

**PAYA LEBAR METHODIST GIRLS' SCHOOL (PRIMARY)**  
**2026 PRELIMINARY EXAMINATION**

**PRIMARY SIX**  
**SCIENCE**  
**(BOOKLET A)**

**NAME :** \_\_\_\_\_(        )

**CLASS :**    P6 \_\_\_\_\_

**DATE :**     20 August 2026

**Total Time for Booklets A and B: 1 hour 45 minutes**

**INSTRUCTIONS TO CANDIDATES**

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Use a 2B pencil to shade your answers on the Optical Answer Sheet (OAS).
5. This booklet consists of 19 printed pages.

|           | Marks Obtained / Maximum Marks |
|-----------|--------------------------------|
| BOOKLET A | / 60                           |
| BOOKLET B | / 40                           |
| TOTAL     | / 100                          |

**PARENT'S SIGNATURE:** \_\_\_\_\_

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) and shade your answer on the Optical Answer Sheet.

(60 marks)

- 1 Aisha classified some animals according to their life cycles.

| group X     | group Y   |
|-------------|-----------|
| beetle      | chicken   |
| grasshopper | cockroach |
| mosquito    | frog      |

Which animal has been classified wrongly?

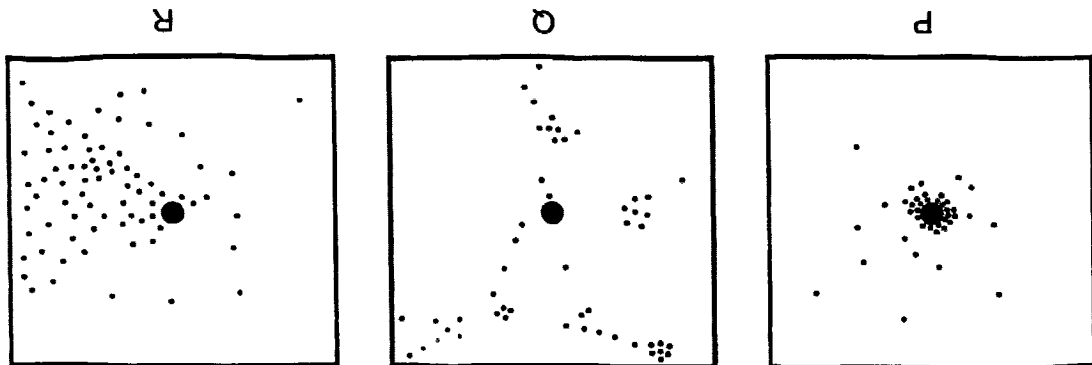
- (1) frog
  - (2) beetle
  - (3) mosquito
  - (4) grasshopper
- 2 Rita found an animal in a river deep in a forest.

Which of the following characteristics should she use to identify it as a fish, reptile or amphibian?

- (1) number of legs
- (2) presence of gills
- (3) type of body covering
- (4) method of reproduction

|     |         |         |         |
|-----|---------|---------|---------|
|     | plant X | plant Y | plant Z |
| (1) | P       | Q       | R       |
| (2) | P       | R       | Q       |
| (3) | Q       | R       | P       |
| (4) | R       | Q       | P       |

Which one of the following correctly matches each plant to the distribution of its offspring?

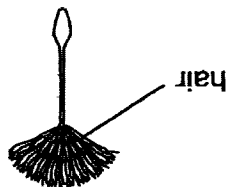


P, Q and R show the locations of the parent plants and their offspring after seed dispersal.

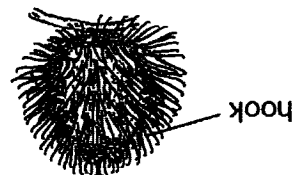
fruit of plant Z



fruit of plant Y



fruit of plant X



The diagrams show the fruits of three plants, X, Y and Z.

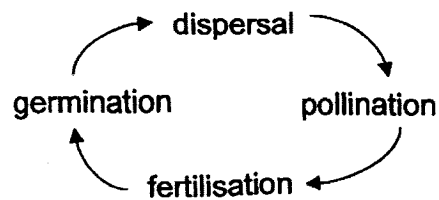
- 5 P and Q are organisms.
- P produces pollen grains while Q does not.
  - P makes its own food while Q does not.

What could P and Q be?

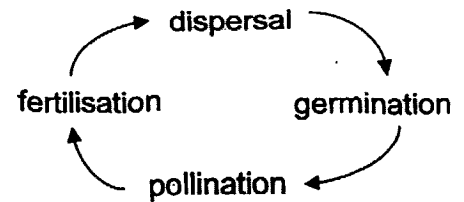
|     | P               | Q               |
|-----|-----------------|-----------------|
| (1) | fungi           | fern            |
| (2) | fern            | flowering plant |
| (3) | flowering plant | fern            |
| (4) | flowering plant | fungi           |

- 6 Which of the following shows the correct order of reproduction in a flowering plant?

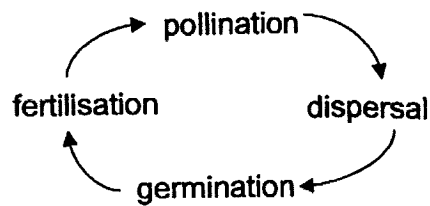
(1)



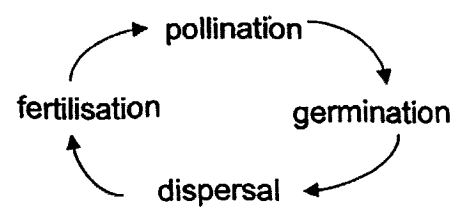
(2)



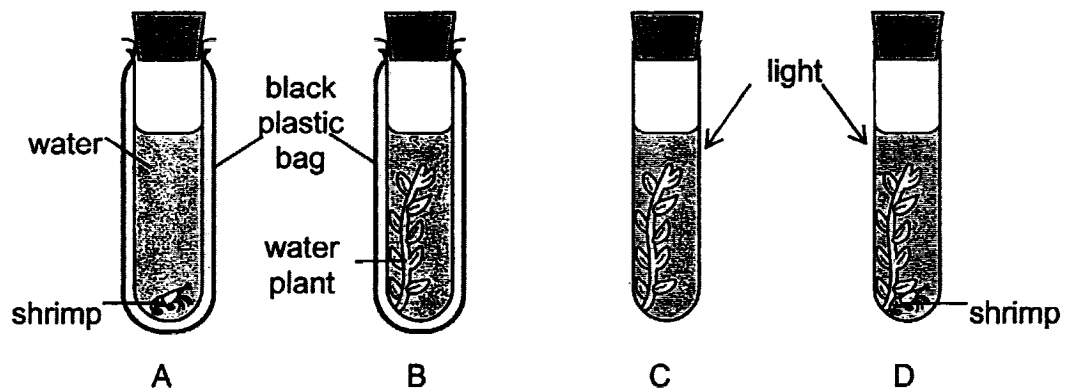
(3)



(4)



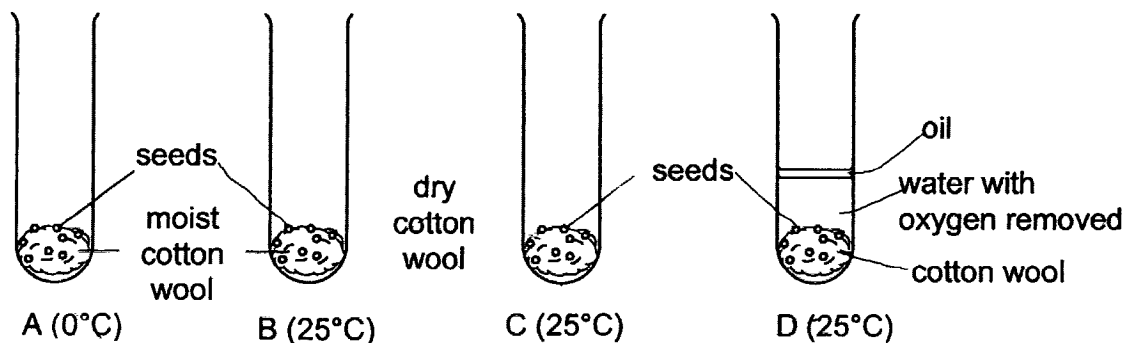
- 7 Bernice set up four test tubes, A, B, C and D as shown. The amount of carbon dioxide in the water was measured at the start of the experiment and again three hours later. The shrimp gives out more carbon dioxide than the water plant during respiration.



Which of the following is correct after three hours?

|     | least amount of carbon dioxide | —————→ |   |   | most amount of carbon dioxide |
|-----|--------------------------------|--------|---|---|-------------------------------|
| (1) | A                              | B      | D | C |                               |
| (2) | B                              | C      | A | D |                               |
| (3) | C                              | D      | B | A |                               |
| (4) | D                              | C      | A | B |                               |

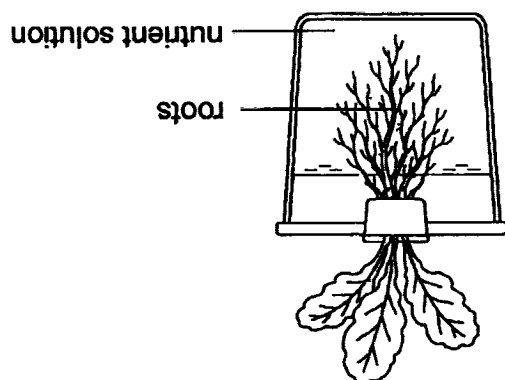
- 8 Set-ups A, B, C and D were placed in the dark.



Which of the following seeds germinated?

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

3 The diagram shows a plant grown using hydroponics.

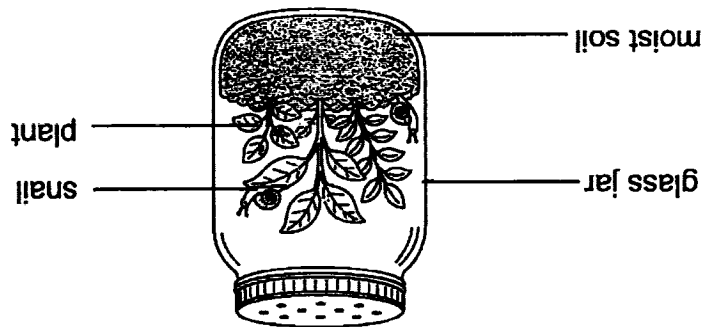


Which of the following is/are function(s) of the roots of the plant shown above?

- A Absorb water and mineral salts
- B Hold the plant upright in the container
- C Absorb food needed for the plant to grow

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

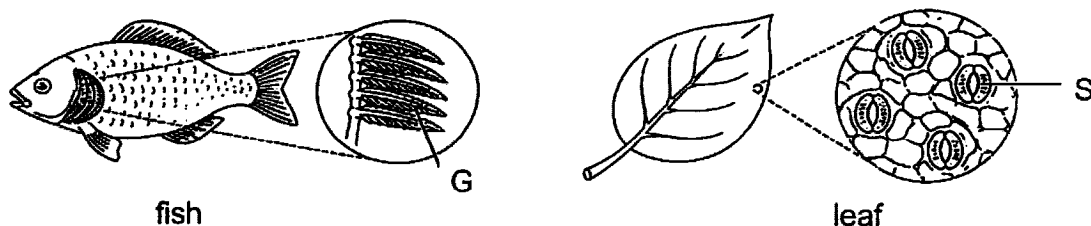
4 The diagram shows a terrarium.



Which one of the following statements is correct?

- (1) One snail forms a population.
- (2) The plants and snails form a habitat.
- (3) The plants and snails form a community.
- (4) The plants, snails and moist soil form a community.

10 Study the diagrams below.



Which one of the following functions do parts G and S have in common?

- (1) They store air.
- (2) They absorb water.
- (3) They absorb nutrients.
- (4) They allow gases to pass through.

11 Chitra plucked four similar leaves, W, X, Y and Z, from the same plant. She applied oil on different surfaces of the leaves as shown.

| Leaves | Coated with oil       |                       |
|--------|-----------------------|-----------------------|
|        | upper surface of leaf | lower surface of leaf |
| W      | No                    | No                    |
| X      | Yes                   | No                    |
| Y      | No                    | Yes                   |
| Z      | Yes                   | Yes                   |

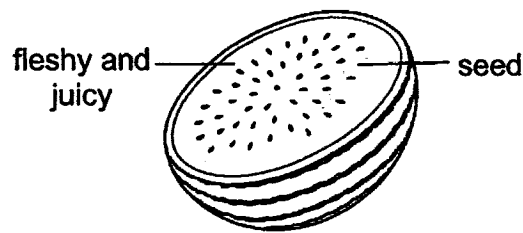
The results are as shown below.

| Leaves | Mass of the leaf at the start of experiment (g) | Mass of the leaf at the end of experiment (g) |
|--------|-------------------------------------------------|-----------------------------------------------|
| W      | 5.0                                             | 3.7                                           |
| X      | 5.0                                             | 3.7                                           |
| Y      | 5.0                                             | 5.0                                           |
| Z      | 5.0                                             | 5.0                                           |

Based on the results, which of the following conclusions is correct?

- (1) Tiny openings are found only on the upper surface of the leaf.
- (2) Tiny openings are found only on the lower surface of the leaf.
- (3) There are more tiny openings on the upper surface than on the lower surface.
- (4) There are more tiny openings on the lower surface than on the upper surface.

- 12 The diagram shows a fruit from Plant W.

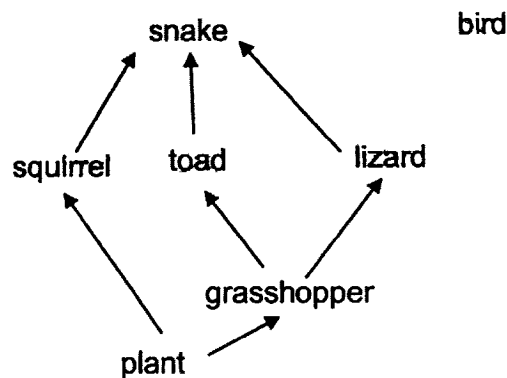


Based on the diagram, which of the following can be concluded about Plant W?

- A The seeds are dispersed by water.
- B The ovary of the flower contained many ovules.
- C The fruit developed from the ovary of the flower.
- D The flower of Plant W was pollinated by animals.

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

- 13 The diagram below shows a food web.



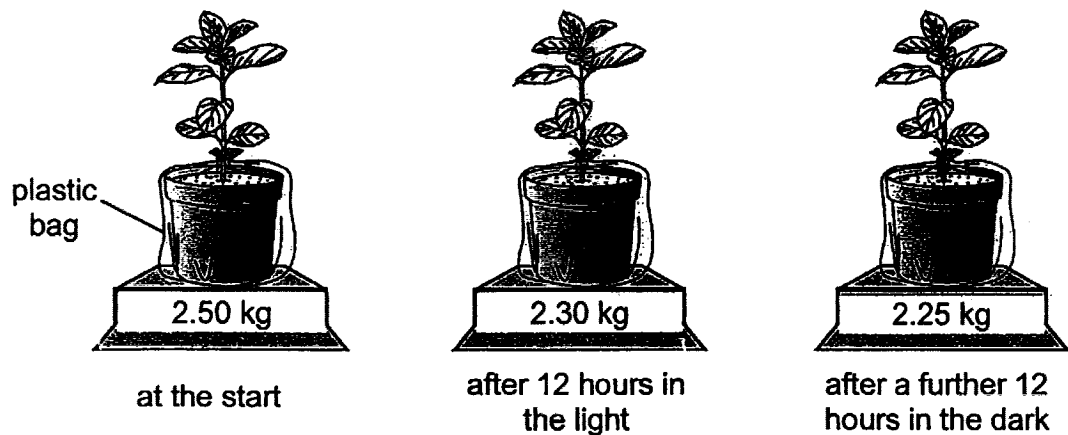
More snakes were introduced to the habitat.

Which one of the following organisms is most likely to increase in number?

- (1) bird
- (2) lizard
- (3) squirrel
- (4) grasshopper

Use the information below to answer Questions 14 and 15.

Daphne set up an experiment using a potted plant as shown. The mass of the potted plant was measured at different times.



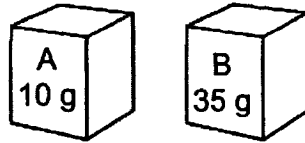
**14** Why did Daphne tie a plastic bag around the pot?

- (1) To prevent water loss from the soil.
- (2) To prevent carbon dioxide from entering.
- (3) To prevent carbon dioxide from escaping.
- (4) To prevent water from being absorbed by the roots.

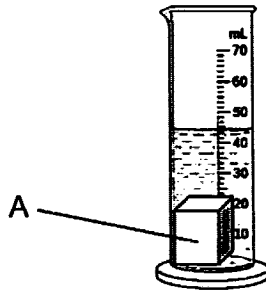
**15** Based on the results, which of the following conclusions can be made?

- (1) The plant needs water only when it makes food.
- (2) The plant lost mass because it stopped making food.
- (3) The plant lost more water in the light than in the dark.
- (4) The plant lost more water in the dark than in the light.

- 16 Oscar carried out an experiment with two solid blocks, A and B, of identical shape and size with different mass.



When block A was completely submerged in 35 ml of water, the water level rose to 45 ml.

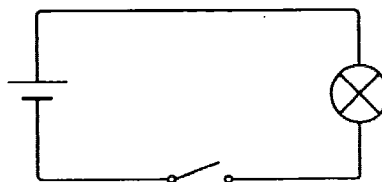


Oscar then carefully removed block A and put in block B. No water was spilled.

What is the new water level when block B is completely submerged in the same measuring cylinder containing 35 ml of water?

- (1) 35 ml
- (2) 45 ml
- (3) 70 ml
- (4) 80 ml

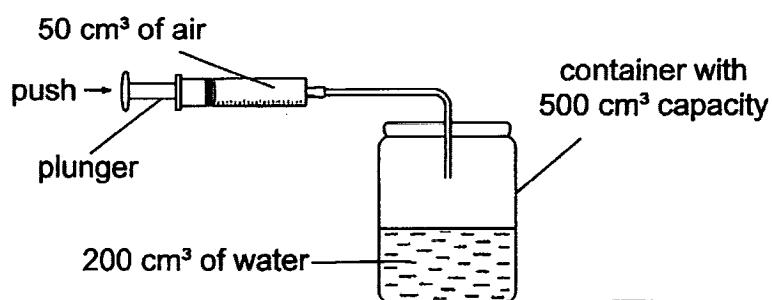
- 17 Study the circuit diagram.



Which one of the following is the source of electricity in the circuit?

- (1) bulb
- (2) wire
- (3) switch
- (4) battery

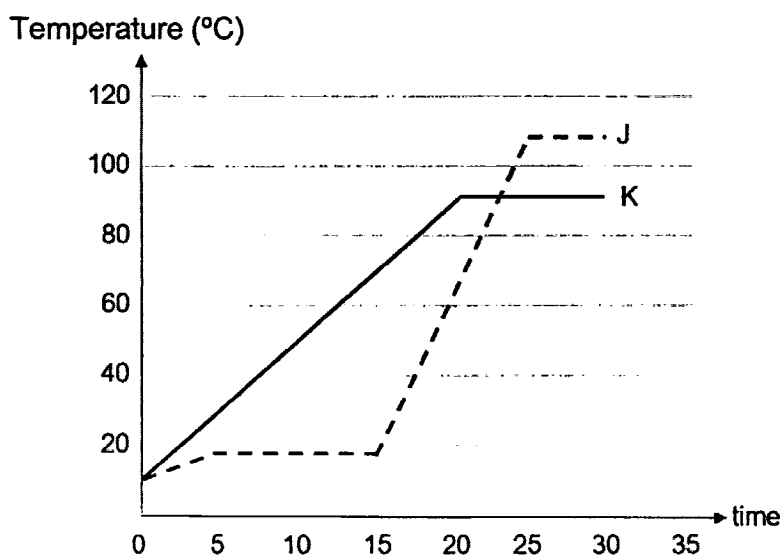
18 Study the set-up below.



What is the volume of air in the container when the plunger is pushed in fully?

- (1) 50 cm<sup>3</sup>
- (2) 200 cm<sup>3</sup>
- (3) 300 cm<sup>3</sup>
- (4) 350 cm<sup>3</sup>

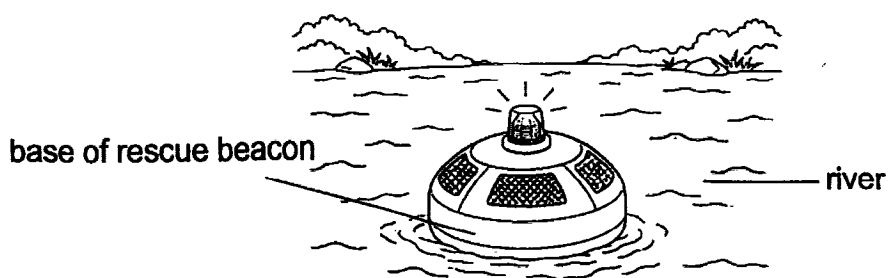
19 Substances J and K were taken out from a refrigerator set at 10°C and heated. The graph shows the changes in temperatures of the two substances which boiled by the end of the experiment.



Based on the graph, which of the following statements is correct?

- (1) Substance K has a higher boiling point than J.
- (2) The melting point of substance J is lower than K.
- (3) Substances J and K are in the liquid state at 50°C.
- (4) Substances J and K are in the same state at 10°C.

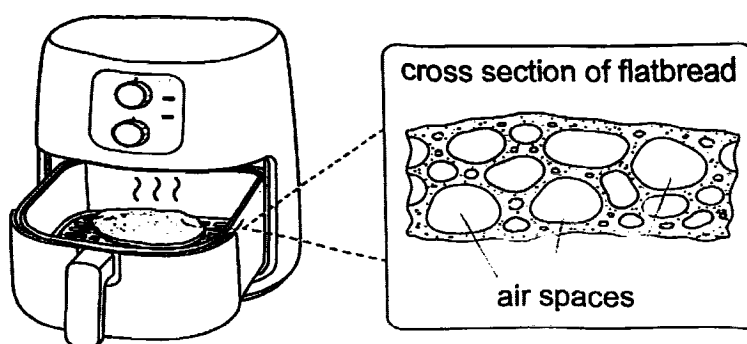
- 20 A rescue beacon is placed in rivers to guide people to safety during floods.



Which material is most suitable for making the base of the rescue beacon?

|     | Material | Property   |                        |                    |
|-----|----------|------------|------------------------|--------------------|
|     |          | waterproof | good conductor of heat | can float on water |
| (1) | A        | ✓          | x                      | ✓                  |
| (2) | B        | x          | x                      | ✓                  |
| (3) | C        | x          | ✓                      | x                  |
| (4) | D        | ✓          | x                      | x                  |

- 21 Claudia placed a flatbread in an air fryer. The flatbread rose as shown when cooked. It became flat again when left on a plate for some time.



Which of the following best explains why the flatbread rose when cooked?

- (1) Solid parts of the flatbread expanded.
- (2) The flatbread becomes lighter when heated.
- (3) Air in the flatbread does not have a fixed volume.
- (4) The air trapped in the flatbread expanded when heated.

- 22 The table shows the melting point and boiling point of four substances.

| Substance | Melting point (°C) | Boiling point (°C) |
|-----------|--------------------|--------------------|
| S         | 30                 | 310                |
| T         | 18                 | 290                |
| U         | 24                 | 350                |
| V         | 50                 | 370                |

Which of the substances is/are liquid at 28°C?

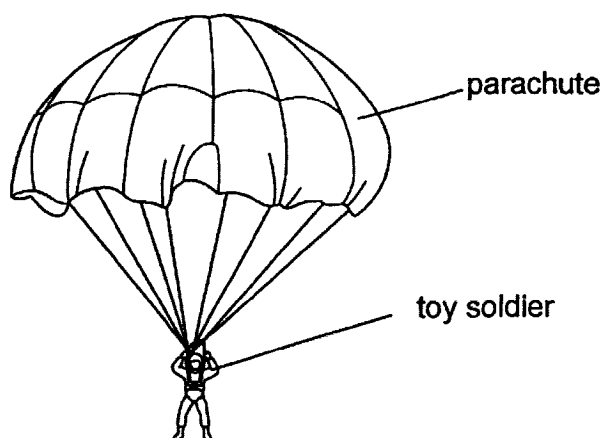
- (1) S only
  - (2) U only
  - (3) T and U only
  - (4) U and V only
- 23 Andy used a hammer to drive a nail into a piece of wood.



Which factor will **not** affect how deep the nail goes into the wood?

- (1) mass of Andy
- (2) mass of the nail
- (3) height the hammer was raised
- (4) friction between nail and wood

- 24 Cheryl conducted an experiment to investigate the time taken for the toy to reach the ground.



Her results are as shown.

| Experiment | Mass of toy soldier (g) | Size of parachute (cm <sup>2</sup> ) | Time taken to reach the ground (s) |
|------------|-------------------------|--------------------------------------|------------------------------------|
| A          | 30                      | 400                                  | 7                                  |
| B          | 20                      | 900                                  | 13                                 |
| C          | 20                      | 400                                  | 10                                 |
| D          | 30                      | 900                                  | 10                                 |

Which two experiments support the hypothesis: "The time taken for the toy soldier to reach the ground is affected by the size of the parachute."?

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

- 25 Sheila glued a magnet on top of a balance as shown in Diagram 1.

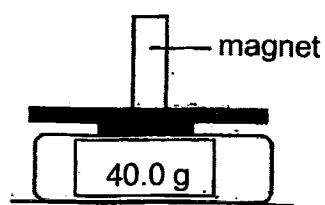


Diagram 1

Next, Sheila placed object A above the magnet as shown in Diagram 2. She repeated the experiment with object B as shown in Diagram 3.

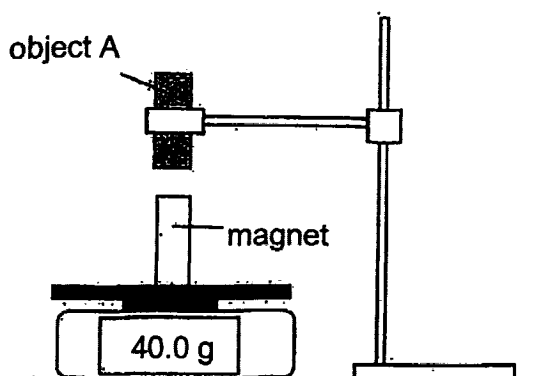


Diagram 2

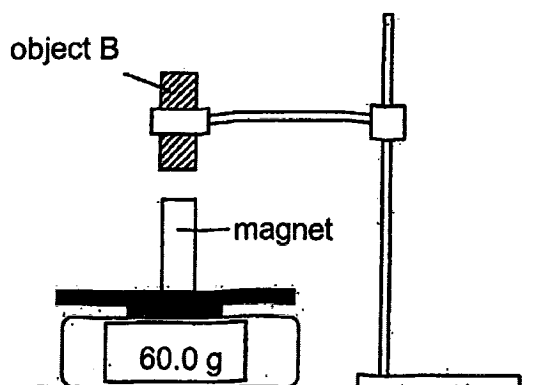
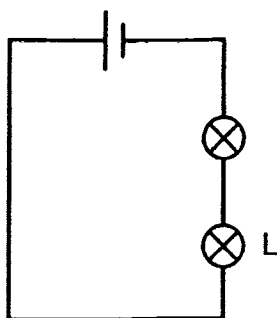


Diagram 3

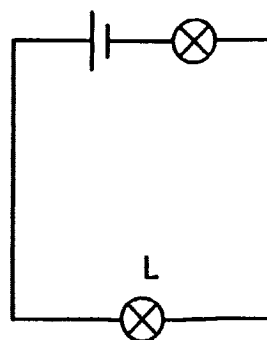
What can Sheila conclude about objects A and B?

|     | <b>A</b>              | <b>B</b>              |
|-----|-----------------------|-----------------------|
| (1) | not a magnet          | non-magnetic material |
| (2) | non-magnetic material | magnet                |
| (3) | not a magnet          | magnetic material     |
| (4) | magnetic material     | magnet                |

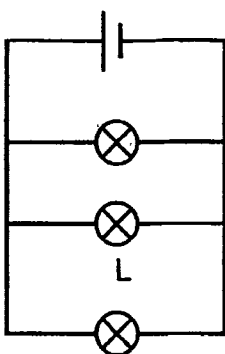
26 Vivien sets up four circuits using identical batteries and bulbs in working condition.



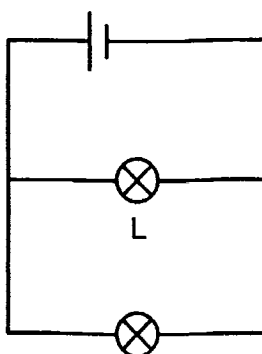
circuit A



circuit B



circuit C

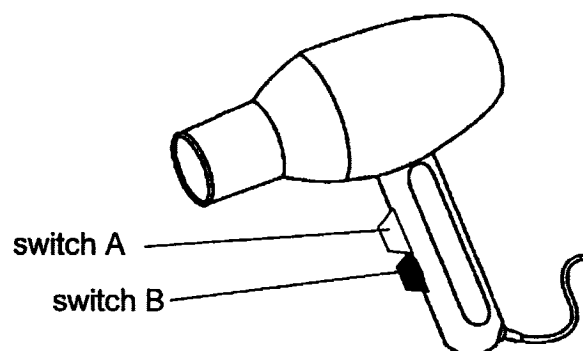


circuit D

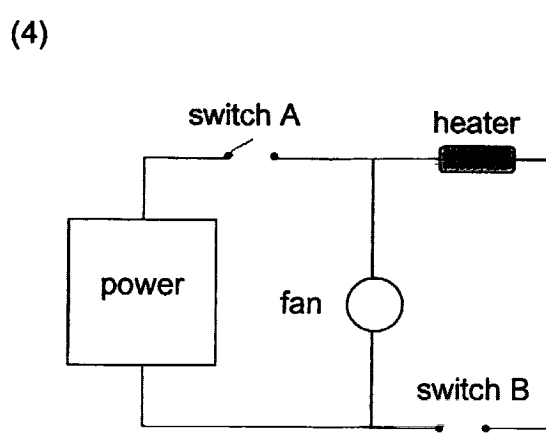
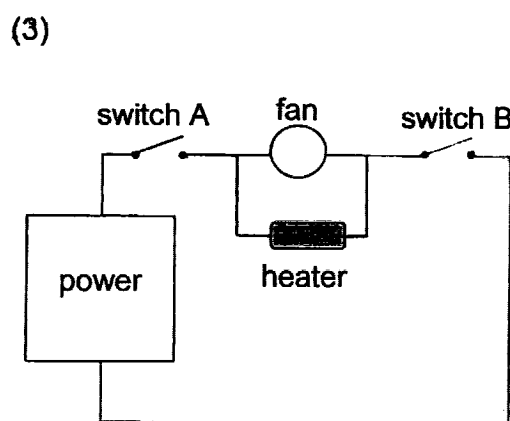
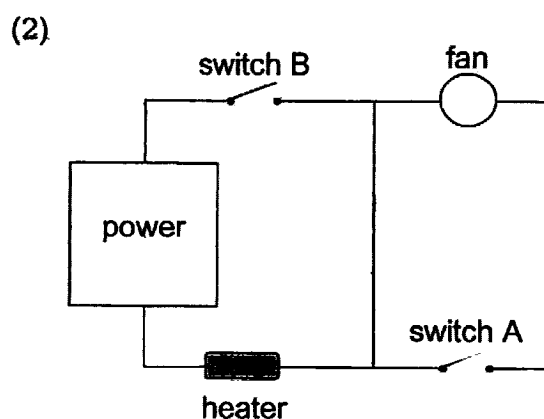
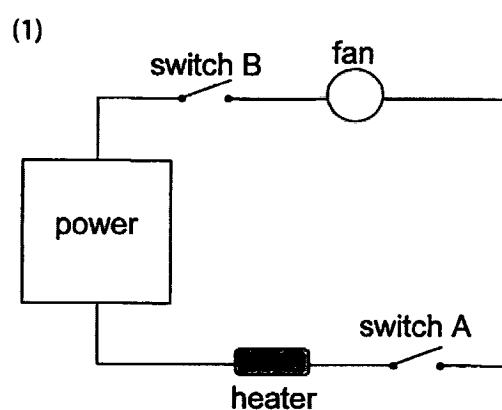
In which circuits will bulb L have the same brightness?

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

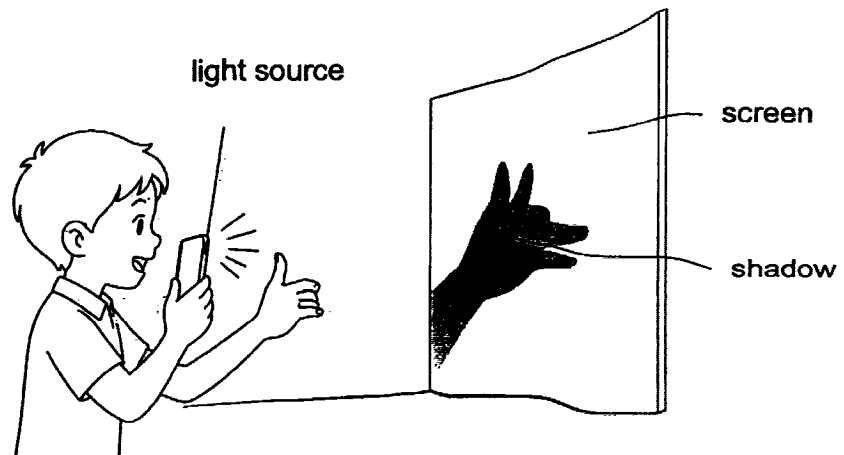
- 27 The diagram shows a hair dryer with two switches.  
Switch A turns on the fan for cool air. Switch B turns on the heater for hot air.



Siti wants to dry her hair using only cool air without turning on the heater. Which circuit matches the description on how the hair dryer works?



28 Alari used his smartphone flashlight to make a shadow.

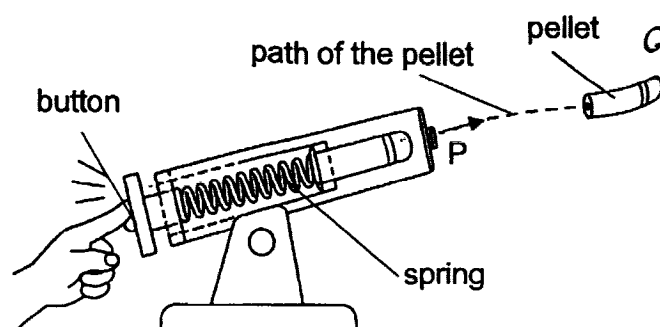


Which action makes the shadow bigger?

- (1) Move his hand closer to the screen.
- (2) Move his hand further from his flashlight.
- (3) Move the smartphone closer to his hand.
- (4) Move the screen closer to his smartphone.

Use the information below to answer Questions 29 and 30.

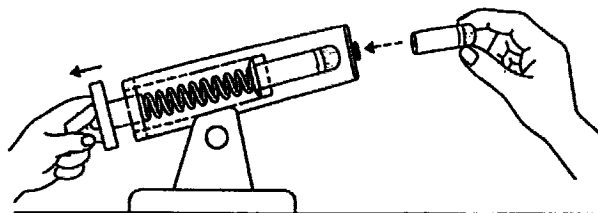
When the button of the toy is pushed, the pellet moved as shown.



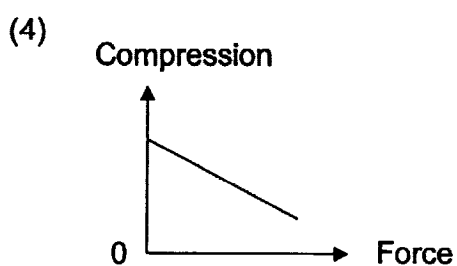
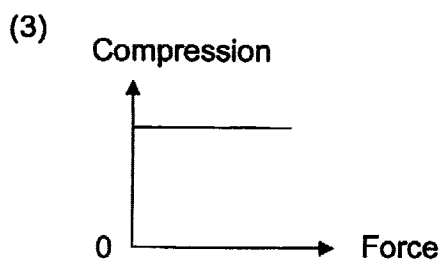
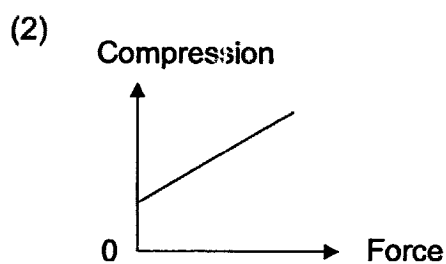
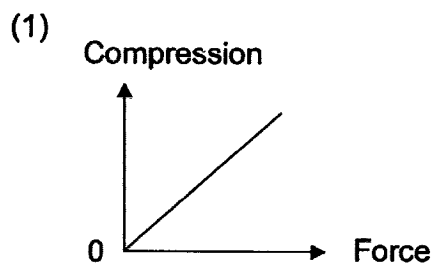
29 Which statement on forces is **not** correct?

- (1) A force is pushing the pellet up at P
- (2) A force is pulling the ~~dart~~ downwards at Q.
- (3) The pellet slowed down from P to Q because of gravity.
- (4) There is no force acting on the pellet between P and Q.

- 30 Ian managed to push one pellet after another into the toy as shown.



Which graph shows the relationship between Ian's force when pushing the pellets and the compression of the spring?



END OF BOOKLET A

**PAYA LEBAR METHODIST GIRLS' SCHOOL (PRIMARY)**  
**2026 PRELIMINARY EXAMINATION**

**PRIMARY SIX**  
**SCIENCE**  
**(BOOKLET B)**

**NAME** : \_\_\_\_\_ (       )

**CLASS** :    P6 \_\_\_\_\_

**DATE** :     20 August 2026

**Total Time for Booklets A and B: 1 hour 45 minutes**

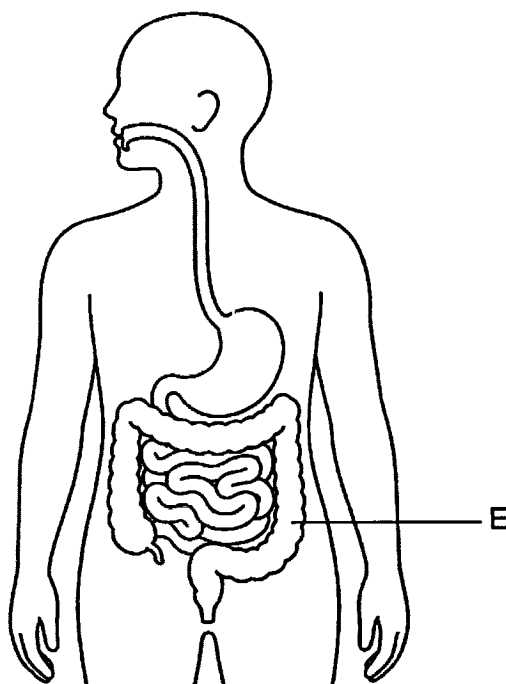
**INSTRUCTIONS TO CANDIDATES**

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Use a dark blue or black ballpoint pen to write your answers and use a pencil for drawings, diagrams or graphs.
5. Do not use correction fluid/tape.
6. Do not use highlighter on any part of your answers.
7. This booklet consists of 14 printed pages.

|                  | Marks Obtained / Maximum Marks |
|------------------|--------------------------------|
| <b>BOOKLET B</b> | / 40                           |

For questions 31 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31 The diagram shows a human body system.



(a) Identify the system and state the function of this system. [2]

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(b) Part E is not working properly. Explain why the waste is watery. [1]

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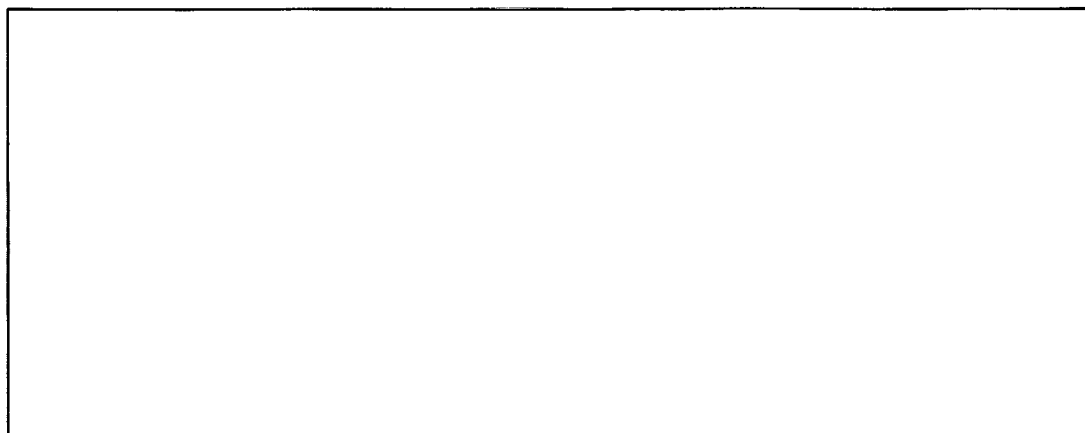
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|       |   |
|-------|---|
| SCORE | 3 |
|-------|---|

**32** Four organisms P, Q, R and S live in a pond.

- S is a producer.
- S is eaten by Q and R.
- P eats R only.

**(a)** Using the information given above, draw a food web to show the food relationships among organisms P, Q, R and S. [1]



**(b)** Global warming causes drought, where there is very little rainfall over a long period of time. Using the food web in (a), explain how global warming affects the population of organism P. [2]

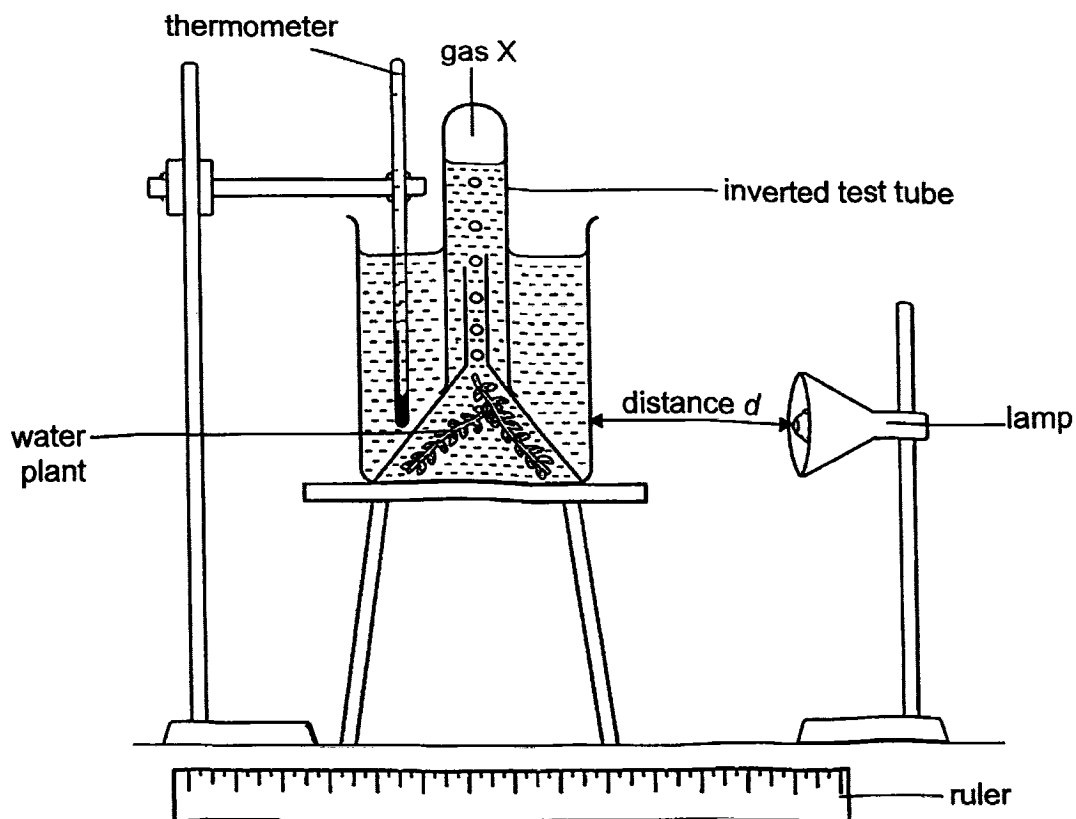
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|       |   |
|-------|---|
| SCORE | 3 |
|-------|---|

33 Faith sets up an experiment using a water plant in a dark room.



She changed distance  $d$  and counted the number of gas bubbles produced per minute. Her results are as shown.

| Distance $d$ (cm) | Number of bubbles produced per minute |
|-------------------|---------------------------------------|
| 20                | 82                                    |
| 40                | 63                                    |
| 60                | 47                                    |
| 80                | 29                                    |
| 100               | 11                                    |

(a) Name gas X. [1]

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(b) Using the results in the table, state the relationship between the intensity of light and the number of bubbles produced per minute. [1]

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|       |   |
|-------|---|
| SCORE | 2 |
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(c) Faith wanted to investigate if the intensity of light affects the rate of photosynthesis.

(i) Instead of counting the number of bubbles, suggest how she can obtain a more accurate result using the same set-up. [1]

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(ii) State how she can ensure her results are reliable. [1]

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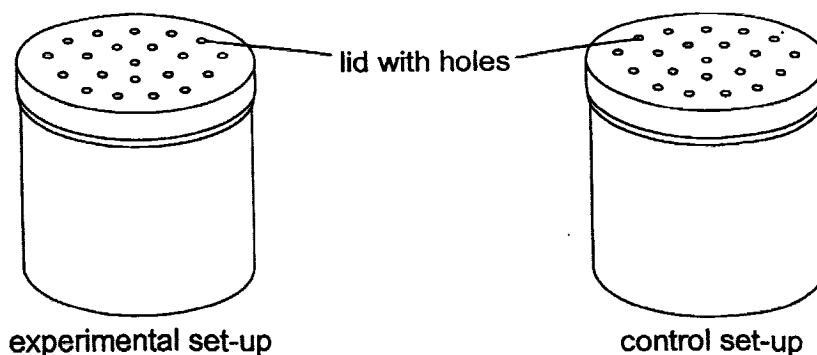
(d) Explain why the experiment was carried out in a dark room. [1]

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| SCORE | <div></div> <div>3</div> |
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- 34 Gaya wants to investigate if water will help dead leaves to break down more quickly. She used two identical containers for her investigation as shown.



- (a) Explain why Gaya used containers with a lid that has holes. [1]

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She has **only** the items below. She may use some or all of them.

| Item        | Quantity |
|-------------|----------|
| dry soil    | 1 packet |
| wet soil    | 1 packet |
| dead leaves | 40 g     |

- (b) What items should she put inside the container for each set-up? [2]

Experimental set-up: \_\_\_\_\_

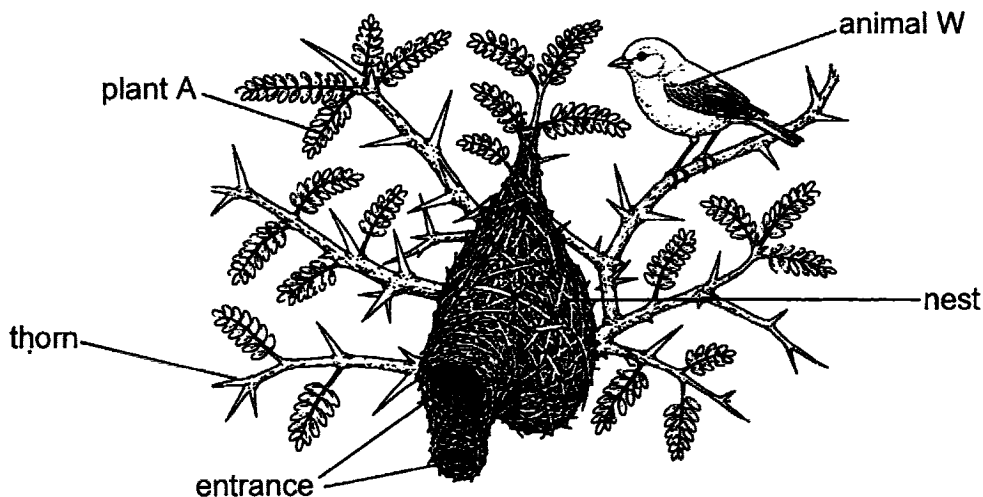
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Control set-up: \_\_\_\_\_

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|       |                                                                                                                                                                                                                                                                                                                                    |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCORE | <div style="border: 1px solid black; width: 40px; height: 40px; position: relative;"><div style="position: absolute; top: 0; right: 0; width: 100%; height: 100%; border-left: 1px solid black; border-top: 1px solid black; transform: rotate(45deg); display: flex; align-items: center; justify-content: center;">3</div></div> |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- 35 Animal W builds its nest on plant A. Plant A has sharp thorns. Animal W often leaves droppings near plant A.



- (a) Animal W lays eggs in its nest. The nest has two narrow entrances that face the ground. Suggest how the narrow entrances help animal W survive. [1]

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- (b) How does plant A and animal W benefit from this relationship? [2]

(i) Benefit for plant A: \_\_\_\_\_

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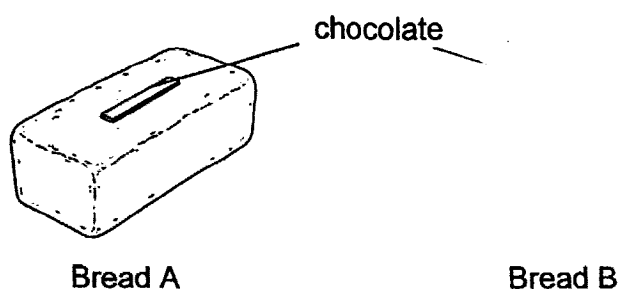
(ii) Benefit for animal W: \_\_\_\_\_

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| SCORE | 3 |
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- 36 Joe baked two similar pieces of bread. One was mixed with 20 g of substance S while the other was not. Substance S is a type of fat used in baking.

Immediately, after removing the bread from the oven, he placed an identical piece of chocolate on top of each bread.



He observed and recorded what happened to the chocolate after 5 minutes.

| Bread | Amount of substance S (g) | Observation of chocolate |
|-------|---------------------------|--------------------------|
| A     | 0                         | Melted a lot             |
| B     | 20                        | Melted slightly          |

- (a) Give a reason why the chocolate melted on the bread. [1]

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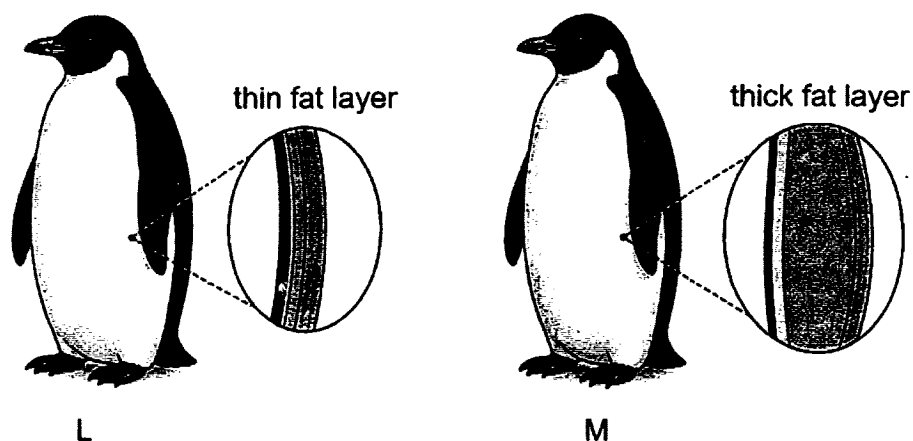
- (b) Based on his observations, what can Joe conclude about the effect of substance S on the transfer of heat? [1]

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| SCORE | 2 |
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Joe read about different penguin species, L and M, with different thicknesses of fat.



- (c) Which penguin species, L or M, is better adapted to living in a colder environment? Explain your answer. [2]

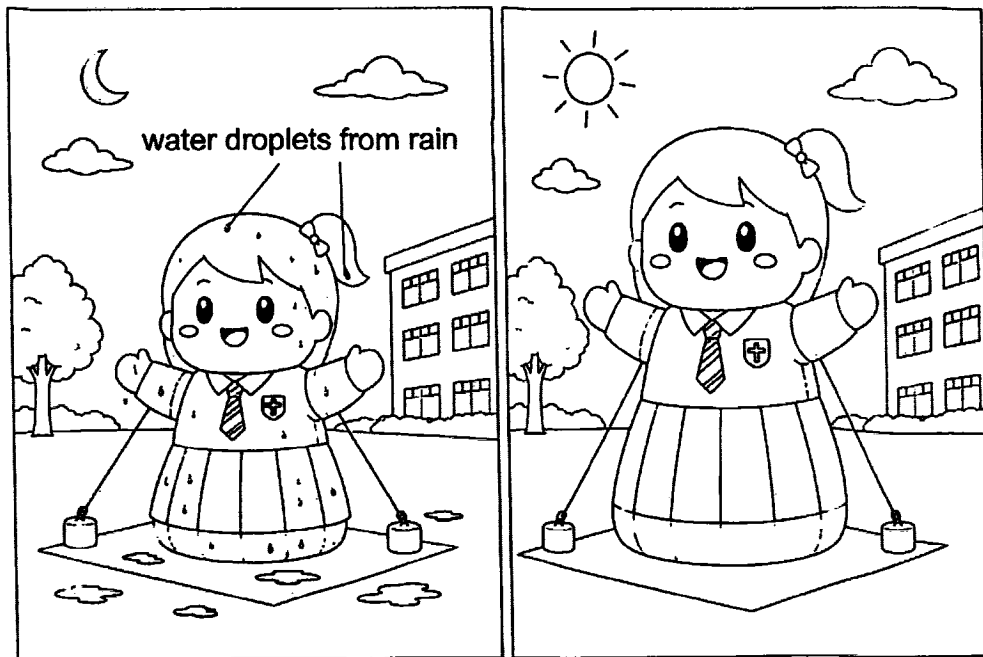
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| SCORE | 2 |
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- 37 A school was having a carnival and set up an inflatable decoration the previous evening. It rained the night before and water droplets were observed on the inflatable.



before the carnival (at night)

during the carnival (at noon)

- (a) Anna observed that the inflatable decoration had increased in size the next day. Explain her observation. [2]

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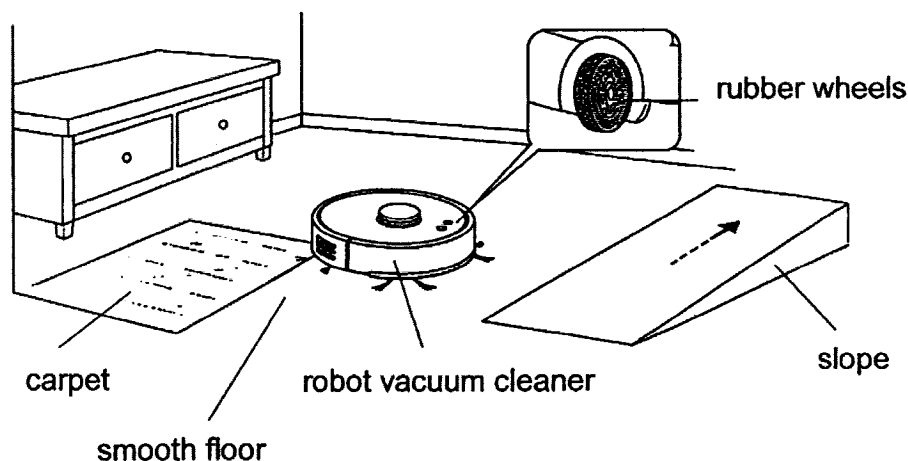
- (b) Anna also observed that the water droplets on the inflatable decoration had disappeared the next morning. Give a reason for her observation. [1]

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|       |   |
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| SCORE | 3 |
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- 38 The diagram shows a robot vacuum cleaner moving around a room.



- (a) Explain why the robot vacuum cleaner moves slower over the carpet than the smooth floor. [1]

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- (b) Will the robot vacuum cleaner speed up, slow down or remain at the same speed when moving up the slope? Explain your answer in terms of forces. [2]

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After a few months, Mrs Lim replaced the rubber wheels.

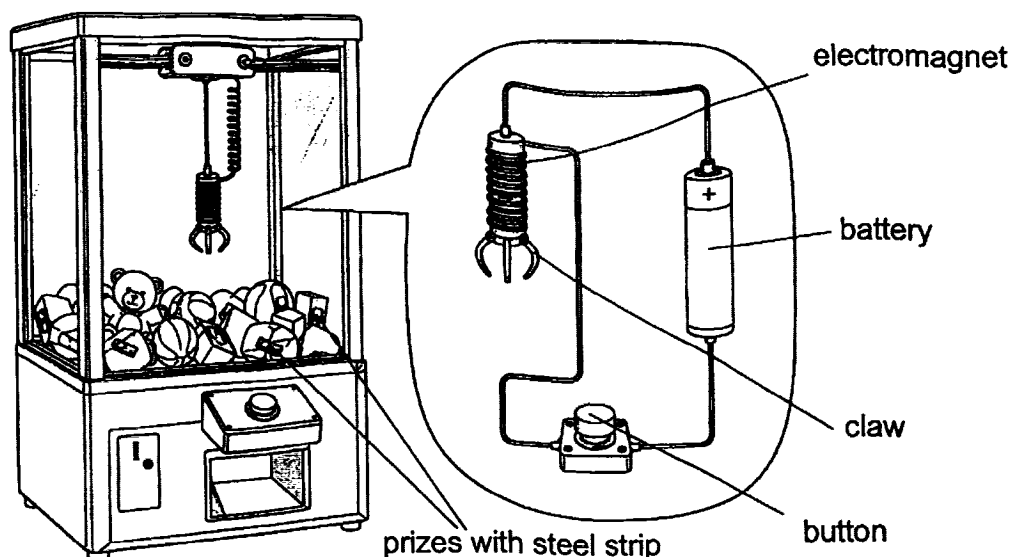
- (c) State and explain what caused the old wheels to become damaged after repeated use. [1]

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| SCORE | 4 |
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**39 Study the toy claw machine.**



The claw successfully picked up a prize when the button was pressed but dropped it when the button was released.

- (a)** Describe how the claw machine works when the button is pressed and then later released. [2]

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- (b)** The steel strips on the prizes were replaced with copper strips. The claw was unable to pick up the prizes. Give a reason for this observation. [1]

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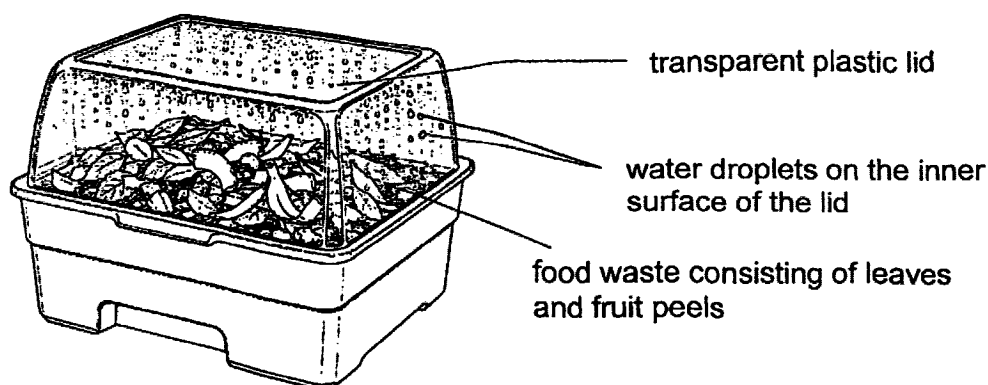
- (c)** The prizes were replaced with heavier ones. State one change that can be made to the electrical circuit so that heavier prizes can be picked up by the claw. [1]

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|-------|---|
| SCORE | 4 |
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40 Tom has a food composter in his kitchen.



- (a) Tom observed water droplets on the inner surface of the transparent plastic lid after a few hours. Explain how the water droplets were formed. [1]

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- (b) Tom moved the food composter into an air-conditioned room. He observed fewer water droplets on the inner surface of the lid. Explain. [1]

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- (c) After a few weeks, the leaves and fruit peels from the food waste became a soil-like substance. State the process that caused this change. [1]

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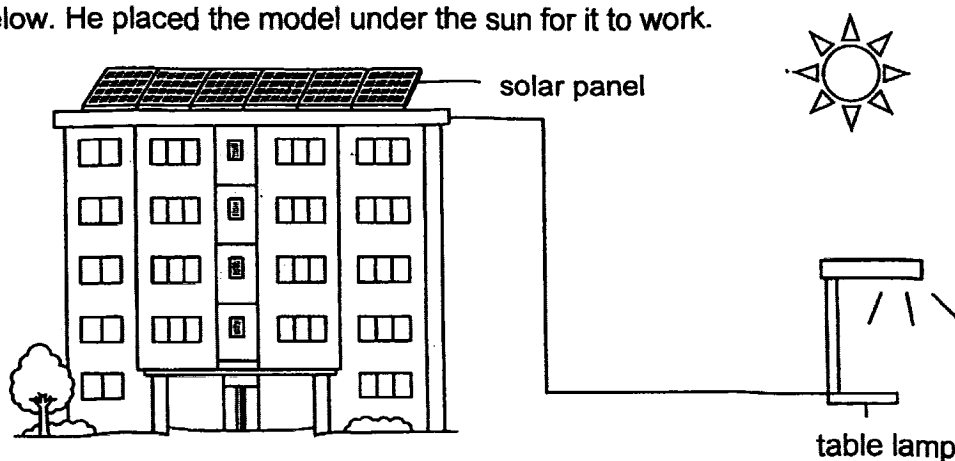
- (d) Tom used to add whole leaves and fruit peels into the composter. He then decided to cut them into smaller pieces before adding them in. Explain how this change would affect the process in (c). [1]

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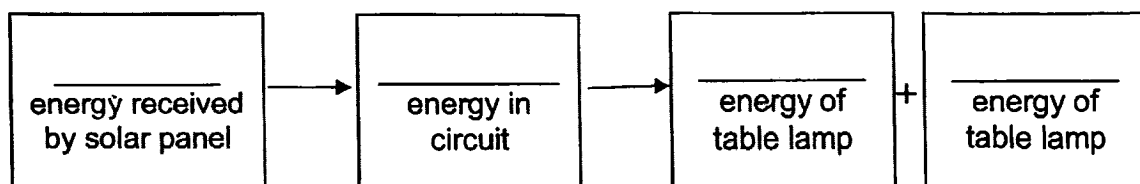
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|       |   |
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| SCORE | 4 |
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- 41 Ahmad built a model for his project to light up a table lamp as shown in the diagram below. He placed the model under the sun for it to work.

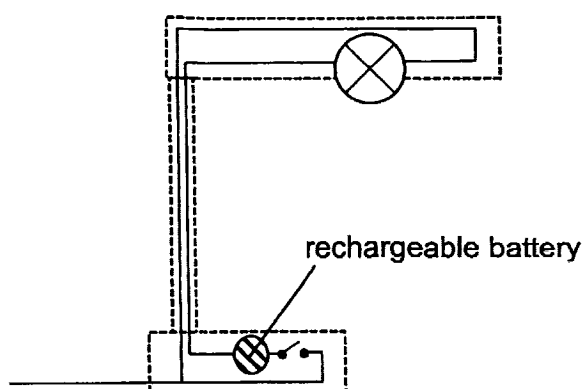


- (a) State the energy conversion of the model by filling in the boxes below. [2]



- (b) Ahmad suggests installing more solar panels on the roofs of HDB blocks. Give a reason why solar energy is a better energy source than fossil fuels for generating electricity. [1]

Ahmad installs a rechargeable battery in his model so that the table lamp is still able to work at night as shown below.



- (c) Explain how this rechargeable battery allows the table lamp to work at night. [1]

END OF BOOKLET B

SCORE

4

**SCHOOL : PL MGS PRIMARY SCHOOL**  
**LEVEL : PRIMARY 6**  
**SUBJECT : SCIENCE**  
**TERM : PRELIM 2026**

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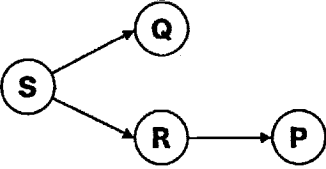
|            |            |            |            |            |            |            |            |            |            |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Q1</b>  | <b>Q2</b>  | <b>Q3</b>  | <b>Q4</b>  | <b>Q5</b>  | <b>Q6</b>  | <b>Q7</b>  | <b>Q8</b>  | <b>Q9</b>  | <b>Q10</b> |
| <b>4</b>   | <b>3</b>   | <b>1</b>   | <b>3</b>   | <b>4</b>   | <b>2</b>   | <b>3</b>   | <b>2</b>   | <b>3</b>   | <b>4</b>   |
| <b>Q11</b> | <b>Q12</b> | <b>Q13</b> | <b>Q14</b> | <b>Q15</b> | <b>Q16</b> | <b>Q17</b> | <b>Q18</b> | <b>Q19</b> | <b>Q20</b> |
| <b>2</b>   | <b>3</b>   | <b>4</b>   | <b>1</b>   | <b>3</b>   | <b>2</b>   | <b>4</b>   | <b>3</b>   | <b>3</b>   | <b>1</b>   |
| <b>Q21</b> | <b>Q22</b> | <b>Q23</b> | <b>Q24</b> | <b>Q25</b> | <b>Q26</b> | <b>Q27</b> | <b>Q28</b> | <b>Q29</b> | <b>Q30</b> |
| <b>4</b>   | <b>3</b>   | <b>1</b>   | <b>2</b>   | <b>2</b>   | <b>1</b>   | <b>4</b>   | <b>3</b>   | <b>4</b>   | <b>2</b>   |

Name: \_\_\_\_\_ ( )

Date: \_\_\_\_\_

Class: \_\_\_\_\_

**P6 Preliminary Science 2026 Correction Template**

| Qn.   | Answer                                                                                                                                                                                                                                                                                                                               | Remarks                                                                                                                                                                                                                                                                                               |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 31(a) | <p><b>Digestive</b> _____ system.</p> <p>It breaks down food into</p> <p><b>simpler</b> _____ substances.</p>                                                                                                                                                                                                                        | <p>This question has two parts:</p> <ol style="list-style-type: none"> <li>1. Identify the system</li> <li>2. State its function</li> </ol> <p>✗ Do not write "smaller pieces" or "smaller substances". That describes food becoming physically smaller, such as when we chew food in the mouth.</p>  |
| 31(b) | <p>Since Part E is not working properly, less water is <b>absorbed</b> _____</p> <p>from the undigested food.</p>                                                                                                                                                                                                                    | <p>Part E is large intestine.</p> <p>Link to function of large intestine.</p> <p>✗ Do not write "excess water". This may suggest that the large intestine only removes extra water that the body does not need.</p>                                                                                   |
| 32(a) |  <pre> graph LR     S((S)) --&gt; Q((Q))     S((S)) --&gt; R((R))     R((R)) --&gt; P((P)) </pre>                                                                                                                                                 | <p>The arrows show the direction of energy flow from food to consumer.</p> <p>→ means "eaten by".</p>                                                                                                                                                                                                 |
| 32(b) | <p>Drought causes the amount of water in the pond to <b>decrease</b> _____.</p> <p>Organism S will have less water to photosynthesise so they cannot survive.</p> <p>With less <b>S</b> available as food for R, the population of R decreases. With less R available as food for P, the population of P <b>decreases</b> _____.</p> | <p>Link global warming / drought to the pond environment first.</p> <p>Then use the food web to trace the effect from one organism to another.</p> <p>☑ Correct flow: drought / higher temperature → less water in pond → less S → less food for R → R decreases → less food for P → P decreases.</p> |

|           |                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33(a)     | Gas X is <u>oxygen</u> .                                                                                               | Gas X is produced by the aquatic plant during photosynthesis.<br><br>During photosynthesis, plants take in carbon dioxide and give out oxygen.                                                                                                                                                                                                                                                                           |
| 33(b)     | As the intensity of light <u>decreases</u> , the number of bubbles produced per minute <u>decreases</u> .              | This is a relationship question. Identify the variables before answering.<br>Cause / changed variable: intensity of light.<br>Effect / measured variable: number of bubbles produced per minute.<br>The table gives distance from the lamp, but the question asks about intensity of light.<br>✗ Do not answer in terms of distance from the lamp. State the relationship between light intensity and number of bubbles. |
| 33(c)(i)  | Measure the <u>height</u> of gas X collected in the inverted test tube using a ruler.                                  | Counting bubbles may not be very accurate because the bubbles may be different sizes, join together, or be counted wrongly.<br><br>A more accurate method state something <b>measurable</b> , such as the height / volume of gas collected.<br><br>✗ Do not write "observe the gas". This is not measurable and does not quantify the amount of gas produced.                                                            |
| 33(c)(ii) | Repeat the experiment <u>3</u> more times to check for <u>consistent</u> readings and take the <u>average</u> reading. | ✗ Do not write about accuracy here. Accuracy and reliability are different.<br><br>Help yourself distinguish the terms:<br><br>Reliability: repeat the experiment and check for consistent readings.<br><br>Accuracy: use a suitable measuring instrument and measure carefully.<br><br>Fair test: keep all other variables the same and change only the variable being tested.                                          |

|       |                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 33(d) | <p>This ensures that the <b>difference in the number of bubbles produced</b> was only due to the <b>intensity</b> _____ of light from the lamp and not due to light from the <b>surroundings</b> _____.</p>         | <p>This is a fair-test question.</p> <p>The experiment was carried out in a dark room to prevent other light sources from affecting the rate of photosynthesis.</p> <p>You must mention the measured variable: the number of bubbles produced.</p>                                                                                                                                                                          |
| 34(a) | <p>The lid with holes allows <b>air</b> _____ / <b>oxygen</b> _____ to enter the set-ups.</p> <p>Decomposers such as bacteria and fungi need oxygen to <b>respire</b> _____ and break down the dead leaves.</p>     | <p><del>X</del> Do not say the dead leaves need air to decompose. Dead leaves are not living. It is the decomposers that need oxygen.</p>                                                                                                                                                                                                                                                                                   |
| 34(b) | <p><b>Experimental set-up:</b></p> <p><b>1 packet wet</b> _____ soil + <b>20</b> _____ g of dead leaves</p> <p><b>Control set-up:</b></p> <p><b>1 packet dry</b> _____ soil + <b>20</b> _____ g of dead leaves.</p> | <p>A control set-up does not contain the changed variable. Here, the control set-up must not contain water.</p> <p>The changed variable is the <b>presence of water</b>. Moist soil provides water in the experimental set-up, while dry soil ensures that no water is present in the control set-up. All other variables, including the amount of soil and mass of dead leaves, must be kept the same for a fair test.</p> |

|          |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                             |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35(a)    | <p>The narrow entrances make it difficult for <b>larger</b> predators to <u>enter</u> through, protecting animal W and its <u>young</u> from predators.</p> <p>OR</p> <p>The two entrances <u>confuses</u> the predator which ensures the eggs in the nest are safe.</p> <p>OR</p> <p>The entrances face the <u>ground</u>, making it difficult for predators to climb in.</p> | <p>This question is about how the nest structure (narrow entrance that faces the ground) helps animal W survive.</p> <p>Choose one feature of the nest and explain clearly how it protects animal W and its eggs from predators.</p> <p><b>X</b> Do not only describe the nest. You must link the feature to protection from predators.</p> |
| 35(b)(i) | <p>Animal W's droppings provide <u>minerals</u> to the soil, which helps Plant A grow better.</p>                                                                                                                                                                                                                                                                              | <p>Explain the benefit to plant A.</p> <p><b>X</b> Do not say the droppings are food for the plant.</p> <p><input checked="" type="checkbox"/> Plants make their own food, and they absorb mineral salts and water through their roots.</p>                                                                                                 |

|           |                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 35(b)(ii) | <p>Plant A's sharp thorns deter predators from trying to reach the nest. This helps to protect Animal W's nest / eggs from <u>predators</u>.</p>           | <p>Use the <b>diagram information</b> to guide your answer.</p> <p>Ask yourself:</p> <ol style="list-style-type: none"> <li><b>Where does Animal W build its nest?</b><br/>It builds its nest on Plant A.</li> <li><b>What feature does Plant A have?</b><br/>Plant A has sharp thorns.</li> <li><b>How do the sharp thorns help Animal W?</b><br/>The sharp thorns make it difficult for predators to reach the nest.</li> <li><b>What is being protected?</b><br/>Animal W, its nest and its eggs are protected from predators.</li> </ol> <p>✗ Do not only write "the thorns protect the nest".</p> <p>☑ You must state <b>what the thorns protect the nest from</b> — predators.</p> |
| 36(a)     | <p>The chocolate gained <u>heat</u> from the hot bread roll.</p> <p>OR</p> <p>Heat was transferred from the <u>bread roll</u> to the <u>chocolate</u>.</p> | <p>Show the direction of heat transfer clearly. Heat is transferred from the hotter object to the cooler object.</p> <p>In this question, the hot bread roll loses heat and the chocolate gains heat.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|       |                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 36(b) | <p>Substance S <u>slows down</u> the transfer of heat from the bread to the chocolate.</p>                                                                                                                         | <p>Use the table to guide your answer.<br/>Ask yourself:</p> <ol style="list-style-type: none"> <li><b>What is different between Bread A and Bread B?</b><br/>Bread B has substance S.</li> <li><b>What happened to the chocolate on Bread B?</b><br/>The chocolate <b>melted lesser</b>. This shows that less heat was transferred from the bread to the chocolate.</li> <li><b>What can you conclude about substance S?</b><br/>Since the bread with substance S caused the chocolate to melt less, substance S <b>slows down / decreases the transfer of heat</b>. S is a poor conductor of heat.</li> </ol> <p>✗ Do not only write "the chocolate melted less". That is the observation, not the conclusion.</p> |
| 36(c) | <p>C: Penguin species</p> <p><u>M</u></p> <p>E: It has a thicker fat layer, which is a <b>poor</b> _____ conductor of heat.</p> <p>R: M loses heat <u>slower</u> _____ from its body to the cool surroundings.</p> | <p><b>C —Claim</b><br/>Which penguin species is better adapted to living in a colder environment?</p> <p><b>E — Evidence</b><br/>What feature shown in the diagram supports your claim? Look at the thickness of the fat layer.</p> <p><b>R — Reasoning</b><br/>What Science concept explains why this feature helps? Link the fat layer to heat transfer.</p> <p><input checked="" type="checkbox"/> CER thinking flow:<br/>Claim → choose the penguin<br/>Evidence → use the diagram feature, show comparison<br/>Reasoning → explain using heat transfer concept.</p>                                                                                                                                             |

|       |                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37(a) | <p>Air in the inflatable decoration had gained <u>heat</u> from the warmer surroundings and <u>expanded</u>.</p>    | <p>Recall this experiment we did in P4.</p> <div data-bbox="821 235 1388 548"> </div> <p>Use these questions to guide your answer:</p> <ol style="list-style-type: none"> <li><b>What happens to the balloon when the air inside the bottle gains heat?</b><br/>The balloon becomes inflated because the air expands and takes up more space.</li> <li><b>What causes the inflatable decoration to become bigger?</b><br/>It is the air inside the inflatable that expands.</li> <li><b>How does this link to the question?</b><br/>At noontime, the surroundings are warmer. The air inside the inflatable gains heat, expands and takes up more space. This causes inflatable decoration to increase in size.</li> </ol> <p>✗ Do not say "more air entered the inflatable". The question does not state that extra air was pumped in.</p> |
| 37(b) | <p>The water droplets <u>evaporated</u>.</p> <p>OR</p> <p>The water gained heat and became <u>water vapour</u>.</p> | <p>✗ Do not say the inflatable absorbed the water unless the question gives evidence for this.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|       |                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 38(a) | <p>There is <u>more</u> friction <b>between the robot vacuum cleaner's wheels</b> and the carpet than between the wheels and the smooth floor.</p>                                                                  | <p>Friction acts between two surfaces in contact. You must name both surfaces: the wheels and the carpet / smooth floor.</p> <p>Claim: The robot vacuum cleaner moves slower.<br/>Evidence: the carpet is rougher.<br/>Reason: Link roughness to greater friction between surfaces and slower movement.</p>                                                                                                                                                                                                                                                                                                                                                               |
| 38(b) | <p>Claim: The robot vacuum cleaner will <u>slow down</u>.</p> <p>Evidence: It is moving <u>up</u> the slope.</p> <p>Reasoning: It is moving <b>against</b> the downward pull of <u>gravitational</u> force.</p>     | <p>Use the <b>C-E-R structure</b>.</p> <p><b>C — Claim</b><br/>What happens to the robot's speed when it moves up the slope?</p> <p><b>E — Evidence</b><br/>What direction is the robot moving in the diagram?</p> <p><b>R — Reasoning</b><br/>Which force acts downwards and opposes the robot's motion up the slope?</p> <p>✗ Do not write only "gravity acts on it".<br/> <input checked="" type="checkbox"/> You must explain that the robot is moving <b>against the downward pull of gravitational force</b>.<br/> ✗ Avoid saying "overcome gravitational force".<br/> <input checked="" type="checkbox"/> Say it is moving <b>against gravitational force</b>.</p> |
| 38(c) | <p>The old wheels became damaged because they rubbed against the ground repeatedly.</p> <p>This caused <u>frictional force</u> to act between the wheels and the ground, causing the wheels to <u>wear</u> out.</p> | <p>This question has two parts.</p> <p>Part 1: State what caused the old wheels to become damaged.</p> <p>Part 2: Explain why this caused damage. What happens when the wheels rub against the ground many times over a long period?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|       |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                  |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39(a) | <p>When the button is pushed, a <u>closed</u> circuit is formed and electricity flows through the circuit.</p> <p>The electromagnet <u>attracts</u> the steel strip on the prize.</p> <p>When the button is released, the circuit becomes <u>open</u>. The electromagnet is demagnetized and no longer <u>attracts</u> the steel strip.</p> | <p>Explain both situations: button pushed and button released.</p>                                                                                                                                                                                                                                               |
| 39(b) | <p>Copper is a <u>non-Magnetic</u> material, so it cannot be attracted by a magnet.</p>                                                                                                                                                                                                                                                     | <p>Recall: Not all metals are magnetic. Only some metals are magnetic, such as:</p> <ul style="list-style-type: none"> <li>• iron</li> <li>• steel</li> <li>• nickel</li> <li>• cobalt</li> </ul> <p>Other metals, such as copper, aluminium and gold, are non-magnetic and cannot be attracted by a magnet.</p> |
| 39(c) | <p>Increase the number of <u>coils</u> of wire around the electromagnet.</p> <p>OR</p> <p>Increase the number of <u>batteries</u> in the circuit.</p>                                                                                                                                                                                       | <p>The prizes are heavier, so a stronger electromagnet is needed.</p> <p>The strength of an electromagnet can be increased by increasing the number of coils of wire or increasing the number of batteries connected in series to the circuit.</p>                                                               |

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| 40(a) | <p>Water from the food waste <u>evaporated</u> into water vapour.</p> <p>The water vapour came into contact with the cooler inner surface of the lid, lost heat and <u>condensed</u> to form water droplets.</p>                                              | <p>Explain both processes clearly: <b>evaporation</b> and <b>condensation</b>.</p> <p>Use these questions to guide your answer:</p> <ol style="list-style-type: none"> <li><b>Where did the water vapour come from?</b><br/>It came from the <b>water in the food waste</b>.</li> <li><b>What happened to the water in the food waste?</b><br/>It evaporated to form water vapour.</li> <li><b>What cooler surface did the water vapour touch?</b><br/>It came into contact with the <b>cooler inner surface of the lid</b>.</li> <li><b>What happened during condensation?</b><br/>Use <b>WCLCCW</b>:<br/>Water vapour from [?]<br/>→ comes into contact → loses heat → to the cooler [surface] → condenses → forms water droplets.</li> </ol> |
| 40(b) | <p>In the air-conditioned room, the temperature of the surroundings is <u>lower</u>.</p> <p>Water from the food waste evaporates <u>less</u> into water vapour. Water vapour condenses more slowly into fewer water droplets which are formed on the lid.</p> | <ol style="list-style-type: none"> <li><b>What changed when the composter was moved into the air-conditioned room?</b><br/>The temperature of the surroundings became lower.</li> <li><b>How does the lower surrounding temperature affect the whole set-up?</b><br/>The food waste and air inside the composter become cooler.</li> <li><b>How does lower temperature affect evaporation?</b><br/>Water from the food waste evaporates more slowly.</li> <li><b>How does slower evaporation affect the number of water droplets formed?</b><br/>Less water vapour is formed, so less water vapour condenses on the lid. Hence, fewer water droplets are seen.</li> </ol>                                                                       |
| 40(c) | <p>The process is <u>decomposition</u>.</p>                                                                                                                                                                                                                   | <p>Leaves and fruit peels are <b>dead organic matter</b>. After a few weeks, they became a soil-like substance because decomposers broke them down into simpler substances.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| 40(d) | <p>Cutting the leaves and fruit peels into smaller pieces increases the <b>exposed surface</b> _____</p> <p><b>area</b> _____ of the food waste in contact with the decomposers.</p> <p>This allows decomposers to break down the food waste <b>faster</b> _____.</p> | <p><b>Reminder: Surface area answers must state "surface area of what" and "in contact with what".</b></p> <p>Use this structure:<br/> <b>Increase in surface area of _____ in contact with _____ → more parts can be acted on at the same time → process happens faster / more efficiently.</b></p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• <b>Decomposition:</b> Cutting food waste increases the exposed surface area of the <b>food waste</b> in contact with <b>decomposers</b>, so decomposition happens faster.</li> <li>• <b>Digestion:</b> Chewing increases the exposed surface area of the <b>food</b> in contact with <b>digestive juices</b>, so digestion happens faster.</li> <li>• <b>Small intestine:</b> Finger-like projections increase the exposed surface area of the <b>small intestine</b> in contact with <b>digested food</b>, so more digested food can be absorbed.</li> <li>• <b>Lungs:</b> Air sacs increase the exposed surface area of the <b>lungs</b> in contact with <b>air</b>, so gas exchange can take place more efficiently.</li> <li>• <b>Heat transfer:</b> A larger contact surface area between the <b>object</b> and the <b>heat source / cooler surroundings</b> allows heat to be gained or lost faster.</li> </ul> |
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| 41(a) | <p><b>Light</b> _____ energy<br/>received by solar panel</p> <p style="text-align: center;">↓</p> <p><b>Electrical</b> _____ energy in<br/>circuit</p> <p style="text-align: center;">↓</p> <p><b>Light</b> _____ energy of lamp<br/>+</p> <p><b>Heat</b> _____ energy of lamp</p> | The solar panel needs <b>light</b> to work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 41(b) | Solar energy is <u>renewable</u>                                                                                                                                                                                                                                                   | <p>Renewable energy sources:<br/>solar energy, wind energy, hydroelectric energy / energy from moving water</p> <p>Non-renewable energy sources:<br/>fossil fuels such as coal, oil and natural gas</p> <p>✗ Do not only write "solar energy is from the Sun". You must explain why this makes it better than fossil fuels.</p>                                                                                                                                                                                                                                      |
| 41(c) | <p>The rechargeable battery stores <u>chemical potential</u> energy.</p> <p>At night, this potential energy of the battery is converted into electrical energy in the circuit which is converted into <u>light</u> energy in the lamp, allowing the lamp to light up.</p>          | <p>Use these questions to guide your answer:</p> <p>Can the solar panel work at night?<br/>What is the role of the rechargeable battery?<br/>What form of energy is stored in the battery?<br/>What happens to the stored energy at night?</p> <p>✗ Do not say the solar panel works at night.<br/>☑ The lamp can work at night because the battery stores energy for later use.</p> <p>✗ Do not say the battery stores electrical energy.<br/>☑ The <b>battery stores potential energy</b>, which is converted to electrical energy when the circuit is closed.</p> |