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**NAN HUA PRIMARY SCHOOL
PRELIMINARY EXAMINATION – 2009
PRIMARY 6**

**SCIENCE
BOOKLET A**

30 Multiple Choice Questions (60 marks)

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

INSTRUCTIONS TO CANDIDATES

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

Marks Obtained

Booklet A		/ 60
Booklet B		/ 40
Total		/ 100

Name: _____ () **Class:** P 6 _____

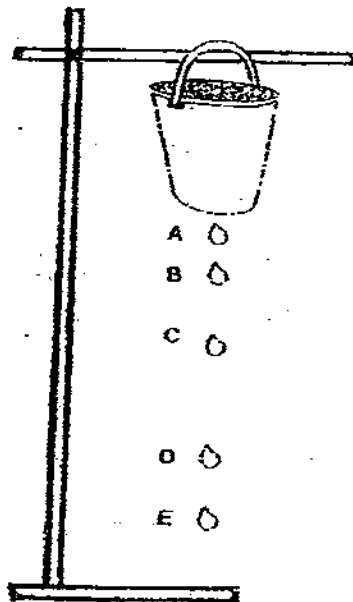
Date : 27 August 2009

Parent's Signature: _____

Section A: (20 x 2marks = 40marks)

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.

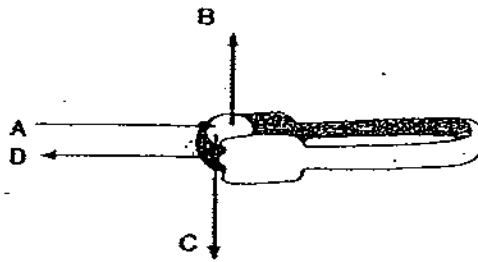
1. The diagram below shows the positions of a drop of water that dripped from the base of a pail.



The most gravitational potential energy is converted to other forms of energy is when the drop of water falls from position _____.

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

2. A pair of tongs was used to pick up a glass marble.



Which arrow represents the direction of friction?

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

3. A study on the effects of temperature on the number of adult frogs in a pond was carried out. The table below shows the results.

Year	2006	2007	2008	2009
Average Temperature ($^{\circ}\text{C}$)	29	28	32	31
Population	178	150	200	189

Which of the following reasons could explain the results obtained?

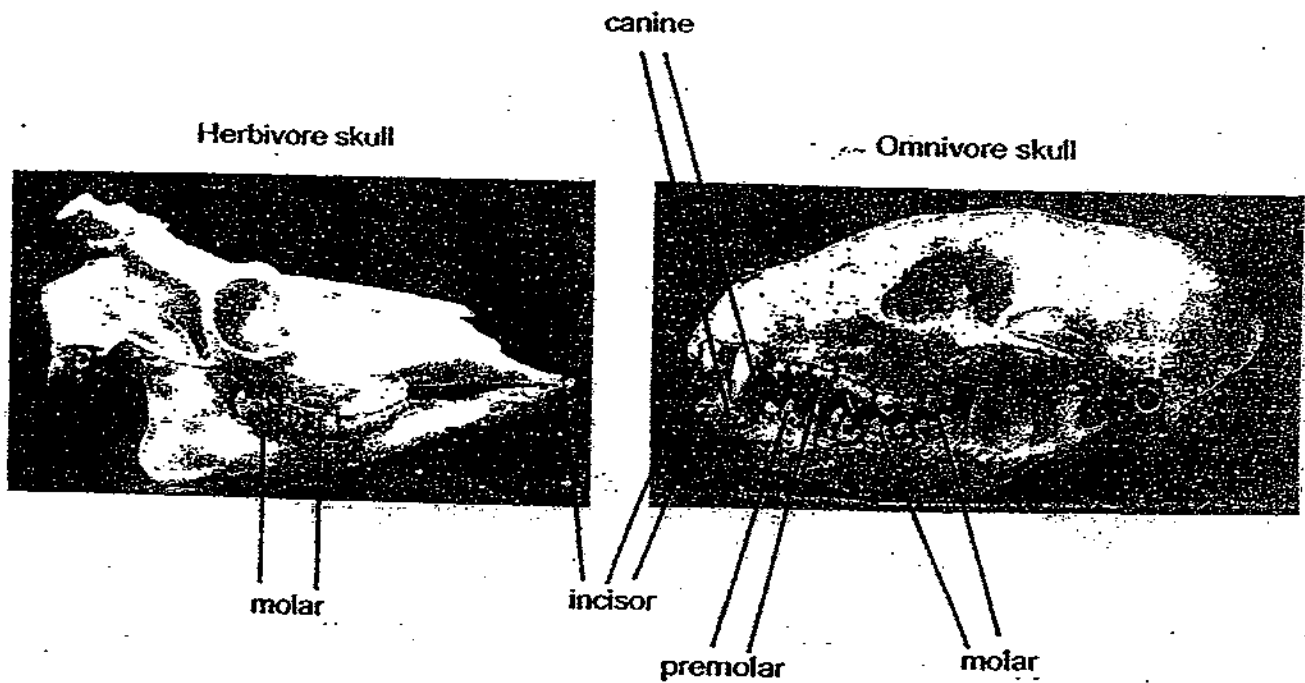
- (1) When the temperature decreases, frogs produce fewer eggs.
 (2) When the temperature increases, more frog's eggs are eaten.
 (3) When the temperature decreases, more eggs hatch into frogs.
 (4) When the temperature increases, diseases spread and kill more frogs.
4. Which one of the following forms a population?
- (1) All the elodea and gold fish in an aquarium.
 (2) The four male and four female fruit flies in a jar.
 (3) The two papaya and three banana trees on a farm.
 (4) All the female gorillas and female chimpanzees in a zoo.

For questions 5 and 6 use the information below.

Mammal's teeth have particular functions:

- incisors – pick up and cut food
- canines – grip and tear food
- premolars – coarsely grind food
- molars – finely grind food

The photographs show the skulls of two mammals, a herbivore and an omnivore. No teeth are missing from either skull.



5. What did this omnivore's teeth do to help to prepare food for swallowing?

- (1) pick up and cut food only
- (2) pick up, cut and finely grind food only
- (3) pick up, cut, grip, tear and coarsely grind food only
- (4) pick up, cut, grip, tear, coarsely grind and finely grind food

6. The herbivore skull is different from the omnivore skull because it has

- (1) molars in both jaws
- (2) no incisors in either jaw
- (3) no canines and no premolars
- (4) incisors and molars in the lower jaw only

7. Annabel grew a single-cell alga. How many cells would there be after 4 generations of cell division?

- (1) 4
- (2) 8
- (3) 12
- (4) 16

8. During puberty period, rapid changes in the human body takes place. Which of the following changes occur during this period?

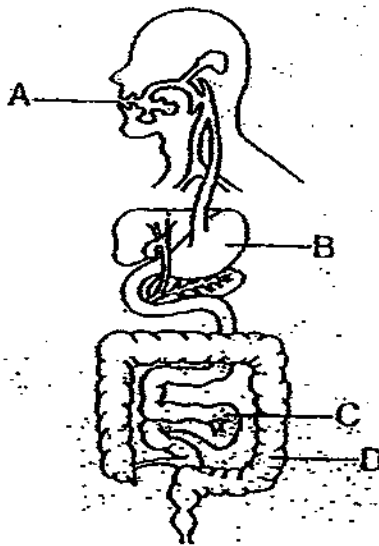
- A Dropping of milk teeth
- B Growing taller rapidly
- C Breasts begin to develop for females
- D Voice breaks and begins to deepen for males
- E Hair begins to grow longer

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

9. Which of the following comparisons between photosynthesis and respiration are correct?

	Photosynthesis	Respiration
A	Water is needed	Water is produced
B	Carbon dioxide is produced	Carbon dioxide is needed
C	Takes place in plants only	Takes place in living organisms only
D	Takes place in the presence of light only	Takes place in darkness only

- (1) A and C only
 (2) B and D only
 (3) C and D only
 (4) A, C and D only
10. The diagram below shows the human digestive system. Use it to answer question 10.



Where does the last stage of food digestion occur before it is passed into the blood vessel?

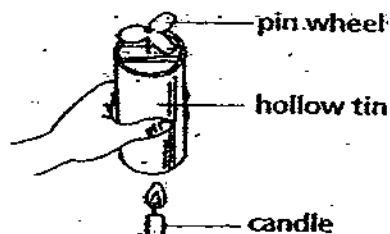
- (1) A
 (2) B
 (3) C
 (4) D

11. Read the description of Material Y carefully.

Material Y
a) Magnetic? – No
b) Good conductor of heat? – Yes
c) Good electrical conductor? – Yes

What could material Y be?

- (1) Iron
 - (2) Steel
 - (3) Copper
 - (4) Wood
12. A pin wheel is placed on a hollow tin as shown. When a lighted candle is placed below the hollow tin, the pin wheel begins to spin.



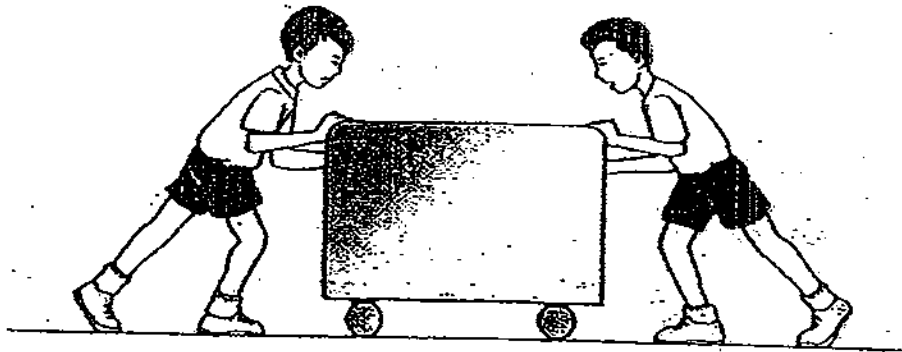
Four children observed this and commented on what they have seen.

- Aaliyah : The candle has stored energy.
Sisi : The candle produces heat and light energy when lighted.
Qiqi : Heat energy from the candle flame causes the pin wheel to spin.
Betty : Hot air rises and kinetic energy of the moving air causes the pin wheel to spin.

Who have made the correct observations?

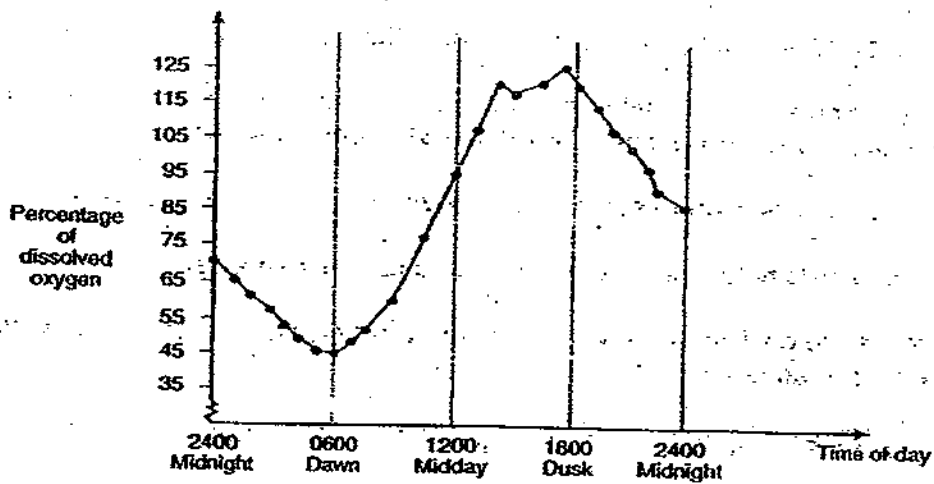
- (1) Aaliyah, Sisi and Qiqi
- (2) Aaliyah, Sisi and Betty
- (3) Sisi, Qiqi and Betty
- (4) Aaliyah, Sisi, Qiqi and Betty

13. In the diagram below, a box is mounted on wheels. Two boys are pushing as hard as they can, but the box is not moving. Why?



- (1) No force is acting on the box.
- (2) One boy is pushing harder than the other.
- (3) The force exerted by each boy is the same.
- (4) The force of gravity on the box prevents the box from moving.

14. The graph below shows the changes in the percentage of dissolved oxygen in river water over a 24-hour period.

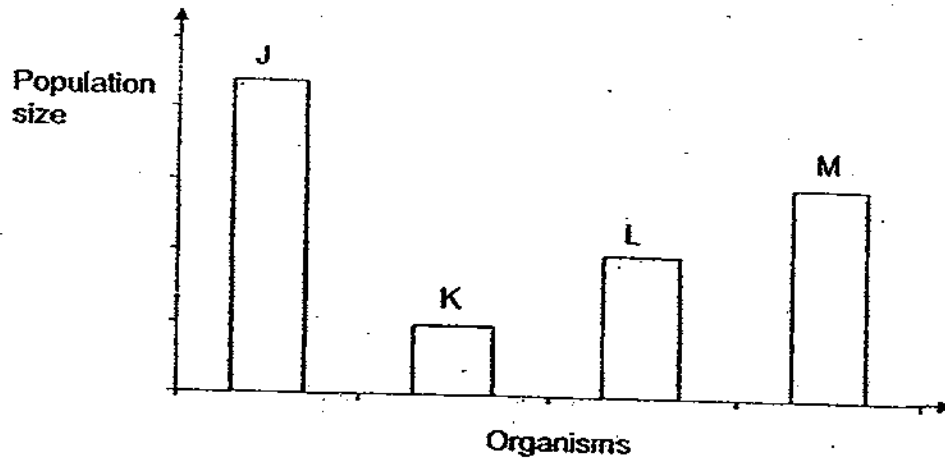


Based on the graph, we can be very sure that _____

- A the percentage of dissolved oxygen in the river water was highest from 1400 to 1800 hrs.
- B the intensity of light available during the 24-hour period had little effect on the amount of oxygen collected.
- C the percentage of carbon dioxide in the river water was highest at 0600 hrs.
- D photosynthesis was at the slowest rate around dawn.

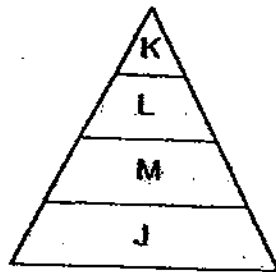
- (1) A only
- (2) B, C and D only
- (3) A and C only
- (4) A, C and D only

15. The graph below shows the population of four groups of organisms, J, K, L and M, in a community.

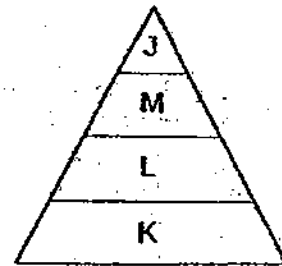


Which pyramid of population size best represents the above community?

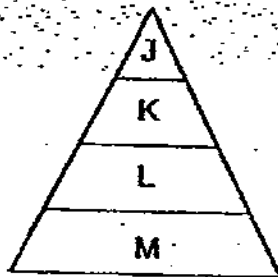
(1)



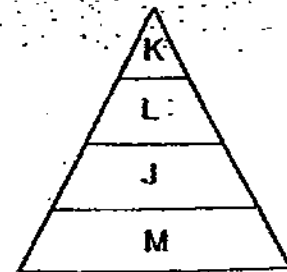
(2)



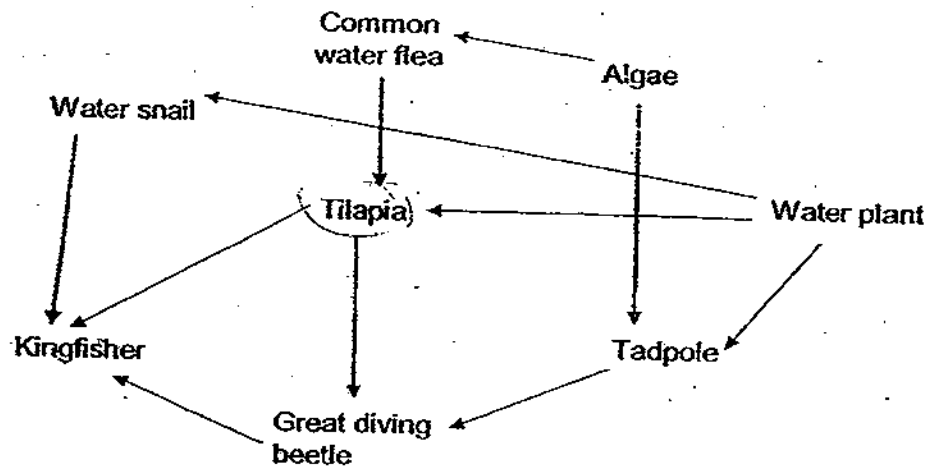
(3)



(4)



16. The food web below shows the food relationships between some organisms in a pond community.



Based on the information provided, which of the following statements are true for the above food web?

- A There are two omnivores in the food web.
- B There are six food chains in the food web.
- C There are three predators in the food web.
- D There are three herbivores in the food web.

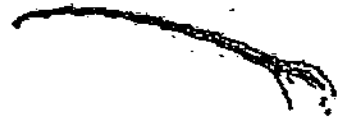
- (1) A and B only
- (2) C and D only
- (3) A, B and D only
- (4) B, C and D only

17. The diagram shows the beaks of four birds. Based on the adaptations of the beaks, which one of the birds feeds on flying insects?

(1)



(2)



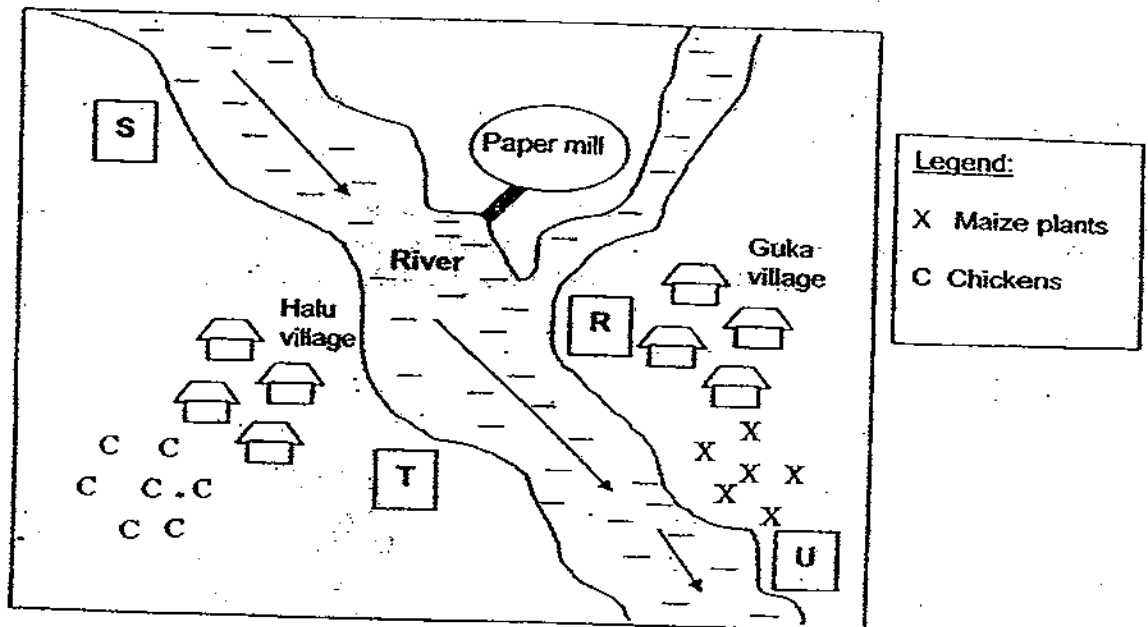
(3)



(4)



18. The map below shows the location of Halu and Guka village along a river.



The villagers of Halu village is proposing the building of a water treatment plant to supply water for home use. The water that is to be treated is pumped to the treatment plant from the point in the river that is nearest to it.

The water in the river flows towards the sea in the direction as shown by the arrows above.

Which of the positions, R, S, T or U is the most suitable position for building the water treatment plant?

- (1) Position R
- (2) Position S
- (3) Position T
- (4) Position U

19. The following table shows some aquatic organisms and the amount of oxygen they need to thrive in their habitat.

Aquatic organisms	Amount of oxygen needed
Rat-tailed maggot	Very little
Bloodworm	Little
Caddisfly larva	Moderate
Mayfly nymph	Large

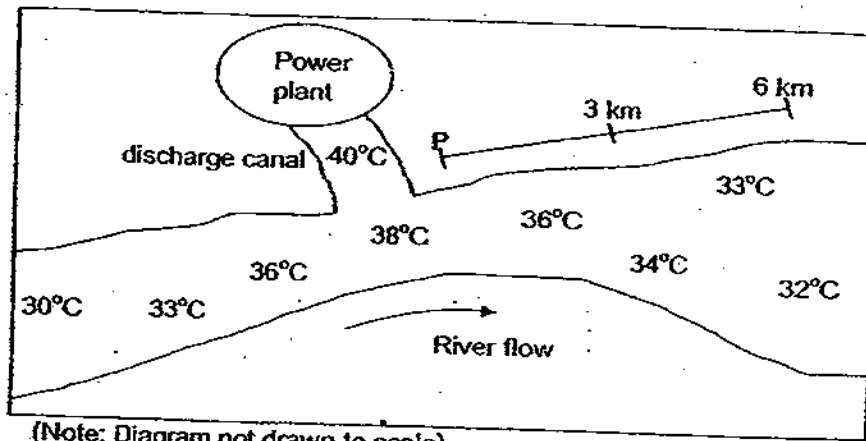
Lindy collected four samples of water A, B, C and D at different locations along a stream. She examined the organisms found in the water samples and recorded the name of the organism with the greatest numbers found in each sample. Her results are as shown in the table below.

Sample of water	Aquatic organisms
A	Caddisfly larva
B	Mayfly nymph
C	Rat-tailed maggot
D	Bloodworm

Based on the information above, which one of the following most likely shows the arrangement of the water samples from the most polluted to the least polluted?

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

20. The diagram below shows the location of a power plant along a river and the temperature range of the water in the river are indicated as shown.



Every day, the power plant uses a large quantity of the river water to cool its generators and this water is then dumped back into the river. The water discharged from the power plant can be at a high temperature of 40°C. This increase in temperature greatly affects the organisms living in the river.

The table below shows the limiting factors for four of the fish found in the river.

Fish	Maximum temperature / °C		Preferred dissolved oxygen range / ppm*
	Preferred range	Deadly temperature	
Carp	31 - 33	40	2
Perch	20 - 22	33	10
Shad	23 - 25	38	7
Shiners	19 - 21	34	10

(* ppm = parts per million)

Based on the information provided, which of the following statements are true about the above scenario?

- A Perch and Carp can be found thriving at the mouth of the discharge canal.
- B Carp, Shad and Shiners would be able to survive 6 km downstream from point P.
- C Shad and Carp would not be able to survive upstream from the power plant.
- D Fishes which have higher deadly temperature can survive in water with lower dissolved oxygen content.

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

21. What prevents a man-made satellite from floating away?

- (1) The Sun's gravity keeps it from floating away.
- (2) The Earth's gravity keeps it from floating away.
- (3) It has strong powerful engines to help it stay in Space.
- (4) The Moon and the Sun's gravity keep it from floating away.

22. Compare the two fruits below.



Fruit A



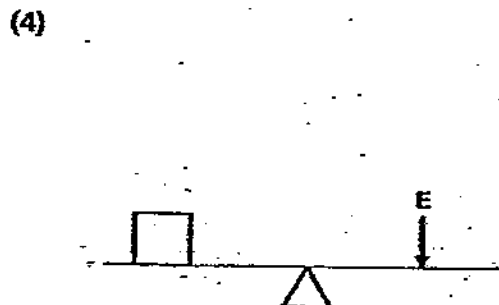
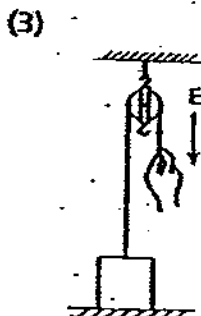
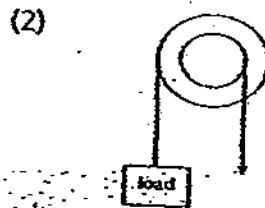
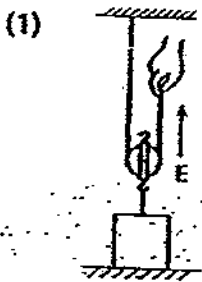
Fruit B

Which of the following statement/s is/are true?

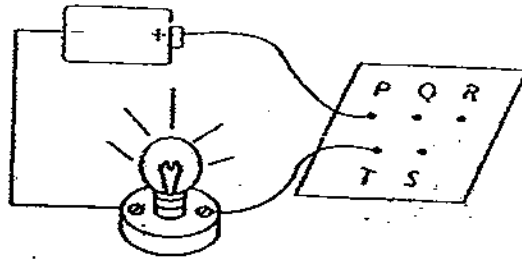
- A Both fruits are dispersed by wind.
- B Fruit A is dispersed by animal while Fruit B is dispersed by wind.
- C Both fruits have wings to 'fly'.
- D Fruit A has hooks while Fruit B has a wing-like structure.

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

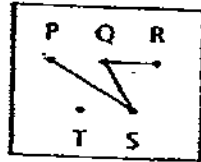
23. Which of the following machines uses the least effort?



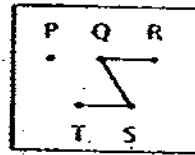
24. The diagram below shows a circuit tester connected to a circuit card.



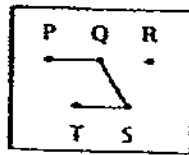
Which of the following is the correct circuit card?



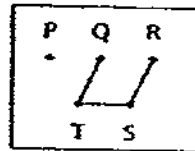
(1)



(2)

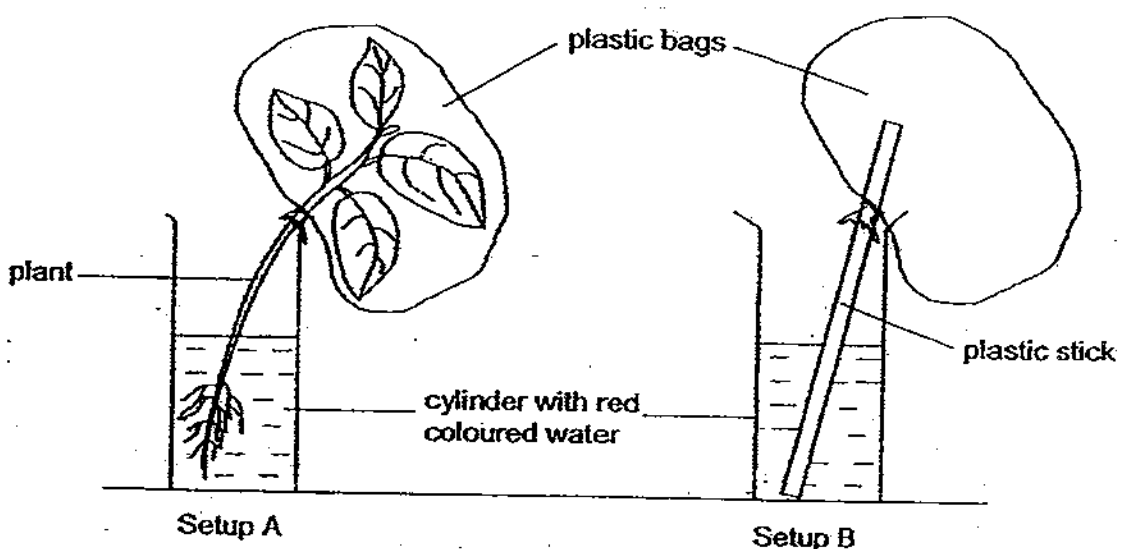


(3)



(4)

25. Kathy placed a plant in a cylinder with red coloured water and covered the plant with a plastic bag as shown in setup A in the diagram below.



Using an identical cylinder and the same amount of red coloured water, Kathy set up another similar experiment, setup B. She placed a stick instead of a plant in the cylinder. Both setups A and B were placed near a window.

A few hours later, the leaves became red and the water level in setup A is lower than the water level in setup B. The water level in both cylinders is lower than the original level. Tiny water droplets are also found on the inner surface of the plastic bag of setup A but not setup B.

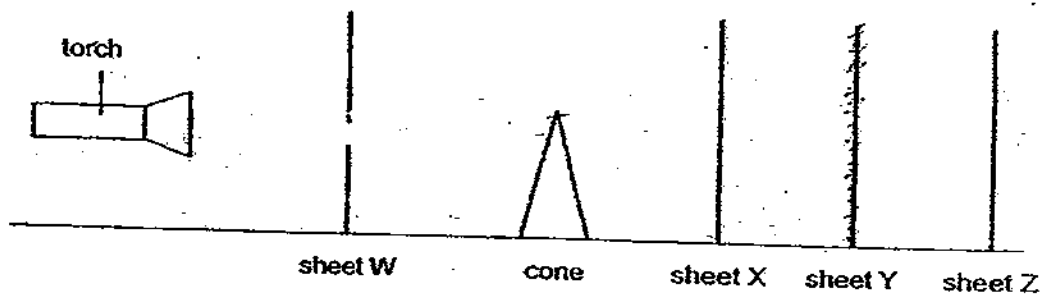
What conclusions can Kathy draw based on the experiment above?

- A The plant takes in water from its roots.
- B The plant transpired to release water vapour.
- C Water in both containers is partly lost through evaporation.
- D Water droplets inside the plastic bag came from the air within the bag.

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

26. Santhi set up an experiment in a dark room, using a torch, a cone and four sheets W, X, Y and Z. She arranged the items as shown in the diagram below. The property of the four sheets of materials is shown in the table below.

Degree of transparency	Materials
Opaque	W, X, Z
Transparent	Y



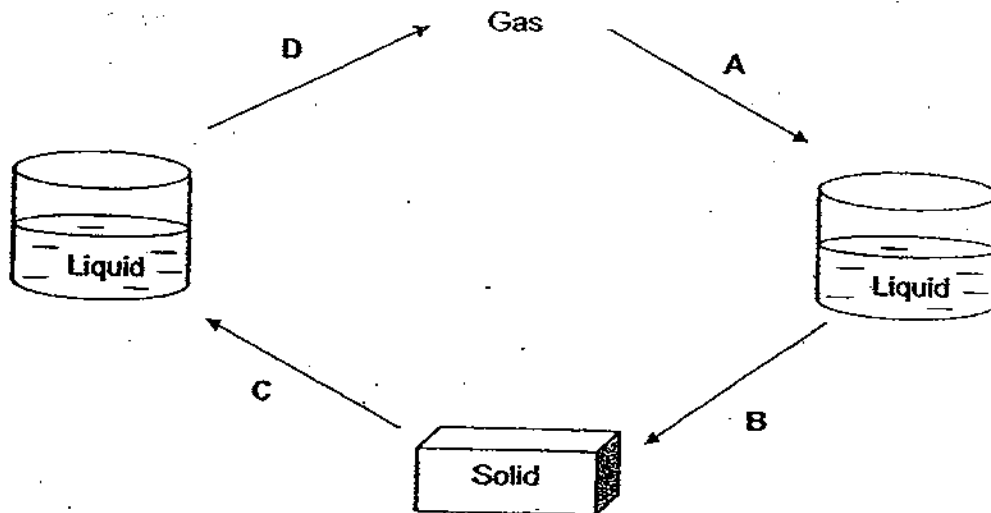
She switched on the torch and made an observation.

Which of the following statement(s) is/are true about her observation?

- A. An inverted shadow is formed.
- B. The shadow is formed on X only.
- C. The shadow is larger than the cone.
- D. The light from the torchlight passes through Y.

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

27. The diagram below shows the three states of a substance.

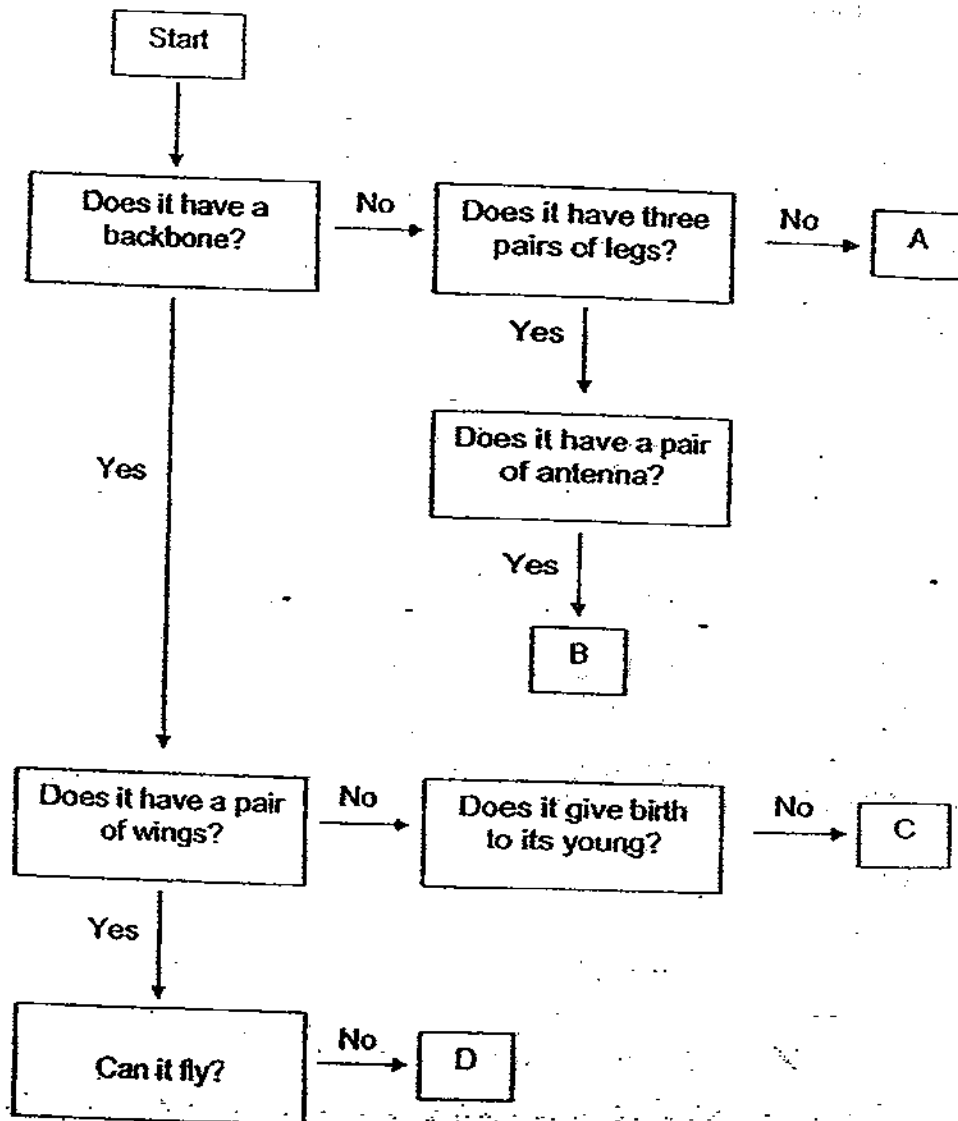


Arrows A, B, C and D represent whether heat is 'lost' or 'gained' by the substance during each change of state.

Which one of the following best represents the four arrows, A, B, C and D as shown in the diagram above?

	A	B	C	D
(1)	heat lost	heat gained	heat gained	heat lost
(2)	heat lost	heat lost	heat gained	heat gained
(3)	heat gained	heat gained	heat lost	heat lost
(4)	heat gained	heat lost	heat lost	heat gained

28. The flow chart below shows certain characteristics of organisms, A, B, C and D.



Which of the following animals best represents organisms A, B, C and D?

	A	B	C	D
(1)	Slug	Grasshopper	Turtle	Ostrich
(2)	Snail	Ant	Frog	Penguin
(3)	Cobra	Spider	Guppy	Kiwi bird
(4)	Earthworm	Termite	Dolphin	Sparrow

29. Josie conducted a study on two animals, X and Y in their natural habitat over a period of time. She drew a checklist and placed a tick (✓) in the box when she made the observation.

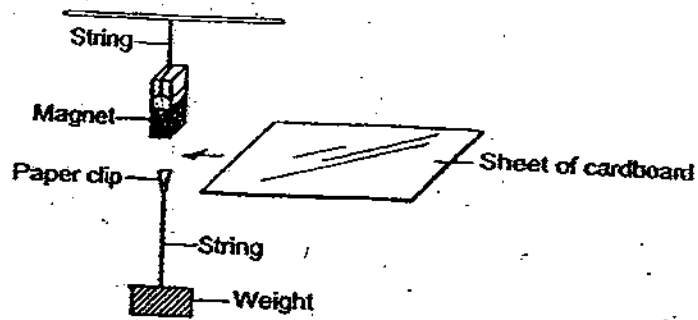
At the end of her study, the completed checklist is as shown below.

Observation	Animal X	Animal Y
Eggs are laid in water	✓	
There are three stages in the life cycle		✓
It has six legs	✓	✓

Based on information above, which of the following animals are most likely animals, X and Y respectively?

	Animal X	Animal Y
(1)	frog	butterfly
(2)	dragonfly	spider
(3)	damselfly	cockroach
(4)	mosquito	grasshopper

30. Andy held a bar magnet above a paper clip tied to a weight by a string. The magnet pulled the paper clip up. When he placed a sheet of cardboard between the magnet and the clip, the clip remained where it was.



Andy concluded that the _____

- (1) cardboard was magnetized
- (2) paper clip was magnetized
- (3) paper clip was very strong
- (4) magnetic force could go through the cardboard

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**NAN HUA PRIMARY SCHOOL
PRELIMINARY EXAMINATION - 2009
PRIMARY 6**

SCIENCE

BOOKLET B

16 Open-ended questions (40 marks)

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

INSTRUCTIONS TO CANDIDATES

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

Marks Obtained

Section B

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

Date : 27 August 2009

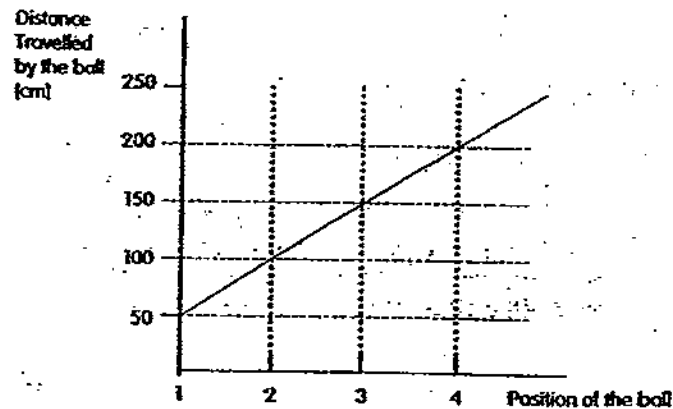
Parent's Signature: _____

Section B: (40marks)

Write your answers to question 31 to 46.

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

31. A ball rolled down from four different positions on an inclined plane until it came to a stop some distance away on the floor. The distance travelled by the ball from the base of the inclined plane was measured and represented in the graph below.



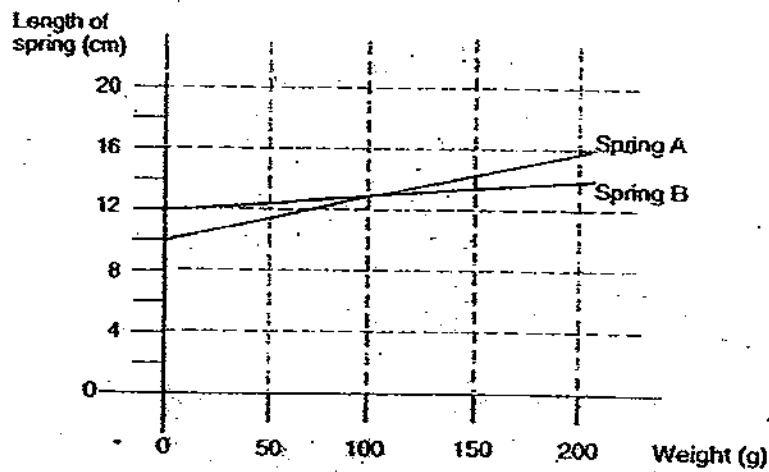
- (a) At which position (1, 2, 3 or 4) on the inclined plane was the ball highest above the ground? [1]

- (b) What energy change takes place as the ball was rolling down the inclined plane? [1]

→ + +

Score	2
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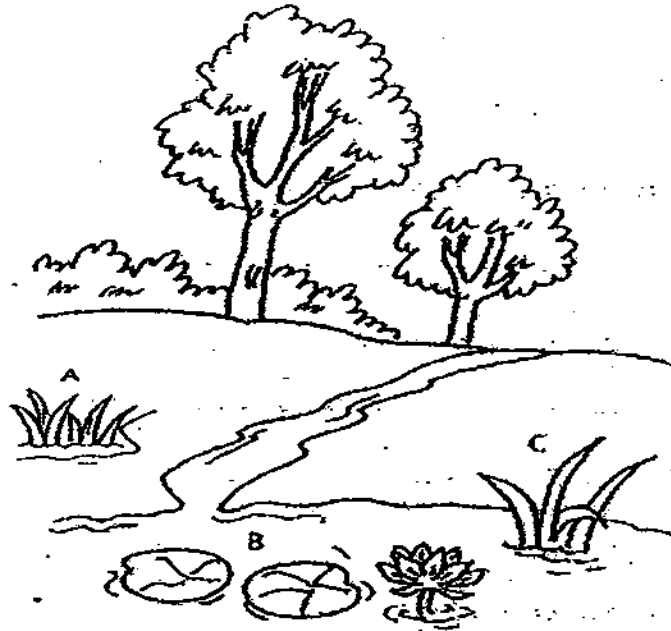
32. The graph below shows the lengths of two springs when they are holding some weights.



- (a) How long was each spring when it was not stretched? [1]
- Spring A : _____
- Spring B : _____
- (b) What is the weight needed to extend the two springs to the same length? [1]
-

Score	2
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33. Changes in the condition of an environment may harm the organism living in the environment. Study the diagram below.



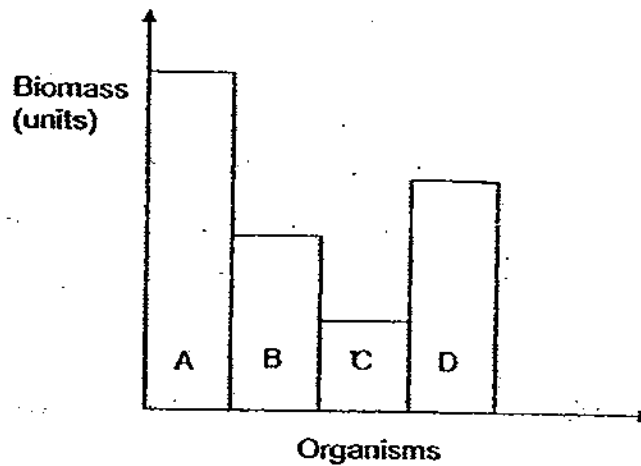
- (a) Which plant, A, B or C is most likely to die first when there is no rain for a long period of time and the water level in the pond decreases? [1]

- (b) Explain your answer for part (a). [1]

Score	2
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34. The bar graph below shows the biomass of four organisms A, B, C and D living in the same habitat and they are interdependent on one another for food.

In ecology, biomass refers to the total mass of living things of a species present at a particular trophic level in a food chain.



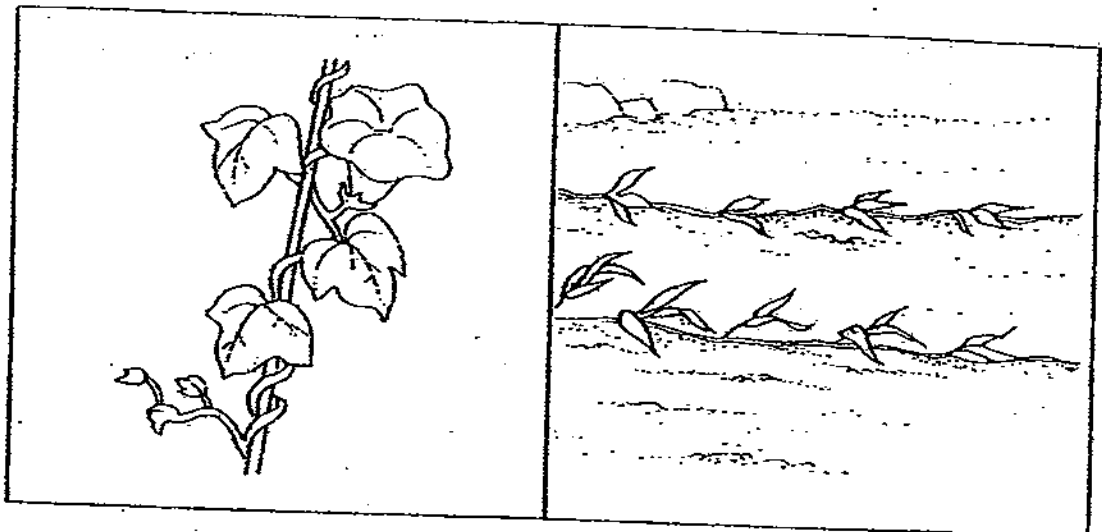
- (a) Write down the food chain which represents the food relationships among the organisms, A, B, C and D. [1]

- (b) State two life processes in which energy is lost by the organism at each level of the food pyramid. [1]

Score	2
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35. The diagram below shows plants A and B.

Both plants A and B have weak stems but they are adapted to grow well.



Plant A

Plant B

(a) Based on the diagram above, state the structural adaptations of each of the plant which enable them to grow well. [2]

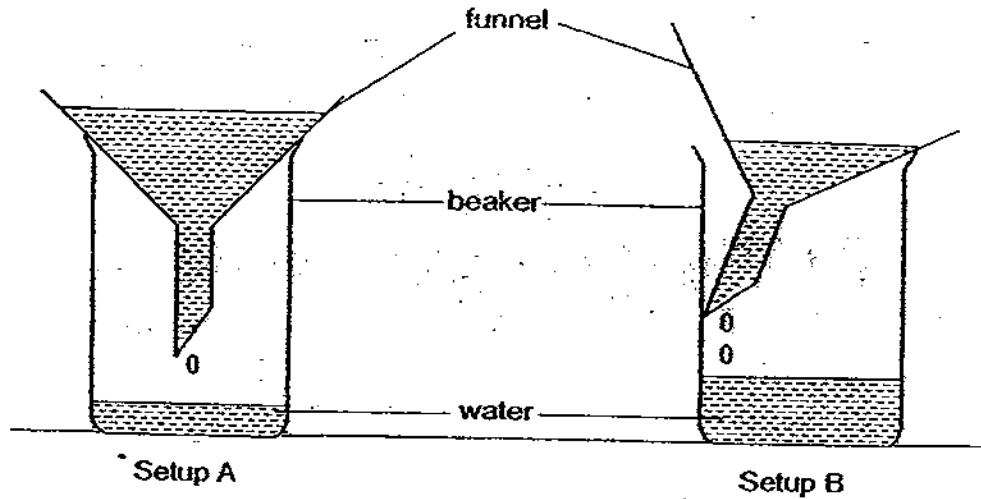
Adaptation of plant A : _____

Adaptation of plant B: _____

(b) Give a common reason why these structural adaptations allow the plants to grow well? [1]

Score	3
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36. Halim conducted an experiment to find out what affects the rate of water flow through a funnel. Using two identical beakers and funnels, he set up two experimental setups as shown in the diagram below.



He poured the same amount of water into the funnels of both setups.

In setup A, he rested the funnel on the opening of the beaker. In setup B, he tilted the funnel at the opening of the beaker.

He noticed that the water flowed through the funnel faster when he tilted the funnel.

- (a) Why is the water level in the beaker in setup B higher than in setup A? [2]

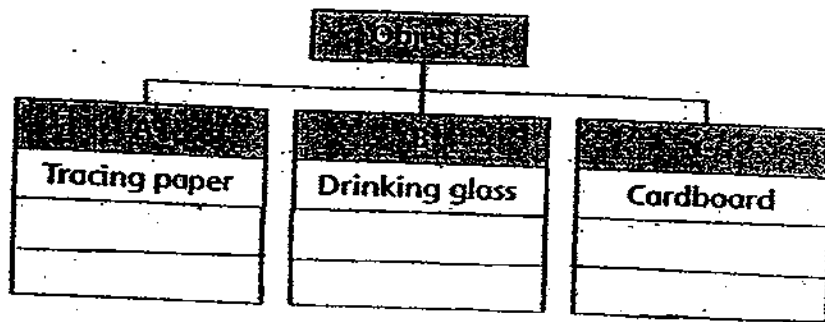
- (b) State the property of air shown in this experiment. [1]

Score	3
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37. The classification chart below grouped objects based on the amount of light that can pass through each object.

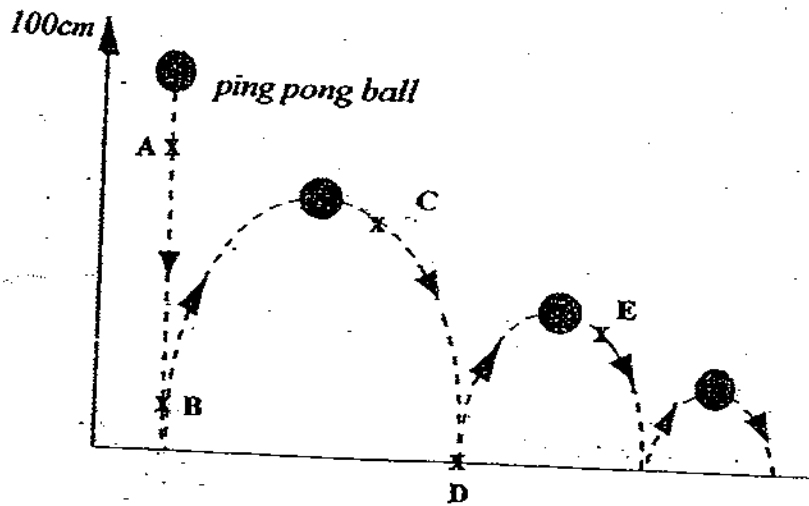
Place the following objects in the appropriate group in the classification chart below. [2]

Frosted glass Glass Beaker Mirror Drawing block



Score	2
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38. A ping pong ball was dropped from a height of 1 metre from the ground. It bounced to a lower height each time it hit the ground as shown below.



- (a) Why do you think that the ball does not bounce back to the same height it was dropped from? Explain your answer. [1]

- (b) At which position (A, B, C, D or E) does the ball possess the maximum gravitational potential energy and kinetic energy respectively. [2]

Maximum gravitational potential energy : At Position _____

Maximum kinetic energy : At Position _____

Score	3
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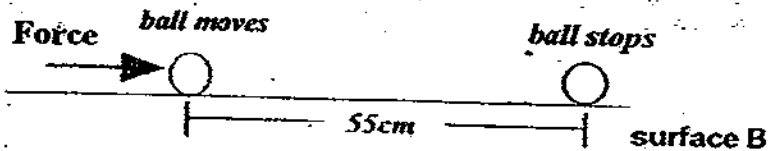
39. Look at the diagram below. A force was applied to the ball on surface A.



The ball stops after moving 30 cm.

- (a) Name two forces that are acting on the ball.

[1]



- (b) The same ball is pushed again with the same force on surface B. The ball moves 55 cm before it stops. Suggest a possible reason why it moves a longer distance on surface B than on surface A.

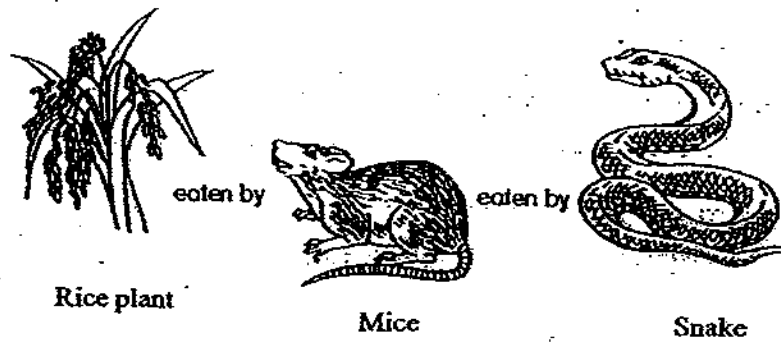
[1]

- (c) If the experiment is carried out in a vacuum*, the ball moves a longer distance. Why is there a difference?
 (* A vacuum is a space that contains no air or other gas.)

[1]

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

40. Study the diagram below.

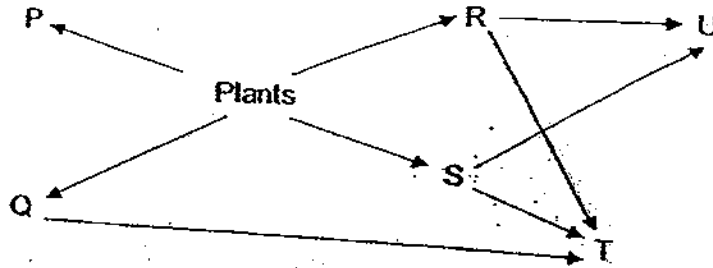


(a) Name two physical characteristics of the environment that will affect the growth of the rice plant. [1]

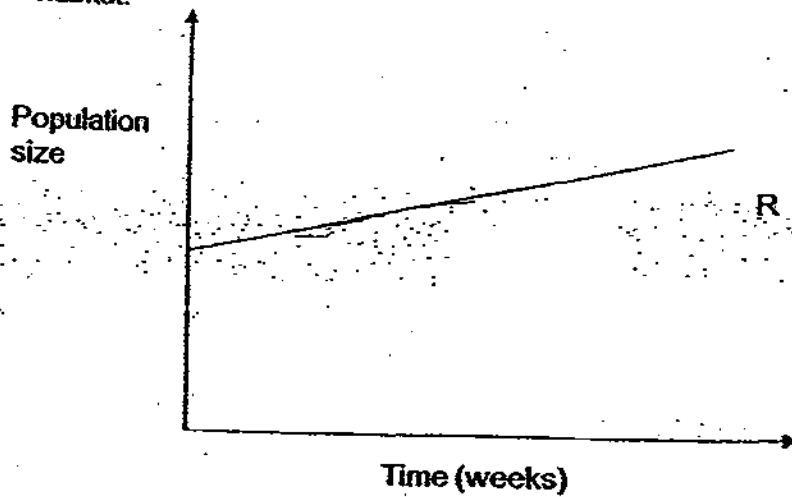
(b) If all the snakes are killed, what will be the immediate effect on the rice plants and mice? Explain your answer clearly. [2]

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

41. The food web below shows six types of animals, P, Q, R, S, T and U in a particular community.



- (a) What will likely happen to the population of P when there is a certain disease that wiped out only the population of T in the habitat? [1]
- _____
- _____
- (b) Explain your answer in (a). [1]
- _____
- _____
- (c) In the axis provided below, complete the graph by drawing and labeling a line graph which best represents how the population of U is likely to be affected when the certain disease wiped out only the population of T in the habitat. [1]



Score	3
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42. The diagram below shows two species of moth with a variety of speckled colouration on its wings and body.



Moth X



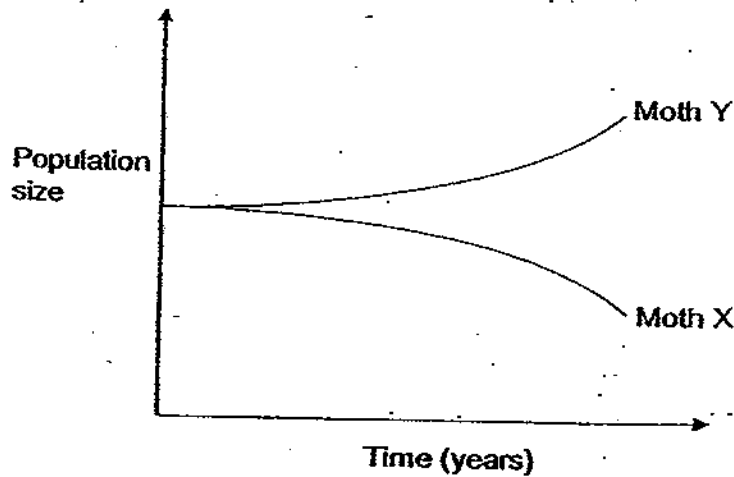
Moth Y

Moth X is light-coloured and Moth Y is dark-coloured.

Both populations of Moth X and Moth Y can be found in the same natural habitat.

The populations of Moth X and Moth Y were tracked over a period of time. During this period of time, pollution occurs in the environment and resulted in the blackening of the leaves and trunks of the trees where the two species of moth usually take rest on.

The changes in the population size of moth X and moth Y are shown in the graph below.



Based on the information provided, explain how the colouration of the moths affected their population size. [2]

Moth X: _____

Moth Y: _____

Score	2
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43. Read the article below carefully and answer the question that follows.

Bottle Gardens

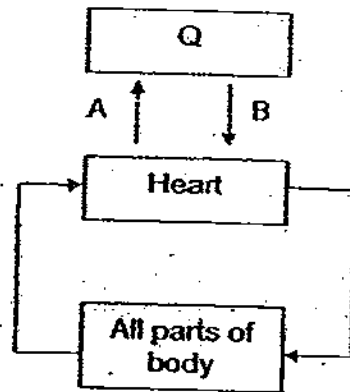
A really attractive and unusual way of growing plants indoors is to create a bottle garden. If carefully made a bottle garden can last a long time needing very little attention and with the great advantage that the plants do not get dusty and pests, draughts and fumes are excluded. Select a suitable glass container with a lid. The more air tight the lid the less watering the plants will need.

(abstract from: http://www.greenchronicle.com/gardening/bottle_gardens.htm)

Based on the information from the abstract above, explain how the plants in the "bottle garden can last a long time" with little watering. [2]

Score	2
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44. The diagram below shows how blood flows in certain parts of the body. The arrows represent the direction of blood flow.



- (a) Name the organ Q.

[1]

- (b) Explain why blood flowing at B has higher oxygen content than blood flowing at A.

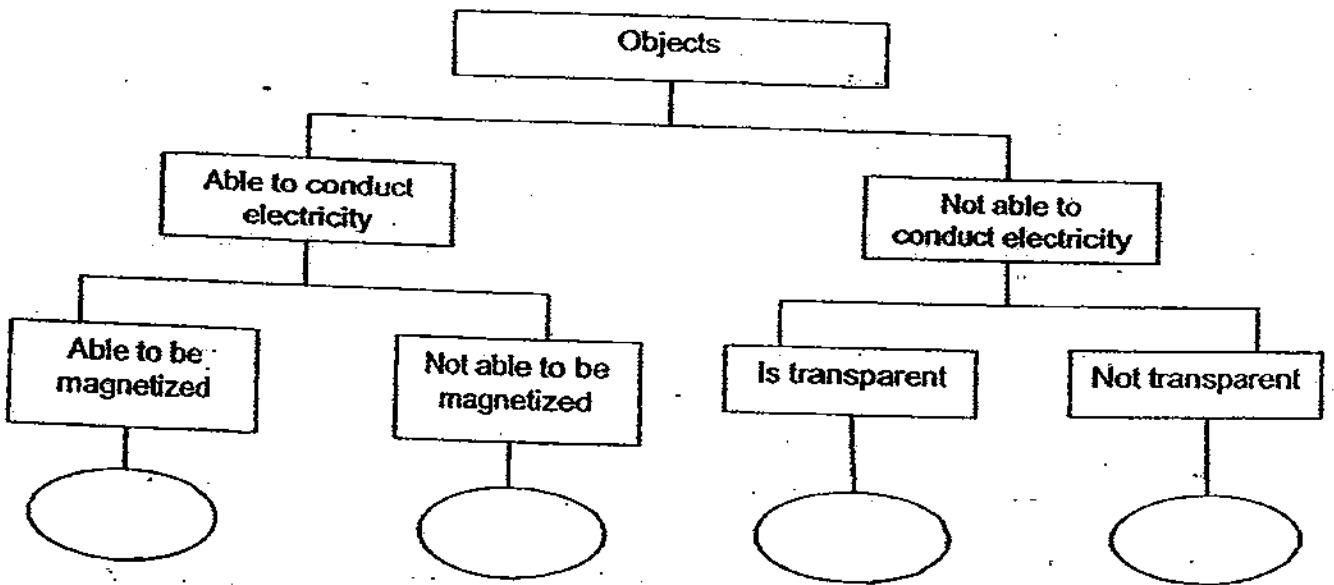
[2]

Score	3
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45. The following table gives information on four objects, W, X, Y and Z, based on three properties. A tick (✓) indicates that the object has the property.

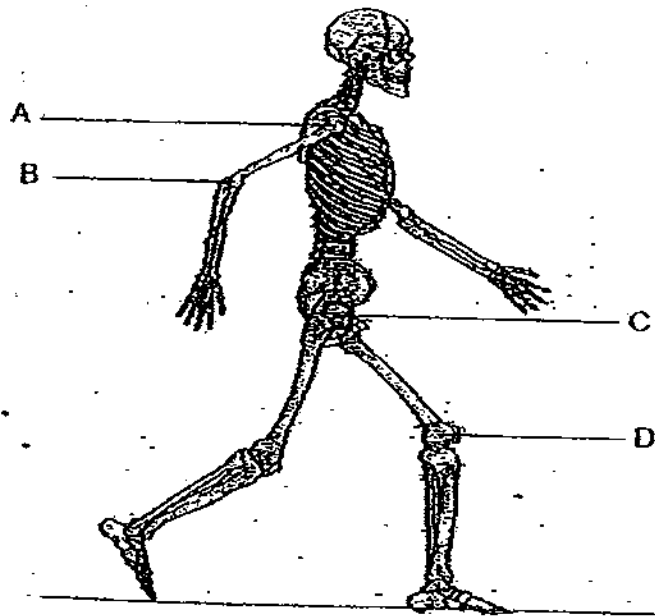
Property	Objects			
	W	X	Y	Z
Able to conduct electricity	✓		✓	
Able to be magnetized			✓	
Is transparent		✓		

From the information given above, complete the classification chart below by writing letters, W, X, Y and Z in the correct ovals. [2]



Score :	2
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46. Our bones are hard and stiff. They do not bend. We can bend or move some of our body parts because of the presence of joints. The diagram belows show a skeletal system with the various joints labeled A, B, C and D.



- (a) Identify a pair of joints which is most similar in their movement. [1]

- (b) What is the difference between hinge joints and ball and socket joints? [1]

- (c) Which other systems in our body are required to work together with the skeletal system when we are running? [1]

Score	3
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END OF PAPER



ANSWER SHEET

EXAM PAPER 2009

SCHOOL : NAN HUA PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

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

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

31)a)4.

b)Gravitational potential energy \rightarrow Kinetic energy + Heat energy + Sound energy

32)a)A: 10cm. B: 12cm.

b)100g.

33)a)Plant A.

b)It is the only land plant in the diagram. Therefore, when there is no rain, it will not receive any water but the other plant is either on the hate surface of partially submerged, therefore if will receive water.

34)a)A \rightarrow D \rightarrow B \rightarrow C

b)Respiration and growth.

35)a)A: Its stems twine around a support.

B: It spreads itself on the ground.

b)It allows them of obtain more sunlight for photosynthesis.

36)a) In set-up B, the felted funnel does not block the opening completely so it allows air in the container to escape easily. Hence, water flows in easily to replace the air in the container. But in set-up A, air cannot escape so water cannot enter easily.

b) Air occupies space.

37) A: Frosted glass B: Glass Beaker C: Mirror, Drawing block

38)a) Some of the energy in the ball was converted into heat energy and sound energy.

b) A, B

39)a) Frictional force and gravitational force.

b) Surface B is smoother than surface A so there is lesser friction between the ball and surface B than surface A.

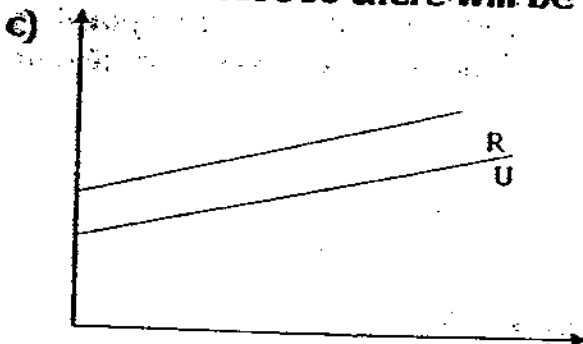
c) There is no air resistance so there is no air to stop the ball.

40)a) The temperature and the amount of water in the environment.

b) The number of mice will increase and the number of rice plants will decrease. There will be no snakes to eat the mice so there will be more mice to feed on the rice plants resulting in a decrease of rice plants.

41)a) It will become smaller.

b) The population of Q, R and S will increase and the number of plants will decrease so there will be lesser plants for P to feed on.



42) X: It can be easily spotted by its predators as it is light-coloured and will be easily spotted in the dark surroundings.

Y: It cannot be easily spotted by its predators as it is dark-coloured and it can blend in with its dark surroundings.

43)When the plants transpire, water is given out in the form of water vapour. This water vapour will condense on the cool surface of the glass container to form water droplets. The water droplets will flow back into the soil to moisten it.

44)a)The lungs.

b)Blood flowing at B has just absorbed from the lungs. Most of the oxygen in the blood flowing at A been taken in for respiration by the rest of the body.

45)Y, W, X, Z.

46)a)B and D.

b)Hinge joints are moveable joints that allow movement in only one direction. Ball and socket joints are moveable joints move in many directions.

c)The muscular system circulatory system and respiratory system.

