NANYANG PRIMARY SCHOOL

2023
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 ( )

Booklet A consists of 17 printed pages including this cover page.

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Section A: Multiple Choice Questions [56 marks]

1. Which one of the following is a non-living thing?

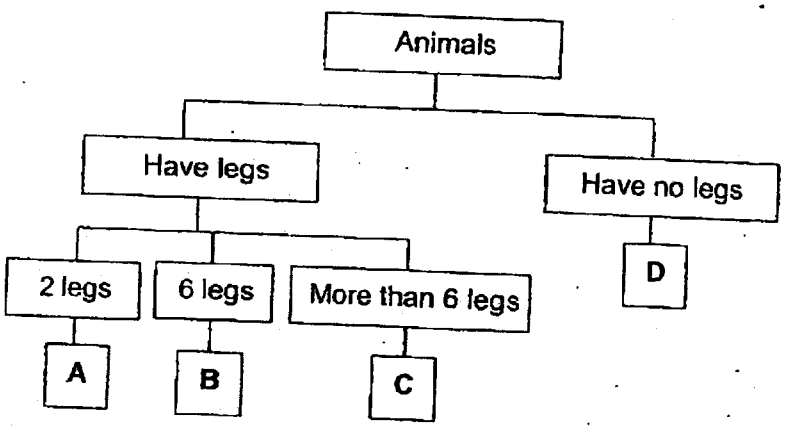
(1) 

(2) 

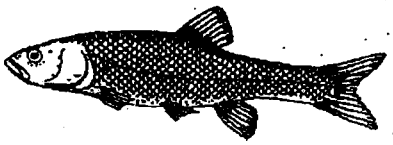
(3) 

(4) 

2. Study the chart below.



Where would you put this animal in the chart above?



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

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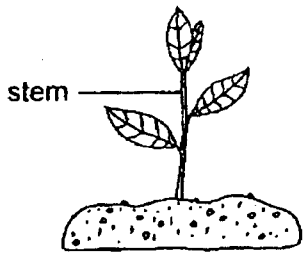
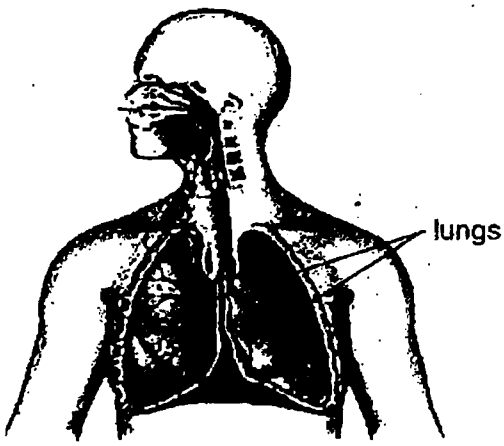
3. The diagram below shows a young plant.



What is the function of the stem in the plant above?

(1) To hold the plant upright
(2) To make food for the plant
(3) To absorb water for the plant
(4) To absorb mineral salts for the plant

4. Which organ system is shown in the diagram below?



(1) Circulatory system
(2) Muscular system
(3) Respiratory system
(4) Skeletal system

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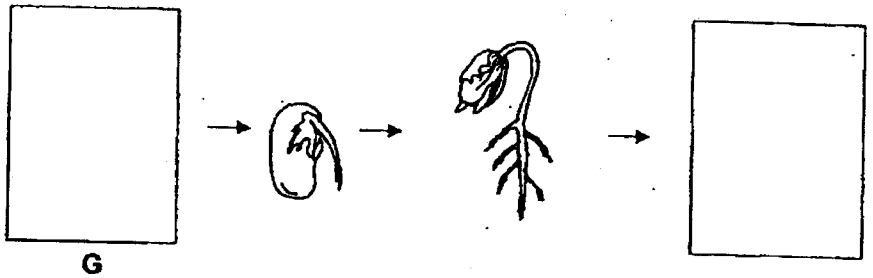
5. The diagram below shows the growth of a bean plant with two missing stages, G and H.



Which one of the following shows the correct stages for G and H?

	G	H
(1)		
(2)		
(3)		
(4)		

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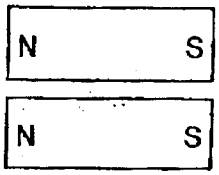
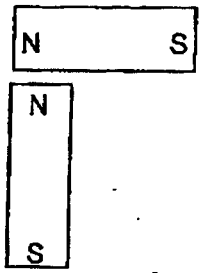
6. In which one of the following will the two magnets move towards each another?

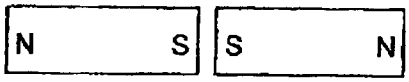
(1)



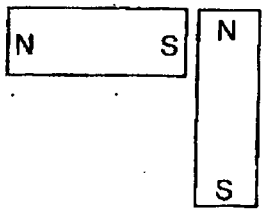
(2)



(3)



(4)



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7. The diagram below shows a raincoat to keep the user dry when it rains.

What is the property of plastic that explains why it is used to make the raincoat above?

(1) Plastic is waterproof.
(2) Plastic can float on water.
(3) Plastic cannot reflect light.
(4) Plastic allows light to pass through it.

8. Which one of the following is the best conductor of heat?

(1) A glass cup
(2) A metal cup
(3) A paper cup
(4) A plastic cup

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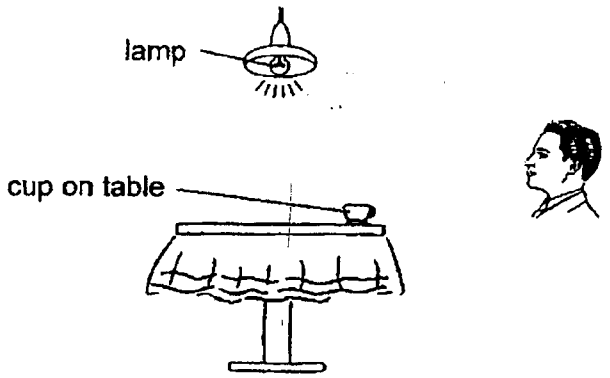
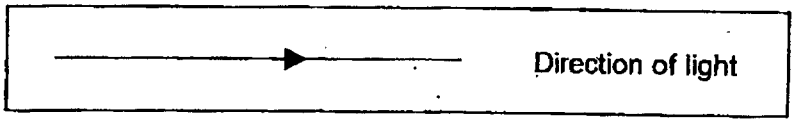
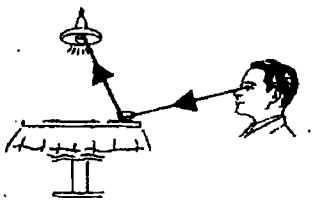
9. Look at the picture below.



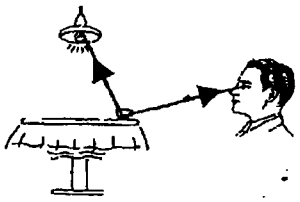
Which of the following explains why Ben can see the cup on the table?



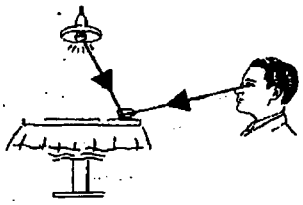
(1)



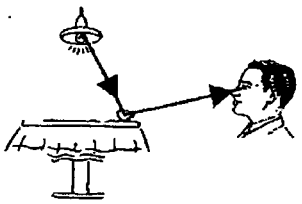
(2)



(3)



(4)



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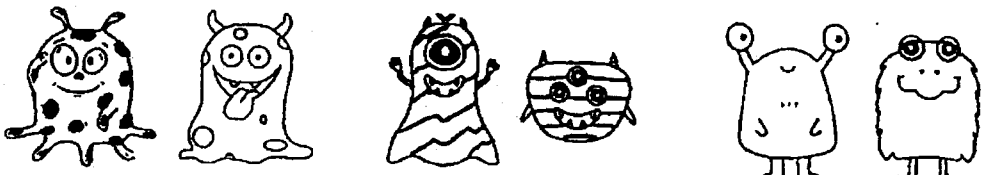
10. Matter is anything that has mass and occupies space.

Which one of the following is matter?

(1) Air
(2) Heat
(3) Light
(4) Shadow

11. Six aliens have been classified according to their characteristics.



Group A **Group B** **Group C**

Which of the following correctly states the characteristic which both aliens in each group have in common?

	Group A	Group B	Group C
(1)	Has spots	Has stripes	Has 2 eyes
(2)	Has stripes	Has 2 eyes	Has stripes
(3)	Has 2 eyes	Has spots	Has 2 eyes
(4)	Has spots	Has stripes	Has spots

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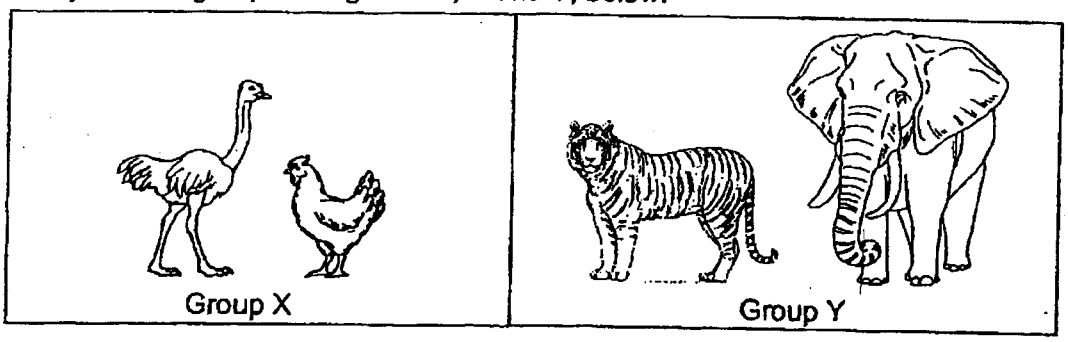
12. Study the two groups of organisms, X and Y, below.

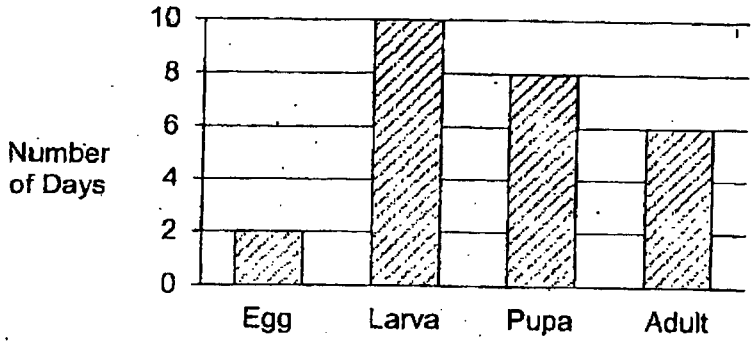


Which of the following statements correctly describe the animals in both groups X and Y?

A Animals in both group X and group Y are covered in hair.
B Animals in group X have beaks but animals in group Y do not.
C Animals in group Y give birth to young alive but animals in group X do not.

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

13. The graph below shows the stages in the life cycle of insect M and the number of days the insect remained at each stage of the life cycle.



How many days does insect M take to become an adult after the egg hatches?

(1) 16 days
(2) 18 days
(3) 20 days
(4) 24 days

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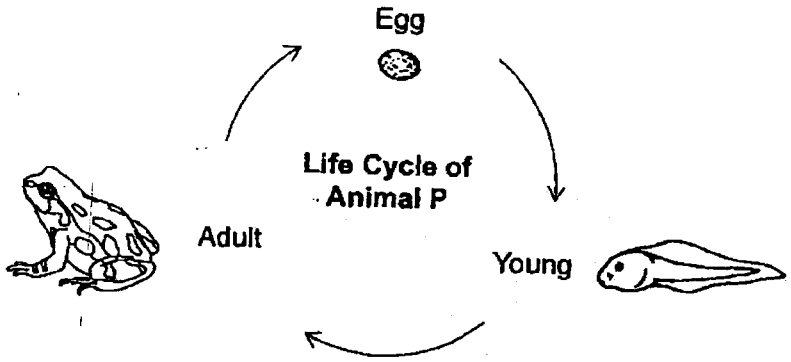
14. Karne studied a diagram showing the life cycle of an animal P, as shown below.



Karne made the following 3 observations about the life cycle of animal P.

A The life cycle of animal P has 3 stages.
B The life cycle begins with the egg stage.
C The young of animal P resembles the adult.

Based on the life cycle shown, which of Karne's statement(s) is/are true?

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

15. Which of the following are functions of a leaf?

A Keeps the plant upright
B Produces food for the plant
C Holds the plant firmly to the ground
D Exchange gases with the surroundings

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

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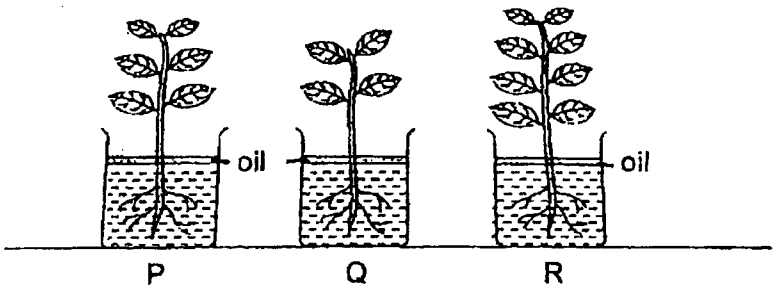
16. Shimian wanted to find out how the number of leaves a plant has affects the amount of water taken in by the plant. She took 3 similar plants with a different number of leaves as shown in the diagram below.

She placed the plants in water with a layer of oil added on top to prevent water loss to the surroundings.



The table below shows the amount of water left in each set-up after a few days.

	Volume of water (ml)		
	P	Q	R
Start of experiment	100	100	100
End of experiment	85	93	82

Which can Shimian conclude from the results of her experiment?

(1) The more leaves a plant has, the greater the amount of water left.
(2) The more leaves a plant has, the smaller the amount of water left.
(3) The fewer leaves a plant has, the smaller the amount of water left.
(4) The number of leaves a plant has does not affect the amount of water left.

17. Caleb classified the organs found in the different human body systems as shown in the table below.

Human Body Systems			
Respiratory	**Circulatory**	**Skeletal**	**Muscular**
nose windpipe	heart blood vessels	bones stomach	muscles

Which organ had been classified **wrongly**?

(1) nose
(2) heart
(3) stomach
(4) muscles

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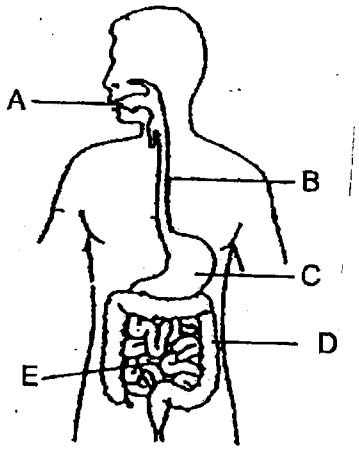
For questions 18 and 19, please refer to the diagram below.

18. Study the diagram of the human digestive system with parts A, B, C, D and E.



Which one of the following shows the changes in the amount of undigested food from the time it enters until it leaves each of the parts A, B, C and D?

	A	B	C	D
(1)	decreases	no change	decreases	no change
(2)	no change	decreases	no change	no change
(3)	no change	decreases	no change	decreases
(4)	decreases	no change	decreases	decreases

19. Which of the following takes place at part E?

(1) Digestion of food is completed.
(2) Undigested food is pushed to the anus.
(3) Saliva is added to the food to moisten it.
(4) Water is absorbed from undigested food.

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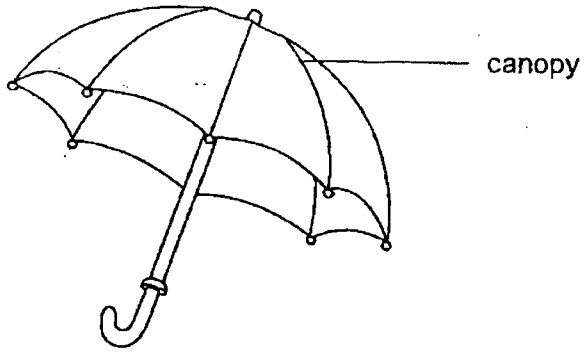
20. Imran was making an umbrella which must protect him from the rain and can be closed without tearing.



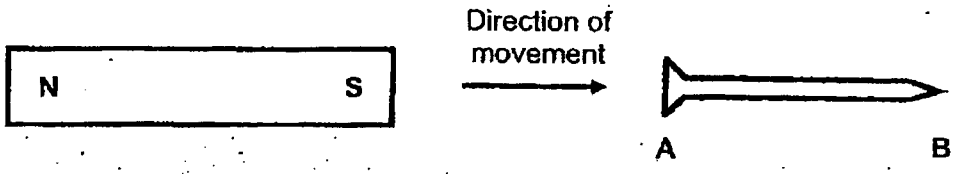
He wanted to select the best material for the canopy of the umbrella. The table below shows the properties of materials F, G, H and I.

Properties	Material F	Material G	Material H	Material I
Is it strong?	Yes	No	Yes	Yes
Is it flexible?	No	Yes	Yes	Yes
Is it waterproof?	Yes	Yes	Yes	No

Which one of the following materials is the most suitable for making the canopy?

(1) Material F
(2) Material G
(3) Material H
(4) Material I

21. The diagram below shows a bar magnet and a nail. The south-pole of the magnet repelled end A of the nail as shown below.



Based on this observation, which of the following statements is true?

(1) The nail is made of plastic.
(2) The nail is a temporary magnet.
(3) The north pole of the magnet can repel end A of the nail.
(4) The north pole of the magnet can attract end B of the nail.

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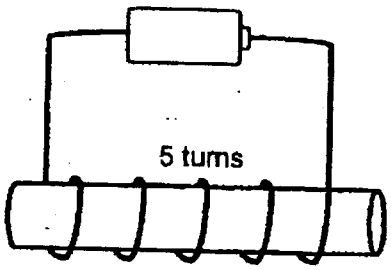
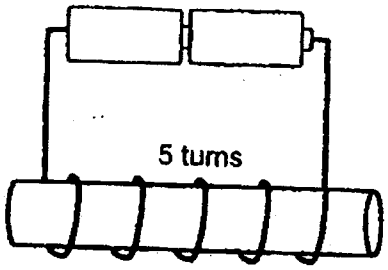
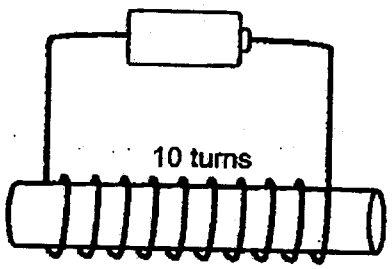
22. Jane used four rods of the same material to make four electromagnets, J, K, L and M.



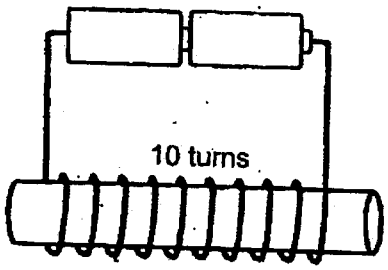
Electromagnet J



Electromagnet K



Electromagnet L



Electromagnet M

Which electromagnet has the greatest magnetic strength?

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

23. Which one of these sets consists only of objects that **do not** give out light?

A pencil, sun
B mirror, glass
C firefly, candle
D fire, aluminium foil

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

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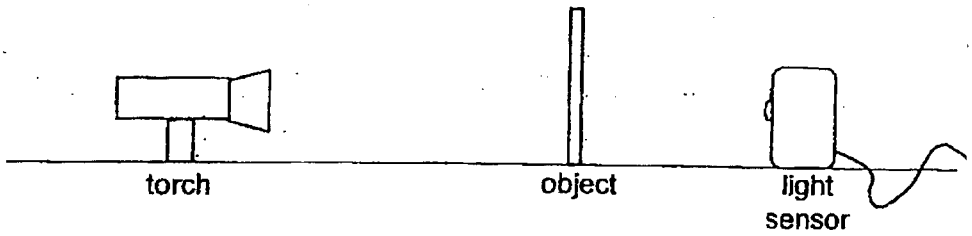
24. Hayley used the set-up below to investigate how the thickness of an object affects the amount of light passing through it.

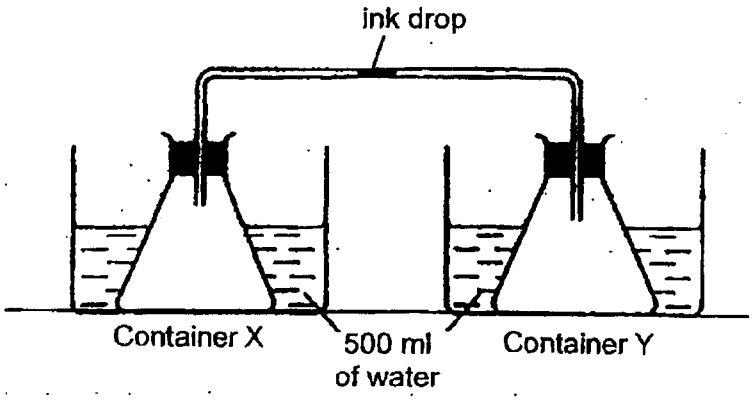


Which of the following variables should she keep constant to ensure that she is carrying out a fair test?

A Material of object
B Brightness of torch
C Thickness of object
D Distance between the torch and the light sensor

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

25. Study the set-up below.



Which of the following shows the possible temperature of water in containers X and Y that will cause the movement of the ink drop?

	Temperature of water in container X	Temperature of water in container Y	Movement of ink drop
(1)	5°C	90°C	towards container X
(2)	90°C	5°C	towards container X
(3)	25°C	25°C	towards container Y
(4)	5°C	90°C	towards container Y

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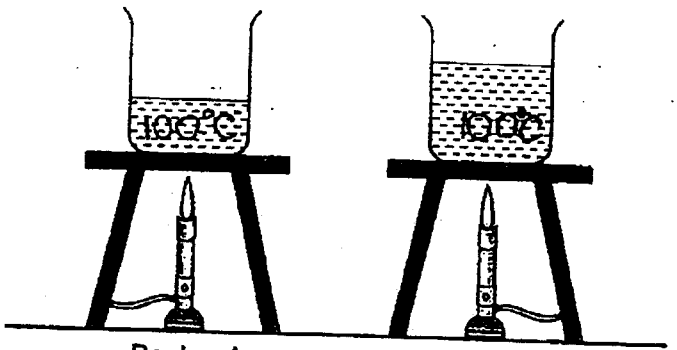
26. Siti poured different amounts of water at room temperature into two identical beakers, A and B. She heated the water over identical heat sources and recorded the time taken for the water to reach 100°C.



Her results are shown in the table below.

	Beaker A	Beaker B
Time taken for the water to reach 100°C (min)	8	11

Based on the information given, which of the following statements correctly explains the difference in the results obtained?

(1) The water in beaker A was at a higher temperature at the start.
(2) The water in beaker A had more heat at the end of the experiment.
(3) The water in beaker B needed more heat to reach the same temperature.
(4) The water in beaker B reached a higher temperature at the end of the experiment.

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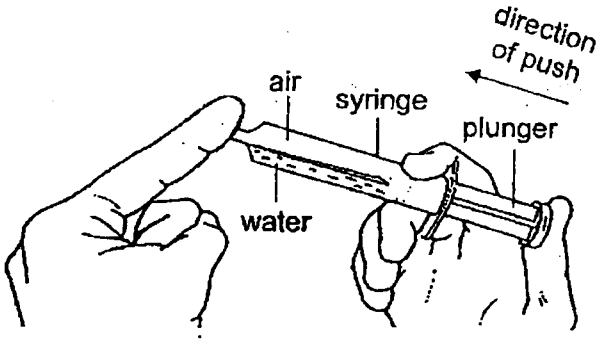
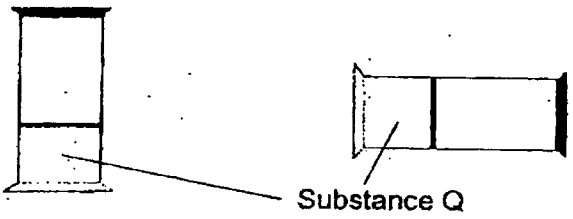
27. Divya held a syringe containing both air and water against her finger.



What will happen to the volume of water and volume of air when the plunger is pushed inwards?

	Volume of water	Volume of air
(1)	Decreases	Decreases
(2)	Remains the same	Remains the same
(3)	Decreases	Remains the same
(4)	Remains the same	Decreases

28. The diagram below shows a container containing substance Q.
The container was placed in different positions as shown below.



Three students made the following conclusions about substance Q.

Anwin: Q is a gas.
Brent: Q occupies space.
Carla: Q has a definite shape.

Which students made the correct conclusion?

(1) Anwin and Brent only
(2) Anwin and Carla only
(3) Brent and Carla only
(4) Anwin, Brent and Carla

~ END OF BOOKLET A ~

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NANYANG PRIMARY SCHOOL

2023
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.

Booklet A:		**56**
Booklet B:		**44**
Total:		**100**

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 16 printed pages including this cover page.

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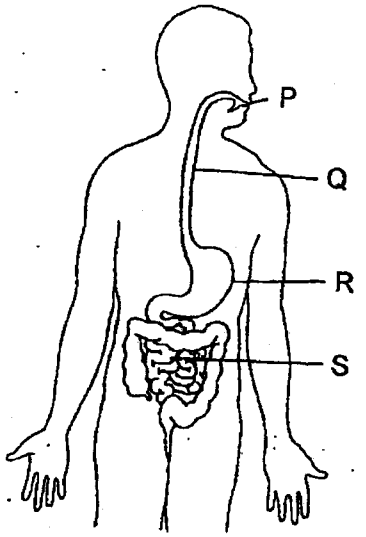
Section B: Open-Ended Questions [44 marks]

29. The diagram below shows the human digestive system.



Identify the part (P, Q, R or S) where:

(a) digestion **does not** take place: _____ [1]

(b) digested food is absorbed into the blood: _____ [1]

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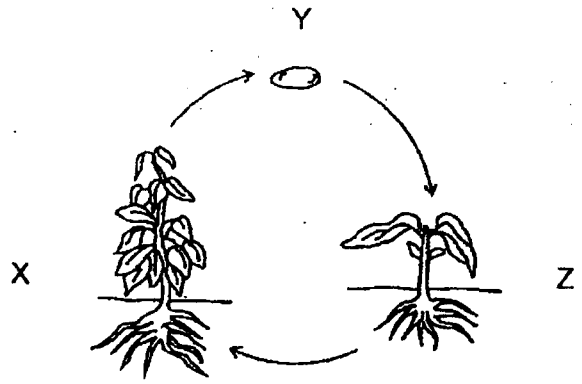
30. The diagram below shows the life cycle of a plant.



Choose the correct words from the box to answer the question below.

adult plant	egg	seed	young plant

Identify stages Y and Z in the life cycle of the plant shown above. [2]

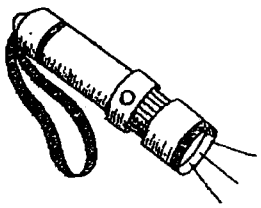
Y: _____

Z: _____

31. Look at the pictures below. Put a tick (✓) in the box(es) to show if the object is a source of light. [2]

☐ the moon

☐ a candle flame



☐ a torchlight

☐ a mirror

4

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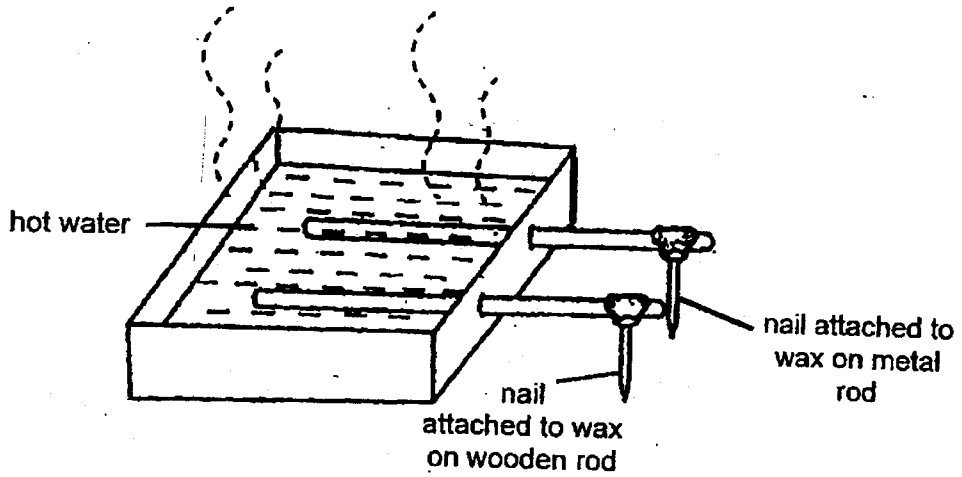
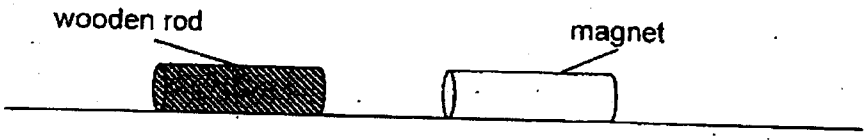
32. Sally placed a metal rod and a wooden rod in a tray of hot water as shown below. An equal amount of wax was put on each rod and each rod had a nail attached to the wax.



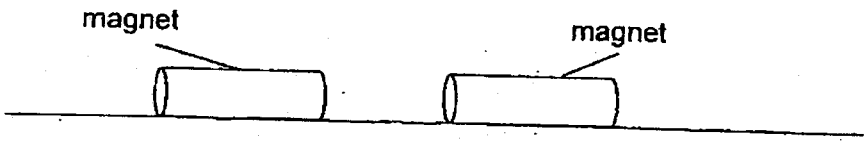
She would observe that the wax on the wooden rod melted _____ than the wax on the metal rod. This is because wood is a _____ conductor of heat than metal. [2]

33. Ali placed a magnet next to a wooden rod, as shown in the diagram below.



(a) The wooden rod was not attracted by the magnet. This is because wood is a _____ material. [1]

Ali removed the wooden rod and placed another magnet next to the first magnet, as shown in the diagram below.



(b) The magnets were not attracted to each other. The magnets _____ each other instead. [1]

4

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34. Miss Nur took her students to the school eco-garden to find out about plants. They recorded the names of the plants in a table based on where they were found. They also jotted down observations of what they had seen.

Plants	
Found in garden	**Found in pond**
moss mould mango tree bird's nest fern	water lotus water hyacinth

Observations:
- Water hyacinth has purple flowers.
- The fruit of the water lotus could be seen.

Miss Nur pointed out that mould had been classified wrongly.

(a) Based on its characteristics, explain why mould should not be classified in the table above. [1]

_____

_____

Using the observations that were recorded, Miss Nur told her students to classify the same plants in **another** way. Do not include mould.

(b) In the table below,
(i) write <u>suitable headings</u> to re-classify the plants. [1]
(ii) classify the 5 plants according to the headings in (i). [1]

	Plants	
(i)		
(ii)		

The students discovered an unknown small green plant with no flowers. They classified it as a non-flowering plant.

(c) Explain why they are wrong. [1]

_____

_____

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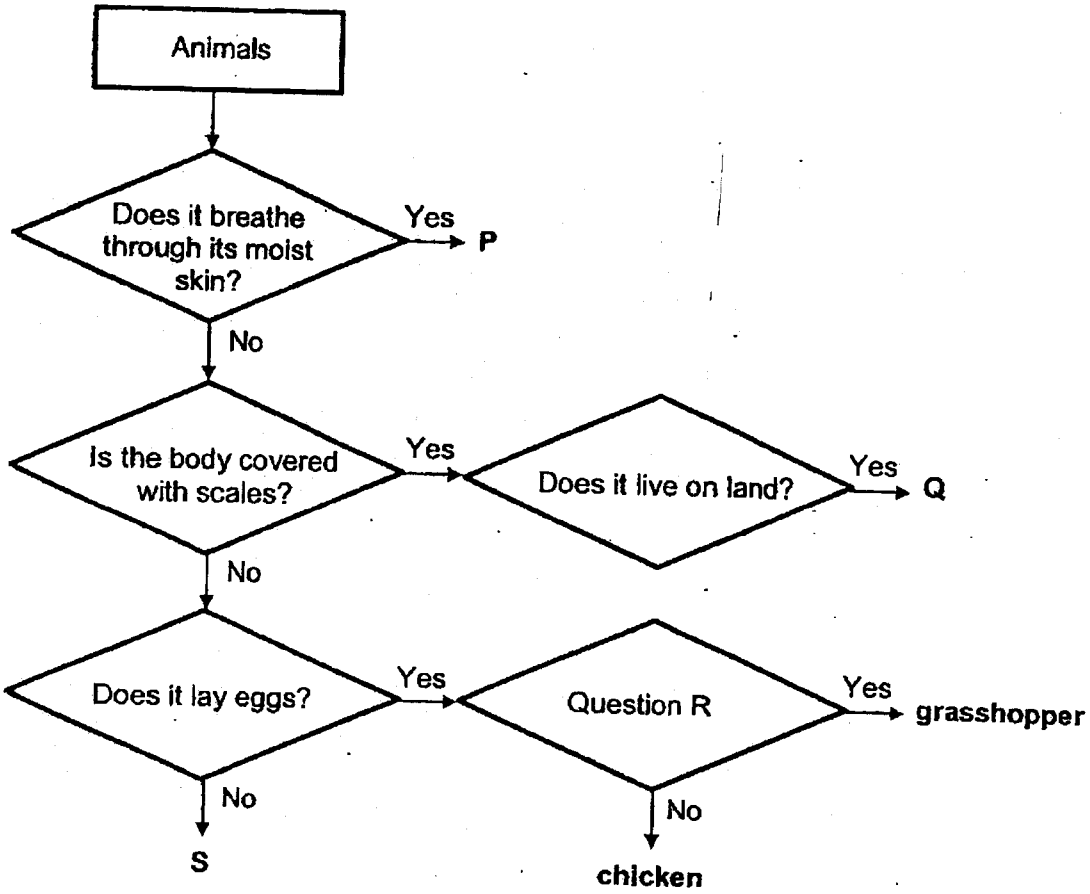
35. Study the flow chart below.



(a) (i) Based on the flow chart above, state all the characteristics of animal Q. [1]

_____

_____

(ii) Give an example of animal Q. [1]

_____

(b) Based only on the flow chart, state the difference between animals P and S. [1]

_____

_____

(c) What could question R most likely be? [1]

_____

4

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36. Jana was watering her plant when she noticed an unknown living thing, L, growing in the soil.

L in pot of soil.

Close-up view of L

She observed the following about L:

- L was white
- L had spores
- L had no leaves or flowers.

Jana showed a picture of the unknown living thing to her teacher and said that L should be classified as a non-flowering plant. Her teacher told her that this was incorrect.

(a) Identify the group of living things which L most likely belongs to. [1]

_____

(b) Based only on the information given, give a reason why Jana is wrong. [1]

_____

_____

(Turn over to continue Question 36)

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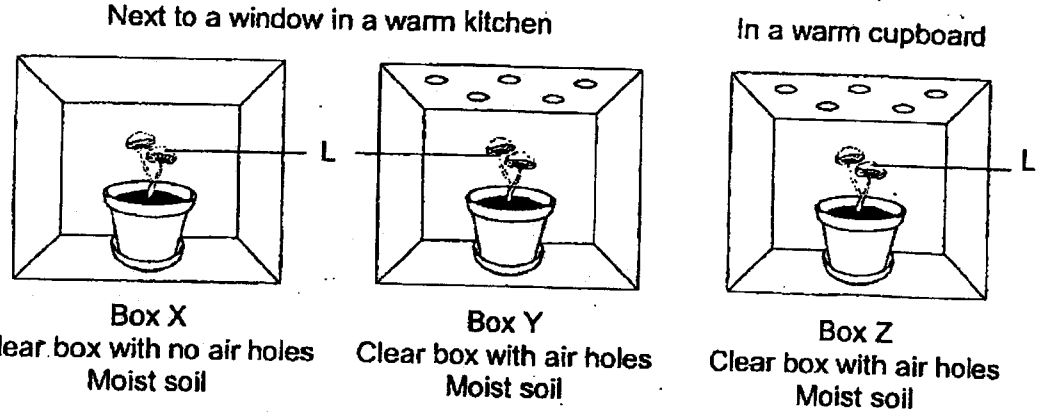
(Continued from previous page)

Jana then conducted an experiment to investigate the conditions required by L to grow. She placed three boxes of L in different areas as shown below. The pots were watered once a week.



Box X
Clear box with no air holes
Moist soil

Box Y
Clear box with air holes
Moist soil

Box Z
Clear box with air holes
Moist soil

After two weeks, Jana counted the number of L found in each pot and recorded her results in the table below.

Box	Number of L at the start	Number of L after 1 week	Number of L after 2 weeks
X	2	1	0
Y	2	3	4
Z	2	3	4

Jana noticed that only living thing L in box X had died.

(c) Suggest a reason why living thing L in box X died but not in box Y. [1]

(d) Explain fully why living thing L in both box Y and Z survived. [1]

2

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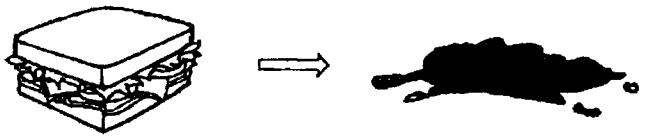
37. Lena ate a small sandwich for breakfast.

(a) What happened to the sandwich when she chewed it with her teeth? [1]

_____

_____

Half an hour later, she had a stomachache and she threw up.
She noticed that what she had thrown up was wet and lumpy.



sandwich thrown-up sandwich

(b) Immediately after leaving the mouth, which part of the digestive system did the sandwich move to? [1]

_____

(c) Describe what had happened to the sandwich in the stomach that made it wet and lumpy when it was thrown up. [1]

_____

_____

(d) State the part of our digestive system that absorbs water from undigested food. [1]

_____

4

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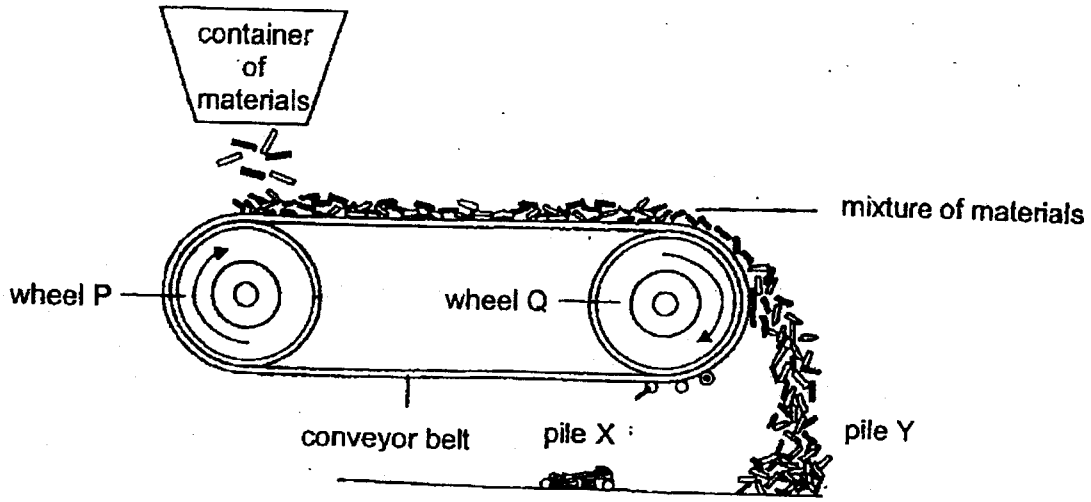
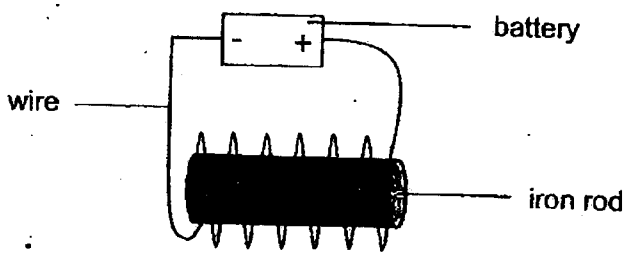
38. Fajar designed a machine to separate magnetic and non-magnetic materials, as shown in the diagram below.



One of the wheels of the machine contained an electromagnet. A simplified diagram of an electromagnet is shown below.



(a) Which wheel of the machine, P or Q, is more likely to contain the electromagnet?

Wheel _____. [1]

Fajar wanted to collect some plastic bottles for recycling.

(b) Which pile, X or Y, would he find the plastic bottles in? Explain your answer. [2]

_____

_____

(c) Other than increasing the number of coils around the iron rod, state one method Fajar can use to increase the magnetic strength of the electromagnet. [1]

_____

_____

4

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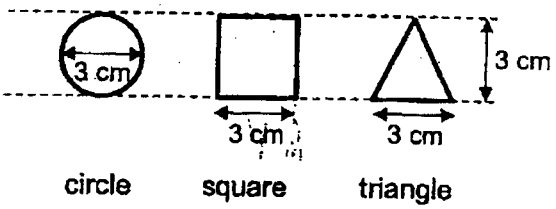
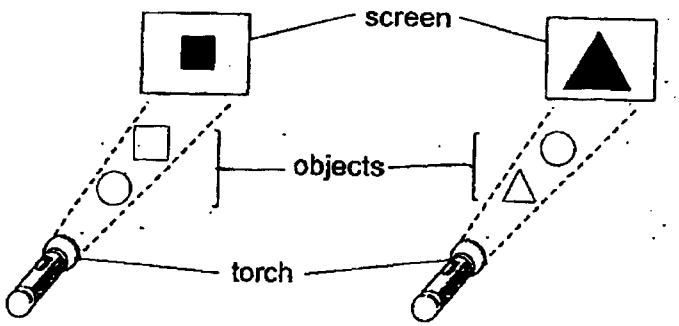
39. Michael used three objects of the same size but of different materials in an experiment.



He took 2 objects at a time and set them up between a torch and a screen. Then he observed the shadows formed on the screens as shown in the diagram below.



(a) Based on the observations, place a tick (√) in the correct column to describe the degree of transparency of these objects. [1]

	Object	allows most light to pass through	does not allow light to pass through
(i)	circle		
(ii)	triangle		

(Turn over to continue Question 39)

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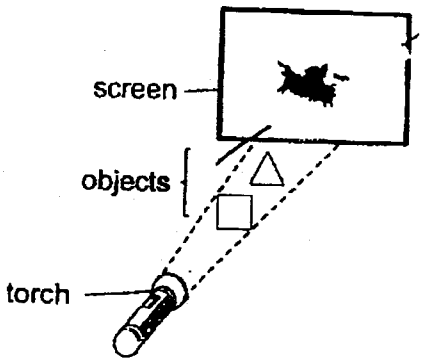
(Continued from previous page)

(b) Based on the observations in the previous set-ups, draw and fully shade the shadow that would be formed by the objects on the screen below. [1]



(c) Without moving the screen, what can Michael do to form a larger shadow on the screen? [1]

_____

(d) State the 2 properties of light that enables a shadow to be formed. [2]

_____

_____

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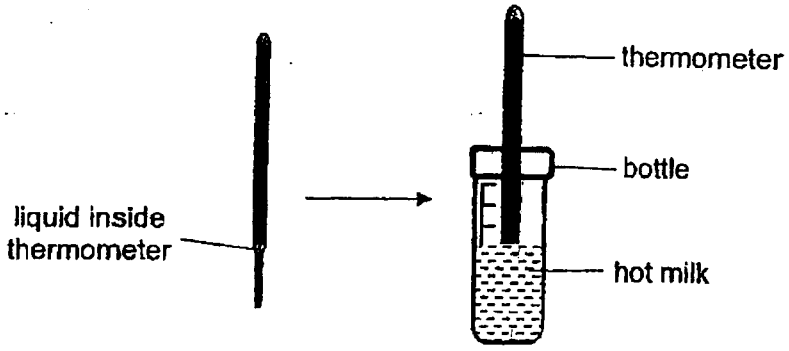
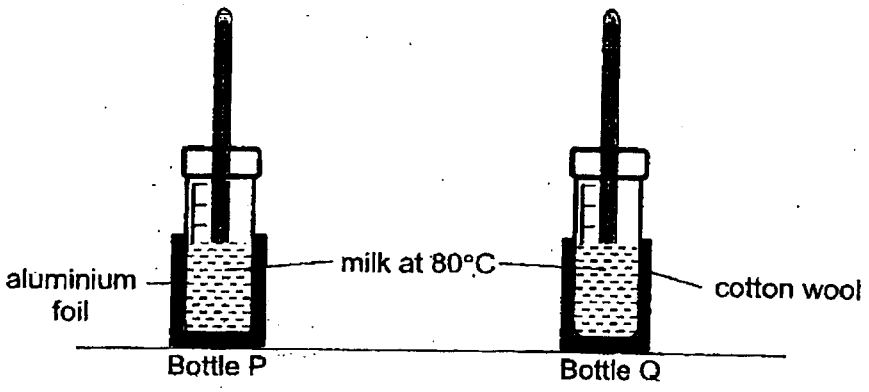
40. Mrs Tan placed a thermometer in a bottle of hot milk. She observed that the liquid inside the thermometer rose.



(a) Why did the liquid inside the thermometer rise? [1]

She conducted an experiment using two identical bottles, P and Q. Both bottles contained milk at 80°C. She wrapped bottle P and bottle Q with different materials as shown in the diagram below.



(Turn over to continue Question 40)

1

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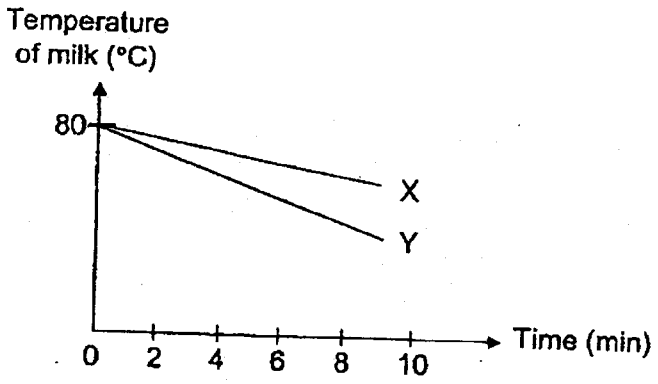
(Continued from previous page)

Mrs Tan recorded the temperature of the milk in both bottles for some time and plotted the results in the graph as shown below.



(b) Describe the change in temperature of milk in both bottles during the experiment. [1]

(c) Which graph, X or Y, shows the change in the temperature of milk in bottle P? Explain your answer. [2]

(d) State one other variable that should be kept constant for the experiment to be a fair one. [1]

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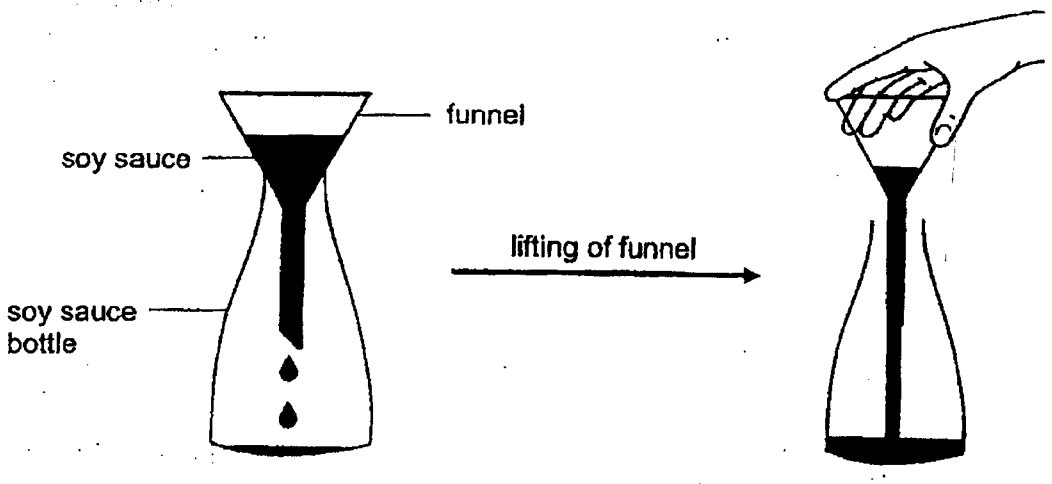
41. Haruto placed a funnel on an empty soy sauce bottle to fill it with soy sauce.

When Haruto poured soy sauce into the funnel, he noticed that the soy sauce dripped into the flask slowly.



When Haruto lifted the funnel, he noticed that the soy sauce flowed in much faster.

(a) Explain why the soy sauce flowed faster when Haruto lifted the funnel. [2]

Haruto then measured the volume of soy sauce needed to fill the bottle to the brim. He found that he needed 250 ml of soy sauce to fill the bottle to the brim.

Haruto emptied the soy sauce bottle and tried to fill it with marbles. Although each marble had a volume of 1 ml, he found that he could not fit 250 marbles into the soy sauce container.

(b) Using the properties of matter, explain fully why the soy sauce bottle could be filled with 250 ml of soy sauce but not 250 ml of marbles. [2]

~ END OF BOOKLET B ~

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SCHOOL : NANYANG PRIMARY SCHOOL
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2023 SA2

CONTACT :

SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	1	3	3	4	1	2	4	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	3	2	1	2	2	3	1	1	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	4	2	2	1	3	4	3		

SECTION B

Q29) a) Q
b) S

Q30) Y: Seed
Z: Young plant

Q31) Tick, torchlight and candle flame

Q32) Slower, poorer

Q33) a) Non-magnetic
b) Repelled

Q34) a) It does not have leaves but a plant does
b)

Plants	
Flowering/reproduce by seeds	Non-flowering/reproduce by spores
Mango Tree Water Hyacinth Water lotus	Bird's nest fern Moss

c) The plant is not an adult plant yet

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Q35)	a) (i) Q is an animal that does not breathe through its moist skin. Its body is covered with scales and it lives on land. (ii) Snake b) Animal P breathes through its moist skin but animal S does not c) Does it have six legs
Q36)	a) Fungi b) L has no leaves but non-flowering plants have leaves c) There was not enough air for L to survive in box X d) L had enough air and water in both both X and Y
Q37)	a) The sandwich was broken into smaller pieces b) Gullet c) THe sandwich was broken down into simpler substances d) Large intestine
Q38)	a) Wheel Q b) Pile Y. Plastic is a non-magnetic material and would not be attracted to the electromagnet c) Increase the number of batteries
Q39)	a) (i) Circle - allows the most light to pass through (ii) Triangle - does not allow light to pass through b)  c) Move object closer to the torch d) (i) Light travels in a straight line (ii) Light can be blocked
Q40)	a) The liquid gained heat from the hot milk and expanded b) They both decreased c) Graph Y. The temperature of the milk decreased faster as aluminum foil is a better conductor of heat than cotton wool. Hence, it conducted heat from the milk to the surroundings faster. d) The volume of milk
Q41)	a) WHen he lifted the funnel, the air in the flask would be able to escape the bottle. THis allowed the soy sauce in the funnel to take up space previously occupied by the air. b) Soy sauce is a liquid and does not have a definite shape but marbles are solids and have definite shape

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