AI TONG SCHOOL

2014 END-OF-YEAR EXAMINATION

PRIMARY FIVE SCIENCE

DURATION : 1hr 45 min

DATE: 27th October 2014

INSTRUCTIONS

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

Name : _____ **( )**

Class : Primary _____

Parent's Signature : _____

Date : _____

Booklet A	60
Booklet B	40
Total	100

Section A (30 x 2 marks)

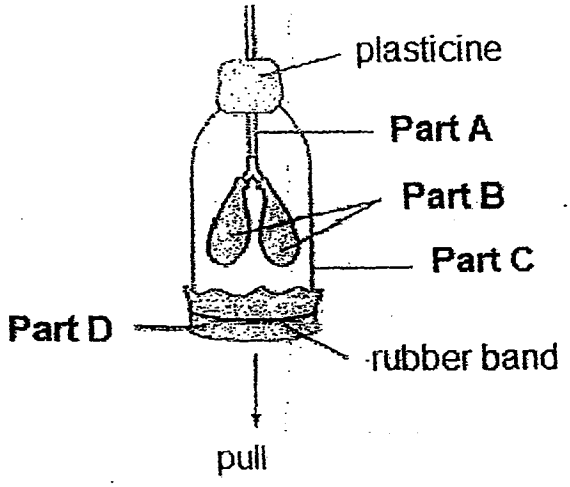
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Besides water, what other conditions are needed for a seed to germinate?

   A Oxygen
   B Sunlight
   C Warmth
   D Mineral salts

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

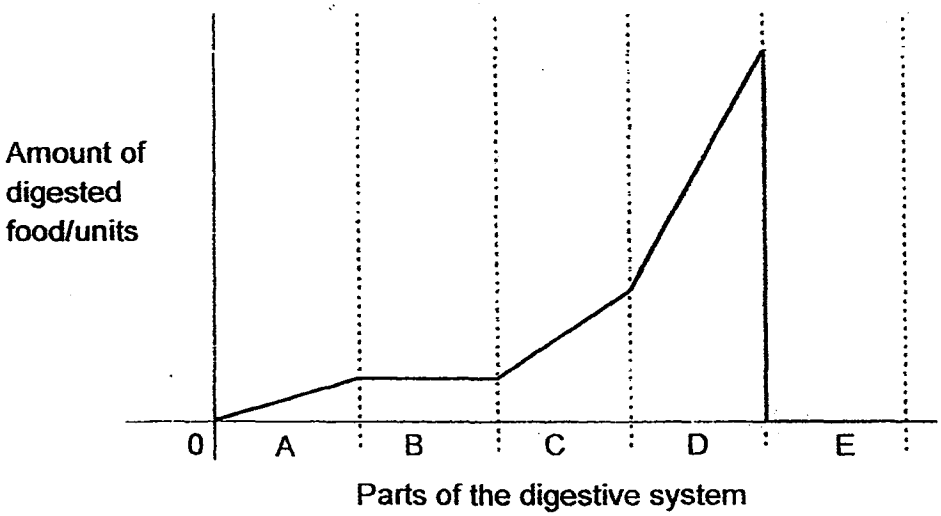
2. Rachel made a model of the human respiratory system. A, B, C and D represent parts found in the human respiratory system.



What do parts A, B, C and D represent?

	Parts			
	A	B	C	D
(1)	windpipe	lungs	ribcage	diaphragm
(2)	diaphragm	windpipe	ribcage	lungs
(3)	lungs	ribcage	windpipe	diaphragm
(4)	ribcage	lungs	diaphragm	windpipe

3. The graph below shows the amount of digested food that is found in each part of the human digestive system.



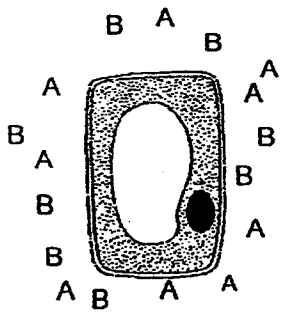
Which one of the following correctly identifies Part B, C and E of the human digestive system?

	Parts		
	B	C	E
(1)	Large intestine	Anus	Mouth
(2)	Gullet	Stomach	Large intestine
(3)	Mouth	Gullet	Anus
(4)	Stomach	Small intestine	Large intestine

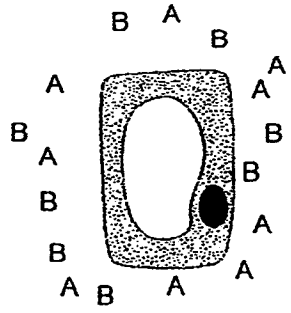
4. Siti carried out an experiment using 2 similar plant cells, P and Q. Cell Q had a cell part removed. Cell P and Q were then placed in a solution containing substances A and B.

The diagram below shows what Siti observed before and after the experiment.

Before

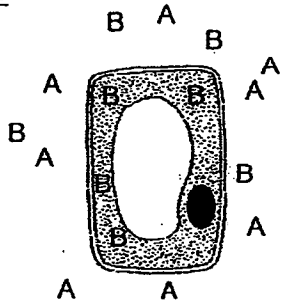


Cell P

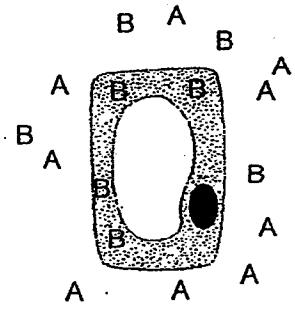


Cell Q

After



Cell P

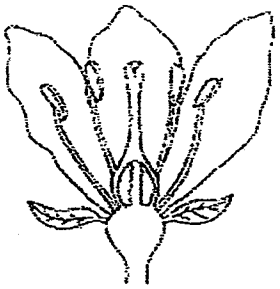


Cell Q

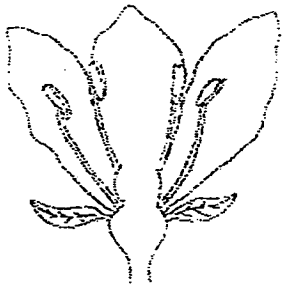
Which one of the following correctly explains the observations above?

(1) The cell wall of plant cell P protects it from A.
(2) The cytoplasm of plant cell Q only allows B to enter.
(3) The nucleus of plant cells P and Q controls the entry of B.
(4) The cell membrane of plant cells P and Q does not allow A to enter.

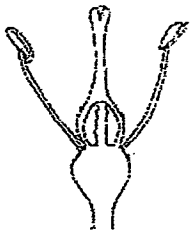
5. The diagrams below show four similar flowers with different parts of each flower removed.



Flower A



Flower B



Flower C

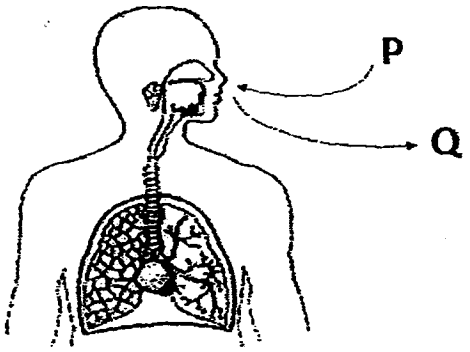
Flower D

All four flowers were dusted with pollen grains.

Which of the above flowers will become a fruit?

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

6. A human is continuously breathing in P and breathing out Q.

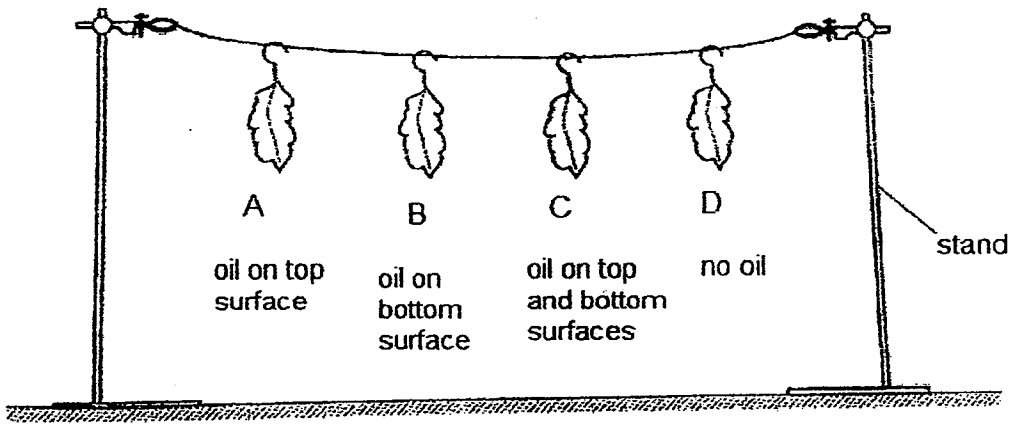


Which of the following statements about P and Q are correct?

A P contains less nitrogen than Q.
B Q does not contain oxygen at all.
C Q contains more water vapour than P.
D P contains less carbon dioxide than Q.

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

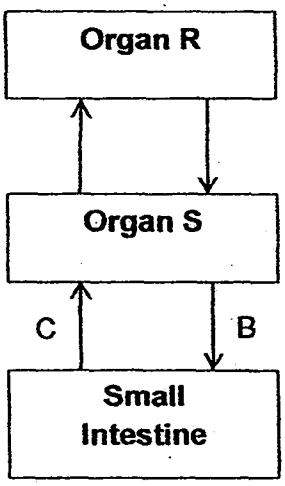
7. Mala set up an experiment using four similar leaves, A, B, C and D. These leaves have more stomata on the underside. She coated some surfaces with oil. She hung the leaves on a stand. She weighed the mass of the leaves four hours later.



Which one of the following is true about the loss in mass of the leaves after 4 hours?

	Smallest loss in mass ⟶ Biggest loss in mass			
(1)	C	B	A	D
(2)	D	A	B	C
(3)	B	C	D	A
(4)	A	B	C	D

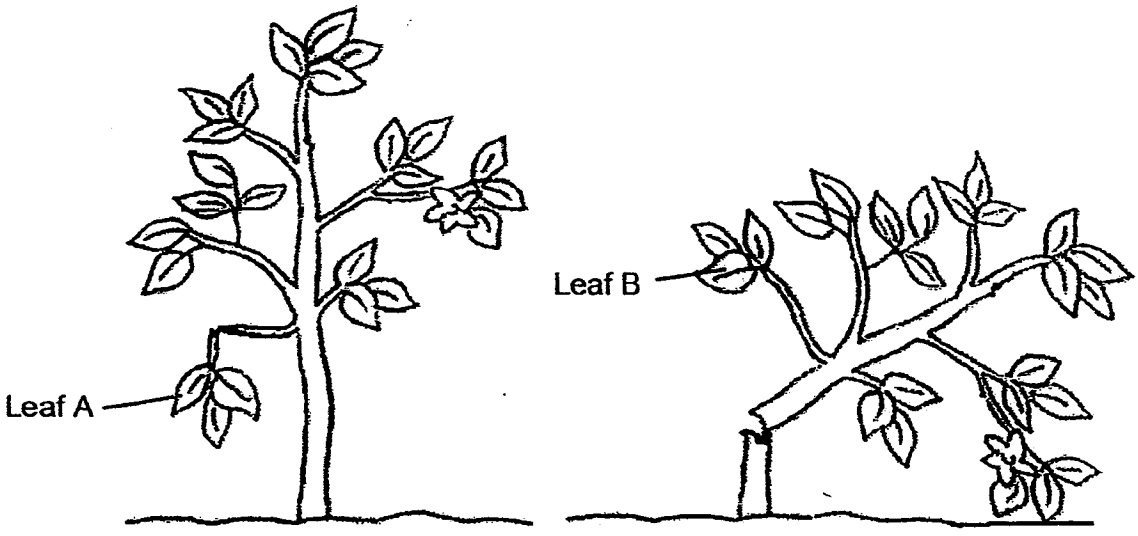
8. The diagram below shows where blood flows to in the human body.



Which of the following information about organs R and S and blood at B and C is correct 5 hours after a meal?

	Organ R	Organ S	Blood at B	Blood at C
(1)	Lungs	Heart	Rich in oxygen	Has more digested food
(2)	Lungs	Heart	Has more digested food	Has less digested food
(3)	Heart	Lungs	Rich in oxygen	Has less digested food
(4)	Heart	Lungs	Has more digested food	Rich in oxygen

9. The diagram below shows Plants X and Y after a storm.

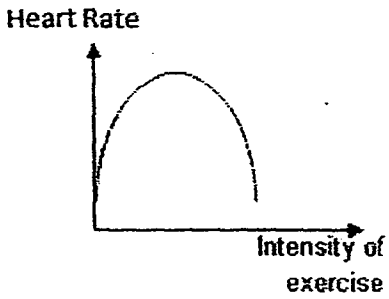


Which of the following statements is true?

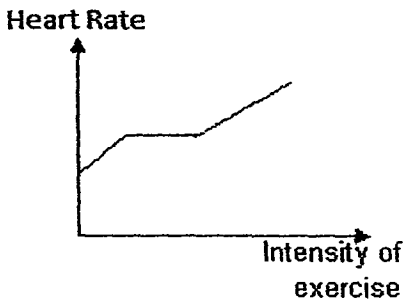
(1) Plant X will continue to grow healthily but not Plant Y.
(2) Leaf A and B will still be able to get water from the roots.
(3) Food made by leaf A will still be transported to the other parts of Plant X.
(4) Leaf B will continue to grow healthily as its stem continues to take in water.

10. Which one of the following graphs shows the correct relationship between the intensity of exercise and a person's heart rate?

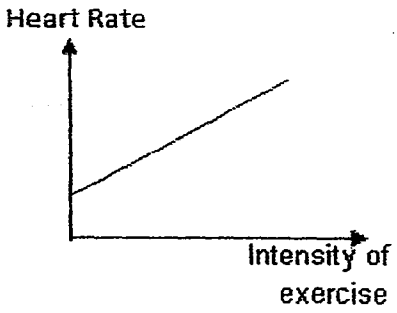
(1)



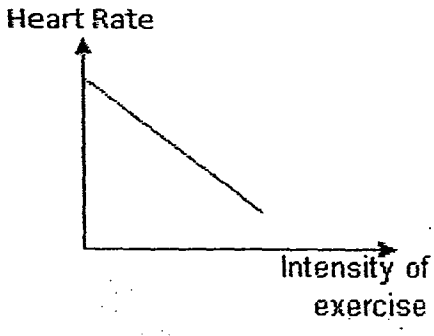
(2)



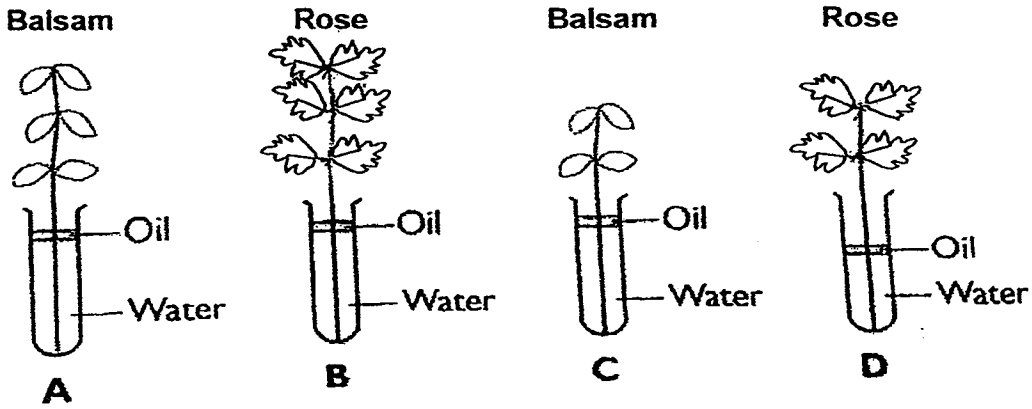
(3)



(4)



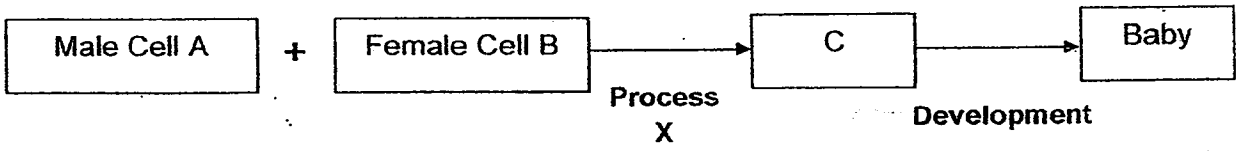
11 Darren wants to find out if the number of leaves a plant has will affect the amount of water taken in by the plants.



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

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

12 The diagram below represents what happens during human reproduction.

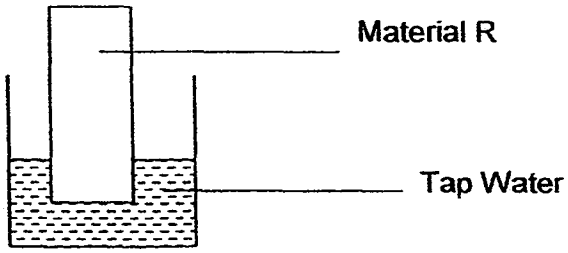


Identify A, B, C and Process X.

	A	B	C	Process X
(1)	Pollen Grains	Egg Cell	Fertilised Egg	Pollination
(2)	Egg Cell	Sperm Cell	Pollen Grains	Fertilisation
(3)	Pollen Grains	Stigma	Seed	Cell Division
(4)	Sperm Cell	Egg Cell	Fertilised Egg	Fertilisation

13 Zoe wanted to find out which material, R, S, T or U would be the best to make a pair of gloves that would keep hands dry.

She dipped material R into a container of 200ml of tap water as shown in the diagram below. The amount of water left in the container after R was removed was recorded.



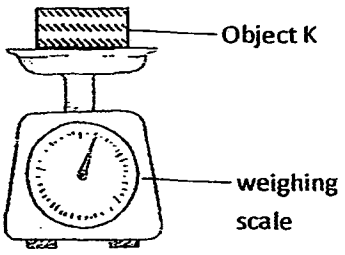
She repeated the experiment with materials S, T and U and recorded the results in the table below.

Material	Amount of water left (ml)
R	157
S	200
T	139
U	175

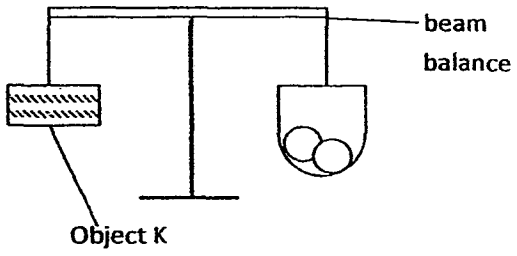
Based on the information above, which material should Zoe choose to make the gloves?

(1) Material R
(2) Material S
(3) Material T
(4) Material U

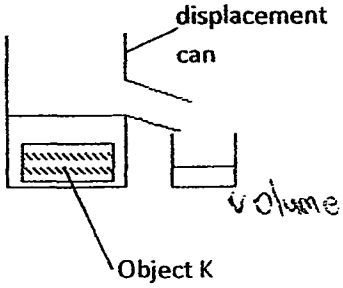
14. The diagrams below show set-ups A, B, C and D.



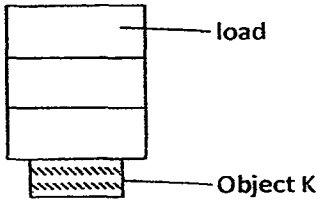
Set-up A



Set-up B



Set-up C

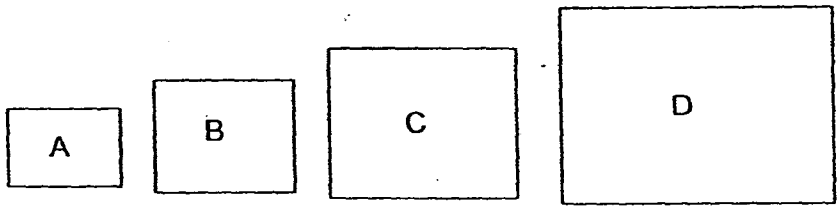


Set-up D

Which of the following set-ups can be used to find the mass of Object K?

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

15. The four boxes below each contain 20g of Substance X.



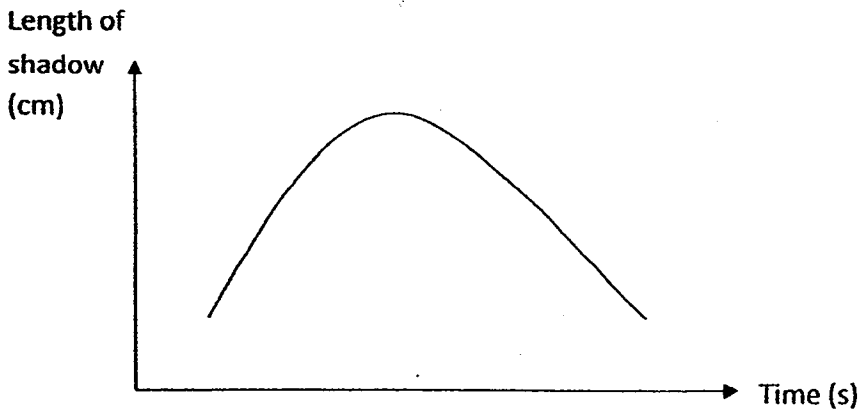
The volume of Substance X in each box is as follows.

Box	A	B	C	D
Volume of X (cm^3)	150	200	350	600

Which of the following could Substance X be?

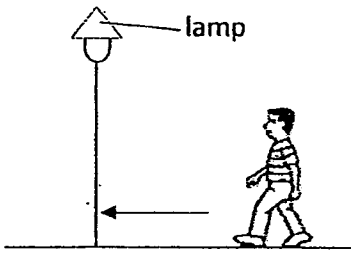
(1) Water
(2) Wood
(3) Sand
(4) Oxygen

16. The graph below shows how the length of John's shadow changes over a period of time as he walks near a street lamp at night.

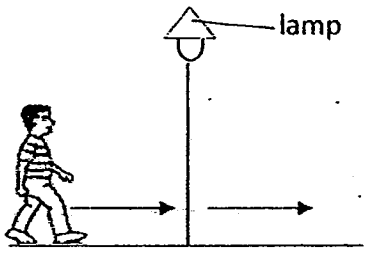


Based on the graph, which of the diagrams below shows the correct direction he is walking?

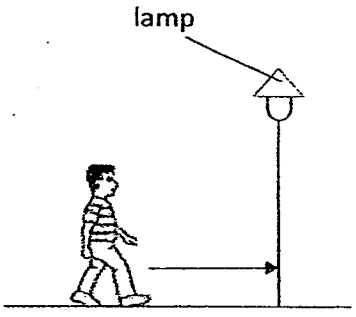
(1)



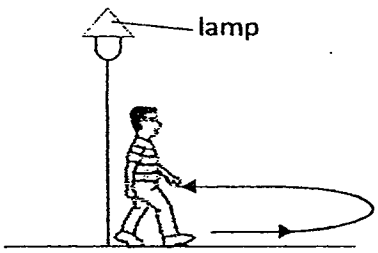
(2)



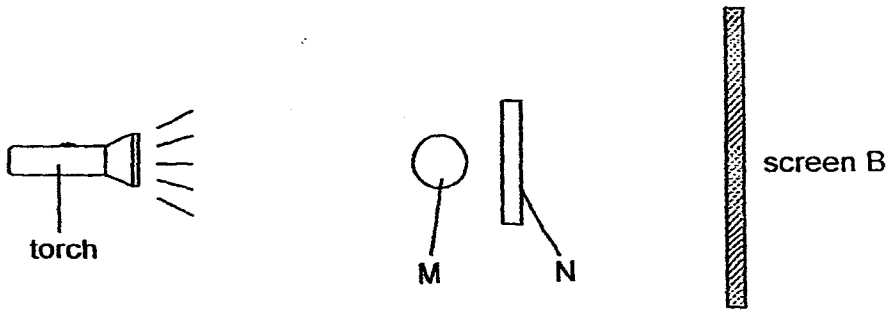
(3)



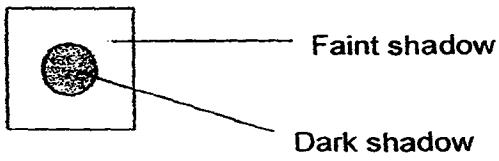
(4)



17. A group of students set up the experiment as shown below.



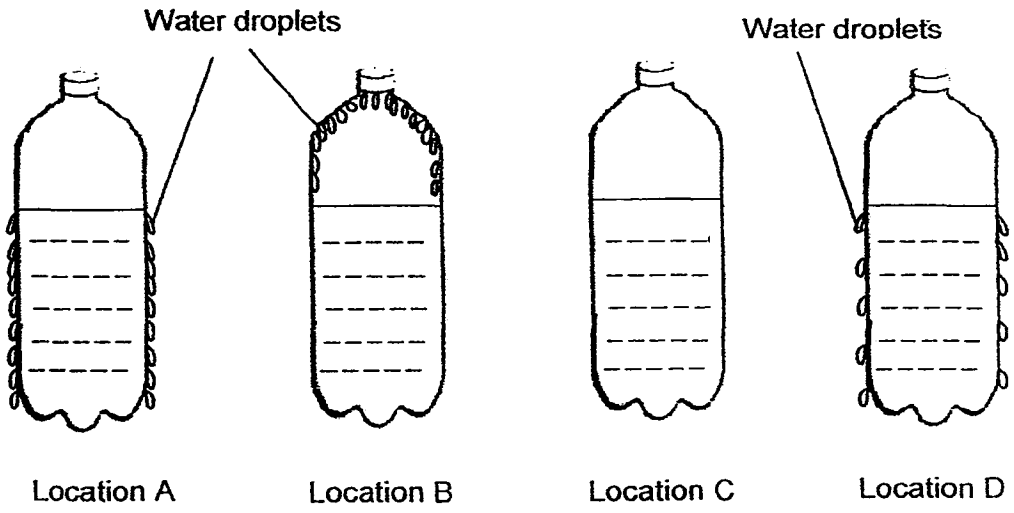
The shadow cast on the screen is shown below.



Which one of the following correctly describes Object M and N?

	Allows most light to pass through	Allows some light to pass through	Does not allow light to pass through
(1)	M	N	
(2)		M	N
(3)		N	M
(4)	M		N

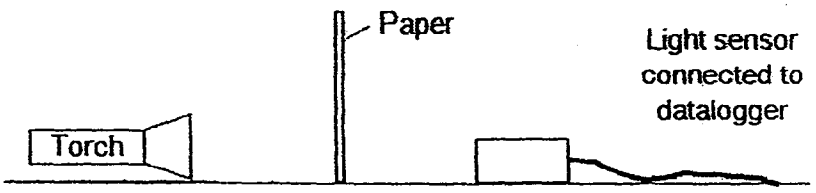
18. 4 bottles of water at the same temperature were placed in four locations A, B,C and D. The temperature at each location was different. After 15 minutes, the following observations were made.



Which location was the coldest?

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

19. Jimmy wanted to find out how the amount of light passing through paper is affected by the number of sheets of paper. He set up the apparatus as shown.



He tabulated his findings in the table below.

Number of sheets	Amount of light detected(units)
0	120
1	81
2	44
3	2

Which one of the following statements can he conclude from his experiment?

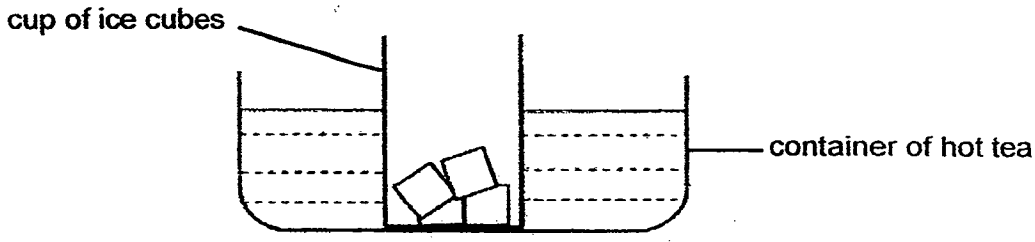
(1) The greater the number of sheets of paper, the greater the amount of light detected.

(2) The greater the amount of light detected, the greater the number of sheets of paper.

(3) The fewer the number of sheets of paper, the amount of light detected is less.

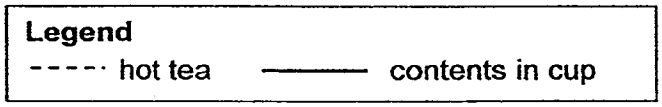
(4) The fewer the number of sheets of paper, the greater the amount of light detected.

20. The diagram below shows a cup of ice cubes in a container of hot tea.

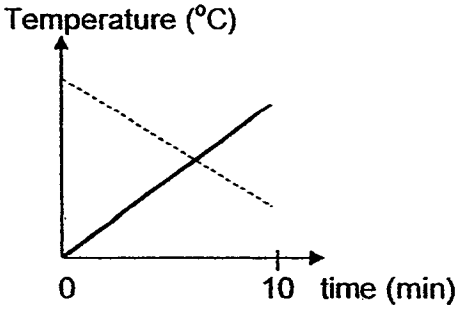


Mary plotted a graph to show changes in the temperature of the contents in the cup and the hot tea for 10 minutes.

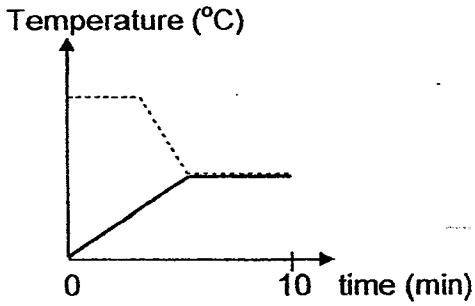
Which one of the following shows the correct graph?



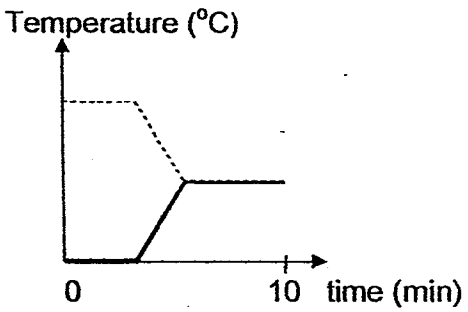
(1)



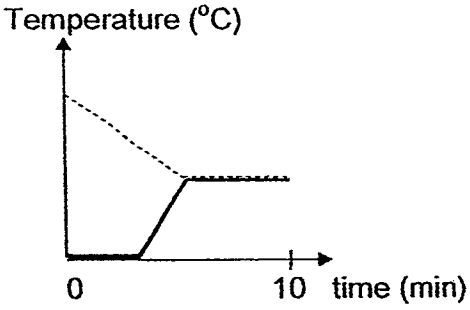
(2)



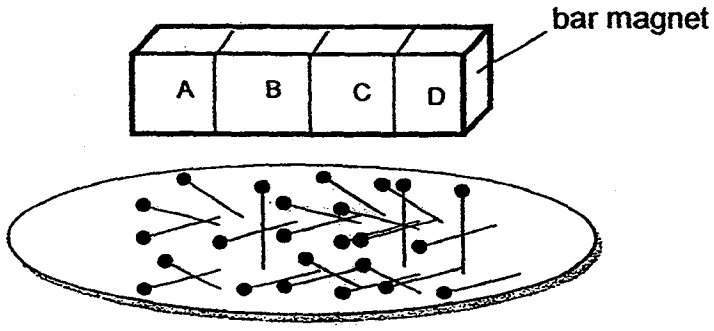
(3)



(4)

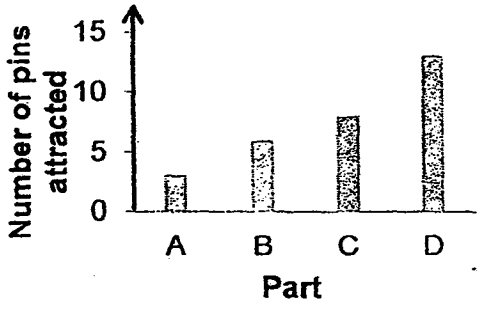


21. A bar magnet is lowered into a dish of pins as shown in the diagram below. The number of pins attracted to each part of the magnet labelled A, B, C and D was counted and recorded.

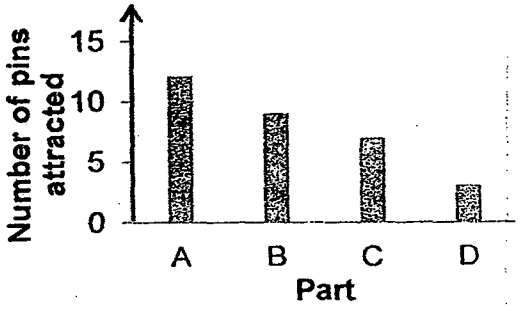


Which one of the following graphs correctly identifies the number of pins attracted at different parts of the magnet?

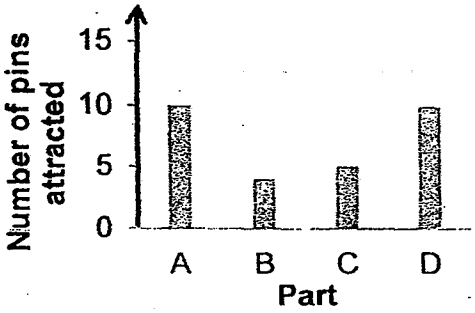
(1)



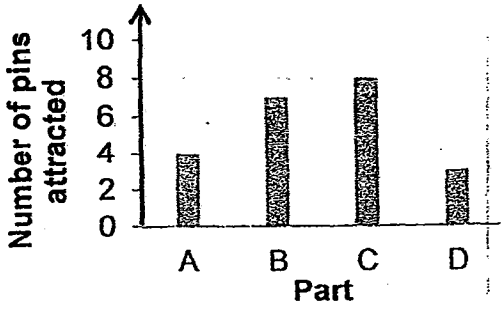
(2)



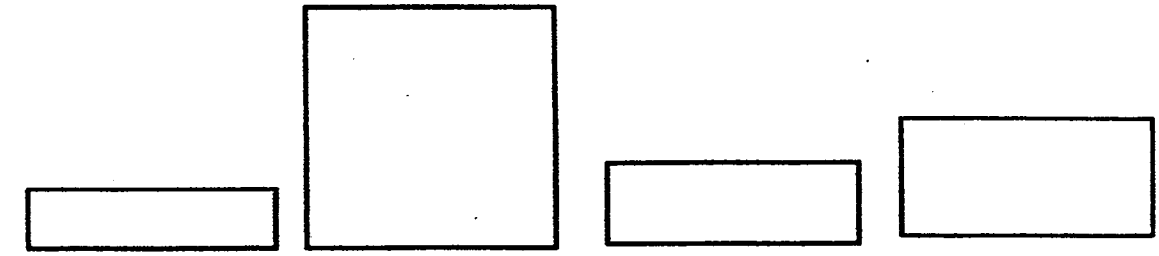
(3)



(4)



22. Katy poured the same amount of water on 4 similar towels which are folded in different ways as shown in the diagram below.



A
olded three times)

B
(not folded)

C
(folded two times)

D
(folded one time)

The time taken for the handkerchiefs to dry completely are given below.

Handkerchief	Time taken to dry completely (mins)
A	10
B	15
C	30
D	21

Which handkerchief had its result recorded wrongly?

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

23 The table below shows the state of four substances W, X, Y and Z, at different temperatures.

Substance	State of substance at		
	10°C	30°C	50°C
W	liquid	liquid	liquid
X	solid	solid	solid
Y	solid	liquid	liquid
Z	solid	solid	liquid

Which one of the following statements is true about the substances above?

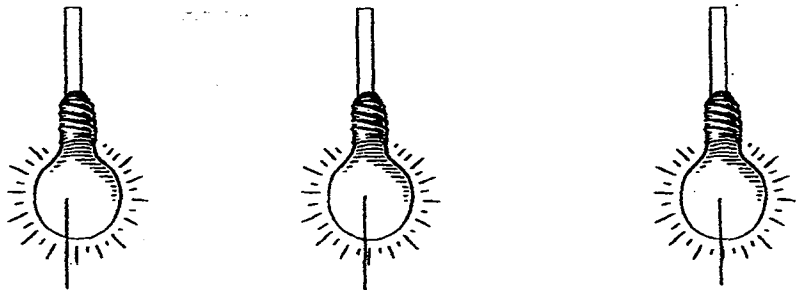
(1) Substance W has the lowest melting point.

(2) Substance X has the lowest freezing point.

(3) Substance Y boils at a temperature of 20°C.

(4) Substance Z boils at a temperature of 45°C.

24 Melissa wanted to find out which colour light attracts the most number of insects. She sets up the experiment below.

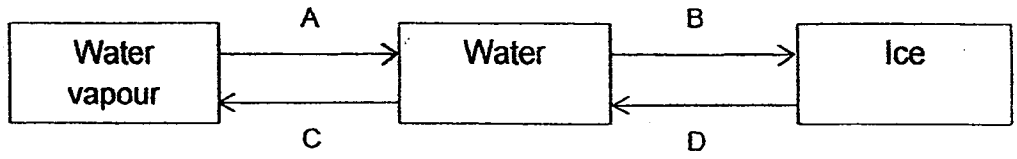


Blue light Yellow light Red light

Which of the following shows the correct variables that she changed, measured and kept constant?

	Changed variable	Measured variable	Constant variable
(1)	Number of insects	Location of lights	Colour of light
(2)	Location of lights	Number of insects	Colour of light
(3)	Colour of light	Number of insects	Location of lights
(4)	Location of lights	Colour of light	Number of insects

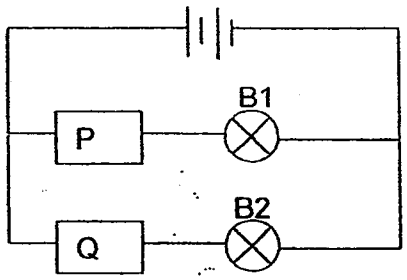
25. The diagram below shows the three states of water. A, B, C and D represent four different processes.



Which one of the following correctly shows if heat is gained or lost during processes A, B, C and D?

	A	B	C	D
(1)	Heat gained	Heat gained	Heat lost	Heat lost
(2)	Heat gained	Heat lost	Heat gained	Heat lost
(3)	Heat lost	Heat gained	Heat lost	Heat gained
(4)	Heat lost	Heat lost	Heat gained	Heat gained

26 Susan set up the circuit as shown below.



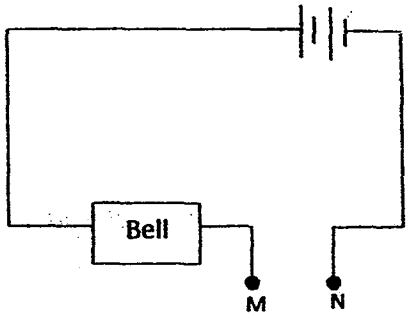
Bulb B1 lighted up while Bulb B2 did not.

Susan then switched the positions of P and Q and noticed that both bulbs did not light up.

Based on the above, which of the following is correct?

	Electrical Conductor	Fused Bulb
(1)	P	B1
(2)	P	B2
(3)	Q	B1
(4)	Q	B2

27. The diagram below shows a circuit tester. When the circuit is closed at MN, the bell will ring.

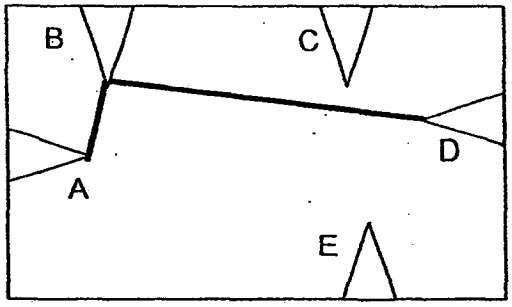


Sam used the above circuit tester to find out which paper clips in a circuit card were connected by wire.

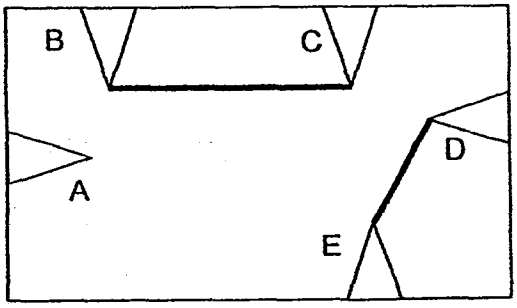
Clips tested	Did the bell ring?
A and B	Yes
B and C	Yes
C and D	No
D and E	No

Which of the following circuit cards was Sam using?

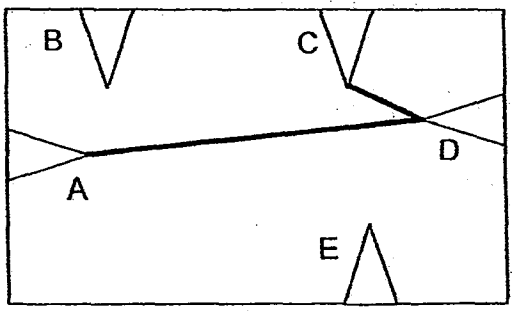
(1)



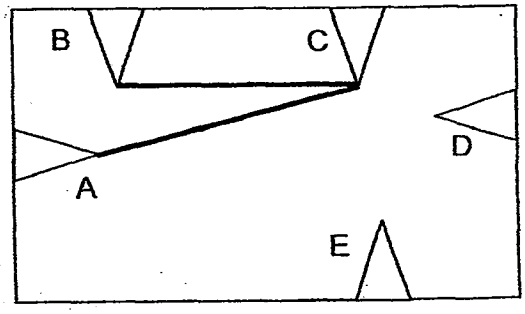
(2)



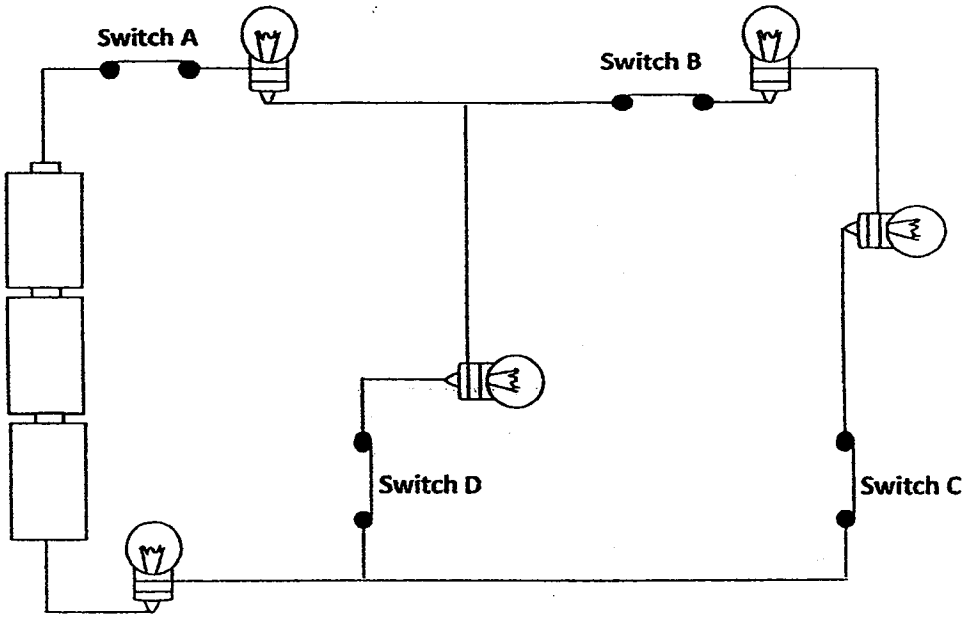
(3)



(4)



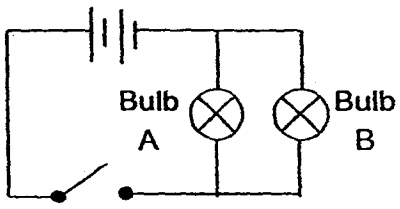
28. Five bulbs are placed at different positions in the circuit as shown below. All the bulbs are in working condition.



Which one of the following is <u>not</u> true when the switch stated is opened?

	Switch that is opened	Number of bulbs that light up
(1)	B	3
(2)	C	4
(3)	D	4
(4)	A	0

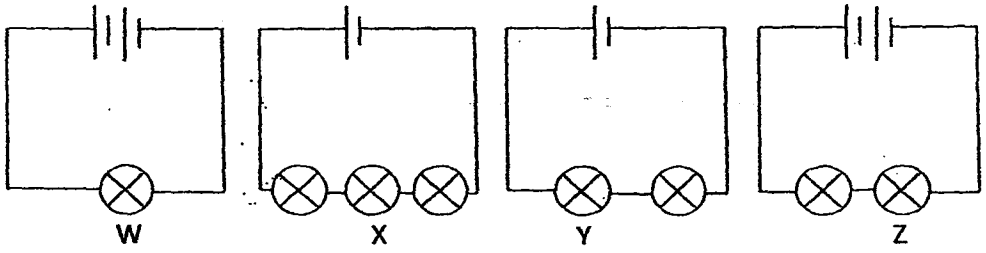
29. Ali set up an electrical system as shown below with 2 similar bulbs, 2 similar batteries and a switch.



Which of the following statements is correct when the switch is closed?

(1) Bulb A is as bright as bulb B.
(2) Bulb A is brighter than Bulb B.
(3) The switch only controls Bulb A.
(4) If bulb A fuses, Bulb B will not work too.

30 Study the 4 circuit diagrams below. The bulbs and batteries in the 4 circuits are new and functioning properly.



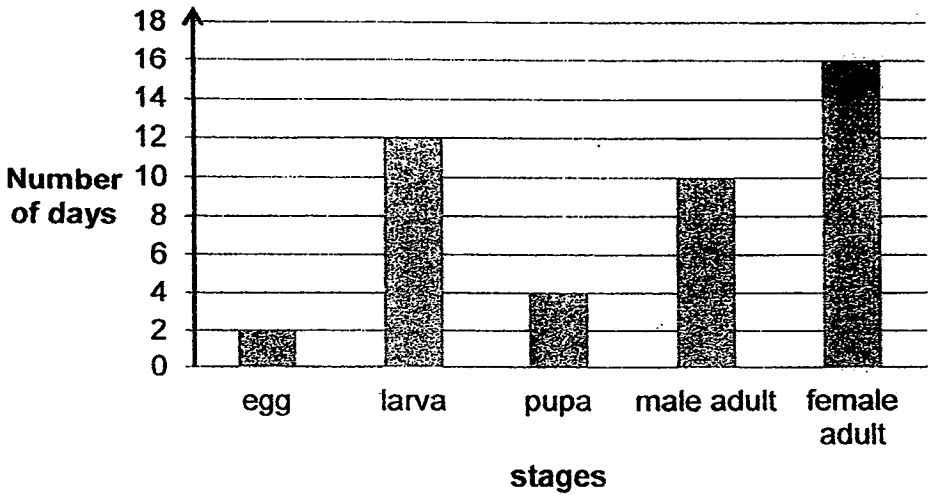
Which one of the following arranges bulbs W, X, Y and Z from the brightest to the dimmest?

(1) W, Z, Y and X
(2) W, Y, X and Z
(3) X, Y, Z and W
(4) Z, W, Y and X

Name: _____ ( )
Class P5 ( )

Section B: 40 marks
Read the questions carefully and write down your answers in the spaces provided.

31. The table below shows the number of days for each stage of the life cycle of Insect Z.



(a) Based on the graph above, how many days does it take for insect Z to become an adult after the egg has hatched? [1]

_____

(b) It is observed that the adult stage of insect Z lives on land while for the rest of its stages it lives in water.

How does this help Insect Z survive better? [1]

_____

_____

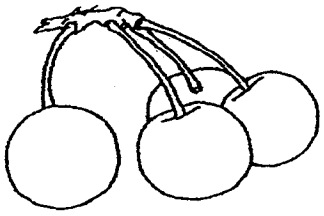
_____

2

32. The diagram below shows the fruits of some plants.

P

Characteristics of Fruit P :
- Has hooks
- Small
- Hard



Q

Characteristics of Fruit Q:
- Small
- Has many small seeds
- Juicy

Fruits P and Q are dispersed by animals.

(a) State an advantage of this method of dispersal for the plants. [1]

_____

_____

Birds eat the whole of Fruit Q. The seeds of Q cannot be digested.

(b) How does this method of animal dispersal give Plant Q an added advantage? [2]

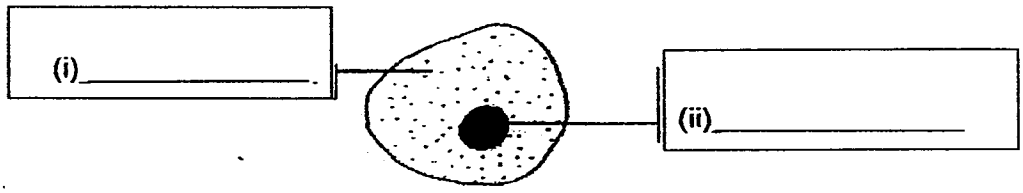
_____

_____

3

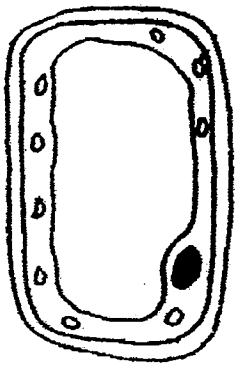
33. The diagram below shows Cell A which is found in a multicellular organism.

a) Give the names of parts (i) and (ii) of Cell A in the spaces provided. [1]



Cell A

The diagram below shows cell B.



Cell B

(b) Sarah says Cells A and B are found in the same multicellular organism.

Do you agree with her? Explain your answer. [2]

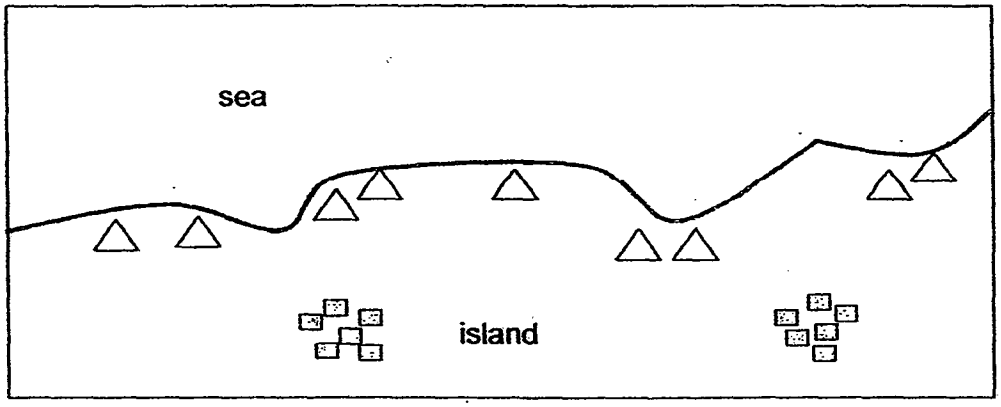
_____

_____

_____

3

34. The diagram shows part of an island where two types of plants (▣, △) are growing.



(a) Based on the diagram above, how are the fruits or seeds of each type of plant most likely dispersed? Explain your answer. [3]

Plant	Dispersal method	Reason
△	By _____	
▣	By _____	

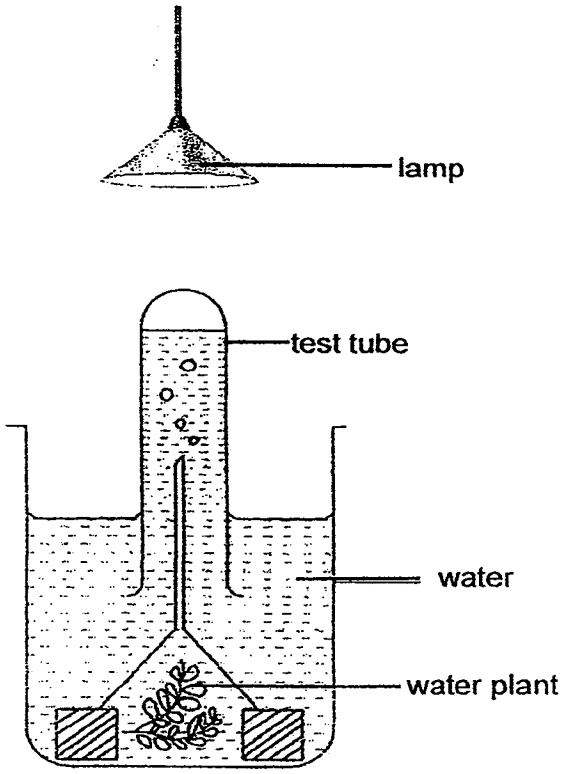
(b) State 2 characteristics that the fruit or seeds of plant △ have. [1]

_____

_____

4

35. John prepared the set-up below to find out if the height of the lamp from the plant affects the rate of photosynthesis of the water plant.



Write down the steps that John should do to help him achieve the aim of the experiment. Step 1 has been written for you. [2]

Step 1: Turn on the lamp.

_____

_____

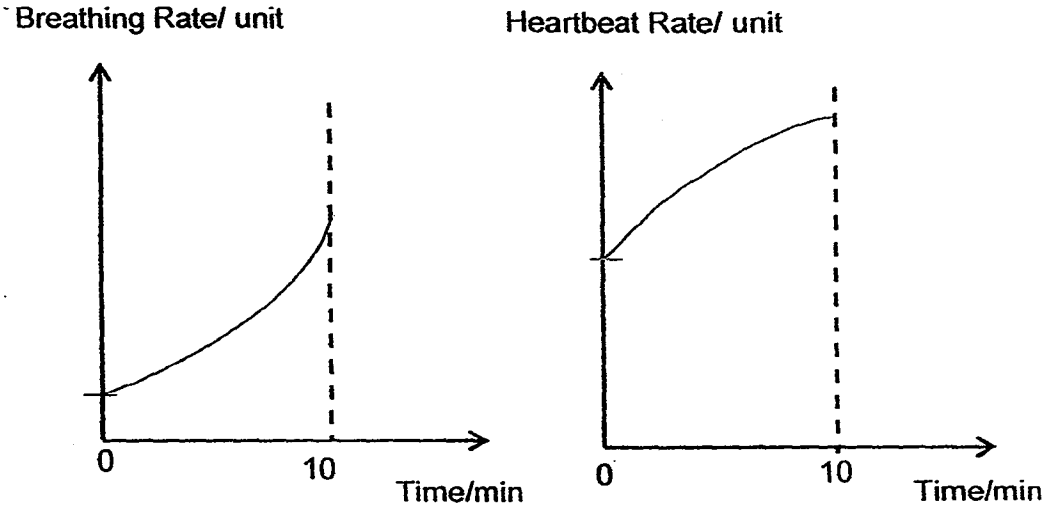
_____

_____

_____

2

36 Philips was asked to exercise for ten minutes. His breathing rate and heartbeat rate during the activity were measured and plotted into the line graphs as shown below.



(a) Based on the graphs shown above, what is the effect of exercising on Philips' breathing rate and heartbeat rate? [1]

(i) Breathing rate : _____

(ii) Heartbeat rate _____

(b) Explain the change in Philips' breathing rate when he exercised. [2]

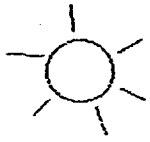
_____

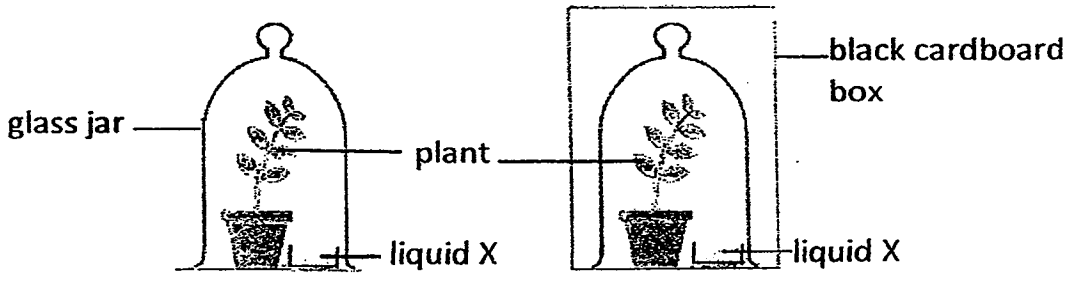
_____

_____

3

37. Ali prepared set-ups P and Q which were placed under the sun for 4 hours. Liquid X was placed in both set-ups.





Set-up P Set-up Q

The table below shows the colour of liquid X when there is more or less carbon dioxide in the surrounding.

Colour of Liquid X	When more carbon dioxide is present	When less carbon dioxide is present
	Yellow	Pink

At the end of the 4 hours, the colour of liquid X in both set-ups were observed.

(a) Complete the table below by indicating the colour of liquid X in set-up P at the end of the 4 hours. [1]

Colour of Liquid X after 4 hours	Set-up P	Set-up Q
		Yellow

(b) Explain the colour change of liquid X in Set-up Q. [2]

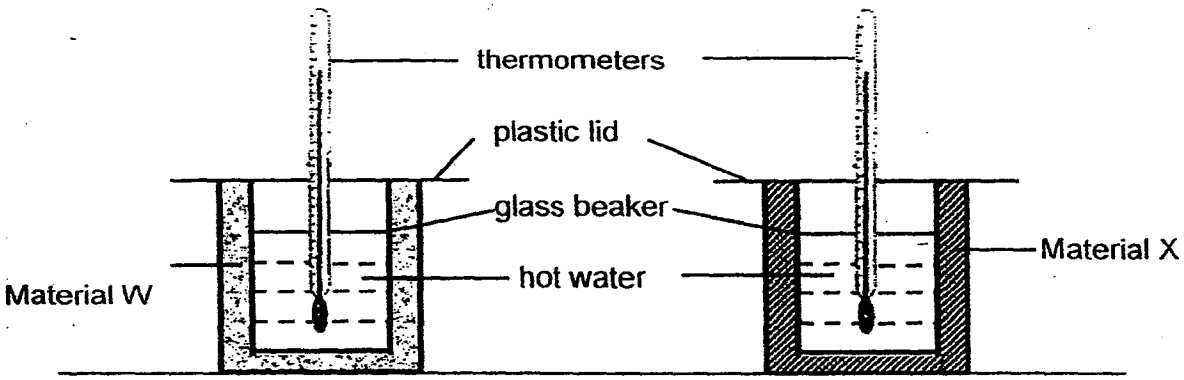
_____

_____

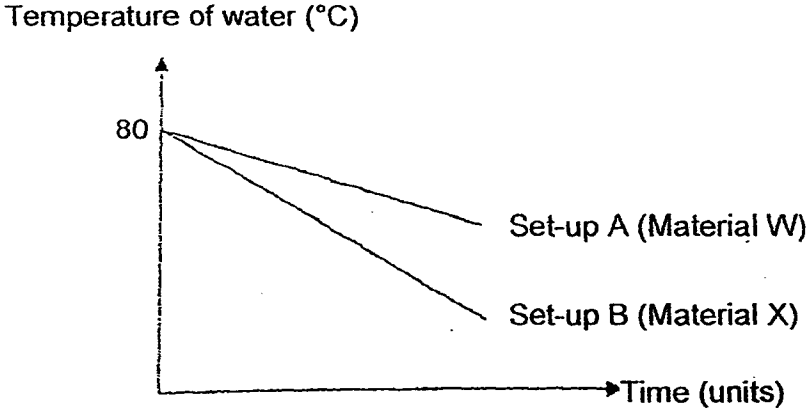
_____

3

38. Billy conducted an experiment using set-ups A and B as shown below. He wrapped a glass beaker with material W and another identical beaker with material X. He filled both beakers with the same amount of hot water at 80°C.



He measured the temperature of the water in both set-ups over time and plotted his results in the graph shown.



(a) Based on the graph, in which set-up, A or B, did the water cool down faster? Explain your answer. [1]

_____

_____

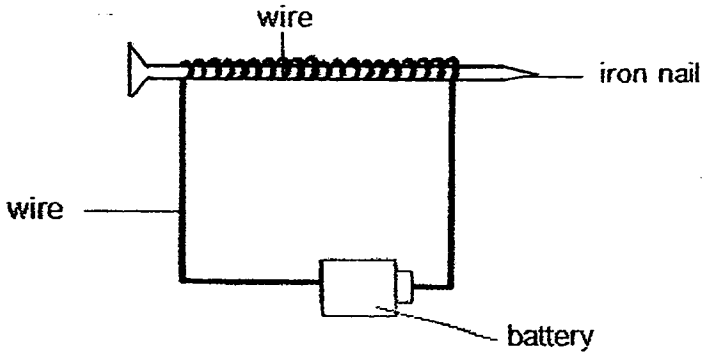
(b) Which material, W or X is more suitable in making a jacket used in cold weather? Explain. [2]

_____

_____

3

39. Winston wanted to find out how the number of turns of the wire affects the strength of the electromagnet. He tested the strength of the electromagnet by counting the number of steel pins that could be attracted by it.



He recorded his observations in the table below.

Number of turns	Number of pins attracted
10	7
20	15
30	22
40	36

(a) Based on the table above, what is the relationship between the number of turns and number of pins attracted? [1]

_____

_____

When the number of turns of wire was 40, Winston decided to add one more battery to the circuit in series to the first battery.

(b) Predict if the number of pins attracted was less than 36, more than 36 or remained at 36. Explain your answer [2]

_____

_____

Winston decided to change the iron nail to an aluminium nail.

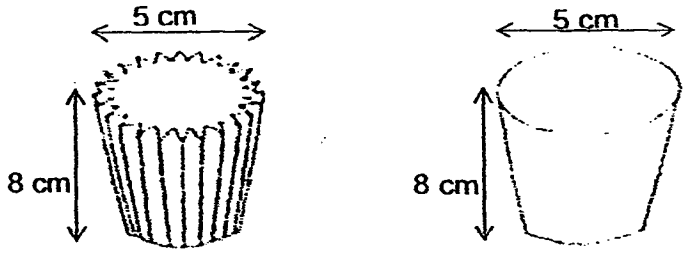
(c) Will the aluminium nail attract any pins? Explain your answer. [1]

_____

_____

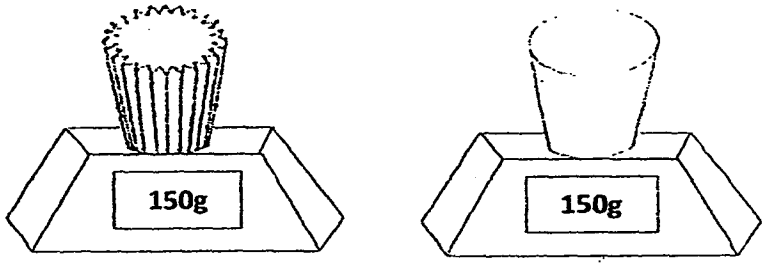
4

40. Containers A and B are made of the same type of metal and weigh 150g each.



Container A **Container B**

Both containers were placed in the freezer for a few hours. When the containers were taken out from the freezer, they were placed on an electronic balance.



Container A **Container B**

Water droplets soon formed on surfaces of each container through Process X.

(a) Name Process X [1]

_____

The readings recorded by the electronic balances with Containers A and B placed on them were recorded for a period of 5 minutes.

Time (min)	Readings (g)	
	A	B
0	150	150
1	155	152
2	163	156
3	168	160
4	179	163
5	173	165

(b) Explain why the reading for container A increased more at the end of 5 minutes. [2]

_____

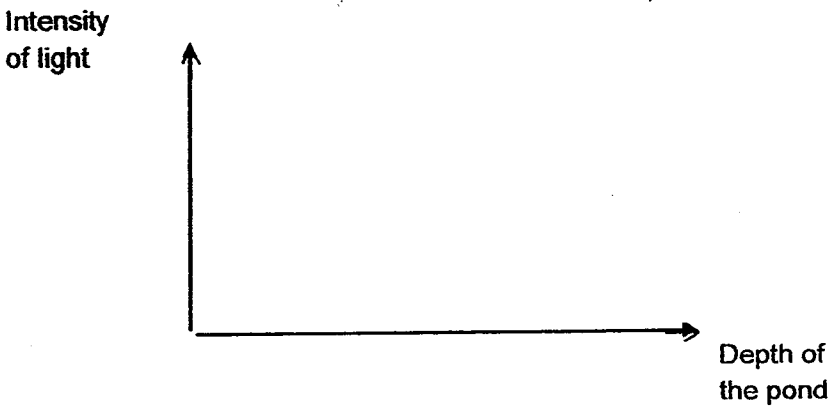
_____

_____

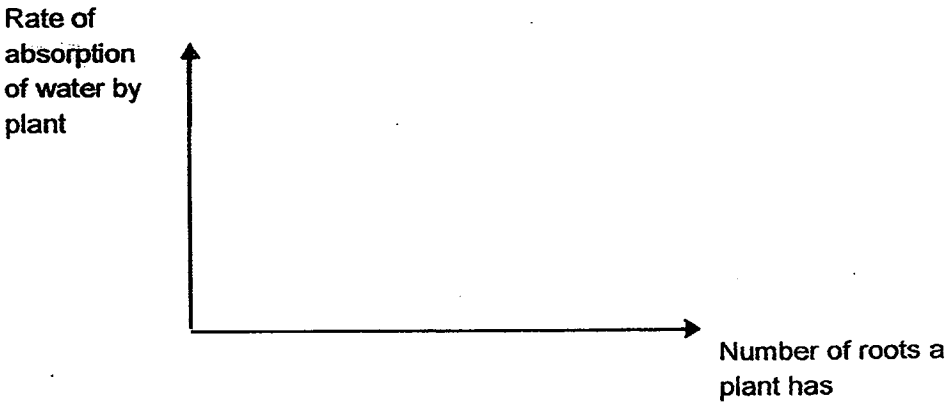
3

41 In each of the following, draw line graphs to show the relationship between the variables shown in the axes. [2]

(a)

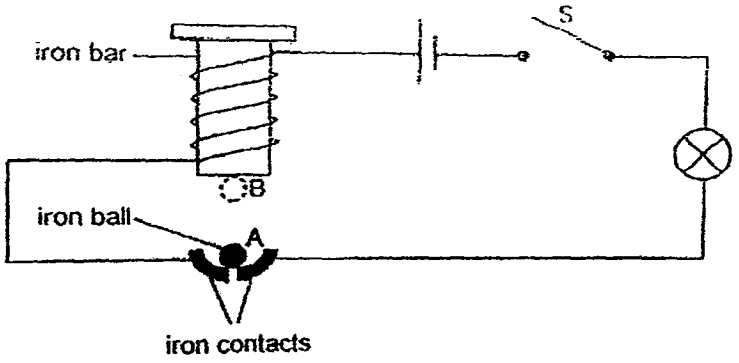


(b)



2

42. Cody was given the circuit as shown below. When the switch was closed, she noted that the iron ball moved up and down between points A and B. This resulted in the light bulb being turned on and off repeatedly.



(a) State whether the light bulb is turned on or off when the iron ball is at points A and B. Explain why the bulb is turned on or off at the respective points. [3]

Point	Is light bulb turned on or off?	Explanation
A		
B		

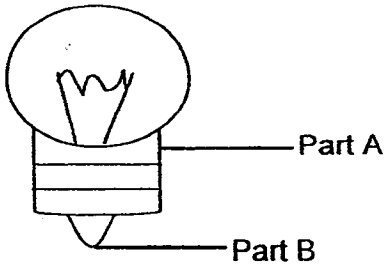
(b) Cody then removed the iron ball and placed a plastic ball of the same size at A. He repeated the experiment but the bulb did not light up at all.

What property of the plastic ball caused this to happen? [1]

_____

4

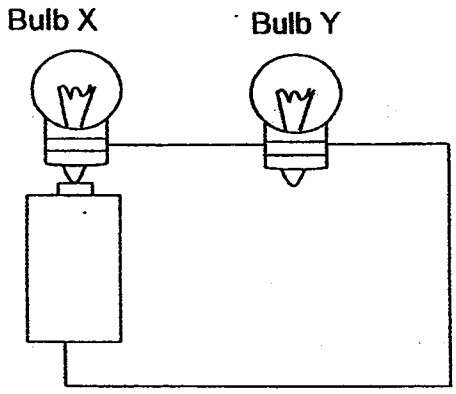
43 The diagram below shows a light bulb. Parts A and B of the light bulb are labelled below.



(a) Are Parts A and B electrical insulators or electrical conductors? [1]

Part	Is it an electrical insulator or electrical conductor?
A	
B	

2 new working bulbs of the same type, X and Y, were connected to a new battery with wires as shown in the circuit below.



Bulb X lighted up.

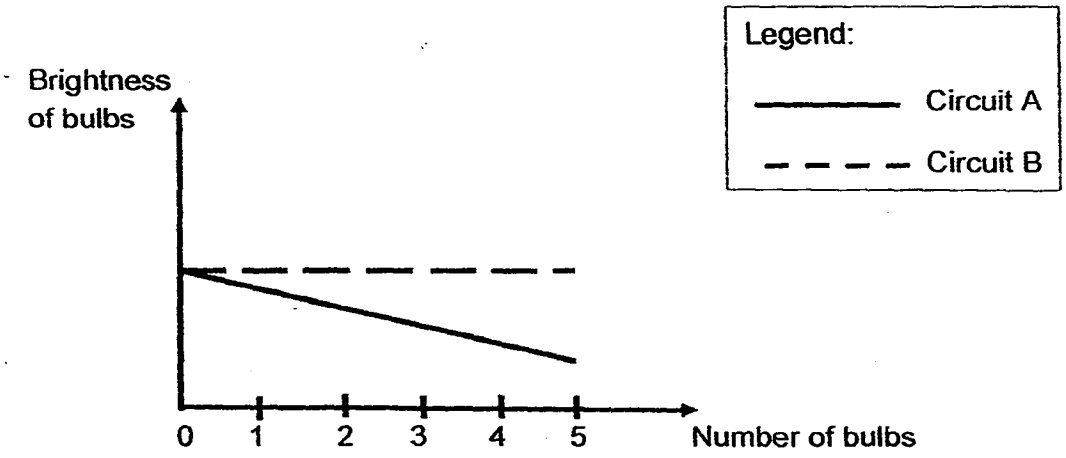
(b) Did Bulb Y light up too? Explain your answer. [1]

_____

_____

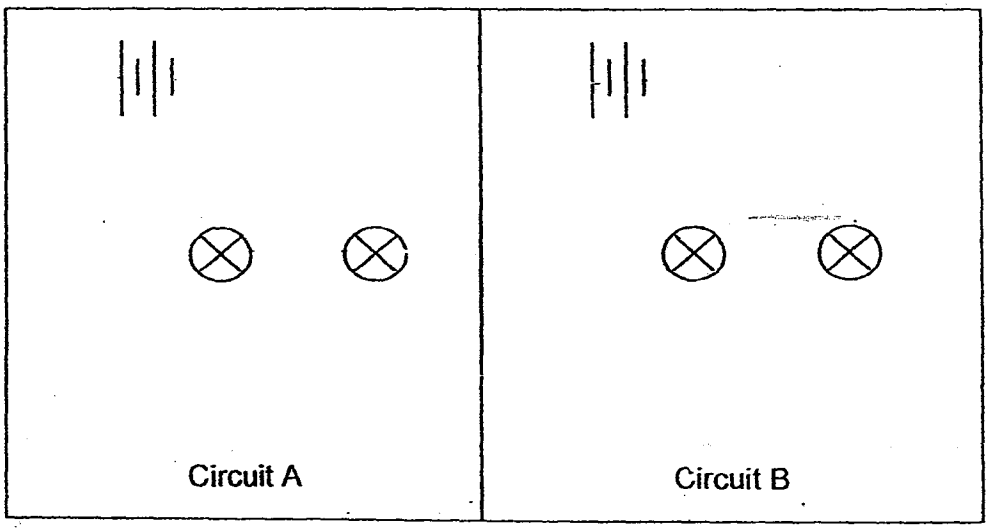
2

44. Joy used identical batteries and light bulbs to set up two electrical circuits, A and B. She used two batteries in each circuit. She then added more bulbs to each circuit and plotted a graph to compare the brightness of the bulbs in the two circuits.



Based on the graph above, draw wires in the spaces below to show how the 2 batteries and 2 bulbs should be connected to represent electrical circuits A and B.

[2]



2

END OF PAPER

EXAM PAPERS 2014

SCHOOL: AI TONG SCHOOL
SUBJECT: SCIENCE
LEVEL: PRIMARY 5
TERM: SA 2

BOOKLET A

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

BOOKLET B

Q31 a) 16
b) There will be no competition for food between the young and adult of insect 2 so the young will have more food to survive.

Q32 a) It allows the seed to be dispersed further from parent plant thus prevent overcrowding.
b) The birds' waste act as fertilizer for the seedling to grow better.

Q33 a)(i) cytoplasm (ii)nucleus
b)No as cell B has chloroplast and a cell wall which only exist in plants and cell A does not have chloroplast and cell wall so A is not a plant cell but B is.

Q34 a) By water. Reason: The plant seeds are found along the shoreline of the sea. By splitting. Reason: the plant seeds are all near each other at the same spot.
b) The fruit has a fibrous husk and is waterproof.

Q35 Step 2: move the lamp to 50cm away from the plant.
Step 3: measure the number of bubbles per minute.
Step 4: move the lamp to 60cm away from the plant.
Step 5: measure the number of bubbles per minute.
Step 6: Repeat step 2 to 5 three times and get the average result.
Step 7: Compare and conclude.

Q36 a)(i) increases (ii) increases
b) Philip needed more energy so he had to respire more to transform more digested food into energy and oxygen is needed in that process so Philips' breathing rate increased to breathe in more oxygen and more carbon dioxide must be removed from the body faster.

Q37 a) Pink

b)The plant in set-up Q could not receive sunlight for photosynthesis as the plant was placed in a black cardboard box so the plant can only respire and oxygen is taken in in the process and carbon dioxide is given out so liquid X in set-up Q would turn yellow as more carbon dioxide is present.

Q38 a) B. Temperature of water decreased faster for B.

b) Material W as temperature of water in set-up A dropped at a slower rate than set-up B. This shows that Material W is a poorer conductor of heat and slows down hear transfer to the surrounding thus making it suitable in making a jacket.

Q39 a) As the number of turns increased, the number of pins attracted increased.

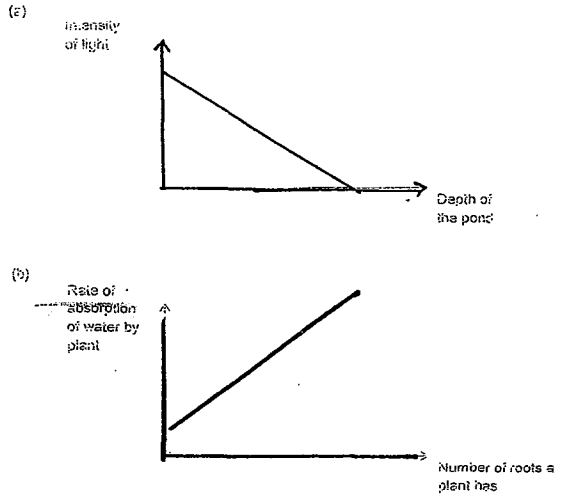
b)More than 36 as there is more electrical energy so the magnetic strength of the iron nail was more and the nail would attract more nails.

c) No as the aluminium is a non-magnetic material so the aluminium nail cannot be magnetised and attract any pins.

Q40 a) Condensation

b) Container A has more surface area than B so more water vapour can condense on the container and A would be heavier that B as there is more water droplets.

Q41



Q42 a) On. Explaination: There is no gap in the circuit so the electricity can flow and the bulb can light up. Off. Explaination: There is a gap in the circuit so the electricity cannot flow and the bulb cannot light up.

b) An insulator of electricity.

Q43 a) A: electrical conductor. B: electrical conductor.

b) No as both ends were connected to the metal casing so the bulb could not light up as a wire needs to be connected to the metal tip

Q44