RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (2) 2018

Section A	/50
Section B	/40
Your score **out of 90 marks**	
Parent's signature	

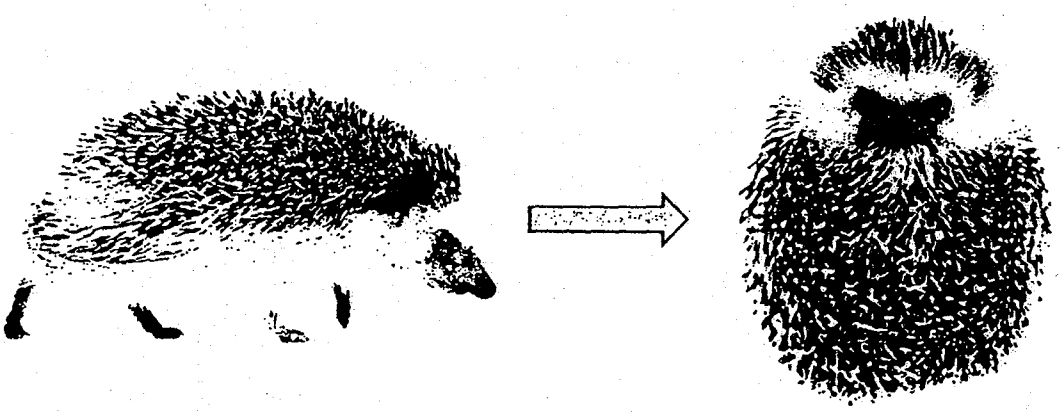
Name : _____ **Index No.:** ___ **Class: P4** ___ **Date:** _____

25 October 2018 **SCIENCE** **ATT: 1 h 30 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 (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

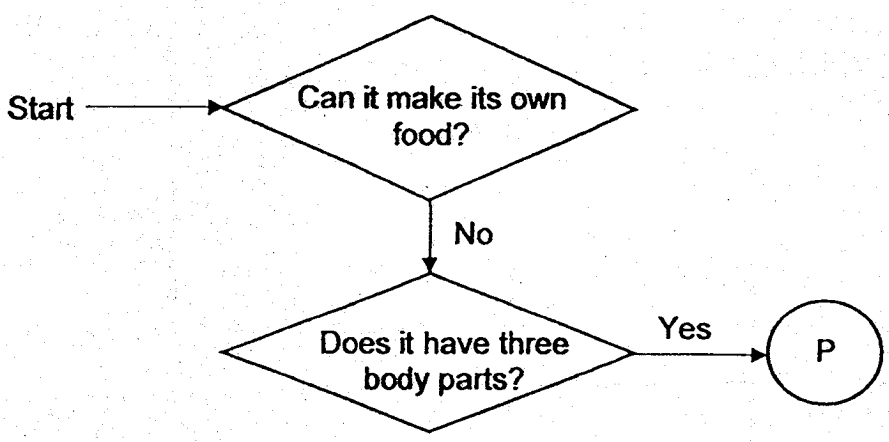
1. When threatened, the hedgehog curls itself up into a ball, making it difficult for predators to eat it.



This shows that the hedgehog is a living thing because it _____.

(1) grows
(2) reproduces
(3) needs air, food and water
(4) responds to changes in its surroundings

2. Study the diagram below carefully.



What could P be?

(1) bird
(2) insect
(3) mammal
(4) amphibian

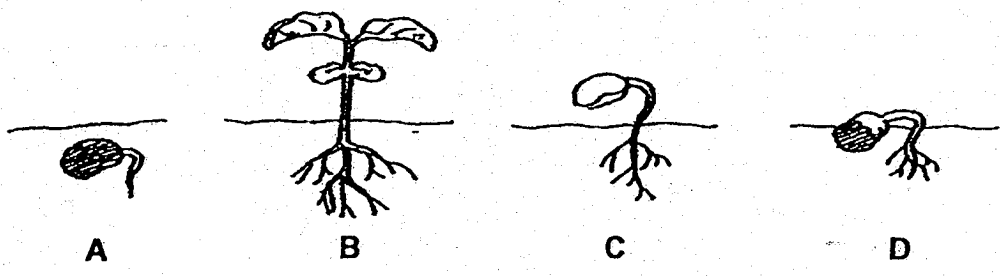
3. Joanne made the following observations on the life cycle of an animal.

- ✓ There are four stages in the life cycle.
- ✓ Some stages of the life cycle occur in water.

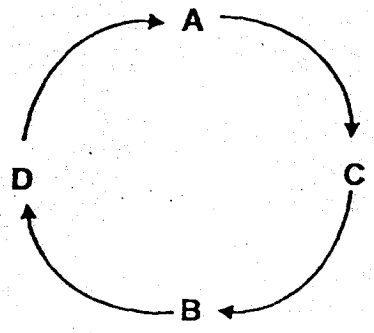
Which animal was Joanne observing?

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

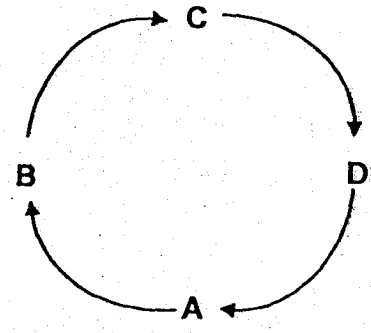
4. The diagram below shows four stages of the growth of a young plant in the incorrect order. Arrange the stages in the correct order.



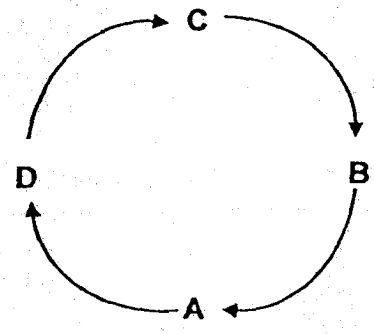
(1)



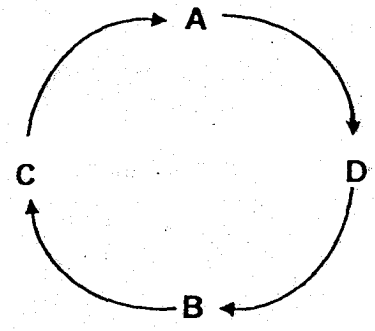
(2)



(3)

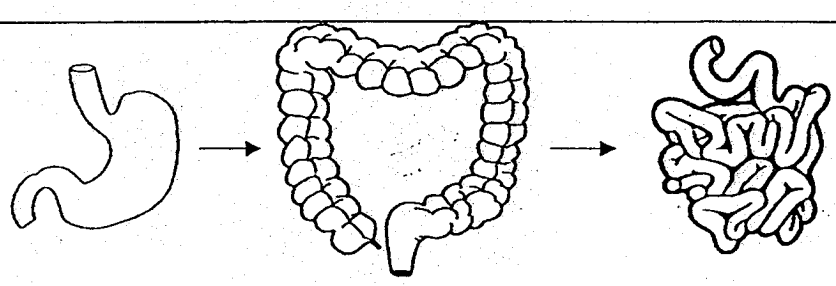


(4)



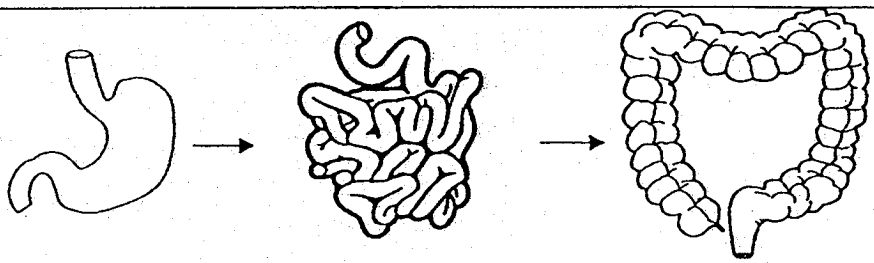
5. Which one of the following shows the correct sequence when food moves through some parts of the digestive system?

(1)



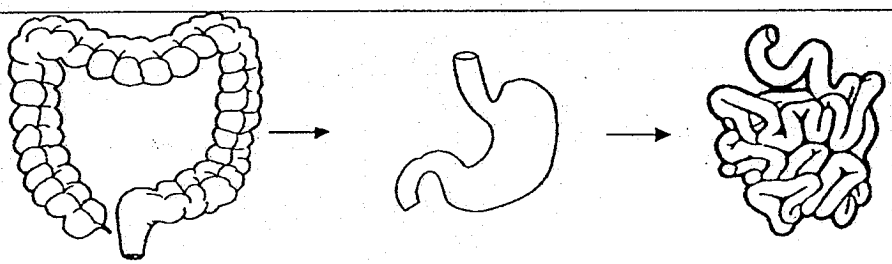
Stomach → Large intestine → Small intestine

(2)



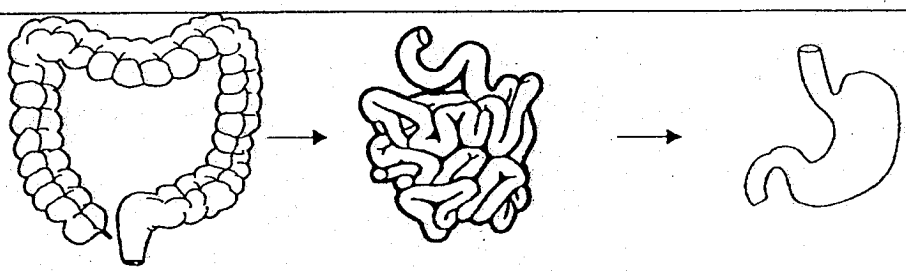
Stomach → Small intestine → Large intestine

(3)



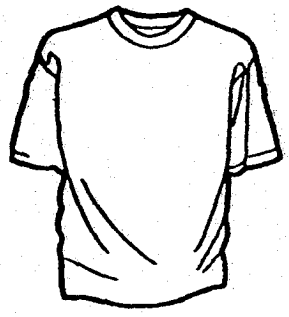
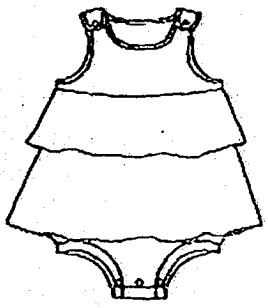
Large intestine → Stomach → Small intestine

(4)



Large intestine → Small intestine → Stomach

6. Which of the following objects is made of waterproof material?

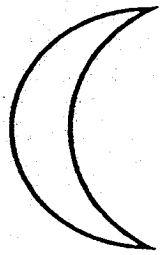
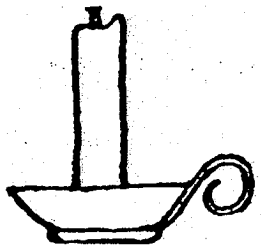
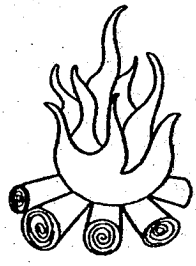
(1) Cotton T-shirt 	(2) Newspaper 
(3) Swimming suit 	(4) Rubber boots 

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

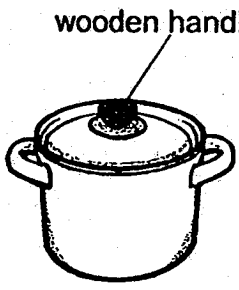
Which of the following is **NOT** matter?

(1) oil
(2) air
(3) sand
(4) shadow

8. Which one of the following is a source of light?

(1) eyes 	(2) the moon 
(3) candle 	(4) fire 

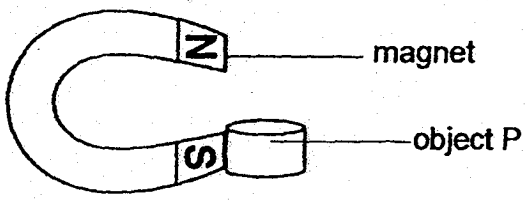
9. Siti cooked a pot of chicken soup in the pot shown below.



She was able to remove the lid of pot using the wooden handle. This is because wood is a _____.

(1) light material
(2) flexible material
(3) poor conductor of heat
(4) good conductor of heat

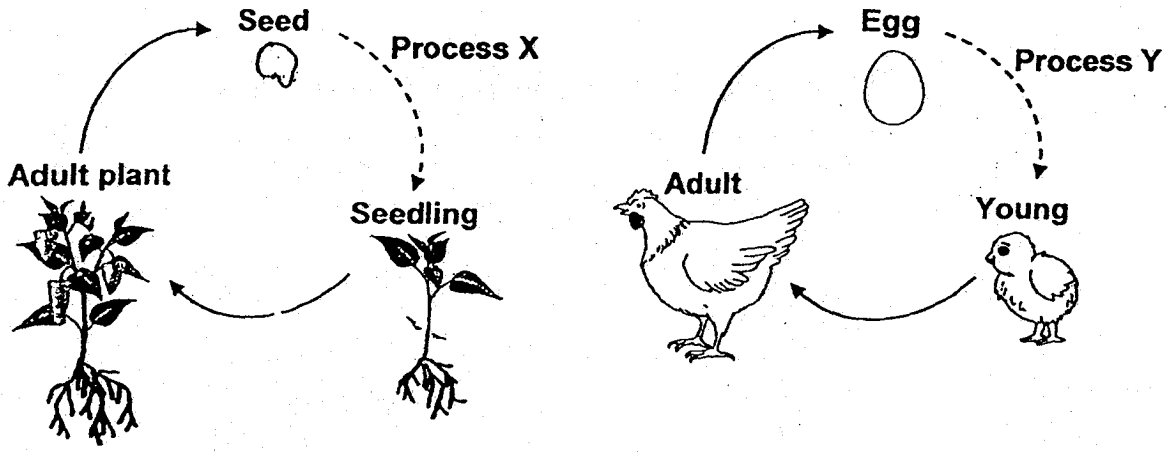
10. An object P was attracted to a magnet, as shown in the figure below.



Object P is made of _____.

(1) iron
(2) wood
(3) plastic
(4) rubber

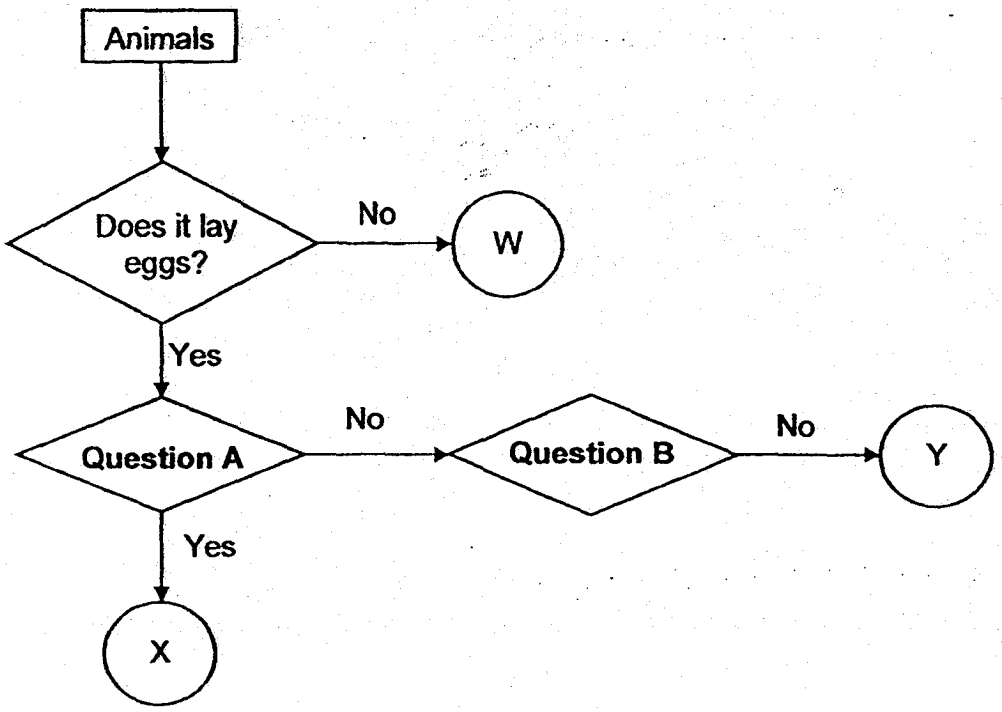
11. The diagrams below show the life cycles of a chilli plant and a chicken.



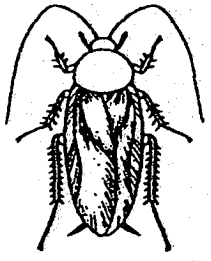
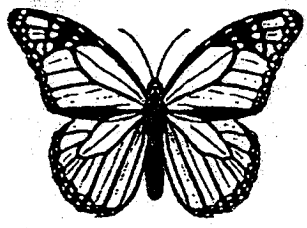
Which one of the following statements best describes the conditions that are required during process X and process Y?

(1) Warmth must be present in both processes.
(2) Sunlight must be present in both processes.
(3) Both processes only takes place in the night.
(4) Both processes require the presence of the adults.

12. Study the flowchart below.



Amelia identifies Animals X and Y as shown in the table below.

Animal X	Animal Y
	

What are questions A and B likely to be?

	Question A	Question B
(1)	Does it have a three-stage life cycle?	Does the young resemble its adult?
(2)	Does the young resemble its adult?	Does the young live on land?
(3)	Does it have a four-stage life cycle?	Does it have a three-stage life cycle?
(4)	Does the young live on land?	Does it have a four-stage life cycle?

13. James wanted to conduct an experiment to find out if different amounts of digestive juices would affect the rate of digestion of noodles.

He prepared the following set-ups for the experiment.

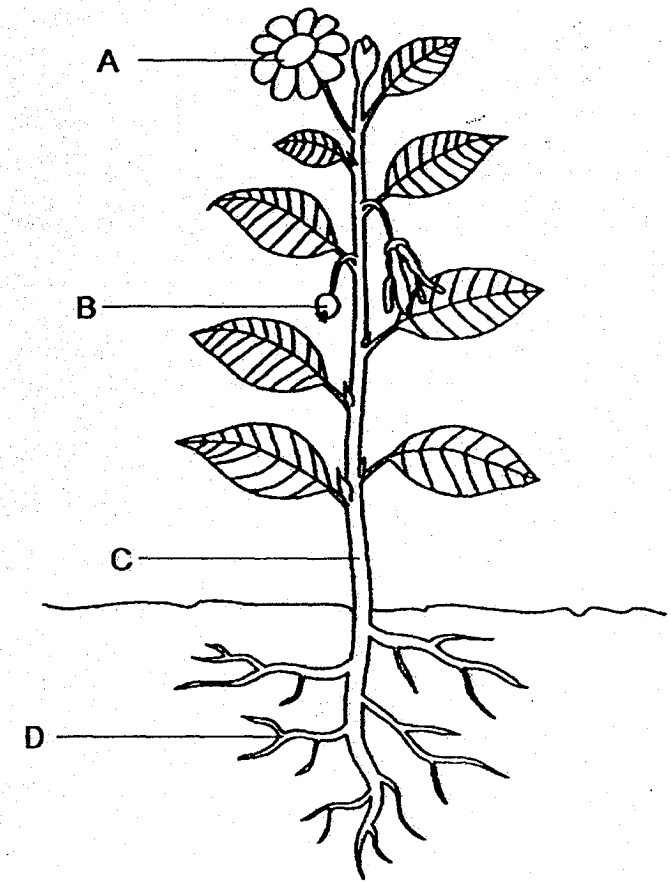
Set-up	Volume of digestive juices (ml)	Type of noodles	Mass of cooked noodles (g)	Duration of experiment (minutes)
A	5	rice	20	20
B	5	rice	40	20
C	10	rice	20	20
D	10	wheat	40	15

Which of these set-ups should James use to ensure a fair test has been conducted?

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

14. The diagram shows a plant.

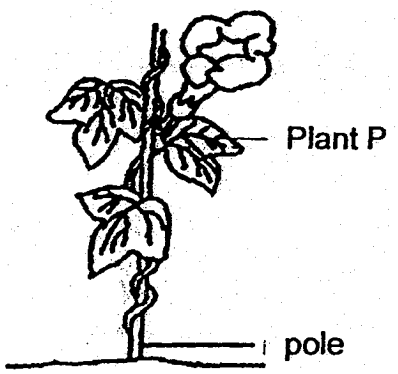
Parts A, B, C and D show the different parts of the plant.

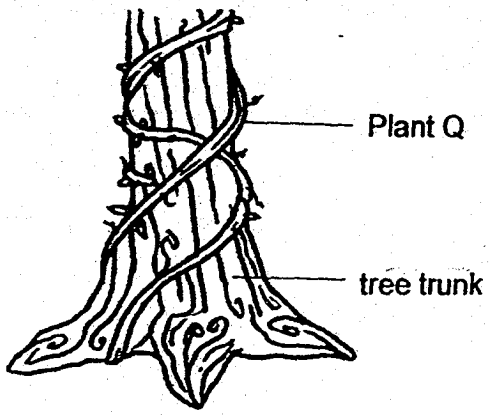


Which of the following matches the correct part of the plant to its function?

	Part	Name of part	Function
(1)	A	Flower	To make food
(2)	B	Fruit	To absorb sunlight
(3)	C	Stem	To transport water from the roots to the other parts of the plant
(4)	D	Roots	To transport food from the roots to the other parts of the plant

15. Plant P grew around a pole while Plant Q grew around a tree trunk.





Which of the following is correct?

(1) Both plants are non-flowering plants.

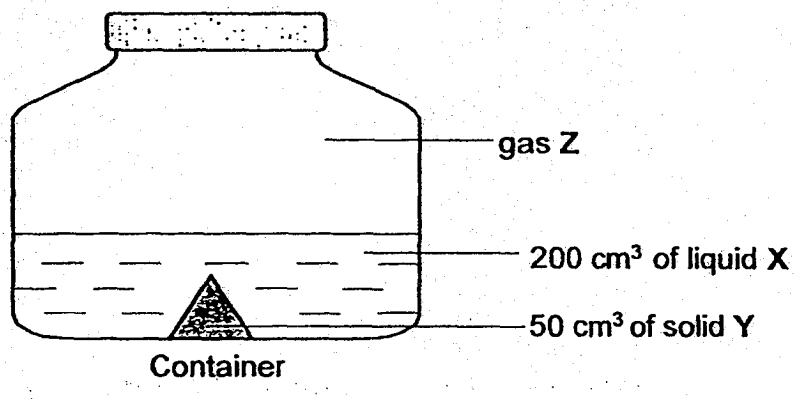
(2) Plant P has a strong stem but Plant Q has a weak stem.

(3) Both plants need a support to grow towards the sunlight.

(4) Plant P can make its own food as it has flowers but not plant Q.

16. The diagram below shows a tightly sealed 1000-cm^3 container.

The container was initially filled with 200 cm^3 of liquid **X** and 50 cm^3 of solid **Y**. The rest of the container was filled with gas **Z**.



50 cm^3 of liquid **X** was removed.

Which of the following statements about the volume of matter in the container are true?

A The volume of gas **Z** was 750 cm^3 at first.

B The final volume of gas **Z** was 650 cm^3 in the end.

C The final volume of gas **Z** was 800 cm^3 in the end.

D The final volume of liquid **X** was 100 cm^3 in the end.

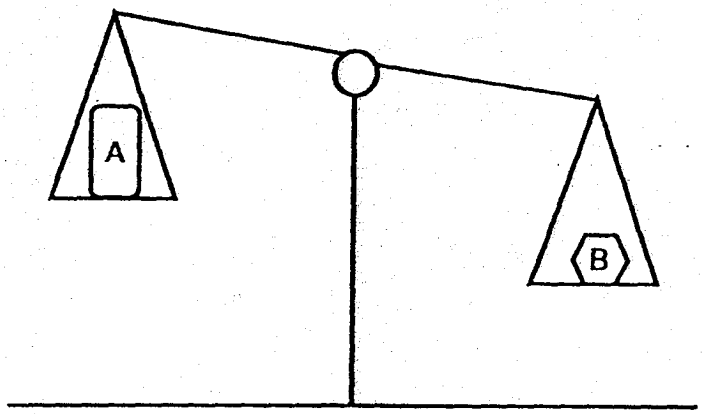
(1) A and C

(2) A and D

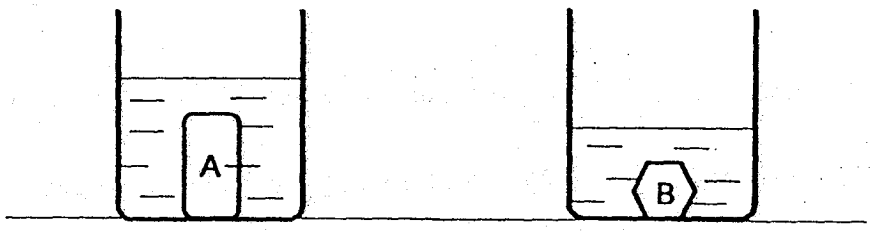
(3) B and C

(4) B and D

17. Objects A and B were placed on a balance as shown below.



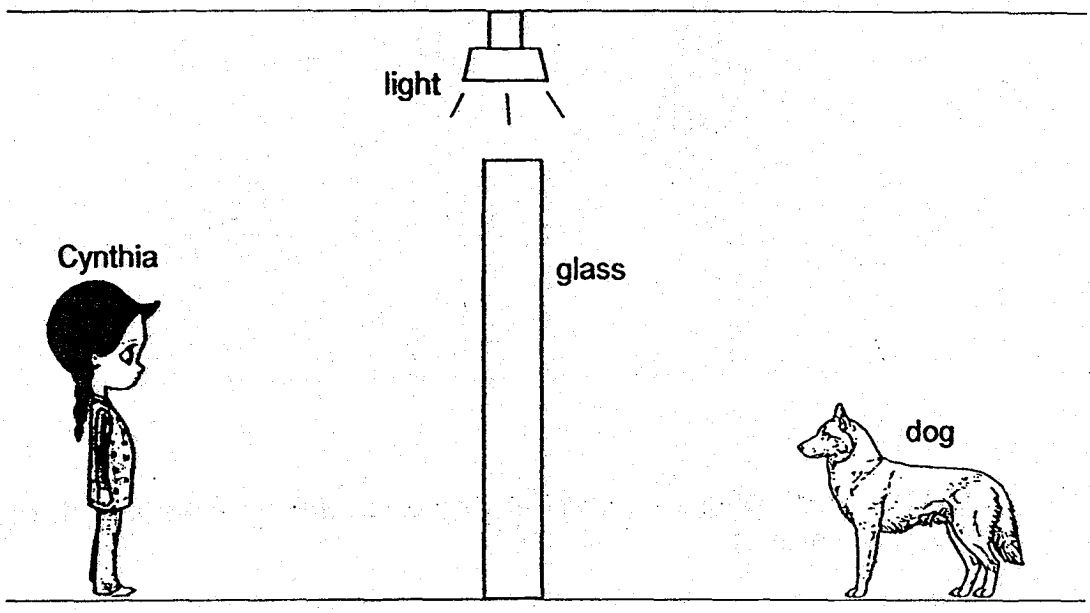
Objects A and B were then placed in identical containers containing the same amount of water.



Based on the observations above, which of the following statement is true?

	Volume	Mass
(1)	Object A has a larger volume than object B.	Object A has a larger mass than object B.
(2)	Object A has a larger volume than object B.	Object A has the same mass as object B.
(3)	Object A has a larger volume than object B.	Object A has a smaller mass than object B.
(4)	Object A has a smaller volume than object B.	Object A has a greater mass than object B.

18. Cynthia could see her pet dog when she stood behind the glass as shown in the diagram below.



Which one of the following explains why Cynthia could see her pet dog?

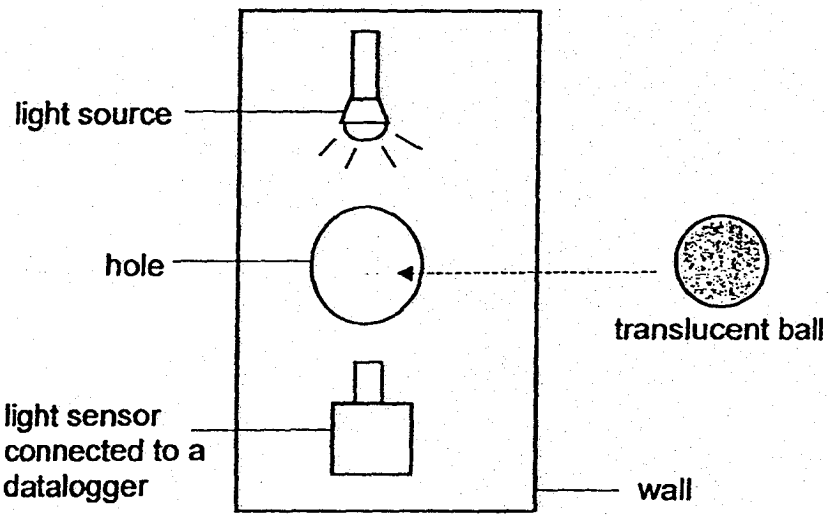
(1) The glass reflected light from the dog into Cynthia's eyes.

(2) The glass reflected light from the lamp into Cynthia's eyes.

(3) The pet dog reflected light from the lamp through the glass into Cynthia's eyes.

(4) The pet dog gave off light and the light entered Cynthia's eyes through the glass.

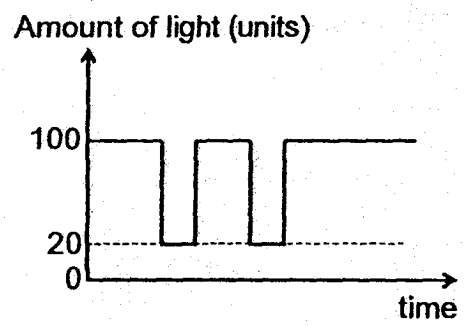
19. Azahar set up a light source and a light sensor to count the number of balls going through a hole as shown.



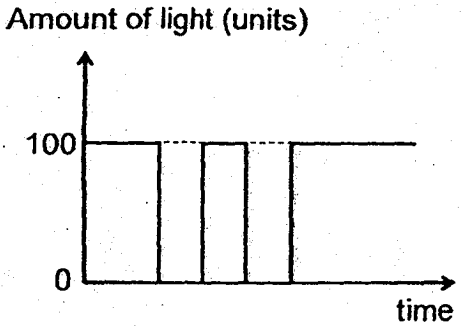
He threw a few identical balls one at a time and recorded the results.

Which one of the following graphs shows the amount of light recorded by the light sensor as he threw the ball?

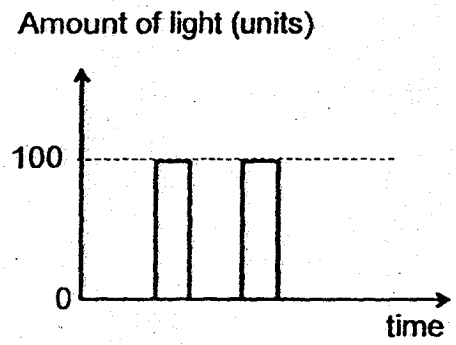
(1)



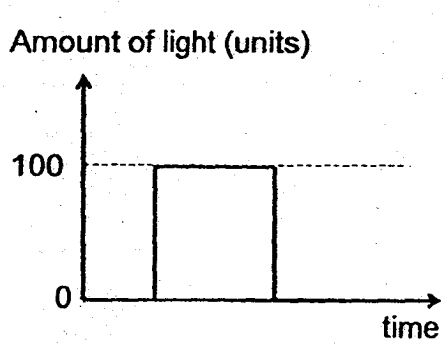
(2)



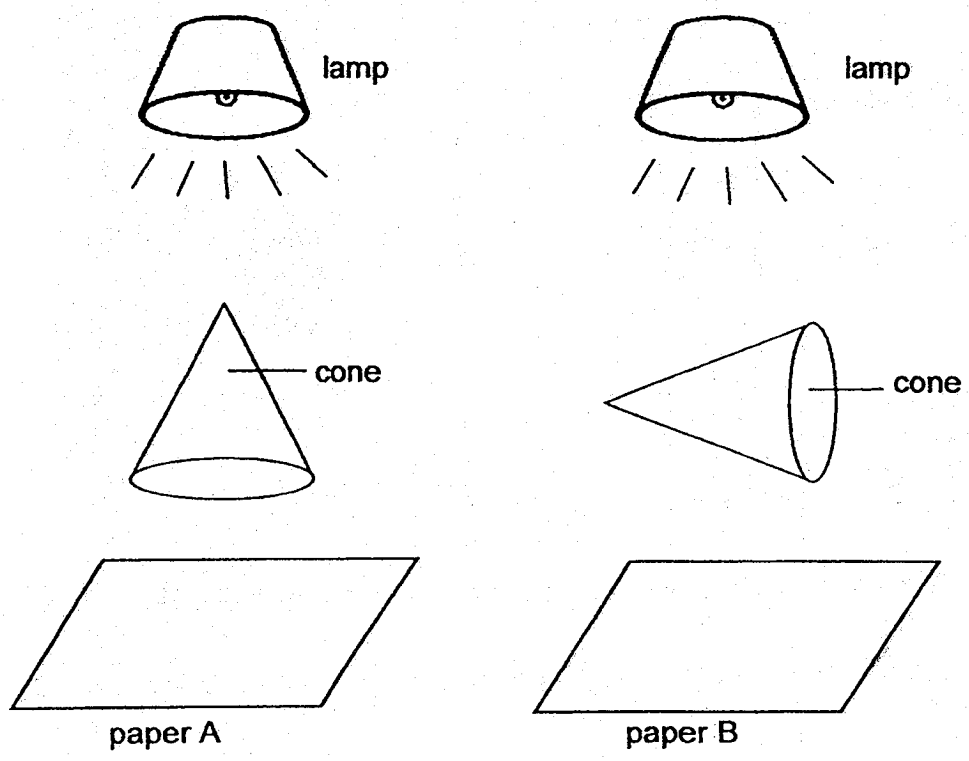
(3)



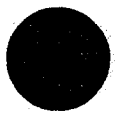
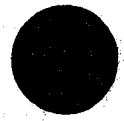
(4)



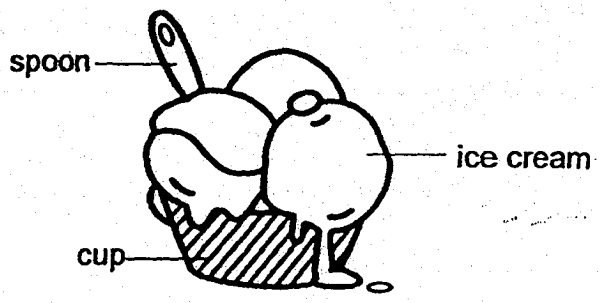
20. Matilda studied the shadows formed by two identical cones. The cones were placed at different positions under identical light sources in a dark room.



Which one of the following shadows would be observed on each piece of the paper?

	Paper A	Paper B
(1)		
(2)		
(3)		
(4)		

21. Samantha placed a metal spoon in a cup of ice cream.



The spoon became colder after a while.

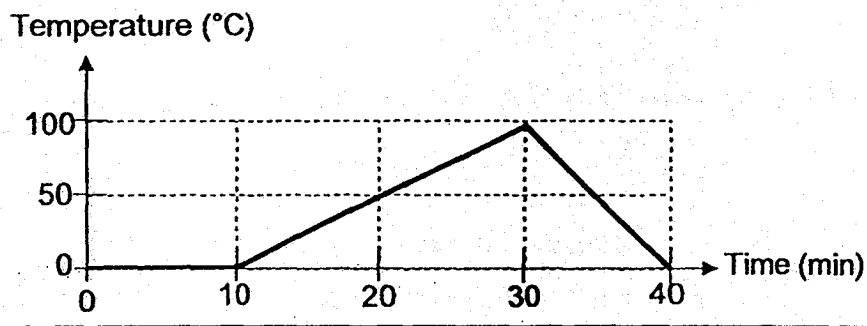
Which one of the following explains this?

(1) The cup lost heat to the ice cream.
(2) The ice cream lost heat to the spoon.
(3) The spoon lost heat to the ice cream.
(4) The spoon gained heat from the ice cream.

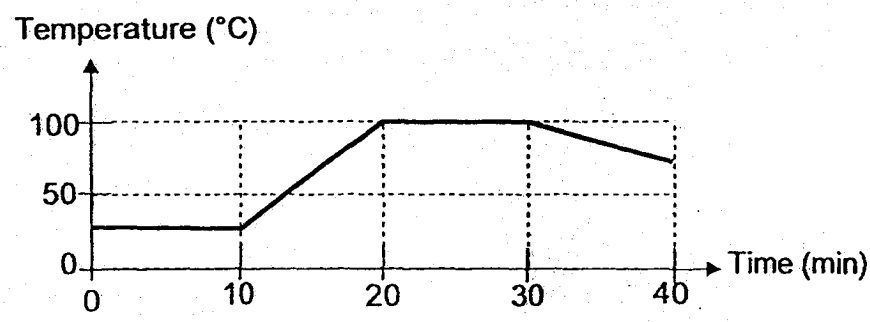
22. Kate placed some water in a beaker at room temperature over a bunsen burner. After 10 minutes, the water started to boil. She left the water boiling in the beaker for 10 minutes. She removed the beaker immediately and left it in the freezer for another 20 minutes. At the end of the experiment, she noticed that the water is still in liquid state.

Which one of the following graphs correctly shows the results of Kate's experiment?

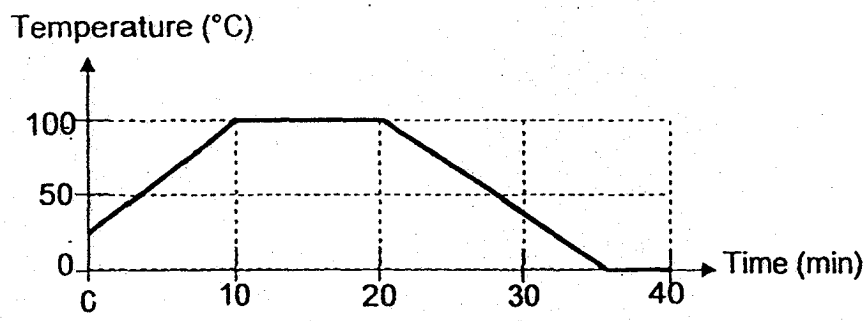
(1)



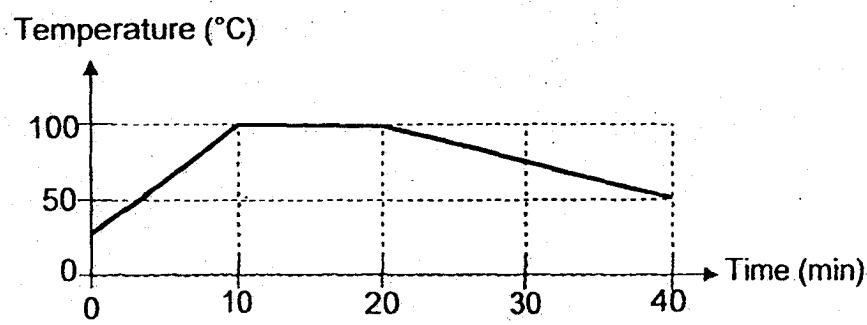
(2)



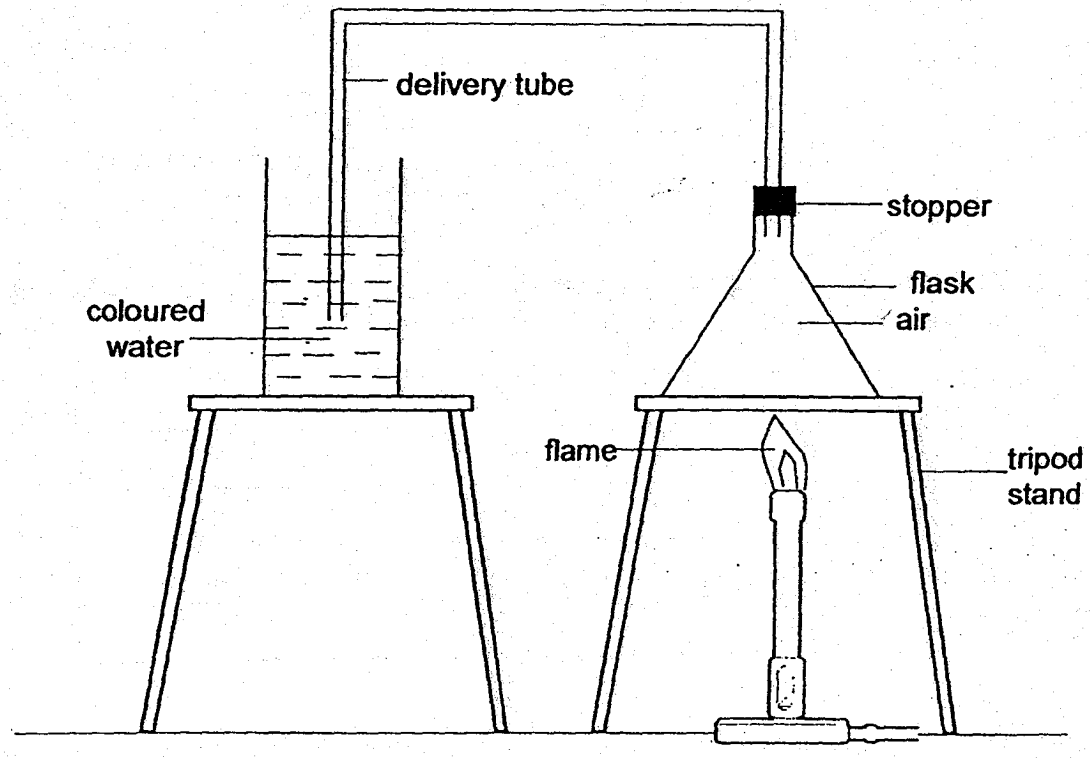
(3)



(4)



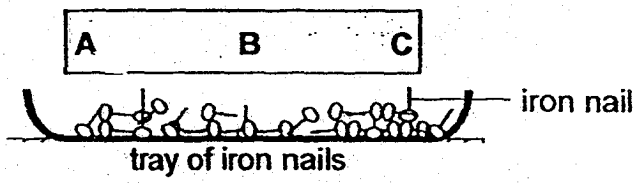
23. Daniel prepared a set-up to investigate the effect of heat on the volume of air in the flask as seen below.



Which one of the following correctly describes the observation of the experiment and the explanation for the observation?

	Observation	Explanation
(1)	Coloured water was drawn into the delivery tube.	Heat causes a decrease in the volume of air.
(2)	Coloured water was drawn into the delivery tube.	Heat causes an increase in the volume of air.
(3)	Formation of bubbles observed in the coloured water.	Heat causes a decrease in the volume of air.
(4)	Formation of bubbles observed in the coloured water.	Heat causes an increase in the volume of air.

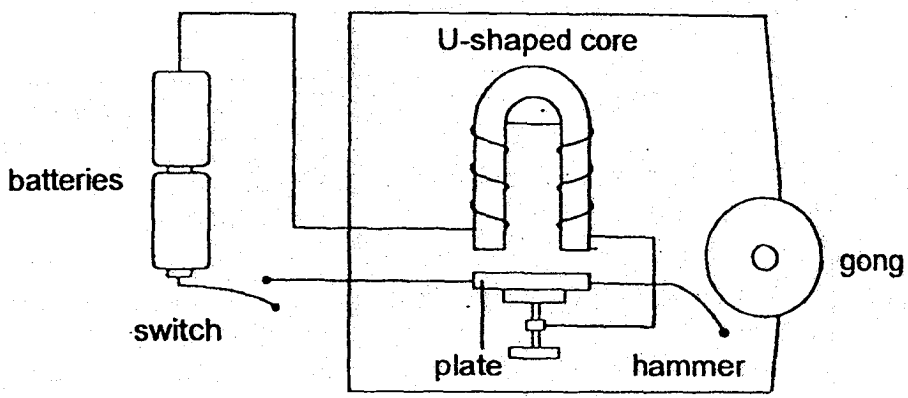
24. Annika labelled the different parts of a bar magnet, A, B and C as shown in the diagram below. She brought the bar magnet close to a tray of iron nails as shown in the diagram below



Which of the following would most likely show the number of iron nails that would be attracted to parts **A, B** and **C** of the magnet?

	A	B	C
(1)	2	6	2
(2)	3	1	8
(3)	6	1	5
(4)	8	6	3

25. The diagram below shows the door bell system. When the switch is closed, the U-shaped core will be magnetized and become an electromagnet, attracting the plate with the hammer, hitting the gong.



What of the following materials should be used to make the U-shaped core and plate?

	U-shaped core	Plate
(1)	Aluminium	Iron
(2)	Iron	Steel
(3)	Steel	Copper
(4)	Copper	Iron

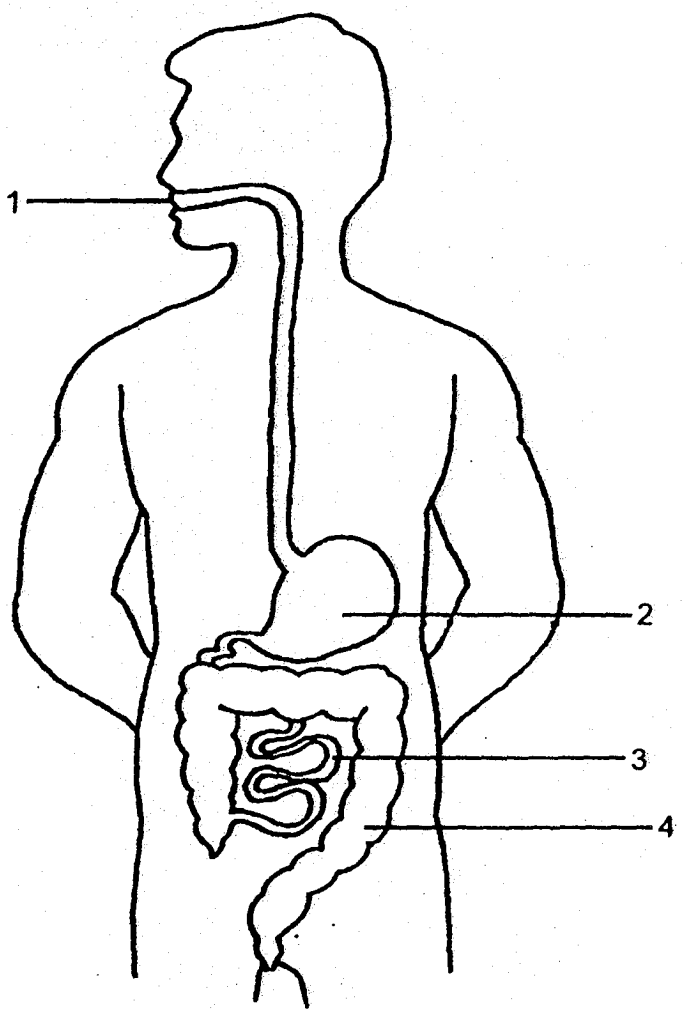
Name : _____ Index No: ___ Class: P4_____

40

SECTION B (40 marks)

For questions 26 to 37, 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. The diagram below shows the human digestive system.



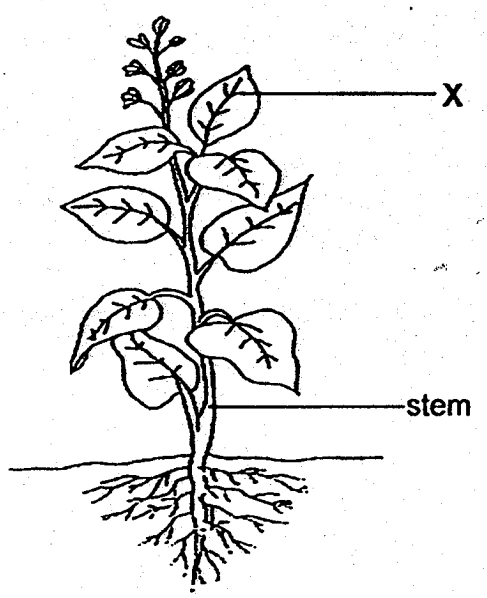
Based on the diagram above, identify the part where

(a) digestion is completed: _____ [1]

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

Score 2

27. The diagram shows plant Y.

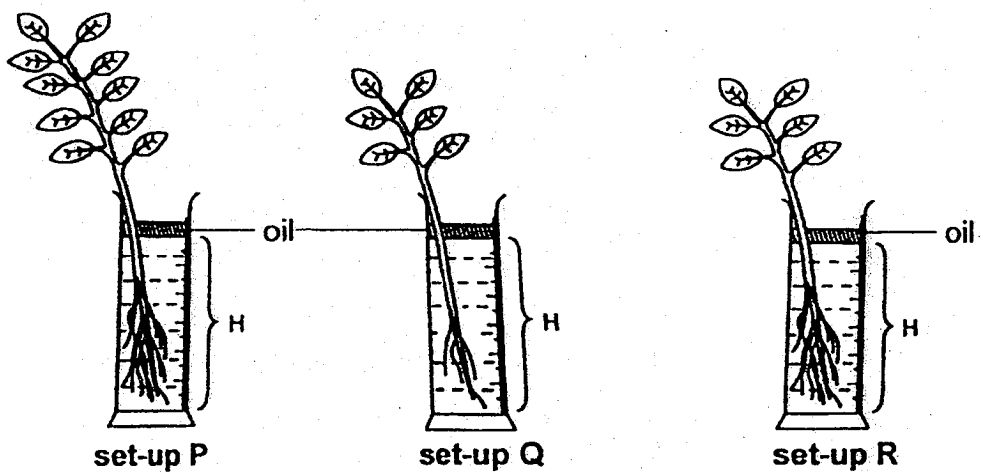


(a) Name plant part X. [1]

X : _____

(b) The substance that the stem of the plant transports from plant part X to other parts of the plant is _____ . [1]

(c) Xiuli left three set-ups of plant Y near a window in her kitchen as shown. She then recorded the water level, H after 2 days.



set-up P set-up Q set-up R

Score	/ 2

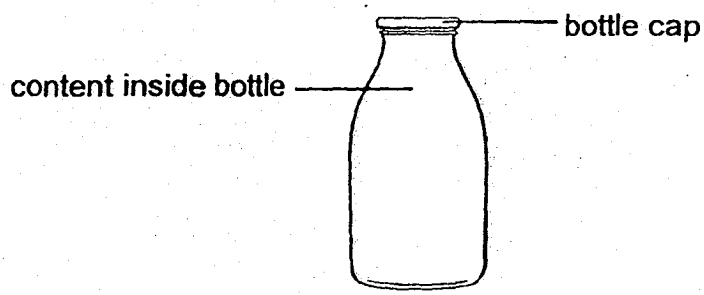
Continue on next page.

Continue from previous page.

(i) Xiuli wanted to find out if the amount of roots of a plant affects the amount of water taken in. Which set-ups should Xiuli use to carry out a fair test to investigate her aim? Explain your answer clearly. [1]

(ii) Which of the three set-ups will have the lowest water level H recorded after 2, days? Explain your answer clearly. [2]

28. The picture below shows an empty bottle.



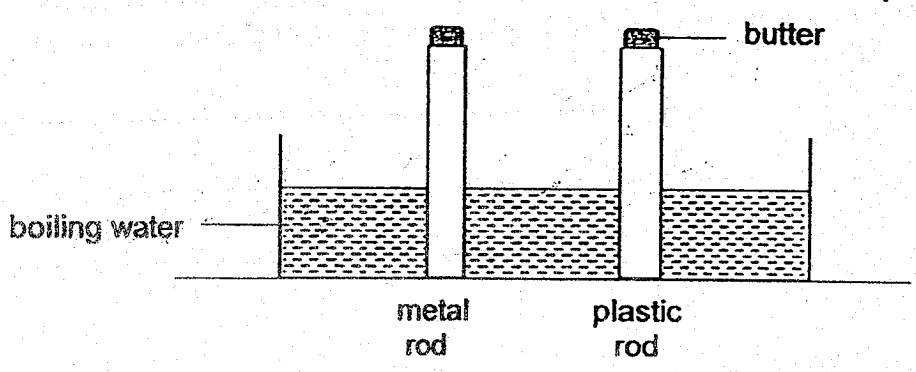
Circle the correct state for the following things. [2]

(a) Bottle cap: solid / liquid / gas

(b) Content inside bottle: solid / liquid / Gas

Score	
	5

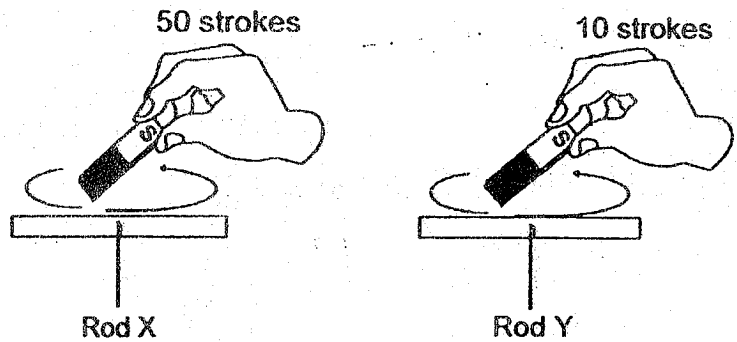
29. Meixuan placed a metal rod and a plastic rod into a tank of boiling water as shown below. Equal amounts of butter were put on both rods of the same height.



What would Meixuan observe and why?

Meixuan observed that the butter on the plastic rod melted more _____ than the butter on the metal rod, as plastic is a _____ conductor of heat than metal. [2]

30. Diane stroked two similar iron rods X and Y with the same magnet as shown in the figure below.



Both rods became temporary magnets and were used to attract similar paper clips.

(a) Tick (✓) the correct answer in the table below. [1]

Rod X attracted			Rod Y.
	less paper clips than		
	the same number of paper clips as		
	more paper clips than		

Score	/ 3

Continue on next page.

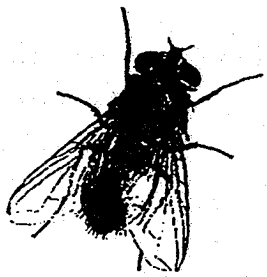
Continue from previous page.

(b) Choose the correct word from the box to answer the question below. [1]

strong	magnetic	flexible

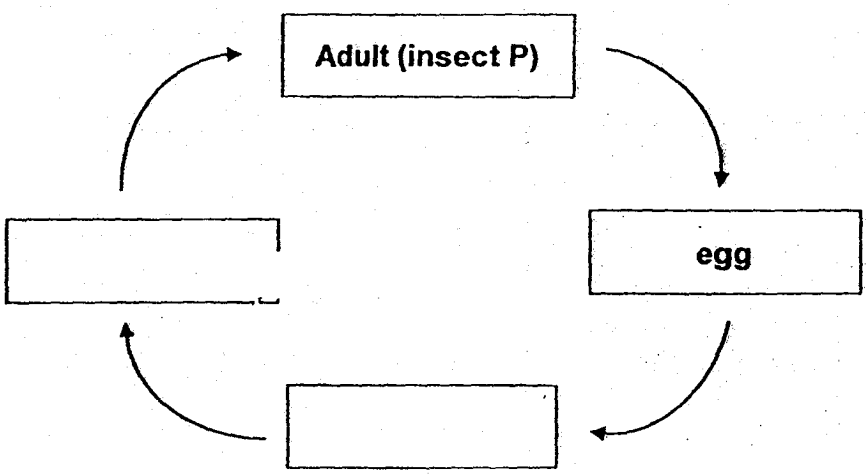
Diane's observations show that paper clips are _____ objects.

31. Insect P lays eggs on dead animals upon their death.



Insect P

(a) Complete the life cycle of insect P as shown below. [2]



Continue on next page.

Score	/ 3

Continue from previous page.

The table below shows the surrounding temperature and the number of days taken for an egg of insect P to turn into an adult.

Surrounding temperature (^{0}C)	Number of days taken for an egg of insect P to turn into an adult
20	27
25	23
30	15
35	12
40	12

(b) What is the relationship between the surrounding temperature and the number of days taken for an egg of insect P to turn into an adult? [2]

Surrounding temperature from 20^{0}C to 35^{0}C	
Surrounding temperature from 35^{0}C to 40^{0}C	

Score	/2

32. Eleana measured 5 ml of four different substances and added these substances into four different test tubes. Each of the test-tube contains a piece of food. The experiment took place at room temperature.

She recorded the time taken for the piece of food to be broken down into simpler substances. The results of her investigation is shown in the table below.

Substance	A	B	C	D
Time taken for the piece of food to be broken down into simpler substances (minutes)	8	3	6	more than 10

(a) Which substance, A, B, C or D, was most effective in breaking down the piece of food into simpler substances? Explain your answer. [1]

_____

_____

(b) Eleana observed that the piece of food was still intact in the set-up with substance D at the end of the 10 minutes. Based on her observation, what can Eleana conclude about the set-up with substance D at the end of the 10 minutes? [1]

_____

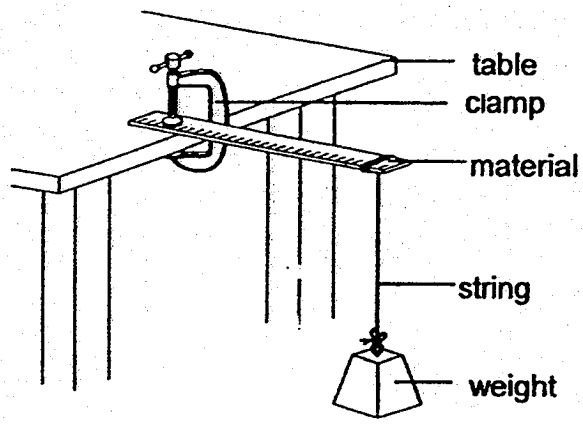
_____

(c) State the organ system that is involved in transporting the simpler substances to the other parts of the body. [1]

_____

Score	
	3

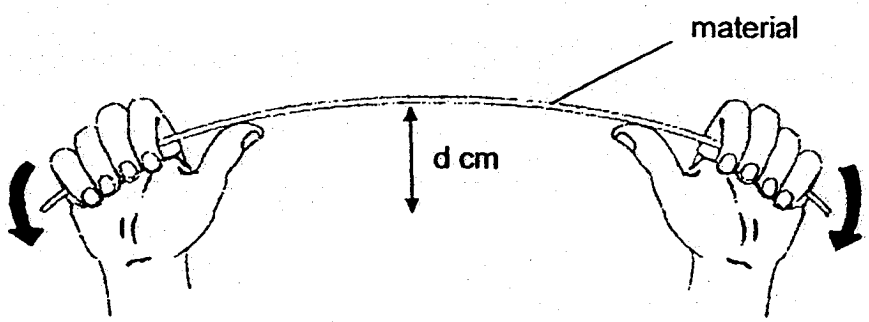
33. Marie carried out an experiment using four different strips of materials, P, Q, R and S, of the same length and thickness. She hung weights on the end of each material. She kept increasing the mass of the weights till the strip of material started to break.



The table below shows the mass of the weights each material could hold before it started to break.

Materials	Total mass of weights before it started to break (kg)
P	3.5
Q	8.5
R	13.0
S	17.5

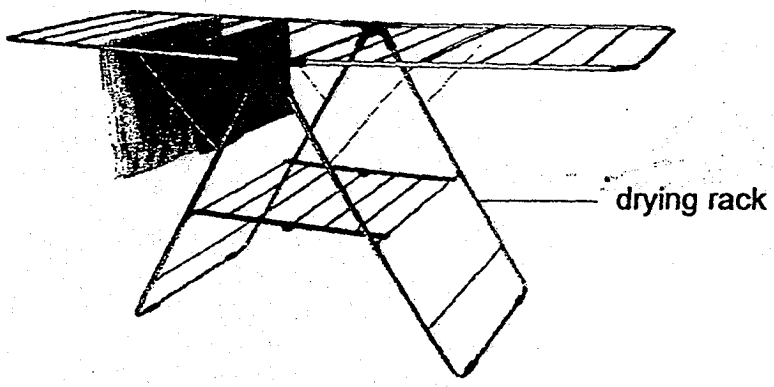
Marie conducted the second experiment as shown below. She then measured the maximum distance, d cm, each strip of material could bend.



Materials	d (cm)
P	0
Q	5
R	13
S	0

Continue from previous page.

(a) Marie wanted to choose one of the above materials P, Q, R or S to make a drying rack to dry wet clothes as shown below.



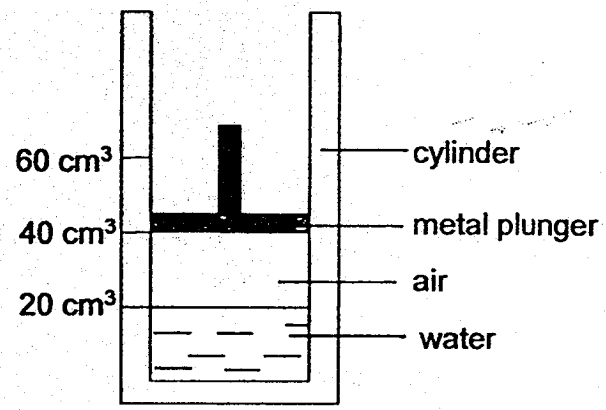
Based on the results obtained from the two experiments, which material, P, Q, R or S, is most suitable for making the drying rack? Explain your answer clearly. [2]

(b) State another property of the material that is needed to be considered for making the drying rack. [1]

(c) Based on the results obtained from the two experiments, which one of the materials, P, Q, R or S, is most suitable for making a fabric bag? Explain your answer. [1]

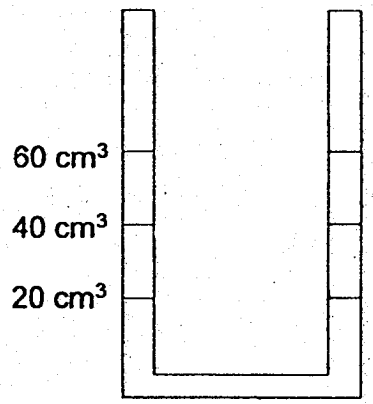
Score	
	4

34. The diagram shows a set-up with a cylinder and a metal plunger. Aisha filled the cylinder with 20 cm^3 of water leaving 20 cm^3 of air.



Aisha pushed the metal plunger downwards as far as she could without any air or water escaping.

(a) Draw how the set-up would look like after she pushed the metal plunger downwards. [1]



(b) Explain your answer in (a). [2]

_____

_____

_____

_____

Continue on next page.

Score	
	3

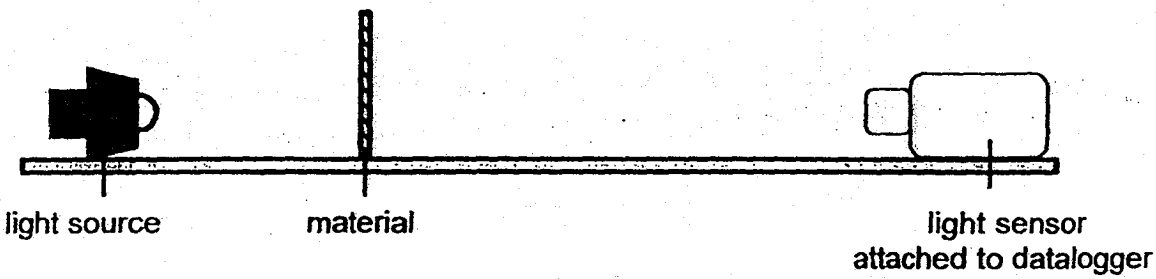
Continue from previous page.

(c) Aisha removed the metal plunger and left it in a tub of hot water for 15 minutes. Give a reason why the metal plunger could no longer fit into the cylinder. [1]

_____

_____

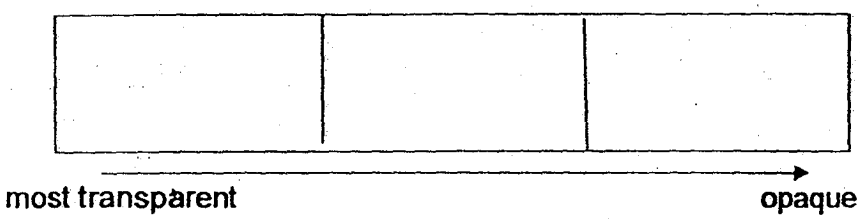
35. Peter wanted to investigate the degree of transparency of materials, A, B and C. He prepared the set-up and placed each material in between the light source and the light sensor as shown below.



The amount of light detected by the light sensor are shown in the table below.

Materials	Amount of light detected by the light sensor (unit)
A	243
B	770
C	0

(a) Based on the readings above, arrange the materials, A, B and C, in order of their degree of transparency, starting with the most transparent material. [1]

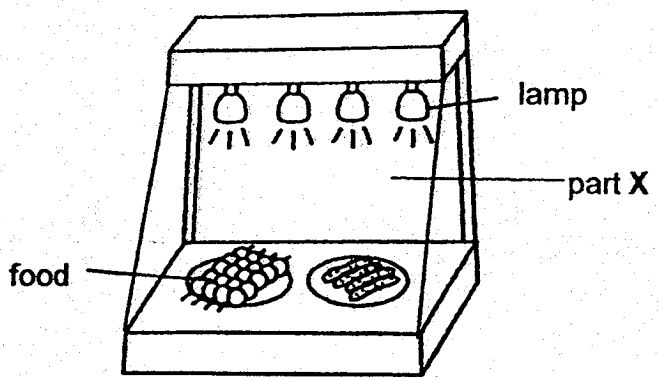


Continue on next page.

Score	2

Continue from previous page.

Peter's mother owns a food stall in the canteen. She placed the cooked food in an enclosed food warmer cabinet as shown below such that the pupils could see and select the food when they ordered it.

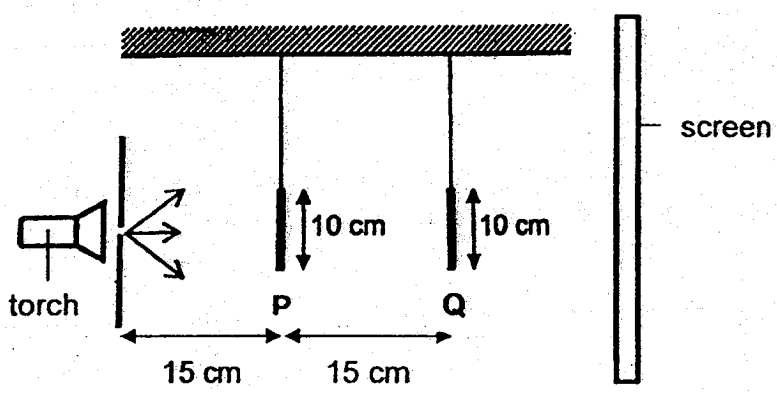


(b) Based on Peter's results, which material, A, B or C, is most suitable for making part **X** of the food warmer cabinet such that the pupils could see and select the food when they place their order? Explain your answer. [1]

_____

_____

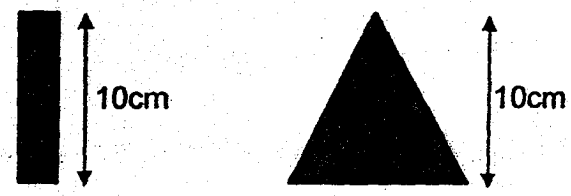
(c) Peter conducted an experiment to find out the size of shadows of different objects formed on the screen. Two opaque objects, **P** and **Q**, were placed at different distance from the torch as seen below.



Continue on next page.

Score	/ 1

Continue from previous page.



Object P Object Q

(i) Draw the shadow of objects, **P** and **Q**, that would be formed on the screen in the box below. [1]

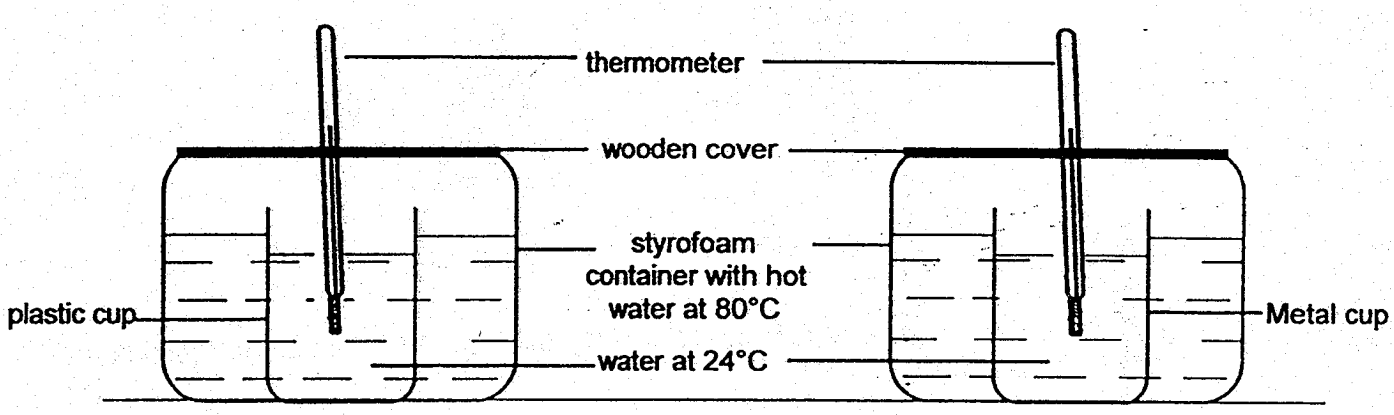
(ii) Without moving the location of objects, **P** and **Q**, suggest one way that Peter could cast a bigger shadow of objects, **P** and **Q**, on the screen. [1]

_____

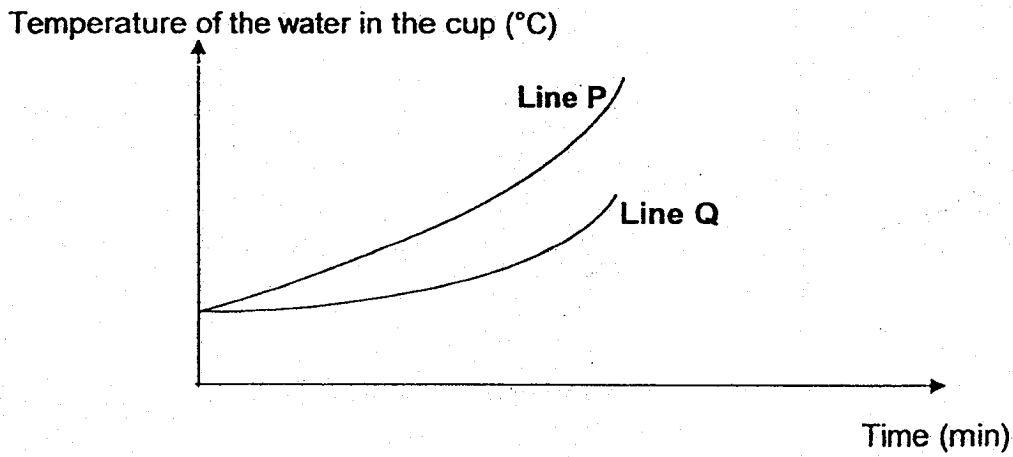
_____

Score	2

36. Sylvia set up the following experiment as shown below. The cups and beakers have the same volume of water in both set-ups.



Sylvia took the temperatures of the water in both cups using a thermometer at every minute interval for 10 minutes and recorded two sets of data. The results are represented in the line graphs below.



(a) State the lines that best represent the temperature of the water in the cups over time in the graph above. [1]

Temperature of the water in plastic cup : Line _____

Temperature of the water in the metal cup : Line _____

Score	
	1

Continue on next page.

Continue from previous page.

(b) Explain the result of the line graph that represented the temperature of the water in the metal cup. [2]

_____

_____

_____

_____

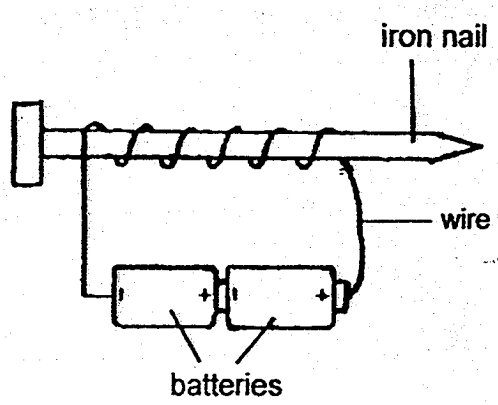
(c) Sylvia had forgotten to remove the thermometers in each cup. She observed that the water in the cups reached the same temperature after 16 hours. Give a reason for her observation. [1]

_____

_____

Score	/ 3

37. Paul made an electromagnet using two batteries, an iron nail and a piece of wire as used below.



He tested the magnetic strength of the electromagnet by placing it near a tray of pins. He then recorded his observations in the table below.

(a) Complete the table below. [1]

Number of turns of the coils around the iron nail	5	10	15	20
Number of pins attracted by the iron nail	1	3	(a) _____	7

(b) He then repeated the experiment using a copper nail.

Complete the table below by ticking (√) the correct boxes accordingly to ensure a fair experiment. [1]

Variables	Kept the same	To be changed
Number of batteries used		
Number of turns of the coils		
Length of wire		
Type of nail used		

(c) Predict the number of pins that the copper nail would be able to attract when Paul made 25 turns of coils around it. Give a reason for your prediction. [2]

_____

_____

Score	/ 4

- End of Paper -

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 4
SCHOOL : RAFFLES GIRLS PRIMARY
SUBJECT : SCIENCE
TERM : SA 2

SECTION A

Q1	4	Q2	2	Q3	3	Q4	3	Q5	2
Q6	4	Q7	4	Q8	4	Q9	3	Q10	1
Q11	1	Q12	1	Q13	2	Q14	3	Q15	3
Q16	1	Q17	3	Q18	3	Q19	1	Q20	4
Q21	3	Q22	4	Q23	4	Q24	3	Q25	2

SECTION B

Q26) a: 3 b: 4

Q27a) leaves

Q27b) food

Q27c) i: Set-up Q and R should be used to carry out a fair test because the amount of water, number of leaves and presence of oil are kept constant in both set-ups to ensure a fair test.

ii: P. It makes more food than Q and R, has more roots than Q to absorb more water.

Q28a) solid

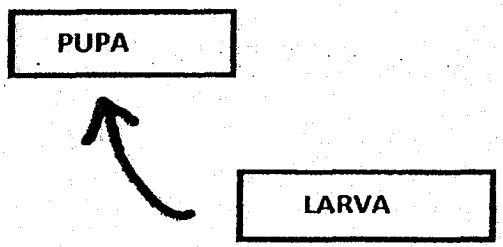
Q28b) Gas

Q29) slowly, poorer

Q30a) more paper clips than

Q30b) magnetic

Q31a)



Q31b)

Surrounding temperature from 20°c to 35°c	**The cooler the temperature is, the more number of days it takes for insect P to turn into an adult.**
Surrounding temperature from 35°c to 40°c	**The number of days taken for the egg to turn into the adult remained the same when the surrounding temperature increased from 35°c to 40°c.**

Q32a) B. It took the least amount of time for the food to be broken down into simpler substances.

Q32b) It took the longest amount of time for the food to be broken down into simpler substances.

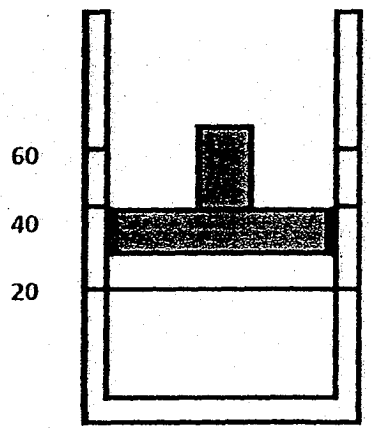
Q32c) Circulatory system.

Q33a) S. It is the strongest material as it could withstand the most number of weights before it started to break. It is also not flexible, meaning that it can hold its shape. This makes it the most suitable material to make the drying rack as the rack will be carrying items that have weight and the rack needs to have a firm shape.

Q33b) It must be waterproof.

Q33c) R. Material R could bend the most easily and could hold 13kg of weights.

Q34a)



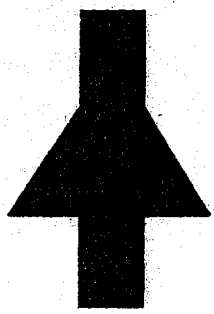
Q34b) Air has no definite volume and can be compressed. However, water has a definite volume and cannot be compressed.

Q34c) The metal plunger gained heat from the hot water and expanded.

Q35a) B > A > C

Q35b) B. It allows the most light to pass through, reflecting less light into the pupils' eyes which enable them to be able to see the food clearer.

Q35c) i:



ii: Move the torch closer to P and Q.

Q36a) Line Q, Line P

Q36b) The metal cup is a better conductor of heat compared to plastic, thus it conducted heat more quickly from the hot water in the Styrofoam container to the water in the metal cup.

Q36c) The cup's water was at room temperature.

Q37a) 5

Q37b)

Number of batteries used	✔	
Number of turns of the coils	✔	
Length of wire	✔	
Type of nail used		✔

Q37c) 0. Copper is a non-magnetic material which cannot be magnetised.

END