PSLE Index Number: | | | | | | — | |

MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

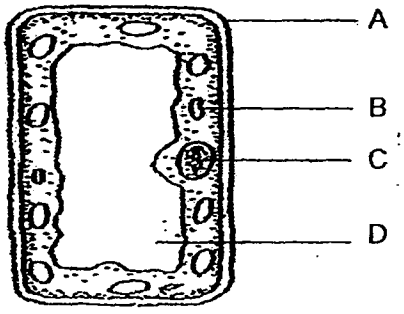
22 AUGUST 2014

BOOKLET A

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 (OAS). (30 x 2 marks)

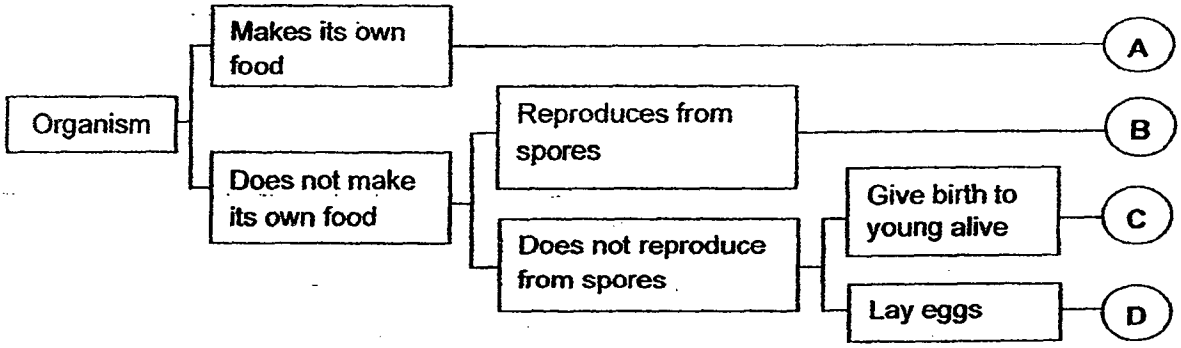
1. Javan ate a delicious mango and decided to plant the mango seed in his garden. He hopes it will grow into a mango tree that bears sweet fruits like the one he has just eaten.

Which part of the cell will enable the new mango tree to bear the type of fruits that Javan hopes for?



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

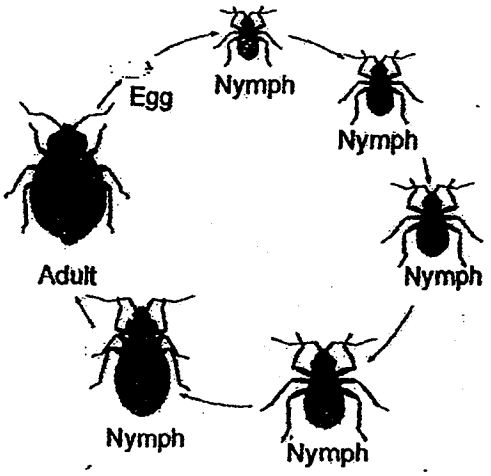
2. Study the flow chart below.



Based on the flowchart, which one of the following statements is <u>not</u> true?

(1) Organism A is a plant.
(2) Organism B is a fern.
(3) Organism C is a mammal.
(4) Organism D is a mammal.

3. The diagram below shows the development and life cycle of an insect.



Based only on the information gathered above, which one of the following statements about the insect is definitely true?

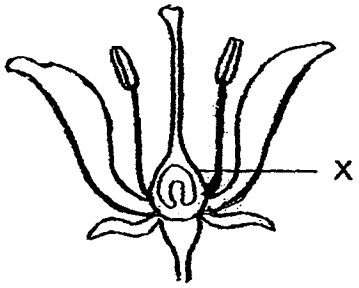
(1) It lays eggs on land.

(2) It has a 7-stage life cycle.

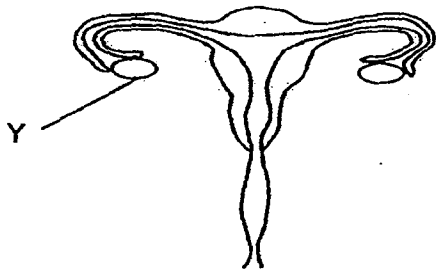
(3) Its young resemble the adult.

(4) Its life span is at least 7 days long.

4. Study the reproductive parts of the flowering plant and female human below.



Reproductive parts of flowering plant



Reproductive parts of female human

Based on the functions of X and Y, which one of the following best describes their similarity?

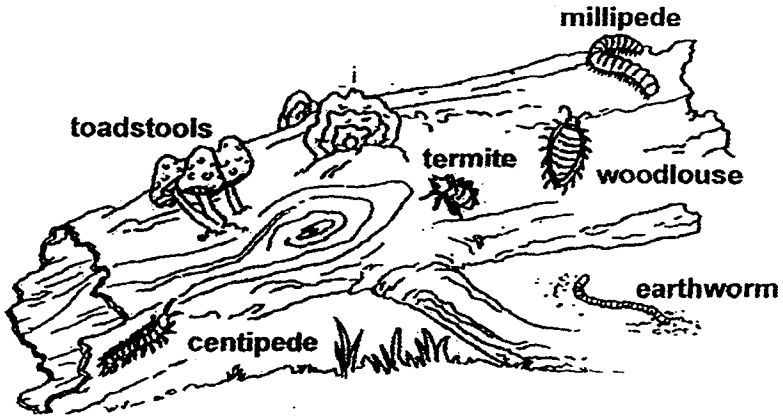
(1) Both are the female sex cells.

(2) Both contain the female sex cells.

(3) Both will be fertilised by the male sex cells.

(4) Both will develop into a new organism after fertilisation.

5. Joel spotted a rotting log community as shown in the diagram below. He recorded the following statements about the rotting log in his journal.



A: The rotting log was once alive.

B: The termite and woodlouse help speed up decomposition.

C: The toadstool and millipede found on the rotting log were decomposing the log.

Which of the above statements are correct?

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

6. The picture below shows the fruit and seeds of the Fruit X. The seeds have wing-like seed coats and the fruits have capsules which are hard and dry when it is ready for dispersal.

Fruit X

How does the Fruit X disperse its seeds?

A: By wind

B: By splitting

C: By animal

(1) A only

(2) B only

(3) A and B only

(4) A and C only

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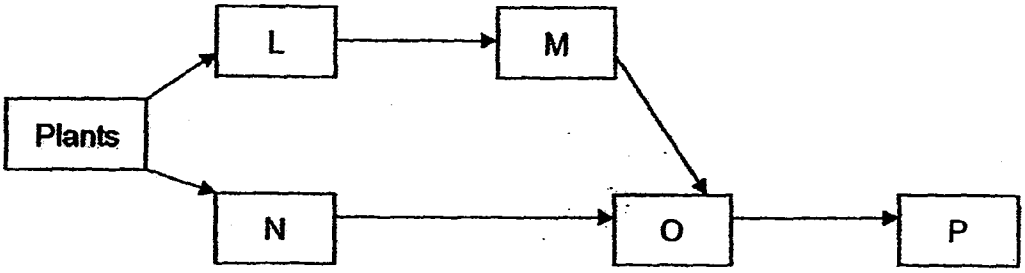
7. L, M, N, O and P are organisms found in a certain community.



Which one of the following best represents how populations of organisms M and N would immediately be affected if population of organism L is wiped out by a disease?

	Organism M	Organism N
(1)	decrease	increase
(2)	increase	decrease
(3)	decrease	remains the same
(4)	remains the same	decrease

8. Which one of the following about the gaseous exchange of a plant and a fish is correct?

	Plant	Fish
(1)	Involves taking in of carbon dioxide only	Involves taking in of oxygen and giving out of carbon dioxide
(2)	Involves taking in and giving out of carbon dioxide and oxygen	Involves taking in of oxygen and giving out of carbon dioxide
(3)	Takes place on the leaves	Takes place in the mouth
(4)	Water-carrying tubes transport carbon dioxide to all parts of the plant	Blood vessels transport carbon dioxide to all parts of the body

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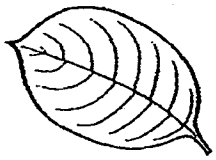
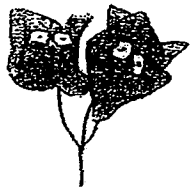
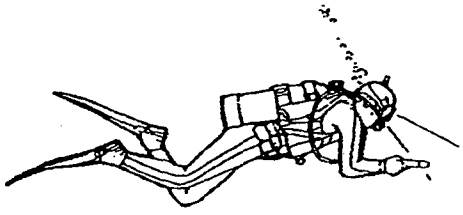
9. Which one of the following best describes the functions of the structural adaptation in the leaves of the following four plants?

	 **needle-like leaves**	 **thick succulent leaves**	 **waxy leaves**	 **purple leaves around small white flowers**
(1)	self-defence	food storage	reduce water loss	absorb more light
(2)	prevent water accumulation	water storage	self-defence	absorb more light
(3)	reduce water loss	water storage	prevent water accumulation	help attract pollinators
(4)	hook on support	prevent water accumulation	absorb more light	help attract pollinators

10. Study the picture of the diver.



From which animals did Man most likely get the idea of the different equipment used by the diver to increase his efficiency in moving underwater?

A: Frog

B: Tadpole

C: Water stick insect

D: Great diving beetle

(1) A and C

(2) A and D

(3) B and C

(4) B and D

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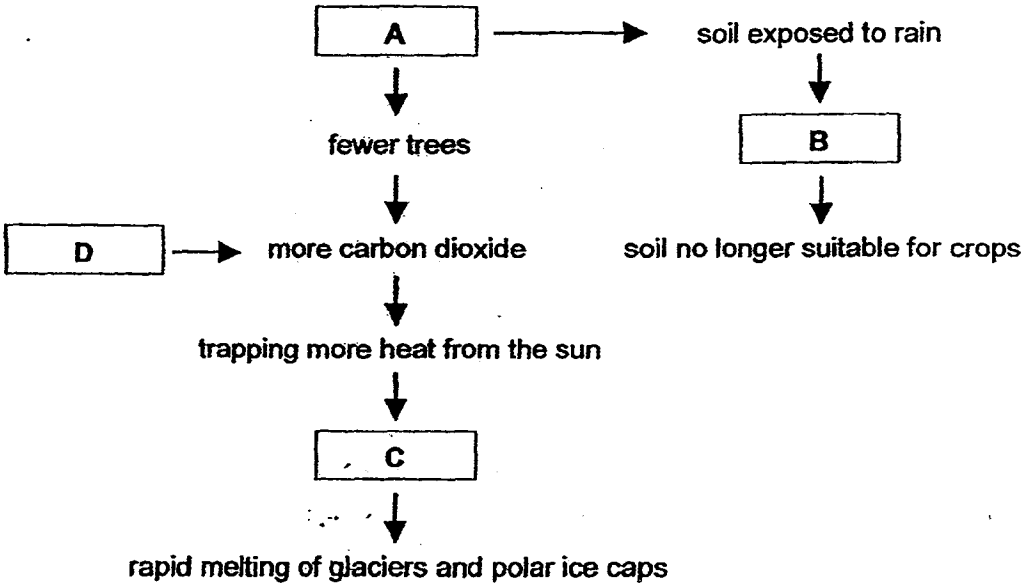
11. The diagram below shows the negative impacts on the environment due to some human activities.



Which one of the following best represents A, B, C and D?

	A	B	C	D
	Deforestation	Soil erosion	Global warming	Soil erosion
	Burning fossil fuel	Burning fossil fuel	Deforestation	Global warming
	Global warming	Deforestation	Burning fossil fuel	Soil erosion
(4)	Deforestation	Soil erosion	Global warming	Burning fossil fuel

12. Food relationships between three organisms (X, Y and Z) are shown in the food chain below.

$$X \rightarrow Y \rightarrow Z$$

Which one of the following statements about the above food chain is true?

A: Y is both a prey and predator.

B: X gets its energy from the sun.

C: Z depends on X indirectly for food.

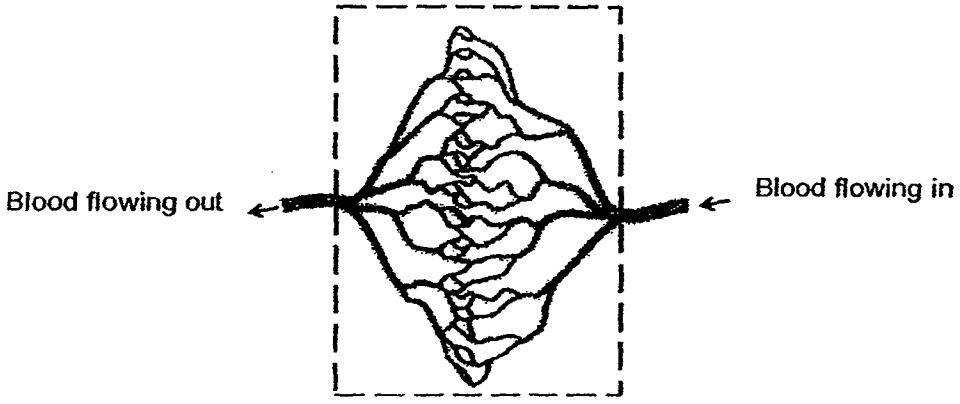
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

13. Study the diagram below.



Blood vessels in the small intestine

Which one of the following correctly states the changes in substances carried by the blood as it flows out of the small intestine?

	Oxygen	Carbon dioxide	Digested food
(1)	Decreases	Increases	Increases
(2)	Increases	Decreases	Unchanged
(3)	Increases	Decreases	Decreases
(4)	Decreases	Increases	Unchanged

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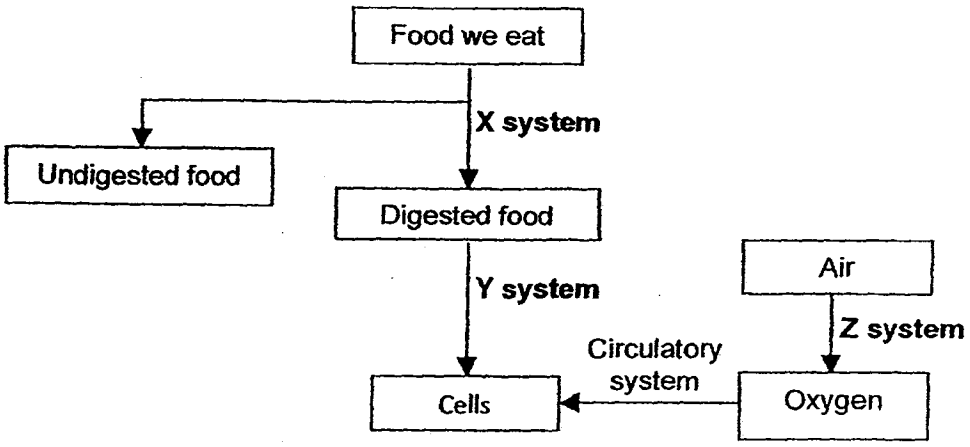
14. Study the flow chart below.



Identify the three systems, X, Y and Z.

	X system	Y system	Z system
(1)	digestive system	digestive system	respiratory system
(2)	digestive system	circulatory system	respiratory system
(3)	respiratory system	circulatory system	digestive system
(4)	respiratory system	digestive system	circulatory system

15. Rachael cut out three stalks of white flowers, A, B and C, from the same plant and placed each of them in identical beakers containing red-coloured water at different temperatures. The temperature of the red-coloured water was maintained throughout the experiment.

Rachael observed the flowers over the next few days and recorded her results in the table below.

Flower	A	B	C
Temperature of red-coloured water (°C)	15	20	25
Time taken for flower to turn red (days)	4	2.5	1.5

Based on the information given above, which one of the following statements is **incorrect**?

(1) The stem of the flower contains water-carrying tubes.

(2) The petals of the flower contain water-carrying tubes.

(3) The type of flower used affects the time taken for the flower to turn red.

(4) The temperature of coloured water affects the speed water is taken up by the flower.

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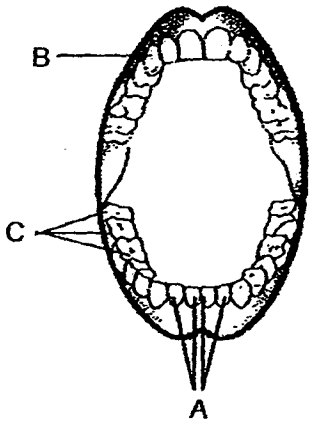
16. The diagram below shows the different types of teeth of a human. Humans need teeth to tear meat and grind vegetables.



The table below describes the function of each of the tooth type.

Tooth type	A	B	C
Function of tooth	picking up / cutting food	gripping / tearing food	grinding of food

The tables below shows the number of the different types of teeth found in animal P and Q.

Animal P

Tooth type	A	B	C
Upper jaw teeth	0	0	6
Lower jaw teeth	6	0	6

Animal Q

Tooth type	A	B	C
Upper jaw teeth	6	2	8
Lower jaw teeth	6	2	8

Based on the information above, what can we conclude about the two animals?

(1) Animal P and Animal Q are both herbivores.

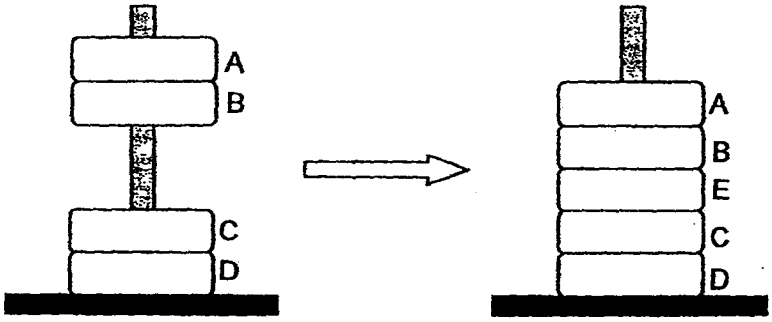
(2) Animal P and Animal Q are both omnivores.

(3) Animal P is an herbivore while Animal Q is an omnivore.

(4) Animal P is an omnivore while Animal Q is an herbivore.

(Go on to the next page)

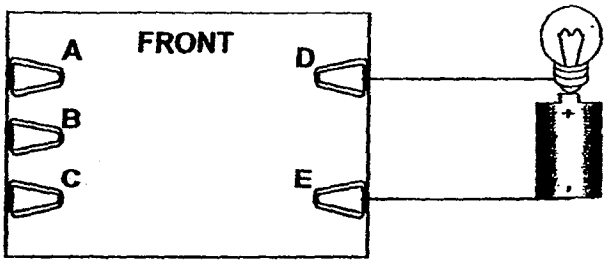
17. Jia Wen put four rings, A, B, C and D, through a wooden rod. A and B "floated" above C and D as shown below. Next, Jia Wen removed A and B. Then, she placed a new ring, E, before putting back rings A and B without flipping them over.



Which one of the following is possible?

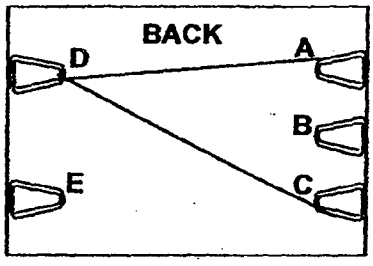
	ring magnet(s)	steel ring(s)	copper ring(s)
(1)	E	B, C	A, D
(2)	B, C	A, D	E
(3)	B, C	E, D	A
(4)	B, C, E	D	A

18. Kumar connected a battery and a bulb using a circuit card as shown below. The bulb lit up.

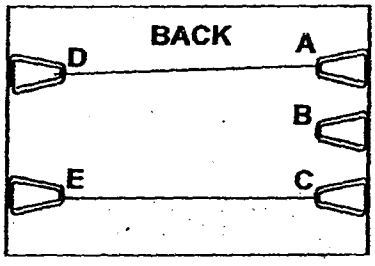


Which one of the following diagrams shows the correct arrangement of the wires at the back of the circuit card?

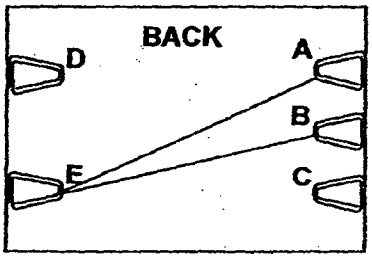
(1)



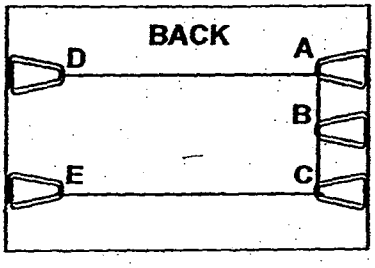
(2)



(3)



(4)



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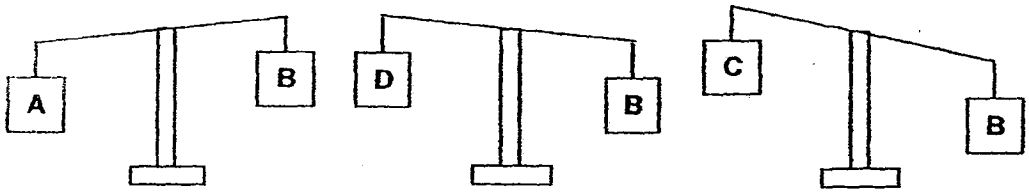
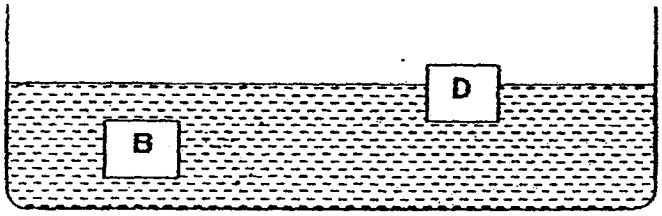
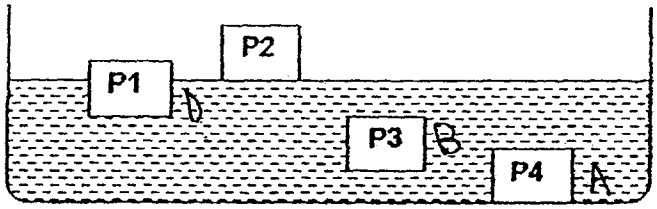
19. The diagrams below show the mass of four objects, A, B, C and D. They have the same volume.



The diagram below shows the positions of objects B and D when they are placed in water.



In the diagram below, P1, P2, P3 and P4 represent the positions of the objects (A, B, C and D) when placed in water.



Which one of the following shows the correct positions of Objects A and C when placed in water?

	Object A	Object C
(1)	P2	P1
(2)	P3	P1
(3)	P4	P2
(4)	P4	P3

(Go on to the next page)

20. The freezing point and boiling point of substances X and Y are shown below.

Substance	X	Y
freezing point (^{0}C)	43	6
boiling point (^{0}C)	181	80

Which of the following statements are true?

A: X is a solid at 40°C.

B: Y is a solid at 90°C.

C: X is a gas at 100°C.

D: Y is a liquid at 10°C.

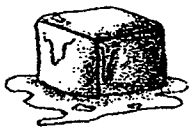
(1) A and B only

(2) A and D only

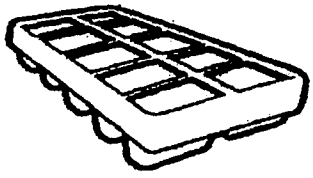
(3) B and C only

(4) C and D only

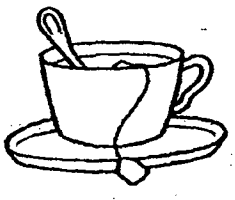
21. Which one of the following objects can be used to show the presence of water vapour in the air around us?

(1) 

ice left at room temperature

(2) 

a tray of water left in the freezer

(3) 

a cup of hot tea left at room temperature

(4) 

a can of cold drink left at room temperature

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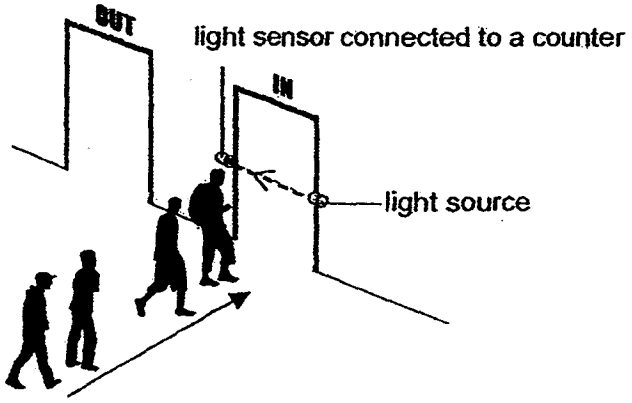
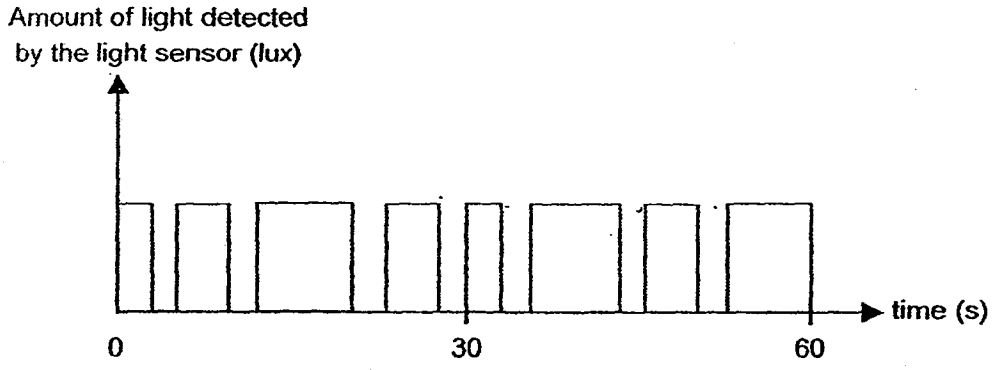
22. The set-up below uses a light sensor to count the number of people entering an office building.



Only one person can pass through the doorway each time. When a person is between the light source and the sensor, his body blocks the light from reaching the sensor.

The line graph below shows the amount of light detected by the light sensor over a period of 60 seconds.



Based only on the information given above, which one of the following statements is true?

(1) Eight people walked through the doorway in the 60 seconds recorded.

(2) Seven people walked through the doorway in the 60 seconds recorded.

(3) The light sensor detects light when someone walks through the doorway.

(4) The light sensor does not detect any light when no one passes through the doorway.

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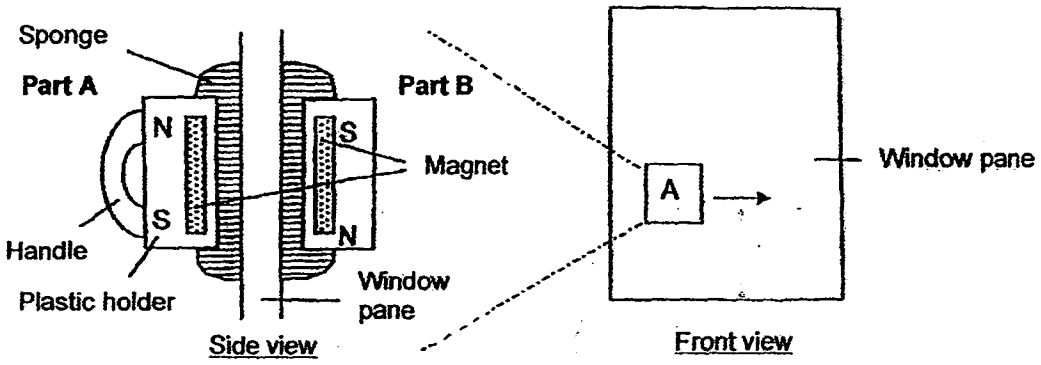
23. The diagram below shows a two-piece tool designed to clean both sides of a window pane at the same time.



When Part A moves over the inner surface, Part B follows it and moves over the outer surface.

What properties of a magnet are applied in this tool?

A: Magnets repel each other.

B: Magnets attract each other.

C: The pull of a magnet is strongest at its poles.

D: Magnetic force can pass through some materials.

(1) B only

(2) B and D only

(3) A, C and D only

(4) A, B and C only

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24. Diagram A shows a balloon inside a bottle with its opening stretched over the mouth of the bottle. Diagram B shows that the same balloon becoming slightly inflated with air after the bottle was placed in a container of ice cubes for some time.

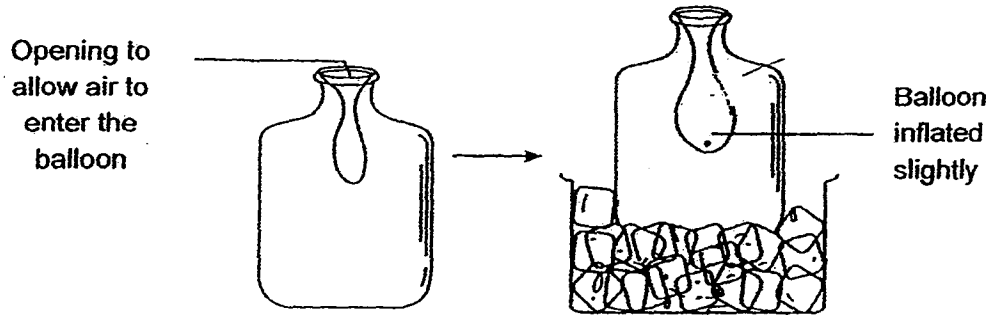


Diagram A **Diagram B**

Which one of the following explains why the balloon became inflated inside the bottle?

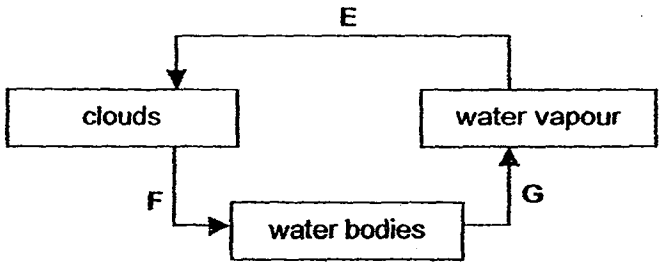
(1) The bottle contracted and caused the air in the bottle to take up more space.

(2) The bottle expanded and caused the air outside the bottle to enter the balloon.

(3) The air inside the bottle contracted and caused the air outside the balloon to enter the balloon.

(4) The air inside the balloon expanded and caused the air outside the balloon to enter the balloon.

25. Study the water cycle below.

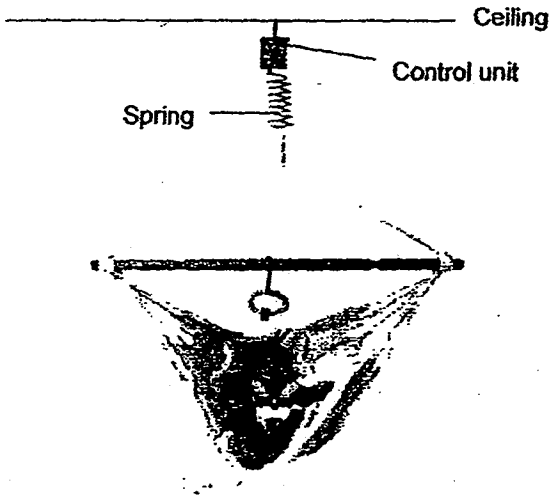


Which one of the following correctly describes E, F and G?

	No change in state	Change from gas to liquid	Change from liquid to gas
(1)	E	F	G
(2)	F	G	E
(3)	E	G	F
(4)	F	E	G

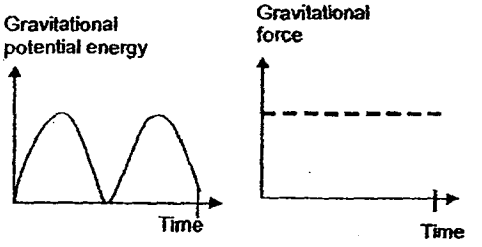
(Go on to the next page)

26. The diagram below shows an electric baby hammock that would move the baby up and down to the same height in order to put the baby to sleep. The control unit was set to move the spring up and down for a period of 1 hour.

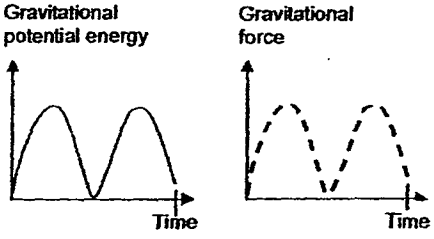


Which one of the following pairs of graphs correctly shows the gravitational potential energy possessed by the baby and the gravitational force that is acting on the baby over a period of time?

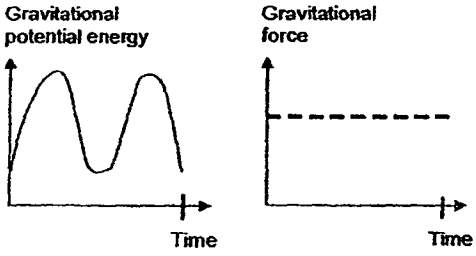
(1)



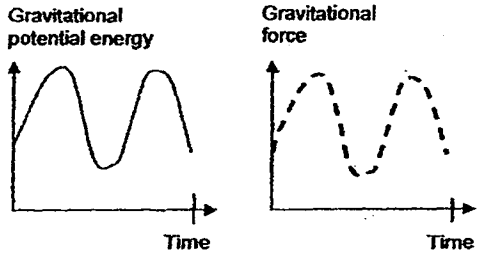
(2)



(3)



(4)



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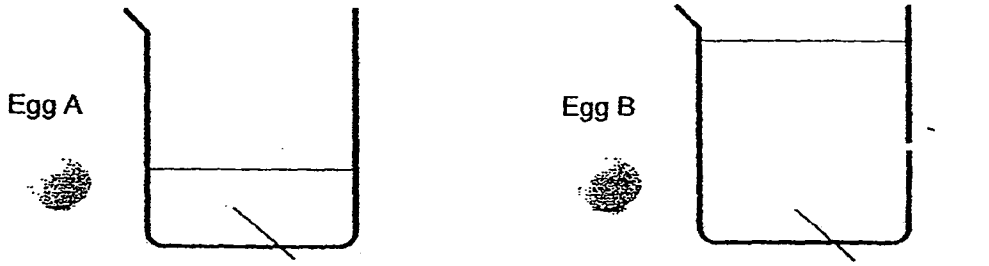
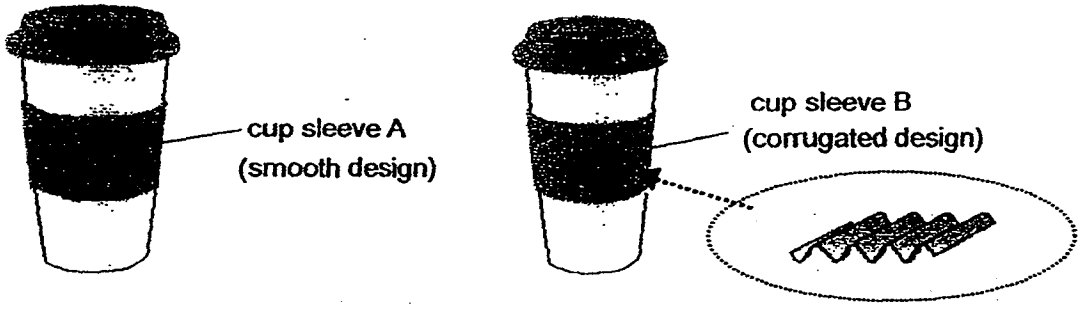
27. When egg is cooked, its watery uncooked egg white and yolk turn solid. A raw egg of the same size was placed into each of the beakers below.



After ten minutes, both eggs were removed from the beaker, cracked open and observed. What is the most likely observation and reason for John's observation?

	Observation	Reason
(1)	Both eggs are uncooked.	Heat cannot be transferred to the egg as the shell is a poor conductor of heat.
(2)	Egg B is less watery than Egg A.	More heat is transferred to cook the egg at a faster rate by a larger volume of water.
(3)	Egg A is less watery than Egg B.	More heat is transferred to cook the egg at a faster rate by a smaller volume of water.
(4)	Both eggs are cooked to the same degree.	The amount of heat transferred to both eggs is the same as water in both beakers have the same temperature.

28. Cup sleeves are used to reduce scalding of hands when hot drinks are served to customers on the go. There are two types of cup sleeves shown below. Both are made of the same material but have different designs.



Which one of the following best explains why cup sleeve B is more effective in preventing scalding?

(1) It has a larger surface area to lose heat to the surrounding air.

(2) It has a smaller surface area to lose heat to the surrounding air.

(3) There is less area of contact between the cup sleeve and the hand.

(4) There is more area of contact between the cup sleeve and the hand.

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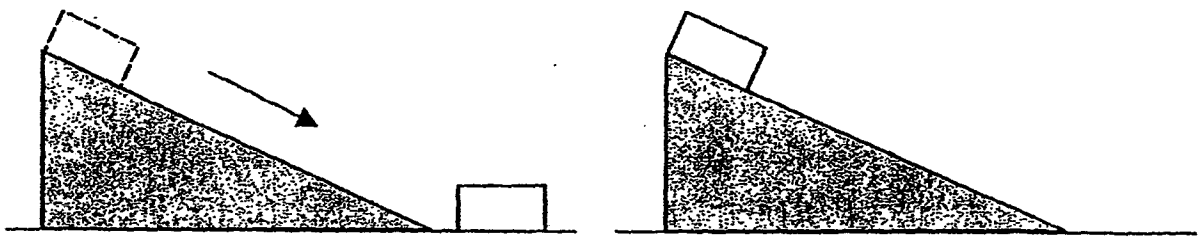
29. Two identical blocks are placed on 2 ramps of the same size. The blocks were released from the same height. The block in set-up A slid down but the block in set-up B did not move.



Set-up A **Set-up B**

Which one of the following statements are likely explanations for the observations?

A: The ramp in set-up A has a smoother surface than set-up B.

B: Frictional force is present between the block and the ramp in set-up B but not present in set-up A.

C: The block in set-up A had more gravitational potential energy than the block in set-up B before each was released.

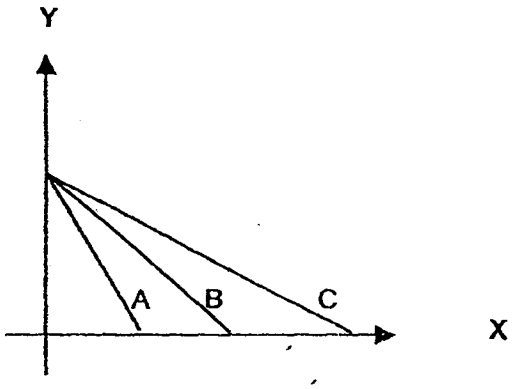
(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

30. Mary dried three identical towels, A, B and C, containing the same amount of water in the sun. Each towel was folded to expose a different amount of surface area. The three towels were weighed at regular intervals until all of them were dried. Mary plotted her results on a graph.



Which one of the following gives the most suitable labels for X and Y of the graph Mary plotted?

	X	Y
(1)	Surface area of towel (cm^2)	Mass of towels (g)
(2)	Surface area of towel (cm^2)	Time (min)
(3)	Time (min)	Surface area of towel (cm^2)
(4)	Time (min)	Mass of towels (g)

END OF BOOKLET A

PSLE Index Number: | | | | | | — | |

MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

22 AUGUST 2014

BOOKLET B

NAME: ( )

CLASS: Primary 6 ( )

14 questions

40 marks

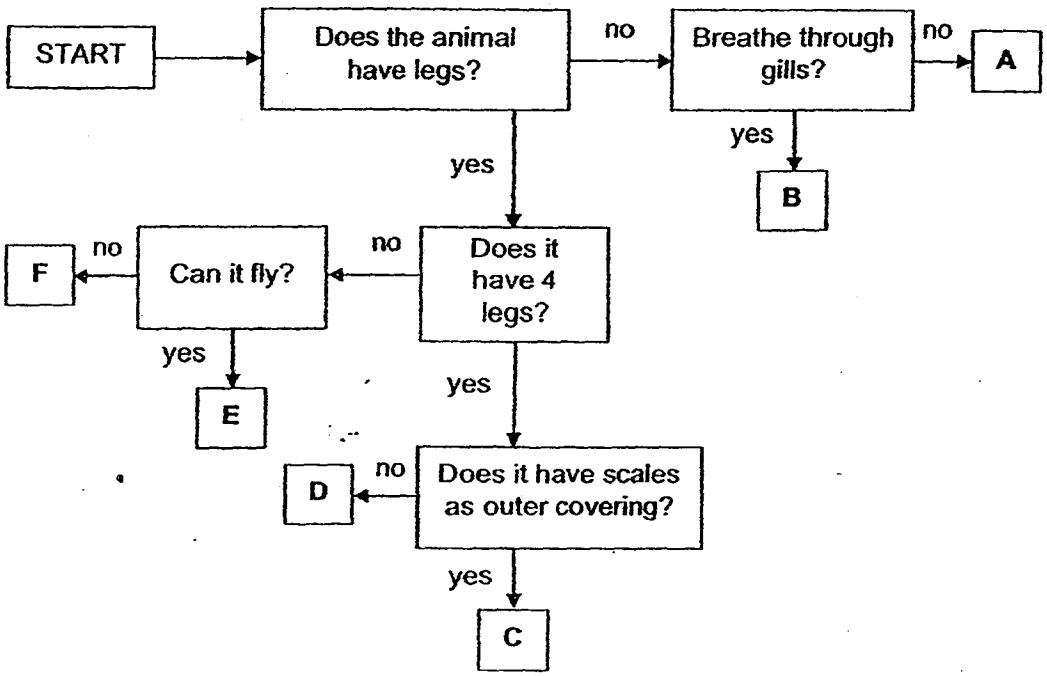
Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

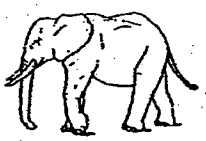
For questions 31 to 44, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. [40 marks]

31. Study the flowchart below. Letters A to F represent different animals.



(a) Based on the flowchart above, state one similarity of animals C and E. [1]

(b) Write down the letters (A, B, C, D, E or F) that best represent each of the following animals. [2]

Animal	Letter
 dolphin	
 eagle	
 elephant	
 penguin	

3

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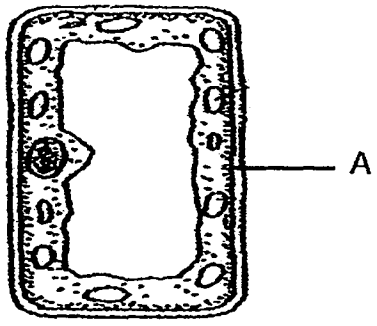
32. Ryan wanted to find out if a cell sample he had was from the skin of a potato. A potato is a underground storage stem. He observed the cell under a microscope and below is what he observed.



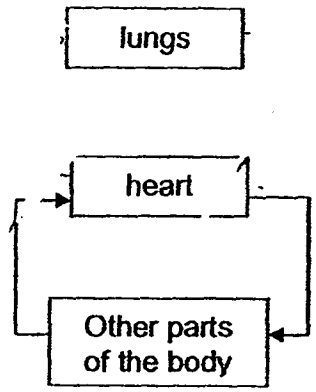
(a) Ryan concluded that the cell was not from the skin of a potato.

Explain how Ryan came up with the conclusion. [1]

(b) Name and state one function of the cell part labelled A. [1]

2

33. The diagram below represents the human circulatory system.



human circulatory system

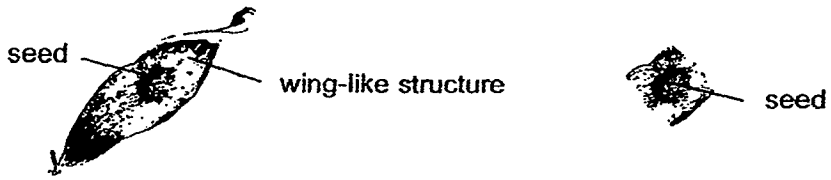
(a) Draw the two missing arrows (→) in the human circulatory system above. [1]

(b) Complete the comparison table between the plant and human transport systems. [2]

	Plant transport system	Human circulatory system
Name 2 important substances transported that is needed for survival	(i) _____ (ii) _____	(iii) _____ (iv) _____
Name the main transporting tube(s)	(v) _____ (vi) _____	(vii) _____

3

34. Chee Beng was given two identical fruits from plant G. He left the wing-like structure of one of the fruits intact and cut off the wing-like structure of the other fruit.



Chee Beng dropped the fruits, one at a time, from a height of 10-metres and recorded the time taken for the fruits to reach the ground. The results are shown in the table below.

	Time taken for fruit to reach the ground (s)			
	1st try	2nd try	3rd try	Average
Fruit with wing-like structure	8.6	8.1	8.5	8.4
Fruit without wing-like structure	4.5	4.8	4.2	4.5

(a) Based on the results above, explain how the fruit's wing-like structure helps the fruit in dispersal and prevention of overcrowding of its young. [1]

_____

_____

(b) Instead of dropping the fruits one at a time, Chee Beng was told that he should drop both the fruits at the same time for each try.

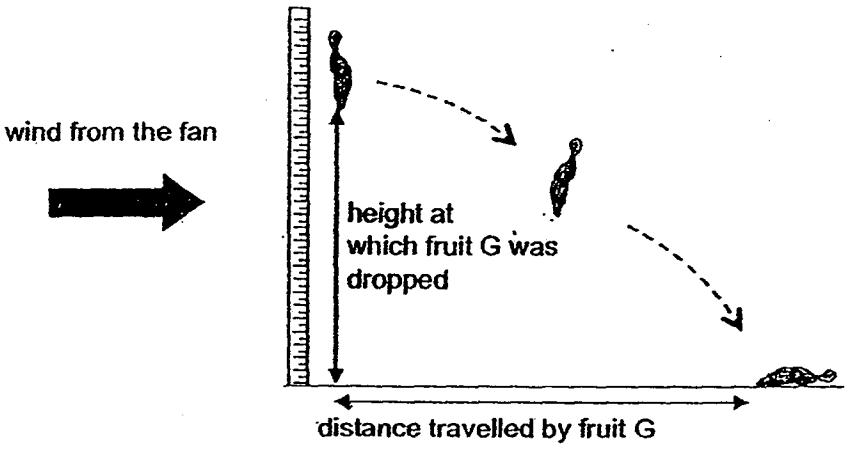
How would dropping both fruits at the same time make his experiment more valid? [1]

_____

_____

2

(c) Chee Beng also wanted to find out how the distance travelled by the fruit of Plant G is affected by the height at which it was dropped. He conducted the experiment as shown below.



Which of the following variables must be kept the same to ensure a fair test? Put a tick (✓) in the appropriate boxes. [1]

(i)	mass of fruit G	
(ii)	speed of wind from the fan	
(iii)	distance travelled by fruit G	
(iv)	height at which fruit G was dropped	

1

35. Flamingos live near water and have long necks and legs that are structural adaptated to help them feed and stay warm. They feed on tiny organisms found deep underwater.

(a) Explain how the flamingo s long neck help it in feeding. [1]

_____

_____

(b) Explain how the flamingo's long legs help it stay warm while feeding. [1]

_____

_____

In the beaks of flamingos are comb-like structures covered with fine hair. During feeding, flamingos would place their beaks upside down into the water and pump in water containing tiny organisms. Water pumped into their mouths passes through the comb-like structures before it is released.

Flamingo's head

(c) How do the comb-like structures help a flamingo in its feeding? [1]

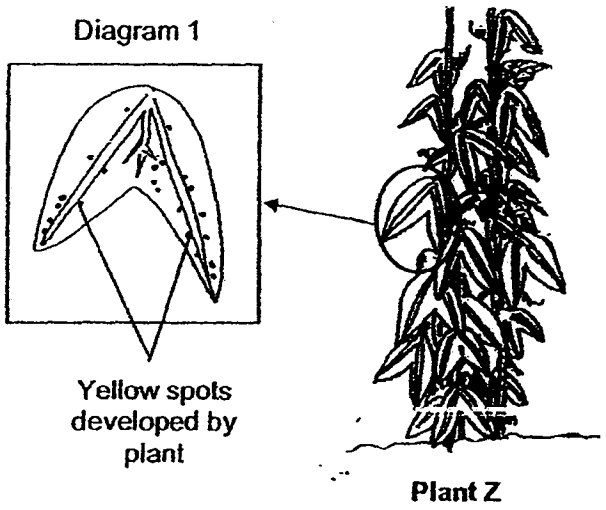
_____

_____

	3

(Go on to the next page)

36. Butterfly B lays its eggs on the leaves of Plant Z. This is to ensure that its young will have food to feed on once they hatch.



(a) Plant Z is able to develop yellow spots as shown in diagram 1. These spots look similar to the eggs of Butterfly B and are harmless to the plant.

Give a reason why this is an advantage for Plant Z. [1]

_____

_____

(b) Animal Y is commonly found on Plant Z and feeds on eggs and young of Butterfly B as well as the plant sap that Plant Z produces.

How do Plant Z and Animal Y benefit from this relationship? [2]

(i) Benefit for Plant Z: _____

_____

(ii) Benefit for Animal Y: _____

_____

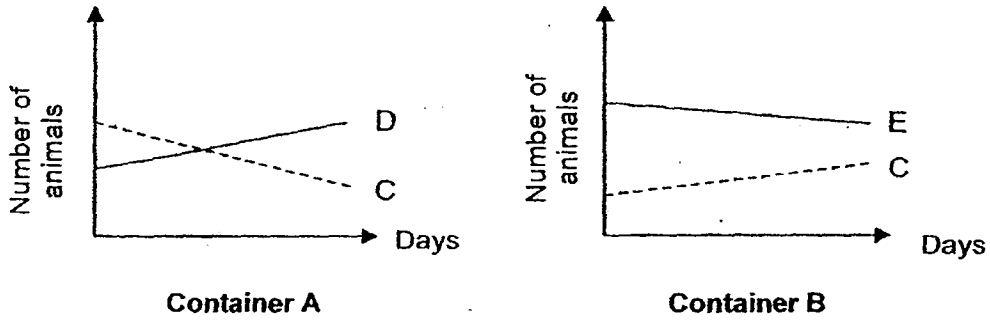
3

37. Fandi found 3 different types of animals, C, D and E, in the garden. He recorded his observations of the animals in the table below.

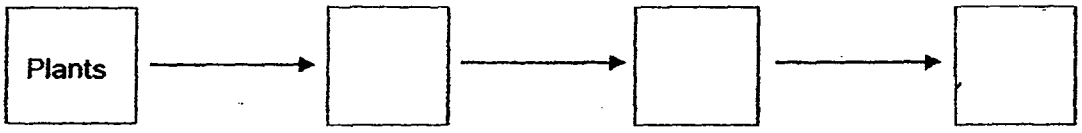
Animal	Observations
C	• Has 3 body parts • Has 6 legs
D	• Crawls with its 4 legs • Has a long tail
E	• Feeds on fruits only • Moves very slowly

Fandi placed animals, C and D, in Container A and animals, C and E, in Container B. Some plants and water were also placed in both containers. He also replenished the plants and water in both containers every day.

Fandi counted the number of animals left in each container daily, for a week, and plotted his results as shown in the graphs below. Throughout the experiment, he did not add any animals in the containers and no dead animals were found in both containers.



(a) Fill in the boxes with letters, C, D and E, to show a possible food relationship involving the 3 animals. [1]



(b) If plants were not added into container A, would the results as shown in the graph above be different? Give a reason. [1]

_____

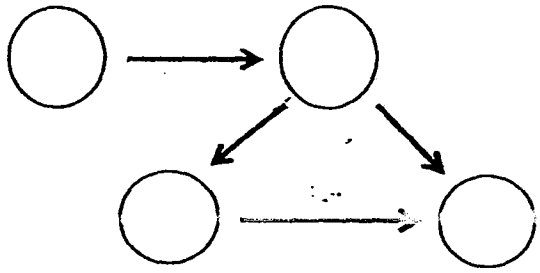
_____

	2

(c) Fandi studied another community and found 4 living things, V W, X and Y.
The following is information about these living things.

- X feeds on Y.
- Y is the predator of V.
- V gets its food from W.
- X feeds on V but not on W.

(i) Use the information to help you to complete the food web below.
Write the correct letter, V, W, X and Y, in each circle. [1]



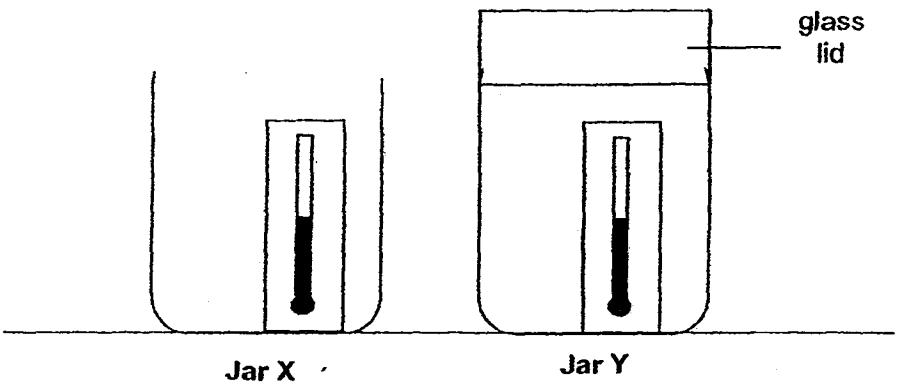
(ii) Fill in the correct living things (V, W, X or Y) into the table below. [1]

Prey only	Predator only

2

(Go on to the next page)

38. Marianne placed two glass jars, X and Y, in the sun. She placed a thermometer in each jar so that she could read the temperature of the air in the glass jars. Then, she covered Jar Y with a glass lid. The jars are set up as shown below.



After 15 minutes, Marianne observed that the temperature in Jar Y was higher than the temperature in Jar X.

(a) What is the positive environmental impact demonstrated in this experiment? [1]

_____

(b) Name the gas found in our atmosphere that is the main contributor of the environmental impact named in (a). [1]

_____

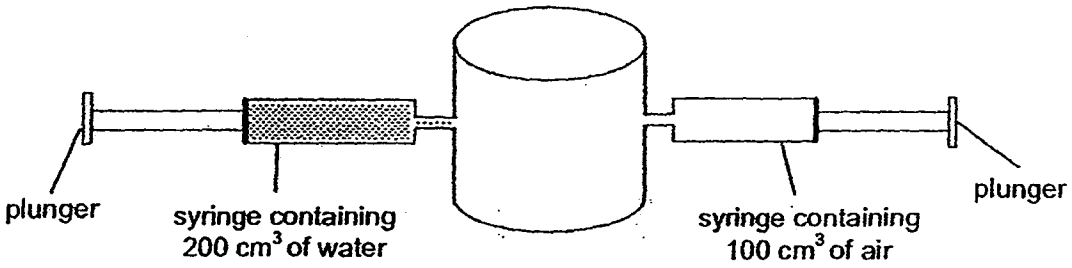
(c) Explain how deforestation and the burning of fossil fuels can turn the positive environmental impact named in (a) into a negative impact. [1]

_____

_____

3

39. Two syringes were fitted to a container with a capacity of 800 cm^3 as shown in the diagram below.



Container with two openings
for fitting the syringes

(a) The plungers of both syringes were pushed in completely and then pulled back completely to their original positions.

What is the volume of air in the container after the actions above were taken? [1]

_____

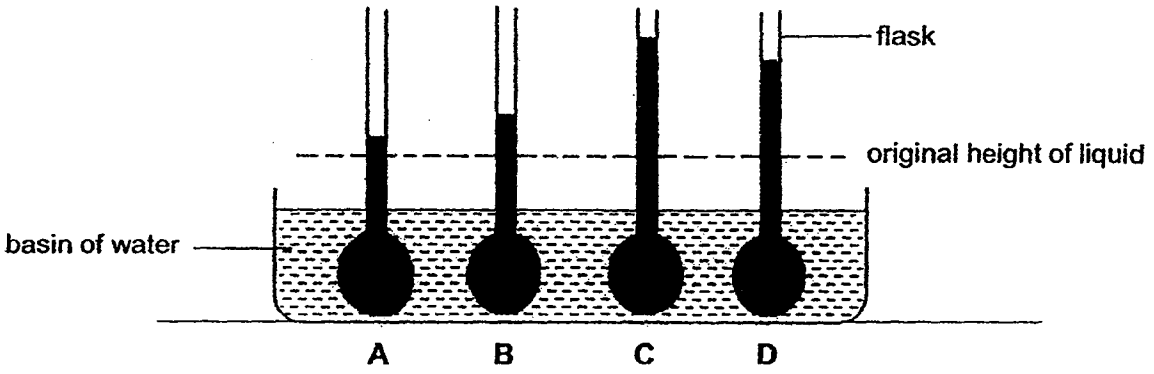
(b) Name the two properties of liquid demonstrated in the above. [2]

(i) _____

(ii) _____

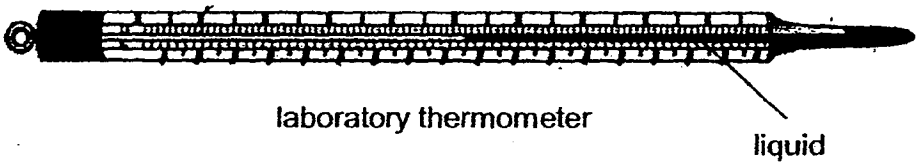
3

40. Four flasks were filled with the same amount of four different liquids, A, B, C and D. The diagram below shows the change in the heights of the liquids after the flasks were placed in a basin of water.



(a) Based on the changes observed, what can you infer about the difference in the temperature of the water in the basin and the 4 liquids? [1]

_____



(b) Which one of the liquids (A, B, C or D) is the most suitable to be used as the liquid component of a laboratory thermometer? Give a reason. [1]

_____

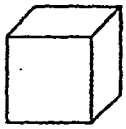
_____

	2

(Go on to the next page)

41. Javier bought a new ice tray that can make X-shaped ice pieces. His old ice tray makes ice cubes which has square faces. Both the X-shaped ice piece and the ice cube use the same amount of water to make and freezes to look like the ones shown below.

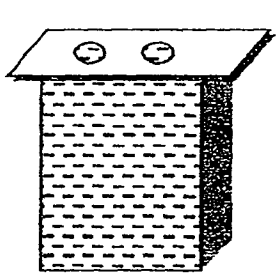
X-shaped ice



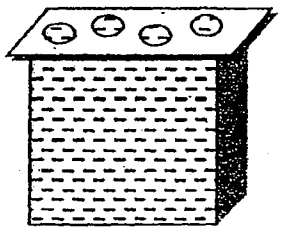
Ice cube

(a) Explain why Javier's drink is able to cool faster when he uses the X-shaped ice instead of the ice cube. [1]

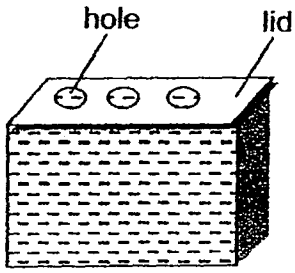
Containers A, B and C are made of the same material, filled with the same amount of water. Each container is covered with identical plastic lids except for the number of holes in each lid. The holes are of the same size and are above the openings of the containers.



Container A



Container B



Container C

(b) Which container has the least amount of water left after 6 hours? Explain your answer. [1]

(c) Name another important variable that must be kept constant for a fair test. [1]

	3

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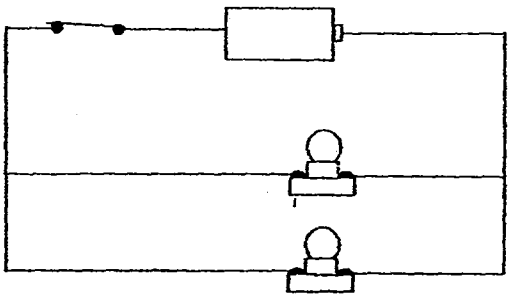
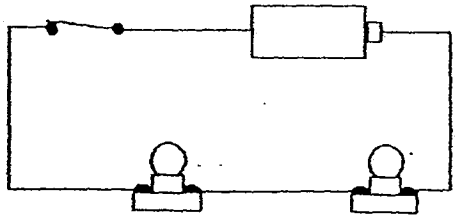
42. Study the two circuits A and B below. The type of batteries and bulbs used in the both circuits are the same.

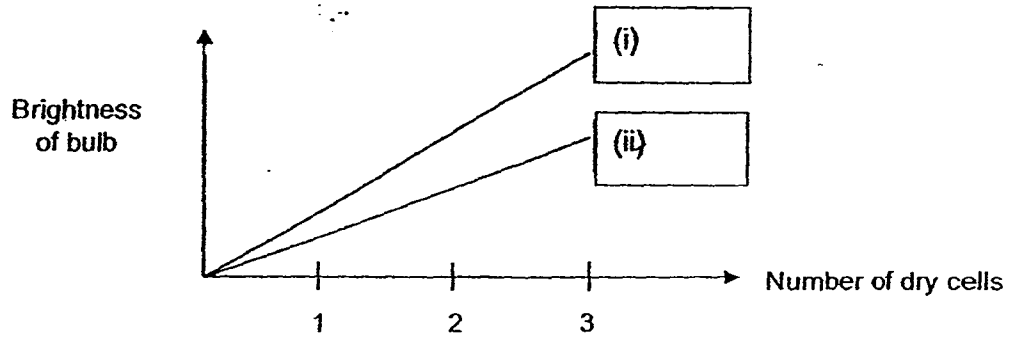


Circuit A



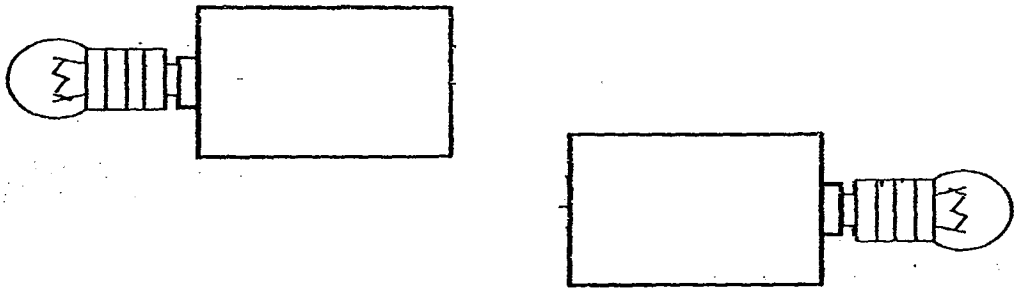
Circuit B

The graph below shows how the arrangement of the bulbs in a circuit can affect the brightness of a bulb.



(a) Indicate in the boxes above which circuits, A or B, the lines represent. [1]

(b) Draw the **wires** below to show how you can connect the dry cells and the bulbs so that the bulbs will light up the brightest. [1]



2

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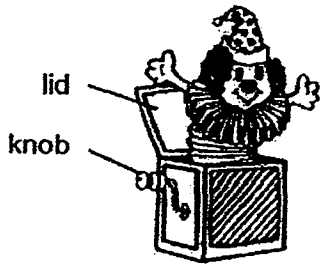
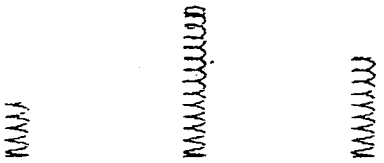
43. Leroy wanted to create a similar toy as shown below. He can make the toy by attaching a toy clown to one end of a steel spring and attaching a knob to the spring. When the knob is turned to the maximum and the lid opened, the toy clown in the box would pop up.



(a) State the source of energy that caused the toy clown to pop up. [1]

_____

Leroy can use one of the 3 steel springs, A, B or C, to construct his toy.



Spring A Spring B Spring C

(b) Which steel spring, A, B or C, should Leroy use if he wants his toy clown to pop up to the highest height when the lid is opened? Explain your choice in terms of energy conversion. [2]

_____

_____

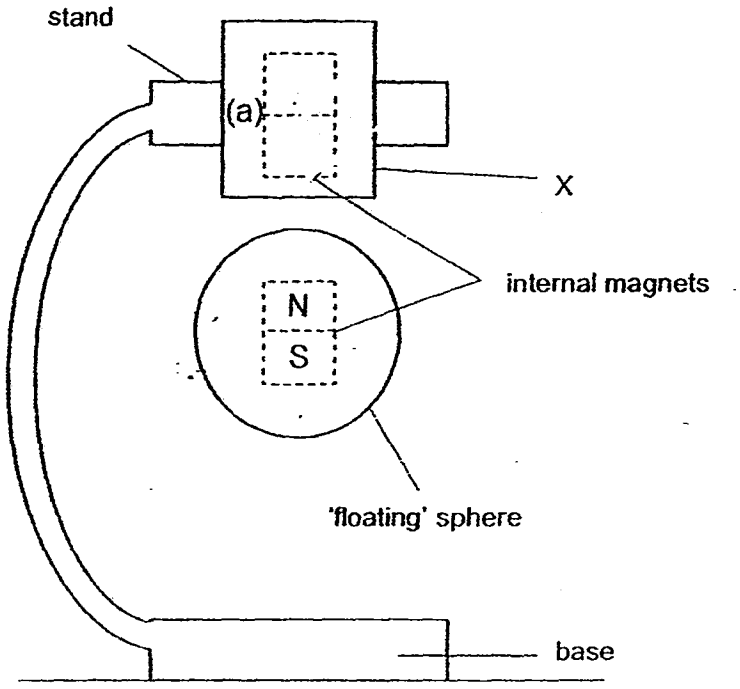
_____

_____

	3

(Go on to the next page)

44. The diagram below shows a picture of a toy. The toy is made up of a stand and a sphere. The stand has a piece of iron bar inside it and the sphere has a magnet inside it. Part X of the stand is made of plastic. When the switch on the toy is turned on, the iron bar becomes an electromagnet and the sphere appears to be 'floating' in the air. The base of the stand does not contain any magnets.



(a) Label the poles of the electromagnet in the stand such that the sphere is able to 'float' in the air. [1]

(b) It is observed that when the switch of the toy is turned off, the sphere drops to the ground. Explain the observation. [1]

_____

_____

(c) Will the toy still work (sphere "float" in the air) if part X of the stand is made of rubber? Explain your answer. [1]

_____

_____

End of Booklet B

Maris Stella High School (Primary) P6 Preliminary Exam Science 2014

Booklet A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3	2	3	2	1	3	1	2	3	2	4	3	1	2	3
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
3	3	4	3	2	4	2	2	3	4	3	2	3	1	4

Booklet B

31 a Both animals C and E have legs.

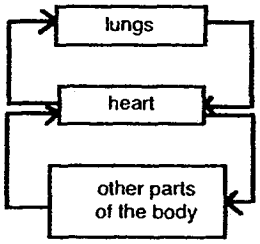
b

Animal	Letter
Dolphin	A
Eagle	E
Elephant	D
Penguin	F

32 a The cell contains chloroplasts that is absent in the cell of potato skin as potato is found underground and is not exposed to sunlight. Hence its skin cell does not need to have chloroplasts.

b A is the cell membrane. The cell membrane controls the movement of substances moving in and out of the cell.

33 a



b

Plant transport system	Human circulatory system
(i) water (ii) food	(iii) water (iv) digested food
(v) xylem tubes (water-carrying tubes) (vi) phloem tubes (food-carrying tubes)	(vii) blood vessels

34 a The wing-like structures enables the seed to float in the air/ stay air-borne for a longer period of time hence can be dispersed further away by the wind.

b Dropping both fruits at the same time helps ensure that the amount of wind present will be the same/constant.

c

(i)	✓
(ii)	✓
(iii)	
(iv)	

35 a Its long neck allows its beak to go deep underwater to look for food.

b The long legs of the flamingo keeps its out of the water, allowing smaller surface area of contact between the flamingo and the water, hence the flamingo will lose heat to the water slower.

c The comb-like structures increases the surface area so more organisms will get stuck to fine hair and get eaten by the flamingo.

36 a The yellow spots present will cause Butterfly B to think that there are already eggs on Plant Z and hence it will not lay eggs on Plant Z. This is advantageous for Plant Z as there will be lesser young of Butterfly B that will feed on it.

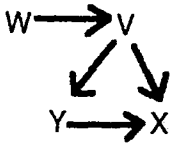
b (i) Less of Plant Z's leaves will be eaten by Butterfly B, hence Plant Z can continue to photosynthesize more effectively to produce more food.

(ii) Animal Y will have more food to eat.

37 a Plants → E → C → D

b No. Animals C and D do not feed on the plants directly.

c (i)



(ii)

Prey only	Predator only
V	X

38 a Increase in the temperature of the surroundings

b Carbon dioxide

c More carbon dioxide (greenhouse gas) will be present in the atmosphere to trap more heat, resulting in global warming.

39 a 600 cm^3

b Accept the following 2 properties:

(i) Liquid had a definite volume / occupies space.

(ii) Liquid has an indefinite shape.

40 a The temperature of the water is higher than the liquids.

b Liquid C. It expands the most when it gains heat from the basin of water and will be most sensitive to the temperature changes in the surroundings.

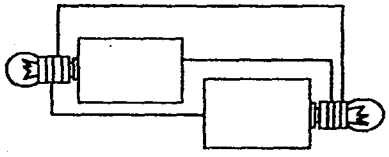
41 a X-shaped ice has a greater surface area exposed to the drink, so it will gain more heat from the drink and melts faster to cool the drink faster.

b Container B. It has a larger exposed surface area to the surroundings so most water will evaporate from it.

c Location of the experiment must be kept constant.

42 a (i) A (ii) B

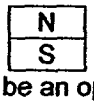
b Accept any correct connections of the circuit that connect the dry cells in series and light bulbs in parallel to each other: e.g.



43 a Compressed spring

b Spring B. It can be compressed the most and have the most elastic potential energy converted to more kinetic energy which is then transferred to the toy clown.

44 a (a)



b It will be an open circuit so electricity cannot flow through and the electromagnet will lose its magnetism hence it cannot attract the sphere, causing it to drop to the ground.

c Yes. Rubber is a non-magnetic material and since magnetism can pass through non-magnetic material, the electromagnet can still attract the sphere through part X.