Rosyth School
Preliminary Examination 2017
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /56

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 24 August 2017 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 41, give your answers in the spaces given in the Booklet B.

* This booklet consists of 20 printed pages (including cover page).

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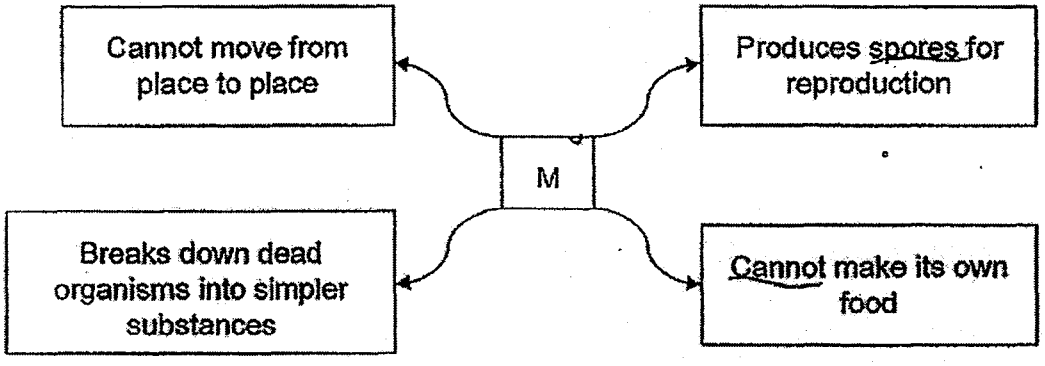
Part I

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(56 Marks)**

1 Which of the following characteristic is similar for both a fish and reptile?

(1) The way they move
(2) The presence of fins
(3) The way they breathe
(4) The type of outer covering

2 The diagram below shows some characteristics of an organism M.



What can organism M be?

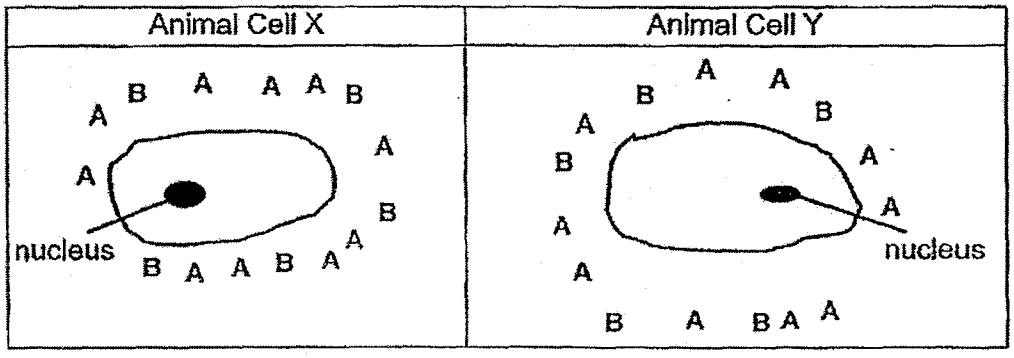
A: Bacteria
B: Bread Mould
C: Mushroom
D: Bird's Nest Fern

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

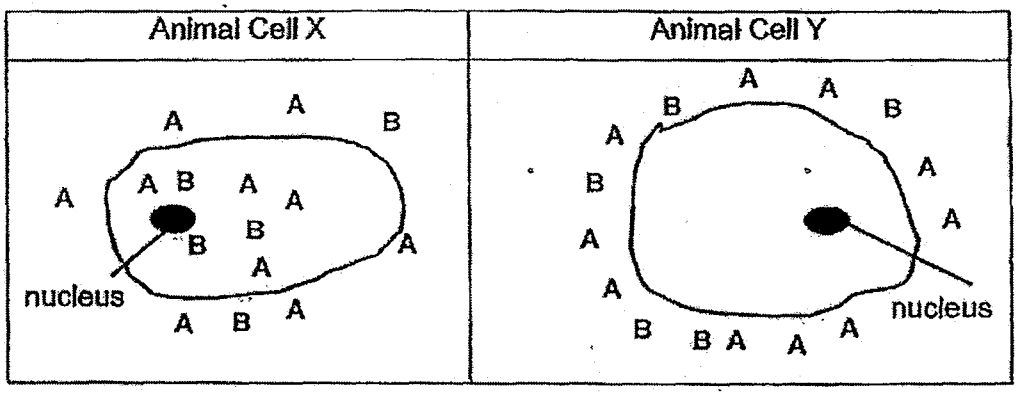
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3 Bala placed two animal cells X and Y in two beakers of water with the same amount of dissolved substances, A and B, respectively.

Before the experiment



After the experiment

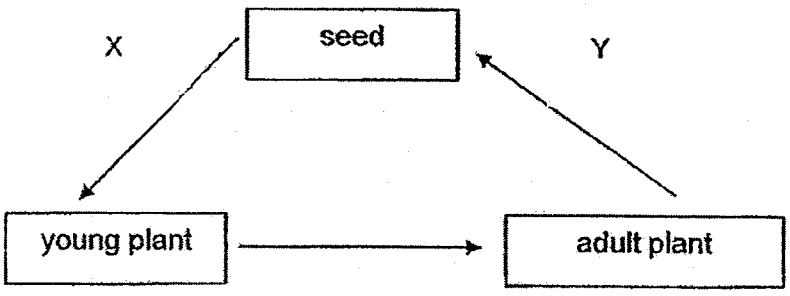


At the end of the experiment, both cells were bigger. Which one of the conclusions made by Bala is correct?

(1) Cytoplasm of cell X has allowed water to enter.
(2) Cell membrane of cell Y has allowed water to enter.
(3) Nucleus of cell X controlled the movement of A and B.
(4) Cell wall of cell Y has prevented A and B from entering.

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4 The diagram below shows the life cycle of a plant.



Which one of the following is correct?

	Process(es) at X	Process(es) at Y
(1)	Fertilisation	Pollination
(2)	Dispersal and Germination	Pollination and fertilisation
(3)	Germination	Dispersal
(4)	Pollination and Fertilisation	Dispersal and Germination

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5 The diagrams below show the reproductive systems in a plant and human respectively.

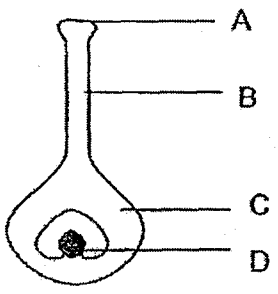


Diagram 1

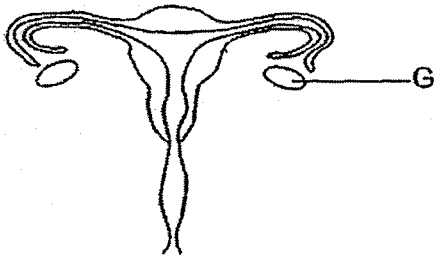


Diagram 2

Which part, A, B C or D, has a similar function to G?

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

6 Some pupils planted seeds at three different temperatures. They planted the same number of seeds at each temperature. Their results are shown in the table below.

Temperature (°C)	Total number of seeds germinated				
	Day 1	Day 2	Day 3	Day 4	Day 5
5	0	0	0	0	2
15	0	0	0	1	5
25	0	2	8	13	17

Which one of the conclusions is correct?

(1) At 25°C the seeds germinated the fastest.
(2) At 25°C all the seeds germinated by Day 5.
(3) 5°C is too cold for any seeds to germinate.
(4) The best temperature for germination is 15°C.

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7 Betty conducted an experiment to find out if the size of leaves affect the amount of oxygen given out during photosynthesis. She had three different set-ups and measured the amount of oxygen in each set-up for 1 minute. She recorded her results in the table shown below.

Set-up	Type of water plants	Size of leaves	Number of leaves	Amount of oxygen bubble per minute
1	A	Small	35	10
2	B	Medium	25	15
3	C	Large	10	10

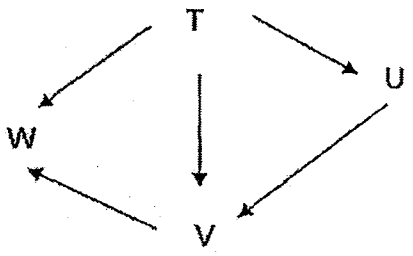
Her friend said that her experiment is **not** fair. Which of the following explains why her experiment is **not** fair?

A : Different size of leaves are used
B : Different number of leaves are used
C : Different type of water plants are used
D : Different amount of oxygen is collected

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

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8 Food relationships among organisms, T, U, V and W, found in a pond are shown below.



Based on the above food web, which one of the following statements is true?

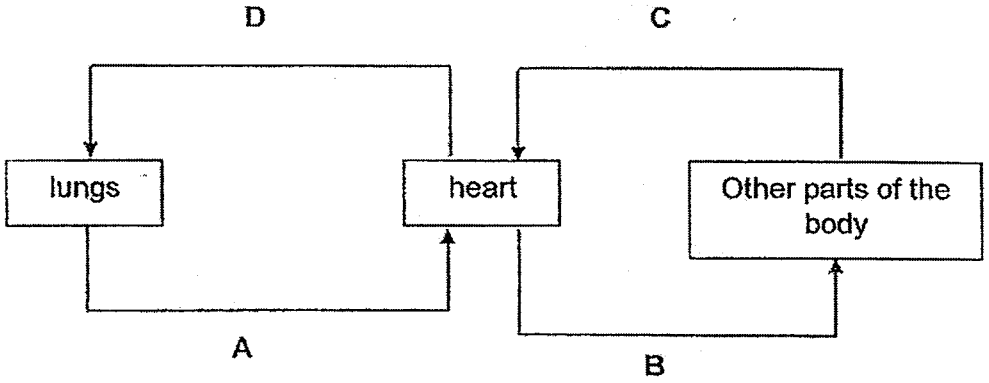
(1) There are two predators.
(2) There are two producers.
(3) There are four food chains.
(4) There are four communities.

9 The table below shows the human body systems and their functions. Which one of the following is **not** correct?

	Human Body System	Functions
(1)	Digestive system	Absorbs digested food into the bloodstream
(2)	Circulatory system	Takes oxygen into the body
(3)	Respiratory system	Exchange gases
(4)	Skeletal system	Supports the body

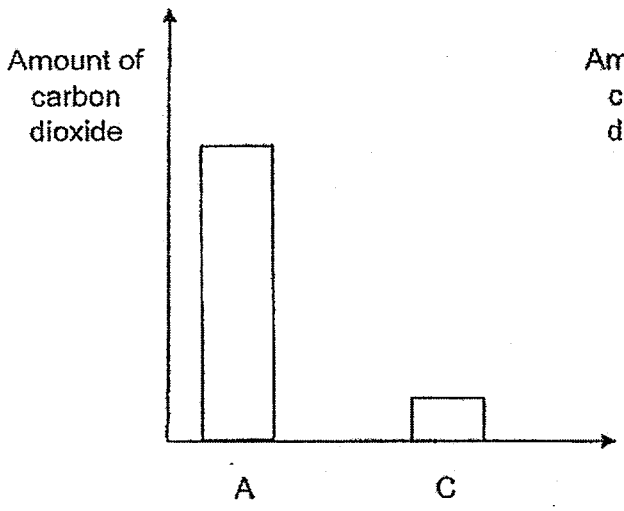
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10 The diagram below shows the flow of blood in the human body.

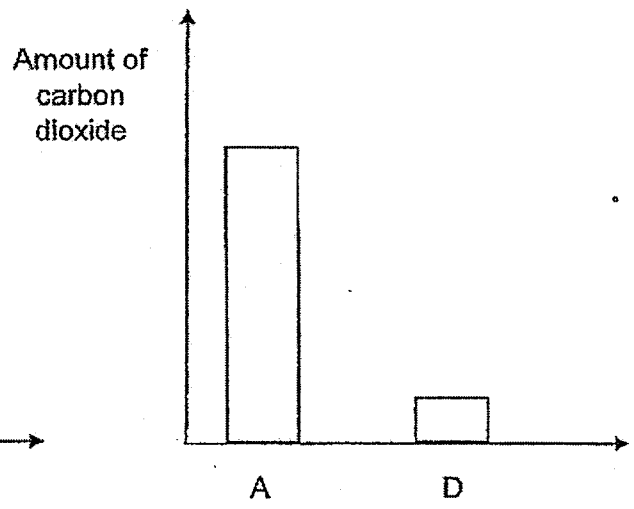


Same amount of blood were taken from A, B, C and D and the amount of carbon dioxide in the blood was compared. Which one of the following graph is correct?

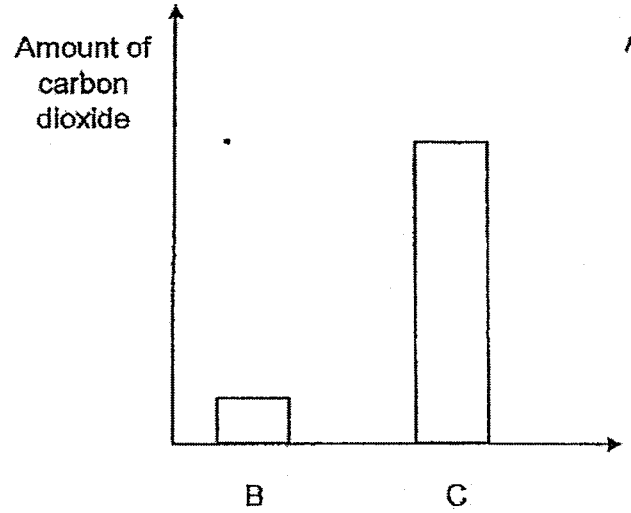
(1)



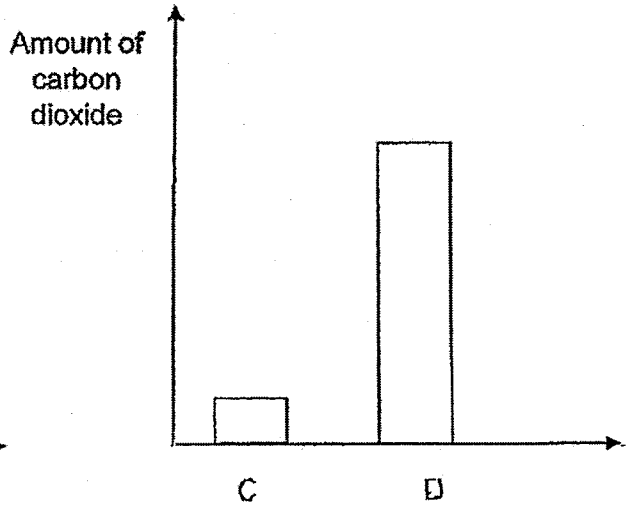
(2)



(3)



(4)

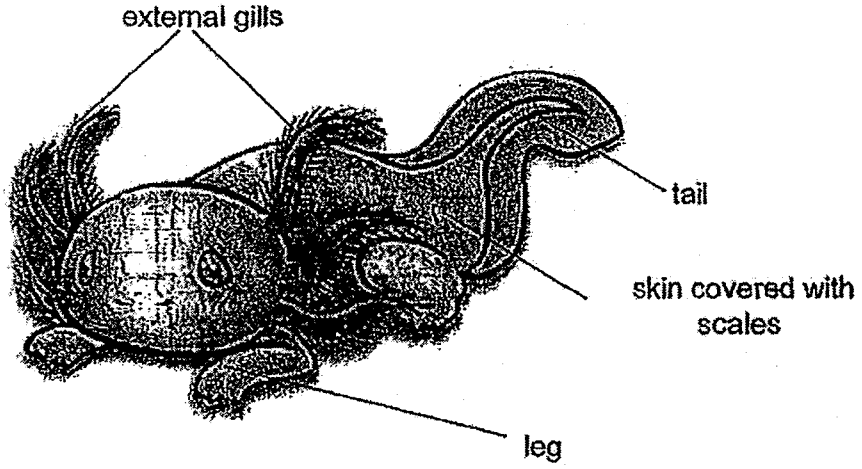


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11 Which of the following is an effect of global warming?

(1) Increase in sea levels
(2) Increase in deforestation
(3) Increase in carbon dioxide
(4) Increase in burning of fuels

12 The diagram below shows organism S.

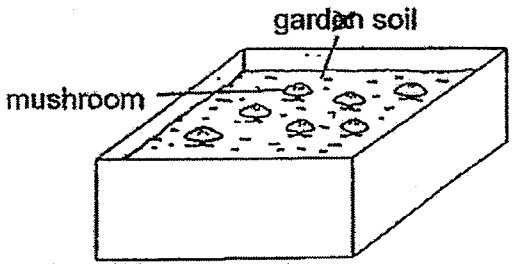


Which physical feature is most likely to determine that organism S needs to live in a damp condition?

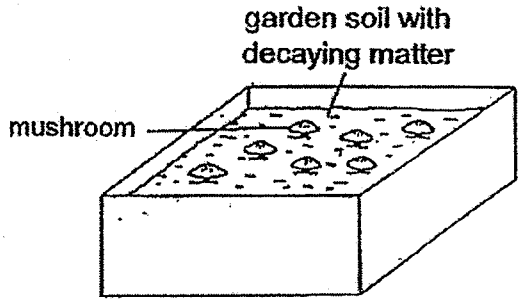
(1) leg
(2) tail
(3) external gills
(4) skin covered with scales

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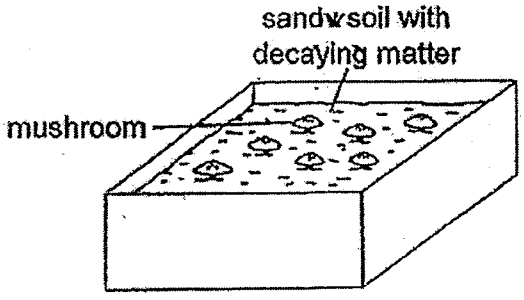
13 Kumar had four experimental set-ups as shown below.



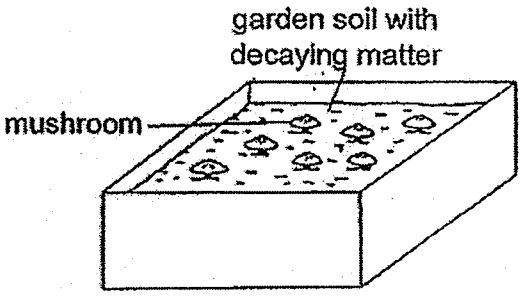
Set-up A (in the cupboard)



Set-up B (in the field)



Set-up C (in the field)



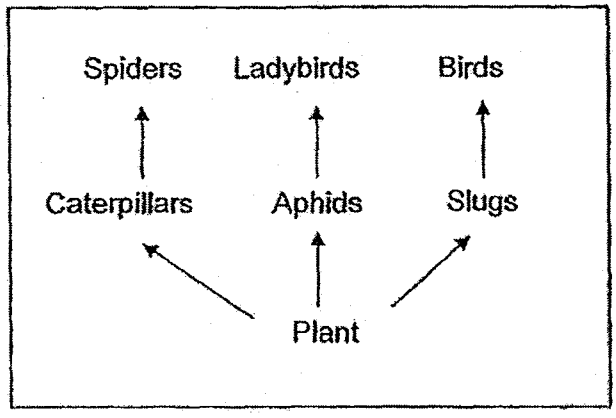
Set-up D (in the cupboard)

Which of the above set-ups should Kumar use to test if mushroom requires sunlight to survive?

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

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14 Study the following food web in a field.



The use of insecticides in the field resulted in the death of most aphids and caterpillars.

Which one of the following options correctly shows how the population size of slugs and ladybirds are likely to be affected after the use of insecticides?

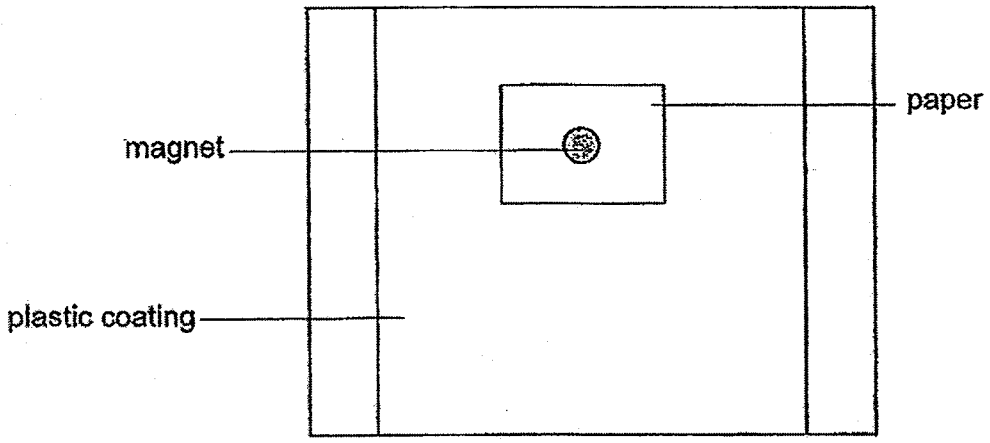
	Population size of slugs	Population size of ladybirds
(1)	Increases	Stays the same
(2)	Decreases	Stays the same
(3)	Decreases	Increases
(4)	Increases	Decreases

15 Ella has three bags made of different materials. Which one of the following test is the best to measure the strength of the bags?

(1) Pull each bag till it stretches.
(2) Weigh each bag using balance.
(3) Pour water into each bag till it tears.
(4) Pull each bag using a spring balance till it tears.

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16 David used a magnet to hold a paper on a noticeboard. The noticeboard is coated with plastic.



Which material is most likely to be under the plastic coating?

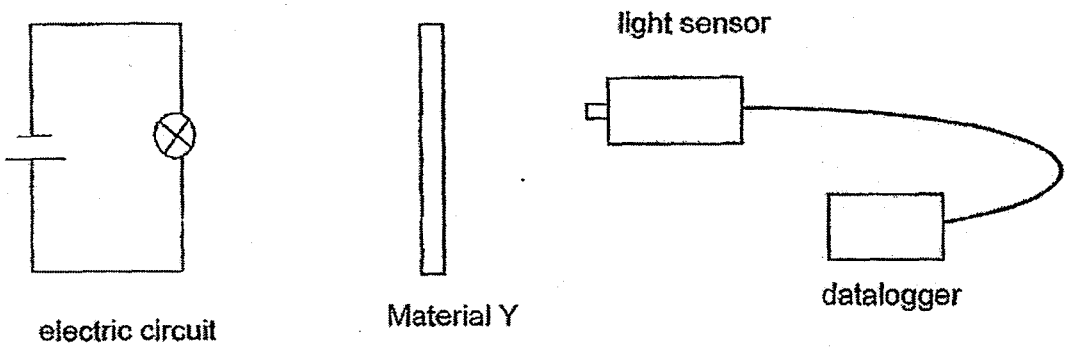
(1) Wood
(2) Steel
(3) Copper
(4) Aluminium

17 Which one of the following is **not** a source of light?

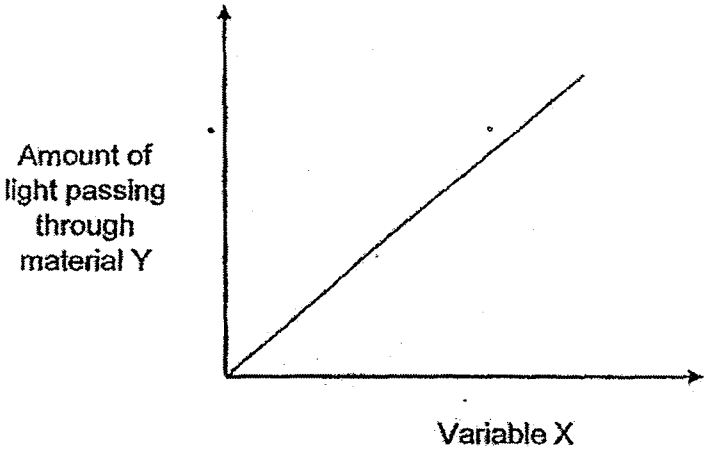
(1) Star
(2) Mirror
(3) Firefly
(4) Lightning

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18 The following set-up was used to measure the amount of light passing through material Y.



The following graph was drawn using the results recorded.

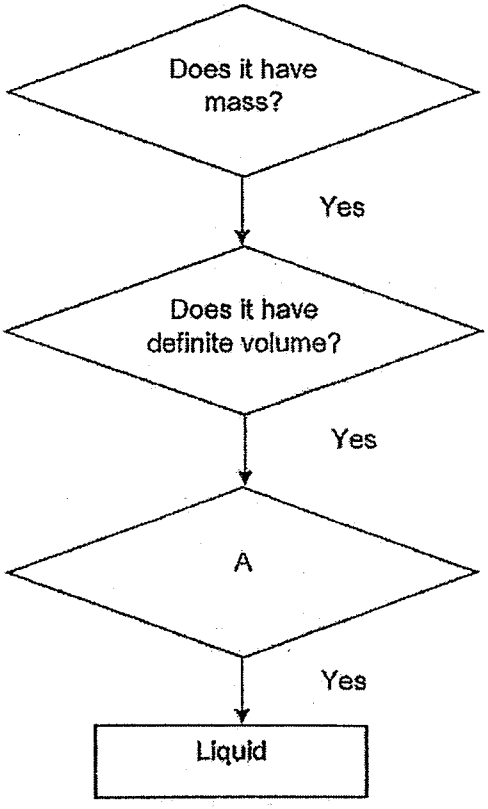


What could variable X most likely be?

(1) Thickness of material Y
(2) Number of bulb in series
(3) Number of battery in the circuit
(4) Distance between the material Y and the light sensor

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19 Study the flowchart below.

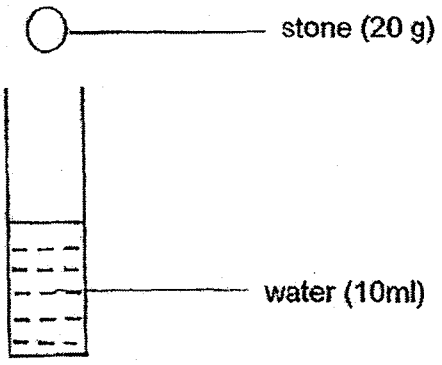


What should be question A for the above flowchart to be correct?

(1) Does it float?
(2) Can it be compressed?
(3) Does it have definite shape?
(4) Does it take the shape of the container?

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20 The container as shown in the diagram below contains some water.

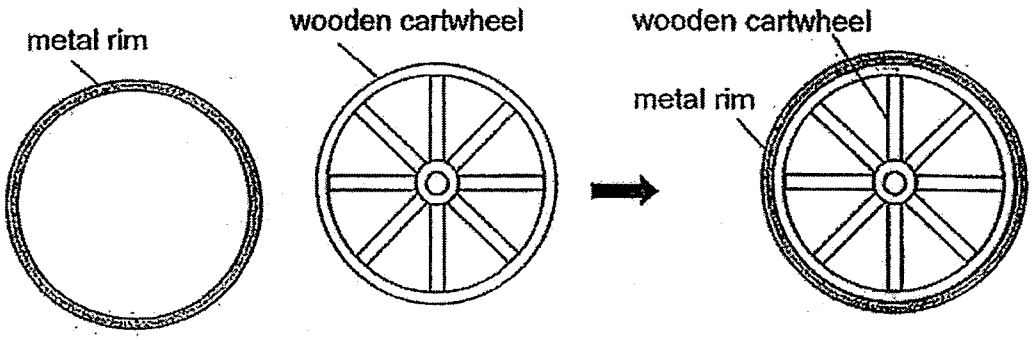


What will happen to the water level and volume of water when the stone is placed into the container?

	Water level	Volume of water
(1)	Increases	Increase
(2)	Increases	Remains the same
(3)	Remains the same	Increases
(4)	Remains the same	Remains the same

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21 Tom was instructed by his father to fit a metal rim tightly round the wooden cartwheel, as shown in the diagrams below.



Before fitting the rim round the cartwheel

After fitting the rim round the cartwheel

However, the metal rim that Tom had was too small to fit round the wooden cartwheel. His father suggested two steps to complete the task.

Which of the following steps would allow Tom to fit the metal rim tightly round the wooden cartwheel in the shortest time?

	Step 1 (Before fitting the rim round the cartwheel)	**Step 2 (After fitting the rim round the cartwheel)**
(1)	Immerse cartwheel in cold water	Immerse rim and cartwheel in hot water
(2)	Heat rim evenly over a flame	Immerse rim and cartwheel in hot water
(3)	Immerse cartwheel in hot water.	Immerse rim and cartwheel in cold water
(4)	Heat rim evenly over a flame	Immerse rim and cartwheel in cold water

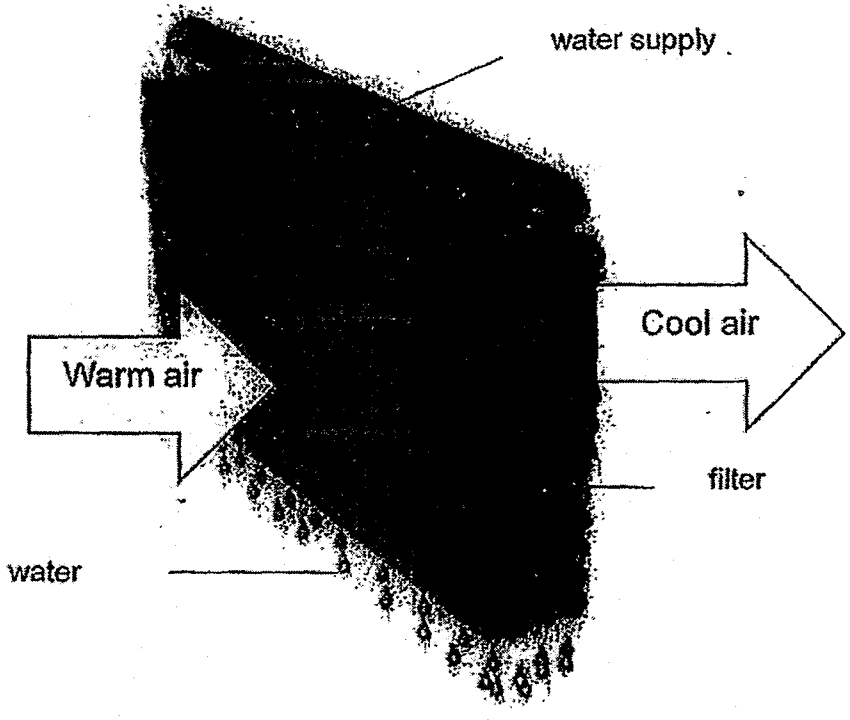
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22 The water cycle on Earth can take place repeatedly because water _____.

A: melts at 0°C and boils at 100°C
B: has volume and is not compressible
C: can change from one state to another
D: is important for the survival of living things

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

23 Study the diagram below. Warm air passes through the filter and comes out as cool air. A continuous supply of water is needed to flow through the filter as some water is lost in the cooling process.

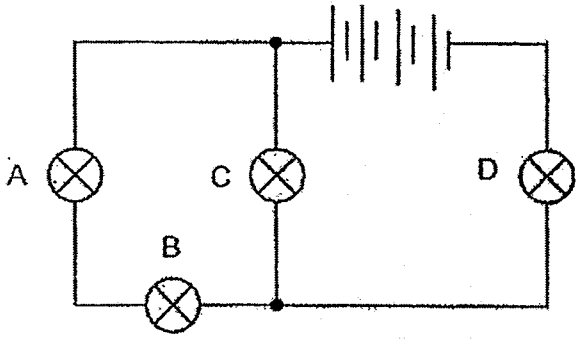


Which process/es has/have caused the warm air to become cool air?

(1) Evaporation only
(2) Condensation only
(3) Evaporation and condensation only
(4) Evaporation, condensation and freezing

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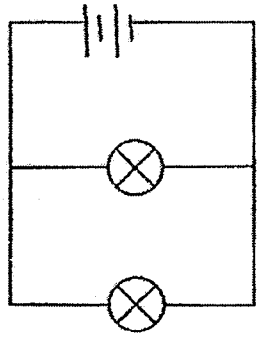
24 In the circuit shown below, one of the bulbs fuses, causing all the other bulbs not to light up.



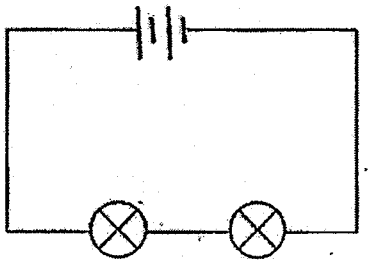
Which one of the bulbs has fused?

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

25 Study the circuits below.



Circuit A



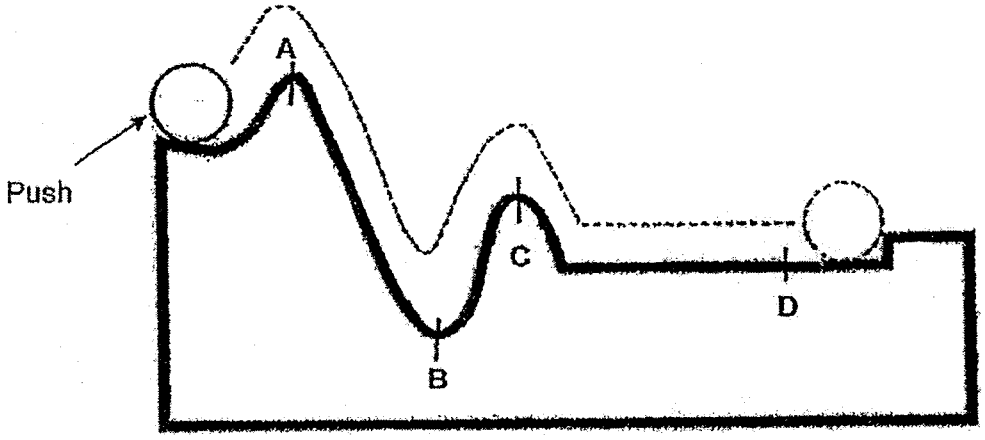
Circuit B

Which one of the following statements describes the two circuits, A and B, correctly?

(1) The bulbs in A will be of different brightness.
(2) The bulbs in B will be dimmer than in circuit A.
(3) The bulbs in A will be lit longer than in circuit B.
(4) The bulbs in B can be controlled independently by adding two switches.

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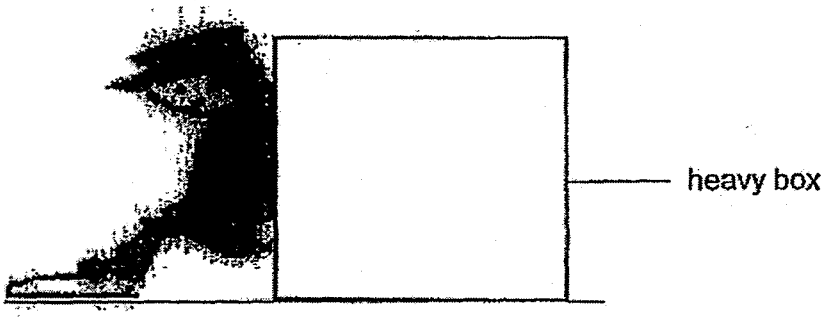
26 A ball is pushed in the direction shown and it rolled towards the end of slope.



At which point of the slope , the ball has the greatest amount of kinetic energy?

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

27 The picture shows a man trying to slide a heavy box along the floor.



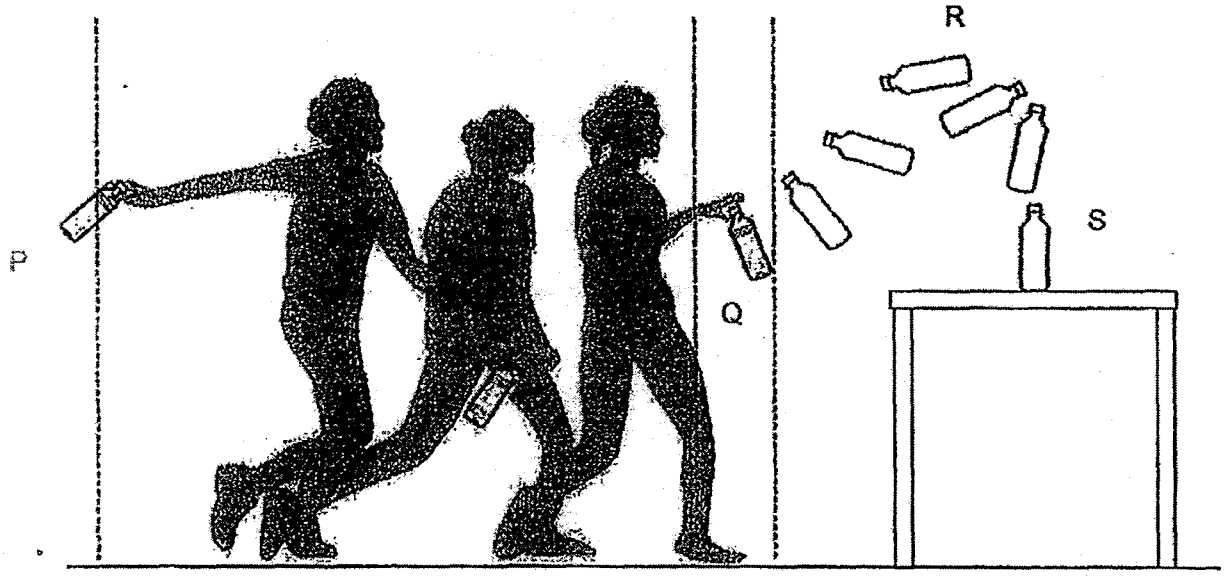
Which of the following forces would help the man to move the heavy box along the floor?

A: The mass of the heavy box.
B: The push the man exerted against the box.
C: The friction between the box and the floor.
D: The friction between the man's feet and the floor.

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

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28 Mei Ling swings a water bottle to point P and then swings the bottle to point Q and tosses it. The bottle reaches maximum height at point R and flips. It comes to a stop at point S.



Which one of the following statements is true?

(1) There is no gravitational force acting at S.
(2) The gravitational force at R is more than at S.
(3) The amount of potential energy is more at P than at R.
(4) The amount of kinetic energy is decreasing from Q to R.

End of Booklet A

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Preliminary Examination 2017
STANDARD SCIENCE
Primary 6

Total Marks: 100

Name: _____

Class: Pr 6 ____ Register No. _____ Duration: 1 h 45 min

Date: 24 August 2017 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 41, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 18 printed pages (including cover page).

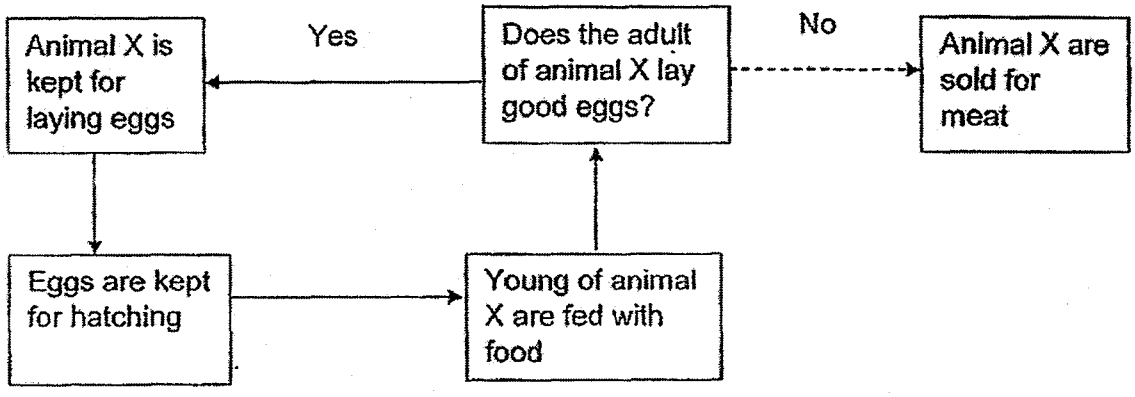
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Part II

For questions 29 to 41, write your answers in the space provided. **(44 Marks)**

29 Study the diagram below.



(a) Based on the diagram above, state two characteristics of living things. [2]

Characteristic 1: _____

Characteristic 2: _____

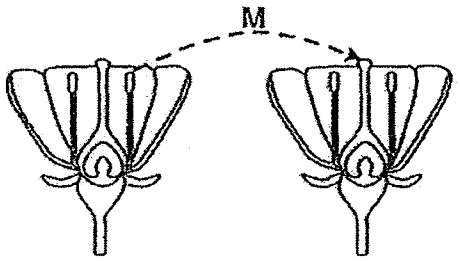
(b) Animal X that lay good eggs are kept for laying eggs. Why? [1]

_____

_____

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30 The diagram below shows a process, M, indicated by the arrow, taking place between two flowers, A and B, from the same plant for reproduction.



flower A flower B

(a) Name the process. [1]

_____

Study the picture of flower C of another plant.



flower C

(b) Flower C is smaller, dull in colour and has no scent.

Explain how the characteristic of the male parts of flower C helps to enable process M to take place. [1]

_____

_____

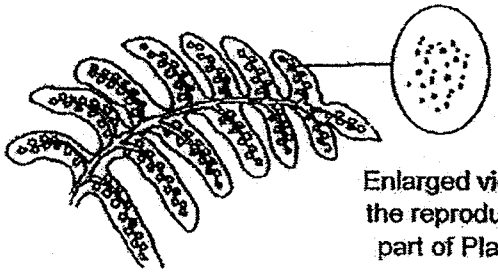
Question 30 continues on page 4

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The diagram below shows the reproductive part of plant X and an enlarged view of the reproductive part of plant Y. Both the reproductive parts of Plant X and Y are dispersed by wind.



Reproductive part of Plant X



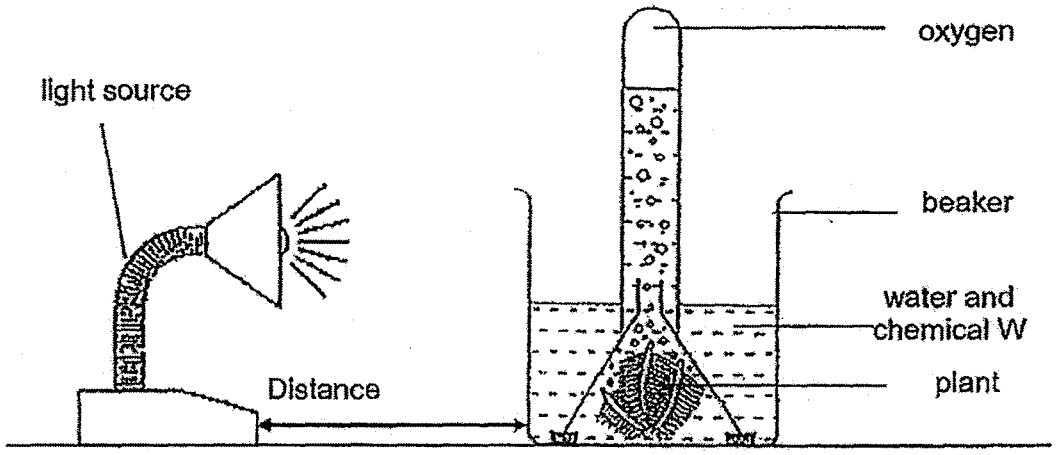
Enlarged view of the reproductive part of Plant Y

(c) Based on the diagram above only, state a different characteristic that the reproductive parts of Plant X and Y would have to help them to be dispersed by wind respectively. [2]

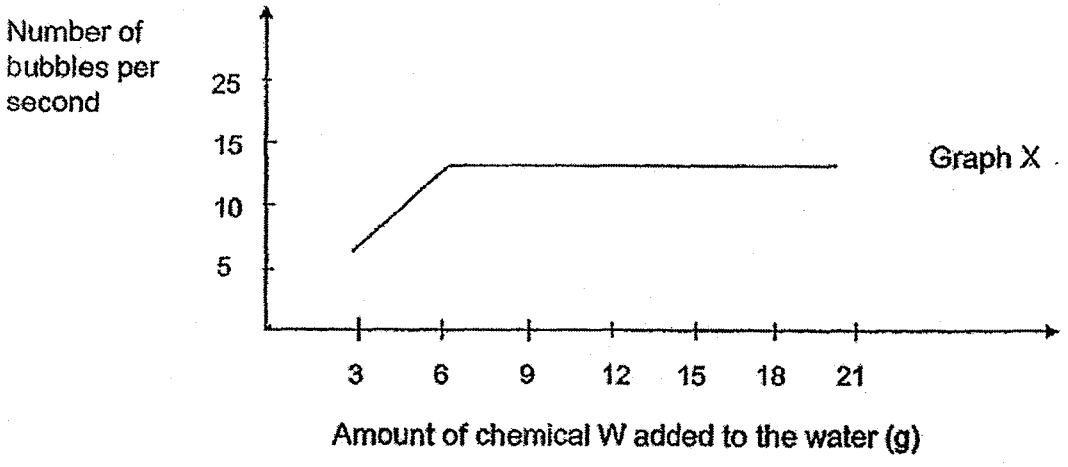
Reproductive parts of:	Characteristic
Plant X	
Plant Y	

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31 Susan set up the experiment below to find out the effect of chemical W on the rate of photosynthesis. She counted and recorded the number of bubbles released during the duration of the experiment. She repeated the experiment by adding increased amount of chemical W each time.



The graph below shows the results of her experiment.

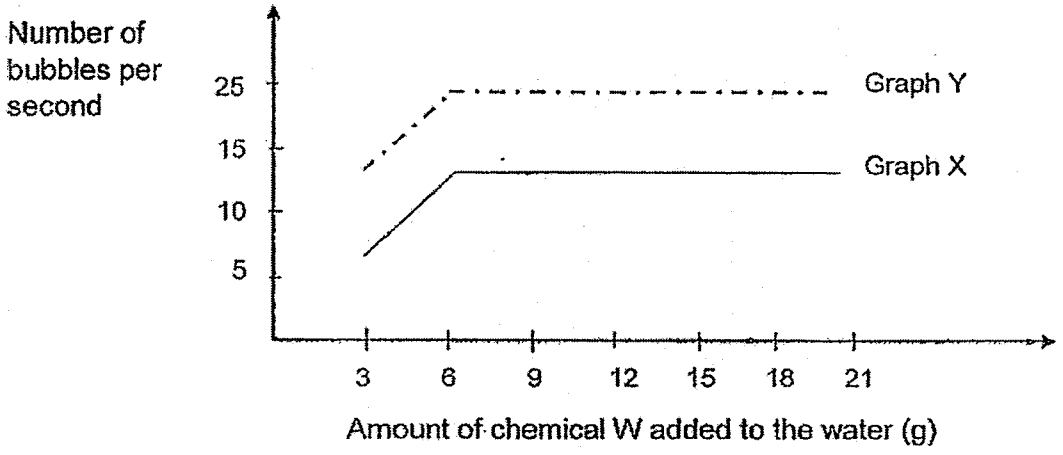


Question 31 continues on page 6

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(a) Based on the results, what is the relationship between the amount of chemical W in the water and the rate of photosynthesis? [2]

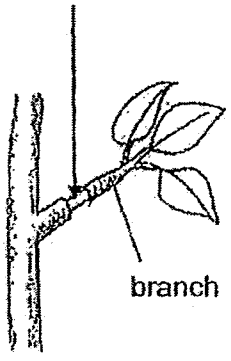
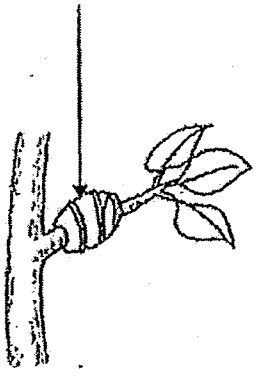
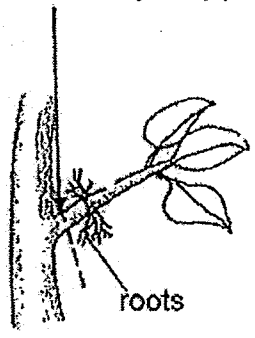
Susan made a change to her experiment without adding or removing items from the set-up and obtained a new set of result as shown in Graph Y.



(b) Suggest a change that Susan could have made. [1]

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32 Shi Ling wanted to grow a young plant from a parent plant directly, found in her garden using the method as shown below.

Step 1	Step 2	Step 3
Cut a ring of the stem from a branch 	Wrap with soil and water daily 	Cut the branch when roots appear and plant it in her garden as a young plant 

(a) Should the water carrying tubes be removed in step 1? Explain why. [2]

(b) In step 2, how is the soil an advantage to the branch? [1]

(c) Give two reasons why the roots must be grown before the branch is cut in step 3. [2]

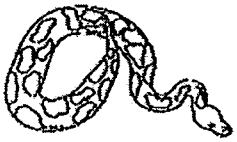
i)

ii)

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33 Study the food chain in the rice plant habitat shown below.



i) **Rice plant ⟶ Grasshopper ⟶ Sparrow ⟶ Python**

Insecticide was sprayed. Only the grasshoppers were killed by the insecticide.

(a) What would happen to the population of rice plant? Explain your answer. [1]

_____

_____

(b) Sparrow started to migrate to another place. Why?

_____

_____

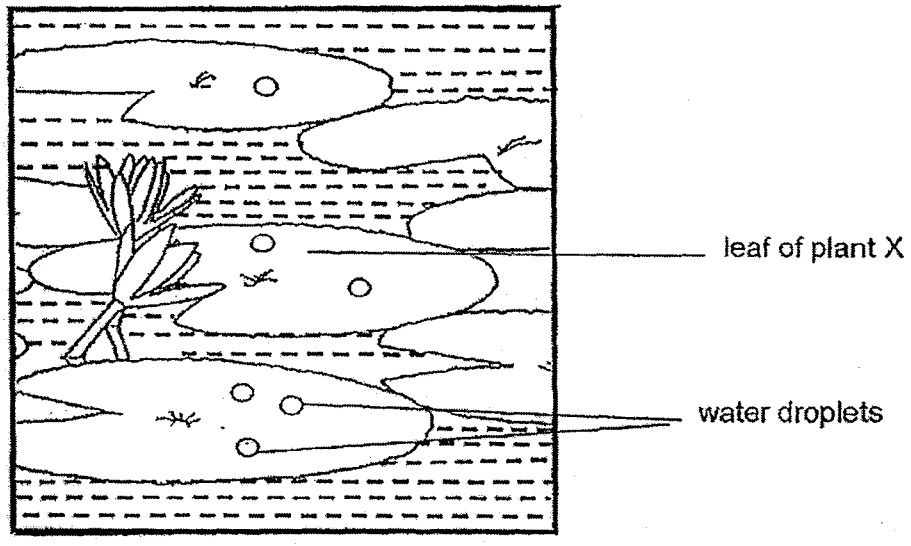
(c) One other food chain was found in the same habitat as shown below.

ii) **Rice plant ⟶ Field mouse ⟶ Python**

Construct a food web using the two food chains, (i) and (ii) in the space provided below. [2]

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34 Plant X floats on the surface of a pond as shown below. When rain falls, the water forms round droplets on the leaf and rolls off.



(a) What is the property of the surface of leaf X that enables water droplets to be formed? [1]

_____

(b) Describe how the above adaptation help the plant to grow well in muddy pond. [2]

_____

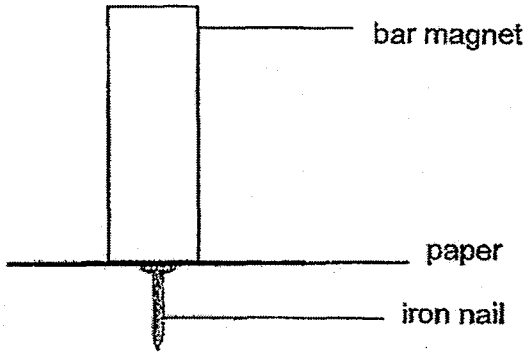
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35 Bob placed a piece of paper in between the magnet and the nail. The magnet attracted the nail.



(a) State the property of magnet shown in the above diagram. [1]

Bob increased the number of pieces of paper till the nail dropped. He carried out the investigations with three different bar magnets, A, B and C. The results were recorded as shown below.

Bar magnet	A	B	C
Length of the magnet (cm)	1	5	9
Number of pieces of paper	24	3	40

(b) How do you ensure that the results obtained are reliable? [1]

Before the experiment, Bob made a prediction that the longer the magnet the greater the magnetic force it has.

(c) Do you agree with his prediction? Explain. [1]

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36 The table below shows how much heat energy is lost by the different parts of the house every second in a cold condition.

Parts of the house	Window	Floor	Roof	Wall
Amount of heat energy(J)	1000	200	3400	4000

(a) When building houses, layers of poor conductor of heat were used to make the walls. Using the data above, explain how this will help the houses in cold condition.

_____

_____

The table below shows information about three types of fuels which can be used to heat the houses in cold condition. Substance S when dissolved in water becomes acidic while substance W does not.

Fuel	Does the fuel produce these substances when burned?	
	Substance W	Substance S
K	Yes	Yes
L	No	No
M	Yes	No

(b) Which fuel can be harmful to the environment? How is it harmful to the environment? [1]

_____

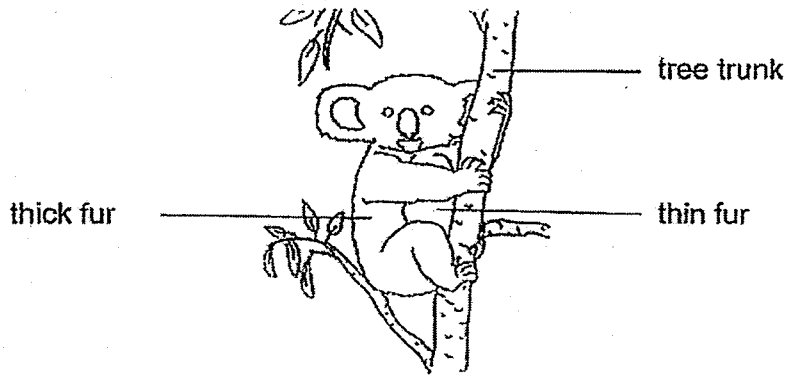
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Question 36 continues on page 12

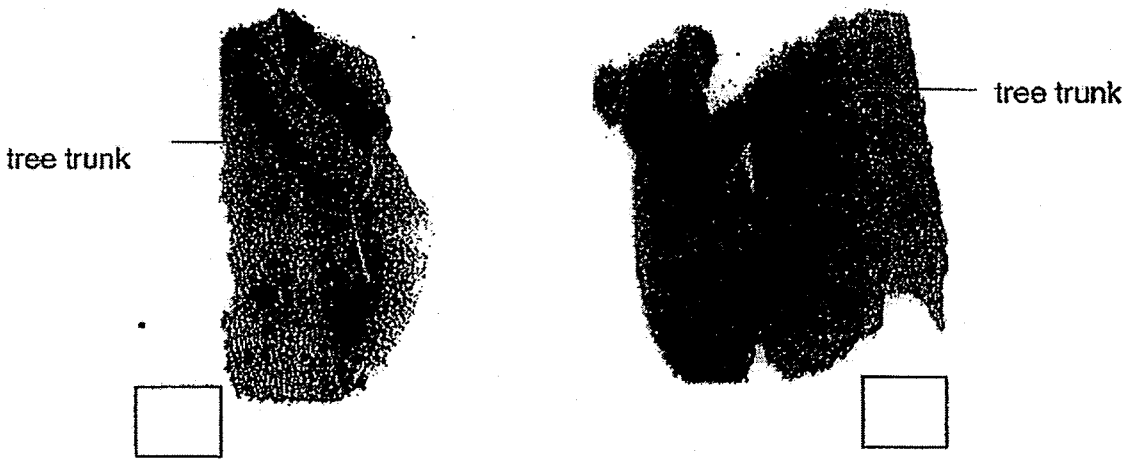
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A koala has both thick fur and thin fur on different parts of its body. Thick fur traps more air than thin fur .The temperature of the tree trunk is lower than the temperature of the surrounding air.



(c) Explain how the difference in fur help the koala to keep cool in a hot day. [2]

Koala has a different posture on the tree depending on the temperature of surrounding air to help it to survive in a hot day.



(d) Tick in the box above to indicate a hotter day. Give a reason. [1]

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37 Rose wanted to find out if the rate of evaporation of liquid W or liquid Y is faster. She measured the volumes of liquid W and Y twice each day to see how much has evaporated.

Day	Time	Volume of liquid W (cm^3)	Volume of liquid Y (cm^3)
Monday	10 am	100	100
	3 pm	99	95
Tuesday	10 am	100	100
	3 pm	85	80
Wednesday	10 am	100	100
	3pm	95	90

(a) Draw and label two set-ups for a fair test in the box below. The two containers are already drawn for you. [1]

(b) Using the results, state the conclusion for her experiment. [1]

_____

_____

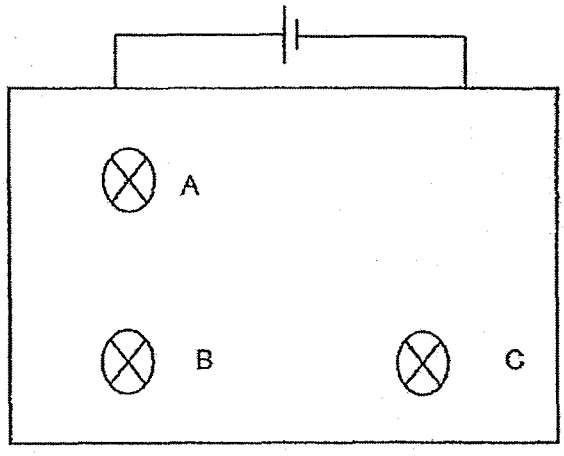
(c) Which day, Monday, Tuesday or Wednesday could be the hottest? Explain why. [1]

_____

_____

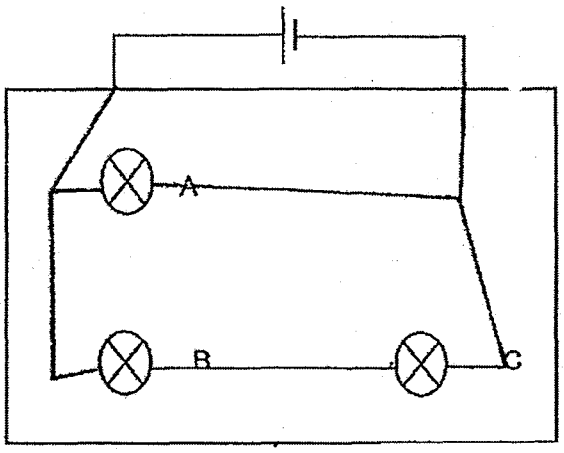
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38 Liza built a puzzle circuit with three identical bulbs. She covered the connections to the bulbs with a piece of card as shown below. The bulbs could be seen through holes in the card.



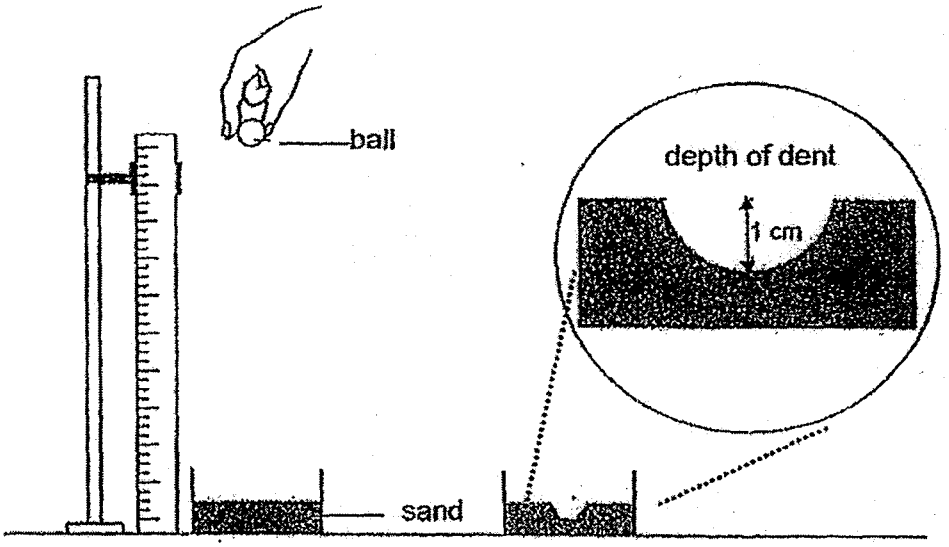
Bulb removed	Observations
A	B and C stayed on
B	C went off A stayed on
C	B went off A stayed on

Using the results above, complete the circuit below to show the how the bulbs are connected. [2]



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39 Thomas wants to investigate if potential energy is affected by the height of the object using the set-up below.



He dropped the ball from a certain height onto a container of sand. The ball created a circular dent and he measured the depth of the dent.

He repeated the experiment using balls of various mass and height of release.

His results are shown below.

Set-up	Mass of ball (g)	Height of release(cm)	Depth of dent(cm)
R	20	30	1
S	30	50	5
T	20	40	2
U	30	40	4

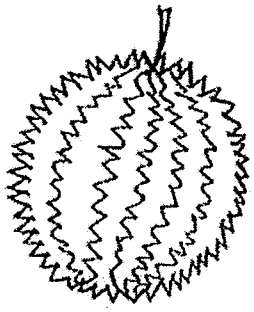
(a) Which two set-ups, should he use to investigate his experiment? [1]

_____

Question 39 continues on page 16

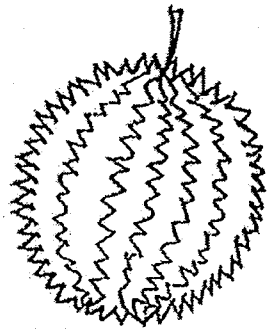
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Fruit A and fruit B are from the same tree. They drop from the tree when they are ripe.



fruit A

2kg



fruit B

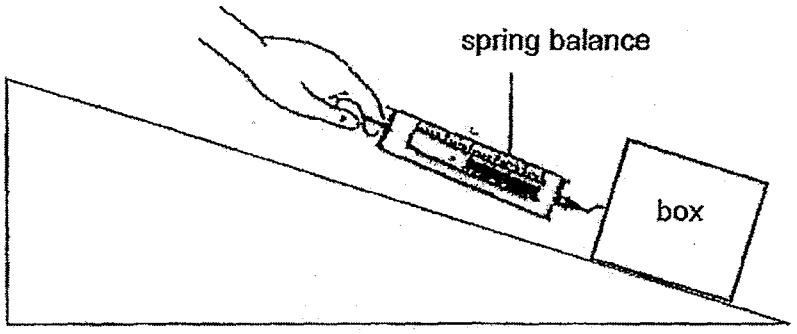
3kg

(b) Thomas concluded that fruit B has more potential energy than fruit A at the same height. Using his results, explain how he arrive at his conclusion. [2]

(c) Other than the depth of the dent the fruits can create when they drop from the tree, what observation could Thomas use to confirm his conclusion? [1]

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40 Devi pulled a box using a spring balance across a wooden surface ramp.



(a) Devi found the temperature on the bottom surface of the box increased slightly after moving it many times along the wooden surface. Give a reason. [1]

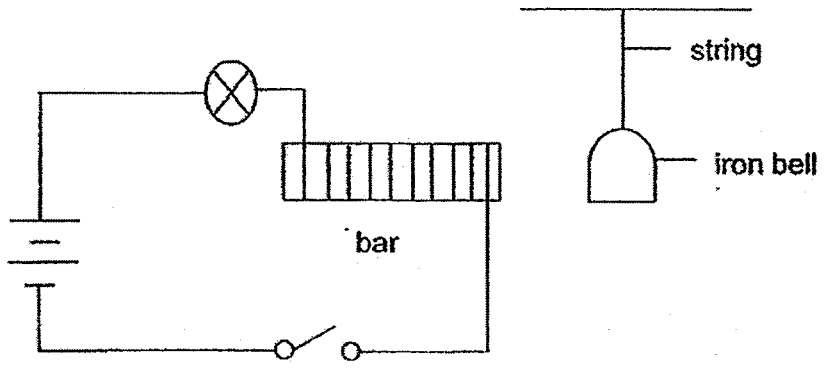
Devi conducted an experiment to find how the surface of the ramp affected the force needed to start moving the box.

Surface of the ramp	Force needed to pull the box (N)
Wooden	600
Plastic	200

(b) Explain why is the force needed to pull the box across the two surfaces are **not** the same? [1]

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41 Study the set-up as shown below.



An iron bell was hung near the bar in the circuit above. When the switch in the circuit was closed and opened continuously, the bell would ring.

(a) State an effect of force in the above set-up. [1]

_____

_____

(b) Using the set-up above, state two properties of the bar in the circuit. [1]

_____

_____

(c) Name the energy source in the above set-up. [1]

_____

End of Booklet B

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ANSWER SHEET

EXAM PAPER 2017 (P6)

SCHOOL : ROSYTH

SUBJECT : SCIENCE

TERM : PRELIM

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

29) a)1: Living things reproduce

2: Living things need food to survive

b) To ensure the good eggs become healthy young.

30) a) pollination

b) The male parts of flower c are sticking out of flower c. Therefore, the wind would be able to blow the pollen grains from the male parts easily.

c) Plant X – Hair like structure Plant Y – Tiny and numerous

31) a) The rate of photosynthesis increases as the amount of chemical W added to the water. After the point when 6g of chemical W was added to the water,

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the rate of photosynthesis remains constant as the amount of chemical W added to the water increases.

b) Increasing the light intensity of the light source.

32) a) No, the water carrying tubes should not be removed in step 1. This will allow the water carrying tube to continue transporting water to the leaves so that the leaves are able to use the water for photosynthesis and make food. This will allow the branch and leaves to continue surviving.

b) The soil contains mineral salts which the branch can use. With more mineral salts, the branch and leaves will grow more healthily.

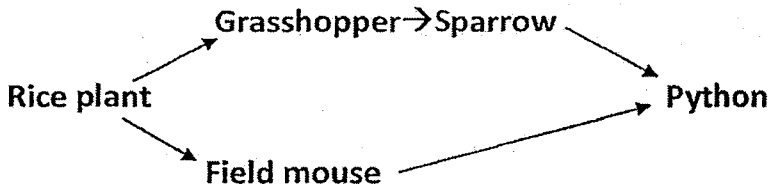
c) i) The young plant will need roots to take in water and mineral salts.

ii) The roots holds the young plant firmly into the ground to prevent the young plant from being blown away.

33) a) The population of rice plant will increase. When there is a decrease in the number of grasshoppers, less grasshoppers will feed on the rice plant and the death rate of the rice plant will be slower than the birth rate of the rice plant , allowing it to increase.

b) When there was a decrease in the number of grasshoppers, the sparrows will have less prey to feed on and will migrate to another place with more food to survive.

c)



34)a)Waterproof.

b)Since plant X is waterproof, it able to float on the water of the muddy pond. This allows able the leaf of plant X to receive more sunlight when it is at the water surface and photosynthesise to make more food.

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35)a)Magnetic force is a non-contact force.

b)Repeat the experiment at least two more times.

c)No, I do not agree with his prediction. Although bar magnet B is longer than bar magnet A, bar magnet A was able to attract the nail through more paper showing that it had a stronger magnetic Force than bar magnet B. Therefore the magnetic force a magnet has is not affected by the length of the magnet.

36)a)Wall loses the most heat thus the poor conductor of heat will reduce heat loses from the house surroundings, so the house to be warm.

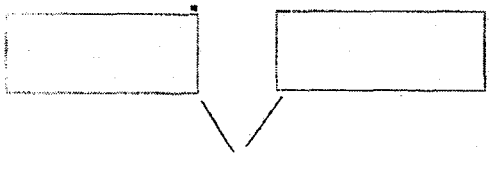
b)K. Fuel K gives out substance S when burned. Since substance S becomes acidic when dissolved in water, substance S will become acidic when coming into contact with rain and this will harm the environment when the rain is acidic. Causing animals and plants to die.

c)The thick fur traps more air, allowing the koala to gain less heat from its surroundings on a hot day and stay cool. Since the thin fur is close to the tree trunk and the tree trunk is cooler, the koala is able to lose heat to the tree trunk and keep cool.

d)  

When the koala hugs the tree trunk tightly, it reduces the exposed surface area of the koala and the koala and the koala will gain less heat from its surroundings, allowing it to stay cool.

37)a) Liquid w Liquid Y



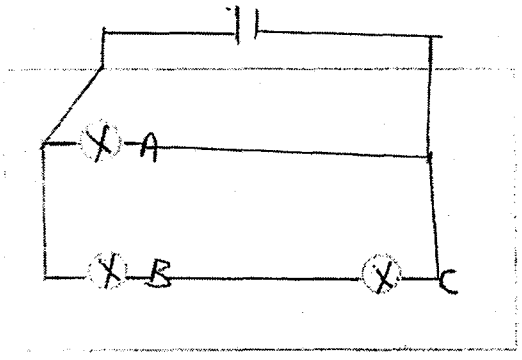
Container

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37)b)The rate of evaporation of liquid Y is Faster than the rate of evaporation of liquid W.

c)Tuesday could be the hottest. On Tuesday, liquid W and Y evaporation at a Faster rate than on other days. Therefore, Tuesday could be the hottest as a higher temperature cause the liquid to evaporation at a faster rate.

38)



39)a)S and U.

b)By comparing the results of set-ups T and U, he is able to observe that the amount of potential energy the ball possesses is affected by the mass of the ball. Although the balls in set-ups T and u are dropped from the same height, the depth of dent of the ball in set-up U is deeper than the depth of dent of the ball in set-up T as the ball in set-up U is heavier than the ball in set-up T.

c)When the fruits drop, the ball with more potential energy will produced a louder sound when hitting the ground.

40)a)There is friction between the box and the surface of the ramp when it is moving which produces heat.

b)Plastic is smoother than wood. Therefore, the friction that the pull Force needs to overcome is more between the wooden ramp and the box than the plastic ramp and the box.

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41)a)The iron bell was attracted to the bar.

b)The bar was magnetic and was a good conductor of electricity.

c)2 batteries.

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