NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2015

BOOKLET A

Date : 2 March 2015
Duration : 1 h 45 min

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. Study the two diagrams below. They show the flow of substances inside a plant.

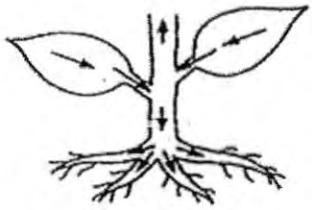


Diagram 1

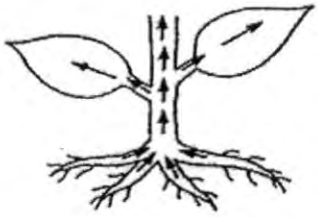
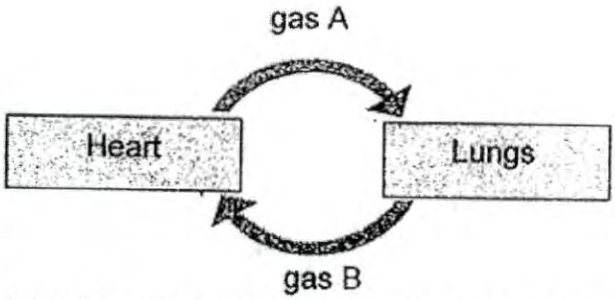


Diagram 2

Which one of the following correctly identifies the substances in each diagram?

	Diagram 1	Diagram 2
(1)	oxygen	food
(2)	food	water and mineral salts
(3)	water and mineral salts	food
(4)	water and mineral salts	carbon dioxide

2. Dave drew the diagram below which represents the circulatory system between the heart and the lungs in the human body.



Which of the following correctly describes gas A and gas B?

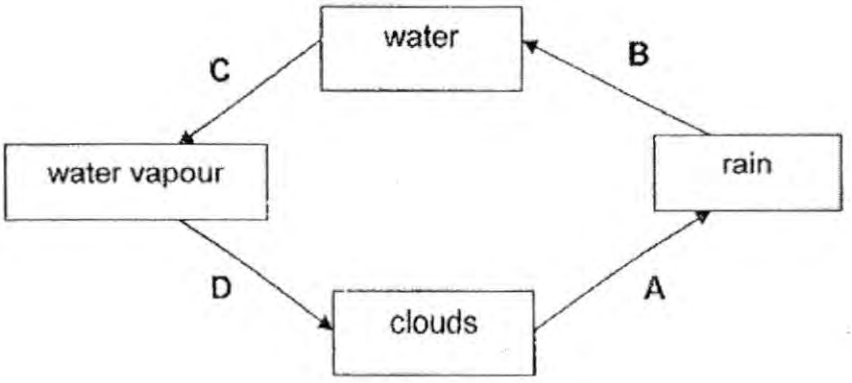
	Gas A	Gas B
(1)	Taken in by plants for photosynthesis	Not found in the air around us
(2)	Found in the largest amount in the air around us	Given out by plants during photosynthesis
(3)	Taken in by plants for photosynthesis	Given out by plants during photosynthesis
(4)	Found in the least amount in the air around us	Taken in by plants for photosynthesis

3. Which of the following statement(s) about the water cycle is/are **false**?

A The sun is the main source of energy in the water cycle.
B The water cycle can take place because water can change from one state to another.
C The water cycle ensures that there is a continuous supply of fresh water for Man and animals only.

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

4. Study the water cycle below.



At which stage in the water cycle will the **surrounding air** gain heat for a change in state to take place?

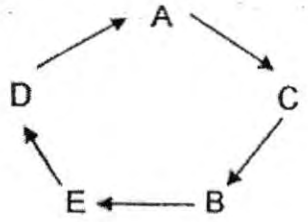
(1) A
(2) B
(3) C
(4) D

5. The following statements describe the changes in the water cycle.

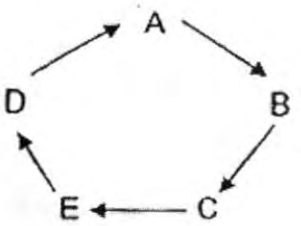
A Water evaporates.
B Condensation occurs.
C Tiny droplets of water gather to form clouds.
D Heat energy from the Sun warms the Earth.
E When the water droplets become big and heavy, they fall as rain.

Which one of the following shows the correct sequences of the water cycle?

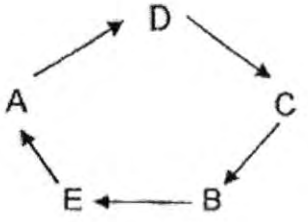
(1)



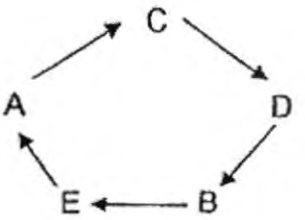
(2)



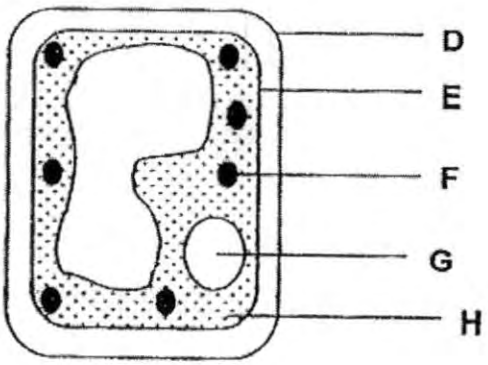
(3)



(4)



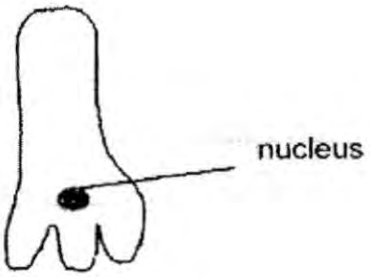
6. The diagram below shows a plant cell.



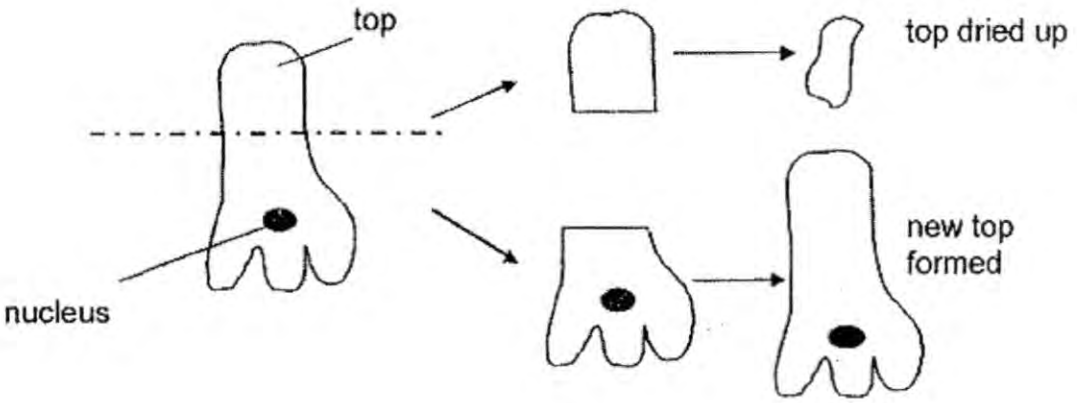
Which parts are **not** found in animal cells?

(1) D and F only
(2) E and F only
(3) D, G and H only
(4) E, G and H only

7. The diagram below shows a single-celled organism *X*.



Mrs Jacob wanted to find out the function of the nucleus in organism *X*. She cut it into half as shown below.

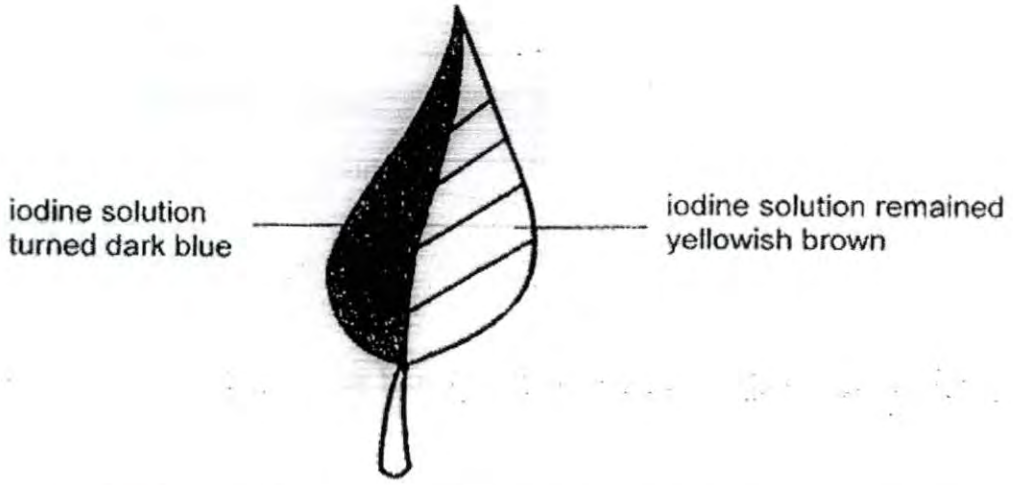


After a few days, she observed that the top half of the organism had dried up. However, a new top was formed in the bottom half that had the nucleus.

Based on her observations, what can Mrs Jacob conclude about the function of the nucleus?

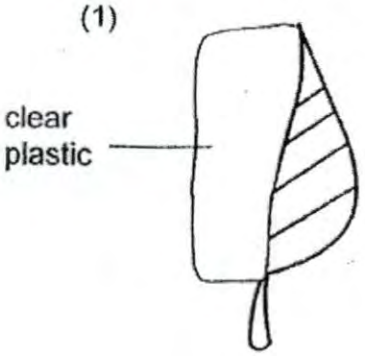
(1) It causes the organism to die.
(2) It enables the organism to germinate.
(3) It enables the organism to reproduce.
(4) It repairs old and damaged parts of an organism.

8. Sara tested a leaf for the presence of starch using some iodine solution. Her findings are shown in the diagram below.

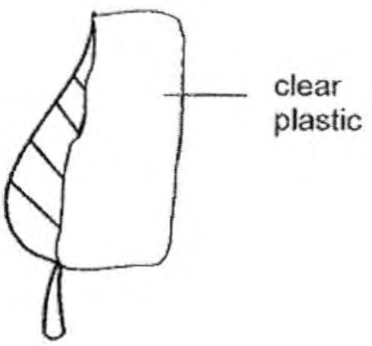


Which diagram below shows what she could have done to the leaf 3 days before it was tested for starch?

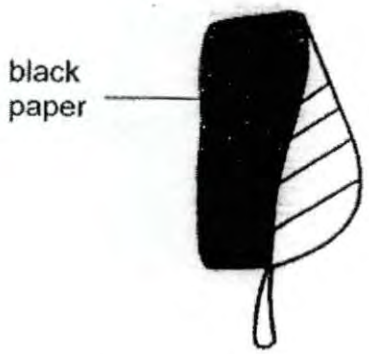
(1)



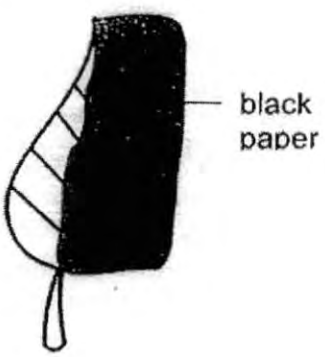
(2)



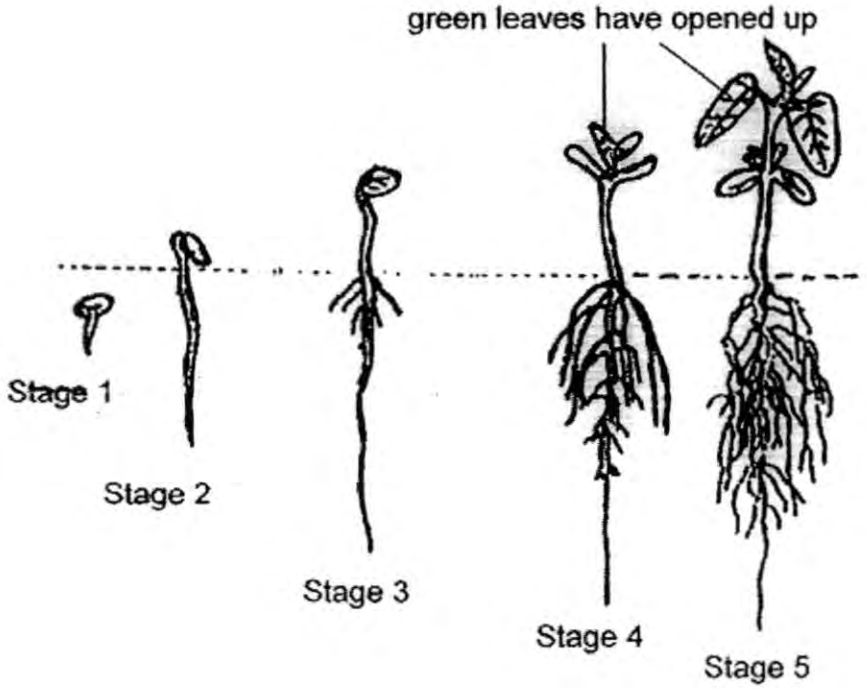
(3)



(4)



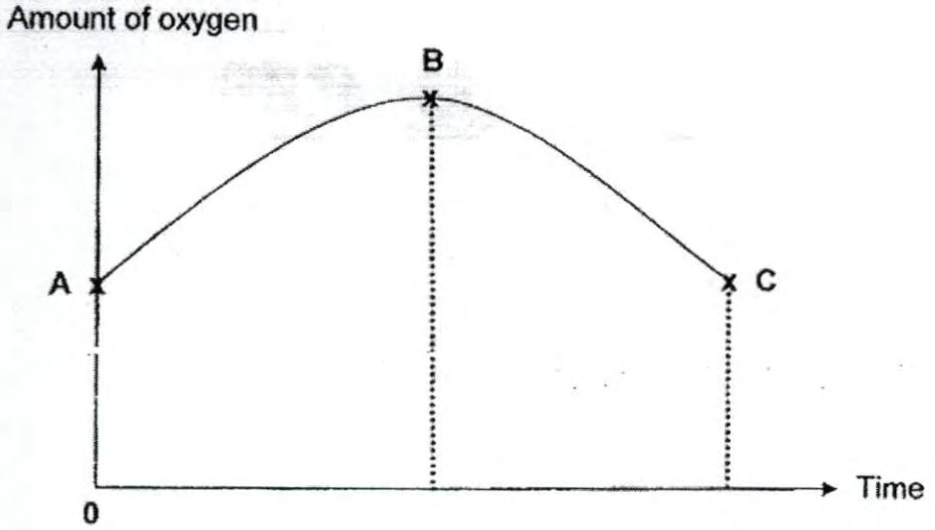
9. The diagram below shows the stages in the growth of a seedling.



Which of the following correctly shows the change in the amount of starch present in the plant at each stage of its development?

	Amount of starch present				
	Stage 1	**Stage 2**	**Stage 3**	**Stage 4**	**Stage 5**
(1)	decrease	decrease	decrease	increase	increase
(2)	decrease	decrease	decrease	increase	remain constant
(3)	decrease	remain constant	increase	remain constant	increase
(4)	decrease	remain constant	remain constant	increase	increase

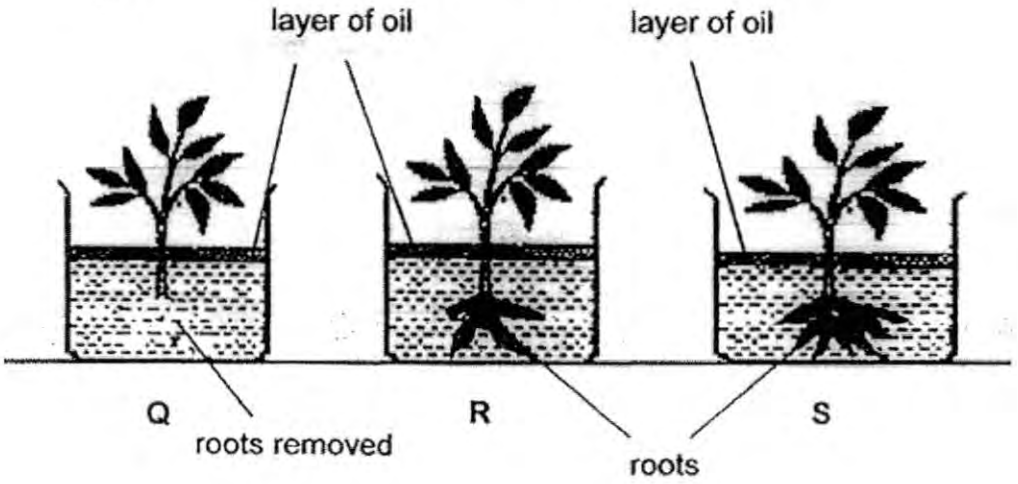
10. The graph below shows the change in the amount of oxygen produced by a tree over a period of time in a day.



Which period of the day is represented by points B to C in the graph?

(1) 7 a.m. to 10 a.m.
(2) 9 a.m. to 12 noon
(3) 12 noon to 4 p.m.
(4) 6 p.m. to 9 p.m.

11. You Jie conducted an experiment by preparing the set-ups, Q, R and S, as shown below. The 3 identical beakers contained equal amount of water. The set-ups were placed near a window.



After a few days, he used a special device to measure the amount of starch found in each plant.

What was the aim of his experiment?

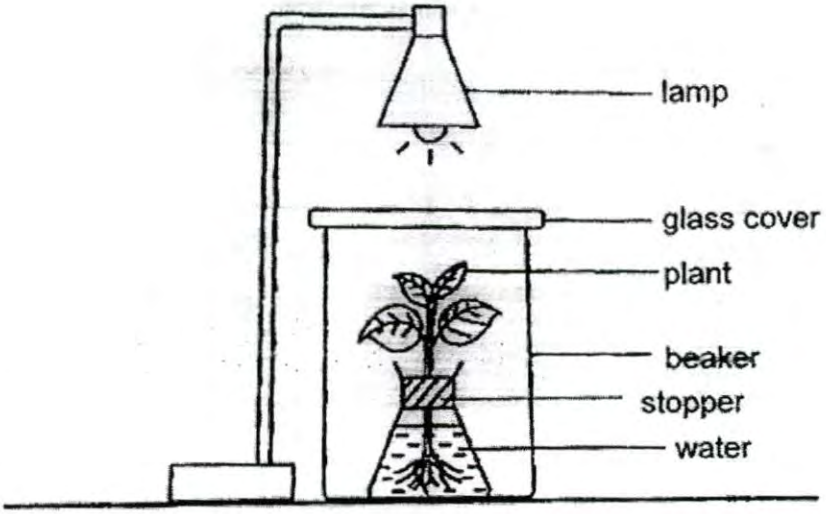
(1) To find out how the amount of water taken in by a plant would affect the amount of food the plant makes.

(2) To find out how the amount of light given to the plant would affect the amount of food the plant makes.

(3) To find out how the amount of chlorophyll in a plant would affect the amount of food the plant makes.

(4) To find out how the amount of carbon dioxide taken in by a plant would affect the amount of food the plant makes.

12. Study the set-up below.

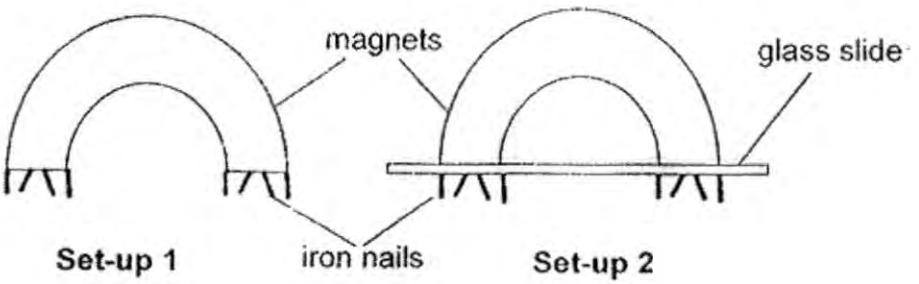


After a week, the rate of photosynthesis of the plant slowed down. Which one of the following could be the most likely reason?

A Insufficient light
B Insufficient water
C Insufficient oxygen
D Insufficient carbon dioxide

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

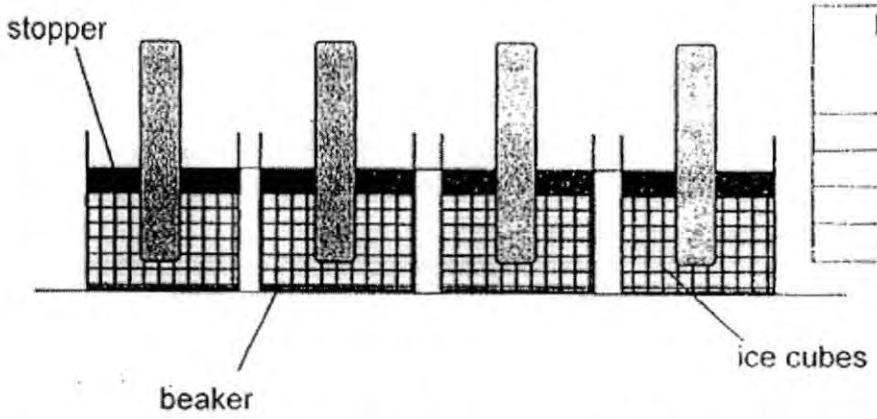
13. Ken set up an experiment as shown below.



Based on the two set-ups above, what could be a possible aim of the experiment?

(1) To find out if glass is a magnet.
(2) To find out if magnets can attract all metals.
(3) To find out if the poles of a magnet are the weakest.
(4) To find out if magnetic force can pass through non-magnetic materials.

14. Zan wanted to conduct an experiment to find out which rod, A, B, C or D, is the best conductor of heat. He placed each end of the four rods, each made of different materials, in a closed container filled with ice cubes. The starting temperatures of the rods were the same. The time taken for the ice cubes to melt completely was recorded.

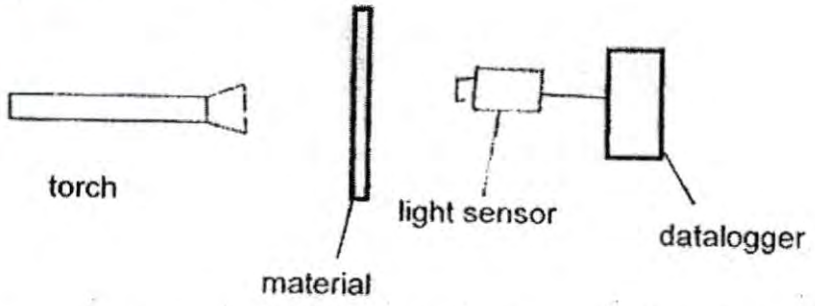


Rod	Time for ice cubes to melt completely (mins)
A	23
B	17
C	14
D	21

Based on the results, which rod is made from a material that is the **best** conductor of heat?

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

15. The diagram below shows the set-up for Daniel's experiment. He used different materials of the same thickness and conducted the experiment with each material three times.



He recorded the readings from the datalogger as shown in the table below.

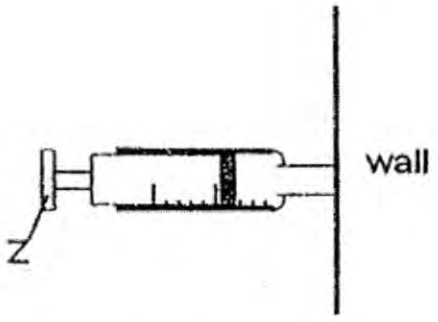
The reading when no material was placed between the light sensor and torchlight was 1800 lux.

Materials	1st try	2nd try	3rd try
X	1200 lux	1224 lux	1210 lux
Y	500 lux	510 lux	505 lux
Z	5 lux	10 lux	8 lux

Based on his results, which one of the following could be the conclusion of his experiment?

(1) The materials could reflect light well.
(2) Different materials affect the amount of light that could pass through them.
(3) The number of tries affects the amount of light that pass through the material.
(4) The brightness of the torch is affected by the amount of light detected by the datalogger.

16. Ali filled a 5 ml syringe with substance K. He pressed the nozzle of the syringe against the wall and pushed hard on plunger Z as shown in the diagram below.



He observed that the volume of substance K became 3 ml.

Assuming that no substance had escaped from the syringe, which of the following could be Ali's conclusion based on his observation?

(1) Substance K has a definite shape.
(2) Substance K has a definite mass.
(3) Substance K can be compressed.
(4) Substance K has changed its state.

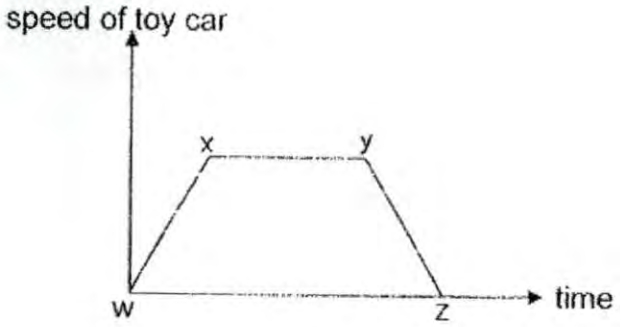
17. The two cylinders, Q and P, shown below are made of different materials but have the same mass.

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

A Q is heavier.
B P occupies less space.
C P and Q have the same amount of matter.
D P is more likely to float on water than Q.

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

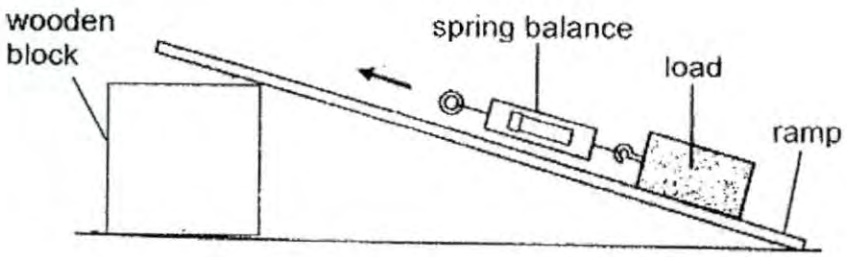
18. The graph below represents the observations made when Sam experimented with a toy car.



Which one of the following statements could explain the observation represented by the line YZ?

(1) The toy car is at rest.
(2) The toy car is moving down a slope.
(3) The toy car is changing its direction.
(4) The toy car is slowing down to a stop.

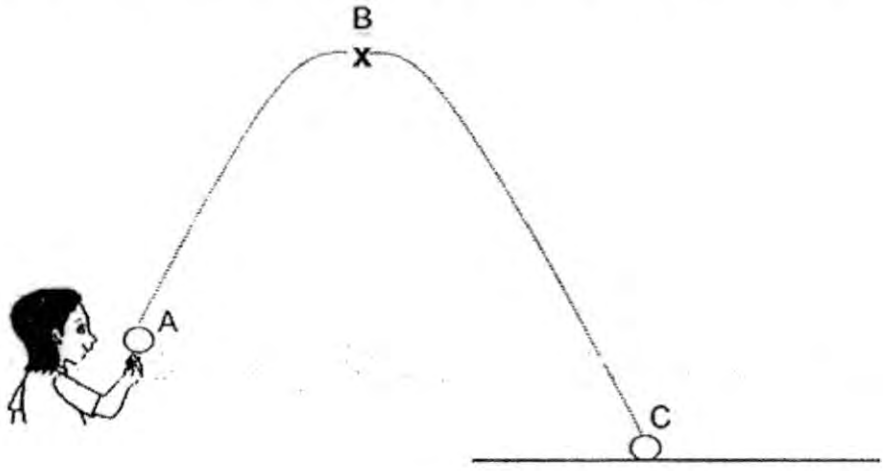
19. Devi set up an experiment to find out how the surface of the ramp affects the amount of force needed to move up a load.



Which of the following variables must she change to ensure a fair test?

(1) Mass of the block
(2) Material of the ramp
(3) Height of the block
(4) Material of the load

20. The diagram below shows a pebble which has been thrown up into the air. The dotted line shows the path of motion the pebble takes from A to C.

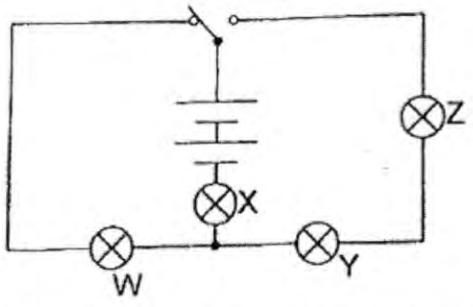


Which of the following statements **is/are true** based on the diagram above?

A Gravity acts on the pebble at point B only.
B There was a push force exerted on the pebble at point A.
C There are at least 2 forces acting on the pebble at any one time.

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

21. Dan set up a circuit as shown below.

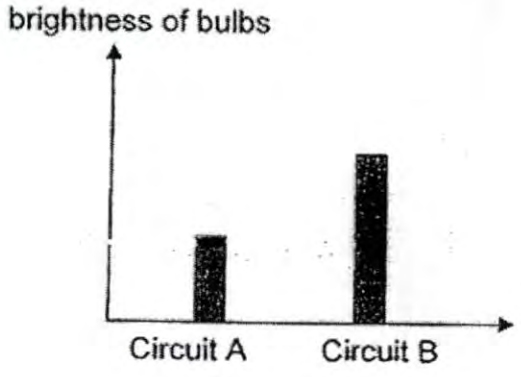


Based on the position of the switch, which bulbs will light up?

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

22. Two people set up two circuits A and B. Each of them was given two similar bulbs, batteries and wires to set up their circuits.

The graph below shows the brightness of the bulbs in each circuit.



Which of the following statements best explains the difference in the brightness of the bulbs for each circuit?

(1) Circuit B used a brighter bulb.
(2) Circuit A used a switch while circuit B did not.
(3) Circuit B was open while circuit A was closed.
(4) Circuit A had bulbs arranged in series but Circuit B's bulbs were arranged in parallel.

Study the set-up below and answer questions 23 and 24 based on the information given.

Two circuits are set up as shown below in diagram 1. X and Y are objects used in the circuit. Bulb B_1 lights up but bulb B_2 does not.

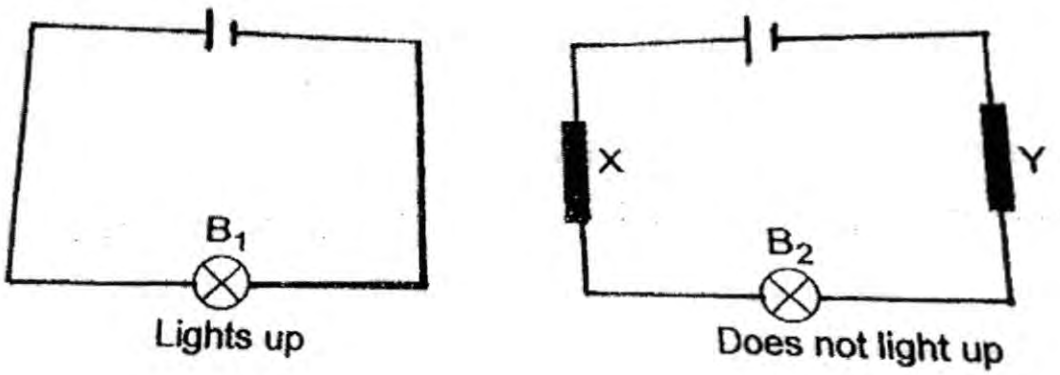


Diagram 1

The 2 circuits above were then joined together as shown in diagram 2. Both bulbs, B_1 and B_2, light up.

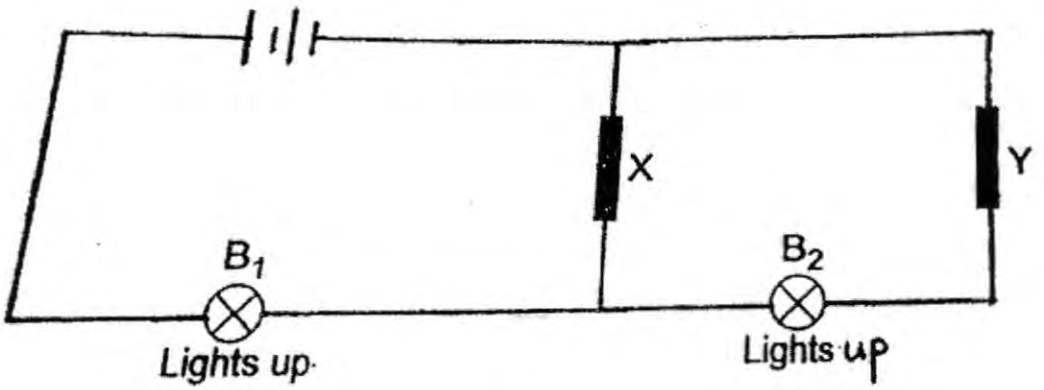


Diagram 2

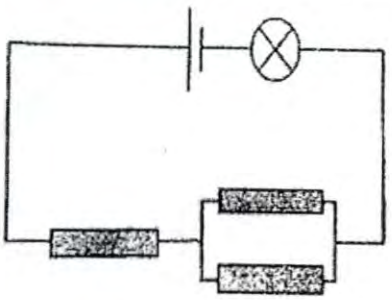
23. Which of the following correctly states the properties of objects X and Y?

	X	Y
(1)	Non-conductor of electricity	Electrical conductor
(2)	Electrical conductor	Non-electrical conductor
(3)	Electrical conductor	Electrical conductor
(4)	Non-electrical conductor	Non-electrical conductor

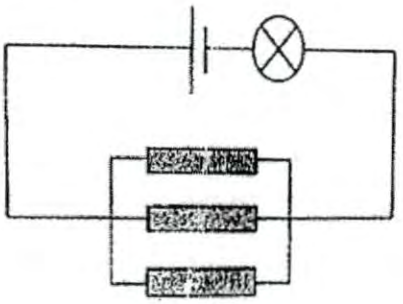
24. Which of the following pair of statements and reasons about bulbs B_1 and B_2 in diagram 2 is correct?

	Statement	Reason
(1)	B_1 is brighter than B_2	The wires allow electricity to pass through.
(2)	B_2 is brighter than B_1	There are two batteries in the circuits.
(3)	B_1 and B_2 are equally bright.	Both bulbs are connected in series in the same circuit.
(4)	B_1 and B_2 are equally bright.	Both bulbs are connected in parallel in the same circuit.

25. Wenhui set up two similar circuits as shown below. Each of the circuits has a steel rod, a glass rod and a wooden rod.



circuit A

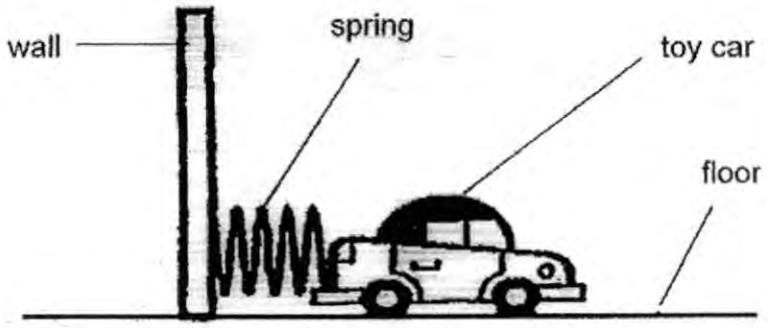


circuit B

In which of the circuits would the bulb **not** light up?

(1) A only
(2) B only
(3) A and B
(4) None of the circuits

26. Study the diagram below.



The toy car was pushed towards the wall against the spring before it was released.

Which one of the following is the **correct** energy conversion of the toy car from the time it was pushed towards the wall until it stopped moving after it was released?

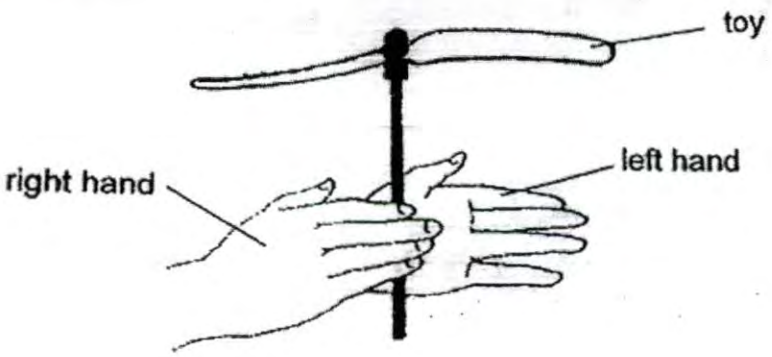
(1) Kinetic energy → Kinetic energy → Elastic potential energy

(2) Kinetic energy → Elastic potential energy → Kinetic energy

(3) Kinetic energy → Kinetic energy → Heat energy + Sound energy

(4) Kinetic energy → Elastic potential energy → Kinetic energy + Heat energy + Sound energy

27. Mark held a toy between his hands as shown below. He rotated the toy by sliding his right hand forward and his left hand backwards before releasing it. The toy flew to a certain height after it left his hands.

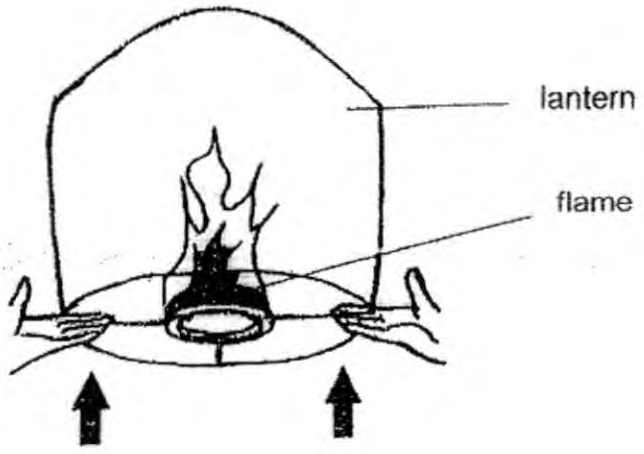


He rotated the toy at the same starting position again. But this time, the toy flew to a higher height than it did before.

Which one of the following could explain why the toy flew to a higher height?

(1) The mass of the toy was greater.
(2) The kinetic energy of the toy was less than before.
(3) The gravitational potential energy of the toy was greater.
(4) The kinetic energy used to rotate the toy was more than before.

28. The following diagram shows a sky lantern. It is a small object made of paper, with an opening at the bottom where a small fire is placed so that the lantern can float up into the air.



Which one of the following shows the energy conversion involved in making the sky lantern float into the sky when the fire is started?

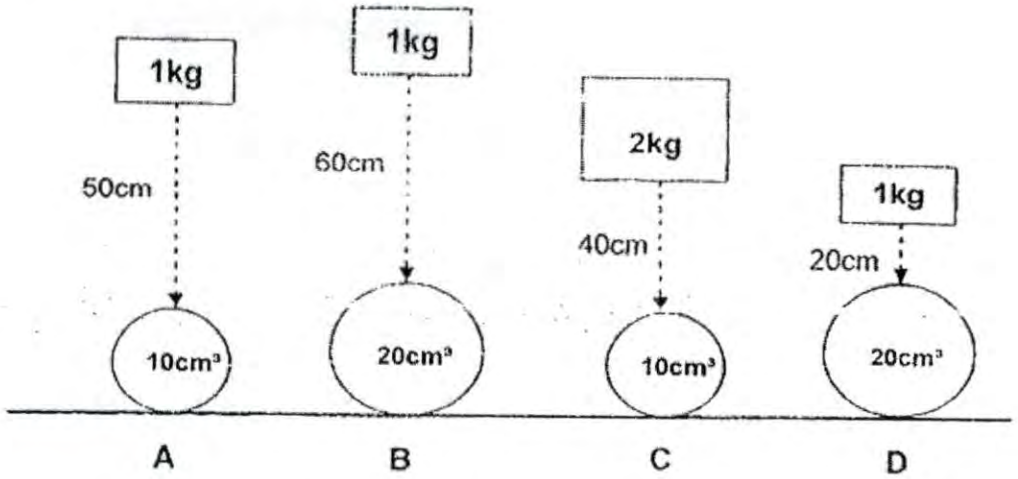
(1) Heat energy → Kinetic energy → Sound energy + Light energy

(2) Heat energy → Light energy → Kinetic energy + Gravitational potential energy

(3) Chemical potential energy → Light energy → Kinetic energy + Heat energy

(4) Chemical potential energy → Heat energy → Kinetic energy + Gravitational potential energy

29. Lydia set up an experiment using balls of plasticine of different volumes. Objects of different masses were then dropped directly on the balls of plasticine, creating a dent on them.



Lydia wanted to find out whether an object has less gravitational potential energy if it is dropped from a shorter height.

Which two of the set-ups should she use in order to conduct a **fair test**?

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

30. The diagram below shows Nico running down a slope.

What happened to the amount of gravitational potential energy and kinetic energy he possessed as he was running?

	Kinetic energy	Gravitational potential energy
(1)	Increased	Decreased
(2)	Decreased	Increased
(3)	Remained unchanged	Decreased
(4)	Increased	Remained unchanged

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2015

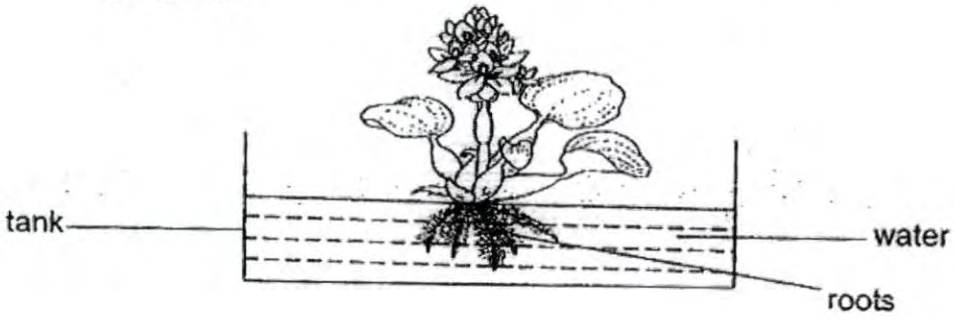
BOOKLET B

Date : 2 March 2015

Duration : 1 h 45 min

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

31. Lily wanted to use the set-up shown below to demonstrate that water is absorbed by the roots of a plant. She left the set-up in the field for a total of 5 hours.



(a) She was told to add a layer of oil onto the surface of water in the tank. Explain why Lily should do so. [1]

_____

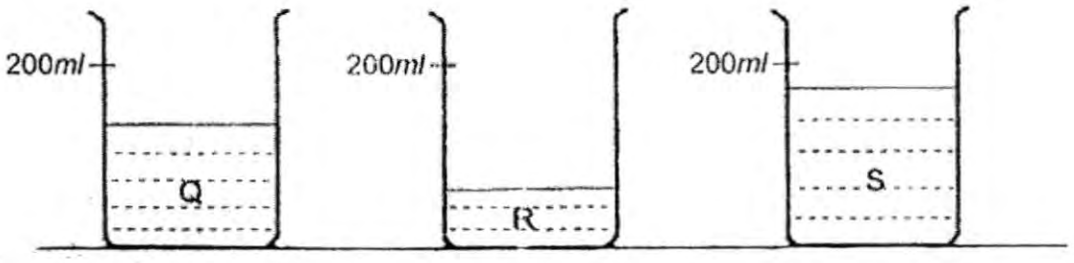
_____

(b) To improve her experiment, Lily decided to prepare a control set-up with no plant in it and with a layer of oil on the water surface. Explain the purpose of the control set-up. [1]

_____

_____

32. Xiao En filled 3 identical beakers each with 200*ml* of different types of liquid, Q, R and S. She left the beakers in the room. Four hours later, the amount of liquid left in the beakers is shown below.



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

_____

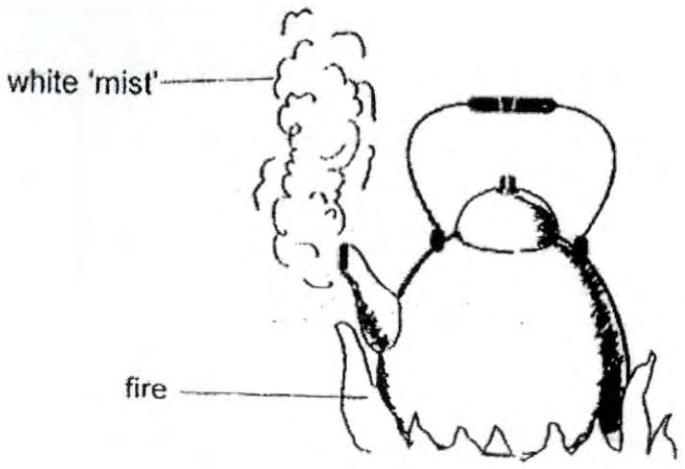
_____

(b) Which of the liquids, Q, R or S, should Xiao En apply on her arm in order to feel cool the fastest? Give a reason for your answer. [1]

_____

_____

33. James boiled some water in a kettle and observed some white 'mist' above the kettle spout.

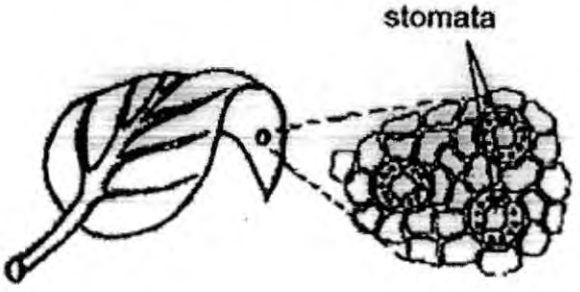


(a) What form of energy is required for the water to boil? [1]

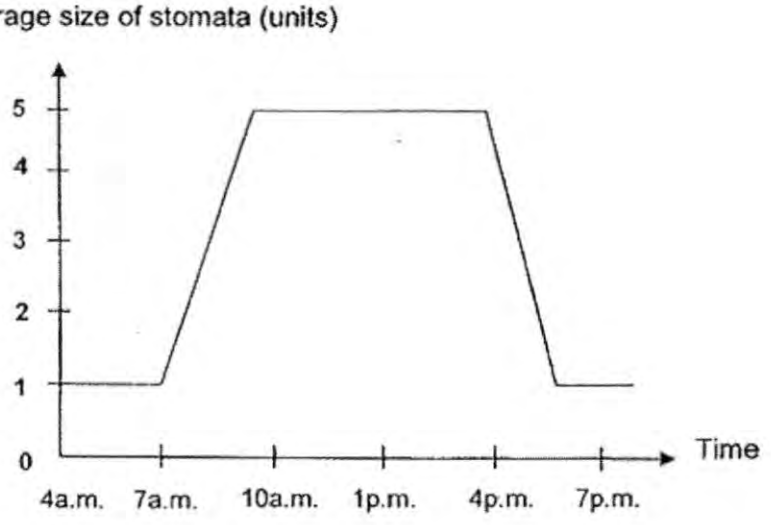
(b) Explain how the white 'mist' is formed. [2]

(c) What should James do to increase the amount of white 'mist' above the kettle spout? [1]

34. Leaves have tiny openings called stomata on their surfaces. Stomata are needed for gaseous exchange in the plant.



The graph below shows the changes in the size of the stomata of a plant placed by the window at different times on a clear day. The result is plotted in the graph below.



(a) Based on the results above, what is the relationship between the intensity of light and the size of the stomata? [1]

_____

_____

(b) How does the change in the size of the stomata in (a) help in the process of photosynthesis? [1]

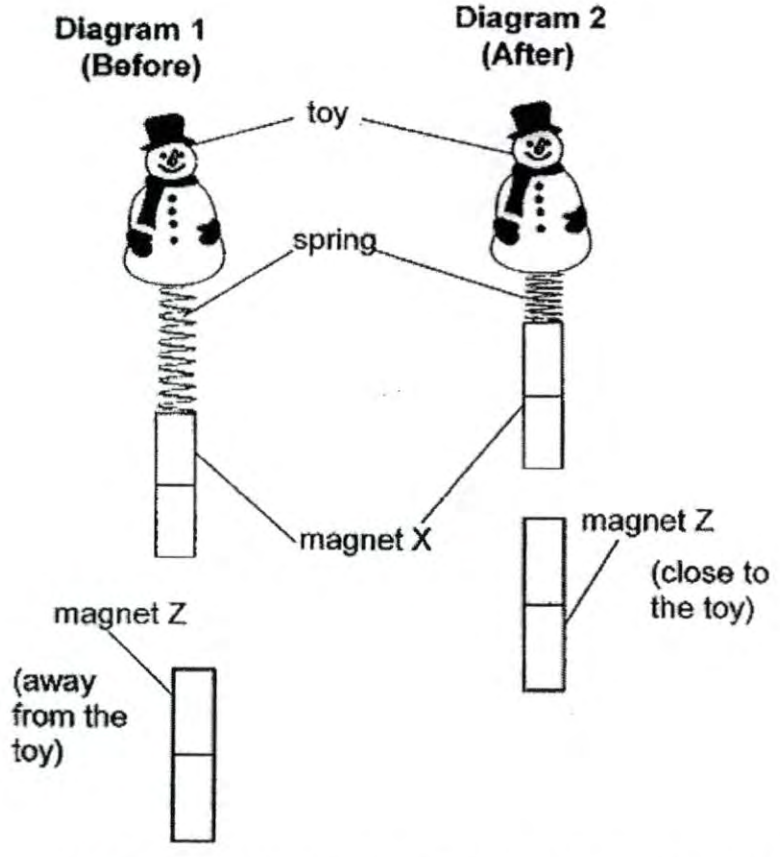
_____

_____

(c) The change in the size of stomata in the presence of light can also be a disadvantage to the plant.

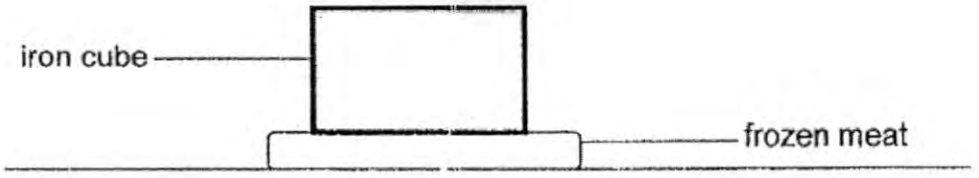
What is **one disadvantage** caused by the size of the stomata between 10 a.m. to 4p.m? [1]

35. The diagrams below show a toy which was attached to a spring with a magnet at one end. The toy was mounted onto a wall.



When magnet Z was brought closer to magnet X, the spring in the toy was compressed as shown in diagram 2. Explain the observation. [2]

36. Lina conducted an experiment as shown in the diagram below. She placed a piece of frozen meat in contact with a solid iron cube at room temperature (32°C). The temperature of the frozen meat before the experiment was 3°C while the temperature after 10 minutes was 21°C.



(a) State a property of the iron cube that had caused the change in the temperature of the frozen meat. [1]

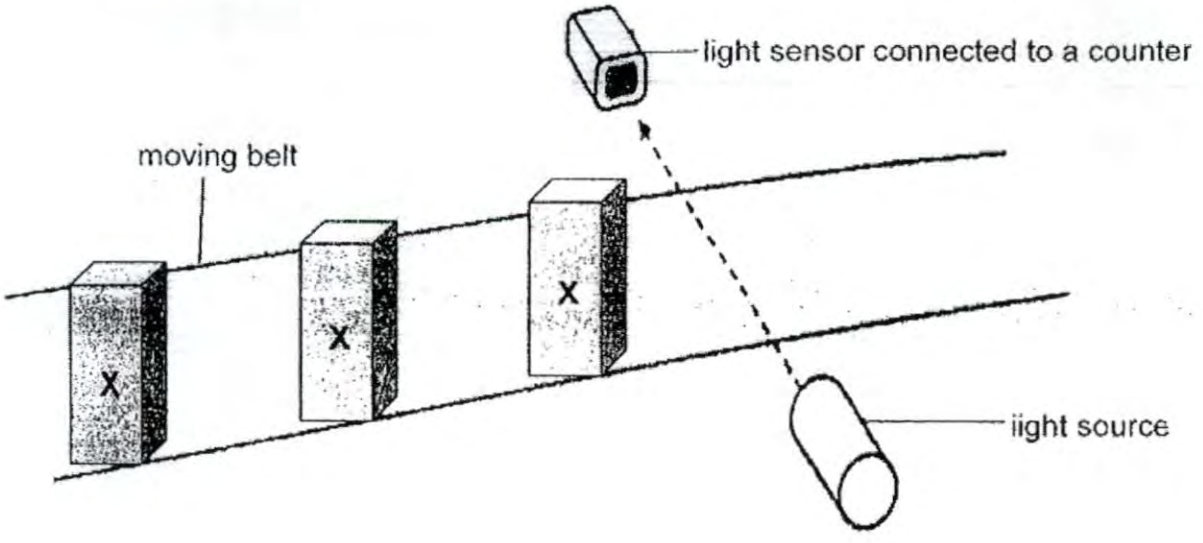
_____

(b) Explain how the iron cube caused the temperature of the frozen meat to increase after 10 minutes. [1]

_____

_____

37. A factory uses a light sensor to count the number of object X on a moving belt. The set-up can count 10 object X in a minute when the belt moves at its maximum speed.



(a) State what happens when object X is between the light source and the light sensor. [1]

_____

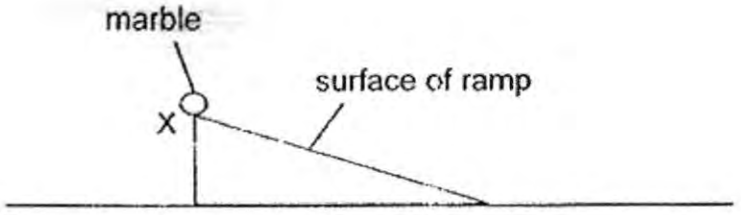
_____

(b) The factory workers decided to place each object X nearer to one another on the moving belt. Explain why. [1]

_____

_____

38. Mary released a marble from the top of three ramps (point X) made from surfaces of different materials (wood, glass and sandpaper) as shown in the diagram below.



She recorded the distance travelled by the marble from point X until it came to rest. The results are shown in the table below.

Type of surface	Distance travelled(cm)
(a)(i) _____	31
(a)(ii) _____	24
Sandpaper	19

(a) **Fill in** the missing surfaces in the correct boxes in the table above. [1]

(b) Explain, in terms of forces, why the marble travelled the shortest distance on the ramp made of sandpaper. [1]

_____

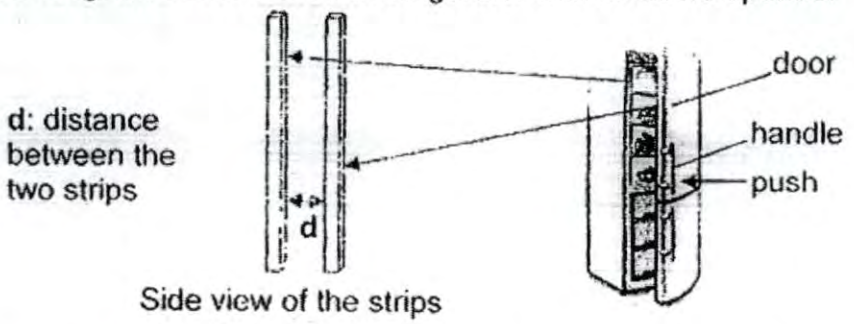
_____

(c) Without changing the marble or type of ramp, suggest a method to increase the distance taken for the marble to travel on the ramp made of sandpaper. [1]

_____

_____

39. The diagram below shows a refrigerator with its doors opened.



Side view of the strips

Tim applied a push force on the handle of the door and he observed that the two strips on the doors were pulled towards each other and came into contact due to force X.

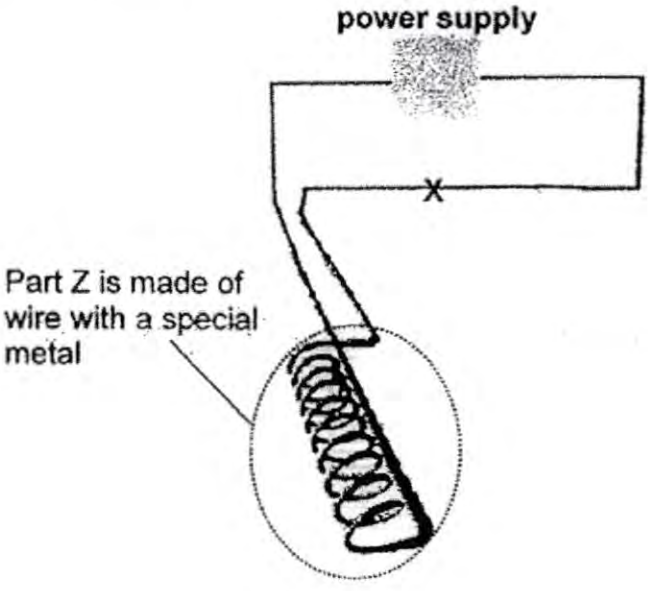
(a) State what force X could be [1]

Tim plotted a graph as shown below after conducting an experiment on the two strips.

(b) State the relationship between the distance between the strips and force X. [1]

(c) Tim gave the door handle a hard 'pull' and managed to open the refrigerator door. Give a reason for this observation in terms of forces. [2]

40. The diagram below shows a simple circuit inside a hair dryer which contains part Z. The electrical circuit is connected to a power supply.



(a) Identify the main form of energy given off by part Z. [1]

_____

(b) A wire was cut at point X in the circuit. Explain how the cut wire will affect part Z. [1]

_____

_____

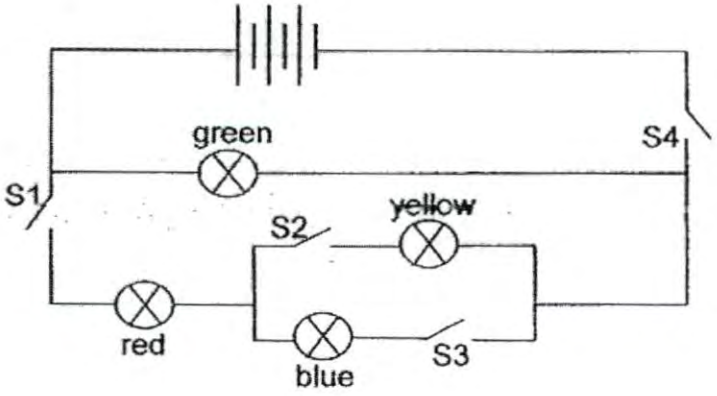
(c) The wire in part Z is made of a special metal. State two properties of the metal that makes it suitable to be used to make part Z. [1]

(i) _____

(ii) _____

41. Ken designed an electrical circuit using coloured light bulbs.

(a) By referring to the circuit, complete the table below to show which switches must be closed in order for the stated light bulbs to work. [2]



Light bulb(s)	switches to be closed
Green only	
Green, Blue and Red only	

(b) All the switches were then closed but the blue bulb had fused. Name the bulbs which will still light up. [1]

_____

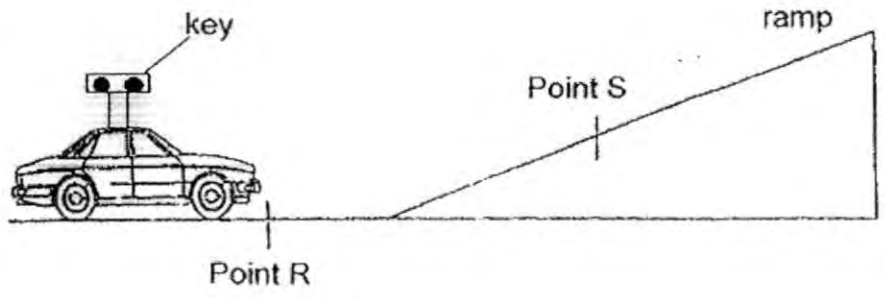
_____

(c) Name the **brightest** bulb when current flows through the circuit. [1]

_____

_____

42. Study the diagram below.



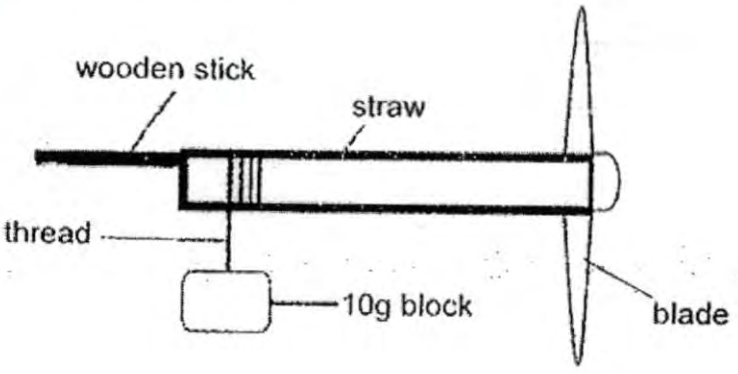
Jun Xi wound up a toy car a few times before releasing it at Point R as shown in the diagram above. The car moved up the ramp and reached Point S before it rolled backwards.

(a) What type of energy did the toy car possess at Point R before it was released? [1]

(b) Jun Xi wanted to make the toy car travel beyond Point S.

Without changing the ramp, state **one** way to make the same toy car travel beyond Point S. [1]

43. Li Wen constructed a home-made fan using a wooden stick inserted into a straw. A thread with a 10g block attached to it was wound a few times around one end of the straw as shown below. The fan spun freely when the 10g block was released. She counted the number of turns made by the blade in 10 seconds.



(a) State the correct energy conversion that takes place when the block was released. [1]

(before releasing the block) (in the falling block) (in the moving blade)

Li Wen repeated the experiment with blocks of different masses and recorded the results in the table below.

Mass of block (g)	Number of turns made in 10 seconds
10	8
20	15
30	20
40	27

(b) What is the relationship between the mass of the block and the number of turns made in 10 seconds? [1]

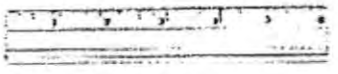
(c) Other than the mass of the block and the effect of wind on the experiment, name **one** variable that will increase the number of turns made by the blade in 10 seconds. [1]

_____

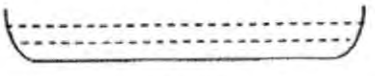
_____

44. Grace was given a metal ball, a metre ruler and a tray of sand to conduct an experiment. She wanted to find out how the height of a ball from the ground would affect the amount of gravitational potential energy it possessed.

Metal ball



Metre ruler



Tray of sand

(a) Write down the steps that Grace should take to conduct her experiment. Step 1 has been written for you. [2]

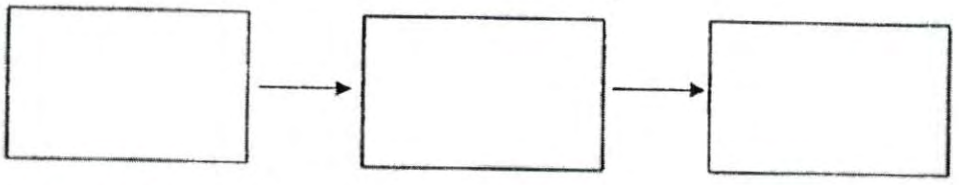
Step	Description
1	Place the metre ruler upright on the table.
2	
3	
4	
5	

(b) What is the force acting on the ball when it is being released from a height?

[1]

(c) State the correct energy conversion from the point before the ball is being released from a height to the point when it touches the sand in the tray.

[1]



(of the ball before being released) (in the falling ball) (as the ball lands on the sand)

EXAM PAPER 2015

SCHOOL :NANYANG

SUBJECT : P6 SCIENCE

TERM : CA1

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

31)a)It is to prevent water in the tank from evaporating.

b)It is to ensure that it was the roots which absorbed the water

32)a)To find out how the different types of liquid affects the rate of evaporation.

B)Liquid evaporates the fastest , hence it will remove the most heat.

33)a)Heat energy .

B)When the water boils , it gains heat and evaporates to become hot water vapour . When the hot water vapour comes into cantact with the coder surrounding air, it reacts with it and condenses to from tiny water droplets which from the white mist.

c)Boil the water in a cooler room.

34)a)The more the intensity of light, the large the size of the stomata.

b)The larger the size of the stomata the more carbon dioxide taken in , hence the rate of photosynthesis increases.

c)The plant will lose more water.

35)The magnets' like poles were facing each other , hence they repelled each other, causing magnet X to move backwards and compress the spring.

36)a)It was a good conductor of heat.

b)The iron cube gains heat from the surrounding air and conducts heat to the frozen meat.

37)a)Object X blocks the light from the light source, hence the light sensor detects less or no light.

b)More objects X could be counted.

38)a)i)Galss ii)Wood

b)The surface of the sandpaper was the roughest, hence there was the most friction between the marble and the ramp, therefore the marble travelled the shortest distance.

c)Coat the ramp with oil. Add a block to raise the ramp.

39)a)Magnetic force of attraction.

b)The further the distance between the two strips, the less the amount of force X

c)The force of the pull was stronger than force X and over came it, thus allowing Tm to open the refrigerator door. The pulling force exerted by Tim was greater than force X.

40)a)Heat energy

b)The circuit will be open, hence electricity can no longer pass through the circuit and part Z cannot function.

c)i)It is a good conductor of heat .

ii)It is an electrical conductor.

41)a)S4/ S1,S3, S4

b)The red bulb, the yellow bulb and the green bulb will still light up.

c)Green

42)a)Elastic potential energy.

b)Wind up the car more times.

43)a)Gravitational potential energy→Kinetic energy →Kinetic energy

b) The greater the mass of the block, the more the number of turns made.

c)Decrease the mass of the blade.

44)a)step2:Drop the metal ball from a height of 15 cm.

Step 3:Measure the depth of the hole.

Step4:Repeat step 2-3 a few times to check for reliability.

Step5:Repeat step 2-4 but dropping the ball from different heights .

Step6:The greater the height at which the ball is dropped , the greater the amount of gravitational potential energy.

b)Gravity

c) Gravitational potential energy→Kinetic energy →Sound energy