

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION
2004

SAR

BOOKLET A

Date :

Duration : 1 h 45 min

Name : _____ ()

Class: Primary 6 ()

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Parent's signature:

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

Booklet A consists of 16 printed pages including this cover page.

Section A (30 x 2 marks = 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 Answer Sheet provided.

1. Which of the following statements are true for ALL animals?

- A They are food consumers.
- B They give birth to their young.
- C All the young resemble the adults.
- D All the young go through the same life cycles as their parents.

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

2. A substance N melts at 22°C and boils at 99°C . At what temperature does N exist as a solid ?

- (1) 20°C
- (2) 30°C
- (3) 50°C
- (4) 70°C

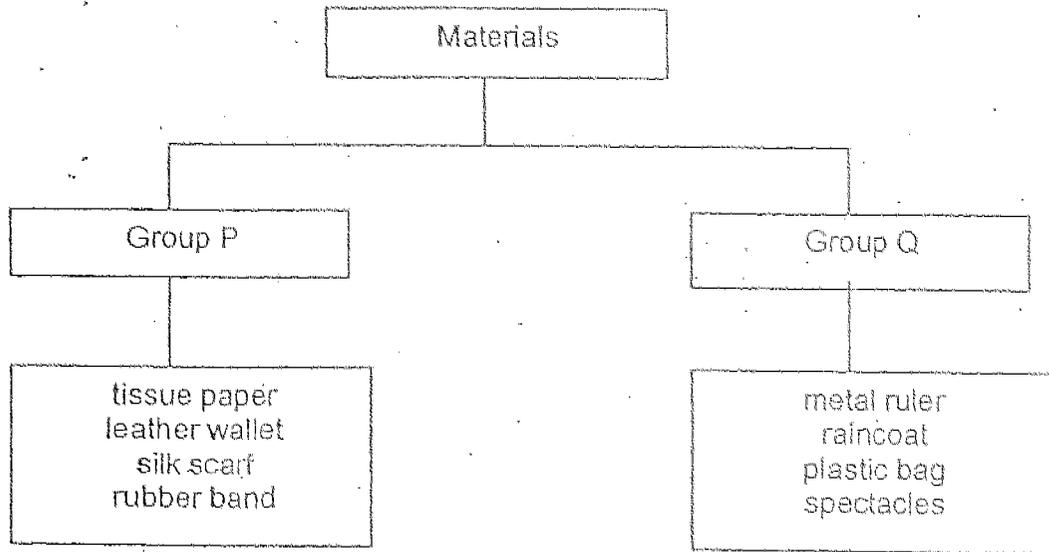
3. Study the table given below .

A	B	C
emu	lizard	sheep
sparrow	alligator	bat
parrot	snake	tiger
mynah	turtle	lion

The above animals in groups A, B and C are classified according to _____

- (1) their habitat
- (2) the food they eat
- (3) their body covering
- (4) how they move about

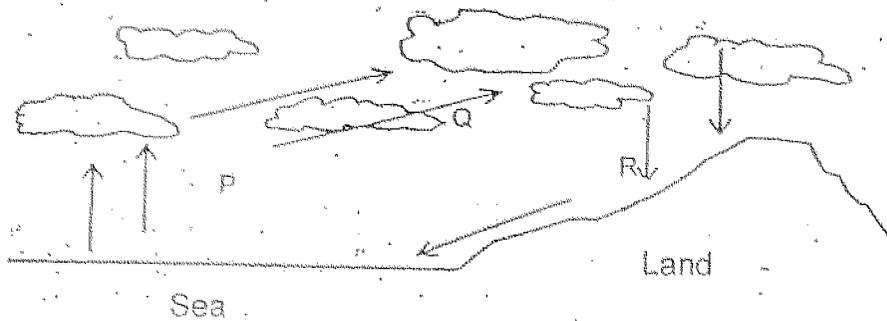
6. Study the classification table below.



Which of the following headings are suitable for Group P and and Q respectively?

	Group P	Group Q
(1)	Waterproof	Non-water proof
(2)	Durable	Non durable
(3)	Once alive	Never alive
(4)	Can break easily	Cannot break easily

7. The diagram below shows the water cycle.



P, Q and R represent the different processes in the water cycle. Which one of the following statements is incorrect?

- (1) Heat is lost during Q
 - (2) Heat is gained during P
 - (3) P can occur at any temperature.
 - (4) Water exists as a liquid during P, Q and R.
8. The government has been trying to prevent water pollution. However, some people continue to throw rubbish into the rivers. What are some actions that the government can carry out to reduce such practices from occurring?

- A Fine those who litter the rivers.
- B Build more incinerators to burn the rubbish.
- C Use more land as burial grounds for the litter.
- D Educate the public about the impacts of water pollution.

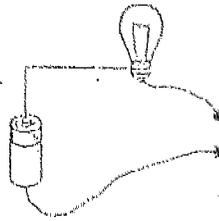
- (1) A only
- (2) A and D only
- (3) A, B and C only
- (4) A, B, C and D

SBC 123

9. Mr Ahmad held a card as shown above in front of a mirror. What would he see in the mirror?

- | | |
|-------------|--------------|
| (1) 321 153 | (2) 321 3CB |
| (3) 315BC2 | (4) 2153 2BC |

10. The diagram below shows a circuit tester.



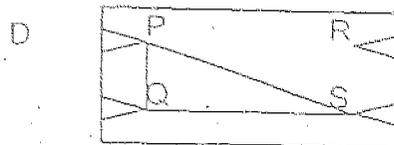
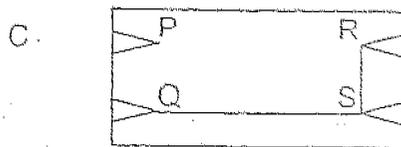
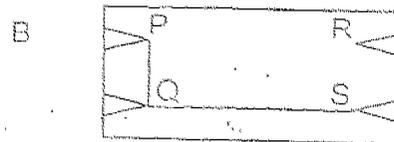
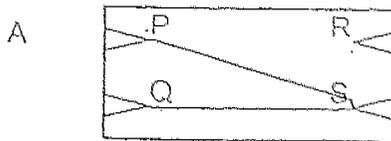
The circuit card shown below has a metal clip at each of the points P, Q, R and S.



The circuit tester is used to test the circuit card and the results are recorded in the table below.

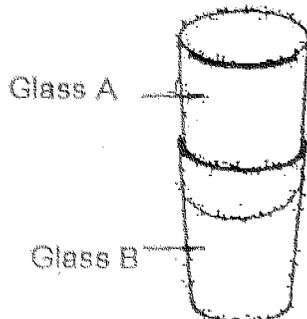
Clips connected	Does the bulb light up?
P and Q	Yes
P and R	No
P and S	Yes
Q and R	No
Q and S	Yes
R and S	No

Which of the figures below show the possible connections of the clips by wires?



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

11. Two glasses, A and B, were stuck together as shown in the diagram below.



Which one of the following is the best way to separate the two glasses?

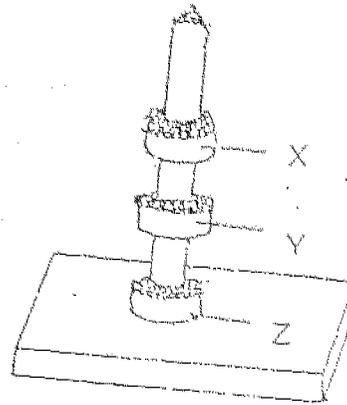
- (1) Pour hot water into glass A and put glass B in cold water.
 - (2) Pour hot water into glass A and put glass B in hot water.
 - (3) Pour cold water into glass A and put glass B in cold water.
 - (4) Pour cold water into glass A and put glass B in hot water.
12. The table below shows the effort required to lift three different loads A, B and C.

	Set-up A	Set-up B	Set-up C
Load (kg)	25	40	5
Effort (kg)	5	4	0.5

Which set of readings could have come from the same machine?

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

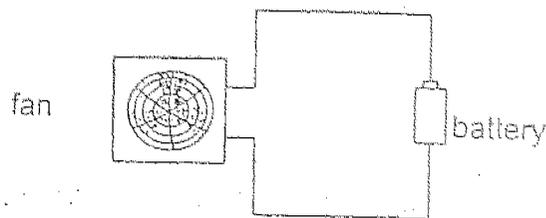
13. The diagram below shows three ring magnets, X, Y and Z.



What are the shaded poles of the three magnets?

	Magnet X	Magnet Y	Magnet Z
(1)	north	north	north
(2)	north	north	south
(3)	south	north	south
(4)	south	north	north

14. Which one of the following describes the energy changes when a battery is used to run a fan as shown below?



- (1) Electrical energy → Potential energy → Kinetic energy
 (2) Potential energy → Electrical energy → Kinetic energy
 (3) Electrical energy → Potential energy → Sound energy
 (4) Potential energy → Sound energy → Electrical energy

15. The picture below shows six children seated around a circle playing a game with two tennis balls. Each child rolls the tennis balls along the floor so that they collide.

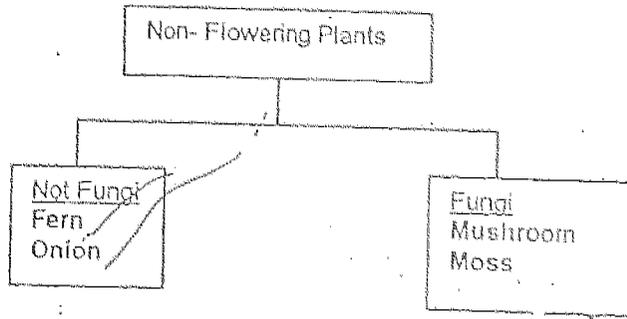


Which one of the following is not an effect of the force on the ball ?

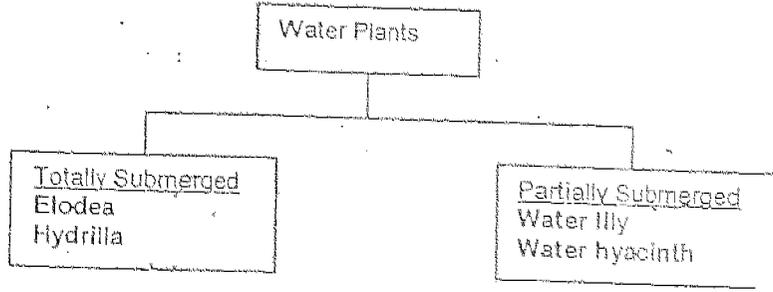
- (1) The ball stops moving.
- (2) The shape of the ball is changed.
- (3) The speed of the ball is changed.
- (4) The direction of the ball is changed.

16. Which one of the classification charts below is correct?

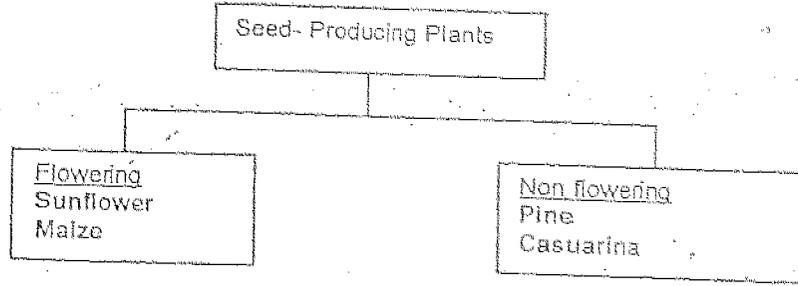
(1)



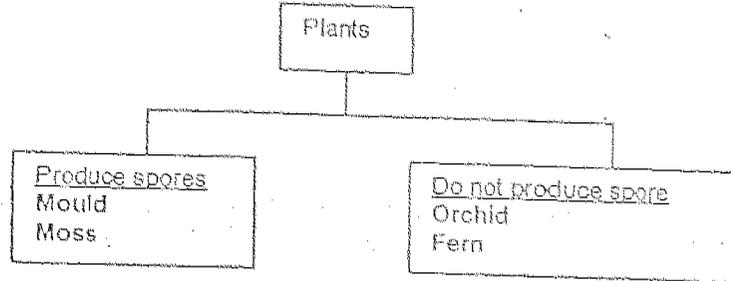
(2)



(3)



(4)



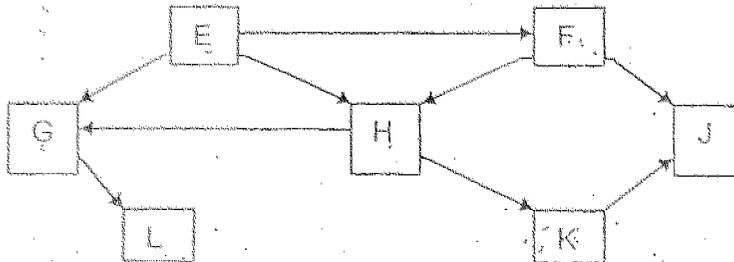
17. Which one of the following plant parts does not perform the function described?

	Plant Part	Function
(1)	Begonia leaf	Helps to lose excess water
(2)	Maize seed	Germinates and grow into seedling
(3)	Morning Glory stem	Climbs to receive sunlight
(4)	Potato root	Stores food

18. Which one of the following pairs shows the products common to both respiration and decomposition?

- (1) oxygen and water vapour
- (2) nutrients and carbon dioxide
- (3) water vapour and carbon dioxide
- (4) carbon dioxide and oxygen

19. Study the food web as shown below.

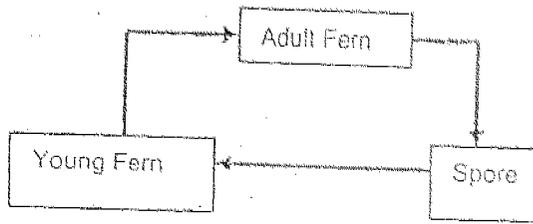


Based on the food web, which of these statements are likely to be true?

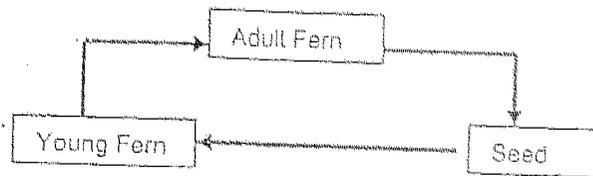
- A E is a food producer.
 - B G and F are omnivores.
 - C L and J are predators.
 - D F and K are both predator and prey.
- (1) A only
 - (2) B and D only
 - (3) A and C only
 - (4) A, B, C and D

20. Which one of the following life cycles best represents the development of a bird's nest fern ?

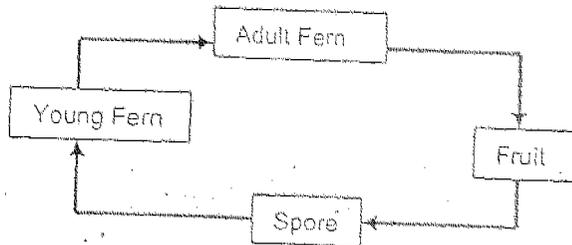
(1)



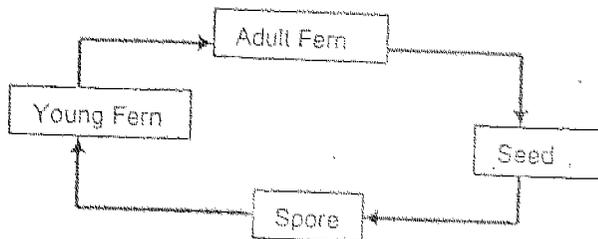
(2)



(3)



(4)



21. Which of the following statement(s) is/are definitely true about the life cycle of insects?

- A Nymphs of all insects live in water.
- B The life cycle of a dragonfly consists of 3 stages.
- C The young of insects may not feed on the same type of food as the adult.
- D Insects with life cycle of 4 stages takes longer time to develop into adult compared to those with life cycle of 3 stages.

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

22. Which one of the following statements explains how the budding of the yeast is different from the division of muscle cells?

- (1) Energy is required for cell division but not for budding
- (2) Budding is not a method of reproduction but cell division is.
- (3) Fertilization must always occur before budding but not cell division.
- (4) A new organism is produced during budding but not during cell division.

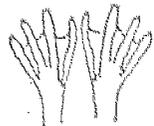
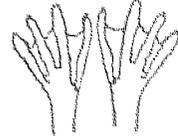
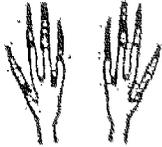
23. Which one of the following groups consists of only animals which have fertilized egg(s) developing outside the female body ?

- (1) dolphin, eagle, snake
- (2) seal, penguin, goldfish
- (3) guppy, pigeon, tortoise
- (4) platypus, frog, mosquito

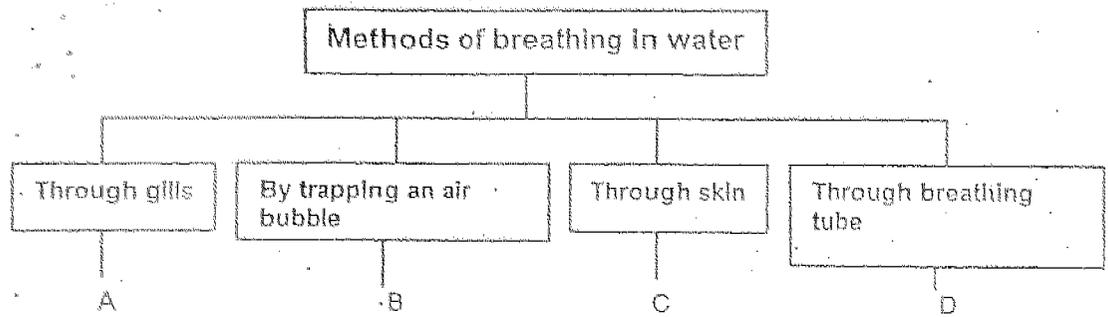
24. Which one of the following statements is true about a pollen grain ?

- (1) A pollen grain is produced by the stigma.
- (2) A pollen grain fuses with the seed during fertilization.
- (3) When a pollen grain lands on an anther of flower of the same species, a pollen tube is formed.
- (4) The male cells in a pollen grain pass traits of the parent to the offspring.

25. The yapok is a mammal that digs and lives in burrows by the river or lake. It swims and hunts for food underwater. Which one of the following pairs of fore and hind limbs are most probably those of the yapok ?

	Fore limbs	Hind limbs
(1)		
(2)		
(3)		
(4)		

26. Study the classification table below.



Which one of the following groups of animals correctly represent A, B, C and D ?

	A	B	C	D
(1)	tilapia	crab	frog	mosquito larva
(2)	dragonfly nymph	water spider	tubifex worm	water scorpion
(3)	shrimp	water stick insect	pond skater	damselfly nymph
(4)	water boatman	great diving beetle	tadpole	water flea

27. Below are statements describing a particular system Z.

- After fertilization, the ovary wall usually becomes fleshy.
- The male cells may be transported by wind to the female part of the organism.

Which one of the following consists of only parts belonging to the system Z?

- (1) sap, ovule
- (2) pistil, stigma
- (3) pistil, stamen
- (4) xylem, phloem

28. Jim ate a pink bar of almond-flavoured chocolate and said that it was sweet. Which of the following sense organs did he use to make these observations?

- A Eyes
- B Skin
- C Tongue

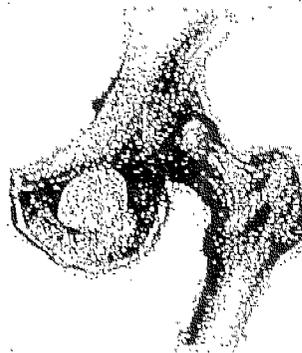
- (1) C only
- (2) A and C only
- (3) B and C only
- (4) A, B and C

29. Which of the following part(s) of the digestive system do(es) not produce digestive juices?

- A Mouth
- B Gullet
- C Stomach
- D Large intestine

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

30. Study the diagram below.



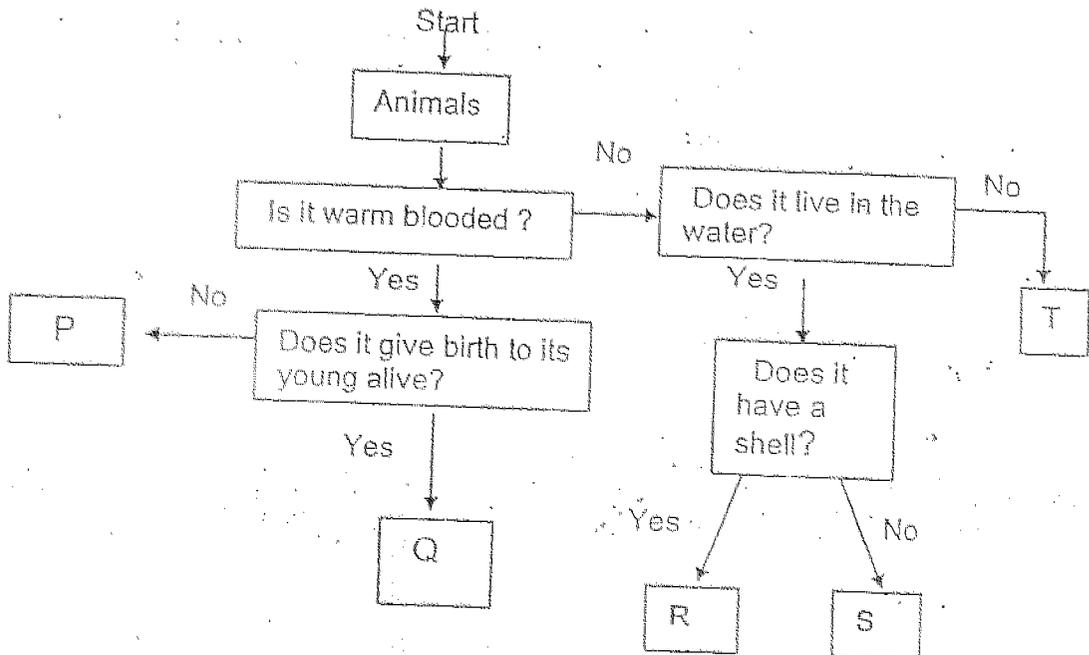
Which other part of the human body has a joint like the one shown in the diagram?

- (1) skull
- (2) elbow
- (3) knee
- (4) shoulder

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. The flow chart below shows the characteristics of 5 different animals represented by the letters P, Q, R, S and T. Study it carefully and answer the following questions.



- (a) Name one common-characteristic between animal R and S. (1m)

- (b) How are animal P and Q different? (1m)

- (c) Describe Animal R. (1m)

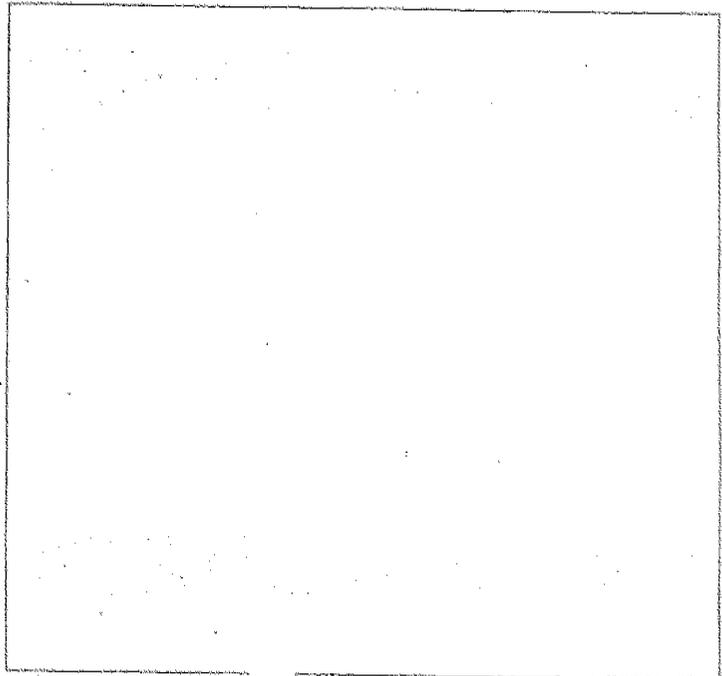
32. During a Science lesson, Joel learnt that the planet Earth is 150 million kilometres from the Sun. It is surrounded by a layer of air called the atmosphere.
Planet Pluto is 5,900 million kilometres from sun. It has an atmosphere made up of primarily nitrogen gas and methane. Joel also learnt that Planet Earth can support life but not Planet Pluto. Based on the given information, give two reasons why Planet Pluto does not support life. (2m)

(a) _____

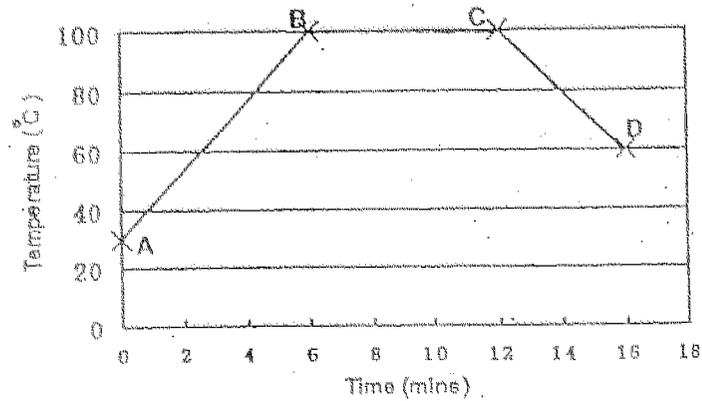
(b) _____

33. Using the symbols given below, draw a circuit diagram in the box provided to show the arrangement of 3 bulbs such that the circuit can continue to function even though one of the bulbs has fused. (2m)

	battery
	bulb
	wire



33. Sullin heated some water in a beaker at room temperature until it boiled. It was then left on the kitchen table to cool. She recorded her results in the graph as shown below.



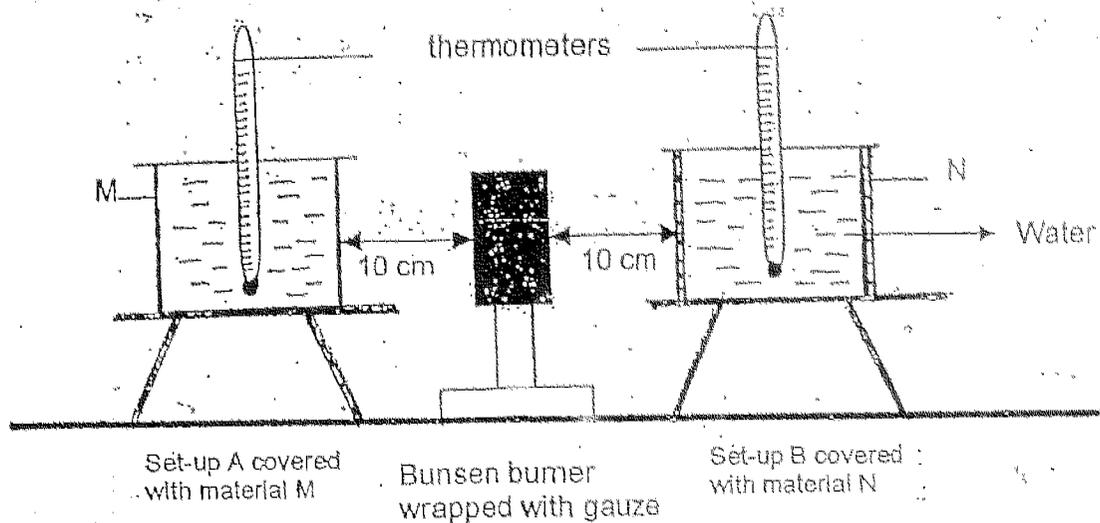
Below are 4 sentences based on her results. Indicate whether each of the statements is True, Not True or Not Possible to Tell by putting a tick (✓)

In the correct box.

(2m)

Statements	True	Not True	Not Possible to Tell
(i) Water has boiled for 12 minutes.			
(ii) Water only evaporates during period CD.			
(iii) Water has no definite volume during the period BC.			
(iv) Water exists in the same state during the periods AB and CD.			

35. Lily carried out an experiment as shown in the set-ups below. The beaker in Set-up A was covered with material M while the beaker in Set-up B was covered with material N. The temperature of the water in the 2 beakers at the start of the experiment was 27°C .



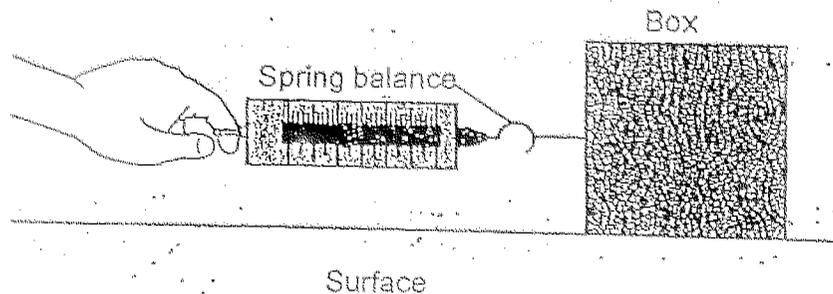
She then recorded the temperature of the water in the 2 set-ups every 10 minutes as shown in the table below.

Time (mins)	Temperature in Set-up A ($^{\circ}\text{C}$)	Temperature in Set-up B ($^{\circ}\text{C}$)
10	50°C	40°C
20	72°C	52°C
30	95°C	70°C

- (a) What was her aim in carrying out the experiment? (1m)

- (b) Based on the results of the experiment, which material, is more suitable for-making containers for keeping food warm? Give a reason for the choice of the material. (1m)

36. Danny pulled a box over the same distance across 3 different surfaces P, Q and R.



Then he recorded the amount of force needed for each occasion and recorded the results as shown in the table below.

Surface	Force (g)
P	670
Q	815
R	364

- (a) If Q was a carpeted surface, write the letters P and R in the correct spaces below. (1m)

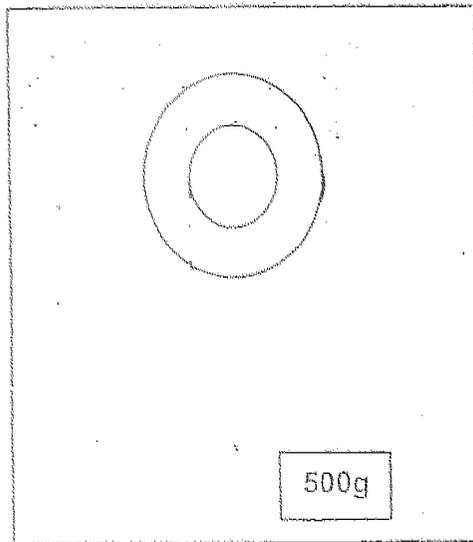
Glass surface _____

Polished wooden surface _____

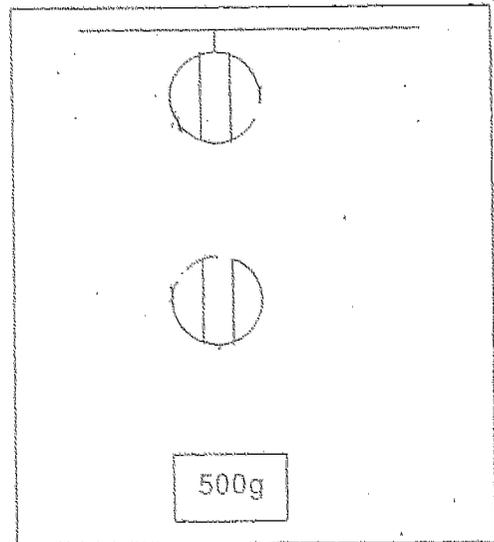
- (b) State the type of force that the spring balance measures in each of the following occasions.

	(i) When the box is pulled along the surface with the spring balance.	(ii) When the box is lifted vertically upwards with the spring balance.
Type of force		

37. Yasmin set up an experiment using two simple machines as shown in the diagrams below. Set-up A shows a wheel and axle while Set-up B shows a pulley system made up of a single fixed and a single movable pulley.



Set-up A



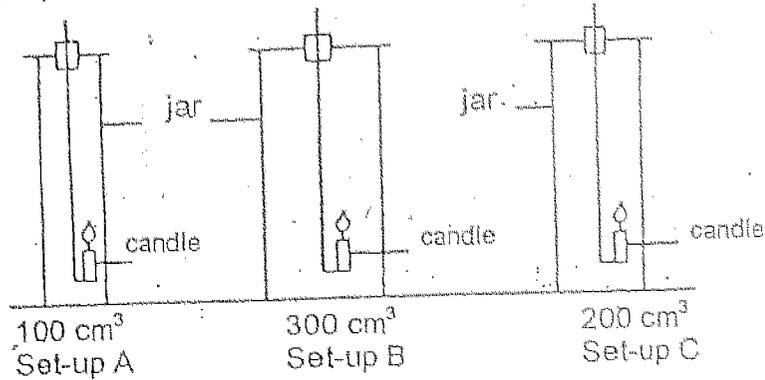
Set-up B

- a) Complete the two diagrams to show how Yasmin can effectively reduce the effort needed to lift a 500g load in each of the set-ups. You may draw lines to represent strings needed to lift the load. You are to show where the effort is applied in each simple machine by drawing an arrow head. (2m)
- b) Give two similarities between the machines. (Do not compare their shapes or sizes.) (2m)

(i) _____

(ii) _____

38. Susan put 3 similar candles into 3 jars of different volume as shown in set-ups A, B and C.

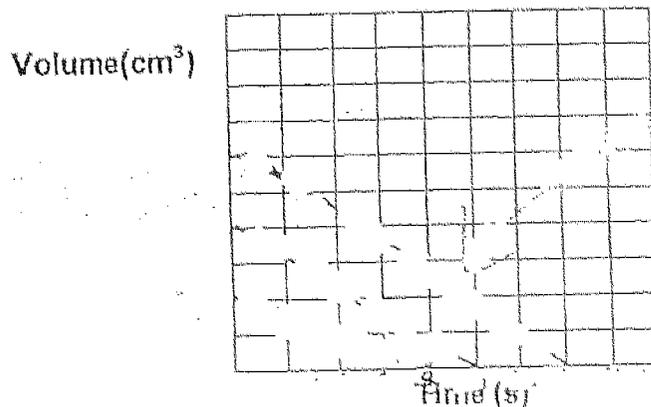


The time taken by each candle to go off was noted and recorded in the table shown below:

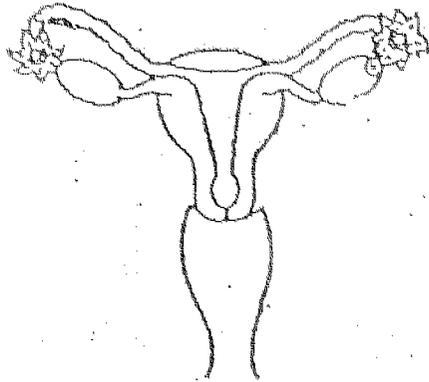
Set-up	Time (s)
A	8
B	14
C	10

- (a) What is the relationship between the volume of the jar and the time taken for the candle flame to go off? (1m)

- (b) In the grid below, draw a graph to show the relationship between the volume of the jar and the time taken for the candle flame to go off. (2m)



39. The diagram below shows the female reproductive system of a human.



(a) On the diagram, label and name the part that produces the egg. (1m)

(b) Name the part of the male reproductive system that produces the sperm. (1/2 m)

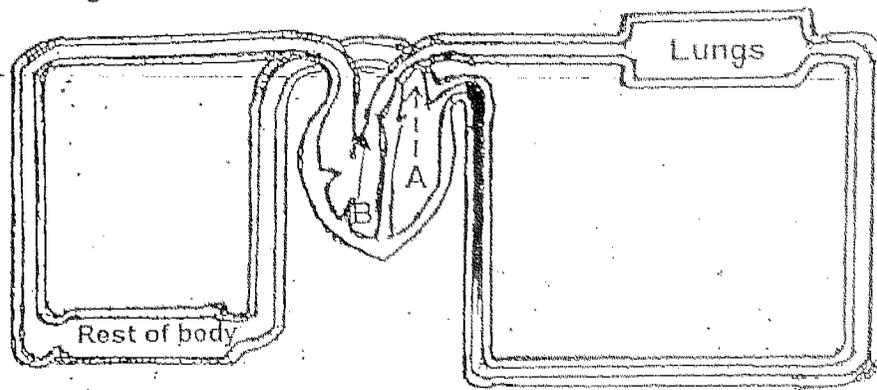
(c) Name the part of the female reproductive system where the fertilized egg develops into a baby. (1/2 m)

40. State 2 adaptations of fruits that are dispersed by water. (2m)

(a) : _____

(b) : _____

41. The diagram below shows the human circulatory system.

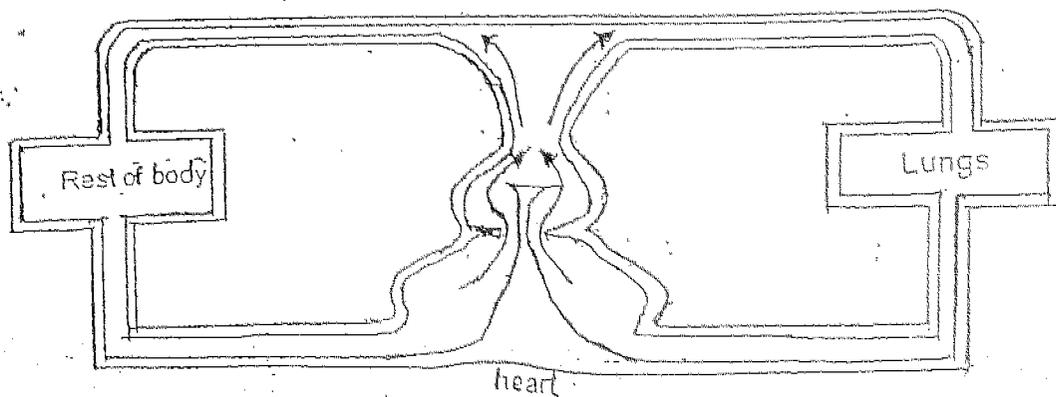


The arrows A (----->) and B (----->) represent the flow of blood from the heart.

(a) Name the arrow which represents blood flow which is rich in oxygen. (1/2m)

(b) Name the arrow which represents blood flow which is rich in carbon dioxide. (1/2m)

The diagram below shows the circulatory system of an amphibian.



Study the circulatory system of the human and that of the amphibian.

(c) Describe the flow of blood in the heart of the amphibian which makes it less efficient than that of the human. (1/2m)

42.

Explain how acid rain is formed.

(2m)

43.

The forest on a slope of a hill was cleared by burning. It was found that years later, very few plants grew on the cleared area. On the other hand, the plants at the foot of the hill were growing very well.

(a) Explain why few plants grew on the cleared slope. (1m)

(b) Name another effect of this type of deforestation. (1m)

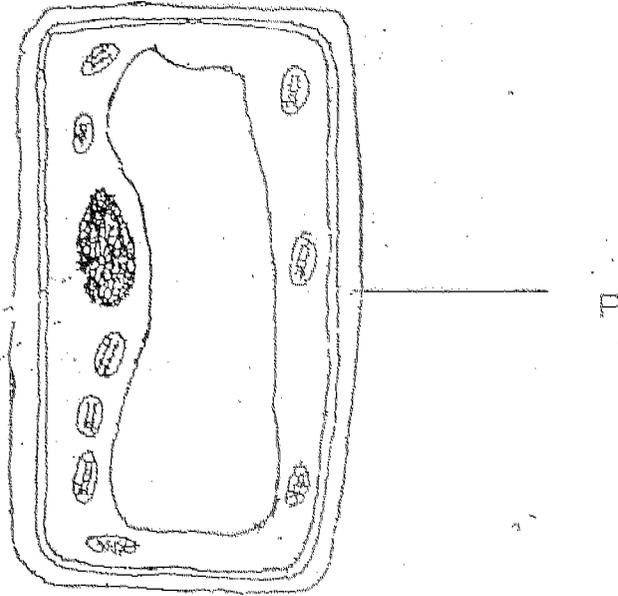
44. Jane noticed that initially there were only some mushrooms growing on a log in her garden. A few months later, some ferns started to grow on it.

(a) Explain why the ferns were only able to grow on the log a few months later. (1m)

(b) Name an animal which is not an insect that feeds on the woody tissue of the log. (1m)

(c) Besides feeding, state one other reason why animals were found at the log. (1m)

45. The diagram below is a plant cell.

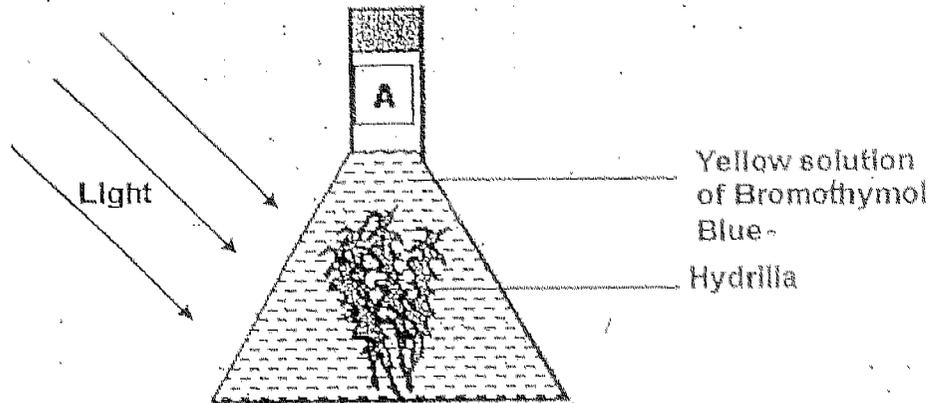


(a) State the function of the part labelled P. (1m)

(b) Name the part of the plant cell that enables it to be a food producer. (1m)

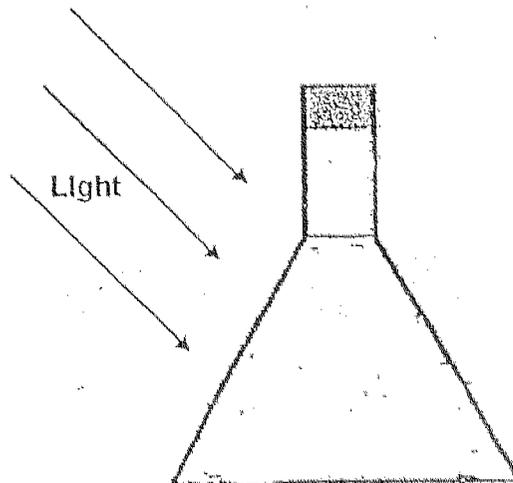
(c) A scientist wishes to introduce some genetic information into the above plant cell so that it will produce a new substance. He also wanted this information to be passed to daughter cells when this plant cell divides. On the above diagram, name and label the part of the cell that he should introduce the genetic material. (1m)

46. Bromothymol Blue turns from blue to yellow when carbon dioxide is present. Sam wanted to show that carbon dioxide is required by hydrilla during photosynthesis. He labelled a flask A and placed Bromothymol Blue in it. Using a rubber tubing, he blew bubbles until the solution was deep yellow. Then he set up an experiment in a laboratory as shown below.



- (a) Besides carbon dioxide and light, name 2 other conditions required for photosynthesis to occur. (1m)

- (b) Complete and label the diagram below to show the control that Sam should set up for this experiment. (1m)



- (c) After sometimes, Sam saw some bubbles rising from the hydrilla. Explain how these bubbles were formed. (1m)

- (d) Sam expected the yellow solution in flask A to turn blue after some time. After more than 5 hours, the hydrilla was still photosynthesizing but the solution turned a lighter yellow and remained yellow. Explain why the solution remained yellow. (1m)

End of paper

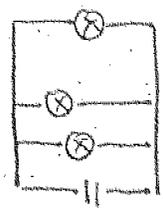
Remember to check your work thoroughly.

Setter: Mrs Loo PF, Mr Pang K K

SA 2

- 1) 3
- 2) 1
- 3) 3
- 4) 1
- 5) 3
- 6) 3
- 7) 4
- 8) 2
- 9) 1
- 10) 3
- 11) 4
- 12) 3
- 13) 3
- 14) 2
- 15) 2
- 16) 3
- 17) 4
- 18) 3
- 19) 3
- 20) 1
- 21) 3
- 22) 4
- 23) 4
- 24) 3
- 25) 3
- 26) 1
- 27) 3
- 28) 2
- 29) 3
- 30) 2
- 31) a) They both live in the water.
 b) P does not give birth to its young alive but Q gives birth to its young.
 c) It is not warm-blooded, lives in the water and has a shell.
- 32) a) Planet Pluto is much further away from the Sun than Earth so it does not receive as much heat as Earth. / *pluto is too far from the sun.*
 b) Planet Pluto's atmosphere is made of nitrogen gas and methane but living things need oxygen to live. / *There is no oxygen on pluto.*

33)



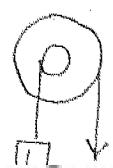
- 34) i) not true
 ii) not true
 iii) not possible to tell
 iv) true

- 35) a) She wanted to see which, M or N, was a better conductor of heat. / *she was trying to find out which material is a good conductor of heat.*
 b) Material N, as it is an insulator of heat and will not conduct too much heat away from the food.

- 36) a) R
 P

b) Frictional force Gravitational force

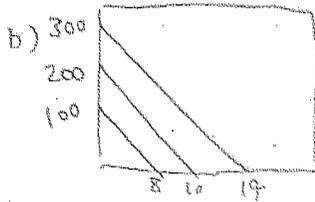
37) a)



37) b) i) They both change the direction of a force.

ii) They both make the effort move a longer distance than the load. / They enable less effort to move a heavier load.

38) a) The larger the volume of jar, the longer the time taken for the candle to go off. / The smaller the volume of jars, the lesser the time taken by each candle to go off.



39) a)  b) testis
c) womb / uterus

40) a) They have waterproof, fibrous husks to float on water.

b) They have air spaces trapped in the fruit. / The fruit has waterproof husk to prevent water from entering it.

41) a) Arrow A b) Arrow B

c) The oxygenated blood and deoxygenated blood are mixed together so that blood reaching the body is not totally oxygenated. / There is mixing of oxygenated and deoxygenated blood in the heart.

42) When water evaporates, it mixes with air pollutants or chemicals in the air and condenses into water droplets. The water droplets gather into clouds and fall as rain with the chemicals still dissolved in them.

43) a) The soil eroded and was washed down the hill by rain, so the nutrient-rich soil gathered at the bottom and allowed plants to grow. / There was no roots of plant to hold the soil down.

b) Haze / Extinction of species of animals.

44) a) There were not enough mineral salts in the rotting log.

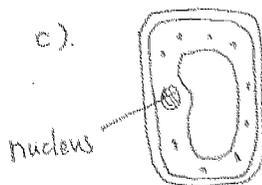
b) The woodlouse

c) They were hiding from predator.

45) a) It gives the plant cell its shape. / support the cell.

b) Chloroplasts

c).



46c) They were formed when the hydrilla gave out oxygen through photosynthesis.

46d) Respiration also produces carbon dioxide so solution remains yellow.

46) a) Water and chlorophyll.

c) The bubbles were filled with oxygen, which is a by-product of photosynthesis.

