NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT

2016

BOOKLET A

Date : 29 February 2016
Duration : 1 h 45 min

Name : _____ **( )**

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

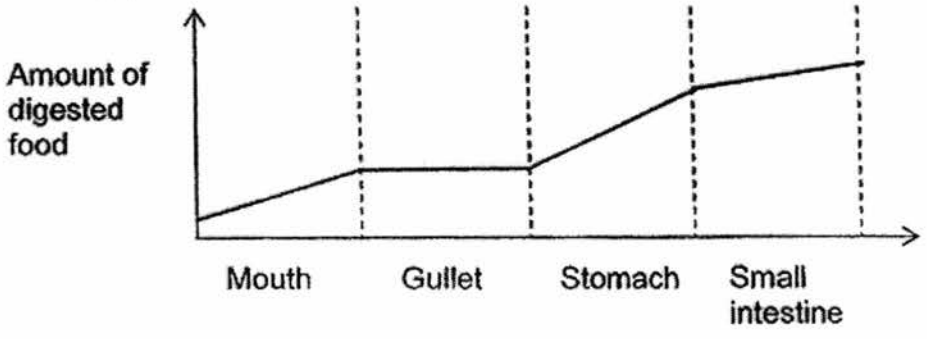
Booklet A consists of 21 printed pages including this cover page.

Section A (30 x 2 marks = 60 marks)

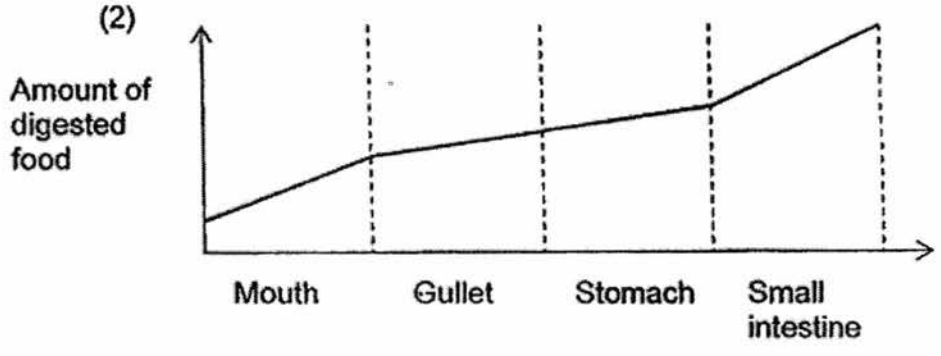
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. John ate a sandwich for lunch. Which one of the graphs below correctly represents the amount of digested food found in the different body parts as it passes through John's digestive system?

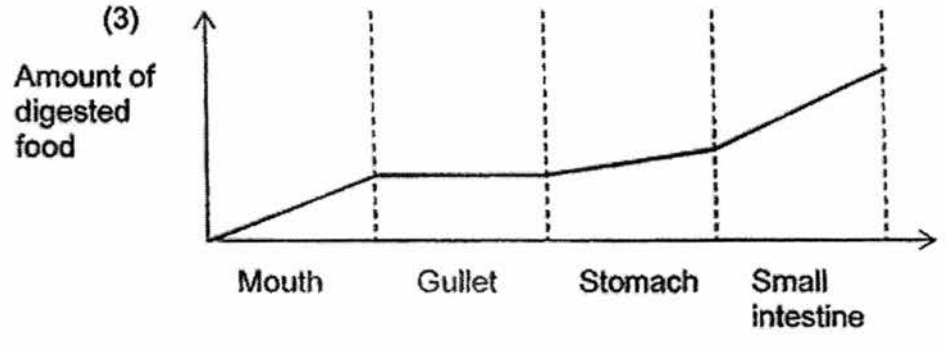
(1)



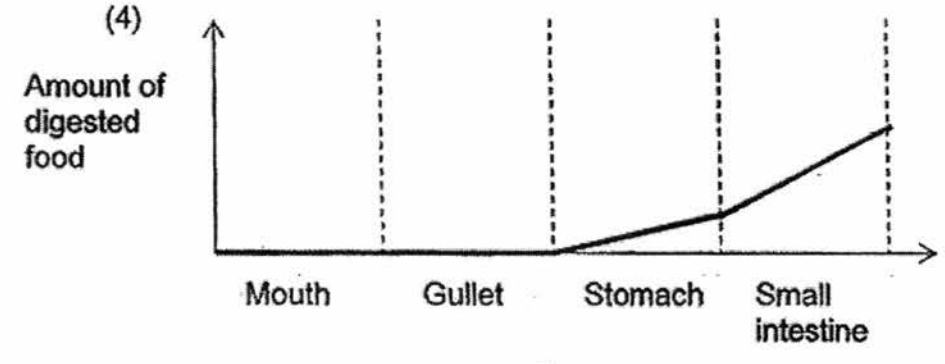
(2)



(3)



(4)

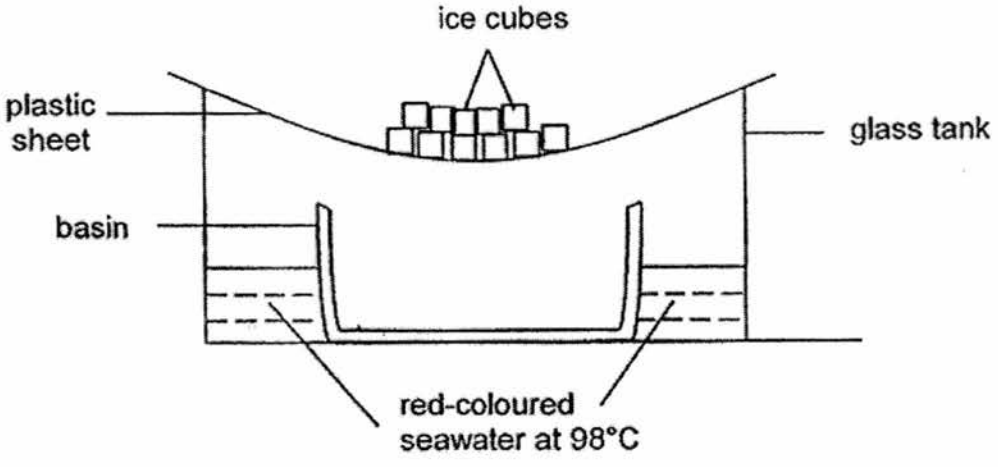


2. Which of the following statement(s) is/are **true** about the various systems in our body?

A The skeletal system gives the body its shape.
B The digestive system transports food to all parts of our body.
C The muscular system is directly involved in the digestion of food.
D The muscular, digestive and skeletal systems are directly involved when we breathe.

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

3. Sam set up the experiment as shown in the diagram below and placed it under a light source.



What would most likely be collected in the basin after 30 minutes?

(1) Red-coloured water will be collected in the basin.
(2) Colourless salt water will be collected in the basin.
(3) Colourless pure water will be collected in the basin.
(4) Red-coloured salt water will be collected in the basin.

4. James conducted an experiment using 4 set-ups, P, Q, R and S, containing water in containers made of the same material. The table below shows the different conditions at the start of each experiment.

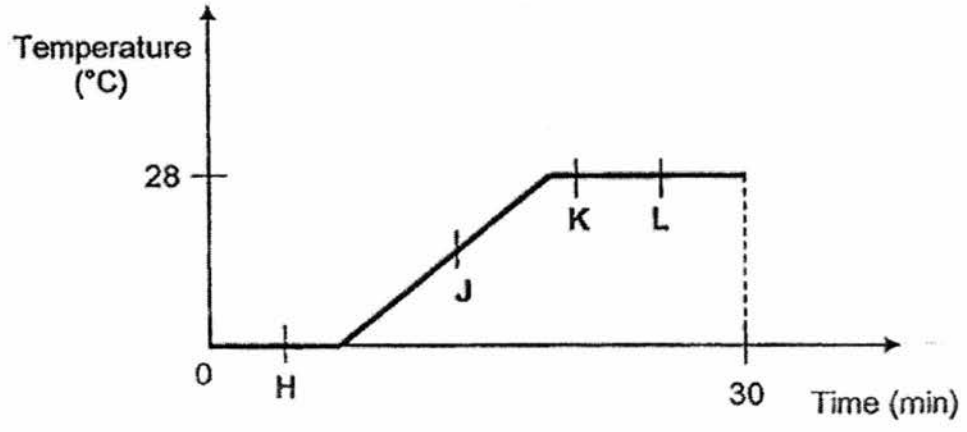
	Set-ups			
	P	Q	R	S
Room temperature (°C)	28	26	26	28
Exposed surface area of water (cm^2)	100	100	200	100
Volume of water (ml)	200	200	200	200
Temperature of water (°C)	40	40	50	50

James wanted to investigate how the rate of evaporation of water was affected by the temperature of water.

Which of the following 2 set-ups are the best for him to use to ensure a fair test?

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

5. Tim placed a beaker of crushed ice in a classroom which was at room temperature. The temperature of the melting ice was recorded and the results were plotted in the graph shown below.

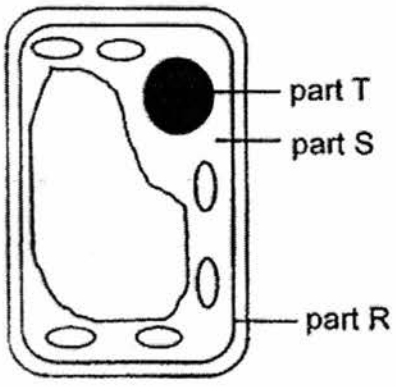


Based on the graph above, which of the following statements are **true**?

A At point K, water in the beaker is evaporating.
B At point J, all the ice in the beaker has melted.
C At point L, there is no water present in the beaker.
D At point H, the beaker contains a mixture of ice and water.

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

6. The diagram below represents a cell.



Which of the following statements about the cell above are **true**?

A Part R can only be found in animal cells.
B Part T is the basic unit of any living organism.
C Part S can be found in both plant and animal cells.
D Part T contains information that is passed down from one generation to another.

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

The table below shows the parts present in cells W, X, Y and Z.

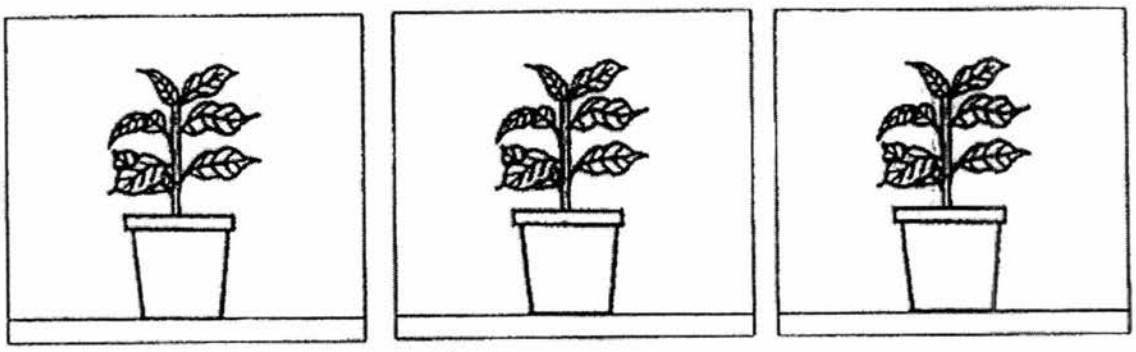
	Cell			
Cell structure	**W**	**X**	**Y**	**Z**
Nucleus	Present	Present	Absent	Present
Cell wall	Present	Present	Absent	Absent
Cytoplasm	Present	Present	Present	Present
Chloroplast	Present	Absent	Absent	Absent
Cell membrane	Present	Present	Present	Present

Based on the information in the table above, which of the following statements are **true**?

A Cell Z could be a cheek cell.
B Cell X could be a sperm cell.
C Cell Y could be a root hair cell.
D Cell W could be an onion skin cell.

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

8. Ali placed three identical potted plants in three glass containers, A, B and C. The glass containers had the same amount of carbon dioxide at the start of the experiment and were placed at different locations as shown in the diagrams below.



A	B	C
in a dark cupboard	under the sun	in the shade

Arrange the glass containers accordingly, from the one containing the least amount of carbon dioxide to the one with the most carbon dioxide, after a few hours.

least carbon dioxide ⟶ most carbon dioxide

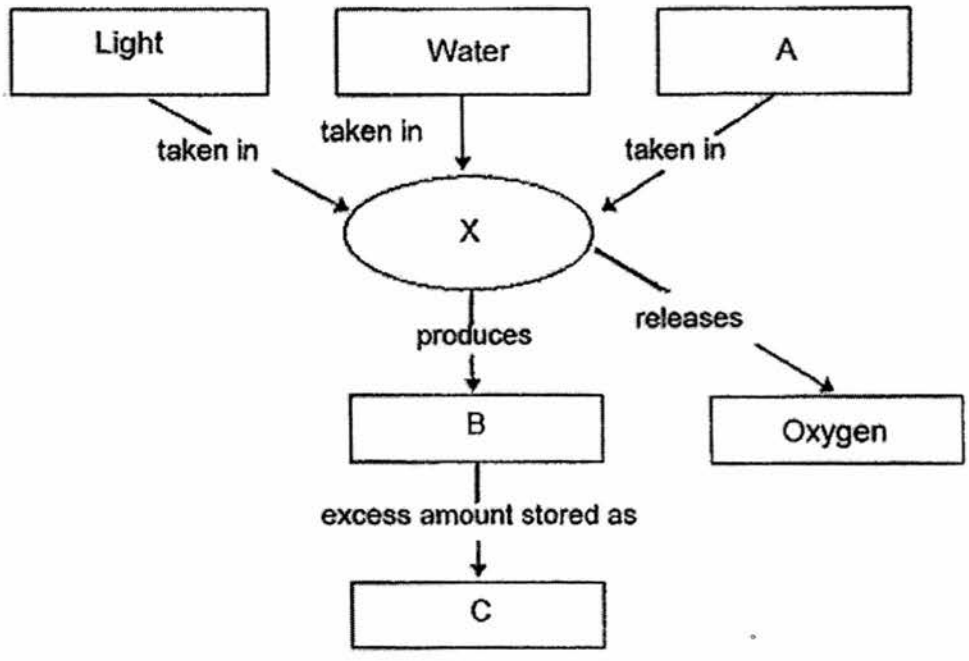
(1)	A	B	C
(2)	A	C	B
(3)	B	C	A
(4)	C	B	A

9. Which of following statements about photosynthesis are **correct**?

A Photosynthesis releases energy.
B Water and carbon dioxide are taken in by the stomata.
C Oxygen is given out during the process of photosynthesis.
D Food made in the leaves is transported to all parts of the plants.

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

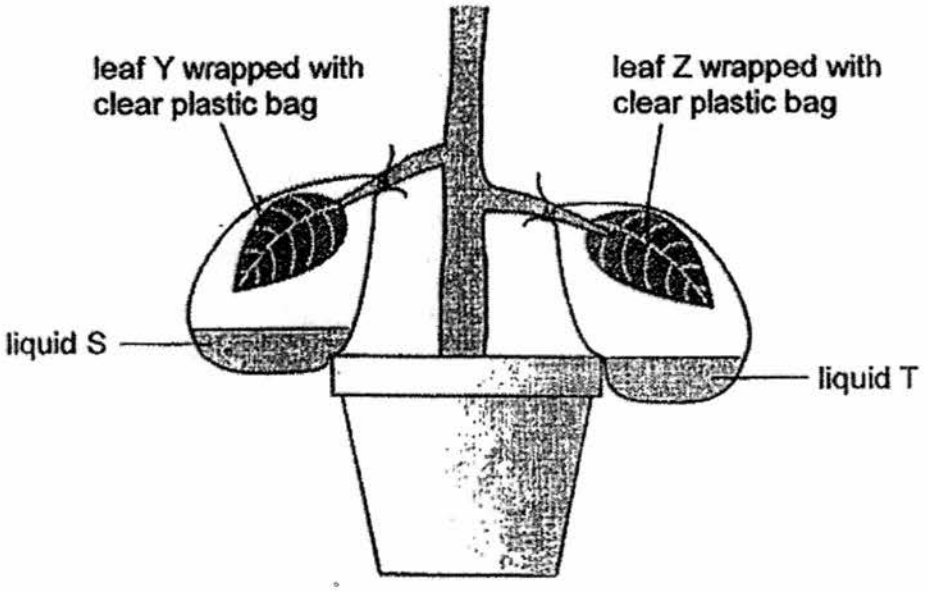
10. Study the diagram below.



Which one of the following correctly represents process X and substances A, B and C in the diagram?

	X	A	B	C
(1)	photosynthesis	oxygen	starch	sugar
(2)	respiration	carbon dioxide	sugar	starch
(3)	respiration	oxygen	starch	sugar
(4)	photosynthesis	carbon dioxide	sugar	starch

11. Jane placed a pot of plant in a dark room for 3 days. She then set up the following experiment under the sun to find out the effect of carbon dioxide on photosynthesis. Liquids S and T were placed in each of the plastic bags as shown below.



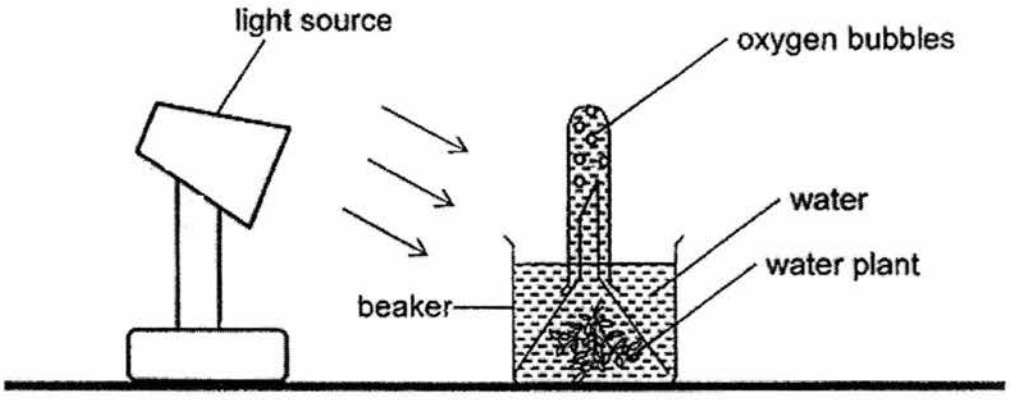
Jane conducted a starch test on both leaves, Y and Z. The iodine solution turned dark blue on leaf Y but it remained brown on leaf Z.

Which of the following statements best explain the results from the above experiment?

A Starch was absent in leaf Z.
B Starch was present in leaf Y.
C Liquid T removed carbon dioxide from the plastic bag.
D Liquid S removed carbon dioxide from the plastic bag.

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

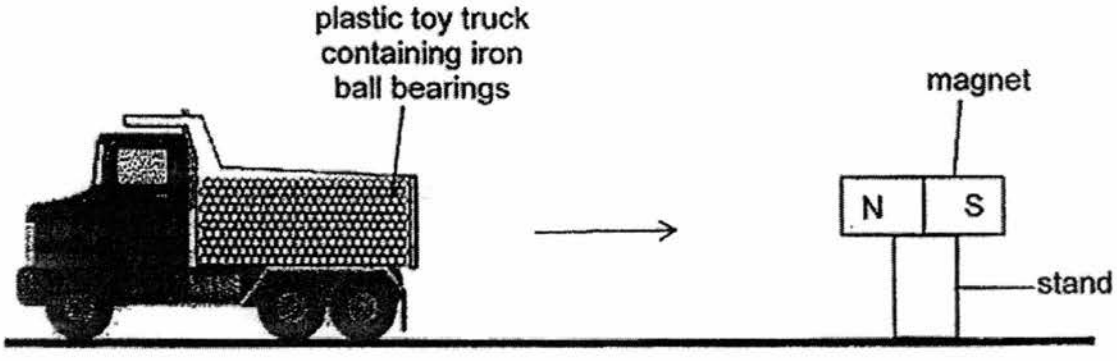
12. Study the experimental set-up below.



It was observed that the water plant produced oxygen bubbles during the experiment. Which one of the following factors would most likely cause a decrease in the number of oxygen bubbles produced?

(1) Using a bigger beaker.
(2) Adding one more light source.
(3) Increasing the amount of water in the beaker.
(4) Moving the set-up away from the light source.

13. A plastic toy truck carrying some iron ball bearings was given a push and was moving in the direction of the magnet as shown below.

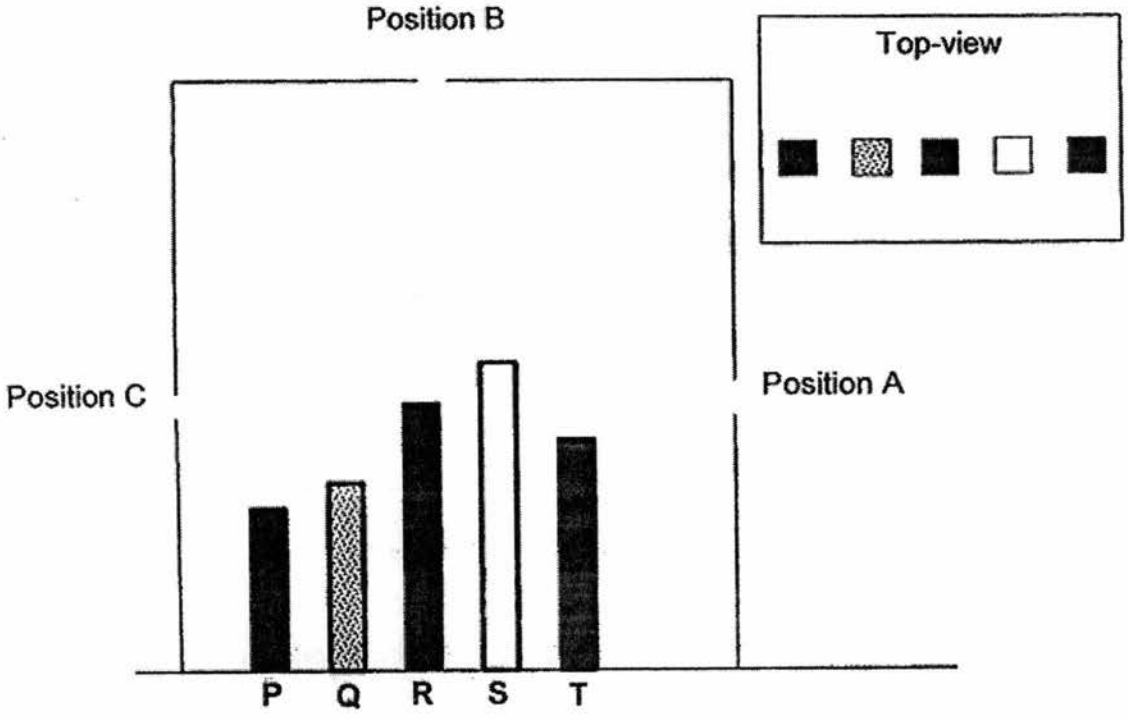


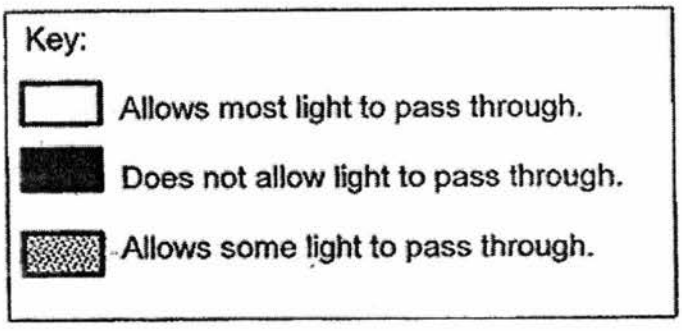
Which of the following change(s) would enable the plastic toy truck to take a shorter time to reach the magnet?

A Replace the magnet with a stronger magnet.
B Add additional copper ball bearings to the truck.
C Flip the magnet such that the South Pole is facing the truck.
D Replace the iron ball bearings with plastic ball bearings of the same mass.

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

14. Five rectangular blocks of the same thickness and width were placed in a straight line in a well-lit box as shown in the diagram below. Shaun peered through the three small holes at positions A, B and C to look at the blocks from different positions.



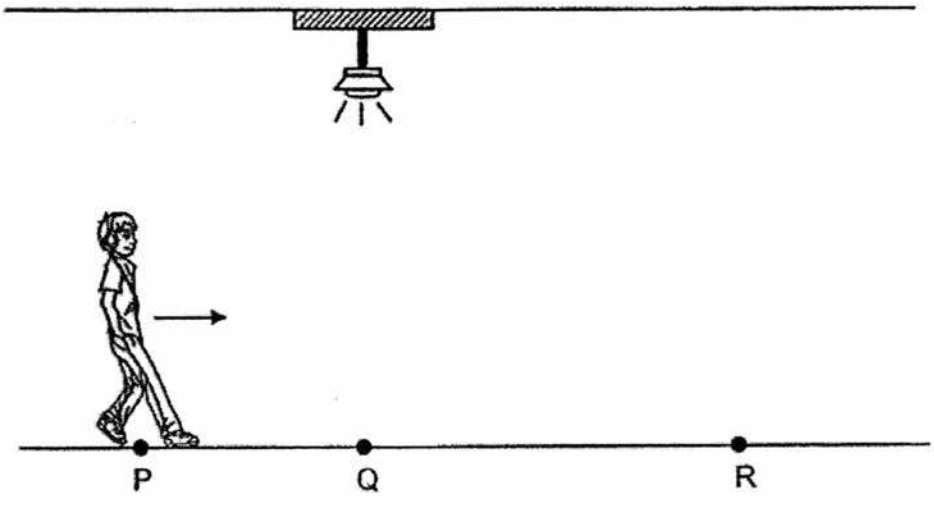


Which rectangular blocks would he be able to see from the various positions?

	Position A	Position B	Position C
(1)	R and T	P, R and T	P and R
(2)	R, S and T	P, Q, R, S and T	P, Q, R and S
(3)	S and T	P, Q, R, and T	P, Q, R and S
(4)	P, Q, R, S and T	P, Q, R, S and T	P, Q, R, S and T

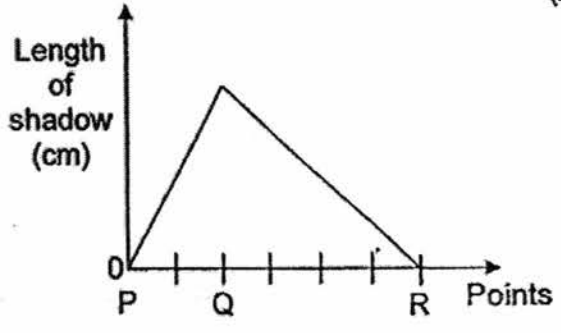
15. Peter walked in a straight line from P to R as shown in the figure below.

At Q, he was directly under the lamp. The distance between P and Q is half the distance between Q and R.

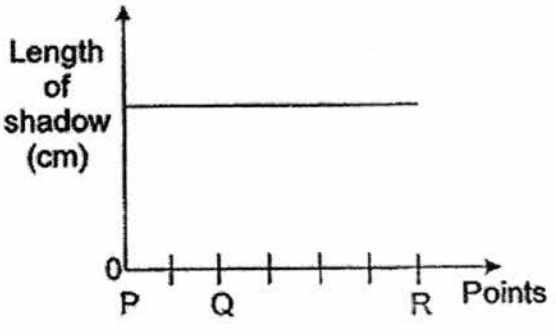


Which one of the following graphs correctly represents the length of Peter's shadow from point P to point R?

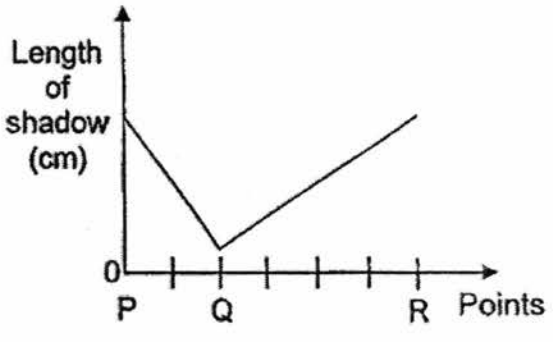
(1)



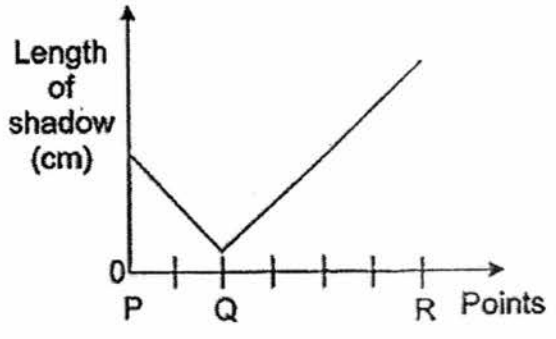
(2)



(3)



(4)



16. The table below shows the states of 4 substances, E, F, G and H, at different temperatures.

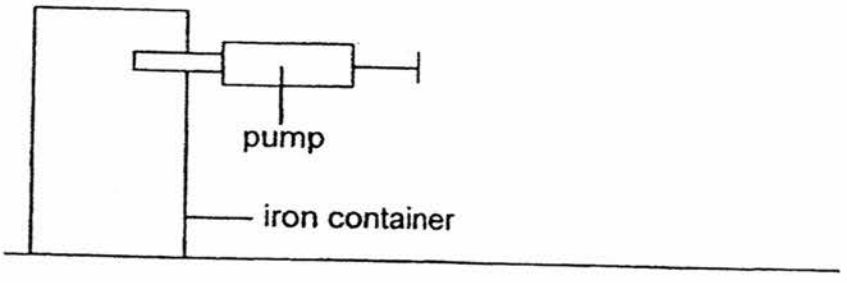
Substances	States of substances		
	at 2°C	at 52°C	at 95°C
E	solid	liquid	gas
F	liquid	liquid	gas
G	liquid	gas	gas
H	solid	solid	liquid

Which of the following statements **correctly** describe substances E, F, G and H?

A The freezing point of substance E is 1°C.
B The boiling point of substance F is 98°C.
C Substance H has the highest boiling point.
D Substance G has the highest melting point.

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

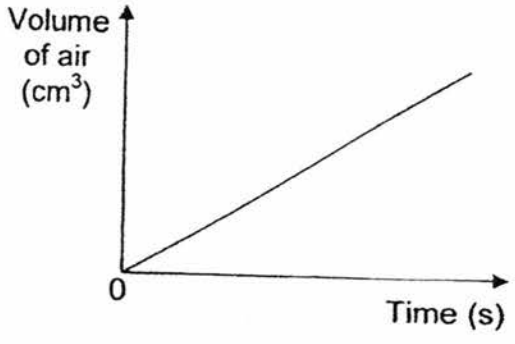
17. An experiment was set up using a sealed iron container that contains $300cm^3$ of air as shown in the diagram below.



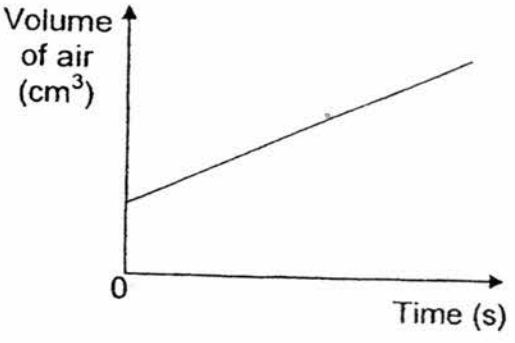
Air was pumped into the container at a rate of $20cm^3$ per second for 10 seconds.

Which one of the following graphs represents the volume of air in the sealed container during the experiment?

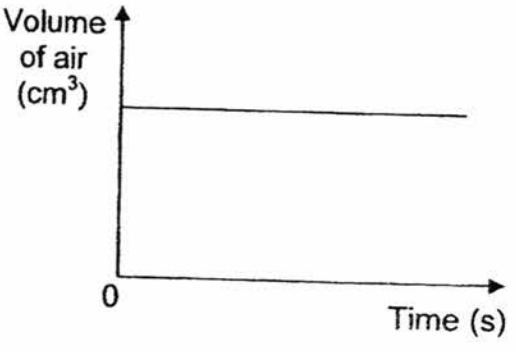
(1)



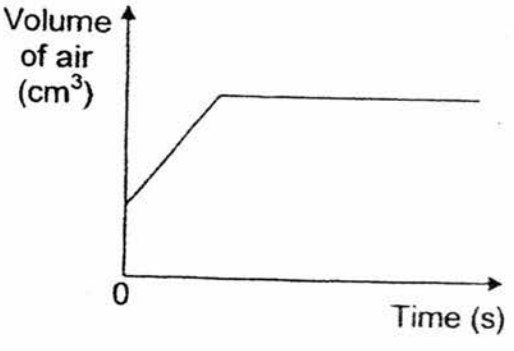
(2)



(3)



(4)

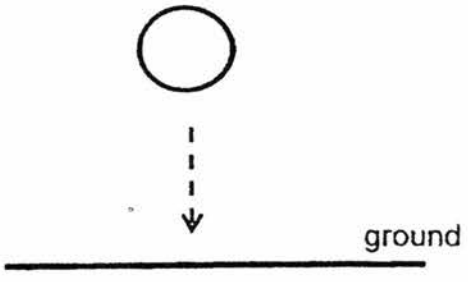


18. Which of the following action(s) demonstrate(s) a person exerting a push force?

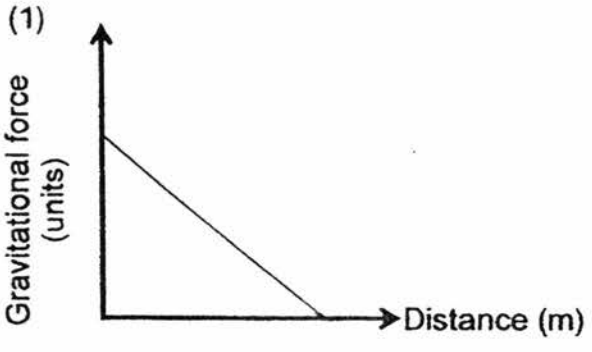
A A person lifting a box off the ground.
B A person walking up a flight of steps.
C A person hitting the ping pong ball with a bat.
D A person pressing the emergency button in a lift

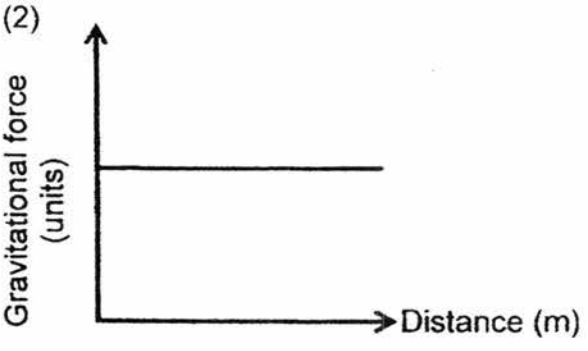
(1) A only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

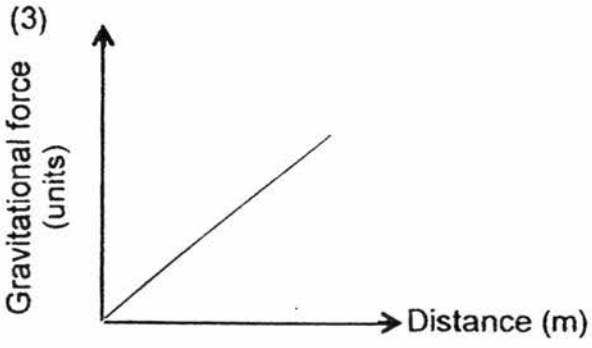
19. The diagram below shows a ball that was released from a certain height.

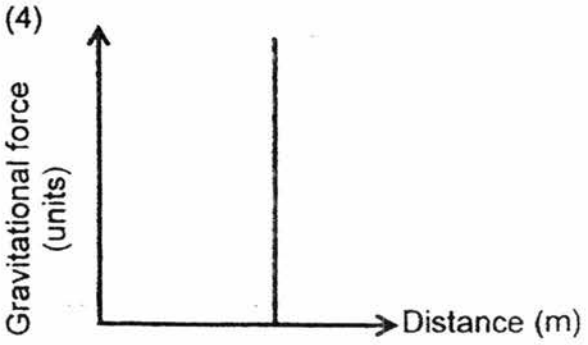


Which one of the following graphs correctly shows how the gravitational force acting on the ball is affected by the distance of the ball from the ground?

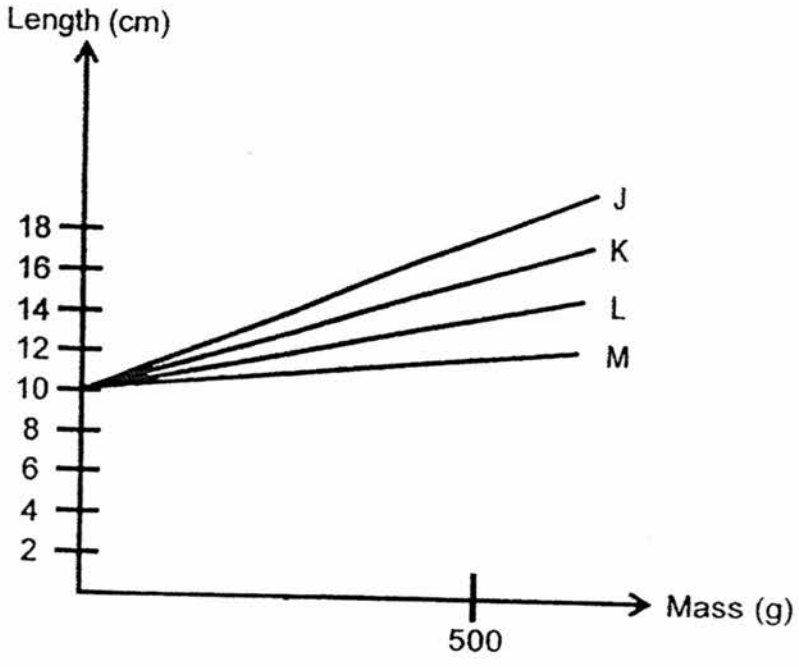
(1)


(2)


(3)


(4)


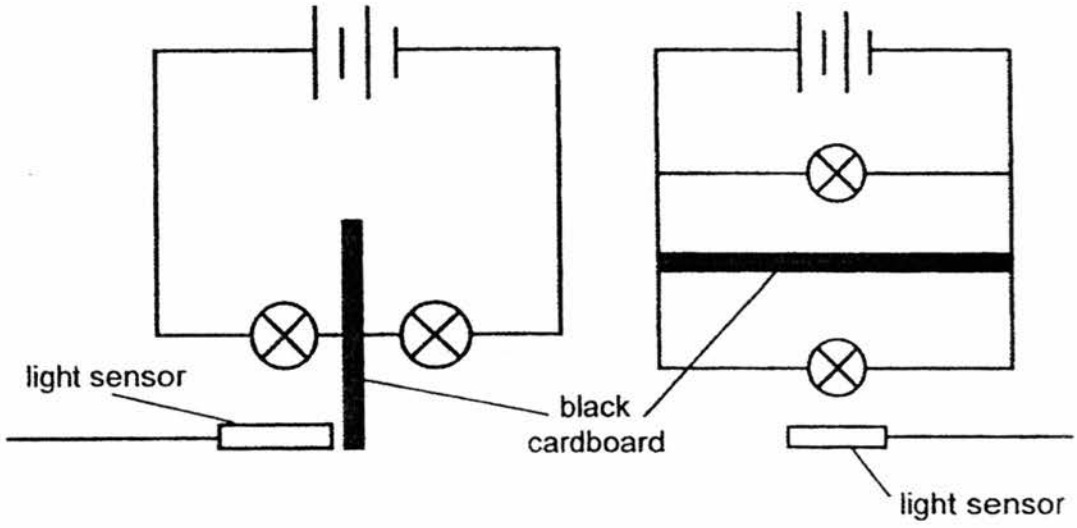
20. The graph below shows how 4 springs, J, K, L, and M, were stretched when different weights were hung on them.



Which spring was the least elastic when a mass of 500g was hung on it?

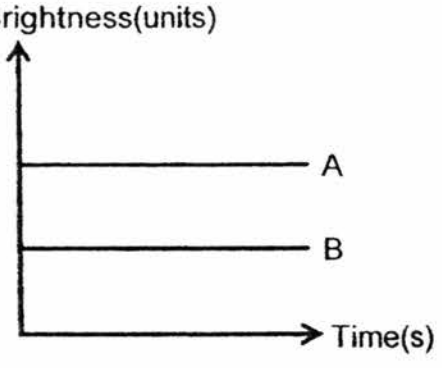
(1) J
(2) K
(3) L
(4) M

21. Two circuits using identical bulbs were set up as shown in the diagram below. A black cardboard was placed between the 2 bulbs in each set-up such that the light sensor was only able to detect light coming from one light bulb.

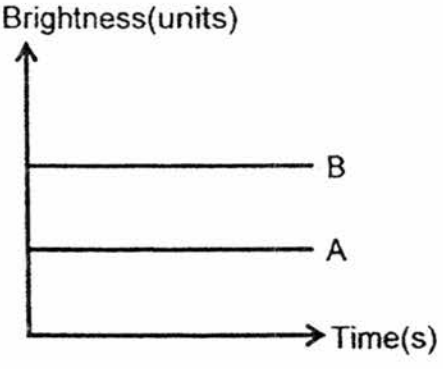


Which one of the following graphs correctly shows how the readings of the light sensor would vary with the two set-ups?

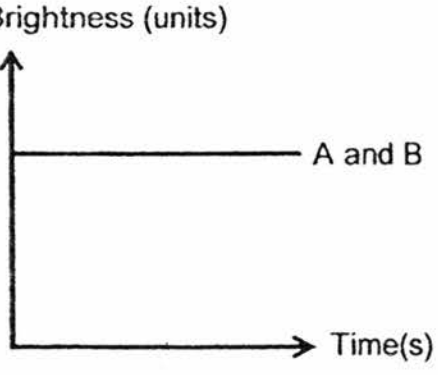
(1)



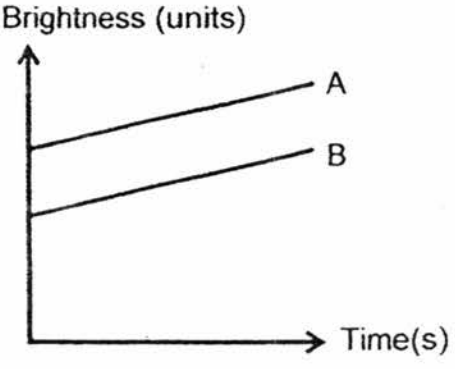
(2)



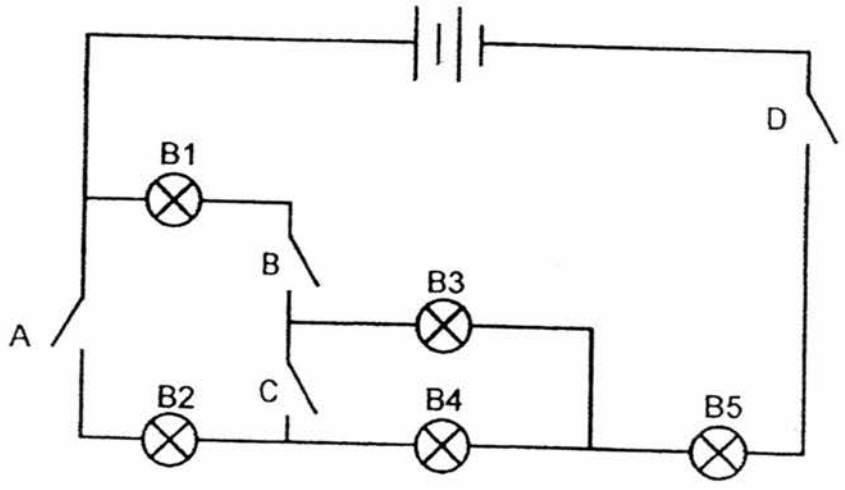
(3)



(4)



22. A circuit was constructed as shown.

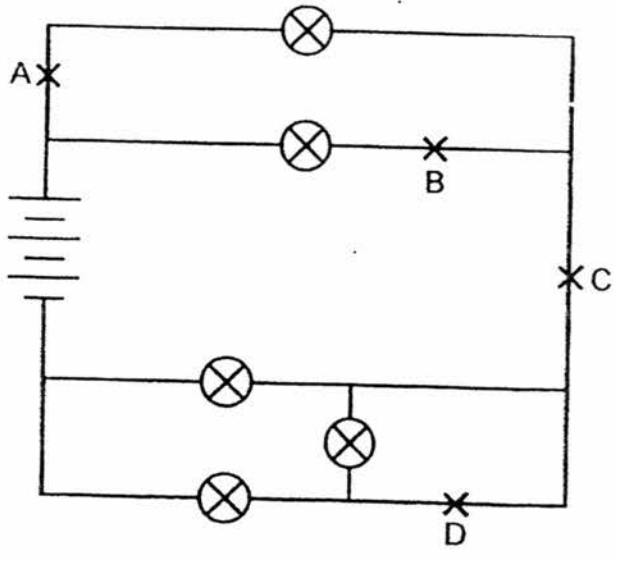


When some switches were closed, only bulbs B1, B3 and B5 lit up.

Which of the following switches were closed?

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

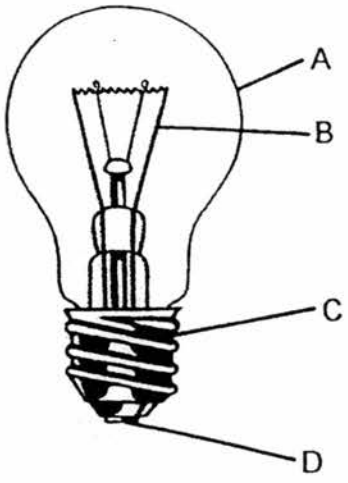
23. Alice set up the circuit diagram as shown below.



In which position should she add a switch such that she is able to control all the bulbs at the same time?

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

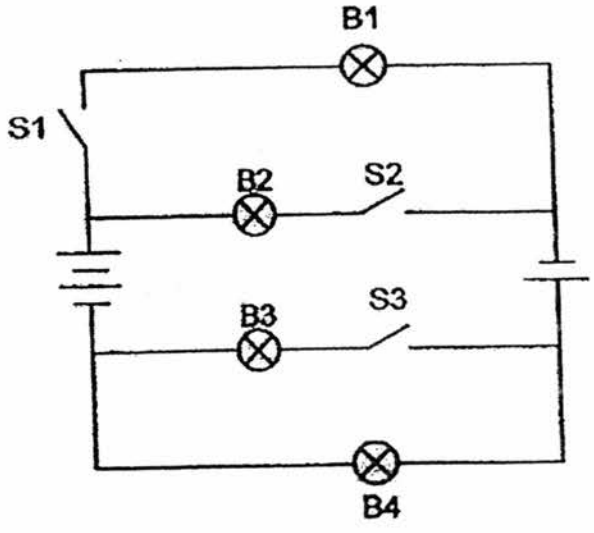
24. The diagram below shows a light bulb.



Which parts of the light bulb are conductors of electricity?

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

25. Study the circuit diagram shown below.



Which of the following statement(s) is/are **true** of the above set-up?

A When only S1 is closed, only B1 will light up.
B When only S3 is closed, only B3 will light up.
C When only S2 is closed, only B2 and B4 will light up.
D When only S2 and S3 is closed, only B2, B3 and B4 will light up.

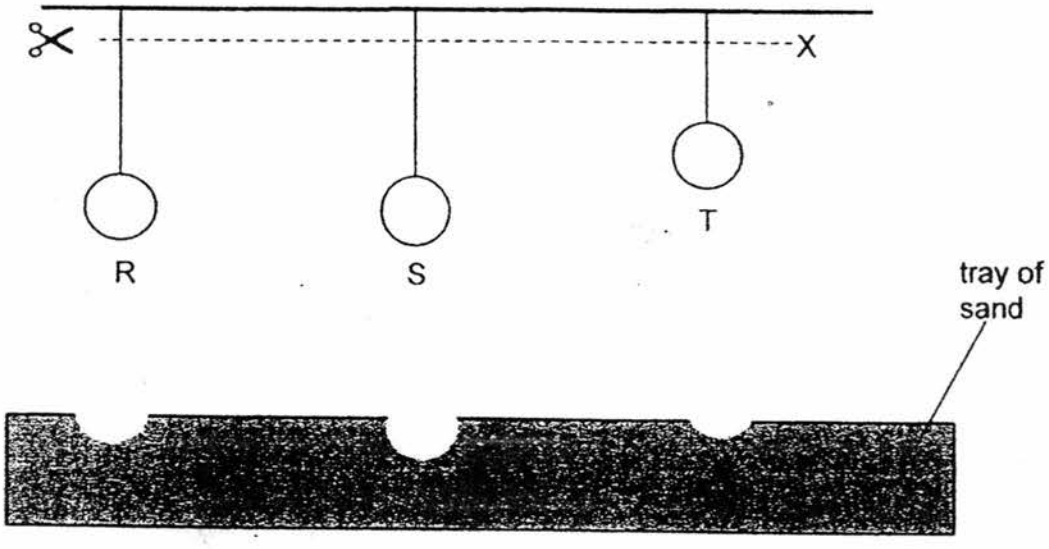
(1) C only
(2) C and D only
(3) A and B only
(4) A, C and D only

26. Which of the following statements about energy are **true**?

A Energy can exist in different forms.
B Energy is not needed during sleeping.
C Energy is needed by green plants only.
D Energy can be converted from one form to another

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

27. Three metal balls of the same size, R, S and T, were hung from the ceiling. The strings were cut at point X and the metal balls landed on a tray of fine sand, leaving dents made by them respectively.

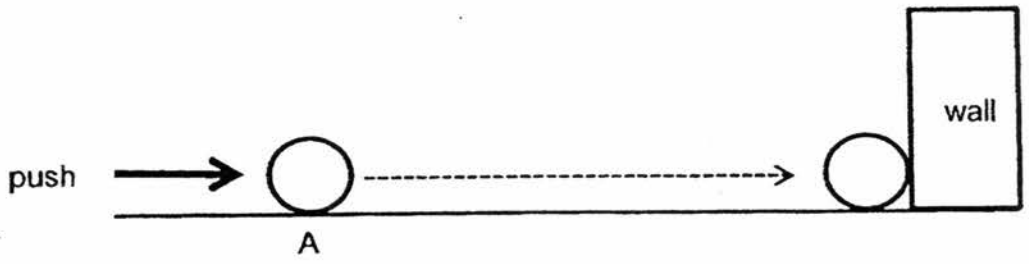


Based on the above diagram, which of the following statements is/are **correct**?

A T has the greatest mass.
B S has a greater mass than R.
C T has the greatest gravitational potential energy.

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

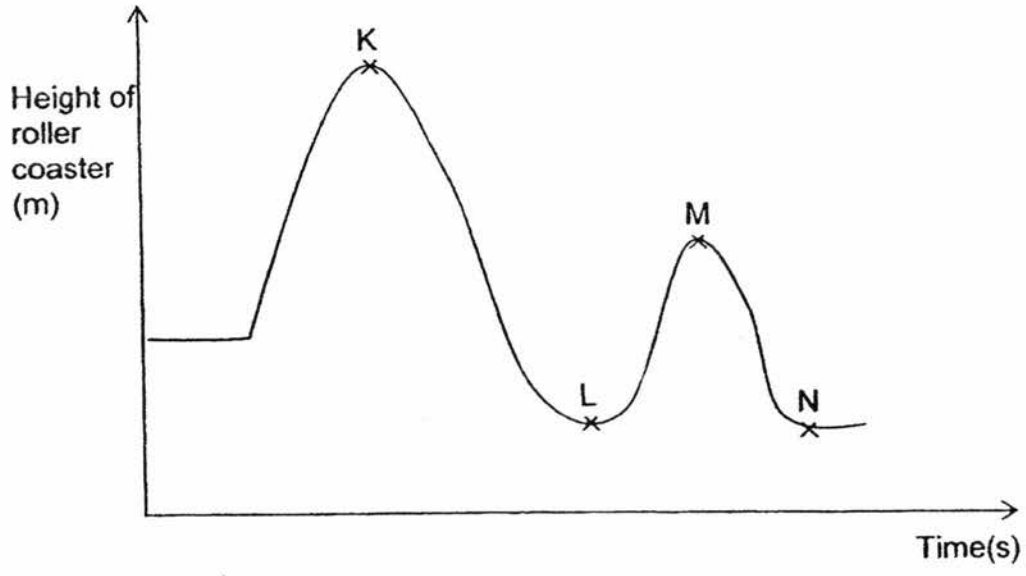
28. A ball was pushed at point A. The ball rolled along the floor, hit the wall and it stopped immediately as shown in the diagram below.



Which one of the following statements best describes the forms of energy involved in the above activity?

(1) The ball possessed gravitational potential energy at A.
(2) Heat energy was produced when the ball rolled on the floor.
(3) The kinetic energy of the ball is the highest before it hits the wall.
(4) The kinetic energy of the ball was converted to gravitational potential energy when it rolled on the floor

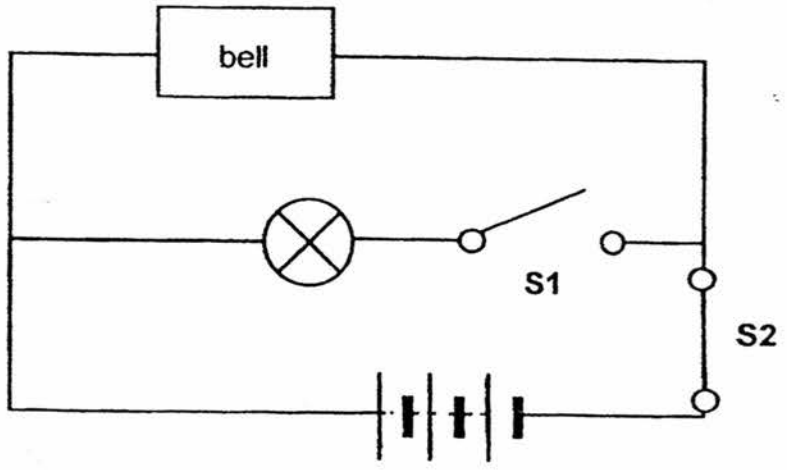
29. Bob took a roller coaster ride. The graph below shows the changes in the height of the roller coaster at different points in time.



Based on the graph above, which one of the following statements is **correct**?

(1) There was the same amount of kinetic energy at L and N.
(2) The car had the maximum gravitational potential energy at M.
(3) The kinetic energy of the roller coaster was greater at L than N.
(4) The gravitational potential energy gained by the roller coaster was converted to kinetic energy only from K to L.

30. The diagram below shows a diagram of a circuit used in an alarm system. A bell is connected to the circuit.



Which of the following shows the correct energy conversions when S1 is opened and S2 is closed?

(1) Electrical energy → Sound energy

(2) Chemical potential energy → Electrical energy → Sound energy

(3) Electrical energy → Light energy + Sound energy

(4) Chemical potential energy → Electrical energy → Light energy + Sound energy

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT

2016

BOOKLET B

Date : 29 February 2016

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		**60**
Booklet B :		**40**
Total :		**100**

Any query on marks awarded should be raised by 11 March 2016. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature:

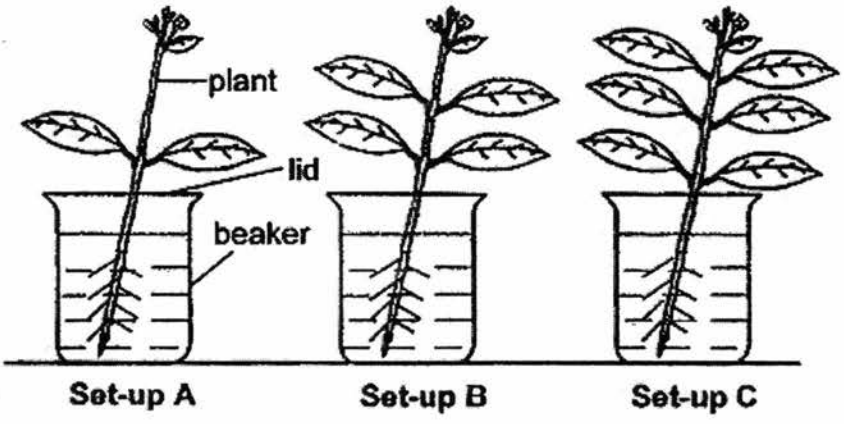
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 18 printed pages including this cover page.

Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.

31. Henry carried out an experiment to find out how the number of leaves on a plant affects the amount of water it takes in.

The diagram below shows the set-ups of his experiment.



He left the set-ups near the window and recorded the amount of water left in each beaker after 4 days.

	Set-up A	Set-up B	Set-up C
Amount of water at the start of the experiment (ml)	200	200	200
Amount of water at the end of the experiment (ml)	190	184	171

(a) Explain the change in the amount of water in all the set-ups above [1]

_____

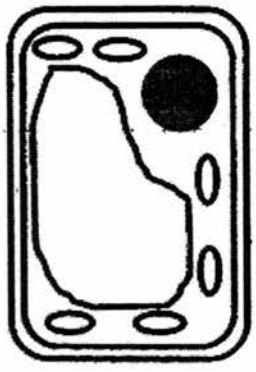
_____

(b) Why did he use plants with the same number of roots in set-ups A, B and C?

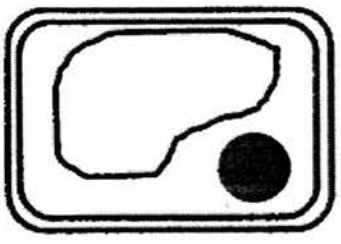
_____

_____

32. The diagram below shows two different types of cells, A and B, taken from different parts of a same plant.



Cell A



Cell B

In which parts of the plant are you most likely to find cell A and cell B? Explain your answers. [2]

Cell A: _____

Explanation:

_____

_____

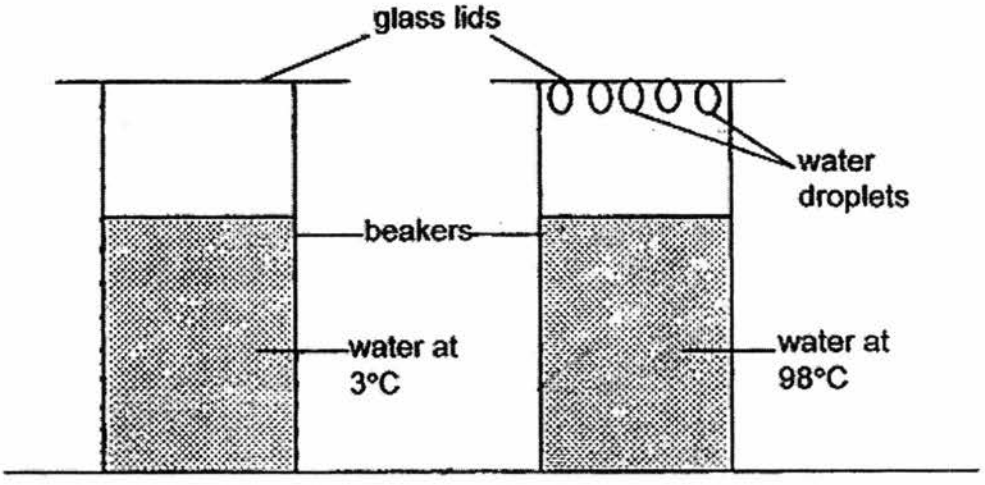
Cell B: _____

Explanation:

_____

_____

33. Oliver took a beaker of water at 3°C and a beaker of water at 98°C and placed them in a classroom at room temperature as shown in the diagram below.

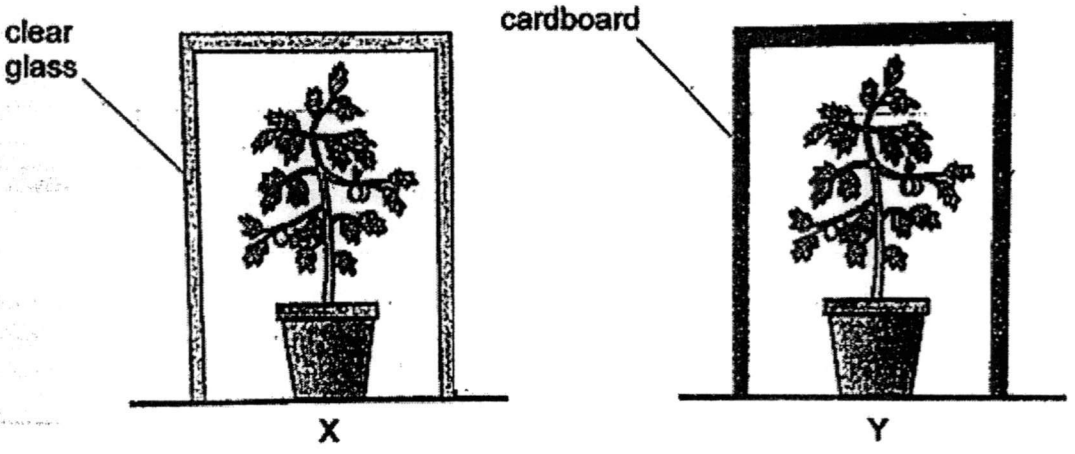


(a) **Draw** where the water droplets will be observed for set-up A after 10 minutes. [1]

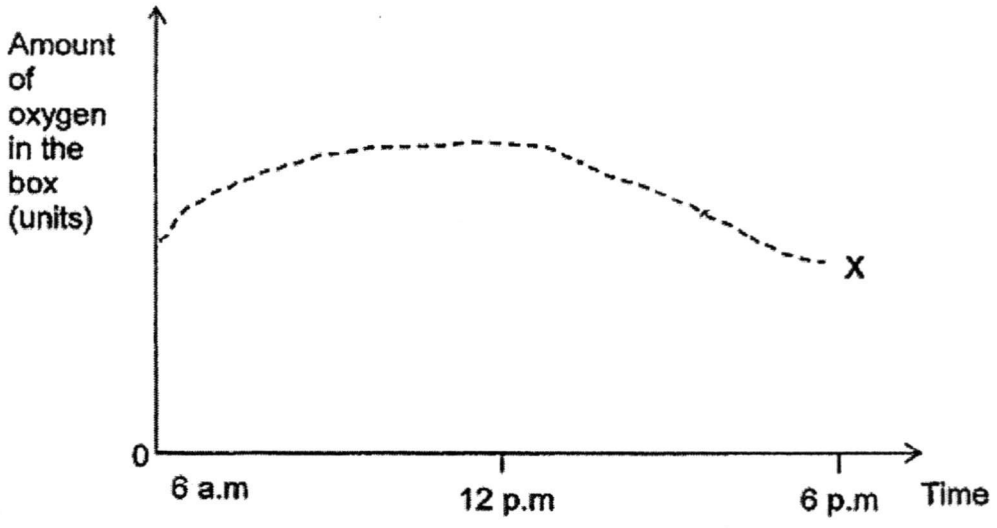
(b) Explain how the water droplets are formed in set-up B. [2]

(c) After 20 minutes, he observed that there were less water droplets being formed in both set-ups. Explain this observation. [1]

34. The following experiment was set up using two similar pots of plants, X and Y, which were placed in two boxes made of different materials as shown below.



The two boxes were placed in a garden for a day and the amount of oxygen present in the box for plant X was recorded as shown below.



(a) **Draw** and **label** the graph for plant Y. [1]

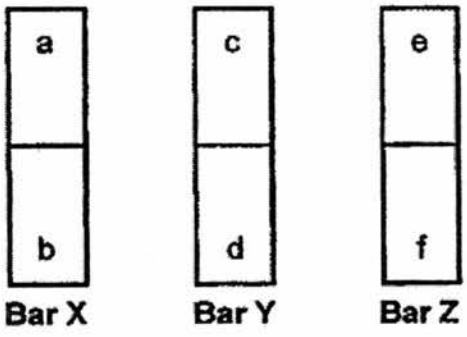
(b) Based on the graph for plant X, state the relationship between the amount of light received by the plants and the amount of oxygen present in the box. [2]

_____

_____

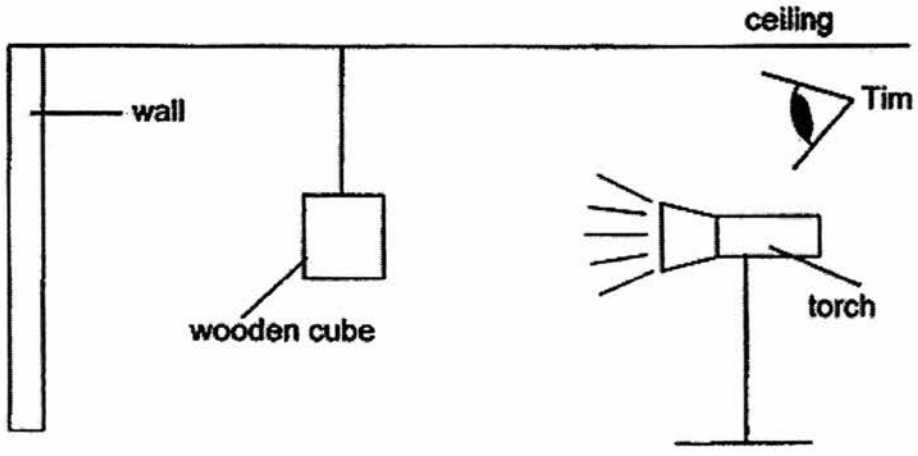
_____

35. Tom had three similar bars as shown in the diagram below. They were identical in colour, shape and mass. Two of the bars were magnetised while the other bar was made of a magnetic material but not magnetised.



Using only the three bars (X, Y and Z) above, describe how Tom could determine which two bars were magnetised. [2]

36. Tim carried out an experiment in a dark room as shown in the diagram below.



(a) Explain how Tim was able to see the wooden cube when the torch was switched on. [1]

_____

_____

(b) Without moving the wall, state two changes that he could make to **decrease** the size of the shadow formed on the wall. [1]

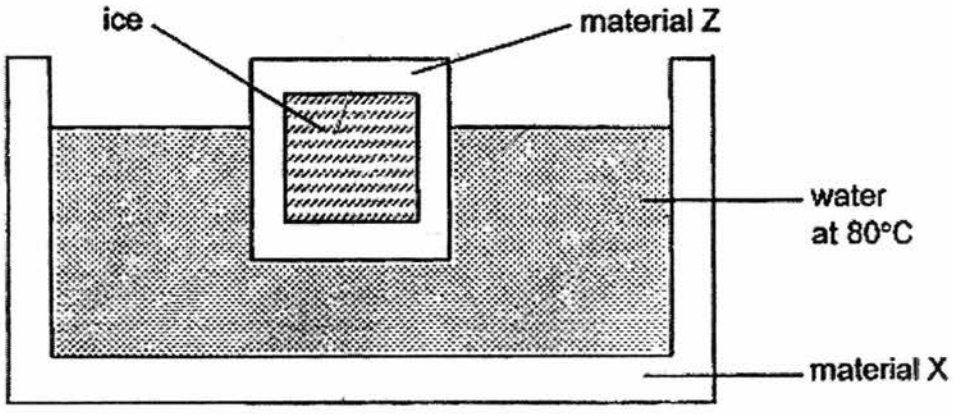
(i) _____

(ii) _____

37. Hanson recorded the time taken for the same amount of water to boil when placed in containers of different materials, X, Y and Z, in the table shown below. The same amount of heat was used for each set-up.

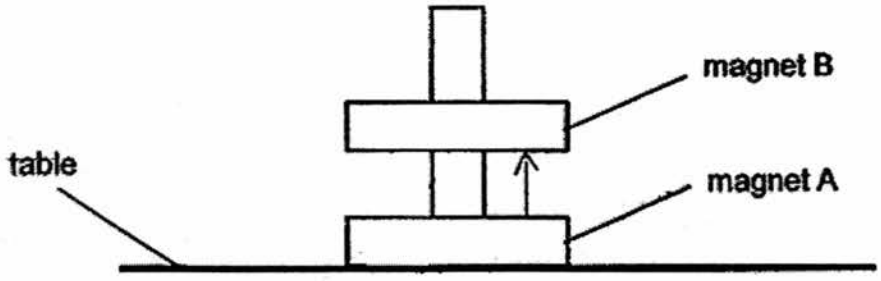
Material	Time taken for water to start boiling (min)
X	10
Y	15
Z	20

He then created a set-up as shown in the diagram below.



Explain why materials **X** and **Z** were used so as to ensure that the ice melts the slowest. [2]

38. The diagram below shows two ring magnets, A and B, with one "floating" on top of the other.



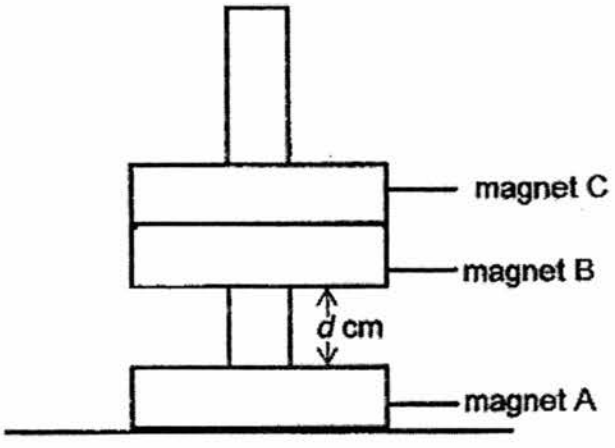
(a) **On the diagram above**, draw and label two forces that were **acting on magnet B.** [1]

(b) Explain why the two magnets were "floating" on top of one another. [1]

_____

_____

(c) Another similar ring magnet, C, was added as shown in the diagram below.



Using the concept of forces, explain why the distance, *d*, decreased when ring magnet C was added. [1]

_____

_____

39. The pictures below show a gymnast dipping his palms into a container of powder before his competition.

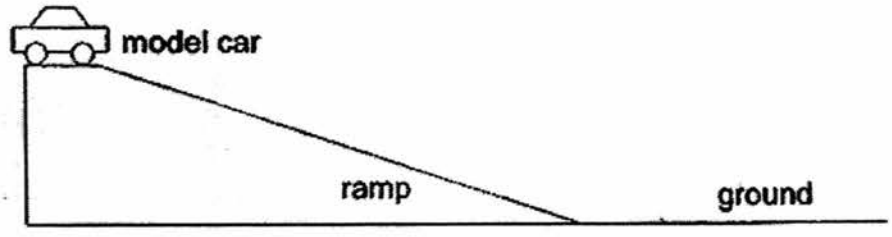
powder

bar

Gymnasts with sweaty palms tend to cover their palms with more powder.

(a) Using the concept of forces, explain how covering their sweaty palms with powder will help to improve their grip on the handle bars. [2]

Jonathan conducted an experiment as shown below.



Some powder was applied to the surface of the ramp and the car was given a gentle push. The distance travelled by the car on the ground was then measured. The experiment was repeated using 4 different types of powder.

(b) What was the aim of Jonathan's experiment? [1]

_____

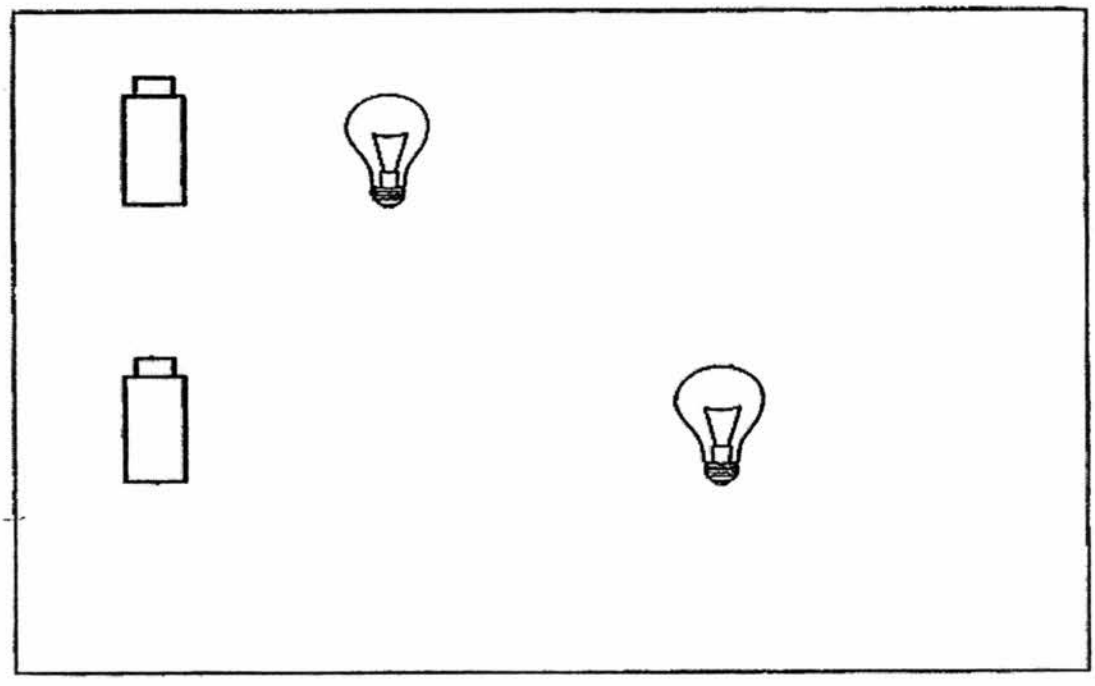
_____

(c) List down one factor that Jonathan should keep constant when he conducted the experiment. [1]

_____

_____

40. (a) In the space provided below, connect the two bulbs and batteries together such that each bulb will light up the brightest. [2]



(b) Suggest one disadvantage of connecting bulbs in series. [1]

_____

_____

41. **The diagram below shows a circuit board with four bulb holders, H1, H2, H3 and H4. Diagram 2 shows a bulb attached to a bulb holder. Electricity can only flow through a bulb holder when a bulb is attached to it.**

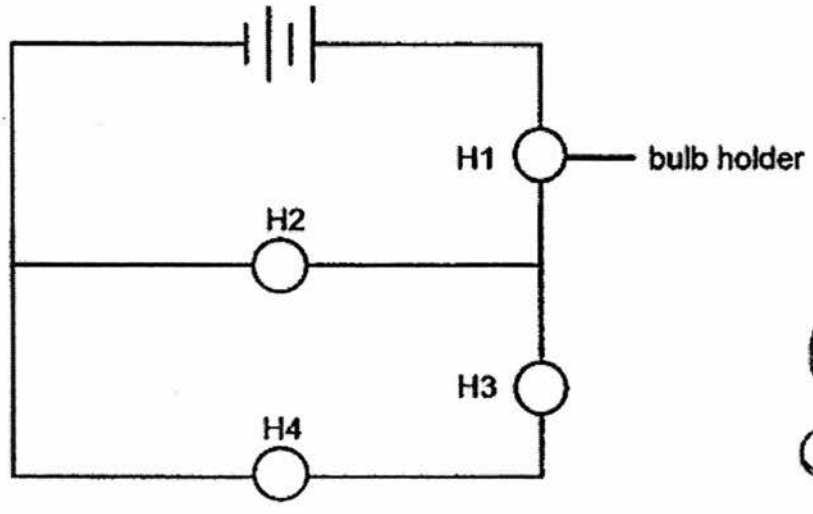


Diagram 1

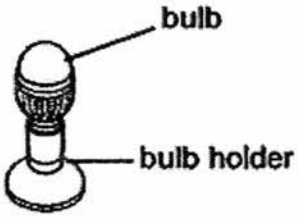


Diagram 2

Tammy was given four bulbs, B1, B2, B3 and B4. One of the bulbs had fused.

(a) Suggest 2 methods how Tammy could use the above circuit board to determine which was the bulb that had fused. (You may rearrange the positions of the bulb.) [2]

Method 1

_____

_____

_____

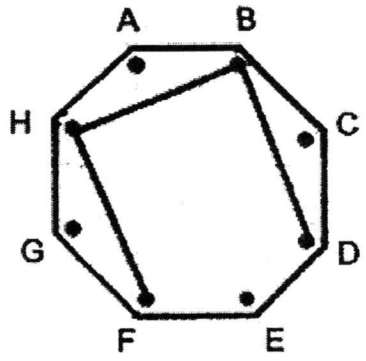
Method 2

_____

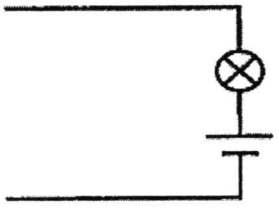
_____

_____

The diagram below shows wires connected in a circuit card.



Circuit card

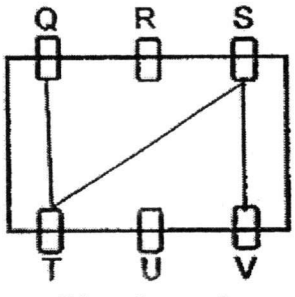


Circuit tester

(bi) In the table below, list 2 different pairs of connecting points which would enable the bulb of the circuit tester to light up. [1]

and	
and	

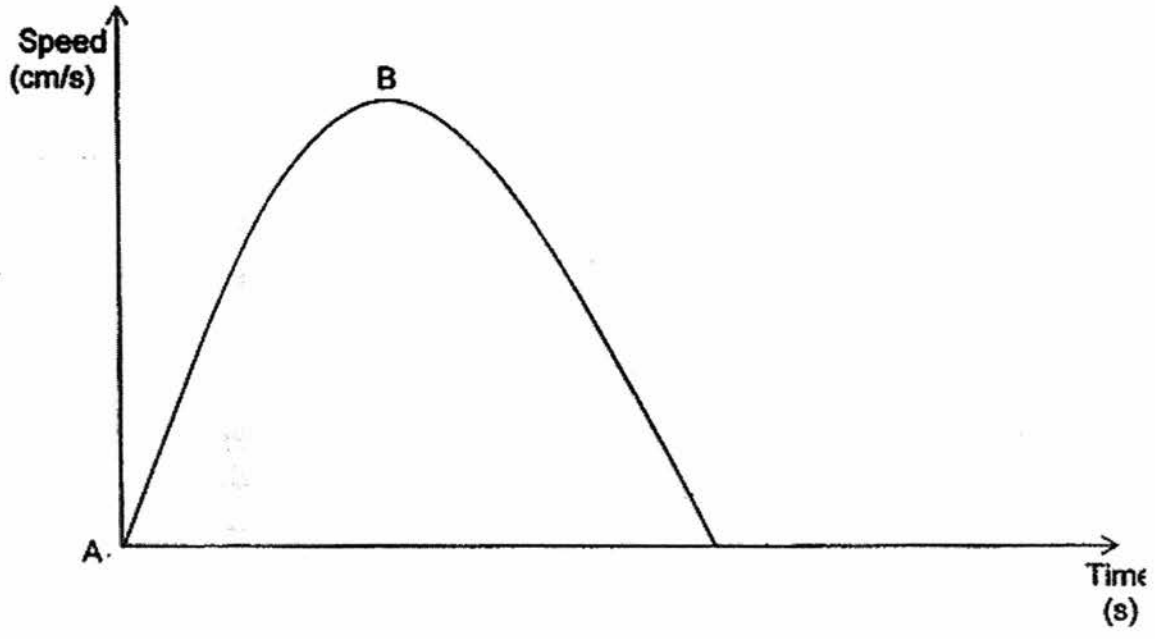
(bii) In the circuit card below, using only 3 wires, draw one way of connecting the circuit such that the bulb of the circuit tester will light up based on the results in the table below. [1]



Circuit card

Clips tested	Results of test
Q and R	Did not light up
Q and T	Light up
S and V	Light up
R and V	Did not light up
T and U	Did not light up
T and S	Light up
T and V	Light up
R and S	Did not light up

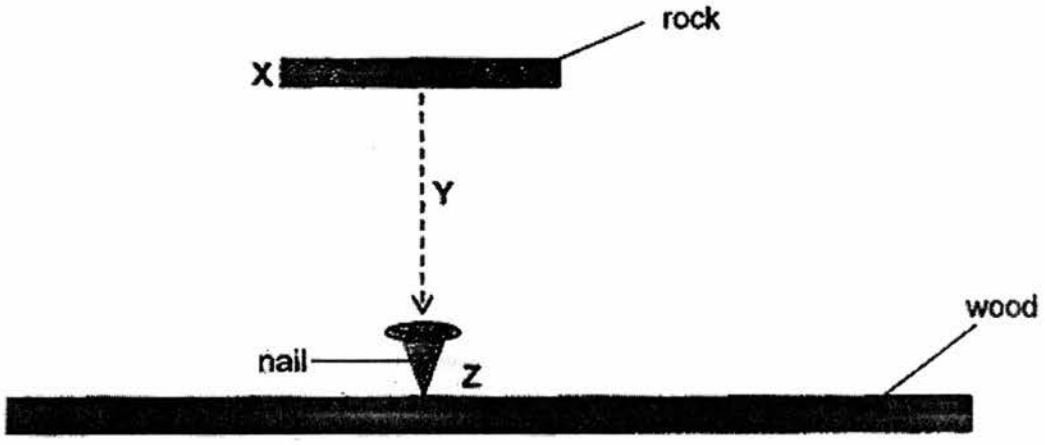
42. A toy car was pushed down a ramp. The graph below shows the speed of the toy car at different points, A, B, and C, over a period of time.



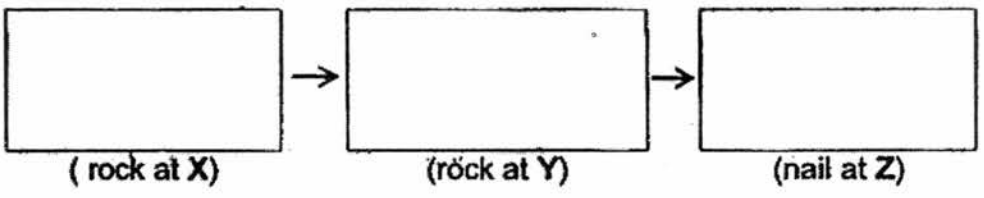
(a) Describe how the kinetic energy of the toy car changes from points A to C. [1]

(b) Explain, in terms of energy conversion, why the toy car came to a stop at point C. [1]

43. Ali dropped a slab of rock to push a nail into a piece of wood as shown in the diagram below. He then observed that only half of the nail was pushed into the wood.

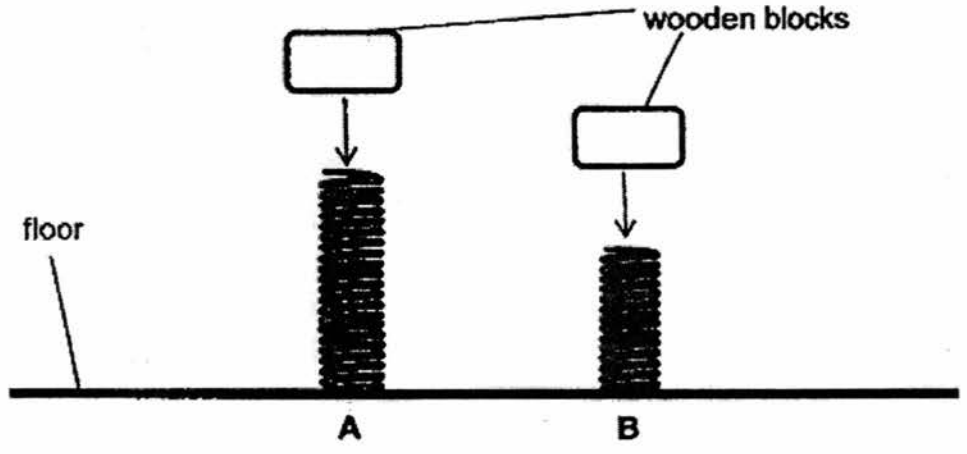


(a) State the main energy changes from point X to point Z. [1]



(b) Explain, in terms of energy conversion, what would happen to the nail when Ali raised the rock higher than point X and dropped it? [2]

44. The diagram below shows two similar springs, A and B, of different lengths which were attached to the floor. The two springs were fully compressed after two wooden blocks were pressed on them as shown below.



(a) State the type of energy possessed by the springs when they are fully compressed. [1]

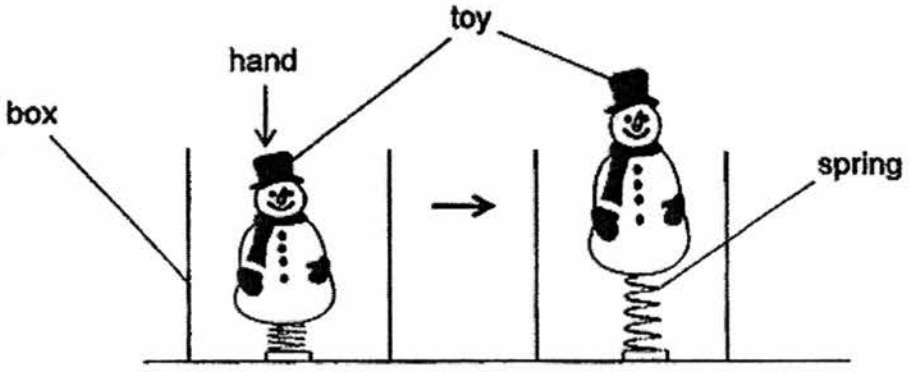
_____

(b) Explain what could happen to both springs when both the wooden blocks were removed at the same time. [1]

_____

_____

Ray fixed a toy to a spring in a box shown below. He used his hand to press down the toy in diagram 1. The toy jumped up when Ray let go of his hand as shown in diagram 2.



(ci) Suggest a change to the set-up so that the toy could jump higher. [1]

(cii) Using energy conversion, explain your answer to your suggestion. [1]

End of paper

EXAM PAPER 2016

SCHOOL :NANYANG

SUBJECT :P6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	3	2	3	2	1	3	4	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	1	2	4	1	3	4	2	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	3	3	2	2	3	2	3	2

31)a)The amount of water decreased because the plants used the water for transpiration/photosynthesis.

b)It is to ensure a fair test so that he can ensure that the decrease in the amount of water is only due to the number of leaves and not the number of roots.

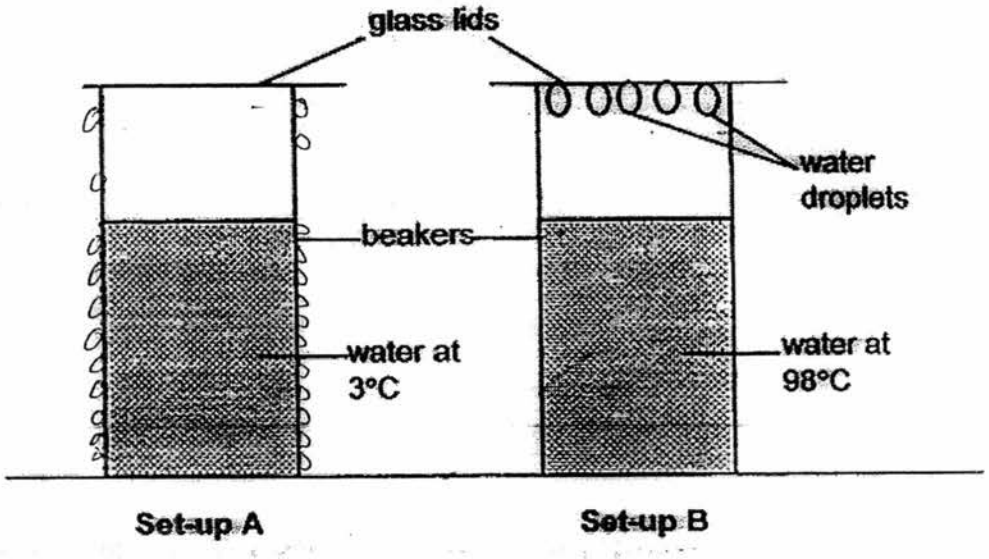
32)Cell A: leave

Explanation: Just like the leaves Cell A also has chloroplast which makes food for the plant.

32) Cell B: roots

Explanation: Just like the roots, Cell B does not have any chloroplast to make food for the plant.

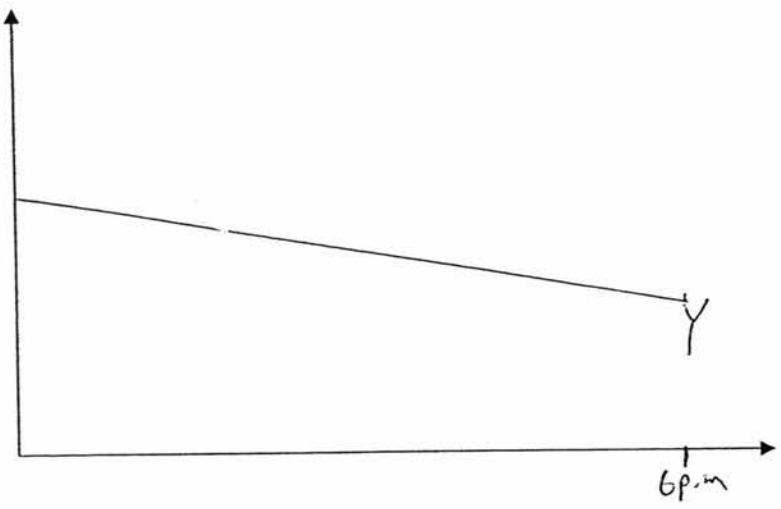
33)a)



b)The water in set-up B evaporates, forming water vapour. The water vapour then comes into contact with the cooler under surface of the glass lid, loses heat to the glass lid and condenses, forming water droplets.

c)The water in set-up A was gaining heat. Thus, vapour from the surrounding air lost lesser heat to the beaker and condensed lesser than before, forming lesser water droplet. The water in beaker B was losing heat. Thus, lesser water evaporated and there was lesser water vapour to condense onto the under surface of the glass lid, forming lesser water droplets.

34)a)



b)As the amount of light received by the plant increase, the amount of oxygen present in the box also increases.

35)Take end of each bar and place the end together with another bars. If any of the ends repel the two bars are magnetized .

36)a)The light from the torch was reflected by the wooden cube into Tim's eyes.

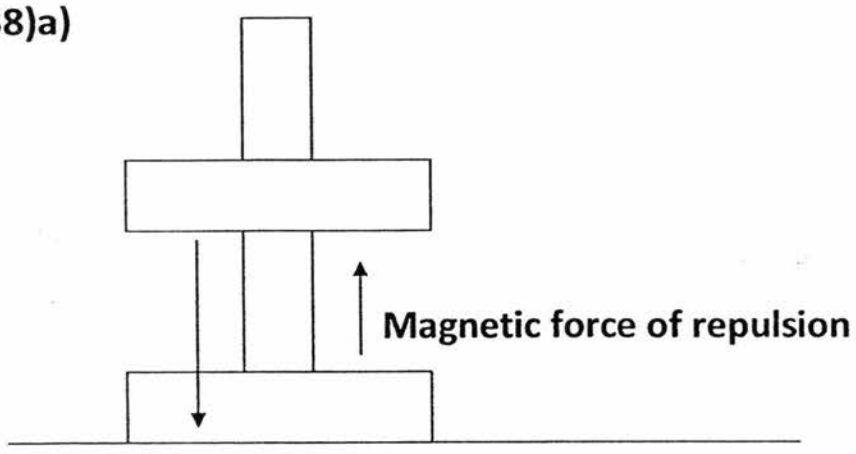
b)i)He could move the wooden cube nearer to the wall.

ii)He could move the torch further from the wooden cube.

37)Material Z is the poorest conductor of heat. Therefore heat transferred heat transferred through the surrounding air and water at 80℃ through material Z to the ice will be the slowest.

Material X is the best of heat. Heat transfer from the water at 80℃ to the surrounding air will be the fastest.

38)a)



38)b)The like poles of the two magnets were facing each other. Hence they repelled each other,causing them to float.

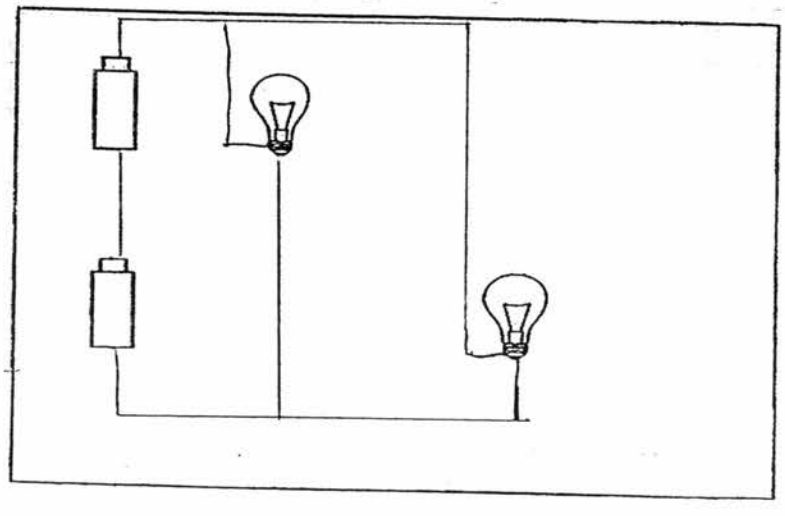
c)When magnet C was added, there was more gravity, thus pushing magnet B down, and causing distance d to decrease.

39)a)To powder absorbs the sweat is a lubricant. Hence it increases friction between the hand the bar, helping the gymnast to get a better grip of the bar.

b)To find out how the different type of powder affects the travelled by the car on the ground.

c)The material of the ramp.

40)a)



40)b)If one fuse, the other bulbs will not be able to light up.

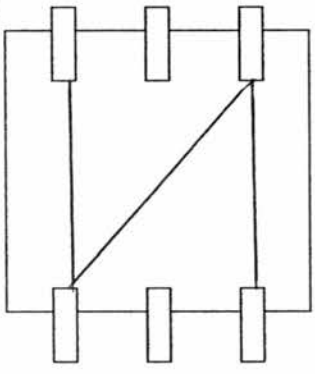
41)a)Method 1: Put each bulb at H1 and the rest and the other slots when all the bulbs do not light up, the bulb at H1 is the fused bulb.

Method 2: Put each bulb in all 4 bulb holders and ensure that the bulbs have been placed at H2. When all the bulbs except the bulb in H1 light up, the bulb on H2 is the fused bulb.

bi)F and D

H and F

bii)



42)a)Kinetic energy from the car is 0 at A, the kinetic energy increases and reaches the maximum point at B , then decreases to 0 when it reaches C.

b)Kinetic energy was converted to sound and heat energy. When all the kinetic energy bad been converted ,the car will come to a stop.

43)a)Gravitational potential energy→kinetic energy→kinetic and sound energy

43) b)The nail will be pushed deeper into the wood as when the rock is raised higher, it possessed more gravitational energy and was converted to more kinetic energy when it dropped. Hence there will be more impact on the nail and it will be pushed deeper into the wood.

44)a)Elastic potential energy.

b)They would spring up and become their original length.

ci)Ray could use a longer spring.

cii)When a longer spring is used, it will possess more elastic potential energy when it is compressed and will be converted to more kinetic energy when it is released, pushing the toy up higher.