Name: _____( )

Class: Primary 6____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Continual Assessment– 2015
SCIENCE

BOOKLET A

5 March 2015

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

30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 26 printed pages.

Section A : (30 x 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Figure 1 shows the location of a parent plant before it disperses its fruits while Figure 2 shows the location of its seedlings a few months later.

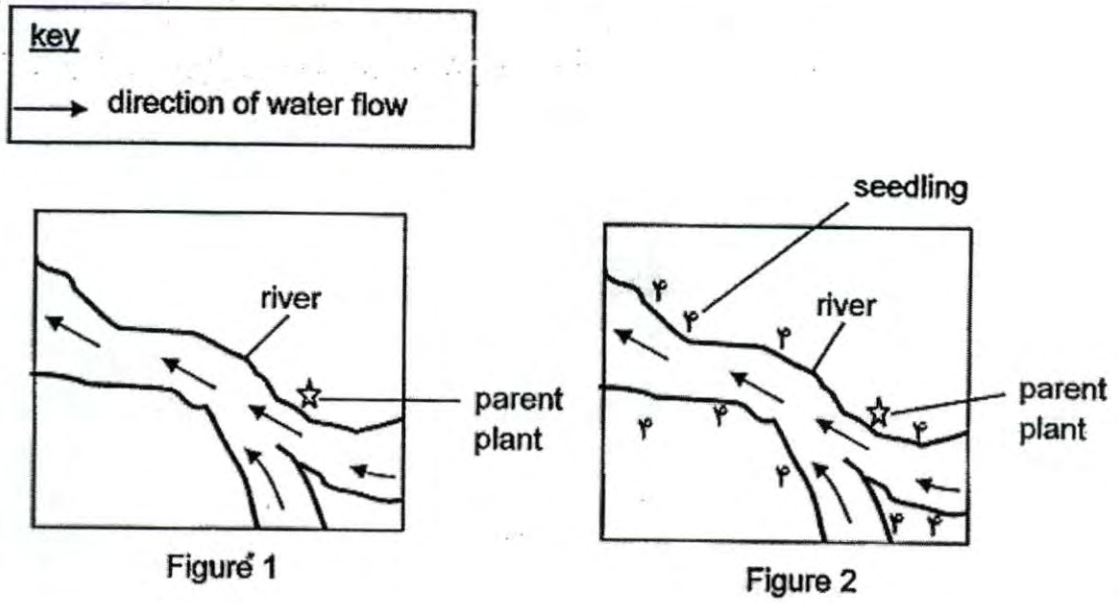


Figure 1

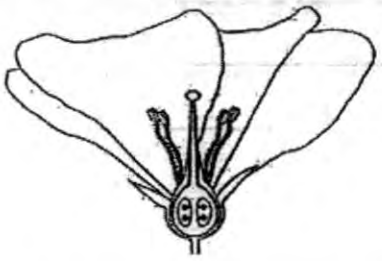
Figure 2

Based on the characteristics shown in the table below, which of the fruit(s) below could have been dispersed in the way as shown in the diagram above?

Characteristics of the fruit	Fruit A	Fruit B	Fruit C	Fruit D
Has seed pods				√
Sweet and juicy			√	
Has a fibrous husk		√		
Has a wing-like structure	√			

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

2. The diagram below shows the cross-section of a flower.



David observed the cross-section of the flower and recorded the followi observations.
Which of the following statements indicate that the flower is pollinated animals?

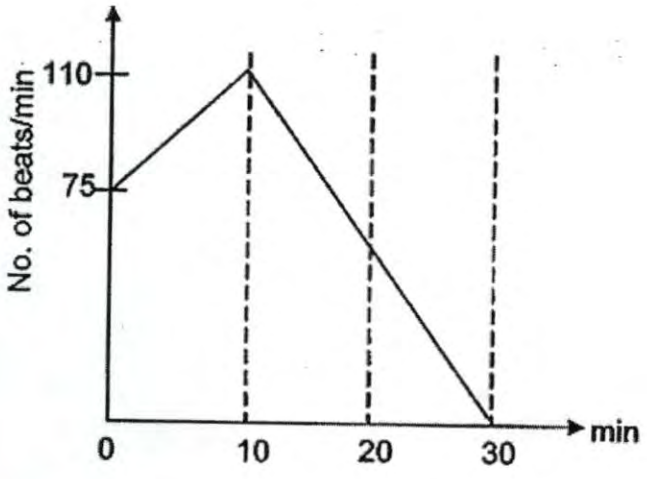
A The flower has an ovary.
B The flower has a sweet smell.
C The bright red petals of the flower are large.
D The anther and the stigma are hidden in the flower.

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

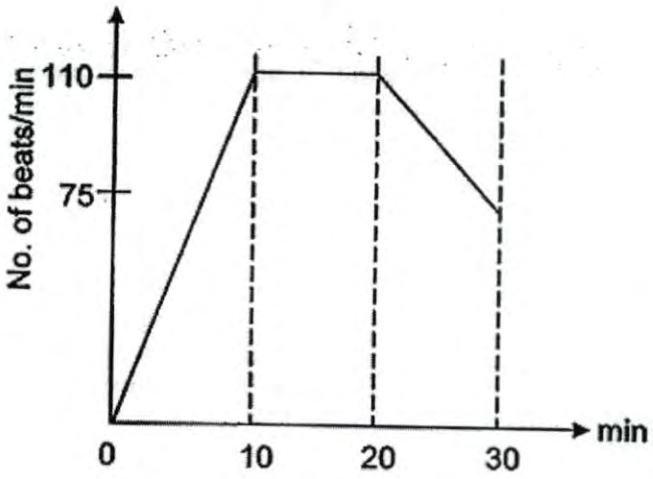
3. Elizabeth did the following activities continuously.
First she skipped with a skipping rope for 10 minutes.
Then she rested for 10 minutes
Finally she sat on a sofa to read a book for another 10 minutes.

Which one of the graphs below shows her pulse rate over the 30 minutes?

(1)



(2)



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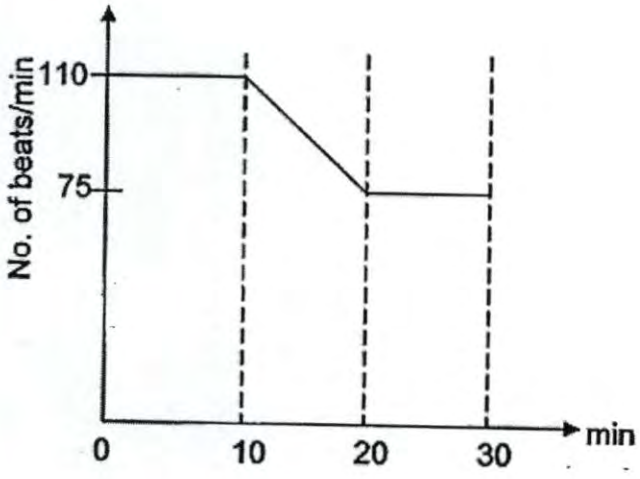

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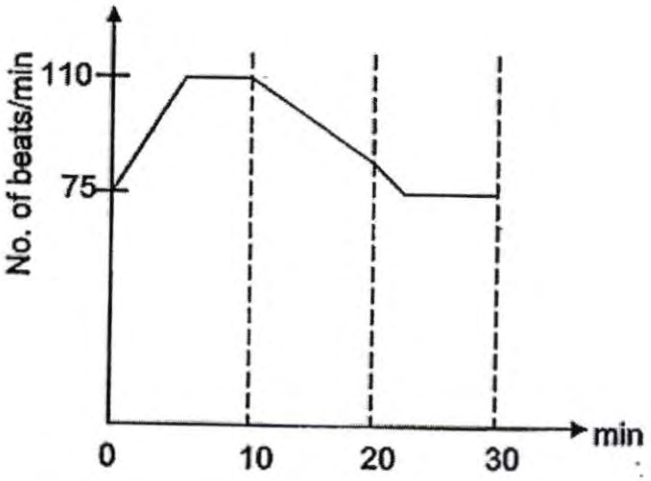
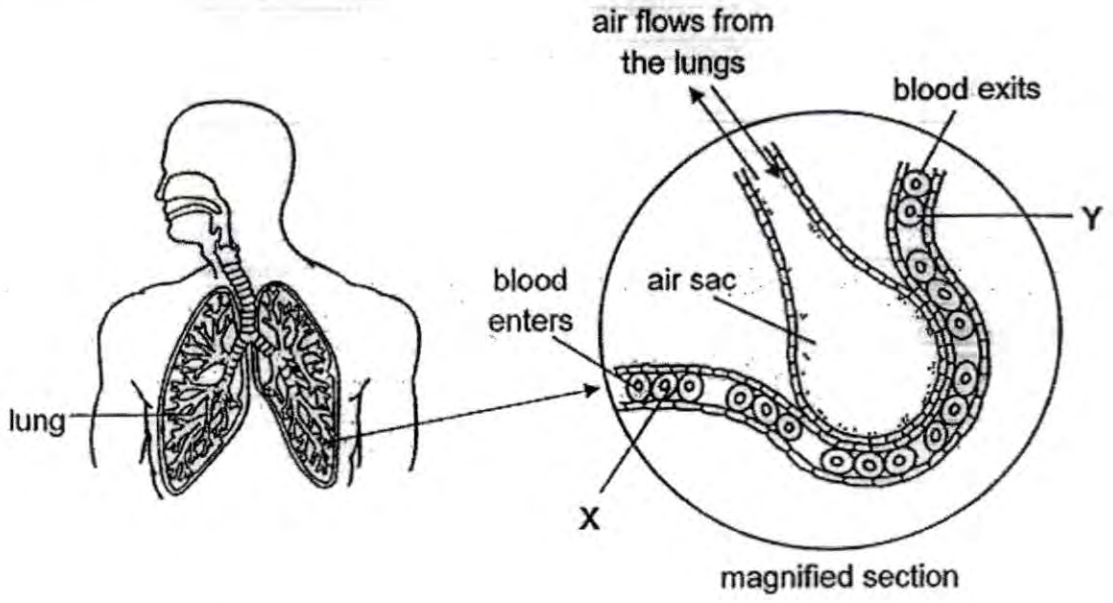


4. The diagram below shows the human respiratory system and part of the circulatory system.



Which of the following statements about the magnified section shown in the above diagram are **true**?

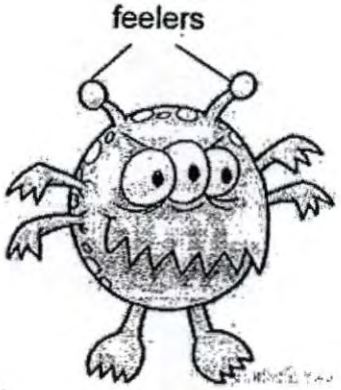
A Blood at X is rich in oxygen.
B Blood at Y is rich in oxygen.
C Air entering from the air sac into the blood stream is rich in oxygen.
D Air entering from the blood stream into the air sac is rich in oxygen.

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

5. A group of monsters is classified according to their physical traits as shown in the classification table below.

Name of monster	Physical traits
Eerie	3 eyes, 10 legs, 2 feelers
Grimmy	6 eyes, 10 legs, 4 feelers
Creepy	3 eyes, 6 legs, 2 feelers
Scary	6 eyes, 6 legs, 4 feelers

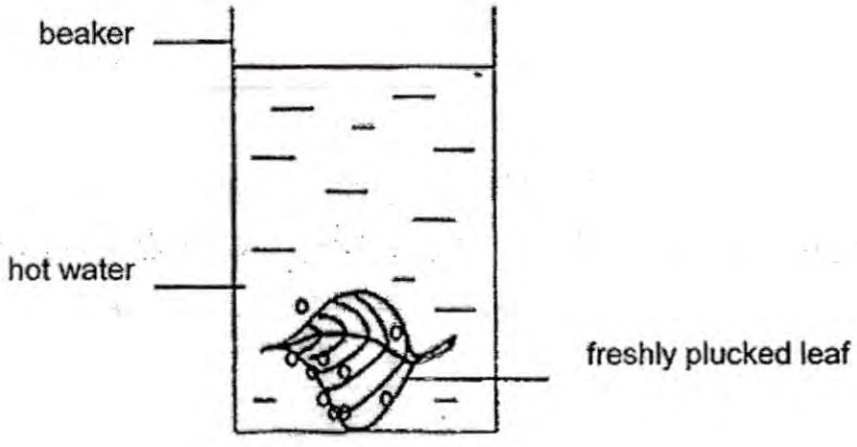
Based on the information given, which 2 possible monsters have reproduced the offspring shown below.



offspring

(1) Eerie and Grimmy
(2) Grimmy and Scary
(3) Creepy and Eerie
(4) Scary and Creepy

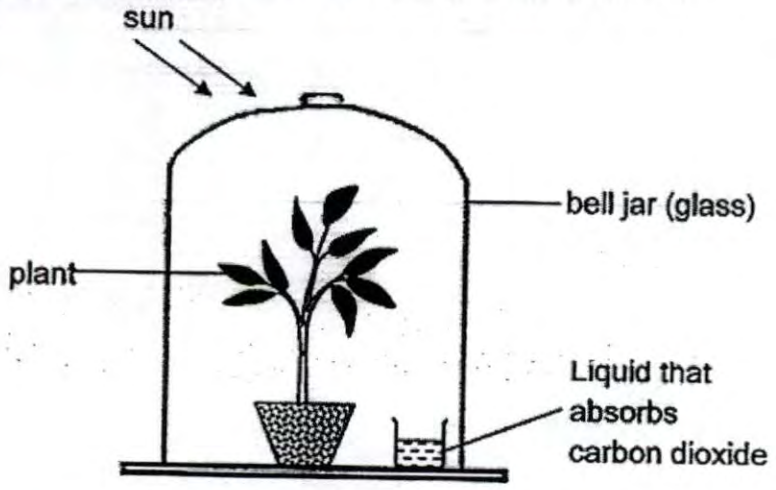
6. A freshly plucked leaf from a plant which has been exposed to the sun is placed in a beaker of hot water as shown in the diagram below.



After some time, bubbles were observed on the underside of the leaf.
Which one of the following statements explains this observation?

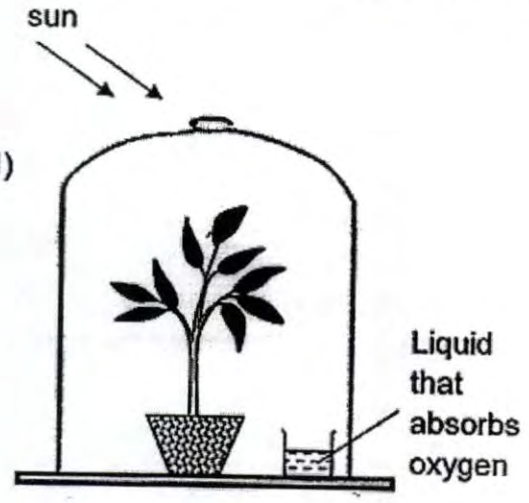
(1) Air escaped through the stomata on the underside of the leaf.
(2) Air in the hot water caused the bubbles to appear on the leaf.
(3) Air in the hot water expanded and escaped to the surrounding.
(4) Air entered through the upper surface of the leaf and escaped through the lower surface of the leaf.

7. Stella conducted an experiment to find out whether carbon dioxide is needed for photosynthesis. She used the set-up as shown below.

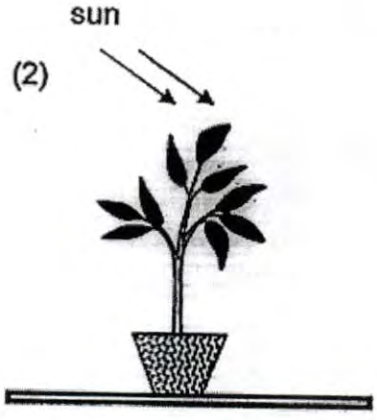


Which of the following set-up should Stella use as a control for her experiment?

(1)



(2)



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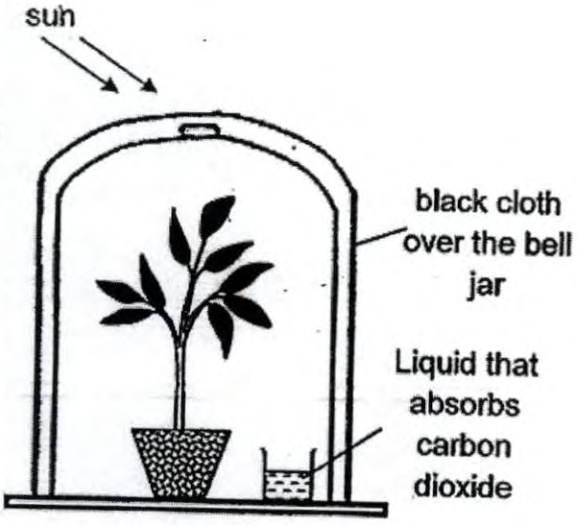

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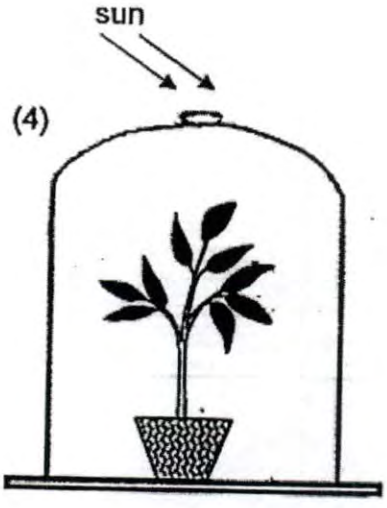


8. Melissa conducted a starch test on two food items. She added 2 drops of brown iodine solution on each food item. Iodine solution will turn dark blue in the presence of starch. She then recorded her observation in the table below.

Food Item	Colour of Iodine
C	Brown
D	Dark blue

Which one of the following food items can C be?

(1) Rice
(2) Corn
(3) Bread
(4) Fish

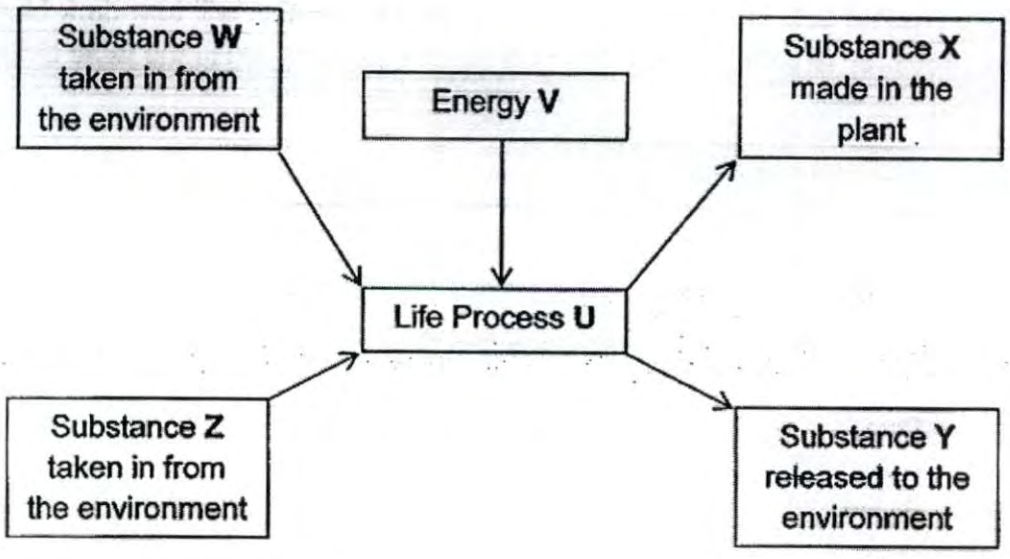
9. Ming Ming conducted an experiment to study the hardness of four different materials, P, Q, R and S. She used the sharp ends of a plastic rod, a wooden rod and a metal rod to scratch each of these materials and recorded her observations in the table below.

Rod used to scratch material	Scratch marks observed on material?			
	P	Q	R	S
Plastic	No	Yes	No	No
Wood	No	Yes	No	Yes
Metal	No	Yes	Yes	Yes

Which one of the following statements is true?

(1) R is harder than P.
(2) Q is the hardest material.
(3) Q and R are harder than plastic.
(4) P and R are harder than wood

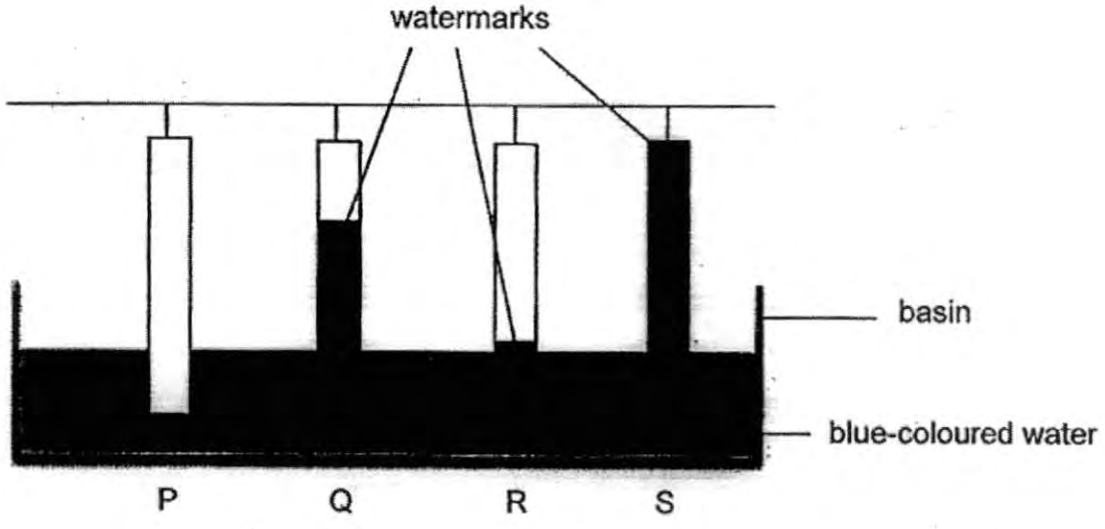
10. The diagram below represents life process U that takes place in green plants.



Which one of the following best represents life process U, Energy V and W, X, Y and Z?

		Substance				
	Process U	W	X	Y	Z	Energy V
(1)	Respiration	oxygen	water	carbon dioxide	water vapour	heat
(2)	Respiration	carbon dioxide	water	food	oxygen	heat
(3)	Photosynthesis	carbon dioxide	food	oxygen	water	light
(4)	Photosynthesis	oxygen	food	water vapour	carbon dioxide	light

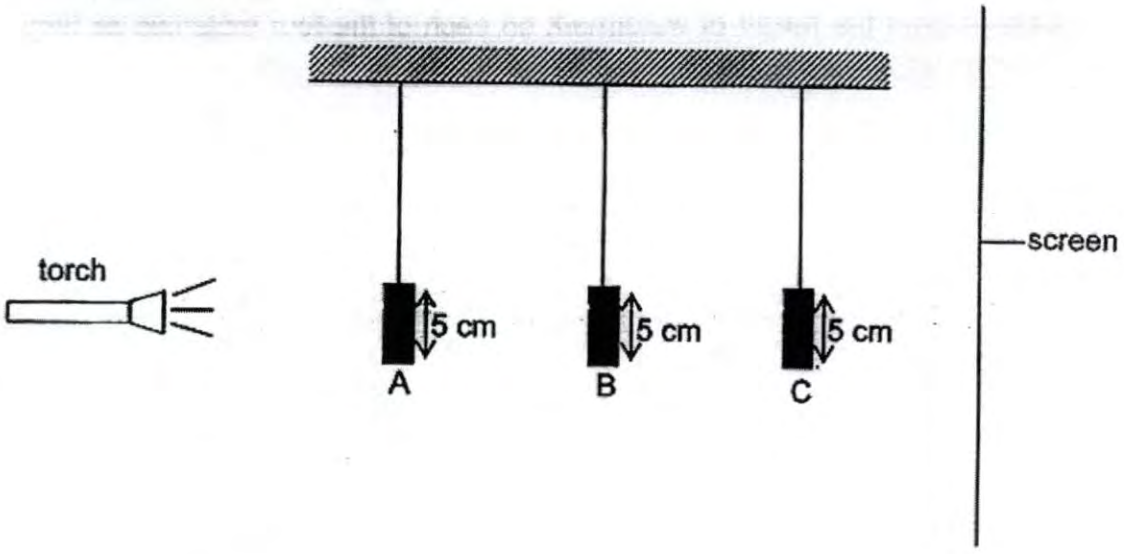
11. Jamie conducted an experiment to compare the amount of water 4 different types of materials absorbed. She placed the materials, P, Q, R and S, of identical size and thickness into a basin of blue-coloured water for 10 minutes. Jamie marked the height of watermark on each of the four materials as they absorbed the water as shown in the diagram below.



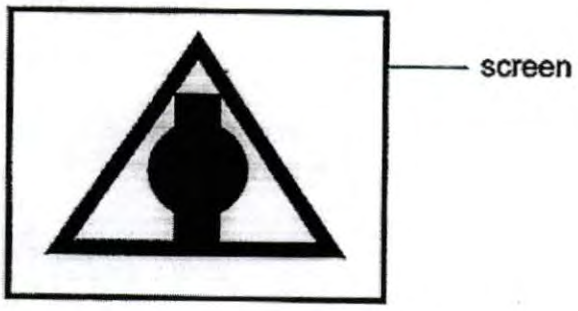
Based on the information above, which one of the following correctly identifies the most suitable material for making each object?

	Tissue paper	Raincoat	Cotton towel
(1)	R	P	S
(2)	S	R	Q
(3)	S	P	Q
(4)	P	Q	R

12. The set-up below shows light shining on three shapes A, B and C made of cardboard. They were placed at different distances from the torch.



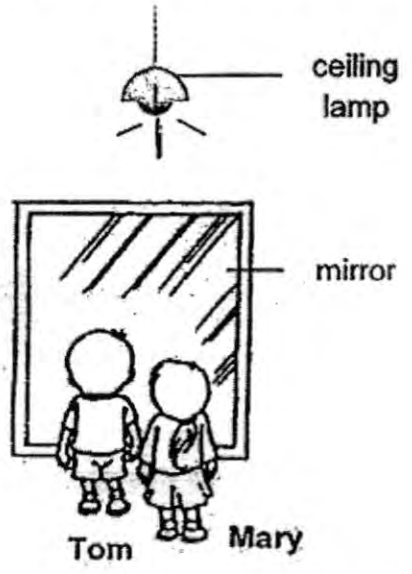
The diagram below shows what was seen on the screen.



Which one of the following best represents shapes A, B and C respectively?

	A	B	C
(1)	triangle	rectangle	circle
(2)	triangle	circle	rectangle
(3)	circle	rectangle	triangle
(4)	circle	triangle	rectangle

13. Tom and Mary stand in front of a mirror in a room. Even though Mary is standing behind Tom, Tom can still see her clearly.



Which one of the following statements explains how Tom is able to see Mary?

(1) Mary reflects light from the lamp into Tom's eyes.
(2) The mirror gives off light which travels into Tom's eyes.
(3) The light reflected by Mary is reflected by the mirror into Tom's eyes.
(4) The light given off by Mary is reflected by the mirror into Tom's eyes.

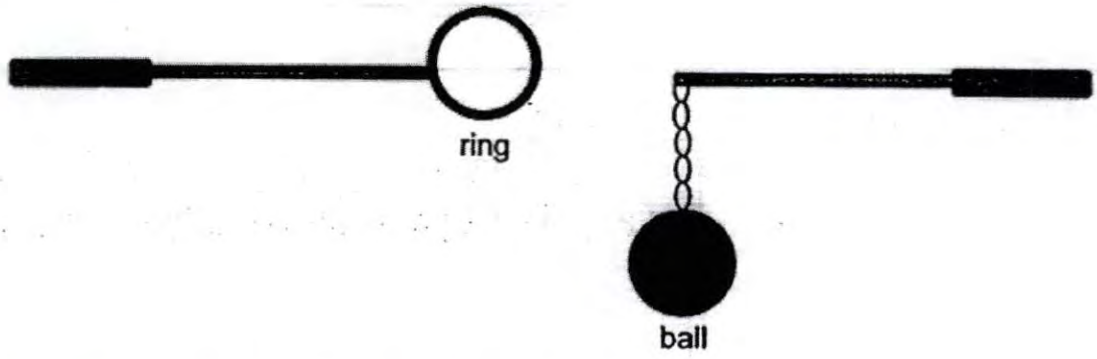
14. Giselle filled four identical cups made of different materials with equal amount of water at 80°C. She then left the four cups on a table. She recorded the time taken for the water in the cup to reach room temperature.

Material of the cup	Time taken for water to reach room temperature (min)
P	30
Q	15
R	60
S	45

Based on the results shown above, which material would be most suitable to make an ice-box?

(1) P
(2) Q
(3) R
(4) S

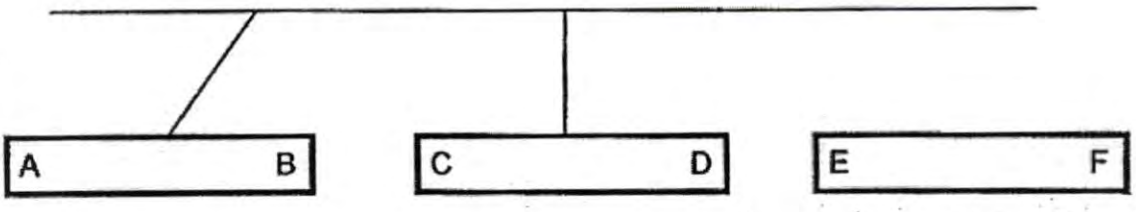
15. The ring and the ball shown below were made of the same material. At room temperature, the ball was unable to pass through the ring. After heating the ring for a while, the ball passed through the ring.



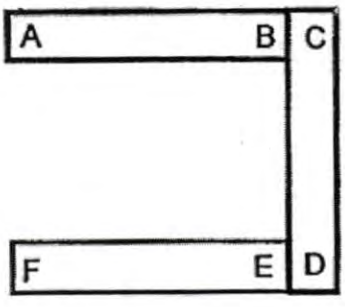
Which one of the following best explains this observation?

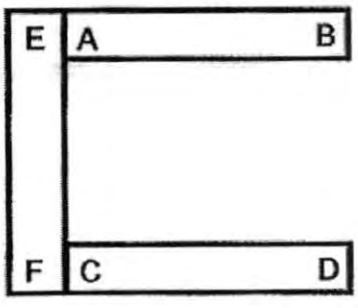
	The ring	The ball
(1)	Gained heat and expanded.	No heat gained or heat lost.
(2)	Gained heat and expanded.	Lost heat and contracted.
(3)	No heat gained or heat lost.	Lost heat and contracted.
(4)	No heat gained or heat lost.	Gained heat and expanded.

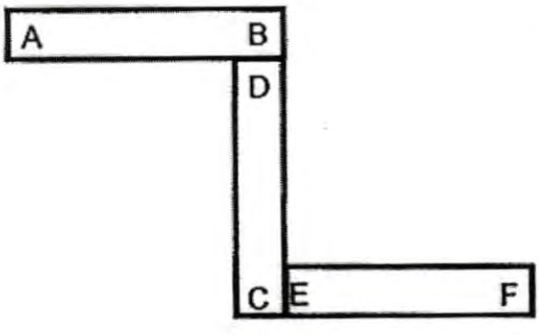
16. Zachary suspended three magnets freely on a pole. The diagram below shows the final positions of the magnets after a while.



Which one of the following shows the possible arrangement of the magnets?

(1)


(2)


(3)


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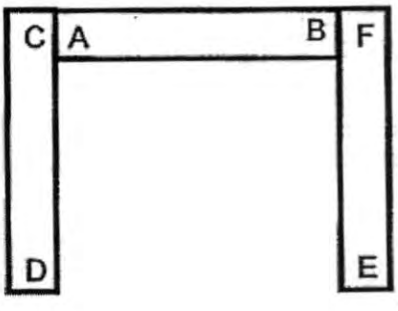
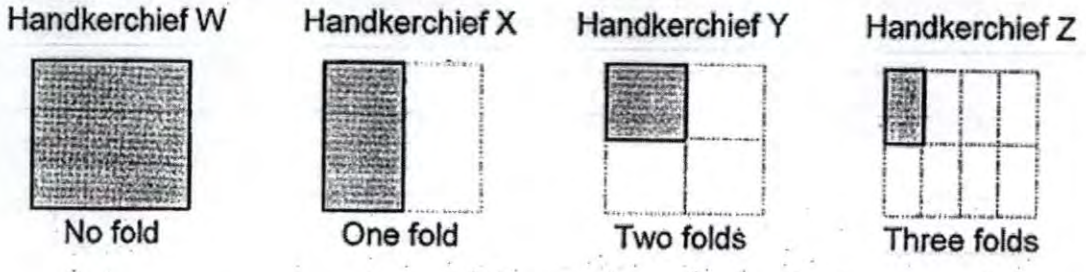


17. Regina soaked 4 similar handkerchiefs, W, X, Y and Z, with the same amount of water. She folded each handkerchief differently and hung them on a bamboo pole under the hot sun. The diagram below shows the size of each handkerchief being hung.



Regina then writes down some observations. Which of the following observations are correct?

A Handkerchief Z dries faster than handkerchief X.
B Handkerchief W dries faster than handkerchief Y.
C The number of folds has no effect on the rate that the handkerchiefs dry up.
D The exposed surface area of the handkerchief affects the rate of evaporation

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

18. We should conserve water so that we will not run out of water. Which of the following are good practices that help to conserve water?

A Use water directly from a hose to wash a car.
B Use water from a mug to rinse your mouth when you brush your teeth.
C Water plants using water that has been used to wash rice.
D Wash dishes in a basin of water instead of water from a running tap.

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

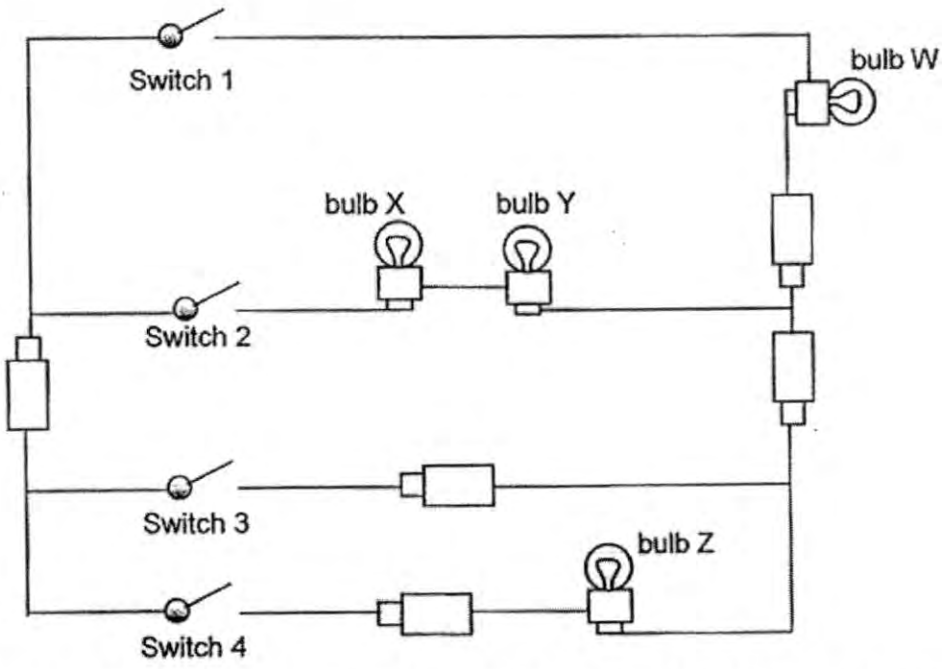
19. The table below shows the melting points and boiling points of three substances, A, B and C.

Substances	Melting Point (°C)	Boiling Point (°C)
A	45	87
B	32	189
C	5	28

Which one of the following observations is definitely correct when the temperature of the substances is 40°C?

(1) Substance A is in the liquid state.
(2) Substance B is in the gaseous state.
(3) Substance C is in the gaseous state.
(4) Substances B and C are in the liquid state.

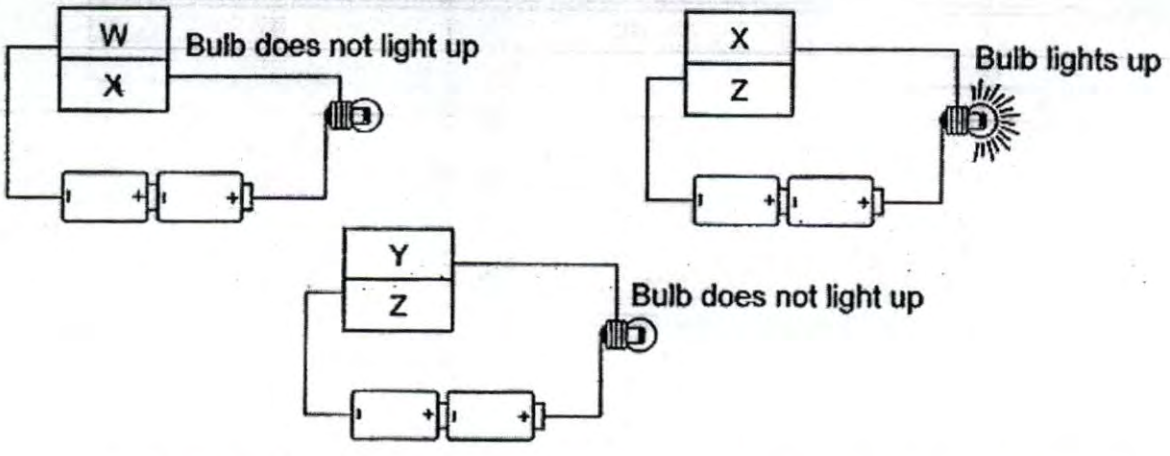
20. Study the diagram below carefully.



In order to get bulb W to glow the **brightest**, which of the following situations should take place?

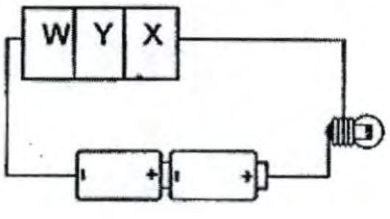
	Switch 1	Switch 2	Switch 3	Switch 4
(1)	Closed	Closed	Closed	Open
(2)	Closed	Open	Closed	Open
(3)	Open	Closed	Closed	Open
(4)	Open	Open	Closed	Closed

21. Study the diagrams below. W, X, Y and Z represent four pieces of materials. They are connected to a circuit in different combinations and the effect on the bulb is shown in the diagrams.

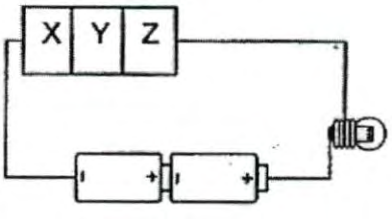


Using the information given, predict which of the following bulbs will light up.

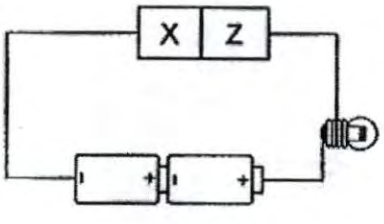
A



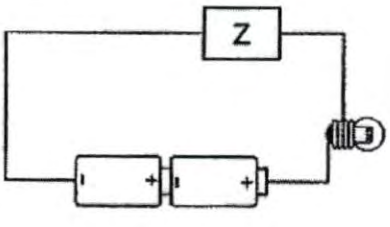
B



C



D



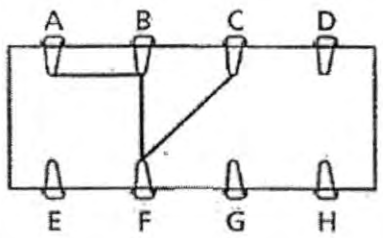
(1) D only
(2) C and D only
(3) A and B only
(4) B, C and D only

22. Raja used a circuit tester to test several points on a circuit card. He recorded his findings below.

Points	Did the bulb of the circuit tester light up?
AC	No
BG	Yes
CF	No
DE	Yes
DF	No
GH	No

Which one of the following circuit cards did Raja use?

(1)



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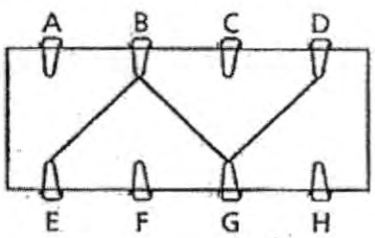
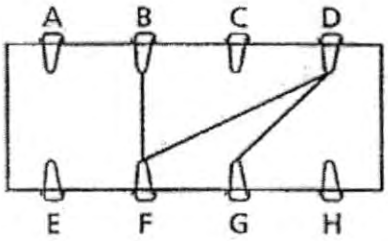
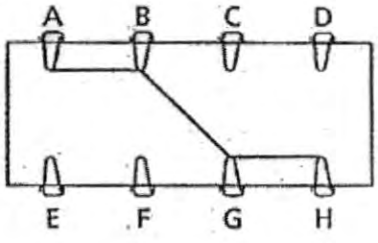


(3)



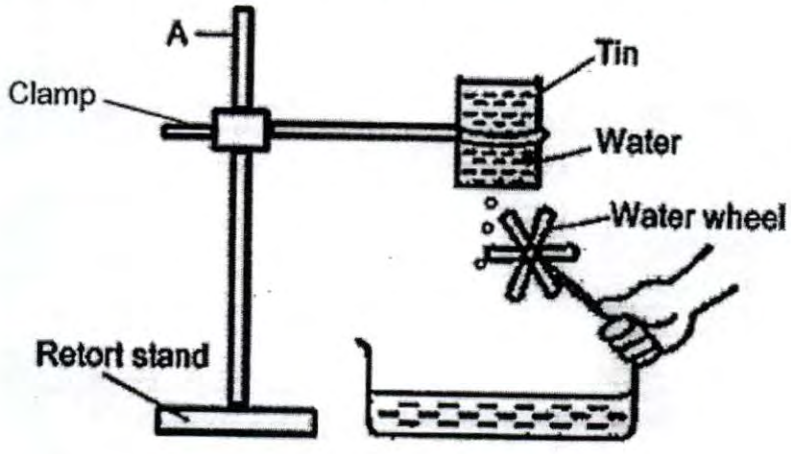
(4)



23. Which one of the following is the best example of increasing an object's potential energy?

(1) Dropping a pencil.
(2) Switching on a light bulb.
(3) Rolling a bowling ball.
(4) Stretching a rubber band.

24. Jan set up an experiment to see the effect of running water on a water wheel. He drilled a hole at the bottom of a tin filled with water and placed a water wheel beneath it as shown in the diagram below.

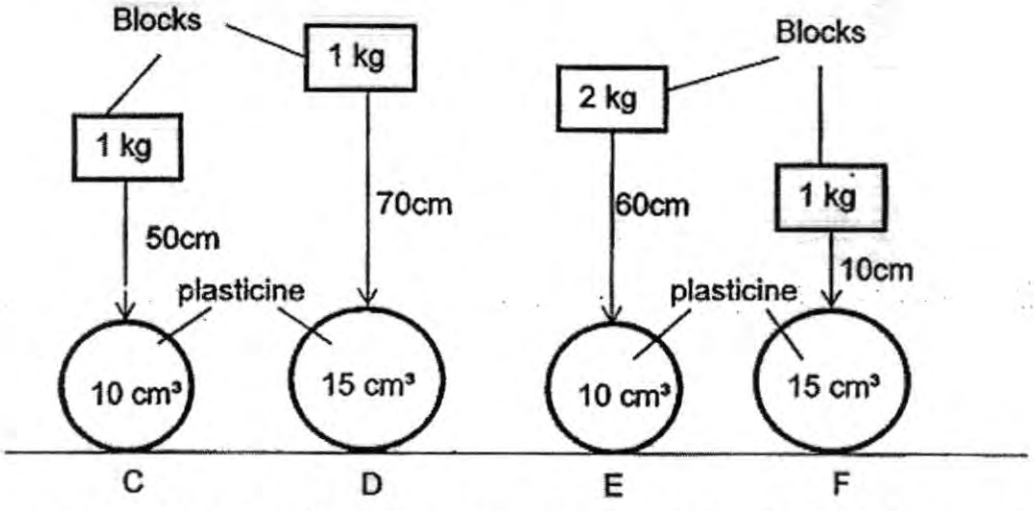


Which of the following modifications should Jan make if he wants the water wheel to spin faster?

S : Use a wider tin
T : Use a bigger water wheel.
U : Increase the size of the hole.
V : Move the clamp to the height of position A.

(1) S and T only
(2) S and U only
(3) T and V only
(4) U and V only

25. Ravi set up an experiment as shown below. Blocks of different masses were dropped directly on the balls of plasticine to flatten them.

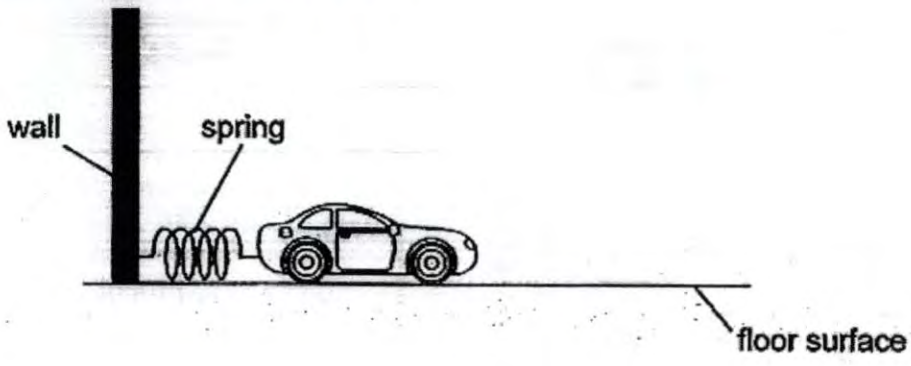


Ravi wanted to find out if an object has more gravitational potential energy if it is dropped from a greater height.

Which one of the following set-ups should he choose in order to conduct a fair test?

(1) C and D
(2) C and E
(3) D and F
(4) E and F

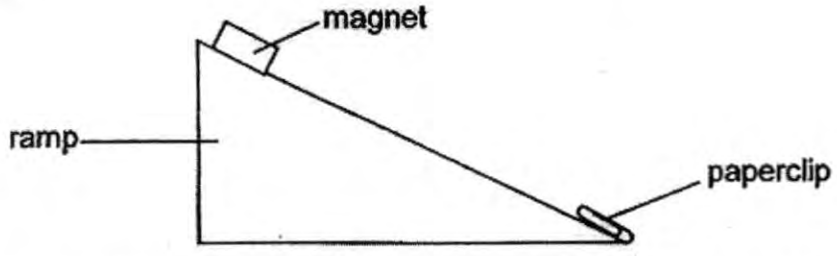
26. Liting pushed a toy car against the wall and then held it against a spring before letting it go as shown below.



Which one of the following best showed the energy conversion of the toy car from the time it was held against the wall till it stopped moving?

	Energy conversions
(1)	Potential energy ⟶ Kinetic energy ⟶ Potential energy
(2)	Kinetic energy ⟶ Potential energy ⟶ Kinetic energy
(3)	Kinetic energy ⟶ Potential energy ⟶ Sound + Heat energy
(4)	Potential energy ⟶ Kinetic energy ⟶ Sound + Heat energy

27. Willy glued a strong magnet at the top of a ramp as shown in the diagram below.

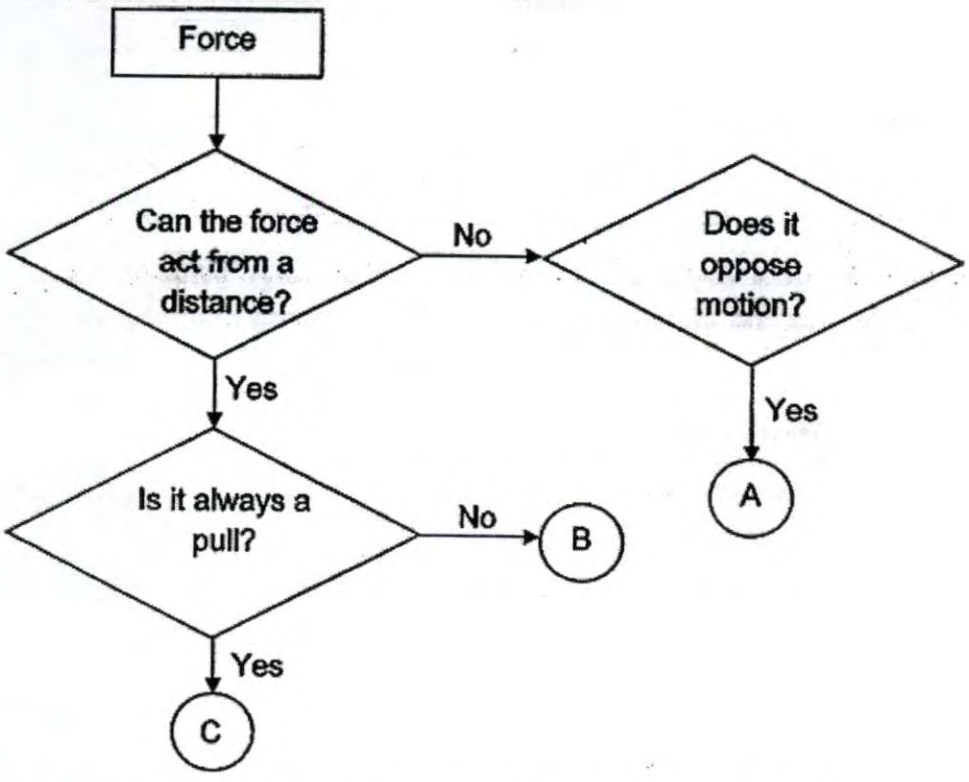


He then held a paperclip at the base of the ramp. When he let it go, he observed that the paperclip moved up the ramp and become attached to the magnet. What forces were acting on the paperclip as it moved up the ramp?

A Magnetic force
B Frictional force
C Gravitational force
D Elastic spring force

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

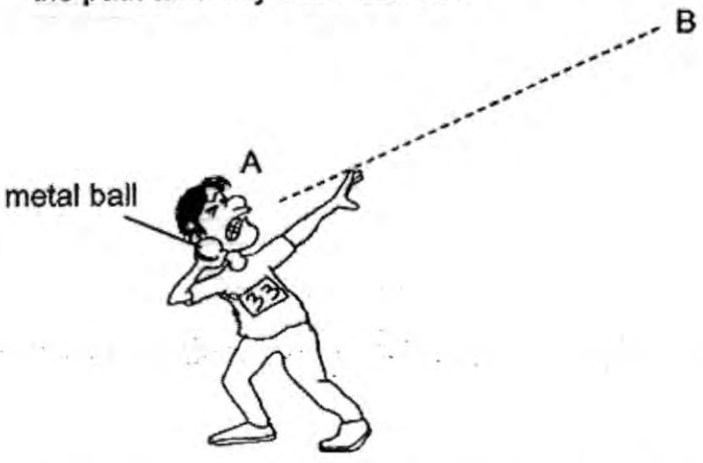
28. Study the flow chart shown below.



Which one of the following identifies the types of forces A, B and C?

	Types of force		
	A	B	C
(1)	frictional	magnetic	gravitational
(2)	frictional	gravitational	magnetic
(3)	magnetic	frictional	gravitational
(4)	magnetic	gravitational	frictional

29. Tom threw a metal ball in a shot put competition. Point A to B shows part of the path taken by the metal ball.

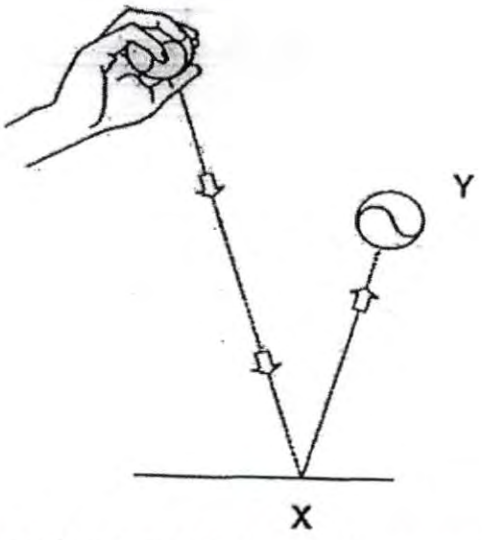


Which of the following statement(s) is/are **incorrect**?

A The mass of the metal ball remained the same from point A to B.
B There is no frictional force acting on the metal ball from point A to B.
C The gravitational force acting on the ball increased from point A to B.

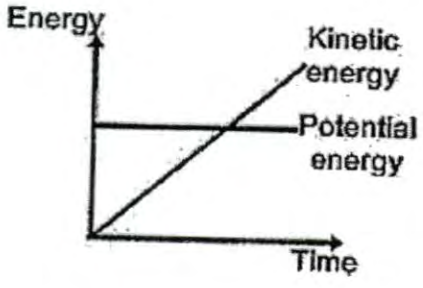
(1) A only
(2) B only
(3) A and C only
(4) B and C only

30. Peter threw a ball as shown.

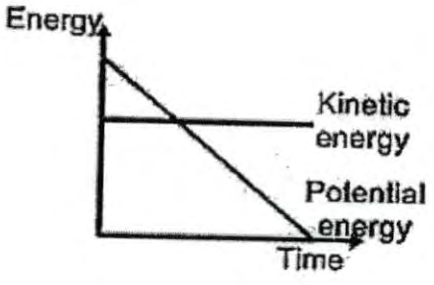


Which one of the following graphs **correctly** shows the energy conversion that occur between X and Y?

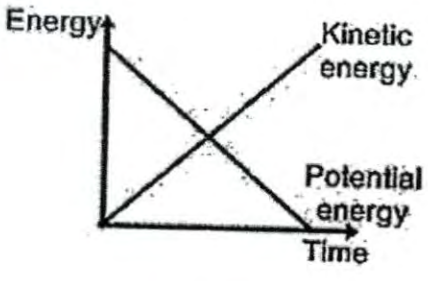
(1)



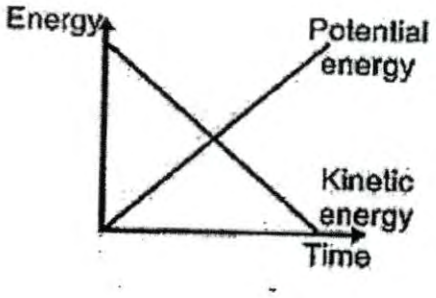
(2)



(3)



(4)



-----End of Section A-----

Name : _____( )

Class: Primary 6___

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Continual Assessment 1 – 2015

SCIENCE

BOOKLET B

5 March 2015

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

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 17 printed pages.

Booklet A	60
Booklet B	40
Total	100

Section B: 40 marks

For questions 31 to 44, write your answers in this booklet.

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

31. Johnson conducted an experiment to find out how temperature affects the germination of seeds. He used four similar seeds, P, Q, R and S, in his experiment. The table below shows the physical conditions that were provided for each of the seeds.

	Physical Conditions			
Seed	**Air**	**Water**	**Light**	**Temperature (°C)**
P	Present	Absent	Present	80
Q	Present	Absent	Present	0
R	Present	Present	Absent	32
S	Absent	Present	Absent	5

(a) Johnson was told that his experiment was not a fair one. What should he have done to ensure a fair test? [1]

_____

_____

(b) After a few days, Johnson observed that one of the seeds germinated. Which seed, P, Q, R or S, germinated? Explain your choice. [1]

_____

32. Roger conducted an experiment with 2 similar shorea fruits. Fruit B has part of its wing-like structures cut off as shown in the diagram below. He dropped the 2 fruits from the same height and recorded the time taken for each fruit to reach the ground.

Fruit A

Fruit B

(a) What was the aim of Roger's experiment? [1]

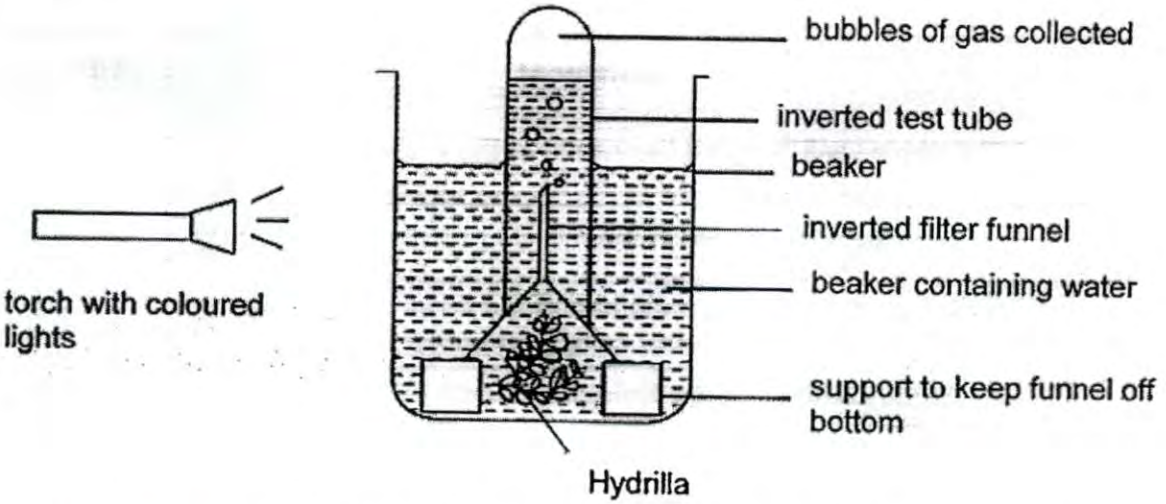
A traditional toy, Chapteh, as shown below, has similar structure as the shorea fruit. Colourful feathers are attached to a rubber or plastic base. Chapteh is played by having the player kicking it with the heel of his/her foot.

(b) Explain why the chapteh is made having similar structure as a shorea fruit. [1]

33. Write 'T' for every true statement and 'F' for every false statement in the boxes provided. [3]

	Statement	T/F
(a)	The ovules will become the seeds of the fruit.	
(b)	The ovary can be found in the female part of the flower only.	
(c)	Pollen grains from the male part of the flower are transferred to the tip of the female part called the anther.	
(d)	All plants can reproduce through self-pollination and cross pollination.	
(e)	Seeds which are dispersed by wind are all small and light.	
(f)	Ferns and mosses are plants which reproduce by spores.	

34. Johana set up the experiment as shown below in a dark room.



She shone the torch at the hydrilla plant for 15 minutes. She observed the number of bubbles given out by the plant during that time and recorded it in the table below. She then repeated the experiment using different coloured lights.

Study the table below which shows the results Johana obtained.

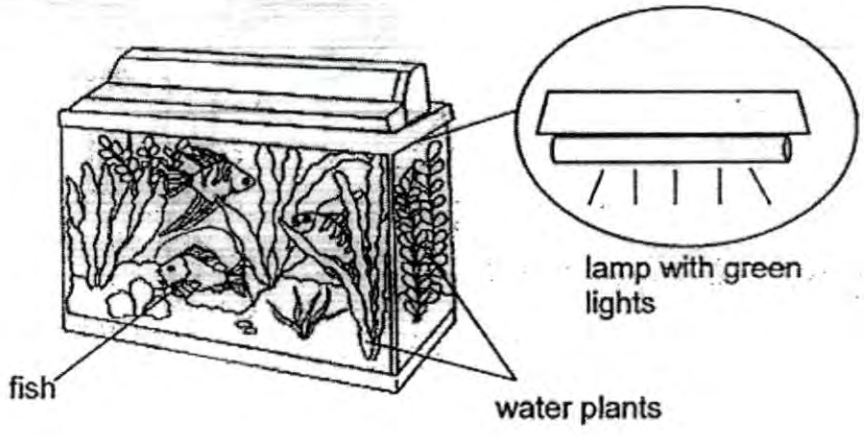
Colours of light	Number of bubbles produced
Red	18
Blue	24
Green	0
Yellow	14

(a) What can Johana conclude from the results of the experiment? [1]

(b) With the **same** set-up, what **other** observation Johana could measure to achieve the same aim. [1]

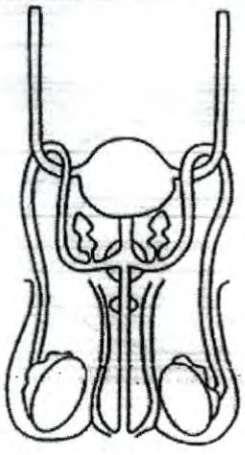
34.

(c) Johana then installed a lamp with green lights in her fish tank as shown below. She then placed the tank in a dark room.

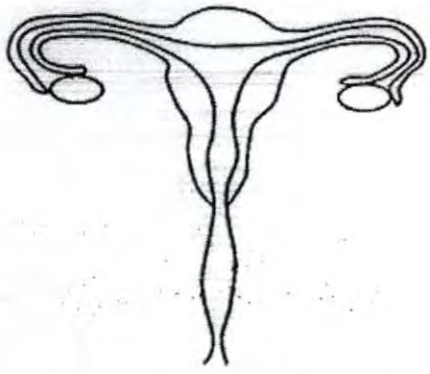


After a few days, Johana discovered that some of the fish in the tank died even though she had been feeding them regularly.
Based on the results of her experiment, what could be the reason that the fish could not survive? [2]

35. The diagram below shows the female and male human reproductive system.



Front view of the male reproductive system

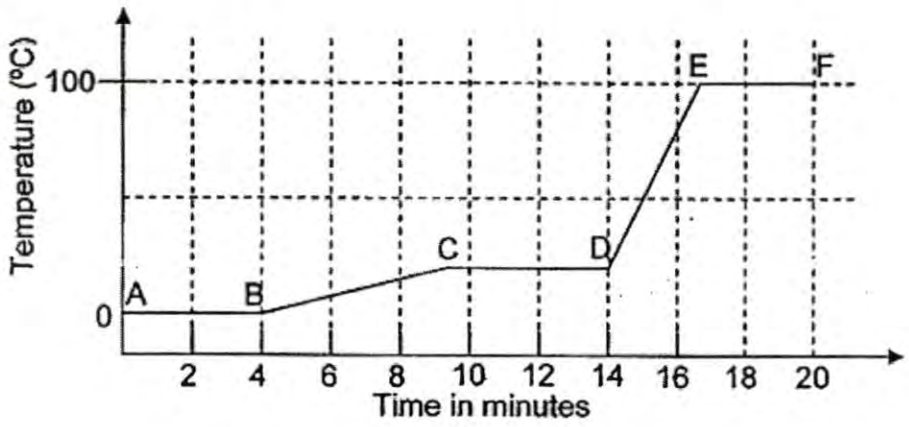


Front view of the female reproductive system

(a) Shade the parts that show the organs which produce the reproductive cells? [1]

(b) In what way is the human reproduction similar to the reproduction in most flowering plants? [1]

36. The graph below shows the changes in temperature of a beaker of ice cubes over a period of 20 minutes.



(a) Based on the graph above, what can we conclude about the temperature of the ice as it is melting? [1]

_____

_____

(b) Is there heat gain at part AB of the graph? Explain your answer. [1]

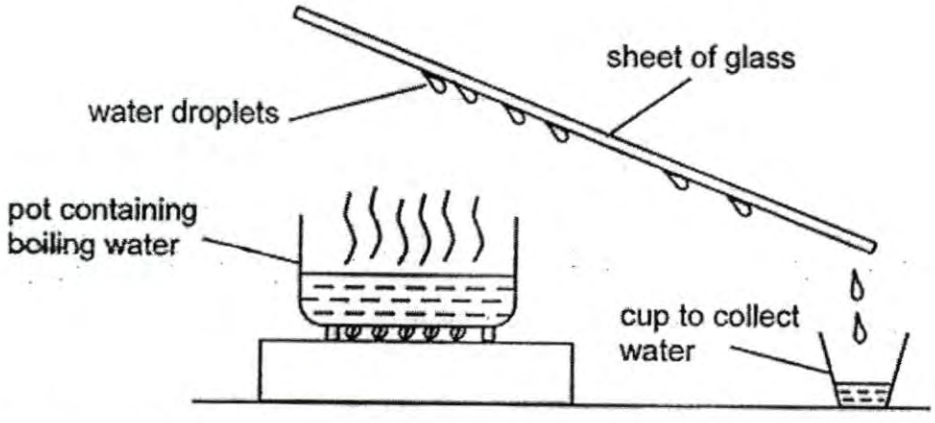
_____

_____

(c) Name the process that is happening at part EF of the graph. [1]

_____

37. In the diagram shown below, a pot with 90 cm^3 of water was heated over a stove and a cup was placed at the end of the sheet of glass to collect the water droplets formed.



a) Explain how the water droplets are formed. [2]

_____

_____

_____

_____

At the end of the experiment, it was found that the volume of water left in the pot was 50 cm^3.

b) Predict what would be the amount of water collected in the cup. [1]

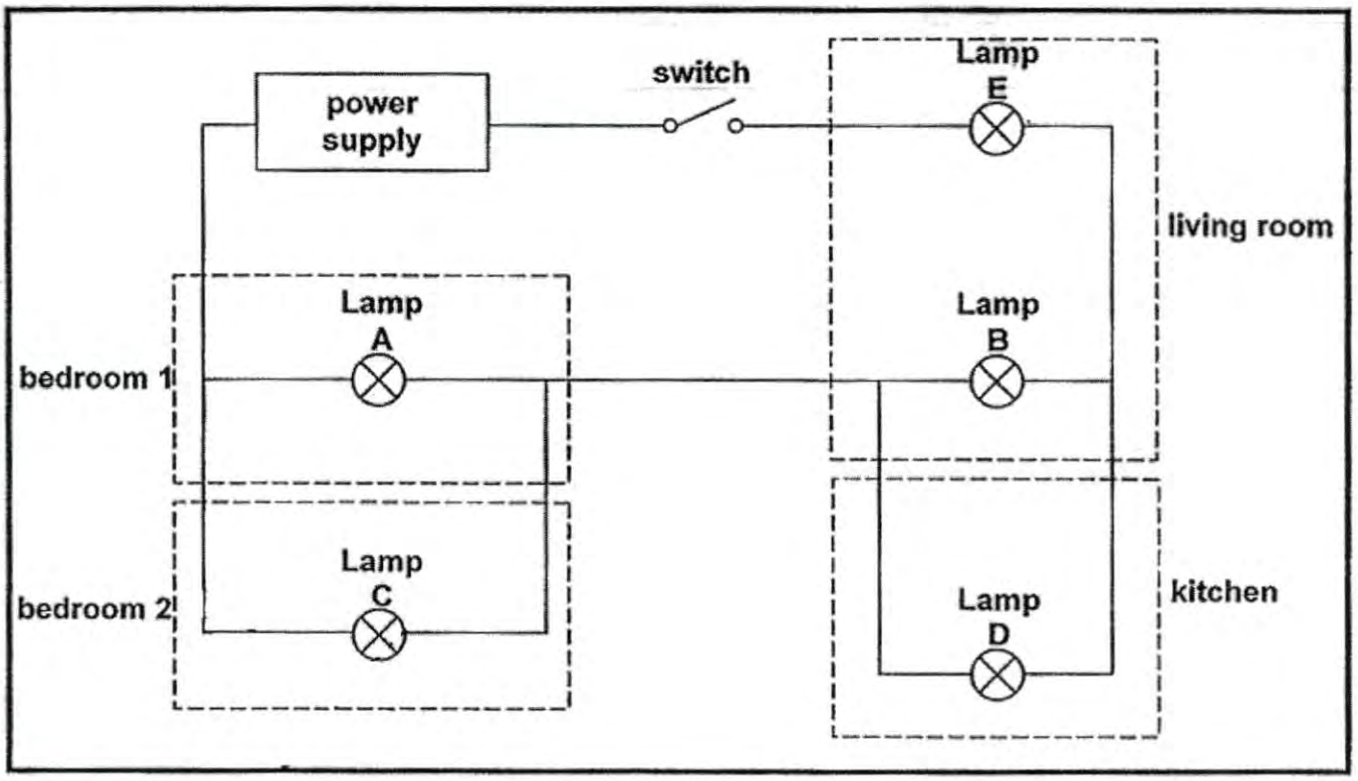
_____ cm^3

c) Give a reason for your answer in **(b)**. [1]

_____

_____

38. The diagram below shows an electrical circuit in a home consisting of four rooms; the living room, the kitchen and two bedrooms. Five lamps, A, B, C, D and E, are used to light up different rooms in the home.



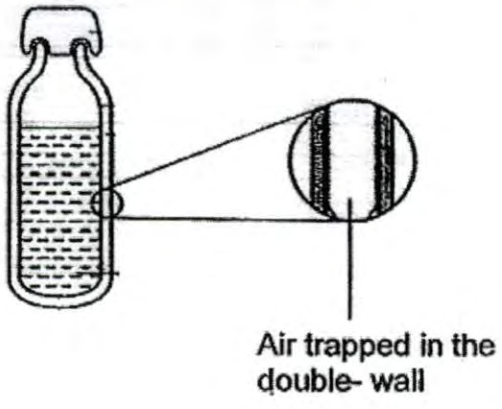
(a) Suggest one **disadvantage** of the electrical circuit shown above. [1]

_____

_____

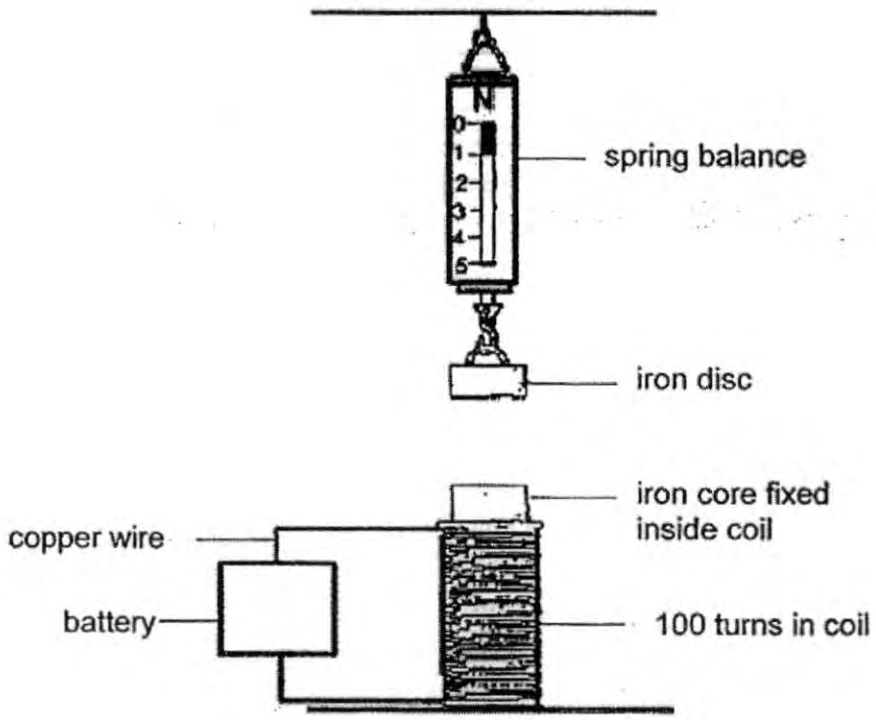
(b) Draw an "X" in the electrical circuit above to mark the position where a switch should be installed to control Lamp C in bedroom 2.

39. Mrs Lim poured hot coffee into a flask as shown in the diagram below. The flask has a double-wall feature that surrounds the flask. This double-wall feature helps to keep her coffee hot for a longer time.



Explain how the double-wall feature helps to keep her coffee hot for a longer time. [2]

40. Sue Ann set up the experiment as shown below to test the strength of an electromagnet. A spring balance is used to measure the magnetic force acting on the iron disc.



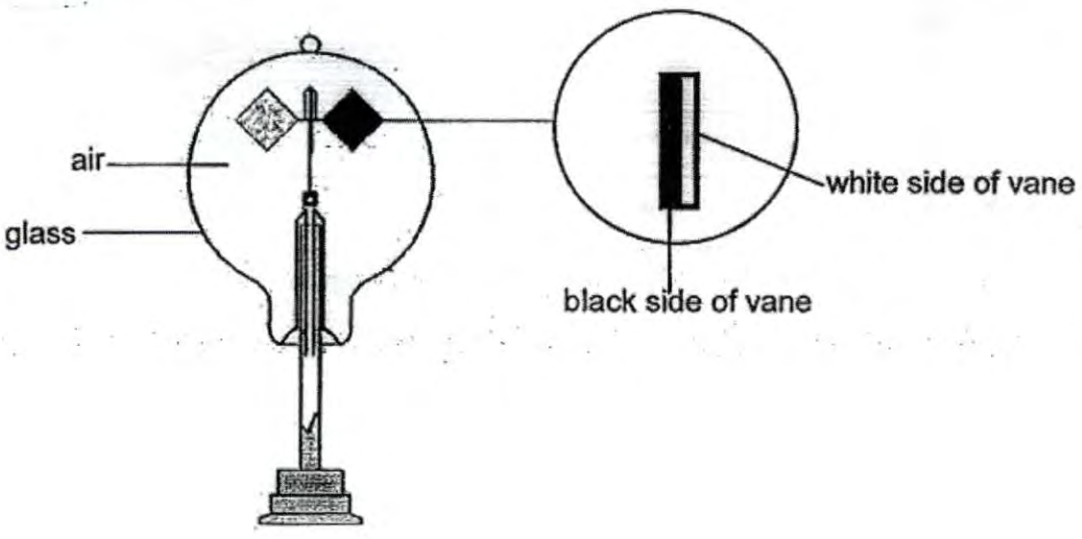
(a) When electric current passed through the coil, Sue Ann observed that there was a change in the **reading** on the spring balance.
State whether the reading would decrease, increase or remain the same.

[1]

(b) Explain why there was a change in the reading on the spring balance.

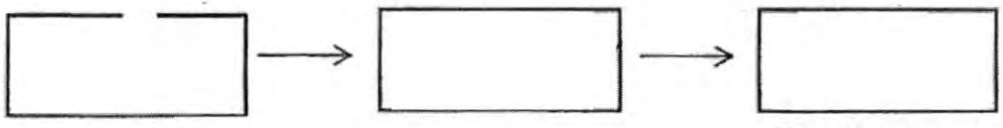
[2]

41. The diagram below shows a toy. Each vane is white on one side and black on the other.



When a torch is shone on the toy, the vanes will rotate.

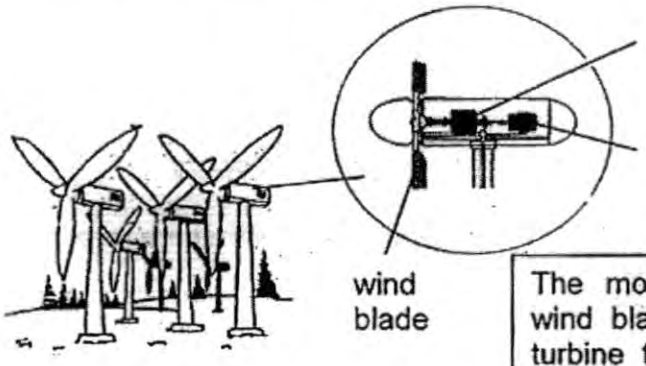
(a) State the energy changes that occurred. [1]



(b) If a brighter light source is used, will the vanes rotate faster or slower? Give your reason for your answer. [2]

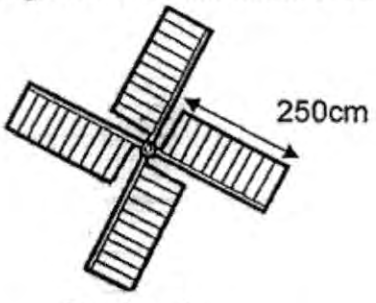
(c) When the light source was removed, the vanes stopped rotating after a while. Explain why this is so. [1]

42. Scientists are constantly looking for various ways of making use of renewable source of energy. One such example is to make use of the windmill. The designs of the blades of the windmill determine the efficiency of the windmill. The diagram below shows how a windmill generates electricity.

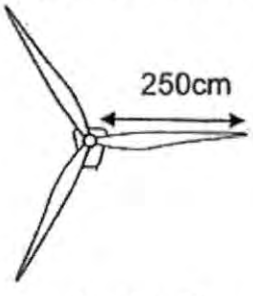


The movement of the wind blades cause the turbine to rotate which in turn generate electricity in the generator.

Two designs of the wind blades for the windmills are shown below.



Design A
Mass of each blade =20kg



Design B
Mass of each blade =15kg

(a) Based on the above information, which design, A or B, should be used to make windmills such that as much electricity can be generated as possible within a period of time? Explain your choice. [2]

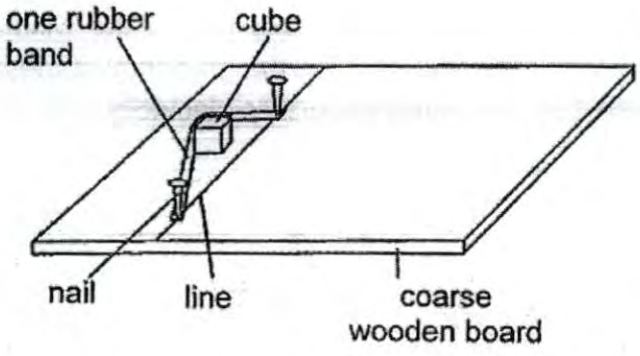
_____

_____

(b) State one reason, apart from the high cost of building windmills, why it is not ideal to generate electricity using windmills in Singapore. [1]

_____

43. An experiment is set up as shown in the diagram.



(a) In the table below, **identify** the forces that are involved when the cube is released. [1]

Tick (√)	Forces
	Magnetic force
	Frictional force
	Gravitational force
	Elastic spring force

(b) The experiment is repeated on a glass top instead of a coarse wooden board. Will the cube move further? Explain your answer. [1]

_____

_____

(c) What can you add to the set-up in order for the cube to travel a longer distance? Explain your answer. [1]

_____

_____

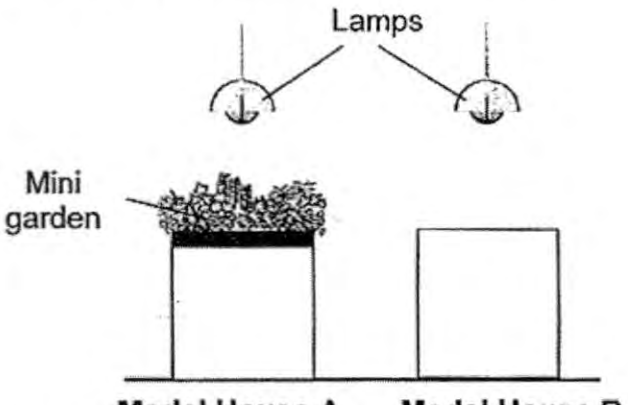
44. Based on a recent newspaper article, more rooftop gardens are constructed in Singapore as shown in the article below.

More HDB car parks to house rooftop gardens

A rooftop garden at Block 465A Upper Serangoon Road. Nine hectares of space from the roof top of multi-storey car parks will be transformed into garden spaces over the next few years. Minister for National Development Mr Khaw Boon Wan wrote this in a blog post on Wednesday. Feb 7 2013 - ST FILE PHOTO MALAVIKA SINGH

Jill wanted to find out how the interior temperatures of buildings are affected by the presence of rooftop gardens. She constructed two similar model houses and placed a mini garden on the roof of Model House A only.

Similar lamps were placed at equal distance from each model house and were switched on at the same time. The temperature in each model house was measured after several hours. It was found that the temperature in Model House A is lower than in Model House B.



(a) Give a reason why the temperature in Model House A is lower than that of Model House B after several hours. [2]

(b) Research has shown that rooftop gardens can also reduce flooding at ground level. Give a reason why this is so. [1]

EXAM PAPER 2015

SCHOOL : CHIJ

SUBJECT : P6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	4	3	3	1	4	4	4	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	1	3	3	1	3	3	4	3	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	4	4	3	4	3	1	4	4

31)a)Johnson should provide air, water and light for all the seeds so that there will only be I changed variable-the temperature the seeds are placed in.

b)Seed R. Seeds need oxygen, water and warmth to germinate. Seed R was provided with air that has oxygen, water and warmth.

32)a)To find out if the length of the wing-like structure affects the time taken for the fruit to reach the ground.

b)The Chapteh is supposed to stay suspended in the air for as long as possible. The shorea fruit is dispersed by wind so it is able to stay in the air for a long time. The feathers attached are like the wing-like structures of the shorea fruit which helps to keep it in the air for a longer time.

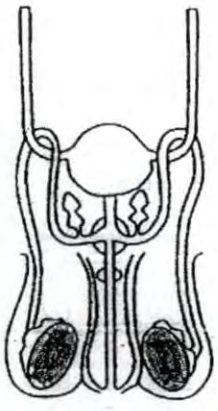
33)a)T b)T c)F d)F e)F f)T

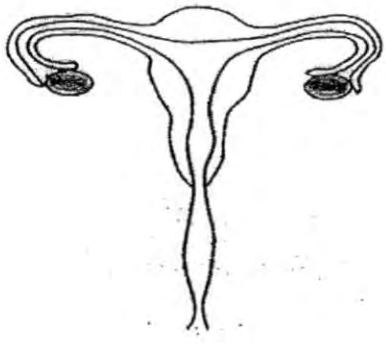
34)a)Green light does not support photosynthesis of plants. Blue light supports photosynthesis of plants the most.

b)Amount of gas collected at the top of the inverted test tube.

c)Plants cannot photosynthesize in green light.Fish lack of oxygen will die.

35)a)





b)Both need the male reproduction cell to fuse with the female reproduction cell for reproduction to occur.

36)a)It remains at its melting point,0℃.

b)Yes, there is heat gain at part AB of the graph. The ice needs to gain heat to melt but its temperature when ,melting remains at 0℃.

c)Boiling.

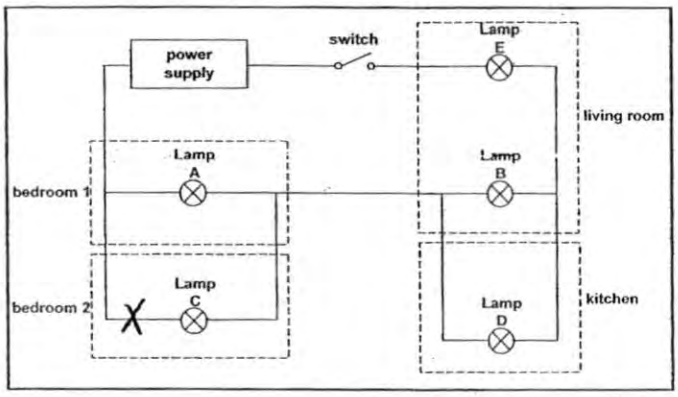
37)a)Warm water vapour from the boiling water touches the cooler glass surface, loses heat and condenses into water droplets.

37)b)38

c)After the warm water vapour touches the sheet of glass numerous times, the sheet of glass will gain heat from the warm water vapour and the temperature of the sheet of glass will rise, resulting in some water vapour not condensing on the sheet of glass as it is not the cooler surface so less water will be collected in the cup.

38)a)If Lamp E fuses, the circuit is open, all the bulb will not light up.

b)



39)Between the double-wall feature, there is air trapped. Air is a poor conductor of heat so it will conduct the heat from the hot to the surroundings at a slower rate, keeping the coffee hot for a longer time.

40)a)Increase.

b)The iron core will be an electromagnet when electric current passes through the coil, attracting the iron disc which is made of iron, a magnetic material, causing the iron disc to move downwards, increasing the reading on the spring balance.

41)a)Light energy→Heat energy→Kinetic energy

b)Faster with a brighter light source, more heat and light energy is present to be converted into more kinetic energy, hence the vanes rotate faster.

c)The light source was the main source of energy.Without the light no heat energy is present to be converted into kinetic energy of the rotating vanes.

42)a)B. The mass of each blade for design B is lighter than the mass of each blade for design A. More over A has more blade than B with lesser and lighter blades, the blades can move faster, hence rotating the turbine at a faster rate generating more electricity.

b)Singapore has not enough land to build windmills on large field where wind is abundant.

43)a)Frictional force / Gravitational force / Elastic spring force

b)Glass is smoother so it will reduce friction between the cube and glass.

c)Add oil on the surface of the board. Oil will act as a lubricant which will reduce the friction between the board and the cube, enabling the cube to travel a longer distance.

44)a)Light energy used for photosynthesis. Heat energy block by the plants, plants releases water vapour. These help to keep house A cooler.

44)b)The soil at rooftop gardens will absorb the water for the plants, resulting in less water on the ground level,so flooding is reduced.