

**NAN HUA PRIMARY SCHOOL
MID-YEAR EXAMINATION 2022
PRIMARY 6**

SCIENCE

BOOKLET A

28 Multiple Choice Questions (56 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided below.
2. Do not turn over the 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).

Marks Obtained

Booklet A		/ 56
Booklet B		/ 44
Total		/ 100

Name: _____ () Class: P 6 _____

Date: 11th May 2022

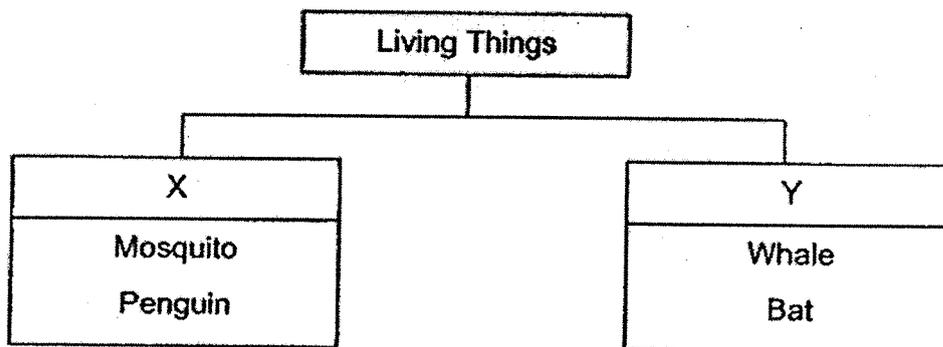
Parent's Signature: _____

This booklet consists of 22 printed pages.

Section A: (28 x 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

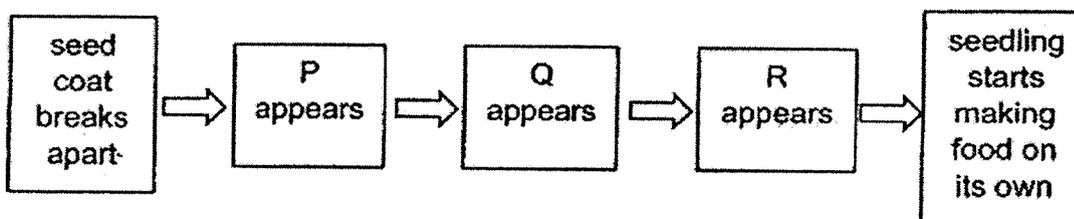
- 1 Andy classified the following animals into two groups as shown in the classification chart below.



What could the headings, X and Y, be?

	X	Y
(1)	Have wings	Do not have wings
(2)	Lay eggs	Give birth
(3)	Have feathers	Have hair
(4)	Live in water	Live on land

- 2 The diagram below shows how a seedling grows.



What does P, Q and R represent?

	P	Q	R
(1)	shoot	root	leaf
(2)	root	leaf	shoot
(3)	leaf	root	shoot
(4)	root	shoot	leaf

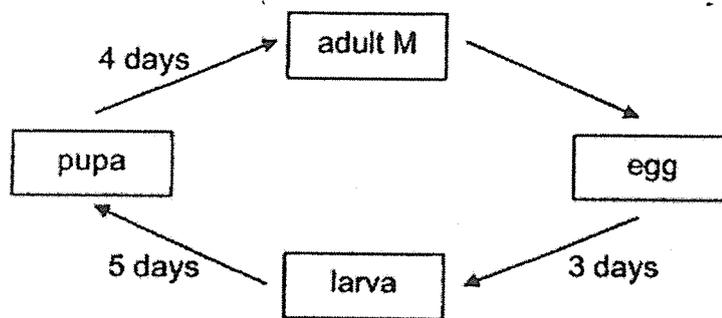
3 An experiment was conducted to find out how the temperature of the surroundings can affect organism M in the following ways:

- Number of eggs laid each time
- Time taken to reach adulthood from the moment the eggs are laid

After every full cycle from the egg stage to the adult stage, the temperature of the surroundings was changed. The data obtained is showed in the table below.

Temperature of surroundings (°C)	Number of eggs laid	Time taken to reach adulthood (days)
16	42	34
20	88	17
25	137	12
32	205	9

At a certain period of the experiment, period X, the life cycle of M was observed and represented in the diagram below.

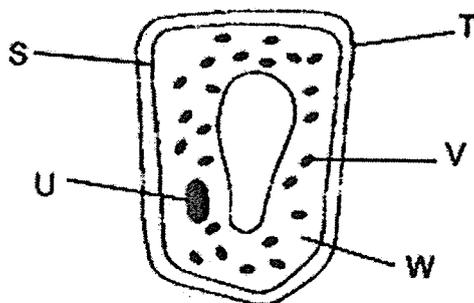


Based on the information above, what could be inferred about organism M?

A	It took 9 days for organism M to change from its larval stage to pupal stage during period X.
B	The surrounding temperature of the surroundings during period X was around 25 °C.
C	The duration of the egg stage of organism M is 3 days at all temperatures.
D	Adult M could reproduce very quickly when the temperature of the surroundings is around 25 °C to 32 °C.

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

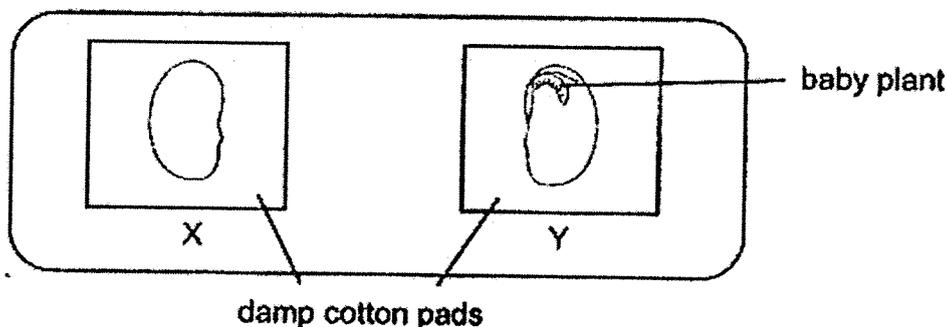
- 4 The picture below shows a plant cell and its parts, S, T, U, V and W.



Which of the following identifies the parts of the cell correctly?

	It controls the activities in the cell	It traps light energy	It is also found in animal cells
(1)	U	W	T, U, W
(2)	S	U	T, W, V
(3)	S	T	S, W, V
(4)	U	V	S, U, W

- 5 In an experiment, Ben soaked a seed that has not germinated and removed its seed coat. Then, he split the seed into two parts and placed them on two separate cotton pads as shown in the diagram below. He labelled the parts as X and Y.



He kept the set-up in a dark corner of a room and made sure the two cotton pads were kept damp.

Which of the following would he observe on the 5th day of the experiment?

- (1) Another baby plant grew from part X.
- (2) A root grew from part Y but not from part X.
- (3) A root grew from part X while a shoot grew from part Y.
- (4) The size of X decreased but the size of Y remained the same.

- 6 Celine wanted to find out if the addition of fertilizer to the soil will affect the growth of a plant.

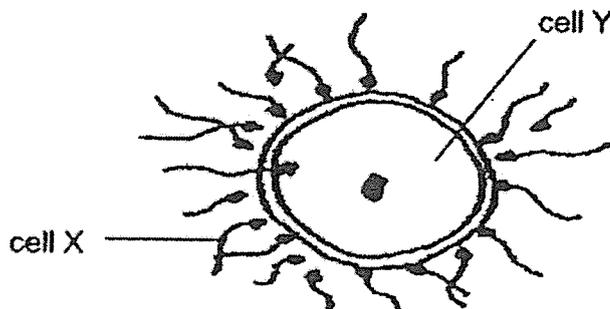
She put an equal amount of soil in two identical pots, P and Q, and planted similar plants in them. The table below shows the other variables in her experiment.

Pot	Amount of fertilizer (g)	Number of plants in the pot	Number of times the plants were watered each day	Location of the pot
P	A	B	C	D
Q	20	5	2	garden

What should A, B, C and D be if Celine wanted to conduct a fair test?

	A	B	C	D
(1)	10	5	2	garden
(2)	0	5	2	garden
(3)	0	10	1	living room
(4)	10	5	3	living room

- 7 The diagram below shows two types of human reproductive cells, cell X and cell Y.

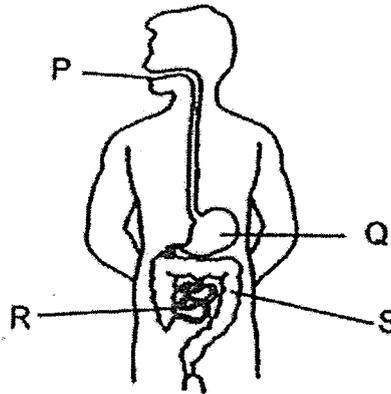


Which of the following statements is correct?

- (1) More than one cell X can fuse with cell Y.
- (2) Cell X is produced in the testes of the male human.
- (3) Cell Y is produced in the ovule of the female human.
- (4) Cell X contains all the genetic materials needed to be passed on to the offspring.

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- 8 The diagram below shows the digestive system of a human.



Which of the following statements is/are correct?

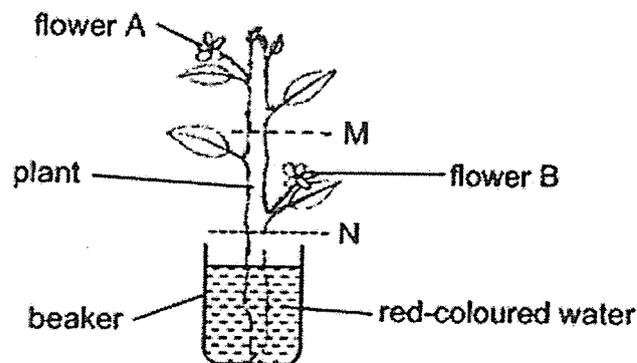
- A Water is absorbed at S.
 - B Digested food is absorbed at Q.
 - C Digestive juices are released at P and Q only.
 - D Undigested food at S will be broken down into simpler substances.
- (1) A only
(2) A and C only
(3) B and D only
(4) B, C and D only

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- 9 Diana placed a plant with two flowers, A and B, into a beaker containing red-coloured water. She made cuts on the stem of the plant at M and N as shown in the diagram below and removed some parts of the stem.

The parts that were removed at M and N were:

M	Food-carrying tubes and water-carrying tubes
N	Food-carrying tubes

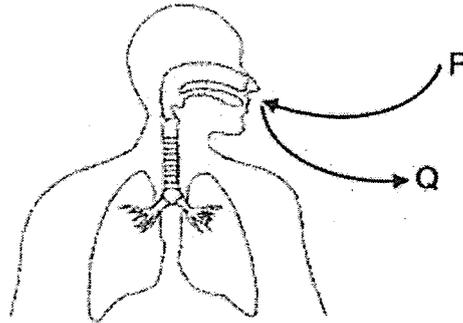


Which of the following would Diana observe after three days?

- A Flower A will turn red.
 - B Flower B will turn red.
 - C The leaves below the cut at M will start to wilt.
 - D There will be new leaves growing out above the cut at M.
- (1) B only
(2) A and D only
(3) B and C only
(4) A, C and D only

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- 10 The diagram below shows a human respiratory system. P represents the air that is inhaled and Q represents the air that is exhaled.

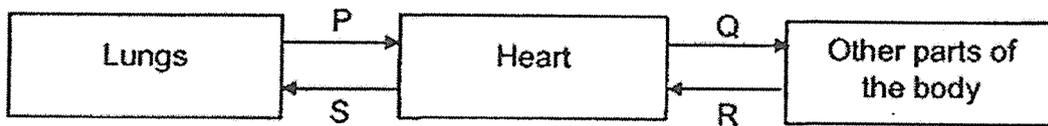


Which of the following statements about P and Q is/are correct if the human is resting in an air-conditioned room?

- A P contains only oxygen.
- B Q contains more water vapour than P.
- C P is at a lower temperature as compared to Q.
- D Both P and Q contain a gas that is needed for photosynthesis.

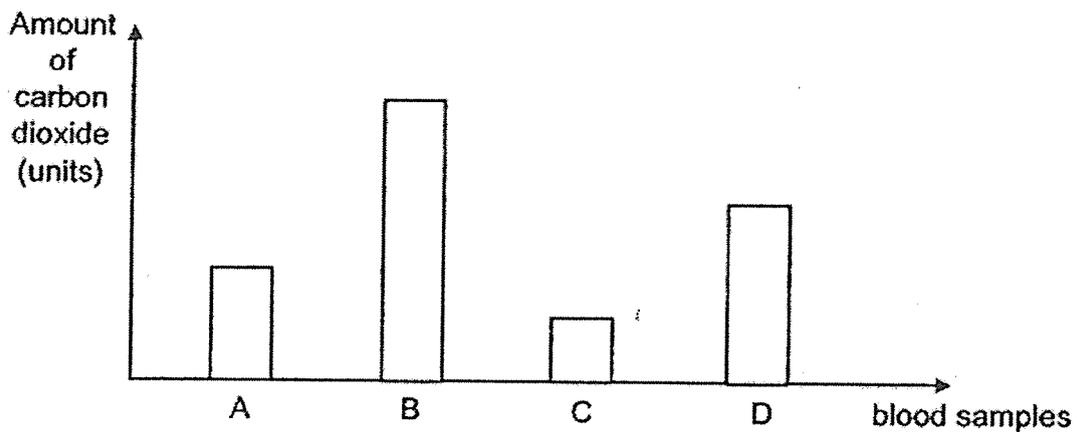
- (1) A and C only
- (2) B and D only
- (3) A, B and C only
- (4) B, C and D only

11 The diagram below shows how blood flows in the human body.



The amount of carbon dioxide in blood samples taken from the blood vessels at P, Q, R and S was measured and plotted in the graph below.

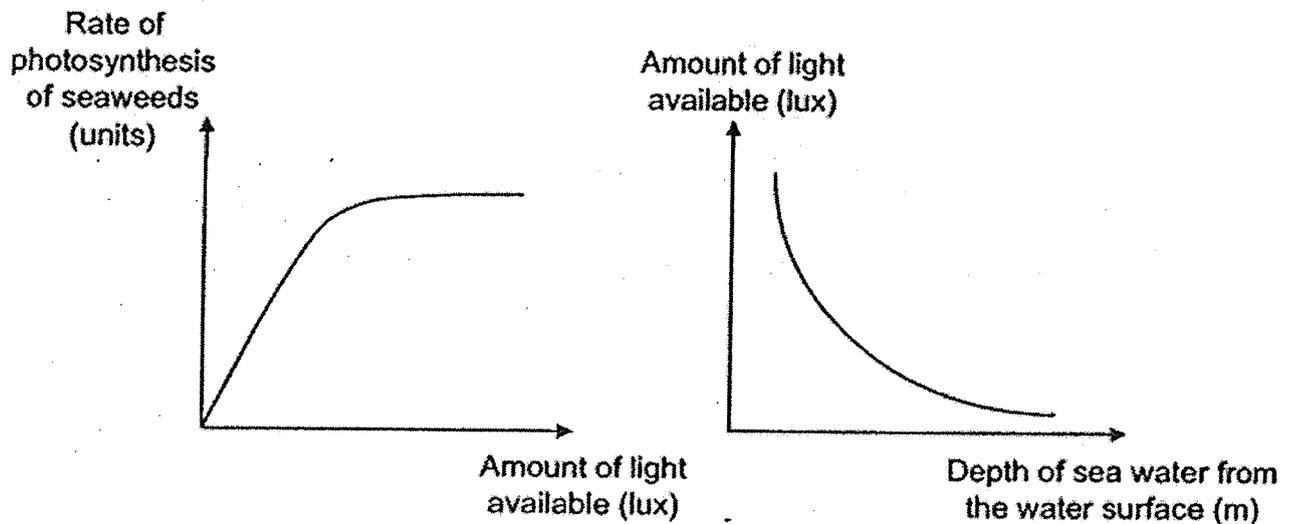
The blood samples were labelled as A, B, C and D.



Which of the following correctly matches the blood samples (A, B, C and D) to the blood vessels (P, Q, R and S) where the samples were taken from?

	P	Q	R	S
(1)	C	A	D	B
(2)	B	D	A	C
(3)	A	C	B	D
(4)	D	B	C	A

- 12 Some researchers studied an ocean and plotted some graphs based on the measurements taken. Study the two graphs below carefully.

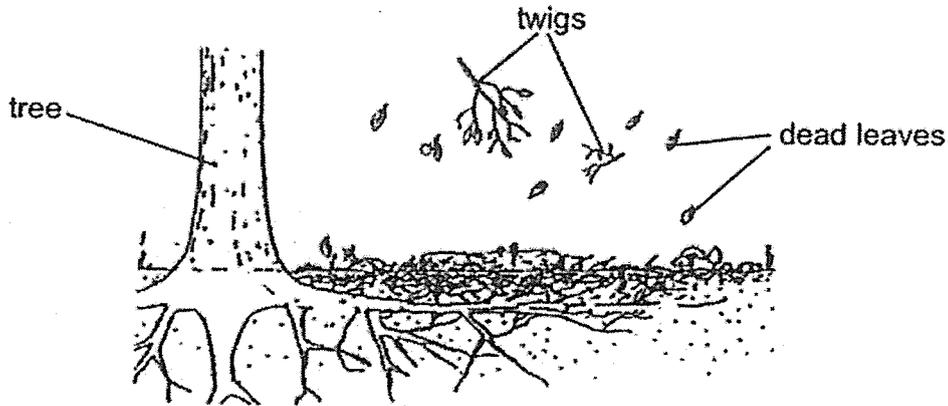


Based only on the graphs above, which of the following statements is/are true?

- A The deeper it is from the water surface, the greater the light intensity.
 - B The rate of photosynthesis of seaweeds does not depend on the amount of light available.
 - C There will be more seaweeds growing at 5 m below the water surface as compared to 30 m below the water surface.
- (1) A only
(2) C only
(3) A and C only
(4) B and C only

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13 Study the diagram below carefully.



How are the dead leaves and twigs important to the survival of the tree?

- (1) They provide oxygen for the tree to respire.
- (2) They decompose and become nutrients for the tree.
- (3) They keep the soil around the roots cool by providing shade.
- (4) They protect the roots of the trees by covering the soil above it.

14 Larry measured the light intensity and temperature of the surrounding air in two different habitats, A and B, over a period of time. He recorded the readings in the two tables as shown below.

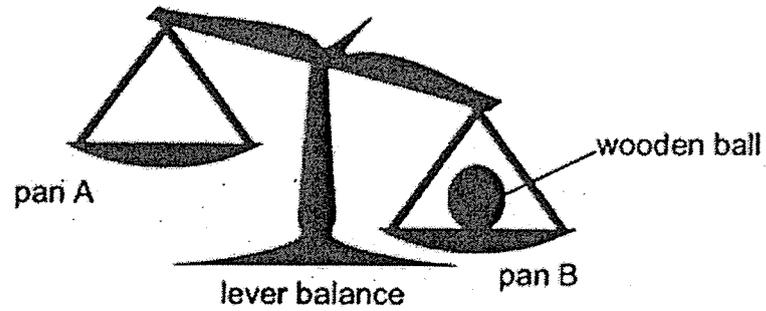
Habitat	Light intensity (lux)				
	9 am	12 pm	3 pm	6 pm	10 pm
A	1.5	4.9	3.8	1.6	0.2
B	0.1	0.3	0.3	0.2	0.1

Habitat	Temperature of air (°C)				
	9 am	12 pm	3 pm	6 pm	10 pm
A	28	33	33	30	27
B	26	28	28	27	26

Based on the tables above, what could habitat A and B be?

	Habitat A	Habitat B
(1)	field	leaf litter
(2)	garden	seashore
(3)	leaf litter	garden
(4)	seashore	field

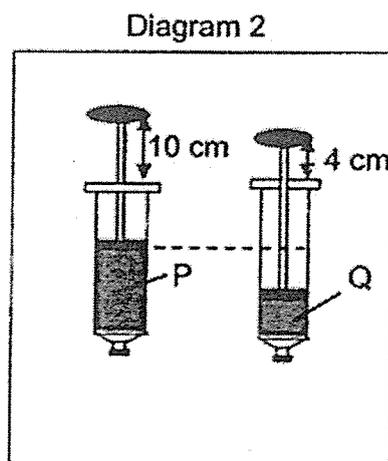
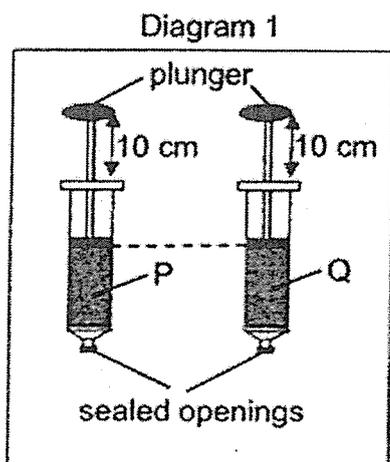
- 15 The diagram below shows a lever balance with a wooden ball placed on pan B.



What would happen to the lever balance when a styrofoam ball of the same mass as the wooden ball is placed on pan A?

- (1) Both pans will move up and down continuously.
- (2) The position of pan A will be lower than the position of pan B.
- (3) The position of pan B will be lower than the position of pan A.
- (4) The position of pan A will be at the same height as the position of pan B.

- 16 Two identical syringes were filled with substances P and Q respectively, to the same point on each syringe as shown in Diagram 1 below. Diagram 2 shows the results when the plungers were pushed down with a similar force.

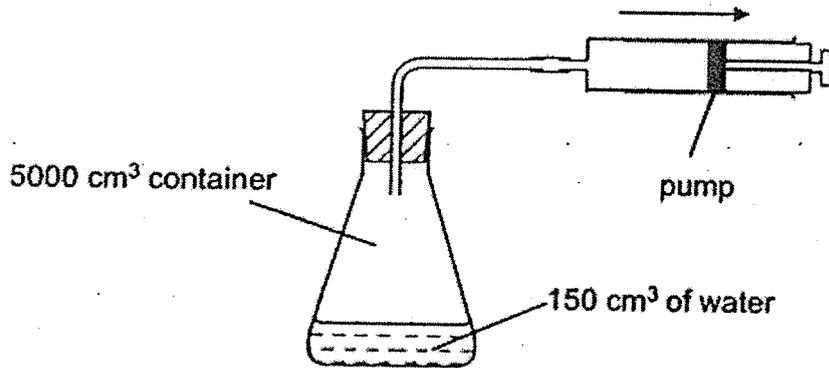


Based on the above observations above, which of the following statements about the properties of P and Q is true?

- (1) Q occupies more space than P.
- (2) Q has a definite volume but not P.
- (3) Both P and Q have definite shapes.
- (4) P cannot be compressed but Q can.

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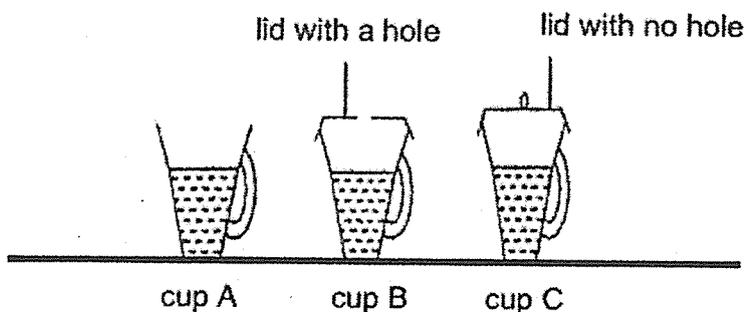
- 17 Skyler poured 150 cm^3 of water into a sealed container as shown below. He then used the attached pump to remove 200 cm^3 of air from the container.



Which of the following statements is/are true about the set-up above at the end of the experiment?

- A The water level will increase.
 - B 150 cm^3 of air is left in the container.
 - C Some water took the place of the air that was pumped out.
 - D The volume of air inside the container remains the same as before.
- (1) D only
(2) A and C only
(3) B and C only
(4) A, B, C and D

- 18 Three cups containing hot water of the same temperature were left on a kitchen table.



In which cup(s) would evaporation of the hot water take place?

- (1) A only
 - (2) C only
 - (3) A and B only
 - (4) A, B and C
- 19 The table below shows the melting points of substances W, X, Y and Z.

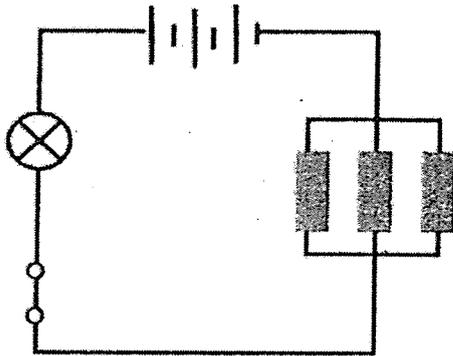
Substance	Melting point (°C)
W	5
X	25
Y	55
Z	135

Which of the following statements is correct?

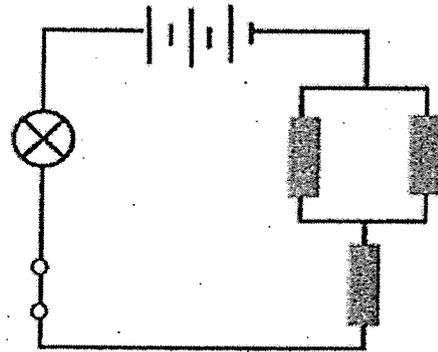
- (1) Substance X is a solid at 20 °C.
- (2) Substance W is a liquid at 1 °C
- (3) Substances Y and Z are gas at 140 °C.
- (4) Substances X and Y are liquid at 30 °C.

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- 20 The diagram below shows two circuits, A and B. Each of the circuit has an iron rod, a plastic rod and a wooden rod connected as part of the circuit. The rods are represented by the black rectangles in the circuit diagrams.



circuit A

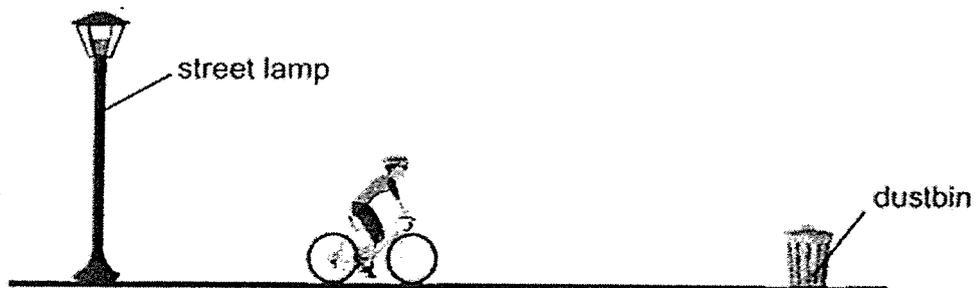


circuit B

Which of the following observations is correct based on the above circuits?

	bulb in circuit A	bulb in circuit B
(1)	lights up	lights up
(2)	lights up	does not light up
(3)	does not light up	does not light up
(4)	does not light up	lights up

- 21 David was riding his bicycle at night.

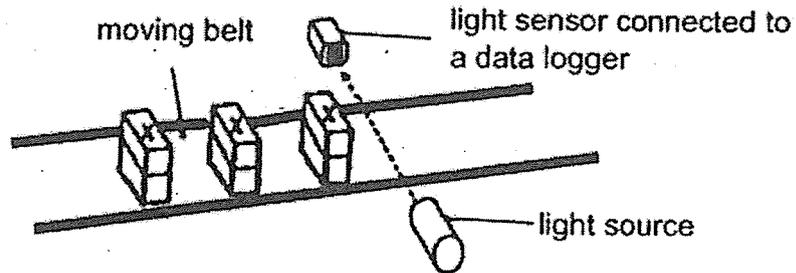


He could see the dustbin in front of him because the light from the street lamp was reflected by _____.

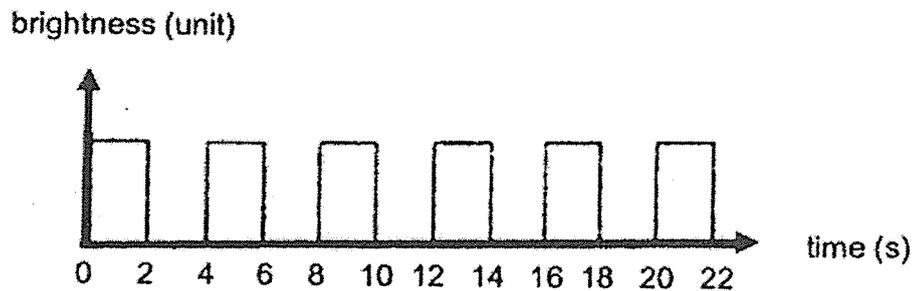
- (1) the ground onto the dustbin
- (2) the bicycle into David's eyes
- (3) the dustbin into David's eyes
- (4) David's eyes onto the dustbin

- 22 The set-up below shows a light sensor counting the number of identical wooden boxes X on a moving belt.

To speed up the counting process, two boxes were stacked on top of each other as shown below.



The amount of light measured by the datalogger was plotted in the graph below.

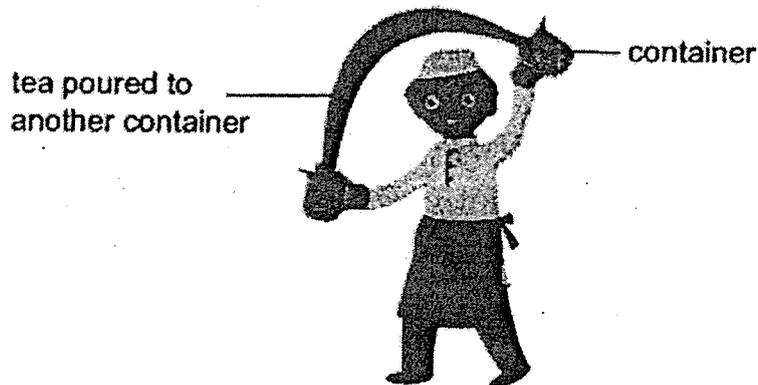


Based on the graph, how many boxes were counted in 22 seconds?

- (1) 5
- (2) 6
- (3) 10
- (4) 12

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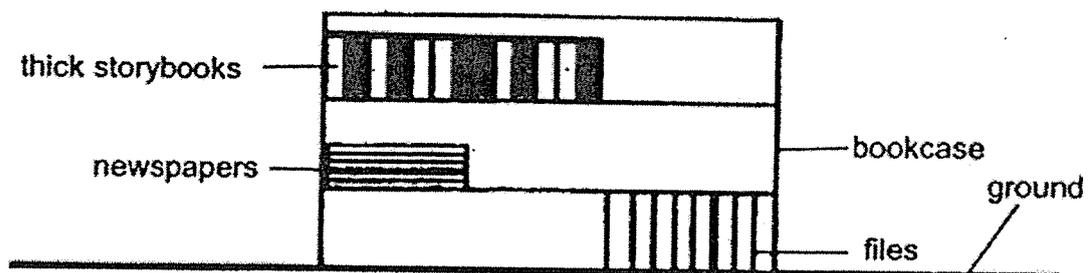
- 23 The diagram below shows Uncle Tarik pouring hot tea from one container above his head to another container below a few times before serving his customers.



How does his action help to cool the tea?

- (1) The tea loses heat faster when the container is lifted higher.
- (2) When the tea flows from one container to another, it reduces heat loss.
- (3) The tea loses heat faster when it flows from a higher to a lower position.
- (4) The tea has a bigger surface area in contact with the surrounding air to lose heat.

- 24 The diagram below shows the arrangement of objects on the bookcase.

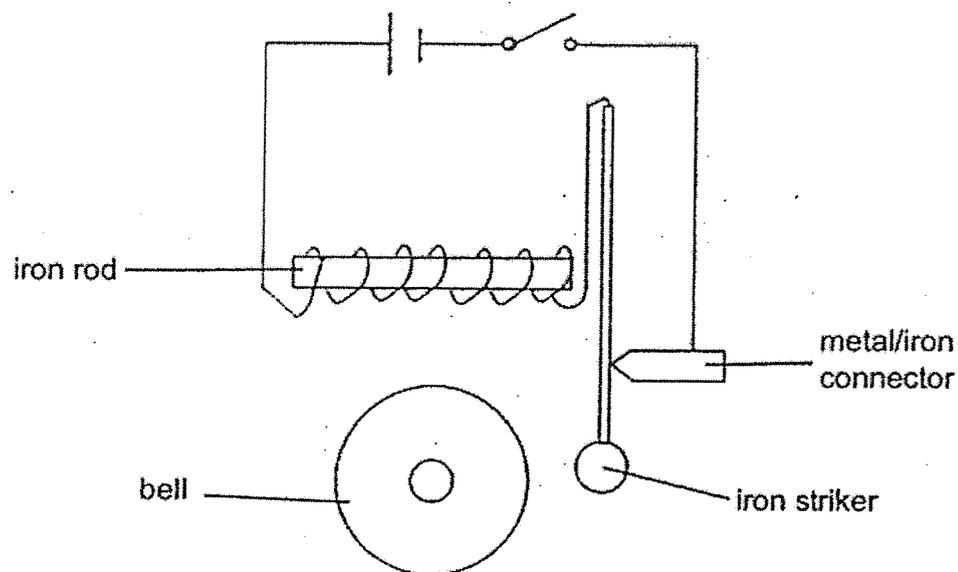


Based on the diagram above, which of the following statements is/are correct?

- A The newspapers have no kinetic energy.
- B The files have gravitational potential energy.
- C The newspapers possess more gravitational potential energy than the thick storybooks.

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

25 The diagram below shows the circuit of an electric bell.

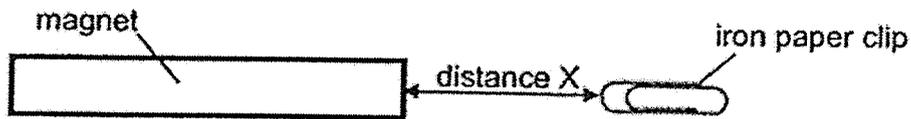


Which of the following shows the correct order of the energy conversions when the circuit is closed?

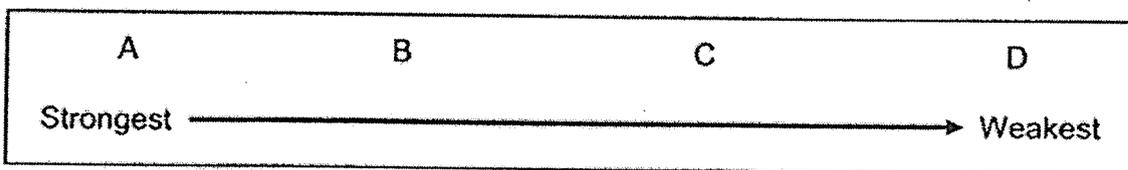
- (1) chemical potential energy \rightarrow kinetic energy \rightarrow sound energy + heat energy
- (2) electrical energy \rightarrow chemical potential energy \rightarrow kinetic energy \rightarrow sound energy
- (3) electrical energy \rightarrow kinetic energy \rightarrow chemical potential energy \rightarrow sound energy
- (4) chemical potential energy \rightarrow electrical energy \rightarrow kinetic energy \rightarrow sound energy

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- 26 Ashlyn conducted an experiment with four different magnets, A, B, C and D as shown below. Distance X is the greatest distance between the magnet and the iron paper clip for the magnet to attract the iron paper clip.



Magnets A, B, C and D are ranked according to their strength as shown in the box below.



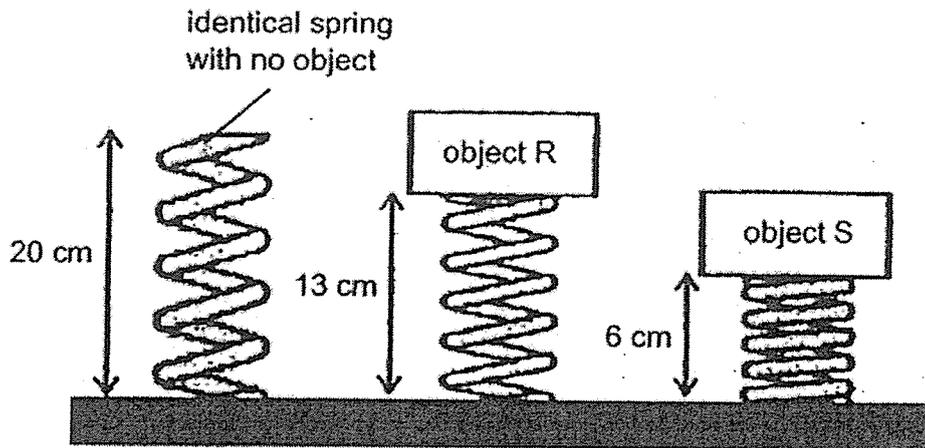
Magnet	Distance X (cm), when iron paper clip moved towards the magnet
A	5.0
B	J
C	2.5
D	K

Which of the following are possible distances J and K for magnets B and D listed in the table above?

	J (cm)	K (cm)
(1)	2.0	3.0
(2)	3.5	1.5
(3)	4.0	5.5
(4)	5.5	1.5

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- 27 Mindy conducted an experiment with two rectangular objects, R and S, of the same size but made of different materials. She placed them on two identical springs as shown in the diagram below.



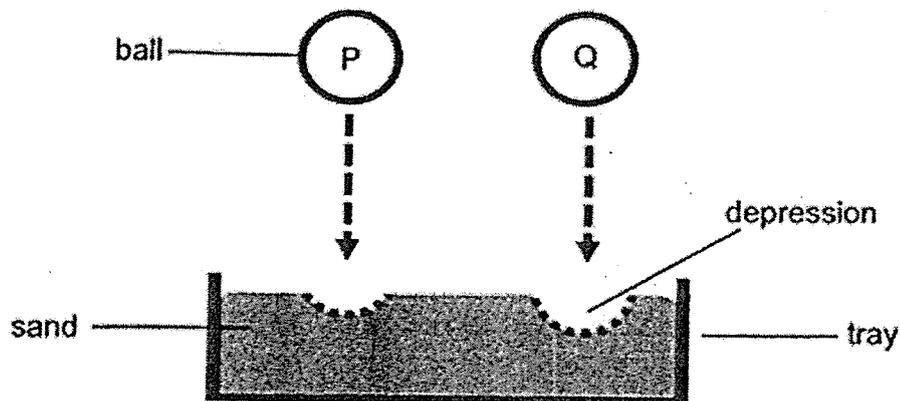
She considered the following statements based on her observation.

- A Object S had more mass than object R.
- B Object R had more gravitational force acting on the spring than object S.
- C The spring with object S exerted a smaller elastic spring force than the spring with object R.
- D The spring with object R exerted a smaller elastic spring force than the spring with object S.

Which of the above statements are correct?

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

- 28 Ahmad dropped two balls, P and Q, of the same size but of different masses into a tray of sand from the same height as shown below.



He recorded the depth of the depressions made by each ball in the tray of sand in the table below.

Ball	Depth of depression (cm)			Average
	1 st try	2 nd try	3 rd try	
P	1.2	1.3	1.0	1.17
Q	3.4	3.0	3.5	3.33

Based on the results in the table above, which of the following correctly explains his observations?

- (1) more frictional force was acting on P than Q
- (2) more frictional force was acting on Q than P
- (3) more gravitational force was acting on P than Q
- (4) more gravitational force was acting on Q than P

(Go on to Booklet B)



**NAN HUA PRIMARY SCHOOL
MID-YEAR EXAMINATION 2022
PRIMARY 6**

SCIENCE

BOOKLET B

12 Open-ended questions (44 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided below.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Use a dark blue or black ballpoint pen to write your answers in the space provided for each question.
6. Do not use correction fluid/tape or highlighters.

Marks Obtained

Section B

	/ 44
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Name: _____ () **Class: P 6** _____

Date: 11th May 2022

Parent's Signature: _____

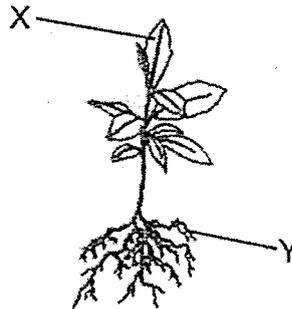
This booklet consists of 19 printed pages.

Section B: (44 marks)

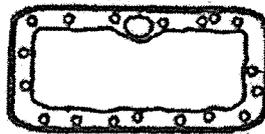
For questions 29 to 41, write your answers in the spaces provided.

The number of marks available is shown in brackets [] at the end of each question or part question.

29 The diagram below shows a plant with two of its parts labelled.



Ginny observed a cell, cell A, taken from one of these parts, as shown below.



cell A

(a) Which part of the plant, X or Y, is cell A taken from? Explain your answer clearly. [2]

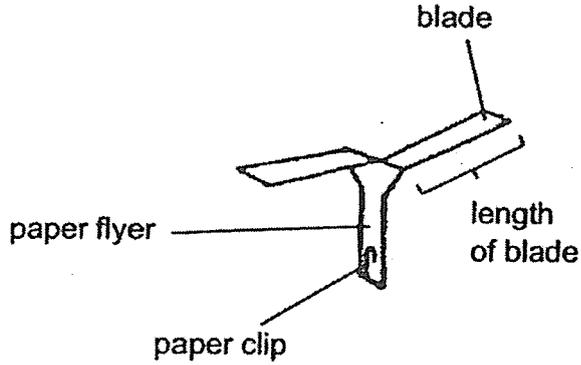
(b) A scientist wanted to genetically-modify the plant above so that its offspring will have bigger leaves. Which part of cell A should he change? [1]

(c) Most animals have skeletons to give their body a shape and structure. Explain why plants can have a structure even though they do not have a skeleton. [1]

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Score	4
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30 Josh made a paper flyer out of a strip of paper and a paper clip as shown below.



He conducted an experiment to find out how the length of the blade affects the time it takes for the paper flyer to fall to the ground. He recorded the results in the table shown below.

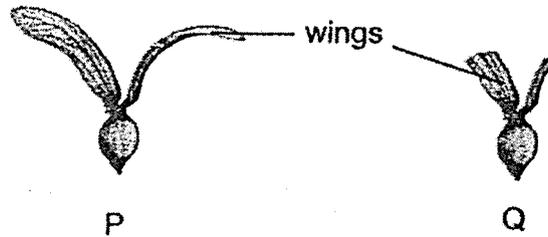
Length of blade (cm)	Time taken for paper flyer to fall to the ground (s)			
	1 st Try	2 nd Try	3 rd Try	Average
4	3	4	3	3.3
8	6	6	5	5.7
12	10	11	10	10.3

(a) What is the relationship between the length of the blade and the time taken for the paper flyer to fall to the ground? [1]

(b) Why did Josh repeat the experiment two more times? [1]

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Josh came across two similar fruits, P and Q, on his hiking trip as shown below. Fruit Q's wings were broken as shown below.



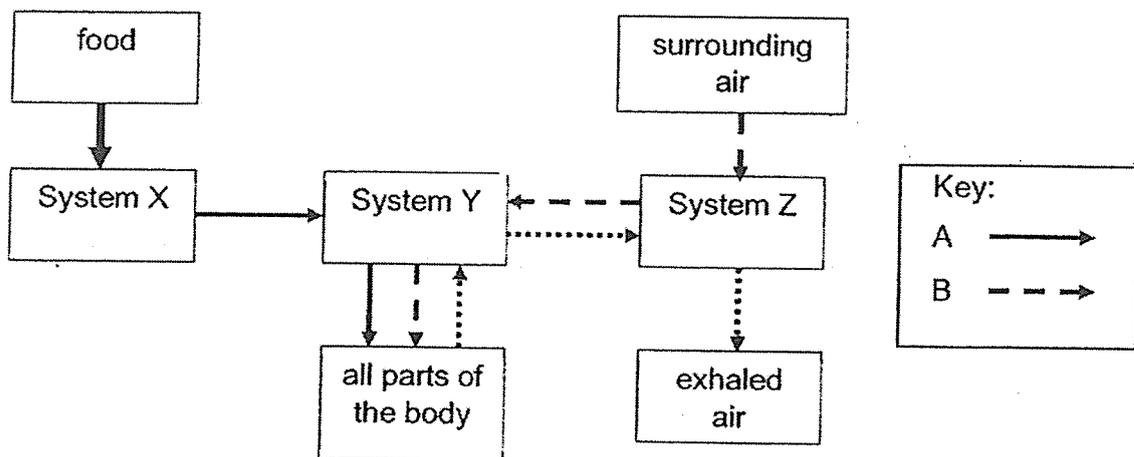
(c) State the method of dispersal for fruits P and Q. [1]

(d) Which fruit, P or Q, will be dispersed further away from the parent plant? Explain your answer clearly. [2]

(Go on to the next page)

Score	5
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- 31 The diagram below shows how three different systems work together in the human body. The arrows represent the substances that are transported around the three systems.



- (a) Identify systems Y and Z. [1]

System Y: _____

System Z: _____

- (b) Identify substances A and B. [1]

Substance A: _____

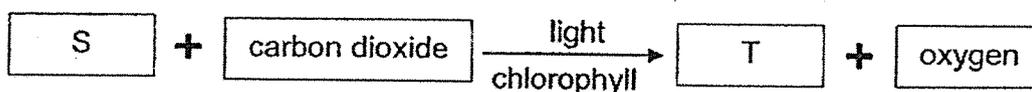
Substance B: _____

- (c) Which organ in system X, when not working properly, will prevent substance A from being absorbed into system Y? [1]

(Go on to the next page)

Score	3
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32 The diagram below shows the process of photosynthesis.



(a) What do S and T represent?

[1]

S: _____

T: _____

Henry wanted to find out if the size of the stoma on the leaves of a plant will affect the rate of photosynthesis of the plant.

Stomata (plural for stoma) are openings on the leaves that allow for gaseous exchange between the leaves and the surroundings.

He prepared two set-ups, P and Q, as shown in the diagram below. The plant in set-up P had healthy leaves while the plant in set-up Q had leaves that had wilted. A magnified view of the stoma on the leaves for both plants is shown in diagram A below.

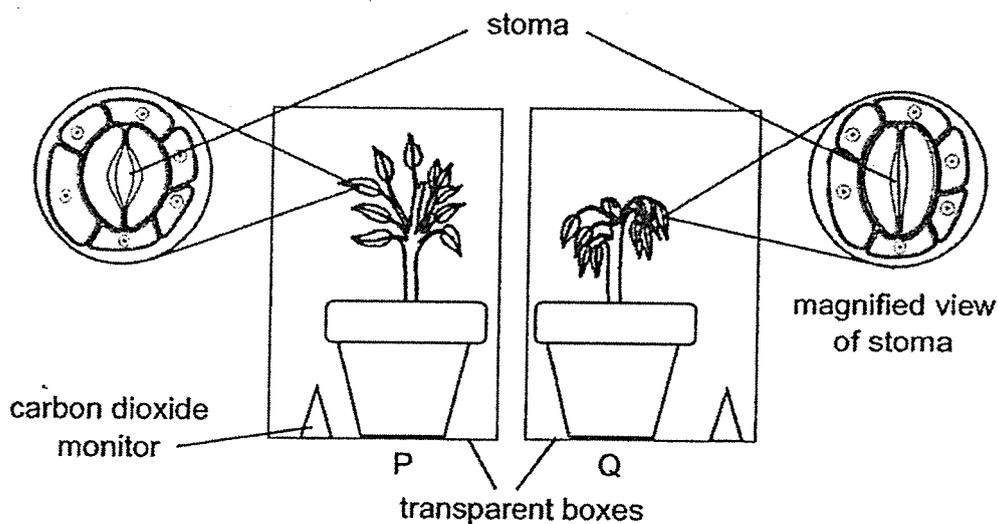


diagram A

He placed both set-ups in identical transparent boxes with similar amount of carbon dioxide at the start in them. Both set-ups were left in a brightly lit room for 5 hours. He used a carbon dioxide monitor to measure the amount of carbon dioxide left in each box.

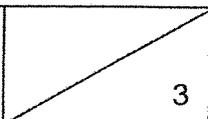
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After five hours, he recorded his findings in the table below.

Set-up	Amount of carbon dioxide left (units)
P	169
Q	305

- (b) Based on Diagram A and table above, what can Henry conclude about how the size of the stoma will affect the rate of photosynthesis? [2]

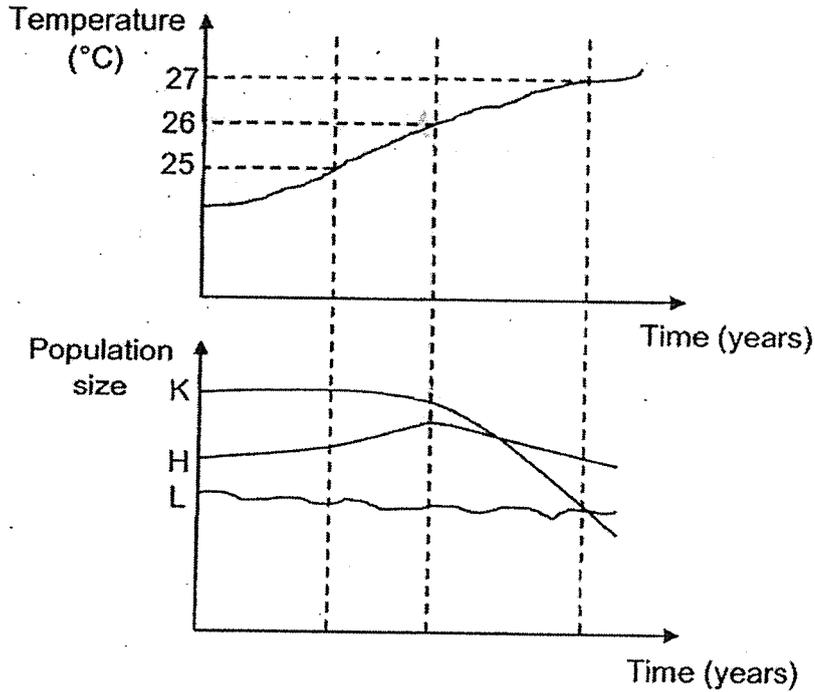
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Score	
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33 Study the two graphs below carefully.

Graph 1 shows the changes in the temperature of a habitat over a period of time.

Graph 2 shows the changes in the population size of three different organisms, H, K and L, which lived in the same habitat over the same period of time.



(a) Based on the graphs above, which organism was least affected by the changes in the temperature over the period of time? Give a reason for your answer. [1]

(b) Based on the graphs above, what surrounding temperature was most favourable for organism H? [1]

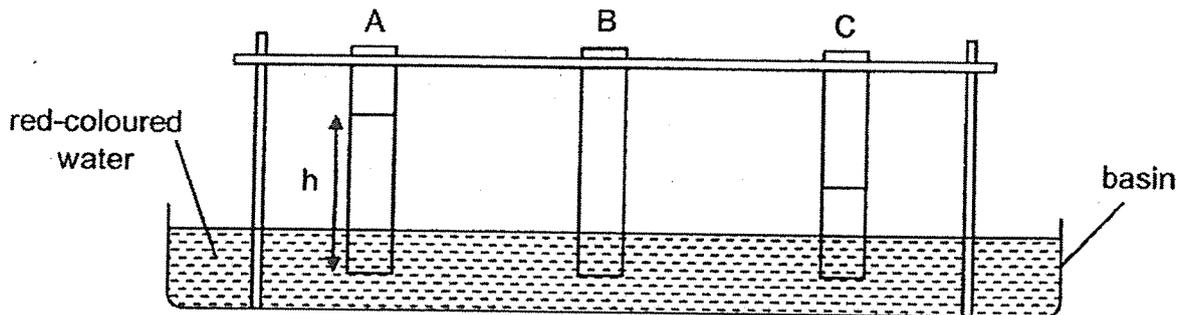
(c) What would likely happen to the population size of organism K if the surrounding temperature continued to rise? [1]

(Go on to the next page)

Score	
	3

- 34 Tom prepared the following set-up to find out the absorbency of three different types of materials, A, B and C.

He hung the three pieces of materials over a basin of coloured water as shown below. The pieces of materials were of the same size, shape and thickness.



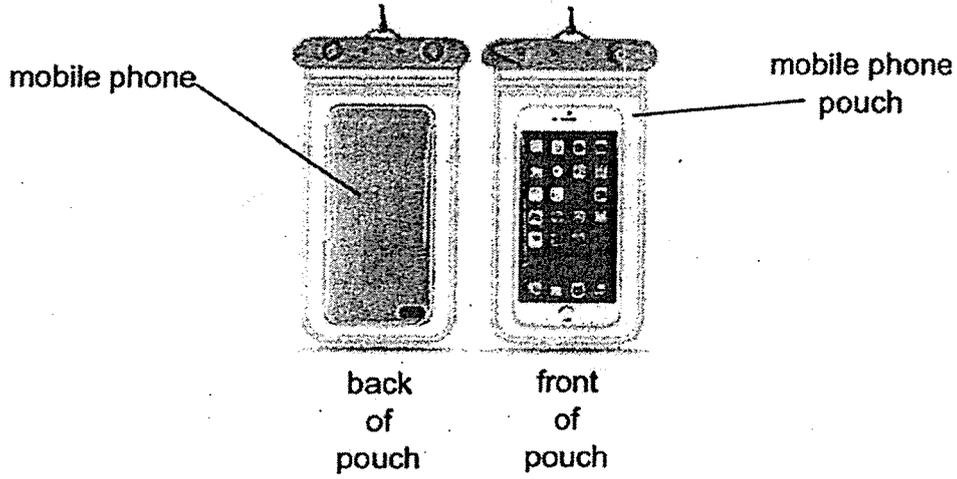
He measured length h , which is the length from the bottom of the material to the highest point of the watermark on the material and recorded the results in the table below.

Material	h (cm)
A	15
B	0
C	8

- (a) Based on the results above, which material is the most suitable for making a pouch to protect a mobile phone from getting wet? Give a reason for your answer. [2]

(Go on to the next page)

The diagram below shows how the mobile phone pouch in (a) looks like.



- (b) Other than the property mentioned in (a), state two other properties that the pouch should have. [1]

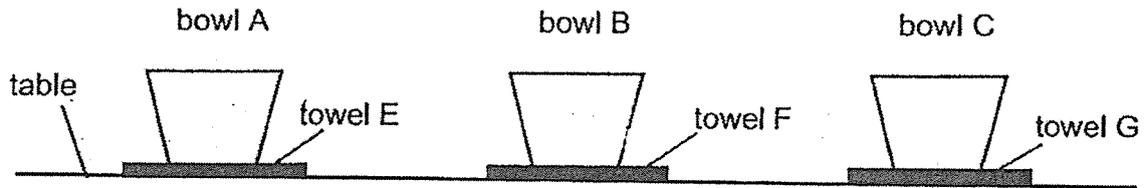
First property: _____

Second property: _____

(Go on to the next page)

Score	3
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- 35 Vera prepared three bowls, A, B and C, which are the same size but made of different materials. She poured 200 ml of hot soup into each bowl. Instead of placing the bowls with hot soup directly on the table, she placed identical towels underneath each bowl to protect the tabletop.



After 10 minutes, she found that the towels felt warmer and she recorded their temperatures in the table below.

Towels	E	F	G
Temperature of towel (°C)	60 °C	39 °C	48 °C

- (a) Explain why the towels became warmer after 10 minutes. [1]

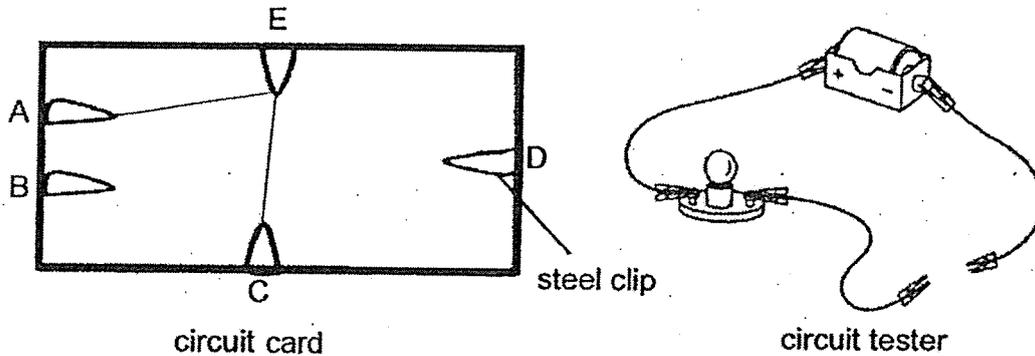
- (b) Based on the results above, which bowl would contain the hottest soup after 10 minutes? Explain your answer. [2]

- (c) Vera also observed that the volume of soup in all the bowls had decreased after 10 minutes. Explain her observation. [1]

(Go on to the next page)

Score	4
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- 36 Siva conducted an experiment using the circuit tester to find out how the wires in a circuit card were connected, as shown below.

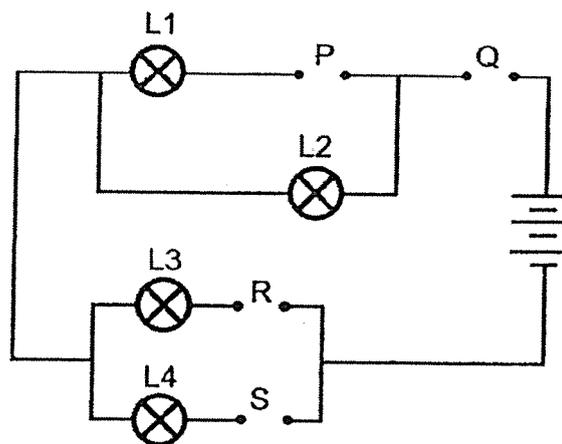


He connected the wires to two steel clips on the circuit card at a time. The results of his experiment were recorded in the table below.

Steel clips on the circuit card that were tested	Bulb in circuit tester
A and C	lit up
A and E	lit up
B and D	did not light up
B and E	did not light up
C and D	did not light up
C and E	lit up

- (a) Based on the information above, draw two lines in the circuit card above to show how the wires were connected in the circuit card. [1]

Siva then set up another circuit, circuit F, with four gaps, P, Q, R and S as shown below.



circuit F

He connected the ends of four rods, W, X, Y and Z, to each of the gaps in circuit F. He recorded his observations in the table below. A tick (✓) in the box indicates that the bulb lit up.

Position of rod				Light bulb(s) that lit up			
Gap P	Gap Q	Gap R	Gap S	L1	L2	L3	L4
W	X	Y	Z		✓	✓	

- (b) Based on the table above, what can you conclude about rods W, X, Y and Z? [1]

- (c) The positions of rods, W, X, Y and Z, were re-arranged in two different ways as shown in the table below. Put a tick (✓) in the appropriate boxes to show which bulb(s), L1, L2, L3 and L4, will light up. [1]

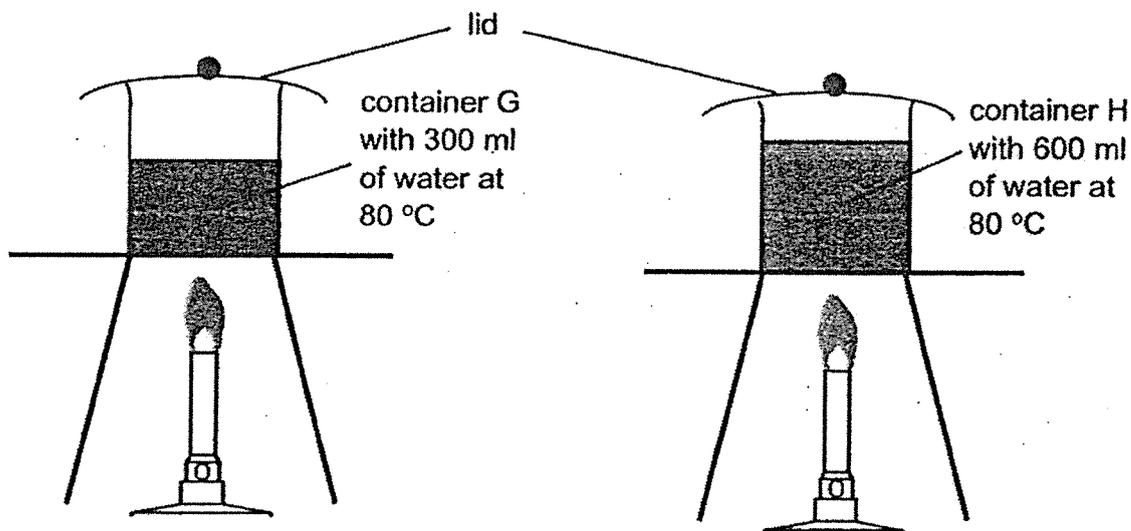
	Position of rod				Light bulb(s) that lit up			
	Gap P	Gap Q	Gap R	Gap S	L1	L2	L3	L4
(i)	Z	X	W	Y				

- (d) Siva re-arranged the components in circuit F and added some switches. Draw the new circuit diagram that would allow Siva to control L1, L2, L3 and L4 individually. [1]

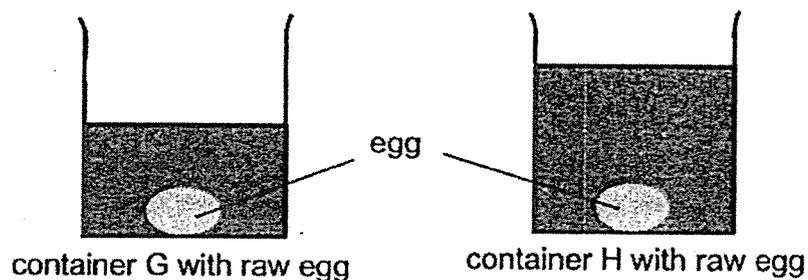
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Score	4
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- 37 Jayden carried out an experiment as shown below. He wanted to find out whether the amount of water will affect how well an egg is cooked. He used two identical containers of water containing different amount of water which are heated to 80 °C.



He then placed eggs of identical mass into each of the container as shown below.



After five minutes, each of the eggs was taken out of the containers and cracked into a bowl to observe the amount of uncooked portion as shown in the table below.

The observations were recorded in the table below.

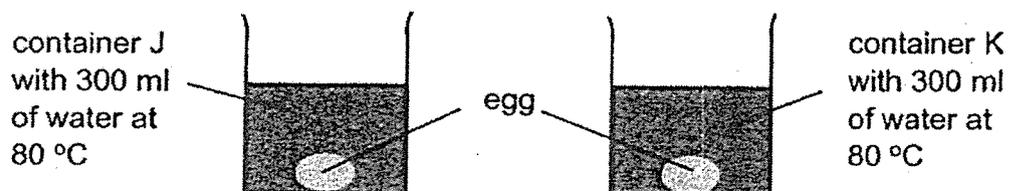
Egg in container G	Egg in container H
Some uncooked portion	No uncooked portion

(a) What is the purpose of having the lid on the container in this experiment? [1]

(b) Explain why the results for eggs in containers G and H were different. [2]

(c) Besides leaving the egg in the hot water for a longer time, suggest another way Jayden can ensure the egg in container G would be fully cooked. [1]

Jayden set up another experiment by placing two other identical eggs in containers J and K as shown below.



Both containers contained equal amount of water at 80 °C. Container J was made of metal while container K was made of plastic.

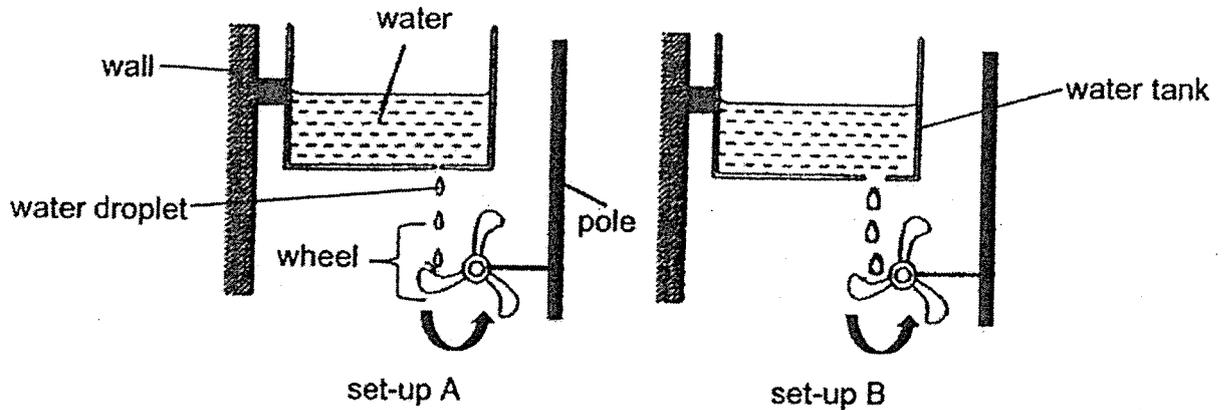
After few minutes, he took out the eggs and found out that the egg in container K was fully cooked while the egg in beaker J was partially cooked.

(d) Explain why the egg in beaker J was only partially cooked. [1]

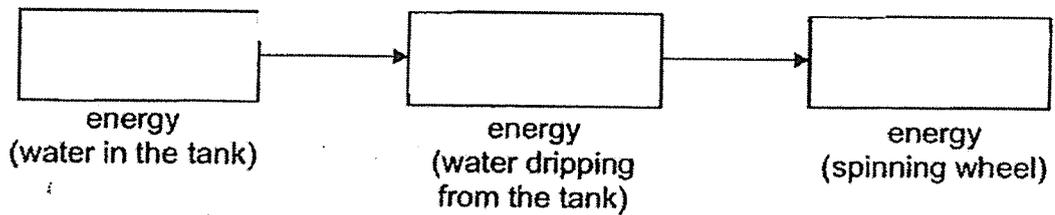
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Score	5
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- 38 Alex set up an experiment as shown below. He observed that the identical wheels in both set-ups, A and B, spun when water dripped on them.



- (a) Fill in the boxes below to show the energy conversions from the experiment above. [1]

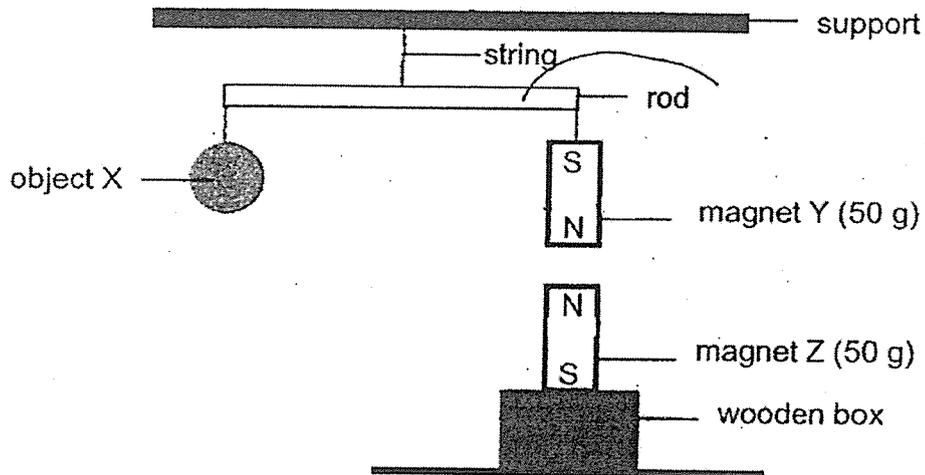


- (b) Alex observed that the wheel in set-up A spun more slowly than the wheel in set-up B. Explain this observation. [2]

(Go on to the next page)

Score	3
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- 39 Mindy placed magnet Z on a wooden box and balanced object X and magnet Y at an equal distance from the string on a suspended rod as shown in the diagram below.



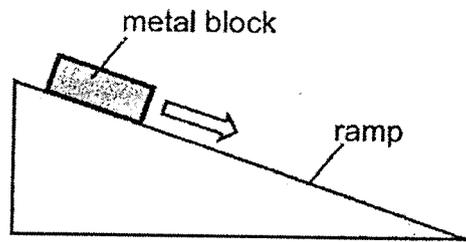
- (a) State the force acting between the two magnets. [1]

- (b) Is the mass of object X less than, equal to or greater than 50 g? [1]

- (c) Will object X and magnet Y still be balanced if magnet Z is replaced by a plastic bar of the same size? Explain your answer. [2]

Score	4
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40 Rama set up the experiment as shown below.



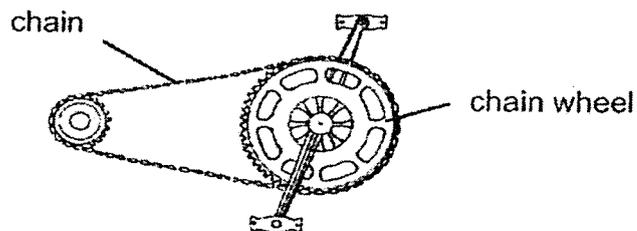
He released the metal block from the top of the ramp and recorded the time taken for it to reach the bottom of the ramp.

He then repeated the experiment by applying different types of substances, R, S and T, on the surface of the ramp. The results were recorded in the table as shown below.

Substance applied	Time taken (s)
none	11
R	8
S	3
T	5

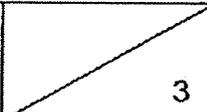
(a) What was the force that caused the block to slide down the ramp? [1]

The diagram below shows the chain and chain wheel of Rama's bicycle. The chain wheel has been making creaking noises and turning more slowly due to wear and tear.



(Go on to the next page)

- (b) From Rama's experiment, which substance, R, S or T, would be most suitable for slowing down wear and tear on the chain and chain wheel? Explain your answer. [2]

Score	
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~ End of Paper ~

SCHOOL : NAN HUA PRIMARY SCHOOL
 LEVEL : PRIMARY 6
 SUBJECT : SCIENCE
 TERM : 2022 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	1	4	2	2	2	1	1	4
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	2	1	4	4	1	4	1	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
3	3	4	1	4	2	2	4		

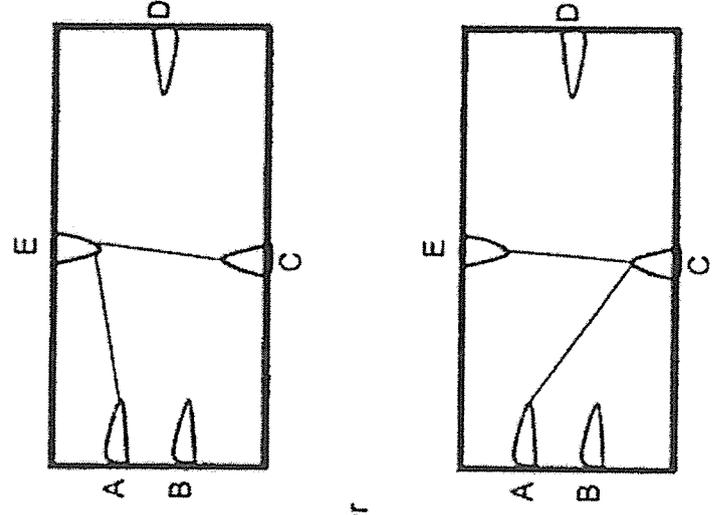
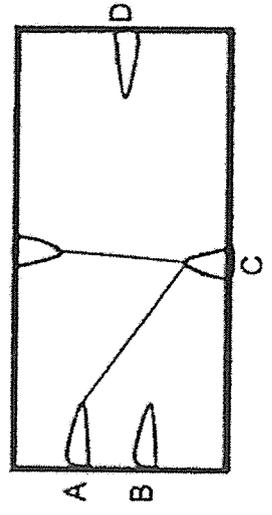
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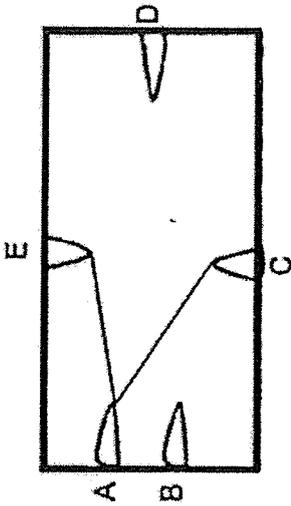
NAN HUA PRIMARY SCHOOL
 Mid-Year Examination 2022
 PRIMARY SIX
 SCIENCE

Answer Key (Student Copy)

Section B (44 marks)

Qns	Answer
29a	X. X is the leaf which contains chloroplast that helps the plant to trap light to photosynthesise.
29b	Nucleus
29c	The cell wall of a plant cell provides structure.
30a	As the length of the blade increases, the time taken for the paper flyer to fall to the ground increases.
30b	It is to ensure the reliability of the results
30c	By wind
30d	P. The wings of P are longer so it can be carried by the wind to a place further away / for a longer period of time. Hence, it will be dispersed further away from the parent plant.
31a	System Y: Circulatory system System Z: Respiratory system
31b	Substance A: Digested food Substance B: oxygen
31c	small intestine
32a	S: water T: sugar / glucose / food
32b	When/As the size of the opening of the stomata of the leaves is larger/bigger/increases, the plant took in more carbon dioxide. So, the rate of photosynthesis is higher/more/increases/faster.
33a	L. The population size of L did not vary much / remained more or less the same as the temperature increases.
33b	H thrives when the temperature of the habitat is 26 °C.
33c	It will continue to decrease.
34a	B. The length of h is 0 cm. So, material B is waterproof / does not absorb water and so will be able to prevent water from getting into the pouch to wet the mobile phone.

34b	<p>First property: transparent Second property: flexible</p>
35a	<p>The towels gained heat from the hot soup through the bowls.</p>
35b	<p>Bowl B. Towel F had the lowest temperature after 10 minutes. This means that bowl B gained the least heat from the hot soup and that the bowl B was the poorest conductor of heat and hence the soup lost the least heat to the towel.</p>
35c	<p>The water in the hot soup had evaporated into water vapour.</p>
36a	<p>A, C and E should be connected.</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Or</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Or</p>

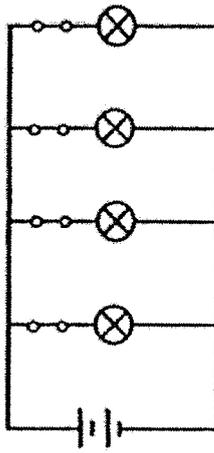


36b X and Y are electrical conductors but W and Z are not electrical conductors.

36c

Light bulb(s) that lit up				
	L1	L2	L3	L4
(i)		✓		✓

36d



37a To prevent the water in the containers from evaporating into the surroundings.

To prevent water vapour from escaping into the surroundings.

37b In container H, there was more water hence it would have more heat to cook the egg faster than the water in container G.

37c Add more water of 80 °C into container G.

37d Metal is a better conductor of heat than plastic. Hence, the heat from the hot water in container J will be conducted to the surrounding air faster. So, there is not enough heat in the water in container J to fully cook the egg.

38a	(Gravitational) potential energy \rightarrow Kinetic energy \rightarrow Kinetic energy
38b	The mass of the water droplets in set-up A was less than that in set-up B. Hence, less force is exerted on the wheel and therefore, the wheel in set-up A spins more slowly. OR The gravitational potential energy of the water droplets in set-up A was less than that in set-up B. Hence less gravitational potential energy was converted to less kinetic energy of the water droplets and therefore, the wheel in set-up A spins more slowly as less kinetic energy was transferred to it.
39a	Magnetic force of repulsion.
39b	Less than 50 g.
39c	No. Plastic bar is a non-magnetic material hence it will not repel or attract. Since mass of object X and Magnet Y is not the same/mass of Object X is less than Magnet Y/weight of Object X is less than magnet Y, it will not be balanced.
40a	Gravitational force
40b	Substance S. The metal block took the shortest time to reach the bottom of the ramp when Substance S was applied. With Substance S applied to the chain, there would be the least frictional force between the chain and chain wheel. Hence, the chain would move more smoothly, slowing down wear and tear.

