RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)

2014

Name : _____ Index No: ___Class: P4__

6 May 2014 **SCIENCE** **Att: 1 h 45 min**

Section A	60
Section B	40
Your score out of **100** marks	
Parent's signature	

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 (OAS) provided.

1. Rina had some guppies.
Without adding more fish into the tank, she observed that the number of guppies in the tank had increased after one month.

Based on the information above, what can Rina conclude about one characteristic of living things?

The table below shows the characteristics of animals X, Y and Z.

Animal	With fur	With wings	With 2 pairs of legs	With 3 pairs of legs
X	✓		✓	
Y		✓		✓
Z	✓		✓	

Based on the information above, answer **Questions 2 and 3.**

2. In what way(s) is/are animals X and Z similar.

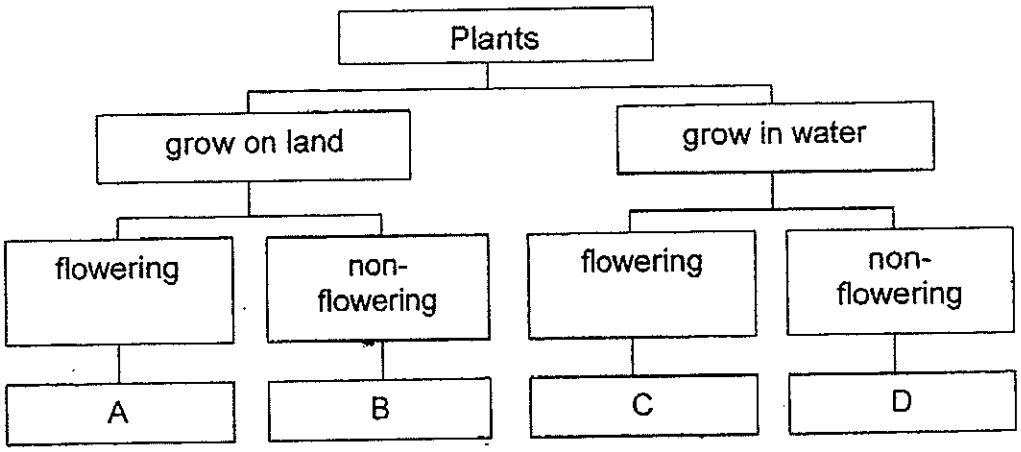
A Both have fur
B Both have wings
C Both have 2 pairs of legs only

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

3. Which animal(s) is/are likely to be an insect?

(1) X only
(2) Y only
(3) Y and Z only
(4) X, Y and Z

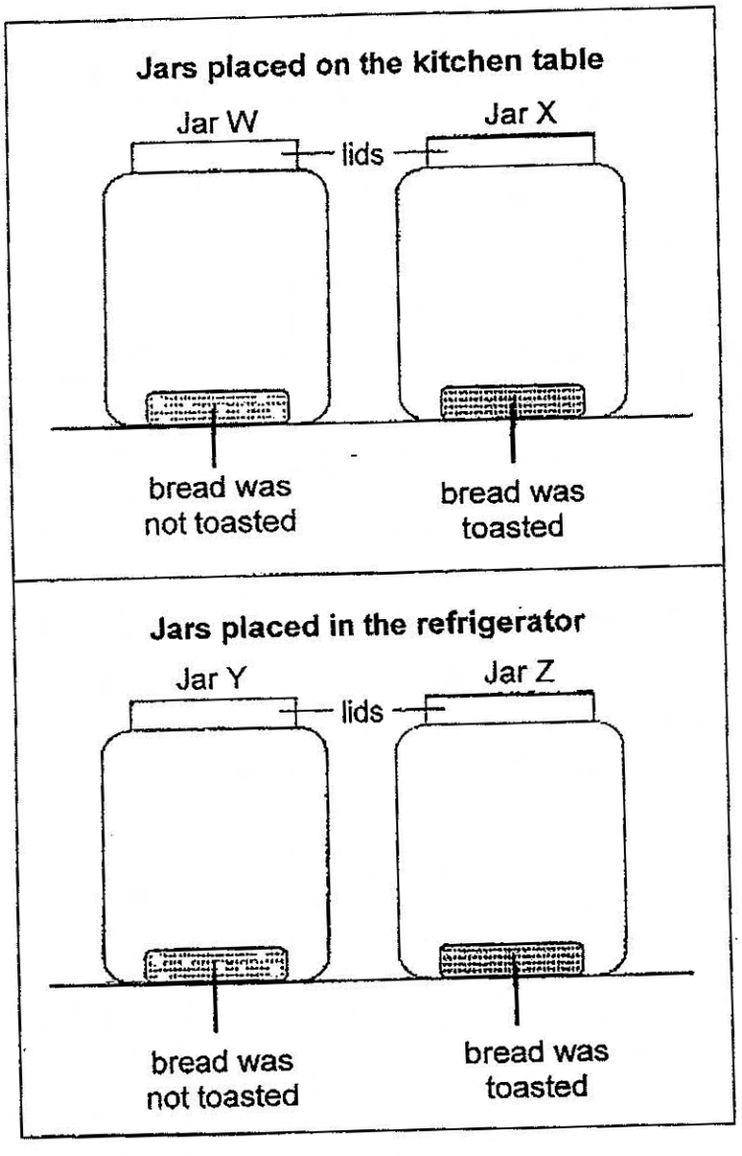
4. The chart below shows how some plants can be grouped.



Which one of the following best represents rose and water lily?

	rose	water lily
(1)	A	C
(2)	B	C
(3)	C	A
(4)	C	B

5. Ahmad placed 4 similar pieces of bread in four identical jars, W, X, Y and Z. The pieces of bread in jars X and Z were toasted. He then covered the jars to make them air-tight. He left jars W and X on the kitchen table and jars Y and Z in the refrigerator.



In which one of the jars would the piece of bread most likely turn mouldy the fastest?

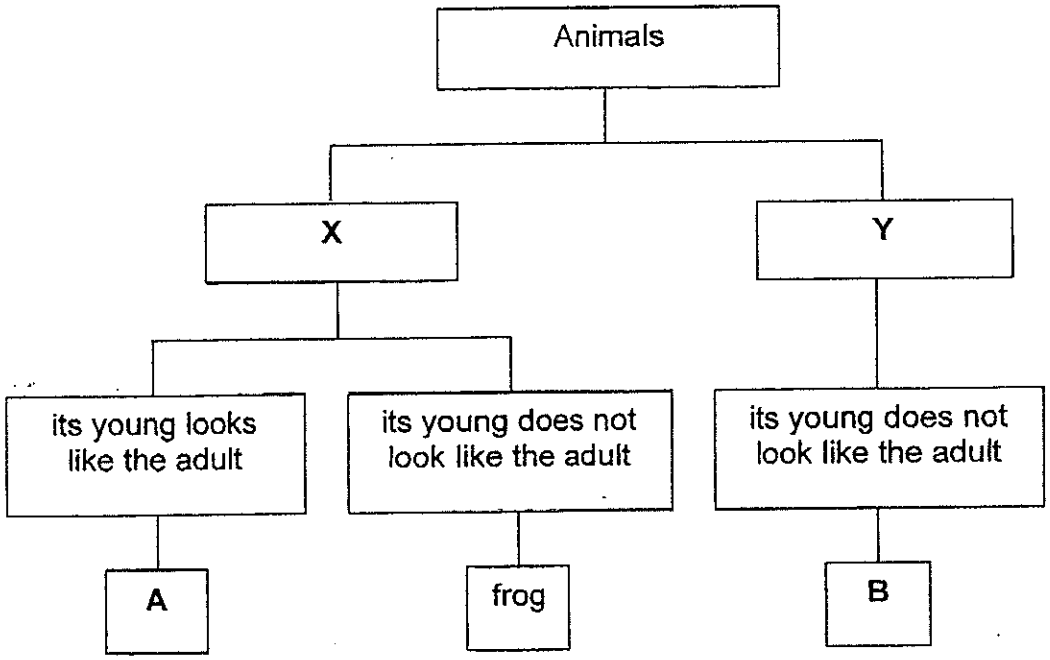
(1) Jar W

(2) Jar X

(3) Jar Y

(4) Jar Z

6. The diagram below shows the classification of some animals.



Which one of the following represents X, Y, A and B respectively?

	X	Y	A	B
(1)	3-stage life cycle	4-stage life cycle	cockroach	grasshopper
(2)	3-stage life cycle	4-stage life cycle	grasshopper	beetle
(3)	4-stage life cycle	3-stage life cycle	mosquito	chicken
(4)	4-stage life cycle	3-stage life cycle	butterfly	cockroach

7. Dion carried out an experiment to find out how the surrounding temperature affects the life cycle of animal X.
She prepared 4 set-ups, A, B, C and D, and observed the length of time animal X was in each stage of its life cycle. She recorded the results in the table below.

		Number of days at each stage		
Set-up	**Surrounding temperature (°C)**	**Egg**	**Larva**	**Pupa**
A	23	2	8	3
B	28	2	7	2
C	32	1	6	2
D	36	1	5	2

Based on the information above, which one of the following statements is correct?

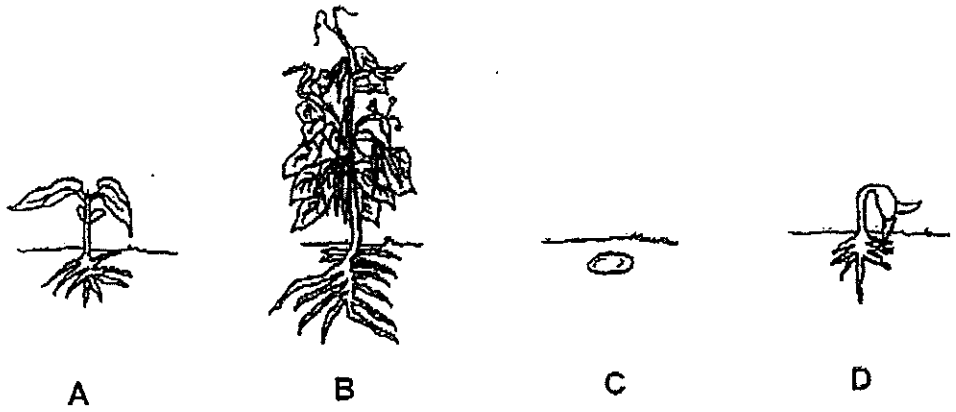
(1) The animal X in set-up A survived the longest.

(2) Animal X will die faster when the surrounding temperature gets higher.

(3) The higher the surrounding temperature, the shorter the time needed for animal X to develop from the egg stage to the adult stage.

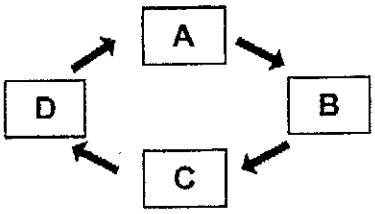
(4) The higher the surrounding temperature, the longer the time needed for animal X to develop from the egg stage to the adult stage.

8. The diagrams below show the different stages of development of a plant.

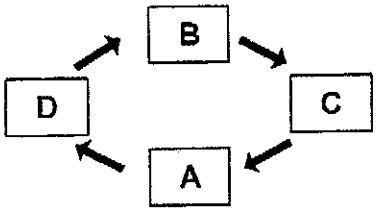


Which one of the following shows the correct sequence of the development of the plant above?

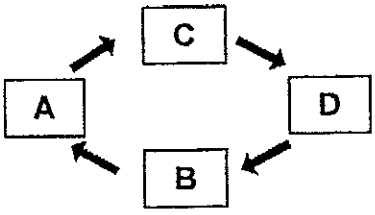
(1)



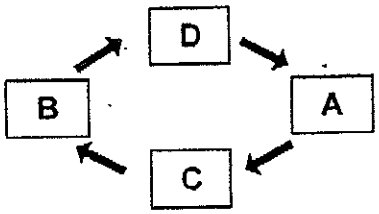
(2)



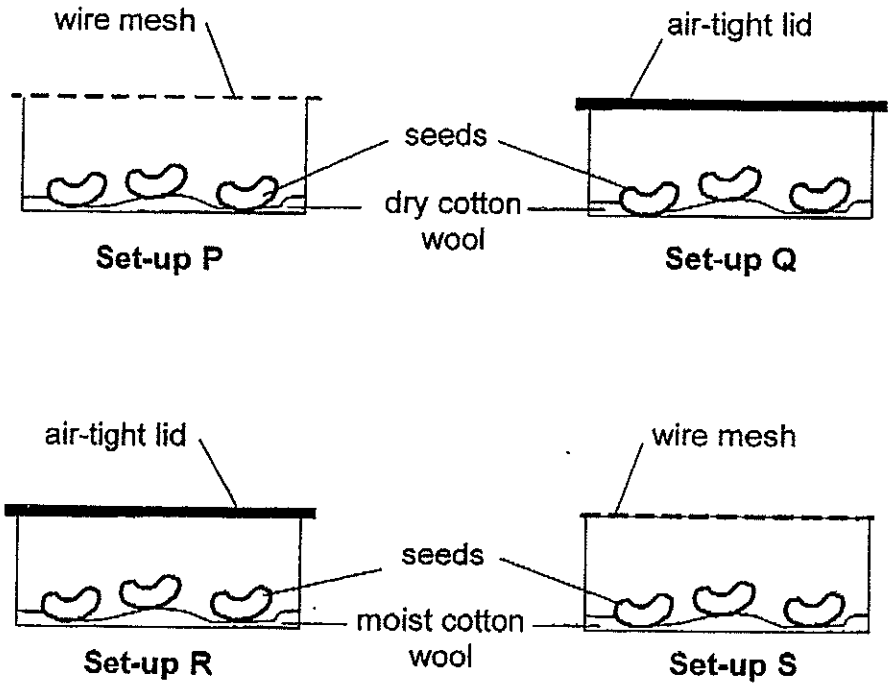
(3)



(4)



9. Nicole prepared four set-ups, P, Q, R and S, using identical containers and similar seeds as shown in the diagrams below.
She placed all the set-ups in a room near the window.



At the end of the experiment, she observed that the seeds grew into seedlings in some of the set-ups.

What was Nicole trying to find out from her experiment?

(1) Whether seeds can grow on cotton wool

(2) Whether containers allow seedlings to grow well

(3) Whether seeds need water and air to grow into seedlings

(4) Whether seeds need warmth, water and air to grow into seedlings

10. Which part in the human digestive system helps to break food into smaller pieces?

(1) Gullet
(2) Teeth
(3) Tongue
(4) Large intestine

11. Which one of the following statements about the human digestive system is true?

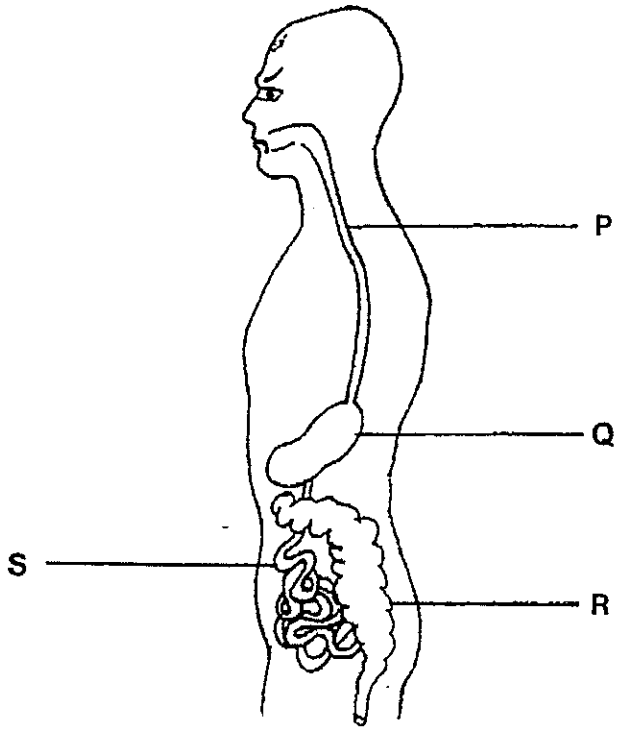
(1) Digested food is absorbed through the walls of the small intestine.

(2) Digested food travels from the small intestine to the large intestine.

(3) Digestion ends in the small intestine and no digestion will take place there.

(4) The muscular walls of the gullet help to push the undigested food to the large intestine.

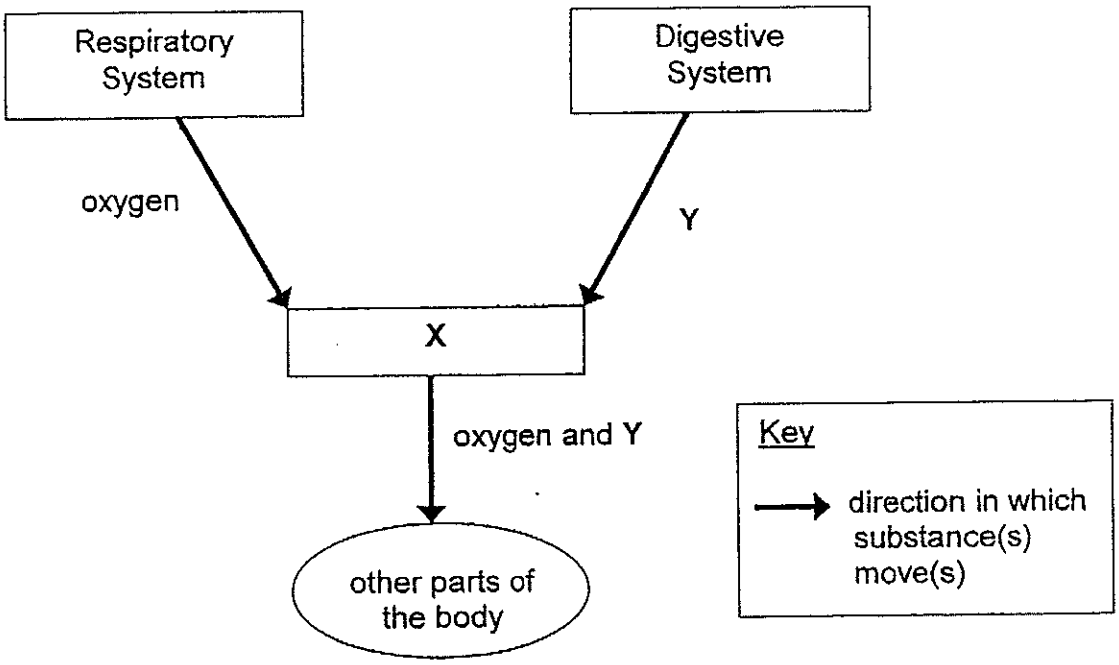
12. The diagram below shows some parts of the human digestive system.



In which of these parts are digestive juices produced?

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

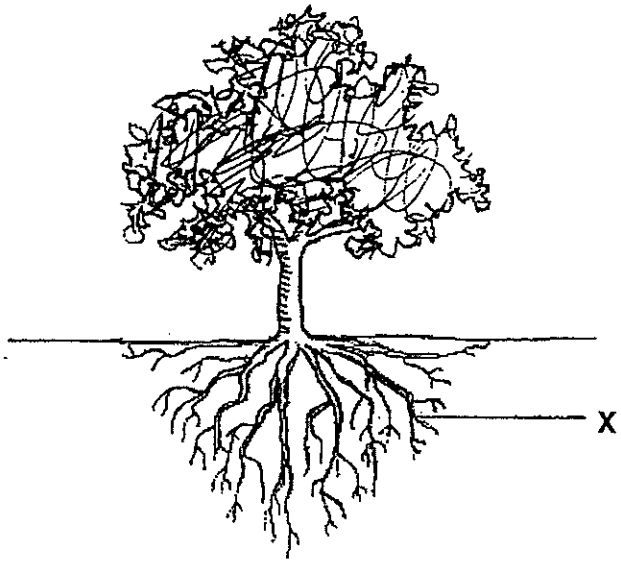
13. The diagram below shows how a substance is moved from one system to another.



Which one of the following best represents X and substance Y?

	X	Substance Y
1)	Skeletal System	undigested food
2)	Muscular System	digested food
3)	Circulatory System	digested food
4)	Circulatory System	undigested food

14. The diagram below shows a tree with one part labelled X.

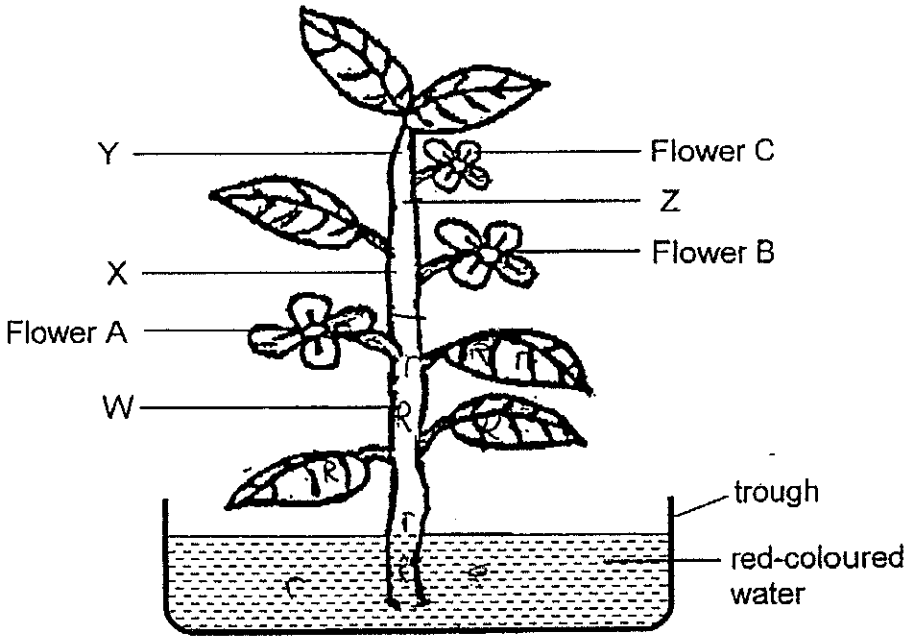


What is/are the function(s) of the part labelled X?

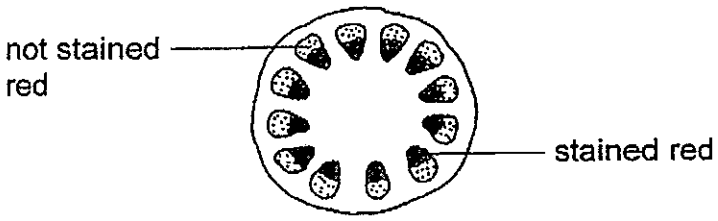
A To hold the tree upright.
B To anchor the tree to the ground.
C To help the tree make food during the day.
D To take in water and mineral salts from the ground.

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

15. Mary placed a plant bearing white Flowers, A, B and C, in a trough of red-coloured water. The roots of the plant were removed.
After some time, Mary observed that Flower A had turned red while Flowers B and C remained white.



Mary cut one part of the stem and observed that its cross-section was stained red as shown below.



Cross-section of stem

At which part of the stem, W, X, Y or Z, did Mary most likely make the cut?

(1) W (2) X

(3) Y (4) Z

Ali used 4 identical pots of seedlings, A, B, C and D, for his experiment. Each pot contained the same amount of soil of the same type. He watered each pot of seedlings daily.
After 9 days, he measured and recorded the height of the seedlings in each pot as shown in the table below.

Pot	Height of seedlings after 9 days (cm)	Amount of water given each day (ml)
A	5	20
B	8	30
C	10	35
D	13	45

Based on the information above, answer **Questions 16 and 17.**

The seedlings have to grow to a height of at least 8 cm in 9 days to be considered as growing well.

16. What is the **least** amount of water Ali had to give to the seedlings each day to ensure that they grow well?

(1) 20 ml
(2) 30 ml
(3) 35 ml
(4) 45 ml

17. What can Ali conclude from his experiment?

(1) The seedlings grew more quickly when they were given more water daily.
(2) The seedlings died more quickly when they were given less water daily.
(3) The seedlings grew more slowly when they were given more water daily.
(4) The seedlings died more quickly when they were given more water daily.

18. Eric carried out an experiment using 4 rods which were made of different metals, P, Q, R and S, of the same thickness and length.
He scratched one rod against another, one at a time.

He recorded his observations in the table below. A tick (✓) in the box indicates scratch marks on the rod.

Types of metals	scratch marks observed on the materials			
	P	Q	R	S
P		✓	✓	✓
Q				
R		✓		
S		✓	✓	

Which one of the following metals is the hardest?

(1) P (2) Q

(3) R (4) S

19. Which of the following is/are **not** matter?

A car
B rain
C wind
D shadow

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

20. John placed two identical balloons, X and Y, on each end of a rod of a balance as shown in diagram 1.
John released the air in balloon Y. The rod came to rest in a new position as shown in diagram 2.

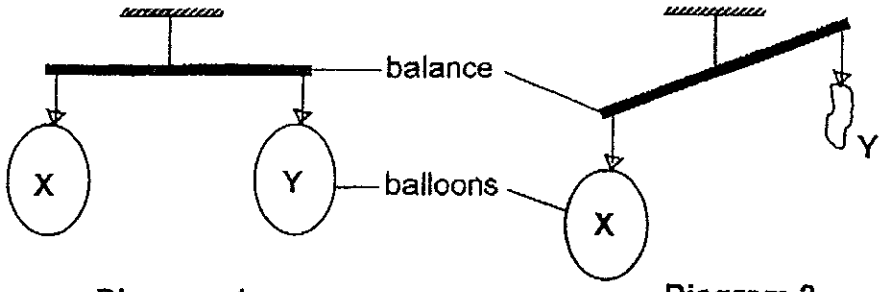
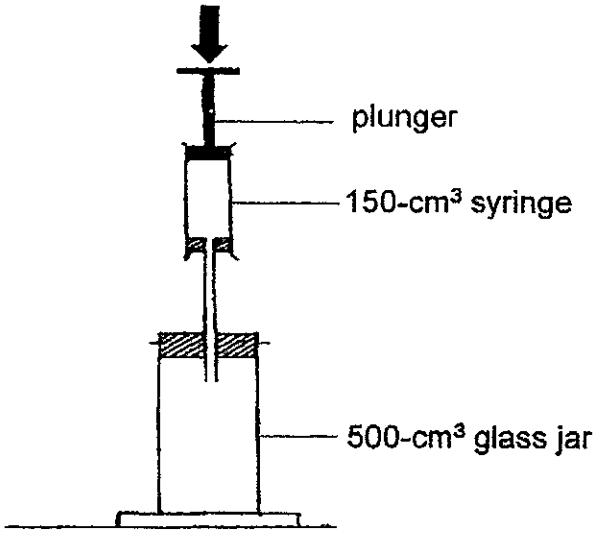


Diagram 1 **Diagram 2**

John's experiment showed that air _____.

(1) has mass
(2) has a definite volume
(3) can be compressed
(4) has no definite volume

21. Jane set up an experiment using the apparatus as shown below.



Jane was able to push in the plunger completely.
What would be the total volume of air in the glass jar now?

(1) 150 cm^3
(2) 350 cm^3
(3) 500 cm^3
(4) 650 cm^3

22. Four pupils made the following statements about matter.

Pupil A Bacteria are matter.

Pupil B Solids and liquids have mass.

Pupil C The bigger the object, the greater its mass.

Pupil D Solids of the same shape and size occupy the same amount of space.

Which of these pupils made the correct statements?

(1) A and B only

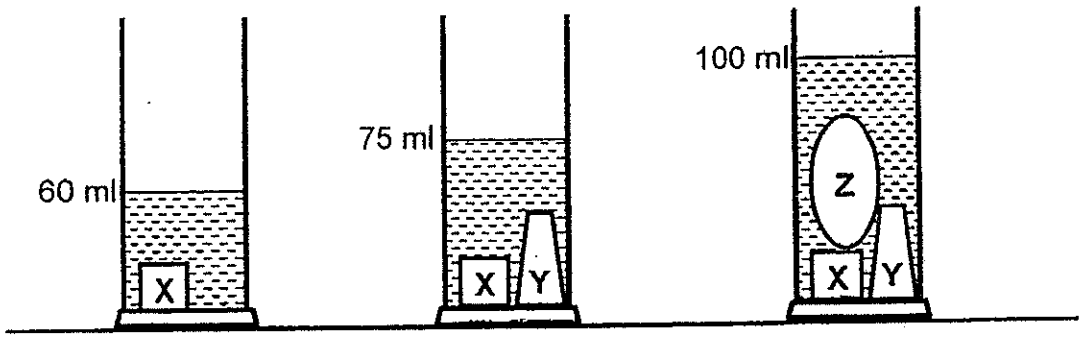
(2) C and D only

(3) A, B and D only

(4) A, B, C and D

23. David poured 50 ml of water into a measuring cylinder. He then placed object X into the cylinder, followed by object Y and finally object Z.

David drew his observations as shown below.



Based on the information above, which one of the following statements is correct?

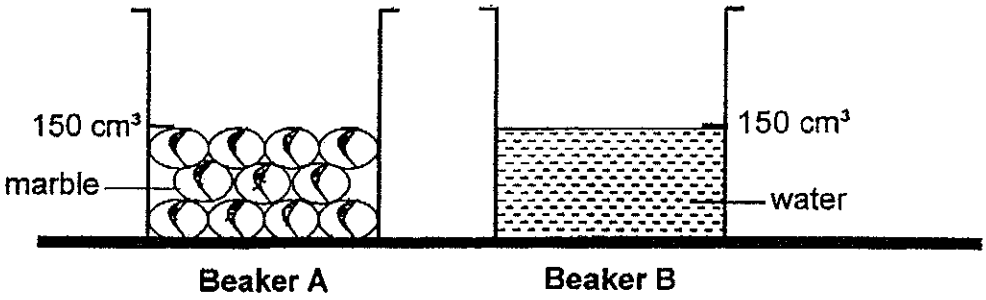
(1) Object X has a greater mass than object Y.

(2) Object Y has a greater mass than object X.

(3) Object Y has a greater volume than object Z.

(4) Object Z has a greater volume than object Y.

24. There are 2 identical beakers, A and B, as shown below.
Beaker A is filled with marbles to the 150-cm³ mark. Beaker B is filled with water to the same level.



The water in beaker B is poured into beaker A.
Which one of the following is most likely to be the water level mark in beaker A?

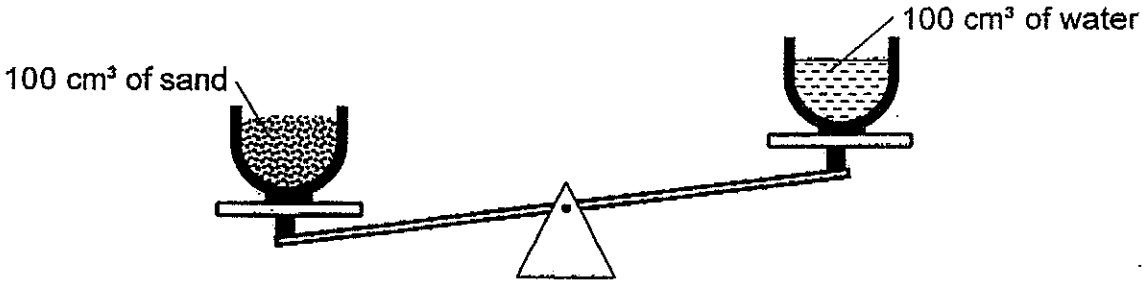
(1) 150-cm³

(2) 300-cm³

(3) more than 300-cm³

(4) between 150-cm³ and 300-cm³

25. The diagrams below show 2 identical bowls placed on a balance lever. The bowls were filled with 100 cm³ of sand and water respectively.



Based on the information above, which of the following statements are correct?

P The bowls of sand and water have the same mass.

Q The bowls of sand and water have the same volume.

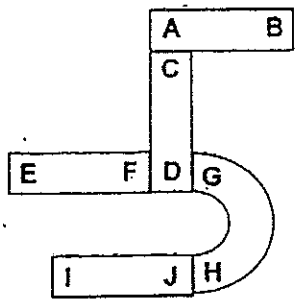
R The bowl of sand has a greater mass than the bowl of water.

S The bowl of sand has a greater volume than the bowl of water.

(1) P and R only (2) P and S only

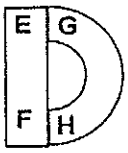
(3) Q and R only (4) Q and S only

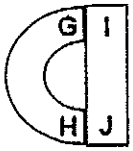
26. Five magnets with their poles labelled are arranged as shown in the diagram below.

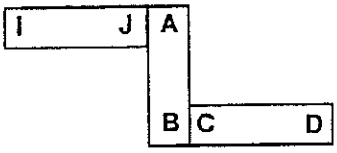


Which one of the following arrangements using the magnets above is **NOT** possible?

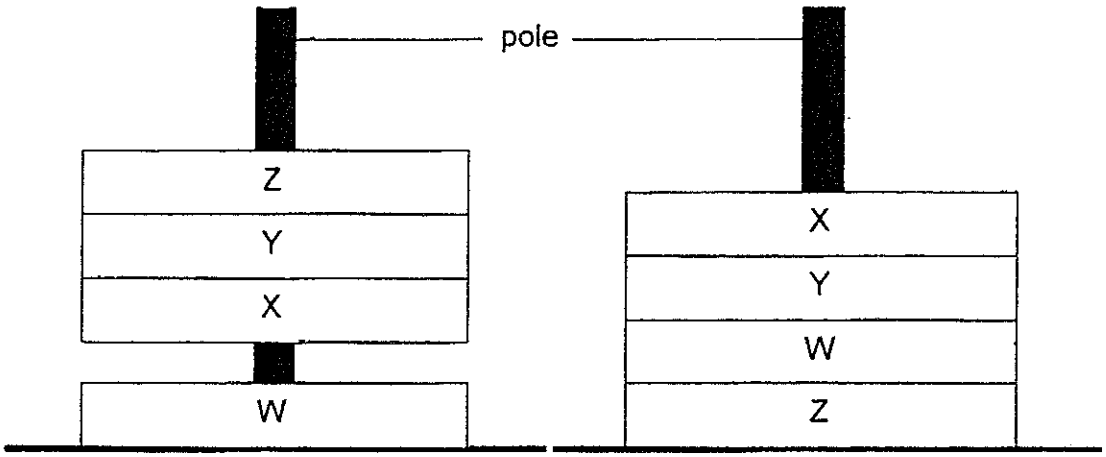
(1)


(2)


(3)


(4)


27. Jeff placed 4 rings, W, X, Y, and Z, through a pole. His observations are shown in the diagrams below.



Jeff wrote some statements based on his observations.

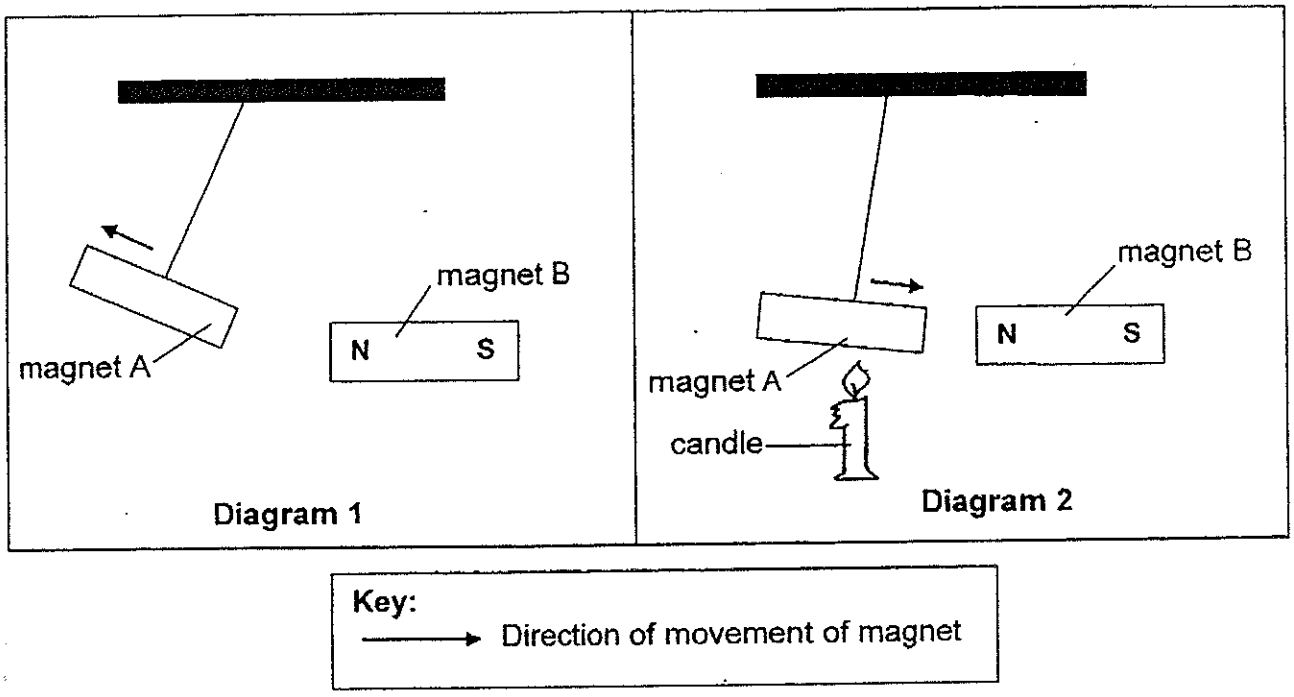
A Both rings W and X are magnets.
B Unlike poles of X and Y are facing each other.
C Unlike poles of W and Z are facing each other.

Which of Jeff's statement(s) is/are **definitely** true?

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

28. Tom suspended magnet A using a string. He brought magnet B near magnet A. He observed that magnet A moved away from magnet B as shown in Diagram 1.

Without moving magnet B, Tom placed a lit candle directly below magnet A. After some time, he observed that magnet A moved a little towards magnet B as shown in Diagram 2.



Based on the information above, which of the following statement(s) is/are correct?

W Heating magnet A reduces its magnetic strength.

X Like poles of magnets A and B are facing each other.

Y Suspending magnet A increases its magnetic strength.

Z The force of attraction of magnets is greatest only at one of its poles.

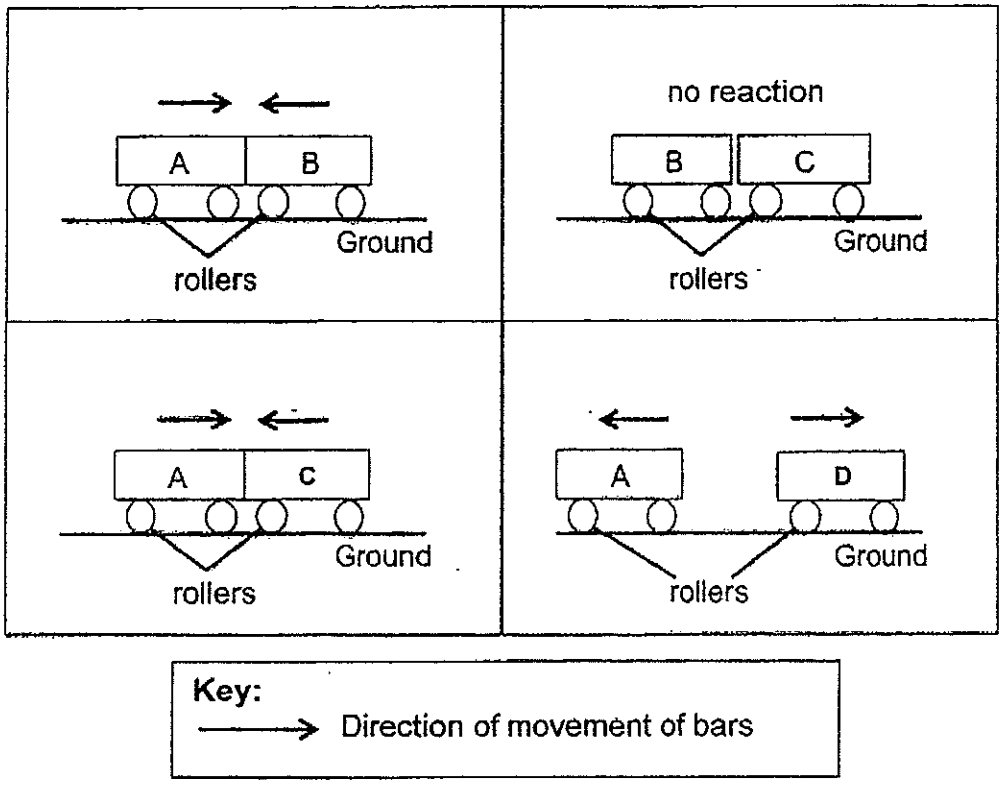
(1) Y only

(2) W and X only

(3) Y and Z only

(4) W, X and Z only

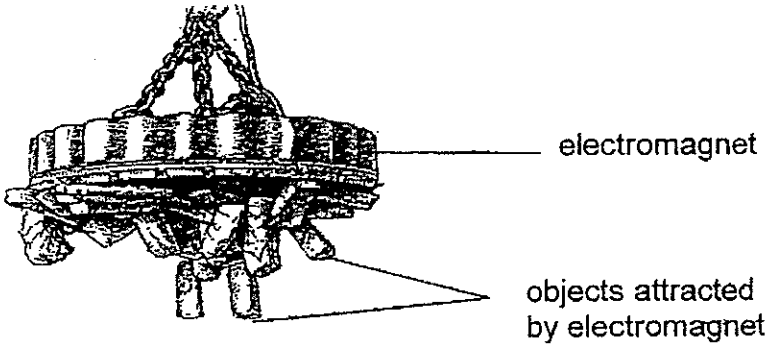
29. Yiming placed four bars, A, B, C and D, of the same size on rollers. He put them near each other and recorded the direction of movement of the bars as shown in the diagrams below.



Which of the following identifies the four bars correctly?

	Bar A	Bar B	Bar C	Bar D
(1)	magnet	magnetic object	magnet	magnet
(2)	magnet	magnetic object	magnetic object	magnet
(3)	magnetic object	magnet	non-magnetic object	magnet
(4)	non-magnetic object	magnet	non-magnetic object	magnetic object

30. The diagram below shows an electromagnet that is used in scrapyards to separate magnetic materials from non-magnetic materials.



Which set of materials would the electromagnet be able to separate?

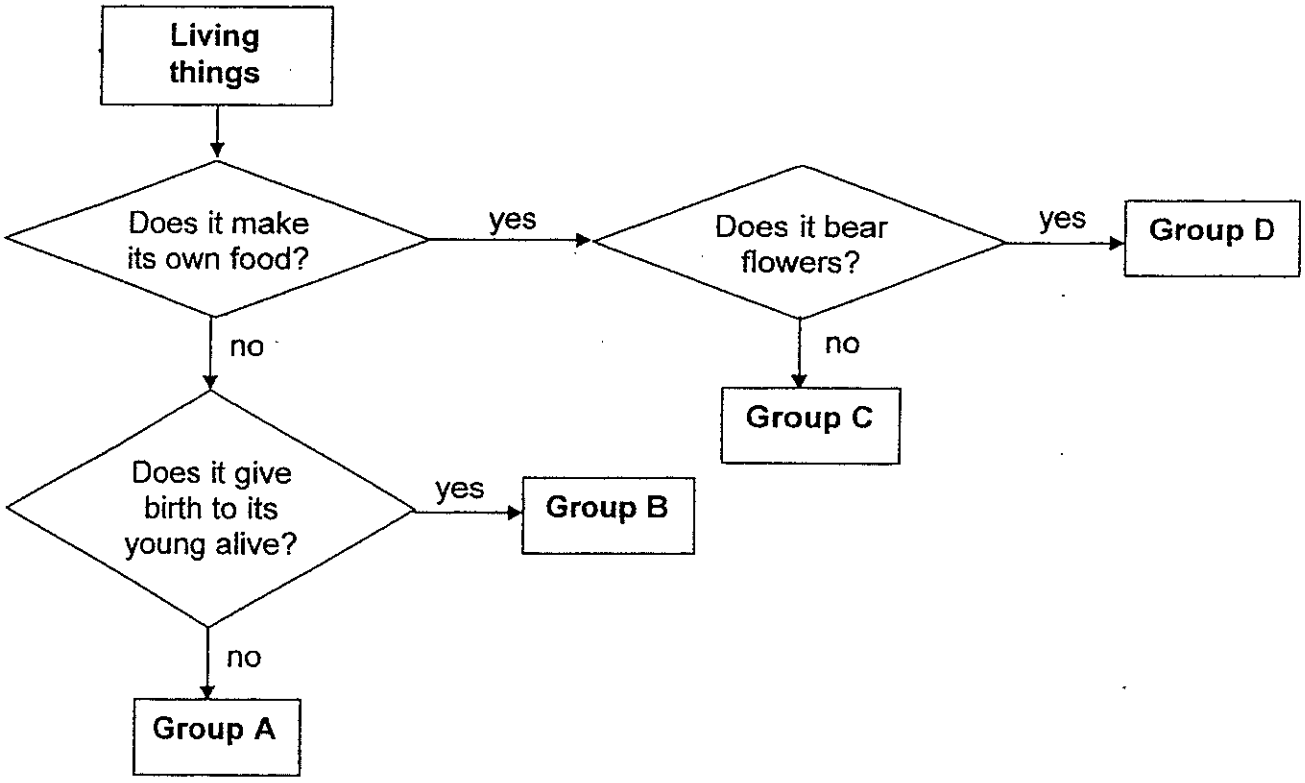
(1) steel and nickel
(2) plastic and glass
(3) silver and copper
(4) iron and aluminum

End of Section A

Name : _____ Index No: ____ Class: P4 __ 40

SECTION B (40 marks)
For questions 31 to 44, write your answers clearly in the spaces provided.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. The classification chart below shows how some living things are being classified into groups A, B, C and D.



(a) State a common characteristic between the living things in groups C and D. [1]

_____

(b) In which group, A, B, C or D, does the bird's nest fern belong to? [1]

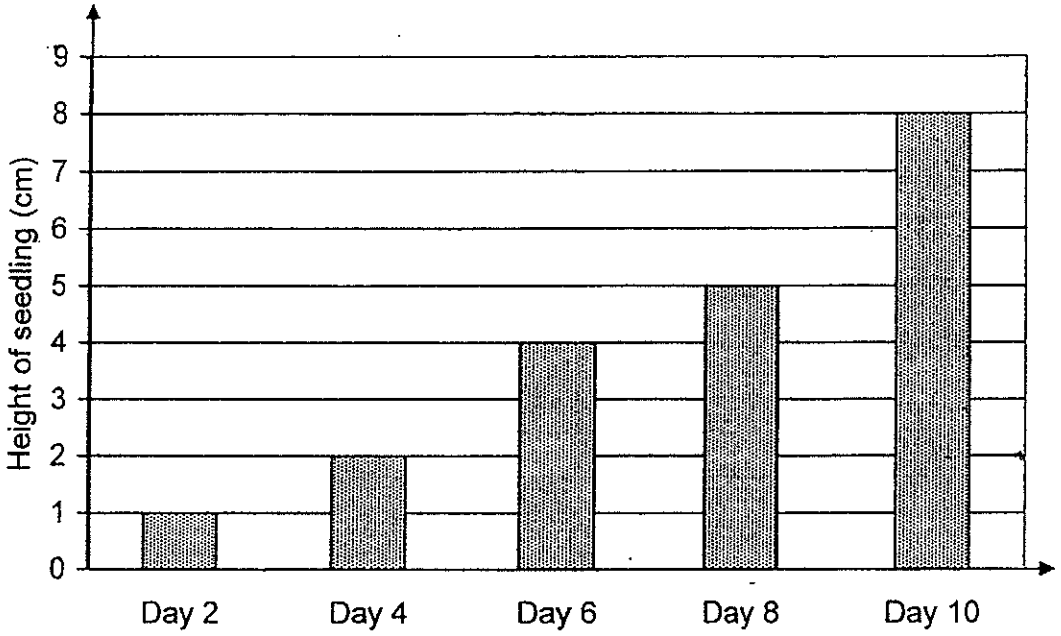
Group _____

(c) The spiny anteater is an animal that reproduce by laying eggs.
Which group, A, B, C or D, does the spiny anteater belong to? [1]

Group _____

Score 3

32. James planted a seedling in a pot. He recorded the height of the seedling every two days and plotted a graph as shown below.



(a) What characteristic of living things does the data from the graph show? [1]

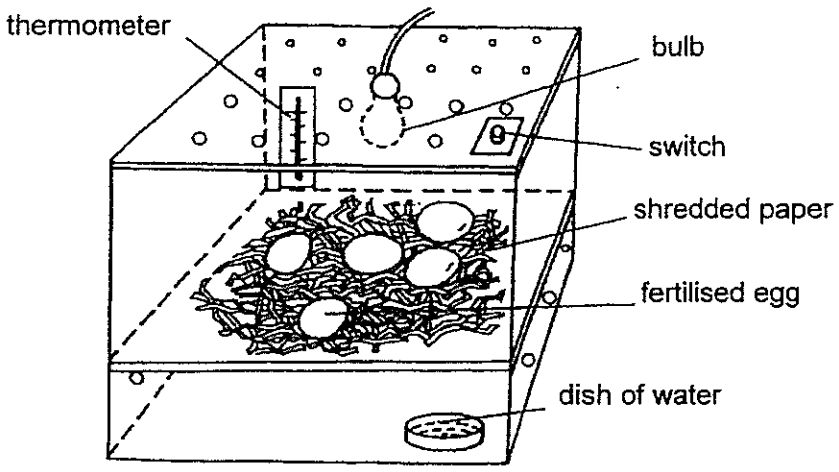
_____

(b) How much did the seedling grow from the 4th day to the 10th day? [1]

_____

Score		2

33. Pat wanted to find out if the temperature in an incubator will affect the length of time taken for an egg to hatch. She set up two incubators for her experiment. One of them is shown below.



(a) Name the changed variable in Pat's experiment? [1]

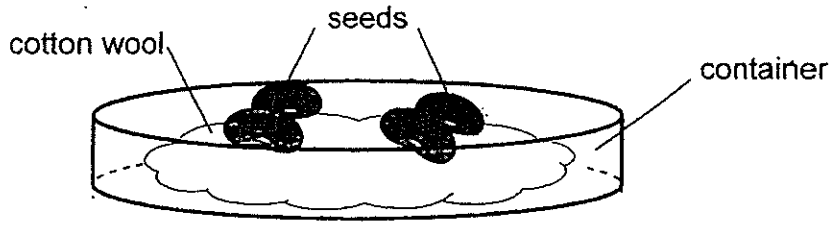
_____

_____

(b) Name 2 variables that Pat should keep the same for both her set-ups to ensure a fair test. [2]

Variable 1	
Variable 2	

34. John set up an experiment to find out the conditions needed for seeds to germinate. The diagram below shows one of his set-ups.



The table below shows the conditions of each of his set-ups.

Set-up	Moist cotton wool	Dry cotton wool	Placed near the window	Placed in a cupboard
P	✓			✓
Q		✓	✓	
R		✓		✓
S	✓		✓	

(a) To find out whether seeds need water to germinate, which two set-ups should John use? [1]

_____

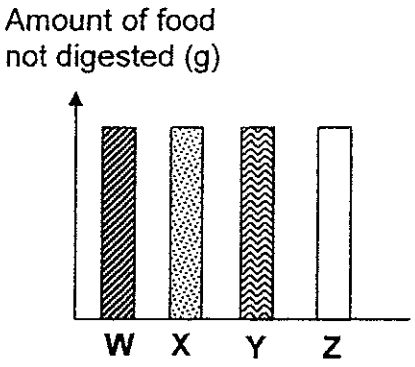
(b) After a few days, John observed that some seeds germinated.

Name the set-up(s) the seeds would most likely germinate. [1]

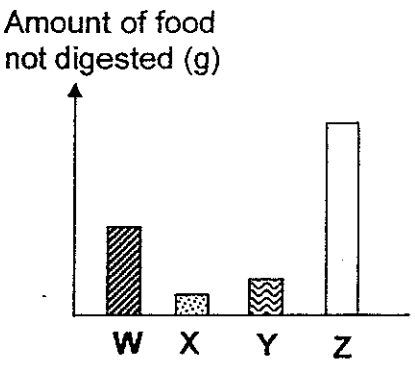
_____

Score /2

35. Graph 1 shows the types of food, W, X, Y and Z, taken into the body's digestive system at the start.
Graph 2 shows the amount of food that remained undigested in the system 5 hours later.



Graph 1



Graph 2

Based on the information above, answer the questions below:

(a) Which type of food, W, X, Y or Z, is **NOT** digested at all? [1]

_____

(b) Which type of food, W, X, Y or Z, is the easiest to digest?
Give a reason for your answer. [1]

_____

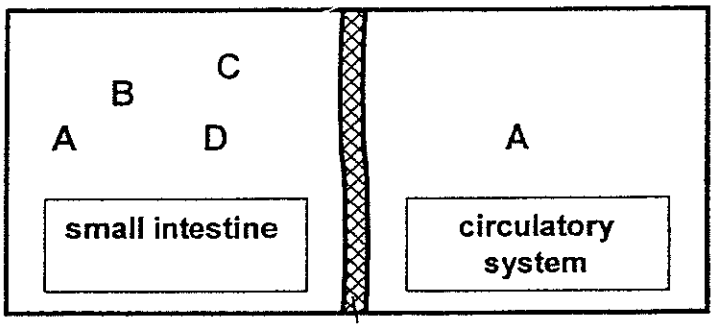
_____

(c) Food that is high in fibre takes a longer time to digest than other types of food.

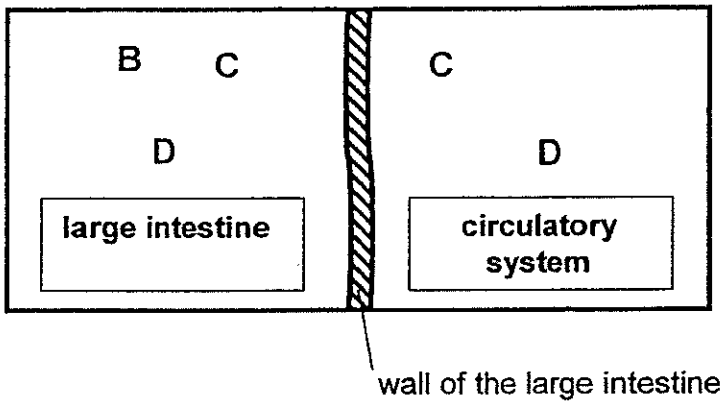
Which type of food, W, X or Y, most likely contains the highest amount of fibre? [1]

_____

36. Substances A, B, C and D are found in the small intestine. Only substance A is absorbed through the walls of the small intestine as shown in the diagram below.



When the substances travelled further in the digestive system, only substances C and D are absorbed through the walls of the large intestine as shown in the diagram below.



(a) Based on the information above, write a letter, A, B, C or D, that best represents each of the substances below. [2]

Water : _____

Mineral salts : _____

Digested food : _____

Undigested food : _____

(continue to the next page)

Q36 (continue from previous page)

(b) Fill in the blanks using the words in the box below. [2]

carbon dioxide	oxygen

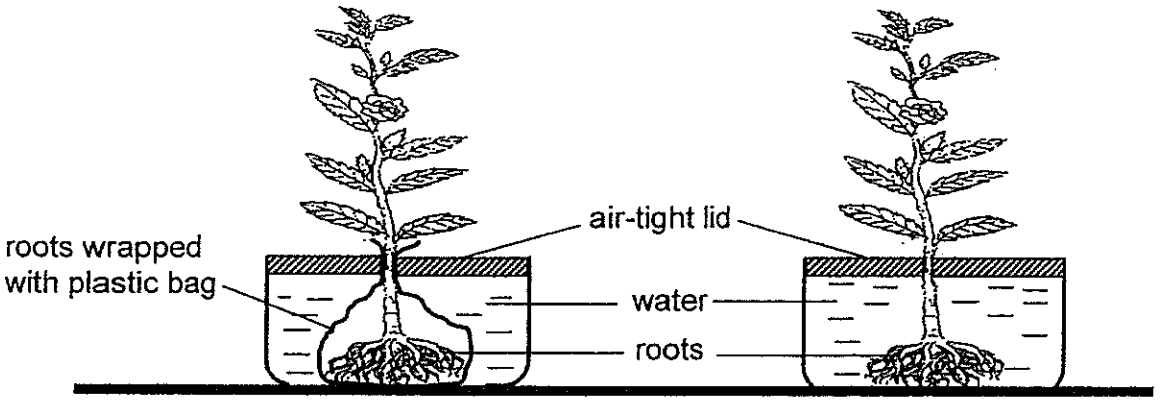
(i) The circulatory system transports _____ to all parts of the human body.

(ii) The circulatory system transports _____ away from all parts of the human body.

(c) Name the body system that works with the circulatory system to perform the functions stated in part (b). [1]

_____

37. Peiling poured 500 ml of water into each of the two identical beakers, X and Y. Next, she placed two similar plants into the beakers before covering each beaker with an air-tight lid as shown in the diagrams below.



Three days later, she recorded the volume of water left in the two beakers. Her results are shown in the table below.

	volume of water on the first day (ml)	volume of water on the third day (ml)	volume of water on the fourth day (ml)
beaker X	500	500	i)
beaker Y	500	380	ii)

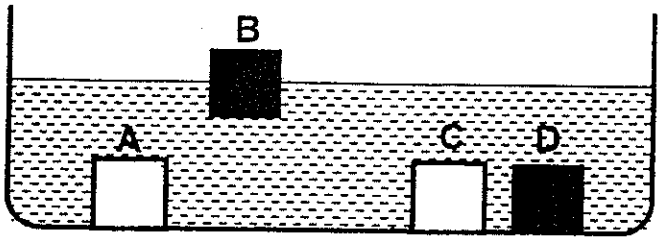
(a) In the table above, fill in the amount of water left in beakers X and Y on the **fourth day**. [1]

(b) Based on the information above, give a reason for the volume of water left in beakers X and Y on the third day? [2]

	Reason
Beaker X	
Beaker Y	

Score /2

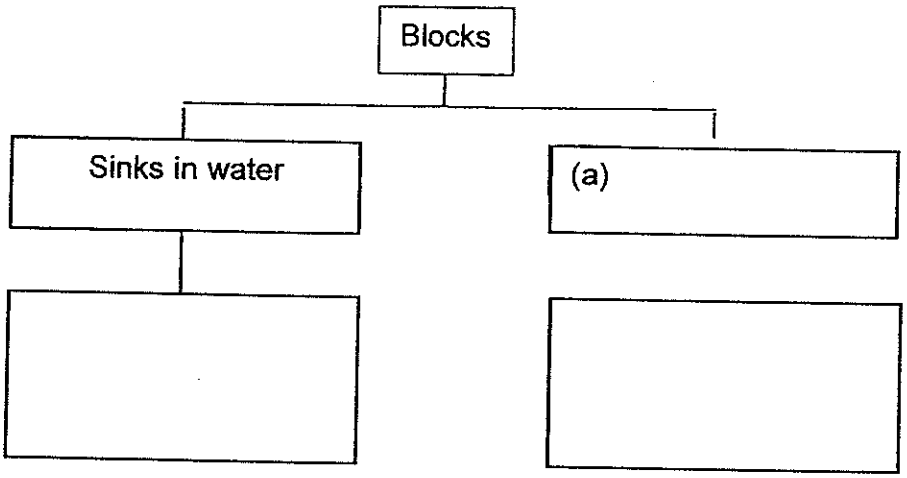
38. Fatimah conducted an experiment using four different blocks, A, B, C and D, of similar shape and size. She placed them into a tank filled with water as shown in the diagram below.



In the classification chart below,

(a) write a suitable sub-heading. [1]

(b) classify the blocks by writing the letters, A, B, C and D, in the correct box. [1]

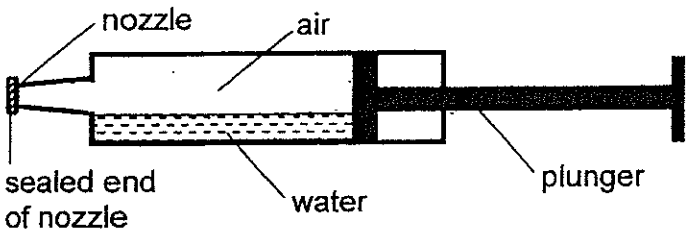


(c) Name one other possible way that Fatimah can classify the blocks that sunk. [1]

_____

_____

39. The diagram below shows a syringe filled with some water and air. The nozzle of the syringe is tightly sealed.



Siti pushed the plunger and discovered that the plunger could be pushed in slightly.

(a) Explain why the plunger could be pushed in slightly. [1]

_____

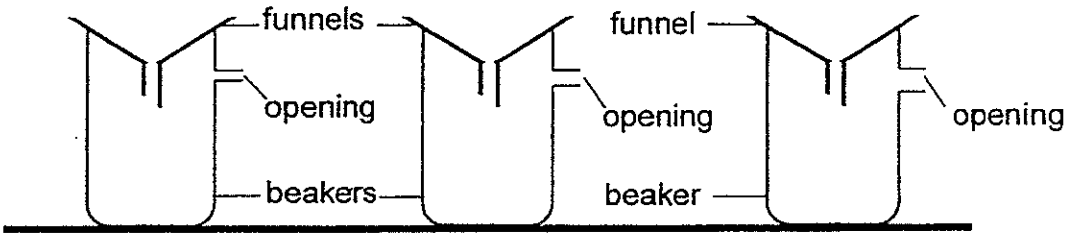
_____

(b) Did the volume of the water in the syringe change after the plunger was pushed in slightly? Give a reason for your answer. [1]

_____

_____

40. The diagrams below show three set-ups, A, B and C, each with a beaker of similar volume and shape. Each of the beakers had an opening of different size at its side. Sam placed an identical funnel over the mouth of each beaker.



Set-up A **Set-up B** **Set-up C**

Next, Sam poured 100 ml of water into the funnel and measured the time taken for all the water to flow into the beaker.
He recorded the results in the table below.

Set-up	Size of opening (mm)	Time taken for all the water to flow into the beaker (seconds)
A	4	34
B	5	30
C	8	19

(a) How did the size of the opening at the side of the beaker affect the time taken for all the water to flow into the beaker? [1]

_____

_____

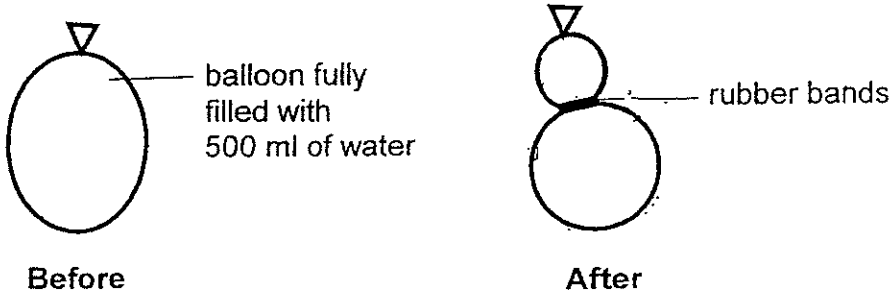
(b) In which set-up, A or C, did the water take a shorter time to flow into the beaker? Explain your answer. [2]

_____

_____

_____

41. Magdalene fully filled a balloon with 500ml of water. She then squeezed the balloon and tied rubber bands around its middle as shown in the diagrams below.



(a) What was the volume of water in the balloon after it had been tied in the middle by rubber bands? [1]

_____

(b) What does the change in the shape of the balloon tell you about the property of water? [1]

_____

42. Peter placed two identical woollen towels, P and Q, on a balance lever as shown in Diagram 1 below.

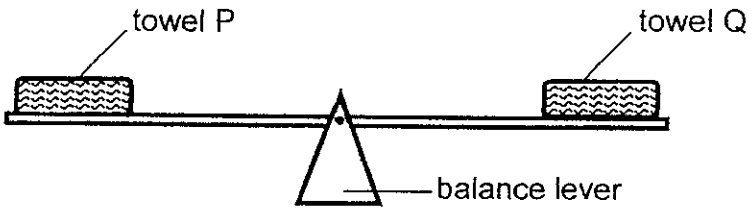


Diagram 1

Peter then poured some water on towel Q and the balance lever titled as shown in Diagram 2 below.

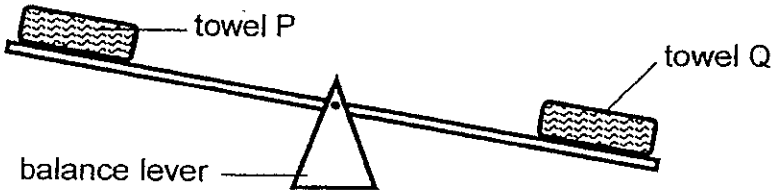


Diagram 2

(a) Based on the information above, what could Peter conclude about the property of water? [1]

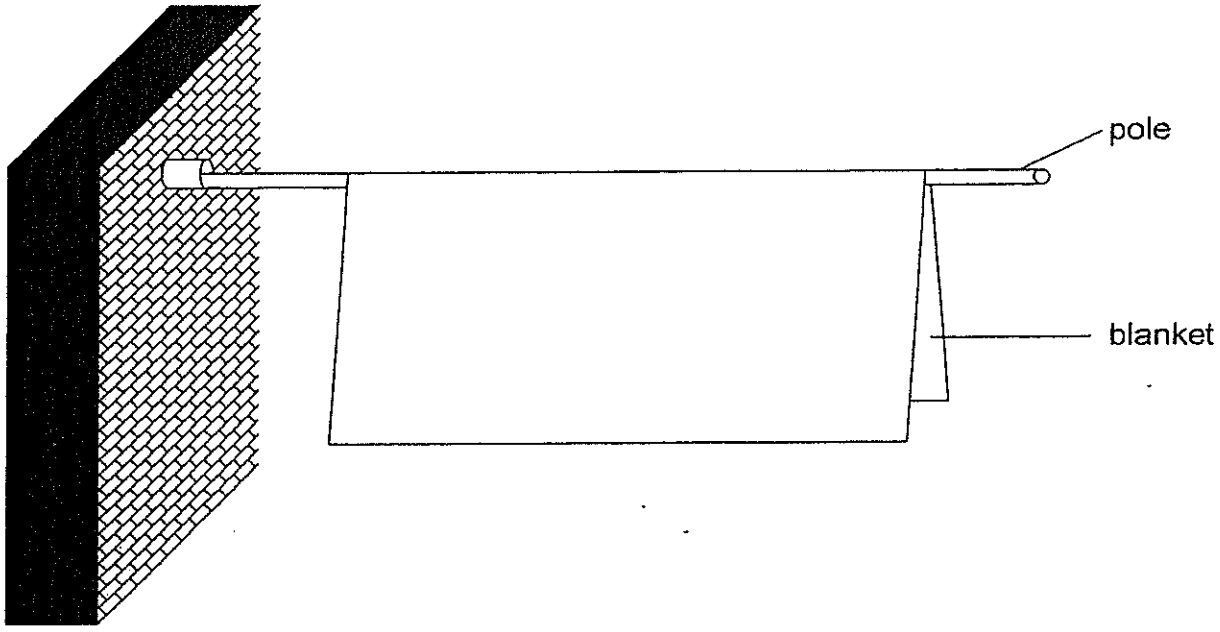
_____

_____

(continue to the next page)

Q42 (continued from previous page)

The diagram below shows a pole that is used to hang a blanket to let it dry.



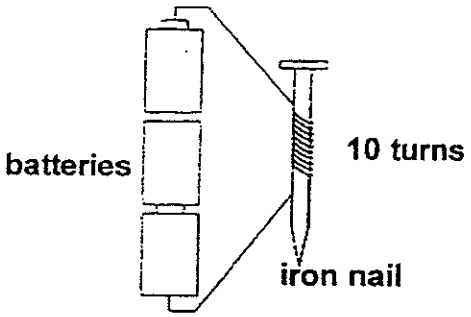
Mrs Tan has two poles, X and Y, of equal length, each made of a different material. The table below shows the information of the two poles.

Pole	Maximum mass the pole can hold just before it breaks (kg)
X	3
Y	6

Mrs Tan has a piece of dry woollen blanket of mass 3 kg.

(b) Which pole, X or Y, should Mrs Tan use to hang the blanket after washing it? Explain your answer. [2]

43. Meiling made an electromagnet by coiling an iron nail with wire and then connecting the ends of the wire to the batteries as shown below.



Meiling tested the magnetic strength of the electromagnet by counting the number of steel paper clips that the iron nail could attract.

She repeated the experiment by increasing the number of turns of wire around the iron nail. She recorded her observations in the table below.

Number of turns of wire around the iron nail	Number of paper clips the magnetised iron nail attracted
10	2
20	7
30	(a)
40	12

(a) In the table above, fill in the number of paper clips the magnetised iron nail would most likely attract when there were 30 turns of wire around the iron nail. [1]

(b) Based on her observations, how would the number of turns of the wire around an iron nail affect the magnetic strength of the electromagnet? [1]

_____

_____

(c) Name **ANOTHER** way Meiling could increase the magnetic strength of the electromagnet. [1]

_____

44. Junwei attached magnets P and Q, which had strong magnetic strength, to a balance as shown in Diagram 1 below. The masses of magnets P and Q were 100 g and 80 g respectively.

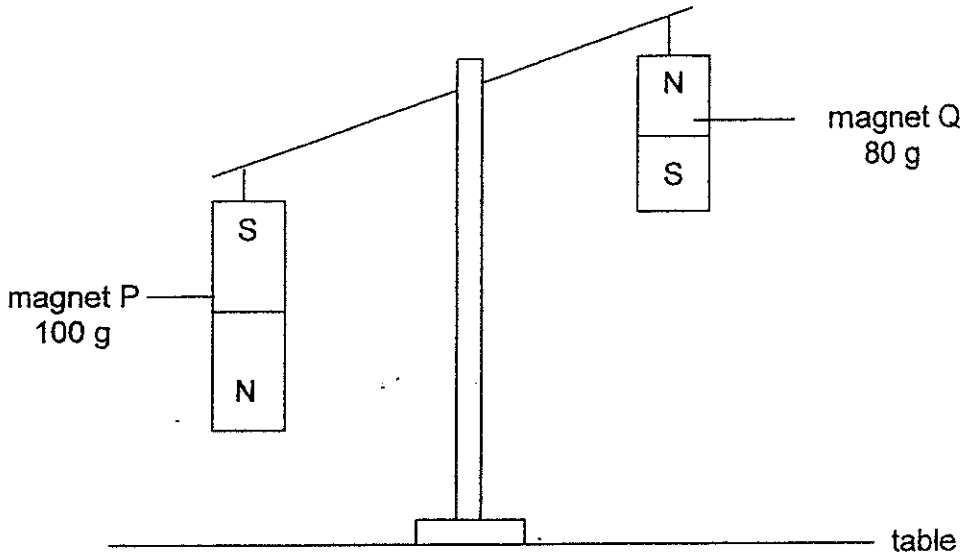


Diagram 1

Junwei placed another magnet, A, which had strong magnetic strength, directly under magnet Q. He attached magnet A to the table such that it could not move. He observed that magnet P moved upwards and both magnets P and Q balanced as shown in Diagram 2.

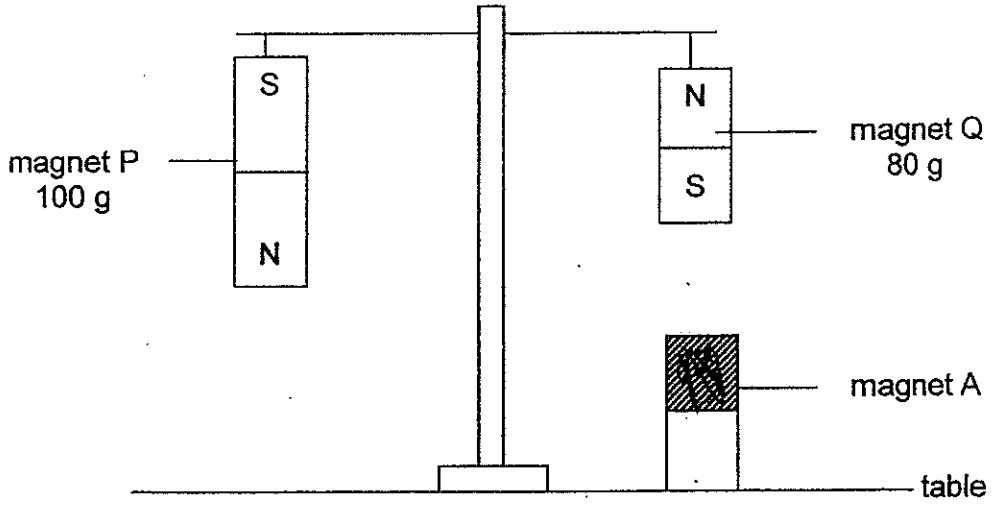


Diagram 2

(a) Explain Junwei's observations in Diagram 2. [2]

_____

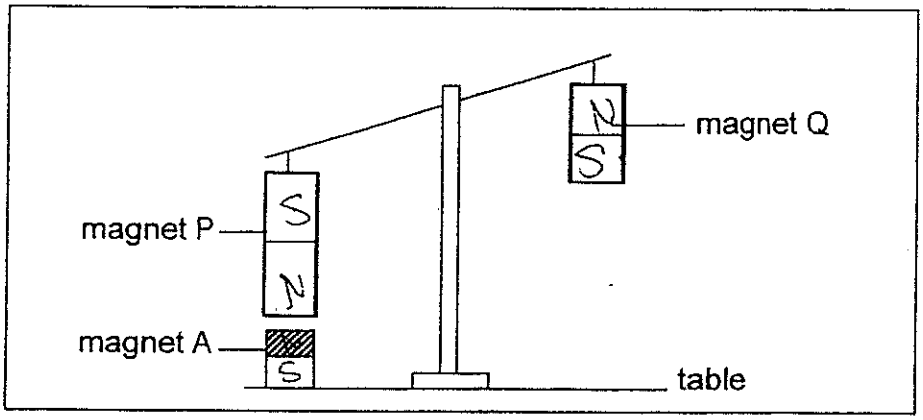
_____

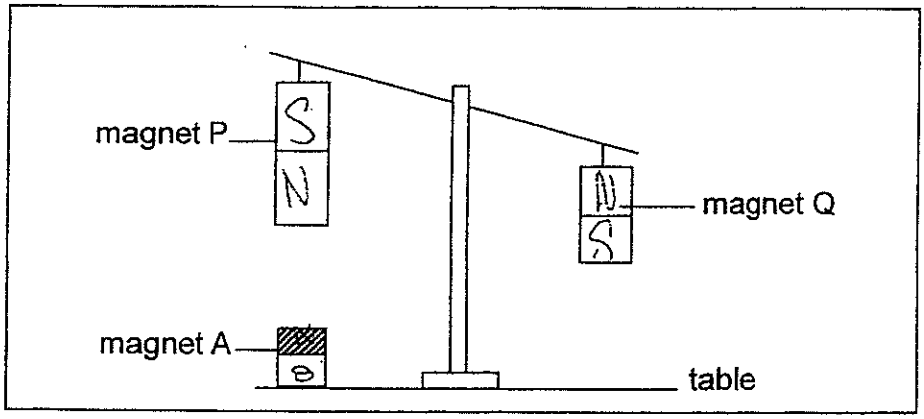
_____

(continue to the next page)

Q44 (continued from previous page)

Using the same apparatus in Diagram 2, Junwei moved magnet A and placed it directly below magnet P.





(b) Which one of the diagrams above shows the correct observation made by Junwei?

(i) Put a tick (✓) in the box next to the correct diagram above.

(ii) Give a reason for your answer. [1]

_____

_____

End-of-paper

~ Check your work carefully ~

Exam Paper 2014 Answer Sheet

School: RAFFLES GIRLS' PRIMARY SCHOOL
Subject: PRIMARY 4 SCIENCE
Term: SA1

1) 2	6) 2	11) 1	16) 2	21) 4	26) 4
2) 3	7) 3	12) 3	17) 1	22) 3	27) 1
3) 2	8) 1	13) 3	18) 1	23) 4	28) 2
4) 1	9) 3	14) 3	19) 2	24) 4	29) 2
5) 1	10) 2	15) 1	20) 1	25) 3	30) 4

31. (a) They both make their own food.
(b) C
(c) A

32. (a) Living things grow.
(b) 6cm

33. (a) The temperature of the incubator.
(b) 1: The type of egg used. ; 2: The size of the incubator.

34. (a) P and R
(b) P and S

35. (a) Z
(b) X. The amount of food left undigested was at least after 5 hours.
(c) W

36. (a) C, D, A, B
(b) i. oxygen
ii. carbon dioxide
(c) Respiratory system

37. (a) i. 500
ii. 260
(b) X: The plastic bag wrapping around the roots prevented the roots to take in water.
Y: The roots absorbed water.

38. (a) Floats on water.
(b) Sinks: A, C, D; Floats: B
(c) According to colour.

39. (a) The syringe was partly occupied by air. As the air in the syringe can be compressed, the plunger can be pushed in slightly.
(b) No. Water has a definite volume.

40. (a) The bigger the opening at the side of the beaker, the shorter time taken for all the water to flow into the beaker.

(b) C. It has a bigger opening than beaker A. Therefore, more air is able to escape to allow water to flow.

41. (a) 500ml

(b) Water has no definite shape.

42. (a) Water has mass.

(b) Y. Pole Y is stronger than pole X. The mass of blanket will be more than 3kg after washing because the blanket had absorbed some water.

43. (a) 10

(b) The more the number of turns around the iron nail, the greater the strength of the electromagnet.

(c) Add batteries to the circuit.

44. (a) Magnet Q and A attracted because their unlike poles were facing each other. Therefore, magnet Q moved downwards.

(b) The North pole of magnet A was facing the North pole of magnet P.