

Tao Nan School
Primary 6 Science Mid Year Examination - 2006

Name: _____ ()

Date: 10 May 2006

Class: Primary 6 ().

Duration: 1h 45 min

Parent's signature: _____

Marks: _____/100

Section A (30 X 2 marks)

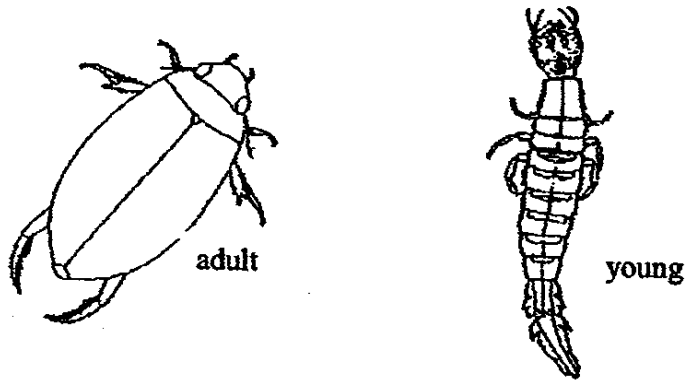
For each question 1 to 30, four options are given. Select the correct option and shade its corresponding oval (1, 2, 3, 4) on the Optical Answer Sheet.

1. Kok Kim told Gopal that all the animals he caught were insects. To find out if Kok Kim was correct, Gopal planned to do the following.
- A Find out their eating habits.
 - B Measure the length of each animal.
 - C Count the number of legs of each animal.
 - D Measure the weight of each animal.
 - E Count the number of main body parts of each animal.

Which of the activities will help Gopal in confirming whether the animals are insects?

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

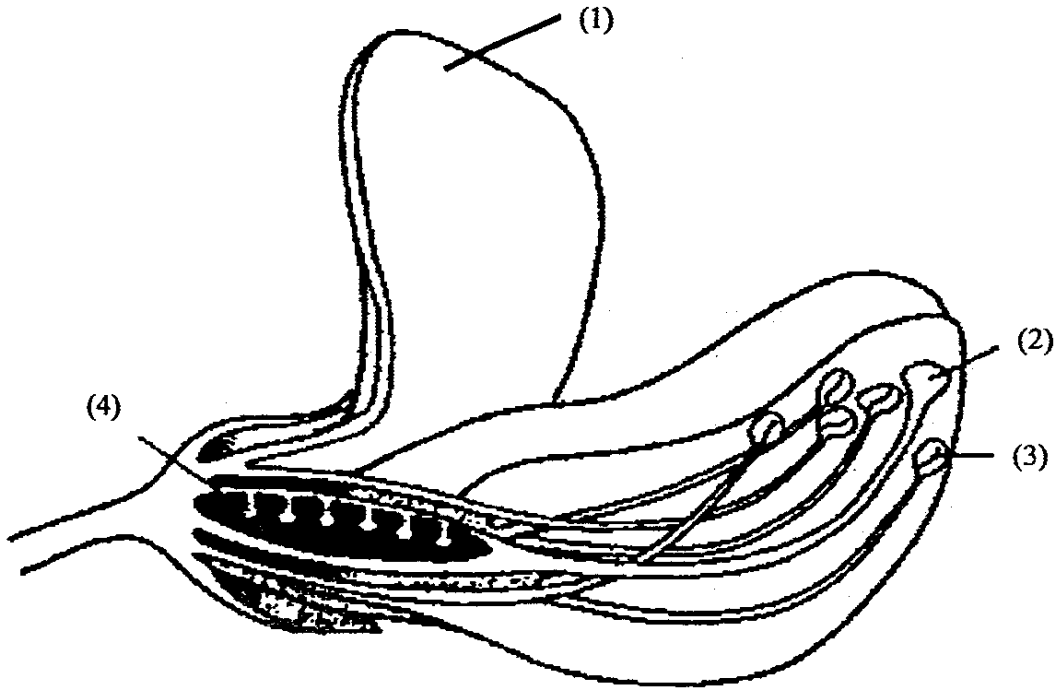
2. The pictures below show an organism and its young.



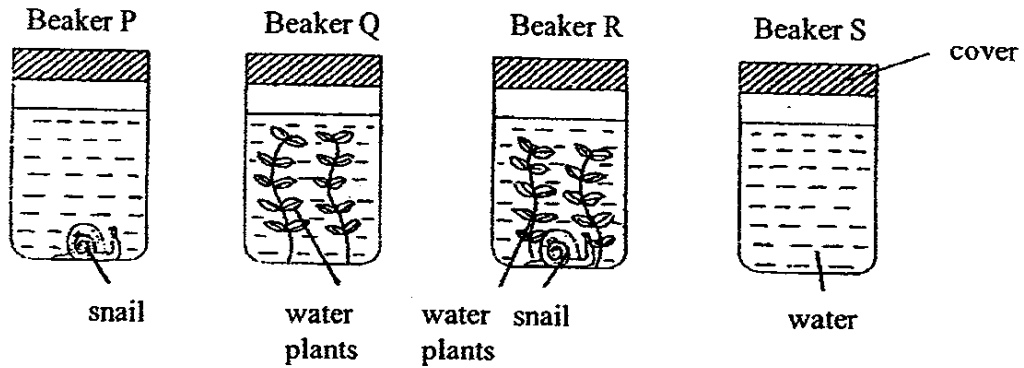
Based on the picture given above, which of the following about the organism is correct?

- (1) It has a 3-stage life cycle.
- (2) It has a 4-stage life cycle.
- (3) The young moults to become an adult.
- (4) Both the adult and the young have the same number of legs.

3. Study the cross-section of the flower below carefully. Which of the following will develop into the fruit of this flower after fertilisation?



4.

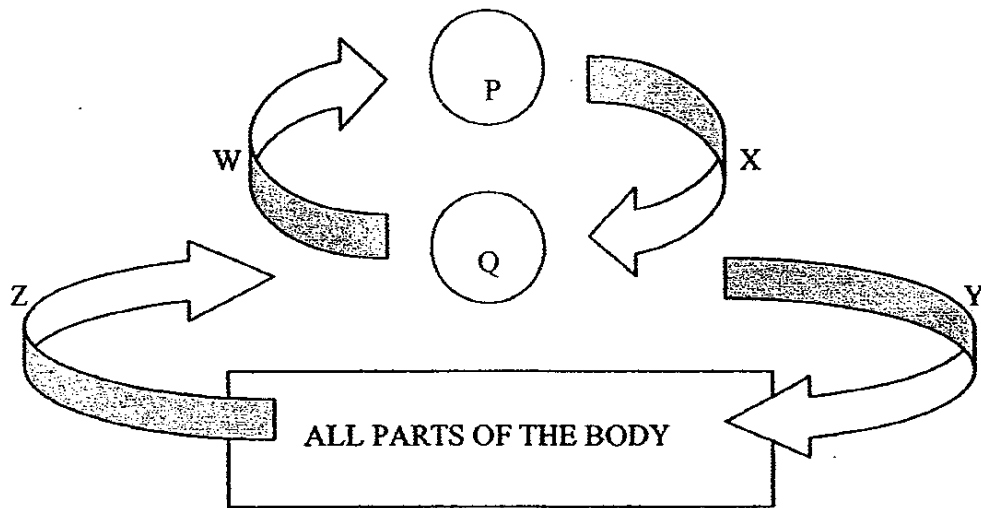


Four identical beakers were set up as shown above using some water plants and snails. The beakers were left in the sunlight from 9.30 a.m. to 3.30 p.m.

Which beaker would contain the least amount of carbon dioxide at 3.30 p.m.?

- (1) Beaker P
- (2) Beaker Q
- (3) Beaker R
- (4) Beaker S

5. The diagram below shows how blood circulates in our body. Arrows W, X, Y and Z represent the movement of our blood.



Which of the following are true?

















- A: P represents the heart and Q represents the lungs.
- B: The blood in Q is carried to P to receive oxygen.
- C: Arrows X and Y represent the movement of blood rich in oxygen.
- D: Arrows W and Z represent the movement of blood rich in carbon dioxide.

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

6. Four Angsana fruit with wing structures of different sizes were dropped from the same height. The time taken by each fruit to reach the ground was recorded in the table below.

Fruit	Time taken for the Angsana fruit to reach the ground (seconds)		
	1 st try	2 nd try	3 rd try
W	6.9	6.4	6.0
X	2.8	2.4	2.6
Y	4.3	4.6	5.1
Z	3.9	3.7	3.2

Which of the following shows the Angsana fruit representing W, X, Y and Z respectively?

	W	X	Y	Z
(1)				
(2)				
(3)				
(4)				

7. Thomas found that iodine turns dark blue in the presence of starch. He tested 4 different food items, W, X, Y and Z with some iodine. He recorded the results in the table below.

Food	Iodine turns dark blue?
W	Yes
X	No
Y	Yes
Z	Yes

Which of the following are probably the food items he tested?

	W	X	Y	Z
(1)	fish	cake	beef	banana
(2)	beef	fish	spinach	noodle
(3)	noodle	spinach	fish	beef
(4)	cake	pork	noodle	spinach

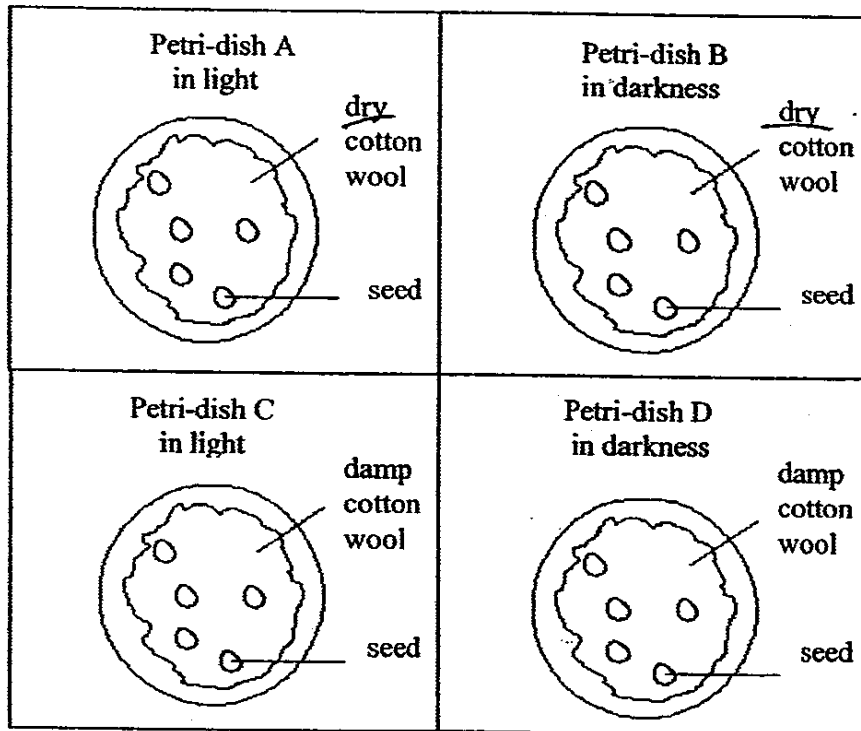
8. Andrew and Boon Tiong went trekking in a tropical rainforest. They noticed that the trees grew very closely together. Which of the following were likely features of the trees that they saw?

- A: The trunks were thin and tall.
- B: The trunks were broad and short.
- C: The branches were high and upward stretching.
- D: The branches were low and outward-stretching.

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

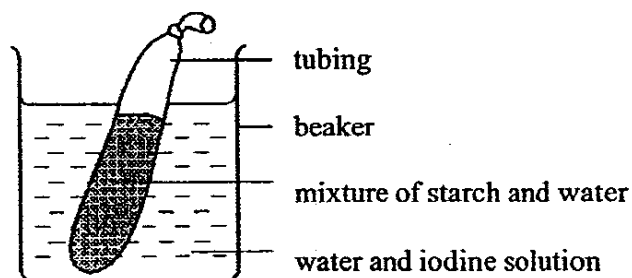
9. Jane set up an experiment as shown in the diagram below. At the end of the experiment, she observed that the seeds grew into seedlings in petri-dishes C and D but not in A and B.

What did Jane find out from her experiment?



- (1) Seeds need cotton wool to grow into seedlings.
- (2) Seeds need light to grow into seedlings.
- (3) Seeds need water to grow into seedlings.
- (4) Seeds need darkness to grow into seedlings.

10. May Lee filled a tubing with a mixture of starch and water. She placed the tubing in a beaker of water containing some iodine solution as shown in the diagram below.



The set-up was left overnight. The next day, she discovered that the mixture inside the tubing had turned dark blue. However, the water containing iodine solution remained the same colour.

Which of the following gives the right explanation?

- 1) The tubing allowed ~~both~~ the starch to move out.
- 2) The tubing ^{allowed} iodine solution to move in. .
- 3) The tubing allowed the water to move out.
- 4) The tubing allowed the water to move in ..

11. Farmer Joe wanted to find out which type of fertiliser, X or Y, gives him a greater yield. He divided 3 plots of maize field (Plot 1, Plot 2 and Plot 3) into 2 equal halves each.

He put fertilizer X in one half of each of the 3 plots of maize field. He did the same using an equal amount of fertilizer Y on the other half of each of the 3 plots of maize field. He measured the height of the maize over a period of 4 months. He calculated the gain in height of the maize over the same period of time.

Which of the following tables would help him to arrive at the correct conclusion?

1)

	Gain in height of the maize (cm)		
	Plot 1	Plot 2	Plot 3
Fertiliser X			
Fertiliser Y			
Average gain in height (cm)			

2)

	Gain in height of the maize (cm)		
	Plot 1	Plot 2	Plot 3
Fertiliser X			
Fertiliser Y			
Total gain in height (cm)			

3)

	Gain in height of the maize (cm)		
	Fertiliser X	Fertiliser Y	Total gain in height (cm)
Plot 1			
Plot 2			
Plot 3			

4)

	Gain in height of the maize (cm)			Average gain in height (cm)
	Plot 1	Plot 2	Plot 3	
Fertiliser X				
Fertiliser Y				

12. Two similar tennis balls, M and N, are moving along a marble floor in the same direction as shown below. M moves at a greater speed than N.

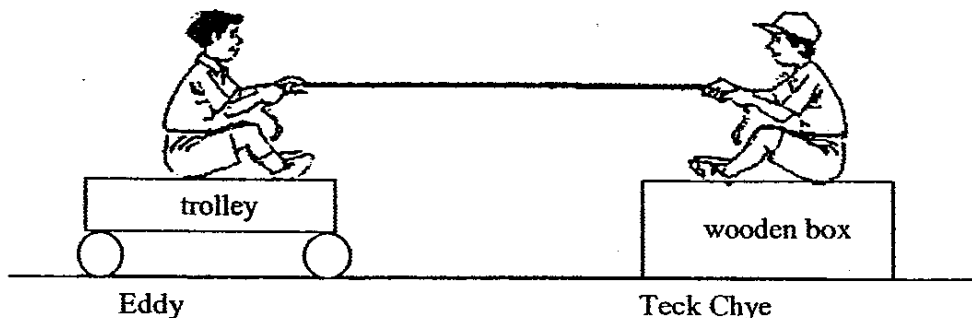


What will happen to the balls, after M hits N?

- A: Both balls will continue to move in the same direction.
- B: M will move in the opposite direction while N will move in the same direction.
- C: M will move faster than N.
- D: N will move faster than M.

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

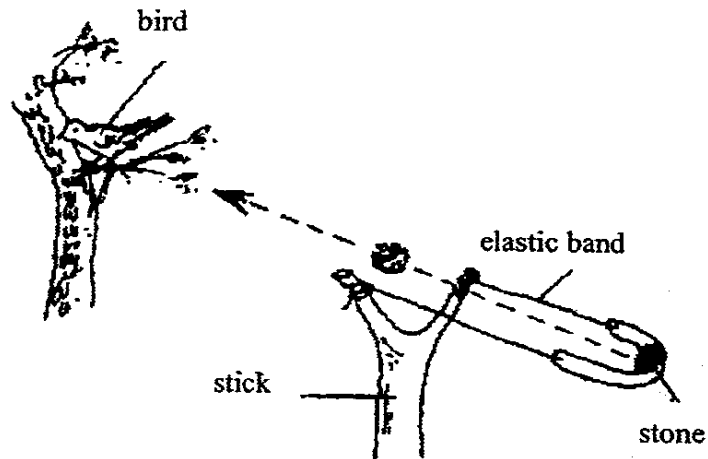
13. Eddy and Teck Chye are of equal mass. Eddy is sitting on a trolley while Teck Chye is sitting on a wooden box. They are on level ground. They are holding a rope as shown in the diagram below.



Which of the following will take place when Teck Chye pulls the rope?

- (1) Eddy and Teck Chye will move towards each other.
- (2) Eddy will move towards Teck Chye who will remain stationary.
- (3) Teck Chye will move towards Eddy who will remain stationary.
- (4) Eddy and Teck Chye will move away from each other.

14 Study the picture below carefully.

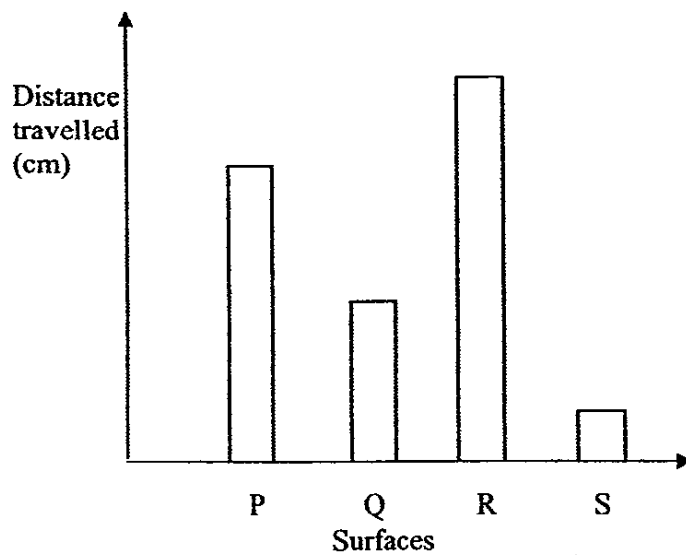


When the elastic band is released, the stone moves forward and hits the bird.
Which of the following determine how hard the bird will be hit?

- W Size of the stone
- X Thickness of the stick
- Y Extension of the elastic band
- Z Distance between the stone and the bird.

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

15. A ball is rolled along surface P. The distance travelled is measured and recorded. The experiment is repeated with the same ball along surfaces Q, R and S. The results are plotted in the graph below.

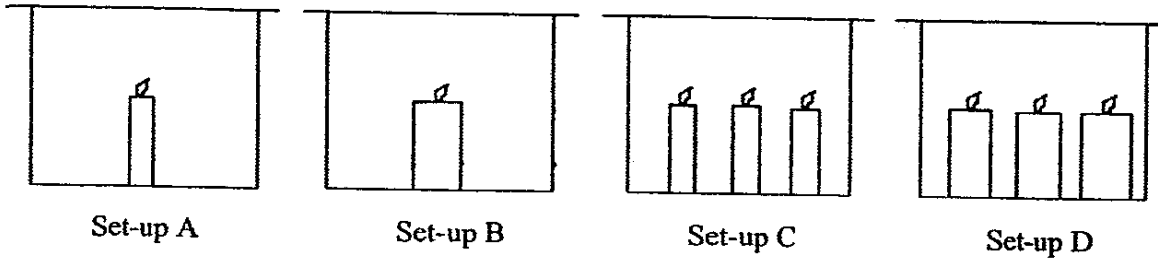


Which of the following are true?

- A: Surface P is smoother than surface Q.
- B: Surface S is made of sandpaper.
- C: The friction between Surface R and the ball is the least.

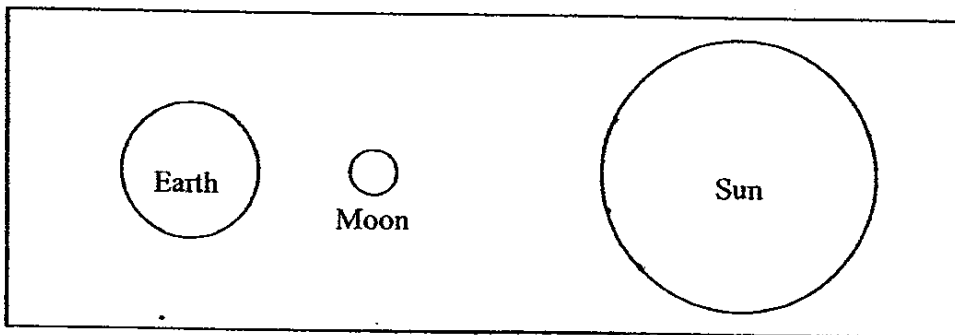
- (1) C only
- (2) A and C only
- (3) B and C only
- (4) A, B and C

16. Mei Lin wanted to find out how the number of candles affect the length of time the candle/s remain lighted before being extinguished.



Which 2 set-ups should Mei Ling use to conduct a fair test?

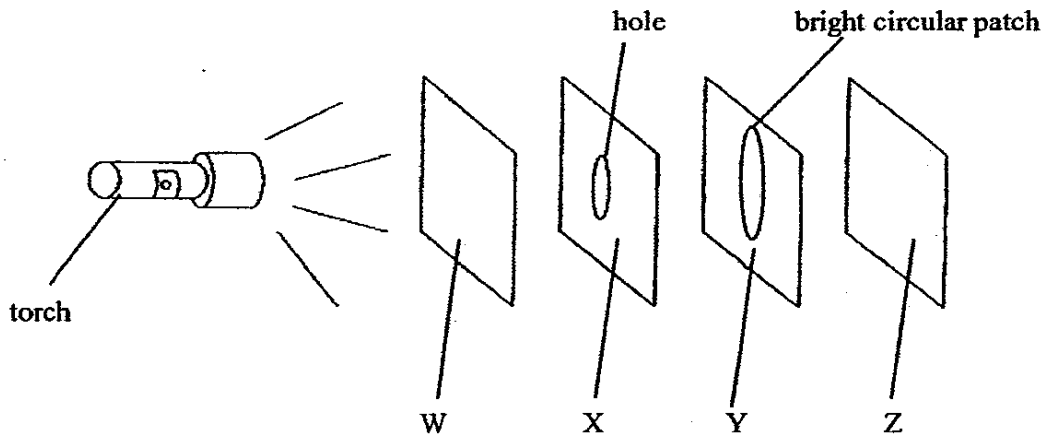
- (1) A and B
 - (2) B and C
 - (3) B and D
 - (4) C and D
- 17 Study the diagram below carefully.



Which of the following describes what would happen when the Sun, Earth and Moon are in the positions shown above?

- (1) The Sun will cast a shadow on the Moon.
- (2) The Moon will cast a shadow on the Sun.
- (3) The Moon will cast a shadow on the Earth.
- (4) The Earth will cast a shadow on the Moon.

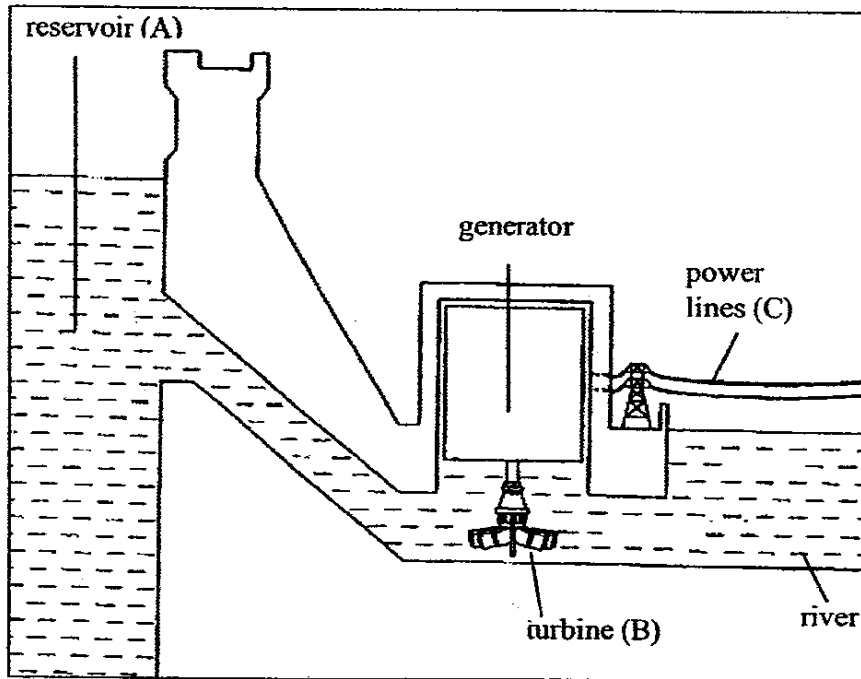
18. An experiment was carried out in a dark room. Four sheets, W, X, Y and Z of different materials, were arranged in a straight line as shown below. When the torch was switched on, a bright circular patch of light was seen on Sheet Y only.



Which of the following describes the degree of transparency of the sheets?

	Most light can pass through	No light can pass through	Not possible to tell
(1)	Y	W and Z	X
(2)	W and X	Y	Z
(3)	W	X and Y	Z
(4)	W and Z	Y	X

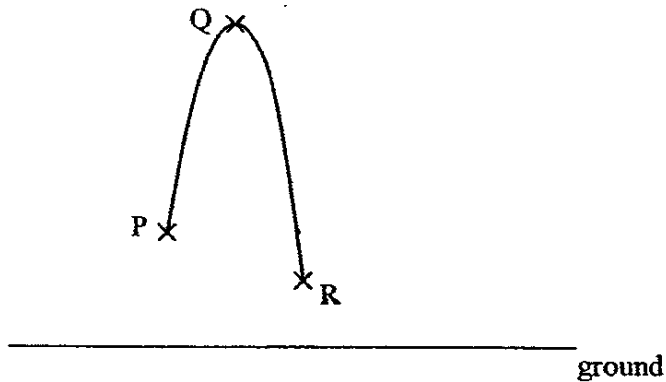
19. The diagram below shows a hydroelectric power station.



Which of the following best describes the energy changes that take place from part A to part B to part C as shown in the diagram?

- (1) chemical potential energy \longrightarrow kinetic energy \longrightarrow electrical energy
- (2) gravitational potential energy \longrightarrow kinetic energy \longrightarrow electrical energy
- (3) gravitational potential energy \longrightarrow electrical energy \longrightarrow kinetic energy
- (4) kinetic energy \longrightarrow electrical energy \longrightarrow chemical potential energy

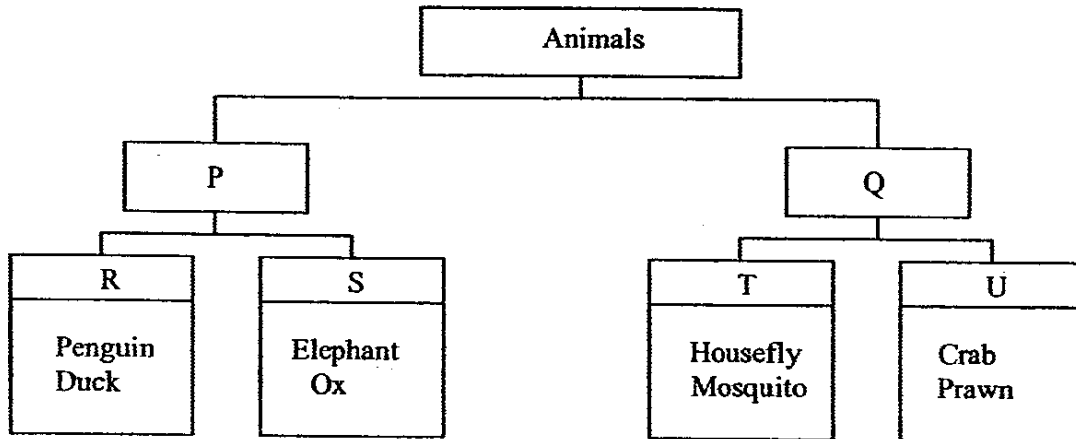
20. A ball is thrown from point P. The diagram below shows part of the path travelled by the ball when thrown.



Which of the following identify the energy the ball possess at points P, Q and R?

	Point P (The start)	Point Q (Highest point)	Point R (Still falling)
(1)	Gravitational potential energy and kinetic energy	Gravitational potential energy and kinetic energy	Gravitational potential energy and kinetic energy
(2)	Kinetic energy	Gravitational potential energy	Kinetic energy
(3)	Gravitational potential energy and kinetic energy	Gravitational potential energy	Gravitational potential energy and kinetic energy
(4)	Gravitational potential energy	Gravitational potential energy	Gravitational potential energy and kinetic energy

21. Study the classification chart below carefully.



Which of the following are correct?

- A: Group R lay eggs while Group S give birth to their young alive.
- B: Group T are animals with six legs while Group U are animals with eight legs.
- C: Group P are animals with backbones while Group Q are animals without backbones.

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

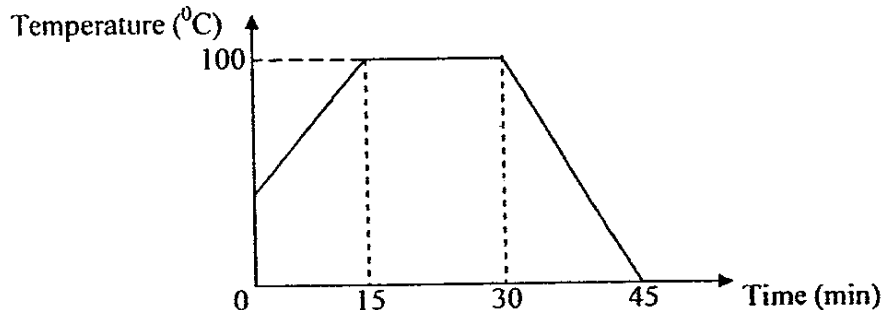
22. Study the objects below carefully. They can be classified into two groups, A and B such that there are three items in each group.

iron rod	plastic plate	water
porcelain cup	eraser	silver ring

Which of the following classifications is correct?

	Group A	Group B
(1)	Solids	Liquids
(2)	Metals	Non-metals
(3)	Conductors of electricity	Non-conductors of electricity
(4)	Magnetic substances	Non-magnetic substances

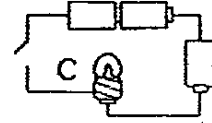
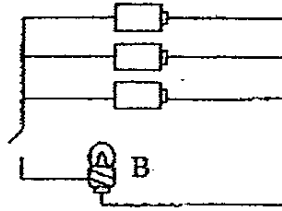
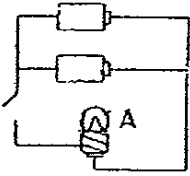
23. The graph below shows the changes in temperature of some water when it was heated and then cooled.



Which of the following descriptions about the water are correct?

	Time (min) : 0 to 15	Time (min) : 15 to 30
(1)	The water was changing to water vapour.	The water was boiling.
(2)	The water was changing to water vapour.	The boiled water remained at room temperature.
(3)	The water was boiling.	The boiled water remained at room temperature.
(4)	The boiled water remained at room temperature.	The boiling water was cooling and becoming ice.

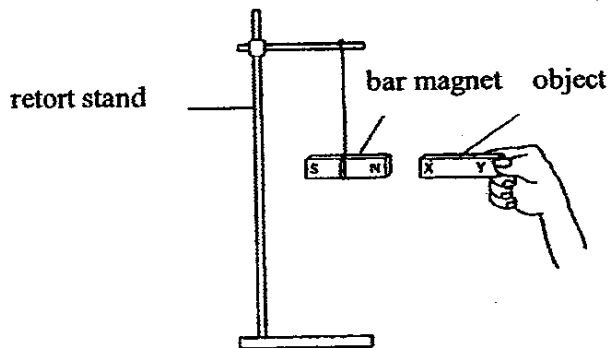
24. Study the circuit diagrams below carefully.



When the circuits are closed, all the three bulbs light up. Which of the following describes the result most accurately?

- (1) Bulb B is the brightest.
- (2) Bulb C will light up the longest.
- (3) Bulb A and Bulb B are of equal brightness.
- (4) Bulb A will light up the shortest.

25. 3 objects, A, B and C are brought very near to the north pole of a hanging magnet as shown in the diagram below.



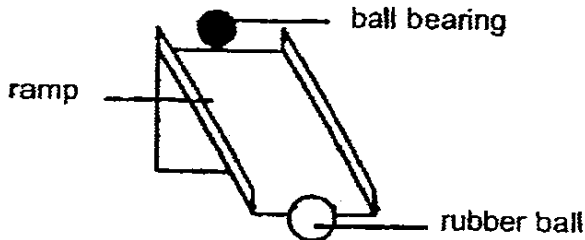
The table below shows the result of the experiment.

Object	End	Attracted to the magnet	Repelled by the magnet	No reaction to the magnet
A	X			√
	Y			√
B	X		√	
	Y	√		
C	X	√		
	Y	√		

Which of the following is correct?

- (1) Objects B and C are magnets.
- (2) Object A is made of copper. ?
- (3) End X of object B is the north pole.
- (4) End Y of object C is the north pole.

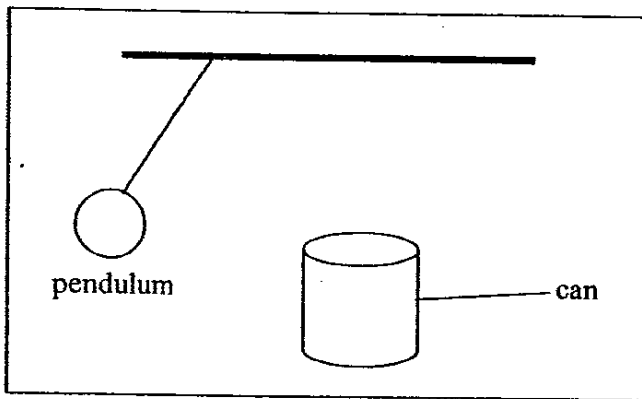
26. Wee Kim released a ball bearing down a ramp so that it would hit a rubber ball at the base of the ramp.



Which of the following would not result in the rubber ball travelling further when hit?

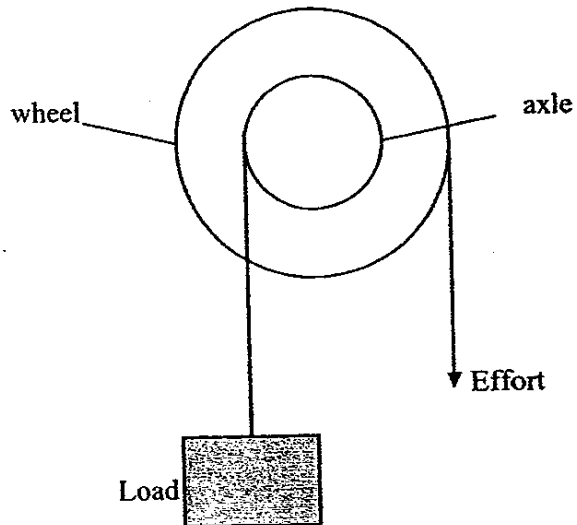
- (1) Apply a lubricant on the ramp.
- (2) Use a ball bearing with a greater mass.
- (3) Raise the height of the ramp.
- (4) Use a longer ramp with the same height.

27. A can is placed in the path of a pendulum. The can is knocked over by the pendulum. Which of the following shows the conversion of energy from the time the pendulum is released to the time the can is knocked over?



- (1) Chemical potential energy → kinetic energy → sound energy
- (2) Gravitational potential energy → sound energy → kinetic energy
- (3) Gravitational potential energy → kinetic energy → sound energy
- (4) Chemical potential energy → kinetic energy → sound energy
sound. kinetic.

28. Study the picture of the wheel and axle below carefully.

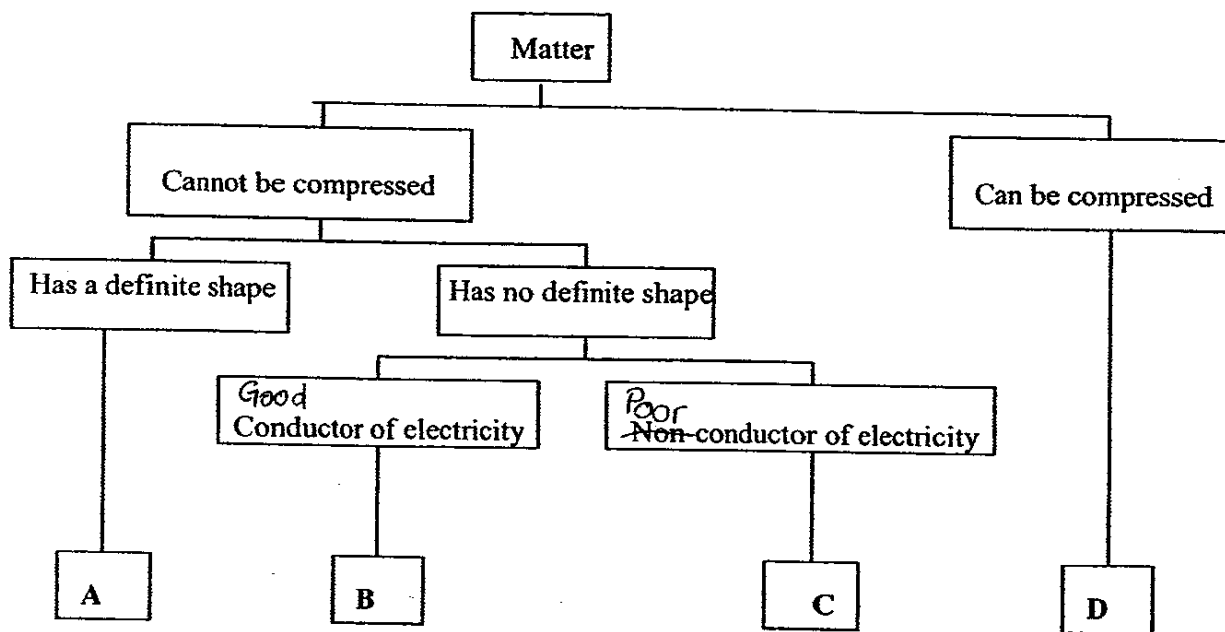


Which of the following actions will reduce the effort needed to lift the load?

- A: Reduce the mass of the load.
- B: Reduce the length of the rope.
- C: Increase the size of the wheel.
- D: Increase the size of the axle.

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

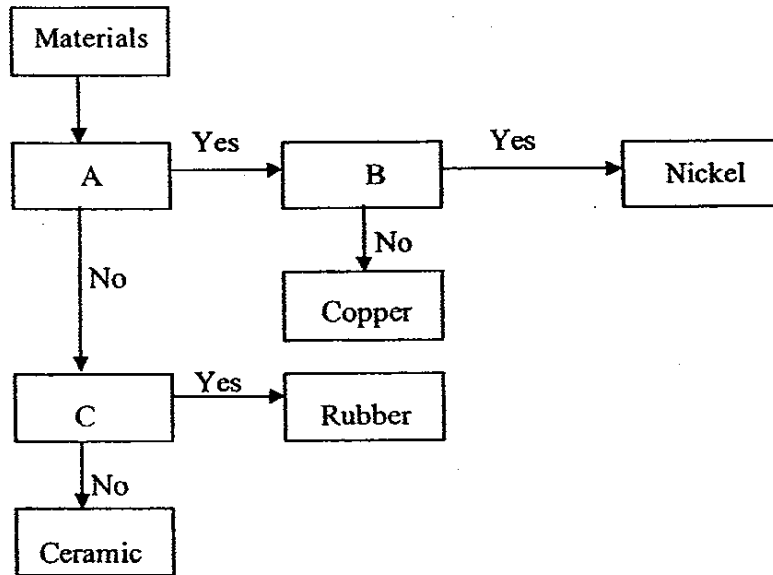
29. Study the classification chart below carefully. A, B, C and D are examples of matter.



Identify A, B, C and D.

	A	B	C	D
(1)	Sand	Mercury	Oil	Carbon Dioxide
(2)	Water	Vinegar	Ice Cubes	Oxygen
(3)	Salt	Copper Coin	Rubber Band	Jelly
(4)	Ice cube	Water	Mercury	Water vapour

30. Study the flow chart below carefully.



Which of the following are A, B and C ?

	A	B	C
(1)	Conducts electricity	Can it be attracted to a magnet	Is it flexible
(2)	Is it flexible	Conducts electricity	Is it hard
(3)	Is it fragile	Allows light to pass through	Is it flexible
(4)	Allows light to pass through	Conducts electricity	Is it fragile

Name: _____ ()

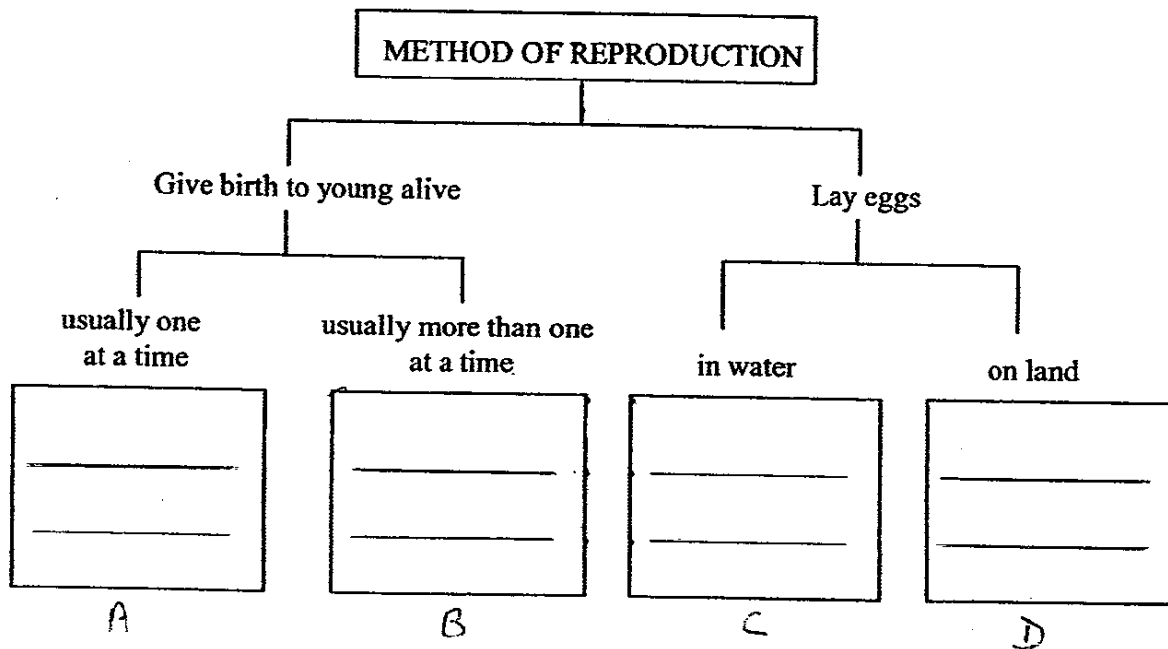
Marks: _____

Class : Primary 6 ()

Section B (40 marks)

For questions 31 to 46, write your answers in the spaces provided.

31. In the classification table below, classify these animals, (guppy, penguin, whale and turtle) according to the way they reproduce. [2m]



32. Beng So made a study of the parts that are found in some cells. She recorded her observations in the table below, using a tick (✓) to indicate the presence of the parts in each cell.

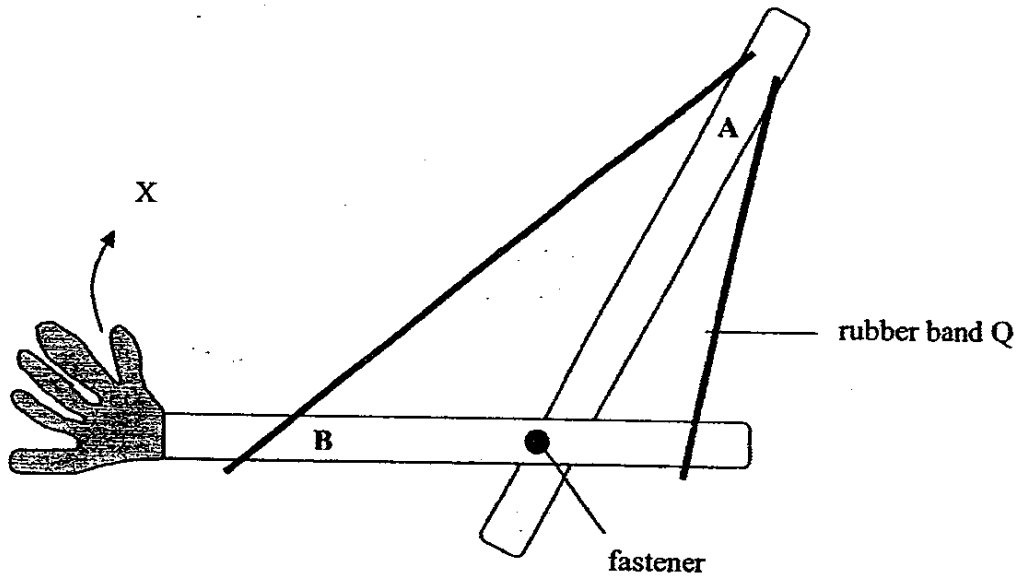
Part of cell	Cell P	Cell Q	Cell R	Cell S	Cell T
Nucleus	✓	✓	✓	✓	✓
Cell wall		✓	✓		✓
Cytoplasm	✓	✓	✓	✓	✓
Chloroplast		✓			✓
Cell membrane	✓	✓	✓	✓	✓

Complete the table below by identifying the cells in the boxes.

[3m]

Animal cells	
Plant cells that carry out photosynthesis	
Plant cells that do not carry out photosynthesis	

33. Ahmad constructed a model of an arm to demonstrate how muscles help the bones to move as shown in the diagram below. He used two rubber bands to represent the muscles connecting the upper arm (A) and the forearm (B).



- (a) What do the following represent ?

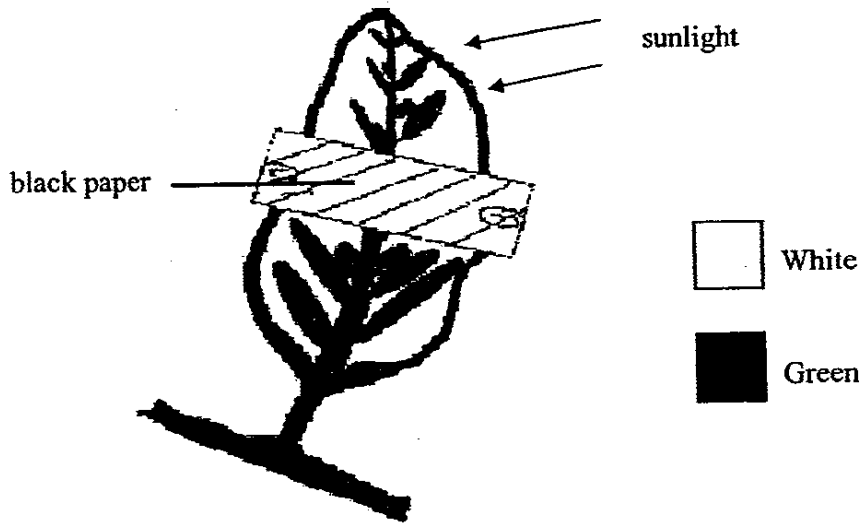
rubber band P : _____ ($\frac{1}{2}$ m)

rubber band Q : _____ ($\frac{1}{2}$ m)

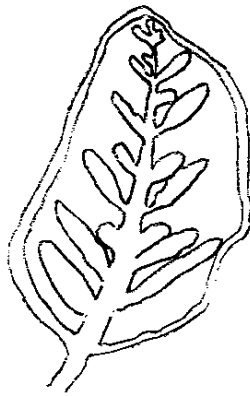
fastener : _____ (1m)

- (b) When he moves part ^BA in the direction of X, _____ is loosened while _____ is stretched. (1m)

34. Siew Lee carried out an experiment on a plant with variegated leaves. Before the start of the experiment, she kept the plant in a dark cupboard for 2 days. For the experiment, she covered part of a leaf with black paper as shown below. After 8 hours in the sun, the leaf was removed from the plant and tested for starch.

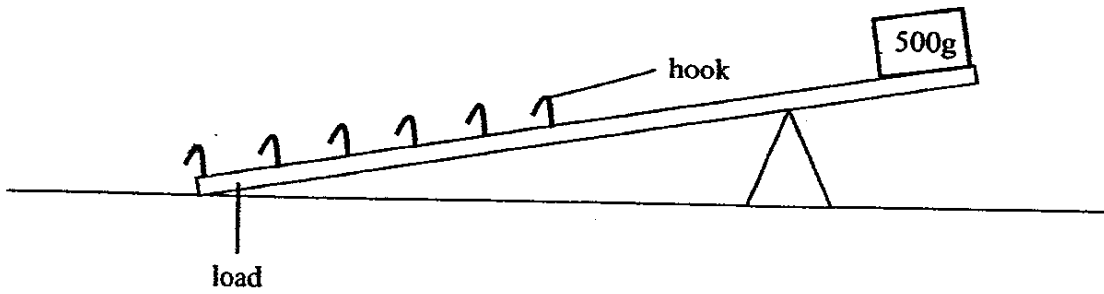
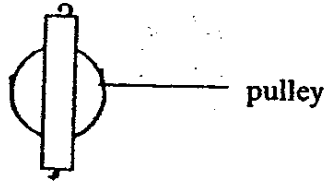
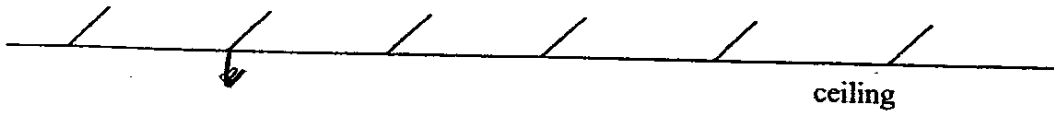


- (a) Shade the parts of the leaf that contain starch in the diagram given below. [1m]



- (b) Explain your answer in (a). [1m]

35. Sammy was given a ball of string and a pulley. Draw in the diagram below to show how Sammy could lift the load with the least effort. [2m]



36. Sean wanted to find out if objects with dark-coloured surfaces or objects with light-coloured surfaces give out more heat over a fixed period of time. He covered two similar tins, A and B with different coloured paper. He put a thermometer in each tin and poured an equal amount of boiling water into each tin. He recorded the temperature of the water in the tins every two minutes.

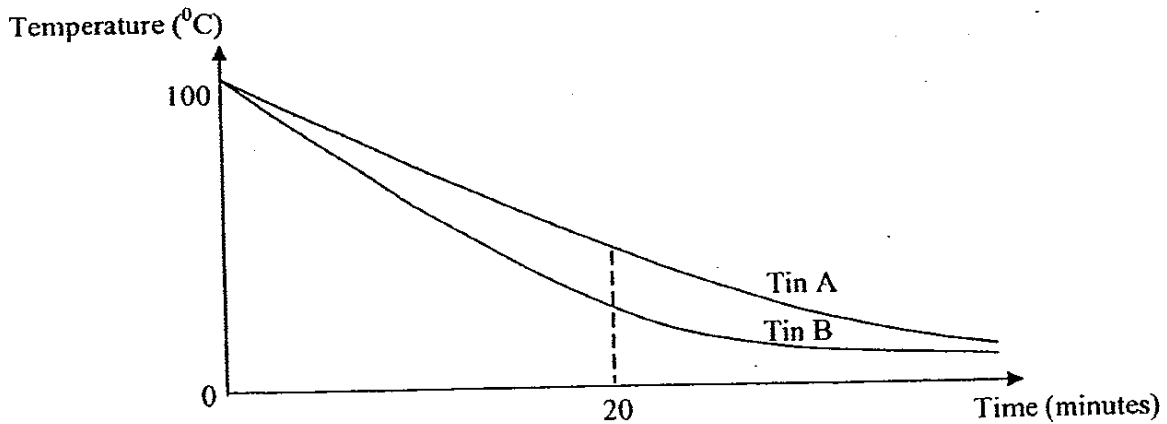


Tin A covered with white paper



Tin B covered with dark blue paper

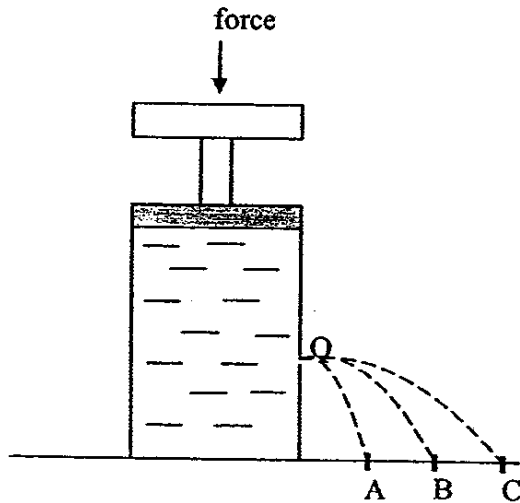
The temperature changes in both tins were recorded in the graph below.



- (a) Which tin, A or B, had a lower temperature after 20 minutes? [1m]

- (b) Explain your answer in (a) [1m]

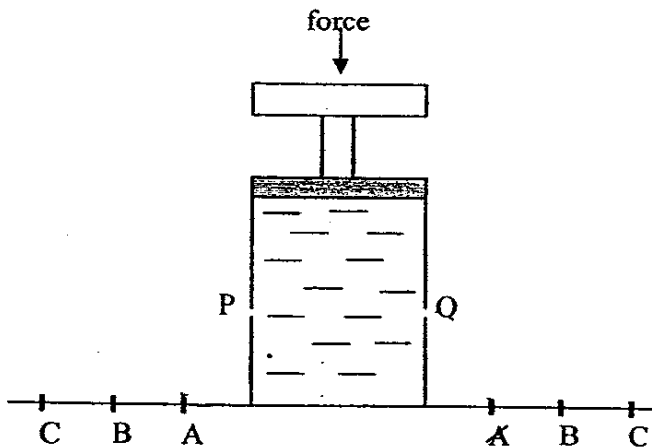
37. The diagram below shows a piston filled with water. It has an opening at point Q. A force is applied at the top of the piston and water squirts out continuously from point Q.



- (a) Complete the table below with the letters, A, B and C to show the position at which the water lands on when a force is applied. [1m]

Force applied (N)	Position at which the water lands on
20	
40	
60	

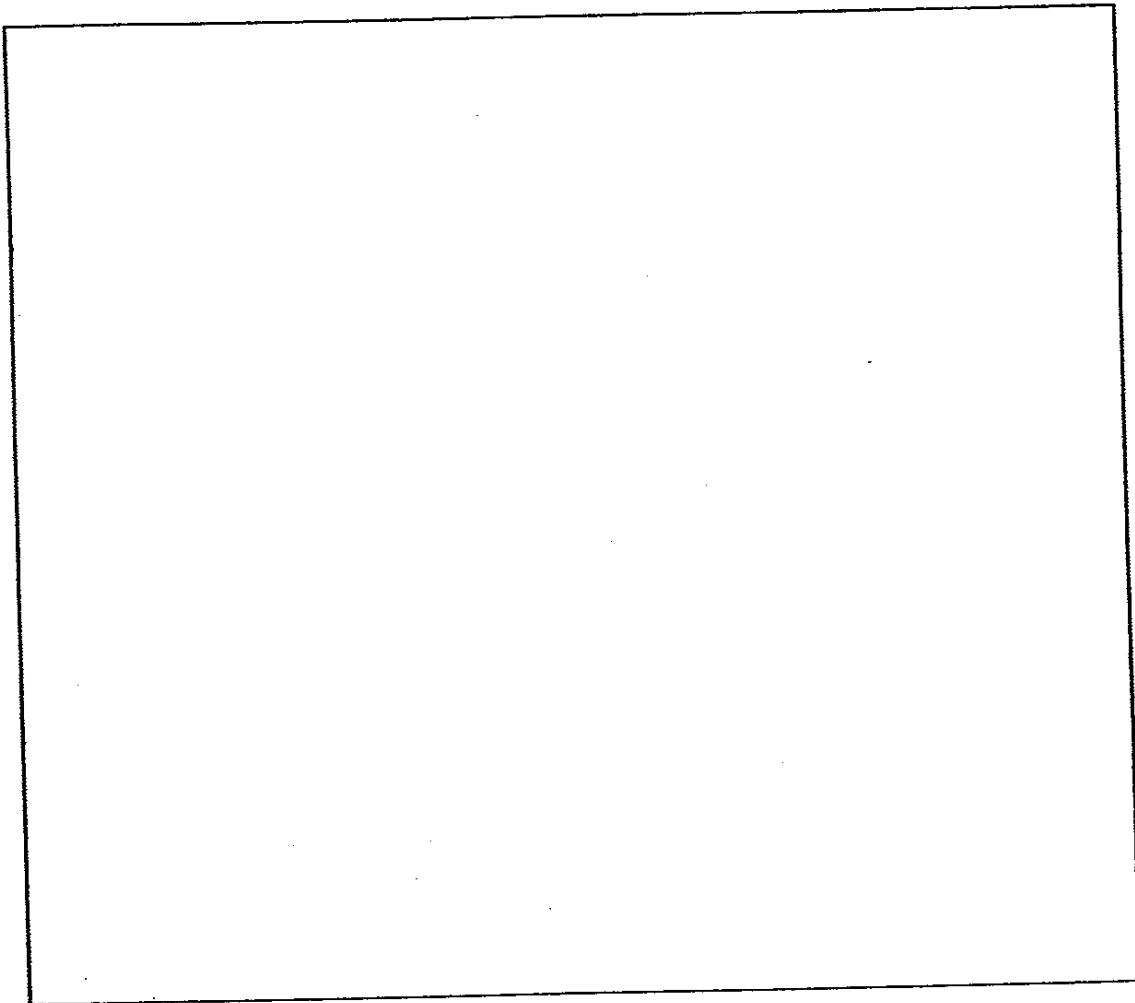
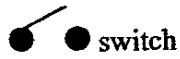
- (b)



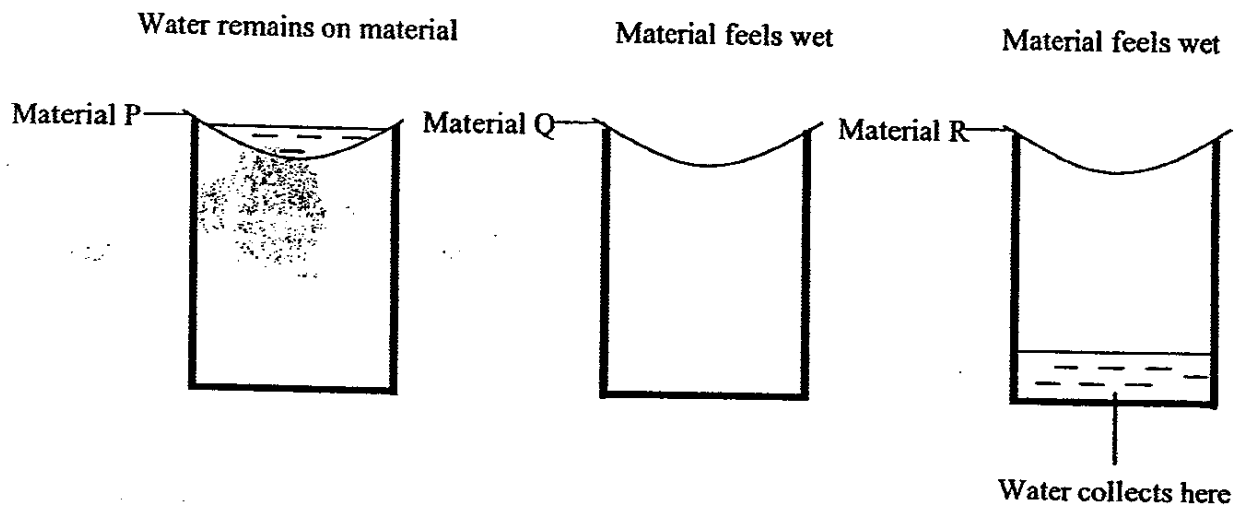
- The experiment is repeated with 2 openings, P and Q. A force of 40N is applied. Predict the position at which the water lands on by drawing on the diagram the paths of the water from the openings P and Q. [2m]

38. You are given two batteries, two bulbs, two switches and some wires. Construct an electrical circuit such that the bulbs will light up **most** brightly and you can control the operation of the two bulbs individually.

Use the following symbols in your drawing of the electrical circuit in the box below. [2m]



39. Lily placed 3 sheets made from different materials over the mouths of 3 beakers as shown in the diagram below. She then poured a tablespoonful of water onto each sheet.



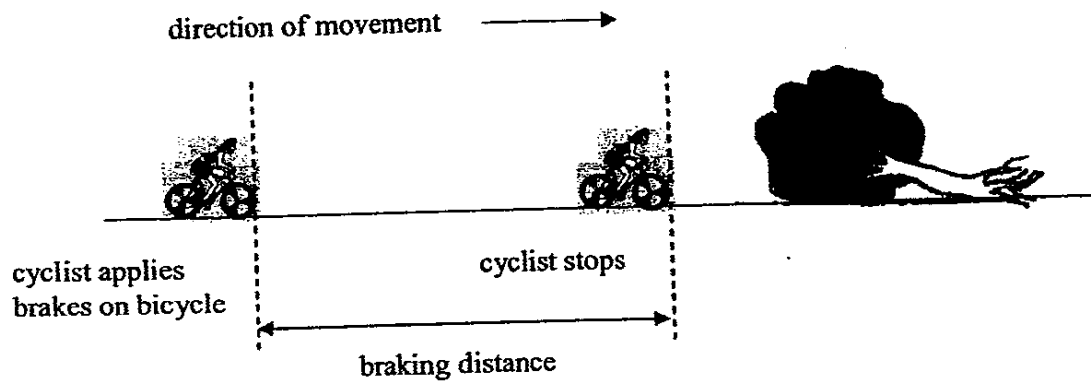
(a) Arrange the 3 materials according to the amount of water each of them can absorb. [1m]

Absorbs least amount of water
 ↓
 Absorbs greatest amount of water

Material

(b) Which material will be the most suitable for making a towel? Explain your answer. [2m]

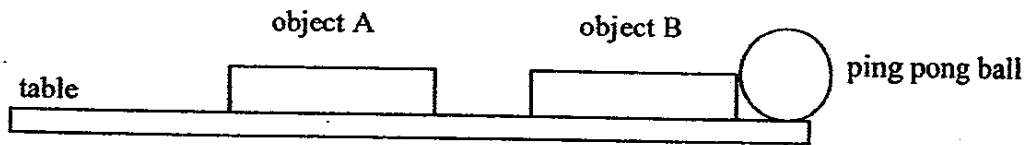
40. A cyclist moving at 7 km/h sees a fallen tree in front of his bicycle. He applies the brakes on his bicycle. There is a distance before he stops. This is called the 'braking distance'. The diagram below shows what happens.



- (a) Would the braking distance be shorter, longer or the same if the cyclist is moving at 10 km/h? [1m]

- (b) Would the braking distance be shorter, longer or the same if the cyclist is moving at 7 km/h on a rainy day? Give a reason for your answer. [1m]

41. In the diagram shown below, when object A was placed nearer to object B without touching it, the ping pong ball was pushed off the table by object B.



- a) What are objects A and B? [1m]

- b) Explain your answer in (a) [1m]

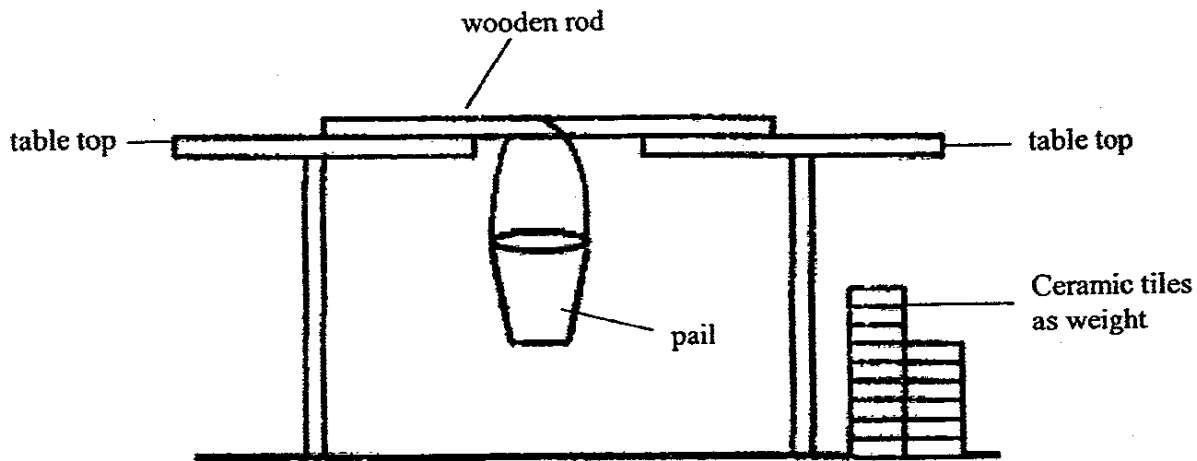
42. Wai Keong carried out an experiment on the rate of evaporation of water. He used four different containers A, B, C and D and placed them in the garden.

Container	A	B	C	D
Volume of water in each container (cm ³)	15	15	15	15
Exposed surface area of water (cm ²)	20	30	35	40
Time taken for water to dry up (min)	30	25	22.5	20

- (a) How long would it take 15 cm³ of water to evaporate from an exposed surface area of 25 cm²? [1m]

- (b) What is the relationship between the exposed surface area and the time taken for the water to dry up? [1m]

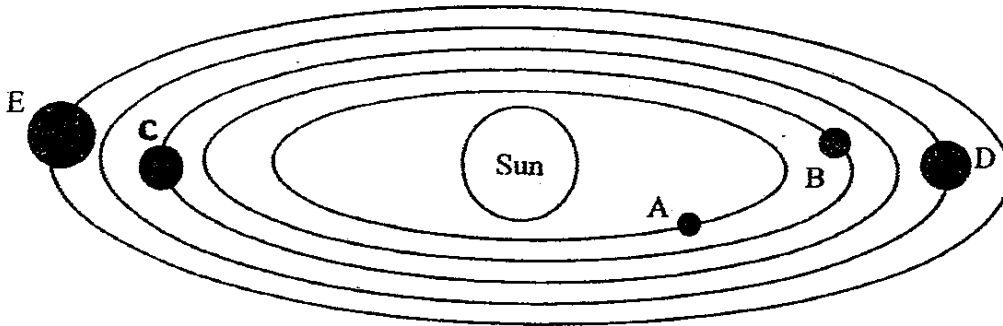
43. Ali was given three wooden rods, P, Q and R which were of the same thickness and length but were made using different types of wood. He was also provided with some ceramic tiles, a pail and two desks of the same height. He set up an experiment as shown below.



Describe the steps he should take to find out which of the three wooden rod is the strongest, using only what he was provided. Number the steps and draw a line after each step.
What is the conclusion? [4m]

Step	Description
Step 1	Set up the experiment as shown above.
Step 2	
Step 3	
Conclusion	

44. The diagram below shows the five planets nearest to the Sun in the solar system.



(a) Name the planet that is labelled B.

[1m]

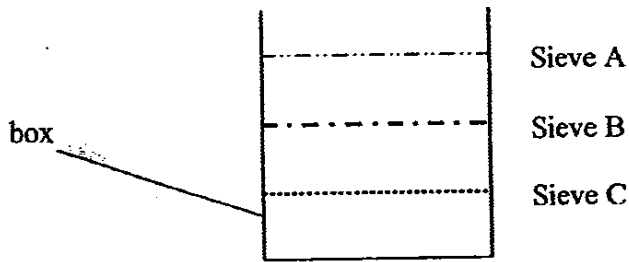
(b) Which of the letters A to E represents the planet on which life forms are found.

[1m]

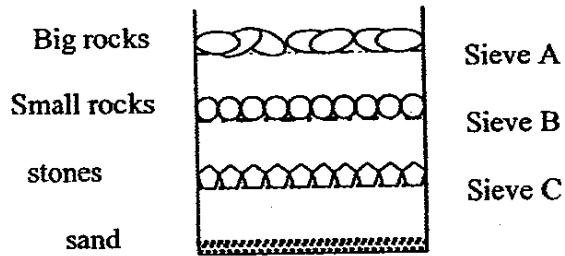
(c) Explain why no life can be found on Planet A?

[1m]

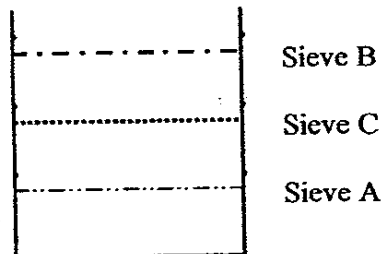
45. Three sieves with holes of different sizes were arranged in a box as shown below.



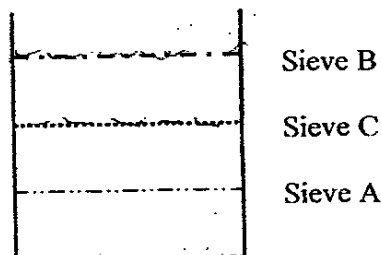
Some rocks were poured onto the top sieve and then shaken. This sorted the rocks according to size as shown in the diagram below.



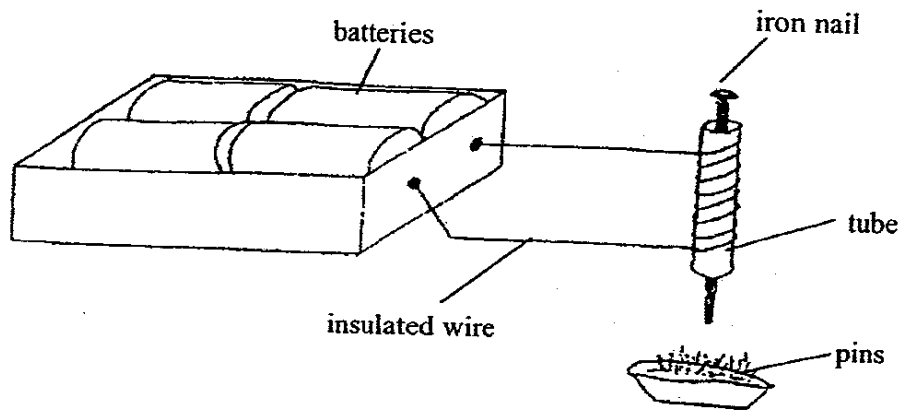
The order of the sieves was then changed as shown below.



The same rocks were poured onto the new sieve arrangement and shaken. Draw and label how the rocks would be sorted in the diagram below. [2m].



46.



James made an electromagnet as shown above. He used a battery pack of four batteries and a thin insulated wire to wind around a tube and an iron nail.

- (a) If James wants to find out if the number of turns of wire will affect the number of pins the iron nail will pick up, what are the variables he must keep the same and what must he change in order to make the experiment a fair one? [2m]

Keep the same: _____

Change: _____

- (b) He recorded the number of turns of wire and the number of pins the iron nail is able to attract in the table below.

No. of turns of wire	8	16	20	25	30
No. of pins attracted	2	4	7	20	25

What can we conclude from the results?

[1m]

END OF PAPER

Tao Nan Primary School
Primary 6 Science SA1 Exams (2006)

(ANSWER KEY)

SECTION A : (60 MARKS)

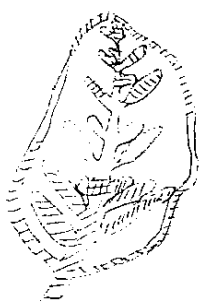
Qn no.	Ans
1	2
2	4
3	4
4	2
5	4
6	4
7	4
8	2
9	3
10	2

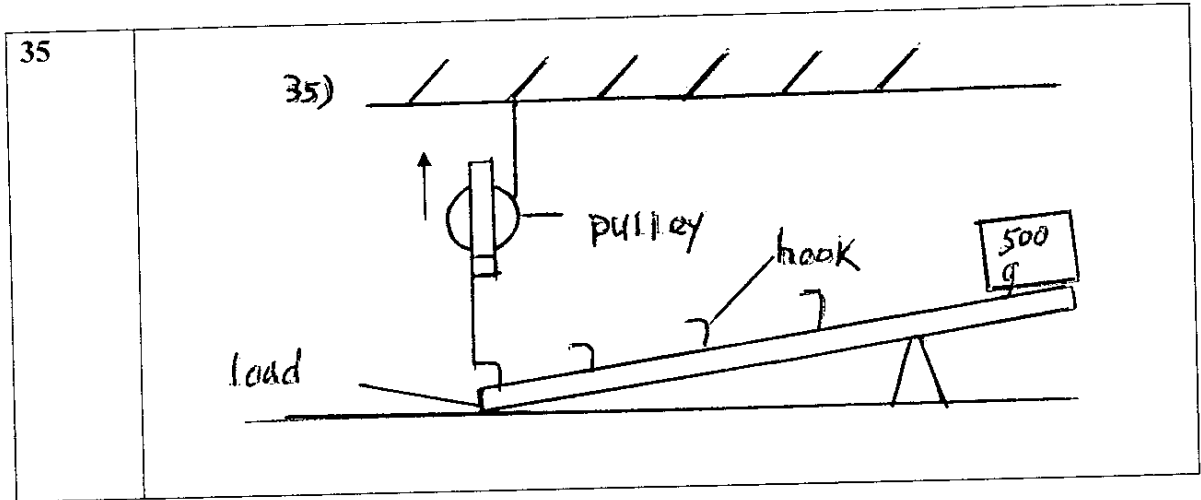
Qn no.	Ans
11	4
12	2
13	2
14	3
15	1
16	3
17	3
18	3
19	2
20	4

Qn no.	Ans
21	2
22	3
23	1
24	3
25	2
26	4
27	3
28	2
29	1
30	1

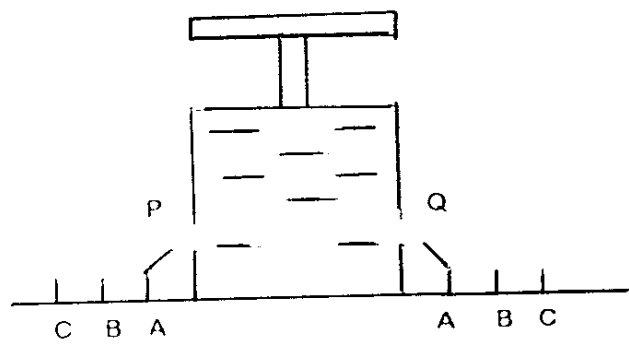
SECTION B (40 MARKS)

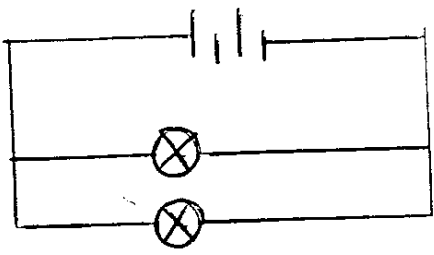
Qn No.	Answers
31	A : whale B: guppy C: penguin D: turtle
32a	P & S
32b	Q & T
32c	R
33a	P : Biceps Q : Triceps Fastener : Hinge joint at the elbow
33b	Rubber band P, Rubber band Q

34a	
34b	<p>The area covered by the black piece of paper does not receive any sunlight. It is not able to produce glucose which is stored as starch, so it has a negative response to the iodine test.</p>



36a	Tin B
36b	The water in Tin B lost more heat than Tin A over a period of time

37a	20 : A 40 : B 40 : C
37b	

Qn No.	Answers
38a	<p>38)</p> 

39a	P, R, Q
39b	Material Q : It absorbs the greatest amount of water.

40a	Longer
40b	Longer. There is now less friction between the wheels and the road.

41a	They are magnets.
41b	They repelled each other and only magnets can do that.

42a	27.5 minutes
42b	The greater the exposed surface area, the lesser the time taken for the water to dry up.

43	Step 1 : Put the ceramic tiles one at a time into the pail until the piece of wood breaks.
	Step 2 : Count and record the number of tiles needed to break the piece of wood.
	Step 3 : Repeat Step 1 and Step 2 that requires the largest number of tiles to break it is the strongest.

44a	Venus
44b	C
44c	It is too hot as is too near the sun.

Qn No.	Answers
45a	<div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: left;"> <p>Big rock</p> <p>Small rock</p> <p>stones</p> <p>sand</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> </div> <div style="text-align: right;"> <p>Sieve B</p> <p>Sieve C</p> <p>Sieve A</p> </div> </div>

46a	Keep the same : The number of batteries, the distance between the iron nail and the pin, the type of nail.
	Change : The number of turns of wire.
46b	The greater the number of turns of wire, the greater the number of pins attracted.