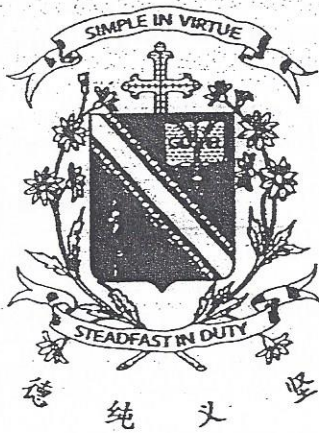


# CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6

PRELIMINARY EXAMINATION – 2015

SCIENCE  
BOOKLET A

27 August 2015

NAME: \_\_\_\_\_ ( )

CLASS : Primary 6 \_\_\_\_\_

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

30 questions  
60 marks

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

This paper consists of 20 printed pages.

Booklet A	60
Booklet B	40
Total	100

\_\_\_\_\_  
Parent's Signature/Date

**Section A (30 x 2 marks = 60 marks)**

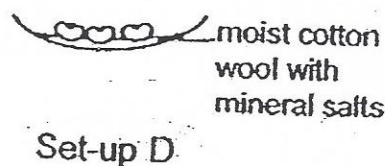
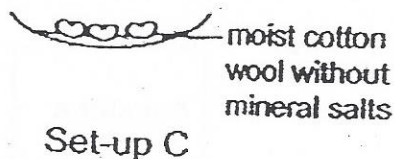
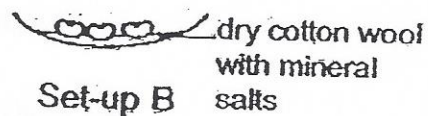
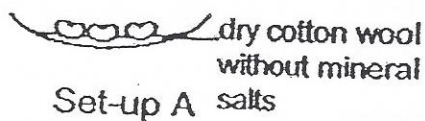
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Ravi set up an experiment with four identical wind-pollinated flowers, P, Q, R and S in a field. The table below shows the different parts of the flowers that have been removed.

Flower	Anthers	Petals	Stigma
P	removed	not removed	not removed
Q	removed	removed	not removed
R	not removed	removed	removed
S	not removed	not removed	removed

Which flowers are able to develop into fruits?

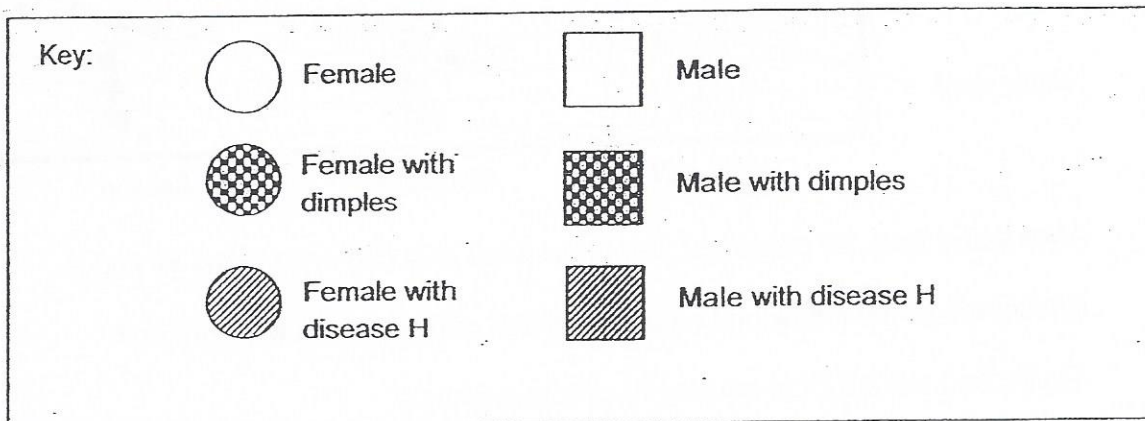
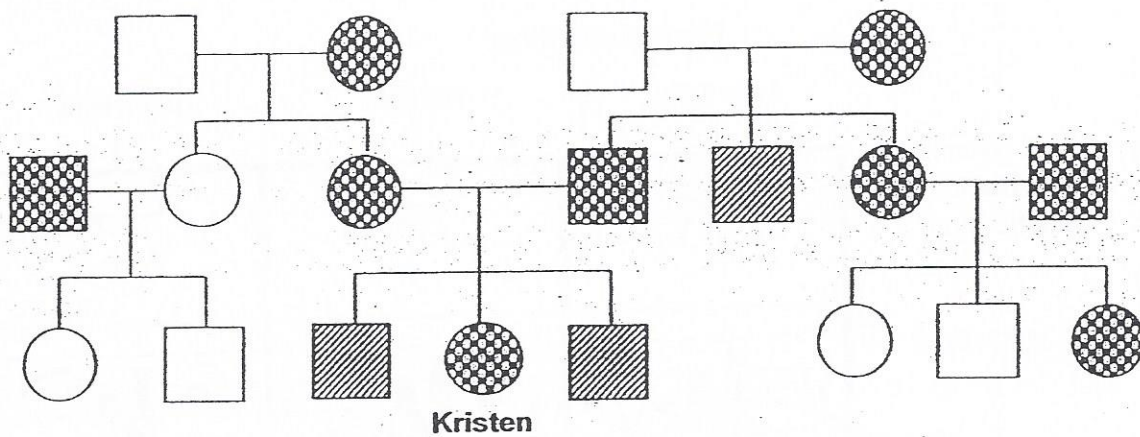
- (1) P and Q only
  - (2) R and S only
  - (3) P and S only
  - (4) None of the flowers
2. Petrina wanted to find out if mineral salts are needed for seeds to germinate.



Look carefully at the set-ups above, which two of the following set-ups should she use to carry out a fair test?

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

3. The diagram below shows Kristen's family tree.



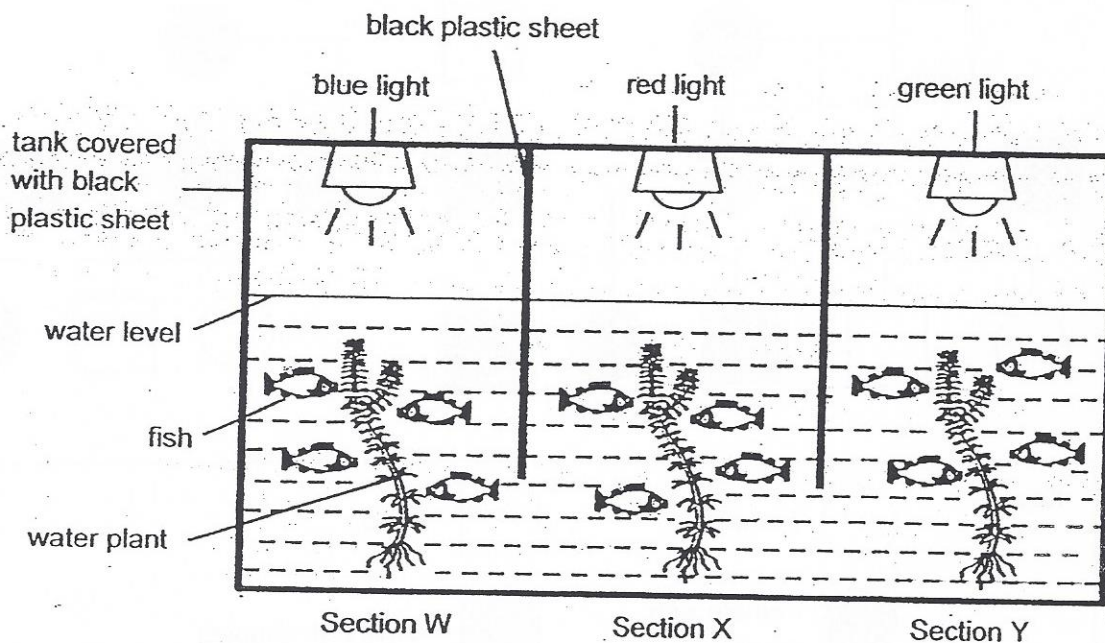
Based on the information provided above, which of the following statements are true?

- A None of Kristen's cousins have disease H.
- B Both Kristen's paternal uncles have dimples.
- C Kristen's maternal grandmother has disease H.
- D The gene that causes disease H only affects the male members of the family.

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



4. Nathaniel conducted an experiment using the set-up below.



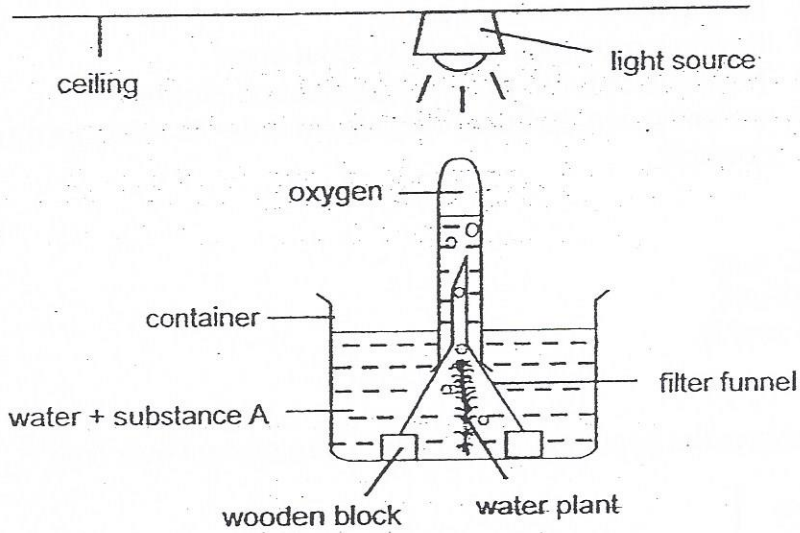
After some time, he observed that there were only fish in sections W and X.

Which one of the following is a possible aim of Nathaniel's experiment?

- (1) To find out if light is needed for photosynthesis.
- (2) To find out if water is needed for living things to survive.
- (3) To find out if the presence of light affects the survival of the fish.
- (4) To find out which coloured light(s), blue, red or green, could be used for photosynthesis.



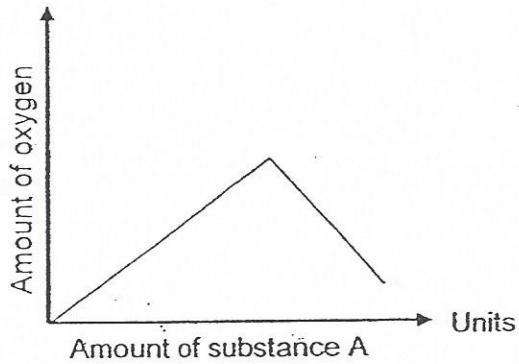
5. Muthu set up the following experiment to investigate the effect of substance A on the rate of photosynthesis. Substance A gives off carbon dioxide in water.



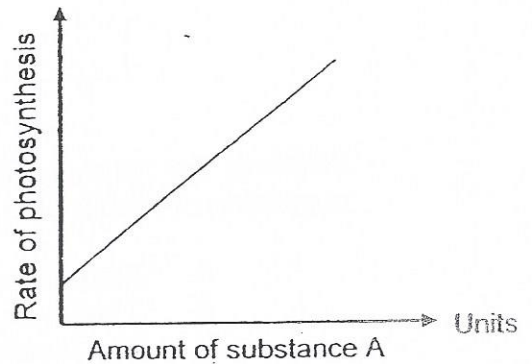
The experiment is repeated with 2 similar set-ups, each time increasing the amount of substance A added to the water.

Which one of the following graphs best represents the results of the experiment?

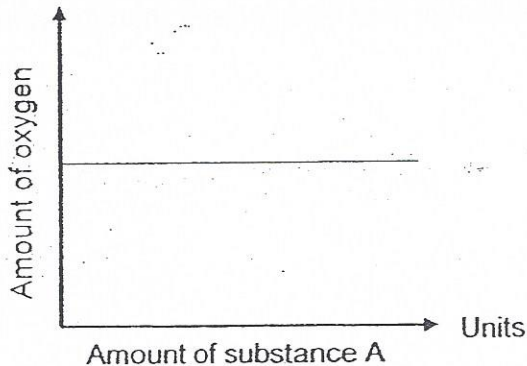
(1)



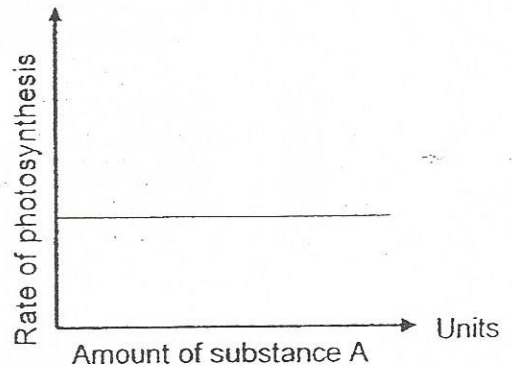
(2)



(3)



(4)

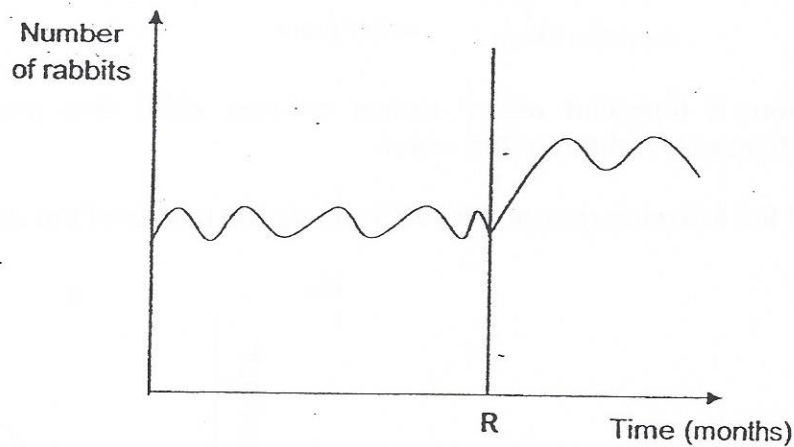


6. The camel has adaptations that enable it to survive in the desert environment. These adaptations are \_\_\_\_\_.

- A having humps to store water
- B having long eyelashes to block out sand
- C having thick fur to protect against sand storms
- D sweating and urinating very little in order to retain as much water as possible

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

7. The graph shows the population of rabbits in a rainforest over time.

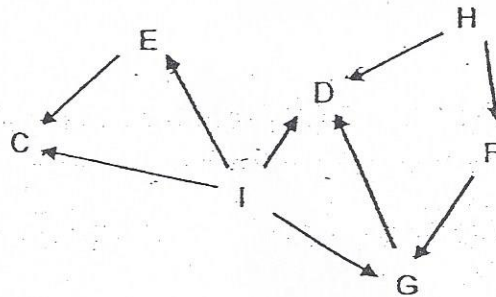


Which of the following statements below likely explain(s) for the change in the population of rabbits after Month R?

- A More rabbits migrated to the rainforest.
- B There was not enough food for the rabbits.
- C The population of predators of the rabbits decreased.
- D The number of rabbits that died was greater than the number that was born.

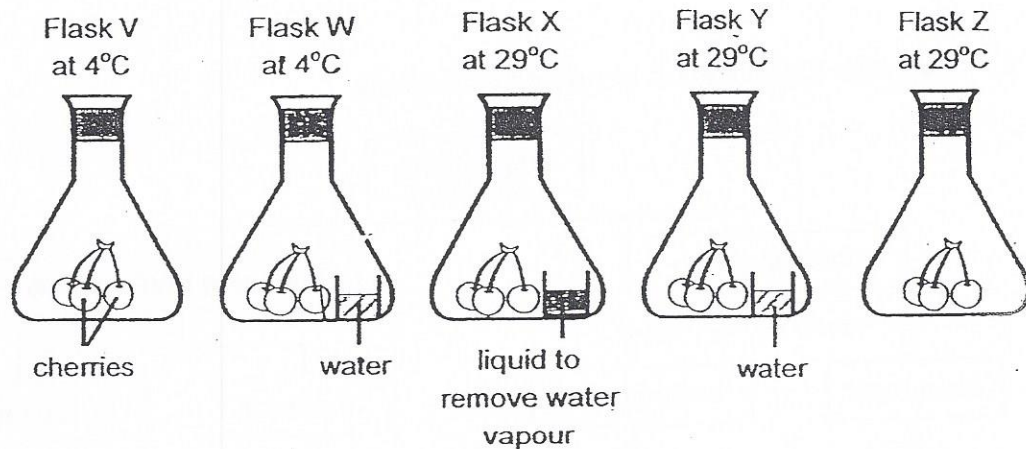
- (1) A only
- (2) D only
- (3) A and C only
- (4) B and D only

8. The food web below shows the relationships between organisms, C, D, E, F, G, H and I.



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

- (1) Organisms D, E and F are herbivores.
  - (2) Organism F is both a prey and predator.
  - (3) If the population of organism C decreases, there will be lesser food for organism E.
  - (4) Both organisms H and I would benefit directly if the level of carbon dioxide in the environment increases.
9. Reiya conducted an experiment using the set-ups as shown below. Three cherries were placed in each of the flasks, V, W, X, Y and Z, and kept under different conditions as shown below.



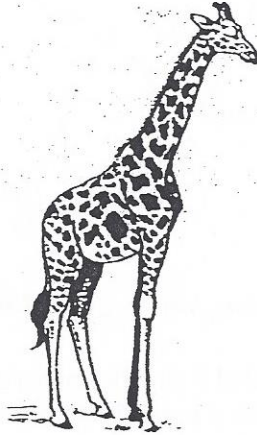
After one week, only the cherries in flasks W, Y and Z showed signs of decomposition.

Based on the results of the experiment above, which one of the following conditions would allow the cherries to be kept as fresh as possible during transportation from an overseas cherry farm to Singapore?

- (1) A dry environment
- (2) A dry environment with a temperature of 29°C
- (3) A dry environment with a temperature of 4°C
- (4) A moist environment with a temperature of 4°C



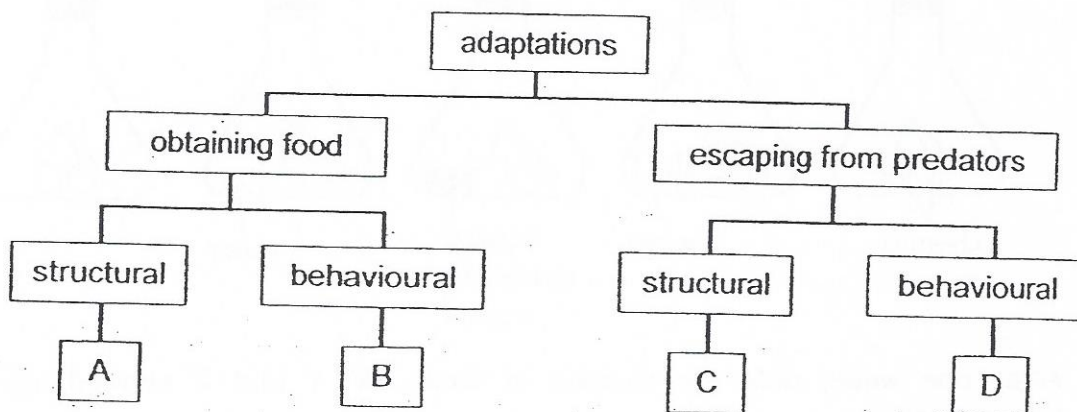
10. The diagram below shows a giraffe. It can be found in the grasslands of Africa. It likes to feed on leaves of tall trees. Lions, elephants and zebras can also be found in the same habitat as the giraffe.



Which one of the following is **not** a likely reason why giraffes have longer necks compared to other animals living in the same habitat?

- (1) To appear larger in size.
- (2) To reduce competition for food.
- (3) To spot predators from a distance.
- (4) To attract female giraffes for mating.

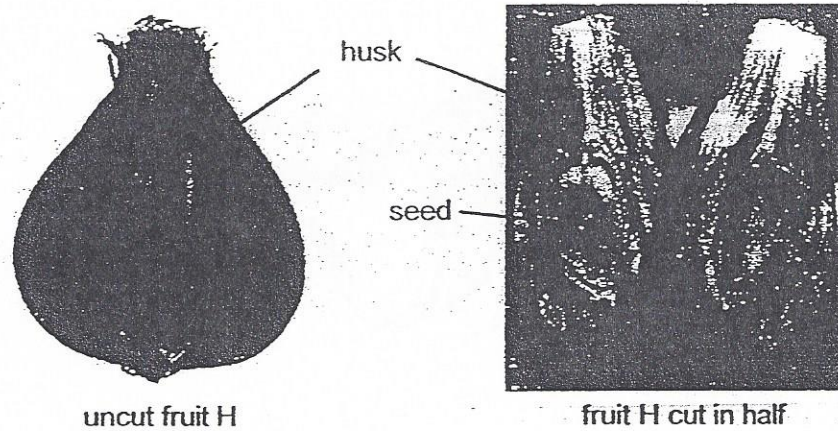
11. Study the classification chart below carefully.



Based on the chart above, which one of the following classifies the adaptations correctly?

	Group	Adaptations
(1)	A	sharp claws, long beaks, sharp teeth
(2)	B	presenting gifts, fighting to show strength, living in herds
(3)	C	mimicry, long and deep roots, camouflage
(4)	D	hard shells, spines, using poisons

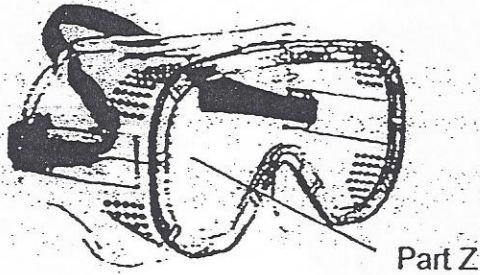
12. The diagrams below show how fruit H looks like.



Based on the diagrams above, which one of the following statements about fruit H is true?

- (1) It has a dry seed pod which splits open when ripe.
  - (2) It has tiny hairs to allow it to float in the air for a longer time.
  - (3) It has a fibrous husk to trap air so that it can float on the water.
  - (4) It has juicy flesh to attract animals to eat it and disperse its seeds.
13. Which one of the following actions **does not** contribute to global warming?
- (1) Driving a car to work.
  - (2) Growing vegetables in the garden.
  - (3) Using non-biodegradable products.
  - (4) Using the air conditioner to cool down a room.
14. Deforestation by burning down forests is harmful to our environment. Which of the following statements about deforestation by burning is **true**?
- A It results in more rainfall.
  - B It results in loss of habitats.
  - C It causes more soil to be washed away by rain.
  - D It results in more oxygen in the air that may result in global warming.
- (1) A and D only
  - (2) B and C only
  - (3) A, B and C only
  - (4) A, B, C and D

15. Study the properties of the four materials shown below.



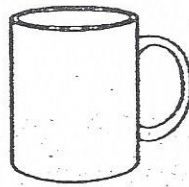
Materials	Waterproof	Transparent	Flexible	Hard
P	√		√	
Q	√	√		
R	√	√		√
S			√	

Which one of the materials is most suitable for making part Z of the safety goggles shown above?

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



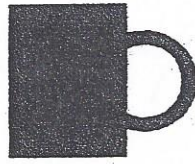
16. The diagram below shows a cup.



Which of the following shadows can be cast by the cup when a torch is shone at it from different directions?



A



B



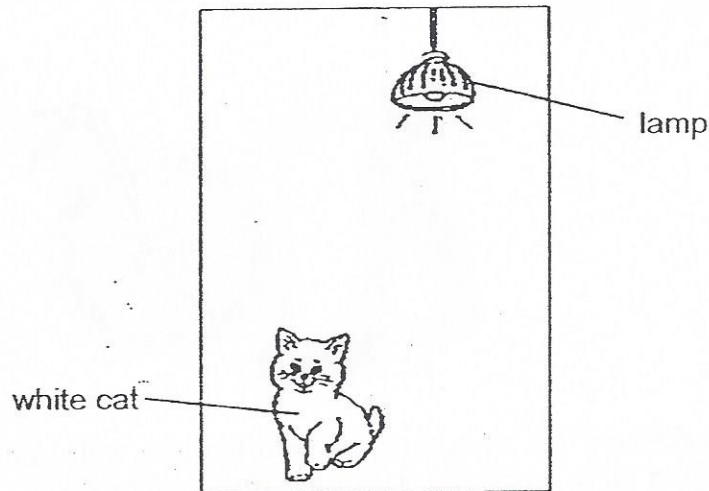
C



D

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

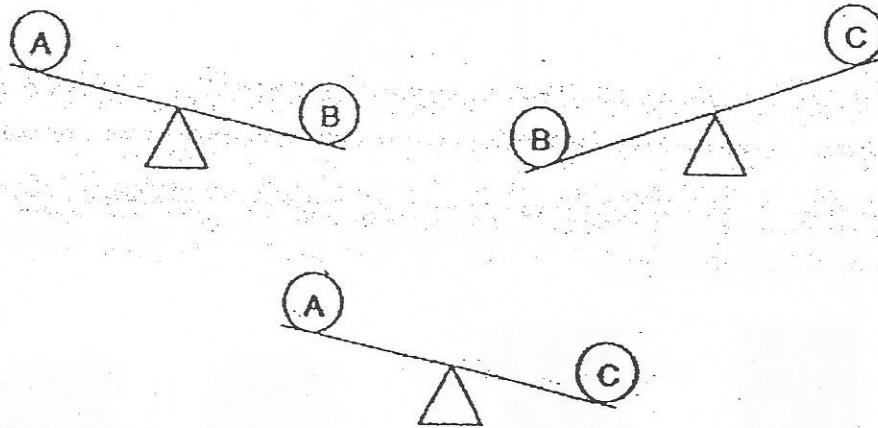
17. The diagram below shows a white cat in a room where the only light source is a lamp.



Which one of the following statements best explains why we are able to see the white cat in the room?

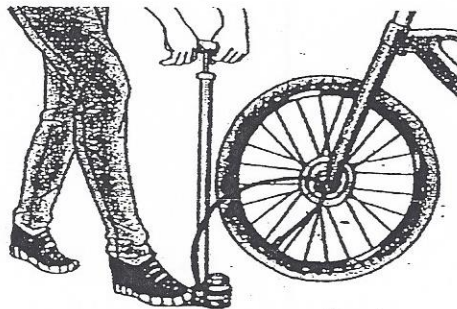
- (1) White reflects light very well.
- (2) The light from the lamp enters our eyes.
- (3) The light from the lamp bounces off the cat.
- (4) The cat reflects light from the lamp into our eyes.

18. Peter compared the masses of 3 objects, A, B and C on balances as shown below.



Arrange the objects according to their masses from the lightest to the heaviest.

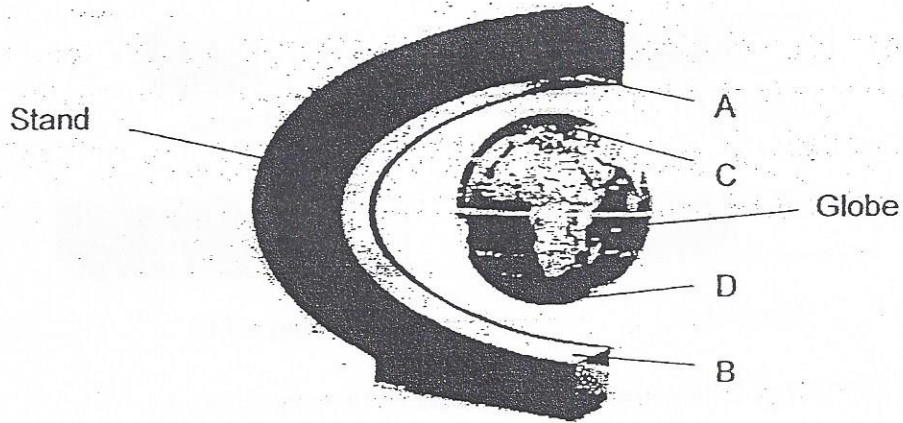
- (1) A, B, C
  - (2) B, C, A
  - (3) C, A, B
  - (4) A, C, B
19. The diagram below shows a fully inflated bicycle tyre. The capacity of the bicycle tyre is  $5000 \text{ cm}^3$ .



Given that  $500 \text{ cm}^3$  of air is pumped into the tyre with each pump, what is the total volume of air in the bicycle tyre after pumping it twice?

- (1)  $1000 \text{ cm}^3$
- (2)  $4000 \text{ cm}^3$
- (3)  $5000 \text{ cm}^3$
- (4)  $6000 \text{ cm}^3$

20. The diagram below shows a floating magnetic globe. The globe is able to float by using three magnets, one in the globe and two in the stand.

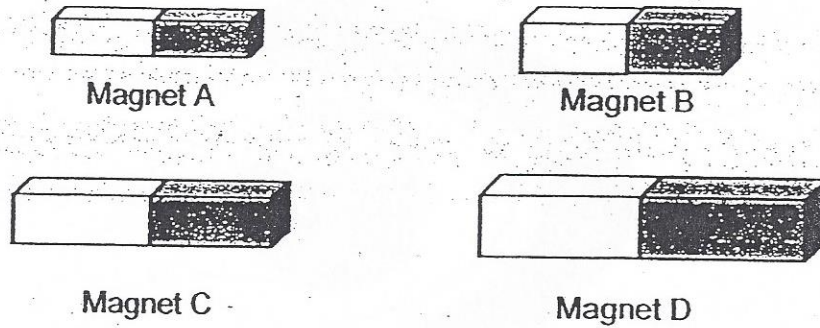


Which one of the following shows the possible arrangement of the poles of the magnets in order for the globe to float?

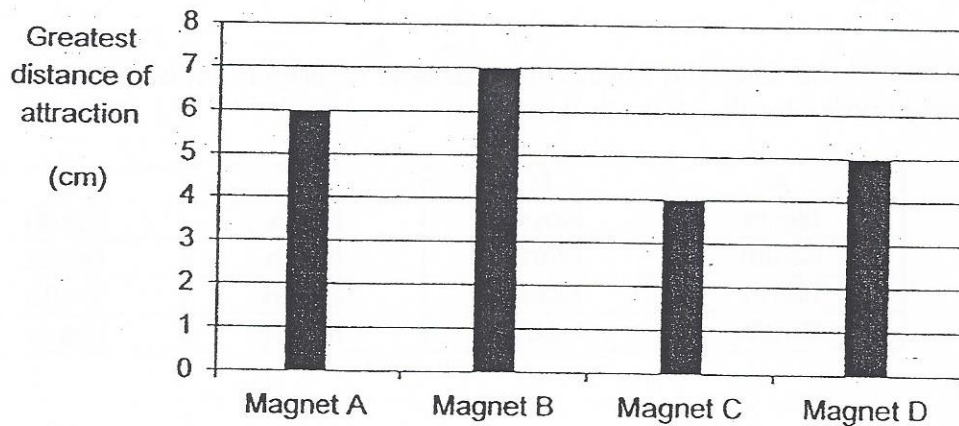
	A	B	C	D
(1)	North	South	North	South
(2)	South	North	North	North
(3)	North	North	South	South
(4)	South	South	North	North



21. Leo had 4 different bar magnets. He conducted an experiment to record the greatest distance at which the magnets, A, B, C and D, will attract some paper clips.



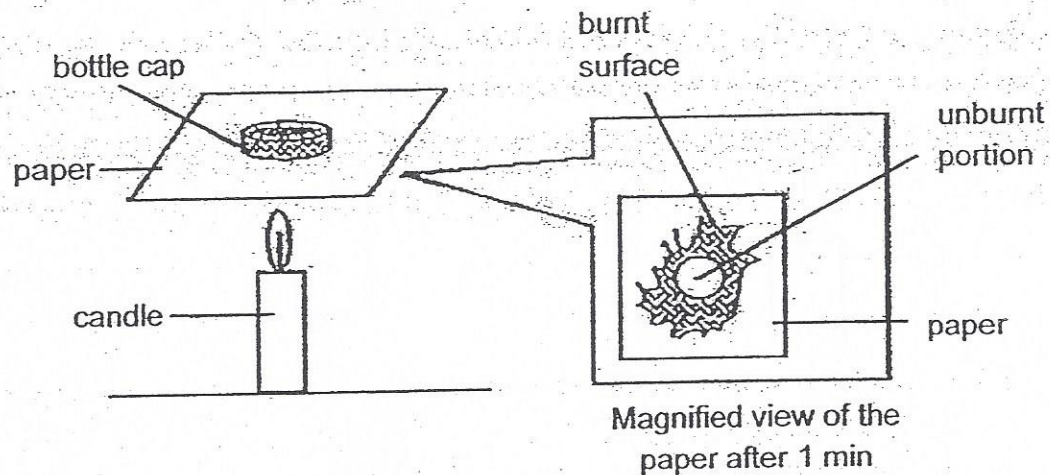
The bar graph below shows the results of his experiment.



Based on the bar graph above, which of the following statements are true?

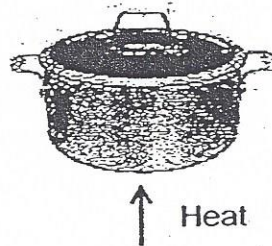
- A Magnet B is stronger than A.
  - B The bigger the size of the magnet, the stronger the magnet.
  - C Only Magnet D can attract paper clips that are placed 5 cm away.
  - D Magnet D can attract more paper clips than Magnet C when the paper clips are placed 2 cm away from the magnets.
- (1) A and B only  
 (2) A and D only  
 (3) B and C only  
 (4) A, C and D only

22. Wei Ming conducted an experiment as shown in the diagram below. He placed a metal bottle cap on a piece of paper and held the paper over a flame. After 1 minute, he observed that the paper around the bottle cap was burnt but the paper under the cap was not burnt at all.



Which one of the following explains why the portion of paper under the bottle cap did not get burnt?

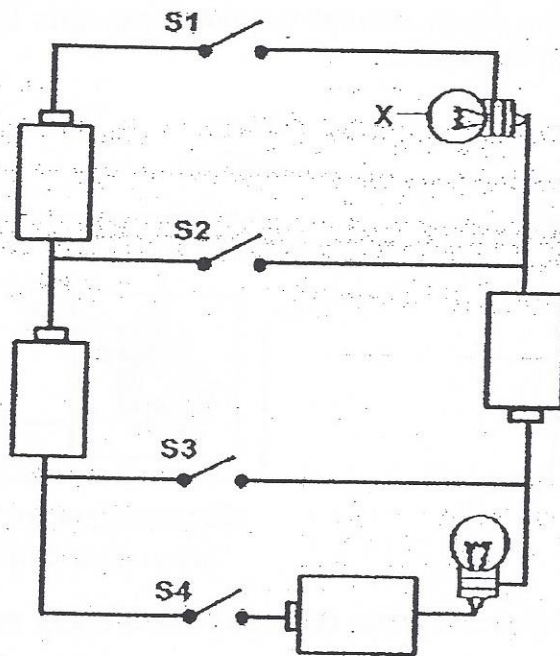
- (1) The paper gained heat from the flame and was burnt.
  - (2) The bottle cap did not gain too much heat, so it did not get burnt.
  - (3) The bottle cap gained heat and expanded so heat did not travel to the paper.
  - (4) Metal is a good conductor of heat so heat was conducted away from the paper.
23. Diana wanted to cook porridge using the pot below.



She observed that the porridge cooked faster when boiled in the pot with the lid covering it. Which one of the following is the best explanation for her observation?

- (1) The lid prevented the porridge from overflowing so it would boil faster.
- (2) The lid was a good conductor of heat so heat would travel to the porridge faster.
- (3) The lid trapped heat in the pot so the porridge would gain more heat and boil faster.
- (4) The water vapour from the boiling porridge would not condense on the cool inner surface of the lid and drip back into the porridge.

24. The diagram below shows an electric circuit.

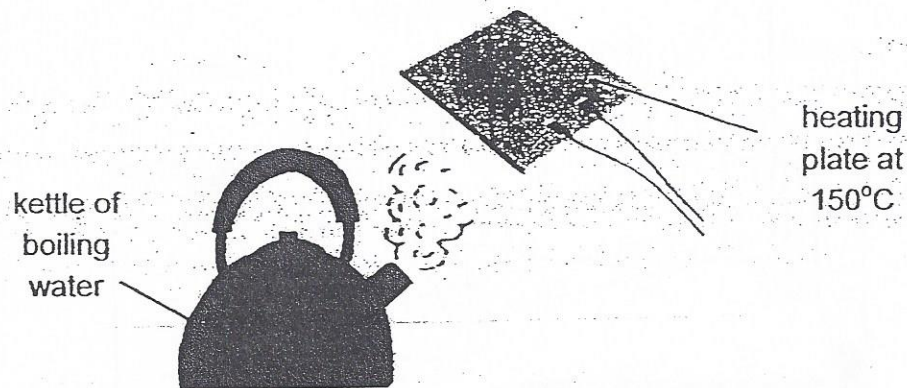


Based on the circuit above, which one of the following would result in Bulb X being the brightest?

	S1	S2	S3	S4
(1)	Close	Close	Open	Open
(2)	Close	Open	Close	Open
(3)	Open	Close	Open	Close
(4)	Close	Open	Open	Close

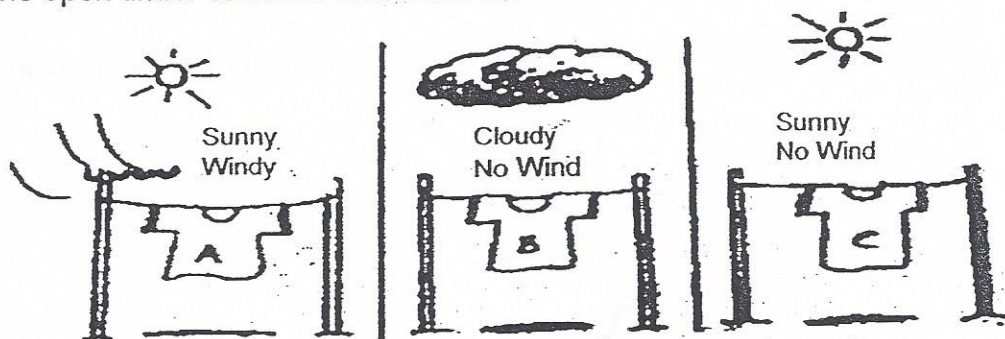


25. A kettle of water was heated until the water in it boiled. A heating plate with a temperature of  $150^{\circ}\text{C}$  was held above the kettle spout.



What could be observed on the heating plate after 2 minutes?

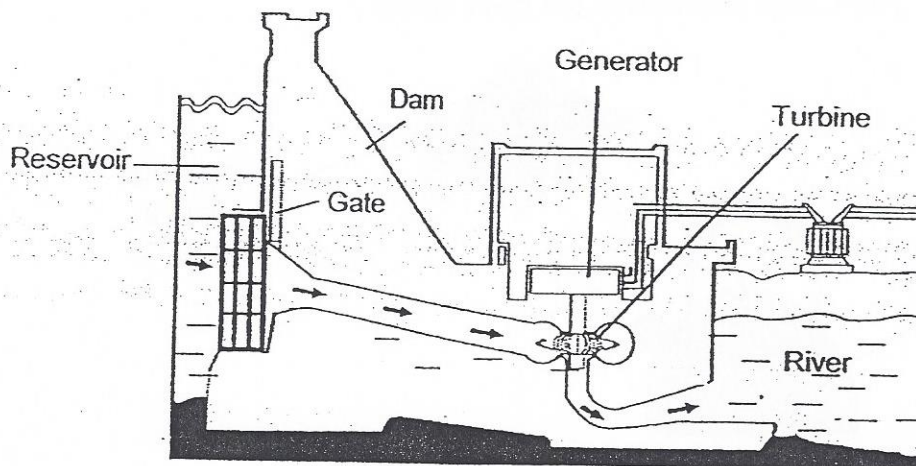
- (1) The heating plate became foggy due to the steam from the boiling water.
  - (2) Hot water vapour condensed to form tiny water droplets on the heating plate.
  - (3) No condensation took place on the heating plate as the hot water vapour could not lose heat to the hotter heating plate.
  - (4) No condensation took place on the heating plate at first but when the hot water vapour gained more heat, it was able to condense on the heating plate to form tiny water droplets.
26. Three similar T-shirts, soaked in the same amount of water, were left to dry in the open under different conditions shown below.



Arrange the three T-shirts in order, beginning with the one that will take the longest time to dry to the one that would take the shortest time to dry.

- (1) A, C, B
- (2) B, A, C
- (3) B, C, A
- (4) C, A, B

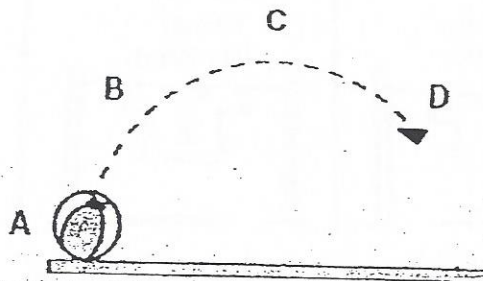
27. The diagram below shows a hydroelectric power station.



Which one of the following shows the energy changes when the gate of the dam is lifted and the water from the reservoir flows through the channel till electricity is generated?

- (1) Gravitational potential energy  $\rightarrow$  Kinetic energy of turbine  $\rightarrow$  Electrical energy
- (2) Gravitational potential energy  $\rightarrow$  Kinetic energy of water  $\rightarrow$  Kinetic energy of turbine  $\rightarrow$  Electrical energy
- (3) Gravitational potential energy  $\rightarrow$  Kinetic energy of water  $\rightarrow$  Electrical energy  $\rightarrow$  Kinetic energy of turbine
- (4) Kinetic energy of water  $\rightarrow$  Gravitational potential energy  $\rightarrow$  Kinetic energy of turbine  $\rightarrow$  Electrical energy

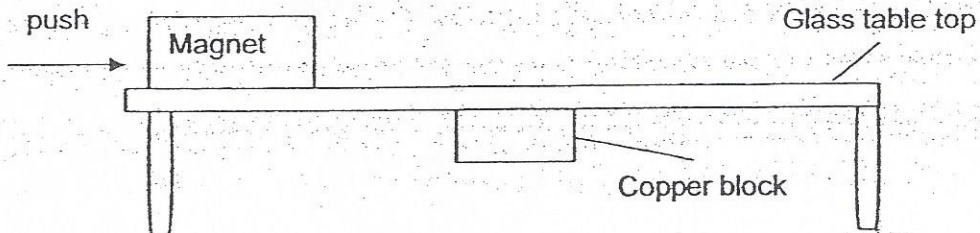
28. The diagram below traces the path of a ball in motion as it was thrown into the air.



The ball has the maximum amount of gravitational potential energy at position \_\_\_\_\_.

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

29. A magnet was placed on a glass table as shown below. A copper block was attached to the bottom of the table. The magnet was given a push to move along the table.



The following are the different types of forces that can act on an object:

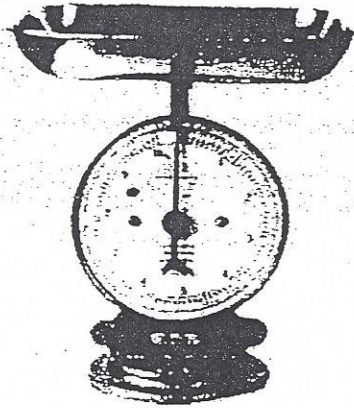
- P Magnetic force
- Q Gravitational force
- R Frictional force

Which of the above force(s) must be overcome in order for the magnet to move along the table?

- (1) P only
- (2) R only
- (3) P and R only
- (4) P, Q and R

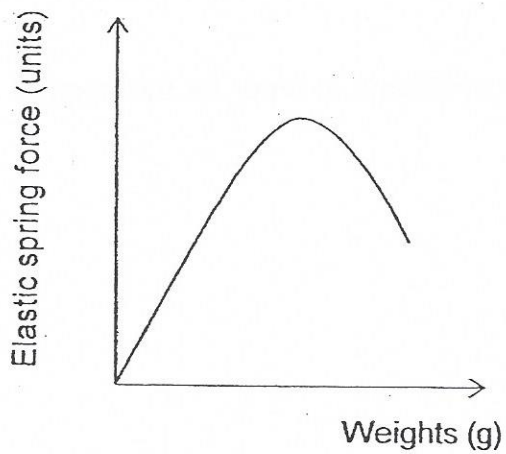


30. The weighing scale in the diagram below consists of a spring which compresses when an object is placed in the pan.

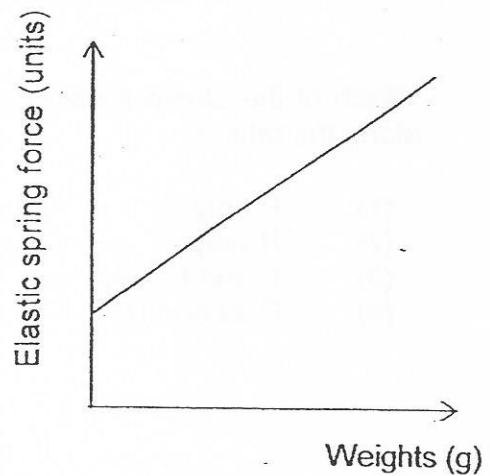


Which one of the graphs below shows the relationship between the amount of elastic spring force and the weights placed on the weighing scale?

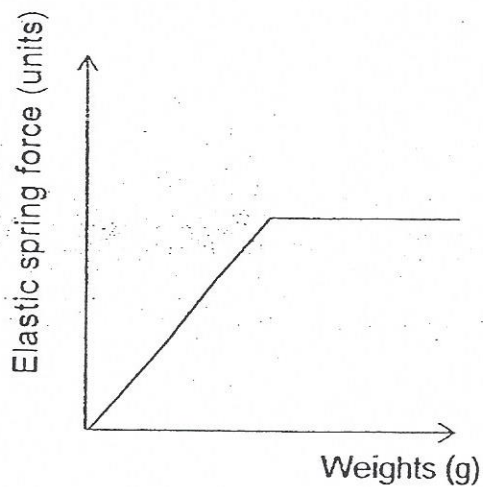
(1)



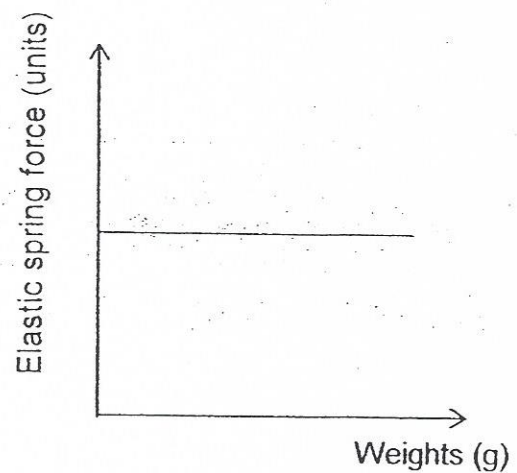
(2)



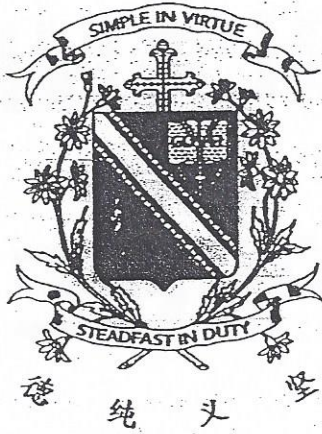
(3)



(4)



# CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6

PRELIMINARY EXAMINATION – 2015

SCIENCE  
BOOKLET B

27 August 2015

NAME: \_\_\_\_\_ ( )

CLASS : Primary 6 \_\_\_\_\_

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

14 questions  
40 marks

Booklet A	60
Booklet B	40
Total	100

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

\_\_\_\_\_  
Parent's Signature/Date

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**PAGE**



**Section B (40 marks)**

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

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

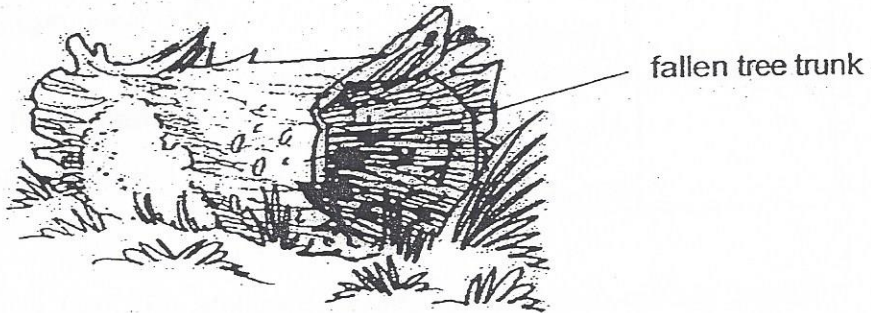
31. Every year thousands of trees are cut down in tropical rainforests.

(a) How does the above activity cause global warming? [1]

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(b) In the forests, fallen tree trunks and branches are left on the ground.



Some organisms feed on these tree trunks and release nutrients or minerals back into the soil.

(i) Why is it important that the nutrients or minerals are released back into the soil? [1]

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(ii) Centipedes can be found in a rotting log community. Are they decomposers? Explain your answer. [1]

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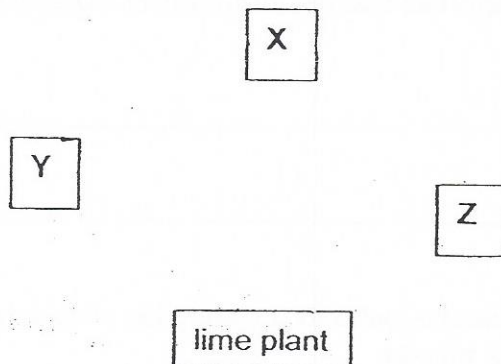


32. David conducted four experiments on food relationships in a garden community made up of a lime plant and three other organisms, X, Y and Z. The table below shows the observations from the experiments conducted over three days.

Experiment	Observations	
	Start of experiment	End of experiment
(i)	5 freshly plucked lime leaves 5 living organism Z.	Bits of leaves left 5 living organism Z
(ii)	5 living organism X 5 living organism Y 5 living organism Z	5 living organism Y 1 living organism Z
(iii)	5 freshly plucked lime leaves 5 living organism X 5 living organism Y	5 leaves left 5 living organism Y
(iv)	5 freshly plucked lime leaves 5 living organism X 5 living organism Z	5 leaves left 5 living organism X

- (a) Based on the observations above, complete the food web shown below by drawing four arrows to connect the organisms to show the possible food relationships among the lime plant and organisms, X, Y and Z.

[2]



- (b) Why is the lime plant important in the garden community?

[1]

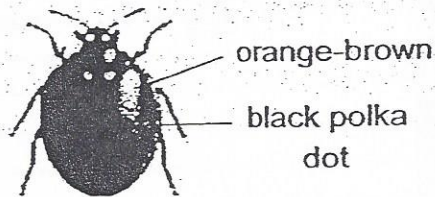
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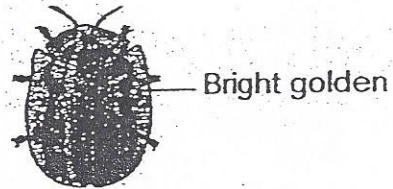
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33. Birds feed on all kinds of beetle but many do not like to eat the ladybird beetle. Ladybird beetles are brightly- coloured; orange-brown with black polka dots. Predators usually avoid eating the ladybird beetles because they contain bitter-tasting chemicals. Golden tortoise beetle is usually bright golden in colour. However, it can change from bright golden to orange-brown with dark spots within a short time period.



ladybird beetle



golden tortoise beetle

- (a) Ladybird beetle is brightly-coloured. How does this adaptation help in the ladybird beetle's survival? [1]

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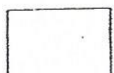
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- (b) The golden tortoise beetle is able to alter its colour within a short time period. How does this help it to survive better? [1]

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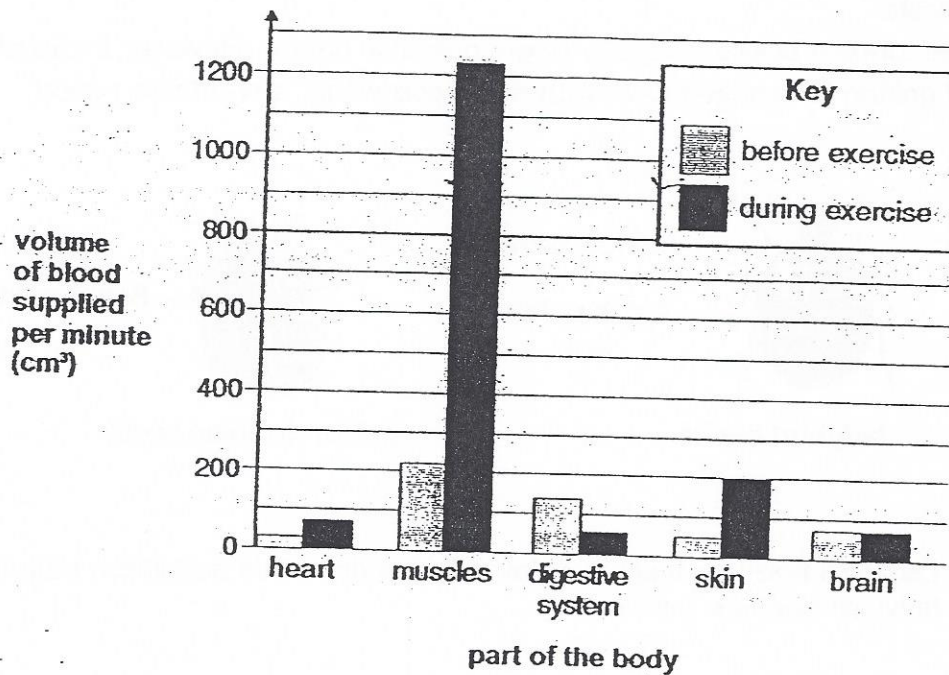
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34. When we exercise, the volume of blood per minute needed to supply different parts of our body changes. This is shown in the bar chart below.



- (a) Explain why our muscles need more blood during exercise. [2]

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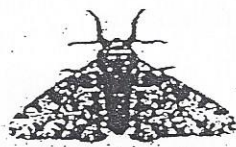
- (b) Based on the bar chart, explain why we should not go for a long run just after eating a meal. [1]

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35. The diagram below shows two different types of moth of the same species. The moths are either speckled or black. It is observed that when there is an increase in the speckled moth population there will be a decrease in the black moth population.

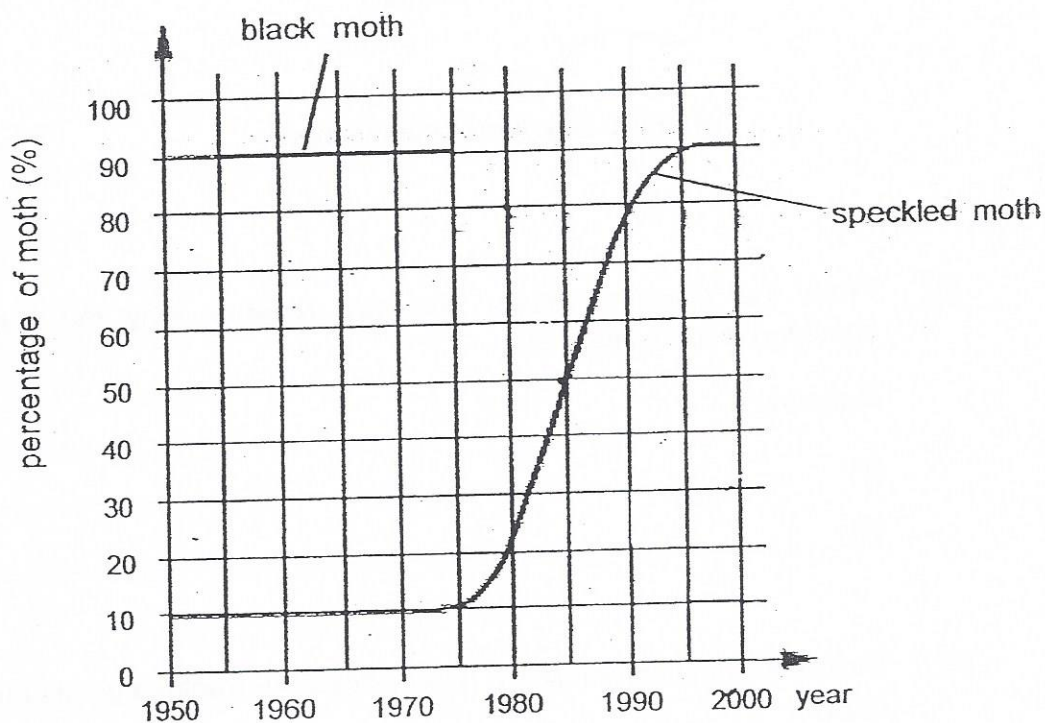


speckled moth



black moth

The graph below shows how the percentage of speckled moths changed between 1950 and 2000 in one city.

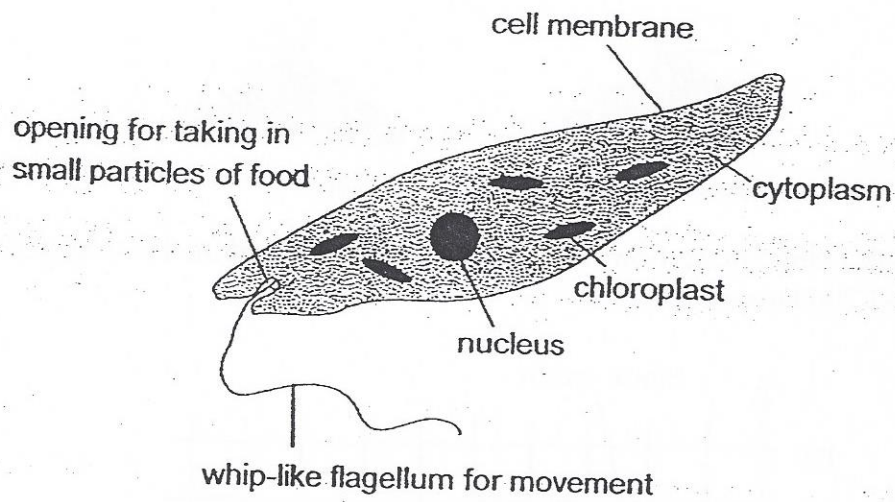


- (a) Using the graph above, complete the table below with the missing year and percentage. [2]

Year	Percentage of speckled moths (%)	Percentage of black moths (%)	Total percentage (%)
1970	10	90	100
	50	50	100
1990	78	( )	100

- (b) The percentage of black moths from 1950 to 1980 is also shown on the same graph. Based on the table in (a), complete the line graph to show how the percentage of black moths had changed between 1980 and 2000. [1]

36. The diagram below shows an organism called Euglena. It is made up of only one cell. It lives in ponds and streams. Euglena has features of both plants and animals.



- (a) From the diagram above, give two reasons why the Euglena can be considered an animal cell.

Reasons:

[2]

(i)

\_\_\_\_\_

(ii)

\_\_\_\_\_

- (b) Based on the diagram above, where does the Euglena get its energy and food from?

[1]

\_\_\_\_\_

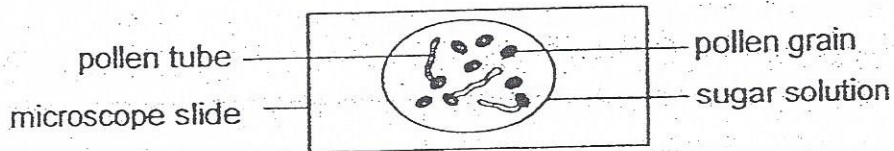
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37. Amy conducted an experiment to find out how sugar affects the growth of pollen grains. She observed the growth of pollen grains under a microscope over a period of time.



This is what Amy did:

1. Add one drop of different concentrations (0%, 5%, 10%, 15%, 20% and 25%) of sugar solution to each microscope slide.
2. Add the same amount of pollen grains to each drop of sugar solution in each microscope slide.
3. Count how many pollen grains have started to grow after an hour.
4. Calculate the percentage of growth of pollen grains.

(a) Why did Amy set up a slide with 0% sugar solution?

[1]

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The table below shows the results of Amy's investigation.

Concentration of sugar solution (%)	Percentage of pollen grains that had started to grow (%)
0	0
5	30
10	100
15	30
20	10
25	0

(b) Based on the results above, what conclusion can Amy draw?

[2]

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38. The diagram below shows a puddle of water on the street after the rain.



The puddle of water disappeared after some time.

- (a) Explain why the puddle disappeared after some time.

[1]

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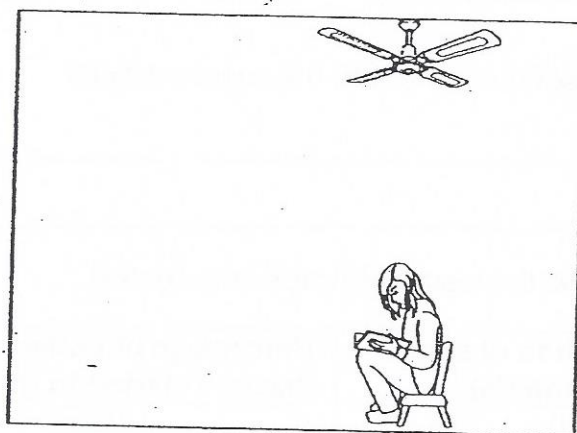
- (b) Give two factors that can cause the puddle of water to disappear faster.

[1]

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The diagram below shows Alice in a room on a hot day. The air in the room has a temperature of  $32^{\circ}\text{C}$ .



Alice

Alice felt cooler sitting under the moving fan than in any other areas in the room.

- (c) Explain why sitting under the fan made Alice feel cooler?

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39. Elsa conducted an experiment with the objects shown below.



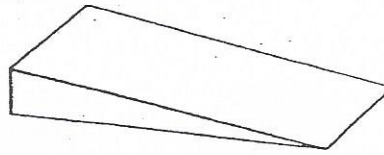
tin



marble



ring



ramp

She rolled the tin down the ramp and recorded the time taken for the tin to reach the floor. She repeated the experiment with the marble and the ring. The experiment was carried out three times with each object. The table below shows the results of the experiment.

Object	Time taken (s)		
	1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> try
Tin	2.3	3.2	1.7
Marble	2.6	2.7	2.4
Ring	3.3	3.5	3.4

(a) What are the forces that act on the objects as they roll down the ramp? [1]

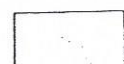
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(b) Elsa realised that she had made a mistake while carrying out the experiment on one of the objects. Which object would that be? List 1 mistake she could have made. [1]

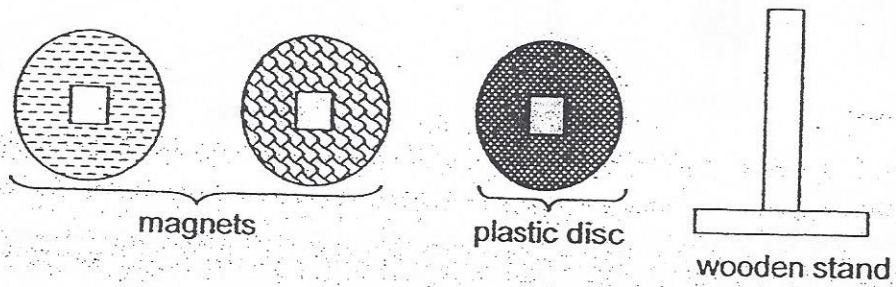
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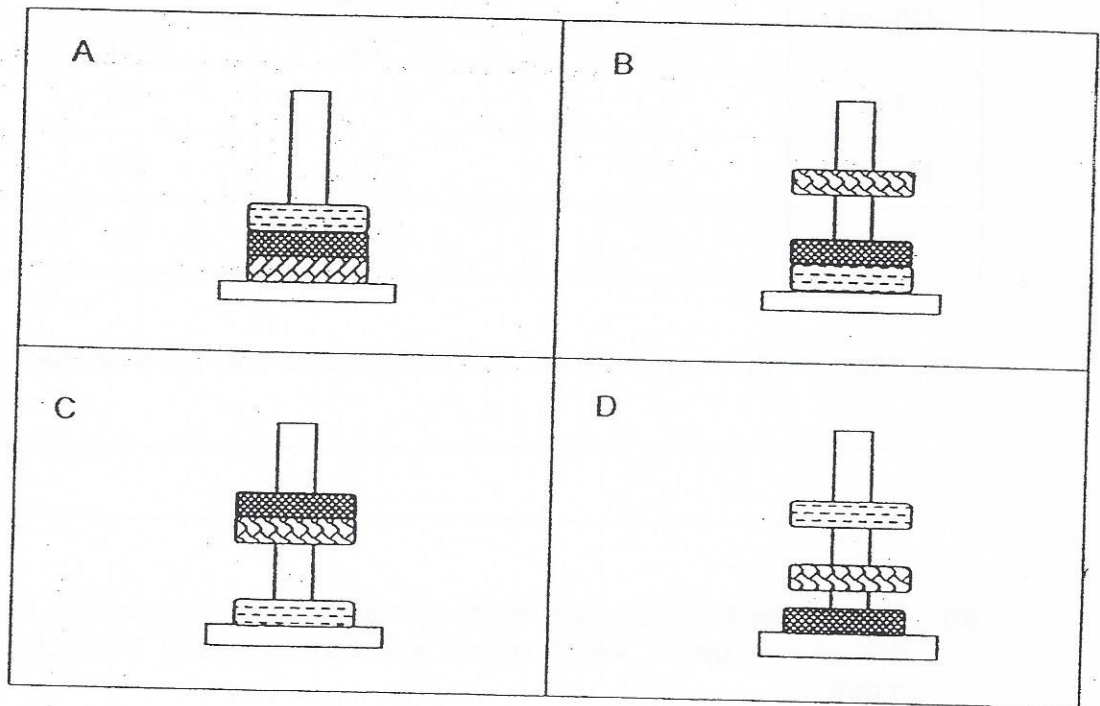




40. The diagram below shows three discs of similar size, each with a square hole in the centre. One of the discs is a plastic disc and the other two are magnets.



The diagrams below show the positions of the three discs when they are placed on top of one another through the wooden stand.



- (a) Which one of the above arrangements would not be a possible observation? Explain your answer.

[1]

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A magnet was brought near Rod A which was suspended on a support and Rod A moved upwards to the position shown in Diagram 1. A flame was then placed at one end of the Rod A as shown in Diagram 2. After a while, Rod A started to move towards the magnet.

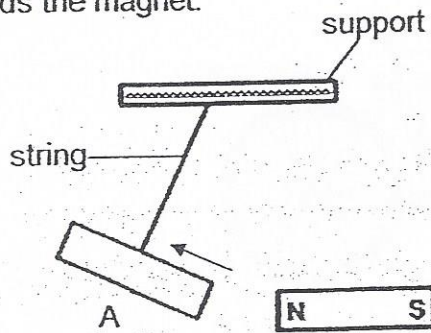


Diagram 1

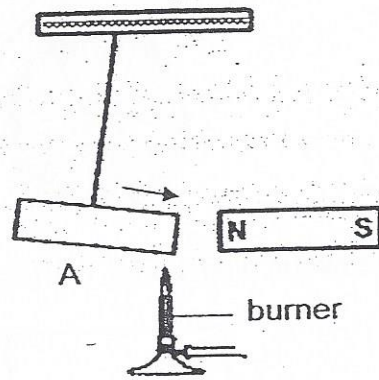
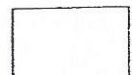


Diagram 2

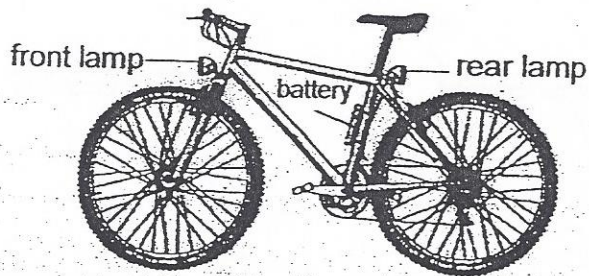
(b) What caused rod A to move towards the magnet? Give one reason. [1]

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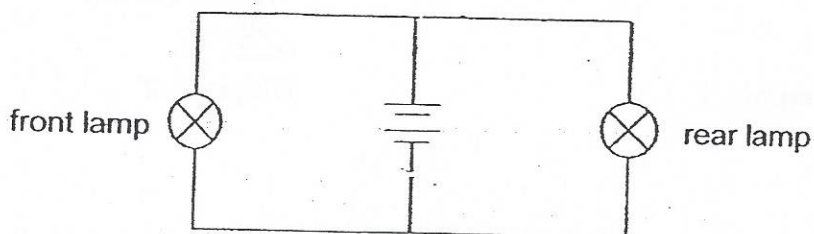


41. The diagram below shows a bicycle with a front and a rear lamp. Both lamps are connected to the same battery.



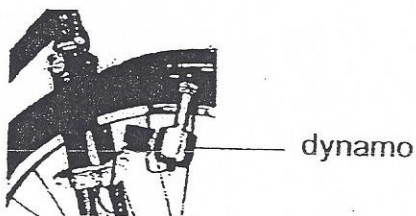
- (a) The circuit diagram for the lamps is drawn below.

[2]



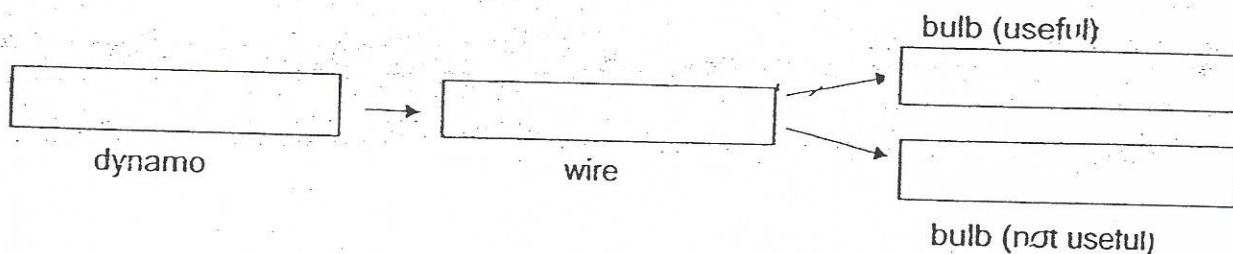
- (i) On the circuit diagram above, place a letter X to show the position of a switch that would turn only the front lamp on and off.
- (ii) On the circuit diagram above, place a letter Y to show the position of a switch that would turn both lamps on and off at the same time.

The battery in the bicycle can be replaced with a dynamo as shown in the diagram below. A dynamo is a small generator able to provide electricity when the wheels of the bicycle are turned.



- (b) Fill in the boxes below with the correct form of energy to show the energy conversion when the dynamo is used.

[1]

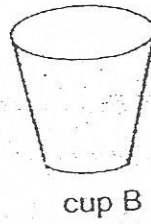
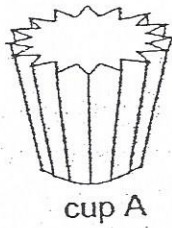


- (c) What effect will it have on the light bulb if we pedal faster?

[1]



42. The diagram below shows two cups of the same material and diameter. The cups were filled with the same amount of hot water at  $90^{\circ}\text{C}$ .



Alan wanted to find out the length of time he could hold onto each cup with his bare hand until it was too hot for him to hold on.

- (a) Which cup could he hold for a longer period of time before it was too hot for him to hold on? Explain your answer. [2]

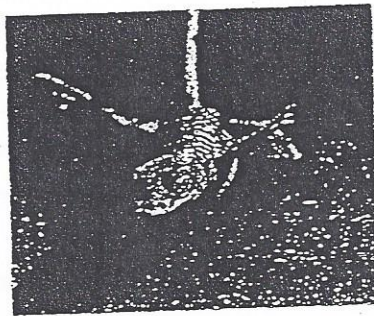
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The picture below shows a shovel-snouted lizard which lives in the desert. It often performs a 'thermal dance' by raising one of its front and back legs diagonally at the same time and then repeated it with the other two legs during the day.



- (b) Explain how by behaving this way enables it to survive in the hot desert. [1]

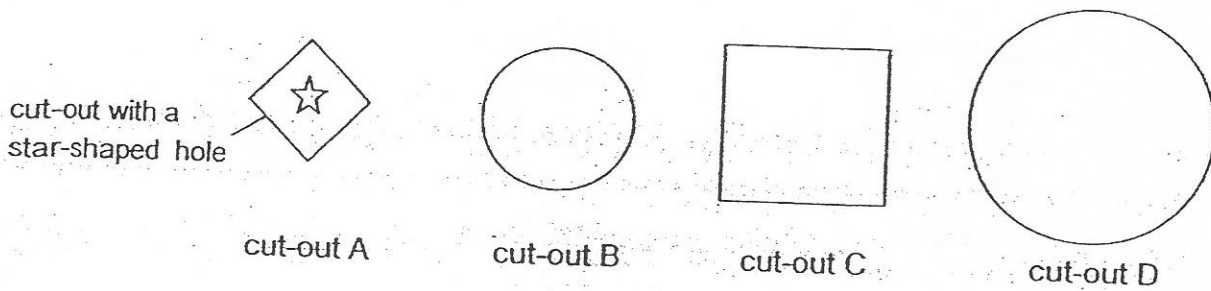
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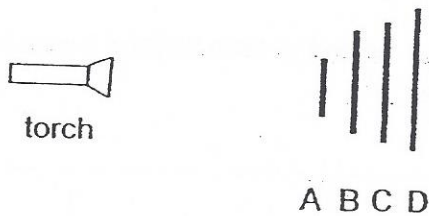
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43. Fauzi had 4 cut-outs made of different materials as shown below. The diagrams are drawn to scale.



He placed the four cut-outs in front of a torch as shown in the diagram below.



Fauzi turned on the torch and recorded his observation on cut-out C as shown below.



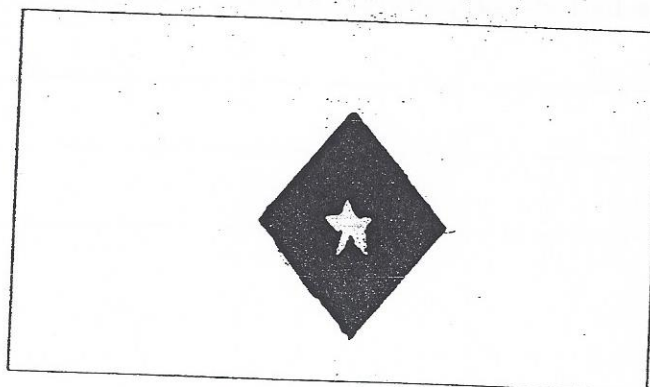
(a) Based on Fauzi's observation, state whether materials A and B are opaque or transparent.

[1]

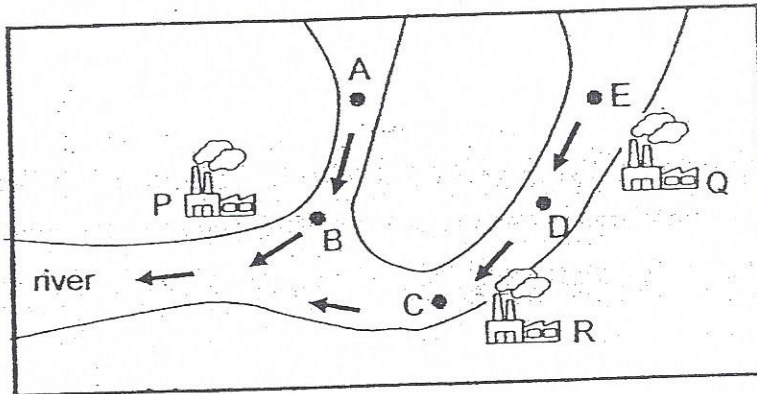
Cut-out	Material
A	
B	

(b) If cut-out D is made of an opaque material, draw the shadow cast on cut-out D in the space provided below.

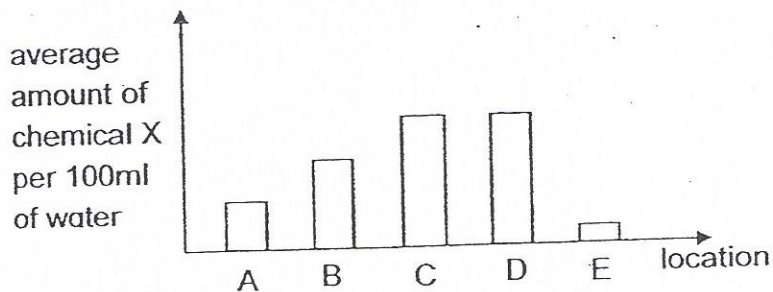
[1]



44. The map below shows the location of three factories, P, Q and R, by the river. The arrows show the direction of water flow in the river.



It is suspected that these factories discharge harmful chemical X into the river. Water samples are collected from five locations, A, B, C, D and E, of the river for analysis. The results of the analysis are plotted in the graph below.



- (a) Based on the graph above. Which factory, P, Q or R, is the least likely to have discharged chemical X into the river. Explain your answer. [2]

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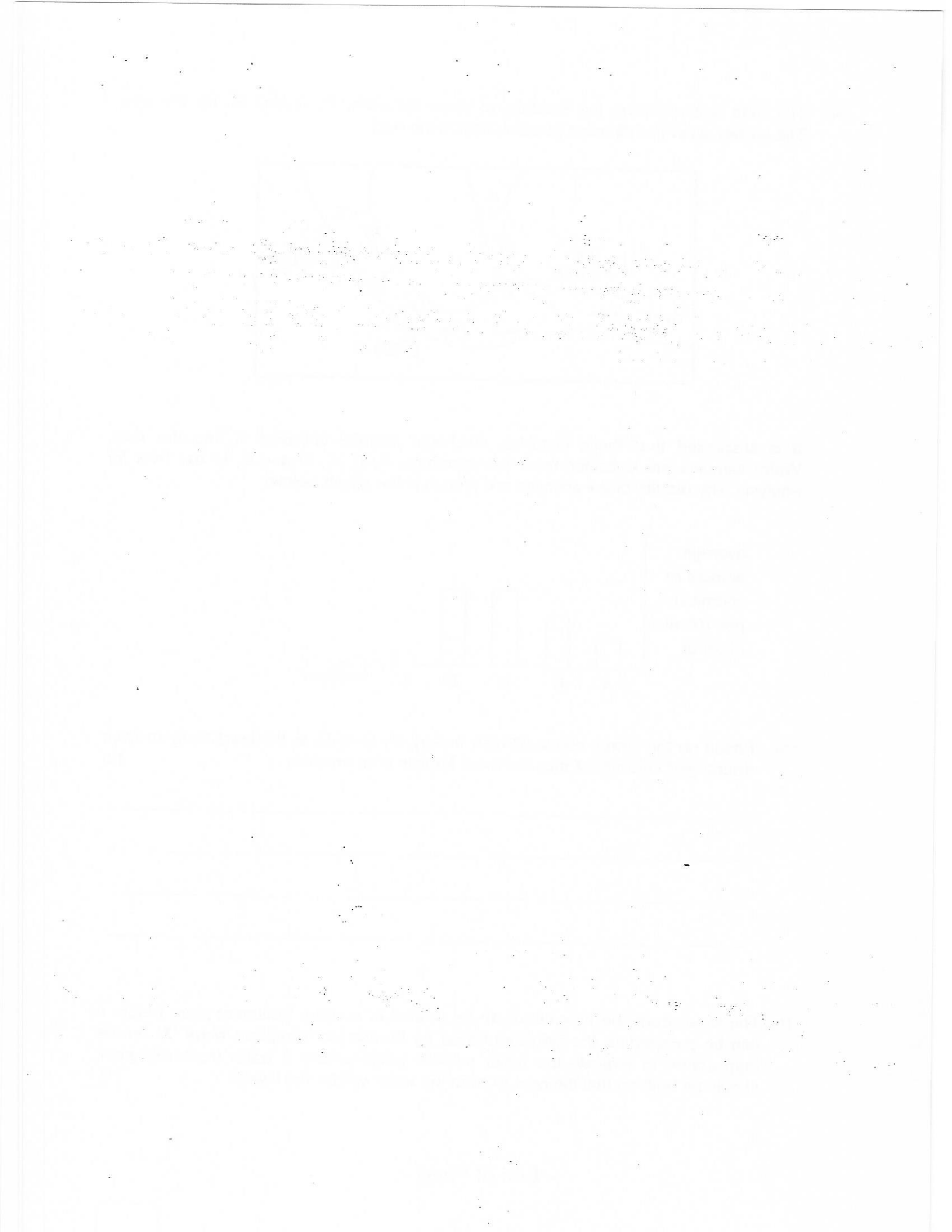


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- (b) The water from the river needs to be treated in a water treatment plant before it can be pumped to the neighbourhood for human consumption. Mark 'X' on the map above to indicate the most suitable place where a water treatment plant should be built so that the cost to treat the water will be the lowest. [1]







EXAM PAPER 2015  
 LEVEL : PRIMARY 6  
 SCHOOL : CHIJ ST NICHOLAS GIRLS' SCHOOL  
 SUBJECT : SCIENCE  
 TERM : PRELIMINARY EXAMINATION

**BOOKLET A**

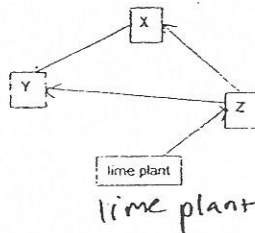
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	1	4	2	3	3	4	3	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	3	2	2	3	1	4	4	3	1
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	4	3	2	3	3	2	3	2	3

**BOOKLET B**

Q31a. There will be lesser trees, so less photosynthesis would occur, hence less carbon dioxide is taken in by trees so there would be more carbon dioxide in the surroundings. Carbon dioxide is a greenhouse gas that traps heat, so more heat will be trapped, leading to global warming.

Q31bi) To replace the nutrients / minerals that are used up. Other plants can use the nutrients / minerals. Q31bii) Decomposers feed on decaying matter by turning them into simpler substances before returning the minerals and nutrients to soil. Centipedes are carnivores and do not decay matter.

Q32a. **SEE PICTURE** Q32b. The lime plant is the food producer. Other organisms directly or indirectly depend on the lime plant for food. Without the lime plant, the other organisms will have lesser and lesser food to consume, leading to death eventually, and the population might die out, so the lime plant is important.



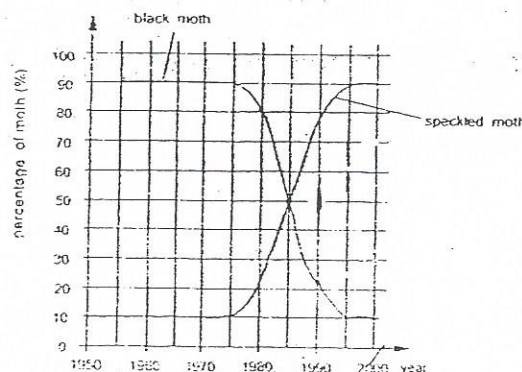
Q33a. As it is brightly coloured, it can lure its prey as well as warn predators not to eat them as they are bitter tasting.

Q33B. It can pretend to be a ladybird beetle as it changes its colour to look like a ladybird beetle. Predators avoid eating ladybird beetles as they contain bitter - tasting chemicals so the golden tortoise beetle's predators will avoid eating the golden tortoise beetle as they mistake it for a ladybird beetle, hence less golden tortoise beetle is taken by predator helping it to survive better.

Q34a. Our muscles enable us to move and exercise. When exercising. Our muscles will need more energy. More blood containing oxygen and digested food needs to be pumped to the muscles for respiration to occur, so that the muscles have energy for us to exercise.

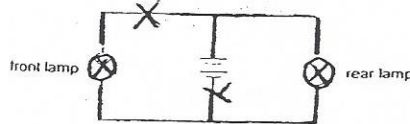
Q34b. During exercise, more blood is pumped to the muscles and lesser blood is pumped to the digestive system. Thus, this will reduce / affect the amount of digested food absorbed and transported by the blood

Q35a. **SEE PICTURE** Q35b. Year : 1985, percentage of black moths (%) - 22



- Q36a i) It has no cell wall like animal cells. Q36a ii) It feeds on other organisms for foods.
- Q36b. The Euglena has an opening to take in small particles of food. It also has chloroplast that contains chlorophyll to trap light energy to photosynthesize.
- Q37a. That slide is the control set up. Its result is used to compare with the other slide's result so as to confirm that the difference in number of pollen grains grown is due to the amount of sugar solution.
- Q37b. When the concentration of sugar solution from 0% to 10% increase, the percentage of pollen grains that started to grow increase. When the concentration of sugar solution from 10% to 25% increases, the percentage of pollen grains that had started to grow decreases.
- Q38a. The water had gained heat from the surroundings that evaporated into water vapor.
- Q38b. Stronger wind and increase in temperature. Q38c. The fan circulates the air under the fan the most. The circulated air is wind. With stronger wind, Alice's seat will gain heat from her body at a faster rate. When her sweat evaporates, the heat around her is absorbed too, so Alice felt cooler when she sat under the fan.
- Q39a. Frictional force, gravitational force. Q39b. She might have given the tin a push instead of just releasing it at the top of the ramp for different tries.
- Q40a. D. One of the magnets was floating above the plastic disc. Only magnets repel and the plastic disc is not a magnet so the magnet will not repel the plastic disc, hence the magnet would not float above the plastic discs. Q40b. A is a magnet. Magnets lose their magnetism when heated. A was heated, so its magnetism weakened, causing it to not be able to repel the magnet as much as before, so it moved towards the magnet.
- Q41a. SEE PICTURE Q41b. KINETIC ENERGY → ELECTRICAL ENERGY → bulb (useful) light energy → bulb (not useful) heat energy. Q41c. The light bulb will light up brighter.

(a) The circuit diagram for the lamps is drawn below.



- Q42a. A. Cup A has a jagged outer layer so when he holds it, less surface area of A is in contact with his hand compared to B, hence heat was conducted from the hot water to his hand at a slower rate for cup A, so he was able to hold cup A longer. Q42b. With only two legs in contact with the hot sand at one time, there is lesser surface area of the lizard's body in contact with the hot sand. So heat from the hot sand will be conducted to the lizard's body at a slower rate, so its body will not gain too much heat.
- Q43a. A - opaque Q43a. B - transparent Q43b Answer not available
- Q44a. R. Water at D is between Q and R. Water at C is after R. The amount of X per 100ml of water from D and C did not change at all, meaning that R did not discharge X into the river.
- Q44b. SEE PICTURE.

