



RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (2)
2009

Your score out of 90 marks		
Highest score	Class	Level
Average score		
Parent's signature		

Name : _____ Index No.: _____ Class: P4 _____

30th October 2009

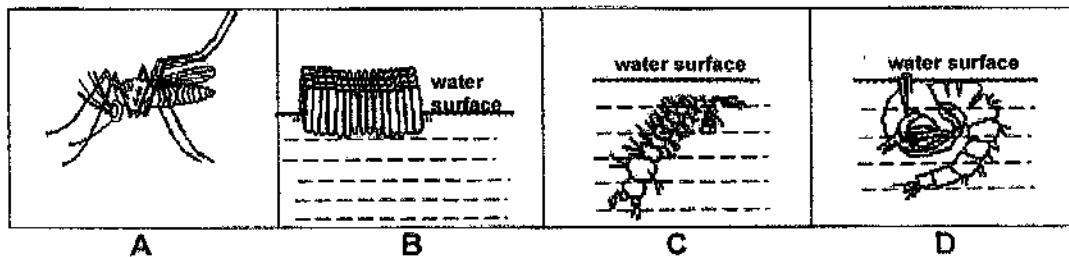
SCIENCE

ATT: 1 h 20 min

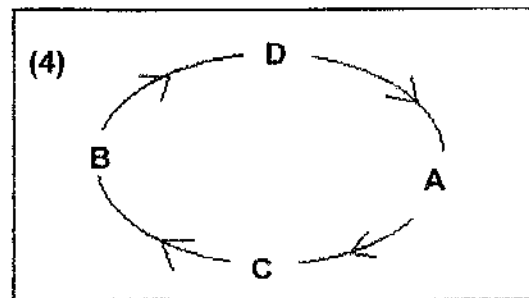
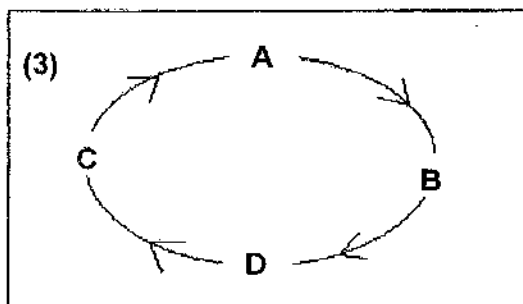
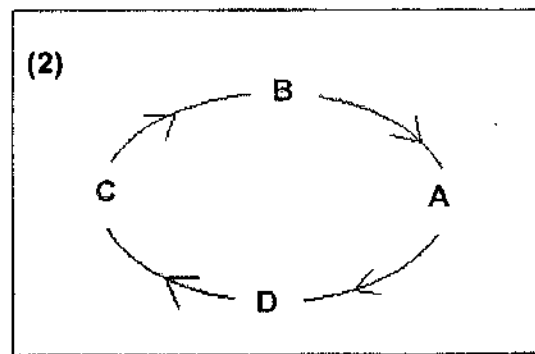
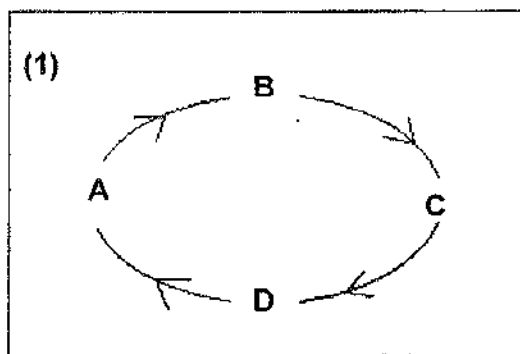
SECTION A (25 x 2 marks)

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 (OAS) provided.

1. The stages in the life cycle of a mosquito are shown below.
[Stages A, B, C and D are NOT arranged in order.]



Which one of the following diagrams shows the correct order of the stages in the life cycle of a mosquito?



2. Fandi did a study on two animals, X and Y.

He recorded his observations in the table below.

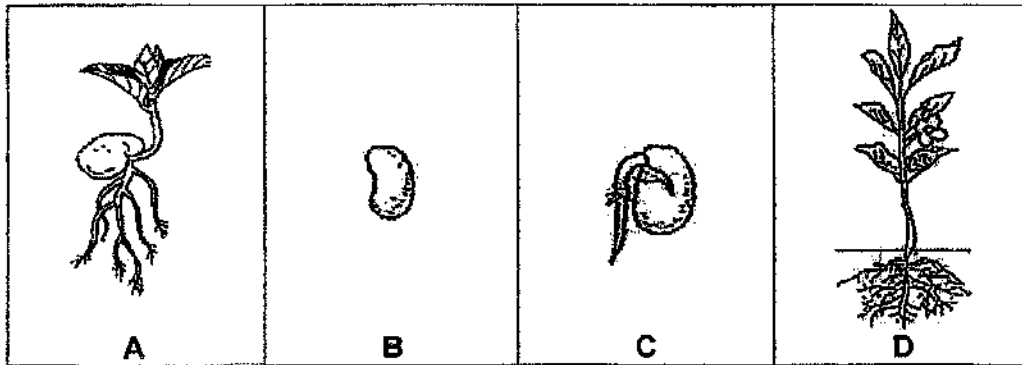
A tick (✓) in the box indicates the observation made of the animal.

observation	animal X	animal Y
There are 3 stages in its life cycle.	✓	
Its eggs are laid on land.	✓	✓
Its young do NOT have wings.	✓	✓

Which one of the following sets identifies animal X and animal Y correctly?

	animal X	animal Y
(1)	chicken	mosquito
(2)	butterfly	chicken
(3)	cockroach	butterfly
(4)	mosquito	cockroach

In the diagrams below, A, B, C and D, represent the different stages in the life cycle of a flowering plant.



Based on the diagrams above, answer questions 3 and 4.

3. Which one of the following shows the correct order of stages in the life cycle of a flowering plant?

	1st stage	→		last stage
(1)	A	B	C	D
(2)	B	C	A	D
(3)	C	D	B	A
(4)	D	A	C	B

4. Which of the following does the flowering plant need at stage A to carry out photosynthesis?

- A light
- B heat
- C water
- D oxygen

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

5. Four pupils, Alison, Bakar, Chris and Devi, made the following statements about a plant.

Alison : Flowers develop from the buds.

Bakar : A seed cannot grow without light.

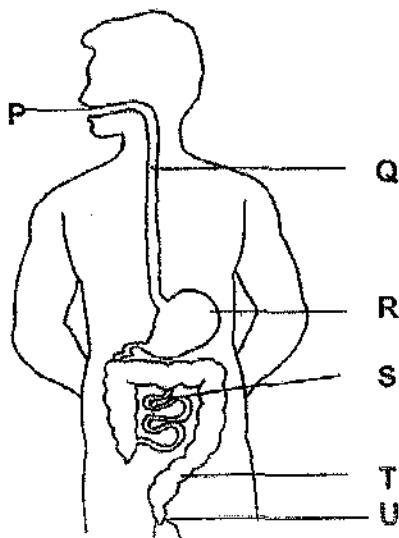
Chris : The seedling makes its own food when its first shoot appears.

Devi : Seeds need air, water, warmth and carbon dioxide to germinate.

Who made the correct statements?

- | | |
|----------------------------------|--------------------------------|
| (1) Alison only | (2) Alison and Chris only |
| (3) Alison, Bakar and Chris only | (4) Bakar, Chris and Devi only |

The diagram below shows parts of the digestive system of a human.



Based on the diagram above, answer questions 6, 7, 8, 9 and 10.

6. Which of the sentences below best describe(s) the teeth present in P?

- A They speed up digestion.
- B They grind the food in P into smaller pieces.
- C They produce saliva to moisten the food in P.
- D They break down the food so that it can be digested easily.

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

7. Which of the following statements describe(s) correctly the function(s) of the digestive juices in P?

- A It softens the food in P.
- B It helps to digest the food in P.
- C It removes water from the food in P.

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

8. Which one of the following sets best describes what take place at Q, R and S correctly?

	Q	R	S
(1)	allows food to flow through	digestion takes place	digested food is absorbed
(2)	digestion takes place	allows food to flow through	digested food is absorbed
(3)	water is being removed	digestion takes place	allows food to flow through
(4)	allows food to flow through	digested food is absorbed	digestion takes place

9. In which one of these organs, Q, R, S or T, is water being removed?

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

10. The table below shows a comparison between what happen at S and T.

	at S	at T
A	Food is being digested.	Food is completely digested.
B	It passes digested food to T for further digestion.	Undigested food is absorbed into the blood stream.
C	Food is digested completely.	Undigested food is passed to U for removal.

Which one of the following sets of comparisons is/ are correct for both S and T?

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

11. The following box shows a list of different functions of the various parts of a land plant.

A	makes food for the plant
B	takes in water and mineral salts
C	contains and protects the seeds
D	holds the plant firmly to the ground
E	supports and spreads out the branches and leaves
F	transports food, water and mineral salts to all parts of the plant

Which one of the following parts of the plant is matched correctly to its functions?

	part of a plant	functions
(1)	leaf	A and D
(2)	stem	E and F
(3)	fruit	A and B
(4)	root	C and E

12. The diagrams below show plant X and plant Y.



plant X



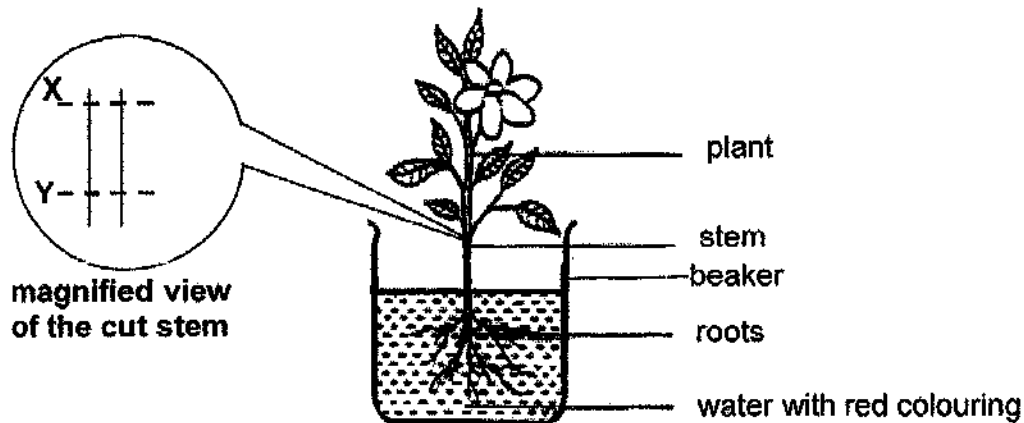
plant Y

Which one of the statements below is true about both plants X and Y?

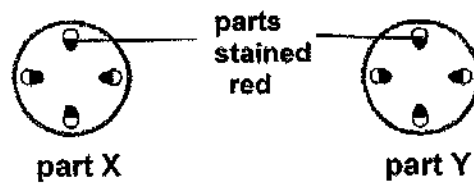
- (1) Both plants have weak stems.
- (2) Both plants do not have fruits.
- (3) Both plants use their roots to cling onto supports.
- (4) Both plants need to cling onto supports to reach out for food.

13. Bethany placed a plant in a beaker filled with red-coloured water.

After a day, she observed that some parts of the stem, leaves and flower of the plant turned red. She cut the stem of the plant at two parts, X and Y, as shown in the diagram below.



Bethany observed that the cross-sections of parts X and Y look like these:



What could Bethany conclude from her experiment?

- A There are tubes in the stem.
- B The tubes carry the red-coloured water to the roots.
- C The tubes in the stem can transport the red-coloured water to all parts of the plant.

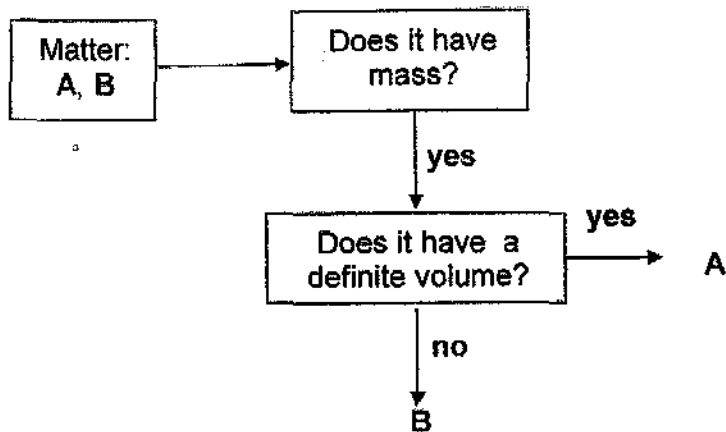
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

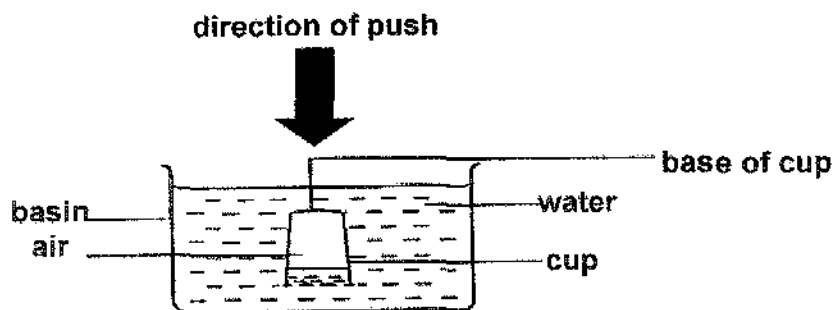
14. The flow chart below is used to differentiate matter A and matter B.



Which one of the following pairs identifies A and B correctly?

	A	B
(1)	gas	liquid
(2)	solid	gas
(3)	gas	solid
(4)	solid	liquid

15. John pushed an inverted plastic cup into a basin of water as shown in the diagram below.

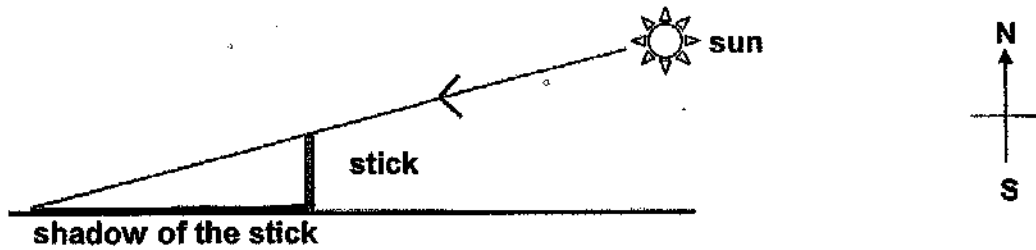


John noticed that the cup was **NOT** filled completely with water. How could John fill the cup completely with water?

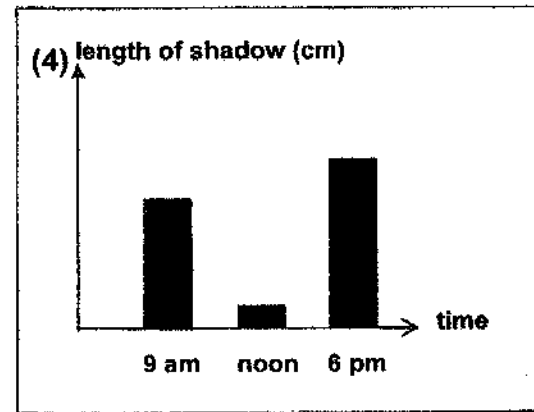
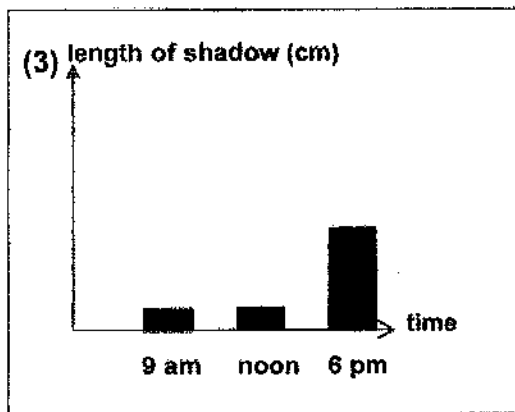
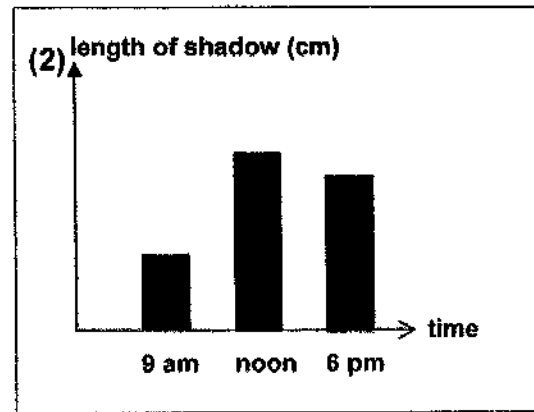
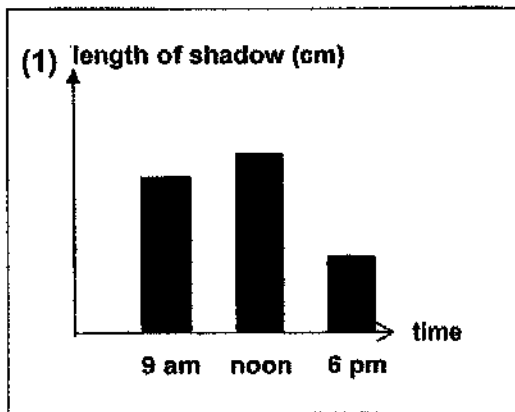
- A Add more water into the basin
- B Tilt the cup slightly at an angle
- C Make a hole at the base of the cup
- D Push the cup straight down directly to the bottom of the basin

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

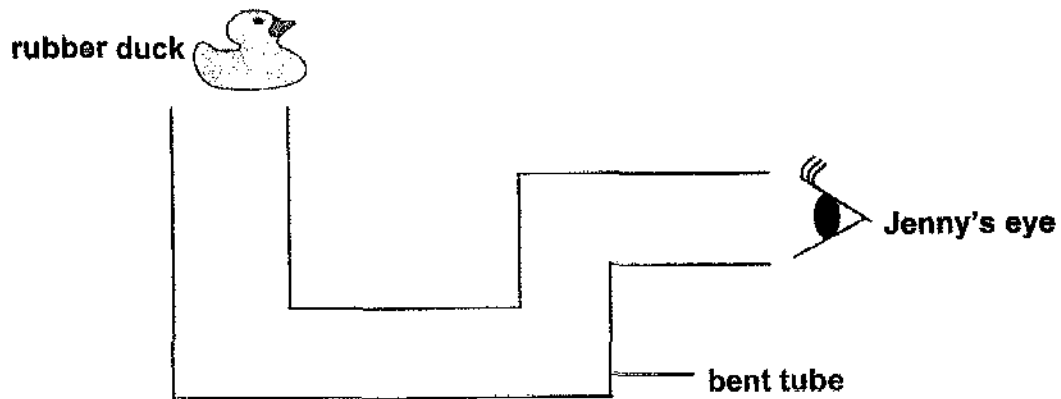
16. A stick is stuck to the ground. The rays from the sun fall on the stick as shown in the diagram below.



Which one of the following diagrams shows correctly the length of the shadow of the stick from 9 a.m. to 6 p.m.?



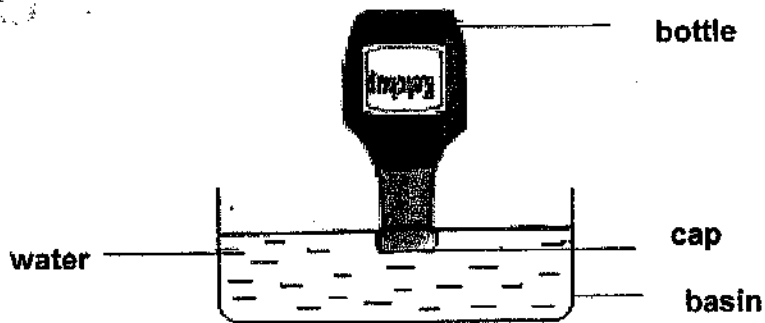
17. Jenny used the following apparatus to see a rubber duck at one end of a bent tube.



What was the least number of mirrors that Jenny would need to put into the bent tube to see the rubber duck?

- | | |
|-----------|----------|
| (1) five | (2) two |
| (3) three | (4) four |

19. Dalia could NOT open the cap of a bottle. Her mother told her to place the cap of the bottle into a basin of hot water as shown in the diagram below.

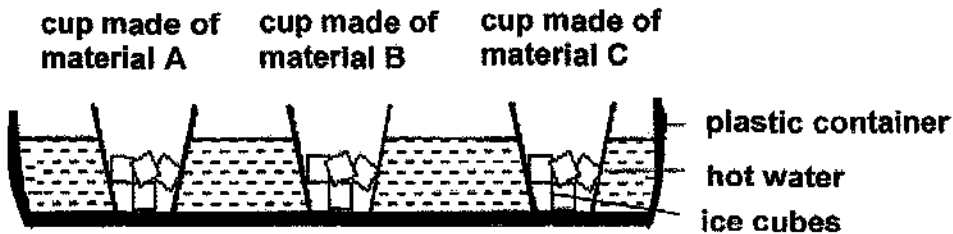


Which one of the following statements explains how the bottle cap could be removed?

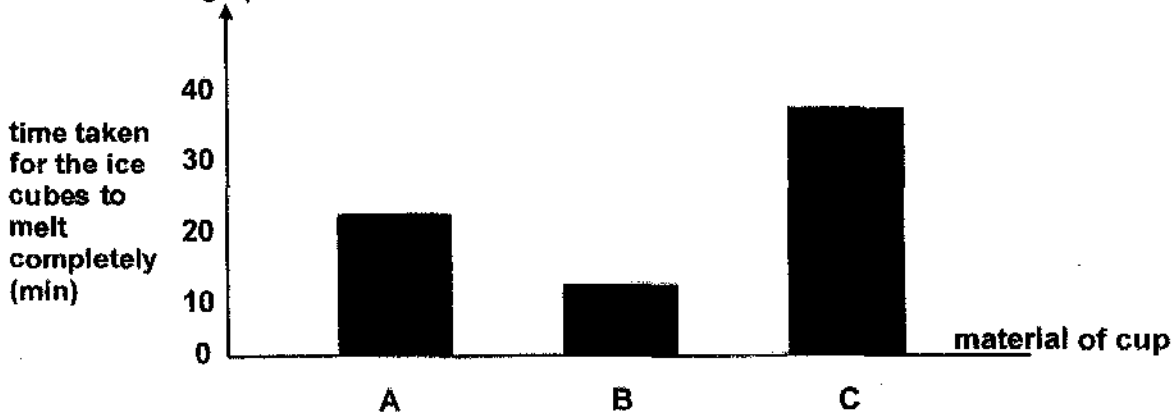
- (1) The hot water caused the cap to expand.
- (2) The hot water caused the cap to contract.
- (3) The hot water caused the bottle to contract.
- (4) The hot water caused the air in the bottle to expand.

Wendy had 3 cups of the same size. Each cup was made of a different material, A, B and C, of the same thickness. She put an equal amount of ice cubes into each cup.

Then, Wendy placed all the cups into a plastic container of hot water as shown below.



Wendy recorded the time taken for the ice cubes to melt completely in each cup in the graph below.



Based on the information above, answer questions 20 and 21.

20. What was the aim of Wendy's experiment?

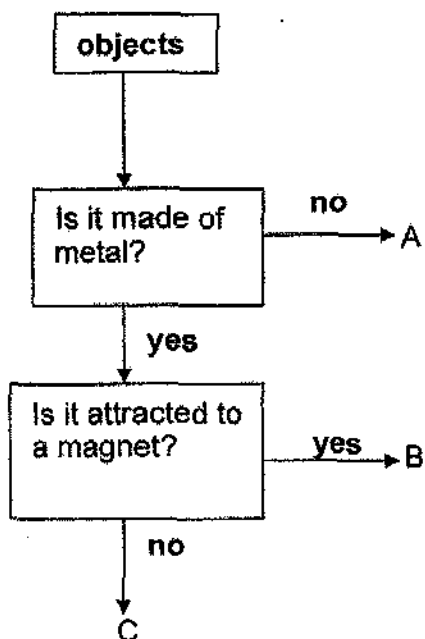
- (1) To find out how ice cubes melt
- (2) To show the different states of water
- (3) To find out if water is a good conductor of heat
- (4) To show that different materials conduct heat at different rates

21. Which of the following statements explain(s) correctly why the ice cubes take the longest time to melt in the cup made of material C?

- A Material C is the poorest conductor of heat.
- B Heat could not pass through the cup made of material C easily.
- C Heat in the cup made of material C was transferred to the water in the plastic container.

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

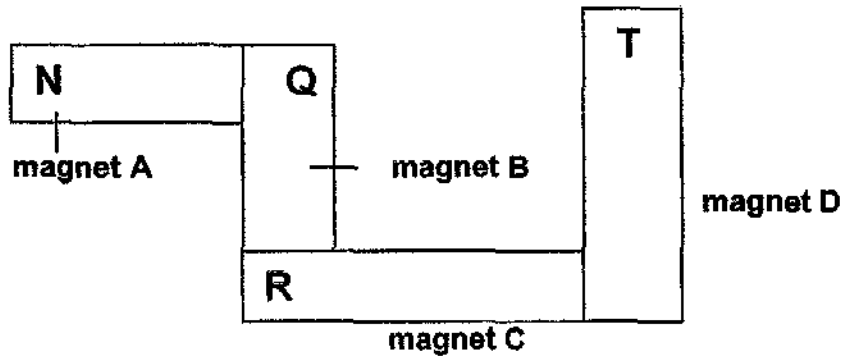
22. Qingru made use of the flow chart below to classify 4 objects: an eraser, a piece of aluminium foil, a copper coin and a steel can.



Which one of the following sets identifies correctly objects A, B and C?

	A	B	C
(1)	eraser	steel can	aluminium foil, copper coin
(2)	copper coin	aluminium foil	steel can, eraser
(3)	eraser	copper coin	steel can, aluminium foil
(4)	aluminium foil	steel can	copper coin, eraser

23. Sandra arranged 4 bar magnets, A, B, C and D, in the manner as shown below.

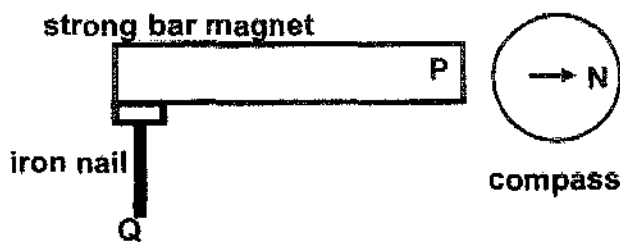


The magnets were attracted to one another.
The letter N on magnet A indicates its North pole.

What are the poles of magnets B, C and D as indicated by the letters, Q, R and T respectively?

	Q	R	T
(1)	South	North	North
(2)	South	South	North
(3)	North	North	South
(4)	North	South	South

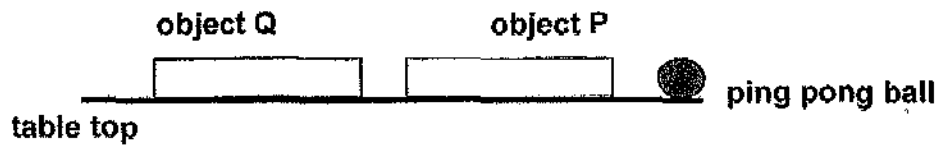
24. Charmaine placed a compass near end P of a strong bar magnet as shown in the diagram below.



Which one of the following represents correctly the poles at P and Q?

	P	Q
(1)	South	South
(2)	North	North
(3)	North	South
(4)	South	North

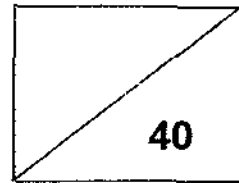
25. Jaimie placed a ping pong ball at the edge of a table.



When she put object Q near to object P as shown in the diagram above, the ping pong ball was pushed off the table by object P.

Which one of the following statements best describes object P and object Q?

- (1) Object P is a magnet and object Q is made of a magnetic material.
- (2) Object Q is a magnet and object P is made of a magnetic material.
- (3) Both P and Q are magnets with their like poles facing each other.
- (4) Both P and Q are magnets with their unlike poles facing each other.



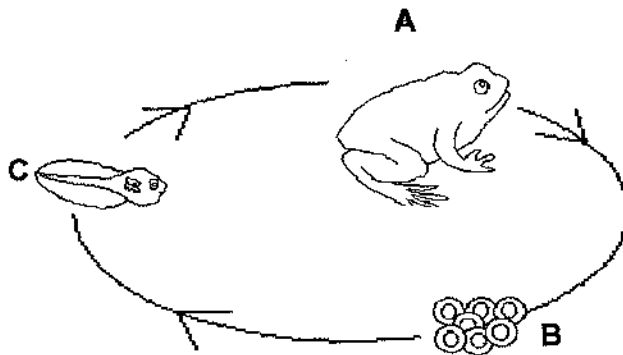
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SECTION B (40 marks)

For questions 26 to 38, write your answers clearly in the spaces provided.

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

26. The diagram below shows the different stages involved in the life cycle of animal X.



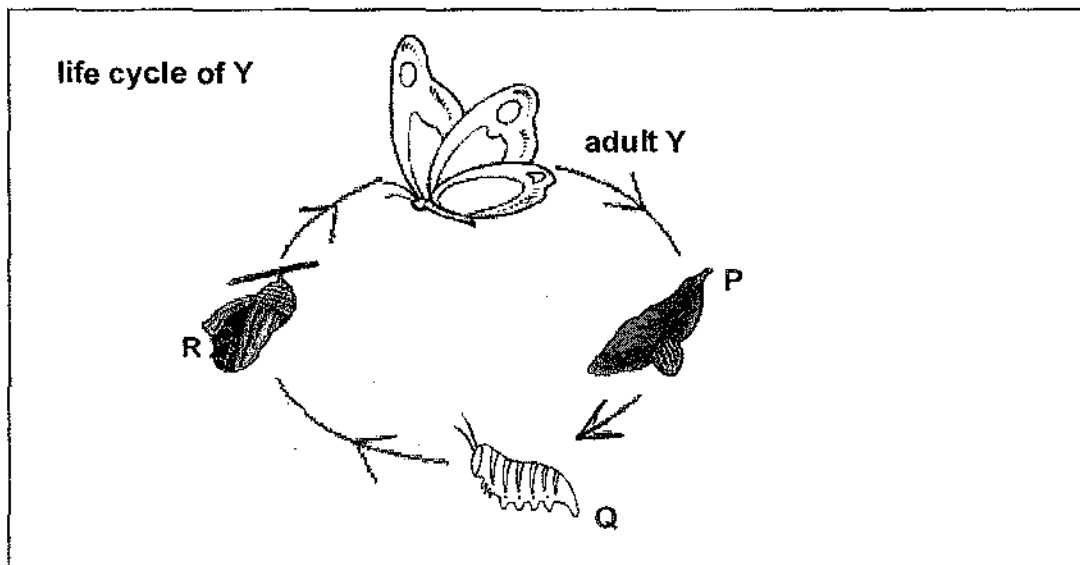
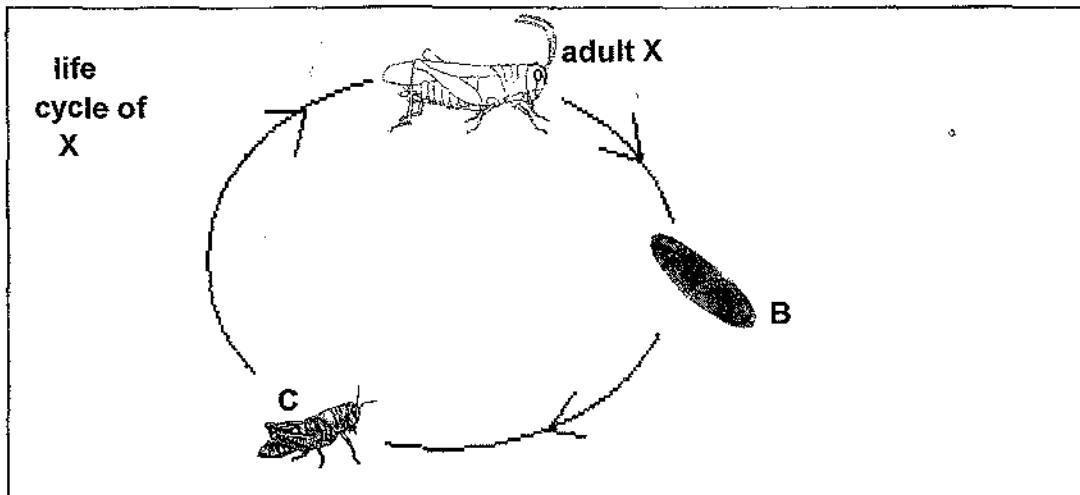
Based on the diagram above, answer the following questions:

(a) What is the young of animal X known as at stage C? [1]

(b) List **TWO** differences between stages A and C. [Do **NOT** compare size.] [2]

1 st DIFFERENCE	
2 nd DIFFERENCE	

27. The diagrams below show the different stages in the life cycles of animals X and Y.



Based on the diagrams above, answer the following questions:

(a) What is Y known as at stage P? [1]

(b) Compare the life cycles of X and Y.
 (i) State one difference. [1]

(ii) State one similarity. [1]

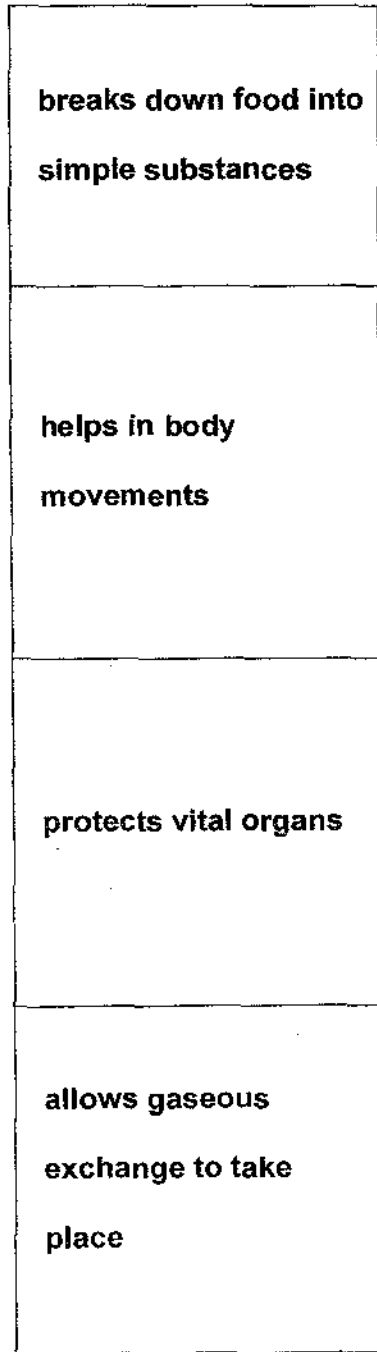
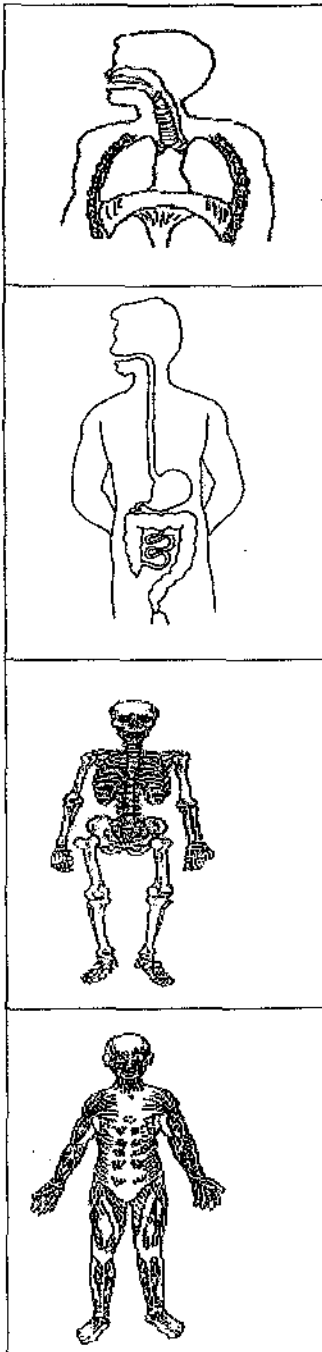
28. The diagrams below show the different body systems found in man.
Match each system correctly to its function.

Each system can be matched to **ONE** function only.

[2]

body system

function



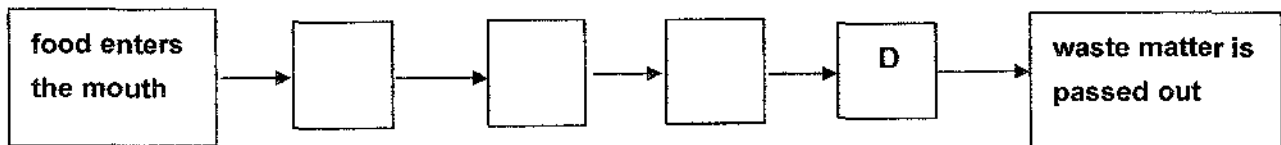
29. The following processes, A, B, C and D, take place in the various parts of the digestive system.

- A food is digested and absorbed into the blood stream
- B saliva is produced to break down food
- C partially digested food is pushed down the tube
- D undigested food is stored here to be passed out

(a) Arrange the processes A, B, C and D according to the order that each takes place in the different parts of the human digestive system.

Write the letters A, B and C in the correct boxes below.
D has been written for you.

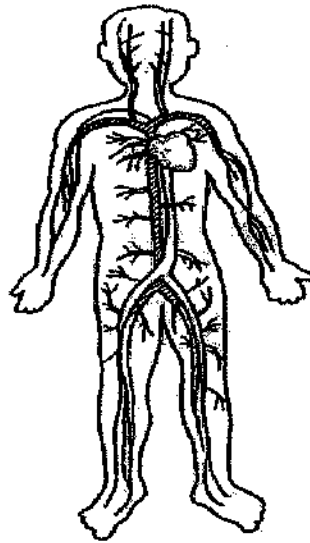
[1]



(b) Name the parts of the digestive system where digestive juices are produced.

[3]

30. The diagram below shows a body system found in man.



Based on the diagram above, answer the following questions:

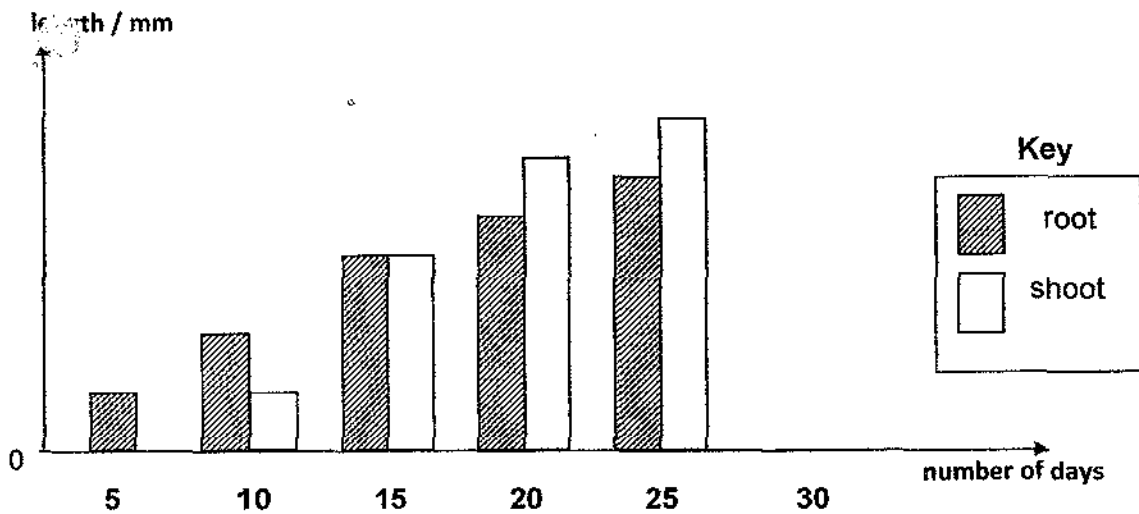
(a) Name the system. [1]

(b) Name **TWO** parts of the system. [2]

(i) _____

(ii) _____

31. The graph below shows the length of the root and shoot of a germinating seed.



Based on the graph above, answer the following questions:

(a) Which part of the seed grows out first? [1]

(b) State **ONE** similarity between the length of the root and shoot of the germinating seed from Day 5 to Day 25. [1]

(c) Predict the new length of the root and shoot of the germinating seed on the 30th day.

DRAW and **SHADE** appropriately on the graph given above. [1]

32. **Diagram Y** shows a measuring cylinder filled with some water and stone B in it.

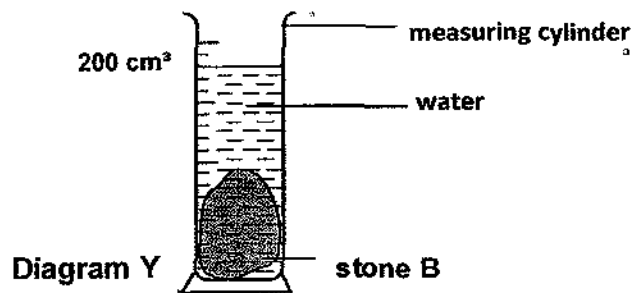
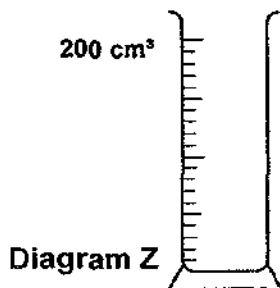


Diagram Z below shows the same measuring cylinder **WITHOUT** stone B. The volume of stone B is 120 cm³.

(a) **DRAW** the water level on **Diagram Z WITHOUT** stone B. [1]



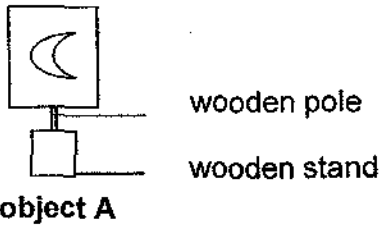
(b) Give **ONE** conclusion about stone B based on the above observations. (Do **NOT** mention the volume of stone B.) [1]

(c) When stone B is dropped into the **SAME** measuring cylinder filled with liquid M, the stone is totally covered by the liquid.

Will the volume of stone B remain as 120 cm³?

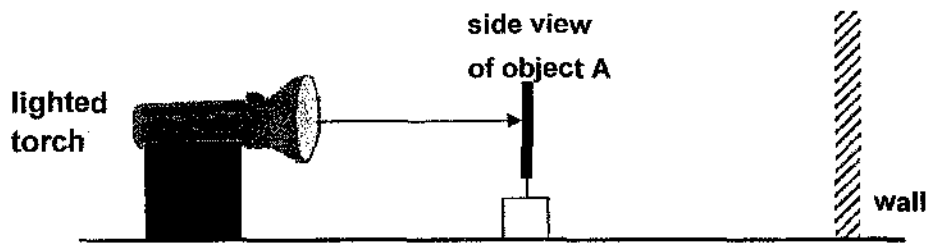
Give a reason for your answer. [1]

33. Alex had an object A as shown below.



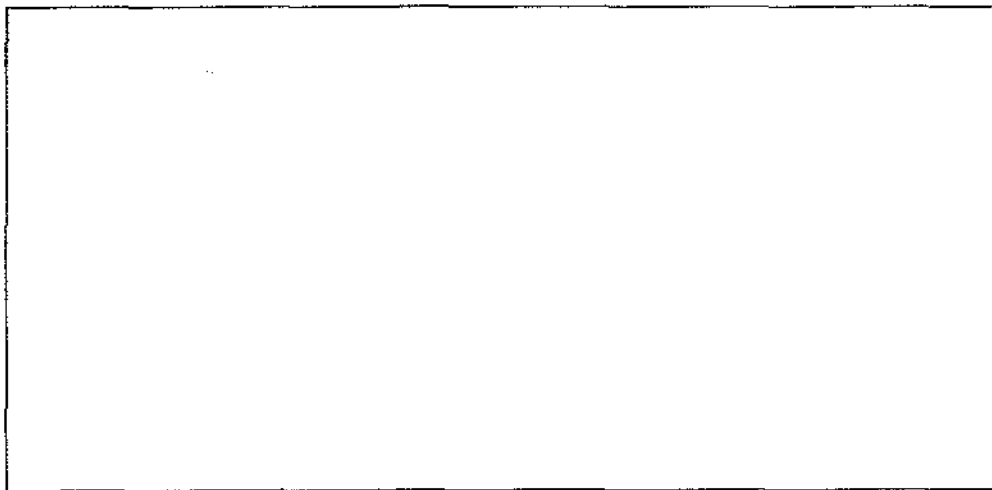
Object A is a hard cardboard with a crescent cut out in its centre. It stands upright on a wooden stand held up by a wooden pole.

Alex placed object A, with its cut-out crescent facing the torch, between a lighted torch and the wall in a straight line as shown below.



Alex saw a dark shadow of object A cast on the wall.

- (a) **DRAW** the shadow of object A that Alex saw on the wall in the box given below. [2]

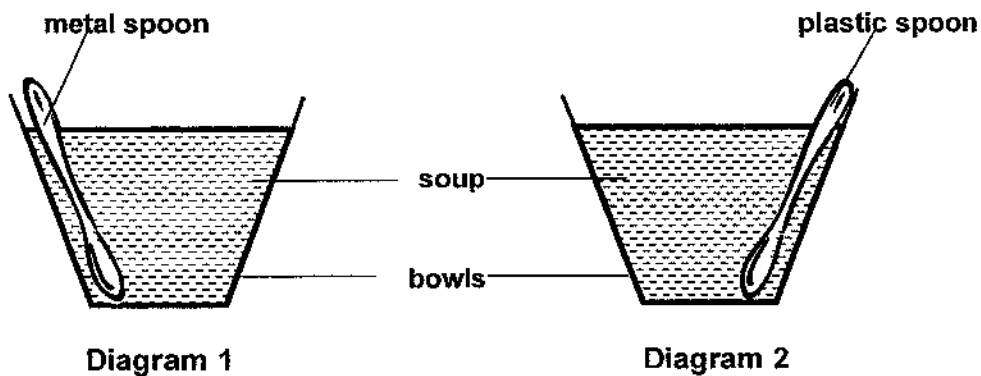


- (b) Why was object A able to cast its shadow on the wall? [1]

34. Cathy cooked some soup in a pot on a hot stove.

She switched off the stove and poured out the soup into two identical bowls. She used a metal spoon to stir the soup in one bowl and another similar spoon made of plastics in the other bowl.

Next, Cathy left both spoons in the bowls as shown in **Diagram 1** and **Diagram 2** below.



- (a) A few minutes later, Cathy lifted both spoons and found that the metal spoon was hotter than the plastic spoon.

Explain why the metal spoon was hotter than the plastic spoon. [1]

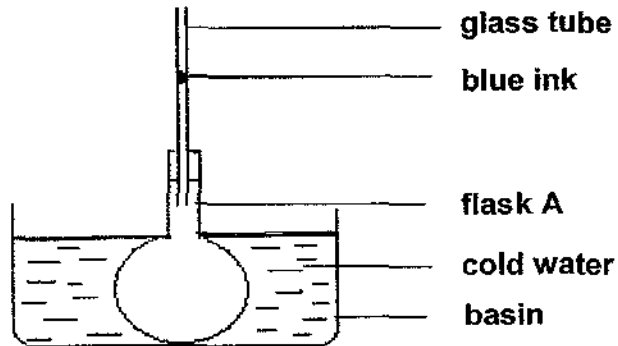
- (b) Half an hour later, Cathy measured the temperatures of the soup in the bowl and of the metal spoon. Both the temperatures were the same.

Give a reason why it was so. [2]

- (c) **DRAW** an arrow (→) in each diagram to show the direction in which heat travelled in **each** bowl on **Diagram 1** and **Diagram 2** above. [1]

35. Ben placed a drop of blue ink in a glass tube connected to flask A.

Next, Ben immersed the flask in a basin of cold water as shown below.



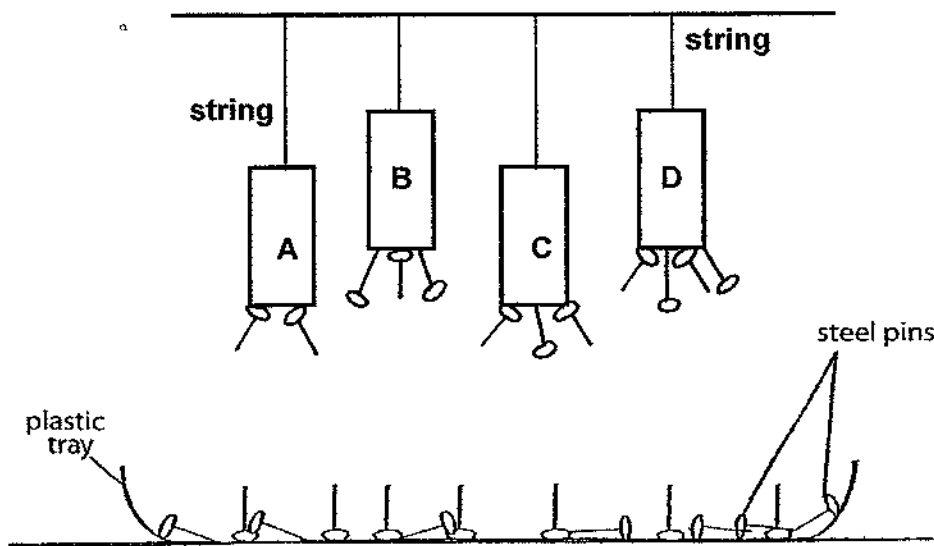
Based on the information above, answer the following question:

Ben noticed that the drop of blue ink in the glass tube rose first and then fell.

Explain how this could have happened.

[2]

36. A, B, C and D are magnets hanging from strings of two different lengths as shown in the diagram below.



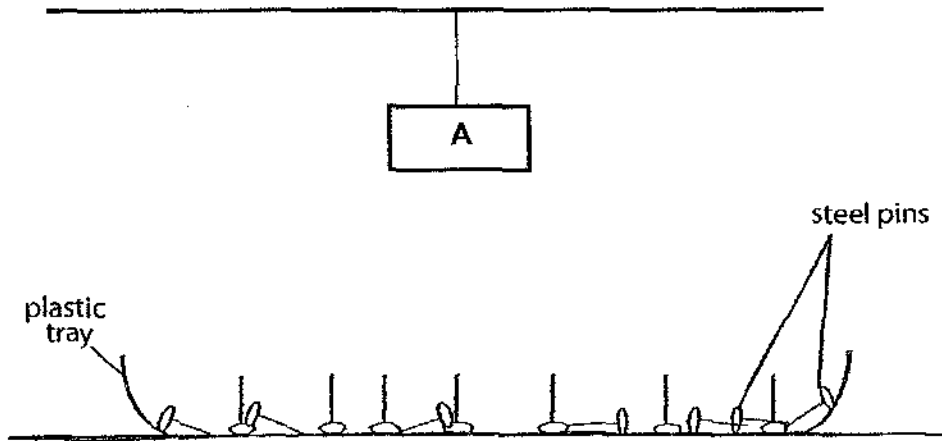
A plastic tray of steel pins is placed directly below the magnets and different numbers of pins are attracted to the magnets.

- (a) Based on the diagram above, arrange the magnets, A, B, C and D, according to their magnetic strength in ascending order.

Fill in the correct boxes with the letters A, B, C and D **ONLY**. [1]

strongest

Magnet A is re-tied and hung over the **SAME** tray of pins as shown below.



- (b) **MARK** a cross / crosses (X) on the part (s) of magnet A that attract(s) the most number of pins.

Give a reason for your answer.

[3]

37. Samantha brought the N-pole of a magnet near end P of object X as shown below.



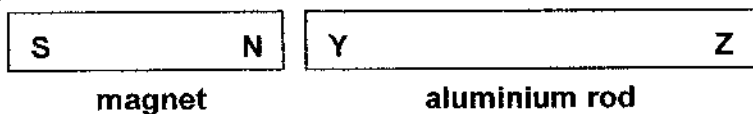
Next, she brought the N-pole of the same magnet to part Q of object X. She recorded her observations below.

part of object X	observation
P	P was attracted to the magnet.
Q	Q was repelled by the magnet.

Based on the information above, answer the following questions:

- (a) What was Samantha trying to find out? [1]

Samantha replaced object X with an aluminium rod. Its ends were marked Y and Z.

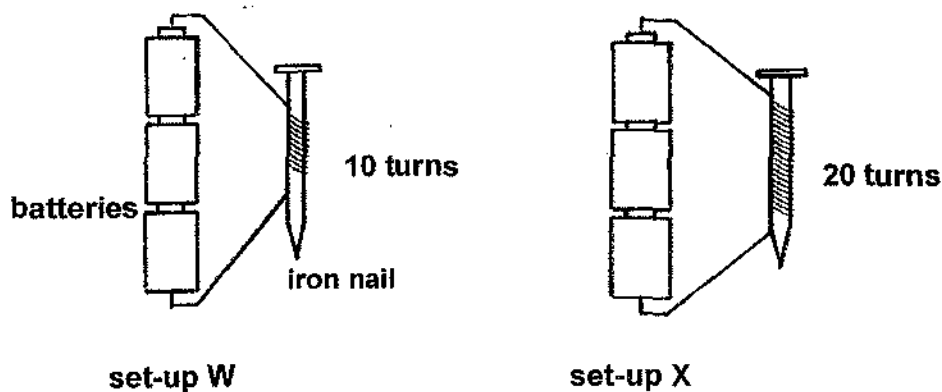


- (b) Using the **SAME** magnet, Samantha brought each end of the aluminium rod, Y and Z, **ONE** at a time, near the S-pole of the magnet. Record what Samantha would observe in the table below. [2]

part of aluminium rod	observation
Y	
Z	

- (c) What could Samantha conclude about the property of the aluminium rod? [1]

38. Trisha's teacher told her that an iron nail can become an electromagnet when it is placed in a coil of wire with its ends joined to batteries as shown in set-ups W and X below.



For each set-up, Trisha tested the strength of the electromagnet by counting the number of steel paper clips that each could attract. Trisha wound 10 more turns round the iron nail in set-up X and then recorded her observations in the table as shown below.

number of turns of wire round the iron nail	number of paper clips magnetised iron nail attracted
10	2
20	5
30	11

- (a) Based on Trisha's observations, what could she conclude about the number of turns of the wire round an iron nail and its magnetic strength? [1]

- (b) Name **ONE** variable that Trisha must keep the same to ensure that she carried out a fair test. [1]

- END OF PAPER -

Setters: Mr Johnson Ong, Mrs Christina Lim, Ms Haslina



RAFFLES GIRLS' PRIMARY SCHOOL

2009 PRIMARY 4 SCIENCE SEMESTRAL ASSESSMENT 2 ANSWER KEY

Setters: Mr Johnson Ong (compiled Section B), Mrs Christina Lim (compiled Section A), Ms Haslina

SECTION A (25 X 2 marks)

1.	1
2.	3
3.	2
4.	1
5.	1

6.	3
7.	3
8.	1
9.	4
10.	2

11.	2
12.	1
13.	2
14.	2
15.	4

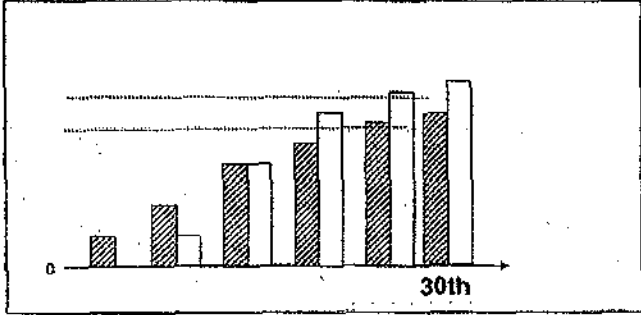
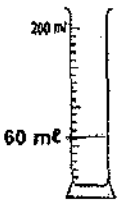
16.	4
17.	3
18.	4
19.	1
20.	4


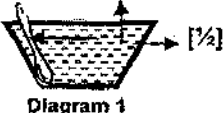
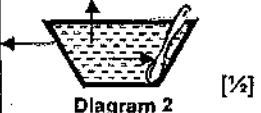
21.	2
22.	1
23.	3
24.	3
25.	3

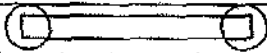
SECTION B (40 marks)

No.	Marks	Answers	Remarks
26	a	<p>Concept/ idea: To be able to identify the stages of an animal i.e. frog</p> <p>tadpole nymph(tadpole) -- $-\frac{1}{2}$]</p>	$[\frac{1}{2}]$ wrong spelling
	b	<p>Concept/ idea: To observe and state the differences between the stages of the life cycle of an animal i.e. frog</p> <ul style="list-style-type: none"> At stage C, it has a tail but not at stage A. Arms & legs $[\frac{1}{2}]$ Arms [0] Limbs [1] <p>AND</p> <ul style="list-style-type: none"> It has no legs at stage C but has legs at stage A 	MUST make comparisons between stage A and C
27	a	<p>Concept/ idea: To name the stage(s) of a butterfly</p> <ul style="list-style-type: none"> egg/s 	$-\frac{1}{2}$] wrong spelling
	bi	<p>Concept/ idea: To observe and state the differences between the stages of the life cycles of 2 different animals</p> <ul style="list-style-type: none"> X has 3 stages in its life cycle while Y has 4 stages in its life cycle. X has no pupa stage but Y has pupa stage The young of X looks like its parents but not the young of Y. 	Cannot accept : <ul style="list-style-type: none"> caterpillar and grasshopper feed on leaves caterpillar and grasshopper breathe with spiracles

NO.	Marks	Answers	Remarks
28	2	<p>Concept/ Idea: To identify and state the function of different body systems</p>	[1] for each correct answer
29	a	<p>Concept/ Idea: To analyse from the information given the process that takes place in each part of the digestive system</p>	NO partial marks
	b	<p>Concept/ Idea: To name the parts of the digestive system where digestive juices are produced/ (partial/ complete) digestion takes place</p> <ul style="list-style-type: none"> • mouth • stomach • small intestine 	Any order -[½] for each wrong spelling of word
30	a	<p>Concept/ Idea: To identify the circulatory system based on the diagram given</p> <p>circulatory system If muscular system, [0] then part (b) give 0 straight away</p>	-[½] for wrong spelling
	b	<p>Concept/ Idea: To name the parts of the circulatory system</p> <p>ANY two of the following:</p> <ul style="list-style-type: none"> • heart • blood vessels • veins • arteries • capillaries 	[1] for each correct answer Do NOT accept: blood vessels with any of the following: • veins • arteries • capillaries

31	a	1	<p>Concept/ idea: To know that the roots develop before the shoot roots</p>	
	b	1	<p>Concept/ idea: To be able to analyse and interpret graph the relationship between the growth of the shoot and the root of a young seedling</p> <ul style="list-style-type: none"> Both the length of the root and shoot increased/become longer/keep rising 	<ul style="list-style-type: none"> -They start to grow -Plant grow -Same height as on day15 -... taller -... bigger & bigger -Shoot grow faster than root <p>longer spelt wrongly - [½]</p>
	c	1	<p>Concept/ idea: To be able to draw on the graph to show their understanding that the shoot and root continue to grow after germination</p> 	<p>[½] for each of the following:</p> <ul style="list-style-type: none"> shade the root and it must be between the dotted lines the shoot must be above the 1st dotted line
32	a	1		<p>-[½] for water level which is NOT drawn straight</p>
	b	1	<p>It <u>occupies/takes up space</u> in water [1]</p> <p>NOT acceptable: It has a <u>definite volume</u>.</p>	<ul style="list-style-type: none"> -[½] for misspelt underlined word it has definite volume [0] it has mass [0]
	c	1	<p>It is a <u>solid</u> which has a <u>definite volume</u>.</p>	<ul style="list-style-type: none"> It is solid [0] Vol will not change/remains the same [0] Definite volume [½] Definite volume & shape [½]

NO.	Marks	Answers	Remarks	
33	a	2	 <p>[0] for no base drawn</p>	-[1] for NOT shading rectangular box dark. [1] for drawing box and crescent moon in the centre
	b	1	<p>It is made of opaque materials that do not allow light to pass through. Opaque [1]</p>	
34	a	1	<ul style="list-style-type: none"> • Metal is a better conductor of heat than plastics. • Heat from the soup was transferred faster to the metal spoon than to the plastic spoon. • Metal is a better conductor of heat than plastic.[0] • Plastic spoon is an insulator - [½] • Metal spoon is a good conductor While plastic spoon is a poor conductor [0] 	Good conductor [0]
	b	2	<p>OR</p> <ul style="list-style-type: none"> • Heat from the hot soup was transferred / escape from surrounding to the spoon till both reached the same temperature. • Both lost heat to its surrounding to match the room temperature [1½] • Conduct heat [0] • Plastic spoon gained heat.[½] • Metal spoon cooled down [0] • Metal spoon / soup lost heat[½] • Metal spoon absorbed heat... [2] 	Temperature / conductor - wrong spelling -[½]
	c	1	 <p>Diagram 1 [½]</p> <p>Any ONE of such arrows in EACH DIAGRAM</p>  <p>Diagram 2 [½]</p>	Award [½] for each correct arrow in each diagram Arrows can be similar Ignore correct arrows

NO.	Marks	Answers	Remarks	
35	2	<ul style="list-style-type: none"> Flask A contracted first [½] before the air in it contracted [½] thus pushing the ink upwards. When cooled further, the air contracted [½] and ink drops to take up the empty space. [½] 		
36	a	1	A C B D	No partial mark
	b	3	Mark on the 2 ends / poles [1] [1]  <u>[1] Reason:</u> The poles of a magnet are the strongest.	[1] for each correct end/ pole
37	a	1	to find out if object X is a magnet	Magnetic material [0]
	b	2	Y and Z <ul style="list-style-type: none"> were not attracted to the magnet were not repelled by the magnet. 	Nothing happened/ remained the same [0]
	c	1	OR <ul style="list-style-type: none"> It is not magnetic. It is non-magnetic. 	
38	a	2	As the number of turns of the wire increases, <ul style="list-style-type: none"> the strength of the electromagnet increases. the magnetic strength of the iron nail increases OR	-[½] when magnet is mentioned, electromagnet is NOT mentioned
	b	1	<ul style="list-style-type: none"> The type of batteries must be the same The number of batteries must be the same The voltage of batteries must be the same The brand of batteries must be the same The iron nail must be of the same type. The wire must be of the same type. 	

– END OF PAPER –