



PRIMARY 6 MID-YEAR EXAMINATION 2012

Name : _____ () Date: 14 May 2012

Class : Primary 6 ()

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

Duration : 1h 45min

Parent's Signature : _____

Marks: _____ / 60

SCIENCE BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

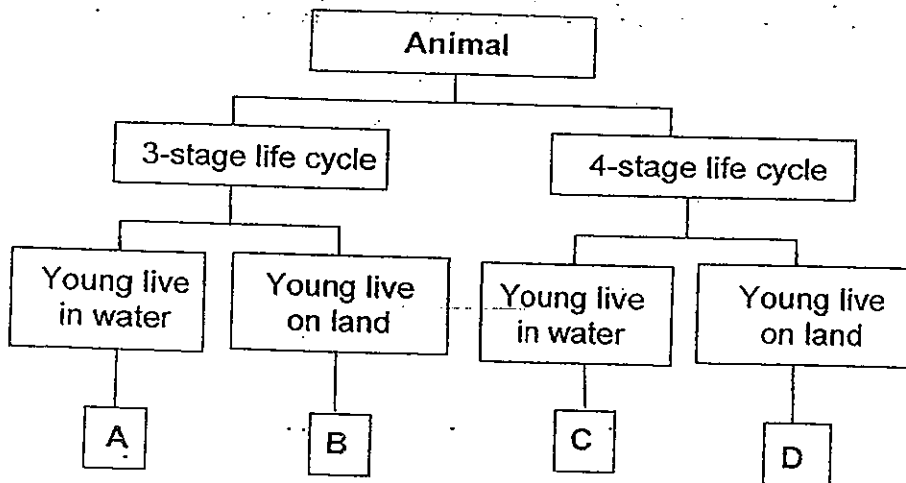
Section A (30 x 2 marks)

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

1. The table below gives information about Animal X, Animal Y and Animal Z. A tick (✓) shows that the animal has the characteristic stated in the table.

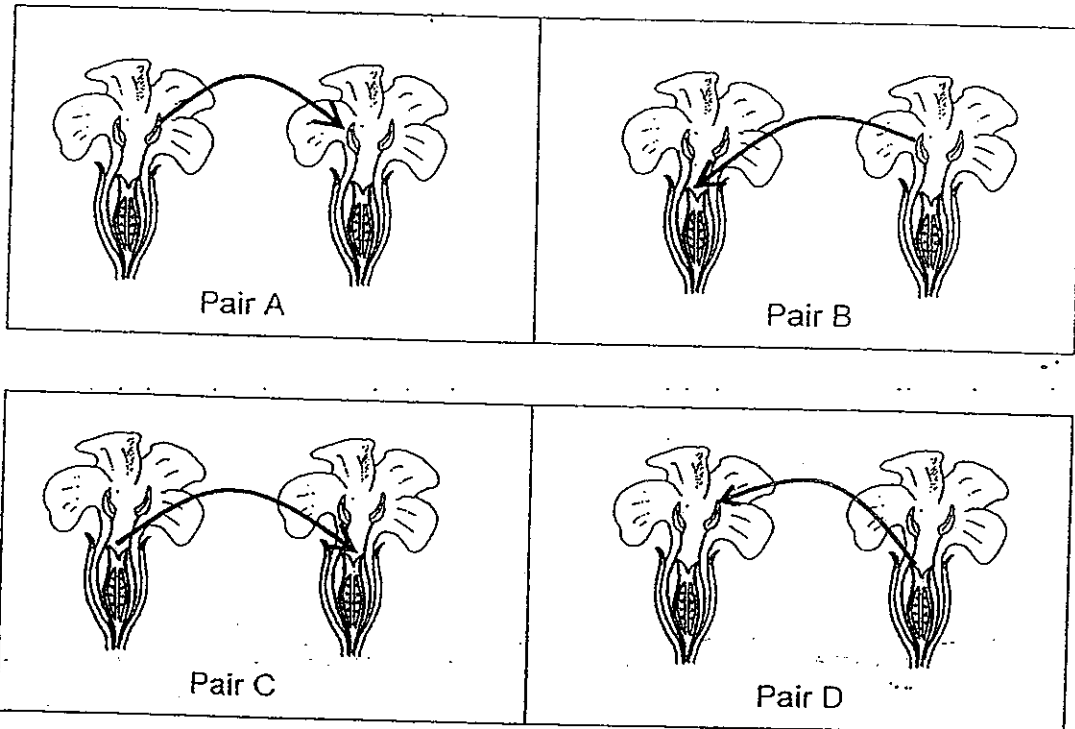
Characteristic	Animal X	Animal Y	Animal Z
It has a 3-stage life cycle.	✓		✓
Its young live in water.		✓	✓

From the information given, where do Animals X, Y and Z belong in the classification chart below?



	Animal X	Animal Y	Animal Z
(1)	A	B	C
(2)	B	C	A
(3)	A	C	D
(4)	B	D	A

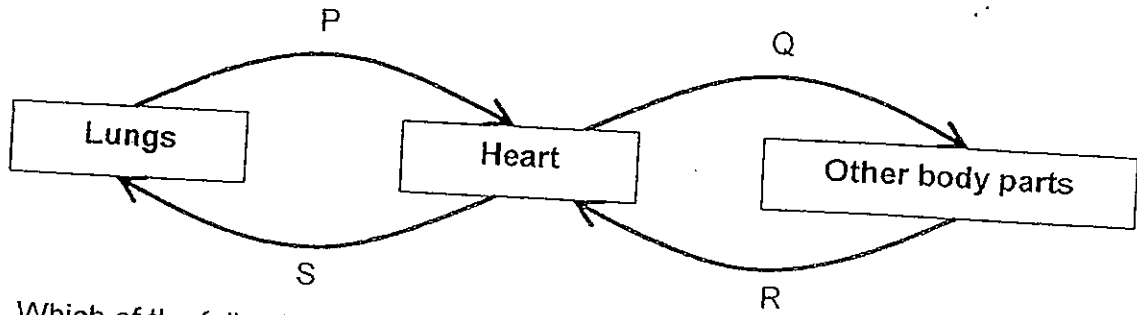
2. The arrow in each pair of flowers below shows the direction in which pollen grains are transferred.



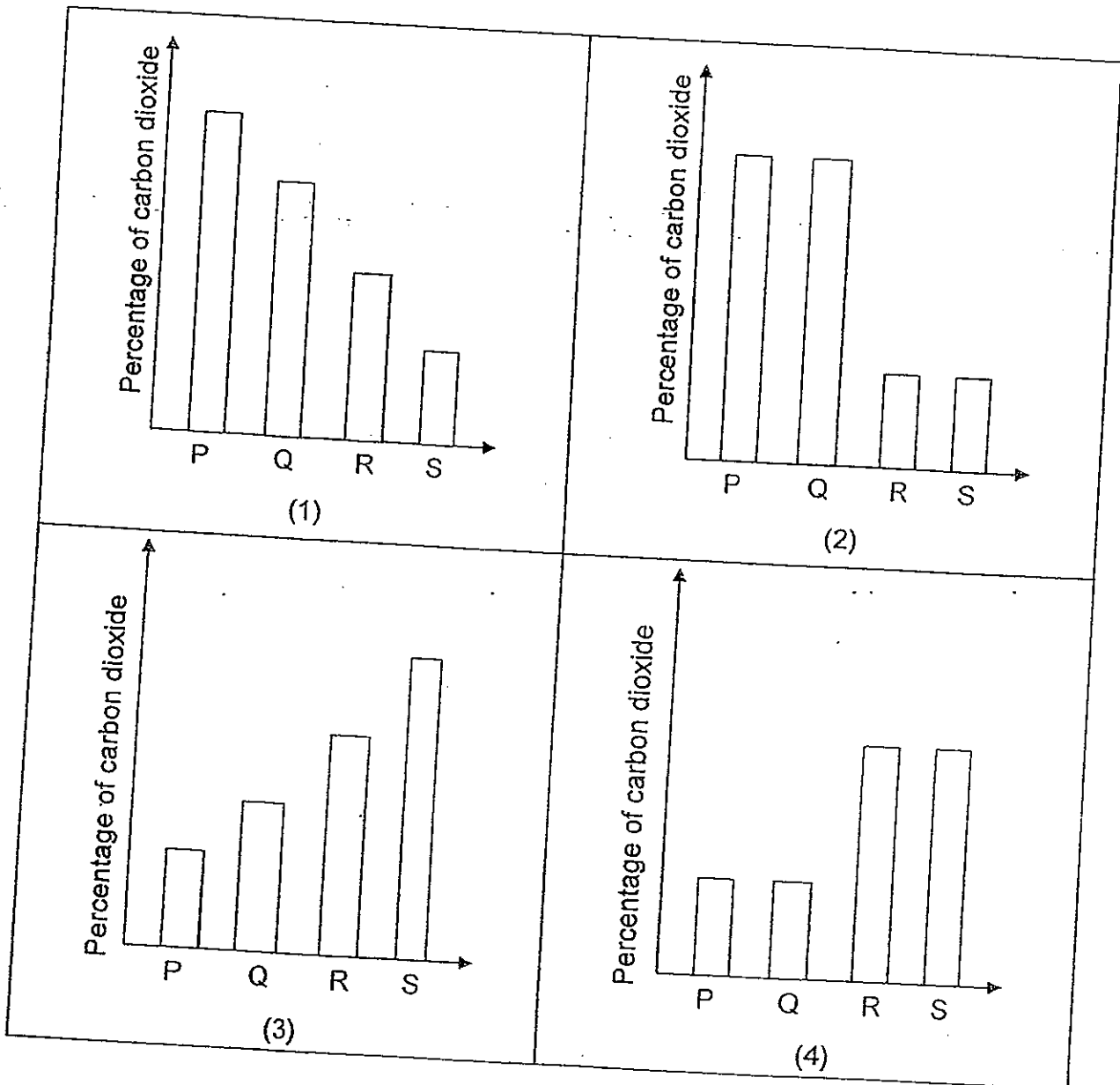
Which pair of flowers would most likely develop into a fruit?

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

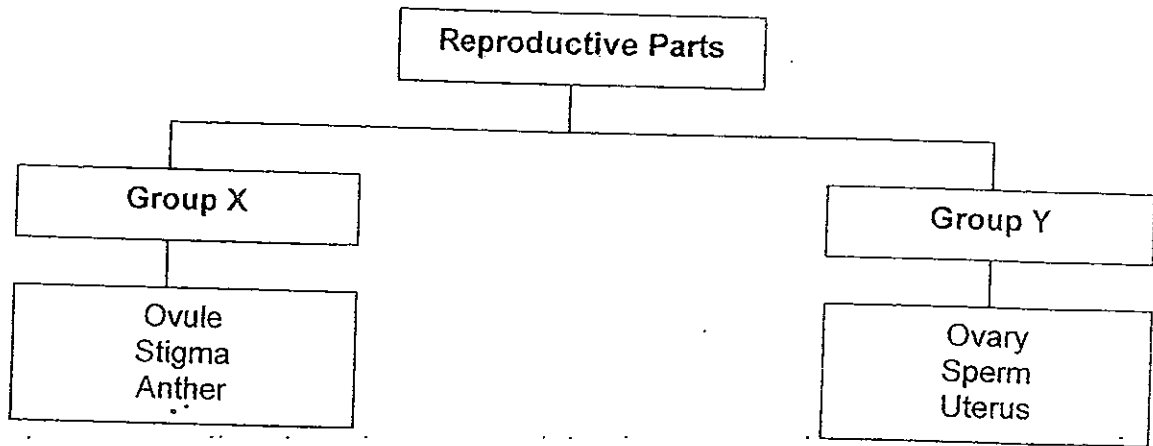
3. The diagram below shows the blood circulation in a human body. The arrows P, Q, R and S, represent the flow of blood to the various parts of the body.



Which of the following graphs shows the percentage of carbon dioxide in P, Q, R and S?



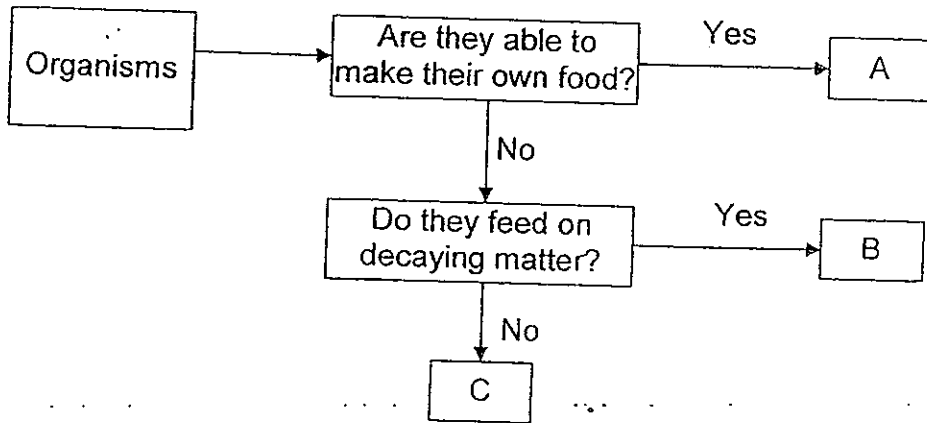
4. The chart below shows how some reproductive parts are grouped.



Which of the following headings best describe the two groups?

	Group X	Group Y
(1)	Male reproductive parts of Plants	Female reproductive parts of Plants
(2)	Female reproductive parts of Humans	Male reproductive parts of Humans
(3)	Human reproductive parts	Plant reproductive parts
(4)	Plant reproductive parts	Human reproductive parts

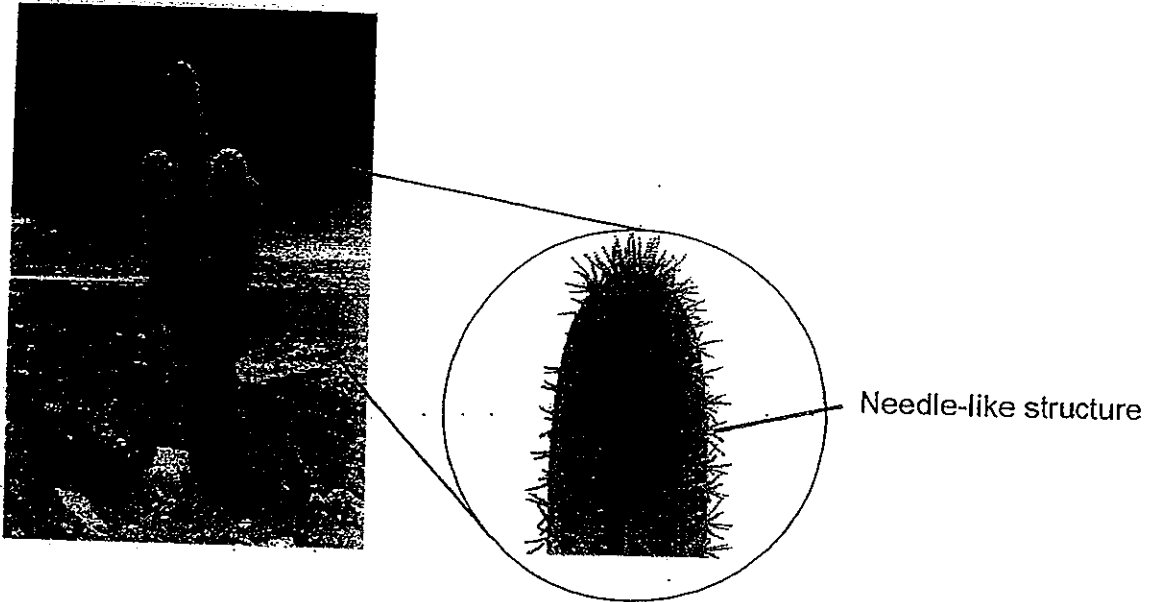
5. The flow chart below provides information about three organisms, A, B and C.



Which of the following organisms are A, B and C?

	A	B	C
(1)	Bird's Nest Fern	Mushroom	Frog
(2)	Mushroom	Yeast	Snake
(3)	Bacteria	Cow Grass	Lizard
(4)	Cow Grass	Jew's ears	Mushroom

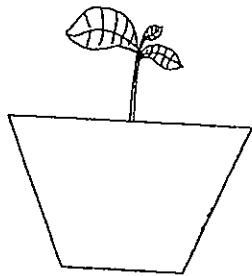
6. The picture below shows a cactus in a desert.



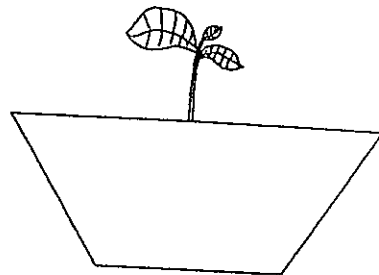
Which of the following best explains the function of these needle-like structures?

- (1) They take in water.
- (2) They reduce water loss.
- (3) They help the cactus to grow towards sunlight.
- (4) They prevent insects from feeding on the cactus.

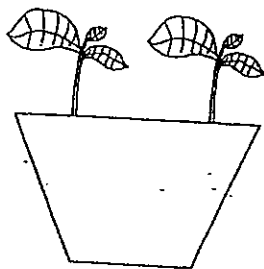
7. Liang Yee conducted an experiment to find out if different types of soil affect the growth of plants. He had similar plants in pots A, B, C, D and E. Which of the pots should he use to conduct a fair test?



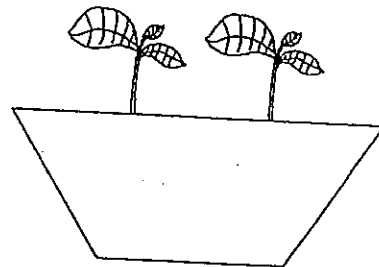
Pot A (Clayey soil)



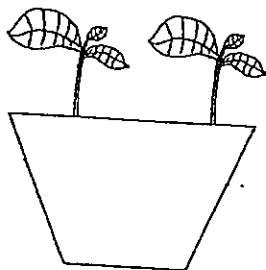
Pot B (Garden soil)



Pot C (Garden soil)



Pot D (Clayey soil)



Pot E (Clayey soil)

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

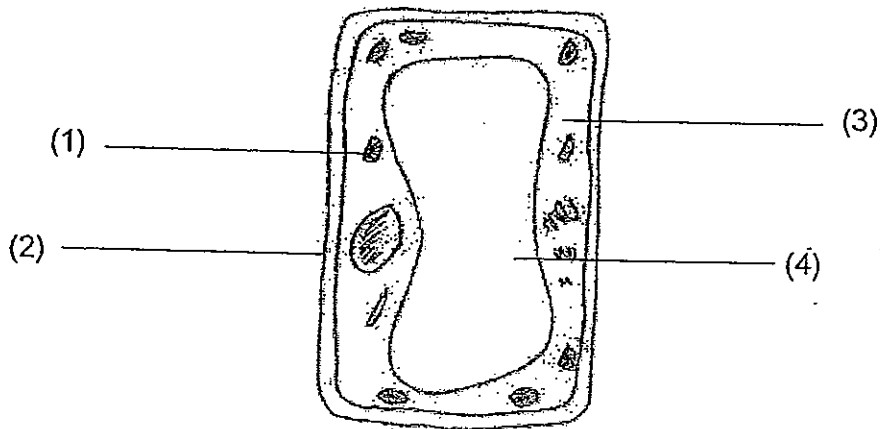
8. Azman counted the number of organisms in a garden. He recorded the number of organisms in a table below.

Name of organism	Number of organisms
Tiger Butterfly	10
Grasshopper	2
Mango tree	6
Spider	3
Caterpillar of the Tiger butterfly	7
Grasshopper nymph	5
Balsam plant	12

How many populations of organisms are present in the garden?

- (1) 5
- (2) 7
- (3) 27
- (4) 45

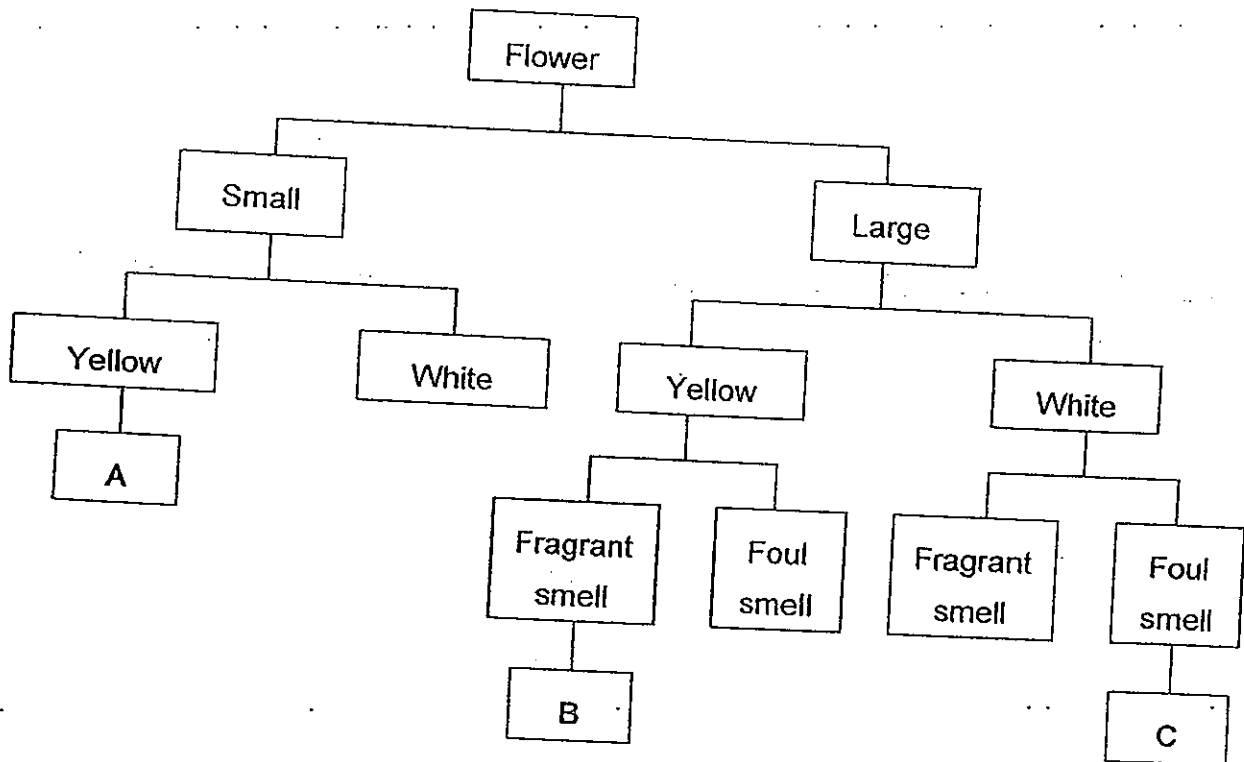
9. The diagram below shows a plant cell. Which part of the cell traps light energy during photosynthesis?



10. The table shows the characteristics of some flowers which attract specific animals.

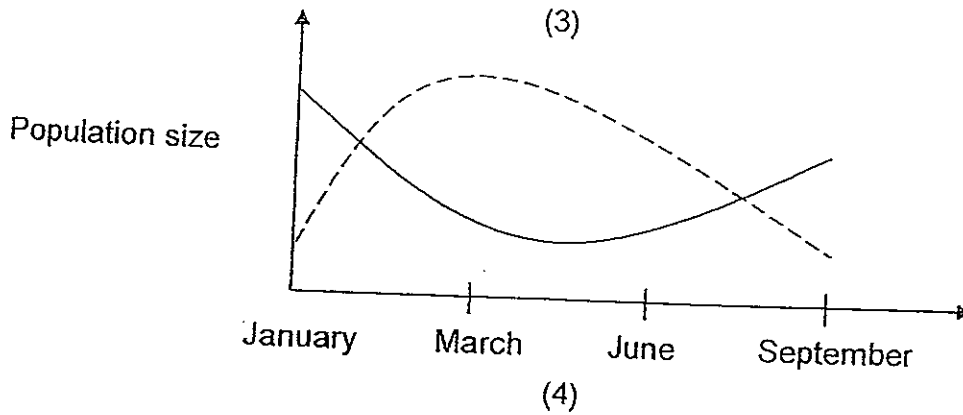
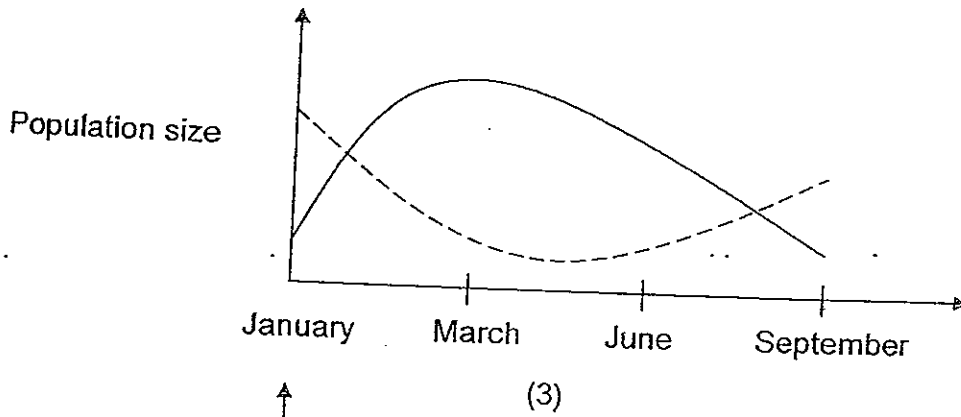
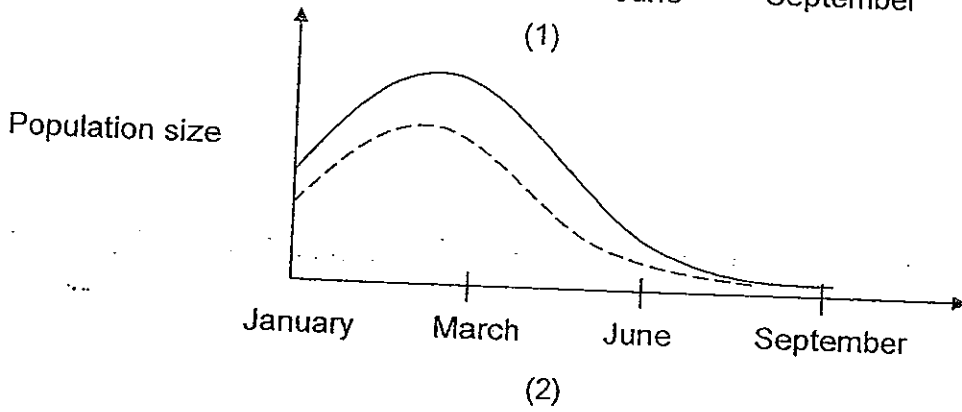
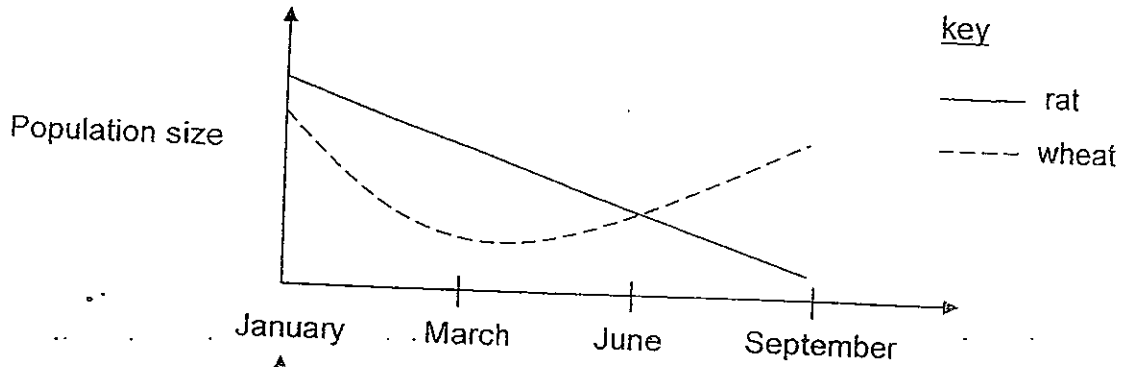
Animal	Characteristics of flower		
	Size	Colour	Smell
Bee	Small	Yellow	Odourless
Butterfly	Large	White	Fragrant
Bird	Large	Yellow	Fragrant
Beetle	Large	White	Foul
Ant	Small	White	Fragrant

From the information given, which animals would be attracted to Flowers A, B and C in the classification chart below?

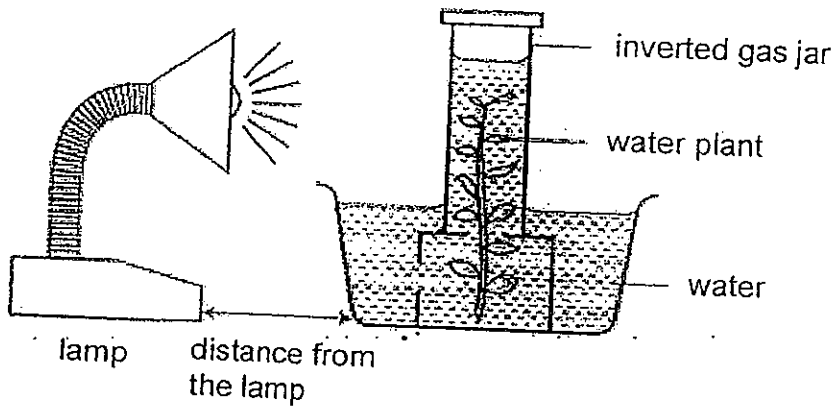


	A	B	C
(1)	Bee	Bird	Beetle
(2)	Bee	Butterfly	Ant
(3)	Ant	Bird	Beetle
(4)	Ant	Bee	Butterfly

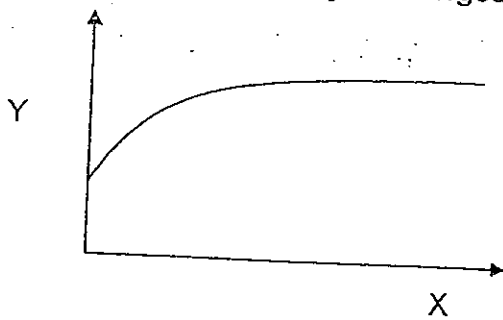
11. A wheat farmer found out in January that rats have been eating up his wheat plants. In March, he released snakes into his wheat farm. The food chain is represented by wheat \rightarrow rat \rightarrow snake. Which of the following graphs best shows the change in population size of wheat plants and rats from January to September?



12. Jimmy carried out an experiment to find out the effects of temperature of water on the rate of photosynthesis of a fully submerged water plant.



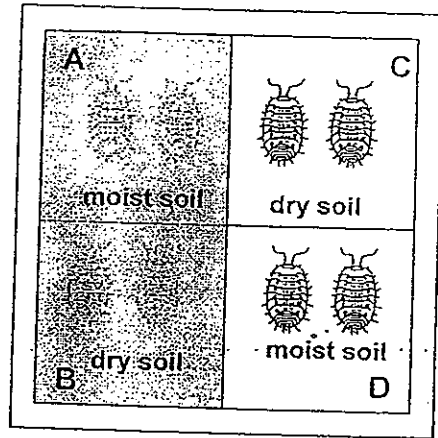
The graph below shows the relationship between the temperature of water and the rate of photosynthesis of the fully submerged water plant.



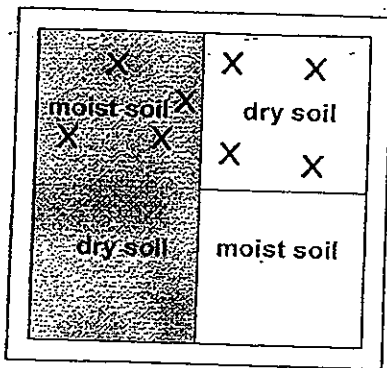
What do X and Y represent?

	X	Y
(1)	Temperature of water	Volume of oxygen
(2)	Volume of oxygen	Temperature of water
(3)	Temperature of water	Volume of carbon dioxide
(4)	Volume of carbon dioxide	Temperature of water

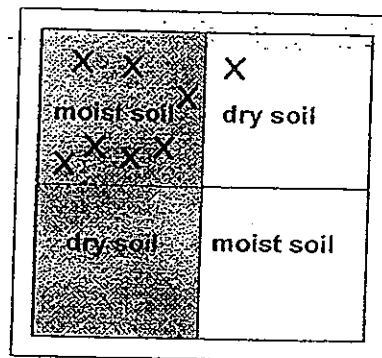
13. The diagram below shows a tray. It is divided into four equal sections, A, B, C and D. Sections A and B are shaded with a cloth while sections C and D are exposed to the sun for the duration of the experiment. Two woodlice are placed on each section of the tray.



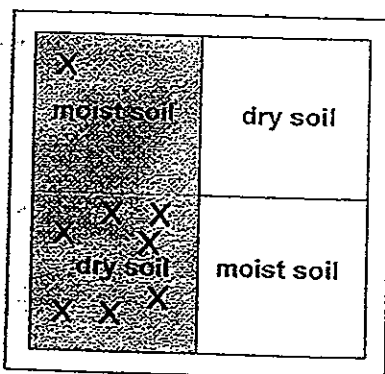
Which of the following trays correctly shows where the woodlice are most likely to be found after four hours? ("X" denotes the final position of each woodlouse).



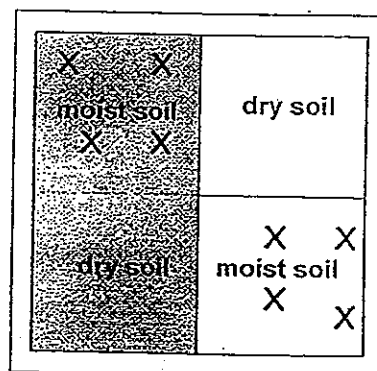
(1)



(2)

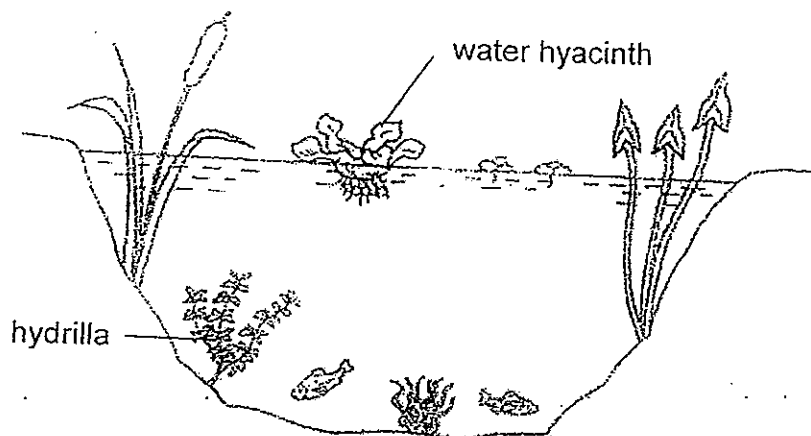


(3)



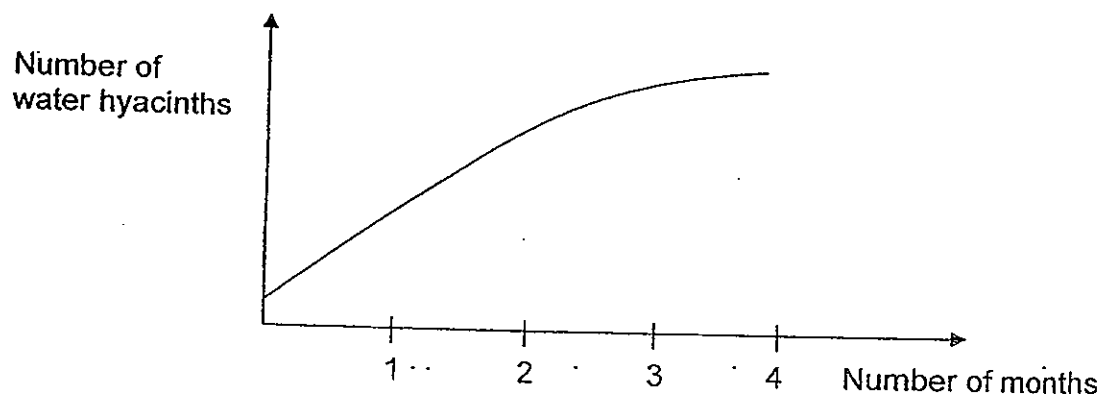
(4)

14. Mandy counted the number of water hyacinths in the pond every day, over four months.



Cross-section of a pond

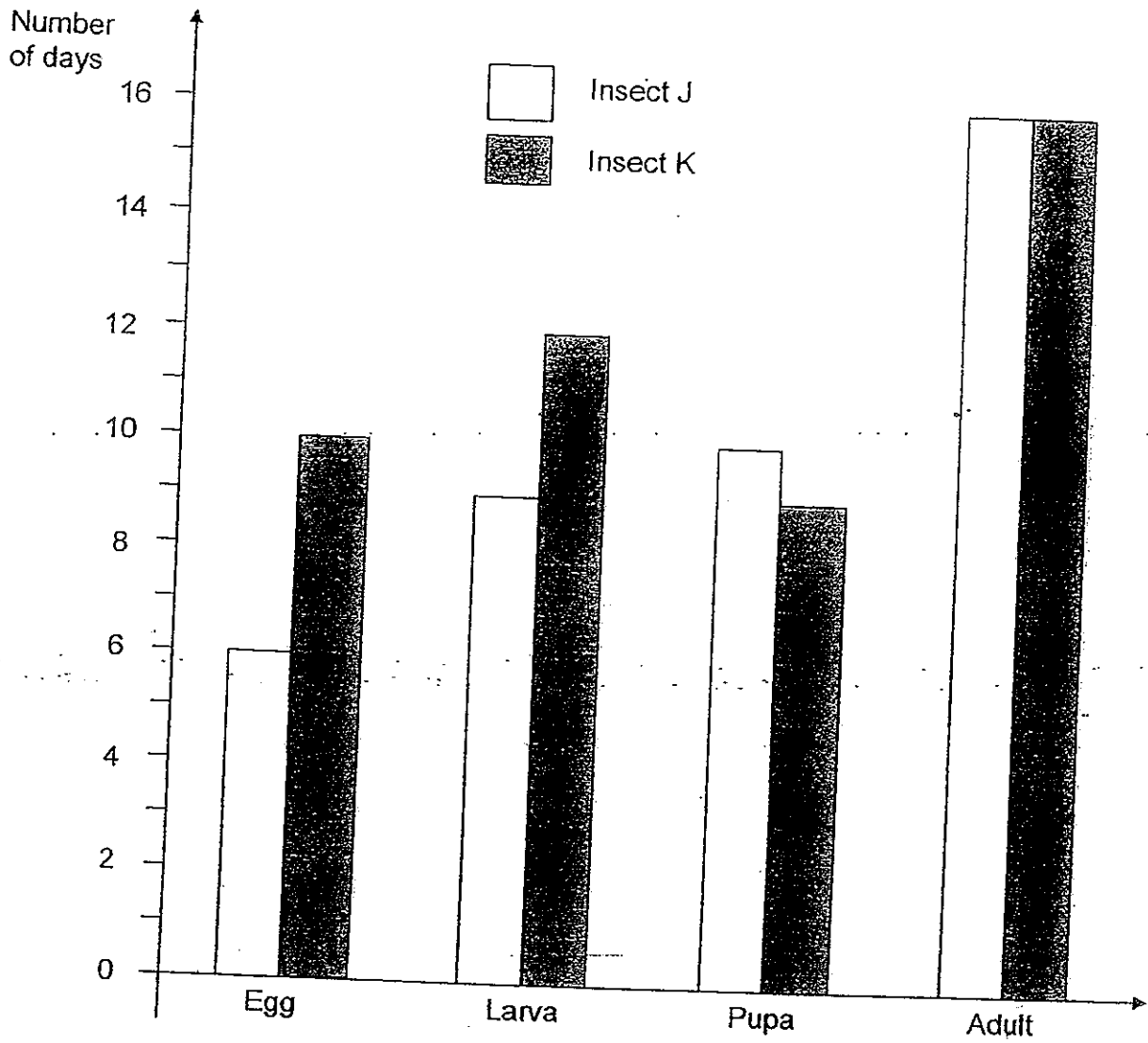
Mandy plotted the number of water hyacinths over four months as shown below.



How will the population size of hydrilla be affected over a period of four months?

	Population size of hydrilla	Reason
(1)	Increase	Hydrilla received more sunlight
(2)	Increase	The temperature of the pond water decreased
(3)	Decrease	Hydrilla did not receive enough sunlight
(4)	Decrease	The temperature of pond water was too low

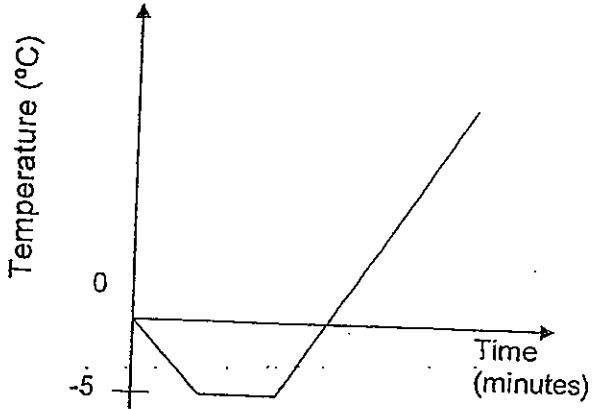
15. The bar graph below shows the number of days that each stage of the life cycles of insects, J and K, lasts.



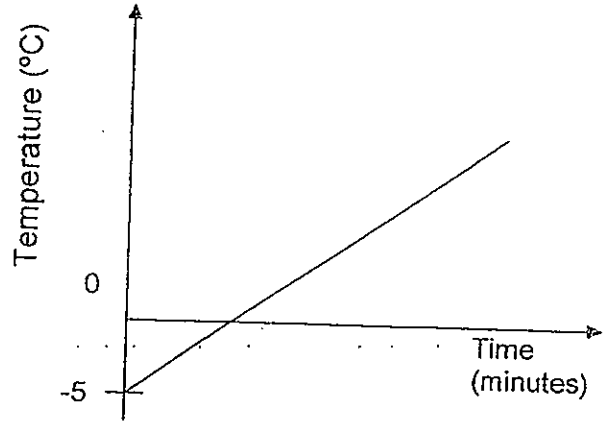
At which stage would the insects, J and K, be on the 16th day after the eggs were laid?

	J	K
(1)	Larva	Larva
(2)	Pupa	Pupa
(3)	Adult	Adult
(4)	Pupa	Larva

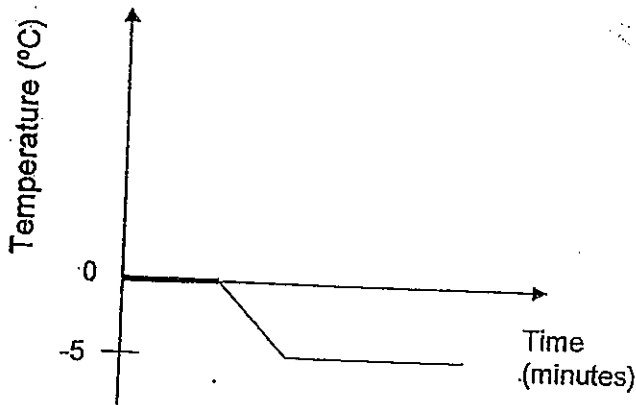
16. Macy observed the temperature of pure water in a beaker from the time it was taken out of the freezer with a temperature of -5°C till the time it melted fully. She recorded her observation in a graph. Which of the following graphs is correctly plotted by Macy?



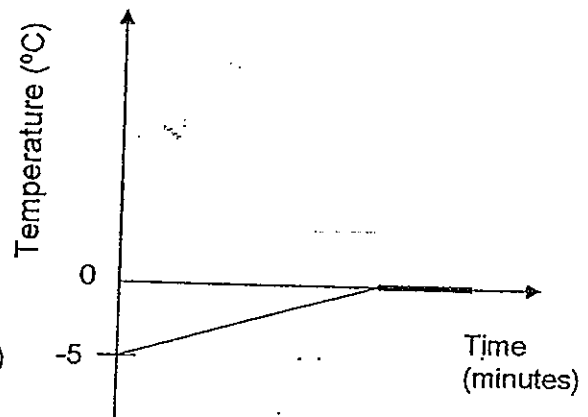
(1)



(2)

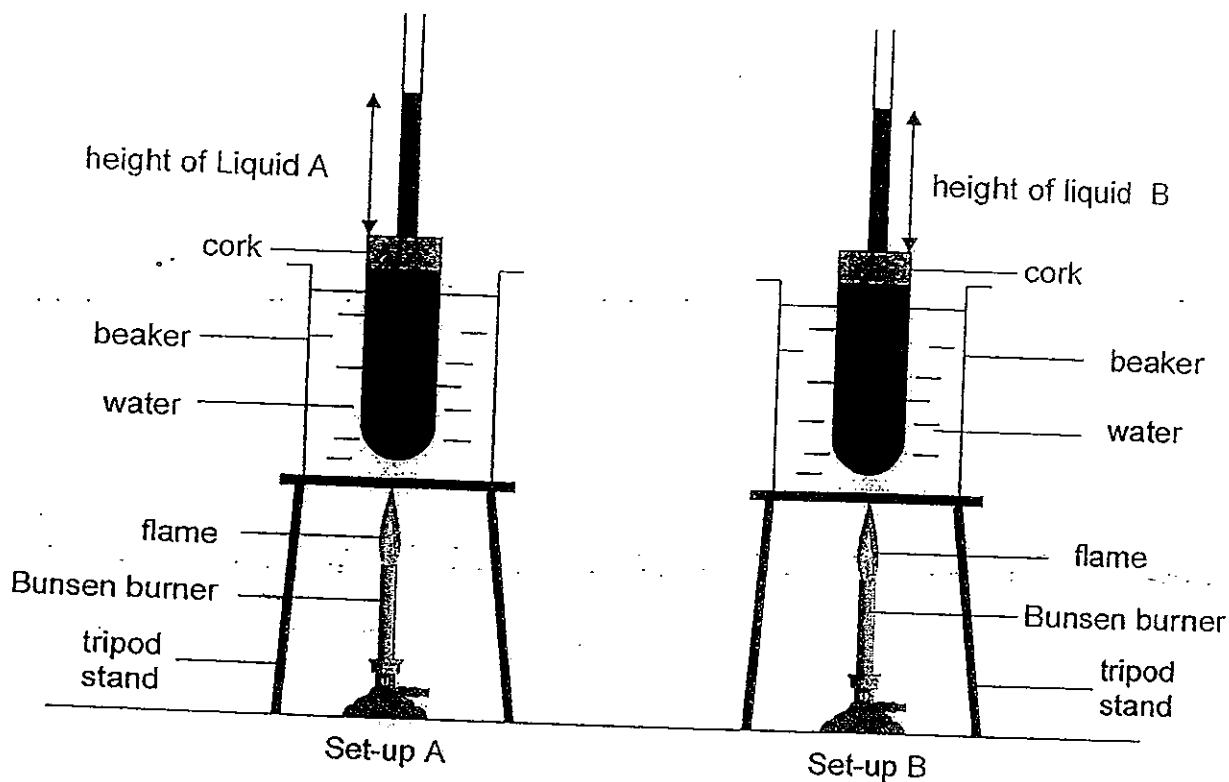


(3)

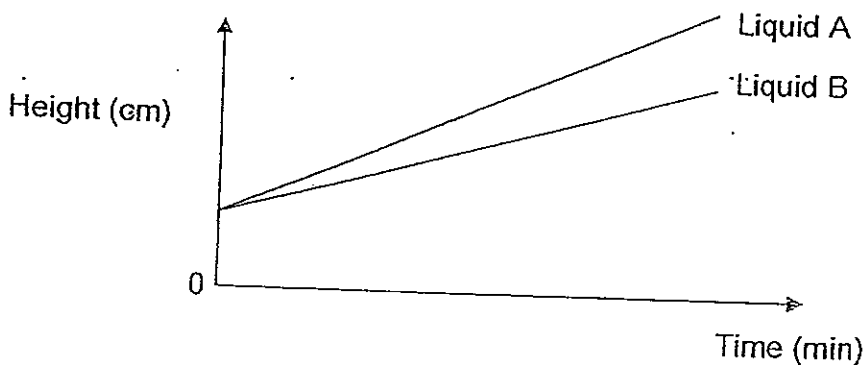


(4)

17. Simon filled a boiling tube with Liquid A and covered it with a cork fitted with a narrow tube as shown in Set-up A below. He repeated the steps for Liquid B as shown in Set-up B below. Both set-ups were immersed in a beaker containing the same amount of water and the Bunsen burner was turned on at the same time. Simon measured the height of Liquid A and Liquid B at two-minute intervals.



The following graph shows how the height of liquid A and B changed over 30 minutes.



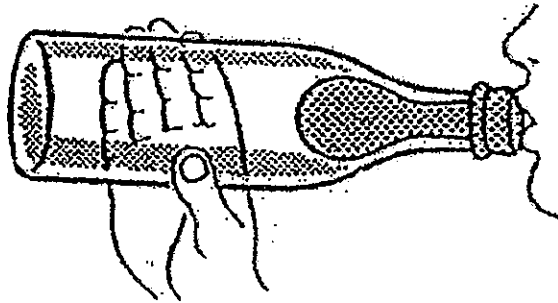
Which of the following is true?

- (1) Liquid A expands faster than Liquid B.
- (2) Liquid B expands faster than Liquid A.
- (3) The boiling point of Liquid A is higher than that of Liquid B.
- (4) The boiling point of Liquid B is higher than that of Liquid A.

18. Which of the following about the water cycle is true?

- (1) Clouds are water in the gaseous state.
- (2) Water condenses to form water vapour.
- (3) Rain drops falling into the sea contain salt.
- (4) Energy for the water cycle comes from the Sun.

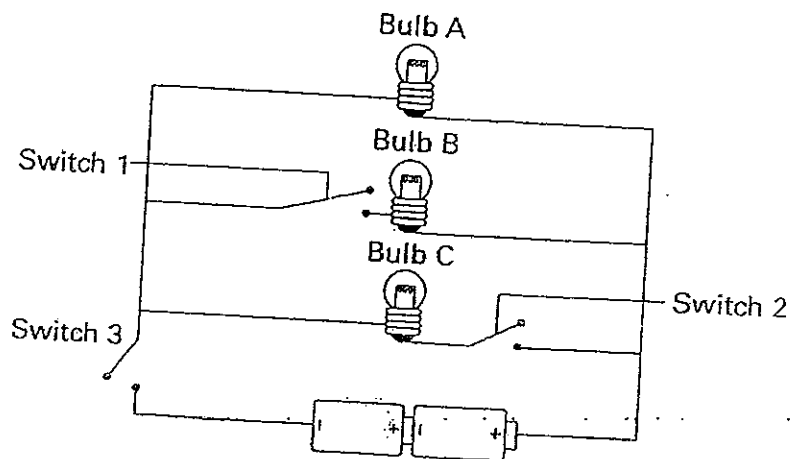
19. Wayne pushed a balloon into a plastic bottle and stretched its mouthpiece over the opening of the bottle. Then he blew into the bottle but the balloon could not inflate fully as shown in the picture below.



Which of the following actions could cause the balloon to inflate more fully within the bottle?

- (1) Use a glass bottle.
- (2) Make a hole in the bottle.
- (3) Make a hole in the balloon.
- (4) Pour water into the balloon.

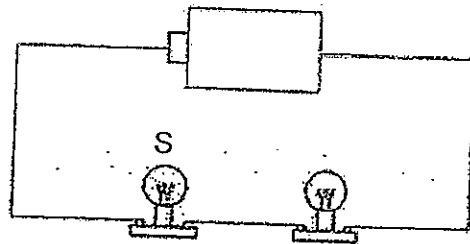
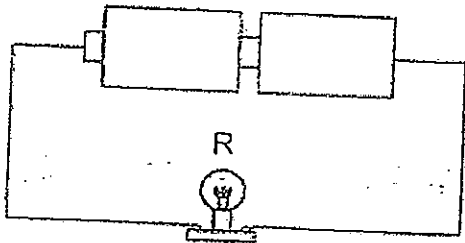
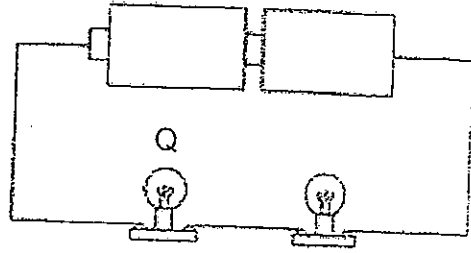
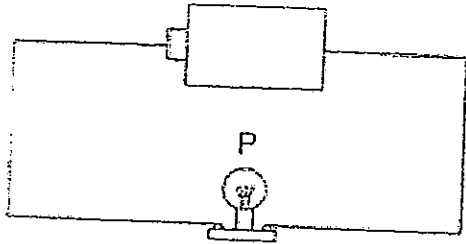
20. The diagram below shows an electric circuit.



Which switch(es) must be closed so that only Bulb A and Bulb B light up?

- (1) Switch 3 only.
- (2) Switches 1 and 2 only.
- (3) Switches 1 and 3 only.
- (4) Switches 1, 2 and 3.

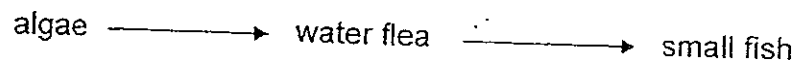
21. The diagram below shows four circuits with different arrangements of identical batteries and identical bulbs. The bulbs in all four circuits light up.



Which of the following pairs of bulbs have the same brightness?

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

22. What is the source of energy for the food chain below?

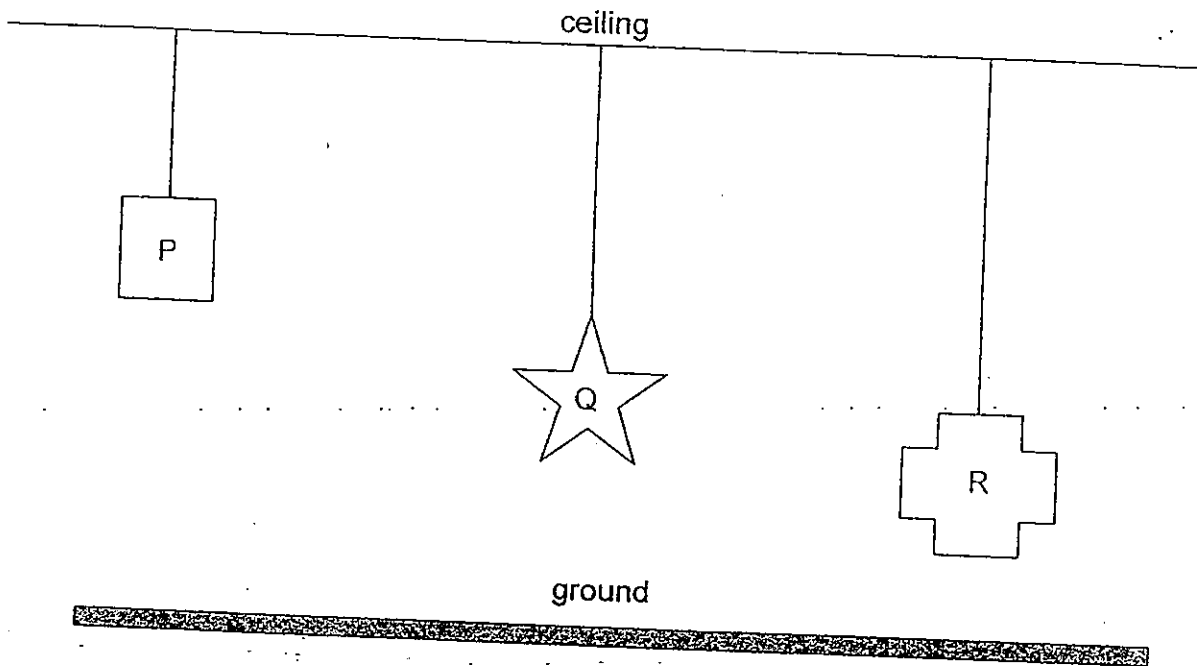


- (1) Sun
- (2) Water
- (3) Mineral salts
- (4) Carbon dioxide

23. Which of the following is an example of a push?

- (1) Opening a drawer.
- (2) Extending a spring.
- (3) Pressing a doorbell.
- (4) Raising a flag at the flagpole.

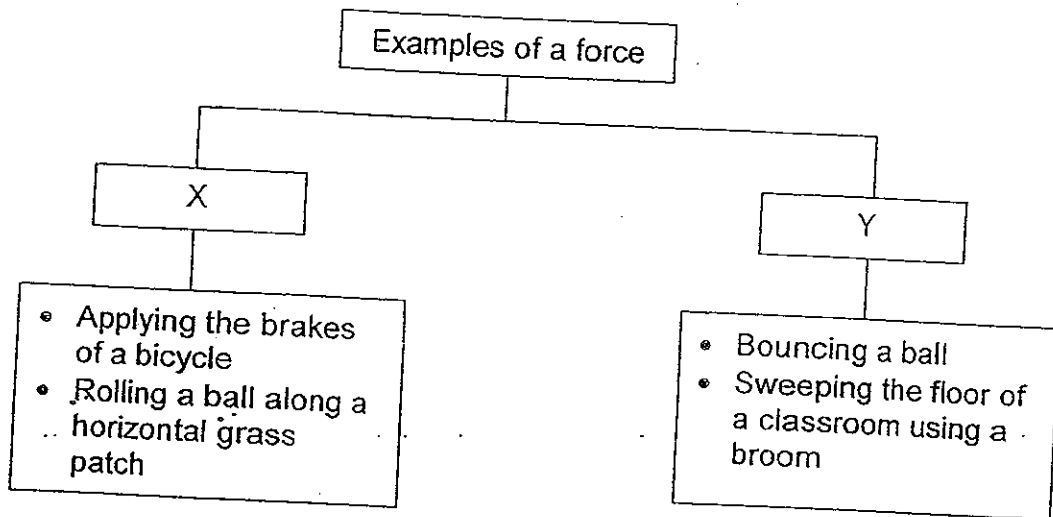
24. The diagram below shows three objects hung by a thread from a ceiling. All three objects have the same mass.



Which of the following is true about Objects P, Q and R?

- (1) R has the most chemical energy.
- (2) Q has more kinetic energy than R.
- (3) Q has more elastic potential energy than P.
- (4) P has the most gravitational potential energy.

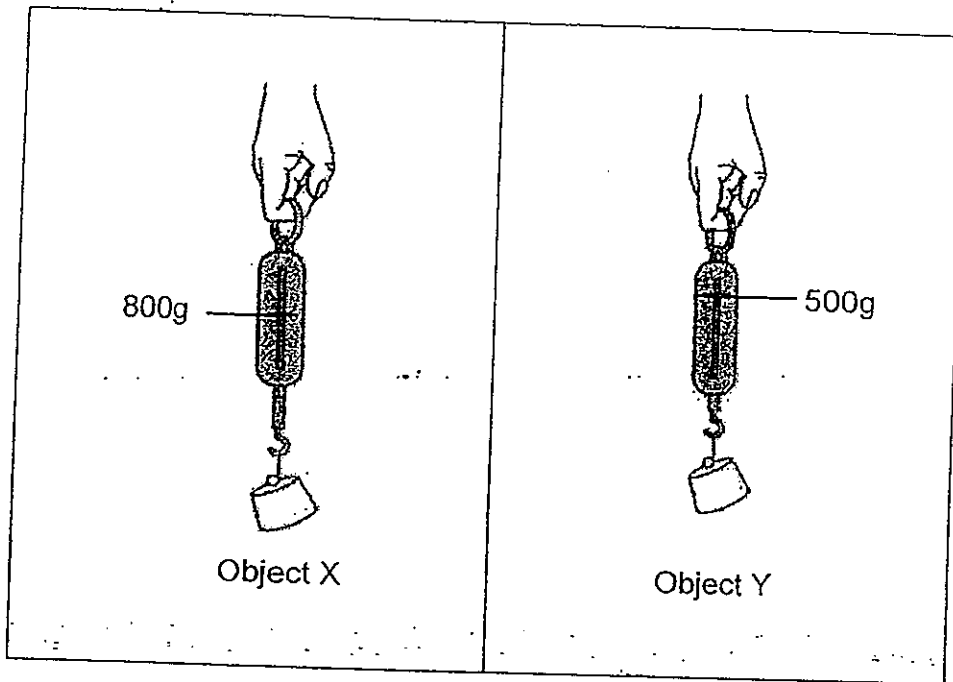
25. The classification chart below shows the examples of a force applied on an object.



Which of the following headings best describe X and Y?

	X	Y
(1)	Slows down a moving object	Changes the direction of a moving object
(2)	A Push	A Pull
(3)	Changes the direction of a moving object	Slows down a moving object
(4)	A Pull	A Push

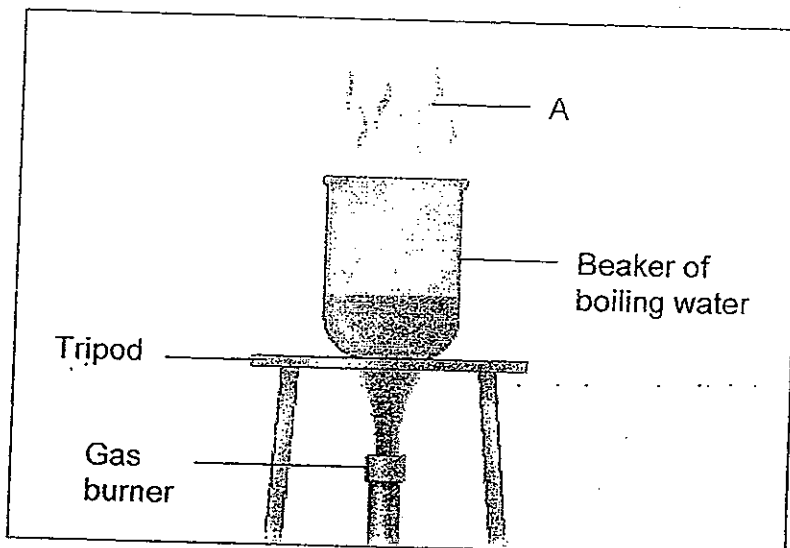
26. Object X was hung from a spring balance and its mass was measured as 800g. Object Y was hung from the same spring balance, at the same location, and its mass was measured as 500g.



Which of the statement is true about the above observation?

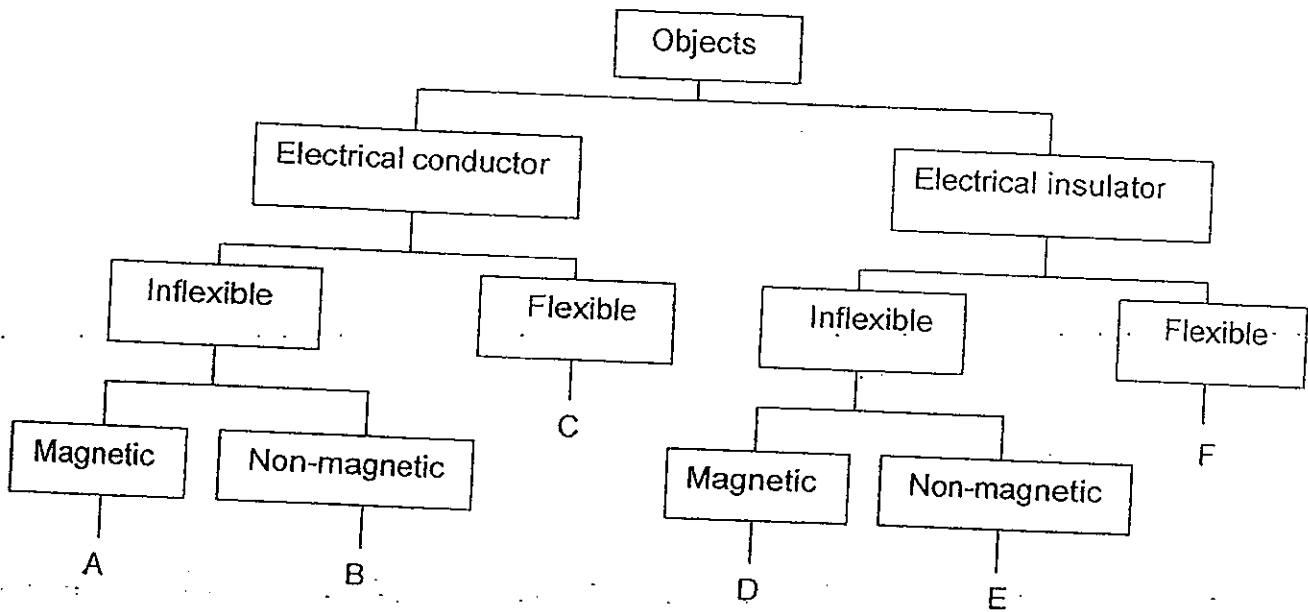
- (1) The gravity acting on the objects were the same.
- (2) The elastic spring force exerted on the objects were the same.
- (3) The gravity acting on Object X was stronger than the gravity acting on Object Y.
- (4) The elastic spring force exerted on Object X was weaker than the elastic spring force exerted on Object Y.

27. The picture below shows a beaker of boiling water. Identify A (which is visible) and its state of matter.



	A	State of matter
(1)	steam	Gas
(2)	steam	Liquid
(3)	cloud	Gas
(4)	cloud	Liquid

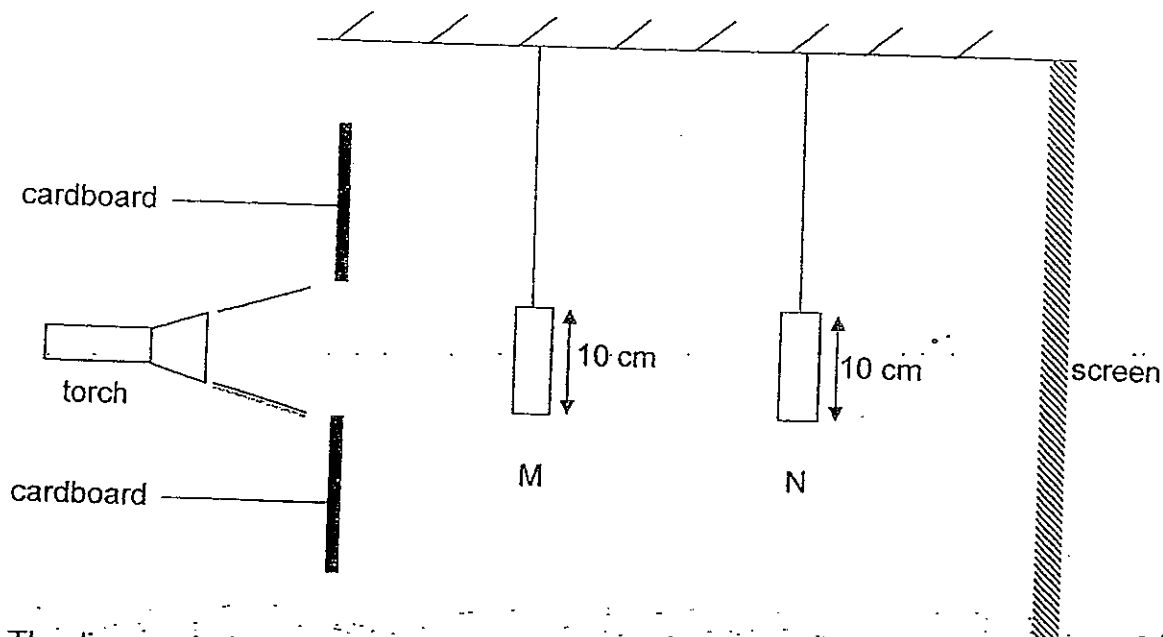
28. Study the classification chart below.



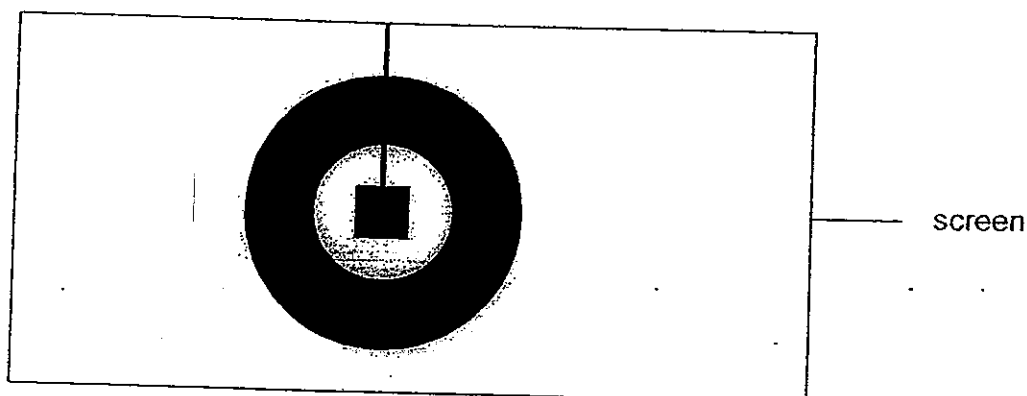
Which objects, A, B, C, D, E or F, represent the 'iron nail' and 'raincoat'?

	Iron nail	Raincoat
(1)	A	E
(2)	A	F
(3)	B	F
(4)	C	D

29. The set-up below, not drawn to scale, shows light shining on two objects, M and N. Each object is hung from the ceiling with a string. A cardboard with a hole in the middle is placed between the torch and object M.



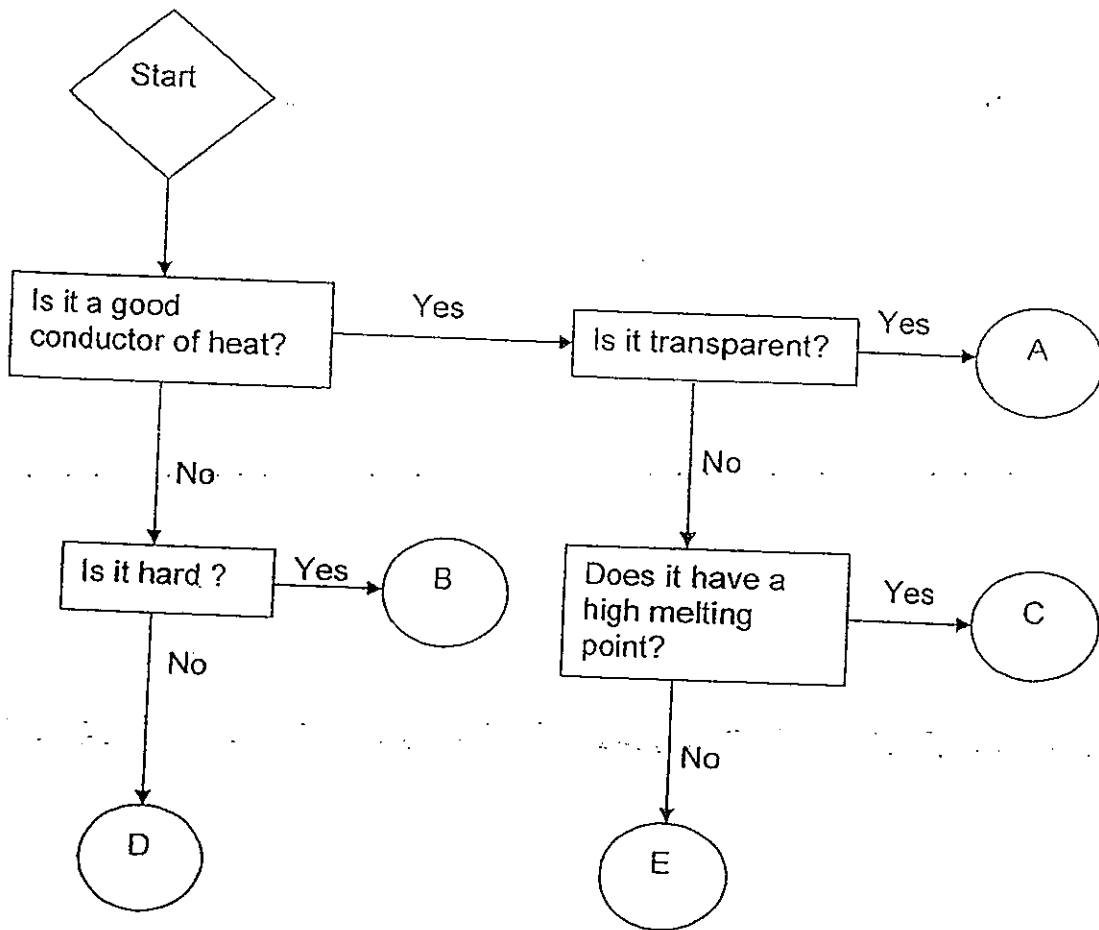
The diagram below shows their shadows on the screen when the torch is switched on.



Which of the following objects are M and N?

	M	N
(1)	Opaque ring	Opaque square
(2)	Opaque square	Opaque ring
(3)	Transparent ring	Transparent square
(4)	Transparent square	Transparent ring

30. Study the flow chart below.



Which of the following is most suitable for making the parts, X and Y, of the frying pan shown below?



	X	Y
(1)	A	C
(2)	B	C
(3)	B	E
(4)	D	E

END OF BOOKLET A



PRIMARY 6 MID-YEAR EXAMINATION 2012

Name : _____ () Date: 14 May 2012

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, class and register number.

Do not turn over this page until you are told to do so.

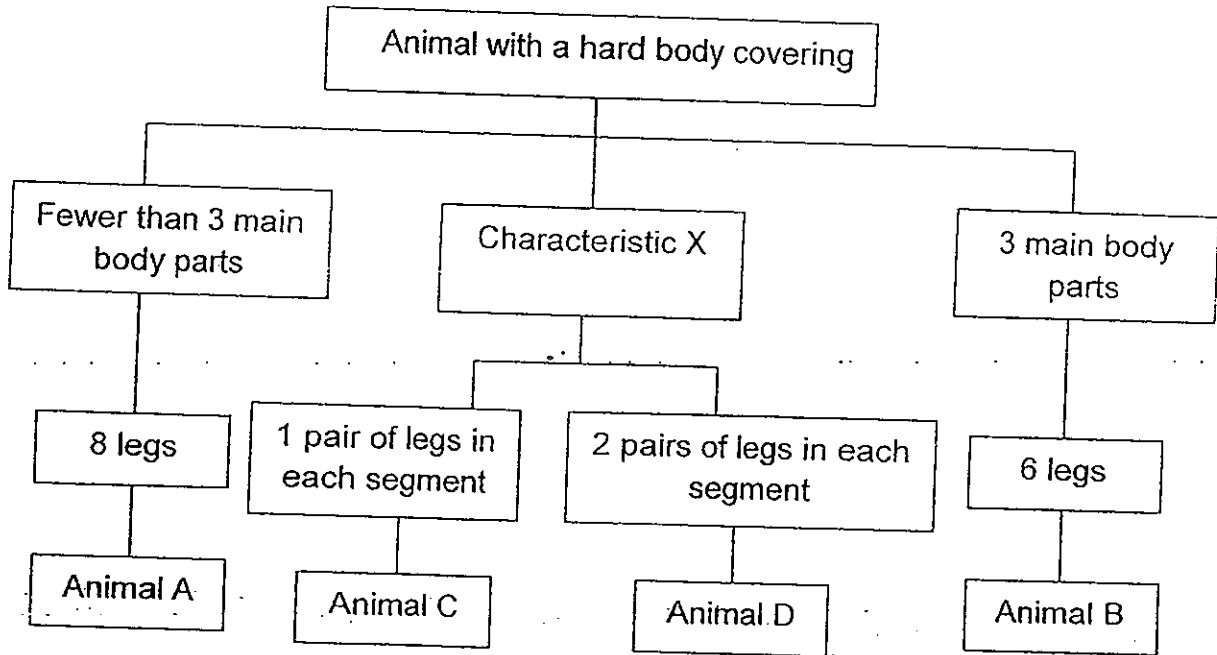
Follow all instructions carefully.

Answer all questions.

Section B (40 marks)

Write your answers for the questions, 31 to 44, in the spaces provided.

31. Study the classification chart below.



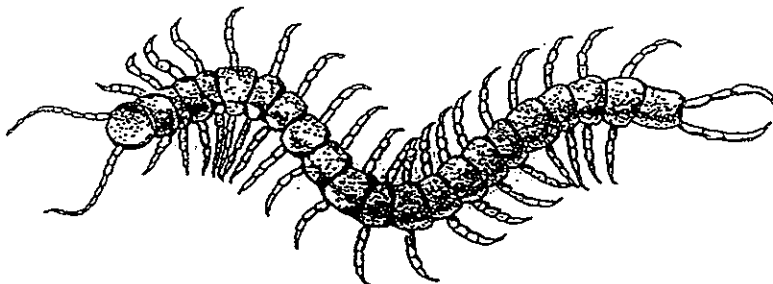
(a) What is Characteristic X?

[1]

(b) Describe Animal A.

[1]

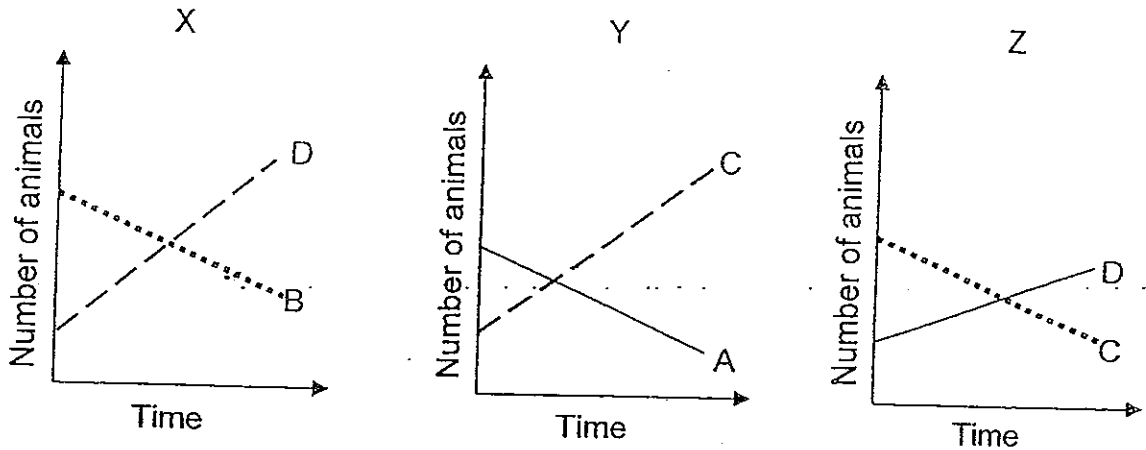
(c)



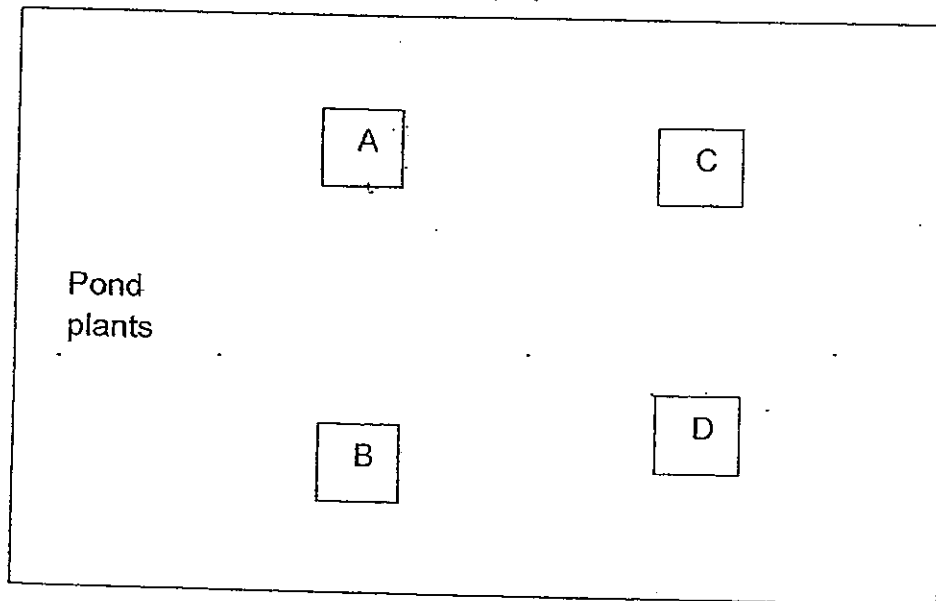
Harry noticed that the animal above had a hard body covering. Which animal, A, B, C or D, is this?

[1]

32. A, B, C and D represent four different types of pond animals. A and B eat pond animals only. Three tanks, X, Y and Z were filled with pond water. Two of the four types of pond animals were placed together in the tanks. The number of each type of pond animals were then counted over time and the data was shown by the graphs below.

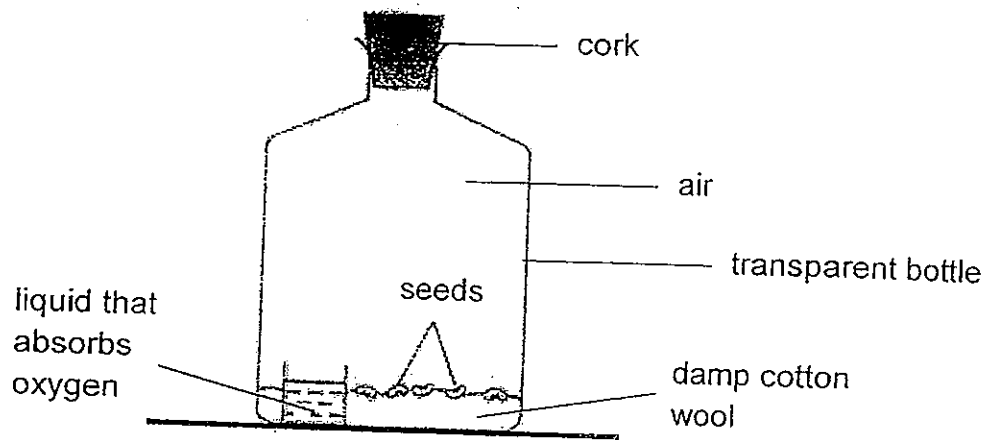


- (a) Based on the graphs, complete the food web below involving the four different types of pond animals, A, B, C and D. [1]



- (b) Which of the four types of pond animals is (are) both a predator and a prey? [1]

33. Ming Wei placed five seeds in a transparent bottle as shown below.

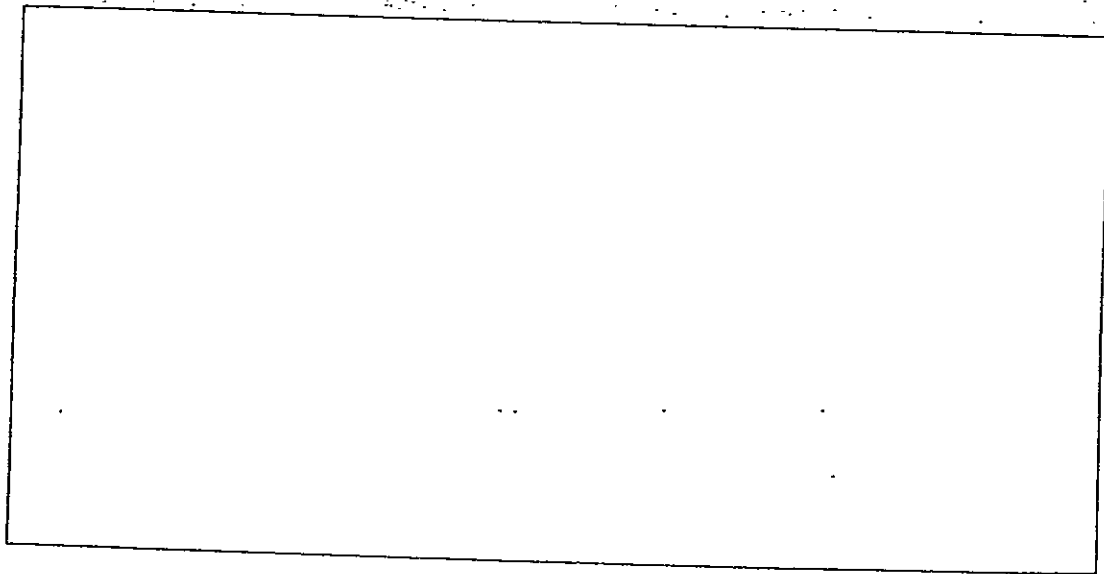


experimental set-up

The set-up was placed at room temperature.

(a) Draw and **label** with a pencil in the box below, a control set-up if Ming Wei wanted to find out if the seeds need oxygen to germinate.

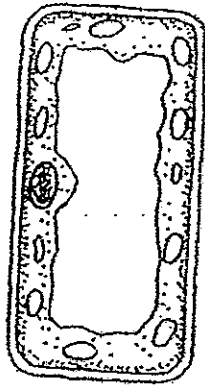
[1]



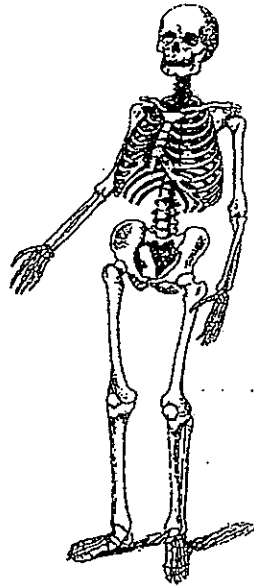
(b) Explain why the cork was used to seal the bottle in the experimental set-up.

[1]

34. The diagram below shows a typical plant cell and a human skeleton.



plant cell



human skeleton

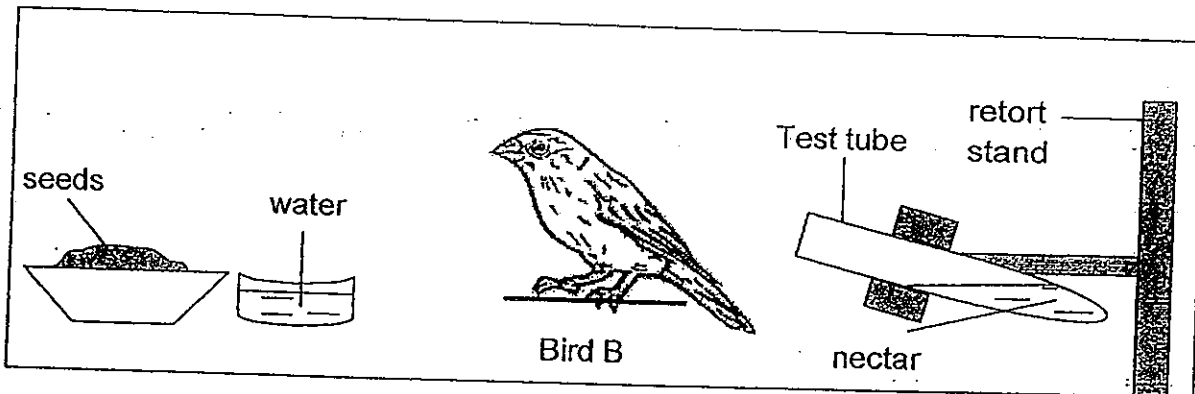
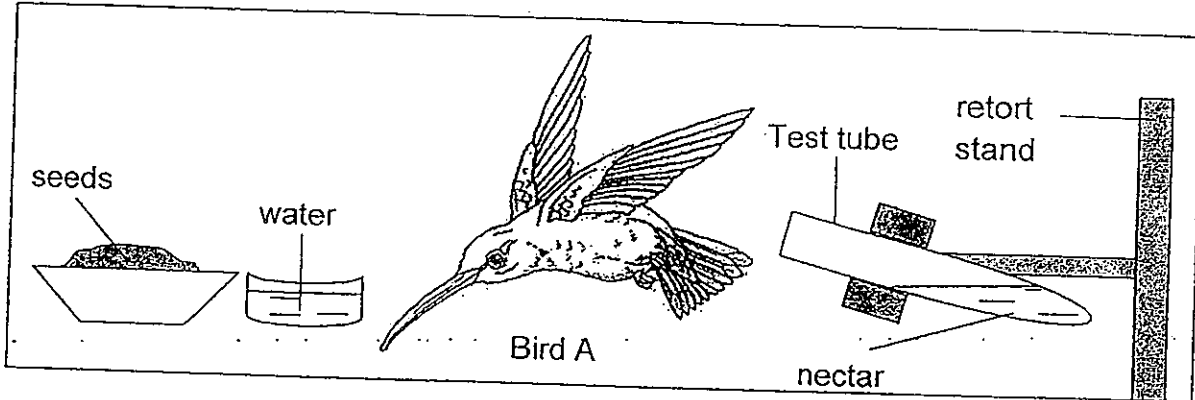
(a) Name the part of the plant cell which has a similar function to the human skeleton.

[1]

(b) Explain your answer in (a).

[1]

35. Two birds, Bird A and Bird B, were kept separately in two cages as shown below.



300g of seeds and 50ml of nectar were placed in each cage at the start of the experiment. After two days, the amount of seeds and nectar were recorded in the table shown below.

	Mass of seeds at the start of the experiment (g)	Mass of seeds at the end of the experiment (g)
Cage with Bird A	300	300
Cage with Bird B	300	100

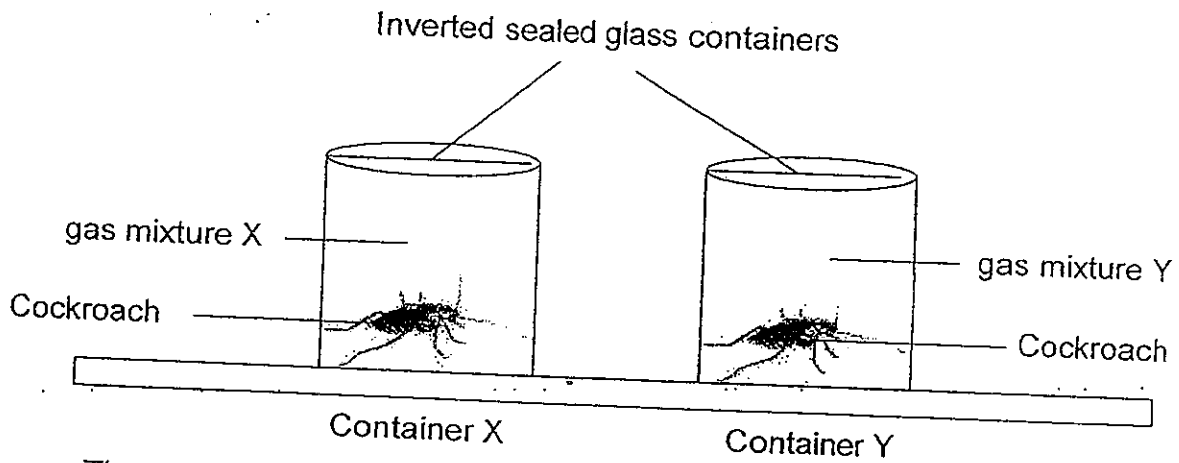
	Volume of nectar at the start of the experiment (ml)	Volume of nectar at the end of the experiment (ml)
Cage with Bird A	50	20
Cage with Bird B	50	50

(a) What can you infer about the diet of Bird A? [1]

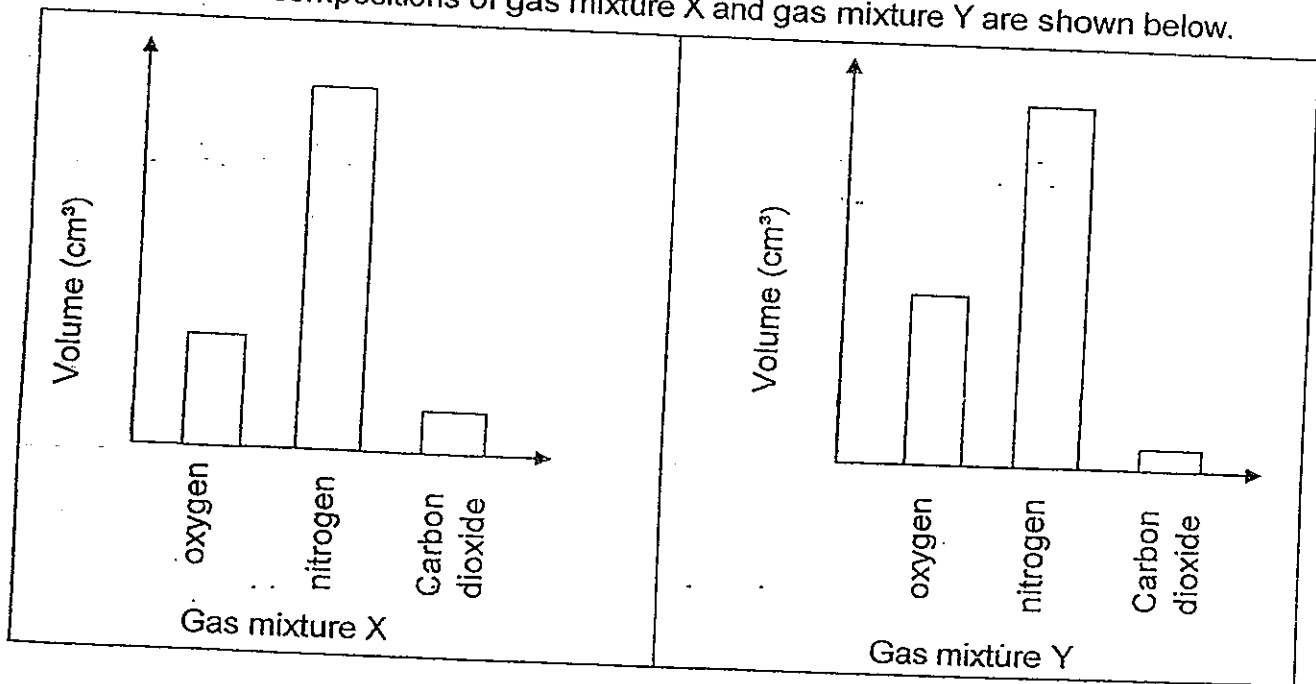
(b) How is Bird A adapted in its natural habitat for the diet mentioned in (a)? [1]

(c) Why was the volume of nectar in the cage with Bird B the same at the start and at the end of the experiment? [1]

36. Azmi placed a cockroach into each of the identical glass containers, Container X and Container Y, as shown below. Container X is filled with gas mixture X and container Y is filled with gas mixture Y.



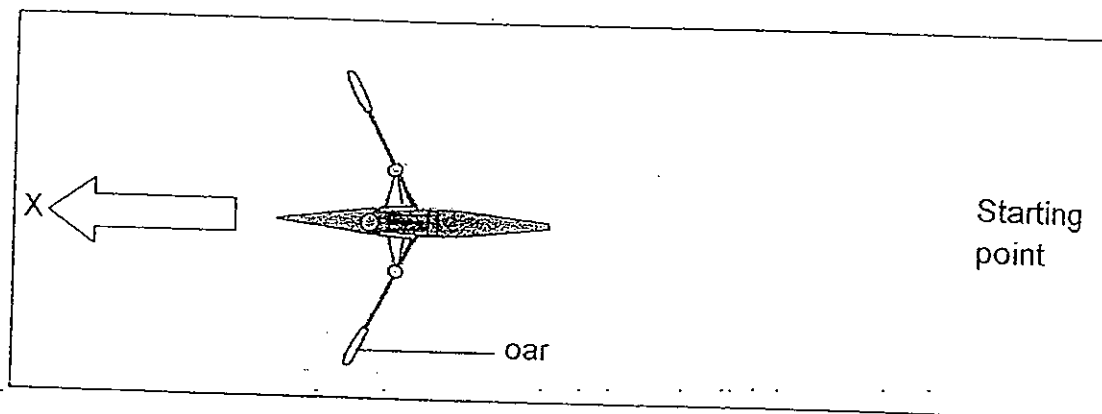
The compositions of gas mixture X and gas mixture Y are shown below.



- (a) Based on the information given, which container will the cockroach survive for a longer period? [1]

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

37. Seng Wee placed a battery operated toy row-boat in a tray filled with water. He recorded the time taken to reach the point, X, from the starting point.



He then replaced the oars with a pair of larger oars. He repeated the experiment and recorded the data as shown below.

Surface area of oar (cm ²)	Time taken to reach point X (s)
12	45
24	33
36	20

- (a) What was the aim of Seng Wee's experiment? [1]

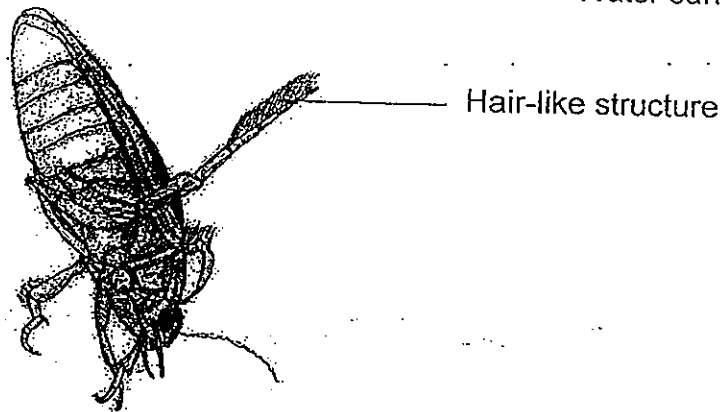
- (b) How can Seng Wee make his readings more reliable? [1]

- (c) What is the relationship between the surface area of the oar and the speed of the toy row-boat?

[1]

- (d) Study the picture of a great diving beetle shown below.

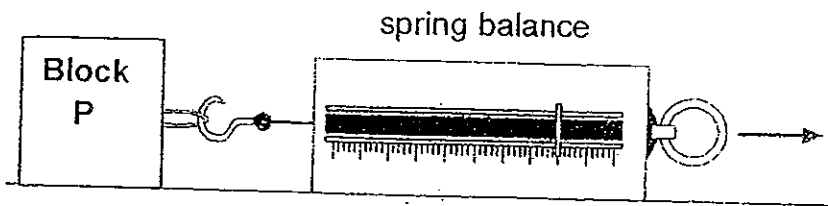
----- Water surface



How would the hair-like structure help the great diving beetle swim faster?

[1]

38. Block P was pulled along a surface and the average pulling force was recorded.



The experiment was repeated by pulling Block Q and Block R of different masses. The table below shows the average pulling force when Block P, Block Q and Block R were pulled.

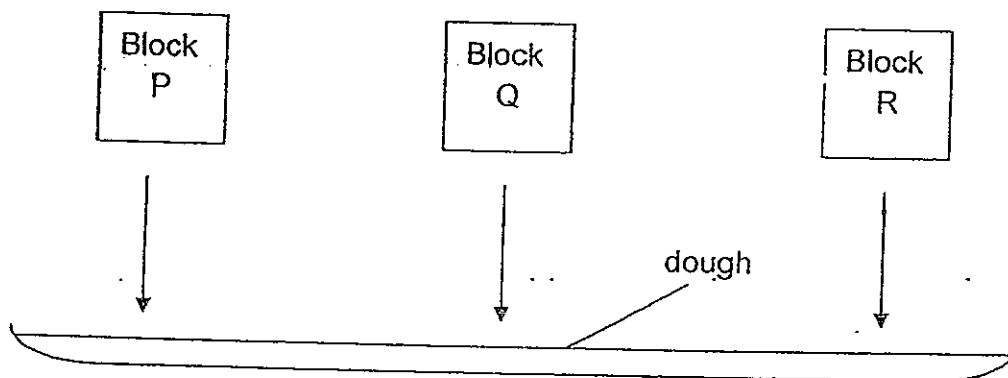
Block	Block P	Block Q	Block R
Average pulling force (N)	0.6	0.9	0.3

(a) Name two variables which must be kept the same in order to conduct a fair test. (Note: The same spring balance was used throughout the experiment).

Variable 1 : _____ [½m]

Variable 2 : _____ [½m]

Next, Block P, Block Q and Block R were dropped from the same height onto a layer of dough.

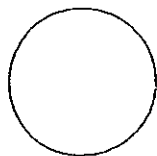


Each block made a dent of different depths on the dough as shown above.

(b) Match Block P, Block Q and Block R with the depth of the dent made on the dough by completing the table below. [1]

Block	Depth of dent (cm)
	0.4
	1.1
	1.3

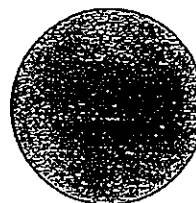
39. In a group activity, the pupils were given a polystyrene ball, an iron ball, a rubber ball and a balance.



Polystyrene ball



Iron ball



Rubber ball

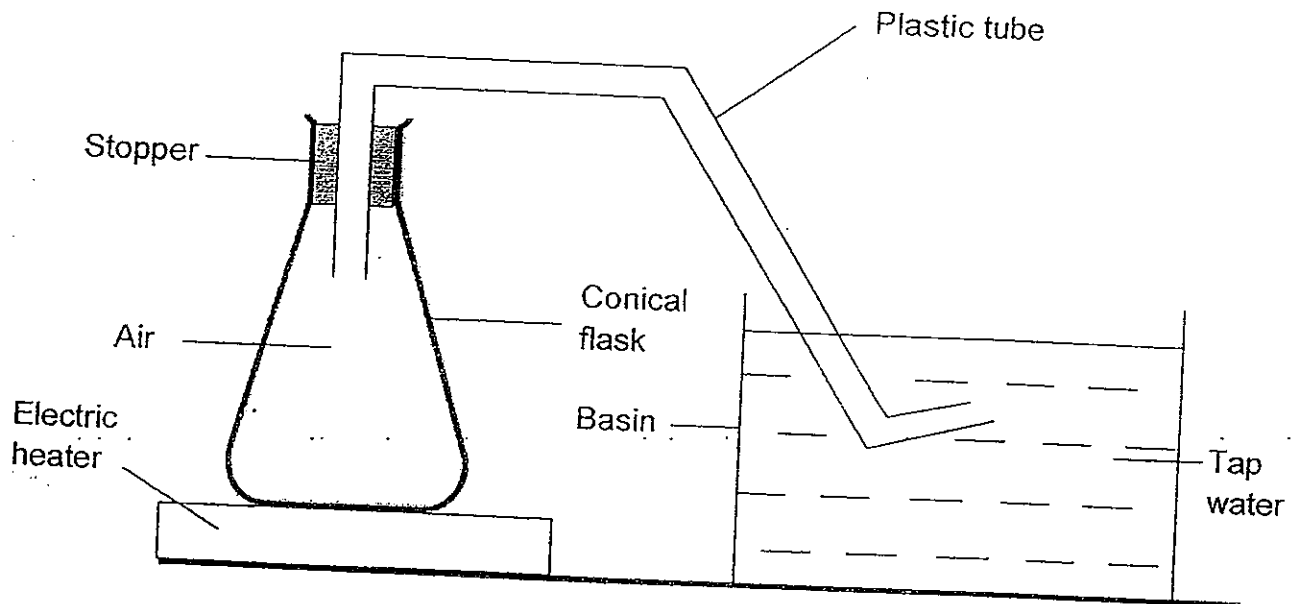
Their masses and volumes were compared and the results are given below.

Comparison between:	Which has a bigger mass ?	Which has a bigger volume?
Polystyrene and Rubber balls	Rubber ball	Rubber ball
Polystyrene and Iron balls	Iron ball	Polystyrene ball
Iron and Rubber balls	Iron ball	Rubber ball

Using only the information given in the table and the diagrams shown above, put a tick (✓) in the correct box for each of the following statements. [2]

	Statements	True	False	Not possible to tell
(a)	The iron ball is the heaviest.			
(b)	The larger the size of the ball, the heavier the ball.			
(c)	When all the balls are completely submerged in the same amount of water, the iron ball displaces more water than the rubber ball.			
(d)	If more air is pumped into the rubber ball, it will become heavier than the iron ball.			

40. Jovan and Sally set up the apparatus shown below.

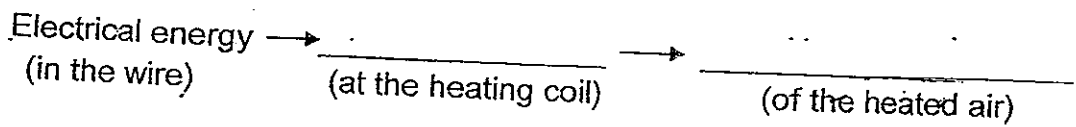


(a) The air in the flask is heated by the electric heater for 20 minutes. Write down one observation seen in the basin of tap water during the process of heating.

[1]

(b) Describe the energy changes as the air in the flask is heated by the electric heater.

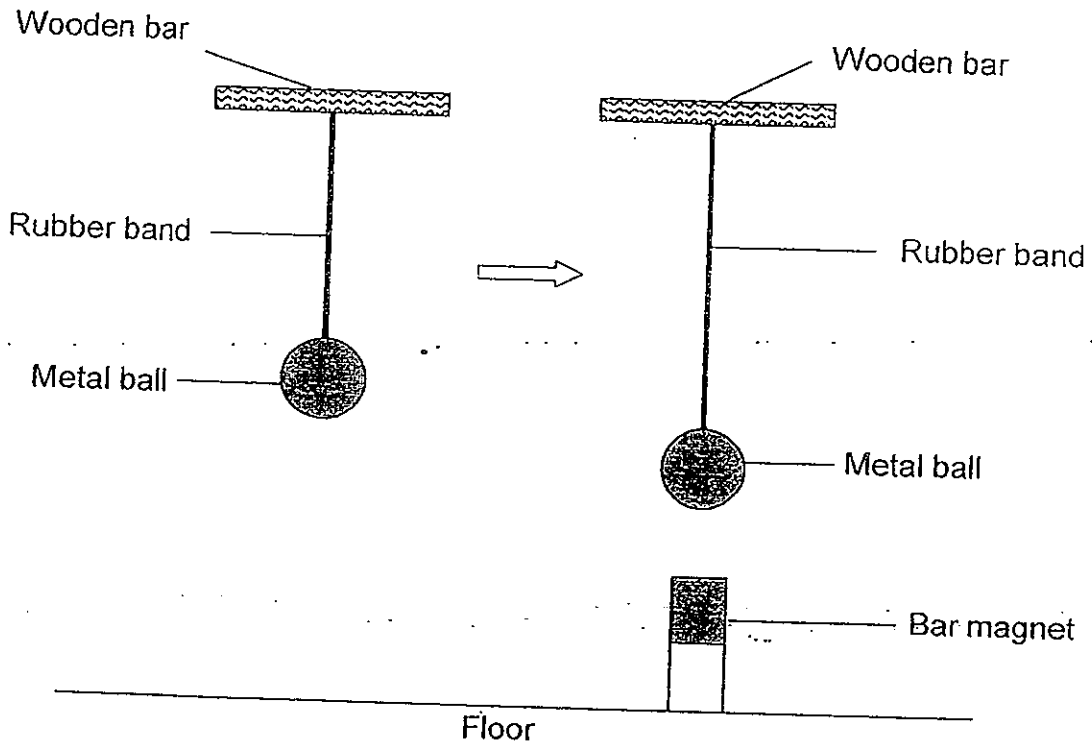
[1]



(c) Seawater was added into the flask and the electric heater was turned on. Jovan predicted that the tap water will turn salty, while Sally predicted that the tap water will not turn salty. Whose prediction was correct? Explain your answer.

[2]

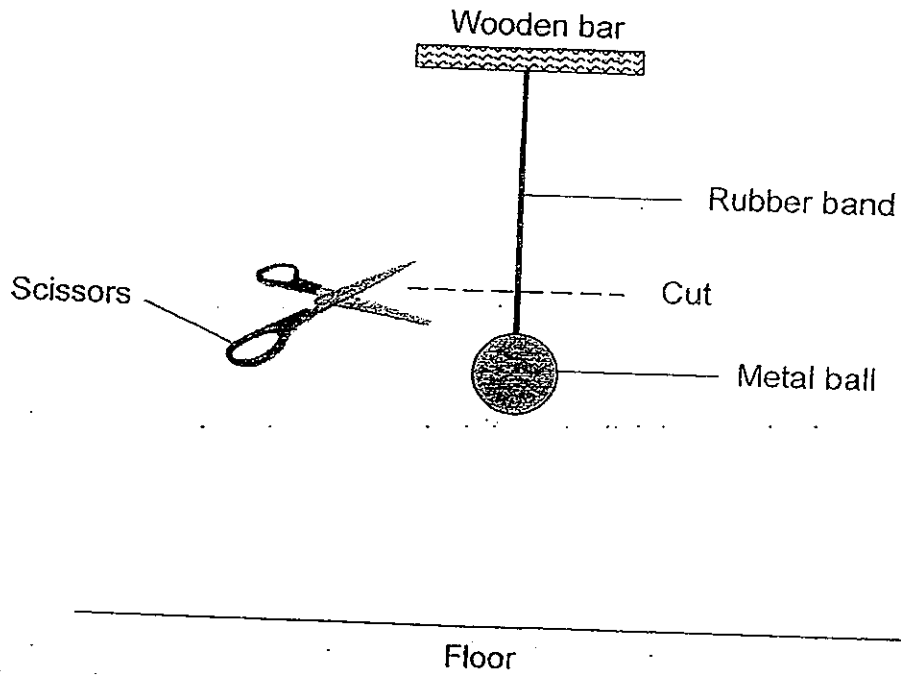
41. A metal ball was hung from a wooden bar with a rubber band. The length of the rubber band increased when a strong bar magnet was placed under the metal ball as shown below.



- (a) Based on the information given, name one property of the metal ball. [1]

- (b) Explain why the length of the rubber band increased when the bar magnet was placed under it. [2]

(c) The same materials were used in the set-up as shown below.

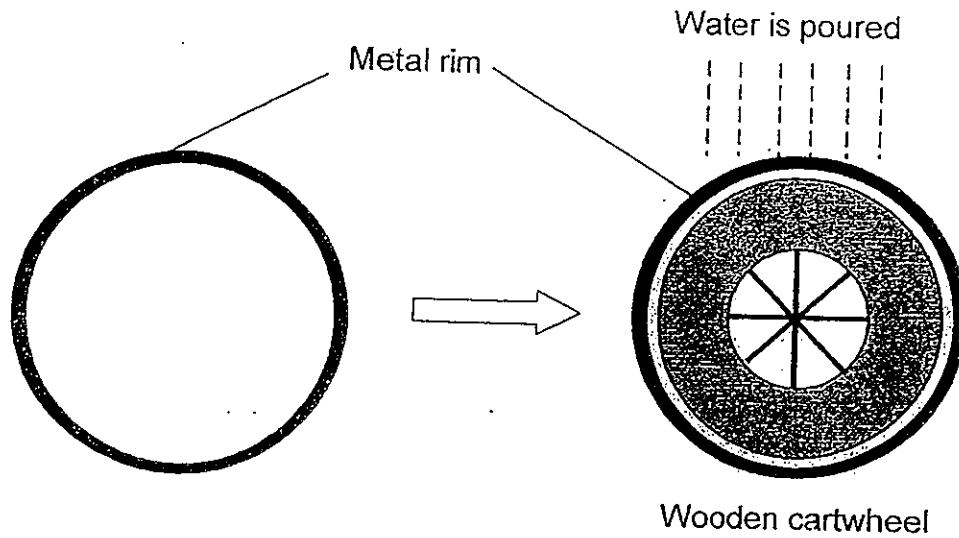


State the energy conversions **immediately after** the rubber band was cut by the pair of scissors.

[2]

- (i) →
Stretched rubber band Cut rubber band
- (ii) →
Metal ball before the rubber band was cut Metal ball right after the rubber band was cut

42. The diagram below shows how a metal rim is fitted tightly round a wooden cartwheel.



- Step 1 : The metal rim is heated strongly for 20 minutes.
Step 2 : The hot metal rim is placed round the wooden cartwheel.
Step 3 : Water is poured over the heated metal rim.

The metal rim is now fixed tightly round the wooden cartwheel.

- (a) Give one reason for carrying out Step 1. [1]

- (b) Give one reason for carrying out Step 3. [1]

43. A group of students attached Object Q and Object R, of different masses to a toy parachute each and released them from the same height. They recorded the time taken for each object to reach the ground.



Object Q



Object R

Ground

The results were recorded in the table shown below.

Object	Time taken for the object to reach the ground (s)		
	First try	Second try	Average time
Object Q	31	33	32
Object R	36	36	36

- (a) What was the aim of the experiment?

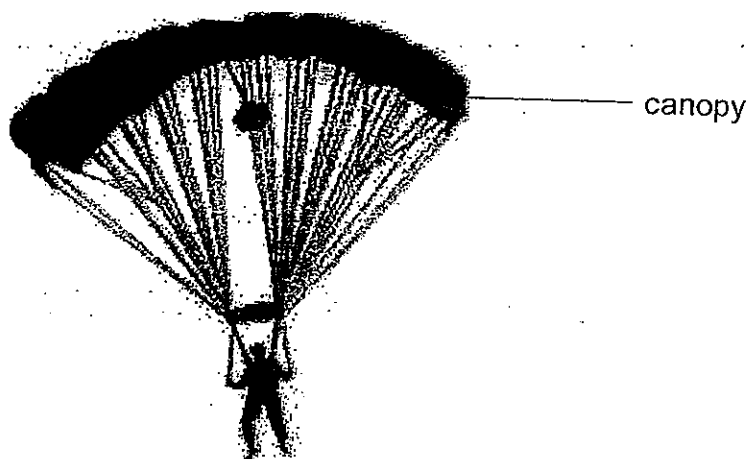
[1]

- (b) Name the force that acts in the direction opposite of the pull of gravity.

[1]

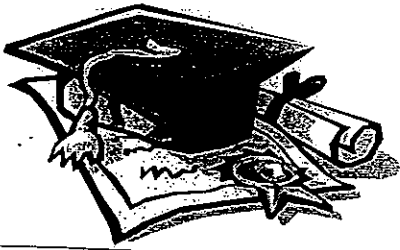
- (c) Which object, Q or R, has a greater mass?
Explain your choice.

[1]



- (d) Look at the picture of a parachutist as shown above. Suggest one change to the canopy which would increase the time taken for the parachutist to reach the ground.

[1]



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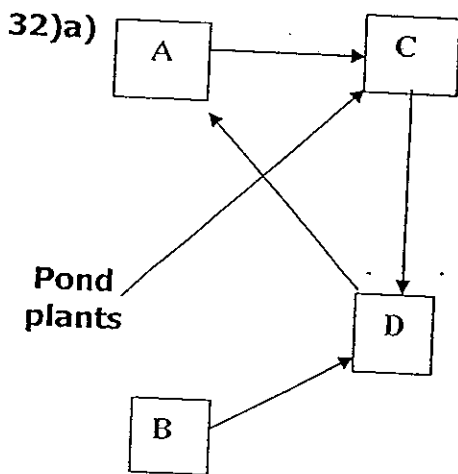
SCHOOL : TAO NAN
SUBJECT : PRIMARY 6 SCINECE

TERM : SA1

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

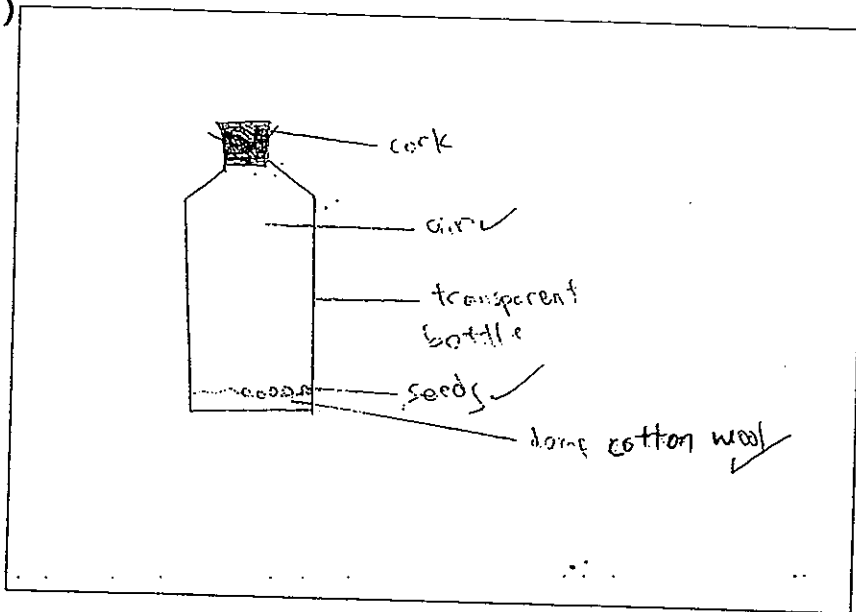
31)a) More than 3 body parts.

- b) Animal A has fewer than 3 main body parts, 8 legs and has a hard body covering.
- c) Animal C.



b) Animal C.

33)a)



b) To prevent oxygen from escaping or entering the bottle.

34)a) Cell wall.

b) The cell wall and human skeleton keeps the organism in a fixed shape.

35)a) Bird A feeds on nectar.

b) Bird A has a long beak to reach into the flowers to drink nectar.

c) Bird B cannot reach the nectar as its beak was too short.

36)a) Container Y.

b) Cockroach needs oxygen for respiration. Container Y has more oxygen than container X.

37)a) He was trying to find out if the surface area of the boat affects the time taken to reach point X.

b) He should repeat the experiment 3 times and calculate the average.

c) As the surface area of the boat increases, the speed of the toy boat increases.

d) The hair-like structure increases the surface area of the leg and helps to propel it with a greater force.

38)a) 1: Texture of the block.

2: The material of the surface.

b) R, P, Q

39)a) T b) F c) F d) Not

40)a)There will be bubbles in the tap water.

b)heat energy→ kinetic energy

c)Sally was correct, only water in seawater evaporated to form water vapour.

41)a)The metal ball is magnetic.

b)The bar magnet attracted the iron ball which was suspended by the rubber band, causing it to stretch.

c)i)Elastic potential energy--→Kinetic energy

ii)Gravitational potential energy--→Kinetic energy

42)a)The metal rim would expand so it can be fitted easily onto the wooden cartwheel.

b)Pouring water cools the rim and causes it to contract.

43)a)The aim is to find out if the mass of the object affects the time taken to reach the ground.

b)Frictional force.

c)Object Q. The effect of air resistance acting on object Q is less than object R. Hence object Q took a shorter time to reach the ground.

d)Increase the size of the canopy.

