RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (2) 2011

Practical 10%	**Your score** out of 100	
Section A 50%		
Section B 40%		
	Class	Level
Highest score		
Average score		
Parent's signature		

Name : _____ **Index No:** ____ **Class: P 4** ___

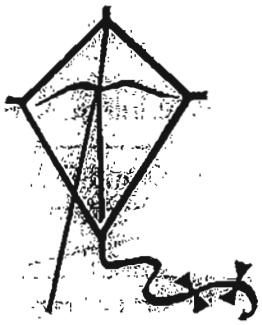
28th October 2011 **SCIENCE** **Att: 1 h 20 min**

SECTION A (25 X 2 marks)

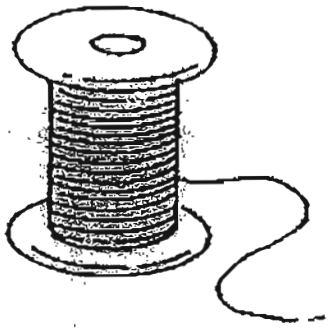
For each question from 1 to 25, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

1. Which one of the following is a living thing?

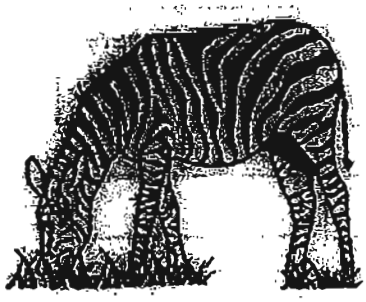
(1)



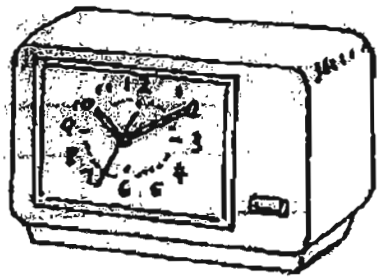
(2)



(3)

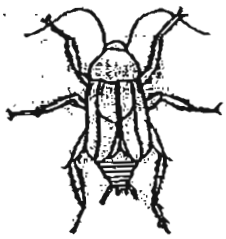


(4)



2. Which one of the following animals is **NOT** an insect?

(1)

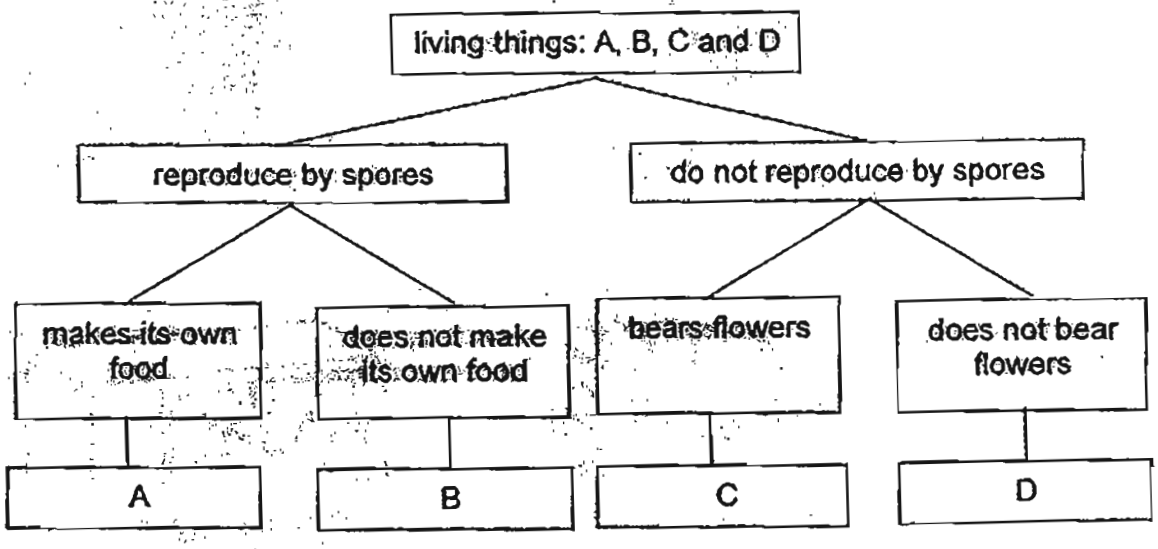


(2)

(3)

(4)

3. The classification table below differentiates living things A, B, C and D.



Which one of these living things represents moss?

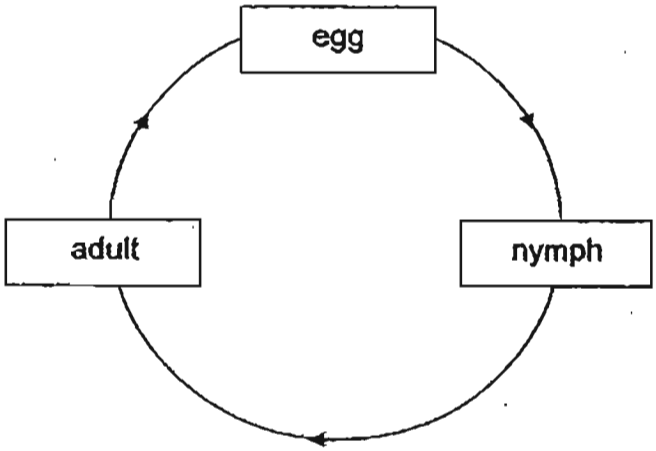
(1) A

(2) B

(3) C

(4) D

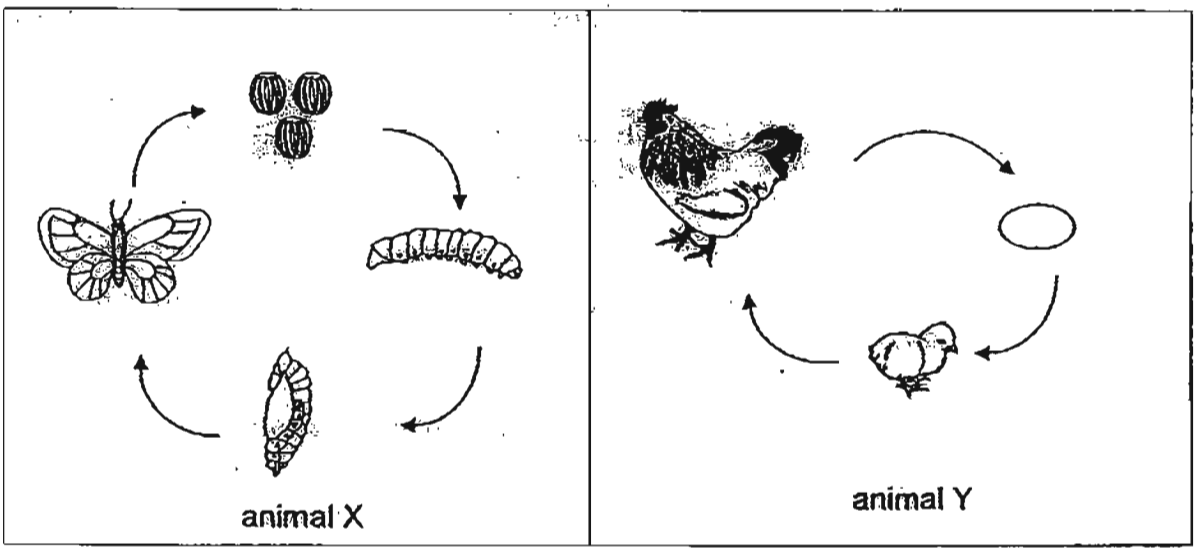
4. The diagram below shows the life cycle of an animal.



Which one of the following animals has its life cycle as shown above?

(1) frog
(2) beetle
(3) chicken
(4) cockroach

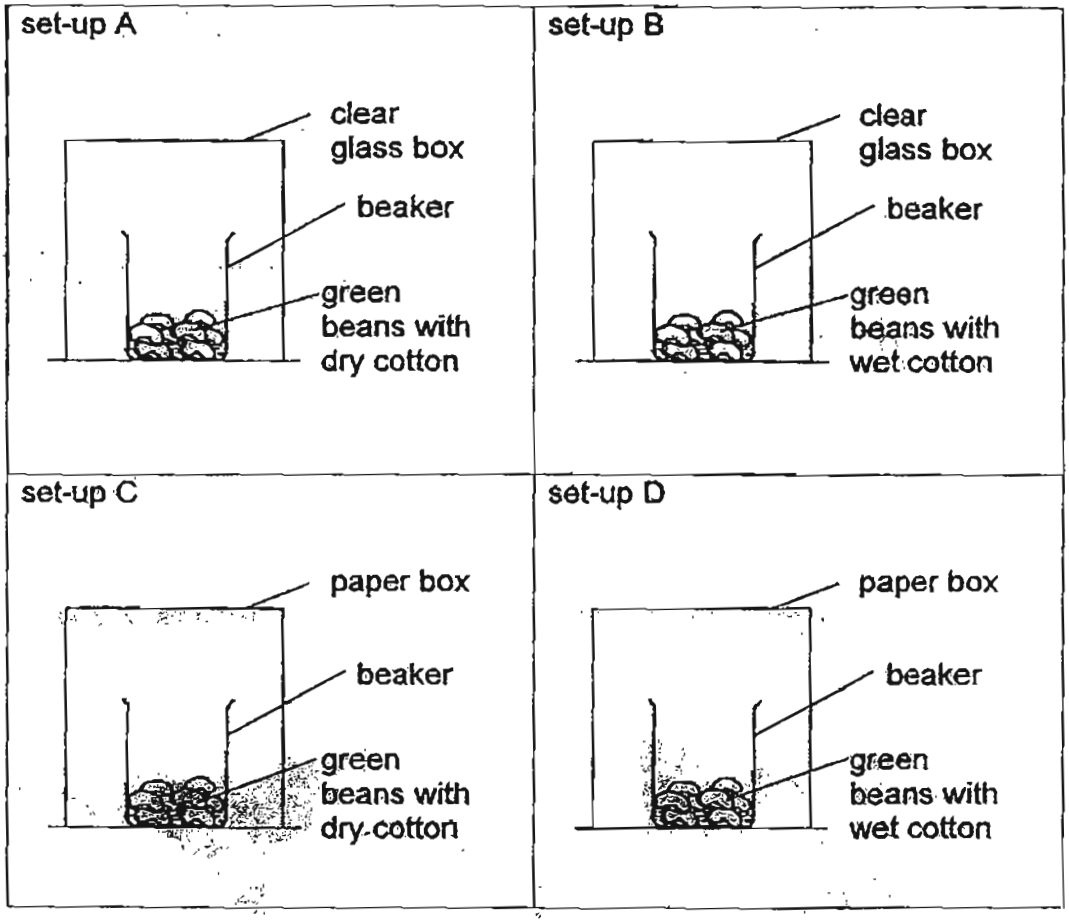
5. The diagrams below show the life cycles of two animals, X and Y.



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

(1) Both adults of animals X and Y lay eggs.
(2) Animal Y has more stages in its life cycle than animal X.
(3) Both the young of animals X and Y resemble their parents.
(4) At the adult stage, animal X has wings but animal Y does not have wings.

6. Jimmy carried out an experiment using similar green beans and boxes of the same size in set-ups A, B, C and D as shown below.



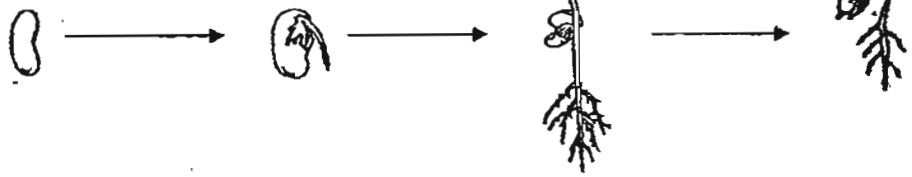
Jimmy placed all set-ups by a window. No sunlight reached the seeds in the paper boxes.

In which of these set-up(s) would the green beans germinate?

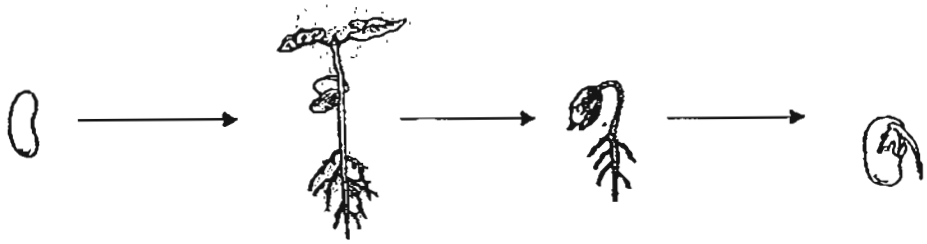
(1) B only
(2) A and D only
(3) B and D only
(4) A, C and D only

7. Which one of the following diagrams shows the correct development of a germinated seed?

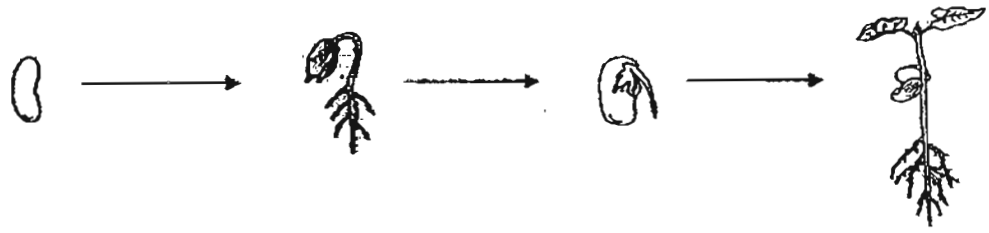
(1)



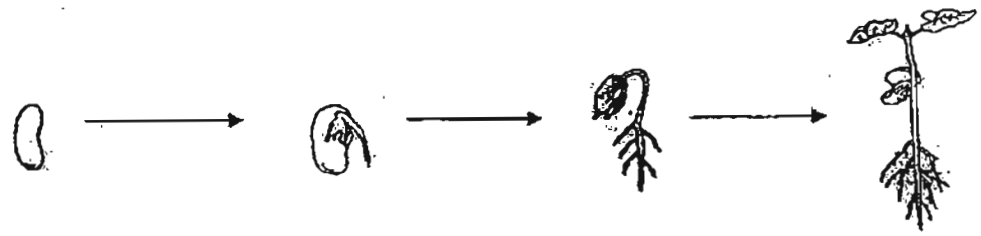
(2)



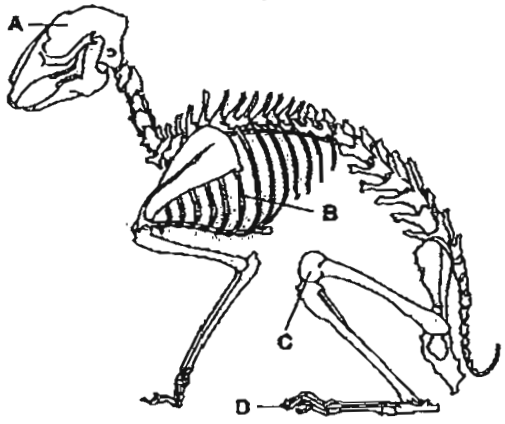
(3)



(4)



8. The diagram below shows the labelled parts of the skeletal system of an animal.



Which of these parts protect certain organs of the animal?

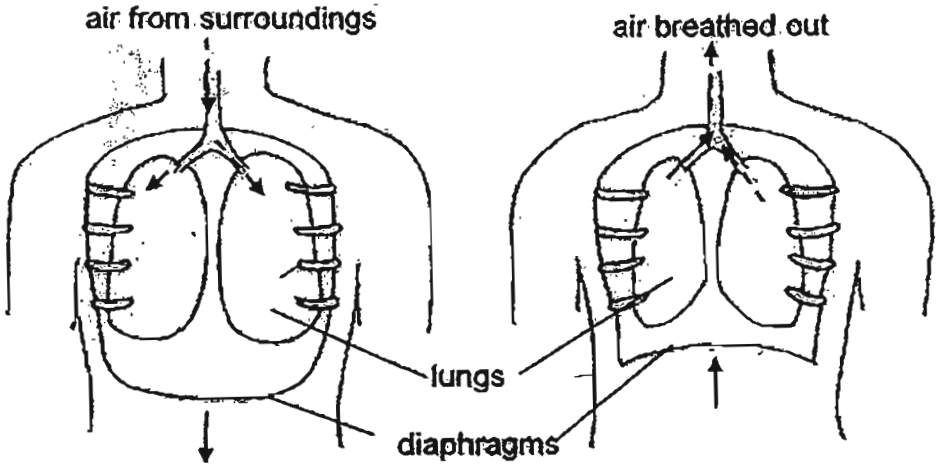
(1) A and B only

(2) B and C only

(3) C and D only

(4) A, B and D only

9. The diagram below shows what happens when we breathe in and out.



When we breathe in, the diaphragm, which is a sheet of muscles, moves down.
When we breathe out, the diaphragm moves up.

Key

⟶ direction of movement of diaphragm

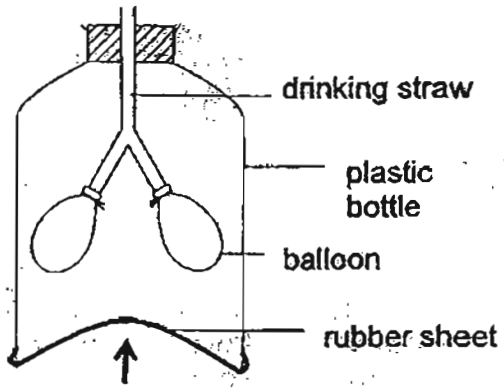
⇢ direction of movement of air

to be continued on the next page

Based on the information on **page 6**, four pupils drew models of the human respiratory system as shown below.

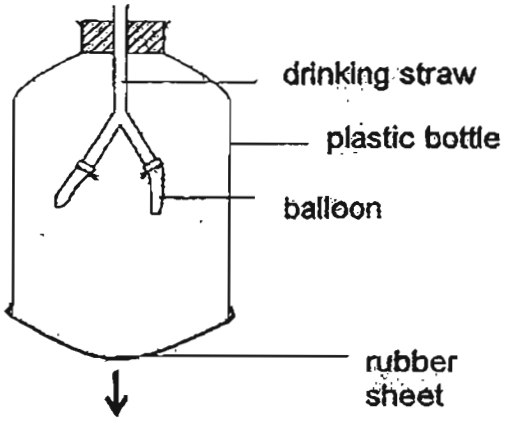
Which one of these model drawings was the best representation?

(1)



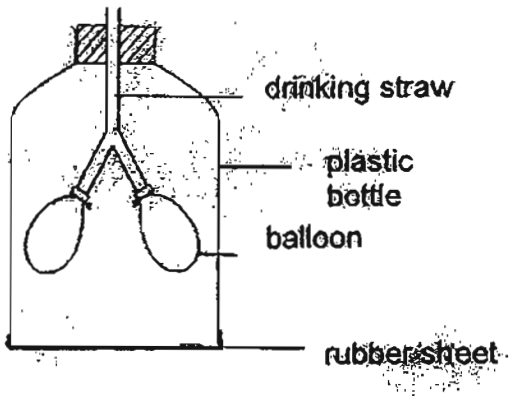
rubber sheet moved up

(2)



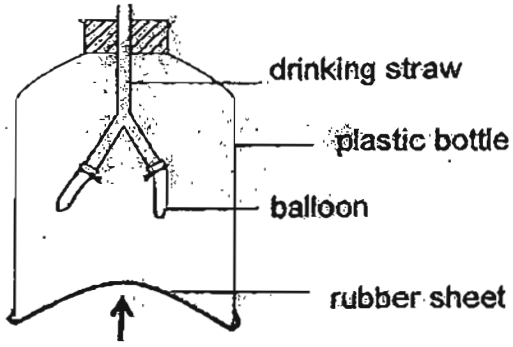
rubber sheet moved down

(3)



rubber sheet not moved at all

(4)

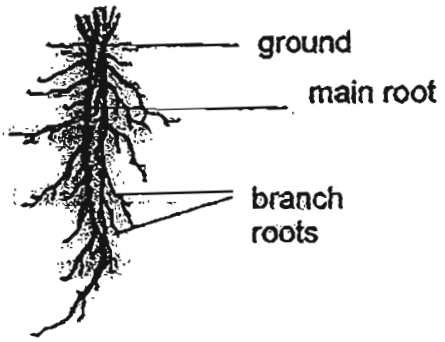
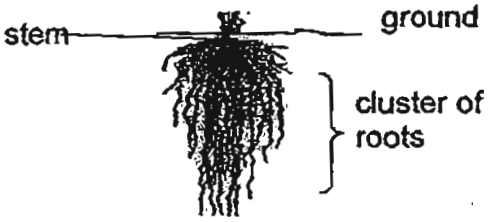


rubber sheet moved up

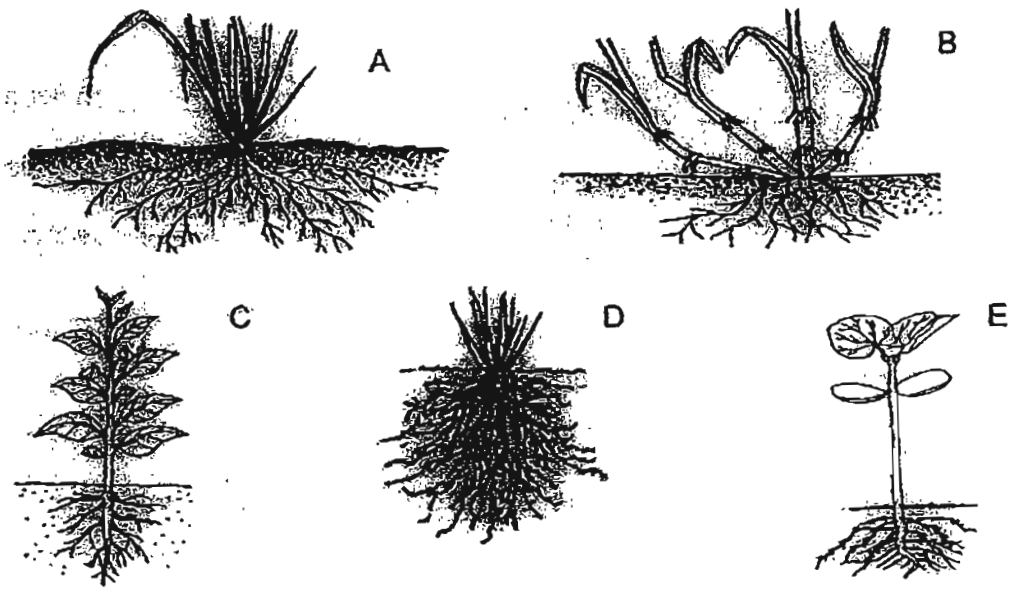
Key

↓ ↑ direction in which rubber sheet moved.

10. There are basically 2 types of root systems as shown in the diagrams below.

tap root system	fibrous root system
	
The tap root system has a single main root with branch roots growing from it.	The fibrous root system has a cluster of roots growing from the base of the stem, replacing the main root.

Based on the information above, classify the roots of these plants, A, B, C, D and E, as shown below.

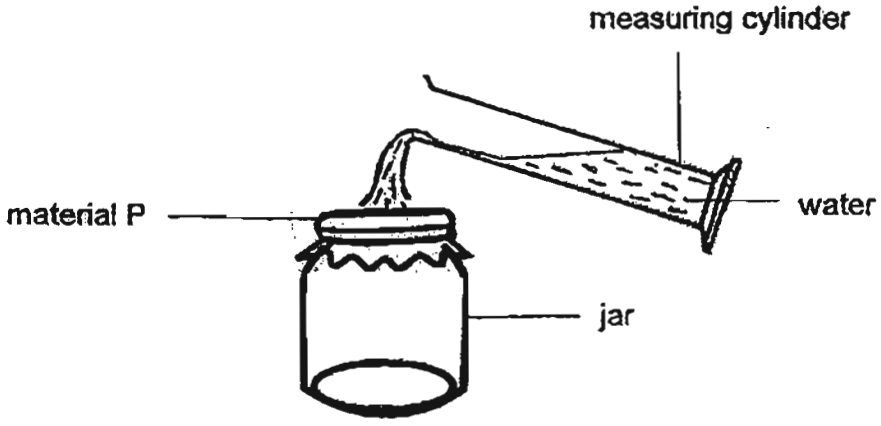


Which one of the following shows correctly how the roots of these plants are grouped?

	tap root system	fibrous root system
(1)	A and E	B, C and D
(2)	B and C	A, D and E
(3)	C and E	A, B and D
(4)	B, D and E	A and C

11. Sam selected four materials, P, Q, R and S, of equal size to find out how well each material absorbed water.

An experiment using the following apparatus was conducted for his investigation.



Material P was placed over the mouth of a jar. 50 mℓ of water was poured through the material.

The whole experimental procedure was repeated with Q, R and then S.

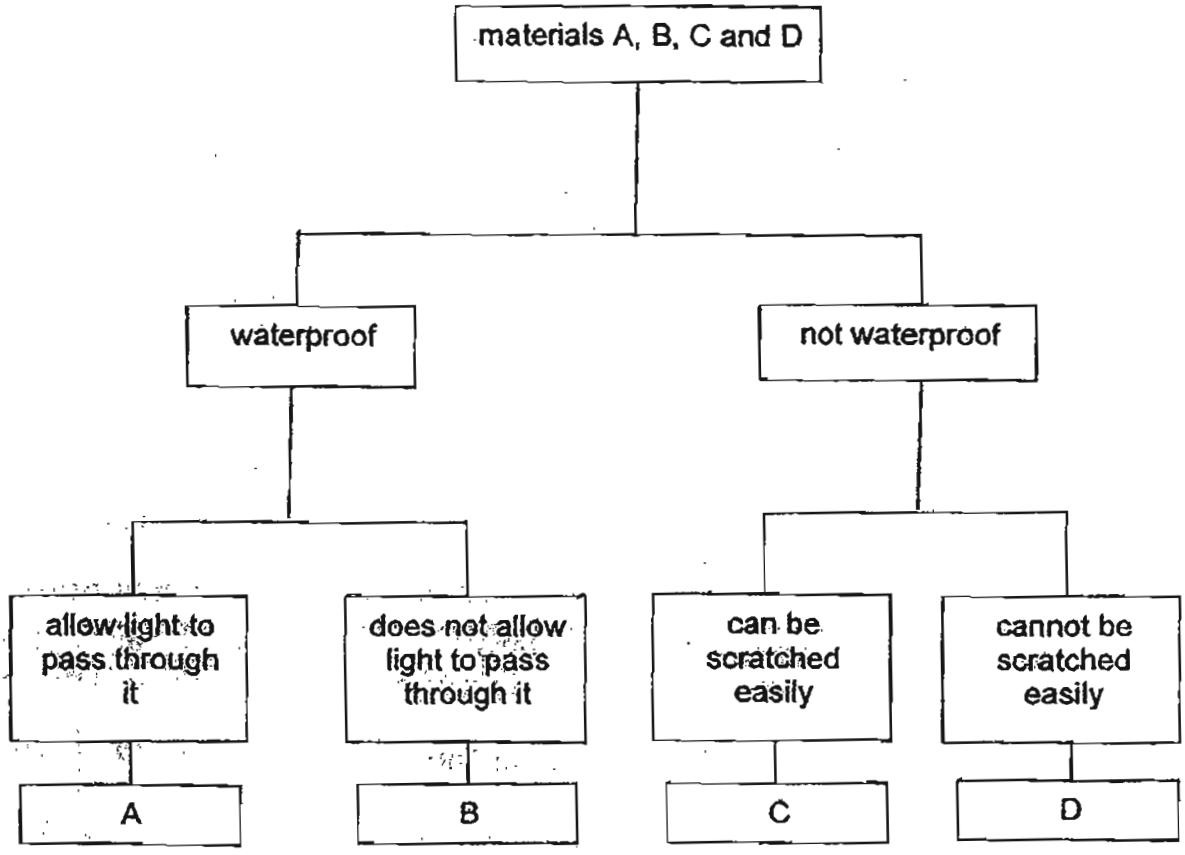
The amount of water collected in the jar was recorded in the table below.

mouth of jar covered with material	P	Q	R	S
amount of water collected in the jar (mℓ)	45	34	15	29

Based on the information above, which one of the following shows the correct arrangement of these materials based on how well they absorbed water?

	most absorbent ←			
(1)	P	Q	S	R
(2)	Q	R	S	P
(3)	R	S	Q	P
(4)	S	P	Q	R

12. Four materials, A, B, C and D, were differentiated as follows:



Martha wanted to make part X of an umbrella, as shown below, to keep rain and sun off.

Based on the information above, which one of these materials, A, B, C or D, should Martha use?

(1) A

(2) B

(3) C

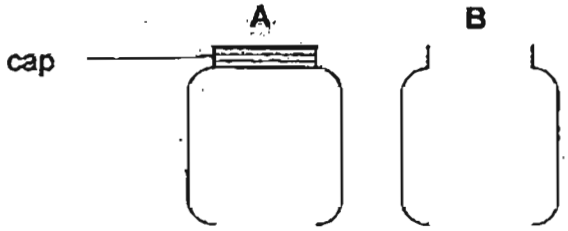
(4) D

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

Which one of the following is **NOT** matter?

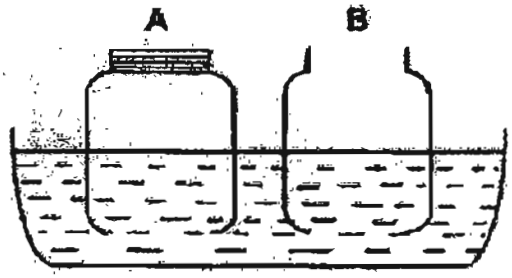
(1) air
(2) honey
(3) shadow
(4) milk powder

14. Siew Jing cut off the bottom of 2 plastic containers, A and B. She screwed the cap tightly on bottle A but **NOT** on bottle B as shown below.

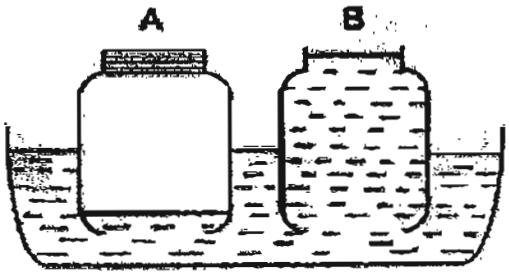


Next, she pushed both bottles directly into a tank of water.
Which one of the following diagrams shows the correct levels in bottles A and B?

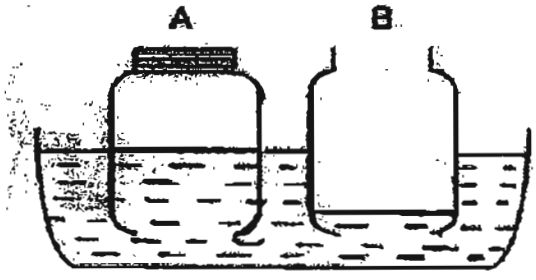
(1)



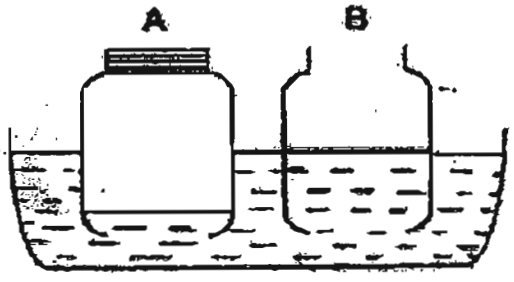
(2)



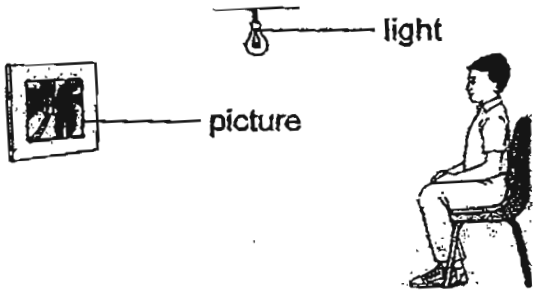
(3)



(4)



15. Look at the picture below.

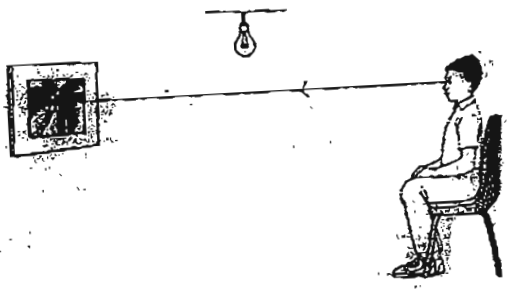


Which one of the following shows the path of light which enables the boy to see the picture?

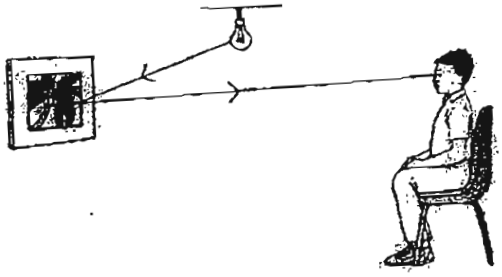
Key

direction of light ——→

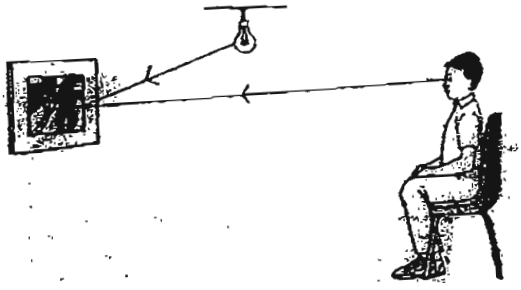
(1)



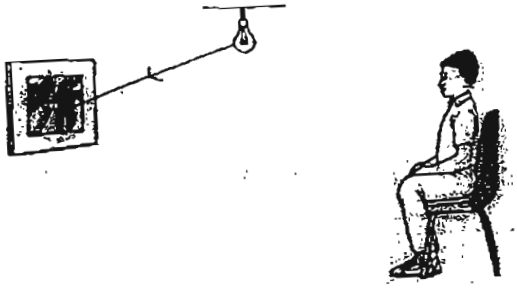
(2)



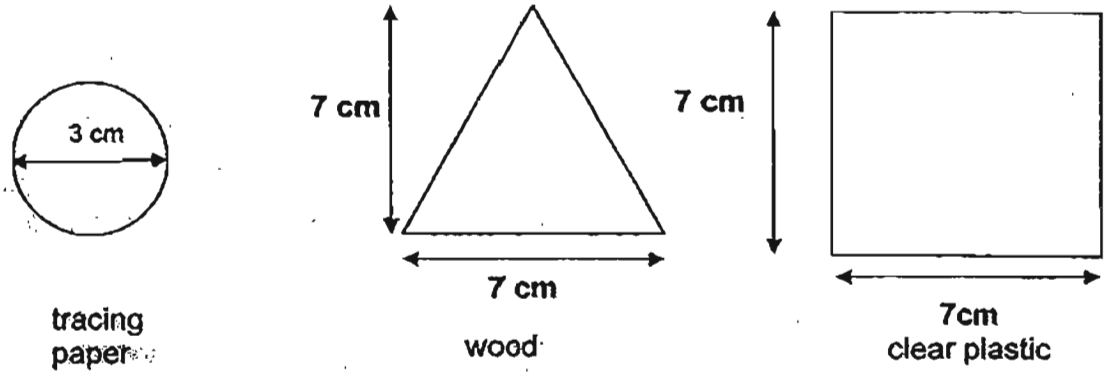
(3)



(4)



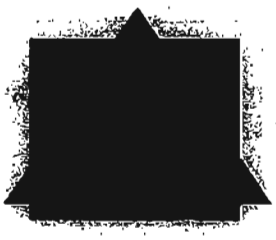
16. Below are 3 figures each cut out from a different material.



The 3 figures are glued together and placed between a torch and a screen as shown below.

Which one of the following is the most likely shadow seen on the screen?

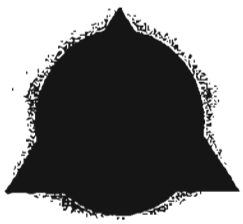
(1)



(2)

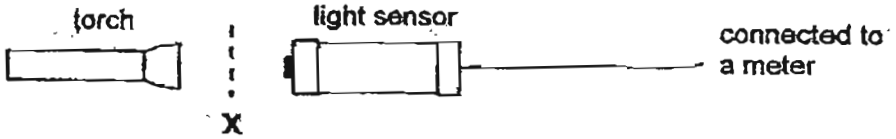
(3)

(4)



17. Ashley had 4 different materials A, B, C and D of similar size and shape.

She placed material A at position X between a lighted torch and light sensor connected to a meter which measured how much light passed through the material.



Ashley then replaced the material A with another material B, C and D, **ONE** at a time.

She recorded her results in the table below:

material	amount of light that passed through (units)
A	450
B	600
C	100
D	850

Based on the information above, which material could possibly be used to make curtains to block out the greatest amount of sunlight?

(1) A

(2) B

(3) C

(4) D

18. Which one of the following is **NOT** a source of heat?

(1) the Sun

(2) a lighted bulb

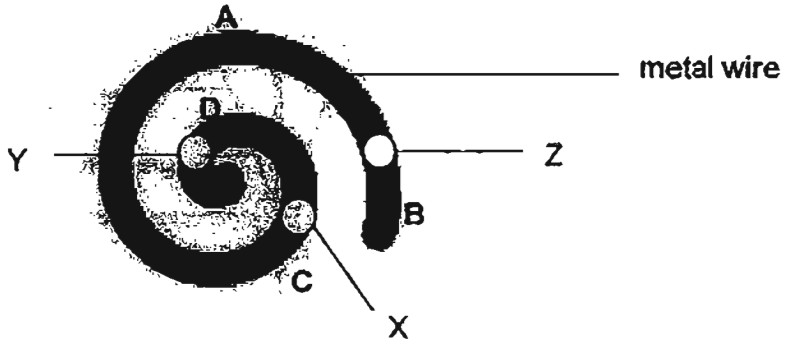
(3) a burning log

(4) a woollen jacket

19. X, Y and Z were blobs of wax on a piece of metal wire shaped into a spiral. The wax was of the same amount.

When the wire was heated at one point, blob X melted first, followed by Y and finally Z.

At which point, A, B, C or D, was the wire heated?



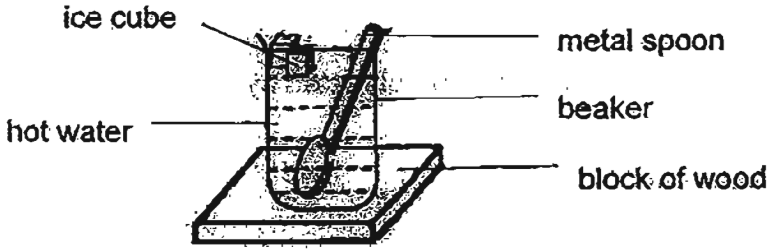
(1) A

(2) B

(3) C

(4) D

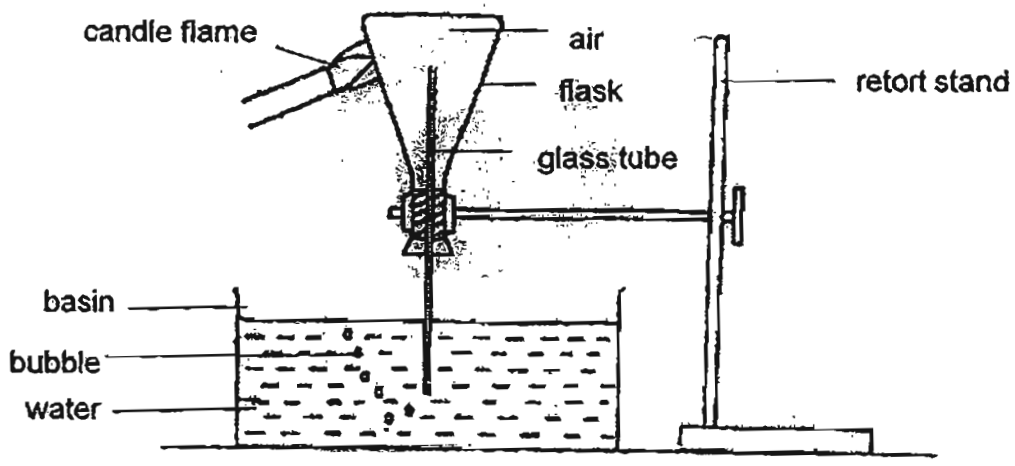
20. Mary put some ice cubes and a metal spoon into a beaker of hot water at the same time. She left it on a block of wood as shown below.



Which one of the following identifies correctly the object(s) which gained/lost heat?

	gained heat	lost heat
(1)	metal spoon	hot water, ice cubes, block of wood
(2)	block of wood, hot water	metal spoon, ice cubes
(3)	block of wood, ice cubes	metal spoon, hot water
(4)	block of wood, ice cubes, metal spoon	hot water

21. Jean used a candle flame to heat the side of an inverted flask as shown in the set-up below.



Jean removed the candle flame and allowed the flask to cool.

Which one of the following could be observed by Jean?

(1) Water level in the basin rose.

(2) More air bubbles were seen in the water.

(3) A few large air bubbles entered the flask.

(4) Water entered the glass tube into the flask.

22. Which one of the following can be attracted by a magnet?

(1) iron ball

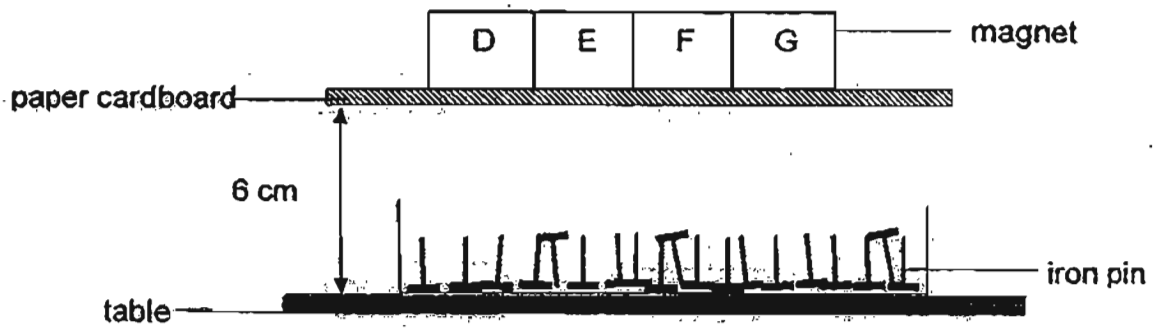
(2) plastic ball

(3) rubber ball

(4) wooden ball

23. Jennifer pasted a cardboard under a magnet and placed them directly above a tray of iron pins.

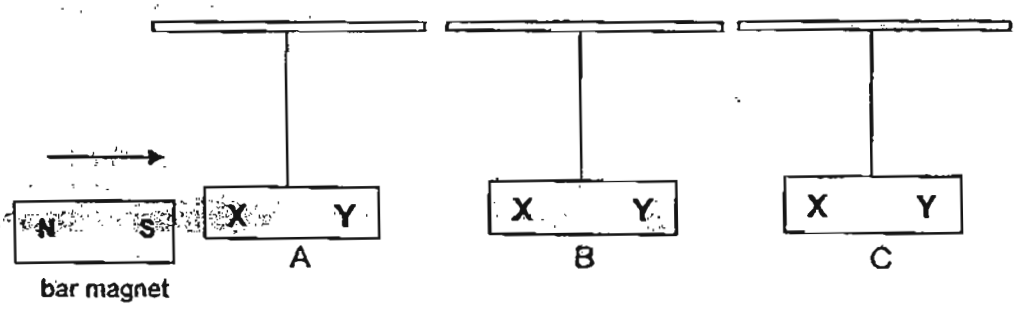
She lowered the magnet to a height of 6 cm above the table and recorded the number of iron pins attracted to each part of the magnet, D, E, F and G, as shown below.



Which one of the following shows the most possible number of pins attracted to each part of the magnet?

	number of pins at			
	part D	part E	part F	part G
(1)	0	10	10	0
(2)	2	9	3	6
(3)	4	4	4	4
(4)	7	2	3	8

Each of the three different bars, A, B and C, of the same size is hung from a horizontal rod as shown in the diagram below.



The S-pole of a bar magnet is brought near to end X and end Y of each of the hanging bars, ONE at a time.

The table below shows the observations made during the experiment.

object	observations	
	X	Y
A	moved away from magnet	moved towards magnet
B	moved towards magnet	moved away from magnet
C	moved towards magnet	moved towards magnet

Based on the information above, answer **questions 24 and 25.**

24. Which one of the following statements is correct?

(1) Only A is a magnet.

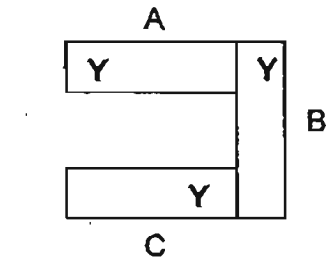
(2) A and B are magnets.

(3) B and C are non-metals.

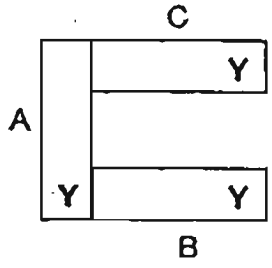
(4) Part X of both A and C repel each other.

25. Using these bars, A, B and C, which one of the following diagrams is correct?

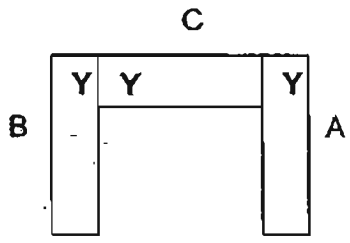
(1)



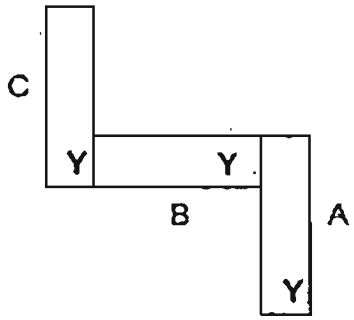
(2)



(3)



(4)



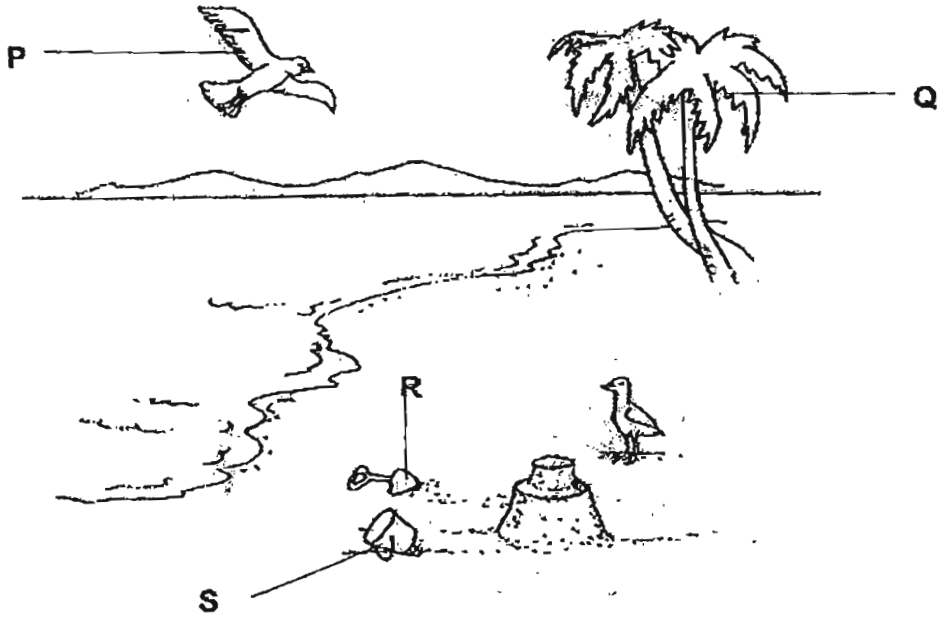
Name : _____ Index No: ____ Class: P4___ 40

SECTION B (40 marks)

For questions 26 to 39, 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.

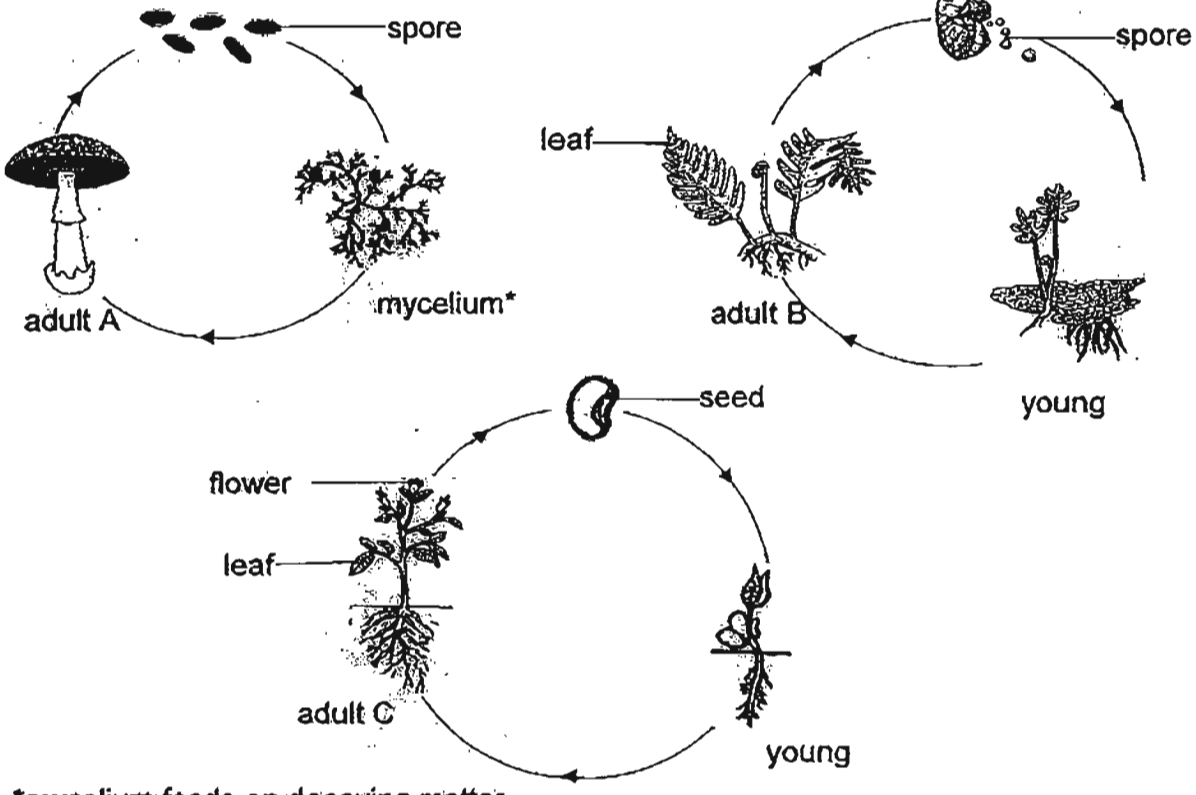
26. Marcus saw some living and non-living things, P, Q, R and S, on the beach as shown in the picture below.



Based on the information above, classify P, Q, R and S into suitable groups in the table below. [2]

things	
living	non-living

27. The diagrams below show the stages in the life cycles of living things A, B and C.



*mycelium feeds on decaying matter

Based on the information above, answer the following questions:

(a) (i) Classify living things, B and C, into two groups in the table below according to how they are reproduced.

Write letters B and C **ONCE** only. [1]

Living thing A and ladder fern have been classified together.

(ii) Write a suitable heading for each group in the table below. [1]

_____	_____
ladder fern A	

to be continued on the next page

continued from previous page

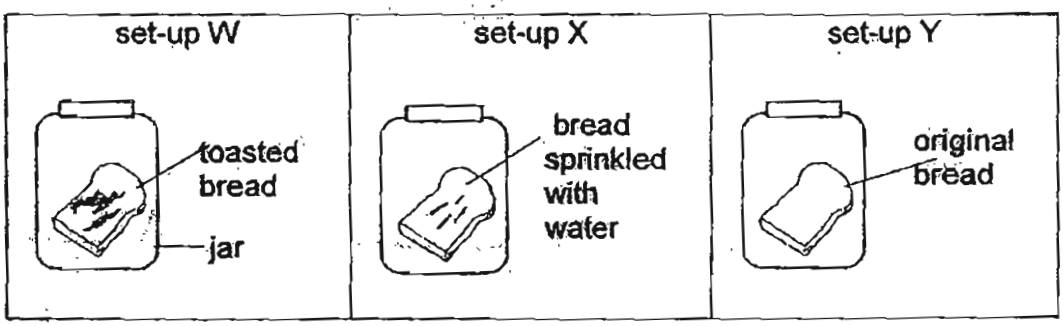
(b) Name **ANOTHER** plant that reproduces in the same way as living thing A. [1]

_____

Justin carried out an experiment by using three pieces of bread from the same loaf.

He toasted a piece of bread and sprinkled some water on another.

Next, he put each piece of bread in a tightly-sealed jar in set-ups W, X and Y and left them in a dark room as shown below.



After a few days, Justin made the following observations of each piece of bread in set-ups W, X and Y.
A tick (√) indicates the presence of mould on the bread.

set-up	presence of mould on the bread
W	
X	√
Y	√

(c) In which set-up was the bread likely to have the largest amount of mould growing on it? Give a reason for your answer. [1]

_____

_____

28. Choose the correct words from the box to answer the questions below.

gullet	large intestine	mouth	small intestine	stomach

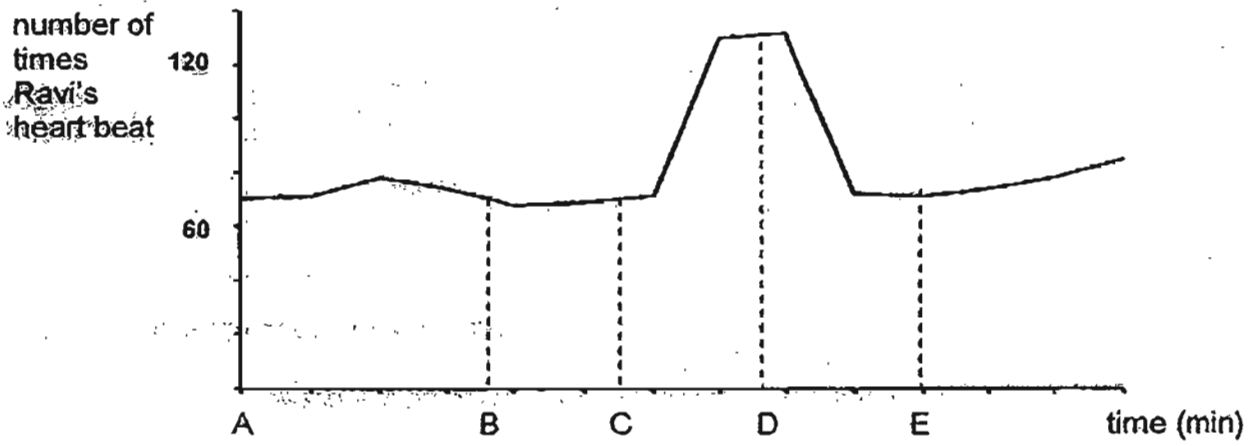
In a human digestive system, name the part where

(a) partial digestion first takes place :_____ [1]

(b) excess water is removed from undigested food :_____ [1]

29. Ravi measured the number of times his heart beat before, during and after his run.
His heart was beating at about 70 times a minute before his run.

The results are shown in the graph below.



AB, BC, CD and DE were different periods before, during and after Ravi's run.

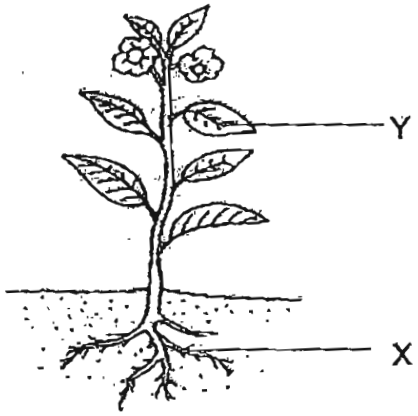
(a) List 2 body systems which work together to enable Ravi to move. [2]

_____

(b) Name the period, AB, BC, CD or DE, during which Ravi started running vigorously.
Give a reason for your answer. [1]

period of time	reason

30. The diagram shows a plant.



(a) Label plant part X. [1]

X : _____

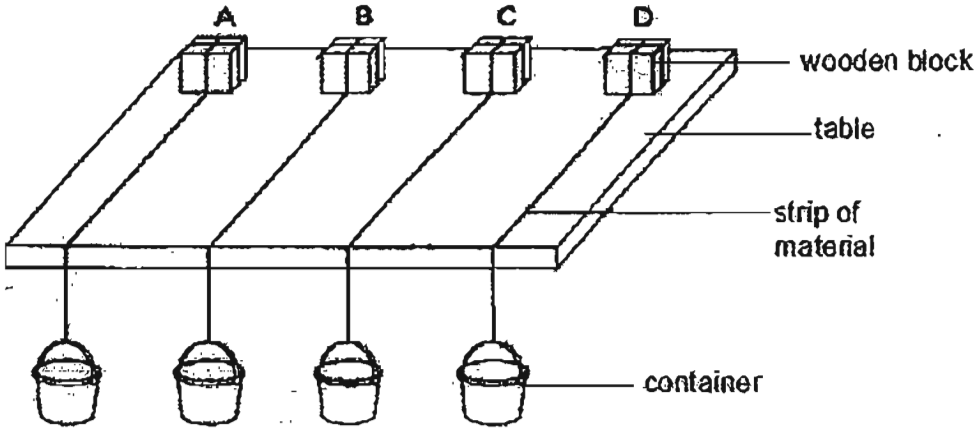
Fill in each blank with a suitable word/ phrase. [2]

(b) Part X helps the plant to take in _____ from the soil.

(c) Part Y helps the plant to make _____ in the presence of light.

31. Jeremy selected four materials, A, B, C and D, to find out which was the best material to make bags for carrying heavy things.

An equal length of each material, A, B, C and D, was tied to each of the four identical wooden blocks on a table.
Four identical containers were hung at the end of the strips as shown below.



Jeremy dropped some marbles, one at a time, into each small container until the strip of material broke.

He recorded the total number of marbles in each container just before the strip of material broke in the table below.

strip of material	number of marbles in the container before the strip broke
A	127
B	134
C	122
D	138

Based on the information above, answer the following questions:

(a) Which of the following variables should Jeremy keep constant to conduct a fair test for his experiment?
Put a tick (√) in the box(es) below. [1]

variable	tick (√) here
mass of marble	
material of strips	
length of strip of material	
thickness of strip of material	

to be continued on the next page

(b) What is the relationship between the number of marbles in the container and strength of the material? [1]

_____

_____

(c) Which one of these materials, A, B, C or D, is the best material to make the bag to carry heavy things?

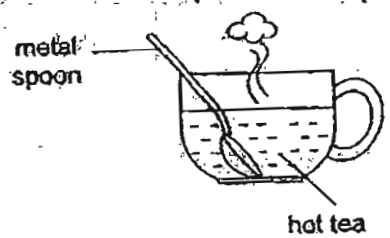
Give a reason for your answer. [1]

_____

_____

_____

32. The diagram below shows a metal spoon in a cup of hot tea.



Complete each sentence to state if each part is **solid, liquid or gas.** [2]

(a) The metal spoon is a _____.

(b) The hot tea is a _____.

33. Ali and Bibi had a glass jar which had a mass of 100 g and a volume of 150 cm^3.
They conducted an experiment using the steps below.

Step 1: Measure the mass of the jar.

Step 2: Pump in 30 cm^3 of air into the jar.

Step 3: Measure the mass of the jar again.

Ali and Bibi repeated steps 1 to 3 several times and recorded their results as follows:

Ali's results:

mass of jar (g)	100	103	106	109	112
volume of jar (cm^3)	150	150	150	150	150

Bibi's results:

mass of jar(g)	100	103	106	109	112
volume of jar (cm^3)	150	180	210	240	270

(a) Which one of these boys, Ali or Bibi, recorded his results correctly? [1]

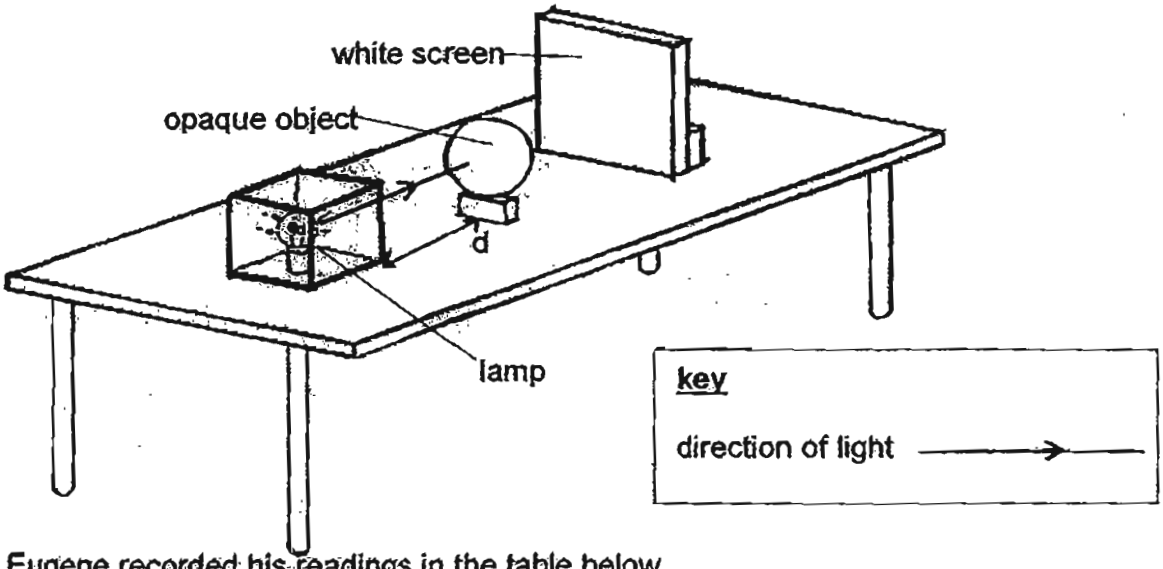
_____

(b) State 2 properties of air in this experiment. [2]

PROPERTY 1	
PROPERTY 2	

34. Eugene wanted to find out how the distance between the light source, d (cm) and an opaque object affects the length of its shadow formed on the screen.

He set up the experiment below and measured the length of the shadow formed.



Eugene recorded his readings in the table below.

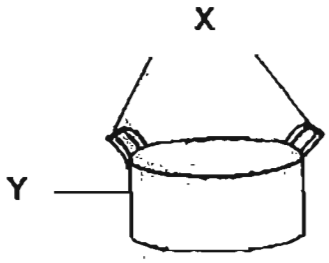
distance between lamp and object, d (cm)	length of shadow (cm)
18	10
23	8
28	5

(a) State the relationship between d and the length of shadow of the object formed on the screen. [1]

(b) What was the possible length of shadow formed on the screen when Eugene placed the object 25 cm from the lamp? [1]

(c) Describe how the shadow of the opaque object is formed on the screen. [1]

35. The diagram below shows a cooking pot with its labeled parts, X and Y.

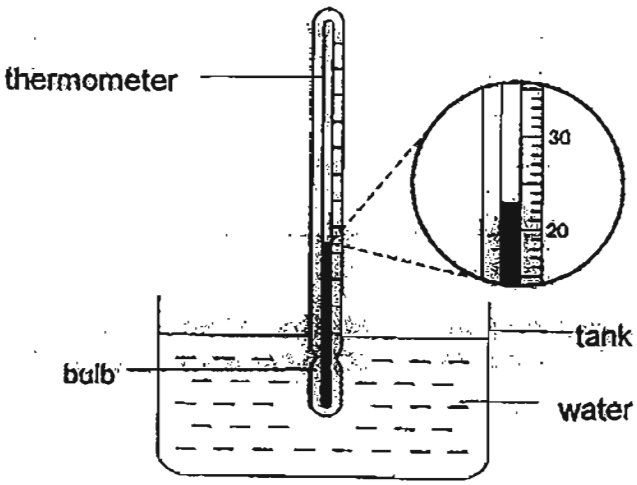


Fill in each blank with a suitable word. [2]

(a) Part X is made of plastic because it is a _____ conductor of heat.

(b) Part Y is made of metal because it is a _____ conductor of heat.

36. Sara put a thermometer into a tank of water as shown below.



(a) What was the temperature of the water in the tank? [1]

_____

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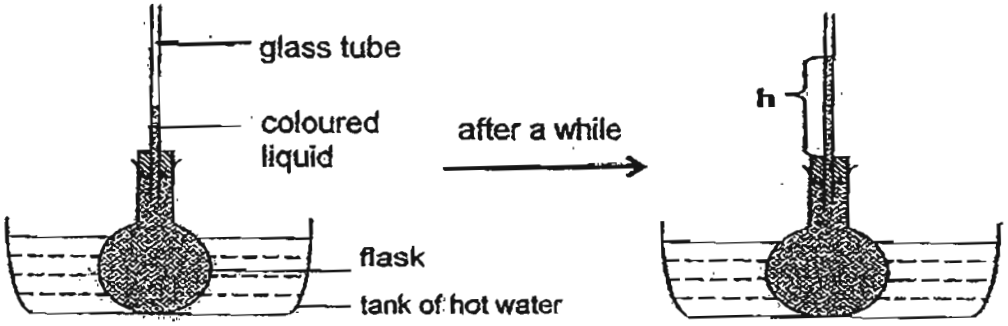
Sara placed a flask of coloured liquid into a tank of hot water.



Sara observed that the liquid in the glass tube rose after a while and recorded the height of the liquid in the glass tube, h (cm), in the table below.

time (s)	0	20	30	40	50	60
h (cm)	6	9		15	13	10

(b) Complete the table. Write down the possible height of the coloured liquid, h, in the glass tube at the 30th second. [1]

(c) Explain why the liquid in the glass tube of a laboratory thermometer moves up when its bulb is placed in hot water. [2]

_____

_____

_____

37. Sruthi places a rod magnet near a small iron bar. The iron bar moves towards the magnet in the direction shown by the arrow.

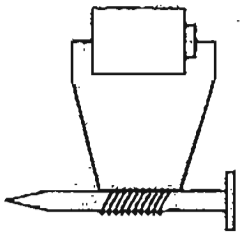
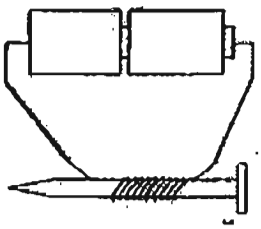
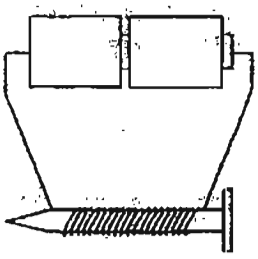
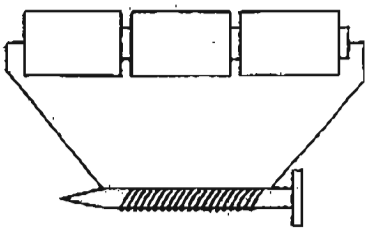
Complete each of the blanks with a suitable word from the box below. [2]

push	hard	magnetic	strong	pull	non-magnetic

(a) Magnet exerts a/ an _____ on the iron bar.

(b) Sruthi's observation shows that iron is a _____ material.

38. Ken wanted to find out whether the number of coils round an iron nail affects the strength of an electromagnet. He arranged four set-ups, A, B, C and D, as shown below.

<table>
<tr>
<td>set-up A
 
12 coils round the nail</td>
<td>set-up B
 
12 coils round the nail</td>
</tr>
<tr>
<td>set-up C
 
25 coils round the nail</td>
<td>set-up D
 
25 coils round the nail</td>
</tr>
</table>

(a) Which two set-ups should Ken use to carry out a fair test for his experiment? [1]

set-ups _____ and _____

(b) Which one of these set-ups, A, B, C or D, could possibly pick up the most number of paper clips?

Give two reasons for your answer. [2]

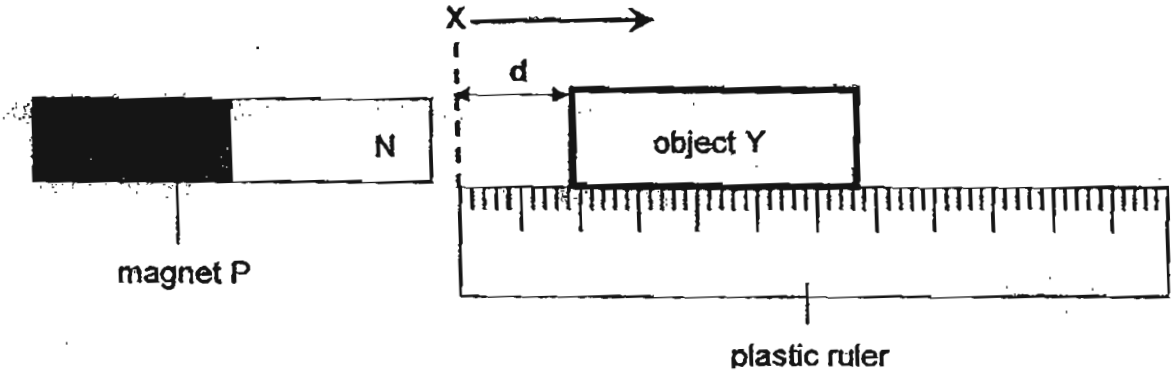
_____

_____

_____

_____

39. Joanne placed object Y at position X.
She brought the N-pole of a bar magnet P close to object Y which moved away in the direction as indicated by the arrow below.



Using a plastic ruler, Joanne measured the distance object Y had moved away from X, d (cm).

Next, she replaced bar magnet P with bar magnets, Q, R and S, of equal size, ONE at a time, and repeated her experiment.
She recorded her results in the table below.

magnet	distance object Y moved from X, d (cm)
P	3
Q	12
R	7
S	14

Based on the information above, answer the following questions:

(a) What could Y possibly be? Give a reason for your answer. [2]

_____

_____

_____

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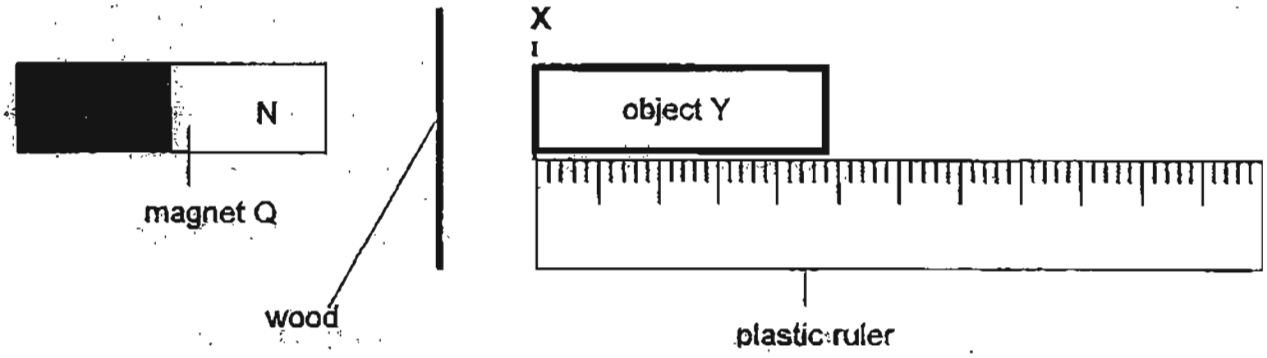
Next, Joanne put a sheet of wood between magnet Q and object Y as shown below.



Joanne brought the N-pole of magnet Q close to the sheet of wood and measured the distance object Y had moved away from position X.

She repeated the experiment by replacing the wood with an iron sheet, a steel sheet and a plastic sheet, **ONE** at a time.
She recorded her results in the table below.

material of sheet	distance object Y moved from X, d (cm)
wood	3
iron	0
steel	0
plastic	5

(b) Based on the information above, classify wood, iron, steel and plastic into two different groups below. [1]

magnetic material	non-magnetic material

(c) Give a reason why object Y did **NOT** move from position X when the iron sheet was used in this experiment. [1]

_____

_____

- END OF PAPER -

Setters: Mr. Darren Lau, Ms Ho Win Nie

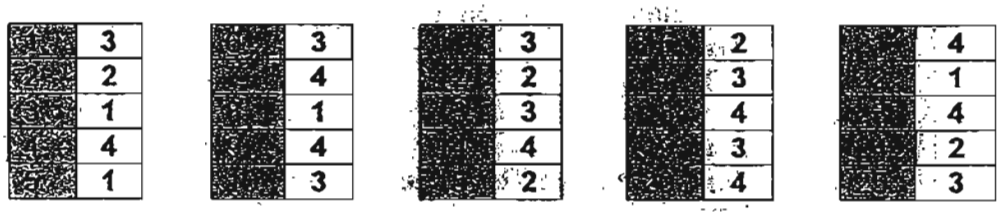
RAFFLES GIRLS' PRIMARY SCHOOL

Please do NOT print the answer key for the pupils

2011 PRIMARY 4 SCIENCE SA 2 ANSWER KEY

Setters: Ms Ho Win Nie, Darren Lau*
* main compiler

SECTION A (25 X 2 marks)



SECTION B (40 marks)

No.		Marks	Suggested answers	Remarks
26		2	Living things – P, Q Non-living things – R, S	**[1] for ONLY each correct group of things classified**
27	(a)	2	(Reproduce) by spores – B (Reproduce) by seeds – C **NOT acceptable:** Reproduce by spores – B Do not reproduce by spores - C Reproduce by seeds – C Do not reproduce by seeds – A, B	**Diagrams clearly stated method of reproduction** [1] for correct classification of B and C [1] for correct sub-headings after the B and C are correctly classified
	(b)	1	Any plant that reproduces by spores Example : bird's nest fern, mosses, fern	**NOT acceptable:** ladder fern (as given in example)
	(c)	1	**Answer:** Set-up X **Reason:** • More(or most) moisture/ water was present on the bread to encourage more mould to grow on it. • X is wetter/ damper than the other set-ups	**mark holistically**

No.		Marks	Suggested answers	Remarks
28	(a)	1	mouth	-[½] for wrong spelling
	(b)	1	large intestine	-[½] for wrong spelling
29	(a)	2	skeletal system and muscular system **NOTE** No mark is given for ONE correct system as TWO systems are to work together.	-[½] for wrong spelling
	(b)	1	▪ **Answer:** ▪ CD **Reason:** ▪ During exercise, Ravi's heart pumped more quickly. ▪ During exercise, Ravi's heart needed to beat faster. **[0] for the following:** ▪ Heart beat was the highest at D.	[0] for identifying the wrong period
30	(a)	1	▪ roots ▪ root hairs	
	(b)	1	Any one of the following: ▪ water ▪ mineral salts ▪ nutrients	
	(c)	1	▪ food ▪ glucose	

No.		Marks	Suggested answers	Remarks
31	(a)	1	**All of the following must be selected:** ▪ mass of marble ▪ length of strip of materials ▪ thickness of strip of materials	NO partial mark
	(b)	1	**[1] for any of the following:** ▪ The more marbles ▪ The bigger the marbles ▪ The higher the number of marbles a material can hold, the stronger is the material. ▪ When the number of marbles a material can hold increases, the strength of the material increases. ▪ When the number of marbles a material can hold decreases, the strength of the material decreases. The stronger the material, the more number of numbers it can hold. **[0] for the following:** ▪ The weaker the material, the strip will break. ▪ Strength of material depends on the number of marbles.	
	(c)	1	**Answer** Material D **Reason** ▪ It is the strongest material. ▪ It is a stronger material than the others. ▪ It withstands the most weight/ mass. ▪ It can carry/ hold more weight/ mass than A, B and C. **[½]** ▪ It could hold the greatest amount of marbles before the strip broke. ▪ It carried most number of marbles. ▪ It carried the heaviest load. **[0] for** It could hold 138 marbles.	[1] correct answer and explanation **Mark holistically**

No.		Marks	Suggested answers	Remarks
32	(a)	1	solid	- [½] for wrong spelling
	(b)	1	liquid	- [½] for wrong spelling
33	(a)	1	Ali	
	(b)	2	**[1] for each of the following:** ▪ Air has mass. ▪ Air can be compressed.	Do **NOT** accept: ▪ Air has weight. ▪ Air has no definite volume ▪ Air takes up space.
34	(a)	1	**[1] for any of the following:** ▪ The greater the distance between lamp and object, d, the shorter the length of the shadow of the object. ▪ The smaller the distance between the lamp and object, d, the longer the length of the shadow of the object. ▪ When d increases, the length of shadow of the object decreases. ▪ When d decreases, the length of the shadow of the object increases.	
	(b)	1	5 cm < length of shadow of object < 8 cm	
	(c)	1	**[1] for any of the following:** ▪ A shadow is formed when the light that travels in a straight line, is blocked by an object. OR ▪ A shadow is formed when light is blocked by an object. ▪ A shadow is formed when an object blocks [the path of] light.	
35	(a)	1	poor	**Not acceptable:** bad
	(b)	1	good	

No.		Marks	Suggested answers	Remarks
36	(a)	1	23 °C	[0] for using the wrong unit or NO unit
	(b)	1	$9 < h < 15$	
	(c)	2	When **heat from the hot water** ▪ is applied ▪ travelled ▪ transferred to the **liquid [1]** which **expands [1]** and moves up. **OR** Liquid **gains heat** from the hot water **[1]**, and **expands** [1], causing it to move up. **OR** Liquid is **heated** by the hot water **[1]**, so it **expands [1]** and moves up. **[1½] for the following:** Liquid **gains heat [½]** and it **expands [1]** and moves up.	Remarks: Gain heat **from hot water** must be mentioned [1] for each point/ idea ▪ how heat travels ▪ what does heat do to the liquid
37	(a)	1	pull	- [½] for wrong spelling
	(b)	1	magnetic	- [½] for wrong spelling
38	(a)	1	**Answer** B and C	NO partial mark
	(b)	2	**Answer** D **[1] for each correct reason** ▪ It has the largest number of coils round the nail. ▪ It has the most number of batteries.	**Mark holistically** No mark for identifying correct set-up only

No.		Marks	Suggested answers	Remarks
39	(a)	2	**Answer** A magnet **Reason** ▪ Like poles of the magnet P and Y faced **each other** and **repelled**. ▪ Like poles of magnet P and Y repelled each other. ▪ Only magnets could repel. ▪ It was **repelled** by other magnets: P, Q, R and S. ▪ It could repel other magnets.	**Mark holistically** **[0]** ▪ It could attract or repel. ▪ It moved away from the magnets (already stated in the question)
	(b)	1	magnetic material [½] ▪ iron ▪ steel non-magnetic material [½] ▪ wood ▪ plastic	
	(c)	1	**Reason :** **[1] Magnetism** cannot pass through the ▪ iron sheet ▪ magnetic material so the object Y would not move away from position X. **Magnetism** was blocked the iron sheet [1], which is a magnetic material. **[0] for negative phrasing:** Magnetism can pass through non-magnetic material.	-[½] for wrong spelling of **magnetism**

- END OF PAPER -