Anglo-Chinese School (Primary)

MID YEAR EXAMINATION 2010
SCIENCE
PRIMARY SIX
BOOKLET A

Name: _____ ( ) Class: Primary 6 ___

Date: 13 May 2010 Duration of paper: 1h 45min

_____
Parent's/Guardian's signature

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 28 printed pages.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.

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 (OAS).

(60 marks)

1 Which one of the following classifications of the four animals shown below is correct?

A Seal

B Whale

C Guppy

D Platypus

	Fish	Mammals that give birth to live young	Mammal(s) that lay eggs
(1)	C only	A and B	C and D
(2)	C only	A and B	D only
(3)	B and C	A and B	D only
(4)	B and C	A, B and D	C and D

2 The table below shows how some materials have been classified based on a certain property.

Group A	Group B
carbon copper aluminium	steel nickel cobalt

Which one of the following is the property used for the above classification?

	Group A	Group B
(1)	Float on water	Sink in water
(2)	Good heat conductors	Poor heat conductors
(3)	Conductors of electricity	Insulators of electricity
(4)	Non-magnetic materials	Magnetic materials

3 The table below shows the comparison between a plant cell and an animal cell.

	Plant Cell	Animal Cell
A	Has cell wall	Does not have cell wall
B	Has chloroplasts	Does not have chloroplasts
C	Does not have cell membrane	Has cell membrane

Which of the above comparisons are true?

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

4 Which of the following statements about inhaled and exhaled air are true?

	Inhaled air	Exhaled air
A	It contains more oxygen.	It contains less oxygen.
B	Its temperature is lower.	Its temperature is higher.
C	It contains less nitrogen.	It contains more nitrogen.
D	It contains more water vapour.	It contains less water vapour.

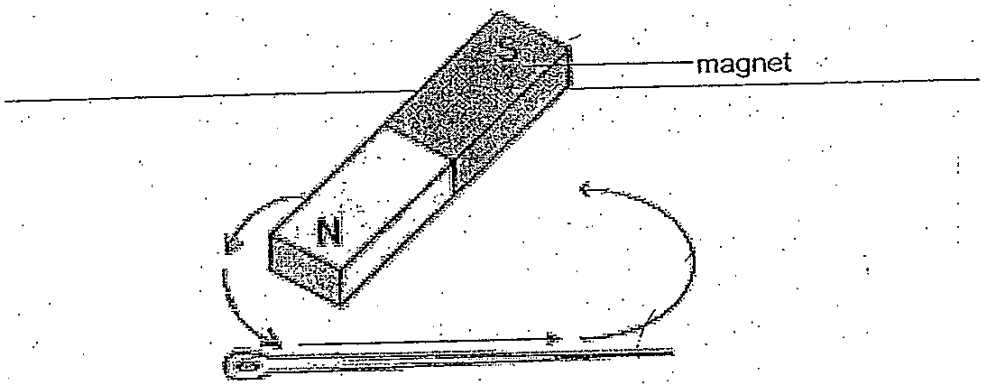
(1) A and B only

(2) B and D only

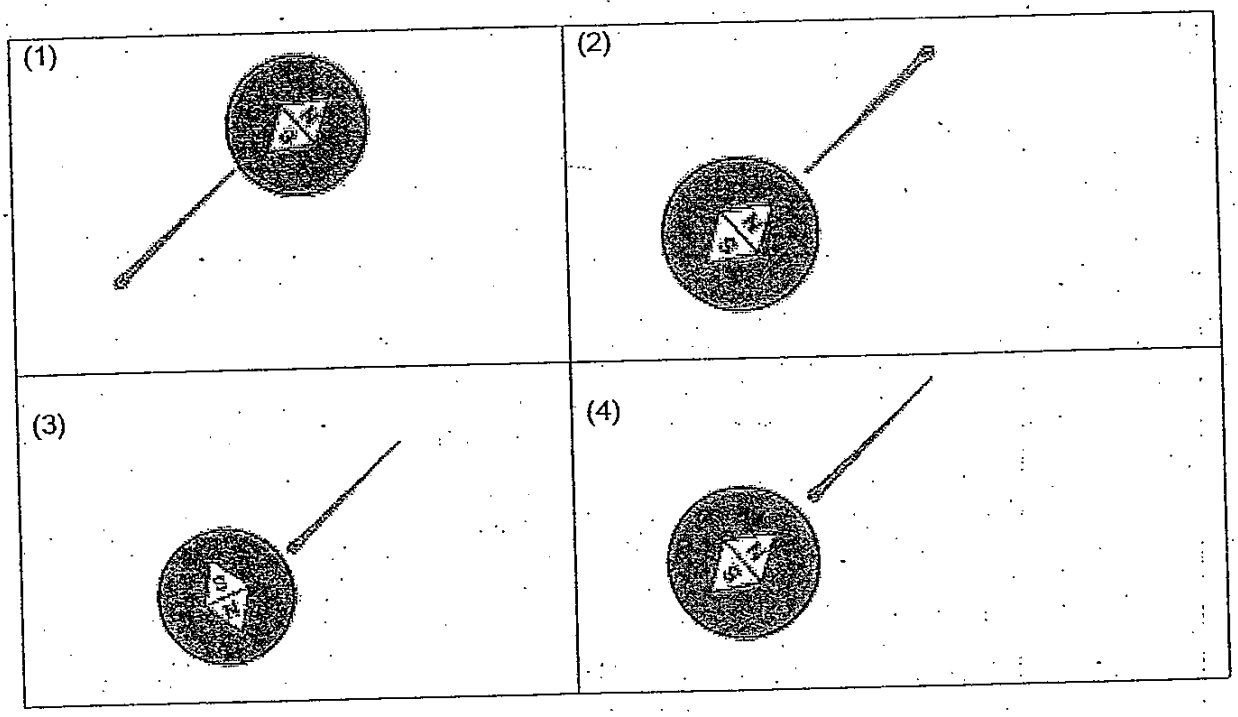
(3) A and C only

(4) A, B and D only

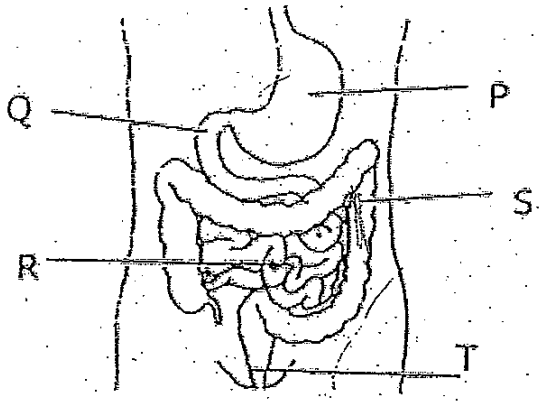
5 Needle S is made into a temporary magnet by using the stroking method as shown below.



Needle S is then placed near a compass. Which one of the following is correct?



6 The diagram below shows the human digestive system with parts P, Q, R, S and T.



Ali, Ben, Chris and David each made a correct statement about the digestive system.

Ali: Solid waste is found here.

Ben: Digestion is completed here.

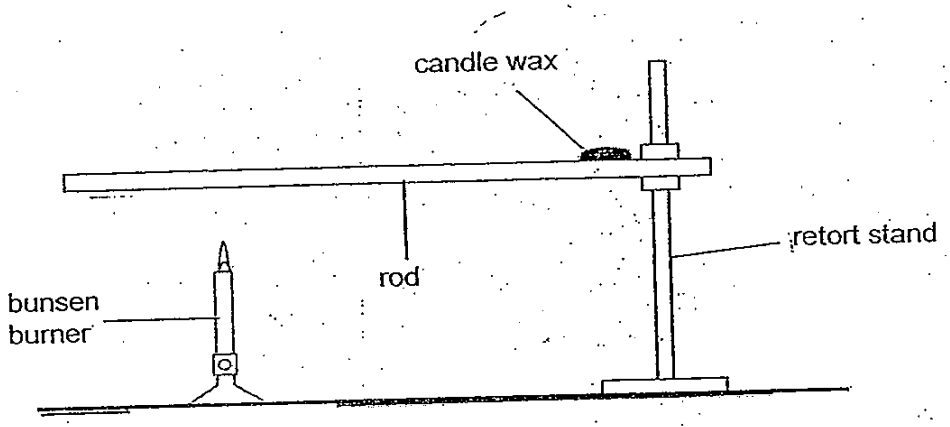
Chris: Water is absorbed from the undigested food here.

David: Digestive juices are secreted here.

Which of the labelled parts P, Q, R, S and T would correspond to the statements made by Ali, Ben, Chris and David?

	Ali	Ben	Chris	David
(1)	T	S	R	Q
(2)	R	T	Q	S
(3)	P	S	R	T
(4)	T	R	S	P

7 Five similar rods, D, E, F, G and H, made of different materials, are heated separately one at a time in the experiment as shown below.



The time taken for the candle wax on each rod to melt completely is recorded as shown in the table below.

Rod	Time taken (seconds)
D	59
E	73
F	35
G	47
H	22

Which one of the following shows the arrangement of the rods according to their heat conductivity, starting with the rod that is the poorest conductor of heat?

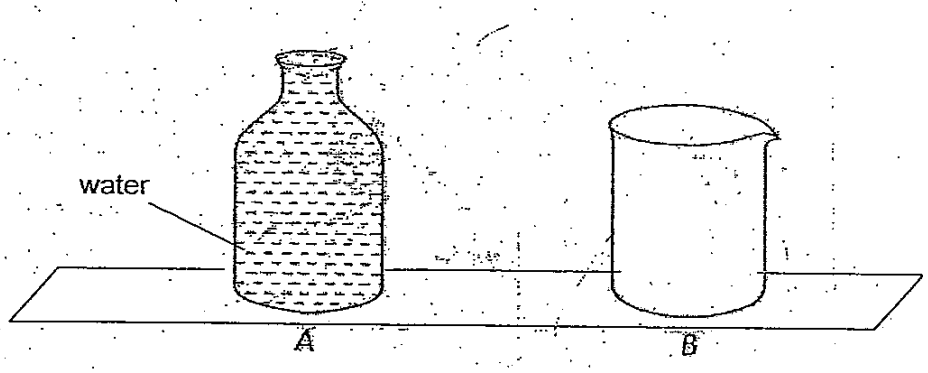
(1) H, F, E, D, G

(2) F, G, H, D, E

(3) E, G, F, H, D

(4) E, D, G, F, H

8 Jim has 2 containers, A and B, of the same volume. He filled Container A to the brim with water as shown in the diagram below.



Which of the following statements correctly state what will happen if he poured all the water from Container A into Container B?

A Container B will be filled to the brim and the water will take the shape of container B.

B Container B will be filled to the brim and the mass of the water will remain unchanged.

C The water will take the shape of container B and the mass of the water will change.

D The water will take the shape of container B and the mass of the water will remain unchanged.

(1) A and B only

(2) C and D only

(3) A, B and D only

(4) A, B, C and D

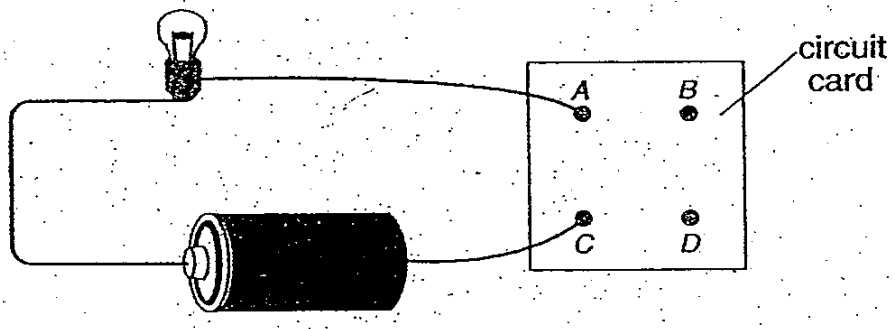
9 The table below shows Sean's pulse rate at different times of the day.

Time	Pulse (heartbeats per minute)
6 a.m.	70
8 a.m.	115
1 p.m.	85

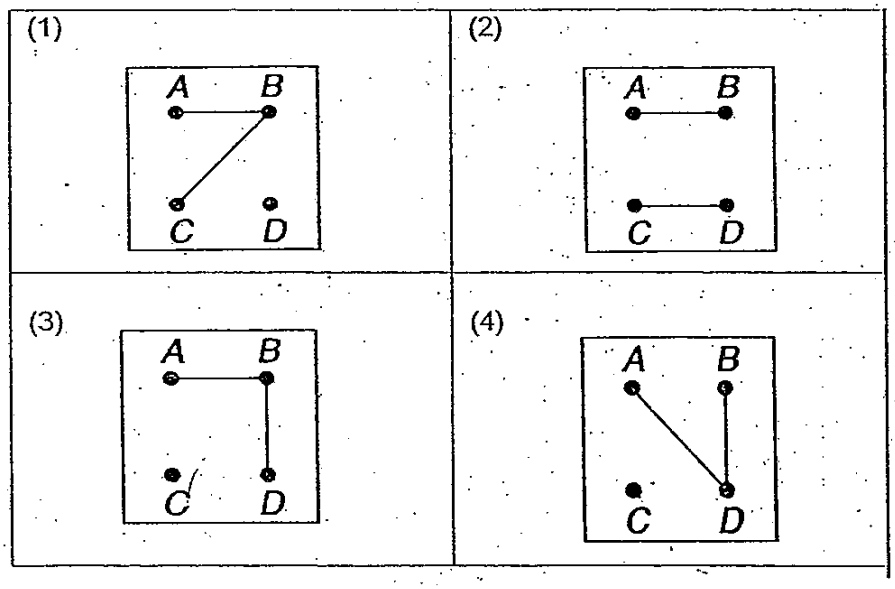
Which one of the following is a possible representation of what Sean was doing at each particular time of the day?

	6 a.m.	8 a.m.	1 p.m.
(1)	Running	Sleeping	Walking
(2)	Sleeping	Walking	Running
(3)	Walking	Sleeping	Running
(4)	Sleeping	Running	Walking

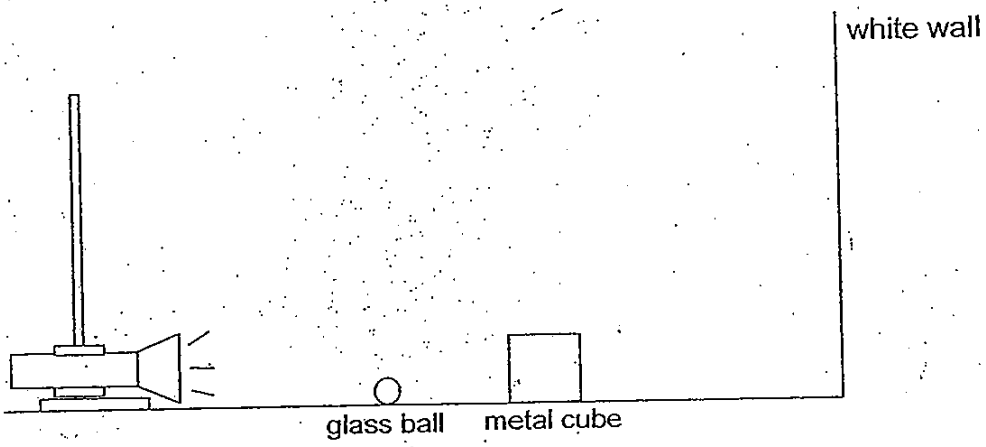
10 The set-up below shows a circuit tester. When it is connected to a circuit card, the light bulb lights up.



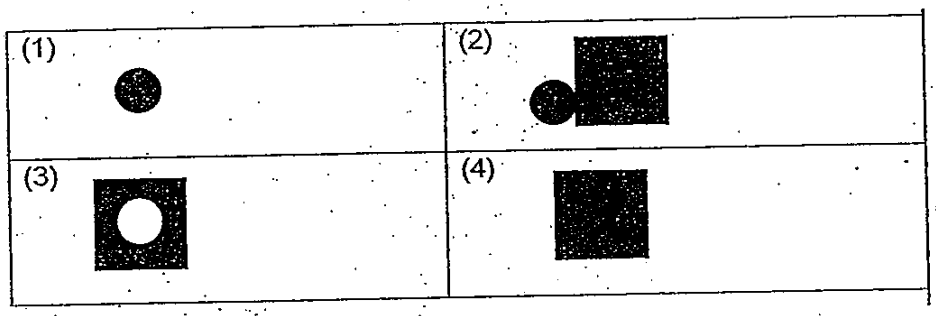
Which one of the following diagrams shows how the wires are connected at the back of the circuit card such that the bulb lights up?



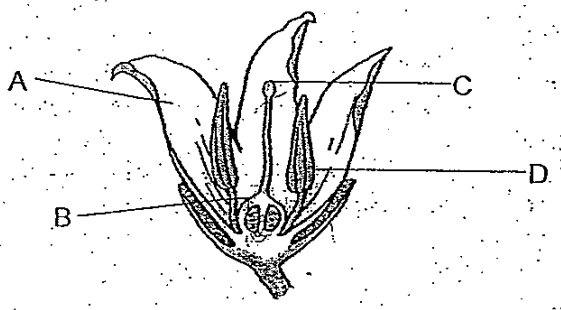
11 A white wall, a glass ball, a metal cube and a torch are placed in a straight line as shown in the diagram below.



When the torch is switched on, a dark shadow is formed on the white wall. Which one of the following shows correctly what is seen on the white wall?



12 The diagram below shows the cross section of a flower.



Which one of the following parts is **wrongly** matched to its function?

	Part	Function
(1)	A	Attracts pollinators
(2)	B	Develops into a fruit
(3)	C	Develops into a seed
(4)	D	Produces pollen grains

13 The table below gives information about four materials, A, B, C and D based on four properties. A tick (√) shows that the material has the property listed.

Property \ Material	A	B	C	D
Bends easily without breaking	✓	✓		
Good conductor of heat			✓	✓
Can be attracted by magnets				✓
Allows most light to pass through		✓		

Which one of the following materials represents a rubber band?

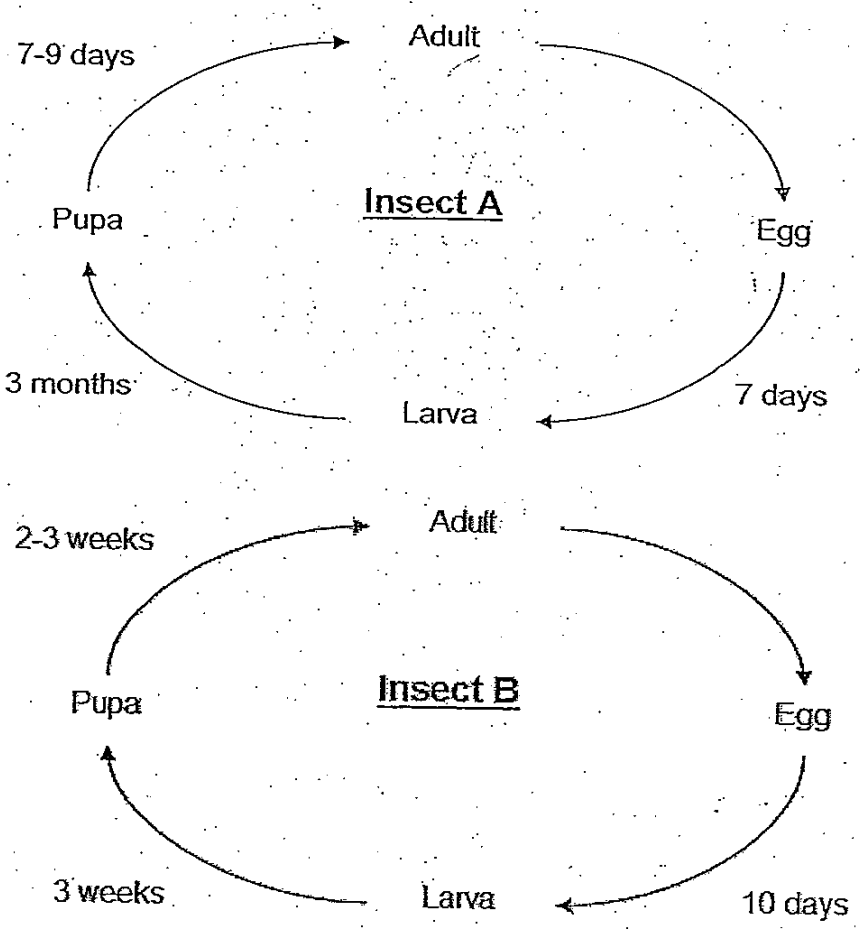
(1) A

(2) B

(3) C

(4) D

14 The diagrams below show the life cycle of 2 insects.



The two diagrams **cannot** be used to compare _____.

(1) the lifespan of the two insects

(2) the number of stages in each life cycle

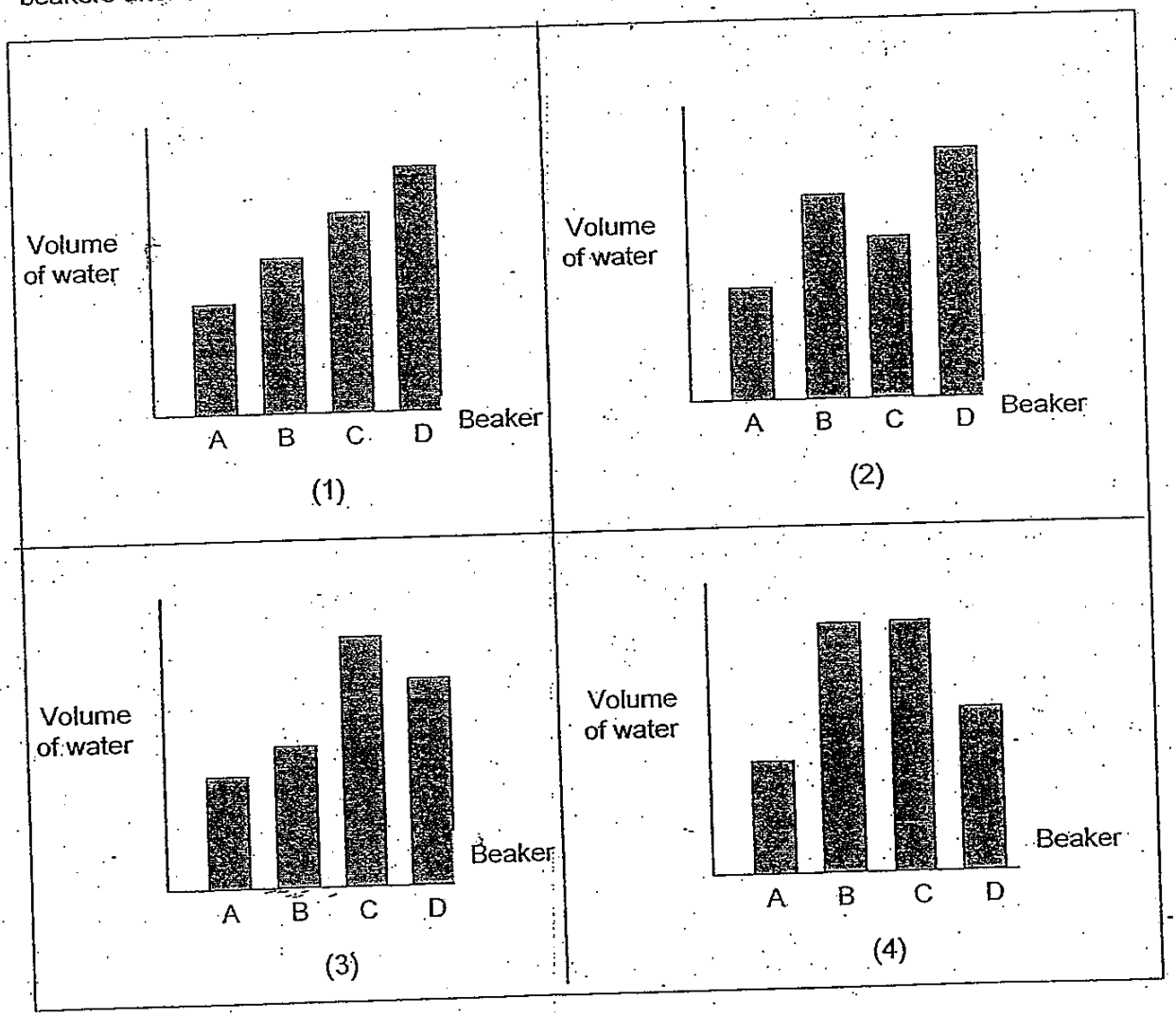
(3) the methods of reproduction of the two insects

(4) the number of days it takes for the eggs to hatch

15 Four identical beakers, A, B, C and D, were filled with the same volume of water. They were left in four places with different conditions for ten hours as shown in the table below.

Beakers	A	B	C	D
Conditions	Sunny Windy	Sunny Not windy	Cloudy Not windy	Cloudy Windy

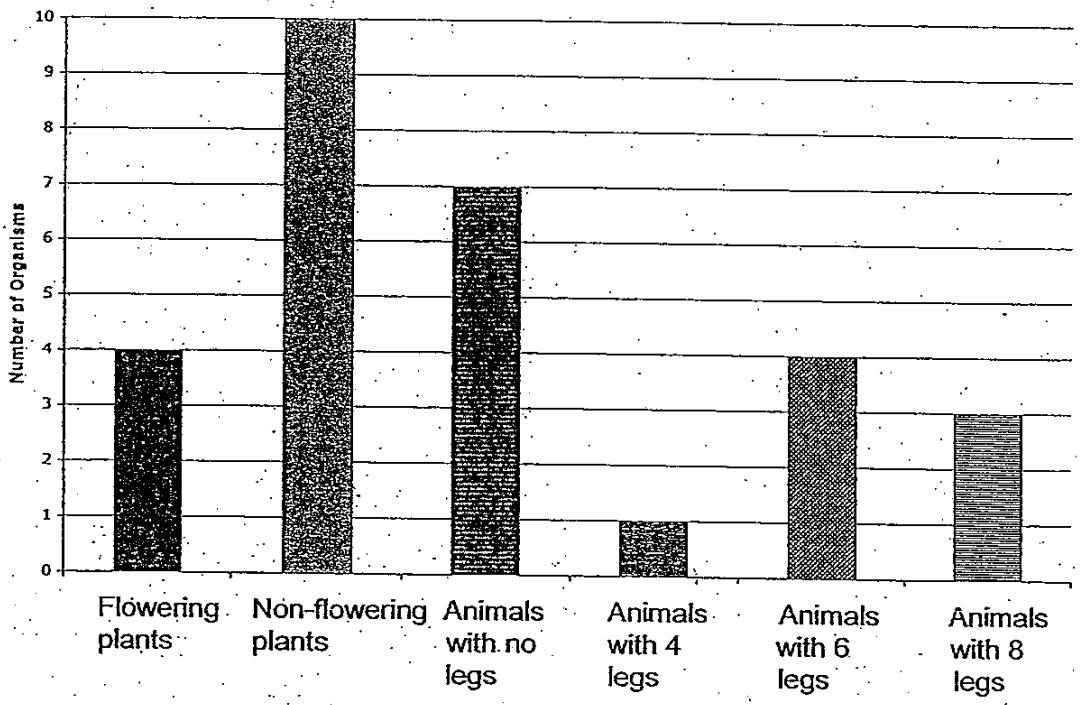
Which one of the following graphs correctly shows the volume of the water left in the four beakers after ten hours?



16 Wei Ming swam ten laps in the swimming pool in the afternoon. What is Wei Ming's source of energy and what are the energy changes during the swim?

	Source of Energy	Energy Changes
(1)	Food	Chemical potential energy → Kinetic energy + Sound energy
(2)	Sun	Light energy → Kinetic energy + Sound energy
(3)	Moving water	Kinetic energy of water → Kinetic energy + Sound energy
(4)	Wind	Kinetic energy of wind → Kinetic energy + Sound energy

17 A group of pupils counted the plants and animals in the school garden. The bar chart below shows their results.



Which one of the following statements about the plants and animals in the garden is correct?

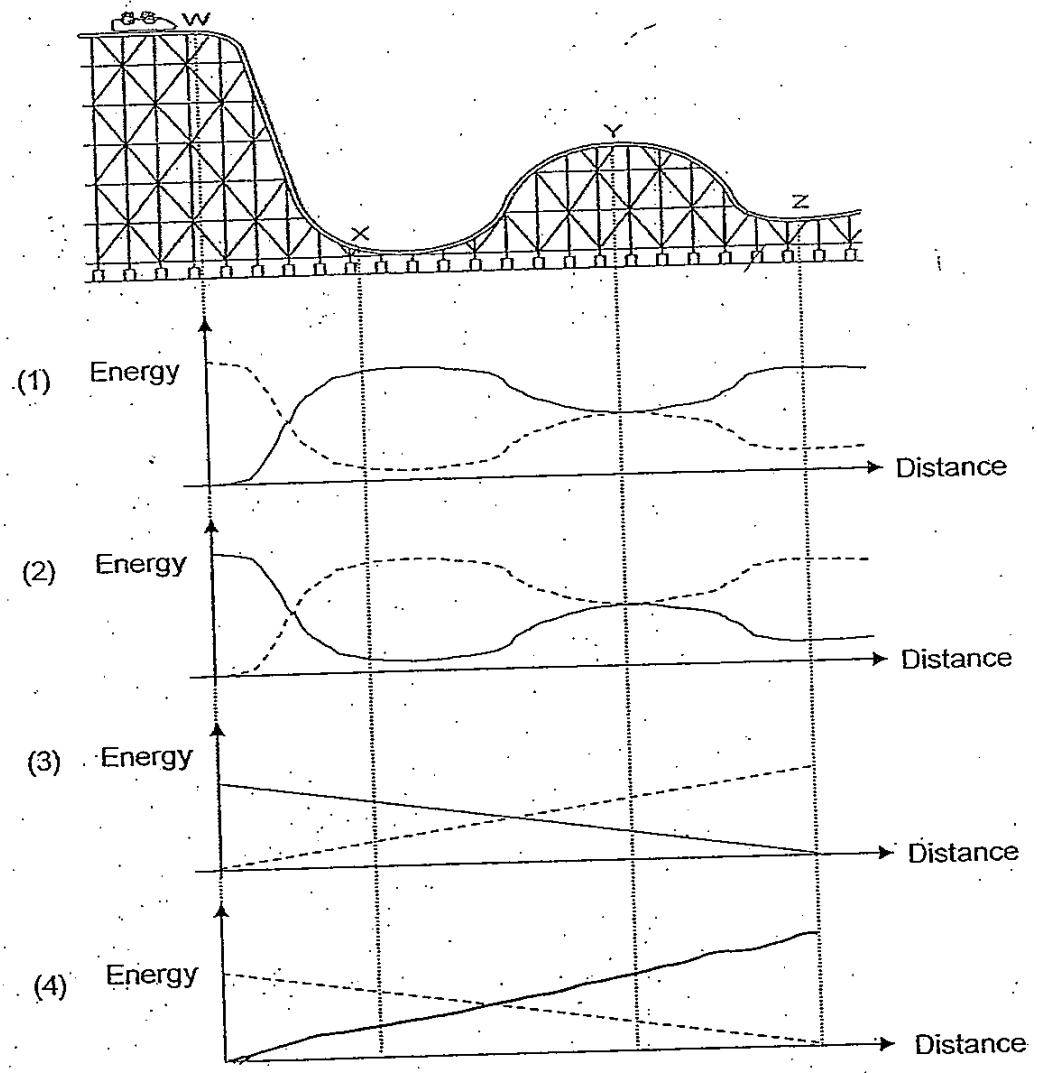
(1) There are two garden communities.

(2) There are fifteen populations of animals.

(3) There are at least six populations of plants and animals.

(4) The number of animals with six legs is fewer than those with eight legs.

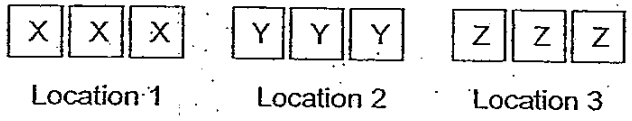
18 The diagram below shows a roller coaster. Which one of the following graphs best show the relationship between kinetic energy and gravitational potential energy of the roller coaster as it travels from W to Z?



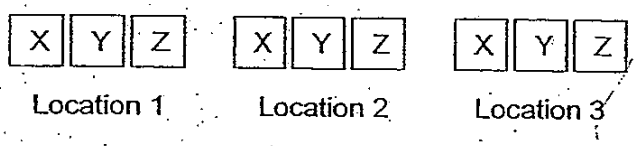
19 An experiment is being done to determine how the amount of light affects the growth of three different types of pea plants. Peas of each type are planted in several similar cups and the cups are labeled X, Y, or Z to show the type of pea planted in each. Some cups are set in each of three locations to receive different amounts of light.

Which one of the following best shows how the plants should be arranged for the experiment?

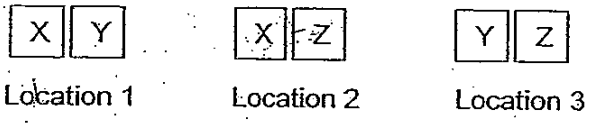
(1)



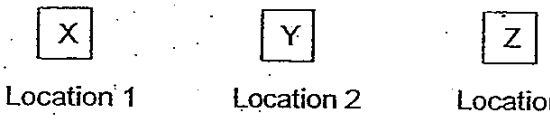
(2)



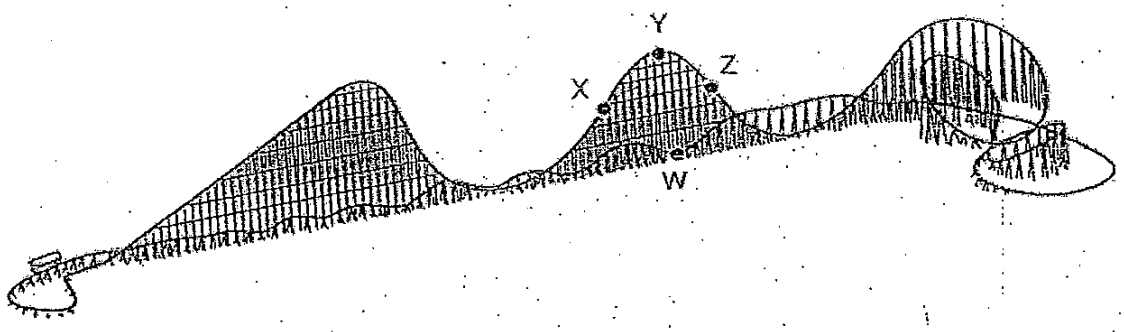
(3)



(4)



20 The diagram below shows one of the longest roller coasters in the world.



Three pupils made the following statements regarding the gravitational potential energy at points W, X, Y and Z.

Daniel: "The roller coaster has the highest gravitational potential energy at point Y as it is at the highest height compared to points W, X and Z."

Jane: "The roller coaster has the highest gravitational potential energy at point W as it is at the lowest height compared to points X, Y and Z.

Brandon: "The roller coaster has about the same gravitational potential energy at points X and Z as both are almost at the same height."

Which pupil(s) made the correct statement?

(1) Daniel only

(2) Brandon only

(3) Daniel and Brandon only

(4) Jane and Brandon only

21 The diagram below shows a toy rocket being launched upwards.

As it rises, its kinetic energy changes. At the time the rocket reaches the highest point, most of the kinetic energy of the rocket has been _____.

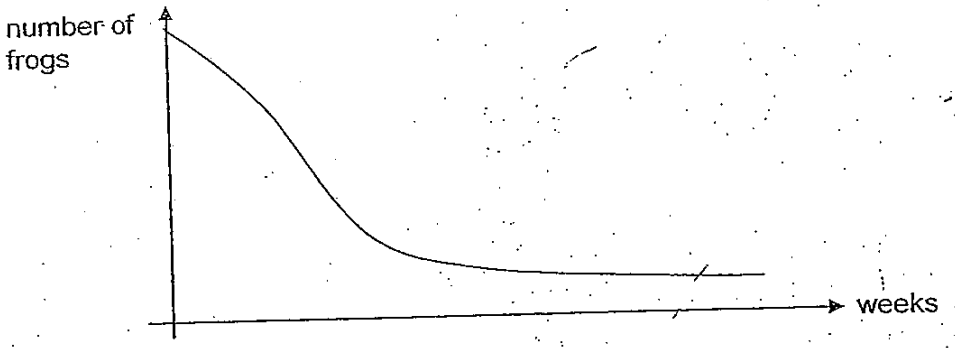
(1) converted to friction

(2) lost to the surroundings

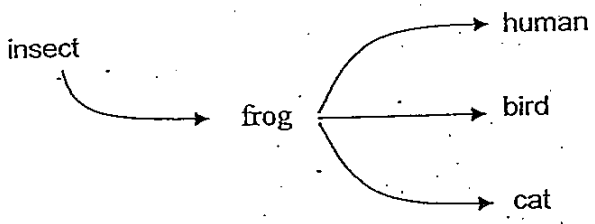
(3) stored back as chemical energy

(4) converted to gravitational potential energy

22 The graph below shows the change in the size of the frog population in a pond over a period of time.



The energy pathway below shows the food relationship between frogs and other organisms. For example, the insects are eaten by the frogs.



What could be the possible causes for the change in the frog population above ?

A A significant increase in the water level in the pond.

B A significant decrease in the cat population.

C A significant increase in the human population.

D A significant decrease in the insect population.

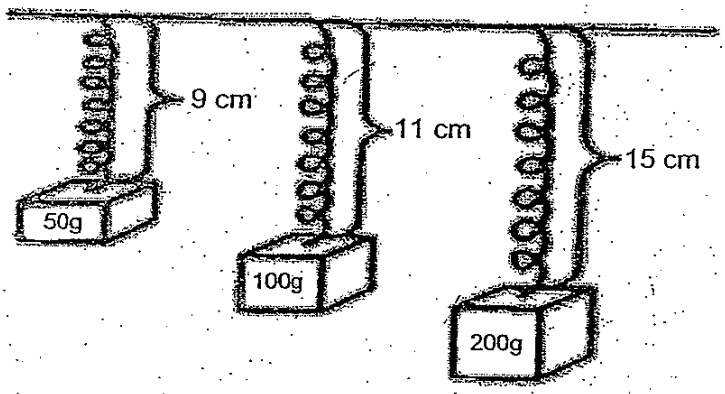
(1) A and C only

(2) A and D only

(3) B and C only

(4) C and D only

23 Dani conducted an experiment using a spring and three weights as shown below. Different weights were added and the lengths of the spring were measured.



What would be the extension of the spring when the load was 225 g?

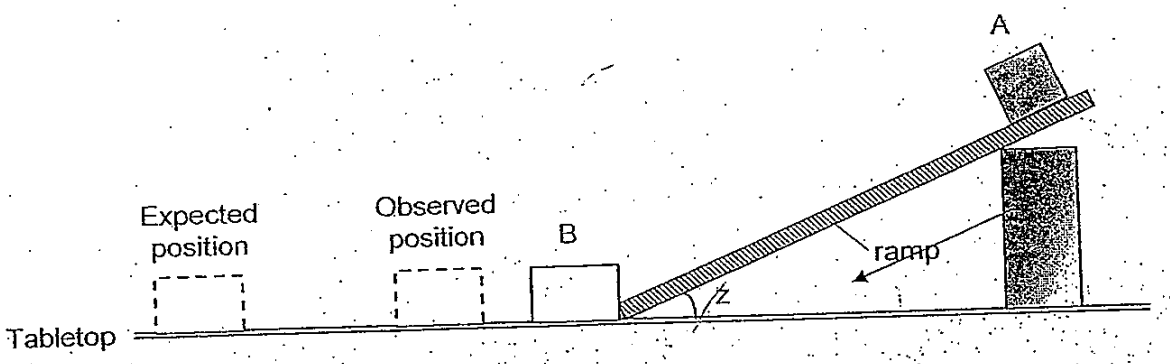
(1) 2 cm

(2) 7 cm

(3) 9 cm

(4) 16 cm

24 Mary carried out the following experiment on a tabletop. When she released box A, box B did not move as far as she had expected after box A hit B.



What could she do to the set-up to ensure that box B reached the expected position or beyond?

A Oil the table top

B Use a lighter box A

C Use a heavier box B

D Increase the angle (z) of the ramp

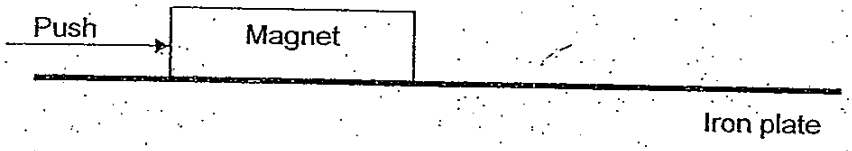
(1) A only

(2) A and D only

(3) B and C only

(4) C and D only

25 A magnet was placed on an iron plate. It was then given a push to move it along the metal plate.



The following are the different types of forces that can act on the magnet.

A Frictional force
B Gravitational force
C Magnetic force

Which of the following force(s) must the push overcome in order for the magnet to move along the iron plate?

(1) A only

(2) C only

(3) B and C only

(4) A and C only

26 Daniel wanted to find out how the temperature of water affects the number of fishes living in a fish tank. The fishes were placed in 4 similar tanks, A, B, C and D.

Tank	Temperature of water / °C	Number of fish	Type of fish
A	15	20	guppy
B	20	30	gold fish
C	25	20	guppy
D	30	20	gold fish

Which of the following tanks, A, B, C and D should he use to carry out a fair test?

(1) A and C only

(2) A and D only

(3) B and C only

(4) C and D only

27 The chart below shows the results collected when similar well-watered potted plants were placed in sunlight for different lengths of time.

Plant Group	Amount of time the plants are exposed to light per day (hours)	Average growth in one week (cm)
 1	2	1
 2	4	3
 3	6	5
 4	8	2

Which one of the following conclusions is best supported by the results?

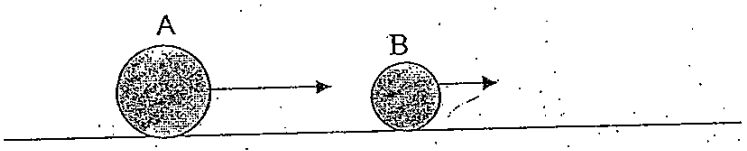
(1) The plants that received 6 hours of sunlight a day grew the most.

(2) The plants that were given more than 8 hours of sunlight a day wilted.

(3) The plants that received 2 hours of sunlight a day had the most leaves.

(4) The plants that were given less than 4 hours of sunlight a day had the thickest stems.

28 Two metal balls, A and B, are moving on the floor at different speeds in the same direction as shown in the diagram below.



What will likely happen to balls A and B after collision?

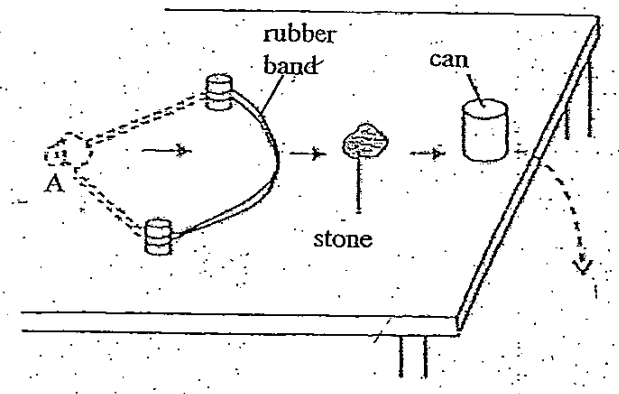
(1) A will slow down and B will increase in speed as A will transfer some of its kinetic energy to B.

(2) A will slow down and B will increase in speed as B will transfer some of its kinetic energy to A.

(3) B will slow down and A will increase in speed as B will transfer some of its kinetic energy to A.

(4) B will slow down and A will increase in speed as A will transfer some of its kinetic energy to B.

29 Andrew conducted an experiment as shown in the diagram below.



He pulled the rubber band backwards together with a stone to position A. When he released the stone, it moved forward and hit the can. The can fell off the table and hit the ground.

Which one of the following shows the correct main energy conversion that took place from the moment Andrew released the rubber band till the can hit the ground?

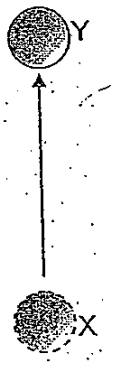
(1) elastic potential energy (stone) → kinetic energy (stone) → kinetic energy (can) → sound energy + heat energy

(2) chemical potential energy (stone) → kinetic energy (stone) → kinetic energy (can) → sound energy + heat energy

(3) elastic potential energy (stone) → kinetic energy (stone) → gravitational potential energy (can) → kinetic energy (can) → sound energy + heat energy

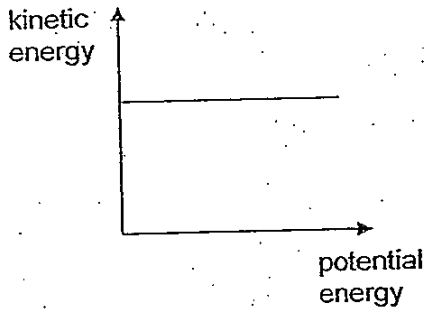
(4) chemical potential energy (stone) → kinetic energy (stone) → gravitational potential energy (can) → kinetic energy (can) → sound energy + heat energy

30 A boy throws a ball upwards from point X to Y. On its way up, the ball decreases its speed at a constant rate till it is momentarily at rest at the highest point, Y.



Which one of the following graphs best represents the energy change of the ball as it is thrown from point X to Y?

(1)



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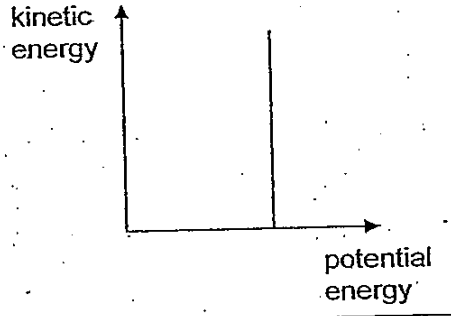

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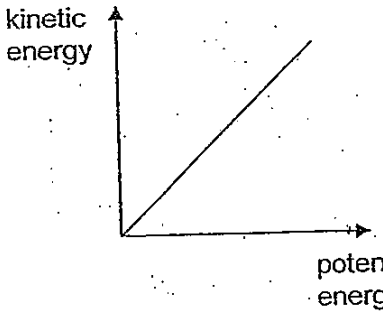

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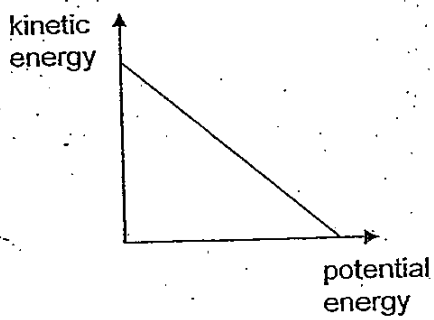


- End of Booklet A -

Anglo-Chinese School (Primary)

MID YEAR EXAMINATION 2010
SCIENCE
PRIMARY SIX
BOOKLET B

Name: _____ ( ) Class: Primary 6____

Date: 13 May 2010 Duration of paper: 1h 45min

_____
Parent's/Guardian's signature

Booklet	Maximum marks	Marks obtained
A	60	
B	40	
Total	100	

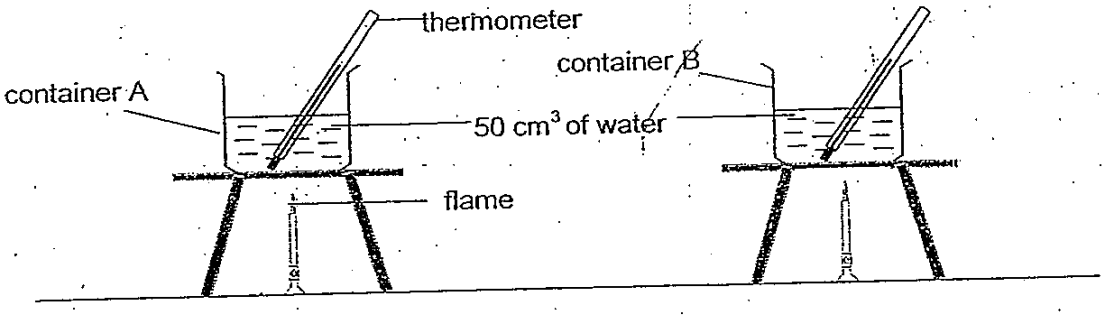
INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 15 printed pages.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.

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

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

31 James poured 100 cm^3 of water at room temperature equally into two containers, A and B, which are made of different materials. A thermometer was then placed in each container as shown below.



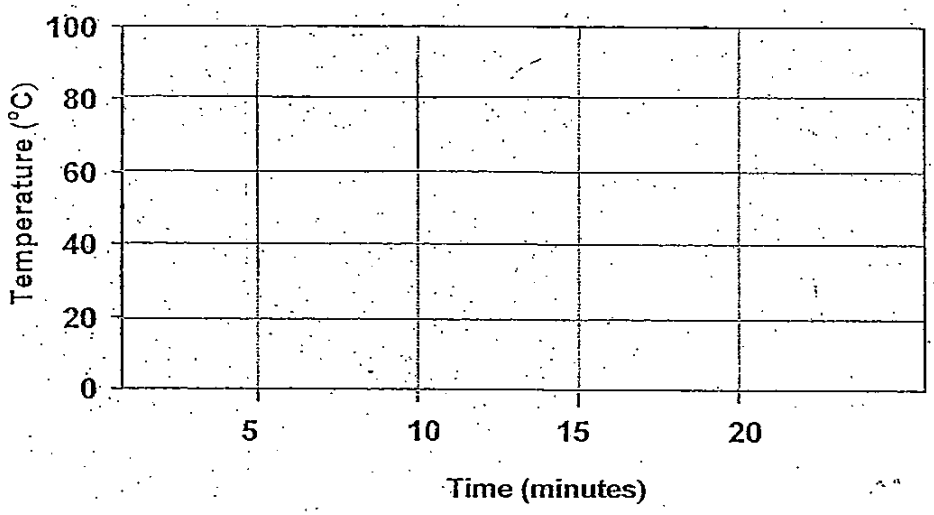
The two containers were then heated from room temperature at 30°C to boiling point. The table below shows the time the water in each container took to reach boiling point.

	Container A	Container B
Time taken to reach boiling point (minutes)	10	15

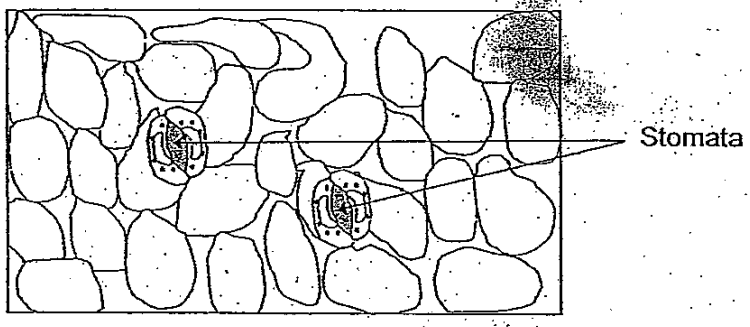
(a) James wants to use one of the two containers to keep a steam bun hot for a longer time. Which container should he use? Explain your answer. [1]

1

(b) Draw two line graphs in the space below to represent the two results in the table. Label the container A and container B. [2]



32 The leaves of plants usually contain less stomata on the upperside of the leaves compared to the underside.

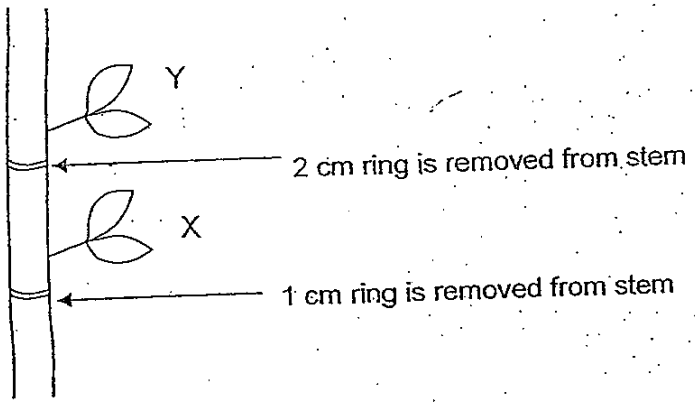


(a) What is the function of the stomata? [1]

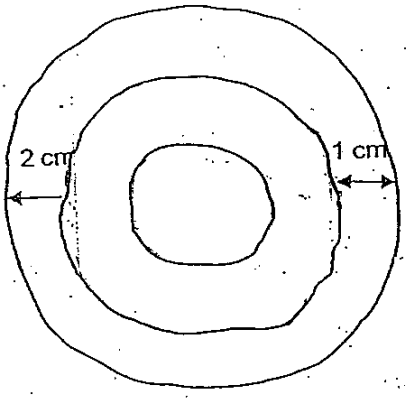
(b) Why are less stomata found on the upperside of leaves? [2]

5

33 Mary carried out an experiment on a stem of a plant as shown below. She observed that the leaves at position Y died after two days.



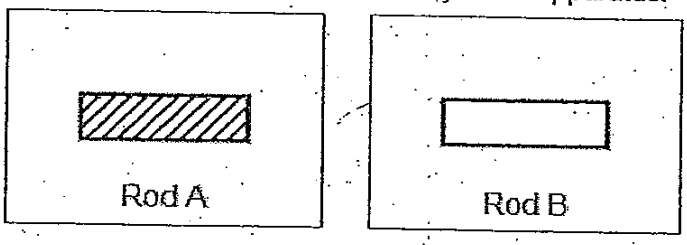
(a) In the diagram below, **shade** the part of the stem that transports water. [1]



(b) Explain why the leaves at position Y will die first after two days. [2]

3

34 Gary wanted to find out if rod A or rod B can conduct electricity. In addition to the two rods given to him as shown below, he was also given some wires, two similar light bulbs and two identical batteries. He was not allowed to use any other apparatus.



(a) Using only the items Gary was given, draw two circuit diagrams to show how he could connect them in order to carry out his investigation. [2]

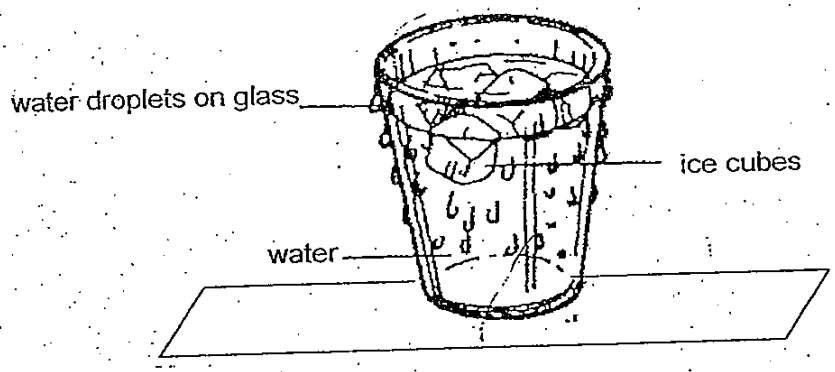
Circuit diagram 1:

Circuit diagram 2:

(b) After setting up the two circuits, explain how Gary can conclude which rod conducts electricity. [2]

4

35 Glenn left a glass of water containing ice cubes in his classroom. After ten minutes, he saw water droplets forming on the outside of the glass as shown in the diagram below.

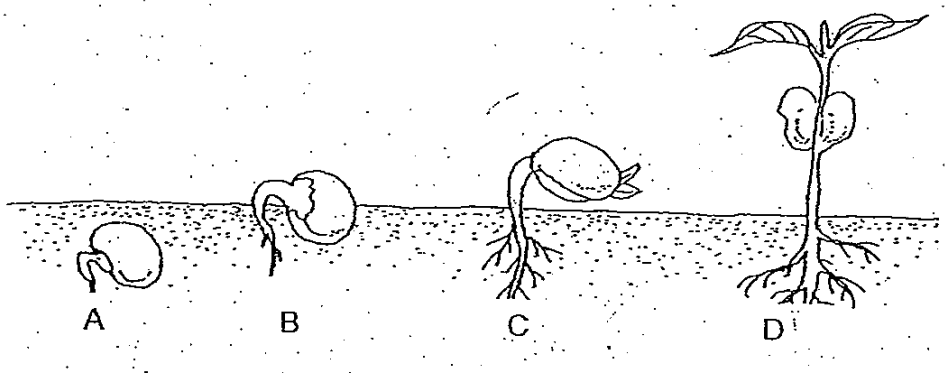


(a) Explain why water droplets could be found on the outside of the glass. [2]

(b) Glenn took another glass of water with ice cubes and put it on a table inside the computer laboratory where the air-conditioner was switched on. After ten minutes, he observed there were no water droplets found on the outside of the glass. Provide an explanation for Glenn's observation. [1]

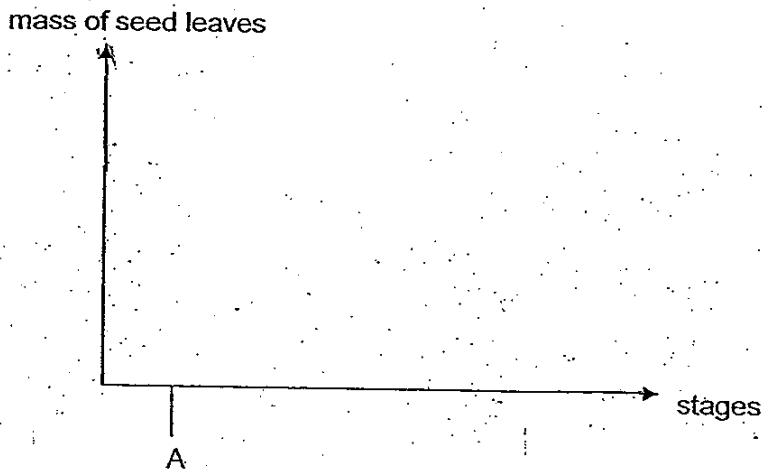
3

36 The diagram below shows the stages of a germinating seed.



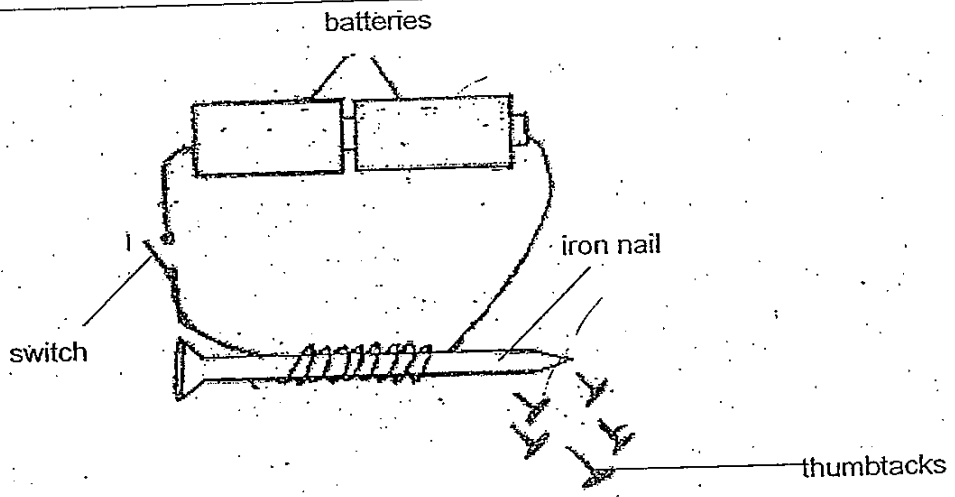
(a) At stage D, the seedling no longer requires the food stored in the seed leaves to grow. Explain why this is possible. [1]

(b) Sketch a line graph below to show how the mass of the seed leaves changes as the seedling grows from stage A to stage C. [1]



2

37 Dan sets up the circuit as shown below. When the switch is closed, he observed that the iron nail attracts the thumbtacks.



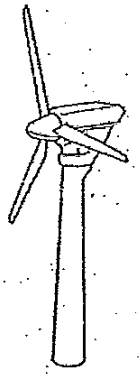
(a) Why is the iron nail able to attract the thumbtacks when the switch is closed? [1]

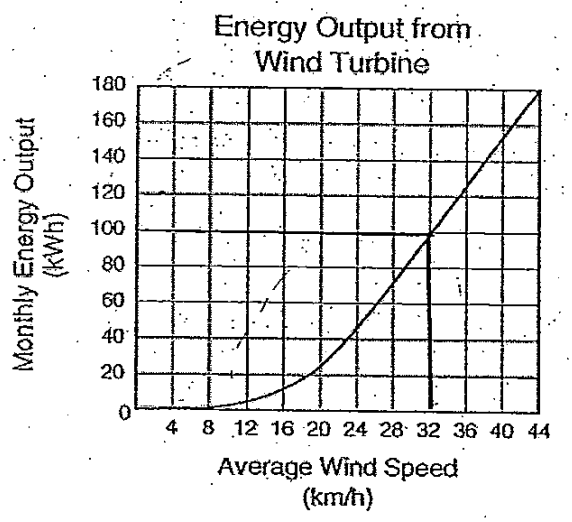
(b) Suggest two things that Dan can do to the circuit, such that the iron nail can attract more thumbtacks. [1]

2

38 An engineer measured how much energy a new type of wind turbine generated with different wind speeds. The monthly energy output is measured in kilowatt hour (kWh). A graph of the results is shown below.

Wind Turbine





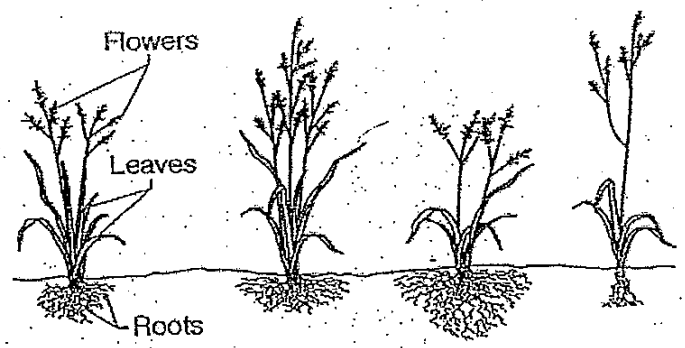
(a) What are the energy changes when the wind turns the wind turbine to generate electricity? [1]

(b) Explain why the monthly energy output is low when the average wind speed is low. [1]

(c) What will be the average wind speed if the engineer wants the wind turbine to generate a monthly energy output of 100 kWh? [1]

3

39 The picture below shows four varieties of the same species of grass that grow in a prairie ecosystem.



Variety 1 Variety 2 Variety 3 Variety 4

Which variety has the best chance of surviving a long period of dry weather? Give two reasons to support your answer. [2]

2

40 In a particular forest, the size of the squirrel population is 100. The forest was cleared and new houses were built. As soon as the houses were completed and new trees planted as shown below, the squirrel population size in the area decreased to 35. After five years, the squirrel population slowly increases to 80.

(a) Give one possible reason for the decrease in the squirrel population. [1]

(b) Give two possible reasons for the increase in the squirrel population. [2]

3

41 Aini did an experiment with four identical balls, A, B, C and D. She dropped them from different heights and recorded the time taken for each ball to hit the ground. The table below shows the results.

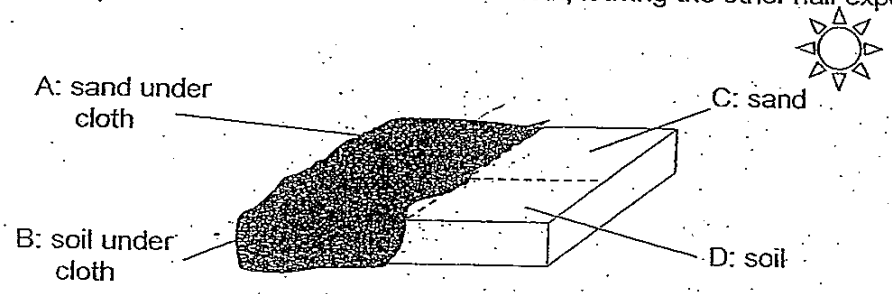
Ball	Time taken (seconds)
A	5
B	7
C	9
D	15

(a) Which ball has the most kinetic energy just before it hits the ground? Explain your answer. [2]

(b) State two energies that the kinetic energy has been changed into when the ball hits the ground. [1]

3

42 David wanted to find out the type of environment that certain animals prefer. He filled half of a section of a container with some soil and the other half with sand. Thereafter, he covered half of the container with a thick black cloth, leaving the other half exposed to the sun.



David then put three populations of animals X, Y and Z, in the centre of the container and left the whole setup in the sun for six hours. After six hours, he removed the thick cloth and counted the number of animals X, Y and Z in each section. The table below shows his results.

Section	Number of Animal X	Number of Animal Y	Number of Animal Z
A	8	2	0
B	2	3	0
C	0	3	1
D	0	2	9

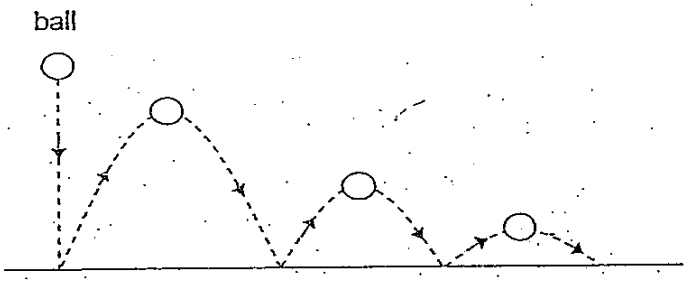
(a) Based on the results, which animal population, X, Y or Z, preferred the soil environment? Explain your answer. [1]

(b) With the thick cloth removed, David left the container in the sun for another six hours. After six hours, he found that one population of the animals has died.

Which population, X, Y or Z, of the animals died? Explain your answer. [2]

3

43 Richard dropped a partially deflated ball on the ground and it bounced only three times before it came to rest.



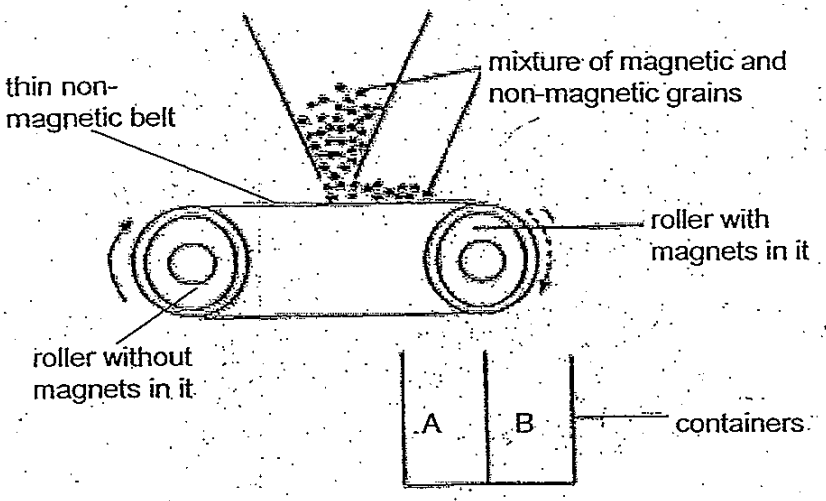
He then pumped in air into the ball till it is fully inflated. He dropped the ball from the same height as in the previous experiment and noted that the ball now bounced more than three times before it came to rest.

(a) Explain why the inflated ball is able to bounce more than three times. [2]

(b) Identify one force that was acting continuously on the ball. [1]

3

44 The diagram below shows how factories use magnetic separators to separate magnetic grains from the non-magnetic ones.



(a) Write the letters, A or B, in the table below to show where the magnetic and non-magnetic grains will fall into. [1]

Type of grains	Container
Magnetic	
Non-magnetic	

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

_____

_____

_____

_____

- End of Paper -

- Have you checked your answers? -

3

ANSWER SHEET

EXAM PAPER 2010

SCHOOL : ACS PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

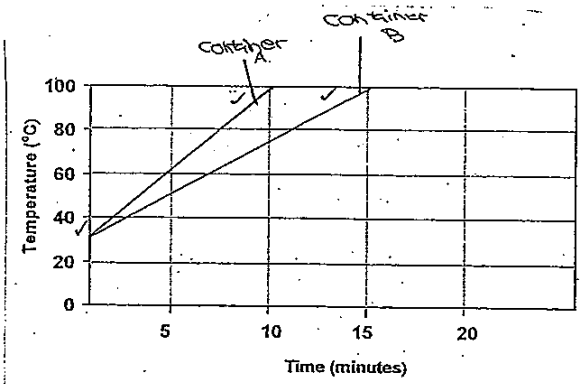
TERM : SA1

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

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

31)a)Container B. As it container B is a poorer conductor of heat than container A, it can prevent heat from escaping easily.

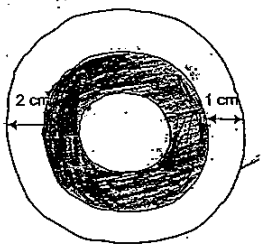
b)



32)a)The stomata allow gaseous exchange.

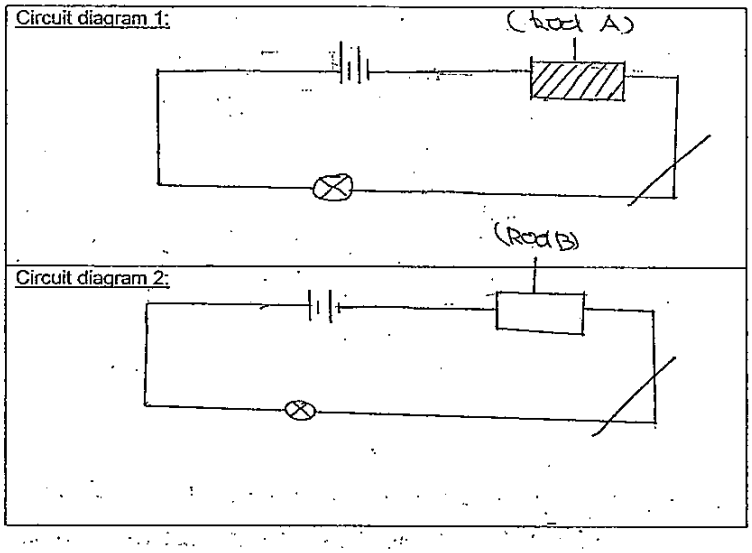
b)It is to avoid direct sunlight and reduce water loss through evaporation. If it is exposed to sunlight, the plant will lose more water as water in the stomata gained heat and evaporated.

33)a)



33)b)The leaves in position Y cannot get water from the roots as the water-carry tube (xylem) has been cut off. Without water the leaves in position Y die first after two days.

34)a)



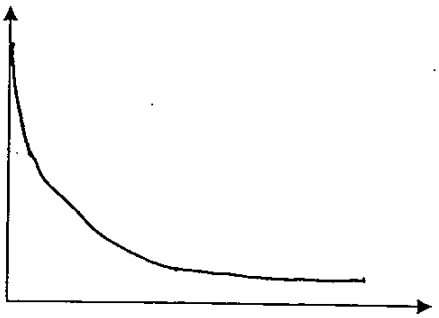
b)If the light bulb in the circuit with Rod A lights up, means Rod A conducts electricity but if it does not light up means Rod A is not a conductor of electricity. If the light bulb in the circuit with Rod B lights up means Rod B conducts electricity but if it does not light up means Rod B is not a conductor of electricity.

35)a)The water vapour in surrounding air touches the cooler surface of the glass, the water vapour loses heat and condenses into tiny water droplets on the glass.

b)The temperature of the water vapour in the surrounding air is the same as the glass of water with ice cubes, as they are same in temperature, no condensation can occur thus no tiny water droplets can be found on the outside of the glass.

36)a)The leaves have a green pigment called chlorophyll, with chlorophyll, they can trap sunlight to make food for them to survive.

b)



37)a)When the switch is closed it forms a full circuit, so there is electric current flowing through the iron nail, thus the iron nail becomes an electromagnet allowing it to attract magnetic things such as thumbtacks.

b)1)Increase the number of batteries.

2)Increase the coils of wire around the iron nail.

38)a)Kinetic energy of the wind→kinetic energy of the spinning turbine→ electrical energy of the generator.

b)The lesser the wind, the lesser electricity is generated.

c)32 km/h.

39)Variety 3. It has the most roots to absorb water from a short shower 2. It has the shortest stem so it does hot have to provide much water to it, thus the other parts of the plant can get more water.

40)a)After the forest was cleared, the squirrels have lesser things to feed on, thus most of the squirrels died due to lack of food, causing them to decrease in number.

b)1)The new trees provide food for the squirrels.

2)The trees grew and the squirrels can escape from predators by climbing on the tree or blending itself with the trunk of the tree.

41)a)Ball D. It takes the longest time to hit the ground so it must be dropped from the highest point. Hence it has the greatest gravitational potential energy which is converted to the most kinetic energy just before it hits the ground.

b)Heat energy and sound energy.

42)a)Z. It has the most animal Z on the soil environment.

b)X. Most of animal X stayed under the doth, removing the cloth caused them to be exposed to the sun, as it is hot suitable for them to be exposed to the sun. They died.

43)a)A fully inflated ball has more air and hence a greater mass than a partially deflated ball. The inflated ball has gravitational potential energy and hence greater kinetic energy just before it hits the ground which enables it to bounce more than three times.

b)Gravitational force.

44)a)A,B

b)There is magnet on one side of the roller, magnets only attract magnetic objects. So the nonmagnetic object will drop into container B as it cannot be attracted to the magnet while the magnetic objects are attracted to the magnet, as there is no magnet after container A, the magnetic object falls into container A.