Rosyth School
Preliminary Examination for 2007
SCIENCE
Primary 6

Total Marks: ____ / 100

Name: _____

Class: Pr_____ Register No. _____ Duration: 1 h 45 min

Date: 23 August 2007 Parent's Signature: _____

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 46, give your answers in the spaces given in the Booklet B.

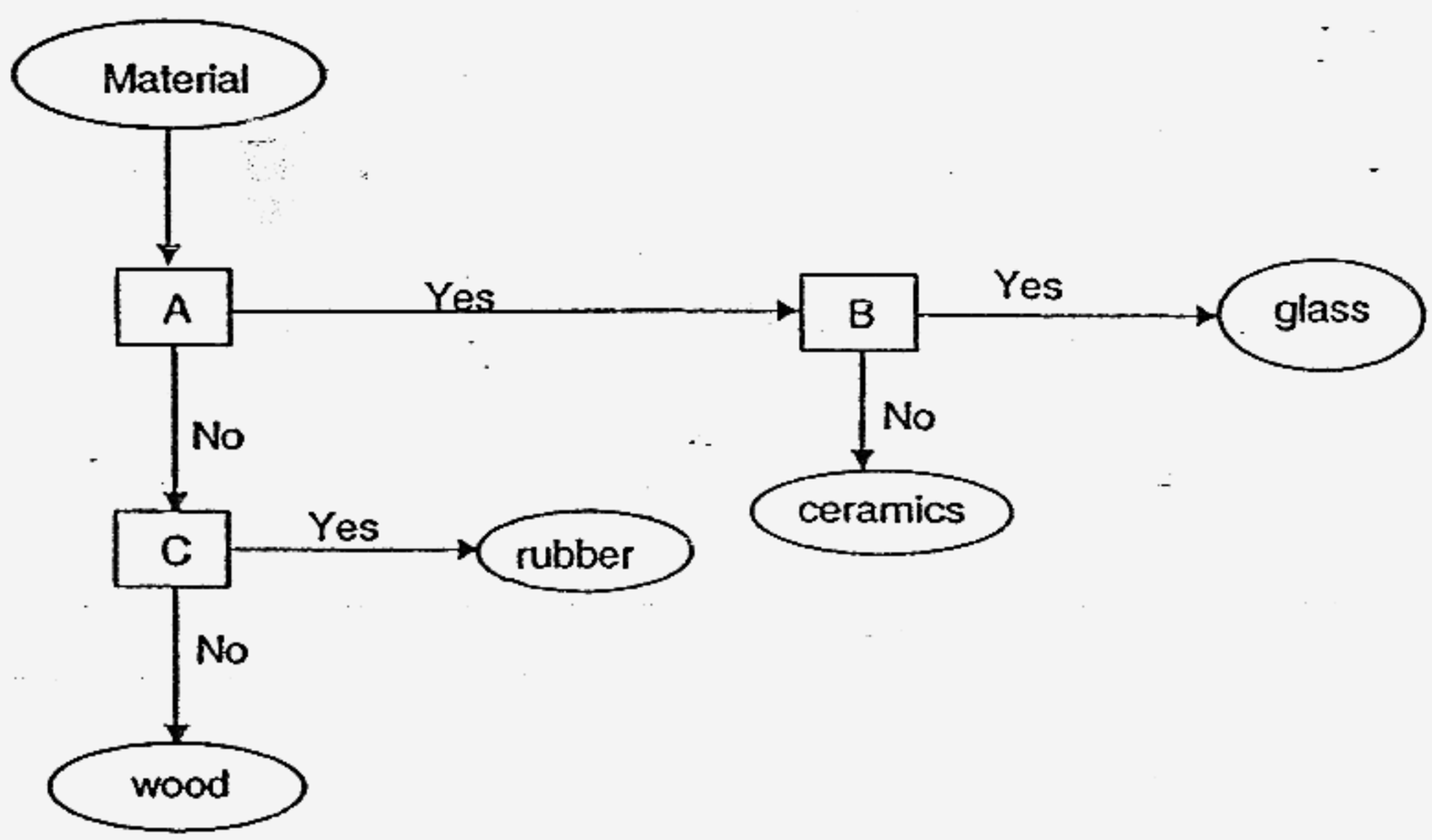
	Maximum	Marks Obtained
Booklet A	**60 marks**	
Booklet B	**40 marks**	
Total	**100 marks**	

* This booklet consists of 18 pages (pg 1-18) .

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 flowchart below carefully.



Which of the following are suitable questions that show the characteristics of Materials A, B and C in the flowchart above?

	A	B	C
(1)	Is it fragile?	Does it allow light to pass through?	Is it flexible?
(2)	Is it flexible?	Is it fragile?	Does it conduct electricity?
(3)	Does it conduct electricity	Is it hard?	Is it fragile?
(4)	Does it allow light to pass through?	Does it conduct electricity?	Is it hard?

2 Which of the following is one of the reasons why the mushroom and the mould are classified as fungi rather than as plants?

(1) They reproduce by spores.
(2) They usually live on other organisms.
(3) They do not have chlorophyll to make their own food.
(4) They cannot move freely from one place to another by itself.

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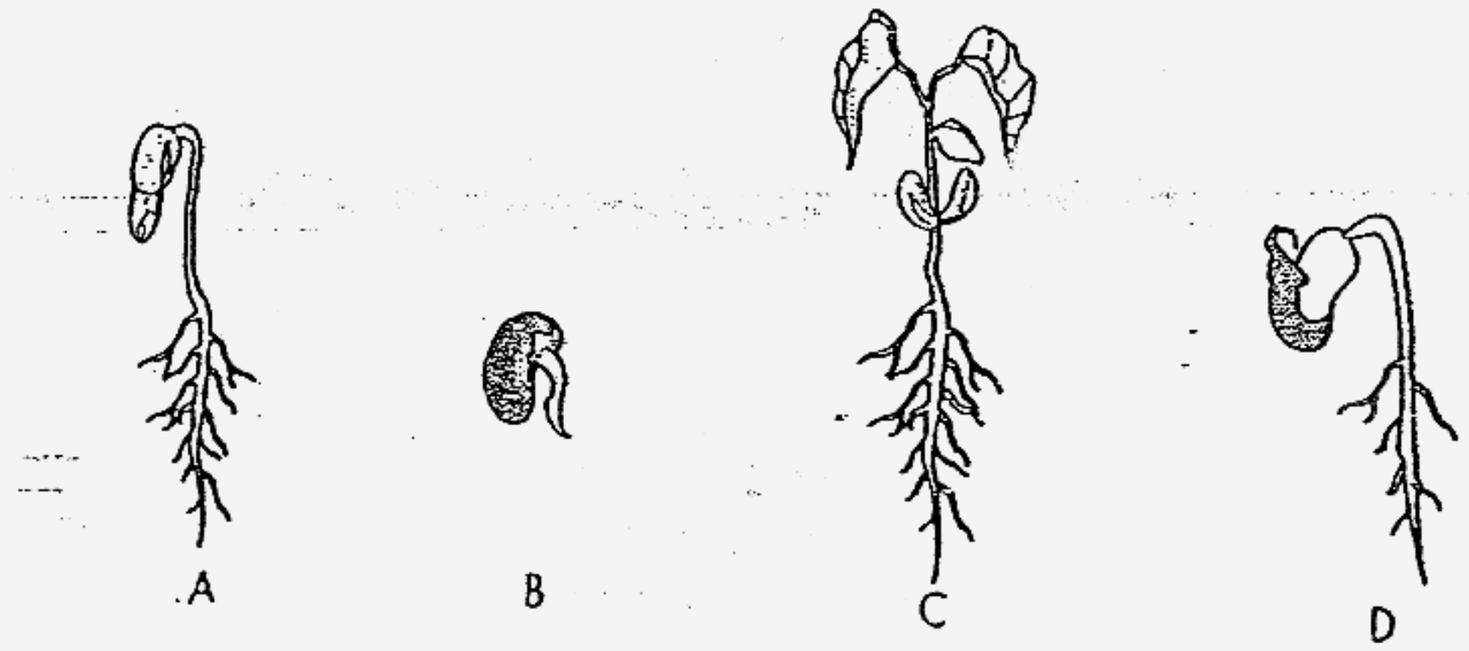
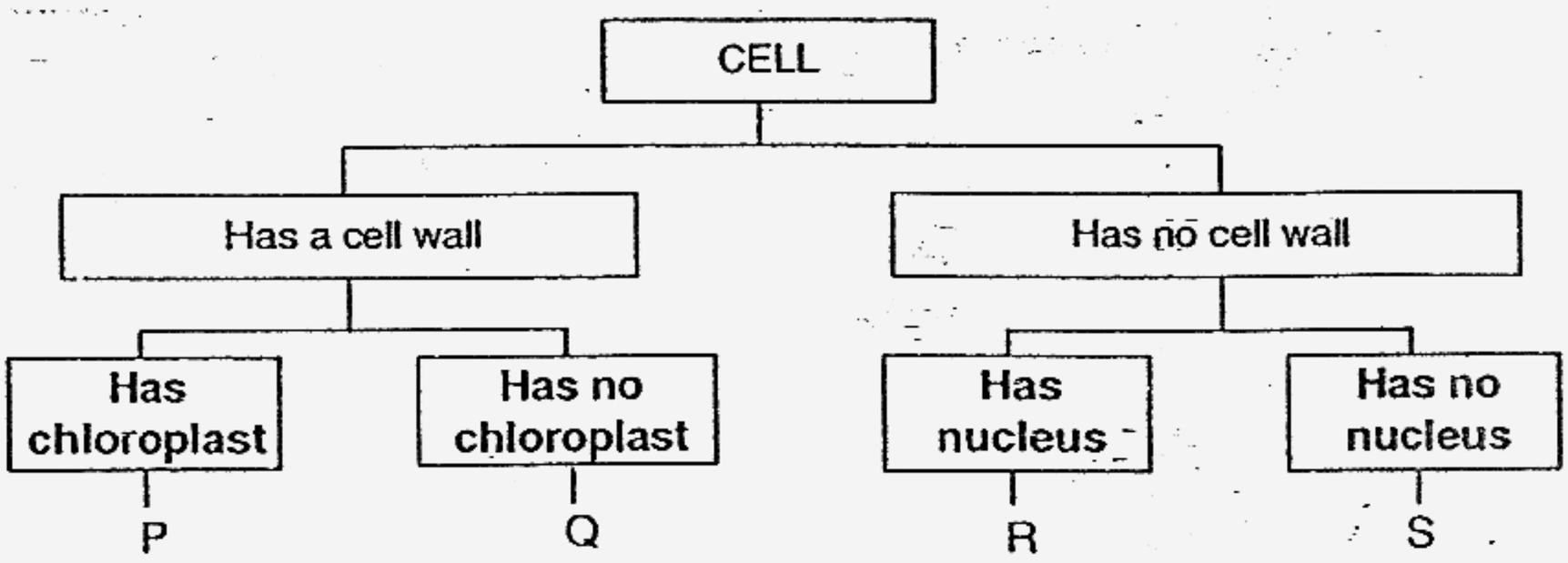
3 The diagram below shows a bean plant at different stages of its growth.



At which stage(s) is sunlight essential for further healthy growth?

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

4 Four cells, P, Q, R and S, are classified according to the chart shown below.



Based on the chart, which of the following statements about P, Q, R or S could be correct?

(1) P could be a leaf cell while R could be a root cell of a plant.
(2) R could be an onion skin cell while S could be an animal nerve cell.
(3) Q could be a root cell of a plant while S could be a human red blood cell.
(4) S could be a human red blood cell while P could be an onion skin cell.

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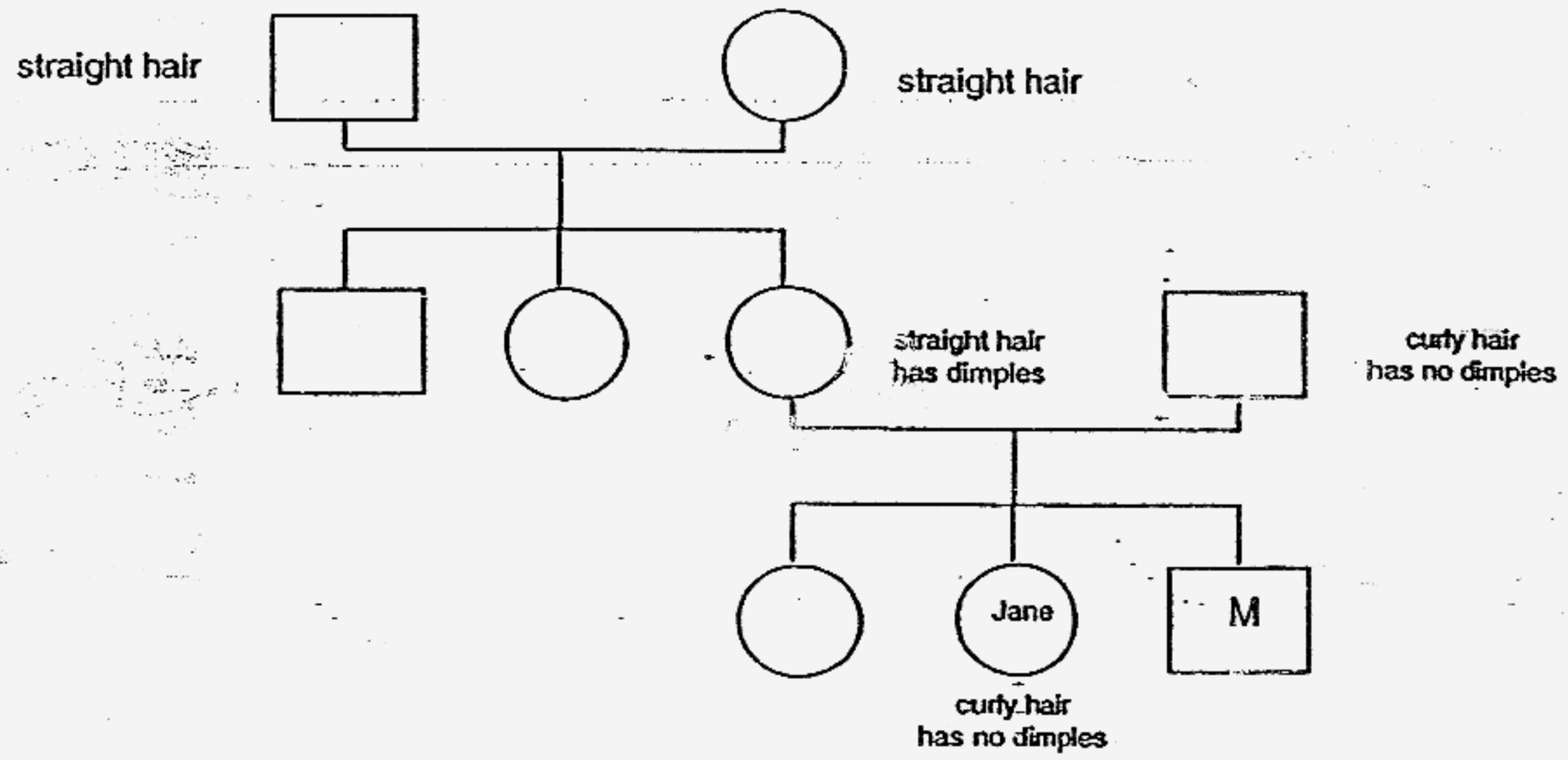
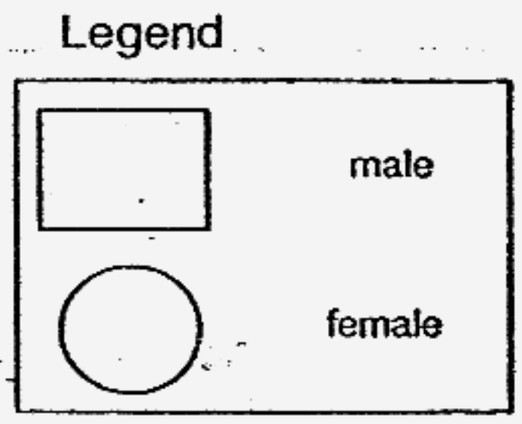
5 Jane drew her family tree as shown below.





Based on the family tree, which of the following statements are true?

A M is Jane's cousin.
B Jane's father has a brother and a sister.
C Jane inherited her curly hair from her father.
D The grandparents shown in the family tree are the parents of Jane's mother.

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

(Go on to the next page)

6 The table below shows the characteristics of four seeds or fruits W, X, Y and Z.

Seed / Fruit	Size	Weight	Other Characteristics
W	Small	Light	It has hooks
X	Small	Light	It is brightly coloured
Y	Small	Light	It has a dry and hard fruit wall when ripe
Z	Big	Heavy	It is buoyant with a fibrous husk

What method of dispersal do W, X, Y and Z most likely use?

	W	X	Y	Z
(1)	By wind	By animals	By water	By animals
(2)	By animals	By animals	By splitting open of fruit	By water
(3)	By animals	By wind	By wind	By water
(4)	By splitting open of fruit	By water	By splitting open of fruit	By wind

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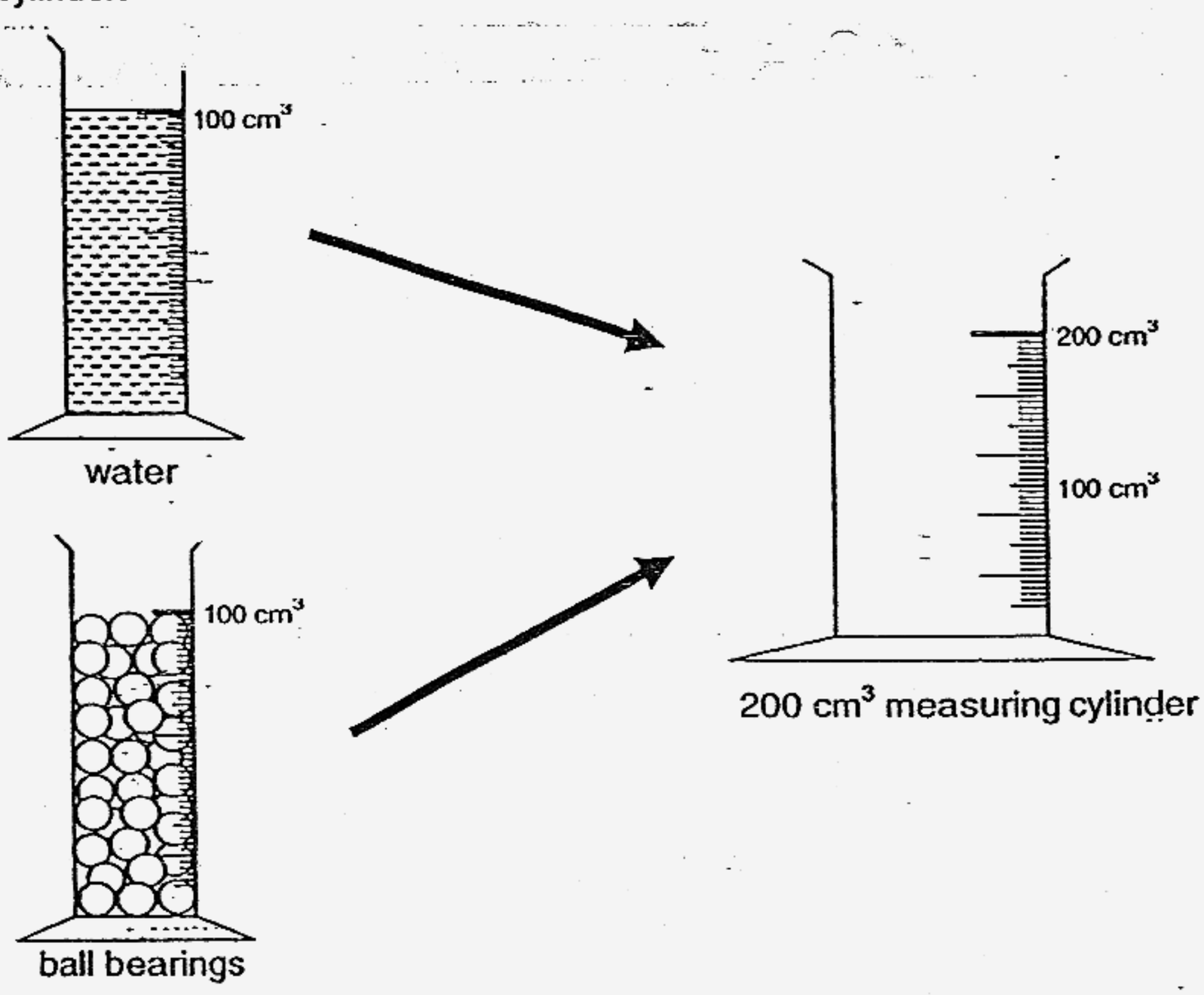
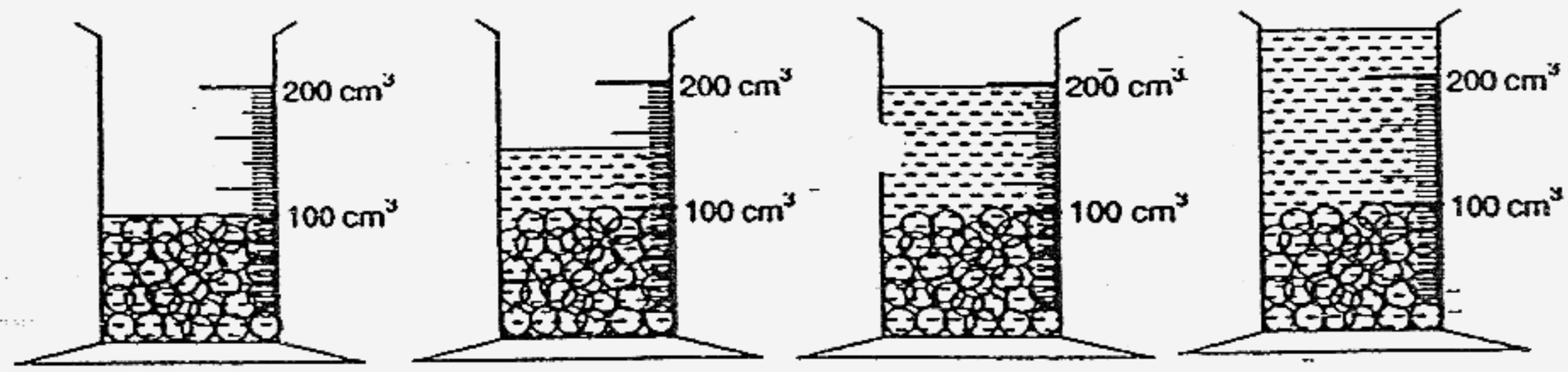
7 Nadiah filled up a measuring cylinder with 100 cm^3 of water. She filled up another similar 100cm^3 measuring cylinder with ball bearings. Next, she transferred both the water and the ball bearings into a 200 cm^3 measuring cylinder.



Which one of the following diagrams shows the possible volume occupied by the wafer and the ball bearings in the 200 cm^3 measuring cylinder?



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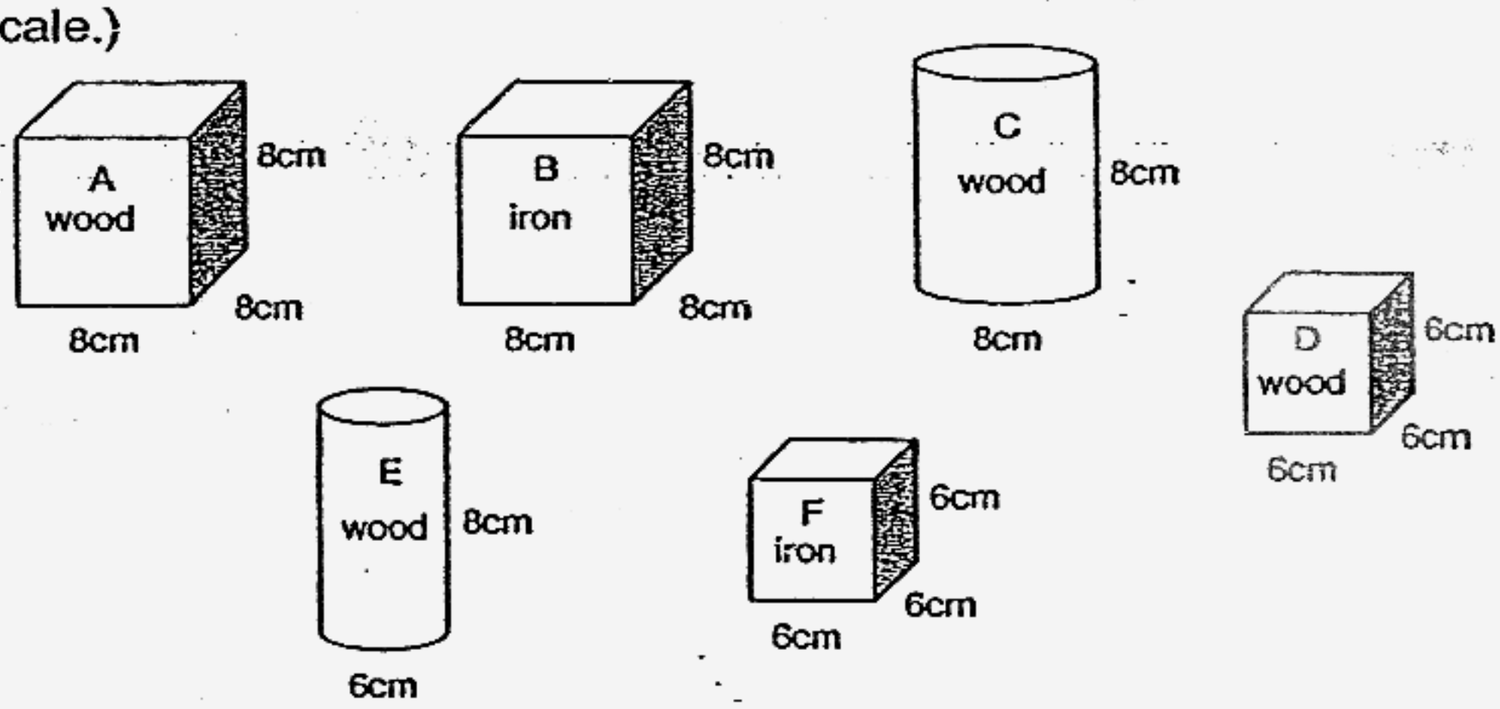
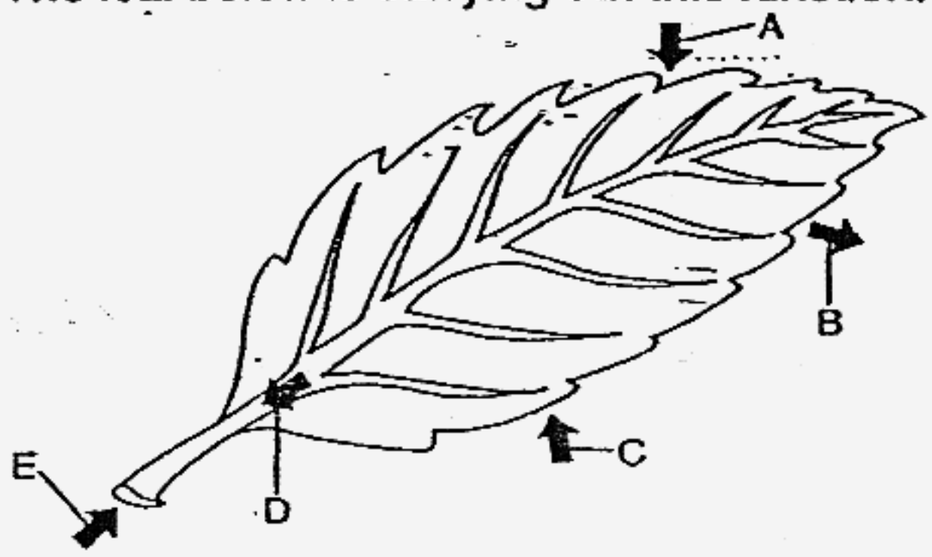
8 Peter wanted to find out whether different materials of the same volume had the same mass. He had the following items to work with. (Diagrams not drawn to scale.)



Which 2 items should he work with to ensure a fair test?

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

9 The leaf is often referred to as a 'food factory' as its function is to make food for the plant. The leaf below is carrying out this function.

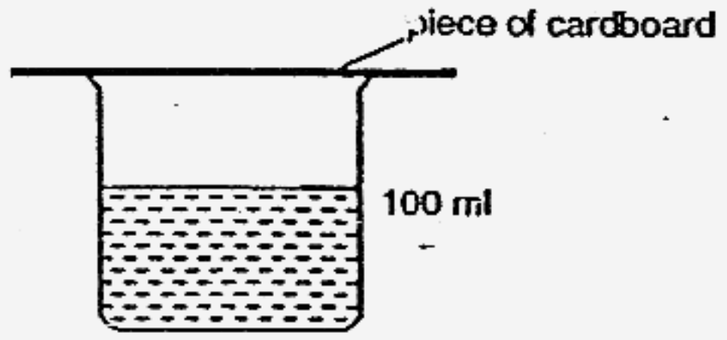


Which of the following shows the correct set of labels for the arrows?

	A	B	C	D	E
(1)	Sunlight	Oxygen	Carbon dioxide	Sugar	Water
(2)	Water	Carbon dioxide	Sunlight	Water	Oxygen
(3)	Carbon dioxide	Oxygen	Sunlight	Sugar	Water
(4)	Sunlight	Water	Oxygen	Carbon dioxide	Sugar

(Go on to the next page)

10 James filled a beaker with 100ml of water and covered the beaker with a piece of cardboard as shown in the diagram below. He then placed the beaker into the freezer. After a day, the water had turned to ice. Without removing the piece of cardboard, James noted the volume of the ice and thereafter left the beaker of ice on the table to melt completely.



Which of the following possibly indicates the volume of the ice right after the beaker was taken out of the freezer and the volume of the water after all the ice had melted?

	Volume of ice right after the beaker was taken out of the freezer	Volume of the water after all the ice had melted
(1)	100 ml	80 ml
(2)	100 ml	100 ml
(3)	110 ml	110 ml
(4)	110 ml	100 ml

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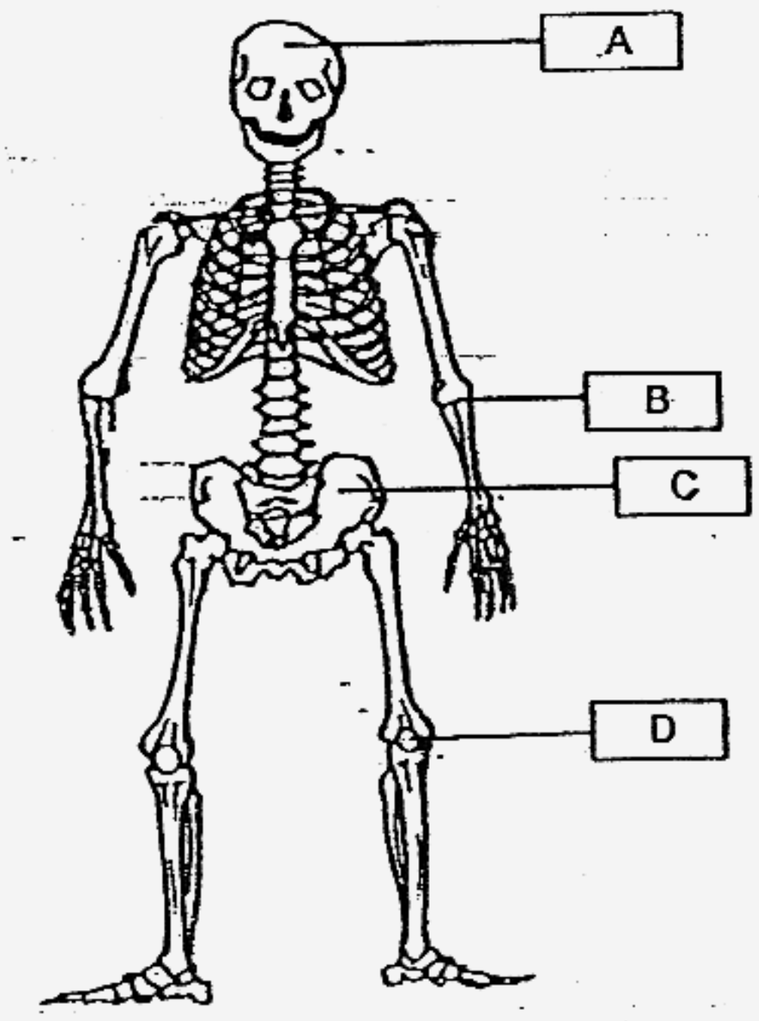
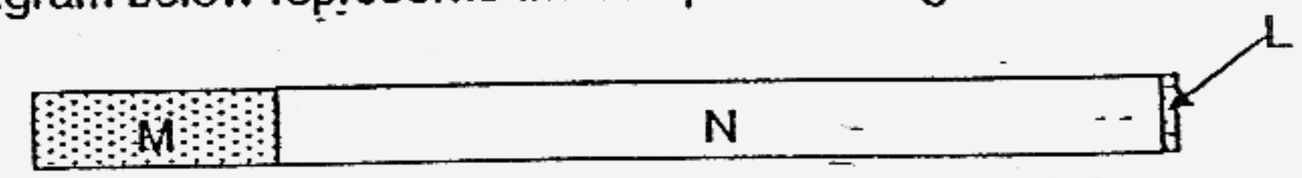
11 The diagram below shows a skeleton with some parts labelled A, B, C and D.



Which parts(s) help(s) protect our organs?

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

12 The diagram below represents the composition of gases in inhaled air.



M represents oxygen.
N represents nitrogen and
L represents carbon dioxide, other gases and water vapour.

Which of the following statement(s) is/are true after the inhaled air enters the human respiratory system and exits as exhaled air?

A Amount of M increases.
B Amount of N increases.
C Amount of L increases.

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

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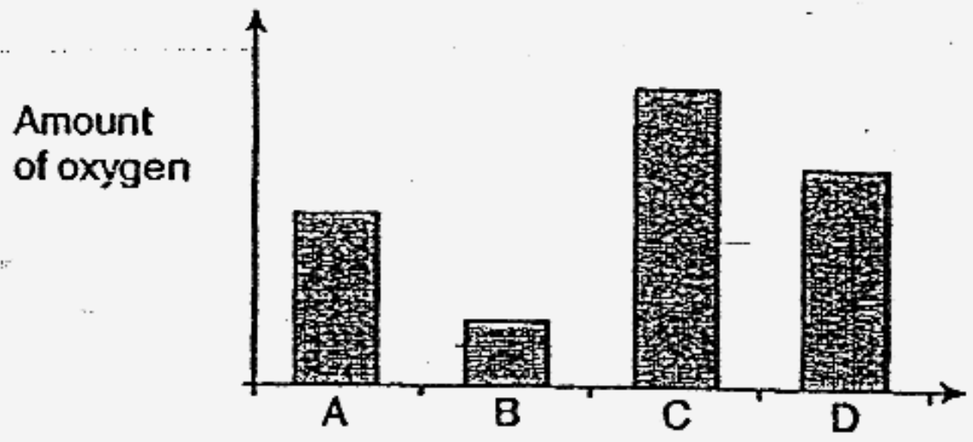
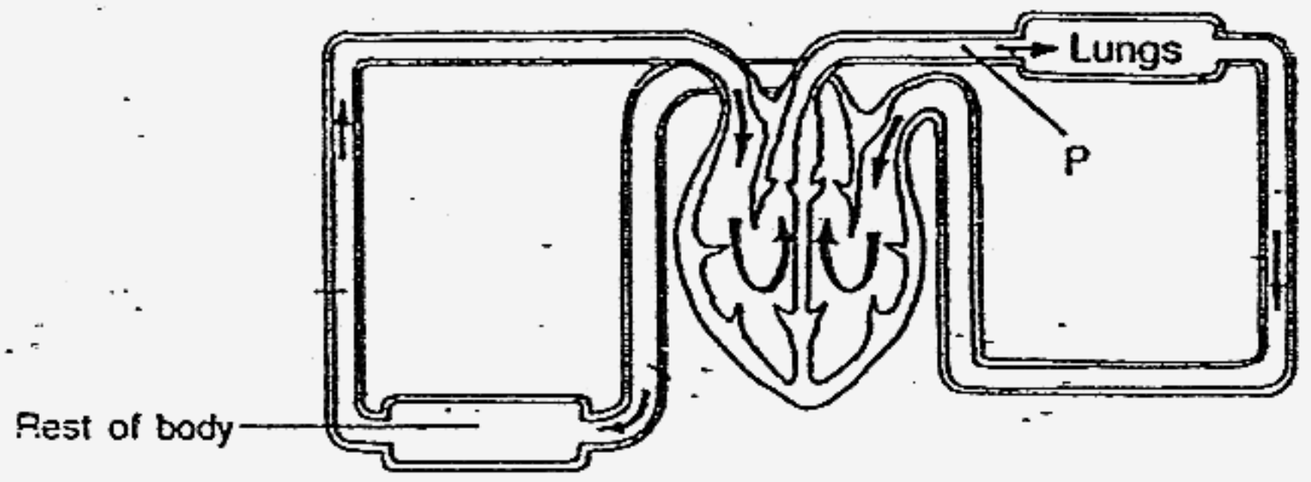
13 The graph below shows the amount of oxygen in four blood samples taken at the same time from four different blood vessels in the body.



The diagram below shows how blood is circulated in our body.



Which blood sample (A, B, C or D) was most likely taken from P of the circulatory system above?

(1) A (2) B

(3) C (4) D

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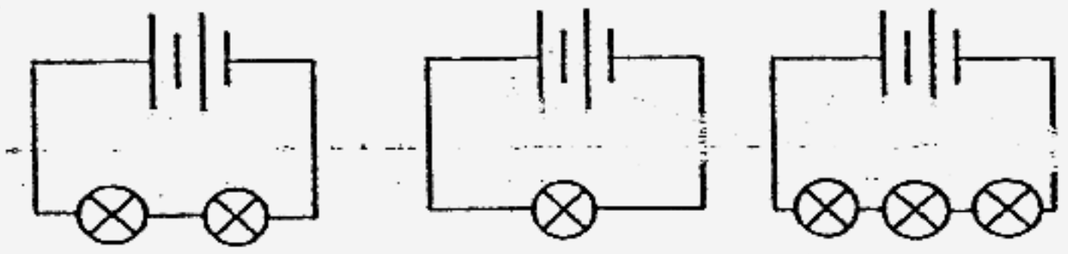
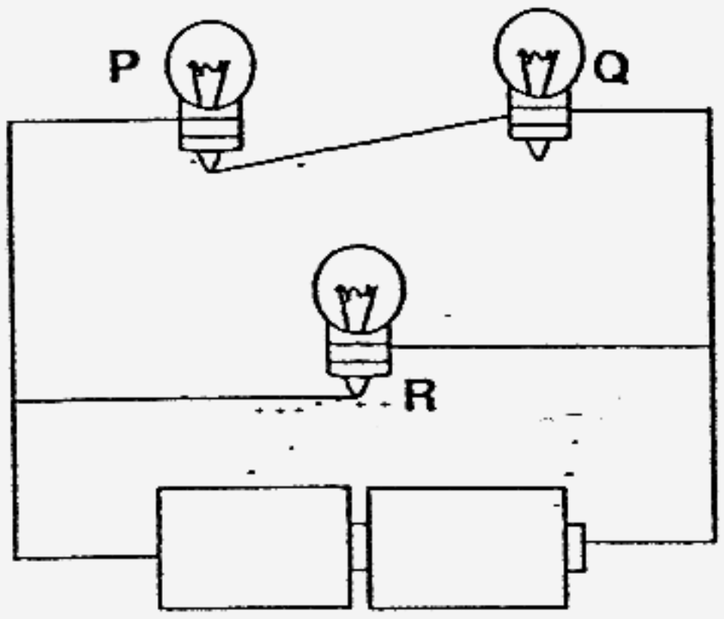
14 Thames set up the following electric circuits to test a hypothesis.



Which of the following could be his hypothesis?

(1) The more the number of bulbs in a circuit, the dimmer the light from each bulb will be.
(2) The brightness of the bulb is affected by the way it is arranged in an electric circuit.
(3) The lesser the number of dry cells in a circuit, the dimmer the light from each bulb will be.
(4) The brightness of the bulb is affected by the way the dry cells are arranged in an electric circuit.

15 The electric circuit shown below has three bulbs, P, Q and R.



If Bulb Q fuses, which of the following will still happen?

A Bulb P will light up.
B Bulb R will light up.
C Bulb Q will light up.
D None of the bulbs will light up.

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

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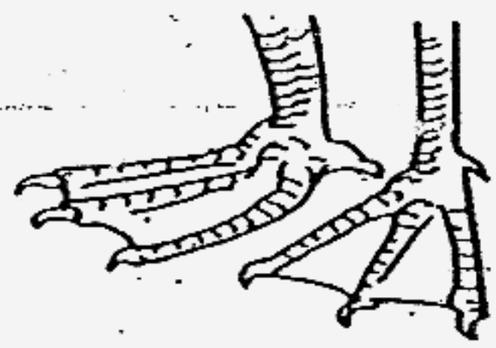
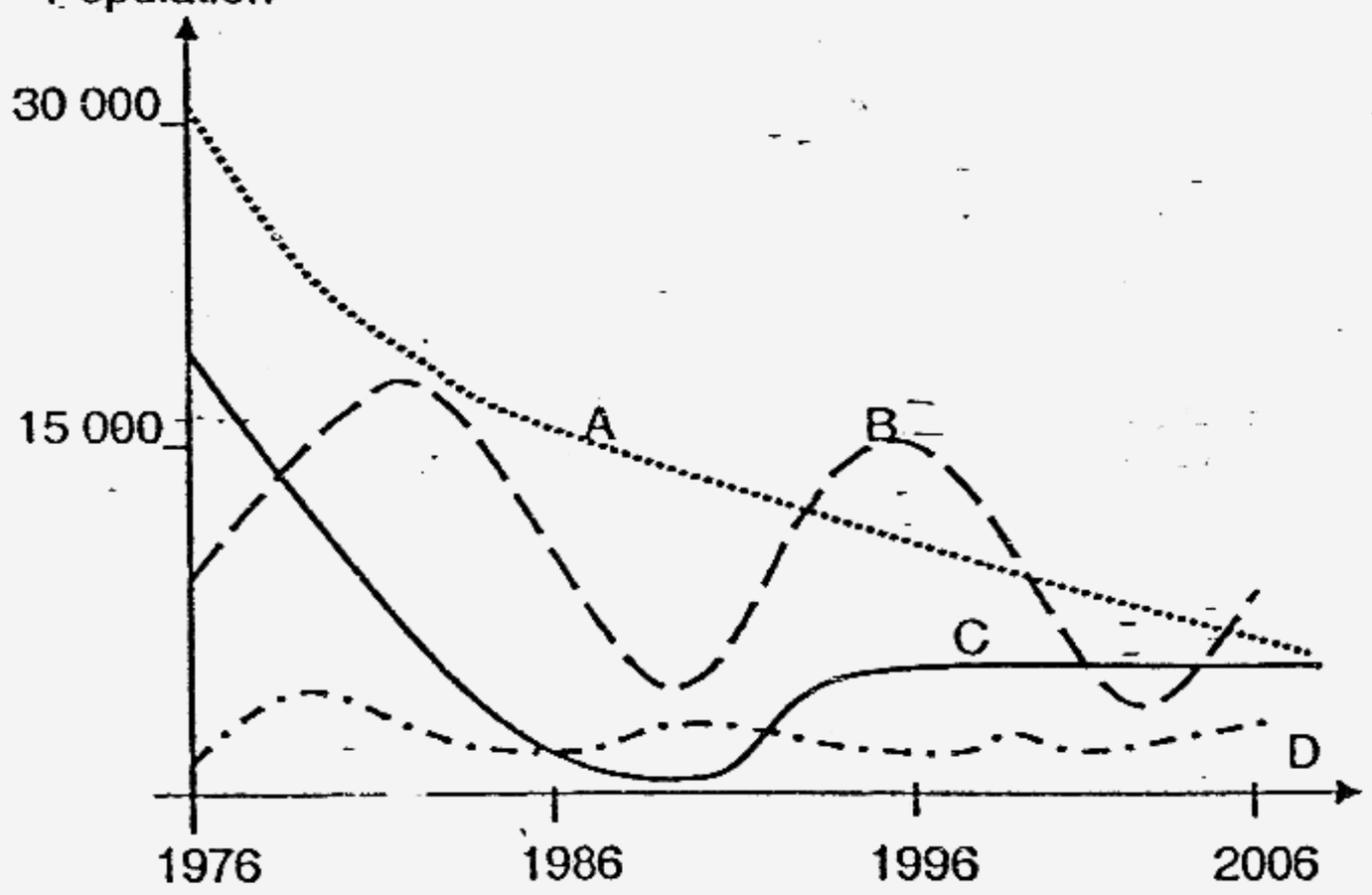
16 The diagram below shows the feet of a bird.



Which one of the following statements is true of the bird?

(1) It is a bird of prey.
(2) It is able to move in water.
(3) It digs in the ground for worms.
(4) It perches on the branches of trees.

17 The population sizes of four different species of birds (A, B, C and D) were monitored over a period of 30 years. The results are shown on the graph.



Which species (A, B, C or D)is in the greatest danger of extinction?

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

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18 Which of the following statements about yoghurt making are true?

A Yeast is added.
B Oxygen is needed.
C Bacteria are added.
D Fermentation of milk takes place.

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

19 A plantation was infested with 2 types of Aphids, A and B. The farmer wanted to use ladybirds to remove the aphids. He did the following experiment to find out which type of Ladybird W, X, Y or Z was the most effective.
He put 50 Ladybird W in the first cage and the same number of Ladybird X, Ladybird Y and Ladybird Z in the second, third and fourth cage respectively.
He also put 200 Aphid A and 200 Aphid B in each of the 4 cages.
The number of each type of aphid left in each cage is shown in the table below.

Cage with	Number of aphids left	
	Aphid A	Aphid B
Ladybird W	19	269
Ladybird X	25	200
Ladybird Y	121	143
Ladybird Z	140	154

Which type of Ladybird (W, X, Y or Z) should he introduce to remove as many Aphid A and Aphid B as possible from his plantation?

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

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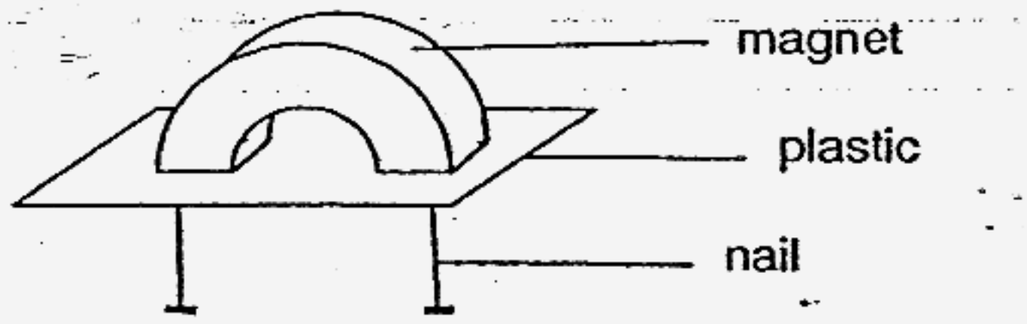
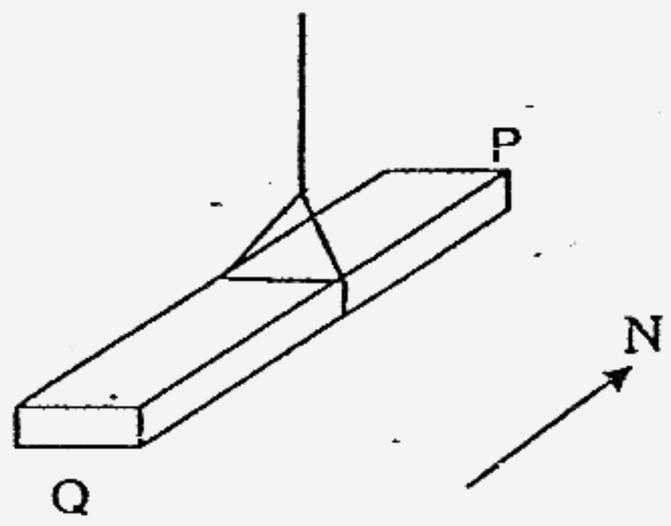
20 Michael placed a sheet of plastic between two nails and a magnet as shown in the diagram below. The nails were attracted to the magnet. Then Michael placed more and more similar sheets of plastic until the nails could no longer be attracted by the magnet.

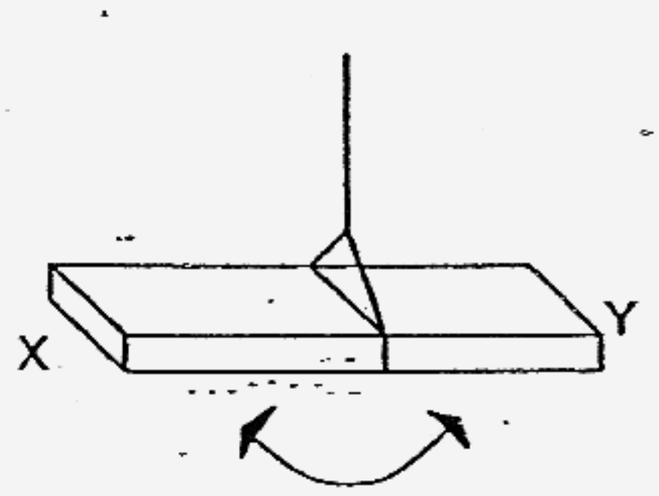


What is the aim of Michael's experiment?

(1) To find out if plastic is magnetic.
(2) To find out if the nails are magnetic.
(3) To find out the strength of the magnet.
(4) To find out the parts of the magnet that has the strongest pull.

21 A metal bar PQ is hung by a thin thread. It always comes to rest with one end of the bar, P, pointing North as shown in the diagram below. Another bar XY made of the same metal as PQ settles in no definite direction.





What happens if the two bars are brought near to each other?

(1) End P attracts end X but repels end Y.
(2) End P repels end X but attracts end Y.
(3) End P neither attracts nor repels end X.
(4) Both ends, P and Q, attract end X.

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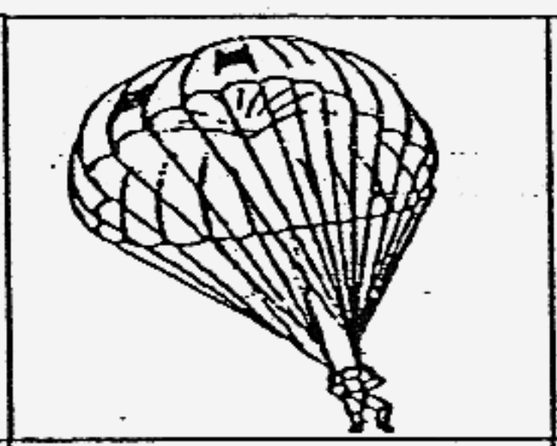
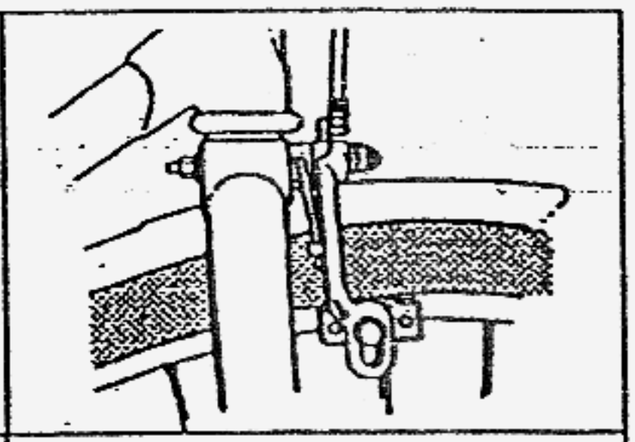
22 The pictures show some effects of a force.

A meteor glowing as it falls through Earth's atmosphere



A parachutist falling through air

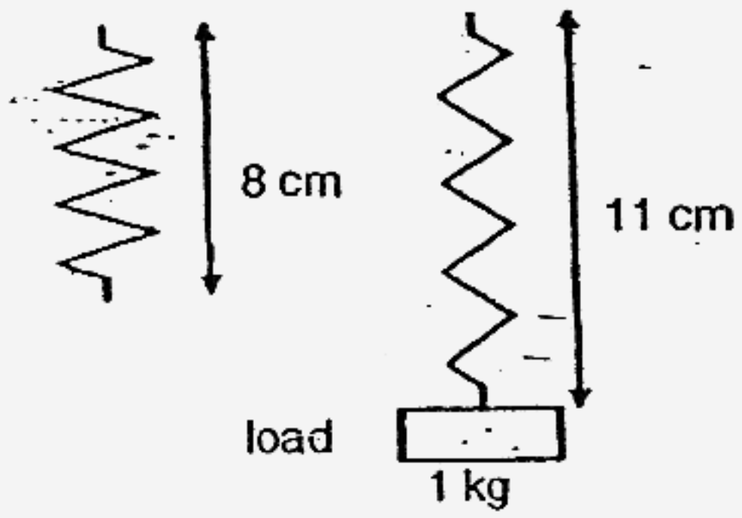


Brakes slowing down a bicycle

What is this common force that is acting in these three situations above?

(1) Friction
(2) Gravitational force
(3) Weight
(4) Magnetic force

23 The diagram below shows how the length of a spring changes when a load of 1 kg is hung on it.



What will the final length of the spring be when a 3 kg load is hung on it?

(1) 9 cm
(2) 14 cm
(3) 15 cm
(4) 17 cm

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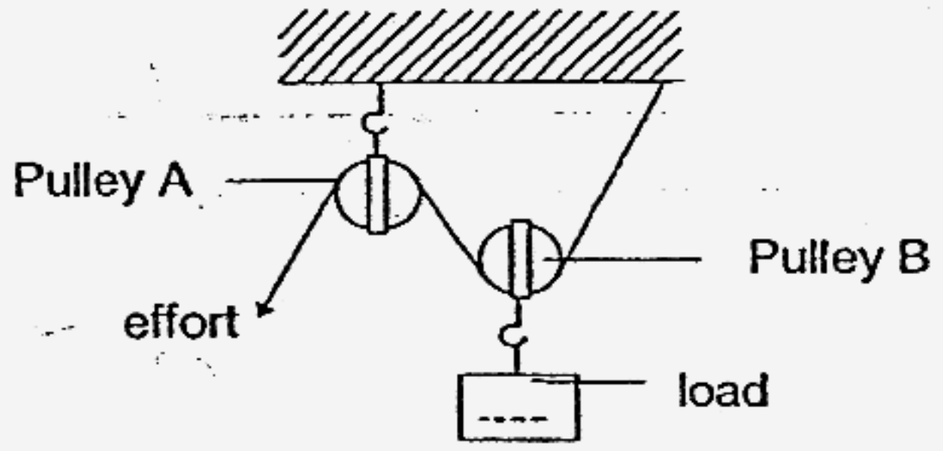
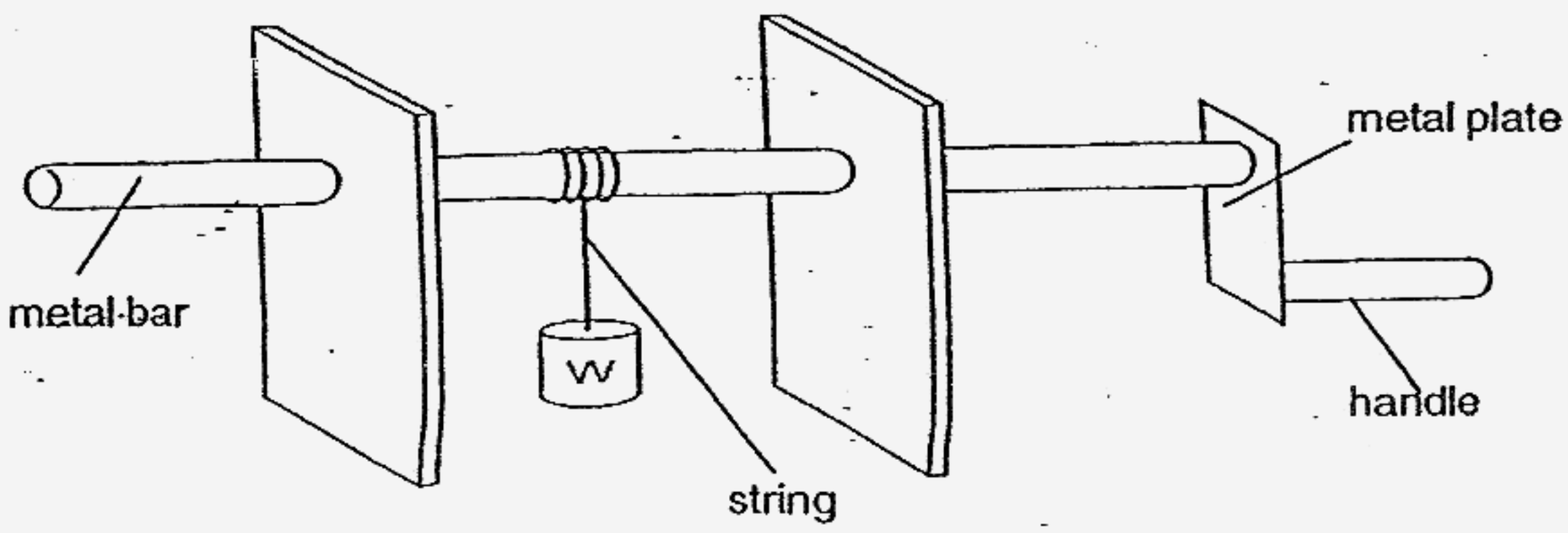
24 Study the diagram below.



What is the function of Pulley A?

(1) To change the direction of force applied.
(2) To reduce the effort needed to lift the load.
(3) To reduce the distance moved by the effort.
(4) To allow a small effort to overcome a heavy load.

25 The simple machine below has been constructed to lift the load W.



What can be done to reduce the effort needed to lift the load?

(1) Use a longer string.
(2) Use a longer handle.
(3) Use a longer metal plate.
(4) Use a metal bar with a bigger diameter.

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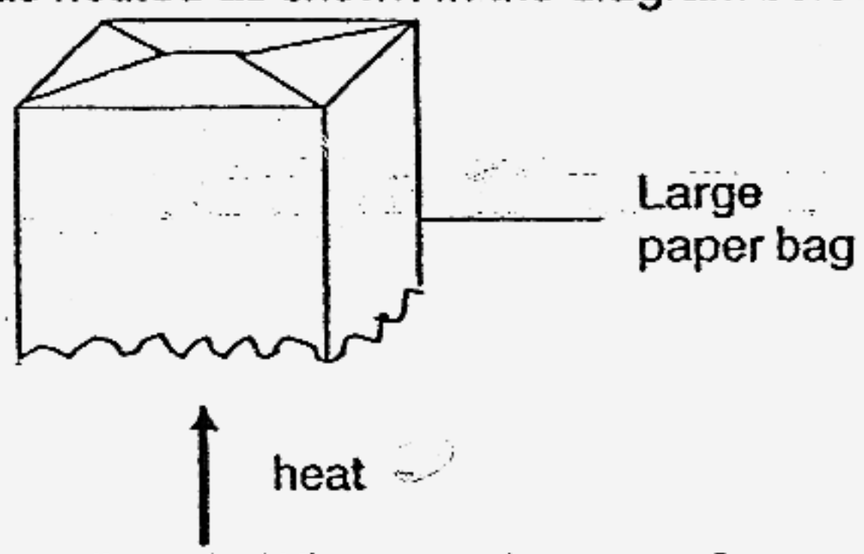
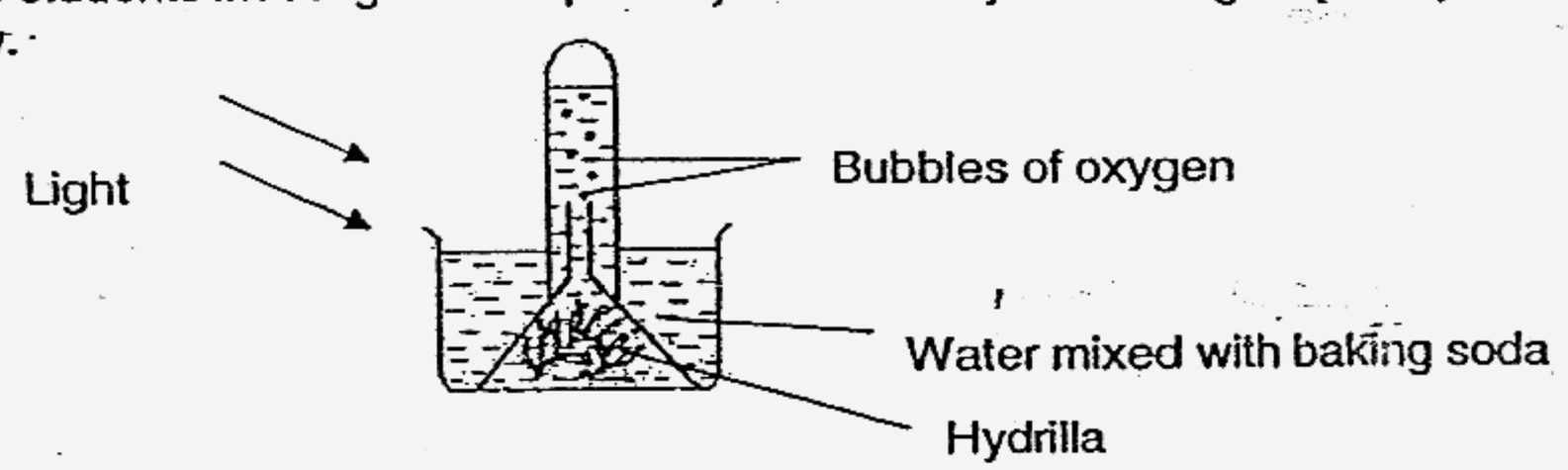
26 The air in a large paper bag was heated as shown in the diagram below.



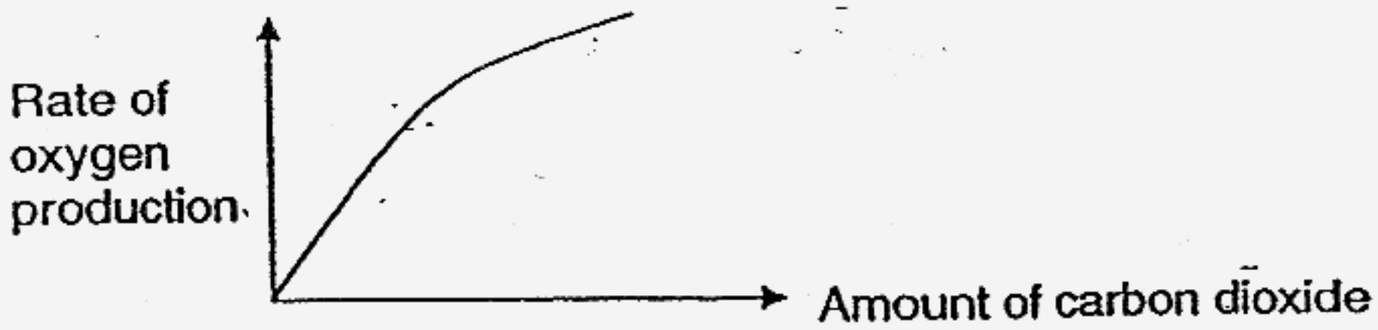
The bag rose through the surrounding air. What was the cause?

(1) Heat always rises.
(2) The air in the bag expanded and rose.
(3) The mass of the paper bag decreased.
(4) The mass of the air in the bag increased.

27 Some students investigated the photosynthesis of hydrilla using the set-up shown below.



The rate of oxygen production was plotted against the amount of carbon dioxide present in the water in the graph shown below:



What conclusion could be deduced from the graph?

(1) The amount of oxygen affects the rate of respiration.
(2) The amount of oxygen affects the rate of photosynthesis.
(3) The amount of carbon dioxide affects the rate of respiration.
(4) The amount of carbon dioxide affects the rate of photosynthesis.

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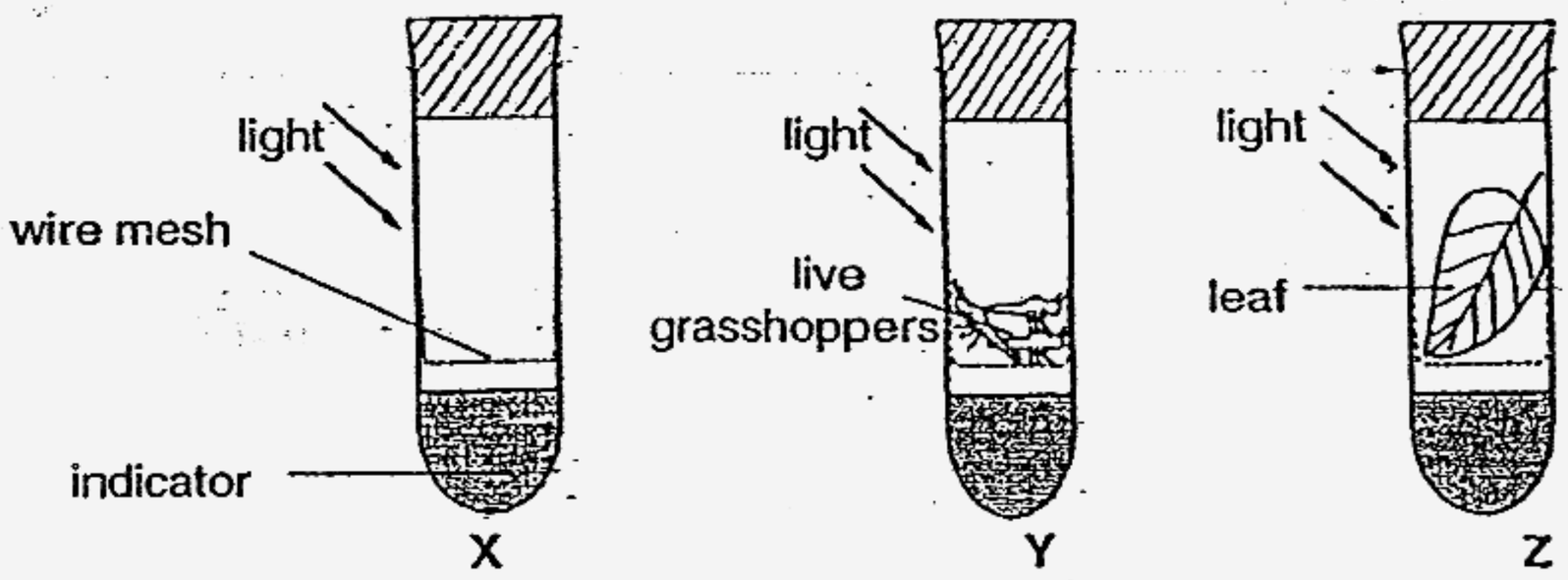
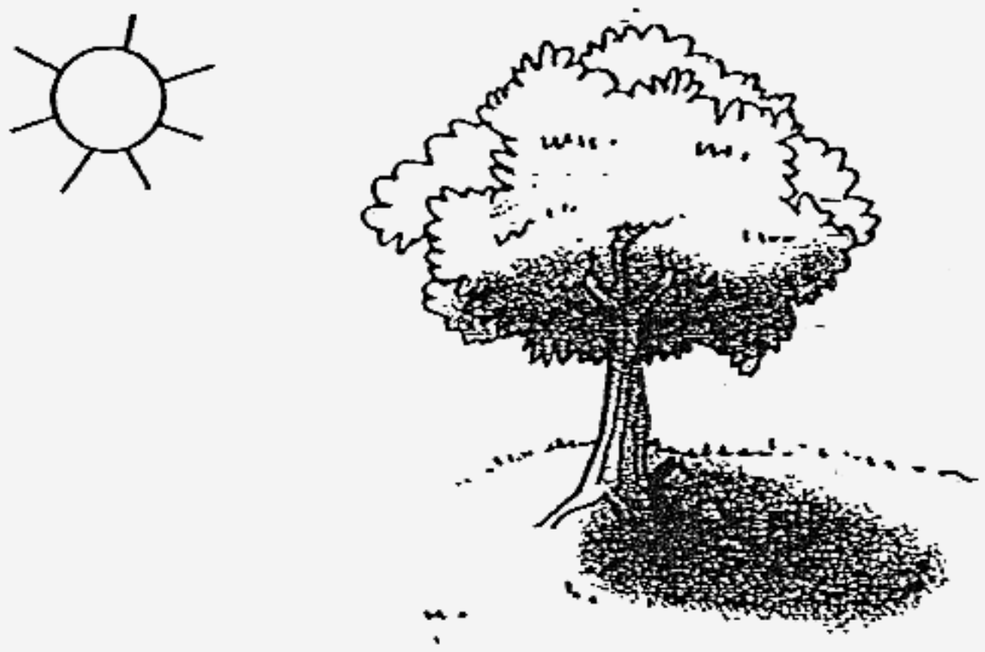
28 Three test-tubes are set up as shown below. At the start of the experiment, the indicator in each test-tube is red. The indicator changes from red to yellow when exposed to increased levels of carbon dioxide.



What will the colour of the indicator be in each test-tube after two hours?

	X	Y	Z
(1)	Yellow	Yellow	Yellow
(2)	Yellow	Red	Red
(3)	Red	Yellow	Red
(4)	Red	Red	Yellow

29 The picture below shows a boy lying under the shade of a tree.



Which one of the following statements is **incorrect**?

(1) The tree blocks the light rays and creates a shadow.
(2) No light is present in the shade so the boy cannot be seen clearly.
(3) The shadow will change in size depending on the position of the sun.
(4) The boy feels cooler because the tree absorbs some of the heat rays of the sun.

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30 Tony wound his clockwork mouse, then let it moved up a steep slope. The mouse ran up the slope, stopped halfway, then tumbled back to land with a crash at the base of the slope. Which one of the energy conversions shown in the table is **incorrect?**

	Activity	Energy Conversion
(1)	Winding the mouse	Chemical energy of Tom's muscle to elastic potential energy of the spring
(2)	Mouse moves up the slope	Elastic potential energy of the spring to gravitational potential energy
(3)	Mouse falls	Gravitational potential energy to kinetic energy of movement
(4)	Mouse lands with a crash	Kinetic energy of movement to sound and heat energy

End of Booklet A

Rosyth School
Preliminary Examination for 2007
SCIENCE
Primary 6

Name: _____ Total Marks: 40

Class: Pr_____ Register No. _____ Duration: 1 h 45 min

Date: 23 August 2007 Parent's Signature: _____

Booklet B

Instructions to Pupils:

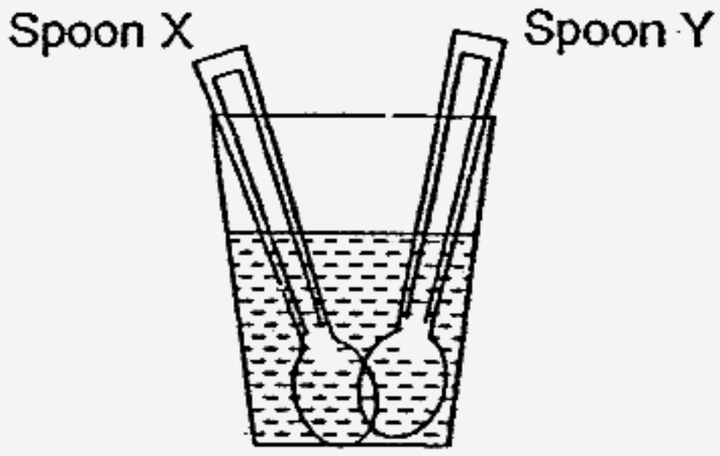
1. For questions 31 to 46, give your answers in the spaces given in this Booklet B.

* This booklet consists of 15 pages (pg 19-33).

PART II (40 MARKS)

For questions 31 to 46, write your answers in this booklet.

31 Spoons X and Y are made of different materials. Wei Ming placed Spoon X and Y into a cup of hot water as shown in the diagram below.



After a while, he touched the handles of both spoons.

(a) What do you think Wei Ming was trying to find out about the materials of Spoons X and Y? [1]

_____

_____

(b) If Spoon X is made of ceramics and Spoon Y of stainless steel, what observation would Wei Ming make in the experiment and what could he conclude about the materials? [1]

Observation : _____

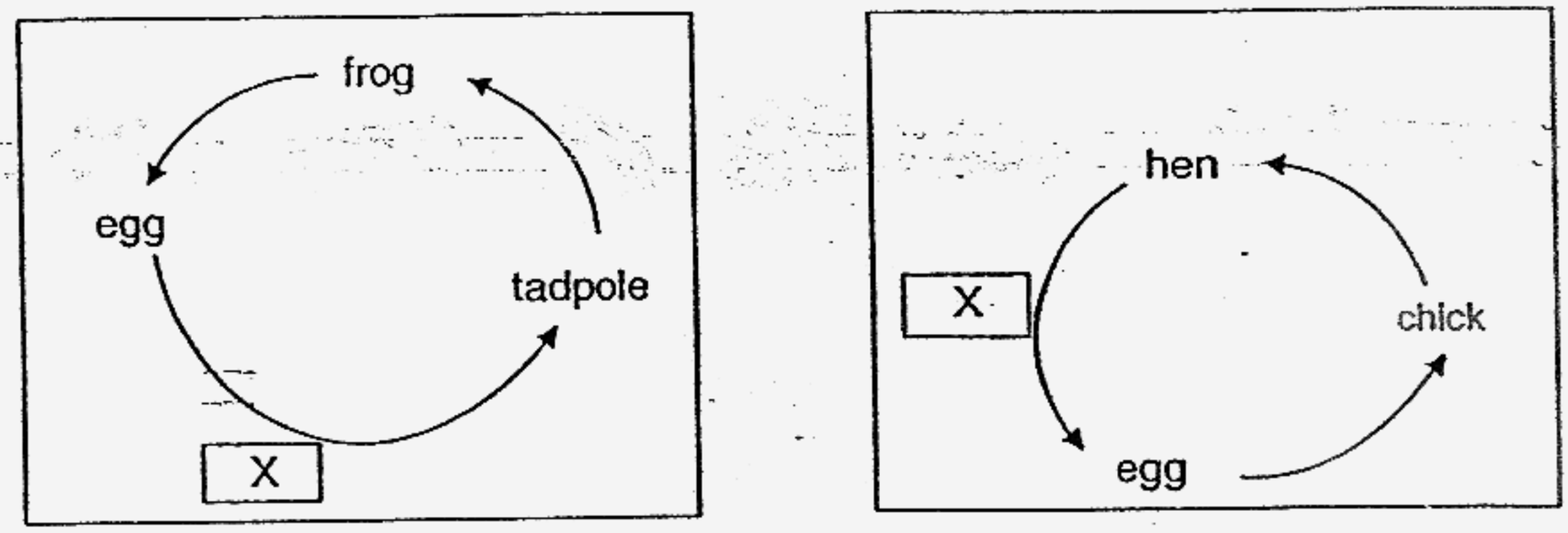
_____

Conclusion : _____

_____

(Go on to the next page)

32 The diagrams below show the life cycle of a frog and a hen.



(a) What process must happen at X in both the life cycle of the frog and that of the hen such that their eggs will continue to develop into the next stage of each life cycle? [1]

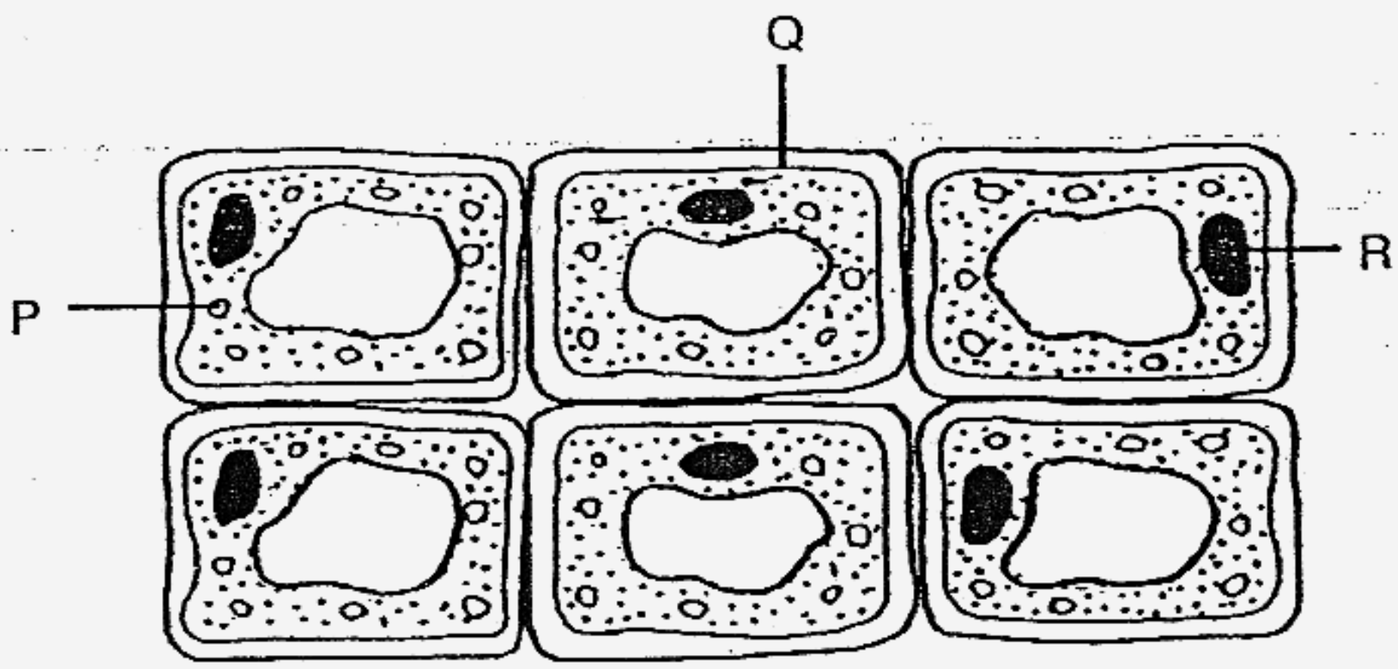
(b) Why is Process X placed **after** the egg stage in the **life cycle of the frog** while Process X is placed **before** the egg stage in the **life cycle of the hen**? [1]

33 Fill in the boxes with suitable word(s) to compare the male reproductive systems of a rabbit and a hibiscus plant. [2]

	Rabbit	Hibiscus Plant
Part that produces the male sex cell.	(a)_____	Anther
Name of male sex cell	Sperm	(b)_____

(Go on to the next page)

34 Keming used a microscope to examine some cells on a slide. The cells are shown in the diagram below. Parts of the cells are labelled P, Q and R.



Based on what he saw, Keming made the following statements. Put a tick (✓) in the appropriate boxes to indicate whether the statements are 'True', 'False' or 'Not Possible to Tell'. [2]

	Keming's statements	True	False	Not Possible to Tell
(a)	P gives support to the plant cell and helps it to maintain its shape.			
(b)	Q is partially permeable and controls the movement of materials in and out of the cell.			
(c)	These plant cells are from the leaf of the elodea.			
(d)	R is the part of the cell that contains chlorophyll needed for photosynthesis.			

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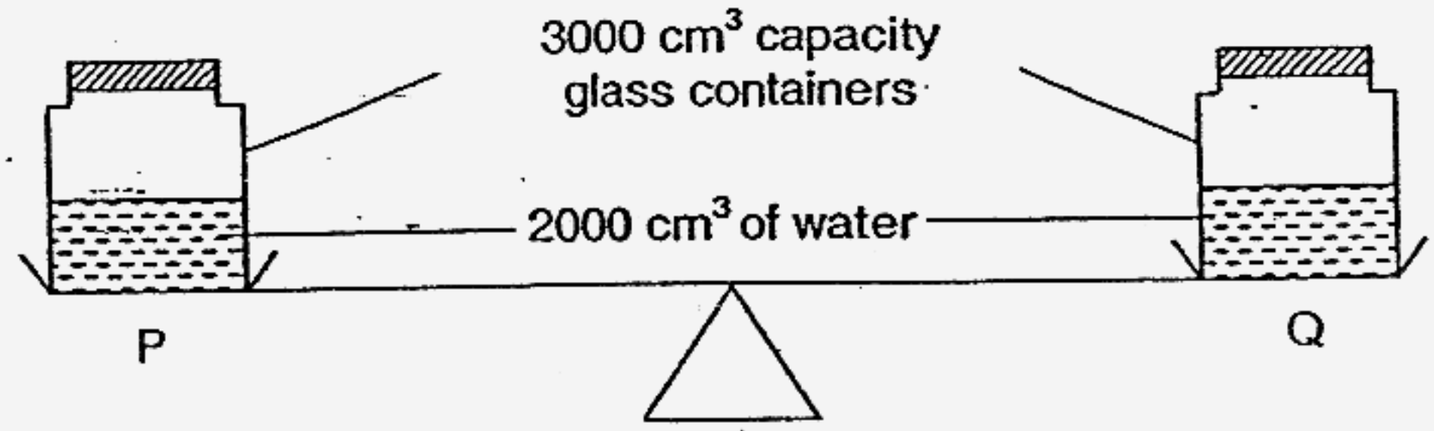
35 Two similar glass containers, P and Q, both with a maximum capacity of 3000 cm^3 were both filled with 2000 cm^3 of water and capped. They were placed on a balance as shown in the diagram below.



Through a special hole in the cap, Raju managed to pump another 300 cm^3 of air into Container P and another 100 cm^3 of air into Container Q. The caps were resealed so that air could not escape and both containers were placed on the balance again.

(a) What happens to the balance? [1]

_____

_____

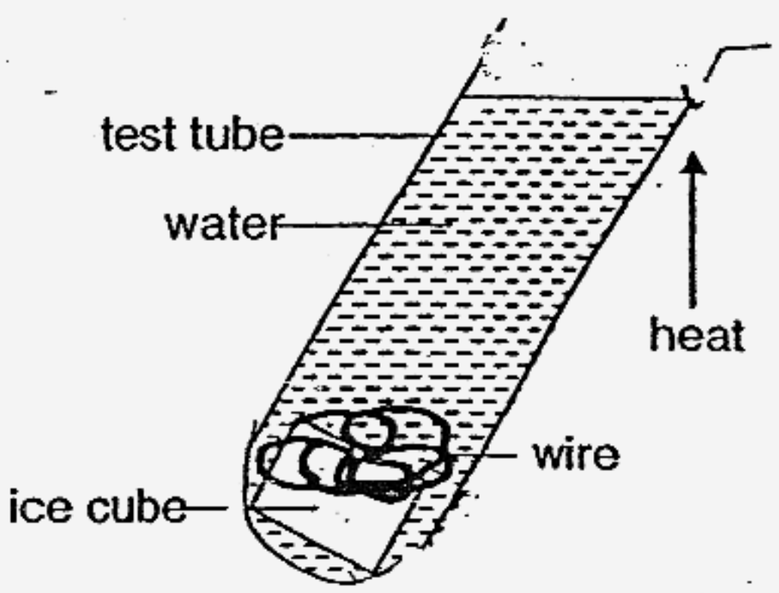
(b) What is the volume of air in each container now? [1]

Volume of air in Container P : _____

Volume of air in Container Q : _____

(Go on to the next page)

36 Kevin filled a test tube with water. He then placed an ice cube into the test tube and kept it to the base of the test tube with the weight of a piece of wire as shown in the diagram below.



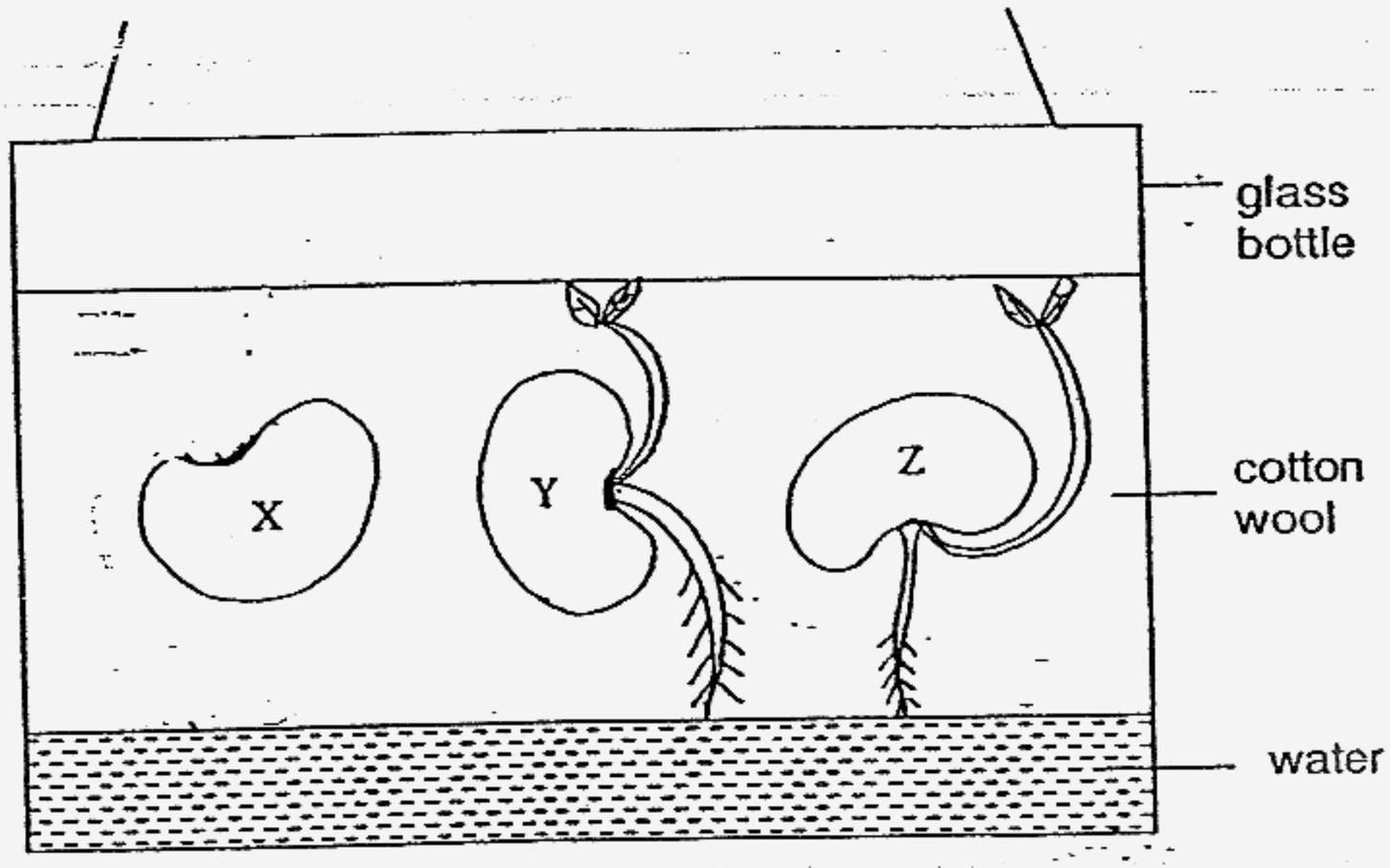
Kevin then heated the water near the water surface. After a while, he noticed water droplets forming at two places of the test tube.

(a) Draw some water droplets at each place clearly in the diagram above. [1]

(b) The water at the surface boiled after a few minutes but the ice cube did not melt completely. Explain why. [1]

(Go on to the next page)

37 Mathew placed Beans X, Y and Z between some cotton wool and the inside wall of a glass bottle. The bottle was then filled with some water.



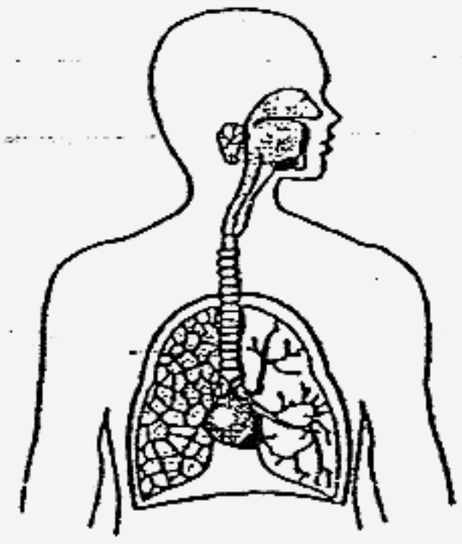
After a few days, Mathew noticed roots and shoots growing out of all three beans and he drew what he saw in the diagram above for Beans Y and Z.

(a) Help Mathew to draw in the root and shoot of Bean X in the diagram above. [1]

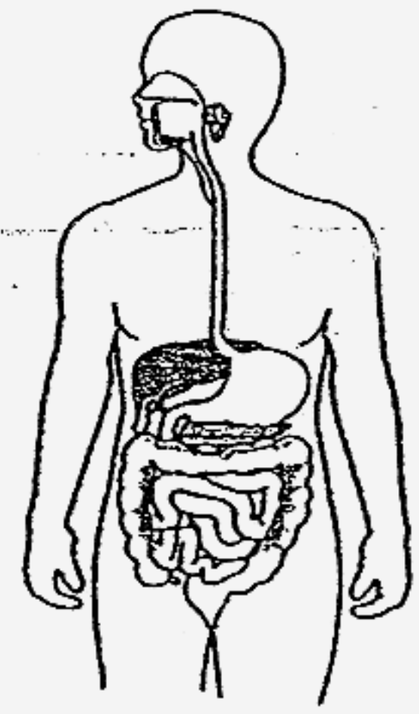
(b) What does the above experiment show about the growth of the root and shoot of a bean plant? [1]

(Go on to the next page)

38 The diagrams below show two systems in the human body.



System F



System G

(a) Give the name of each of the two systems shown. [1]

(i) System F: _____

(ii) System G : _____

(b) Identify the part(s) in System F and the part(s) in System G that are richly covered with blood vessels? [1]

(i) System F: _____

(ii) System G : _____

(c) Why are more blood vessels necessary

_____

_____

_____

_____

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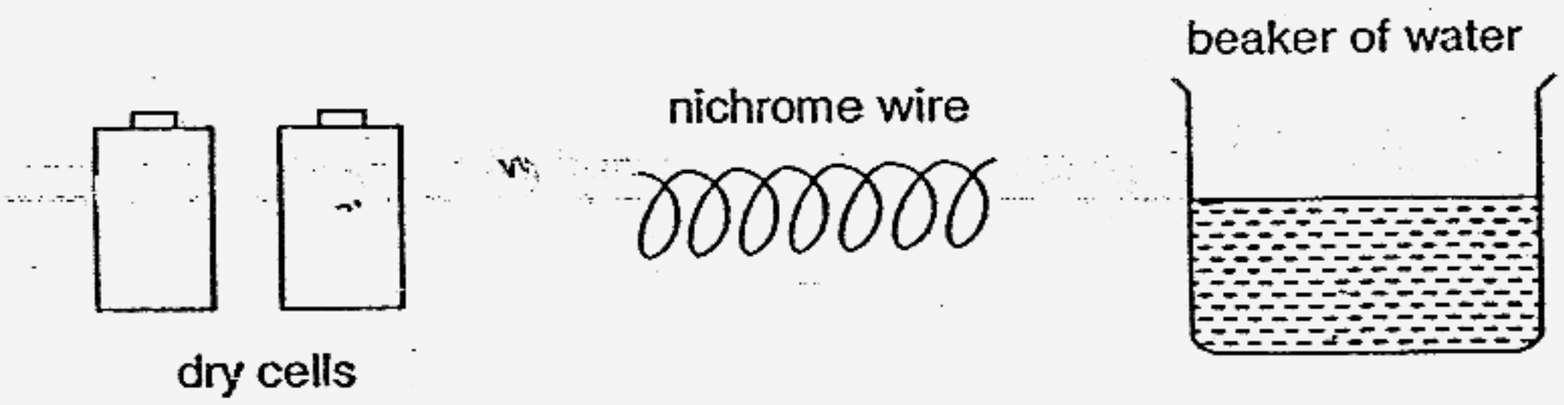
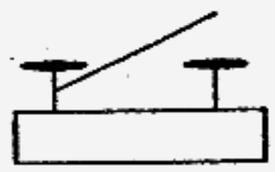
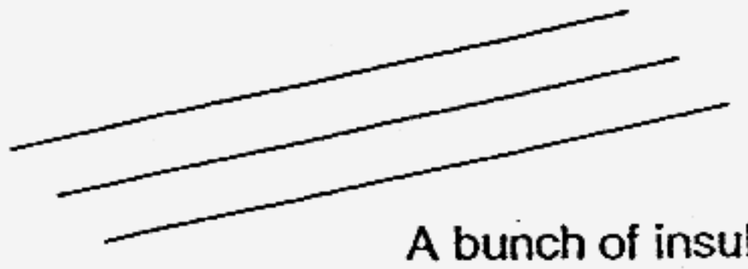
39. Ken wanted to show that a coil of nichrome wire could heat up a beaker of water. He used **all** of the following materials.





switch



A bunch of insulated wires
(Draw as many insulated wires as you need)

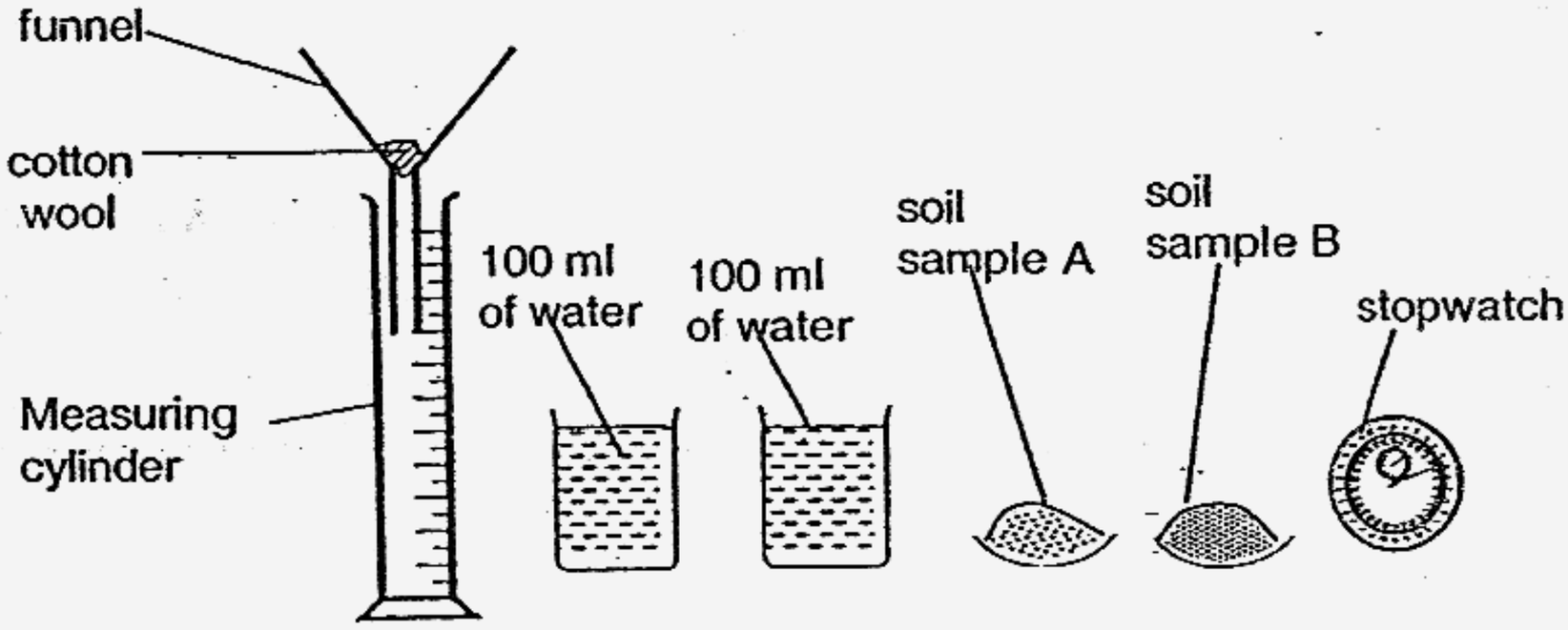
(a) In the space below, draw the electric circuit he had set up to conduct his experiment. Label your diagram. [2]

(b) How would Ken know if his circuit works? [1]

(Go on to the next page)

40 An experiment is conducted to find out which soil sample can hold water longer. The diagram below shows the materials needed for the experiment :

- A measuring cylinder
- A funnel containing some cotton wool
- Equal amount of two soil samples
- Two beakers of water
- A stopwatch.



The results of the experiment are shown in the table below.

Soil Sample	Time taken to collect 60ml of water (s)
A	42
B	18

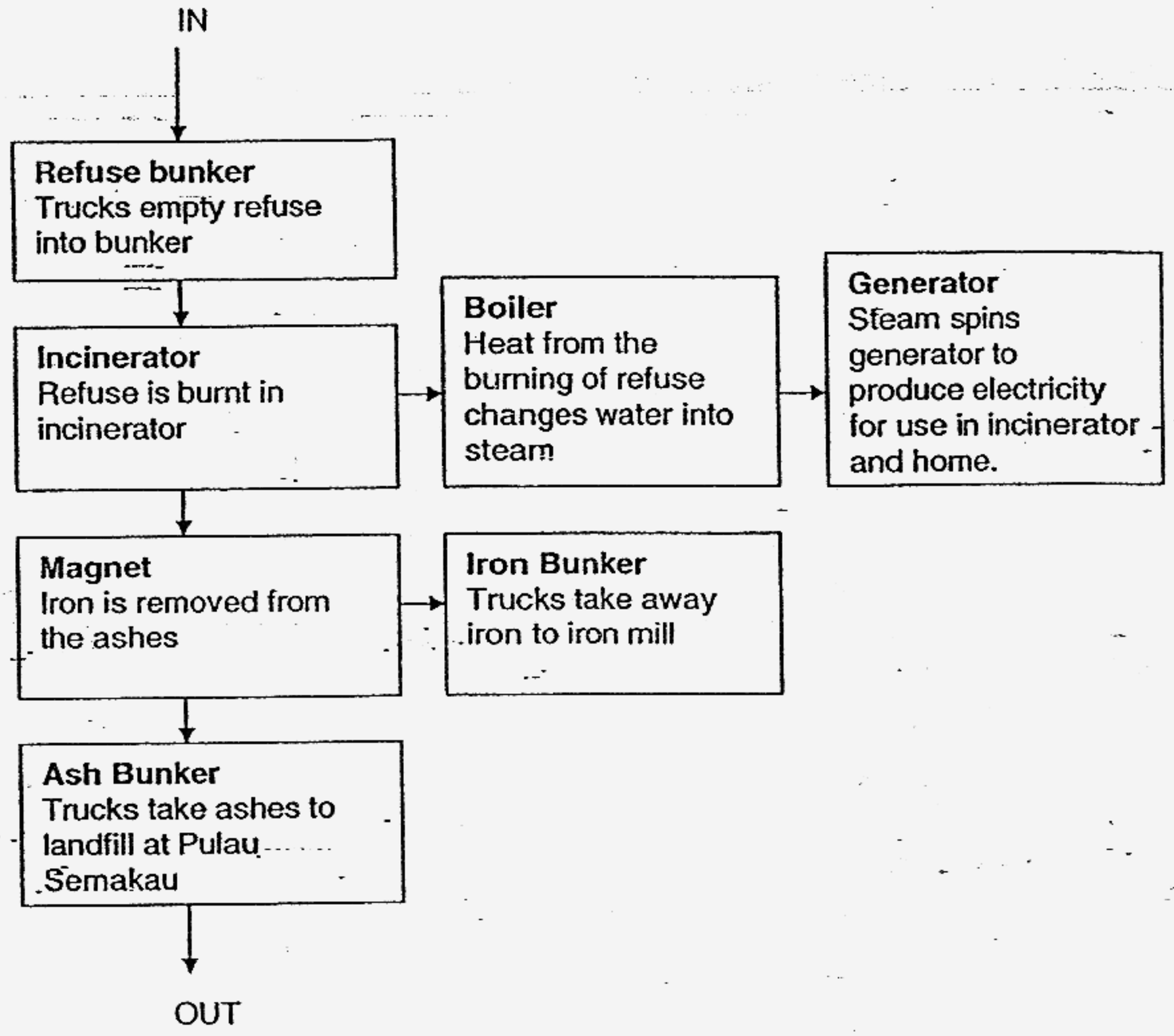
(a) Describe the procedure to find out which soil sample can hold water longer. [1]

(b) ~~Which soil sample is~~ more suitable to grow a cactus? Why? [1]

(c) If soil sample A is garden soil, predict the time taken to collect 60ml of water from clayey soil. [1]

(Go on to the next page)

41. The diagram below shows what happens to the refuse that is taken to the Ulu Pandan Incineration Plant.

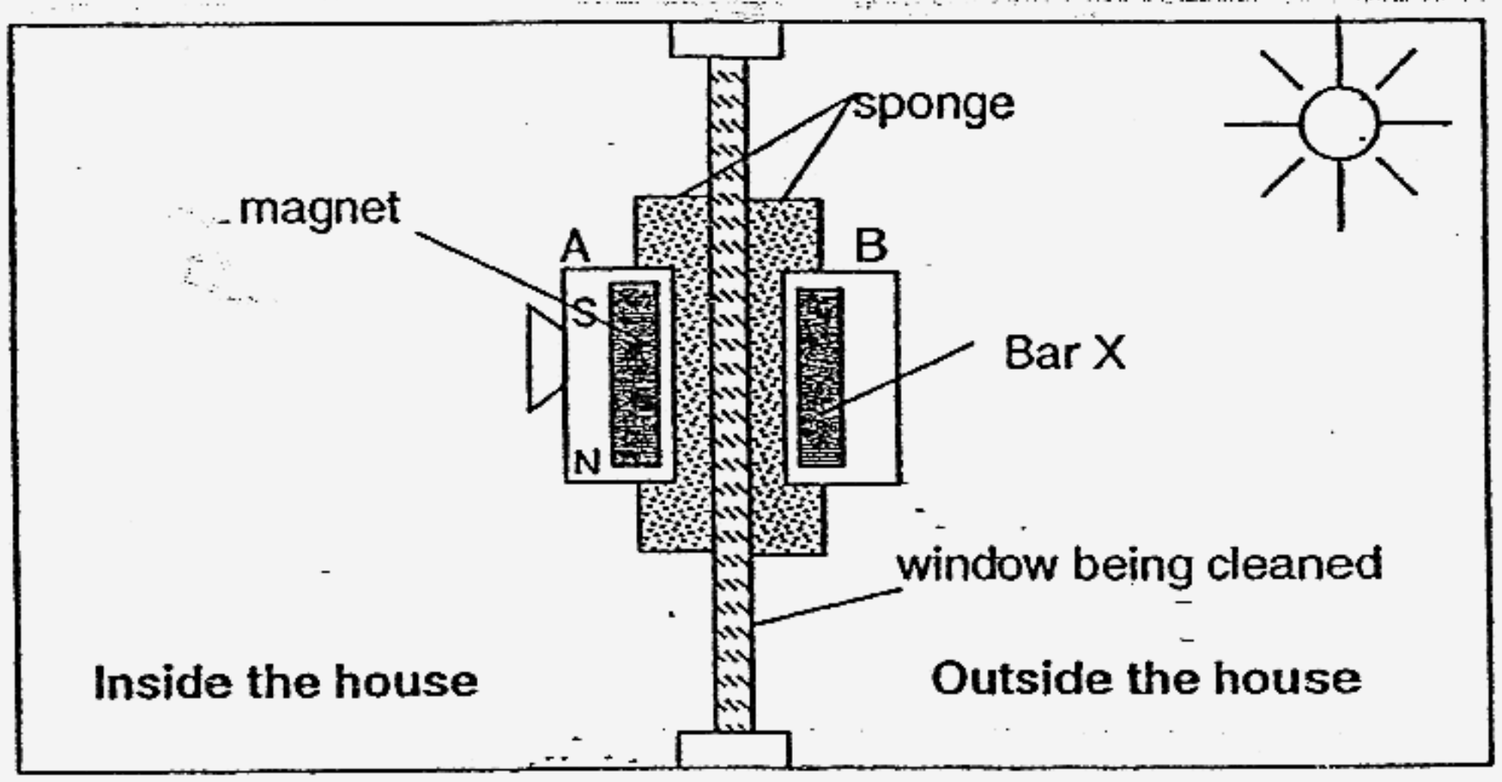


Explain how **two** practices carried out at the above incineration plant support the conservation of natural resources. [2m]

(i) _____

(ii) _____

42. The diagram below shows a two-piece device designed for cleaning both sides of a glass window pane at the same time. When part A is moved over the glass surface inside the house, part B follows it, moving over the glass surface outside the house.



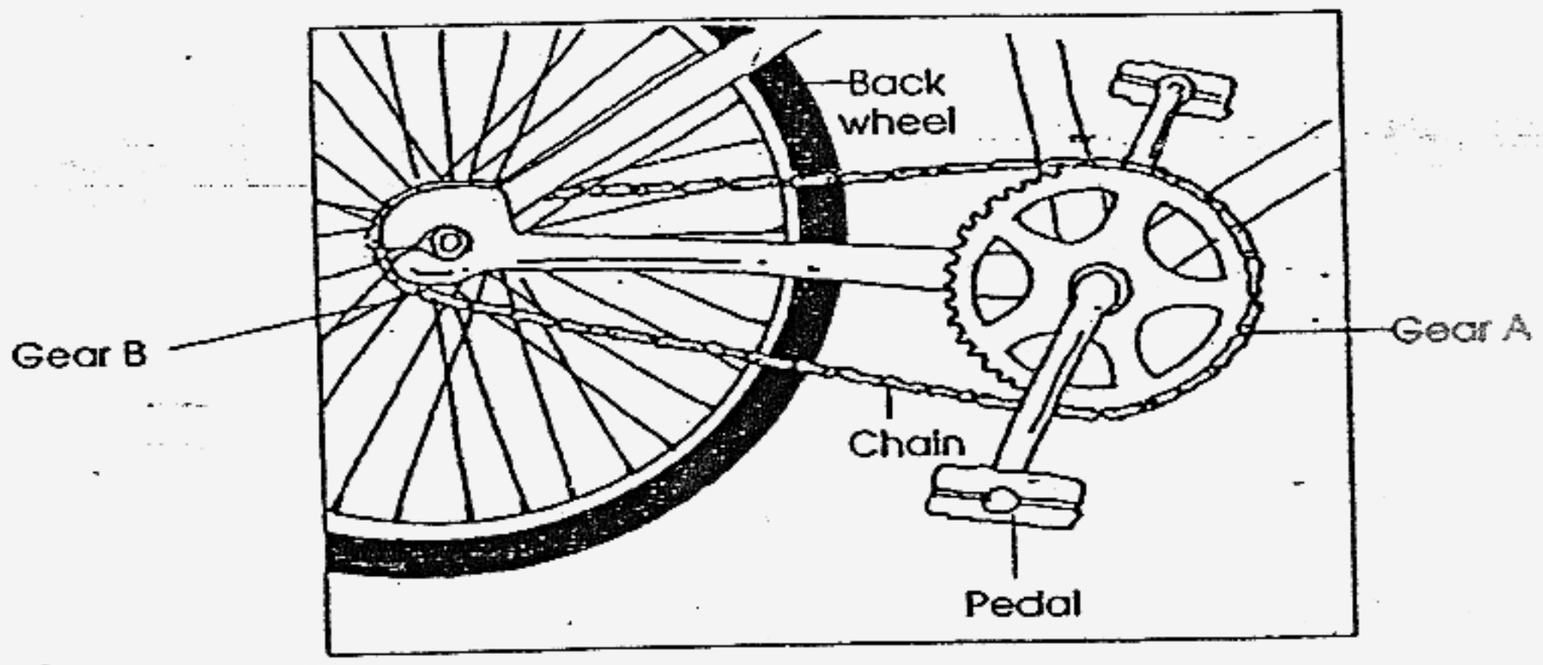
a) What is the material of Bar X? [1]

b) Explain why B follows the movement of A. [1]

c) If the window panes were made of aluminium of the same thickness as glass, would the device work? Why? [1]

(Go on to the next page)

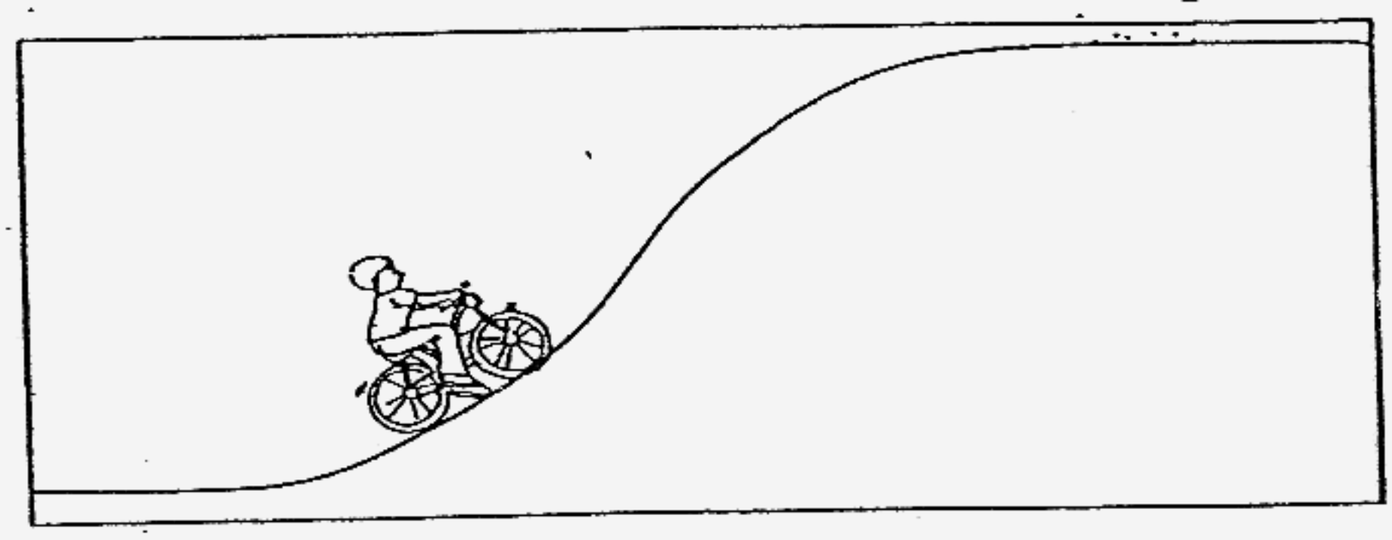
43. The diagram below shows the gear system of a bicycle.



(a) Explain how pedalling a bicycle makes it move forward. [1]

(b) Gear A and Gear B are not of the same size. Explain how this makes cycling easier. [1]

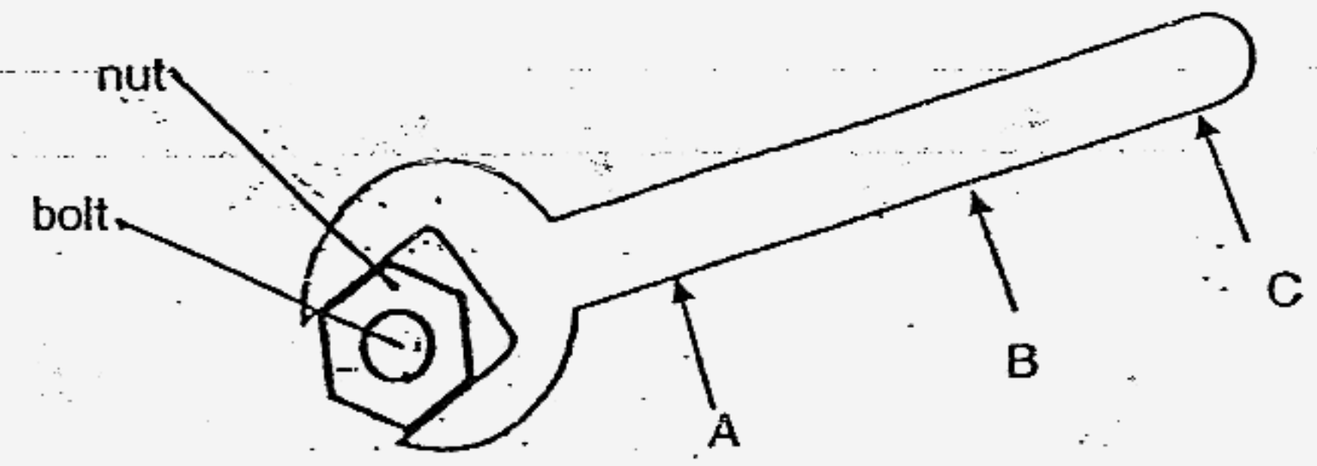
(c) A cyclist cycles up a slope as shown in the diagram below.



Identify **two** forces at work which makes the task difficult. [1]

(Go on to the next page)

44. The diagram below shows a spanner being used to unscrew a nut from a bolt.



(a) Identify the type of simple machine used. [1]

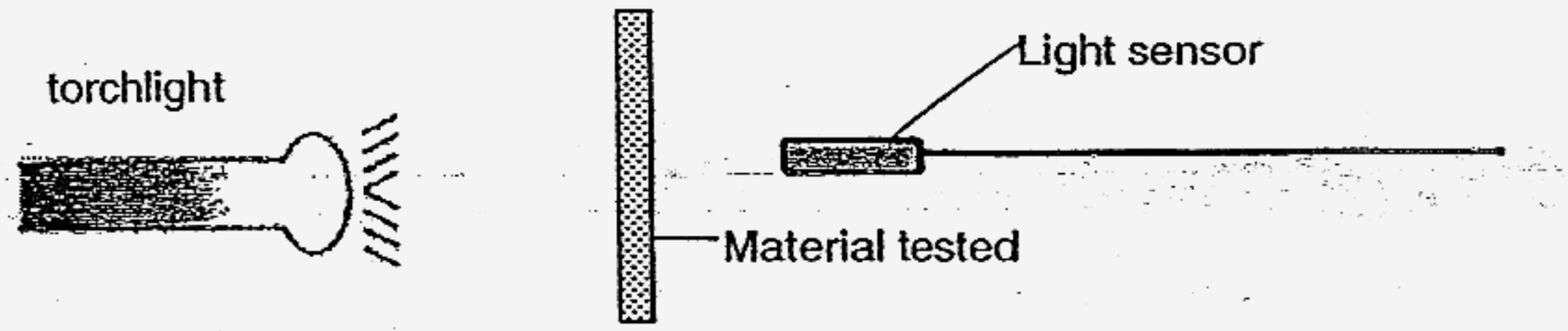
(b) At which position (A, B or C) would you push the spanner? Why? [1]

(c) The nut and bolt are so rusty that it is difficult to turn the nut. Why is it difficult to turn the rusty nut? [1]

(d) What can be done to enable the rusty nut to be turned without increased effort? [1]

(Go on to the next page)

45. The diagram below shows an experiment in which a light sensor is used to determine the degree of transparency of different materials.



(a) Describe the room where the experiment should be conducted to ensure a fair test. [1]

_____

(b) Identify two variables that must be kept constant. [1]

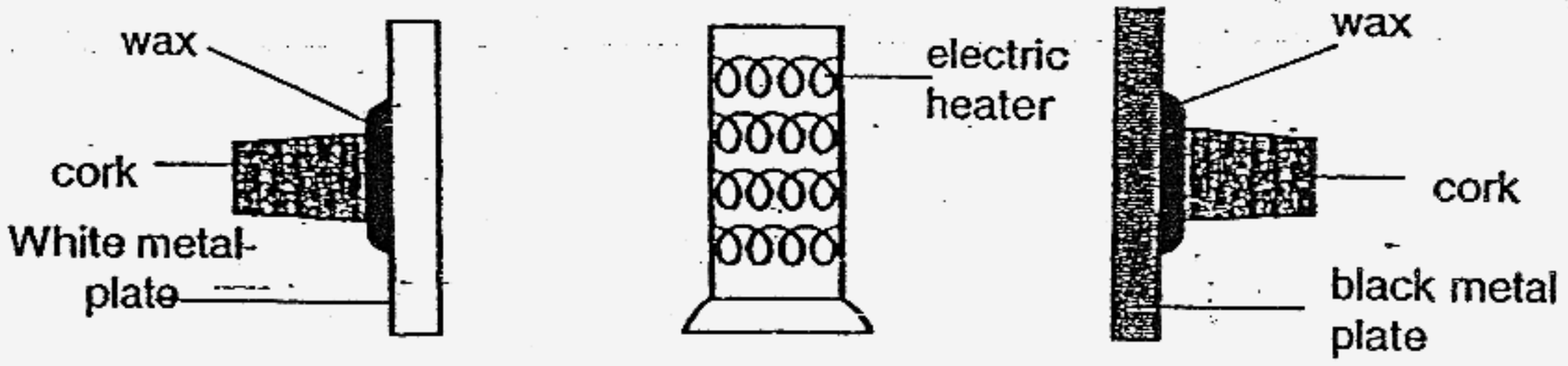
_____

_____

_____

(Go on to the next page)

46. Two small corks were fixed to two identical plates made of the same metal with wax. One metal plate was painted white and the other painted black. An electric heater was placed between them at an equal distance from the two plates as shown in the diagram below. The heater was switched on and after some time, one of the corks droppped off.



(a) What was the aim of the experiment? [1]

(b) Which cork would drop off first? Explain your answer. [1]

(c) If the white metal plate were replaced by a black wooden block of the same size and thickness as the white metal plate, which cork would drop off first? Why?

End of Paper

ROSYTH PRIMARY SCHOOL - PRIMARY 6 SCIENCE 2007
SEMESTRAL ASSESSMENT (2)

1. 1
2. 3
3. 1
4. 3
5. 3
6. 2
7. 2
8. 4
9. 1
10. 4
11. 2
12. 2
13. 2
14. 1
15. 3
16. 2
17. 1
18. 2
19. 3
20. 3
21. 4
22. 1
23. 4
24. 1
25. 3
26. 2
27. 1
28. 3
29. 1
30. 2

31) a) He was trying to find out which material of spoons X and Y is a better conductor of heat.

b) i) The handle of spoon Y will feel hotter than the handle of spoon X.

ii) Stainless steel is a better conductor of heat than ceramics.

32) a) Fertilisation.

b) For the frog, the male will coat the eggs with a jelly-like substance when the female lays the eggs. For the hen, the male will have to fertiliser the eggs in the hen,s body before the egg is hatched.

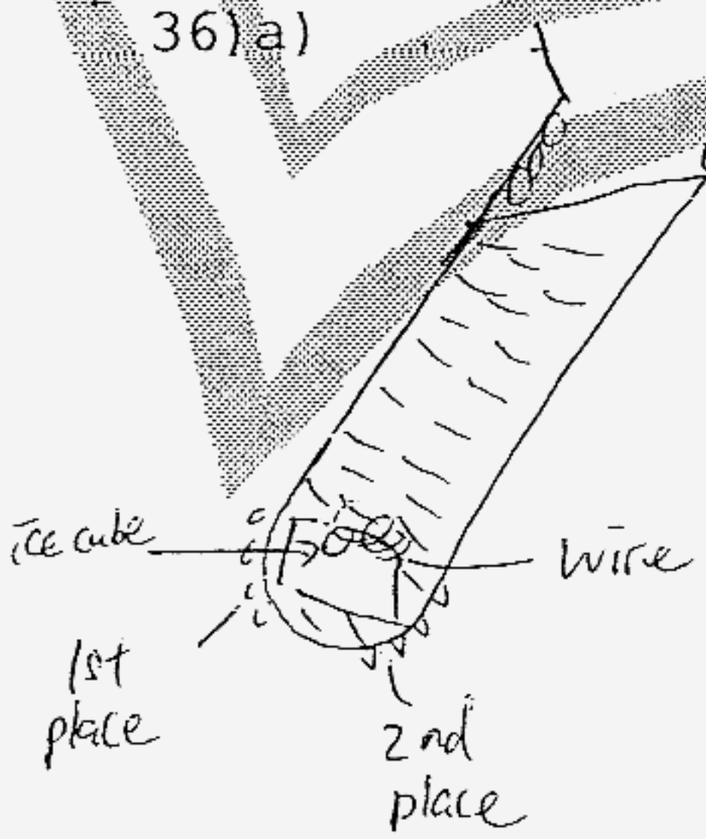
33) a) Tester b) Pollen

34) a) False b) True c) Not d) False

35) a) P will be heavier than Q, so P will move down while Q will move up.

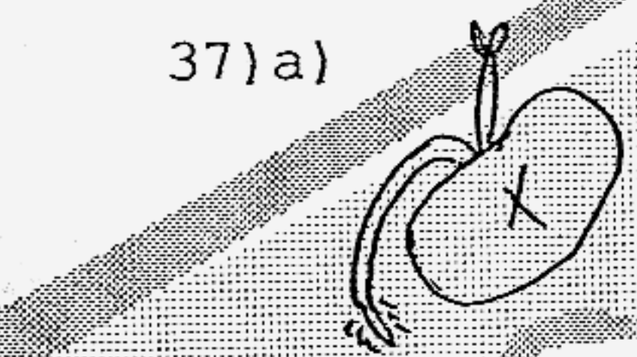
b) P: 1000cm3
Q: 1000cm3

36) a)



36)b)Water is a poor conductor of heat so heat does not travel quickly to the ice cube.

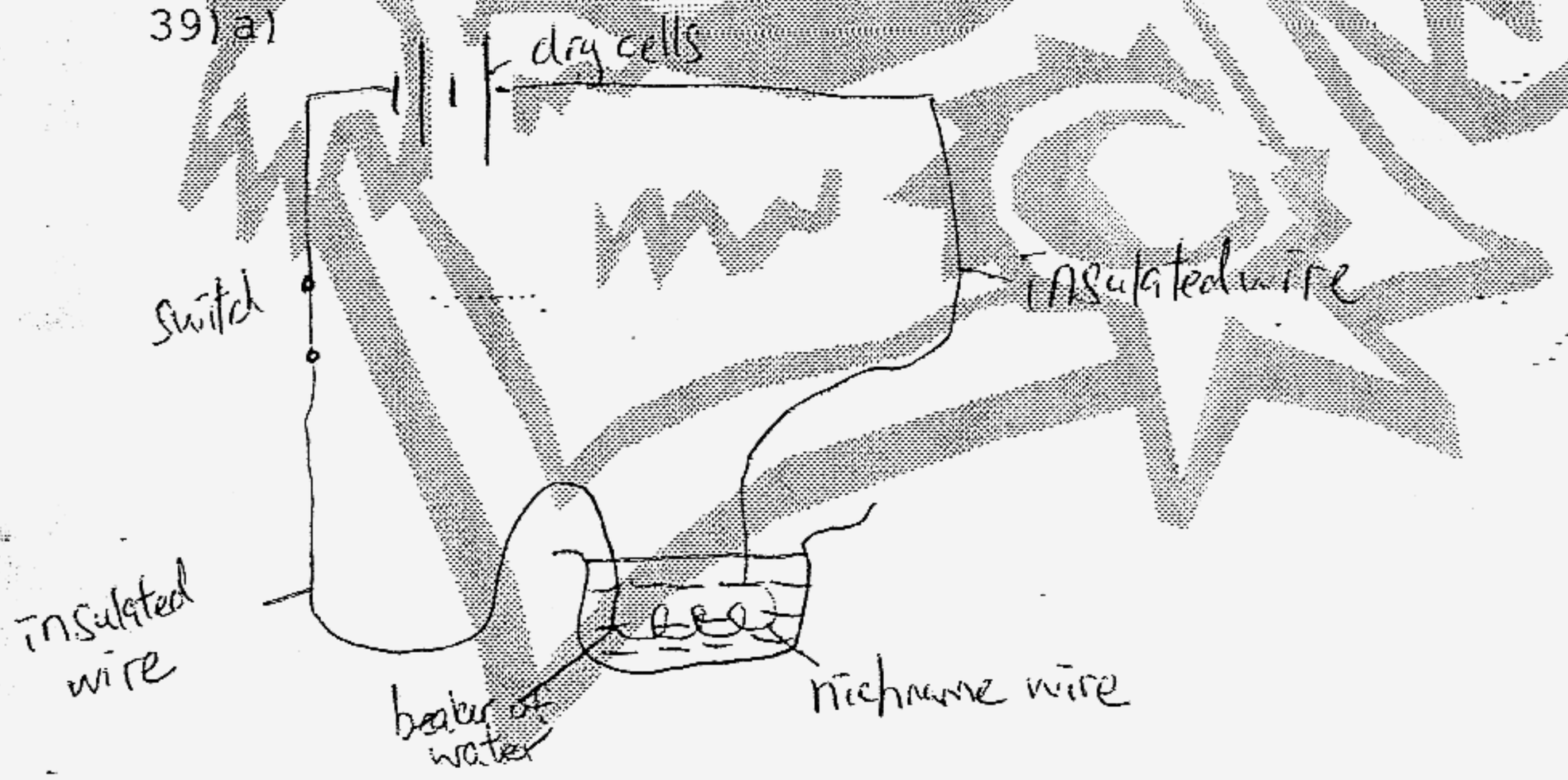
37)a)



b)The root grows towards water while the shoots grow upwards to wards sunlight.

38)a)i)Respiratory system.
ii)Digestive system.
b)i)air sacs
ii)Small intestine.
c)The digested food absorbed by the blood stream has to be transported in the blood vessels to other parts of the body.

39)a)



b)He could feel the beaker of water from the outside and if the circuit works, the beaker of water will feel hot.

40)a)Pour soil sample A into the funnel and pour 100ml of water into the funnel. Use a stop watch to determine the time taken to collect 60ml of water in the measuring cylinder.Repeat the steps above for soil sample B.

b)Soil sample B. It does not retain much water.

c)55 seconds.

41)i)We can save the Earth by recycling the iron by removing the iron from the ashes and bring them to the iron mill.

ii)The heat from the burning of refuse changes water into steam which spins the generator to produce electricity for other usage. In this case ,we save the Earth by not burning fossil fuels for electricity.

42)a)Steel

b)Steel is a attracted by the magnet.

c)Yes as magnetism can pass through aluminium.

43)a)When we pedal,Gear A moves,causing the chain to move. When the chain moves, Gear B moves causing the wheel to move forward.

b)Gear A is bigger, so when we pedal, we do not need such a big force to move the gear.

c)Frictional fore and gravitational force.

44)a)Wheel and axle.

b)Position C. It is the position which requires the least effort to push the spanner.

c)We can apply lubricant to the rusty nut.

45)a)The room should be dark.

b)The brightness of the bulb and the voltage of the batteries in the torchlight.

46)a)The aim was to find out whether a black surface or white surface absorbs more heat.

b)The cork fixed to the wax on the black metal plate would drop off first.

c)The cork fixed to the wax on the black metal plate would drop off first.Metal is a better conductor of heat than wood.