

**NANYANG PRIMARY SCHOOL**

**PRIMARY 6 SCIENCE**

**PRELIMINARY EXAMINATION  
2011**

**BOOKLET A**

**Date : 25 August 2011**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (       )**

**Class: Primary \_\_\_\_\_ (       )**

**Parent's signature: .....**

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 25 printed pages including this cover page.**

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

For each question from 1 to 20, 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 provided.

1. The table below provides the physical factors in 4 different habitats.

Physical factors	Habitats			
	A	B	C	D
Moisture	High	Low	High	Low
Average temperature (°C)	32	23	21	18
Intensity of light	High	Low	Low	High

An organism X was observed to have the following characteristics:

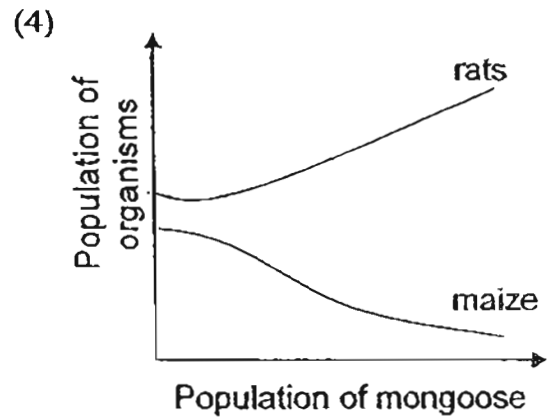
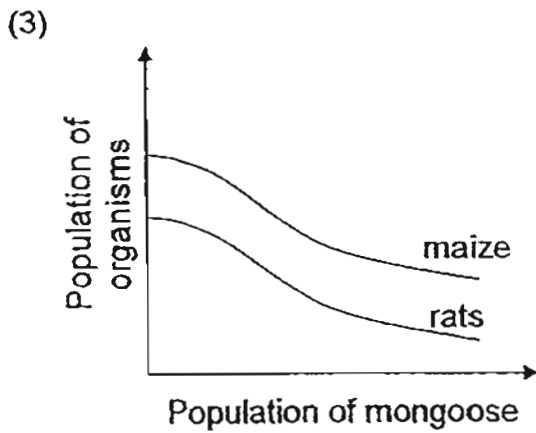
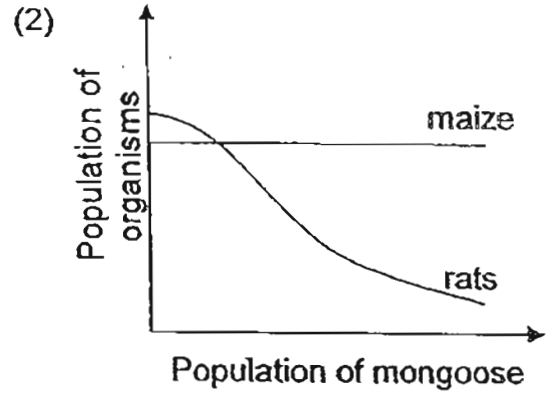
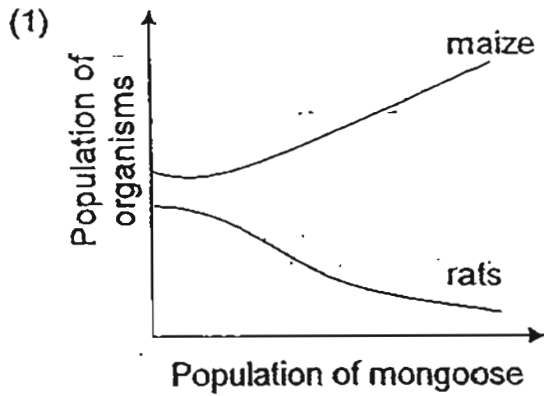
- light sensitive
- lives only in damp environment
- grows well in temperature ranging from 20 – 25 °C

In which habitat(s) can you find the most number of organism X?

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

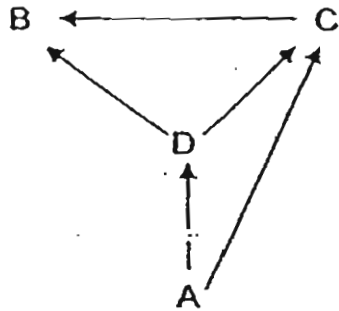
2. Ali grows maize plants in his farm. However, his maize plants are often eaten by rats. To overcome his problem, he introduced a population of mongoose in his farm. The mongoose is a predator of rats.

Which one of the following graphs correctly shows the relationship between the population of maize plants, rats and mongoose in Ali's farm?

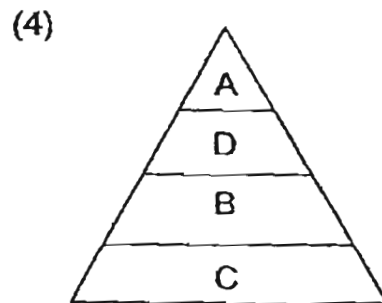
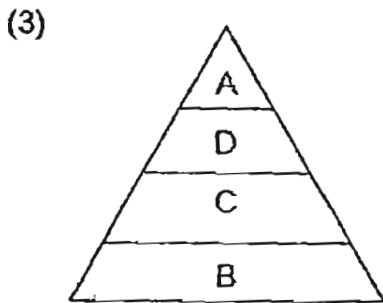
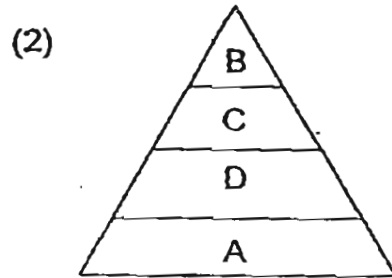
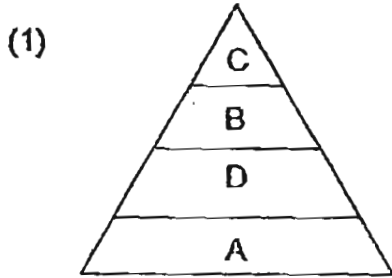


Study the food web below carefully and answer questions 3 and 4.

Organisms A, B, C and D belong to the same community.



3. Which one of the following food pyramids correctly shows a balanced food relationship, in terms of energy transfer, among the organisms above?



4. Another organism, T, was introduced to the community. It feeds only on organism A and is preyed upon by organism C.

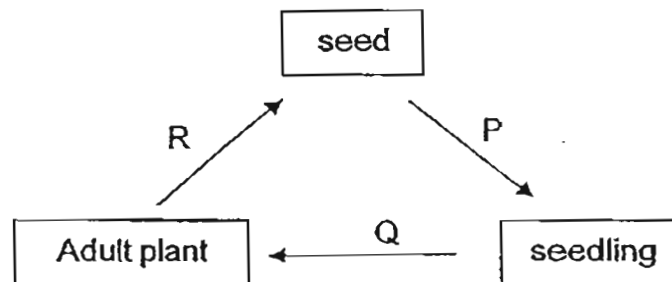
Which two of the following statements correctly describes the change in the populations of the other organisms when the population of T was introduced?

- A. Population of A decreases
- B. Population of B increases
- C. Population of C decreases
- D. Population of D increases

- (1) A and B only
- (3) B and D only

- (2) A and C only
- (4) C and D only

5. The diagram below shows the stages in the life cycle of a flowering plant.



P, Q and R represent the processes that take place between each stage of the life cycle. Which of the following correctly represent processes P, Q and R?

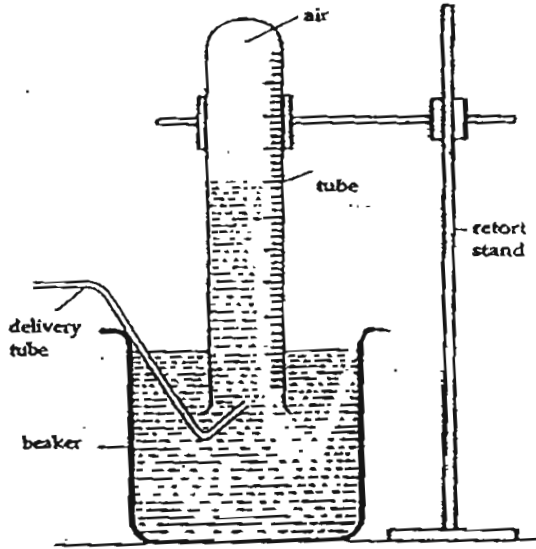
	P	Q	R
(1)	germination	fertilisation	pollination
(2)	germination	growth	fertilisation
(3)	fertilisation	pollination	growth
(4)	pollination	fertilisation	germination

6. Alan was climbing up the stairs. Which one of the following systems interacted to ensure that he could perform the activity?

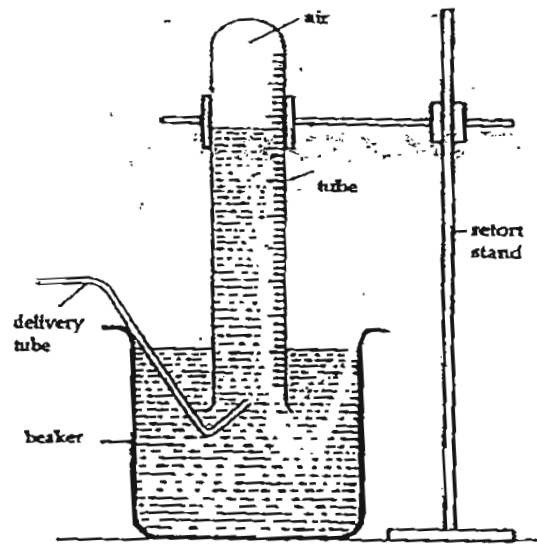
- A. respiratory system
- B. circulatory system
- C. muscular system

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

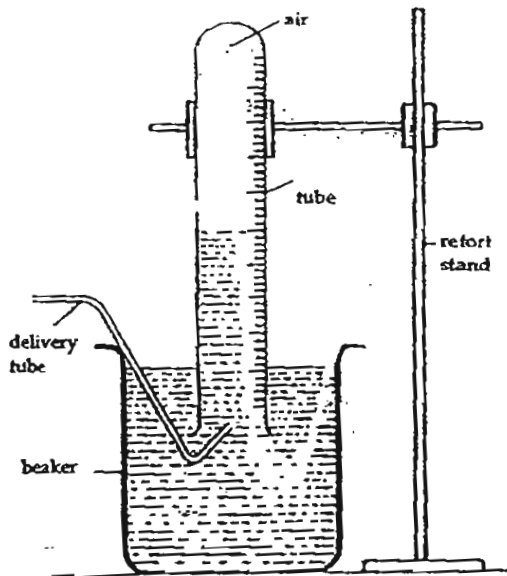
7. The 4 diagrams, P, Q, R and S, show an apparatus that measures the amount of air a person exhales. It was used to record the lung capacity of Mr Lee in January, April, July and November. Mr Lee had picked up smoking in April. After that, his lung capacity was greatly reduced.



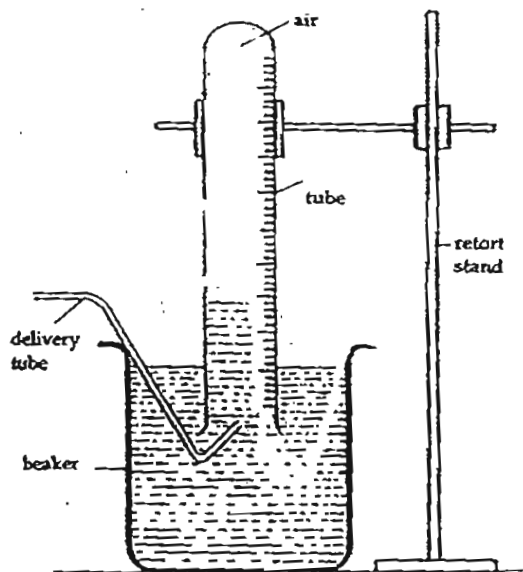
P



Q



R

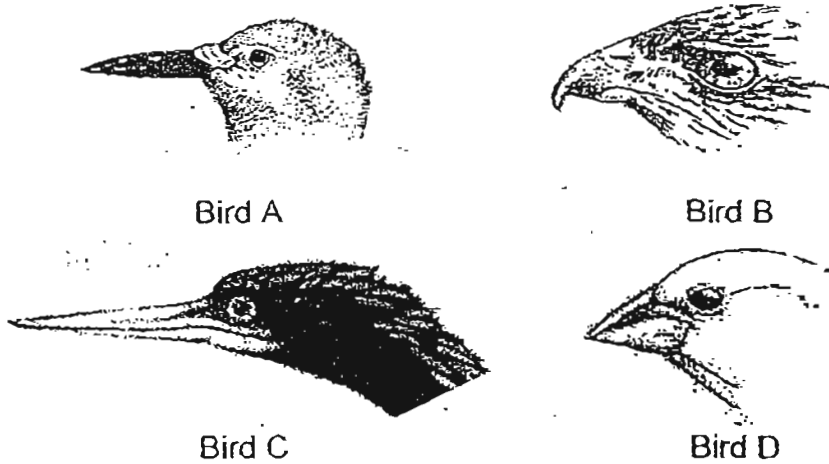


S

Which one of the following shows the change in Mr Lee's lung capacity from January to November?

	January	April	July	November
(1)	P	Q	S	R
(2)	S	R	P	Q
(3)	Q	P	R	S
(4)	R	S	Q	P

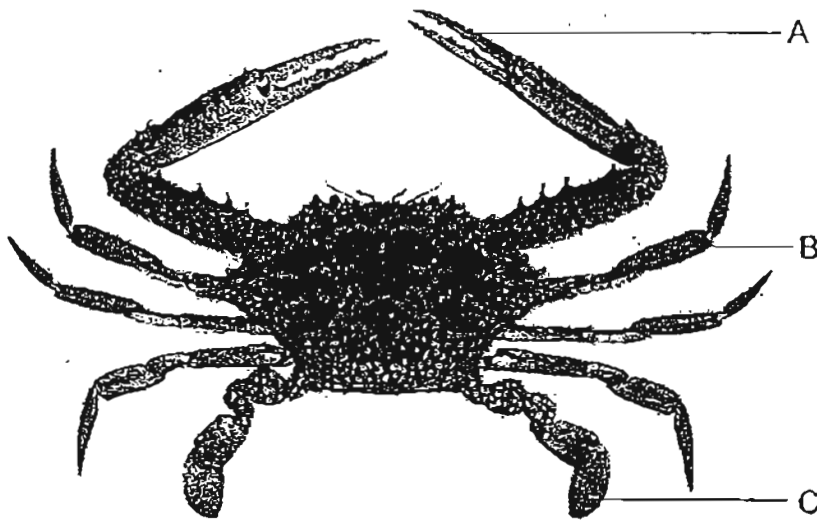
8. The diagram below shows the beaks of 4 birds, A, B, C and D. The beaks are specially adapted to suit their diet.



Which one of the following options correctly matches how Birds A, B, C and D obtain their food with the beaks that they have?

	Bird A	Bird B	Bird C	Bird D
(1)	tearing meat	piercing fish	picking seed	pecking wood
(2)	piercing fish	tearing meat	pecking wood	picking seeds
(3)	pecking wood	tearing meat	piercing fish	picking seeds
(4)	piercing fish	picking seeds	tearing meat	pecking wood

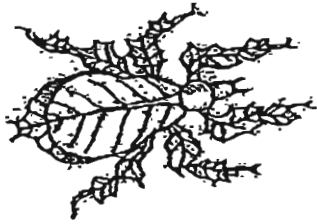
9. Study the picture of the crab below.



Which one of the following options correctly describes the function of each type of leg?

	A	B	C
(1)	swimming	grasping	digging
(2)	digging	swimming	walking
(3)	grasping	walking	swimming
(4)	walking	digging	grasping

10. A few pupils studied the drawings of two organisms as shown below.



Organism A



Organism B

Based only on the drawings, the pupils made the following statements regarding the organisms.

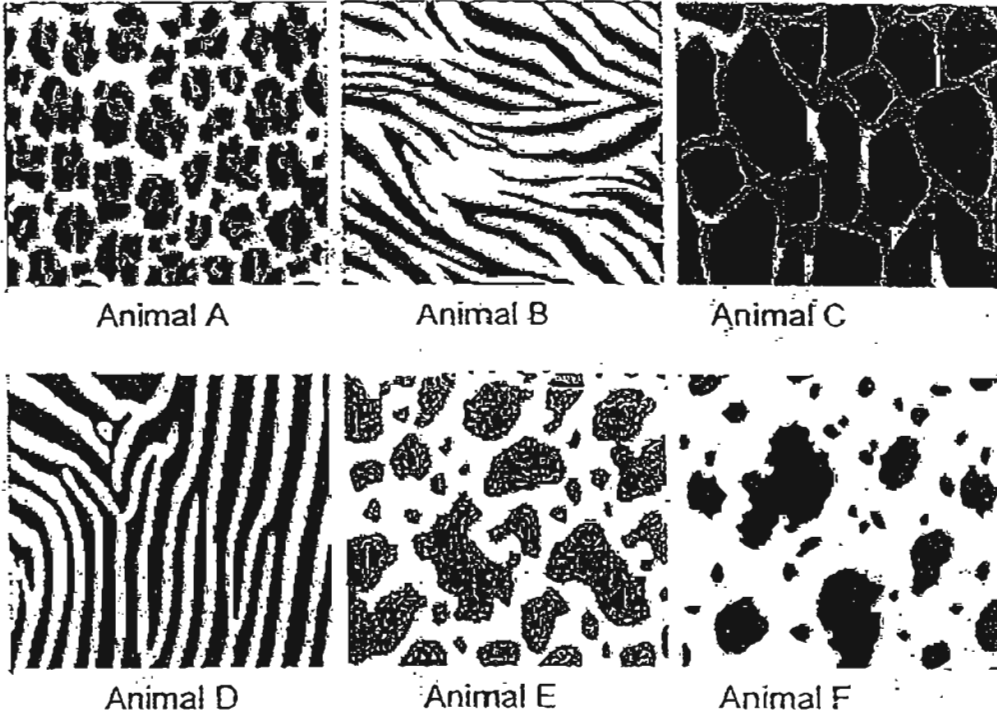
- Pupil A : Both Organisms A and B feed on plants only.
- Pupil B : Both Organisms A and B use their sharp limbs for defence
- Pupil C : Both Organisms A and B are likely to be found in a rotting log community
- Pupil D : Both Organisms A and B have body parts resembling surroundings to protect themselves

Which pupil had made the correct statement?

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



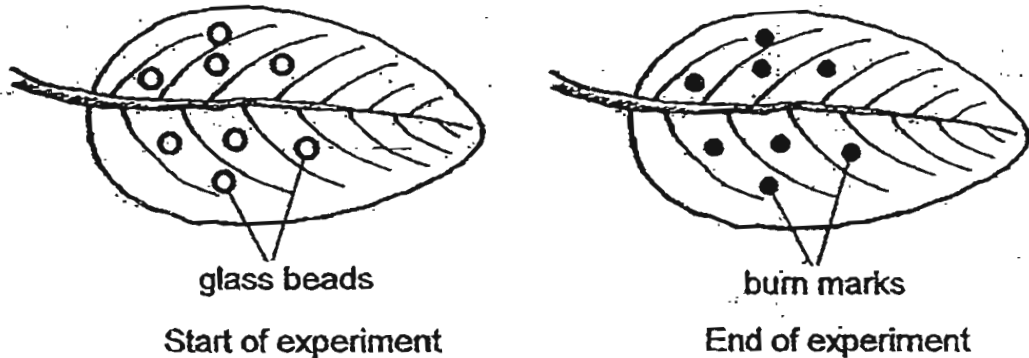
11. The diagrams below show the outer coverings of some animals.



Based only on the diagrams above, which animal will most likely escape detection from its prey or predator in areas with tall grass?

- (1) Animal B and D
- (2) Animal E and F
- (3) Animal A, B and D
- (4) Animal A, D and E

12. Cui Yu conducted an experiment by attaching glass beads on the surface of a few leaves. She then placed the entire pot of plant out under the bright sun. After 3 hours, she retrieved the pot of plant, removed the glass beads and recorded her observation as shown in the diagram below.

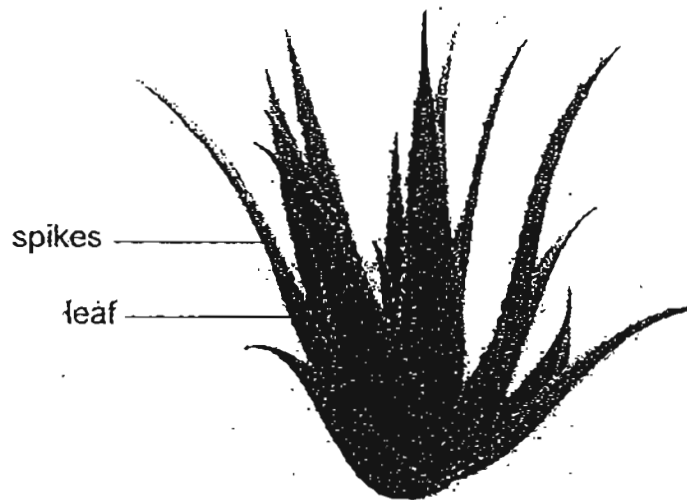


She visited the Eco-garden with her friends and noticed that some leaf surfaces are waxy while others are hairy. The surfaces of waxy leaves are smooth while that of hairy leaves are not. Her friends then made a few statements about what would happen to the leaves after a rainfall.

Which one of her friends' statements below is correct?

- (1) Both waxy and hairy leaves will remain dry and not be burnt by the sun.
- (2) Both waxy and hairy leaves will form water droplets and get burnt by the sun.
- (3) Waxy leaves will remain dry but hairy leaves will form water droplets and be burnt by the sun.
- (4) Hairy leaves will remain dry but waxy leaves will form water droplets and be burnt by the sun.

13. The picture shows a plant that Linda found in her garden. The leaves have spikes on them.



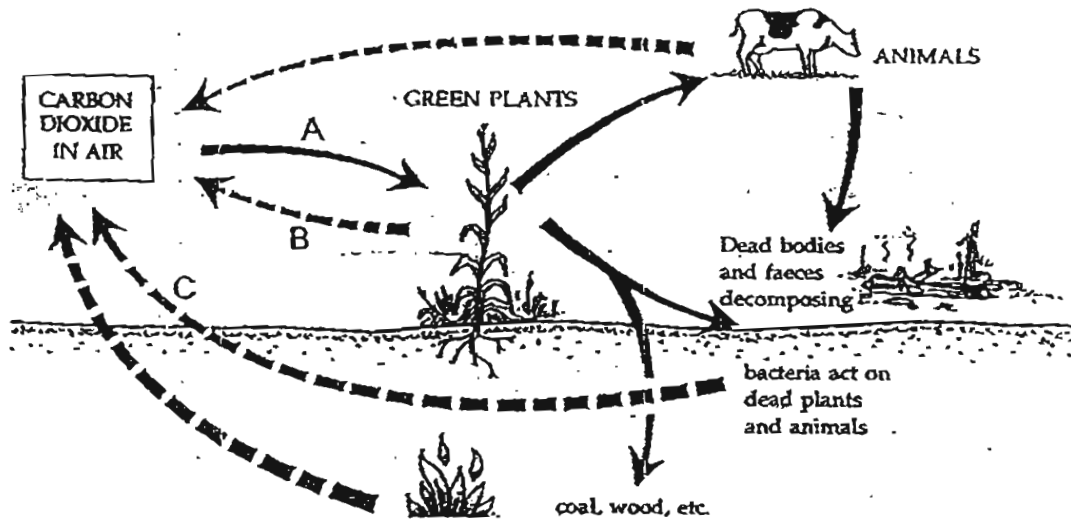
Which one of the following is the most likely function of the spikes?

- (1) To reduce water loss to the surroundings
  - (2) To help the plant climb up higher for support
  - (3) To photosynthesize and make food for the plants
  - (4) To deter animals from eating the plant
14. The Bird's Nest fern is a large leafy fern, commonly found on roadside trees, particularly the Rain tree. The fern grows at the base of large branches and can grow in the absence of soil as it has a unique ability to trap water so that it can make its own food. The Rain tree is not damaged by this process and does not benefit from it.

Which pair of living things has the same type of interdependent relationship as the Bird's Nest fern and the Rain tree?

- (1) tiger and deer
- (2) vultures and lions
- (3) butterflies and flowers
- (4) dogs and fleas

15. The diagram below shows how producers, consumers and decomposers are interdependent on each other.



What are the processes represented by arrows A, B and C?

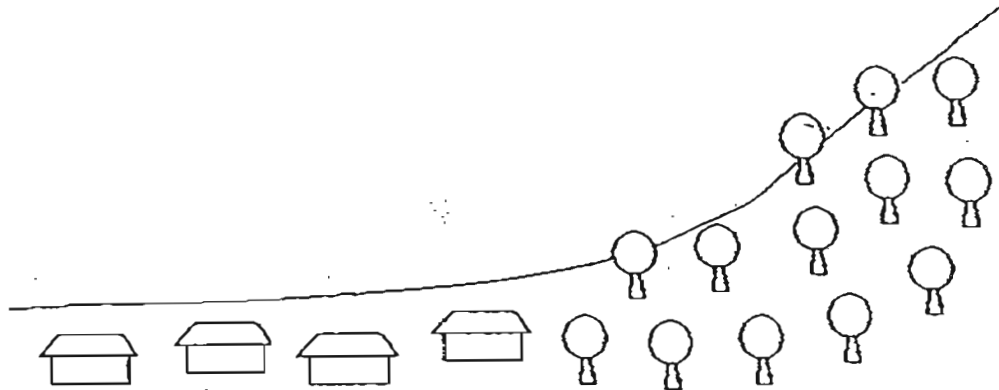
	Arrow A	Arrow B	Arrow C
(1)	photosynthesis	decomposition	respiration
(2)	respiration	photosynthesis	decomposition
(3)	photosynthesis	respiration	decomposition
(4)	respiration	photosynthesis	respiration

16. Which of the following are possible causes of global warming?

- A. Acid rain
- B. Melting of polar ice caps
- C. Excessive deforestation
- D. Flooding of coastal towns
- E. Increased number of cars on the road

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

17. The picture below shows a village beside a hill. Some villagers are planning to clear the hill by burning the trees in order to build more houses there.



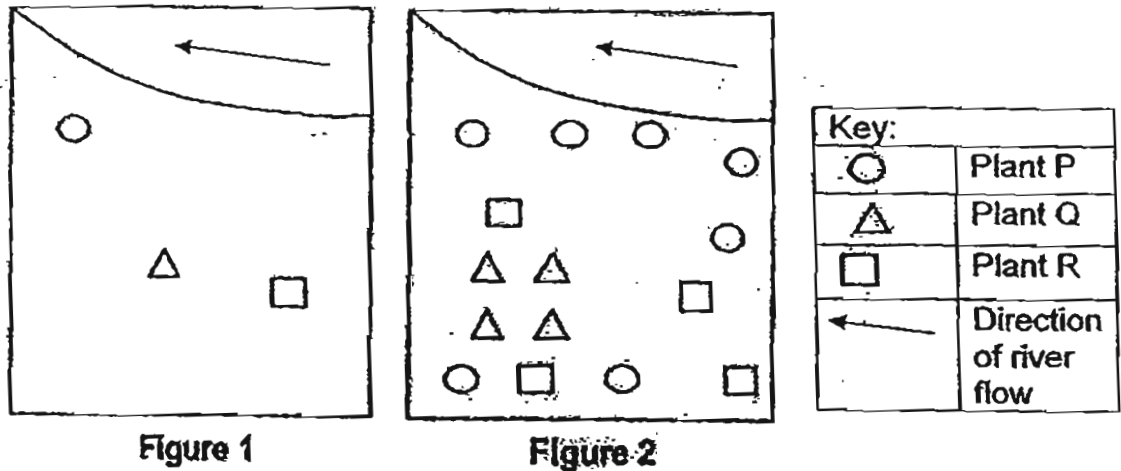
What are the possible immediate environmental damages the villagers are causing?

- A. Global warming
- B. There would be air pollution
- C. Animals would lose their homes.
- D. Landslides could occur after heavy rainfall.

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

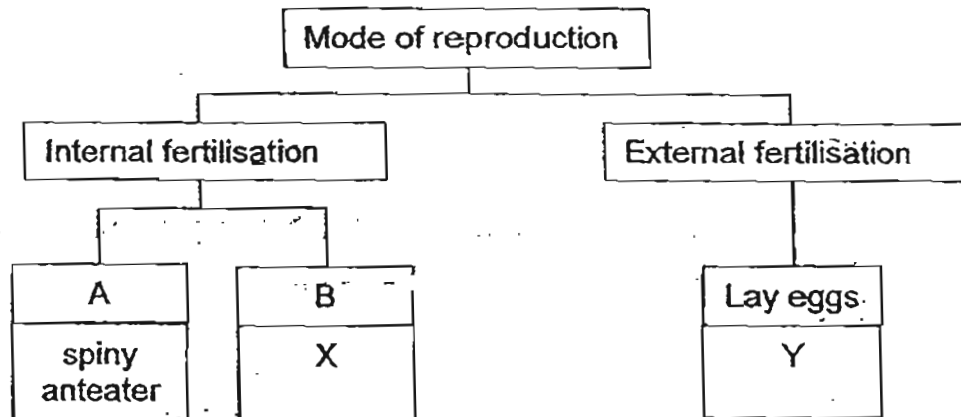
18. Figure 1 shows a plot of land beside a river. There are 3 types of plants. Figure 2 shows the same plot of land ten years later. The number of plants have increased.

Based on the information in the diagram, how are the seeds of the 3 plants dispersed?



	P	Q	R
(1)	By wind	By water	By splitting
(2)	By water	By animals	By wind
(3)	By animals	By water	By wind
(4)	By wind	By splitting	By animals

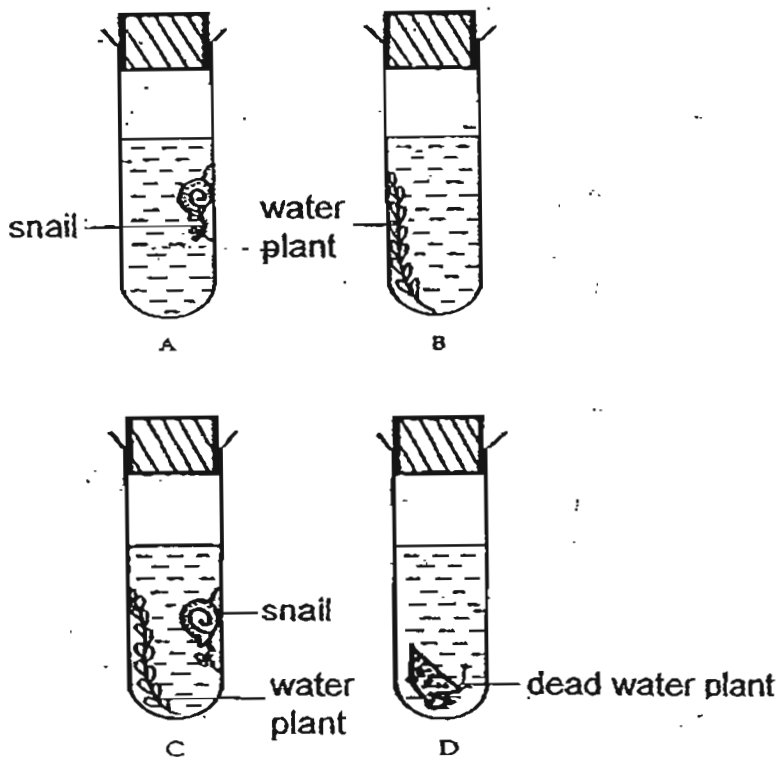
19. Study the classification table of reproduction methods below.



Which of the following correctly represents headings A and B, and organisms X and Y?

	A	B	X	Y
(1)	Lay eggs	Give birth to young alive	Dolphin	Salmon
(2)	Mammals	Birds	Spider	Guppy
(3)	Give birth to young alive	Lay eggs	Crow	Frog
(4)	Birds	Mammals	Whale	Toad

20. Mrs Goh set up four tubes as shown in the diagrams below. All the tubes contain the same amount of red indicator which will change to yellow when it detects carbon dioxide and purple when it detects oxygen.

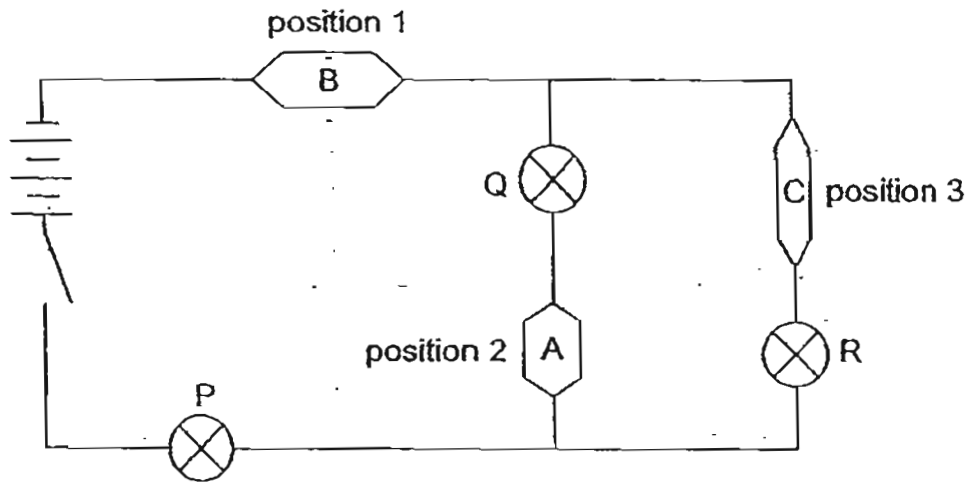


She then placed tube A and B near a window and tubes C and D in a cupboard. What will be the colour of the solutions in each tube a day later?

	Tube A	Tube B	Tube C	Tube D
(1)	red	yellow	purple	purple
(2)	yellow	purple	yellow	yellow
(3)	purple	red	purple	yellow
(4)	yellow	yellow	red	red



21. Study the circuit diagram shown below.



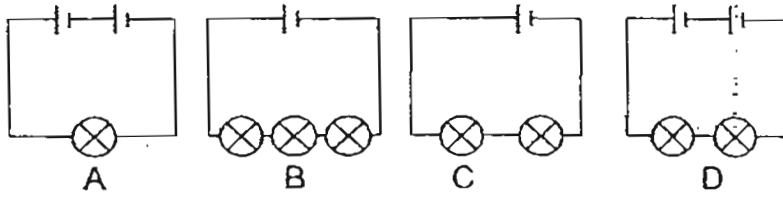
Three different materials, A, B and C, were placed at positions 1, 2 and 3. All the bulbs were identical and functioning properly prior to the experiment.

When the switch was closed, it was observed that bulbs P and R lit up but not bulb Q.

The positions of materials A, B and C were then rearranged. Which of the following is a possible observation?

	Positions			Bulbs		
	1	2	3	P	Q	R
(1)	A	B	C	lit	unlit	unlit
(2)	A	C	B	lit	unlit	lit
(3)	C	B	A	lit	lit	unlit
(4)	B	C	A	unlit	unlit	unlit

22. Study the 4 different circuit diagrams below. The bulbs and batteries in the 4 circuits are new and functioning properly.



Which one of the following correctly shows the correct arrangement of the brightness of bulbs from the brightest to the dimmest?

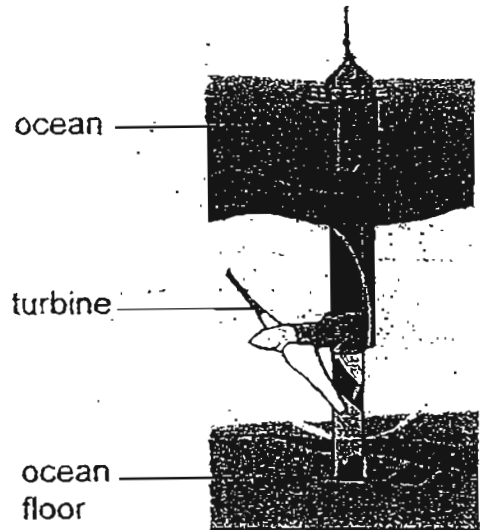
- (1)  $A > D > C > B$   
 (2)  $A > C > B > D$   
 (3)  $B > C > D > A$   
 (4)  $D > A > C > B$
23. The following table shows several objects that have been classified into groups X, Y and Z according to the main forms of energy that they possess.

X	Y	Z
a <u>book</u> falling off a shelf	a <u>ball</u> rolling on a flat ground	a ringing <u>bell</u>
a roller coaster <u>car</u> moving up a loop	a spinning <u>windmill</u>	a <u>piano</u> being played

Which one of the following objects could be placed under group X?

- (1) an oven in use  
 (2) a bouncing ball  
 (3) a whistle being blown  
 (4) a bus moving on the road

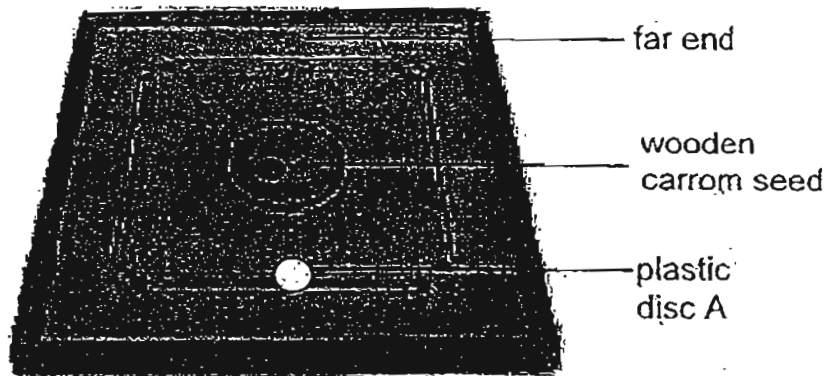
24. The diagram below shows an ocean turbine. It is connected to a power station and can be used to convert the energy from underwater ocean currents into electricity using a generator.



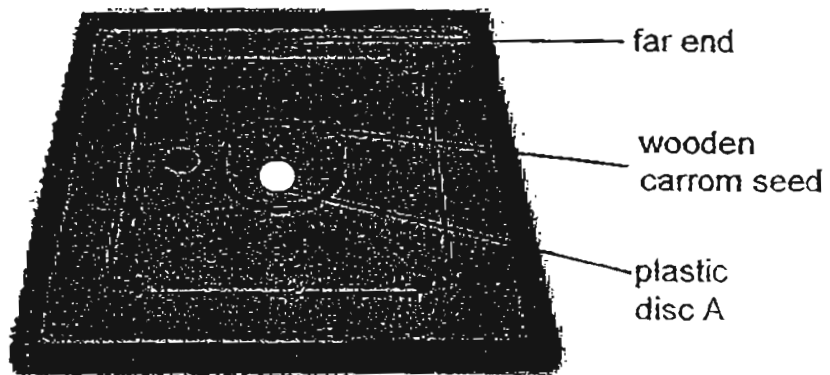
Which one of the following correctly shows the energy changes that most likely takes place when the ocean turbine generates electricity?

- |                                                  |   |                                        |   |                                  |
|--------------------------------------------------|---|----------------------------------------|---|----------------------------------|
| (1) Kinetic energy<br>(ocean current)            | → | Chemical potential energy<br>(turbine) | → | Electrical energy<br>(generator) |
| (2) Chemical potential energy<br>(ocean current) | → | Kinetic energy<br>(turbine)            | → | Electrical energy<br>(generator) |
| (3) Chemical potential energy<br>(ocean current) | → | Heat energy<br>(turbine)               | → | Electrical energy<br>(generator) |
| (4) Kinetic energy<br>(ocean current)            | → | Kinetic energy<br>(turbine)            | → | Electrical energy<br>(generator) |

25. Keegan was playing a game of carrom using the board shown below.



Keegan flicked disc A with his fingers and the position of the seeds and the disc on the board appeared as shown below.



He then made the following statements.

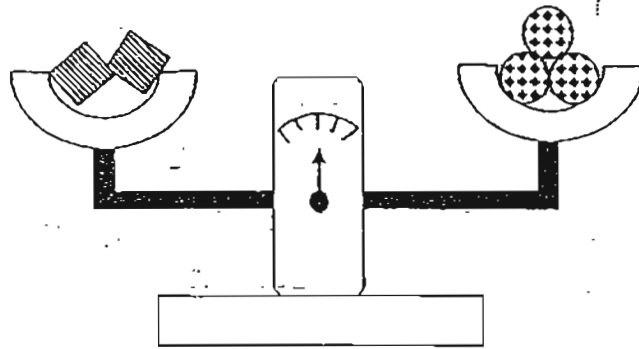
- A. Disc A moved forward a certain distance and hit the 2 carrom seeds.
- B. The 2 carrom seeds that were hit, dispersed and moved only towards the far end of the board.
- C. Disc A and the carrom seeds stopped moving because of gravity.
- D. Upon flicking, disc A moved because the push force was greater than the frictional force.

Which of the statements that he made are correct?

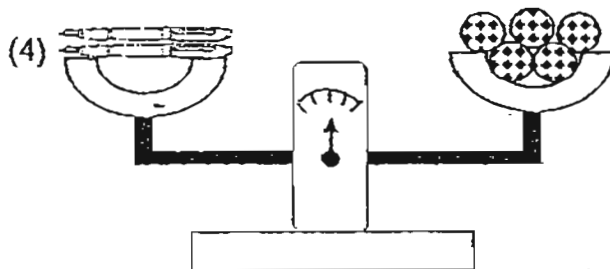
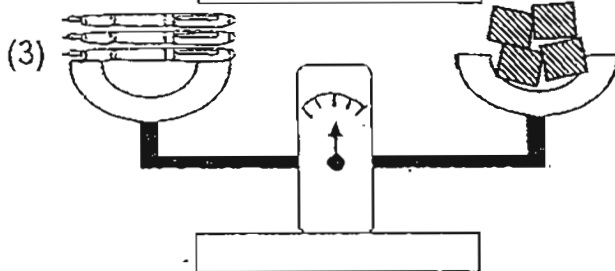
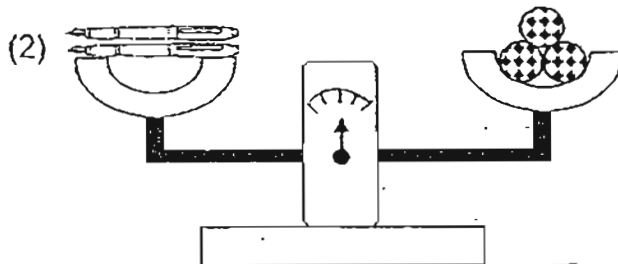
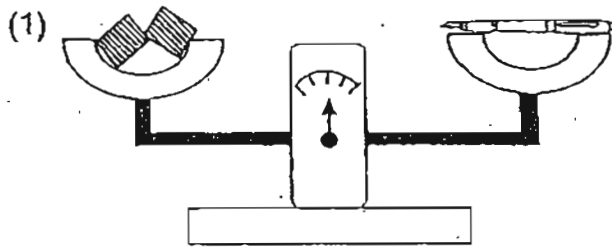
- (1) A and C only
- (3) B and D only

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

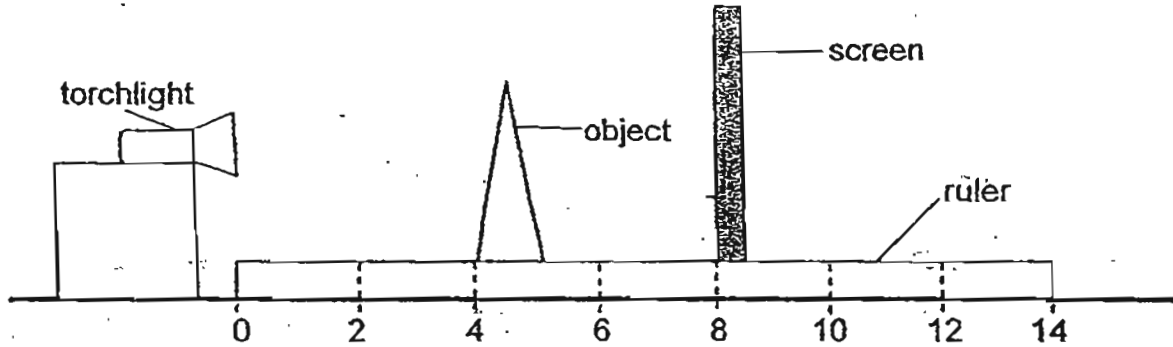
26. The diagram below shows a balanced scale with 2 identical blocks on one side and 3 identical marbles on the other. Two of the marbles were then replaced with a pen. The scale remained balanced.



Based on the information above, which one of the following diagrams is possible?



27. Elaine set up an experiment as shown below.



She placed a torchlight at the 0-centimetre mark of a ruler and shone it on an object that was placed on the 4-centimetre mark. A shadow was then observed on the screen which was placed on the 8-centimetre mark.

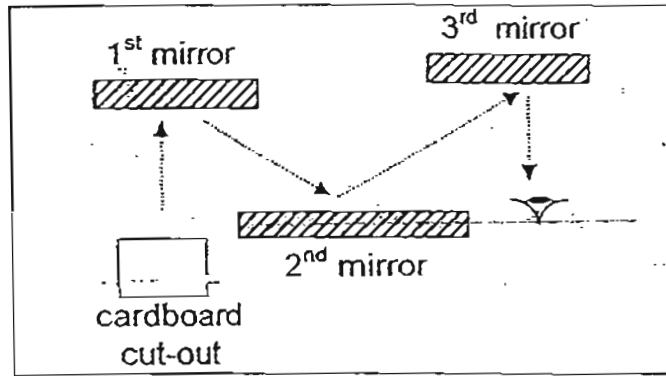
Which of the following changes would result in the object casting a bigger shadow than the one observed in Elaine's set-up?

Marking on the ruler			
	Torchlight	Object	Screen
A	2	6	10
B	1	5	8
C	3	7	13
D	0.5	3	8

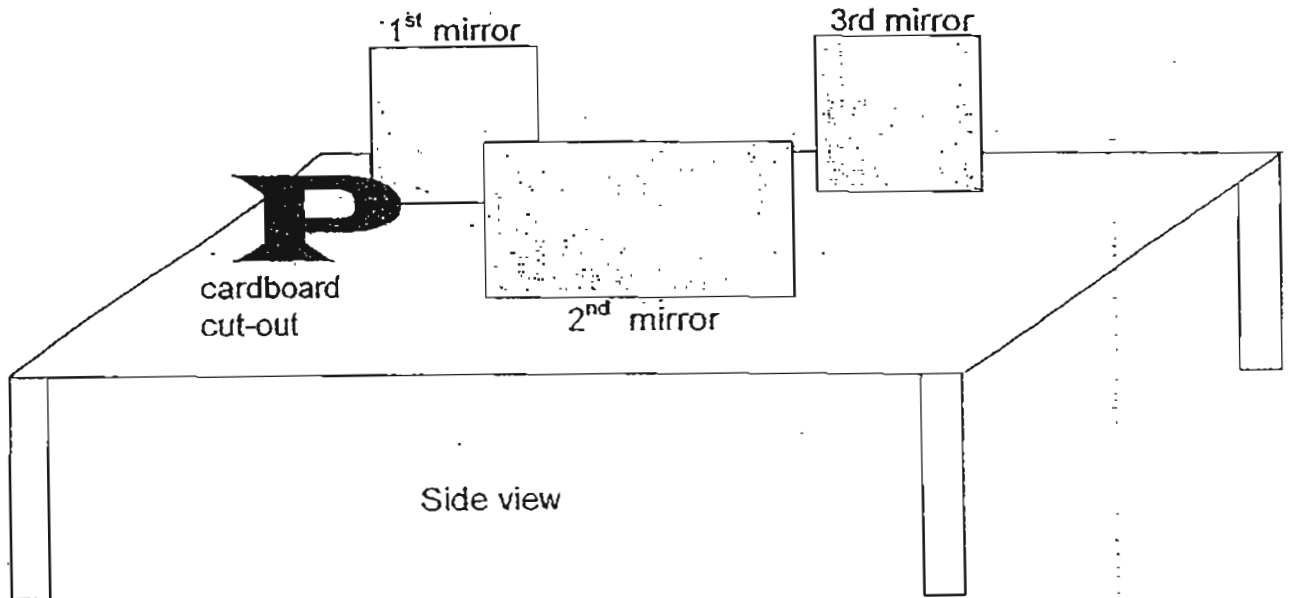
- (1) A and C only  
 (3) B and C only

- (2) A and D only  
 (4) C and D only

28 The diagram below shows the top view of how 3 mirrors had been placed in a room. A large cardboard cut-out of the letter 'P' was placed in front of the first mirror.



Top view



Side view

Which one of the following shows the correct image of the cardboard, as seen in the third mirror?

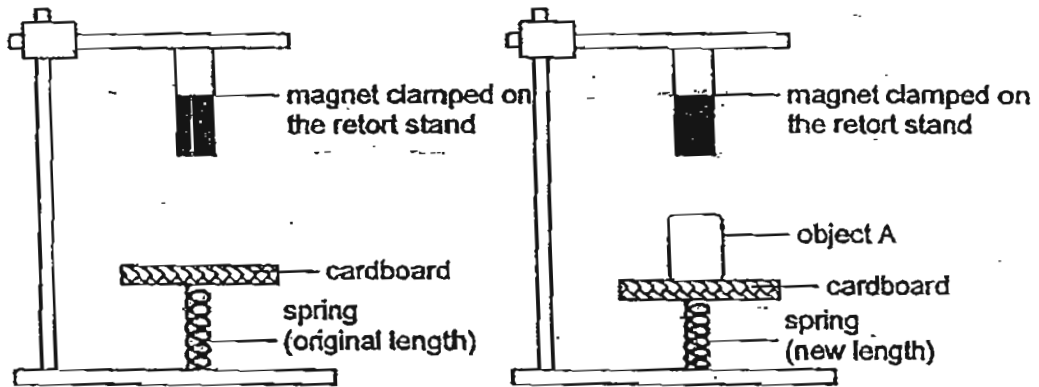
(1) **P**

(2) **q**

(3) **d**

(4) **b**

29. The diagram below shows the experiment that Sarah set up to find out how objects A, B, C and D interact with the magnet clamped on a retort stand. The four objects were made of different materials but of the same mass. She stuck a cardboard on a spring before placing object A securely on it. She then recorded the length of the spring.



Sarah repeated her experiment by replacing object A with objects B, C and D one at a time. She recorded her results in the table below.

Objects	Original length of the spring (cm)	New length of the spring (cm)
A	5	7
B	5	3
C	5	5
D	5	8

Based on the results of her experiment, what could objects A, B, C and D be?

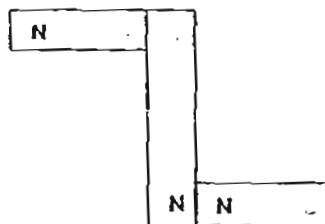
	A	B	C	D
(1)	steel bar	magnet	copper bar	iron bar
(2)	iron bar	steel bar	aluminium bar	copper bar
(3)	aluminium bar	copper bar	iron bar	magnet
(4)	copper bar	iron bar	magnet	steel bar



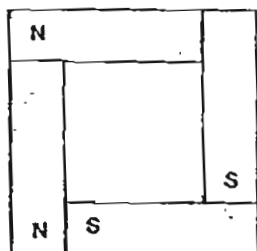
30. The diagram below shows the arrangements of some magnets.



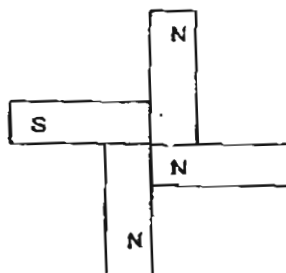
Set-up W



Set-up X



Set-up Y



Set-up Z

Which 2 of the above arrangements are not possible?

- (1) W and X only
- (3) X and Y only

- (2) W and Z only
- (4) Y and Z only

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**BOOKLET B**

Date : 25 August 2011

Duration : 1 h 45 min

Name : \_\_\_\_\_ (            )

Class: Primary \_\_\_\_\_ (            )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Parent's signature: .....

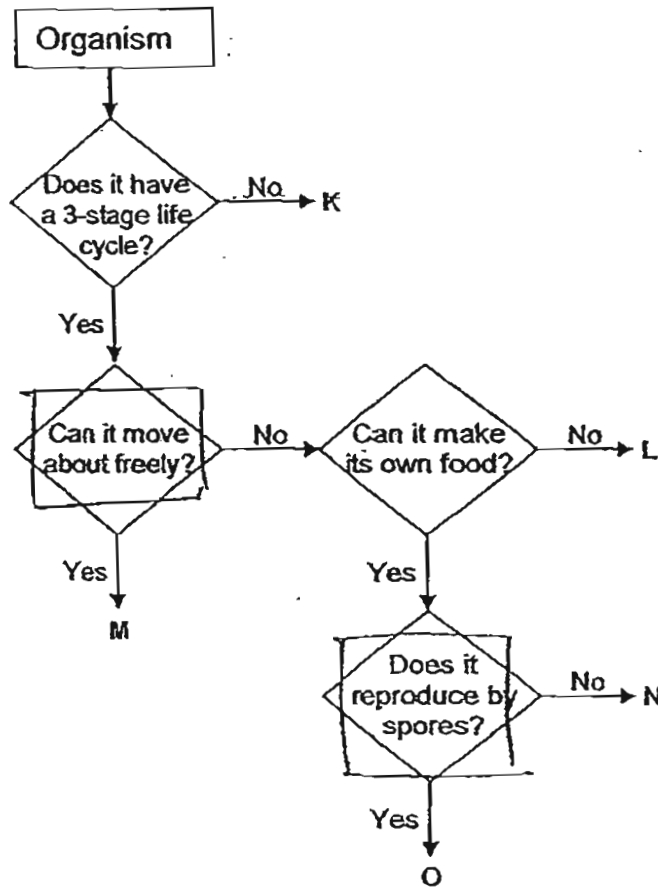
**DO NOT OPEN-THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

Booklet B consists of 15 printed pages including this cover page.

**Section B (40 marks)**

Write your answers to questions 31 to 46 in the spaces provided.

31. Study the flowchart below carefully.



(a) State the characteristics of organism 'N'. [1]

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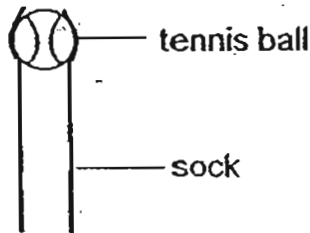
(b) Based only on the characteristics shown in the flow chart, state one similarity and difference between organisms 'M' and 'O'. [2]

Similarity: \_\_\_\_\_

Difference: \_\_\_\_\_

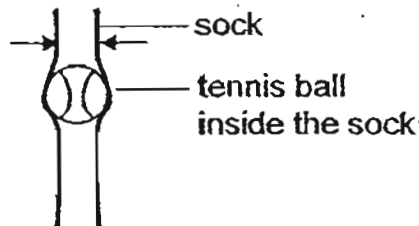
32. Ms Yasmeen used a section of an old sock and a tennis ball to demonstrate how our muscles help in the movement of a substance through a system of the human body.

In her first demonstration, she placed the tennis ball at the top opening of the sock. It was observed that the top portion of the sock bulged out but the tennis ball did not move any further downwards. The set-up of her demonstration is shown in the diagram below.



First demonstration

In her second demonstration, she squeezed the top half of the sock at the region near the tennis ball, as indicated by the arrows below. The tennis ball was observed to move downwards. She repeated her actions without squeezing the part where the sock bulged out, until the tennis ball reaches the bottom end of the sock.



Second demonstration

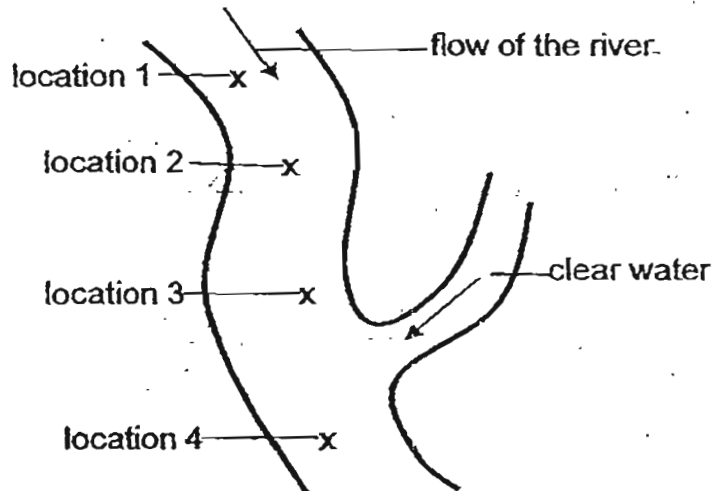
- (a) In which part of the human body would our muscles help in the movement of a substance as demonstrated by Ms Yasmeen? [1]

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Ms Yasmeen explained that when she squeezed and let go of the sock, her movements represent the movements of muscles in a part of the body system.

- (b) Based on the information above, explain how these muscles work with reference to her hand movements. [1]

33. The diagram below shows a river where two aquatic organisms, X and Y, can be found. There is a factory located near the river. This factory releases its waste products into the river. The waste products cause the population of aquatic organism X to increase but the population of organism Y to decrease.



The table below shows the population of organisms X and Y present in samples taken at 4 different locations of the river.

Location	Population of X	Population of Y
1	14	81
2	15	80
3	30	37
4	16	41

- (a) i) In the diagram above, mark the possible location of the factory with the letter "F" and a dot (•). [1]

- ii) With reference to the population of X and Y, explain your choice in (i). [2]

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- (b) It is observed that as the river flows further downwards, population of Y starts to increase again as shown in location 4.

State a possible reason for this increase. [1]

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34. Buffaloes usually have numerous blood sucking ticks attached to their bodies. The Oxpecker bird feeds on them and also hitches a ride on the buffaloes.

(a) How does the buffalo benefit in this relationship? [1]

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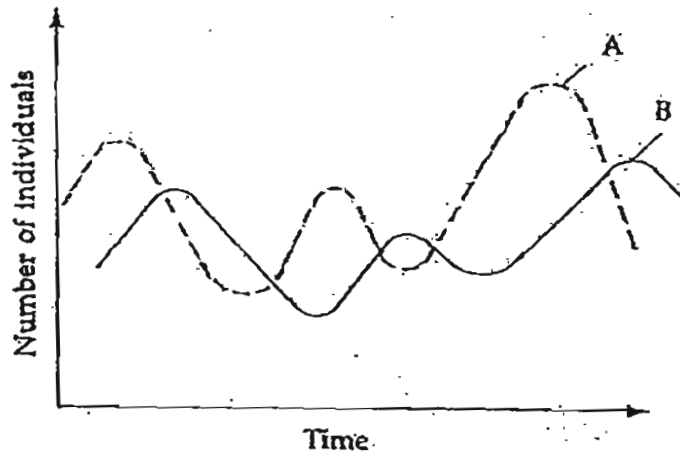
(b) How does the relationship between the buffaloes and the ticks differ from that between the buffalo and the Oxpecker? [2]

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35. In a pond, there are microscopic plants and animals. The graph below shows the changes in the two populations which are from the same food chain.



(a) In the table below, identify which line belongs to each of the 2 populations? [1]

Population	Line
Microscopic plants	
Microscopic animals	

(b) Why are the two graphs similar in shape? [1]

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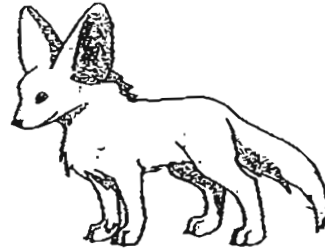


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36. The diagrams below show an Arctic Fox and a Fennec Fox.



Arctic Fox



Fennec Fox

The Arctic Fox lives in a very cold environment while the Fennec Fox lives in the desert.

(a) Explain how the ears of the Fennec Fox are adapted to the environment it lives in.

[1]

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The Arctic Fox has white fur during winter and brown fur during Summer. The Fennec Fox has cream-coloured fur throughout the year.

(b) Explain why it is an important adaptation that the Arctic Fox is able to change the colour of its fur.

[1]

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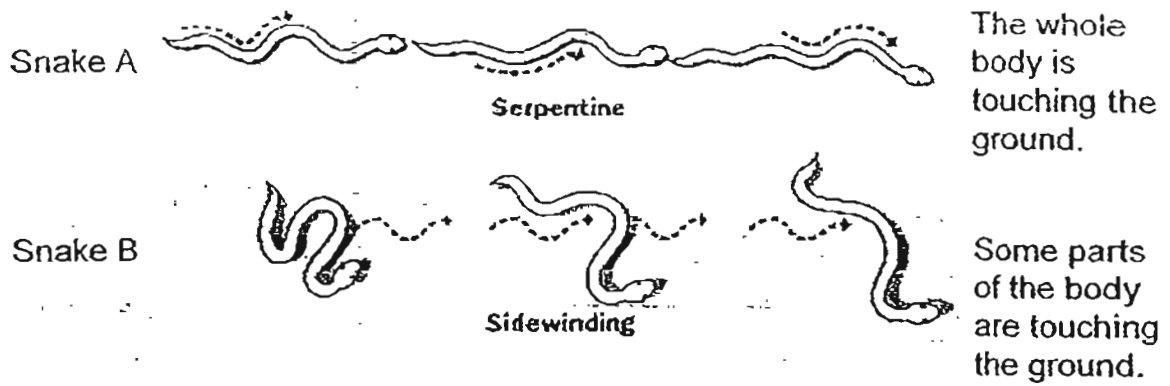
(c) During winter, the Arctic Fox have hairs on the bottom of its paws. Besides for keeping it warm, what is another function of the hairs?

[1]

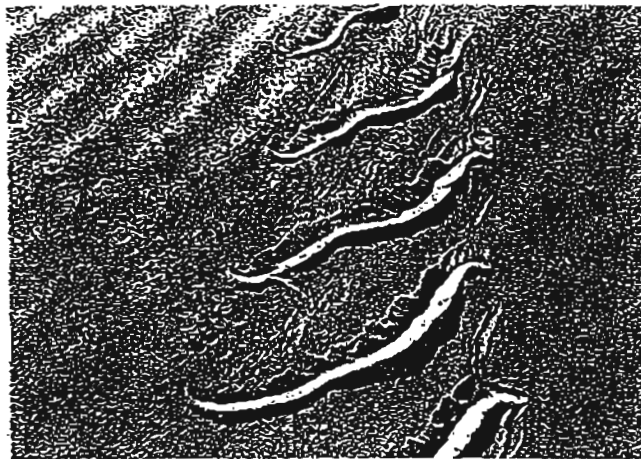
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37. The image below shows the movement of two types of snakes.



The following photograph shows the tracks left behind on sand after a snake had moved past.

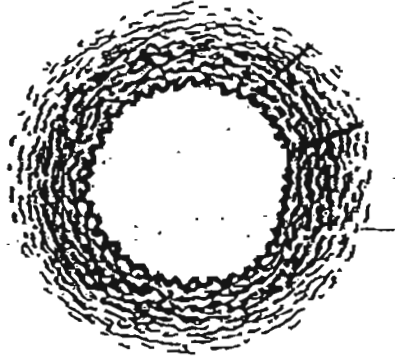


(a) Which of the two snakes, A or B, is most likely to have made these tracks? [1]

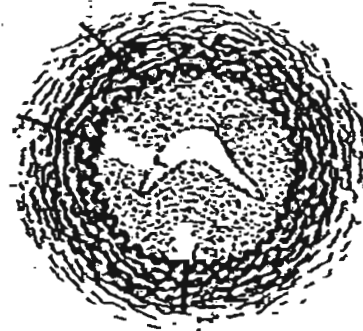
(b) State one behavioural adaptation that snake B has and explain how this adaptation helps the snake cope with the extreme temperatures in a desert. [1]



38. The diagrams below show the cross section of a healthy blood vessel and the cross section of a narrowed blood vessel. Narrowed blood vessels leave a smaller opening for blood to flow through.



Healthy blood vessel



Narrowed blood vessel

- (a) Based on the information above, compare the rate and amount of blood flow in the healthy blood vessel and the narrowed blood vessel. [1]

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The table below shows the heart rate of 2 volunteers at rest and while running.

Activity	Heart rate (beats per-minute)	
	At rest	While running
Volunteer X	65	90
Volunteer Y	75	110

- (b) Based on the information above, which volunteer is most likely to have a narrowed blood vessel? Explain your answer. [1]

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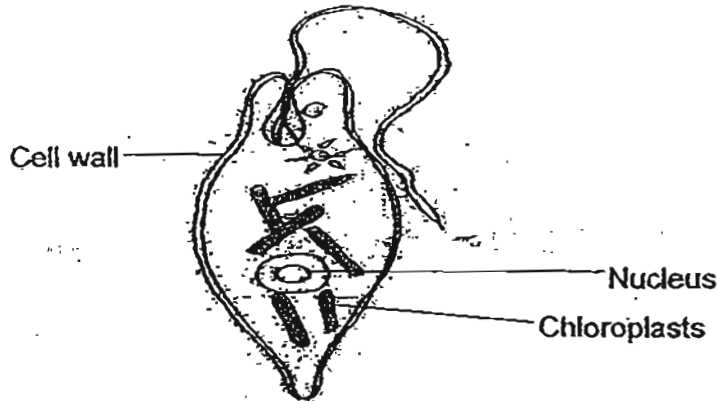


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39. The diagram shows a magnified view of a single-celled organism which Kelvin had found in a pond.



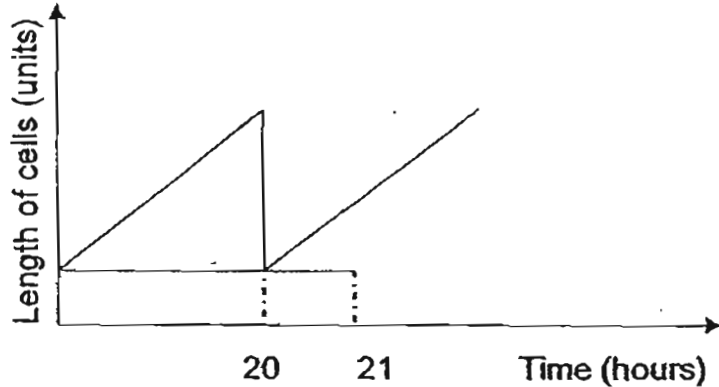
- (a) Based only on the diagram above, state 2 observations to explain why the organism is likely to be a plant cell. [1]

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Kelvin observed and measured the length of an animal cell over a period of time. He recorded his results in a graph as shown below



Kelvin observed that at the 20<sup>th</sup> hour, the length of the animal cell decreased sharply.

- (b) i) State the process that had happened at the 20<sup>th</sup> hour. [1]

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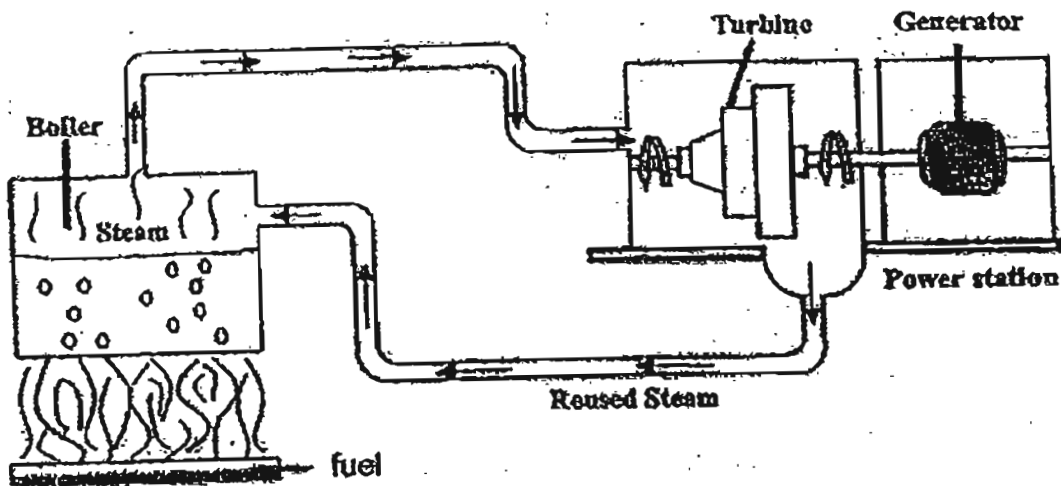
- (ii) Explain why this process in (i) is needed? [1]

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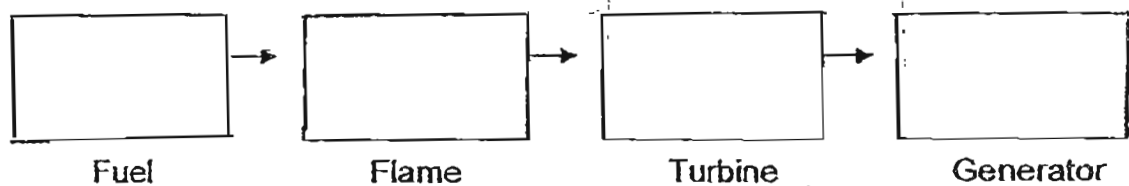


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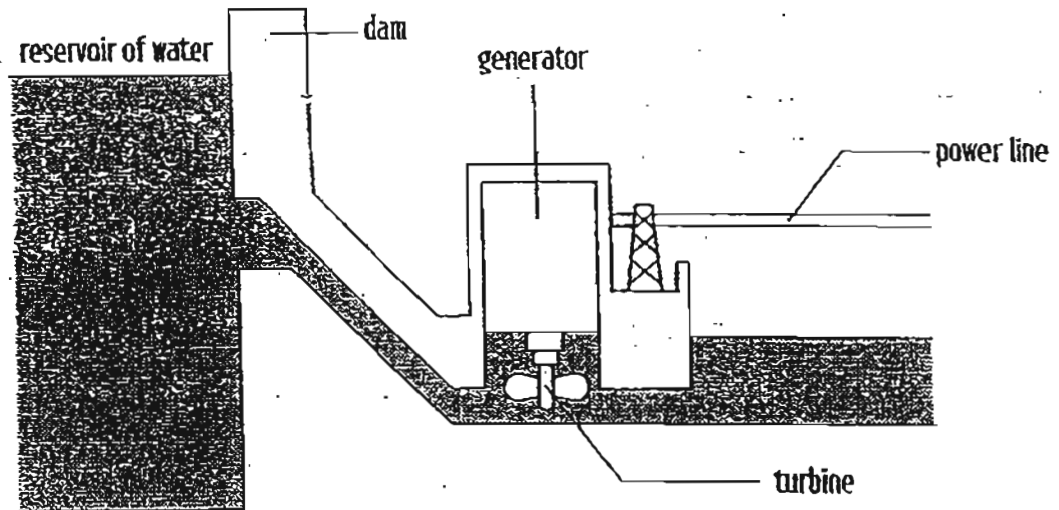
40. The diagram below shows how electrical energy is generated in a conventional power station. Fossil fuels are burnt to boil water and produce steam. This steam drives a turbine which generates electricity.



(a) State the energy conversions that take place in the power station. [1]



The diagram below shows how electrical energy is produced in a hydroelectric power station. When water is released from a great height from the reservoir, it will possess gravitational potential energy which can be converted to kinetic energy. This can be used to drive a turbine to generate electricity.



(b) Give two explanations why this method of generating electricity is eco-friendly [2]

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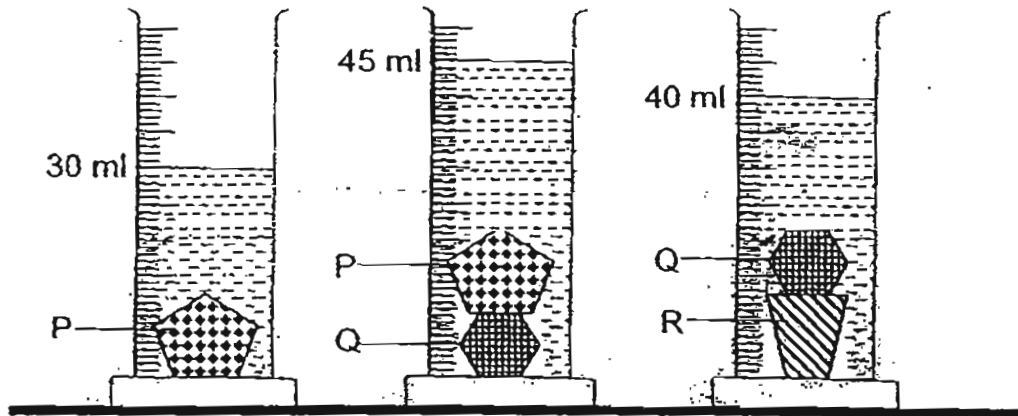
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(c) Other than fossil fuels and moving water, suggest another natural source of energy. Explain its disadvantage. [1]

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41. Damiane poured equal amount of water into 3 similar measuring cylinders. He then placed 3 blocks, P, Q and R in the cylinders in the following order.



Study the statements below and put a tick ( $\checkmark$ ) in the appropriate boxes.

[2]

	Statements	True	False	Not possible to tell
(a)	The volume of block P is greater than the volume of block R.			
(b)	The volume of block Q is 5 ml.			
(c)	The original volume of water was 20 ml.			
(d)	The total volume of blocks P and R is more than the volume of block Q.			

42. Georgia conducted an experiment to study how the arrangement of bulbs in a circuit affected their brightness. She had the following apparatus to use for her experiment:

- 6 identical bulbs
- 4 identical batteries
- a few wires
- 2 switches

After setting up her experiment, she discovered that in set-up 1, when 1 bulb fused, all the bulbs did not light up.

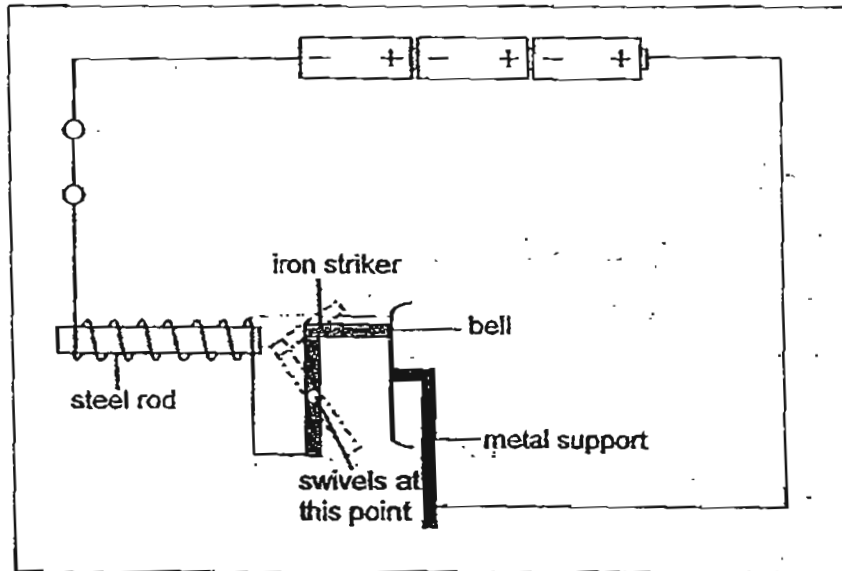
(a) In the space provided below, draw a circuit diagram for each of the set-ups that she needed to conduct her experiment. She had to conduct both experiments at the same time. [2]

Set-up 1	Set-up 2

(b) Georgia had to record the brightness of the bulbs in each circuit for comparison. State the equipment she would need to obtain this reading. [1]

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43. Study the diagram of a circuit of an alarm shown below carefully.



In the above set-up, when the switch was closed, the striker was observed to be pulled back towards the rod (as represented by the dotted lines) before suddenly moving back to hit the bell.

(a) Explain the interaction between the rod and the striker when the switch was closed. [2]

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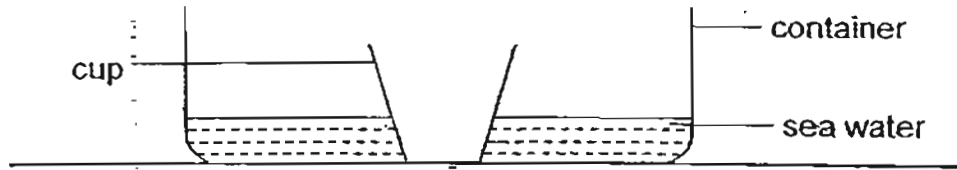
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(b) Explain the effect on the alarm system if the steel rod is replaced with a copper rod. [1]

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44. Godwini was given a container of sea water. He was asked to obtain fresh water in the cup from the container of sea water only. The diagram below shows the initial set-up given to him before he conducted his experiment.



His science teacher provided him with the following apparatus:

- A clear plastic sheet
- A 10 g weight
- Some clear sticky tape
- A high-intensity lamp

- (a) In the table below, list down the steps he should take to obtain fresh water from the container of sea water. [2]

Step	Procedure
1	
2	
3	
4	
5	Collect freshwater in the cup

- (b) Explain how the above experiment enabled him to obtain fresh water from the sea water. [2]

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~THE END~



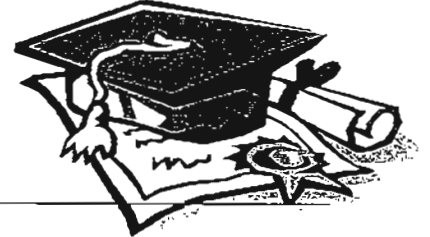


# ANSWER SHEET

**EXAM PAPER 2011**

**SCHOOL : NANYANG  
SUBJECT : PRIMARY 6 SCINECE**

**TERM : PRELIMINARY**



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

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

31)a) Organism 'N' has a 3-stage life cycle, if cannot move about freely, can make its own food and does not reproduce by spores.

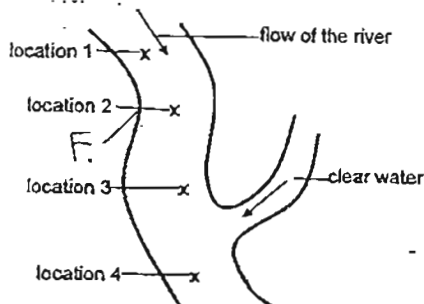
b) Similarity: They have a 3-stage life cycle.

Difference: Organism 'M' can move around freely while organism 'O' cannot move around freely.

32)a) The gullet.

b) When she squeezed the sock, it represents muscle contraction when she lets go, it represents muscle relaxation.

33)a)



b) The size of population X increased from location 2 to location 3 while that of population Y decreased. Since the river is flowing down wards location 4, the factory must be some where in between the 2 location.

c) The water has been diluted by the clear water and there was less pollutants in location 4.

34)a)The Oxpecker bird will help the buffaloes eat the ticks.

b)In the first relationship, the ticks will benefit but the buffaloes will be harmed. In the other relationship, the buffaloes and the Oxpecker bird will benefit.

35)a)A,B

b)The microscopic animals feed on microscopic plants so any changes in the population will affect the other as well.

36)a)The Fennec Fox has large ears which enables it to lose heat faster and keep its body cool.

b)It is able to blend in with its surrounding during the different seasons to avoid being spotted.

c)To walk easily ice without slipping.

37)a)Snake B.

b)Snake B reduces the surface area in contact with the ground to reduce heat gain.

38)a)The healthy blood vessels can pump more blood and at a faster rate while a narrowed blood vessel can pump less blood and at a slower rate.

b)Volunteer Y. His heart would need to pump faster to ensure that more blood flows through the narrowed blood vessels.

39)a)It has a cell wall and chloroplasts.

b)i)cell division. ii)For replacing old and damaged cell and for growth.

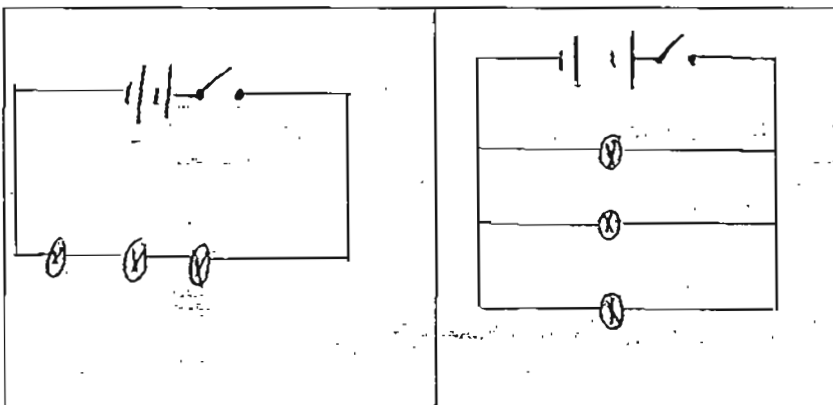
40)a)Chemical potential energy→Heat energy→Kinetic energy→Electrical energy.

b)It does not produce harmful gases and the water is renewable, No fossil fuels need to be burnt so less pollution is caused.

c)The wind. It is not available all the time.

41)a)T b)F c)Not d)Not

42)a)



b)A light sensor connected to a data logger.

**43)a)When the circuit was closed at first, the steel rod becomes an electromagnet and attract the iron striker. The iron striker will move back to wards the electromagnet and open the circuit T his causes it to be released.**

**b)It would not sound as copper is a non magnetic material and would not be attracted.**

**44)a)1)Use same sticky tape and stick the clear plastic sheet onto the top of the container.**

**2)Put the 10g weight on the plastic sheet above the cup.**

**3)Use a high-intensity lamp and shine it at the sea water.**

**4)Wait for the water to drop into the cup.**

**b)When the sea water evaporate, the salt particles will be left behind. The water vapour will condense on the cooler surface of plastic sheet and will flow under the 10g weight to drop in to the cup as water droplets.**