



**NAN HUA PRIMARY SCHOOL  
SEMESTRAL ASSESSMENT 1 – 2015  
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**

<b>Booklet A</b>		<b>/ 60</b>
<b>Booklet B</b>		<b>/ 40</b>
<b>Total</b>		<b>/100</b>

**Name:** \_\_\_\_\_ (     ) **Class: P 6** \_\_\_\_\_

**Date : 13 May 2015**

**Parent's Signature:** \_\_\_\_\_

---

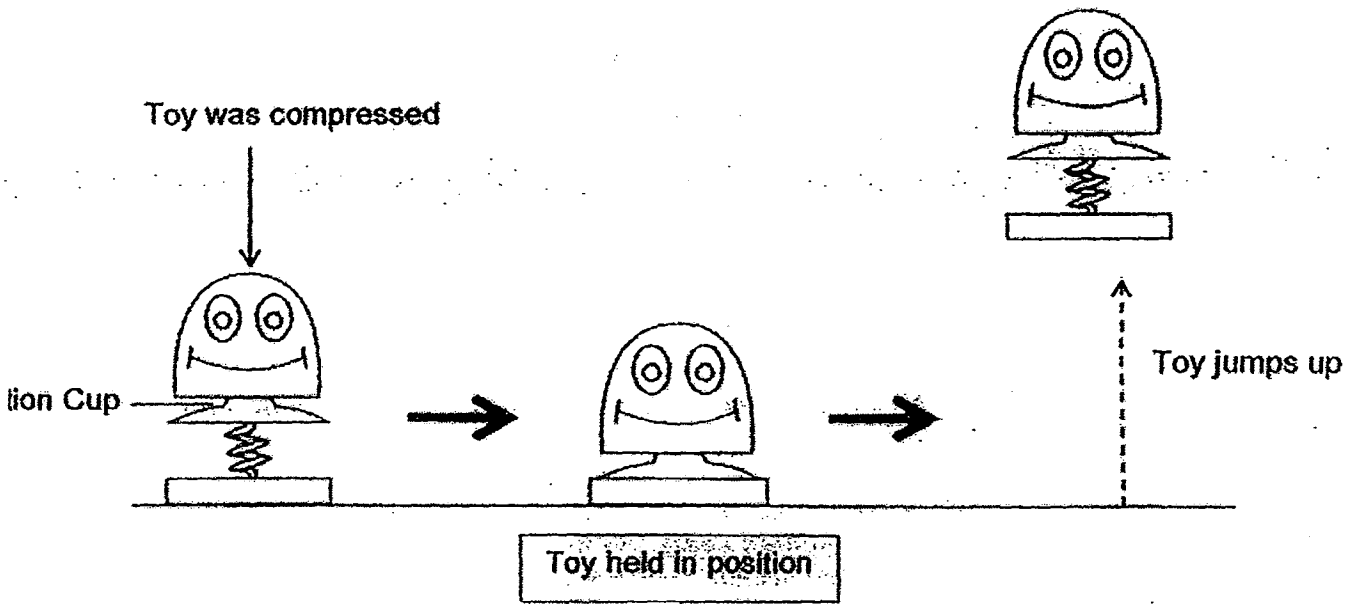


**Section A: (30 x 2marks = 60marks)**

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) Plants need light energy to make food.
  - (2) All animals depend directly on plants for energy.
  - (3) The Sun is the main source of energy for all living things.
  - (4) Energy is transferred from the Sun to plants during photosynthesis
2. We need to conserve energy sources such as coal, oil and natural gas as they \_\_\_\_\_.
- A are non-renewable
  - B take one hundred years to form
  - C are available readily everywhere
  - D can be formed from other sources
- (1) A only
  - (2) D only
  - (3) A and B only
  - (4) B, C and D only

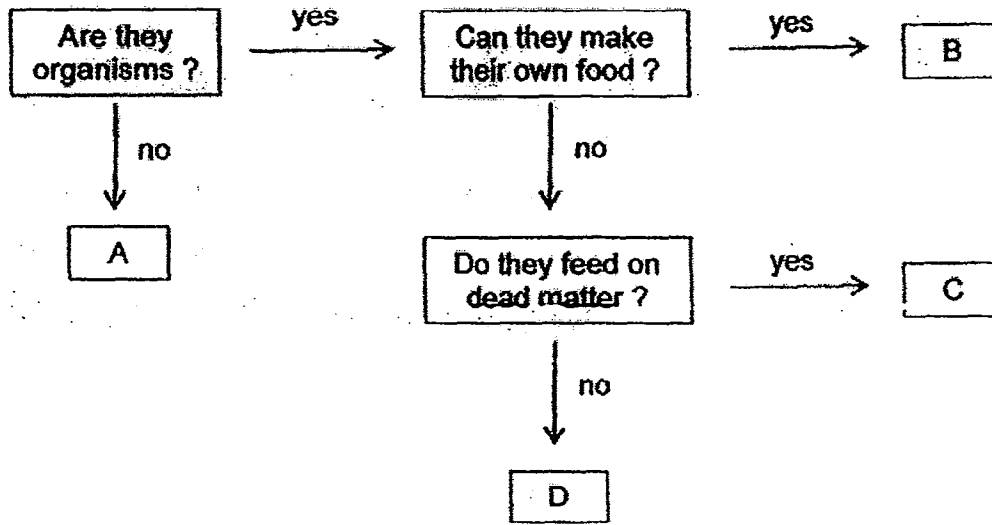
3. Peter bought an elastic spring toy as shown in the diagram below. He pushed the toy down so that the spring was compressed. The suction cup would then hold the toy in position. After a while, the toy would jump up into the air.



Which of the following shows the direction the force is acting on the toy when it is held in position on the table?

	Gravitational Force	Elastic Spring Force
(1)	↓	↑
(2)	↑	↑
(3)	↑	↓
(4)	↓	↓

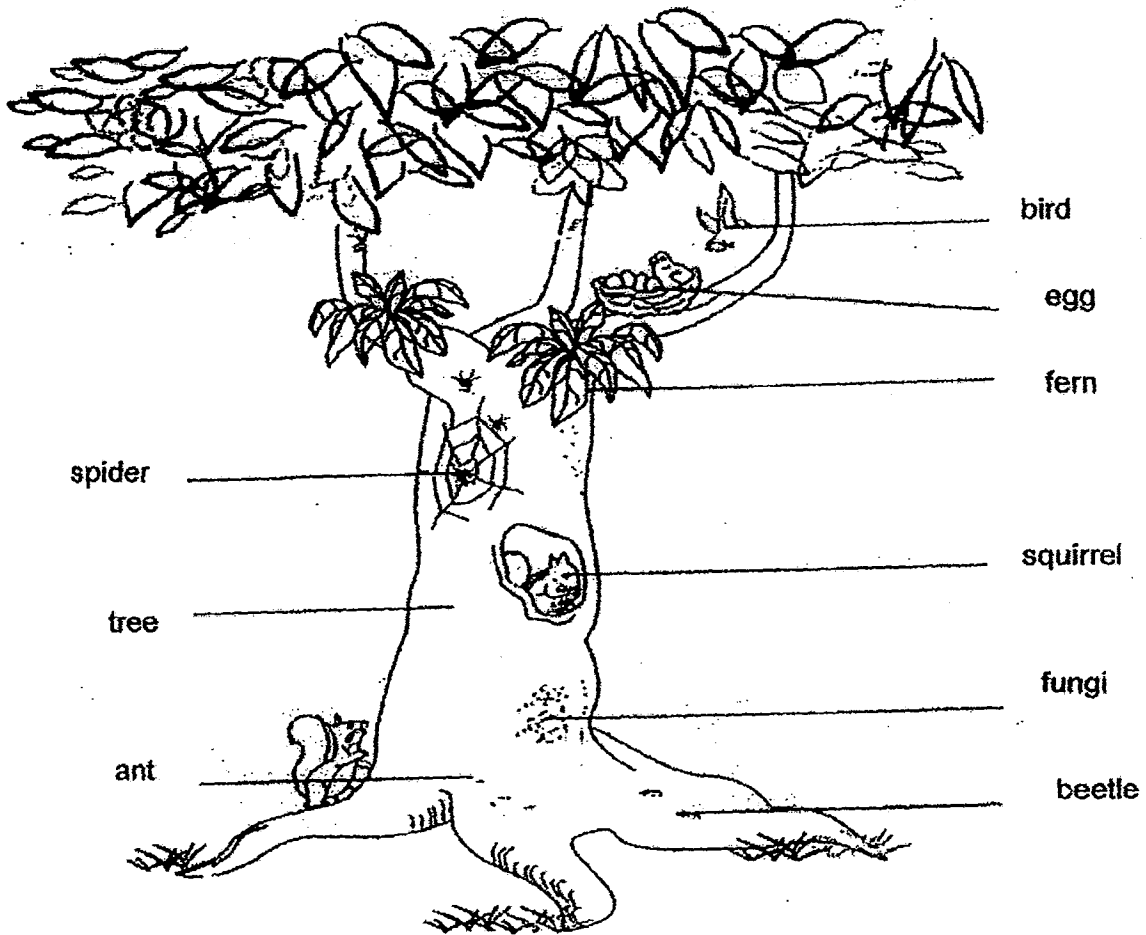
4. Study the flow chart below carefully.



Which one of the following correctly shows what A, B, C and D could be?

	A	B	C	D
(1)	Car	Fern	Bacteria	Lizard
(2)	Turbine	Toadstool	Mould	Frog
(3)	Yeast	Rose plant	Mushroom	Bird
(4)	Telephone	Grass	Fern	Bacteria

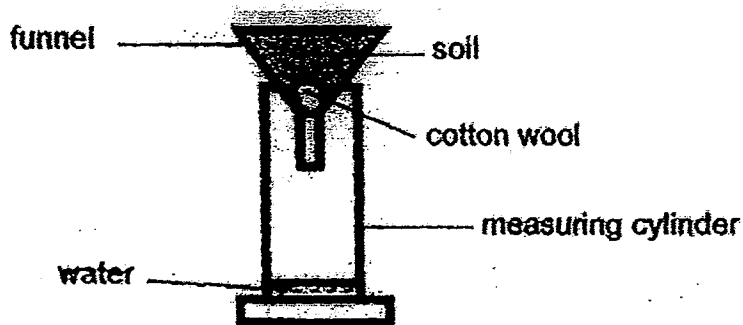
5. The diagram below shows living things found on a tree.



Based only on the picture, which one of the following statements is correct?

- (1) There are two types of decomposers.
- (2) There are nine populations of living things.
- (3) There is only one community of living things.
- (4) All the living things on the tree are food consumers.

6. Peter conducted an experiment to investigate which type of soil is suitable for growing mangrove plant, hibiscus and cactus. He prepared 3 similar set-ups like the one shown below and poured 50ml of water onto each soil sample.



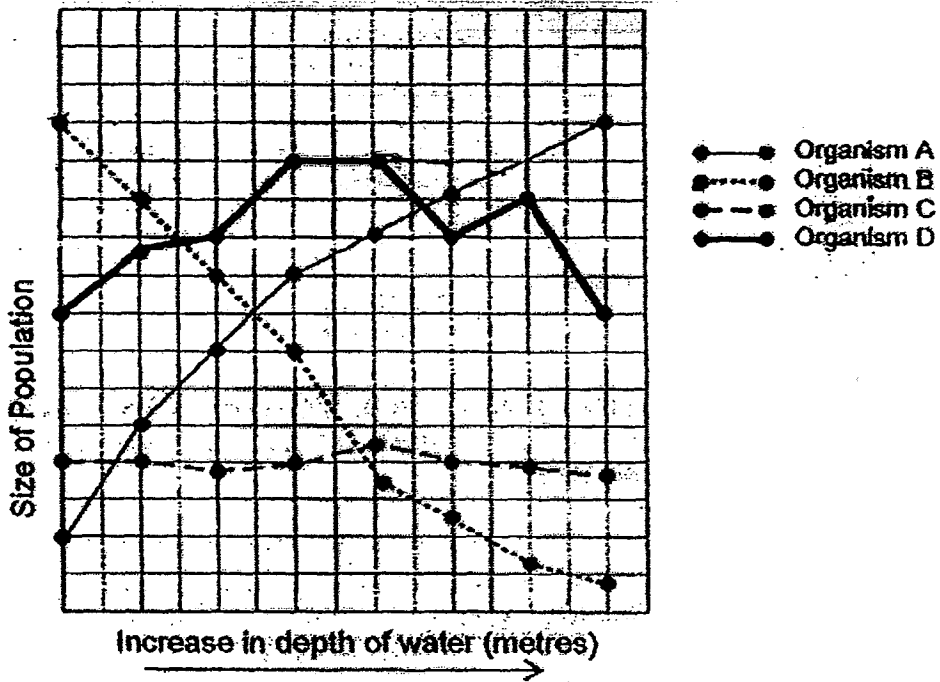
He recorded the time taken for 30ml of water to be collected in each measuring cylinder for the 3 types of soil. The table below show the results of his investigation.

	Soil X	Soil Y	Soil Z
Time taken to collect the water	2 min	8 min	50 min

Based on the information given, choose the most suitable soil for each of the plant below.

	Soil X	Soil Y	Soil Z
(1)	Mangrove plant	Hibiscus	Cactus
(2)	Hibiscus	Cactus	Mangrove plant
(3)	Cactus	Mangrove plant	Hibiscus
(4)	Cactus	Hibiscus	Mangrove plant

7. As the depth of the ocean increases, the amount of light the organisms receive decreases. The graph below shows the population size of four different species of organisms at different water depths.



Based on the graph above, which organism most likely performs photosynthesis?

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

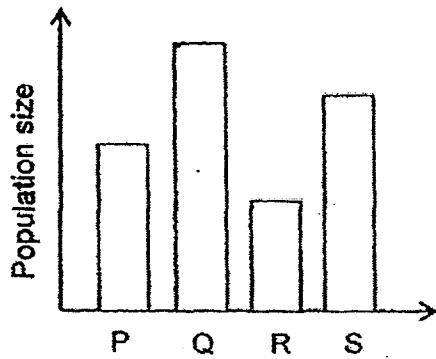


8. The diagram below shows how energy from the Sun is transferred from one organism to another in an eco-system:

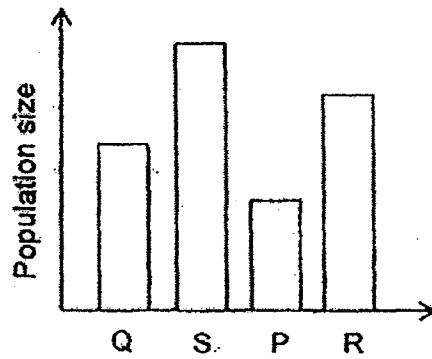


Based on the food chain above, which one of the following bar graphs represents the population size of the four organisms?

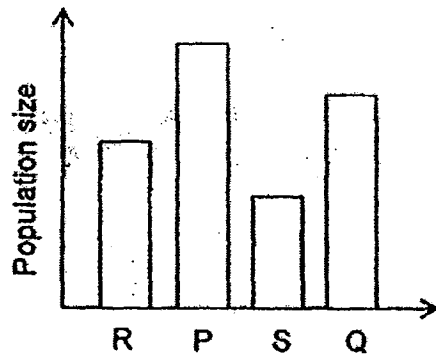
(1)



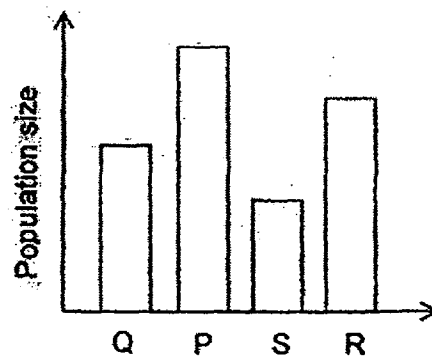
(2)



(3)

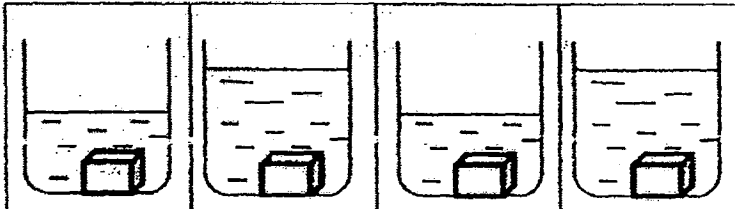


(4)



9. Chris prepared 4 set-ups as shown below. Each beaker contained different amount of water with a different temperature at the beginning as shown in the table.

Then he heated 4 identical metal cubes to a temperature of  $80^{\circ}\text{C}$ . He lowered each metal cube into a beaker of water as shown in the diagram below for 5 minutes.

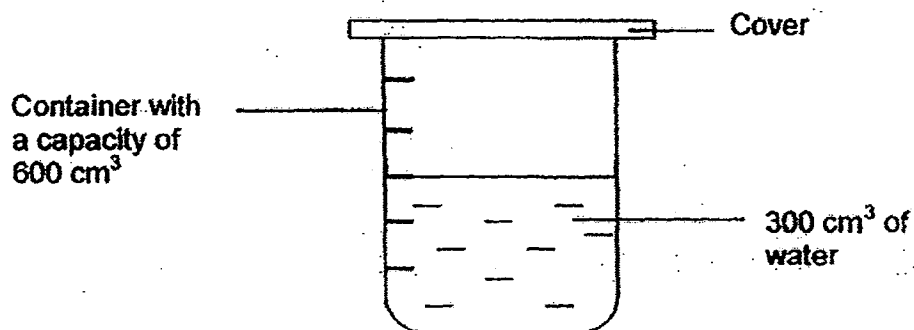


	Beaker A	Beaker B	Beaker C	Beaker D
Amount of water (ml)	100	200	100	200
Temperature of water ( $^{\circ}\text{C}$ ) at the beginning of the experiment	40	40	80	80

Which beaker of water would show the greatest increase in temperature and which beaker of water would possess the greatest amount of heat energy at the end of 5 minutes?

	Greatest increase in temperature	Greatest amount of heat energy
(1)	Beaker A	Beaker C
(2)	Beaker C	Beaker B
(3)	Beaker B	Beaker D
(4)	Beaker A	Beaker D

10. Amy prepared a set-up as shown in the diagram below.



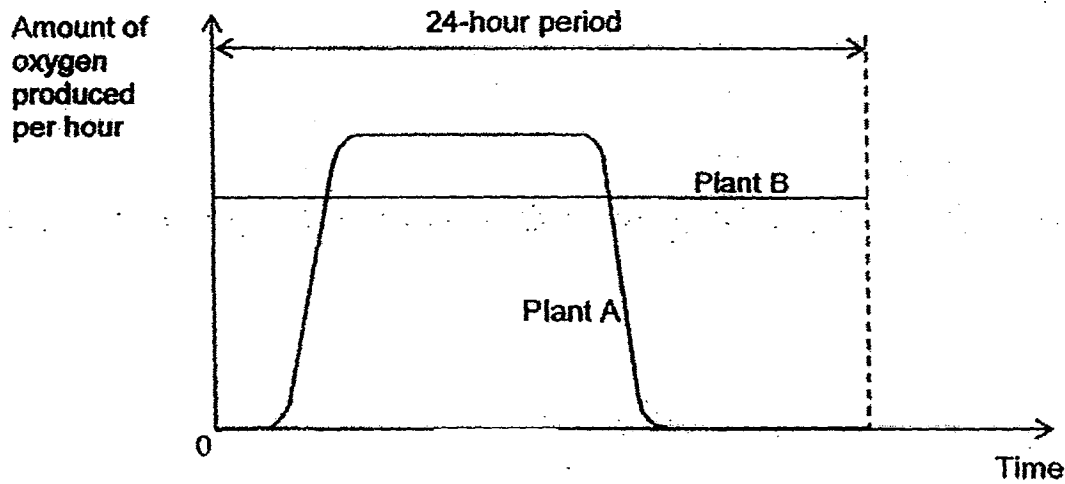
She then poured  $100 \text{ cm}^3$  of marbles into the container and pumped in  $300 \text{ cm}^3$  of air into the container and sealed it.

Which of the following statements is/are possible observations made by her?

- A The mass of the set-up will decrease.
- B The total volume of air in the set-up will increase.
- C The total volume of water in the set-up will increase.
- D The marbles will take up  $100 \text{ cm}^3$  of space in the set-up.

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

11. The graph below shows the amount of oxygen produced by 2 plants, A and B, that are growing at different locations over a period of 24 hours.

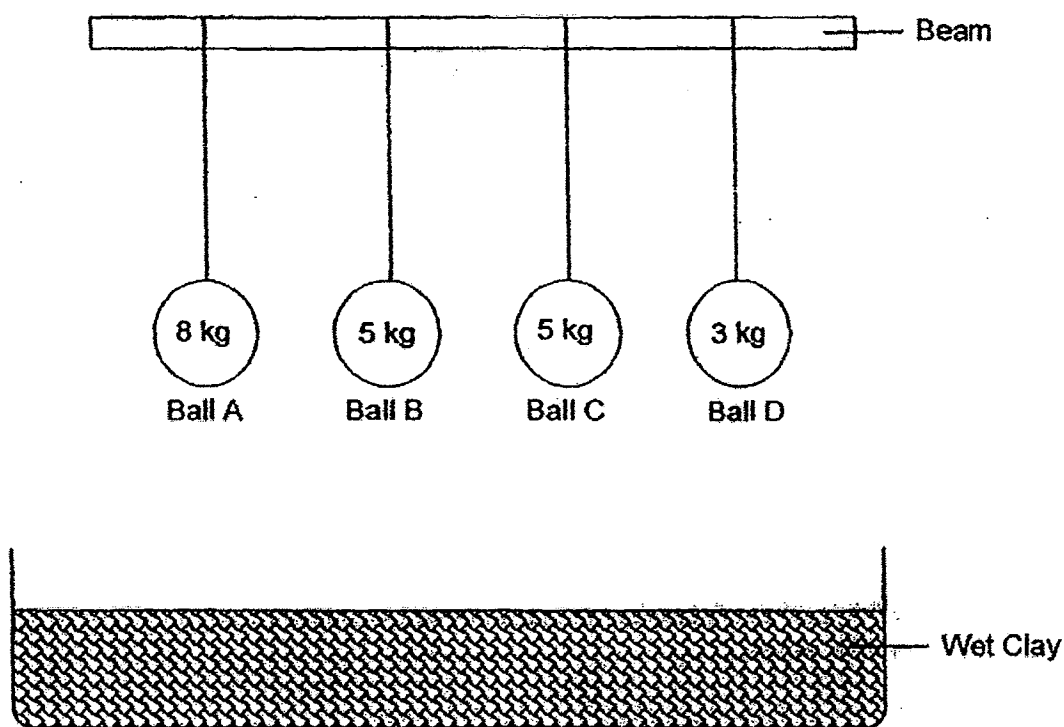


What can you infer from the graph above?

- A Plant A is larger than Plant B.
- B Plant B has a constant supply of light.
- C Both plants have made food throughout the 24-hour period.
- D Plant A is found in an open field whereas Plant B grows in a garden.

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

12. The diagram below shows 4 balls, A, B, C and D, which are of the same size being hung from a beam.



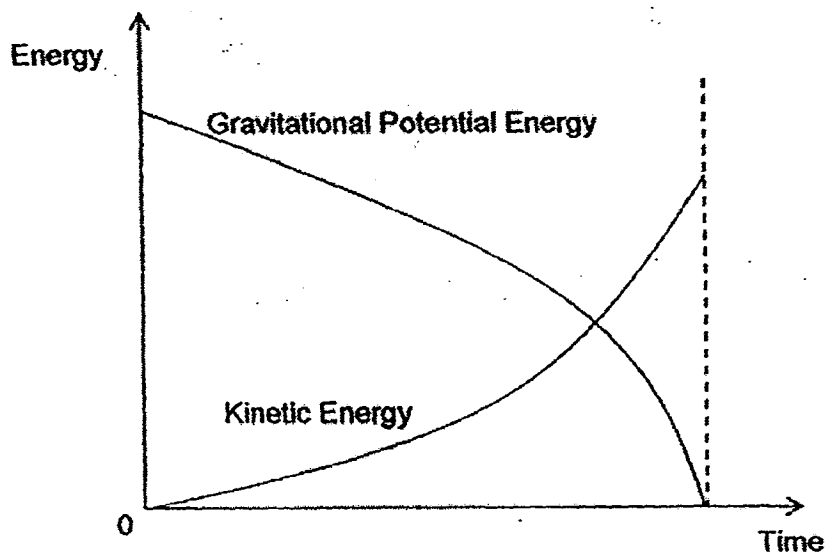
The strings that suspended them were then cut.

Which of the following statement(s) is/are correct?

- A Ball B and C created dents of similar depths
- B Ball D has the least mass so it created the deepest dent.
- C All the balls had similar gravitational potential energy since they were suspended at the same height.
- D Ball A possessed the greatest amount of gravitational potential energy when it was still suspended in the air.

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

13. Study the graph below.

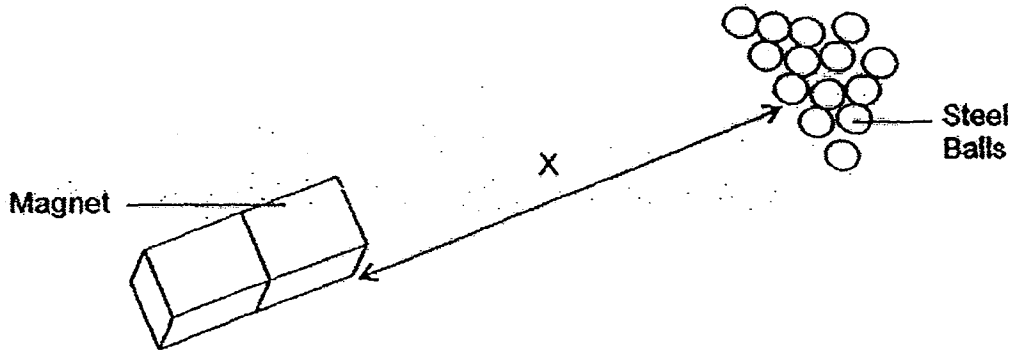


Which of the following would involve an energy conversion similar to the graph above?

- A A fish swimming through the water
- B A hot air balloon rising up into the sky
- C A bicycle that was going down a slope.
- D A coin that was dropping out of a person's pocket

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

14. Bala wanted to test the strength of 4 magnets, A, B, C and D. He set up the experiment as shown in the diagram below.



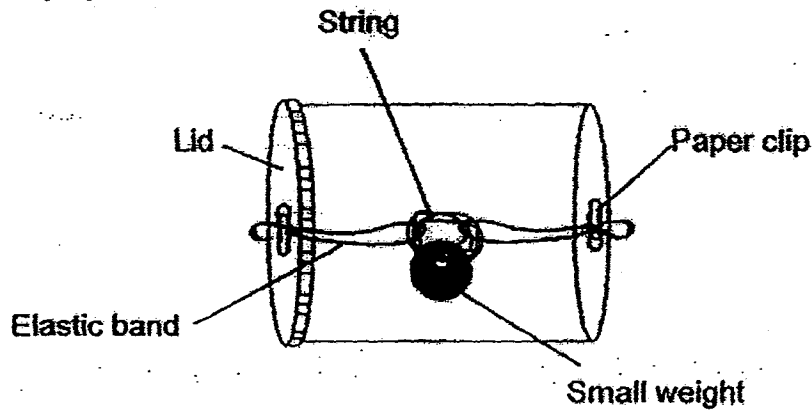
He then recorded the number of steel balls each magnet attracted when placed at a distance, X, from the steel balls in the table below.

Magnet	$X$ (cm)	Number of Steel Balls
A	8	8
B	12	8
C	8	6
D	12	6

Which of the following shows the correct order of the magnetic strength of the magnets from the weakest to the strongest?

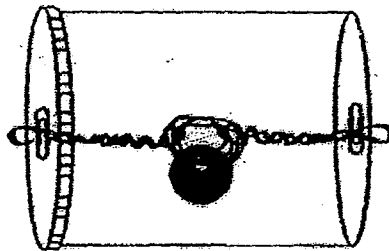
(1)	B	A	C	D
(2)	C	D	A	B
(3)	D	C	A	B
(4)	C	D	B	A

15. Ahmad made a toy as shown in the diagram below. He placed the toy on a table to play with it.



Come-back toy

To make the toy move forward, he has to first roll the toy backwards. After he has released the toy, it will then move forward for a distance before rolling back to the player on its own again.



After rolling the toy backwards and before releasing it

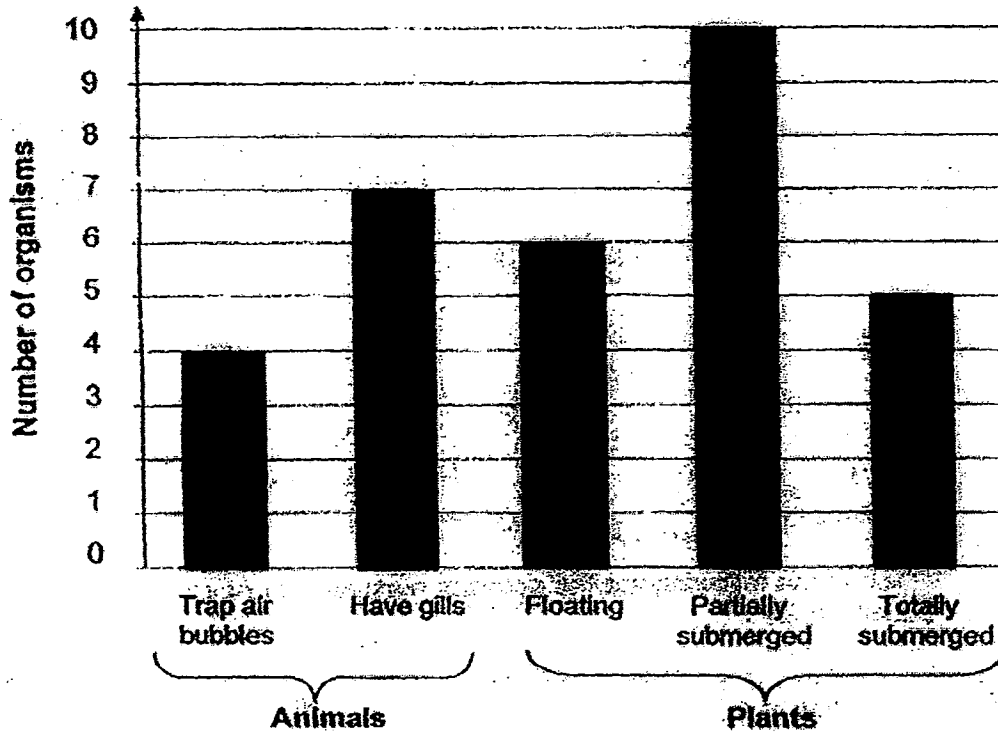
What force(s) is/are acting on the toy when it is rolling backwards to Ahmad?

- (1) Elastic spring force
- (2) Gravitational force and frictional force
- (3) Elastic spring force and gravitational force
- (4) Elastic spring force, gravitational force and frictional force



16. Alvin and his classmates counted the number of aquatic plants and animals found in their school eco-pond.

They plotted their results in a graph as shown below.



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

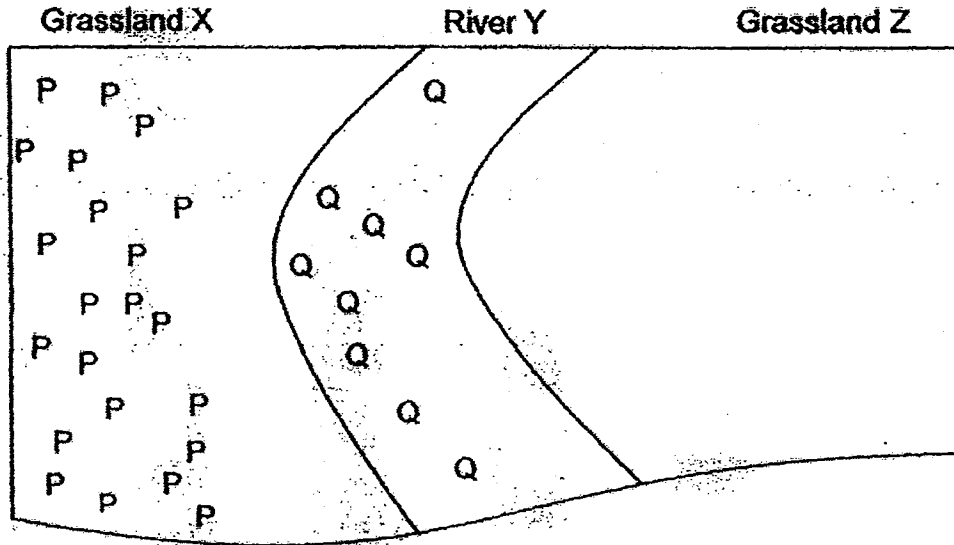
- A There are 11 animals.
- B There are 7 fish in the pond.
- C There are 21 populations of plants.
- D There are at least 5 populations of organisms.

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

17.

Animal P is a herbivore and has been living Grassland X for several years. Animal Q lives in River Y that divides Grassland X from Grassland Z. Animal Q feeds on Animal P when it comes near the river to drink water and will not leave the river.

In 2014, Animal P risked being eaten by Animal Q and travelled to Grassland Z.



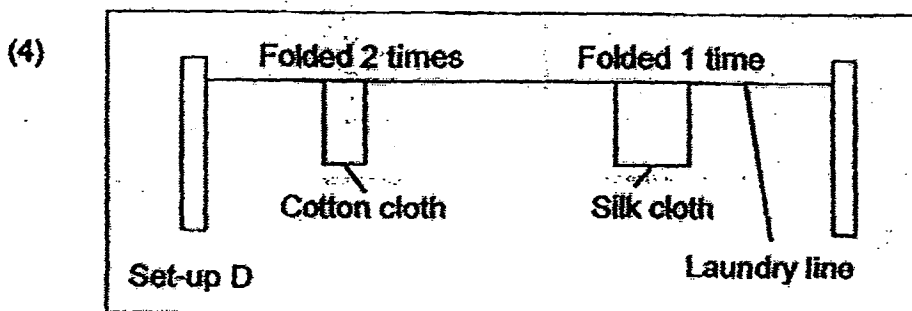
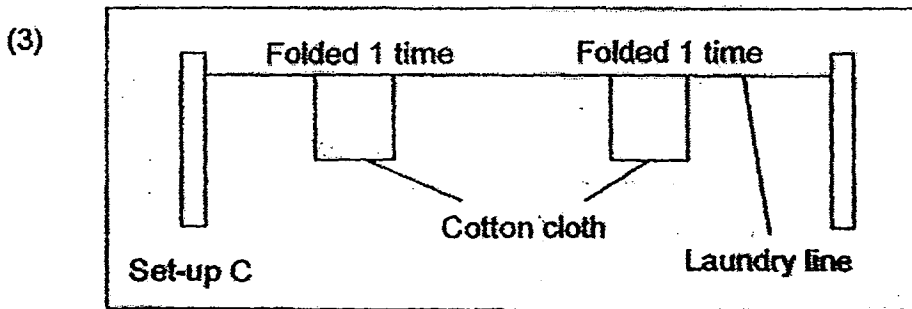
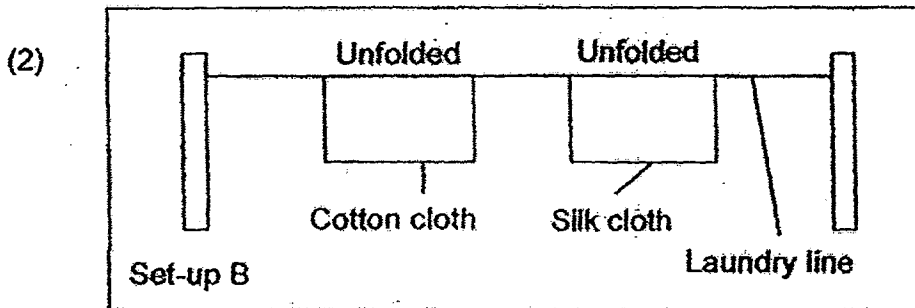
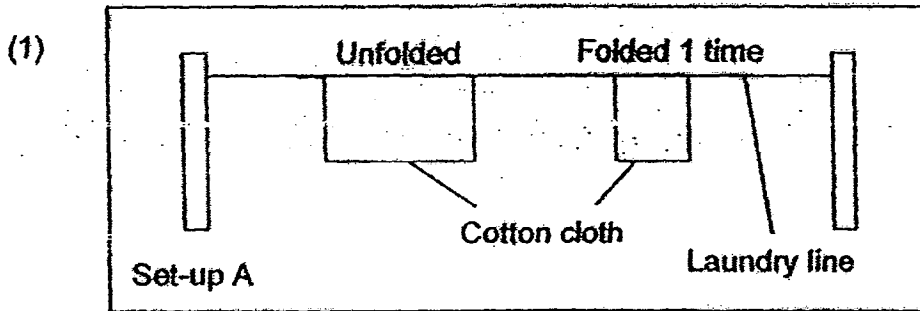
Which of the following are the possible reasons why Animal P moved to Grassland Z?

- A There was a forest fire in Grassland X.
- B Animal Q has started to live in Grassland X.
- C There was a decrease in the availability of food in Grassland X.
- D The physical characteristics of the environment in Grassland X were no longer suitable for Animal P.

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

18. Ellen wanted to find out if the material of a piece of cloth affects the rate of evaporation. She prepared a few set-ups for the experiment. She then poured an equal amount of water on each cloth before hanging them on a laundry line to dry.

Which set-up should she use in order for the test to be fair?

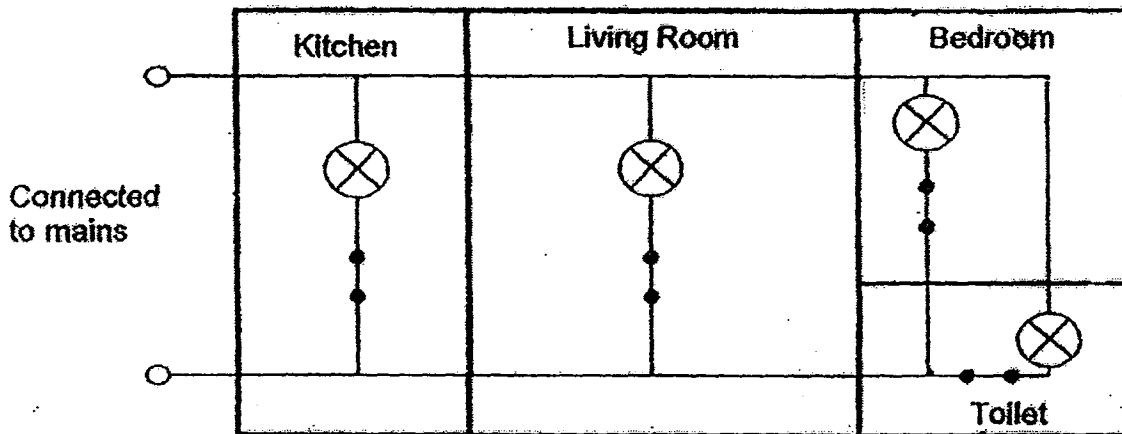


19. Mr Lim was designing the electrical circuit for the lighting in his daughter's doll house. His circuit needed to satisfy the following criteria:

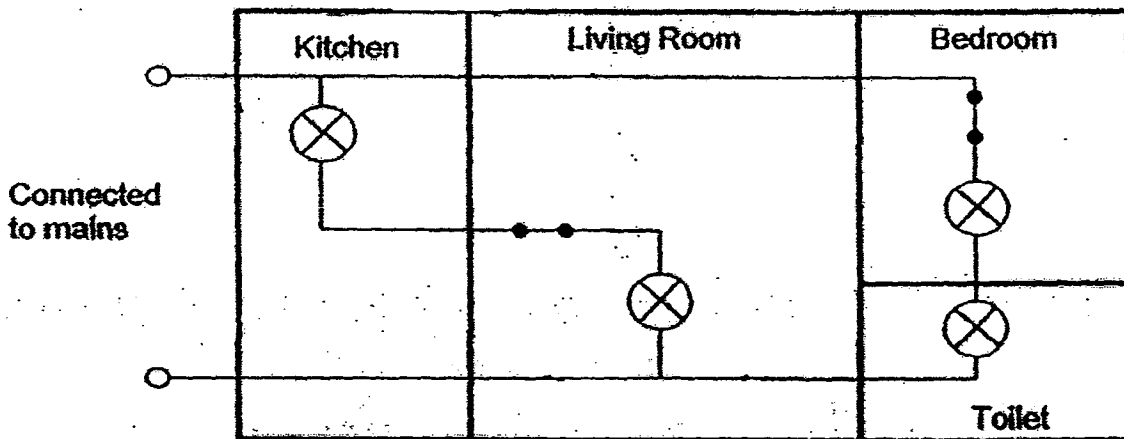
- The lights for the living room and kitchen should be able to light up independently.
- The lights for the toilet and bedroom should light up together.

Based on the criteria stated above, which one of the following circuit diagrams should he use for the doll house?

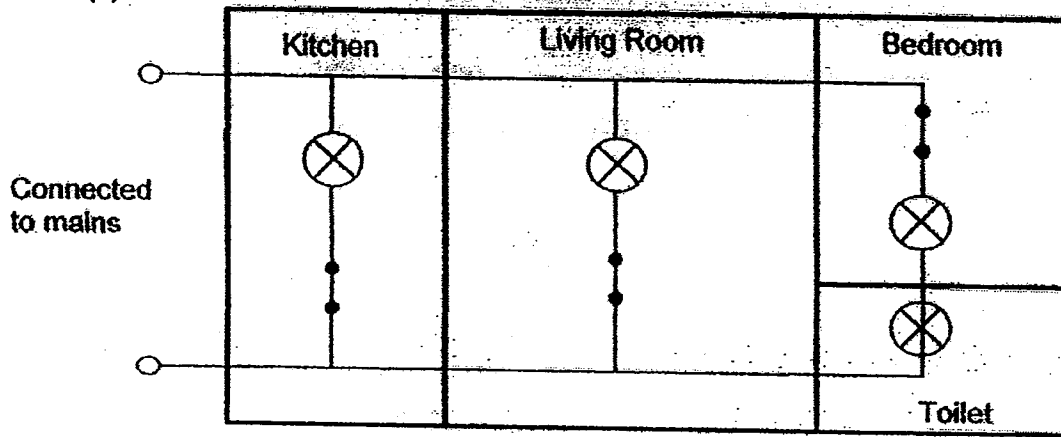
(1)



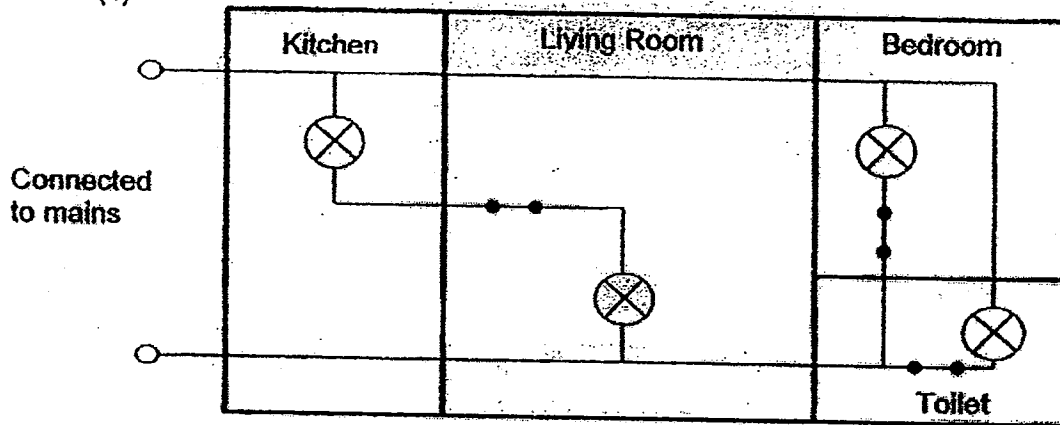
(2)



(3)

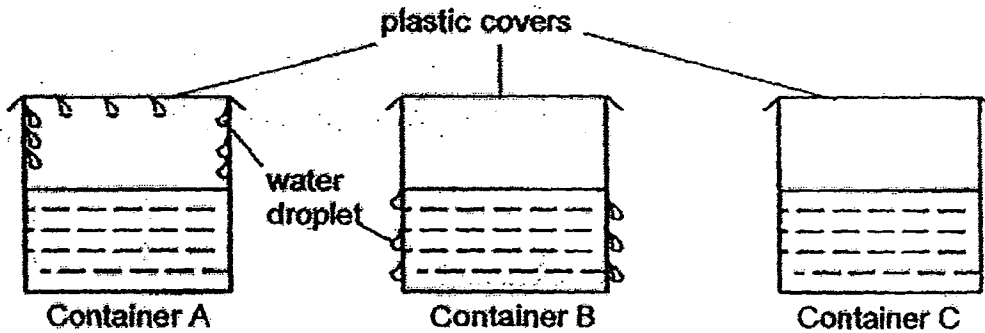


(4)



20. John filled 3 containers A, B and C with an equal amount of water at different temperatures. He placed them in a room at 30°C.

He observed that there were water droplets on the inner surface of Container A and the outer surface of Container B. However, no water droplets were seen on the surface of Container C.



Which one of the following tables best represents the temperature of the water in the three containers?

(1)

Container	Temperature (°C)
A	80°C
B	7°C
C	30°C

(2)

Container	Temperature (°C)
A	80°C
B	30°C
C	7°C

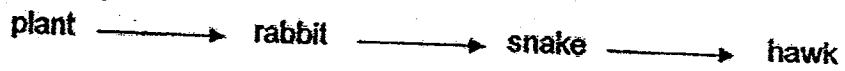
(3)

Container	Temperature (°C)
A	7°C
B	80°C
C	30°C

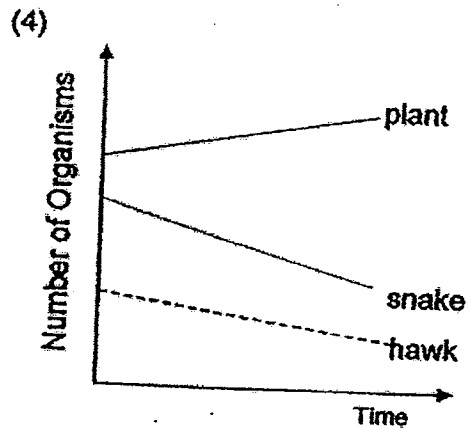
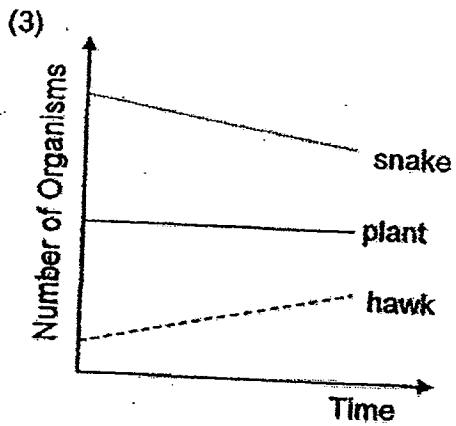
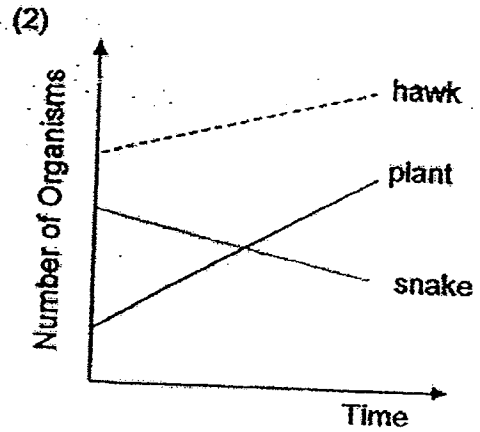
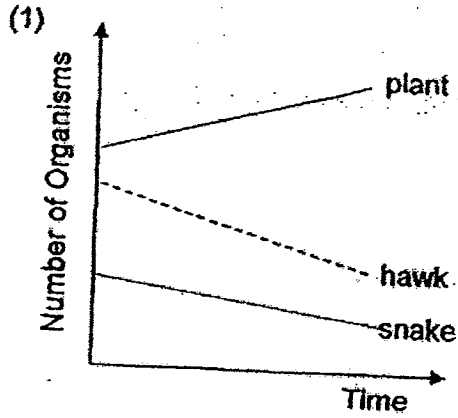
(4)

Container	Temperature (°C)
A	30°C
B	7°C
C	80°C

21. Study the food chain below.



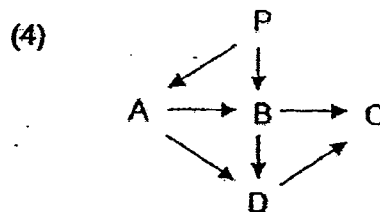
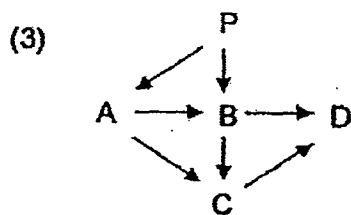
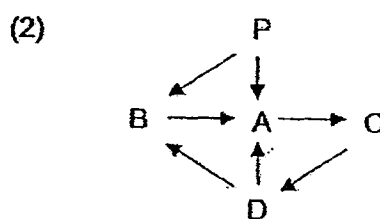
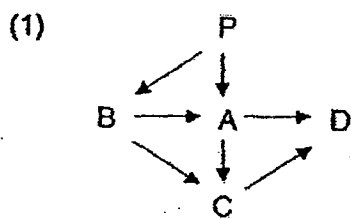
If all the rabbits were removed, which one of the following graphs below shows the immediate effect on the populations of the organisms?



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

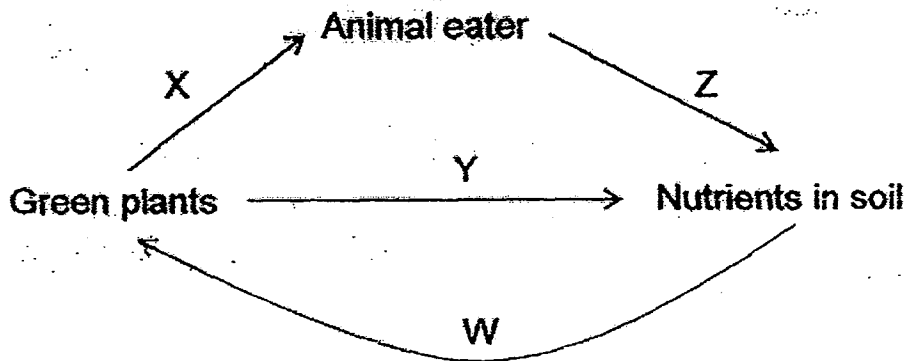
A	P
B	P and A
C	B and D
D	A and B

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





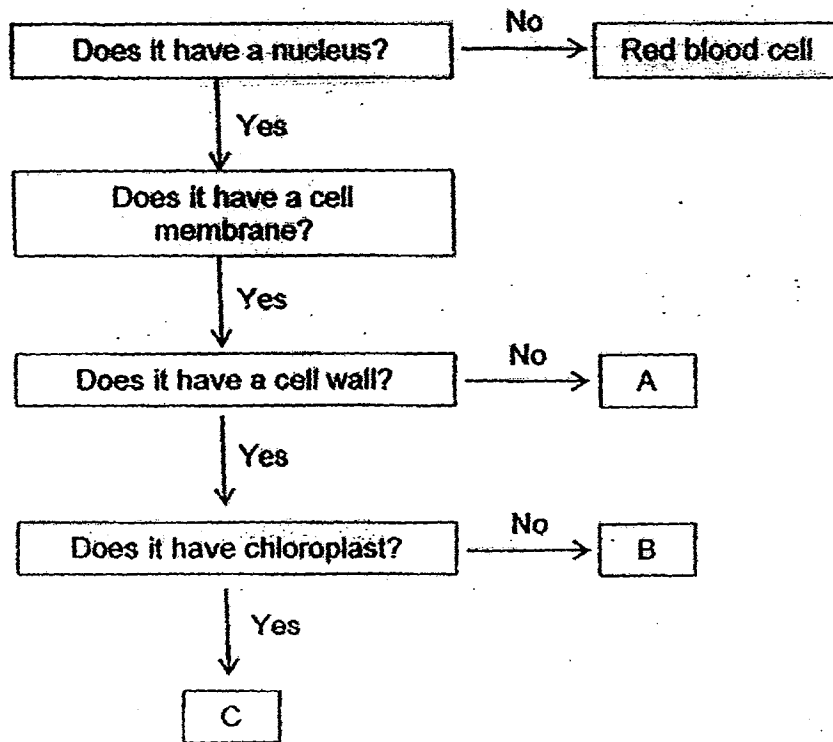
23. Decomposers enrich the soil with nutrients for the plants. The diagram below shows the role of decomposers in the balance of life on Earth.



At which point(s) of the food web will decomposition occur?

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

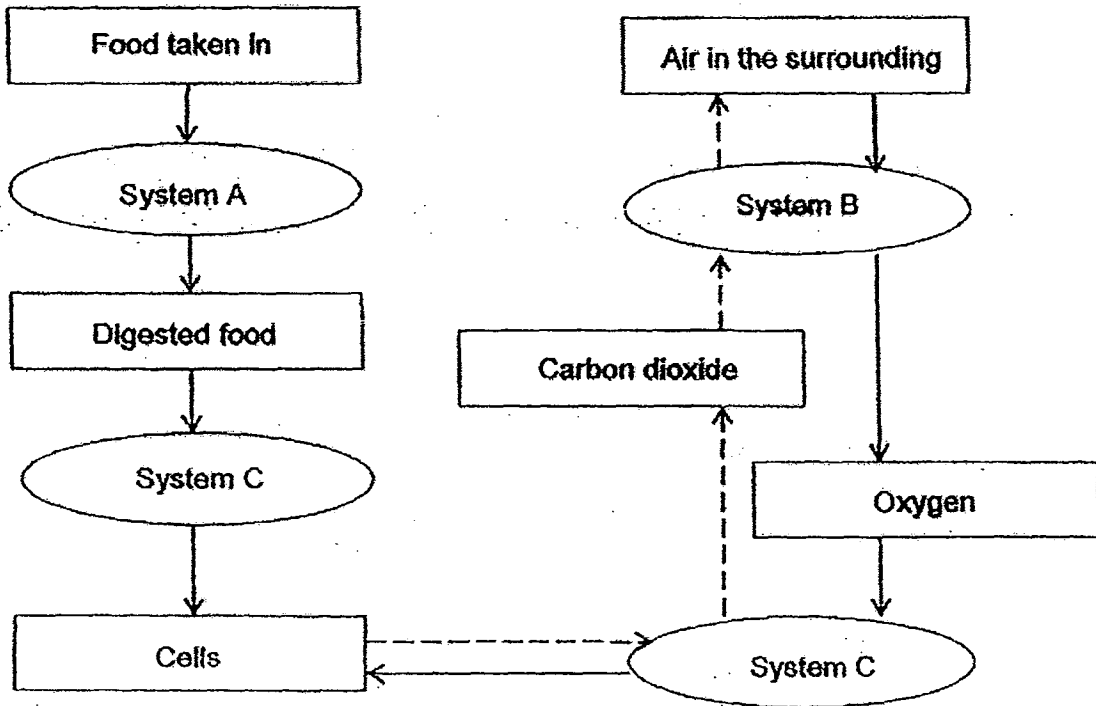
24. May observed 4 different cells A, B, C and D and classified them in the flow chart below.



Which cell(s) is/are likely to be animal cell(s)?

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

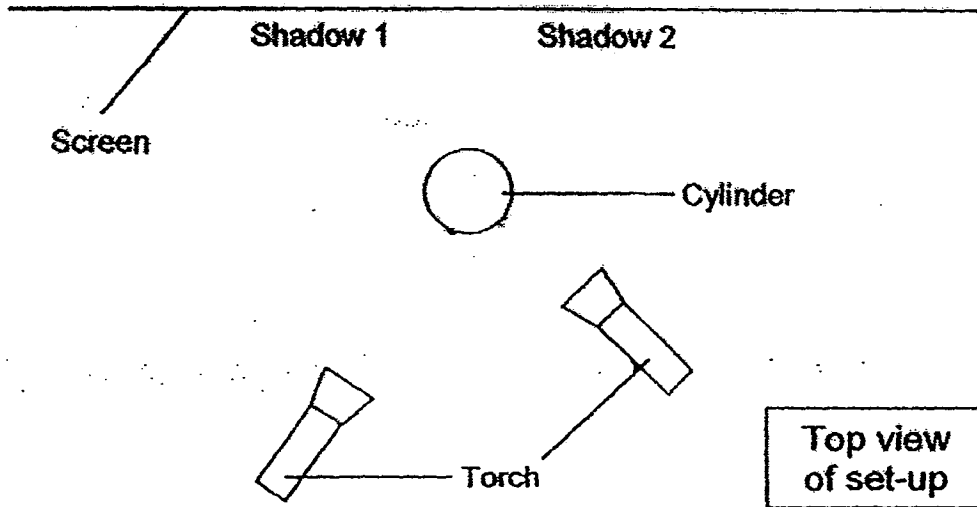
25. Study the flow chart below.



What does system A, B and C represent?

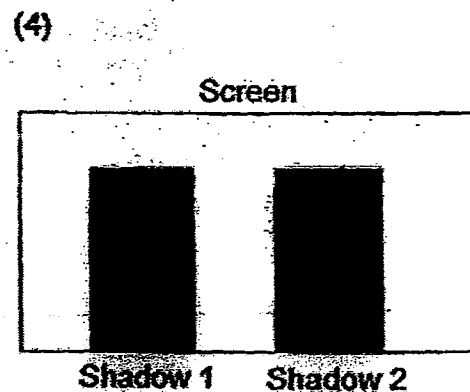
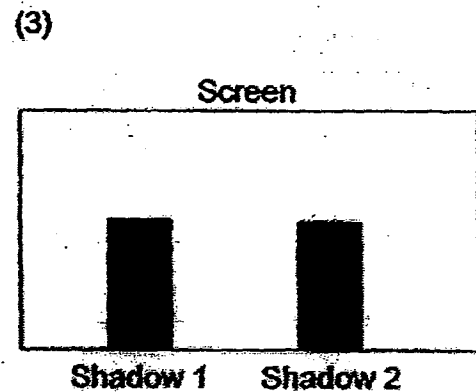
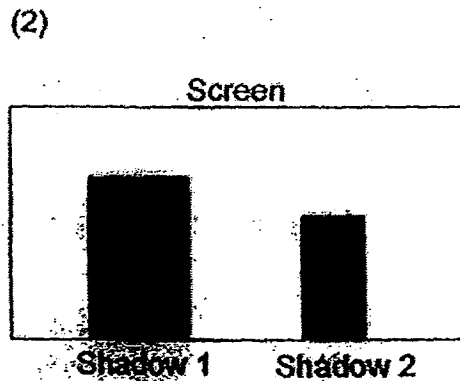
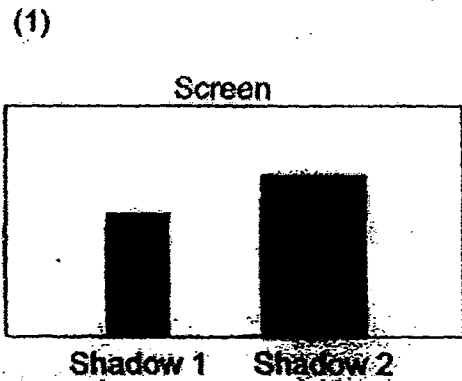
	System A	System B	System C
(1)	Respiratory	Digestive	Circulatory
(2)	Circulatory	respiratory	Digestive
(3)	Digestive	Circulatory	Respiratory
(4)	Digestive	Respiratory	Circulatory

26. Glen prepared a set-up with 2 torches as shown in the diagram below.



He turned on the torches and 2 shadows were cast on the screen on the other side of the cylinder.

Which one of the following correctly shows the shadows cast on the screen?



27. The melting point and boiling point of 2 substances, X and Y are shown in the table below.

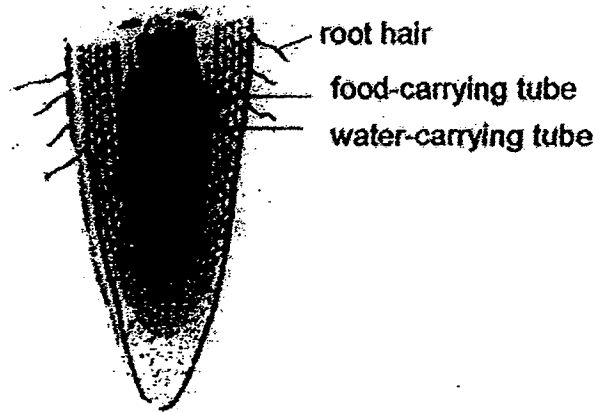
Substance	X	Y
Melting point (°C)	45	5
Boiling point (°C)	225	85

Based on the table above, which of the following statement(s) is/are true?

- A X is a solid at 35°C.  
 B Y is a liquid at 105°C.  
 C X and Y are at the same state at 75°C.

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

28. The diagram below shows a magnified view of a cross-section of a plant root tip.

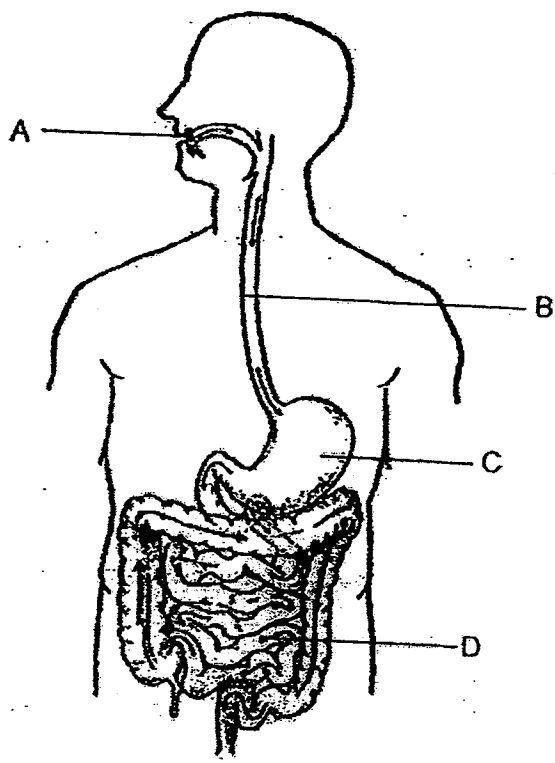


Which of the following statement(s) about the plant root tip is/are correct?

- A The function of root hairs is to absorb water only.  
 B Root hairs are directly responsible for the growth of plants.  
 C The function of water-carrying tubes and food-carrying tubes is for storage of food.  
 D The water-carrying tubes and food-carrying tubes transport water and food respectively to the various part of the plant.

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

29. The diagram below shows part of the human digestive system.





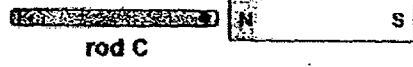
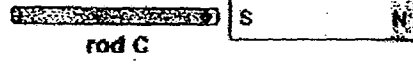


Which one of the following correctly compares the changes in the amount of digested food when it leaves Parts A, B, C and D?

	A	B	C	D
(1)	No change	No change	Increases	Increases
(2)	Increases	No change	Increases	Increases
(3)	Decreases	Increases	Decreases	Decreases
(4)	Increases	No change	Decreases	Decreases

30. Anna has 3 rods, A, B and C, made from different materials. One rod is a magnet, one is made of aluminium and one is made of steel. She wants to find out which rod is made of what material. She uses only a bar magnet to identify each rod. She puts each pole of the bar magnet next to the dotted end of each rod.

Which one of the following correctly matches what should be used to fill in the blanks?

test	observations	type of rod
 <p>rod A</p>	attract	Rod A is
 <p>rod A</p>	attract	(a)
 <p>rod B</p>	nothing happens	Rod B is
 <p>rod B</p>	(d)	(b)
 <p>rod C</p>	attract	Rod C is
 <p>rod C</p>	(e)	(c)

	(a)	(b)	(c)	(d)	(e)
(1)	steel rod	magnet	aluminium rod	attract	attract
(2)	steel rod	aluminium rod	magnet	nothing happens	repel
(3)	aluminium rod	steel rod	magnet	attract	repel
(4)	magnet	aluminium rod	steel rod	nothing happens	attract



**NAN HUA PRIMARY SCHOOL  
SEMESTRAL ASSESSMENT 1 – 2015  
PRIMARY 6**

**SCIENCE  
BOOKLET B**

**14 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**

<b>Section B</b>		<b>/40</b>
------------------	--	------------

**Name:** \_\_\_\_\_ (     ) **Class: P 6** \_\_\_\_\_

**Date : 13 May 2015**

**Parent's Signature:** \_\_\_\_\_

---

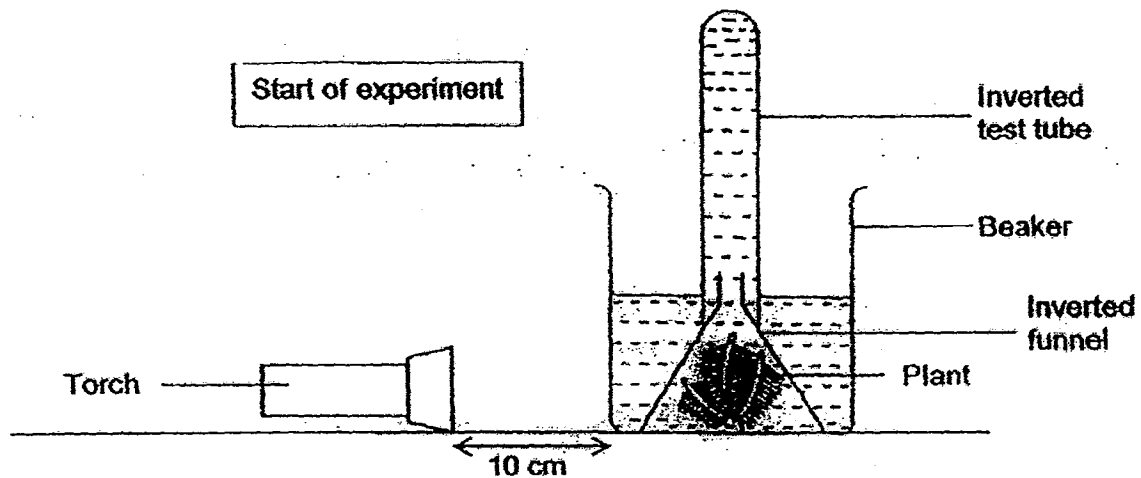


**Section B: (40marks)**

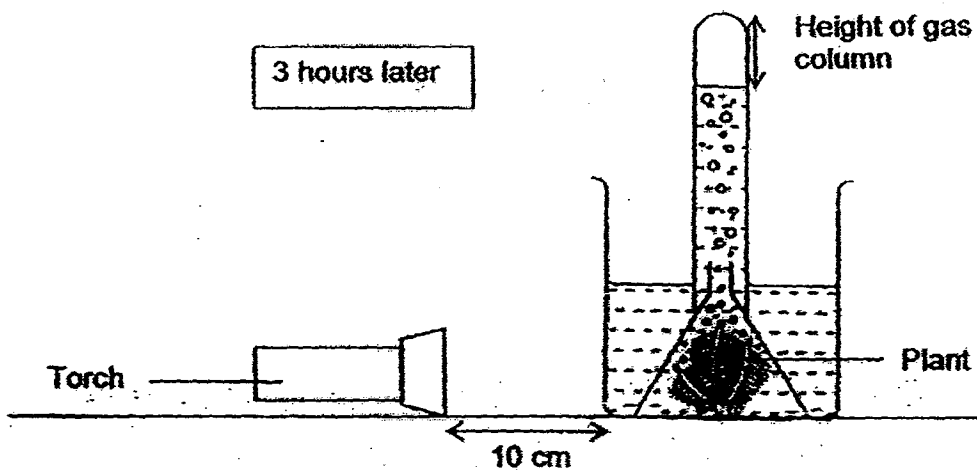
Write your answers to question 31 to 44.

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

31. Larry conducted an experiment using the set-up as shown below.



He turned on the torch for 3 hours. At the end of 3 hours, he noticed that a column of gas had appeared at the end of the inverted test tube. He measured the height of the gas column and recorded it in a table.



He then repeated the experiment by placing the torch 30 cm away from the beaker.

10	8
30	3

(a) What is the aim of Larry's experiment?

[1]

---

---

(b) At which position, 10 cm or 30 cm, is the rate of photosynthesis higher?  
Explain your answer clearly

[2]

---

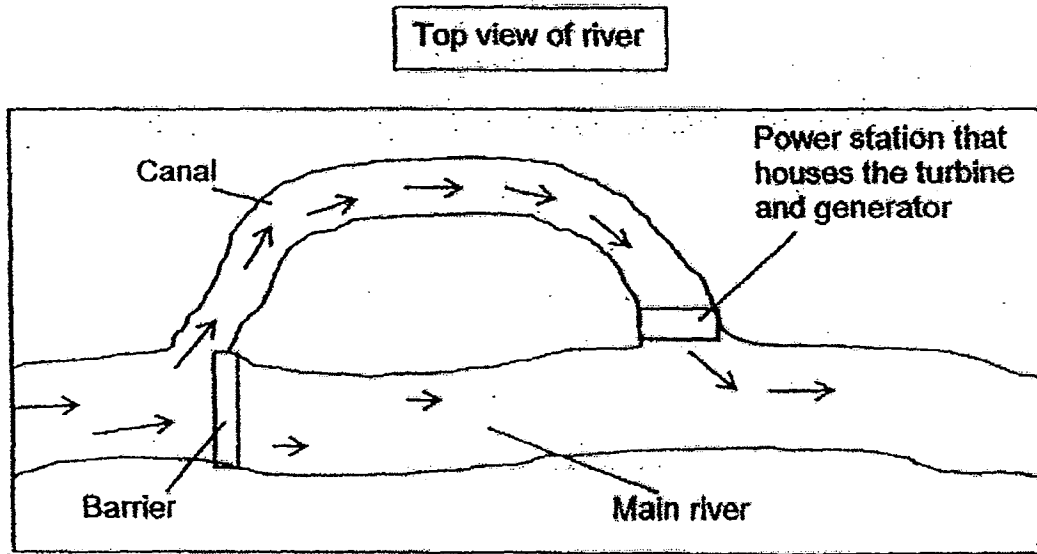
---

---

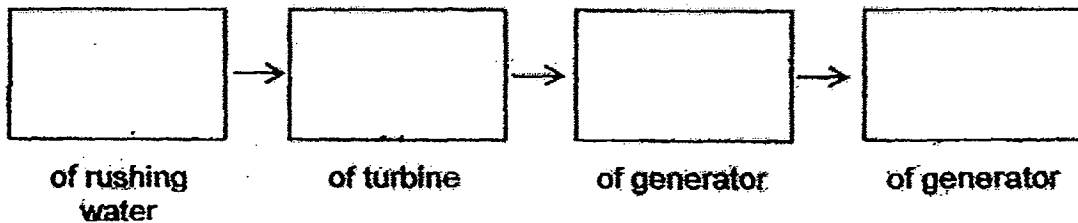
Score	3
-------	---

32. The diagram below shows a river power station.  
 In the river station, a barrier was built across the river to reduce the amount of water downstream along the main river such that most of the water flows through a canal, which was dug out beside the river.

The water from the river will rush through the canal at a high speed towards the power station, which houses the turbine and generator.



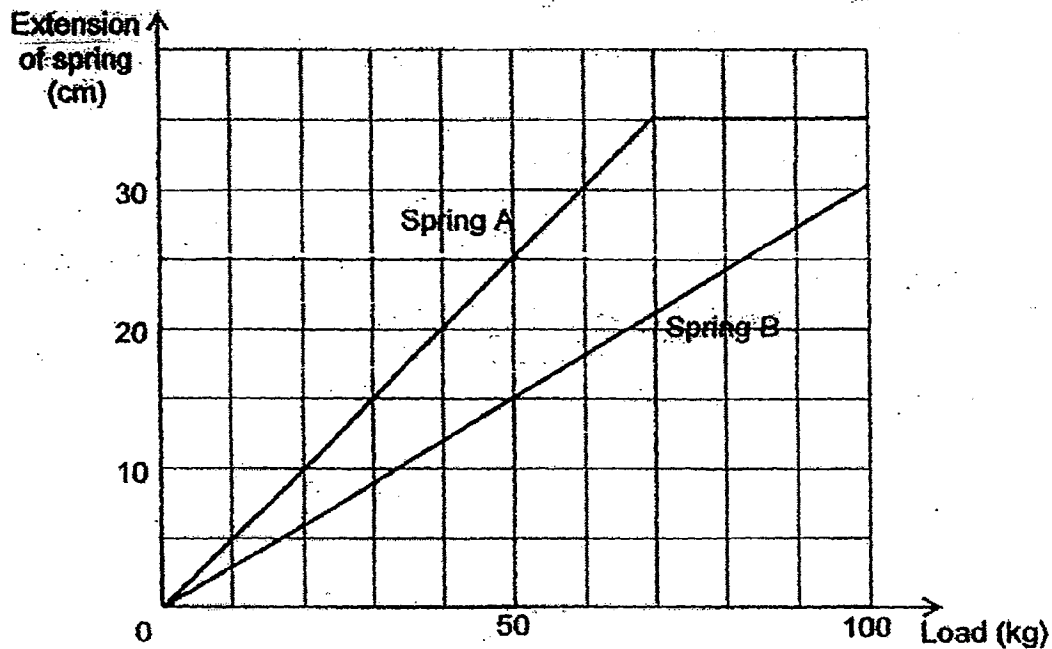
- (a) Write down the energy conversion on how electricity is generated in the river power plant shown above. [1]



- (b) State 2 other renewable sources of energy. [1]

Score	2
-------	---

33. Caroline conducted an experiment with 2 springs, A and B. She hung various loads on them and measured the extension of the springs. She then plotted a graph based on her results as shown below.



- (a) What is the relationship between the load hung on the spring and its extension for Spring A? [1]

---

---

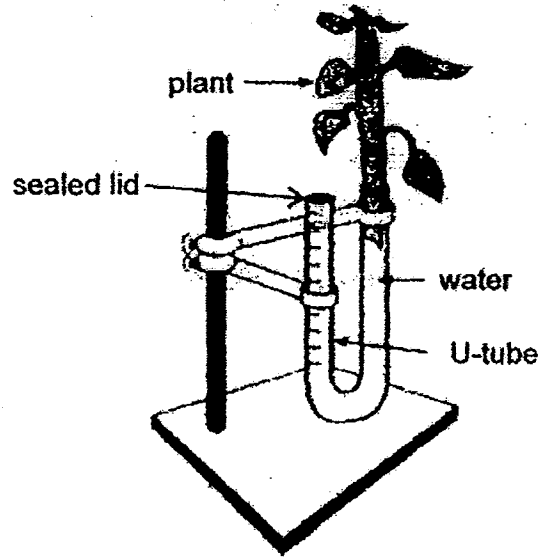
- (b) Which spring, A or B, requires more force for it to be stretched? Explain your choice clearly. [1]

---

---

Score	2
-------	---

34. Alvin conducted an investigation to find out the effects of various environmental factors on the rate of transpiration (loss of water in the form of water vapour through the leaves) in plants. Alvin prepared 4 groups of plants. Each group contained 10 identical plants. Each group was exposed to different environmental factors. The apparatus shown in the diagram was constructed to measure water loss by the plant over time in 10-minute intervals for 30 minutes. The results are shown in the data table.



Environmental Factors	Time	Average Water Loss (ml) per 10 min			
		0 min	10 min	20 min	30 min
Science Laboratory condition		0	2.2	4.6	6.6
Science Laboratory condition + Floodlight (High intensity artificial lights)		0	4.2	7.6	11.7
Science Laboratory condition + Fan		0	4.5	7.6	11
Science Laboratory condition + Mist		0	1.3	2.4	3.7

(a) Why did Alvin prepare 10 identical plants for each group? [1]

---

---

(b) Which one of the environmental factors resulted in the lowest rate of transpiration? [1]

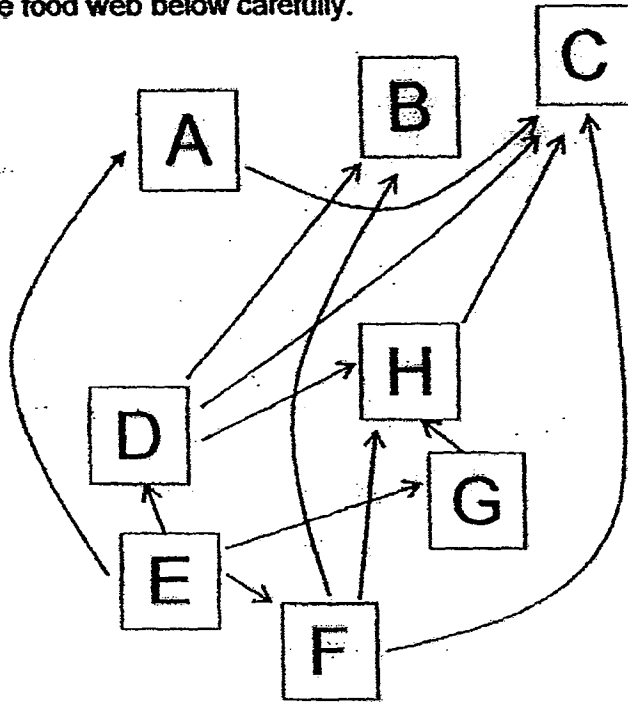
---

(c) Identify the control group of plants in this experiment. [1]

---

Score	3
-------	---

35. Study the food web below carefully.



(a) Classify all the organisms in the food web above in the table below. [2]

Food Producer	Prey only	Predator	Scavenger

(b) Both B and C feed on F. Explain why the removal of F from this food web would likely affect B more than C. [1]

Score	3
-------	---

36. The diagram below shows an electric scooter. It makes use of electricity to allow the user to travel around easily.



- (a) Write down the source of energy for the electric scooter to move. [1]

---

- (b) Compare the difference in chemical potential energy used between a bicycle and the electric scooter and explain how travelling from one place to another is more relaxing for a person riding on an electric scooter. [2]

---

---

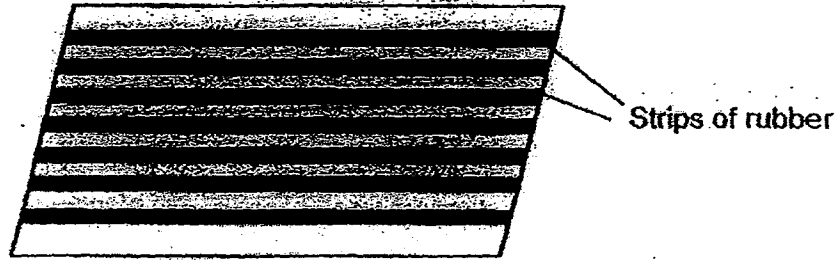
---

---

Score	3
-------	---



37. Anwar was running through the kitchen when he stepped on a floor mat and slipped. His mother then changed the mat to another one that has strips of rubber found on the bottom of the mat as shown in the diagram below.



Bottom of floor mat

Explain clearly how the strips of rubber found on the bottom of the mat help to reduce the chances of him slipping. [2]

---

---

---

---

Score	2
-------	---

38. Fatimah investigated the temperature in 3 different habitats. She measured the temperature every 6 hours and recorded her observations in the table below.

Time	Habitat 1	Habitat 2	Habitat 3 (Temperature of air under the nest boxes)
6 a.m.	23 °C	24 °C	27 °C
12 noon	30 °C	33 °C	28.5 °C
6 p.m.	28 °C	29 °C	28 °C
12 midnight	25 °C	26 °C	27.5 °C

- (a) Based on Fatimah's observations, which habitat has the smallest range of daily temperature? [1]
- 
- (b) Give two reasons why the habitat in (a) is able to maintain an almost constant temperature. [2]
- 
- (c) Explain why the pond does not become as hot as the open field. [1]
- 

Score	4
-------	---

39. River XYZ has an average temperature of about 25°C. The river also contains populations of trout, black bass and carp.

The table below shows the amount of oxygen that will dissolve in fresh water at different temperatures.

Temperature (°C)	Oxygen (ppm)
20	9.11
25	8.27
30	7.56
35	6.23

- (a) State one effect of temperature change on the fresh water oxygen content. [1]

---



---

Trout and black bass are freshwater fish that normally require at least 8 parts per million (ppm) of dissolved oxygen in the water for survival. Other freshwater fish, such as carp, are able to live in water that has dissolved oxygen level of 5 parts per million (ppm).

Fish	Minimum amount of dissolved oxygen required for survival (ppm)
Carp	5
Trout	8
Black bass	8

In 2014, ABC Company built a factory along River XYZ. ABC Company uses the water in the river to cool their equipment. They then release the water (sometimes as much as 8°C warmer) back into River XYZ.

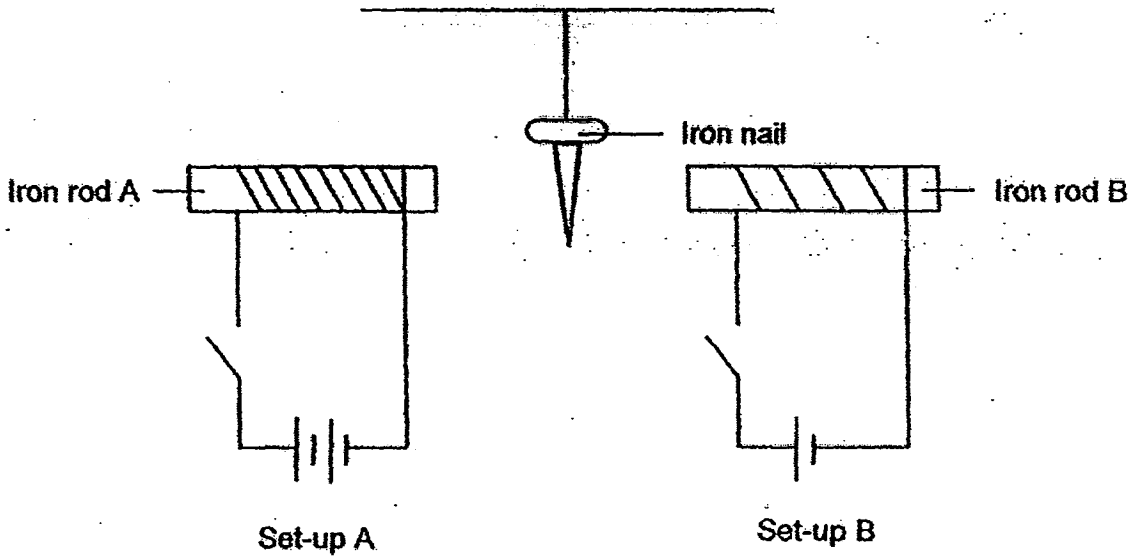
- (b) Company ABC will have an environmental impact on the ecosystem in River XYZ. How will it affect the fish population in River XYZ? Explain your answer clearly. [2]

---



---

40. Zenia conducted an experiment using the set-up shown below. An iron nail is suspended freely at an equal distance from iron rods A and B. Iron rods A and B are identical.



- (a) When both circuits are closed, what will happen to the iron nail? Explain your answer clearly. [2]

---



---



---



---

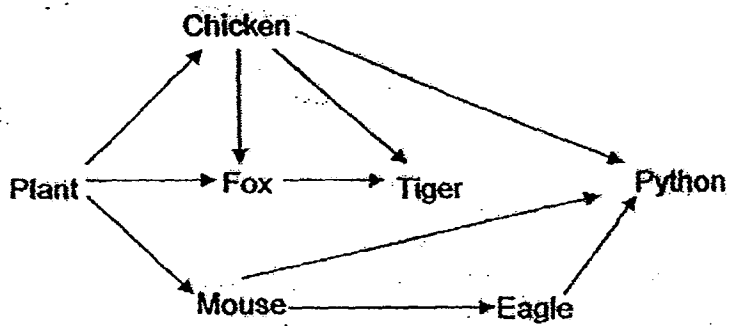
Looking at her set-up, her teacher told her that her experiment is not a fair one.

- (b) What should Zenia do to make the experiment a fair one if the aim is to find out how the number of coils around an electromagnet affects its magnetic strength? [1]

---

Score	3
-------	---

41. Study the food web below carefully.



- (a) Will the population of pythons decrease immediately if a disease strikes the eagles, causing many of them to die? Explain your answer. [1]

---

---

- (b) Write down 2 food chains with 4 types of organisms each from the above food web. [1]

---

---

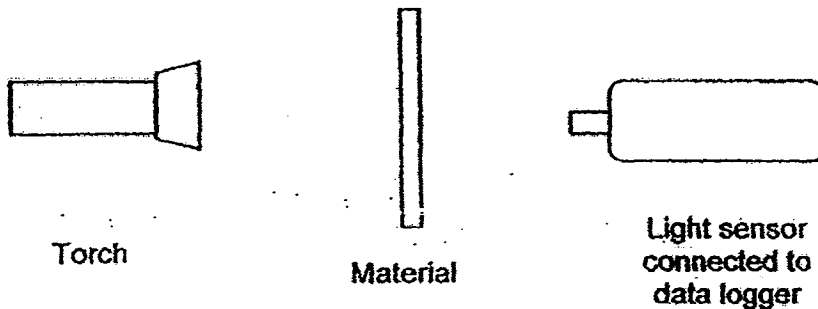
- (c) Explain why there is less energy available to the next consumer in the food chain in (b) when it feeds on its prey. [1]

---

---

Score	3
-------	---

42. Gina set up an experiment as shown below to find out the degree of transparency of 3 materials, A, B and C. The materials are of the same size and shape.



The amount of light detected by the light sensor was then recorded in the table below.

Material	Amount of light detected by light sensor (lux)
A	98
B	0
C	34
No material	98

- (a) Why did Gina use a light sensor and data logger to measure the amount of light that passed through the material instead of relying on her sense of sight? [1]

---



---

- (b) Out of the three materials, one of them is used to make a mirror. Which one is most likely used to make a mirror? Give a reason for your choice. [1]

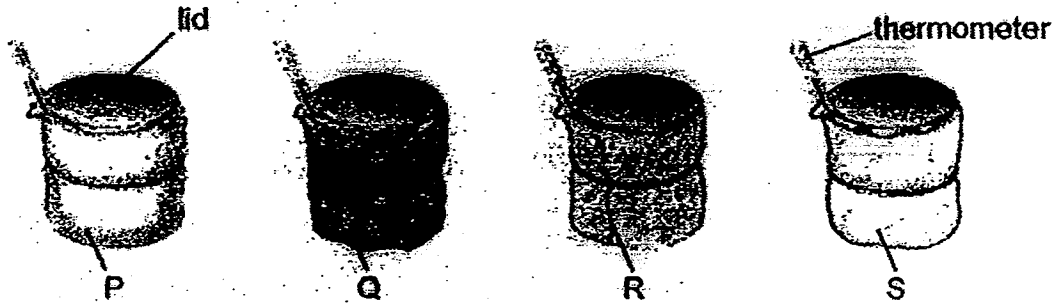
---



---

Score	2
-------	---

43. Mrs Jacob conducted an experiment to find out which type of material, P, Q, R or S, could keep a beaker of hot water warm for the longest time. She wrapped each beaker in a different material. She recorded the temperature at the start and 20 minutes later.



The results of her investigation are shown below.

Time (minutes)	Material P	Material Q	Material R	Material S
0	80	80	80	80
20	32	54	42	35

- (a) Which material is best in keeping the beaker of hot water warm for the longest time? Use the evidence in the results table to support your choice.

[1]

---



---

- (b) Mrs Jacob lives in a country where summers are very hot and winters are very cold. She wants to pick a material to make a curtain that can keep the heat out of the house during summers and heat in the house during winters. Which material should she choose? Explain your answer clearly.

[2]

---



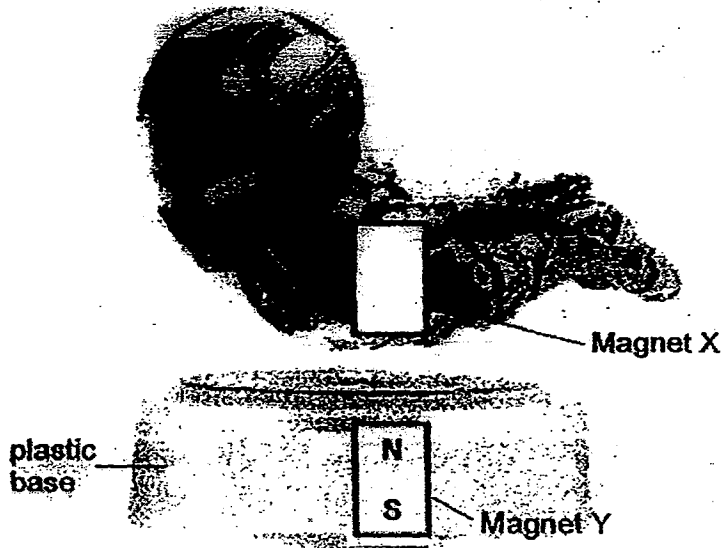
---



---

Score	3
-------	---

44. Ben has a robot toy which is shown below. Magnets X and Y make the robot toy 'float' above the plastic base.



(a) On Magnet X, label the poles of the magnet with the letters N and S. [1]

(b) Explain why the robot toy is able to float in the air? [1]

---

---

(c) Ben measured and recorded the distance between the two magnets. Then he added weights to the robot toy. What will happen to the distance between the 2 magnets when more weights are added to the toy? Give a reason for your answer. [2]

---

---

---

Score	4
-------	---



**EXAM PAPER 2015**

**SCHOOL : NAN HUA**

**SUBJECT : P6 SCIENCE**

**TERM : SA1**

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	1	1	3	4	2	3	4	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	3	2	4	1	3	2	3	1
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	4	2	1	4	2	2	2	2	2

31)a) Larry wanted to find whether the distance between the torch and beaker will affect the height of gas column after 3 hours.

b) 10cm. The height of gas column after 3 hours is higher when the torch is 10cm away from the beaker. The plant is able to capture more light. The plant will have a higher rate of photosynthesis and produce more oxygen/gas.

32)a) Kinetic Energy → Kinetic Energy → Kinetic Energy → Electrical Energy

b) Wind energy and Solar energy.

33)a) As the load hung on the spring increases, the extension of spring A also increases. However, when the load hung reaches 70k, even when the loads hung increases, the spring will not extend any further.

b) Spring B. Although the same number of loads were used for the springs, spring B's extension was lesser than spring A's.

34)a)So that his results are more reliable and consistent result, and also get the average of the results.

b)Science Laboratory condition + Mist.

c)The first group, which is the one 'Science Laboratory condition'.

35)a)E / A,D,F,G / B,C / H

b)B only has two types of prey, D and F but C has four F,H,D and A.

36)a)Battery.

b)The electric scooter uses Chemical potential energy stored in the battery but a bicycle uses Chemical potential energy stored in the rider's body. Hence riding on an electric scooter uses less effort.

37)The strips of rubber makes the bottom of the floor mat rougher and increase the friction between of the floor mat and the floor.

38)a)Leaf litter habitat.

b)The air under the dead leaves rarely circulated, and the air is also blocked by the leaves, so light would not reach there,thus the temperature is maintained at almost constant.

c)The pond has floating and partially floating plants to shield it from direct sunlight.

39)a)The fresh water oxygen contact would decrease when the temperature of water increases.

b)The population of trout and black bass will decrease but the population of carp will remain the same. Company ABC will increase the temperature of the river and reducing the amount of oxygen in the river. As a result, the trout and bass cannot survive as there is not enough oxygen for respiration. On the other hand carp can survive in water lower oxygen content.

40)a)The iron would be attracted to iron rod A and swing towards set-up A. When the circuit are closed, both iron rods became electromagnets. However the magnetism of iron rod A was stronger than rod B as the number of times wires were coiled is more in set-up A than in B. These two factors affects the strength of an electromagnet.

b)The number of batteries used for each set-up must be the same.

41)a)No. With fewer eagles, the population of mouse will increase as it has fewer predators, thus there are more mouse for the python to feed on.

b)Plant→Chicken→Fox→Tiger

Plant→Mouse→Eagle→Python

c)Most of the energy in the prey is used up to carry out life processes, so the energy left for the next consumer would be less.

42)a)It was to allow her to get a more accurate reading.

b)Material B, A mirror is opaque and material B is also opaque, so B is most likely used to make a mirror.

43)a)Material Q. The temperature of water in Q was the most and it means that Q is the poorest conductor of heat which is good for keeping hot water for the longest time.

b)Material Q. It is the poorest conductor of heat. In summer, it slows down heat gain from the surrounding air outside the house. In winters it slows down heat loss from inside the house to the surrounding air outside.

44)a)S N

b)There is a magnet X in the robot and the magnet Y and Z have like poles facing each other, so the magnets will repel and the magnetic force of repulsion overcame gravity, therefore the robot would float.

c)The distance between the two magnets would decrease. The weight added are pushing forces, thus the weights will push the robot down, decreasing the distance between the two magnets.

