

# METHODIST GIRLS' SCHOOL

Founded in 1887



## END-OF-YEAR EXAMINATIONS 2012 PRIMARY 5 SCIENCE

### BOOKLET A1

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

#### INSTRUCTIONS TO CANDIDATES

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

Follow all instructions carefully.

Answer all questions.

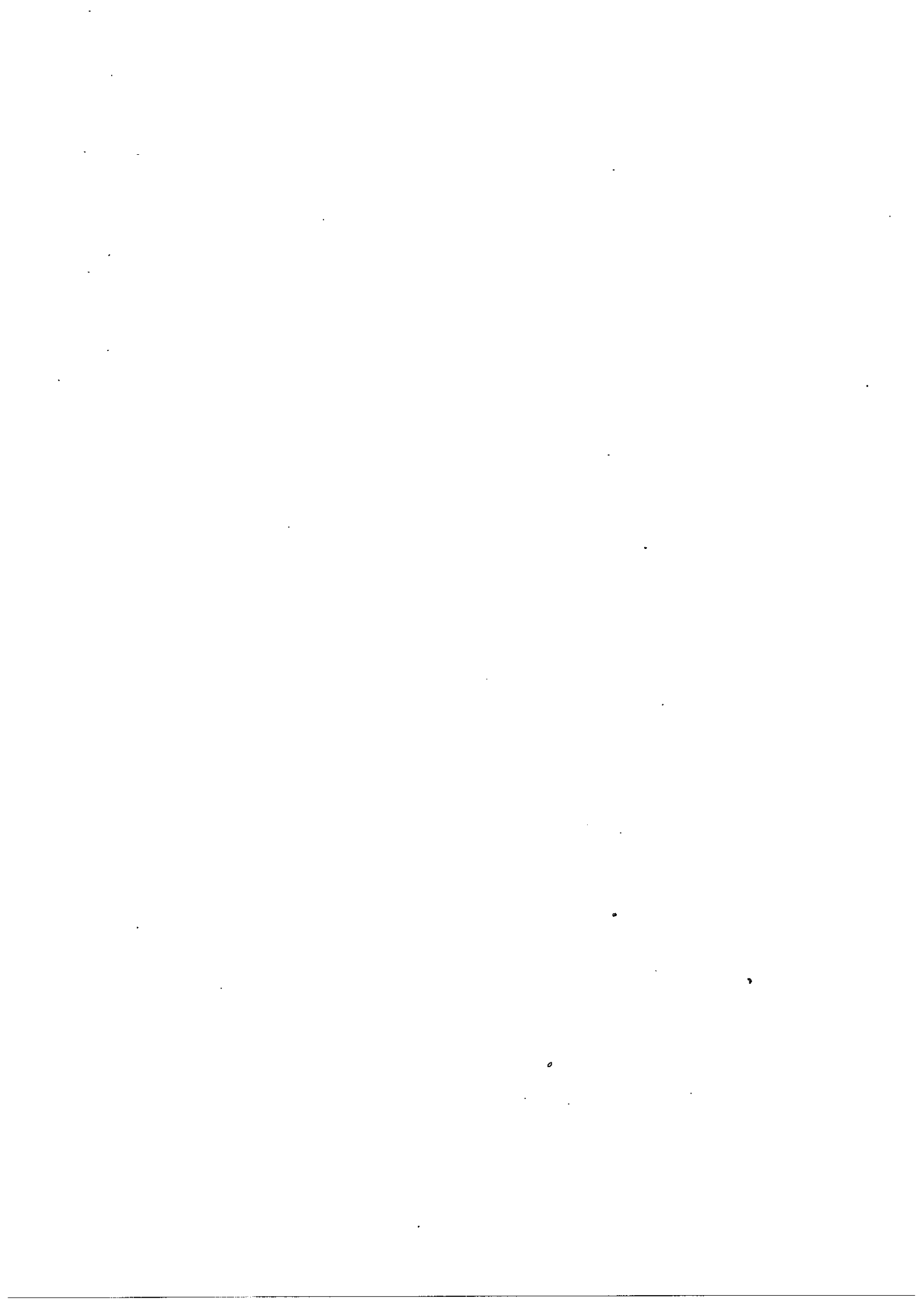
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: \_\_\_\_\_ ( )

Class: Primary 5. \_\_\_\_\_

Date: 11 October 2012

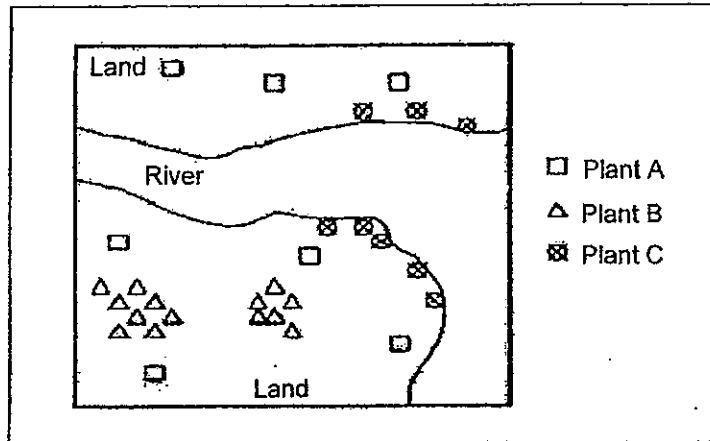
This booklet consists of 15 printed pages including this page.



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

(60 marks)

1. The diagram below shows the location of Plant A, Plant B and Plant C near a river.



Which one of the following sets matches the plants and their seeds correctly?

(1)

| Plant A | Plant B | Plant C |
|---------|---------|---------|
|         |         |         |

(2)

| Plant A | Plant B | Plant C |
|---------|---------|---------|
|         |         |         |

(3)

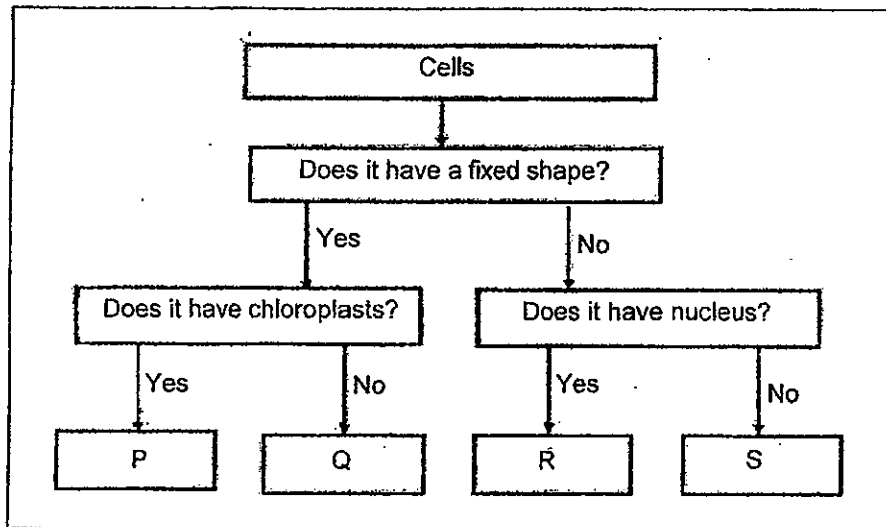
| Plant A | Plant B | Plant C |
|---------|---------|---------|
|         |         |         |

(4)

| Plant A | Plant B | Plant C |
|---------|---------|---------|
|         |         |         |

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2. Study the flowchart below.



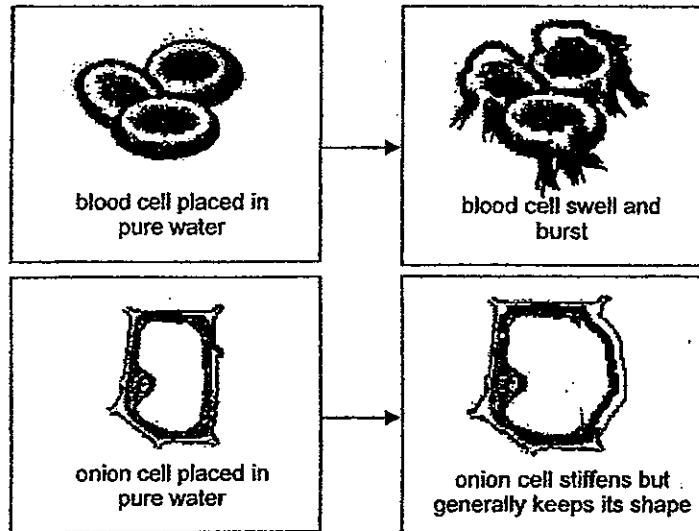
What is P, Q, R and S?

|     | P               | Q               | R              | S              |
|-----|-----------------|-----------------|----------------|----------------|
| (1) | Leaf Cell       | Onion Skin Cell | Cheek Cell     | Red Blood Cell |
| (2) | Leaf Cell       | Root Cell       | Sperm Cell     | Egg Cell       |
| (3) | Onion Skin Cell | Leaf Cell       | Red Blood Cell | Sperm Cell     |
| (4) | Root Cell       | Guard Cell      | Egg Cell       | Cheek Cell     |

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3. An experiment is carried out on both the onion and red blood cell to find out what happens when they absorb too much water. Both cells are placed in pure water so that their cell membranes absorb as much water as possible.

The diagram below shows the results of the experiment 2 hours later.



three

Four students, Alice, Brenda, Candy and Deborah, each gave a reason why the red blood cell burst 2 hours later but not the onion cell when too much water enters it.

Alice: Unlike the blood cell, the onion cell has a cell wall that supports and gives the onion cell its shape.

Brenda: Unlike the blood cell, the onion cell has a nucleus that prevents water from being absorbed into the cell.

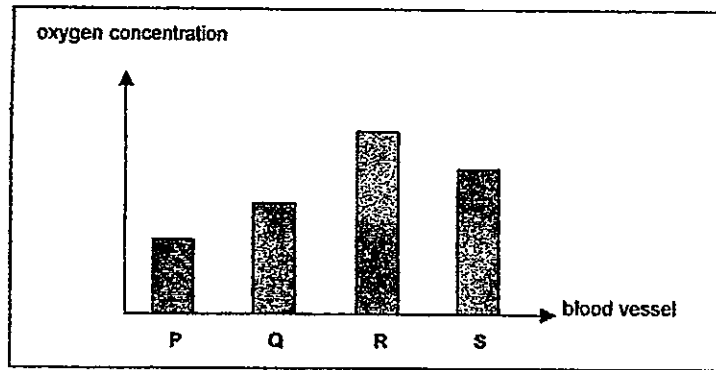
Candy: Unlike the blood cell, the onion cell has chloroplasts that allows photosynthesis to take place.

Who made the correct reasoning?

- (1) Alice only
- (2) Candy only
- (3) Brenda only
- (4) Brenda and Candy only

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4. The graph below shows the concentration of oxygen in blood samples taken from four different places in the human circulatory system.

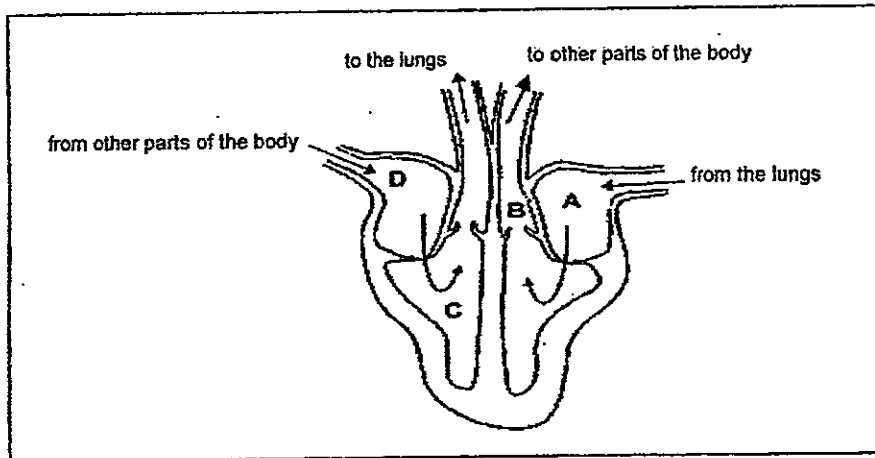


Which blood vessel, P, Q, R or S is most likely to carry blood from the body to the heart?

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

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5. The diagram below shows how blood flows within a human heart.

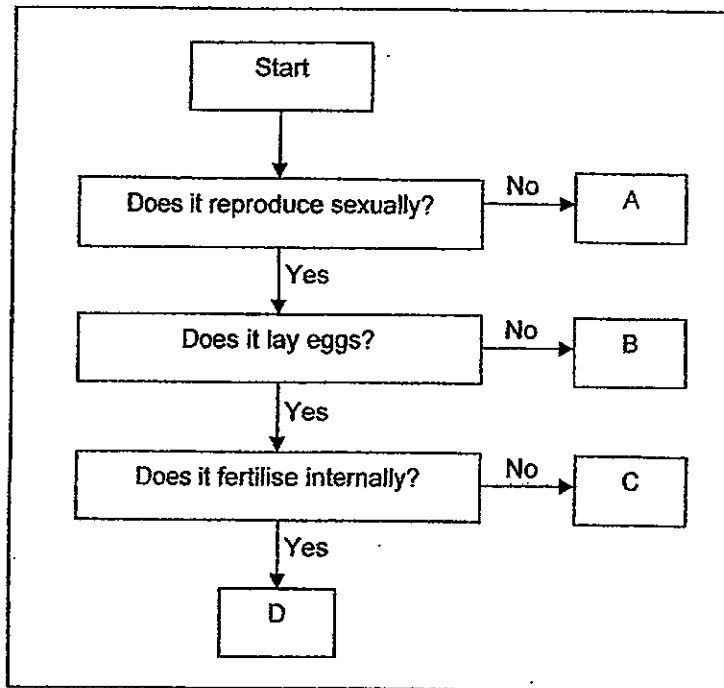


Which of the following describes the blood found in each of these parts correctly?

|     | A                            | B                            | C                            | D                            |
|-----|------------------------------|------------------------------|------------------------------|------------------------------|
| (1) | blood rich in oxygen         | blood rich in oxygen         | blood rich in carbon dioxide | blood rich in carbon dioxide |
| (2) | blood rich in oxygen         | blood rich in carbon dioxide | blood rich in carbon dioxide | blood rich in oxygen         |
| (3) | blood rich in carbon dioxide | blood rich in carbon dioxide | blood rich in oxygen         | blood rich in oxygen         |
| (4) | blood rich in carbon dioxide | blood rich in oxygen         | blood rich in oxygen         | blood rich in carbon dioxide |

(Go on to the next page)

6. Study the flow chart below.



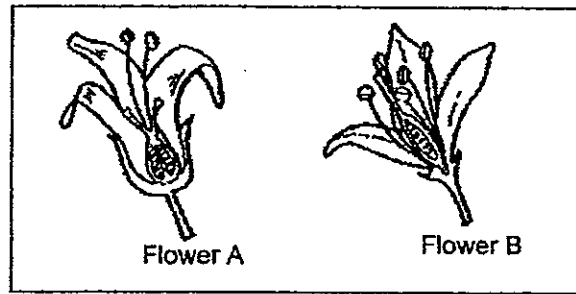
Which letters in the chart represent the parrot and the amoeba correctly?

|     | parrot<br>Guppy | Amoeba |
|-----|-----------------|--------|
| (1) | A               | C      |
| (2) | D               | A      |
| (3) | C               | B      |
| (4) | B               | D      |

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7. Three girls, Philia, Min Ann and Yi Yi were observing the cross-sections of two different flowers as shown below.



Each girl made a statement about what she observed about flowers.

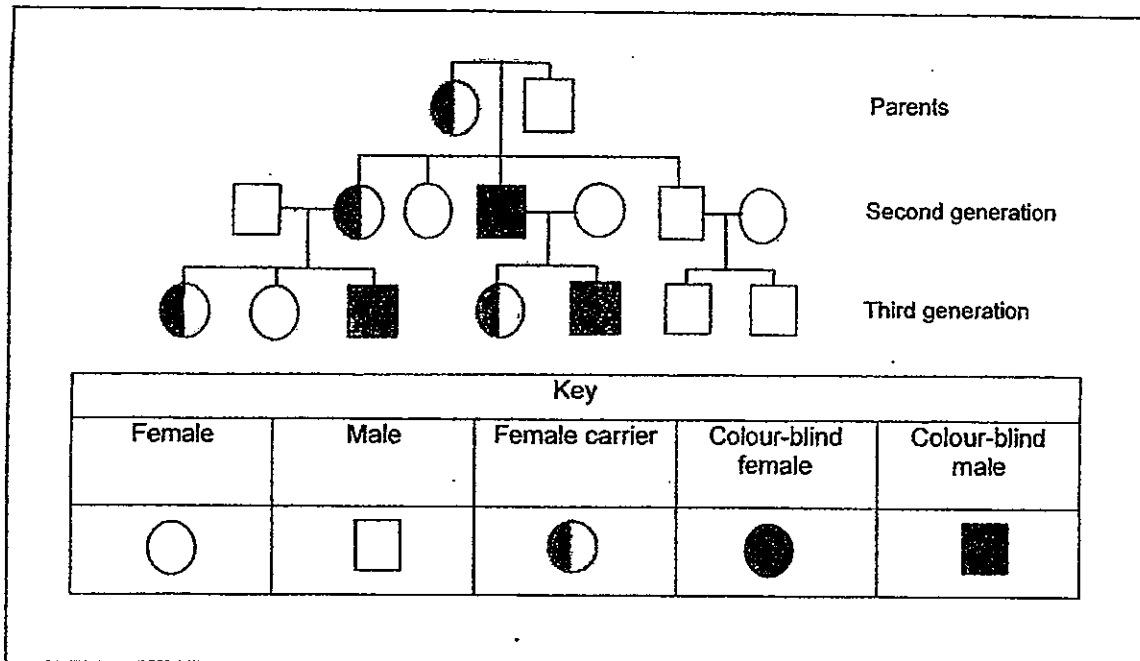
- Philia: Flower A has male parts only.  
 Min Ann: Pollination can take place in both Flower A and Flower B.  
 Yi Yi: Both Flower A and Flower B will most likely grow into fruits.

Who made the correct statements?

- (1) Philia and Yi Yi only
- (2) Min Ann and Yi Yi only
- (3) Philia and Min Ann only
- (4) Philia, Min Ann and Yi Yi

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8. The family tree below shows the children and grandchildren of a female carrier of colour-blindness and a male who is not colour-blind.



How many of the daughters or granddaughters are not colour blind?

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

(Go on to the next page)

9. Study the two groups of animals below.

| Group A    |
|------------|
| Eagle      |
| Sparrow    |
| Kingfisher |

| Group B  |
|----------|
| Goat     |
| Squirrel |
| Leopard  |

4 girls, Ginny, Heidi, Isabel and Jenny, made the following statements about the two groups of animals.

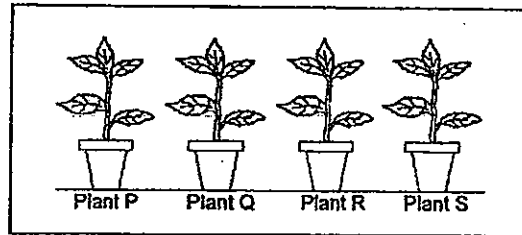
- Ginny : A bat can be classified in Group A because it can fly.  
Heidi : A bee can be classified in Group B because it has six legs.  
Isabel : A guppy can be classified in Group B because it gives birth to live young.  
Jenny : An ostrich can be classified in Group A because it has an outer covering of feathers.

Who made the correct statements?

- (1) Ginny and Heidi
- (2) Heidi and Isabel
- (3) Heidi, Isabel and Jenny
- (4) Ginny, Isabel and Jenny

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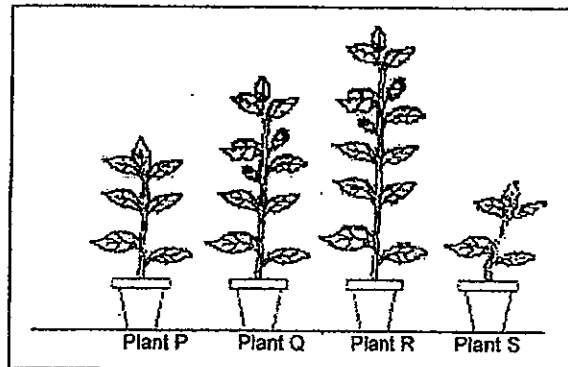
10. Phoebe wanted to examine the effect of fertiliser in some plants. She placed 4 similar plants, P, Q, R and S, in identical pots filled with the same amount and type of soil as shown in the diagram below.



The same liquid fertiliser was used each time. However, the amount of water and fertiliser given to each plant were varied as shown in the information below.

| Plant | Amount of water given per day (ml) | Amount of fertiliser given (drops) |
|-------|------------------------------------|------------------------------------|
| P     | 50                                 | 0                                  |
| Q     | 50                                 | 5 drops every 5 days               |
| R     | 50                                 | 5 drops daily                      |
| S     | 0                                  | 0                                  |

After 15 days, the results are shown in the diagram below.

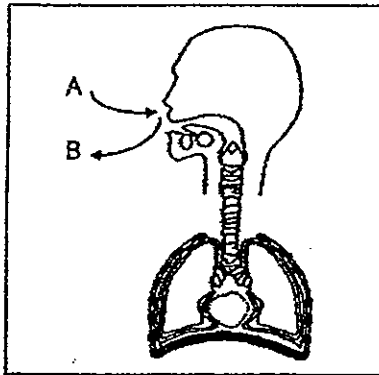


Which of the plants above is the 'control' for this experiment?

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

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11. The diagram below shows the human respiratory system.



A represents the air from the surroundings that enters the respiratory system while B represents the air that leaves the respiratory system into the surroundings.

Four pupils, Ann, Ben, Cath and Don, made the following statements about A and B.

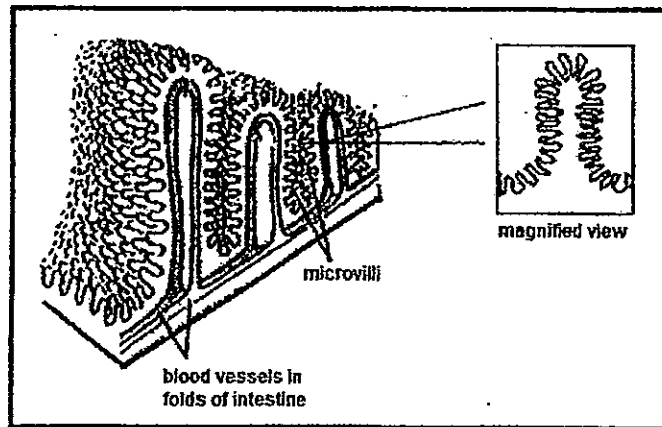
- Ann : B can make limewater turn chalky.  
 Ben : B contains as much amount of carbon dioxide as oxygen.  
 Cath : A contains the same amount of nitrogen and rare gases as B.  
 Don : A enters the nose and travels down the windpipe but only oxygen enters the lungs.

Who made the correct statements?

- (1) Ann and Cath only  
 (2) Ann, Ben and Don only  
 (3) Ben, Cath and Don only  
 (4) Ann, Ben, Cath and Don

(Go on to the next page)

12. The diagram below shows part of a small intestine found in the human digestive system.



Microvilli are finger-like structures found in the small intestine and digested food is absorbed by them.

Based on the information above, three girls, Rachel, Levina and Hannah made the following statements.

Rachel: The structures provide a greater surface area to absorb the digested food into the bloodstream at a faster rate.

Levina: The structure does not have any effect on the absorption of digested food into the bloodstream.

Hannah: The structure speeds up the rate of absorption of digested food

Who made the correct statement/s?

- (1) Levina only
- (2) Hannah only
- (3) Rachel and Levina only
- (4) Rachel and Hannah only

(Go on to the next page)

13. Four girls, Kyla, Leticia, Mona and Nellie, made the following statements about how the body reacted when a person exercised.

Kyla: More oxygen is produced.

Leticia: Blood is circulating at a faster rate.

Mona: The heart is beating at a faster rate.

Nellie: The body needs more blood and food to provide energy.

Who made the correct statement/s?

- (1) Kyla and Mona only
  - (2) Leticia and Mona only
  - (3) Mona, Nellie and Kyla only
  - (4) Kyla, Leticia, Mona and Nellie
14. The table below shows the characteristics of the mango that 4 mango trees, Tree A, B, C and D, bear.

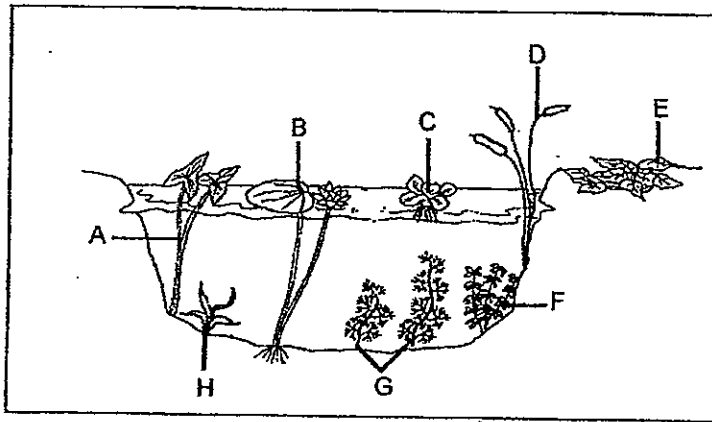
Based on the table, which of the following pair of trees should be used to carry out genetic selection to obtain the most desirable mango produced?

| Tree                          | A                      | B                     | C                    | D                 |
|-------------------------------|------------------------|-----------------------|----------------------|-------------------|
| Characteristics of its fruits | small, sweet and juicy | small, sour and juicy | small, sweet and dry | big, sour and dry |

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

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15. The diagram below shows five plants, growing in and near a pond.



Which of the plants shown above, A, B, D, E, F, G or H, would **not** grow if plant C multiplied rapidly?

- (1) A and B only
- (2) B and D only
- (3) F, G and H only
- (4) A, B, D, F, G and H only

(Go on to the next page)



# METHODIST GIRLS' SCHOOL

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## END-OF-YEAR EXAMINATIONS 2012 PRIMARY 5 SCIENCE

### BOOKLET A2

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

#### INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: \_\_\_\_\_

Class: Primary 5. \_\_\_\_\_

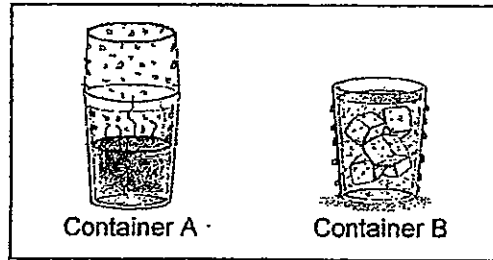
Date: 11 October 2012

This booklet consists of 16 printed pages including this page.

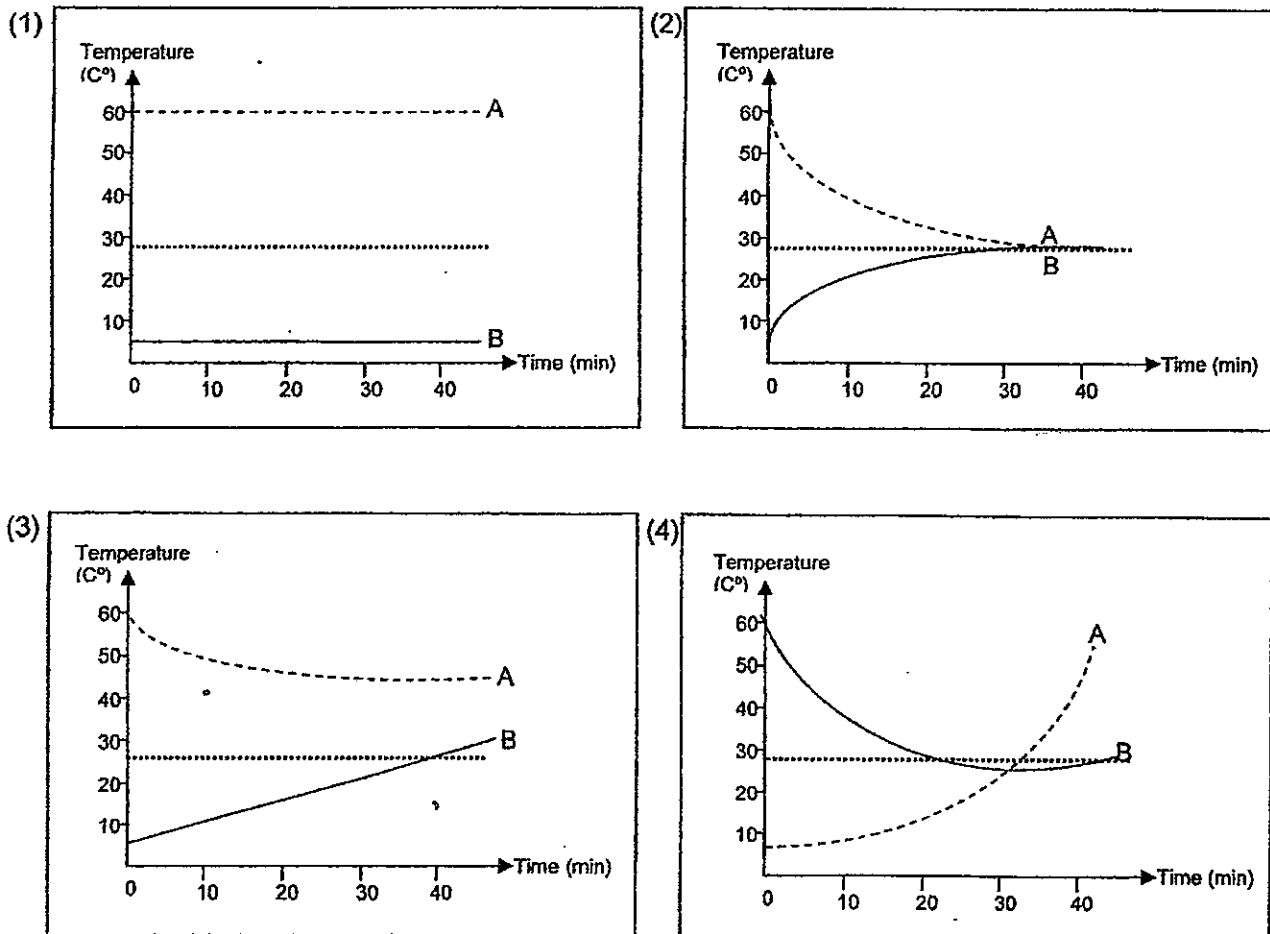
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

16. The diagram below shows two containers filled with water at different temperatures

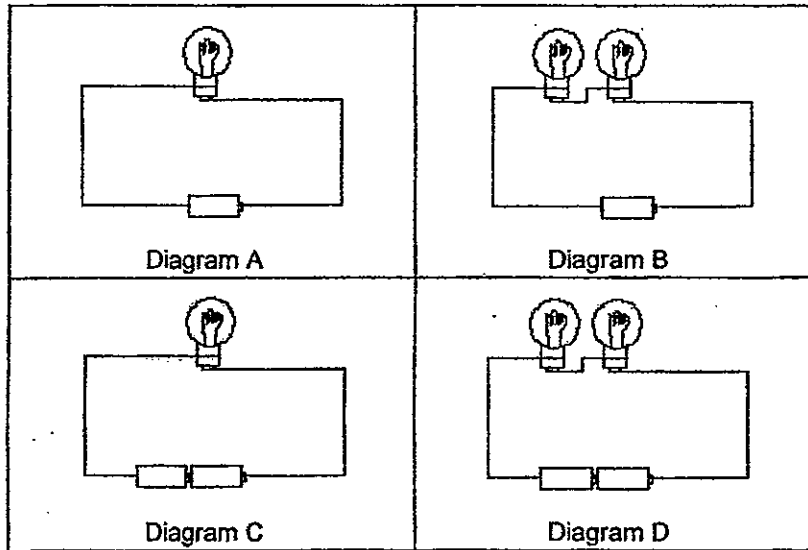


Which of the graph below **correctly** shows the temperature of the two containers of water as time passed?



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17. Heidi, Isabel, Jessica and Katherine were instructed to study the set up of four electric circuits as shown in the diagram below. Each battery supplies 15 units of electrical energy to the circuit.



After studying the set ups, they made the following statements.

Heidi: The bulb in Diagram C will be the brightest.

Isabel: The bulbs in Diagram D will be the brightest.

Jessica: The bulbs in Diagram B will be the dimmest.

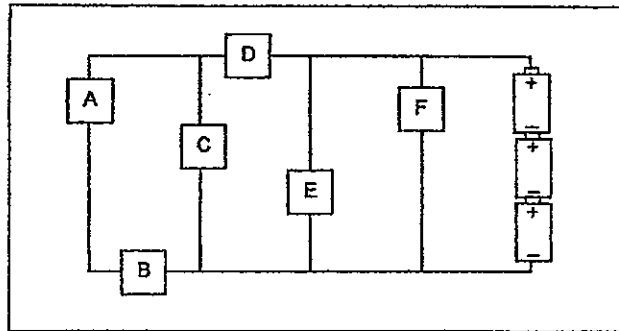
Katherine: The bulbs in Diagram D will be as bright as that in Diagram A.

Who made the correct statement/s?

- (1) Isabel only
- (2) Jessica only
- (3) Heidi and Jessica only
- (4) Heidi, Jessica and Katherine only

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18. The circuit below has six bulb holders, labelled, A, B, C, D, E and F, connected to each other.

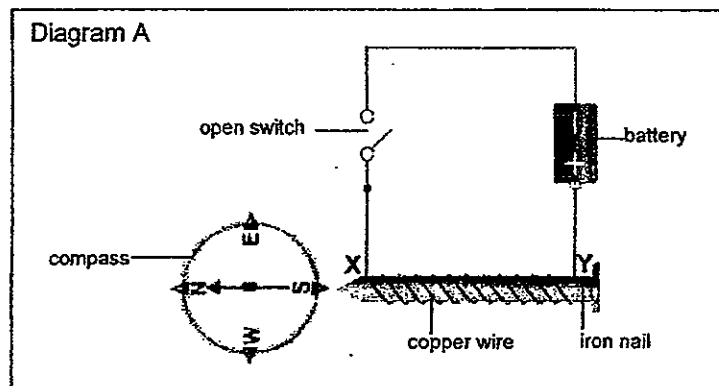


In which two bulb holders should bulbs be fixed such that both the bulbs would light up together?

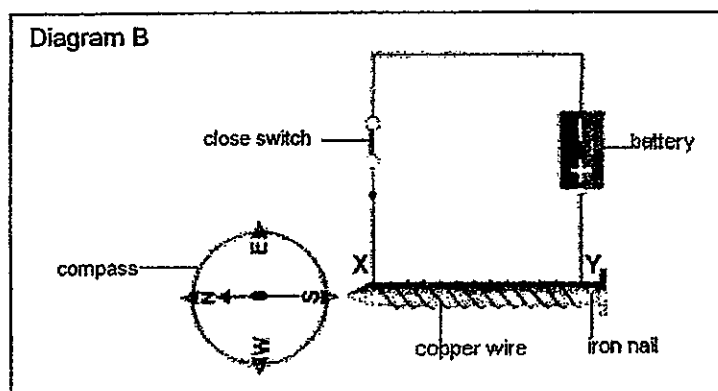
- (1) F and D
- (2) E and B
- (3) D and C
- (4) B and C

(Go on to the next page)

19. Jessica, Katherine and Mary prepared the set-up as shown in Diagram A below to prove the presence of a magnetic force in an electromagnet. X and Y represent the two poles of the electromagnet.



When they closed the circuit, they observed that the compass needle moved slightly and finally pointed to Position N of the compass as shown in Diagram B below.



Through their observation, they made the following statements:

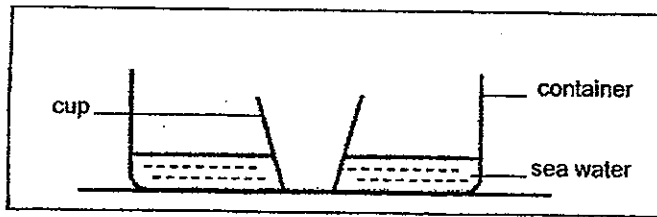
- Jessica : X represents the North Pole of the electromagnet.  
 Katherine : Y represents the South Pole of the electromagnet  
 Mary : The compass is used to indicate the presence of a magnetic force

Who made the correct statement/s?

- (1) Jessica only  
 (2) Katherine only  
 (3) Mary and Jessica only  
 (4) Jessica, Katherine and Mary

(Go on to the next page)

20. The diagram below shows an initial set-up given to Glenda for her to conduct an experiment.



Using the apparatus listed below, she was instructed to obtain fresh water from the cup in the container of sea water.

Apparatus given:

- a clear plastic sheet
- a 10g paper weight
- some sticky tape
- a high-intensity lamp

The following sentences list down the steps she should take to obtain fresh water from the container of sea water. However, they are not in order.

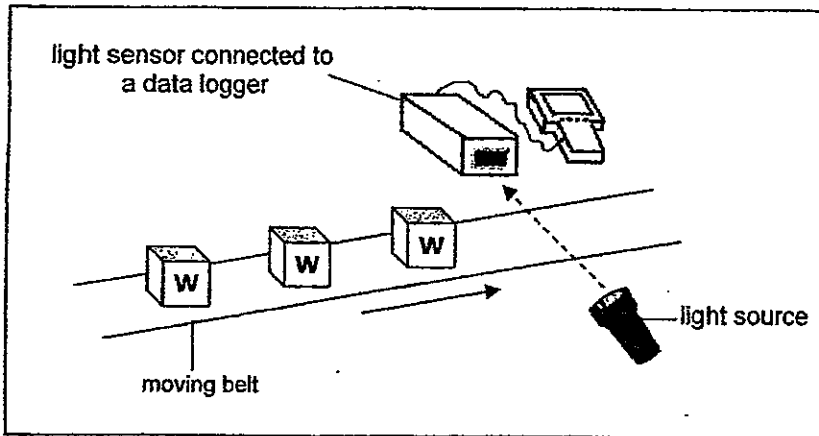
- A: Put the 10g weight on the plastic sheet, placed above the cup.  
 B: Collect freshwater in the cup.  
 C: Use some sticky tape and stick the clear plastic sheet onto the top of the container.  
 D: Wait for the water to drop into the cup.  
 E: Use a high-intensity lamp and shine it at the sea water

Which of the following shows the **correct order** of steps that she should take to obtain fresh water from the container of sea water?

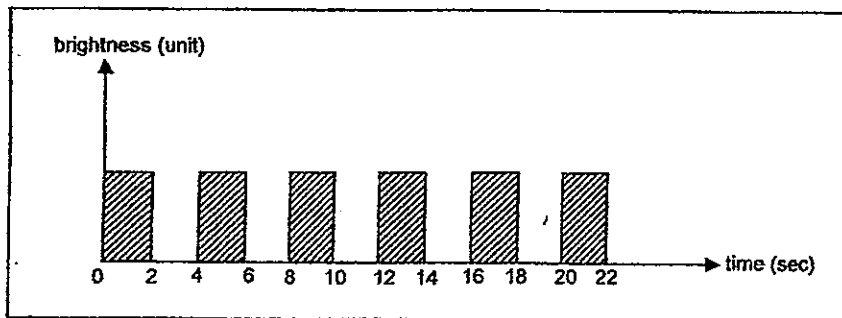
- (1) A, C, B, D, E  
 (2) A, C, D, E, B  
 (3) C, A, E, D, B  
 (4) C, A, E, B, D

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21. Jamie set-up an experiment using a light sensor to count the number of identical Object W, on a moving belt as shown in the diagram below.



The belt moves at a constant speed. When an Object W is between the light source and light sensor, it **blocks off** the light from reaching the light sensor. The data recorded is shown in the bar graph below.

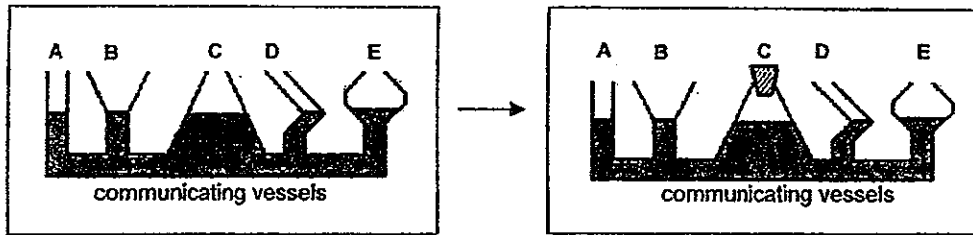


Based on the graph, how many of Object W passed through the sensor in 22 seconds?

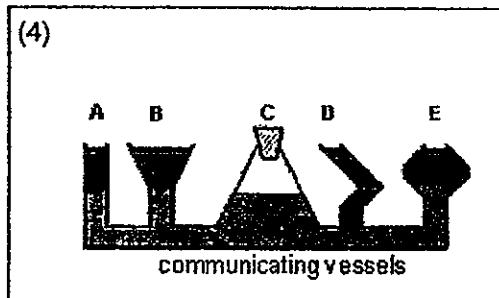
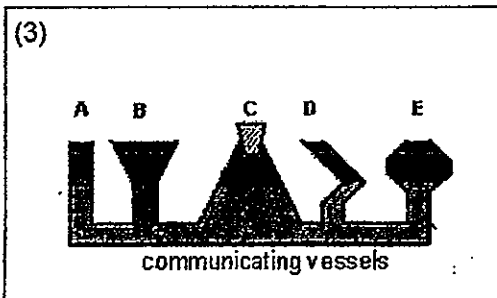
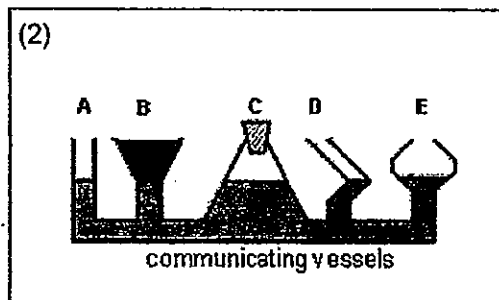
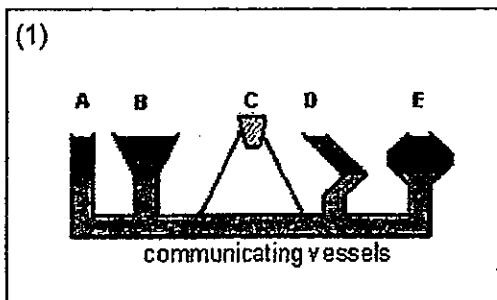
- (1) 5
- (2) 6
- (3) 11
- (4) 22

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22. Yi Yi filled some communicating vessels with coloured water. She then covered Vessel C tightly with a stopper as shown below.



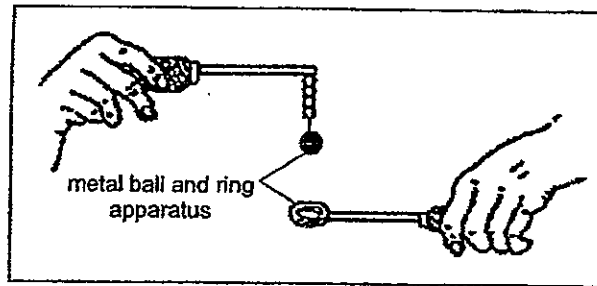
Then she continued to pour water into B.  
Which of the following would show the water level A, B, C, D and E correctly?



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23. The picture below shows a metal ball and ring apparatus. The ring was big enough for the ball to pass through at the start of the experiment.



Three girls, Nellie, Odelia and Philia, suggested the following procedures to prevent the ball from passing through the ring.

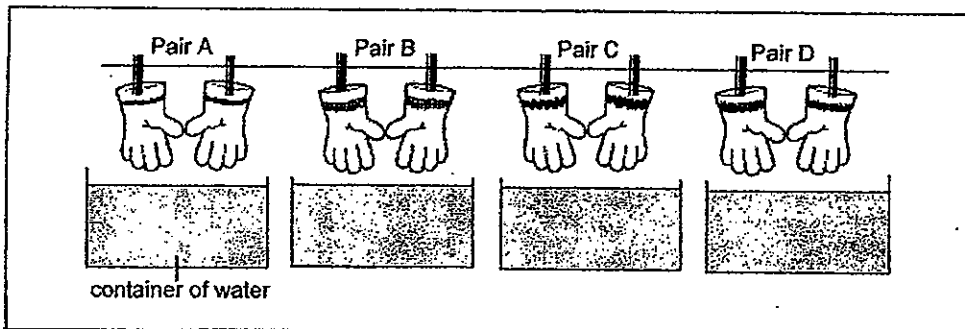
- Nellie: Heat up the ring.  
Odelia: Cool the ring.  
Philia: Heat up the metal ball.

Who gave the **correct** suggestions?

- (1) Nellie and Odelia
- (2) Odelia and Philia
- (3) Nellie and Philia
- (4) Nellie, Odelia and Philia

(Go on to the next page)

24. Min Ann prepared the set up as shown in the diagram below to investigate whether the type of material the gloves are made of affects the amount of water absorbed.



She measured the mass of each pair of gloves before placing them in a container of water. She measured the mass of each pair of gloves again after taking them out of the water.

The following table shows the results of her investigation.

| Pair | Mass of gloves              |                              |
|------|-----------------------------|------------------------------|
|      | Before placing in water (g) | After taken out of water (g) |
| A    | 50.5                        | 56.0                         |
| B    | 50.5                        | 50.5                         |
| C    | 50.5                        | 45.5                         |
| D    | 50.5                        | 51.5                         |

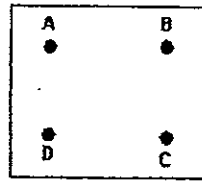
Min Ann realised that she had made a mistake during the investigation.

With which pair of gloves did Min Ann make the mistake and what is the **most likely** reason for her mistake?

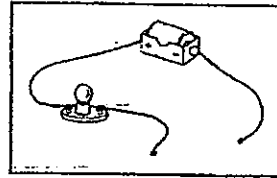
|     | She made the mistake with pair | The reason is because                           |
|-----|--------------------------------|---|
| (1) | A                              | the change in mass of the gloves was too great  |
| (2) | B                              | mass of the gloves did not change               |
| (3) | C                              | mass of the gloves decreased                    |
| (4) | D                              | the change in mass of the gloves was too little |

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25. The circuit card shown in the diagram below has a metal thumbtack at each of the points A, B, C and D. Some of the thumbtacks are connected by wires behind the card.



circuit card



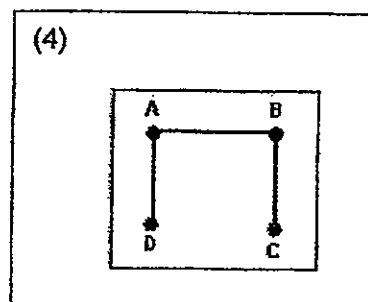
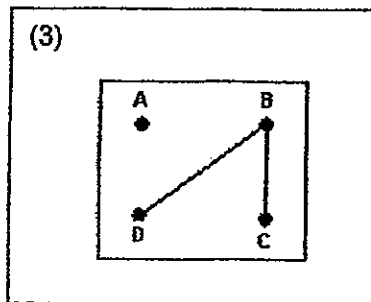
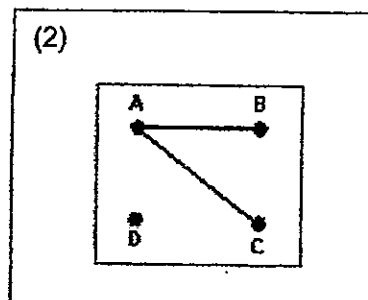
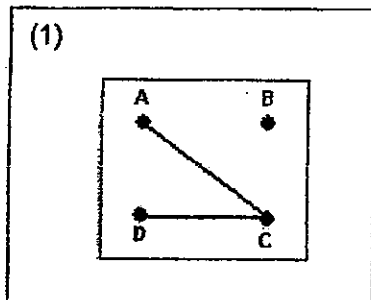
circuit tester

To find out how these thumbtacks are connected, the two ends of the circuit tester as shown in the diagram above, are connected to 2 different thumbtacks each time.

The results are shown in the table below.

| Circuit tester connected to thumbtacks at | Does the bulb in the circuit tester light up? |
|---|---|
| A and B                                   | No  |
| A and C                                   | Yes   |
| A and D                                   | Yes   |
| B and C                                   | No  |
| B and D                                   | No  |

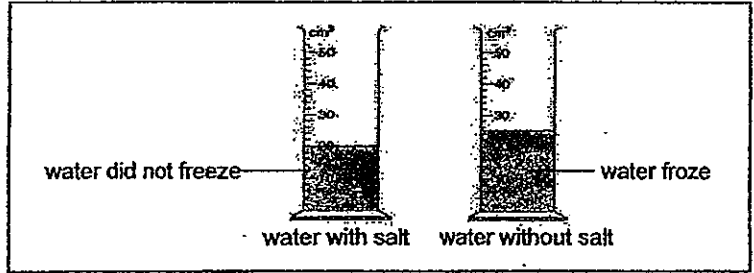
From the results shown in the table above, which one of the following is a possible arrangement of the wires behind the circuit card?



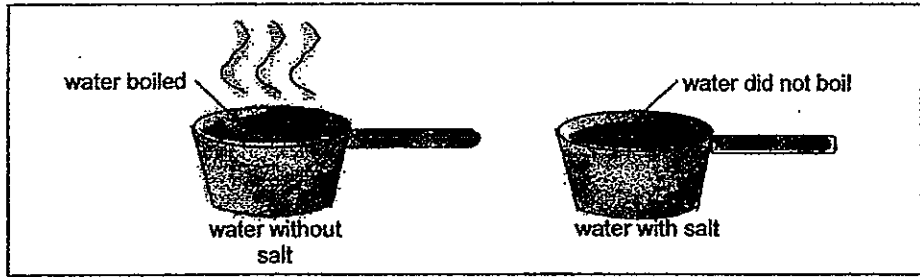
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26. Jamie poured an equal amount of water into two measuring cylinders. She dissolved five large spoonfuls of salt into one of the cylinders and placed both cylinders into a freezer.

After 6 hours, she removed both cylinders from the freezer and the results are shown in the diagram below.



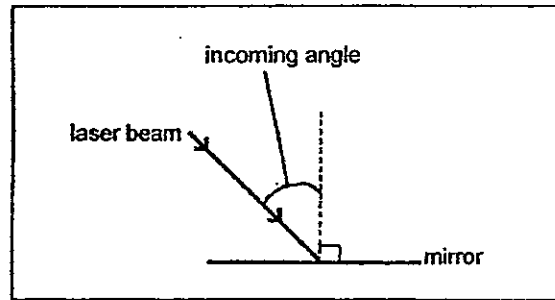
Jamie then poured an equal amount of water into two pots. She dissolved five large spoonfuls of salt into one of the pots and heated both pots under the same heat intensity until water in one of the pots boiled. The results are shown in the diagram below.



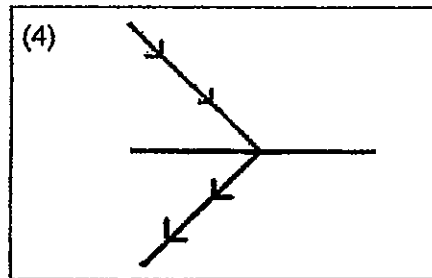
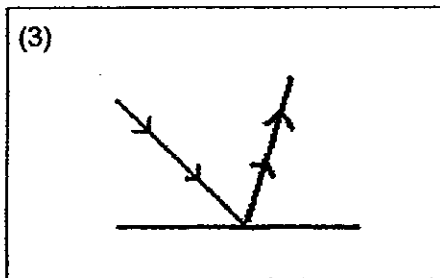
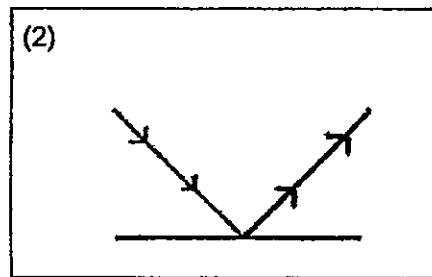
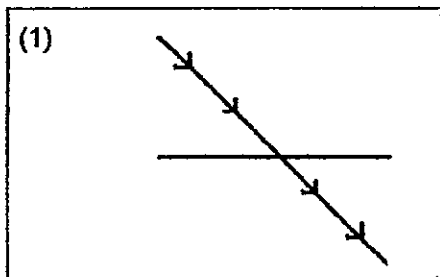
What can be concluded about the boiling point and freezing point of water when salt was added to it?

- (1) The freezing point and the boiling point both increased.
- (2) The freezing point and the boiling point both decreased.
- (3) The freezing point and the boiling point both remained the same.
- (4) The freezing point will be lowered and the boiling point will be increased.

27. After a laser beam strikes a mirror, the beam is reflected. The angle at which the beam is reflected is equal to the incoming angle. The diagram below shows a laser beam striking a mirror as viewed from above.



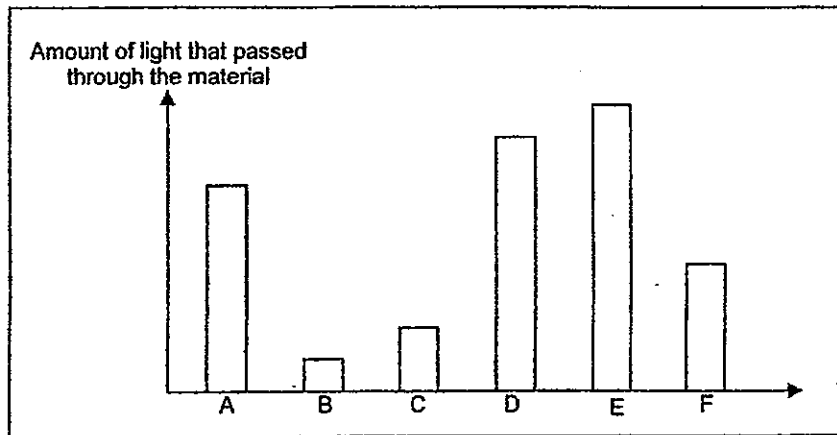
Which of the following shows the correct observation?



(Go on to the next page)



28. Marcus conducted an experiment to measure the amount of light that can pass through six different materials. He made use of a datalogger and recorded his results in the graph below.



The following statements were made based on the results given in the bar graph above.

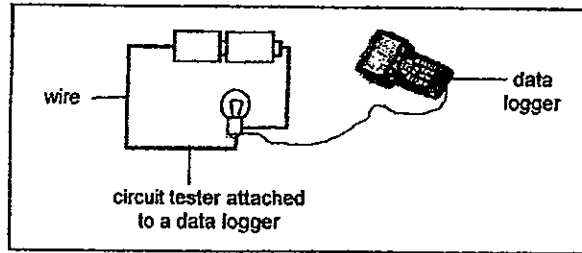
- A: Material E is opaque.  
 B: Material C is a mirror.  
 C: Material F is able to block light partially.  
 D: Material B is darker in colour than Material C.  
 E: Material F has a lighter shadow than Material E.  
 F: Material D allows more light to pass through than Material A.

Which statements are **definitely** true?

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

(Go on to the next page)

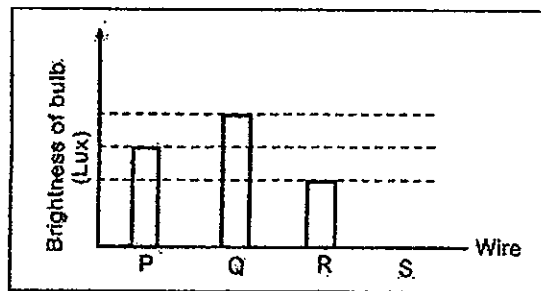
29. Harry wanted to find out if the thickness of the wire affected the brightness of the bulb in a circuit tester. He set up a circuit tester and connected it to a datalogger as shown in the diagram below.



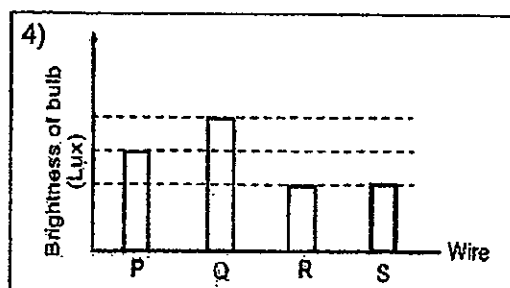
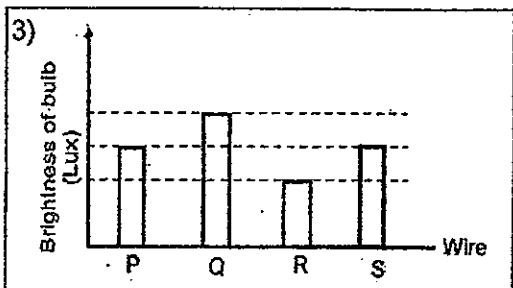
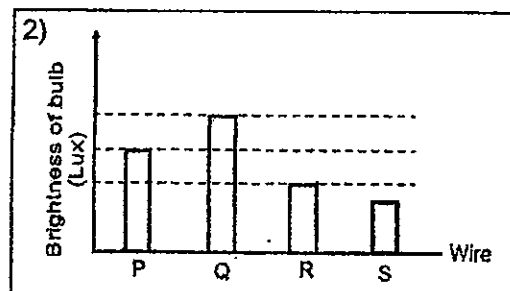
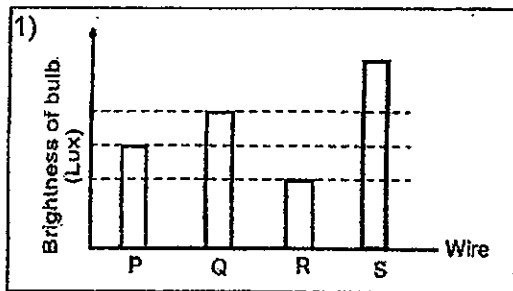
Harry used 4 types of wires of the same length and material, but of different thickness, P, Q, R and S, as shown below.

| thickness of wire |   |   |   |
|-------------------|---|---|---|
| P                 | Q | R | S |
|                   |   |   |   |

He recorded his observation in the bar graph below. However, the bar for Wire S was not drawn. (Lux is the unit for measuring the brightness of the bulb.)

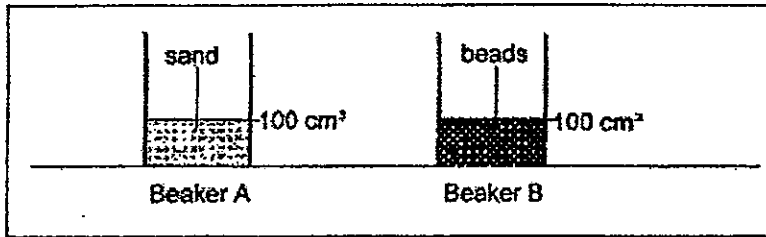


Which of the following graphs represent the correct brightness for thickness of Wire S correctly?



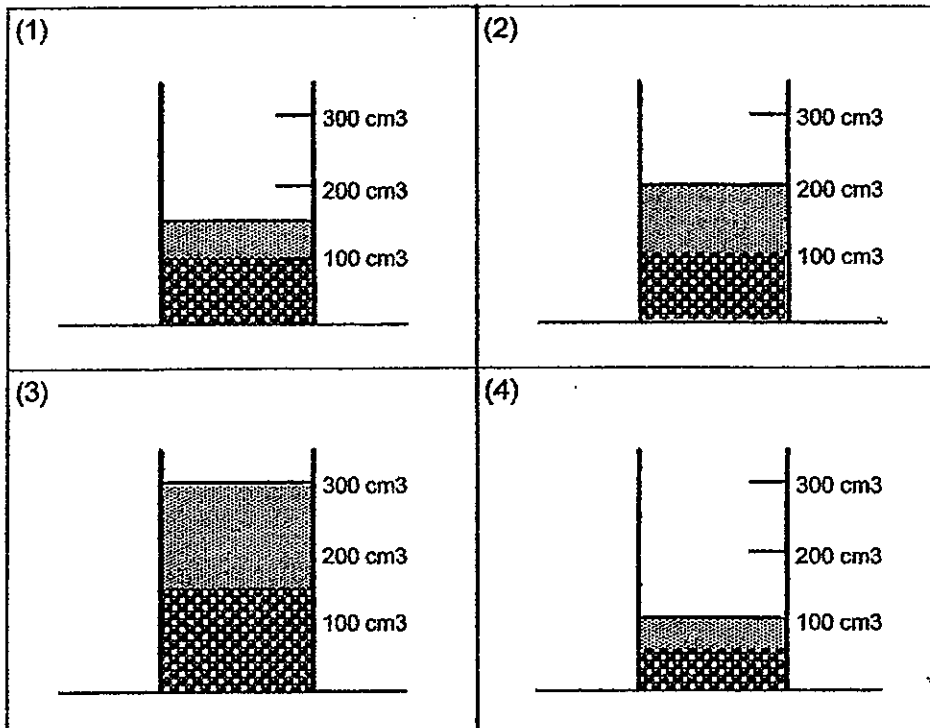


30. Sonia poured  $100 \text{ cm}^3$  of sand into Beaker A and  $100 \text{ cm}^3$  of beads into Beaker B as shown in the diagram below.



Then she poured all the sand from Beaker A into Beaker B.

Which of the following diagrams show the total volume of the sand and the beads correctly?



(Go on to the next page)



# METHODIST GIRLS' SCHOOL

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## END-OF-YEAR EXAMINATIONS 2012 PRIMARY 5 SCIENCE

### BOOKLET B1

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

#### INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

Name: \_\_\_\_\_ ( )

Class: Primary 5. \_\_\_\_\_

Date: 11 October 2012

|                            |              |
|----------------------------|--------------|
| <b>Booklets A1 &amp; 2</b> | <b>/ 60</b>  |
| <b>Booklet B1</b>          | <b>/ 20</b>  |
| <b>Booklet B2</b>          | <b>/ 20</b>  |
| <b>TOTAL</b>               | <b>/ 100</b> |

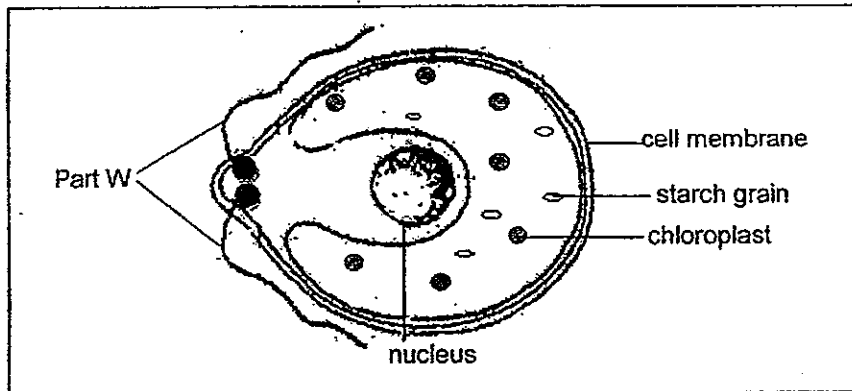
This booklet consists of 9 printed pages including this page.



For questions 31 to 37, write your answers in the space provided.

(20 marks)

31. Jane collected a sample of pond water and examined a few drops of it under a microscope. She observed and drew the diagram of a single-celled organism, Organism X, as shown below. She noticed that Organism X moves about using its tail-like structures, labelled as Part W.



Based on the diagram, Jane had difficulty classifying Organism X.

- a) Give a reason why Jane could not classify Organism X as an animal cell. (1m)

---



---

- b) Give a reason why Jane could not classify Organism X as a plant cell. (1m)

---



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- c) Part W is known as the flagella. State the main function of the flagella. (1m)

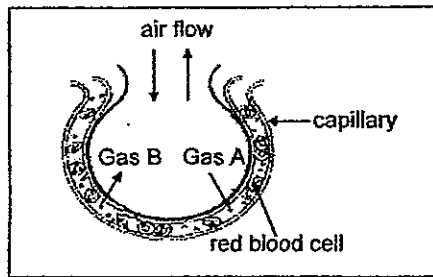
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32. The diagram below shows a section of an air sac in the lung of a human.

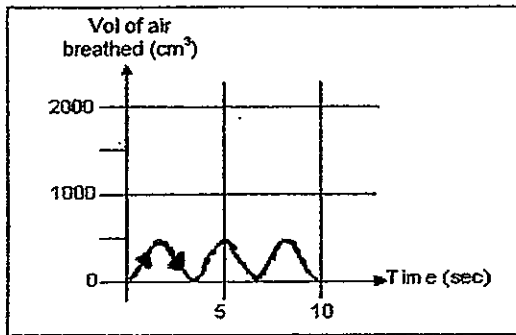


Gas A enters the capillary from the air sac. Gas B leaves the capillary and enters the air sac.

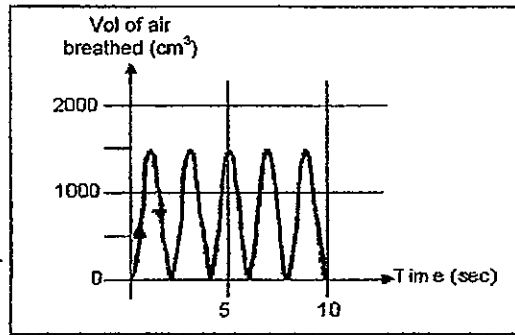
a) What is Gas A and Gas B? (1m)

- i) Gas A is \_\_\_\_\_
- ii) Gas B is \_\_\_\_\_

Rebecca measured the volume of air she breathed in and out of her lungs before and during exercise. The graphs below show her results.



before exercise



during exercise

b) How much air did Rebecca breathe in with each breath before exercise and during exercise? (1m)

- i) before exercise: \_\_\_\_\_ cm<sup>3</sup>
- ii) during exercise: \_\_\_\_\_ cm<sup>3</sup>

c) Besides increasing the volume of air breathed in, in what other way did Rebecca's breathing change during exercise? How is this shown in the graph? (1m)

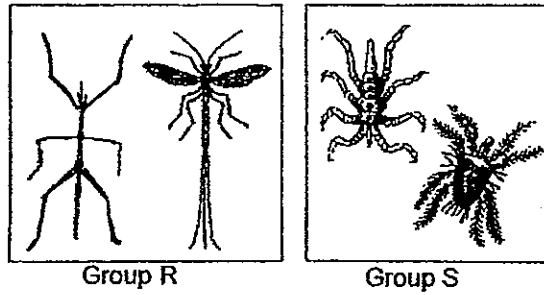
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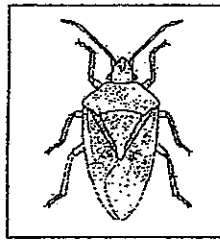
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33. Sonia found some animals in her garden. She classified them into two groups, R and S as shown in the diagram below.



- a) Which animal kingdom does Group R belong to? (½m)
- 
- b) Based on the pictures above, state one difference between the animals in Group R and Group S. (1m)
- 
- 

The diagram below shows Animal X.

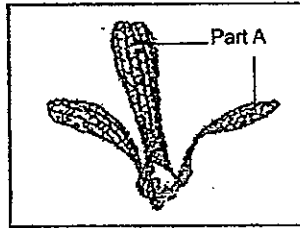


Animal X

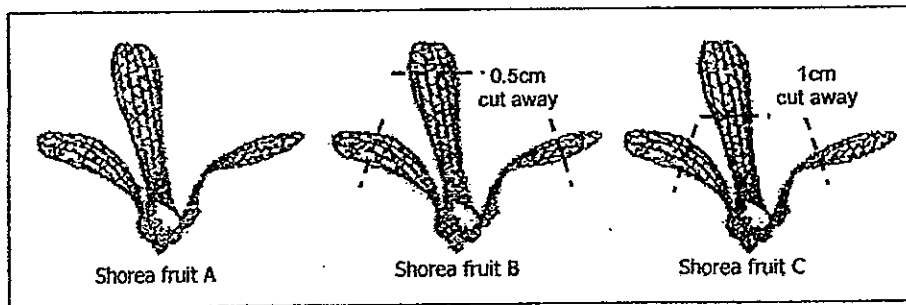
- c) In which group, R or S, would you put Animal X in? Give a reason for your answer. (1m)
- 
- 

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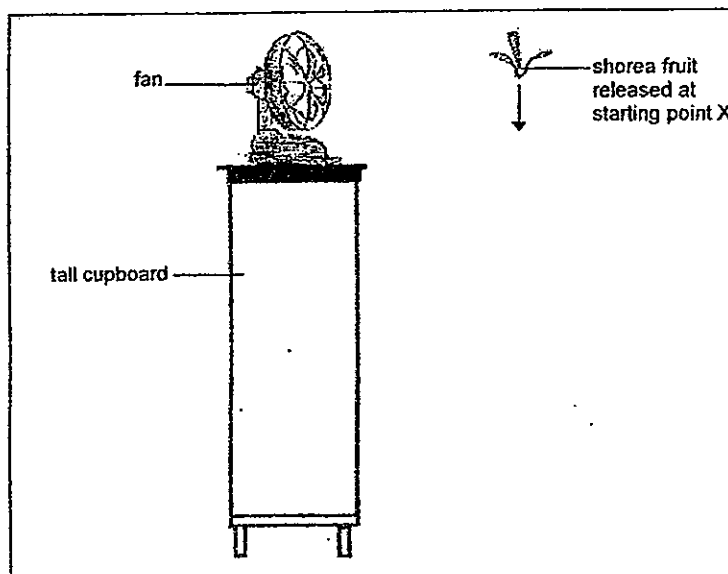
34. The diagram below shows a shorea fruit. Part A shows its wing-like structure.



Rachel wanted to carry out an experiment to find out how the length of the wing-like structure (Part A) of a shorea fruit affects the distance it travelled. She used three similar shorea fruits with the same mass. Shorea fruit A was left intact. Shorea fruit B had its wing-like structures, 0.5 cm cut away and Shorea fruit C had its wing-like structures, 1 cm cut away as shown in the diagram.



Each of the three fruits was then released from the same starting point, X, in front of a fan placed on a tall cupboard as shown in the diagram below.




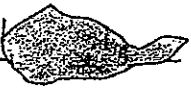
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- a) Which of the following variables should be kept constant for this experiment? Tick (✓) your answer/s.  
(1m)

|      | Observation   | Tick your answer/s |
|------|---|--------------------|
| i)   | Mass of each shorea fruit.  |                    |
| ii)  | Height at which the shorea fruit was dropped.                           |                    |
| iii) | Time taken for the shorea fruit to stay in the air.                     |                    |
| iv)  | Distance between the starting point and the landing point of the fruit. |                    |

The table below shows the results of Rachel's experiment. However, some of the information was stained when she accidentally spilled coffee on it.

|                |   |
|----------------|---|
| Shorea fruit   | i) The t  (s) |
| Shorea fruit A | 20 s  |
| Shorea fruit B | ii)  s         |
| Shorea fruit C | 10 s  |

- b) What do you think the missing information was? (2m)

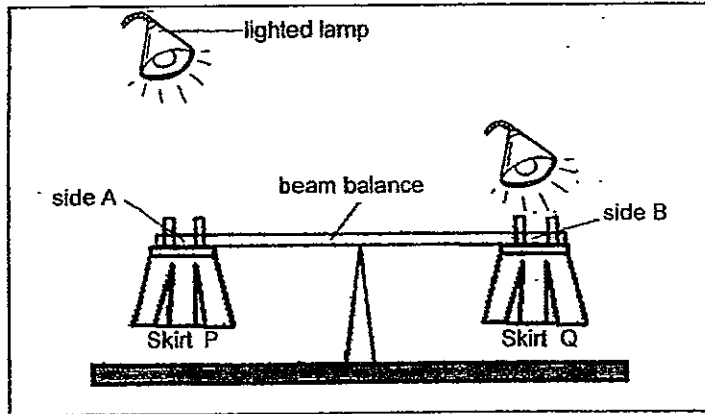
i) \_\_\_\_\_

ii) \_\_\_\_\_ s

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35. Barbara wanted to find out how temperature affects the rate of evaporation of water. She poured 300 ml of water on two identical skirts, each with a mass of 250g. She hung the skirts on a beam balance. The 2 ends of the beam balance are balanced at the start of the experiment. She placed identical lighted lamps at different distances from the skirts as shown in the figure below.



She recorded her results in the table below.

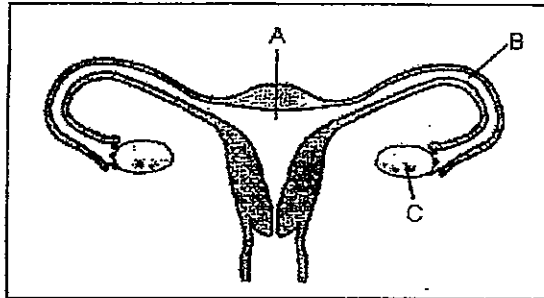
|                         | Mass of skirts (g) |         |
|-------------------------|--------------------|---------|
|                         | Skirt P            | Skirt Q |
| Start of the experiment | 250                | 250     |
| End of the experiment   | 230                | 200     |

- a) What is the purpose of the lighted lamp? (1m)
- 
- b) What will happen to the beam balance at the end of the experiment? (1m)
- 
- c) Based on her results, what can Barbara conclude about the effect of temperature on the rate of evaporation of water? (1m)
- 

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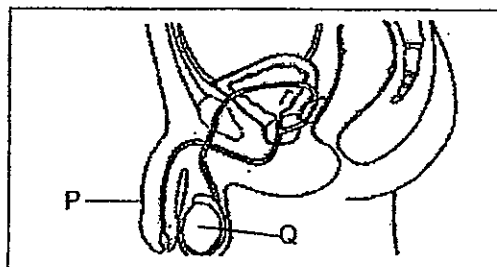
36. The diagram below shows parts of the female human reproductive system, labelled, A, B and C.



Based on the diagram above, the following statements were made. Put a tick (✓) in the appropriate boxes to indicate whether each of the statements is 'True' or 'False', for a normal process. (2m)

|    | Statement  | True                     | False                    |
|----|--|--------------------------|--------------------------|
| a) | The egg travels from C to A.                                 | <input type="checkbox"/> | <input type="checkbox"/> |
| b) | A fertilised egg is released from C every month.             | <input type="checkbox"/> | <input type="checkbox"/> |
| c) | The sperm fuses with the egg at A during fertilisation.      | <input type="checkbox"/> | <input type="checkbox"/> |
| d) | The foetus develops at A after the sperm fuses with the egg. | <input type="checkbox"/> | <input type="checkbox"/> |

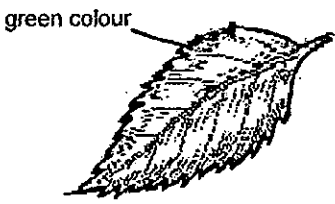
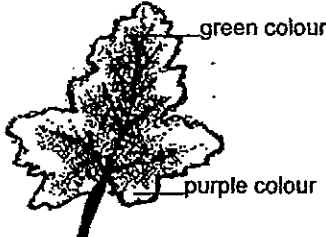
The diagram below shows the male reproductive system.



- e) Name the parts labelled P and Q respectively. (1m)
- i) P: \_\_\_\_\_
- ii) Q: \_\_\_\_\_
- f) Which part of a flowering plant has a similar function as Q? (½m)
- \_\_\_\_\_

(Go on to the next page)

37. The diagrams below show two leaves, A and B.

|   |  |
|---|--|
|                    |    |
| <p>Leaf A was plucked from a healthy plant. It was then left in a wooden cupboard for two days.</p> | <p>Leaf B was plucked from a healthy plant. It had been in the sun for two days.</p> |

Immediately, the colours of these leaves were first removed by boiling the leaves and soaking them in alcohol, then they were tested for the presence of starch using iodine. Iodine is a yellow-coloured solution that turns dark blue when it comes into contact with starch, which is excess sugar produced by leaves that is not used by the plant.

- a) Which part in a leaf cell allows it to make food? (½m)

---

- b) When a few drops of iodine were added to Leaf A, the iodine remained yellow. Explain why the iodine solution did not turn dark blue? (1m)

---



---

- c) When a few drops of iodine were added to the green and the purple parts of Leaf B, the iodine turned dark blue. What could be inferred from this observation? (½m)

---



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# METHODIST GIRLS' SCHOOL

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## END-OF-YEAR EXAMINATIONS 2012 PRIMARY 5 SCIENCE

### BOOKLET B2

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

#### INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

Name: \_\_\_\_\_

Class: Primary 5. \_\_\_\_\_

Date: 11 October 2012

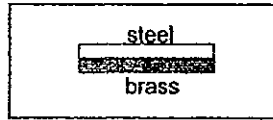
|            |      |
|------------|------|
| Booklet B2 | / 20 |
|------------|------|

This booklet consists of 12 printed pages including this page

For questions 38 to 45, write your answers in the space provided.

(20 marks)

38. The diagram below shows a bimetallic strip made of steel and brass fastened together.

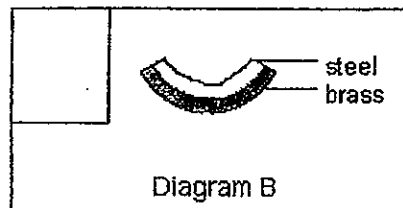
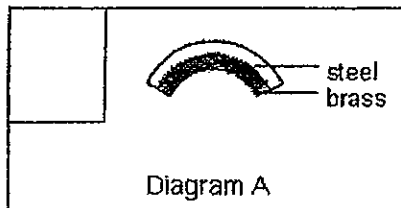


The bimetallic strip is cooled in the freezer at a temperature of  $-10^{\circ}\text{C}$  for 2 hours.

- a) Brass expands and contracts more than steel. What would the bimetallic strip look like, after it has been immediately taken out from the freezer?

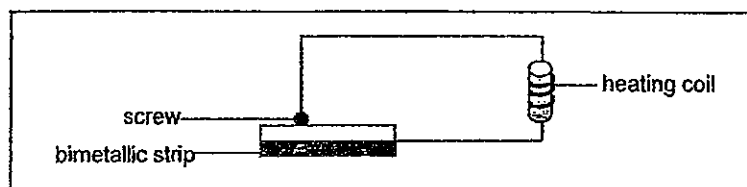
**Tick (✓)** your answer in the correct box below.

(1 m)



The same bimetallic strip is used as a thermostat in an electric iron. The thermostat regulates the iron's temperature while it is being used, keeping it at the desired temperature of  $80^{\circ}\text{C}$ .

The diagram below shows a simple set-up of the thermostat in a circuit in an electric iron at  $28^{\circ}\text{C}$ .



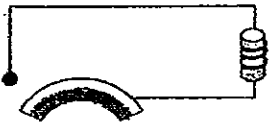
The bimetallic strip touches the screw to allow electricity to flow and heat up the heating coil.


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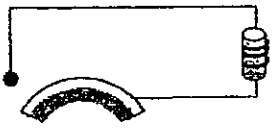


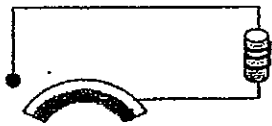
The pictures below show the reactions of the bimetallic strip to the change in temperature.

b) **Write 'Yes' or 'No'** under each picture to indicate if the bimetallic strip has reacted to the change in temperature **correctly**. (2m)

|  |  |
|--|--|
| i) Reaction of strip at 95°C                       |  |
| Does the strip react correctly to the temperature? | Answer:<br>_____   |

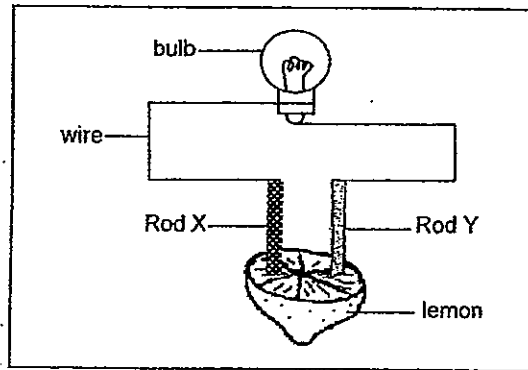
|  |  |
|--|--|
| ii) Reaction of strip at 10°C                      |  |
| Does the strip react correctly to the temperature? | Answer:<br>_____   |

|  |  |
|--|--|
| iii) Reaction of strip at 91°C                     |  |
| Does the strip react correctly to the temperature? | Answer:<br>_____   |

|  |  |
|--|--|
| iv) Reaction of strip at 16°C                      |  |
| Does the strip react correctly to the temperature? | Answer:<br>_____   |

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39. Leticia carried out an experiment to find out whether a lemon conducts electricity. She connected a lemon to an electric circuit as shown in the diagram below.



Leticia said that for the bulb to light up, Rod X and Rod Y must be a conductor of electricity.

- a) Do you agree with Leticia? Give a reason for your answer. (1m)

---

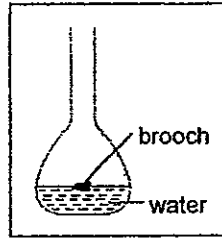
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- b) The lemon, with Rod X and Rod Y placed in it, when connected to the circuit, serves as an electrical component. Which electrical component does it serve as? (1m)

---

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40. Angeline accidentally dropped a small plastic brooch into a long-neck bottle filled with some water as shown in the diagram below. She wanted to remove the brooch from the bottle without pouring the water out.

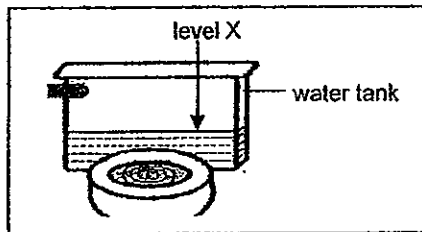


Her sister suggested that dropping some marbles into the bottle would help to remove the brooch.

- a) Do you think her sister's suggestion would work? (½ m)

---

The diagram below shows a water tank used for flushing a toilet bowl. The flushing and re-filling system is not shown in the diagram.



After flushing, water enters and re-fills the tank. The tank will stop filling when the water reaches level X.

In order to use less water to re-fill the water tank, some pebbles were placed into the water tank.

- b) Explain how this method would help reduce the amount of water used to re-fill the water tank. (1½m)

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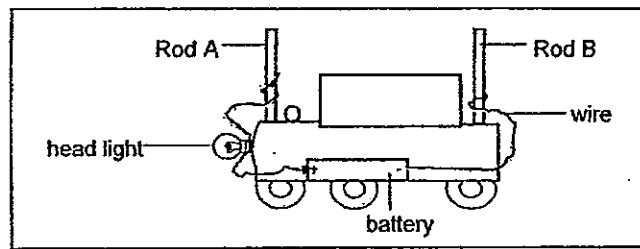
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- c) What property of matter is the suggestion in (a) and the method in (b) based on? (1m)

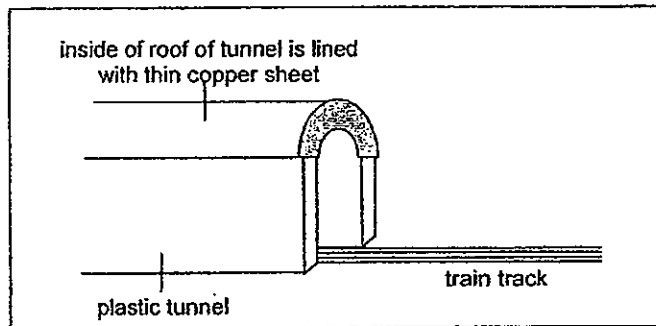
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41. Amanda built a toy train as shown in the diagram below.

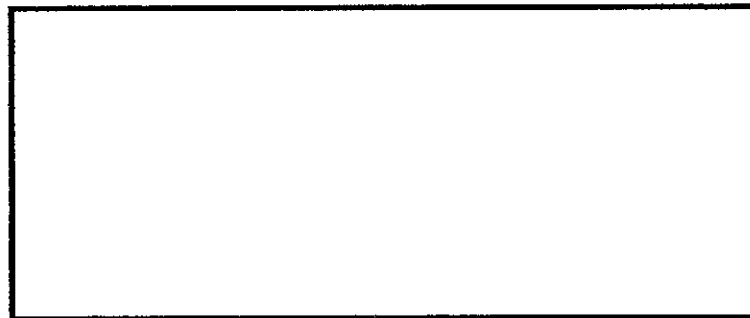


The train's headlight is operated by a battery, which will only light up when the train enters a plastic tunnel. The plastic tunnel has a roof, which is lined with a thin copper sheet as shown in the diagram below.



When the train enters the tunnel, Rod A and B touch the roof lined with the copper sheet. Thus, the contact between the train and the tunnel causes the bulb to light up.

- a) In the space provided below, **draw and label** a simple circuit diagram of Amanda's toy train. (1m)



- b) Explain why the headlight only lights up when the whole train is inside the tunnel. (1m)

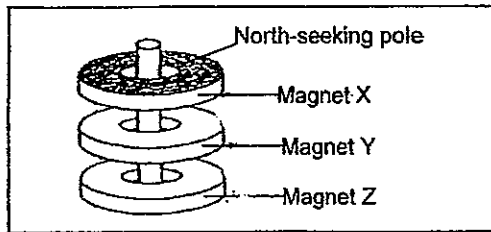
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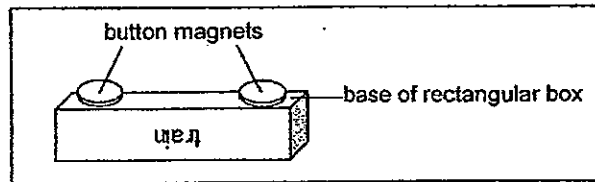
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42. The setup below consists of three ring magnets, X, Y and Z 'floating' above one another through a wooden rod. The shaded part of the Magnet X is its North-seeking pole.

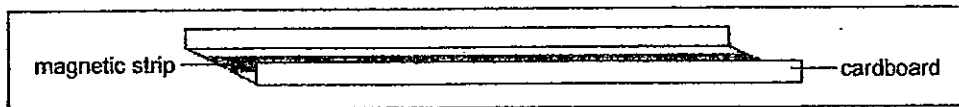


- a) Identify the pole of Magnet Z that is facing magnet Y in the setup above. (1m)

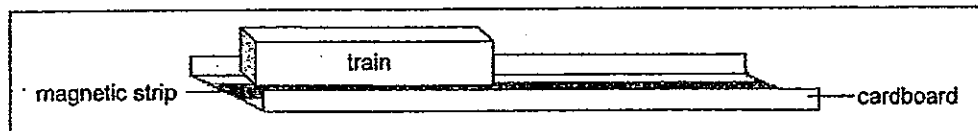
A Maglev train is a special train that floats a few centimetres above the track while it is moving. It is made possible by the use of very strong magnets. Glenda wanted to make a model of a Maglev train. She stuck two button magnets at the base of a rectangular box as shown in the diagram below to represent her train.



Next, she stuck a long magnetic strip onto a cardboard to make a track for the train as shown in the diagram below.



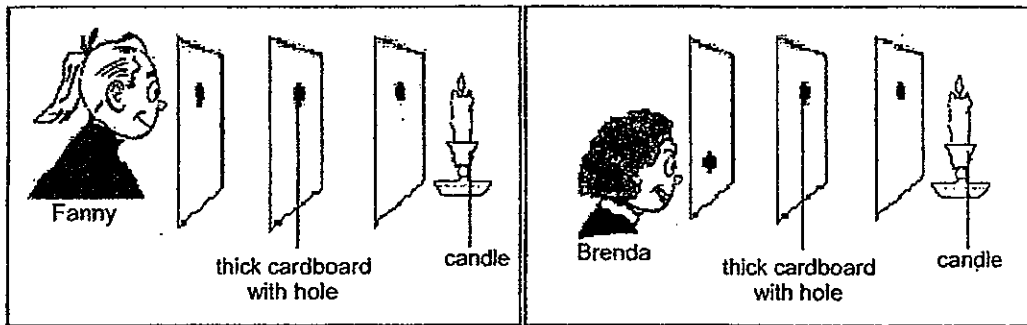
When Glenda placed the train above the track as shown in the diagram below, the train could 'float' above the track.



- b) Explain how Glenda must place the button magnets on the base of the train such that the train was able to 'float' above the whole track. (1m)

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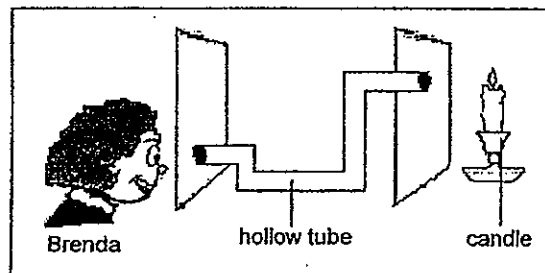
43. Fanny and Brenda set up an experiment as shown below.



Fanny could see the candle flame through the holes on the pieces of cardboard but Brenda could not.

- a) Name the property of light that allows Fanny but not Brenda to see the candle flame. (1m)

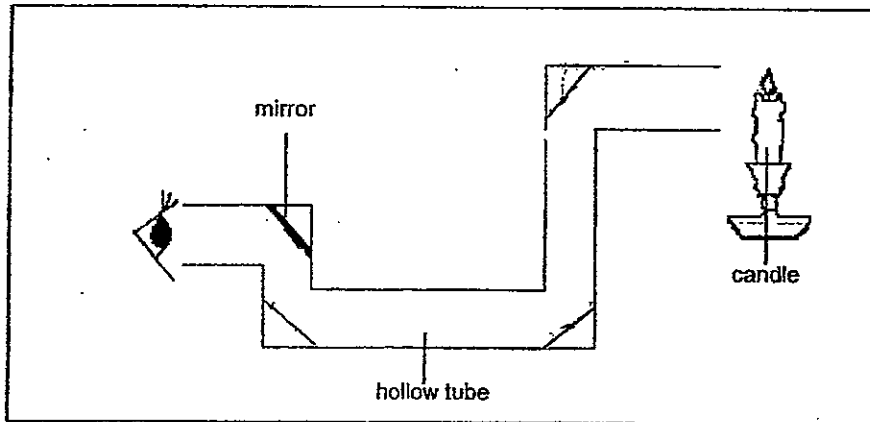
Brenda removed the cardboard in the middle and used a hollow tube to look at the light as shown below.



By placing four mirrors inside the hollow tube, Brenda was able to see the candle flame.

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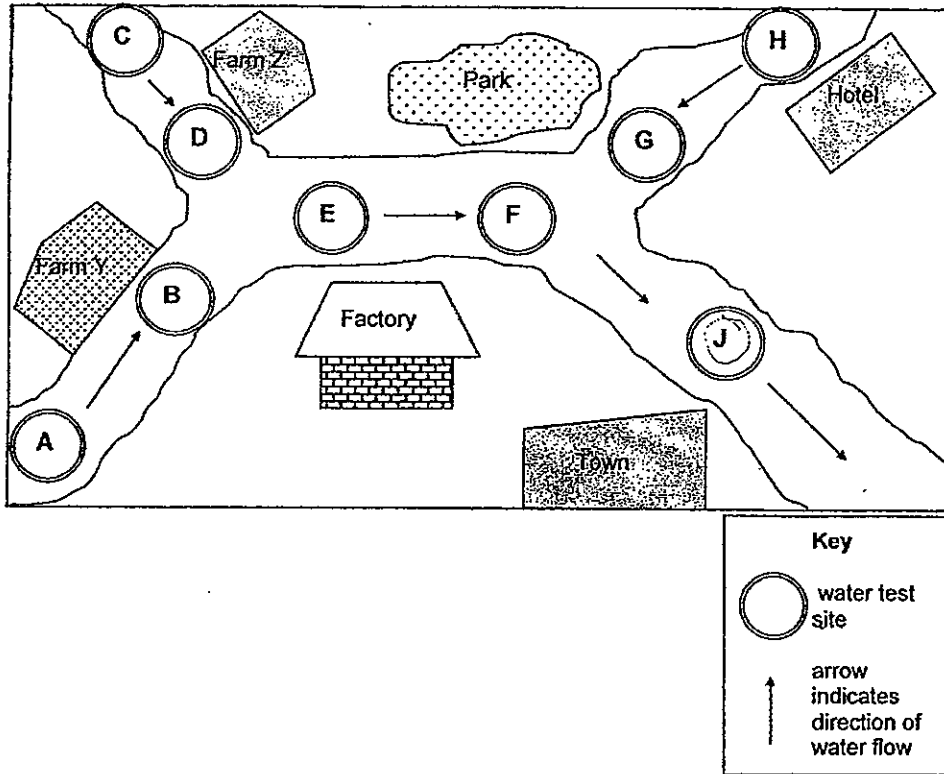
- b) In the diagram below, **draw 3 thick lines** to show where she had placed the mirrors to help her see the candle flame. One of the mirrors has been drawn for you. (1m)



- c) In the same diagram above, **draw arrows** to show the path of light from the candle flame to her eye. (1m)

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44. Pollution in a river can be detected by testing the water from the river. The map below shows the land use around a river and the location of several water testing sites, A, B, C, D, E, F, G, H and J.



Pollution was first detected in water samples at site J. Scientists investigated to find the source of the pollution. They concluded Farm Y was the source of the pollution.

For the scientists to reach this conclusion,

- a) At which other three test sites were pollution detected? (1m)

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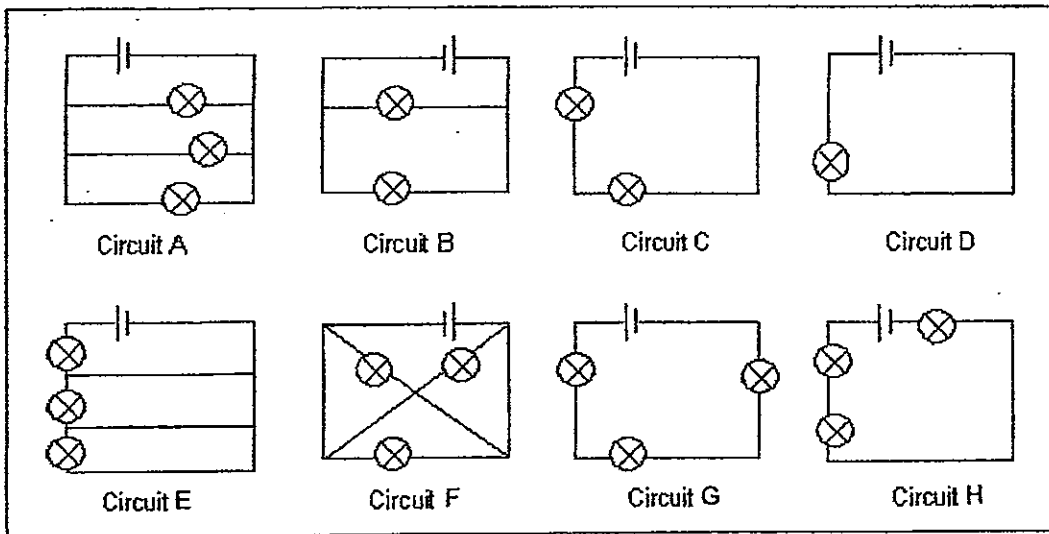
- b) Assuming that there was no other source of pollution but Farm Y, at which test sites were clear of pollution? (1m)

\_\_\_\_\_

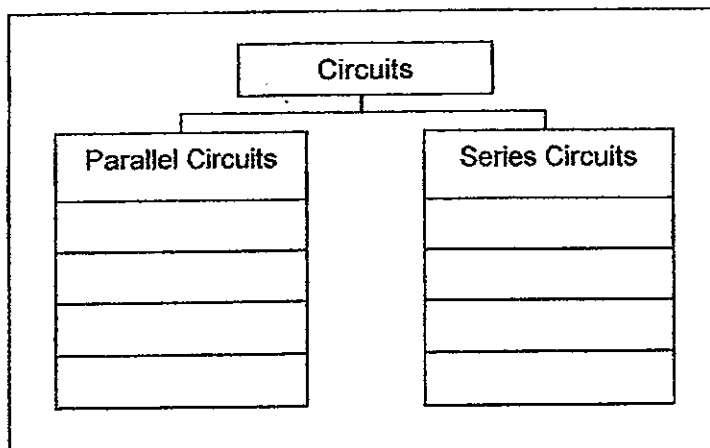
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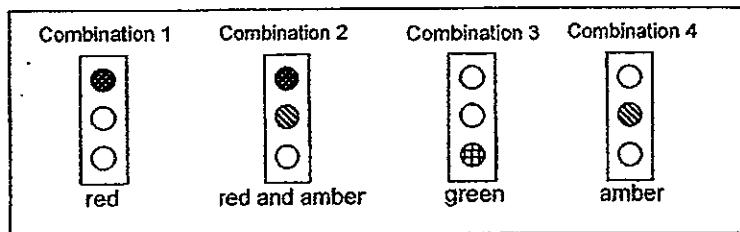
45. The diagram below shows some electrical circuits.



a) In the classification table below, place the Circuits, A, B, C, D, E, F, G and H into the correct group. (1m)

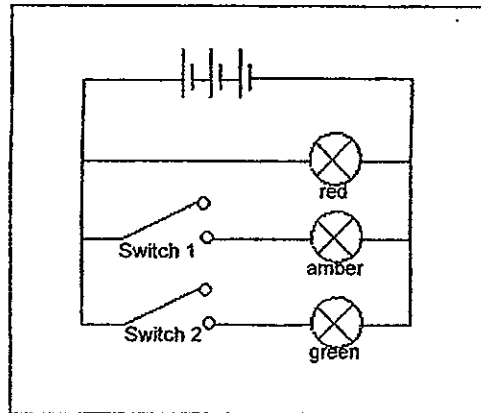


Maria studied the changes in the colours of a traffic light and observed that they show the following combination of colours.



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Maria designed and constructed her traffic light circuit using coloured bulbs as shown in the diagram below.



- b) Based on her design, do you think all her combination of colours would light up? Explain your answer. (1m)

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- c) Is there any way her design could be improved? Explain your answer. (1m)

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End of Section B2

# ANSWER SHEET

**EXAM PAPER 2012**

**SCHOOL : MGS**

**SUBJECT : PRIMARY 5 SCIENCE**

**TERM : SA2**

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

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

- 31)a)Organism X has chloroplasts which only plant cell have.  
b)Organism X does not have a cell wall but a plant cell has a cell wall.  
c)The function of the flagella is to help the cell move about faster and easily.

- 32)a)i)Oxygen                      ii)carbon dioxide  
b)i)500cm<sup>3</sup>                      ii)1500cm<sup>3</sup>  
c)Rebecca increased the number of times she breathes in 10 seconds. From the graph, there are more curves when she is doing exercise than when she is resting.

- 33)a)Group R belongs to the group of Insects.  
b)The animals in Group R have six legs whereas the animals in Group S. has eight legs.  
c)I will put Animal X in Group R. Animal X has six legs and a pair of feelers.

- 34)a)i)Mass of each shorea fruit.  
ii)Height at which the shorea fruit was dropped.  
b)i)The time taken for the shorea fruits to land on the ground.  
ii)15s

- 35) a) To increase the temperature of the surrounding.  
 b) It will tilt down wards at the end of Side A.  
 c) The higher the temperature, the faster the rate of evaporation of water.

- 36) a) T b) F c) F d) T  
 e) i) Penis ii) Testes  
 f) The anthers.

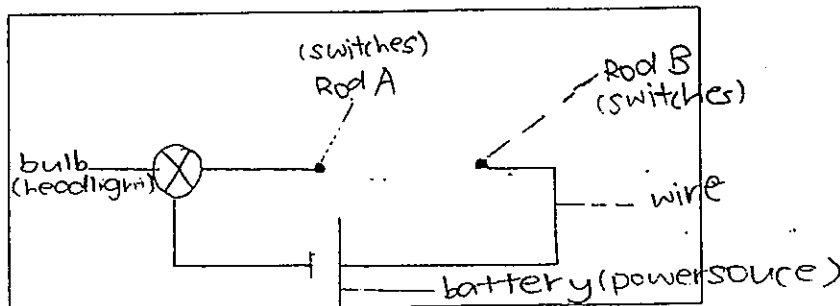
- 37) a) The chloroplasts.  
 b) The starch was absent as leaf A was placed in a wooden cupboard, since there is no sunlight for the plant to make food, the presence of starch is absent.  
 c) The purple part of leaf B contains chlorophyll so it can make food.

- 38) a) Diagram A  
 b) i) No ii) No iii) No iv) Yes

- 39) a) Yes. These rods, X and Y, have to be conductors of electricity so that it is a closed circuit and electricity can pass through them, lighting the bulb up.  
 b) The batteries.

- 40) a) Yes, her sister's suggestion would work,  
 b) The pebbles will take up space in side the water tank. The water level in the water tank will be higher. Thus, less water is needed to reach level X.

41) a)



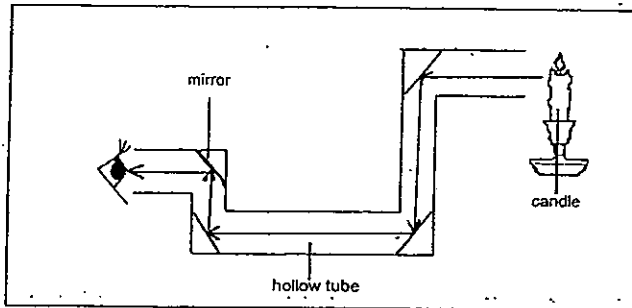
- b) When the train enters the tunnel Rod A and B will be touch the copper sheet, which is an electrical conductor, then the circuit will be come a closed circuit, enabling the head light to light up.

42)a)North-seeking pole.

b)She must ensure that the poles of the button magnets facing downward on the train and the poles facing up ward on the track are like poles so that they repel each other causing the train to float.

43)a)Light travels in a straight line.

b)



44)a)Sites B, E and F.

b)Sites C, D, H, A and G.

45)a)Circuit A

Circuit C

Circuit B

Circuit D

Circuit E

Circuit H

Circuit F

Circuit G

b)No. there is no switch near the red bulb, so she will not be able to do combination 3 and 4.

c)Yes there is, by putting a switch at the left side of the red bulb. This way, she could do combination 3 and 4 by closing either switch 1 or switch 2 and opening the switch near the red bulb.

