CATHOLIC HIGH SCHOOL
PRIMARY 5
SEMESTRAL EXAMINATION 2
2011

SCIENCE

Name: _____ ( )

Class : Primary 5 _

Date : 28 October 2011

BOOKLET A

30 Questions
60 Marks

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

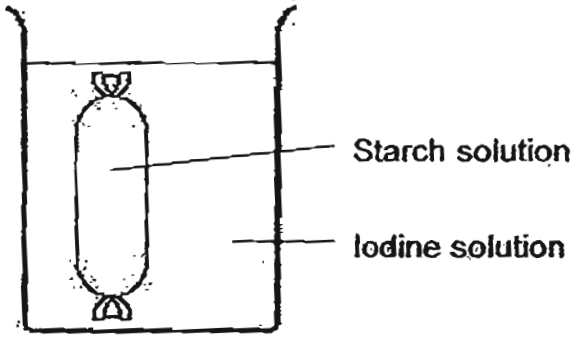
Instructions to Candidates

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

Section A : Multiple Choice Questions (60 marks)

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

1. Ali set up an experiment as shown below. He filled a bag with starch solution and placed it into a beaker containing iodine solution.

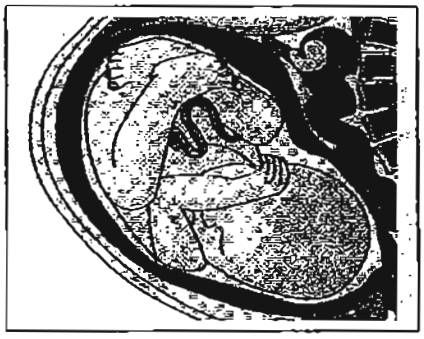


Two hours later, Ali observed that the starch solution in the bag had turned dark blue.
Which statements below correctly explain the experiment above?

A The bag functions like the cell membrane.
B The bag is semi-permeable and allowed both the iodine and starch to pass through.
C The starch had entered the beaker and turned dark blue when it reacted with the iodine.
D The iodine had entered the bag and turned dark blue when it reacted with the starch solution.

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

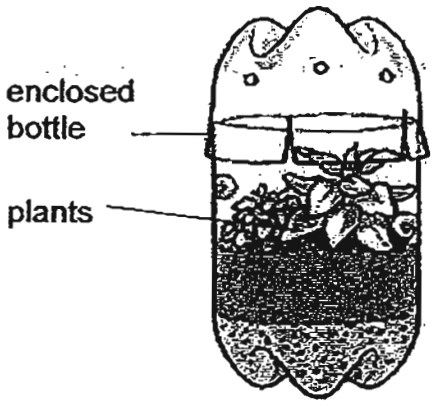
2. The diagram below shows a developing foetus. Which of the following statements about the foetus at this stage are correct?



A It produces waste.
B It is in its mother's womb.
C It breathes through its nostrils.
D It gets its nutrients from its mother.

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

3. Some plants were placed in an enclosed bottle as shown below. They were found to be surviving well in a closed environment.



Which of the following processes are taking place in the bottle?

A Water cycle
B Respiration
C Photosynthesis

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

4. Study the cross-section of the flower shown below carefully.

After fertilisation, which one of the following fruits is likely to develop from this flower?

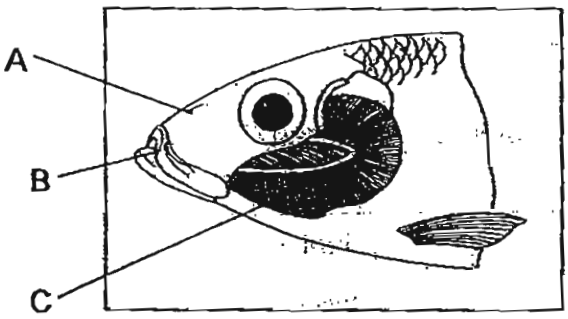
(1)

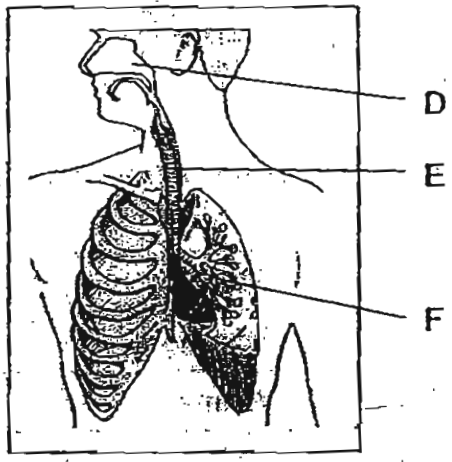
(2)

(3)

(4)

5. The diagrams below show the respiratory systems of 2 organisms.





Which part of the respiratory system of the fish and human allow exchange of gases?

	Fish	Human
(1)	A	D
(2)	B	F
(3)	C	E
(4)	C	F

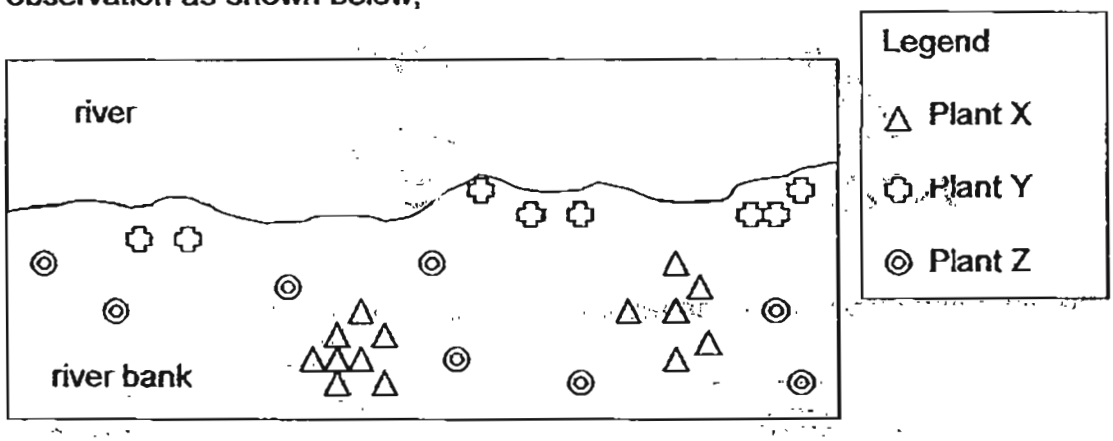
6. Jen classified some organs in the digestive system as shown in the table below.

Digestion takes place	Digestion does not take place
Mouth	Gullet
Stomach	Small intestine
	Large intestine

Which one of the following organs did she classify wrongly?

(1) mouth
(2) gullet
(3) small intestine
(4) large intestine

7. Jess was walking along the bank of a river and she observed that the plants of the river bank were growing in a particular pattern. She made a diagram of her observation as shown below,



How are the seeds of the 3 different plants most likely scattered?

	Plant X	Plant Y	Plant Z
(1)	Splitting	Animal	Wind
(2)	Animal	Splitting	Water
(3)	Splitting	Water	Animal
(4)	Water	Wind	Splitting

8. Which of the following happens when Sean does his 1.6 km walk/run during his NAPFA test?

A His heart beats faster.
B He takes in more oxygen.
C His body produces less carbon dioxide.

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

9. Which of the following systems work together to supply nutrients to all parts of the body?

A respiratory system
B circulatory system
C digestive system
D muscular system

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

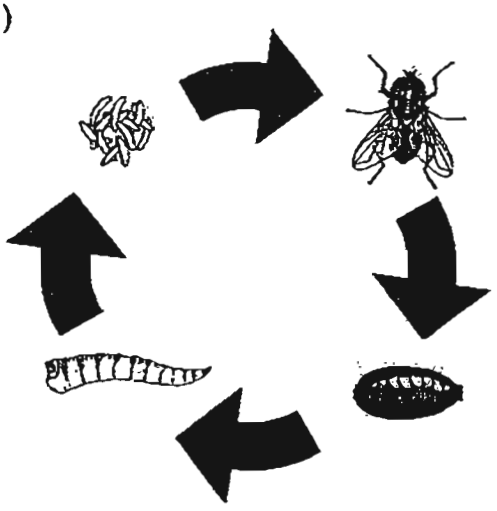
10. Justin spread a layer of cooking oil on the stem, leaf stalks and both surfaces of the leaves of a plant. The plant was placed in the sun and watered every day. After a few days, the plant died because the layer of oil _____.

A prevents the chlorophyll from trapping sunlight.
B blocked the stomata, preventing gaseous exchange
C blocked the stomata, preventing water from leaving the plant

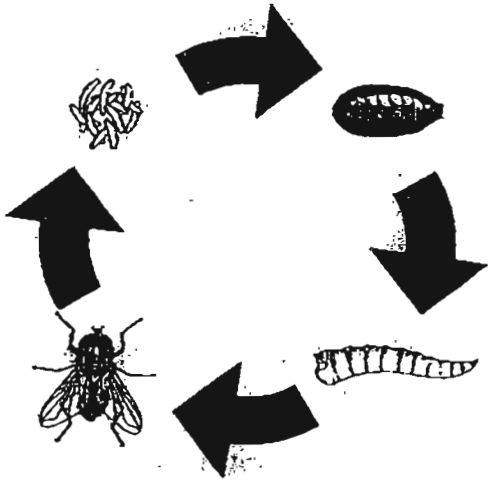
(1) A and B only
(2) B and C only
(3) A and C only
(4) A, B and C

11. A housefly has four stages in its life cycle.
Which one of the following shows the correct order of its life cycle?

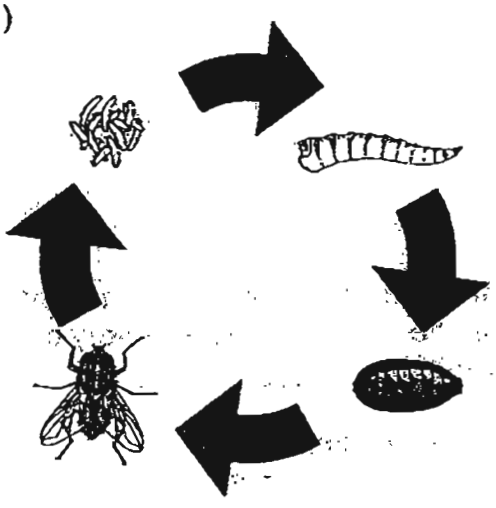
(1)



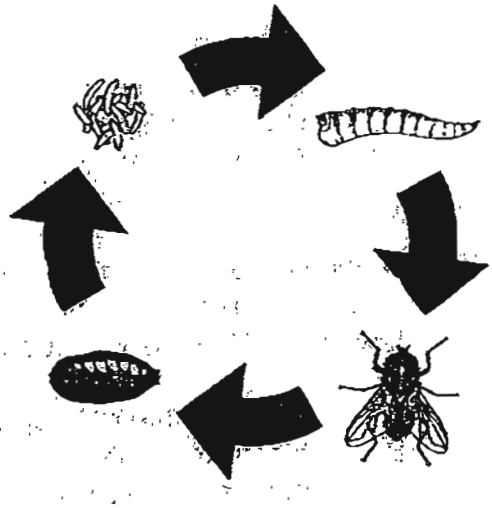
(2)



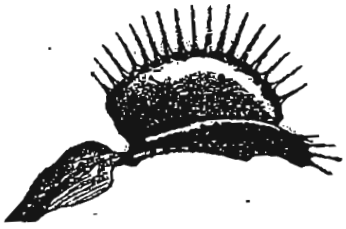
(3)



(4)



12. The Venus Flytrap is a plant that captures insects by snapping its leaves shut when an insect lands on it.



The reaction of the Venus Flytrap to the presence of its prey shows that living things _____.

A respond to touch
B can move by itself
C need food to survive
D can reproduce and grow

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

13. The table shows some characteristics of Animals L and M.

Characteristics	Animal L	Animal M
It has a four-stage life cycle	No	Yes
Its mother looks after its young	Yes	No
Its young resembles the adult	Yes	No
It is a pest in one or more of its stages	No	Yes

Which two animals would fit the descriptions given in the table above?

	Animal L	Animal M
(1)	Cat	Housefly
(2)	Grasshopper	Mosquito
(3)	Frog	Butterfly
(4)	House lizard	Mealworm

14. Mark, Nicholas and James wanted to find out who had the largest lung capacity.

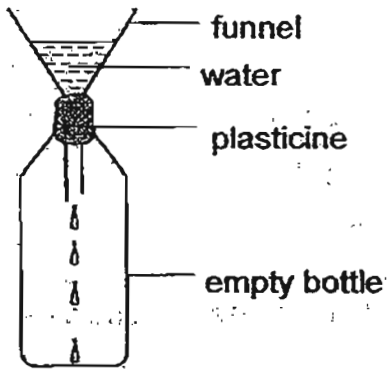
They each took a recorder and blew into it with one breath to see who could hold the note longer.

Which of the following must they keep the same in order to make it a fair test?

A Colour of recorder
B Length of recorder
C Material recorder is made of

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

15. Jason poured some liquid into a bottle through a funnel as shown in the diagram below.



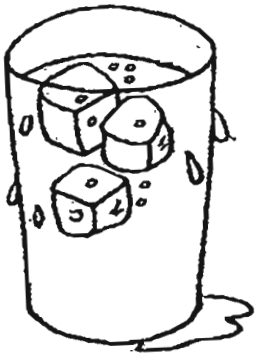
After a while, the liquid stops flowing into the bottle.

Which one of the following statements best explains why the liquid stops flowing?

(1) The tube of the funnel is too narrow.
(2) The bottle has already been filled up with the liquid.
(3) There is no space for the liquid as the air in the bottle occupies space.
(4) The liquid has a definite shape and is unable to flow through the funnel.

16. Linda filled a glass of orange juice with ice and left it on the table.

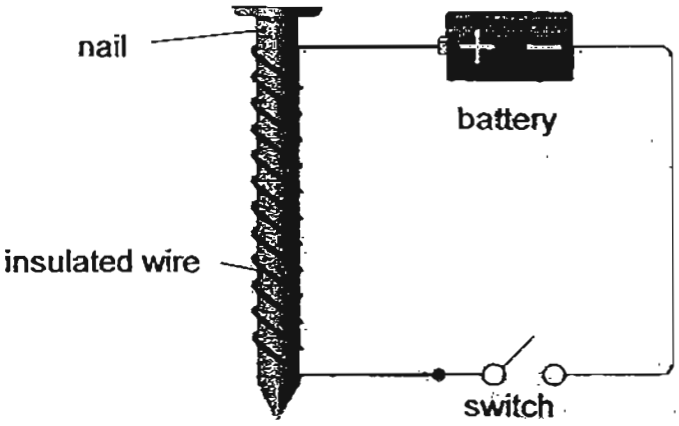
After 20 minutes, she noticed a small puddle of water at the base of the glass as shown in the diagram below.



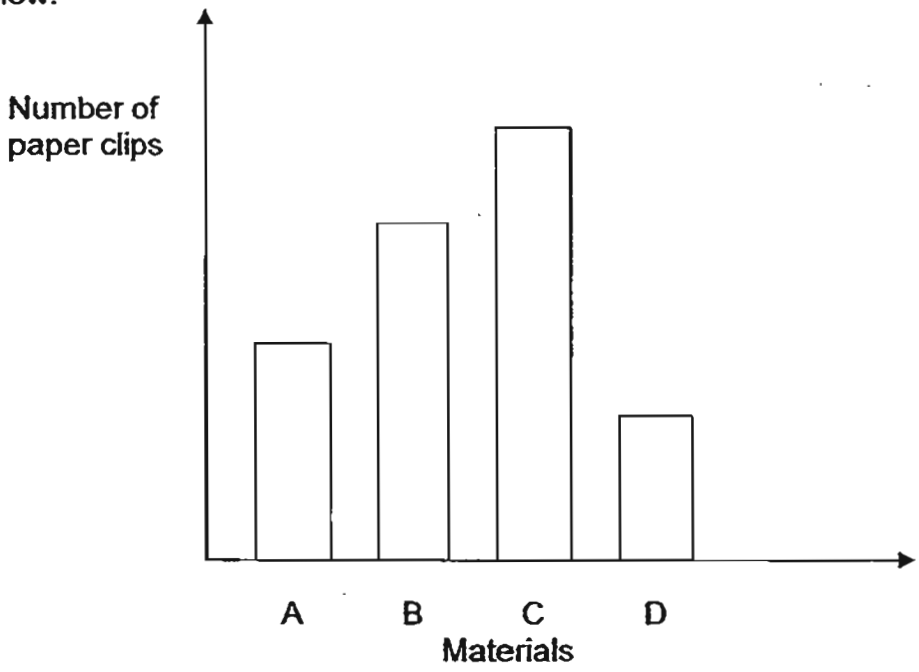
The water in the puddle came from the _____.

(1) ice
(2) glass
(3) orange juice
(4) surroundings

17. Jacob tested four nails made of magnetic materials, A, B, C, D, by using the apparatus shown in the diagram.



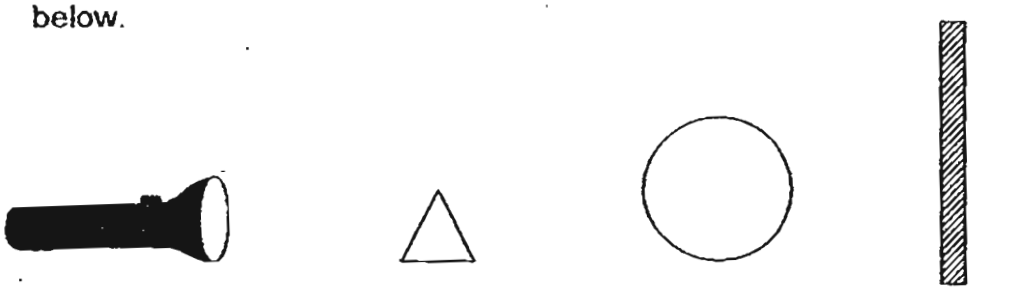
When the switch was closed, the nail picked up some steel paper clips. Jacob counted the number of paper clips picked up and recorded the results in the graph below.



Based on the results obtained, arrange the materials in order of the strength as electromagnets, from the weakest to the strongest.

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

18. A torch is shone on a rubber ball and a wooden pyramid as shown in the diagram below.



Torch Pyramid Ball Screen

Which one of the following shows the shadow cast on the screen?

(1) 

(2) 

(3) 

(4) 

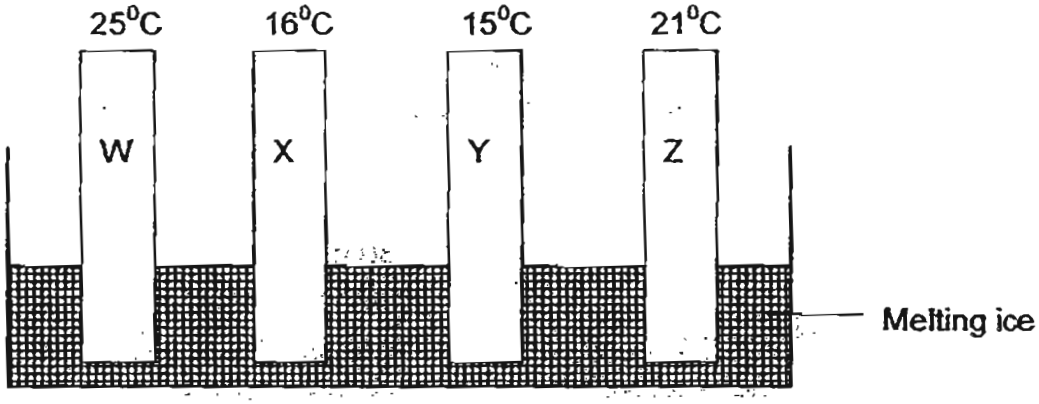
19. On a rainy morning, Peter was on his way to school in his father's car when he noticed that the inner surfaces of the windscreen and the windows became covered with a layer of water droplets.

This shows that the temperature inside the car was _____ the temperature outside.

(1) lower than
(2) higher than
(3) the same as
(4) changing with

22. Jasper wanted to find out which material is the best conductor of heat. He placed each end of four rods, W, X, Y and Z, each made of different materials in a container filled with melting ice cubes. The starting temperatures were the same for all the rods. After a while, the temperature at the top end of each rod was measured.

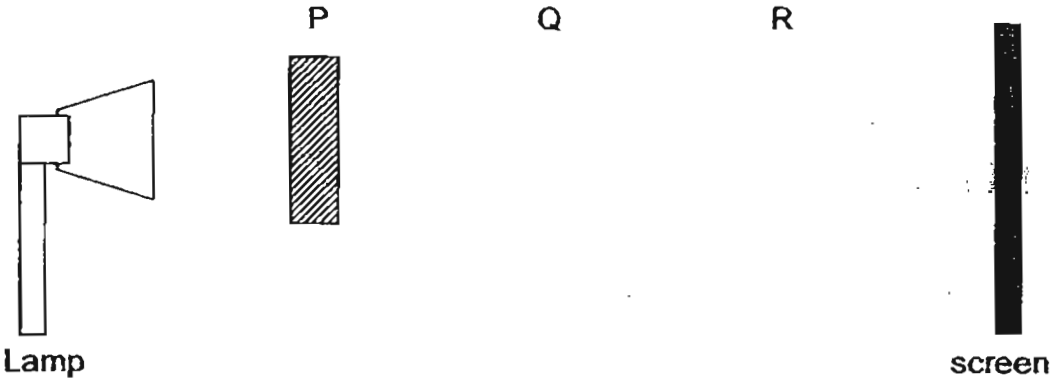
The diagram below shows the temperature of the rods at the end of the experiment.



Which rod is the best conductor of heat?

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

20. Ali set up an experiment as shown below.



Ali place the block at positions P, Q and R which are at different distances from the screen. At each position, she measured the length of the shadow cast on the screen. Which of the following shows the length of the shadows Ali recorded?

	Length of shadow / cm		
	At P	At Q	At R
(1)	13	19	25
(2)	13	25	19
(3)	19	25	13
(4)	25	19	13

21. A group of pupils carried out an experiment to find out the effect of the surface area of the container on the rate of evaporation of water.

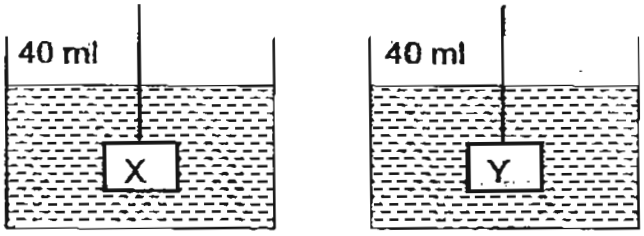
The results are shown in the table below.

Set-ups	Volume of water / ml	Surface area of container / cm^3	Temperature / ^0C	Wind speed / km/h
A	300	80	75	15
B	300	50	75	25
C	300	50	60	25
D	300	80	60	25

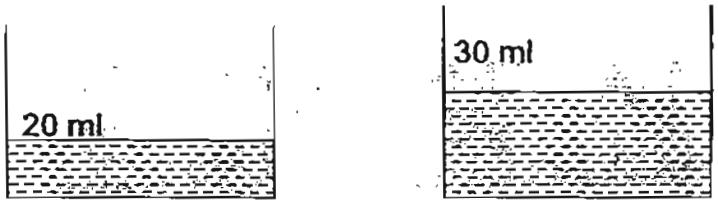
Which two set-ups should the pupils use to compare the effect of surface area of the container on the rate of evaporation?

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

23. Study the diagrams below.



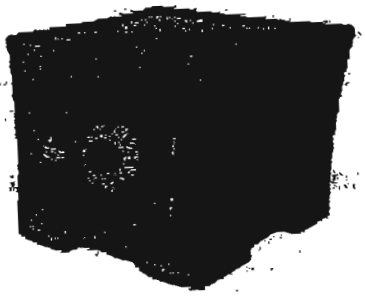
The water level in the two containers above are at 40 ml. When objects X and Y are taken out of the water, the water levels of the containers are shown below.

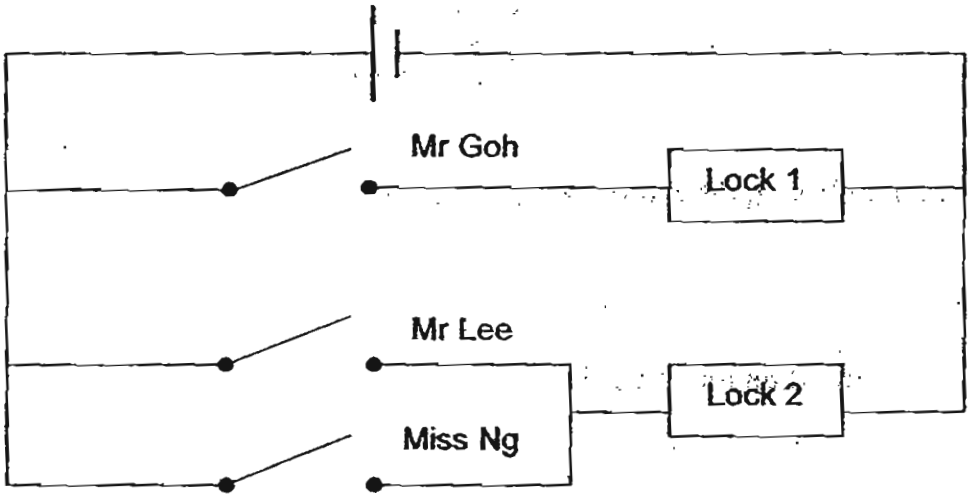


Based on the above experiment, which one of the following statements is true?

(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.

24. A safe in a bank has 2 electric locks which must both be unlocked to open the safe. Mr Goh, Mr Lee and Miss Ng each has a key that can open a lock. The diagram below shows how the electric circuits controlling the locks are set up.

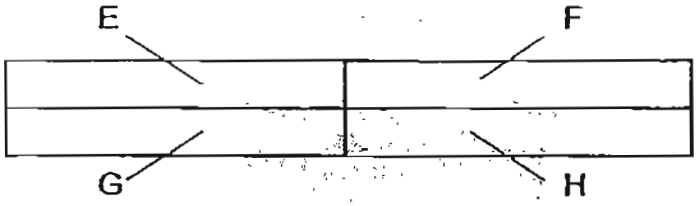




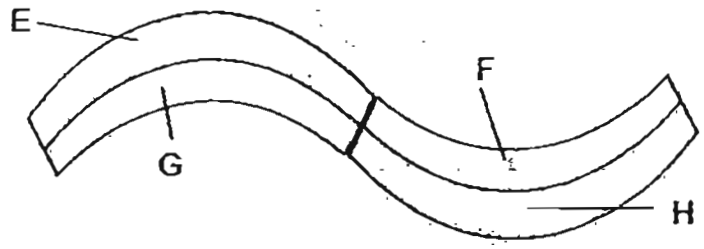
Whose key/s could be used to open the safe?

(1) Mr Goh's only
(2) Miss Ng's only
(3) Mr Lee's and Miss Ng's
(4) Mr Goh's and Miss Ng's

25. A special metal strip was made up of 4 metals, E, F, G and H welded together.



When the strip was heated for a while, its shape changed to look like this.

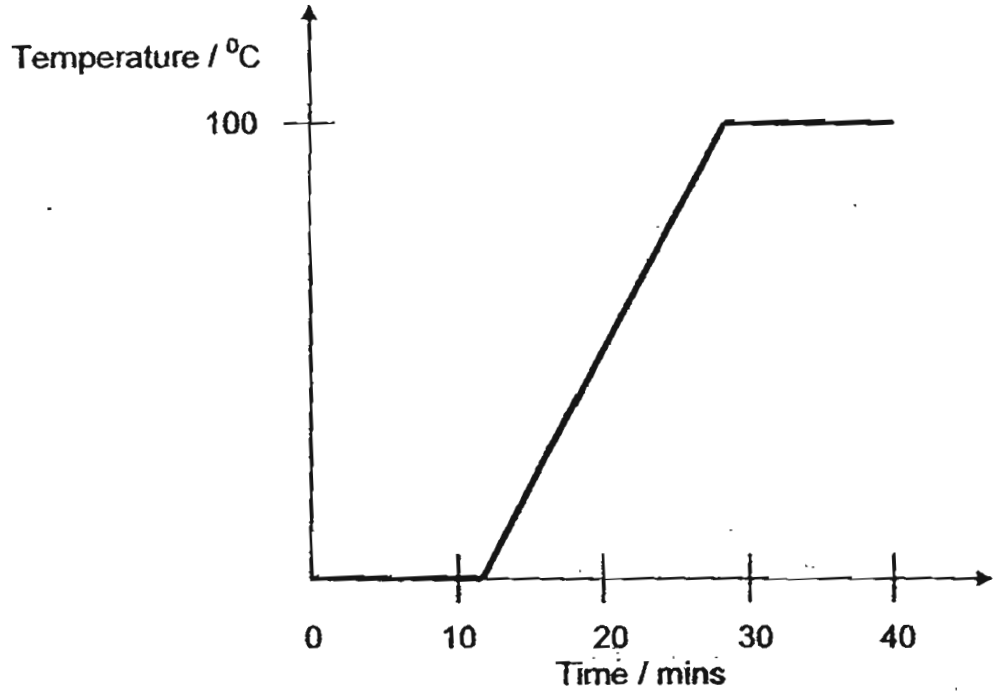


Which of the following do you think took place?

A H expanded more than F
B H expanded more than G
C E expanded more than G
D H expanded as much as E

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

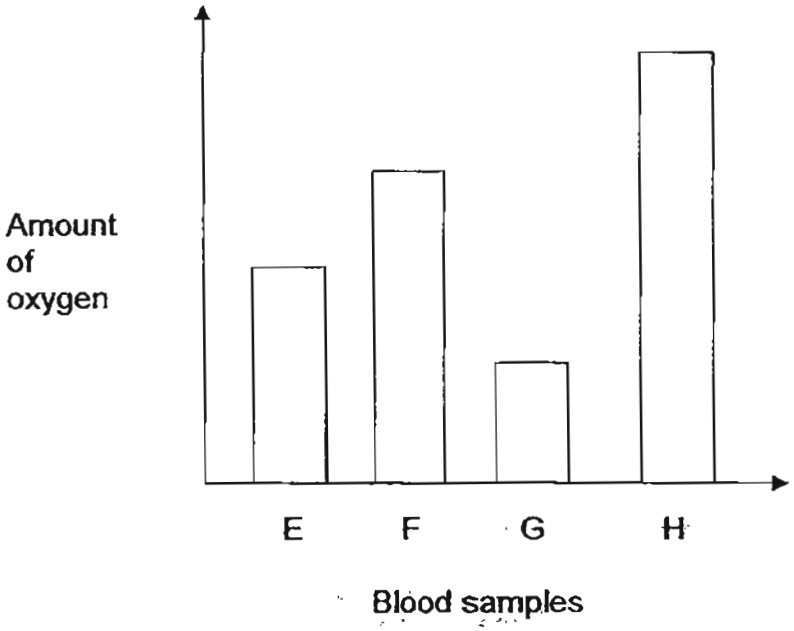
26. A beaker of ice was heated for 40 minutes. The graph shows the temperature change of the content in the beaker.



What was found in the beaker at the 8th and 30th minute?

	8th minute	30th minute
(1)	Ice only	Water only
(2)	Water only	Steam only
(3)	Ice and water	Steam only
(4)	Ice and water	Water and steam

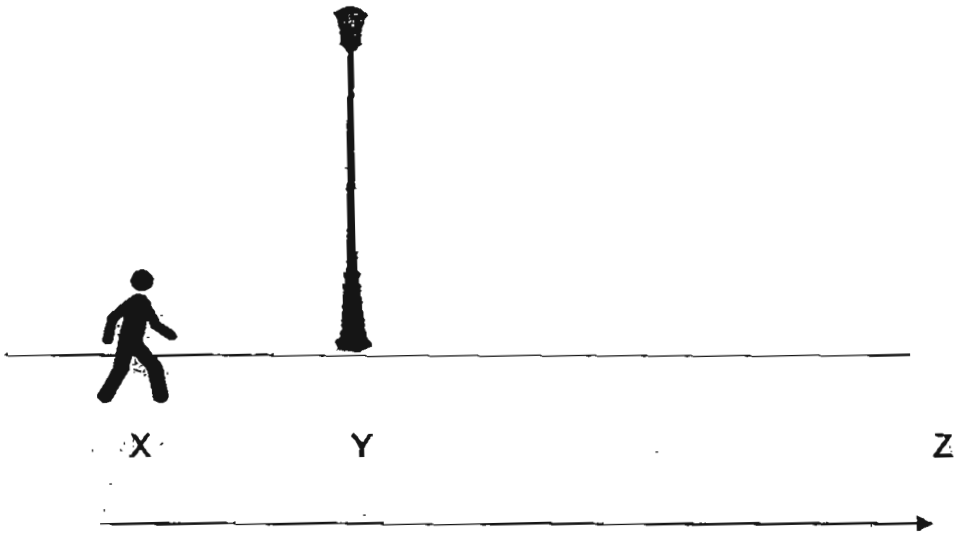
27. Four blood samples, E, F, G and H, were taken from different blood vessels in the body.
The graph below shows the amount of oxygen in each of these blood samples.



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

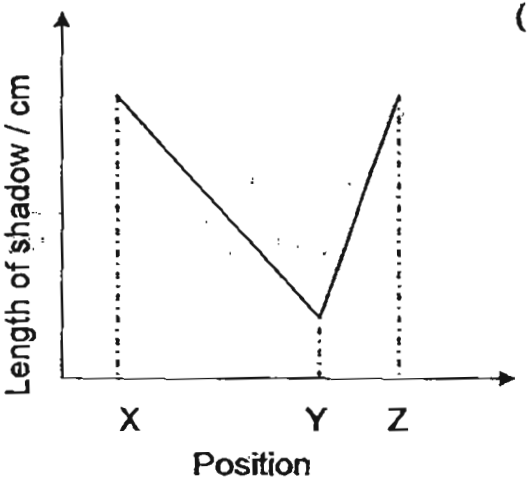
(1) E
(2) F
(3) G
(4) H

28. On a very dark night, a man walking along a street noticed that his shadow changed length as he was walking along the pavement.

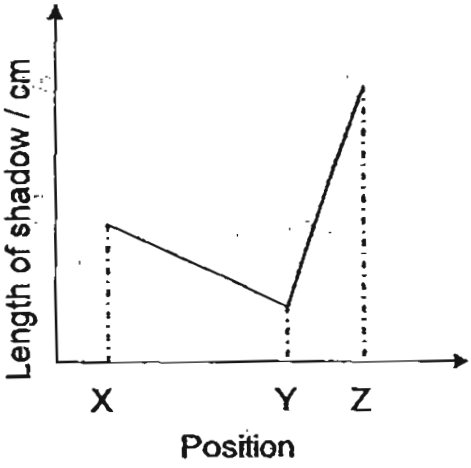


Which one of the following graphs shows the change in the length of his shadow as he walks from Point X to Point Z?

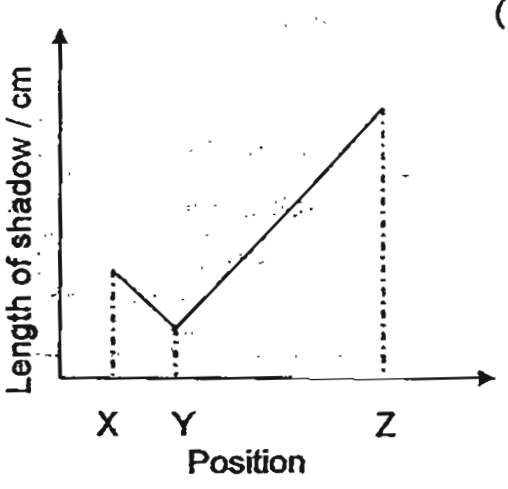
(1)



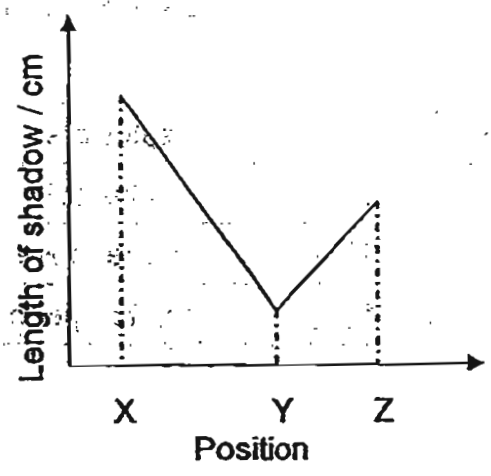
(2)



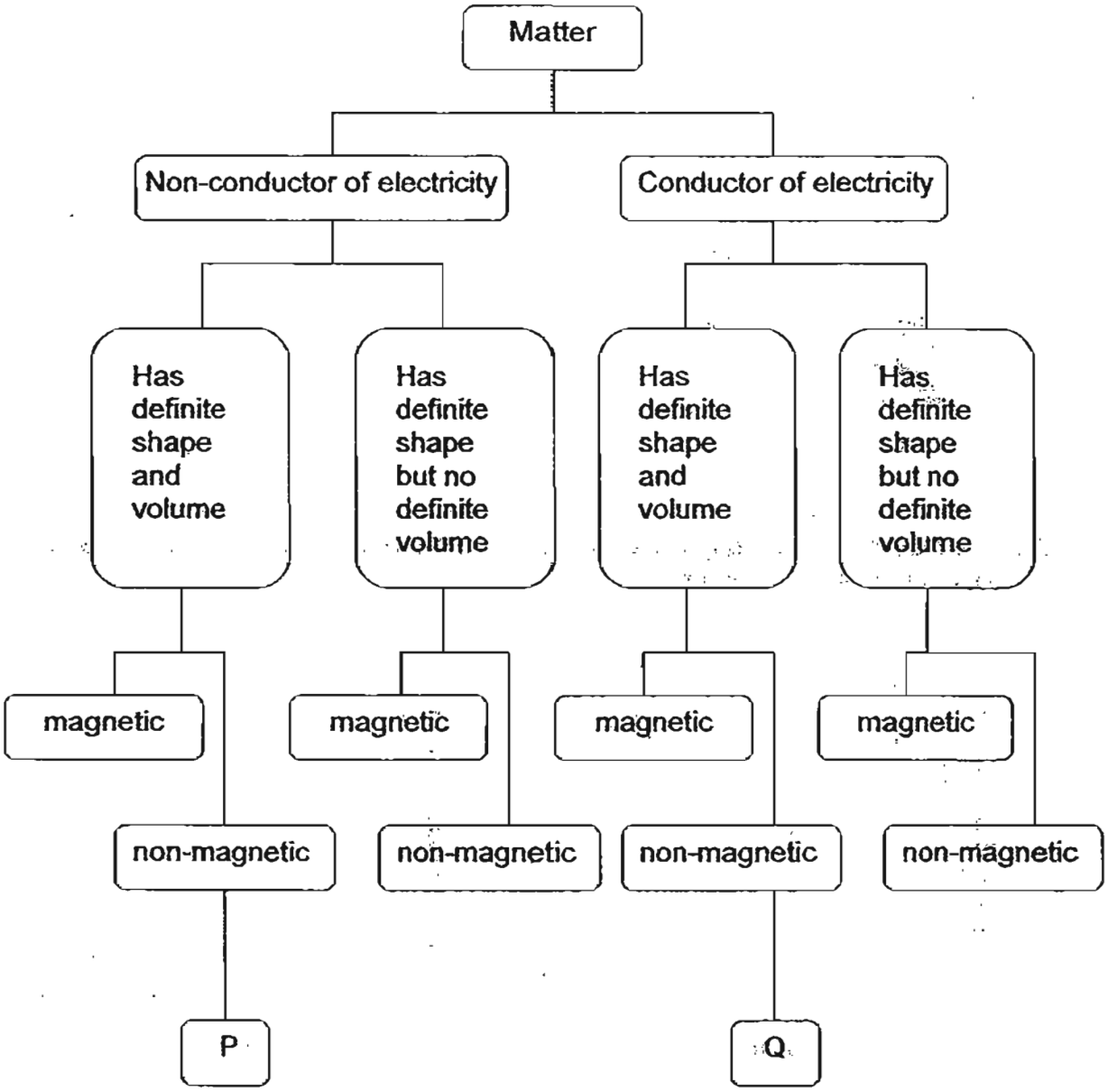
(3)



(4)



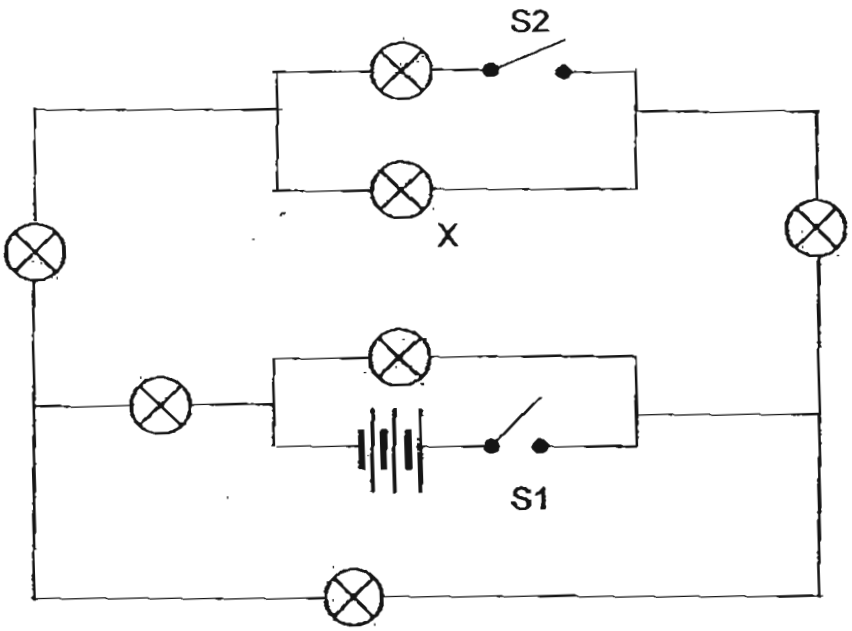
29. Study the classification table below.



What do the letters P and Q represent respectively?

	P	Q
(1)	salt water	steel can
(2)	nickel coin	salt water
(3)	rubber hose	iron fork
(4)	plastic spoon	brass plate

30. Ryan set up the circuit as shown below.



After setting up the circuit, Ryan realises that Bulb X has fused. How many bulbs will light up when Ryan closes Switches 1 and 2?

(1) 0
(2) 1
(3) 3
(4) 6

- End of Section A –

CATHOLIC HIGH SCHOOL
PRIMARY 5
SEMESTRAL EXAMINATION 2
2011

SCIENCE

Name: _____ ( )

Class : Primary 5 _____

Date : 28 October 2011

BOOKLET B

14 Questions
40 Marks

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

Instructions to Candidates

Follow all instructions carefully.
Answer all questions.

Score	
Section A	60
Section B	40
Total	100

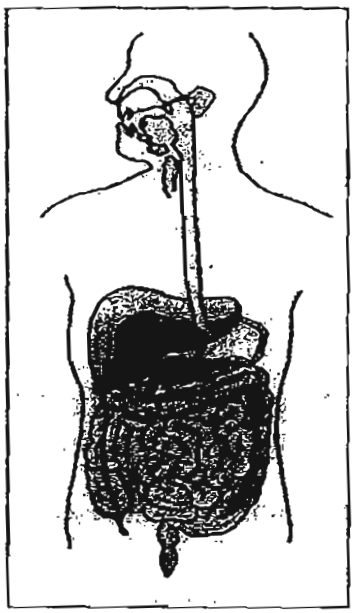
Parent's Signature: _____

Date: _____

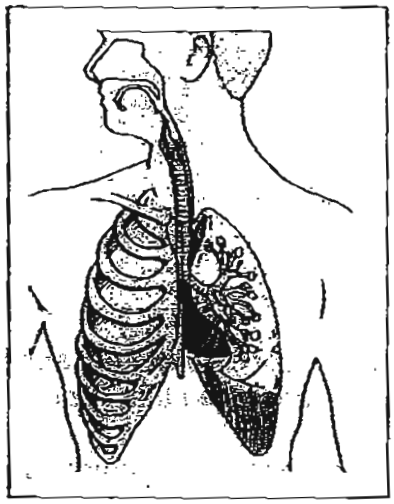
Section B : Open-Ended Questions (40 marks)

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

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



System P



System Q

(a) Give the name of each of the two systems above. (1)

(i) System P _____

(ii) System Q _____

(b) Identify the part/s in Systems P and Q where the most exchange of substances take place. (1)

(i) System P _____

(ii) System Q _____

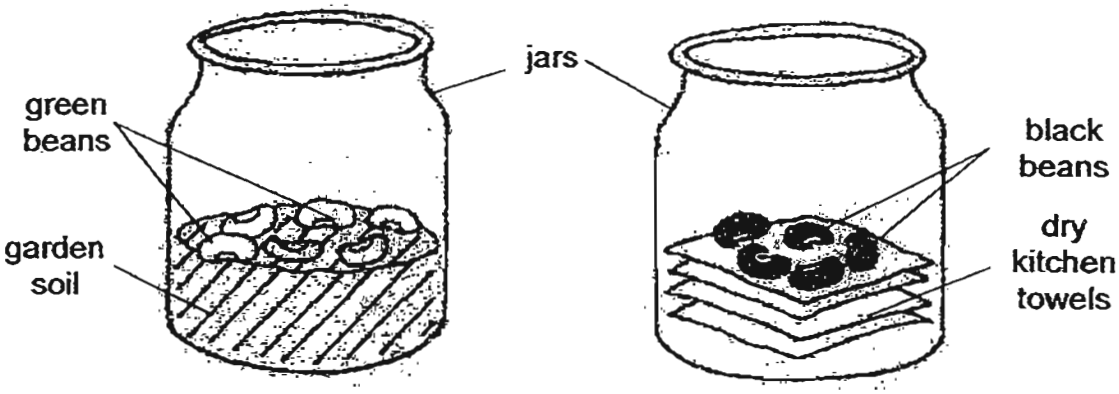
(c) Why are the blood vessels in the above-mentioned part/s necessary? (1)

_____

_____

3

32. Jacinta wanted to find out if the presence of light would affect the germination of seeds. She prepared 2 set-ups as shown below and placed Set-up A by the window and Set-up B in a dark room.



After a week, she noticed that the seeds in Set-up A germinated but not the seeds in Set-up B. She concluded that light was necessary for the germination of seeds.

(a) Did Jacinta make the correct conclusion? Give a reason for your answer. (2)

_____

_____

(b) State 2 ways she can improve on her experiment. (1)

_____

_____

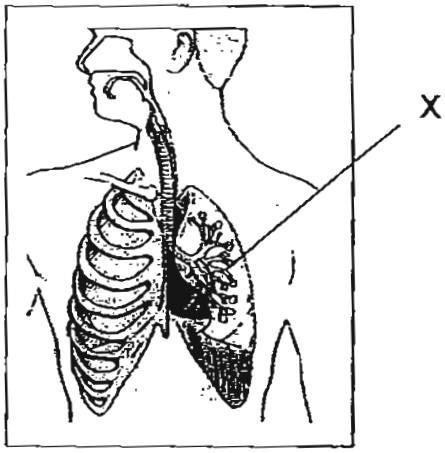
(c) Name 2 factors that are necessary for an adult plant to grow but not needed for the seeds to germinate. (1)

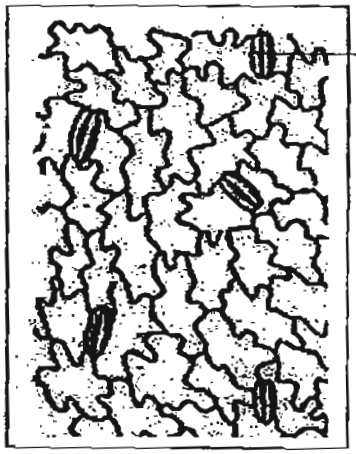
_____

_____

4

33. The diagrams below show the human respiratory system and a magnified section of a leaf.





(a) Name the part labelled Y. (1)

_____

(b) State one similarity between parts X and Y. (1)

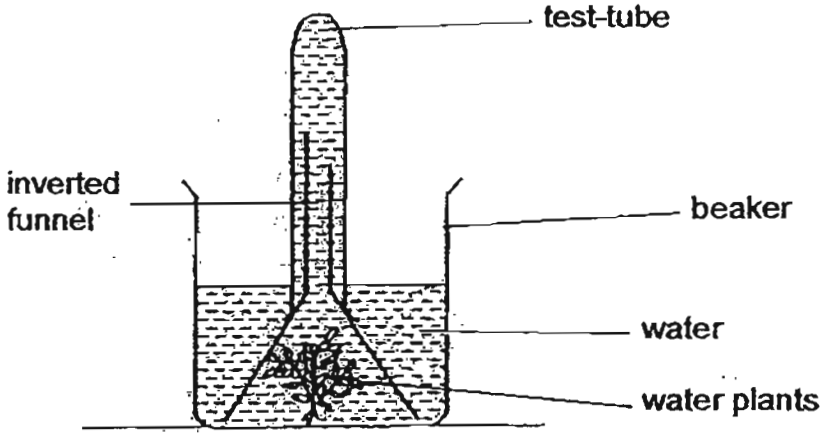
_____

_____

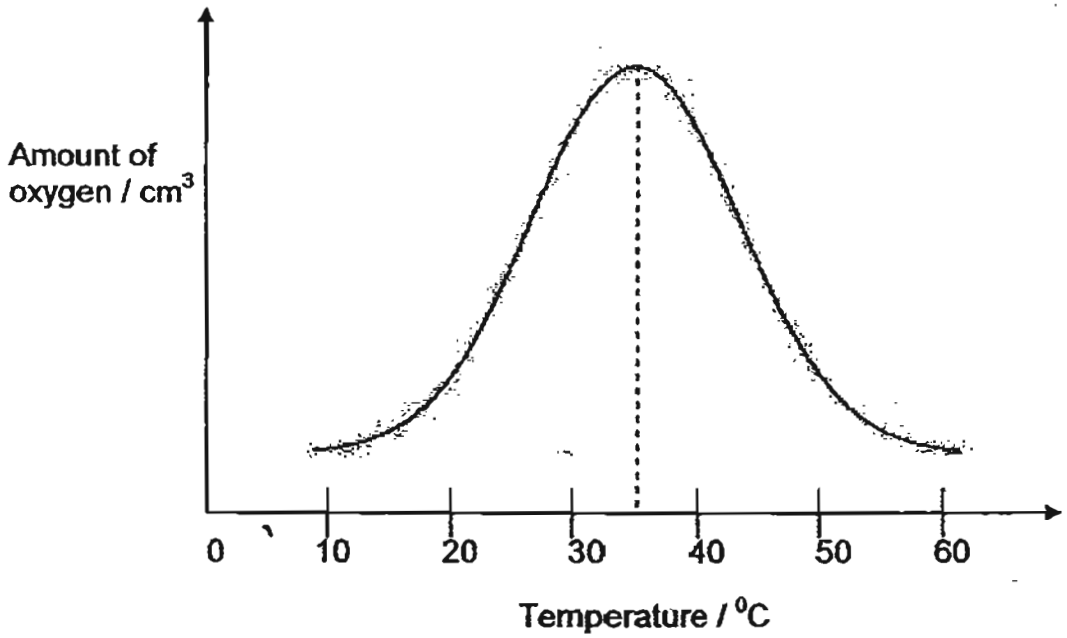
2

34. Mary used the set-up, as shown below, to find out the effect of temperature on the rate of photosynthesis of an aquatic plant.

She set up several similar set-ups and placed them in different locations at different temperatures. All the set-ups were exposed to the same amount of light.



At the end of the experiment, Mary measured the amount of oxygen collected in each of the test-tubes. Using the results, she plotted the following graph.



Based on the graph above, what can Mary conclude about the effect of temperature on the rate of photosynthesis of the aquatic plant? (2)

_____

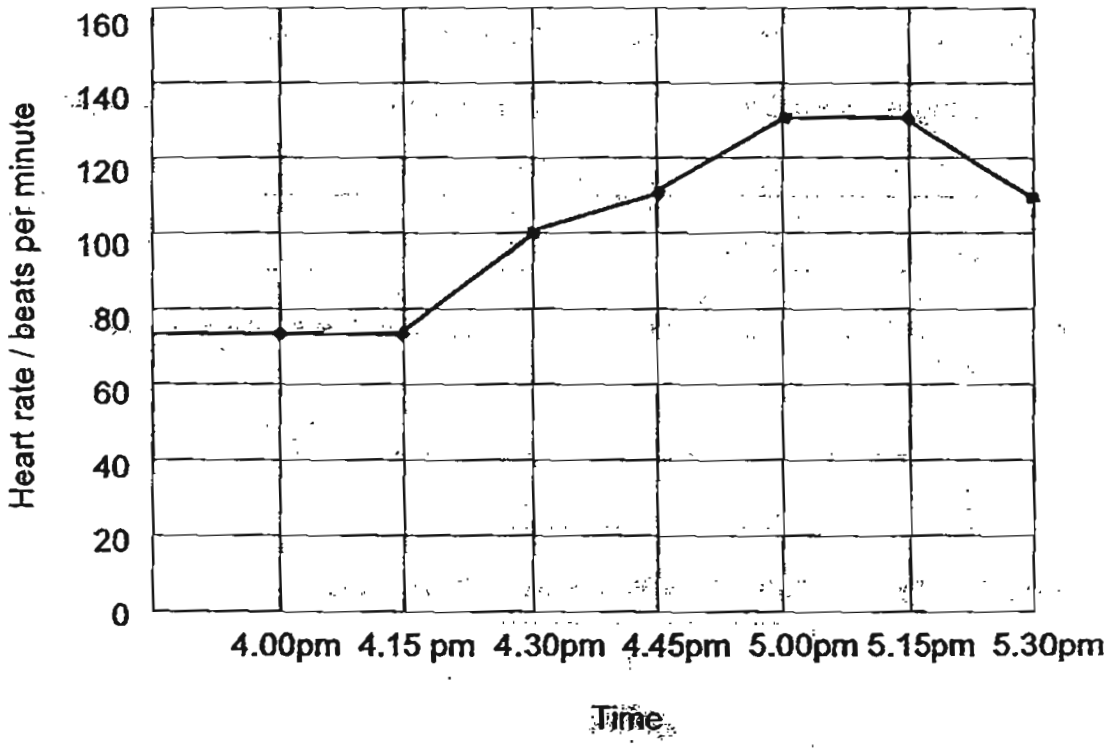
_____

2

35. The following picture shows blood vessels. Study the picture carefully.

(a) What is the difference between the blood flowing in P and Q? (1)

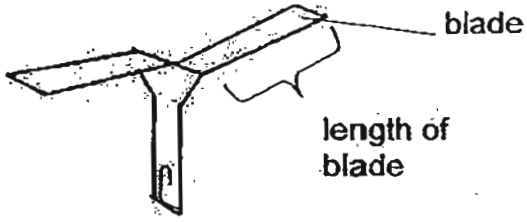
The following graph shows the changes in the heart rate of a man as he exercises.



(b) What was the man's fastest heart rate? (1)

(c) What happened to his heart rate from 5.15pm ? Why? (2)

36. David carried out an experiment. He made a paper flyer out of a strip of paper and a paper clip as shown in the diagram below.



He wanted to find out how the length of the blade affects the time it takes for the paper flyer to fall to the ground. He recorded his results in the table below.

Length of blade / cm	Time taken to fall to the ground / s
8	12
6	8
4	6
2	3

David's friends commented that his results were not reliable.

(a) Suggest what David should do to ensure that his results were reliable. (1)

_____

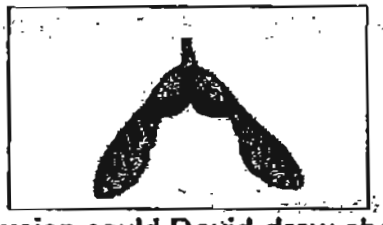
_____

(b) Name two variables that David has to keep the same to ensure it is a fair test.

_____

_____

The paper flyer is modelled after the fruit shown below.



(c) What conclusion could David draw about the fruit based on the experiment above? (1)

_____

_____

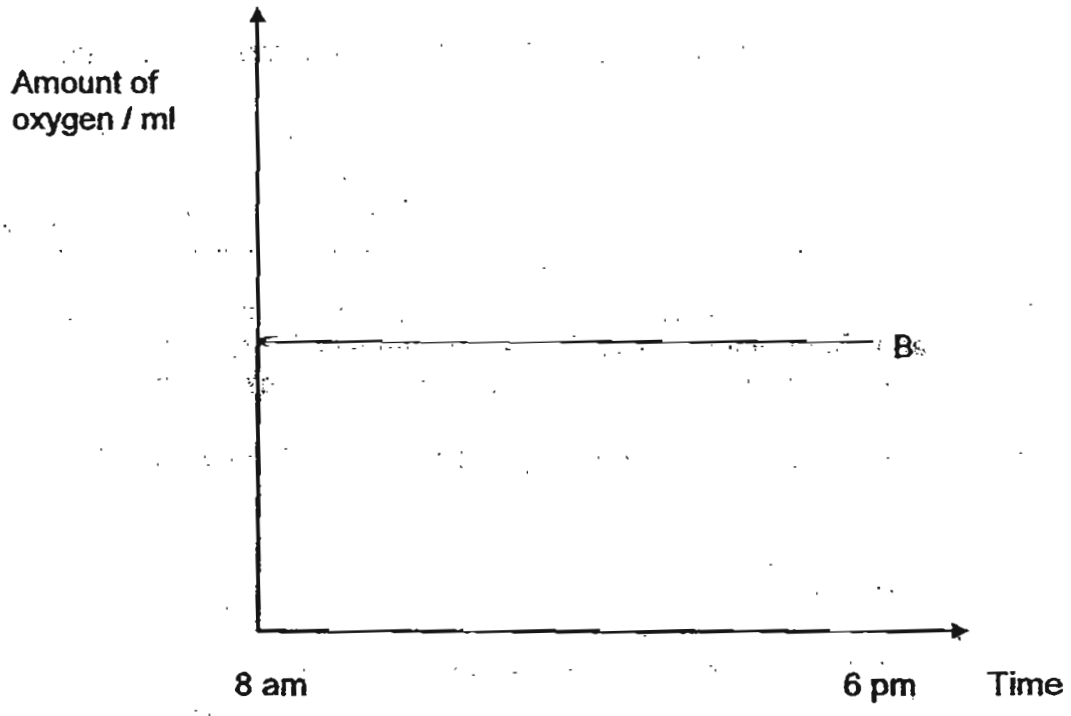
4

37. John wanted to find out how the amount of oxygen in three similar jars would change with time. He put different number of pots of rice plants and grasshoppers in three sealed jars labelled A, B and C as shown in the table below.

Jar	Number of rice plants	Number of grasshoppers
	6	0
	6	3
	0	2

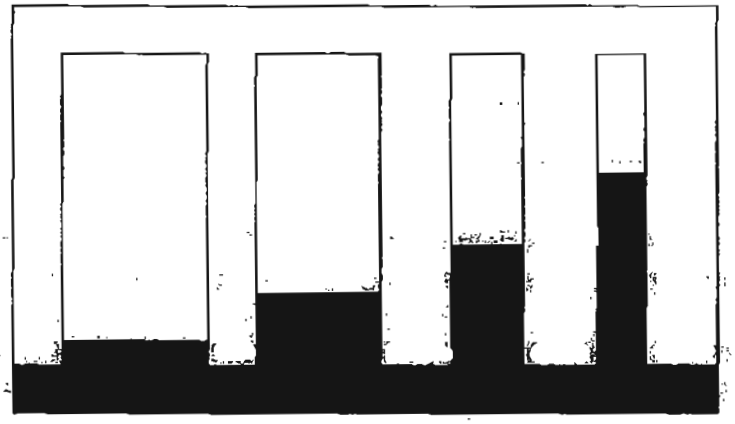
He placed the jars in an open field from 8 am to 6 pm. He used an apparatus to measure the amount of oxygen in each of the jars throughout the day.

In the space below, draw two other lines and label them A and C to show the relationship between the amount of oxygen in the two jars and the duration of the experiment. (2)



2

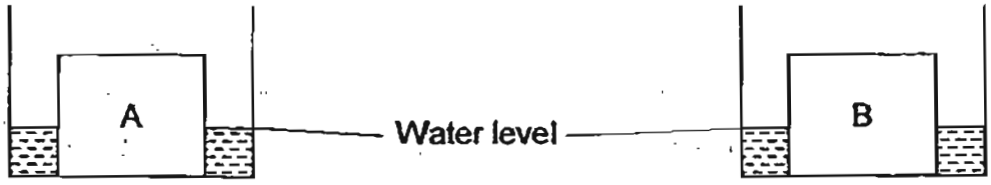
38. The water-carrying tubes in plants make use of capillary action to draw water into its system. Capillary action refers to the ability of a narrow tube to draw a liquid upwards against the force of gravity. The diagram below shows water being drawn up the tubes with different diameters. The coloured portions show the water level in each tube.



(a) What is the relationship between the diameter of the tube and the water level? (2)

Jeremy placed 2 objects, A and B of the same size into 2 similar basins containing 300ml of water. Both objects have the same number of vertical tubes. Object A has tubes of diameter 1.5mm and Object B has tubes of diameter 2mm.

At the end of the experiment, Jeremy noticed that both basins have 100ml of water left.



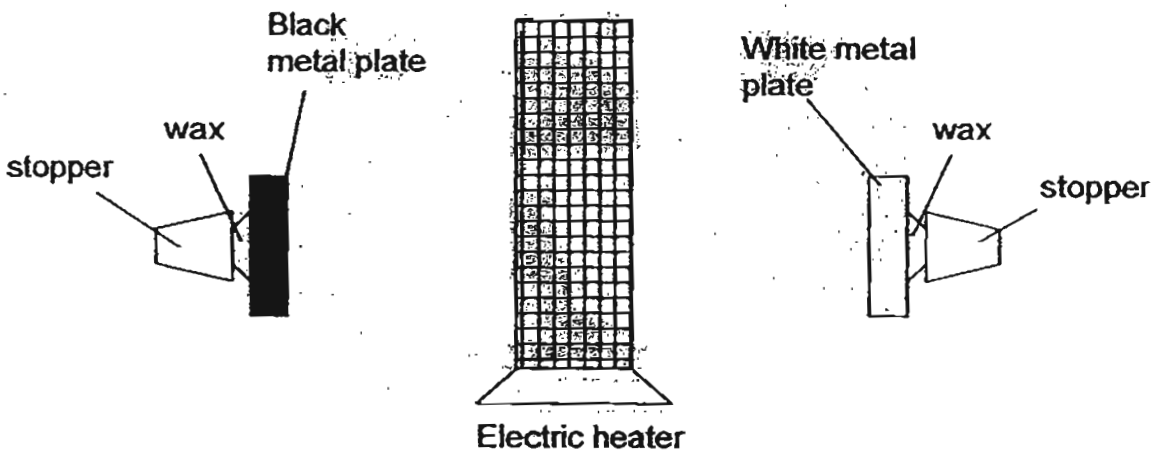
A contains tubes of diameter 1.5mm

B contains tubes of diameter 2mm

(b) Why do you think both objects drew in the same amount of water? (1)

3

39. Darron fixed two small stoppers to two identical plates, made of the same metal, with wax. One metal plate was painted black and the other was painted white. 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 stoppers dropped off.



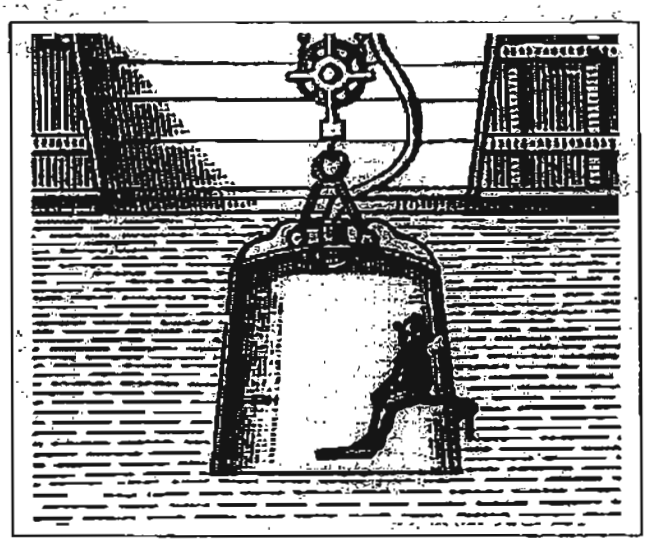
(a) What was the aim of Darron's experiment? (1)

(b) Explain which stopper dropped off first. (1)

(c) If the white metal plate was replaced by a black rubber sheet of the same size and thickness as the black metal plate, explain which stopper would drop off first. (1)

3

40. A large strong glass container is lowered into the sea until it is fully submerged as shown in the diagram below.

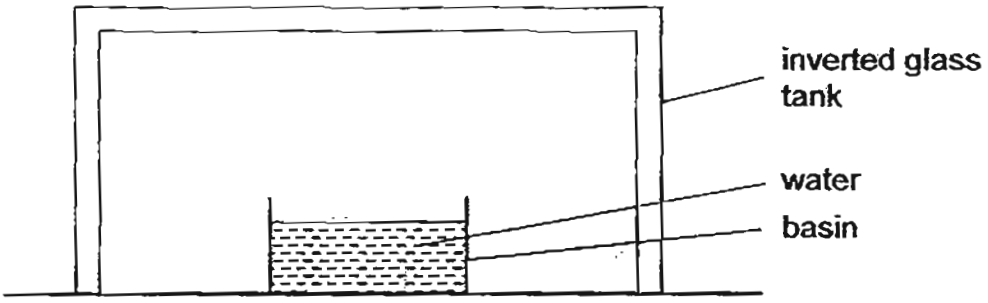


Give a reason why the man is able to survive underwater inside the container. (2)

_____

_____

41. Study the set-up below.



60 ml of water was left in the basin and the temperature inside the tank and the volume of water left in the basin were recorded at the end of each day.

Day	Temperature inside tank / ^{0}C	Volume of water in basin / ml
1	28	55
2	28	50
3	28	46
4	28	43
5	28	41

(a) Based on the results, how much water had evaporated by the end of Day 5? (1)

_____

(b) What change of state has occurred to the water in the basin? (½)

_____

(c) On which day was the rate of evaporation the slowest? (½)

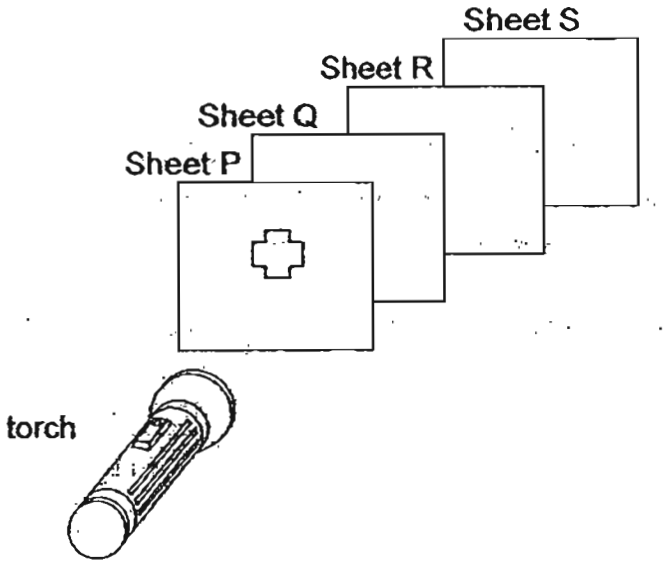
_____

(d) Give a reason why the rate of evaporation decreased over the five days. (1)

_____

3

42. The diagram shows four sheets, P, Q, R and S, of similar size but made of different materials.
The sheets were arranged in a straight line in a dark room. When the torch was switched on, a bright cross-shaped patch of light was seen on Sheet R.

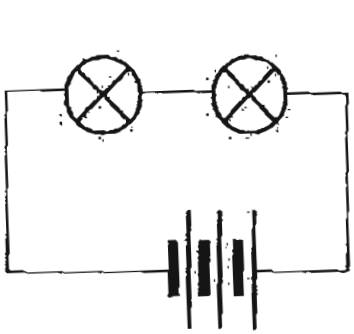


(a) What is one difference between the properties of the materials used to make Sheets P and Q? (1)

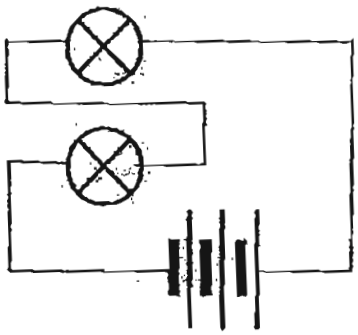
(b) If Sheet R is replaced with a piece of blue-coloured clear plastic, what can be observed? (1)

43. Jason wanted to find out if the arrangement of bulbs would affect the brightness of the bulbs.

He set up 2 circuit arrangements, E and F, using the same type of components, as shown in the diagrams below.



Circuit E



Circuit F

Jason concluded that the arrangement of bulbs does not affect the brightness of the bulbs.

(a) Based on the diagrams above, explain why Jason made a wrong conclusion. (1)

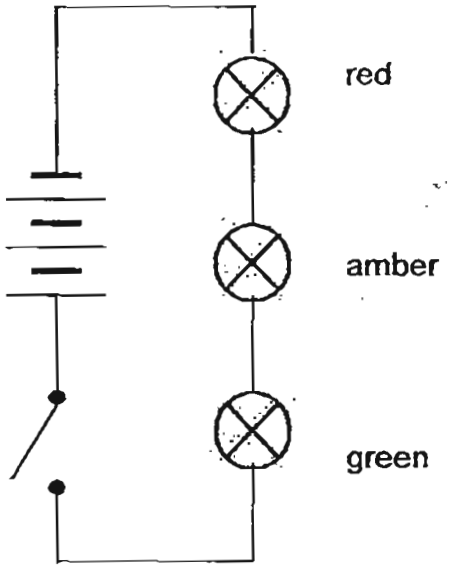
_____

_____

(b) Draw a circuit diagram in the space below to show what the circuit arrangement in F should be. (1)

2

Jason modified the circuit arrangement by adding a switch and replacing the bulbs with coloured bulbs as shown below.



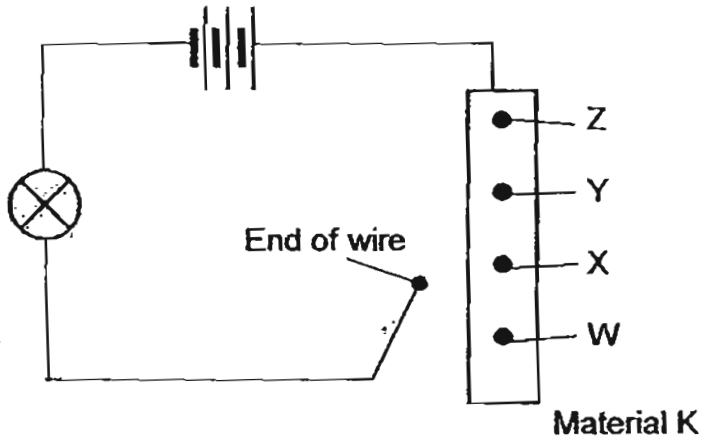
(c) Explain why this circuit cannot show a change from green to amber and then to red, similar to traffic lights. (1)

_____

_____

(d) Draw a circuit diagram to show how the above circuit should be arranged so that the change in the colour of the bulbs can take place one at a time. (1)

44. Ben set up the circuit as shown below. He touched the end of the wire to points W, X, Y and Z on the piece of material K. He noticed that the brightness of the bulb increases as the end of the wire moved from W to Z.



(a) Is Material K a conductor of electricity? How do you know? (1)

_____

_____

(b) Besides testing to see if Material K is a conductor of electricity, what else was Ben testing? (1)

_____

_____

- End of Section B -

2

Answer Ke

EXAM PAPER 2011

SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 5 SCIENCE

TERM : SA2

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

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

31)a)i)Digestive system ii)Respiratory system
b)i)Small intestine ii)Lungs
c)Blood in the blood vessels transport nutrients oxygen and carbon dioxide to other part of the body.

32)a)No. It had too many changed variable.
b)Use garden soil for both Set ups.
Use the same type of beans.
c)Light and carbon dioxide.

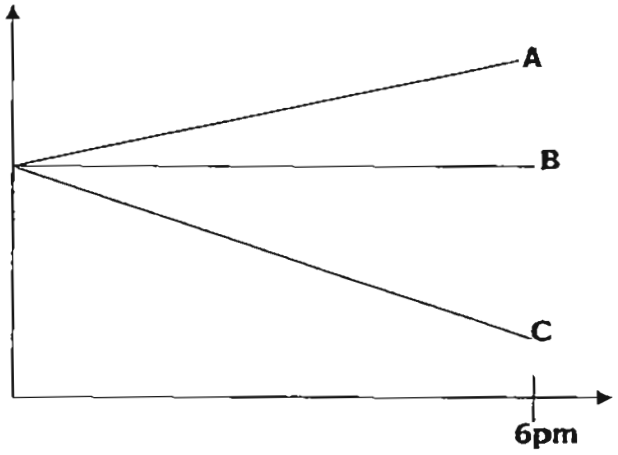
33)a)Stomata.
b)They both exchange gas.

34)The rate of photosynthesis increasing with the temperature until it reach 35℃ when the rate of photosynthesis decreasing.

35)a)P has blood rich in oxygen and poor in carbon dioxide and Q has rich in carbon dioxide and poor in oxygen.
b)About 130 beats per minute.
c)It slowed down. The man has stopped his exercise.

36)a)Conduct more experiment.
b)Where he conducts the experiment.
The type of material used.
c)The longer the blade the longer the fruit stays in the air.

37)



38)a)The more narrow the diameter is the higher the water level.
b)The diameter of the tubes does not affect the amount of water.

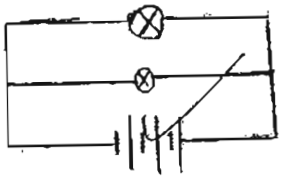
39)a)The aim was to find out which colour is a better absorber of heat.
b)Dark colours absorb more heat.
c)The stopper affached to the black metal plate dropped of first metal is a better conductor of heat than rubber.

40)Air occupies space and the oxygen trapped in the container will enable him to survive.

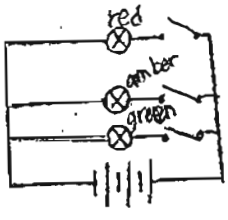
41)a)19ml.
b)It has changed into water vapour.
c)Day 5.
d)As the humidity in the tank increases the rate of evaporation decreases.

42)a)P is opaque and Q is transparent.
b)There will be a blue-coloured cross on shoot S.

43)a)The bulbs are arranged in series in both circuits.
b)



c)Bulbs cannot be controlled independently.
d)



44)a)Yes. The bulb became brighter every time.

b)He was testing to see if the length of material K affect the brightness of the bulb.