MAHA BODHI SCHOOL

2019 SEMESTRAL ASSESSMENT 1

PRIMARY SIX SCIENCE

(BOOKLET A)

Name : _____ _____( )

Class : Primary 6_ _____

Date : 16 May 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of **19** printed pages.

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BOOKLET A : [28 x 2 marks = 56 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). **Shade your answer on the Optical Answer Sheet.**

1. Which one of the following represents a community?

   (1) frog and tadpoles in a pond
   (2) cockroaches, nymphs and eggs on a shelf
   (3) butterflies, caterpillars and eggs on a plant
   (4) earthworms, spiders and grasshoppers in a garden

2. Which one of the following shows the direct transfer of energy correctly?

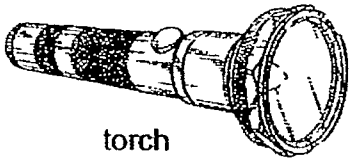
   (1) sun → plant eater
   (2) plant → animal eater
   (3) plant eater → animal eater
   (4) animal eater → plant eater

3. Which of the following are examples of behavioural adaptations?

   A. Rabbits have long hind legs.
   B. Bears hide and rest during winter.
   C. Peacocks have colourful tail feathers.
   D. Penguins huddle together to keep warm.

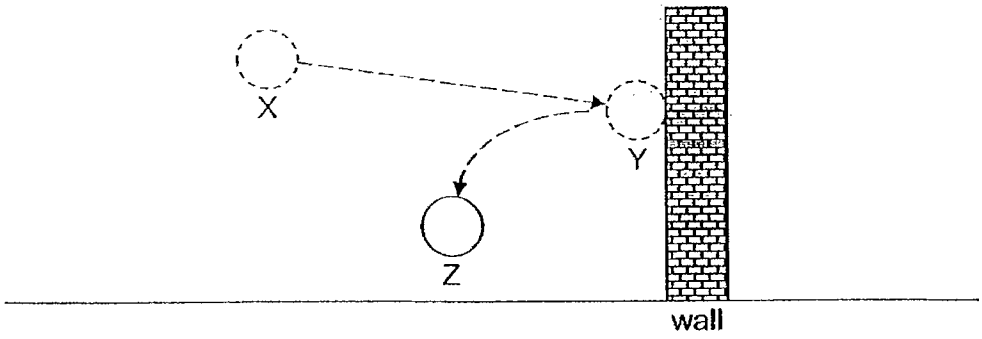
   (1) A and C only
   (2) B and D only
   (3) A, B and D only
   (4) A, B, C and D

4. Which of the following most accurately shows the energy conversion of a battery-powered torch?



(1) electrical energy → light energy → heat energy
(2) chemical energy → light energy → heat energy
(3) electrical energy → chemical energy → light energy+ heat energy
(4) chemical energy → electrical energy → light energy + heat energy

5. A ball was thrown towards the wall. It travelled from X to Y and then to Z as shown below.



Which of the following shows that a force was exerted by the wall on the ball?

(1) The moving ball stopped.
(2) The moving ball sped up.
(3) The stationary ball moved.
(4) The moving ball changed direction.

6. Devi shone a light on the container below.

Which one of the following is/are not possible shadow(s) for the container?

A B C D

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

7. Which of the following processes require heat gain?

A. Boiling
B. Melting
C. Evaporation
D. Condensation

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

8. Three animals X, Y and Z reproduce by laying eggs.
The table below shows the characteristics of these animals.

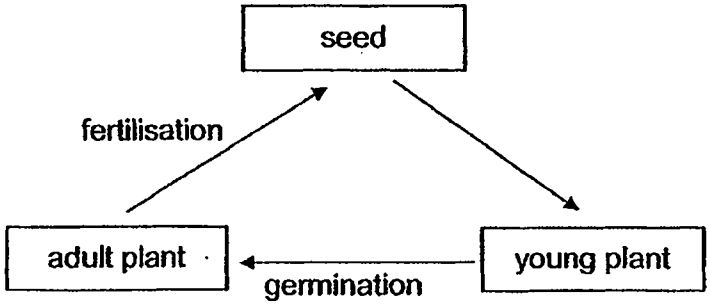
Characteristics	Animal X	Animal Y	Animal Z
Number of legs	6	6	4
Number of stages in their life cycle	4	3	3

Based on the characteristics above, what could possibly be Animals X, Y and Z?

	Animal X	Animal Y	Animal Z
(1)	butterfly	cockroach	frog
(2)	ant	butterfly	grasshopper
(3)	cockroach	grasshopper	mealworm
(4)	mealworm	frog	butterfly

9. Which of the following diagrams correctly shows the processes in the life cycle of a flowering plant?

(1)



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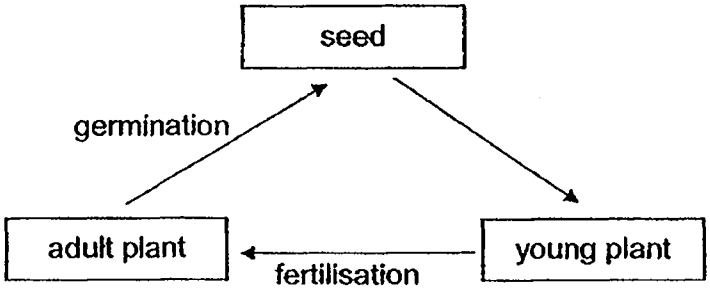

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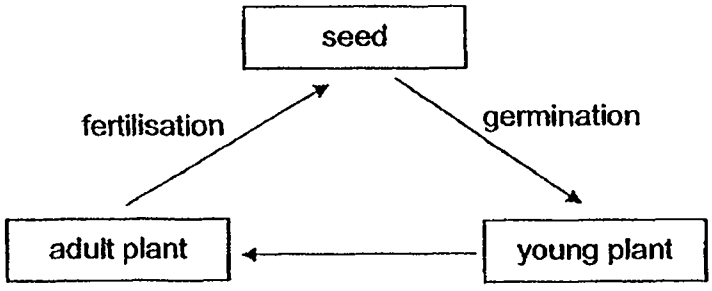

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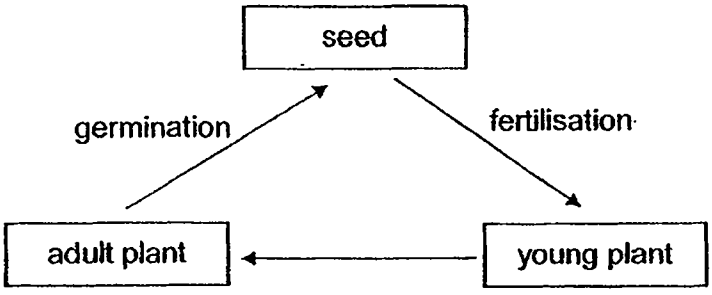


10. Blood leaving the small intestine carries more _____ than the blood entering it.

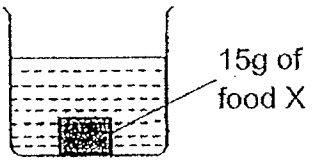
A. food
B. oxygen
C. carbon dioxide

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

11. The diagrams below show the setup of an experiment to study the digestion of food. Each beaker contains food X and the same amount of digestive juice.

In which set-up would the food be completely digested first?

(1)



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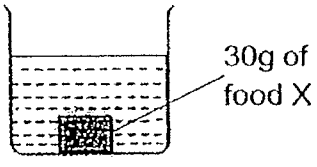

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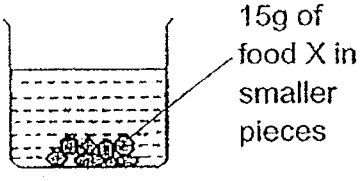

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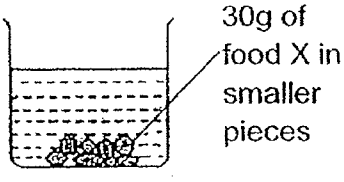
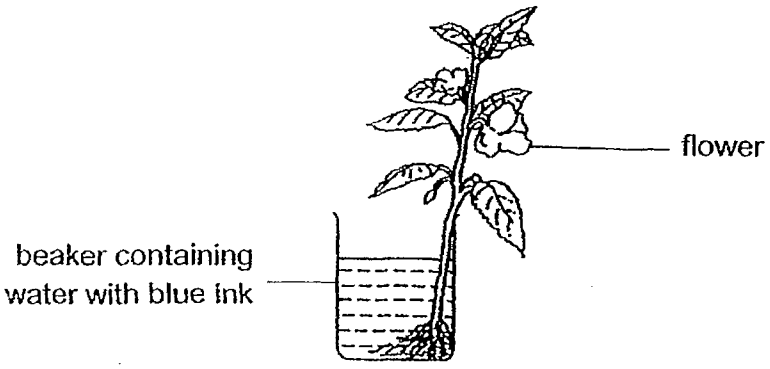


12. Henry puts a plant into a beaker of water in which some blue ink has been added. A few hours later, he observes that the flowers turn from white to blue.



What can Henry conclude from this experiment?

(1) Water is absorbed by the roots.
(2) The stem joins the roots to the rest of the plant.
(3) Water is lost to the surroundings from the leaves.
(4) The stem carries water from the roots to the rest of the plant.

13. Christina wants to investigate the effect of water on plant growth.

Which one of the following shows correctly the number of set-ups, the variable changed and variable measured for her investigation?

	Number of set-ups	Variable changed	Variable measured
(1)	2	Amount of water	Amount of oxygen released
(2)	2	Amount of sunlight	Amount of oxygen released
(3)	3	Amount of water	Number of green leaves
(4)	3	Amount of sunlight	Number of leaves dropped

14. P, Q, R and S represent four organisms in a habitat.

- P is a predator of S
- S is a prey to R
- Q is a predator of P
- R is a prey to Q

Using the information given above, which of the following most correctly represents P, Q, R and S?

	P	Q	R	S
(1)	plant eater	animal eater	plant eater	producer
(2)	animal eater	plant eater	animal eater	animal eater
(3)	animal eater	producer	animal eater	animal eater
(4)	animal eater	animal eater	animal eater	plant eater

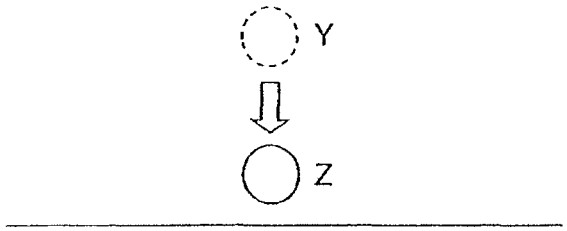
15. Hassan took 50 g of leaves from four different plants A, B, C and D. He placed the leaves on separate plates in a room at 40°C under bright light.
He weighed the leaves again 12 hours later and recorded the results in the table below.

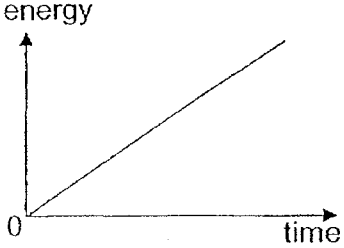
	Type of plant			
	A	B	C	D
Mass of leaves at first (g)	50	50	50	50
Mass of leaves after 12 hours (g)	25	40	35	30

Hassan can conclude that the rate of _____ varies for different plants.

(1) water loss
(2) water gain
(3) photosynthesis
(4) absorption of light

16. Which of the following correctly shows the change in potential energy as the ball falls from point Y to Z?



(1)


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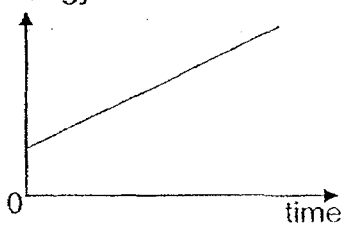

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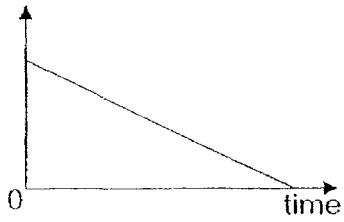

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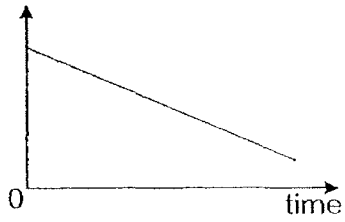
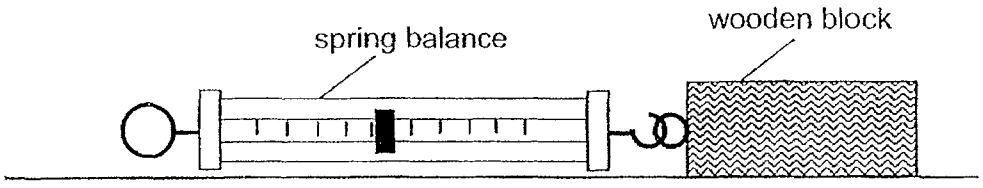


17. A spring balance is used to pull a wooden block over a table top.

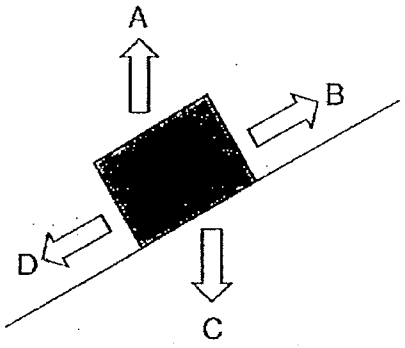


Which of the following will affect the amount of force needed to pull the block?

A. mass of the wooden block
B. roughness of the table top surface
C. change in length of the spring in the spring balance

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

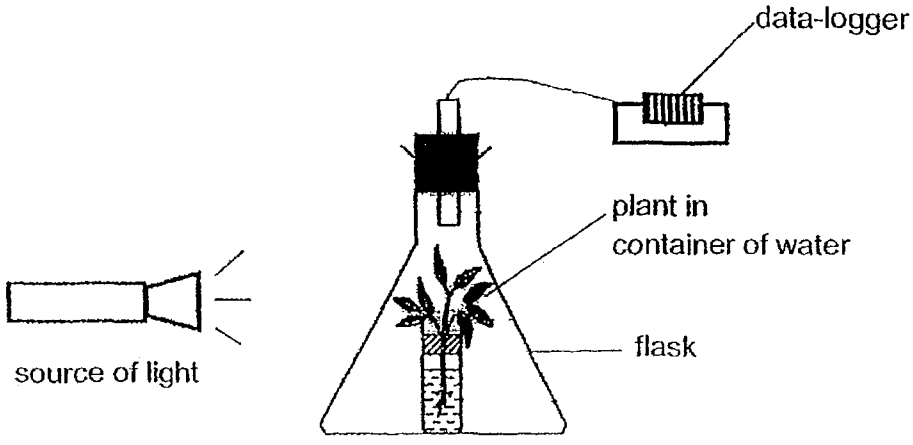
18. A box was pushed off a ramp. It slid down the ramp before stopping at the position shown below.



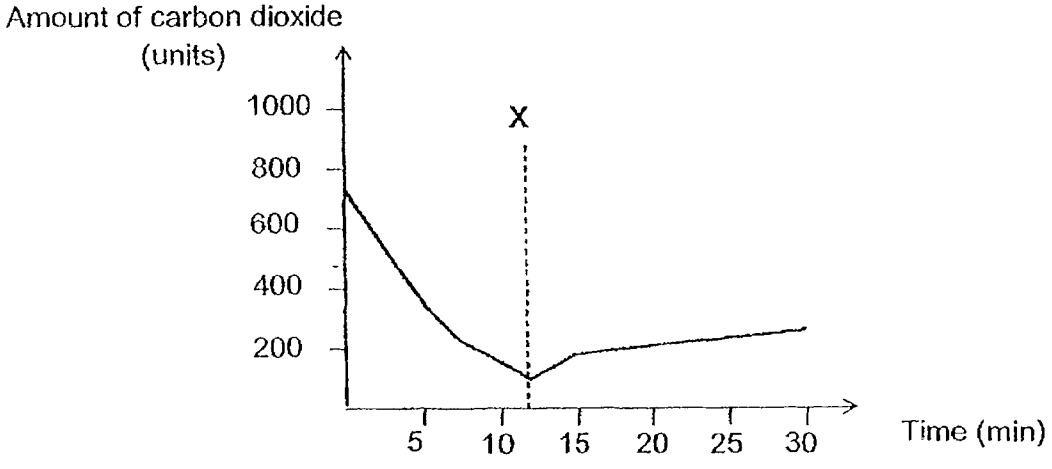
Which arrow correctly shows the direction of the force that stopped the box?

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

19. Joyce placed a plant in a container of water in a flask near a source of light. She measured the amount of carbon dioxide in the flask using a data-logger as shown below.



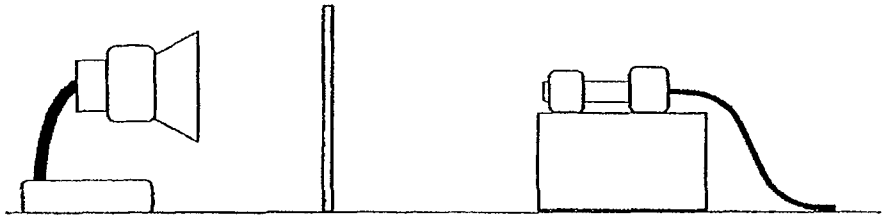
The graph below shows the results recorded by the data-logger.



Which of the following could have happened at X to cause the change in the amount of carbon dioxide as shown in the graph?

(1) The light was switched off.
(2) The amount of light was increased.
(3) There was too much oxygen in the flask.
(4) There was not enough oxygen in the flask.

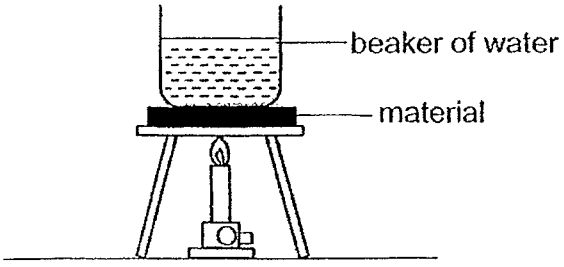
20. The set-up below was used to test how much light can pass through different materials.



Which of the following correctly shows the changed and measured variables?

	Changed variable	Measured variable
(1)	type of material	distance between lamp and sensor
(2)	type of material	amount of light received by sensor
(3)	brightness of lamp	amount of light received by sensor
(4)	brightness of lamp	distance between lamp and sensor

21. Muru conducted an experiment using the set-up below.



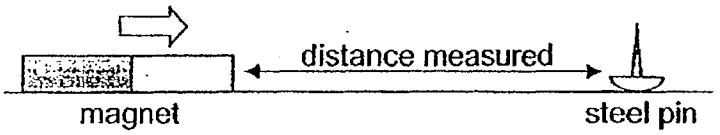
He recorded the time taken for the water to boil when different materials P, Q and R were placed below the beaker of water in the table below.

Material	How well it conducts heat	Time taken for water to start boiling (min)
P	very good	10
Q	poor	10
R	good	10

Which of the following correctly shows the volume of water used at the start of each experiment?

	Volume of water at the start (cm^3)		
	P	Q	R
(1)	50	150	100
(2)	150	50	100
(3)	50	100	150
(4)	150	100	50

22. Lewis tested the strength of different magnets X, Y and Z using the set-up shown below.



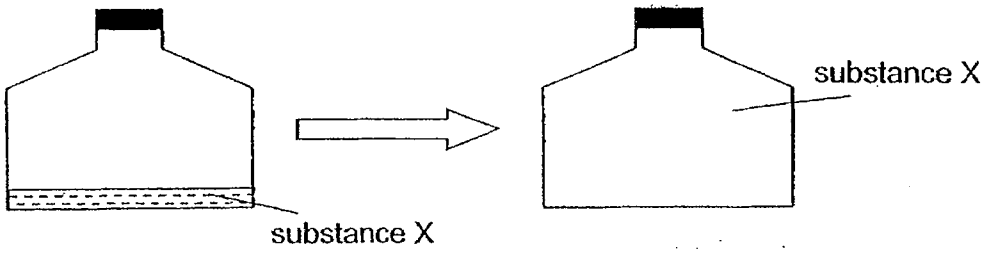
He moved the magnet towards the steel pin and recorded the distance between the two when the steel pin was attracted to the magnet in the table below.

magnet	distance when steel pin was attracted to magnet (cm)
X	5
Y	2
Z	3

Which of the following correctly shows the strength of the magnet from strongest to the weakest?

	strongest →		weakest
(1)	X	Y	Z
(2)	X	Z	Y
(3)	Y	Z	X
(4)	Z	Y	X

23. Rishi poured substance X into a sealed container. He heated it until it boils.



Which of the following properties of substance X changed after boiling?

A. mass
B. shape
C. volume

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

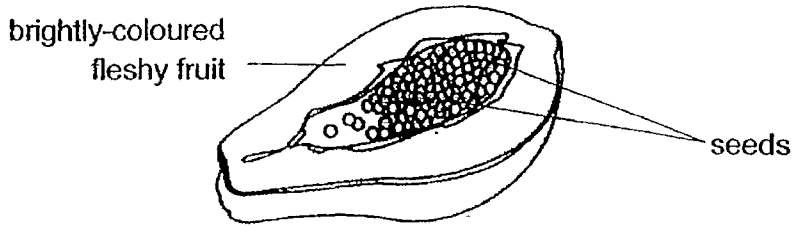
24. David wanted to find out how the conditions in the different locations affect how fast clothes dry. Four similar shirts were soaked in water. Their masses were measured before they were hung out to dry in a similar manner at different locations. After 1 hour, he measured the mass of each shirt and recorded in the table below.

Shirt	Mass after soaking in water (g)	Mass after drying for 1 hour (g)
A	400	320
B	400	350
C	500	350
D	500	320

Which two shirts should David use to explain the results of his experiment?

	Shirts compared	Possible explanation
(1)	A and B	A was exposed to less wind than B.
(2)	A and D	A and D were exposed to the same surrounding temperature.
(3)	B and C	B and C were exposed to the same amount of wind.
(4)	C and D	D was exposed to a higher surrounding temperature than C.

25. A fruit was cut open as shown.



Which of the following statements are correct?

A. There were many ovules in the ovary.
B. Pollination and fertilization have taken place.
C. The fruits and seeds were developed from a flower.
D. The seeds would be dispersed by wind as they were small.

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

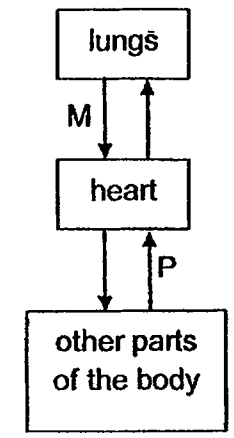
26. Simon conducts an experiment to find out if the presence of water and air affect the germination of seeds. He places the seeds in various pots. The table below shows the conditions of the pots.

Pots	Condition
A	Moist cotton wool in sealed container
B	Moist cotton wool in open container
C	Dry cotton wool in sealed container
D	Dry cotton wool in open container

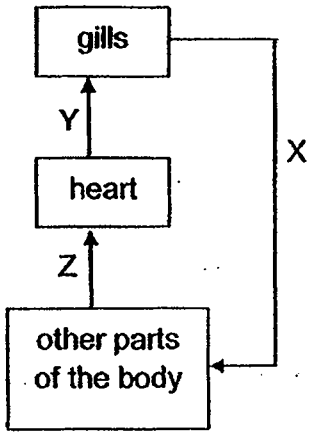
Which one of the following shows correctly the pair of pots that Simon could use to compare the results?

	Variable tested - Water	Variable tested - Air
	Pots used	Pots used
(1)	A and B	A and C
(2)	A and C	B and C
(3)	B and D	A and B
(4)	B and D	C and D

27. The diagram below shows the circulatory systems of a human and a fish. The arrows represent the direction of blood flow in the organisms.



Human circulatory system



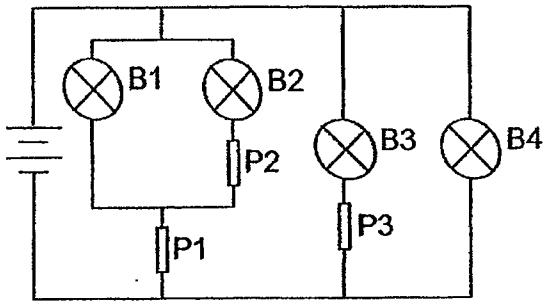
Fish circulatory system

Based on the diagrams above, which of the following statement(s) is/are correct?

A. Blood vessels at Y carry blood rich in oxygen.
B. Blood vessels at M carry blood rich in oxygen.
C. Blood vessels at X carry blood rich in carbon dioxide.
D. Blood vessels at P and Z carry blood rich in carbon dioxide.

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

28. Julia wanted to test which rods W, X and Y are conductors of electricity by using the circuit below.



The table below shows which bulbs lit up when the rods were placed in different positions.

Position			Bulb lit up			
P1	P2	P3	B1	B2	B3	B4
W	X	Y				✓
X	Y	W	✓			✓

Which of the materials are conductors of electricity?

(1) W only
(2) X only
(3) X and Y only
(4) W and Y only

END OF BOOKLET A

GO ON TO BOOKLET B

MAHA BODHI SCHOOL

2019 SEMESTRAL ASSESSMENT 1

PRIMARY SIX SCIENCE

(BOOKLET B)

Name:_ _____ _____( )

Class: Primary 6_____ _____

Date : 16 May 2019

Total Duration for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write all your answer in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		100

Parent's signature: _ _____

This booklet consists of 16 printed pages.

BOOKLET B : [44 marks]
For questions 29 to 41, 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.

29. The table below shows the set-up of an experiment to find out if the amount of soil would affect the growth of plant X. The experiment was set-up for 3 weeks.

Variables	Pot A	Pot B	Pot C
Number of leaves at the start of the experiment	10	10	10
Amount of soil (cm^3)	500	700	900
Type of soil	sandy	garden	clayey
Amount of water added to soil daily (ml)	100	120	150
Number of leaves at the end of the experiment	10	40	20

(a) What is the variable measured for this experiment? [1]

(b) Why is this experiment not a fair test? Explain your answer. [1]

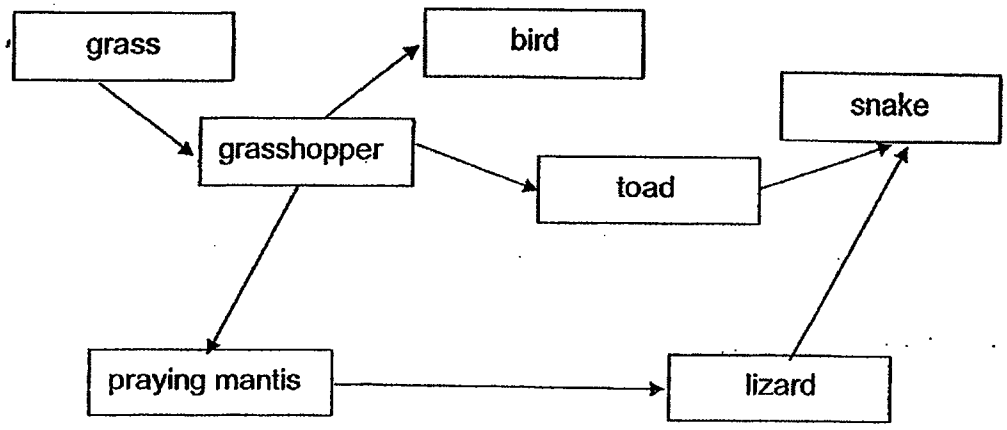
(c) Based on the set-up in the table above, state what can be done to make the experiment a fair test? [2]

(i)

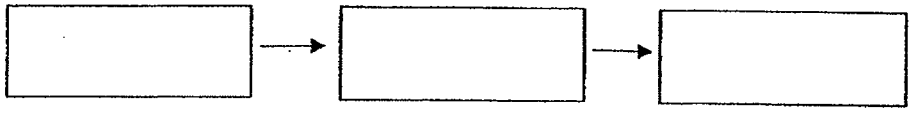
(ii)

Marks : / 4

30. The diagram below shows a food web in a community.



(a) Based on the food web above, construct a food chain with 3 types of organisms. [1]

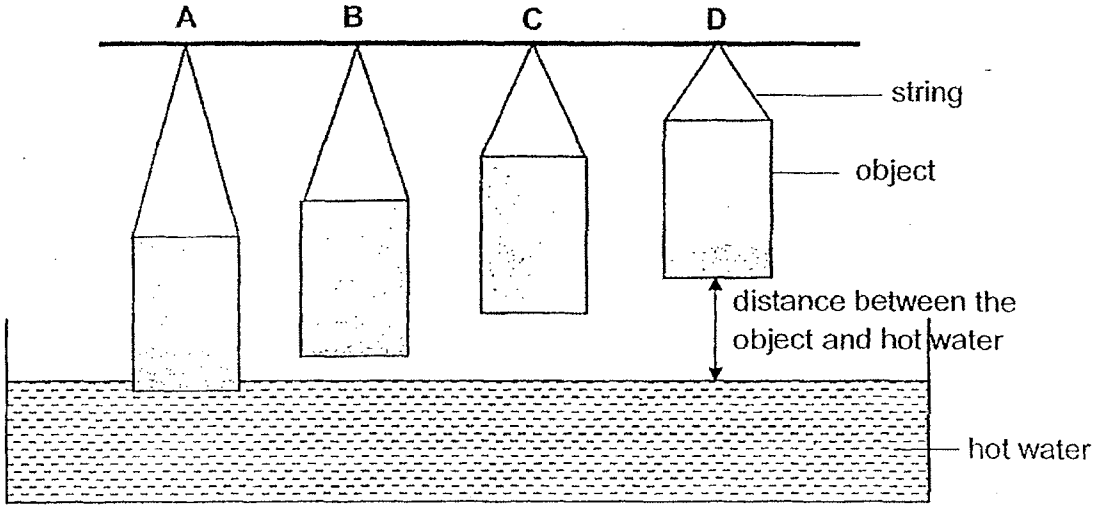


(b) If the population of praying mantis is killed by a disease, which population in the food web would be most affected?
Explain your answer. [1]

(c) Which action, the removal of snake or grass from the community, would have a greater effect on the organisms in the food web?
Explain your answer. [2]

Marks : / 4

31. Ai Ling hung four similar objects A, B, C and D above a basin of hot water. She measured the temperature of the objects after few minutes.



Her results are shown in the table below.

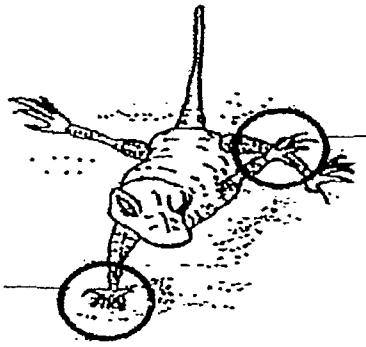
Object	A	B	C	D
Temperature of object (°C)	60	38	25	25

(a) What is the relationship between the temperature of the object and the distance between object and hot water? [1]

(b) Explain why the temperature had to be taken within a short period of time. [1]

Marks : / 2

(c) The lizard lifts its foot as it crawls along the desert floor on a hot day.



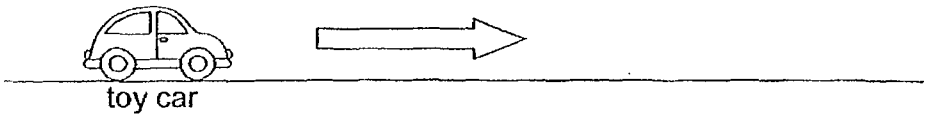
Explain why the feet have different temperature. [2]

	Explanation
Foot on the ground	
Foot above the ground	

(d) It is observed that the lizard runs quickly across the hot desert ground. Explain how this behaviour helps the lizard reduce heat gain. [1]

Marks : / 3

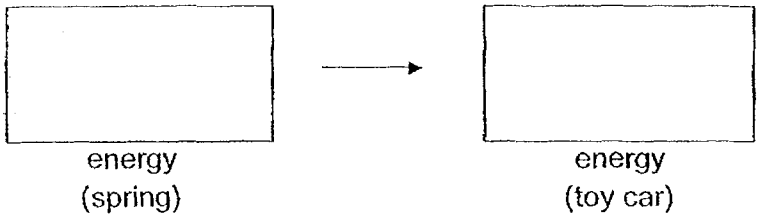
32. Leroy wound the spring of a wound-up toy car and released it. He wanted to find out how the number of times the toy car was wound up would affect the distance travelled by the toy car.



He recorded the results of his experiment as shown below.

Number of times toy car wound up	Distance travelled (cm)
5	12
10	26
15	39

(a) State the energy conversion that took place in the boxes below. [1]

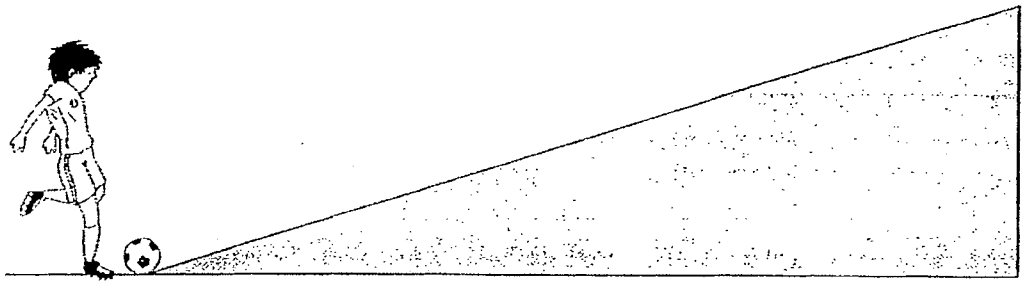


(b) Explain how winding the toy car more times allowed the car to travel further. [1]

(c) Leroy wound the toy car 30 times. The toy car did not move when released.
Suggest a possible reason. [1]

Marks : / 3

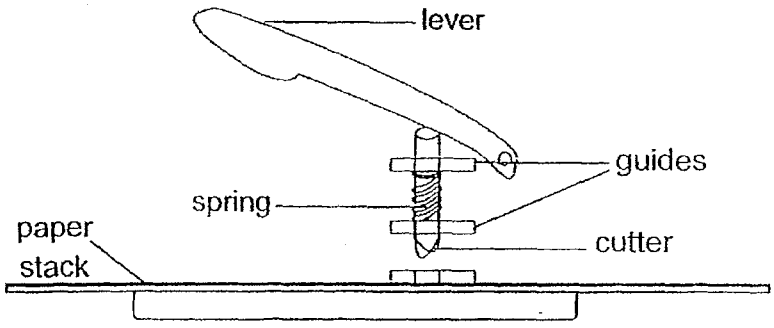
33. Zhi Hua kicked a ball up a ramp as shown below.



Explain in terms of energy conversion why the ball would slow down as it moved up the ramp. [2]

Marks : / 2

34. The diagram below shows the cross section of a hole-puncher.



When the lever is pushed down, it moves the cutter down to punch a hole through the stack of paper.

When the lever is released, it moves back to its original position.

(a) Name the force that allows the lever to return to its original position.[1]

_____

(b) After using for a few months, the lever of the hole-puncher was unable to return to its original position after being pushed down.

(i) Give a reason why the lever was unable to return to its original position. [1]

_____

_____

Oil was applied to the area of contact between the cutter and the guides. This allowed the lever to return to its original position again.

(ii) Explain how oil helped the lever return to its original position.[2]

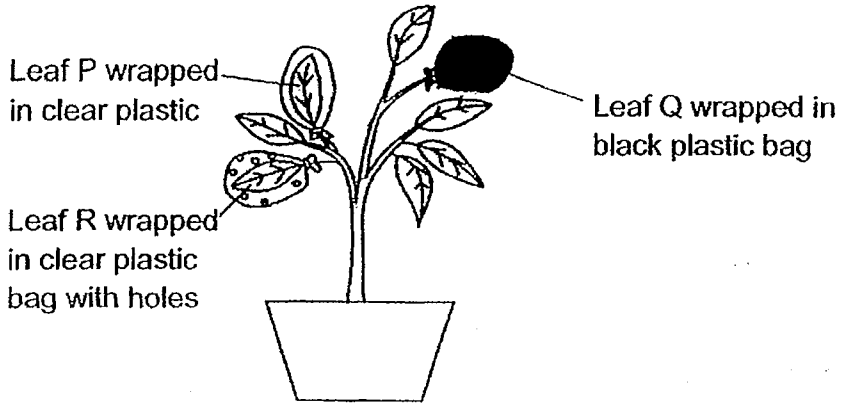
_____

_____

_____

Marks : / 4

35. An experiment was carried out using the set-up shown below. The leaves were wrapped in different types of plastic bags. The bags were of the same size. The plant was watered daily and placed under the sun.



(a) Before the start of the experiment, the plant was left in complete darkness for two days to remove starch in the leaves.
Why was this necessary? [1]

(b) After two days in the sun, leaves P, Q and R were removed and tested for starch using iodine. The table below shows the results of the starch test. Iodine is a yellowish brown liquid that turns blue black in the presence of starch.

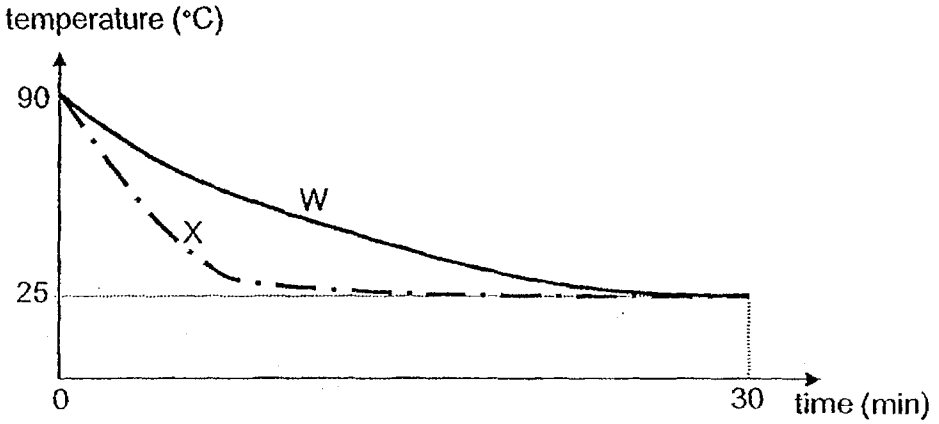
Leaf P	Leaf Q	Leaf R
yellowish brown	yellowish brown	blue black

Which leaf, P, Q or R's starch test result is incorrect? Explain why. [2]

Marks : / 3

36. Annie heated up the same amount of water sealed in containers W and X which are made of different materials to 90°C.

She left both containers in the same room, measured the temperature of the water over 30 minutes and recorded them in the graph below.



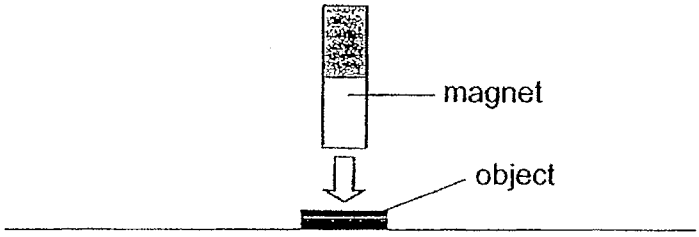
(a) Why did the water in both beakers reach the same temperature after 30 minutes? [1]

(b) Explain which container of water, W or X, will freeze first if they were both placed into the same freezer. [2]

(c) Annie wanted to test if the volume of water affects the rate its temperature changes. What changes should she make to her experiment? [1]

Marks : / 4

37. Joseph lowered a magnet towards an object as shown below.



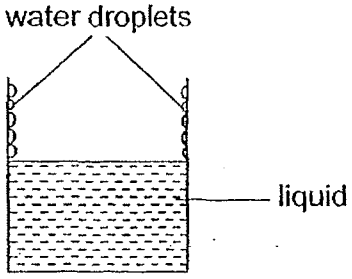
As the magnet was lowered, the object moved up towards the magnet.

(a) What is the property of the material of the object? [1]

(b) What would Joseph need to do to pick up a heavier object with the same magnet? [1]

Marks : / 2

38. Lilian poured some liquid into a glass and noticed water droplets forming on the inside of the glass after a few minutes as shown below. The surrounding temperature is 25°C.

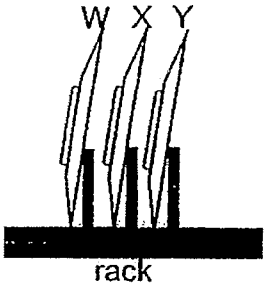


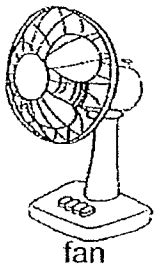
(a) Explain how the water droplets were formed. [1]

(b) Based on the observation, what can you tell about the temperature of the liquid? [1]

Marks : / 2

39. 3 similar plates W, X and Y were washed and placed on a rack in front of a fan as shown below.



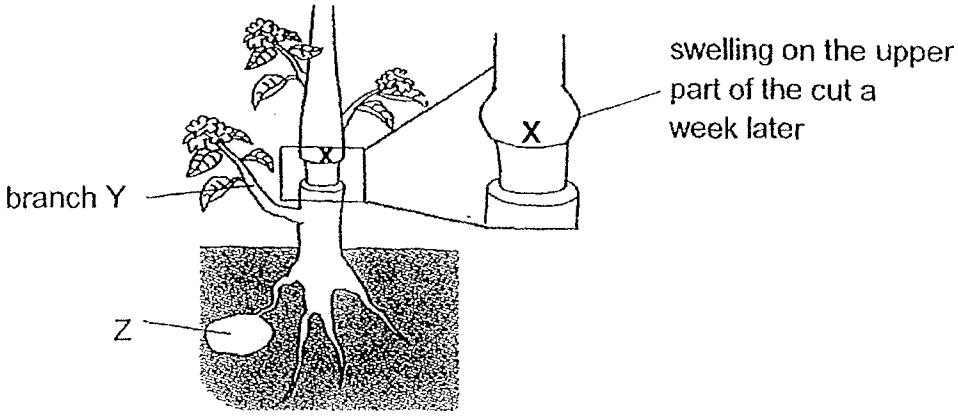


(a) How does turning on the fan help dry the plates faster? [1]

(b) Which plate, W, X or Y, will dry fastest? Explain your answer. [2]

Marks : / 3

40. The outer ring of a stem was cut as shown below. As a result, the food-carrying tubes were removed.

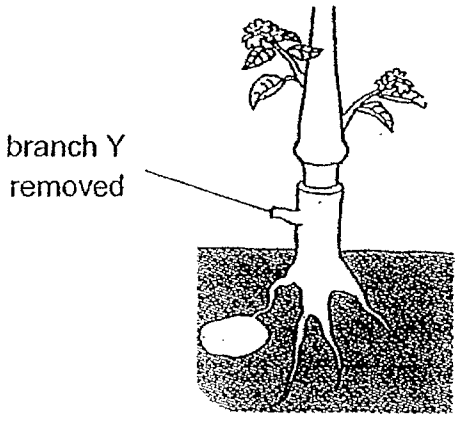


(a) A swelling on the upper part of the cut at X was observed a week later. Explain why part X swelled up. [1]

(b) Part Z grew bigger after one week. Explain why this is possible. [1]

Marks : / 2

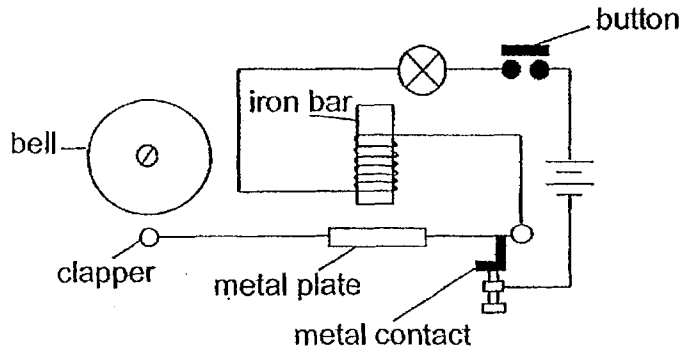
(c) Two weeks later, branch Y was removed as shown below.



Explain why the leaves above the plant wilted and the plant died after a few weeks. [2]

Marks : / 2

41. The circuit diagram shows how a simple electrical bell system works.



When the button was pressed down, the metal plate moves towards the iron bar, lifting the metal contact as well as the clapper to strike the bell once.

(a) Give a reason why the metal plate moved towards the iron bar when the button was pressed. [1]

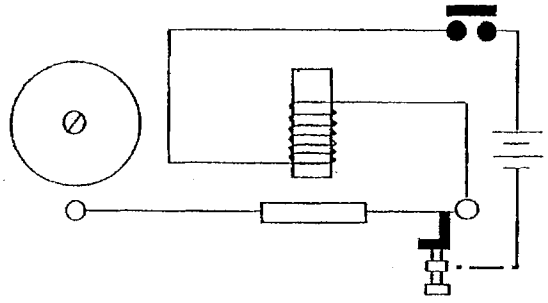
(b) If the button was pressed down without releasing, the clapper would continuously strike the bell.
Explain how this happens. [2]

Marks : / 3

(c) The bulb flickered continuously as the button was pressed.

Show how you can connect the bulb to the circuit below such that it stays lit while the button is pressed down.

Draw your own bulb and wires. [1]



Marks : / 1

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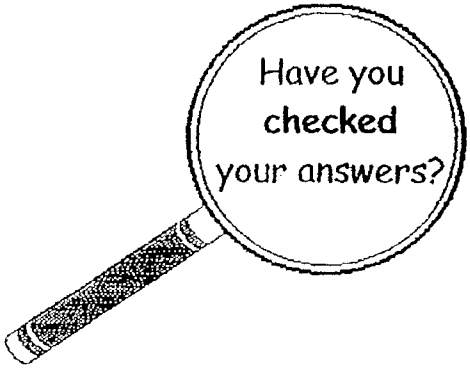

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LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	2	4	4	1	3	1	3	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	3	4	1	4	1	2	1	2
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	2	3	4	3	3	3	2		

SECTION B

Q29)	a)Number of leaves at the end of the experiment. b)There is more than one changed variable. c i)Change the type of soil of all pots to garden soil. ii)Change the amount of water added to the soil of the three pots daily to 100ml.
Q30)	a) Grass $\longrightarrow$ Grasshopper $\longrightarrow$ Bird b)The population of lizards. As lizards feed on praying mantis only, if the population of praying mantis is killed, the population of lizards will not have food and will die. c)Grass. The grass is the only producer in the food web. Its removal would decrease the population of all the other organisms in the food web. The removal of snake would result in an increase in the population of some organisms.
Q31)	a)As the distance increases, the temperature desreases until it reaches 25°C.

	b)Within a short period of time, the hot water will not heat from the surroundings and evaporate, so the object would not be able to lose as much heat to the surroundings compared to a long period of time. c) The foot on the ground will gain heat from the hot desert floor and so the temperature would be higher. The foot above the ground would lose heat to the surroundings and so the temperature would be lower. d) There will be lesser time spent on the hot desert ground and the lizard would be able to lift up its Feet faster and lose heat to the surroundings, which will reduce heat gain.
Q32)	a) Elastic potential $\longrightarrow$ Kinetic b)The spring would be more stretched and have more elastic potential energy stored in the spring. More elastic potential energy would be converted to kinetic of the toy car, allowing the car to travel further. c)The spring in the toy car was over stretched.
Q33)	There is less kinetic energy as the kinetic energy of the ball was converter to potential energy.
Q34)	a)Elastic spring force. b i)The elastic spring force was unable to overcome the friction between the cutter and the guides ii)Oil reduced the friction between the cutter and the guides. The elastic spring force could overcome the friction and push the lever back up.
Q35)	a)This ensures that the presence of starch tested at the end of the experiment was due to the plastic bags. b)P. It could carry out photosynthesis as it could receive light through the clear plastic bag and there is carbon dioxide in the bag
Q36)	a)The water in both beakers lost heat to the surroundings and reached room temperature. b)X.The temperature of the water decreases at a faster rate which means it loses heat more quickly. X is a better conductor of heat. c)Use containers of the same material but with different volumes of

	water.
Q37)	a)The material of the object is a magnetic material. b)Place the magnet closer to the object.
Q38)	a)Water vapour in the surroundings lost heat to the glass and condensed into water droplets. b)The temperature of the liquid is higher than the room temperature.
Q39)	a)The wind from the fan increases the rate of evaporation of the water on the plates. b)Y. Y was exposed directly to the wind unlike the others. Water on the plate will evaporate the fastest.
Q40)	a)Food made by the leaves above the cut could not be transported to the plant parts below the cut , so the food was stuck at the upper part of the cut and resulted in swelling. b)The food made by the leaves below the cut could not be transported to plant parts above the cut so most of the food will be started in part 2. c)As there was no leaves below the cut and food cannot be transported from the leaves above the cut , the roots would have no food and will not absorb any water , since no water is absorbed , the whole plant will have no water and die.
Q41)	a)The iron bar became an electromagnet and attracted the metal plate. b)The circuit would be a closed circuit so electric current can flow through it and the iron bar would become an electromagnet and attract the metal plate, the clapper would strike the bell , but the metal contact would also move up, making the circuit and open circuit , so electric current would not be able to flow through it , the metal plate would not be attracted and fall back the metal , contact would also fall back,making the circuit a closed one again. c)