CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2013
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____( )

Class: Primary 6 - _____

Date: 27 August 2013

30 questions

60 marks

Total Time for Booklets A & B: 1 hour 45 minutes

Instructions to Candidates

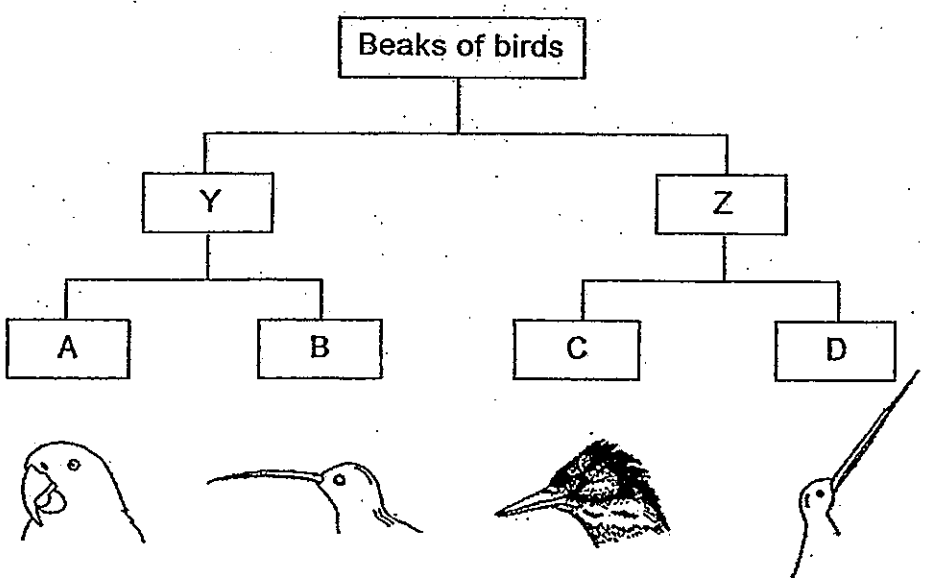
Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 26 printed pages, excluding cover page.

Booklet A (30 × 2 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 your answer on the Optical Answer Sheet. (60 marks)

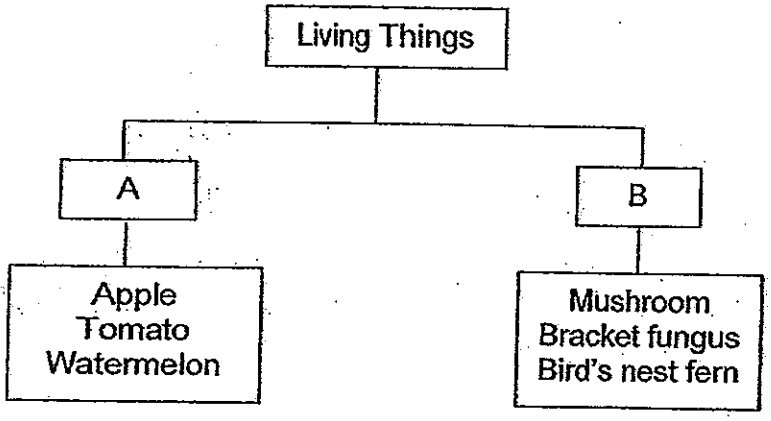
1. The diagram below shows how different groups of birds are classified according to certain characteristics, A, B, C, D, Y and Z.



Which of the following correctly shows the characteristics A and Z?

	A	Z
(1)	Straight beak	Beak longer than head
(2)	Curved beak	Beak shorter than head
(3)	Beak longer than head	Curved beak
(4)	Beak shorter than head	Straight beak

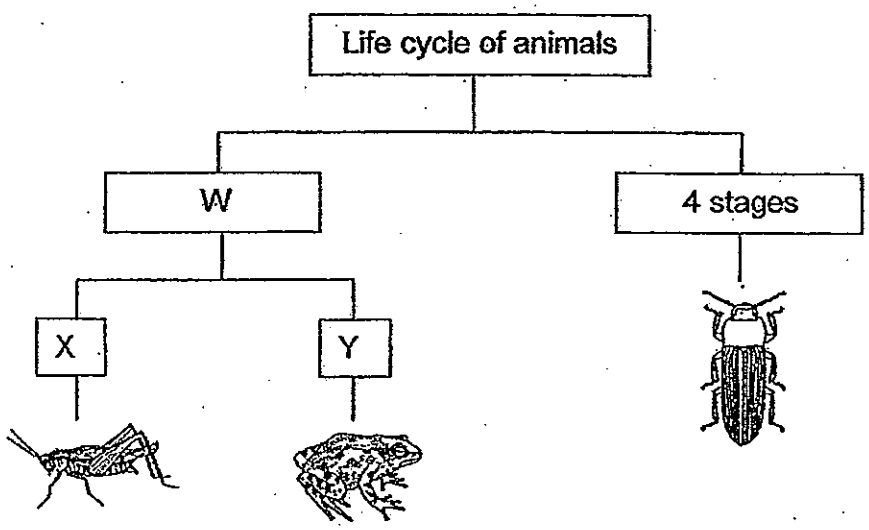
2. The classification chart below shows how some living things can be grouped.



Which of the following represents A and B?

	A	B
(1)	Cannot be eaten	Can be eaten
(2)	Make their own food	Cannot make their own food
(3)	Fruits with many seeds	Fruits with one seed
(4)	Reproduce from seeds	Reproduce from spores

3. Study the diagram below.



Which of the following is represented by W, X and Y?

	W	X	Y
(1)	2 stages	Young looks like the adult	Young does not look like the adult
(2)	2 stages	Young does not look like the adult	Young looks like the adult
(3)	3 stages	Young looks like the adult	Young does not look like the adult
(4)	3 stages	Young does not look like the adult	Young looks like the adult

4. Jane planted similar balsam plants in four pots, P, Q, R and S, with three plants in each pot.

	Pot P	Pot Q	Pot R	Pot S
Material of pot	ceramic	ceramic	ceramic	plastic
Type of soil	garden	sandy	clayey	garden
Size of pot (cm^3)	1500	1500	500	1000
Amount of water used to water the plants daily (ml)	100	100	100	100

If Jane wanted to find out which type of soil is most suitable for growing the balsam plants, which of the two pots must Jane choose in order to conduct a fair test?

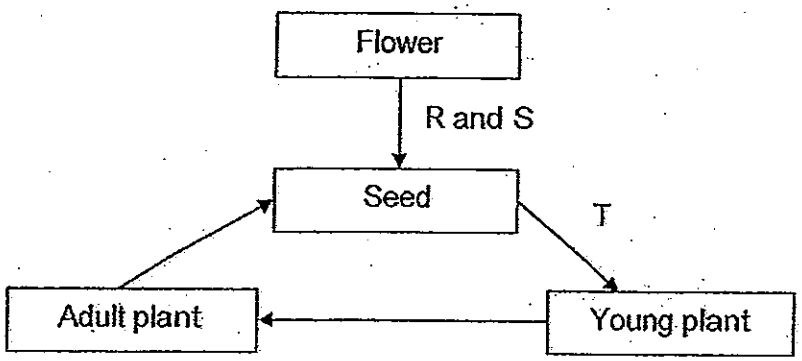
(1) Pots P and Q

(2) Pots Q and R

(3) Pots Q and S

(4) Pots R and S

5. A flowering plant undergoes processes R, S and T as shown below.

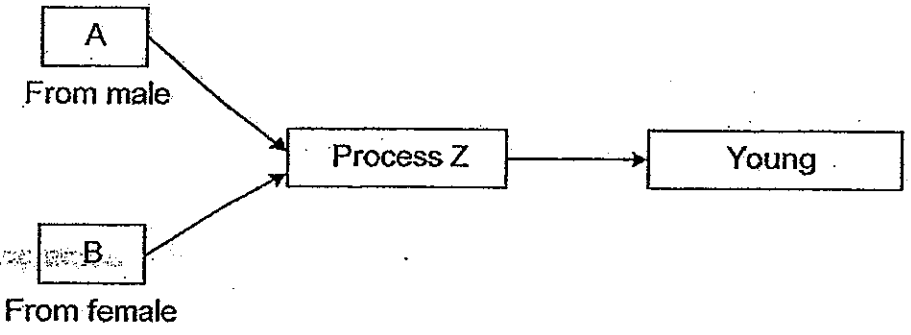


Process R must occur before Process S.

Which of the following correctly represents the processes R, S and T?

	R	S	T
(1)	Fertilisation	Pollination	Germination
(2)	Pollination	Fertilisation	Germination
(3)	Pollination	Fertilisation	Seed dispersal
(4)	Fertilisation	Pollination	Seed dispersal

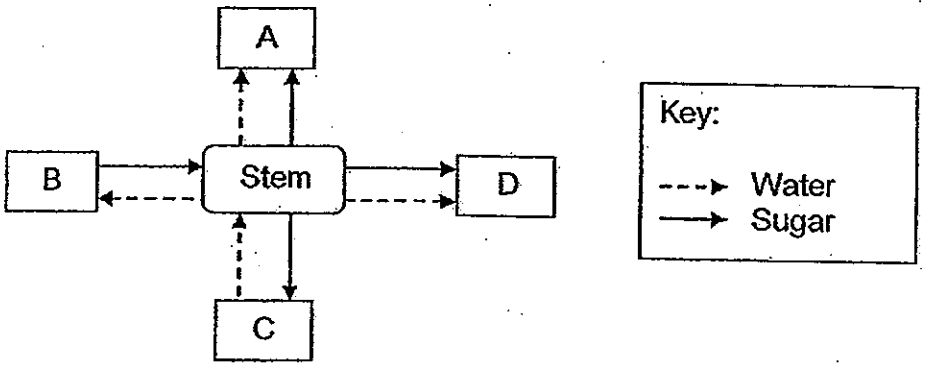
6. Study the diagram below carefully. The diagram can be applied to both the human and plant reproductive systems.



Which of the following represents correctly A, B and Process Z in both the human and plant reproductive systems?

	Human Reproductive System			Plant Reproductive System		
	A	B	Process Z	A	B	Process Z
(1)	Testis	Ovary	Fertilisation	Anther	Stigma	Pollination
(2)	Ovary	Testis	Fertilisation	Stigma	Anther	Fertilisation
(3)	Sperm	Egg	Fertilisation	Pollen grain	Egg	Pollination
(4)	Sperm	Egg	Fertilisation	Pollen grain	Ovule	Fertilisation

7. The diagram below shows how water and sugar are transported to and from different parts of a plant, A, B, C and D.



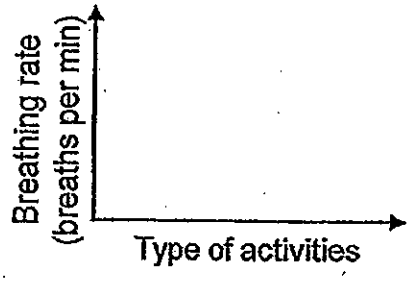
Which one of the following correctly shows the parts of a plant that A, B, C and D represent?

	A	B	C	D
(1)	Roots	Flowers	Fruits	Leaves
(2)	Fruits	Roots	Flowers	Leaves
(3)	Fruits	Leaves	Roots	Flowers
(4)	Leaves	Flowers	Roots	Fruits

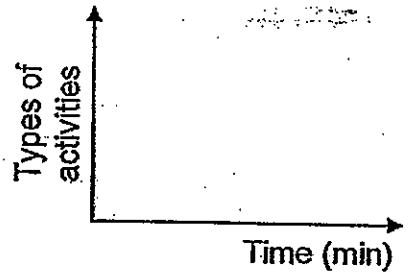
8. Mr Lee wanted to investigate whether his breathing rate increases when he does different types of activities.

Which one of the following axes should he use to show his results?

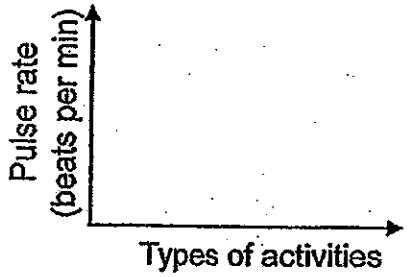
(1)



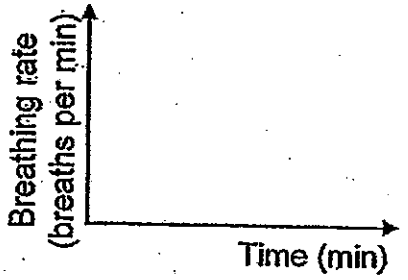
(2)



(3)

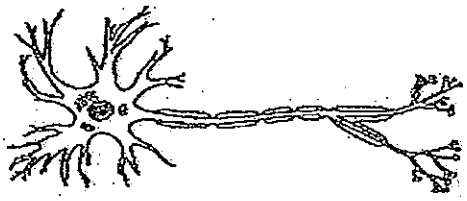


(4)

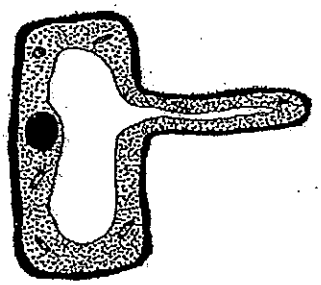


9. Four different types of cells, A, B, C and D, are shown below.

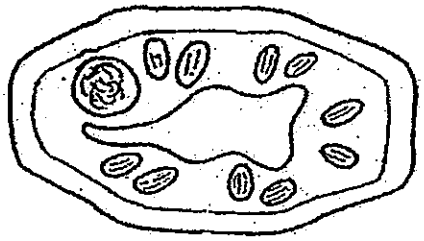
A



B



C



D

Which one of the following is the correct classification of the cells, A, B, C and D?

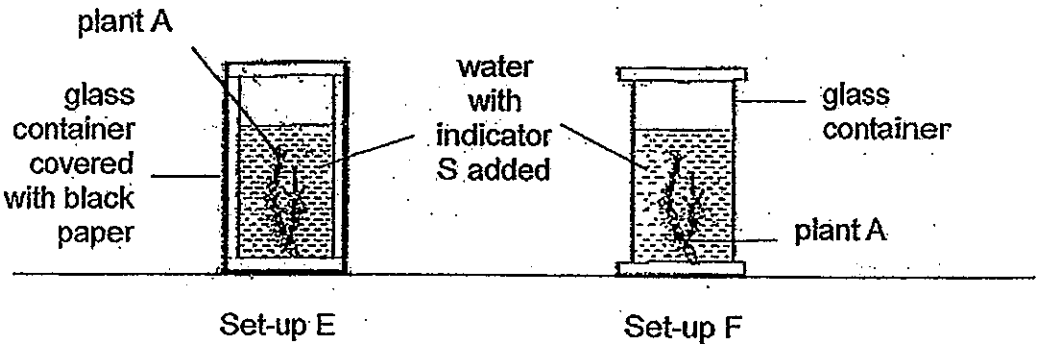
	Animal cells	Plant cells
(1)	A and B	C and D
(2)	B and C	A and D
(3)	A, B and C	D
(4)	A, B and D	C

10. Jun Xiong wanted to find out if the presence of light affects the amount of dissolved carbon dioxide taken in by plant A. He added an indicator solution, S, to his two set-ups.

The colour of the indicator S changes with the amount of dissolved carbon dioxide in the water as shown in the table below.

Colour of Indicator S	Yellow	Green	Blue
Amount of dissolved carbon dioxide in water	More than normal	Normal	Less than normal

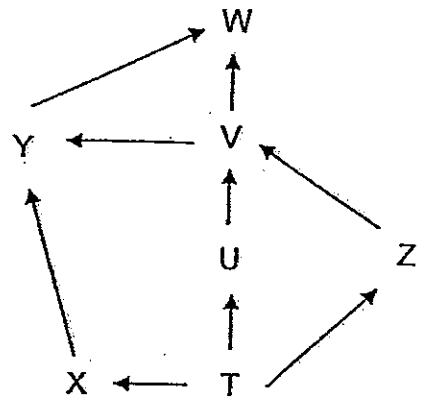
The two set-ups that were used for his investigation are shown in the diagram below. Both set-ups were left in a bright room for an hour.



Which one of the following correctly identifies the colour of indicator S at the end of the investigation in each set-up?

	Colour of indicator S at the end of the investigation in set-up	
	E	F
(1)	Yellow	Blue
(2)	Yellow	Yellow
(3)	Blue	Yellow
(4)	Blue	Green

11. The food web below shows the feeding relationships between organisms T, U, V, W, X, Y and Z.



How many organism(s) is/are both a prey and predator in the food web above?

(1) 1

(2) 2

(3) 3

(4) 4

For Questions **12** and **13**, refer to the information provided in the table below. It provides a description of some physical factors in four different habitats.

Physical factors	Habitats			
	A	B	C	D
Amount of moisture	Low	Low	High	High
Average temperature (°C)	23	18	32	21
Intensity of light (lux)	Low	High	High	Low
Time taken for 20ml of water to flow through soil samples (s)	8	13	15	20

An organism Z was observed to have the following characteristics:

- thrives in a damp environment
- prefers to stay in a dark environment
- most active when the surrounding temperature ranges from 20 – 25 °C

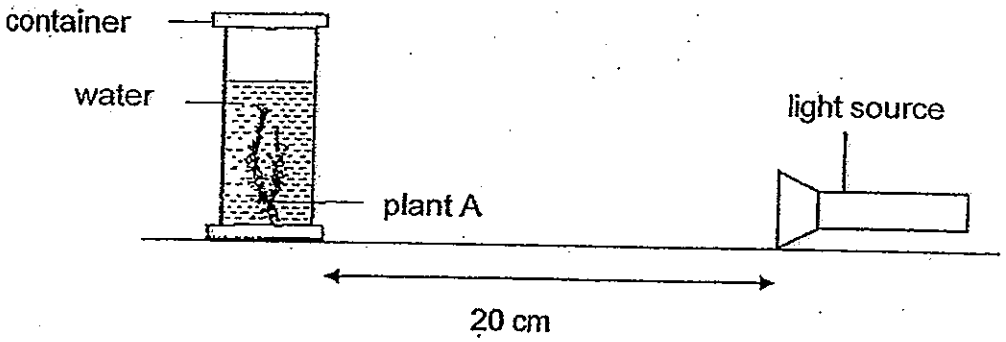
12. In which habitat(s) would there be the greatest number of organism Z?

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

13. Which one of the habitats, A, B, C and D, has the most amount of air spaces present in its soil sample?

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

14. Timothy wanted to investigate how the intensity of light affects the rate of photosynthesis of aquatic plant A.



He set up three similar set-ups as shown above using light bulbs of different light intensities, 20 lux, 60 lux and 100 lux, in a dark room. He counted and recorded the number of bubbles observed in each set-up over a period of 15 minutes.

Light intensity of light bulb (lux)	Number of bubbles			
	E	F	G	H
20	40	20	10	20
60	20	20	20	10
100	10	40	40	40

The table above shows four sets of results, E, F, G and H.

Which set of results, E, F, G or H, is most likely to be the set of results collected by Timothy?

(1) E

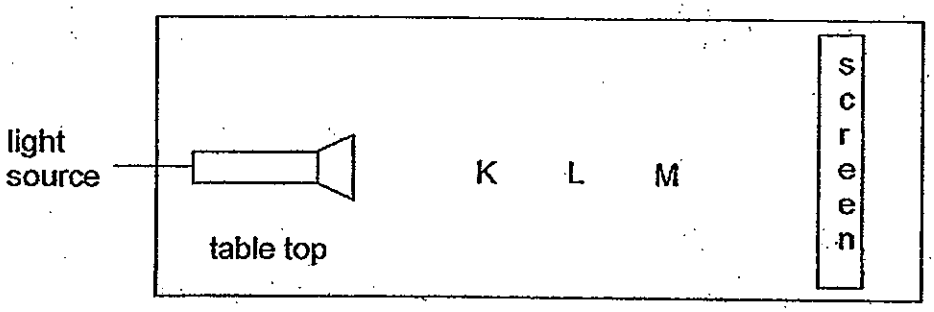
(2) F

(3) G

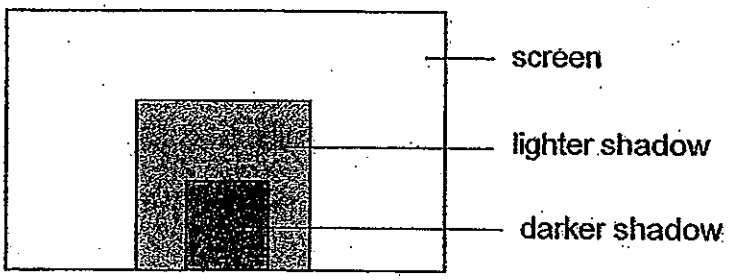
(4) H

15. Three cubes, K, L and M, were placed in a straight line and light was shone on them.

The diagram below shows a top view of the positions of cubes K, L and M, which are placed between the light source and the screen on a table top.



The shadow formed on the screen is shown in the diagram below.



Which one of the following best represents the degree of transparency to light of cubes K, L and M, and their respective sizes?

(1)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K	✓			216
L			✓	27
M		✓		64

(2)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K	✓			216
L		✓		27
M			✓	64

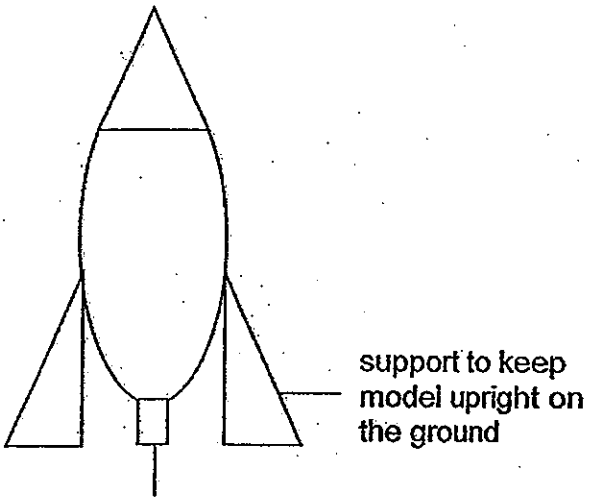
(3)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K			✓	216
L	✓			27
M		✓		64

(4)

Cubes	Degree of transparency to light			Volume of cubes (cm^3)
	opaque	translucent	transparent	
K			✓	216
L		✓		27
M	✓			64

16. Ming En wanted to construct a flying model as shown in the diagram below.



He wanted to conduct a test launch where the flying model would fly to a height of at least two metres when filled with water and its parts would still remain intact when it lands on the ground.

Which of the following properties must he take into consideration while selecting the material to construct the flying model?

	Property of material
A	Strength
B	Hardness
C	Waterproof
D	Lightweight
E	Heat resistant

(1) B and D only

(2) A and E only

(3) A, C and D only

(4) B, C, D and E only

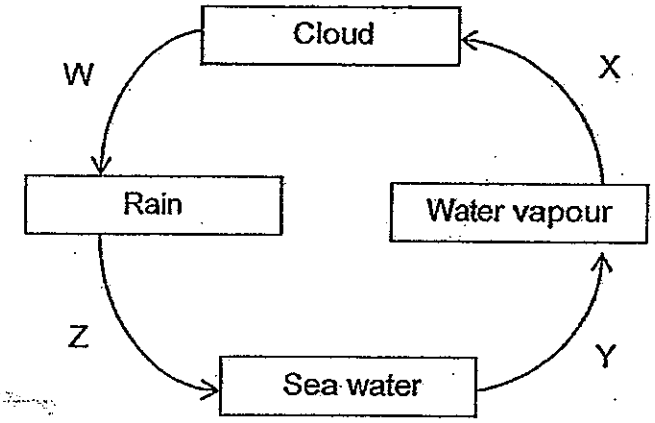
17. The table below shows the melting and boiling points of two substances, X and Y.

Substance	Melting point (°C)	Boiling point (°C)
X	20	200
Y	150	250

Which one of the following shows the correct states of X and Y at 100°C?

	X	Y
(1)	solid	liquid
(2)	solid	solid
(3)	liquid	solid
(4)	liquid	liquid

18. The diagram below represents the water cycle.

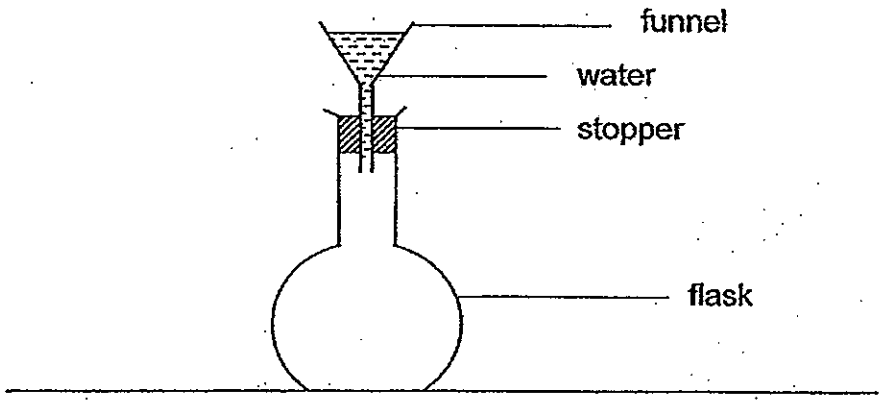


Which of the statement(s) is/are correct?

A Process Y can take place only during the day.
B Heat is lost by the water vapour during process X.
C There is a change in the state of water during processes W and X.

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

19. Ravi's teacher set up the apparatus as shown in the diagram below. When she poured water into the funnel, it did not flow into the flask at all.



Ravi set up a similar experiment as his teacher. When he poured water into the funnel, some of the water flowed into the flask.

What would be a likely reason for Ravi's observations in his experiment to be different from that of his teacher's?

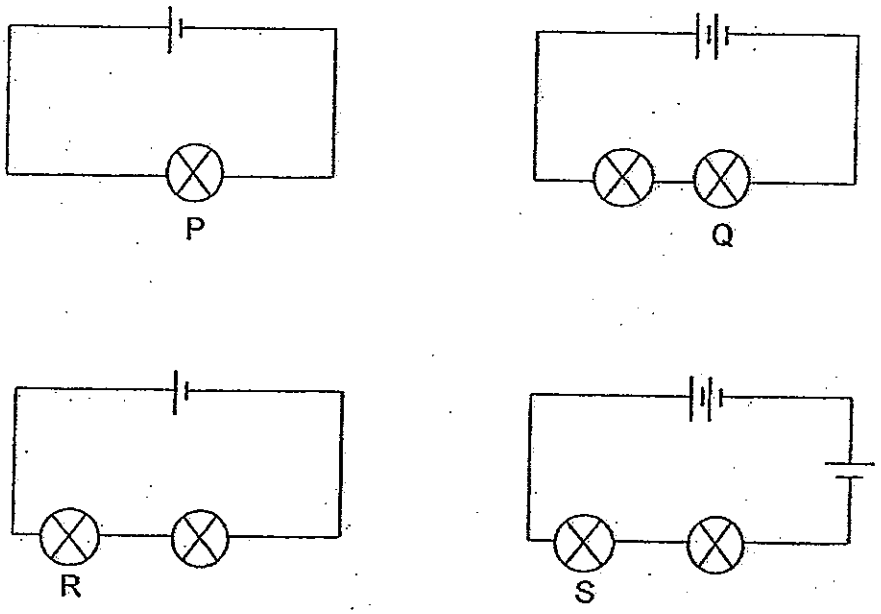
(1) The stopper was loosely fitted.

(2) Ravi poured the water in quickly.

(3) Hot water was used in the funnel.

(4) Ravi placed the flask into a basin of hot water.

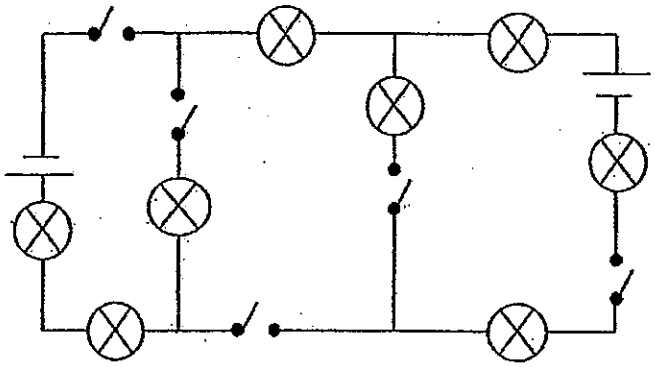
20. The diagram below shows four circuits with different arrangements of similar batteries and similar bulbs. The bulbs in all circuits light up.



Which one of the following shows the brightness of the bulbs?

	Brightness of bulbs		
	Low	Medium	High
(1)	S	P	Q
(2)	P	R	S
(3)	R	P	S
(4)	Q	P	S

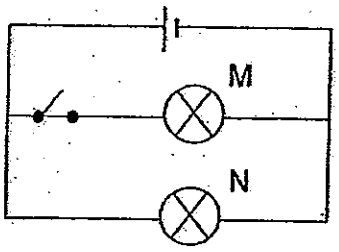
21. Study the electrical circuit below.



In order to have exactly 4 bulbs to light up at the same time, what is the minimum and maximum number of switches that must be closed?

	Minimum number	Maximum number
(1)	1	2
(2)	2	3
(3)	3	4
(4)	4	5

22. Kelvin conducted an experiment using the set-up shown below. He measured the brightness of bulbs M and N.



In his second experiment, he connected another identical bulb O to the circuit. All three bulbs lit up. He measured the brightness of bulbs M, N and O this time.

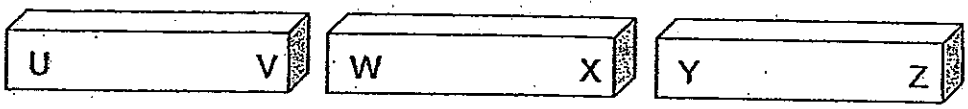
He found that the brightness of bulb M was lower than that in his first experiment and that bulbs M and O had the same brightness in the second experiment. The brightness of N remained the same in both experiments.

Which of the following statements about the circuit in Kelvin's second experiment is/are correct?

A When bulb M fused, bulbs N and O remained lit.
B When the switch was opened, bulb N remained lit.
C All the bulbs in the circuit are arranged in parallel.

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

23. Felicia labelled the ends of three metal bars, E, F and G, as shown in the diagram below.



metal bar E metal bar F metal bar G

She wanted to find out if the metal bars would repel or attract one another when they were brought close to one another.

The table below shows the results of Felicia's experiment.

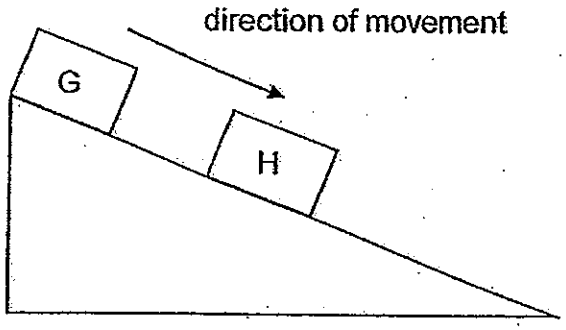
		Metal bar F		Metal bar G	
		W	X	Y	Z
Metal bar E	U	attract	attract	attract	attract
	V	attract	attract	attract	attract
Metal bar F	W			attract	repel
	X			repel	attract

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

A Only metal bar F is a magnet.
B All the metal bars are magnets.
C Only metal bars F and G are magnets.
D All the metal bars are made of magnetic materials.

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

24. The diagram below shows two similar wooden boxes of equal masses, G and H, as they were pushed down a slope.



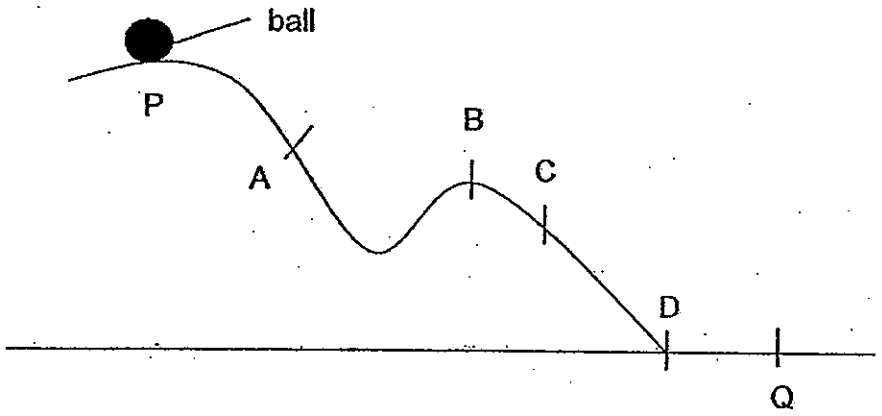
Three students made the following statements about the above diagram.

Students	Statements
Ashley	The frictional force that is acting on both boxes G and H oppose movement.
Beatty	There is more frictional force between box G and the slope compared to box H and the slope.
Charlie	The amount of frictional force between box G and the slope is the same as that between box H and the slope.

Which of the following students made the correct statements?

(1) Beatty only
(2) Charlie only
(3) Ashley and Beatty only
(4) Ashley and Charlie only

25. The diagram below shows a ball that is about to roll down a slope from position P to Q.



At which point(s) of the slope would the amount of gravitational force acting on the ball be the same as that at position P?

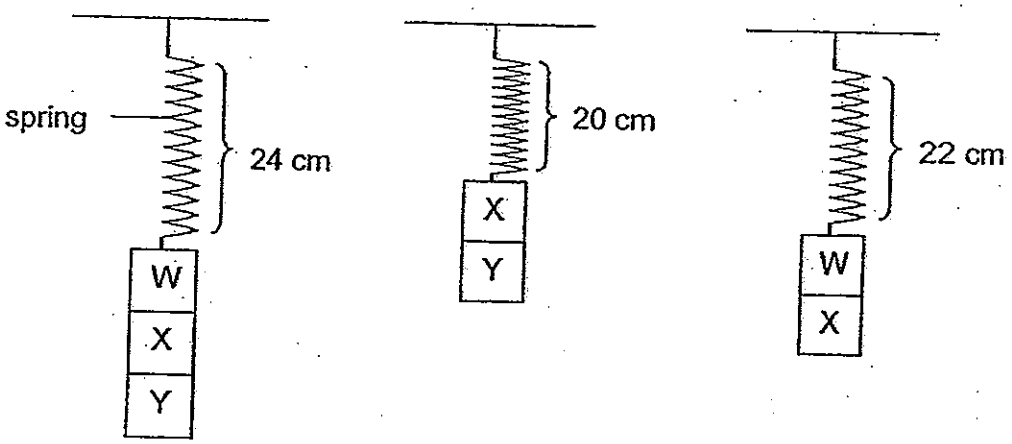
(1) B only

(2) D only

(3) A, B and C only

(4) A, B, C and D

26. The diagram below shows the lengths of a 10 cm spring that was extended when loads, W, X and Y, were placed on it.



What would be the length of the extended spring when only load X was placed on it?

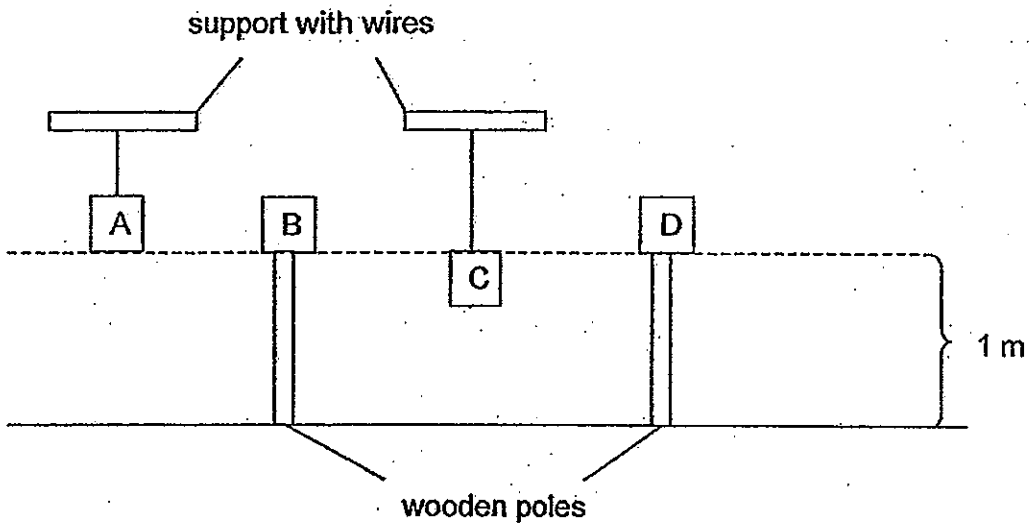
(1) 12 cm

(2) 14 cm

(3) 16 cm

(4) 18 cm

27. Ahmad, Brandon, Claire and Darren placed four cubes of equal mass supported in different ways as shown in the diagram below. Cubes A and C are hung from a support using wires while cubes B and D are placed on wooden poles.



Which of the following statements made by the four students is/are true about the amount of gravitational potential energy that the cubes possess?

Students	Statements
Ahmad	All the cubes possess the same amount of gravitational potential energy.
Brandon	Cube A possesses a greater amount of gravitational potential energy than cube C.
Claire	Cube C possesses a greater amount of gravitational potential energy than cube D.
Darren	Cubes B and D possess the same amount of gravitational potential energy.

(1) Ahmad only

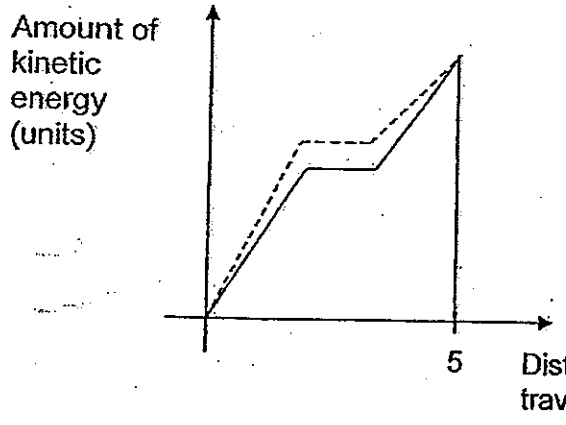
(2) Darren only

(3) Brandon and Claire only

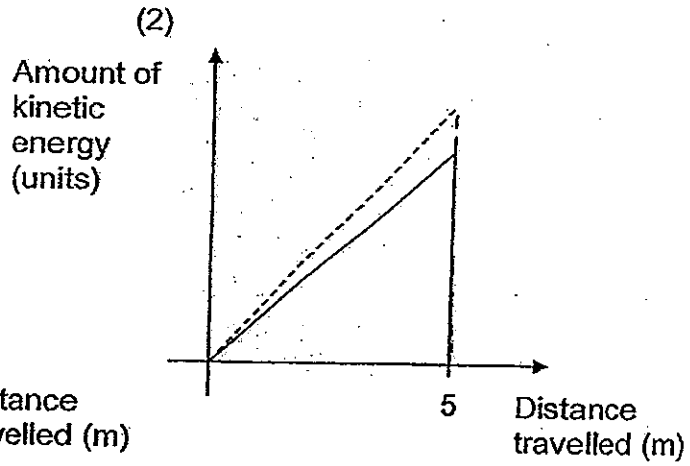
(4) Brandon and Darren only

28. Two objects P and Q of different masses were released from the same height of 5m. Which one of the following graphs best represents how the amount of kinetic energy changes with the distance travelled by the objects?

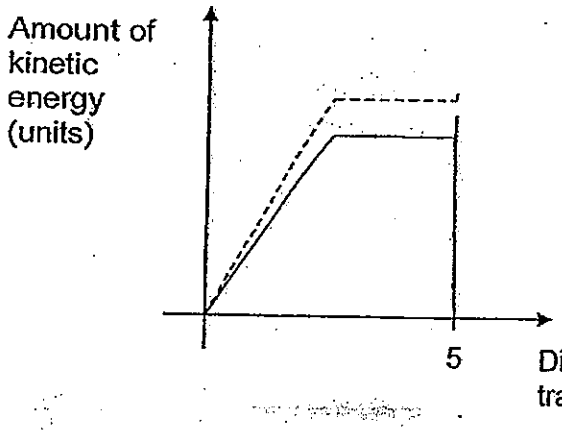
(1)



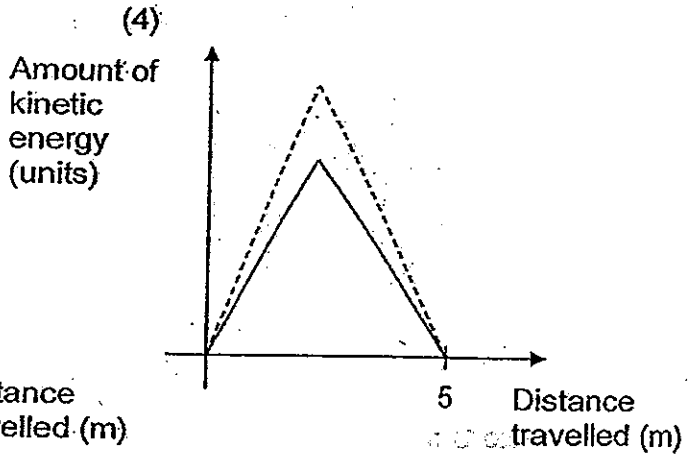
(2)



(3)



(4)



Legend

Object P ——————

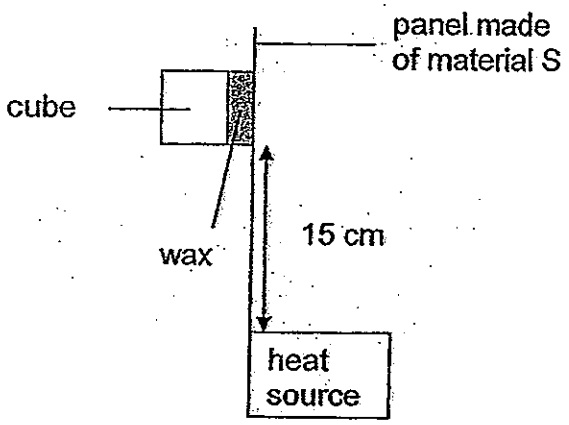
Object Q - - - - - - - -

29. The diagram below shows Mr Wong with his golf club and a golf ball.

Based on the diagram above, which one of the following best represents the type of energy possessed by the golf club and the golf ball?

	Energy possessed by	
	Golf club	Golf ball
(1)	Kinetic energy	kinetic energy
(2)	Kinetic energy	Gravitational potential energy
(3)	Gravitational potential energy	Kinetic energy
(4)	Gravitational potential energy	Gravitational potential energy

30. Emily stuck one cube onto a panel made of material S using wax at a height of 15 cm away from the heat source as shown in the diagram below.



She repeated the experiment with three more panels of equal thickness but made of different materials, T, U and V, one at a time. She recorded the time taken for the same cube to fall off the panels. The results of her experiment are shown in the table below.

Panels made of materials	Time taken for cube to fall off the panel (s)
S	25
T	55
U	37
V	12

Based on the results above, which one of the following shows the correct arrangement of materials, starting with the material that is least able to conduct heat?

(1) T, U, S, V
(2) T, S, U, V
(3) V, S, U, T
(4) V, U, S, T

End of Booklet A

CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2013
PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____( )

Class: Primary 6 - _____

Date: 27 August 2013

Parent's Signature: _____

Booklet A	/60
Booklet B	/40
Total	/100

14 questions

40 marks

Total Time for Booklets A & B: 1 hour 45 minutes

Instructions to Candidates

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 18 printed pages, excluding cover page.

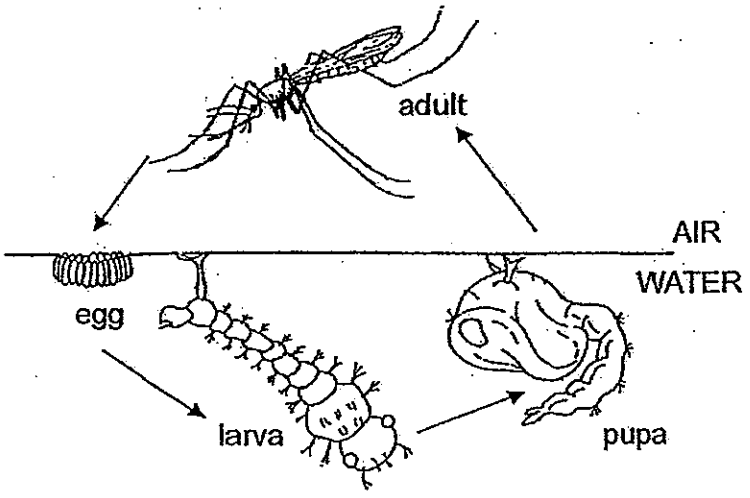
Booklet B (40 marks)

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. The National Environment Agency has observed an increase in the number of Dengue cases recently. To protect yourself from dengue, it is necessary to take preventive steps regularly.

Patrick's teacher gave him a diagram on the life cycle of an Aedes mosquito as shown below.

Life cycle of an Aedes Mosquito



(a) At which stage of a mosquito's life cycle is it most difficult to kill? Explain why. [2]

_____

_____

(b) Patrick's teacher wanted him to think of a way to control the population of Aedes mosquitoes. He suggested spreading a layer of oil on the surface of the water in order to control the population of the Aedes mosquitoes.

Based on the diagram and information given above, why is Patrick's method effective in controlling the population of the Aedes mosquito? Explain your answer. [1]

_____

_____

(Go on to the next page)

SCORE	
	3

32. Leo took part in the Ironman Marathon Race. His heart rate and breathing rate increased during the race.

(a) Why did Leo's heart rate increase during the race? [2]

_____

_____

_____

_____

(b) There were many water points along the race. Leo took a bottle of water from one of the water points. Other than drinking the water, Leo also poured some of the water over his body to cool himself. Why did Leo do this? [1]

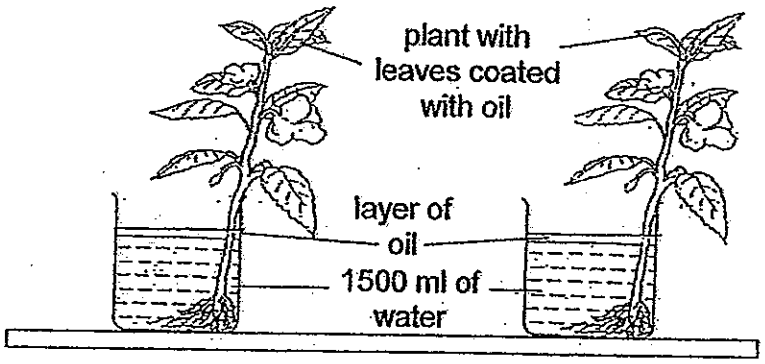
_____

_____

(Go on to the next page)

SCORE	3

33. Mrs Cheng placed 2 similar plants in identical beakers, W and X. She coated one side of all the leaves with oil for the plant in Beaker W and coated the other side of all the leaves with oil for the plant in Beaker X.



The table below shows the volume of water in the beakers at the beginning and at the end of the experiment after a day.

Beaker	Volume of water (ml)	
	Start of experiment	End of experiment
W	1500	1250
X	1500	1000

(a) Based on the results above, which beaker contained the plant with leaves that were coated with oil on the underside of the leaves? Explain your answer. [2]

_____

_____

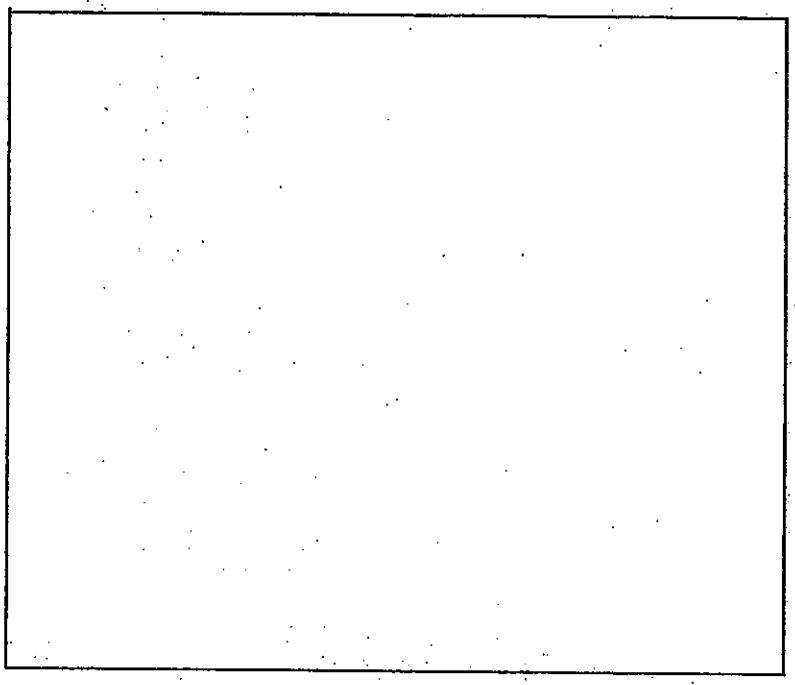
_____

_____

(Go on to the next page)

SCORE	
	2

33. (b) Mrs Cheng realised that she needed to have a control set-up for her experiment. Draw a control set-up for the above experiment. [1]



(c) What is the purpose of the control set-up? [1]

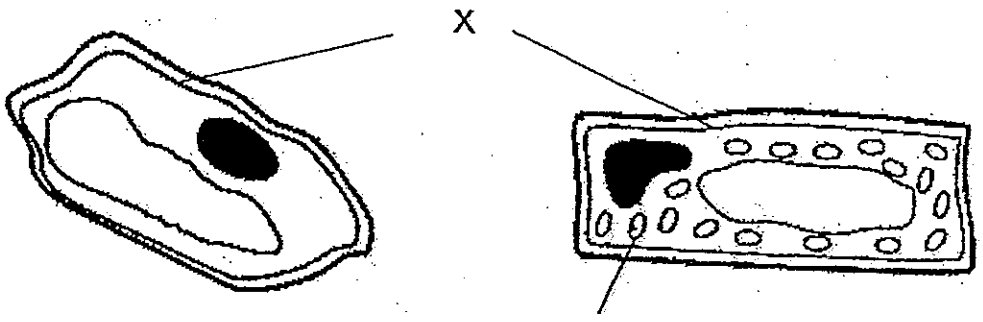
_____

_____

(Go on to the next page)

SCORE

34. Randy observed two types of cells, A and B, from the same plant, as shown in the diagram below.



Cell A Cell B

(a) What is the function of X? [1]

_____

_____

(b) Mark and label, in the diagram above, the part of the cell that makes food for the plant in Cell B. [1]

(c) State a part of the plant where Cell A is likely to be found.
Give a reason for your answer. [1]

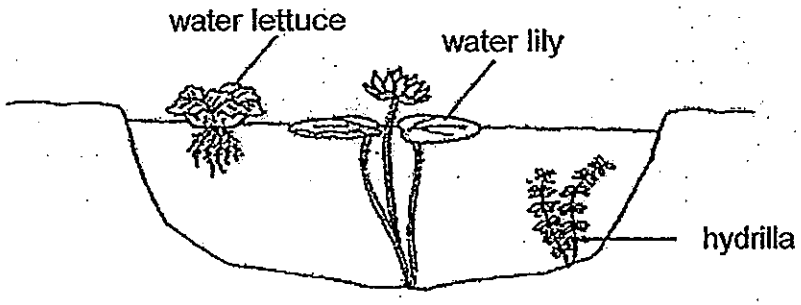
_____

_____

(Go on to the next page)

SCORE	
	3

35. The diagram below shows a pond with three types of aquatic plants.



After a downpour, a large amount of soil particles was washed into the pond water which resulted in many of these soil particles being suspended in the water.

Which plant would be immediately affected and how? [2]

_____

_____

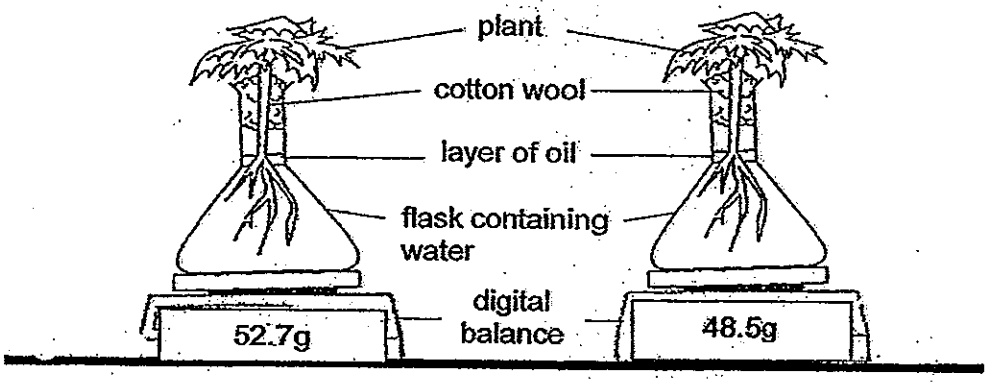
_____

_____

(Go on to the next page)

SCORE	2

36. Melissa placed a plant in a flask of water. She then left the set-up outdoors under bright sunlight where it was warm and windy for six hours as shown in the diagram below.



Start of experiment At the end of six hours

(a) State the energy conversion that took place in the leaves during the experiment. [1]

_____

_____

(b) How does the presence of the layer of oil above the water improve the validity of the results at the end of the experiment? [1]

_____

_____

(c) If Melissa had placed the same set-up in a dark room which was also warm and windy, would the reading on the balance be more or less than 48.5g? Why? [1]

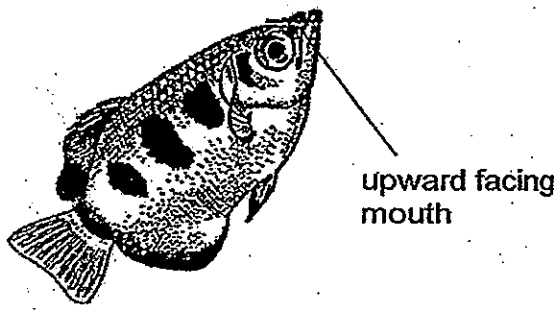
_____

_____

(Go on to the next page)

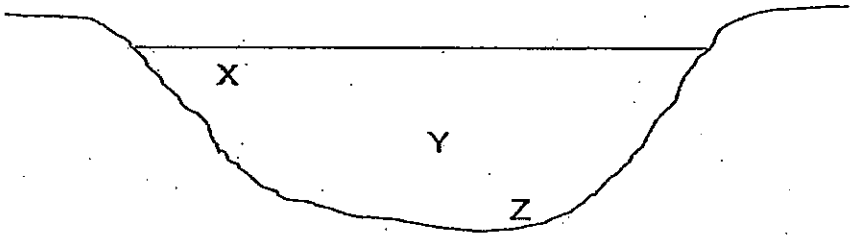
SCORE	/ 3

37. The diagram below shows Fish R which has an upward facing mouth.



Fish R feeds on floating plants which are found in the water and on insects that are found on low, overhanging branches of mangrove trees. These insects fall into the water below after being shot down by a stream of water that Fish R releases from its mouth.

The diagram below shows a cross-section of the habitat where Fish R can be found.



Cross-section of habitat where Fish R can be found

(a) Based on the information above, in which part of the habitat, X, Y or Z, would you most likely find Fish R? Explain your choice. [1]

_____

_____

(b) How does being dependent on two different sources of food enable Fish R to increase its chances of survival? [1]

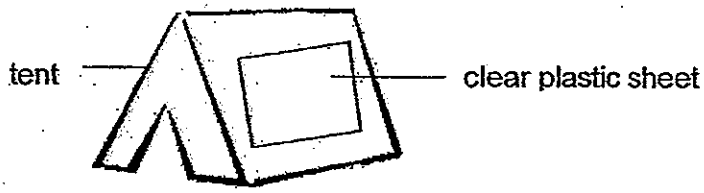
_____

_____

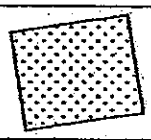
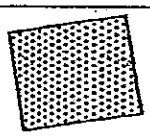
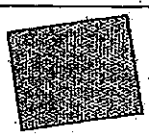
(Go on to the next page)

SCORE	2

38. Harim conducted an experiment to find out the period of the day when the air contained the most amount of dust. He replaced a part of his tent with a piece of clear plastic sheet as shown in the diagram below.



The piece of plastic sheet was neither moved nor cleaned for 24 hours. He recorded the appearance of the clear plastic sheet at different periods of the day as shown in the diagram below.

Appearance on clear plastic sheet			
Period of time	8am – 4pm	4pm – 12 midnight	12 midnight – 8am

He concluded that the air contained the most amount of dust between 12 midnight to 8am. His father told him that it was an incorrect conclusion.

(a) Explain why the conclusion made by Harim was incorrect. [1]

_____

_____

(b) What should Harim do to ensure that he could make a valid conclusion? [1]

_____

_____

(Go on to the next page)

SCORE	2

38. (c) A few days later, Harim observed his father changing the filter for one of the air purifiers in the house. He noticed that the filter was pleated as shown in the diagram below.

State a reason why the filter was pleated. [1]

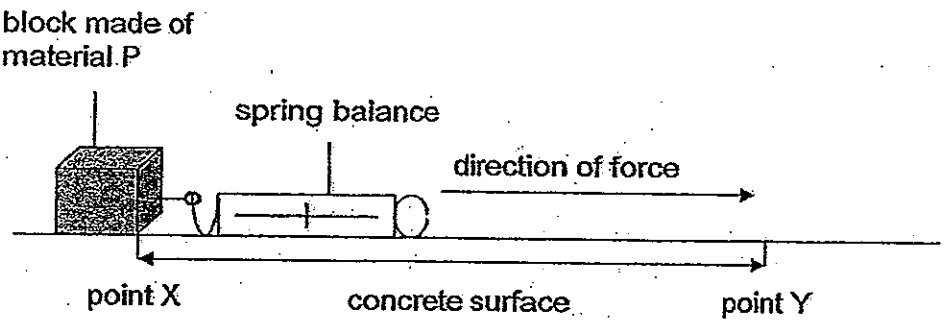
_____

_____

(Go on to the next page)

SCORE	1

39. Christopher had five similar blocks where each block was made of a different material. He pulled them one at a time across a concrete surface from point X to Y as shown in the diagram below.



The force needed to pull each block across the concrete surface was measured and recorded in the table below.

Block made of material	Amount of force needed to pull each block (units)
P	15
Q	25
R	13
S	32
T	19

(a) Based on the data collected, arrange the texture of the surface of the blocks starting with the smoothest surface to the roughest surface. [1]

_____

(b) Christopher wanted to use one of the materials above to make the soles of shoes worn by construction workers where they might be walking along surfaces that are covered with grease and water.

Which material should he choose? Explain. [2]

_____

_____

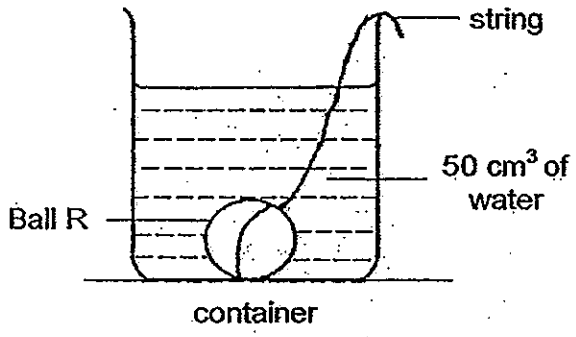
_____

_____

(Go on to the next page)

SCORE	
	3

40. Jamilah wanted to find out the volume of two metal balls, R and S. First she put Ball R in a container with 50 cm^3 of water and recorded the final volume of water with Ball R. She then removed Ball R carefully and repeated the experiment with Ball S. The results are as shown in the table below.



Final volume of water with Ball R (cm^3)	Final volume of water with Ball S (cm^3)
65	85

(a) Based on the results above, which ball has a bigger volume? Explain. [1]

_____

_____

(b) What is the volume of Ball R? [1]

_____

(c) Based on the experiment above, what property of solids does this experiment show? [1]

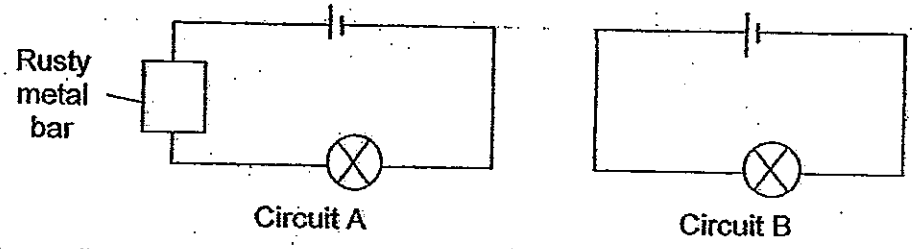
_____

_____

(Go on to the next page)

SCORE	/ 3

41. Joanna set up two similar circuits as shown below.



Circuit A Circuit B

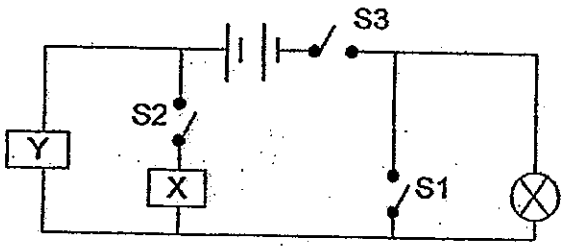
She realised that the bulb in the Circuit A did not light up while the bulb in Circuit B lit up.

(a) Based on Joanna's observation, what can she conclude about the property of the rusty metal bar? [1]

_____

_____

She continued to set up another circuit as shown below using the rusty metal bar in Circuit A and a copper wire at positions X and Y in a random order.



Circuit C

She closed some of the switches in the above circuit and her observations were recorded below.

Switches	Did the bulb light up?
S1 and S3	No
S2 and S3	Yes

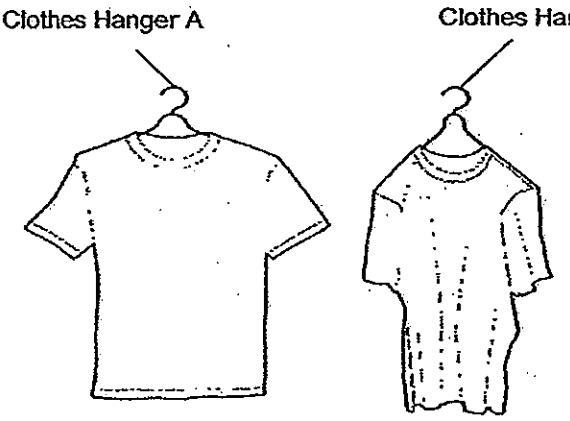
(b) Based on her observations, write down the positions, X and Y, of the two items used in Circuit C. [1]

Items	Position
Copper wire	
Rusty metal bar	

(Go on to the next page)

SCORE	2

42. Sangeetha wanted to dry her wet t-shirts by hanging them on clothes hangers before bringing them out to sun. She managed to find two types of clothes hangers and hanged her t-shirts as shown below.



(a) Which clothes hanger will allow Sangeetha to dry her t-shirts faster? Explain why. [1]

_____

_____

(b) Sangeetha realised that she had spilled some water on the floor while hanging the wet t-shirts. She needed the floor to be dry as soon as possible. Name two things that Sangetha could do to ensure that. [2]

(Note: She did not have any cloth to wipe the water nor any mop around.)

Method 1:

_____

_____

Method 2:

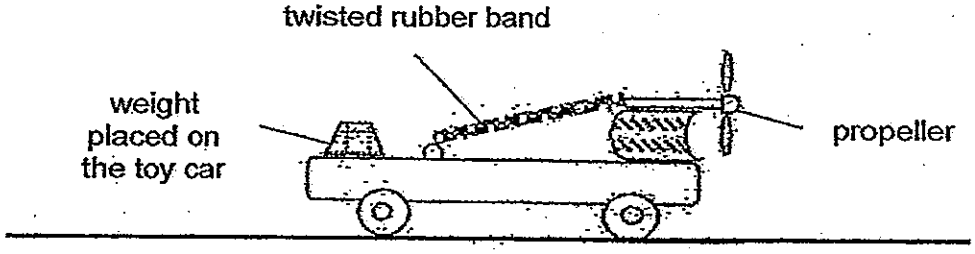
_____

_____

(Go on to the next page)

SCORE	3

43. Ignatius had a toy car which has a propeller attached to a rubber band as shown in the diagram below.



He wanted to find out how the number of weights on the toy car affects the distance it could move on the ground.

In order for the toy car to move, he had to turn the propeller which in turn twist the attached rubber band. He then placed the toy car on the ground before releasing it to measure the distance moved by the toy car on the ground.

(a) State the form(s) of energy possessed by the rubber band as he turns the propeller of the toy car before placing the toy car on the ground. [1]

_____

He recorded the data that he collected in the table as shown below.

Number of weights on the toy car	Distance moved by the toy car (cm)
0	37
1	30
2	26
3	13
4	3
5	0
6	0
7	0

(b)(i) Based on the results collected, how does the number of weights on the toy car affect the distance it could move on the ground? [1]

_____

_____

(Go on to the next page)

SCORE	
	2

43. (ii) Every time before letting the toy car move on the ground, Ignatius turned the propeller four times.

How does this ensure a fair test? [1]

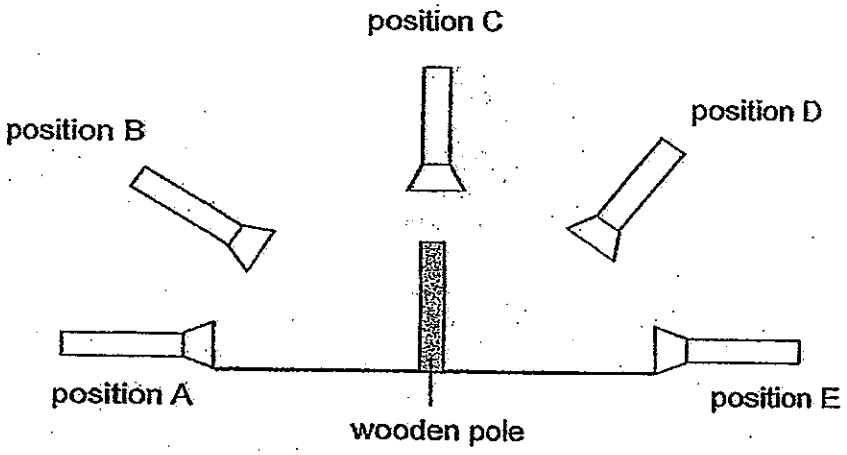
_____

_____

(Go on to the next page)

SCORE	/ 1

44. Joshua conducted an experiment in a dark room as shown in the diagram below.



He kept the distance between the torchlight and the wooden pole constant as he placed the torch at the various positions, A, B, C, D and E. He then observed that the directions and lengths of the shadows cast change with the position where the torch was placed.

(a) Why did Joshua conduct the experiment in a dark room? [1]

_____

_____

(b) What property of light is demonstrated in the above experiment? [1]

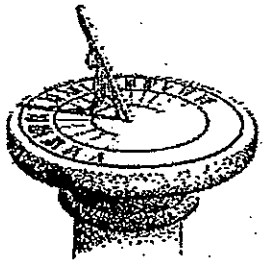
_____

_____

(Go on to the next page)

SCORE	/ 2

44. A sundial is a device that tells the time of the day by the position of the Sun based on the length of the shadows cast as shown in the diagram below.



Joshua wanted to make a sundial using the results that was collected from the experiment as shown in the table below.

Position	Length of shadow formed (cm)
A	50
B	30
C	10
D	30
E	50

(c) Based on the results above, which position(s) of the torch is/are similar to the position of the Sun at noon as seen from Earth? Give a reason for your choice. [1]

_____

_____

-End of Booklet B-

SCORE	/ 1

Answer Key

EXAM PAPER 2013
SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

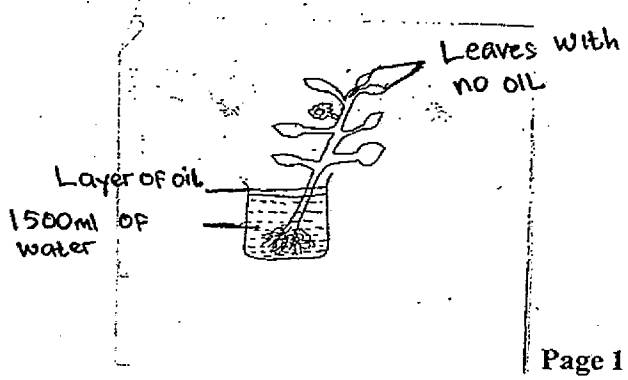
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
4	4	3	1	2	4	3	1	1	1	2	2	1	3	3	3	3

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	3	2	1	4	4	4	4	4	2	4	1

31)a)The adult has wings so it can fly while the 3 other stages stay in water.
b)The mosquito larva and pupa uses breathing tubes that stick out of the water for oxygen and by spreading a layer of oil, the tubes will not be able to suck in air.

32)a)His heart beats faster to supply more blood to other parts of the body, therefore, more oxygen and more digested food can be transported to convent to more energy.
b)When the water evaporates, it removes heat from his body/ gains heat from his body.

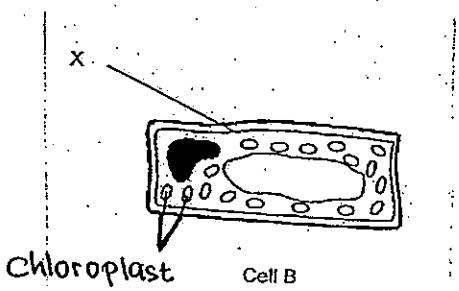
33)a)Beaker W. Volume of water left in beaker W will be more than beaker X. More stomata are found on the underside of the leaves of plant in W was coated in oil, less water was lost through the stomata.
b)



33)c)To compare and confirm that the difference in volume of water left is due to leaves that were coated with oil only.

34)a)It controls the movement of substances in and out of the cell.

b)



c)In the roots of a plant. It does not have chloroplast and has a cell wall meaning that the cell in a part of a plant that close not photosynthesis and make food.

35)The hydrilla. The soil particles suspended in the water will block most sunlight from reaching the hydrilla and the hydrilla would not have sufficient sunlight for it to photosynthesise and make food and would eventually die.

36)a)Light energy→Chemical energy potential energy.

b)This ensures that any decrease in the mass of the set-up left is due to the absorption of water through the roots.

c)In the absence of light photosynthesis will not take place so less water will be used.

37)a)Part X. Fish R has to remain close to the surface to catch its prey/ insect and to feed on the floating aquatic plant.

b)If the insects are eaten by another predator, fish R can feed on floating plants.

38)a)Harim did not clear the mat after the intervals, and the mat would just continue collecting more dust from each time period.

b)

c)So that there would be a larger surface area fur the filter to trap dust.

39)a)R, P, T, Q, S.

b)Material S. The amount of force needed to pull the material was the most and the material has the roughest meaning that the frictional force between material S and ground is the most compared to material P,Q,R,T preventing construction workers from slipping.

40)a)Ball S. The final volume of water with ball S was more than the final volume ball R.

b)15cm3.

c)Solids have a definite volume.

41)a)The rusty metal bar cannot conduct electricity.

b)X

Y

42)a)Clothes Hanger A. It has a larger surface area which increase the rate of evaporation.

b)1)She can spread out the puddle of water.

2)She could use a fan to fan the water.

43)a)Elastic potential energy and kinetic energy.

b)i)The more the number of weights on the toy car, the lesser the distance moved by the toy car until 5 weights where the car cannot move at all.

ii)This is to ensure the number of weight on they toy car is the only variable that a affects the distance moved by the toy car.

44)a)So to ensure that no other light would interrupt the experiment. Conclusions it may affect the direction and length of shadow cast.

b)Light travels in a straight line.

c)Position C. The position of the sun would be the same as position C and the shadow that is cast at noon would be the shortest compared to other times.