Index No. [ ][ ][ ][ ][ ] – [ ]

PRELIMINARY EXAMINATION 2017

SCIENCE

SECTION A

Time: 1 h 45 min

Name : _____ ( )

Class : Primary 6____

Date : 4 August 2017

Parent's Signature: _____ ____

INSTRUCTIONS TO CANDIDATES

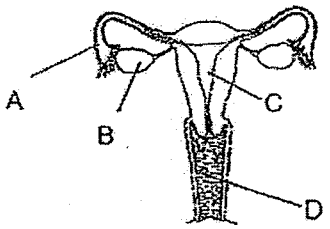
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
WRITE YOUR ANSWERS IN THIS BOOKLET

Section A (28 × 2 marks)
For questions 1 to 28, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the optical Answer Sheet (OAS) provided.

1. Nutrients from the surroundings need to pass through the parts of a plant cell in order to reach its nucleus. Which of the following shows the path taken by the nutrients?

   (1) cell membrane → cell wall → cytoplasm → nucleus
   (2) cell wall → cell membrane → cytoplasm → nucleus
   (3) cell wall → cytoplasm → cell membrane → nucleus
   (4) cytoplasm → cell wall → cell membrane → nucleus

2. The diagram below shows the female human reproductive system.



   Where does the fertilised egg develop into a baby?

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

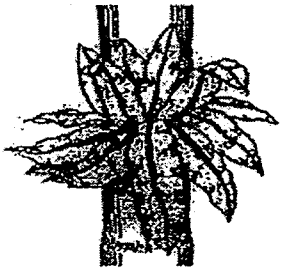
3. Fadilah conducted an experiment by growing some green bean seeds in a pot of soil.

   Which of the following should she choose in order to have the tallest and thinnest seedlings at the end of her experiment?

	Location	Condition of soil	Number of seeds
(1)	near the window	moist	30
(2)	in the refrigerator	dry	5
(3)	near the window	moist	5
(4)	in a dark cupboard	dry	30

4. The diagram below shows the mushroom and the Bird's nest fern.

mushroom



Bird's nest fern

Which of the following compares the difference between the two organisms correctly?

	mushroom	Bird's nest fern
(1)	It reproduces from spores.	It reproduces from seeds.
(2)	It feeds on dead plants.	It feeds on dead animals.
(3)	It does not need sunlight to grow.	It needs sunlight to grow.
(4)	It is a flowering plant.	It is a non-flowering plant.

5. Daniel placed some watermelon seeds in six identical pots as shown in the table below.

Pot	Number of seeds	Type of soil	Presence of sunlight	Amount of water added daily(ml)
A	8	garden	no	80
B	16	clayey	yes	50
C	8	sandy	no	50
D	16	garden	yes	50
E	8	clayey	no	30
F	16	sandy	yes	50

Which three pots should he use to find out the effects of the type of soil on the growth of the seedlings?

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

6. Wynne placed a plant with two white flowers, K and L, into a beaker of blue-coloured water. She removed an outer ring of the stem at positions S and T as shown in Diagram 1 below. A few hours later, she observed that the flower K turned blue while flower L remained white. Diagram 2 shows the cross-sectional view of the stem of the plant.

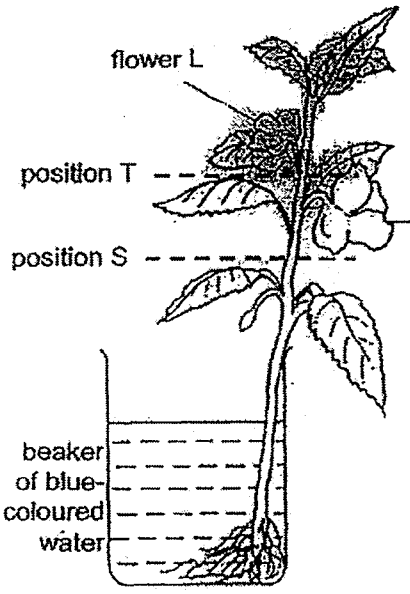


Diagram 1

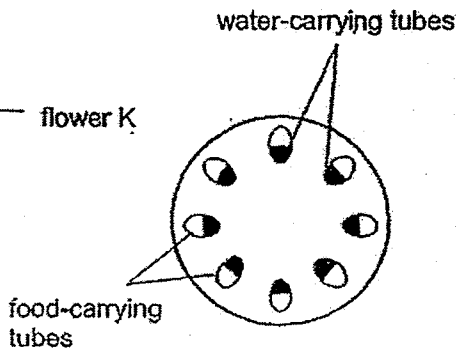


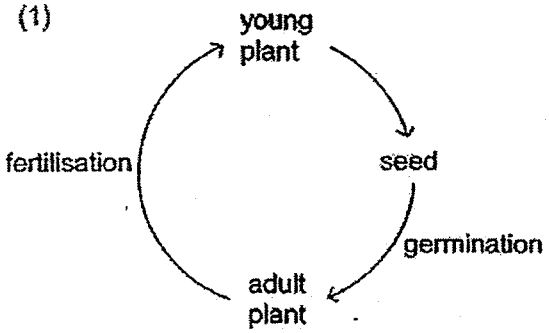
Diagram 2

Based on Wynne's observation, which tubes did she most likely remove at positions S and T?

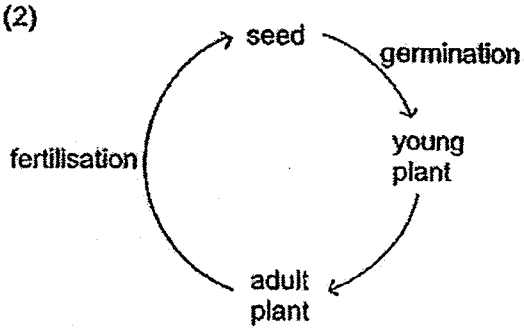
	Tube(s) removed at position S	Tube(s) removed at position T
(1)	food-carrying tubes	water-carrying tubes
(2)	food-carrying tubes	food-carrying and water-carrying tubes
(3)	water-carrying tubes	food-carrying tubes
(4)	food-carrying and water-carrying tubes	water-carrying tubes

7. Which diagram correctly shows the order of stages and processes in the life cycle of a flowering plant?

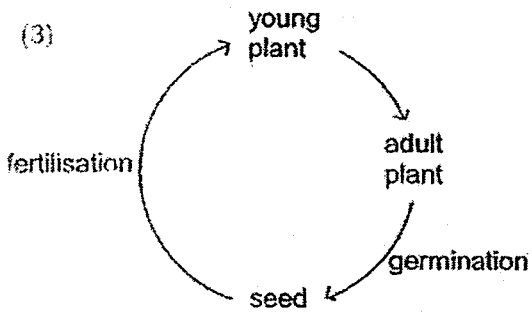
(1)



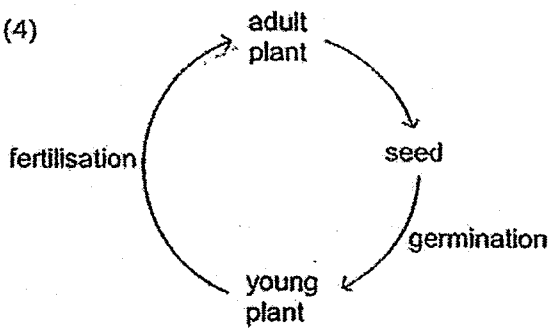
(2)



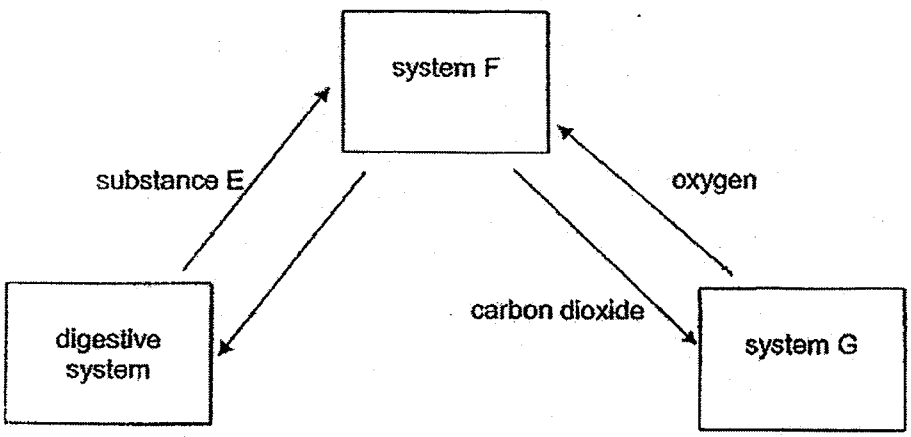
(3)



(4)



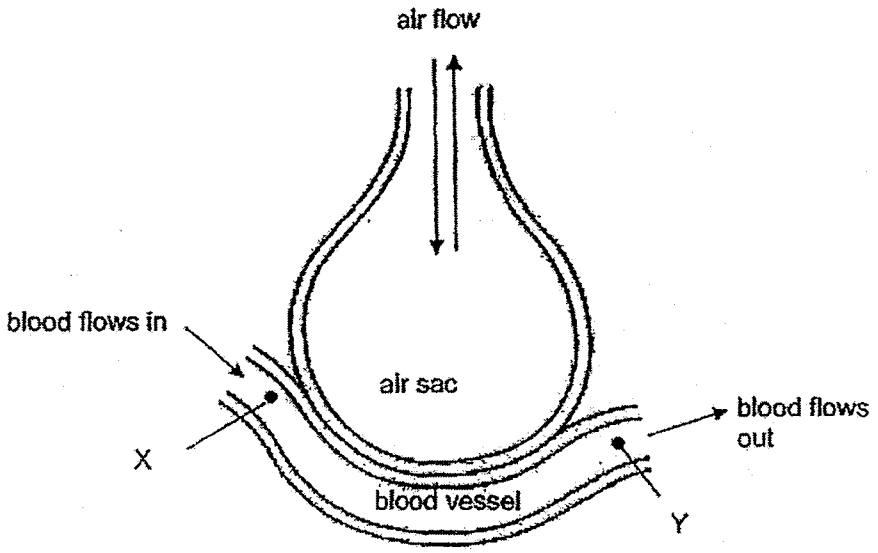
8. The diagram below shows a part of the interaction between systems in the human body.



Which of the following correctly represents E, F and G?

	E	F	G
(1)	digested food	respiratory	circulatory
(2)	digested food	circulatory	respiratory
(3)	undigested food	circulatory	respiratory
(4)	undigested food	respiratory	circulatory

9. The diagram below shows the movement of blood in a blood vessel on the wall of an air sac in the lungs.



Which of the following statements are true?

A : Blood at X has more oxygen than the blood at Y.

B : Blood at Y has more oxygen than the blood at X.

C : The air entering the air sac has more carbon dioxide than the air that is leaving.

D : The air entering the air sac has less carbon dioxide than the air that is leaving.

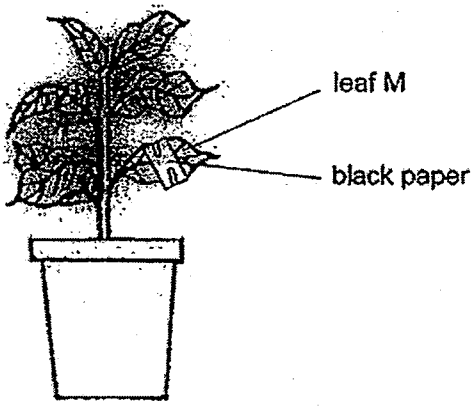
(1) A and C only

(2) A and D only

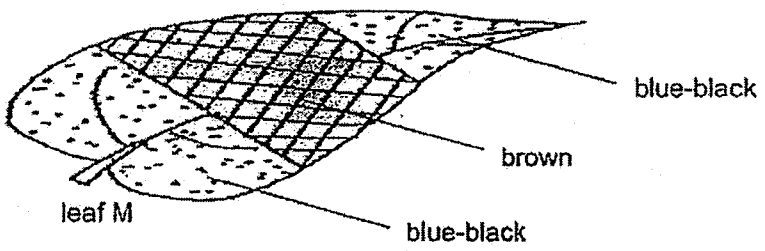
(3) B and C only

(4) B and D only

10. A potted plant was placed in the dark for 48 hours to remove any starch present in its leaves. One of its leaves, leaf M, was then partially covered with black papers on both of its sides. After doing so, the potted plant was placed under the sun for six hours as shown below.



At the end of the experiment, leaf M was plucked off the stem. The black paper was removed and the leaf was tested for starch by using iodine solution. Iodine solution will change from brown to blue-black if there is starch in the leaf.

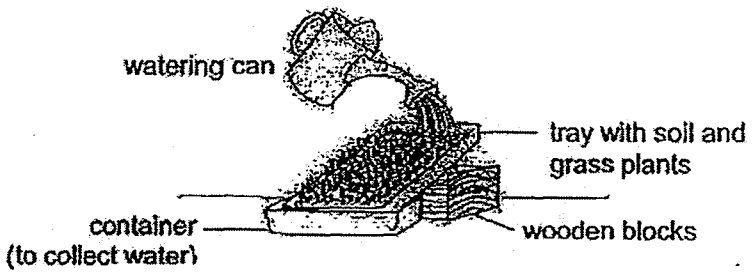


Which of the following can be concluded from this experiment?

A : Carbon dioxide is needed for photosynthesis.
B : Chlorophyll is needed for photosynthesis.
C : Sunlight is needed for photosynthesis.
D : Water is needed for photosynthesis.

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

11. Hema carried out an experiment to find out if the height of the grass plants growing on a slope affects the amount of soil washed away by rain water. The diagram below shows one of her set-ups. She poured some water on to the tray with a watering can and waited for water to flow down the tray and into the container placed below it.



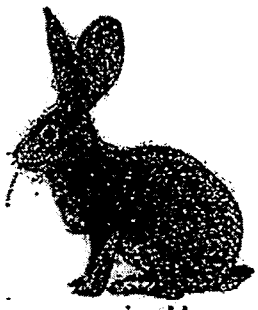
Hema repeated her experiment with two other trays of grass plants.
Which of the following should be kept constant for a fair test?

A : Type of soil in the tray
B : Number of plants in the tray
C : Height of grass plants in the tray
D : Amount of soil collected in the container

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

12. The diagram below shows two animals, K and L. One of the animals lives in a hot environment but its body temperature is usually above the surrounding temperature. The other animal lives in a cold environment and its body temperature is always above the surrounding temperature.

animal K

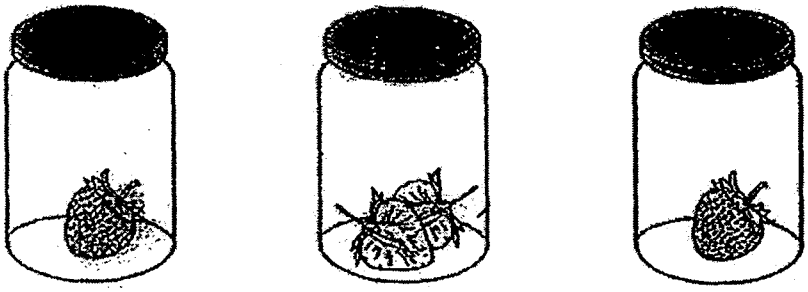


animal L

Based on the size of the ears of the two animals, which of the animals is more likely to live in the hot environment and how does the characteristic help it to survive better in that environment?

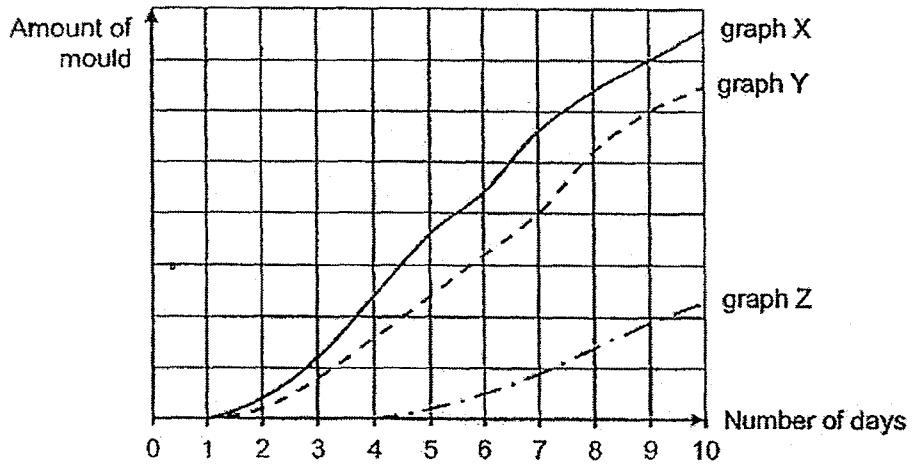
	Animal	Adaptation
(1)	K	It has smaller ears to help it gain less heat from its surroundings.
(2)	K	It has smaller ears to help it lose less heat to its surroundings.
(3)	L	It has bigger ears to help it gain more heat from its surroundings.
(4)	L	It has bigger ears to help it lose more heat to its surroundings.

13. Gopal carried out an experiment to study the decomposition of food. He used three similar strawberries in his experiment as shown below. Strawberry B was cut in half.



strawberry A (kept at 5°C) | strawberry B (kept at 30°C) | strawberry C (kept at 30°C)

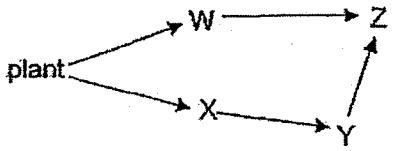
He measured and recorded the amount of mould growing on each of the strawberries over ten days. His results are shown in the graph below.



Which of the following correctly matches the strawberries to the graphs?

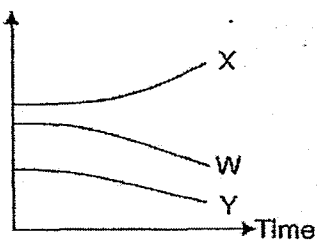
	Graph X	Graph Y	Graph Z
(1)	A	C	B
(2)	B	A	C
(3)	B	C	A
(4)	C	B	A

14. The diagram below shows a food web in a habitat.

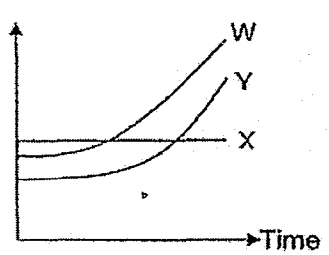


Which one of the following graphs shows the correct changes in the populations of W, X and Y when Z increases?

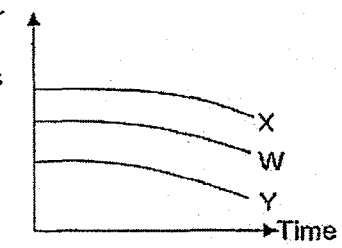
(1)



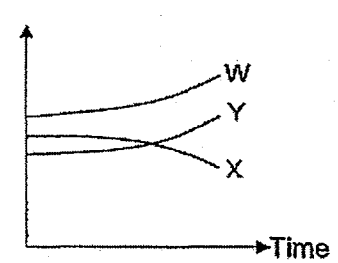
(2)



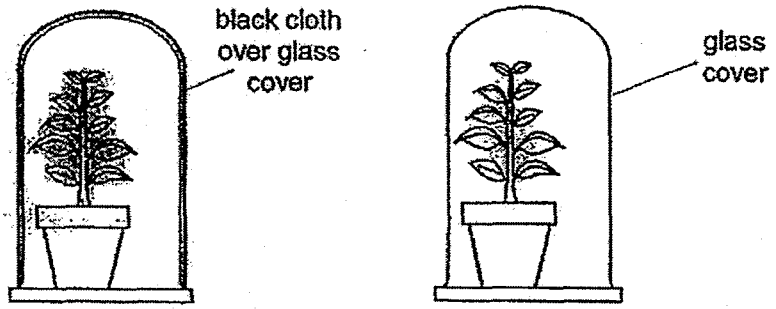
(3)



(4)



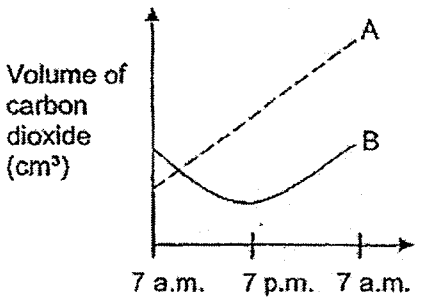
15. Alex used two similar pots of plants to set up an experiment as shown below.



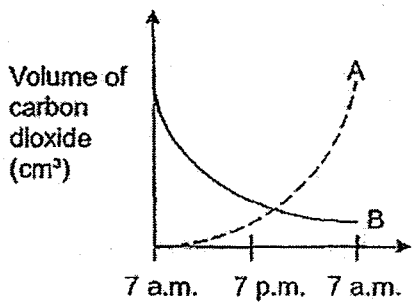
He recorded the amount of carbon dioxide in both set-ups at hourly intervals, starting from 7 a.m. till 7 a.m. the next morning.

Using the results that he has collected, he plotted a graph to show the amount of carbon dioxide in each of the boxes. Which of the following graphs correctly shows the graph that Alex has plotted?

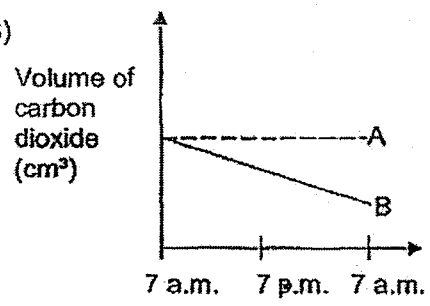
(1)



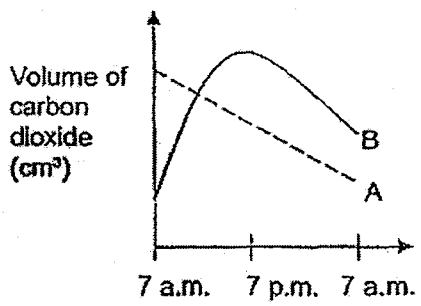
(2)



(3)



(4)



16. Which of the following would happen after large areas of forests are cut down?

(1) The soil in the area would become less fertile.

(2) More oxygen would be absorbed from the air.

(3) Less heat would be trapped in the atmosphere.

(4) More variety of animals would be living in the area.

17. Jacky placed two black tables under the Sun for three hours as shown below. One of the tables was made of steel and the other was made of wood.

steel table wooden table

Jacky touched both tables and found that the steel table felt hotter. Which of the following best explains his observation?

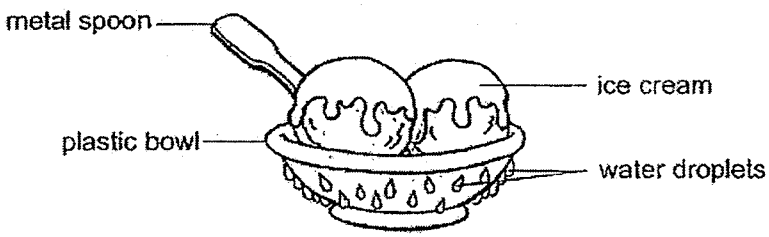
(1) Steel expands more than wood.

(2) Steel conducts heat better than wood.

(3) The steel table is higher in temperature.

(4) Jacky's hands gained heat from the tables.

18. A plastic bowl of ice cream was left on the table at room temperature. After several minutes, droplets of water were observed to be on the outer surface of the plastic bowl and the ice cream started to melt. The metal spoon felt cold when touched.



Which of the following correctly explain the observations?

A : The metal spoon conducted heat to the ice cream.

B : The ice cream lost heat to the plastic bowl and melts.

C : The plastic bowl conducted heat away from the ice cream.

D : The water vapour in the surroundings lost heat and condensed on the plastic bowl.

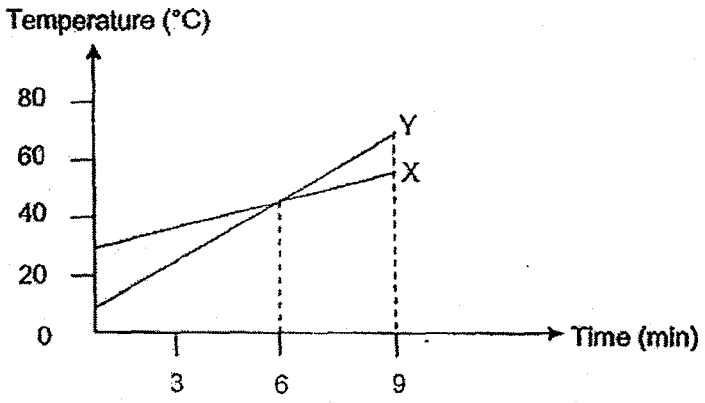
(1) A and D only

(2) B and C only

(3) C and D only

(4) A, B and D only

19. George had two identical beakers, X and Y, each filled with the same amount of water. He heated both beakers. The graph below shows the changes in the temperature of the water in both beakers for nine minutes.



Based on the given information, which of the following statements is/are definitely true?

A : The water in beaker Y was heated with a stronger flame.

B : At the 6th minute, both beakers contained the same amount of water.

C : If George continued heating both beakers, the water in beaker X will boil first.

(1) A only

(2) C only

(3) A and B only

(4) A, and C only

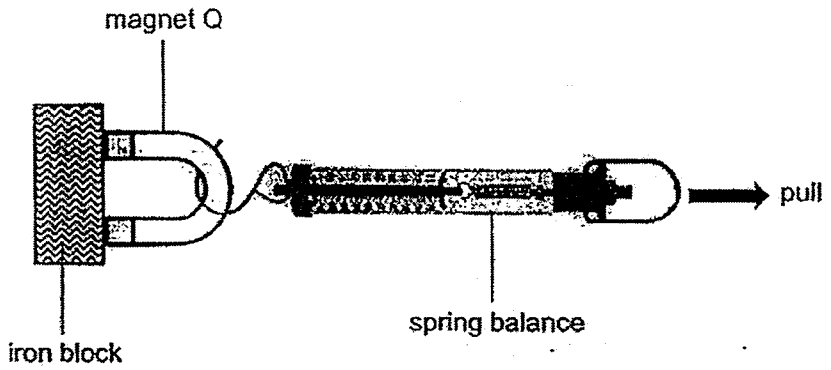
20. The table shows the melting and boiling points of two substances X and Y.

Substance	Melting point (°C)	Boiling point (°C)
X	30	90
Y	140	250

Which of the following shows the correct states of X and Y at 130°C?

	X	Y
(1)	solid	solid
(2)	liquid	gas
(3)	gas	solid
(4)	gas	liquid

21. Hulwen set up an experiment below to measure the amount of force required to separate four U-shaped magnets, Q, R, S and T, from an iron block.



She pulled the spring balance until the magnet was separated from the iron block and she recorded the results in a table below.

Magnet	Amount of force used (units)
Q	5
R	13
S	11
T	9

Based on the results, which magnet would be able to attract the most number of paper clips?

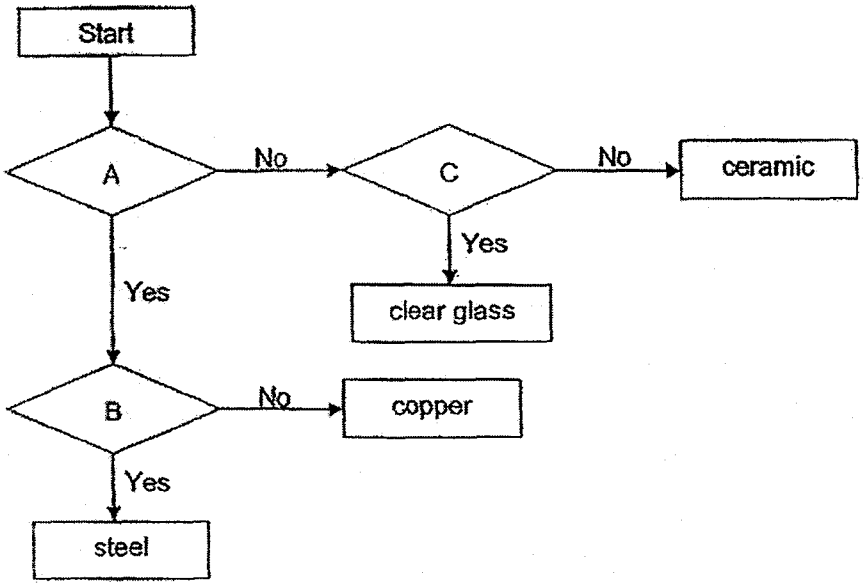
(1) Q

(2) R

(3) S

(4) T

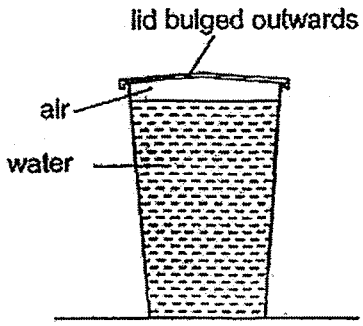
22. The flow chart below shows the properties of some materials.



Which of the following correctly describes A, B and C in the chart above?

	A	B	C
(1)	Is it a conductor of electricity?	Is it a good conductor of heat?	Is it a non-magnetic material?
(2)	Is it a good conductor of heat?	Is it a conductor of electricity?	Does it allow light to pass through?
(3)	Does it allow light to pass through?	Is it a magnetic material?	Is it a poor conductor of heat?
(4)	Is it a conductor of electricity?	Is it a magnetic material?	Does it allow light to pass through?

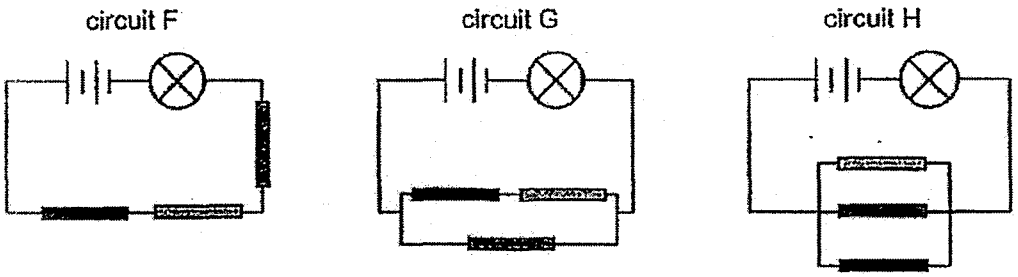
23. Jamie filled a plastic bottle with water and covered it with a lid. The lid bulged outwards as shown in the diagram below.



The lid bulged outwards because the air in the plastic bottle _____.

(1) has mass.
(2) occupies space.
(3) has no definite shape.
(4) cannot be compressed.

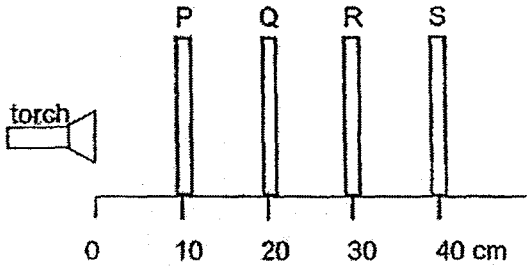
24. Each of the circuits below has a plastic rod, iron rod and an aluminium rod. The batteries and bulbs are all working properly.



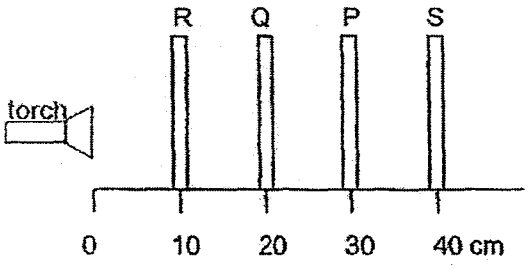
In which of the circuits would the bulb light up?

(1) H only
(2) F and G only
(3) G and H only
(4) None of the circuits

25. An experiment was conducted to investigate whether light can pass through four sheets, P, Q, R and S, which are made of different materials. The sheets were arranged in two set-ups A and B as shown below.

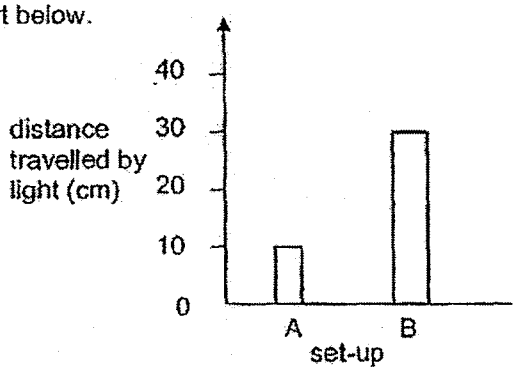


set-up A



set-up B

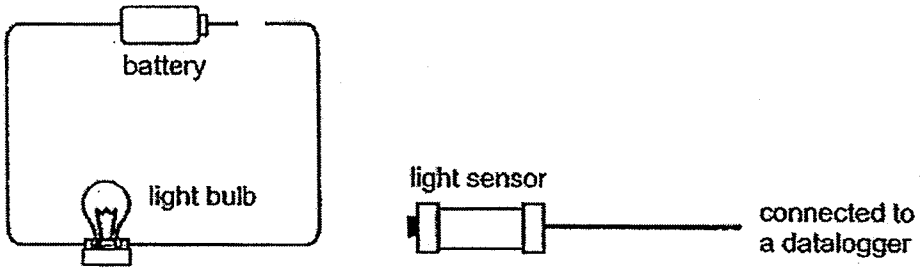
The distance travelled by the light for each set-up was measured and the results are shown in the chart below.



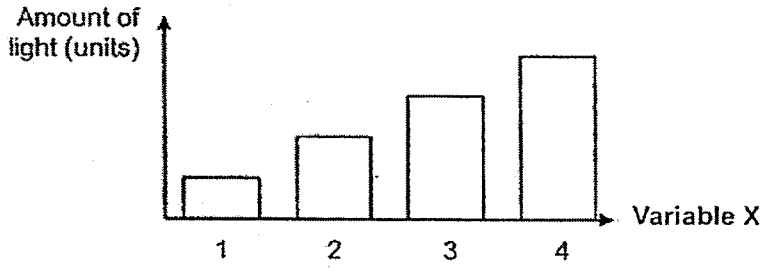
Which of the following correctly describes sheets P, Q, R and S?

	Does it allow light to pass through?			
	P	Q	R	S
(1)	no	not possible to tell	yes	no
(2)	yes	yes	yes	no
(3)	no	yes	yes	not possible to tell
(4)	yes	no	yes	not possible to tell

26. Weiming constructed a simple circuit in a dark room as shown below. He placed a light sensor near the circuit to measure the amount of light given out by the bulb(s) in the circuit



He changed variable X and measured the amount of light given by the bulb (s) in the circuit. He kept the other variables constant. The bulbs and batteries used are identical and working properly. His results are shown below.

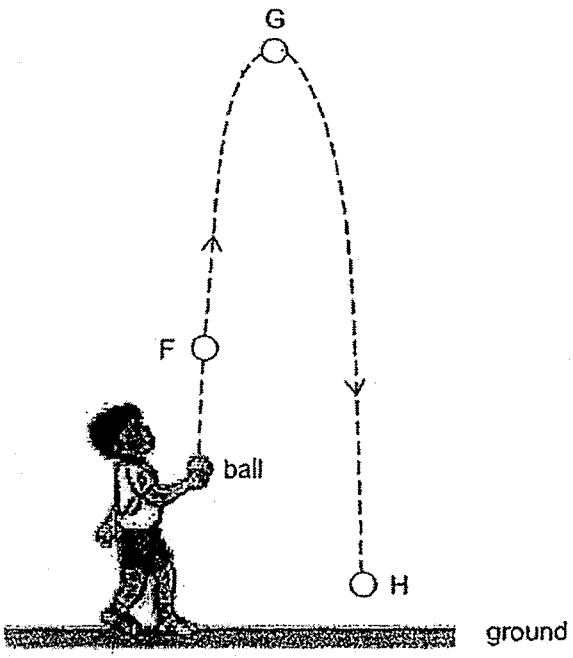


What could variable X be?

A : Number of bulbs added in series
B : Number of bulbs added in parallel
C : Number of batteries added in series

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

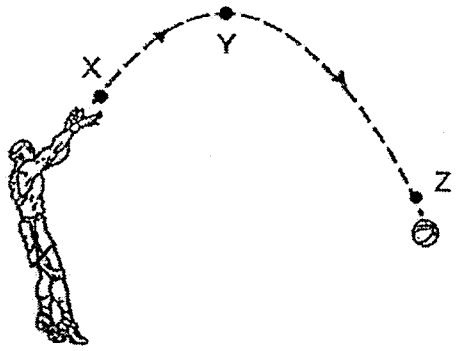
27. The diagram below shows part of the path travelled by a ball when it is thrown from position F to position G, the highest point in its path, and to position H.



Which of the following correctly identifies the energy the ball possesses at positions F, G and H?

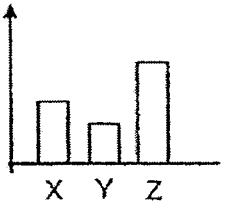
	Position F	Position G	Position H
(1)	potential energy and kinetic energy	potential energy	potential energy and kinetic energy
(2)	potential energy	kinetic energy	potential energy
(3)	potential energy	potential energy and kinetic energy	potential energy
(4)	potential energy and kinetic energy	kinetic energy	potential energy and kinetic energy

28. Steven threw a basketball into the air. The diagram below shows the path of the basketball after he has thrown it. Points X, Y and Z are different positions along the path of the moving basketball.

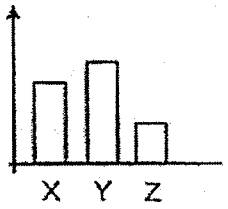


Which of the following graphs shows the correct amount of gravitational force acting on the basketball at points X, Y and Z?

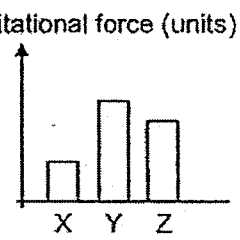
(1)



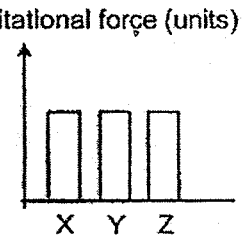
(2)



(3)



(4)



End of Section A

Index No. [ ][ ][ ][ ][ ][ ] – [ ]

PRELIMINARY EXAMINATION 2017

SCIENCE

SECTION B

Time: 1 h 45 min

Name : _____ ( )

Class : Primary 6 ___

Date : 4 August 2017

Parent's Signature: _____

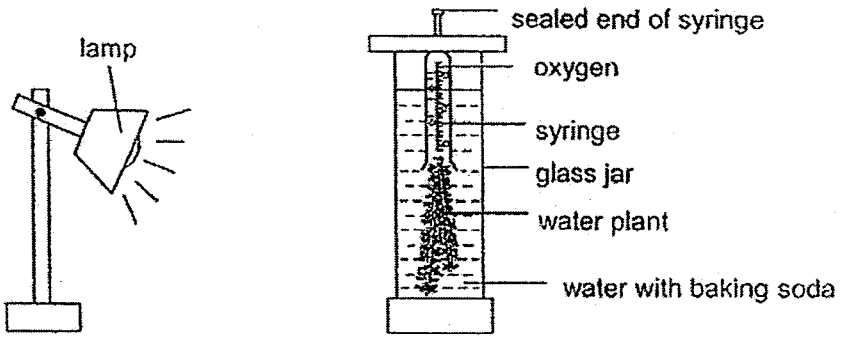
SECTION A	/56
SECTION B	/44
TOTAL	/100

INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
WRITE YOUR ANSWERS IN THIS BOOKLET.

Section B (44 marks)
For questions 29 to 41, write your answers in the spaces provided.

29. Martina set up an experiment in a dark room as shown below.



After one hour, she measured and recorded the amount of gas released in the syringe. Keeping all the other variables constant, she repeated her experiment by adding different amount of baking soda into the water. Baking soda was added to increase the amount of carbon dioxide in the water.

Her results are shown below.

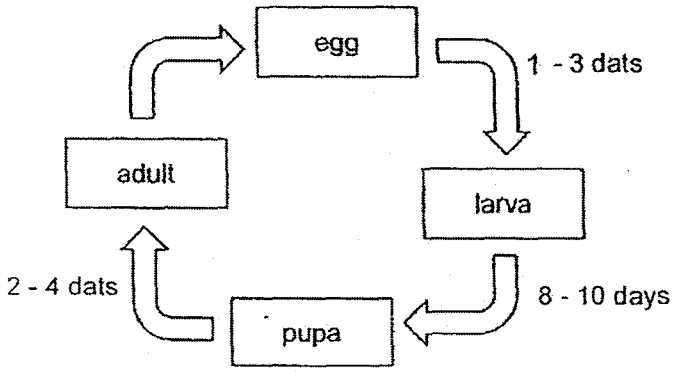
Amount of baking soda added (g)	Amount of gas collected in the syringe after one hour (cm3)
0	5
5	18
10	25
15	30
20	30
25	30

a) Based on her results, what is the relationship between the amount of carbon dioxide in the water and the rate of photosynthesis? [2]

b) Without adding or removing any apparatus from the set-up, suggest a way to increase the amount of gas collected in the syringe in one hour. [1]

SCORE	

30. Min Min studied the life cycle of mosquito X and recorded the number of days for each stage of its life cycle. The diagram below shows the life cycle of mosquito X.



a) Mosquito X spends certain stages of its life cycle in the water. Name all the stages it spent in water. [1]

_____

b) Based on Min Min's results, what is the minimum number of days it takes for mosquito X to become an adult after the egg has hatched? [1]

_____

c) Dengue fever is an illness caused by infection transmitted by mosquito X and its infection and transmission depends on the climate of a city. The table below shows the number of dengue cases and the average amount of rainfall in city R for a period of 12 months.

Periods	Average amount of rainfall (mm)	Number of dengue cases
January - March	20	30
April - June	150	220
July - September	250	580
October - December	100	170

Based on the information given, suggest a reason why the number of dengue cases increased in the months with higher rainfall. [1]

_____

_____

d) To prevent the spread of dengue fever, it is important to kill mosquito X before it becomes an adult. Give a reason why this is so. [1]

_____

_____

SCORE	

31. Figure 1 shows two types of plants that were growing in a pond.

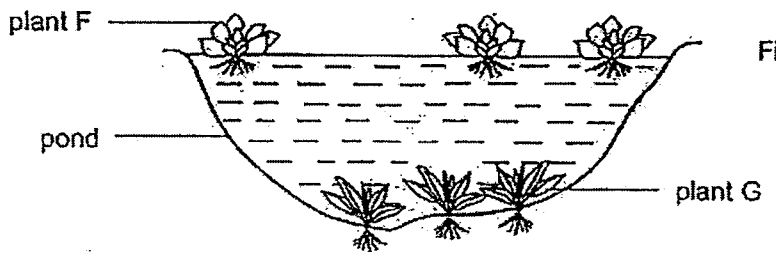


Figure 1

Figure 2 shows a food web in the pond habitat.

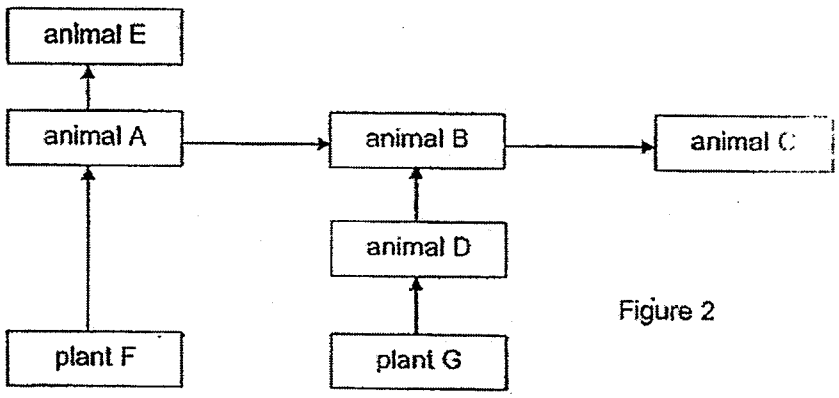


Figure 2

a) A large amount of fertiliser from a nearby farm flowed into the pond. The fertiliser increased the growth of plant F. How would the population of animal E be affected by this increase? Give a reason for your answer. [ ]

b) When the population of plant F increased, it was observed that the population of plant G amd animal D decreased . Animal D breathes through gills.

i) Suggest a reason for the decrease in the population of plant G. [ ]

ii) Give two reasons why the decrease in the population of plant G caused a decrease in the population of animal D. [2]

Reason 1:

Reason 2:

SCORE

c) When a lot of plant G died and started to rot, the level of oxygen in the pond decreased. Give a reason why the rotting plants caused a decrease in the level of oxygen. [1]

_____

_____

32. Ashlyn had two identical pieces of paper, A and B. She crushed paper A as shown in the diagram below.

paper A

paper B

She released both pieces of paper from the same height and measured the time taken for both pieces of paper to reach the ground.

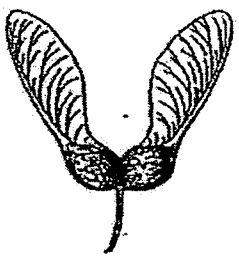
a) Which piece of paper will reach the ground first?
Give a reason for your answer. [1]

_____

_____

The diagram below shows seeds X and Y.

seed X



seed Y

b) Explain how the structural adaptation in seed Y allows it to be dispersed further away from the parent plant than seed X. [2]

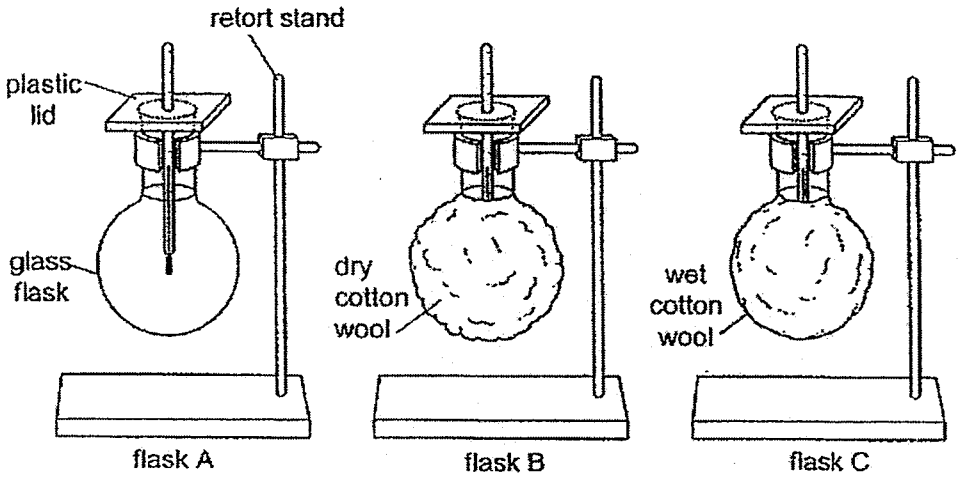
_____

_____

_____

SCORE	

33. Fatimah conducted an experiment using three identical glass flasks, A, B and C, as shown below. She wrapped flask B with a layer of dry cotton wool and flask C with a layer of wet cotton wool that was soaked in water at room temperature.



Each flask was filled with an equal volume of hot water. The temperature of the water in each flask was measured as it cooled.

The table below shows her results.

Time (min)	Temperature of water (°C)		
	Flask A	Flask B	Flask C
0	70	70	70
2	66	68	64
4	61	67	58
6	58	65	52
8	50	61	42
10	45	60	40

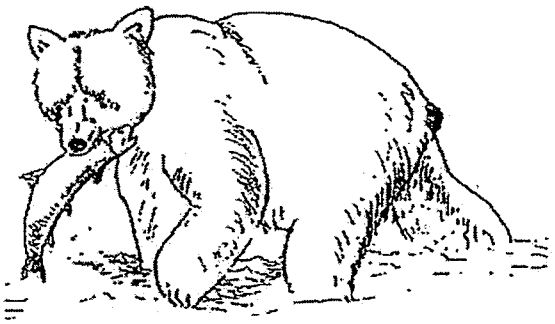
a) Explain why the temperature of the water in flask B is higher than that of flask A after ten minutes. [1]

b) Fatimah observed that there was less water on the wet cotton wool after some time due to evaporation.

How did this process help the water in flask C to cool down faster than the water in flask A? [1]

SCORE	

c) Animal B lives in a cold environment and it hunts for food in the river.

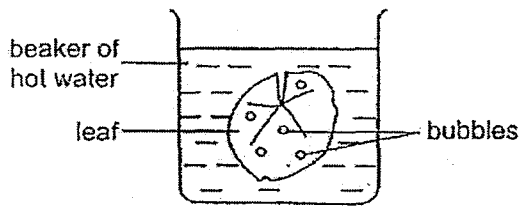


It shakes off the water on its wet fur when it gets out of the water.
Based on Fatimah's experiment, suggest a reason for such a behaviour. [1]

_____

_____

34. Paul wanted to compare the number of stomata on the upper and lower surface of a leaf from plant X. A fresh leaf was plucked and placed in a beaker of hot water. After a short while, some air bubbles were observed appearing on both sides of the leaf.



a) More bubbles were observed on the lower surface of the leaf.
Give a reason for this observation. [1]

_____

_____

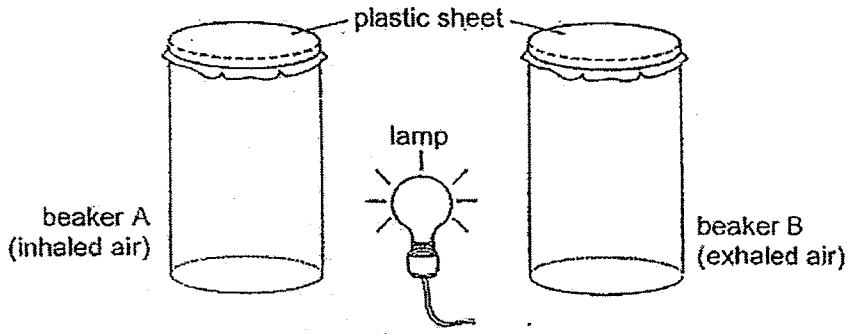
b) Plant X grows in a sunny and hot place.
How will the distribution of the stomata on the leaves of plant X help it to survive? [1]

_____

_____

SCORE	

35. Huili prepared two identical glass beakers as shown below. She covered beaker A with a clear plastic sheet. She took a deep breath and exhaled into beaker B before covering it with a clear plastic sheet.



She waited for the temperature in beaker B to become the same as that in beaker A before she placed the two beakers at the same distance away from a lamp. She measured the temperature in both beakers after ten minutes.

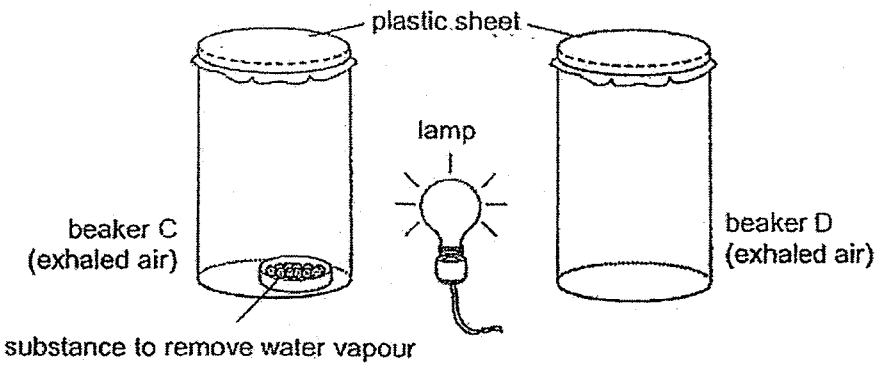
a) In which beaker, A or B, would the temperature be higher?
Explain your answer. [2]

_____

_____

_____

b) Huili read in the magazine that water vapour also contributes to global warming. To check that this is correct, she repeated her experiment with beakers C and D as shown below.



What observation would show that the water vapour also contributes to global warming? [1]

_____

_____

SCORE	

36. Arnold conducted an experiment by heating 3 similar pieces of tiles made of ceramic A, B and C for 10 minutes. He recorded the area of each tile before and after heating in the table below.

Ceramic	Area before heating (cm^2)	Area after 10 minutes of heating (cm^2)
A	400	403
B	400	410
C	400	407

a) Based on the results, what can Arnold conclude about the effects of heating different ceramic tiles ? [1]

_____

_____

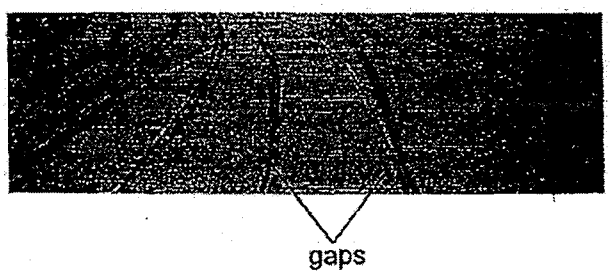
b) In another experiment, Arnold heated a thicker tile made of ceramic B of area 400 cm^2 for 10 minutes.

He observed that the area of the thicker tile did not increase as much as the thinner tile after heating. Suggest a reason for this observation. [1]

_____

_____

c) Ceramic tiles laid on outdoor footpaths are usually laid with tiny gaps between them.



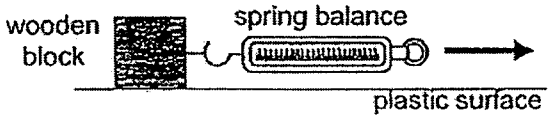
What would happen to the tiles on a very hot day if there were no gaps?
Give a reason for your answer. [1]

_____

_____

SCORE	

37. Benny conducted an experiment to find out if the area of contact between two surfaces affects the friction between the two surfaces. He set up the experiment as shown below. He pulled a wooden block along a plastic surface using a spring balance.



He repeated the experiment with two different wooden blocks of the same height and width. The blocks were made of the same type of wood.

The diagram below shows the three wooden blocks he used for his experiment.

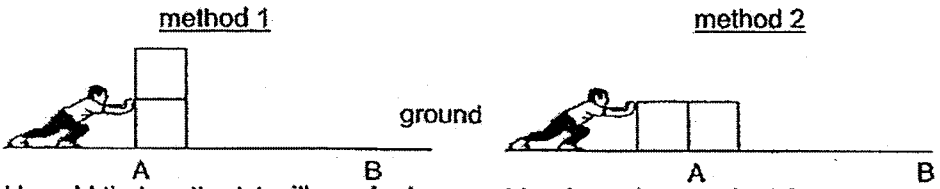
a) Suggest one way in which his experiment might not have been fair. [1]

b) His friend, Devi, conducted the same experiment using only one wooden block. She rested different surfaces of the block on the plastic surface and pulled it using the spring balance. The table below shows the results of her experiment.

Area of contact between the two surfaces (cm^2)	Friction (units)
24	10
32	10
48	10

What could Devi conclude from her experiment? [1]

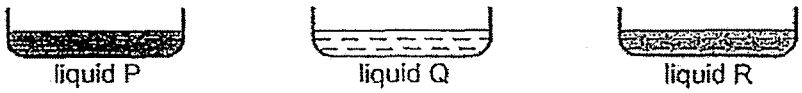
c) A worker wanted to push two heavy identical boxes from point A to point B. The diagram below shows two methods.



He said that method 1 will require less pushing force than method 2.
Do you agree with him? Give a reason for your answer. [1]

SCORE

38. Rita poured equal volume of liquids P, Q and R in three dishes as shown below and placed the dishes side by side in the open.



She recorded the volume of liquid left in each dish after ten minutes.
The table below shows her results.

Liquid	P	Q	R
Boiling point (°C)	50	65	80
Volume of liquid at the start of experiment (ml)	10	10	10
Volume of liquid at the end of experiment (ml)	2	7	9

a) Arrange liquids P, Q and R according to their rates of evaporation, starting with the lowest rate to the highest rate. [1]

_____, _____, _____

lowest ⟶ highest

b) Based on her results, what is the aim of the experiment ? [1]

_____

_____

c) Give a reason how the following actions would help make Rita's experiment a fair test. [2]

i) Using dishes of the same size and shape.

_____

_____

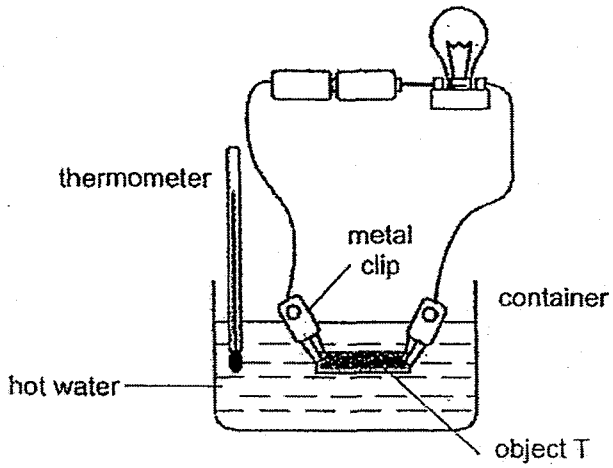
ii) Placing the three dishes in the same location

_____

_____

SCORE	

39. Marissa set up an experiment as shown below in a dark room. She wanted to find out how the amount of electric current flowing through the circuit was affected by the temperature of object T.



She poured hot water in the container and observed the brightness of the bulb as the temperature of the water decreased.

The table below shows her results.

Temperature of water (°C)	Brightness of bulb
85	very bright
65	bright
45	dim
25	very dim

a) Based on her results, what is the relationship between the temperature of object T and the amount of electric current flowing in the circuit? [1]

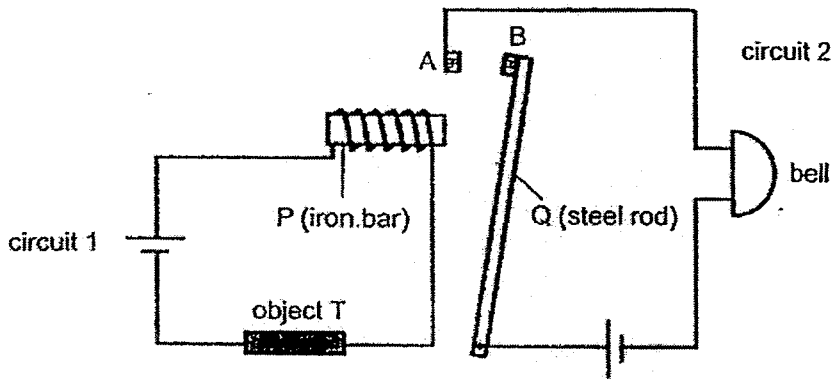
_____

_____

SCORE	

b) Marissa designed a fire-alarm system as shown below. The system is made up of circuits 1 and 2. It is designed to ring the bell when there is a fire near object T.

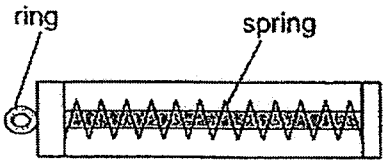
P is an iron bar placed in a coil of insulated wire. A and B are two copper pins which will come into contact with each other when steel rod Q moves to the left. The bell in the system rings when the electricity passes through it.



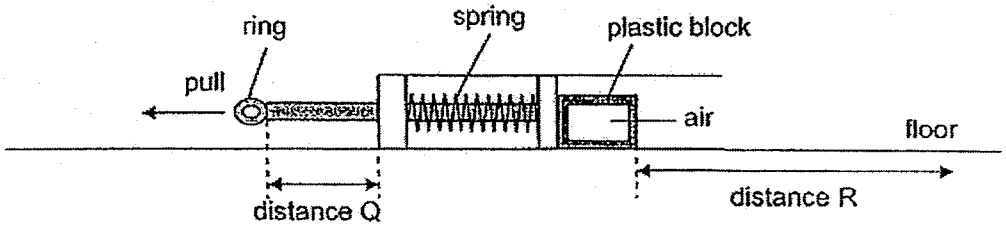
Explain why the bell rings only when object T becomes hot. [2]

SCORE	

40. Rahmat carried out an experiment using a toy he had made as shown in the diagram below.



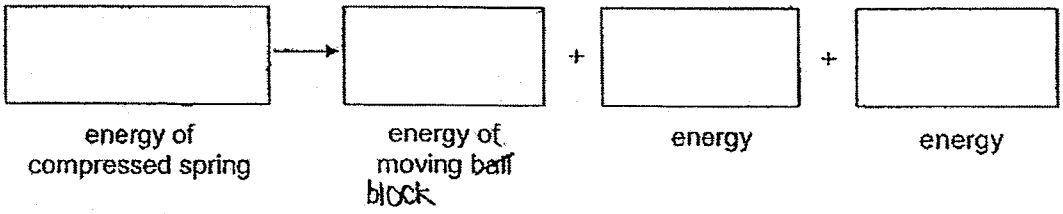
He placed the toy on the floor and pulled the ring back over a distance Q with a hollow plastic block placed at the position as shown in the diagram below.



When he released the ring, he measured the distance R travelled by the plastic block along the floor. He repeated his experiment 2 more times with each distance Q. His results are shown below.

	Distance R (cm)		
Distance Q (cm)	**Trial 1**	**Trial 2**	**Trial 3**
3	8	10	9
8	21	19	22
12	32	30	31

a) State the energy changes that took place when the ring was released. [2]



b) Give a reason why distance R was different for each trial. [1]

_____

_____

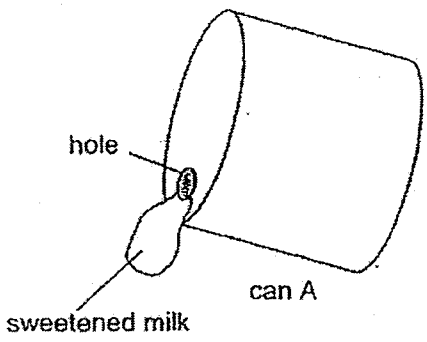
c) Rahmat conducted another experiment using a heavier plastic block of the same size. He pulled the ring back to the same distances Q as in the previous experiment. From the results, will distance R be *shorter*, *longer* or *equal to* those measured previously? Give a reason for your answer. [1]

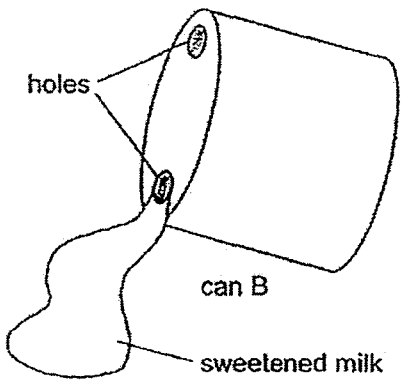
_____

_____

SCORE	

41. Terry conducted an experiment with two cans of sweetened milk. He wanted to find a faster way to drain the milk out of the can into a mug. For can A, he punched a hole at the top of the can using a can opener. For can B, he punched two holes at the top of the can as shown in the diagrams below.





a) The sweetened milk in can B flowed out faster. Give a reason why. [1]

_____

_____

b) For this experiment, Terry used two cans of the same size with equal volume of sweetened milk.

State two other variables that Terry should keep constant to make his experiment a fair test. [2]

Variable 1: _____

_____

Variable 2: _____

_____

c) State a property of the sweetened milk which enabled Terry to drain the milk out of the cans into a mug. [1]

_____

_____

End of Section B

Set by : Mr Zhang Qiyan, Mdm Sharon Lim, Mdm Samantha Gooi and Mr Benjamin Kua
Vetted by: P6 Science teachers

SCORE	

ANSWER SHEET

EXAM PAPER 2017 (P6)

SCHOOL : PEI CHUN

SUBJECT : SCIENCE

TERM : PRELIM

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

29)a)As the amount of carbon dioxide in the water increases, the rate of photosynthesis increases. However beyond 15g of baking soda added to the water, the rate of photosynthesis remained the same.

b)Martina could move the lamp closer to the glass jar/ increase the intensity of the light.

30)a)Egg, larva, pupa.

b)10 days.

c)There is more water for mosquito X to lay its eggs in allowing more egg to hatch and grow into an adult.

d)Mosquito X only infects with dengue when it is an adult, so if we kill mosquito X before it becomes and adult, it will not be to infect people.

31)a)The population of E will increase. More plant F will be food for animal A, allowing animal A to reproduce faster, having more food for animal E, letting E reproduce faster.

b)i)Plant F prevented the sunlight from reaching G, when G could not get sunlight , G could not photosynthesis and make food for itself.

ii)1)Animal D eats plant G. There was not enough food for all of D to eat.

2)F blocked the sunlight from G, making G unable to photosynthesis and produce oxygen, causing a shortage of oxygen for animal D.

c)The level of bacteria in the pond increased taking in more oxygen.

32)a)Paper A. A would reach the ground first as it is smaller, allowing lesser surface area in contact with the air, creating less air resistance.

b)Seed Y has a wing like structure which allows the seed to stay in the air longer so that it can be blown away by the wind further away from the parent plant.

33)a)The dry cotton wool trapped air and is a poor conductor of heat.

b)The water on the wet cotton wool gained heat from the hot water in flask C and evaporated.

c)Animal B shakes off the water on its fur to keep its fur dry so that it will lose less body heat to the surrounding air to keep warm.

34)a)There are more stomata on the under surface of the leaf.

b)Plant X will lose less water through the stomata.

35)a)Beaker B. There was more carbon dioxide in beaker B and carbon dioxide being a greenhouse gas, it trapped more of the light heat in the beaker.

b)The air in beaker D will be hotter than the air in beaker C.

36)a)Different ceramic tiles will expand to a different size when heated.

b)The thicker tile needed to gain more heat for expansion.

36) c)The ceramic tiles would crack as they would expand during a very not day, and if there were no gaps, the ceramic tiles would not have enough space, thus, it would crack.

37)a)The wooden blocks were not of the same mass.

b)The area of contact between two surfaces does not affect the friction between the two surface.

c)No. The amount of friction between the boxes and the ground is the same for both methods as their mass are the same.

38)a)R, Q , P

b)To find out how the boiling point of a liquid would affect its rare of evaporation.

c)i)To keep the exposed surface area of the liquids the same.

ii)To keep the temperature of the surroundings (amount of wind) humidity the same.

39)a)The hotter object T is, the more the amount of electric current flowing in the circuit.

b)When object T becomes hot, there is more electric current flowing in circuit 1. P will become a stranger electromagnet and Q will be attracted to P. pin B touches pin A and circuit 2 will be closed, hence the bell rings.

40)a)potential →kinetic + heat + sound

b)There are human errors when measuring the distance moved by the block.

c)Shorter. AS the mass of the plastic is greater, there is more frictional force acting between the block and the surface of the floor, resulting in the block travelling a shorter distance.

41)a)Air could enter can B through one of the holes and occupy the space in the can, pushing the milk out.

b)1)The angle the cans were tilted at.

2)The size of the holes in the respective cans.

41)c)The sweetened milk does not have a definite shape.