AI TONG SCHOOL

2011 SEMESTRAL ASSESSMENT (2)

PRIMARY FIVE SCIENCE

DURATION : 1hr 45 min

DATE: 31 Oct 2011

INSTRUCTIONS

Do not open the booklet until you are told to do so.
Follow all instructions.
Answer all questions.

Name : _____ ( )

Class : Primary 5 _____

Parent's Signature : _____ **Marks :** 100

Date : _____

Section A (30 x 2 marks)

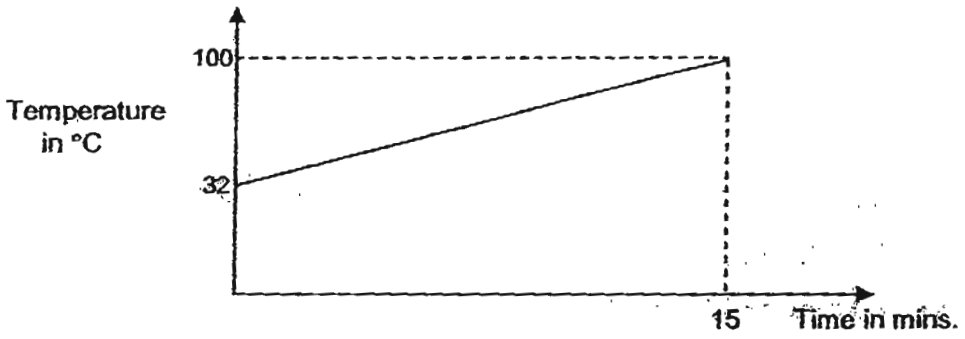
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. When matter gains or loses heat, a change in state can occur. In which of the following changes of state is heat lost?

   A Liquid → Gas
   B Liquid → Solid
   C Solid → Liquid
   D Gas → Liquid

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

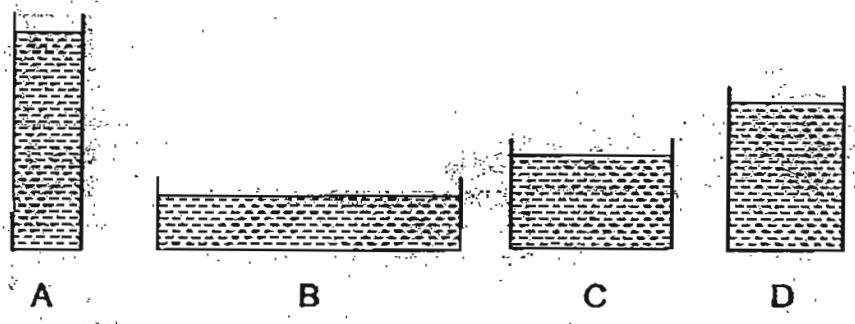
2. The graph below shows the change in temperature of pure water over 15 minutes.



Which one of the following statements is **incorrect**?

(1) Water is boiling at the 15th minute.
(2) There is no change of state taking place.
(3) Water is gaining heat faster than losing heat.
(4) Evaporation takes place before the 15th minute.

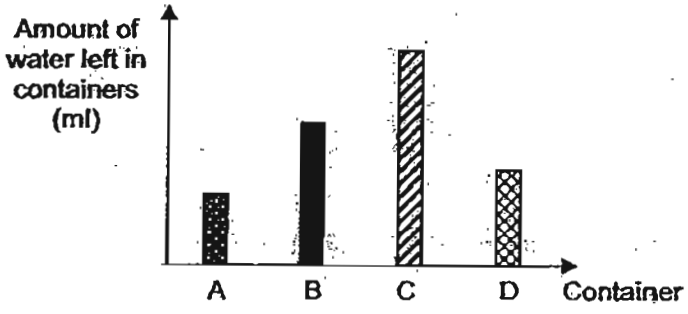
3. Melvin poured 1000 ml of tap water into each container, A, B, C and D, as shown in the diagram below.



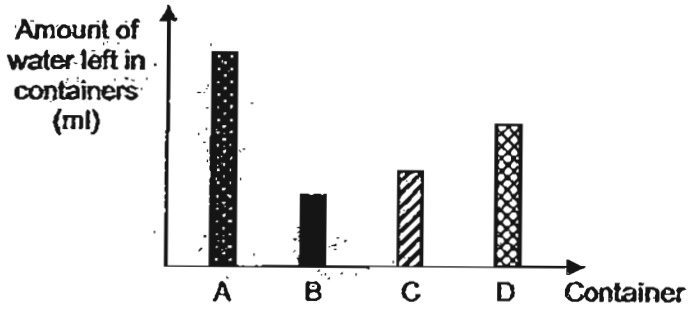
The 4 containers were each placed under a fan moving at the same constant speed for a day. At the end of the day, Melvin measured the amount of water left in each container and plotted a bar graph.

Based on the information above, which one of the following graphs shows the correct results?

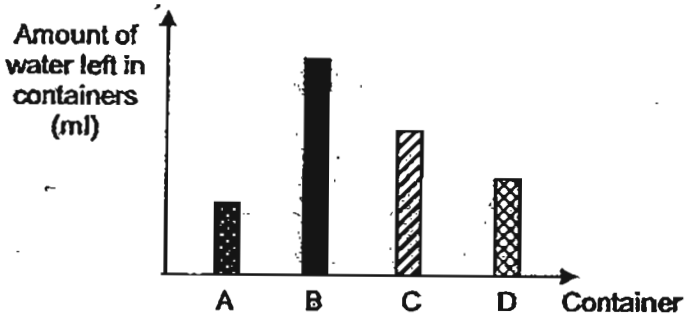
(1)



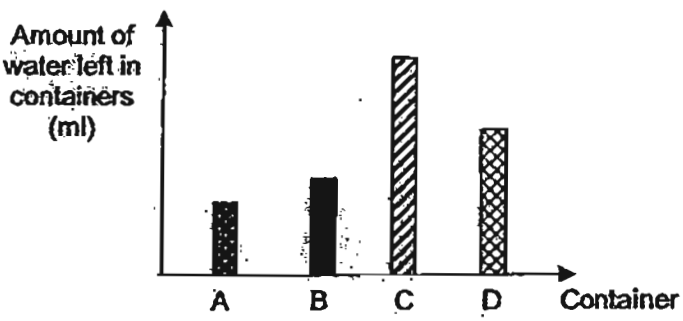
(2)



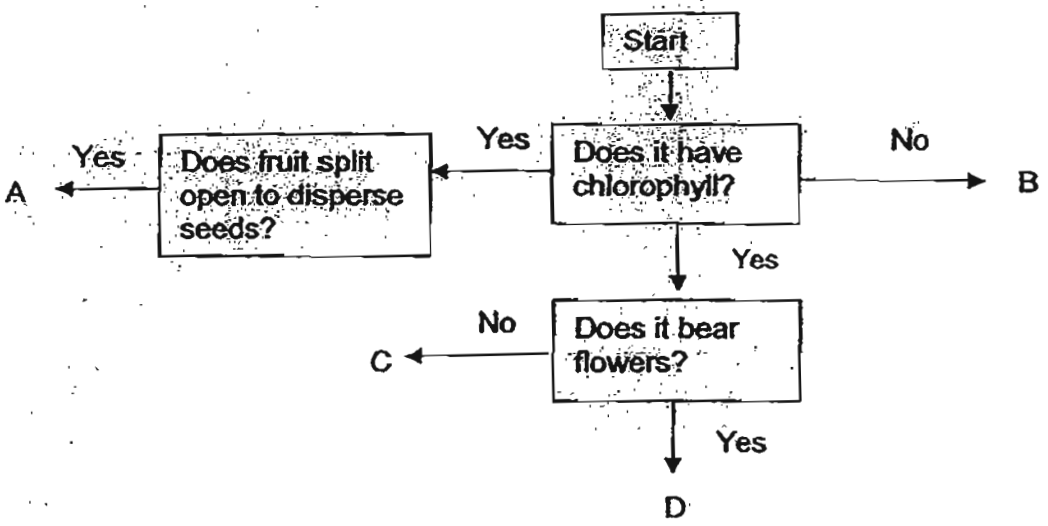
(3)



(4)



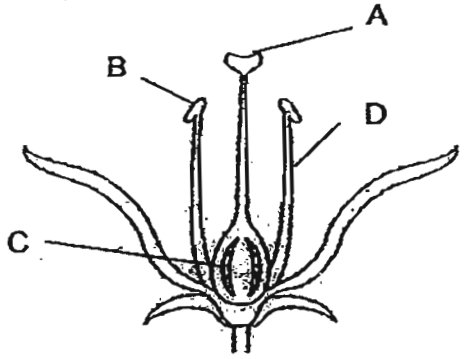
4. The following flowchart shows the characteristics of 4 different organisms.

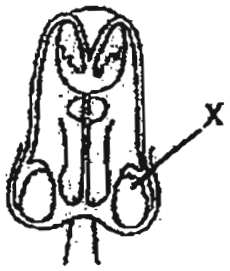


Which are organisms A, B, C and D?

	A	B	C	D
(1)	balsam	bracket fungi	staghorn fern	lady's finger
(2)	pong pong	mushroom	angsana	tomato
(3)	angsana	moss	tomato	balsam
(4)	African tulip	bracket fungi	pong pong	tomato

5. The diagrams below show parts of the reproductive systems of a flower and of a man.

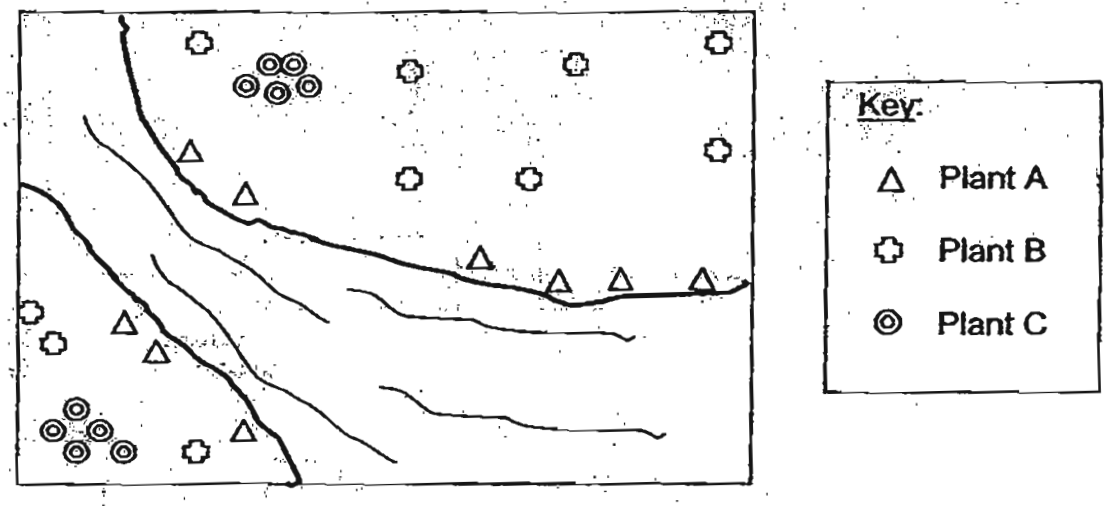




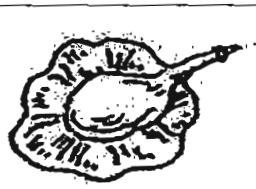
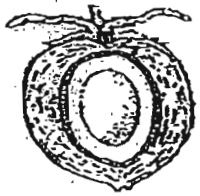
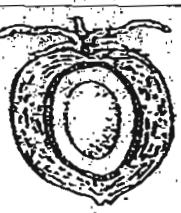
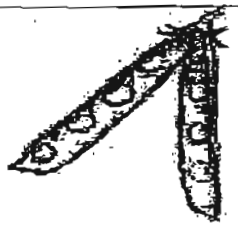
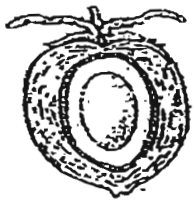
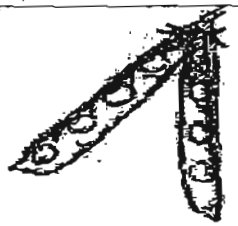
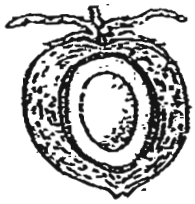
Based on the diagrams above, which part of the flower has a similar function as X?

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

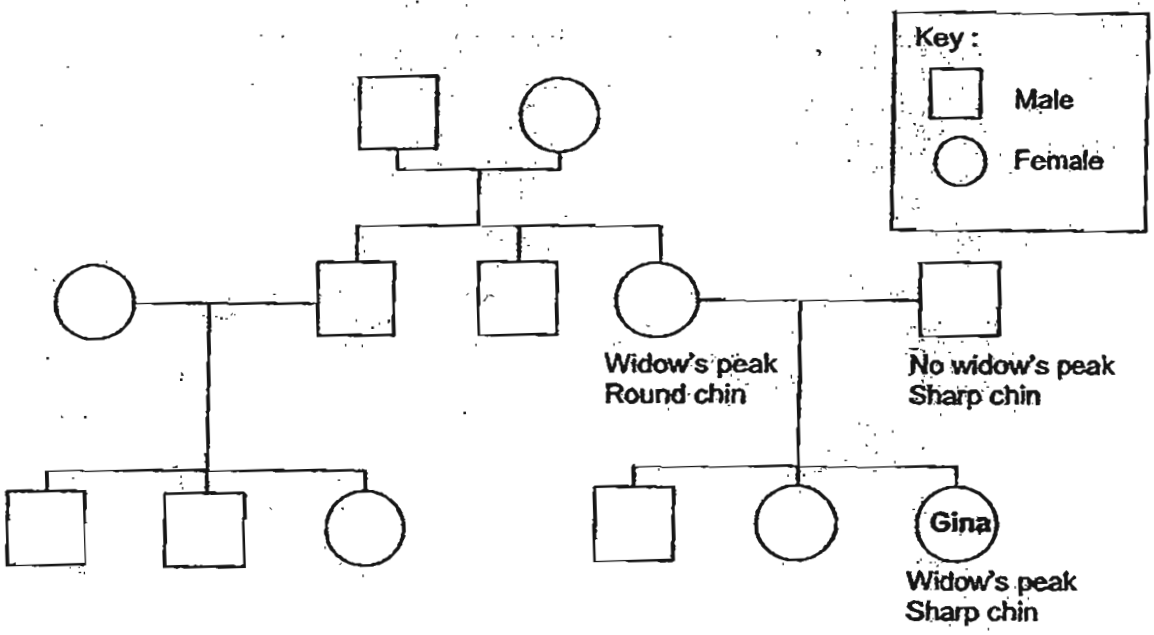
6. The diagram below shows the location of 3 plants, A, B and C, near a river mouth.



Which of the following correctly matches the plants and their seeds?

	Plant A	Plant B	Plant C
(1)			
(2)			
(3)			
(4)			

7. The diagram below shows Gina's family tree.



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

A Gina has 3 cousins.

B Gina has two uncles and two aunts.

C There are three generations shown in the family tree.

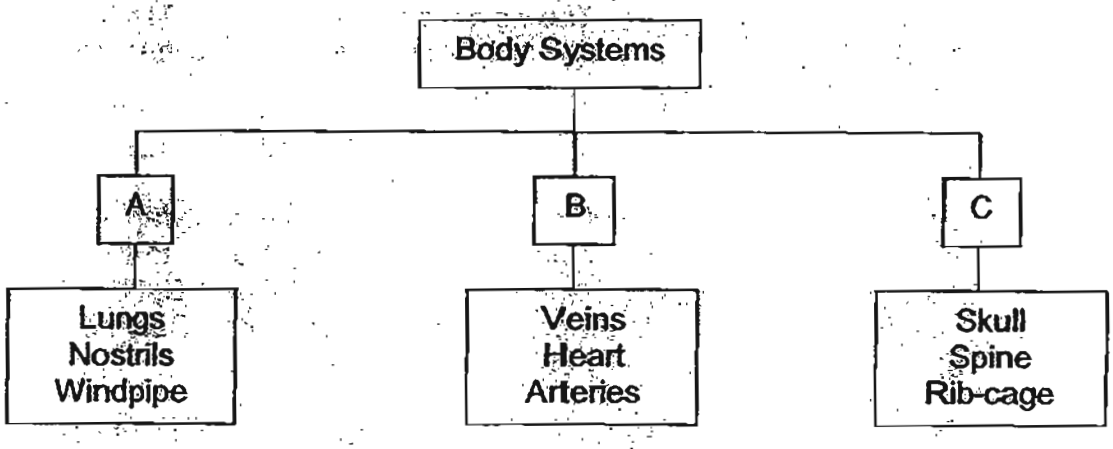
D Gina's father has passed on the trait of sharp chin to her.

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

8. Which one of the following shows the correct order by which carbon dioxide is transported round our body?

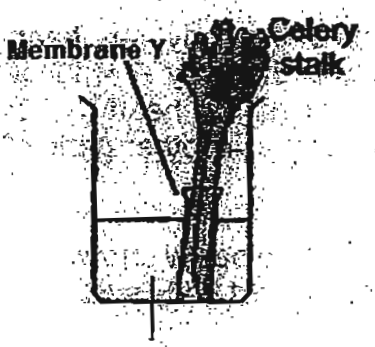
(1) other parts of the body → heart → lungs → nose
(2) other parts of the body → lungs → heart → nose
(3) nose → lungs → heart → other parts of the body
(4) heart → lungs → other parts of the body → nose

9. The classification chart below shows some body systems. Match the parts of the body to the correct body systems, A, B and C.



	A	B	C
(1)	Circulatory	Respiratory	Skeletal
(2)	Respiratory	Skeletal	Circulatory
(3)	Skeletal	Respiratory	Circulatory
(4)	Respiratory	Circulatory	Skeletal

10. Gary set up an experiment as shown below:

 Tap water coloured purple with Substance P	 Tap water coloured purple with Substance P	 Tap water coloured purple with Substance P
Set-up A	**Set-up B**	**Set-up C**

The base of the celery stalks in Set-up A and B were wrapped with membrane X and Y respectively before placing them into a beaker of tap water with purple pigment added. The celery stalks in Set-up C was simply placed in tap water with purple pigment. 3 days later, Gary noted his observation of the 3 celery stalks in the table below.

	Set-up A	**Set-up B**	**Set-up C**
Observations	Leaves are purple and firm.	Leaves are yellowish and floppy.	Leaves are purple and firm.

Which of the following statement/s can be concluded from Gary's experiment?

A Water can pass through Membrane X.
B Water can pass through Membrane Y.
C Purple pigment can pass through Membrane X but not Membrane Y.
D The leaves of the celery stalk in Set-up B will be firm if the base of the celery stalk was not wrapped with Membrane Y.

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

11. The picture below shows a boy blowing a balloon.

Which of the following correctly describes what happens to his ribs, diaphragm and chest when he blows into the balloon once?

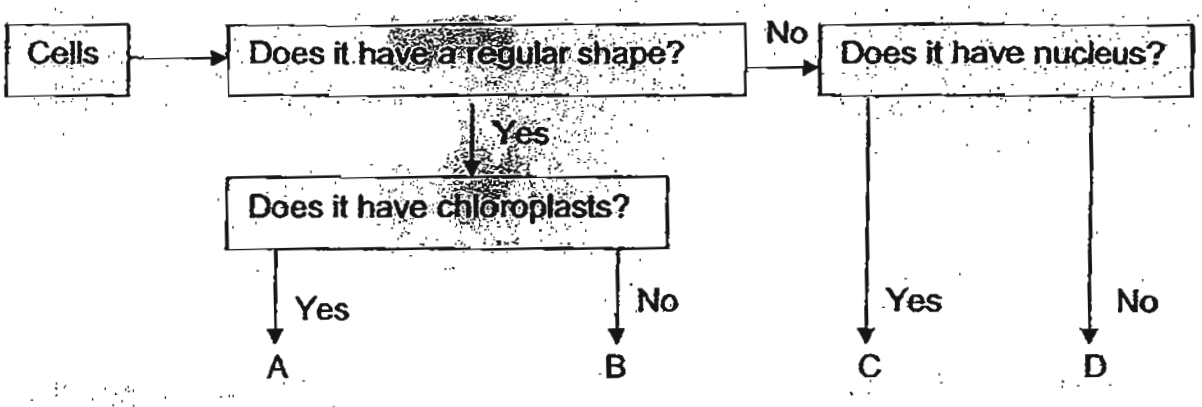
	Ribs	Diaphragm	Chest
(1)	Move in and downwards	Move downwards	Bigger
(2)	Move in and downwards	Move upwards	Smaller
(3)	Move out and upwards	Move downwards	Bigger
(4)	Move out and upwards	Move upwards	Smaller

12. What will happen to a plant cell if the nucleus is not functioning properly?

A The plant cell will not be able to divide.
B The activities of the cell will not be well controlled.
C There will be no control over substances moving in and out of the cell.

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

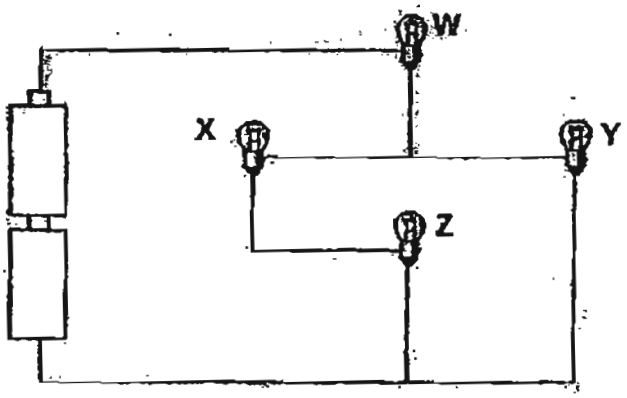
13. Study the flowchart below.



What is A, B, C and D?

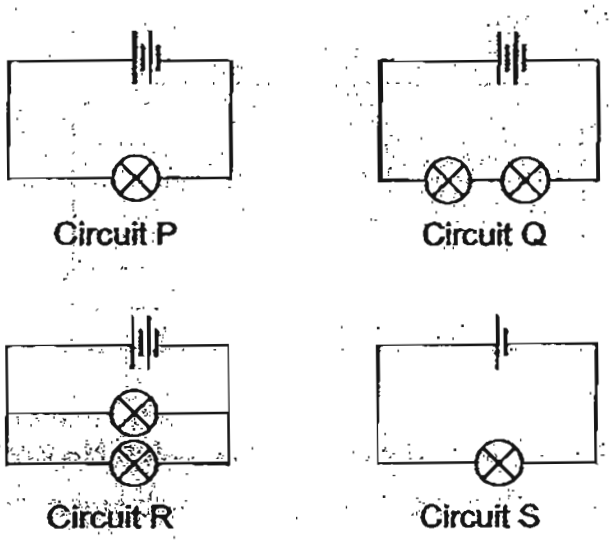
	A	B	C	D
(1)	Leaf cell	Onion skin cell	Red blood cell	Cheek cell
(2)	Guard cell	Leaf cell	Egg cell	Red blood cell
(3)	Leaf cell	Guard cell	Red blood cell	White blood cell
(4)	Guard cell	Root cell	Sperm cell	Red blood cell

14. In the set-up below, which bulb will still light up when bulb X fuses?



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

15. Study the four circuits, P, Q, R and S, as shown below.



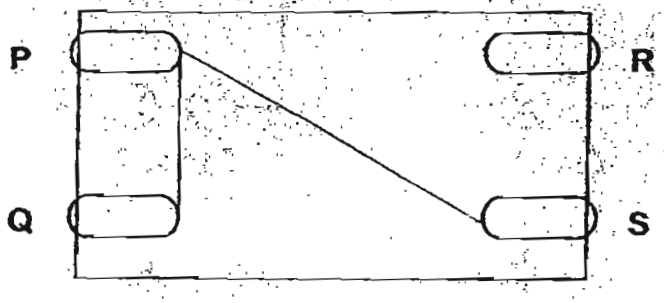
The bulbs and the batteries in the four circuits are identical. All the bulbs light up when the circuits are closed.

Which one of the following statements about the brightness of the bulb(s) is **correct**?

correct

(1) The bulb in Circuit S is as bright as the bulb in Circuit P.
(2) Each bulb in Circuit Q is as bright as each bulb in Circuit R.
(3) The bulb in Circuit P is brighter than each bulb in Circuit Q.
(4) The 2 bulbs in Circuit R will be dimmer than the bulb in Circuit S.

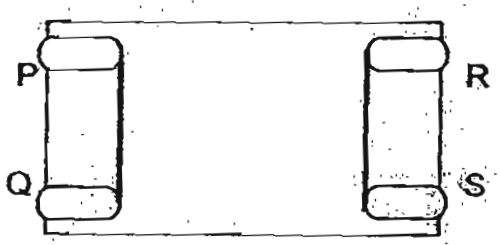
16. The diagram below shows a circuit card. The wires connecting the clips are hidden from view.



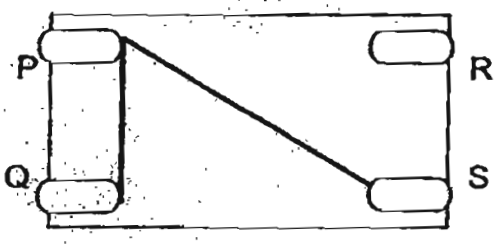
John tested the circuit card with a circuit tester. He found the following pairs of clips **PQ, PS** and **QS** caused the bulb in the circuit tester to light up.

Which one of the following represents the correct circuit card?

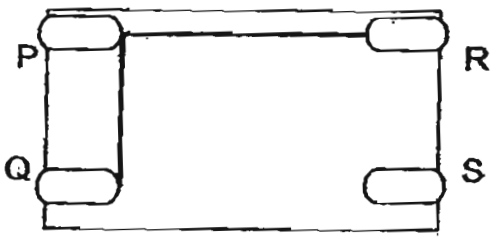
(1)



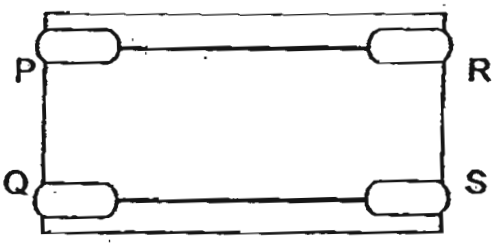
(2)



(3)



(4)



17. Roy kept his guppies in two tanks A and B under different conditions. The table below shows the conditions that the guppies were kept in.

	Amount of water	Amount of food	Number of guppies	Number of water plants
Tank A	4 litres	15g a day	5	4
Tank B	4 litres	15g a day	5	0

After one week, Roy found that the guppies in Tank A were swimming at the bottom of the tank while the guppies in Tank B were swimming near the water surface. What could be the reason for the above difference in the observation made?

(1) There was not enough food in Tank B.
(2) There was not enough dissolved oxygen in Tank B.
(3) There were no water plants for guppies to hide in Tank B.
(4) The water plants provided shelter for the guppies in Tank A.

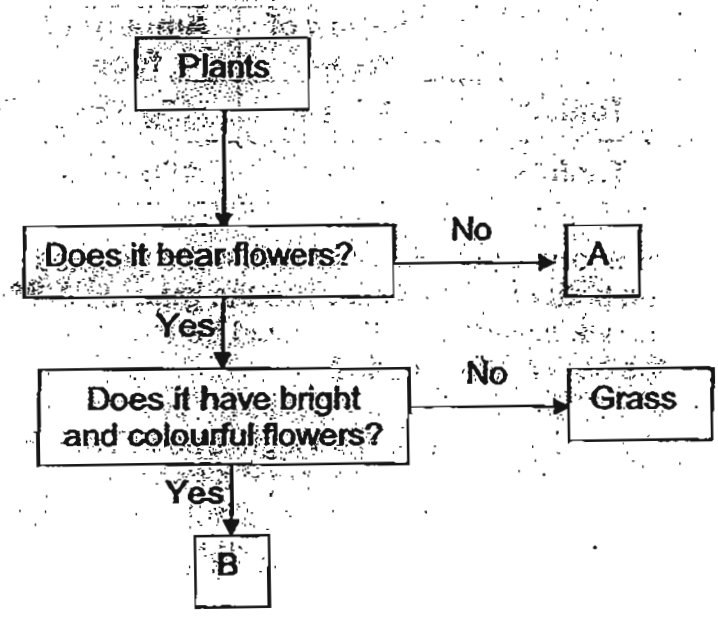
18. Four children, Alan, ~~Ben~~ Bob, Carl and David, each stated a characteristic of an insect.

Alan: All insects have wings.
Bob: All insects reproduce by laying eggs.
Carl: All insects have 3 body parts.
David: All insects have 6 legs.

Which of the four children has/have stated the characteristic(s) which make an insect different from the other animal groups?

(1) Alan only.
(2) Carl and David only.
(3) Bob, Carl and David only.
(4) All four children.

19. The flow chart below shows the characteristics of some organisms. Study it carefully and answer the question that follows.



Which statement(s) best describe(s) Plant A and B?

	Plant A	Plant B
A	It reproduces by spores.	It reproduces by seeds.
B	It is not a green plant.	It is a green plant.
C	It will not bear fruit.	It will bear fruit.
D	It is pollinated by wind.	It is pollinated by insects.

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

20. In which one of the following situations will mould most likely be found first after a few days?

(1)

Plain bread kept in refrigerator at 4°

(2)

Toasted bread kept in refrigerator at 4°

(3)

Plain bread kept in the open at room temperature.

(4)

Toasted bread kept in the open at room temperature.

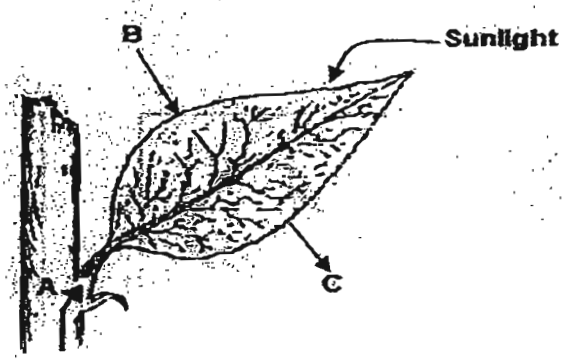
21. The following table shows the properties of materials P and Q. A tick or cross represents the presence or absence of the properties respectively.

Properties	P	Q
It is a natural product.	✓	x
It can be stretched.	✓	x
It is a good conductor of heat.	x	x
It allows light to pass through.	x	✓

Which of the following materials are P and Q most likely to be?

	P	Q
(1)	Rubber	Clear glass
(2)	Clear glass	Silk
(3)	Rubber	Mirror
(4)	Wood	Mirror

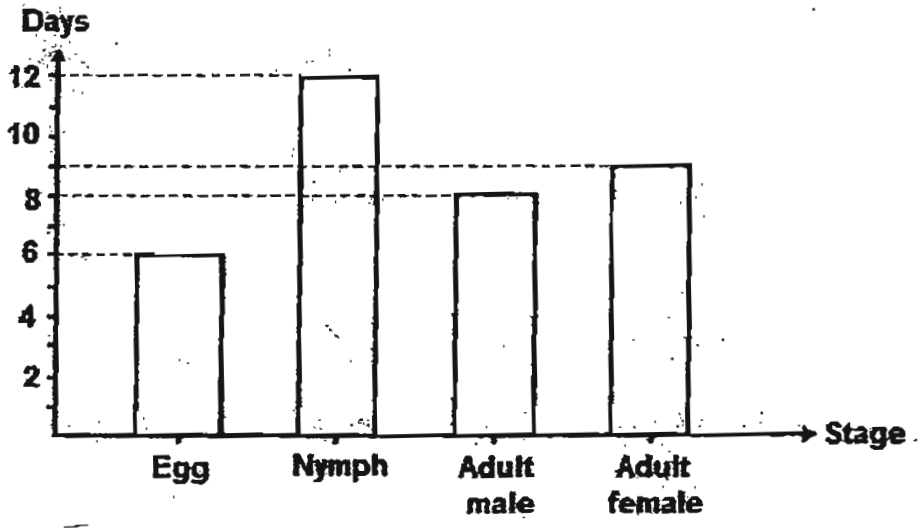
22. The diagram below shows the movement of three substances in and out of a leaf.



Which of the following substances do arrows, A, B and C, best represent?

	A	B	C
(1)	Sugar	Oxygen	Carbon dioxide
(2)	Water	Oxygen	Sugar
(3)	Sugar	Carbon dioxide	Oxygen
(4)	Water	Carbon dioxide	Oxygen

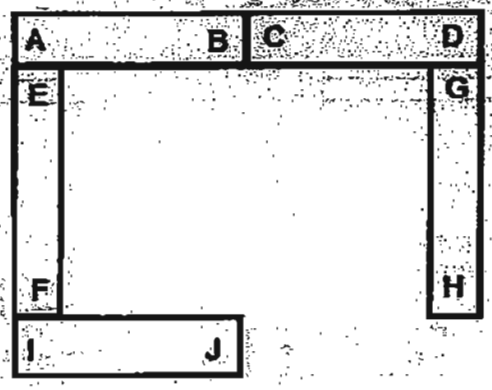
23. The graph below shows the number of days each stage in the life cycle of an insect lasts.



How many days would the insect take to become an adult after the egg is laid?

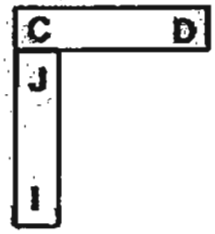
(1) 6 days
(2) 12 days
(3) 18 days
(4) 26 days

24. Lawrence was given five magnets. He marked their ends with letters A to J and joined them together as shown below.



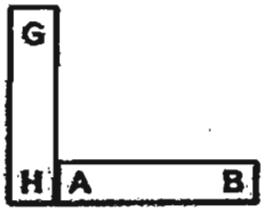
Lawrence then made use of two magnets at a time and rearranged them. Which one of the following diagrams shows a possible arrangement of two of the magnets?

(1)

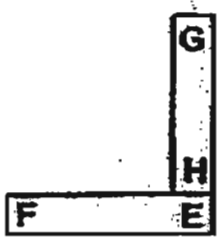


(2)

(3)



(4)



25. A magnet was brought near Rod Q which was tied to a string and Rod Q moved upwards to the position shown in Diagram 1. A flame was then placed at one end of Rod Q as shown in Diagram 2. After a while, Rod Q started to move towards the magnet.

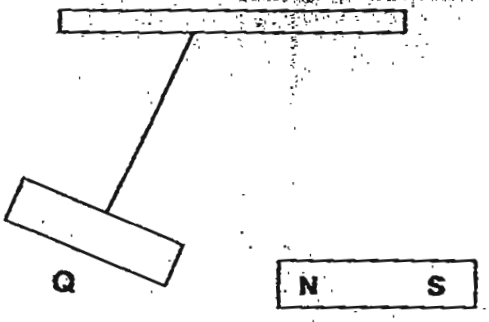


Diagram 1

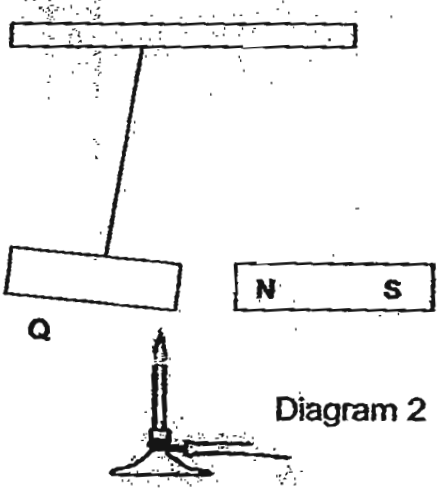


Diagram 2

Which of the following caused Rod Q to move towards the magnet?

A Rod Q was pulled by gravity.
B Rod Q had lost some of its magnetism.
C Rod Q gained more magnetic force due to the flame.

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

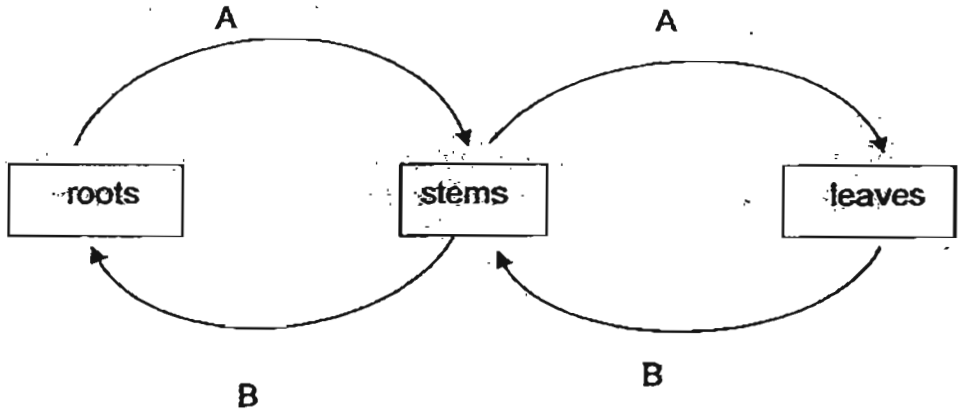
26. The table below shows the freezing point and boiling point of four different substances, P, Q, R and S.

Substance	Freezing Point (°C)	Boiling Point (°C)
P	15	112
Q	-10	40
R	40	180
S	-110	-35

Which of the following correctly represents the states of each of the substances, P, Q, R and S, respectively at 30°C?

	States of substances at 30°C			
	P	Q	R	S
(1)	Liquid	Liquid	Solid	Liquid
(2)	Solid	Gas	Liquid	Gas
(3)	Gas	Solid	Liquid	Solid
(4)	Liquid	Liquid	Solid	Gas

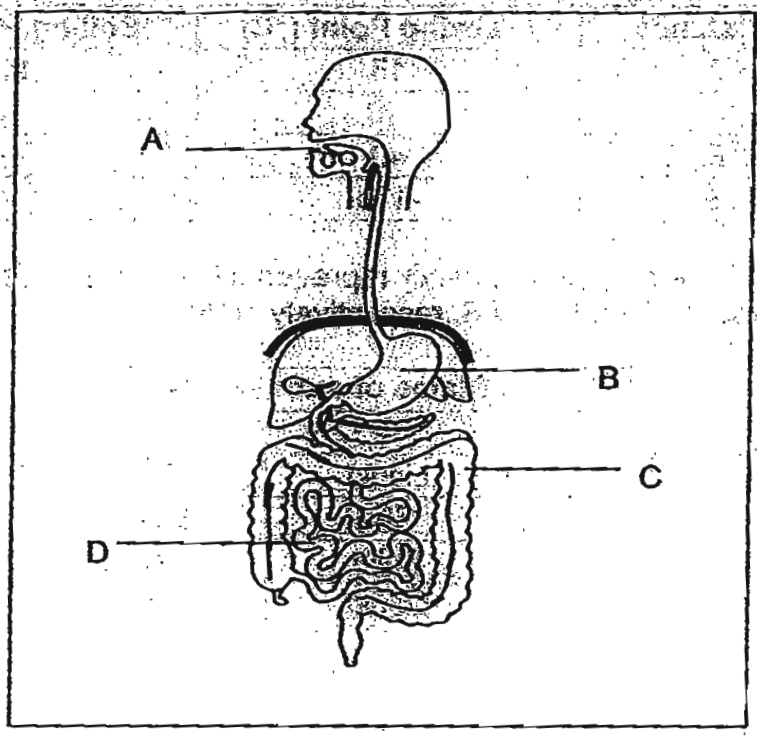
27. The diagram below shows how substances, A and B, are transported in a plant.



Based on the diagram, what are substances A and B?

	Substance A	Substance B
(1)	Water	Mineral salts
(2)	Mineral Salts	Sugar
(3)	Sugar	Mineral Salts
(4)	Starch	Water

28. In which part of the digestive system is digested food absorbed into the bloodstream?



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

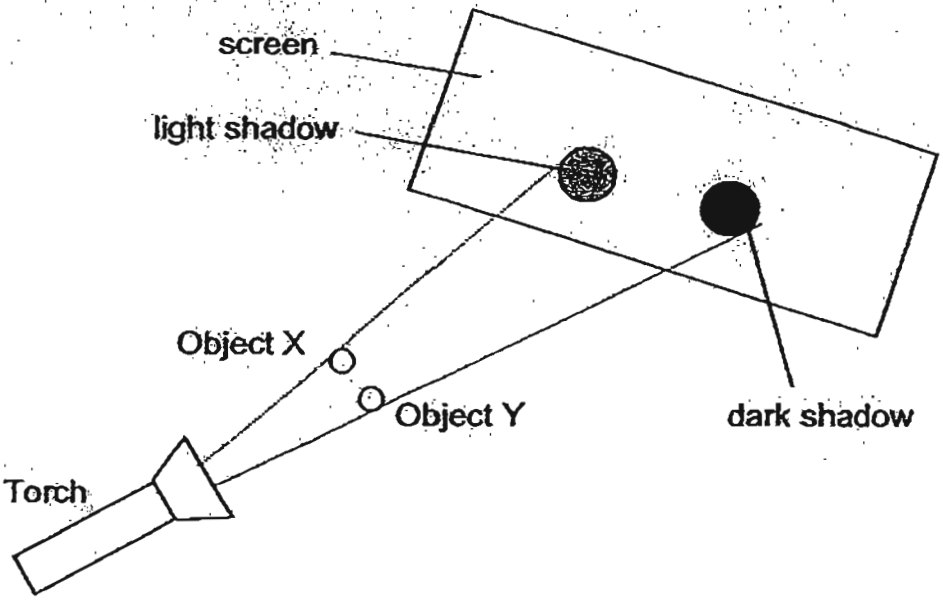
29. Mei Ling poured an equal amount of tea into 3 cups, each made of different materials, X, Y and Z. She then recorded the temperature of the tea in each cup over a period of time in a table as shown below.

Time (min)	Temperature of tea (°C)		
	X	Y	Z
0	90	90	90
10	65	75	56
20	48	64	38
30	35	54	35

Which cup(s) would be the best for keeping a drink warm for the longest period of time?

(1) Cup X
(2) Cup Y
(3) Cup Z
(4) Cups X and Z

30. Adam shone a beam of light from a torch at two objects, X and Y, as shown in the diagram below.



The shadow formed by object X was much lighter than the one formed by object Y.

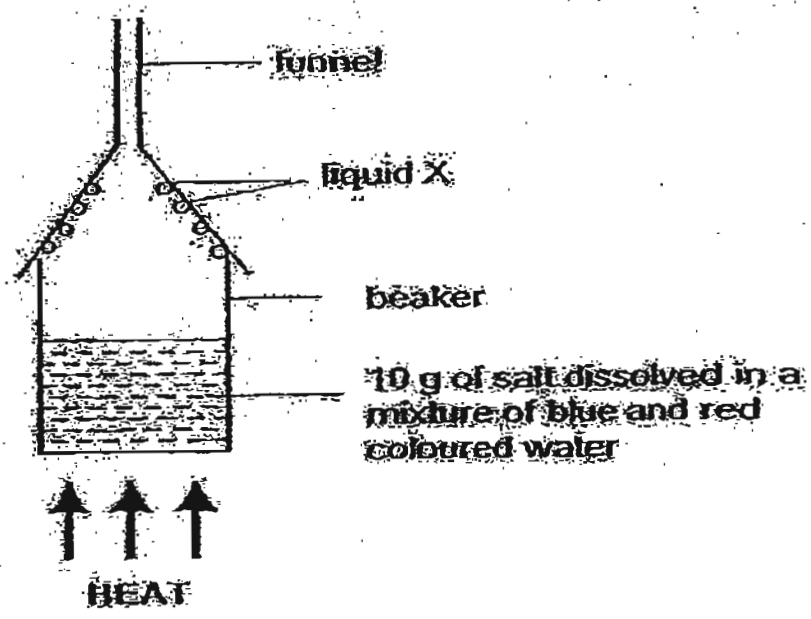
Which of the following materials are X and Y likely to be made of?

	Object X	Object Y
(1)	iron	glass
(2)	mirror	paper
(3)	frosted glass	copper
(4)	styrofoam	tracing paper

Name : _____ ( )
Class : P 5( )

Section B: 40 marks
Read the questions carefully and write down your answers in the spaces provided.

31. 250ml of blue coloured water was mixed with 250ml of red coloured water. 10g of common salt was then dissolved into the mixture. The mixture was then heated as shown below.



Droplets of liquid X were formed on the sides of the funnel during the heating.

(a) How was this liquid X formed? [2]

_____

_____

_____

_____

(b) What is the colour and taste of this liquid X? [1]

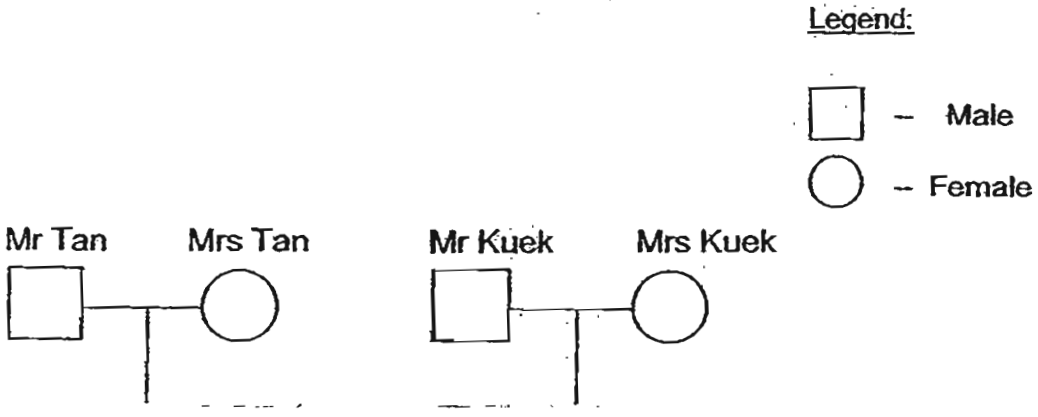
_____

3

32. Study the information given below and construct a family tree based on the given information.

- Mr and Mrs Tan have a son named Tony and a daughter named Trina.
- Mr and Mrs Kuek have a son named Kenneth and a daughter named Kimberly.
- Kenneth and Trina are married to each other and they have a son named Amos and a daughter named Brenda.

Part of the family tree has been drawn for you. Make use of the legend and name all the members in the family tree. [3]



3

33. Shaun conducted an experiment to find out the conditions required for the germination of seeds. He used four similar seeds, P, Q, R and S, in his experiment. The table below shows the physical conditions that were provided for each of the seeds.

Seed	Physical Conditions			
	Air	Water	Light	Temperature (°C)
P	Absent	Present	Present	50
Q	Present	Absent	Present	0
R	Present	Present	Absent	32
S	Absent	Present	Absent	25

(a) Shaun was told that his test was not a fair one. What should he have done to ensure a fair test? [1]

(b) After a few days, Shaun observed that one of the seeds germinated. Which seed, P, Q, R or S, germinated? [1]

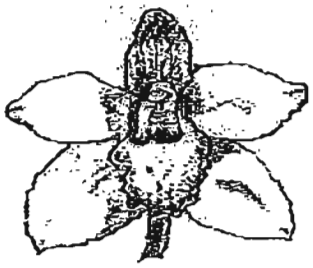
(c) In his experiment, Shaun placed his seeds on cotton wool instead of garden soil. Explain why there was no need to use garden soil for his experiment. [1]

3

34. A group of scientists discovered a new species of a plant which they named 'Roisen'. They are trying to find out the way it pollinates and disperses its seeds. They analysed the structure of the flower and the seed. These are what they found out:

- The flowers are small, colourful and grow in bunches.
- The flowers have short filaments and sticky pollen grains.
- There are many small and hard seeds in each fruit.
- The fruit is juicy and sweet.

The diagrams below are not drawn to scale.



A flower from the plant

A seed from the plant

(a) Based on the information given, what is the most likely way the seeds are dispersed? [1]

_____

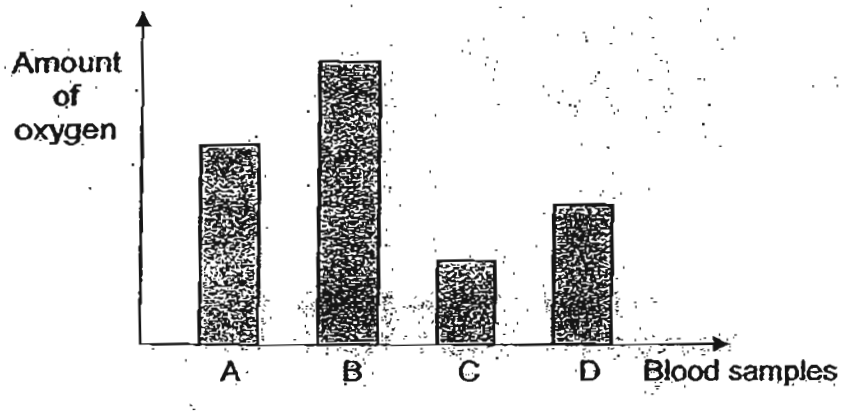
(b) Explain your answer given in (a). [2]

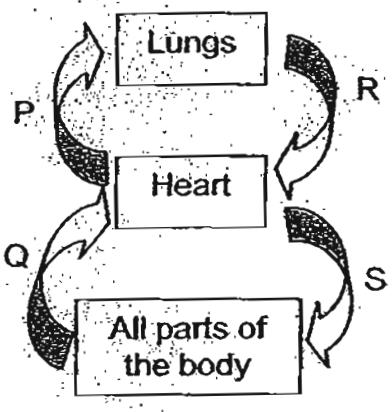
_____

_____

/3

35. The bar chart below shows the amount of oxygen in four blood samples taken from blood vessels, P, Q, R and S, in the human circulatory system.





(a) Based on the diagrams above, blood sample C is most likely taken from which blood vessel? Why do you think so? [1]

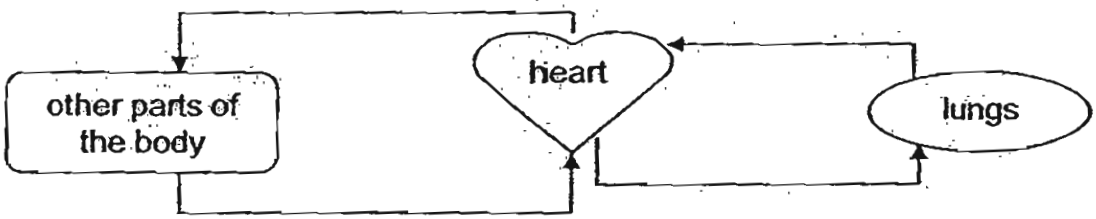
(b) Explain why blood is pumped faster to the other parts of the body when we exercise. [2]

3

36. The diagram below shows the movement of water in a plant.

(a) What happens to the water after it reaches the leaves? [1]

The arrows below show the flow of blood in the human body.



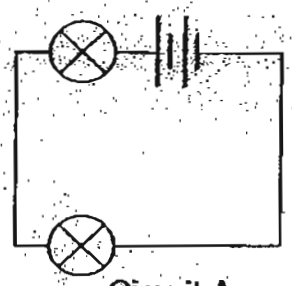
(b) What is the difference between the direction of movement of water in plants and the direction of movement of blood in the human body? [2]

37. The statements below are about the human circulatory system. Indicate whether each statement is true with the letter T or false with the letter F. [2]

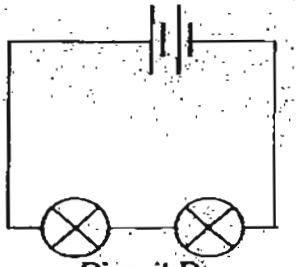
	Statements	True / False
(a)	The white blood cells help to fight germs.	
(b)	The main function of red blood cells is to transport oxygen and digested food.	
(c)	The platelets help blood to clot when an injury occurs.	
(d)	The veins carry oxygen-rich blood from the heart to the other parts of the body.	

5

38. Natalie wanted to find out whether the arrangement of bulbs would affect the brightness of the bulbs.
Using the same type of components, she set up 2 arrangements, Circuit A and Circuit B, as shown in the circuit diagrams below.



Circuit A



Circuit B

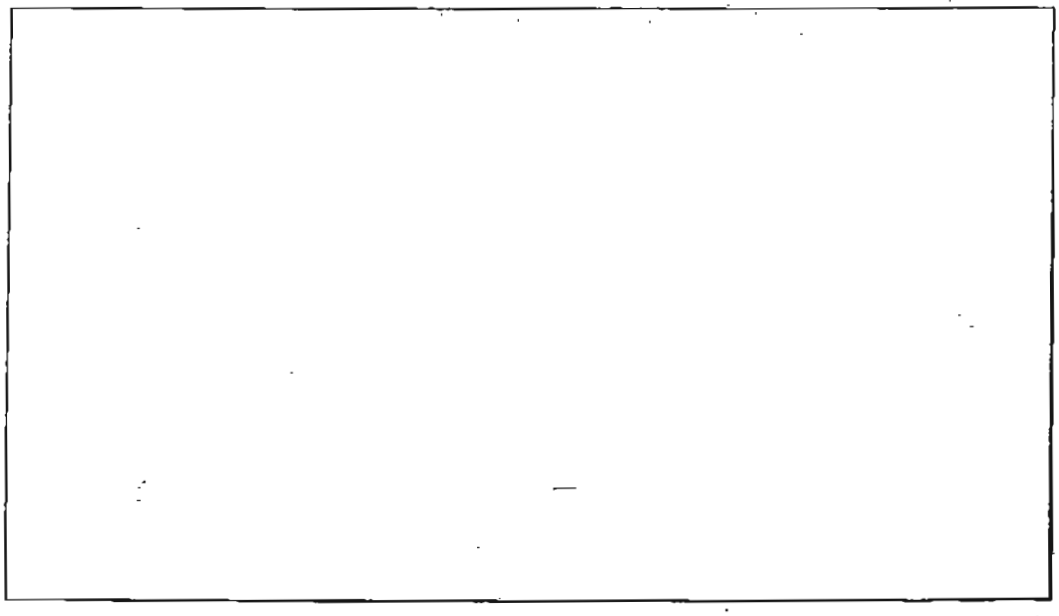
Natalie concluded that the arrangement of bulbs does not affect the brightness of the bulbs.

(a) Based on the diagrams above, give a reason why Natalie made a wrong conclusion. [1]

_____

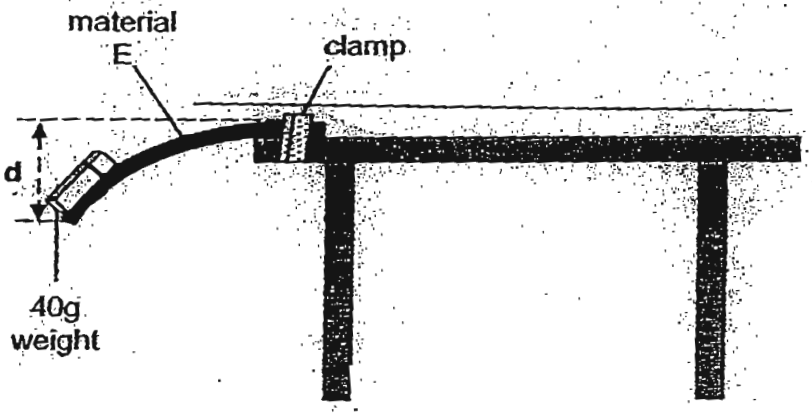
_____

(b) Draw a circuit diagram in the space below to show what the circuit arrangement in A should be for Natalie to conduct a fair test. [2]



3

39 Ali conducted an investigation as shown in the diagram below.



He clamped a strip of material E at the edge of the table before taping a 40g weight to the end of the strip. As a result, material E bent as shown above. He measured the distance d, which was the extent to which the material bent. Using the same 40g weight, he repeated his investigation with material, F, G and H and recorded his results in the table below.

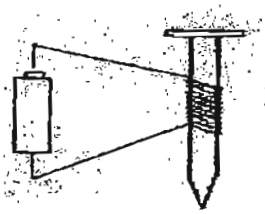
Material	Distance d (cm)
E	4
F	2
G	7
H	12

(a) What property of the materials was Ali investigating? [1]

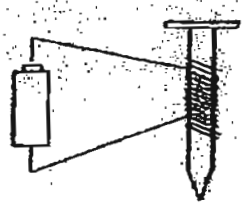
(b) Name a variable which Ali should keep constant for a fair comparison. [1]

2

40. Fatimah set up an experiment to make an electromagnet using iron nails. She wanted to find out if the number of coils of a wire around an iron nail would affect the strength of an electromagnet.



10 coils



20 coils

(a) What should Fatimah do to find out the strength of her electromagnets? [2]

_____

_____

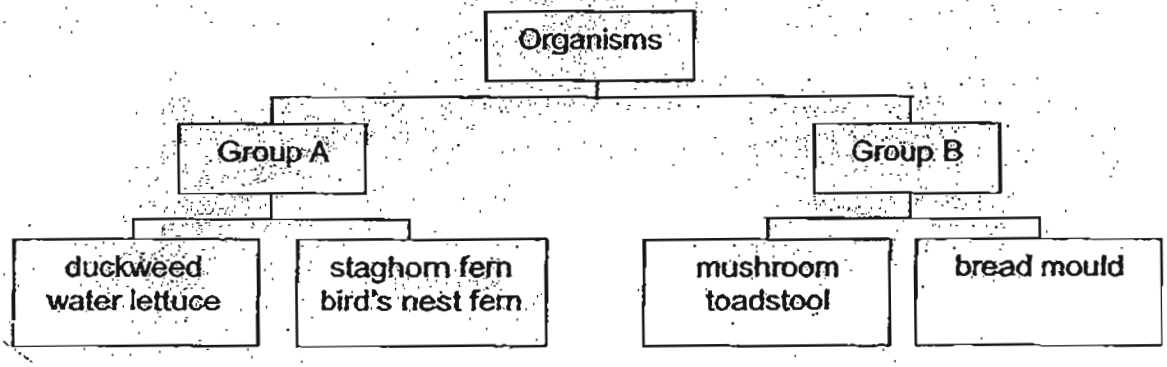
(b) If Fatimah wanted to find out whether the number of batteries affects the strength of an electromagnet, what changes should she make to the experiment above? [1]

_____

_____

3

41. Nick found some organisms and classified them as shown below.



(a) Give a suitable heading for Group A and B according to the way the organisms are grouped. [1]

Group A: _____

Group B: _____

(b) Nick placed the organism, moss, in the same group as bread mould. Is he correct? Explain. [1]

_____

_____

2

42. Sue Lin wanted to find out how the thickness of a material can affect the amount of light passing through it. She decided to carry out her investigation in a dark room. At the start of her investigation, she used the light sensor to record the amount of light given out by the light source. The light sensor recorded a reading of 1000 units.
Then she placed Material Z between the light source and the light sensor as shown below.

The amount of light passing through Material Z was captured by the light sensor. She then repeated her investigation using Material Z of different thickness and recorded the amount of light passing through it in the table below.

Thickness of Material Z (mm)	Amount of light captured (units)
2	600
4	450
8	250
16	50

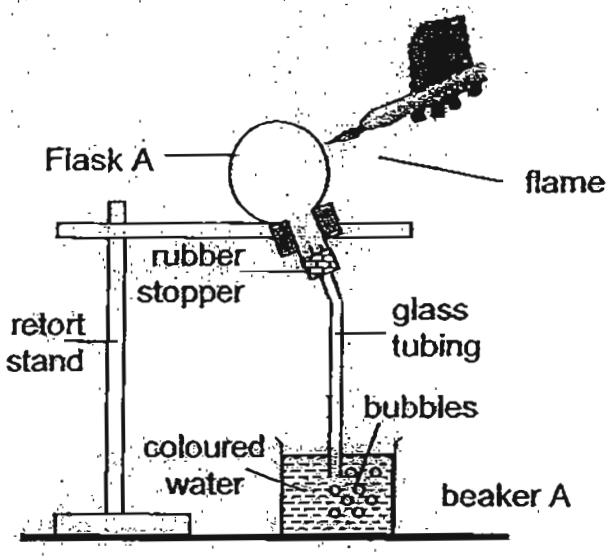
(a) State a property of Material Z. [1]

(b) State the relationship between the thickness of Material Z and the amount of light passing through it. [1]

(c) Explain why the experiment needs to be conducted in a dark room? [1]

3

43. Mike carried out an experiment as shown in the diagram below. He gently heated Flask A with a flame. After some time, he observed bubbles appearing in the coloured water.



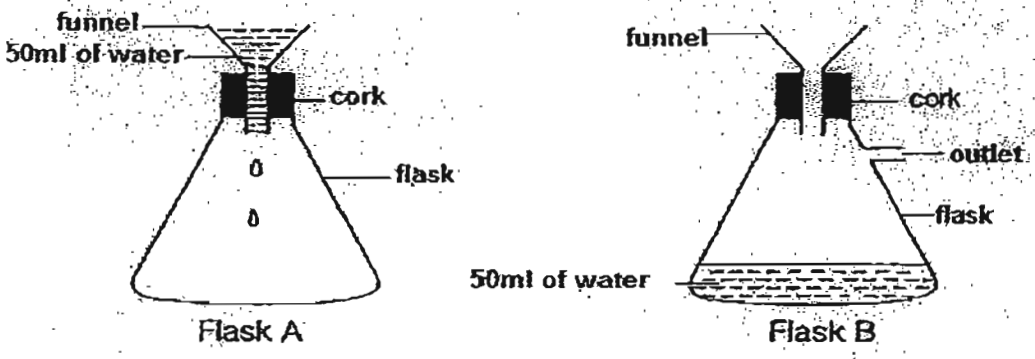
(a) Explain why bubbles were formed in the coloured water. [2]

(b) Mike removed the flame and allowed the flask to cool down. What would he observe about the water in Beaker A? [1]

(c) Explain your answer in (b). [1]

4

44. Janice poured 50 ml of water into the funnels of two similar flasks, A and B, as shown in the diagram below.



She used a stop-watch to measure the time taken for the 50 ml of water to flow through the funnel into each flask. She noticed that the water flowed into Flask B very quickly, unlike in Flask A. She repeated the experiment a few times.

(a) Why did she repeat the experiment a few times? [1]

(b) Give a reason why water can flow into flask B so quickly. [1]

(c) Based on your answer in (b), how can she change the existing set-up of Flask A so that the flask would fill up more quickly? [1]

3

ANSWER SHEET

EXAM PAPER 2011

SCHOOL : AITONG
SUBJECT : PRIMARY 5 SCIENCE

TERM : SA2

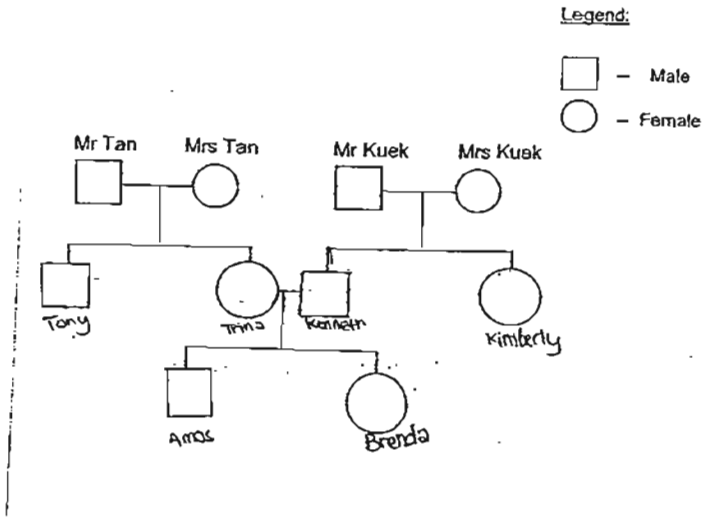
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
4	2	2	1	2	3	3	1	4	4	2	2	4	1	3	2	2

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

31)a)When the coloured water was heated the water will soon be boiled, then, it evaporated into water vapour. When the hot water vapour came into contact with the cooler surface of the funnel lost heat, it condensed into tiny water droplets of liquid X.

b)Liquid X will be colourless and tasteless.

32)



33)a)He should have kept only one variable unchanged.

b)Seed R.

c)Germination does not require mineral salts hence garden soil was not needed.

34)a)The seeds are most likely dispersed by animals.

b)The animal eat the juicy and sweet fruit and as the seed is hard, the animals will spit out the seed helping to disperse the seed.

35)a)Blood in P is going from the heart to lungs, hence it must have the least amount oxygen as oxygen is used by other parts of the body.

b)More energy is needed during exercise. Cell must respire faster to release more energy. Heart must pump faster to transport digested foos and oxygen to all cells more quickly.

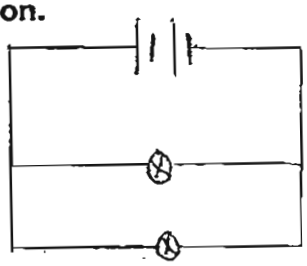
36)a)It will be used for photosynthesis to make food for the plant.

b)Water moves in one way in plants while blood circulates through out the human body.

37)a)T b)F c)T d)F

38)a)She had arranged both bulbs Circuit A and B is series so she had made a wrong conclusion.

b)



39)a)He was investigating the flexibility of the materials.

b)He should keep the size of the materials the same.

40)a)She should place the iron magnets above some paper clips and see which iron nails could attract the most number of paper clips and the more pins attracted, the stronger the electromagnet.

41)a)A: Plants B: Fungi

b)No. Moss can make its own food unlike break mould which feed on other organisms.

42)a)It allowed some light to pass through so it is translucent.

b)The thicker Material Z is the lesser light is passing.

c)This is no ensure that there are no other light source besides the one in the experiment captured by the light sensor.

43)a)As the flask was heated, the air in it gained heat and expanded causing it to be forced out of the glass tubing and into the coloured water as air bubbles.

b)The water in Beaker A will travel up through the glass tubing and bubbles will gradually decreases until there is no more bubbles.

c)The air in the flask cooks down and contracts. The water in the beaker then moves up to take up space previously occupied.

44)a)It was to provide a more accurate and reliable result as it reduces the chances of human error.

b)The air in Flask B originally took up the space but as the water was added and an outlet of the flask. The enabled water to enter occupy its space.

c)She could poke a hole through the cork so that air can escape from there.