

NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2014
PRIMARY 6

SCIENCE

BOOKLET A

30 Multiple Choice Questions (60 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/ 60
Booklet B		/ 40
Total		/100

Name _____ () Class: P 6 _____

Date : 16 May 2014

Parent's Signature: _____

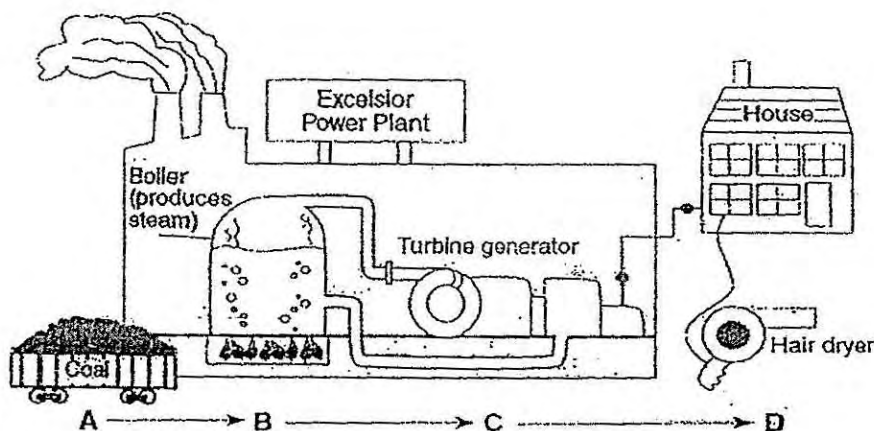
Section A: (30 x 2marks = 60marks)

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. Which of the following statements about energy is false?

- (1) Energy can be stored.
- (2) Energy can change forms.
- (3) Non-living things do not need energy to do work.
- (4) Energy can be transferred from one object to another.

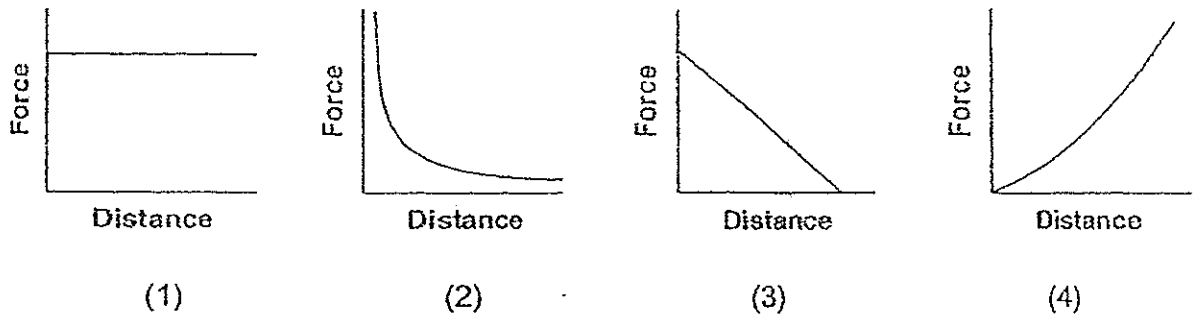
2. The diagram below shows the steps necessary to provide the energy needed to run a hair dryer.



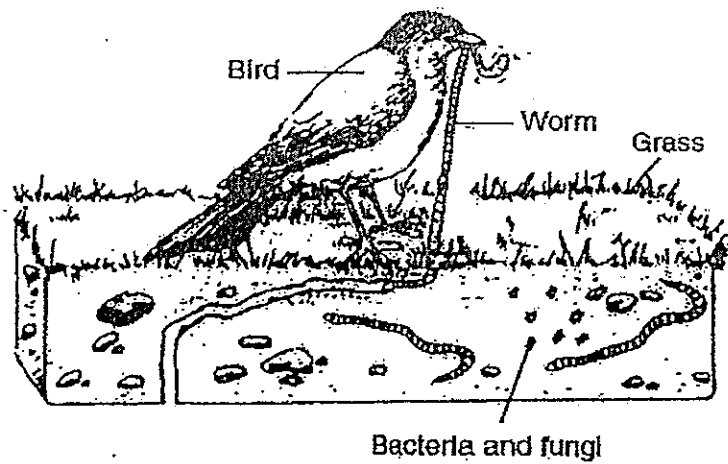
From Location A to Location D in the diagram, which of the following best shows the form of energy in each location?

	A	B	C	D
(1)	Heat Energy	Kinetic Energy	Kinetic Energy	Heat Energy
(2)	Chemical Potential Energy	Heat Energy	Kinetic Energy	Electrical Energy
(3)	Heat Energy	Kinetic Energy	Electrical Energy	Heat Energy
(4)	Chemical Potential Energy	Kinetic Energy	Kinetic Energy	Chemical Potential Energy

3. A space probe is launched into space from Earth's surface. Which graph below shows the relationship between the amount of gravitational force exerted by Earth on the space probe and the distance between the space probe and the centre of Earth?



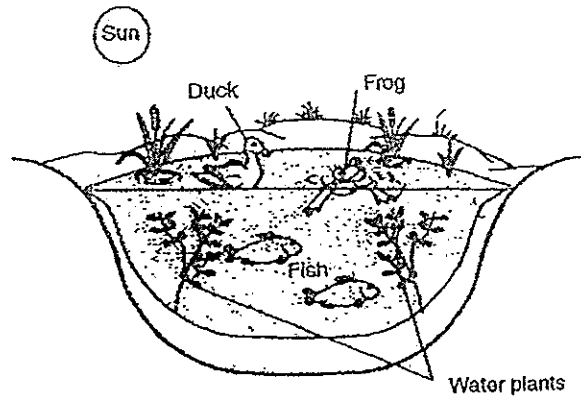
4. The diagram below shows several different organisms found in an area.



The worms in the diagram represent _____.

- (1) a habitat
- (2) a population
- (3) a community
- (4) an ecosystem

The diagram below shows a pond community containing a variety of plants and animals. Answer Questions 5 and 6 based on the diagram.



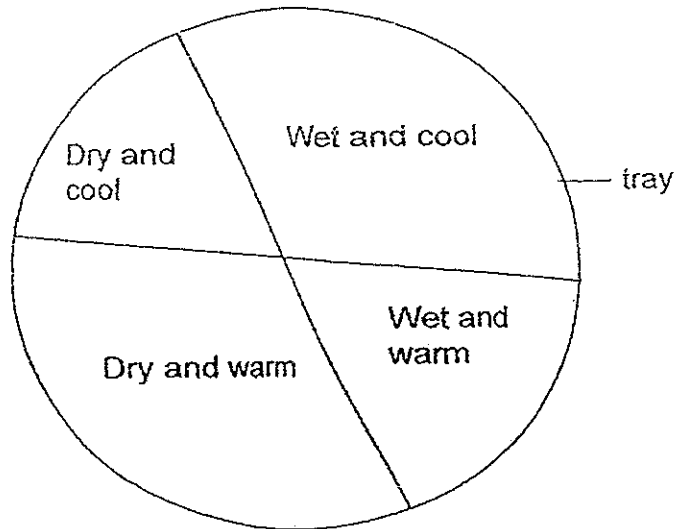
5. What is the main source of energy for this pond community?

- (1) Sun
- (2) Fish
- (3) Pond water
- (4) Water plants

6. Why are the fish able to survive in the pond?

- (1) The fish use oxygen produced by the plants.
- (2) The fish use carbon dioxide produced by the frog.
- (3) The fish use carbon dioxide produced by the plants.
- (4) The fish can make its own food through photosynthesis.

7. Ellen conducted an experiment to find out the suitable conditions needed for the survival of an Organism X. She took a round tray and divided it into four sections as shown below. Then she introduced 40 Organism X and placed them in the middle of the tray.



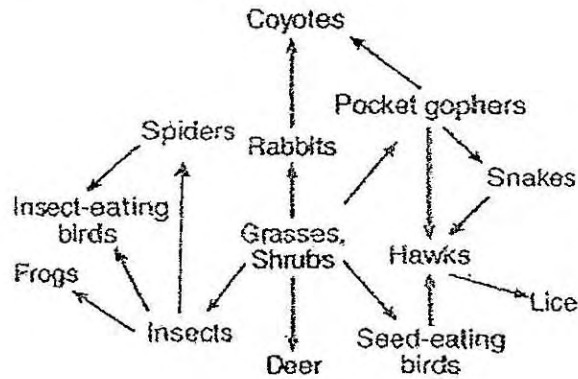
After five hours, she recorded the number of Organism X found in each section. Her classmates commented that her experiment was not fair. Their comments are stated below.

- Alice : Ellen should repeat the experiment.
Ben : The sections of the tray were not divided equally
Charlie : The observations should be done as soon as the experiment was set up.
David : At the beginning of the experiment, all the Organism X should be spread all over the tray.

Which classmate(s) had provided the best reason(s) to show that Ellen's experiment was not fair?

- (1) Ben only
- (2) David only
- (3) Alice and Ben only
- (4) Alice and Charlie only

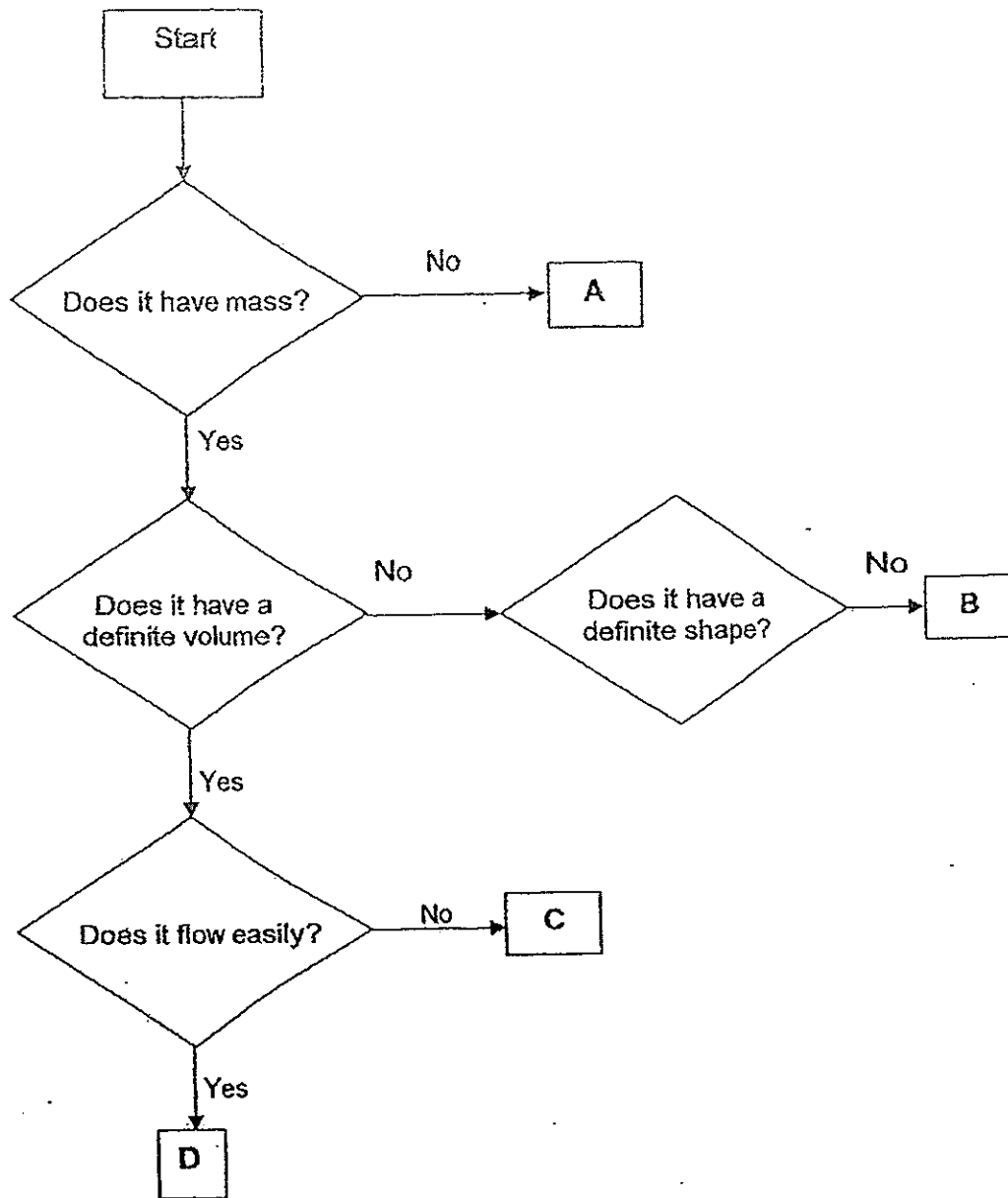
8. The diagram below represents a food web.



Which statement regarding organisms in this food web is correct?

- (1) There would be more coyotes than rabbits.
 - (2) There would be more snakes than pocket gophers.
 - (3) There would be more hawks than seed-eating birds.
 - (4) There would be more insects than insect-eating birds.
9. Expansion has its usefulness but it also causes some problems in everyday life. Which one of the examples given below is **NOT** caused by expansion?
- (1) Buckling of railway lines on a hot day.
 - (2) Snapping of overhead wires in cold weathers.
 - (3) Cracking of sealed bottle full of water when left in the freezer.
 - (4) Returning a dented ping pong ball to its original shape by dipping it in hot water.

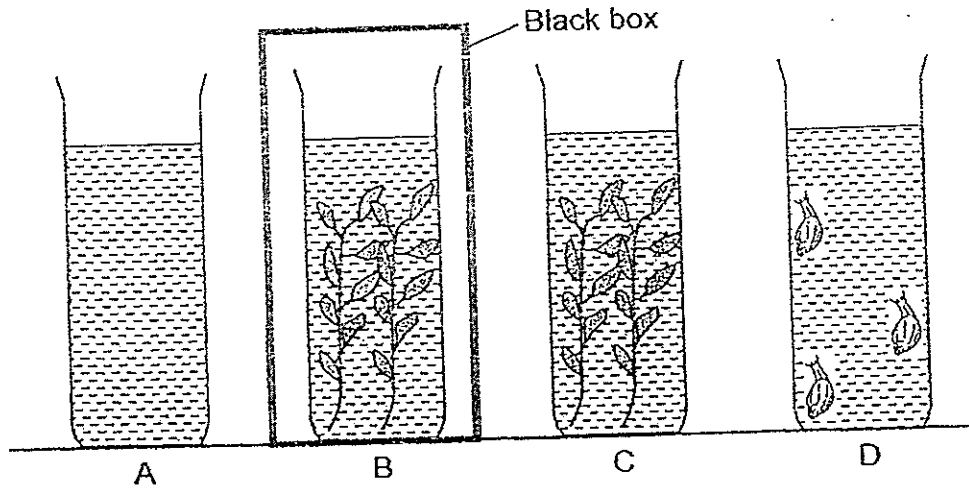
10. The flowchart below shows the properties of A, B, C and D.



What could A, B, C and D be?

	A	B	C	D
(1)	heat	water vapour	ice cube	honey
(2)	shadow	water vapour	honey	ice cube
(3)	oxygen	heat	tap water	rock
(4)	nitrogen	air	rock	tap water

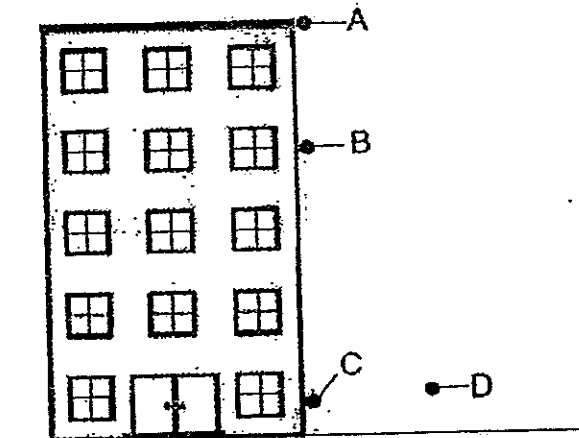
11. The diagram below shows 4 beakers, A, B, C and D, with an equal volume of water. The 4 beakers were placed in the sun for 12 hours.



Which one of the following shows the amount of carbon dioxide in each beaker after 12 hours, starting from the most carbon dioxide to the least?

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

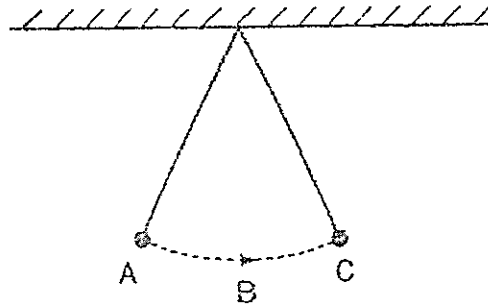
12. A ball is dropped from the roof of a building. Points A, B, C and D in the diagram below represent positions of the ball as it falls.



At which position will the ball have the greatest kinetic energy?

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

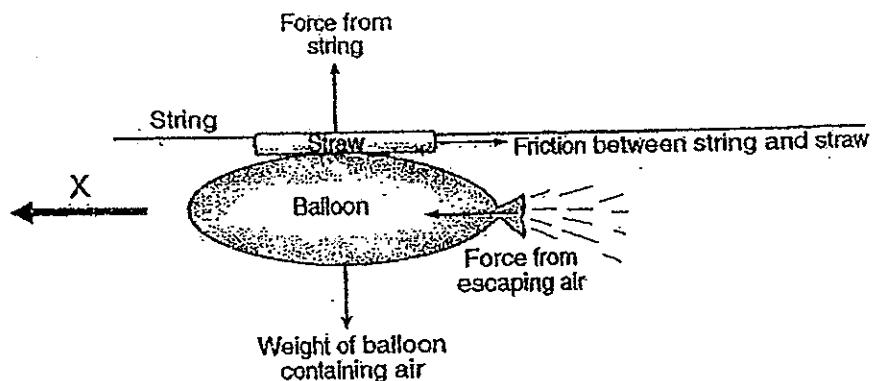
13. In the diagram below, a pendulum released from position A swings freely to position C.



As the pendulum swings from A to C, what are the changes to its gravitational potential energy and kinetic energy from A to B and B to C respectively?

	Gravitational potential energy		Kinetic energy	
	A to B	B to C	A to B	B to C
(1)	Increases	Decreases	Decreases	Increases
(2)	Decreases	Increases	Increases	Decreases
(3)	Increases	Decreases	Increases	Decreases
(4)	Decreases	Increases	Decreases	Increases

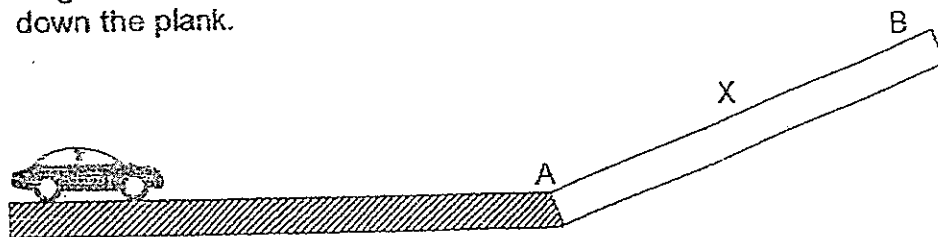
14. The diagram below shows an inflated balloon attached to a straw that is moving along a string. Some forces that are acting on the straw are shown by the labelled arrows.



When air was allowed to escape from the balloon, the force caused the balloon and the straw to move in direction X because this force was greater than the _____.

- (1) force from the string
- (2) weight of balloon containing air
- (3) friction between string and straw
- (4) friction between the balloon and straw

15. A toy car was pushed towards a wooden plank AB as shown in the diagram below. It moved up the plank, stopped at X and then it rolled down the plank.



Which of the following statement(s) about the movement of the car is/are true?

- A The car stopped at X because it has lost its energy.
- B The car stopped at X because there were no forces acting on it.
- C The car rolled down the slope from X because of gravitational force.
- D The car slowed down as it moved up the slope because it is going against gravity. ✓

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

16. The table below shows the characteristics of four different habitats A, B, C and D found in an environment.

Characteristics of the habitat	Habitat			
	A	B	C	D
Temperature	Fluctuates widely	Fluctuates widely	Some changes	Little or no change
Presence of moisture	Dry	A little damp	Very wet	Damp
Light intensity	High	Low	High	Low

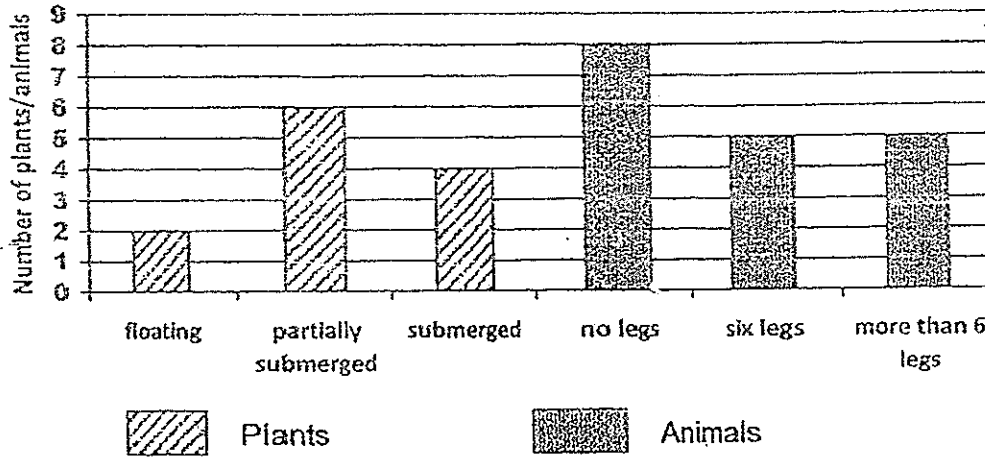
Jenny found an organism in one of the habitats. She observed and recorded the characteristics of the organism as shown below.

✓ It is sensitive to light.
 ✓ It feeds on dead matter.

In which one of the following habitats was the above organism most likely to be found?

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

17. A group of P6 pupils counted the plants and animals in the school pond. They plotted their results in a bar graph as shown below.



Which of the following statements about the plants and animals are definitely true?

- A There are 6 communities in the pond.
- B There is a total of 30 organisms in the pond.
- C There are at least six populations of plants and animals in the pond.
- D There is a total of five populations of animals with 6 legs in the pond.

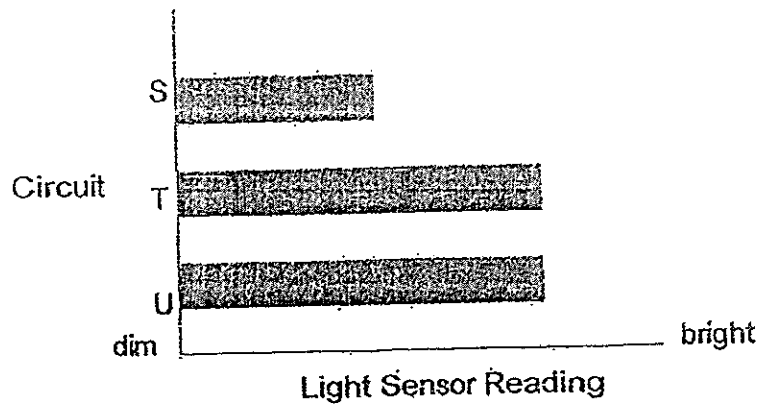
- (1) A and B only
- (2) B and C only
- (3) C and D only
- (4) B, C and D only

18. A student is trying to determine if beetles will help control the population of a harmful plant. Which sequence would be best suited for his investigation?

(1)	State an aim Conduct an experiment Formulate a hypothesis Make a conclusion Analyze data	(2)	Formulate a hypothesis Make a conclusion State an aim Analyze data Conduct an experiment
(3)	Make a conclusion Conduct an experiment State an aim Formulate a hypothesis Analyze data	(4)	State an aim Formulate a hypothesis Conduct an experiment Analyze data Make a conclusion

19. James made three new circuits. He used a light sensor to measure the brightness of one of the lit bulbs in each circuit.

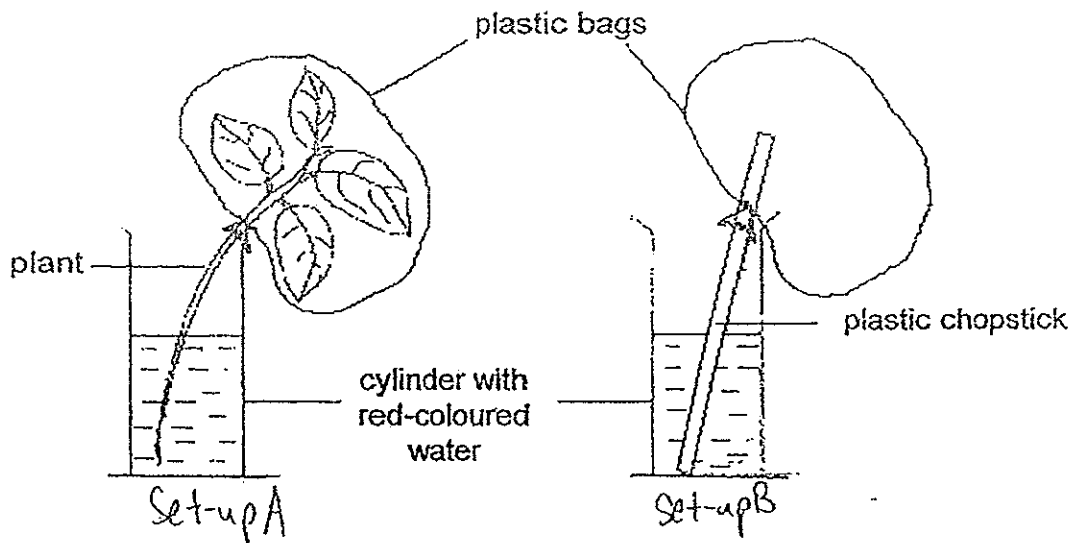
The sensor gave the results on the graph below.



Based on the graph above, which of the following shows the correct setup for each circuit?

	S	T	U
(1)			
(2)			
(3)			
(4)			

20. Maggie placed a plant in a cylinder of red-coloured water and covered the leaves with a clear plastic bag as shown below. She also used an identical cylinder and the same amount of red-coloured water to make Setup B. Both setups were placed near a window.

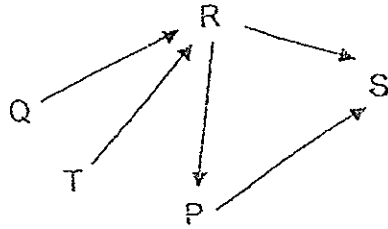


Which of the following could she observe after 3 hours?

- A The leaves in Setup A have turned red.
- B There is more water left in Setup A than B.
- C The leaves in Setup A released water vapour
- D There are water droplets inside the plastic bag of Setup A but not Setup B.

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

21. The following relationships were observed among 5 living things P, Q, R, S and T.

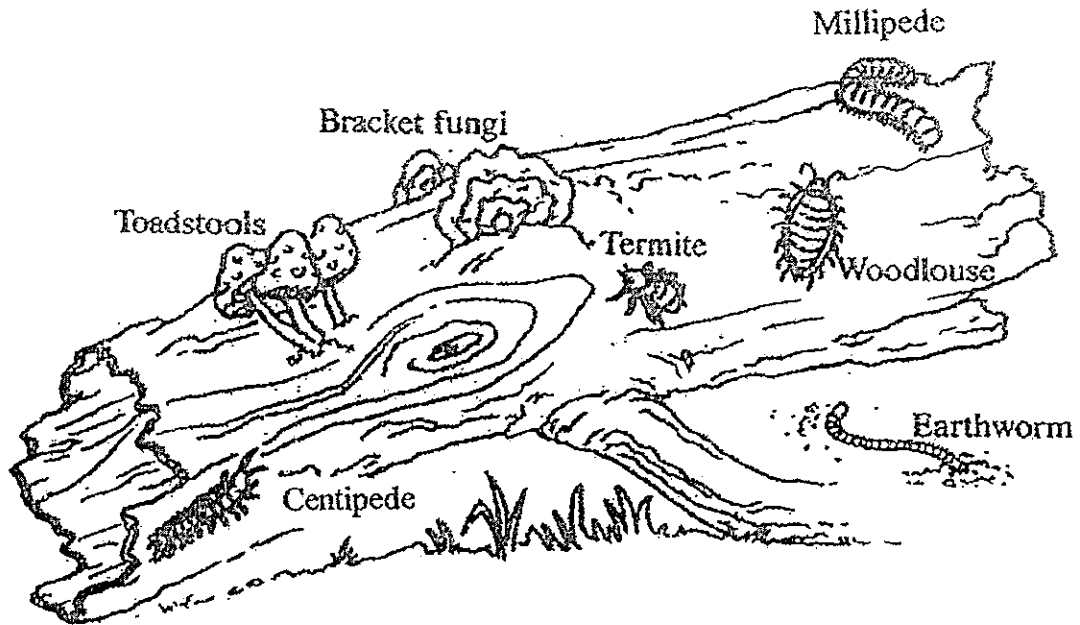


Which one of the following classifications is correct?

	Producer	Prey	Predator and Prey	Predator
(1)	Q, T	S	P	R
(2)	S	P, T	R	Q
(3)	Q, T	R	P	S
(4)	S	Q	R	P, T

22. Chee Han found a rotting log in a park.

He recorded the following statements about the rotting log in his notebook.



- A The rotting log is a community.
- B The rotting log is a living thing.
- C The toadstool and earthworm are decomposers
- D The termites and woodlouse help to speed up decomposition.

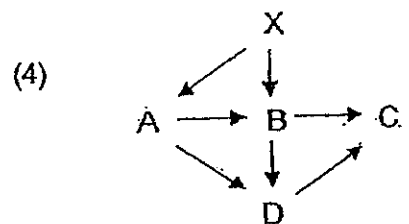
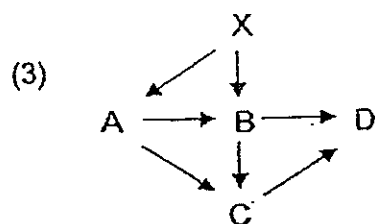
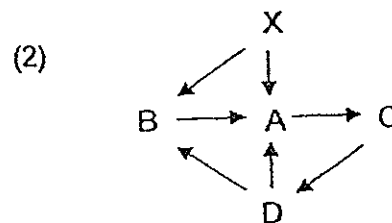
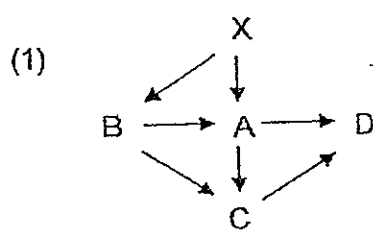
Which of the above statements are correct?

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

23. A, B, C and D are four living organisms in a community. The table below shows the food of these four organisms.

Food consumer	Food
A	X
B	X and A
C	B and D
D	A and B

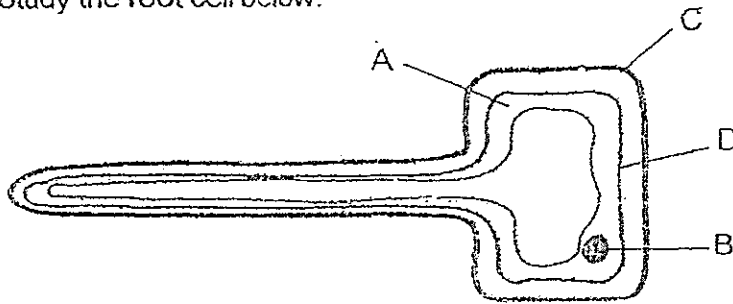
Which of the following food webs is found in this community?



24. Which pathway do most nutrients take after a person takes a bite of food?

- (1) digestive system → circulatory system → body cells
- (2) circulatory system → body cells → digestive system
- (3) digestive system → body cells → circulatory system
- (4) circulatory system → digestive system → body cells

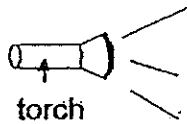
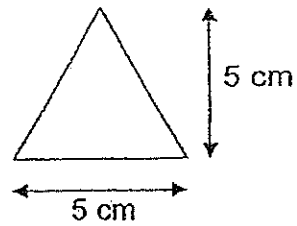
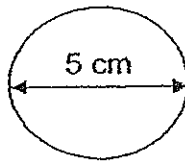
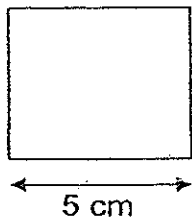
25. Study the root cell below.



Which parts of the cell above are also present in all animal cells?

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

26. The diagram below shows 3 pieces of wood of different shapes.



Three pieces of wood glued together

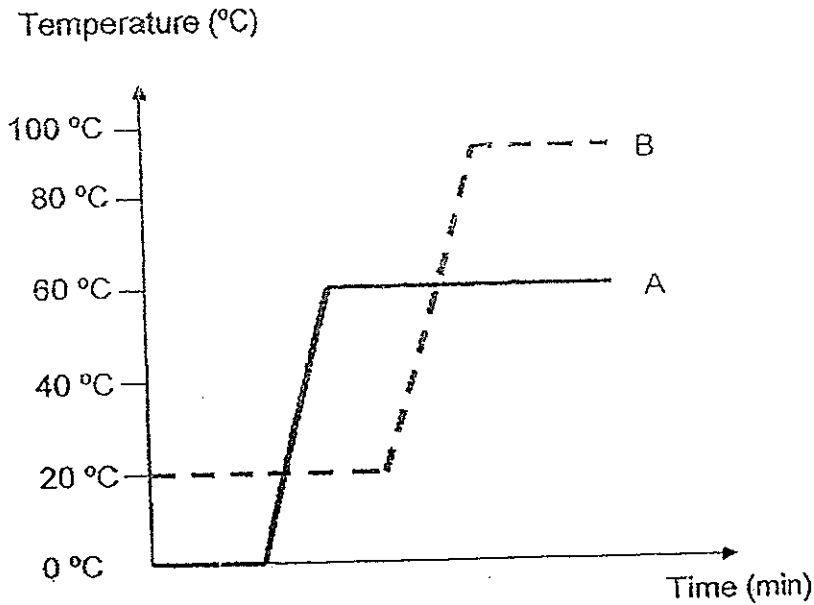
screen →



Which of the following shadows would be observed on the screen?

(1)		(2)	
(3)		(4)	

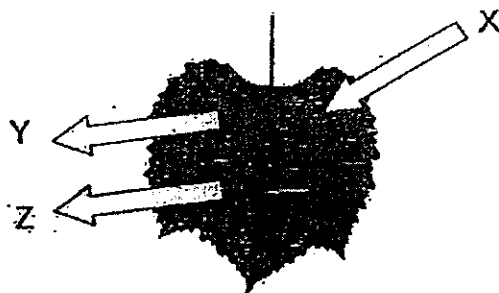
27. The graph shows the melting point and boiling point of two substances A and B.



When the surrounding temperature is 50°C what is the state of A and B?

	A	B
(1)	Solid	Liquid
(2)	Liquid	Solid
(3)	Liquid	Liquid
(4)	Gas	Gas

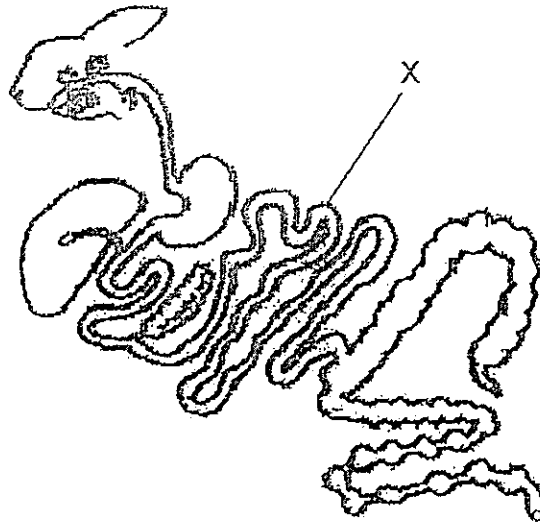
28. The diagram below shows the movement of gases in and out of a leaf which is growing on a potted plant left in a dark room.



Which of the following correctly shows the gases indicated by the arrows?

	X	Y	Z
(1)	Carbon dioxide	Oxygen	Water vapour
(2)	Oxygen	Water vapour	Carbon dioxide
(3)	Water vapour	Carbon dioxide	Oxygen
(4)	Water vapour	Oxygen	Carbon dioxide

29. The diagram below shows the digestive system of a rabbit. Katherine and her classmates were told that the digestive system of a rabbit is very similar to that of a human being.

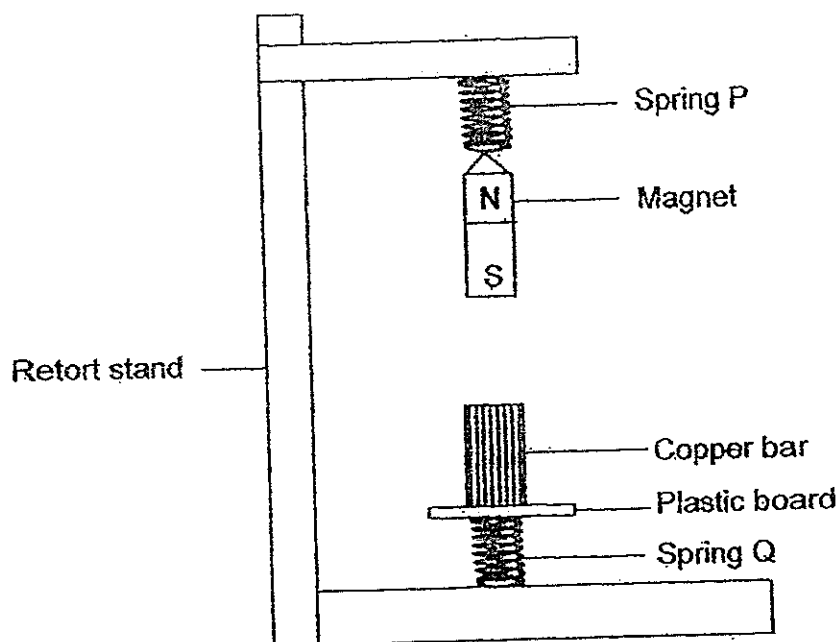


Blood leaving X carries more _____ than the blood entering it.

- A oxygen
- B digested food
- C carbon dioxide

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

30. Mr Cheng set up an experiment as shown below to find out how a copper bar would interact with a magnet hanging from Spring P which is attached to the top of the retort stand.
- Another spring, Spring Q, was attached securely onto the plastic board and placed at the base of the retort stand.
- Both springs have an original length of 4cm
- He then placed a copper bar onto the plastic board and measured the length of both the springs.



Which one of the following sets of results shows how the copper bar will interact with the magnet?

	Length of Spring P	Length of Spring Q
(1)	3cm	4cm
(2)	4cm	4cm
(3)	5cm	3cm
(4)	5cm	5cm



NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2014
PRIMARY 6
SCIENCE
BOOKLET B

14
16 Open-ended questions (40 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

Section B

	/40
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Name: _____ () Class: P 6 _____

Date : 16 May 2014

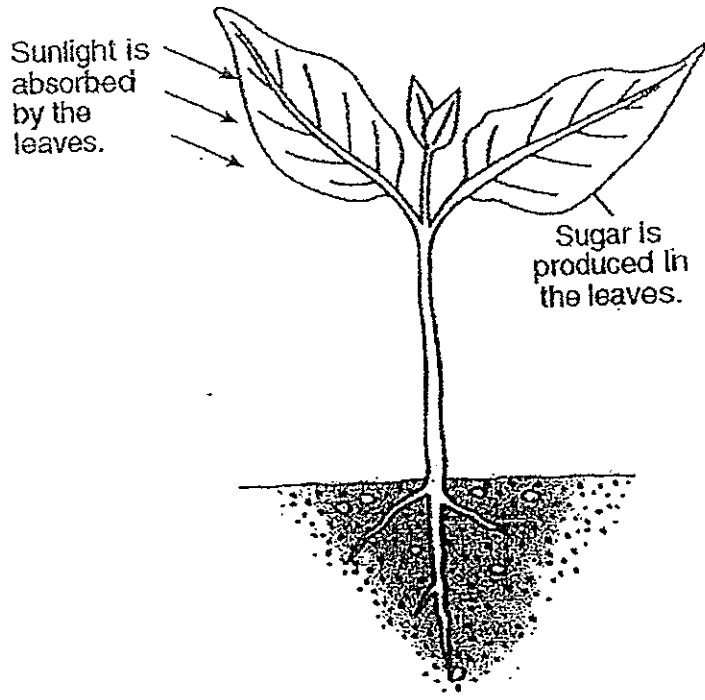
Parent's Signature: _____

Section B: (40marks)

Write your answers to question 31 to 44 in the spaces provided.

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

31. The diagram below shows a plant carrying out photosynthesis.

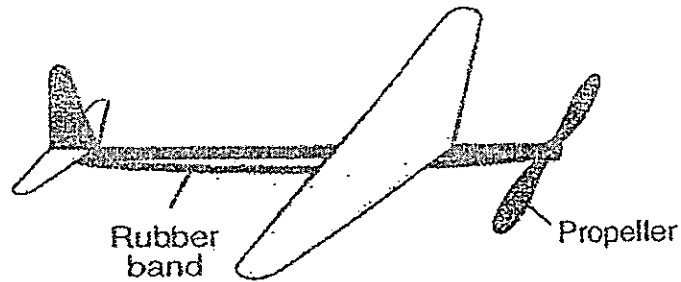


(a) Other than sunlight, name 2 other substances that are also taken in by the plant to make food. [1]

(b) State one way the plant uses the sugar that is produced in the leaves. [1]

Score	2
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32. The diagram below shows a toy airplane. The propeller is turned 20 times which twists the rubber band connected to it. When the propeller is released the rubber band unwinds and the propeller turns at a high speed, enabling the airplane to move forward.



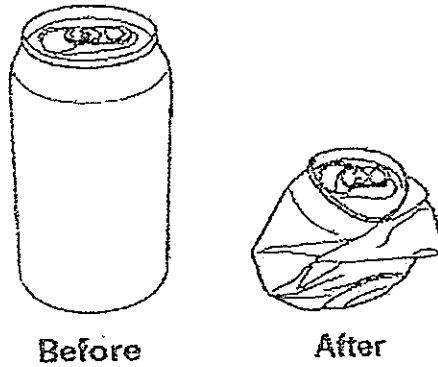
- (a) State the energy conversion when the rubber band unwinds and the propeller turns enabling the toy airplane to move forward. [1]

	→	
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- (b) Without making any changes to the toy airplane, identify one change that could be made to make the airplane move further? [1]
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Score	2
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33. The diagram below shows an empty aluminium can before and after it was crushed.



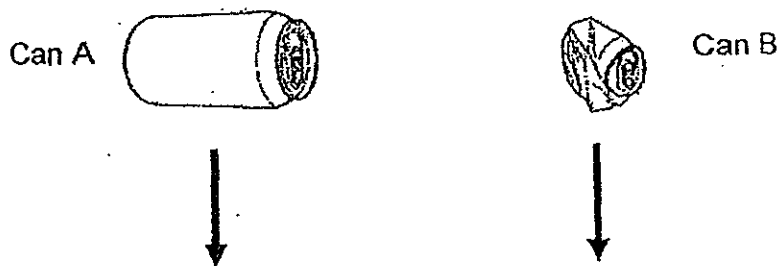
(a) What force is exerted on the can to cause the change? Put a tick in the correct box. [1]

Push

Pull

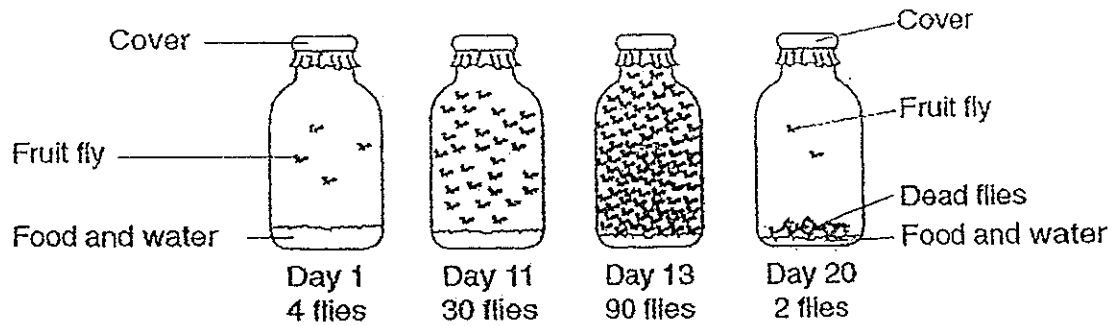
(b) What effect does the force mentioned in (a) have on the can? [1]

(c) Sally took 2 other empty identical aluminum cans and labelled them Can A and Can B. She crushed Can B like the diagram above. Then she dropped both cans from the same height in the direction as shown in the diagram below. Which can, A or B, will reach the ground first? Explain your answer. [2]



Score	4
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34. The diagram below shows the results of a fruit fly activity that took place over a 20-day period. On Day 1, four fruit flies were placed in a jar containing food and water. The jar had a cover that allowed enough air exchange for the fruit flies to survive, but would not allow them to escape or other flies to enter. The number of flies observed in the jar during the 20-day period is shown.



- (a) What is the process responsible for the population change that occurred from Day 1 to Day 13? [1]

- (b) State two possible reasons why many of the fruit flies died from Day 13 to Day 20. [1]

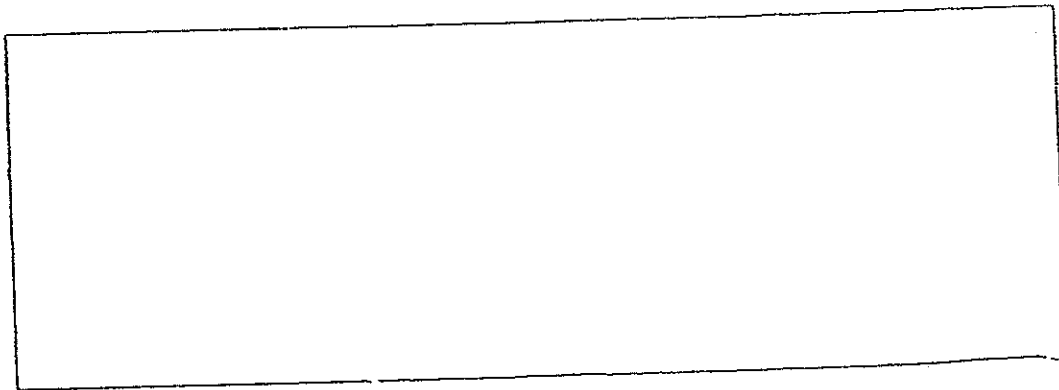
Score	2
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35a. Study the information given below.

T feeds on R.
S has no predator.
S feeds on Q and T.
P is eaten by Q and R.

Using the information given, draw a food web in the box below.

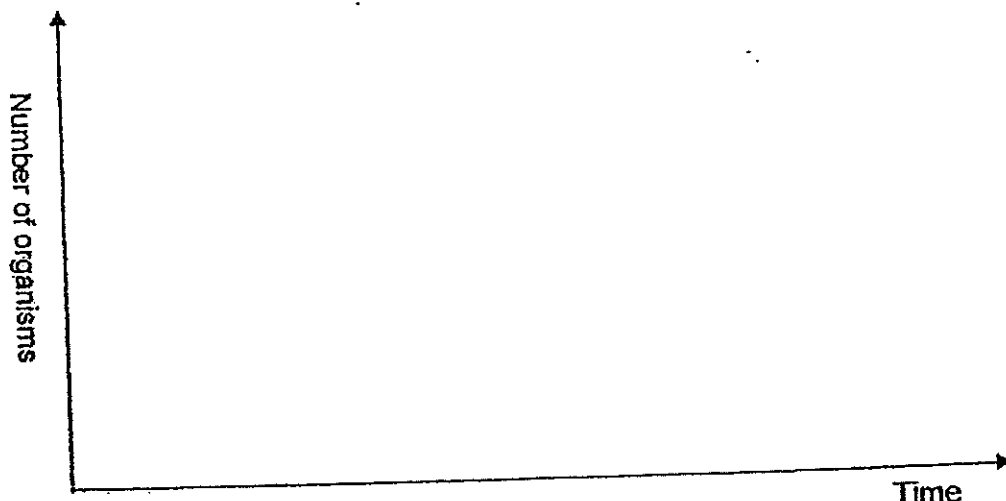
[1]



35b. Study the food chain below..

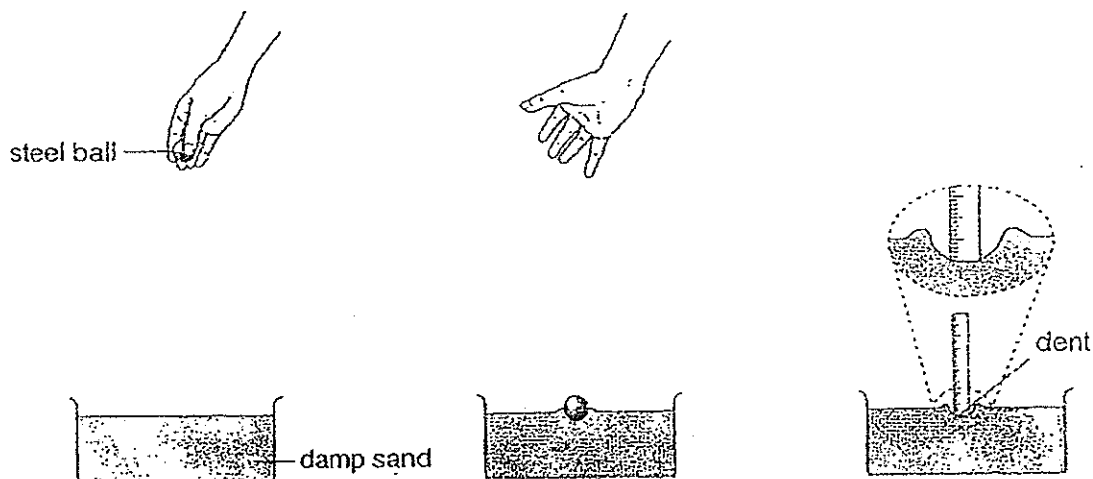


If all the rabbits were removed, sketch a graph below to show the immediate effect on the populations of the organisms in the food chain. Label your graph clearly. [2]



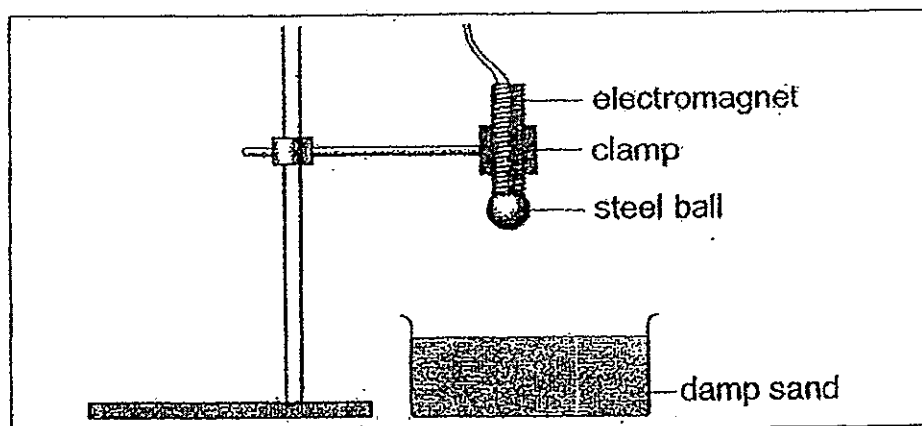
Score	3
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36. Jack dropped a steel ball into a tray of damp soil as shown below. He measured the depth of the dent made in the damp soil.



- (a) Jack dropped the steel ball from different heights. Predict how the depth of the dent would change with the height of drop. Give a reason for your answer. [2]

- (b) Jack's friend said that the ball could be dropped using an electromagnet instead of dropping it by hand.

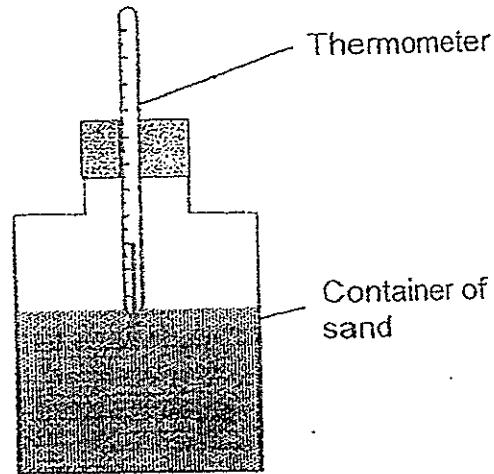


Explain why this would improve the investigation.

[1]

Score	3
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37. Ming found out that shaking a container of sand would cause the temperature of the sand to rise.

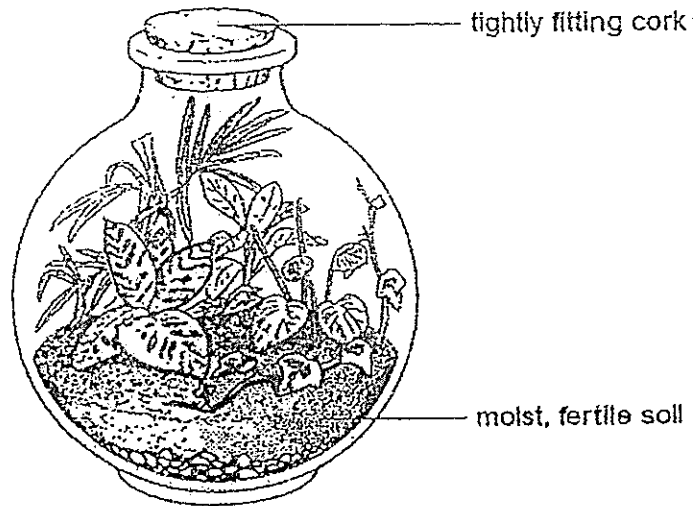


- (a) Explain why the shaking would cause the temperature of sand to rise. [2]

- (b) He then performed a new experiment to see if shaking a container of small rubber balls would cause the temperature of the rubber balls to rise. Describe how you would find out if shaking a container of small rubber balls would affect its temperature. [2]

Score	4
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38. The diagram below shows a bottle garden which is kept in a brightly lit room.

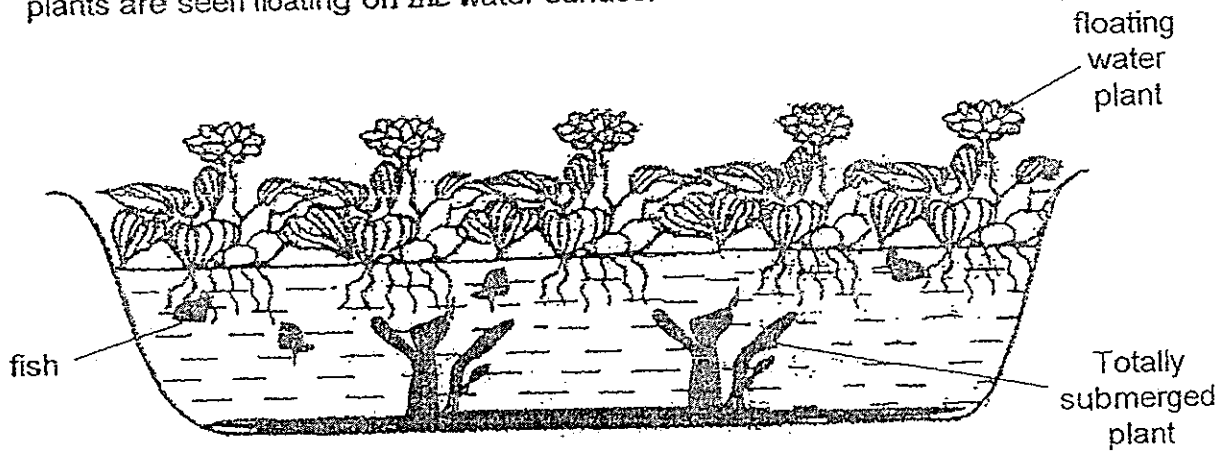


(a) Explain why the plants can survive in the bottle for years without any watering. [1]

(b) Cross-pollination is the transfer of pollen grain from one plant to another. Give two reasons why cross-pollination is less likely to happen in this bottle garden than in an outdoor garden. [2]

Score	3
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39. The diagram below shows the cross section of Jamie's school pond. Many water plants are seen floating on the water surface.

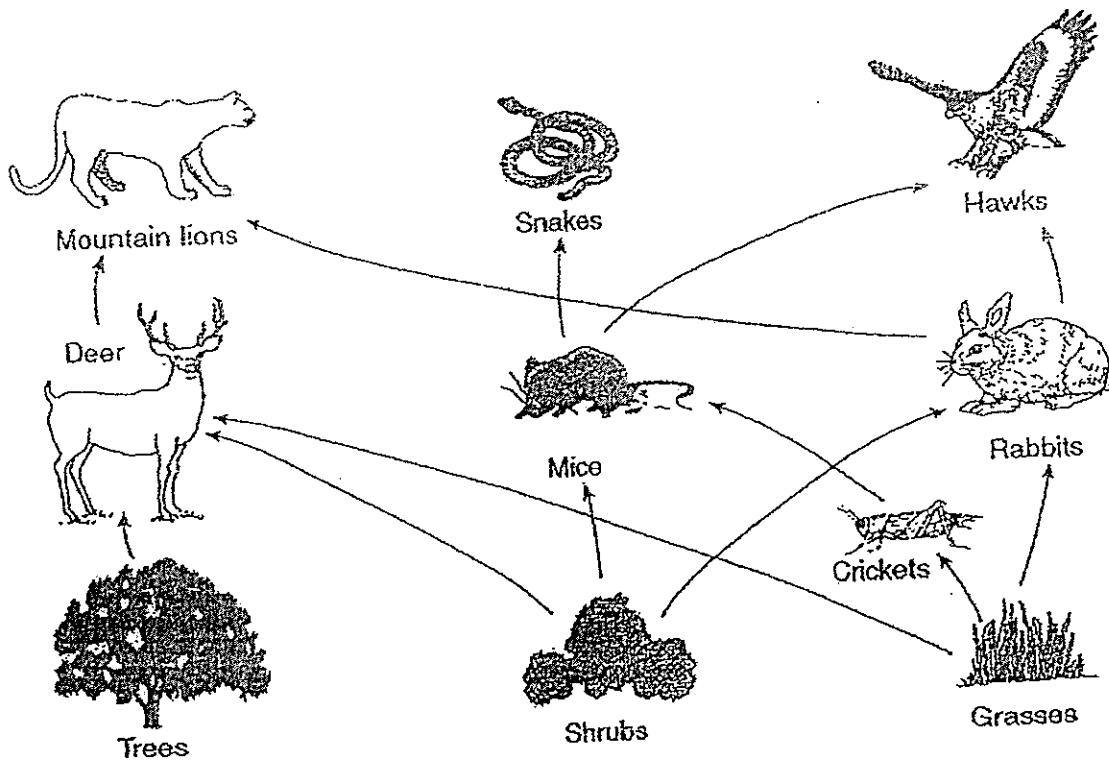


(a) Jamie's classmate said that the school should remove some of the floating water plants as it will affect the totally submerged plants. Do you agree? Explain your answer. [1]

(b) Give a reason each to explain how the fish and the totally submerged water plants are interdependent on each other. [2]

Score	3
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41. The diagram below shows part of a food web.

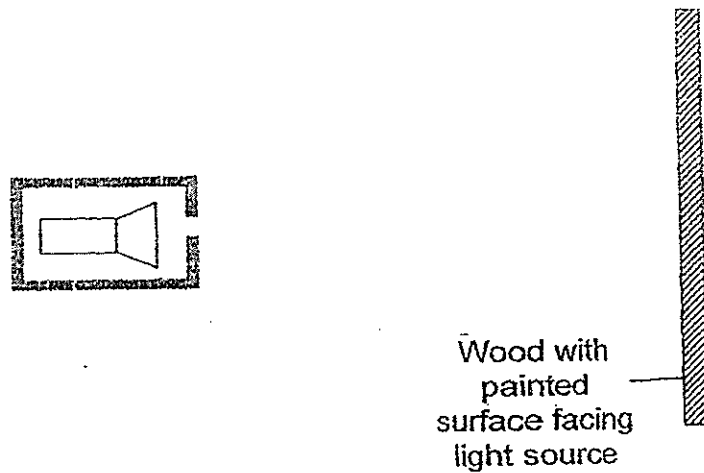


(a) Explain clearly how an increase in the number of rabbits will cause an increase in the population of mice. [2]

(b) Rat poison can be used to control the population of mice. After some time, each snake contains more poison than each mouse. Explain why each snake contains more poison than each mouse. [1]

Score	3
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42. Samantha wanted to find out how well the different types of paint reflect light. She painted four similar pieces of wood with the same colour but of different type of paints.



- (a) Put a 'X' to indicate in the diagram above to show where Samantha should place the light sensor to measure the light reflected by the paint. [1]
- (b) Why should Samantha conduct her experiment in a dark room? [1]

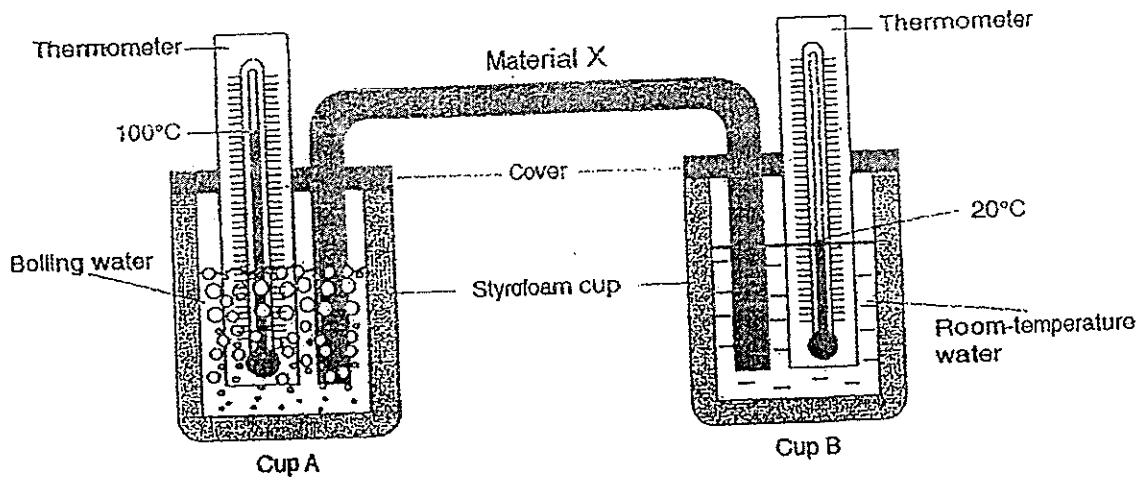
- (c) She carried out the experiment with 4 types of paint and recorded her results in the table below.

Type of paint	Amount of light reflected (lux)
A	100
B	30
C	60
D	80

Which type of paint should she use to paint a banner so that it will be the most visible to the pedestrians at night? Give a reason for your answer. [1]

Score	3
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43. Chee Wai wanted to investigate the heat conductivity of different materials. The diagram below shows how he connected two insulated styrofoam cups of water with Material X. The thermometers show the temperature of the water in Cup A and Cup B at the beginning of the experiment.



He measured and recorded the temperature of the 2 cups after 15 minutes. Then he repeated the experiment using Material Y and Z respectively. The results of his experiment are shown below.

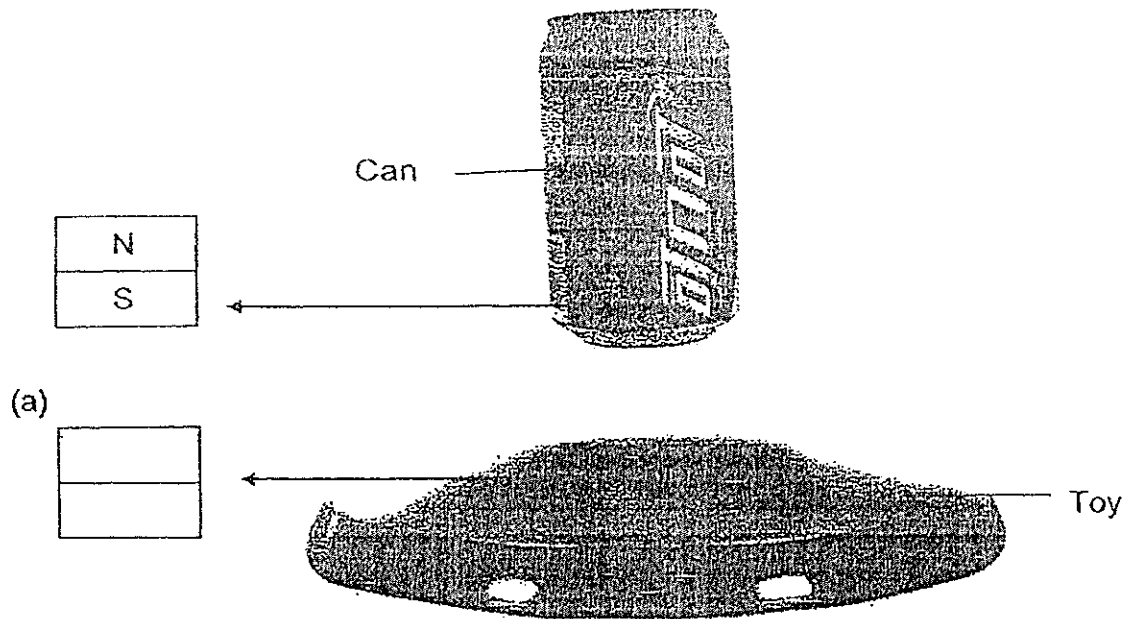
Material	Temperature of Cup A after 15 minutes	Temperature of Cup B after 15 minutes
X	80°C	24°C
Y	60°C	30°C
Z	90°C	22°C

- (a) Based on the results, which material is the best conductor of heat? Give a reason for your answer. [1]

- (b) If Chee Wai wanted to choose a material to make an ice-box for storing cold drinks, which material is the most suitable? Explain your answer. [1]

Score	2
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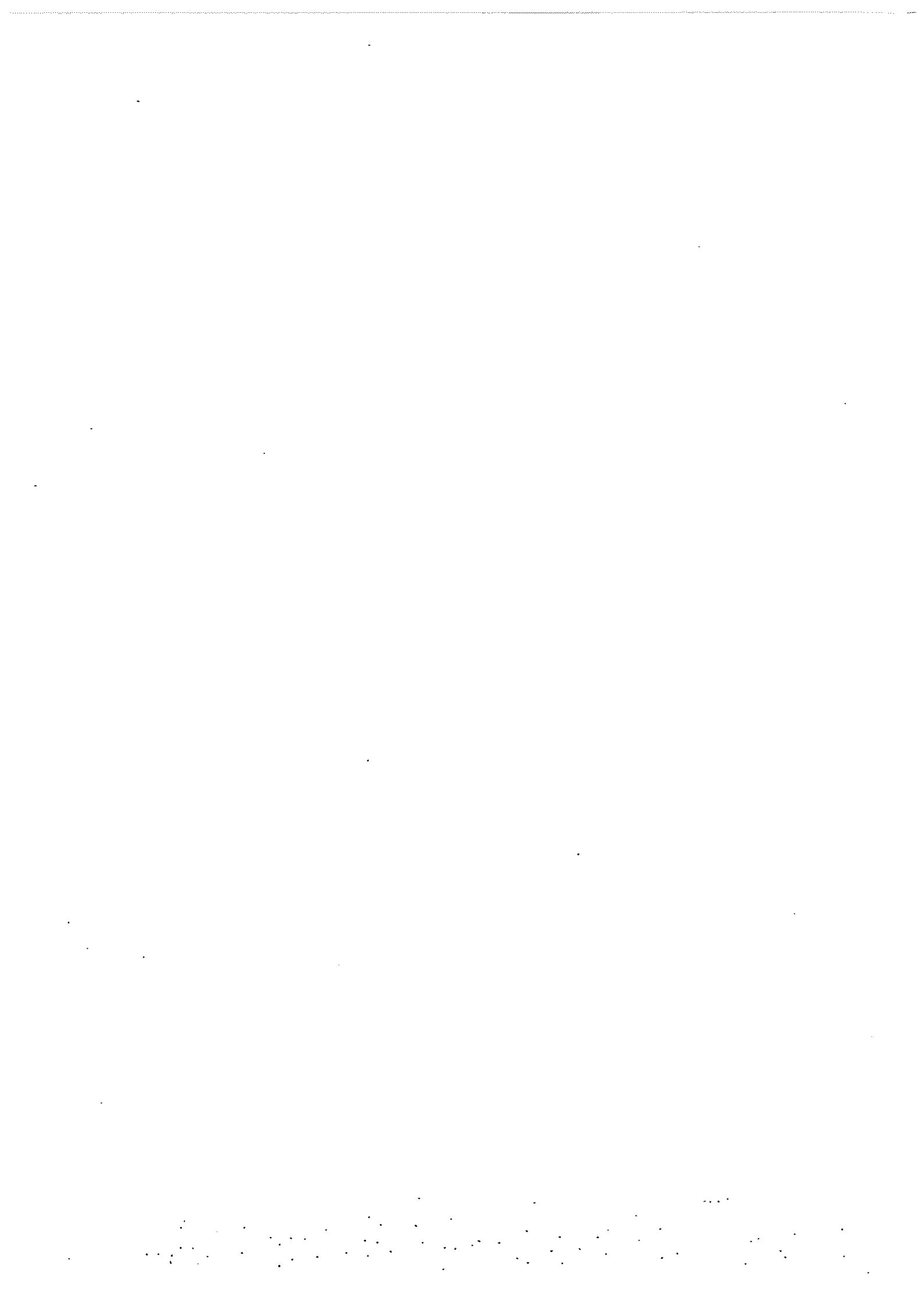
44. The diagram below shows a toy. Both the toy and the can have magnets inside them. The can appears to be 'floating' in the air.



- (a) Label the poles of the magnet in the toy in the diagram above so that the can is able to 'float' in the air. [1]

- (b) Explain clearly why the can drops to the floor when the toy is removed. [2]

Score	3
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ANSWER SHEET

EXAM PAPER 2014

SCHOOL : NAN HUA

SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

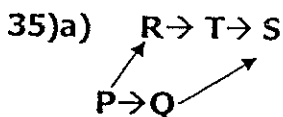
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	1	3	3	1	4	1	3	2	3	2	3	3

- 31)a)Water and Carbon dioxide.
b)Growth.

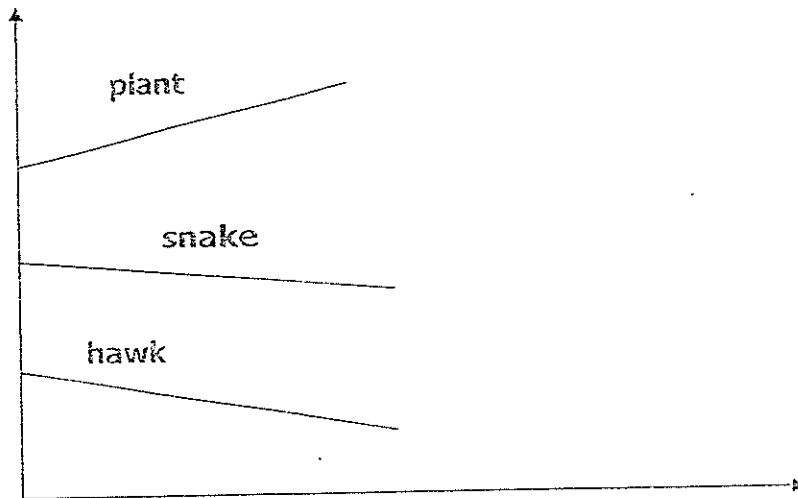
- 32)a)Elastic Potential Energy→Kinetic Energy.
b)Increase the number of times the propeller is turned.

- 33)a)Push
b)It changes the shape of the can.
c)Can B will reach the ground first as it has less surface area in contact with air and will encounter less air resistance.

- 34)a)Reproduction.
b)1)There could have been a lack of oxygen.
2)The food and water might have ran out.



35)b)



36)a) The higher the position the steel ball is dropped, the deeper the dent would be. There is more gravitational potential energy to be converted to kinetic energy at a higher position so the dent will be deeper.

b) It ensures that the force user to drop the steel ball will be the same in energy try so that the results of the experiment will not be affected.

37)a) When the sand is shaken, the friction between the grains of sands produces heat which increases the temperature.

b) 1) Using the thermometer, measure the temperature of the container of rubber balls.

2) After recording down the temperature, shake the container of rubber balls.

3) Repeat step 1 and note down the temperature.

4) Compare the two temperature and then conclude results.

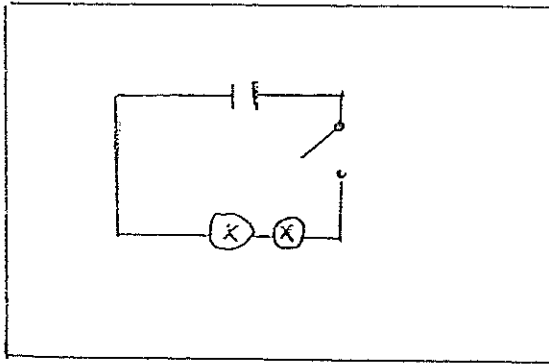
38)a) Water will evaporate from the moist soil to water vapour. When the water vapour comes in contact with the cool inner surface of the bottle, the water vapour will condense back into droplets and drip back to the soil.

b) There are no pollinations to transfer the pollen grains. There is no in to transfer the pollen grains.

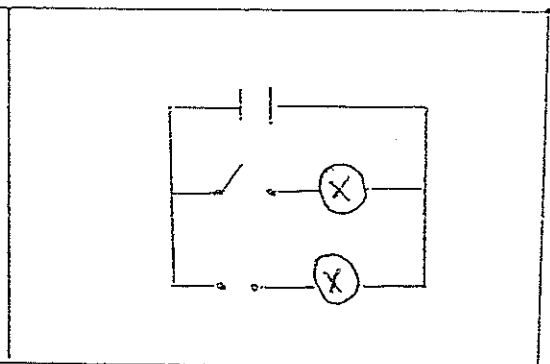
39)a) Yes. Too many floating plants will prevent sunlight from reaching the totally submerged plants with less sunlight, the totally submerged plants will make less food and some will die.

b) In the presence of sunlight, the plants photosynthesis and produce oxygen for the fish to respire. During respiration the fish release carbon dioxide which the plants take in for photosynthesis.

40)a)i)



ii)

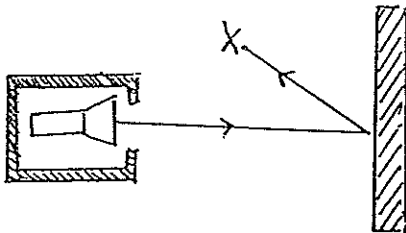


b) Kinetic energy \rightarrow Kinetic energy \rightarrow Electrical energy \rightarrow light energy

41)a) When the population of rabbits increase, there will be more food for the hawks, so less mice will be eaten by the hawks. The mice reproduce and increase in population.

b) The snake had to eat many mice to get sufficient energy and the poison from many mice accumulated in the body.

42)a)



b) It is to ensure that the light collected from the light sensor is collected from the reflected light of the surface rather than other reasons.

c) Type A of paint Type A paint reflected the most amount of light so more light will be reflected into the pedestrian's eyes, allowing them to notice the banner easily.

43)a)

b) Material Z. It is the poorest conductor of heat and will allow the least heat transfer from the surrounding to the ice-box there by keeping the drinks cold.

44)a) SN

b) The can floats as like poles of the can and toy were facing each other. The can dropped to the floor when the magnetic force of repulsion was gone when the toy was removed. Gravitational force acting on the can caused it to drop to the floor.

