NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2008

BOOKLET A

Date : 5 MAY 2008

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary _____ ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

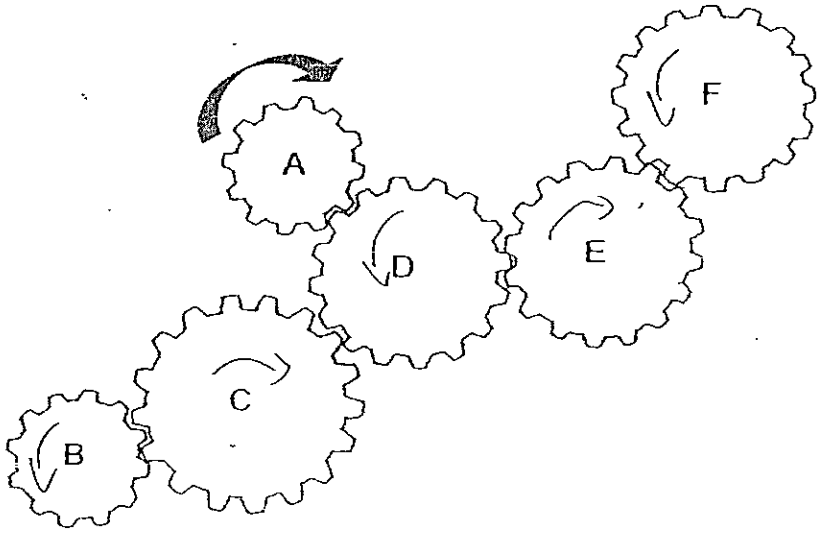
Parent's signature: ....

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

Booklet A consists of 15 printed pages.

Section A (30 x 2 marks = 60 marks)
For each question from 1 to 20, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Study the diagram of the gears below carefully.



When gear A is turned clockwise, which other gears will also turn clockwise?

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

2. Which of the following appliances will convert electrical energy to kinetic energy and heat energy only as useful forms of energy, when in use?

A. Iron
B. Blender
C. Toaster
D. Hair dryer

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

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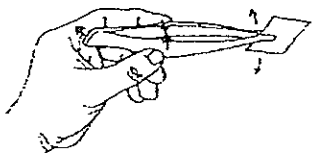
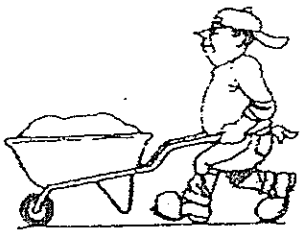
3. In which of the following diagrams of simple machines is the effort required less than its load?

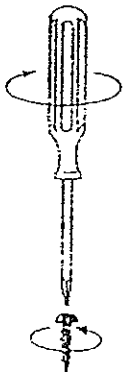


A: Tweezer

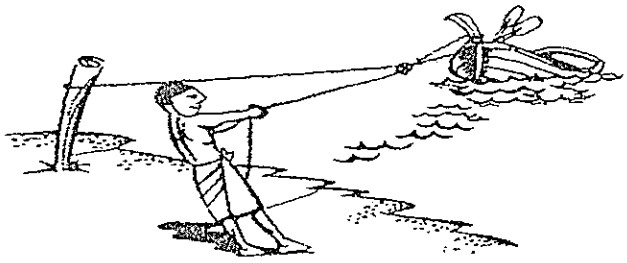


B: Wheelbarrow

C: Broom



D: Screwdriver



E. Movable pulley

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

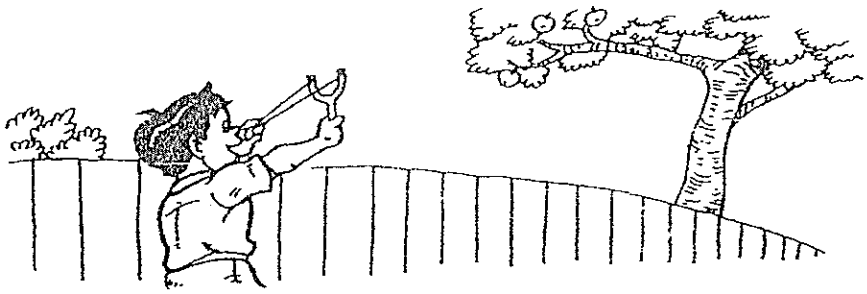
4. The following table shows several objects that have been classified according to the type of energy that they mainly possess.

X	Y	Z
- a book on top of a shelf - a roller coaster car at the top of a loop	- a rolling ball - a spinning windmill	- a ringing bell - a piano being played

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

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

5. Timothy used a pebble and a catapult to shoot at a fruit on a tree as shown in the diagram below.



Which one of the following correctly shows the energy conversion that took place when he used the catapult?

(1)

gravitational potential energy + sound energy	→	kinetic energy
(catapult)		(pebble)

(2)

kinetic energy + sound energy	→	kinetic energy + gravitational potential energy
(catapult)		(pebble)

(3)

kinetic energy	→	elastic potential energy	→	kinetic energy
(boy's hand)		(catapult)		(pebble)

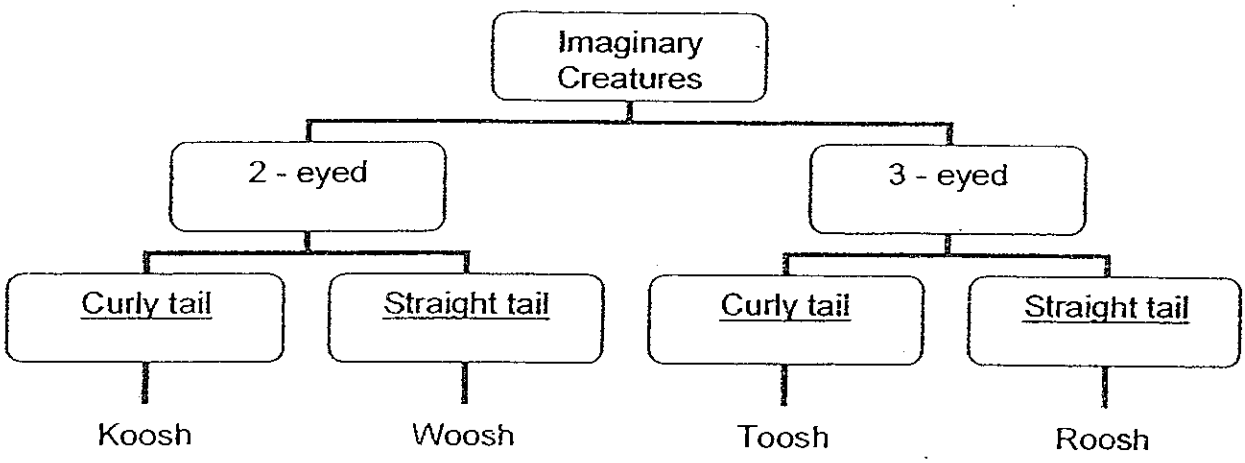
(4)

elastic potential energy	→	kinetic energy	→	gravitational potential energy + sound energy
(boy's hand)		(catapult)		(pebble)

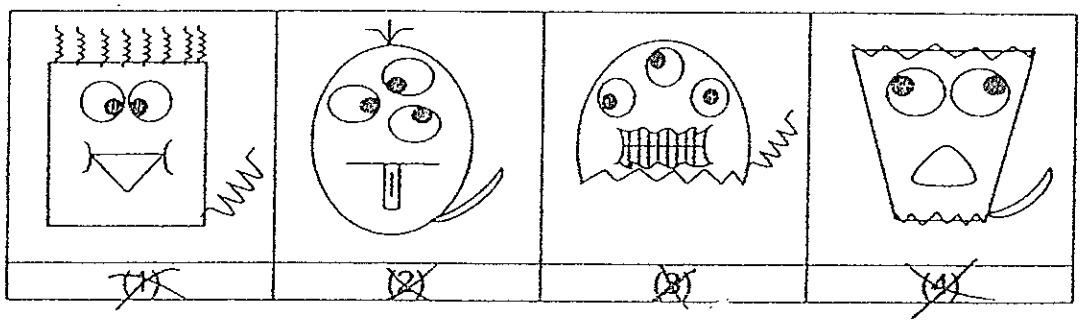
6. Which one of the following groups shows examples of renewable sources of energy only ?

(1) petrol, steam and air
(2) wind, waterfall and sun
(3) vapour, cooking oil and sun
(4) rice, kerosene and waterfall

7. The classification chart below shows the characteristics of four imaginary creatures.



Which one of the following creatures is Toosh?



8. Study the classification table below.

S	T
- iron frying pan	- ~~rubber band~~ wooden table
- steel metal ruler	- drawing paper
- aluminium window grill	- woollen sweater

Which one of the following best represents S and T?

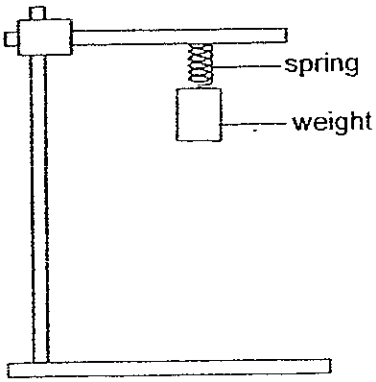
	S	T
(1)	Rough	Soft
(2)	Flexible	Non-flexible
(3)	Magnetic	Non-magnetic
(4)	Never alive	Once alive

9. Which of the following are examples of a pushing force only?

A. kicking a ball
B. blowing a balloon
C. sawing a wooden plank
D. sucking a drink through a straw

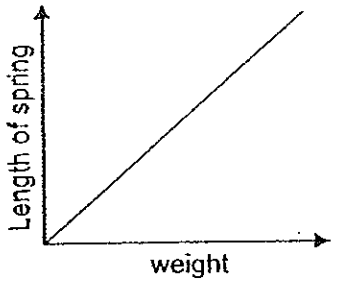
(1) A and B only
(2) A and D only
(3) B and D only
(4) C and D only

Study the set-up below and answer questions 10 and 11.

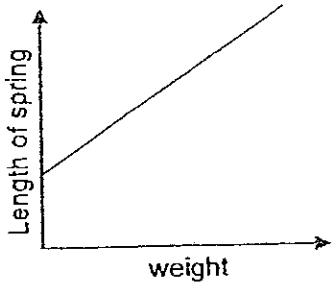


10. Weights were continually added to the set-up even until the spring reaches its limit. Which one of the following graphs shows the correct result that would be obtained?

(1)



(2)



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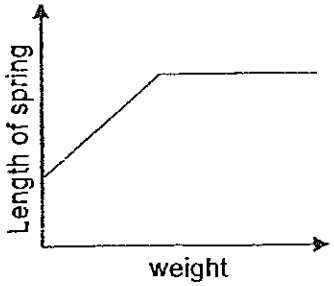

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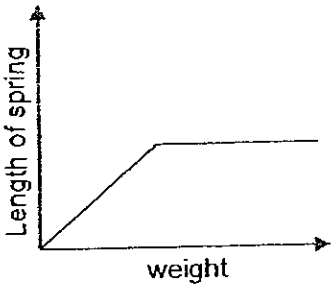


11. The results obtained from the experiment was tabulated in a table as shown below.

Weights (g)	10	15	20	25	30
Extension (cm)	4	6	8	10	12

If the original length of the spring is 7 cm, what would be its total length when a 40g weight was added to it?

(1) 14 cm
(2) 16 cm
(3) 21 cm
(4) 23 cm

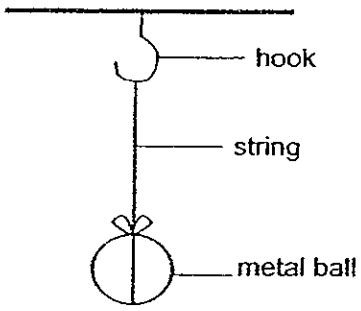
12. Junde pushed a very heavy cardboard box over a distance of 1 metre on different types of surfaces. His friend used a stopwatch to measure the time he took to complete the distance on each surface. Junde made sure that he used the same amount of effort to push the box along each surface. The result of his experiment are as shown below.

Surfaces	Time taken (s)
A	30
B	10
C	50

Based on the results that he has obtained, which one of the following statements are true?

(1) Surface A has the most friction
(2) Surface C has less friction than surface A
(3) Surface B has more friction than surface C
(4) Surface B has less friction than surfaces A and C

13. The diagram below shows a metal ball hanging from a string. Which one of the following statements about the diagram is true?



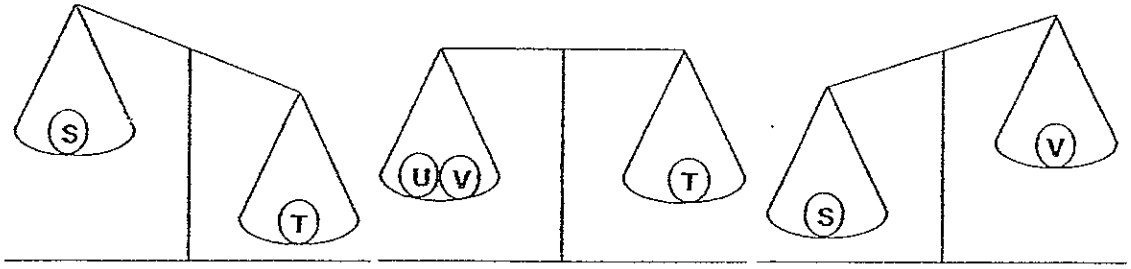
(1) There is no gravity acting on the ball so it does not fall.
(2) There is friction pushing the ball upwards so it does not fall.
(3) There is gravity acting on the ball so the ball hangs downwards.
(4) There is magnetic force between the ball and the hook so it stays in the air.

14. Which of the following statements about frictional force is true?

A. Frictional force causes wear and tear
B. Frictional force can help things move faster
C. Frictional force acts in the direction that opposes motion

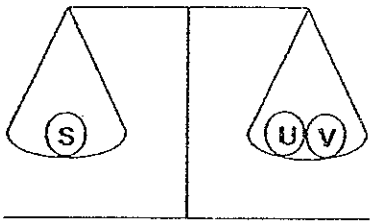
(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

15. Study the diagram below carefully. Objects S, T, U and V are of the same size.



Which one of the following diagram represents a possible situation?

(1)



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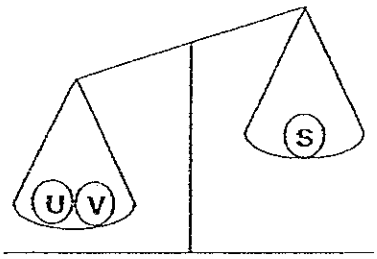

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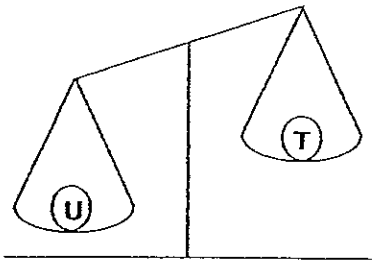

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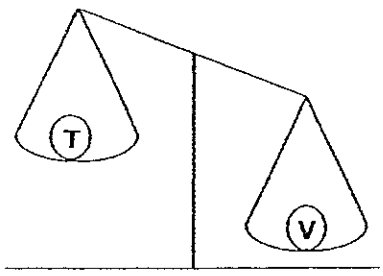

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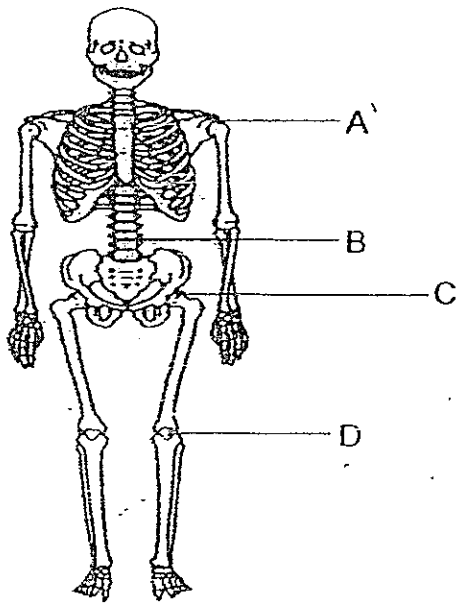
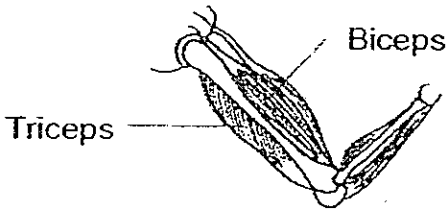
16. The diagram below shows a human skeletal system.



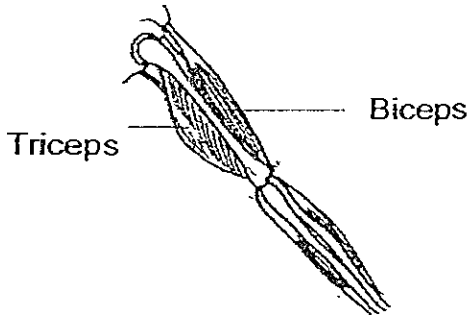
Which parts of the skeletal system have the same type of joints?

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

17. The two diagrams below show the arm movements when they are bent and straightened.



Arm bent

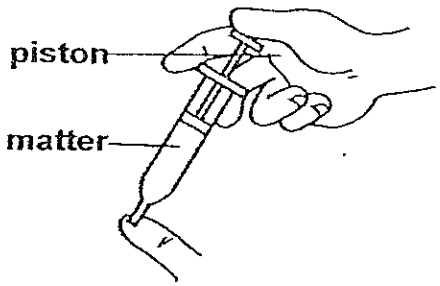


Arm straightened

Which one of the following shows correctly the movement of the muscles?

	Arm Bent		Arm Straightened	
	Biceps	Triceps	Biceps	Triceps
(1)	Contracts	Relaxes	Contracts	Relaxes
(2)	Contracts	Relaxes	Relaxes	Contracts
(3)	Relaxes	Contracts	Contracts	Relaxes
(4)	Relaxes	Contracts	Relaxes	Contracts

18. Zhi Jie prepared three syringes and filled each of them with 3 matters, A, B and C. He then placed his index finger to cover each syringe and pushed the piston as shown below.



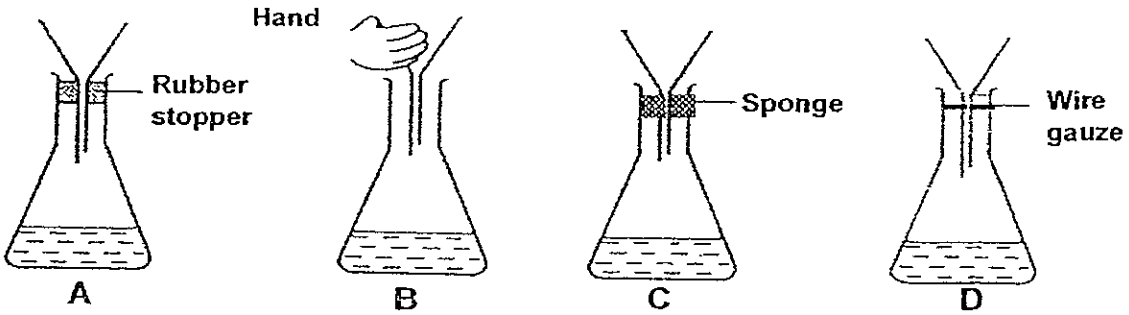
He recorded the distance moved by the piston for each syringe as shown in the table below.

Distance moved by piston (cm)		
A	B	C
0.1	0	0.5

Which one of the following shows what A, B and C most likely were?

	A	B	C
(1)	air	salt	carbonated water
(2)	salt	carbonated water	air
(3)	carbonated water	air	salt
(4)	carbonated water	salt	air

19. Yi Sing prepared 4 set-ups as shown in the diagrams below. She wanted to find out which set-up will allow water to flow through the funnel in the shortest period of time.



Which one of the following correctly shows the rate at which the water flow through the funnel from the fastest to the slowest?

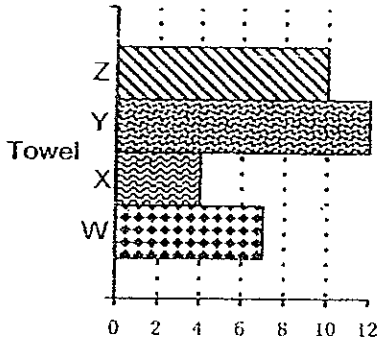
(1) A, C, D, B
(2) A, D, C, B
(3) B, C, A, D
(4) B, D, C, A

20. Four identical wet towels, W, X, Y and Z were left to dry in four places with different conditions for half a day as shown in the table below.

~~Container~~ Towel	Condition
W	Sunny and windy
X	Sunny and not windy
Y	Shady and windy
Z	Shady and not windy

Which one of the following graphs is most likely to show the mass of the wet towels after half a day?

(1)



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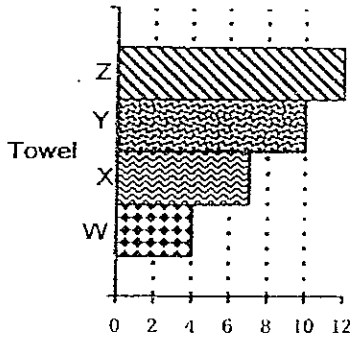
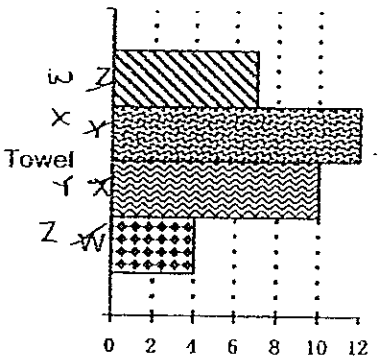
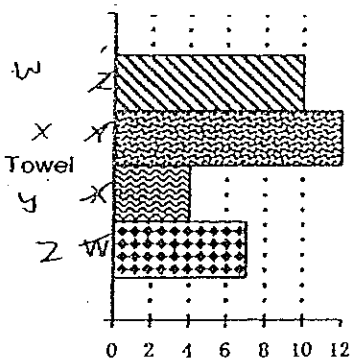


(3)



(4)



21. Which of the following will change when water freezes?

A state
B mass
C volume
D temperature

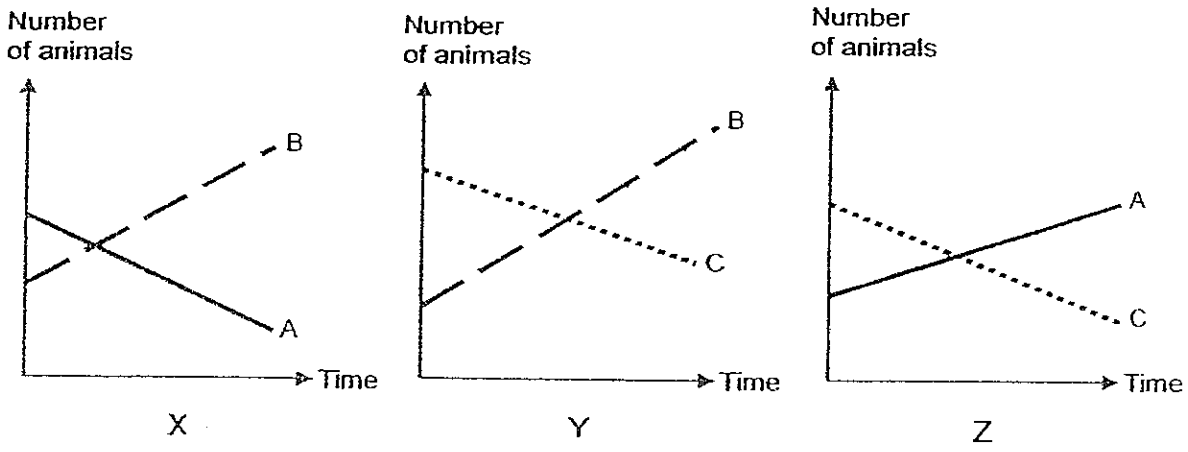
(1) A, B and C only
(2) A, C and D only
(3) B, C and D only
(4) A, B, C and D

Study an investigation that Rita carried out and answer questions 22 and 23.

Rita puts three different types of animals, A, B and C, into three containers, X, Y and Z as recorded in the table below. There were water plants in each of the three containers. Only one of the animals is a herbivore.

Container	Type of Animals
X	A and B
Y	B and C
Z	A and C

She counted the number of animals at the end of each week for two weeks. She did not see any dead animals in the container and she recorded and plotted her results in the graph X, Y and Z shown below.



22. Which one of the following correctly shows the food chain linking these 3 animals?

(1) Plants → A → B → C
(2) Plants → A → C → B
(3) Plants → B → C → A
(4) Plants → C → A → B

23. If container X was left to stand for another 1 month, what observation could she make for animals A and B?

and very few plants were left

(1) The number of animal A will increase.
(2) The number of animal B will increase.
(3) The numbers of both animals A and B will increase.
(4) The numbers of both animals A and B will decrease.

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24. A group of pupils observed a big tree by the roadside and noted that most of the leaves were found at the higher branches. Which one of the following reasons best explains why this is so?

(1) The leaves will be able to provide shade for the roots.
(2) The leaves will be able to catch more water when it rains.
(3) The leaves will be able to trap sunlight easily to carry out photosynthesis.
(4) The leaves will be able to get more carbon dioxide to carry out photosynthesis.

Study the experiment conducted by Rashid and answer questions 25 and 26.

Rashid took 50g of leaves from each of four different plants and labelled them A, B, C and D. He placed them in separate plates under a warm lamp. He then weighed the leaves again 12 hours later and recorded his results as shown below.

Type of plant	A	B	C	D
Weight of leaves at first (g)	50	50	50	50
Weight of leaves at the end (g)	36	28	46	13

25. What is the aim of his experiment?

(1) To find out if the plants need light to survive.
(2) To find out if water is lost when the leaves photosynthesise.
(3) To find out which plant can survive in warm temperatures for a long time.
(4) To find out the plate of leaves of which plant will be able to lose most amount of water within the same amount of time.

light

absorb

26. Which one of the above plants is most likely to be a cactus?

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

27. Mrs Chng noticed that there was a colony of a particular type of insect in her healthy pot of plant. She successfully got rid of the insects by spraying pesticide to the colony.

But soon, she realised that her plant began to wilt. Which one of the following reasons could NOT have led to the death of the plant?

(1) The pesticide had poisoned the plant.
(2) The pesticide prevented the roots from taking in water.
(3) The plant had already been badly attacked by the insects.
(4) The insects were feeding on pests that were attacking the plant.

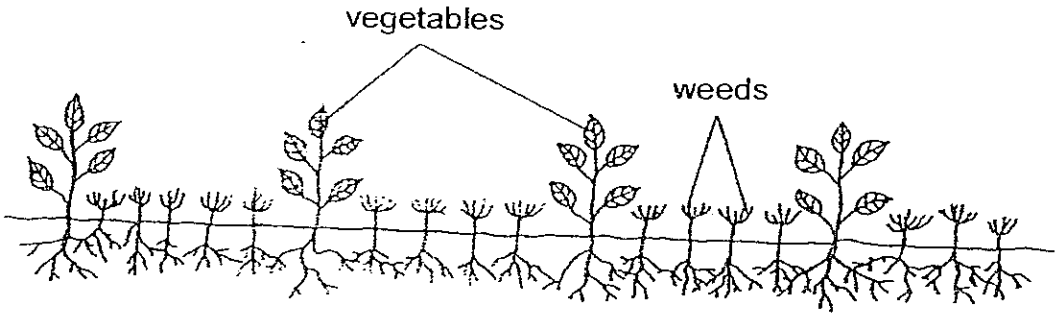
49

28. Vicky wanted to find out if plant growth is affected by extreme weather conditions such as drought and flood.

Which one of the following shows correctly the variable that she should change and measure if she were to carry out an experiment?

	Number of set-up(s)	Variable changed	Variable measured
(1)	1	Amount of water	Number of leaves dropped
(2)	1	Amount of sunlight	Height of plant
(3)	3	Amount of water	Number of leaves dropped
(4)	3	Amount of sunlight	Height of plant

29. The diagram below shows some vegetables and weeds growing in a plot of land.

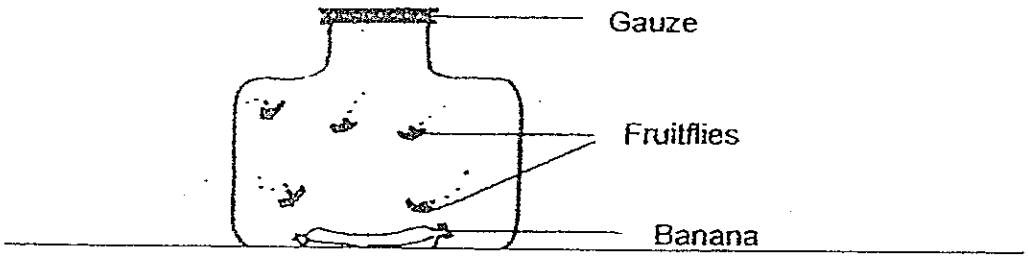


Due to the presence of weeds, the vegetables will not be able to grow healthily. Which one of the following basic necessities do the plants need NOT compete with the weeds for?

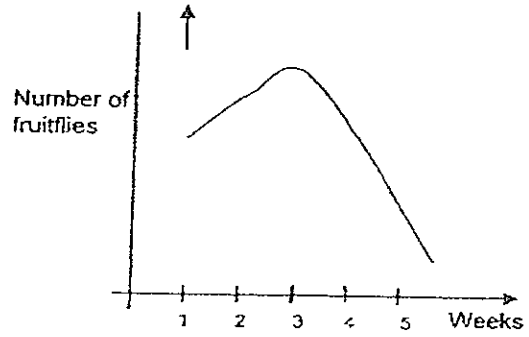
(1) water
(2) oxygen
(3) space
(4) nutrients

50

30. Shi Kai kept some fruit flies in a jar. He put a banana in it and covered the jar with a piece of wire gauze as shown below.



He counted the number of fruit flies over the next few weeks and plotted a graph as shown below.



Which one of the following could most likely have happened between weeks 3 and 4?

(1) The fruitflies reproduced.
(2) He removed the banana from the jar.
(3) He added another banana into the jar.
(4) He removed all the oxygen in the jar with a chemical.

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2008

BOOKLET B

Date : 5 May 2008

Duration : 1 h 45 min

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Total :		100

Parent's signature: _____

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Section B (40 marks)

Write your answers to questions 31 to 46 in the spaces provided.
Marks will be deducted for misspelt key words.

31. Four pupils conducted an experiment with four identical rubber bands. They stretched the rubber bands to different lengths before letting them go. They then measured the distance that the rubber bands had travelled and obtained the following results.

Pupils	Distance stretched (cm)	Distance travelled (cm)
Aaron	5	100
Beatrice	10	175
Chloe	12	200
Dylan	8	140

(a) What was the aim of the experiment? (1 mark)

_____

_____

(b) Their teacher noticed that only Dylan had leaned forward before releasing his rubber bands. She told them that they had not conducted a fair test. Explain why she said so. (1 mark)

_____

_____

32. Shuhui tested the hardness of four similar-sized objects, T, U, V and W, by scratching them against one another. She tabulated her results as follows.

Objects used to scratch	Objects scratched			
	T	U	V	W
T		√	√	√
U	X		X	X
V	X	√		X
W	√	√	√	

√ - scratch marks observed

X – no scratch marks observed

(a) Compare the hardness of object 'T' and 'U'. (1 mark)

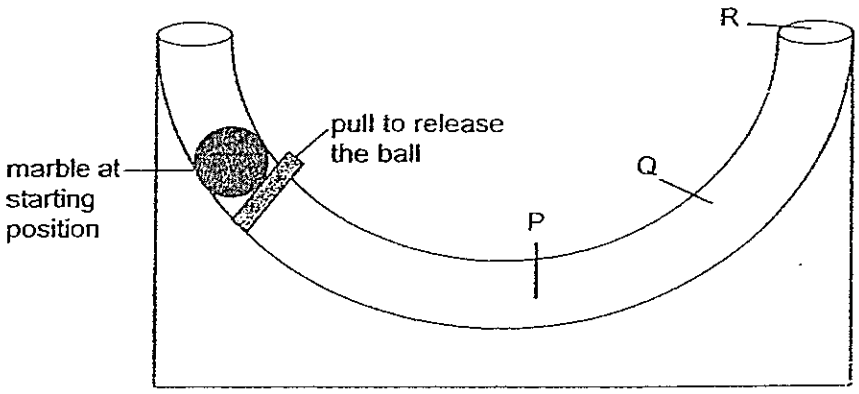
_____

(b) State one variable that should be kept the same to ensure a fair test. (1 mark)

_____

54

33. The diagram below shows a glass tube with a marble placed at one end. When the marble is released, it rolls to the other end of the tube before rolling back downwards.



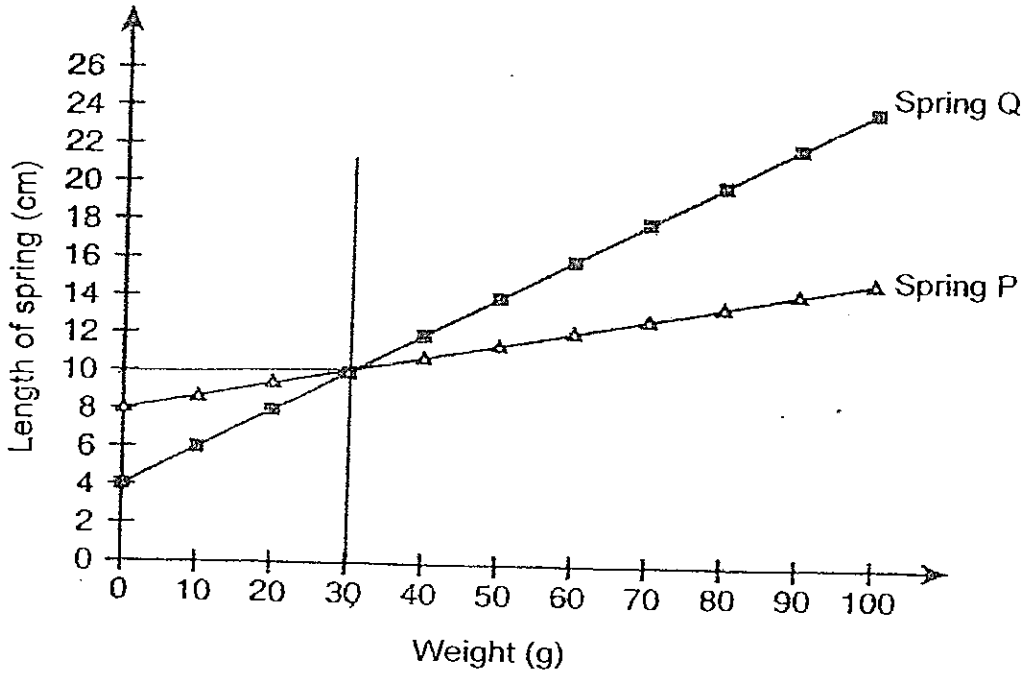
(a) At which point (P,Q or R) will the marble reach before it rolls down to the bottom again? (1 mark)

_____.

(b) Without adding anything to the set-up, state one change that can be made to ensure the marble rolls higher before rolling back downwards when it is released. (1 mark)

_____

34. Melissa and Arica were given Spring P and Spring Q respectively to conduct an experiment. They each added weights to their springs and measured the new length of their springs. They then drew a graph to represent both their results.



(a) What was the length of the springs when 30g was added to each of them? (1 mark)

Spring P: _____.

Spring Q: _____.

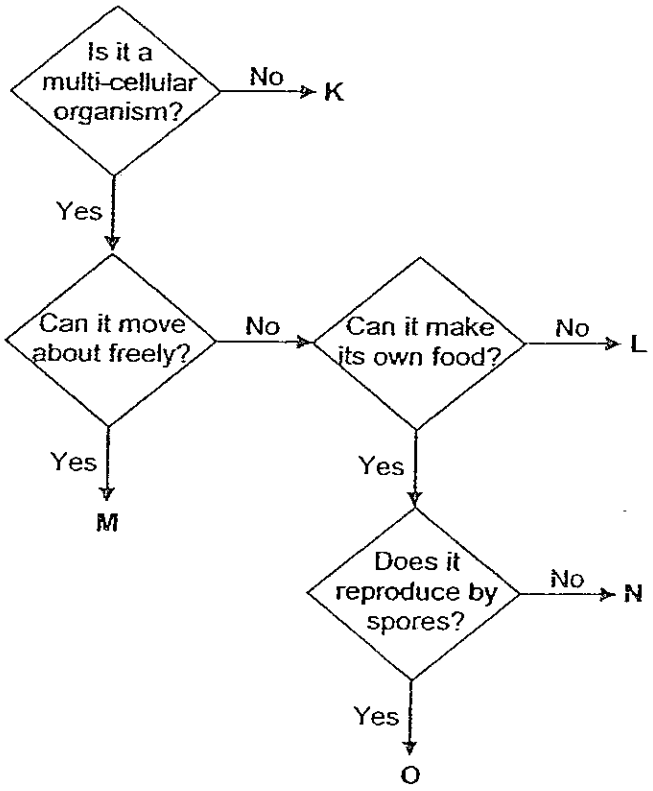
(b) Which spring was more elastic? Explain your answer. (1 mark)

_____

_____

56

35. Study the flowchart below carefully.



(a) Give an example of organism 'L'. (1 mark)

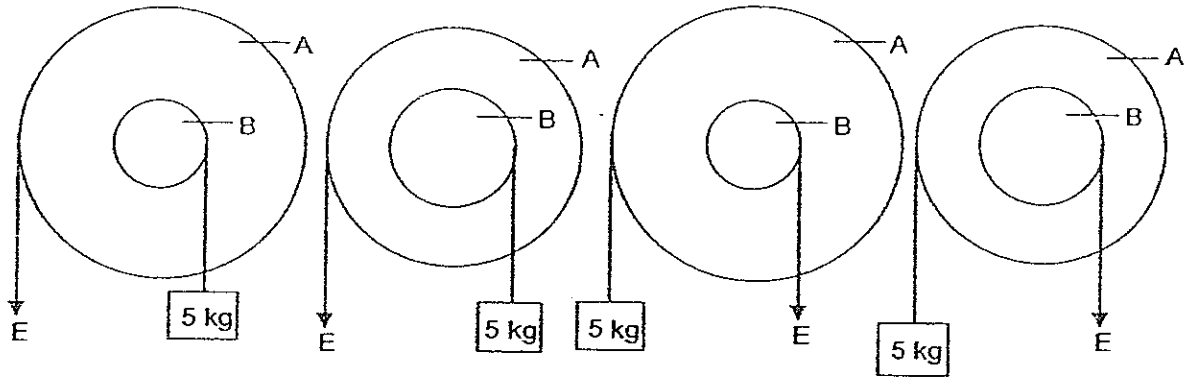
_____

(b) Describe organism 'N'. (1 mark)

_____

_____

36. Helen conducted an experiment using four sets of similar simple machines. She sets them up to lift a load of 5 kg as shown in the diagram below.



Machine P | Machine Q | Machine R | Machine S

Each machine has a different radius for parts A and B. The measurements of their radii are given as follows.

	Machine P	Machine Q	Machine R	Machine S
Radius of A (cm)	15	12	15	12
Radius of B (cm)	5	6	5	6

(a) State the type of simple machine that Helen had used in her experiment. (1 mark)

_____.

It was observed that Machine P would enable her to use the least effort.

(b) State two reasons to explain her observation regarding Machine P. (2 marks)

(i) _____

_____

(ii) _____

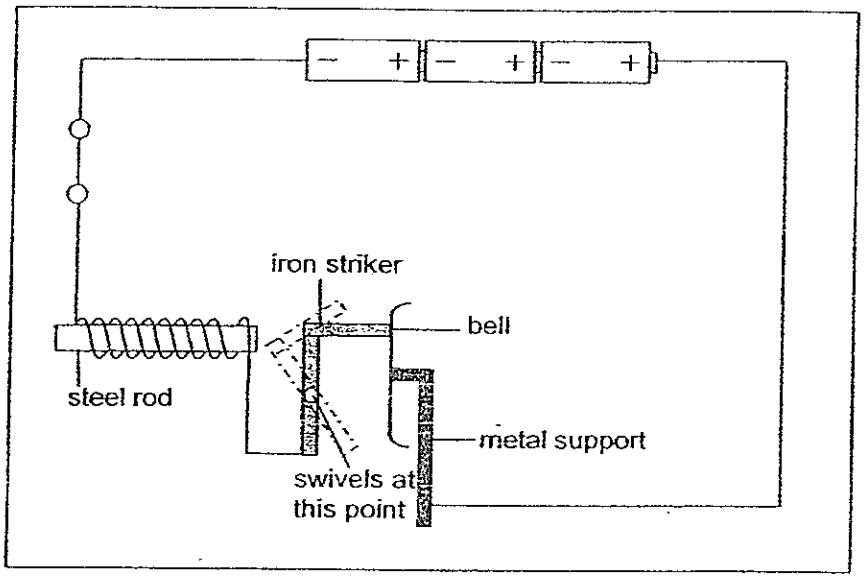
_____

(c) How much effort would be needed to lift up the load in Machine Q? (1 mark)

_____kg.

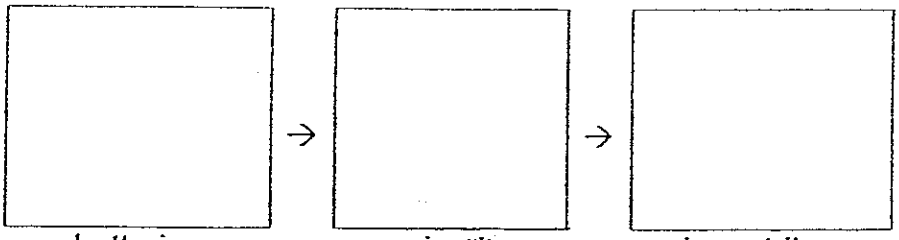
58

37. Study the diagram below carefully.



In the above set-up, when the switch is closed, electricity will pass through the circuit and the steel rod will be magnetised. The striker will then be pulled back towards the rod (represented by dotted lines), causing it to break its contact with the bell. When this happens, the circuit is opened and the striker will move back and hit the bell.

(a) State the energy conversion that takes place only when the circuit is closed. (1 mark)



(b) Explain why the iron striker cannot be made of copper. (1 mark)

_____

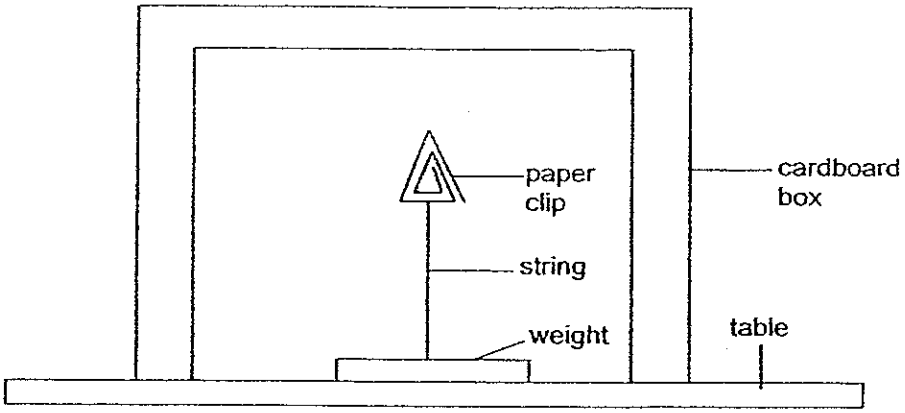
_____

(c) What would happen if the steel rod was magnetised permanently? (1 mark)

_____

_____

38. Webster created the following set-up in class to help him perform a magic trick.



When he lifted the paper clip, it seemed to float in air while the string remained upright. He then passed a piece of paper in between the paper clip and the top of the box but the paper clip remained upright.

(a) Describe what he had done to the cardboard box and explain how his magic trick works. (2 marks)

_____

_____

_____

_____

(b) State two forces that were acting on the paper clip. (1 mark)

_____

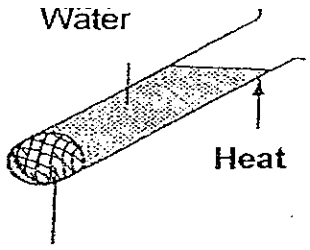
(c) Webster performed the trick again but lifted the paper clip without attaching it to the weight. What would his friends observe? (1 mark)

_____

_____

6b

39. Caleb set up an experiment as shown below.



Ice wrapped in wire gauze

He wrapped a piece of ice in a piece of wire gauze to make it sink to the bottom of the test tube filled with water. He then heated the water surface till it boils.

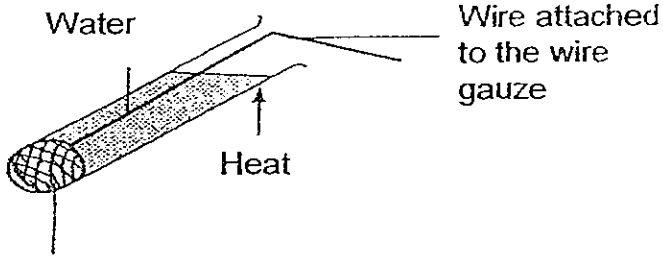
After sometime, he noticed that the water at the surface was boiling but the ice did not melt quickly.

(a) What was he trying to find out in this experiment? (1 mark)

_____

_____

(b) He conducted a second experiment and attached a piece of wire to the wire gauze as shown in the diagram below.



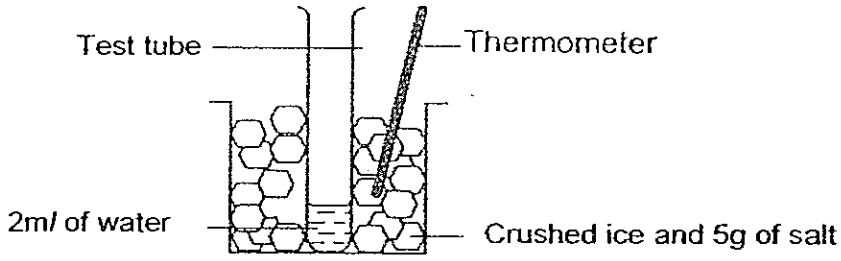
Ice wrapped in wire gauze

He found that the ice melted very quickly after he had added the piece of wire. Explain why he made such an observation in his second experiment. (2 marks)

_____

_____

40. Farah set up an experiment as shown in the diagram below.



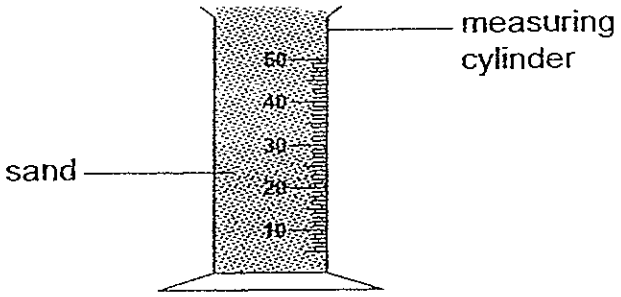
She wanted to find out if the amount of salt added to ice affects the time taken for the water in the test tube to freeze.

(a) In the space given below, draw and label the control set-up she should use. (2 marks)

(b) State the hypothesis of her experiment. (1 mark)

62

41. Joseph filled a measuring cylinder completely with sand as shown below.



He then slowly poured in some water from a beaker until it reaches the brim of the measuring cylinder. He realized that he could pour in 20ml of water.

(a) What other observation could he have made while pouring in the water? (1 mark)

_____

(b) Explain why he was able to pour in water even though the measuring cylinder was already completely filled with sand? (1m)

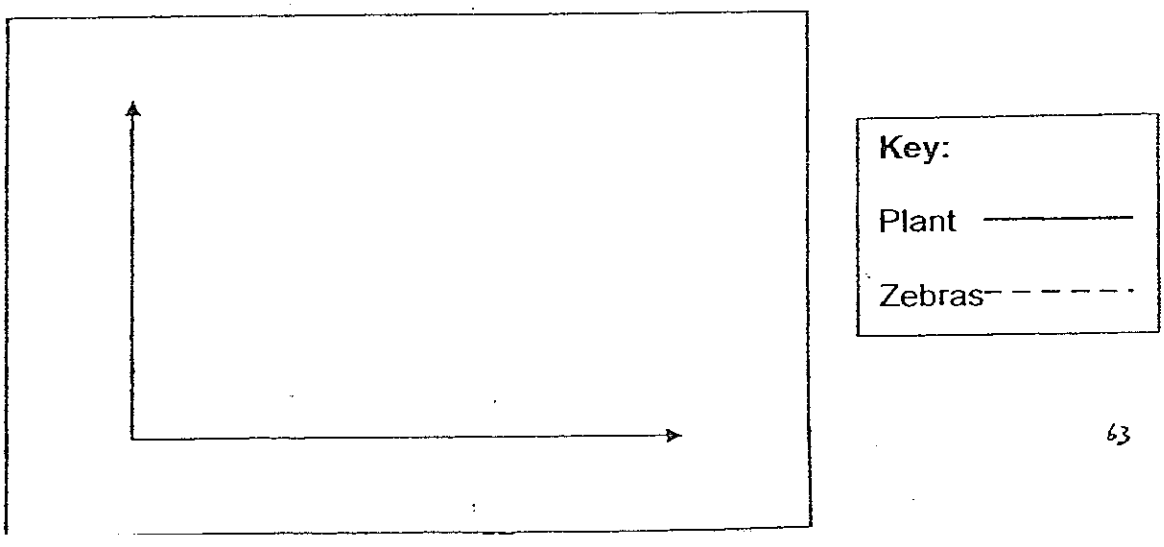
_____

_____

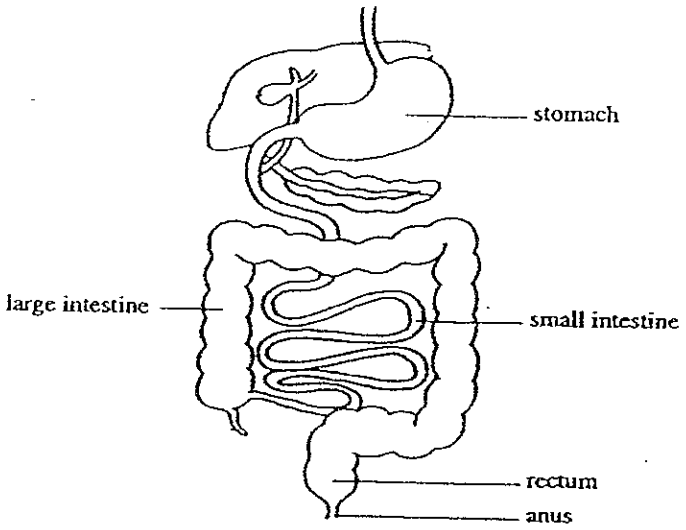
42. Study the food chain below.

Plant → Zebras → Lions

In the space provided below, draw the line graph for Zebra and label the axes to show how the population of plants and zebras would change in a year if all the lions were killed by hunters. (2 marks)



43. The diagram below shows part of the human digestive system.



(a) At which part of the digestive system does digestion end?
(1 mark)

_____

(b) Muscles lined the walls of the gullet and stomach. What are the functions of these muscles?
(2 marks)

Muscles in the gullet : _____

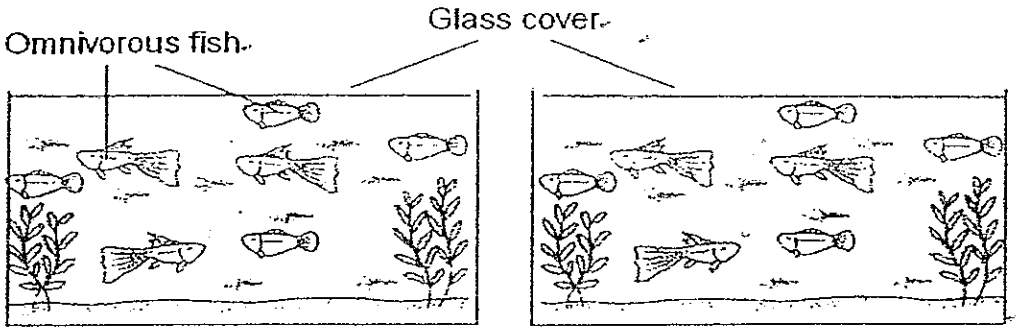
_____

Muscles in the stomach: _____

_____

64

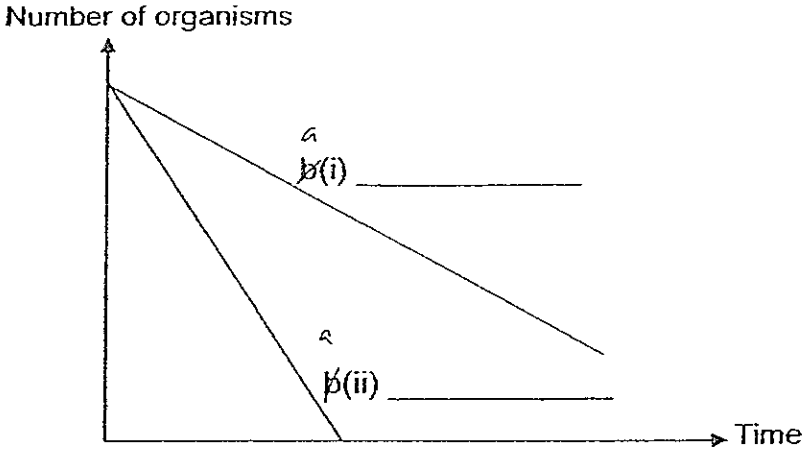
44. A group of pupils set up two similar fish tanks, P and Q, as shown below.



Fish tank P **Fish tank Q**

Fish tank P was placed near the window and fish tank Q was placed in a dark room.

The graphs below show the changes in the number of fish and tadpoles in one of the fish tanks after a week.



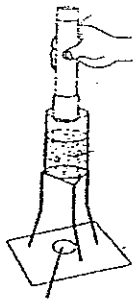
(a) Based on the graph above, both the fish and tadpoles have decreased in numbers. Label the line graphs with 'fish' and 'tadpole' correctly in the blanks provided. (1 mark)

(b) Only fish tank Q will show the results in the graph. Explain why this is so. (2 mark)

_____

_____

45. Yi Hui collected samples from 5 different ponds, V, W, X, Y and Z, and poured them into 5 identical beakers. She then shone a torch over each of these beakers as shown in the diagram below.



Light sensor

Light sensor measures the amount of light that passes through the beaker of water (light intensity).

The table below shows a simple description of the set-ups and the results.

Sample	Amount of Water (*ml*)	Light Intensity
V	100	Dim
W	80	Very dim
X	100	Very dim
Y	100	Bright
Z	80	Bright

(a) Which water sample provides the most favourable condition for fully-submerged plants to grow in? (1 mark)

_____

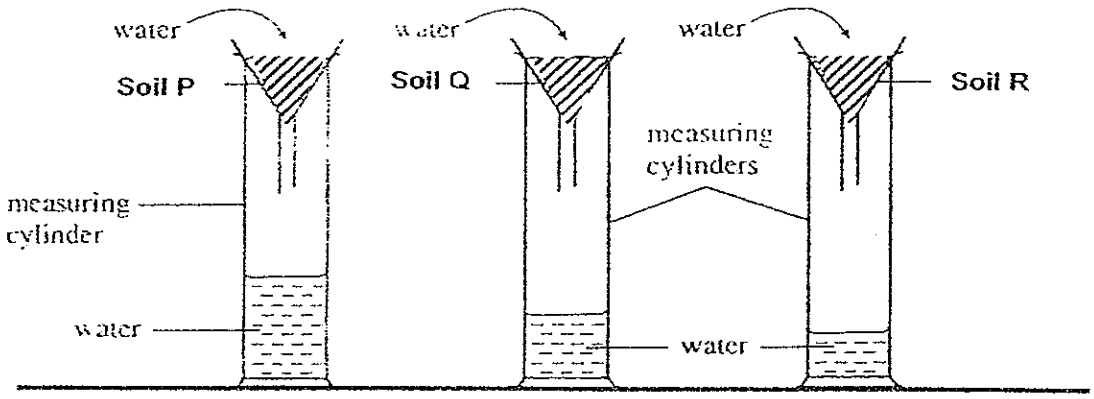
(b) Explain how Yi Hui is able to make her experiment a fair test. (1 mark)

_____

_____

66

46. The diagram below shows an experimental set-up using 3 different types of soil, P, Q and R.



Equal amount of water was poured into the filter funnels.

(a) Paddy (rice plants) needs a lot of water to grow well. Which one of the above types of soil will be most suitable for growing paddy? (1 mark)

_____

Nanyang Primary School

Primary 6 Science SA1 Exams (2008)

Answer Keys

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

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

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

31a. They wanted to find out how the distance the rubber band is stretched affects the distance it travelled when they are let go.

31b. To show how the distance a rubber bands is stretched affects the distance that it will travel.

32a Object T is harder than object U.

32b The amount force used to scratch each surface.

33a Point Q.

33b Shift the marble's current position to a higher one.

33c

34a P : 10cm Q : 10cm

34b Spring Q. If stretches more than spring P when the same weights are added to them.

35a mushroom

35b. Organism N is a multi-cellular organism, it cannot move about freely but can make its food and it does not reproduce by spores.

36a Wheel and axle.

36b(i) The radius of A for machine P is 3 times bigger than the radius of B.

(ii) The effort is applied at A which has a bigger radius than B.

36c. 2.5kg

37a Chemical potential energy ⟶ electrical energy ⟶ kinetic energy

37b Copper is non-magnetic and will not be attracted by the electromagnet.

37c. The bell would not ring because the iron striker will be attracted by the steel rod even if the circuit is broken.

38a. He put a magnet inside the top of the box where no one can sect. When he lifted the paper clip, the magnet would attract it and it will stay in the air. When he put a paper in between, the paper clip will still be in the air because magnetism can pass through non-magnetic materials.

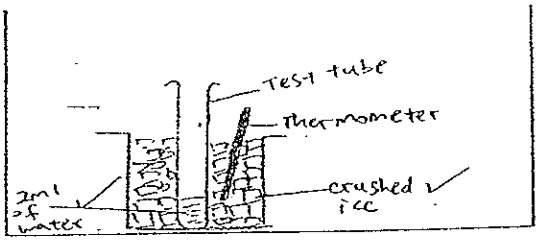
38b. Gravity and magnetic force.

38c. The paperclip wonld be struck to the top of the box.

39a To find out if water is a good conductor of heat.

39b The wire and wire gauze are good conductors of heat. When the water boils, the wire which is wrapped around the ice. The gauze conducts the heat and causes the ice to melt faster.

40a

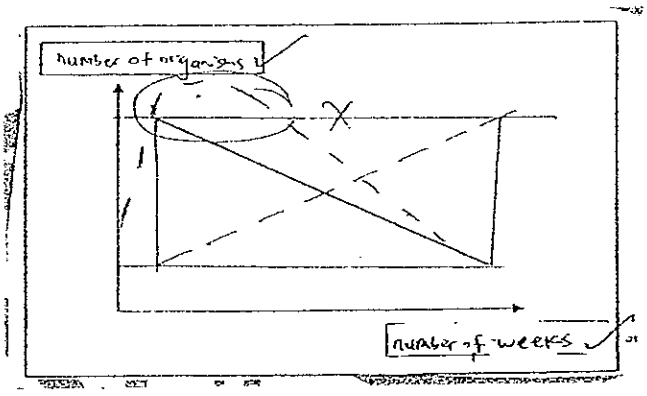


40b The greater the amount of salt added, the shorter the time taken for the water in the test tube to freeze.

41a Bubbles could be seen in the measuring cylinder.

41b The sand had air holes and water could take their place.

42



43(a) At the small intestine

43(b) Muscles in the gullet. Push the food down to the stomach.
Muscles in the stomach. Churn and mix the food with gastric juice.

44a(i) Fish (ii) tadpole

44b Plants cannot photosynthesize in the dark, thus no more food for the fish.

45a Sample Y.

45b She can use the same amount of water.

46 Soil R