



NANYANG PRIMARY SCHOOL

2022  
PRIMARY 4  
END-OF-YEAR EXAMINATION

SCIENCE  
(BOOKLET A)

Total Time for Booklets A and B: 1 h 45 min

**INSTRUCTIONS TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For each question from 1 to 28, four options are given.  
Indicate your choice in this booklet.  
Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

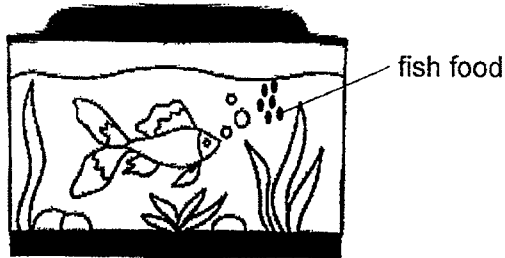
Name: \_\_\_\_\_ (      )

Class: Primary 4 (      )



**Section A: Multiple Choice Questions (56 marks)**

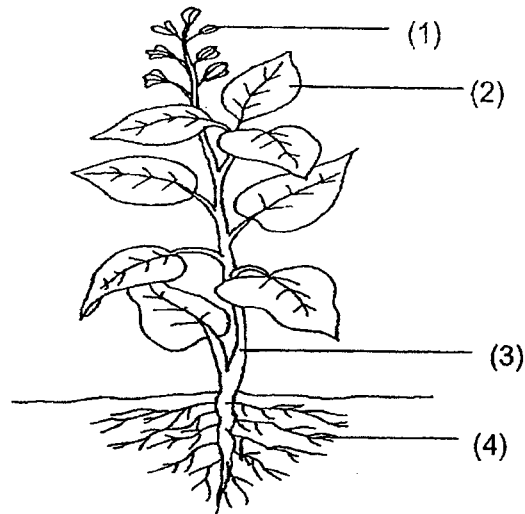
1. Jane has a fish in a glass tank. When she drops some fish food into the tank, the fish swims towards the food.



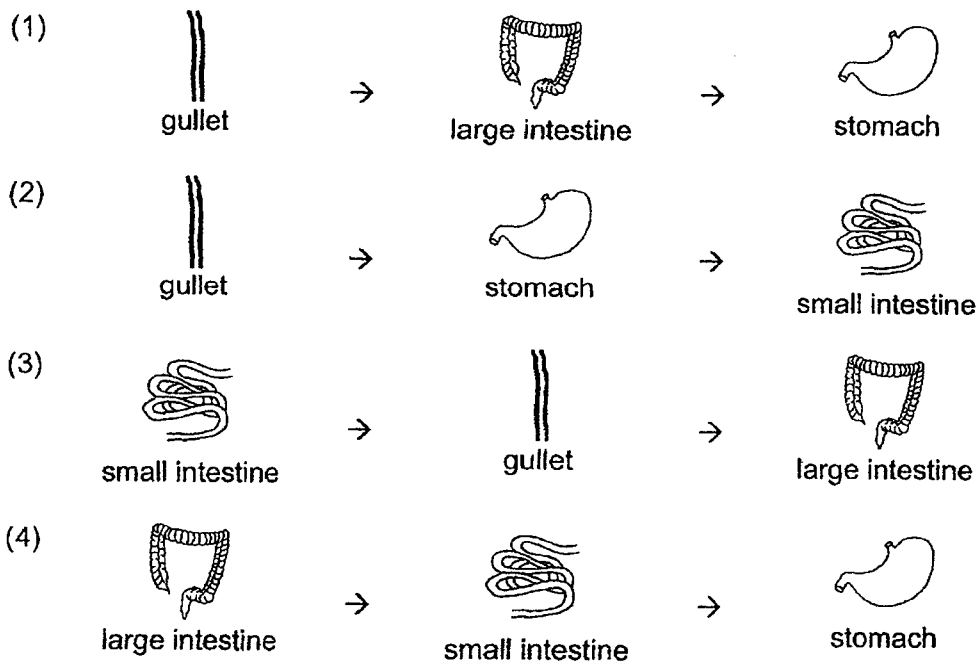
This shows that the fish is a living thing because it can \_\_\_\_\_.

- |     |           |     |         |
|-----|-----------|-----|---------|
| (1) | breathe   | (2) | grow    |
| (3) | reproduce | (4) | respond |
2. Which statement is true about most mammals?
- (1) They can swim.
  - (2) They have wings.
  - (3) They have four legs.
  - (4) They give birth to their young alive.

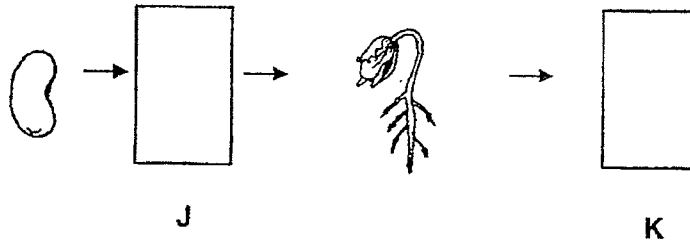
3. Which part, (1), (2), (3) or (4), holds the plant upright?



4. Which one of the following shows the correct order when food moves through some parts of the digestive system?



5. The diagram below shows the growth of a young plant with two missing stages, J and K.



Which one of the following shows the correct stages for J and K?

	J	K
(1)		
(2)		
(3)		
(4)		

6. Which one of the following can be attracted by a magnet?

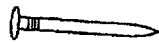
(1) a piece of cloth



(2) a sheet of glass



(3) an iron nail



(4) a wooden ball



7. Which one of the following objects can be bent easily without breaking?

(1) a glass cup



(2) a metal bottle



(3) a rubber band



(4) a wooden ruler



8. Which one of the following is **NOT** a source of light?

(1) fire

(2) an apple

(3) a lit bulb

(4) The Sun

9. Which one of the following is a source of heat?

(1) a coat

(2) a candle flame

(3) a blanket

(4) a woollen cap

10. Which one of the following substances has a fixed shape?

- (1) air  
(3) oil

- (2) rock  
(4) milk

11. Study the classification table below.

X	Y
cat	snake
lion	goldfish
elephant	dolphin

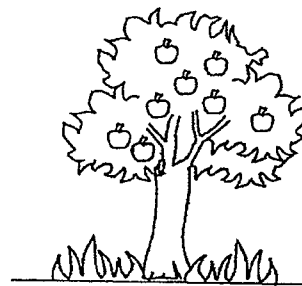
Which of the following headings best represent X and Y?

	X	Y
(1)	have 4 legs	have no legs
(2)	living things	non-living things
(3)	animals that live in water	animals that live on land
(4)	can move by themselves	cannot move by themselves

12. The diagram below shows two plants.



Plant B



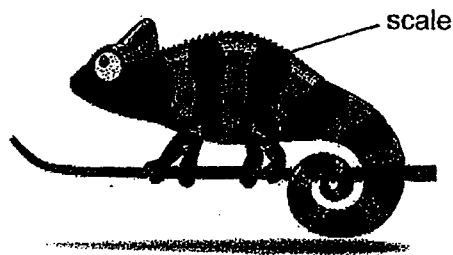
Plant E

Which one of the following statements about plant B and plant E is correct?

- (1) Only plant E reproduces by seeds.  
 (2) Both plants cannot make their own food.  
 (3) Only plant B needs air, food and water to survive.  
 (4) Both plants can move freely on their own from place to place.

13. The characteristics of 4 animals, P, Q, R and S are listed in the table below.

Characteristics	P	Q	R	S
Has hair			✓	
Has 4 legs			✓	✓
Has a beak	✓			
Has 3 body parts		✓		



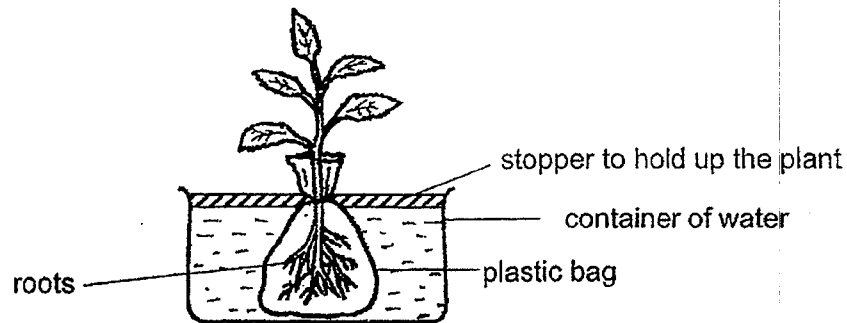
Animal X

Which one of the animals P, Q, R or S best represents animal X as shown above?

- |              |              |
|--------------|--------------|
| (1) Animal P | (2) Animal Q |
| (3) Animal R | (4) Animal S |
14. Which one of the following statements about fungi and bacteria is correct?
- (1) Fungi can make their own food.
  - (2) Bacteria can only be seen with our naked eyes.
  - (3) Fungi can move freely from place to place on its own.
  - (4) Some bacteria can cause diseases such as food poisoning.



15. Pauline did an experiment by wrapping the roots of her plant in a plastic bag before placing it into a container of water as shown in the diagram below.



One week later, she observed that the plant dried up and the leaves turned yellow and died.

Based only on her observations, what can Pauline conclude from this experiment?

- (1) The leaves make food for the plant.
  - (2) The roots take in water for the plant.
  - (3) The roots cannot hold the plant firmly.
  - (4) The stem takes in mineral salts for the plant.
16. Our body systems are made up of different organs.  
Which of the following organs have been correctly classified in the table below?

	<b>Skeletal system</b>	<b>Digestive system</b>	<b>Respiratory system</b>
(1)	skull	stomach	lungs
(2)	skull	mouth	blood vessels
(3)	heart	nose	windpipe
(4)	muscles	mouth	nose

17. Ben was playing when his finger was accidentally hit by a ball.



Finger hit by a ball



Finger became swollen and could not be straightened

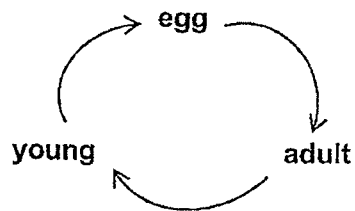
He felt a sudden pain and saw that his finger became swollen. He could not straighten his finger as shown in the diagram above. He went to see the doctor and he was told that he had fractured his finger.

Which one of the following human organ systems would he most likely have injured?

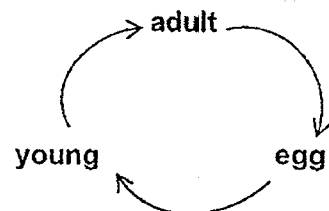
- |                        |                        |
|------------------------|------------------------|
| (1) Skeletal system    | (2) Digestive system   |
| (3) Circulatory system | (4) Respiratory system |

18. Which of the following shows the correct life cycle of a butterfly?

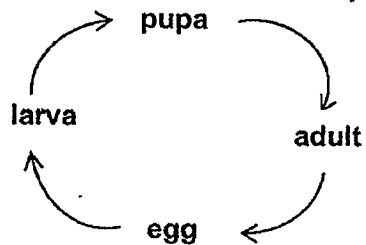
(1)



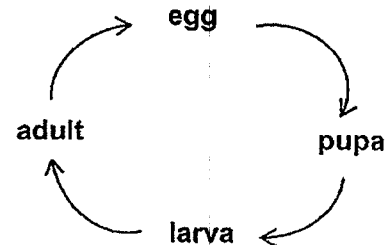
(2)



(3)



(4)



19. Which of the following statement(s) about the life cycle of the cockroach is/are true?

- A It has a pupa stage.
- B The cockroach lives on land.
- C The young resembles the adult.
- D The cockroach has a four-stage life cycle.

(1) A and D only

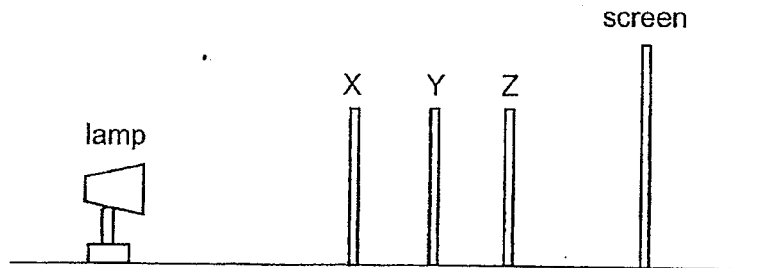
(2) B and C only

(3) B, C and D only

(4) A, B, C and D

20. Sammy wanted to find out how the property of different materials used affect the shadow formed.

His experiment was conducted in a room with only one light source, a screen and three different materials, X, Y and Z and as shown in the diagram below.

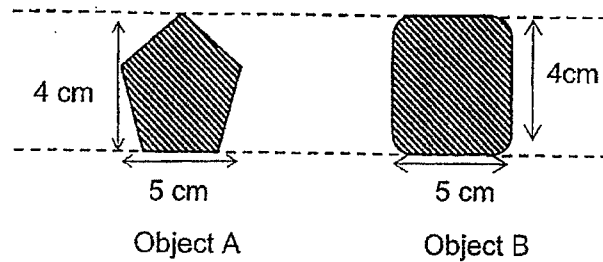


When the lamp was turned on, there was a patch of bright light seen on Y. A shadow was observed on Z and the screen.

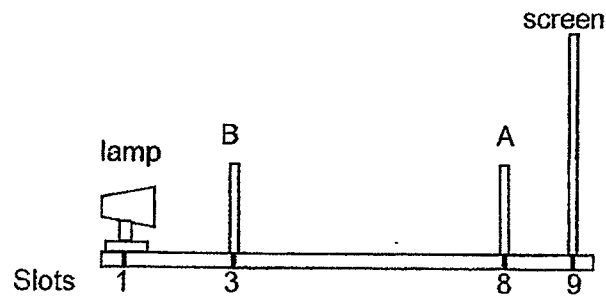
Which of the following best describe the property of materials X, Y and Z?

	Allow light to pass through it	Does not allow light to pass through it
(1)	Z	X and Y
(2)	X and Y	Z
(3)	Y and Z	X
(4)	X	Y and Z

21. The diagram below shows two wooden objects, A and B.

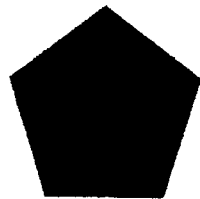


The two objects were arranged using the Light Kit such that a shadow was formed on the screen.



Which one of the following correctly shows the shadow formed?

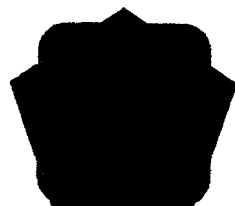
(1)



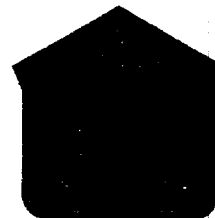
(2)



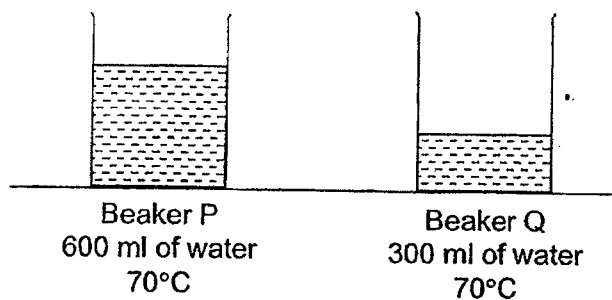
(3)



(4)



22. Rahim set up two beakers of water. Beaker P contains 600 ml of water at  $70^{\circ}\text{C}$ . Beaker Q contains 300 ml of water at  $70^{\circ}\text{C}$ . He then placed them in a room at temperature of  $25^{\circ}\text{C}$  for 2 hours as shown in the diagram below.



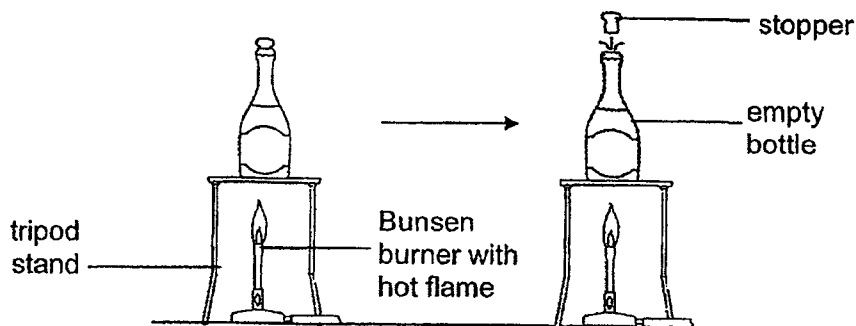
Rahim made some statements based on his observations:

- A The water in both beakers will lose heat to the surroundings.
- B The water in both beakers will gain heat from the surroundings.
- C The water in both beakers will reach the same temperature after 1 day.
- D The water in both beakers will have the same amount of heat at the start of the experiment.

Which of the following statement(s) is/are **wrong**?

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

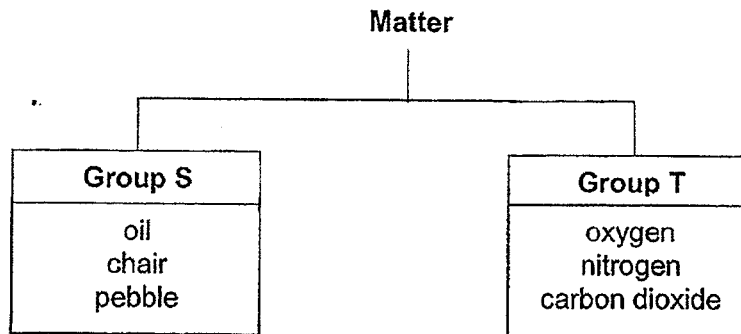
23. An empty bottle is covered with a stopper. It was placed on a tripod stand, above a Bunsen burner with a hot flame. After some time, the stopper popped out of the bottle.



Which of the following explains this observation?

- (1) The Bunsen burner lost heat and contracted.
- (2) The air in the bottle lost heat and contracted.
- (3) The air in the bottle gained heat and expanded.
- (4) The Bunsen burner gained heat from the surroundings.

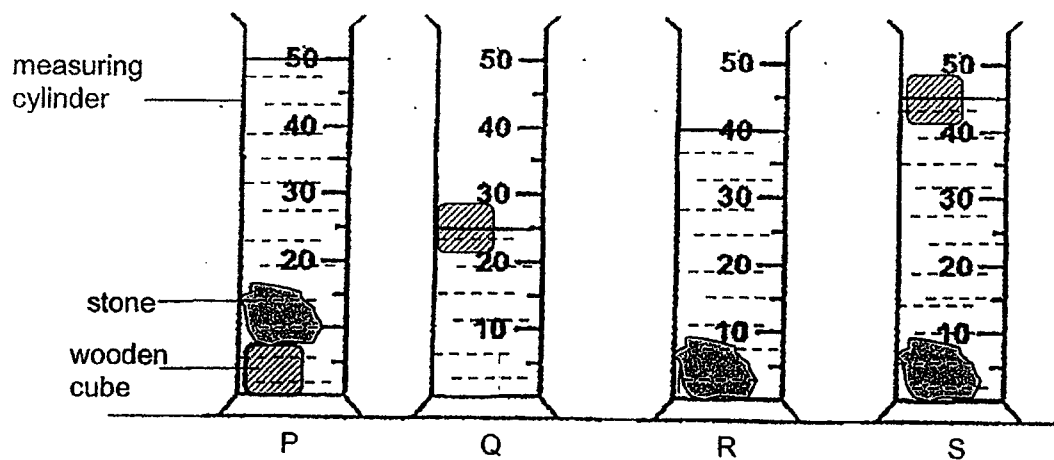
24. Study the classification chart below.



Based on the classification chart above, which of the following headings correctly represent groups S and T?

	Group S	Group T
(1)	occupies space	does not occupy space
(2)	has definite shape	does not have definite shape
(3)	has definite volume	does not have definite volume
(4)	can be compressed	cannot be compressed

25. Alina conducted an experiment with four set-ups, P, Q, R and S using identical measuring cylinders. Each measuring cylinder contained 20 cm<sup>3</sup> of water. She placed identical wooden cubes and stones in the measuring cylinders as shown below.



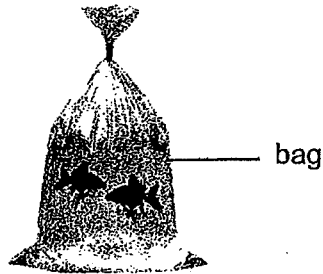
Based on the observations above, which one of the following correctly shows the volumes of the wooden cube and the stone?

	Volume of wooden cube (cm <sup>3</sup> )	Volume of stone (cm <sup>3</sup> )
(1)	5	15
(2)	10	20
(3)	10	40
(4)	25	40



26. The table below listed the properties of 4 materials, A, B, C and D.

Properties	Material A	Material B	Material C	Material D
Is it strong?	No	Yes	Yes	Yes
Is it flexible?	Yes	Yes	Yes	No
Is it waterproof?	Yes	No	Yes	Yes



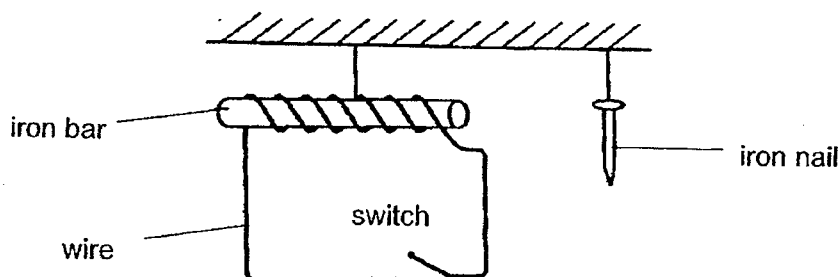
Mrs Lim went to the aquarium to get some live goldfish. She was given a bag to store the fish as shown in the diagram above.

Which one of the following materials is most suitable to make this bag?

- (1) Material A
- (3) Material C

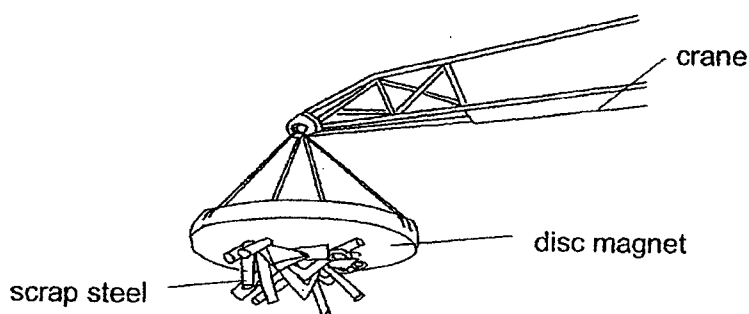
- (2) Material B
- (4) Material D

27. Suli wanted to make an electromagnet. She used the following materials as shown in the setup below. When the switch was turned on, she observed that the iron nail was not attracted to the iron bar.



Based on the diagram above, which one of the following statements explains why the iron nail was not attracted to the iron bar?

- (1) There was no battery.
  - (2) The wire was too short.
  - (3) The electromagnet was too weak.
  - (4) There were too many coils of wire around the bar.
28. The diagram below shows a crane with a disc magnet at its end. It is commonly found at a scrap yard to help move large amounts of scrap steel easily from one place to another. When the operator switches on the electric switch, the disc magnet attracts the scrap steel. When the operator switches off the electric switch, the scrap steel drops.



Which one of the following statements is true?

- (1) The disc magnet is not an electromagnet.
- (2) Only non-magnetic materials will be attracted to the disc magnet.
- (3) When the electric switch is turned on, the disc magnet loses its magnetism.
- (4) When the electric switch is turned on, the disc magnet becomes magnetised.

~ END OF BOOKLET A ~



**NANYANG PRIMARY SCHOOL**

**2022  
PRIMARY 4  
END-OF-YEAR EXAMINATION**

**SCIENCE  
(BOOKLET B)**

**Total Time for Booklets A and B: 1 h 45 min**

**INSTRUCTIONS TO CANDIDATES**

1. Write your name and index number in the space provided.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers to Questions 29 to 41 in the spaces provided.

<b>Booklet A:</b>		<b>56</b>
<b>Booklet B:</b>		<b>44</b>
<b>Total:</b>		<b>100</b>

Name: \_\_\_\_\_ (      )

Class: Primary 4 (      )

Parent's signature: \_\_\_\_\_

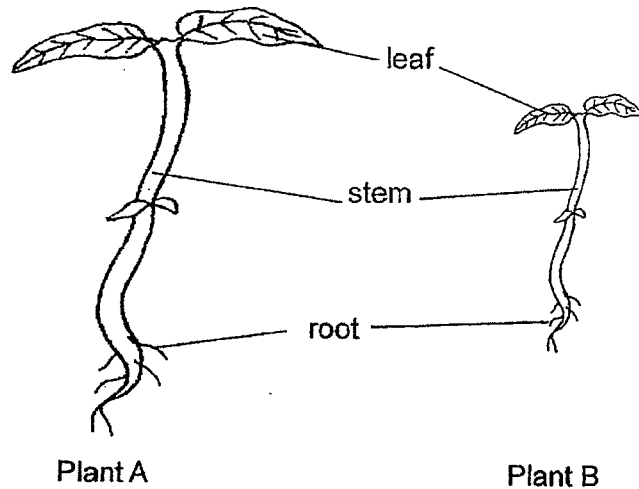
**Please sign and return the paper the next day. Any queries should be raised at the same time when returning the paper.**

Booklet B consists of 15 printed pages excluding this cover page.



**Section B: Open-Ended Questions [44 marks]**

29. The diagram below shows two plants with their parts labelled.

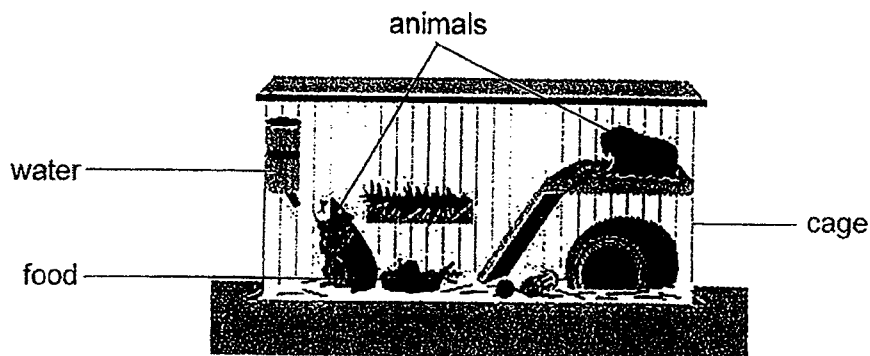


(a) What is one difference between the leaf of plant A and the leaf of plant B?

The leaf of plant A is \_\_\_\_\_ than the leaf of plant B. [1]

(b) The roots help the plant to take in \_\_\_\_\_ and mineral salts from the soil. [1]

30. Study the diagram below.



- (a) Put a tick (✓) in the correct box below.

After a few days, the amount of water in the water dispenser will:

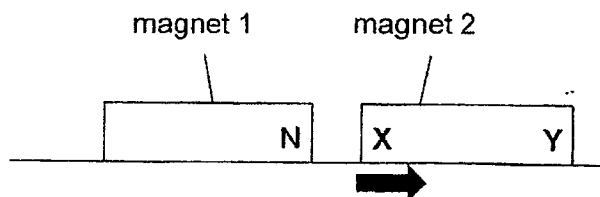
[1]

- ☐ Increase  
☐ Decrease  
☐ Remain the same

- (b) Based on the diagram above, state one substance this animal needs so that it remains alive. [1]

\_\_\_\_\_

31. When the north pole of magnet 1 is placed next to the pole labelled X of magnet 2, magnet 2 moves away from magnet 1, as shown by the arrow below.



The north pole of magnet 1 is labelled N.

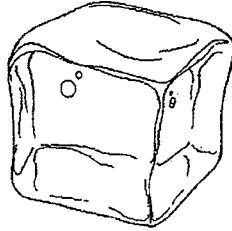
Identify the poles labelled X and Y on magnet 2.

[2]

X: \_\_\_\_\_

Y: \_\_\_\_\_

32. The diagram below shows a block of ice.



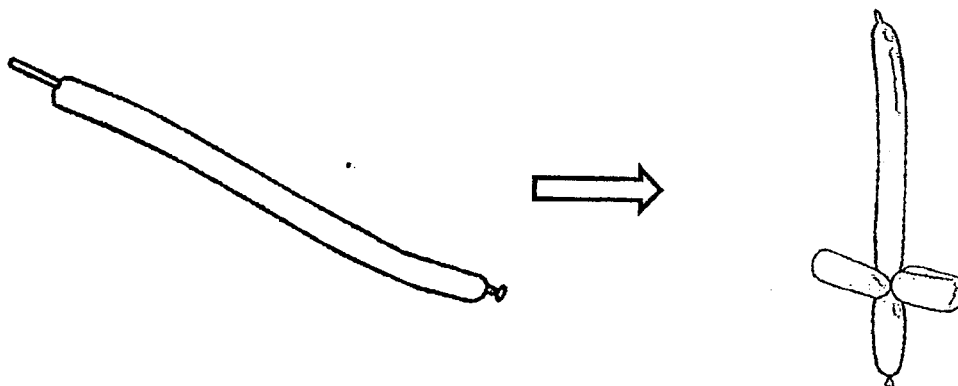
Fill in the blanks using the correct words in the box.

gas	decreases	liquid
remains unchanged	increases	

- (a) The block of ice is left on a table. After some time, the ice will change its state to become a \_\_\_\_\_ [1]

- (b) When Lisa places a pot of water over a fire, the temperature of the water \_\_\_\_\_ [1]

33. Ali pumps 5 pumps of air into a long balloon as shown. He then squeezes the balloon slightly without bursting it. He is able to twist the balloon into the shape of a sword.



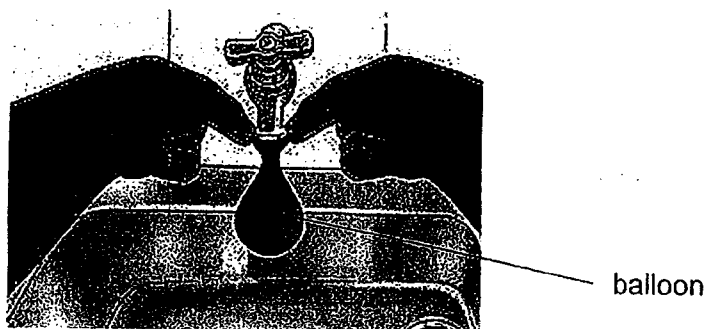
Both the volume and shape of air inside the balloon changes.

**Circle** the correct option in the statement below.

- (a) This shows that air is a 'solid' / 'liquid' / 'gas'.

[1]

Ali fills another balloon with 50 ml of water. After that, he empties the water in the balloon back into a beaker. The volume of water is still 50 ml.



The shape of the water changes but the volume of water remains the same.

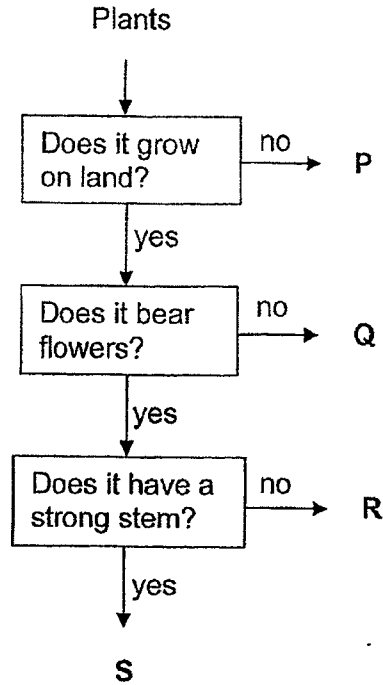
**Circle** the correct option in the statement below.

- (b) This shows that water is a 'solid' / 'liquid' / 'gas'.

[1]



34. Study the flowchart below.



(a) Based on the flowchart above, which of the following plants, P, Q, R or S, best represent the plants below? [2]

i) apple tree \_\_\_\_\_

ii) bird's nest fern \_\_\_\_\_

(b) Based on the flowchart above, state **all** the similarities between plants R and S. [1]

\_\_\_\_\_  
 \_\_\_\_\_

(c) Based on the flowchart above, state the difference between plants P and Q. [1]

\_\_\_\_\_  
 \_\_\_\_\_

35. Study the classification table below.

Group K	Group L
eagle	dog
ostrich	whale
penguin	giraffe

- (a) Based only on the animals' method of reproduction, identify the correct headings for groups K and L. [2]

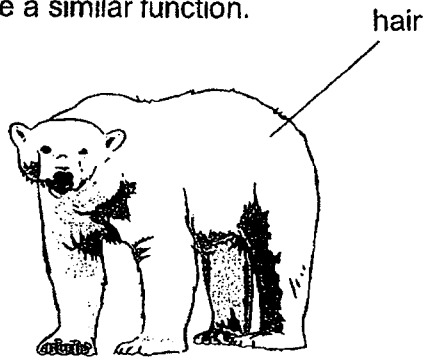
Group K: \_\_\_\_\_

Group L: \_\_\_\_\_

- (b) State another characteristic that only animals in Group K have. [1]

\_\_\_\_\_

Animal Q lives in a cold place. Both the hair on animal Q and the jacket that people wear have a similar function.



animal Q

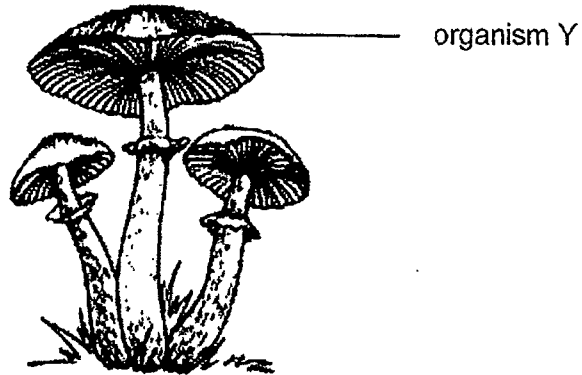


jacket

- (c) Describe how the hair helps animal Q to live in a cold place. [1]

\_\_\_\_\_

36. Manfred found organism Y growing on the grass as shown in the diagram below.



- (a) Which group of living things does organism Y belong to? [1]

\_\_\_\_\_

- (b) How does organism Y reproduce? [1]

\_\_\_\_\_

Over the next few days, the weather was hot and there was also more rainfall. Manfred then observed that the number of organism Y had increased.

- (c) State the conditions that organism Y needed in order to grow. [1]

\_\_\_\_\_

Manfred's mother bought some freshly baked bread and left it on the table. Manfred suggested she should keep the bread in the refrigerator to prevent the bread from getting mouldy.

- (d) Is Manfred's statement correct? Explain your answer. [1]

\_\_\_\_\_

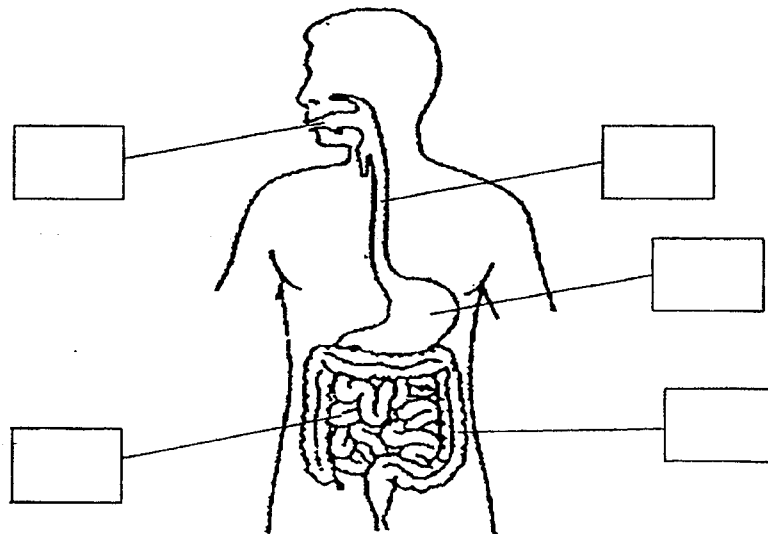
\_\_\_\_\_

37. Study the table below.

(a) Identify the human organ system based on their functions in the table below.[1]

	Human Organ system	Functions
(i)		works together with skeletal system to enable movement
(ii)		takes in oxygen from the air we breathe in and gives out carbon dioxide

(b) In the diagram below, identify the organs which **do not** produce digestive juices by marking an "X" in the correct box(es) only. [2]






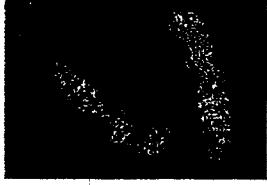
(c) Give a reason why chewing food before swallowing helps in faster digestion of food. [1]

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38. Hafiz found two eggs of a mealworm beetle in his garden. He kept them in a box with a netting as the cover and observed their growth. He took some photographs of the beetle in its different stages as shown in the table below.

			
Stage K	egg	adult	Stage L

Stages of the life cycle of a mealworm beetle

- (a) Based on the photographs above, identify the stages of the life cycle of the mealworm beetle. The egg and the adult stages have been correctly identified for you. [1]

Stage K: \_\_\_\_\_

Stage L: \_\_\_\_\_

- (b) At which stage in the life cycle does the beetle stop feeding? [1]

\_\_\_\_\_

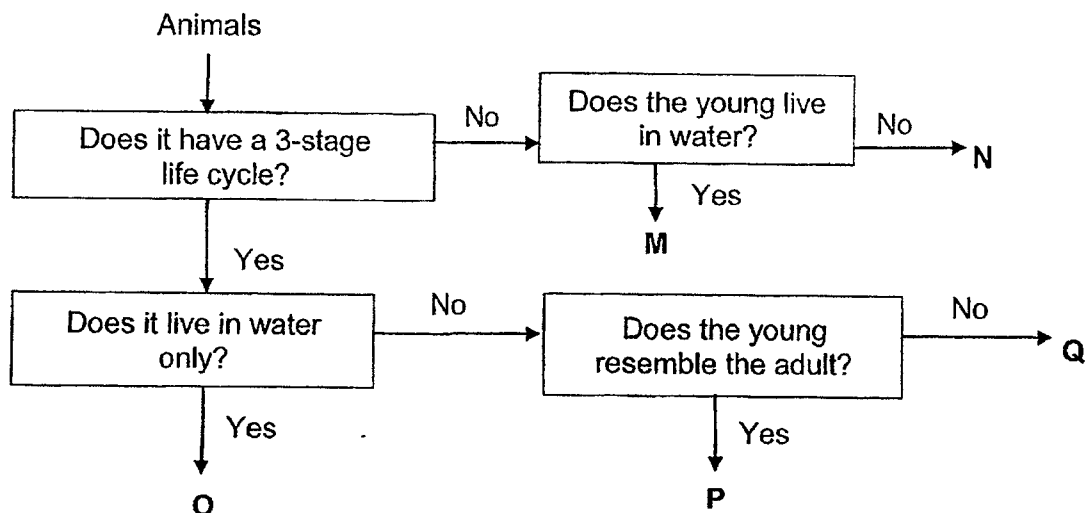
- (c) State one example of another animal that has the same stages of life cycle as the mealworm beetle. [1]

\_\_\_\_\_

(Turn over to continue Question 38)

(Continue from previous page)

Study the flowchart below.



- (d) Based on the flowchart above, state the difference between the life cycles of animals M and O. [1]

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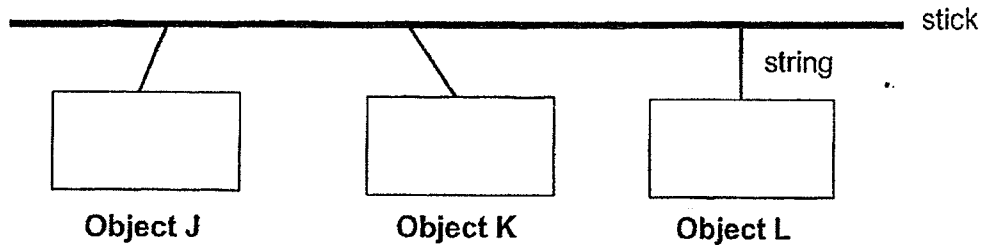


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- (e) Based on the flow chart above, which of the following animals, M, N, O, P or Q, best represent the animals in parts (i) and (ii)? [1]

(i)	frog	Animal _____
(ii)	mealworm beetle	Animal _____

39. Janet was playing with objects J, K and L. She hung them onto a long stick using 3 similar strings as shown in the diagram below. She observed that objects J and K moved away from each other while object L remained in the same position.



Janet concluded that objects J and K are definitely magnets.

- (a) Explain if Janet's statement is correct. [1]

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- (bi) Was object L made of a magnetic material? Give a reason for your answer. [1]

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- (bii) Identify a **material** that object L was most likely made of. [1]

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Janet had an iron nail and she turned it into a temporary magnet.

- (c) Using the stroke method, how can she increase the magnetic strength of the iron nail? [1]

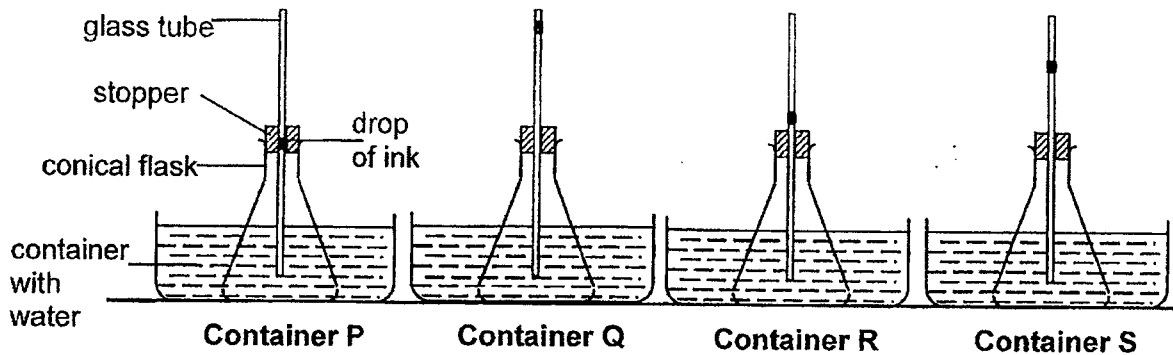
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40. Raj set up four identical conical flasks. He inserted each empty conical flask with a glass tube and a stopper. Each of the four tubes contained a drop of ink at the same height.

The flasks were then placed into four containers, P, Q, R and S, that were filled with water of different temperatures. After 20 minutes, the drop of ink in each tube changed its position as shown in the diagram below.



- (a) Based on the results above, arrange the containers, P, Q, R and S, from the highest temperature of water to the lowest temperature of water. [1]

highest temperature  $\longrightarrow$  lowest temperature

Container	Container	Container	Container

- (b) Explain why the drop of ink moved up the glass tube in container Q. [2]

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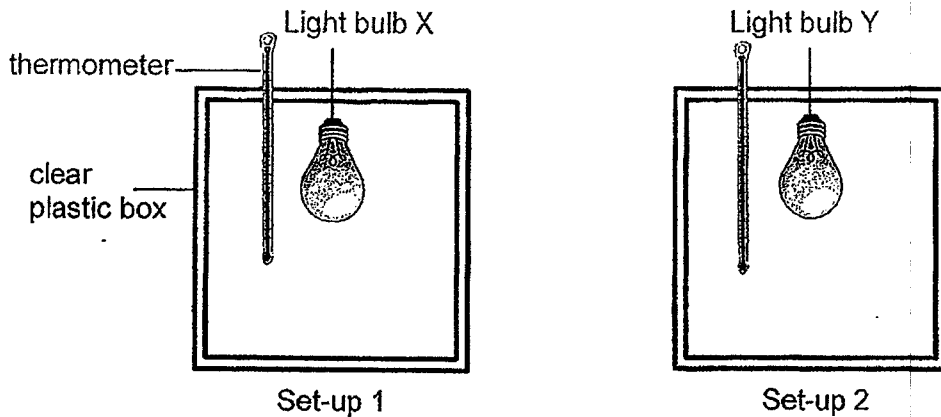
(Turn over to continue Question 41)



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Raj had learnt that he can save the environment by using energy-saving electrical appliances. He also learnt that energy-saving light bulbs produce less heat energy than other light bulbs.

Raj decided to conduct an experiment to find out which light bulb, X or Y, is more energy-saving as shown in the diagram below.



He observed that the drop of ink in set up 2 rose higher than the drop of ink in set-up 1. He also recorded the temperature of the air in the set-ups at the beginning and after 1 hour of the experiment as shown in the table below.

	Set-up 1	Set-up 2
At the start of experiment	25°C	25°C
At the end of experiment	26°C	28°C

- (c) Based on the diagram above, which light bulb, X or Y, is more energy-saving?

[1]

Light bulb \_\_\_\_\_

Raj wanted to set up another experiment using the items in set-up 1. He wanted to find out how the number of light bulbs affect the temperature of the air in the clear plastic box.

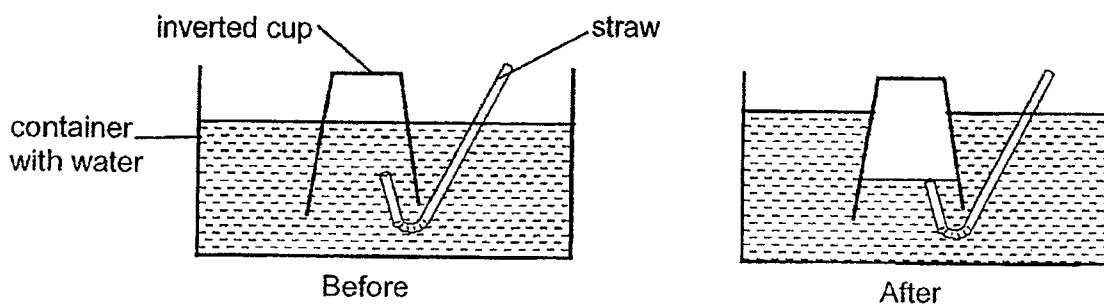
- (d) State the variable that Raj should change in this experiment.

[1]

\_\_\_\_\_

\_\_\_\_\_

41. Alyssa set up the experiment as shown in the diagram below. When she blew air into the straw, she observed that the water level inside the inverted cup decreased.



- (a) Explain why the water level inside the inverted cup had decreased. [1]

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- (b) Based on the experiment above, state the property of matter that is shown. [1]

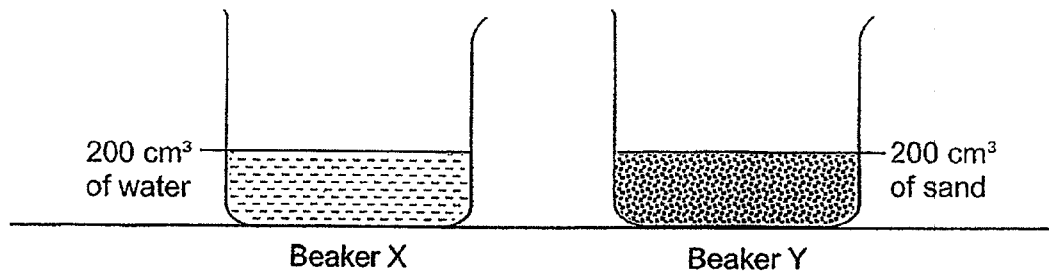
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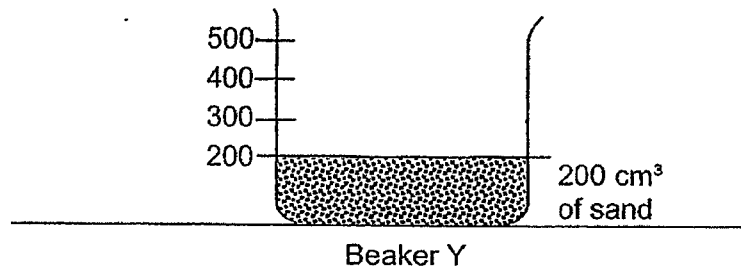
(Turn over to continue Question 42)

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Alyssa set up another experiment using beaker X and Y. She filled beaker X with  $200 \text{ cm}^3$  of water. She then filled beaker Y with sand, up to  $200\text{-cm}^3$  mark. Next, she poured all the water from beaker X into beaker Y



- (c) In the diagram below, draw the water level in beaker Y that would be observed. [1]



- (d) Explain your answer in part (c). [1]

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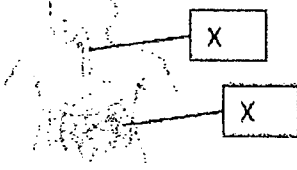
~ END OF BOOKLET B ~



**Suggested Answer Key – EYE 2022 (P4 SCIENCE)****Section A**

1	4	6	3	11	1	16	1	21	2	26	3
2	4	7	3	12	1	17	1	22	3	27	1
3	3	8	2	13	4	18	3	23	3	28	4
4	2	9	2	14	4	19	2	24	3		
5	4	10	2	15	2	20	4	25	2		

**Section B**

Qns No	Answer
29 (a)	The leaf of plant A is <b>bigger/taller/longer/larger</b> than the leaf of plant B.
(b)	<b>Roots – take in water and mineral salts from the ground</b>
30 (a)	<b>Decrease</b>
(b)	<b>Air / Oxygen / Food / Water</b>
31 (a)	<b>X: N or North, North-pole</b>
(b)	<b>Y: S or South , south-pole</b>
32 (a)	<b>liquid</b>
(b)	<b>increases</b>
33 (a)	<b>Gas</b>
(b)	<b>Liquid</b>
34 (a)	<b>i) S ; ii) Q</b>
(b)	<b>Both grow on land and bear flowers.</b>
(c)	<b>P does not grow on land but Q grows on land.</b>
35 (a)	<b>Group K: (Reproduce by) laying eggs</b> <b>Group L: (Reproduce by) giving birth to young alive</b>
(b)	<b>They have feathers/ They have a beak/ They have wings/can fly.</b>
(c)	<b>The hair keeps animal Q warm.</b>
36 (a)	<b>Fungi</b>
(b)	<b>Organism Y reproduce from spores.</b>
(c)	<b>It needs air/oxygen, warmth and water to grow.</b>
(d)	<b>Yes, it is correct.</b> <b>Data: It is colder/cold/too cold in the refrigerator.</b> <b>Explain: Mould needs warmth to grow.</b>
37 (a)	<b>i) muscular system ; ii) respiratory system</b>
(b)	
(c)	<b>The food will be broken down into smaller pieces for more surface area in contact with digestive juices to act on, so digestion of food takes a shorter time.</b>
38 (a)	<b>Stage K: larva</b> <b>Stage L: pupa</b>
(b)	<b>Stage L /Pupa</b>
(c)	<b>Any animal that has 4-stage life cycle</b> <b>E.g. butterfly, ladybird beetle, mosquito, etc</b>
(d)	<b>Animal M does not have 3-stage life cycle/ has 4-stage life cycle but Animal O has a 3-stage life cycle.</b>
(e)	<b>(i) Q</b> <b>(ii) N</b>

39 (a)	Yes, they are magnets as the like poles of objects J and K are facing each other so they repelled/push each other away.
(bi)	No. Object L is not attracted to object K.
(bii)	Any non-magnetic material e.g aluminium, plastic, rubber, fabric, glass, copper, wood, etc
(c)	She can increase the number of strokes on the iron nail.
40 (a)	Q, S, R, P
(b)	Air in the glass tube/in the flask gained heat from the hot water and expanded, thus pushing the ink up the glass tube.
(c)	Light bulb X
(d)	The number of light bulbs
41 (a)	Air displaced the water in the inverted cup/The air occupied the space in the inverted cup that was previously occupied by the water.
(b)	Matter/air occupies space.
(c)	Water level must be <u>more than</u> 200cm <sup>3</sup> but <u>less than</u> 400cm <sup>3</sup> of water. (A straight solid line must be drawn)
(d)	-There are air spaces between the sand. The water took up the space previously occupied by the air between the sand/ The water displaced the air between the sand.