19

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION
2016

BOOKLET A

Date: 25 August 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 24 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.**

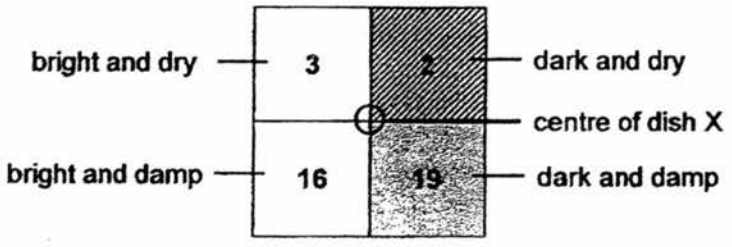
1. Rahman observed the different types of organisms found in an area at a park. He recorded the number of each organism in the table below.

Type of organism	Number of organisms
Spider	2
Tree	2
Caterpillar	5
Beetle	3
Fern	3
Squirrel	2
Beetle larva	4
Butterfly	6
Mushroom	4

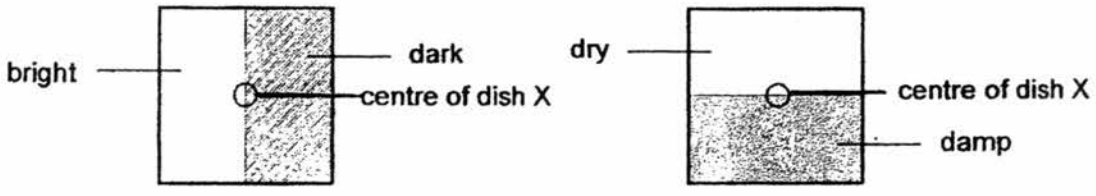
Based on the information above, which of the following statement is **correct**?

(1) There is only one food producer.
(2) There are only six food consumers.
(3) There are seven populations of organisms.
(4) There are eight communities of organisms.

2. Devi carried out an experiment to find out the preferred environment for organism A. Forty organism A were placed in the middle of Dish X. After 20 minutes, the number of organism A in each section of Dish X was counted and recorded in the diagram as shown below.

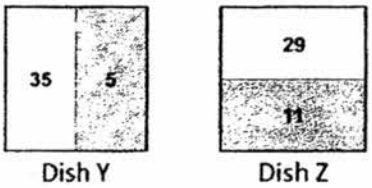


The experiment was then repeated with Dishes Y and Z using the same number of organism A.

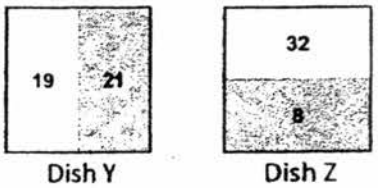


Which one of the following shows the likely number of organism A in each section of Dishes Y and Z?

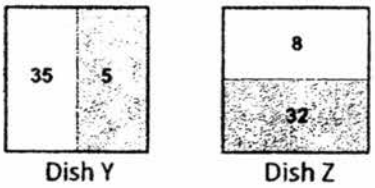
(1)



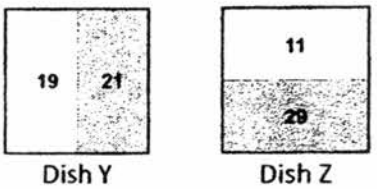
(2)



(3)



(4)

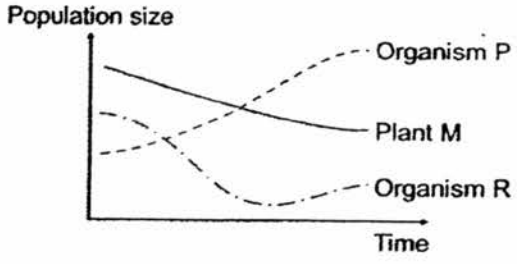


3. Study the food chain below.

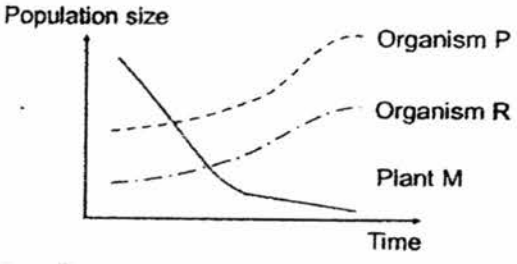
Plant M → Organism P → Organism R

It was observed that there is an increase in the population of organism P. Which one of the following graphs below correctly shows the change in the population size of plant M, organisms P and R over a period of time?

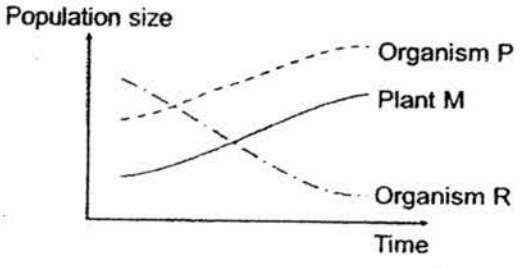
(1)



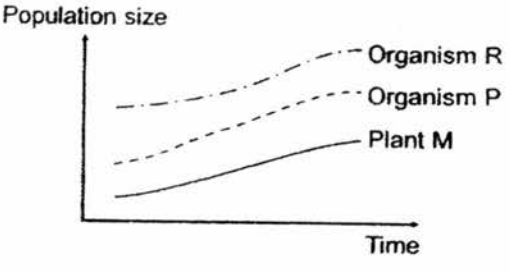
(2)



(3)



(4)



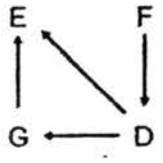
4. The following food relationships were observed among four organisms, D, E, F and G.

D is a prey only.
E is a predator only.
F is a food producer.
G is both a predator and a prey.

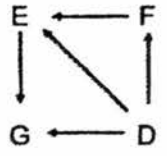
Which one of the following correctly represents the food web for D, E, F and G?

(1)

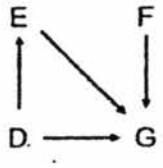
(2)



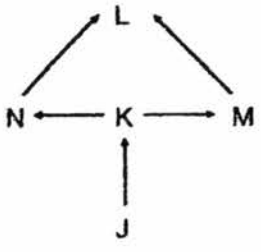
(3)



(4)



5. Study the food web below.

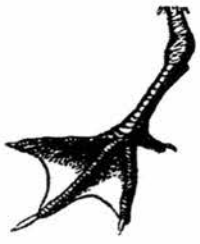


If the population of organism K decreases, which of the following statements show immediate effects on the other organisms?

A The population of organism L will increase.
B The population of organism J will increase.
C The population of organism N will decrease.
D The population of organism M will be the same.

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

6. The diagram below shows types of feet from three different birds R, S and T.



Bird R

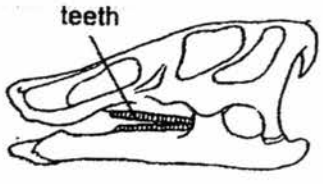
Bird S

Bird T

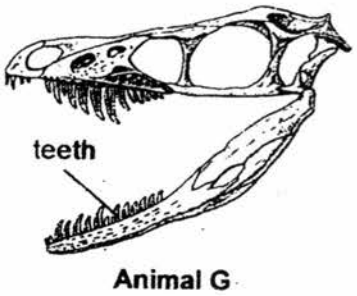
Which of the following is the most likely habitat of each bird?

	Types of habitats		
	Bird R	Bird S	Bird T
(1)	Tree	Field	Pond
(2)	Pond	Field	Tree
(3)	Field	Pond	Tree
(4)	Pond	Tree	Field

7. The diagrams below show the skulls of two animals, F and G. Animal F was a herbivore.



Animal F



Animal G

Based on the diagrams, which one of the following statements about animal G's diet is **correct**?

(1) It is a herbivore as it has many teeth like animal F.
(2) It is a carnivore as it has teeth at the front unlike animal F.
(3) It is a herbivore as its skull is long and pointed like animal F.
(4) It is a carnivore as it has sharp teeth unlike those of animal F.

8. The list below states some behaviours of Bird V which is known to feed on small animals.

A It puffs up and ruffles its feathers.
B It pierces insects with its sharp beak.
C It turns its back to face the sun.
D It imitates the mating call of its prey.

Which of the above behaviour(s) helps it to catch its prey?

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

9. Which of the following is/are behavioural adaptation(s) that will help an animal to escape from its predators?

A Having soft pads on paws.
B Moving quickly and without making any sound.
C Decorating the nest with colourful pebbles and flowers.
D Having body covering that has similar colours as its surroundings.

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

10. Plant K grows in an environment with the following characteristics:

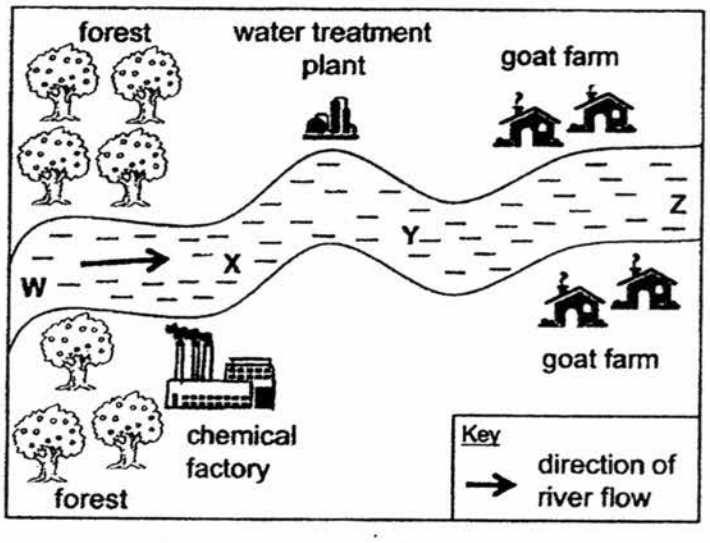
- Low average temperature
- Surrounding air has very little water vapour
- Frozen soil prevents water from flowing deep into the ground

Which of the following adaptations must be present to ensure the survival of Plant K?

A Having very small leaves
B Having stems that store water
C Having long and shallow roots

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

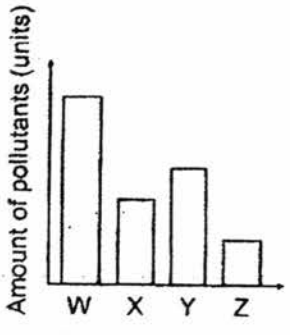
11. A river runs through an area of land as shown in the diagram below.



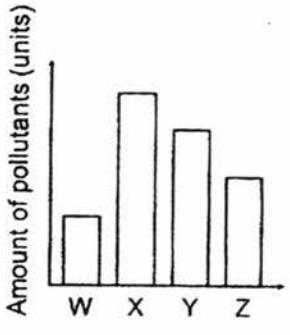
Equal amounts of water samples were collected from positions W, X, Y and Z in the river and were analysed for the amount of pollutants in them.

Which one of the following graphs correctly shows the most likely levels of pollutants in each water sample?

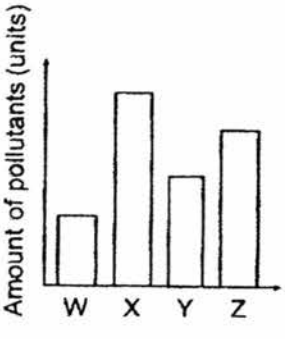
(1)



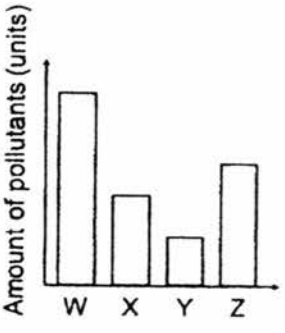
(2)



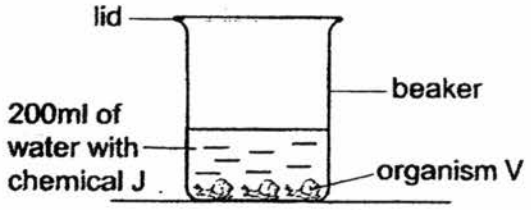
(3)



(4)

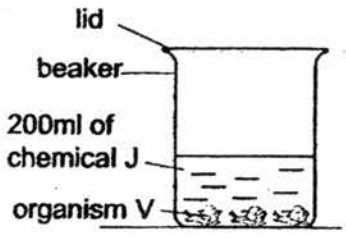


12. Daphne wanted to find out if the presence of chemical J in water would affect the growth of organism V. She used the set-up below for her experiment.

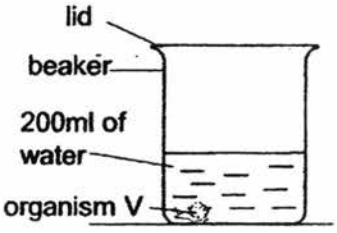


Which one of the following set-ups should she use as a control for her experiment?

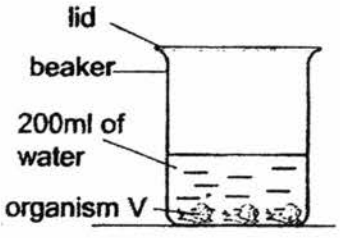
(1)



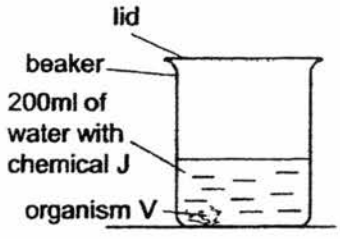
(2)



(3)



(4)



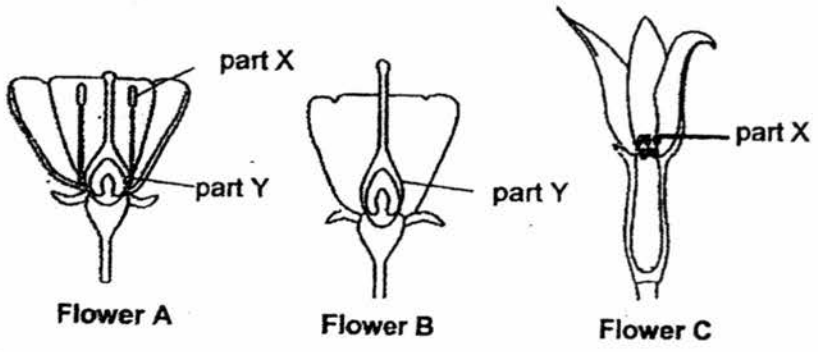
13. Some observations of four different types of fruits are shown below.

Fruit	Description
A	It has a pod with a few seeds. It turns dark brown when it is ripe.
B	It is edible and has small indigestible seeds.
C	It has a waterproof outer covering.
D	It is small, light and has a wing-like structure.

Based on the observations, how are the fruits most likely to be dispersed?

	Dispersal methods			
	Water	Wind	Animals	Explosive action
(1)	C	B	D	A
(2)	C	D	B	A
(3)	D	C	A	B
(4)	A	D	B	C

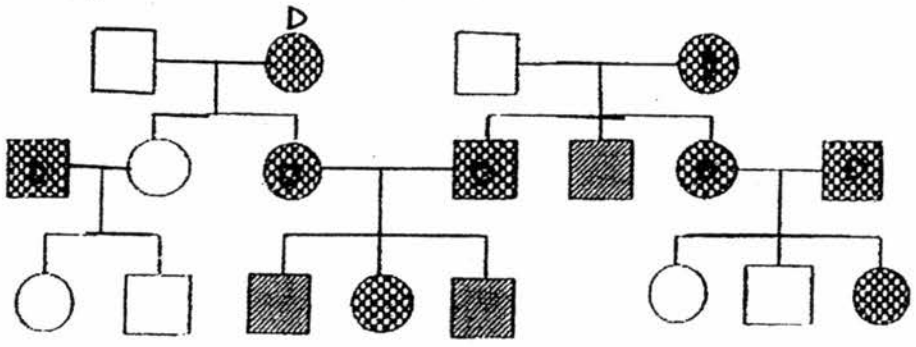
14. The diagram below show the cross-sections of flowers A, B and C. Flowers A and B are from the same plant. Only Flowers A and B have part Y. Part X of flowers A and C carry out the same function.



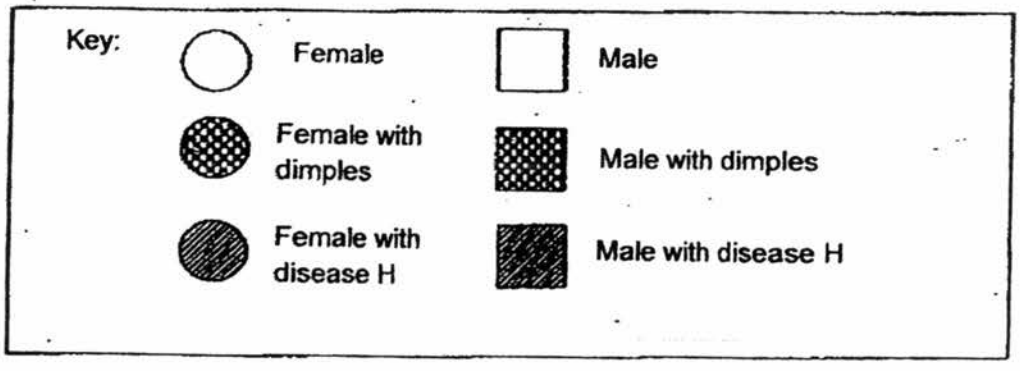
Based on the diagram above, which one of the statements is **correct**?

(1) Flower C can be fertilised.
(2) Only Flower B can develop into a fruit.
(3) Pollen grains from part X of flower A can pollinate flower B.
(4) Flower A is pollinated by insect but Flower C is pollinated by wind.

15. The diagram below shows Diana's family tree.



Diana

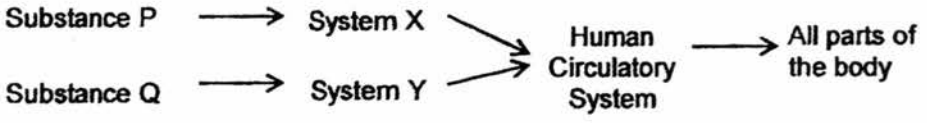


Based on the information provided above, which of the following statements are **true**?

A Three of Diana's uncle has dimples.
B None of Diana's cousins has disease H.
C Both Diana's grandmothers have disease H.
D Some of the male members of the family have disease H.

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

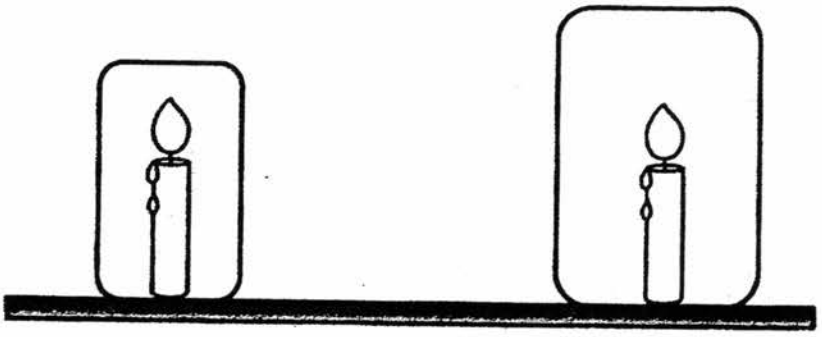
16. The diagram below represents how different systems work together in a human body to take in substances P and Q that are needed for life processes.



Which one of the following correctly identifies substances P and Q and systems X and Y?

	Substance P	Substance Q	System X	System Y
(1)	water	oxygen	Respiratory System	Digestive System
(2)	water	carbon dioxide	Digestive System	Muscular System
(3)	food	carbon dioxide	Muscular System	Respiratory System
(4)	food	oxygen	Digestive System	Respiratory System

17. Joong Ki placed two lit candles in different containers that were filled with oxygen as shown in the set-ups below.



Container P Container Q

Based on the experiment, which one of the following correctly describes the aim of the experiment and the variables that he needs to keep constant to ensure a fair test?

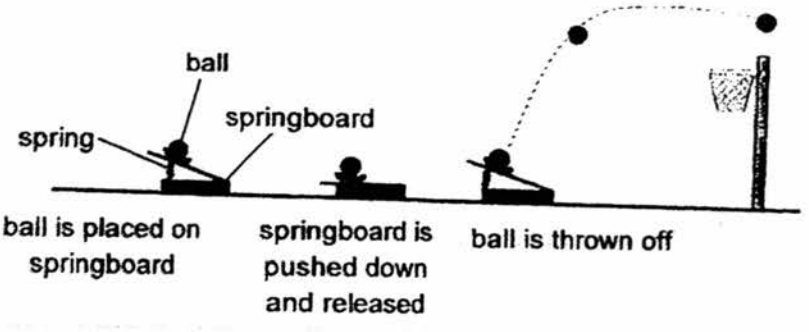
	Aim	Variables to be kept constant
(1)	To find out how the amount of oxygen affects how long the candle remains lit.	• size of the candles • size of the containers
(2)	To find out if oxygen is needed for burning.	• material of the container • time taken for the flame to go off
(3)	To find out if oxygen is needed for burning.	• size of the candles • size of the containers
(4)	To find out how the amount of oxygen affects how long the candle remains lit.	• size of the candles • number of candles

18. **Which one of the following statements correctly** matches the part of the digestive system with its function?

	Part of digestive system	Function
(1)	gullet	produces digestive juices to digest the food
(2)	stomach	allows food to travel into the blood
(3)	small intestine	absorbs nutrients from the food
(4)	large intestine	transports undigested food to the small intestine

3

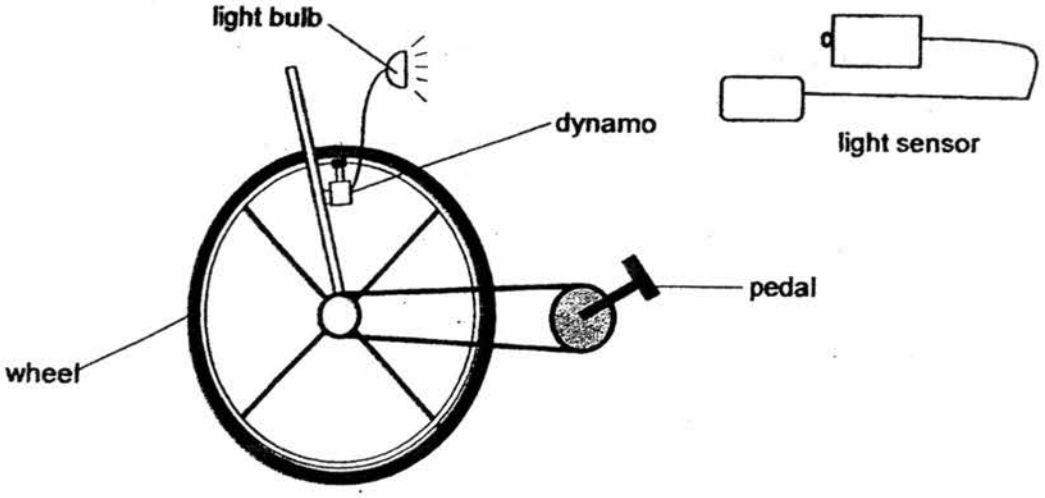
19. Samantha was playing a game of Mini Shoot Basket with her brother. The diagram below shows how the game is played.



Which one of the following shows the correct energy conversions of the game when the springboard is pressed and released?

(1)	Chemical potential energy	→	Kinetic energy	→	Gravitational potential energy
(2)	Elastic potential energy	→	Kinetic energy	→	Gravitational potential energy
(3)	Gravitational potential energy	→	Elastic potential energy	→	Kinetic energy
(4)	Kinetic energy	→	Gravitational potential energy	→	Elastic potential energy

20. A dynamo is a gadget that converts kinetic energy into electrical energy. Some pupils fixed a dynamo to a wheel as shown below and began turning the wheel. They observed that the bulb started to light up after a while. The pupils then turned the pedal of the wheel at different speeds and measured the brightness of the light.



Which one of the following tables correctly shows the most likely results of their investigation?

(1)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	60
70	80
90	130
110	180

(2)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	60
70	130
90	180
110	80

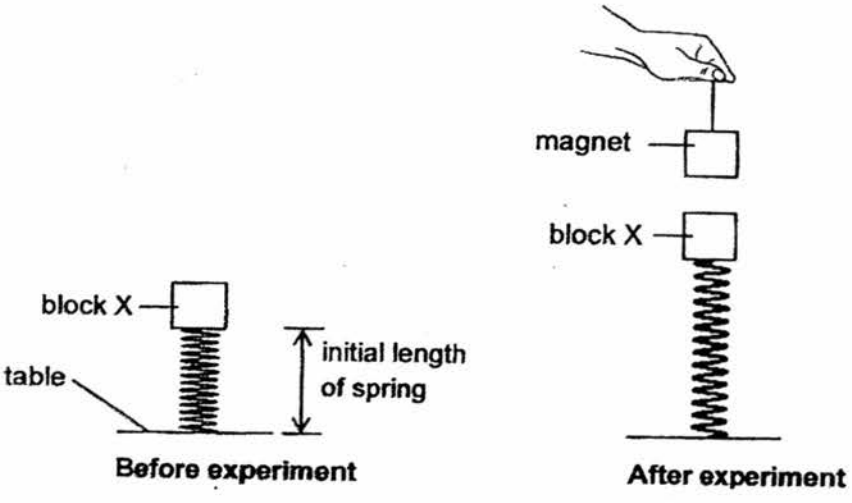
(3)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	180
70	80
90	60
110	130

(4)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	180
70	130
90	80
110	60

21. A spring was attached to a table and block X was attached on top of the spring and left to rest. A magnet was then hung above block X and slowly brought closer to the block. The sequence of events is shown in the diagrams below.

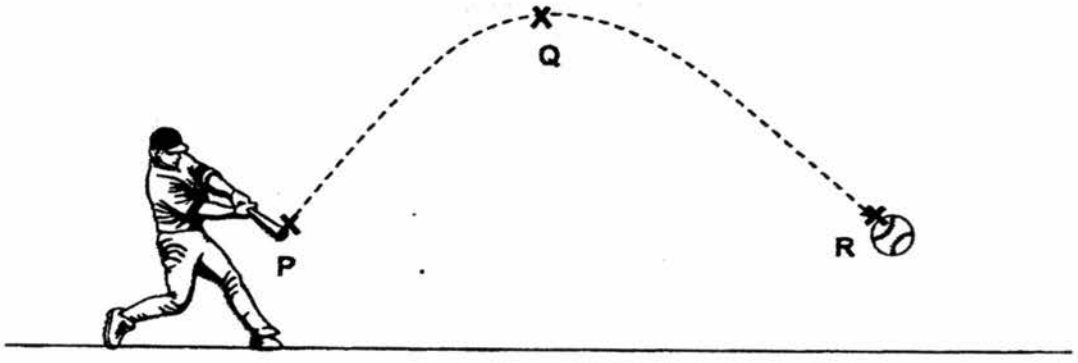


Which of the following statements **correctly** state the types of forces acting on block X after the experiment?

A Gravity
B Magnetic force
C Elastic spring force

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

22. A ball was hit using a bat as shown below.

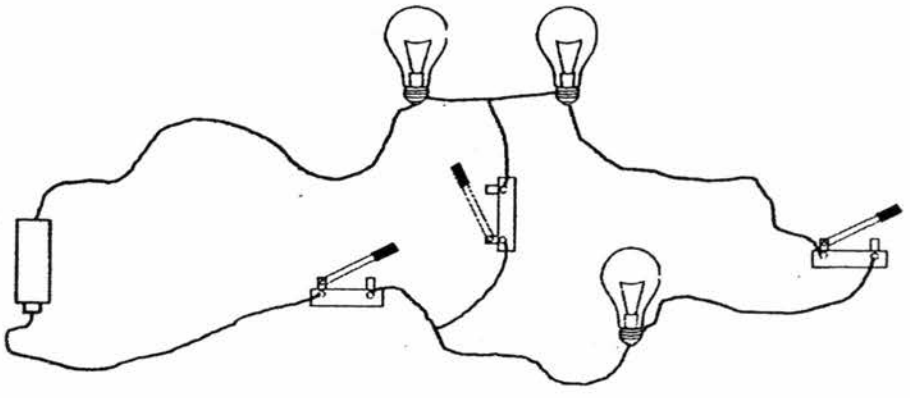


Which of the following statements below **correctly** states the effects of forces on the ball?

A The ball stopped moving at point R.
B The ball changed direction at point Q.
C The ball moved faster from point P to Q.

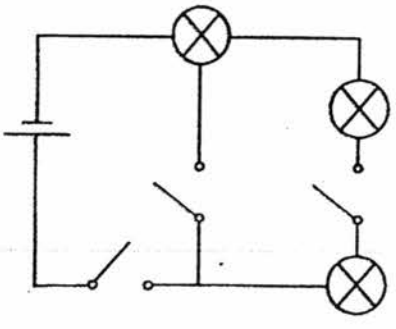
(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

23. Study the electric circuit below.

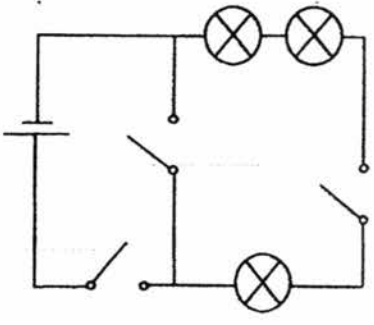


Which circuit diagram below **correctly** represents the circuit arrangement above?

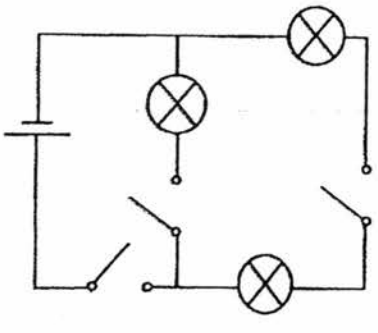
(1)



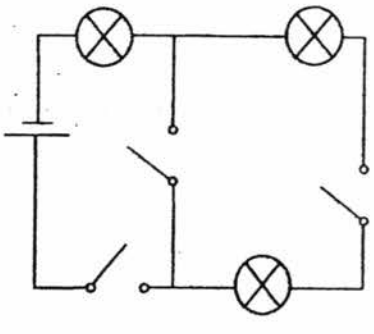
(2)



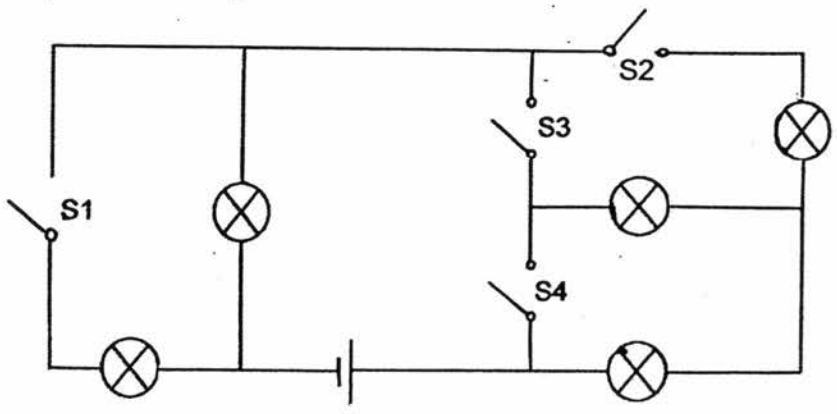
(3)



(4)



24. Study the circuit diagram below.

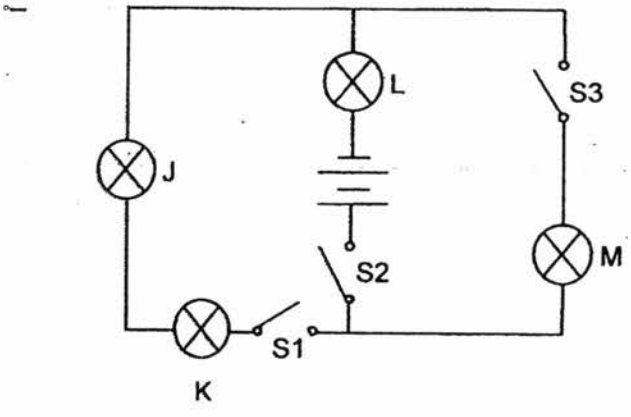


Which pairs of switches will allow only four bulbs to light up when closed?

A S1 and S2 only
B S1 and S3 only
C S2 and S3 only
D S2 and S4 only

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

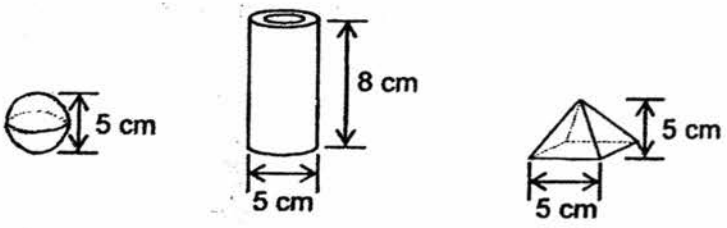
25. A circuit was set up as shown below.



Which one of the following statements **correctly** describes the bulbs when switches S1 and S2 are closed?

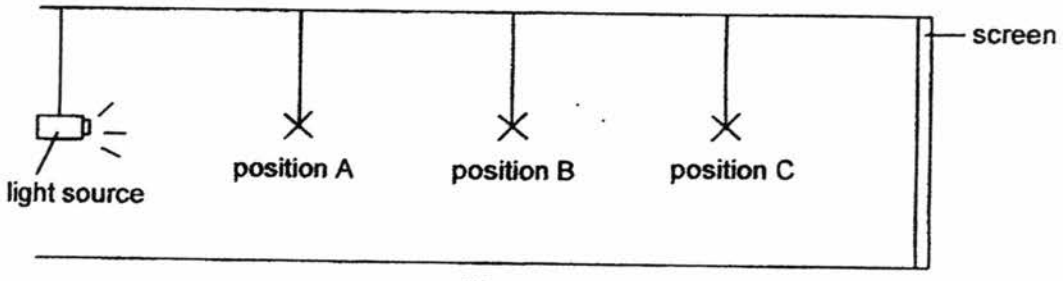
(1) Bulbs J and K do not light up.
(2) Bulb L is brighter than bulb K.
(3) Bulb M is brighter than bulb K.
(4) Bulbs J, K and L have the same brightness.

26. Three objects made of the same material that does not allow light to pass through are shown in the diagrams below.



sphere **cylinder** **pyramid**

The objects were hung in a line at various positions, A, B and C, to cast a shadow on a screen as shown in the diagram below.



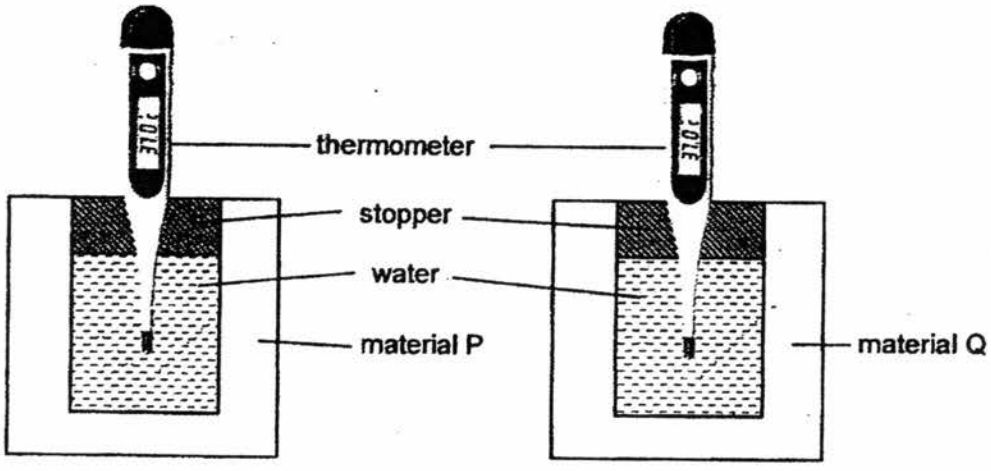
shadow cast

Which of the following **correctly** matches the positions the objects were hung and the shadow cast on the screen?

	position A	position B	position C
(1)	cylinder	sphere	pyramid
(2)	cylinder	pyramid	sphere
(3)	sphere	pyramid	cylinder
(4)	pyramid	cylinder	sphere

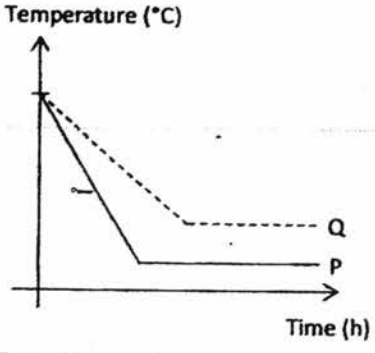
27. Suzy has two identical blocks each made of a different material, P and Q. Material P is a better conductor of heat than material Q.

Both blocks are placed in the same compartment in a refrigerator at the same time and their temperatures monitored using a thermometer as shown below.

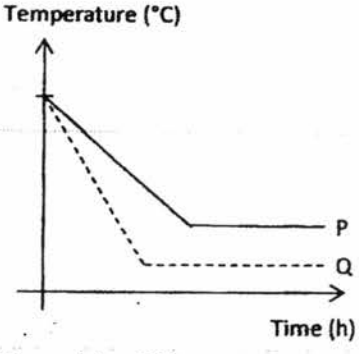


Which of the following graphs correctly shows the temperatures of both blocks over time?

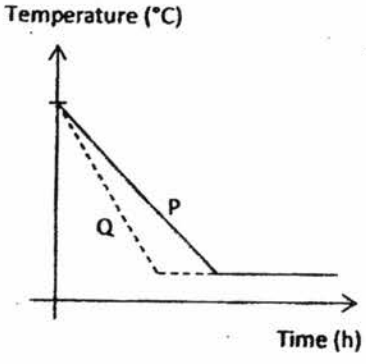
(1)



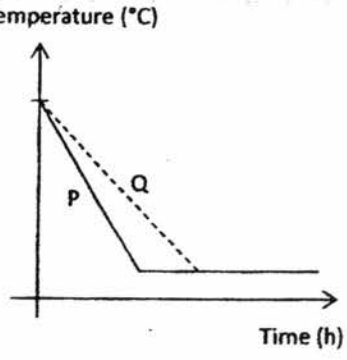
(2)



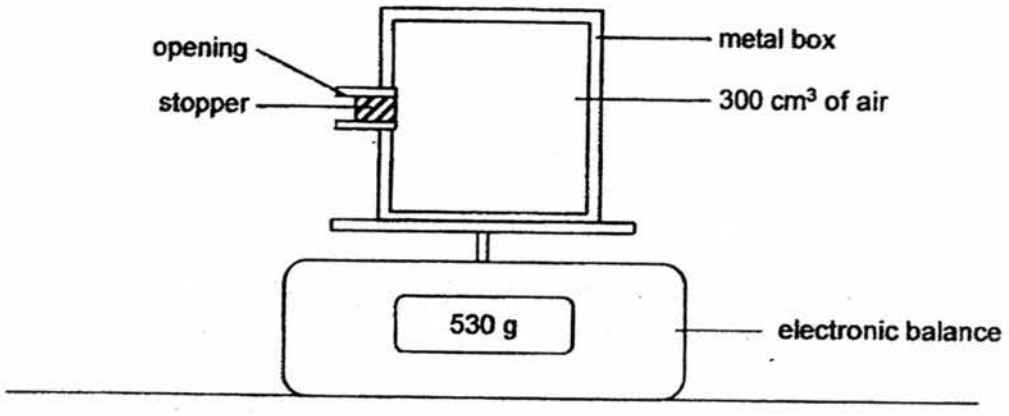
(3)



(4)



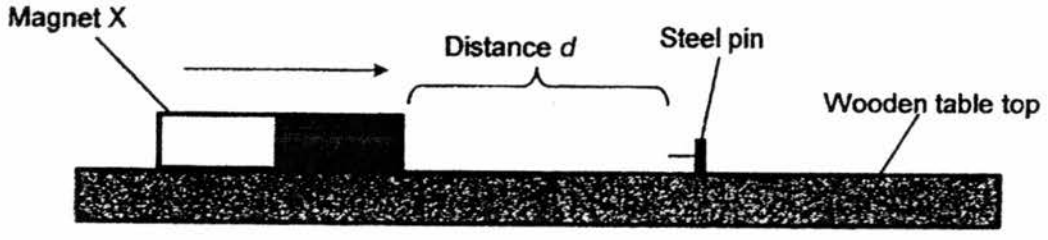
28. A metal box containing 300 cm^3 of air was placed on an electronic balance as shown in the diagram below.



An additional 100 cm^3 of air was pumped into the metal box. Which option below **correctly** states the volume of air in the metal box and the reading on the electronic balance?

	Volume of air in the metal box (cm^3)	Reading on the electronic balance (g)
(1)	300	530
(2)	300	more than 530
(3)	400	530
(4)	400	more than 530

29. Jamie carried out an investigation to find the strength of three magnets, X, Y and Z, given to her. She slowly moved Magnet X towards a steel pin placed on a wooden table until the magnet attracted the pin from a distance *d* as shown in the diagram below.



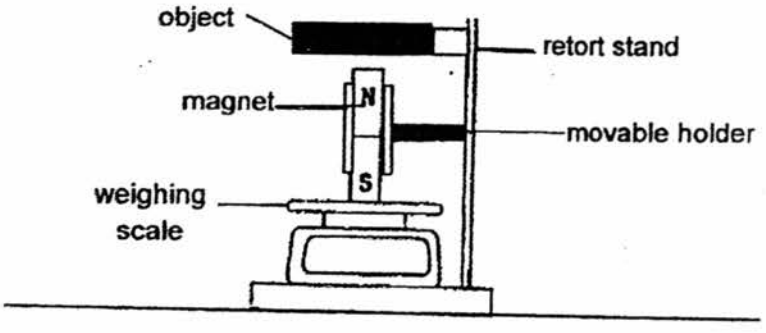
She then repeated the procedure two more times and calculated the average distance. The experiment was then repeated with the other two magnets, Y and Z. The results were tabulated as shown below.

	Distance *d* (cm)			
	1st try	2nd try	3rd try	Average
Magnet X	2.4	2.3	2.8	2.5
Magnet Y	3.0	3.1	2.7	2.9
Magnet Z	1.5	1.9	1.8	1.7

Which of the following shows the correct ranking of the strength of the magnets from the strongest to the weakest?

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

30. Benedict set up an experiment with a magnet weighing 4 units to find the properties of objects X, Y and Z. The magnet is attached to a holder which allows it to move.



The table below shows the readings on the weighing scale when each object is used.

Object	Reading on weighing scale (units)
X	More than 4
Y	0
Z	4

Based on the results, which of the following statements can Benedict possibly make about the properties of the objects?

a Object Y can be an iron rod.
b Object X can be a ring magnet.
c Object Z can be an aluminium rod.

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

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION 2016

BOOKLET B

Date: 25 August 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 6 Sept 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.

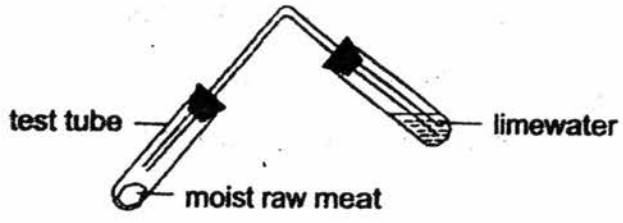
Parent's signature: .....

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

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

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

31. Wallace conducted an experiment with a small piece of moist raw meat and limewater as shown in the diagram below.



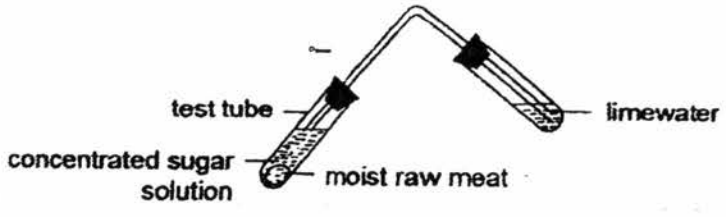
After 1 week, he observed that the limewater had turned cloudy. He was also told that process X took place to cause this change.

(a) Name process X. Explain his observation. [1]

_____

_____

He repeated the experiment but added some concentrated sugar solution to the moist raw meat as shown in the diagram below.



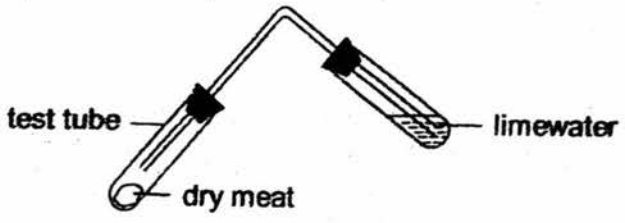
After 1 week, he observed that the limewater remained colourless.

(b) Based on his observation, what can he conclude about the effect of the concentrated sugar solution on the process happening in the raw meat? [1]

_____

_____

(c) He repeated the experiment again using dry meat as shown in the diagram below.



After 1 week, he observed that the limewater remained colourless.

(i) Explain his observation. [1]

_____

_____

(ii) Based on this experiment, state one condition that is needed for process X to take place. [1]

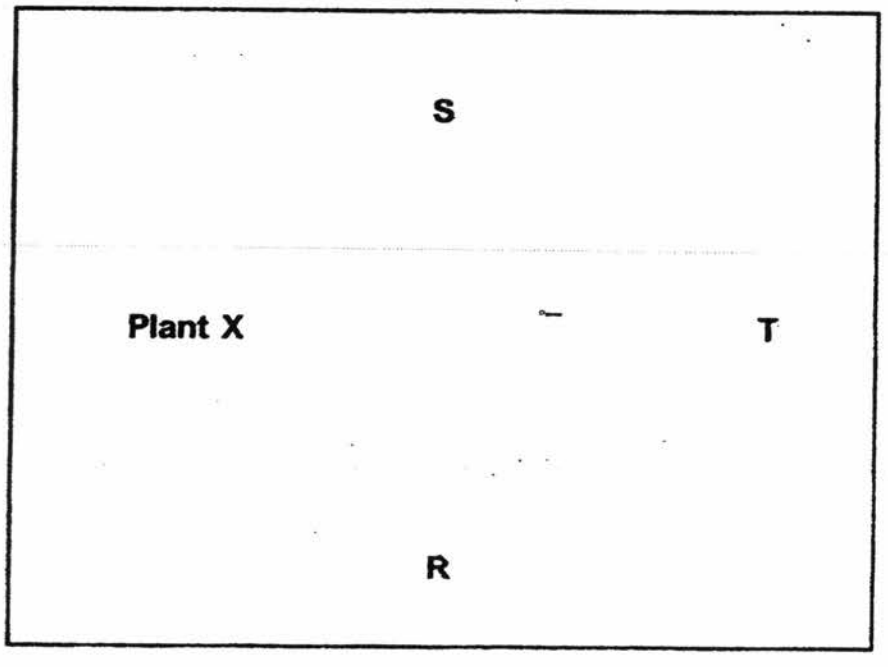
_____

_____

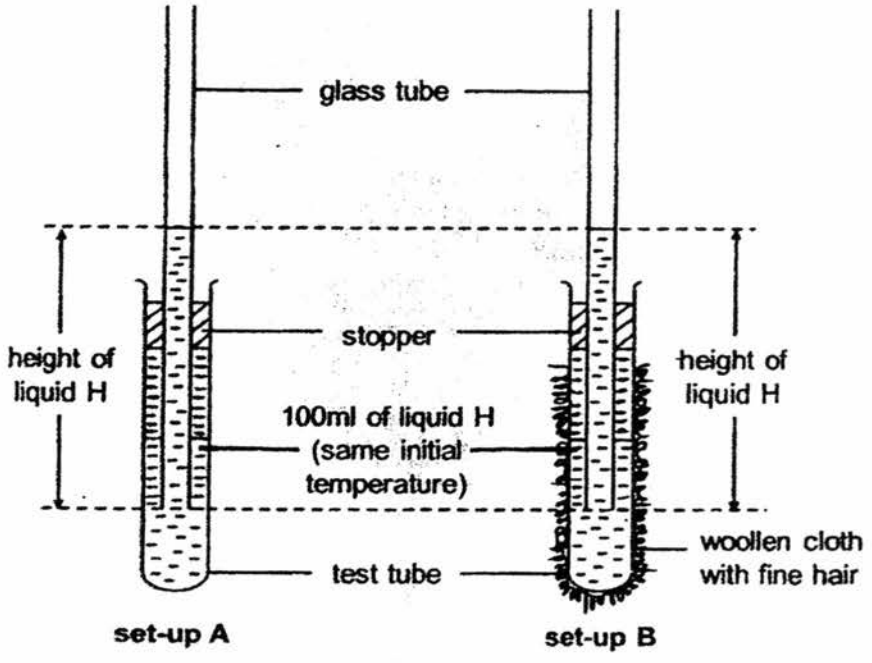
32. Wei Xiang conducted an experiment to study the food relationships between some organisms by using leaves from plant X and three other organisms, R, S and T. The table below shows the results of the experiments conducted over a period of five days.

Experiment	Number of live organisms at the start of experiment				Number of live organisms at the end of experiment			
	Plant X	R	S	T	Plant X	R	S	T
1	10	0	3	0	10	0	0	0
2	10	3	0	0	5	3	0	0
3	10	3	0	3	0	0	0	3
4	0	3	3	3	0	0	2	2
5	0	0	3	3	0	0	0	0

In the space below, draw arrows to complete the food web for plant X, organism R, organism S and organism T. [2]



33. Vivian carried out an experiment using the set-up shown below. She covered the test tube in set-up B with some woollen cloth and added liquid H of the same temperature into both test tubes.

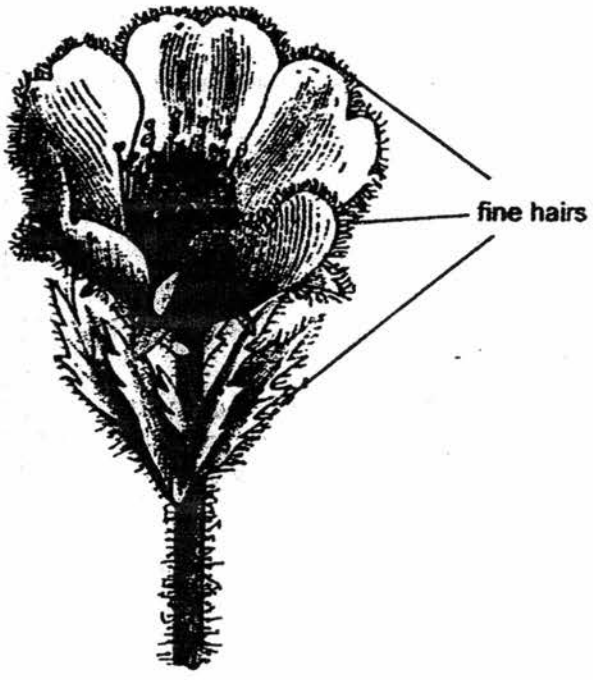


She then recorded the height of liquid H in the glass tube every 5 minute for 15 minutes. The results are shown in the table below.

	Height of liquid H (cm)	
Time (min)	Set-up A	Set-up B
0	2.0	2.0
5	1.6	1.8
10	1.3	1.7
15	0.8	1.5

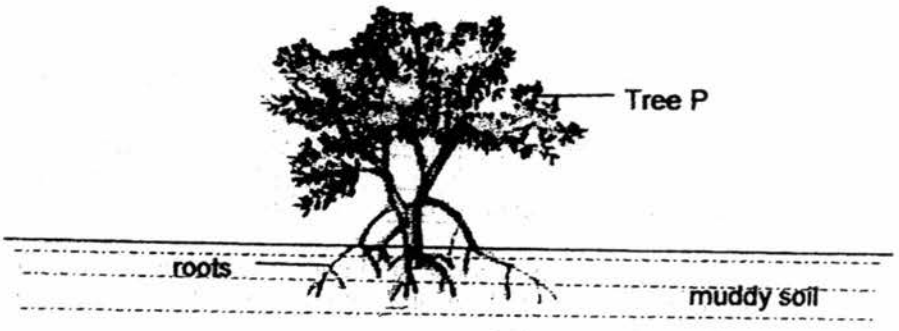
(a) Based on the information above, which set-up contains liquid with a lower temperature after 15 minutes? Explain. [2]

The picture below shows a flowering plant G found in an environment with very low temperatures. It is observed that all the parts of the plant are covered with fine hairs.

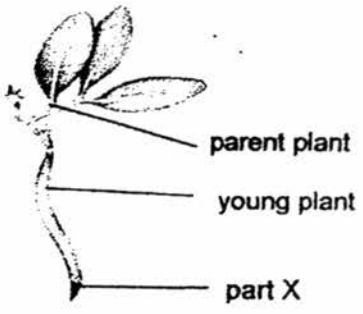


(b) **Explain how the fine hairs help the plant to survive in its cold environment.** [2]

34. Trees P are found in muddy swamps. They have special roots that enable them to survive in the swamps.



Another adaptive feature of Tree P is the way in which it reproduces. The seeds of Tree P start to grow into a young plant while they are still attached to the parent plant as shown in the diagram below.



(a) During certain seasons, the young plant drops into the mud near the parent tree and starts to grow. Explain how the location of the young plant is a disadvantage for it. [1]

_____

_____

(b) During high tide, the young plant floats on the water. State a most likely physical characteristic of part X. [1]

_____

(c) Tree P is observed to produce many young plants at a time. Suggest a reason how this is an advantage for Tree P. [1]

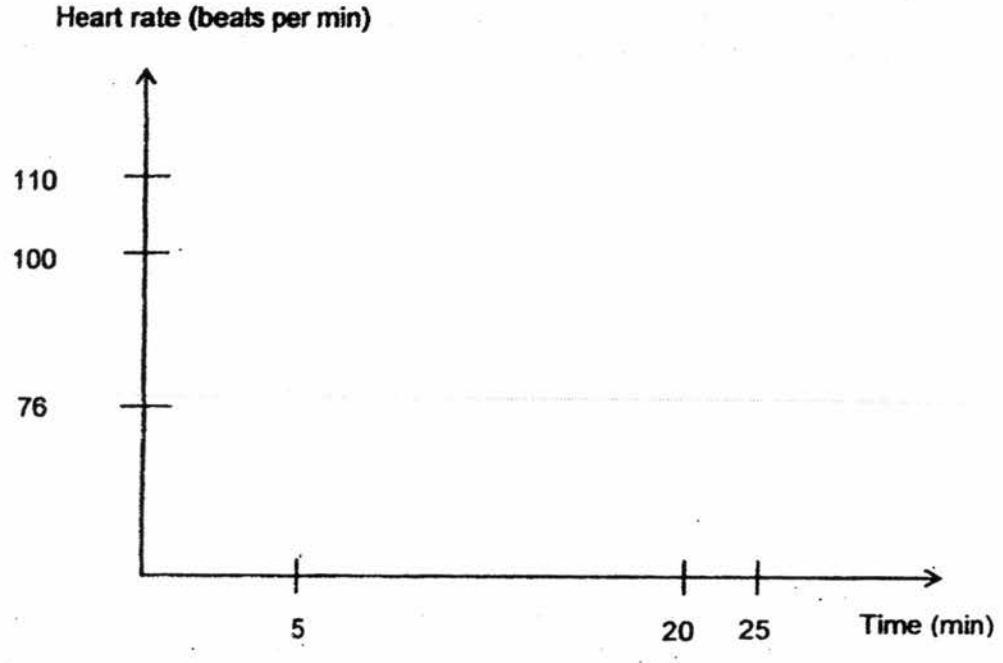
_____

_____

35. Danielle measured her heart rate at three points during 3 activities, standing still, jogging and immediately after jogging. She recorded her heart rate for the three activities in the table as shown below.

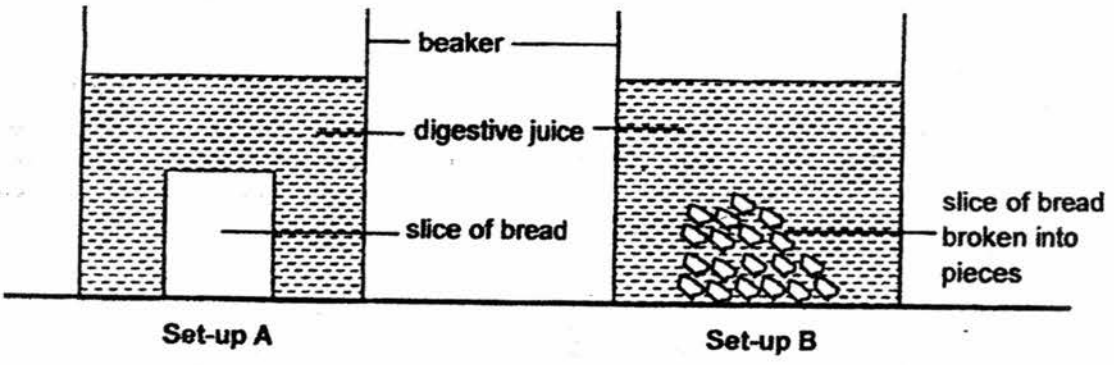
	Activity	Heart rate (beats per min)	Time (min)
(i)	standing still	76	5
(ii)	jogging	110	15
(iii)	immediately after jogging	100	5

(a) Complete the line graph below to show Danielle's heart rate during the three activities in this respective order – standing still, jogging and immediately after jogging. [1]



(b) On the graph that you have drawn in part (a), label with a letter "X" to show the time when Danielle started jogging. [1]

36. Raju conducted an experiment using the set-ups shown below.

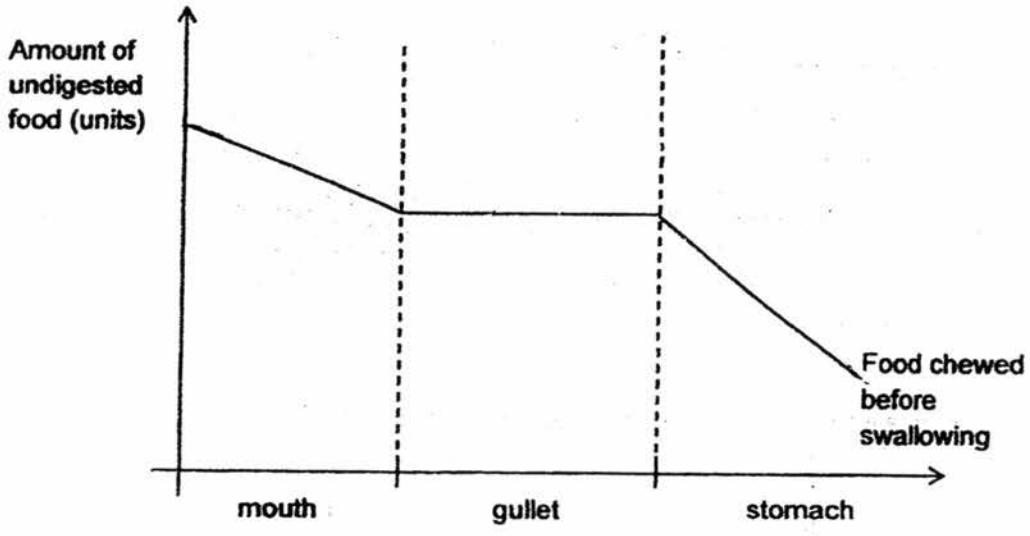


He measured the mass of the bread after 1 hour and the results are shown in the table below.

Setup	Mass of bread (g)	
	Before experiment	After experiment
A	5	3
B	5	1

(a) Using the information given, explain the results from the table above. [1]

The graph below shows the amount of undigested food in some parts of animal X's digestive system after a meal.



Parts of the digestive system

(b) Draw on the graph above the amount of undigested food in each part of the digestive system if the food has not been chewed before swallowing. [1]

37. During the process of human reproduction, many millions of sperms are released at a time.

(a) Give a possible reason for the release of millions of sperms. [1]

_____

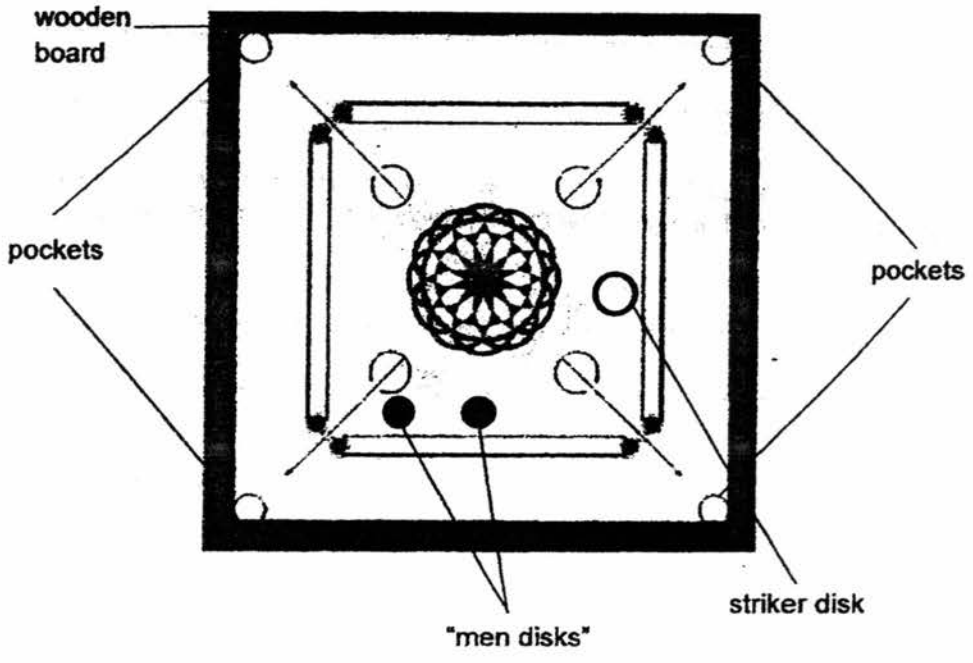
_____

(b) State the organ which produces the sperms. [1]

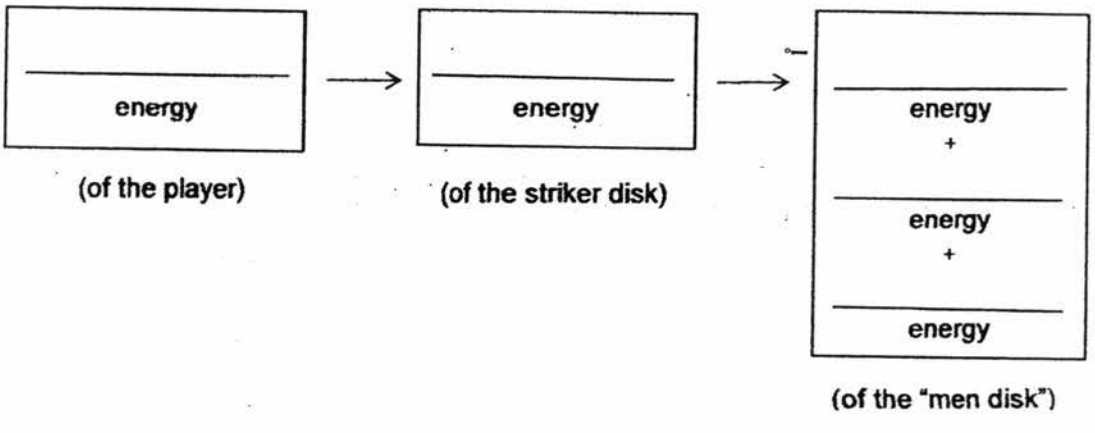
_____

_____

38. In the game of carom, a striker disk is flicked with the finger to hit small disks called "men disks" and shoot them into pockets at the four corners of a wooden board.



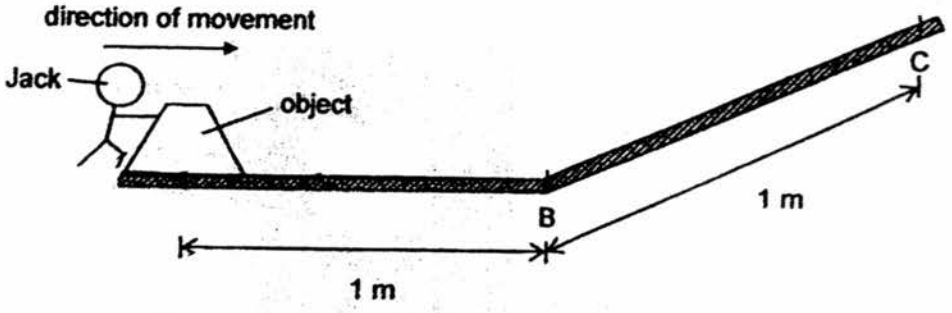
(a) State the energy conversions that take place from the time the player flicks the striker disk until the striker disk hits a "man disk". [1]



(b) If the player changes his striker disk to a heavier one and the striker disk travels at the same speed as in part (a), explain how it would affect the "men disk"? [2]

(c) It was observed that the "men disk" slowed down after some time. Using the concept of energy conversion, provide a reason for the observation. [1]

39. Jack pushed an object over the same type of surface from points A to C as shown in the diagram below.



(a) In the diagram above, **draw and label any two forces** that were acting on the object at A as Jack was pushing it. [1]

(b) Based on the diagram above, explain why Jack needed more force to push the object from B to C than from A to B. [1]

_____

_____

(c)(i) Suggest one method to allow Jack to reduce the amount of force needed to push the object from A to B. [1]

_____

_____

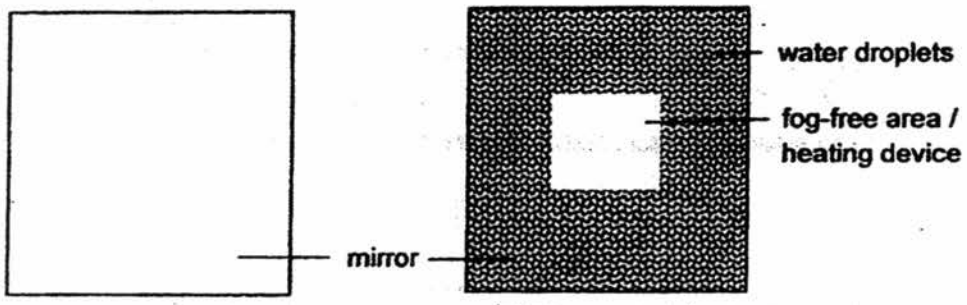
(ii) Explain, in terms of forces, how your method stated in (c)(i) will reduce the amount of force needed to push the object from A to B. [1]

_____

_____

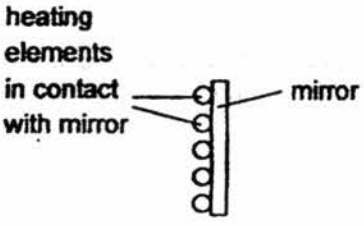
_____

40. Rena is building an anti-fog mirror which uses a heating device to prevent it from fogging when taking a hot shower. Fogging occurs when water droplets are formed on the surface of the mirror.



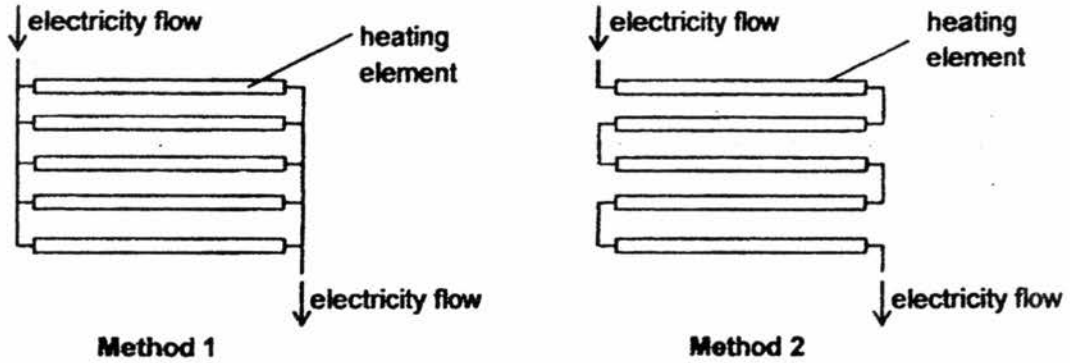
Before hot shower

After hot shower



Side view of fog-free area

Rena is deciding between two possible methods to wire the heating elements in the heating device as shown below.



Method 1

Method 2

(a) What is one advantage of Method 1 compared to Method 2? [1]

_____

_____

In deciding the material to be used for the mirror, Rena tested three different types of material, K, L and M, for heat and electrical conductivity. Her results are shown in the table below.

Material	Heat conductivity	Electrical conductivity
K	poorest conductor	does not conduct electricity
L	poor conductor	conducts electricity
M	good conductor	conducts electricity

(b) Rena chose Material K to make the mirror. Explain an advantage and a disadvantage for choosing that material. [2]

Advantage:

_____

_____

_____

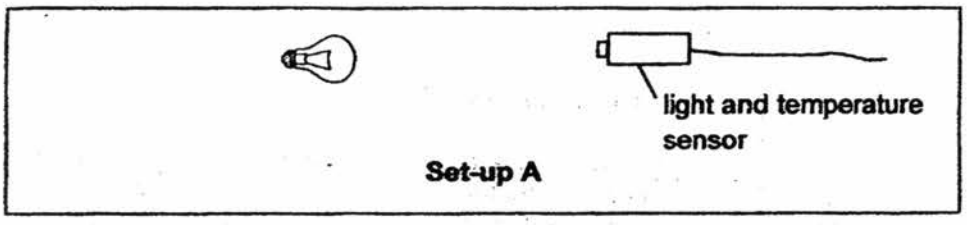
Disadvantage:

_____

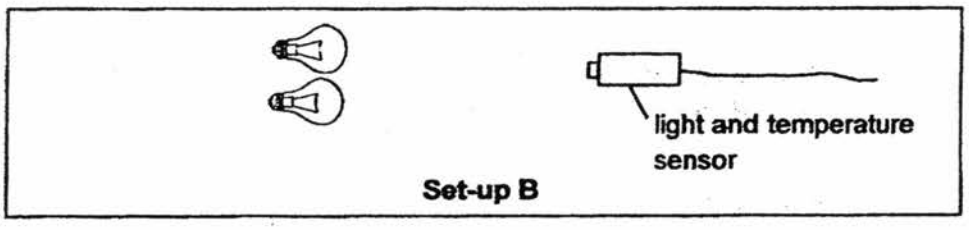
_____

_____

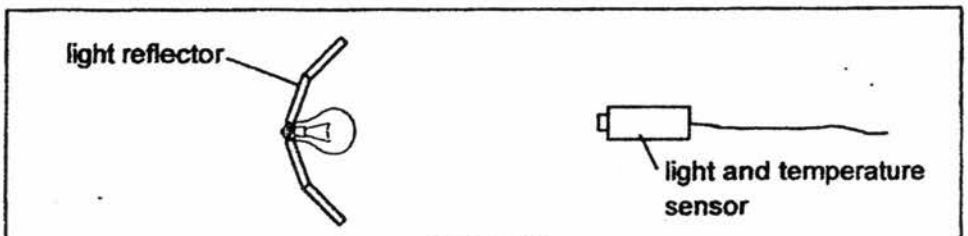
41. An experiment was conducted to determine the difference between one bulb, two bulbs and a bulb with a light reflector for use in a classroom as shown in the diagrams below.



Set-up A



Set-up B



Set-up C

The results are shown in the table below.

Set-up	Amount of light detected (lux)	Temperature (°C)
A	200	31
B	400	34
C	400	31

The ideal amount of light for a classroom is between 350 lux to 400 lux.

(a) Using the information given above, state & explain two advantages of using a light with a light reflector to help to save energy. [2]

Advantage 1:

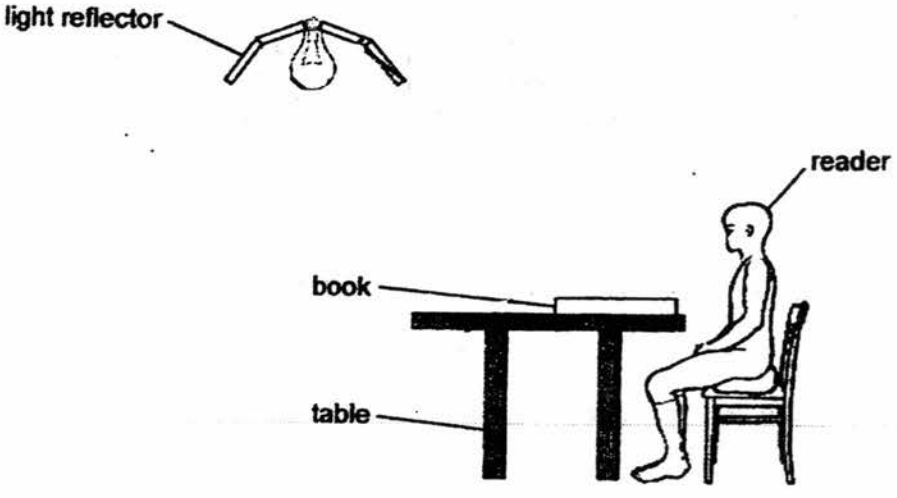
Advantage 2:

_____

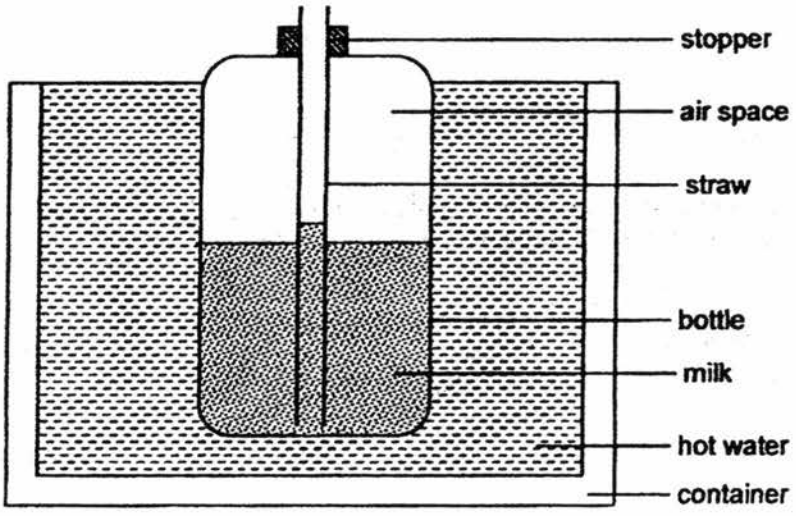
_____

_____

(b) In the diagram below, draw a path of light to show how the light reflector works by lighting the book **brighter** for the reader. [1]



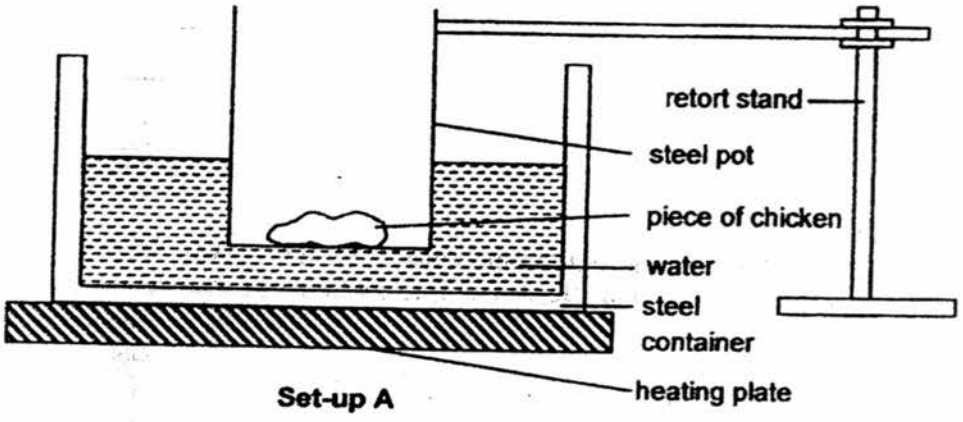
42. Athena wanted to warm up a bottle of milk. She placed the bottle in a container of hot water as shown in the diagram below.



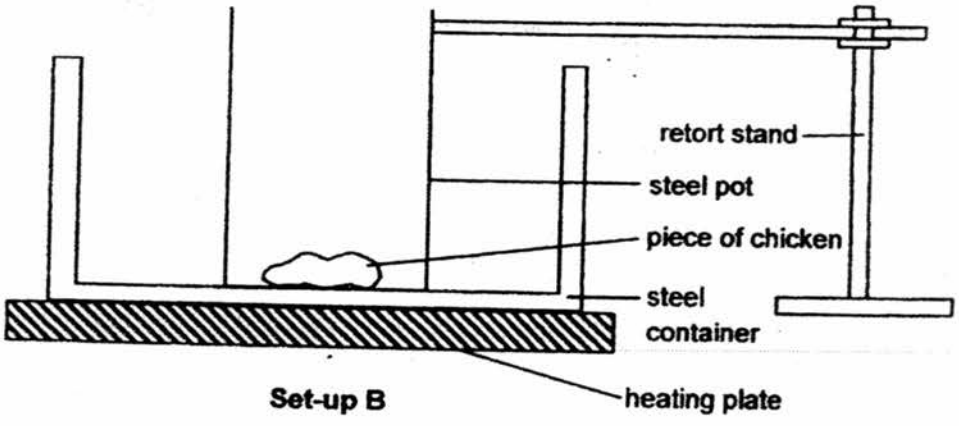
After a few seconds, she noticed some milk was rising up the straw and flowing out of it.

Explain why the milk flowed out of the straw. [2]

43. Gordon used 2 set-ups to cook a piece of chicken each as shown below.



Set-up A



Set-up B

Gordon used a temperature sensor to measure the temperature of the piece of chicken meat and heated both set-ups on medium heat for 30 minutes. He then repeated his experiment using high heat. His results are shown in the table below.

Medium heat used		
Set-up	Temperature of piece of chicken (°C)	
	Initial	After 30 mins
A	5	100
B	5	250

High heat used		
Set-up	Temperature of piece of chicken (°C)	
	Initial	After 30 mins
A	5	100
B	5	375

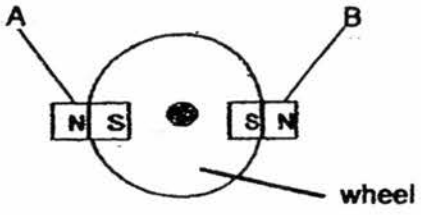
Explain why the temperature of the piece of chicken in set-up A will never go above 100°C. [2]

_____

_____

_____

44. Timothy wanted to find out the properties of a bar magnet. He attached two pieces of strong bar magnets, A and B, to a wheel as shown below.



top view of the wheel

The wheel is fixed to a board in the middle but is able to rotate freely as shown below. The iron bar was attached to a spring that allowed it to move from its original position.

When the wheel was placed in the set-up as shown above, the bulb in the circuit was lit as shown in diagram 1.

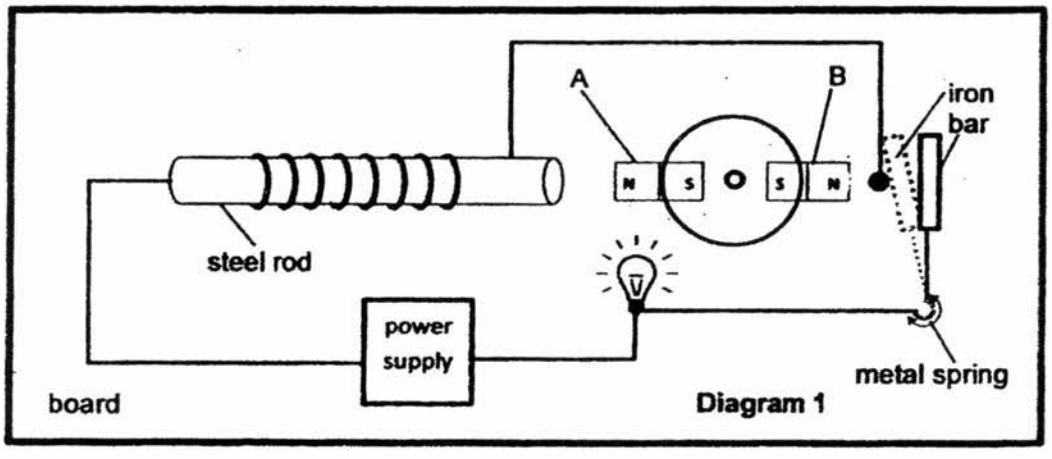


Diagram 1

(a) Explain how the light bulb was lighted up in Diagram 1. [1]

_____

_____

Timothy noticed that the wheel moved to the position as shown in Diagram 2 below after the circuit was closed in Diagram 1.

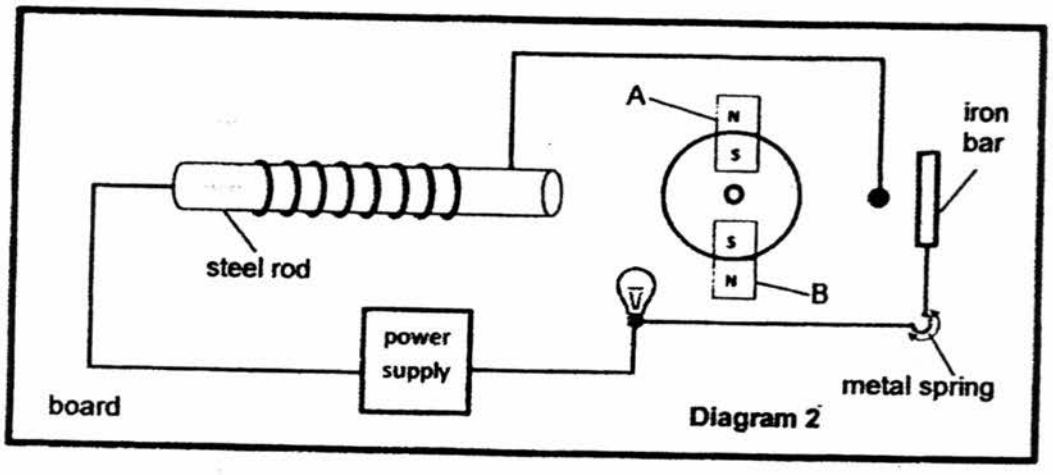


Diagram 2

(b) Explain why the bulb in Diagram 2 did not light up. [2]

END

YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**NANYANG PRIMARY**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIMINARY EXAMINATION**

Booklet A

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

Booklet B

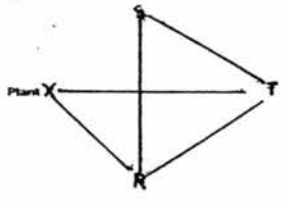
Q31a Process X is decomposition. When decomposition occurs, it will take in oxygen and give out carbon dioxide which will turn the limewater cloudy.

Q31b The concentrated sugar solution prevents decomposition from taking place.

Q31c (i) Decomposition needs moisture to take place and since there was no moisture decomposition could not take place and give out carbon dioxide which turns the limewater cloudy.

(ii) Moisture is needed.

Q32



Q33a The height of liquid A is lower. So liquid in A will lose more heat to the surroundings.

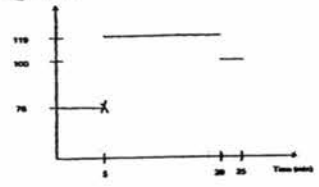
Q33b The fine hairs will trap a layer of air that is a poor conductor of heat and will conduct the heat away from the flowering plant slower allowing the plant to stay warm for a longer amount of time in the cold environment.

Q34a The young plant will have to compete with the parent plants for mineral salts, space, water and sunlight.

Q34b Part X is light and traps air.

Q34c This increases the changes of the young plant growing into an adult.

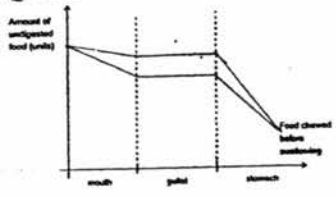
Q35a



Q35b See above

Q36a The broken slice of bread had a larger surface area in contact with the digestive juice so the broken pieces could get digested faster than the slice so after one hour the mass of bread in set-up B is less than set-up A.

Q36b



Q37a This increases the chances of a sperm fertilising the egg.

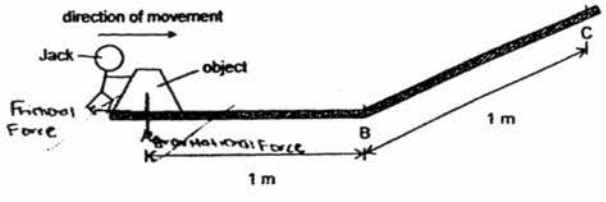
Q37b The testes.

Q38a Kinetic → Kinetic → Kinetic + Heat + Sound

Q38b When the striker disk has a greater mass the kinetic energy is greater and will hit the man disk with greater impact.

Q38c Some of the kinetic energy of the "men disk" was converted into heat and sound energy.

Q39a



Q39b When the block was travelling from B to C it was opposing gravity.

Q39c (i) Add some wheels to object A.
(ii) Allowing the block to move more easily hence requiring less force to push.

Q40a Method 1. Since the heating elements are arranged in parallel, this ensures that each heating element can be heated to its maximum termperature allowing he mirror to heat up faster and more so less water vapor will condense on it.

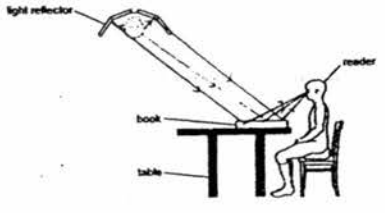
Q40b Advantage: She will not get electrocuted or burned if she touches that part of the mirror.

Disadvantage: It is the poorest conductor of heat so the heat will transfer to the mirror slower.

Q41a Advantage 1: The reflector will reflect the light from the lightbulb, allowing maximum light to be detected. Since the amount of light detected for one bulb with a reflector is the same as using 2 light bulbs, it saves energy as there is no need for the second light bulb to produce same amount of light.

Advantage 2: The bulb produces less heat than 2 bulbs even though the amount of light detected was the same resulting in a cooler classroom.

Q41b



Q42 The air in the bottle gained heat from the hot water and was expanding and pushing the milk downwards the milk. The milk was entering the straw and displacing the air in the straw.

Q43 Water boils at 100°C and becomes steam and the steam will escape from the container and thus less heat is transferred to the chicken.

Q44a The magnet on the wheel could attract the iron bar causing a closed circuit to be formed allowing electricity to pass through lighting of the bulb.

Q44b The iron rod became an electromagnet and the north pole of the rod was facing the north pole of the magnet repelling each other.

End