

METHODIST GIRLS' SCHOOL

Founded in 1887



MID-YEAR EXAMINATION 2014 PRIMARY 6 SCIENCE

BOOKLET A1

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

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____ ()

Class: Primary 6. _____

Date: 12 May 2014

This booklet consists of 11 printed pages including this page.

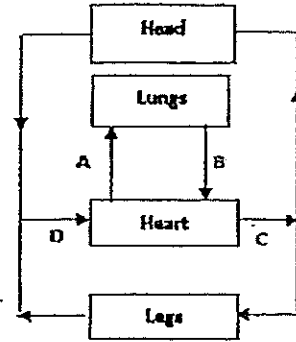
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

[60 marks]

- 1 Why do crabs shed their outer skeletons?
- (1) Their skeletons are expanding.
 - (2) They are outgrowing their skeletons.
 - (3) Their body temperature is increasing.
 - (4) They need to breathe through their skin.
- 2 Which part of the respiratory system does gas exchange take place?
- (1) nose
 - (2) lungs
 - (3) windpipe
 - (4) diaphragm
- 3 Earthworms and woodlice feed on dead leaves. How do they increase the rate of decomposition?
- (1) They raise the temperature of the decaying material.
 - (2) They release carbon dioxide to the decaying material.
 - (3) They release body substances to decay the dead leaves.
 - (4) They break down the decaying material into smaller pieces.
- 4 Which one of the following characteristics can be used to differentiate between a housefly and a spider?
- (1) Number of legs
 - (2) Body temperature
 - (3) Type of body covering
 - (4) Method of reproduction

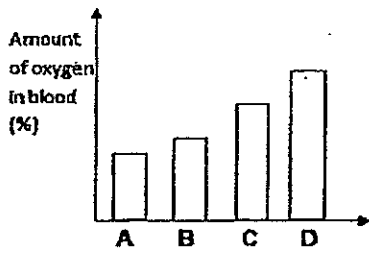
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- 5 The diagram below shows the movement of blood in some parts of the human circulatory system.

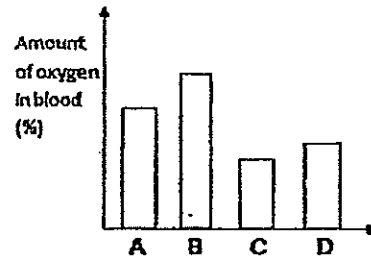


Which of the following graphs represents the amount of oxygen in blood vessels, A, B, C and D?

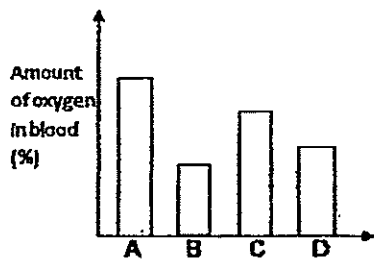
(1)



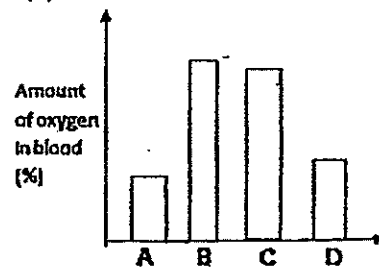
(2)



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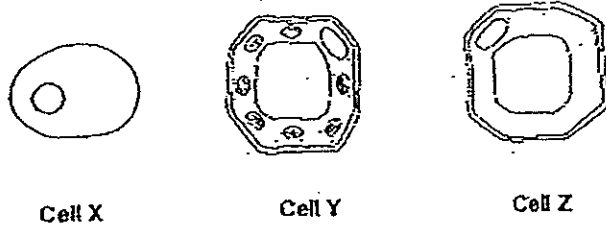


(4)



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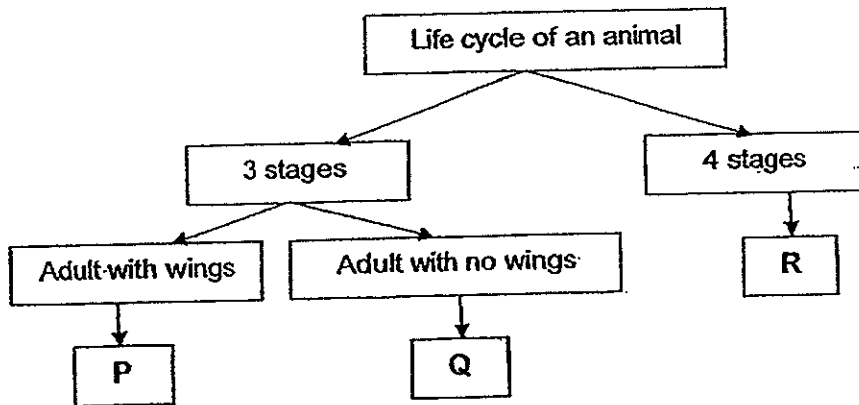
6 Study the three cells below.



Which of the following are found in all the three cells?

- (1) cell wall and nucleus
- (2) cytoplasm and nucleus
- (3) cytoplasm and chloroplast
- (4) cell membrane and chloroplast

7 Study the classification chart below.



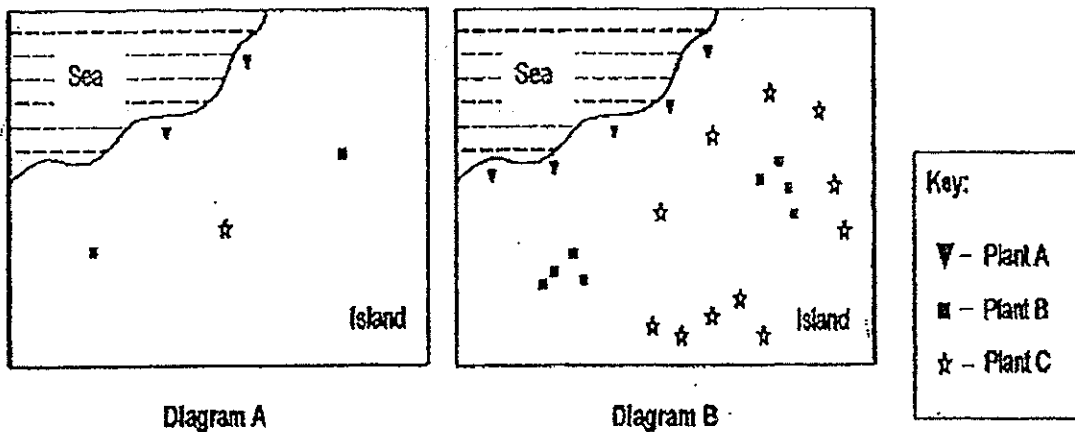
Which one of the following animals represents P, Q and R?

	P	Q	R
(1)	frog	grasshopper	cockroach
(2)	grasshopper	butterfly	frog
(3)	cockroach	frog	butterfly
(4)	butterfly	cockroach	grasshopper

(Go on to the next page)

- 8 Three types of plants, A, B and C, were planted on an island near the sea as shown in Diagram A below.

A few years later, more of the three types of plants were found growing at different parts of the island as shown in Diagram B.

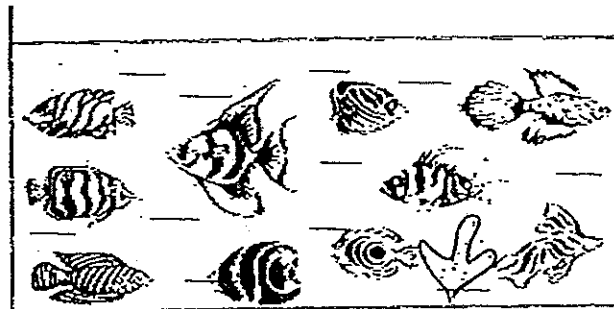


Based on the information given above, how are the fruits or seeds of each type of plant dispersed?

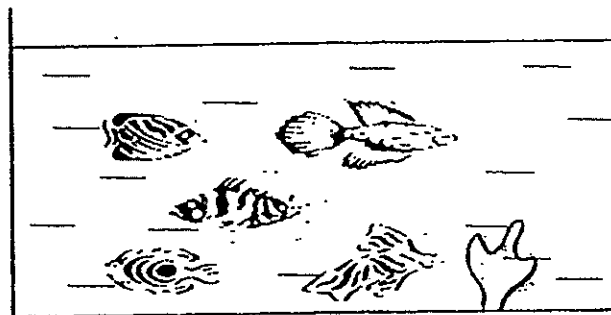
	Plant A	Plant B	Plant C
(1)	By splitting action	By animals	By water
(2)	By animals	By wind	By splitting action
(3)	By water	By splitting action	By animals
(4)	By wind	By splitting action	By water

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- 9 Sandy set up an experiment as shown in the diagram. At the end of the experiment, it was observed that some fishes stopped swimming in Tank A but not in Tank B.



Tank A



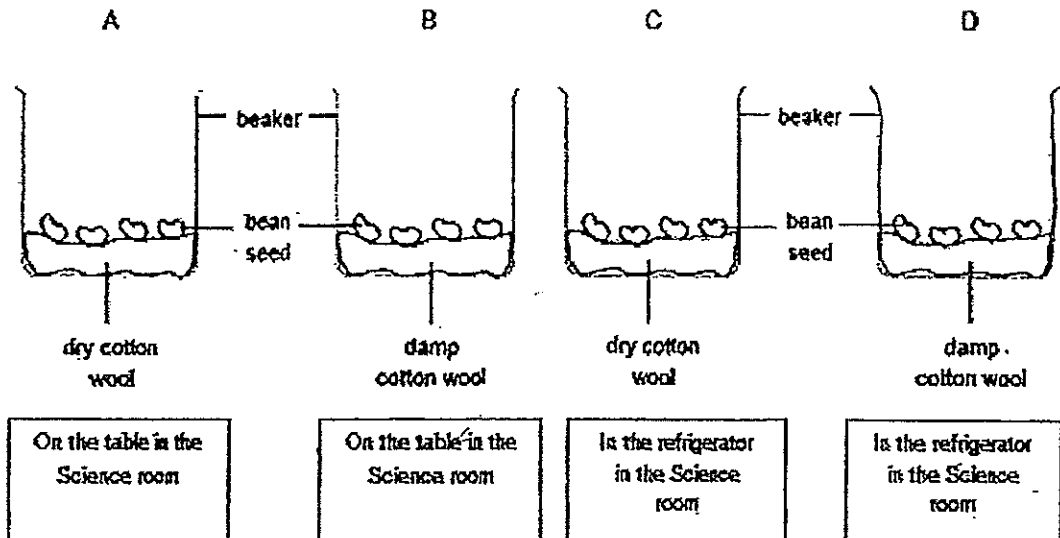
Tank B

Which of the following best describes what effect overcrowding has on the fishes?

- A The water plant gives out oxygen during photosynthesis.
 - B Fishes show no change in behaviour in the water.
 - C Both the water plant and the fishes need oxygen to carry out respiration.
 - D Fishes may not be able to survive long when there is more carbon dioxide than oxygen in the water.
- (1) A and B
- (2) B and C
- (3) A and D
- (4) C and D

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- 10 Grace wanted to find out if seeds need warmth for germination. She had four containers, each with four green bean seeds placed on some cotton wool, as shown below.

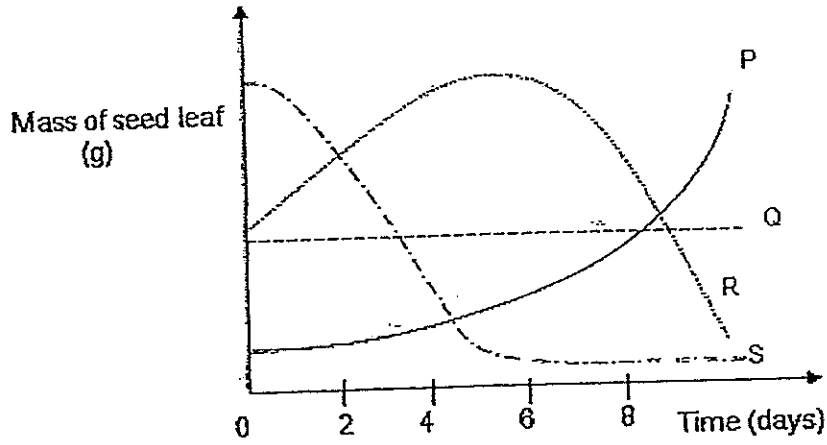


Which pairs of containers should she use to find out if seeds need warmth for germination?

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

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- 11 The diagram shows a seed that is germinating.

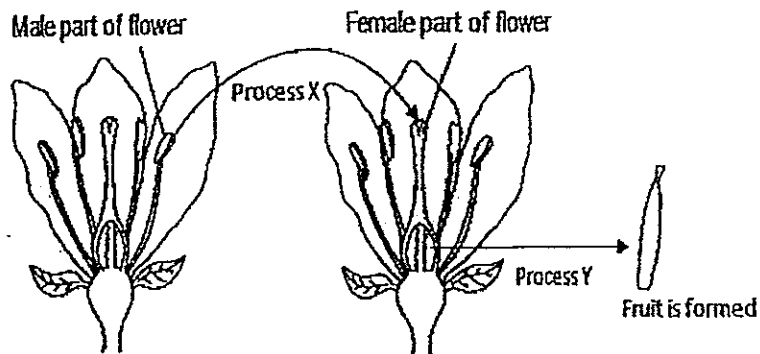


Which line shows the change in the mass of the seed leaf over time?

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

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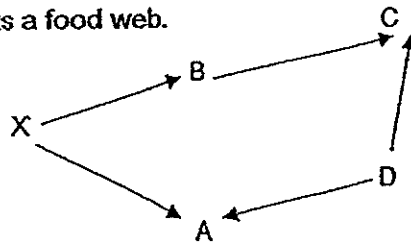
- 12 The diagram shows the main processes in the sexual reproduction of a flowering plant. Process X takes place before process Y.



Which one of the following correctly shows processes X and Y?

	Process	Process Y
(1)	Germination	Fertilisation
(2)	Pollination	Fertilisation
(3)	Pollination	Dispersal
(4)	Fertilisation	Pollination

- 13 The diagram represents a food web.

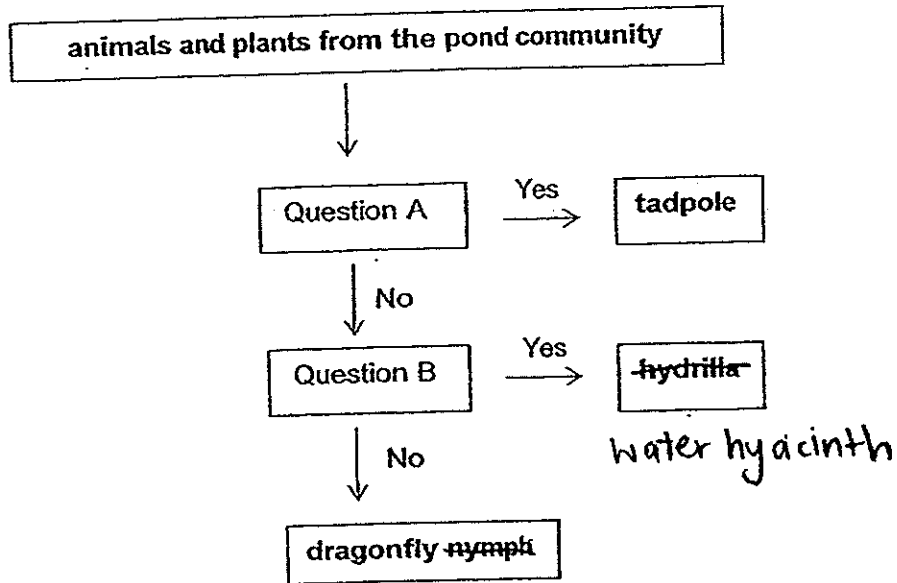


Which one of the following organisms will be most affected if there is a decrease in organism X?

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

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14 Study the chart below.



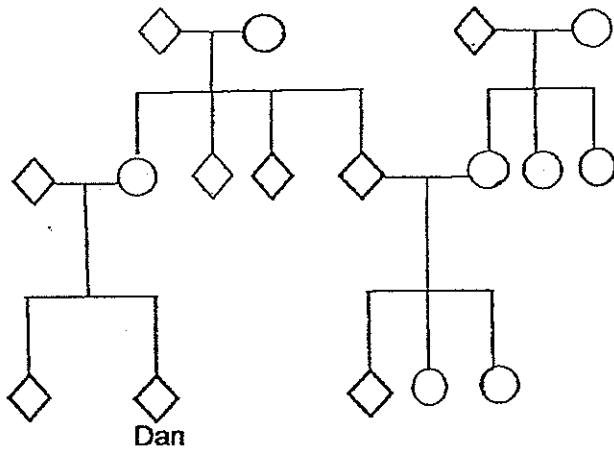
What are Questions A and B?

	Question A	Question B
1)	Does it photosynthesise ?	Does it partially submerge in water ?
2)	Does it float on water ?	Does it photosynthesise ?
3)	Does it have chlorophyll ?	Does it float on water ?
4)	Does it submerge in water ?	Does it have chlorophyll?

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- 15 Study the family tree of Dan below. The family tree shows the members who have either single earlobes or attached earlobes.

detached



Key

- ◊ Male attached earlobes
- Female attached earlobes
- ◊ Male detached earlobes
- Female detached earlobes

Which one of the following statements about the family tree is correct?

- (1) Dan's parents have attached earlobes.
- (2) Dan's cousins have detached earlobes.
- (3) Dan has one uncle who has attached earlobes.
- (4) Dan inherited the detached earlobe gene from his cousin.

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MID-YEAR EXAMINATION 2014 PRIMARY 6 SCIENCE

BOOKLET A2

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

INSTRUCTIONS TO CANDIDATES

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Name: _____ ()

Class: Primary 6. _____

Date: 12 May 2014

This booklet consists of 8 printed pages including this page.

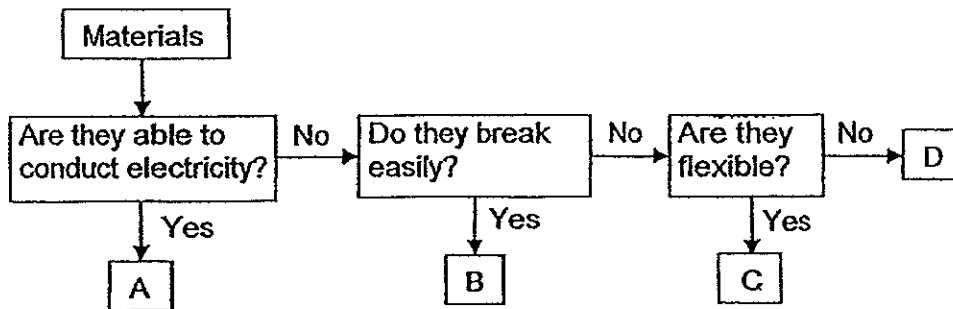
For each question from 1 to 30, four **options** are given, one of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

[60 marks]

16 Which property is the least important when choosing a material to make a frying pan?

- (1) It is hard.
- (2) It is shiny.
- (3) It is durable.
- (4) It conducts heat easily.

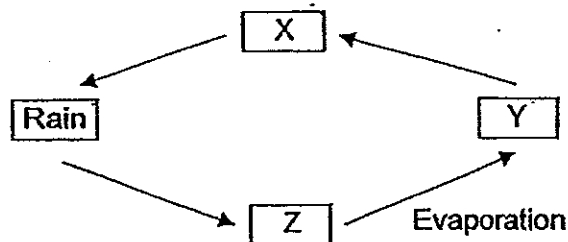
17 Study the flow chart below.



Which of the following identifies A, B, C and D correctly?

	A	B	C	D
(1)	Rubber	Glass	Wood	Iron
(2)	Iron	Glass	Rubber	Wood
(3)	Steel	Wood	Porcelain	Rubber
(4)	Steel	Porcelain	Wood	Rubber

18 The diagram below shows the various stages in the water cycle.



In which stage(s), X, Y or Z, in the water cycle does water have definite volume but no definite shape?

- (1) Z only
- (2) X and Y only
- (3) X and Z only
- (4) X, Y and Z

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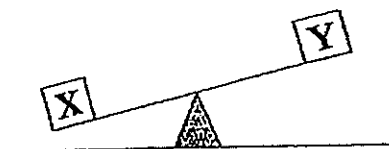
- 19 The table below shows the melting point and boiling point for 4 different substances, P, Q, R and S.

Substance	Melting point ($^{\circ}\text{C}$)	Boiling point ($^{\circ}\text{C}$)
P	17	116
Q	-9	39
R	42	184
S	-104	-37

Which one of the following represents correctly the states of each of the substances P, Q, R and S respectively at 30°C ?

States of substances at 30°C				
	P	Q	R	S
(1)	Gas	Solid	Liquid	Solid
(2)	Liquid	Liquid	Solid	Liquid
(3)	Liquid	Liquid	Solid	Gas
(4)	Solid	Gas	Liquid	Gas

- 20 Rita placed two cubes of the same size made of different materials on a beam balance. The result is as shown below.



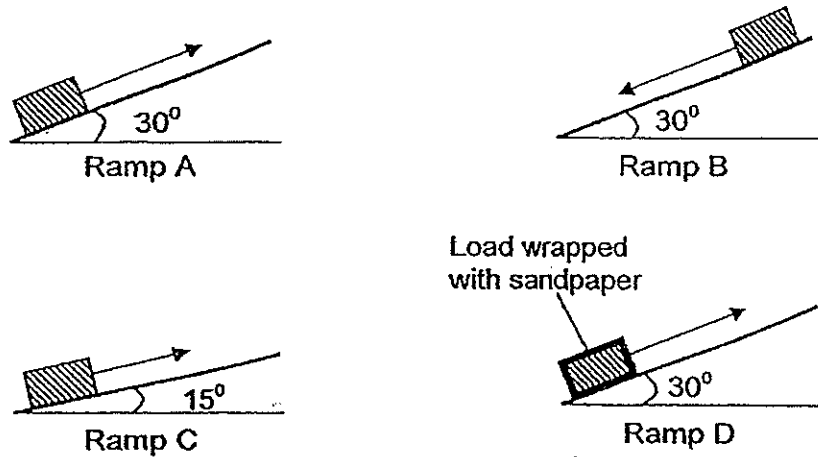
Rita made the following statements:

- A: Object X has a greater mass than Object Y
 B: Object Y takes up less space than Object X.
 C: Object X and Object Y have the same mass.
 D: Object X and Object Y have the same volume.

Which of his statements are correct?

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

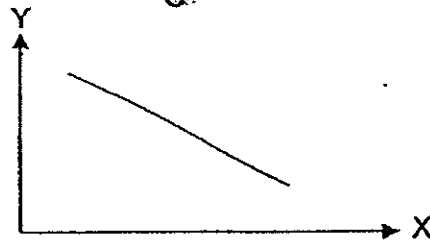
21 The diagrams below show a 20 kg load being pulled along ramps made of different materials.



If the force needed to move the load along the four ramps is the same, arrange the order of the texture of the ramp from the roughest to the smoothest.

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

22 The graph below shows the possible relationship between two variables in an electric circuit. ~~in series arrangement.~~

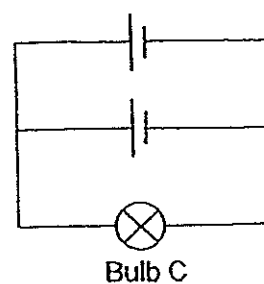
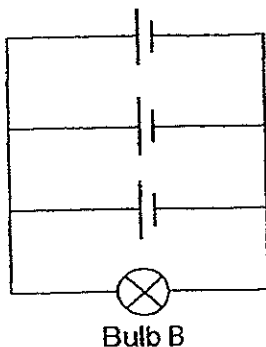
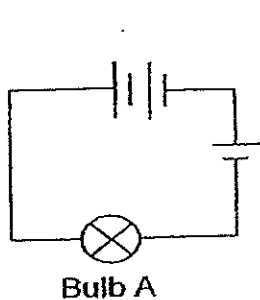


axis

Which of the following could represent both X and Y axes in the graph above?

	X-axis	Y-axis
(1)	Number of Batteries	Brightness of Bulbs
(2)	Number of Bulbs	Brightness of bulbs
(3)	Number of Switches	Brightness of Bulbs
(4)	Number of Bulbs	Voltage of Bulbs

- 23 Study the circuits below carefully. The batteries and bulbs used in all the circuits are identical.



All the three bulbs light up when the circuits are closed. Which of the following statements is/are correct?

- X: Bulb B is the brightest.
 Y: Bulb B and Bulb C are of equal brightness.
 Z: Bulb A will light up for the longest period of time.

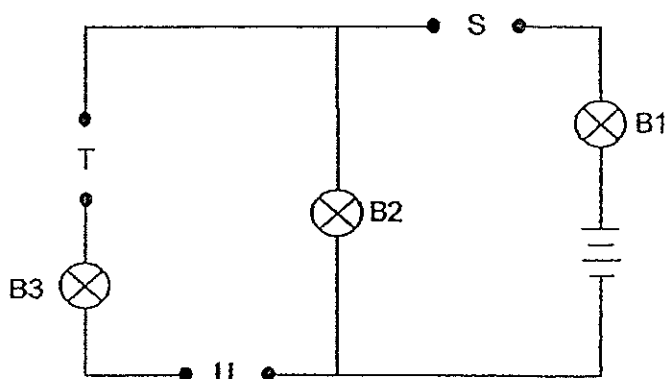
- (1) Y only
 (2) X and Y only
 (3) X and Z only
 (4) Y and Z only

- 24 Which of the following are examples of pushing force at work?

- A: Hoisting a flag.
 B: Playing on the piano.
 C: Bouncing a basketball
 D: A bird flapping its wings.

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

- 25 Three objects, P, Q and R made from different materials are placed in the circuit at various positions, S, T and U, as shown below.



The results of the experiment are shown in the table below.

Position of objects			Bulbs are lighted up		
S	T	U	B1	B2	B3
P	Q	R	Yes	Yes	No
R	P	Q	Yes	Yes	No
Q	R	P	No	No	No

Based on the above information, which of the objects, P, Q or R are insulators of electricity?

- (1) P only
 - (2) Q only
 - (3) P and Q only
 - (4) Q and R only
- 26 Jasmine had four objects of different masses. She hung them one at a time on a spring which had an original length of 7 cm. She then recorded the length of the spring respectively in the table as shown below.

Object	Length of spring (cm)
A	13
B	10
C	15
D	20

What can Jasmine conclude from this experiment?

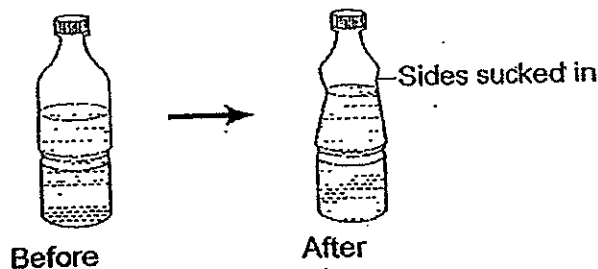
- (1) Object A is the lightest.
- (2) Object B is heavier than Object C.
- (3) The mass of Object A is twice the mass of Object B.
- (4) The mass of Object D is twice the mass of Object B.

- 27 A boy is starting a fire by rubbing a stick on a piece of wood as shown below.



Which of the following shows the energy conversions that take place when the boy rubs the stick against the piece of wood?

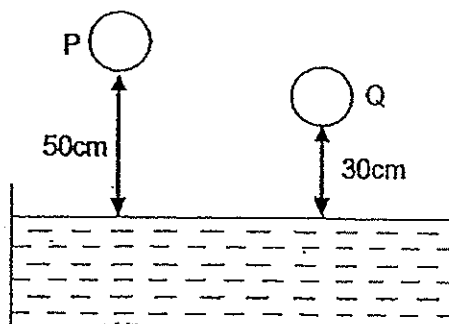
- (1) Kinetic energy \rightarrow potential energy \rightarrow heat + light energy
 - (2) Kinetic energy \rightarrow heat energy \rightarrow light energy
 - (3) Potential energy \rightarrow kinetic energy \rightarrow light energy
 - (4) Potential energy \rightarrow kinetic energy \rightarrow heat + light energy
- 28 John filled a plastic bottle with water and put the half-filled water bottle in the refrigerator. When he took the bottle out the next day, he noticed that sides of the bottle had been sucked in. The diagrams below show the bottle before and after it has been placed in the refrigerator.



What could be the possible explanation for his observation?

- (1) The bottle had cooled down and expanded.
- (2) The air in the bottle lost heat and contracted.
- (3) The air in the bottle gained heat and expanded.
- (4) The water in the bottle gained heat and expanded.

- 29 Two identical balls, each weighing 300g, are dropped from different heights at the same time.



Which of the following statements are correct?

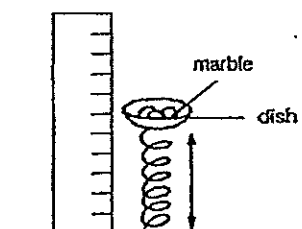
- A: P has more gravitational potential energy than Q.
 B: Q will give a greater splash in the water when both balls are dropped into the water.
 C: P will have more kinetic energy than Q just before they were dropped into the water.

- (1) A only
 (2) A and C only
 (3) B and C only
 (4) All of the above

- 30 Mr Han wanted to find out how the number of marbles affected the length of a spring

He first measured the length of the spring when the dish was empty. He then placed three marbles on the dish and measured the new length of the spring. He repeated the same steps by adding more marbles to the dish and recorded the results in the table as shown.

Number of marbles	Length of spring (cm)
0	50
3	44
6	38
8	34



If the experiment was repeated on a planet with half the gravitational force of Earth, what will the length of the spring be when the same three marbles are placed on the dish?

- (1) 22 cm
 (2) 38 cm
 (3) 44 cm
 (4) 47 cm

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MID-YEAR EXAMINATION 2014 PRIMARY 6 SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ()

Class: Primary 6. _____

Date: 12 May 2014

Booklet A	/ 60
Booklet B1	/ 20
Booklet B2	/ 20
TOTAL	/ 100

This booklet consists of 7 printed pages including this page.

For questions 31 to 44, write your answers clearly in the space provided.

The number of marks available is shown in brackets [] at the end of each question or part question. [20 marks]

31 Yeast is useful in food production. It is used to make bread dough rise.



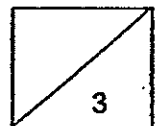
(a) Arrange these statements about the bread baking process in correct order by inserting the numbers, 1, 2, 3 and 4, (1 being the first step), in the spaces provided.

[2]

Statement	Order
The dough is left in a warm place.	
Carbon dioxide produced by respiring yeast makes dough rise.	
Bubbles of gas expand when bread is baked.	
Yeast and sugar are added to flour to make dough.	

(b) Besides sugar and warmth, give another substance that will affect the speed of the process.

[1]



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- 32 The berries shown below are the red, fleshy fruit of a plant. The berries contain seeds which are hard and not easily digested.



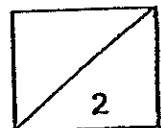
To investigate if having red fruits is an advantage for a green plant, Meihua hung different coloured beads on some green plants. She used the same number of beads of each colour. Meihua gave Andy two minutes to look for the beads.

The table below shows the number of beads of each colour found by Andy.

Colour of beads	Number found in 2 minutes
Black	20
Green	9
Red	26

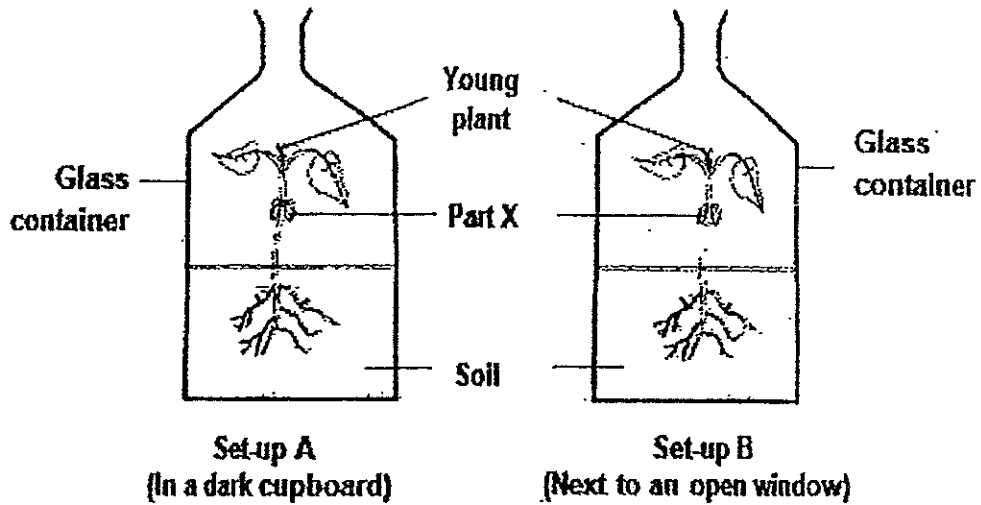
- (a) Based on the results, suggest why it is an advantage for the berries to be red. [1]

- (b) Suggest a reason why the number of green beads is the least number of beads found by Andy. [1]



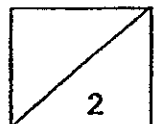
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- 33 Jeremy planted a bean seed in each of the two similar glass containers below. He placed set-up A in a dark cupboard and set-up B next to an open window. He watered the seeds daily. After 5 days, he observed that both seeds had germinated as shown in the diagram below.



- (a) Based on the findings above, explain if light is needed for seeds to germinate. [1]

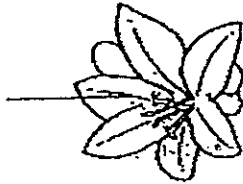
- (b) What is the function of part X before the leaves start to grow? [1]



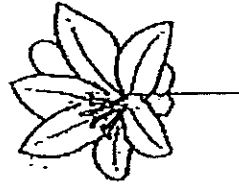
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- 34 Ravi carried out an experiment to find out if bees are attracted to water with sugar. He used two similar plastic flowers of different colours and sprayed each of them with 5 ml of water with sugar as shown below.

Pink plastic flower
sprayed with 5ml
of water with
sugar



Flower A



Flower B

Yellow plastic
flower
sprayed with
5ml of water
with sugar

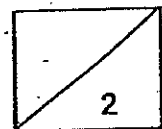
The plastic flowers were left in an open garden for five hours. The number of bees visiting each flower was counted.

However, his teacher, Mrs Tan, told him that his experiment was not a fair one.

State two changes that Ravi would have to make to his set-up to ensure a fair experiment. [2]

(i)

(ii)



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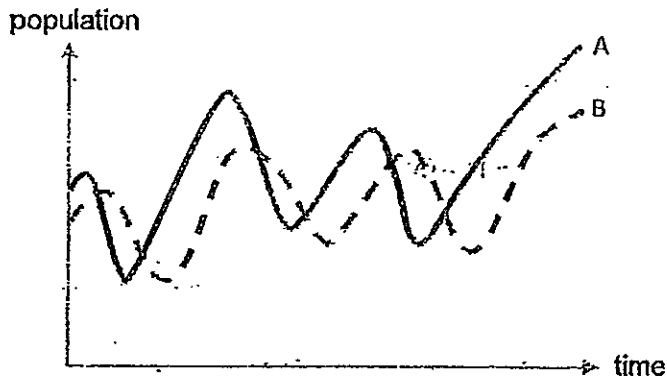
35 The diagram below shows a fish and a human swimming in the water.



(a) Name one characteristic that helps the fish and the human swim in the water. [2]

(b) How do both breathe while swimming in the water? [2]

36 The graph below shows the relationship between a plant eater and an animal eater.



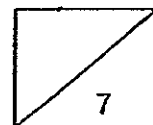
(a) What are organisms A and B?

Prey	
Predator	

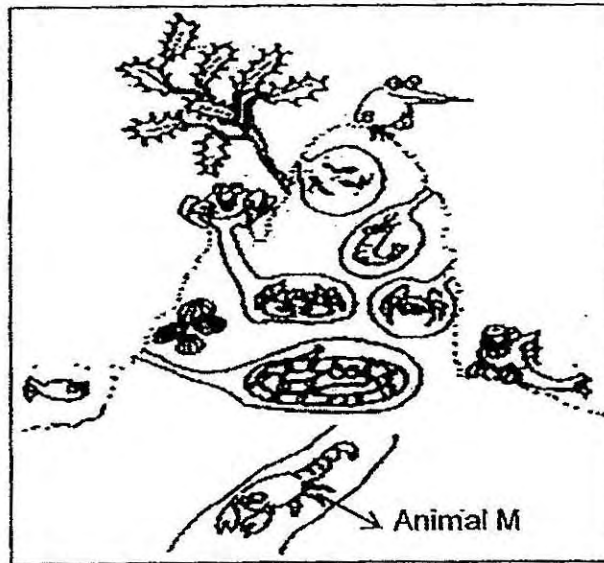
 [1]

(b) What can you infer from the graph about keeping a balance in a food chain? [2]

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- 37 Animal M lives deep under the swamp mud mound it builds. It feeds on the mud as it digs into the mud and recycles nutrients from deep underground. Some animals are found living in this mud mound. Plants also grow on this mound.



- (a) How does the mud mound benefit these animals? [1]
-
-
- (b) How does the waste of animal M benefit the plant? [1]
-
-
- (c) Give a possible reason why the plant population gradually multiplies on the mud mound.
-
-
- (d) In what way is animal M similar to the earthworm in their feeding diet? [1]
-
-

METHODIST GIRLS' SCHOOL
Founded in 1887



MID-YEAR EXAMINATION 2014
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ()

Class: Primary 6. _____

Date: 12 May 2014

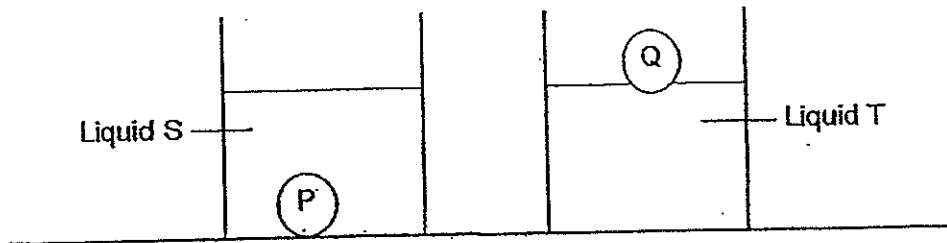
Booklet B2	/ 20
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This booklet consists of 8 printed pages including this page.

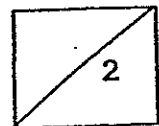
For questions 38 to 44, write your answers in the spaces provided. The number of marks available is shown in brackets [] at the end of each question or part question.

[20 marks]

- 38 When Ball P is placed in Liquid S and Ball Q is placed in Liquid T, the positions of the Ball P and Ball Q are shown in the diagrams below.



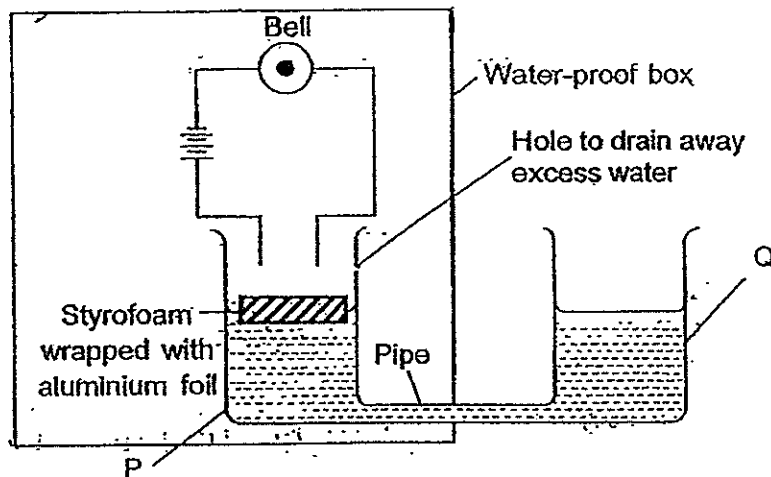
Given that Liquid S is water and Liquid T is oil, draw and label the diagram in the space below to show the possible outcome when Liquid S, Liquid T, Ball P and Ball Q are put together in a container. [2]



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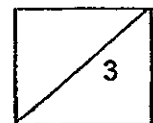
39 Mr Singh designed a simple flood warning device as shown in the diagram below.

Parts P and Q of a tank are linked by a horizontal pipe and their water levels will always be equal. P and the electric circuit are kept covered in a water-proof box, while Q is left uncovered outdoors. When it rains, the rain water collects in Q and causes the water level in P to rise as well.



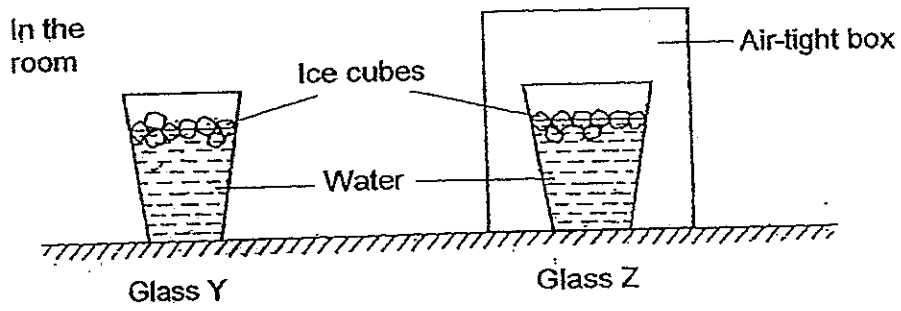
(a) Explain how a heavy rain can cause the alarm in the flood warning device to sound. [2]

(b) Why is the circuit housed in a water-proof box? [1]



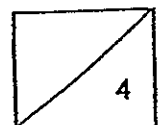
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40 Sifi left two identical glasses of ice water, Y and Z, in a room as shown below.



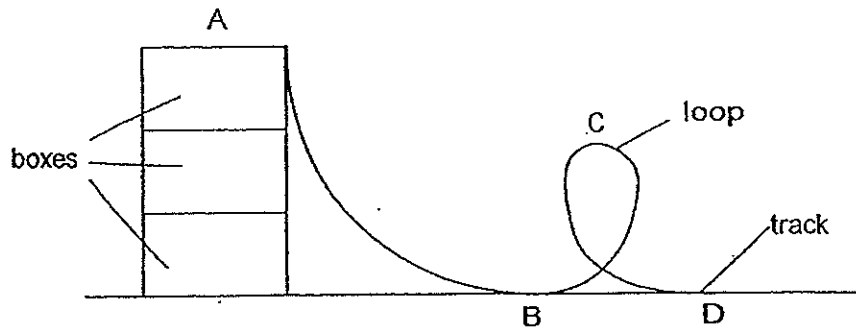
(a) What will you observe for both glasses after ten minutes? [2]

(b) Explain your answer in (a). [2]



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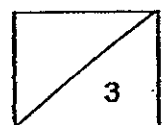
- 41 The diagram below shows a track that Calvin set up. He wanted his toy car to move up the loop to the end of the track. The toy car is not operated by battery.



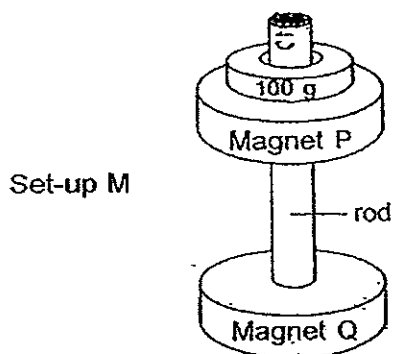
- (a) Explain why the top of the loop (point C) has to be constructed lower than Point A. [1]

- (b) Calvin stacked more boxes to raise the starting height.

State and explain his observation about the distance moved by the car. [2]

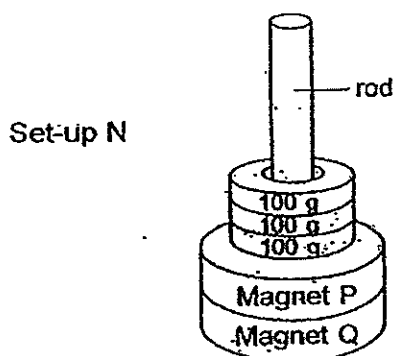


- 42 Zihua placed a 100g mass and two ring magnets P and Q, through a wooden rod as shown in Set-up M.

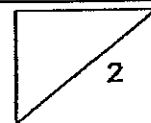


- (a) Why is Magnet P floating above Magnet Q? [1]

When Zihua placed two additional 100g masses on top of Magnet P, it falls on top of Magnet Q as shown in the set-up N.

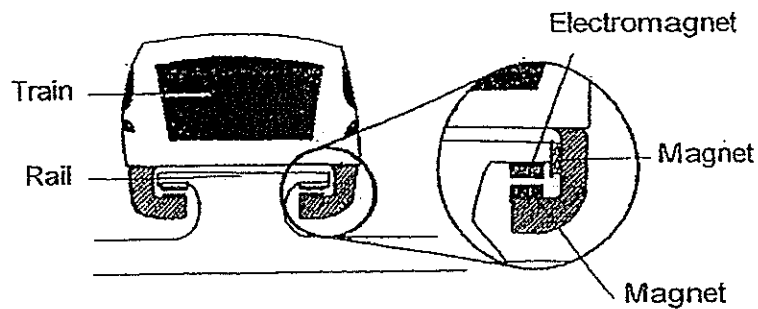


- (b) Compare the magnetic force between Magnets P and Q and the gravitational force exerted by the masses in both set-ups. What is the difference between the two forces? [1]



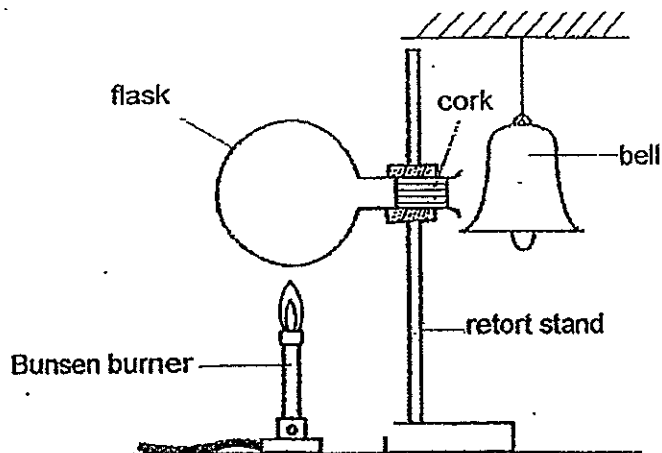
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The diagram shows a Maglev train, which uses the magnet force between the train and the tracks, to move quickly.



- (c) Based on your answers in (a) and (b), what must engineers do to ensure that the situation in Set-up N would not happen to the Maglev train? [1]

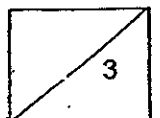
- 43 Mr Lee set up a flask stoppered with a cork, positioned near to but not touching the bell. He warmed the flask by supplying heat using a Bunsen burner.



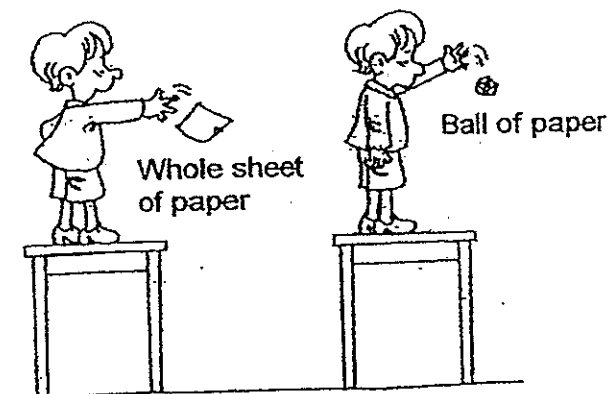
- (a) Describe what happens after some time. [1]

- (b) Provide an explanation for your answer in (a) [1]

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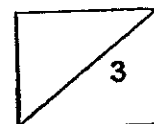
- 44 Tim took two identical sheets of paper, crushing one of them into a ball of paper. He then released both pieces of paper from a height of 2.5m above the ground and measured the time taken for each piece of paper to reach the ground.



- (a) What is the relationship between the surface area of the paper and the time taken for it to reach the ground? [1]

- (b) Explain your answer in (a). [1]

- (c) What were the effects of the force applied on the whole sheet of paper as Tim crushed the sheet of paper into a ball? [1]



ANSWER SHEET

EXAM PAPER 2014

SCHOOL : MGS

SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	3	2	4	2	1	4	2	3	4	2	2	4

31)a) 2 3 4 1
b) water

32)a) Red is a striking colour, thus it allows animals to spot it easily and hence the plant able to disperse its seeds more efficiently.

b) The green beads camouflaged with the leaves of the plant, thus Andy could not spot many green beads.

33)a) Light is not needed for germination as the plant only needs light to make food. However, the plants leaves have not grown yet and can not make their own food.

b) X provides the seedling with food before its leaves start to grow.

34)i) Ravi should change the colour of one flower to the same colour as the other flower.

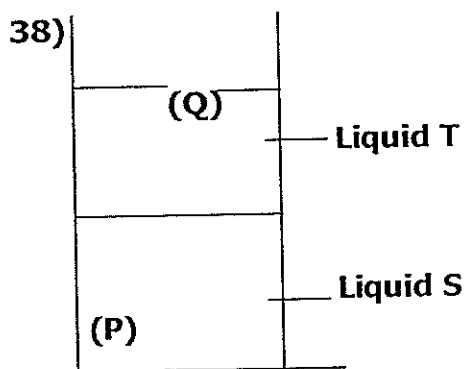
ii) He should ensure that one of the flowers is not sprayed with the mixture of water sugar.

35)a) They have fins or hands that allow them to swim in the water.
 b) The fish take in dissolved oxygen from the water through its gills but the human has to come up for air while swimming as it breathes through lungs.

36)a) Prey : A
 Predator : B

b) It is important to keep a balance in a food chain as some animals depend on other animals for food. When there is a decrease in the plant-eaten population, the meat-eaten population will decrease. The plant-eaten will gradually increase and feed on more plants resulting in the decrease of plants. Finally, the plant-eaten will decrease over time.

37)a) The mud mound provides a place for animals to live.
 b) It fertilizes the mud and the plant would grow even better.
 c) The waste from all the animals fertilizes the mud and they the plant would grow and reproduce well.
 d) Both M and the earthworm recycle nutrients from deep underground.



39)a) The heavy rain will fill Q, thus also filling P, causing the Styrofoam wrapped in aluminium foil to rise along with the water sounding the device as aluminium foil as a conductor of electricity it close the circuit, sounding the device.

b) It is to keep the circuit dry so that it will protect people from getting an electric shock when they touched a wet circuit.

40)a) There would be tiny water droplets on the outer surface of Y but nothing would happen to Z. Ice has melted and water droplets are seen on the outer surface of Y. Ice has melted and no water droplets are seen on the outer surface of Z.

b) The water vapour from the surrounding air came into contact with the cooler outer surface of Y. It loss heat and condenses into water droplets. However Z was put in a air-tight box, thus no air would condense into water droplets on the outer surface of glass Z.

41)a)The gravitational potential energy of the toy car at point A is converted to kinetic energy as it travels to point B but some of it is lost as heat and sound energy. Making point C lower than point A ensures that the toy car has sufficient kinetic energy to reach and pass through to the top the loop.

42)a)The poles of magnet P and Q that were facing each other were like poles and like poles repel each other.

b)The gravitational force exerted by the masses was stronger than the magnetic force between P and Q.

c)The engineers need to ensure that the magnetic force of repulsion is equal to the gravitational force acting on the train which is affected by the number of passengers on it. This ensures that the train will float above the track and not press down against it.

43)a)The cork shoots out of the flask and hit the bell, making the bell ring.

b)As the Bunsen heated the flask, the air inside it expanded more than the flask, pushing the cork out and thus it hit the bell.

44)a)The larger the surface area of the paper, the longer it takes to reach the ground.

b)The large surface area of the paper increase the air resistance pushing the paper, the air slows the paper down.

c)Tim changed the shape of the paper.

