



AI TONG SCHOOL

**2011 SEMESTRAL ASSESSMENT (1)
PRIMARY SIX SCIENCE**

DURATION: 1hr 45 min

DATE: 13 May 2011

INSTRUCTIONS

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

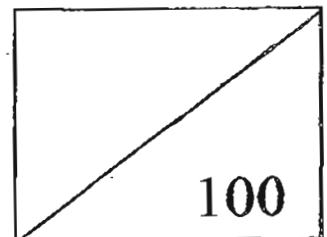
Name: _____ ()

Class : Primary 6 _____

Parent's Signature: _____

MARKS:

Date : _____

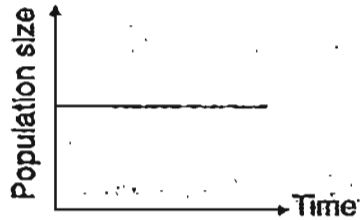


Section A (30 x 2 marks)

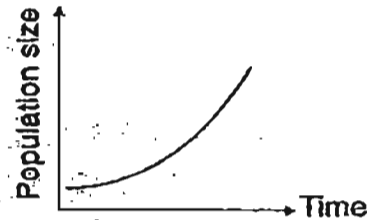
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. If a particular population of monkeys has a higher birth rate than death rate during a period of time, which one of the following graphs could possibly represent the changes in their population size over this period of time?

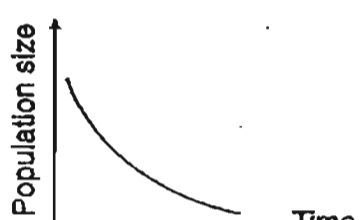
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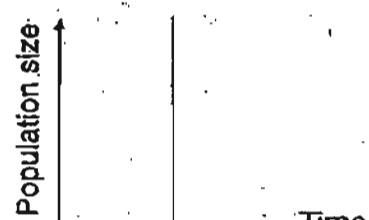
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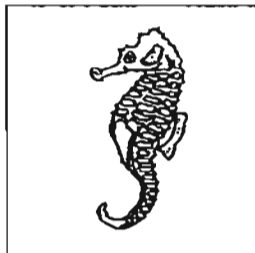
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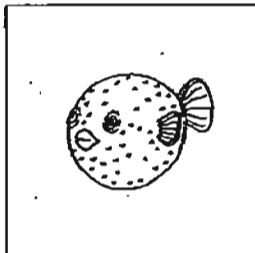
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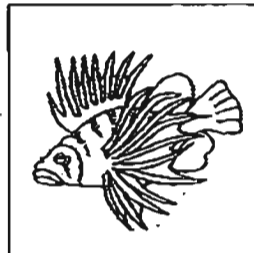
2. The four animals shown in the diagram below live in the ocean. Which of them would swim fastest through water?



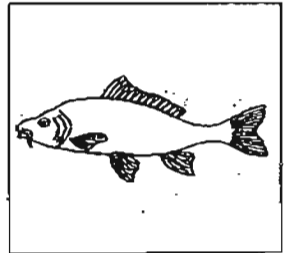
(1)



(2)

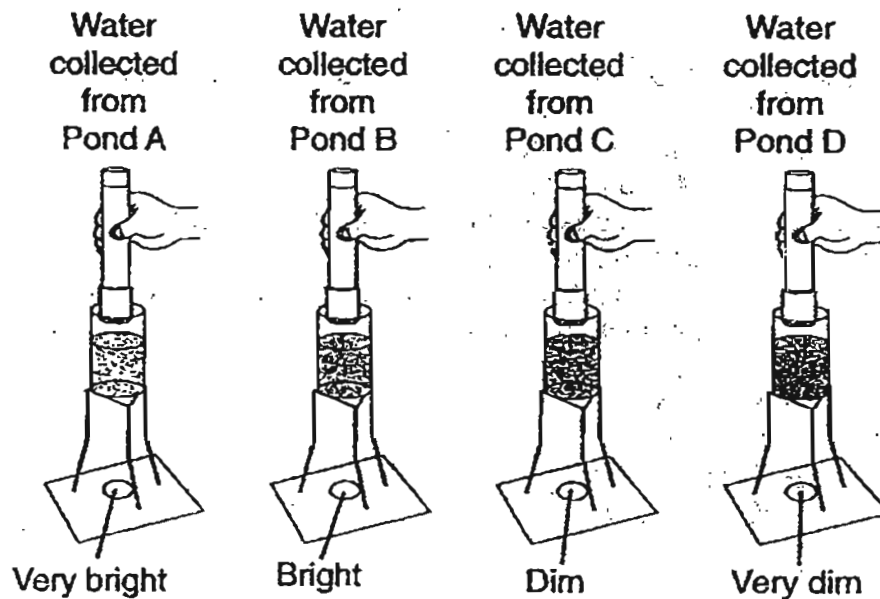


(3)



(4)

3. James collected water samples from 4 different ponds. He put the samples into 4 identical beakers. He then shone a torch over each of the beaker and made observations about the brightness of the circle of light created on a piece of paper at the bottom of each set-up. The diagram below shows the set-ups and the results of James' observations.



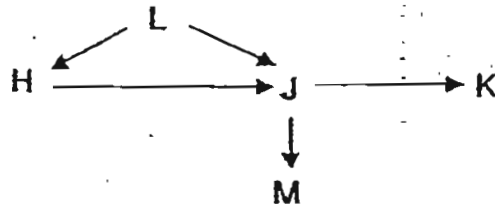
James then went to each pond to count the number of submerged water plants each pond had. He used the following words to categorise the number of submerged water plants he counted.

Word	Number of submerged water plants
None	0
Few	1-10
Several	11-20
Many	More than 20

Which of the following best matches the number of submerged plants that the different ponds would likely have?

	Pond A	Pond B	Pond C	Pond D
(1)	None	Few	Several	Many
(2)	Few	Many	None	Several
(3)	Many	Several	Few	None
(4)	Several	None	Many	Few

4. The following food web represents the food relationship between 5 organisms (H, J, K, L and M).



Based on the food web, which of the following statements are correct?

- A J is an omnivore.
 - B M is a food producer.
 - C A decrease in the population of M would result in an increase in the population of K.
 - D A decrease in the population of J would result in a decrease in the population of L and H.
- (1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

5. Which of the following are true about aquatic animals?

- A Many aquatic animals have modified limbs to help them move in water.
 - B All of them have gills which enable them to take in the dissolved oxygen in the water.
 - C Most of them are found to live at the bottom of the water.
 - D Some of them can camouflage themselves to give them a better chance of survival against predators.
- (1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

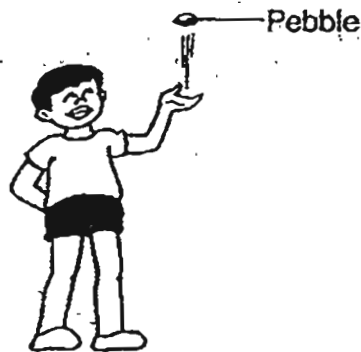
6. Four items M, N, O and P were buried in the ground for a month. The table shows the mass of the items before and after they were buried.

Item	Mass before being buried	Mass after being buried
M	25g	25g
N	12g	8g
O	24g	14g
P	20g	18g

Which of the following correctly shows the least and most easily biodegradable items?

	Least biodegradable item	Most biodegradable item
(1)	M	O
(2)	O	P
(3)	N	M
(4)	P	N

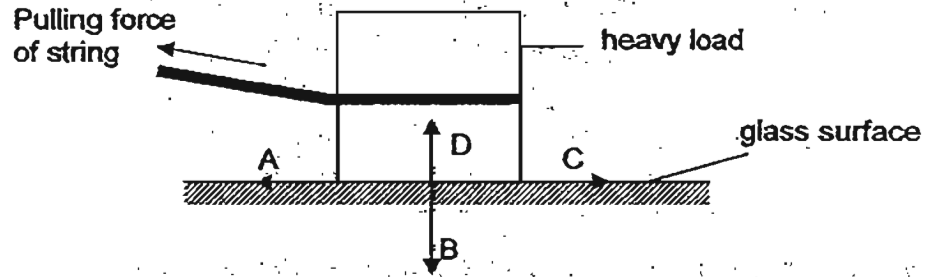
7. Michael throws a stone upwards as shown in the diagram below.



Which one of the following statements is correct?

- (1) Gravity does not act on the stone as it is going up.
- (2) The stone will speed up as it reaches its highest point.
- (3) The stone will keep going upwards until gravity stops acting on it.
- (4) Gravity acts on the stone both while it is going up and while it is falling down.

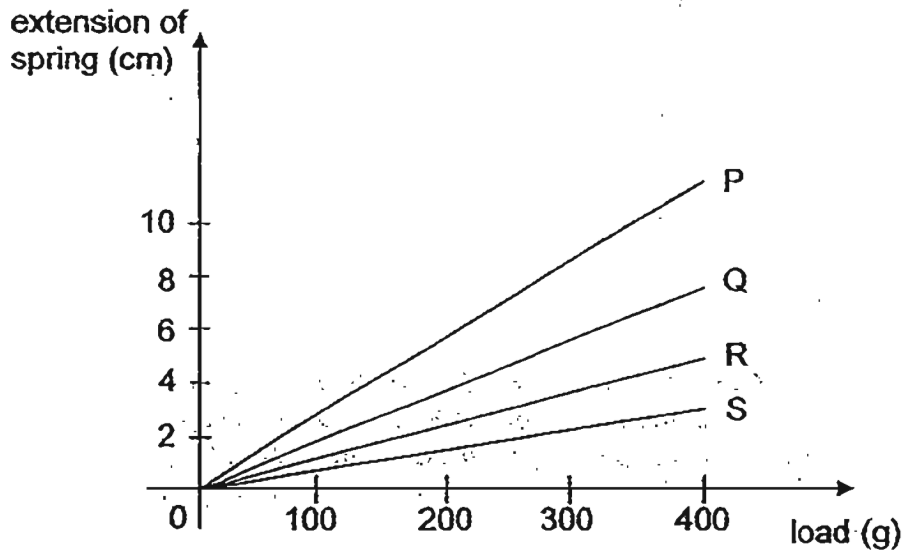
8. A heavy load was pulled across a glass surface in the direction of the pulling force indicated in the diagram below.



Which one of the following arrows shows the direction of the frictional force between the bottom surface of the load and the glass surface as the load is being pulled?

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

9. The graph below shows the extension of 4 different springs (P, Q, R and S) when loads of different weights were added to them individually. Each time the loads are removed, all 4 springs will return to its original length.



Which one of the springs would need the least elastic spring force to read an extension of 5cm?

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

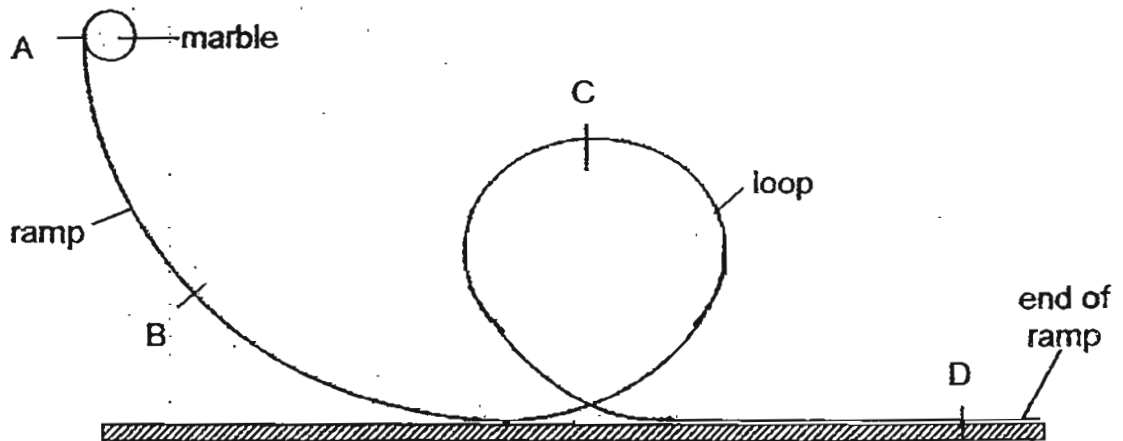
10. Which one of the following correctly shows the transfer of energy in food?

- (1) plants → energy from sun → animal eaters → plant eaters
- (2) plants → plant eaters → animal eaters → energy from the sun
- (3) energy from the sun → plants → plant eaters → animal eaters
- (4) animal eaters → plant eaters → plant → energy from the sun

11. During photosynthesis, M and N are changed into X and Y in a leaf and X is changed into starch to be stored in various parts of the plant after it is made during photosynthesis. Which one of the following best represents what M, N, X and Y are?

	M	N	X	Y
(1)	oxygen	water	carbon dioxide	sugar
(2)	water	carbon dioxide	sugar	oxygen
(3)	carbon dioxide	sugar	starch	water
(4)	starch	oxygen	water	carbon dioxide

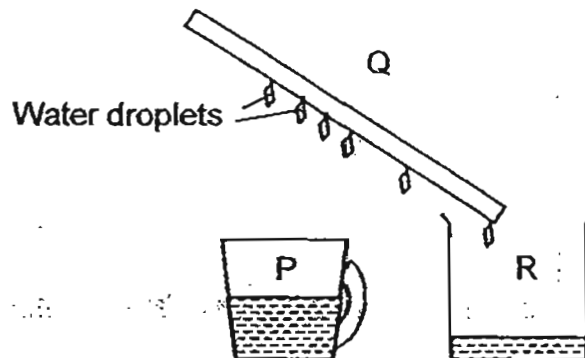
12. A marble was placed at the top of a ramp that has a loop. The marble rolled down the ramp from A, reached B, rolled up to C and moved towards D. The marble finally comes to a stop at D.



Which one of the following gives the arrangement of the positions (A, B, C and D) starting with the position at which the ball had the greatest gravitational potential energy to the position at which the ball had the least gravitational potential energy?

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

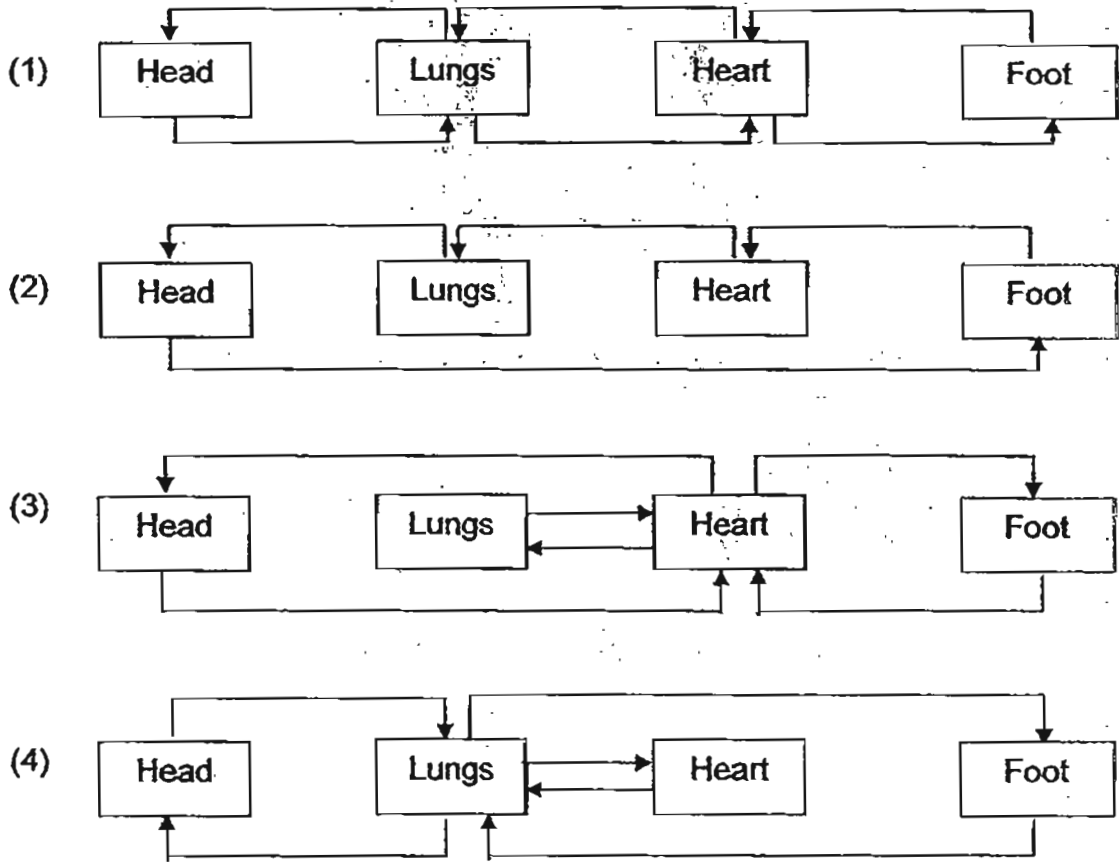
13. When a piece of firewood is burning, energy conversion takes place. Which one of the following statements is correct?
- (1) Heat energy is converted to light energy.
 - (2) Chemical energy is converted to light and heat energy.
 - (3) Heat and light energy is converted to electrical energy.
 - (4) Elastic potential energy is converted to chemical energy.
14. James wanted to find out if the material of a handkerchief affects the rate at which water in it evaporates. Which of the following variables should he keep the same?
- A Material of the handkerchief
 - B Amount of water in the handkerchief
 - C Time taken for all the water in the handkerchief to evaporate
 - D Rate at which water from each handkerchief evaporates
 - E Size and thickness of handkerchief
- (1) B and E
 - (2) C and D
 - (3) A, B and E
 - (4) B, C and E
15. The diagram below shows water located in three places. There is water in teacup P, water droplets on the underside of the tilted metal ruler, Q, placed above the teacup and in beaker R placed below the lower end of the tilted metal ruler.



Which one of the following statements is correct?

- (1) The water in P must be cold.
- (2) A change of state for water occurs from Q to R.
- (3) The metal ruler Q gains heat as water droplets form on it.
- (4) For water in P to become water droplets on Q, only evaporation has to take place.

16. Blood circulates in the human body in a certain manner so that digested food and oxygen can be transported to all parts of the body. Which of the following shows the correct way in which blood travels in the body?



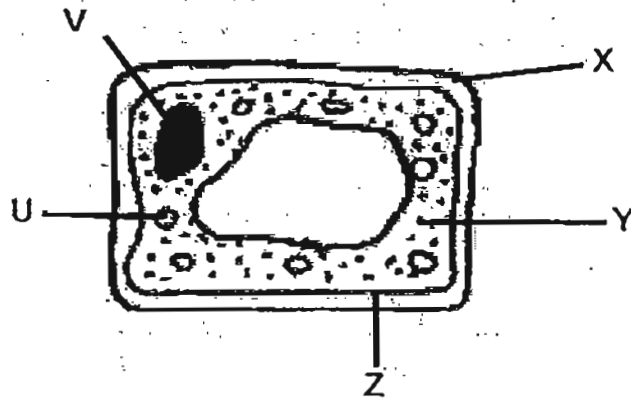
17. The diagram shows a plant in a garden in the night. Arrow P represents the gas entering its leaves while arrow Q represents the gas leaving its leaves.



Which of the following correctly shows what gases P and Q represent?

	Arrow P	Arrow Q
(1)	nitrogen	oxygen
(2)	oxygen	carbon dioxide
(3)	carbon dioxide	oxygen
(4)	carbon dioxide	nitrogen

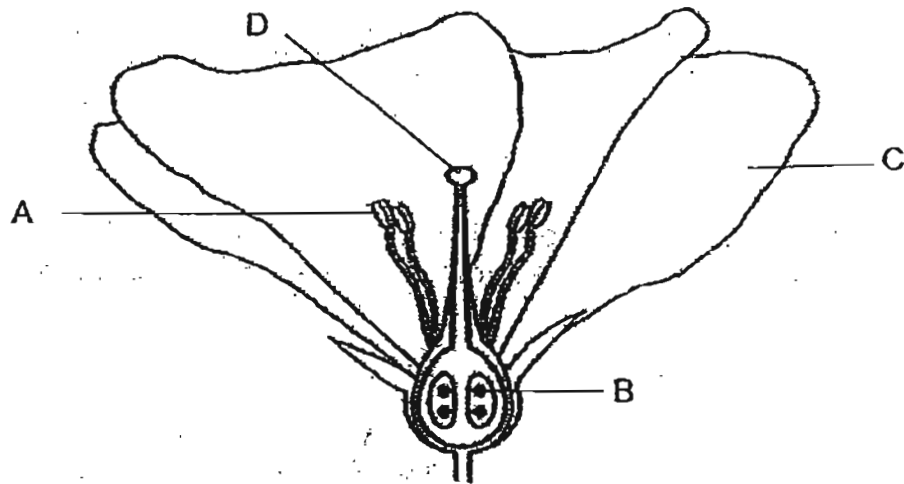
18. The diagram shows a typical plant cell.



Which of the structures in it are not found in a typical animal cell?

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

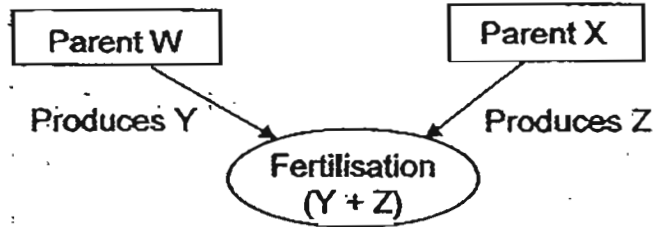
19. The following shows the cross-section of a flower.



Which of the parts labelled above (A, B, C, D) becomes a part of the fruit when the fruit develops after fertilisation?

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

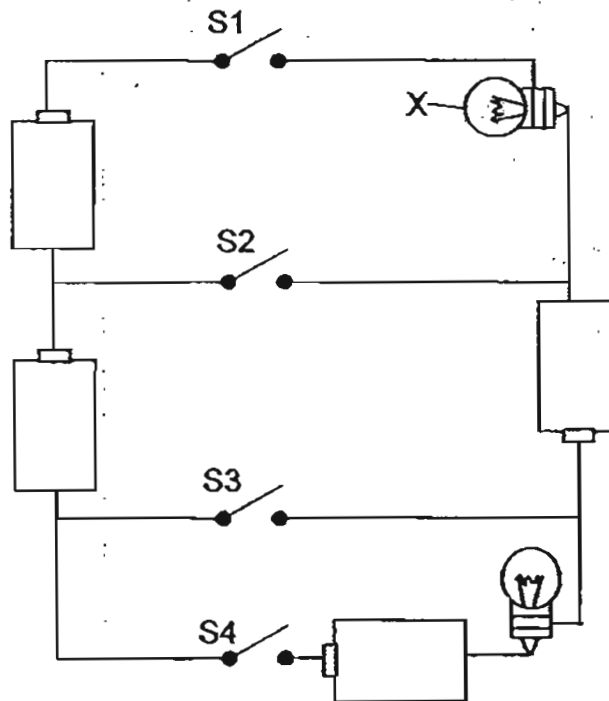
20. In human reproduction, fertilisation takes place when Y from Parent W fuses with Z from Parent X.



Which of the following correctly shows what W, X, Y and Z could represent?

	Parent W	Parent X	Y	Z
(1)	male	female	egg	ovaries
(2)	female	male	egg	sperm
(3)	male	female	testes	sperm
(4)	female	male	sperm	egg

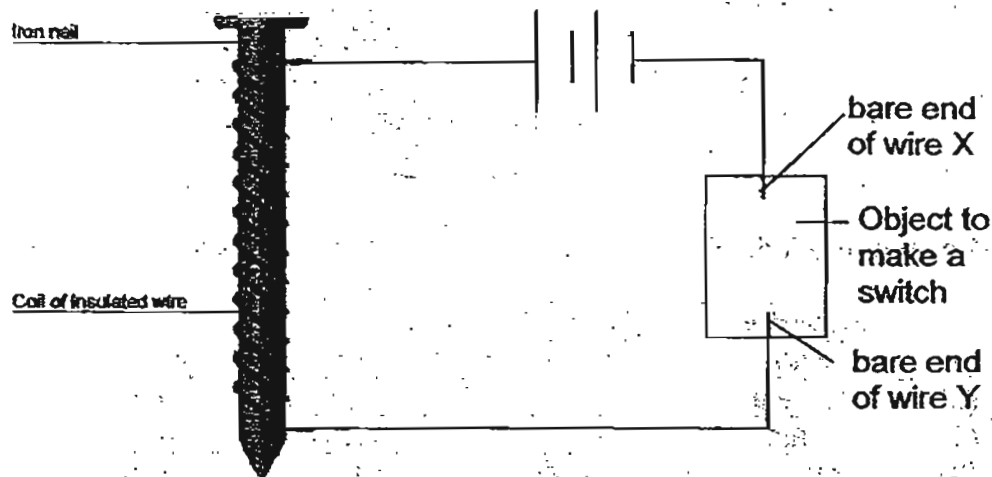
21. The diagram below shows an electric circuit.



Which of the following would result in Bulb X being the brightest?

	S1	S2	S3	S4
(1)	Close	Close	Open	Open
(2)	Close	Open	Close	Open
(3)	Open	Close	Open	Close
(4)	Close	Open	Open	Close

22. Michael wanted to make an electromagnet using an iron nail. He set up the circuit as shown below.

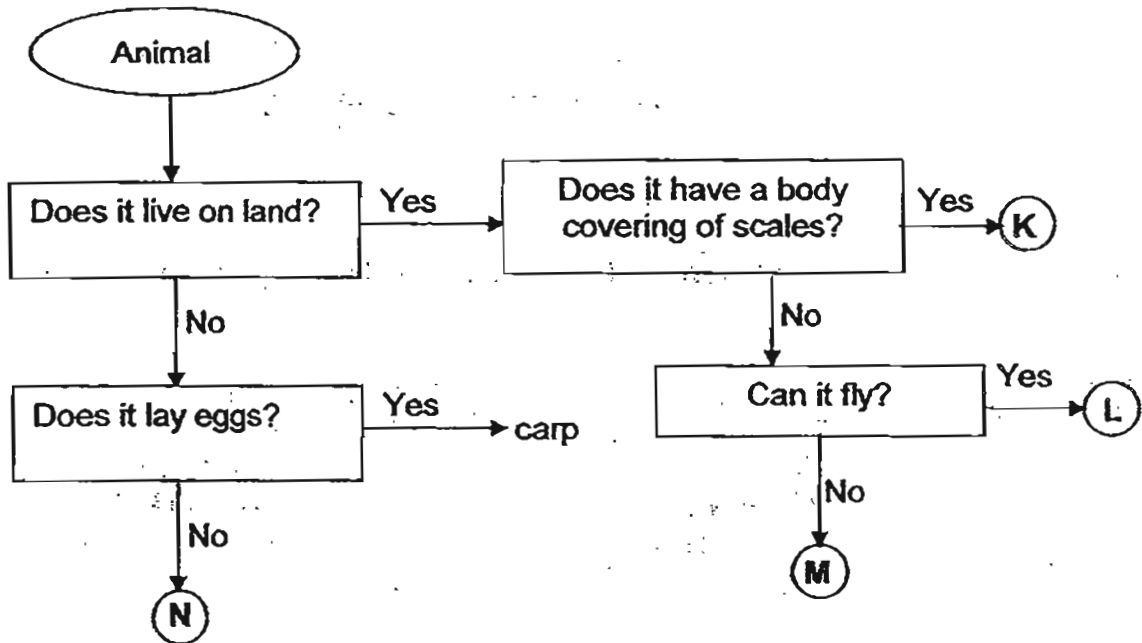


He needed an object to make a switch for the circuit. He wanted to place this object such that it touches the bare ends of Wire X and Wire Y as shown in the diagram. When he wanted electricity to flow through, he would make both the bare ends of Wire X and Wire Y touch this object. When he wanted to open the circuit, he would lift the bare end of wire Y such that it would not touch the object.

Which of the following objects could he use?

- A Copper rod
 - B Piece of cloth
 - C Aluminium foil
 - D Iron paper clip
 - E Piece of paper
- (1) D only
(2) B and E only
(3) A, C and D only
(4) B, C and E only

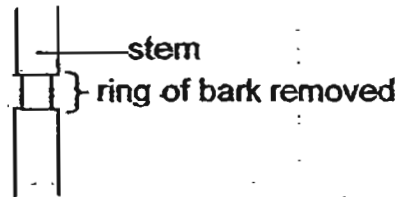
23. The diagram below shows how some animals (K, L, M and N) are classified.



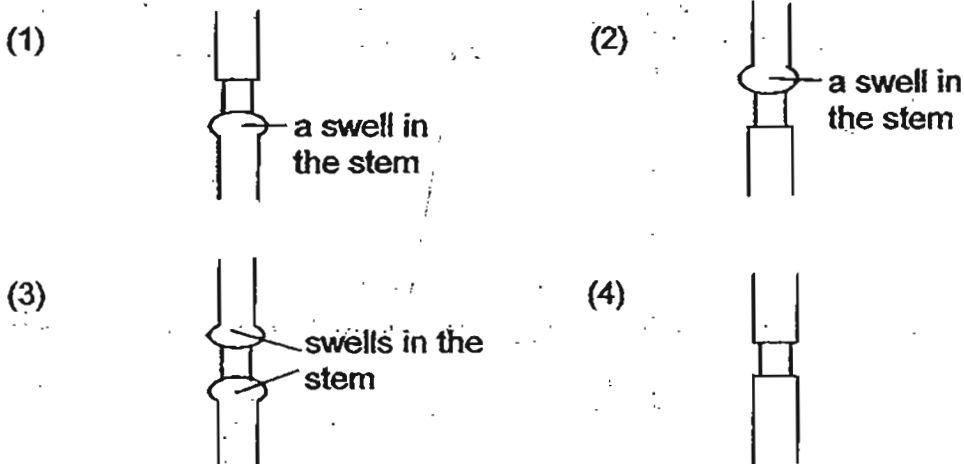
Which one of the following correctly shows what K, L, M and N could be?

	K	L	M	N
(1)	Platypus	Sheep	Lion	Turtle
(2)	Snake	Eagle	Spider	Crab
(3)	Guppy	Sparrow	Zebra	Angelfish
(4)	Lizard	Pigeon	Ostrich	Dolphin

24. Muthu removed a ring of bark from the stem of a plant as shown in the diagram below. That resulted in the removal of the food-carrying tubes in the stem.



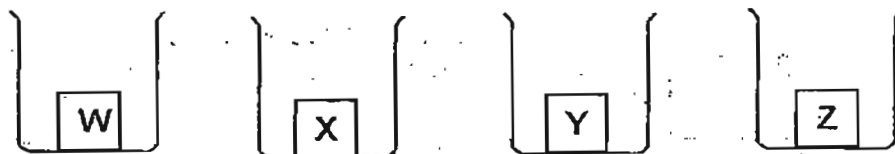
Which one of the following diagrams shows the likely appearance of the stem after one week?



25. The human digestive system consists of the mouth, gullet, stomach, small intestine and large intestine which ends of with the anus. Which of the following gives the name(s) of the part(s) of the digestive system in which digested food passes through but no digestion occurs?

- (1) gullet only
- (2) mouth and large intestine only
- (3) stomach, large intestine and anus only
- (4) mouth, stomach and small intestine only

26. W, X, Y and Z are all cubes with a volume of 27cm^3 . All of them sink in water but are made of different materials. All 4 cubes were dry before the experiment. They were each placed in a small beaker as shown in the diagram below.



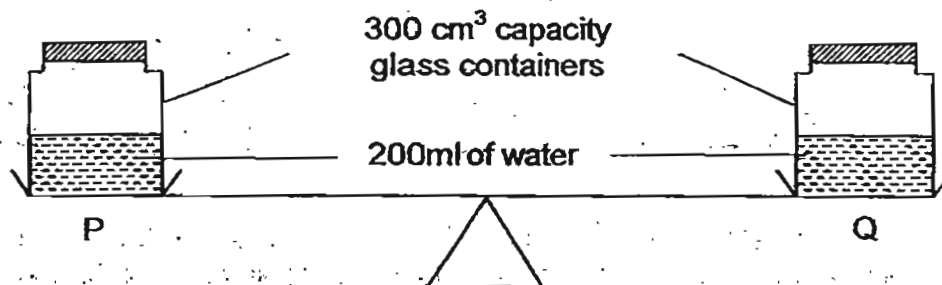
100ml of water was then poured into each beaker. After a while, it was noted that the water levels of each beaker were not the same. The following table gives the water levels for each beaker.

Cube	Water level
W	125ml
X	127ml
Y	120ml
Z	123ml

Which one of the cubes is most waterproof?

- (1) W
- (2) X
- (3) Y
- (4) Z

27. Paul balanced two similar 300cm^3 glass containers, each containing 200ml of water on a balance as shown in the diagram below.



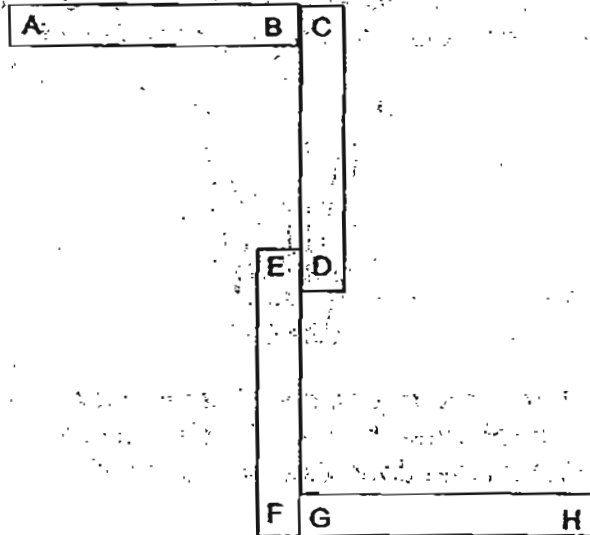
Through a special hole in the cap of the containers, Paul pumped in an additional 50cm^3 of air into Container P but did not do anything to Container Q.

Which of the following statements are correct?

- A The balance remained balanced.
- B The side with Container P moved downwards.
- C The side with Container Q moved downwards.
- D Volume of air in Container P increased.
- E Volume of air in Container P decreased.
- F Volume of air in Container P did not change.

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

28. The diagram shows four similar bar magnets with their poles labelled and arranged in the following manner.



Which of the following shows a situation that is possible among the 4 magnets?

- (1)

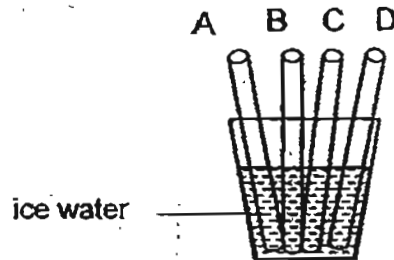
A	B	H	G
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- (2)

C	D	F	E
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- (3)

F	E	A	B
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- (4)

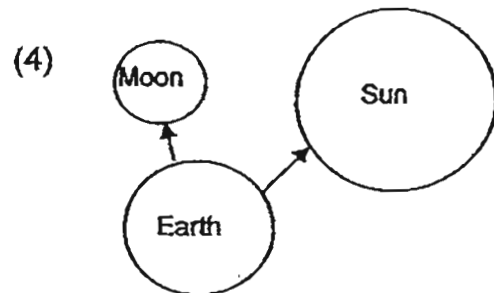
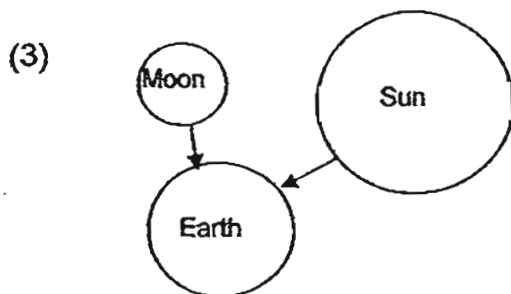
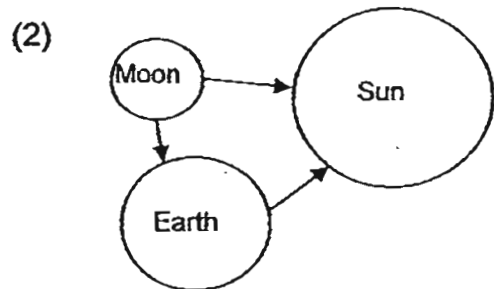
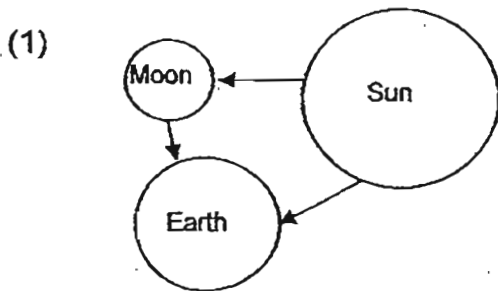
H	G	D	C
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29. Sue was told by Jane that material A was the best conductor of heat amongst four materials (A, B, C and D). She decided to test the hypothesis by carrying out the following experiment. She obtained 4 similar-sized rods, each made of one of the four materials. At the start of the experiment, the rods were at the same temperature. They were then placed into a big container of ice water.



After five minutes, the temperature of the end of the rod not in contact with the ice water was measured and recorded below. Which one of the 4 readings below is the reading for Material A if what Jane said was correct?

- (1) 28°C
 - (2) 23°C
 - (3) 13°C
 - (4) 10°C
30. Which of the following shows the direction in which light travels such that humans on Earth get to see the moon and sun in the sky?



END OF BOOKLET A

Name: _____ ()
Class P6 ()

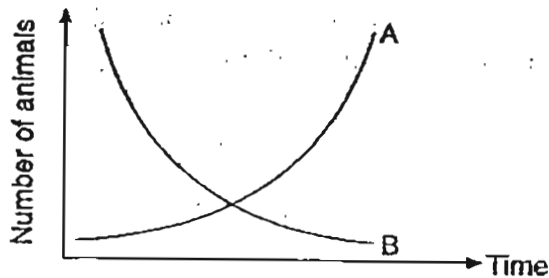
Section B: 40 marks

Read the questions carefully and write down your answers in the spaces provided.

31. The diagram below shows a weasel.



A farmer realised that there were too many weasels on his farm. He started killing off the weasels. The graph below shows the changes in the population of the weasels as well as organism X on the farm.

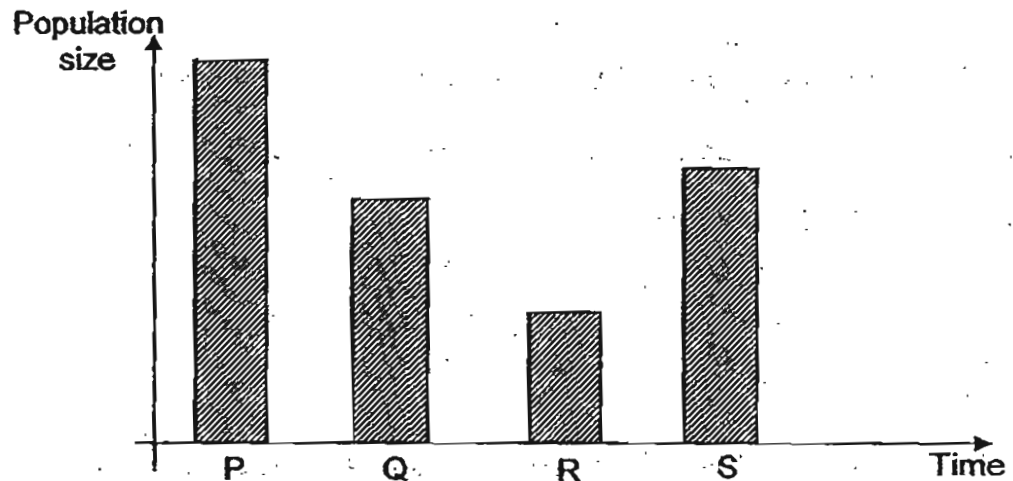


(a) Which line, A or B shows the changes in the population of the weasels? Explain your choice. [1]

(b) How did the change in the population of weasels affect the population of organism X? [1]

(c) Give a possible reason for the change in (b). [1]

32. A food web consists of 4 organisms (P, Q, R and S). The bar graph below shows the average population sizes of the organisms during a period of time.



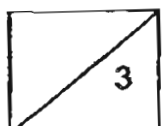
There is only one food producer in this food web.

- (a) Name the organism that is most likely the food producer and state the reason from the bar graph for your choice. [1]

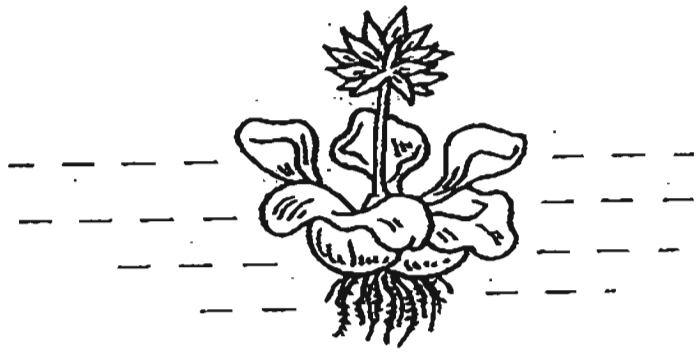
- (b) The box below contains more information about the organisms.

- S eats Q.
- There is one carnivore, one omnivore and one herbivore.
- The carnivore eats two of the other three organisms.

Draw in the space provided below the most likely food web for Organisms P, Q, R and S. [2]



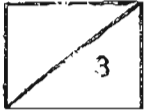
33 The diagram shows a floating plant.



(a) How is the above plant able to float on water? [1]

(b) How does being able to float help the plant in its survival? [1]

(c) How will having too many of the above floating plant in a pond affect the fully submerged water plants in the pond? [1]

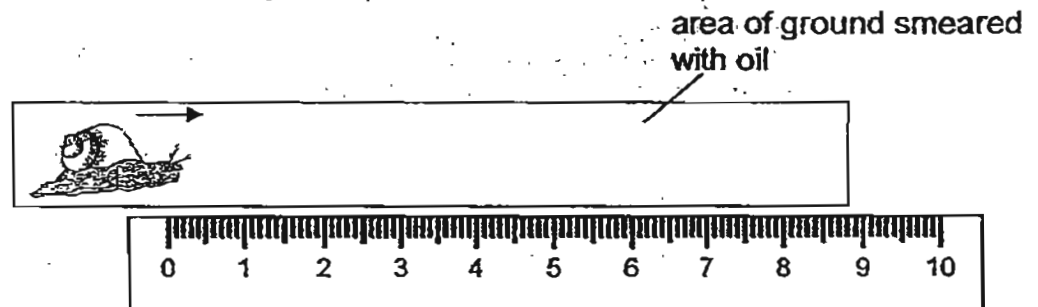


34. Monuments have great historical value. In a particular historic site, the monuments seemed to have been corroded. Authorities noticed that the rate of corrosion increased tremendously after Factory A started operations nearby. Factory A emits smoke through its tall smoke funnels.

(a) Explain how Factory A could have caused the corrosion. [2]

(b) Explain how the smoke emitted by Factory A may also cause water pollution. [1]

35. The snail shown in the diagram below crawls at an average speed of 2cm per second on flat concrete ground. Some oil is smeared on the concrete ground and the snail is placed on the oiled part of the ground. The minute it starts to move forward, time is taken and distance travelled by the snail is also noted.

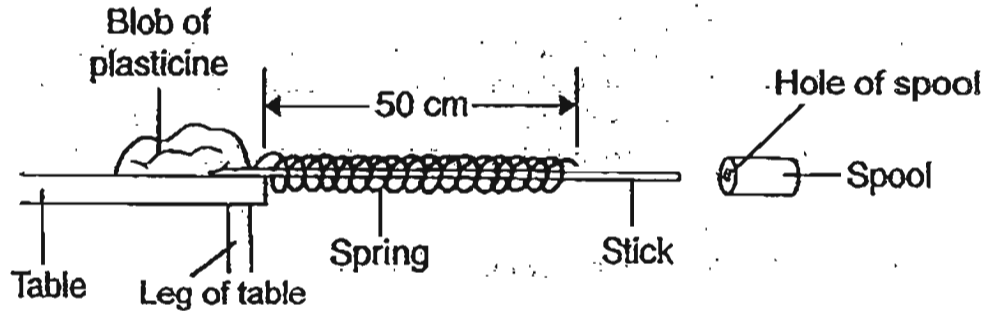


(a) After three seconds, how far do you think the snail would have travelled on the oiled concrete ground if it did not stop moving at all? [1]

(b) In terms of forces, explain your answer in (a). [2]

36

Jack wanted to create a gadget that could send a spool flying forward so he used scrap material to come up with the following set-up.



When Jack slid the spool through the stick, pushed it against the spring and then released the spool, it flew a certain distance from the leg of the table and landed on the floor:

- (a) In terms of energy conversion, explain why the spool was able to fly forward. [2]

- (b) If a heavier spool of the same size was used, what would one observe of the distance travelled by the spool when it flew? [1]

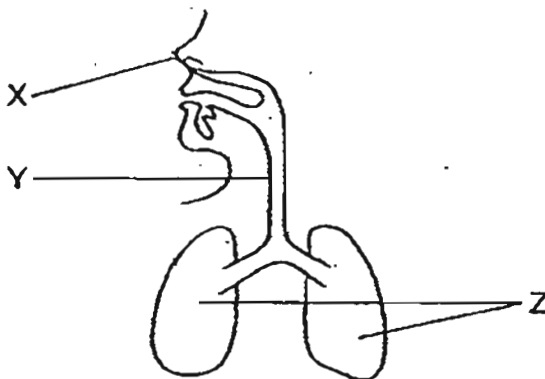
37. Xavier carried out an experiment and the steps are stated below.

1. He filled a beaker with water.
2. He added some sugar into the beaker of water and stirred it until all the sugar dissolved.
3. He then heated the solution until boiling point was reached.
4. Using a thermometer, he measured and recorded the boiling point of the sugar solution.
5. He repeated the experiment but this time with salt instead of sugar.

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

(b) Name two variables Xavier must keep the same in order to carry out a fair test. [1]

38. The diagram below shows a particular human body system.



(a) Which body system does the above diagram represent? [1]

b) What are the parts X and Y called? [1]

X: _____

Y: _____

- (c) State one difference between the air that goes into this system and the air that comes out of this system. [1]

39. Three plants, X, Y and Z, were planted on a piece of land next to a river as shown in Diagram A. The rest of the land had no plants growing on it and no animals had ever been seen crossing the river. A few years later, there were more of the three plants and they were found growing at different places as shown in Diagram B.

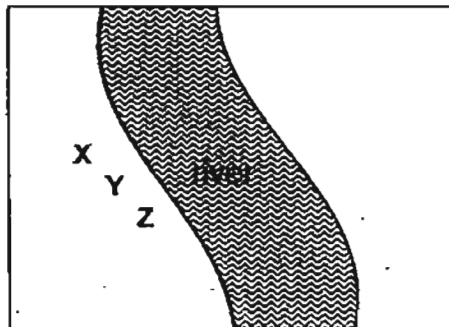


Diagram A

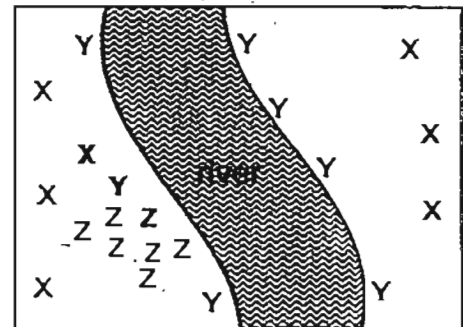


Diagram B

Plants X, Y and Z use different methods of fruit and seed dispersal. Based on the diagram above, write down the most likely methods of fruit and seed dispersal used by Plants X and Z. [2]

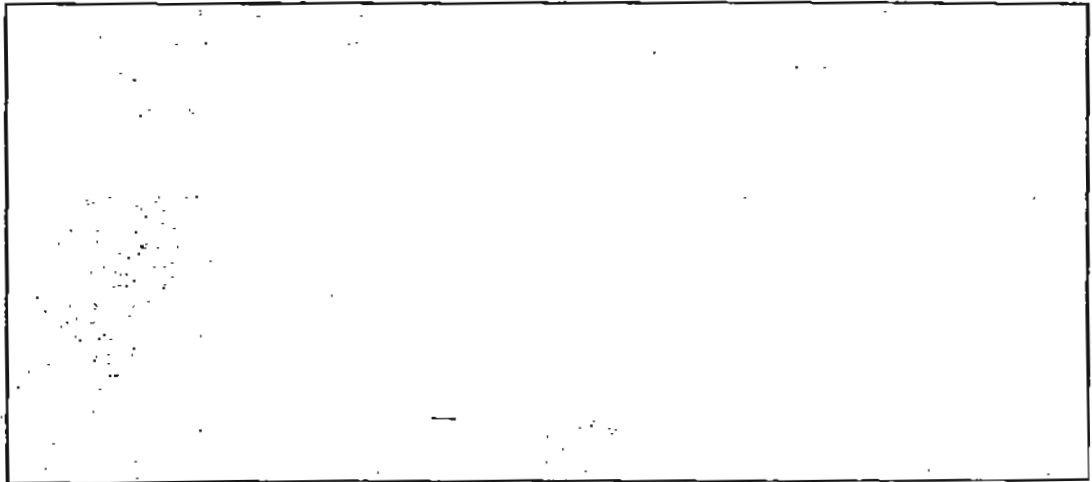
(a)

Plant	Fruit and Seed Dispersal Method
X	
Z	

- (b) How are the fruits of Y mostly likely dispersed? Write down a characteristic that the fruit of Y would have to assist the plant in being able to be dispersed further away from the parent plant. [1]

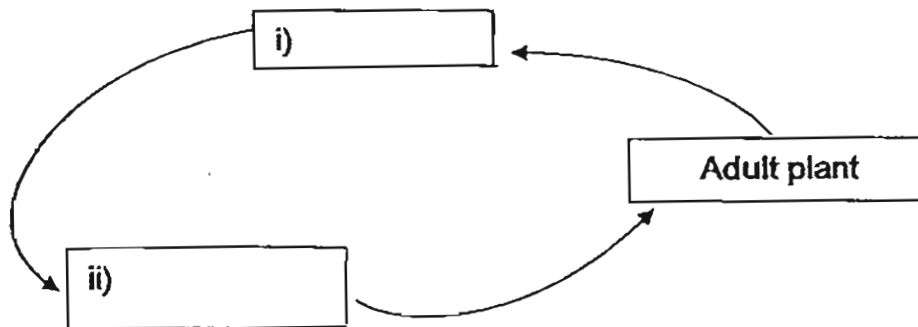
40. Draw a circuit diagram in the box provided, using symbols, such that the following are fulfilled : [3]

- There are two batteries in the circuit.
- The batteries are arranged such that the bulbs will be at their brightest.
- There are two bulbs in the circuit.
- If one bulb fuses, the other will not be affected.
- There is a switch to control one of the bulbs but not the other.
- You may use any number of wires.



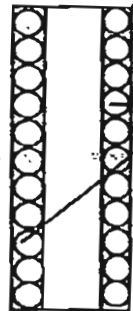
41. The life cycle of a long bean plant consists of three stages.

(a) Fill in the missing stages in the boxes provided for (i) and (ii). [1]



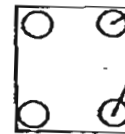
(b) Ahmad grew some long bean plants. His neighbour told him she would like some of his long bean plants as soon as they become adult plants. What must Ahmad observe in his plants to know when the right time to give the plants to his neighbour is? [1]

42. Amos wanted to make a model of a Maglev train. He used an empty box to represent the train and cardboard to make a track for the train. He lined the two sides of the cardboard track with button magnets as shown in the diagram below. He also stuck four button magnets at the base of the train.



Button magnets lining the two sides of the track

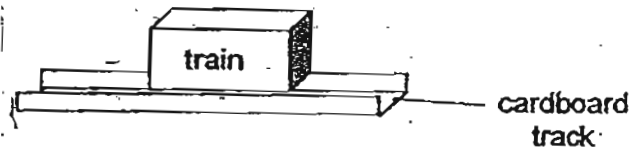
Top view of the cardboard track



Four button magnets placed at the corners on the base of the train.

Base of train

When Amos placed the train above the track as shown in the diagram below, the train could 'float' above the track.

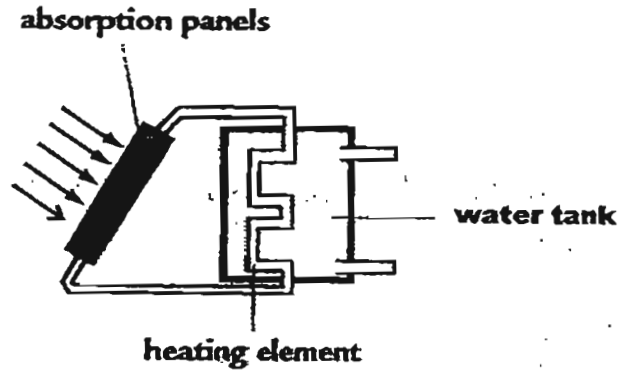


- (a) Explain how Amos must place the magnets both on the track and the train such that the train was able to 'float' above the whole track. [2]

- (b) How does making a train 'float' above its tracks help the train in its movement? [1]

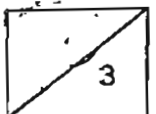
43

The diagram below shows a simplified solar water heater. The absorption panels are placed facing the sun so as to absorb as much heat as possible. The heating element is made up of a tube filled with water that circulates in the tube such that water passes through the absorption panels, into the water tank and then out again towards the absorption panels.

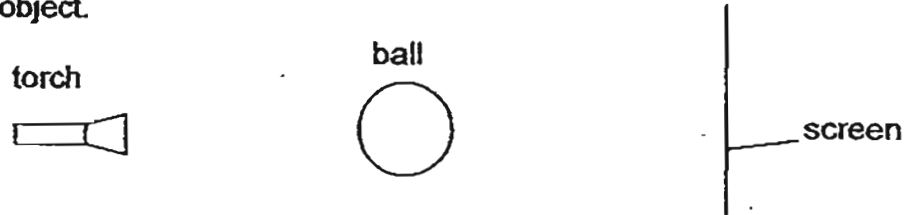


- (a) Explain how the water in the water tank gets heated up. [2]

- (b) The tubes used to contain the water to make the heating element are often made of metal. Explain how this would make the water tank more effective. [1]

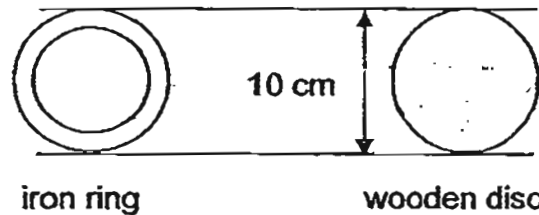


44. Mark shone a torch at a ball and observed the shadow of the ball on a screen placed behind the object.

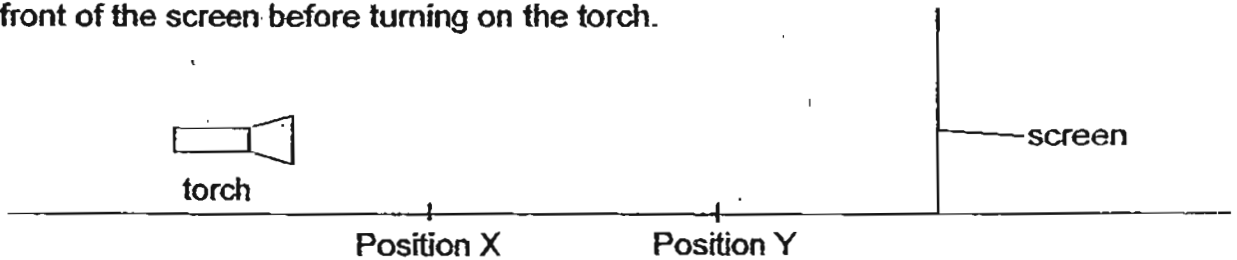


- (a) What happens to the shadow when the object is moved closer to the screen? [1]

Mark then obtained two other objects, an iron ring and a wooden disc, of the same diameter.



He placed the iron ring and wooden disc, one at position X and one at position Y in front of the screen before turning on the torch.

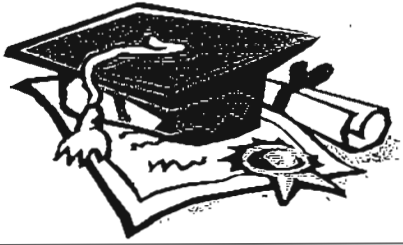


The picture below shows the shadow that was cast on the screen.



- (b) Which object was placed at Position X and which at position Y? Explain your answer. [2]

END OF PAPER

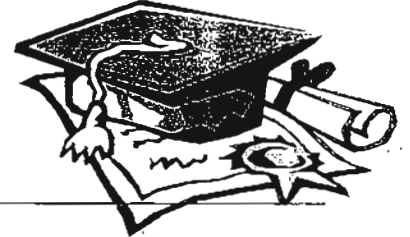


ANSWER SHEET

EXAM PAPER 2011

**SCHOOL : AITONG PRIMARY
SUBJECT : PRIMARY 6 SCIENCE**

TERM : SA1



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

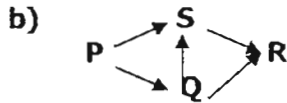
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	2	3	4	2	1	2	2	4	4	1

31)a)Line B. If the farmer is killing the weasels, the number of weasels reduces so the graph should be down ward curve just like B.

b)As the population of weasels decreased the population of organism X increase.

c)The weasels could be predators of organism X so with less weasels, more C could survive and reproduce.

32)a)The food producer should be P. P has the largest population size amongst the 4 organisms.



33)a)It has a swollen leaf stalk which has air spaces.

b)Being able to float allows the leaves of the plant to get sunlight to carry photosynthesis.

c)They block sunlight from reaching the fully submerged.

34)a)The smoke that Factory A emits could contain harmful substances. These harmful substances dissolve in the rain water forming acids which will corrode the monuments.

b)The acid rain created will flow into the rivers and lakes and contaminate the water ,thus causing water pollution.

35)a)Any distances less than 6cm but more than 0cm.

b)Oil reduces the amount of frictional force between the foot of the snail will find it hander to grip the ground and more forward.

36)a)When the spool was pushed against the spring it compressed the spring making it store elastic potential energy. When the spring was released the stored elastic potential energy to kinetic energy which is transferred to the spool,allowing it to fly forward.

b)The distance travelled will reduce.

37)a)Xavier was trying to find out whether adding different substances would affect the boiling point of water.

b)Volume of water and amount of salt or sugar.

38)a)Respiratory system

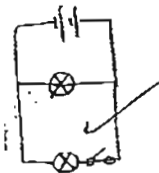
b)X: nose Y: wind pipe

c)Air that enters the system has more oxygen than exits.

39)a)X:By wind Z: By splitting action

b)By water. Has a fibrous and light.

40)



41)a)i)seed ii)seedling

b)He must observe that his long plants have flowers.

42)a)He must place all the button magnets on the track with the same pole facing upward while the 4 button magnets on the base of the train must have the same pole facing downward. The poles facing upward on the track and the poles facing downward on the train must be like poles so that they repel each other causing the train to float.

b)When the train floats above the tracks, there is no contact between the train and its tracks, thus eliminating friction between train and track so the train will travel fast.

43)a)The sun heats up the absorption panels which in turn heats up the water in the tube passing through the absorption panels. The hot water moves through the tubes to the water tank. Heat from the hot water moves to the water in the water tank.

b)Metal is good conductor of heat. Heat can travel from the water in the tubes to the water in the water tank faster.

44)a)smaller.

b)The iron ring was placed at position X while the wooden disc was placed at position Y. A shadow gets smaller if the object is placed nearer to the screen/further away from the light source. Since the shadow of the wooden disc appeared much smaller than that of the iron ring even though they were of the same diameter, the wooden disc must have been placed closer to the screen further away from light source.