NANYANG PRIMARY SCHOOL
PRELIMINARY EXAMINATION
2025

PRIMARY 6

SCIENCE
(BOOKLET A)

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

Additional materials: Optical Answer Sheet (OAS)

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Use a 2B pencil to shade your answers on the Optical Answer Sheet (OAS).

Name: _____( )

Class: Primary 6 ( )

This booklet consists of 19 printed pages and 2 blank pages.

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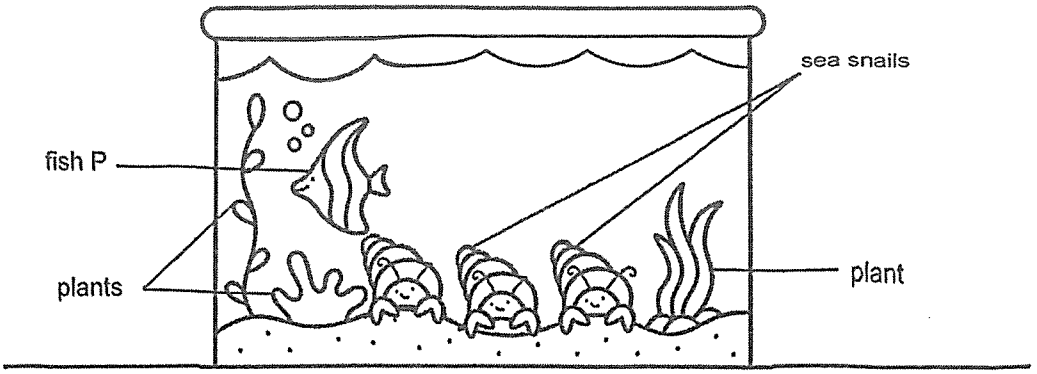
Section A: Multiple Choice Questions [56 marks]

1. Study the living things in the tank below.

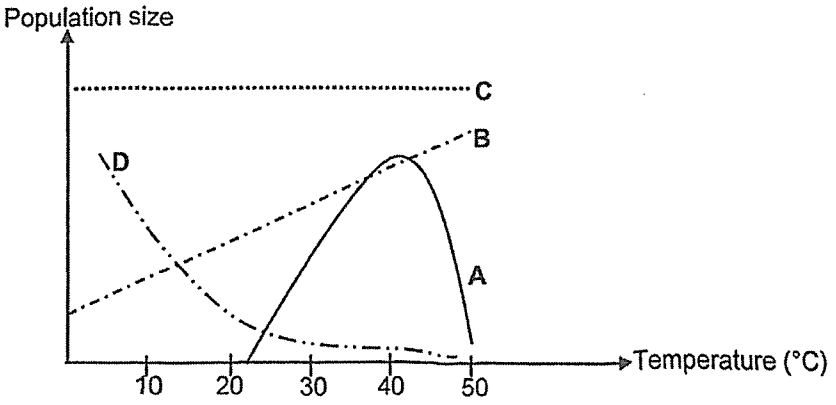


Based on the diagram above, which statement(s) is/are correct?

A Fish P forms one population.
B The plants in the tank are organisms.
C The sea snails form three communities.

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

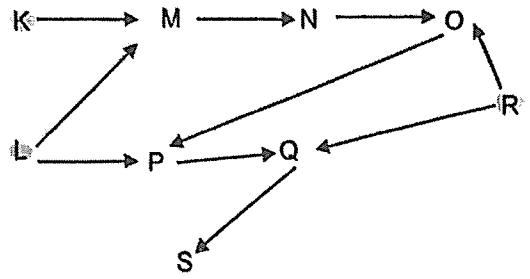
2. The graph below shows the effect of temperature on the population of 4 different organisms, A, B, C and D.



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

(1) Population of organism A increases most at 22°C.
(2) Population of organism C is most affected by temperature change.
(3) Population of organism B increases when the temperature increases.
(4) Population of organism D increases when the temperature increases.

Study the food web below and answer questions 3 and 4.



3. How many food producers are there in the food web above?

(1) 1
(2) 2
(3) 3
(4) 4

4. Which of the following statements is correct?

(1) O is only an animal eater.
(2) P, Q and S are consumers.
(3) M and N are only plant eaters.
(4) Q and N are plant-and-animal eaters.

5. The food relationship between four organisms is shown below.

W ⟶ X ⟶ Y ⟶ Z

Based on the food chain, which statement(s) is/are correct?

A W is the prey of X.
B Y is the predator of Z.
C Y is both prey and predator.
D There are only 2 predators in the food chain.

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

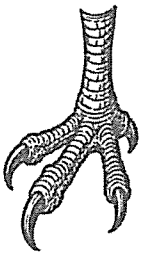
6. Which of the following statements is an example of behavioural adaptation?

(1) Eagles have sharp claws to hunt prey.
(2) Squirrels collect and store food for winter.
(3) Turtles have shells to protect their bodies against predators.
(4) Rabbits have large ears so they can hear and avoid danger.

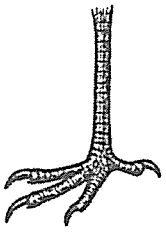
7. Some birds swim in the water.
Which of the following feet helps the bird swim fast in the water?

(1)

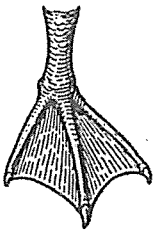
(2)



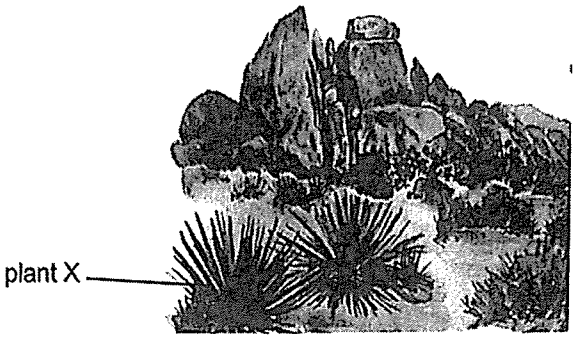
(3)



(4)



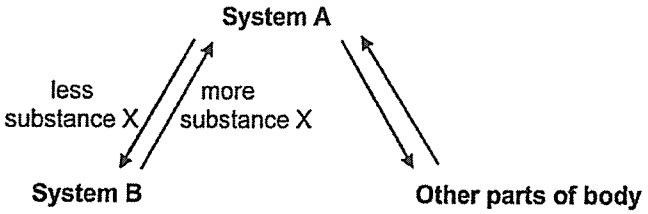
8. John found plant X in a windy desert. The plant is short and has thin leaves.



Which of the following gives the correct adaptation of Plant X and how it helps Plant X to survive in a windy desert?

	Plant X's adaptation	How it helps Plant X
(1)	Thin leaves	To allow more water loss.
(2)	Thin leaves	To trap less light for photosynthesis.
(3)	Grow closer to the ground	To trap less light for photosynthesis.
(4)	Grow closer to the ground	To prevent the wind from blowing plant X over.

9. The diagram below shows the amount of substance X being transported in the human body.



Which of the following could correctly represent systems A and B and substance X?

	System A	System B	Substance X
(1)	circulatory	digestive	oxygen
(2)	digestive	circulatory	carbon dioxide
(3)	circulatory	digestive	digested food
(4)	digestive	circulatory	digested food

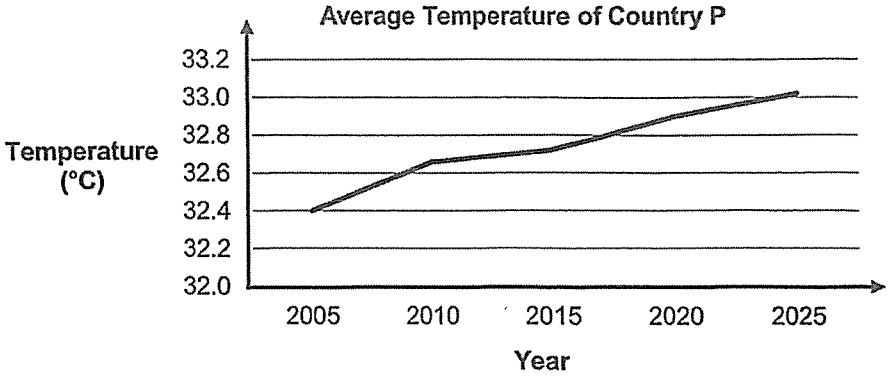
10. The table below shows some information about three types of fuel, X, Y and Z, that can be burnt to produce energy.

Fuel	Number of years fuel can last	Amount of energy produced	Amount of greenhouse gases produced
X	110-120	high	high
Y	70-80	low	medium
Z	70-80	high	low

Based on the information in the table above, which of the following **cannot** be concluded?

(1) Acid rain forms only from the burning of X.
(2) X, Y and Z are non-renewable sources of energy.
(3) Burning of X, Y and Z contributes to global warming.
(4) Z produces the least amount of greenhouse gases when burnt.

11. A scientist recorded the average yearly temperature of Country P over the last 20 years as shown in the graph below.

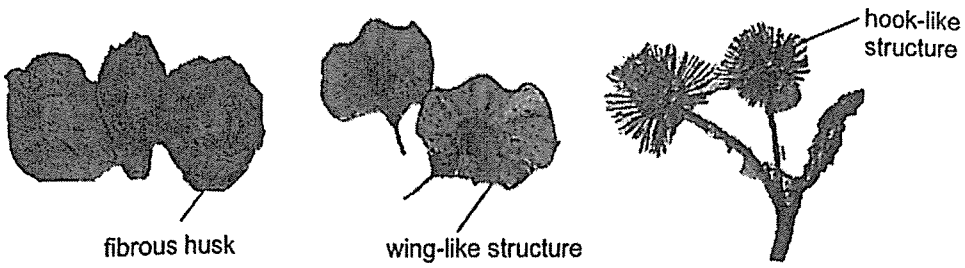


Which of the following activities could have caused the change in the temperature as shown in the graph above?

A Picking up litter from the ground
B Travelling on the road in petrol vehicles
C Clearing of forests by cutting down trees
D Turning off the tap when soaping the hands

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

12. The diagram below shows three different kinds of fruits.

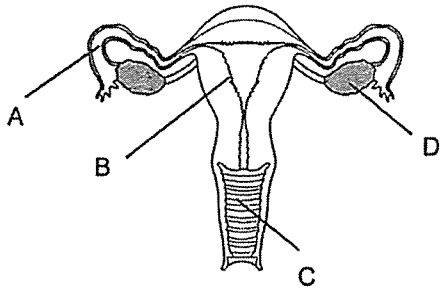


Fruit A Fruit B Fruit C

Which of the following correctly identifies the dispersal method for fruits A, B and C?

	Fruit A	Fruit B	Fruit C
(1)	water	animal	wind
(2)	splitting	wind	animal
(3)	animal	water	splitting
(4)	water	wind	animal

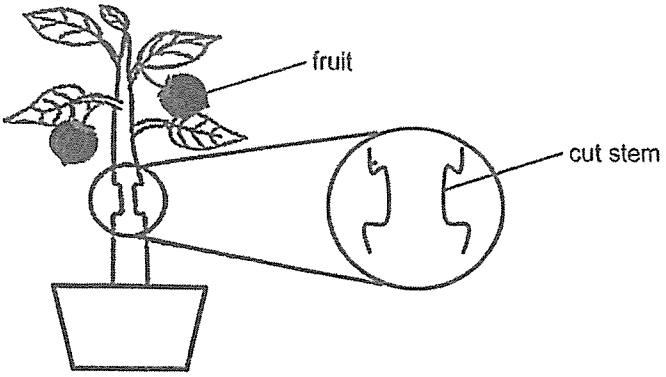
13. The diagram below shows the female reproductive system.



Which of the following correctly match the parts to its functions?

	Part that produces eggs	Part where fertilised egg develops
(1)	A	C
(2)	B	A
(3)	D	C
(4)	D	B

14. Marlin made a cut on the stem of a plant to remove the food carrying tube. He watered the plant daily and left it in a place with light as shown in the diagram below.

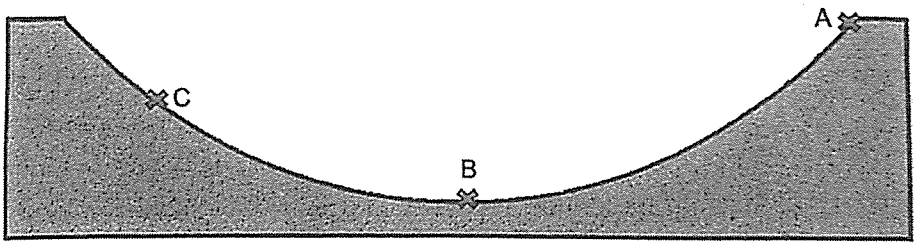


Which of the following would Marlin made most likely observe after 2 weeks?

A The fruits would become smaller and are less juicy.
B Only the top part of the cut stem would become swollen.
C Both the top and bottom parts of the cut stem would become swollen.

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

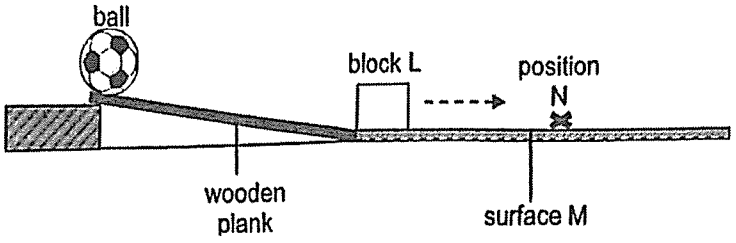
15. Amy released a ball at point A. It rolled past point B to point C before rolling back.



Which of the following statements correctly states the amount of kinetic and potential energy that the ball had at different points?

(1) The ball had no potential energy at point C.
(2) The ball had less potential energy at point A than point C.
(3) The ball had more potential energy at point C than point B.
(4) The ball had the same amount of kinetic energy at points A and B.

16. A ball moves down the smooth slope of a wooden plank as shown in the diagram below.



When the ball hits block L, block L moves along surface M and then it stops at position N.

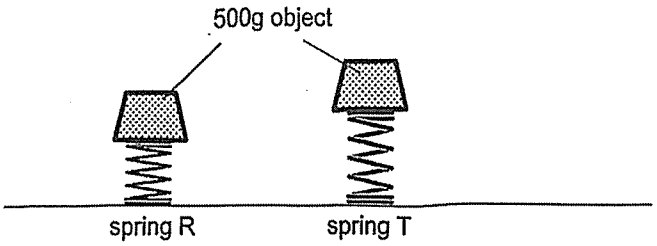
The following changes were then made to the set-up above and tested individually.

A Decrease the mass of block L
B Increase the height of the slope
C Increase the width of the wooden plank
D Decrease the roughness of the surface M

Which of the following change(s) would make block L move further than position N?

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

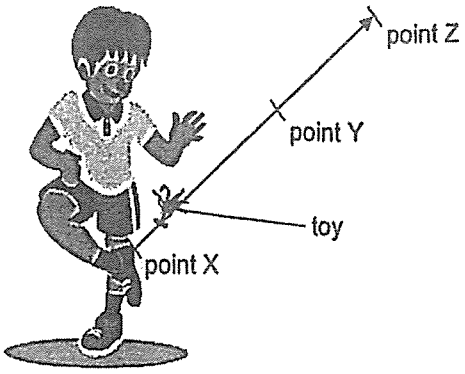
17. Two identical objects were placed separately on two similar springs made of different materials as shown below. The springs were of the same length at the start of the experiment.



Which of the following about the springs is correct?

(1) Spring R is stiffer than spring T.
(2) Spring T requires less force to compress it than spring R.
(3) More force was exerted on spring R by the object than on spring T.
(4) The gravitational force exerted on both springs by the object is the same.

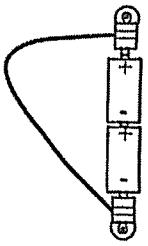
18. Fabian kicked a toy upwards. The toy travelled from point X, where Fabian's shoe hit the toy, to reach the highest point at point Z as shown below.



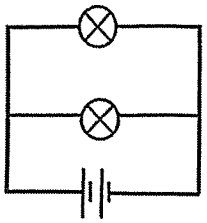
Which of the following best describes the forces acting on the toy from point X to point Z?

(1) At point X, there is no gravitational force acting on the toy.
(2) At point Z, the gravitational force acting on the toy is the greatest.
(3) At point Y, the toy is moving in the same direction as gravitational force.
(4) At point X, the gravitational force acting on the toy is less than the push force of the kick on the toy.

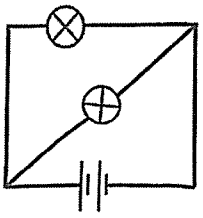
19. Two bulbs lit up when connected in an electrical circuit as shown below.



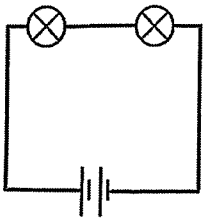
Which of the following circuit diagram(s), A, B, C or D, can represent the electrical circuit?



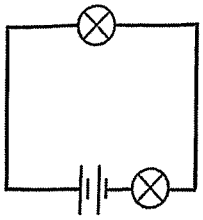
A



B



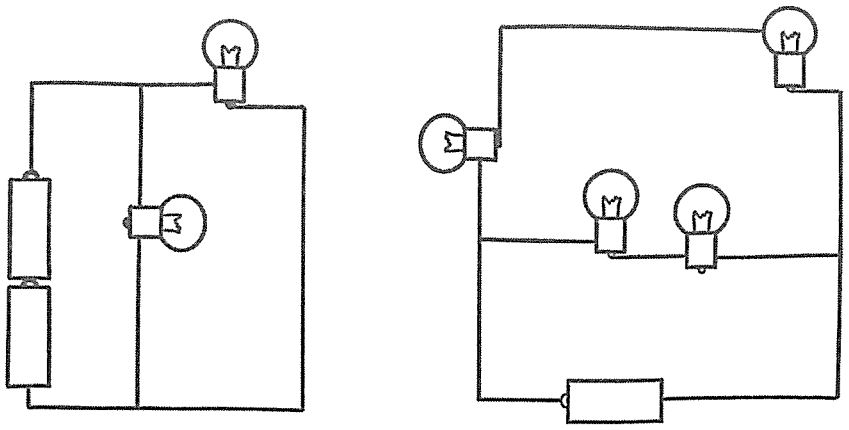
C



D

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

20. Identical bulbs and batteries are used to set up the circuits below.



Which of the following correctly identified the total number of bulbs that lit up in both circuits?

(1) 6 bulbs
(2) 2 bulbs
(3) 3 bulbs
(4) 4 bulbs

21. The following shows the energy changes in a bulb.

Electrical energy → Light energy + Heat energy

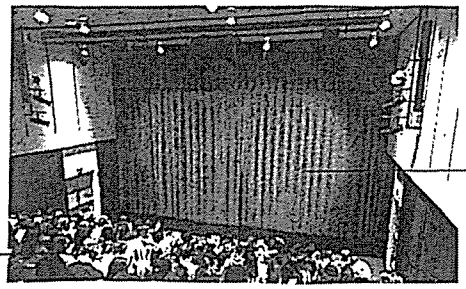
Nasri would like to use a bulb that will allow him to conserve electrical energy. He has identified two suitable bulbs, G and H. He conducted an experiment on the two different bulbs and the results are shown below.

Bulb	Amount of light detected (units)	Temperature of air surrounding bulb when lit (°C)
G	10.9	30
H	11.1	52

Which of the following best explains his choice?

	Choice	Reason
(1)	G	It is cooler and thus less electrical energy is converted to heat energy.
(2)	G	It is brighter and cooler and thus more electrical energy is converted to light energy.
(3)	H	It is brighter and thus uses less electrical energy.
(4)	H	It is warmer and thus less electrical energy is converted to heat energy.

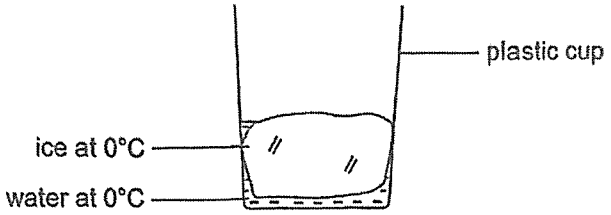
22. John attended a performance with his family. They are seated among the audience.



Which of the following is the reason why John could not see the performers who are getting ready behind the stage curtain?

(1) The performers gave off light.
(2) The performers did not reflect light.
(3) The curtain allowed light to pass through.
(4) The curtain did not allow light to pass through.

23. A block of ice was placed in an empty plastic cup and left in the kitchen at room temperature.



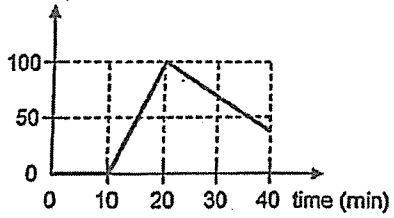
Which of the following is correct about the setup above?

(1) The ice lost heat to the plastic cup.
(2) The water lost heat to the plastic cup.
(3) The ice gained heat from the surrounding air.
(4) The surrounding air gained heat from the plastic cup.

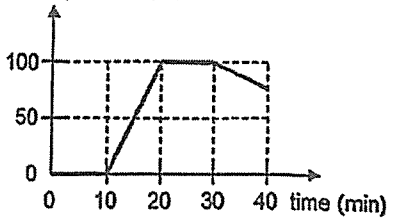
24. Shuyi heated some ice cubes in a beaker using a hotplate. After 10 minutes, all the ice cubes melted. After another 10 minutes, the water started to boil. She then turned off the hotplate 10 minutes after the water started to boil.

Which of the following graphs correctly shows the temperature of the contents in the beaker?

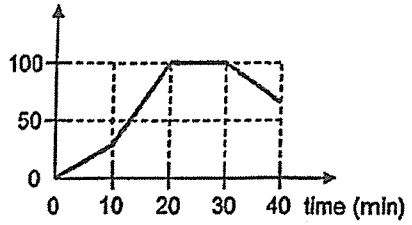
(1)



(2)



(3)



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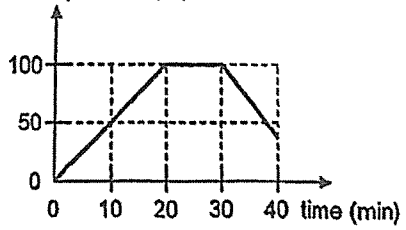
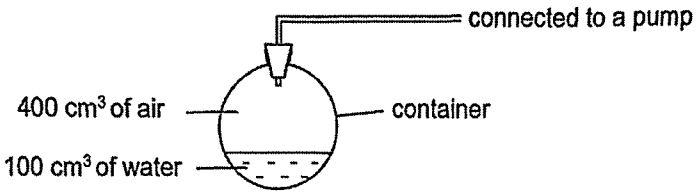


25. Which of the following is **not** matter?

(1) Oil
(2) Heat
(3) Steam
(4) Candle

26. The diagram below shows a container with a capacity of 500 cm^3 at the start of the experiment.



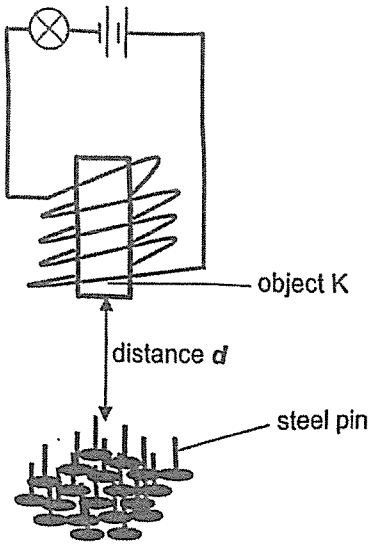
Using the pump, 50 cm^3 of water is first added to the container. Then, 50 cm^3 of air is added to the container.

Which of the following correctly shows the changes in the mass and volume of air in the container as compared to the start of the experiment?

	Mass of air	Volume of air
(1)	Remain the same	Remain the same
(2)	Decrease	Remain the same
(3)	Decrease	Decrease
(4)	Increase	Decrease

Refer to the diagram and information below to answer questions 27 and 28.

Object K was lowered to distance *d* above a pile of steel pins as shown below. The number of steel pins attracted by object K was recorded.



The experiment was repeated by increasing distance *d* each time. The bulb remained lit throughout the experiment. The table below shows the results.

Distance *d* (cm)	Number of steel pins attracted
5	19
10	13
15	5
20	0

27. Based on the results, which of the following statements on the experiment is/are correct?

A Object K is made of a non-magnetic material.
B When distance *d* is 20 cm, object K is not an electromagnet.
C As distance *d* increases, the number of steel pins attracted decreases.
D As distance *d* decreases, the gravitational force acting on the steel pins decreases.

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

28. The experiment was repeated by replacing object K with object L. The bulb remained lit throughout the experiment. The table below shows the results.

Distance *d* (cm)	Number of steel pins attracted
5	0
10	0
15	0
20	0

Which of the following explains the results?

(1) Distance ***d*** is too short.
(2) Object L is made of wood.
(3) No electricity passes through the coils of wire around object L.
(4) There is a magnetic force of repulsion between object L and the steel pins.

~ END OF BOOKLET A ~

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PRELIMINARY EXAMINATION
2025

PRIMARY 6

SCIENCE
(BOOKLET B)

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6 ( )

Parent's Signature: _____

Please sign and return the examination paper the next day. **Any queries should be raised at the time when the paper is returned.**

Booklet A	
Booklet B	
Total	

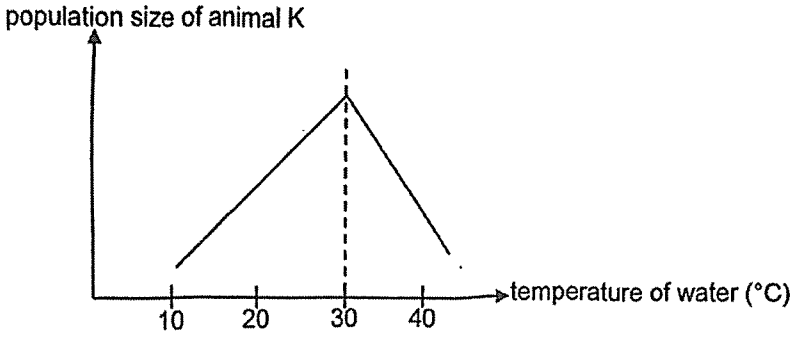
This booklet consists of 17 printed pages and 1 blank page(s).

Section B: Open-Ended Questions [44 marks]

29. (a) What is a population? [1]

Erika observed a population of animal K.

The graph below shows the population size of animal K found at different temperatures of water.

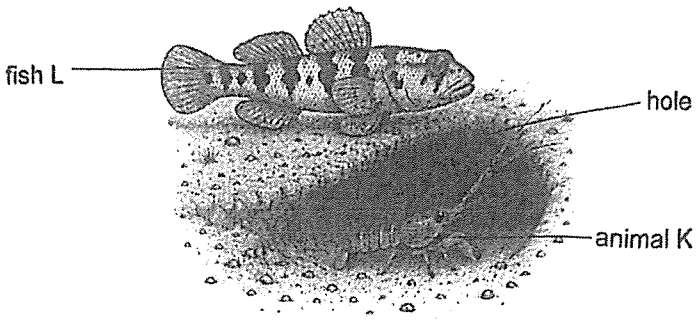


(b) Based on the graph, state the relationship between the temperature of water and the population size of animal K from 10 °C to 40 °C. [2]

3

(Continue from Q29)

Animal K and fish L can be found on the ocean floor. Animal K has poor eyesight. It uses its large claws to build holes. Fish L lives in the hole and alerts animal K by darting back to the hole when there are predators.



(c) Based on the information, explain how animal K and fish L benefit from each other through the interaction. [2]

(i) Benefit to animal K: _____

_____

(ii) Benefit to fish L: _____

_____

2

30. The diagram below shows a food chain in a community.

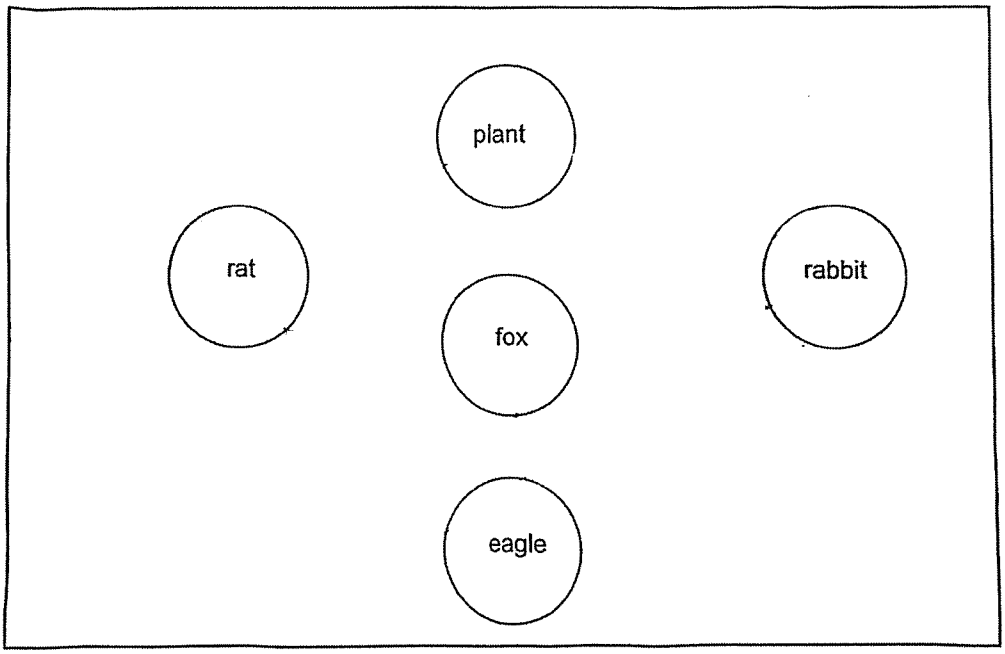
plant ⟶ rat ⟶ eagle

Thomas introduced rabbits to the community. Rabbits feed on the plants but is the prey of eagles. The rabbits are known for producing large numbers of offsprings quickly.

(a) Based on the information above, how would the introduction of rabbits affect the population of rats in the community? Explain your answer. [2]

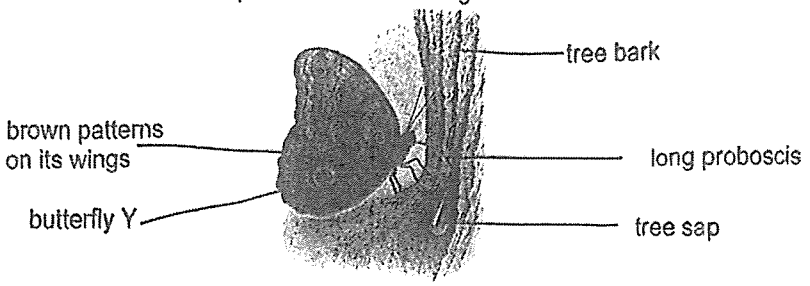
A population of foxes was introduced to the community. They feed on rabbits only. Some eagles feed on small foxes.

(b) Based on the information given above, **draw arrows** in the food web below to show the relationship between the organisms. [1]



3

31. Butterfly Y below has brown patterns on its wings that resemble the tree bark. It also has a long proboscis to reach and suck out tree sap as shown in the diagram below.



(a) Explain how the two structural adaptations in butterfly Y increases the chance of its survival. [2]

(i) Brown patterns on its wings:

_____

_____

(ii) Long proboscis:

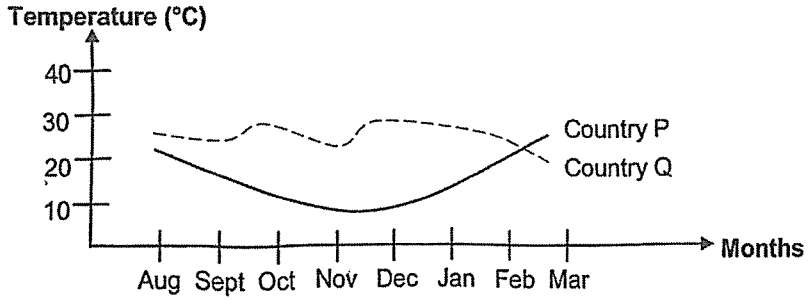
_____

_____

Ember conducted an experiment to investigate the effects of the temperature of the surrounding and the number of butterfly's eggs that hatched. The table shows the results of her experiment.

Temperature (°C)	0	5	10	15	20	25	30	35
Number of butterfly Y's eggs that hatched	0	0	0	0	4	30	3	1

She noticed that between September to February, butterfly Y migrates from country P to country Q. She recorded the temperature of country P and Q as shown below.



(b) Based only on the information above, explain why butterfly Y migrates from country P to Q between September to February. [2]

_____

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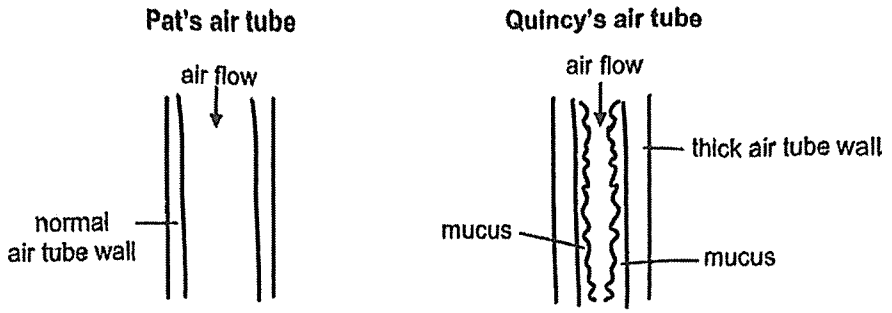
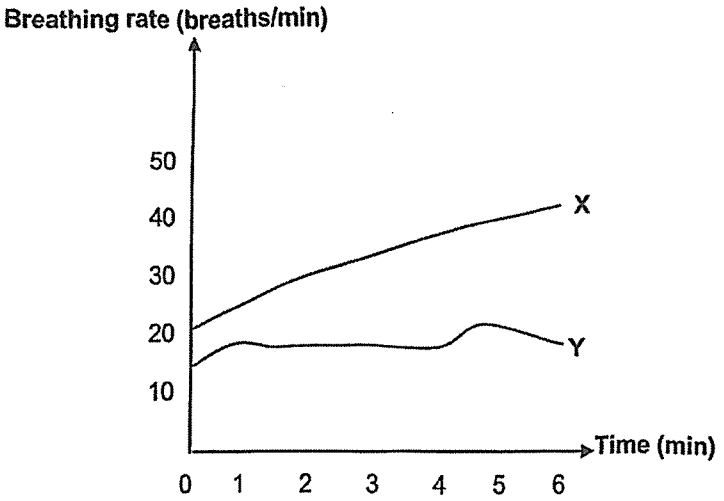
4

32. (a) State all the organs in the human respiratory system. [1]

The diagram below shows the air tubes of Pat and Quincy.



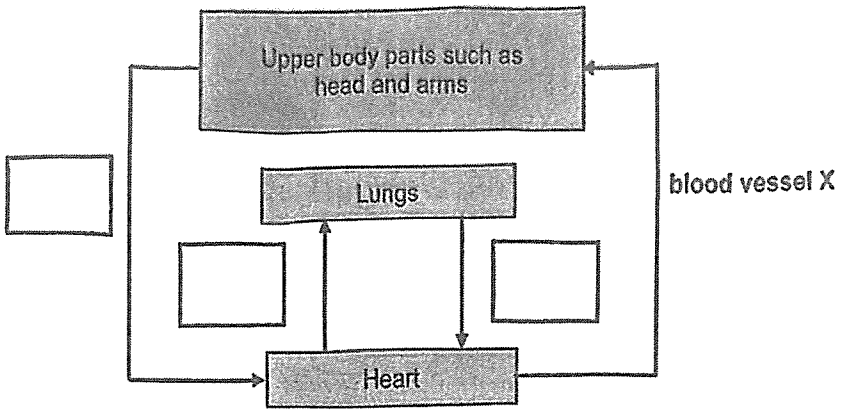
The graph below shows two breathing rates, X and Y.



(b) Which one of the lines, X or Y, best represents the breathing rate of Quincy in order for him to get sufficient oxygen? Explain your answer. [2]

3

33. The diagram below shows the human circulatory system.

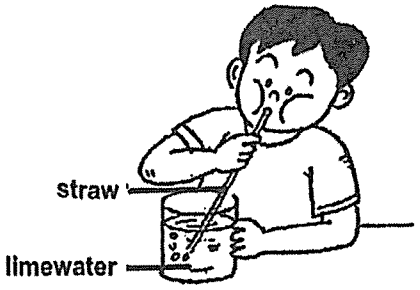


In the diagram above, the arrows represent the flow of blood in the blood vessels of the human circulatory system.

(a) Which blood vessel(s) has more carbon dioxide than in blood vessel X?
Put a tick [✓] in the correct box(es). [1]

(b) When Peter is cycling, his heart pumps blood faster around his body. Explain why. [2]

34. Ali conducted an experiment to find out how running affects the amount of carbon dioxide he exhaled. He breathed out into a beaker containing 100 ml of limewater with a straw. He recorded the number of deep breaths it took for the limewater to turn chalky. Ali then repeated the experiment after a 10-minute run.



The table below shows the number of deep breaths it took to turn the limewater chalky.

	Before running	After running
Number of deep breaths taken to turn limewater chalky	9	5

(a) Based on the results above, what can Ali conclude about the amount of carbon dioxide present in exhaled air after running? [1]

Throughout his experiment, Ali placed another similar beaker of limewater on the table. He did not breathe out into this beaker of limewater.

He observed that this beaker of limewater remained clear before recording the results of his experiment.

(b) What is the purpose of this control set-up? [1]

2

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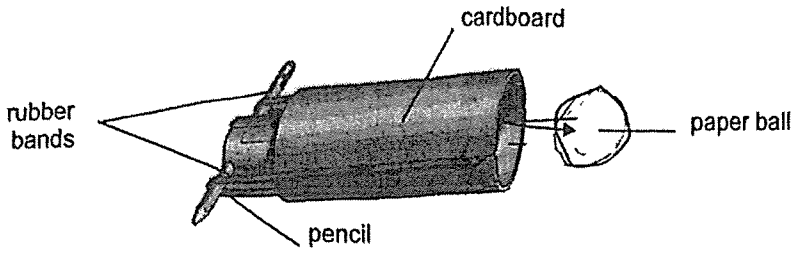
35. Stephen made a paper ball launcher using some recyclable materials. In order to launch the paper ball, he pulls the pencil back. When the pencil is released, the paper ball is launched as shown below.



He tested the launcher and recorded the distances that the paper ball travelled in a table as shown below.

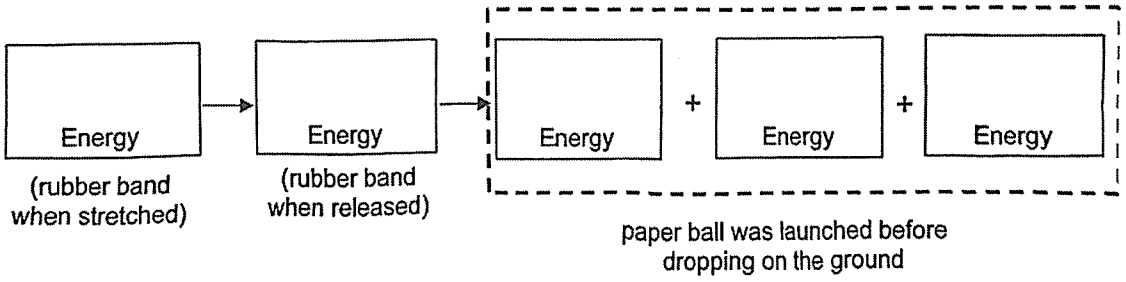
Distance the pencil was pulled back (cm)	1	2	3	4	5	6
Distance, *d*, travelled by the paper ball (cm)	5.3	14.8	36.2	57.1	78.4	0

(a) Based on the results in the table above, state the relationship between the distance the pencil was pulled back and the distance travelled by the paper ball from 1 cm to 5 cm. [1]

_____

_____

(b) State the main energy conversion that took place when the launcher was used. [2]



3

(c) Without changing the cardboard, what could Stephen do to let the ball launch further? [1]

_____

_____

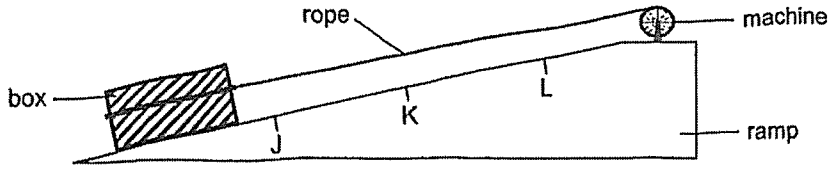
(d) Give a reason why the distance travelled by the paper ball became 0 cm when the pencil was pulled back to 6 cm. [1]

_____

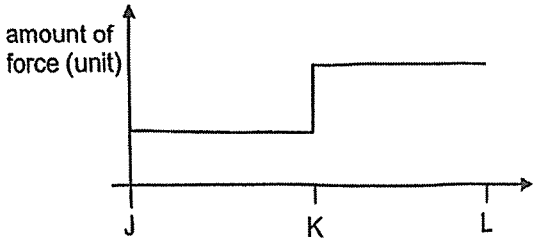
_____

2

36. Dylan used a machine to pull a box up a ramp from point J to L as shown below.



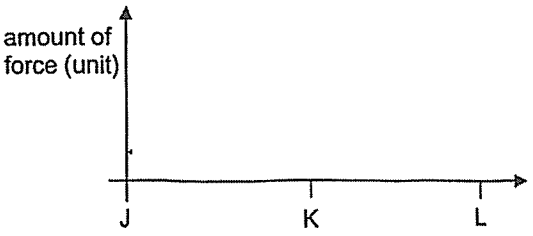
The pull force exerted by the machine was increased from point K to L as shown in the graph below.



(a)(i) State the effect on the movement of the box at K when the pull force was increased. [1]

_____

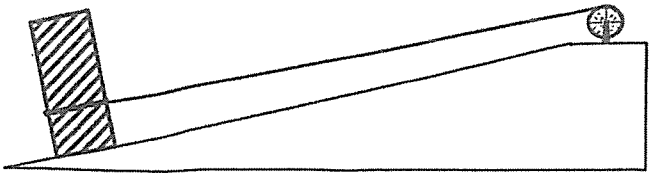
(ii) **Complete the line graph** below to show the amount of frictional force between the box and the surface of the ramp from point J to L. [1]



2

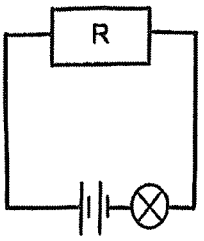
(b) Describe one way Dylan could reduce the amount of frictional force between the box and the surface of the ramp. [1]

Dylan suggested flipping the box to the shorter side to make it easier to pull up the ramp as shown below.

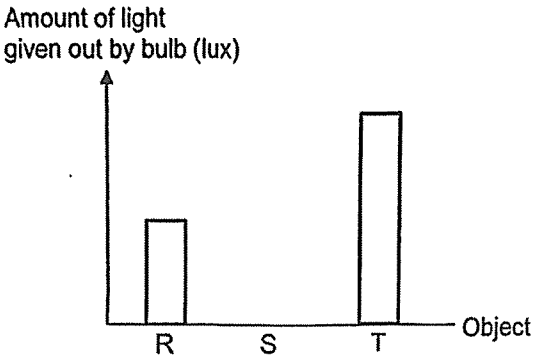


(c) Do you agree with Dylan's suggestion? Give a reason for your answer. [1]

37. Object R was connected to an electrical circuit as shown below. The amount of light given out by the bulb was measured and recorded.



The experiment was repeated twice by replacing object R with objects S and T respectively. The graph below shows the results of the experiment.

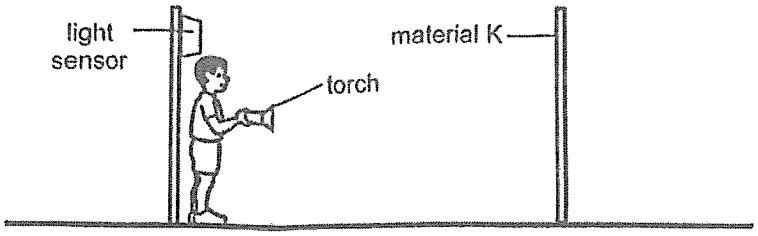


(a) State a difference in property between objects R and S that explains the amount of light given out by the bulb. [1]

(b) State what object T might be. Explain your answer. [2]

3

38. Zhiming wanted to find out which material, K, L or M, reflects the most amount of light. He set up his experiment in a dark room as shown below.



Zhiming shone light from the torch onto material K and recorded the amount of light detected by the light sensor. He repeated the experiment with materials L and M.

His results are shown in the table below.

Material	K	L	M
Amount of light detected (units)	2000	4000	500

(a) Give a reason why Zhiming should do the experiment in a dark room. [1]

_____

_____

Construction workers working on the roads at night should wear a safety vest. When the headlights of vehicles shine onto the safety vest, the workers are more visible to others.

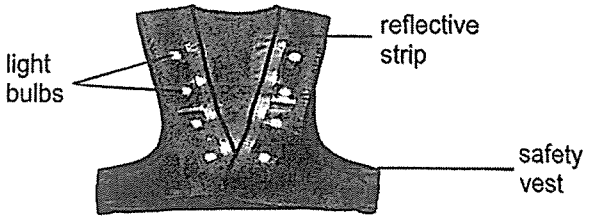
(b) Based on Zhiming's results, which material should he use to make the safety vest of a worker working on the roads at night? Explain your answer. [2]

_____

_____

_____

The diagram below shows another type of safety vest with reflective strips and light bulbs.



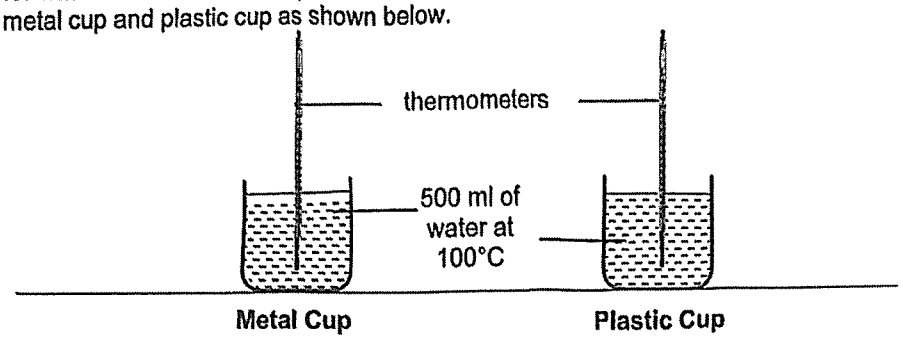
(c) Give a reason why this type of safety vest will make the workers even more visible when used in a dark area. [1]

_____

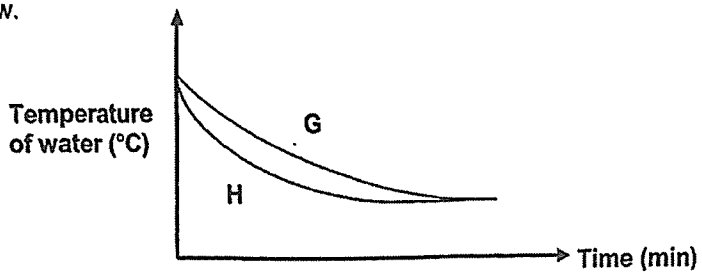
_____

4

39. Mrs Shanti conducted an experiment to find out how the material of the cup affects the time taken for water to cool down. She poured the same amount of water at the same temperature into the metal cup and plastic cup as shown below.

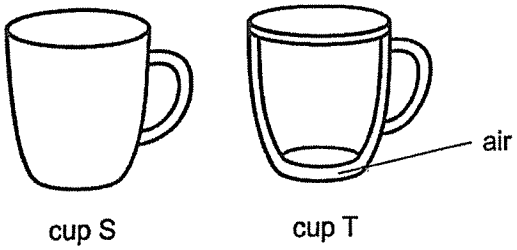


The temperature of the water in both cups were measured at 5-minute intervals as shown in the graph below.



(a) Which graph, G or H, shows the change in the temperature of the water in the metal cup? Explain your answer. [2]

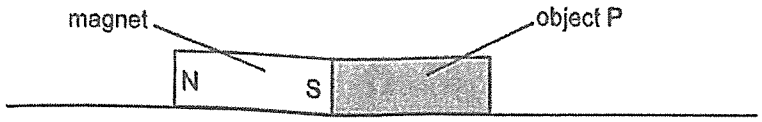
Mrs Shanti wanted to have some ice cream at home. She had 2 uncovered plastic cups of the same size as shown below.



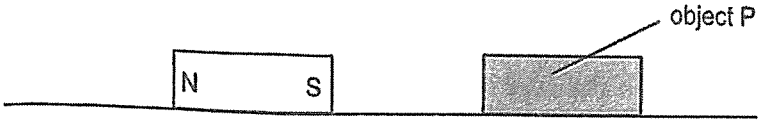
(b) Which cup, S or T, would allow her ice cream to stay frozen for a longer period of time? Explain your answer. [2]

4

40. Raj fixed a magnet securely on a tabletop. He then brought object P close to the magnet as shown below.



After Raj let go of object P, he made the observation as shown below.



He repeated the experiment by replacing object P with objects Q and R of identical size. He measured and recorded the results in the table as shown below.

Object	Variable X (cm)
P	3
Q	6
R	0

Based on the results, Raj concluded that objects P and Q were magnets.

(a) What is measured variable X? [1]

(b) Using the data as shown in the table above, state a difference in property between objects P and Q. [1]

Raj then concluded that object R must be a non-magnetic object.

(c) Explain why his conclusion could be **wrong.** [2]

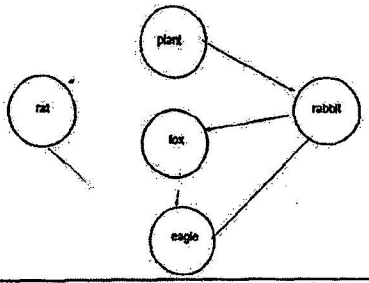
~ END OF BOOKLET B ~

P6 SCIENCE Prelim Paper 2025
Suggested Answer Key

Section A

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

Section B

Qn No	Acceptable Answers
29.(a)	2 or more organisms of the same kind living together
(b)	The higher the temperature, the higher the population of animal K Turning Point: Till 30 °C After 30 °C, the higher the temperature, the lower the population of animal K.
(c)	**Benefit to animal K:** Fish L will alert animal K to the presence of predators so that animal K is able to move back inside the hole. **Benefit to fish L:** Animal K helps build home so that fish L has a shelter
30. (a)	-Increase in population of rabbit -more plants/food will be eaten by the rabbit -less plants/food for the rats. -the population of rats will decrease.
(b)	
31.(ai)	(Brown patterns on its wings) to help camouflage against the tree bark and protect it from predators
(aii)	(Long proboscis) to extend and reach out to obtain sap for food
(b)	Most eggs hatched at 25 °C. Temperature of country Q is closer to 25 °C between the month of Sept to Feb. The butterfly migrates to country Q as more eggs can hatch there.
32. (a)	nose, lungs, windpipe
(b)	X. Quincy has a thicker air tube wall/narrower hole, so less oxygen can flow through the hole. He has to breathe faster in order to take in enough oxygen.

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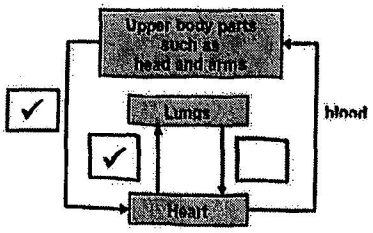
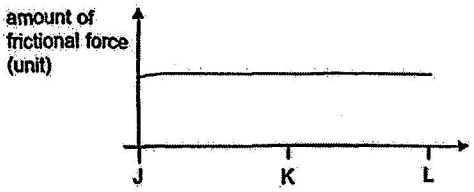
33.(a)	
(b)	To transport more oxygen and digested food to all parts of the body and remove more carbon dioxide and (waste materials) from the body.
34.(a)	More carbon dioxide in exhaled air after running.
(b)	To compare and confirm that any changes in the limewater is only due to Andy exhaling air into it and not other factors
35.(a)	The greater the distance the pencil was pulled back, the further the distance travelled by ball.
(b)	Potential energy → Kinetic energy → Kinetic energy + heat energy+sound energy
(c)	Use more rubber bands.
(d)	The rubber band broke.
36.(ai)	The box moves faster.
(aii)	
(b)	Add oil on the ramp.
(c)	No, I do not agree. The amount of frictional force between the box and the surface of the ramp remains the same regardless of the surface area in contact between the box and the ramp.
37.(a)	R is an electrical conductor but not S.
(b)	T is a battery. The bulb lit up brighter as more electricity is flowing through the circuit.
38.(a)	To ensure that the torch is the only source of light
(b)	Material L. Highest amount of light was detected by the light sensor for L. Material L reflects the most light from the cars/street lamps into the drivers' eyes.
(c)	Without any other light source, drivers could see the light on the safety vest.
9.(a)	Graph H. Graph H shows a faster decrease in the temperature of the water over the same period. Metal is a better conductor of heat and the water will lose heat faster to the surroundings.
(b)	Cup T. Air is a poor conductor of heat. Ice cream will gain heat from the surroundings slower.
40.(a)	Distance between objects and the magnet.
(b)	Q has a greater magnetic strength than P
(c)	Object R could be magnetic and it is attracted to/by the magnet.

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