

# METHODIST GIRLS' SCHOOL

Founded in 1887



## MID-YEAR EXAMINATION 2012 PRIMARY 4 SCIENCE

### BOOKLET A

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

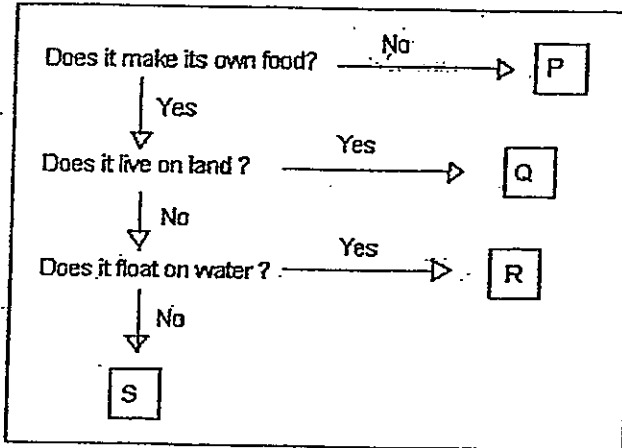
Class: Primary 4. \_\_\_\_\_

Date: 11 May 2012

This booklet consists of 20 printed pages including this page.

For each question from 1 – 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. (60 marks)

1 Study the classification chart below.



Which of the following correctly shows what P, Q, R and S most likely represent?

P	Q	R	S
lion	cactus	hydrilla	water lily
earthworm	sunflower	duckweed	hydrilla
grass	cactus	duckweed	hydrilla
rabbit	water lily	hydrilla	duckweed

2 A group of children carried out an experiment to find out the effects of overcrowding. They put some young plants into each pot and placed them in conditions indicated in the table below.

Variable	In the shade	In direct sunlight
Number of plants	15	15
Types of soil	Clayey soil	Garden soil
Amount of soil	2 kg	2 kg
Types of plant	Balsam	Balsam

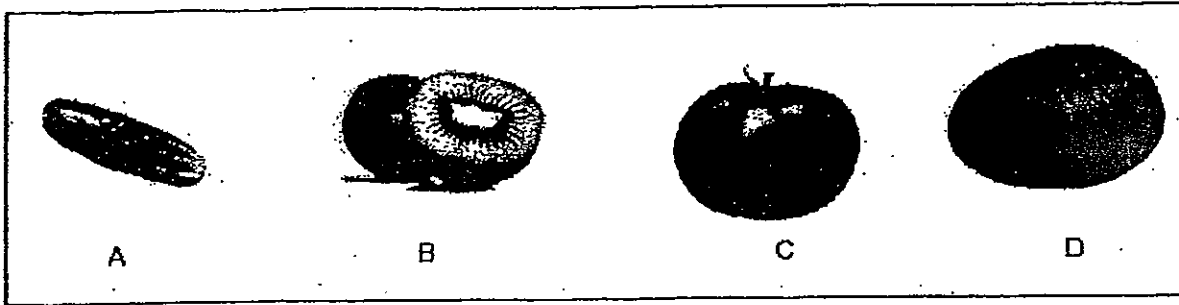
Their teacher told them that their experiment is not fair. What must the children do to make it a fair test. They must \_\_\_\_\_

- A: have the same type of soil.
- B: different amounts of water
- C: have different number of plants
- D: put the plants in the same place

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




Go on to the next page

3 Which of the following is a fruit?



- (1) A and C only
- (2) B and D only
- (3) A, B and C only
- (4) All of the above

4 Study the diagrams below. X, Y and Z represent the characteristics of the animals.

Animal	X	Y	Z
			
			
			

Which of the following represents X, Y and Z correctly?

	X	Y	Z
(1)	Has wings	Can fly	Lay eggs
(2)	Can fly	Lay eggs	Has wings
(3)	Has wings	Lay eggs	Can fly
(4)	Lay eggs	Can fly	Has wings

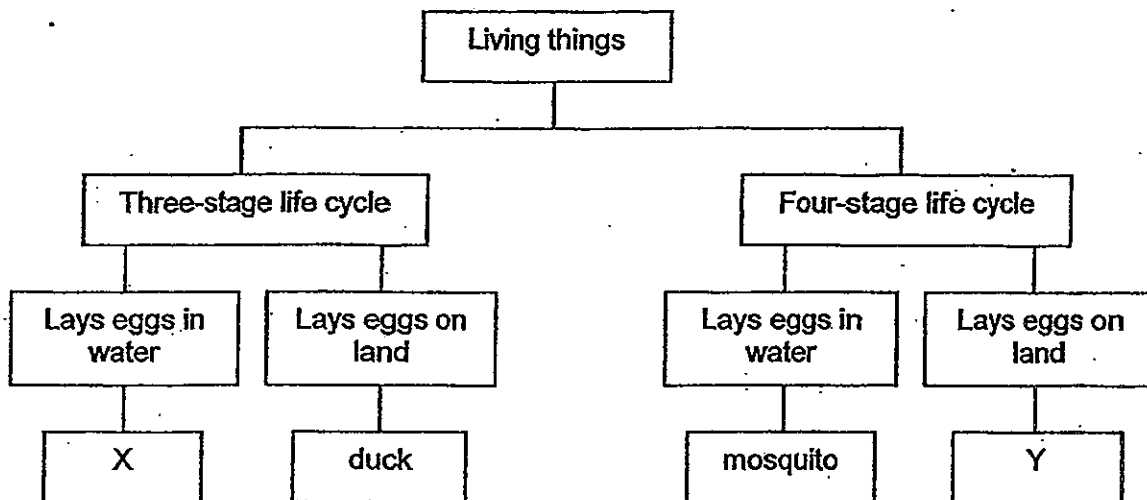
Go on to the next page

- 5 Eddy observed and recorded the changes in the bean seed placed on a moist cotton wool. Arrange her observations in order of appearance.

A: Two green leaves appear.  
 B: A tiny shoot grows upwards.  
 C: A root grows downwards in search of water.  
 D: The food stored in the seed leaves gets used up.  
 E: The bean absorbs water, swells and the seed coat cracks open.

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

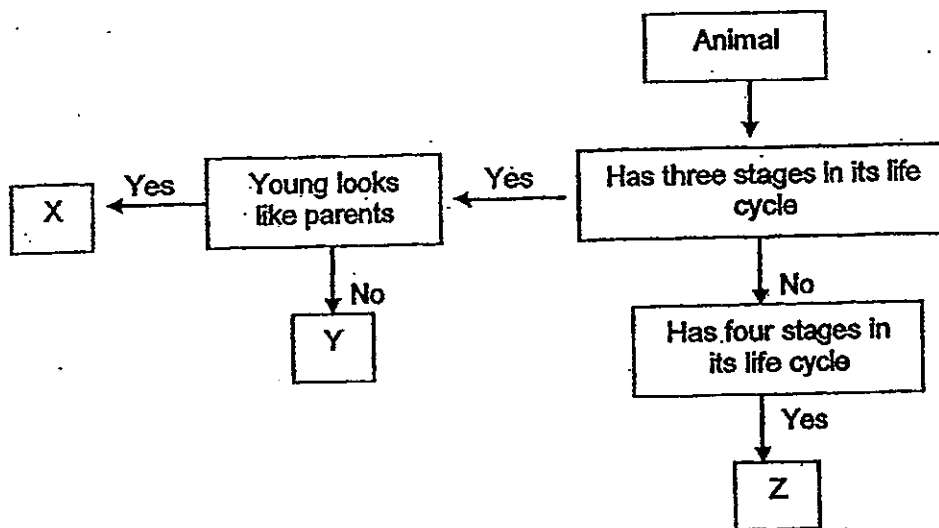
- 6 Study the classification table below.



What living things are X and Y likely to be?

	X	Y
(1)	Dragonfly	Chicken
(2)	Tortoise	Cockroach
(3)	Beetle	Bird
(4)	Frog	Butterfly

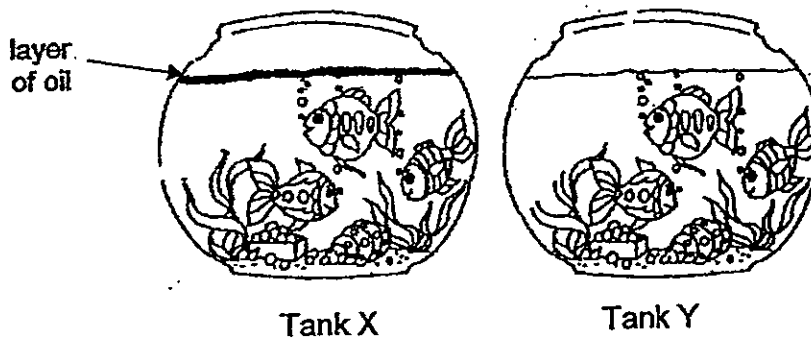
7 Study the flow chart below.



Based on the given flow chart, what are X, Y and Z likely to be?

	X	Y	Z
(1)	Grasshopper	Frog	Mealworm beetle
(2)	Duck	Dolphin	Butterfly
(3)	Toad	Cockroach	Housefly
(4)	Kangaroo	Moth	Cockroach

8 Study the diagram carefully.

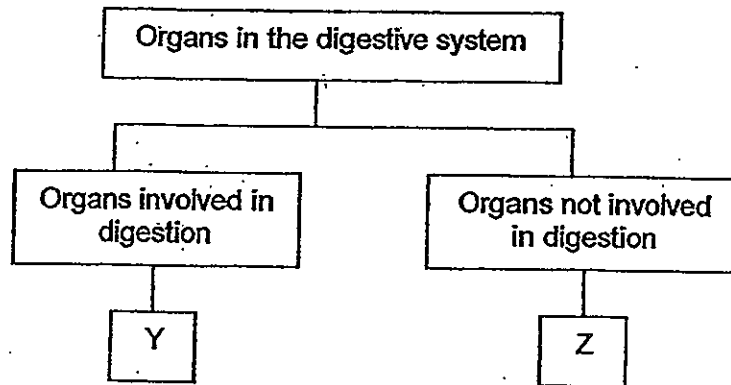


The fish in Tank Y remained alive but all the fish in Tank X were found dead after two days. What is the most likely reason for this to happen?

- (1) The fish in Tank X died as they were poisoned.
- (2) The fish in Tank Y survived as they had enough food.
- (3) The fish in Tank Y were stronger than those in Tank X.
- (4) The fish in Tank X died as they did not have enough air.

Go on to the next page

- 9 The organs that make up the digestive system can be placed into two groups as shown below.



Which of the following organs can be placed at Y and Z?

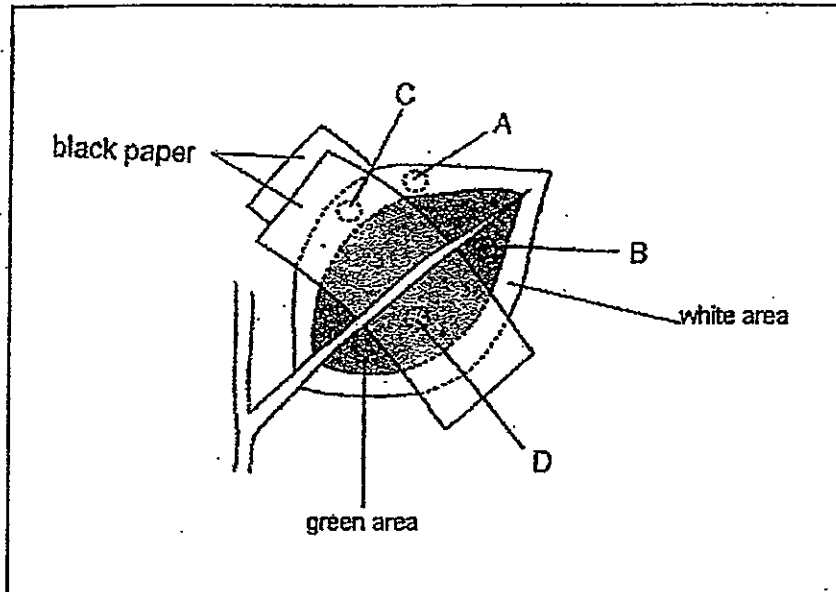
	Y	Z
(1)	Gullet, mouth, small intestine	Large intestine, stomach
(2)	Small intestine, stomach, mouth	Large intestine, gullet
(3)	Large intestine, gullet, stomach	Small intestine, mouth
(4)	Small intestine, stomach	Large intestine, gullet, mouth

- 10 Which of the following is/are the function(s) of the skeletal system in the human body?

- A: support the body
- B: give body its shape
- C: absorb digested food into the blood
- D: protect the delicate internal organs in the body

- (1) A and B only
- (2) B and D only
- (3) A, B and D only
- (4) All of the above

- 11 A plant has green and white variegated leaves. A variegated leaf has different colours on it. The plant was placed in the dark for 24 hours to remove starch in the leaves. Then the leaf was partly covered with two strips of black paper as shown below.

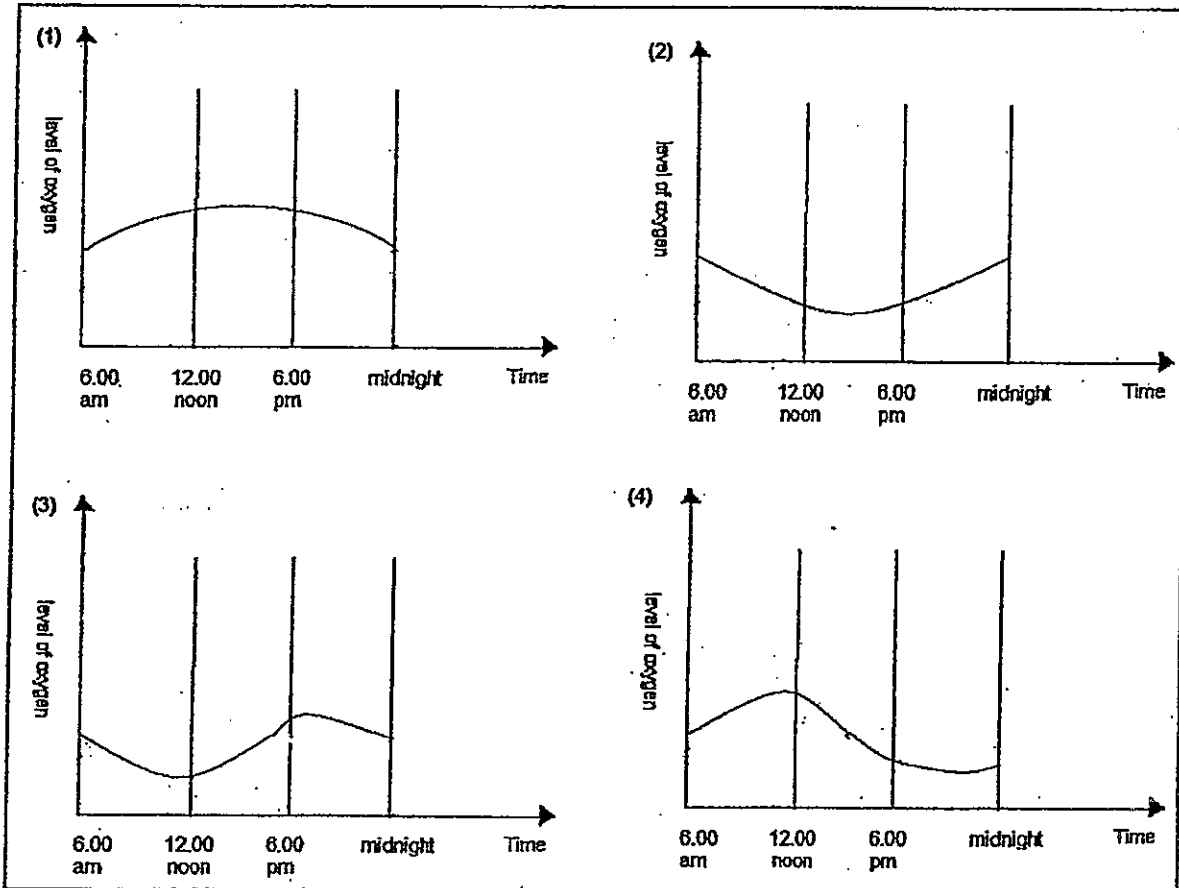


The plant was then placed under sunlight for six hours. After six hours, the strips of black paper were removed and tested for the presence of starch. In which of the labelled areas will starch not be found?

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

- 12 The graphs below show the levels of oxygen in the air at different times of the day in a park.

Which of the graphs shows the level of oxygen in the air from 6 a.m. to 12 midnight?

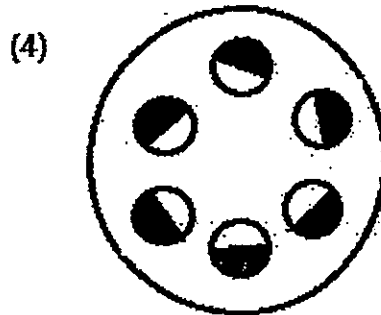
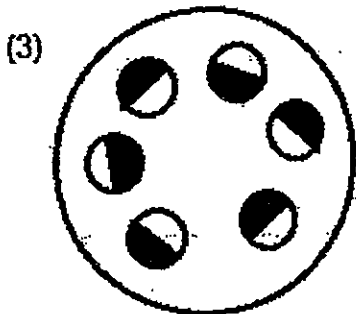
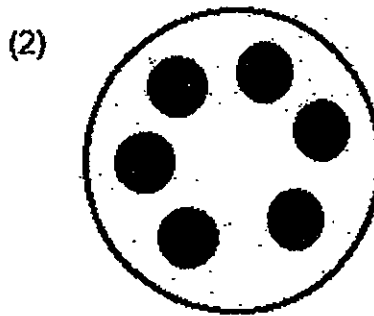
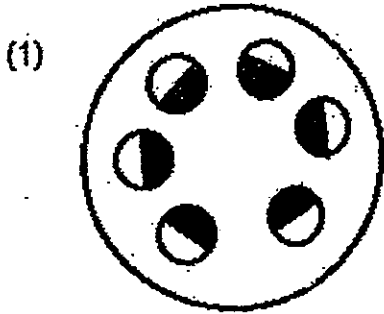


- 13 The lungs and the heart are two organs in the human body. Which one of the following statements on the functions of the lungs and the heart is true?

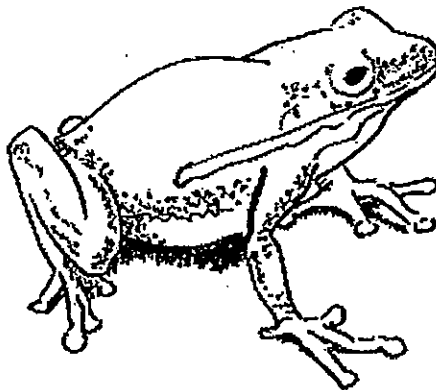
- (1) The lungs remove carbon dioxide from the body.
- (2) The heart removes carbon dioxide from the lungs.
- (3) The lungs transport oxygen produced by the heart.
- (4) The heart takes in oxygen from the surroundings directly into the body.



14. Samantha placed a balsam plant into a beaker containing red-coloured water. After 1 day, she cut a cross-section of the stem and saw that some parts of the cross-section were stained red. Which of the following cross-section would represent what she saw?

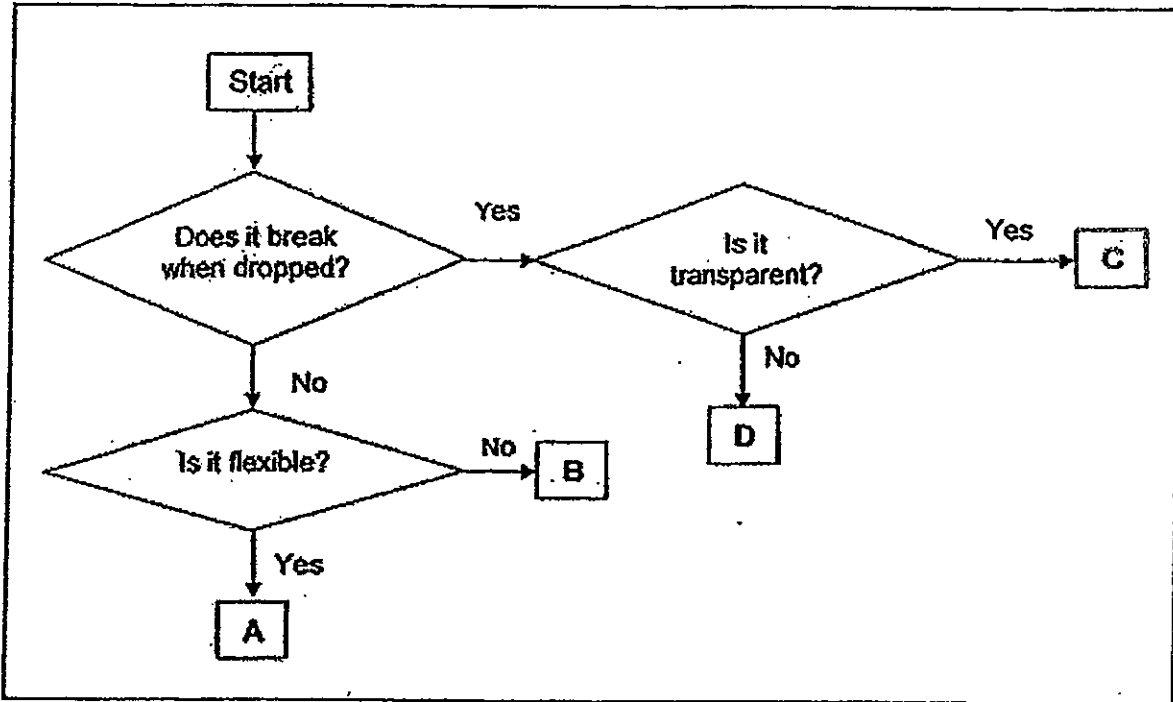


15. Which part of the frog helps it to breathe on land?



- (1) Lungs
- (2) Moist skin
- (3) Gills
- (4) Green skin

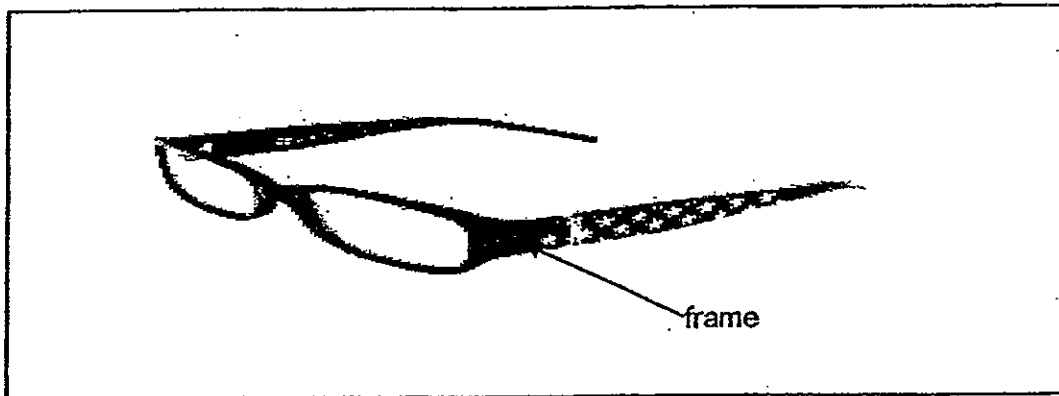
- 16 The flow chart below shows the properties of four different materials, A, B, C and D.



Which of the following can A, B, C and D be?

	A	B	C	D
(1)	Plastic fork	Clay Doll	Nylon Gloves	Beaker
(2)	Nylon Gloves	Plastic fork	Beaker	Clay Doll
(3)	Clay Doll	Beaker	Plastic fork	Nylon Gloves
(4)	Nylon Gloves	Beaker	Clay Doll	Plastic fork

- 17 The diagram below shows a pair of Mrs Tan's spectacles.



Mrs Tan carried out some tests on a few materials, P, Q, R and S to find out which material was most suitable for making the frame of her spectacles.

- Test E: Bending the materials  
Test F: Stretching the materials  
Test G: Shining light through the materials  
Test H: Finding out if the materials could float on water.

Which of the following test(s) is/are necessary?

- (1) Test E and Test F only
- (2) Test E and Test G only
- (3) Test G and Test H only
- (4) Test F and Test H only

18 L, M and N describe the 3 states of matter.

L: Definite volume and definite shape

M: Definite volume and no definite shape

N: No definite volume and no definite shape

The changes in the state of water are shown below:

Water  $\longrightarrow$  Steam  $\longrightarrow$  Water  $\longrightarrow$  Ice

Use L, M and N to represent the above changes of the states of water.

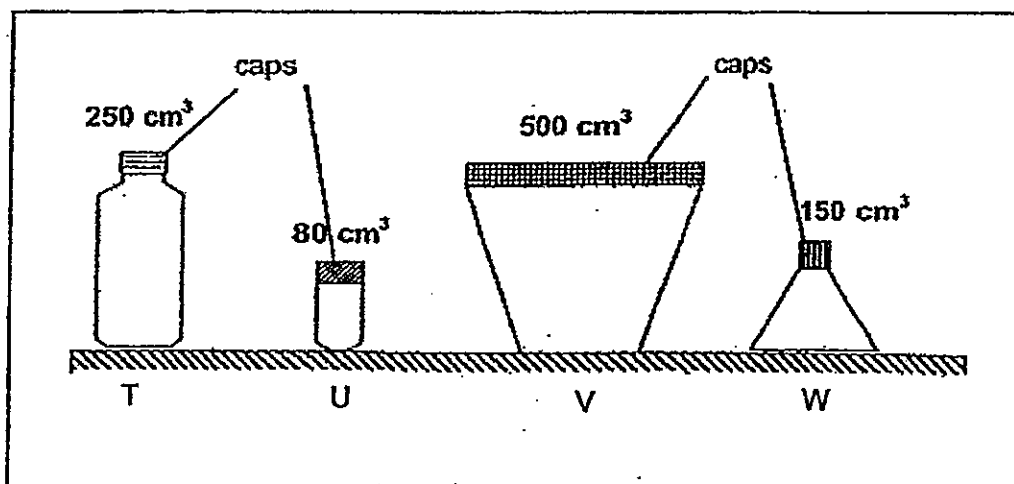
(1) L  $\longrightarrow$  M  $\longrightarrow$  L  $\longrightarrow$  N

(2) L  $\longrightarrow$  N  $\longrightarrow$  M  $\longrightarrow$  L

(3) M  $\longrightarrow$  L  $\longrightarrow$  N  $\longrightarrow$  M

(4) M  $\longrightarrow$  N  $\longrightarrow$  M  $\longrightarrow$  L

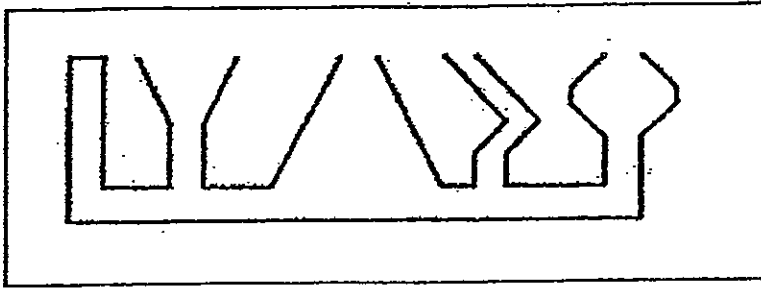
19 The diagram below shows 4 different containers of different capacities.



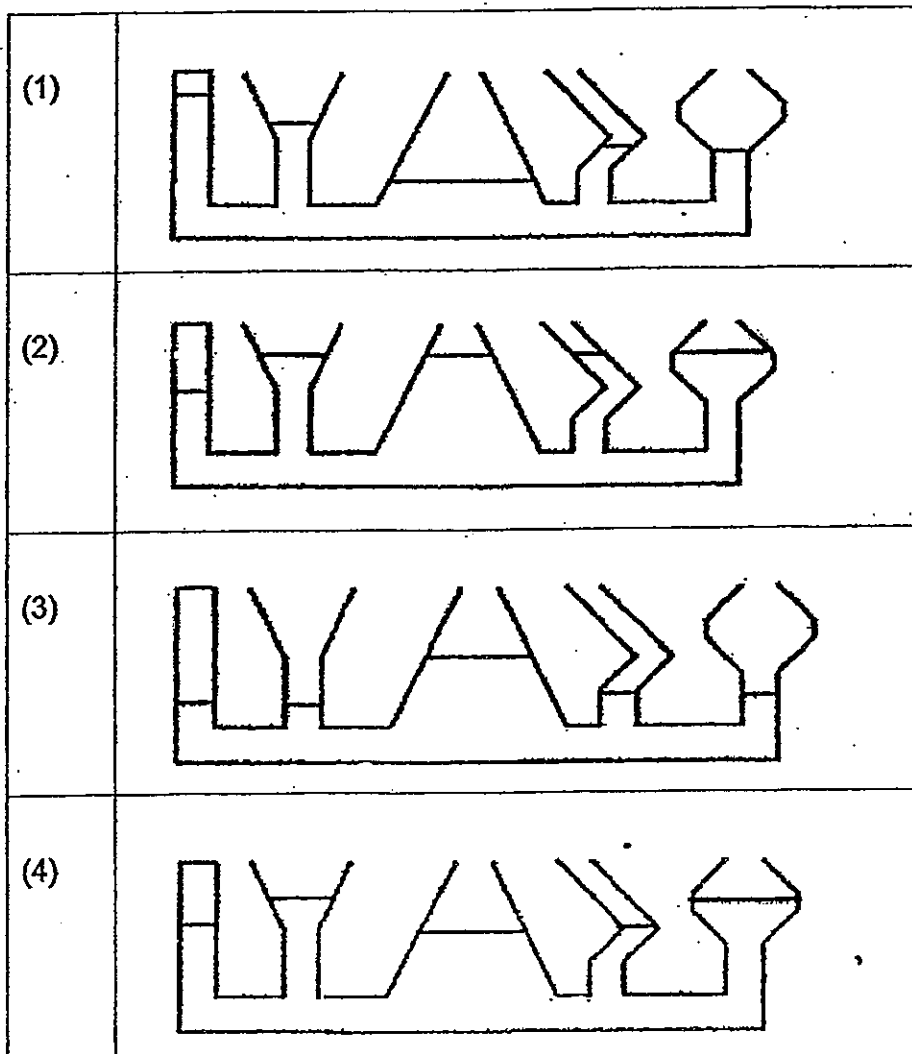
Which of the containers can be totally filled with  $110 \text{ cm}^3$  of air?

- (1) T and V only
- (2) U and W only
- (3) T, V and W only
- (4) T, U, V and W

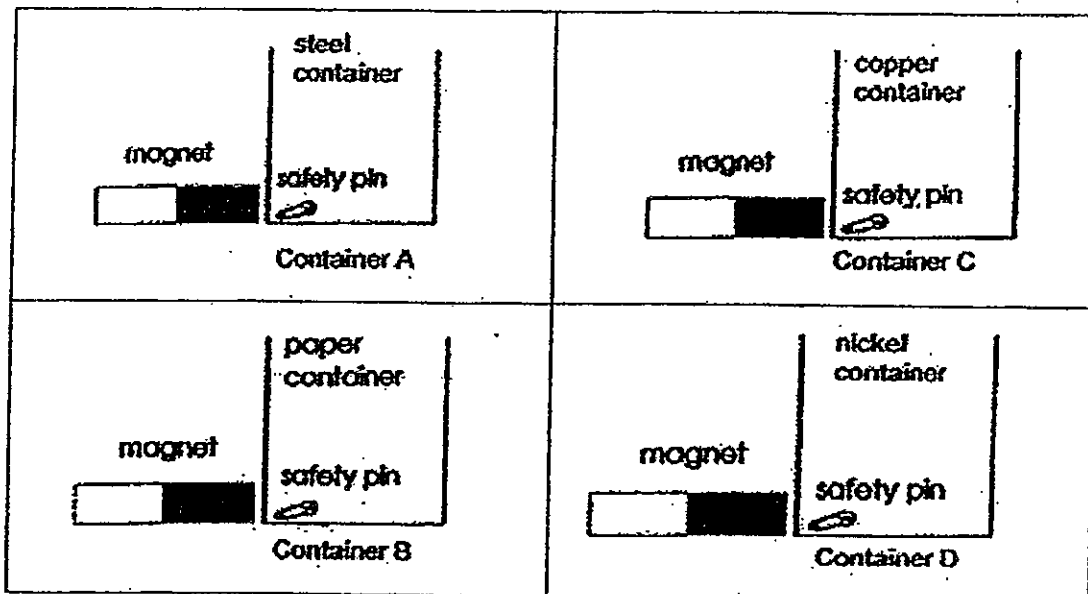
20 The diagram below shows a special glass vessel.



When the glass vessel is filled with some water, which of the following show the water level in the glass vessel correctly?



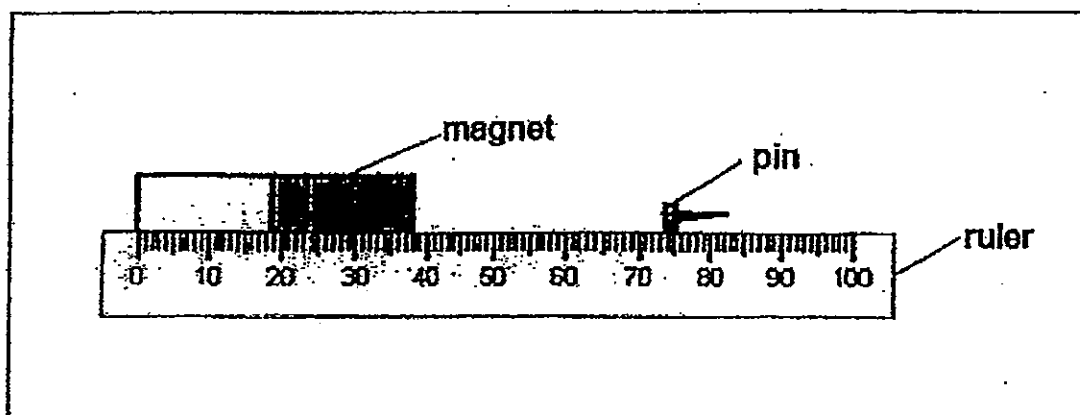
- 21 One iron safety pin is placed in each of the following containers A, B, C and D as shown below. The containers are made of different materials as labelled in the diagram. Eugenia wants to find out which container she will be able to retrieve the iron safety pin by sliding a magnet upwards along the side of the container. The thickness of each container is the same and the same magnet is used for each of the containers.



Which of the container(s) will Eugenia be able to retrieve the iron safety pin from using the magnet?

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

- 22 Mary set up an experiment as shown in the diagram below:



She wanted to find out how the strength of a magnet will affect the distance a pin could be placed for the magnet to be able to attract it.

Which of the following could be a hypothesis of her experiment?

- (1) The lighter the pin, the further the distance the magnet could attract it.
- (2) The greater the strength of the magnet, the further the distance the magnet could attract the pin.
- (3) The longer the magnet, the greater the strength of the magnet.
- (4) The bigger the magnet, the further the distance the magnet could attract the pin.

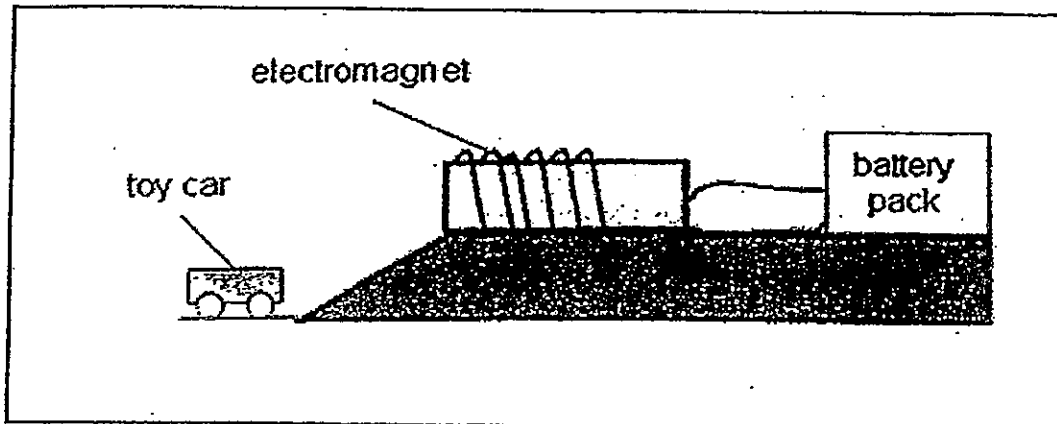
- 23 Four girls described the property of magnets as follows:

Anne : All metals are magnetic materials  
 Belle : All magnets are made of metal.  
 Cindy : Magnet can attract and repel all metals.  
 Denise : All magnets have two poles.

Whose statement(s) is/are correct?

- (1) Belle only
- (2) Denise only
- (3) Cindy and Denise only
- (4) Anne and Belle only

24 Ferb set up an experiment as shown below:



When he turned the switch on, the steel toy car moved up the ramp and went towards the electromagnet. What changes could he make so that the time taken for the car to reach the electromagnet would decrease?

- (1) Use a longer magnet.
- (2) Use a heavier toy car.
- (3) Increase the number of batteries in the battery pack.
- (4) Decrease the number of coils around the electromagnet.

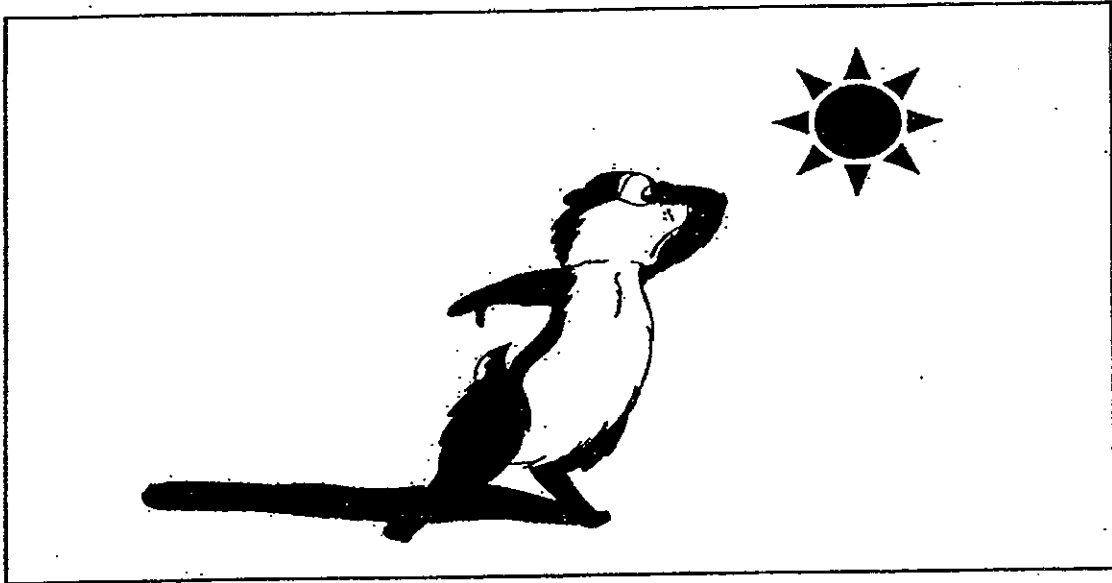
25 We can see the moon at night because:

- A : It gives out light on its own  
 B : It reflects light from the sun  
 C : It absorbs light from the sun  
 D : It reflects light into our eyes

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



26 The shadow of the animal shown below is formed because \_\_\_\_\_



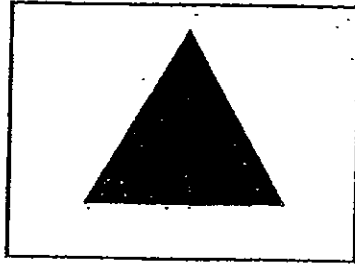
- the animal absorbs sunlight.
- the animal reflects sunlight.
- the source of light is far away.
- light cannot pass through the animal.

27 Mary wanted to conduct an experiment to find out which object allows light to pass through. In order to conduct a fair experiment, which of the objects listed below must Mary use?

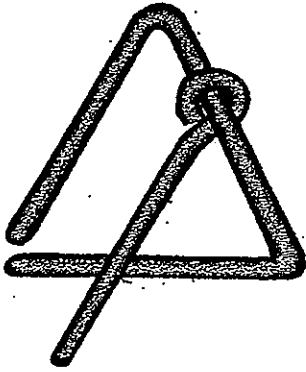

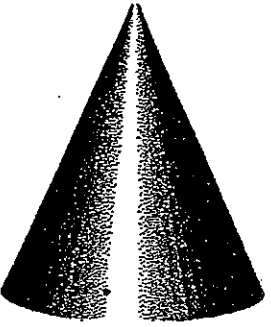
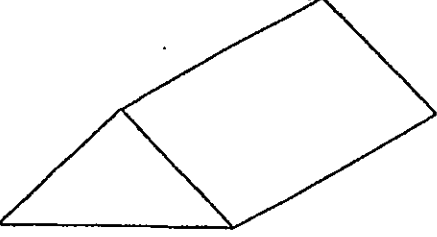
- A: a torch
- B: a book
- C: a mirror
- D: a sheet of glass
- E: a sheet of cardboard

- (1) A, D and E only
- (2) A, B and C only
- (3) A, B, C and E only
- (4) All of the above

28 The diagram below shows the shadow formed by an object.



Which of the following objects COULD NOT have formed the shadow shown above?

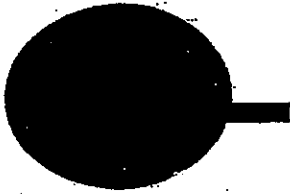
<p>(1)</p>  <p>A triangle musical instrument</p>	<p>(2)</p>  <p>A traffic sign</p>
<p>(3)</p>  <p>A cone</p>	<p>(4)</p>  <p>A block</p>

Go on to the next page

29 Mrs Tan has a porcelain mug and a ceramic teapot shown below:



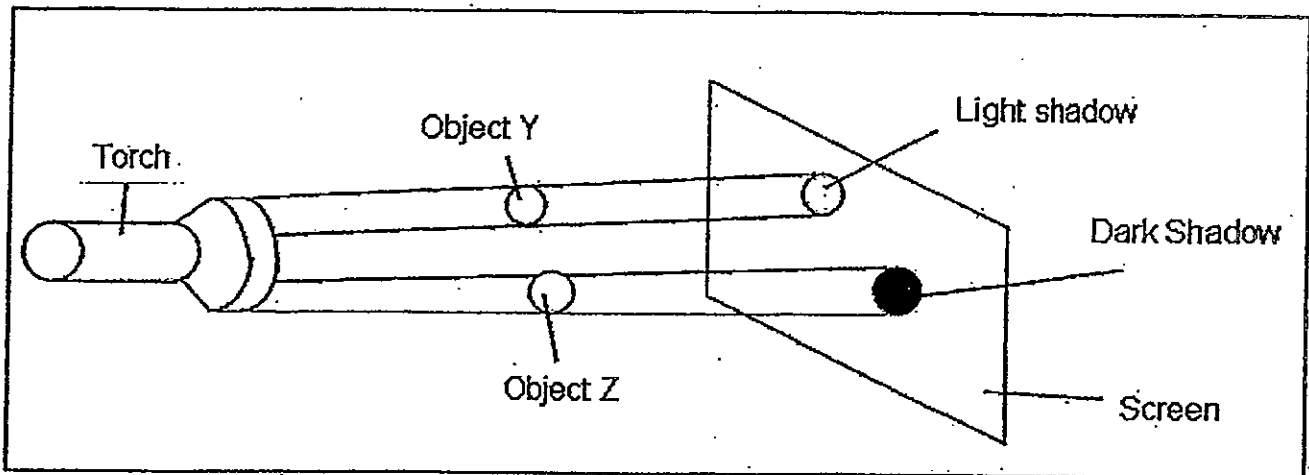
The following shows the shadows of the porcelain mug and a ceramic teapot:



From which side of each object was the light shone to form these shadows?

	Shadow of porcelain mug	Shadow of ceramic teapot
(1)	Top	Side
(2)	Side	Top
(3)	Top	Top
(4)	Side	Side

- 30 A torch was shone onto two objects, Y and Z, as shown in the diagram below:



The shadow formed by object Y seemed much lighter than the one formed by object Z. Which are the materials that object Y and object Z are likely to be made of ?

	Object Y	Object Z
(1)	Wood	Steel
(2)	Clear Plastic	Styrofoam
(3)	Frosted Glass	Frosted Plastic
(4)	Frosted Plastic	Iron

End of Booklet A

# METHODIST GIRLS' SCHOOL

Founded in 1887



## MID-YEAR EXAMINATION 2012 PRIMARY 4 SCIENCE

### BOOKLET B

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.

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

Class: Primary 4. \_\_\_\_\_

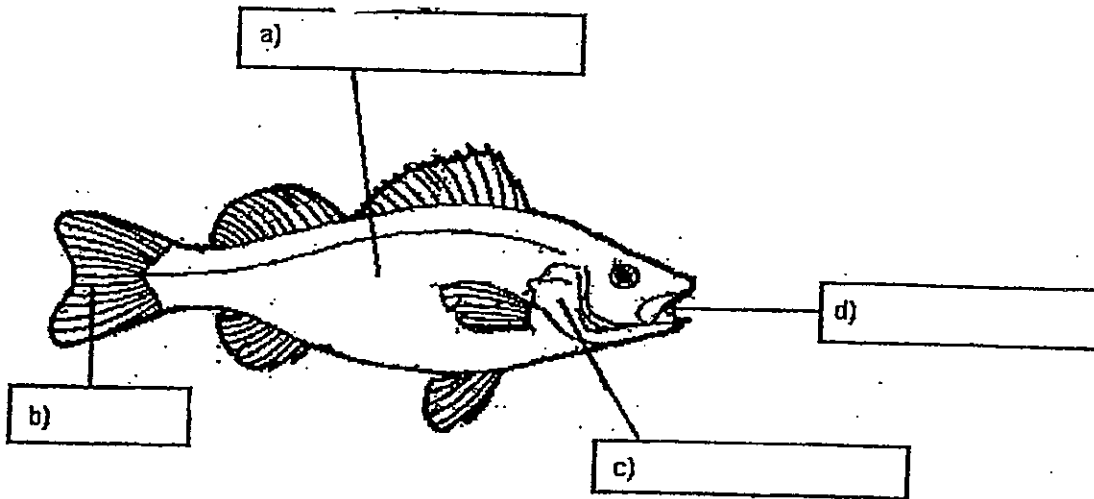
Date: 11 May 2012

Booklet A	/ 60
Booklet B	/ 40
TOTAL	/ 100

This booklet consists of 12 printed pages including this page.

For questions 31 to 43, write your answers in the spaces provided. (40 marks)

- 31 Label the parts of the fish in the boxes provided. (2m)



- 32 Some living things are classified into two groups, A and B as shown below.

Group A	Group B
Yeast	Goose
Bracket fungus	Swan

- a) Give suitable headings for Group A and Group B. (1m)

Group A : \_\_\_\_\_

Group B : \_\_\_\_\_

- b) In which group would you place toad stools? (1m)

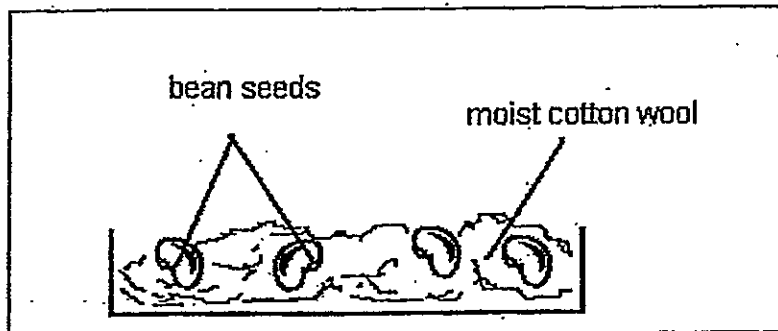
\_\_\_\_\_

- c) What is the outer covering of the animals in Group B? (1m)

\_\_\_\_\_

Go on to the next page





- 33 Alice wanted to investigate the best temperature for seed germination and set up five experiments. She placed some green bean seeds on a moist cotton wool as shown in the diagram below.



Set-up	A	B	C	D	E
Place	Freezer	Fridge	Room	Warm room	Oven
Temperature	4°C	10°C	25°C	28°C	80°C

- a) Name two important variables that Alice must control during the experiment. (2m)
- 
- b) In which two set-ups will the bean seeds grow into young plants? (1m)
- 
- c) Why do you think that the seeds in Set-up E did not grow into young plants? (1m)
-

- 34 Danny measured the mass of one black bean seed. He then put it in a pot and placed it near a window. As the seed grew, he measured the mass of the seedling at regular intervals and recorded the data as shown below.

A	B	C	D
			
2g	5g	12g	18g

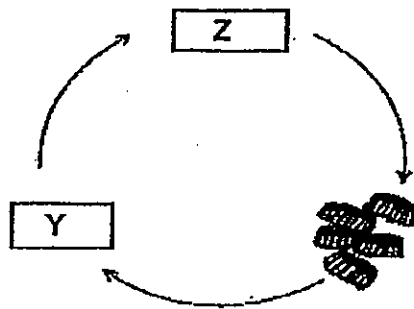
- a) Why was there an increase in the total mass from stage A to stage D? (1m)

---

- b) If Danny removed part Y at stage D, will the seedling continue to grow and why? (1m)

---

- 35 The diagram shows the life cycle of a cockroach.



- a) What is the name of the young cockroach at stage Y? (½m)

---

- b) Why does the cockroach lay many eggs at one time? (1m)

---

- c) Give a difference between the appearance of the cockroach at Stage Y and Stage Z. (1m)

---

Go on to the next page



- 36 The table below shows the percentage of three types of undigested food, A, B and C, after it passes through each part of the digestive system.

Part of digestive system that undigested food has just passed through	% of undigested food remaining		
	A	B	C
Mouth	80	100	100
Gullet	80	100	100
Stomach	80	60	100
Small intestine	20	10	100
Large intestine	20	10	100

- a) Based on the percentage of undigested food in each part of the system, what can you conclude about the gullet? (1m)

---



---

- b) The organ in which most digestion takes place is the \_\_\_\_\_ (½m)

---

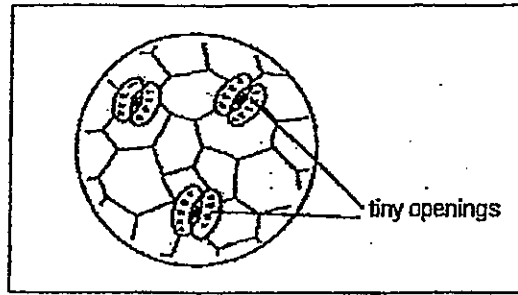
- c) What happens to the food that is digested? (1m)

---



---

- 37 The following picture shows a magnified image of a part of a green plant on land.



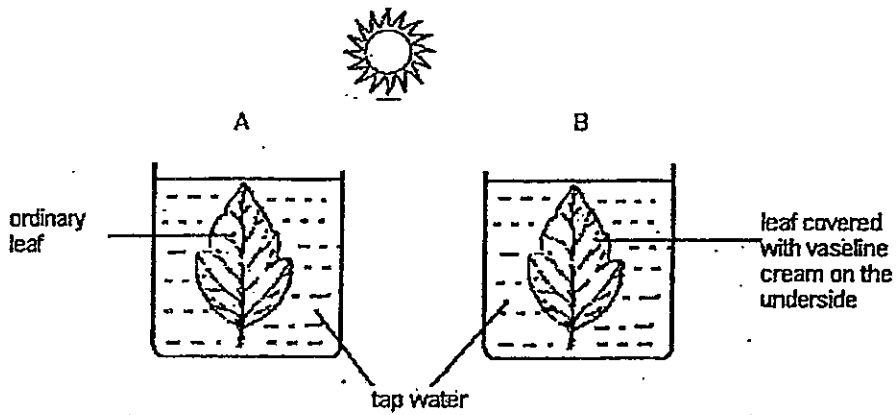
- a) What is the purpose of the tiny openings on the plant part? (1m)

---



---

The following experiment is conducted on two healthy leaves plucked from the same plant.



- b) What can you observe in both the beakers after a while? (2m)

Beaker A : \_\_\_\_\_

Beaker B : \_\_\_\_\_

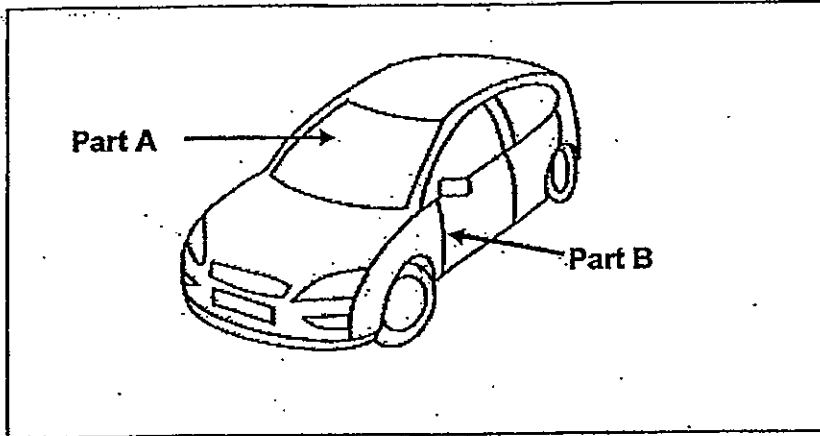
- c) How would the results of the experiment differ if the experiment is carried out at night when there is no light? (1m)

---



---

38 The diagram below shows Mrs Lee's car.



a) Suggest a suitable material for making Part A and B of the car. (1m)

(i) Part A: \_\_\_\_\_

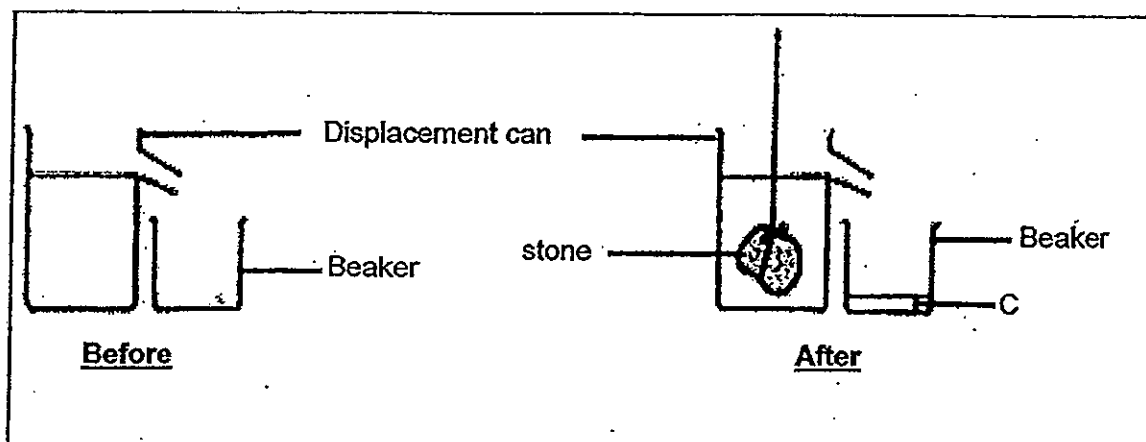
(ii) Part B: \_\_\_\_\_

b) Give a reason for the material chosen for Part A. (1m)

---

---

39 Sally carried out an experiment as shown in the diagram below.



When she lowered a stone into the displacement can, some water was collected in the empty beaker. This amount of water was labelled C.

a) What is Sally trying to find out about the stone from C? (½m)

---

b) What will happen to C if the stone that was placed into the displacement can was bigger? (½m)

---

c) Explain how water gets from the displacement can into the beaker. (2m)

---



---

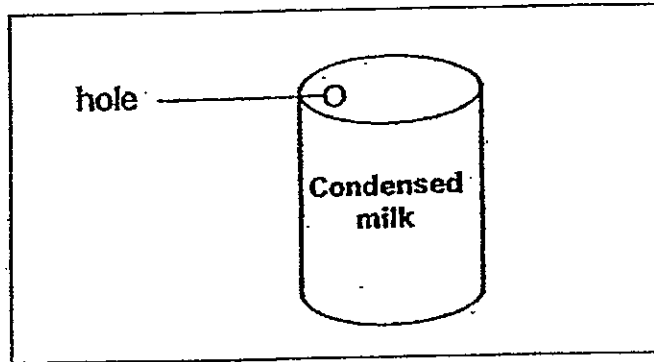


---

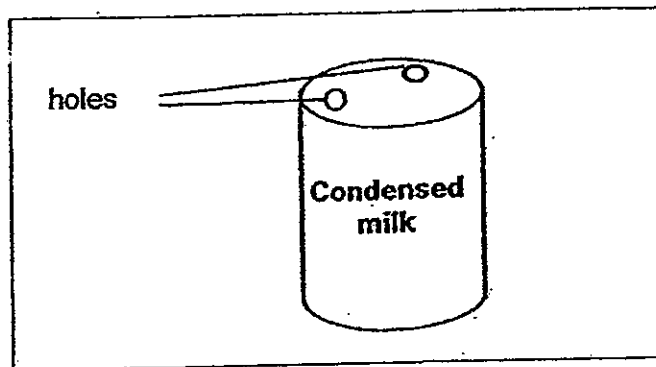
d) What property does the stone have based on Sally's observation of the above experiment? (1m)

---

- 40 Mrs Tan made a hole on a can of condensed milk as shown below.



She tried pouring the milk out but found that it flowed out very slowly. She then made another hole as shown below:



She observed that the milk flowed faster this time.

- a) Explain how the condensed milk was able to flow <sup>faster</sup> out of the can. (2m)

---



---



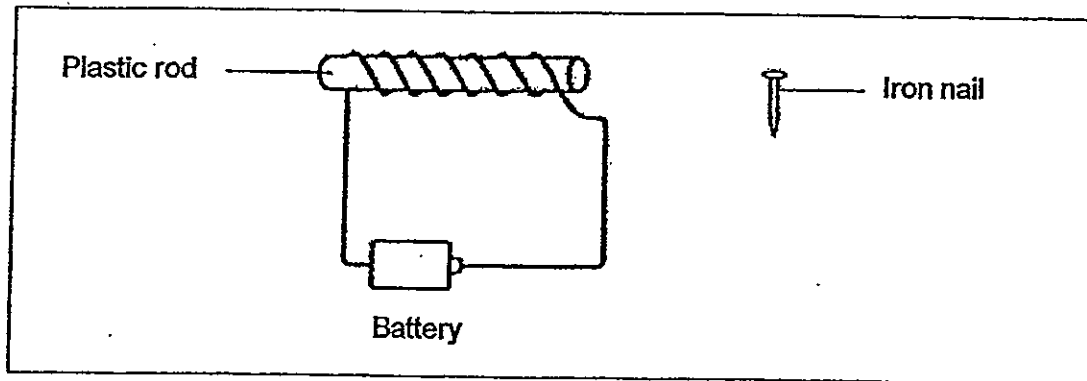
---

Mrs Tan let the condensed milk flow into a glass container.

- b) She found out that the volume of condensed milk that was in the glass container is the same volume as when it was in the can. What does this show about the milk? (1m)

---

41 Jane set up the experiment as shown below:

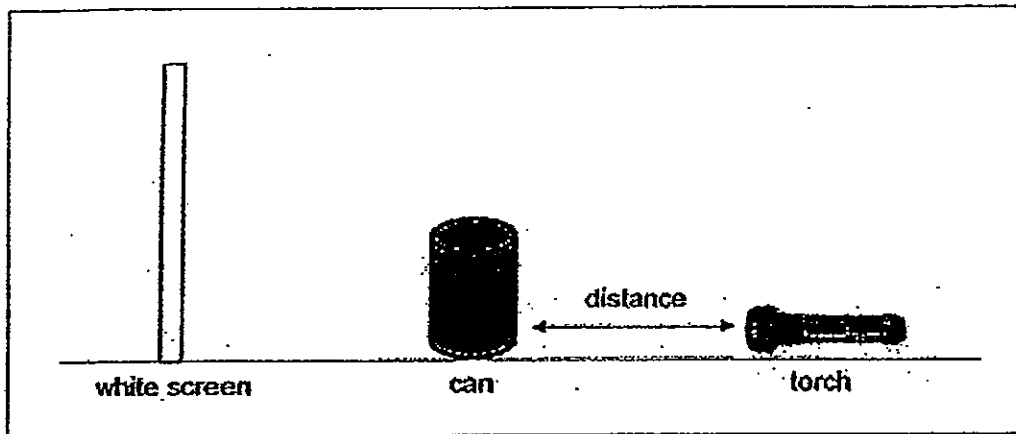


a) What will she observe when the iron nail is placed close to the plastic rod?  
(1m)

b) Explain your answer given in (a).  
(1m)

c) If she wants to make a strong electromagnet, what are the two changes she has to make?  
(2m)

- 42 Cecilia conducted an experiment with a torch, a can and a white screen as shown below.



She changed the distance between the torch and the can by moving the torch to observe the effects on the shadow formed on the white screen. She recorded her findings in a table as shown below.

Distance between the torch and the can (cm)	Height of shadow formed on the white screen (cm)
50	10
40	12
30	14
20	16

- a) Based on the table above, what is the relationship between the distance of the torch and the can, and the height of the shadow formed on the white screen? (2m)

---

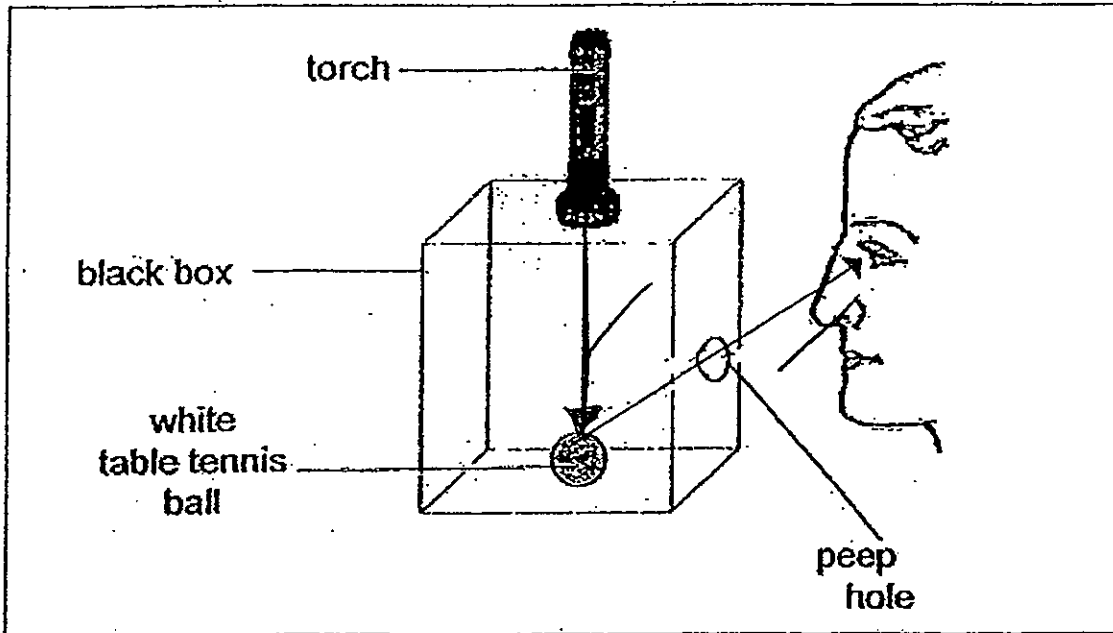
- b) Estimate the distance between the torch and the can when the height of the shadow formed on the white screen is 11cm. (1m)

---



---

- 43 Christina conducted an experiment using a black box and a white table tennis ball as shown below. The black box has a peep hole and is fitted with a torch light on the top of the box which can be turned on to brighten the box within.



At first, Christina could not see the white table tennis ball in the black box through the peeping hole.

- a) Explain why she could not see the white tennis ball. (1m)
- 
- b) Without opening the black box, describe what Christina has to do in order for her to see the white table tennis ball through the peeping hole. (1m)
- 
- c) In the diagram above, draw two arrows to show how a light source allows Christina to see the white table tennis ball in the black box through the peeping hole. (2m)

End of Paper



# ANSWER SHEET

EXAM PAPER 2012

SCHOOL : MGS  
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1

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

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

31)a)Body      b)Tail      c)Gills      d)Mouth

32)a)A: Fungi      B: Birds  
b)Fungi  
c)Feathers

33)a)The amount of bean seeds and the amount of moist cotton wool.  
b)Set-up C and D.  
c)The seeds in Set-up E was put in the oven and the oven was too warm for the seeds to germinate.

34)a)The seedling has increased in mass as the roots, stem and leaves are develop.  
b)Yes, because its leaves has already grown and can make food of its own.

35)a)Nymph.  
b)So that there is a higher chance of eggs becoming adults.  
c)The cockroach at stage Y does not have wings while the cockroach in stage Z has wings.

36)a)The gullet only helps transport the food from the mouth to the stomach. It does not help in digestion at all.

b)Small intestine.

c)Digested food is absorbed through the small intestine walls into the blood stream to be to all parts of the body.

37)a)To allow gaseous exchange to take place.

b)A: Bubbles are seen on the underside of the leaf.

B: No bubbles are seen.

c)Less bubbles are seen on the underside of the leaf while there is no change to B.

38)a)i)Glass ii)Metal

b)The car window needs to be transparent in order for the driver to see where he or she is driving.

39)a)She is trying to find out the volume of the stone.

b)C will be more.

c)When the stone is lowered into the displacement can, water in it will overflow from the spout and into the beaker.

d)The stone has a definite volume.

40)a)Air enters one hole and pushes the condensed milk out the other hole caused the milk to flow out of the second hole much faster.

b)The milk has a definite volume. Liquid has a definite volume.

41)a)Nothing would happen.

b)Plastic is a non-magnetic material thus it cannot be made into an electromagnet.

c)She has to change the plastic rod to a steel rod into a magnetic material and increase the number of batteries used.

42)a)The nearer the light source is to the object, the bigger the shadow.

b)45cm.

43)a)There is no light to reflect the ball into her eyes.

b)She had to turn on the torch.

c)

