Maha Bodhi School
2008 Preliminary Examination
Science

Name : _____ ( ) Date : 21 August 2008

Class : P 6 (_____)

Duration : 1 h 45 min (Parts I & II)

Part I: (60 marks)

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 Mark Sheet (OMS).

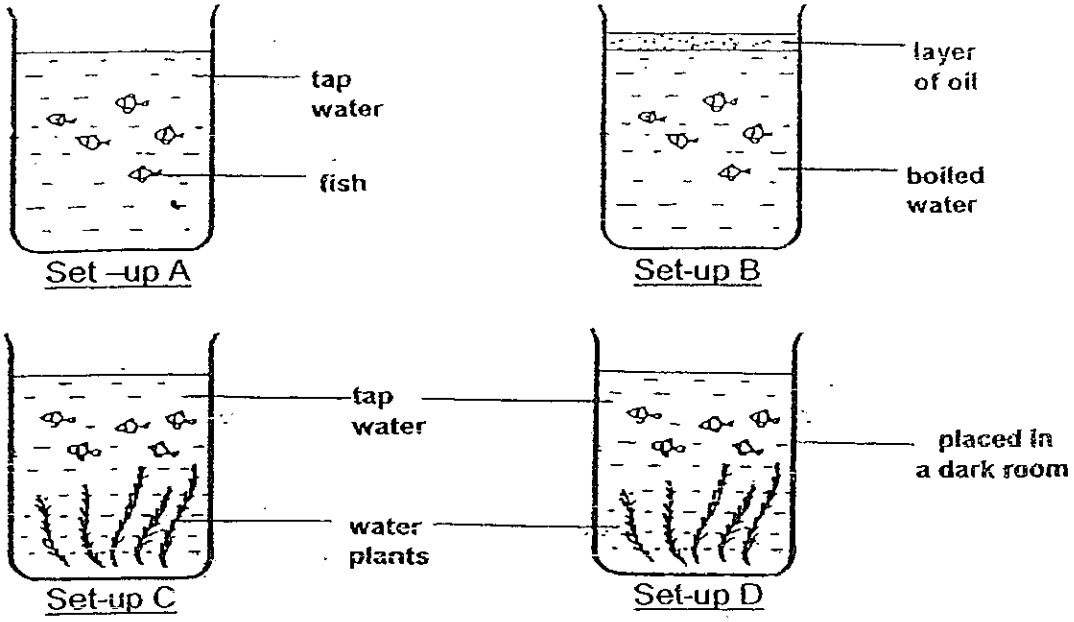
1. Study the classification table below.

Group A	Group B	Group C	Group D
Shrimp	Tubifex worm	Seal	Water spider
Tadpole	Flatworm	Dugong	Water scorpion

State how the animals above are grouped and identify one animal that is grouped **incorrectly**?

	Animals are grouped according to their	Animal that is grouped incorrectly
(1)	adaptations for movement	Dugong
(2)	adaptations for movement	~~Frog~~ Tadpole
(3)	method of breathing	Shrimp
(4)	method of breathing	Water scorpion

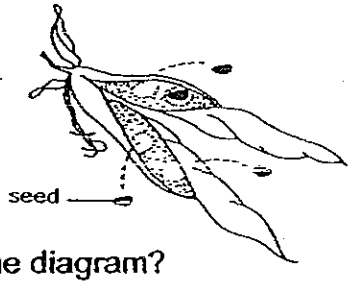
2. Jolyn carried out an investigation as shown in the diagrams below.
Set-ups A, B and C were placed in a well-lit room. Set-up D was kept in a dark room.



In which set-up would the fish survive the **longest**?

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

3. The diagram below shows the fruit of a plant.



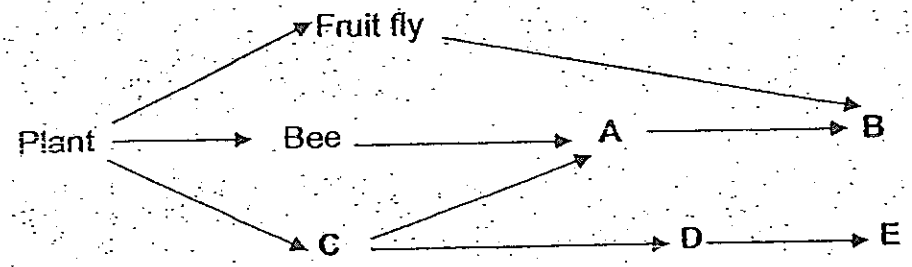
What can we infer from the diagram?

A: The plant is a climber.
B: The seeds are inedible.
C: The plant has flowers.
D: The seeds are dispersed by splitting action.

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

152

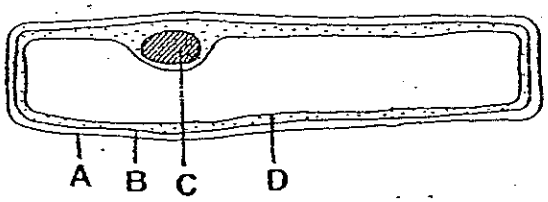
4. Study the food web below.



Which one of the following can be used to complete the food web?

	A	B	C	D	E
(1)	Snail	Lizard	Aphid	Ladybird	Sparrow
(2)	Spider	Lizard	Caterpillar	Sparrow	Snake
(3)	Lizard	Sparrow	Butterfly	Millipede	Snake
(4)	Ladybird	Spider	Praying mantis	Lizard	Sparrow

5. The diagram below shows a plant cell.



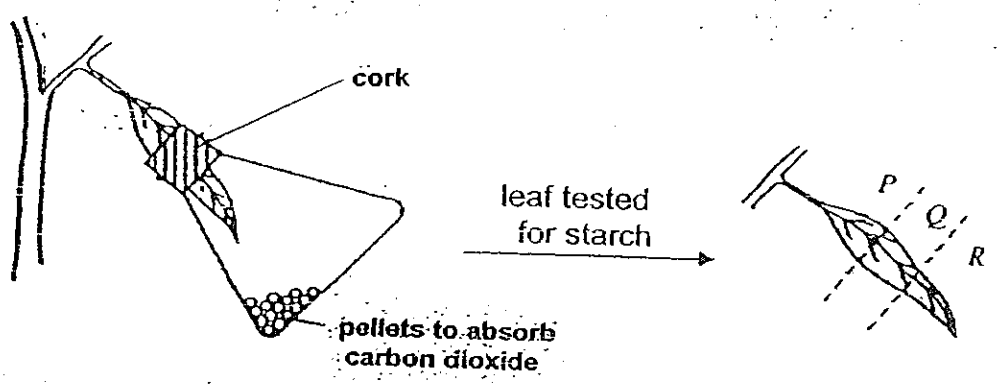
Which one of the structures controls substances that go in and out of the cell?

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

6. Which of the following structures are found in animal cells?

(1) cell wall, cell membrane, nucleus
(2) cytoplasm, nucleus, chloroplast
(3) cell membrane, nucleus, cytoplasm
(4) cell membrane, large vacuole, cytoplasm

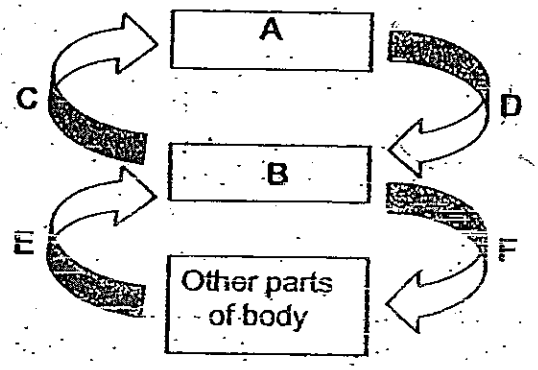
7. Shao Tian carried out an experiment to investigate photosynthesis. He left the set-up in a well-lit room for 10 hours. Then he tested the leaf for starch using iodine solution.



What would be the colours for parts **P**, **Q** and **R**?

	P	Q	R
(1)	blue/black	brown	brown
(2)	blue/black	blue/black	brown
(3)	brown	blue/black	blue/black
(4)	blue/black	brown	blue/black

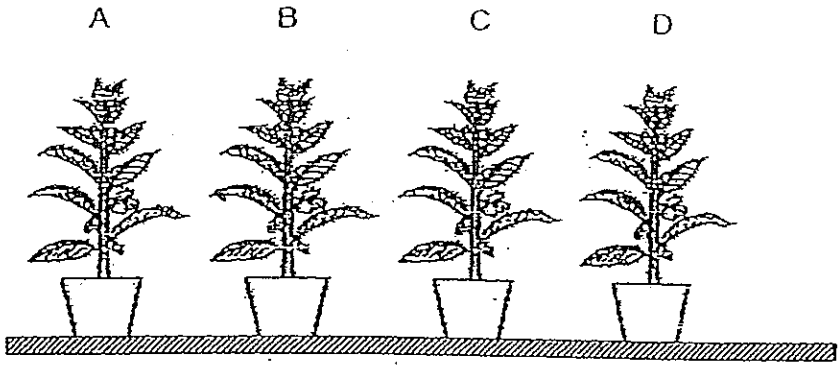
8. The diagram below is a representation of the circulatory system in Man. The arrows represent the blood vessels and the boxes represent the organs in the body.



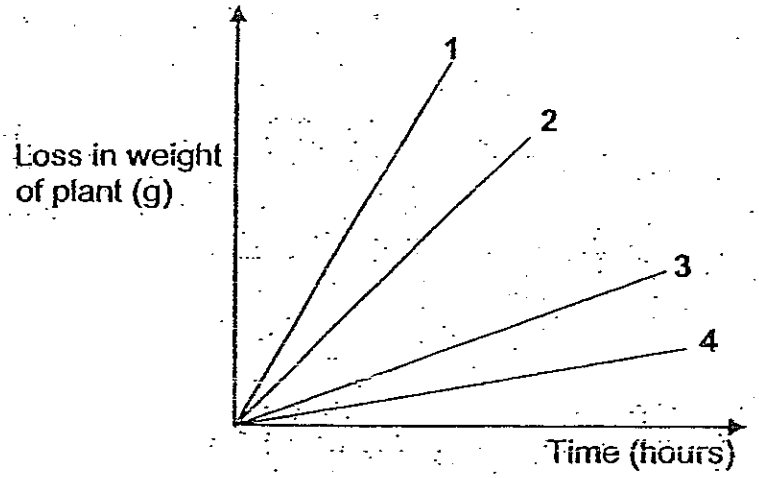
Which one of the following **correctly** represents the organs, A and B, and the type of blood carried by the blood vessels at D and F?

	A	B	D	F
(1)	Lungs	Heart	Deoxygenated	Oxygenated
(2)	Lungs	Heart	Oxygenated	Oxygenated
(3)	Heart	Lungs	Oxygenated	Deoxygenated
(4)	Heart	Lungs	Deoxygenated	Deoxygenated

9. Ruther selected 4 similar leafy plants and applied vaseline onto different parts of the plant. Vaseline coats the leaf and prevents water loss from the leaf surface. He recorded the weight of each plant at the beginning of the experiment.



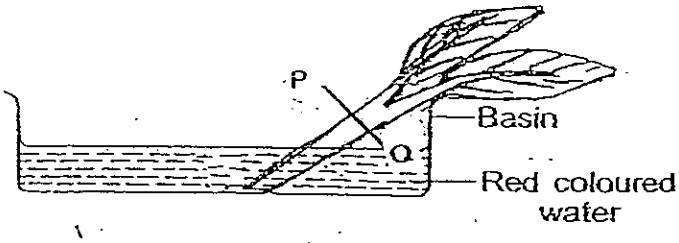
Plant	Parts of leaves with vaseline
A	Upper leaf surfaces covered with waterproof vaseline
B	Lower leaf surfaces covered with waterproof vaseline
C	Lower and upper leaf surfaces covered with waterproof vaseline
D	Vaseline was not applied to the leaves



He measured the weight loss for each plant every 2 hours and plotted the results in the graph above.
Which graphs would show the results for plant **A** and plant **D**?

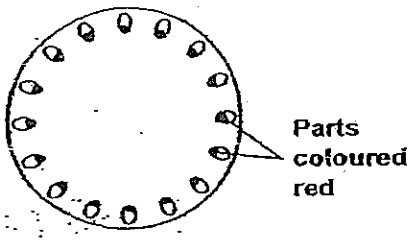
	Plant A	Plant D
(1)	2	1
(2)	3	2
(3)	4	3
(4)	1	4

10. Aloysius placed a stalk from a plant in red coloured water. He removed the stalk 12 hours later and cut it across at PQ as shown in the diagram below.

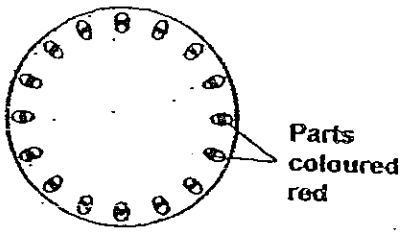


He observed the parts of the stalk that were stained red.
Which one of the following diagrams below shows what he observed?

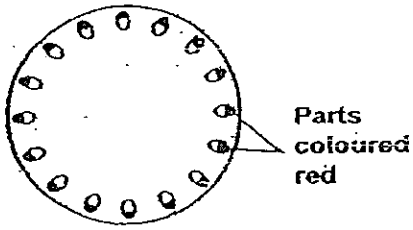
(1)



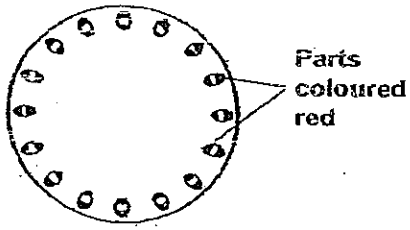
(2)



(3)



(4)



11.

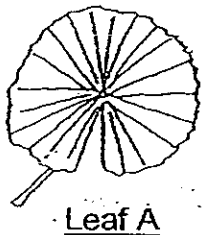
	Development of a Flowering Plant
A	Fertilisation of the ovules
B	Pollination by wind
C	Germination of seeds
D	Dispersal of fruits and seeds
E	Formation of fruits and seeds

Which one of the following shows the **correct** order for the development of a flowering plant?

	Order for Development of a Flowering Plant				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
(1)	A	D	B	C	E
(2)	C	A	E	D	B
(3)	E	D	A	B	C
(4)	B	A	E	D	C

156

12. The diagram below shows leaf A.

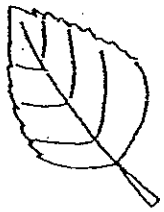


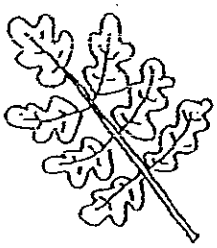
Leaf A

Which one of the following is **most** similar to leaf A?

(1) 

(2) 

(3) 

(4) 

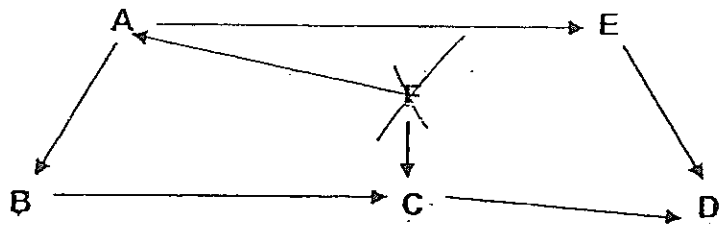
13. The table below shows the observations made by Wai Pan in 2 habitats, A and B.

Habitat A	Habitat B
The habitat is dark, warm and humid.	Frogs, dragonflies and water measurers are seen.
Spiders are feeding on millipedes.	Duckweeds and lotus are found.

What could habitats A and B be?

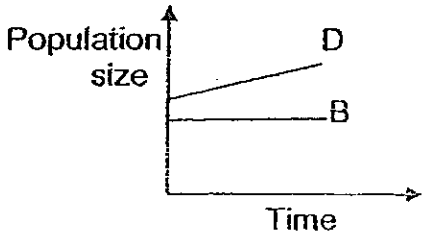
	Habitat A	Habitat B
(1)	Field	Mangrove swamp
(2)	Rotting log	Pond
(3)	Single plant	Ocean
(4)	Garden	Seashore

14. Study the food web below carefully.

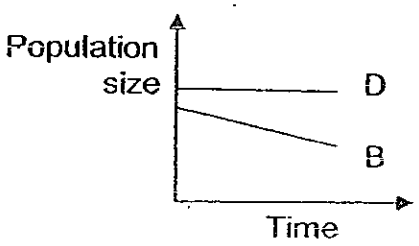


Which one of the following graphs shows **correctly** what will happen to the populations of Organisms **B** and **D** if all of Organism **F** are wiped out?

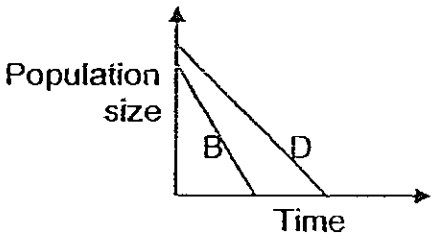
(1)



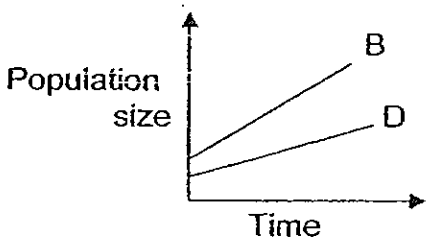
(2)



(3)



(4)

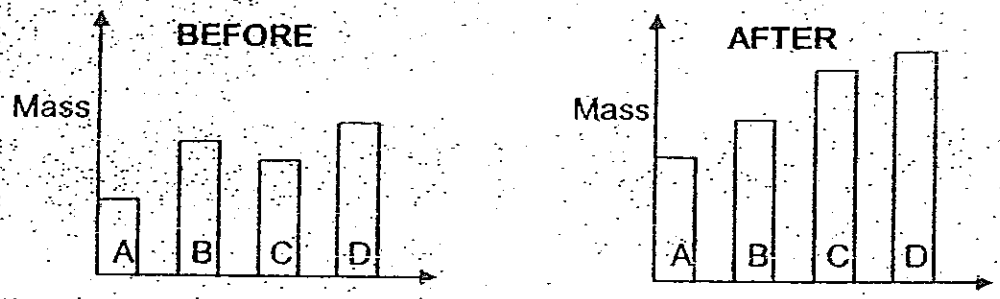


15. Which of the following processes take place in **both** plants and animals?

A: Perspiration
B: Transpiration
C: Respiration
D: Reproduction

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

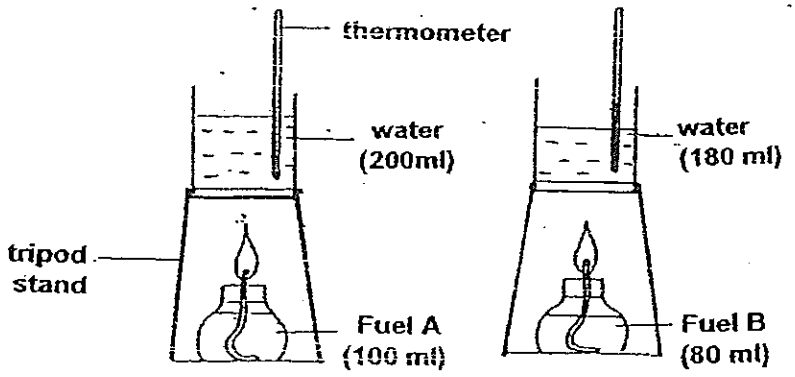
16. The graphs below show the mass of 4 balloons, A, B, C and D, before and after air has been pumped into them.



Which one of the following shows the balloons arranged **correctly** in order of increasing mass of air that has been pumped in?

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

17. Sophia conducted an experiment to find out which liquid fuel, A or B, produces more heat when burnt. The diagrams below show the set-ups for her experiment.



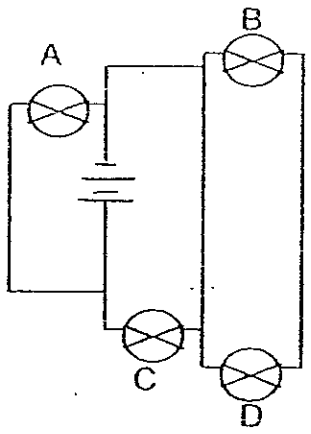
Nicole said that it was not a fair test.
What variables should Sophia keep the same to make it a fair test?

A: Type of fuel
B: Volume of fuel
C: Volume of water

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

159

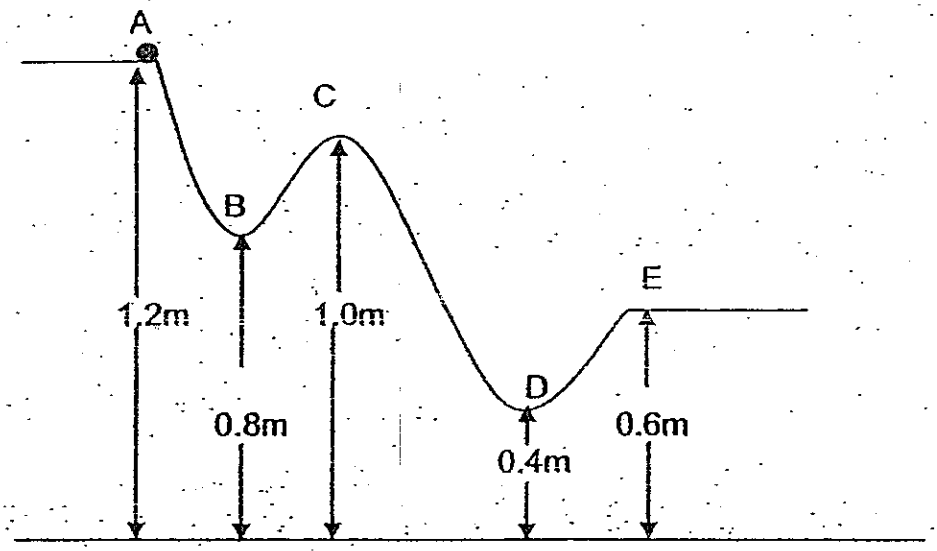
18. Study the circuit below.
Only one bulb lighted up because of a defective bulb in the circuit.



Which bulb was defective?

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

19. A metal ball rolls from rest at Point A down the track to Point E as shown below.

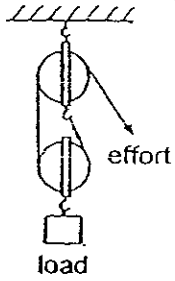


At which point along the track will the metal ball have the **most** kinetic energy?

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

160

20. Which one of the following statements about the pulley system below is **true**?

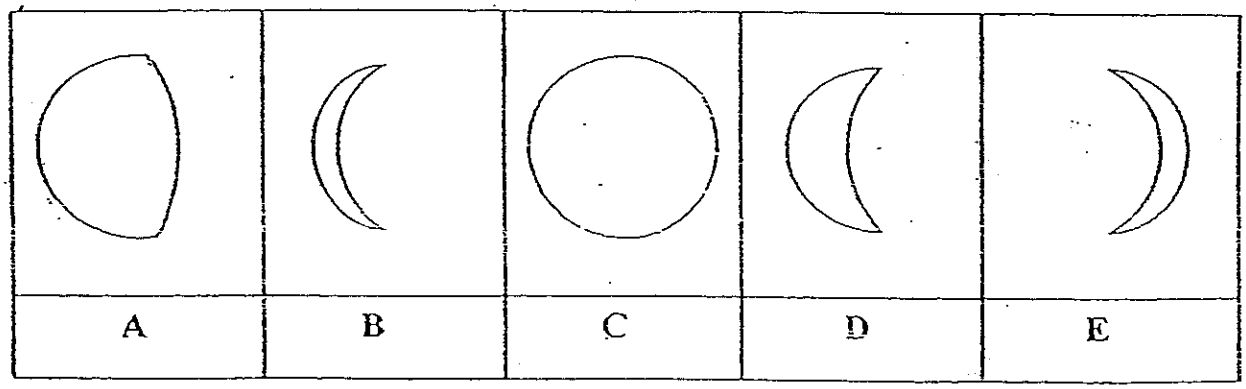


(1) The effort required is more than the load.
(2) The effort and the load move in opposite directions.
(3) The load moves a greater distance than the effort.
(4) The fixed pulley does not change the direction of the effort.

21. Which of the following statements about mass is **true**?

(1) Mass is not a force.
(2) Objects with the same shape have the same mass.
(3) Objects with the same mass have the same volume.
(4) The mass of an object is different at different places.

22. The diagrams below show the phases of the Moon in a month. They are not in the correct order.

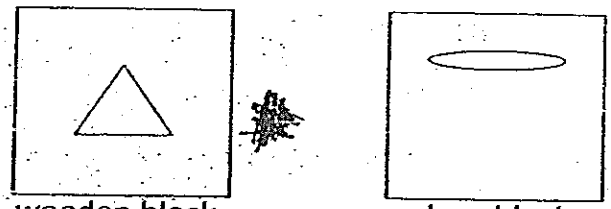


Which one of the following shows the phases of the Moon in the **correct** order?

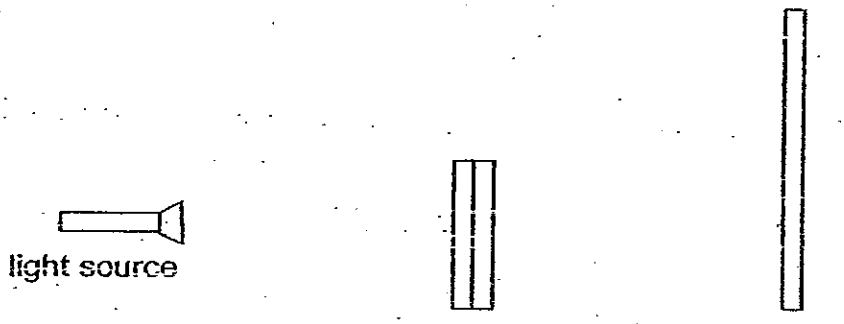
(1) C, A, D, B, E
(2) E, D, A, C, B
(3) A, D, B, C, E
(4) B, D, A, E, C

(6)

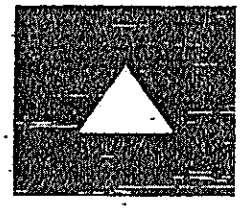
23. A wooden block and a glass block have shapes cut out from them as shown below.

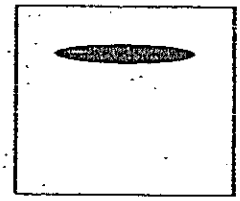


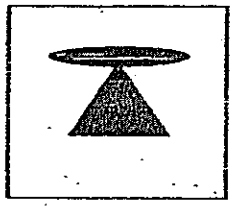
The blocks are then placed in line with each other and glued together. A light source is brought near the glued blocks.

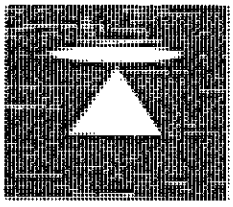


Which one of the following is most likely to be the shadow formed on the screen?

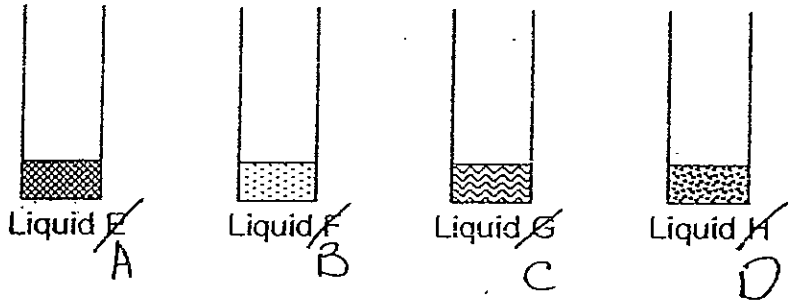
(1) 

(2) 

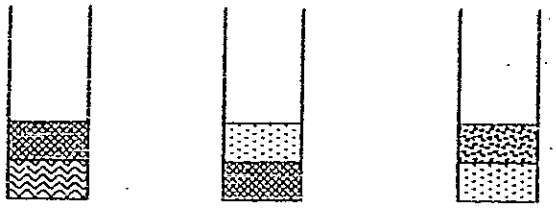
(3) 

(4) 

24. Javier conducted an experiment with 4 different liquids, A, B, C and D. The liquids do not mix but form separate layers when poured into a container.

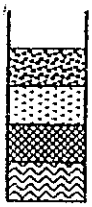


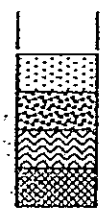
He combined 2 liquids at a time in each container and made the following observations.

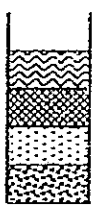


Based on Javier's observations above, which one of the following diagrams below shows what might happen when all 4 liquids are combined in a container?

(1) 

(2) 

(3) 

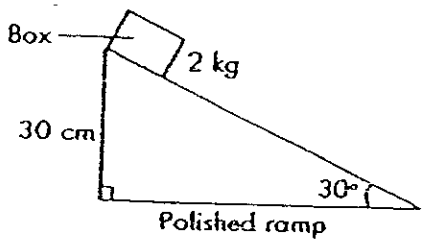
(4) 

25. Which of the following statements about evaporation of water are **true**?

A: Water evaporates at a fixed temperature.
B: Cold water evaporates slower than warm water
C: Rate of evaporation of water is affected by exposed surface area.
D: Rate of evaporation of water is not affected by environmental factors.

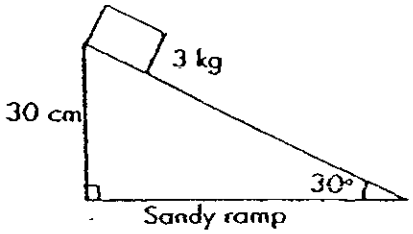
(1) A and B only
(2) B and C only
(3) A, C and D only
(4) A, B, C and D

26. Mei Ting wants to find out if the surface of a slope affects how fast an object moves. She uses a ramp with a polished surface as shown in the diagram below.

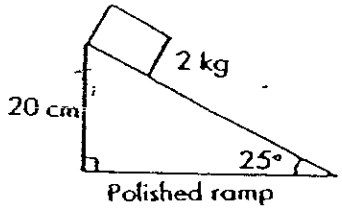


Which one of the following set-ups should Mei Ting use to make her experiment a fair test?

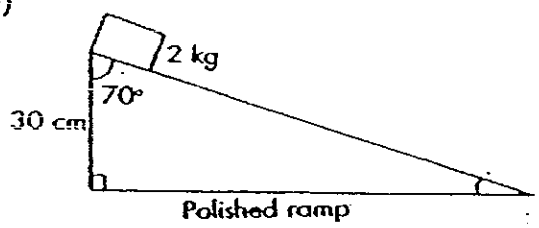
(1)



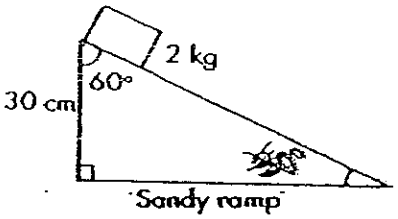
(2)



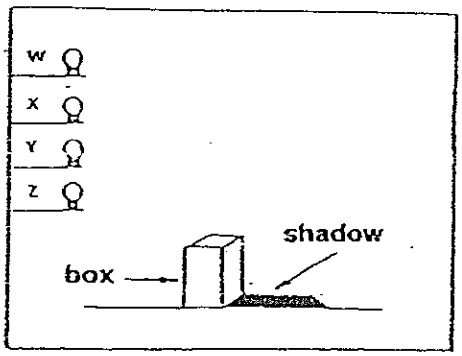
(3)



(4)



27.

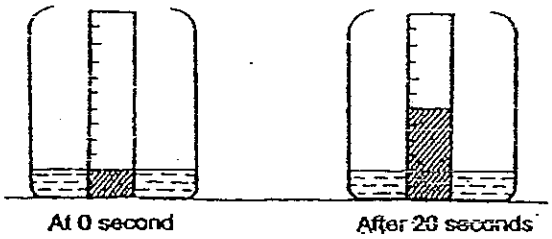


Which bulb when lighted is likely to cast a shadow in the set-up shown in the diagram above?

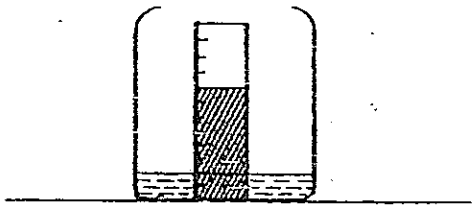
(1) W
(2) X
(3) Y
(4) Z

164

28. The diagram below shows how much water a strip of paper could soak up in 20 seconds.

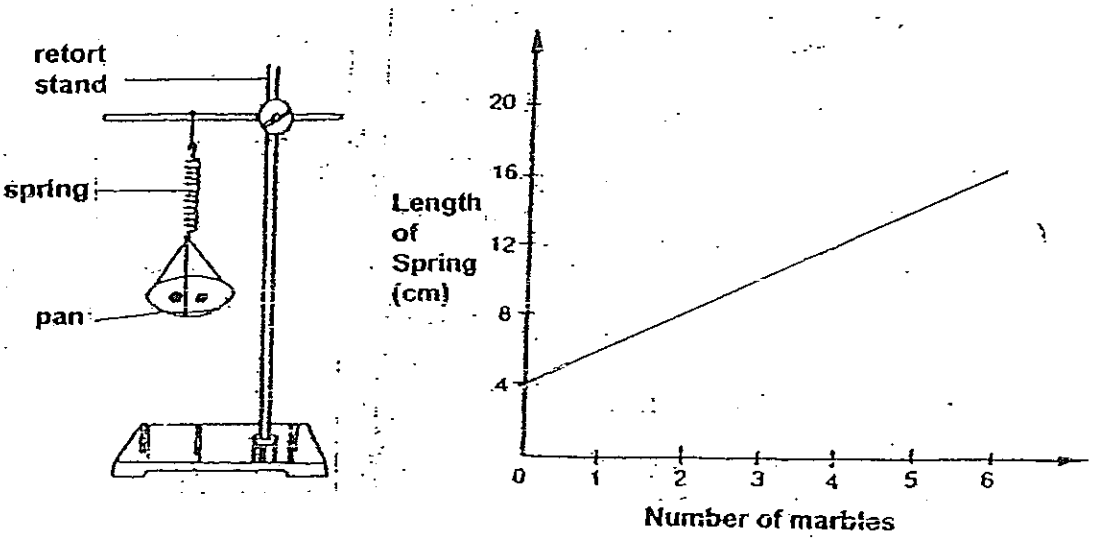


If the strip of paper soaks up water at the same speed, how long would it take to soak up water to the level shown below?



(1) 15 seconds
(2) 25 seconds
(3) 30 seconds
(4) 35 seconds

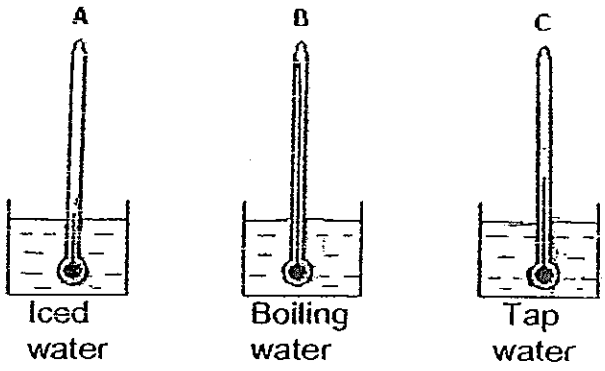
29. Jiong Hao measured the length of a spring each time he put some marbles in a pan. He plotted the graph below to show his results.



What is the **extension** of the spring when he put 4 marbles in the pan?

(1) 8 cm
(2) 10 cm
(3) 12 cm
(4) 14 cm

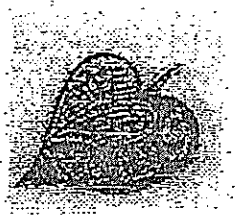
30. The diagrams below show a home-made thermometer that is not calibrated (i.e. without the temperature scale) in a beaker of water of different temperatures.



What is the likely temperature of water in beaker C?

(1) 0°C
(2) 20°C
(3) 75°C
(4) 100°C

END OF PART 1



Maha Bodhi School

2008 Preliminary Examination

Science

Name : _____( )

Class : P 6 (_____)

Duration : 1 h 45 min (Parts I & II)

Date : 21 August 2008

Parent's Signature : _____

Part I (60 marks)	
Part II (40 marks)	
Total (100 marks)	

Part II: (40 marks)

Write your answers to questions 31 to 46 in this script.

31. When plants and animals die, they become food for decomposers.

The equation below shows what happens when decomposers feed on dead matter.

Dead plants and animals → (Decomposers) → P + Carbon dioxide

(a) What could P be?

_____

[1]

(b) Based on the equation above, are earthworms and maggots decomposers? Explain your answer.

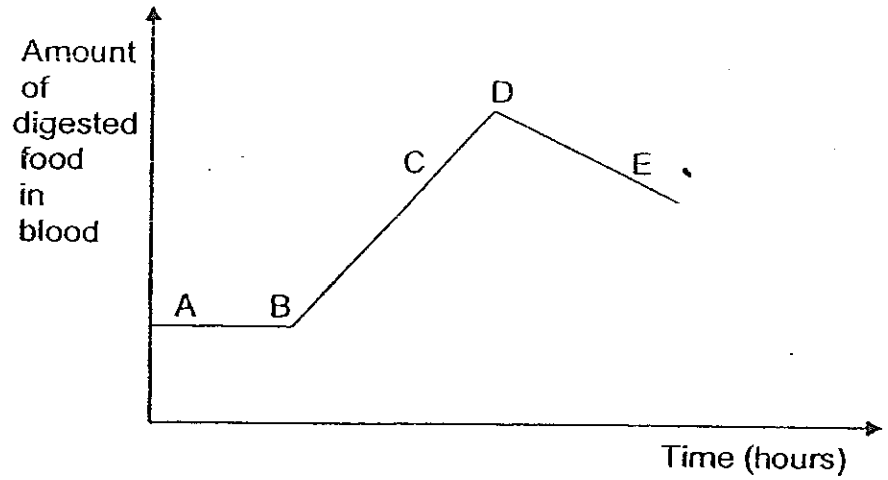
_____

_____

[1]

2

32. Debbie recorded the amount of digested food in the blood after a meal in the graph below.



(a) Which part of the graph shows when the digested food is first absorbed?

_____

[½]

(b) In which part of the digestive system is the food absorbed?

_____

[½]

(c) Why did the amount of digested food in the blood drop at part D?

_____

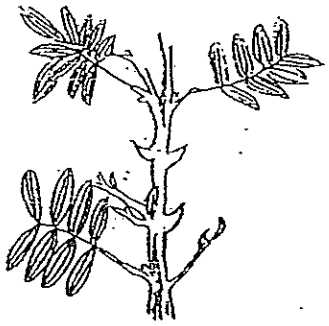
_____

[1]

2

33. The diagram below shows 2 plants.

Plant X



Plant Y

(a) Based on the diagrams above only, state 2 differences between Plant X and Plant Y

Plant X	Plant Y
1.	
2.	

[1]

(b) Name the adaptive feature in Plant X.

_____

[½]

(c) Describe how the adaptive feature named in (b) helps the plant to survive in its habitat.

_____

_____

[½]

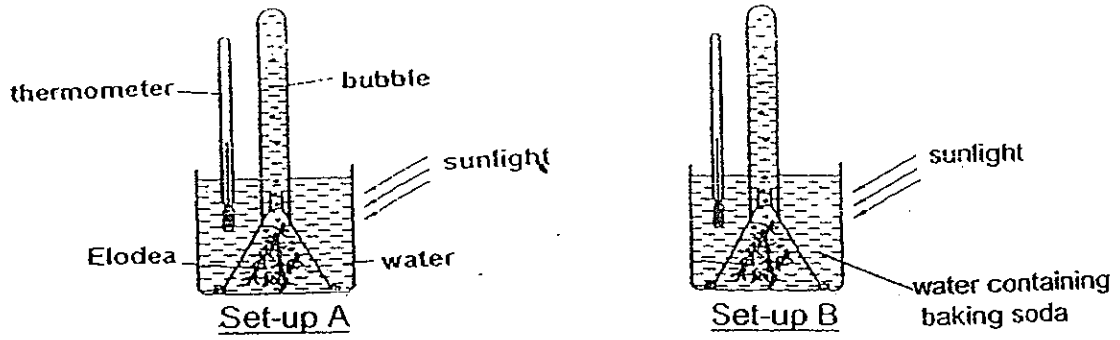
(d) Aquatic plants like Cabomba have air spaces in their leaves and stems. How do the air spaces help the plant survive in its habitat?

_____

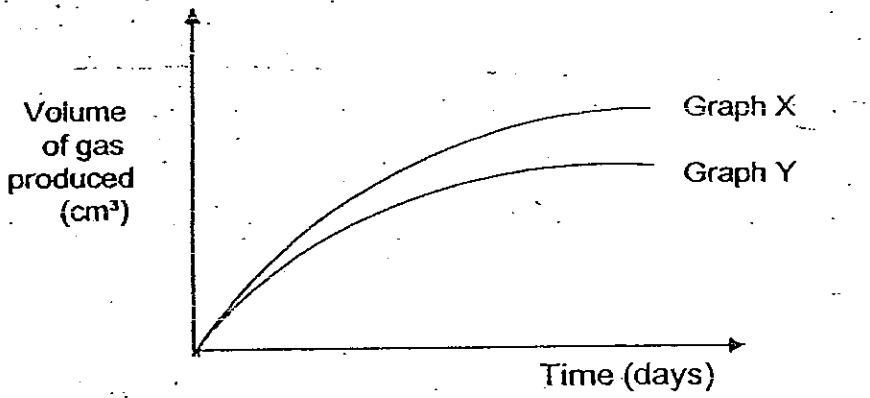
[1]

3

34. Yenlink used the same amount of an aquatic plant, Elodea, in both set-ups A and B. She added some baking soda to the water in set-up B to increase the amount of carbon dioxide in the water. Then she placed both set-ups under sunlight. The diagrams below show the set-ups at the beginning of the experiment.



She recorded the volume of gas collected in each of the inverted test tube everyday for 5 days. Then she plotted the graph below to show the results of her experiment.



(a) What is the gas collected in the test tubes?

_____ [½]

(b) Which graph represents the set-up containing baking soda?

_____ [1]

(c) Give a reason for your answer in (b).

_____

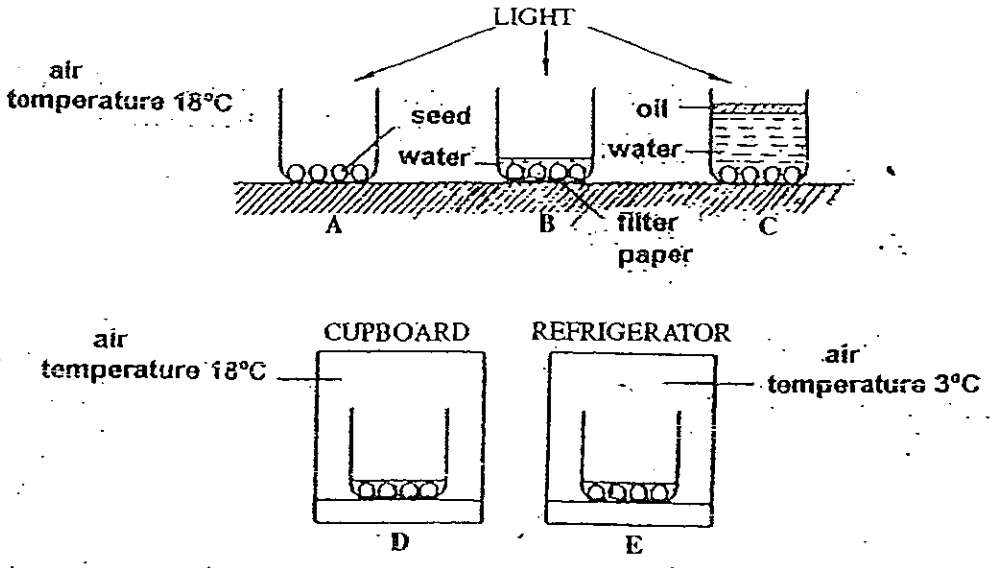
_____ [1]

2½

20

35. Hui Ting set up an experiment to investigate the conditions necessary for germination.

The diagrams A to E below show the different conditions for each set-up.



(a) In which set-up(s) would germination occur?

_____

[1]

(b) Huiting concluded that light is an important factor for germination because the seeds in Beaker E did not germinate.
Did she make the correct conclusion?

_____

[½]

(c) Which beaker in the experiment could be used to support your answer in (b)?
Give a reason for your answer.

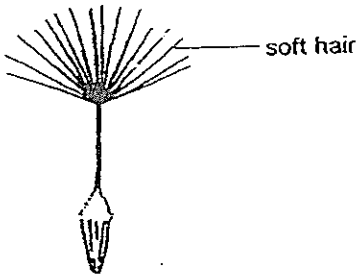
_____

_____

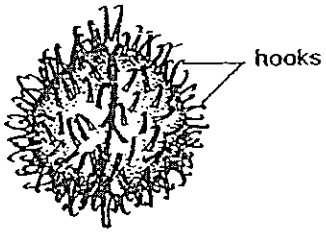
[1½]

3

36. The diagrams below show the fruits of 2 plants.



Fruit A



Fruit B

(a) How is each fruit dispersed?

Fruit A: _____

Fruit B: _____

[1]

(b) Explain how the characteristic of each fruit help in its dispersal.

_____

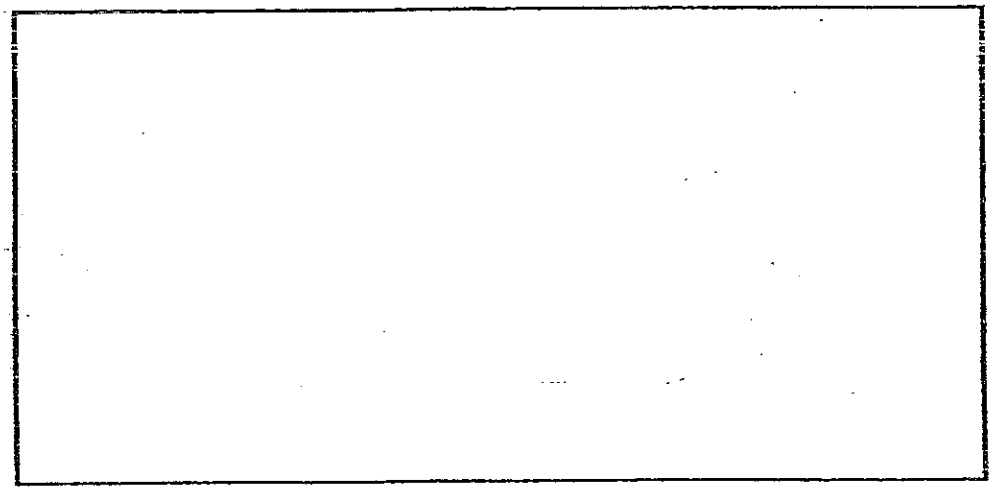
_____

[1]

37. Organisms A, B, C, D and E are found in a habitat.

Organism A is a producer.
Organisms B and E are herbivores.
Organism C eats B, D and E.
Organism D is an omnivore and is both a prey and a predator.

Use the above information to construct a food web in the space below. [2]



4

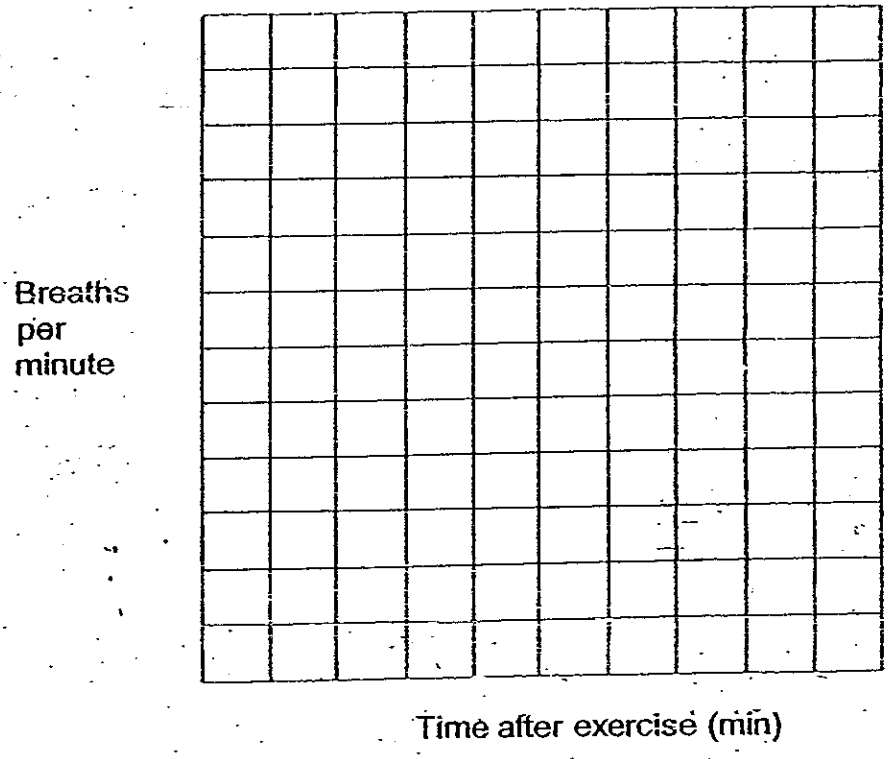
38. Wei Tiong and Jerry carried out an experiment to investigate the effect of exercise on their breathing rate.

They measured their breathing rate before the exercise. Then they ran for 30 minutes. They measured their breathing rate immediately after the run and again every two-minute for 10 minutes.

They recorded their breathing rates before and after the exercise in the table below.

Student		Before exercise	Number of minutes after exercise					
			0	2	4	6	8	10
Wei Tiong	**Breaths/min**	14	44	38	32	26	18	14
Jerry	**Breaths/min**	12	38	30	22	14	12	12

(a) Plot and draw a graph each for Wei Tiong and Jerry to show how their breathing rates change after the exercise. Label the graphs. [2]



(b) Which of the boys,Wei Tiong or Jerry, made a quicker recovery from the exercise? Give a reason for your answer.

_____

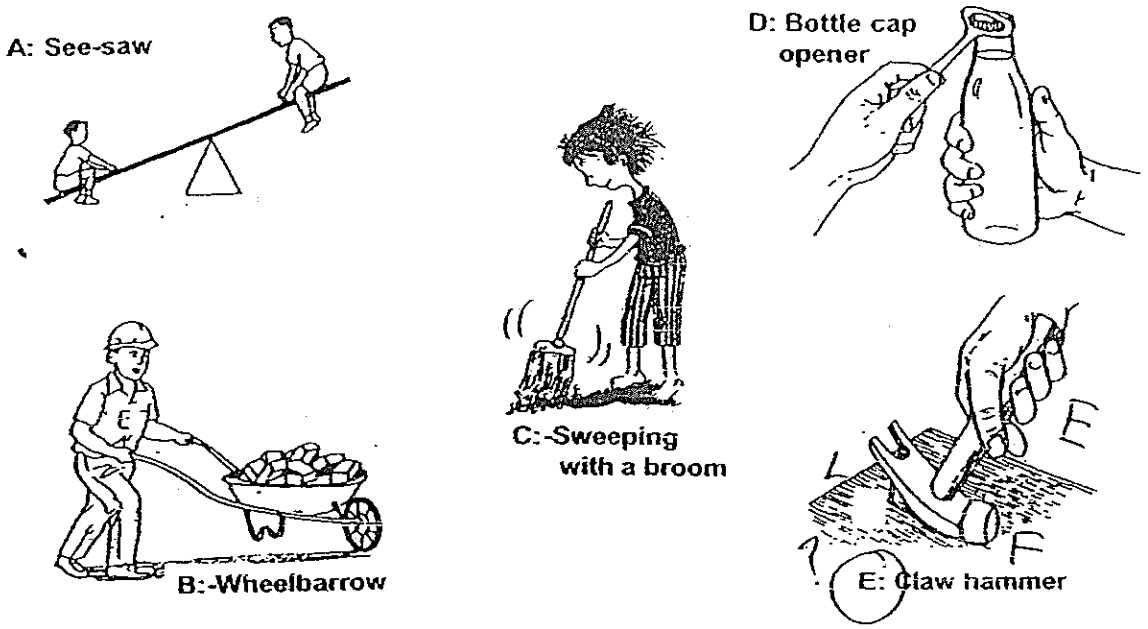
_____

[1]

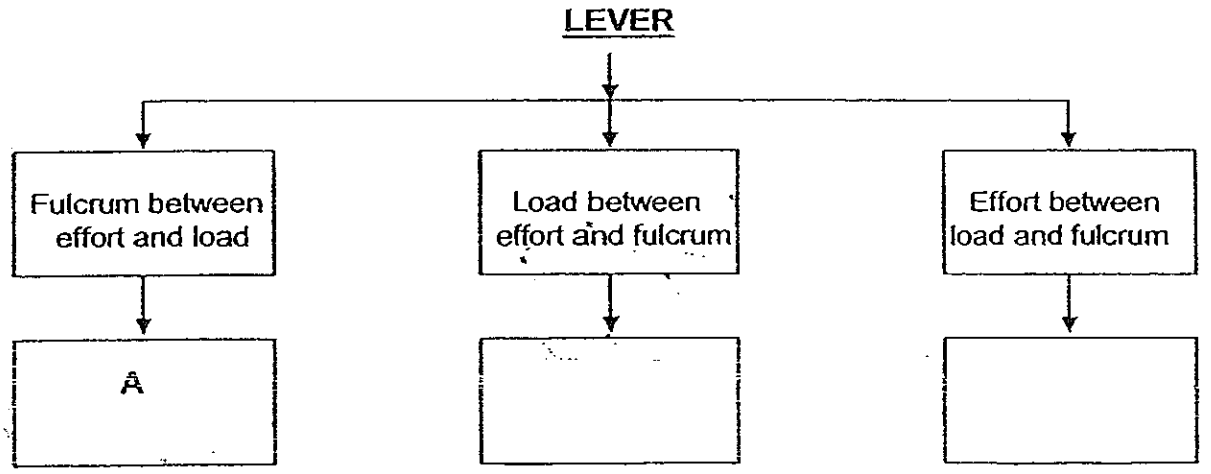
3

73

39. The diagrams A to E below show some examples of levers.



(a) Use the chart below to classify levers A to E according to the position of the load, effort and fulcrum.
One example, **A**, has been done for you.



[2]

(b) How does using a broom to sweep the floor help us to do work faster?

_____

_____

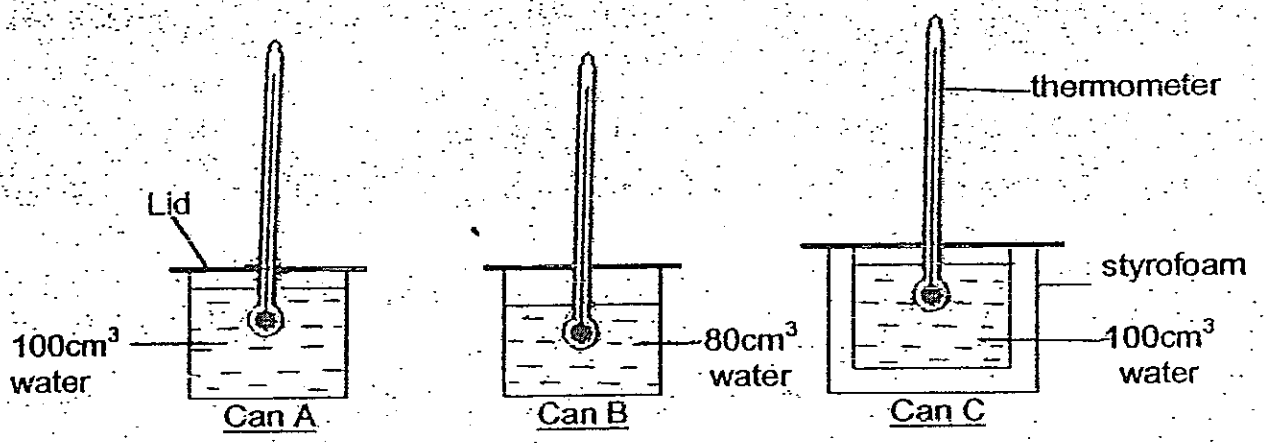
[1]

3

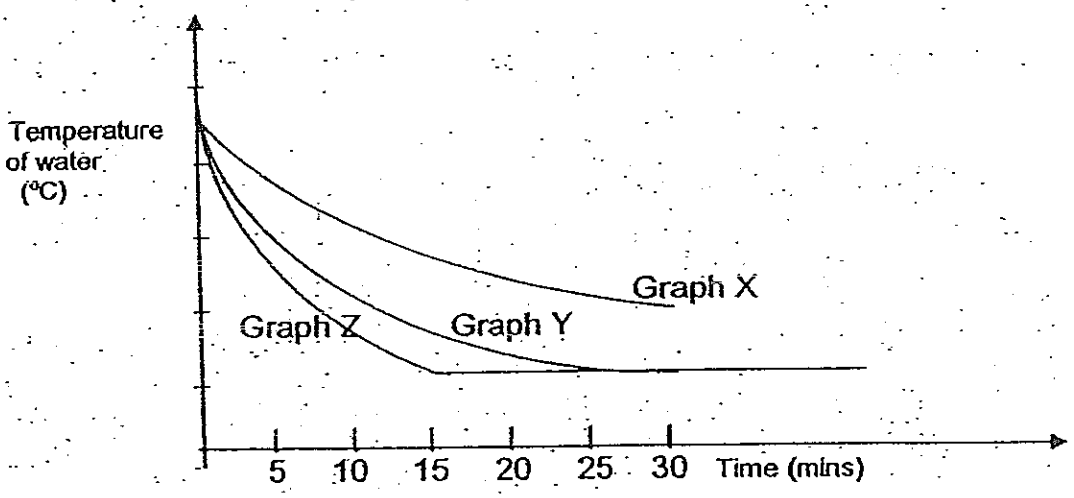
24

174

40. Jaime recorded the change in temperature of water in 3 cans, A, B and C for 30 minutes. The cans contained water at the same temperature at the beginning of the experiment. Each can is covered with a lid.



She plotted the change in temperature for the 3 cans in the graphs below.



(a) Which of the graphs represent the change in temperature for Can A?

_____ [½]

(b) Why did the temperature of the water remain constant after some time?

_____ [1]

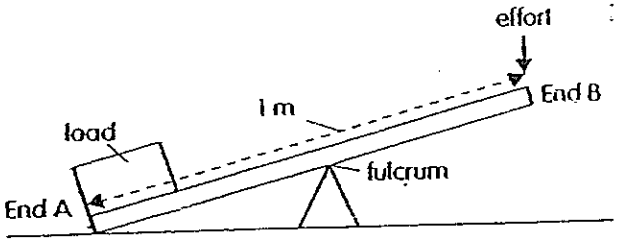
(c) Without changing any of the 3 set-ups, what should Jaime do to make the temperature drop faster?

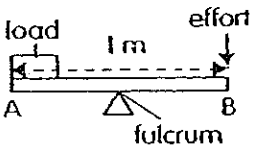
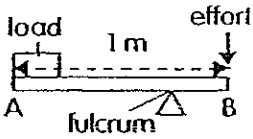
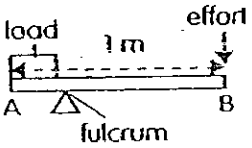
_____ [1]

2½
25

41. Brandon carried out an experiment using 3 levers as shown in the diagrams below.

He applied an effort at End B to balance the load at End A. Then he recorded the effort required to lift the load for each set-up.



Lever used	Load (g)	Effort (g)
	100	100
	100	200
	100	50

(a) What was the variable Brandon changed in the experiment?

_____

[1]

(b) What were the 2 variables Brandon kept the same in the experiment?

_____

_____

[1]

(c) What can you conclude about the effort needed to balance the load and the distance between the fulcrum and the load?

_____

_____

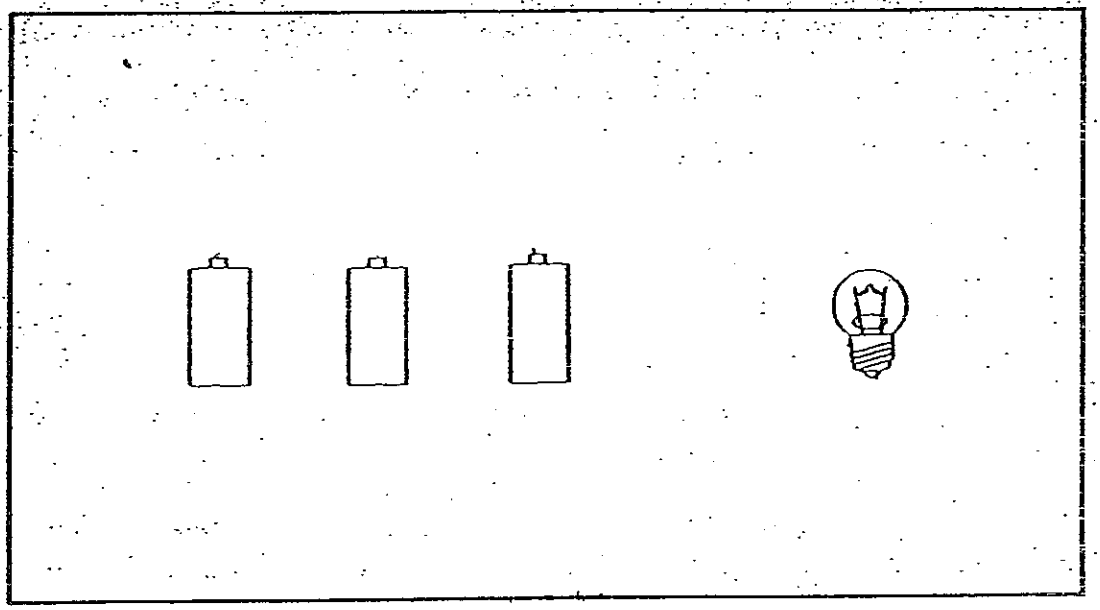
[1]

3

42. Kai Ling wants to set up a circuit that will allow the bulb to light up for a longer period of time.

She is given a bulb, 3 batteries and some wires.

(a) Complete the diagram below to show how she should set up the circuit. [1½]



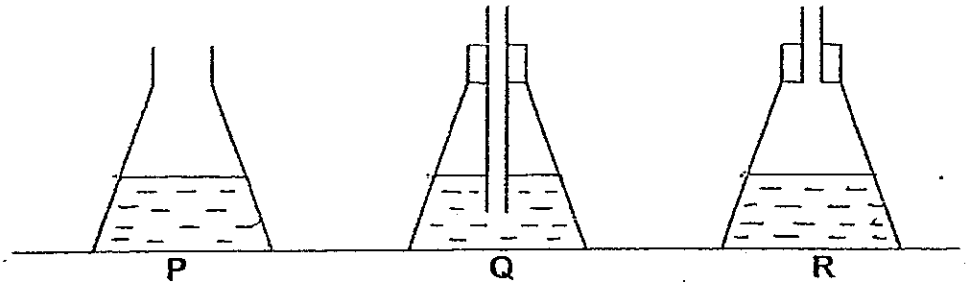
(b) Name another possible arrangement for the batteries which can light up the bulb brighter?

_____

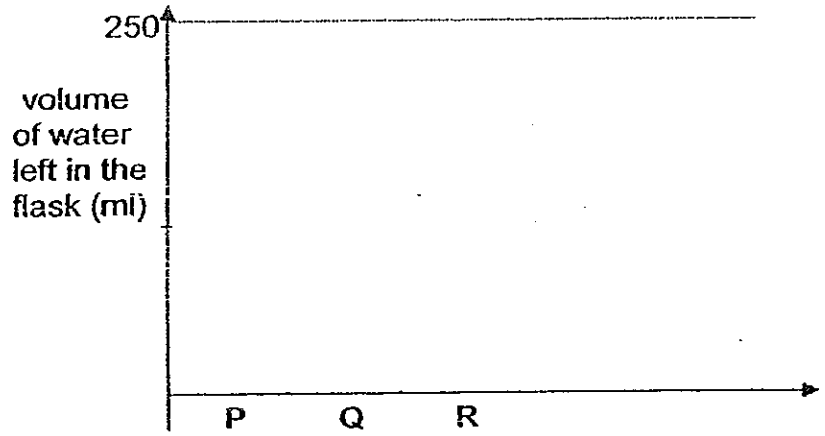
[½]

2

43. Ke Ling conducted the following experiment. She set up 3 flasks, P, Q and R, each containing 250 ml of water. Flasks Q and R are fitted with a glass tube of similar diameter as shown. She left the 3 flasks in a room. Five days later, Ke Ling measured the amount of water left in each flask.



(a) On the graph below, show using bar-graph the amount of water left in each flask.
[1]



(b) Which flask, Q or R, had more water left on the 5th day?

_____
[½]

(c) Explain your answer in (b).

_____

_____

_____

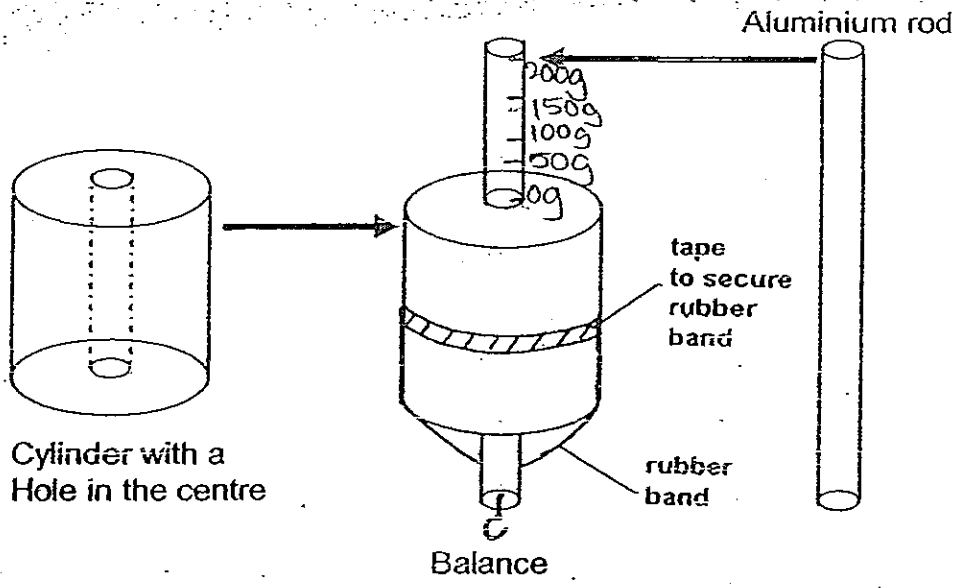
_____
[1]

2½

18

44. Han Jie made a balance to measure some weights.

He first made a cylinder with a hole in the centre. Next he placed an aluminium rod in the hole. Then he tied the aluminium rod to the cylinder with a rubber band and attached a hook to one end of the rod.



(a) What happens if a 50g weight is hung on the aluminium rod?

_____

[1]

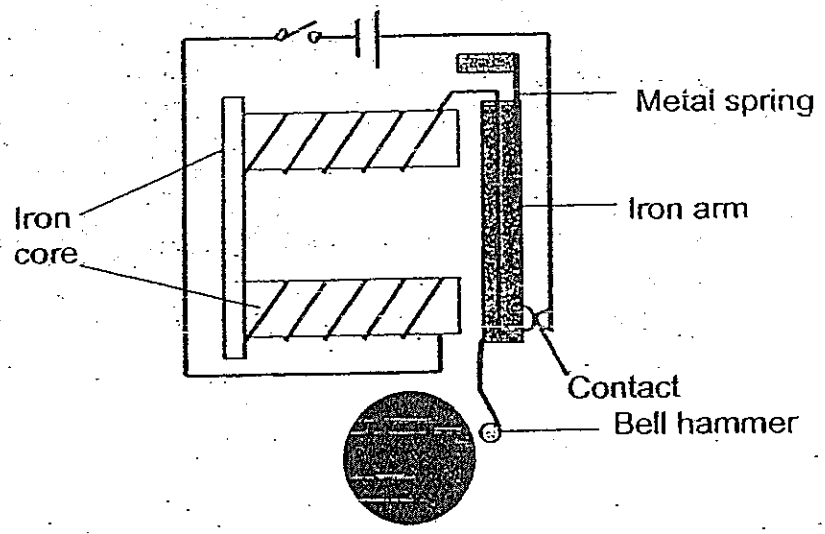
(b) If the balance can weigh a maximum of 200g and Han Jie only has a 50g-weight and a 200g-weight, describe the steps Han Jie should take to **draw a scale on the aluminium rod to show 0g, 50g, 100g, 150g and 200g**.

The first step has been done for you. [2]

Step 1	Mark the position on the rod when there is no weight attached.
Step 2	
Step 3	
Step 4	

3

45. Bennet made an electric doorbell for his Science project using the circuit below.



(a) Based on the diagram above, explain how this electric doorbell works.

[2]

(b) Explain what causes the iron arm to move backwards again.

[1]

3

30

46. Similar mass of substances X and Y were placed in separate beakers in a room.

	Melting Point (°C)	Boiling Point (°C)
Substance X	10	110
Substance Y	25	85

(a) If the temperature of the room is 15°C, in what state would substance Y be?

_____

[½]

(b) If the two beakers are heated to 85°C, which substance, X or Y, will have a smaller mass left? Give a reason for your answer.

_____

_____

_____

[1]

1½

END OF PAPER

Maha Bodhi Primary School

Primary 6 Science SA2 Exams (2008)

Answer Keys

Qo.	Ans
1	4
2	3
3	3
4	2
5	2
6	3
7	1
8	2
9	1
10	1

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

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

31a. Mineral salt

31b. No. They cannot break down dead plants and animals to simple substances and carbon dioxide.

32a. Part B

32b. In the small intestine

32c. The digested is used up by the cells in our body during respiration.

33a(i). Plant X : has tendrils (ii) its leaves have jagged edges
Plant Y : has thorns (ii) its leaves have entire edges

33b. It climbs up other trees or pillars to get as much sunlight as possible using their tendrils.

33c. It helps the plant to climb up support to get their leaves in the best position to obtain sunlight.

33d. It helps the plant to stand upright in the water so as to get more sunlight.

34a. It is oxygen

34b. Graph X

34c. The rate of photosynthesize is higher when there is more carbon dioxide.

34d.

35a. Set up B and D

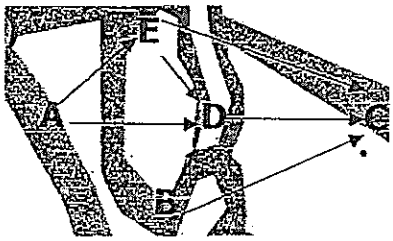
35b. She made the wrong conclusion.

35c. The seeds in set-up D germinated even though they were kept in the dark.

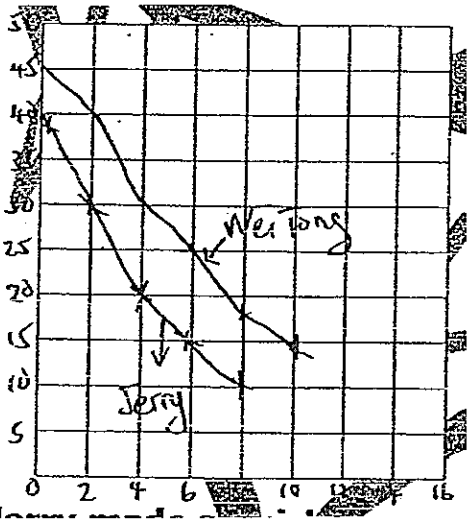
36a. A : By wing B : By animals

36b. The soft hair helps the fruit to float in the wind. The hooks get attached to the body of the animal.

37.



38a.



38b. Jerry made a quicker recovery. Jerry regained his normal breathing rate 8 mins while Wei Tiong needed 10mins.

39a. A, E D, B C, X

39b. the effort applied by the hand only moves a short distance but the load moved a greater distance.

40a. Graph Y

40b. It had reached room temperature.

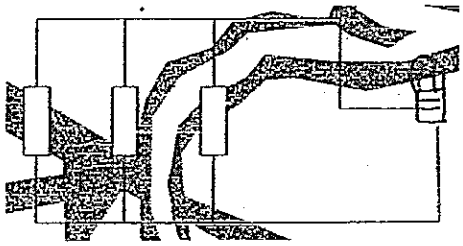
40c. She should place them in an air-conditioned room.

41a. The distance between the fulcrum and the effort.

41b. The load and the distance between the load and the effort.

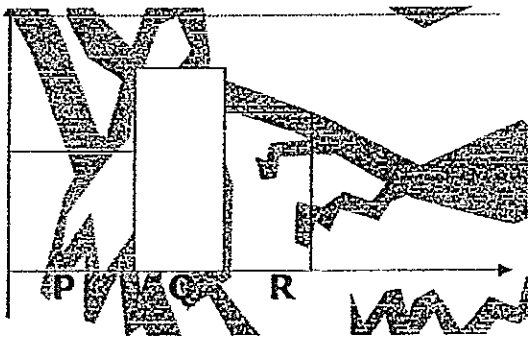
41c. The nearer the distance between the fulcrum and the load, the lesser the effort needed to balance the load.

42a.



42b. Series arrangement

43a.



43b. Flask Q

43c. Water vapour formed in Q escaped into the space inside the flask because of the position of the tube. The space becomes saturated with water vapour so rate evaporation decreases.

44a. The aluminum rod would go down slightly

44b(ii). Place the 50g on the rod and mark 50g

(iii). Place the 200g on the rod and mark 200g

(iv). Use the length of the extension of 200g to take away that of the 50g and you can find the 150g scale.
Use the length of the extension of the 150g to take away that of 150g and you will find the 100g scale.

45a. When the circuit is closed, the iron core become an electromagnet, causing the iron arm to be attracted to it and the bell hammer his the bell, producing sound energy.

45b. When the iron arm is attracted to the electromagnet, the contact is broken, so the circuit becomes incomplete. The iron core loses its magnetism and the iron arm moves back.

46a. It would be its solid state.

46b. Substance Y. As substance Y is at its boiling point while substance X is not, the liquid of substance Y start to evaporate first.