卍慈学校

RED SWASTIKA SCHOOL

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SCIENCE
2017 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 5 May 2017

BOOKLET A

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

Booklet A: 28 questions (56 marks)

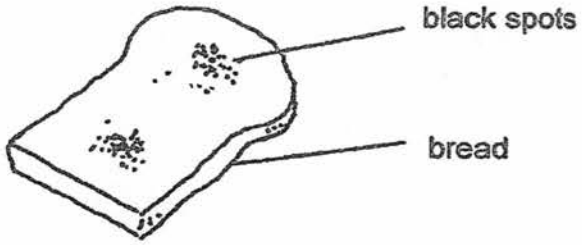
Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
   a. Page 1 to Page 21
   b. Questions 1 to 28

Section A

For Questions 1 to 28, choose the most suitable answer and shade its number in the OAS provided.

1. Sally found black spots growing on a piece of bread that was placed on a table for five days as shown below.

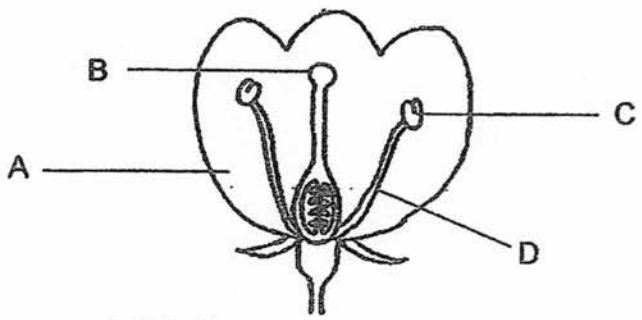


Which of the following need to be present for the black spots to grow?

A: oxygen
B: carbon dioxide
C: water
D: light

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

2. Alan conducted an experiment with a flower on a plant.

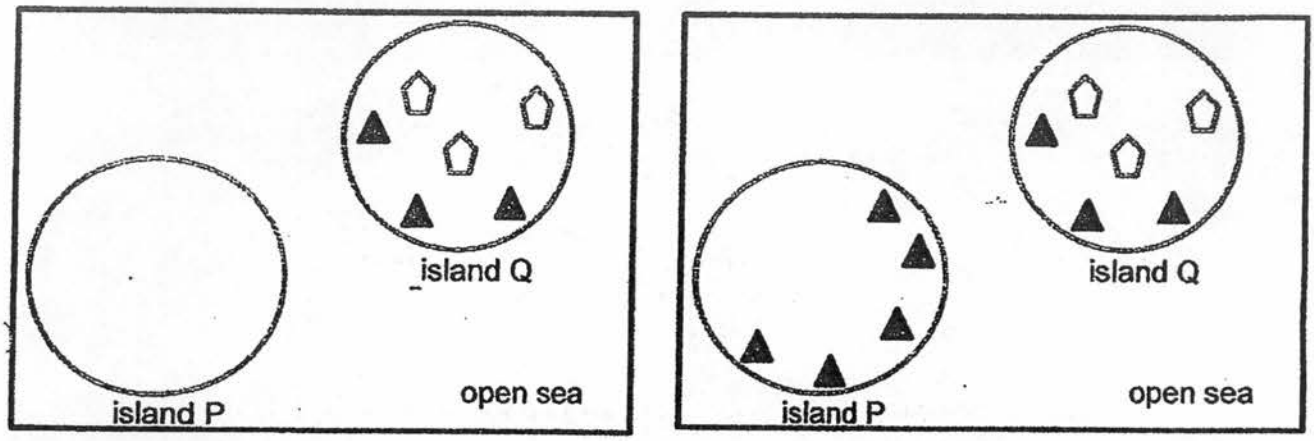


He removed one part of the flower and the flower did not produce any seeds after that.

Which part of the flower did he remove?

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

3. Island P is situated near island Q. Ten years ago, island P was bare, with no trees on it. There are no animals living on both islands.

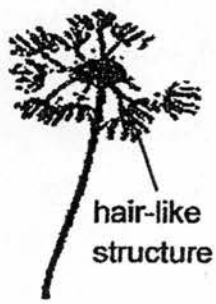


10 years ago present

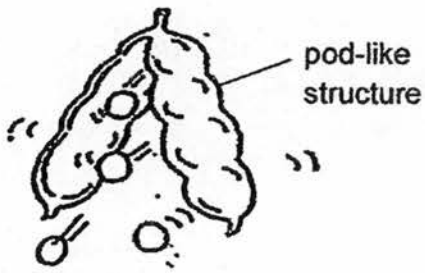
tree X: ▲
tree Y: ⬠

Which of the following fruits is most likely from tree X?

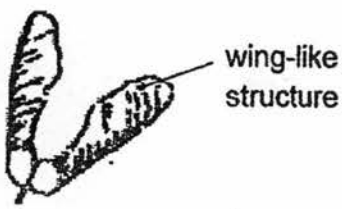
(1)



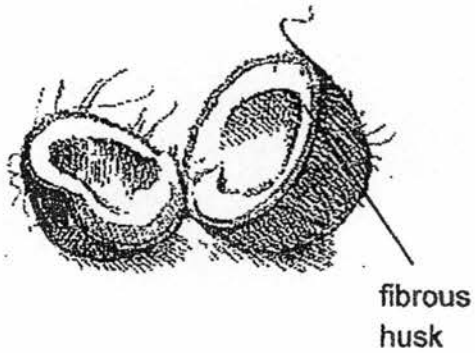
(2)



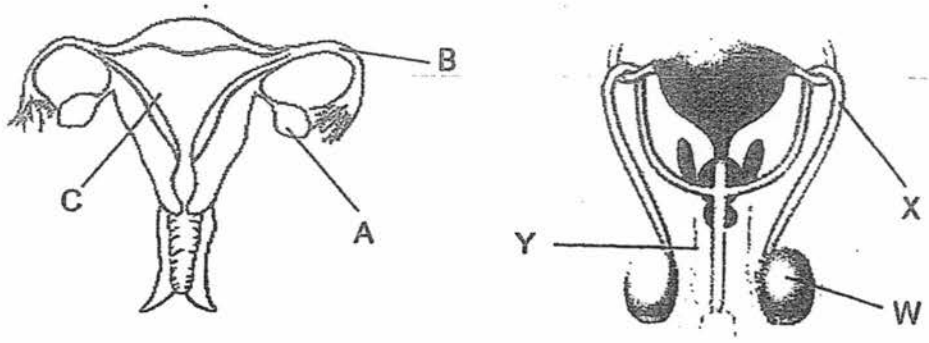
(3)



(4)



4. Study the two human reproductive systems shown below.



How are the above reproductive systems similar?

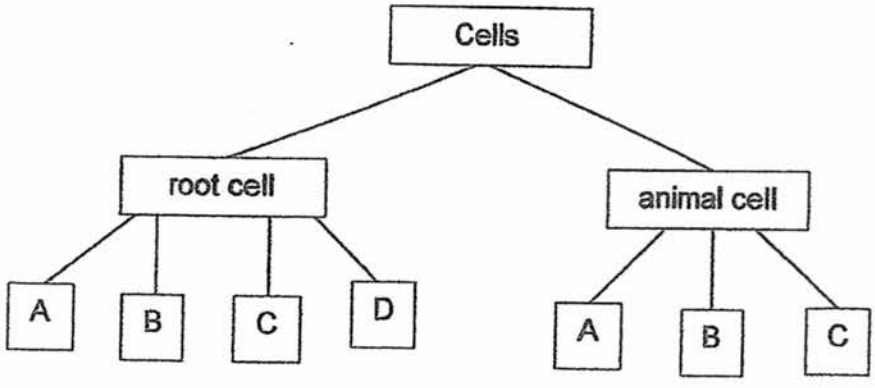
(1) Part Y produces the sperm cell and part B produces the egg cell.

(2) The fertilised egg may develop at part C or part Y.

(3) Reproductive cells can be found in part A and part W.

(4) Fertilisation may occur at part A and part X.

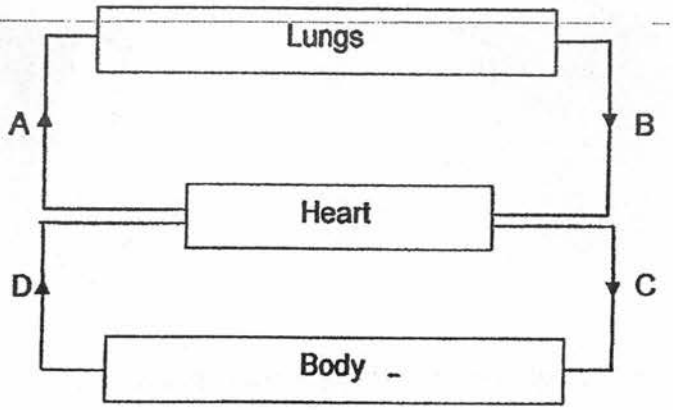
5. Study the flow chart below carefully. A, B, C and D represent functions of the parts of a cell.



Which of the following correctly describes D?

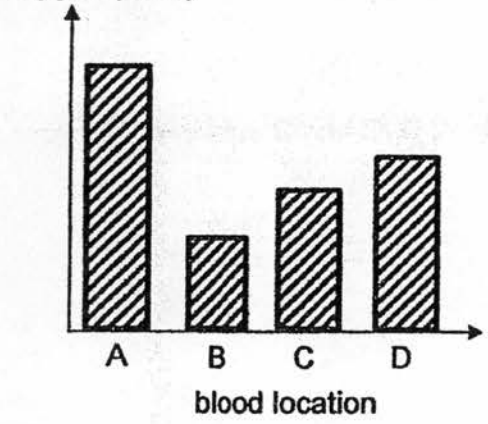
(1) Gives the cell its shape.
(2) Controls everything that happens inside the cell.
(3) Substance where cell activities take place.
(4) Controls movement of materials in and out of the cell.

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

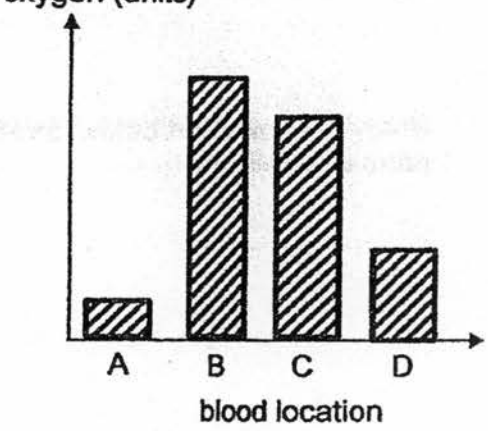


Which of the following graphs correctly represents the amount of oxygen in the blood at locations A, B, C and D?

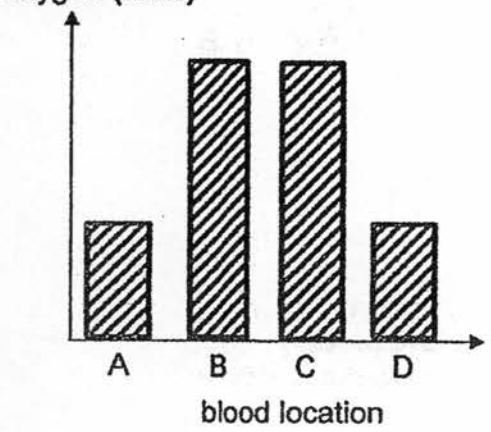
(1)



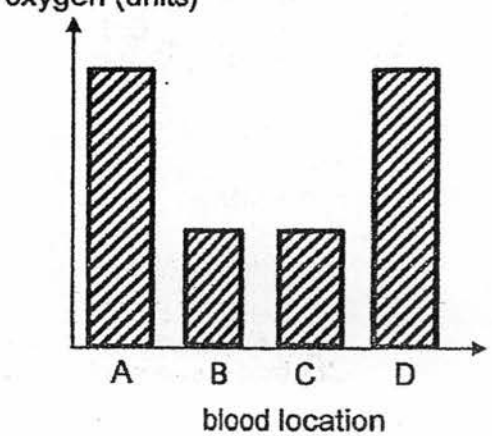
(2)



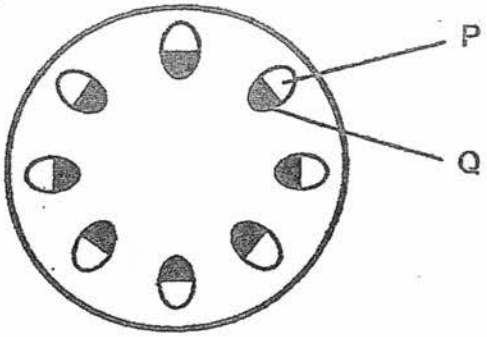
(3)



(4)



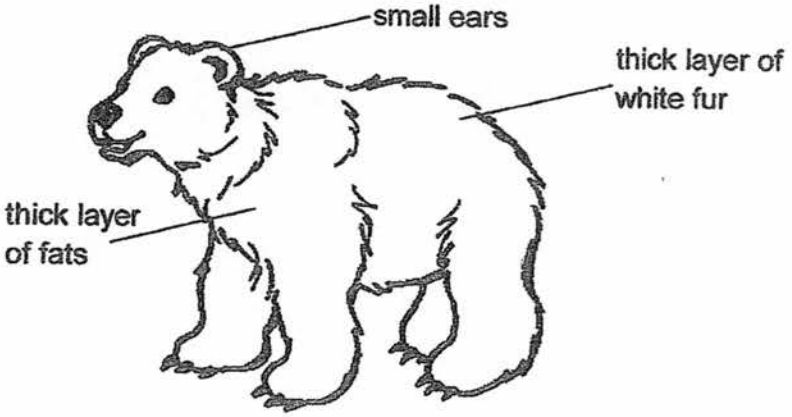
7. Tom put a plant in a beaker of blue-coloured water. After one day, he cut the stem. A section of the stem is shown below.



Tom observed that tube P remained unchanged but tube Q turned blue. Why?

(1) Tube P transports food from the flower to all parts of the plant.
(2) Tube P transports water from the roots to all parts of the plant.
(3) Tube Q transports water from the roots to all parts of the plant.
(4) Tube Q transports food from the leaves to all parts of the plant.

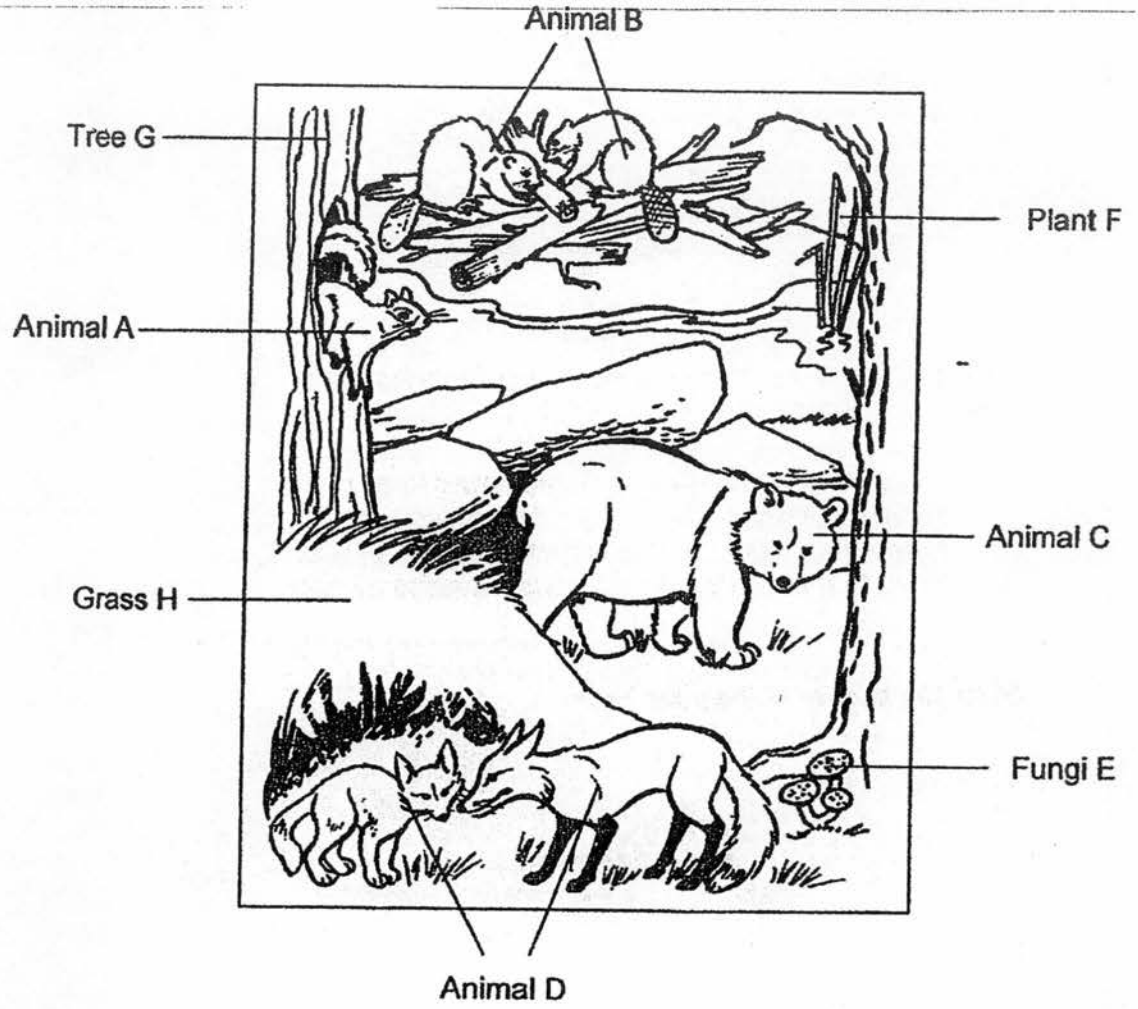
8. Study the picture of the polar bear.



Which of the following correctly matches the adaptation to its function?

	thick layer of fats	small ears	thick layer of white fur
(1)	to fight off predators	slows down heat gain	slows down heat loss
(2)	stores energy	for better hearing	to camouflage
(3)	to fight off predators	for better hearing	to camouflage
(4)	stores energy	slows down heat loss	slows down heat loss

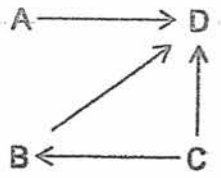
9. Harris found the following animals in habitat X.



Which of the following is correct?

	Number of populations	Number of habitats	Number of producers	Number of consumers
(1)	8	1	3	5
(2)	4	2	4	4
(3)	8	2	4	4
(4)	4	1	3	5

10. The diagram below shows a food web involving organisms A, B, C and D in a certain habitat.



Study the following statements.

A: When the population of organism C decreases, the population of organism B will definitely increase.
B: Only organism C is a producer.
C: Organism D is a plant and animal eater.
D: Organism B is a plant eater.

Which of the above statements is/are definitely correct?

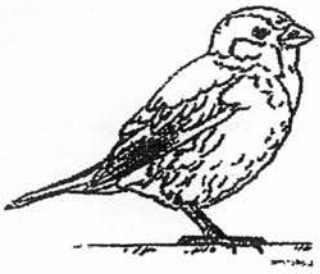
(1) B only
(2) C and D only
(3) A, C and D only
(4) A, B and C only

11. Study the different types of birds shown below.

Bird S eats fish and when it is hungry, it will walk to the deeper end of a pond and not wet its feathers while hunting for fish.

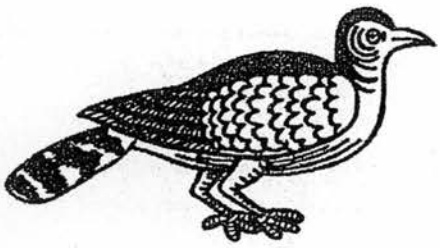
Which of the birds shown below is most likely to be bird S?

(1)

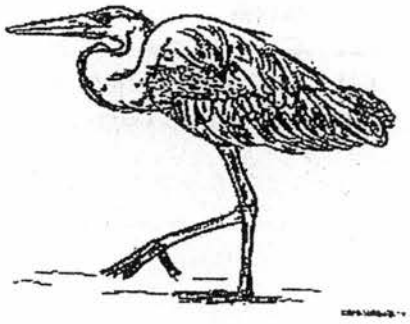


(2)

(3)



(4)



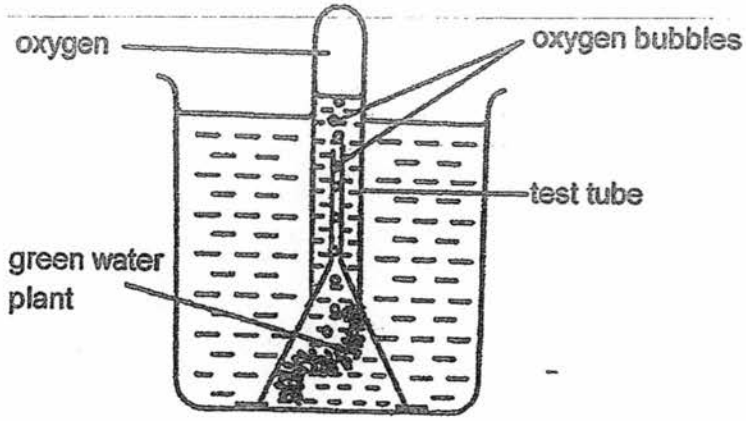
12. A food chain of the organisms living in a community is shown below.

grass ⟶ caterpillar ⟶ bird ⟶ hawk

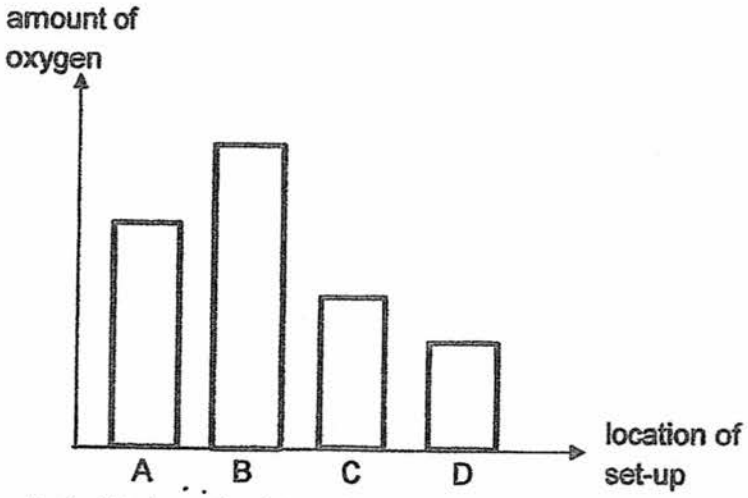
Which of the following is true when the population of hawks decrease?

(1) The population of grass will decrease.
(2) Both the populations of birds and grass will increase.
(3) The number of caterpillars will increase.
(4) There will be no change to the other populations.

13. Sally placed four similar set-ups at four different locations, A, B, C and D. For each location, only the intensity of the light was different.



She observed the amount of oxygen collected in the four test tubes after two hours and recorded her observations in the bar graph below.



Sally concluded that as the intensity of light decreases, the amount of oxygen in the test tube also decreases.

Arrange the locations,A, B, C and D, according to the intensity of light at that location, from the brightest to the dimmest.

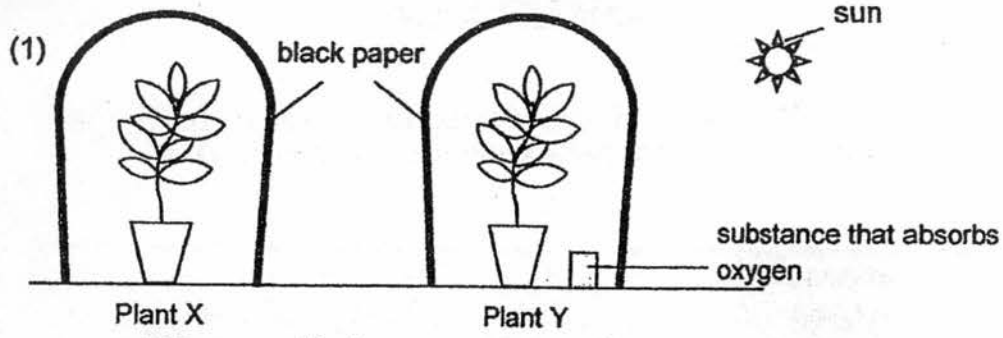
	brightest	less bright	less dim	dimmest
(1)	D	C	A	B
(2)	B	A	C	D
(3)	A	B	C	D
(4)	D	C	B	A

14. Mrs Tan dripped a few drops of iodine solution on two leaves, each taken from plant X and Y. She observed the colour change of the iodine solution and recorded her observations in the table below. Iodine solution changes from brown to dark blue in the presence of starch.

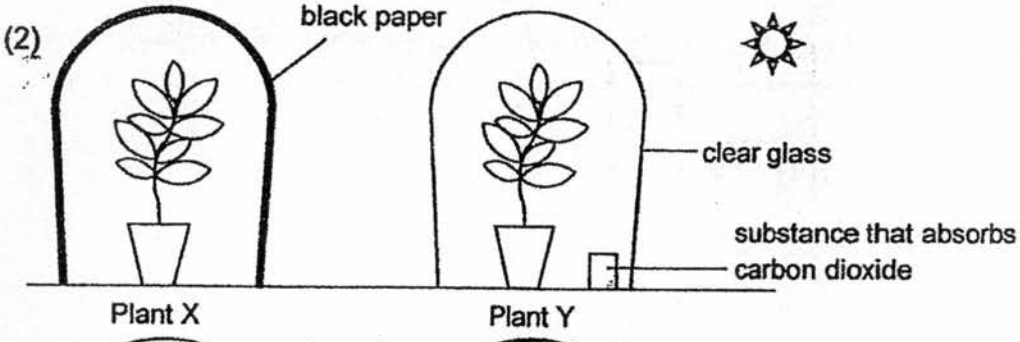
Plant	Results observed
X	Iodine solution turns dark blue
Y	Iodine solution remains brown

Which of the following were the set-ups which Mrs Tan used for her experiment?

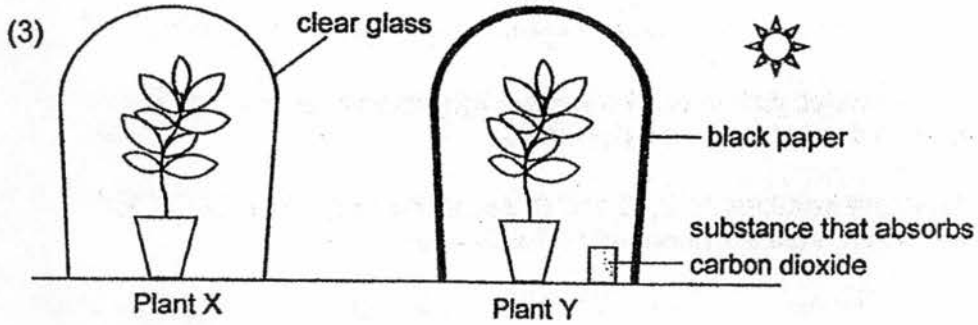
(1)



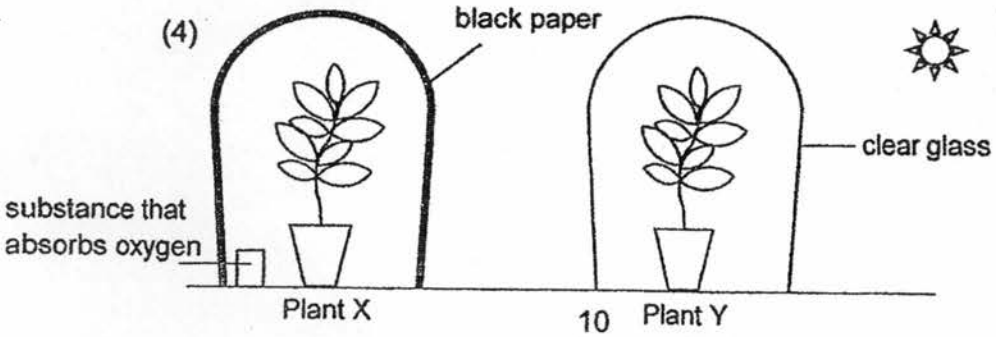
(2)



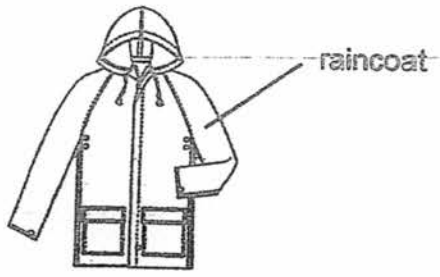
(3)



(4)



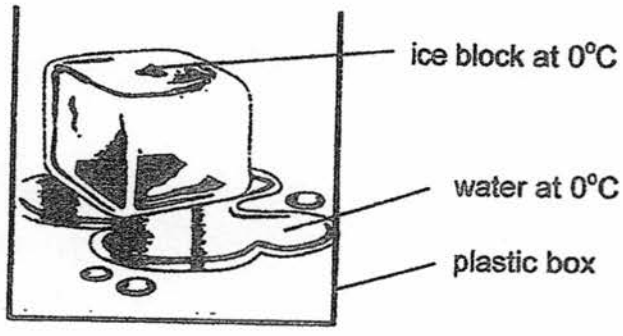
15. Which of the following physical properties must a raincoat have?



A: Flexible
B: Waterproof
C: Transparent

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

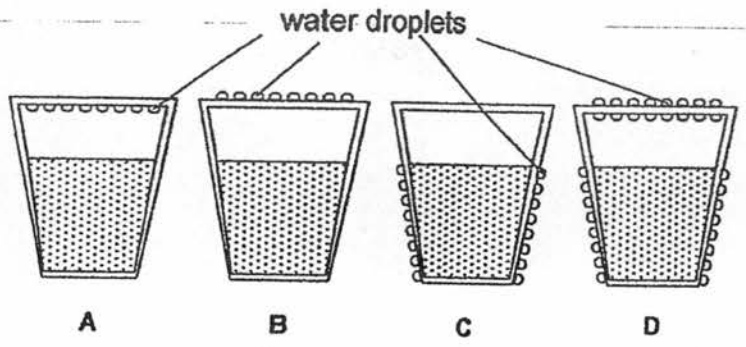
16. An ice block is placed in a plastic box. The box is placed on the table in a room. The room temperature is 28°C.



When the ice and the water were at 0°C, which of the following is correct?

(1) The ice would not melt as its temperature was 0°C.
(2) The ice would not melt as there was no source of heat.
(3) The ice would melt as it gained heat from the room.
(4) The ice would melt as it gained heat from the water.

17. Hot water was poured into a cup with a steel lid.



Which of the diagrams above shows how water vapour condensed onto the cup?

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

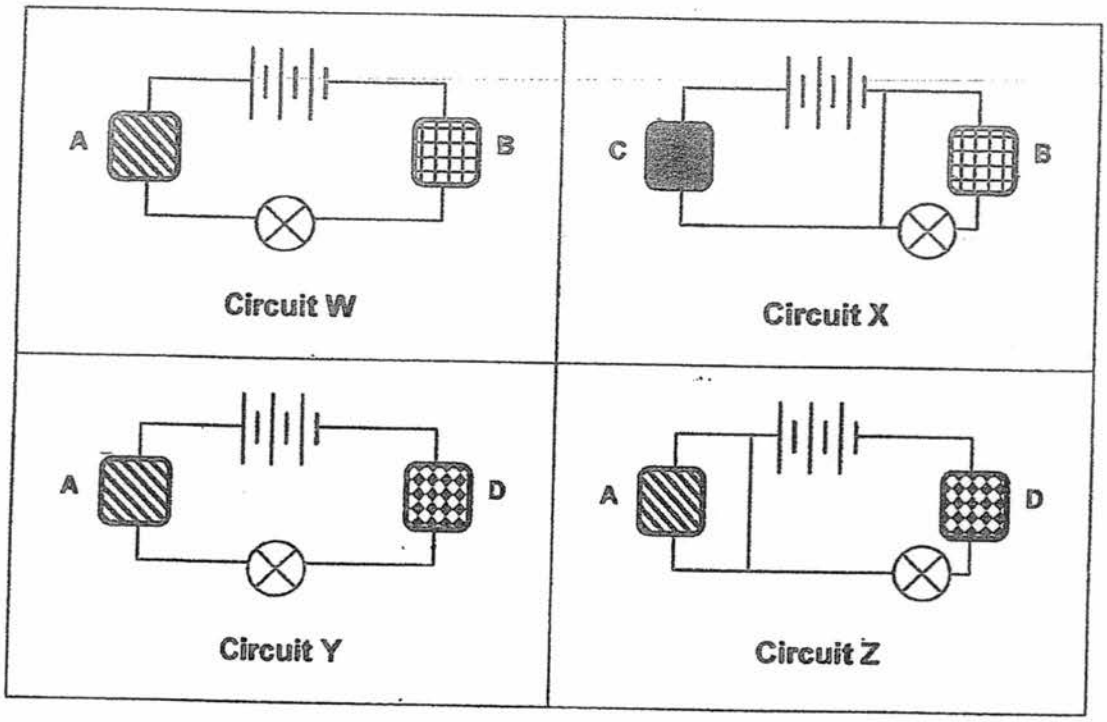
18. The table below shows the melting and boiling points of three different substances, X, Y and Z.

Substance	Melting Point (°C)	Boiling Point (°C)
X	45	80
Y	10	62
Z	62	88

What are the state of substances, X, Y and Z, at a room temperature of 28°C?

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

19. Materials A, B, C and D, were used to set up the four circuits below.



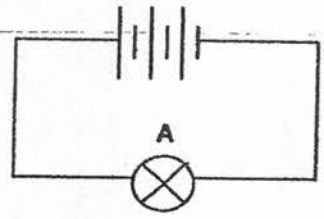
The results of the four circuits are shown in the table below.

Circuit	Does the bulb light up?	
	Yes	No
W		√
X	√	
Y		√
Z	√	

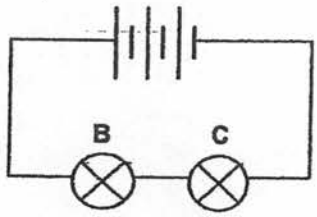
Which of the materials, A, B, C and D, are definitely conductors of electricity?

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

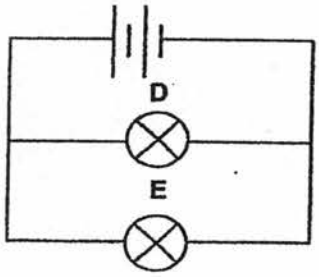
20. Circuits M, N, O and P are made up of similar batteries and bulbs.



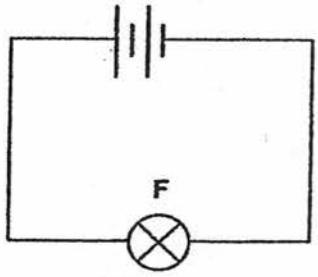
Circuit M



Circuit N



Circuit O

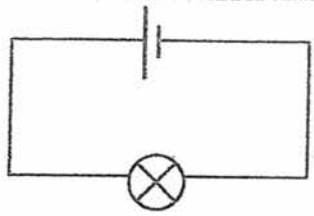


Circuit P

Which of the following shows the correct order of bulbs arranged from the brightest to the least bright?

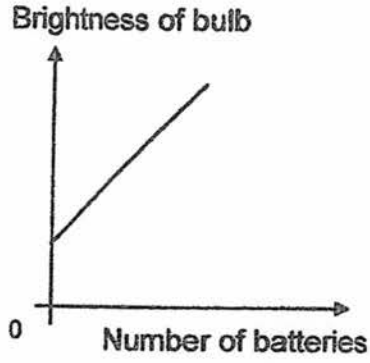
(1) A, B, F
(2) A, F, C
(3) B, E, F
(4) D, F, C

21. Batteries are slowly added to the following electrical circuit in series and the brightness of the bulb is then measured.

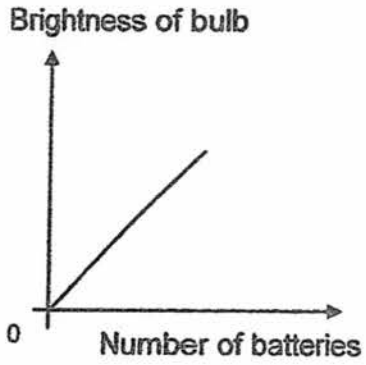


Which of the following graphs show(s) the possible results from the experiment?

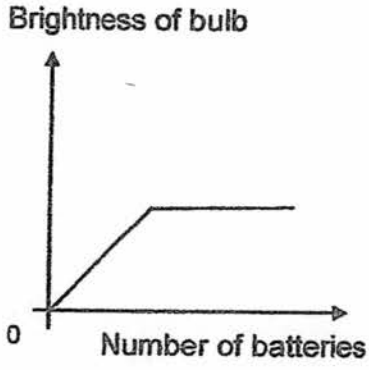
(A)



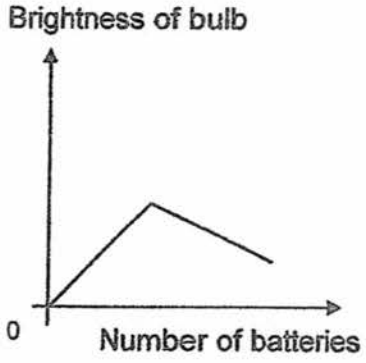
(B)



(C)

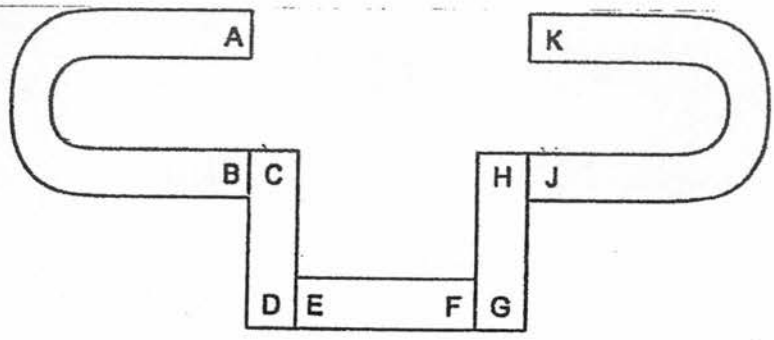


(D)



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

22. The diagram below shows five magnets.

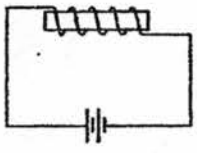


Which of the following statements are false?

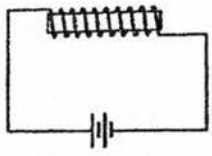
A: E and J are like poles.
B: B will be attracted to D but repel E.
C: E and F have more magnetic force than the other poles.

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

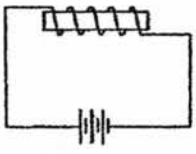
23. Set-ups A, B, C and D are made with similar batteries and iron rods.



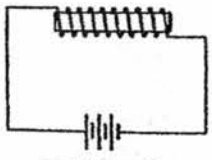
Set-up A



Set-up B



Set-up C

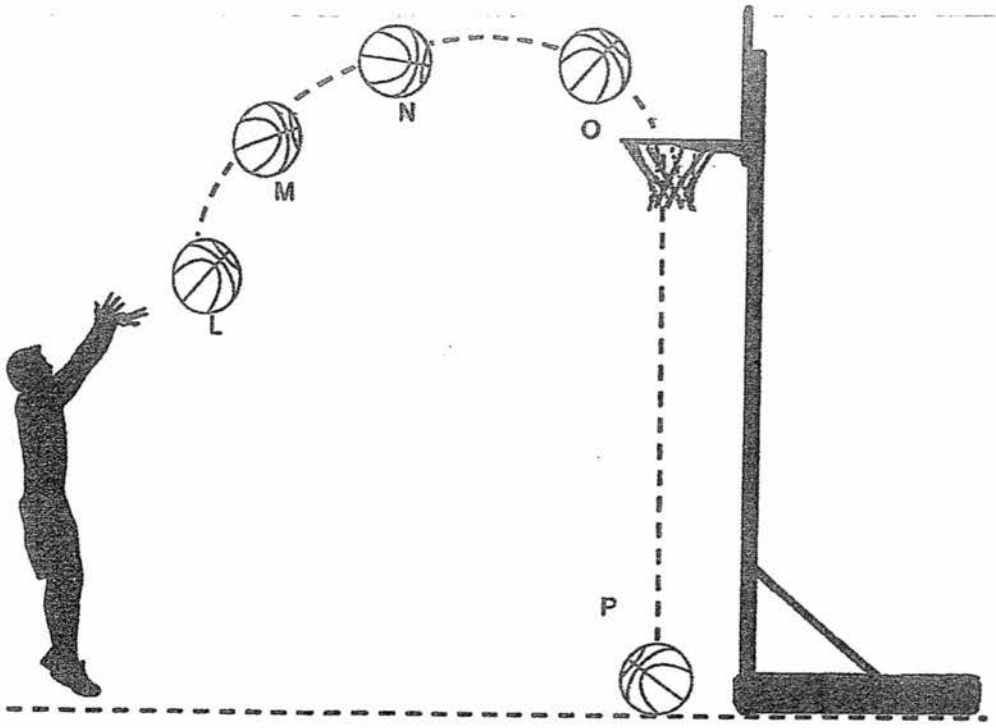


Set-up D

In which set-up will the iron rod attract the least number of iron pins?

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

24. Wei Xiang threw a basketball into the net as shown below.

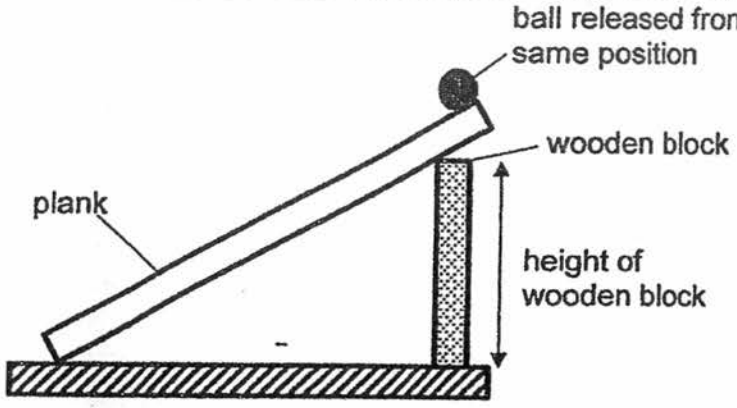


Which of the following statements are false?

A: Gravity acts on the ball only at P.
B: There is more gravity acting on the ball at N than at M.
C: No forces are acting on the ball at P after it comes to a rest.

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

25. An experiment was set up as shown below. A ball was released from the same position each time and the time taken for the ball to reach the end of the plank was measured.

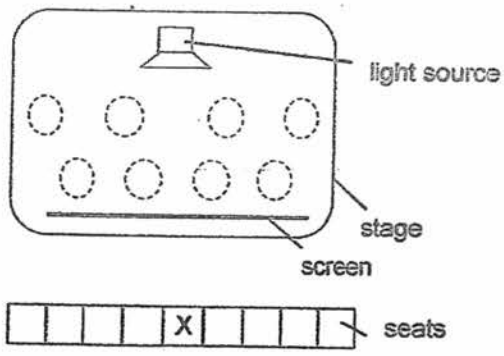


The experiment was repeated several times with the ball being released from the same position each time but some variables are changed each time.

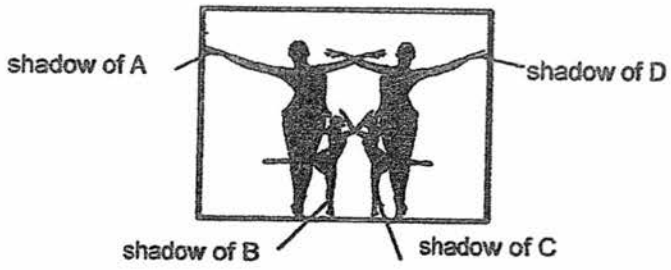
Which of the following shows the correct aim with the correct variables kept constant? A tick (√) indicates that the variable is kept constant.

	Aim of Experiment	Material of Plank	Mass of ball	Height of wooden block
(1)	To find out if the material of the plank affects the time taken for the ball to reach the end of the plank.	√		√
(2)	To find out if the material of the plank affects the time taken for the ball to reach the end of the plank.		√	
(3)	To find out if the height of the wooden block affects the time taken for the ball to reach the end of the plank.	√	√	
(4)	To find out if the height of the wooden block affects the time taken for the ball to reach the end of the plank.			√

26. The diagram below shows the layout of the stage for a shadow performance.

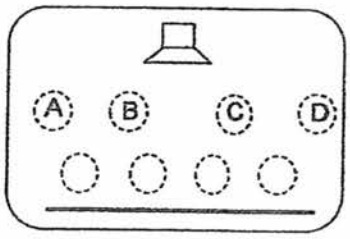


There were four actors, A, B, C and D who were of similar height. The person at X saw the shadows on the screen as shown below.

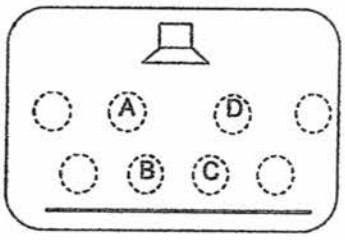


Which of the following shows the positions of actors A, B, C and D?

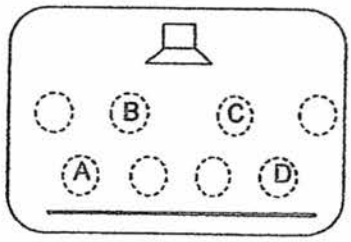
(1)



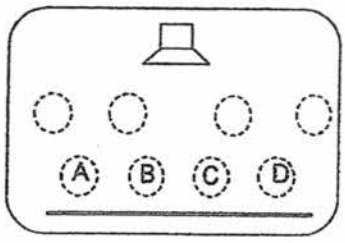
(2)



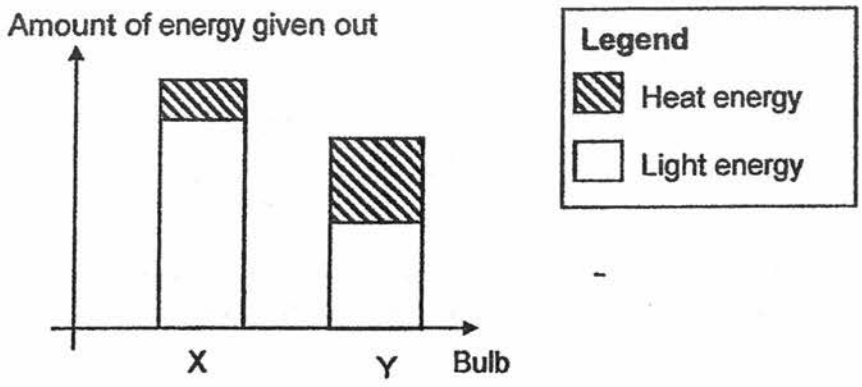
(3)



(4)



27. A test was conducted to compare the amount of light and heat energy given out by two different light bulbs, X and Y. Each light bulb was connected to similar electrical circuits and the graph below shows the amount of light and heat given out by bulbs X and Y.

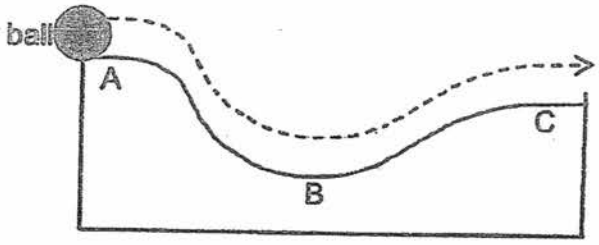


Which of the following statements is/are true?

A: Bulb X will be warmer when lit than bulb Y.
B: Bulb X will be brighter than bulb Y when lit.
C: Bulb X gives out more energy than bulb Y.

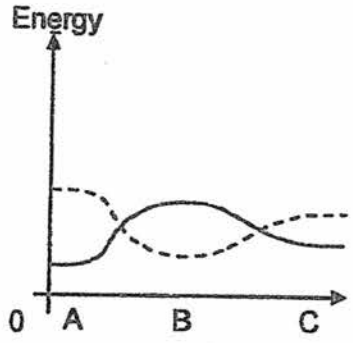
(1) A only
(2) B only
(3) A and B only
(4) B and C only

28. The diagram below shows a ball travelling from point A to C. The ball was at rest at point A before it was released.

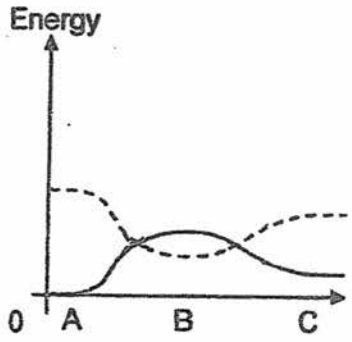


Which of the following graphs shows the possible results from the experiment?

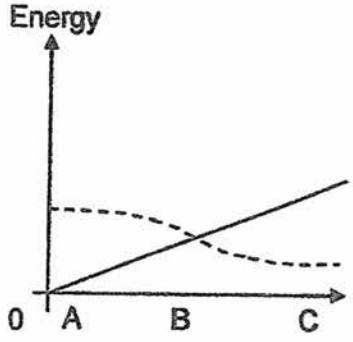
(1)



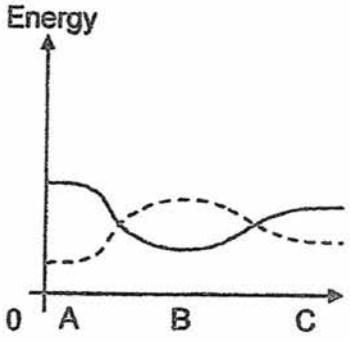
(2)

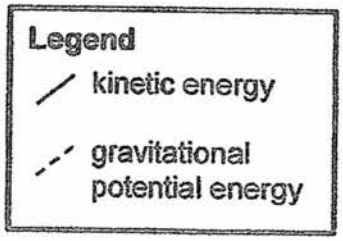


(3)



(4)





END OF SECTION A

RED SWASTIKA SCHOOL

SCIENCE
2017 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 5 May 2017

BOOKLET B

13 Questions
44 Marks

In this booklet, you should have the following:
a. Page 22 to Page 35
b. Questions 29 to 41

MARKS

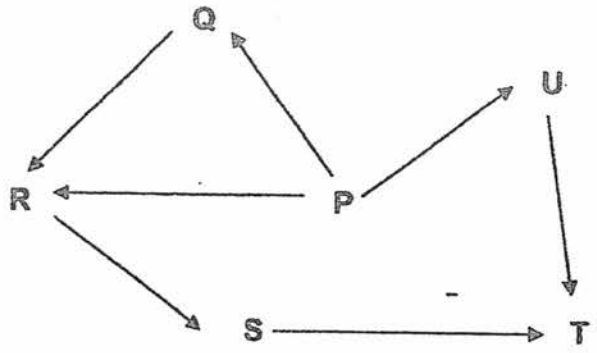
	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

Parent's Signature : _____

SECTION B

Answer all the questions in the spaces provided.

29. Study the food web shown.



(a) Which organism, P, Q, R, S, T or U is a producer? (1m)

_____

(b) Which organisms, P, Q, R, S, T or U, are both predator and prey in the food web? (1m)

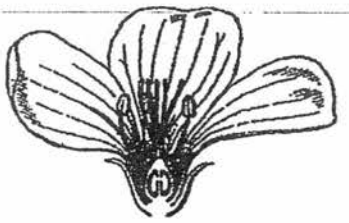
_____

(c) Organism A is a new animal that is introduced into the food web. It is a predator of organism U and a prey of organism T.

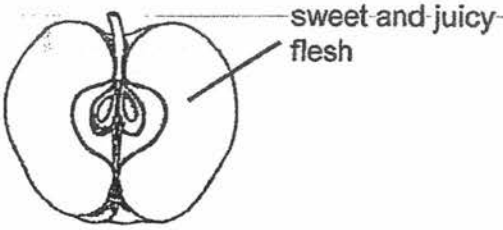
Write the letter 'A' and draw the correct arrows to show organism A in the food web above. (1m)

3

30. The flower of plant A and its fruit were found in a garden.



flower of plant A



fruit of plant A

(a) Name two processes that must take place for the flower of plant A to develop into a fruit. (1m)

_____

_____

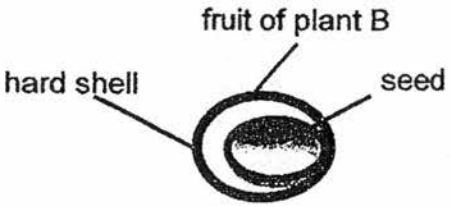
(b) What is the method of dispersal that is most likely used for the fruit of plant A? Explain your answer. (1m)

_____

_____

The fruit of plant B has a hard shell and its seeds are a source of food for mouse X.

mouse X



Mouse X will break the hard shell and bury each seed separately in different places so that it can eat the seeds at a later time.

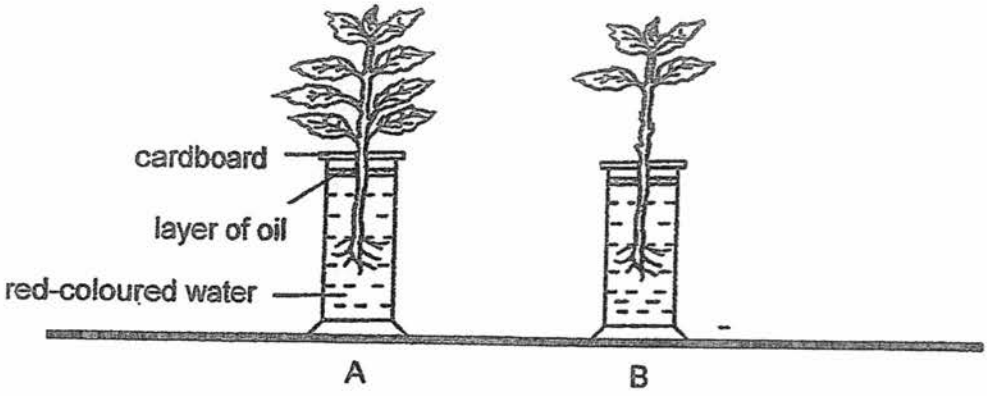
(c) State one benefit for plant B when the mouse buries the seeds at different places. (1m)

_____

_____

3

31. Teck Whye created the set-ups shown below. He would like to find out if plants take in water through the roots.



(a) His teacher told him that his set-up was not correct. Without replacing the plants, state two changes that Teck Whye should do in order to find out if plants take in water through the roots. (2m)

Change 1: _____

_____

Change 2: _____

_____

(b) After three days, a few of the leaves turned red. Explain how this happened. (2m)

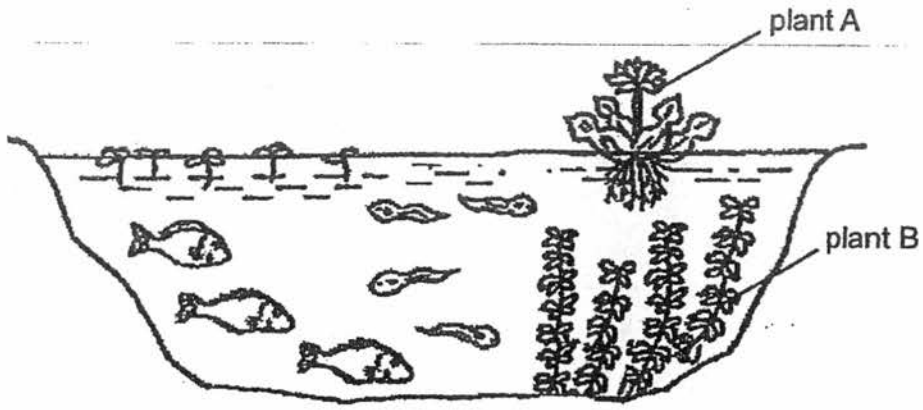
_____

_____

_____

4

32. Study the picture of a pond below carefully.



(a) Besides providing oxygen for the animals in the pond, suggest two other reasons why plant B is important to the animals in the pond. (2m)

Reason 1: _____

_____

Reason 2: _____

_____

(b) When the population of plant A increased, the population of animals surviving in the pond decreased. Suggest a reason for the decrease. (1m)

_____

_____

(c) A disease killed many animals in the pond. It was observed that the oxygen level in the water decreased after that. Explain why. (1m)

_____

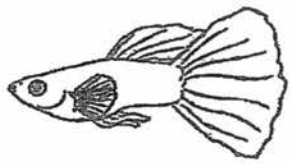
_____

4

33. Fish X is found in the ocean. When faced with danger, it is able to inflate its body with sharp spines that are poisonous. It feeds on shrimps only.

Fish Y swims around fish X and feeds on dead matter found on fish X's body only. Fish Y is not affected by fish X's poisonous spines.

fish X – when inflated



fish Y

(a) How does fish X and fish Y benefit from living near each other? (2m)

Benefit to fish X: _____

_____

Benefit to fish Y: _____

_____

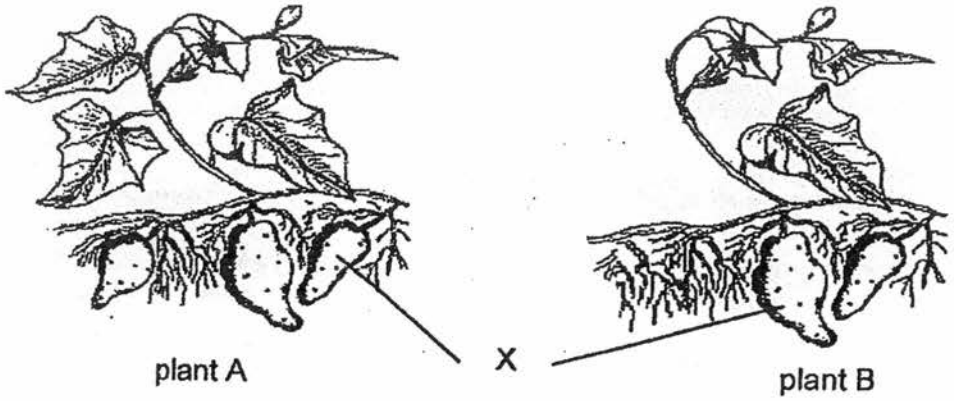
(b) State the type of adaptation shown by fish X when it inflates its spines in the presence of danger. (1m)

_____

3

34. Ahmad planted two similar plants in the same location. The plants were provided with the same amount of water and mineral salts.

After three months, both plants had grown as shown below. Part X of the plant would grow underground in the soil. Animals would dig the soil to feed on part X.



(a) Compare plant A and B. State one observation from the diagram which indicated a possible reason why there was less part X growing in plant B. (1m)

(b) When Ahmad first planted the two plants, part X had not developed. Explain how the leaves and food-carrying tubes work together to help part X to grow in the soil. (2m)

_____

_____

_____

3

35. Five set-ups, A, B, C, D and E, are prepared according to the table below to find out how different variables affect the rate of evaporation of water.

Set-up	Volume of water (ml)	Temperature of water (°C)	Exposed surface area of water (cm^3)
A	200	20	100
B	300	40	150
C	200	30	100
D	350	40	50
E	200	30	150

(a) What would the aim of the experiment be if set-ups A and C are used? (1m)

_____

_____

(b) If the aim of the experiment is to find out how the exposed surface area of water affects the rate of evaporation of water, which two set-ups should be used? (1m)

_____

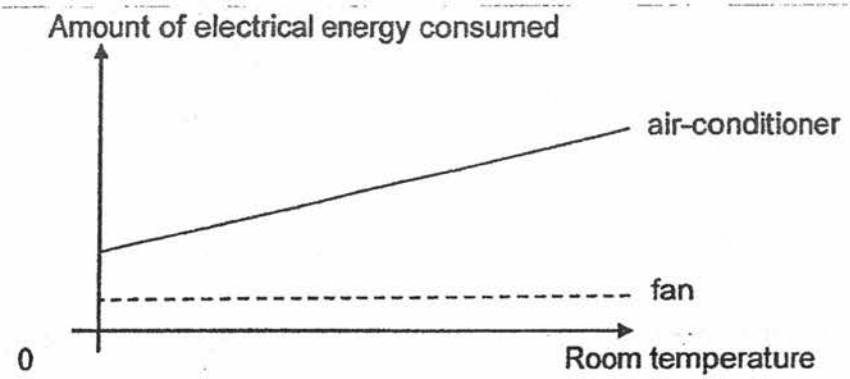
(c) Set-ups B and D are used to find out if the volume of water affects the rate of evaporation of water. Is the experiment a fair test? Explain why. (1m)

_____

_____

3

36. Minah plotted the graph below to show the amount of electrical energy used by her fan and air-conditioner as her room temperature changed.



(a) Based on the results, which electrical appliance is more energy-conserving? Explain why. (1m)

_____

_____

(b) Study the table below.

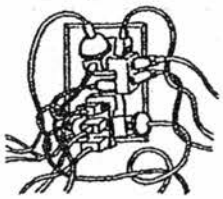
	Room with window shades installed	Room without window shades installed
Temperature during the day (°C)	29	33

Based on the results, what recommendation would you give to a person who wants to save electricity when using an air-conditioner? Explain. (1m)

_____

_____

(c) The following picture shows how Minah uses the electrical sockets in her room.



Is this safe? Explain why. (1m)

_____

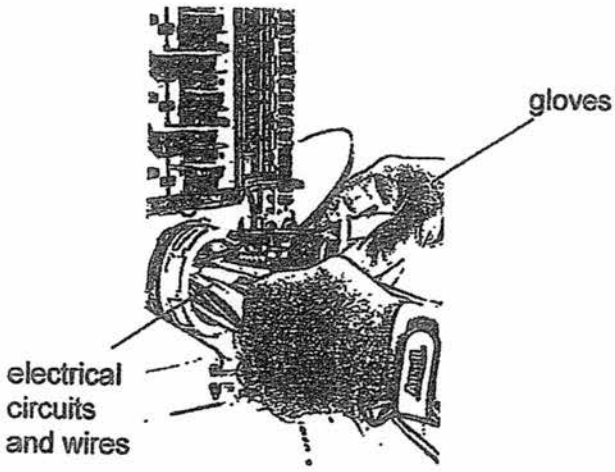
_____

3

37. Saroo has two batteries, two light bulbs and many wires. Draw a circuit diagram to show how he can make both light bulbs shine the brightest at the same time. (2m)

(a)

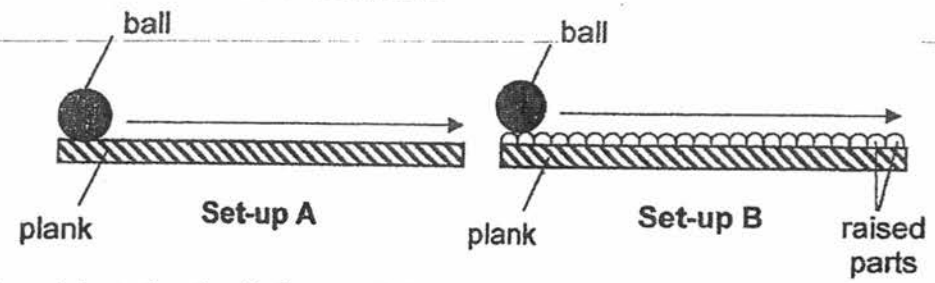
(b) Electrical engineers usually wear rubber gloves when repairing electrical circuits.



Explain how wearing rubber gloves reduces the likelihood of the engineers getting electrical shocks when repairing electrical circuits. (2m)

4

38. Lee Yin prepared two set-ups, A and B, as shown below. In set-up B, raised parts were added to the surface of the plank.



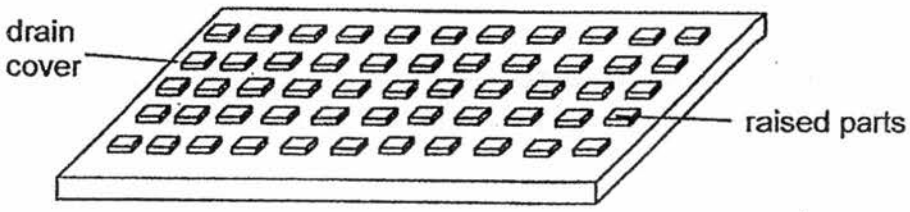
The time taken for the ball to roll from one end of the plank to the other was measured and recorded in the table below. The experiment was repeated four times and the ball was pushed from the same starting point on the plank with the same force each time.

Observation	Time taken for ball to travel from one end of the plank to the other (s)	
	Set-up A	Set-up B
1	3.1	3.9
2	2.9	4.0
3	3.0	4.0
4	3.1	4.1

(a) Why did Lee Yin make four observations? (1m)

(b) Explain the difference in results between set-ups A and B. (1m)

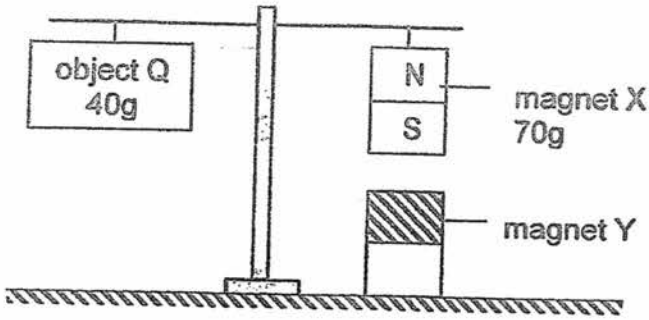
(c) Many drain covers have raised parts included in their design.



Based on the results above, explain why drain covers are designed this way to improve safety during periods of rain. (1m)

3

39. A balancing scale was set up as shown in the diagram below. The masses of magnet X and object Q are 70g and 40g respectively. Magnet Y is fixed to the table.



(a) The scale is balanced. Identify the shaded pole of magnet Y. (1m)

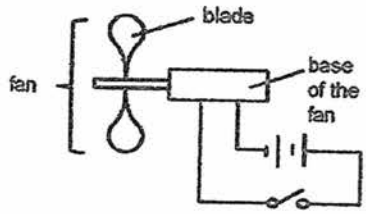
_____

(b) Explain how the scale is balanced. (1m)

_____

_____

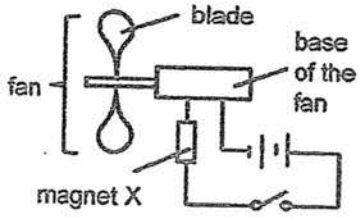
Mr Tan connected a fan to an electrical circuit as shown below. When the switch was closed, the blades of the fan would turn.



(c) He wanted to find out if the amount of electrical energy would affect the speed of the fan. Based on the diagram, state one variable he should change to achieve his aim. (1m)

_____

When Mr Tan added magnet X to the electrical circuit as shown, he observed that the blades of the fan were still able to turn.

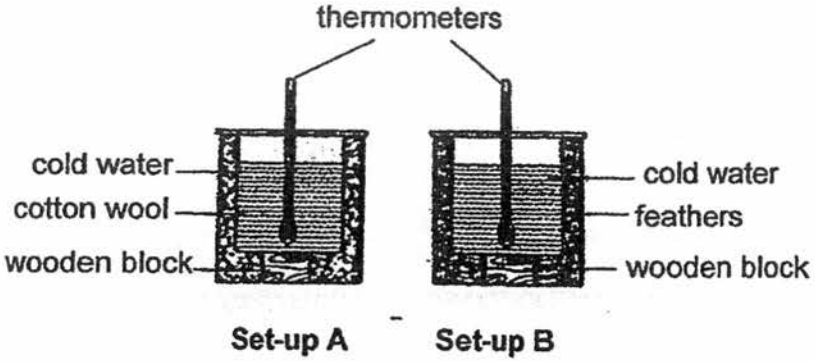


(d) What could he conclude about magnet X? (1m)

_____

4

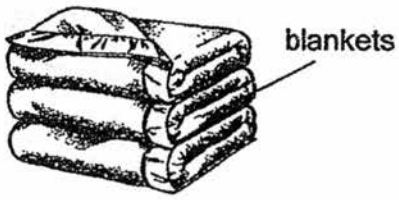
40. Sarisa conducted an experiment. She prepared two identical beakers with the same volume of cold water and placed them in two larger and identical beakers, one filled with cotton wool and the other filled with feathers.



She left the two set-ups on a table in her room and measured the temperature of the water in the beakers after ten minutes. She recorded the results in the table below.

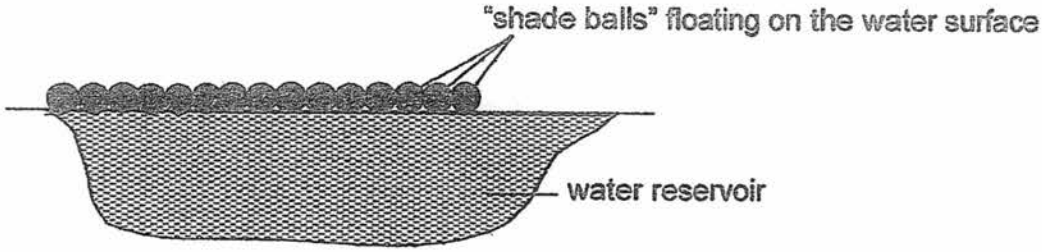
Set-up	Temperature of water at start of experiment (°C)	Temperature of water at end of experiment (°C)
A	10	15
B	10	12

(a) Based on the results, should Sarisa buy cotton or feather blankets to keep herself warmer? Explain. (2m)



2

40 (b) Many countries across the world are adding plastic "shade balls" onto the surface of their water reservoirs as shown below.



Explain how these "shade balls" help to conserve water in the water reservoirs. (2m)

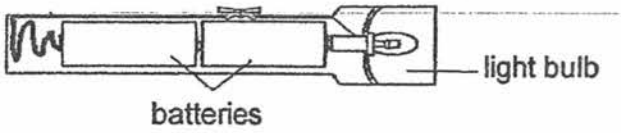
_____

_____

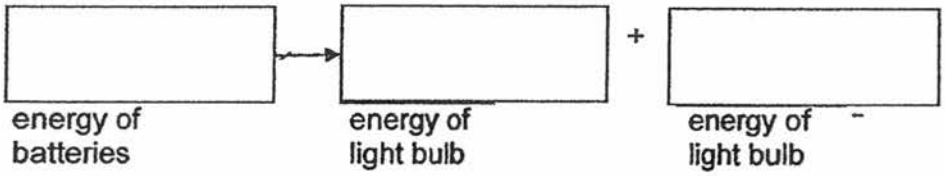
_____

2

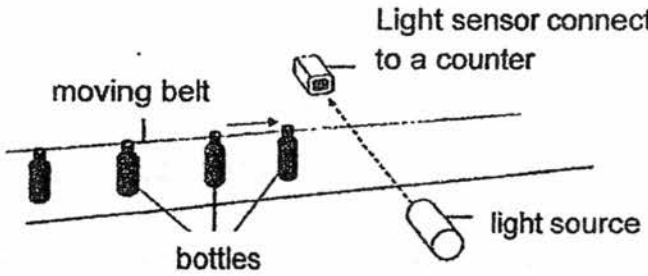
41. The diagram below shows how a torch is set up.



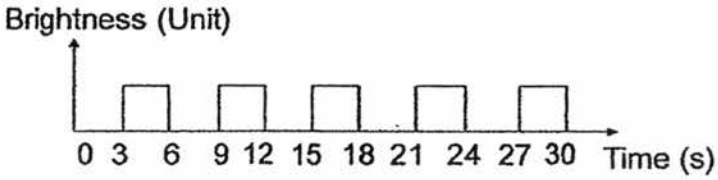
(a) Fill in the boxes to show the energy changes in the torch when the torch is turned on. (1m)



A factory uses a light sensor to count the number of bottles on a moving belt.



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



(b) Based on the graph, how many bottles passed the sensor in 30 seconds? (1m)

_____

(c) The moving belt is already moving at its maximum speed. Suggest a method so that more bottles can be counted in 30 seconds. (1m)

_____

_____

END OF SECTION B
PLEASE CHECK YOUR WORK

3

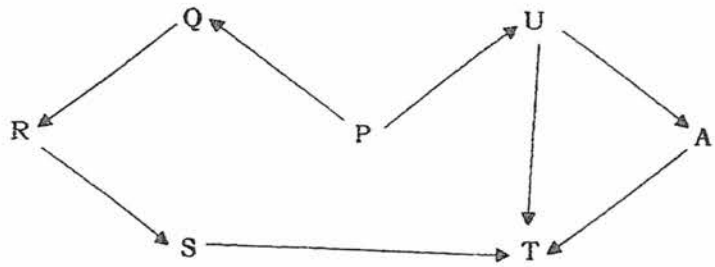
YEAR : 2017
LEVEL : PRIMARY 6
SCHOOL : RED SWASTIKA SCHOOL
SUBJECT : SCIENCE
TREM : SEMESTRAL ASSEMENT (1)

BOOKLET A
Section A

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

BOOKLET B
SECTION B

Q29. a) P
b) R and S
c)



Q30. a) Pollination and Fertilisation
b) By animals. The animal will eat its sweet and juicy flesh and throw its seeds further away.
c) The seeds can germinate further away from the parent plant.

Q31. a) Change 1: remove the roots from one set-up.
Change 2: Cut the leaves from set-up A to be the same as set-up B.
b) The roots take in water and red water is transported through the water – carrying tube to the leaves.

Q32. a) Reason 1: They provide food.
Reason 2 : They provide shether.
b) An increase in plant A will block sunlight from entering the pond, hence plant B photosynthesise less and there will be less food and oxygen for the animals.
c) When the animals die, they start to decompose and oxygen is used up by decomposer during decomposition.

Q33. a) Benefit to fish X : Fish Y will eat the dead matter on its body.
Benefit to fish Y : Fish Y will be protected from its predators.

b) Behavioural adaptation.

Q34. a) Plant B has lesser / fewer leaves.

b) The leaves photosynthesise. The plants use the food-carrying tube to transport excess sugar from the leaves to part X to be stored as starch.

Q35. a) The aim of the experiment is to find out how the temperature of the Water affects the rate evaporation of water.

b) C and E

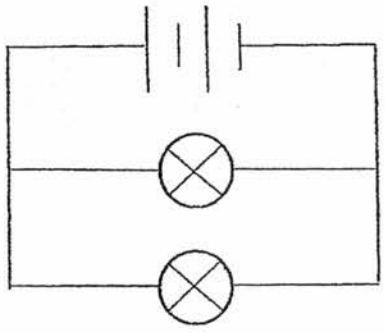
c) No. There are two changed variables, the volume of water and the exposed surface area of water. In a fair test, there can only one changed variable, the volume of water.

Q36. a) The fan. The fan uses lesser electrical energy than the air-conditioner.

b) Install window shades will lower the room temperature and keep room cooler and hence reduces the amount of electricity energy used by the air-conditioner to cool the room.

c) No. Overloading the electrical sockets may cause fire.

Q37. a)



b) The rubber gloves do not conduct electricity and reduces electrical energy flowing through the engineer's body preventing on electrical shock

Q38. a) She made four observations to increase the reliability of the results at the experiment.

b) Adding raised parts to the surface of the plank increased the friction between ball B and the surface and therefore caused the ball to take a longer time to travel from one end of the plank to the other.

c) T he raised parts on the drain cover increases the friction between the feet and the drain cover and helps to prevent slipping.

Red swastika S

Q39. a) South pole.

b) The like poles of magnet Y and X repel, pushing Magnet X up to balance the scale with the lighter object A.

c) Number of batteries.

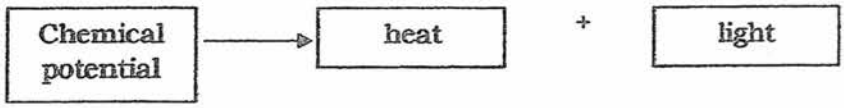
d) Magnet X conducted electricity.

Q40. a) Feather blanket B had water that is lower in temperature. Hence Feather traps air more effectively than cotton. As air is a poor Conductor of heat, the air will conduct her body heat to the surroundings slower, keeping her warm.

b) Plastic is a poor conductor of heat. Heat from the surroundings would be conducted slowly to the water, resulting in a decrease in rate of evaporation.

OR b) The "shade balls" reduce the exposed surface of water in the water reservoirs, causing the rate of evaporation of water to decrease in the water reservoirs.

Q41. a)



b) 5

c) Decrease the distance between each bottle.

End of Paper