PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

PRIMARY 6
SCIENCE
(BOOKLET A)

25th AUGUST 2020

Name: _____

Class: Resilience _____

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

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

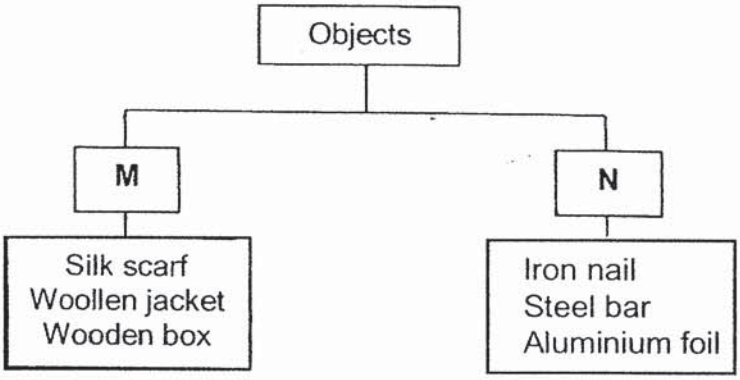
This booklet consists of 19 printed pages, excluding the cover page.

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) and shade your answer on the Optical Answer Sheet. (56 marks)

1 Which of the following statements is true for both fern and mushroom?

(1) Both reproduce by seeds.
(2) Both make their own food.
(3) Both do not produce fruits.
(4) Both are harmful to humans.

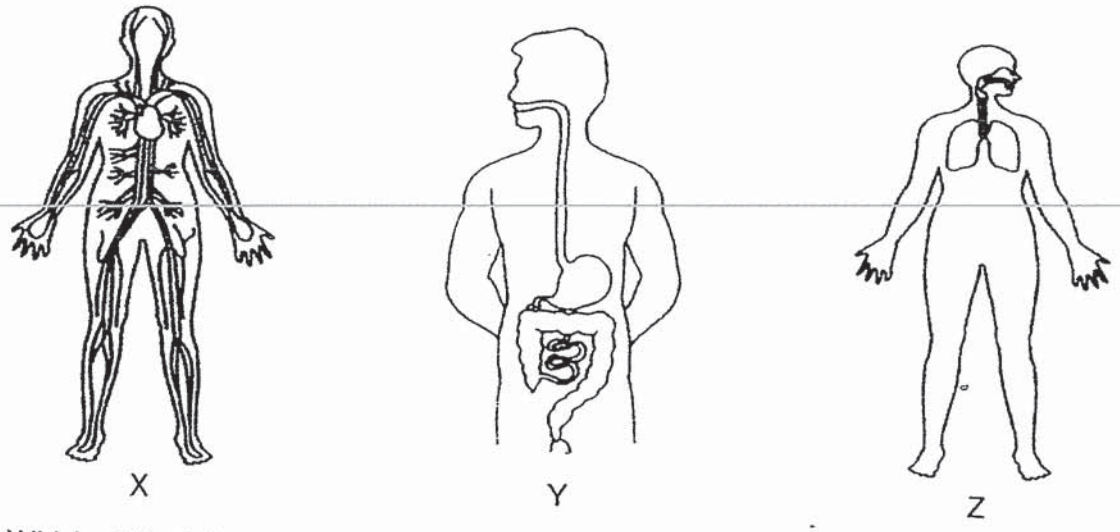
2 Six objects are classified into two groups as shown below.



Which of the following correctly shows the headings for M and N?

	M	N
(1)	waterproof	non-waterproof
(2)	non-magnetic	magnetic
(3)	good conductor of heat	poor conductor of heat
(4)	made from living things	made from non-living things

3 The diagram below shows three human systems X, Y and Z.



Which of the following statements are true?

A System X removes undigested food from the body.

B System X and system Z work together to remove carbon dioxide produced by the different parts of the body.

C System Y and system Z work together to transport food to the different parts of the body.

D System Y breaks down food into simple substances that can be absorbed into the bloodstream.

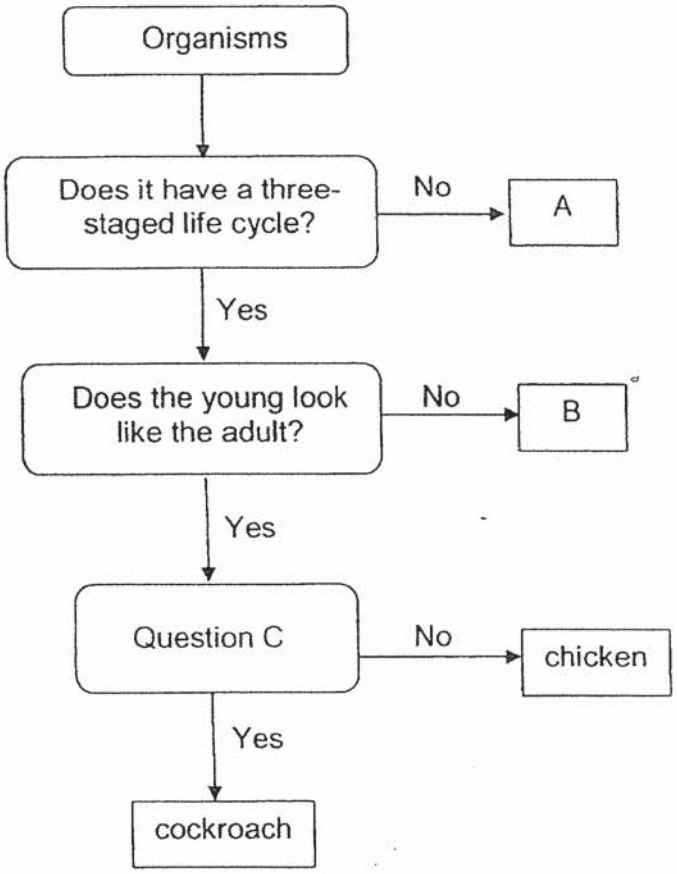
(1) A and B only

(2) B and D only

(3) C and D only

(4) A, C and D only

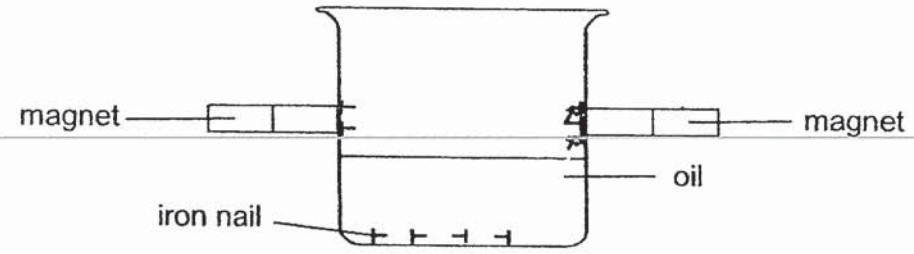
4 Study the chart below.



Which of the following correctly represents A, B and question C?

	A	B	Question C
(1)	beetle	frog	Does it have three body parts?
(2)	butterfly	grasshopper	Does it take care of its young?
(3)	mosquito	butterfly	Does it lay eggs?
(4)	grasshopper	human	Does it have wings?

5 Mr Kong set up an experiment with some iron nails in a beaker containing oil. He placed two magnets on the outer surface of the beaker and slowly moved the magnets upwards from the bottom of the beaker.



Four pupils made the following statements about the experiment.

Ann: One magnet has stronger magnetic strength than the other.

Bob: The oil reduces friction and increases magnetic strength of the magnets.

Chris: The iron nails are attracted by the magnetic force from the magnet.

Diane: There is no gravitational force acting on the nails which are attracted by the magnets.

Which pupils were correct?

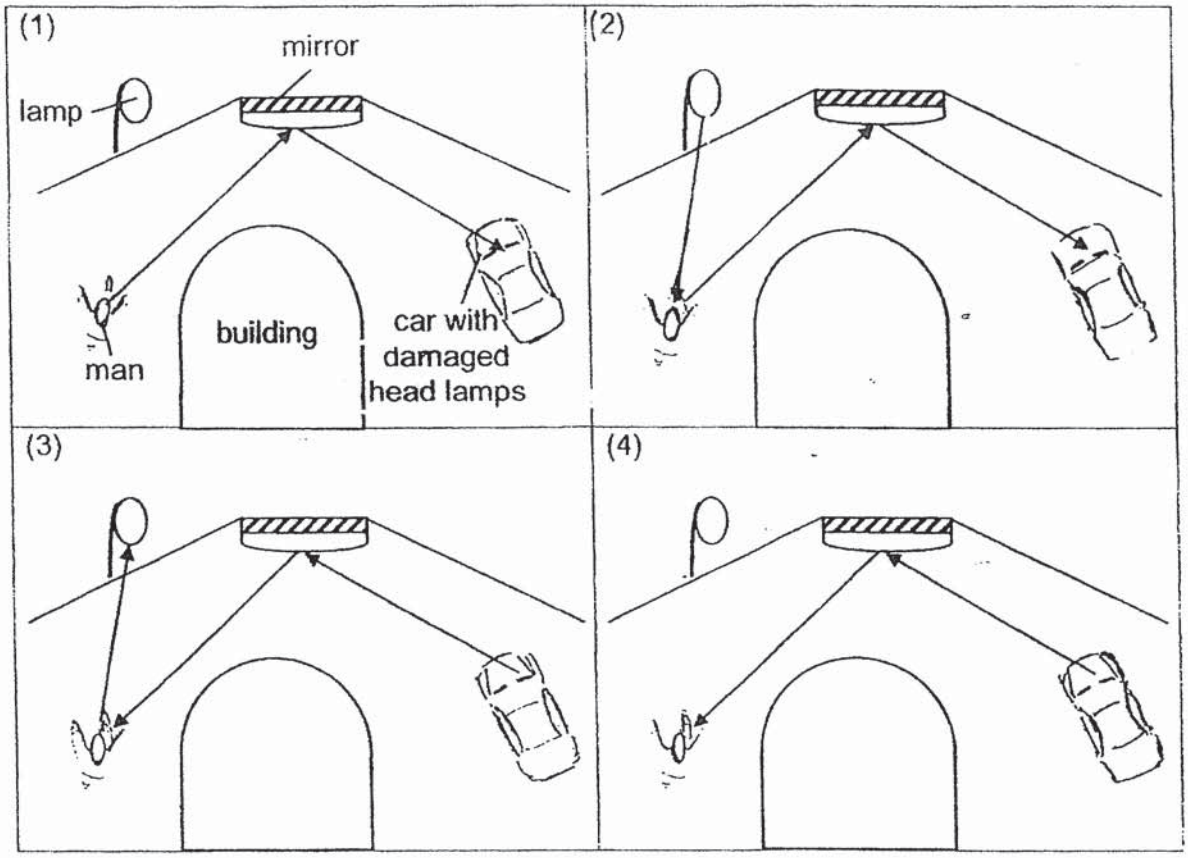
(1) Ann and Chris only

(2) Bob and Chris only

(3) Ann, Bob and Diane only

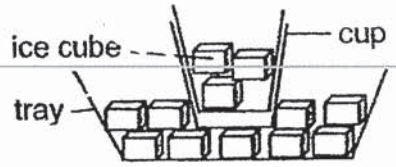
(4) Ann, Chris and Diane only

6 A car with damaged head lamps was travelling towards the bend of a road at night. A man was walking on the road in the opposite direction. Which diagram shows the direction of light so that the driver was able to see the man?

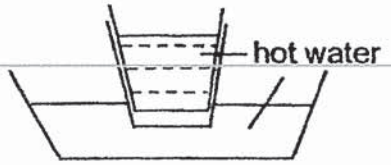


7 Krishnan wants to separate two cups which are fitted tightly to each other. Using only hot water and ice cubes, which of the following set-ups can he use to separate the cups?

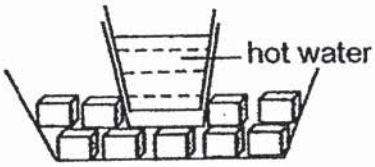
(1)



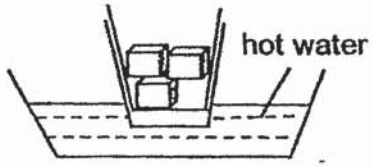
(2)



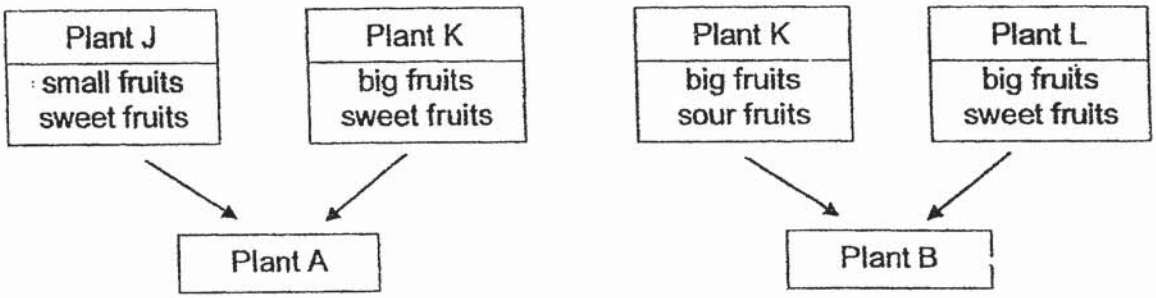
(3)



(4)



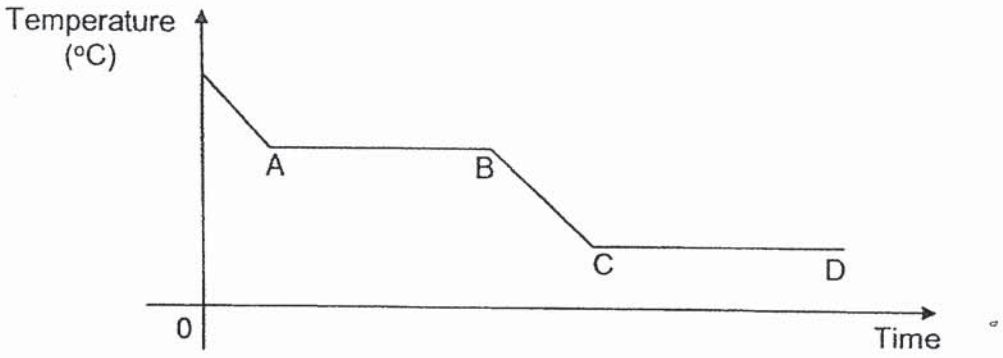
8 A farmer selected plants J, K and L to produce fruits with different characteristics. The diagram below shows the characteristics of the 3 plants.



Plant A inherited some characteristics from plants J and K, while plant B inherited some characteristics from plants K and L. Based on the chart above, which of the following best describes the characteristics of plants A and B?

	Plant A	**Plant B**
(1)	big fruits sweet fruits	big fruits sour fruits
(2)	big fruits sour fruits	big fruits sweet fruits
(3)	small fruits sweet fruits	small fruits sweet fruits
(4)	small fruits sour fruits	small fruits sour fruits

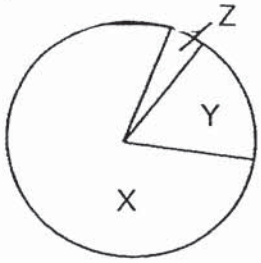
9 John had some substance X at room temperature. He melted substance X completely in a container over a hot plate. After turning off the hot plate, he recorded the changes in the temperature of substance X as it cooled over some time in the graph below.



Which of the following correctly describes the temperatures at AB and CD?

	AB	CD
(1)	boiling point	freezing point
(2)	boiling point	room temperature
(3)	freezing point	room temperature
(4)	room temperature	boiling point

10 The chart below show the composition of air.



Which of the following correctly identifies the gases in the air?

	X	Y	Z
(1)	oxygen	other gases	nitrogen
(2)	nitrogen	oxygen	other gases
(3)	nitrogen	other gases	oxygen
(4)	other gases	oxygen	nitrogen

11 Venus removed two rings of different depths at the stem of a plant as shown in Diagram 1. The enlarged view of a section of the stem is shown in Diagram 2.

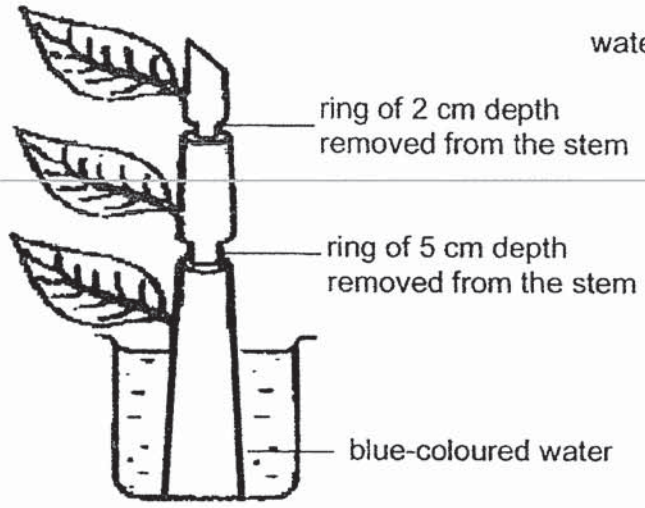


Diagram 1

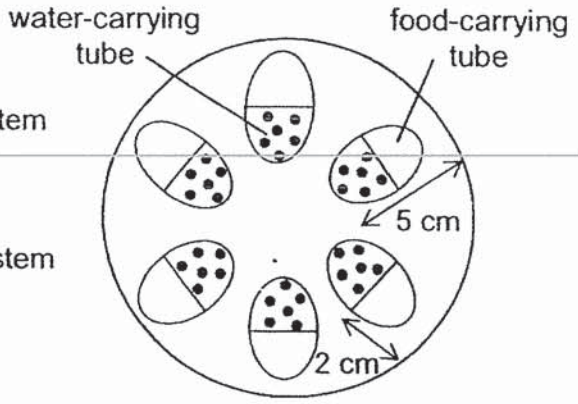
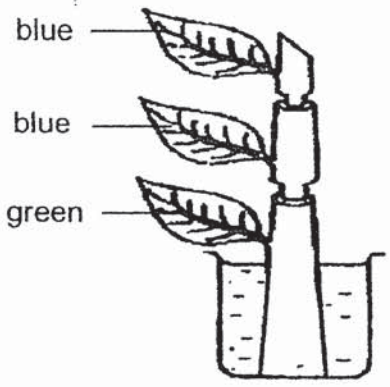


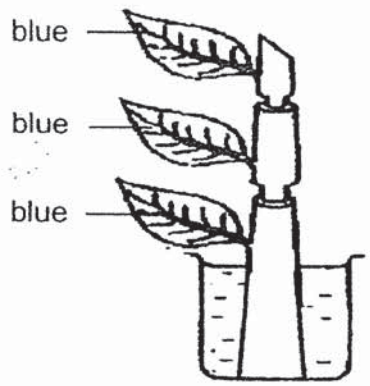
Diagram 2

Which one of the following shows the colour of the leaves after the plant was placed in the beaker of blue-coloured water for few hours?

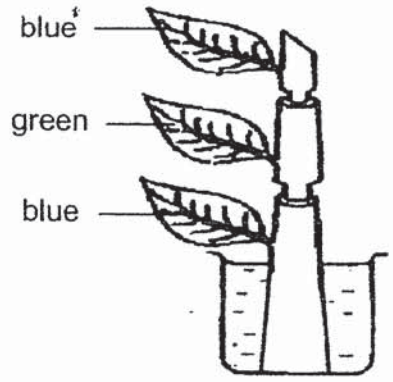
(1)



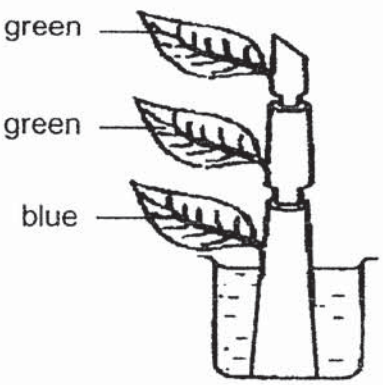
(2)



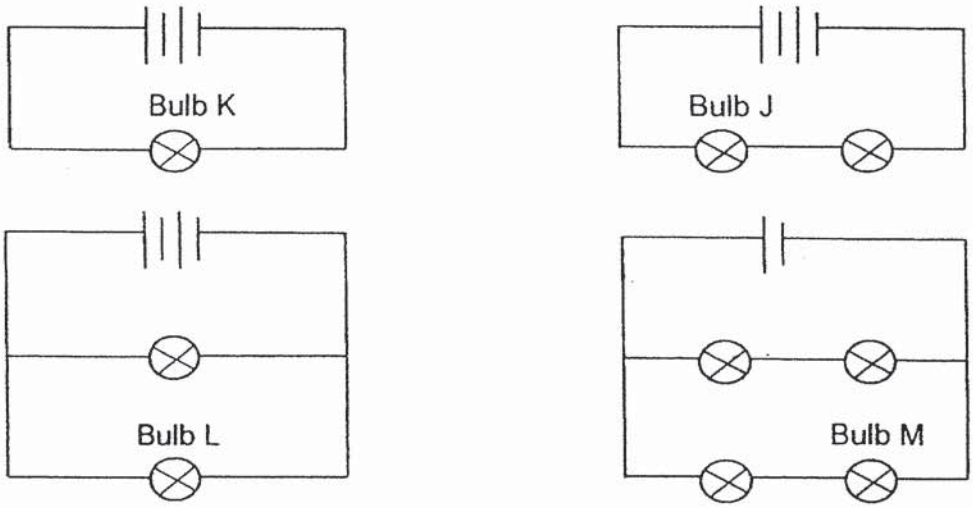
(3)



(4)



12 Study the four circuits shown below.



Which of the following statements about Bulbs J, K, L and M are true?

A Bulb K is as bright as Bulb L.

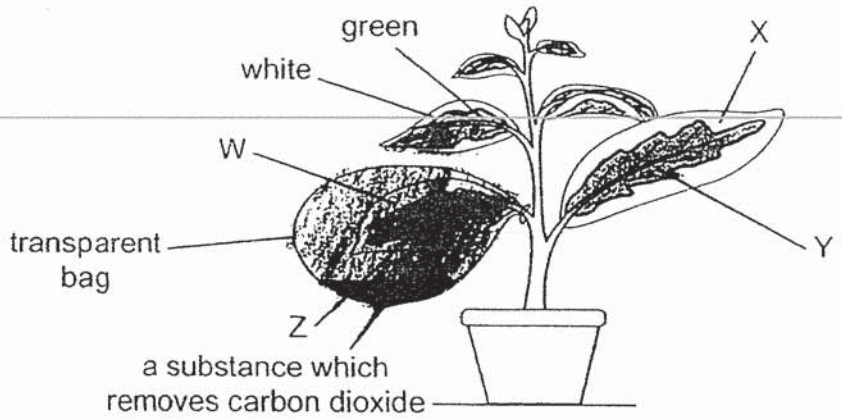
B Bulb J is as bright as Bulb M.

C Bulb L is brighter than Bulb J.

D Bulb M is dimmer than Bulb K.

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

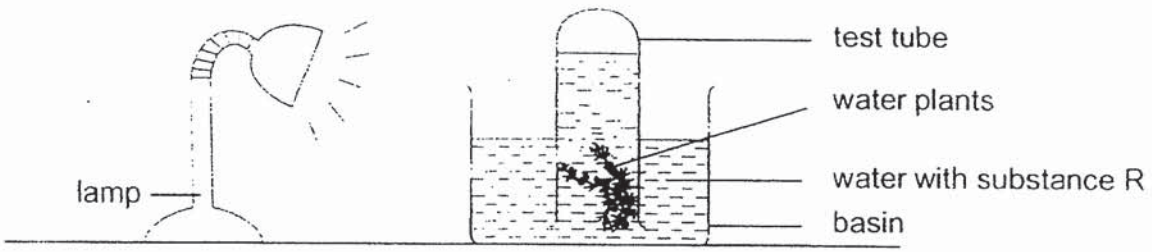
13 An experiment was conducted on photosynthesis using the set-up below. The plant has leaves that are green in the middle and white around the edges and was placed under sunlight.



Which two areas of the leaves, W, X, Y or Z, **lack** only one factor needed for photosynthesis?

(1) W and X
(2) W and Y
(3) X and Z
(4) Y and Z

14 Hui Wen set up an experiment as shown below.



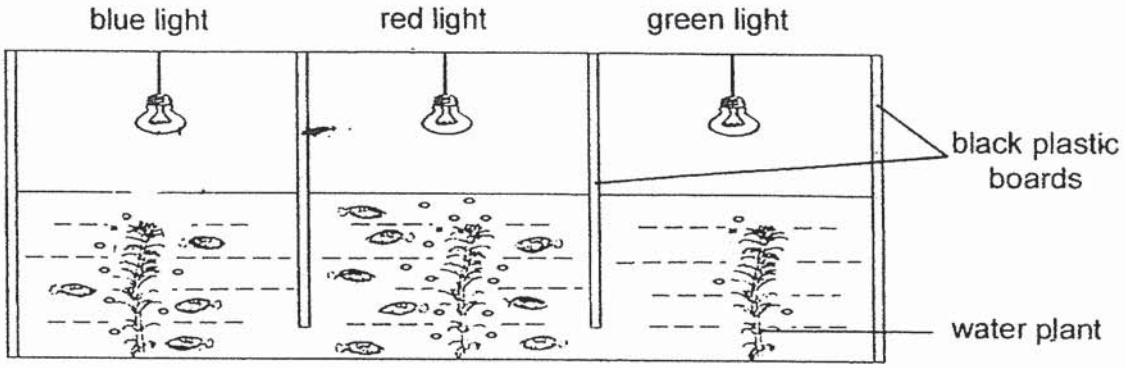
She added substance R to the water. Any carbon dioxide present in the water was absorbed by substance R immediately. She switched on the lamp and measured the amount of various dissolved gases in the water after one hour.

Which of the following statement is true?

(1) The amount of dissolved oxygen increased.
(2) The amount of dissolved oxygen decreased.
(3) The amount of dissolved nitrogen decreased.
(4) The amount of dissolved carbon dioxide increased.

15 Donnie conducted an experiment with the set-up below. He divided a big tank into three sections using black plastic board. Each section has the same type of water plant of similar size and were exposed to different coloured lights of the same brightness. He also added the same number of fishes into each section.

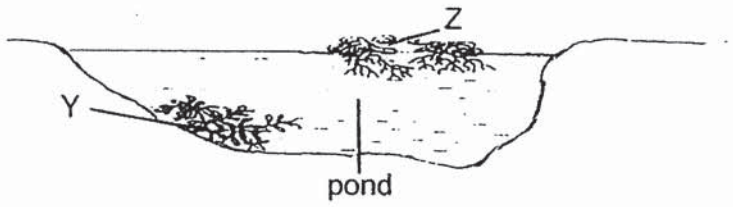
After some time, he observed the bubbles produced by the water plants and the movement of the fishes as shown below.



Based on his observation, what can Donnie conclude from his experiment?

(1) The fishes are able to survive under red light without any water plant.
(2) The water plant produces more oxygen under blue light than red light.
(3) The water plant is unable to carry out photosynthesis under green light.
(4) The water plant uses more carbon dioxide under blue light than green light.

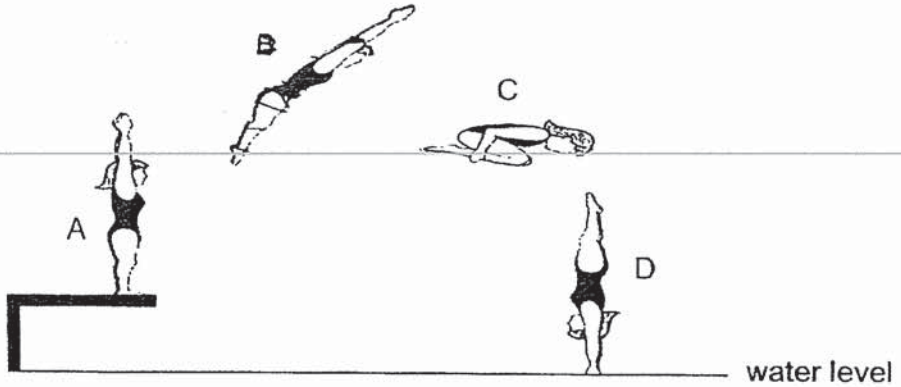
16 The diagram below shows two types of water plants Y and Z, in a pond. It was observed that plant Z increased rapidly in number over a short period of time.



Which of the following correctly shows what will happen to the number of plant Y and the possible reason?

	Number of plant Y	Reason
(1)	decrease	Lack of sunlight for plant Y to make food.
(2)	decrease	Lack of space for plant Y to grow and reproduce.
(3)	increase	Increase in the amount of food produced by plant Z.
(4)	increase	Increase in the amount of oxygen produced by plant Z.

17 Chantelle was practising diving into the pool as shown in the diagram below.



Which of the following is correct?

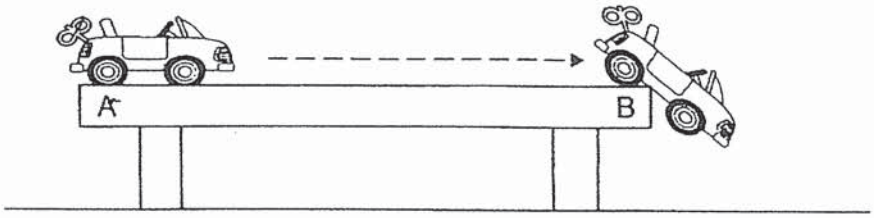
	decrease in potential energy	least potential energy
(1)	A to B	B
(2)	A to B	D
(3)	B to C	D
(4)	C to D	B

18 Hui Min placed a ball on a drum and hit the drum with a stick. She observed that the ball bounced up and down as shown in the diagram below.

Which of the following explains the movement of the ball?

(1) The ball moved down as it has more potential energy.
(2) The ball moved up and down as wind was produced when the drum was hit.
(3) The ball moved up as kinetic energy from the drum was transferred to the ball.
(4) The ball moved up as kinetic energy from the stick was converted to heat energy on the drum.

19 The diagram below shows a wound up toy car released at position A and stopped at the edge of the table at position B.



Which of the following shows the energy conversion of the wound up toy car when released from position A to position B?

(1) kinetic energy → potential energy → kinetic energy
(2) potential energy → kinetic energy → heat energy + sound energy
(3) kinetic energy → potential energy → heat energy + sound energy
(4) potential energy → heat energy + sound energy → kinetic energy

20 Jay dropped a ball which hit a tray of sand that formed a dent as shown in Diagram 1.

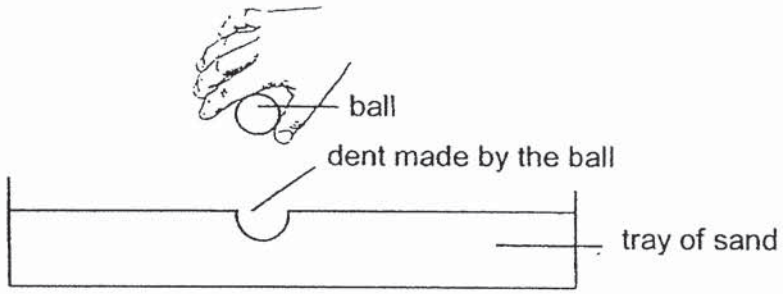


Diagram 1

He repeated the experiment with balls of the same size but different masses released from the same height. Diagram 2 shows the dents made by balls W, X, Y and Z.

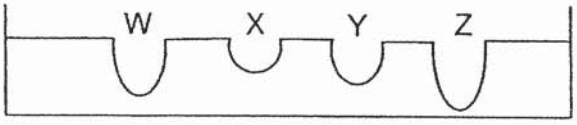
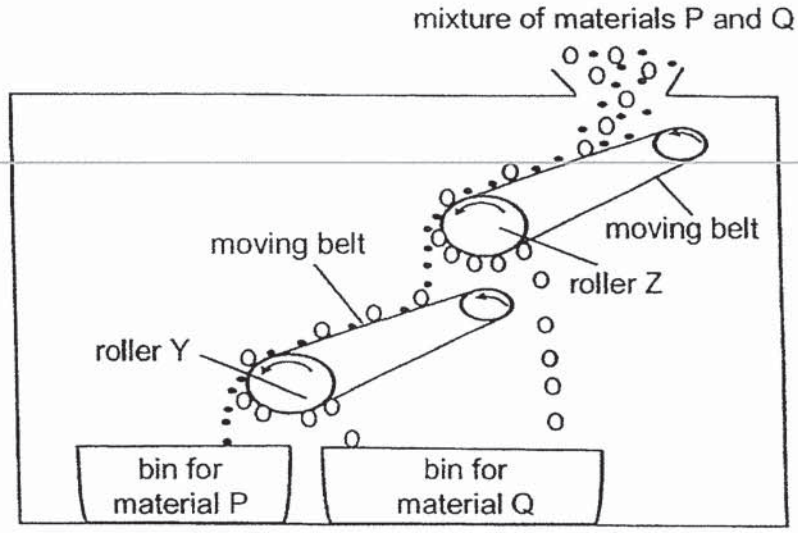


Diagram 2

Which of the following statements is true at the point of release of the ball?

(1) Ball X has a larger mass than ball W.
(2) Ball Z had the greatest potential energy.
(3) Ball W had a lower potential energy than ball Y.
(4) Less gravitational force acted on ball Y than on ball X.

21 The diagram below shows a machine used to separate materials based on their magnetic properties.



Based on the diagram above, which two statements are true?

A Both rollers Y and Z are magnets.

B Material Q could be steel.

C Material P could be iron.

D The machine could separate a mixture of aluminium and copper.

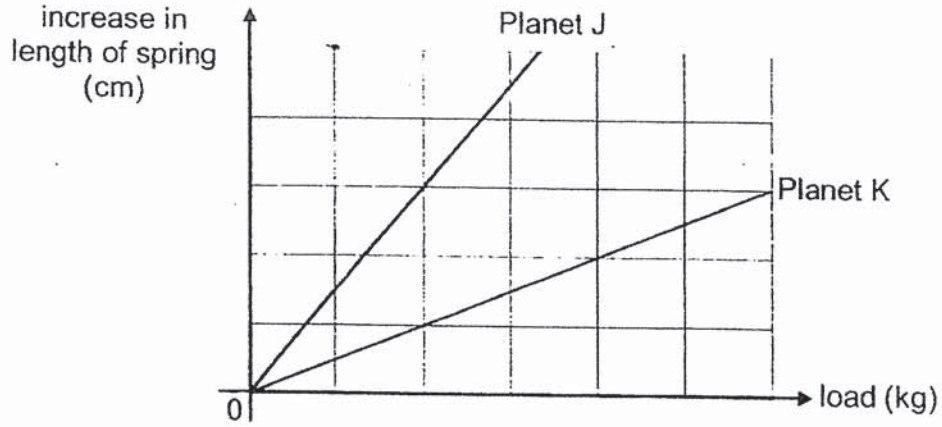
(1) A and B

(2) A and C

(3) B and D

(4) C and D

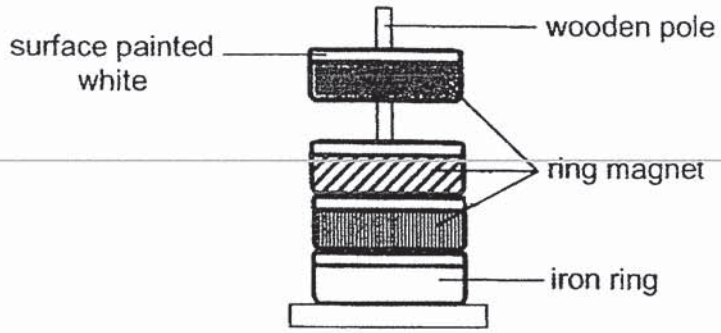
22 An experiment was conducted on a spring at Planet J and Planet K. Various loads were hung one at a time and the increase in length of the spring was recorded. The results are shown in the graph below.



Based on the graph, which one of the following conclusions is correct?

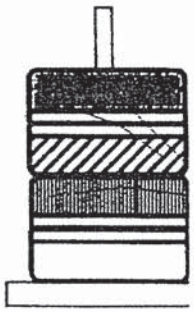
	gravitational force acting on load on	
	Planet J	**Planet K**
(1)	not possible to tell	
(2)	equal to K	equal to J
(3)	less than K	more than J
(4)	more than K	less than J

23 Thiru used the set-up shown to investigate the magnetic force between three ring magnets and one iron ring. One of the surfaces of each ring is painted white.

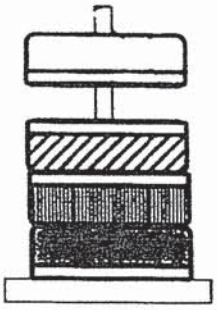


Which one of the following arrangements is possible?

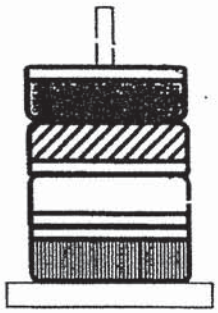
(1)



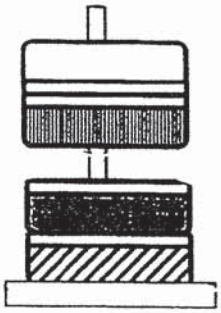
(2)



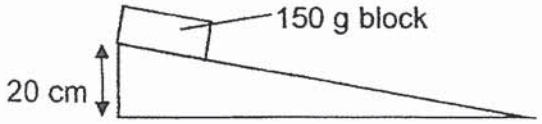
(3)



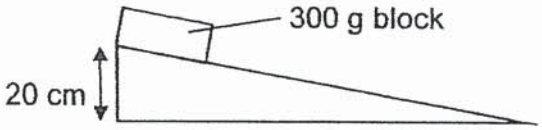
4)



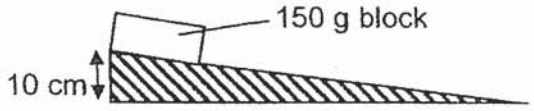
24 Betty conducted an experiment with two blocks of the same size but of different mass. He released the blocks on ramps with 2 different surfaces as shown below.



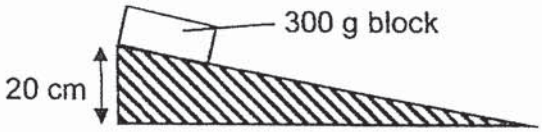
Set-up P



Set-up Q



Set-up R

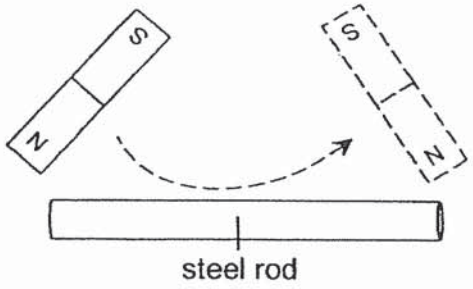


Set-up S

He wanted to find out if the time taken by the block to slide down the ramp is affected by the mass of the block and the surface of the ramp. Which pairs of set-ups should he use for each of his experiments?

	mass of block	**surface of ramp**
(1)	P and S	R and S
(2)	P and Q	Q and S
(3)	Q and R	P and Q
(4)	R and S	P and R

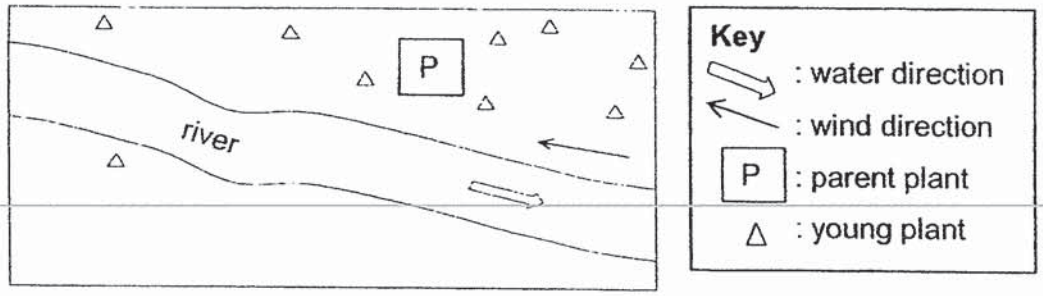
25 Amin used a bar magnet to stroke a steel rod repeatedly in the same direction as shown.



Which of the following statements is correct?

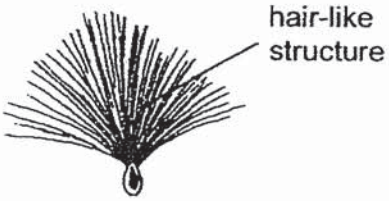
(1) Stroking once is enough to make the steel rod a strong magnet.
(2) The steel rod has stronger magnetism if it is stroke using a horse shoe magnet instead.
(3) The steel rod has stronger magnetism if it is stroke more times in the same direction.
(4) The bar magnet should stroke the steel rod in different directions the same number of times to form a magnetised steel rod.

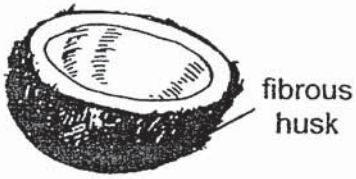
26 Study the distribution of young plants of plant P.



Which one of the following structures is from plant P?

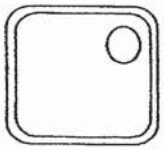
(1)


(2)


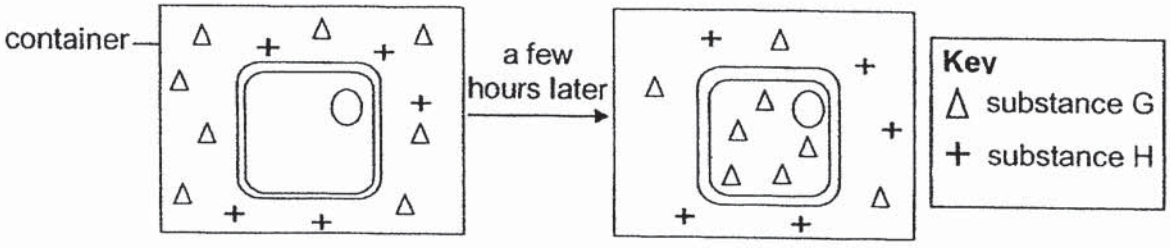
(3)


(4)


27 The diagram below shows a section of a plant cell.



The plant cell was placed in a liquid containing substance G and H for a few hours.



Which of the following statements is a likely explanation for the observation above?

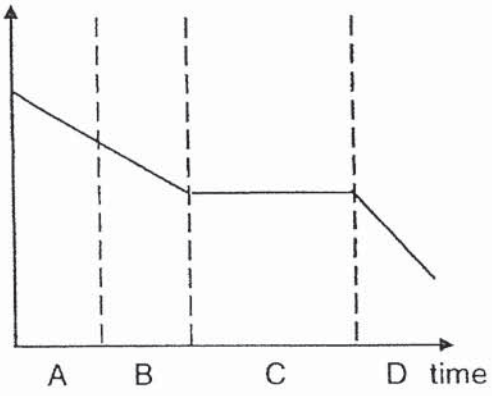
(1) Substance G moved into the cell faster than substance H.
(2) The cell wall prevented substance H from entering the cell.
(3) The cell membrane only allowed substance G to enter the cell.
(4) Substance H is smaller and is blocked by substance G from entering the cell.

28 Ramli was involved in a sequence of events in school as shown below:

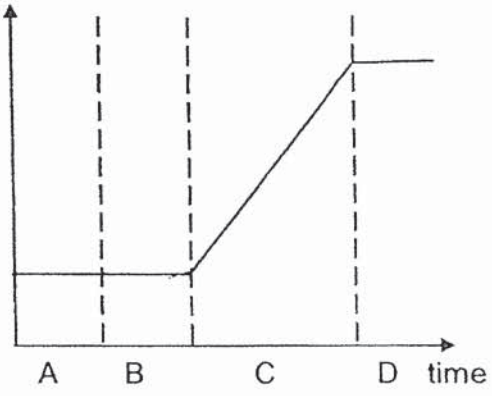
A Walking quickly to the school field from classroom.
B Sitting quietly in the school field to get ready for a soccer match.
C Playing a soccer match with his classmates.
D Cooling down exercise after the soccer match.

Which of the following graphs most likely shows how his heart rate changes from event A to D?

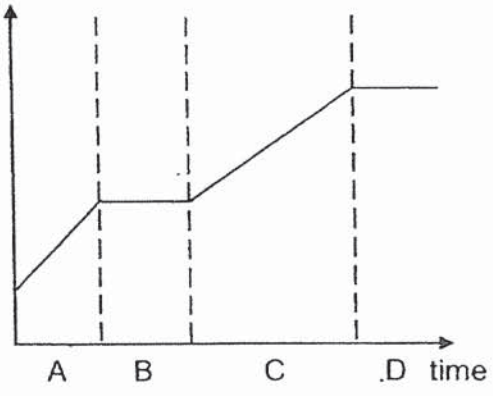
(1) heart rate



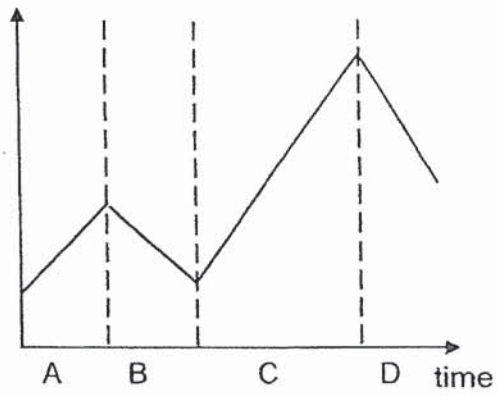
(2) heart rate



(3) heart rate



(4) heart rate



PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET B)

25th AUGUST 2020

Name: _____

Class: Resilience _____

Parent's Signature

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

INSTRUCTIONS TO CANDIDATES

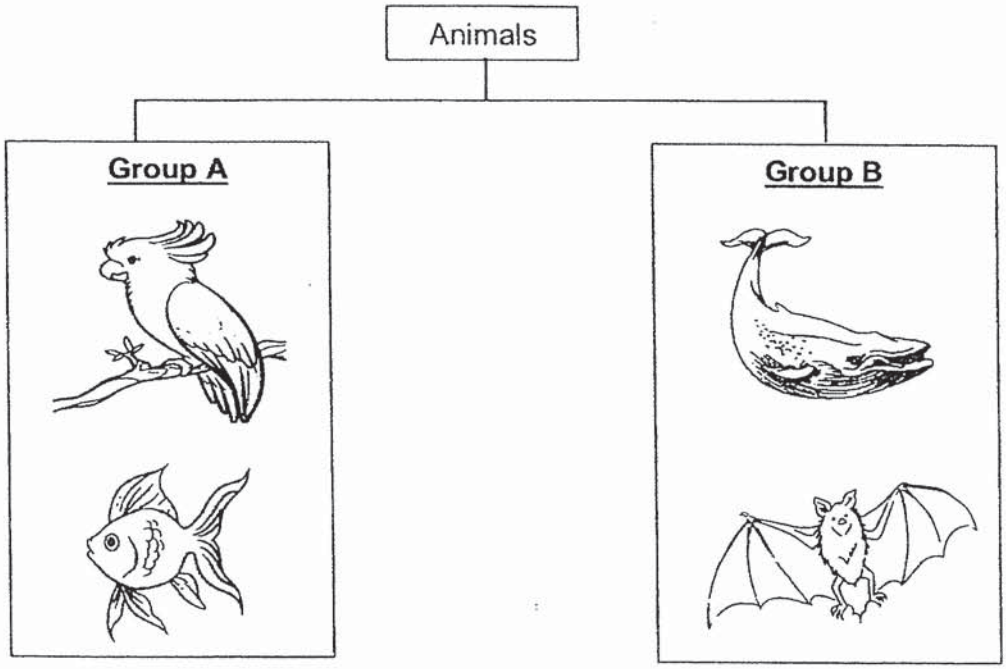
1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so
3. Follow all instructions carefully
4. Answer all questions.
5. Write all your answers in this booklet.

Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklets A & B) :	100

This booklet consists of 17 printed pages, excluding the cover page.

Write your answers to the questions 29 to 41 in the spaces provided.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 The chart shows some animals that are classified into **two groups.**



(a) How are the animals in the chart above classified? [1]

_____

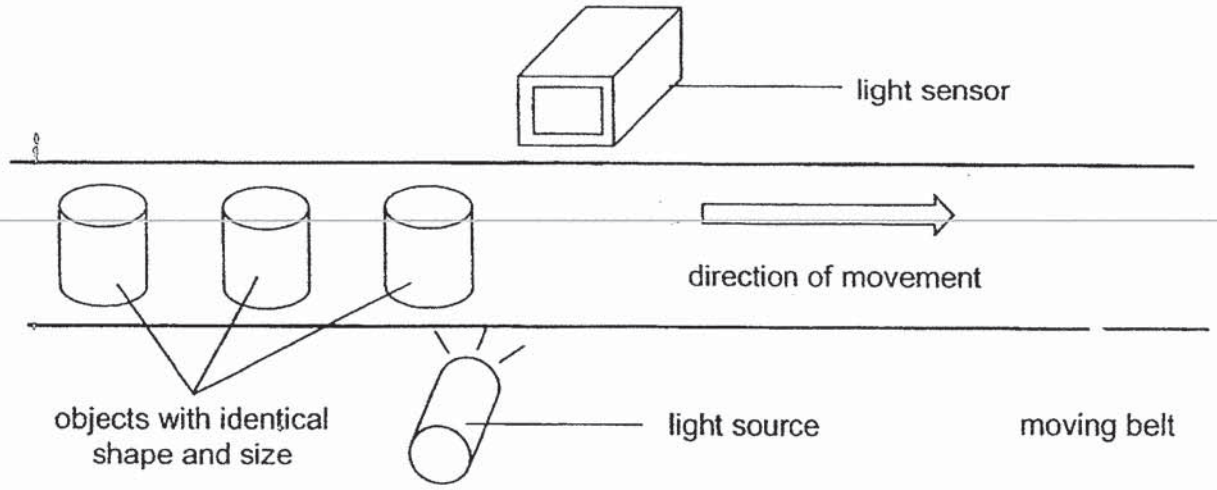
_____

(b) Carrie decided to classify a frog under group B. Based on your answer in (a), do you agree? Give a reason for your answer. [1]

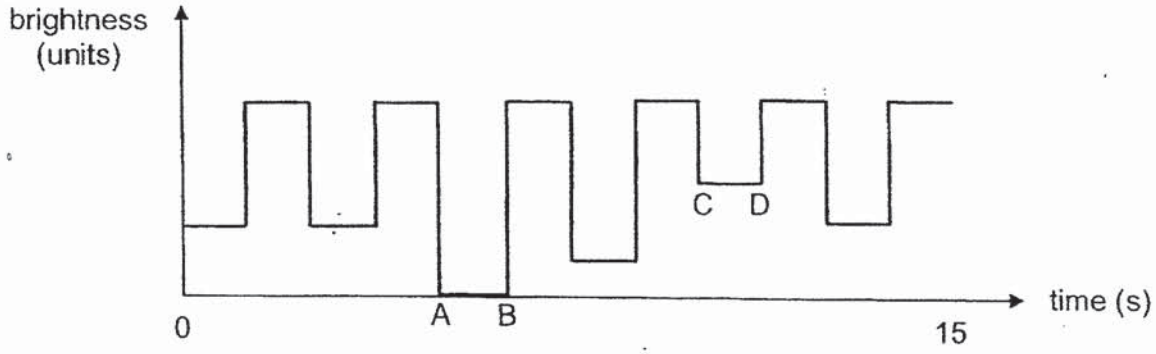
_____

_____

30 A factory uses a light sensor shown below to count objects with identical shape and size.



The belt moves at a constant speed. When the object is between the light source and the sensor, it blocks the light from reaching the sensor. The results recorded is shown in the graph below.



(a) Based on the graph, how many objects passed through the light sensor in 15 seconds? [1]

_____

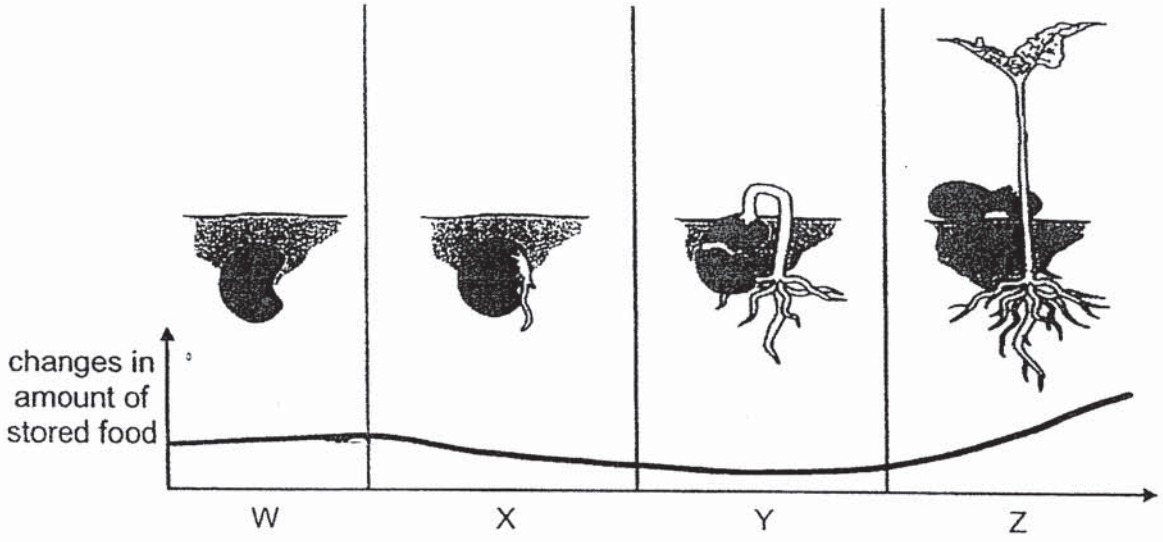
(b) From the graph, line AB and line CD are results obtained from objects M and N respectively. State the difference in property of the materials used to make objects M and N. Explain your answer. [2]

_____

_____

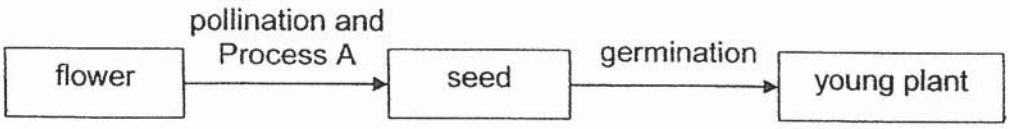
_____

31 The diagram below shows the changes in the amount of food stored in the plant during the stages of growth.



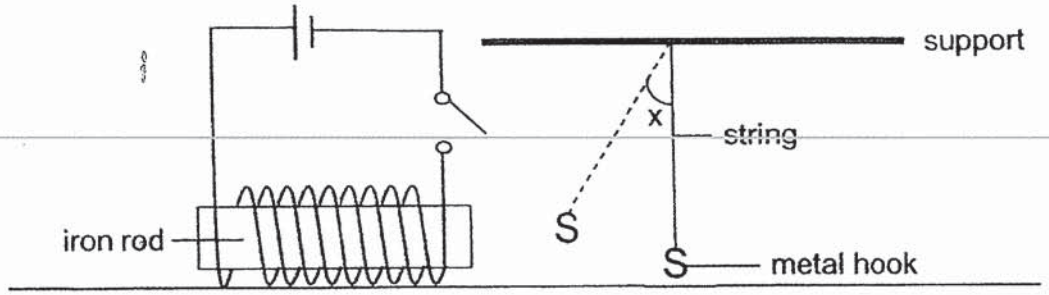
(a) Explain the changes in the amount of stored food in the plant from W to Z. [2]

(b) The diagram below shows how a young plant developed from a flower.



Describe Process A.

32 Winston conducted an experiment with a metal hook hanging down from the ceiling as shown below. When he switched on the circuit, the metal hook moved nearer to the iron rod and he measured angle x as shown.



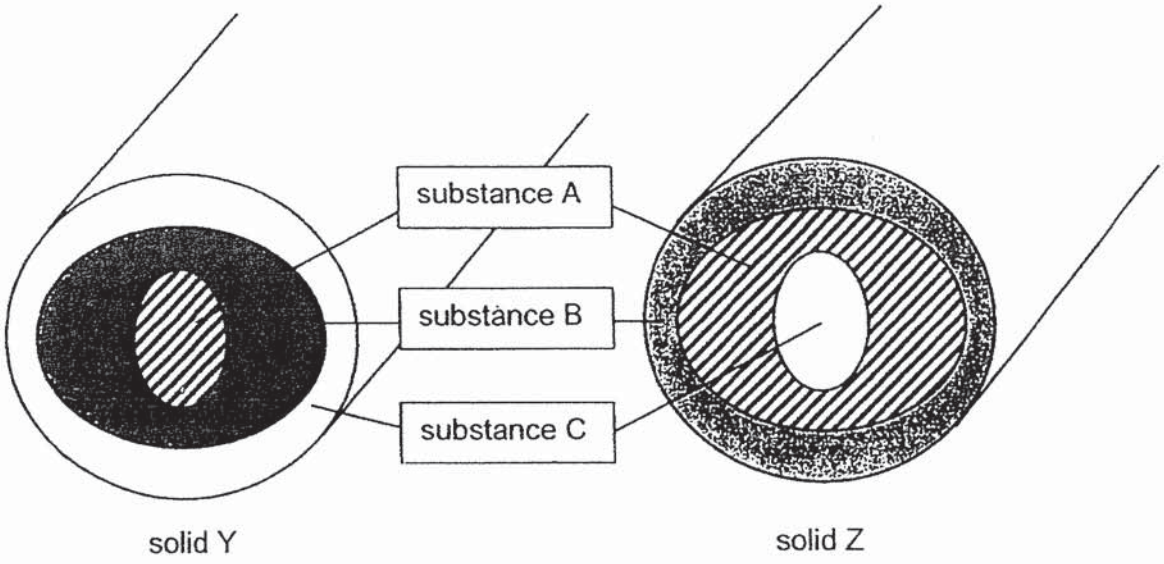
Winston changed the number of coils of the wire around the iron rod and recorded his results in the table below.

number of coils of wire around the iron rod	8	16	24
angle x (°)	17	25	35

(a) Based on Winston's results, explain the relationship between the number of coils of wire around the iron rod and the angle moved by the string. [2]

(b) Suggest one possible change that can be made to the electrical circuit so that the angle x is greater than 35°. [1]

33 Solids Y and Z are made of three layers of substances A, B and C. The diagram below show the cut sections of both solids.



The table below show the melting points of substances A, B and C.

Substance	**A**	**B**	**C**
Melting point (°C)	95	70	52

(a) Suggest a possible temperature to heat solid Y to in order to obtain substance A in its solid state. [1]

_____ °C

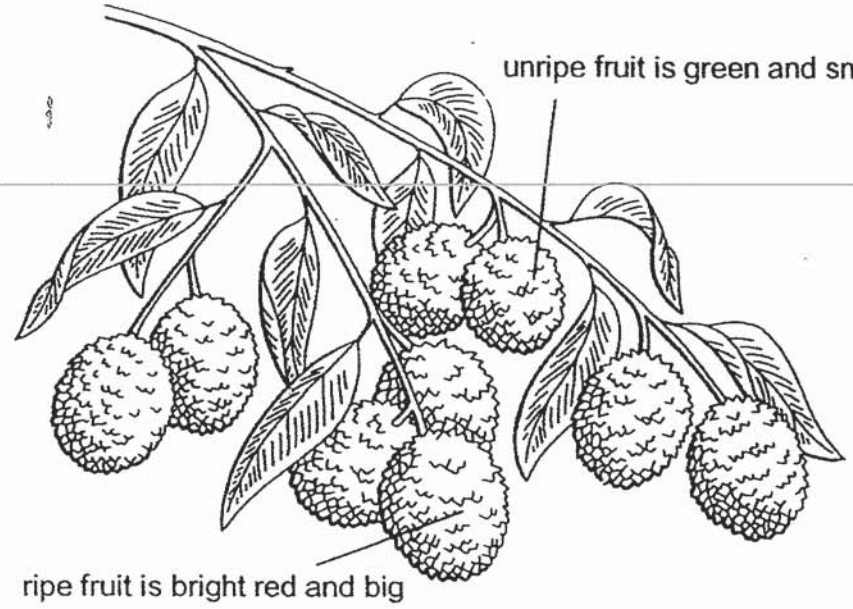
(b) Substance C in solid Z cannot be obtained in solid form using with the method stated in (a). Explain why. [2]

_____

_____

_____

34 The diagram below show the features of the fruits of plant G found on Island X.



(a) (i) Why is it important for the ripe fruit of the plant G to be bright red and big? [1]

_____

_____

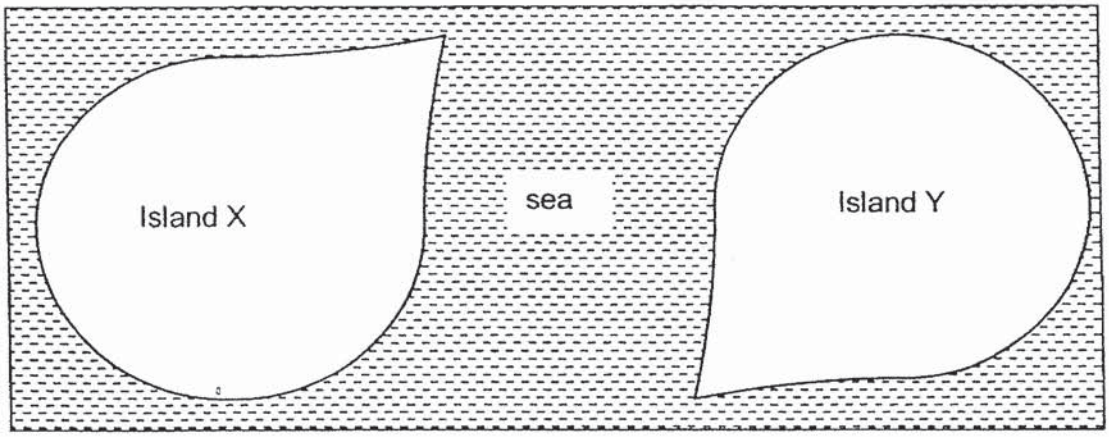
(ii) Suggest another possible characteristic of the **unripe** fruit of the plant G. [1]

_____

_____

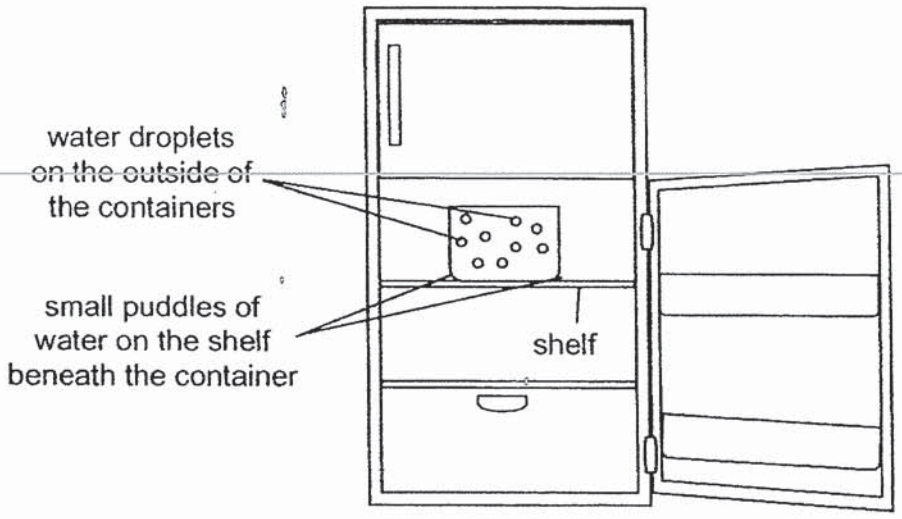
Question 34 continues on page 7

(b) Island X and Island Y are situated far apart from each other and separated by a sea. Plant G was not found on Island Y.



Scientists observed that plant G grows on Island Y some years later. Suggest how plant G can be found on Island Y. [1]

35 Mrs Chew accidentally left the door of her refrigerator opened. She noticed some small puddles of water on the shelf beneath the container after 20 minutes.



(a) Based on the observation above, explain how the small puddles of water appeared on the shelf beneath the glass container. [2]

_____

_____

_____

(b) Mrs Chew added crushed ice from her freezer into a jug with drinks as shown.

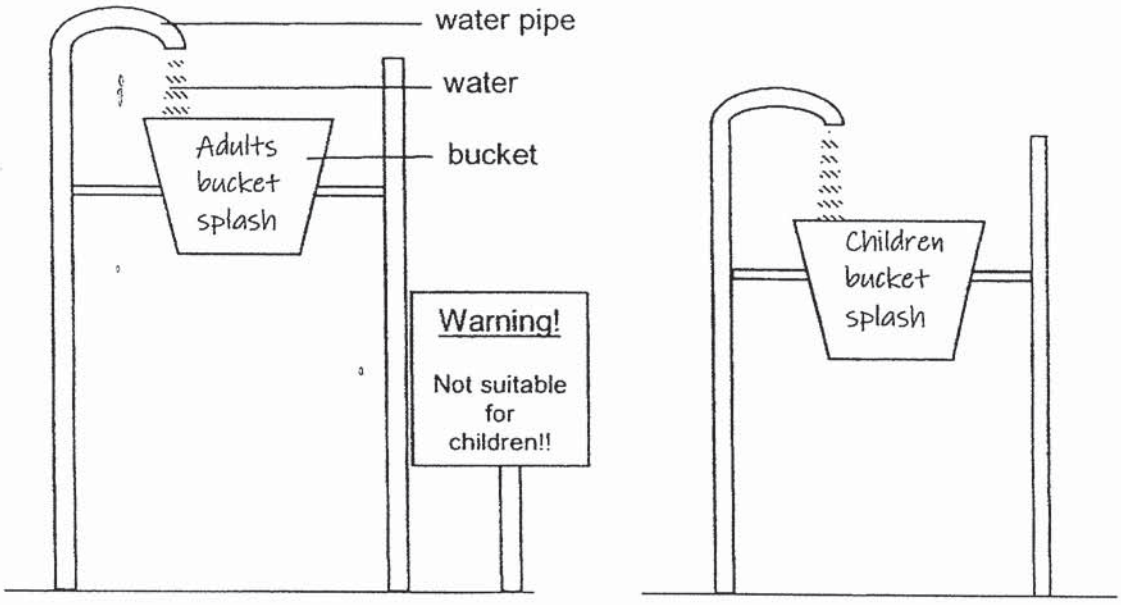
Mrs Chew explained that it is faster to cool the drinks in the jug using crushed ice instead of ice cubes. Explain why cooling is faster when using crushed ice instead of ice cubes. [2]

_____

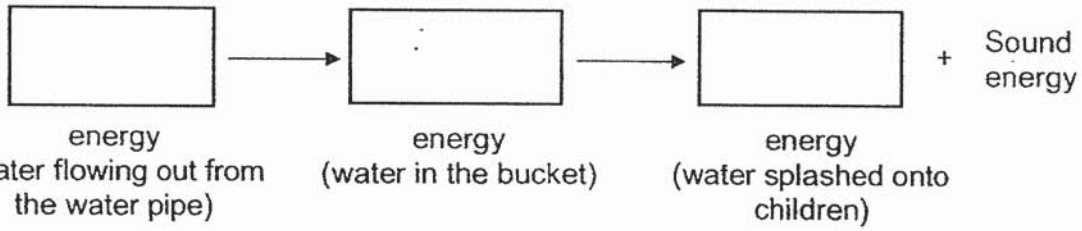
_____

_____

36 The diagram below shows two water playground equipment found in a water theme park. The buckets tip over when they are completely filled with water and splash onto the people below the buckets.



(a) Fill in the boxes to show the main energy changes in the 'Children bucket splash'. [1]



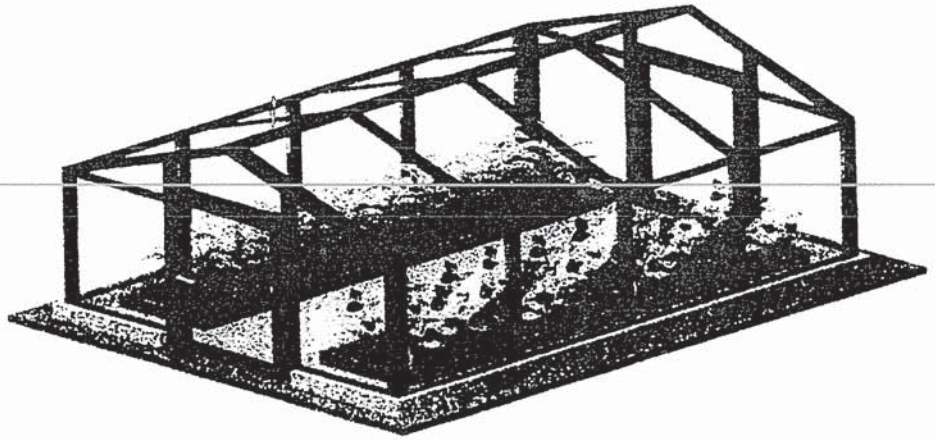
(b) The buckets used in both water playground equipment are of the same size. Explain why children are advised not to play under the 'Adults bucket splash'. [2]

_____

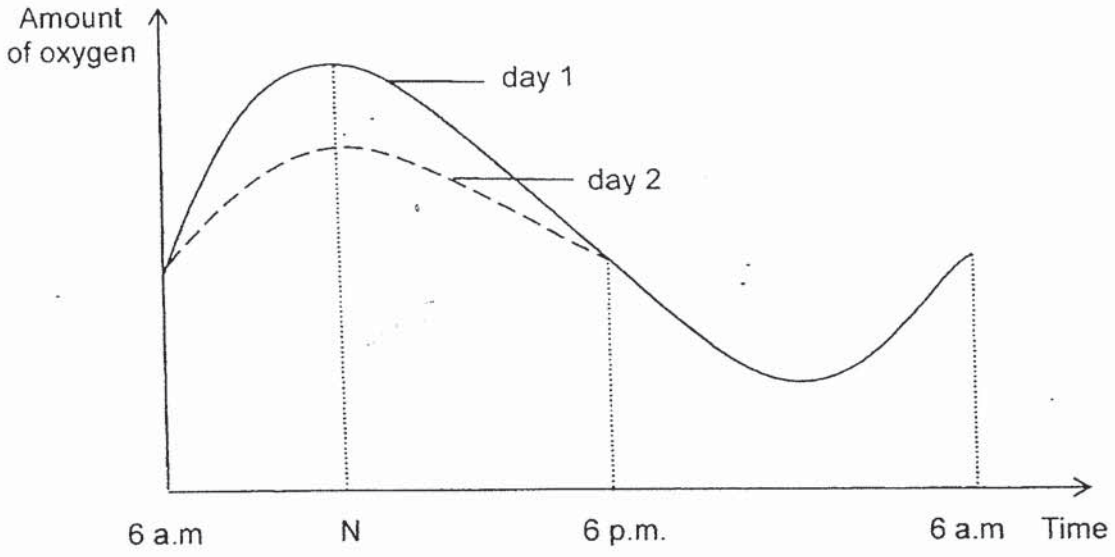
_____

_____

37 A greenhouse is a building made of glass which plants are grown in a controlled environment.



(a) The graph below shows the amount of oxygen in the greenhouse for 2 days.



Suggest a reason for difference in the amount of oxygen in day 2 as compared to day 1 between time N to 6 p.m. Explain your answer [2]

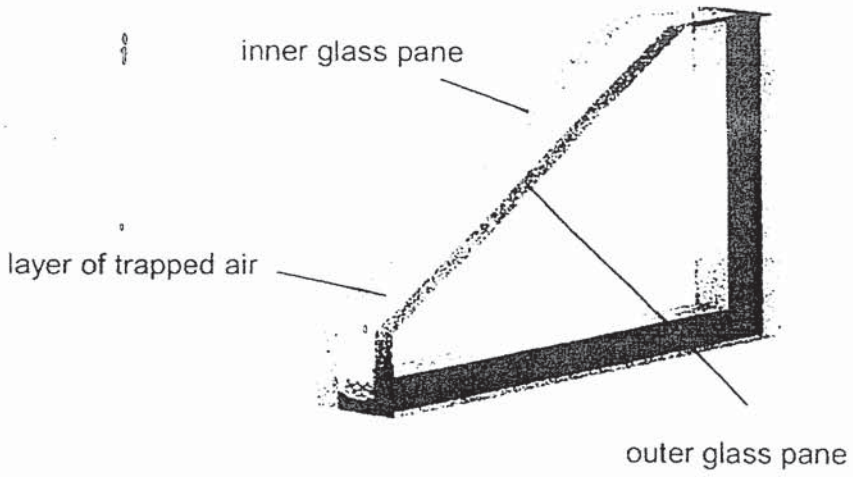
_____

_____

_____

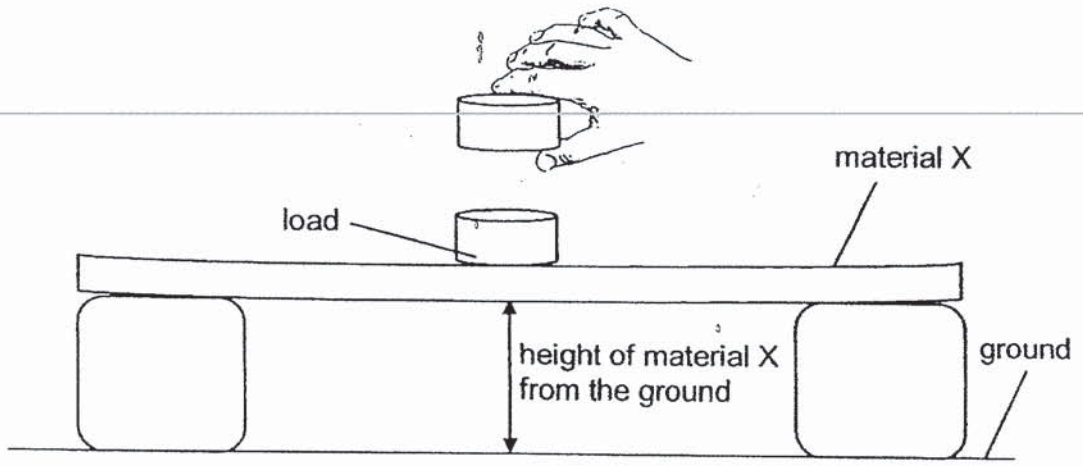
Question 37 continues on page 11

(b) In winter countries, some greenhouses are made using double-layered windows. Double-layered windows are made up of two sealed glass panes with a layer of air trapped in between as shown below.



Explain why it is necessary to use double-layered windows for greenhouses in cold countries. [2]

38 Yiling conducted an experiment using material X and placed similar loads on the material as shown below. She measured the height of the material from the ground as she placed 3 loads on it, one at a time.



She repeated the experiment using material Y and recorded the results shown in the table.

Number of loads added	Height of each material from the ground (cm)	
	Material X	Material Y
0	30	30
1	27	21
2	23	11
3	20	2

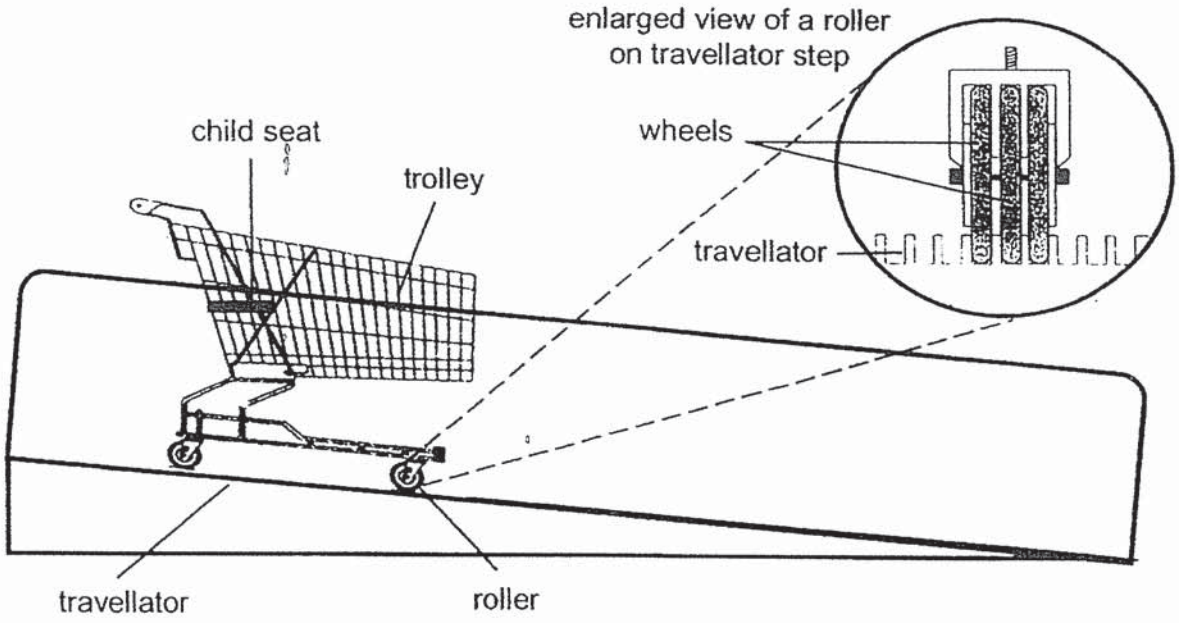
(a) What is the aim of Yiling's experiment? [1]

_____

_____

Question 38 continues on page 13

The diagram below shows a supermarket shopping cart on a travellator.



(b) Based on Yiling's experiment, which material, X or Y, is suitable for the child seat on the trolley? Explain your answer. [1]

_____

_____

(c) Name the forces acting on the wheels of the trolley in the diagram. [1]

_____

(d) Using the forces in (c), explain why the trolley did not move. [1]

_____

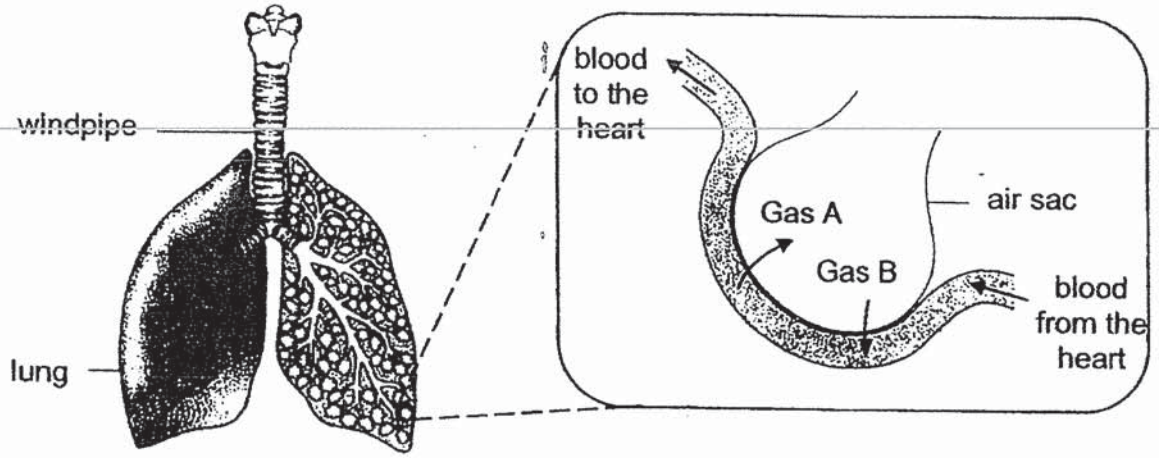
_____

(e) The rollers of the trolley need to be replaced after some time. Give a reason for this. [1]

_____

_____

39 The diagram below shows the human respiratory system. The enlarged diagram of one air sac in the lung shows how Gas A and Gas B move in and out of the blood surrounding the air sac.



(a) Name Gas A and Gas B.

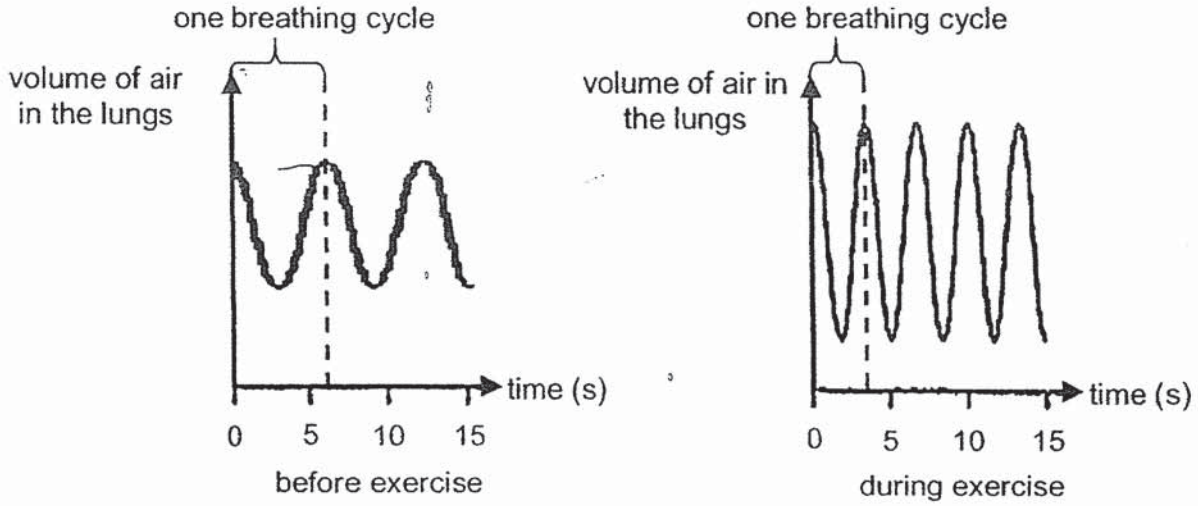
[1]

Gas A: _____

Gas B: _____

Question 39 continues on page 15

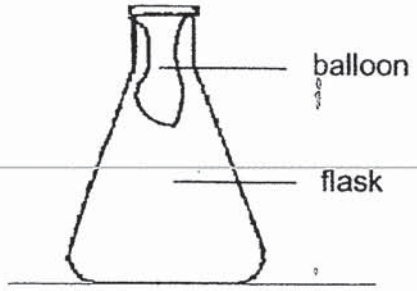
The graphs below show the volume of air in an athlete's lungs as he breathes in and out before and during exercise. One breathing cycle is when the athlete breathe in and out.



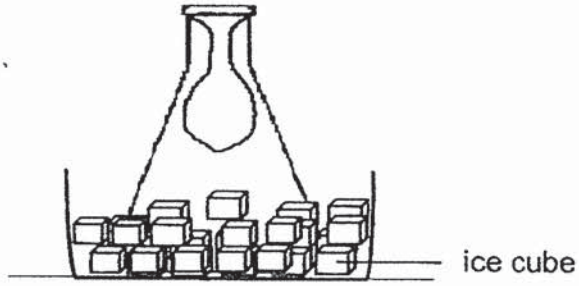
(b) Based on the information in the graphs, describe two differences in his breathing patterns before and during exercise. [2]

(c) Explain the reason for one of the differences stated in (b) during exercise. [2]

40 Giselle used the set-up below to conduct an experiment. The opening of the balloon was fitted over the mouth of the flask.



The set-up was placed in a basin with ice. The balloon then increased in size after 30 minutes.

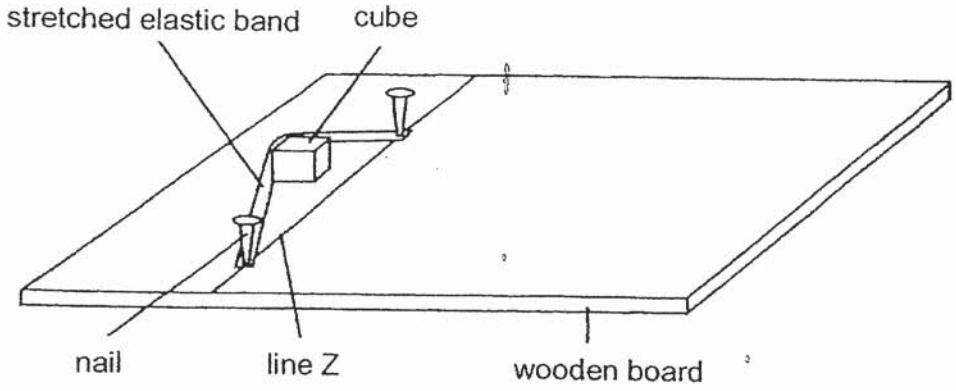


(a) Explain how the balloon increased in size after 30 minutes. [2]

(b) Based on the experiment above, what will happen to the mass and volume of air in the flask surrounding the balloon after 30 minutes? Put a tick (✓) under the correct headings. [1]

	Statement	Increase	Decrease	Remained constant
(i)	Mass of air in the flask surrounding the balloon			
(ii)	Volume of air in the flask surrounding the balloon			

41 Eleanor placed a cube 5 cm behind line Z on a wooden board. She stretched an elastic band over the cube as shown below. When she released the elastic band, the cube move over line Z.



She had other materials that she could use:

- a marker
- a stopwatch
- a metre rule

(a) Eleanor wanted to find out how the distance the elastic band is stretched back behind line Z would affect the distance moved by the cube from line Z.

Using the materials given, describe how she could carry out her experiment. (She does not need to use all the materials.) [2]

(b) What can Eleanor do to ensure that her results are reliable? [1]

- End of paper -