CATHOLIC HIGH SCHOOL
PRIMARY 5
SEMESTRAL EXAMINATION 1
2011

SCIENCE

Name: _____ ( )

Class : Primary 5 _____

Date : 12 May 2011

BOOKLET A

30 Questions
60 Marks

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

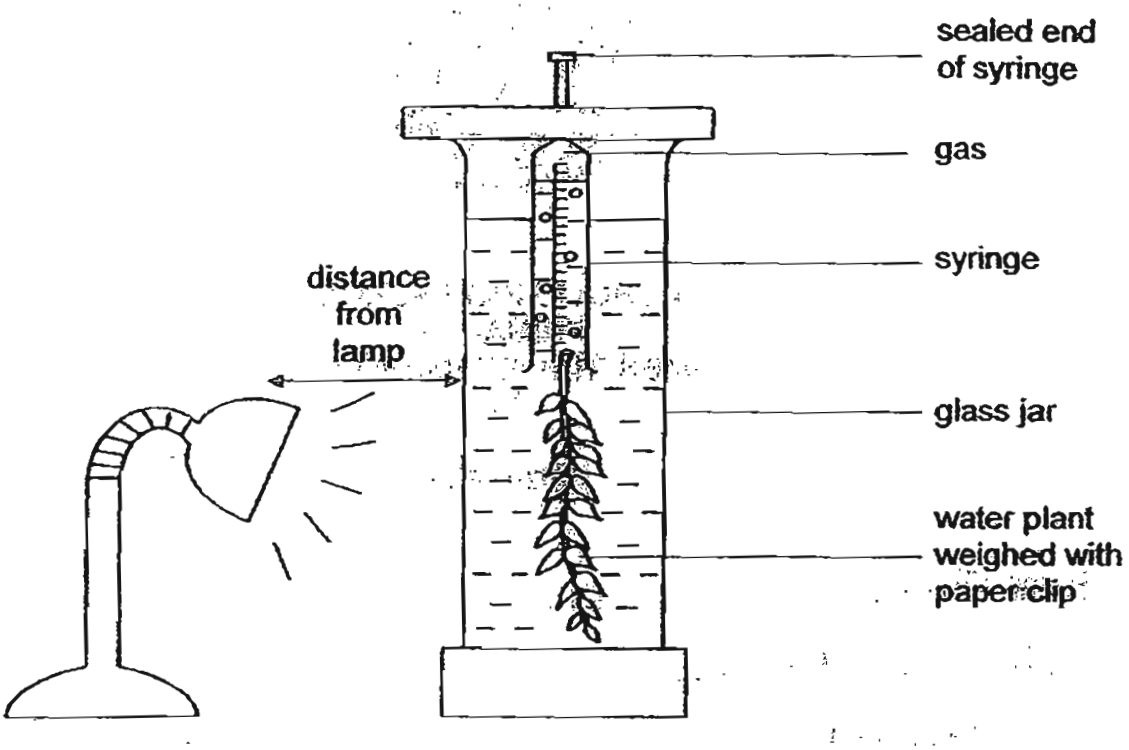
Instructions to Candidates

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 most suitable answer. Make your choice (1, 2, 3 or 4) on the Optical Answer Sheet.

1. An experiment was set up in a dark room as shown below.



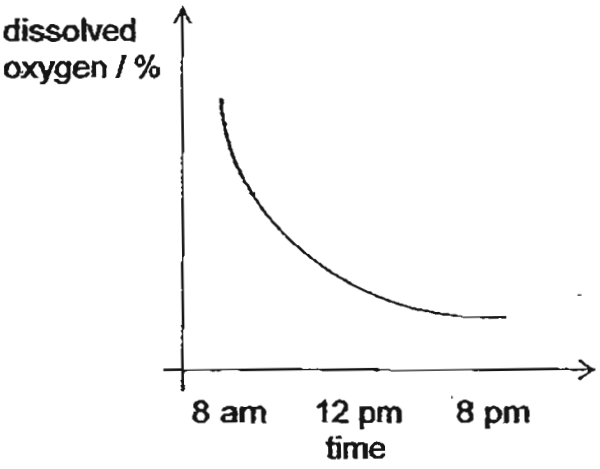
A table lamp was placed at a distance of 15 cm from the glass jar. After an hour, it was observed that the syringe had collected 5 cm^3 of gas. The experiment was repeated by placing the lamp at different distances from the glass jar.

Which one of the following shows the most likely result of this experiment?

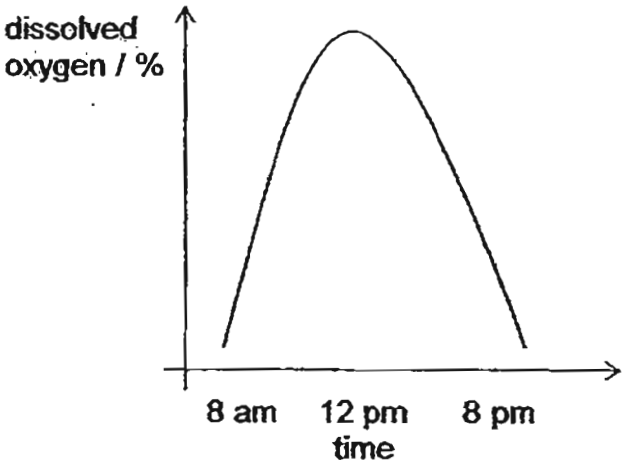
	Distance from the lamp / cm	Volume of gas collected / cm^3
(1)	8	equal to 5 cm^3
(2)	8	less than 5 cm^3
(3)	25	less than 5 cm^3
(4)	25	more than 5 cm^3

2. Jack wanted to find out the amount of oxygen given out by plants in a pond on a hot and sunny day. At different timings of the day, he collected samples of the pond water and tested them for the percentage of dissolved oxygen in them. His results were plotted in a graph. Which one of the following shows the correct graph?

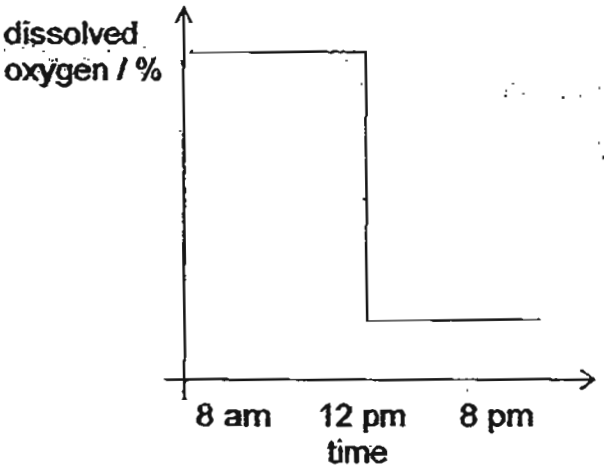
(1)



(2)



(3)



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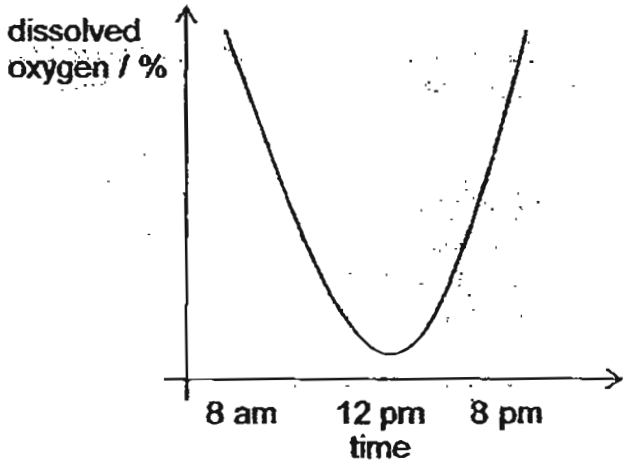
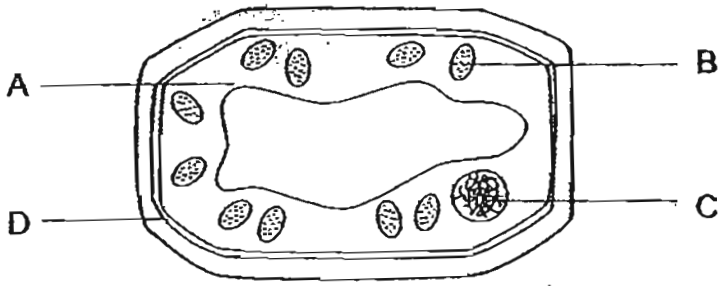


3. The picture below shows a plant cell. If scientists want to modify the characteristics of a plant so that it becomes resistant to diseases, which one of the following parts in a plant cell should scientists modify?



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

4. Jane observed four types of cells under a microscope. She recorded her observations in the table below. A tick (√) shows the presence of the cell part.

	Cell A	Cell B	Cell C	Cell D
nucleus	√	√	√	
cell wall	√		√	
cell membrane	√	√	√	√
chloroplast	√			

Based on her table, where could cells A, B, C and D be taken from?

	A	B	C	D
(1)	leaf	roots	cheeks	red blood cell
(2)	roots	cheek	leaf	red blood cell
(3)	roots	leaf	red blood cell	cheek
(4)	leaf	cheek	roots	red blood cell

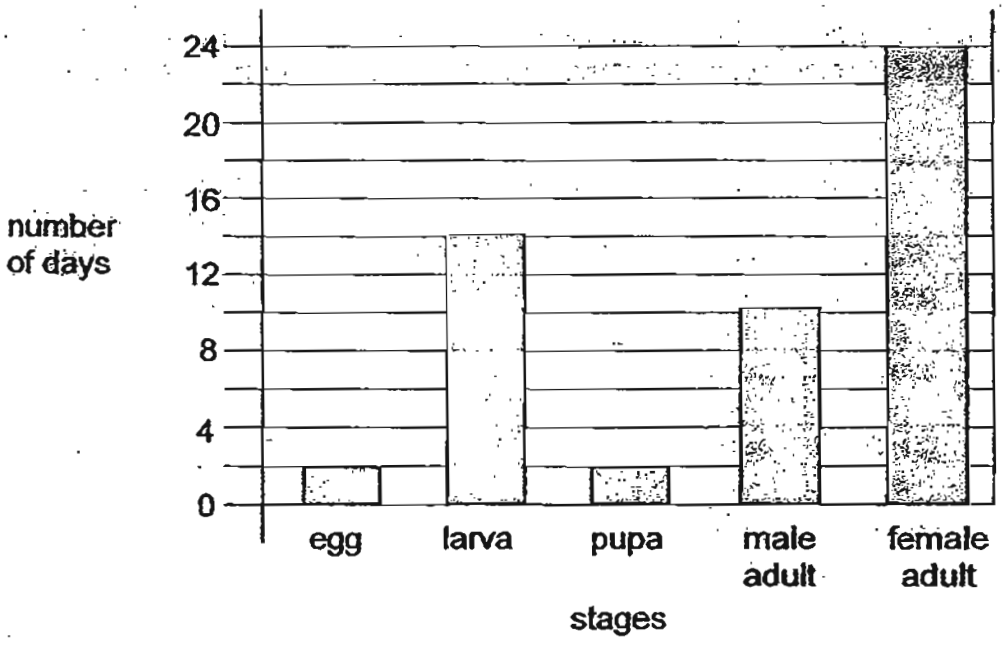
5. Jason observed two organisms, Y and X, over a period of time. He recorded his observations in the table below.

Organism X	Organism Y
It has three body parts.	It has three body parts.
The young is similar to the adult.	The young does not resemble the adult.
Its life cycle has three stages.	Its life cycle has four stages.

Based on the above information, which one of the following would most likely be the two organisms?

	Organism X	Organism Y
(1)	snake	butterfly
(2)	cockroach	mosquito
(3)	mosquito	cockroach
(4)	butterfly	mealworm

6. The graph below shows the number of days for each stage in the life cycle of Insect Z.



Which one of the following information obtained from the graph is correct?

(1) There are 5 stages in the life cycle of Insect Z.

(2) It takes 25 days for Insect Z to become an adult after the egg is hatched.

(3) Insect Z will rest and does not eat for about 2 days before turning into an adult.

(4) The life span of a male adult Z and female adult Z are dependent on their sex, humidity and temperature.

7. Eric grew 3 tomato plants in a greenhouse containing soil. He wanted to find the effect of fertiliser M and N on the growth of the tomato plants. Plants 1 and 2 were given equal amounts of fertilisers M and N respectively. Plant 3 was not given any fertiliser. He recorded his observations in the table below.

Plant/Fertiliser	Height Week 1 / cm	Height Week 2 / cm	Height Week 3 / cm	Height Week 4 / cm
Plant 1/Fertiliser M	7.0	7.3	7.5	7.8
Plant 2/Fertiliser N	7.0	7.1	7.4	7.6
Plant 3/No fertiliser	7.0	7.1	7.1	7.2

What is the control group for this experiment?

(1) Plant 1 only

(2) Plant 2 only

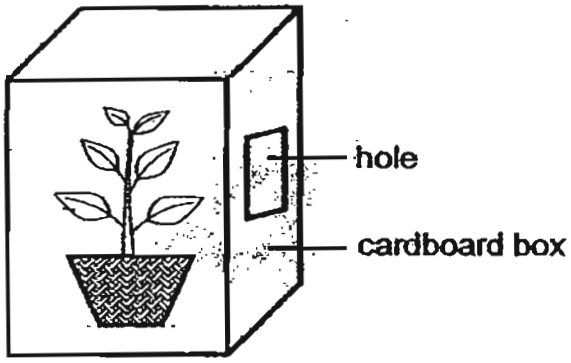
(3) Plant 3 only

(4) Plant 1, 2 and 3

8. Bala wanted to study the effect of overcrowding on the growth of plants. He placed two pots, A and B, side by side in the garden. He planted 1 seedling in Pot A and 20 seedlings in Pot B. Which set of conditions must he use to ensure a fair test?

	type of soil		amount of soil / kg		amount of water added daily / cm^3	
	Pot A	Pot B	Pot A	Pot B	Pot A	Pot B
(1)	garden soil	garden soil	1	1	200	200
(2)	clayey	garden soil	1	1	200	200
(3)	garden soil	garden soil	1	2	200	200
(4)	garden soil	garden soil	1	1	200	400

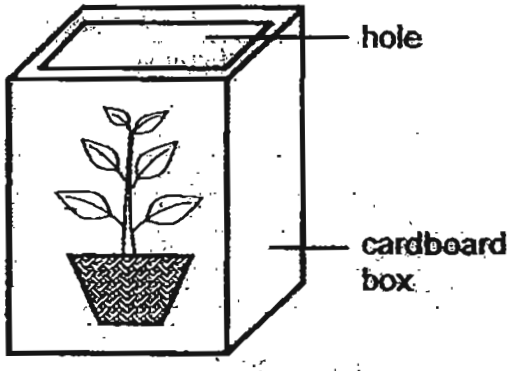
9. Joshua conducted an experiment to show that plants respond to light. He placed a plant in a cardboard box as shown in the picture below.



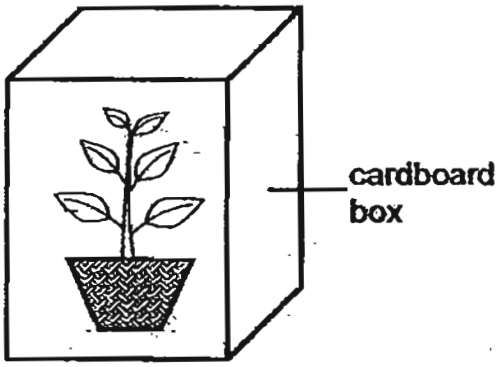
Kenny suggested that he should also have a control for the experiment. Which set-up best represents Kenny's selection?

(1)

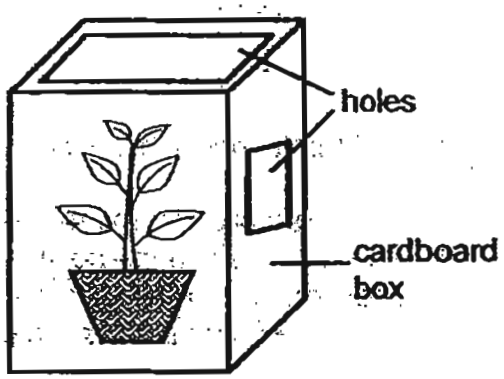
(2)



(3)

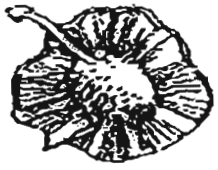


(4)



10. Evelyn wanted to find out how the area of the wing-like structure of an angsana fruit affect the duration it remains in the air. She prepared three specimens of angsana fruit show below.

Fruit A



Fruit B

Fruit C

She dropped each fruit from a certain height and recorded the time it took for the fruit t reach the ground. She repeated the experiment six times. She submitted her results to he teacher who commented that the readings were not reliable. Which readings were take wrongly?

	Time taken for fruit to reach the ground / seconds		
	Fruit A	Fruit B	Fruit C
Test 1	6.3	6.0	5.8
Test 2	5.9	5	3.6
Test 3	5.5	5.3	6.9
Test 4	6.2	5.7	2.2
Test 5	4.8	4.0	1.9
Test 6	3.4	4.9	3.0

(1) Test 1 and 2

(2) Test 4 and 5

(3) Test 3 and 6

(4) Test 3 and 5

11. Which of the following statements about pollen grains is/are incorrect?

A. They are produced by the male part of the flower.
B The nuclei within the pollen grains are the male cells.
C They are approximately the same size as green peas.
D They can only be carried by insects from one flower to another flower of the same kind.

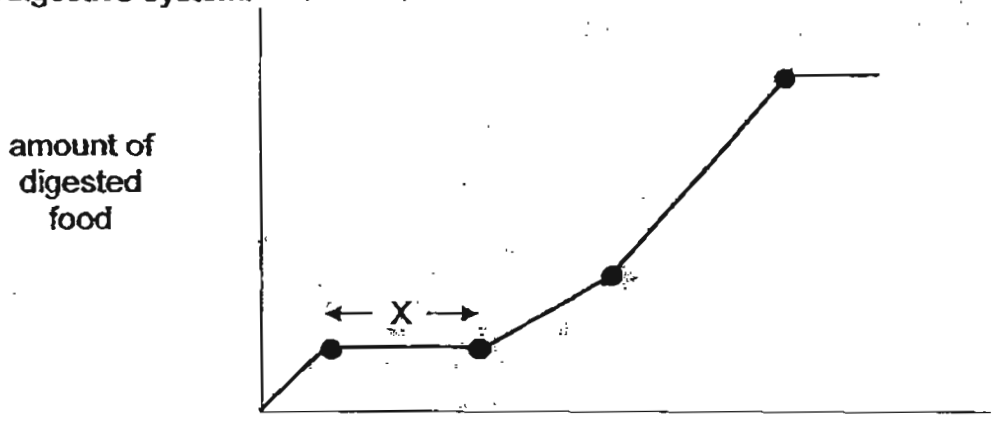
(1) A and C only

(2) B and C only

(3) C and D only

(4) A, B and C only

12. The graph below shows the relative amount of food that was digested as it passes throug the digestive system.



Which part of the digestive system is point X?

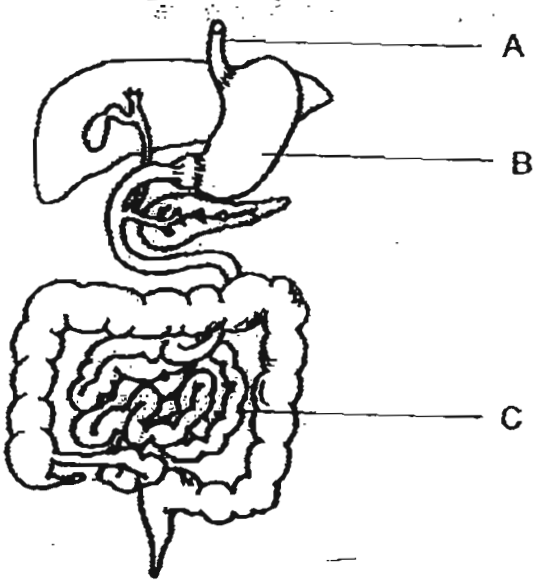
(1) mouth

(2) gullet

(3) stomach

(4) small intestine

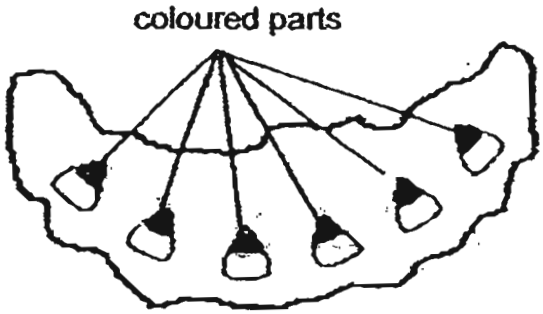
13. The diagram belows part of the human digestive system.



Which of the following sets of information correctly compares the changes in the amount c digested food in Parts A, B and C?

	A	B	C
(1)	No change	Increase	Increase
(2)	Increase	Increase	Decrease
(3)	Increase	Decrease	No change
(4)	No change	Decrease	Increase

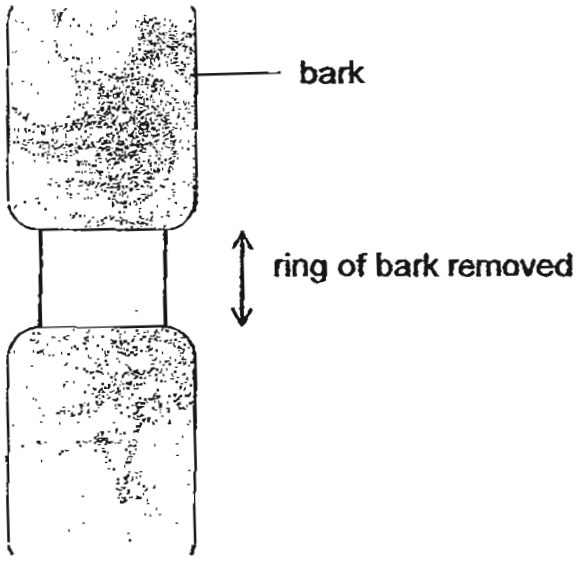
14. A stalk of celery was placed in a glass of coloured water. After one day, John cut acr the stalk. He observed the inside of the stalk and saw coloured parts in the celery stalk. drew a diagram of his observations.



Which of the following statements is correct about the coloured parts?

(1) They support the plant by holding it firmly to the ground.
(2) They are tubes that carry food from the leaves to other parts of the plant.
(3) They are tubes which transport water from the roots to other parts of the plant.
(4) They are tubes that carry out the exchange of gases between the plant and the atmosphere.

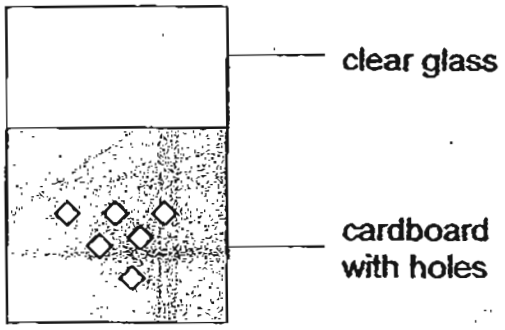
15. Lenny removed a ring of bark from the lower stem of a plant as shown in the diagram. The food-carrying tubes were removed.



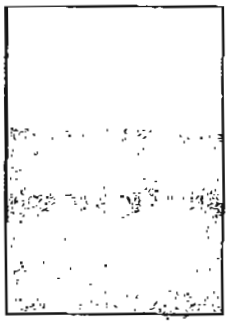
What would happen to the plant after a week?

(1) Food would be trapped above the ring.
(2) There was no change as ring of bark removed was already dead.
(3) Water cannot be transported from the roots to other parts of the plant.
(4) The plant would wither and die because water and food cannot be transported around the plant.

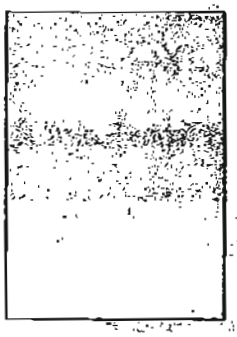
16. Rani attached a piece of cardboard to the glass pane in her window. What would she see o the wall opposite the window when sunlight enters?



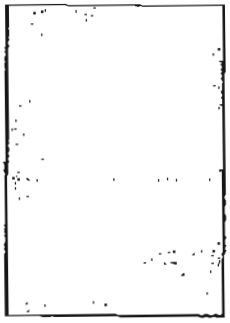
(1)



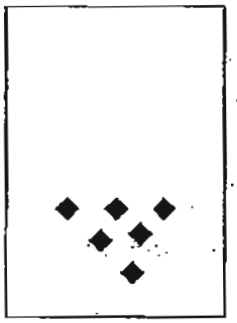
(2)



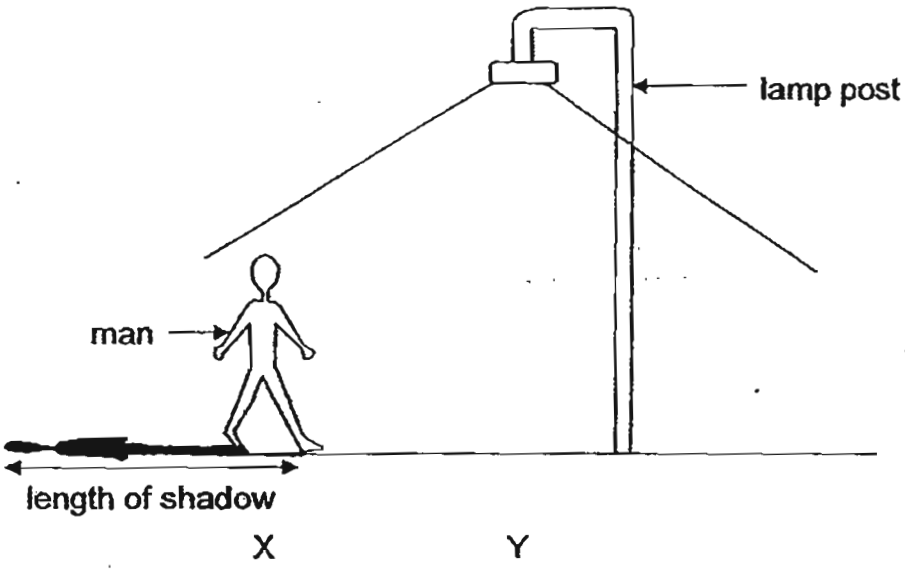
(3)



(4)



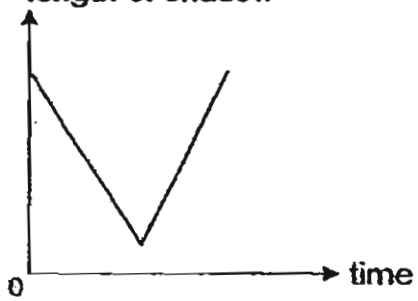
17. A shadow of a man is formed as he walks towards the lamp post as shown in the diagram below.



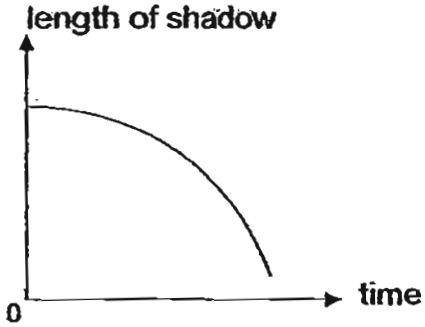
The man walked from Point X to Y, rested for 5 minutes before walking back to X.

Which of the following graphs best represents how the length of the man's shadow changed as he walked from X to Y and back to X again?

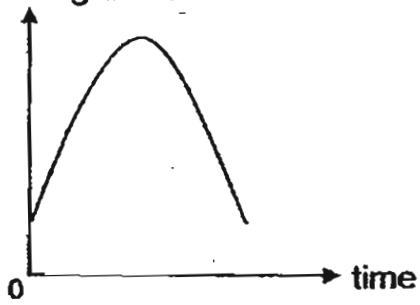
(1)



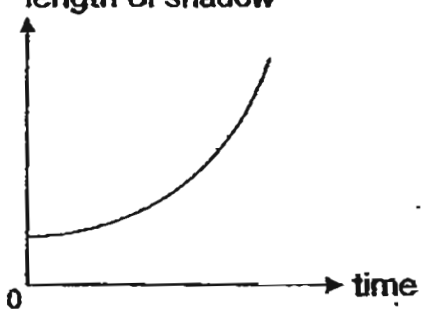
(2)



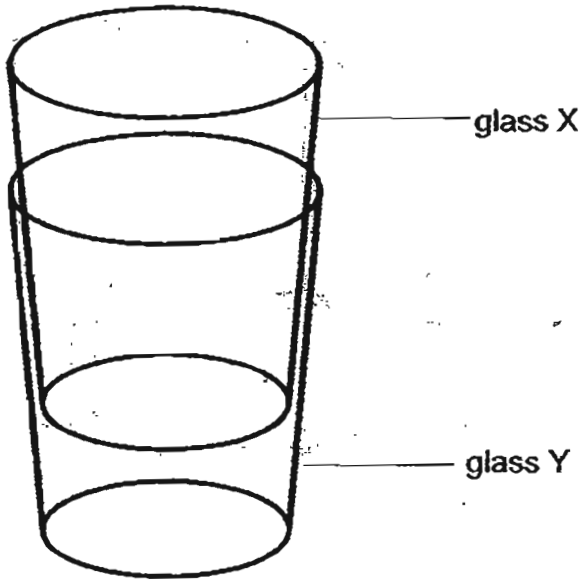
(3)



(4)



18. Daniel found that two of his glasses were stuck together. What could he do to separate them?



(1) Place both glasses in the freezer.

(2) Place both glasses in the microwave oven.

(3) Pour hot water into Glass X and place Glass Y into a bowl of ice water.

(4) Place ice cubes into Glass X and place Glass Y into a bowl of hot water.

19. David set up an experiment to find out if a certain variable will affect the rate of evaporation of water.

Set-up	amount of water / ml	temperature of water / °C	fan switched on
A	300	30	No
B	200	40	Yes
C	300	50	Yes
D	200	30	Yes

Which set-ups should he use to make a fair comparison to find out which factor affects the rate of evaporation?

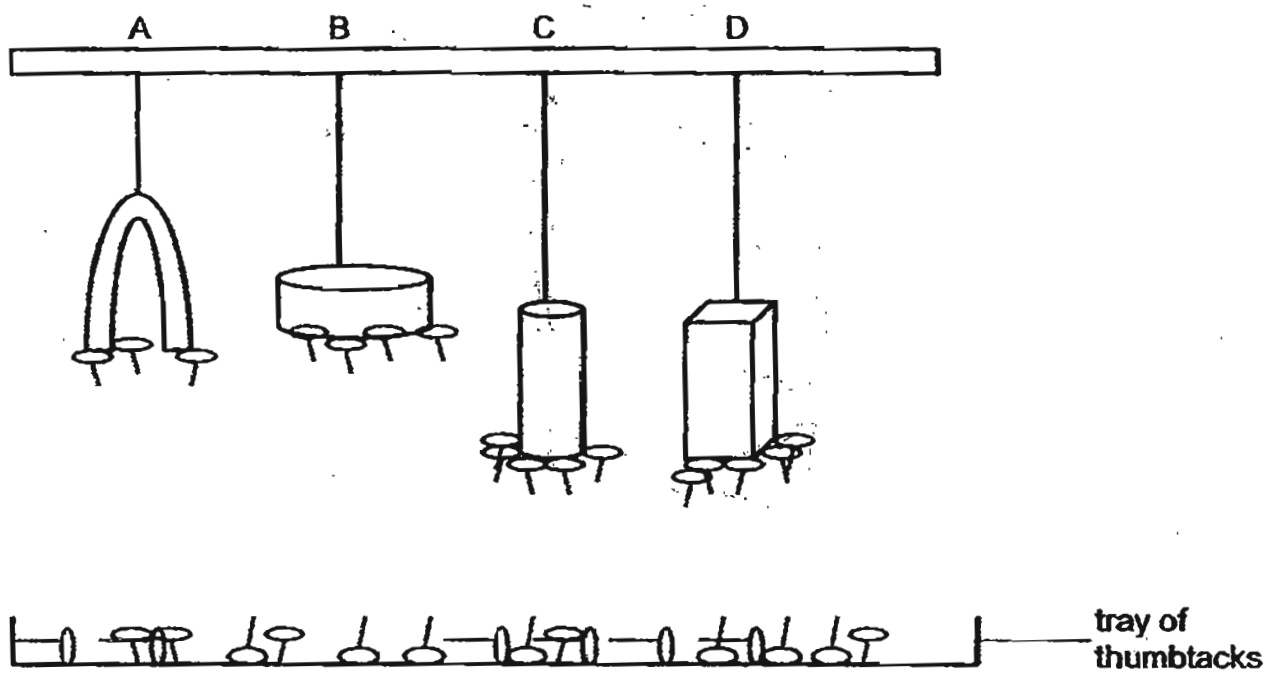
(1) A and C

(2) B and D

(3) A and D

(4) A and B

20. Michael conducted the experiment as shown in the diagram below. Four magnets were suspended above a tray of iron thumbtacks.



What can Michael conclude from the above experiment?

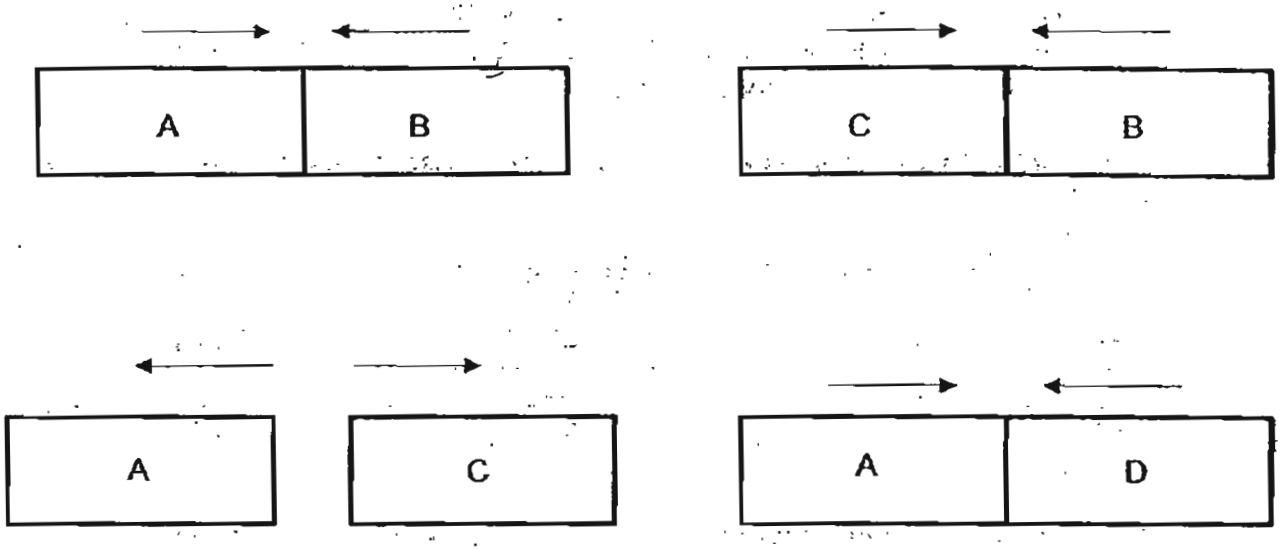
(1) B is weaker than D.

(2) C is stronger than A.

(3) D is stronger than A.

(4) C and D are equally strong.

21. The diagram below shows what happens when objects A, B, C and D are brought near eac other.



Which one of the following about objects A, B, C and D are correct?

	magnet	not a magnet	not possible to tell if object is a/are magnet(s)
(1)	A and B	C	D
(2)	A and C	-	B and D
(3)	B and C	A	D
(4)	A, B and D	C	-

22. The statements below describe the physical properties of a substance.

- At 20°C, it has a definite shape and volume.
- At 40°C, it does not have a definite shape but has a definite volume.
- At 110°C, it can be compressed.

Which of the following substances W, X, Y or Z best represents the substance described here?

	Substance	Freezing point / °C	Boiling point / °C
(1)	W	30	100
(2)	X	50	110
(3)	Y	20	110
(4)	Z	60	100

23. Judy wanted to study how the volume of a substance X is related to its mass. She measured the mass and volume of substance X. Which of the following should Judy do to ensure that it is a fair experiment?

A Use different apparatus to measure the volume of substance X.

B Measure the mass and volume using different amounts of substance X.

C Keep the temperature of substance X the same throughout the experiment.

D Repeat the experiment using another substance Y which is similar to substance X.

(1) A and C only

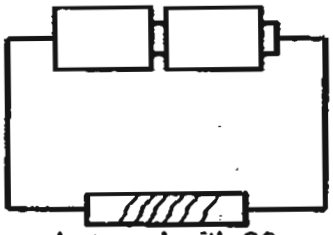
(2) B and C only

(3) A, B and C only

(4) B, C and D only

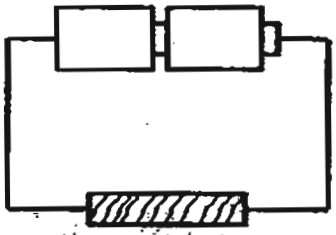
24. Ben wanted to find out whether the number of turns of wire on the rods used in the circuit will affect the strength of the electromagnet. He set up 4 circuits as shown below.

(A)



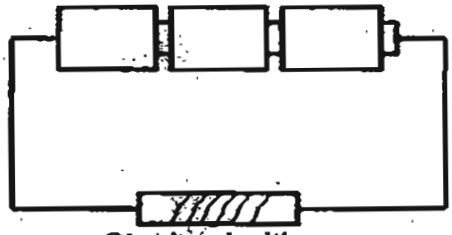
Iron rod with 20 turns of wire

(B)



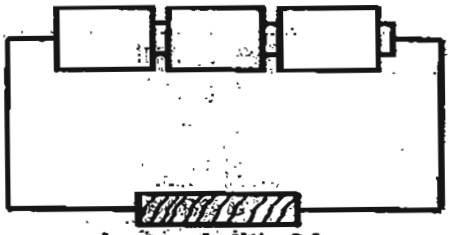
Iron rod with 30 turns of wire

(C)



Steel rod with 20 turns of wire

(D)



Iron rod with 30 turns of wire

Which of the above circuits should he use in order to ensure a fair test?

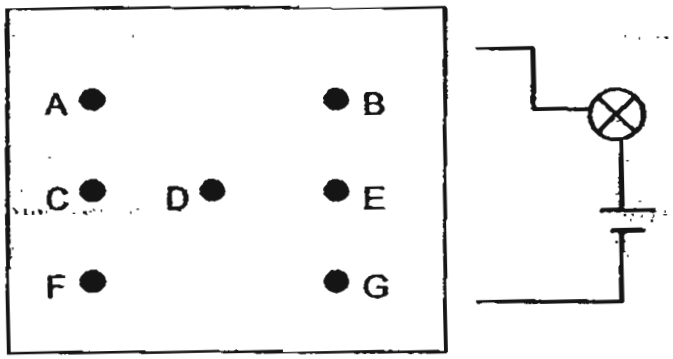
(1) A and B only

(2) A and C only

(3) B and C only

(4) C and D only

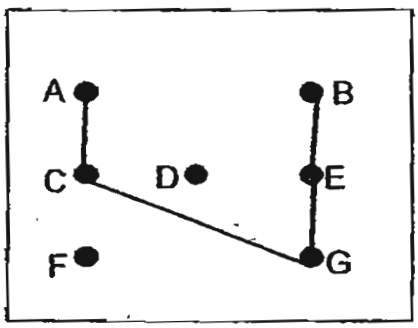
25. A circuit card is set up using using metal pins placed at points A, B, C, D, E, F and G. Some of the pins are connected using wires. Using a circuit tester, the following results were obtained.



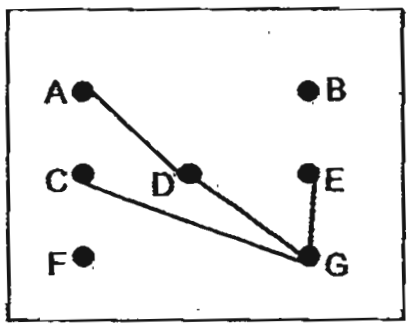
test points	lighted up
A and D	No
A and F	No
B and E	Yes
B and G	Yes
A and C	Yes

Based on the results in the table, which one of the following is a possible arrangement of wires on the circuit card?

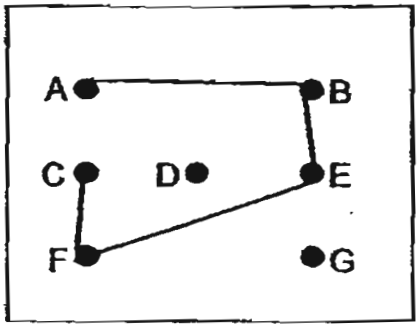
(1)



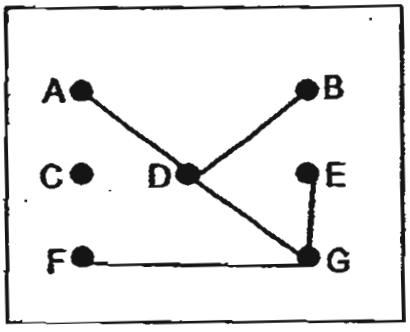
(2)



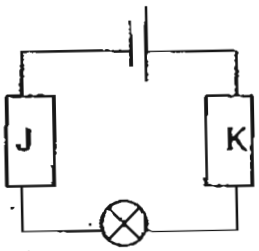
(3)



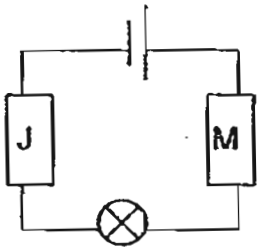
(4)



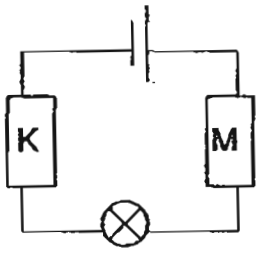
26. The circuits below are set up with different materials J, K, L and M.



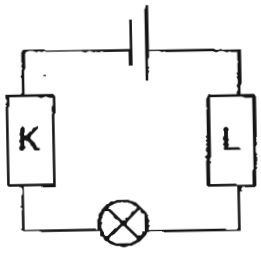
Set-up A



Set-up B



Set-up C



Set-up D

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

Setup	lights up	does not light up
A		√
B		√
C	√	
D		√

Which of the materials J, K, L and M is/are insulator/s of electricity?

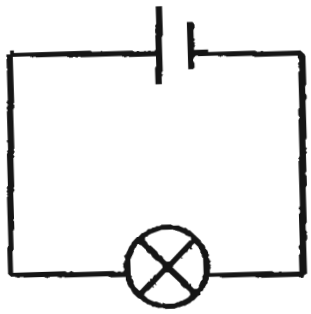
(1) J only

(2) J and L only

(3) J, K and M only

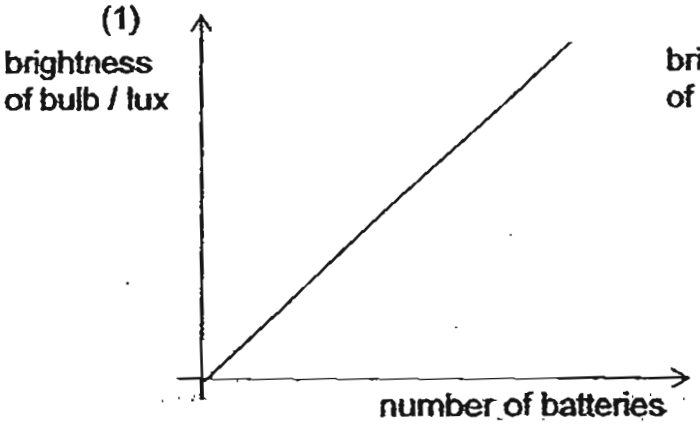
(4) K, L and M only

27. Susan set up the circuit below. She added one battery at a time to the closed circuit which is connected in series. She measured the brightness of the bulb.

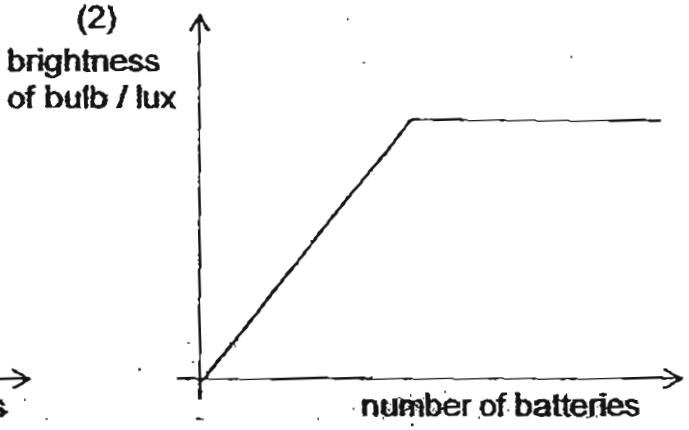


Which one of the following graphs shows correctly the relationship between the number of batteries added in series and the brightness of the bulb?

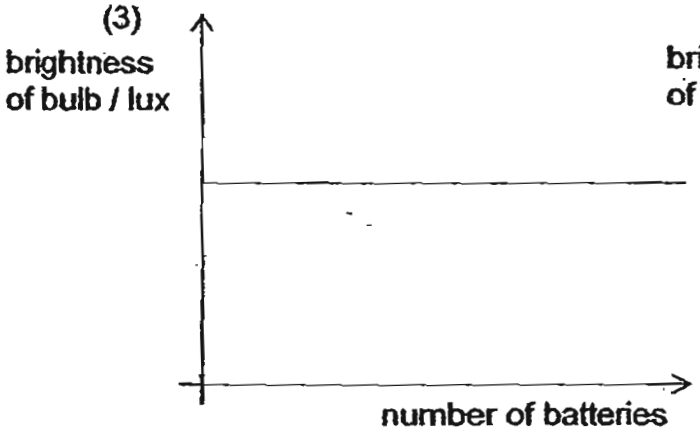
(1)



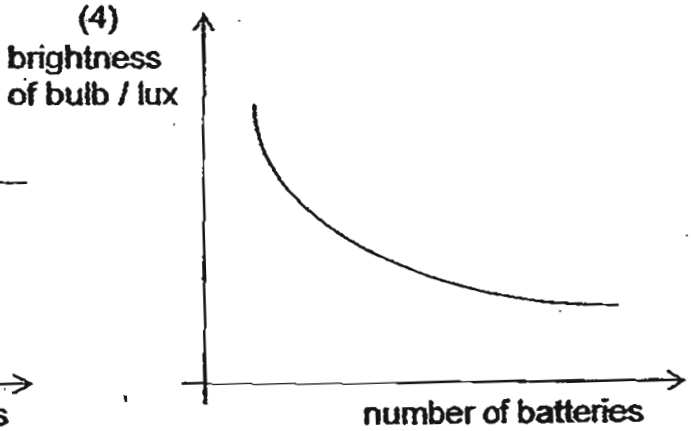
(2)



(3)



(4)



28. Mr Tan wanted to build a kennel for his dog. He was choosing a material for the kennel and the carpenter allowed him to do a scratch test on four different kinds of materials labelled B, C and D to see which was the hardest. He used four different objects to scratch on ea piece of material.

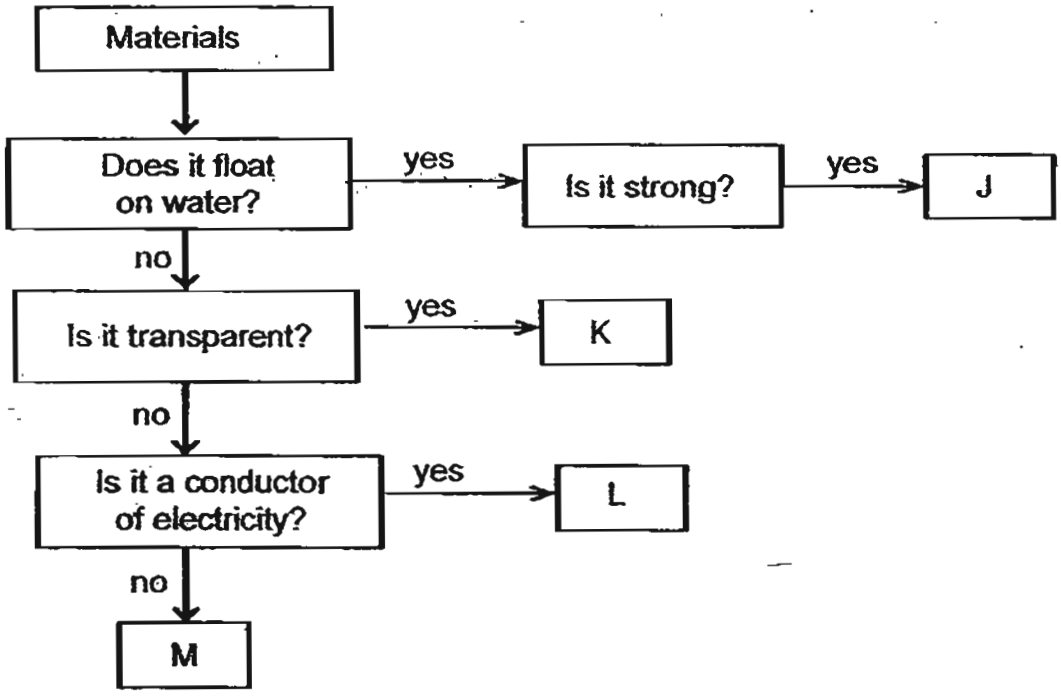
His observations were recorded in the table below, using a tick (√) to indicate the presenc of scratch marks on the material.

	car key	screwdriver	fingernail	penknife
A	√	√	√	√
B		√		
C	√	√		√
D	√	√		

Based on her results, which material would you think is the most suitable for building kennel?

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

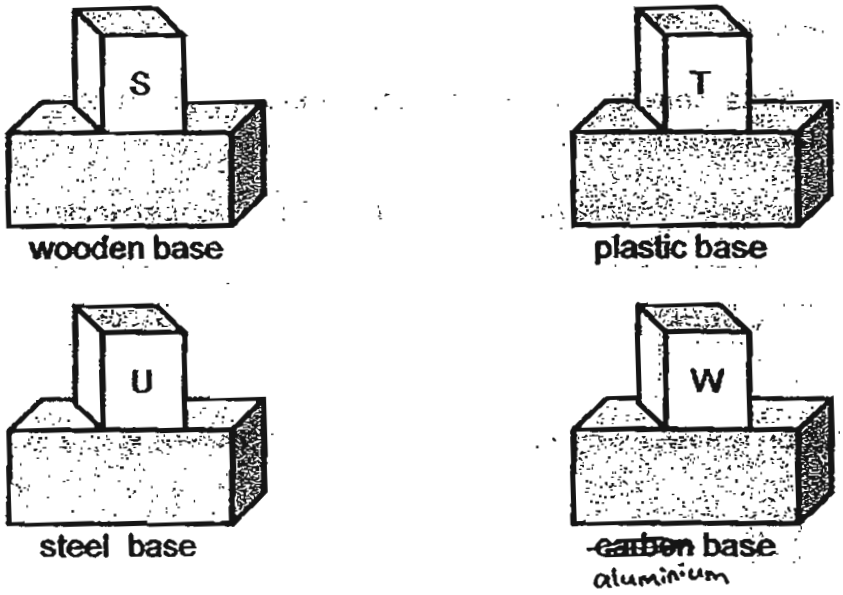
29. Study the flow chart below.



Which one of the following materials, J, K, L or M, is most likely used to make a ship's anchor?

(1) J
(2) K
(3) L
(4) M

30. Danny heated four similar iron cubes in an oven for 20 minutes. He took them out and plac
place each cube on four bases made from different materials, wood, plastic, steel and aluminium.



Which iron cube will lose heat the fastest?

(1) S
(2) T
(3) U
(4) W

∞ End of Section A ∞

CATHOLIC HIGH SCHOOL
PRIMARY 5
SEMESTRAL EXAMINATION 1
2011

SCIENCE

Name: _____ ( )

Class : Primary 5 _____

Date : 12 May 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

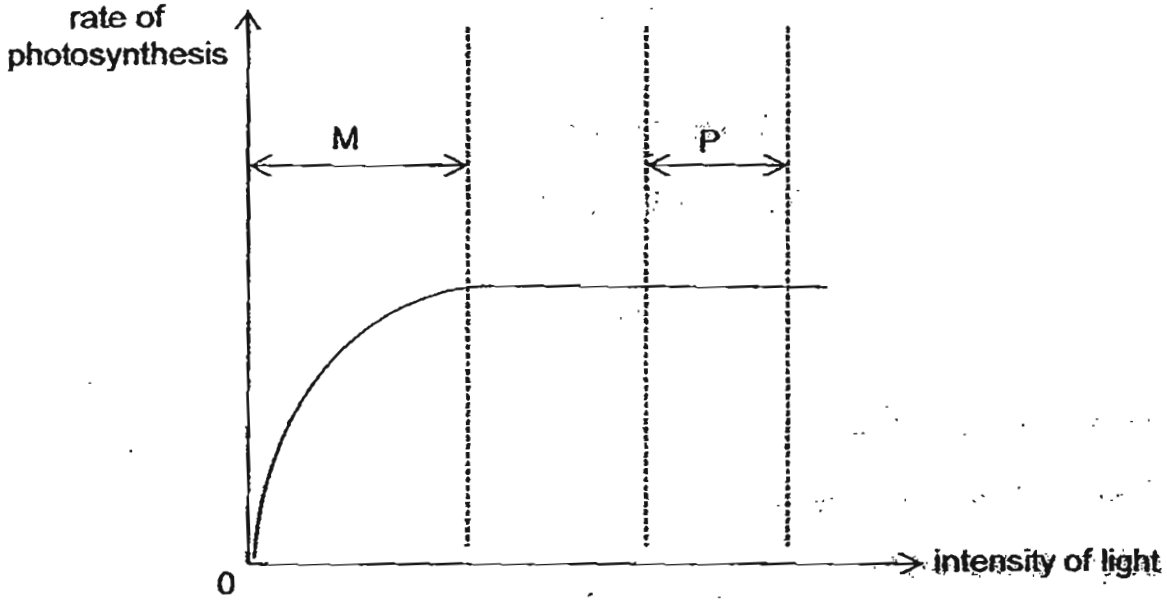
Parent's Signature: _____

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 are shown at the end of each question or part-question.

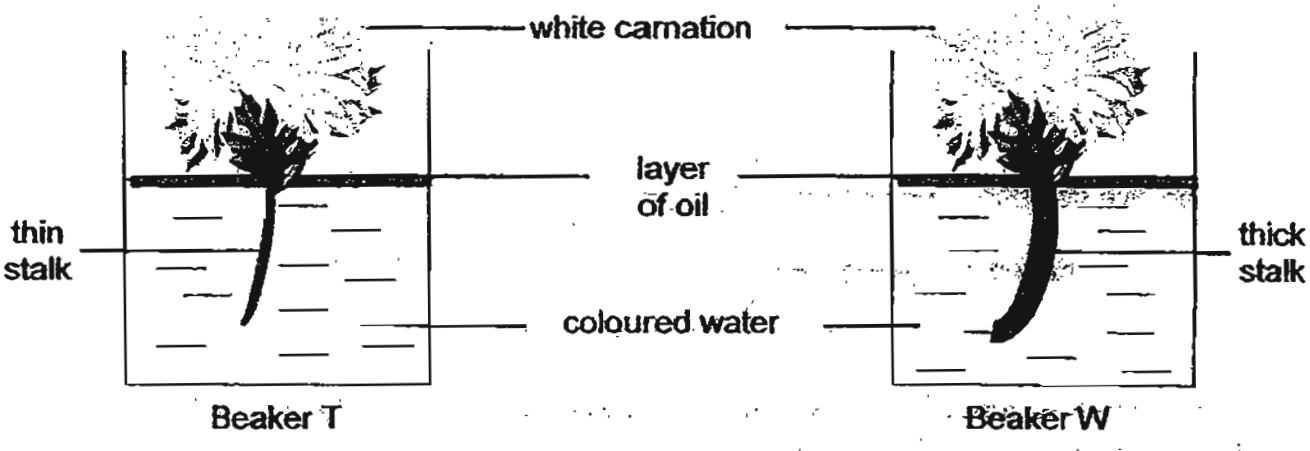
31. The graph below shows an experiment on how the intensity of light affects the rate of photosynthesis in green plants.



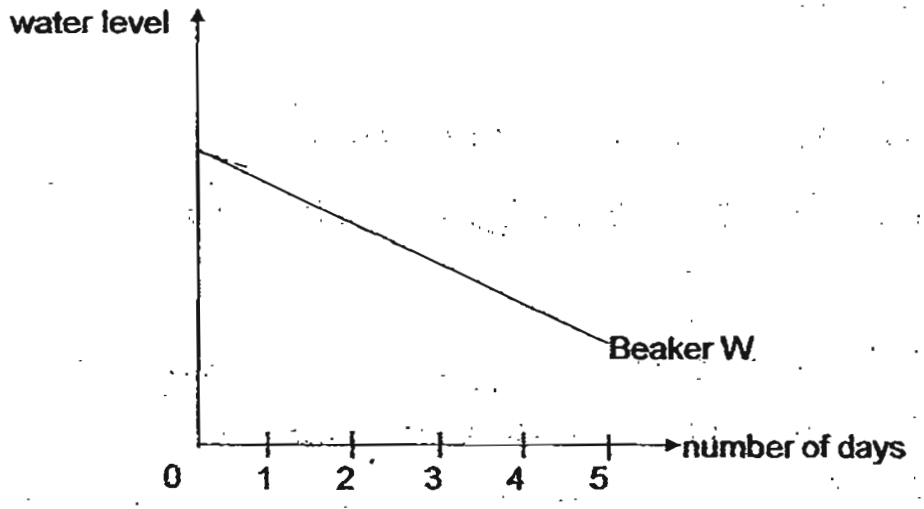
a) What do both Part M and Part P of the graph show about the relationship between the rate of photosynthesis and the intensity of light? [2]

2

32. Francis set up an experiment as shown below. He placed a stalk of white carnation plant in each beaker. He poured equal amount of coloured water and oil into Beaker T and Beaker W. He then placed the two beakers near a window.



The water level was checked daily over a period of 5 days and the results were plotted in the graph below.



a) Draw another line in the graph above to indicate the change in the water level in Beaker T over the same period of time. [1]

b) What was the aim of Francis' experiment? [2]

_____

_____

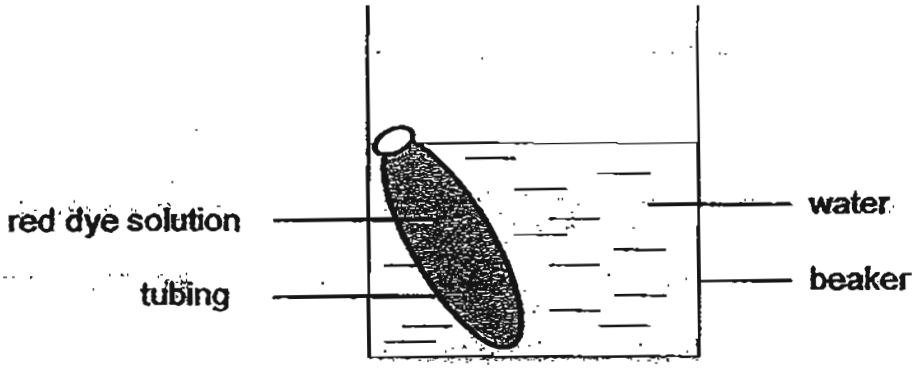
c) Francis observed that the carnation flowers had turned red. Explain the reason why. [1]

_____

_____

4

33. Alice and Joanna set up the experiment below. They used a tubing made of a special material to contain some red dye solution. The tubing was placed in a beaker of water.



They observed that 30 minutes later, the tubing had become bigger and the colour of the water in the beaker remained unchanged.

a) Which part of an animal cell has a similar function as the tubing? [1]

_____

_____

b) Explain why the tubing had become bigger and not smaller. [2]

_____

_____

3

34. The diagram below shows two flowers..

Flower G

Flower H

a) Which flower is likely to be wind pollinated? [1]

_____

b) Explain your answer in part (a). [1]

_____

_____

c) In an experiment, Chandra removed the stigma of a flower. He observed that the flower developed into a fruit after 2 weeks. Explain how this could be possible. [1]

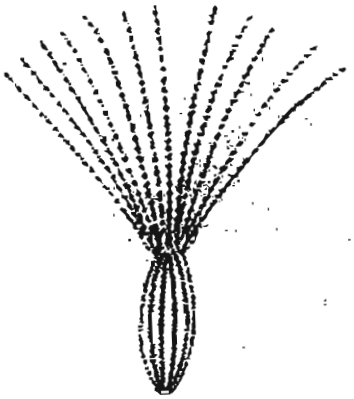
_____

_____

3

35. The diagram below shows two fruits, X and Y. Both fruits are found on land. Fruit X has sticky hair.

Fruit X



Fruit Y

a) Name the likely methods of dispersal for Fruit X and Fruit Y. [1]

Fruit X : _____

Fruit Y : _____

b) Explain why it is important for seeds to be dispersed. [1]

_____

_____

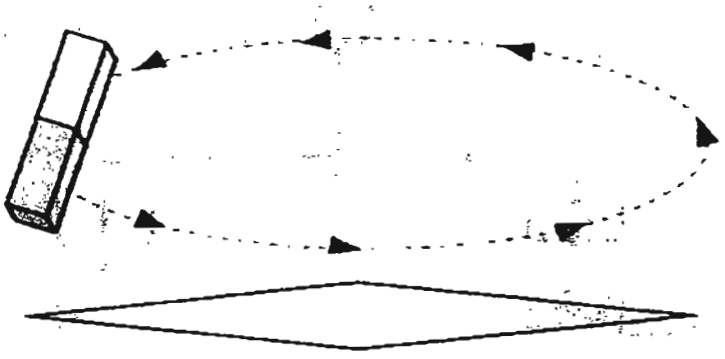
c) A dispersed fruit may not produce a new plant. Give a reason why this is so. [1]

_____

_____

3

36. Bala and Dan had a similar metal leaf made in the shape of a diamond each. They stroked their metal leaf with their own magnets. After that, they recorded the number of iron pins that their respective metal leaf could pick up.



number of pins that Bala's metal leaf could pick up	number of pins that Dan's metal leaf could pick up
3	7

a) Suggest one reason why Dan's metal leaf picked up more pins. [1]

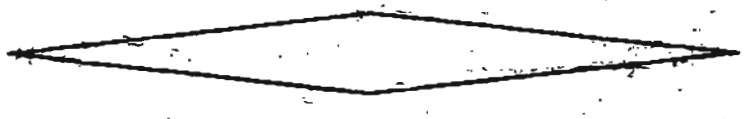
_____

_____

b) What instrument can this metal leaf be used as? [1]

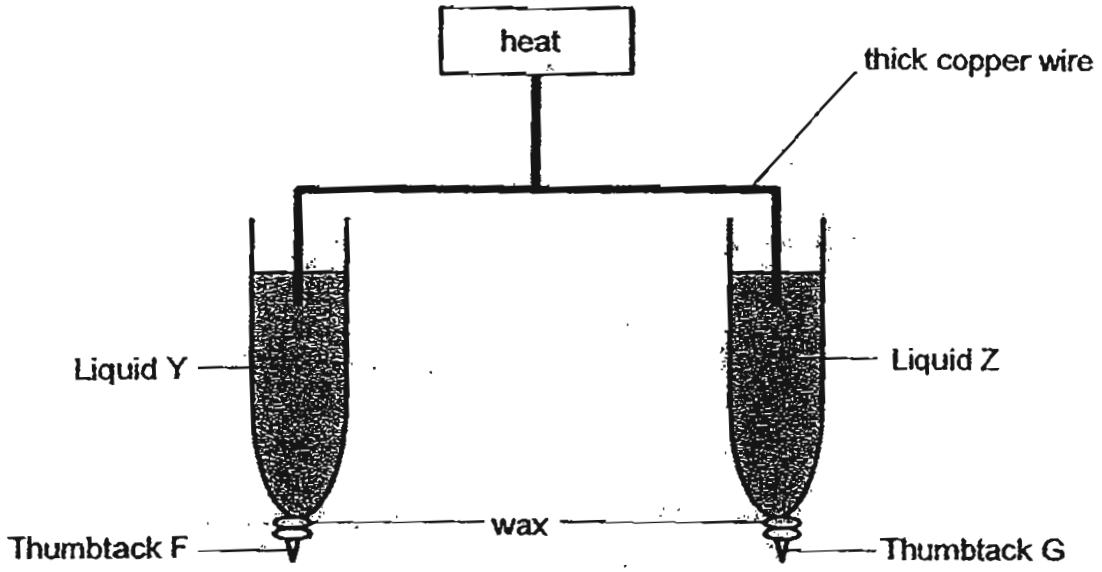
_____

c) From the above experiment, circle the points where magnetism is the strongest in the diagram below. [1]



3

37. Jack wanted to find out whether Liquid Y or Liquid Z was a better conductor of heat. He set up the experiment below. He attached Thumbtack F and Thumbtack G to the base of each test tube with wax.



Using a stopwatch, Jack recorded the time taken for each thumbtack to drop down. He repeated the experiment three times. His observations were recorded in the table below.

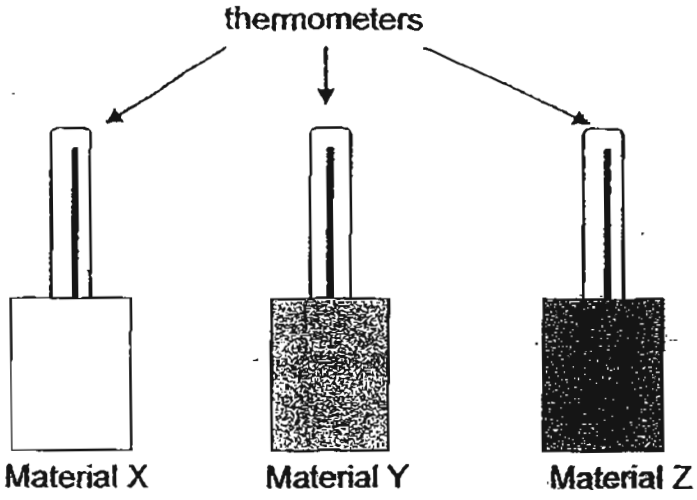
Thumbtack	1st attempt / seconds	2nd attempt / seconds	3rd attempt / seconds
F	56	60	59
G	48	43	45

a) Based on the results in the table, which liquid is a better conductor of heat? Explain your answer. [1]

b) If the copper wire in the above experiment was replaced with glass rods, what would happen? Explain your answer. [2]

3

38. Zheng Kang set up 3 similar cans of hot water of same temperature. He wrapped each can with 3 materials, X, Y and Z respectively and placed a thermometer into each can.



He recorded the readings on the thermometers every 10 minutes, as shown in the table below.

time / min	temperature of water in Material X / °C	temperature of water in Material Y / °C	temperature of water in Material Z / °C
10	80	65	75
20	72	50	68
30	65	30	50

a) What do you think is the aim of the experiment? [1]

_____

_____

b) Rank the materials from the poorest conductor of heat to the best. [1]

(Poor)_____, _____, _____(Best)

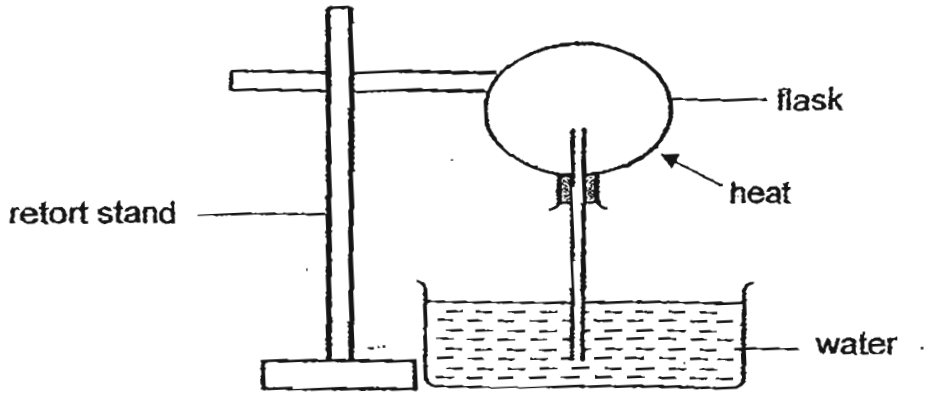
c) Zheng Kang's mother told him to buy some ice-cream. Based on the results of the experiment, which material is more suitable to make containers to keep ice-cream? Explain. [2]

_____

_____

4

39. A flask with some water is covered with a stopper. A hollow tube is inserted through the stopper as shown below. One end of the tube is dipped into an open container of water. A burner is used to heat up the flask.



a) What can be observed ten minutes after the heating began? [1]

_____

_____

b) Give reasons for your observation(s) in (a). [1]

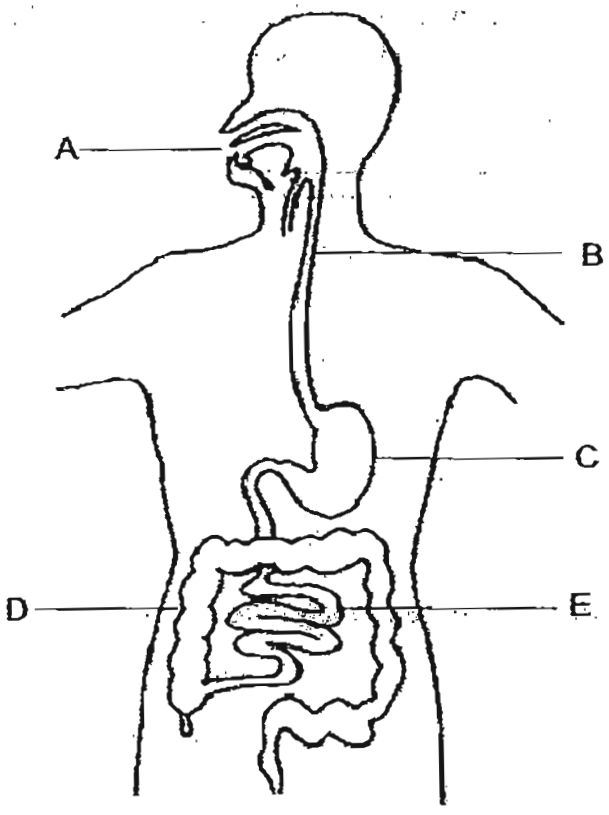
_____

_____

_____

2

40. The diagram below shows the human digestive system.

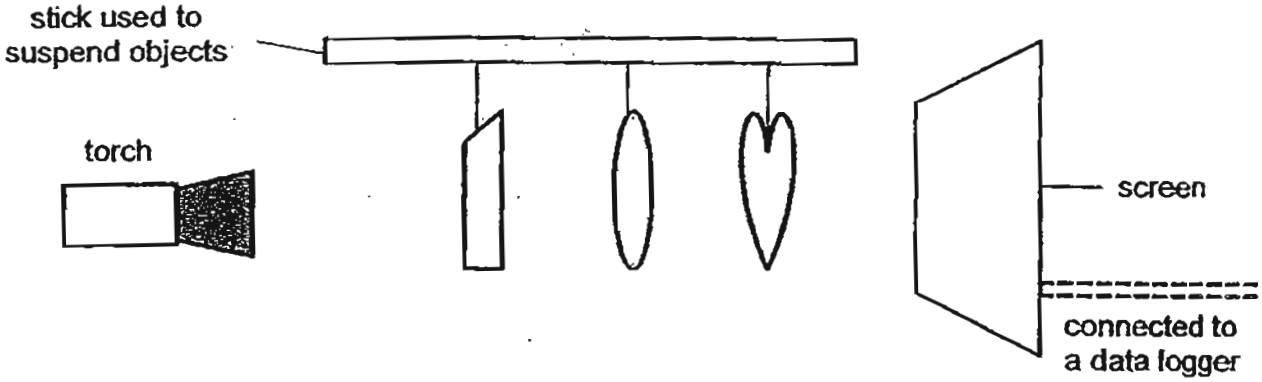


Match the letters (A, B, C, D or E) to the correct statements. [3]

It churns the food and mixes it with digestive juices to digest some of the food.	
It absorbs water from the undigested food and temporarily stores undigested food.	
Digestion of food is completed here. Digested food is absorbed into the bloodstream through its walls.	

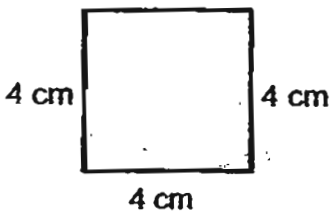
3

41. The diagram shows 3 objects, F, G and H, made of different materials placed between a torch and a screen. The screen is connected to a data logger.

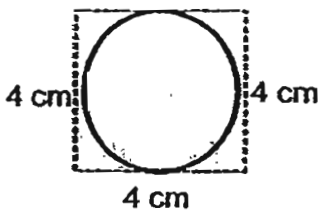


The dimensions of the three objects are given below:

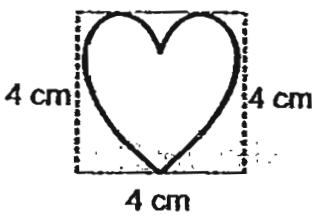
Object F



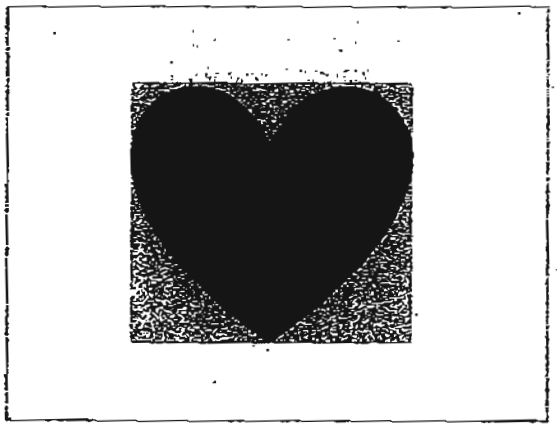
Object G



Object H



When the torch is switched on, it was observed that the shadows of the different objects formed on the screen was as shown below:



a) The table below shows reading from the datalogger when each object, F, G and H, is placed in front of the torch and screen. Identify the object that most likely matches to each of the following readings from the datalogger. [2]

amount of light / lux	Object
16	
900	
1500	

b) The other 3 objects were replaced with Object K. The table below shows results when the experiment was repeated by increasing the number of Object Ks.

number of Object K	amount of light / lux
0	100
1	78
2	35
3	6
4	2
5	0
6	0
7	0

i) Give a reason why the set-up cannot be used to count more than 5 units of Object K. [1]

_____

_____

ii) State one change that can be made to the set-up if you wish to count up to 7 units of Object K. [1]

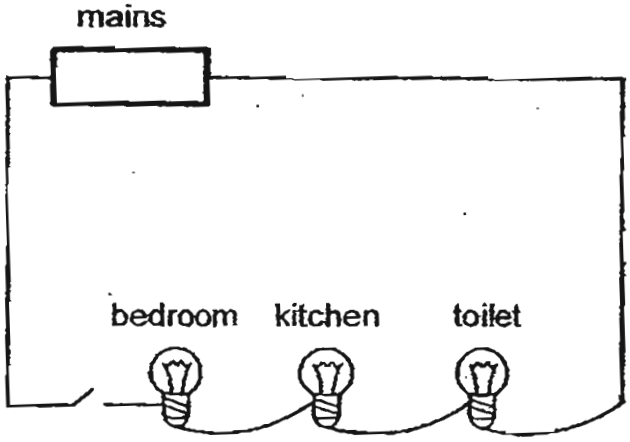
_____

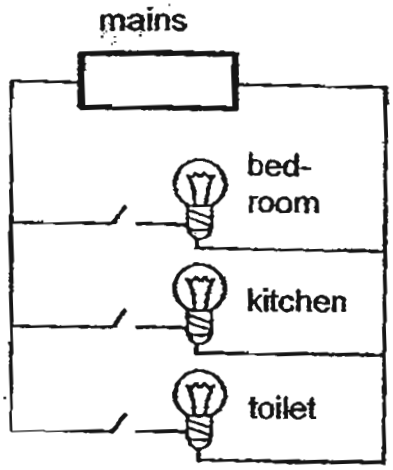
_____

_____

4

42. The circuits below show 2 possible ways in which electric bulbs in three different rooms can be connected to the mains.





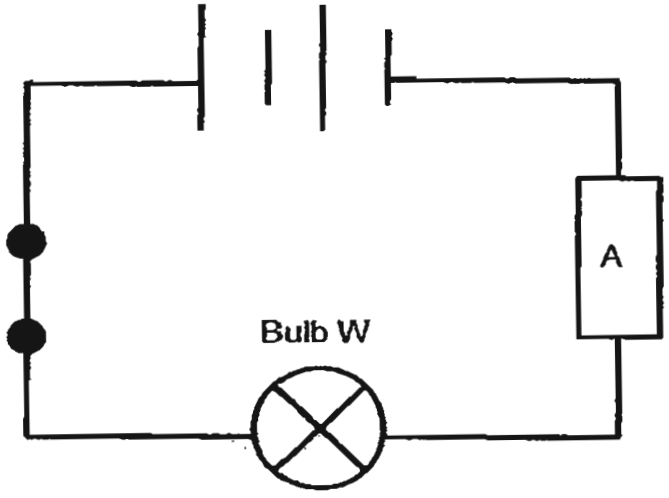
a) Which circuit is a better choice? Explain why. [2]

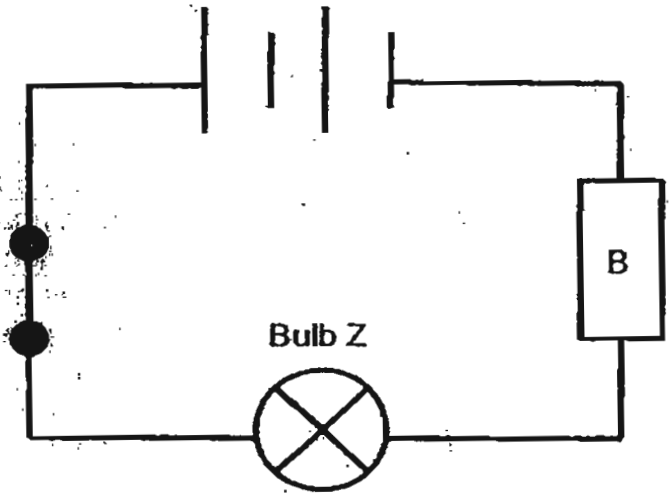
_____

_____

2

43. The diagram below showed two electric circuits that Henry had set up. When both switches were closed, Bulb W lighted up but Bulb Z did not light up. Henry replaced Object A with Object B, Bulb W also lighted up. When he replaced Object B with Object A, Bulb Z did not light up.





a) What can you infer about the property of Object A and B? [1]

_____

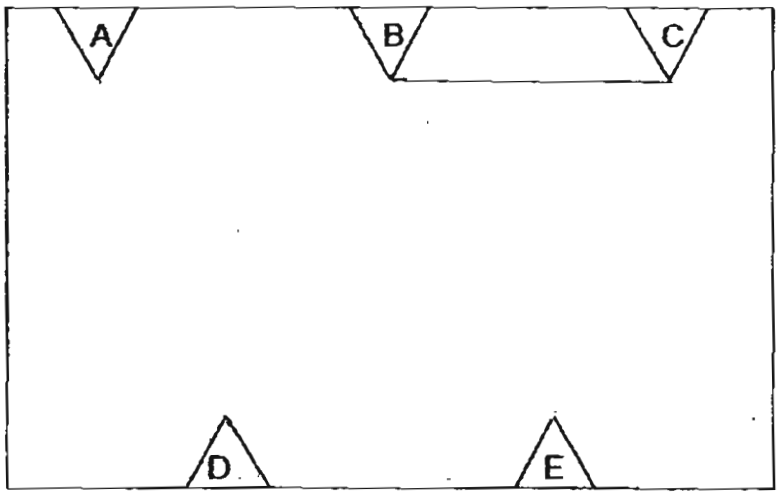
b) Give 2 reasons why Bulb Z did not light up. [1]

_____

_____

2

44. The diagram below shows a circuit board with 5 clips (A, B, C, D, E).



A circuit tester was used to test the circuit.
Below are the results of the test.

clips connected to circuit tester	light bulb of circuit tested
A and B	does not light up
A and C	does not light up
A and D	lights up
A and E	does not light up
B and C	lights up
B and D	does not light up
B and E	lights up
C and D	does not light up
C and E	lights up
D and E	does not light up

Using only 3 lines, draw on the circuit board to show how the clips are connected. [2]

End of Paper

Have you checked your answers?

2

ANSWER SHEET

EXAM PAPER 2011

SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 5 SCIENCE

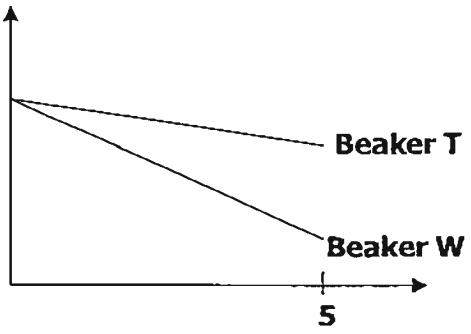
TERM : SA1

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

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

31)a)In Part M, the higher the intensity of light, the rate of photosynthesis increases. In Part P, the intensity of light does not affect the rate of photosynthesis.

32)a)



b)Francis wanted to find out if the size of the stalk affects the amount of water absorbed.

c)The stalk of the flowers absorbed coloured water and the water was transported to the rest of the flowers.

33)a)The cell membrane.

b)It did not become smaller because the tubing did not allow the red dye solution to pass through to the beaker. It become bigger because the water entered the tubing.

34)a)Flower H.

b)The anthers of Flower H were dangling out of the petals so that the wind can carry it away.

c)The male sex cell had already fused with the female sex cell.

35)a)X: Animals Y: Wind

b)This prevent overcrowding, reducing competition between the parent plant and the young plants for sunlight, water, nutrients and space.

c)The conditions were not right for germination which are water, air and suitable temperature.

36)a)He stroked his metal leaf with his magnet more times than Bala.

b)A compass.

c) 

37)a)Liquid Z. Heat flowed through liquid Z faster and melted the wax and the thumbtack dropped first.

b)Both thumbtacks will take longer to drop compared to the previous experiment. Glass is a poorer conductor of heat than copper therefore heat will travel more slowly through the glass rods and the thumbtack will take longer to drop.

38)a)He wanted to find out if a material was a good or bad conductor of heat.

b)X, Z, Y

c)Material X. It is the poorest conductor of heat among the three materials therefore it will gain heat slower and the ice-cream will not melt so fast.

39)a)Bubbles can be seen coming out of the tube.

b)Air in the flask was heated and it expanded. It occupied the space in the hollow tube and the air came out of the tube as there was not enough space to occupy.

40)C, D, E

41)a)H, F, G

b)i)Light cannot penetrate through 5 units of Object K.

ii)Move the torch closer to the units of Object K.

42)a)The parallel circuit. The intensity of the bulbs will be the same and when one bulb fuses, the other bulbs can continue to light.

43)a)They are conductors of electricity.

b)Bulb Z had fused or there was no energy in the buttery.

44)