

# CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 4

Semestral Assessment 2 – 2013

SCIENCE

BOOKLET A

29 October 2013

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

30 questions  
60 marks

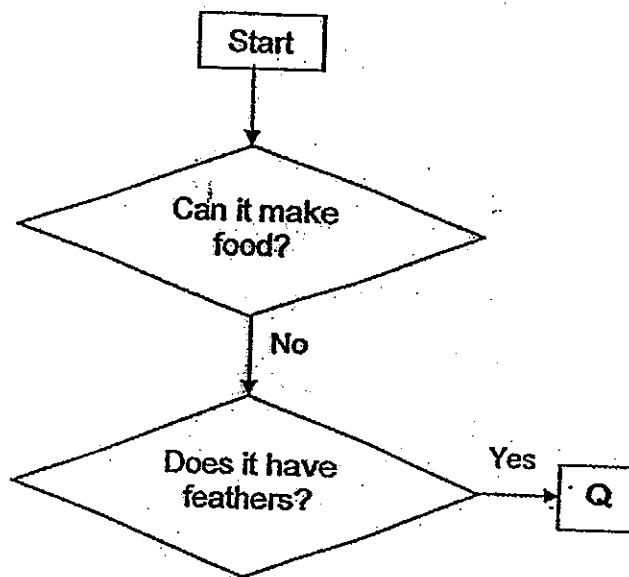
Do not open this booklet until you are told to do so.  
Follow all instructions carefully.  
Answer all questions.

This booklet consists of 21 printed pages.

**Section A : (30 x 2 marks)**

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

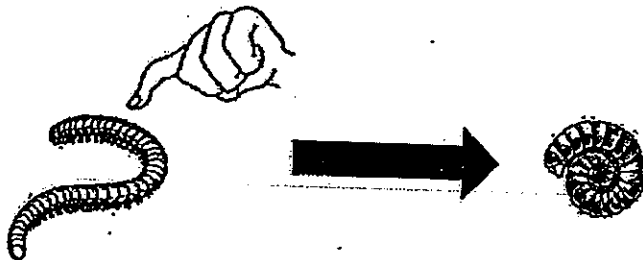
1. Study the flowchart below.



What could Q be?

- (1) bird
- (2) plant
- (3) insect
- (4) mammal

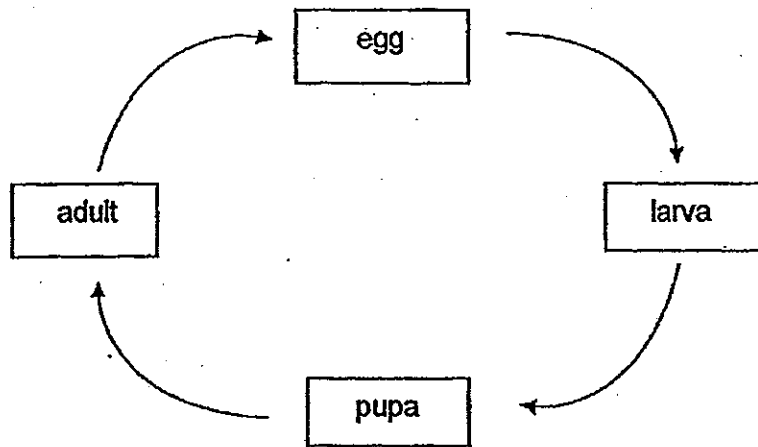
2. A millipede, as shown below, will curl itself when touched.



This shows that millipede is a living thing because it can \_\_\_\_\_.

- (1) grow
- (2) breathe
- (3) respond
- (4) reproduce

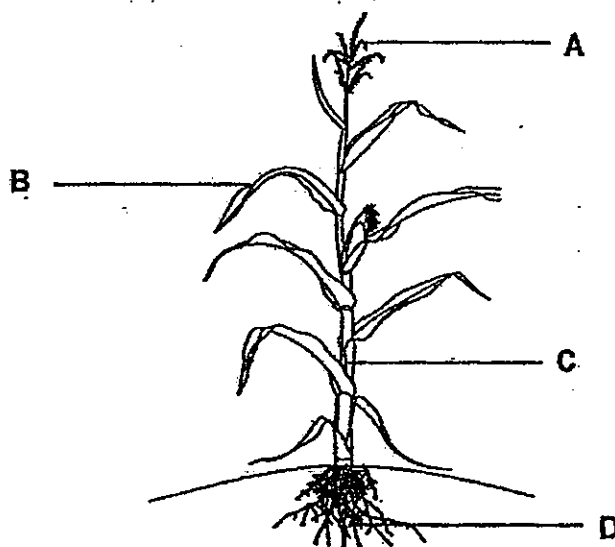
3. The diagram below shows the life cycle of an animal.



Which animal is likely to have the life cycle as shown above?

- (1) frog
- (2) chicken
- (3) grasshopper
- (4) mealworm beetle

4. The diagram below shows a maize plant.



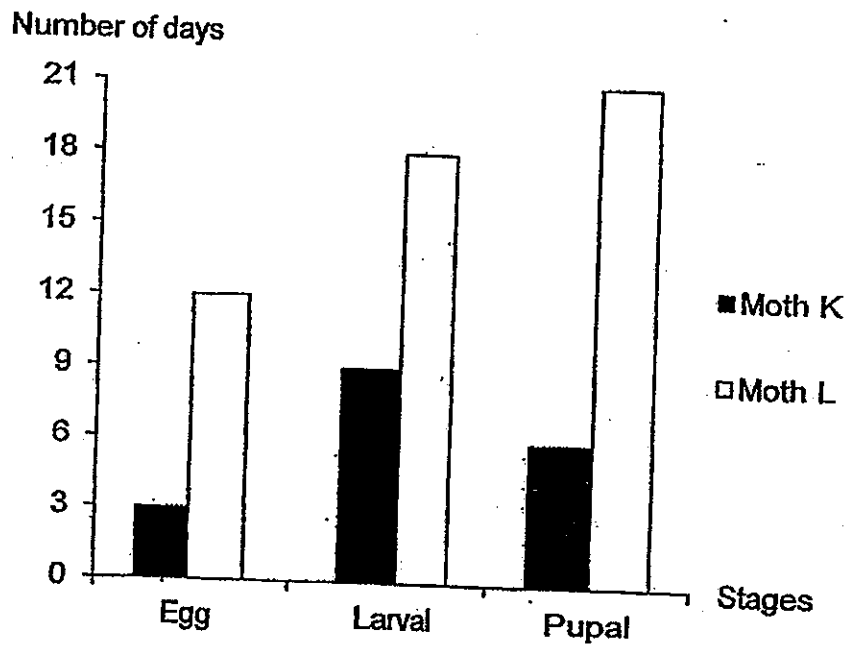
Which part, A, B, C or D, makes food for the plant?

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

5. Which one of the following is the function of the stem of a plant?

- (1) makes food
- (2) absorbs water
- (3) absorbs nutrients
- (4) holds the plant upright

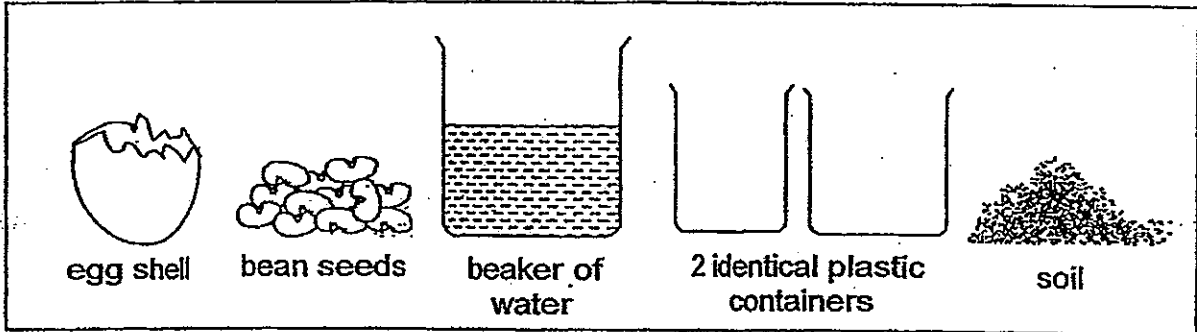
6. The graph below shows the length of time for the different stages in the life cycles of 2 species of moths, K and L.



At which stage would moth K and moth L be on the 15<sup>th</sup> day after the eggs were laid?

	Moth K	Moth L
(1)	Pupal	Pupal
(2)	Pupal	Larval
(3)	Adult	Pupal
(4)	Adult	Larval

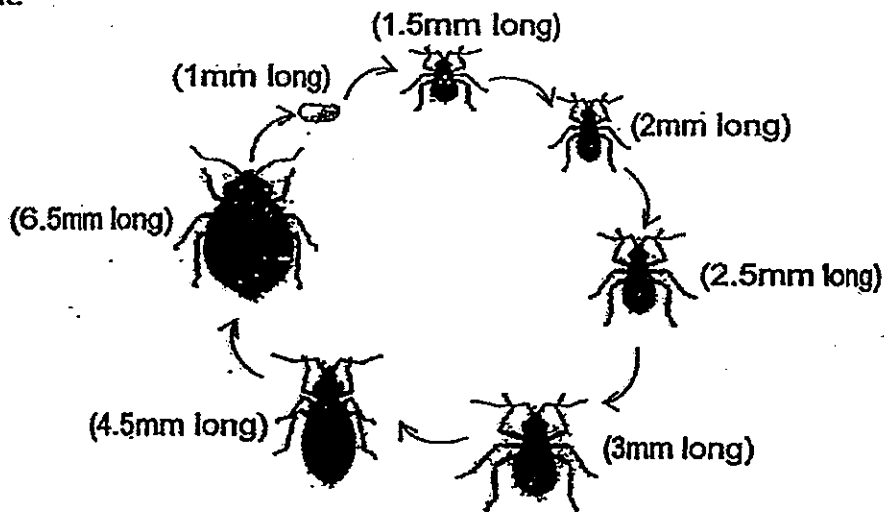
7. Chee Meng had the following materials.



Which one of the following aims **cannot** be investigated using only the materials from above?

- (1) Does the type of egg shells affect the germination of the bean seeds?
- (2) Does the amount of soil used affect the germination of the bean seeds?
- (3) Does the amount of water given affect the germination of the bean seeds?
- (4) Does the use of crushed egg shell as fertiliser result in better seedling growth?

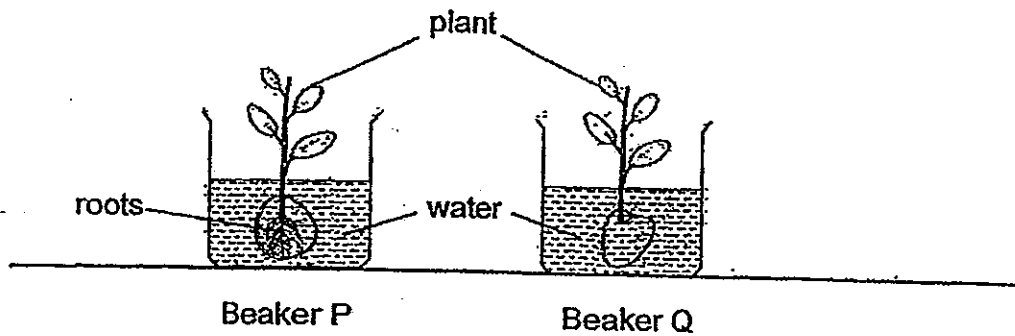
8. The life cycle of a bed bug takes between 5 weeks to 4 months to complete. The diagram below shows the development of a bed bug from an egg to an adult.



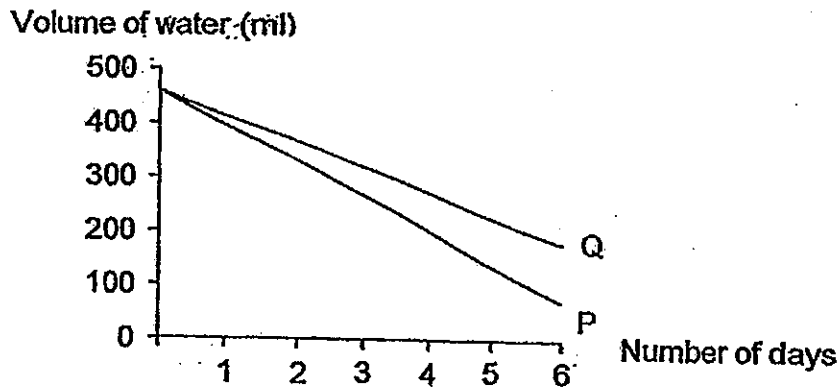
How many stages are there in the life cycle of a bedbug?

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

9. A group of pupils set up an experiment as shown below.



Beaker P and Q were left in the open at the same location and the amount of water in each beaker was recorded over a period of time.



Based on the results of the above experiment, the pupils can conclude that

- (1) the initial amount of water given will affect plant growth
- (2) the presence of roots will affect the amount of water taken in by the plant
- (3) the number of leaves will affect the amount of water taken in by the plant
- (4) the location of the experiment will affect the amount of water taken in by the plant

10. Mr Han wanted to find out the effect of 3 different types of chemicals, X, Y and Z, on the survival of duckweeds. He filled 4 identical tanks, A, B, C and D, with the same amount of water and duckweeds. He added the same amount of chemical X, Y and Z to tanks A, B and C respectively. He counted the number of duckweeds over four days and recorded the results in a table as shown below.

Day	Number of duckweeds			
	Tank A	Tank B	Tank C	Tank D
1	10	10	10	10
2	10	9	10	10
3	16	5	8	16
4	16	1	6	16

Based on his results, he concluded that only two of the chemicals affected the survival of duckweeds.

Which tanks did he compare to reach his conclusion?

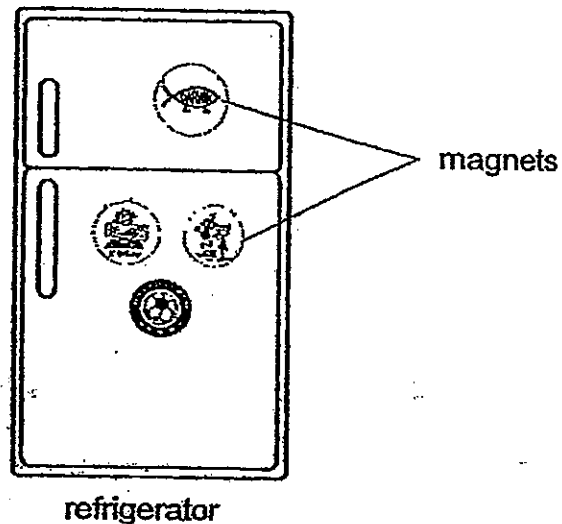
- (1) A and D only
- (2) B and C only
- (3) A, B and C only
- (4) A, B, C and D

11. Matter is anything that has mass and occupies space.

Which one of the following is NOT matter?

- (1) air
- (2) rain
- (3) sand
- (4) shadow

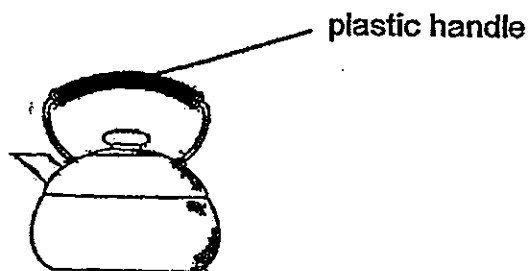
12. The diagram below shows some magnets on the door of a refrigerator.



The magnets can be attracted to the door because it is made of \_\_\_\_\_.

- (1) steel
- (2) wood
- (3) plastic
- (4) rubber

13. Raja boiled some water in the kettle shown below.

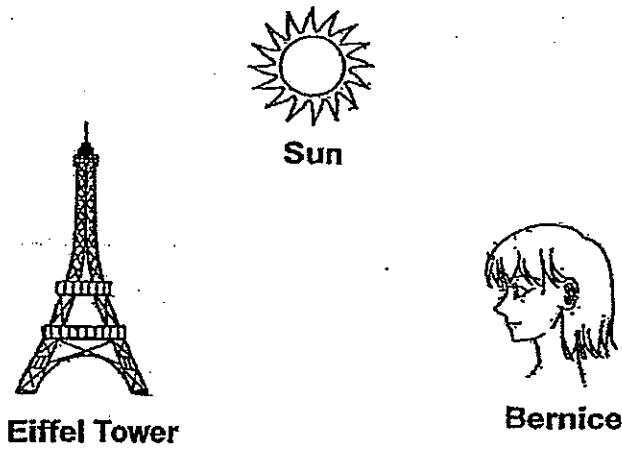


He is able to hold the kettle of boiling water using the plastic handle because plastic is a \_\_\_\_\_.

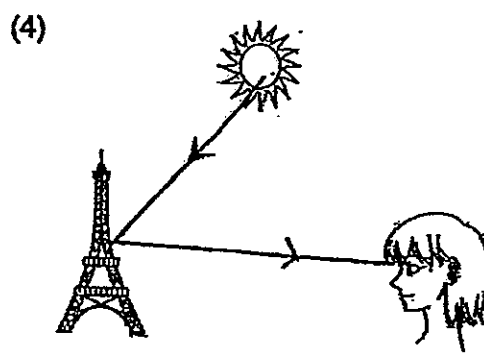
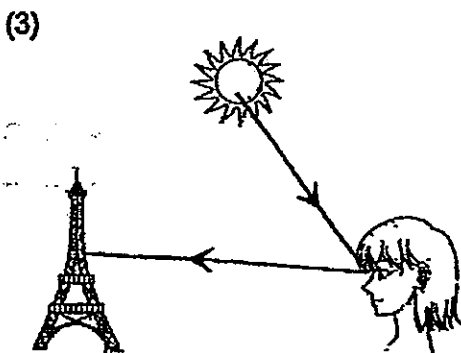
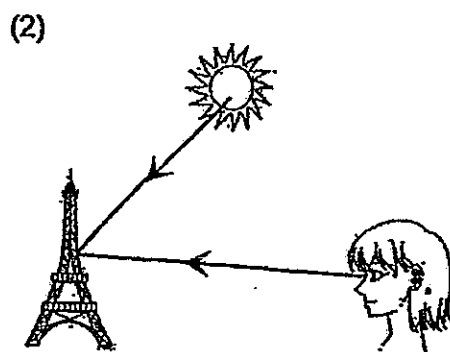
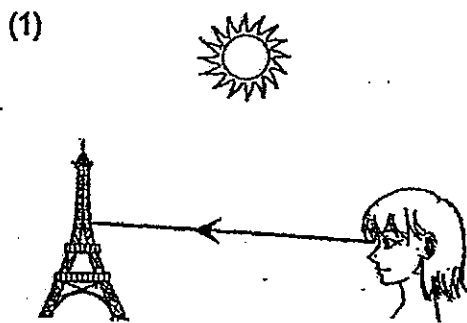
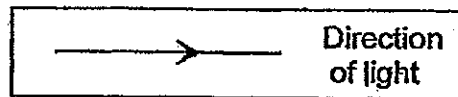
- (1) light material
- (2) flexible material
- (3) poor conductor of heat
- (4) good conductor of heat



14. Look at the picture below.



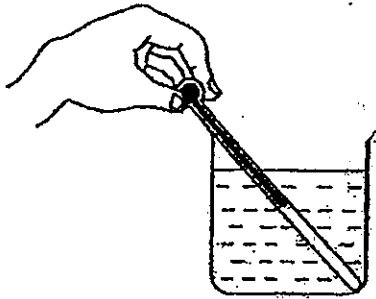
Which one of the following best explains why Bernice can see the Eiffel Tower?



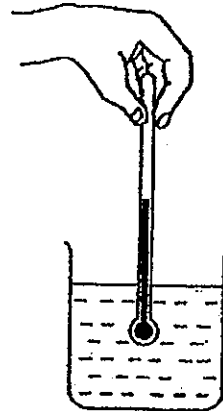
15. Victoria wants to measure the temperature of tap water in a beaker.

Which one of the following diagrams shows the correct position of the thermometer when taking the temperature reading?

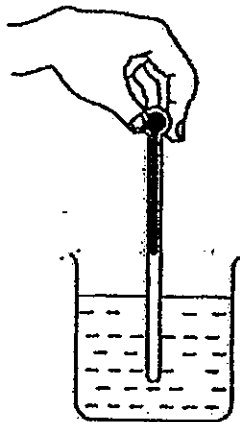
(1)



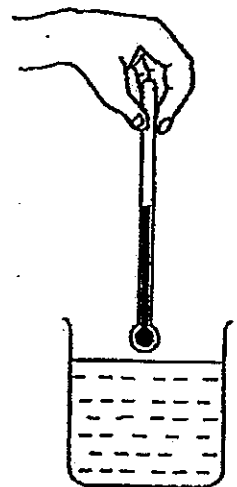
(2)



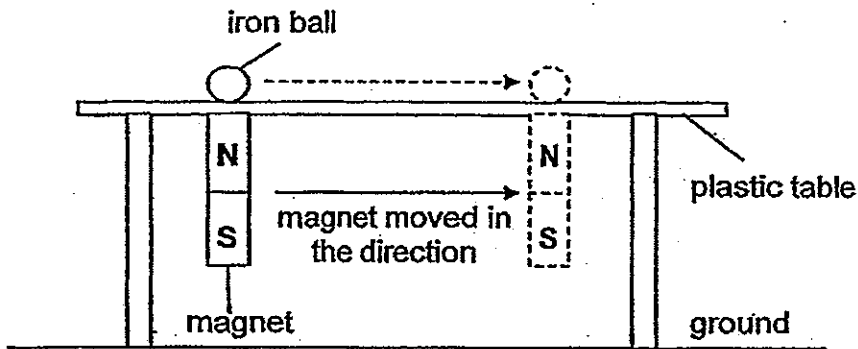
(3)



(4)



16. Nikki set up an experiment as shown in the diagram below.

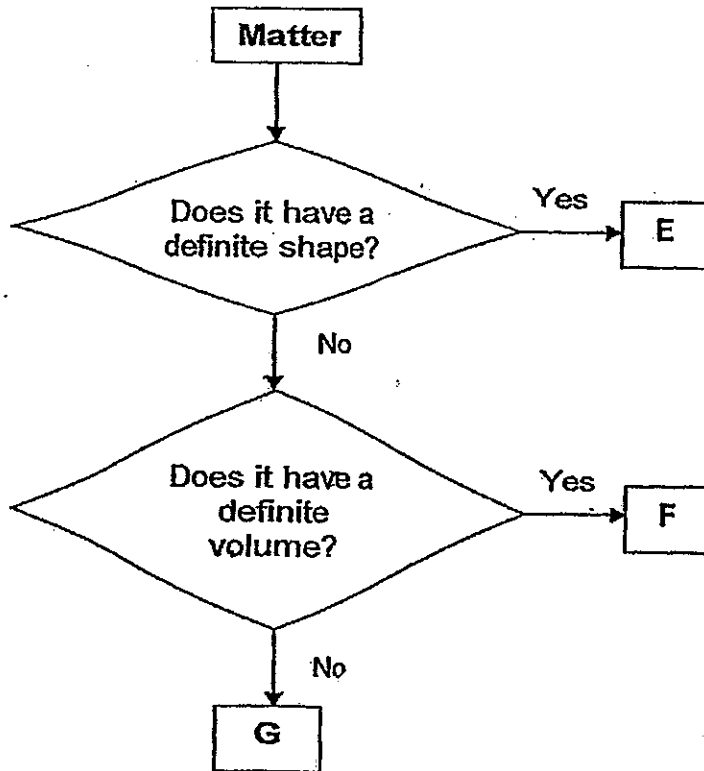


As Nikki slid the magnet along the underside of the table, the iron ball moved along the direction as shown above.

What did Nikki's experiment show?

- (1) A magnet does not attract all types of metals.
  - (2) Plastic allows magnetic force to pass through it.
  - (3) Magnetic force can pass through all non-metallic materials.
  - (4) The poles of the magnet exert the strongest magnetic force.
17. Which one of the following mixture of objects can we use a magnet to separate?
- (1) Nickel pins and iron nails
  - (2) Iron pins and copper nails
  - (3) Iron pins and steel needles
  - (4) Copper nails and wooden toothpicks

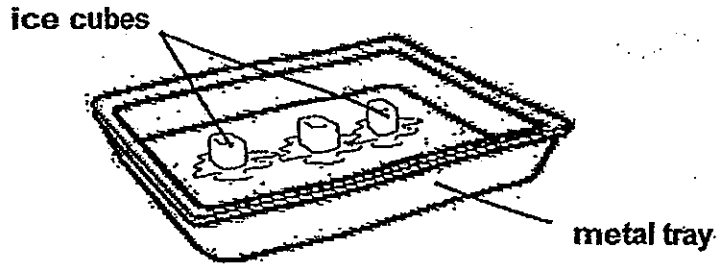
18. Study the flowchart below.



Which one of the following best represents E, F, and G?

	E	F	G
(1)	sponge	orange juice	sand
(2)	plasticine	air	coffee
(3)	sand	water	oxygen
(4)	coin	oxygen	milo

19. A few ice cubes are left to melt on a metal tray as shown in the diagram below.



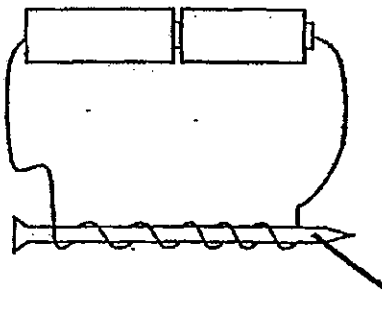
Which of the following statement(s) is/are correct when the ice cubes are melting?

- A The temperature of the ice cubes increases.
- B The temperature of the metal tray decreases.
- C The ice cubes are losing heat to the surrounding air.

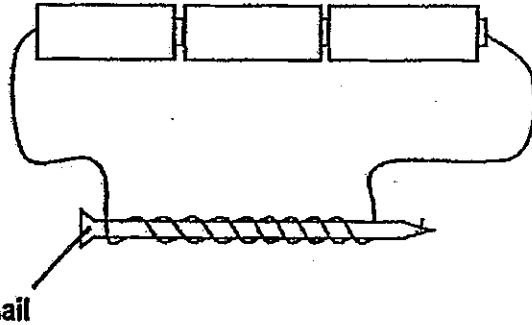
- (1) B only
- (2) A and B only
- (3) A and C only
- (4) A, B and C

20. Which one of the following electromagnets has the strongest magnetism?

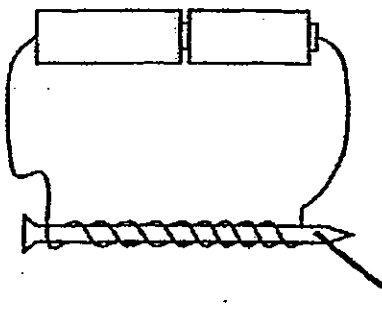
(1)



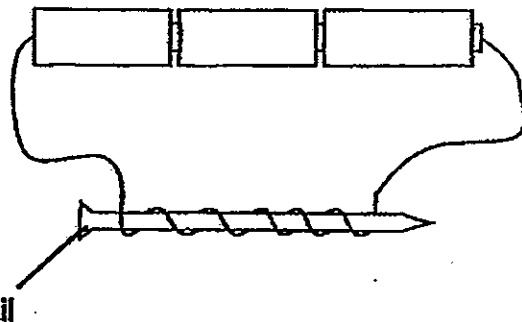
(2)



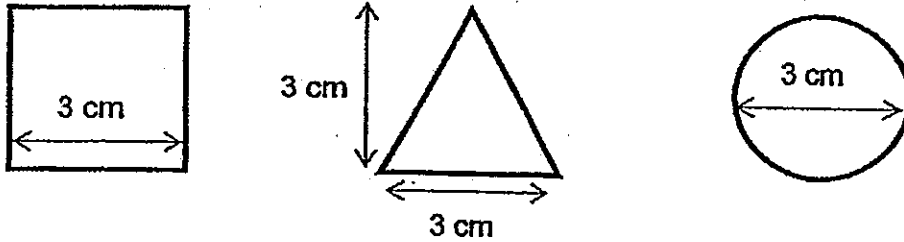
(3)



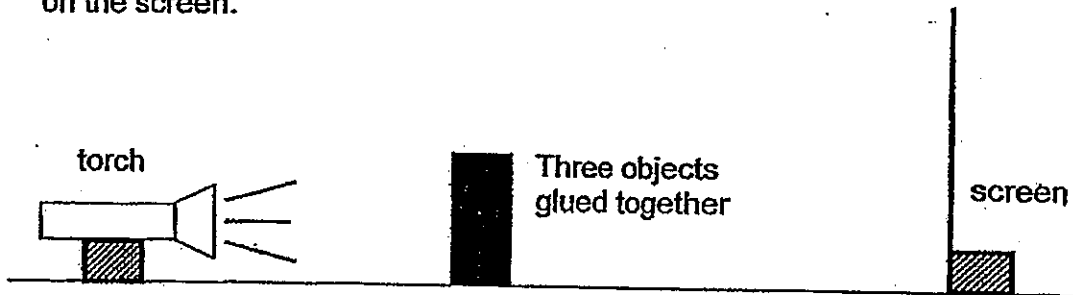
(4)



21. The diagram below shows a square, a triangle and a circle made of metal, frosted glass and clear plastic respectively.



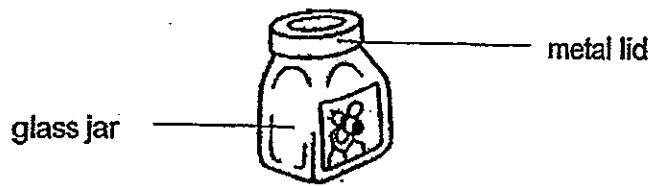
The three objects are glued against each other before they are placed between a lighted torch and a screen as shown below. A shadow is observed on the screen.



Which one of the following shadows is possible?



22. Zaidi removed a jar of honey as shown below from the refrigerator. He could not open the metal lid of the jar because it was too tight.

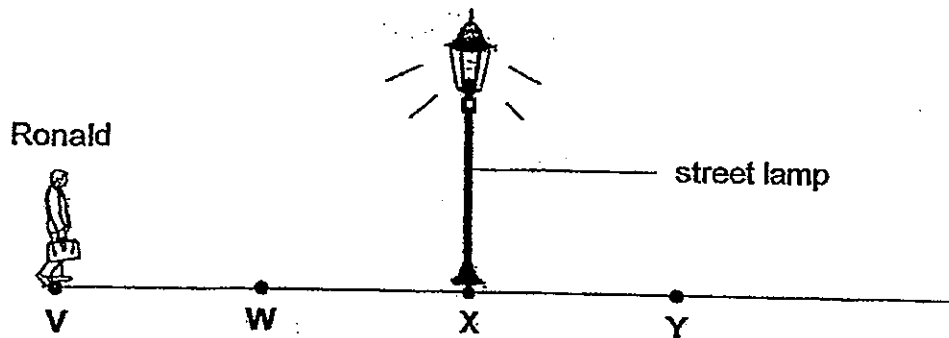


Which of the following actions will enable Zaida to remove the metal lid?

- A Heat only the lid over a flame
- B Place some ice cubes on the metal lid.
- C Wrap a cold towel over the glass jar only
- D Immerse the jar of honey in a basin of hot water

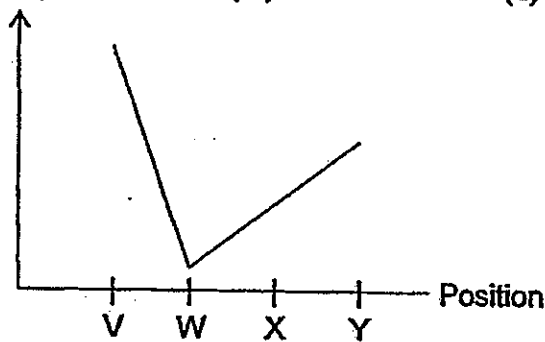
- (1) A only
- (2) A and C only
- (3) B and D only
- (4) A, C and D only

23. Ronald walked past a lighted street lamp from point V to Y as shown in the diagram below.

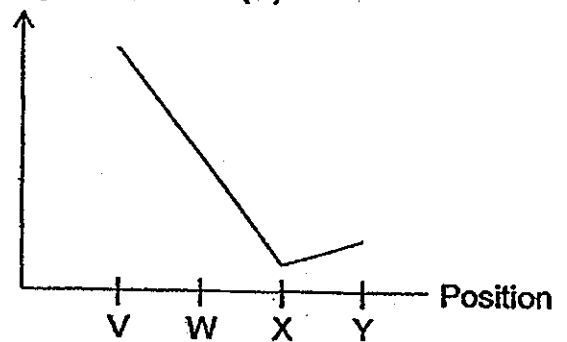


Ronald walked at the same pace from V to Y. The length of his shadow at point V, W, X and Y were recorded. Which one of the following graphs best represents the changes in the length of Ronald's shadow?

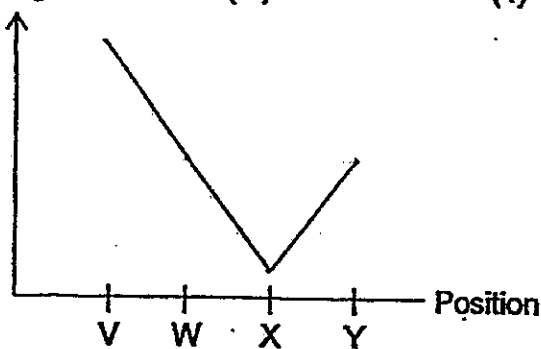
(1) Length of shadow (m)



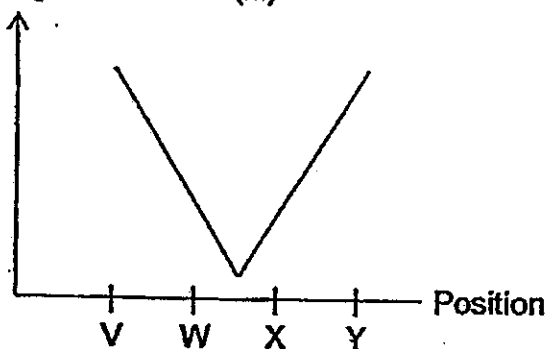
(2) Length of shadow (m)



(3) Length of shadow (m)

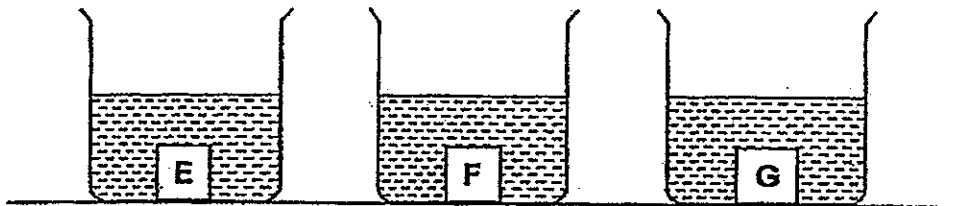


(4) Length of shadow (m)





24. Three similar-sized sheets made of different materials, E, F, G, were weighed individually before they were put into 3 beakers containing equal amounts of water. After 15 minutes, each sheet was taken out and weighed again.



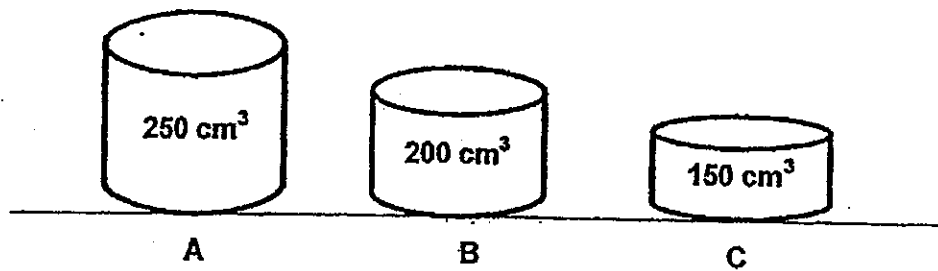
Their masses were recorded in a table as shown below.

Material	Mass at the beginning (g)	Mass after 15 minutes (g)
E	11	12
F	12	14
G	7	12

Which one of the following shows the arrangement of material E, F and G beginning with the most absorbent to the least absorbent?

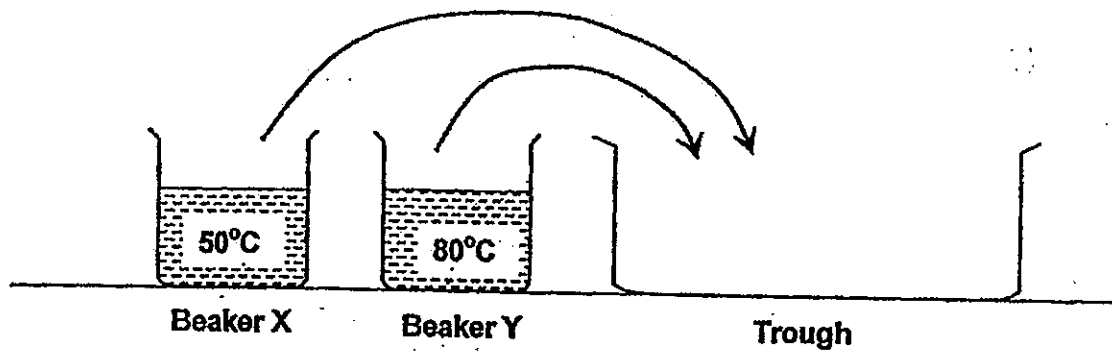
- (1) E, F, G
- (2) F, E, G
- (3) G, E, F
- (4) G, F, E

25. Mr Jordan wants to transfer  $200\text{cm}^3$  of oxygen from a gas tank into another container. He has 3 containers, A, B and C, to choose from.



Which of the above containers can he use?

- (1) A only  
(2) B only  
(3) A and B only  
(4) A, B and C
26. In the set-up below, beaker X and Y contain equal amounts of water at different temperatures. The water in the beakers were then poured into the trough.



What is the most likely temperature of the water in the trough after an hour?

- (1)  $29^\circ\text{C}$   
(2)  $65^\circ\text{C}$   
(3)  $85^\circ\text{C}$   
(4)  $130^\circ\text{C}$

27. Rachel magnetised an iron nail by placing it at the pole of a bar magnet as shown in Figure 1 below. Figure 2 shows the magnetic poles of the iron nail after it was magnetized.



Figure 1

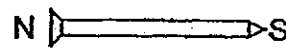
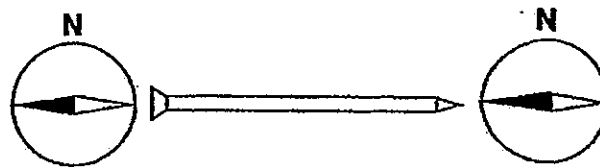


Figure 2

She then placed the same iron nail near 2 compasses and she observed the compass needles interact with the nail as shown below.



Which one of the following statements best explains the observation made of the compass needles?

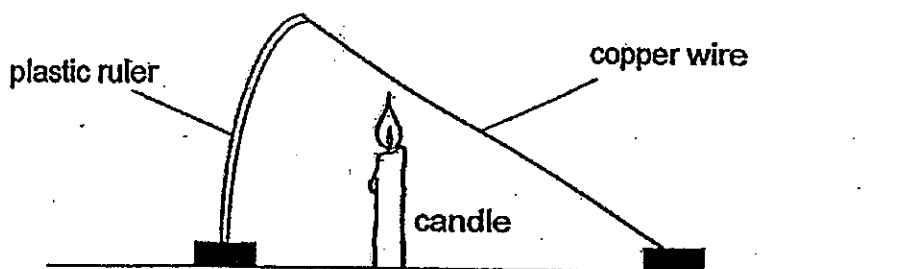
- (1) The nail is a magnetic object.
- (2) The compass needles are non-magnetic objects.
- (3) Magnetism has passed from the nail to the compass needles.
- (4) The nail has become a weak magnet and attracted the compass needles.

28. The table below shows the state of four substances, A, B, C and D, at different temperatures.

Substances	State of substance at		
	20°C	40°C	60°C
A	liquid	liquid	liquid
B	solid	liquid	liquid
C	solid	solid	liquid
D	solid	solid	solid

Which one of the following statements is true about substances A, B, C and D?

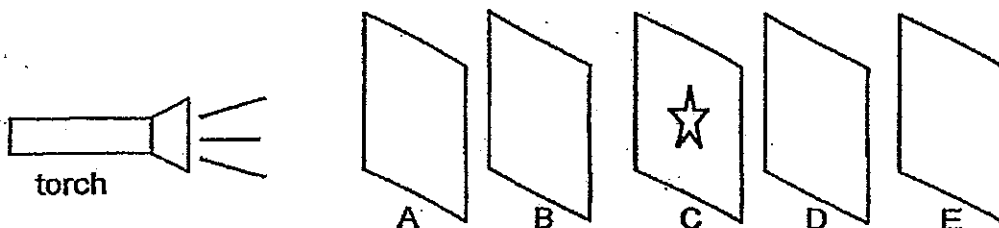
- (1) The boiling point of substance C is 60°C.
  - (2) Substance A has the lowest boiling point.
  - (3) The freezing point of substance B is 20°C.
  - (4) Substance D has the highest melting point.
29. A plastic ruler is attached to a copper wire and a lit candle is placed under the copper wire as shown in the diagram below.



Which one of the following is the most likely observation after 10 minutes?

- (1) The copper wire breaks.
- (2) The plastic ruler bends less.
- (3) The plastic ruler bends more.
- (4) The copper wire becomes shorter.

30. Joshua carried out an experiment in an enclosed dark room with the set-up shown below.



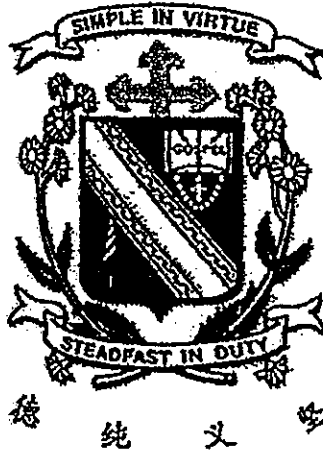
He arranged the torch and 5 similar-sized sheets made of different materials A, B, C, D and E in a straight line. Sheet C has a star-shaped cut-out in the middle. When the torch was switched on, a star-shaped patch of light was seen on sheet D only.

Which one of the following correctly describes the properties of materials A, B, C, D and E?

	Materials which allow light to pass through	Materials which do not allow all light to pass through	Not possible to tell if the material allows light to pass through
(1)	A and B	C, D and E	-
(2)	A and B	D and E	C
(3)	A, B and C	D	E
(4)	A and B	C and D	E

End of Booklet A

# CHIJ ST NICHOLAS GIRLS' SCHOOL



## Primary 4 Semestral Assessment 2 – 2013 SCIENCE

### BOOKLET B

29 October 2013

Booklet A	60
Booklet B	40
Total	100

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

14 questions  
40 marks

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

This paper consists of 14 printed pages.

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Parent's Signature/Date

**Section B: 40 marks**

For questions 31 to 44, write your answers in this booklet.

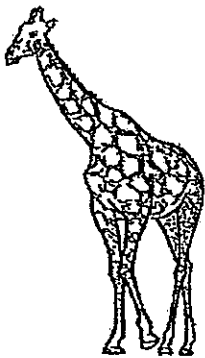
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

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31. Draw lines to match the following animals to the correct groups. [3]

**Animals**

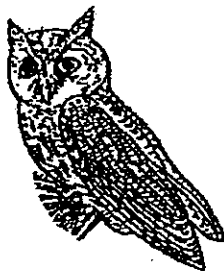
**Groups**



• fish



• bird

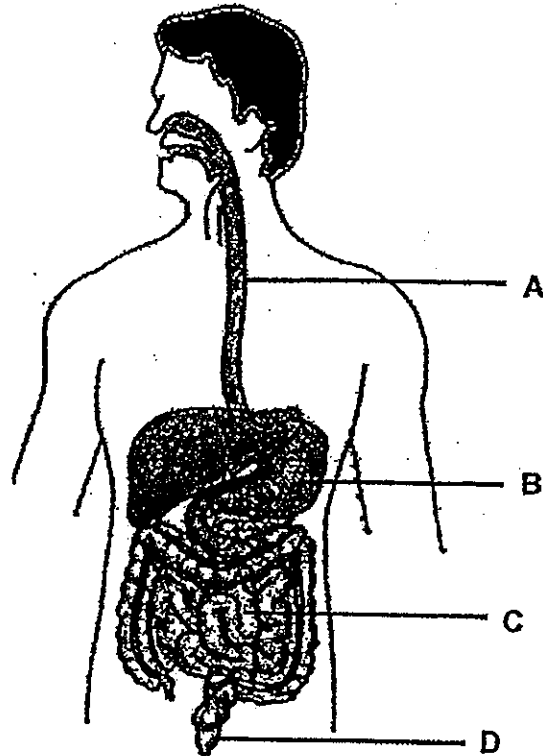


• insect

• mammal



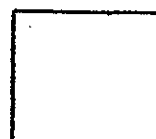
32. The diagram below shows the human digestive system.



Match the letters A, B, C and D to the correct statements.

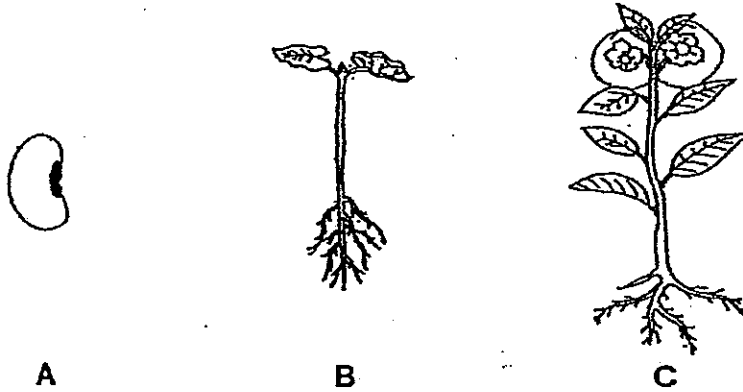
[3]

Statements	Letter
(a) Churns the food and mixes it with digestive juices to digest some of the food.	
(b) Digestion of food completes and absorption of digested food takes place.	
(c) Pushes balls of food along and no digestive juices is produced.	





33. The diagram below shows the stages in the life cycle of a plant.



Choose the correct words from the box to answer the question below.

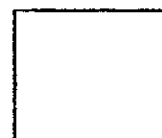
seed	egg	adult plant	young plant
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Name the stages A and C in the life cycle of a plant.

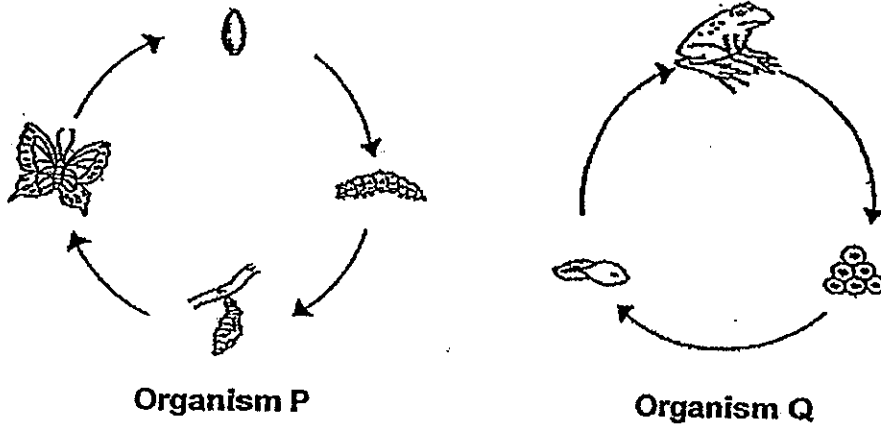
[2]

A \_\_\_\_\_

C \_\_\_\_\_



34. The diagram below shows the life cycles of two organisms P and Q.



(a) Based only on what is observable in the above diagram, state two similarities between the life cycles of organisms P and Q. [2]

(i) \_\_\_\_\_

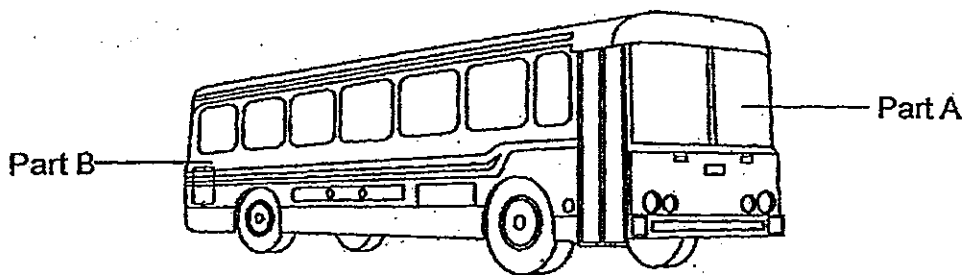
(ii) \_\_\_\_\_

(b) Organism P can be considered harmful to plants. Why is this so? [2]

\_\_\_\_\_  
\_\_\_\_\_



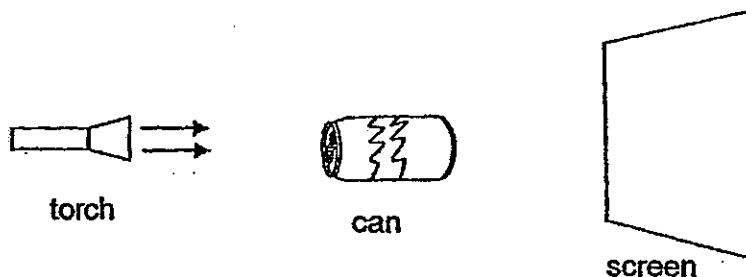
35. The diagram below shows a bus.



(a) Part A is made of glass because it allows \_\_\_\_\_ to pass through so that the bus driver can see the road. [1]

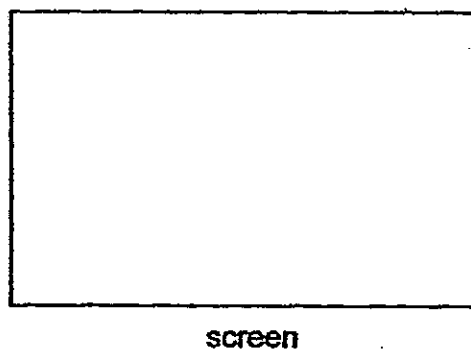
(b) Part B is made of \_\_\_\_\_ because B has to be strong. [1]

36. Penny shines a torch on the can and a shadow is formed on the screen.

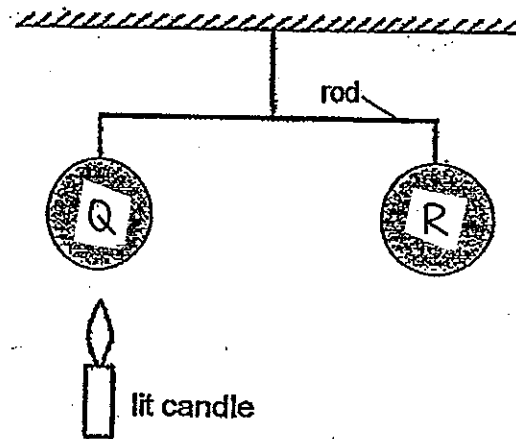


(a) A shadow is formed when light is \_\_\_\_\_ by an object. [1]

(b) Draw the shadow of the can that is formed on the screen. [1]



37. Kathy hung two identical metal balls, Q and R, from a horizontal rod and a lit candle was then placed directly under metal ball Q as shown below.



(a) After a few minutes, will Kathy observe the rod tilting down to the left, right or remaining balanced? [1]

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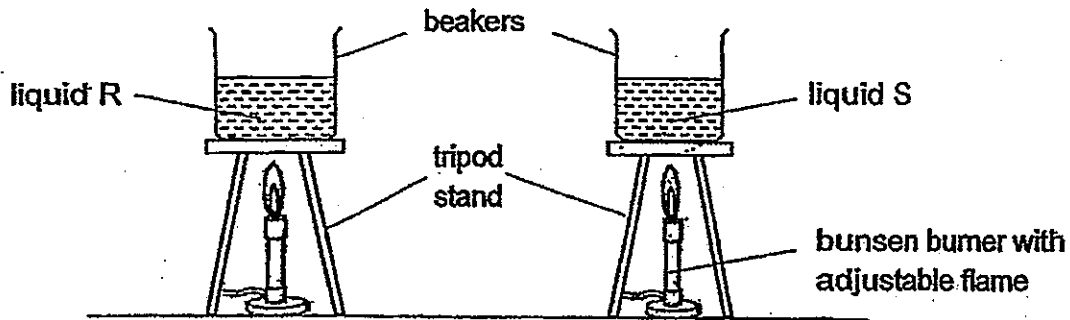
(b) Explain your answer in (a). [1]

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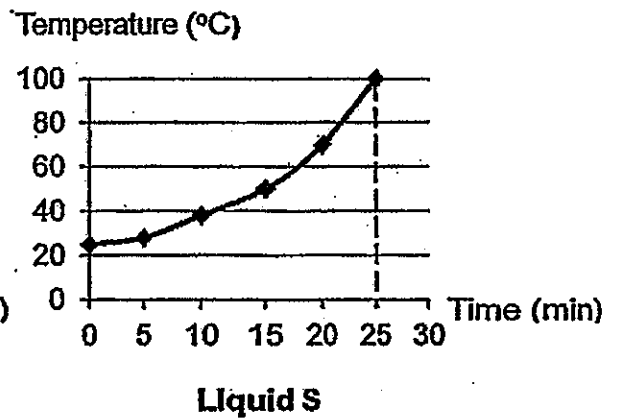
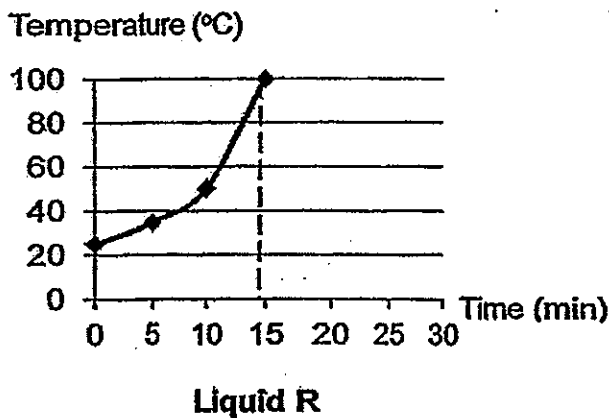
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38. Mandy conducted an experiment to find out the time taken for liquid R and S to reach  $100^{\circ}\text{C}$ . She poured equal amounts of liquid R and S into 2 similar-sized glass beakers before heating them as shown below.



She recorded the temperatures of liquid R and S over a period of 30 minutes and plotted the graphs below.



- (a) Based on the results of the above experiment, which liquid is a better conductor of heat? Explain your answer. [2]

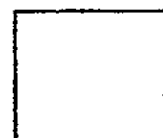
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- (b) Using the same apparatus and without adjusting the size of the flame, suggest what Mandy can do to make liquid S reach  $100^{\circ}\text{C}$  in a shorter time. [1]

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39. Pamela filled a basin with water and placed an inflated balloon in it as shown in Figure A. She then pushed the balloon into the water as shown in Figure B and observed a rise in the water level.

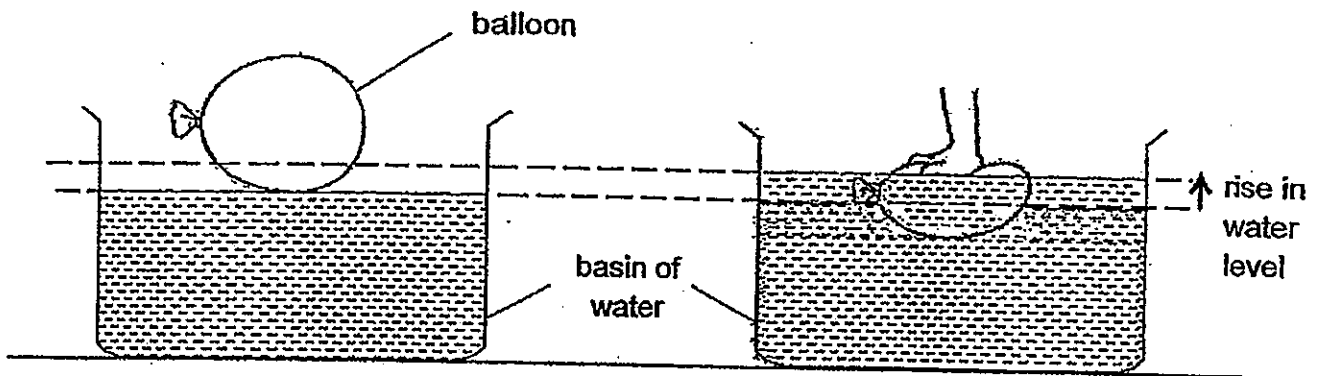


Figure A

Figure B

- (a) Based on the above observation of the rise in water level, what property of air is demonstrated in this experiment? [1]

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- (b) Pamela repeated the experiment with another balloon filled with water to the same size. She noticed that water spilled out from the basin when she pushed the balloon into the water exactly as before. Explain the difference in the observations. [2]

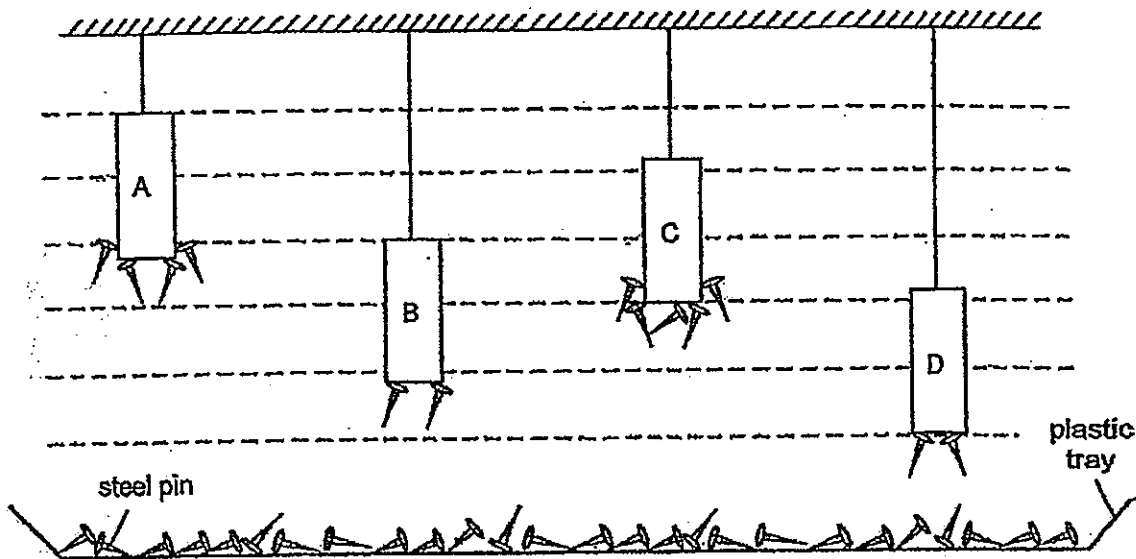
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40. Dora wanted to compare the magnetic force of four magnets A, B, C and D. The magnets were of the same size. She set up the experiment below and observed the number of steel pins that were attracted by each magnet.



From the results of her experiment shown above, Dora could not conclude which magnet had the strongest magnetic force.

- (a) Suggest what Dora should do to her set-up so that she would be able to find out which magnet was the strongest? [1]

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- (b) Using the same set-up as shown in the diagram above, Dora replaced magnet D with another magnet W of the same size.

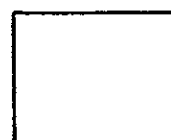
State two possible observations that could be made if magnet W was a much stronger magnet than magnet D [2]

Observation 1: \_\_\_\_\_

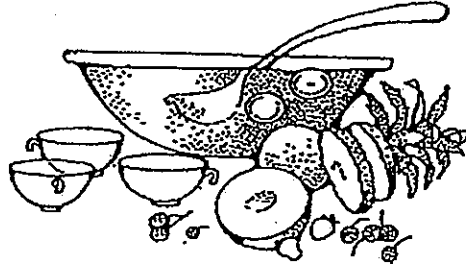
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Observation 2: \_\_\_\_\_

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41. Madam Haji filled a bowl full with fruit punch as shown in the diagram below.



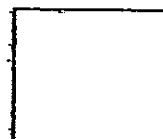
- (a) A cup of fruit punch can be served with ice cubes or crushed ice. Using the same amount of ice, if Madam Haji wants the drink to remain cold for as long as possible, should she use ice cubes or crushed ice? [1]

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

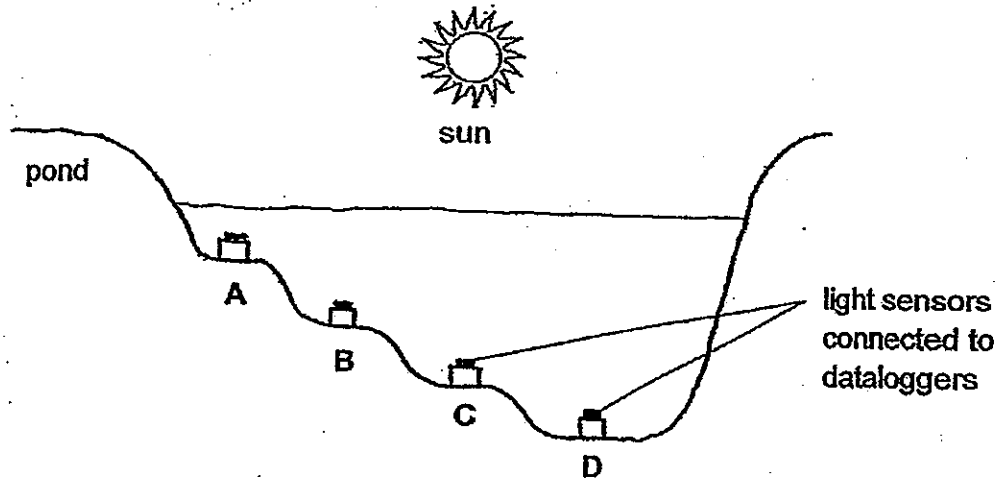
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42. Water plants growing at the bottom of a pond take in any amount of sunlight which is able to pass through the water in order to make food. The diagram below shows a pond with different depths A, B, C and D.



Connie used dataloggers to measure how much light is able to pass through the water at the different depths and recorded her readings in the table below.

Depths of pond (m)	Reading on datalogger (lux)			
	1st	2nd	3rd	Average
	250	248	252	250
	1150	1101	1106	1119
	500	505	495	500
	800	805	807	804

- (a) Complete the table above with A, B, C and D. [2]
- (b) Water plant X needs at least 750 lux of light to grow well. At which depth, A, B, C or D, would Connie be able to find plant X growing? Explain your answer. [2]

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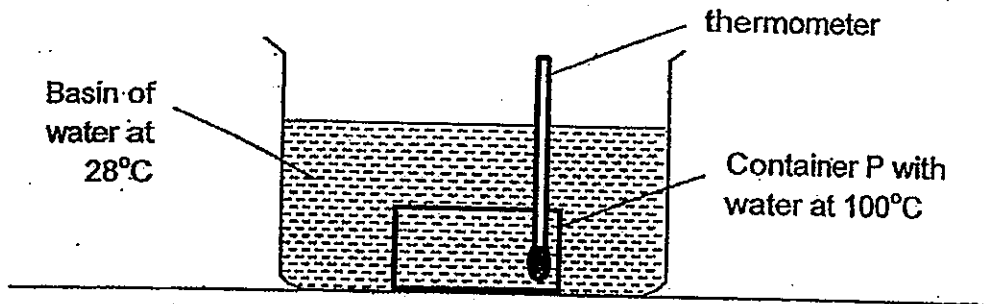
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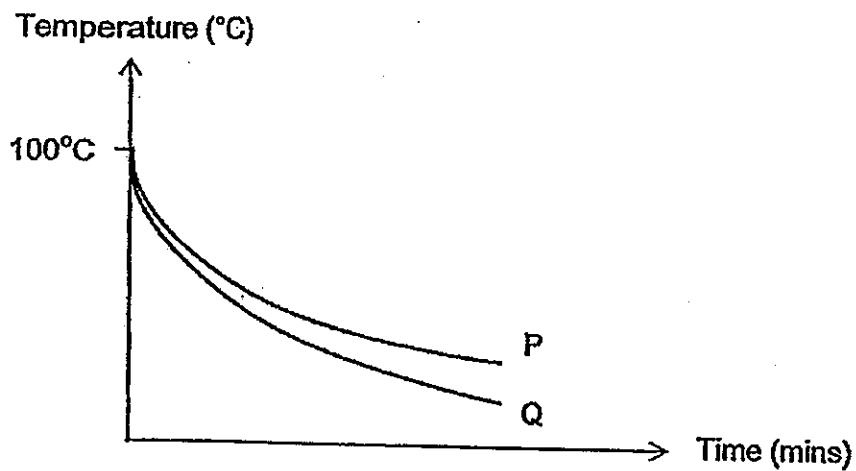
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43. Ahmad has 2 similar-sized containers P and Q, made of different materials. He filled container P with water at  $100^{\circ}\text{C}$  and placed it in a basin of water at  $28^{\circ}\text{C}$  as shown in the diagram below. He repeated the experiment for container Q.

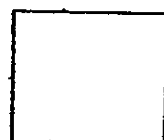


He then measured the temperature of the water in P and Q over a period of time and plotted his results in the graph below.

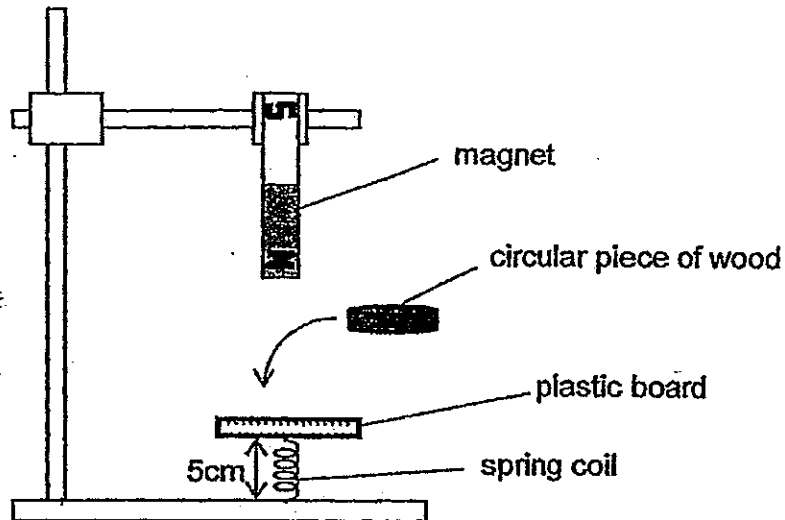


- (a) Based on the results in the above graph, which container should he use to keep the hot drinks hot and cold drinks cold for as long as possible? [1]

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



44. Keith set up an experiment as shown below. He used a sticky tape to stick a circular piece of wood on the plastic board as shown below and noticed that the length of the spring coil became 4cm.



Keith was then given objects X and Y which have the same mass and shape as the circular piece of wood.



He stuck the objects on the plastic board, one at a time, and recorded the length of the spring coil in the table below.

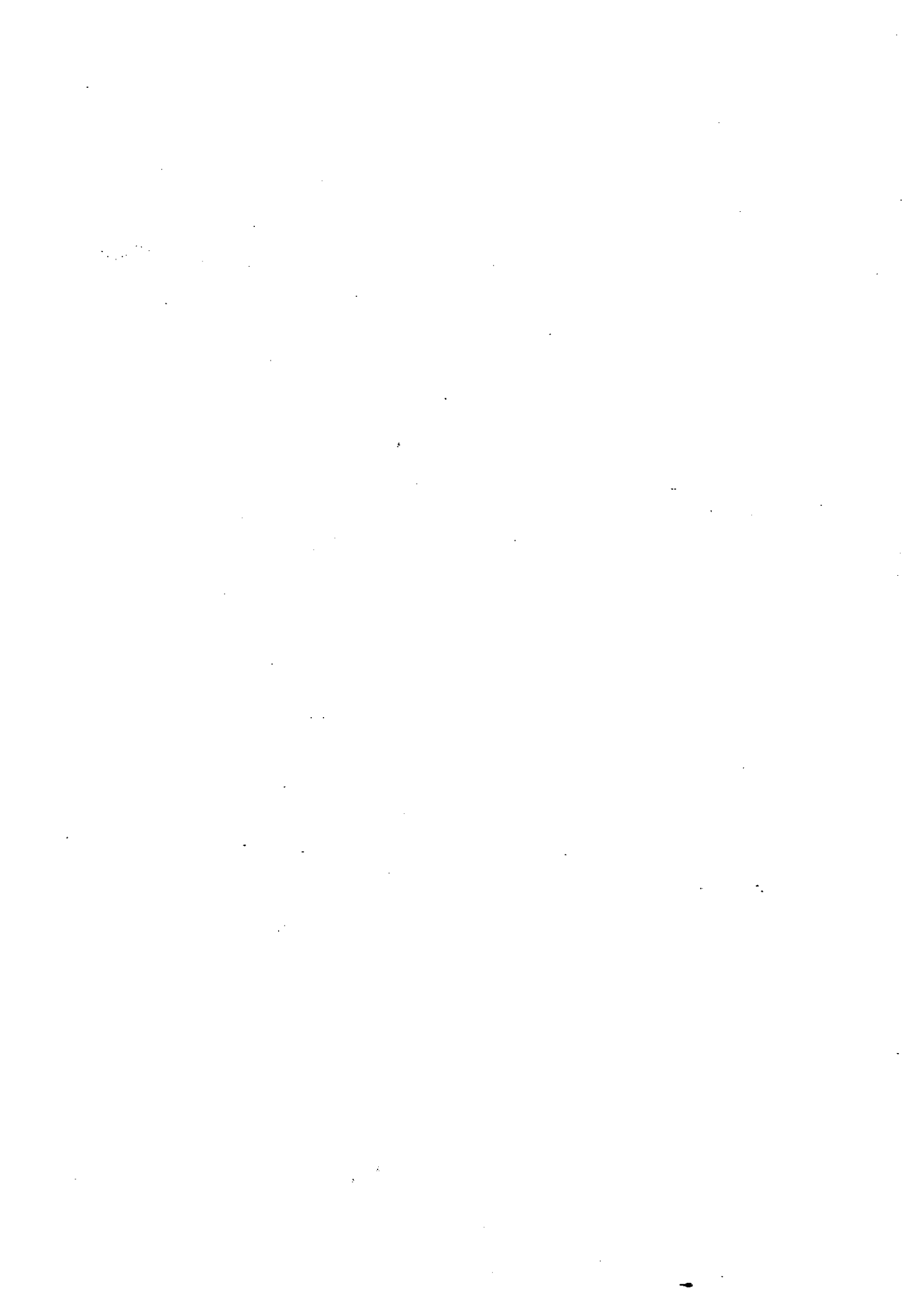
Object	Length of spring coil (cm)
X	7
Y	2

- (a) Based on the results in the above table, which object, X or Y, is definitely a magnet? [1]

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

End of Paper





# ANSWER SHEET

**EXAM PAPER 2013**

**SCHOOL : CHIJ ST NICHOLAS GIRLS' SCHOOL (PRIMARY)**

**SUBJECT : PRIMARY 4 SCIENCE**

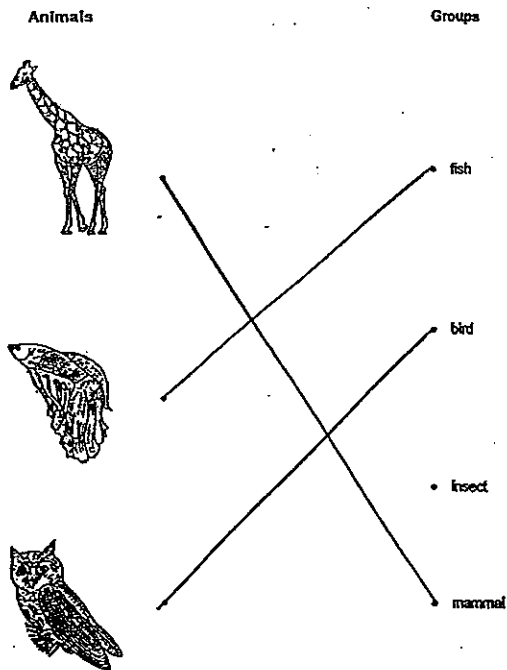
**TERM : SA2**

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

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

## Section B

Q31)



Q32)

Statements	Letter
(a) Churns the food and mixes with digestive juices to digest some of the food	B
(b) digestion of food completes and absorption of digested food takes place	C
(c) Pushes balls of food along and no digestive juices is produced	A

Q33) A: seed

B: Adult plant

Q34

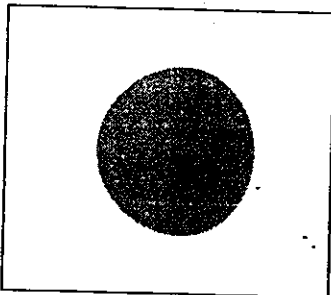
- a) i) Both life-cycles of organism P and Q have the egg stage
- ii) Both the young of organism P and Q does not look like its parents
- b) The young of organism P eats the leaves. Without leaves, the plant cannot make food, so the plant will die.

Q35

- a) Light
- b) Metal

Q36

- a) Blocked
- b)



Q37

- a) Remain balanced
- b) The ball's mass remain unchanged even though it has expanded after heating

Q38

- a) Liquid R. Liquid R took a shorter time to boil compared to Liquid S, showing R is able to gain heat faster.
- b) Remove some of Liquid S from the beaker.

Q39

a) Air occupies space

b) Air can be compressed but water cannot be compressed. The balloon filled with water took up more space than the balloon filled with air, causing the water to spill out from the basin when she pushed the balloon filled with water exactly as before

Q40

a) Place the magnet the same distance away from the tray of steel pins

b) Observation 1: Magnet W could attract more steel pins than magnet D if it was placed at the same distance as magnet D

Observation 2: magnet W might repel magnet C.

Q41

a) Ice cubes

b) Ice cubes have lesser surface area than crushed ice, so it will melt slower as compared to crushed ice which has more surface area than ice cubes.

Q42

a)

Depths of pond (m)	Reading on datalogger (lux)			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
D	250	248	252	250
A	1150	1101	1106	1119
C	500	505	495	500
B	800	805	807	804

b) A and B. At depths A and B, the light sensors received more than 750 lux of light. Therefore, it will be able to receive enough sunlight to make food

Q43

a) Container P

b) Container Q cools down slower so it is a poorer conductor of heat. Hence it will conduct heat away from the hot drink slower and conduct heat to the cold drink slower.

Q44

a) Object Y

b) Only magnets can repel each other. The like poles of the magnet and object Y are facing each other, causing them to repel, so the spring was pushed downwards and the length of the spring became 2cm, therefore object Y is definitely a magnet.

