



2018 PRIMARY 6 SEMESTRAL ASSESSMENT 1

Name: _____ ()

Date: 10 May 2018

Class: Primary 6 ()

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

Parent's Signature: _____

Marks: _____ / 56

SCIENCE BOOKLET A

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

Booklet A (28 x 2 marks)

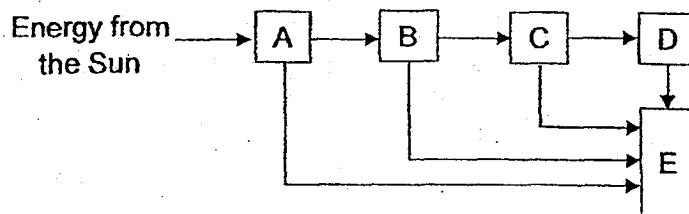
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet. (56 marks)

1. The Sun is useful because it _____.

- A provides light for plants to make food
- B produces oxygen for all living things
- C provides heat for all living things

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

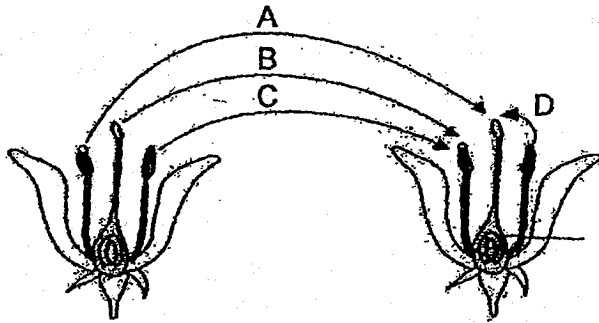
2. The diagram below represents the transfer of energy between organisms in a habitat.



Which 2 letters represent animal-eaters?

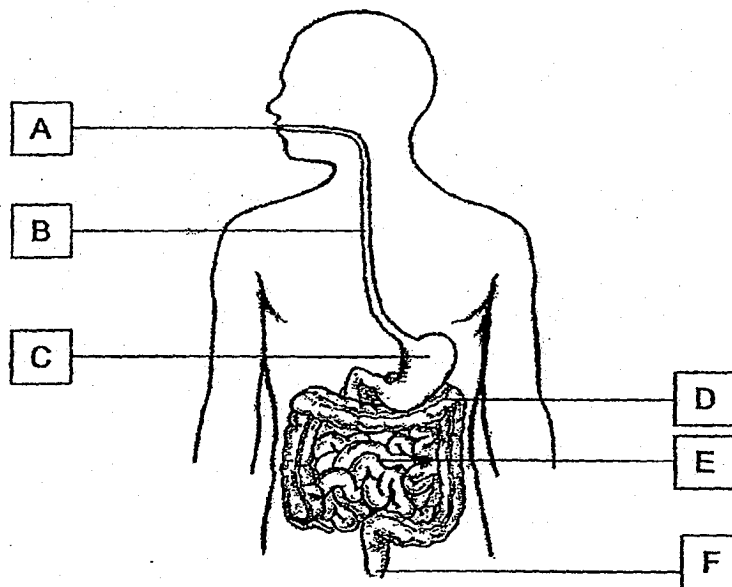
- (1) A and B
- (2) B and C
- (3) C and D
- (4) D and E

3. The diagram below shows two flowers on the same plant:



Which of the above arrow(s) represent(s) pollination?

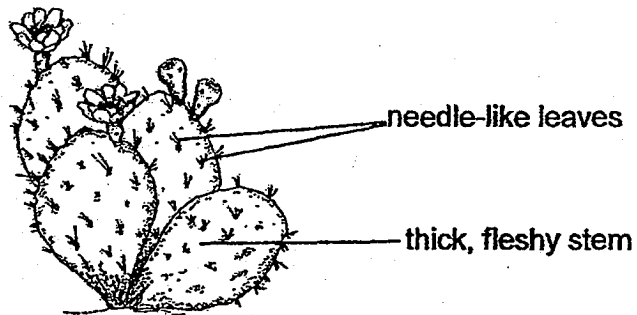
- (1) B only
 - (2) A and D only
 - (3) B and C only
 - (4) A, C and D only
4. The diagram below shows the digestive system of a human body.



Which part(s) shown above does not carry out digestion?

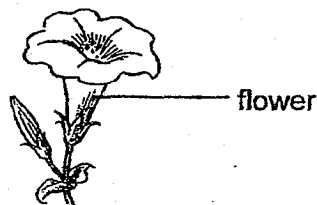
- (1) B only
- (2) A, B and F only
- (3) B, D and F only
- (4) B, E and F only

5. The picture below shows a plant with thick, fleshy stems.



This plant has adapted to survive best in _____.

- (1) ponds
 - (2) deserts
 - (3) swamps
 - (4) polar regions
6. The diagram below shows a flower of a plant.



Which of the following birds would most likely feed on the nectar of the above flower?



(2)



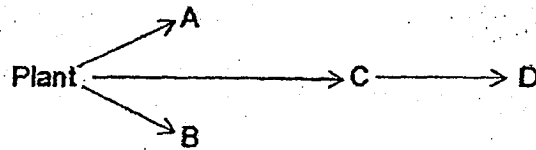
(3)



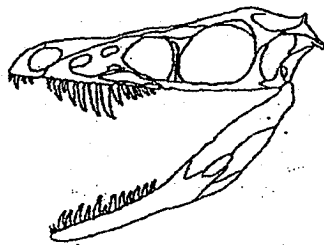
(4)



7. The food web shows the relationships between a producer and organisms A, B, C and D in a community.

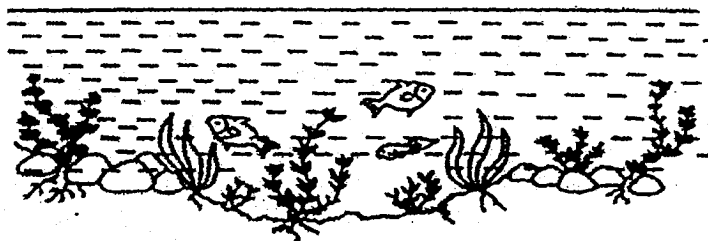


The jawbone of one of the organisms is shown below.



Which organism in the above food web is most likely to have such a jawbone?

- (1) A
 - (2) B
 - (3) C
 - (4) D
8. The diagram below shows a pond community.



How does the presence of the animals benefit the water plants?

- A The water plants are a source of food for the animals.
 - B The animals' waste provides nutrients for the water plants.
 - C The animals produce carbon dioxide for the water plants to make food.
- (1) A and B only
 - (2) A and C only
 - (3) B and C only
 - (4) A, B and C

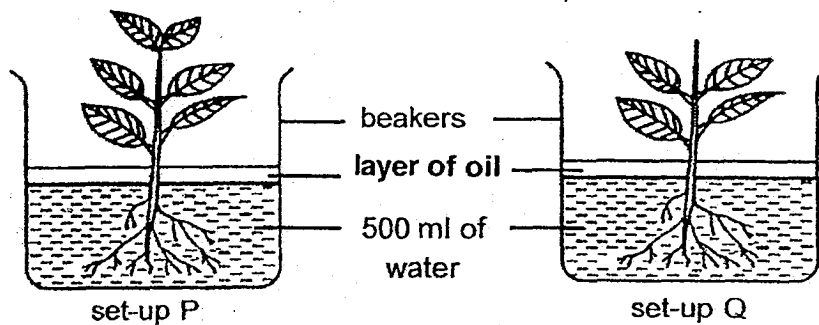
9. Organisms W, X, Y and Z are found in a food chain as shown below.

W → X → Y → Z

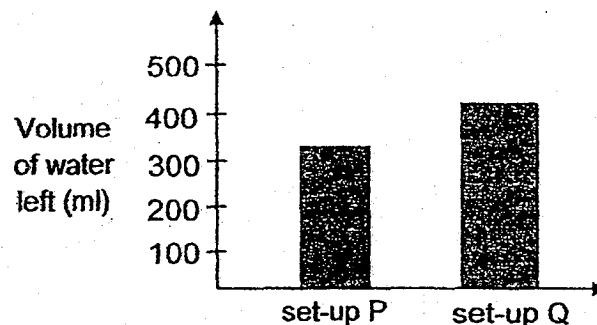
If the population of organism Y increases quickly due to abundance of food provided by Man, which one of the following below shows correctly the immediate changes in the populations of organisms X and Z?

	X	Z
(1)	decrease	decrease
(2)	decrease	increase
(3)	increase	decrease
(4)	increase	increase

10. Musa set up P and Q as shown below using identical type of plants.



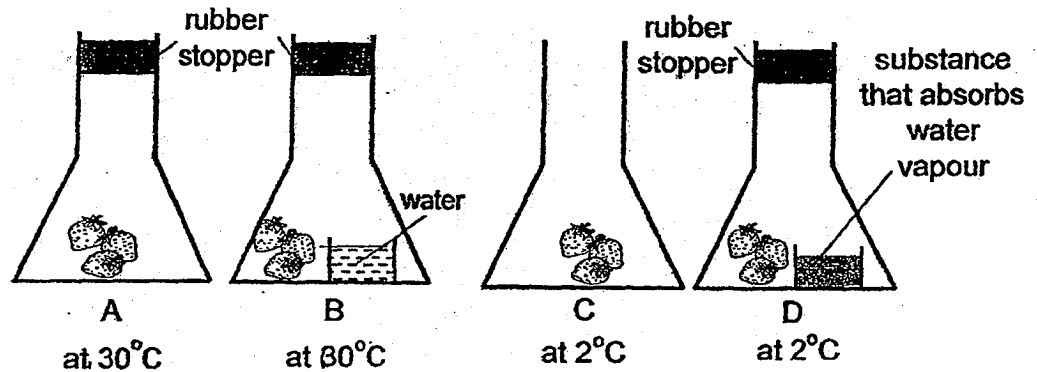
After a few days, Musa recorded the amount of water left in the beakers and plotted his findings in a graph as shown below.



Which of the following statements about the experiment is correct?

- (1) The oil stops the plant from taking in water.
- (2) Plant in set-up P loses more water than plant in set-up Q.
- (3) 100 ml of water is evaporated from the beaker in set-up P.
- (4) Plant in set-up Q takes in more water than plant in set-up P.

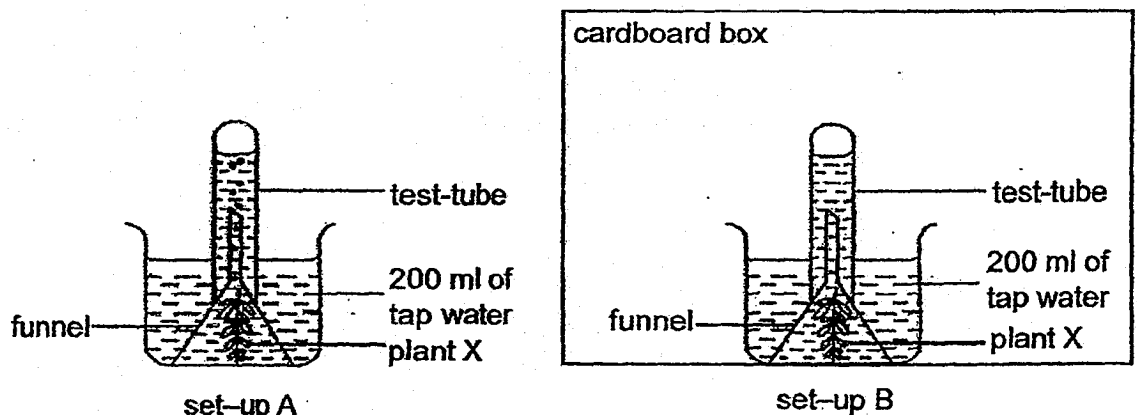
11. Susan set up an experiment to find out about the conditions needed to slow down the rate of decomposition of a fruit. Three fruits of the same type were placed in each of the flasks A, B, C and D and kept in different conditions as shown below.



Which of the above set-ups A, B, C or D would the fruits be kept fresh for the longest period?

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

12. Amelia prepared the set-ups A and B to find out if a certain factor affects the rate of photosynthesis of plant X. She left set-up A in a well-lit room and set-up B in a cardboard box.

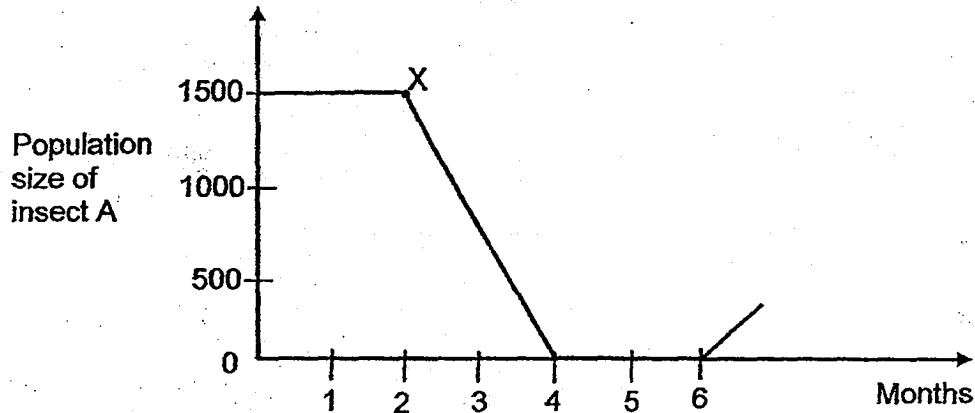


Which of the following factors was the changed variable of her experiment?

- (1) presence of light
- (2) amount of water
- (3) presence of carbon dioxide
- (4) amount of chlorophyll in the plant

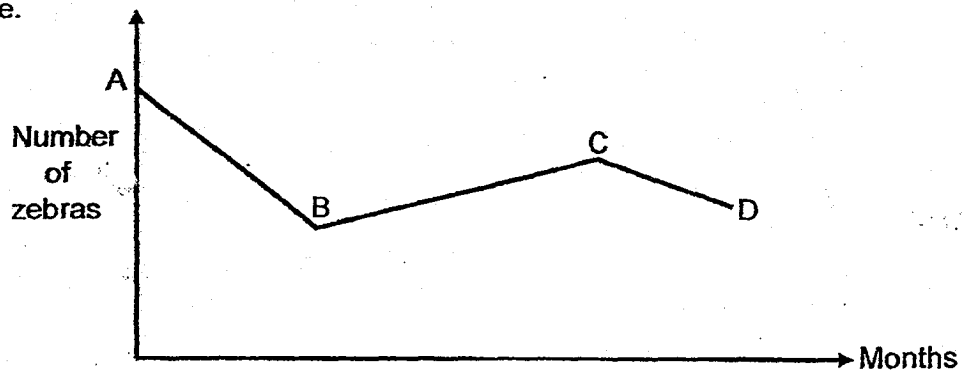
13. A farmer found a population of harmful insect A on his farm. The length of the life cycle of insect A is one month. The farmer used a certain method at X as shown in the graph and managed to kill all the eggs, young and adults of insect A by the end of two months.

The graph below shows the population size of insect A on the farm before and after the method was used.



Which of the following is a likely reason for the increase in the population size of insect A after Month 6?

- (1) The prey of insect A increased.
 - (2) Insect A from other places migrated to the farm.
 - (3) The method used prevents the eggs of insect A from hatching.
 - (4) The surviving insect A reproduced faster by laying more eggs.
14. The graph below shows the changes in the number of zebras on a grassland over time.



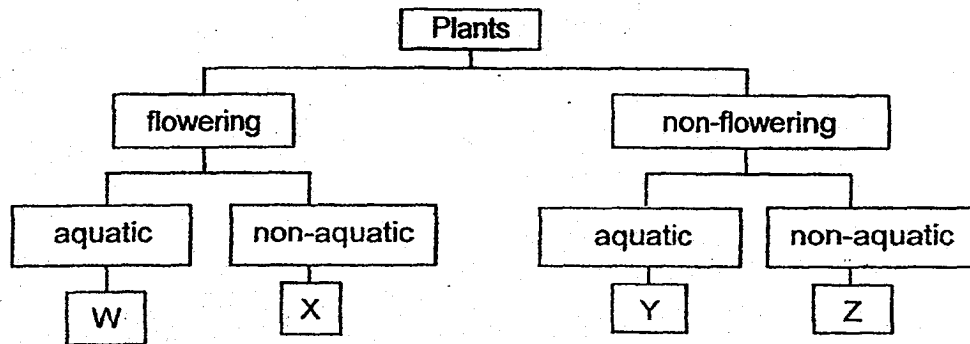
Based on the graph above, which one of the following is a possible reason for the change in the number of zebras?

- (1) The grassland was partly cleared to build houses from C to D.
- (2) There was a spread of disease affecting the zebras from B to C.
- (3) The number of predators feeding on the zebras decreased from A to B.
- (4) There was an increase in the grass available for the zebras to eat from C to D.

15. The table below shows the characteristics of two plants, A and B. A tick (✓) shows the characteristic that each plant has.

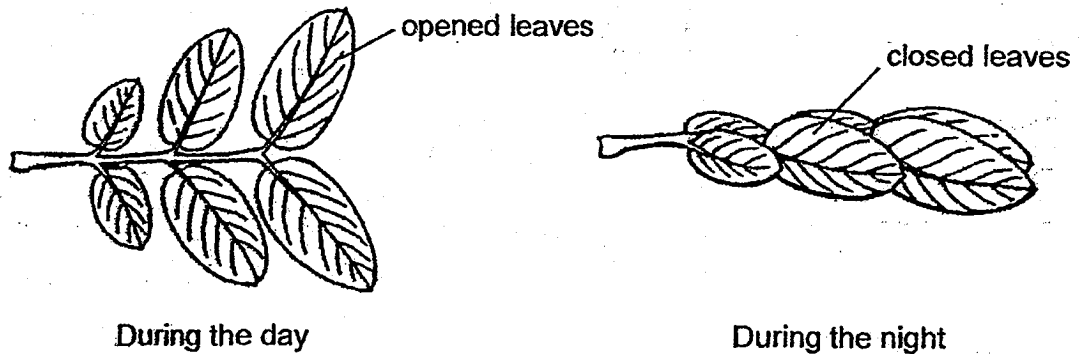
Characteristic	Plants	
	A	B
Bears fruit		✓
Grows on land	✓	

From the information given above, identify the groups that plants A and B belong to in the classification chart below.



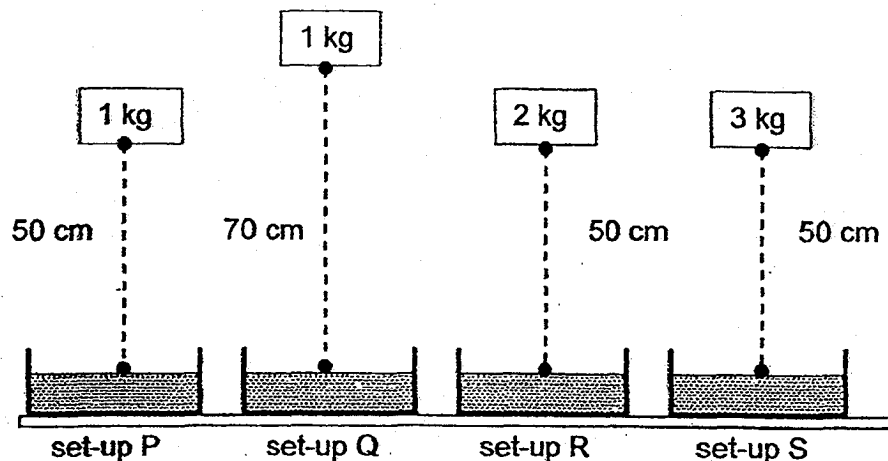
	Plant A	Plant B
(1)	W	X
(2)	Y	X
(3)	Z	W
(4)	Z	X

16. Below shows what happens to the leaves of a plant during the day and night respectively.



Which of the following characteristics of living things is shown above?

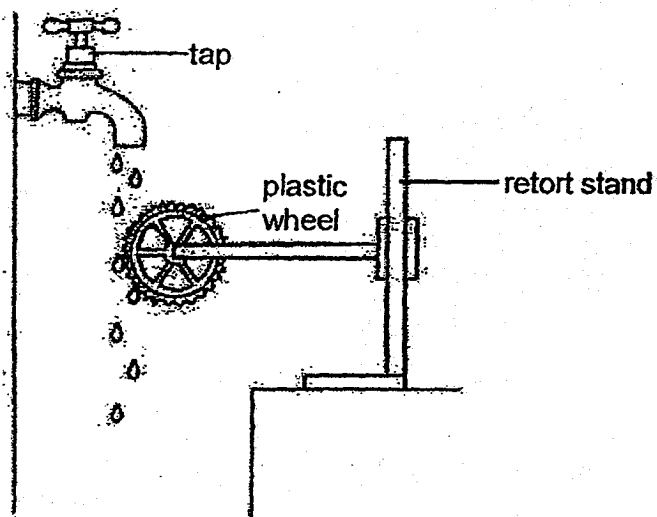
- (1) Living things can reproduce.
 - (2) Living things need air to survive.
 - (3) Living things respond to changes.
 - (4) Living things need water to survive
17. Peter wanted to find out if the height of an object affects the depth of the dent made in the sand.



Which two set-ups should he use to conduct a fair test?

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

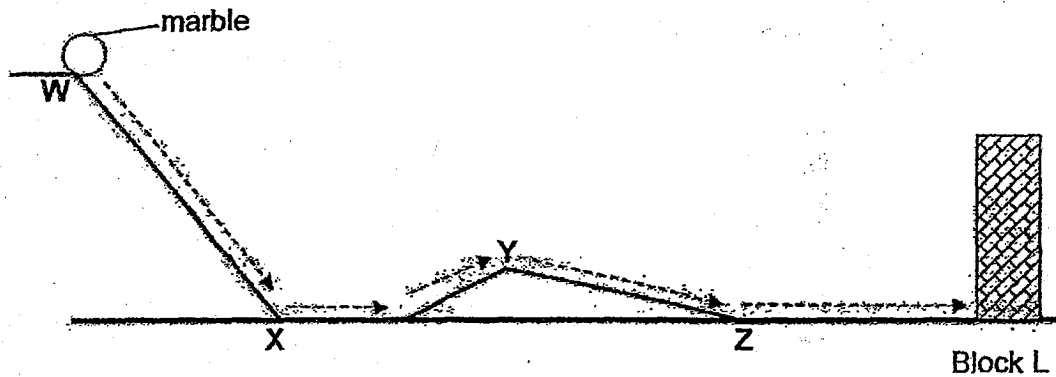
18. Study the set-up shown below.



Which of the following action(s) would make the wheel spin faster?

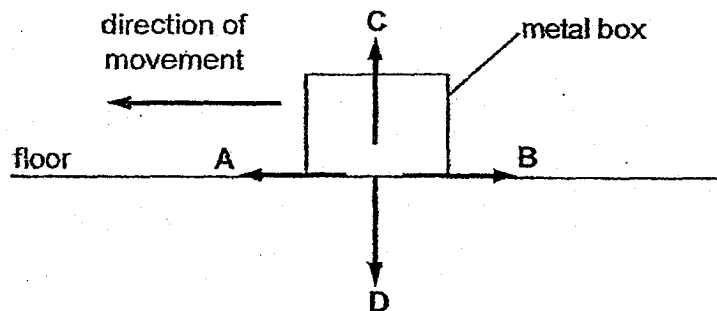
- A Increase the water flow of the tap.
 - B Increase the distance between the tap and the wheel.
 - C Use an iron wheel of similar size instead of a plastic wheel.
- (1) B only
(2) A and B only
(3) A and C only
(4) A, B and C

19. Raju released a marble from point W at the top of a ramp. The marble travelled all the way to the wooden block L and hit it with a soft thud before stopping completely.



Which one of the following statements below is true?

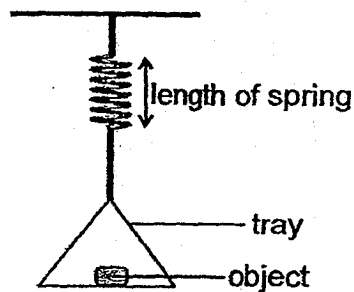
- (1) At point W, the marble had maximum kinetic energy.
 - (2) The marble has more gravitational potential energy at point X than point Y.
 - (3) When the marble hit block L, all of its energy was converted to heat energy.
 - (4) The marble increases in kinetic energy as it moves from point Y to point Z.
20. A metal box was moved across the floor as shown in the diagram below.



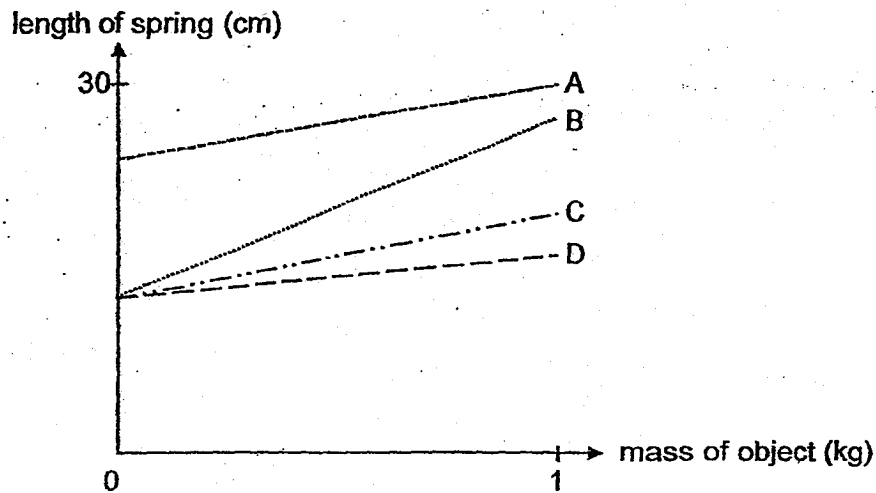
Which of the arrows A, B, C or D, represent the directions of frictional force and gravitational force acting on the box?

	Frictional force	Gravitational force
(1)	C	D
(2)	D	B
(3)	B	D
(4)	A	D

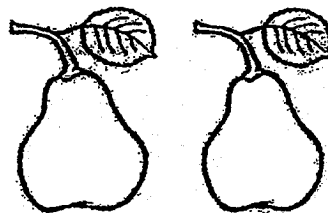
21. Amanda used the set-up below to study four types of springs, A, B, C and D.



She placed objects of different mass on each spring and measured the length of the spring. The results are shown in the graph below.



Using the same set-up, Amanda wanted to compare the mass of two pears below.

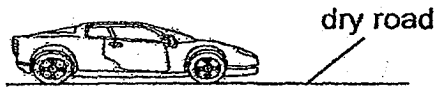


Which spring, A, B, C or D, is the most suitable for her set-up?

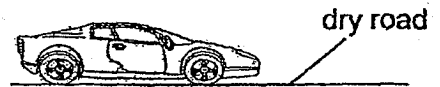
- (1) A
- (2) B
- (3) C
- (4) D

22. Which of the following would require a greater force to stop the moving car?

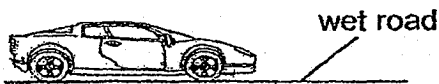
(1) car travelling at 90 km/h



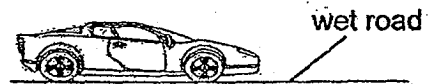
(2) car travelling at 50km/h



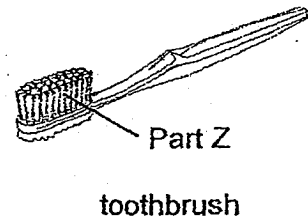
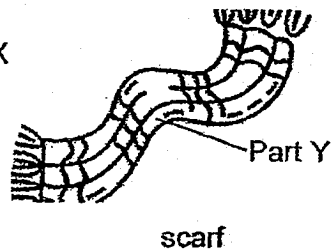
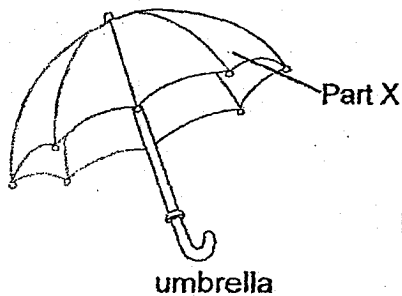
(3) car travelling at 50 km/h



(4) car travelling at 90km/h



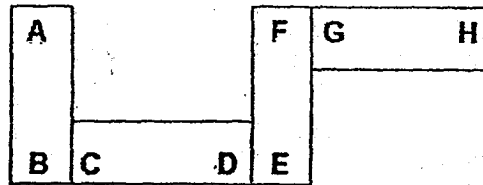
23. Below are three objects.



What is a common property Part X, Part Y and Part Z must have in order to work properly?

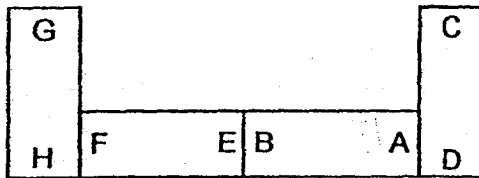
- (1) Flexible
- (2) Waterproof
- (3) Transparent
- (4) Able to float

24. Sharon was able to arrange four bar magnets as shown below.

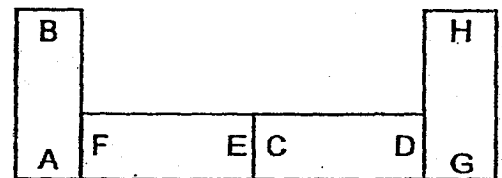


Which of the following is another possible arrangement of the above magnets?

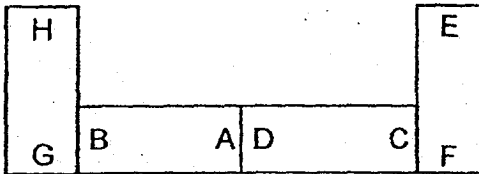
(1)



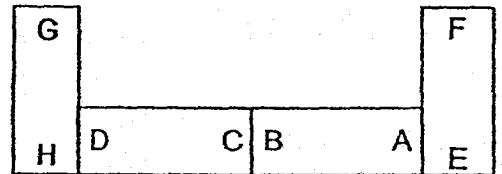
(2)



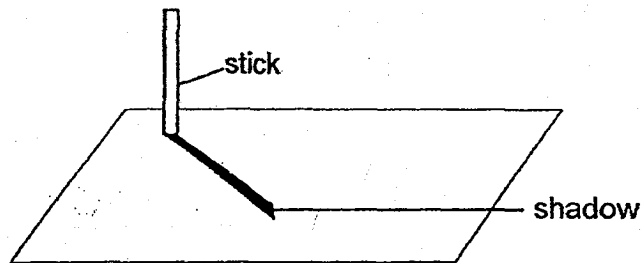
(3)



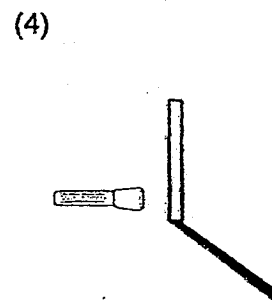
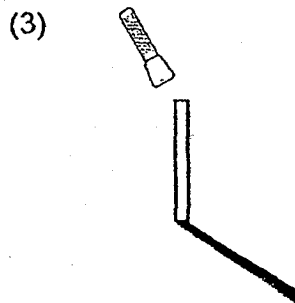
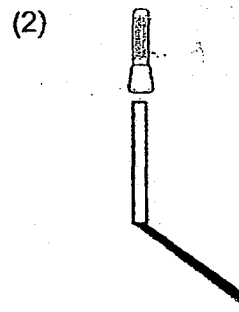
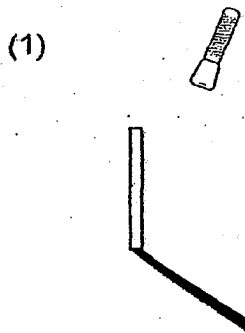
(4)



25. Susan shone a torch at a wooden stick forming a shadow as shown in the diagram below.



Which of the following diagrams below shows the correct position of the torch and the shadow of the wooden stick?



26. Sheela used the set-ups below to find out more about solids X and Y. She placed each of the solids on the weighing balance as shown in Diagram 1. Then, Sheela placed each of the solids into two containers with the same volume of water. Her results are shown in Diagram 2.

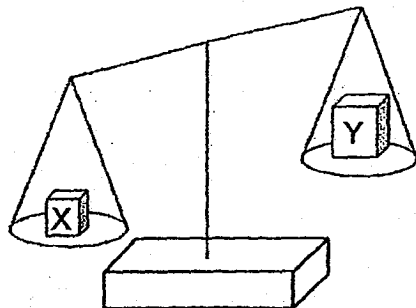


Diagram 1

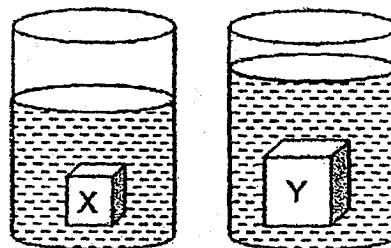


Diagram 2

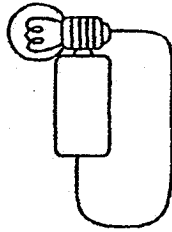
Based on Sheela's observations in the set-ups above, what can she conclude about solids X and Y?

- A Solid X has a smaller mass than Solid Y.
- B Solid X has a greater mass than Solid Y.
- C Solid Y occupied more space than Solid X.

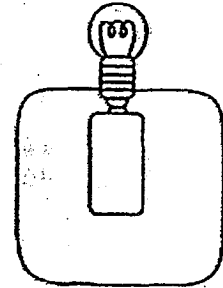
- (1) B only
- (2) C only
- (3) A and C only
- (4) B and C only

27. The diagrams below show four circuits. Which of the circuits will the bulb light up?

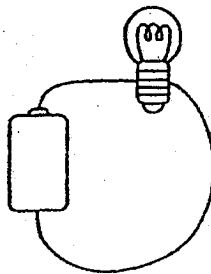
(1)



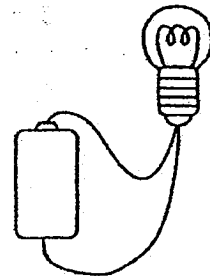
(2)



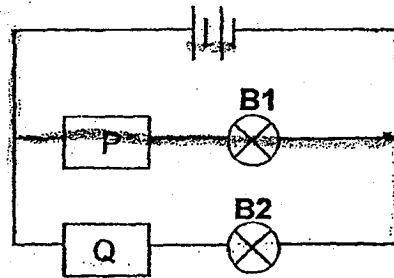
(3)



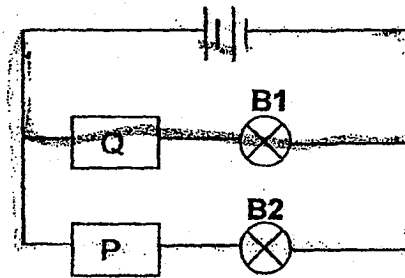
(4)



28. Cynthia set up the circuit as shown below with rod P and rod Q. Bulb B1 lit up but Bulb B2 did not light up. Cynthia then exchanged the positions of rod P and rod Q. Both bulbs did not light up.



Before exchange



After exchange

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

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



2018 PRIMARY 6 SEMESTRAL ASSESSMENT 1

Name : _____ ()

Date: 10 May 2018

Class : Primary 6 ()

Time: 8.00 a.m. – 9.45 a.m.

Parent's Signature : _____

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

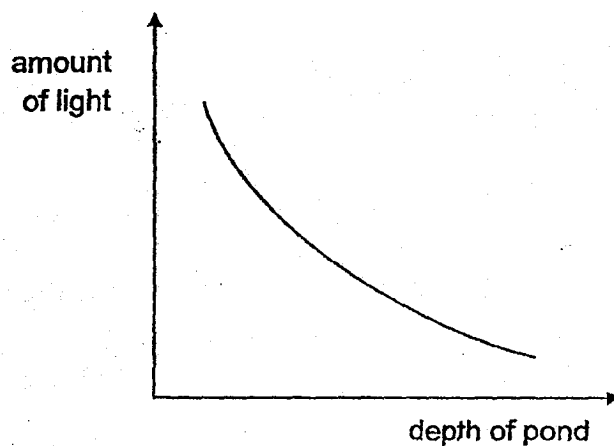
Booklet A	56
Booklet B	44
Total	100

Booklet B (44 marks)

For questions 29 to 40, write your answers clearly in this booklet.

The number of marks available is shown in brackets [] at the end of each question or part question. (44 marks)

29. Devi wanted to study how well the water plants are growing in a pond. She measured the amount of light at different depths of a pond. The graph below shows her findings.



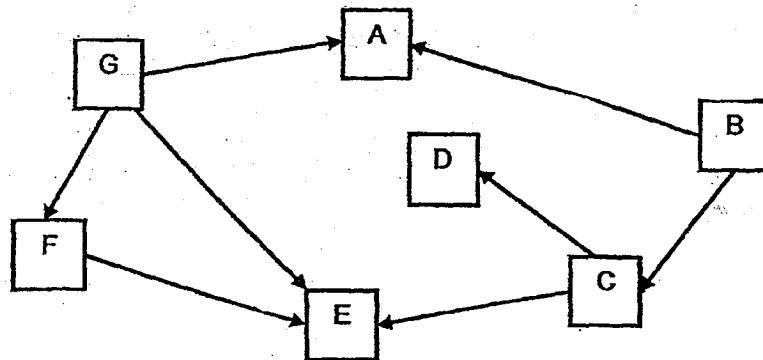
- (a) Based on the graph above, what is the relationship between the amount of light in the pond and the depth of the pond? [1]

- (b) Plants that grow completely under water require sunlight to make food. State two factors that affect the amount of light received by these water plants. [2]

(i) Factor A: _____

(ii) Factor B : _____

30. The food web below shows the relationship between some organisms in a habitat.



a) Based on the food web above, identify the organism(s) which is/are a/an

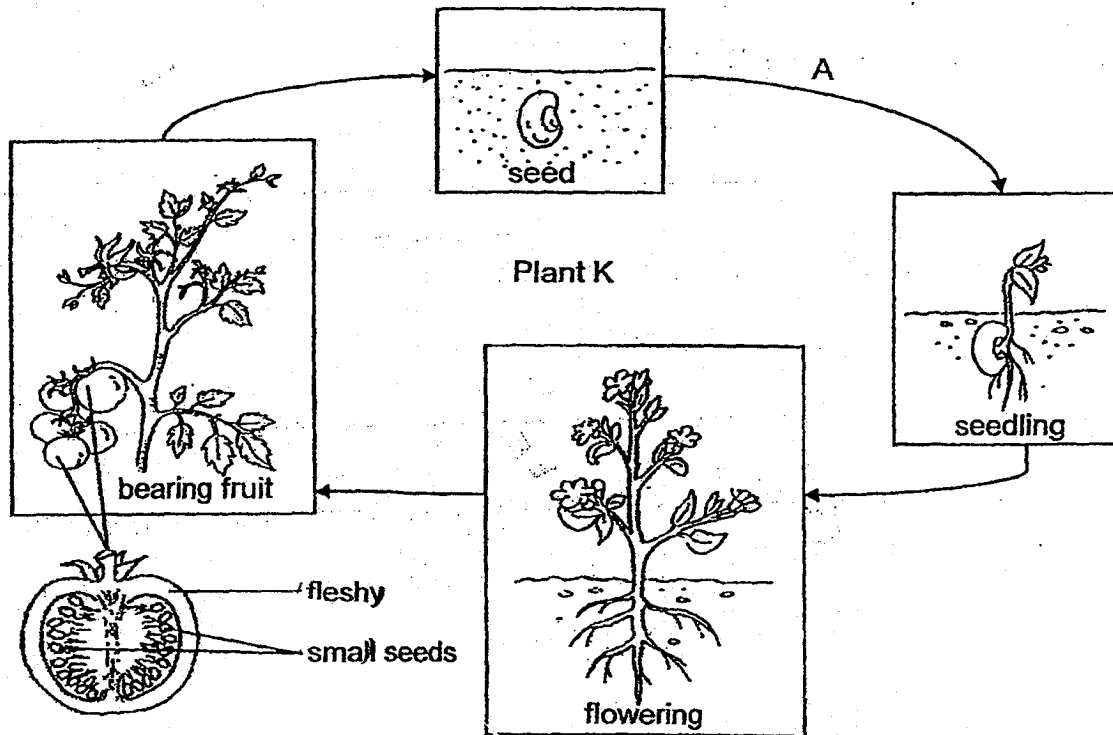
i. animal-eater: _____

ii. plant-and-animal-eater: _____ [1]

b) What would be the immediate effect on the population of organism D if all of organism E were removed from the habitat? Explain your answer. [2]

c) A new predator of organism C was introduced to this community. Explain how this led to a decrease in the population of organism D. [1]

31. The diagram below shows the stages of growth of a flowering plant K.



(a) What are the conditions needed for process A to take place? [1]

(b) Sam planted the above plant in his garden. After a few years, he found two young plants of plant K, growing in his neighbour's garden. Based on the characteristics of the plant shown in the diagram above, state the method of dispersal of the seeds that enabled the seeds to be dispersed to his neighbour's garden. [1]

(c) Based on your answer in (b), explain how the seeds are dispersed to Sam's neighbour's garden? [2]

32. Ali, Ben, Caden and Danny were each given an identical plastic ball. They were told to inflate the ball. The table below shows the number of breaths needed by each of them to inflate the ball fully.

	Ali	Ben	Caden	Danny
Number of breaths	12	10	14	8

- (a) Lung capacity is the amount of air a person can take in with each breath. Who had the largest lung capacity? Explain your answer. [1]

Ali inflated another ball with a pump. However, he mixed up the two balls and could not identify the ball that was inflated using a pump.

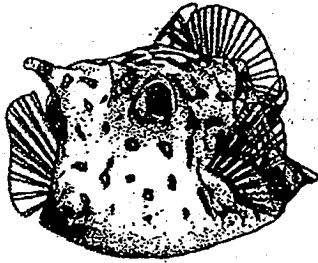
He labelled the two balls X and Y and tested the composition of the air in ball.

Name of gas	Composition of air in Ball X [%]	Composition of air in Ball Y [%]
Nitrogen	78.0	78.0
Oxygen	21.0	15.0
Carbon Dioxide	0.04	4.0
Water Vapour	0.96	3.0

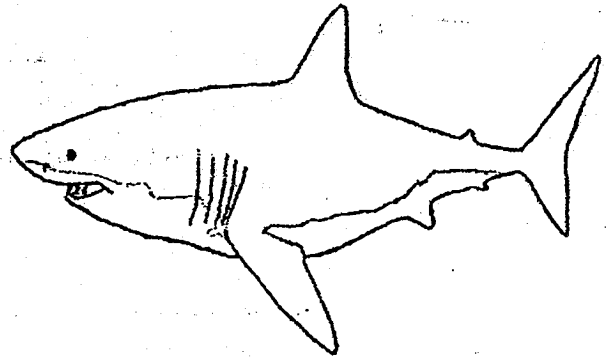
- (b) Based on the results shown in the graph above, which ball was inflated with the pump? Give a reason for your answer. [1]

- (c) The four boys decided to go for a run around the park. As they ran, they noticed that their breathing rates started to increase. Explain why. [2]

33. Study the diagrams of fish A and B below.



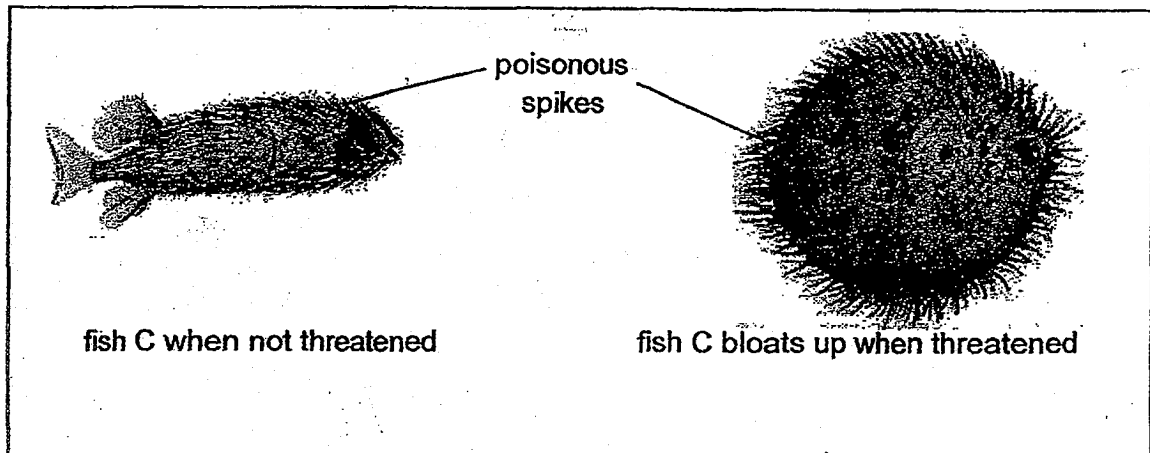
fish A



fish B

- (a) Explain how the body shape of fish B enables it to move faster in water than fish A? [1]

Fish C below has tiny poisonous spikes.

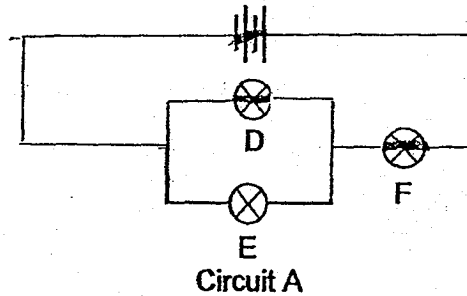


- (b) Fish C bloats up when threatened as shown above. Explain how this behaviour helps fish C to survive. [1]

- (c) (i) Are the spikes of fish C a structural or behavioural adaptation? [1/2]

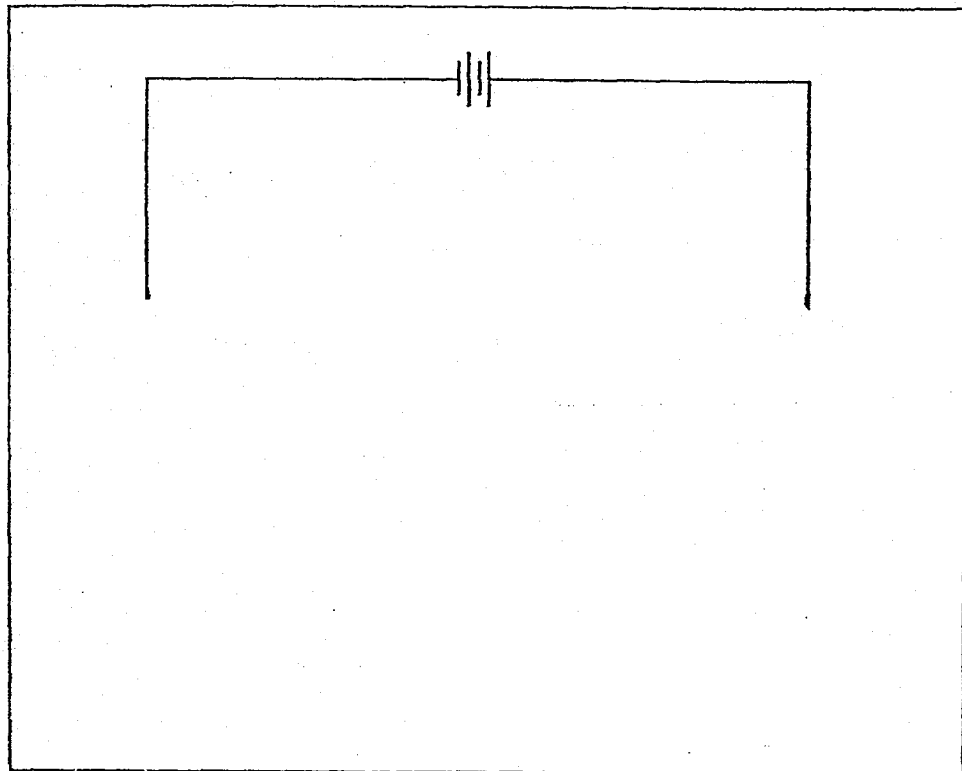
- (ii) Explain why it is an advantage for fish C to have poison in its spikes? [1/2]

34. Benjamin constructed circuit A, as shown below. All the bulbs lit up in circuit A.

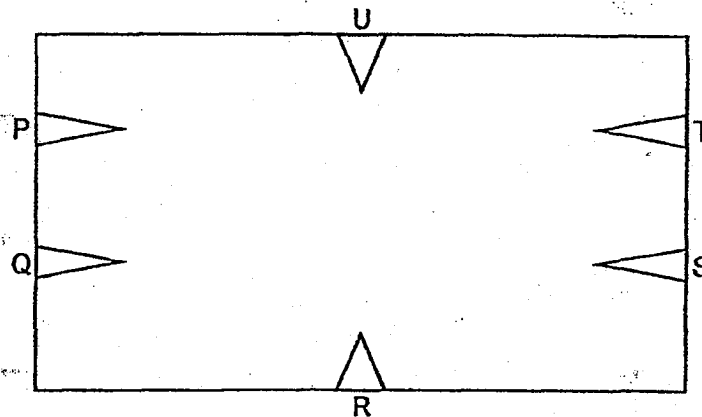


- (a) Benjamin removed one of the bulbs from circuit A and the other two bulbs did not light up. Which bulb did Benjamin remove? Explain your answer. [1]

- (b) Benjamin wanted to rearrange bulbs D, E and F, so that all three bulbs would be brighter than before. Complete the circuit diagram to show this new arrangement. [2]



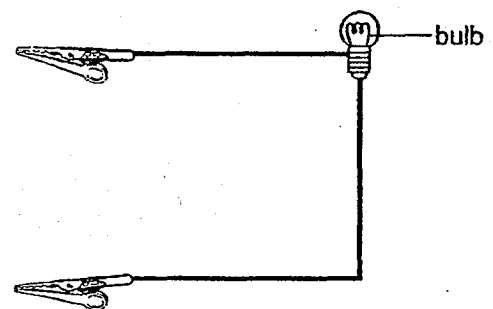
Benjamin has a circuit card with iron clips, P, Q, R, S, T and U, as shown below. He connected **two** wires on the circuit card.



Benjamin used a circuit tester to connect two iron clips on the circuit card. The table below shows his observations.

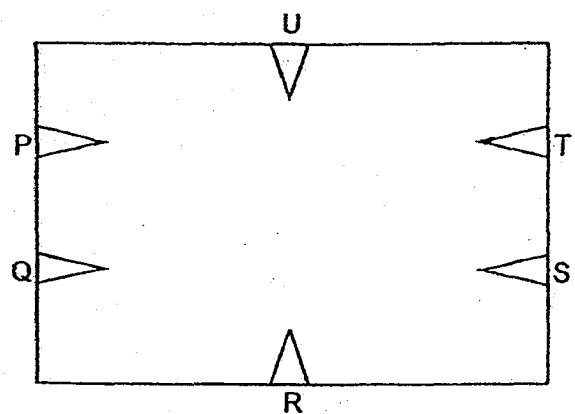
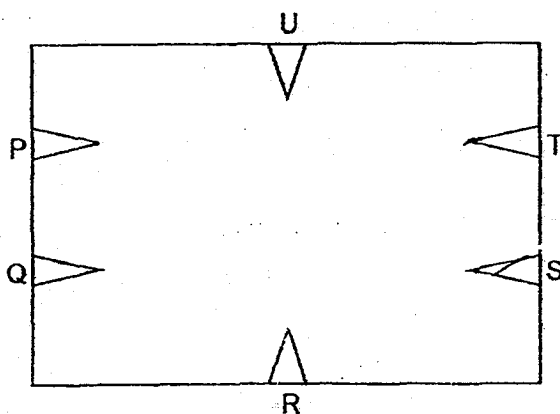
Connection to the circuit tester	Bulb lights up
RT	Yes
PS	No
QT	No
PT	Yes
SR	No
RU	No
PS	No

Table B



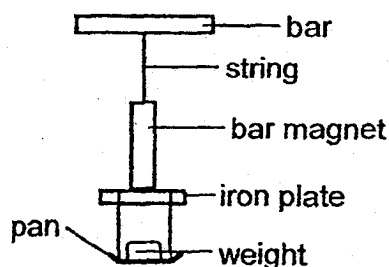
Circuit tester

(c) Draw on the circuit cards below to show two possible arrangements of wires. Please ensure that your wires do not cross. [2]



Score	2
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35. Priya carried out an investigation to test the strength of different bar magnets. Her set-up is shown below.



She added ceramic weights to the pan until the iron plate was separated from the bar magnet. She repeated the experiment with three other bar magnets. In the table below, she recorded the weight needed to separate the iron plate from the bar magnet.

Bar magnet tested	Weight (g)
A	180
B	240
C	890
D	169

- (a) Arrange the bar magnets according to their magnetic strength, from the weakest to the strongest, by writing the correct letters in the boxes below.

[1]

Weakest
→
 Strongest

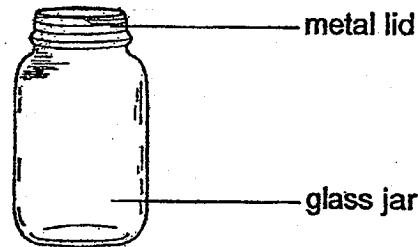
- (b) Would Priya be able to test the magnetic strength of the different bar magnets if a plastic plate was used instead? Explain why.

[1]

- (c) Name the force that caused the iron plate to be separated from the bar magnet.

[1]

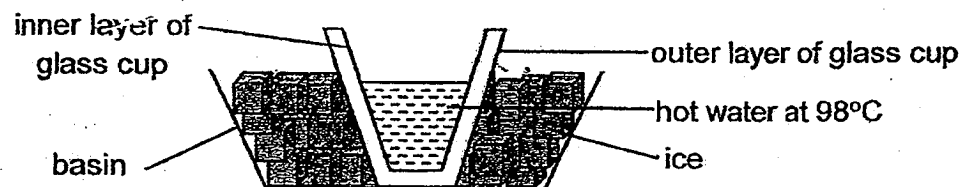
36. Aliya took a jar out of the refrigerator. She tried to unscrew the metal lid but was unsuccessful.



Her father told her to turn the glass jar over and dip only the metal lid of the glass jar into a basin of hot water for fifteen seconds. After doing what her father told her to, Aliya was able to open the metal lid of the glass jar.

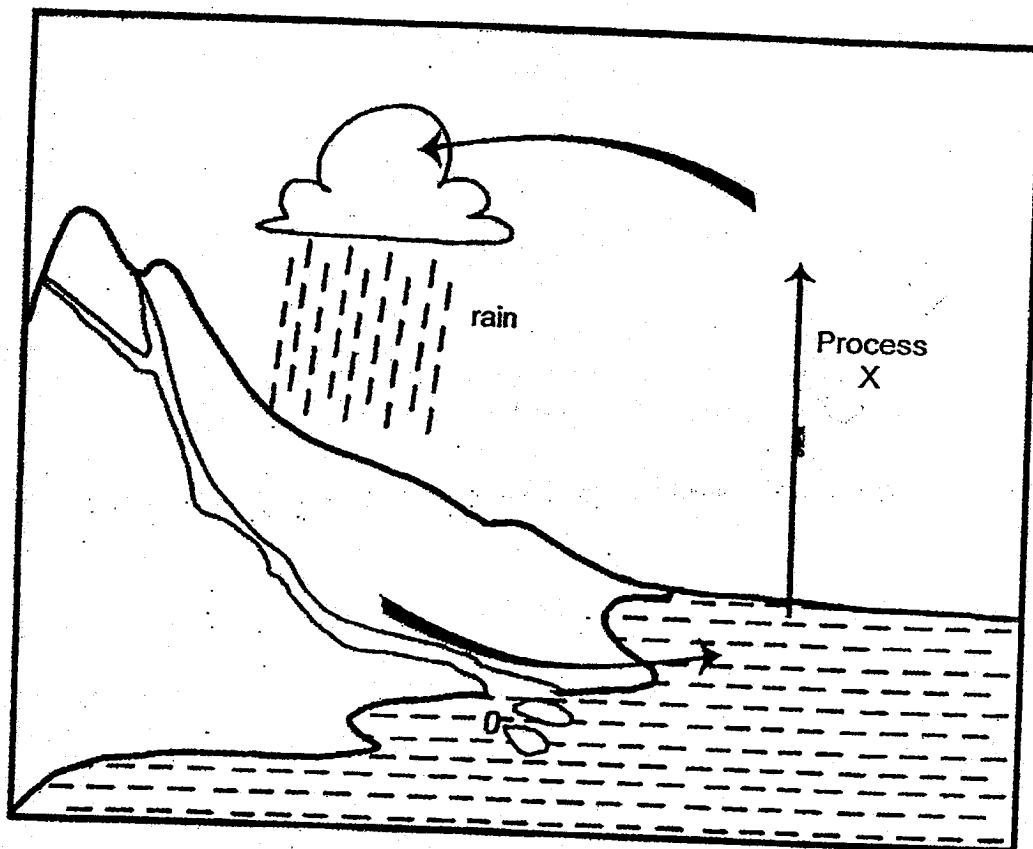
- (a) Explain clearly why Aliya was able to unscrew the metal lid of the glass jar after putting the metal lid in hot water. [2]

Aliya has a glass cup. She placed it into a basin of ice cubes and poured hot water at 98°C , into the jar as shown below.



- (b) Aliya then noticed that the glass cup started to crack. Explain her observation clearly. [2]

37. The diagram below shows the water cycle.



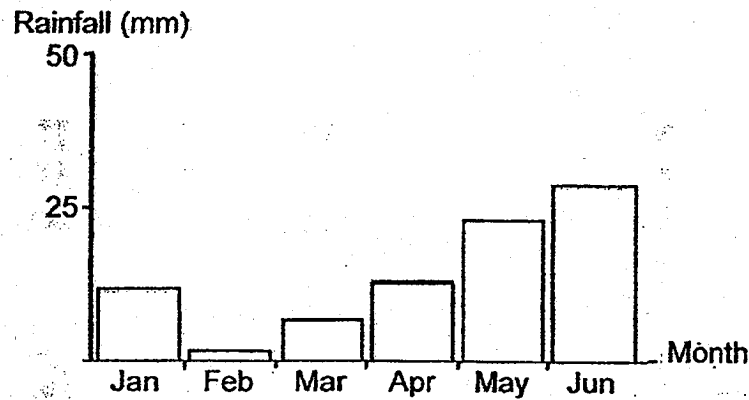
(a) i) State Process X.

[1/2]

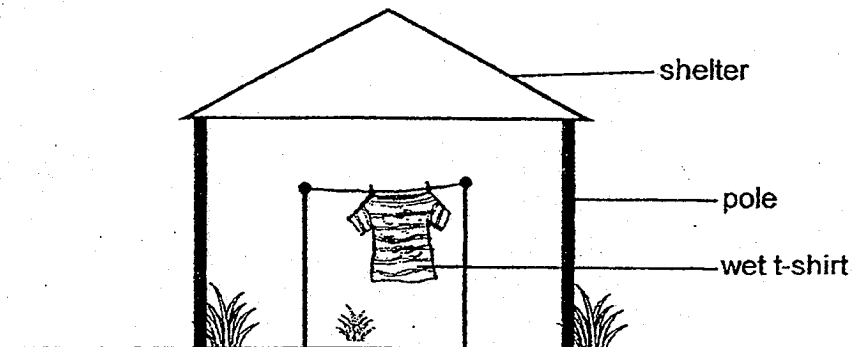
ii) What form of energy is needed for Process X to take place?

[1/2]

The diagram below shows the average monthly rainfall collected at Country X from January to June. Usually for dryer months, there would be more sunlight and lower humidity in the air.



- (b) Based on the graph above, in which month will a wet t-shirt that is hung under a sheltered area as shown below, be able to dry the fastest. Explain why. [2]



38. Diagram 1 shows a metal block sliding down a slope after it was released by Jannah at point A. The cube stopped moving at point B.

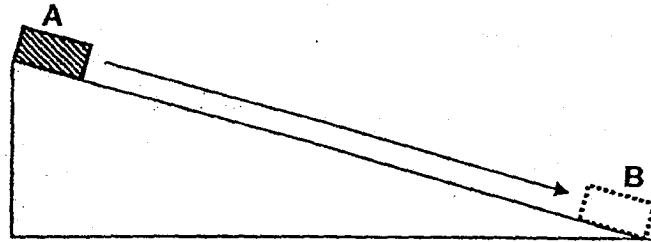
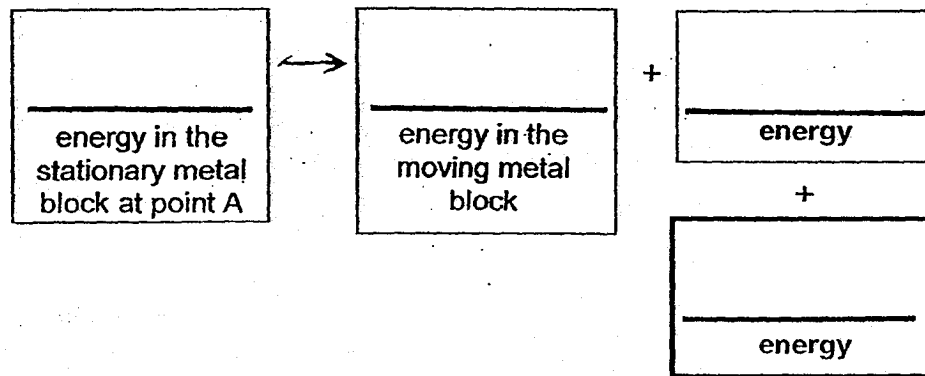


Diagram 1

- (a) State the energy conversion that takes place when the metal block moves from point A to point B. [1]



- (b) What is the change in potential energy of the box as the man pushes the box up the ramp, shown below in Diagram 2? Explain your answer. [1]

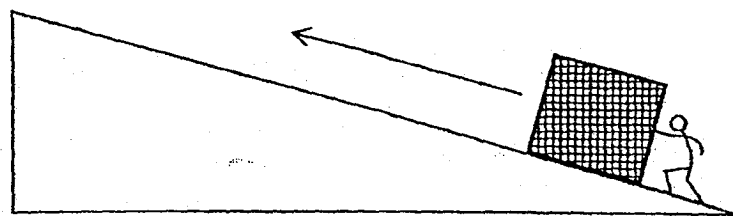
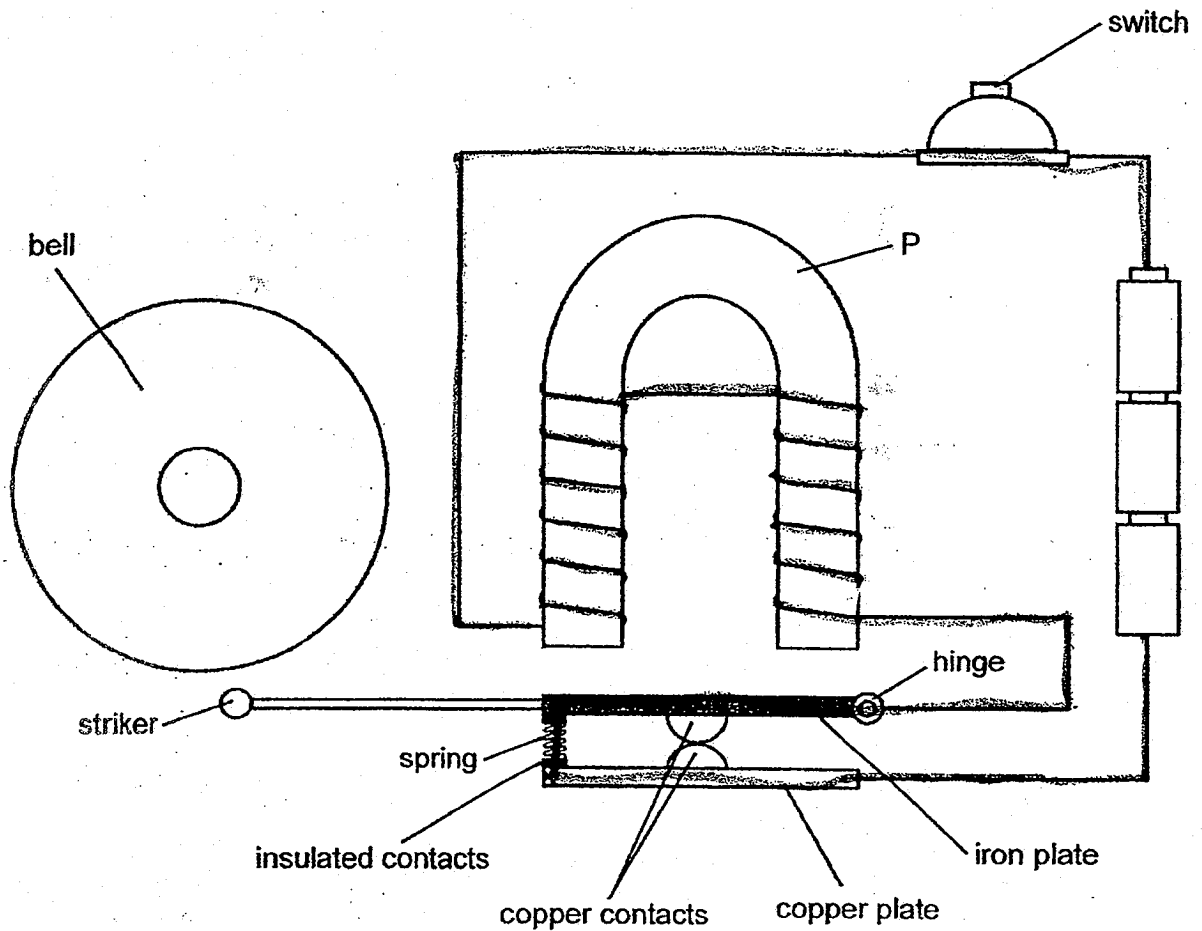


Diagram 2

Score	2
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Jannah constructed the following electric bell circuit.



- (c) If P is made of iron, using energy conversion, explain what takes place in the circuit that caused the electric bell to sound once when the switch is pressed. [2]

39. A rectangular block with surfaces, F, G and H, is placed on a wooden surface as shown in the Diagram 1 below. The rubber band is stretched when the block is pulled against the rubber band. Its surface F is in contact with the wooden surface.

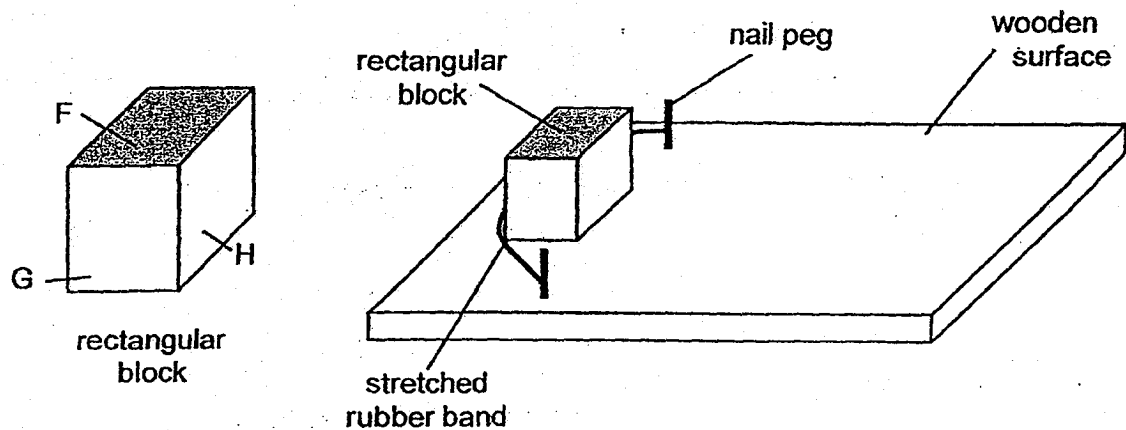


Diagram 1

- (a) Besides gravitational force, what are the two forces acting on the block when the block is released? [1]

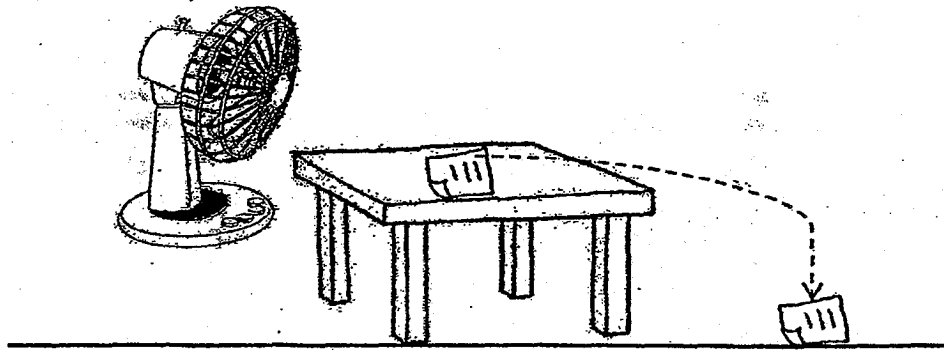
The experiment is then repeated with different surfaces, G and H, of the same rectangular block in contact with the wooden surface. The results are shown below.

Surface	Area of contact with the table (cm ²)	Distance moved by block (cm)
F	250	15
G	200	15
H	300	15

- (b) Based on the results in the table above, what can we conclude about the surface area of a rectangular block, and the friction between the rectangular block and the wooden surface? [1]

- (c) The wooden surface is then replaced with a glass surface while all other variables remain constant. The block travelled a longer distance.
Explain why. [1]

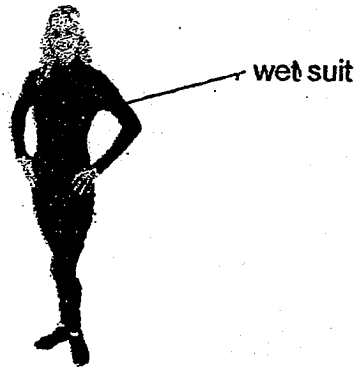
A piece of paper is lying on a table, as shown in the diagram below.



When a nearby fan is switched on, the paper flew from the table and landed on the floor.

- (d) Explain the two effects of forces observed? [2]

40. Anita has three materials, X, Y and Z. She wants to choose one of them to make a wet suit as shown below, for her underwater diving activity.



Material	Flexible	Waterproof
X	Yes	Yes
Y	Yes	No
Z	No	Yes

Which material, X, Y or Z, is most suitable for her to make the wet suit?
Explain your choice. [2]

End of Paper

Score	2
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EXAM PAPER 2018(P6)

SCHOOL : TAO NAN

SUBJECT : SCIENCE

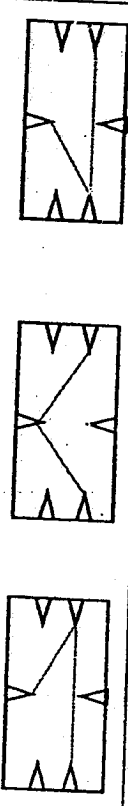
TERM : SA1

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

Primary 6 Science Mid-Year Examination 2018
Suggested Answers

29a)	As the depth of the pond increases, the amount of light in the pond decreases.
b)	Condition / Factor 1: Presence of floating plants on the water surface.
	Condition/Factor 2: Transparency of the water.
30a)	i. D ii. E
b)	D need not compete for food with E so D now has more C to prey on. Hence, the population of D would increase.
c)	D would have to <u>compete</u> with the new predator for C so D now has <u>fewer C to feed on</u> .
31a)	The conditions needed are <u>oxygen, water and warmth</u> .
b)	By Animals
c)	A bird could have eaten the fruit and swallowed the seeds. The bird then <u>flies to Sam's neighbour's garden to release its droppings with the seeds</u> .
32a)	Danny. He took fewest number of breaths to inflate the plastic ball.
b)	Ball X. The composition of air in Ball X is similar to that of inhaled air.
c)	The boys had to take in <u>more oxygen</u> to release <u>more energy</u> .
33a)	Fish B has a <u>streamlined body shape</u> but Fish A does not. This helps to <u>reduce water resistance</u> to swim faster.
b)	Fish C <u>increases its size</u> to <u>scare away</u> its predators
c)	<u>Structural adaptation</u>

Primary 6 Science Mid-Year Examination 2018
Suggested Answers

c) ii	The poison in the spikes of fish C will <u>prick</u> and <u>poison</u> its predators when its predators try to attack it.
34a)	Bulb F It is an <u>open circuit</u> so the <u>electric current</u> is <u>unable</u> to pass through.
b)	Circuit is to be drawn with 3 bulbs in parallel arrangement.
c)	
35a)	D, A, B, C
b)	No. The <u>plastic plate</u> will not be attracted to the bar magnet because <u>plastic</u> is a non-magnetic material.
c)	Gravitational force
36a)	The metal lid <u>gained</u> heat from the hot water thus <u>causing</u> it to <u>expand</u> .
b)	The inner layer of the cup <u>gained</u> heat from the boiling water and <u>expanded</u> . The <u>outer layer</u> of the cup <u>lost</u> heat to the <u>ice</u> and <u>contracted</u> .
37a)	(i) Evaporation (ii) Heat energy
b)	February It has the <u>highest temperature</u> and <u>lowest humidity</u> so the <u>evaporation rate</u> is the <u>highest</u> .
38a)	gravitational potential energy → kinetic energy + sound energy + heat energy

Primary 6 Science Mid-Year Examination 2018

Suggested Answers

b)	The gravitational potential energy of the box <u>increases</u> as the <u>height</u> of the box from the ground <u>increases</u> .
c)	When the circuit is closed the <u>chemical potential energy</u> in the battery is <u>converted</u> into <u>electrical energy</u> in the circuit. This <u>electrical energy</u> is then <u>converted</u> into <u>kinetic energy</u> in the striker as the iron plate is attracted to P. <u>The kinetic energy is then converted into sound energy</u> when the striker hits the bell.
39a)	Elastic spring force and frictional force
b)	The surface area of the object does not affect the friction between the object and the surface. [1]
c)	No it will not. The glass surface is smoother resulting in <u>less frictional force</u> between the glass surface and the rectangular block causing the block to travel further.
d)	The <u>wind moved the stationary paper</u> and <u>gravity pulled the paper to the floor</u> .
40	X/Y. The material is <u>flexible</u> which allows Anita to <u>move</u> .

