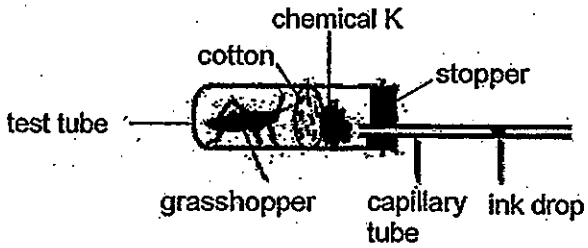
(b) Alex observed that the coloured water had moved up the glass tube after the seeds started to germinate. Explain why the coloured water moved up the glass tube. [1]

_____

_____

_____

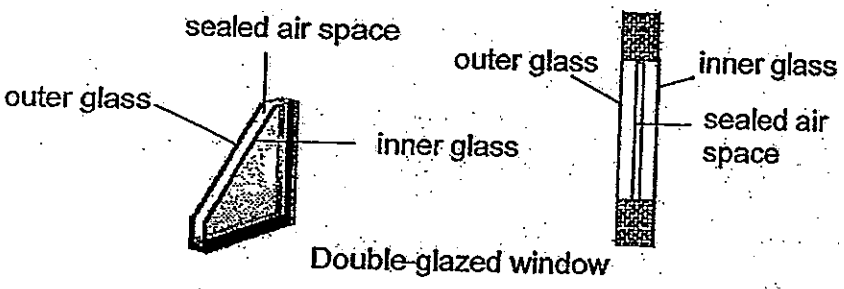
Alex carried out another experiment with a grasshopper as shown in the diagram below.



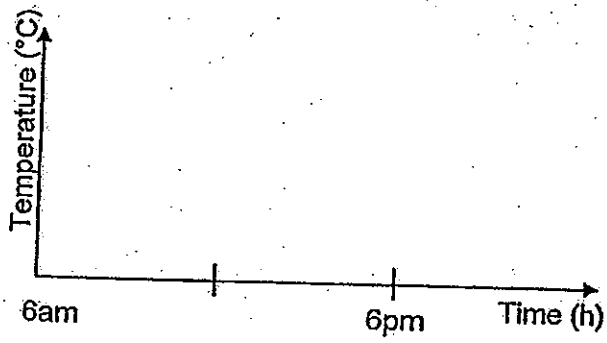
(c) What would happen to the drop of ink in the capillary tube after a while? [½]

_____

36. A room fitted with double-glazed windows will be cooler than one with the normal glass windows. The diagram below shows two different views of a double-glazed window.



The graph below shows how the temperature in the living room would vary with the normal glass windows.



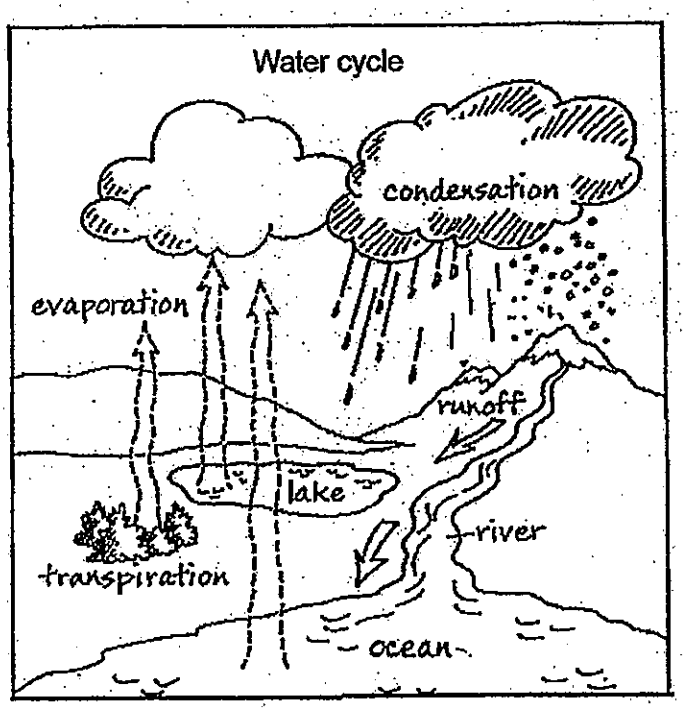
(a) **Draw** another line in the graph above to show how the temperature in the living room would vary with the double-glazed windows. [1]

(b) Explain your graph in (a) above. [1]

At night, some birds puff up their feathers as shown in the diagram below.

(c) Why do some birds puff up their feathers at night? [1]

37. The diagram below shows the water cycle.



(a) What is the main source of energy for the water cycle? [1]

_____

(b) Why is the water cycle important for all living things? [1]

_____

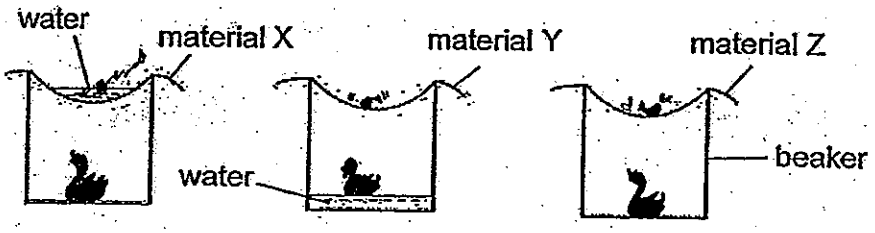
_____

(c) During evaporation a liquid changes into a gas while during condensation a gas changes into a liquid. State one other difference between the two processes. [1]

_____

_____

38. Three pieces of different materials, X, Y and Z, were placed over the mouth of similar empty beakers as shown in the diagram below. The same amount of water was poured onto each of the materials. The diagram below shows the results of the experiment.



(a) From the results, which one of the materials, X, Y or Z, is the most absorbent? [½]

_____

(b) Explain your answer in (a) above. [1½]

_____

_____

(c) Based on the results, which one of the materials, X, Y or Z, is the most suitable for making a tent? Give a reason for your answer. [1]

_____

_____

_____

39. Jackson put a balloon in a bottle as shown in Figure 1. He tried to inflate the balloon by blowing air into it as shown in Figure 2. He managed to inflate the balloon a little but found it hard to inflate the balloon further even though there was ample space in the bottle.

Figure 1

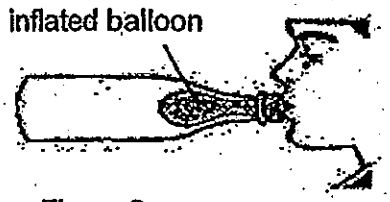


Figure 2

(a) Explain why Jackson could inflate the balloon inside the bottle a little at the start of the experiment. [1]

_____

_____

_____

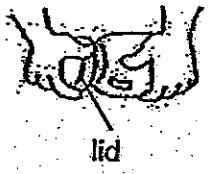
(b) Explain why Jackson <u>could not</u> further inflate the balloon. [1]

_____

_____

_____

40. Jane took out a jar of strawberry jam from a refrigerator but she could not turn the metal lid on the jar.



(a) Suggest one way that Jane could make it easier to turn and open the lid of the jar. [1]

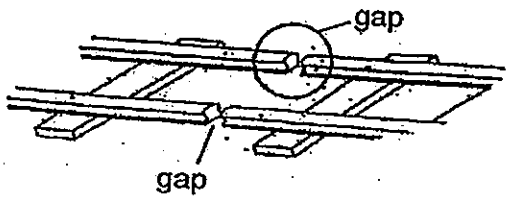
_____

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

_____

_____

The diagram below shows the gaps on a railway track.

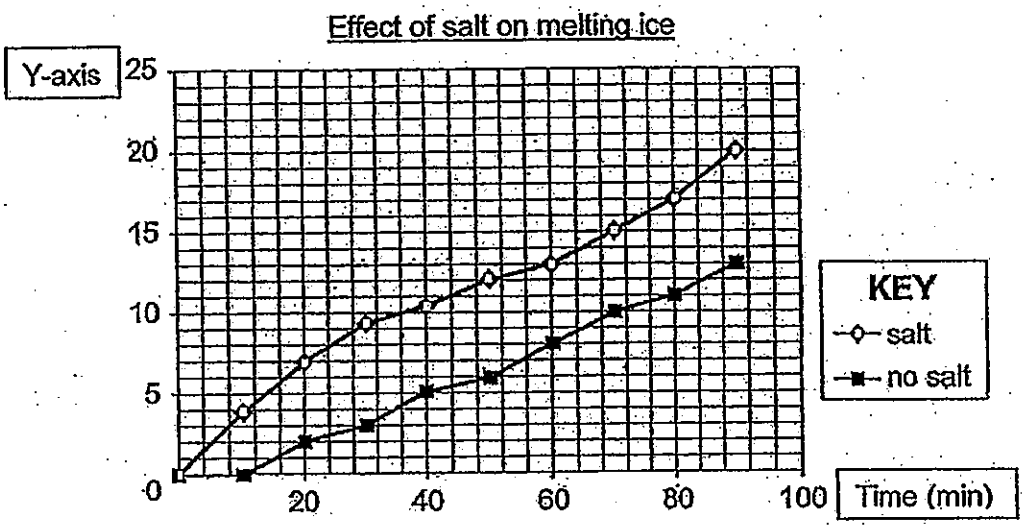


(c) Why is there a need to leave a gap at the joint between two rails? [1]

_____

_____

41. Meiling carried out an experiment to investigate the effect of salt on melting ice. She collected and measured the amount of water from the melting ice at 10-minute intervals. The graph below shows the results of her experiment.



(a) What is the correct label for Y-axis? [1]

_____

(b) What can Meiling conclude from her results? [1]

_____

(c) Meiling carried out another experiment with two ice cubes of the same size, one wrapped with aluminium foil and the other with tissue paper of the same thickness as the foil. Which ice cube will melt faster? Explain your answer. [1]

_____

_____

_____

42. The diagram below shows the mechanism of a door bell as shown in figure 1. When the switch is closed, the hammer will strike the gong as shown in figure 2.

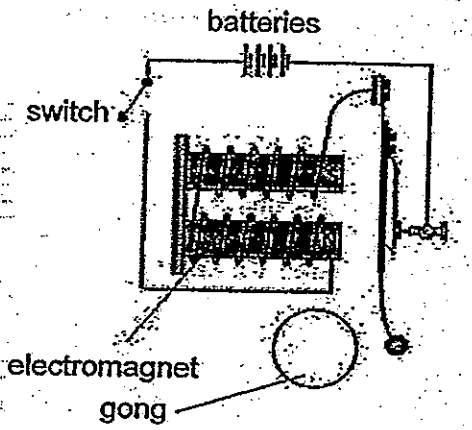


Figure 1

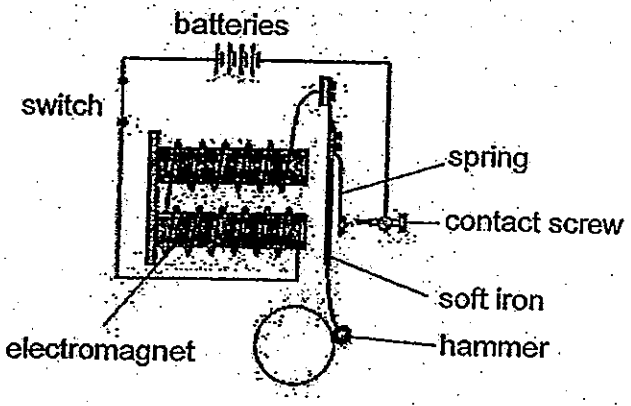


Figure 2

(a) Describe and explain what will happen to the electromagnet when the hammer struck the gong. [2]

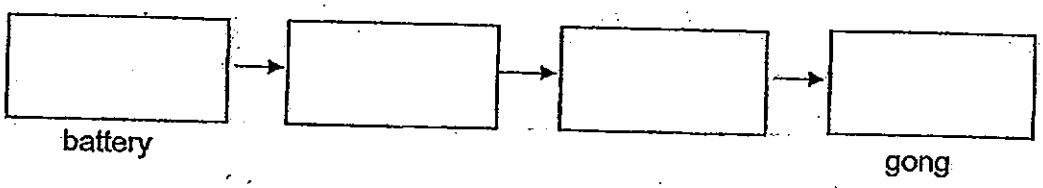
_____

_____

_____

_____

(b) State the main energy conversion that takes place when the switch is closed. [2]



43. The diagrams below show the experiment that Sam set up to find out how objects A and B interact with the magnet. Object A was made of glass while object B was made of a different material. The two objects have the same mass. The length of the spring is shown in Figure 1 after object A was placed on it, Sam repeated his experiment by replacing object A with object B. The length of the spring is shown in Figure 2 when object B was placed on it.

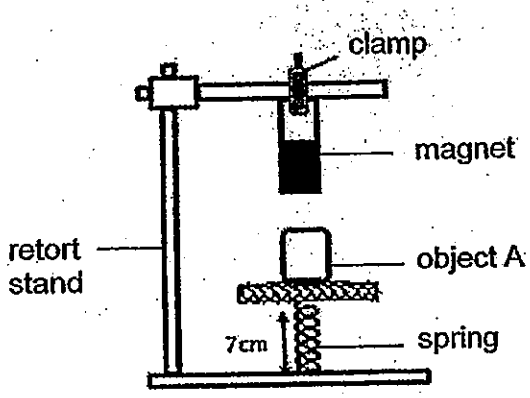


Figure 1

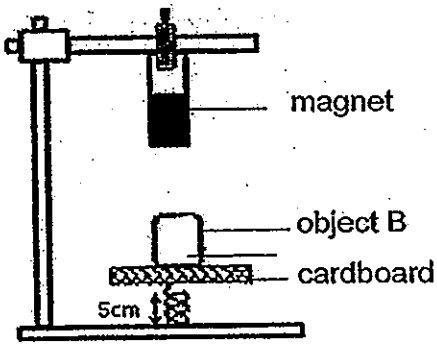


Figure 2

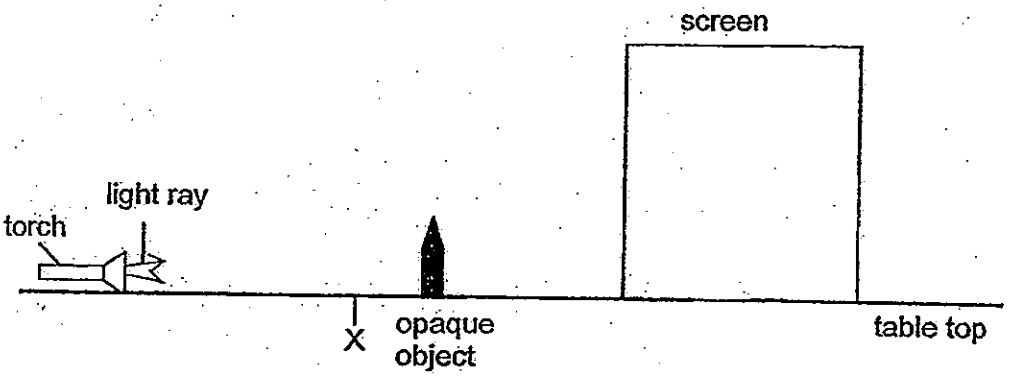
Explain clearly what could have caused the change in the length of the spring when object B was placed on the cardboard. [2]

_____

_____

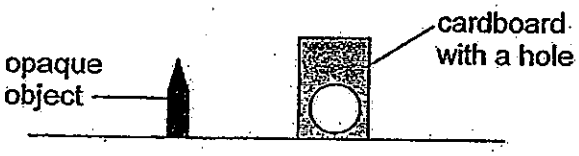
_____

44. The diagram below shows an opaque object placed between a light source and a screen.

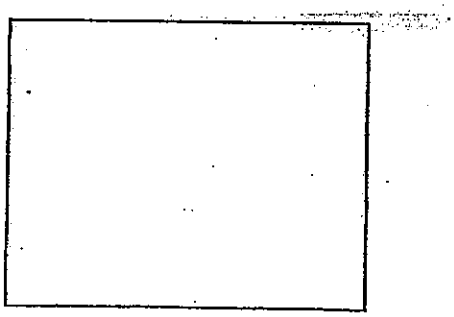


(a) **Draw** the shadow of the object on the screen. [1]

The diagram below shows the relative sizes of a piece of cardboard with a hole and the opaque object.



(b) If the piece of cardboard is placed at position X between the object and the torch, draw the new shadow cast on the screen in the space below. [1]



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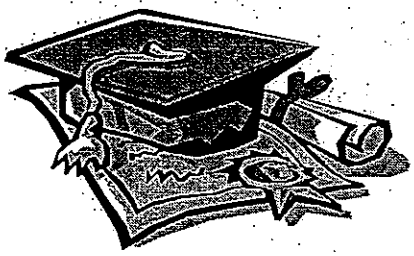


ANSWER SHEET

EXAM PAPER 2013
SCHOOL : CHIJ
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIM

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

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

31)a)Sheep and rabbit.
b)Cat and foxes
c)The population of the echidna would decrease.

32)a)T Q
P R
b)No. It is even a plant.

33)a)It is water. Water is absorbed in the large intestine into the blood stream, therefore the blood that goes through the large intestine will have more water than before.
b) Z.
c)It is a structural adaptation. The tiny flaps covered with blood vessels absorb dissolved oxygen so that the fish can respirate and live.

34)a)i)When the birds dive into the water to get food and come out, the oil from the oil spill would coat their feathers. The would not be able to fly and will either drown or get eaten.
ii)The oil might enter their respiratory system, preventing them from breathed causing them to die.

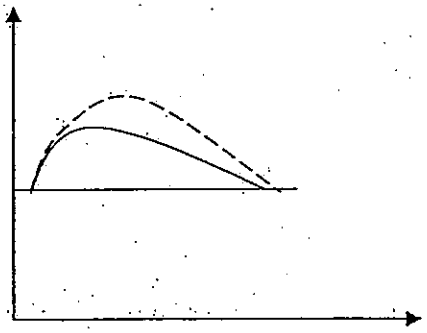
34)b)The oil would prevent sunlight from reaching the algae, and the algae would not be able to photosynthesis and will die.

35)a)Seeds need oxygen to germinate.

b)The seeds respirated and produced carbon dioxide which was desorbed by Chemical K, the oxygen level decreased as the seeds used the oxygen to respirate. The amount of air in the set-up decreased and the coloured water moved up to the empty space.

c)The ink drop would move towards the test tube.

36)a)



b)The air trapped in the double glazed window is a poor conductor of heat which reduces the heat transfer from outside to the room, so the temperature in the room is lower.

c)They puffed up their feathers to trap trap air within their feathers to reduce loss of body heat as air is a poor conductor of heat.

37)a)The sun.

b)It ensures the constant supply of fresh water so that at the living things have enough water.

c)Evaporation evolves heat gain while condensation involves heat loss.

38)a)Z.

b)All the water was absorbed into material Z, allowing not a single drop of water to drop into the beaker or stay on material Z.

c)X. A tent has to be water proof so that when it rains, the users can stay dry. X is water proof, as the water is unable to go through X, therefore X is the best material for making tents.

39)a)Air could be compressed but not too much. When Jackson blew into the balloon, the air blew into the balloon took up space and some of the air in the bottle was compressed. However, Jackson could not blow in more air anymore at the air could not be compressed further.

b)The air in the bottle could not be compressed further therefore when the air blew into the balloon took up space, there was no more space for the balloon to be inflated.

40)a)She could put the lid of the jar into a bowl of hot water.

b)Matter expands when heated and the lid would expand causing it to be bigger and easier to take off the jar.

c)On a hot day when the rails are heated, the rails would expand as matter expands when heated. If there was no gaps, the railway would turn crooked and the train would not be able to travel on it.

41)a)Amount of water from the melting ice.

b)Salt causes the melting ice to melt faster.

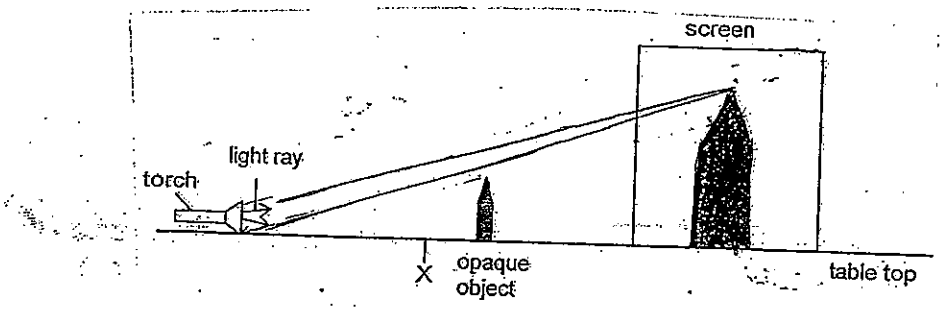
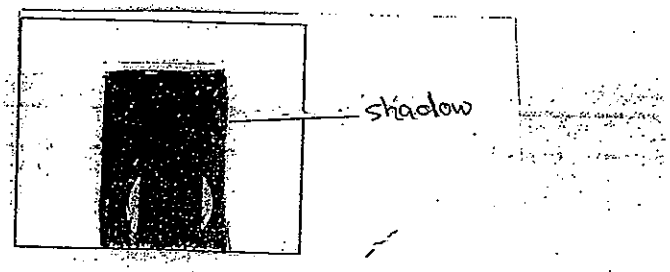
c)The ice cube wrapped in aliminium foil. Aluminium foil is a better conductor of heat than tissue paper, causing the heat from the surrounding air to be conductor to the ice cube faster, causing it to melt faster than the ice cube wrapped in tissue paper.

42)a)The electromagnet would become not magnetic anymore as when the electromagnet attracts the soft iron, causing the hammer to hit the gong, the contact screw would be unable to touch the spring causing it to be an open circuit, de-magnetising the electromagnet.

b)Chemical potential energy→Electrical energy→Kinetic energy→Kinetic sound energy

43)Magnetic repulsion. Object B was a magnet and the like poles of Object B and the magnet were facing each other, causing B to repel and compress the spring, causing the length of the spring to decrease.

44)a)



b)