Index No. | | | | | | – | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2013

SCIENCE

BOOKLET A

Wednesday **21st August 2013** **1 hour 45 minutes**

Name :_____ ( )

Class : P6_____

INSTRUCTIONS TO PUPILS

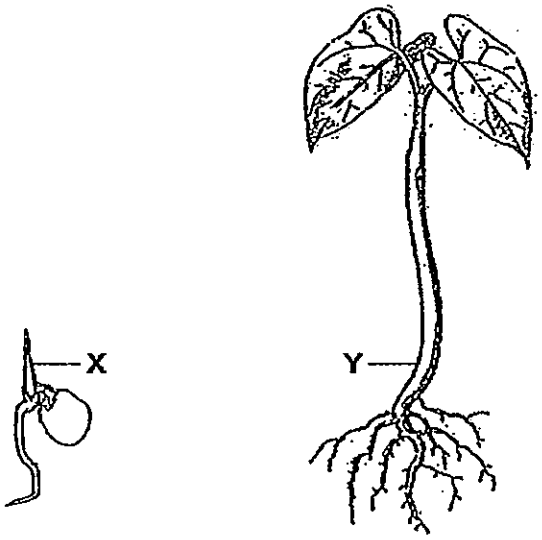
DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO
Follow all instructions carefully.
There are 30 questions in this booklet.
Answer ALL questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 60.
The total time for Booklets A and B is 1 hour 45 minutes.
This question paper consists of 25 printed pages. (Inclusive of cover page)

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. (60 marks)

1 The diagram below shows a plant at different stages of growth.



Young plant Adult plant

What is the direction in which food and water are being transported at X and Y?

	X		Y	
	food	**water**	**food**	**water**
(1)	upwards	upwards	downwards	upwards
(2)	upwards	downwards	upwards	downwards
(3)	downwards	upwards	downwards	upwards
(4)	downwards	downwards	upwards	downwards

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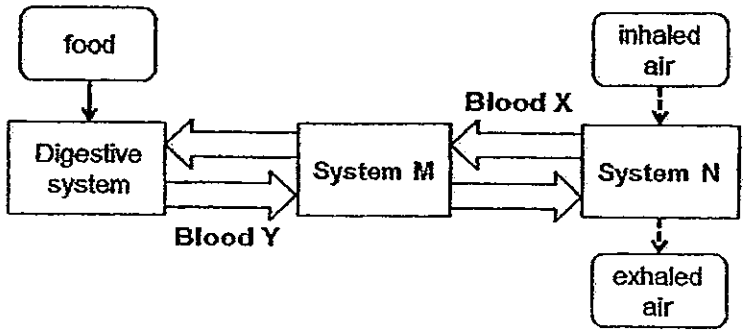
2 The diagram below shows how blood transports food and gases between the different systems in the human body.



Which systems do M and N represent and what is blood X and Y rich in?

	System M	System N	Blood X rich in	Blood Y rich in
(1)	respiratory	circulatory	carbon dioxide	digested food
(2)	respiratory	circulatory	oxygen	undigested food
(3)	circulatory	respiratory	carbon dioxide	undigested food
(4)	circulatory	respiratory	oxygen	digested food

3 Four cells taken from different parts of plants and animals were observed under a microscope. The table below shows the parts of the cells that were observed. A tick (✓) indicates the presence of the cell part.

	Cell P	Cell Q	Cell R	Cell S
nucleus		✓	✓	✓
cell membrane	✓	✓	✓	✓
cell wall		✓	✓	
chloroplast			✓	
cytoplasm	✓	✓	✓	✓

Based on the table above, which of the following cells are grouped correctly?

	Animal cells	Plant cells
(1)	P, Q and S	R only
(2)	P and S	Q and R
(3)	R and S	P and Q
(4)	R only	P, Q and S

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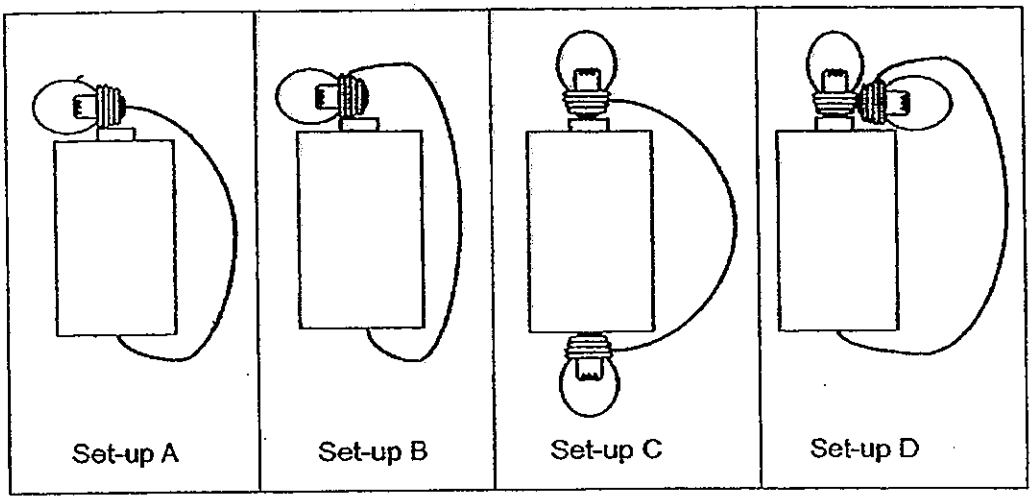
4 The diagram below shows four different set-ups of batteries, bulbs and wires.



In which of the following set-ups, A, B, C and D will the bulb(s) not light up?

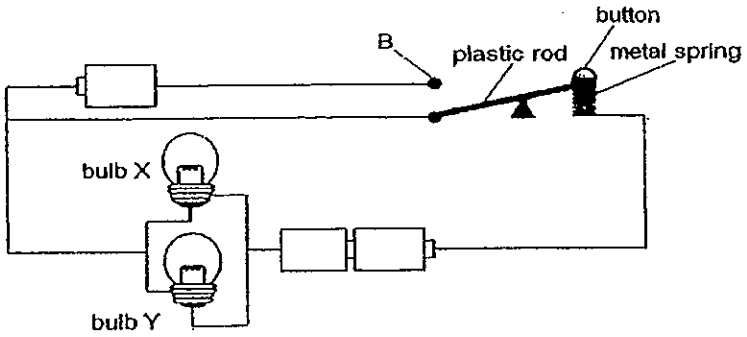
(1) Set-up B only

(2) Set-ups A and C only

(3) Set-ups B and D only

(4) Set-ups A, C and D only

5 Study the diagram below. Bulbs X and Y are identical and the three batteries used are new and identical.



If the button is pressed and held down, the rod will now touch point B. What will happen to bulbs X and Y?

(1) Bulb X will be brighter than bulb Y.

(2) Bulb Y will be brighter than bulb X.

(3) Both bulbs X and Y will not light up.

(4) Both bulbs X and Y will be brighter than before.

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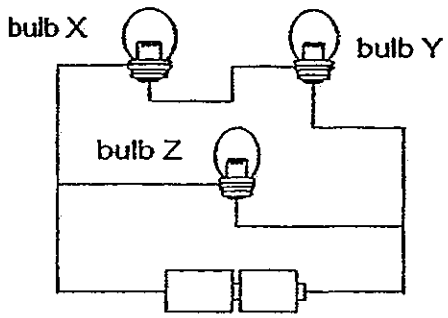
6 The diagram below shows an electric circuit with three bulbs, X, Y and Z and two identical new batteries.



If bulb Y fuses, which of the bulb(s) will remain lit?

(1) X only

(2) Z only

(3) X and Z only

(4) None of the bulbs

7 A pH scale shows how acidic or basic a liquid is. The scale is from 0 to 14. Liquids with pH less than 7 are acidic while liquids above 7 are basic. Water has a pH of 7. The table below shows the pH range of water suitable for animals A, B, C and D to survive.

Animal	pH level
A	6.5 – 8.0
B	5.5 – 7.5
C	7.0 – 8.0
D	7.0 – 9.2

Substance Q can increase the pH level of water according to the table below.

Number of drops	Amount of increase in the pH level
1	0.5
2	1.0
3	1.5
4	2.0

Mel wants to make sure that all the animals A, B, C and D in his aquarium survive. What is the least number of drops of substance Q that Mel should add into his aquarium if the pH level now is 6.1?

(1) 1

(2) 2

(3) 3

(4) 4

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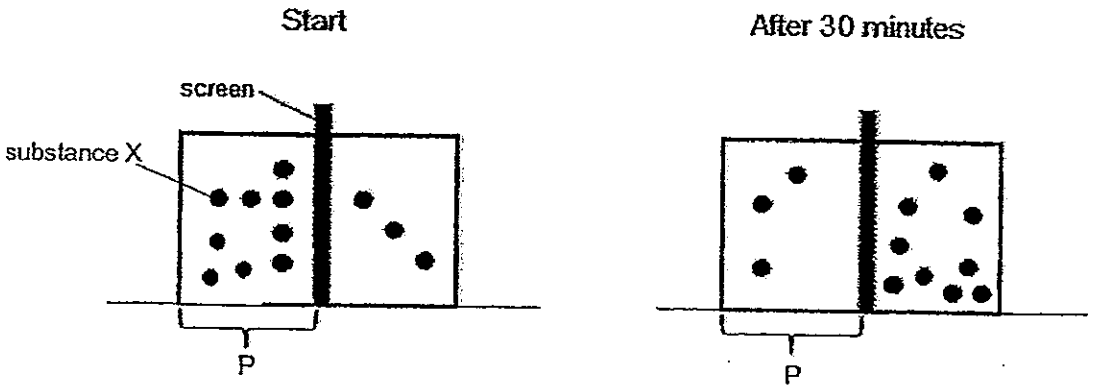
8 John demonstrated what happened at a certain part of the digestive system using his model as shown below.



Which part of the digestive system is represented by part P of his model?

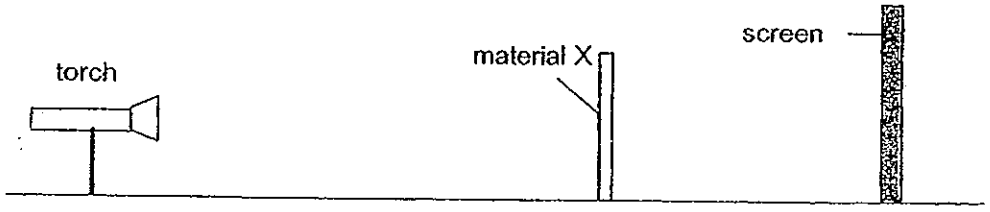
(1) Mouth

(2) Gullet

(3) Stomach

(4) Small intestine

9 Fred wanted to find out how the thickness of a translucent material X affects the amount of light that can pass through it. He placed one piece of material X as shown below and switched on the torch.



What should Fred do next to complete the experiment?

(1) Add another material X.

(2) Increase the intensity of light.

(3) Put the torchlight nearer to the material.

(4) Replace material X with a piece of glass.

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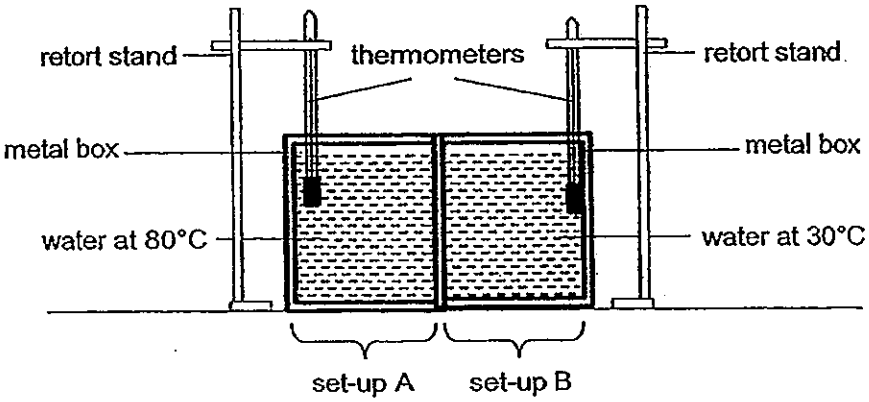
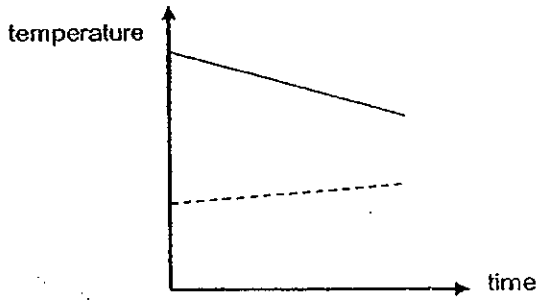
10 Two set-ups are placed beside each other in a room at 30°C as shown below.



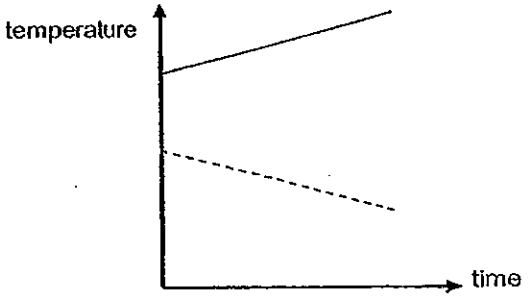
Which graph most likely shows the temperature changes for a period of two minutes in each set-up?

Key :
——— Set-up A
------ Set-up B

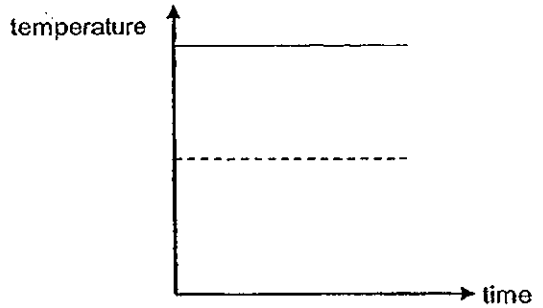
(1)



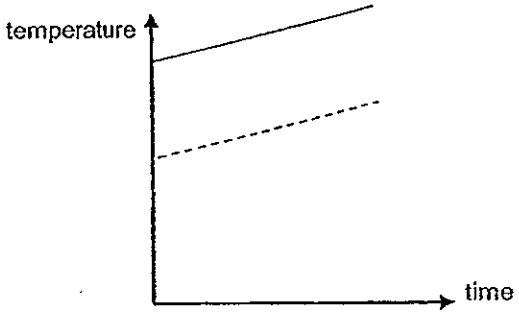
(2)



(3)



(4)



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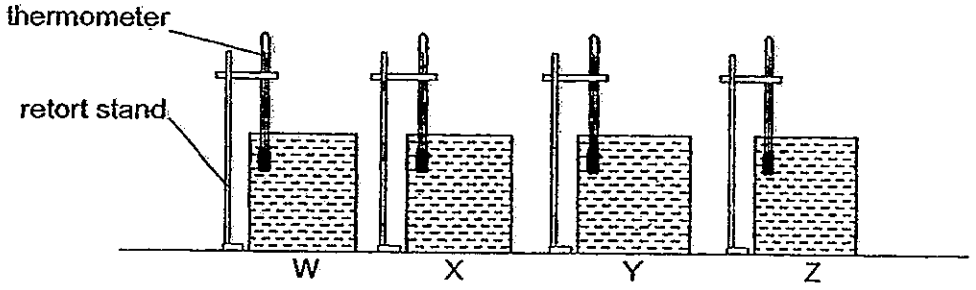
11 Four different liquids W, X, Y and Z were placed in identical containers as shown below. They were heated up to a certain temperature and allowed to cool.



The table below shows the record of the temperature change of each liquid.

Time (minutes)	Temperature of liquid (°C)			
	W	X	Y	Z
0	80	80	80	80
30	50	60	55	70

If the liquids are reheated from 30°C, which liquid would most likely take the shortest time to reach 100°C?

(1) W

(2) X

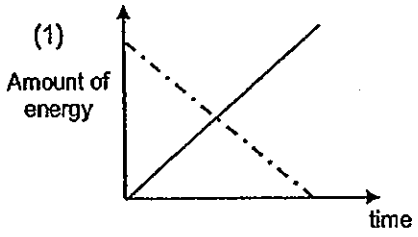
(3) Y

(4) Z

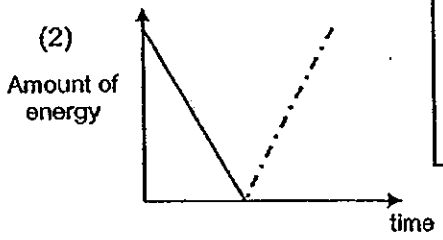
12 The picture below shows a ball rolling down a ramp.

Which one of the following graphs correctly represents the change in the amount of gravitational potential energy (GPE) and kinetic energy (KE) as the ball moved down the ramp?

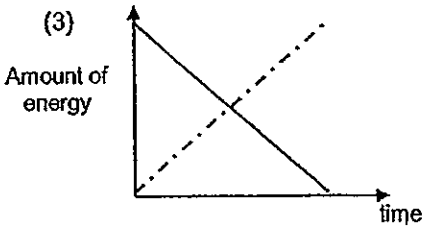
(1)



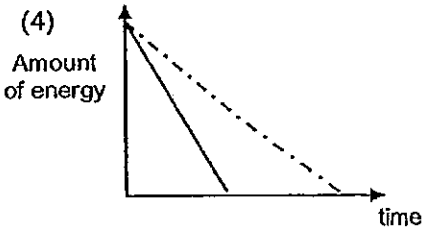
(2)



(3)

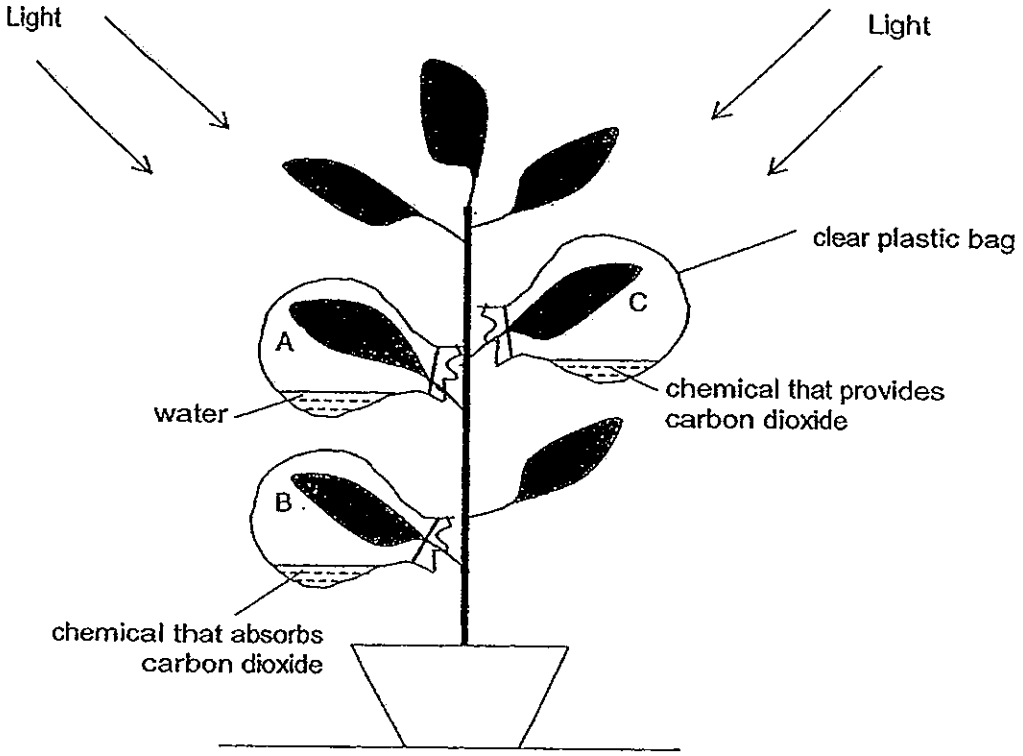


(4)



13 Amy wanted to conduct an experiment on photosynthesis. Before she started her investigation, she left the plant in a dark cupboard for 48 hours.

She set up her experiment in the garden as shown in the diagram below with leaves A, B and C wrapped tightly in a clear plastic bag so that no air can enter or escape.



After four hours, Amy removed leaves A, B and C, and conducted a starch test on the leaves. A starch test is a test whereby iodine turns from brown to dark blue in the presence of starch. Which one of the following sets of results would she most likely obtain?

	Colour of iodine on		
	Leaf A	**Leaf B**	**Leaf C**
(1)	dark blue	dark blue	brown
(2)	dark blue	brown	dark blue
(3)	brown	dark blue	brown
(4)	brown	brown	brown

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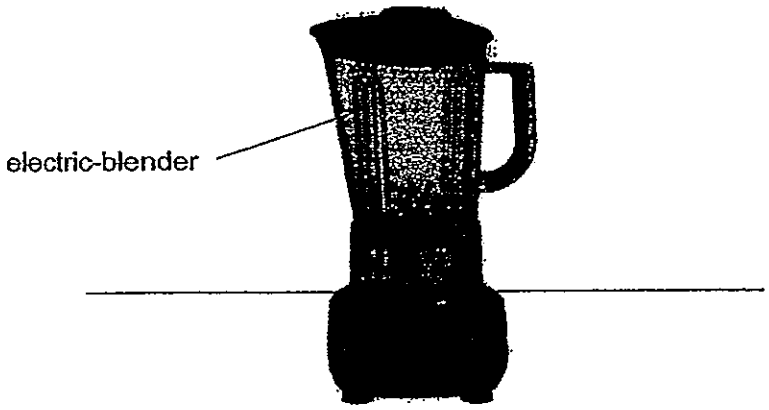
14 Cathy mixes fresh mango pieces with cold water in an electric-blender to make mango juice.



Which of the following takes place when the blender is used?

A Electrical energy is converted to kinetic energy of the blades.

B Potential energy of the mangoes is converted to kinetic energy.

C Kinetic energy of the blades is converted to chemical potential energy.

D The temperature of the cold water increases as it absorbs heat energy produced by friction.

(1) A and B only

(2) A and D only

(3) B and C only

(4) A, C and D only

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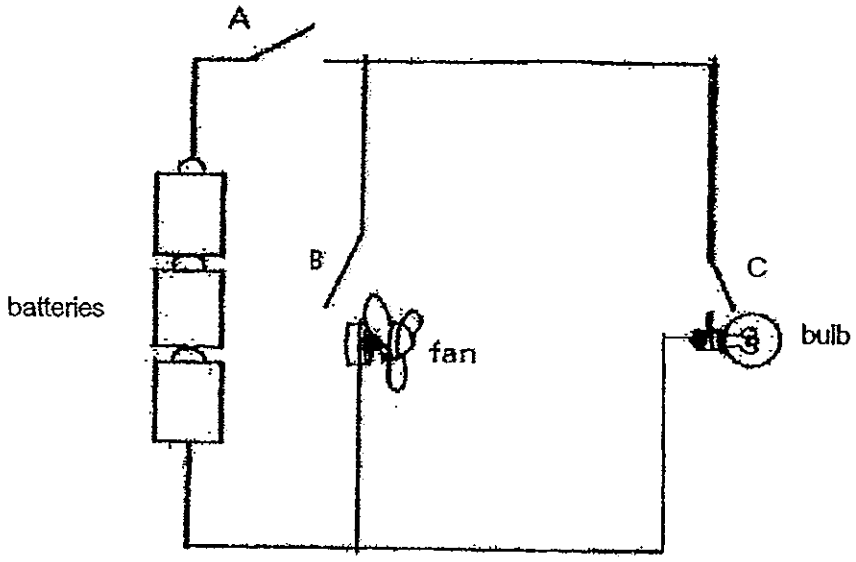
15 Study the diagram below carefully.



Which of the switches must be closed for the following energy changes to take place?

Chemical potential energy → electrical energy → light energy + heat energy

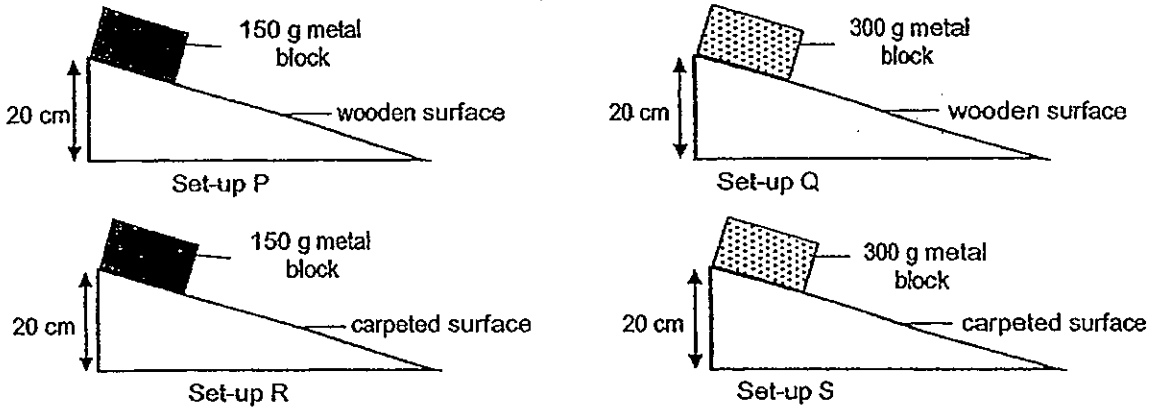
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

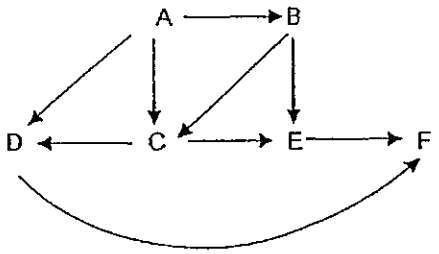
16 Jason conducted an experiment with two metal blocks of the same size but of different mass. He released the blocks from ramps with different surfaces as shown below.



He wanted to investigate how the time taken by the block to slide down the ramp depends on the mass of the block and the surface of the ramp.
Which pairs of set-ups should he use in his investigation?

	Time taken depends on	
	mass of the block	**surface of the ramp**
(1)	P and Q	R and S
(2)	R and S	P and R
(3)	Q and S	P and Q
(4)	P and R	Q and S

17 The food relationships among organisms A, B, C, D, E and F are shown in the food web below.



Based on the above food web, which organisms are both predator and prey?

(1) A and F only

(2) D and F only

(3) C, D and E only

(4) B, C, D and E only

(Go on to the next page)

18 The diagrams below show the skulls of four mammals. No teeth are missing from the skulls. Based on the physical structures of the teeth, which one of the following mammals is most likely a herbivore?

(1)

(2)

(3)

(4)

(Go on to the next page)

19 Pollutant Standard Index (PSI) values give an indication of the quality of air. The table below shows the quality of air with the associated range of PSI values.

PSI value	Quality of air
0 – 50	Good
51 – 100	Moderate
101 – 200	Unhealthy
201 – 300	Very unhealthy
Above 300	Hazardous

The table below shows the quality of air in Country A over a few days.

Day	1	2	3	4	5
PSI value	20	78	124	146	163

Which one of the following reasons can best explain the sudden increase of PSI from days 1 to 5?

(1) Trees were chopped down in the forests.

(2) There were more smokers in the country.

(3) There was an increase of vehicles on the roads.

(4) A forest fire took place in the neighbouring country.

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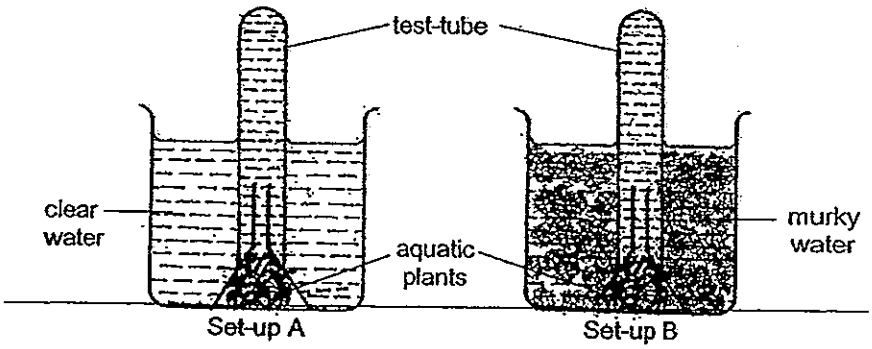
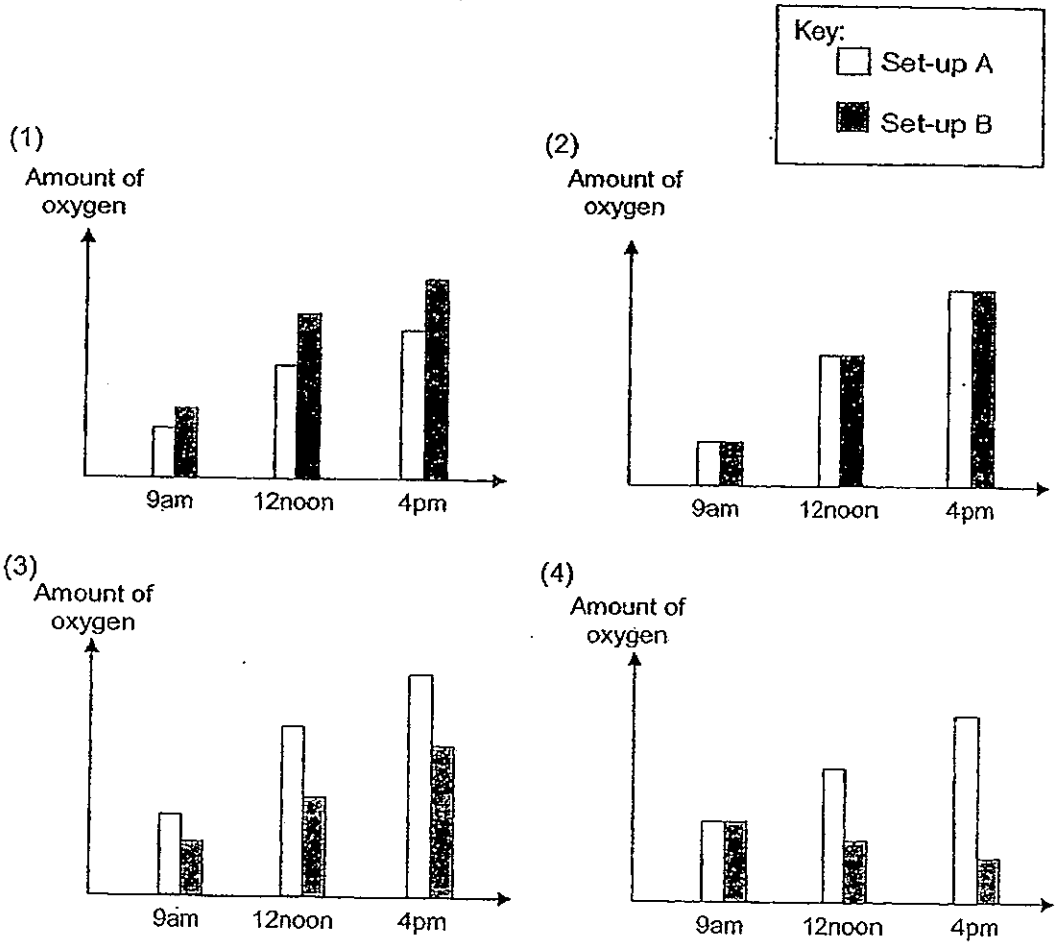
20 Ean set up an experiment as shown below to find out the effect of murky water on the rate of photosynthesis in aquatic plants. Similar aquatic plants and apparatus were used and both set-ups were placed in the school field. Oxygen produced by the aquatic plants was collected in the test tubes and measured at different times of the day.



Which one of the following graphs shows the likely amount of oxygen measured at different times of the day?



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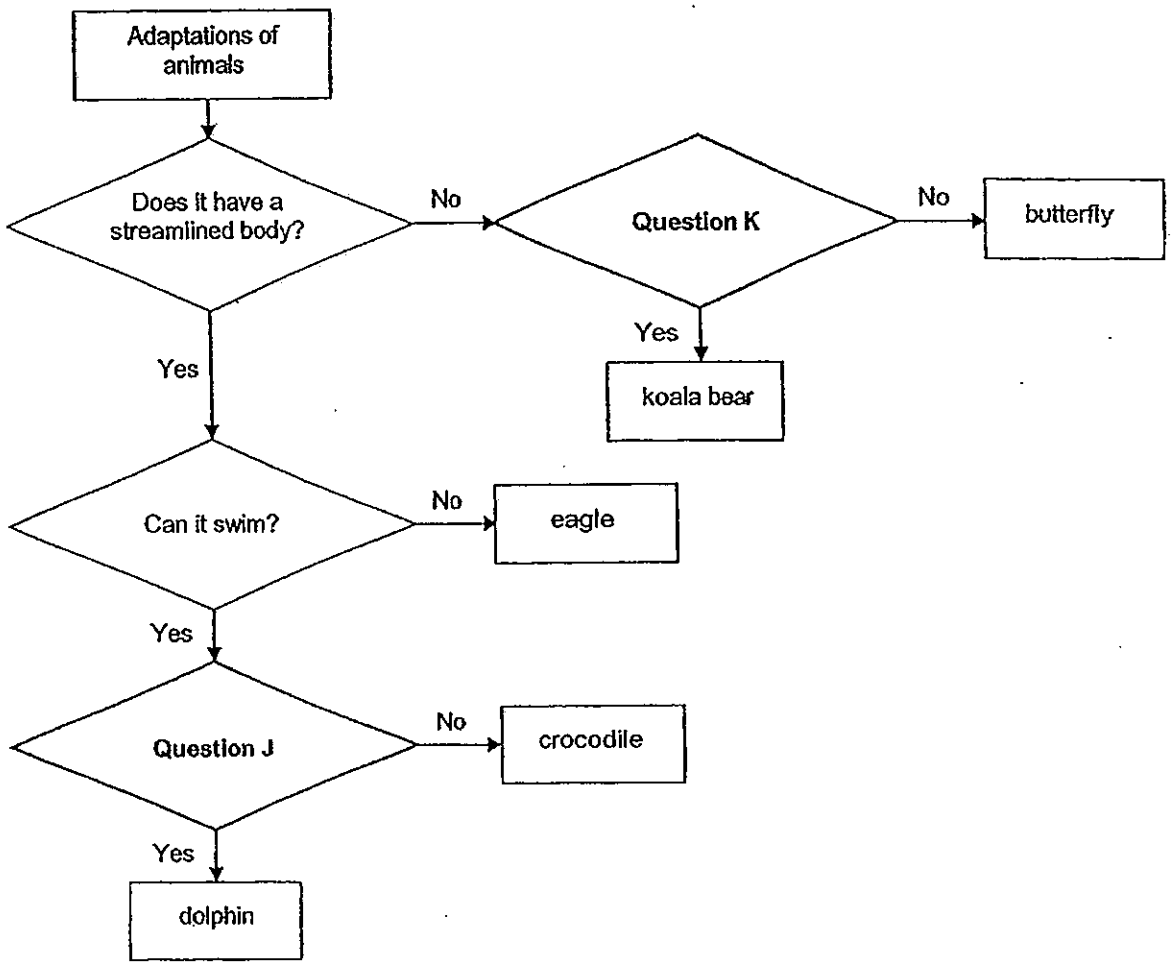
21 Sean classified some animals using the flowchart below.



What were the two questions, J and K most likely to be?

	Question J	Question K
(1)	Does it have gills?	Does it feed on plants?
(2)	Does it live in water?	Can it fly?
(3)	Does it have flippers?	Does it give birth to live young?
(4)	Does it lay eggs?	Does it have fur?

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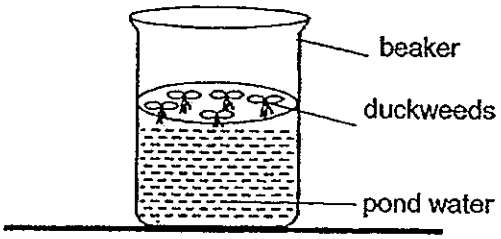
22 Clarence conducted an experiment to investigate the effect of different chemicals on the survival of duckweeds. He put five duckweeds and poured 500 ml of pond water into four identical beakers each. He added 50 ml of each type of chemical, X, Y and Z, only into beakers Q, R and S respectively.



He observed how the number of duckweeds changed over a month and recorded his observations in the table below.

Beaker	Chemical	Number of duckweeds at the end of			
		week 1	week 2	week 3	week 4
P	None added	7	8	10	13
Q	X	12	20	31	45
R	Y	4	3	2	1
S	Z	13	16	19	22

He drew the following conclusions after studying the table. Which one of the following conclusions is correct?

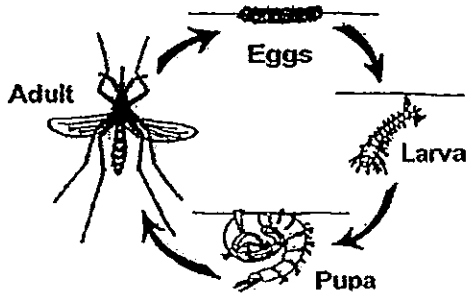
(1) Duckweeds survive best in Chemical X.

(2) Chemical Y has no effect on the survival of the duckweeds.

(3) Duckweeds survive better when chemical Y is added compared to when chemical Z was added.

(4) Duckweeds survive better when chemical Z is added compared to when chemical X was added.

23 The diagram below shows the life cycle of a mosquito.



One way to get rid of the mosquito larvae and pupae in a pond without causing harm to the environment is to _____.

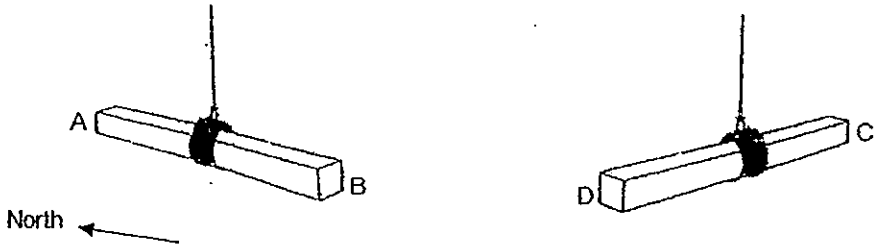
(1) introduce fish that would eat them up

(2) grow more floating plants in the pond

(3) spray a thin layer of oil on the water surface

(4) introduce pondskaters which would lay eggs there

24 A metal bar AB is freely suspended on a string. It was spun and it came to rest with one end of the bar, A, pointing to the North as shown in the diagram below. It was spun a second time and again, end A of the bar came to rest pointing North. Another bar, CD, made of the same metal as AB, was also freely suspended and then spun. However, the bar came to rest in no particular direction.



What would most likely happen if the bars AB and CD are brought near to each other?

(1) End A attracts C but repels D.

(2) End A repels C but attracts D.

(3) End A attracts neither C nor D.

(4) Both ends A and B attract end C.

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25 Three metal bars, X, Y and Z, were freely suspended with strings.

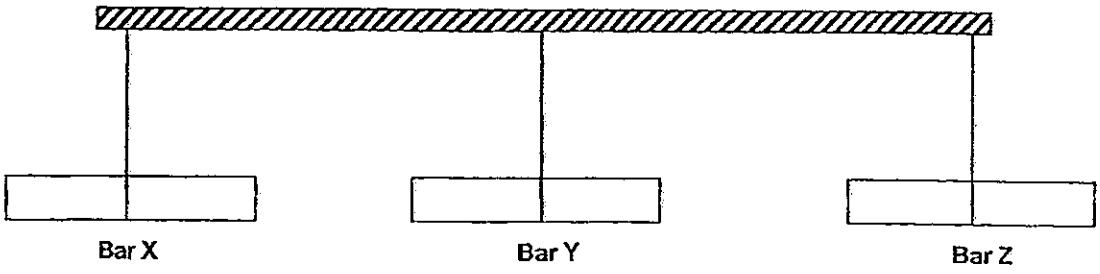

Figure 1 below shows what happened when bars X and Y were brought together.

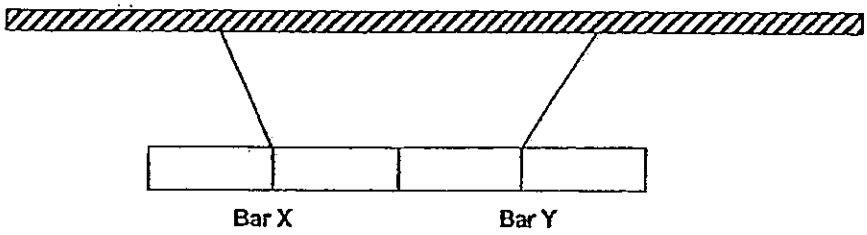

Figure 1

Figure 2 below shows what happened when bars X and Z were brought together.

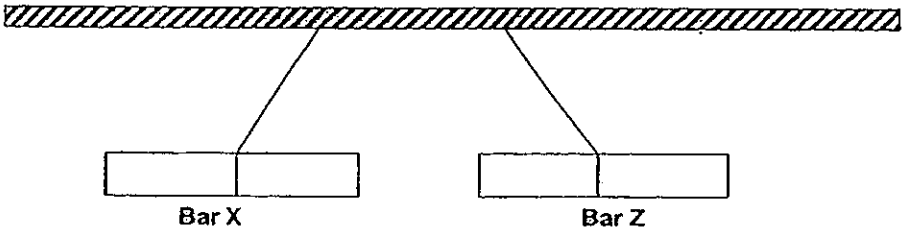

Figure 2

Based on what you can observe in the diagrams, which one of the following inferences is most likely correct?

(1) Bars X and Y are magnets.

(2) Bar Y is definitely made of iron.

(3) Bars Y and Z will repel at one end.

(4) Bar Z is made of a magnetic material.

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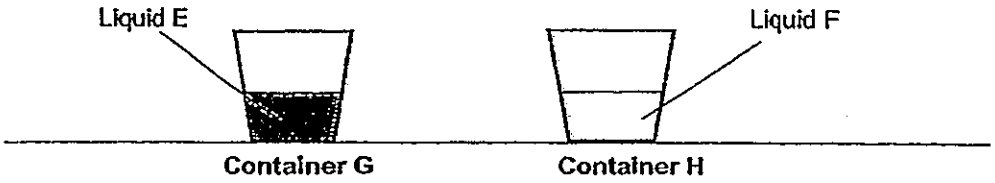
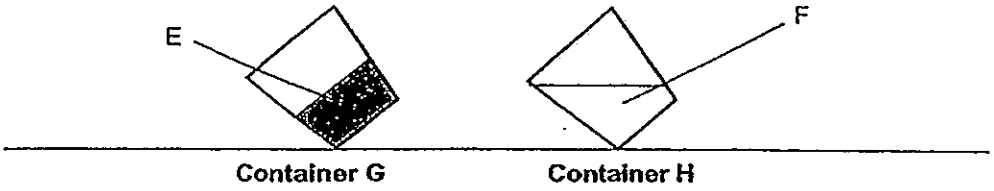
26 Jerome poured equal amounts of liquids E and F at 50^0C into two similar containers, G and H. The liquids were allowed to cool to room temperature.



After an hour, he tilted the containers as shown in the diagram below.



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

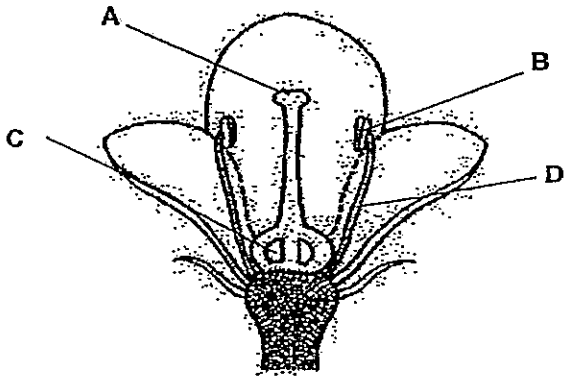
(1) Both liquids E and F have gained heat.

(2) Container G is a poor conductor of heat.

(3) Liquid F has changed its state from liquid to solid.

(4) Liquid E has a higher freezing point than Liquid F.

27 The diagram below shows the cross section of a flower which has both male and female parts.

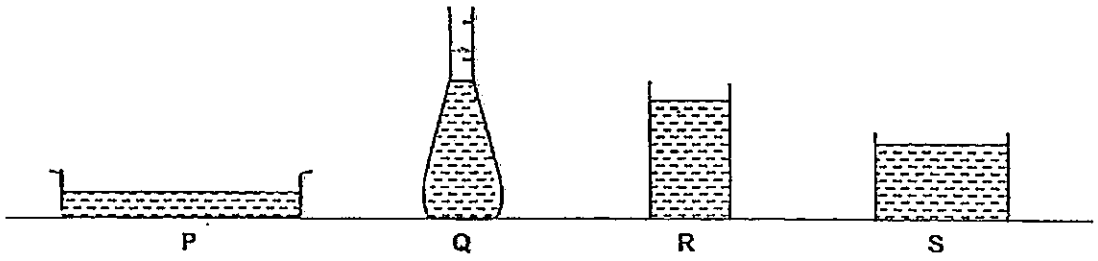


Which one of the following correctly identifies the locations at which pollination and fertilisation occur?

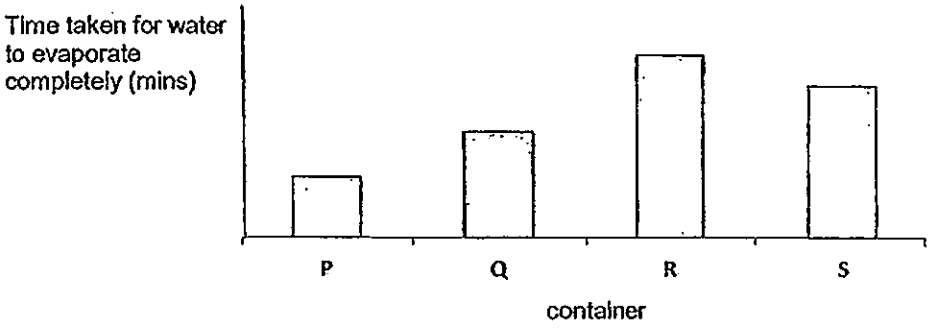
	Pollination	Fertilisation
(1)	A	C
(2)	B	A
(3)	B	C
(4)	D	A

(Go on to the next page)

28 Ethan carried out an experiment to find out how long it would take for 50 cm^3 of water to evaporate completely in four different containers, P, Q, R and S. They were left in the same corner of a room.



He recorded the data in the form of a bar graph as shown below.



Ethan suspects that he made some mistakes in his recordings.
Which container is correctly represented in the graph shown above?

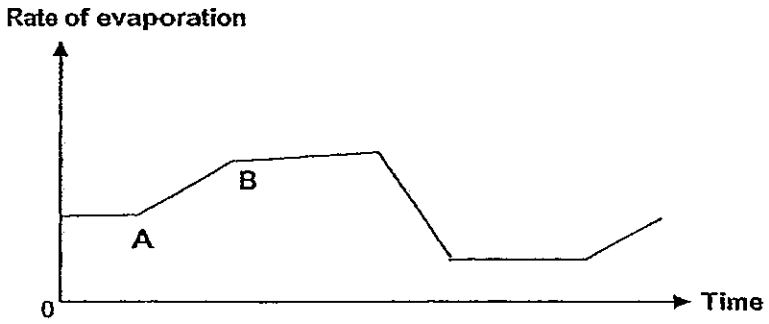
(1) P

(2) Q

(3) R

(4) S

29 The graph below shows the changes in the rate of evaporation of a beaker of water over a period of time. The beaker of water was left indoors (without a fan or air-conditioning) at the start of the experiment.



What do you think most likely happened at line AB of the graph?

(1) Some ice was added to the water.

(2) It was evening and the sun had set.

(3) The temperature of the day increased.

(4) The beaker was shifted to a cooler part of the room.

30 The diagram below shows a kettle of water boiling.

Which one of the following statements is true about the formation of the mist?

(1) It is steam at 100^0C.

(2) The boiling water became gaseous.

(3) Water vapour lost heat to the surrounding.

(4) Water vapour gained heat from the surrounding.

END OF BOOKLET A

Index No. | | | | | | – | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2013

SCIENCE

BOOKLET B

Wednesday **21st August 2013** **1 hour 45 minutes**

Name :_____( )

Class : P6_____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO
Follow all instructions carefully.
There are 14 questions in this booklet.
Answer ALL questions.

INFORMATION FOR PUPILS

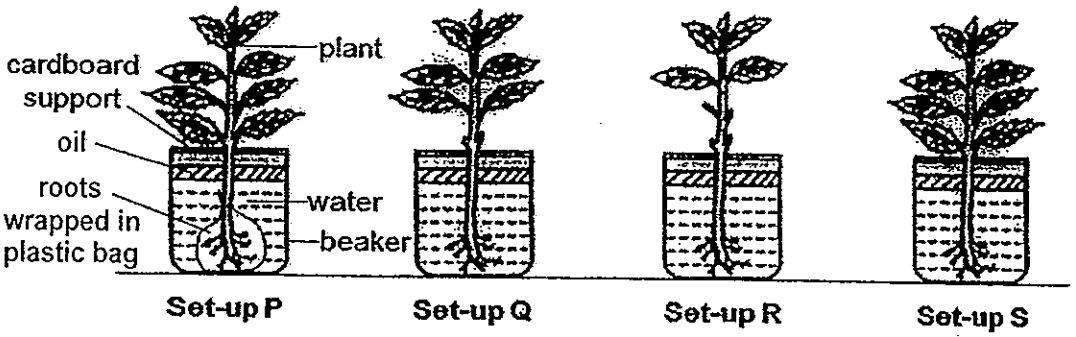
The number of marks is given in brackets [ ] at the end of each question or part question.
The total marks for this booklet is 40.
The total time for Booklets A and B is 1 hour 45 minutes.
This question paper consists of 15 printed pages. (Inclusive of cover page)

BOOKLET A	/ 60
BOOKLET B	/ 40
TOTAL	/ 100
Parent's signature/ Date:	

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

The number of marks available is shown in the brackets [ ] at the end of each question or part question. (40 marks)

31 The diagram below shows four similar plants in identical beakers, each containing equal amounts of water. The set-ups are labelled P, Q, R and S, and they are placed in a brightly-lit area for three days.



(a) Which set-up has the least amount of water left in the beaker after three days? Give two reasons to explain your answer. [2]

(b) What will happen to the water level in set-up P if it is placed in a dark cupboard for three days? Give two reasons to explain your answer. [2]

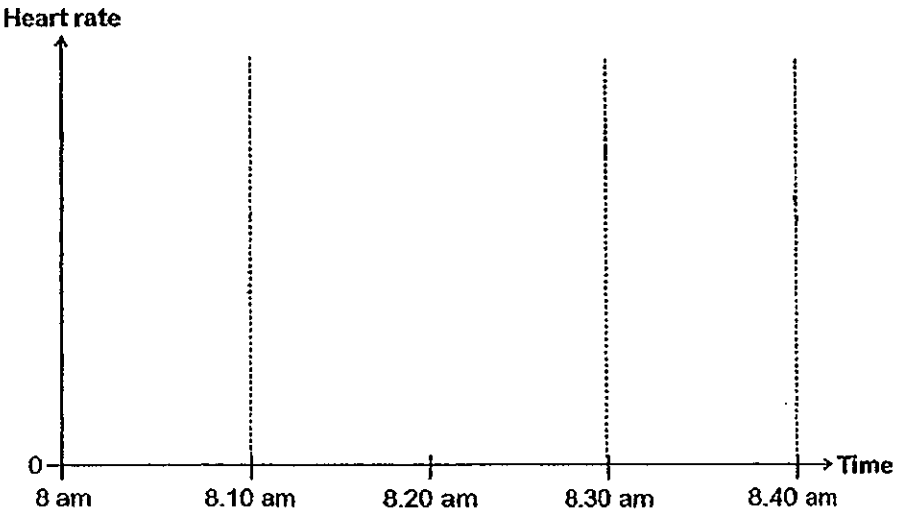
(Go on to the next page)

32 Felicia recorded some of her morning activities in a table as shown below.

Activity	Time
Walking from home to the park	8 am to 8.10 am
Running around the park	8.10 am to 8.30 am
Walking back home from the park	8.30 am to 8.40 am

Felicia also measured her heart rate during the activities mentioned in the table above.

(a) In the graph below, draw a line graph to represent Felicia's heart rate from 8 am to 8.40 am. Use a ruler and pencil to do this. [1]



(b) State two substances that are being transported in Felicia's blood to her muscles to help her in the activities mentioned above. [1]

_____

(Go on to the next page)

Score	/2

33 Tom used one battery, two identical bulbs and some wires to construct a simple electric circuit as shown below.

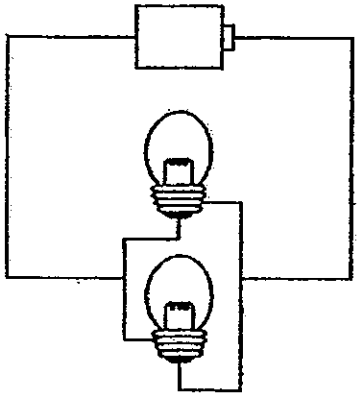


Diagram 1

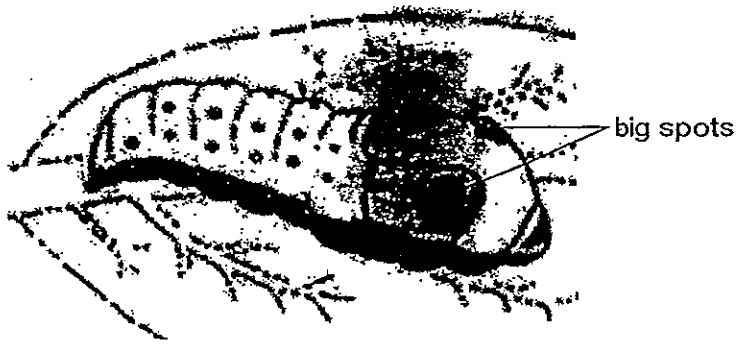
(a) Tom wanted to add two switches to his set-up so that he can control the light bulbs separately.
Using 'X' to represent a switch, draw in Diagram 1 above to show where he should place the two switches. [1]

(b) In the space below, using two identical batteries, two identical bulbs and some wires, draw a circuit diagram to show how the bulbs can have the same brightness as the bulbs in diagram 1. [1]

(Go on to the next page)

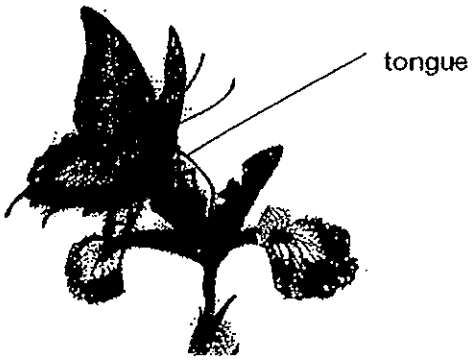
Score	/2

34. The diagram below shows one kind of caterpillar.



(a) How do the big spots on the caterpillar's head act as a defence against predators? [1]

The butterfly has a long tongue to help it obtain nectar as shown in the diagram below.



(b) What can you infer from the butterfly's adaptation about the location of the nectar in the flower? [1]

(Go on to the next page)

Score	/2

The diagram below shows two similar butterflies. The Viceroy butterfly is said to mimic the Monarch butterfly which is known to taste bad.

Monarch butterfly

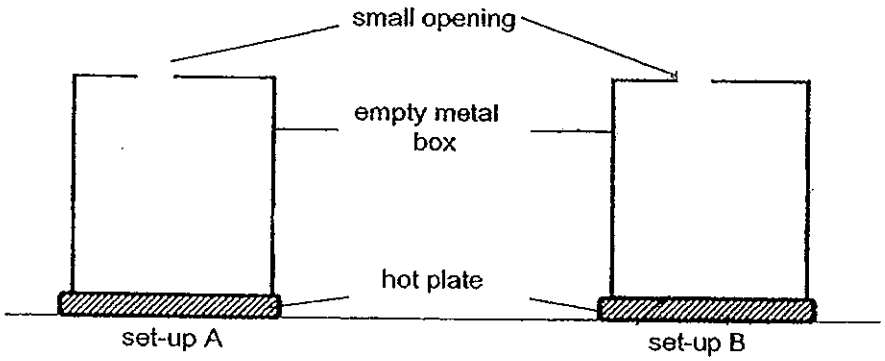
Viceroy butterfly

(c) How does this adaptation help the Viceroy butterfly? [1]

_____

_____

35 Ali wants to find out if air or water is a better conductor of heat. He has the set-ups below. The hot plates have been heated to the same temperature.



(a) There are some missing parts in the above set-ups. Draw and label the parts in the diagram above. [2]

(b) What must Ali observe for him to conclude that water is a better conductor of heat? [1]

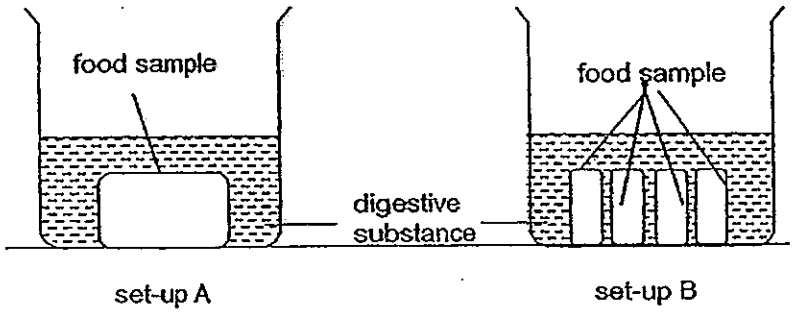
_____

_____

(Go on to the next page)

Score	/4

36 Tina put two identical food samples of equal amounts into each beaker containing an equal amount of digestive subtance as shown in the diagrams below. She left both set-ups in a room of 30°C and observed them two hours later.



(a) Which was the variable that was changed in her experiment? [1]

_____

_____

(b) What would Tina observe at the end of the experiment? [1]

_____

_____

(c) State another variable that must be kept constant in the experiment. [1]

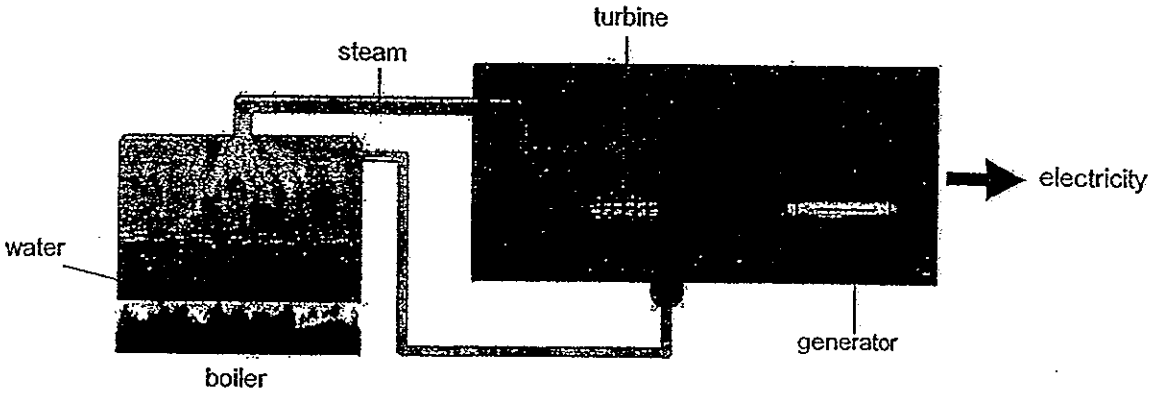
_____

_____

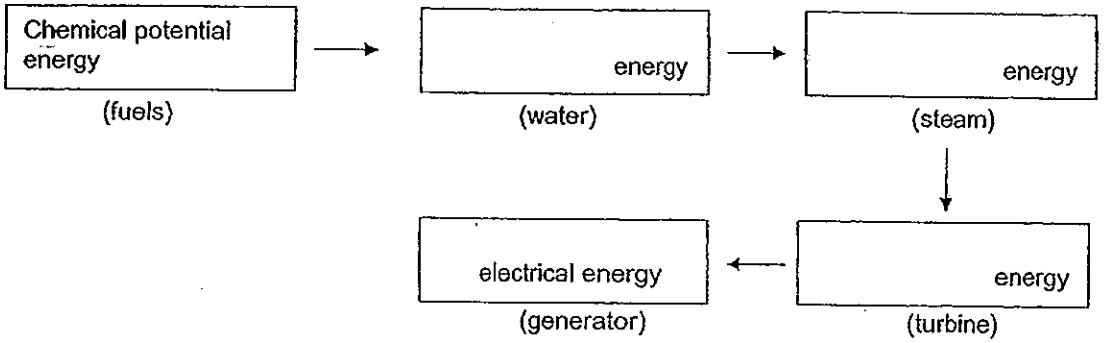
(Go on to the next page)

Score	/3

37 The diagram below shows a simplified diagram of how electricity is generated in a power station by burning fuels.



(a) Write down the energy changes that take place in the power station when electricity is produced in the boxes below. [1]



(b) State two examples of fuels that are burnt in the power station to produce electricity. [1]

_____

_____

(c) Another method to generate electricity is through hydroelectric power stations. Why is this source of energy not used to provide electricity for homes in Singapore? [1]

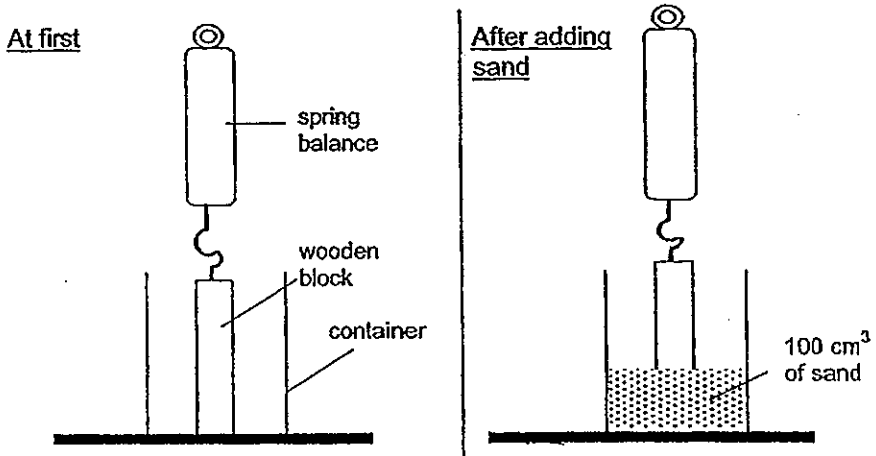
_____

_____

(Go on to the next page)

Score	/3

38 Keith set up the experiment as shown below to measure the amount of force needed to lift the wooden block out of the container. He then poured 100 cm^3 of sand into the container and re-measured the force needed to lift the wooden block out of the container. He repeated the experiment after adding another 100 cm^3 of sand into the container.



(a) State the force that caused the spring to stretch before he added sand. [1]

(b) Based on the results of his experiment, Keith concluded that more force would be needed to lift the wooden block out of the container when more sand was used. Explain his conclusion. [1]

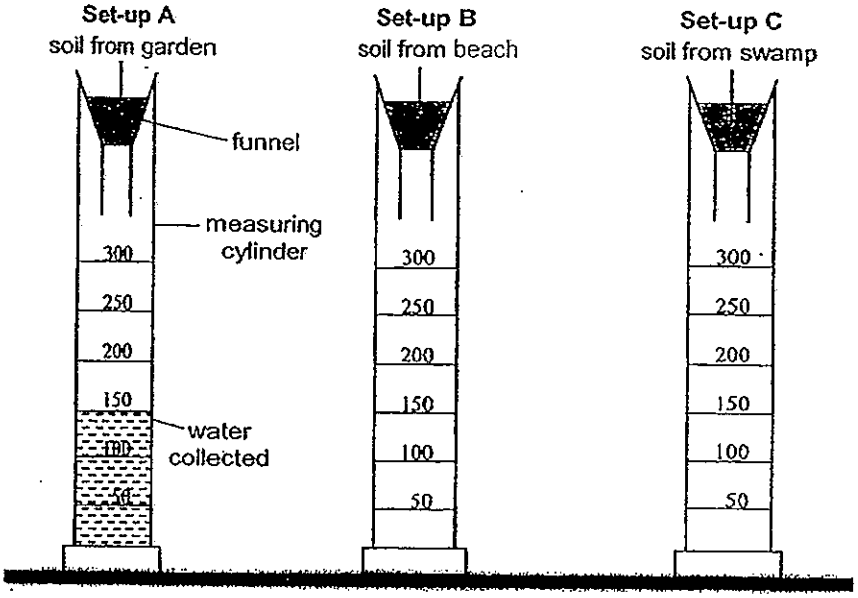
(c) How would the results change if he had used 100 cm^3 of small marbles instead? [1]

(Go on to the next page)

Score 3

39 Wei Jie collected some soil samples from the garden, beach and swamp. He conducted an investigation as shown below to find out which type of soil allows the most amount of water to pass through.

He first poured 250 ml of water into set-up A which contains soil from the garden. He measured the volume of water collected in the measuring cylinder after 5 minutes. He then repeated the experiment with soil samples from the beach and swamp.



(a) The volume of water collected in set-up A was approximately 150 ml. What would be the estimated volumes of water collected for set-ups B and C? Put a tick (✓) in the correct boxes below. [1]

Set-up	More than 150 ml	Less than 150 ml	Equivalent to 150 ml
B			
C			

(b) Wei Jie ensured that all the set-ups used the same amount of soil. How does keeping this variable constant ensure that the test is fair? [1]

_____

_____

(c) Wei Jie found some small pieces of broken and soggy leaves in the garden soil. Explain how their presence in the soil is important to plants. [1]

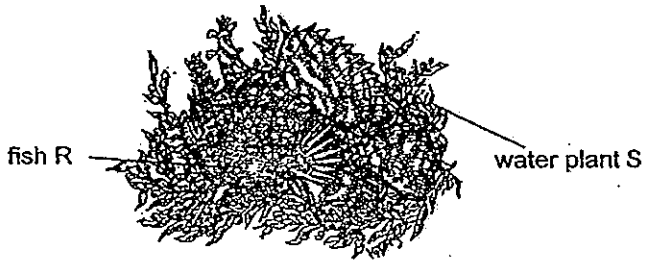
_____

_____

(Go on to the next page)

Score	/ 3

40 The diagram below shows fish R among water plant S in the sea.

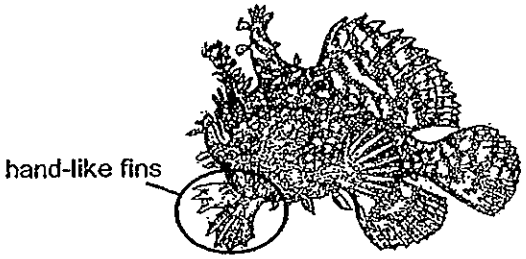


(a) Based on the diagram, how does fish R adapt itself to survive in its environment? [1]

_____

_____

(b) Fish R has modified fins which resembles a human hand.



Explain how this adaptation may help it remain stable among water plant S when the sea is rough. [1]

_____

_____

(c) The food relationships among the organisms are shown below.

- R feeds on U and is eaten by W.
- U is a herbivore.
- W is an omnivore which also feeds on U.

In the space below, draw a food web to show the food relationships among organisms R, S, U and W. [1]

(Go on to the next page)

Score	/3

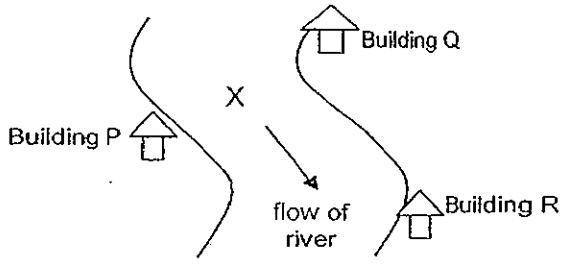
41 Arvin wanted to find out if liquid V could prevent swordtail from reproducing. He conducted an experiment using 100 swordtails which were subjected to different conditions as shown in the table below.

Conditions	Tank S	Tank T
Number of swordtails	25 male 25 female	25 male 25 female
Number of water plants	5	5
Amount of sunlight	moderate	moderate
Amount of food and feeding times	100g, once daily	100g, once daily
Liquid V	present	absent

A month later, Arvin noticed fries (baby swordtails) among the water plants in tank T but none was observed in tank S.

(a) What was the purpose of setting up tank T? [1]

(b) Arvin noticed that the population of fish found in a river at point X started to decrease when a factory was set up nearby. It was found that the factory discharges liquid V into the river.

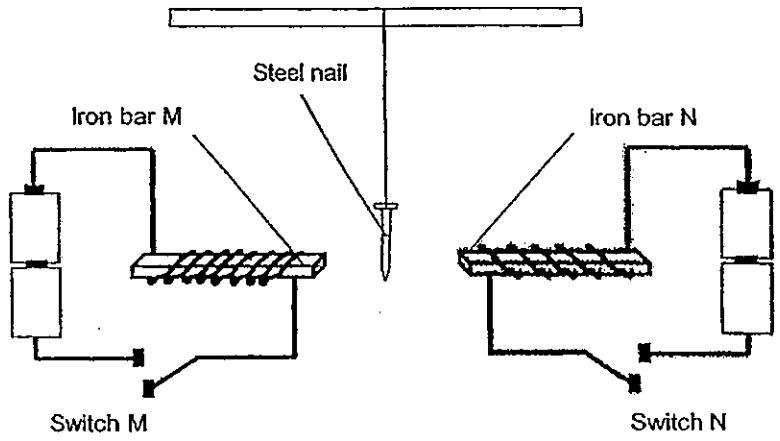


Which building could the factory be? Explain your choice. [1]

(Go on to the next page)

Score /2

42 Aaron set up the experiment below using identical batteries, wires and iron bars. A steel nail is freely suspended at an equal distance between the two iron bars, M and N.

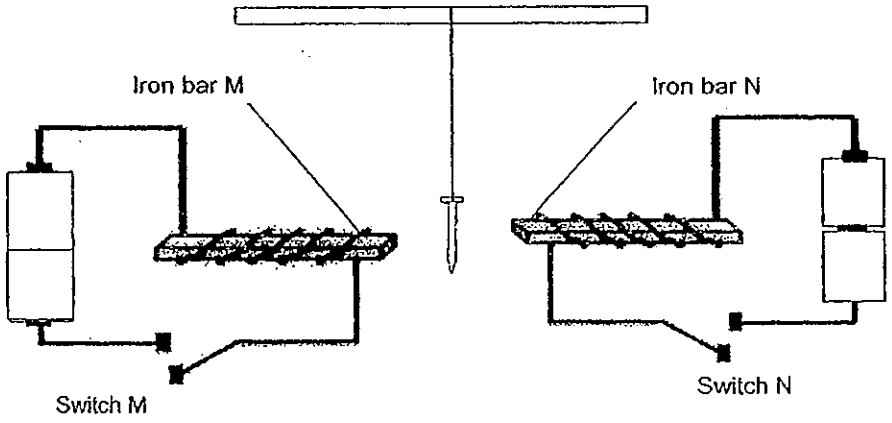


(a) What will happen to the steel nail if both switches M and N are closed at the same time? Explain your answer. [1]

_____

_____

(b) Some changes were made to the set-up as shown in the diagram below.



What will happen to the steel nail when both switches M and N are switched on at the same time? Explain your answer. [1]

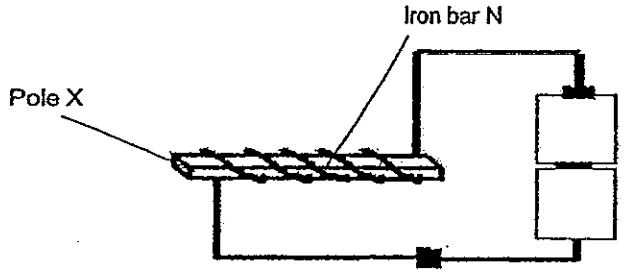
_____

_____

(Go on to the next page)

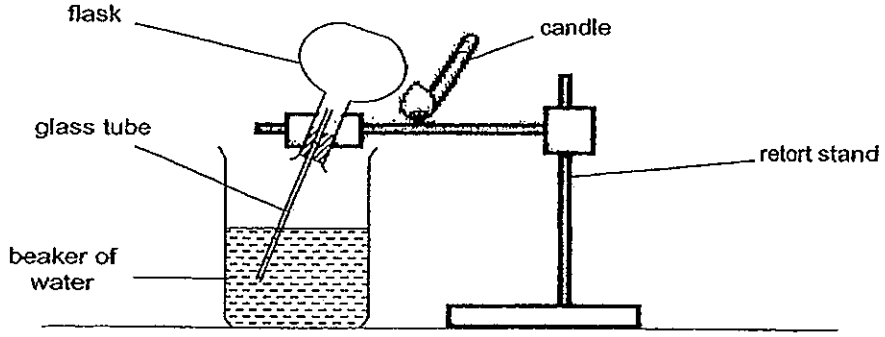
Score	/2

(c) The diagram below shows the set-up with iron Bar N.



Without dismantling the set-up, describe what you would do to determine whether Pole X is the North Pole. [1]

43 Timothy set up an experiment as shown in the diagram below. The flask was heated.



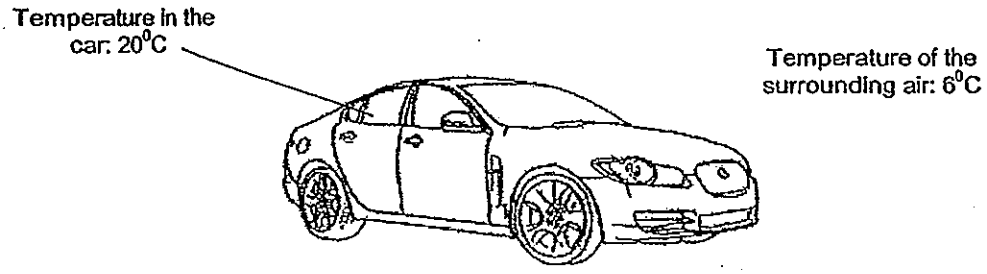
(a) Timothy observes that bubbles were seen coming out of the glass tube. Explain why this happens. [1]

(b) When Timothy stopped heating the flask, he observed that some of the water from the beaker flowed into the flask. Explain why this happens. [2]

(Go on to the next page)

Score 4

44 Jeremiah was driving his car to work when he noticed that the windows of his car had become misty.

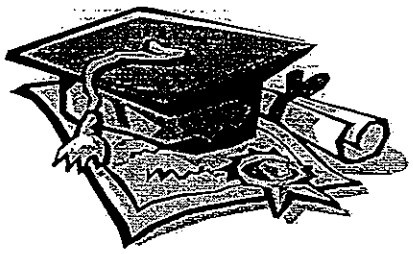


(a) He observed that water droplets formed on the inner surface of the car windows. Explain his observation. [2]

(b) After he wound down one of the windows, water droplets stopped forming on the inner surface of the other windows after a while.
Why did the water droplets stop forming when the window was wound down? [1]

END OF BOOKLET B

Score	/3



ANSWER SHEET

EXAM PAPER 2013
SCHOOL : ACS
SUBJECT : PRIMARY 6 SCINECE

TERM : PRELEM

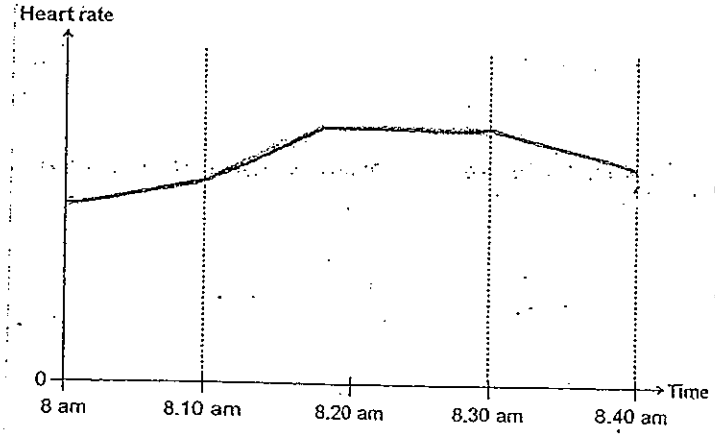
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	4	2	1	3	2	2	4	1	1	1	3	2	2	2	2	3

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	4	3	3	1	1	4	4	4	1	1	3	3

31)a)Set-up S. The plant in S has the most leaves, so its rate of transpiration would be the greatest. Secondly, its roots are not wrapped in a plastic bag, hence the plant is able to absorb water. So, the plant in Set-up S would absorb the most water, leaving the least amount of water left.

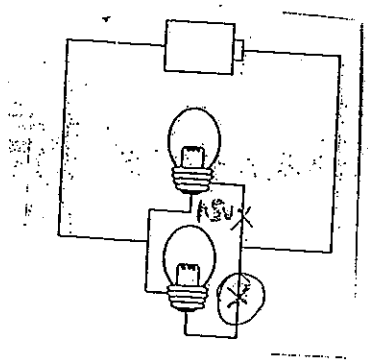
b)The water level in set-up P will remain the same. As the plant in P has its roots wrapped up in a plastic bag, the plant is unable to absorb any water. Secondly the layer of oil prevent evaporation of the water from taking place. Hence, there was no change in the amount of water, so no change to the water level.

32)a)

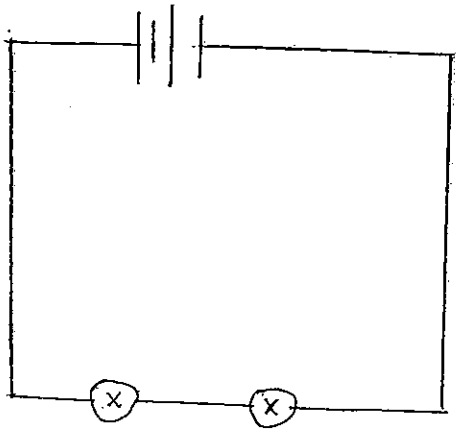


32)b)Sugar and oxygen.

33)a)



b)

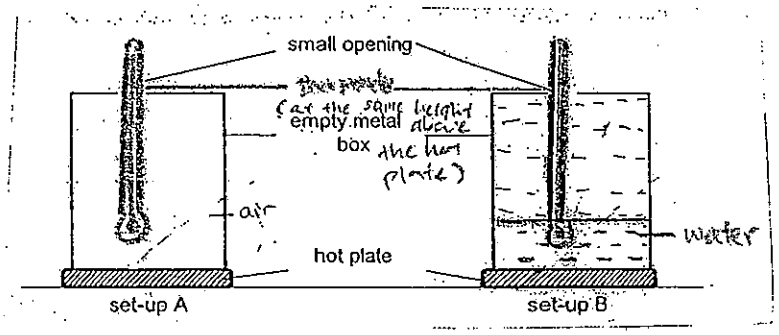


34)a)The big spots look like the eyes of bagger animals.

b)The nectar is deep within the flower.

c)predators of the Viceroy butterfly might mistake it for a Monarch, so they are deterred from feeding on the Viceroy since Monarch are known to taste bed.

35)a)



b)The increase in temperature of the water is greater than that of air after the same period of time.

36)a)The exposed surface area of the food in contact with the digestive substance.

b)Food sample in set-up B and smaller than A.

c)Type of digestive substance.

42)a)It will move towards iron bar M. When both switches are closed, the circuit is closed, so electricity can flow, so the iron bars M and N became electromagnets. Since iron bar M has more coil than N, it is a stronger electromagnet, so it attracted the steel nail.

b)The steel nail will more towards iron bar N. As the batteries for iron bar M have the same sides facing each other, so electricity cannot flow and M will not become an electromagnet. While N can, so N will attract the steel nail towards it.

c)Place a magnet with its pokes known and face each side to pole X. If the magnet repels with its North pole facing X, pole X is the North pole.

43)a)As air in the flask gained heat from the candle it expanded. As air takes up space, it rushes out of the glass tube and emerges as gas bubbles.

b)The air in the flask subsequently lost heat to the surrounding, so it contracted and took up less space, allowing water to displace the space air previously took up.

44)a)The car windows lost heat to the cooler surrounding air. Warmer water vapour in the car touched the inner cooler surface of the car windows, losing heat and condensed on the inner surface of the car windows.

b)This is he cause the temperature of the air inside the car and outside the car becomes the same, so no condensation tucks place.

37)a)Heat energy→Kinetic energy

↓

Kinetic energy

b)Coal and natural gases.

c)Singapore has not enough land to clear to create hydroelectric power stations and does not have the required type of rives that are high enough to possess enough gravitational potential energy.

38)a)Gravitational force.

b)By adding sand, the wooden block would experience more friction, as there is added friction between the sand grains and the wooden block, so more force has to applied to overcome the wooden block's weight and the friction.

c)He would require less force to pull the wooden block up than with sand.

39)a)More than 150ml

Less than 150ml

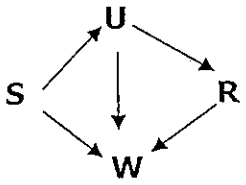
b)As he was only trying to find out which type of soil allows the most amount of water to flow through, he only had to change the type soil used each time, and out the amount of soil, as changing the amount of the soil effaces the experiment so the results would be more accounted and relised.

c)Bacteria decomposes these leaves, returning nutrients back into the soil, so the plants can absorb it and grow heal their.

40)a)The fish in able to blend in with water plant S. so its predators will not be able to easily sport it, hence fish R has a smaller have of being eaten.

b)The modified fins are able to hold onto the water plants to remain stable.

c)



41)a)It is to act as a control and as a comparison to observe if the reproduction rate of the sword tails is affected by the presence of Liquid V.

b)Building Q. It releases liquid V which decreases reproduction rate, so it flowed down stream to X which is after building Q and affected the population of fish.