Anglo-Chinese School (Primary)

MID-YEAR EXAMINATION 2012
SCIENCE
PRIMARY SIX
BOOKLET A

Name: _____ ( ) Class: Primary 6 ___

Date: 10 May 2012 Duration of paper: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 25 printed pages including this cover page
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. 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 and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

---

1 Jeffrey was given three materials X, Y and Z, of different hardness. He used the sharp end of a glass rod and a wooden satay stick to scratch each of the materials. He recorded his observations in the table below.

Items used to scratch material	Scratch marks observed on the material?		
	X	Y	Z
glass rod	No	Yes	Yes
wooden satay stick	No	No	Yes

Based on the results from the table above, which of the following statement(s) about the material(s) is/are most likely correct?

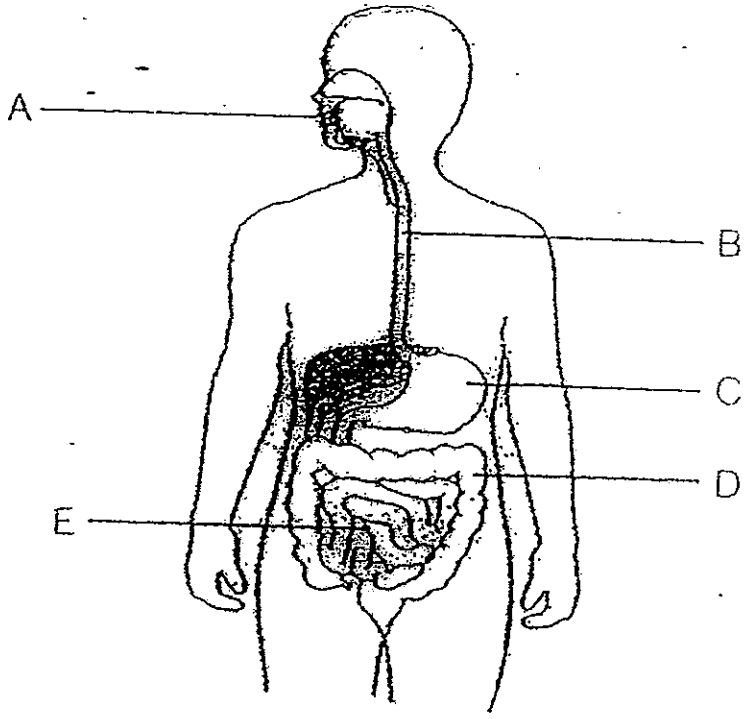
(1) Material X is the strongest material.

(2) Material Y is harder than Material Z.

(3) Material Z is harder than material X.

(4) Material Z is the most flexible material.

2 The diagram below shows the human digestive system.



In which of the following parts, A,B,C,D and/or E, are the digestive juices present?

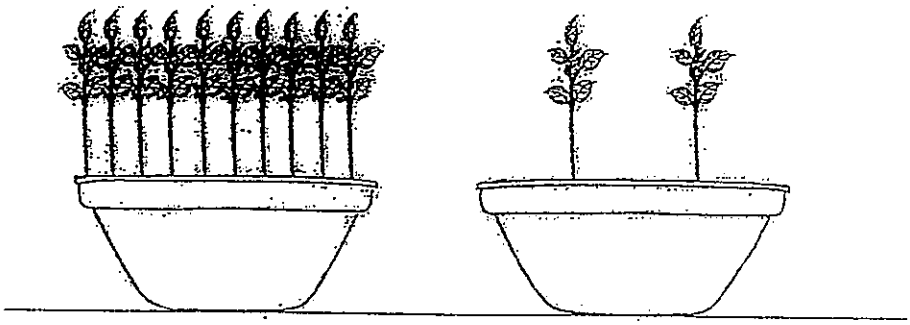
(1) A only

(2) B and D only

(3) A, C and E only

(4) B, C and D only

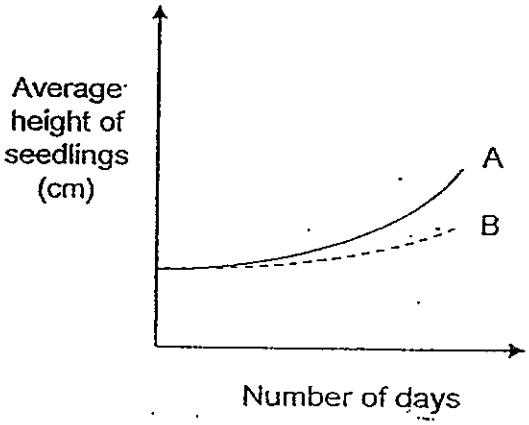
3 Daniel bought some seedlings of the same type and planted these seedlings in two identical pots, A and B, as shown in the diagram below. The pots had the same amount and type of soil. The pots were then placed side by side in the school's garden. He gave the same amount of water to each pot of seedlings daily. He then observed and recorded the heights of the seedlings daily.



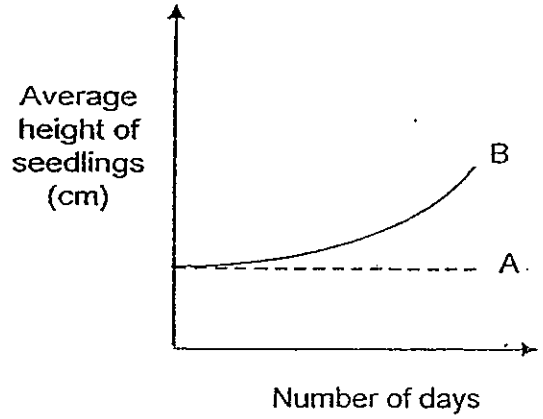
Pot A Pot B

Which one of the following graphs below most likely shows the average heights of the seedlings in pot A and B after a few days?

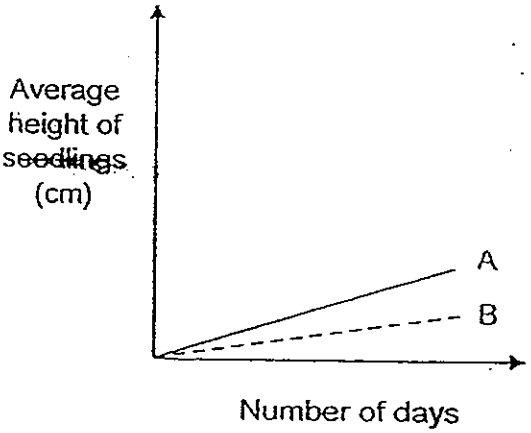
(1)



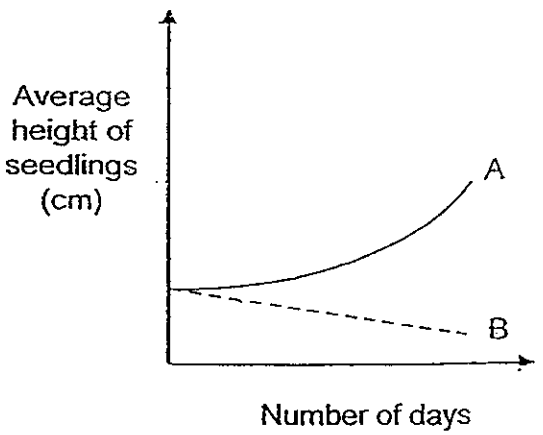
(2)



(3)



(4)



4 The table below provides some information on three cells P, Q and R.
A tick (√) indicates the presence of the part of a cell.

		cell P	cell Q	cell R
Parts of cell	cell wall	√		√
	nucleus	√	√	√
	chloroplast			√

Based on the table above, which of the following statement(s) about cells P, Q and R is/are most likely correct?

A Cells P and Q are animal cells
B Cell P is able to make its own food.
C Cell R is found in the leaf of a plant.
D Cell Q can be found in the roots of a plant.

(1) C only.

(2) A and B only

(3) B and D only

(4) C and D only

5 The table below shows the changes in the population size of some organisms in the same habitat over a period of three years.

Organism	Years		
	2009	2010	2011
R	1253	455	473
S	450	467	460
T	320	389	395

one

Which of the following factors could have most likely caused the drastic change in the population size of organism R from the year 2009 to 2011?

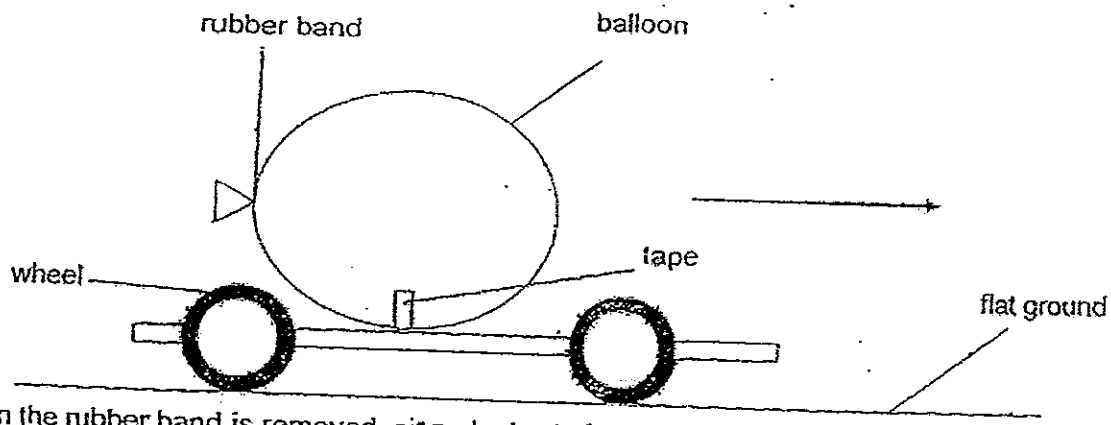
(1) There was a severe drought.

(2) A fire broke out in the habitat.

(3) A disease struck the population of organism R

(4) A new organism was introduced into the habitat.

6 Colin taped a balloon firmly to a toy car to create a 'balloon car racer' as shown in the diagram below.



When the rubber band is removed, air rushed out of the balloon, producing a force. This force caused the balloon and the toy car to move in direction X because this force was greater than the _____

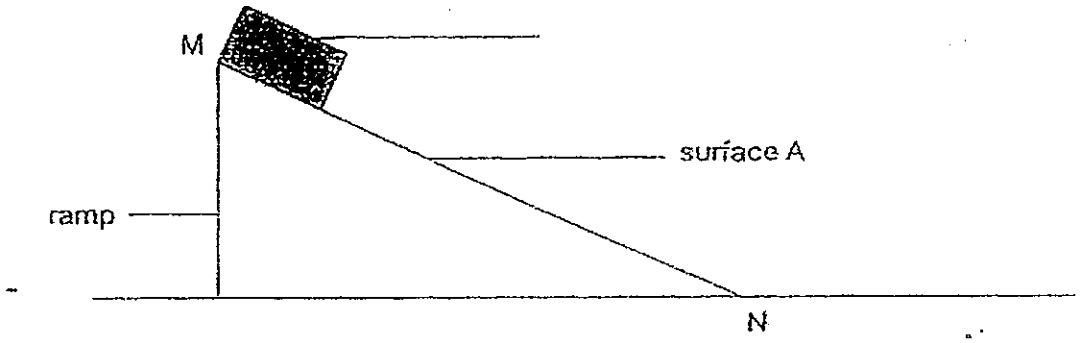
(1) weight of the toy car and balloon

(2) weight of the balloon and the wheels

(3) friction between the wheels and the ground

(4) friction between the balloon and the toy car

7 Molly set up an experiment as shown in the diagram below. A wooden block was released at point M of a ramp with surface A. The time taken for the wooden block to reach point N was recorded.



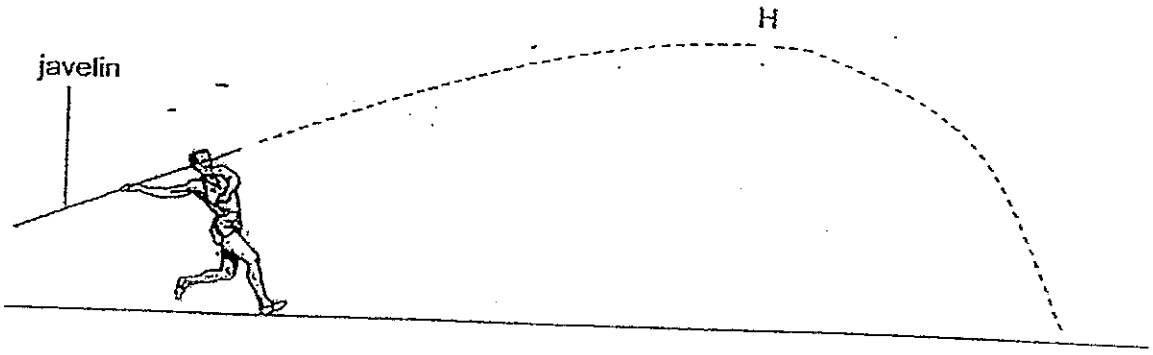
The experiment was repeated on another two identical ramps with different surfaces B and C respectively. The results obtained are shown in the table below.

Surface	Time taken from M to N (seconds)
A	2.1
B	1.5
C	2.7

Based on her results, which surface should be chosen (from best choice to worst choice) as the surface for a ramp for workers to push heavy boxes down their vehicles the fastest?

	Best choice ⟶ Worst choice		
(1)	A	B	C
(2)	C	A	B
(3)	C	B	A
(4)	B	A	C

8 Joseph throws a javelin as shown in the diagram below.



Which of the following statement(s) correctly describe(s) the forces acting on the javelin?

A Frictional force is pulling the javelin to the ground.
B No force was acting on the javelin when it was just released.
C Gravitational force is acting on the javelin throughout its motion.
D Gravitational force only acts on the javelin when it is at its highest point, H.

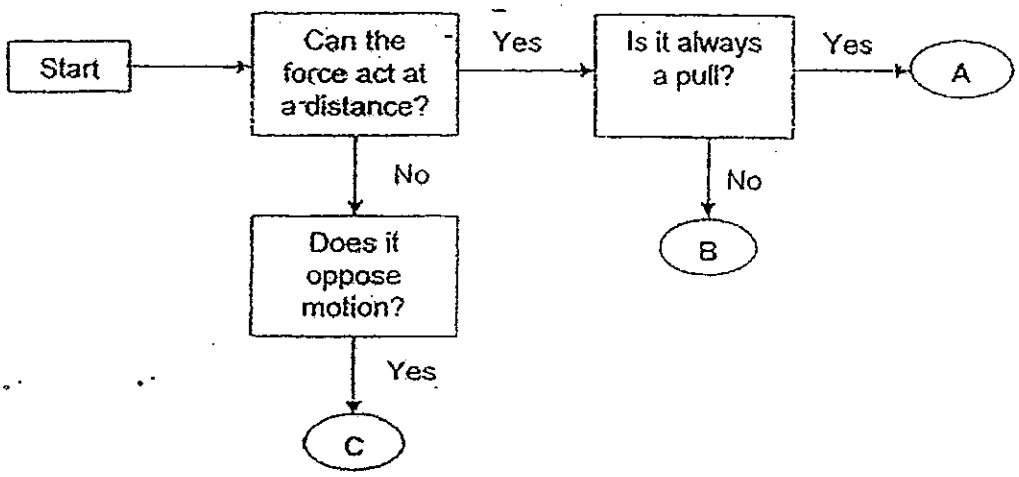
(1) C only

(2) D only

(3) A and C only

(4) B and D only

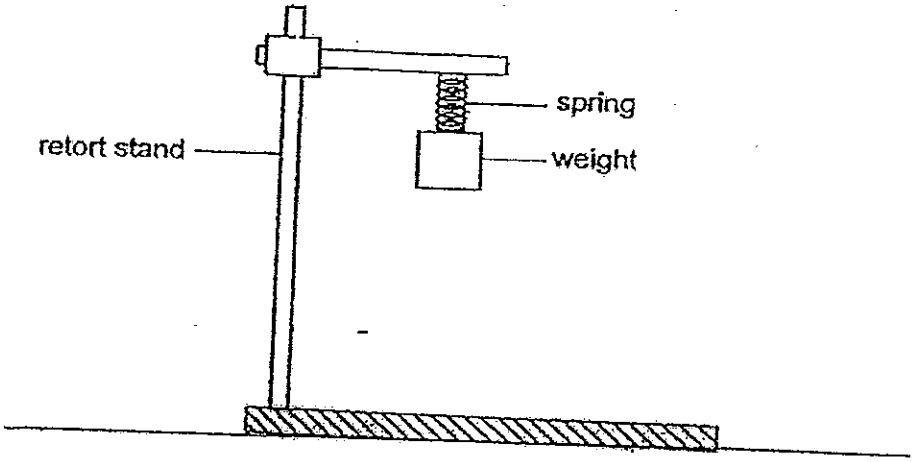
9 Study the following flow chart carefully.



Which one of the following correctly identifies each type of forces (A, B and C)?

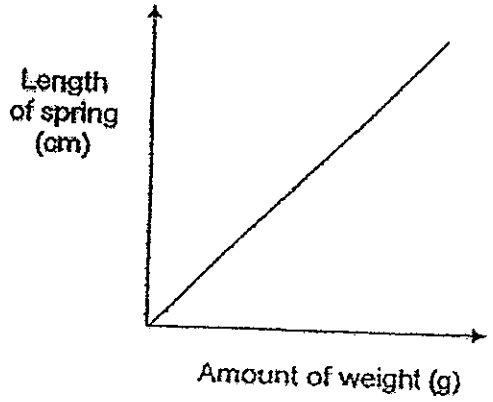
	Types of forces		
	A	B	C
(1)	magnetic force	gravity	friction
(2)	gravity	friction	magnetic force
(3)	magnetic force	friction	gravity
(4)	gravity	magnetic force	friction

10 Caleb set up an experiment to find out how the amount of weights added to a spring affects the length of the spring as shown in the diagram below. He continued to add more weights even after the spring has reached its maximum extension.

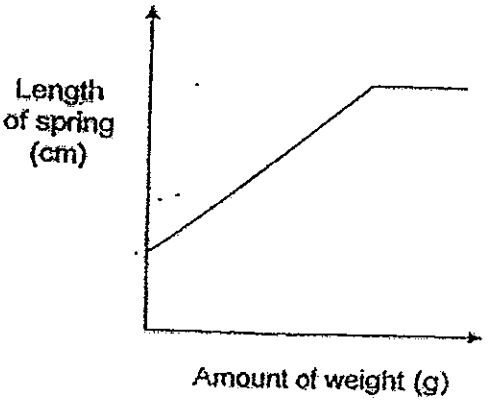


Which one of the following graphs most likely shows the results of the above experiment?

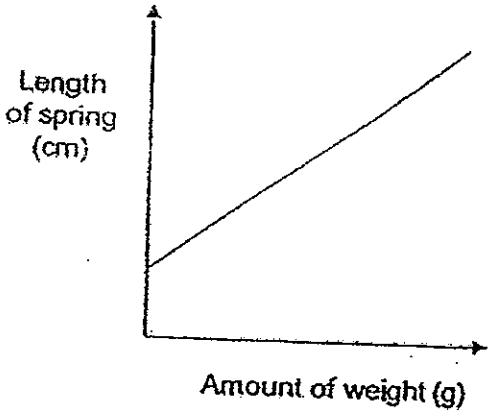
(1)



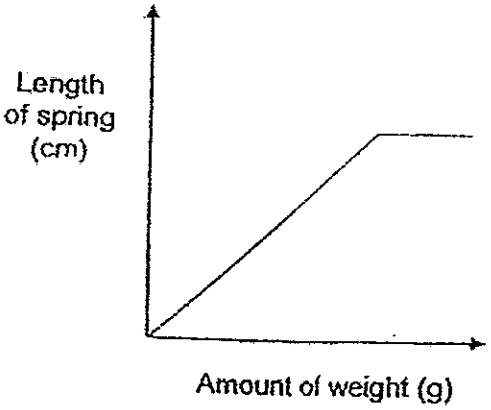
(2)



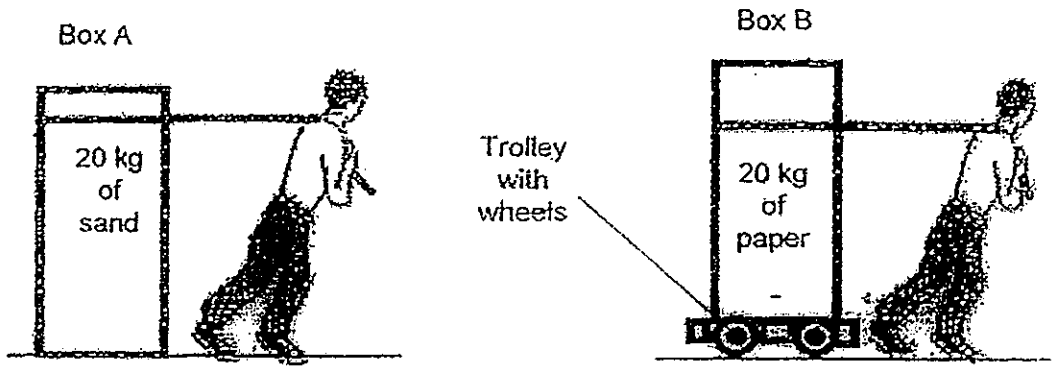
(3)



(4)



11 Jeremy tried to pull two identical boxes filled with paper and sand of the same mass as shown in the diagram below.



It was much easier for him to pull Box B than box A.
Which of the following statement(s) explain(s) this?

A The paper is lighter than the sand.
B Less force is required to pull box B than box A.
C Gravitational force is acting on box B but not on box A.
D There is more friction between box B and the surface of the ground.

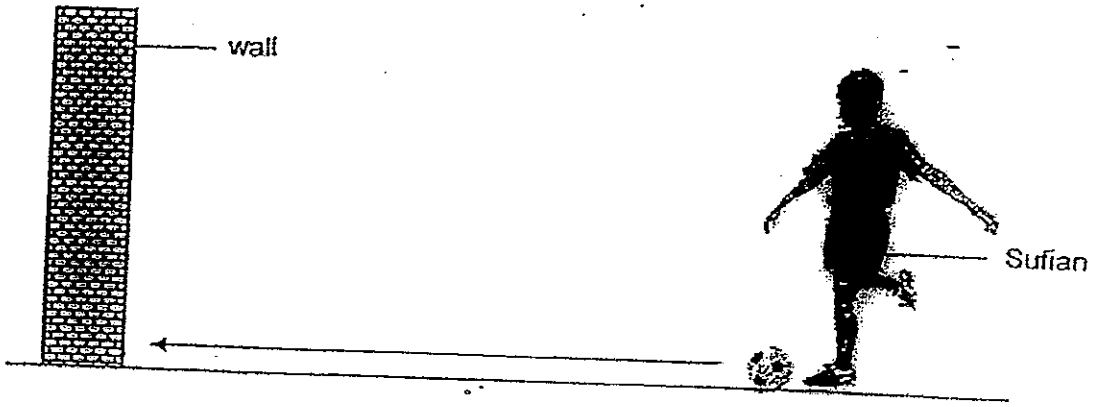
(1) A only

(2) B only

(3) A and D only

(4) B and C only

12 Sufian gently kicks a fully inflated soccer ball towards a wall as shown in the diagram below.



Which of the following statements describe what will most likely happen after the ball hits the wall?

A The ball will change its shape.
B The ball will stop immediately.
C The ball will change its direction.
D The speed of the moving ball will decrease.

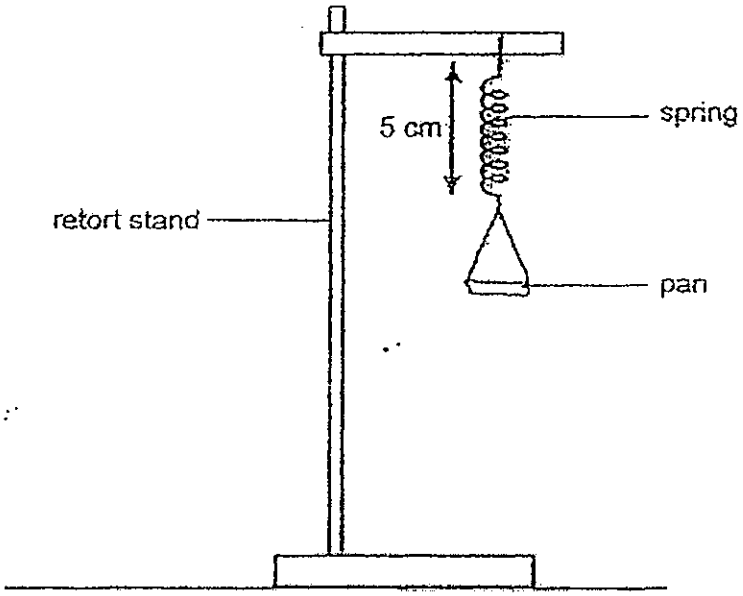
(1) A and B only

(2) B and C only

(3) C and D only

(4) A, B and D only

13 Julius wanted to investigate how much a spring would extend when objects of different mass were placed onto a pan attached to it. The diagram below shows the set-up before each of the objects was placed onto the pan.



The results obtained are shown in the table below.

Object	Length of spring (cm)
book	7
pencil	6
200g weight	8
bottle	16
cup	11

Based on the results above, which object weighs closest to 400g?

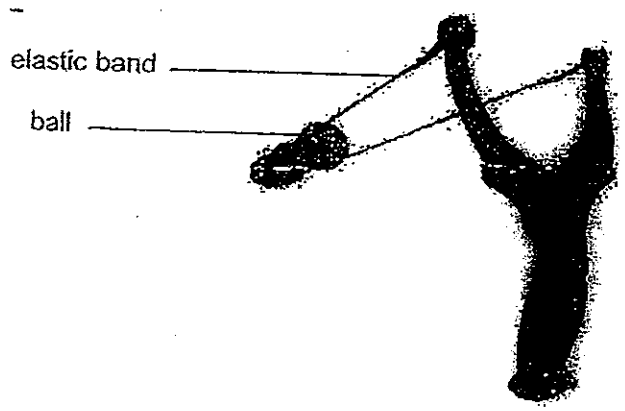
(1) cup

(2) book

(3) bottle

(4) pencil

14 The diagram below shows a slingshot used by Ahmad to carry out an investigation to find out how the distance travelled by the ball is affected by how much the elastic band was extended.



The results obtained are shown in the table below.

Extension of the elastic band (cm)	Average distance travelled by ball (m)
2	2
4	2.3
6	2.5
8	2.6
9	2.6
10	2.6

Which one of the following improvements can Ahmad make to his sling shot so that the ball could travel an average distance of more than 2.6 m?

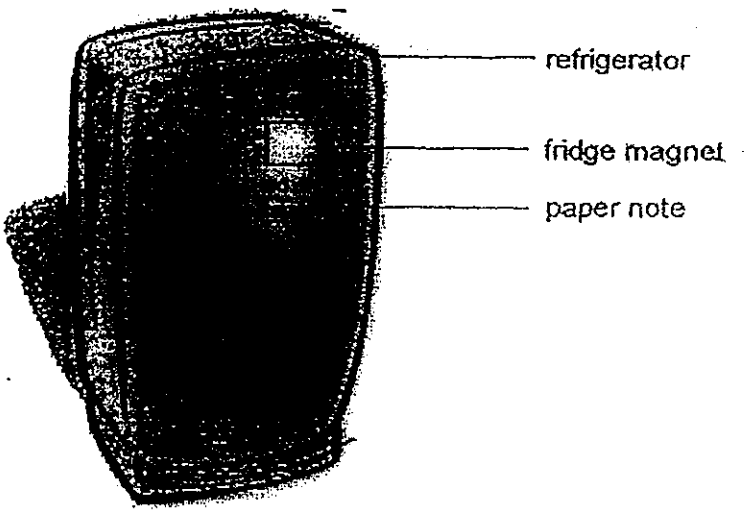
(1) Increase the mass of the ball.

(2) Increase the number of elastic band.

(3) Use an elastic band which is thinner.

(4) Extend the elastic band by more than 10 cm.

15 Sally used a fridge magnet to attach a paper note on the door of the refrigerator as shown in the diagram below.



When she tried to attach a thicker piece of paper note, both the magnet and the paper fell onto the floor. Based on the above information, which of the following statements are most likely correct?

A The thinner paper note is made of a magnetic material.
B Magnetic force is not able to pass through the thicker paper.
C The surface of the refrigerator's door is made of a magnetic material.
D Gravity is only acting on the thicker paper but not on the thinner paper.

(1) A and B only

(2) A and D only

(3) B and C only

(4) C and D only

16 A car was moving on a horizontal road as shown in the diagram below. The driver applied the brakes to stop the car and the car screeched before coming to a stop.

What form(s) of energy was the energy of the moving car being converted to as it was coming to a stop?

A heat
B sound
C potential
D electrical

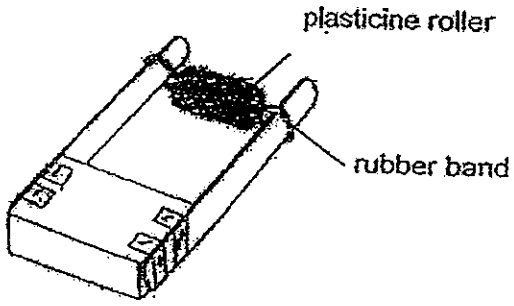
(1) B only

(2) A and B only

(3) C and D only

(4) A, B and D only

17 Peter invented a toy as shown in the diagram below. To enable the toy to move, Peter had to turn the plasticine roller which in turn would twist the rubber band. Peter wanted to find out how far the toy would move when different amounts of energy are given to it.



To ensure a fair test, which one of the following variables does he need to change?

(1) The number of rubber bands used.

(2) The surface over which the toy travelled.

(3) The amount of plasticine used to make the roller.

(4) The number of times the plasticine roller is turned.

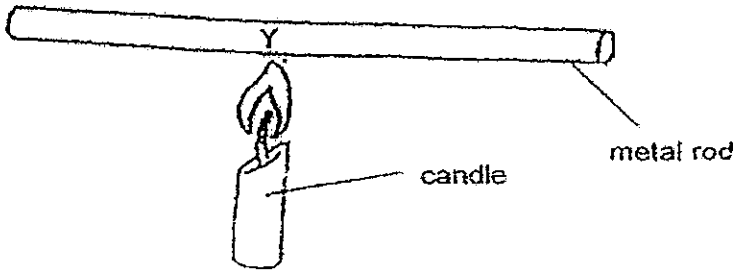
18 The "equation" below is a simple representation of the process of photosynthesis.

$$A + B \xrightarrow[\text{chlorophyll}]{\text{light energy trapped in}} C + \text{sugar}$$

What could the letters A, B and C represent?

	A	B	C
(1)	water	oxygen	carbon dioxide
(2)	water	carbon dioxide	oxygen
(3)	oxygen	carbon dioxide	water
(4)	oxygen	nitrogen	water

19 Four thumbtacks, A, B C and D were attached to different parts of a metal rod with wax.



A candle flame was used to heat up the spot Y on the metal rod as shown in the above diagram. The four thumbtacks dropped from the metal rod in the following order. D, A, C, B.

Which one of the following sets of measurement could be the distance of each thumbtack from spot Y?

	A	B	C	D
(1)	15 cm	20 cm	5 cm	10 cm
(2)	10 cm	20 cm	15 cm	5 cm
(3)	15 cm	10 cm	20 cm	5 cm
(4)	10 cm	5 cm	20 cm	15 cm

20 Which of the following possess kinetic energy?

A A box resting on a slope.
B A wound-up toy car moving on a table.
C A flower vase falling from the top of a shelf.
D A bowling ball rolling along the bowling lane.

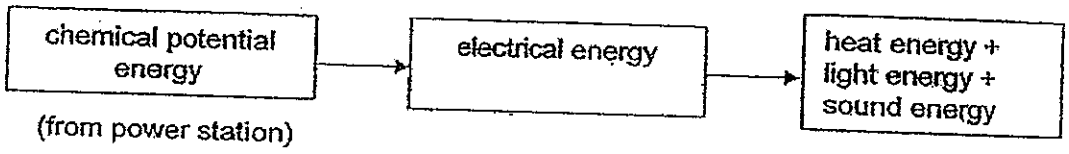
(1) A and B only

(2) B and C only

(3) A, C and D only

(4) B, C and D only

21 In a household equipment, the energy conversion shown below takes place.



Which one of the equipment below is best represented by this energy conversion?

(1) fan

(2) calculator

(3) television

(4) electric iron

22 Which of the following is/are a renewable source(s) of energy?

A sun
B coal
C wind
D petrol

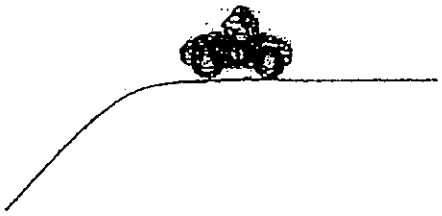
(1) A and B only

(2) A and C only

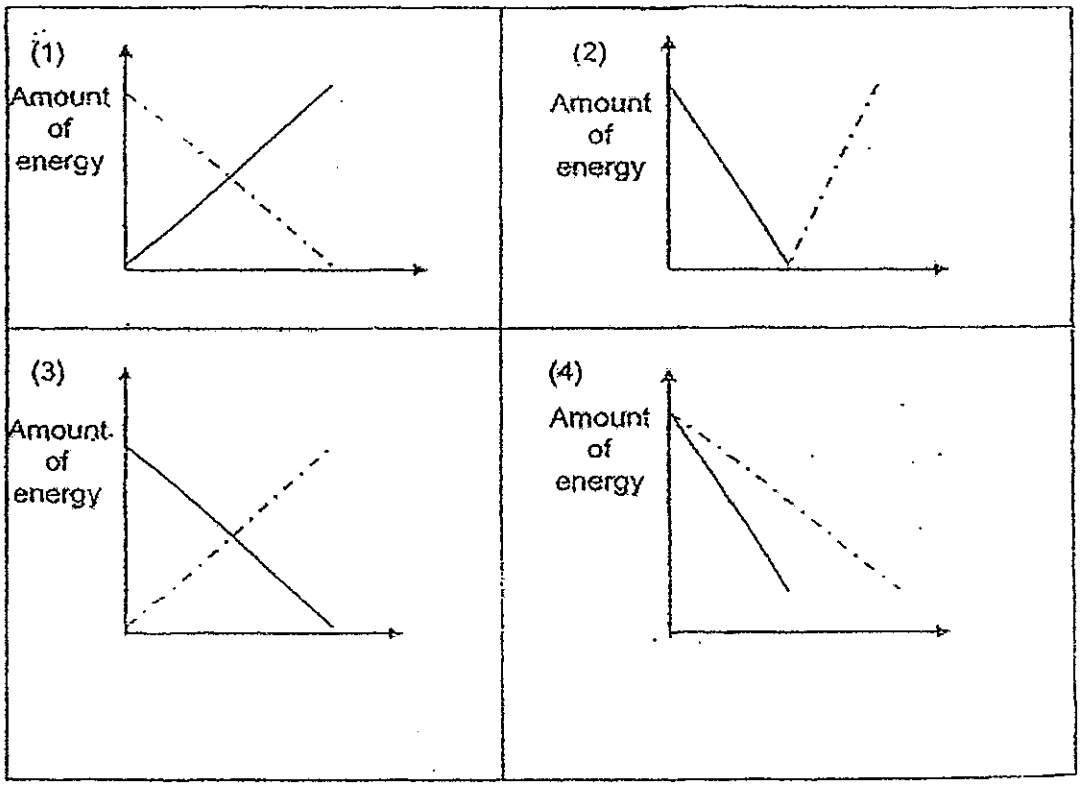
(3) B and C only

(4) C and D only

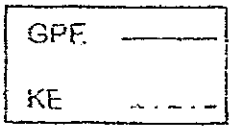
23 John was sitting in a stationary car at the edge of a hill as shown in the diagram below.



Which one of the following graphs below correctly represents the change in the amount of gravitational potential energy (GPE) and kinetic energy (KE) as the car moved down the hill?

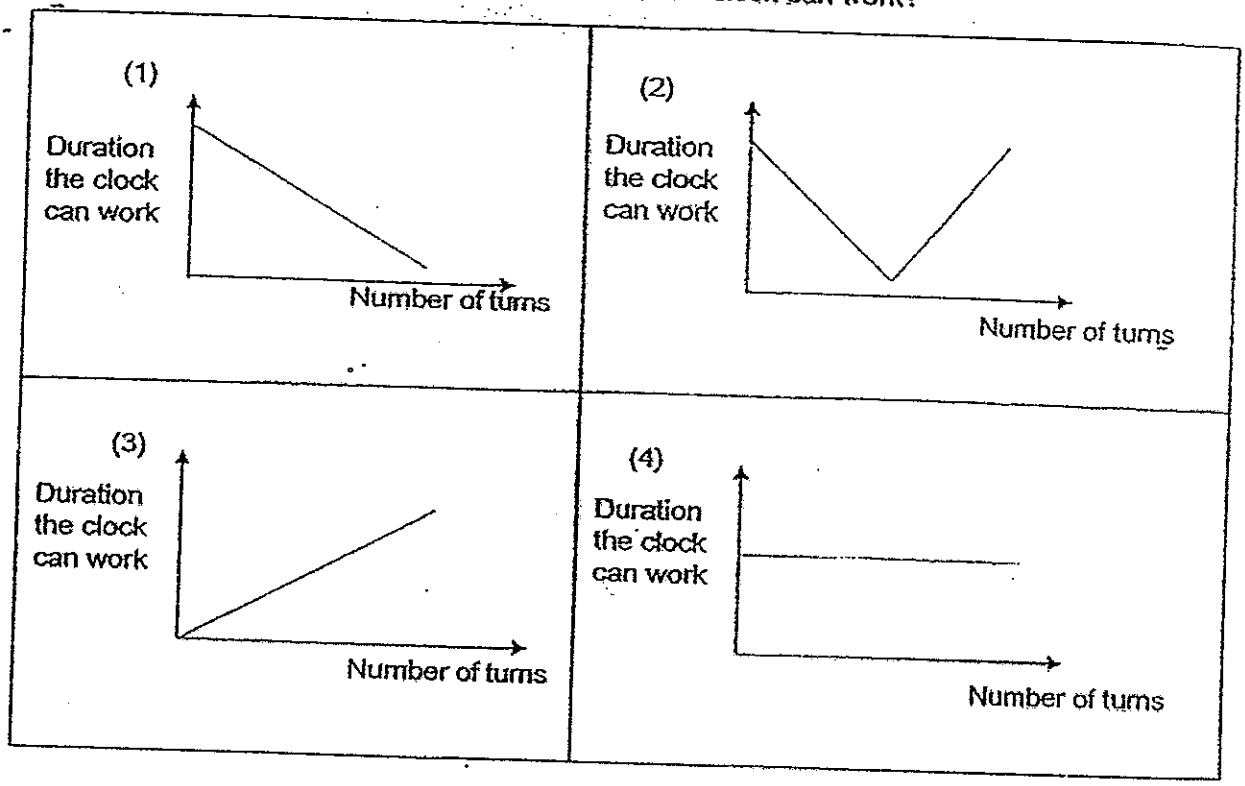


Key:



24 Dylan has a clock. He needs to wind up its spring to make it work.

Which one of the line graphs below shows the relationship between the number of turns the spring is wound and the duration the clock can work?



25 During photosynthesis, sugar is produced by plants. What happens to the sugar that is produced?

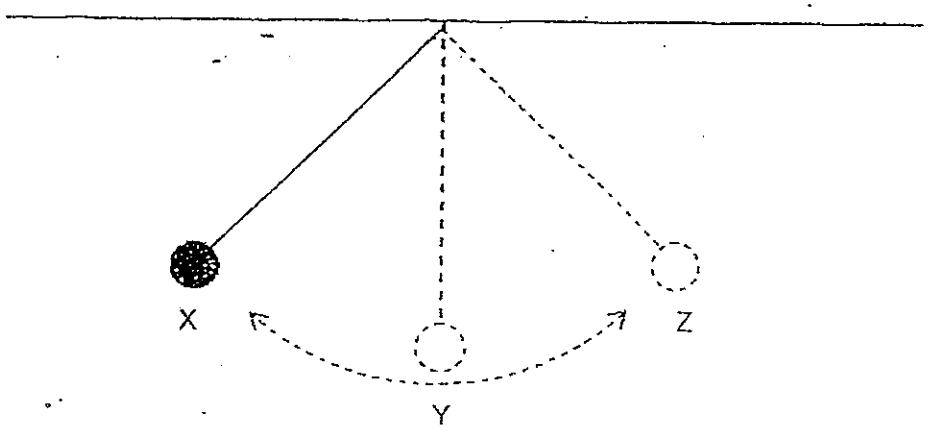
(1) It is transported to the soil to enrich the soil.

(2) It is used by the leaves to make food for the plant.

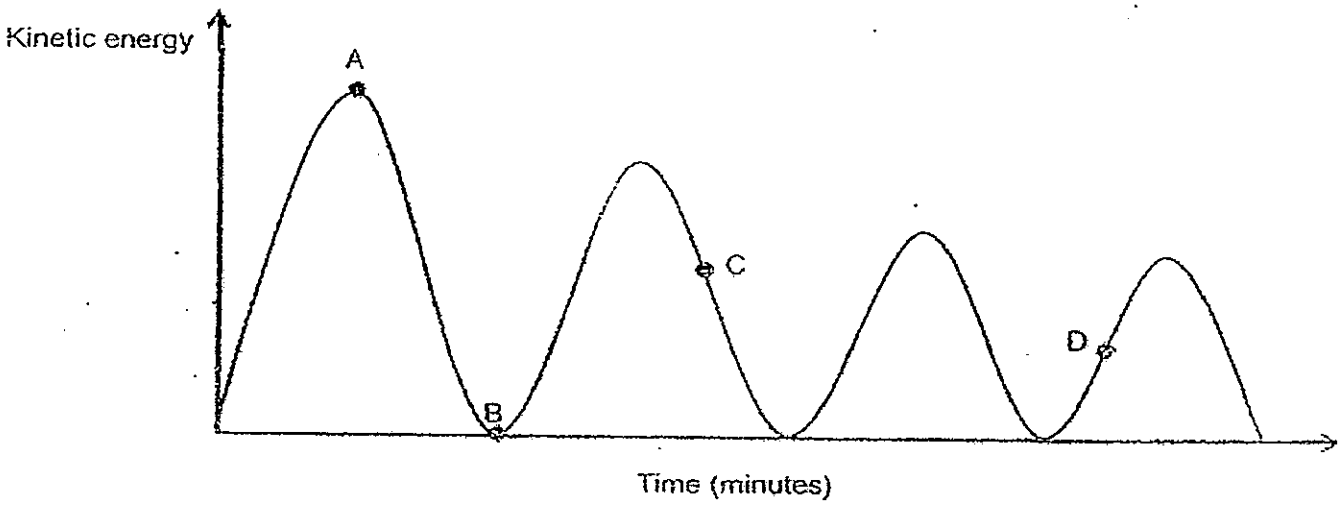
(3) Most of the unused sugar is converted into starch.

(4) It is transported by the xylem to all parts of the plant.

26 A pendulum was released at point X as shown in the diagram below.



As the pendulum swung from point X to Z and then back to X repeatedly, its kinetic energy was recorded and plotted on the graph below.



Which point, A, B, C or D on the graph best represents the kinetic energy of the pendulum when it was at point Y for the first time?

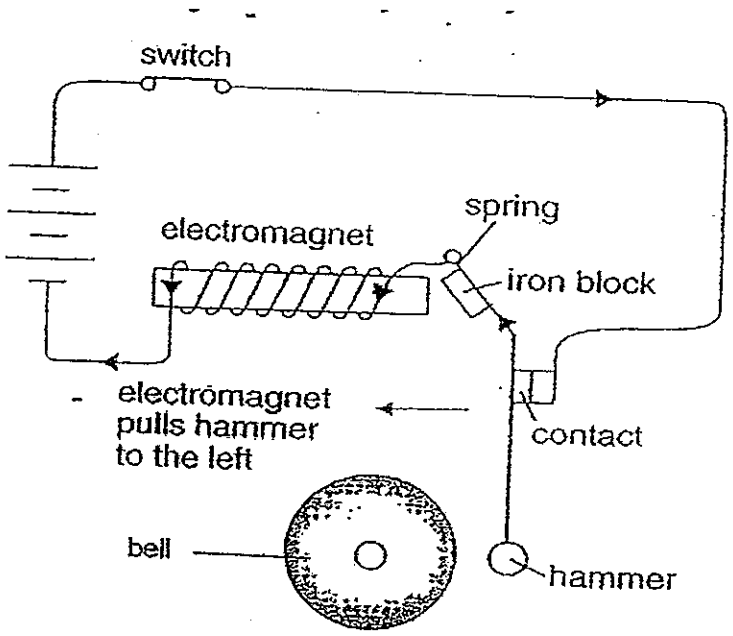
(1) A

(2) B

(3) C

(4) D

27 Study the device shown below carefully.



Which one of the following correctly shows the energy conversion that takes place when the circuit is closed?

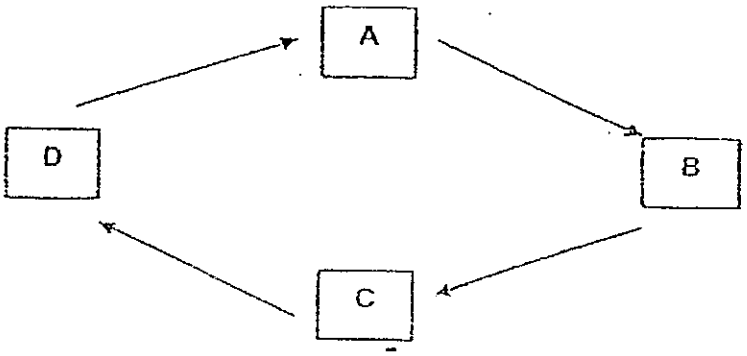
(1) chemical potential energy → kinetic energy →electrical energy →sound energy

(2) chemical potential energy → kinetic energy →sound energy →electrical energy

(3) chemical potential energy → electrical energy → sound energy →kinetic energy

(4) chemical potential energy → electrical energy → kinetic energy →sound energy

28 The diagram shows the four stages in the life cycle of a butterfly.



If stage D is the stage at which the butterfly can reproduce, which letter, A, B, C or D represents the stage at which it is a garden pest?

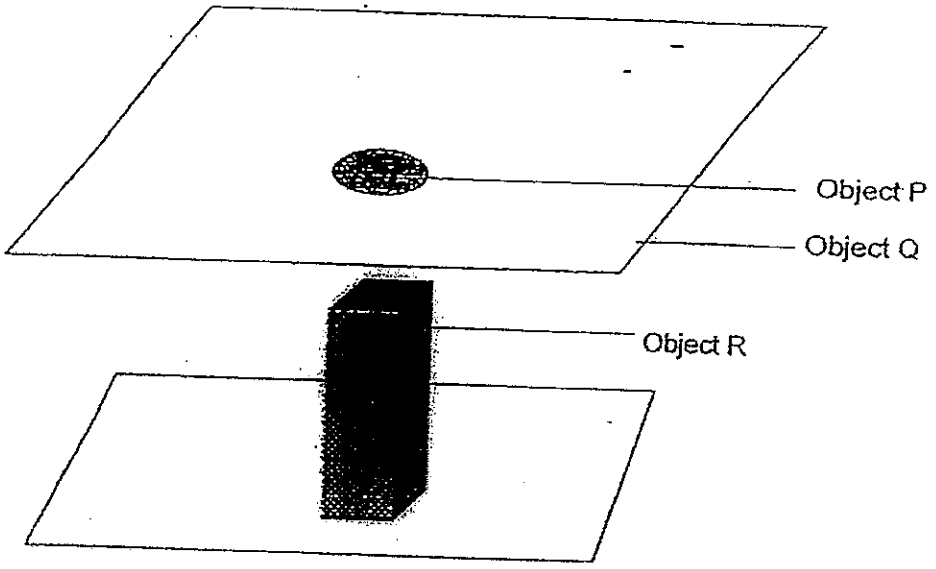
(1) A

(2) B

(3) C

(4) D

29 In the diagram below, Object P rests on Object Q and Object R is placed directly below them. When Object R is shifted, object P moves along with it. Which of the following objects(s) is/are magnetic?



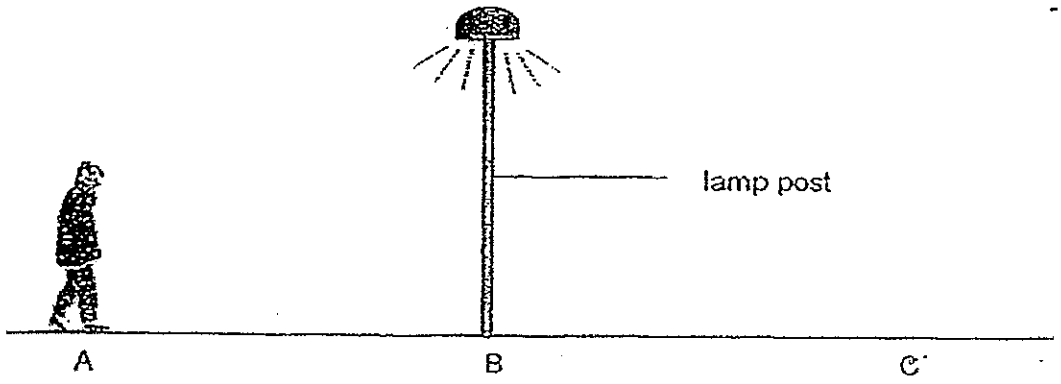
(1) R only

(2) P and R only

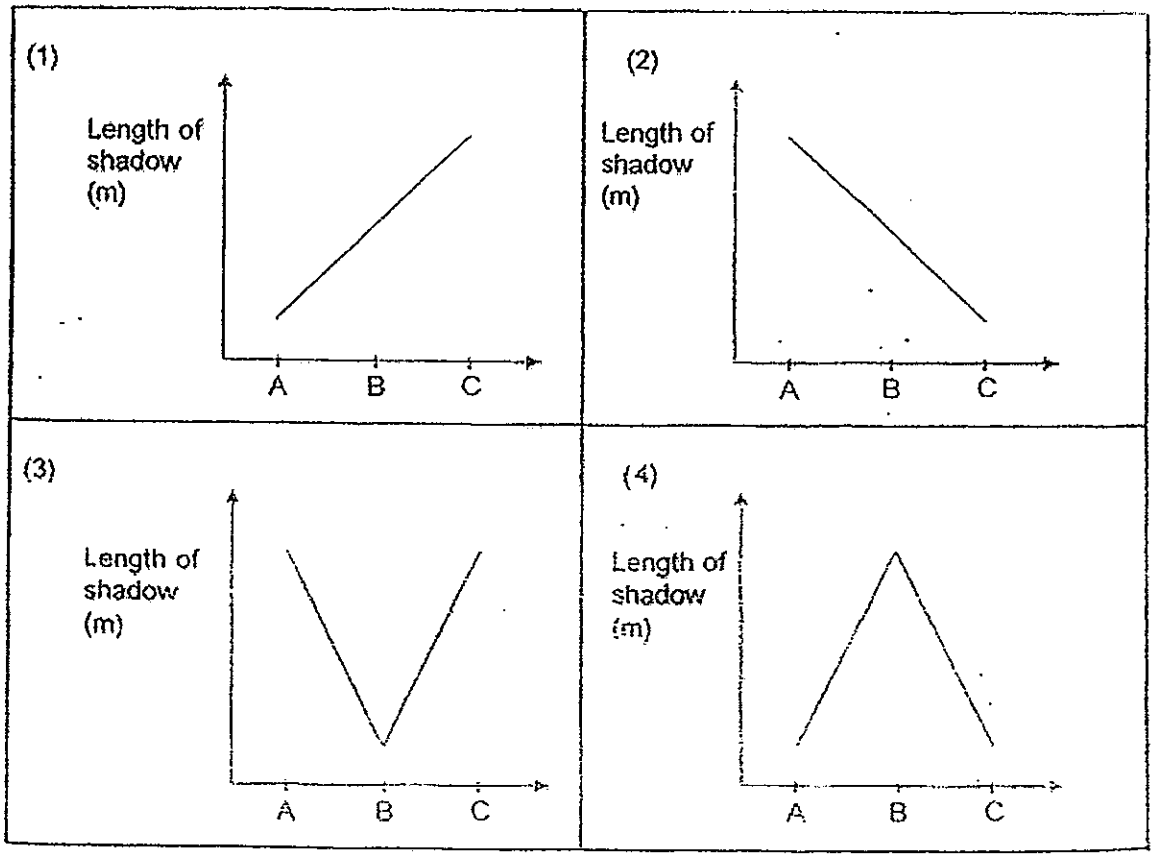
(3) P and Q only

(4) P, Q and R

30 On one dark night, Ali walked from point A to C, passing a lamp post at point B as shown in the diagram below.



If the only light source nearby was the lamp post, which one of the graphs below shows how the length of his shadow changes from points A to C?



END OF BOOKLET A

Anglo-Chinese School (Primary)

MID-YEAR EXAMINATION 2012
SCIENCE
PRIMARY SIX
BOOKLET B

Name: _____ ( ) Class: Primary 6 ___

Date: 10 May 2012

Duration of paper: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of 16 printed pages including this cover page.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.

BOOKLET	MAXIMUM MARKS	MARKS OBTAINED
A	60	
B	40	
Total	100	

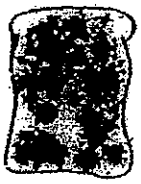
For questions 31 to 44, write your answers in the spaces provided.

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

(40 marks)

31 Amanda is investigating the conditions under which mould grows. She had four identical slices of bread. She put each slice of bread into a plastic bag, at different places in the kitchen.

She then observed and recorded how much mould grew after ten days in the table of results below.

place	container	fridge	freezer	window sill
temperature (°C)	24	4	0	30
mould growth on bread after ten days				

(a) Based on the results above, where is the best place to keep bread to stop it from becoming mouldy? Give a reason for your answer [1]

(b) Describe the relationship between the temperature of the surroundings and the amount of mould that grows on the bread. [1]

(Go to the next page)

Score / 2

(c) Amanda found out that some preservatives were added to bread to keep them fresh for a longer period of time. The table below shows the average number of days bread will be mould free for the different type of bread.

Type of bread	Average number of days the bread will be mould free
A	7
B	4
C	5

Amanda wanted to conduct an experiment to observe the growth of mould in the shortest time possible.

Based on the table above, which type of bread is most suitable? Why? [1]

_____

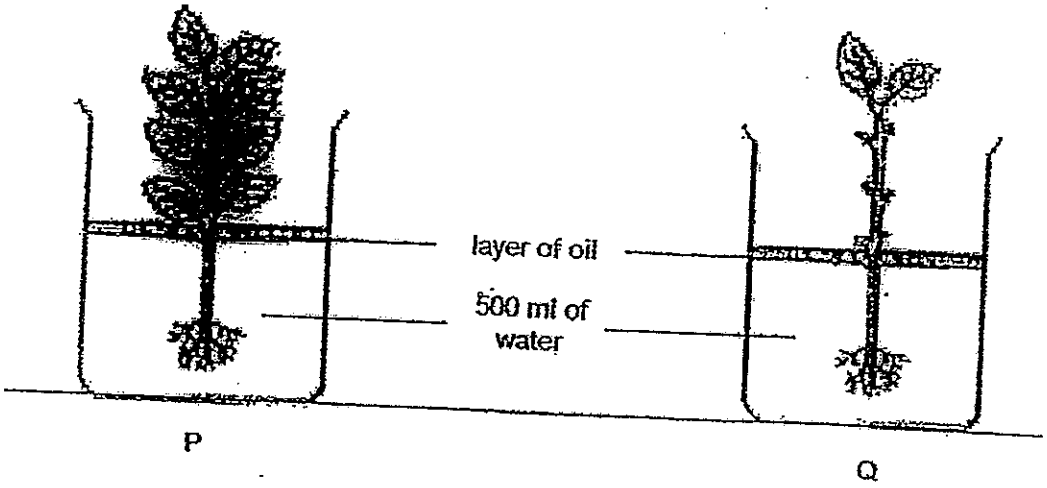
_____

(Go to the next page)

Score / 1

32 Muthu carried out an experiment to find out how the number of leaves on a plant affects the rate of absorption of water by the plant. He placed two similar plants in identical beakers, each containing the same amount of water as shown in the diagram below.

He then placed the two set-ups next to a window for two days.



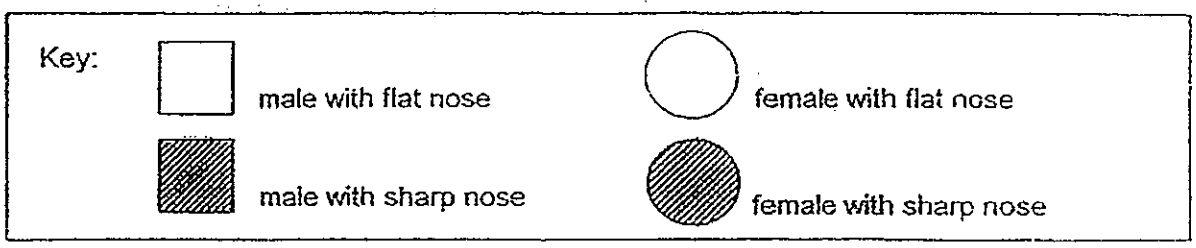
(a) Using your apparatus template, ruler and pencil, draw the control set-up for the experiment and label your diagram clearly. [2]

(b) What should he observe in the set-ups to conclude how the number of leaves on the plant affects the rate of absorption of water by the plant? [1]

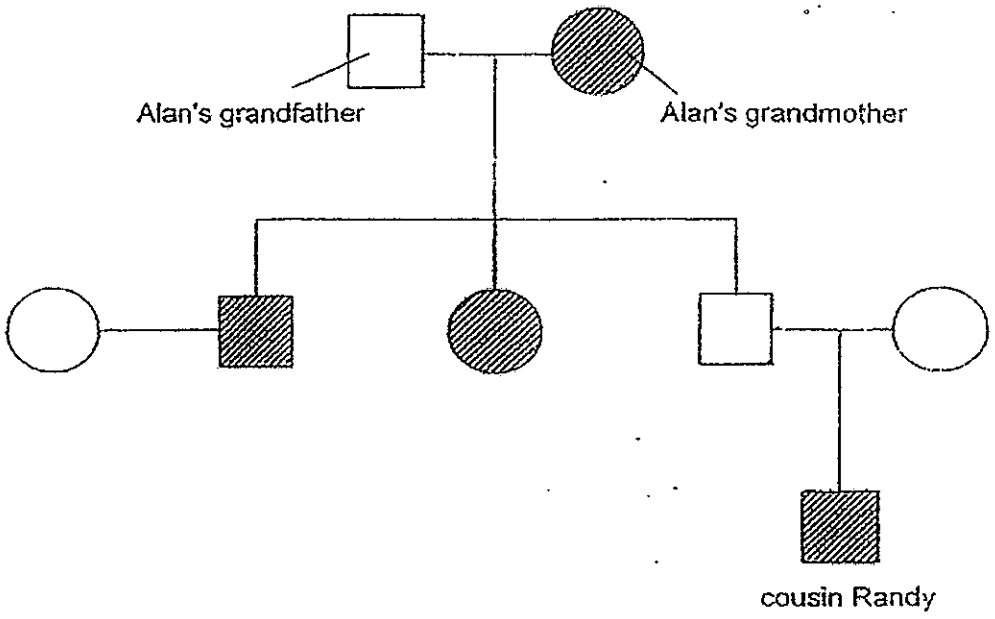
(Go to the next page)

Score / 3

33 Study the diagram below that shows Alan's paternal family tree. A brief description of the physical characteristics of the different family members is given.



Alan's family tree



(a) Alan has a sharp nose. Using a ruler (if necessary) and a pencil, draw and label a symbol to represent Alan in its correct location in the family tree above. [1]

(b) Put a cross (X) on the symbol in the family tree above that represents Alan's uncle. [1]

(c) Alan's cousin, Randy, was puzzled that he has a sharp nose although both his parents do not have this physical characteristic.

Based on the family tree above, who could Randy have inherited his sharp nose from? Give a reason for your answer. [1]

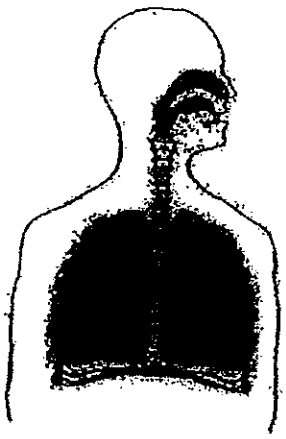
_____

_____

(Go to the next page)

Score

34 The diagrams below show the human respiratory system and an air-conditioning system.



Human respiratory system

Air-conditioning system

(a) Air passing through the air conditioner is cleaned by air filters which collects dust from the air and prevent them from entering the air-conditioning system.

How does our respiratory system prevent dust from entering our lungs? [1]

_____

_____

(b) The table below shows the difference between air going in and out of an air conditioning system as well as air that we breathe in and out of our respiratory system.

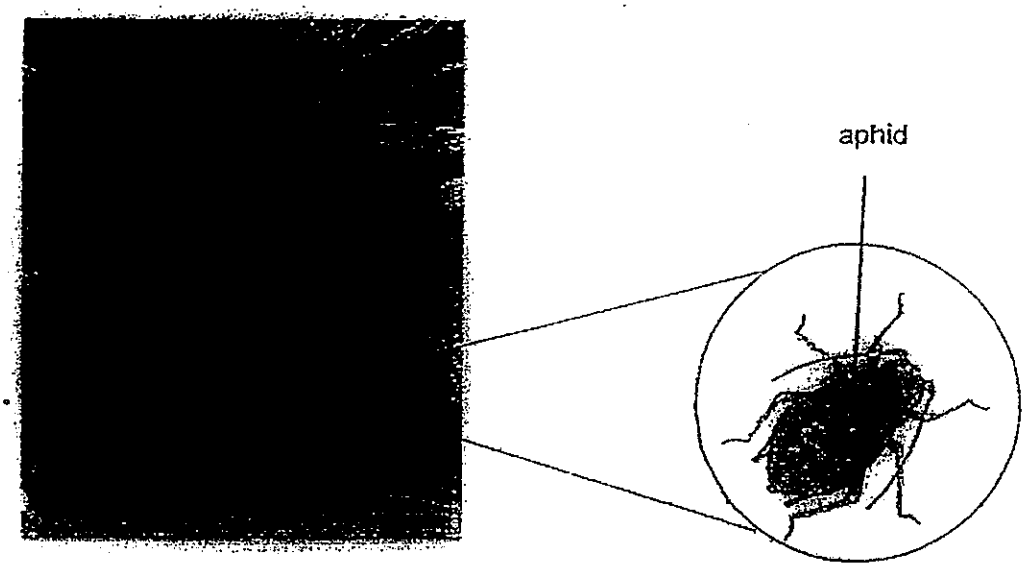
In the table below, state whether the amount of oxygen and water vapour is less, more or the same in the air going in and out of the two systems. [2]

	Human Respiratory System		Air-conditioning system	
	Air breathed in	Air breathed out	Air going in	Air going out
carbon dioxide	less	more	same	same
oxygen				
water vapour				

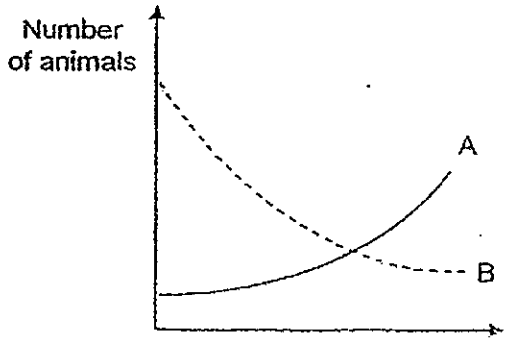
(Go to the next page)

Score	/ 3

35 A farmer discovered that many of the plants on his farm were destroyed by aphids that were feeding on the leaves of his plants as shown in the diagram below.



He was advised to introduce some organism P on his farm instead of using pesticides to solve this problem. The graph below shows the changes in the population of the aphids as well as organism P on the farm.



(a) Which line graph, A or B, most likely shows the changes in the population of the aphids after some organism P has been introduced to the farm?
Give a reason for your answer. [1]

_____

_____

(b) How did the population of organism P change after it was introduced to the farm?
Give a reason for you answer. [2]

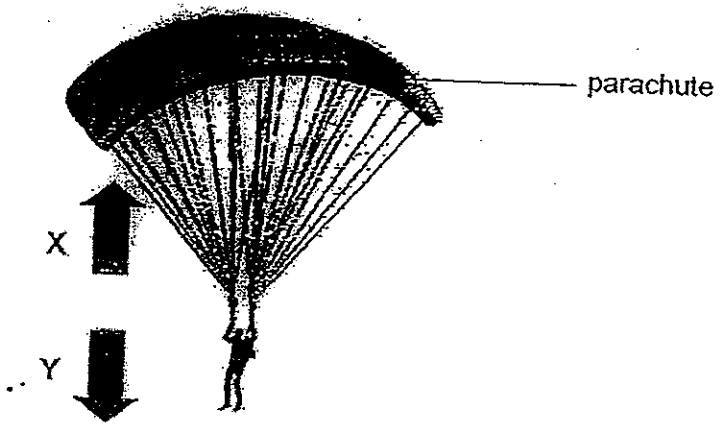
_____

_____

(Go to the next page)

Score / 3

36 The diagram below shows a man who is hanging onto a parachute. There are different types of forces acting on him, as he is falling to the ground. The arrows show the direction in which the forces are acting.



(a) Name the types of forces, X and Y, that are acting on him as he is falling to the ground. [1]

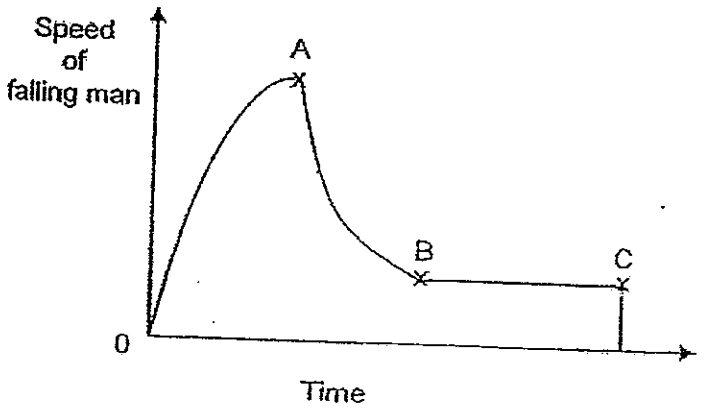
X: _____

Y: _____

(b) What should be done to the parachute to increase the amount of force X? [1]

_____

The graph below shows the change in speed of the falling man from the time he jumped off from the helicopter until he landed safely onto the ground.



(c) Based on the graph above, at which point did the parachute first open? Explain your answer. [1]

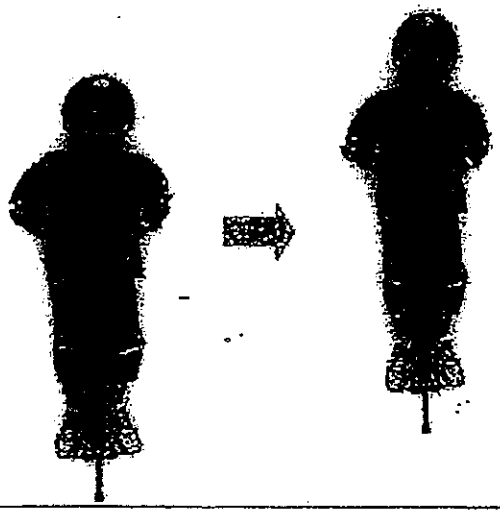
_____

_____

(Go to the next page)

Score	/3

37 The diagram below shows a boy standing on a 'pogo stick'. The 'pogo stick' is a device that contains a spring that is used for jumping off the ground in a standing position.



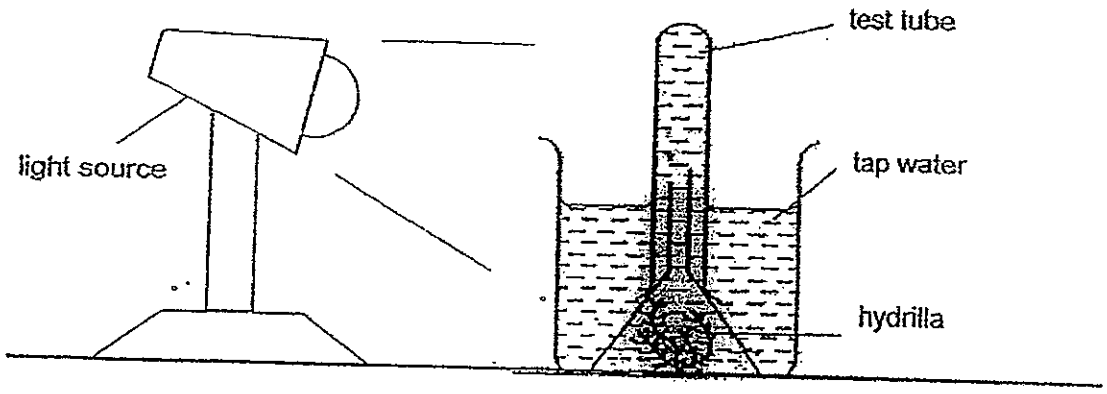
(a) Explain how the force in the spring of the 'pogo stick' enable the boy to bounce off the ground. [1]

(b) On which type of floor surface, carpet surface or concrete surface, will he need to apply a greater amount of force on the 'pogo stick' to reach the same height? Give a reason for your answer. [1]

(Go to the next page)

Score	/2

38 Alvin set up an experiment in a dark room as shown in the diagram below. After some time, he counted the number of bubbles that were coming out from the hydrilla. He repeated the experiment twice, each time with a different coloured light bulb.



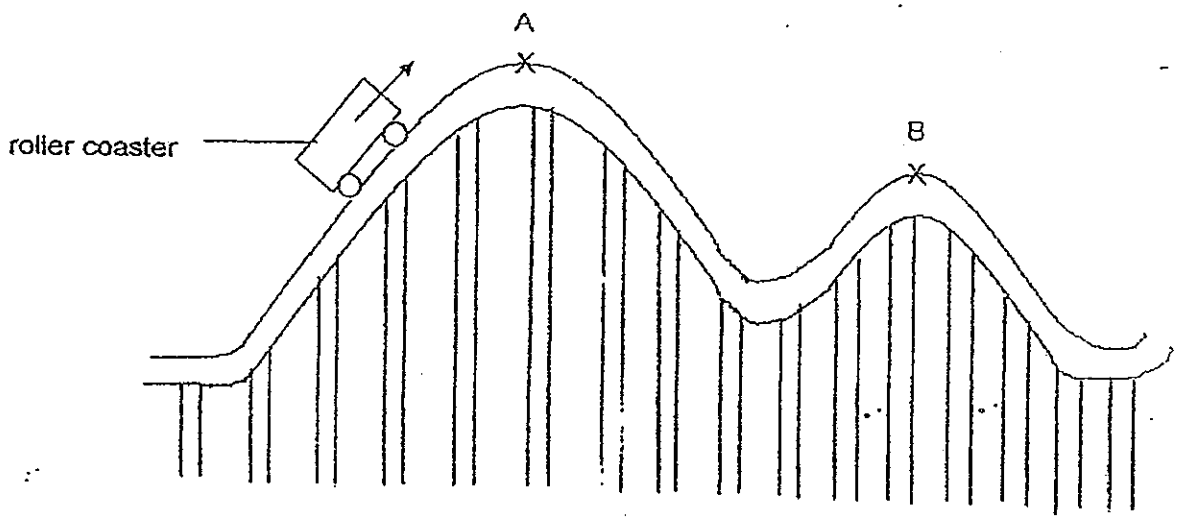
(a) What is the aim of Alvin's experiment? [1]

(b) What would happen to the number of bubbles observed in the test tube if the light source is moved further away from the hydrilla? Explain your answer. [2]

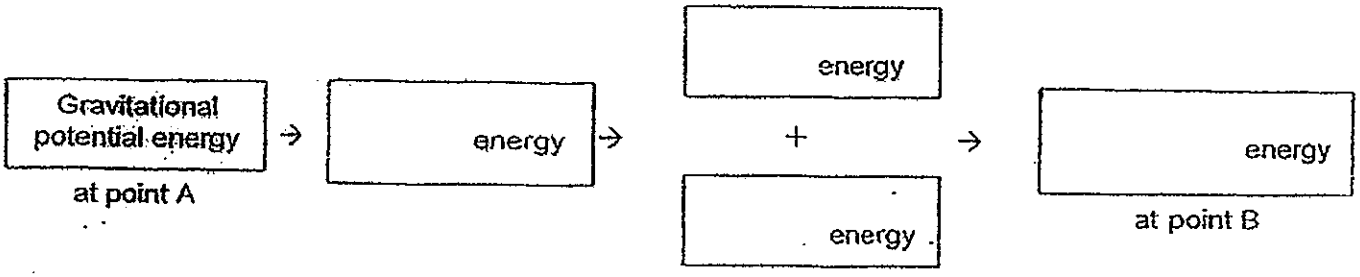
(Go to the next page)

Score / 3

39 The diagram below shows a roller coaster travelling up a track towards point A.



(a) Upon reaching point A, the roller coaster continues to move along the track. Write down the energy change from points A to B in the boxes provided below. [2]



(b) State one modification you would make to the roller coaster to increase its kinetic energy without increasing its speed. [1]

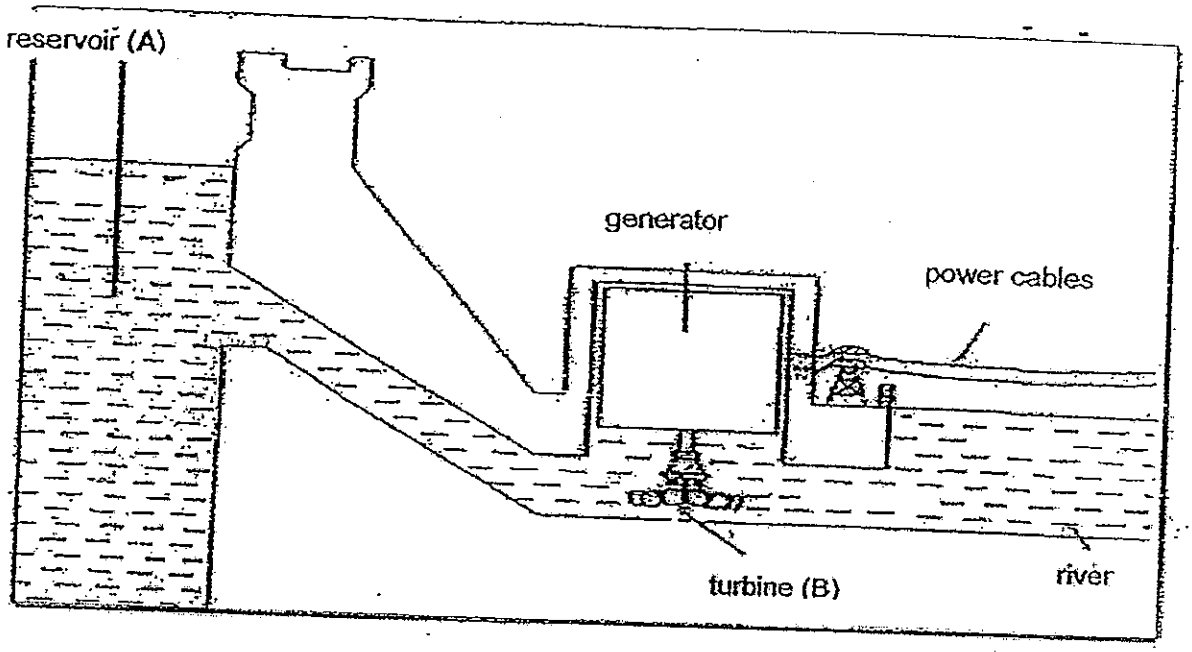
_____

_____

(Go to the next page)

Score / 3

40 The diagram below shows a hydroelectric power station.



(a) Identify the form of energy at the 2 stages, A and B, when the power station is functioning.

[1]

(i) Stage A: _____ energy

(ii) Stage B: _____ energy

(b) State 2 advantages of using a hydroelectric power station to generate electricity.

[2]

Advantage 1: _____

_____

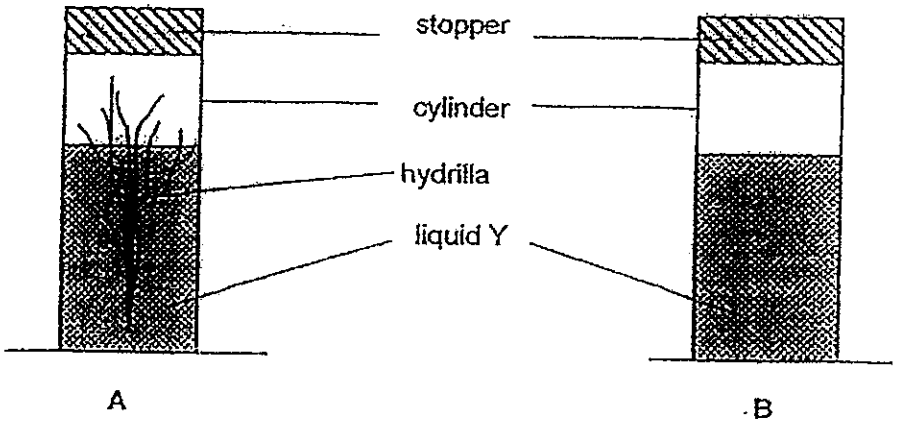
Advantage 2: _____

_____

(Go to the next page)

Score	/ 3

41 A liquid, Y turns from red to blue in the presence of carbon dioxide. Jim wanted to find out if carbon dioxide is released by a water plant during respiration. Respiration is the breakdown of sugar with the release of energy in cells. He set up an experiment as shown in the diagram below.



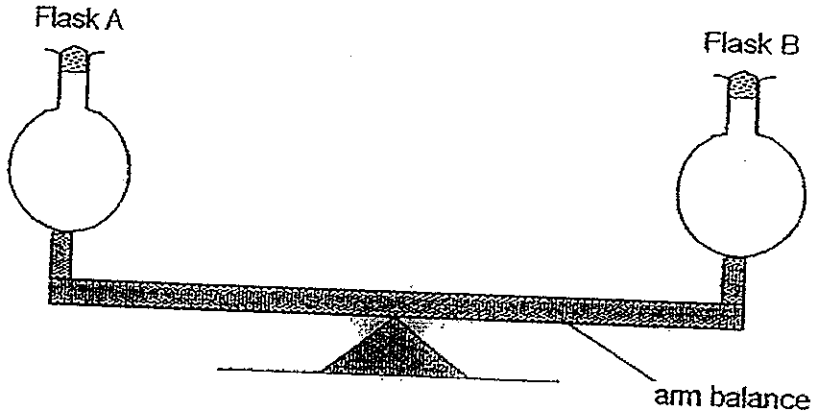
(a) The cylinders were left in the dark to prevent photosynthesis from taking place. Explain clearly why this step was necessary. [1]

(b) What is the purpose of setting up cylinder B? [1]

(Go to the next page)

Score /2

42 Two identical glass flasks, A and B, each containing 100 cm^3 of air, are balanced as shown in the diagram below.



(a) If another 50 cm^3 of air is pumped into flask A, what would be the total volume of air in flask A now?

[1]

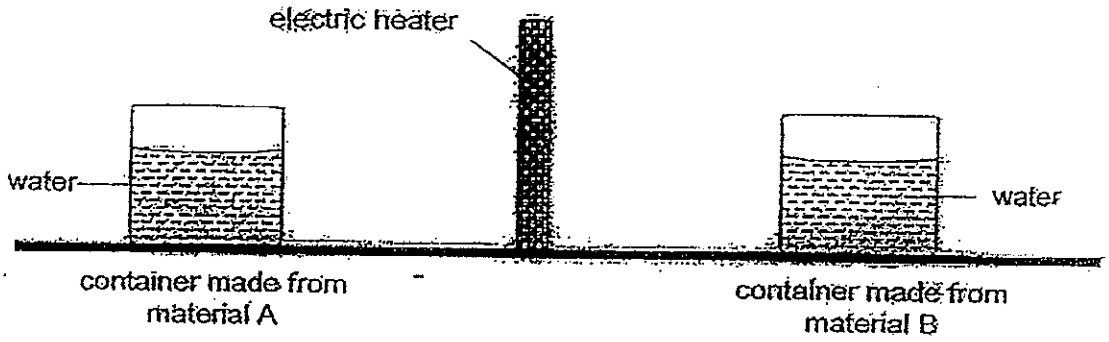
(b) Predict what will be observed to the arm balance when the 50 cm^3 of air is pumped into flask A. Explain your answer.

[2]

(Go to the next page)

Score	/3

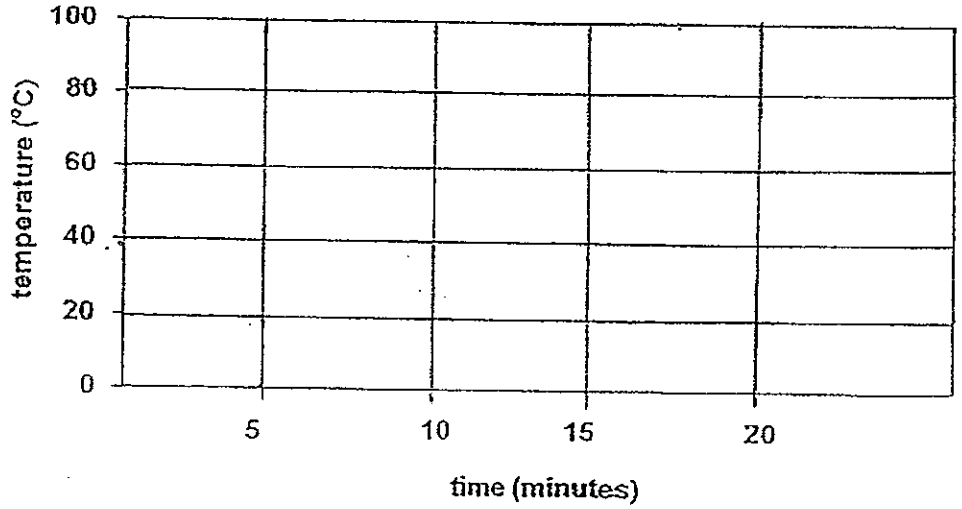
43 Ryan set up an experiment with two containers made of different materials A and B. The containers have the same size thickness and the same amount of water in them. He placed them at an equal distance from an electric heater as shown in the diagram below.



The heater is then switched on and he recorded the temperature over a duration of 20 minutes. The table below shows the results.

Time (min)	Temperature of water in container made of material A (°C)	Temperature of water in container made of material B (°C)
0	20	20
10	60	40
15	80	50

(a) Using a ruler and pencil, draw two line graphs in the space below to represent the two results in the table. Label the lines as A and B. [2]



(b) Which ~~container~~ material, A or B, would be more suitable for making a box used to transport blocks of ice? Explain your answer. [1]

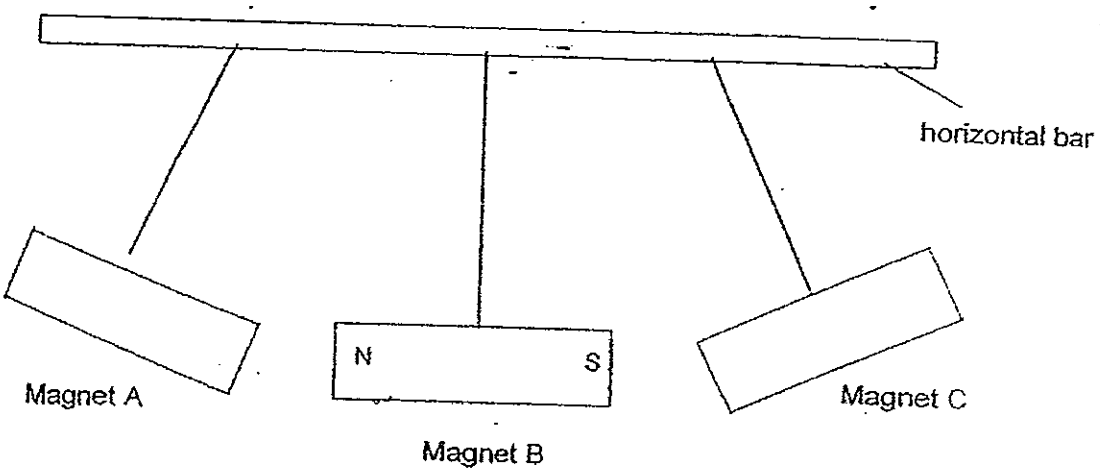
_____

_____

(Go to the next page)

Score / 3

44 The diagram below shows what happens when 3 magnets are suspended on a horizontal bar. The poles of magnet B are labelled as shown in the diagram below.

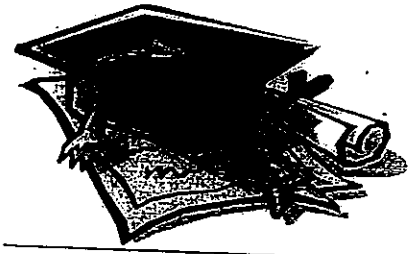


(a) In the diagram, label the poles of magnet A and C, with the letter N to represent the north pole and the letter S to represent the south pole. [1]

(b) If magnet B is removed from the set up, what will happen to magnets A and C? Explain your answer. [2]

END OF BOOKLET B

Score	/ 3



ANSWER SHEET

EXAM PAPER 2012

SCHOOL : ACS
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

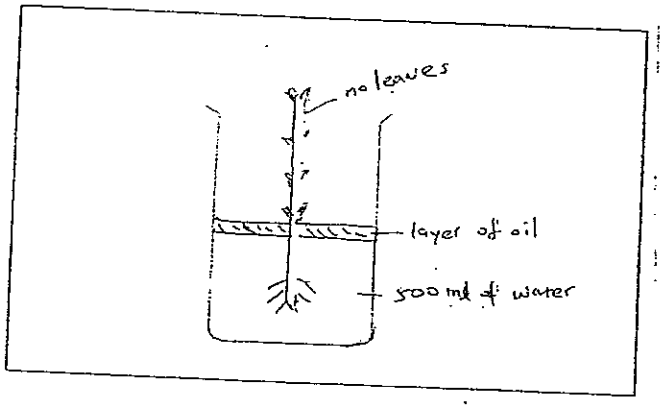
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	4	3	2	3	3	3	1	4	2	2	3

31)a)The freezer. It is the coolest place but mould needs warmth and moist.

b)The higher the temperature of the surroundings, the more amount of mould will grow on the bread.

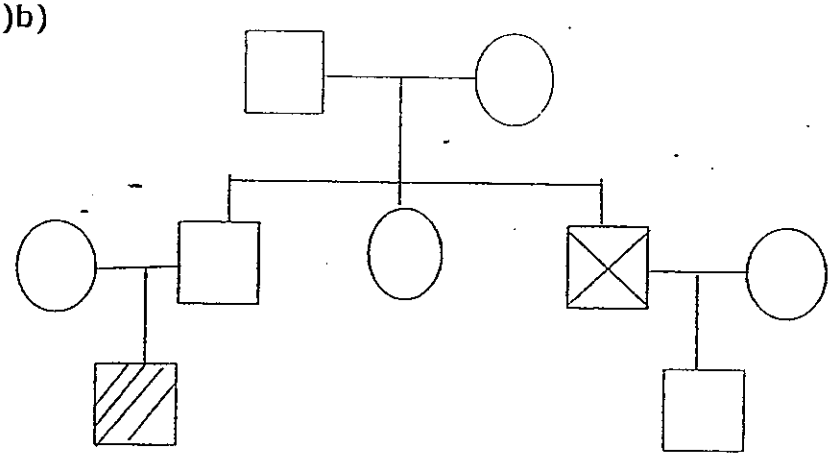
c)Bread B. Because its number of days for it to be mould free is the least therefore making it the first to grow mould.

32)a)



b)He should observe the amount of water left or the water level left.

33)a)b)



Alan

c)Randy's grandmother. Because she has a sharp nose and Randy cannot inherit his genes from his aunt and uncle.

34)a)The fine hairs and wetness in our nostrils prevent dust from entering our lungs.

b)Oxygen→ more, less, same, same

water vapour→less, more, more, less

35)a)B. Because at first there was a huge population of aphids but after organism P was introduced, the population of aphids had decreased.

b)It increased because P fed on aphids and reproduced.

36)a)X: frictional force. Y: gravitational force.

b)The parachute should have been made bigger.

c)Point A. When the parachute first opened at Point A, there was a sudden increase in frictional force between the air and parachute resulting in a sharp decrease in the speed of falling man.

37)a)When the spring is compressed, the elastic spring force increases and is large enough to push the boys up against gravity.

b)Carpet surface. A carpet surface is softer than a concrete surface so it absorbs more force and more elastic spring force is needed.

38)a)It is to find out if the colour of the light affects the rate of photosynthesis.

b)The number of bubbles observed would decrease because as the light source is moved further away from the hydrilla, the rate of photosynthesis decreases.

39)a)

Kinetic energy → heat energy + sound energy → gravitational potential energy

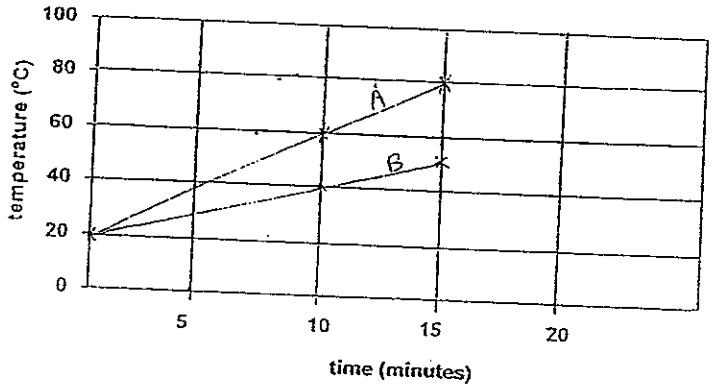
b)Increase the mass of the roller coaster.

40)a)i)gravitational potential energy
ii)kinetic energy
b)1)It is renewable
2)It has unlimited supply.

41)a)As he did not want the carbon-dioxide to be used-up during photosynthesis and he did not need oxygen.
b)It is to be a control set-up to confirm that the carbon dioxide comes from the hydrilla but not Y.

42)a)100cm2
b)The arm balance will tilt down towards Falsk A because Flask A has more air and air has mass.

43)a)



b)material B would be more suitable because it is a poorer conductor of heat than A.

44)a)S N S N
b)Magnets A and C will attract each other. The north pole of A is facing the south pole of C and unlike poles of magnets attract each other.