



NAN HUA PRIMARY SCHOOL  
CONTINUAL ASSESSMENT 1 2012  
PRIMARY SIX  
SCIENCE

Name : \_\_\_\_\_ ( )

Class : Primary 6 / \_\_\_\_\_

Date : 1 March 2012

Duration : 1 hr 45 min

MARKS	
Sect A:	/ 60
Sect B:	/ 40
Total :	/ 100

Parent's Signature : \_\_\_\_\_

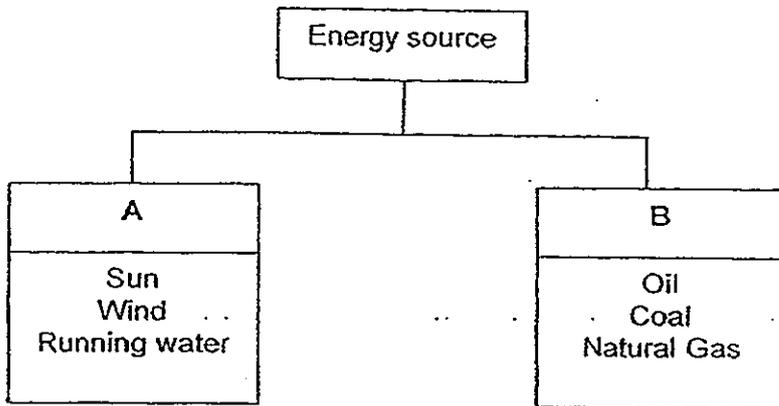
**Section A: (30 x 2marks = 60marks)**

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.

1. What is/are our main source(s) of energy?

- (1) The Sun
- (2) Fossil fuels
- (3) The water cycle
- (4) Plants and animals

2. Study the classification table below carefully.



What could the two sub-headings, A and B, be?

	A	B
(1)	Natural	Artificial
(2)	Primary	Secondary
(3)	Renewable	Non-renewable
(4)	Non-renewable	Renewable

3. In which of the following is electrical energy converted to heat energy that is useful to us?

- A When the oven is used
- B When the computer is switched on
- C When the engine of a car is started
- D When the water heater is turned on

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

4. Which of the following shows the effects of a pushing force only?

- A Closing the cap of a pen.
- B Peeling off the peel of an orange.
- C Food moving through the intestines.
- D Stapling a stack of papers together using a stapler.

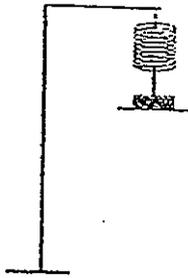
- (1) A and B only
- (2) B and D only
- (3) A, B and D only
- (4) A, C and D only

5. Which of the following are examples of a force?

- A Mass
- B Gravity
- C Friction
- D Magnetic attraction

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

6. Alan hung different weights from a spring as shown in the picture.



He noticed that the length of the spring changed as different weights were used.

The table below shows the results he obtained.

Weight used (g)	200	300	500	700
Length of spring (cm)	10	12	16	?

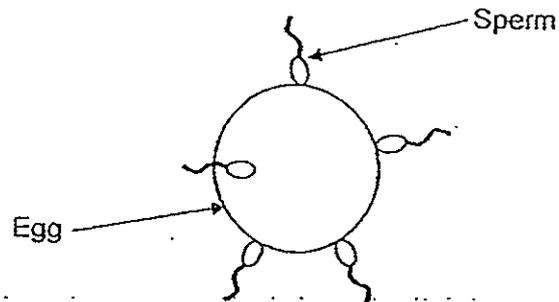
He forgot to record the length of the spring when he used the 700g weight. What would the length be?

- (1) 14 cm                      (2) 20 cm  
(3) 22 cm                      (4) 25 cm
7. What are the correct steps in the reproduction of flowering plants?

- A Ovule develops into a seed.  
B Pollen grain fuses with the egg cell.  
C A pollen tube grows towards the ovary.  
D Pollen grain is transferred to the stigma.

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

8. What is the name of the process shown in the diagram below?



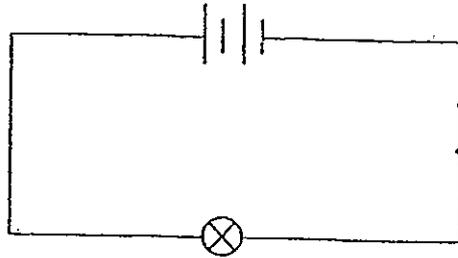
- (1) Pollination                      (2) Fertilization  
(3) Reproduction                (4) Cell division

9. Which of the following statements allow us to infer that a cell is a plant cell?

- A It has a nucleus.  
B It has a cell wall.  
C It has chloroplasts.  
D It has a regular shape.

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

10. The bulb in the following circuit diagram did not light up when the switch is closed.

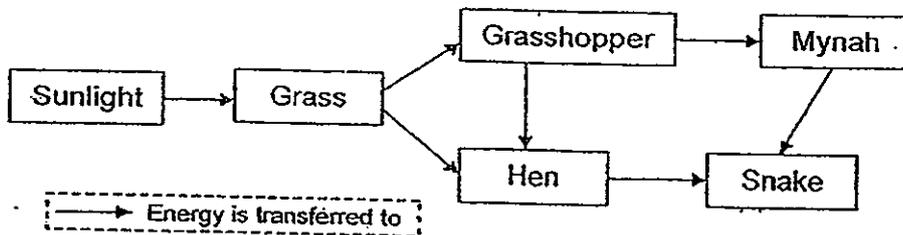


What could the possible reasons be?

- A The switch is faulty.
- B The bulb has fused.
- C The wires are too long.
- D One of the dry cells is flat.

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

11. Study the chart below.



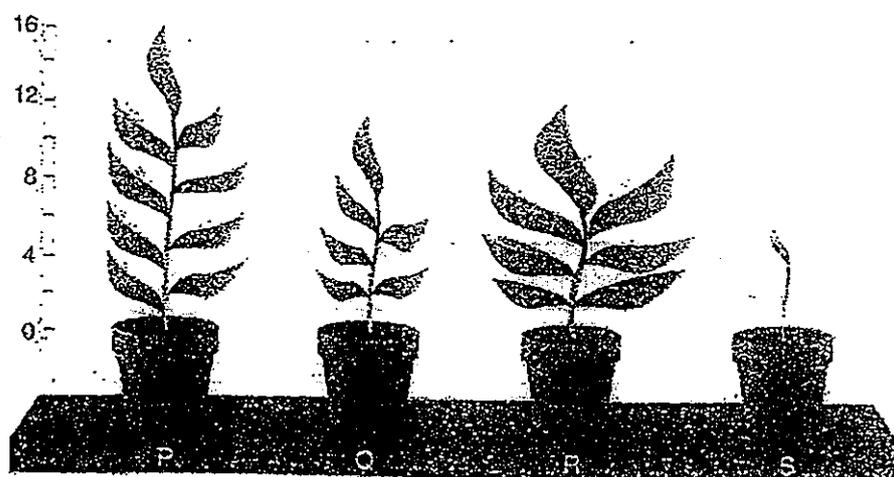
Based on the chart, which of the following statement(s) is/are correct?

- A Plants are sources of energy for animals.
- B Energy from the Sun is transferred indirectly to the snake.
- C The hen gets its energy from eating the grasshopper and grass.

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

12. James wanted to investigate the effect of fertilizer on String Bean seedlings. He planted 4 pots of String Bean seedlings. The results after 15 days are shown by the information below.

Seedling	Amount of water	Amount of fertilizer
P	50 ml	5 drops every 5 days
Q	50 ml	0
R	50 ml	5 drops daily
S	0 ml	0



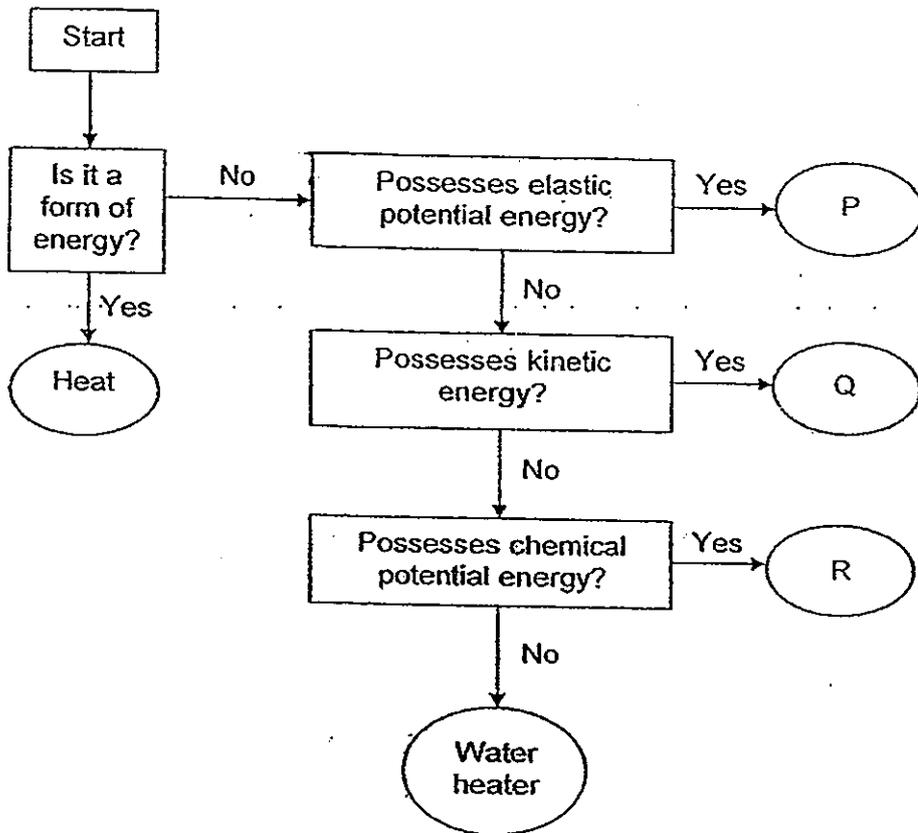
James was told that he needed a 'control' to measure his results against.

A 'control' shows what happens in the experiment when the variable being tested is not used and all other conditions are the same.

Which seedling should James use as the 'control' for his experiment?

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

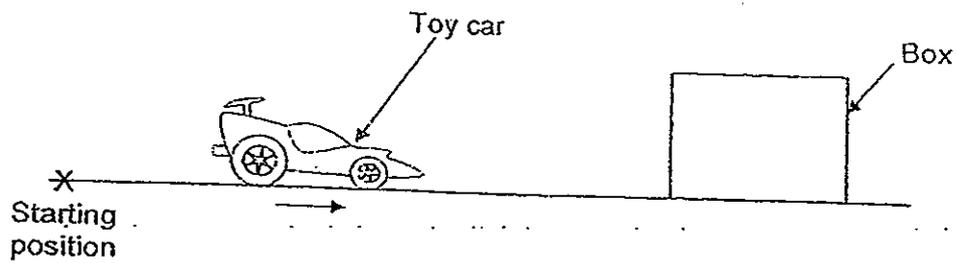
13. Study the flowchart below carefully.



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

	P	Q	R
(1)	Sponge	Moving train	Food
(2)	Compressed spring	Rain	Dry cell
(3)	Wound-up toy car	Waterfall	Electricity
(4)	Stretched rubber band	Air	Kerosene

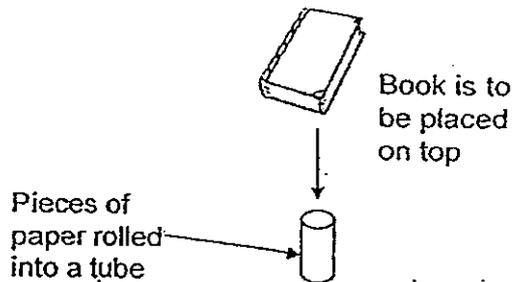
14. A wound-up toy car which was released from the starting position raced across the ground and hit a box in its path. The toy car stopped in its track but the box moved a short distance away.



Which of the following shows the conversion of energy that took place in this experiment?

- (1) Elastic potential energy of car  $\rightarrow$  kinetic energy of car  $\rightarrow$  kinetic energy of box
- (2) Elastic potential energy of car  $\rightarrow$  sound energy  $\rightarrow$  chemical potential energy of car  $\rightarrow$  kinetic energy of box
- (3) Chemical potential energy of car  $\rightarrow$  kinetic energy of car  $\rightarrow$  potential energy of box
- (4) Chemical potential energy of car  $\rightarrow$  sound energy  $\rightarrow$  kinetic energy of car  $\rightarrow$  kinetic energy of box

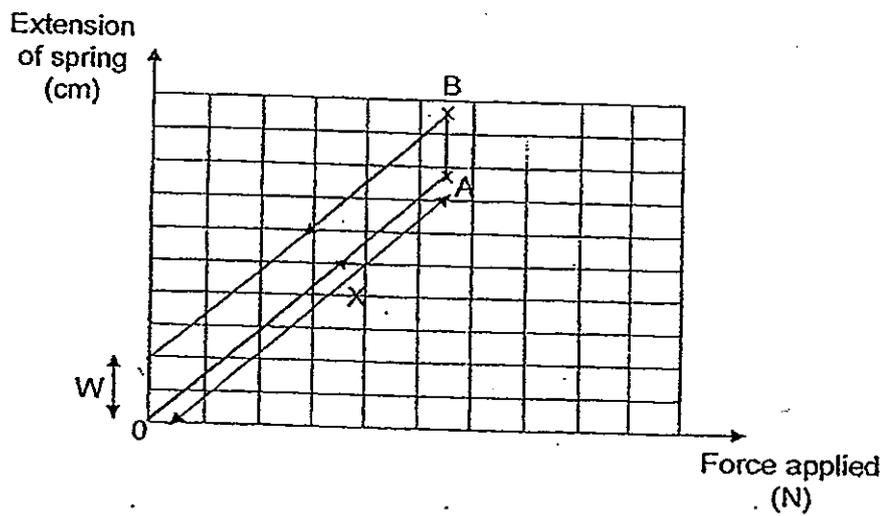
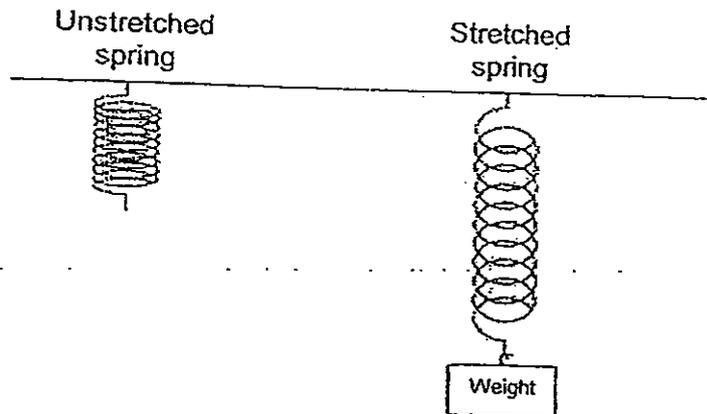
15. Kelly wanted to set up an experiment to find out how many pieces of paper (rolled into a tube as shown below) is needed to support the mass of the book without being squashed.



Identify the independent variable in the experiment Kelly is trying to conduct.

- (1) Mass of book.
- (2) Mass of papers used
- (3) Number of papers rolled into a tube
- (4) Position of book on the tube of papers

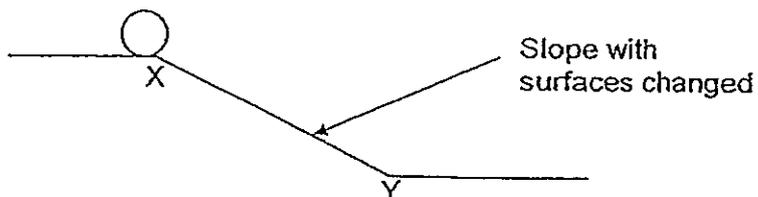
16. George wanted to find out what the elastic limit of a spring is. He performed an experiment in his school laboratory. He added weights to the spring till the spring reached its elastic limit. He realized that after removing the weights, the spring did not return to its original length.



Based on the graph above, which point, A or B, shows the point at which the spring reaches its elastic limit and what is the permanent extension in the spring?

	Point at which the spring reaches its elastic limit	Permanent extension in the spring
(1)	A	W
(2)	A	X
(3)	B	W
(4)	B	X

17. Ben wanted to find out how the time taken for a marble to roll down a slope will be affected by the texture of the surface. He set up an experiment shown below.



He tabulated the results in the table below.

Surface	Time taken for marble to roll from Point X to Y (seconds)
P	24
Q	13
R	20
S	19

Based on the table above, which of the surfaces is the roughest?

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

18. Sally has been asked to conduct an experiment to find out how the number of coils around an electromagnet would affect its strength. Which set of apparatus should she choose for her experiment?

(1) 

Some wires 2 batteries 1 iron rod 1 ruler 1 switch Some paper clips
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(2) 

Some wires 2 batteries 1 steel rod 1 switch
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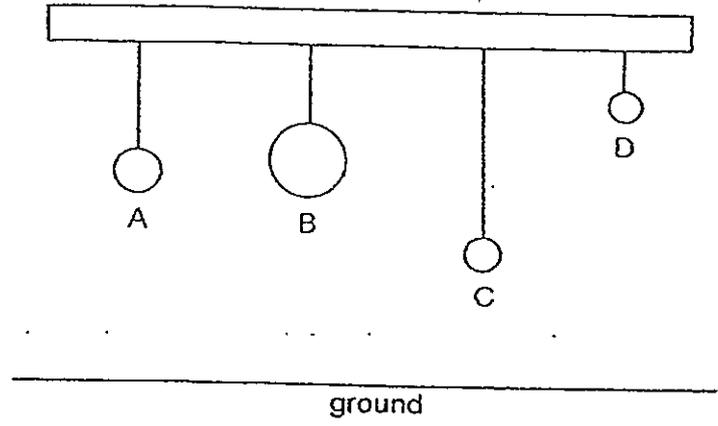
(3) 

Some wires 2 batteries 1 aluminium rod 1 switch Some paper clips
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(4) 

Some wires 2 batteries 1 copper rod 1 bulb 1 switch
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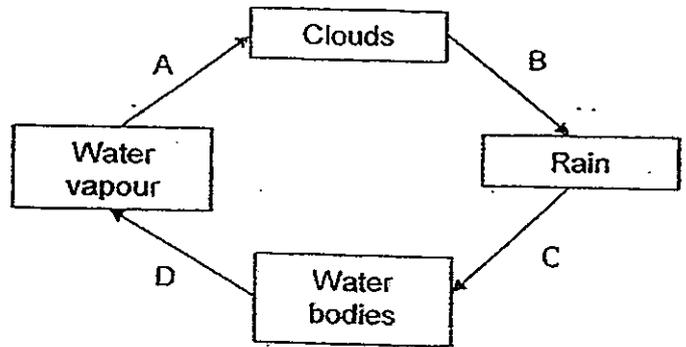
19. The following diagram shows four balls of the same mass hanging from a structure.



Which of the following sentences on the set-up above is true?

- (1) All the balls have no gravitational force acting on it.
- (2) All the balls have the same gravitational force acting on it.
- (3) A has greater gravitational force acting on it as compared to C.
- (4) B has greater gravitational force acting on it as compared to D.

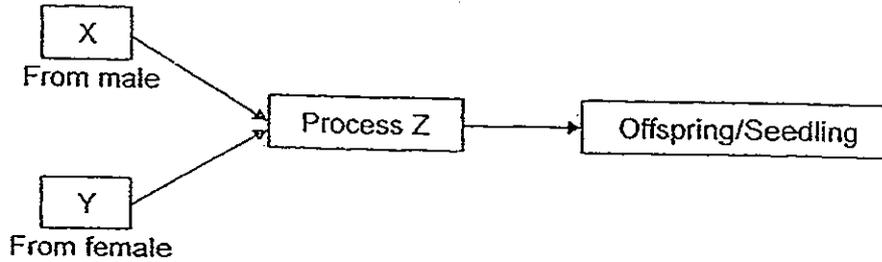
20. The diagram below shows a simplified version of the Water Cycle.



Which processes, A, B, C and/or D, involve(s) a change in the state of water?

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

21. Study the diagram below carefully.



The diagram above can be applied to both the human and plant reproduction systems.

Which of the following correctly represents X, Y and Z in both the human and plant reproduction systems?

	Human Reproduction System			Plant Reproduction System		
	X	Y	Z	X	Y	Z
(1)	Testes	Ovary	Fertilization	Anther	Ovary	Fertilization
(2)	Ovary	Testes	Fertilization	Ovary	Anther	Fertilization
(3)	Egg	Sperm	Fertilization	Egg	Pollen grain	Pollination
(4)	Sperm	Egg	Fertilization	Pollen grain	Egg	Pollination

22. Carl, Derrick and Edward were having a discussion on what they had just learnt in their Science lesson. They made the following comments.

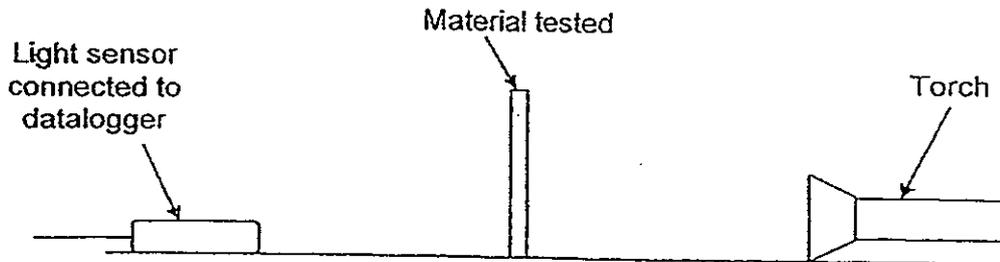
Carl:	The transport systems in both plants and humans are very similar as they transport important substances to all parts of the plants and humans.
Derrick:	The blood in human which carries all the important substances is circulated all over the body whereas the substances in plants are transported only in a single direction.
Edward:	Human needs an organ to pump blood to all parts of the body but the plant does not.

Which of them have made a correct comment?

- |                          |                              |
|--------------------------|------------------------------|
| (1) Edward only          | (2) Carl and Derrick only    |
| (3) Carl and Edward only | (4) Carl, Derrick and Edward |

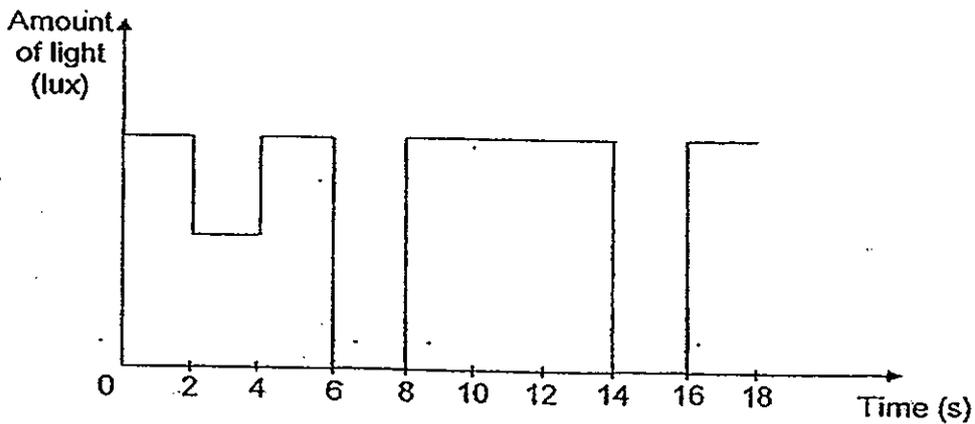


24. Muthu set up an experiment to test the degree of transparency of 4 different materials. The diagram below shows the set-up he has prepared.



First, he turned on the light sensor and torch for 2 seconds. Then, he tested the materials one by one by putting them at the position shown in the diagram above for 2 seconds before removing it. He waited for an interval of 2 seconds before putting in the next material for testing. The light sensor and torch was turned on throughout the duration of the test even when he was changing the materials tested.

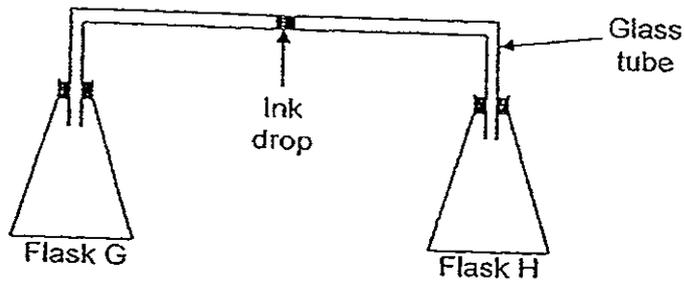
A graph depicting the amount of light received by the light sensor was plotted from the results obtained.



Based on the graph, what do you think is the sequence of materials tested in his experiment?

Materials tested				
	1st	2nd	3rd	4th
(1)	Mirror	Stained glass	Leather	Cling wrap
(2)	Leather	Cling wrap	Mirror	Stained glass
(3)	Stained glass	Leather	Cling wrap	Mirror
(4)	Cling wrap	Mirror	Stained glass	Leather

25. Two flasks are connected via a glass tube as shown in the diagram below. There is a drop of ink in the middle of the tube.

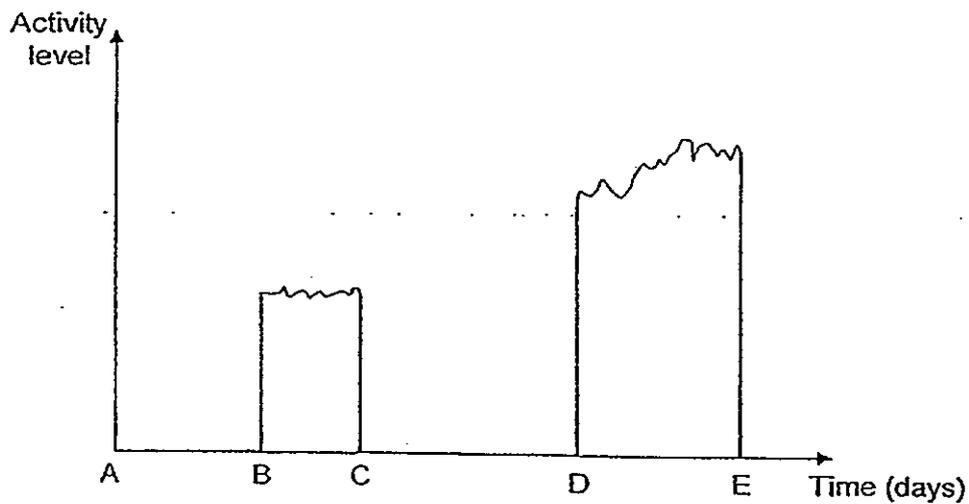


Tom would like to make the drop of ink move towards Flask H. What can he do to make that happen?

- A Put Flask G in a basin of ice water.
  - B Put Flask H in a basin of ice water.
  - C Put Flask G in a basin of hot water.
  - D Put Flask H in a basin of hot water.
- (1) A and B only                      (2) A and C only  
(3) B and C only                      (4) C and D only

26. Amos, Ben and Charles did a study on an organism throughout its whole life cycle till it died.

They plotted the organism's activity level in the graph below.



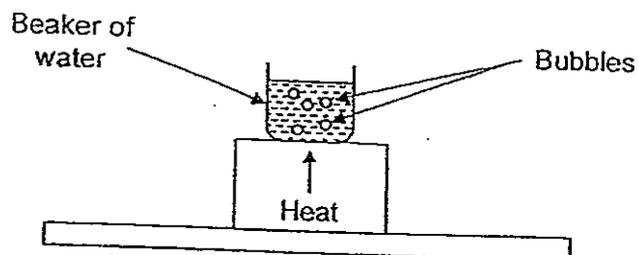
Based on the graph above, they then made certain comments.

Amos	Period BC corresponded to the larval stage of the organism.
Ben	During the period CD, there was no life in the organism as the activity level was 0.
Charles	The organism spent a greater period of its life being inactive as compared to being active.

Which of the three of them made a correct comment?

- (1) Ben only
- (2) Amos only
- (3) Ben and Charles only
- (4) Amos and Charles only

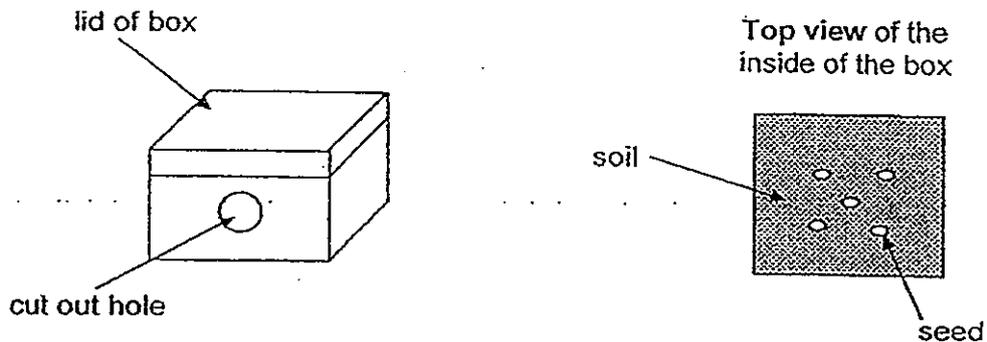
27. The picture below shows a beaker of water being placed over a heat source. The water in the beaker has reached the boiling point.



Why did the volume of water decrease during boiling?

- (1) The water had turned to steam.
- (2) The water had changed to mist.
- (3) The water evaporated into water vapour.
- (4) The water escaped into the surroundings.

28. Danny placed some damp soil in a box. He then placed 5 seeds into the soil and covered the box with a lid. He also cut out a hole on one of the sides of the box as shown below. He placed the box in his balcony.



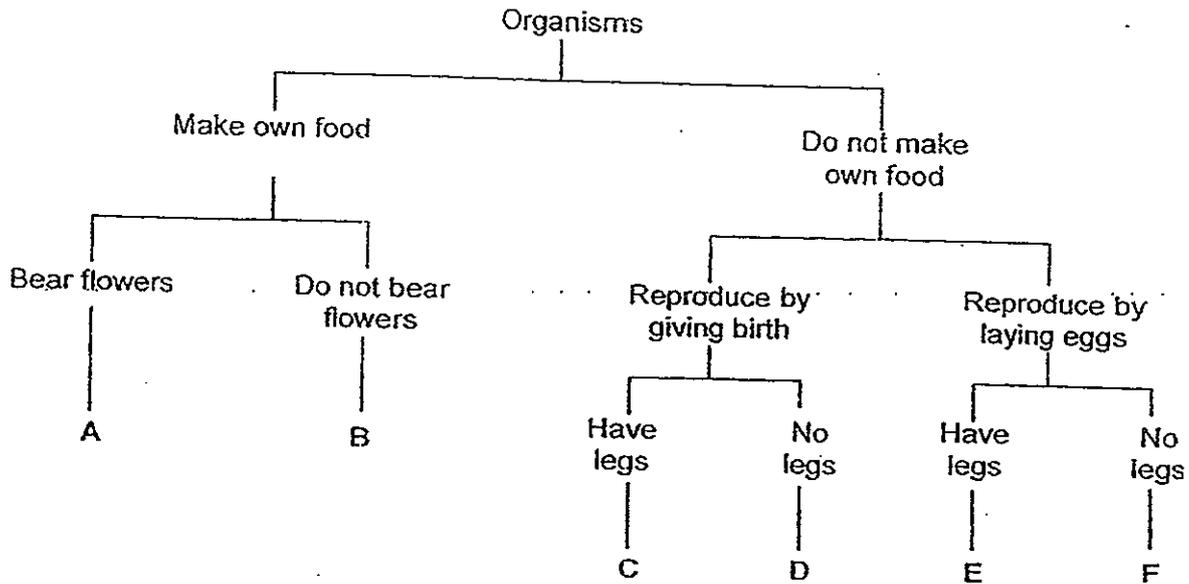
He watered the seeds every day. After 1 week, he noticed that the young seedlings are all growing towards the hole. He made some deductions and recorded them down as shown below.

Deductions	The seedlings are growing towards the hole as:
1	they respond to look for water
2	they respond and grow towards sunlight
3	they respond to get more air from outside the box

His friend told him that not all of his deductions are correct. Which one of his deductions is/are not correct?

- (1) Deduction 1 only                      (2) Deduction 3 only  
 (3) Deductions 1 and 3 only            (4) Deductions 2 and 3 only

29. Study the classification chart below carefully.



Based on the classification chart above, what conclusions can you make?

	True statement	False statement
(1)	B could be a Bird's nest fern	Light is not essential for A's survival
(2)	D could be an organism with its body divided into 3 segments	D could be a penguin
(3)	C and E do not have chlorophyll in their cells	A reproduces by seeds
(4)	C could be a platypus	F could be a whale





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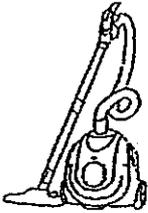
MARKS	
40	

**Section B: (40marks)**

Write your answers to question 31 to 44.

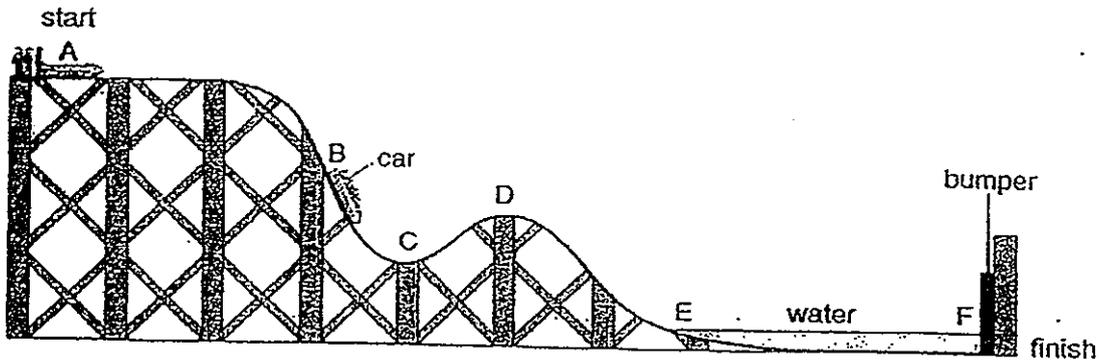
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. Write down the energy required and the source of energy for each of the following objects. [2]

Object	Type of energy required for the vacuum cleaner to work	Source of energy
 Vacuum cleaner		
Object	Type of energy required by the man to row the boat	Source of energy
 Man rowing a boat		

Score	2
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32. The diagram below shows a ride in a theme park.  
The letters A, B, C, D, E and F show the different points along the track.



The car starts from A and travels to F where it stops when it hits the bumper. At E, the car enters a trench filled with water.

- (a) At which point(s) does the car have no kinetic energy? [1]

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- (b) At which point does the car have some kinetic energy and the least gravitational potential energy? [1]

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- (c) What happens to the speed of the car when it splashes through the water at E? Give a reason for your answer. [1]

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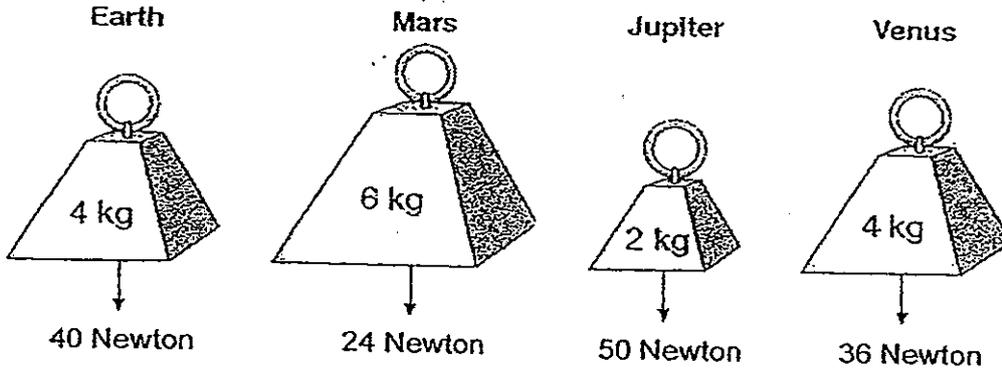


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33. The diagram below shows the mass and weight of four objects on different planets.



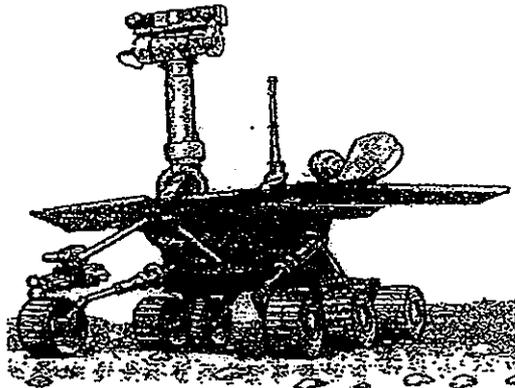
(a) From the diagram above, how can you tell that gravity is greater on Earth than on Venus? [1]

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(b) The diagram below shows a space buggy.

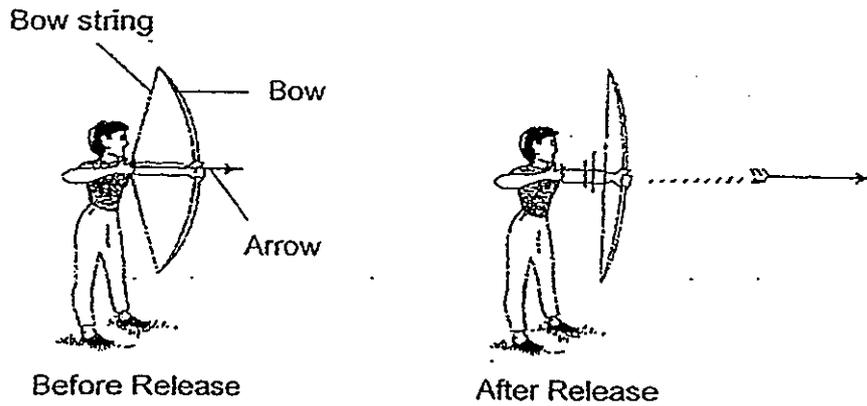


Arrange the weight of the space buggy on Earth, Mars and Jupiter in ascending order. [1]

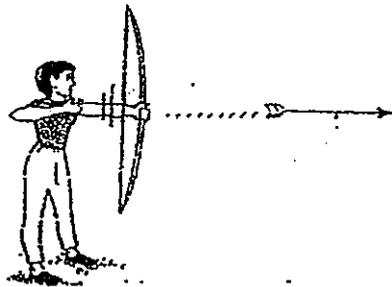
Least  Most

Score	2
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34. The diagrams below show a student using a bow and arrow. The bow string on the bow is used to propel the arrow forward.



- (a) Draw arrows to indicate the forces that are acting on the moving arrow in the diagram below. Label the forces. [2]



- (b) Describe how gravity affects the path of the arrow after it has been released. [1]

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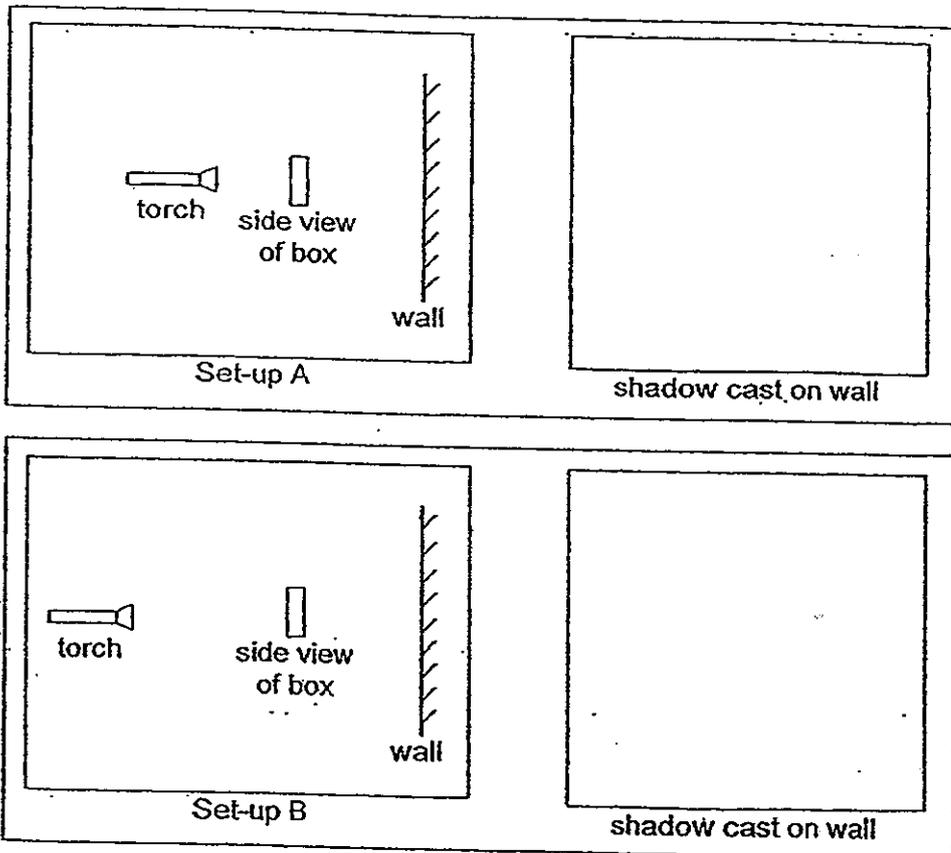


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Score	3
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35. In the two set-ups below, a torch is shone on the front of the box such that a shadow is cast on the wall on the opposite side of the box. The distance from the box to the wall is the same for the two set-ups. However, the distance between the torch and the box is changed.

(a) In the two boxes on the right, draw in the shadow cast on the wall for set-up A and B. [2]



(b) What can you infer from the above experiment? [1]

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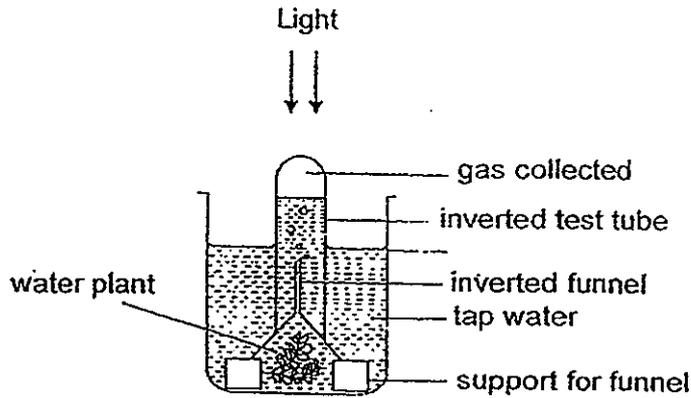
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Score	3
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36. Mabel placed some water plants inside an inverted funnel. She then immersed the inverted funnel and an inverted test tube into a beaker of water.



She placed the beaker near a light source. After a while, she noticed some bubbles floating to the top of the inverted test tube as shown in the diagram above.

- (a) What do you think is the gas found in the bubbles? [1]

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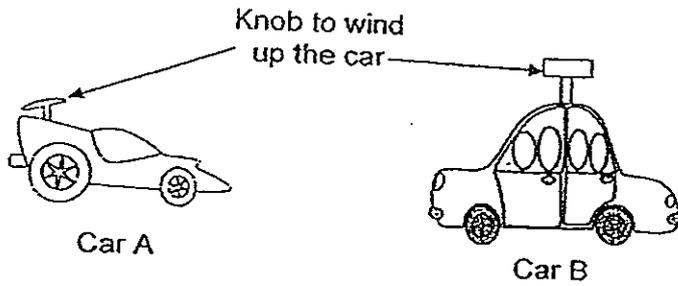
- (b) If Mabel changed the tap water to murky water, would she notice more or less bubbles floating to the top of the inverted test tube? Explain your answer clearly. [2]

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37. Jason received two wind-up toy cars as birthday gifts. He wanted to find out which car can go a further distance.



He started them off from the same starting line after winding up the car and recorded the distance they travelled in the table below.

Car	Number of turns of knob	Distance travelled (cm)
A	12	55
B	15	62

He concluded that Car B was able to travel a greater distance compared to Car A. His brother told him that his experiment was not a fair test.

Do you agree? Explain your answer clearly.

[2]

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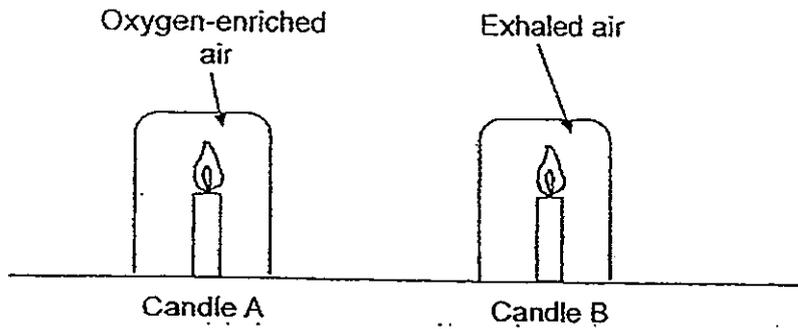
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38. Wayne conducted the experiment shown below. Two candles, A and B, were placed in two inverted jars that were filled with different types of air



- (a) Write down the energy conversion that took place when the candles were burning. [1]

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- (b) Which candle, A or B, would remain lit for a longer time? Explain your answer. [1]

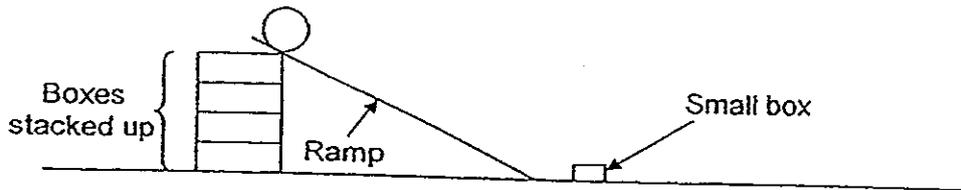
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Score	2
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39. A ramp is supported by some boxes. A small box is placed at the bottom of the ramp. A ball is then allowed to roll down the ramp freely. As it reached the bottom of the ramp, it hit the small box and the small box moved a distance away.



Study the table below carefully and answer the questions that follow.

Number of boxes stacked up	3	5	7	8
Distance moved by small box (cm)	2	6	10	12

- (a) State the energy conversion that takes place as the ball moves from the top of the ramp to the bottom and just before hitting the small box. [1]

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- (b) Why does increasing the number of boxes result in the small box moving a greater distance? [2]

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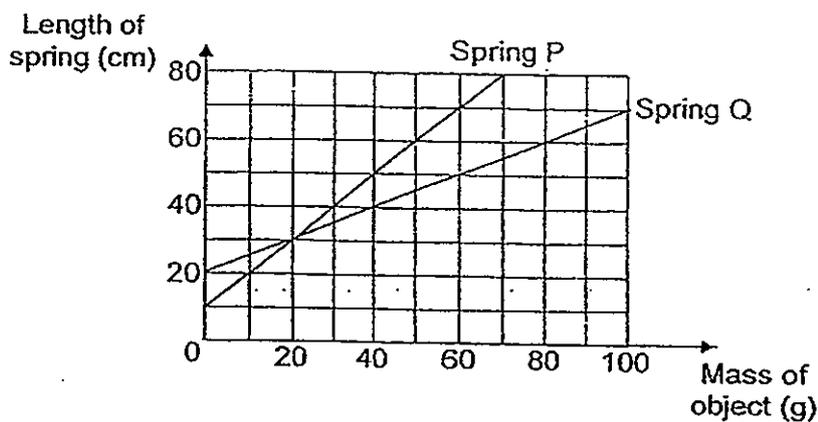


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40. John carried out an experiment to find out how the mass of an object affects the length of a spring when the object was hung on it. The results were plotted on a graph as shown below.



- (a) What was the mass of the object when the two springs were of the same length? [1]

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- (b) What was the extension of Spring Q when an object with a mass of 80g was hung on it? [1]

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- (c) Which spring was more elastic? Explain your answer clearly. [1]

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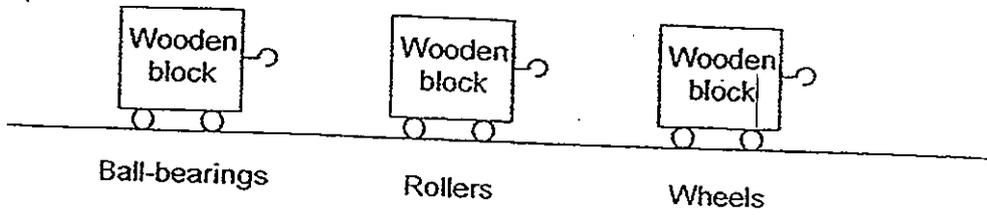


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41. Ali wanted to investigate whether ball-bearings, rollers or wheels produce the most friction. He decided to conduct an experiment to find out. He prepared the following 3 set-ups as shown in the diagram below. At the same time, he prepared a spring balance to help him in the experiment.

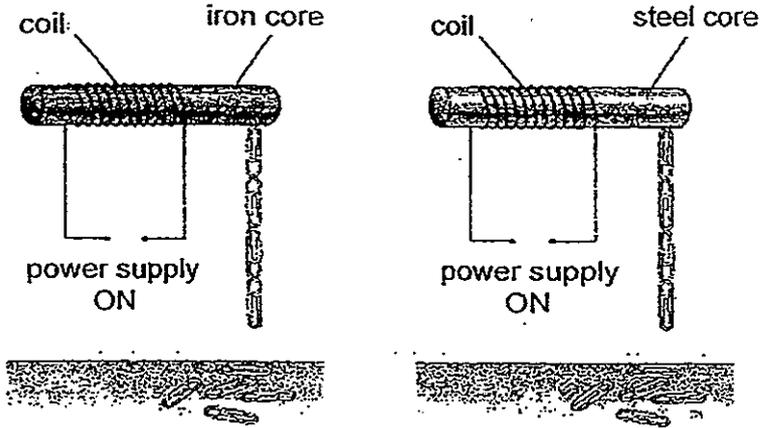


- (a) Identify one variable Ali must keep the same in this experiment. [1]

- (b) Using only the set-ups in the diagram above and the spring balance, write down the steps that he needed to take to conduct the experiment in the box given below. Number your steps clearly. Describe in the final step how Ali could conclude whether ball bearings, rollers or wheels would produce the most amount of friction. [3]


Score	4
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42. Ye Jun made 2 electromagnets as shown below. He used paper clips to test the strength of each electromagnet. He switched on the power supply in both circuits.



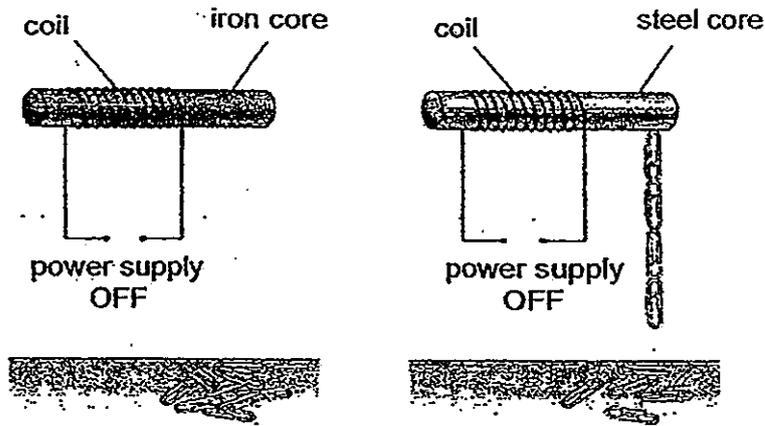
- (a) How can you tell that the strength of both electromagnets is the same? [1]

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When Ye Jun switched off the power supply in both circuits, the paper clips fell off the iron core, but not off the steel core.

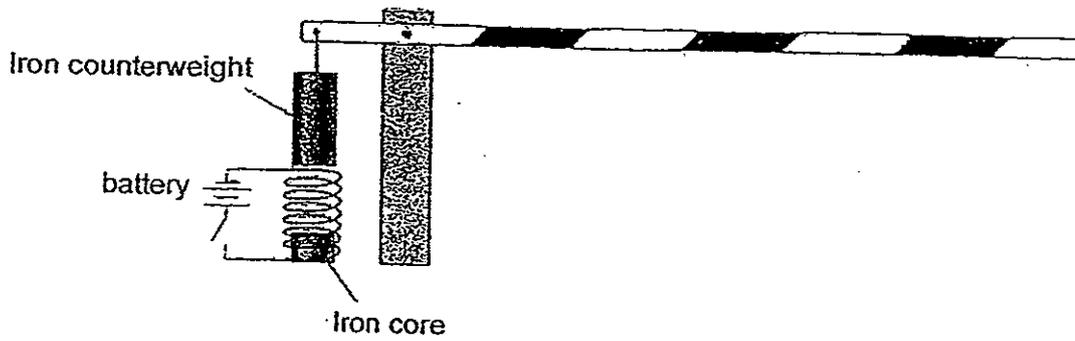


- (b) Why is iron used, rather than steel, for the core of an electromagnet? [1]

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Score	2
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The diagram below shows a car park barrier.



When the switch is closed, the barrier rises.

(c) Based on the diagram, explain clearly how the car park barrier works. [2]

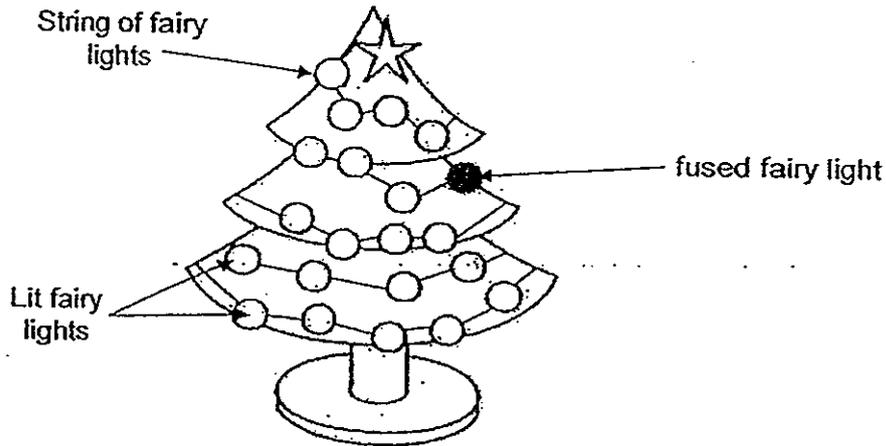
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Score	2
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43. Gina and Tony were looking at a Christmas tree which was beautifully lit by a string of fairy lights. Tony then discovered that one of the light bulbs in the string of fairy lights did not light up.



Tony then commented that the bulbs of the fairy lights must have been connected in series. Gina disagreed with him and said that it should have been connected in parallel.

- (a) Who do you agree with? Explain your choice clearly. [2]

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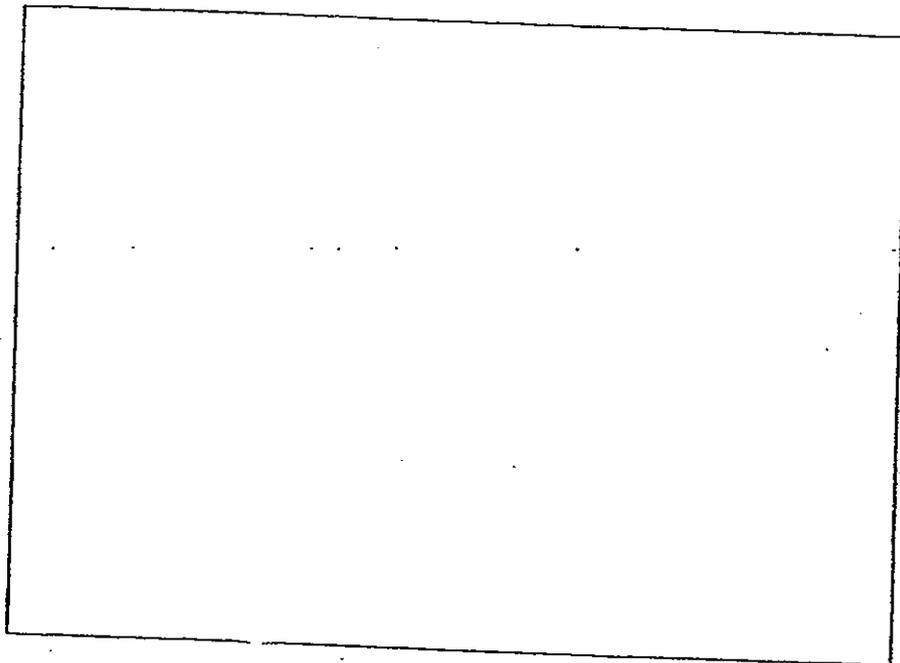
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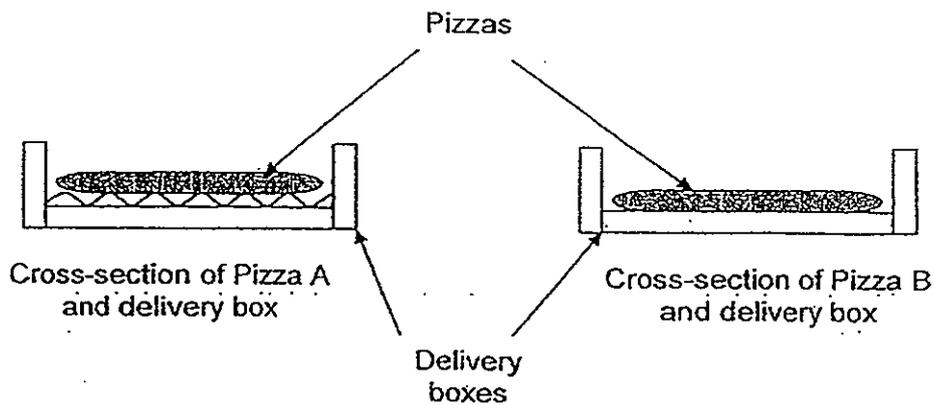
Score	2
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- (b) Draw a circuit diagram to show how you think the string of fairy lights is connected. Include 3 fairy lights (light bulbs), dry cell(s) and switch(es) in your diagram. [2]



Score	2
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14. Jane ordered the delivery of two boxes of pizzas from two different pizza restaurants for her party. The pizzas arrived at the same time, piping hot. However, 30 minutes later, she noticed that one of the pizzas still remained hot while the other has cooled down a lot.



Looking at the diagrams provided above, which pizza do you think remained hot after 30 minutes? Explain your reason clearly. [2]

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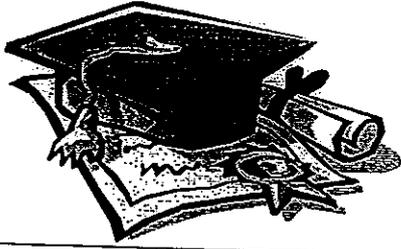
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End of paper

Score	2
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# ANSWER SHEET

EXAM PAPER 2012

SCHOOL : NAN HUA  
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	3	1	4	4	2	3	2	4	1	4	2	2	1	3	1	1
18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30				
1	2	2	1	4	3	3	3	4	1	3	1	3				

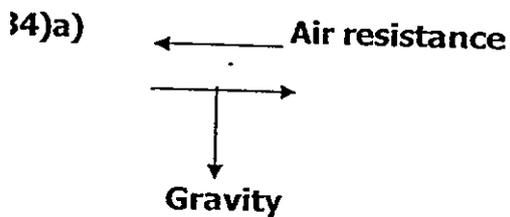
31) Electrical energy / Fossil Fuels  
Chemical potential energy / Food

32) a) A, F  
b) E

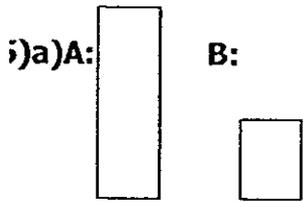
c) The car slows down. The car has to overcome water resistance.

33) a) As both weights have the same mass, the weight on Earth is greater than the weight in Venus the gravity is greater on Earth than on Venus.

b) Mars, Earth, Jupiter



b) The arrow would curve downwards and hit the ground after some time.



b)The nearer the torch from the object, the larger the shadow.

i)a)Oxygen.

b)Less bubbles. Murky water allows less light to pass through to reach the ant at the bottom of the beaker. Thus, the rate of photosynthesis will reduce producing less oxygen.

i)Yes, I agree. In an experiment, there should only be one variable that is changed. In his experiment, there are more than one variable that is changed. In this experiment, the independent variable should be the type of car. He had changed the number of turns of the knob for the two cars, which will in turn affect the results of the experiment.

i)a)Chemical potential energy → heat energy + light energy.

b)A. candle and oxygen continue to burn and oxygen energy air had more oxygen than exhaled air.

i)a)Gravitational potential energy → kinetic energy.

b)The more the boxes being stacked up the greater the amount of gravitational potential energy. When the ball is released, the gravitational potential energy is converted to kinetic energy of the rolling ball, when the ball is the small box, the kinetic energy of the rolling ball is converted to kinetic energy of the moving small box.

i)a)20g.

b)40cm.

c)Spring D. When the same mass was hung on both spring. Spring was stretched more than spring Q.

i)a)The surface of which the blocks are pull on.

b)1)Attach the spring balance to the block with ball-bearings.

2)Pull the block till it just moves.

3)Record the readings on the spring balance.

4)Conduct the experiment 2 more times with the block on ball-bearings and calculate the average.

5)Repeat steps 1-4 with block on Rollers and wheels.

6)The wheels that requires the most amount of force to move it produces the most amount of friction.

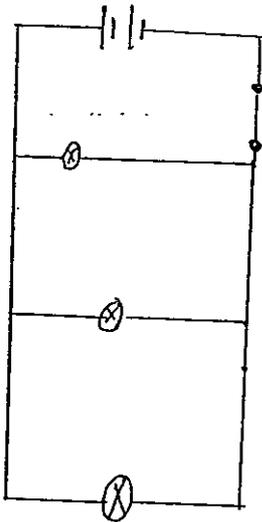
42)a)The number of paper clips attracted to the electromagnets were the same.

b)Once the electricity is switched off, the iron losses its magnetism immediately while the steel core still has a bit of magnetism.

c)When the circuit is closed, electricity flows through the circuit and magnetized the iron core. The iron counter weight is then attracted to the magnetized iron core and moved downwards, therefore lifting the barrier.

43)a)I agree with Gina. If the bulbs are connected in series, when one of them fused, the rest of the bulbs will not light up. However, if the bulbs are connected in parallel, when one of the bulbs did not light up, so it shows that they are connected in parallel.

b)



44)a)pizza A remained hot after 30 minutes. The contact surface between Pizza A and the box that it came with is much lesser than Pizza B. This reduces the amount of heat conducted away to the box from the pizza.

