NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION 2010

BOOKLET A

Date : 26 August 2010

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

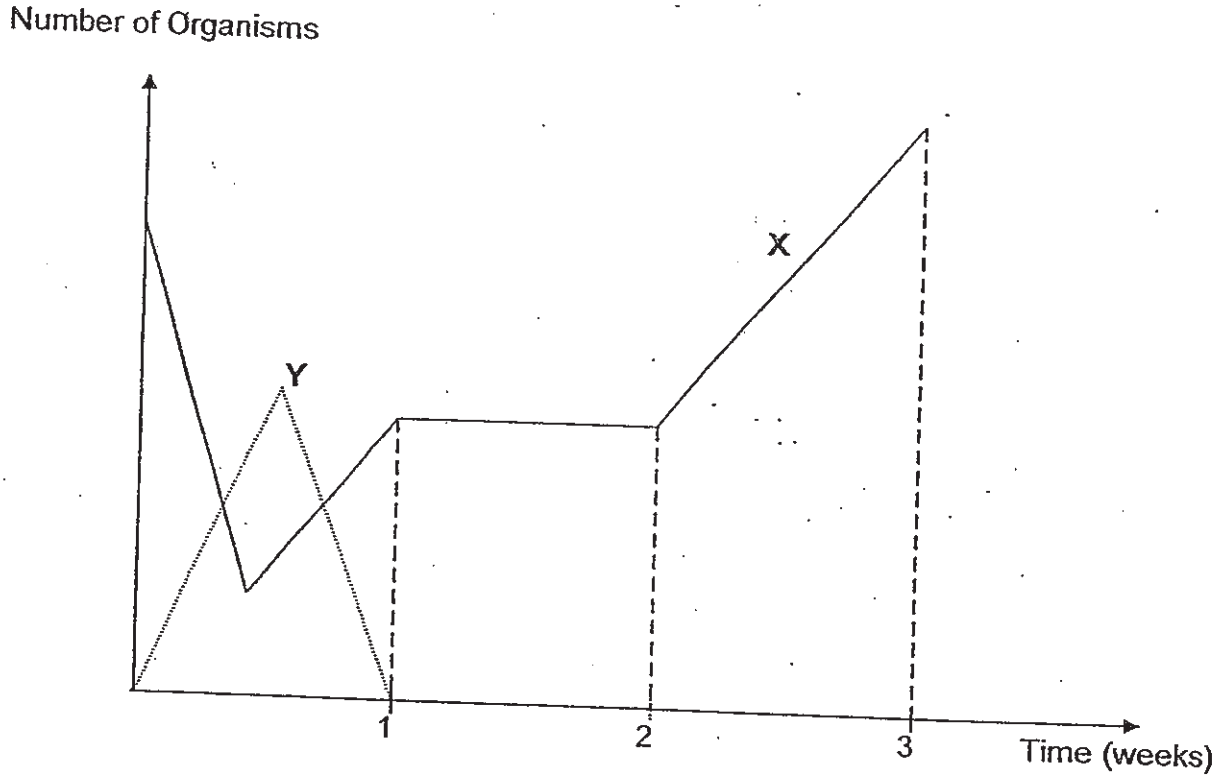
Parent's signature: .....

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

Booklet A consists of 19 printed pages including this cover page.

Section A (30 x 2 marks = 60 marks)
For each question from 1 to 40, 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 diagram below shows how the populations of organisms X and Y change over a period of 3 weeks.

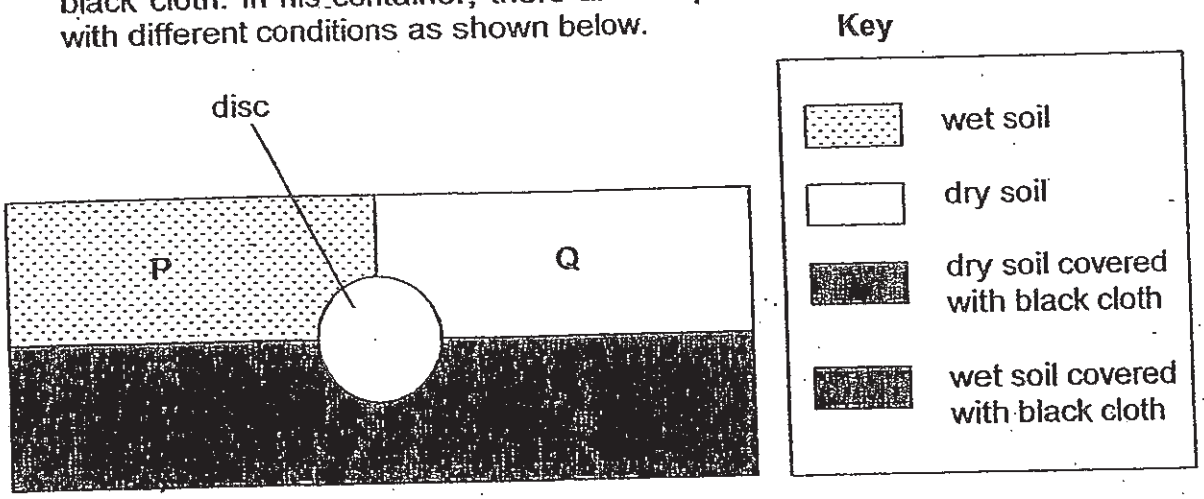


Which of the following statements are true?

A Birth rate of X is equal to its death rate for a week.
B The highest number of X was recorded in Week 1.
C The number of X only starts to increase after Week 2.
D When Y increases in number, the number of X decreases.

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

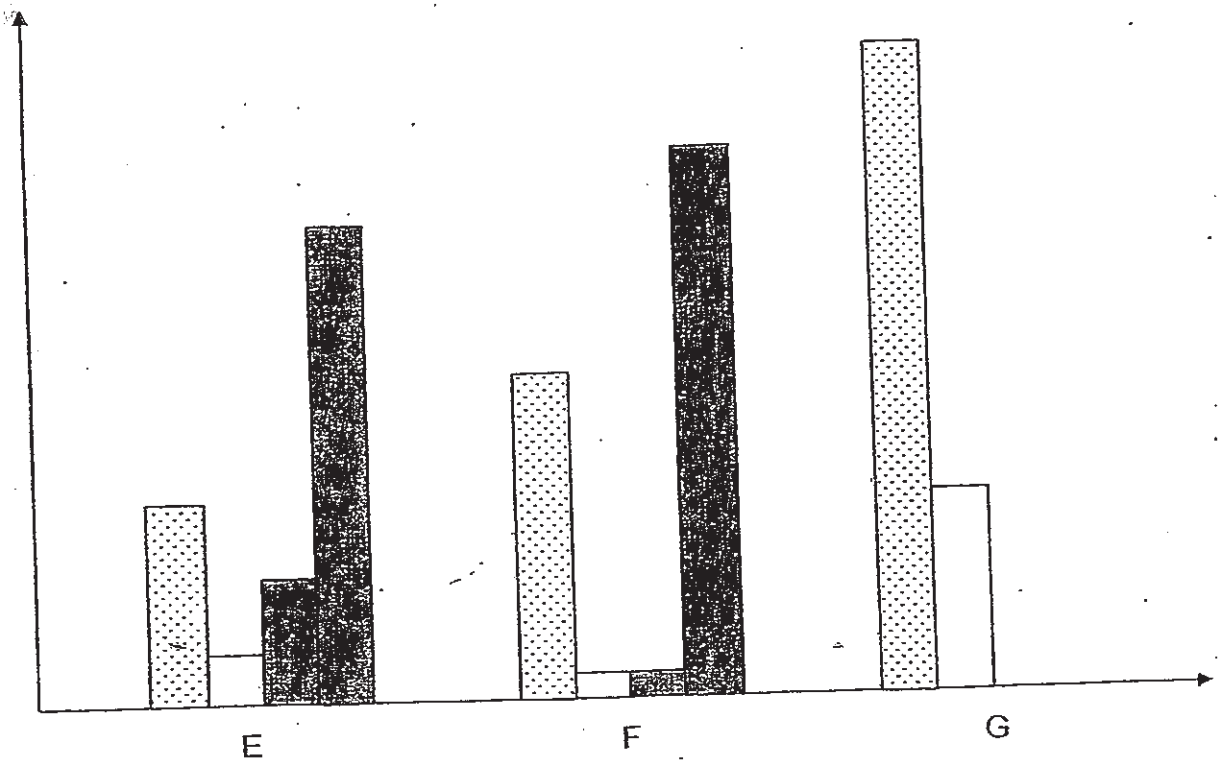
2. Gurmit wanted to find out the suitable living conditions for organism E, F and G. He filled half of a container with wet soil and the other half with dry soil. Then, he covered half of the container with a piece of black cloth. In his container, there are 4 equal areas, P, Q, R and S, with different conditions as shown below.



Top view of container

The same number of organisms E, F and G were placed in the disc in the centre of the container at the beginning of the experiment. At the end of the experiment, the total number of organisms in each area was counted and recorded in a bar chart below.

Number of Organisms

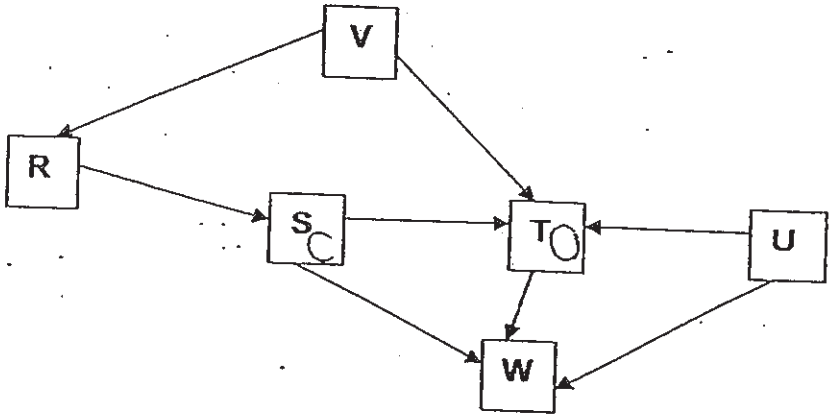


Which of the following statements are true?

A Only organism F can be found in the leaf litter habitat.
B Organism G is most sensitive to the amount of light in the environment.
C Both organisms E and F survive best in environment that is damp and dark.
D Organisms E, F and G can be found in environment that is bright and moist.

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

Study the food web below and answer Questions 3 and 4.



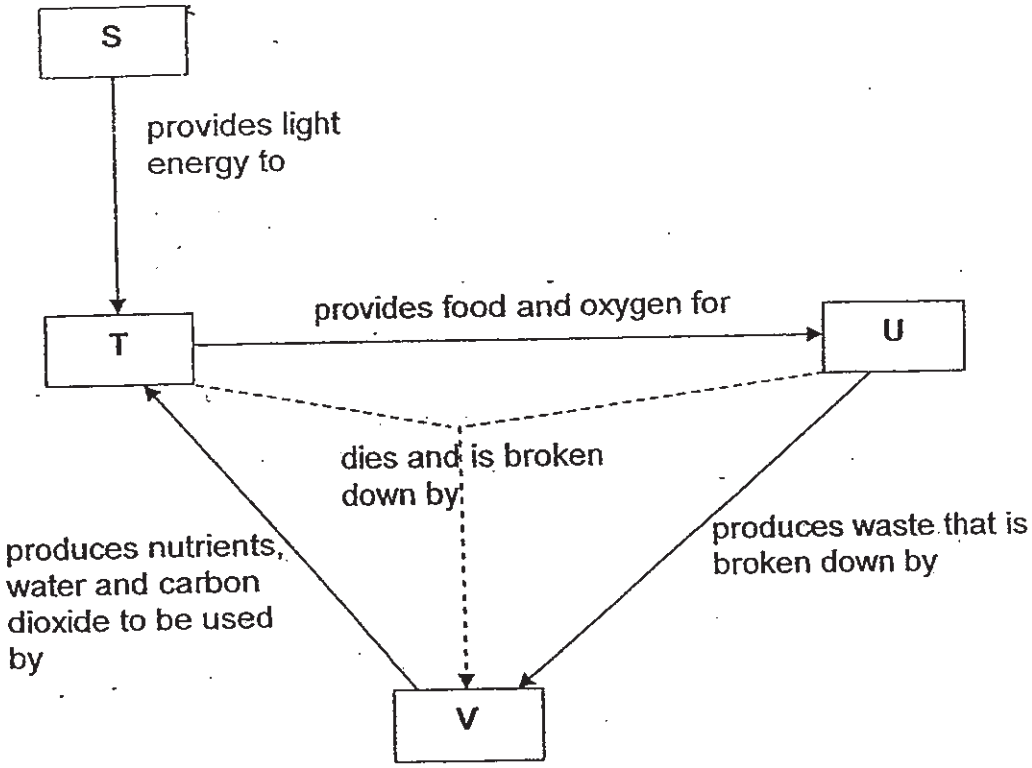
3. Which one of the following statements about the above food web is **incorrect?**

(1) S and W are carnivores.
(2) There is only 1 herbivore in the food web.
(3) When V is wiped out, R will be most affected.
(4) There are more omnivores than carnivores in the food web.

4. Which one of the following pairs of organisms does not have a prey-predator relationship?

(1) R and S
(2) S and W
(3) T and W
(4) U and T

5. Study the concept map below.



Which of the following statements are true?

A V could be a maggot.
B S, T, U and V are all organisms.
C The concept map shows energy transfer.
D Photosynthesis, respiration and decomposition are processes described in the concept map.

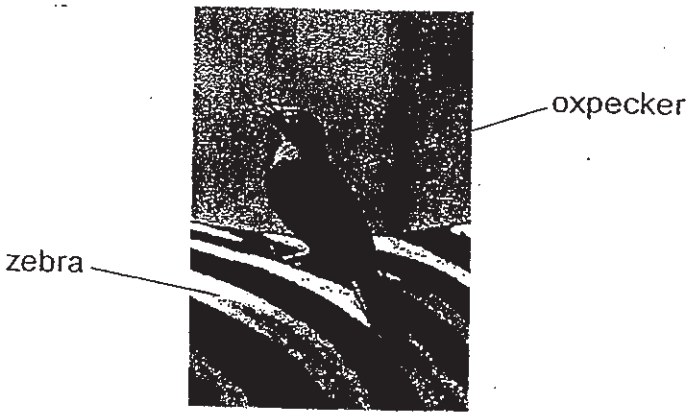
(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B and C only

6. Siti was studying the frogs in the school eco-pond. Each day, she took down notes on the frogs.

Which one of the following statements that Siti made in her notebook is not an adaptation of the frogs to increase their chances to continue their own kind?

(1) Frogs lay many eggs each time.
(2) Frogs lay eggs among the water plants.
(3) Frog egg is covered with a layer of bad-tasting jelly.
(4) Frogs lay eggs instead of giving birth to their young alive.

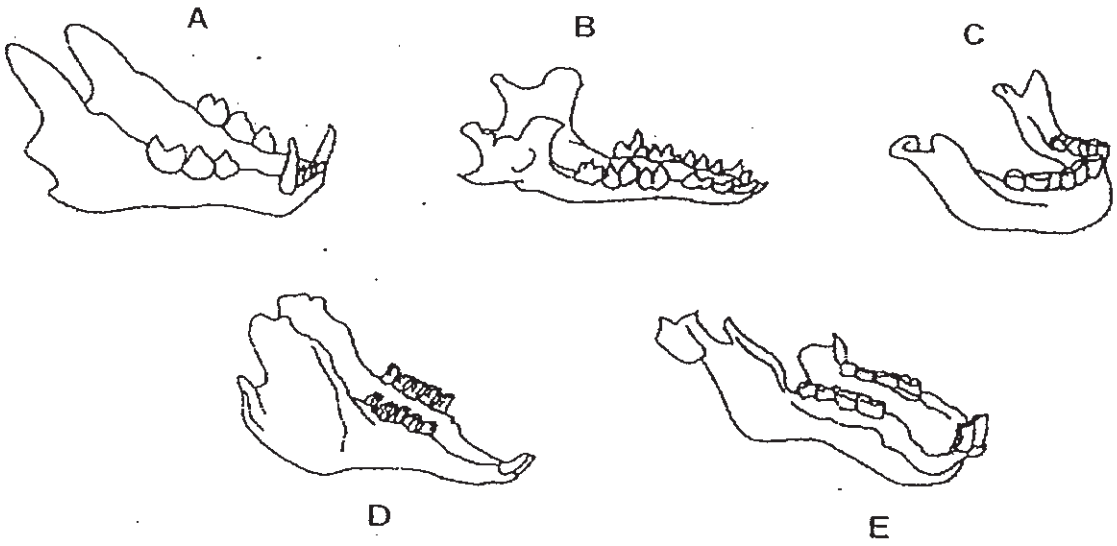
7. Oxpeckers land on zebras and feed on the ticks that live on the zebras' skin. Oxpeckers also fly upward and make a loud noise when there is danger, hence alerting the zebras.



Which one of the following pairs of organisms does not have similar relationships as the oxpeckers and the zebras?

(1) Fleas living on a dog.
(2) Bees collecting nectar from the flower.
(3) Harmless bacteria present in the intestine of human.
(4) Clown fish living among anemones, luring other fish to anemones.

8. Jawbones belonging to five animals, A, B, C, D and E, were discovered.

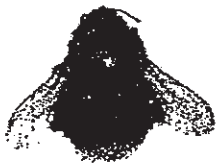


Based on the jawbones, which of the following animals were herbivores?

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

9. The pictures below show the Bee Orchid and the female bumble bee. Studies have shown that bumble bees are the main pollinators of the Bee Orchid. Male bumble bee pollinates the Bee Orchid when it attempts to mate with the flower which resembles the female bumble bee.

Bee Orchid



female bumble bee

Which one of the following describes the above adaptation the Bee Orchid has for pollination?

(1) mimicry
(2) defence
(3) dispersal
(4) camouflage

10. The diagram shows how a bird folds its wings before plunging into water to catch its prey.

wings spread open

wings folded

Which one of the following explains this behavioural adaptation?

(1) To reduce its weight
(2) To have a better aim of prey
(3) To obtain a streamlined body shape
(4) To increase wing span for extra speed

11. Which one of the following descriptions of the defences of the animals is **incorrect**?

	Animal	Structural Adaptation	Behavioural Adaptation
(1)	Leaf-Tailed Gecko 	tail looks like head	tail breaks off when predator grabs its tail mistaking it as the head
(2)	African Porcupine 	spines called quills	uses its quills to strike its enemy
(3)	Giant Tortoise 	hard shell	rams its hard shell at its enemy
(4)	Arrow-Poison Frog 	brightly coloured poisonous skin	oozes poison from skin when in danger

12. Which one of the following is not the result of global warming?

(1) Soil erosion occurs at coastal regions.
(2) Ice in the Arctic and Antarctic begins to melt.
(3) Low-lying coastal regions are endangered by floods.
(4) Seas become warmer, marine lifes which cannot adapt are endangered.

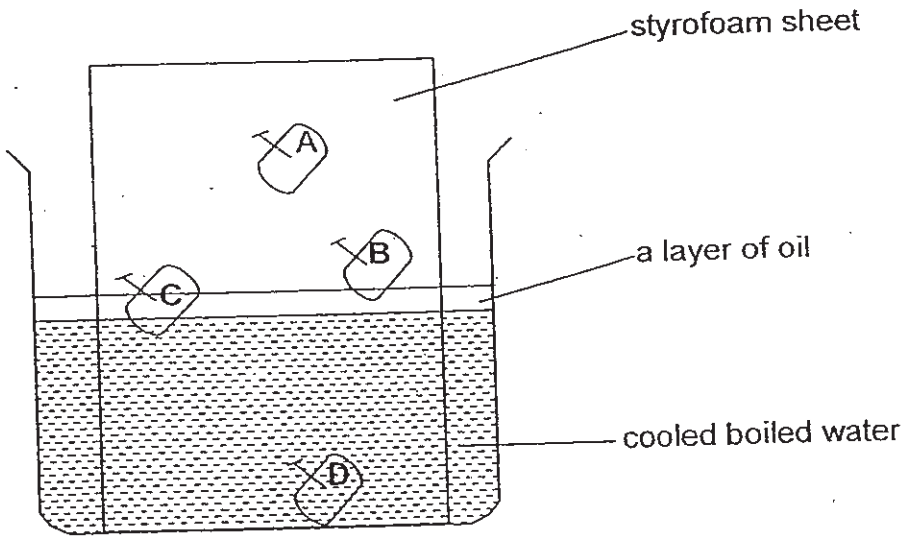
13. The following are statements on the formation of acid rain and its effects. They are not in the correct order.

A Rain falls as weak acid.
B Wildlife habitats are destroyed.
C Plants take in weak acid and are killed.
D Most cars, factories and power plants burn fuel for energy.
E Sulphur dioxide and nitrogen oxide dissolve in the water droplets in the clouds.
F Sulphur dioxide and nitrogen oxide are released into the environment as fumes in the air

Which one of the following shows the correct sequence of the formation of acid rain and its effect?

(1) D, F, E, A, C, B
(2) E, F, D, A, B, C
(3) F, D, E, A, B, C
(4) F, E, A, D, C, B

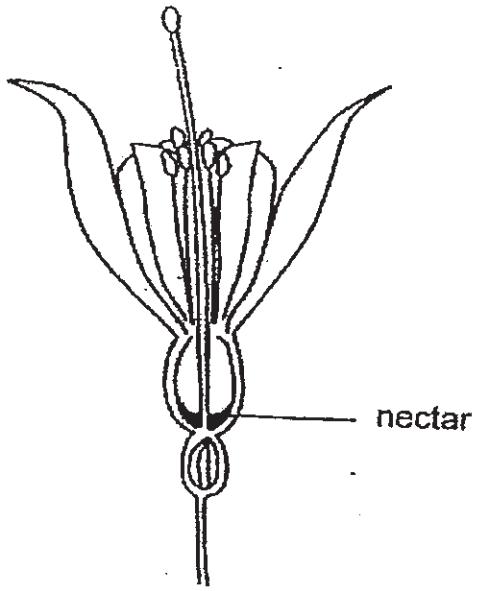
14. Four dry red bean seeds were pinned on a styrofoam sheet. The styrofoam sheet was then placed in a container filled with cooled boiled water covered with a layer of oil as shown in the diagram below.



Which of the following seed(s) will germinate and survive well at the end of one week?

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

15. Kim Peng discovered a plant with unique flowers in his garden. He cut a flower and drew the longitudinal-section of the flower. He also made some notes on the flower in his notebook as shown below.

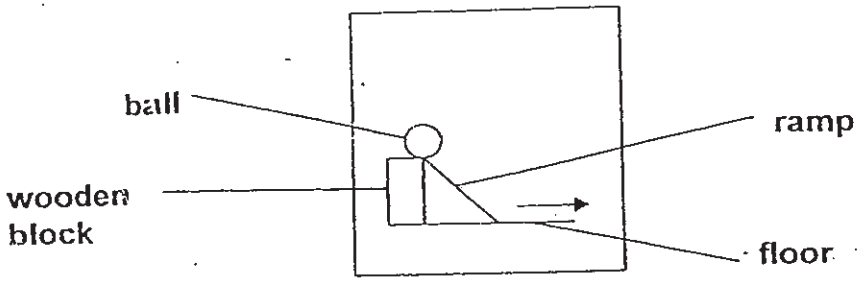


A Flower is beautiful.
B Flower contains nectar.
C Anther is shorter than the stigma.
D Stigma is hanging out of the flower.

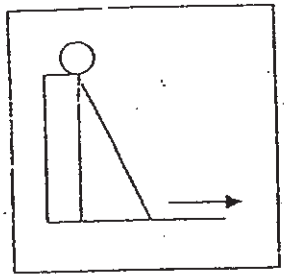
Which of the following characteristics of the flower written in Kim Peng's notebook are adaptations to ensure that it is pollinated by animals?

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

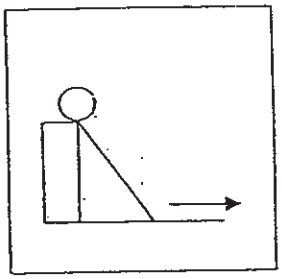
16. Jonash carried out three experiments as shown below using identical balls and ramps made of the same material.



set-up A



set-up B



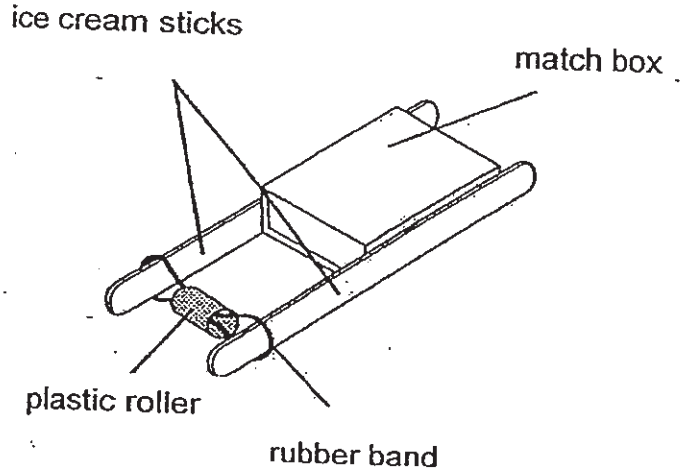
set-up C

Jonash then released the ball down from the top of the ramp and measured the distance travelled by the ball along the floor.

Which one of the following shows the correct results?

	Ball that travelled the greatest distance.	Ball that travelled the shortest distance.
(1)	A	B
(2)	B	A
(3)	B	C
(4)	C	A

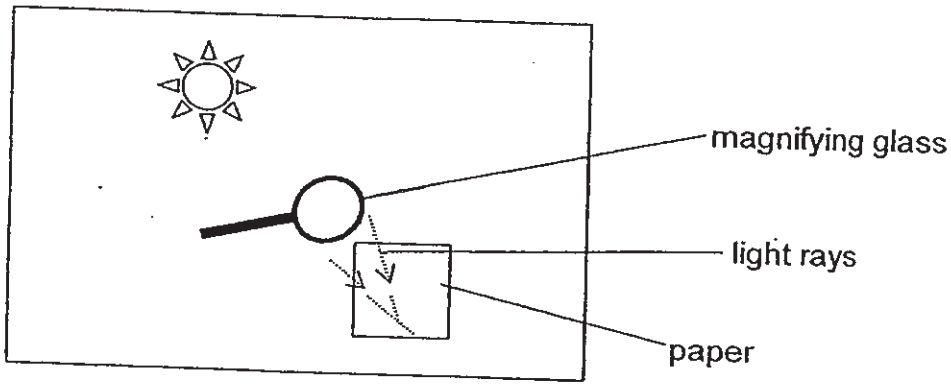
17. Ali made a toy as shown below. He turned the plastic roller using his hand and placed the toy on the floor for it to move forward.



Which of the following changes will allow the toy to travel a further distance?

(1) larger match box
(2) bigger plastic roller
(3) longer rubber band
(4) bigger ice cream stick

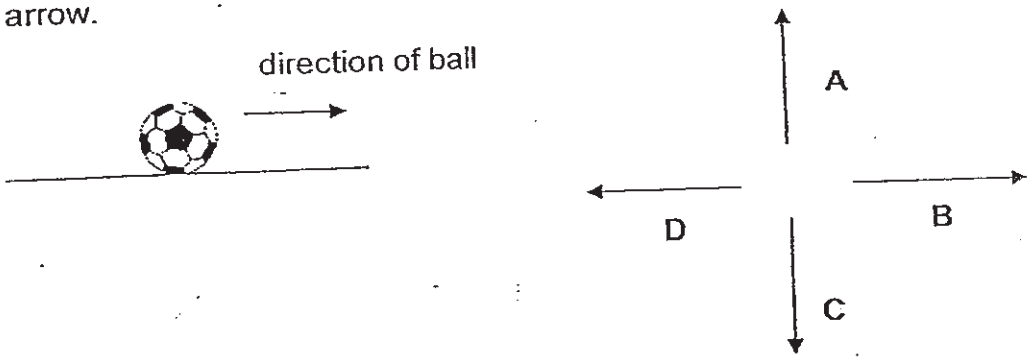
18. Santhi managed to burn a piece of paper with the help of the Sun and a magnifying glass as shown in the diagram below.



What was the energy conversion that was taking place?

(1) heat energy to light energy
(2) light energy to heat energy
(3) chemical potential energy to heat energy
(4) chemical potential energy to light energy

19. The diagram below shows a soccer ball rolling in the direction of the arrow.



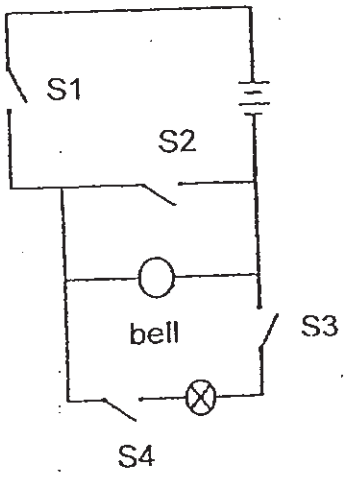
In which direction, A, B, C or D should you apply a minimum force to stop the ball?

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

20. In which one of the following is friction not useful?

(1) a person walking
(2) soles of shoes being worn out
(3) nails being fastened into wood
(4) striking a matchstick against a matchbox

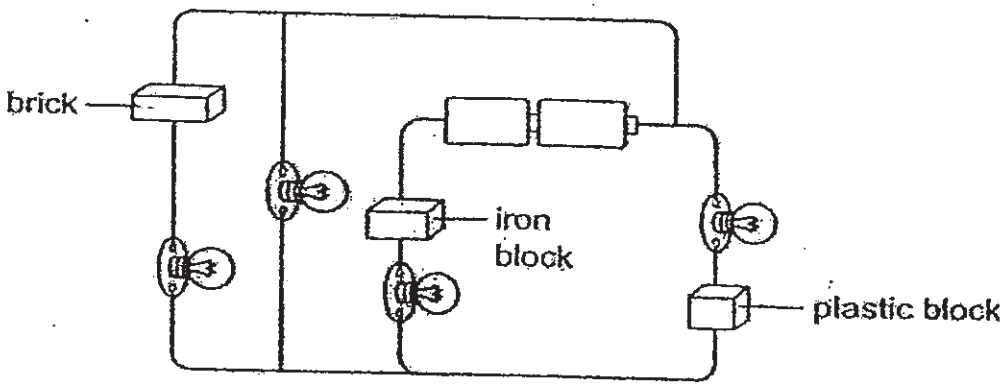
21. Study the diagram below.



Which switch(es) can be closed so that only the bell will ring?

(1) S1 and S2
(2) S1 and S3
(3) S1, S2 and S4
(4) S2, S3 and S4

22. Cindy set up the following circuit as shown below.



How many bulbs will light up?

(1) 1
(2) 2
(3) 3
(4) 0

23. Which of the following statements about photosynthesis and/or respiration are correct?

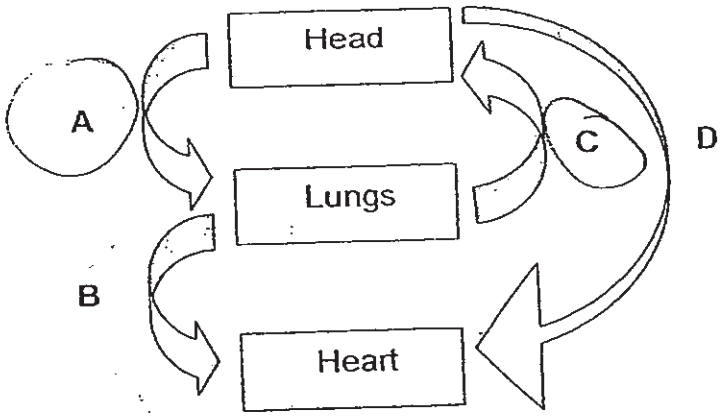
A Both processes require oxygen to take place.
B Photosynthesis only takes place in the presence of light.
C Respiration releases energy while photosynthesis uses up energy.

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

24. In which part of the plant will there be a presence of sugar or starch?

(1) leaves only
(2) stem, roots and fruits only
(3) leaves, stem and fruits only
(4) leaves, stem, roots and fruits

25. Shaiful drew the path taken by the blood in our circulatory system and showed his teacher. His teacher told him that some of the arrows are drawn wrongly.

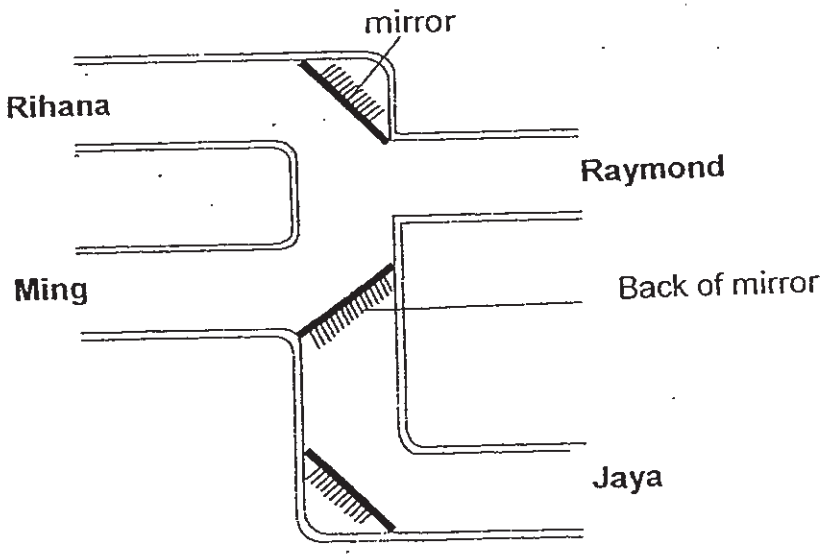


Shaiful's Diagram

Which of the arrows as shown above are drawn wrongly?

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

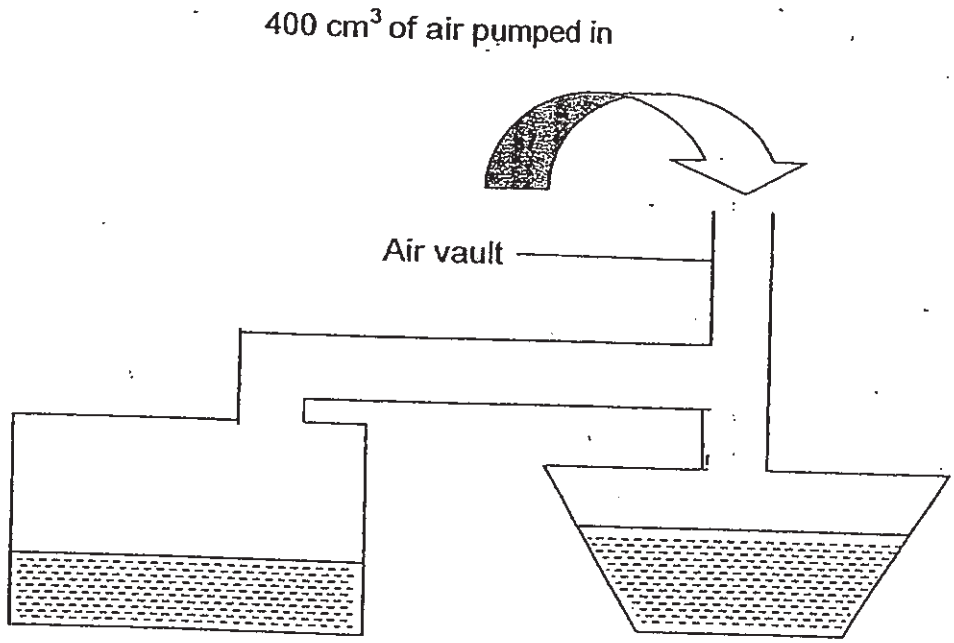
26. The diagram below shows the top view of a part of a maze. Three mirrors are placed at the positions shown with 4 pupils each standing at different positions.



Which two of the four pupils will be able to see each other?

(1) Jaya and Ming
(2) Rihana and Ming
(3) Jaya and Raymond
(4) Rihana and Raymond

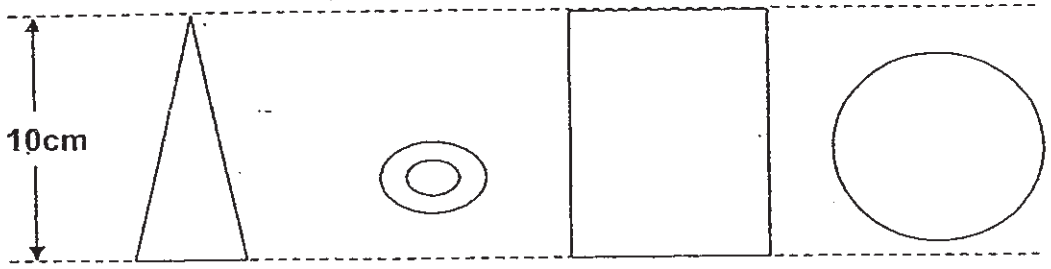
27. The diagram below shows two containers, A and B, containing water and connected to a common air vault. 400 cm^3 of air was then pumped into the container through the air vault inlet.



What is the amount of air in each container?

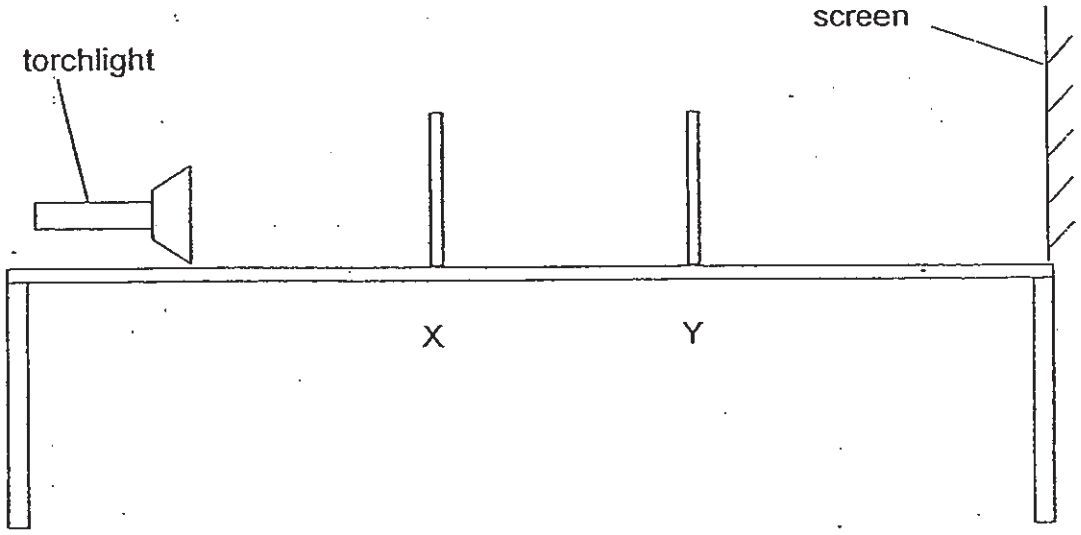
	Container A	Container B
(1)	$200cm^3$	$200cm^3$
(2)	$800cm^3$	$600cm^3$
(3)	$500cm^3$	$300cm^3$
(4)	$700cm^3$	$500cm^3$

28. Look at the four objects shown below.

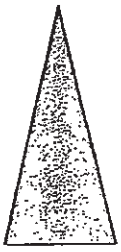


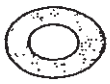
cone ring glass ~~compact disc~~ Paper plate

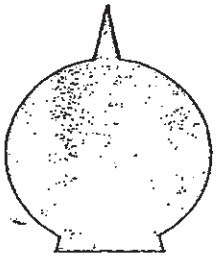
Two of the objects, placed at position X and Y on a table as shown below are then used each time to cast different shadow on a screen.

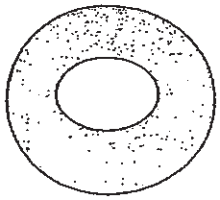


Which of the following is not a possible shadow cast on the screen?

A 

B 

C 

D 

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

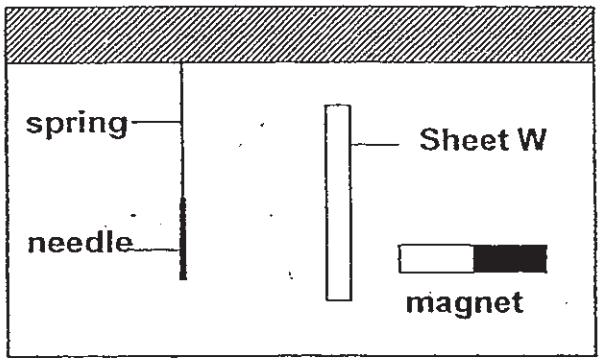
29. Melanie was asked by her teacher to conduct an experiment to find out how the strength of a magnet was affected when it was hit. She counted the number of times a magnet was hit and measured how close the magnet must get to a paper clip in order to attract it. The table below shows the results of her experiment.

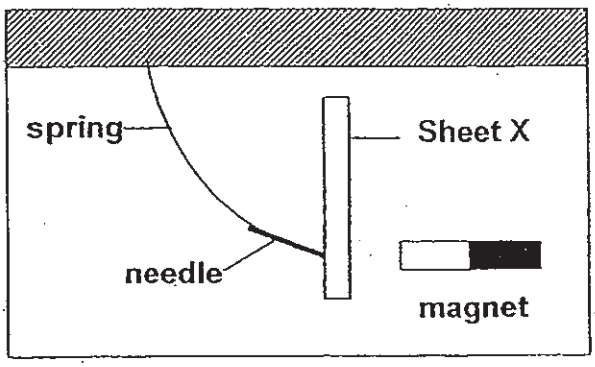
Number of hits	20	30	40	50
Distance between magnet and paper (cm)	5	3	2.5	2

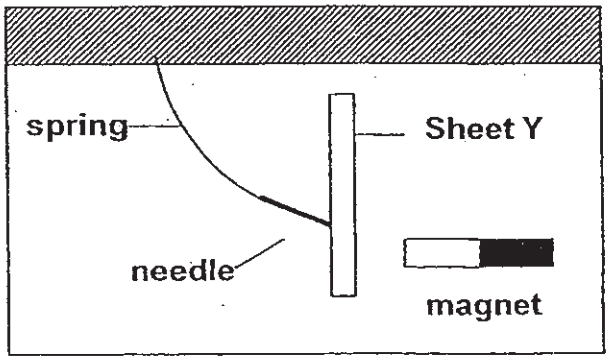
From the table above, which one of the following statements about the magnet is correct?

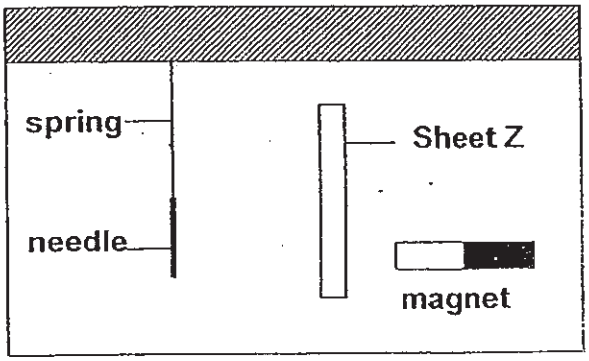
(1) After 60 hits, the magnet can no longer attract a paper clip.
(2) Before being hit, the magnet could attract more than one paper clip.
(3) Before being hit, the magnet could attract a paper clip from a distance of 4cm.
(4) After 30 hits, the magnet could not attract a paper clip from a distance of more than 2 cm.

30. Wynn had 4 thin sheets made of different materials. They were of the same thickness and size. In his experiment, he placed one sheet of material equal distance between the hanging needle and the magnet. He repeated the experiment with different sheets of material. The results of his experiment were shown in the following diagrams.









Which of the following shows possible material that sheet W, X, Y and Z were made of?

	W	X	Y	Z
A	iron	glass	aluminium	steel
B	copper	plastic	glass	aluminium
C	Iron	aluminium	glass	cobalt
D	nickel	cloth	glass	iron
E	steel	copper	wood	iron
F	steel	nickel	glass	paper

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

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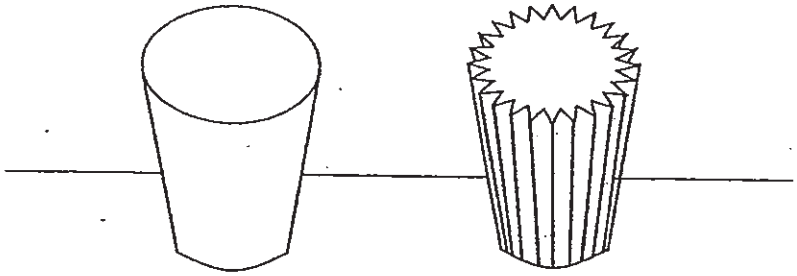
Section B (40 marks)

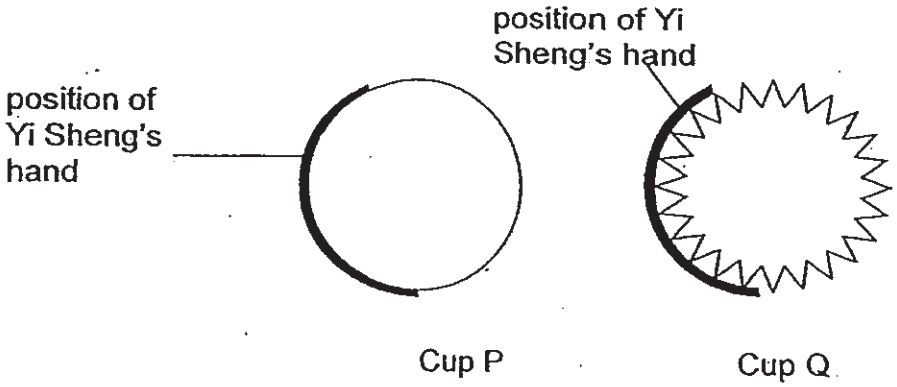
Write your answers to questions 31 to 44 in the spaces provided.
Marks will be deducted for misspelt key words.

31. In an experiment, Yi Sheng poured hot water at 95°C into 2 cups, P and Q, of the same material and diameter as shown in the diagram below.



Cup P Cup Q

He filled the cups with hot water to their brims. Then, Yi Sheng held each cup up with his bare hand. The diagram below shows the position of Yi Sheng's hand when he held each cup up.



Top View of Cups

In the table below, he recorded the longest time that he could hold each cup up until it was too hot for him to hold.

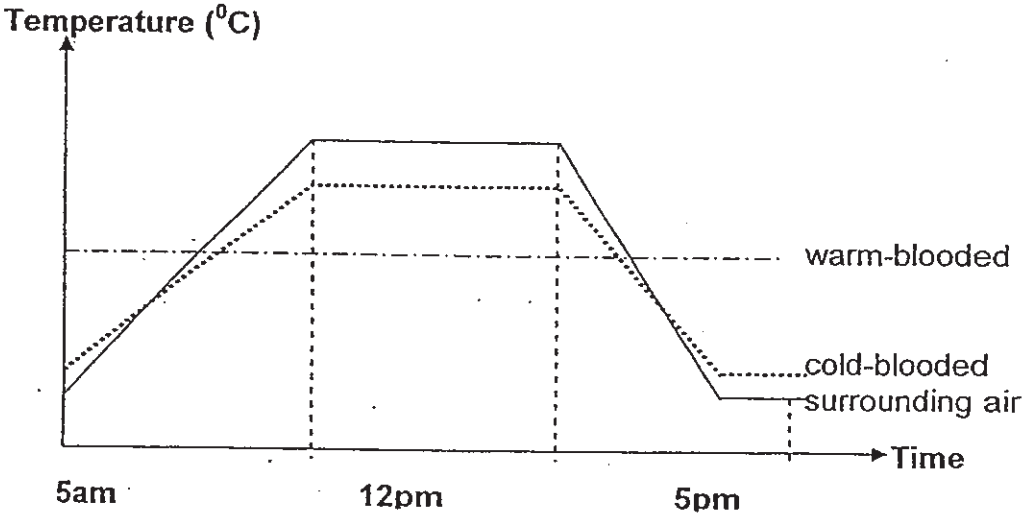
Cup	Time Yi Sheng could hold the cup up in his hand
P	1 min
Q	5 min

(a) Explain why Yi Sheng was able to hold cup Q for a longer period of time than Cup P. (1 mark)

During the day, in a desert, the darkling beetles and lizards never put all their feet on the ground at the same time, even when they stopped walking. They change from one set of legs to another every few seconds.

(b) Explain how this behaviour of the darkling beetle and the lizard helps in their survival in the desert. (2 marks)

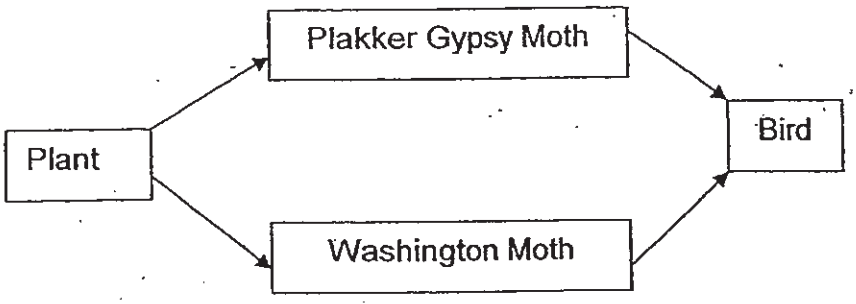
The graph below shows the change of body temperature of warm-blooded animals and cold-blooded animals with surrounding temperature



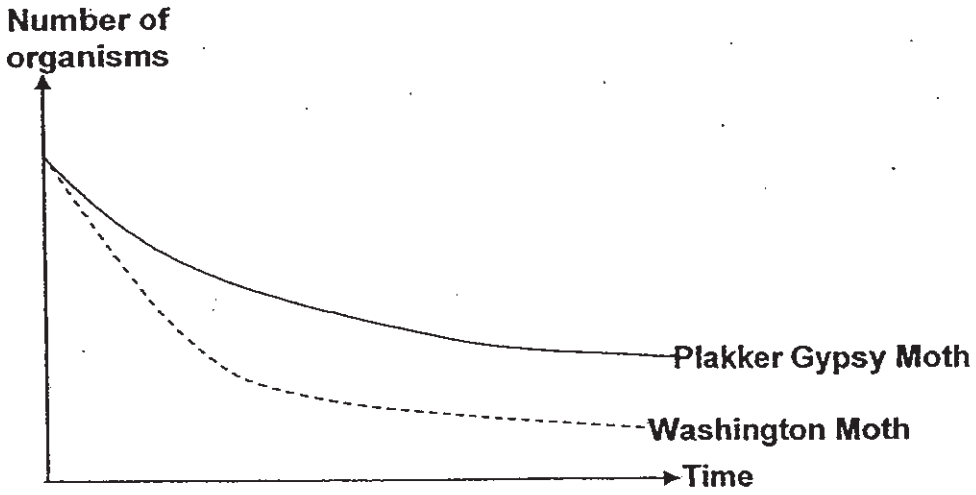
Lizards are cold-blooded animals. After a cold night, lizards need to lie flat on the ground, with all their feet on the ground, in the sunshine for a while before carrying out their daily activities.

(c) Explain why this behaviour of the lizard is different from that in (b). (1 mark)

32. The food web below shows the interaction of four organisms in a jungle habitat .



The Plakker Gypsy Moth is characterised by its light colour while the Washington Moth is dark-coloured. The populations of both types of moths remains very much the same until the Mahogany trees with dark trunks are fell for their timber.
Within a month after all the Mahogany trees were fell, the number of the two types of moths dropped, as shown in the graph below.



(a) Explain why the number of both moths decrease after the Mahogany trees are fell? (1 mark)

_____

_____

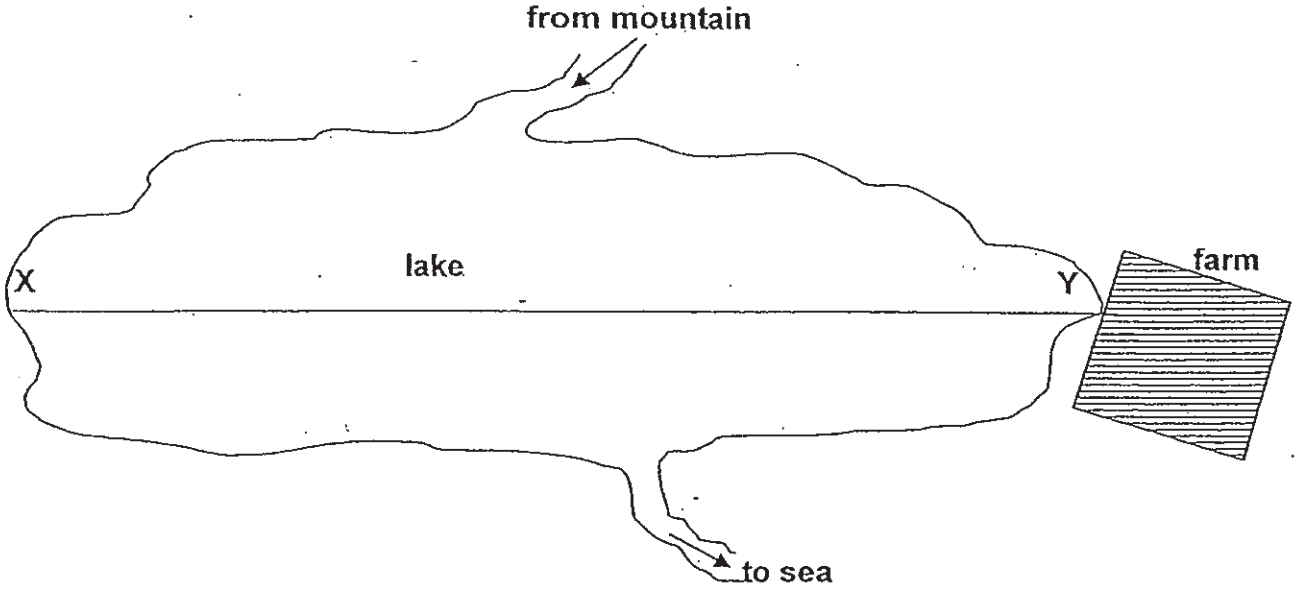
_____

(b) Explain why there was a bigger drop for the population of Washington Moth as compared to that of the Plakker Gypsy Moth. (1 mark)

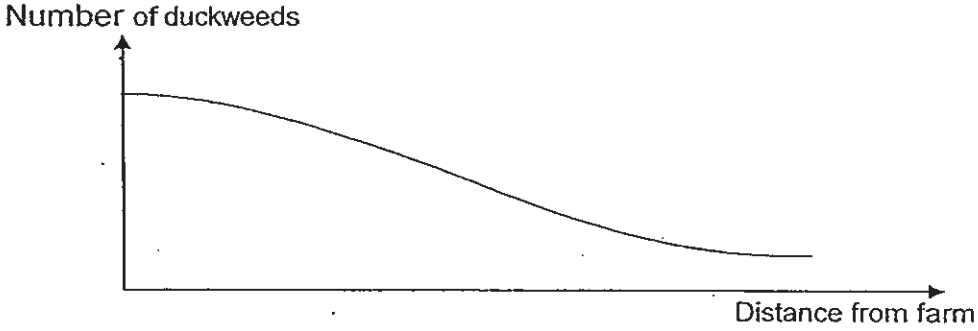
_____

_____

33. An environmentalist made a study of the growth of duckweeds in a lake. From a stream, water flows down from the mountain to reach the lake and then it flows from the lake to the sea. To one side of the lake, there was a farm.



Duckweeds are very sensitive to the quality of the water that they grow in. The environmentalist recorded the number of duckweeds across the lake from point X to Y and plotted a simple graph as shown below to show the growth of the duckweeds in the lake.



(a) Explain the relationship between the number of duckweeds and their distance from the farm. (1 mark)

_____

_____

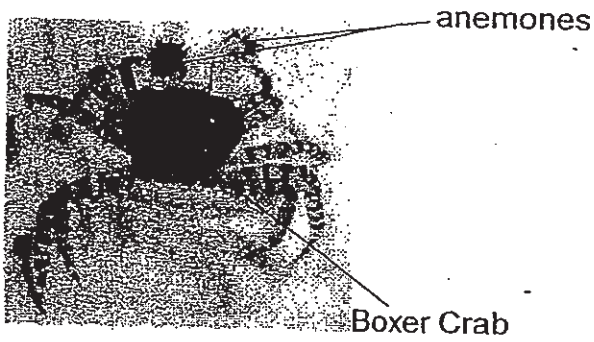
_____

(b) Explain clearly how the presence of the farm has affected the growth of the duckweeds. (1 mark)

_____

_____

34. The Boxer Crab carries a pair of anemones in its claws. When approached by a predator, the Boxer Crab waves the anemones at its predator. The anemones have stinging tentacles.



(a) Based on the information above, how do the Boxer Crab and the anemones each benefit from this relationship? (2 marks)

Some barnacles grow on and through the crab like a root system, eventually breaking through its joints to produce egg sacs in the crab. The crab is not killed but its reproductive system is affected and it becomes infertile.

(b) How does this relationship between the barnacles and the crab differ from that between the anemones and the Boxer Crab? (2 marks)

35. Devi is given 50 seed A and 50 seed B. She wants to find out which seed, A or B, is dispersed by animals. She has the following materials.

- 2 beakers containing 500 ml of water
- 2 trays of the same size
- 2 dry towels of the same size
- an electric fan
- a metre ruler

With the materials available, write down the procedure steps that Devi has to carry out in order to draw a conclusion at the end of her experiment. (Note : You need not use all the materials given)

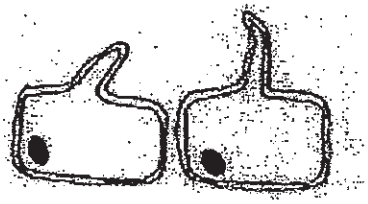
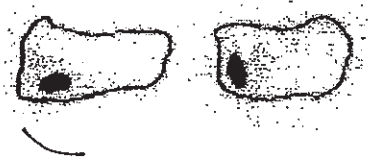
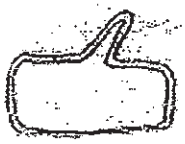
(3 marks)

Steps	Procedures

36. Similar cells from a plant were extracted for an experiment.
Three dishes, X, Y and Z, were prepared for the experiment. Each dish contains solution S which is favourable for the growth and division of the cells.

Dish	Content
X	Solution S + a complete cell of plant
Y	Solution S + a cell of plant with its cell wall removed
Z	Solution S + a cell of plant with its nucleus removed

At the end of the experiment, the following observations were obtained.

Dish	Observation at Start of Experiment	Observation at End of Experiment
X		
Y		
Z		

(a) Based on the observations in dish X, Y and Z, what do you think was the aim of the experiment? (1 mark)

_____

_____

(b) Comparing the observation in dish X and Y only, what can you conclude about the function of the cell wall? (1 mark)

_____

_____

(c) What was the purpose of setting up dish X? (1 mark)

_____

_____

_____

37. Rizal set up the experiment as shown below to find out if the rate of respiration would be affected when his hamster exercised.

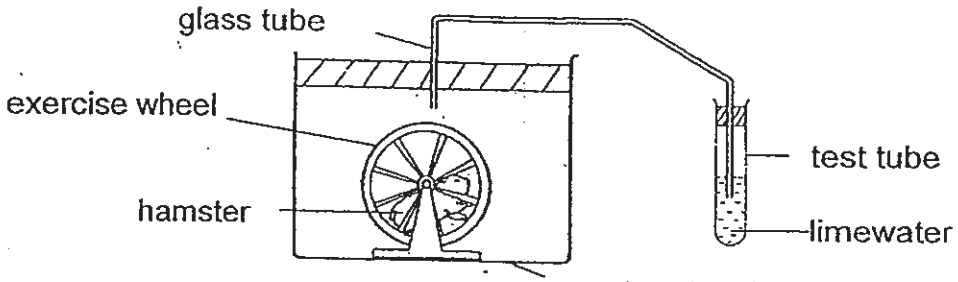


Diagram 8

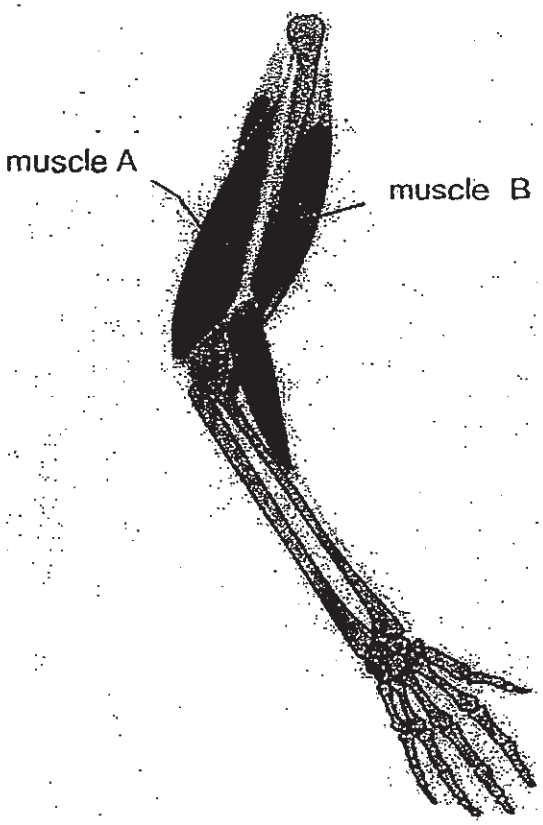
(a) Rizal's teacher told him that he would need to have a control for his experiment. In the box below, draw with labels, what the control should look like. (2 marks)

(b) What observation would he have to make to draw a conclusion? (1 mark)

_____

_____

38. Study the diagram below.



(a) Muscle A and muscle B work together to allow movements. Tick (√) the correct box in the table below to show how the muscles work together to lift the arm up. (1 mark)

	contract	relax
muscle A		
muscle B		

(b) State and explain the process that takes place in a muscle cell to produce energy for it to work. (2 marks)

_____

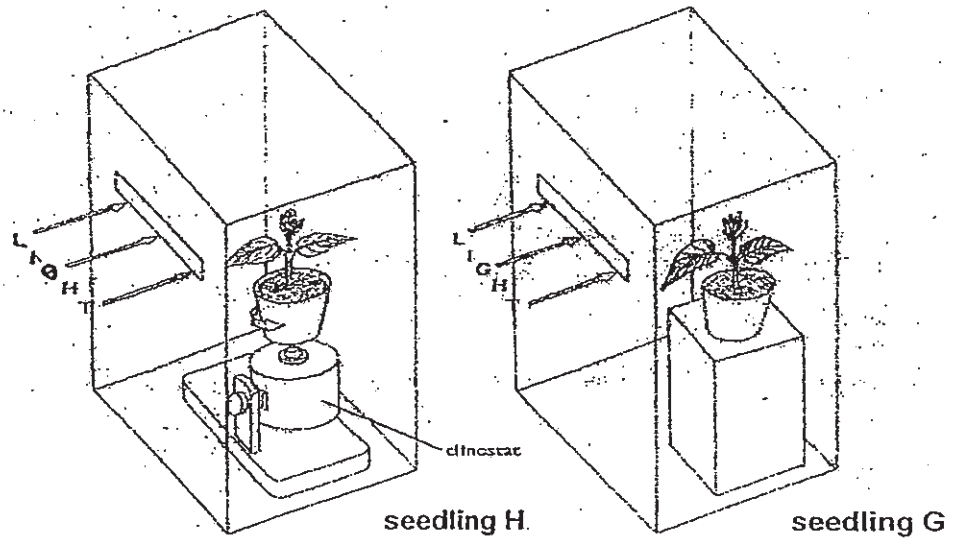
_____

_____

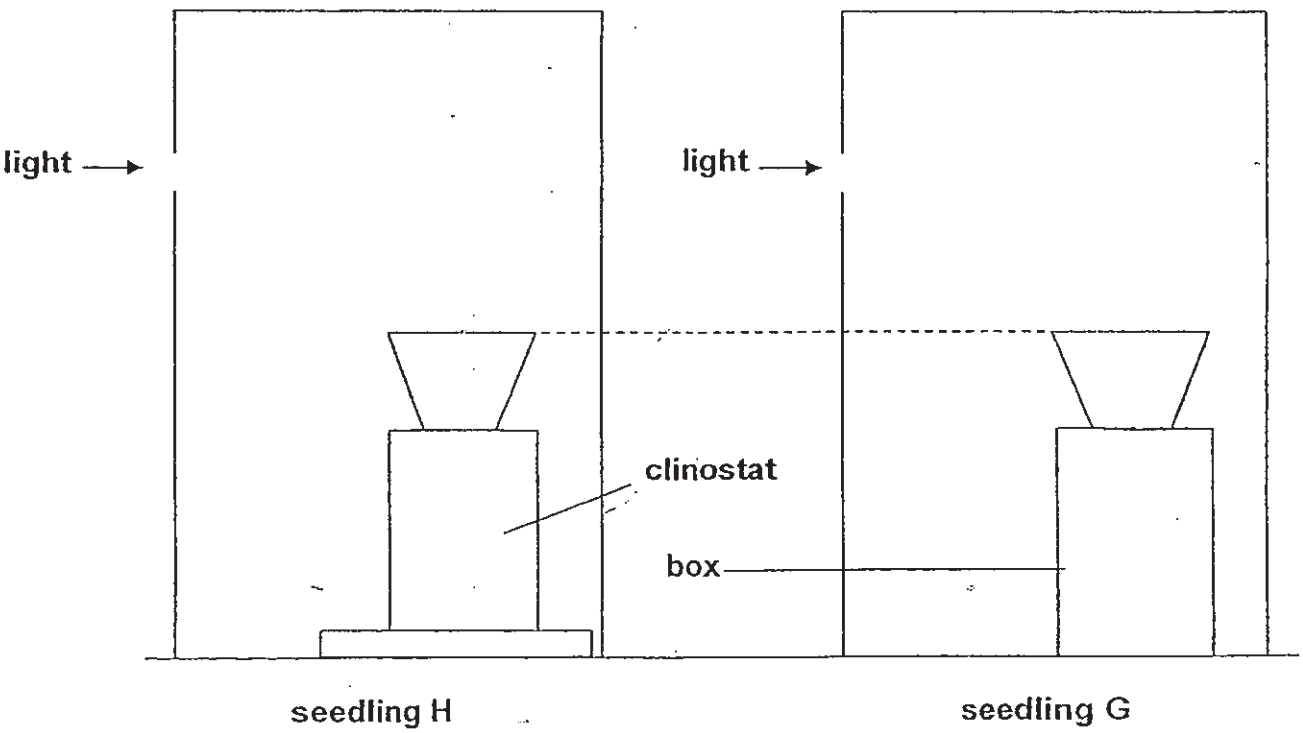
(c) State the energy source of this process. (1 mark)

_____

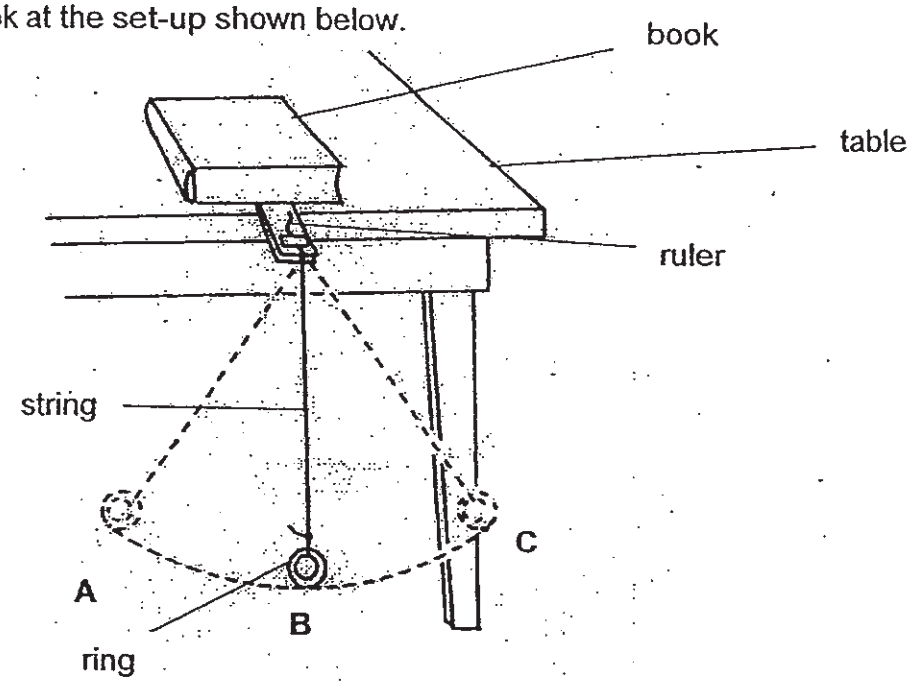
39. Two potted seedlings, G and H, at the same stage of growth were selected for this experiment. After watering, seedling G was placed under a cardboard box with a window cut at one side so that light reached its shoots from one direction only. Seedling H was placed in an identical situation but on a slowly rotating clinostat. With the clinostat, seedling H was exposed to light equally on all sides. Both the clinostat and the box which the plants were placed on were of the same height.



Equal amount of water was given to each seedling each day for 7 days. In the diagram below, draw how each seedling will be like at the end of the experiment. (2 marks)



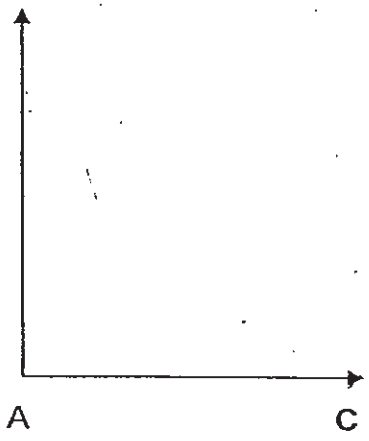
40. Look at the set-up shown below.



Draw the graphs to show the change of energy when the ring swings from A to C. (2 marks)

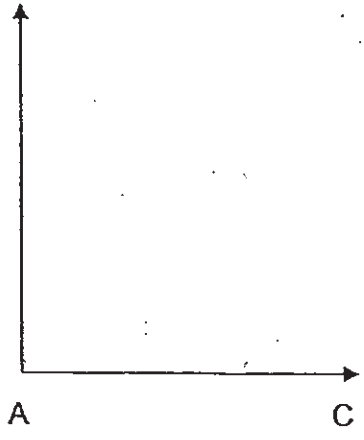
(a)

Gravitational Potential Energy



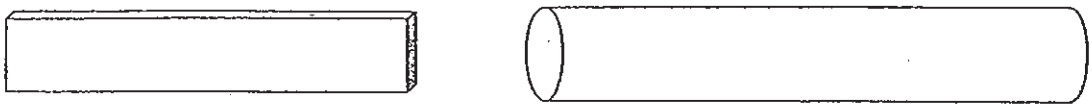
(b)

Kinetic Energy



(c) Explain why the ring came to a stop after some time. (1 mark)

41. Xin Min placed magnet A near magnet B as shown below.



A B

Magnet B then moved away from Magnet A.

(a) What type of force caused the movement of magnet B? (1 mark)

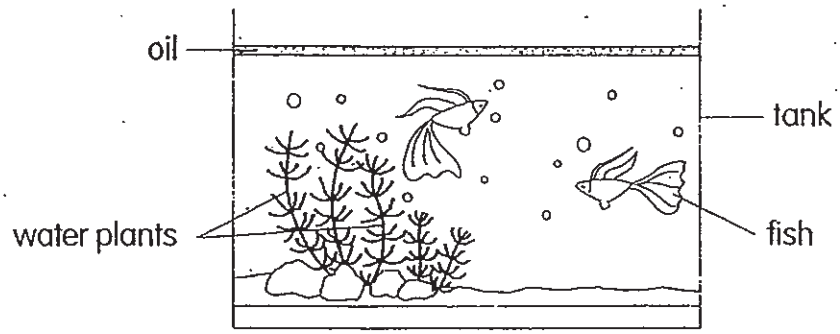
_____

(b) How is the force in (a) different from frictional force? (1 mark)

_____

_____

42. Two fish were placed in a tank of water with some water plants. A layer of oil was then poured into the tank. The tank was placed in the dark and the fish were fed daily.



(a) What was the purpose of the layer of oil? (1 mark)

_____

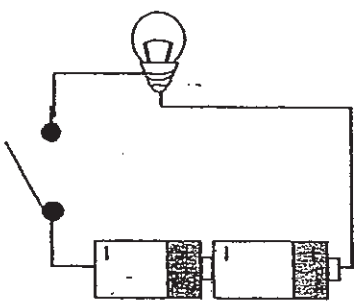
_____

(a) What could happen to the fish after one month? Explain. (1 mark)

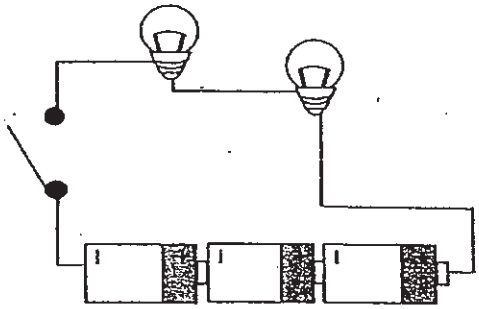
_____

_____

43. John carried out an experiment as shown below to show that the brightness of a bulb would be affected by the number of batteries.



Set-up A



Set-up B

(a) His teacher said that his experiment was not a fair one. Explain why the teacher said so. (2 marks)

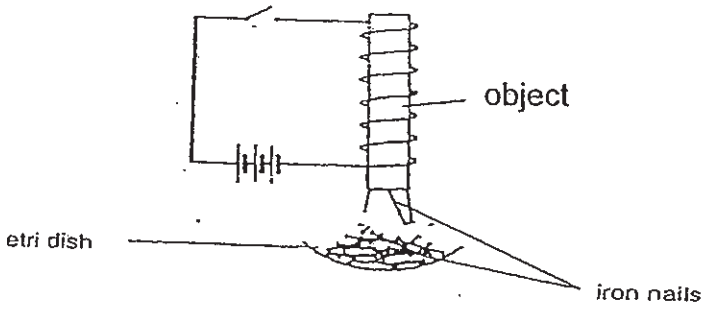
_____

_____

_____

(b) Draw 2 circuit diagrams to show how the circuits should look like for John to carry out a fair test. (2 marks)

44. Sharudin tested objects, W, X, Y and Z, made of magnetic material by using the apparatus shown below in the diagram.



When the switch was closed, the object picked up some of the iron nails but when the switch was opened, some of the nails fell off. Sharudin counted the number of nails picked up and the number of pins left on each of the four objects. The results were recorded in the table below.

Object	No. of nails picked up when switch was closed	No. of nails left on the objects when switch was opened
W	30	2
X	18	8
Y	38	15
Z	18	3

Sharudin wanted to use one of the objects above to make an electromagnet to separate iron objects from a heap of rubbish and release them onto the back of a lorry for recycling.

Based on the results obtained, which one of the objects is the best to be used to separate iron objects from the rubbish? Explain your choice.
(2 marks)

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_____

----------END OF PAPER----------

Setters: Mr Kelvin Tan
Mdm Chia Li Hoon

Answer Ke

EXAM PAPER 2010

SCHOOL : NANYANG PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : PERLIMINARY

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

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

31)a)His hand was in contact with a bigger surface area of cup P than Q, so more heat was transferred to his hand and he could hold cup P for a shorter period of time.

b)By not putting their feet on the ground at the same time, less area will be in contact with the hot sand and there will be less heat gained from the hot sand.

c)It is increase area exposed to gain maximum heat from the sun.

32)a)Both moths have lost their shelter/habitat when the Mahogany trees were fell.

b)At the Washington Moth has a darker colour than the Plakker Gypsy Moth, it would be easier for the predators to see Washington Moth in the open.

33)a)The further the distance from the farm, the lesser the number of duckweeds .

b)The fertilizers used by the farmers on their crops would seep into the ground and /or wash into the river by the rain.

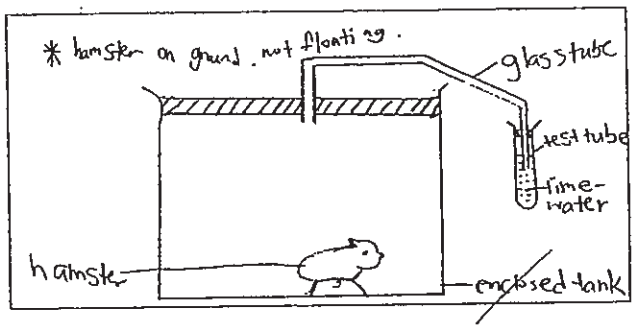
34)a)The boxer crab can use the anemones to protect itself while the anemones can move around for more food when the boxer crab moves.

b)The boxes crabs and anemones both benefit each other while the barnacles benefit from the crab but the crab is harmed.

35)1)Place 50 seed A and spread them evenly on a tray.
2)Use the dry towel to cover the seeds on the tray and press on the towel.
3)Pick up the towel and count the number of seeds on the towel.
4)Repeat steps 1-3 on seeds B.
5)The towel with the most number of seeds attracted to it contain the seeds which are dispersed by animals.

36)a)To see if the cell can divide without the cell wall and nucleus.
b)The cell wall gives the cell a rigid shape.
c)It is a control to show the result of the experiment is due to the presence of the cell wall or nucleus.

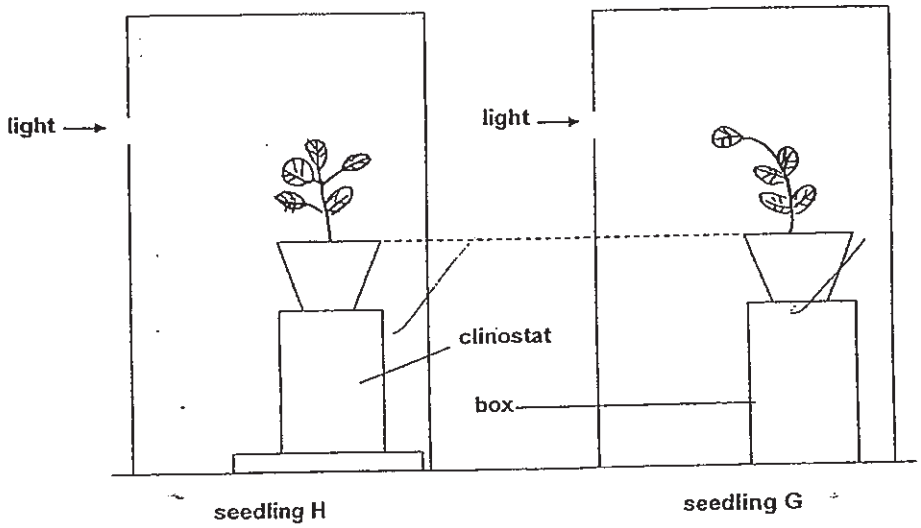
37)a)



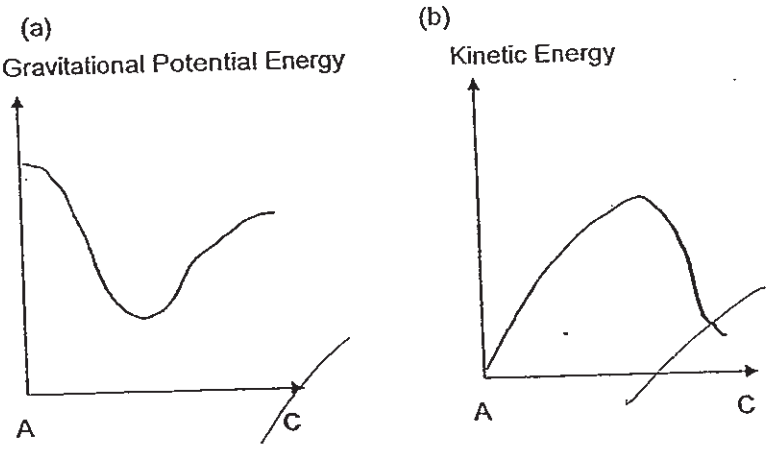
b)The limewater turns chalky faster when the hamster is exercising.

38)a)A: relax B: contract
b)Respiration. The muscle cell needs to respire and uses the oxygen to produce energy.
c)Food.

39)



40)a)



b)It came to a stop due to air resistance.

41)a)Magnetic force of repulsion.

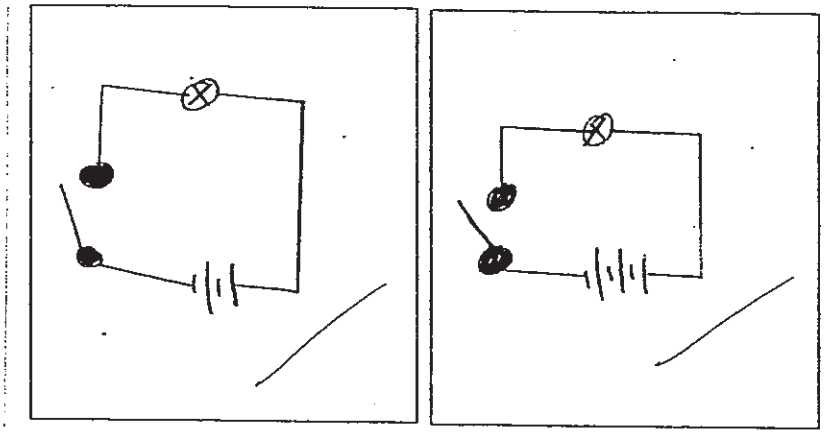
b)Frictional force can act only when two surfaces are in contact but magnetic force can act at a distance.

42)a)To present the fishes from swimming to the surface to get air and to prevent atmospheric from dissolving in the water.

b)The fish will die. water plants cannot photosynthesis in the dark and the fish will die from lack of oxygen.

43)a)There should be only one variable that is changed and that is the number of batteries, but in set up B, there is two light bulbs causing the experiment to be unfair.

b)



44)Object W> As it can attract many nails when the switch was closed and release the most number of nails when the switch was opened.