



PRIMARY 6 PRELIMINARY EXAMINATION 2018

Name : _____

Date: 2 AUGUST 2018

Class : Primary 6 ()

Duration: 1h 45min

Parent's Signature : _____

Marks: _____ / 56

**SCIENCE
BOOKLET A**

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

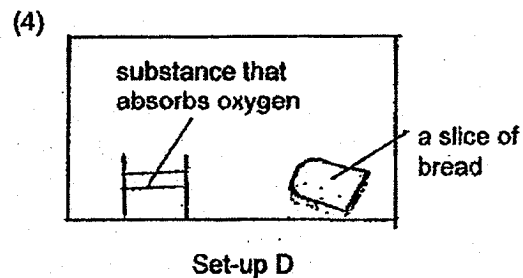
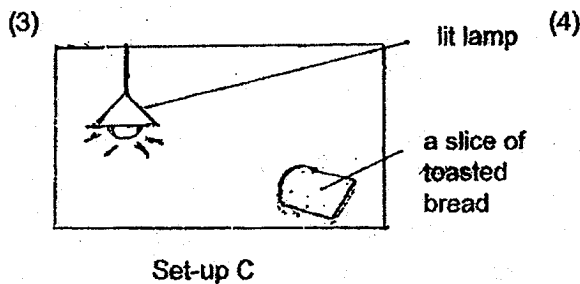
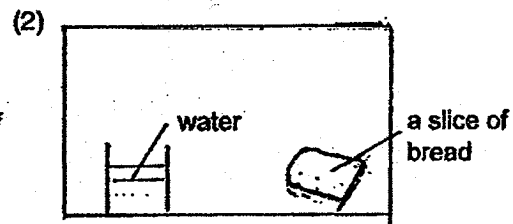
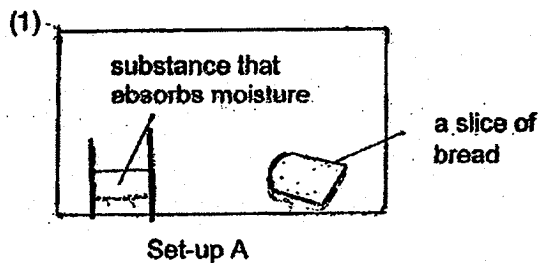
Answer all questions.

Shade your answers on the Optical Answer Sheet (OAS) provided.

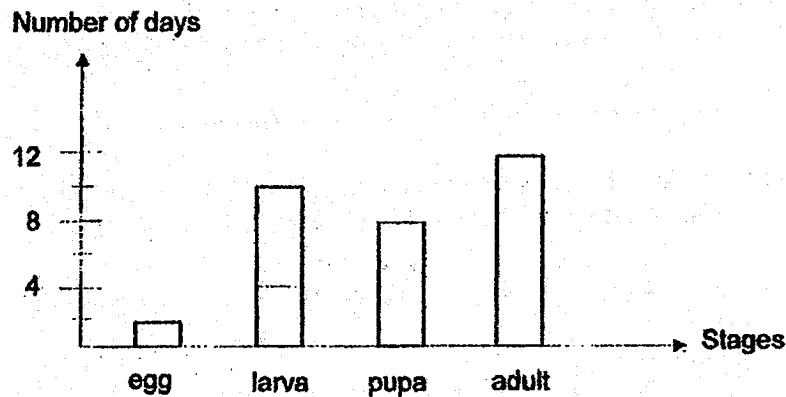
Booklet A (28 x 2 marks)

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) and shade your answer on the Optical Answer Sheet.

1. Mary placed four slices of the same type of bread in four set-ups at room temperature. In which set-up would fungus first appear on the slice of bread?



2. The graph below shows the duration of each stage of the life cycle of a mosquito.



How many days did it take the egg to develop into an adult after it has been laid?

- (1) 18
- (2) 20
- (3) 22
- (4) 30

3. Ali made three statements about sexual reproduction in plants and humans.

Male reproductive cells are produced in the male reproductive parts.

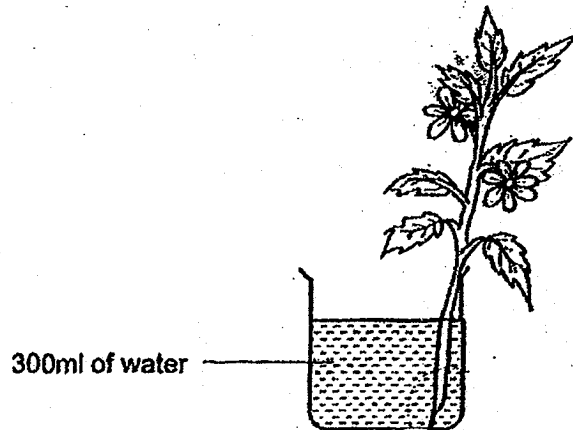
B The fertilised egg develops in the ovary.

Fertilisation occurs in the ovary.

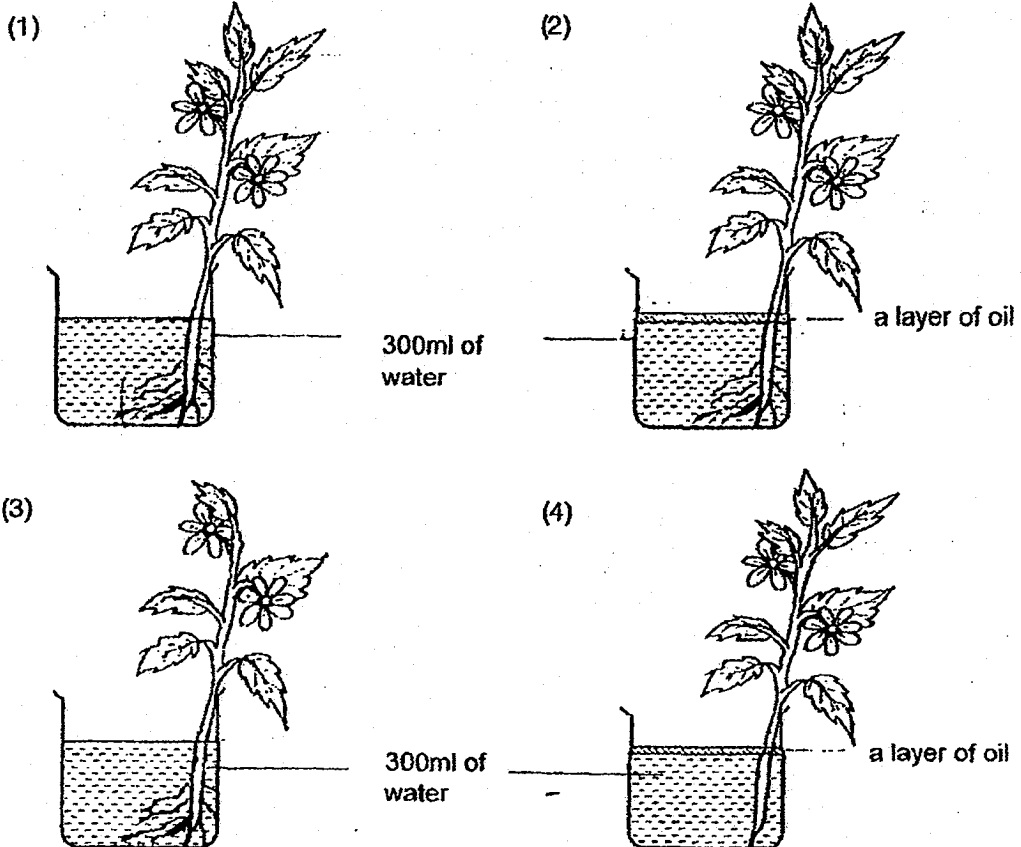
Which of the following is correct?

	Humans	Plants
(1)	B	A, C
(2)	A	A, B, C
(3)	A, C	B, C
(4)	A, C	A, B

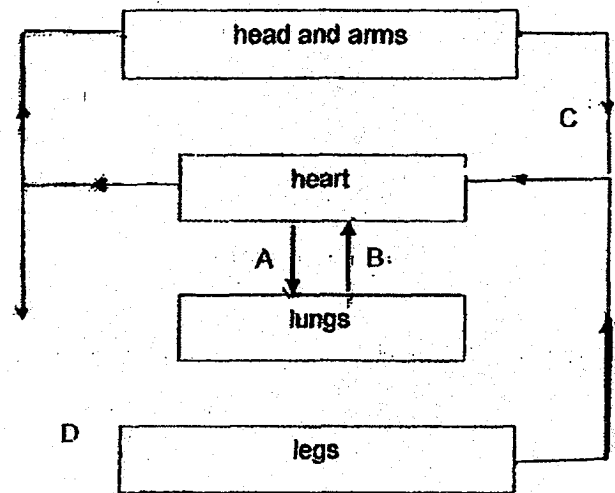
4. Haoming sets up an experiment as shown below to find out if the absence of roots affects the amount of water absorbed.



Which of the following should Haoming use as the control set-up for his experiment?



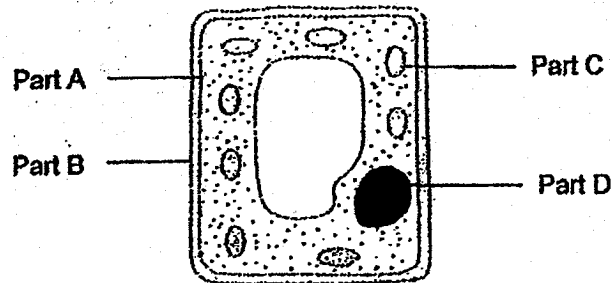
5. The diagram below shows the movement of blood in pathways, A, B, C and D, of the human circulatory system:



Which of the following correctly shows the pathways where blood is rich in oxygen or carbon dioxide?

	Blood rich in oxygen	Blood rich in carbon dioxide
(1)	A	C
(2)	B	D
(3)	C	B
(4)	D	A

6. Cells X shown below has been taken from a plant.

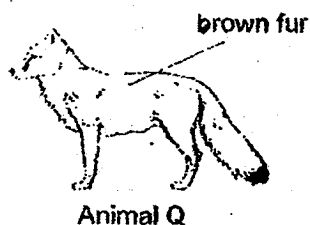


Cell X

Which of the following is true about cell X?

- (1) Part A gives cell X its regular shape.
- (2) Part C contains genetic information for cell X.
- (3) Part D controls all the activities that take place in cell X.
- (4) Part B controls the substances entering and leaving cell X.

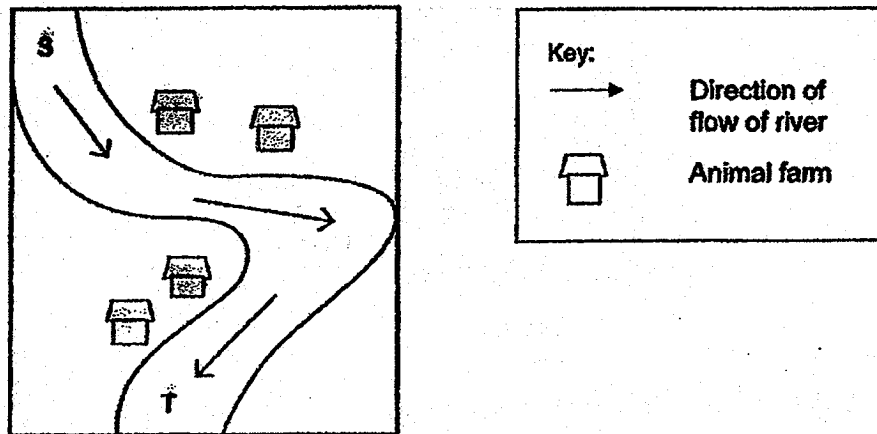
7. Animal Q below lives in cold countries. It has a thick layer of fur on its body.



Why is the fur of Animal Q used as a coat for people in winter?

- (1) The fur helps the wearer to blend in with white walls.
- (2) The fur is dark coloured so it gains less heat from the sun.
- (3) The fur traps air so the wearer will lose less heat to the surroundings.
- (4) The fur helps the wearer gain more heat from the cold air to keep warm.

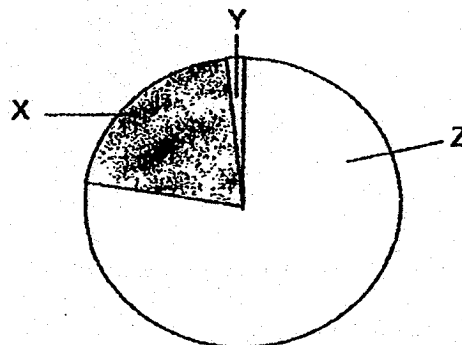
8. The map below shows the location of some animal farms along a river. The animal waste from the farms flowed into the river.



Which of the following would be less in amount at point T than at point S?

- (1) fish
- (2) bacteria
- (3) nutrients
- (4) carbon dioxide

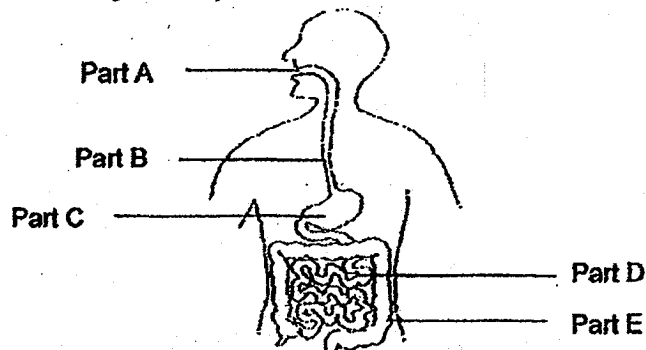
9. The amount of different gases in the air is shown in the pie chart below.



Which of the following statements is true?

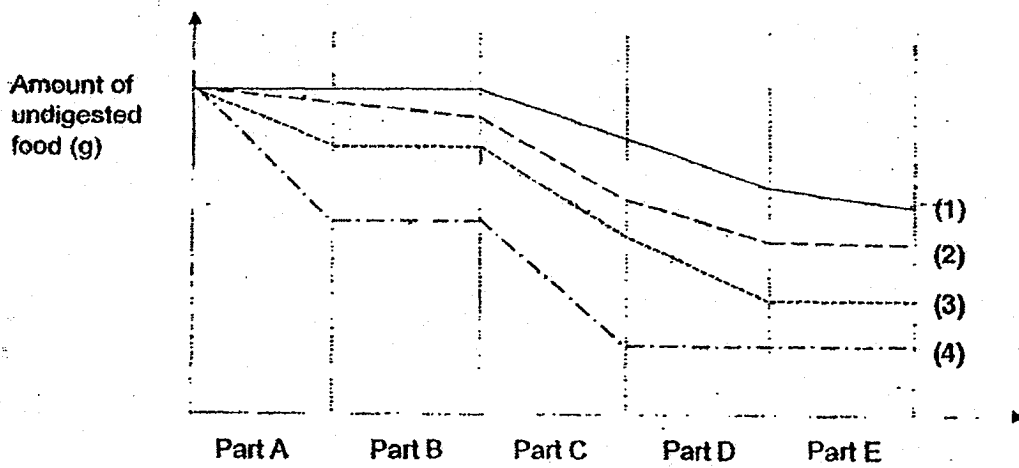
- (1) Plants take in only Z when there is light.
- (2) Plants produce Z during photosynthesis.
- (3) There is less X in exhaled air than in inhaled air.
- (4) There is more Y in inhaled air than in exhaled air.

10. Five samples of food were taken from the following five parts, A, B, C, D and E, of the human digestive system.

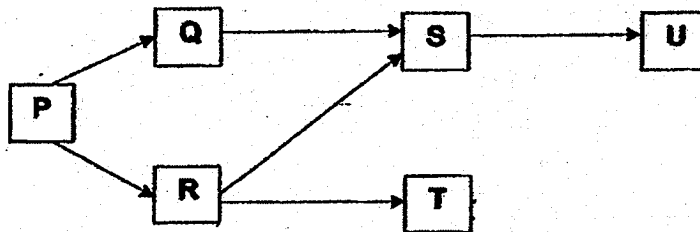


The amount of undigested food at the five parts was plotted in the graph shown below.

Which line in the graph below represents the amount of undigested food in the five parts, A, B, C, D and E?



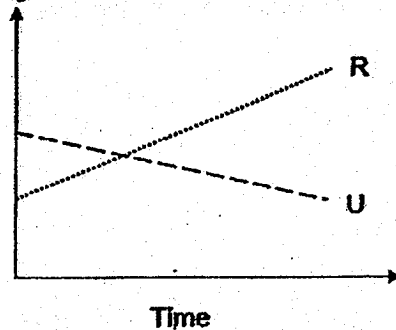
11. Study the food web below.



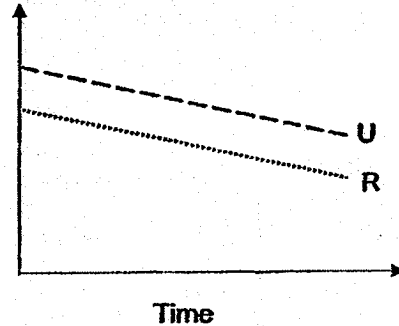
Organism X, which only feeds on U, was introduced into the habitat.

Which of the following graphs shows how the populations of R and U are most likely to be affected?

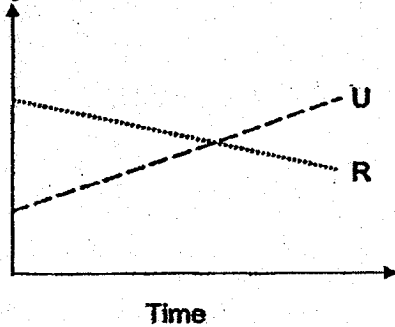
(1) Number of organisms



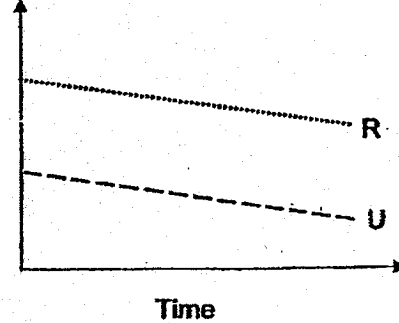
(2) Number of organisms



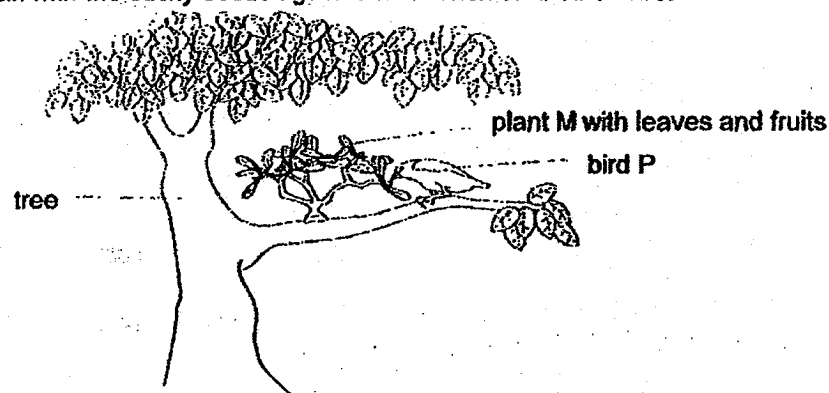
(3) Number of organisms



(4) Number of organisms

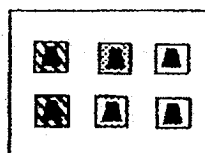


12. The diagram shows plant M which can only grow on tree branches. Bird P feeds on the fruits of plant M which have sticky seeds. When bird P flies away, it rubs its beak with the sticky seeds against the branch of another tree.

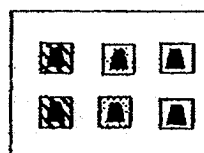


Based on the information above, which statement about plant M is correct?

- (1) Fruit of plant M are dispersed by wind
 - (2) Plant M grows on tree branches so that it can avoid birds
 - (3) Plant M gets its food and water from the branches of the tree,
 - (4) Bird P helps to disperse the seeds of plant M from one tree to another tree.
13. A farmer has two plots of land, X and Y, growing similar grape plants as shown below.



X



Y

Key:



450ml of water given to the plants daily



300ml of water given to the plants daily



0ml of water given to the plants daily



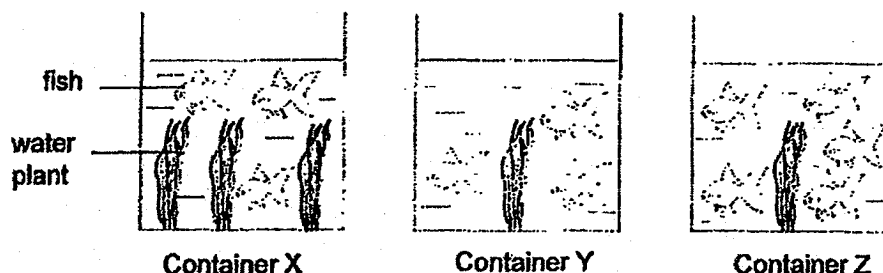
grape plant

Which of the following is/are the possible aim(s) of his experiment when he planted the grape plants on the two plots of land?

- A To find out if water is needed for the plant growth.
- B To find out how the amount of water helps in plant growth.
- C To find out if the soil in plot X has more nutrients than the soil in plot Y.

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

14. Rui En filled three identical containers with an equal amount of water taken from a river. All the containers were placed in a well-lit room filled with different number of similar type of fish and water plants.



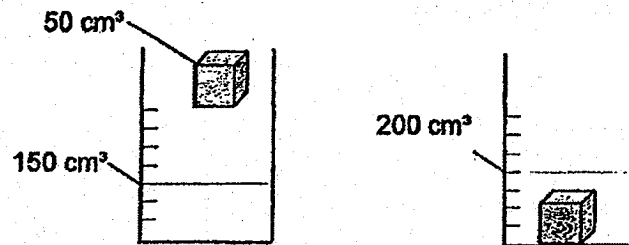
The water in all the containers have the same amount of oxygen at the start of the experiment. After 5 hours, she recorded the amount of dissolved oxygen in the water in container Y.

Time	After 5 hours
Amount of dissolved oxygen (units per litre)	12.0

Which of the following would be the correct amount of dissolved oxygen in the water in containers X and Z after 5 hours?

Amount of dissolved oxygen in the container (units per litre)		
	X	Z
(1)	10.0	11.5
(2)	10.0	12.5
(3)	13.0	11.5
(4)	13.0	12.5

15. A solid metal cube of 50 cm^3 was put into a measuring cylinder containing 150 cm^3 of water. The water level rose as shown.

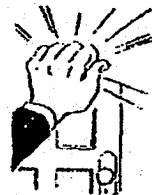


What can we conclude from the above experiment?

- (1) A solid has a definite volume and a definite shape.
 - (2) A solid has a definite volume but no definite shape.
 - (3) A solid has no definite volume and no definite shape.
 - (4) A solid has no definite volume but has a definite shape.
16. Which of the following requires only a pulling force?

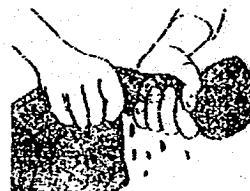
- (1) inflating a balloon

- (2) knocking on a door

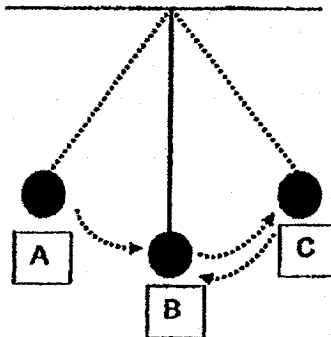


- (3) lifting a box

- (4) wringing a wet cloth



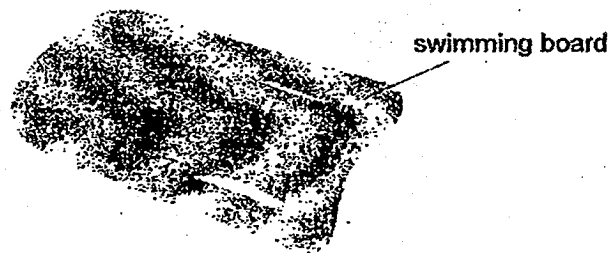
17. The diagram below shows a pendulum swinging from position A to position B to position C and then back to position B.



Which of the following shows the change in the amount of potential energy and kinetic energy in the pendulum?

	Potential energy from A $\rightarrow$ B	Kinetic energy from C $\rightarrow$ B
(1)	Decrease	Decrease
(2)	Decrease	Increase
(3)	Increase	Increase
(4)	Increase	Decrease

18. Peter wants to make a swimming board.



Which of the following is the most important property of the material to make the swimming board?

- (1) strong
- (2) flexible
- (3) transparent
- (4) cannot sink in water

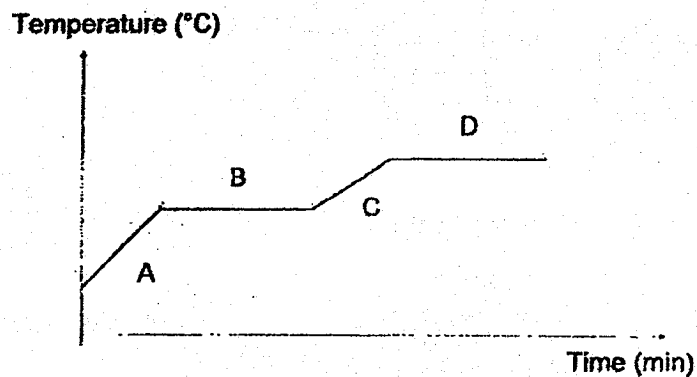
19. Study the table below.

	Freezing Point ($^{\circ}\text{C}$)	Boiling Point ($^{\circ}\text{C}$)
Substance X	5	80
Substance Y	40	105
Substance Z	16	118

Which of the following is true?

- (1) X and Z are solids at 10°C .
- (2) Y and Z are liquids at 20°C .
- (3) Y and Z are liquids at 80°C .
- (4) X and Y are gases at 100°C .

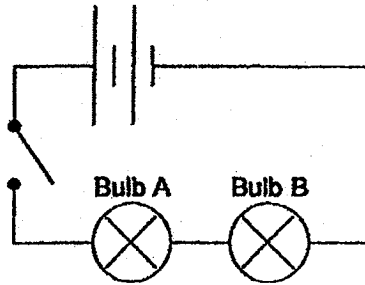
20. Substance X was heated for a period of time. The graph below shows the temperature change of substance X over time during the heating process.



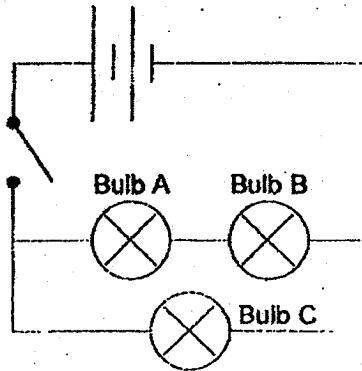
Which part of the graph, A, B, C or D, represents the melting process?

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

21. Two identical bulbs, Bulb A and Bulb B, are connected in a circuit as shown below. Both bulbs light up with equal brightness when the switch is closed.



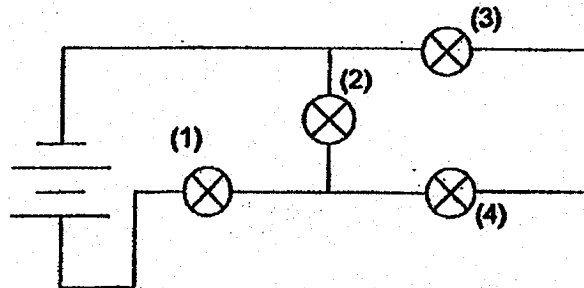
Another similar bulb, Bulb C, is then connected to the circuit as shown below.



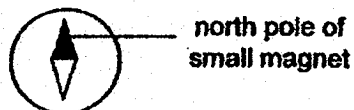
Which of the following correctly describes Bulb C?

- (1) Bulb C does not light up.
- (2) Bulb C is as bright as Bulb A.
- (3) Bulb C is dimmer than Bulb B.
- (4) Bulb C is brighter than Bulb A.

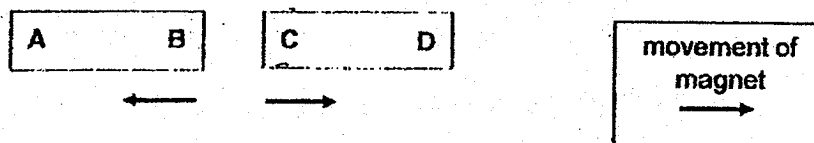
22. The circuit diagram shows two batteries connected to four bulbs. When one of the bulbs fuses, the other three bulbs still remain lit. Which bulb is this?



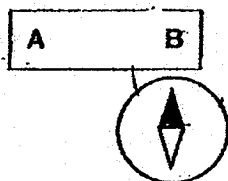
23. A compass has a small magnet that can rotate freely as shown.



Andy brought 2 magnets near each other. He observed their movements as shown below.



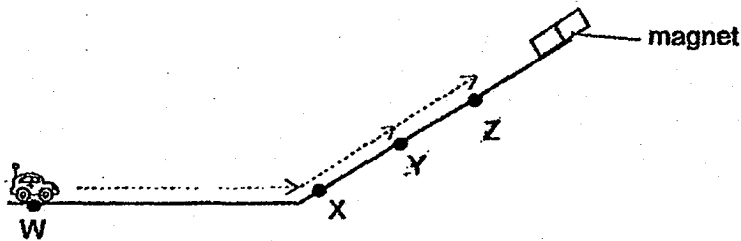
He placed a compass at B and observed the position of its needle which is as shown below.



Which of the following are possible poles of A and C?

	Pole at A	Pole at C
(1)	South	South
(2)	South	North
(3)	North	North
(4)	North	South

24. Sally pushed a toy car from point X to point Y to point Z as shown below.



When the toy car was released at point Y, it would roll down the slope. When the toy car was released at point Z, it continued to move up the slope. Which are the forces acting on the toy car at points Y and Z?

	X			Z		
	frictional force	gravity	magnetic force	frictional force	gravity	magnetic force
(1)	✓	✓		✓	✓	✓
(2)	✓	✓	✓	✓		✓
(3)	✓	✓	✓	✓	✓	✓
(4)		✓		✓		✓

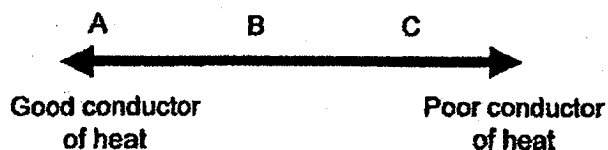
25. A man was pedalling a bicycle up and down a slope of a cemented road.



Which of the following explains why his speed increases as he moves down the slope?

- (1) His weight increases.
- (2) More gravity is pulling the man and the bicycle.
- (3) There is less frictional force between the bicycle and the slope.
- (4) The man and the bicycle are moving in the same direction as gravity.

26. Three conductors of heat, A, B and C, have been arranged according to how well they conduct heat as shown below.

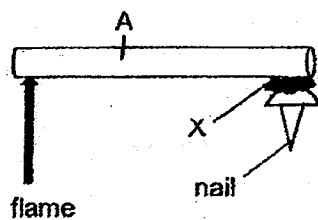


The freezing points of three substances, X, Y and Z are shown in the table below.

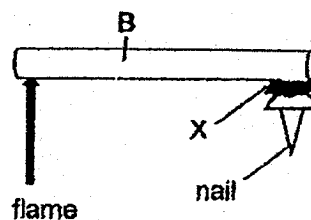
Freezing point of substances		
X	Y	Z
43°C	116°C	146°C

A nail with substances X, Y or Z was glued onto conductors A, B or C at equal distance from the flame as shown below. Which nail will be the first to drop?

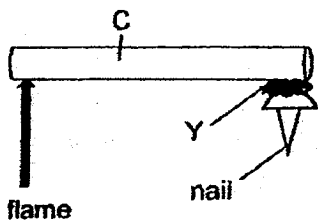
(1)



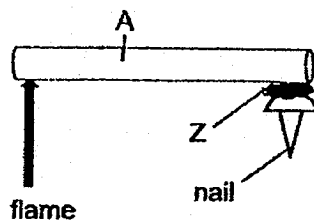
(2)



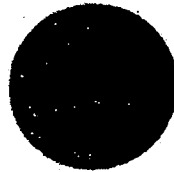
(3)



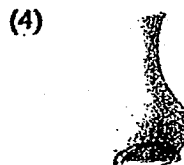
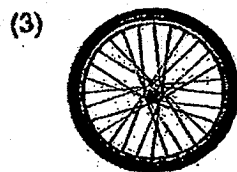
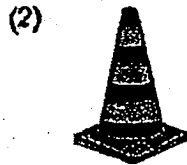
(4)



27. A shadow is shown in the diagram below.



Which of the following objects can cast the shadow shown?



28. In the diagram below, a boy is pushing a trolley.



Which is the energy conversion shown above?

- (1) potential energy of boy $\rightarrow$ kinetic energy of trolley
- (2) kinetic energy of boy $\rightarrow$ potential energy of trolley $\rightarrow$ kinetic energy of trolley
- (3) potential energy of boy $\rightarrow$ kinetic energy of boy $\rightarrow$ kinetic energy of trolley
- (4) kinetic energy of boy $\rightarrow$ potential energy of boy $\rightarrow$ kinetic energy of trolley



PRIMARY 6 PRELIMINARY EXAMINATION 2018

Name : _____ ()

Date: 2 AUGUST 2018

Class : Primary 6 ()

Duration : 1h 45min

Parent's Signature : _____

Marks: _____ / 44

SCIENCE BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

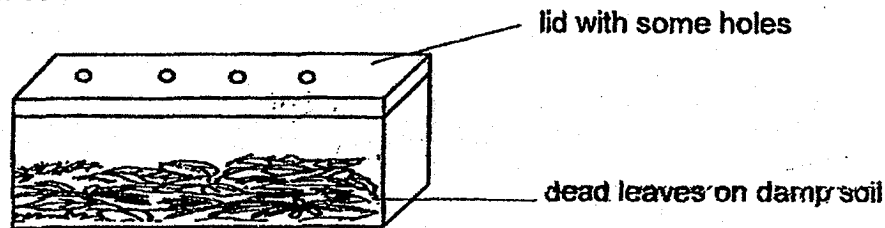
Write your answers in this booklet.

Booklet A	56
Booklet B	44
Total	100

Section B

For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [] at the end of each question or part question.

29. Simon carried out an experiment to study the effect of some environmental factors on dead leaves. He placed the dead leaves and some damp soil in a container as shown below.



After a few weeks, the dead leaves turned into a damp black substance which could be used as fertiliser.

- (a) Name the process that caused the dead leaves to turn into a damp black substance. [1]

- (b) Without changing any of the apparatus used nor adding water, suggest two methods how Simon could make the dead leaves turn into the black substance faster. plain your answer. [3]

Method 1: _____

Explanation: _____

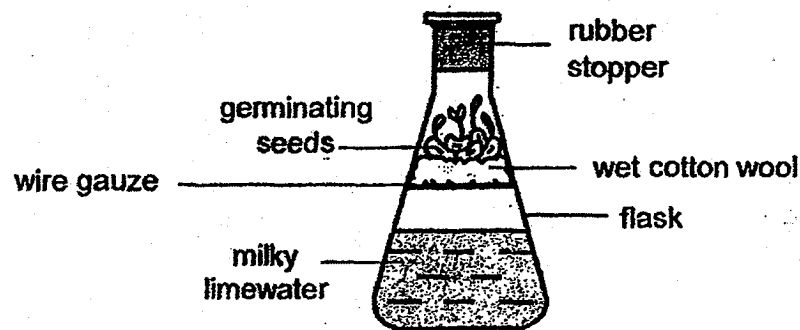
Method 2: _____

Explanation: _____

Score	4
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30. Ahmad prepared a set-up to find out whether germinating seeds produce carbon dioxide. He soaked five seeds in water before placing them in the flask. He left the set-up in a warm and dark place for two days.

After two days, he observed that some of the seeds in the set-up germinated and the limewater turned milky. Limewater turns milky in the presence of carbon dioxide.



- (a) Explain why the limewater turned milky.

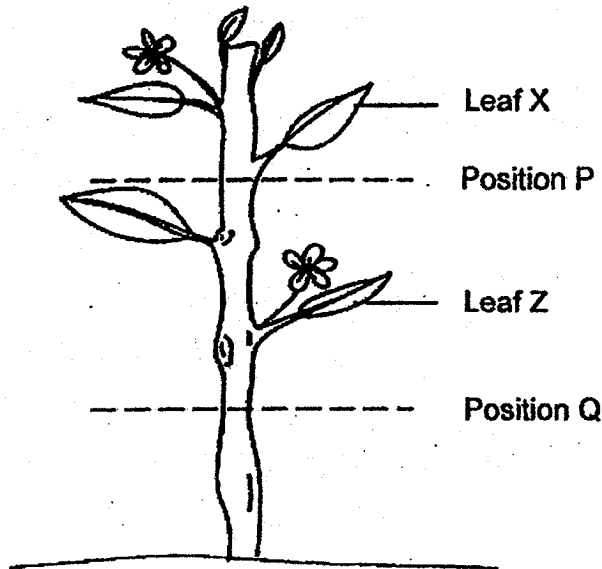
[1]

- (b) Some of the seeds did not germinate. What will happen to these seeds after a week? Explain your answer.

[2]

Score	
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31. Emily removed the food and water-carrying tubes from the stem of a plant at position P and the food-carrying tubes from the stem at position Q.

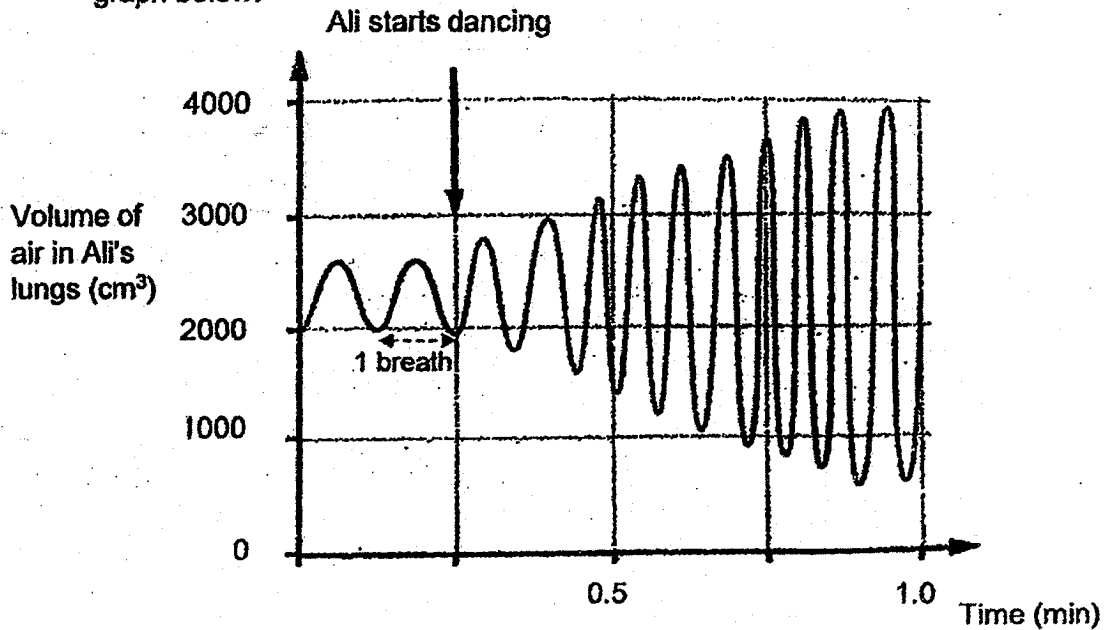


- (a) After some time, Emily observed that Leaf X had withered but not Leaf Z. Give an explanation for her observation. [1]

- (b) At the same time, Emily also observed a swelling in the stem above the cut at position Q. After a week, the plant died. Explain why this happened. [1]

Score	
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32. Ali is a dancer. As he dances, his rate of breathing changes as shown in the graph below.



(a) From the graph above, describe the changes in the following when Ali dances:

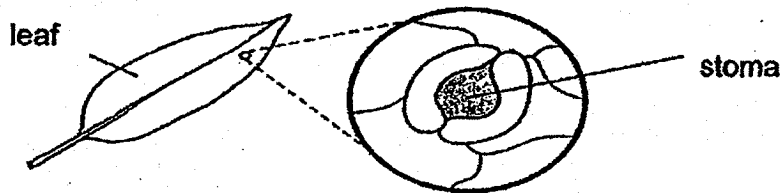
- (i) Volume of air taken in [1/2]

- (ii) Ali's breathing rate [1/2]

(b) Describe how oxygen in the environment reaches Ali's legs as he dances. [2]

Score	3
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33. Leaves have tiny openings called stomata on their surfaces.



Some of the gases that move through the stomata are oxygen, carbon dioxide and water vapour.

Meimei measured the changes in the size of the stomata of a plant placed by the window at different times of a particular day. She calculated the average size of the stomata and recorded them in the table below.

Time of the day	Average size of stomata (units)
2 a.m.	1
6 a.m.	1
8 a.m.	2
10 a.m.	4
2 p.m.	4
4 p.m.	4
6 p.m.	2
10 p.m.	1

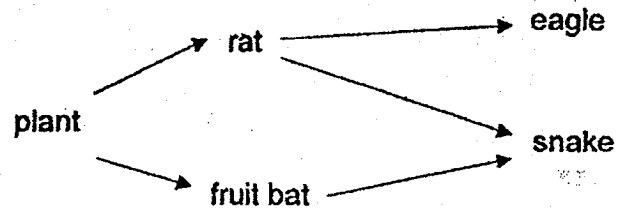
- (a) Based on the table above, the plant photosynthesises the most from 10 a.m. to 4 p.m. Explain why. [1]

- (b) Explain how the change in the size of the stomata in the presence of light can be a disadvantage to a plant growing in a desert. [1]

- (c) What do you think Meimei did in the experiment to ensure that her results were reliable? [1]

Score	
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34. The food web below shows the food relationships between organisms found on an island.



- (a) A large number of snakes were killed by some hunters. Explain how this activity affected the population of the food producer.

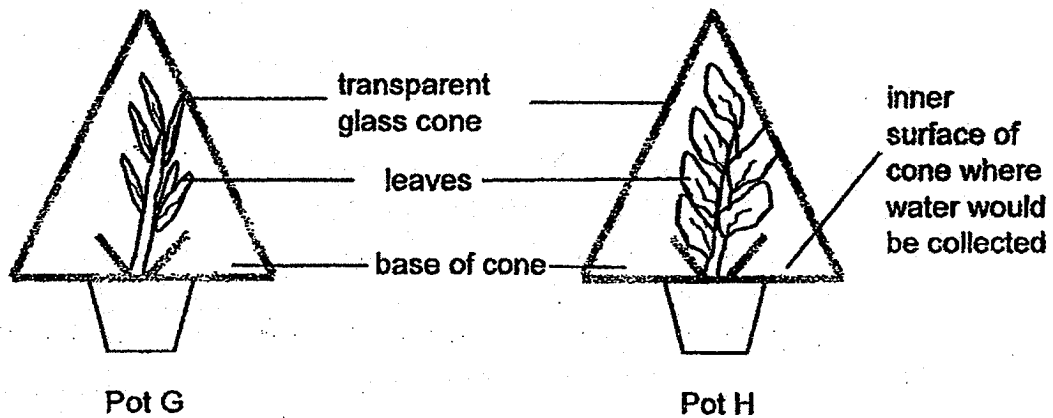
{1}

- (b) A huge forest fire broke out on the island. Two consumers were able to escape to another island. Which are the two consumers and give a reason for your answer.

[2]

Score	3
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35. Jack conducted an experiment using two similar types of plants for pots G and H, with different sizes of leaves. The two pots of plants with the same amount of soil were placed in a garden and watered with the same amount of water at the start of the experiment. A transparent glass cone was placed over each plant where water would be collected at the base as shown.



After one day, Jack measured the volume of water collected and recorded the results as shown below:

Pot	Volume of water at the base (cm ³)	
	at the beginning	after one day
G	0	20
H	0	40

- (a) Which pot, G or H, collected more water? Explain why more water was collected at its base of the cone. [2]

The diagram below shows two types of leaves found growing on different trees, X and Y. During winter, the water stays frozen as snow on the ground and very little water reaches the roots of the trees.



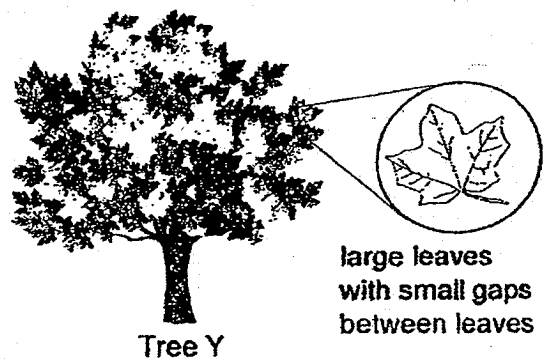
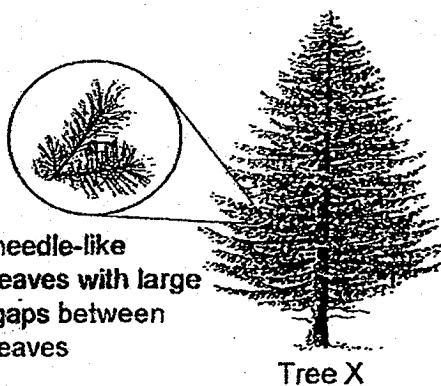
Leaves from Tree X



Leaves from Tree Y

- (b) Which tree, X or Y, will not need to shed its leaves during winter? Explain your answer.

[1]

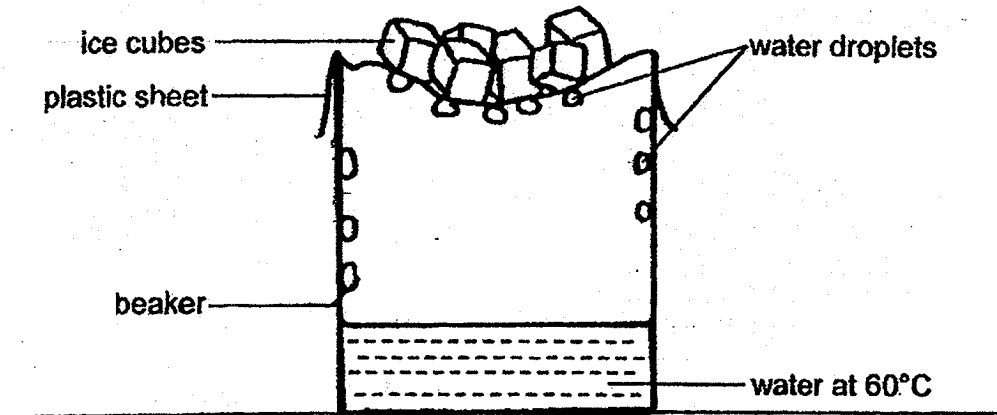


- (c) Strong winds can cause tree branches to break. Branches of which tree, X or Y, would more likely break when there is a strong wind? Explain why.

[1]

Score	2
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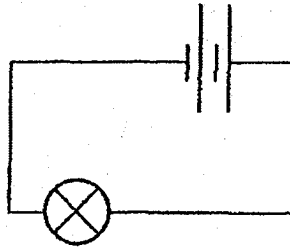
36. The following set-up represents the water cycle.



- (a) Explain how the water droplets are formed on the underside of the plastic sheet. [2]

- (b) What would happen to the rate at which the water droplets are formed if the temperature of the water placed in the beaker was increased to 95°C? Explain your answer. [2]

37. Ahmad set up the following circuit.



He measured the brightness of the bulb with a light sensor. He then added another battery and measured the brightness of the bulb. He repeated the experiment for different number of batteries and recorded his measurements in the table below.

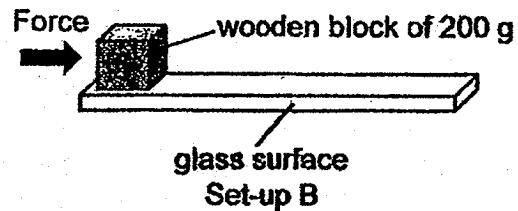
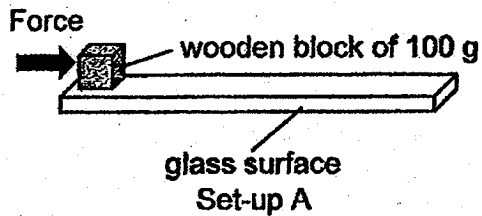
Number of batteries	Brightness of bulb (units)
2	1 000
3	?
4	3 000
5	0
6	0

- (a) What is a possible measurement for the brightness of the bulb when three batteries were used? [1]

- (b) Based on the results, when the number of batteries used is four or below what is the relationship between the brightness of the bulb and the number of batteries? [1]

- (c) Give a reason why the brightness of the bulb is zero when five batteries were used. [1]

38. Matthew had 2 set-ups, A and B, to find out how the type of surface affects the distance moved by an object on the surface. He applied equal force on each of the blocks and measured the distance travelled by them.



- (a) Matthew's teacher said that his set-ups were incorrect. Describe two changes that Matthew should make to Set-up B so that he can test his aim correctly. [2]

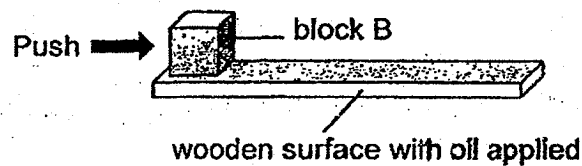
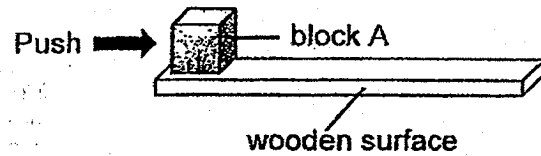
- i) _____

 ii) _____

- (b) Besides friction and the force exerted by Matthew, which other force is present in this experiment? [1]

Score	
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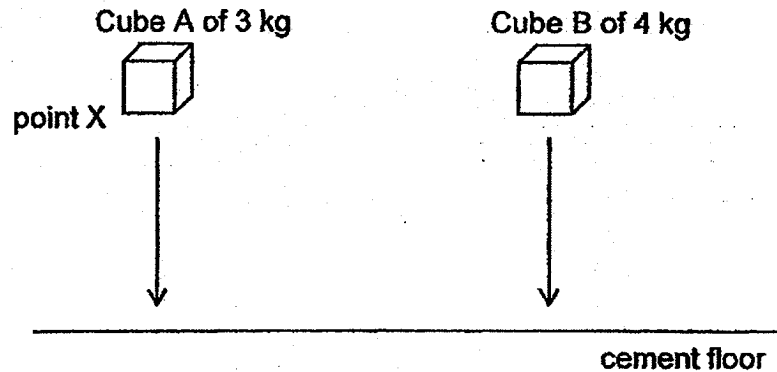
Matthew now placed two identical blocks, A and B, each on a wooden surface. He applied oil onto one of the wooden surfaces as shown below.



(c) Which block, A or B, would require less force to move? Explain why. [2]

Score	2
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39. The diagram below shows two similar sized iron cubes released from point X. There was a loud thud when the cubes landed on the cement floor.



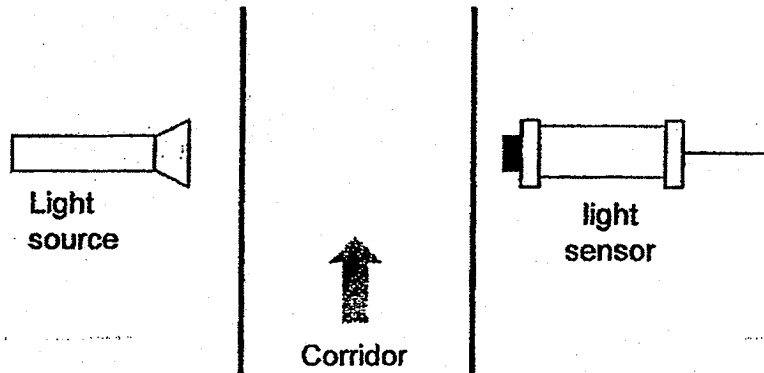
- (a) State the energy conversion when Cube A was released from the height and landed on the cement floor. [1]

	→		→		+	
energy in Cube A at point X		energy in Cube A when it falls		energy in Cube A when it lands		Heat energy in Cube A when it lands

- (b) Which cube, A or B, will produce a louder sound? Explain your answer. [2]

Score	3
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40. The following set-up is installed along a corridor to count the number of students walking along the corridor into a classroom.



The following table shows the light sensor readings when the set-up is working.

	Amount of light detected (units)
When someone walks and enters the classroom along the corridor	X
When no one is present	300

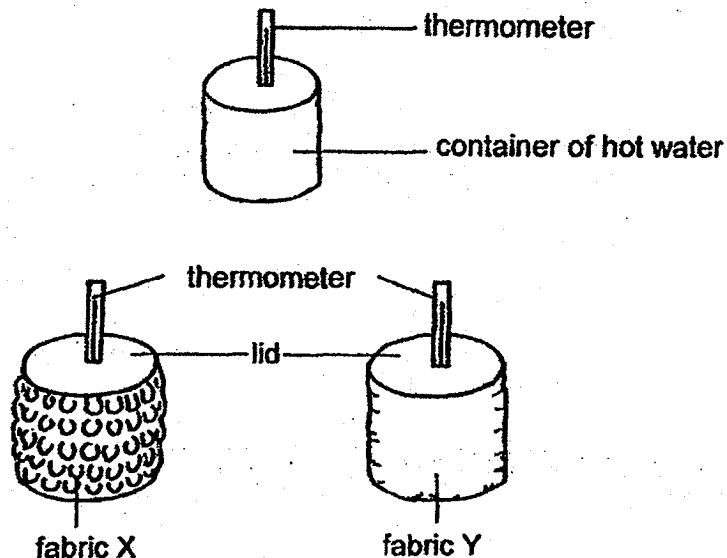
- (a) State the value of X. [1]

_____ unit(s)

- (b) Explain how the above set-up is able to detect the number of people walking past the corridor. [2]

Score	3
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41. Meiling used two fabrics, X and Y, to wrap around similar containers of hot water.



She recorded the temperature of the water at regular intervals in the table as shown below.

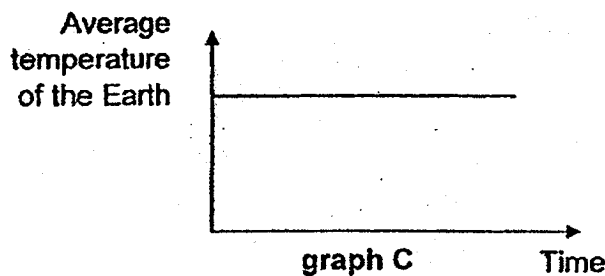
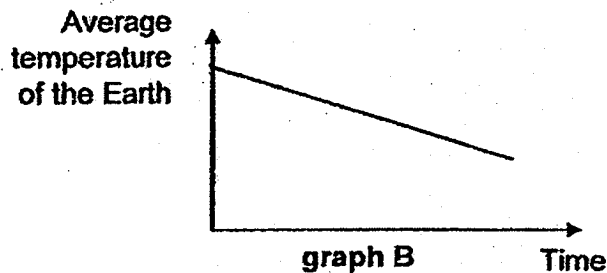
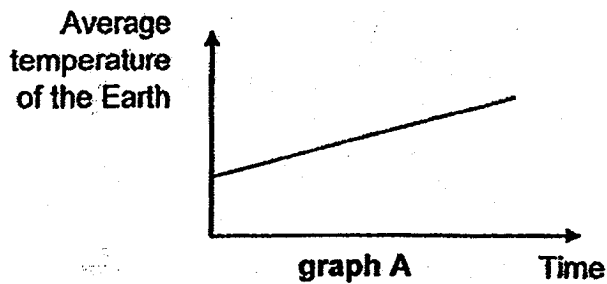
	0 min	5 min	10 min	15 min	20 min
Temperature of water in container wrapped with Fabric X ($^{\circ}\text{C}$)	70	68	63	60	55
Temperature of water in container wrapped with Fabric Y ($^{\circ}\text{C}$)	70	62	55	49	45

- (a) How does the temperature of the water in the container wrapped with Fabric X change as the time increases? [1]

- (b) Which fabric should Meiling use to make a shirt to keep a person cooler in a warm surrounding? Explain your choice. [2]

Score	
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Carbon dioxide is a greenhouse gas. An increase in the amount of carbon dioxide in the Earth's atmosphere results in global warming. Study the three graphs shown below on the change in the average temperature of the Earth over a period of time.



- (c) Which graph, A, B or C, shows the correct change in the average temperature of the Earth if the amount of carbon dioxide increases over time? Explain your answer. [1]

End of Booklet B

Score	1
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EXAM PAPER 2018

LEVEL : PRIMARY 6
SCHOOL : TAO NAN SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAM

BOOKLET A

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

BOOKLET B

- Q29. (a) Decomposition.**
(b) Method 1: Place the apparatus in a warmer place.
Explanation: In a warmer place, the decomposition would occur at a faster rate.
Method 2: Poke more holes to the lid.
Explanation: More air can enter and increase the rate of decomposition.
- Q30. (a) When the seeds germinated, they produced carbon dioxide which came into contact with the limewater and caused it to turn milky.**
(b) The seeds would die and decompose. The presence of warmth, water and air allowed the bacteria in the flask to decompose the dead seeds.
- Q31. (a) Water can be transported from the roots to leaf Z but not leaf X, thus leaf X could not photosynthesise and hence it withered.**
(b) There is swelling as the food produced by the plant during photosynthesis cannot be transported to the roots, causing them to die. Therefore, the roots can no longer absorb water and the plant died.
- Q32. (a) (i) The volume of air taken in increases.**
(ii) His breathing rate increases.
(b) Ali takes in oxygen through his mouth and nose, which enters his lungs where it is absorbed by the air sacs. The heart then pumps the oxygen-rich blood to his legs.
- Q33. (a) The average size of the stomata is the biggest hence the most carbon dioxide is taken in.**
(b) When there is a huge amount of light, the size of the stomata of the desert plant increases, resulting in an increase in the amount of water loss.
(c) She measured the size of at least 3 stomata for each timing.
- Q34. (a) Decreases. There are fewer snakes to feed on rats and fruit bats. Hence their population increases and they feed on more plants.**
(b) The eagle and fruit bat. Both of them have wings that allow them to fly and escape to another island, while the rat and snake are unable to fly.

- Q35. (a) Pot H. The leaves have a bigger exposed surface area. There is more stomata hence more water is lost. More water vapour condensed into the cooler inner surface of the cone.
(b) Tree x. The leaves have a smaller exposed surface area. There are fewer stomata, hence the rate of transpiration decreases.
(c) Tree Y. There are smaller gaps between the leaves compared to that of Tree X, thus wind cannot blow through Tree Y as easily and hence the branches are more likely to break.
- Q36. (a) The hot water evaporated to become water vapour, which condensed on the cooler underside of the plastic sheet
(b) Increase. Water would evaporate faster and more water vapour would condense on the cooler underside of the plastic sheet.
- Q37. (a) 2000 units.
(b) As the number of batteries increases, the brightness of the bulb increases.
(c) There is too much electrical energy passing through the circuit, causing the bulb to fuse.
- Q38. (a) (i) Use the same wooden block as set-up A.
(ii) Change the glass surface to a metal surface.
(b) Gravity.
(c) Block B. The oil reduced the friction between block B and the wooden surface, thus less force is required to move.
- Q39. (a) Gravitational potential $\rightarrow$ Kinetic $\rightarrow$ Sound
(b) Cube B. It has a greater mass than cube A, thus it possess more gravitational potential energy, which is converted to more kinetic energy when it falls and hence more sound energy when it lands.
- Q40. (a) 0 unit(s).
(b) When someone walks pass the light sensor, the light is blocked as the person is opaque and the sensor detects 0 units of light. By recording the number of times the sensor detects no light, the number of people walking past the corridor can be detected.
- Q41. (a) As the time increases, the temperature of the water in the container wrapped with Fabric X decreases.
(b) Fabric Y. The water in the container wrapped with Fabric Y had a lower temperature after 20 minutes. It is a better conductor of heat and will increase the amount of heat loss from the person to the surroundings.
(c) Graph A. If there is more carbon dioxide, more heat would be trapped in the Earth's atmosphere and thus the average temperature of the Earth increases.