



PRIMARY 4 END-OF-YEAR EXAMINATION 2017

Name : _____ ()

Date: 25 October 2017

Class : Primary 4 ()

Time: 8.00 a.m. - 9.30 a.m.

Parent's signature: _____

Duration: 1 hour 30 minutes

SCIENCE
BOOKLET A

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

Booklet A (22 x 2 marks)

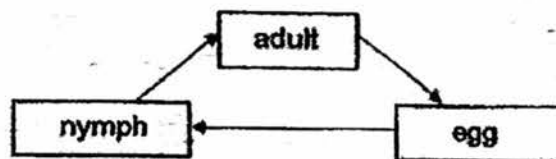
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(44 marks)

1. Matter is anything that has mass and occupies space. Which one of the following is an example of matter?

- (1) air
- (2) heat
- (3) light
- (4) sound

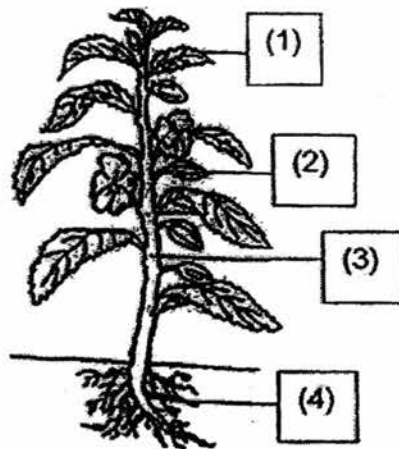
2. The diagram below shows the life cycle of an animal.



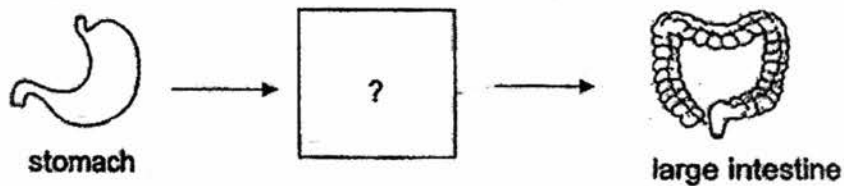
Which one of the following has the life cycle as shown above?

- (1) toad
- (2) butterfly
- (3) mosquito
- (4) cockroach

3. The diagram below shows a plant.
Which part of the plant is the root?

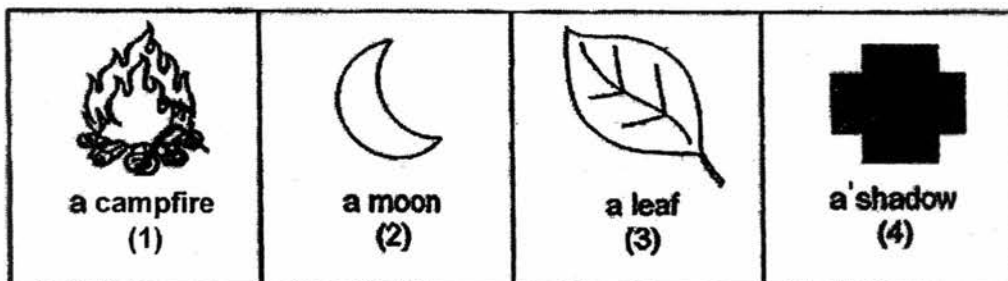


4. The diagrams below show the order of some organs in a human digestive system.



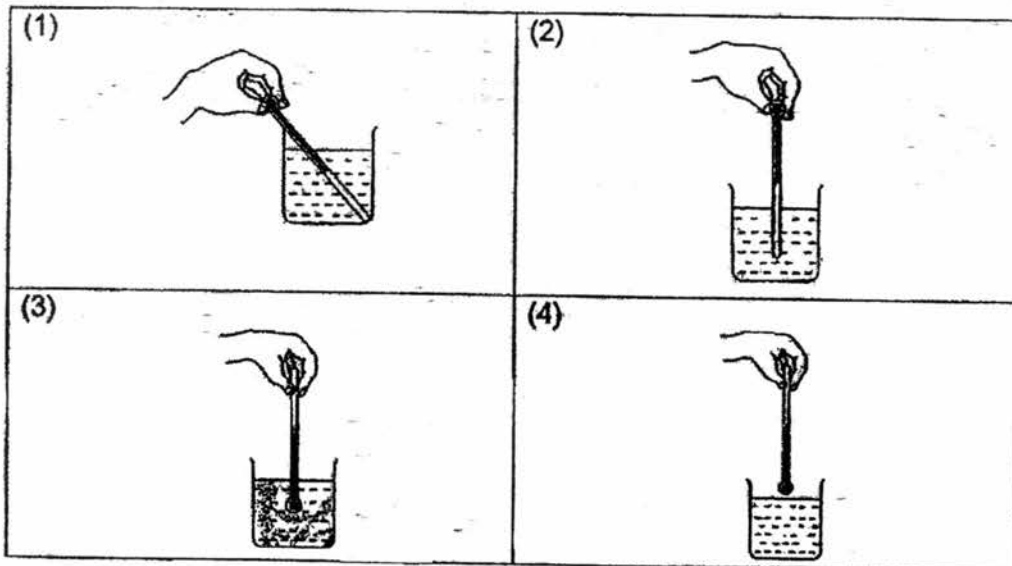
What is the missing part in the box above?

- (1) anus
 - (2) gullet
 - (3) mouth
 - (4) small intestine
5. Which one of the following is a source of light?



6. Kate wants to measure the temperature of cold water in a beaker.

Which one of the following diagrams shows the correct position of the thermometer when taking the temperature reading?



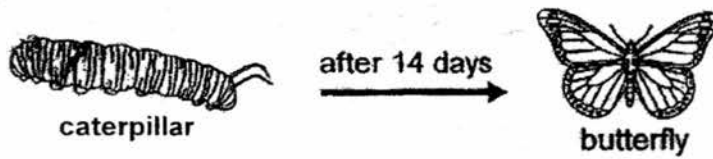
7. Tom places a metal spoon in a bowl of hot soup.



The spoon becomes hotter after a while. Which one of the following explains this?

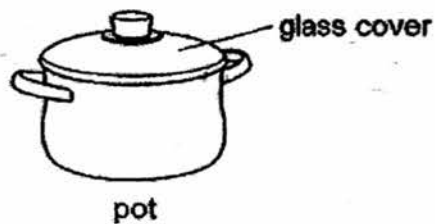
- (1) The bowl loses heat to the hot soup.
- (2) The spoon loses heat to the hot soup.
- (3) The spoon gains heat from the hot soup.
- (4) The hot soup gains heat from the spoon.

8. A caterpillar turns into a butterfly after 14 days.



This shows that the caterpillar is a living thing as it can _____.

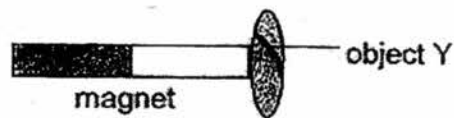
- (1) grow
 - (2) breathe
 - (3) reproduce
 - (4) respond to changes
9. Mrs Lim has a metal pot with a glass cover shown below.



She can see the food that she is cooking in the pot without opening the cover because glass _____.

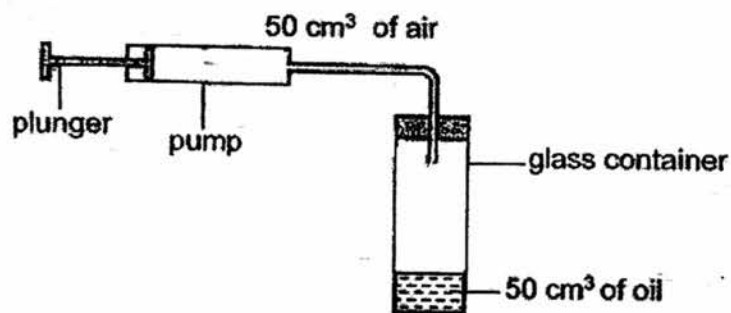
- (1) is strong
- (2) is transparent
- (3) sinks in water
- (4) conducts heat well

10. Object Y is attracted to a piece of magnet as shown in the diagram below.



Object Y is made of _____.

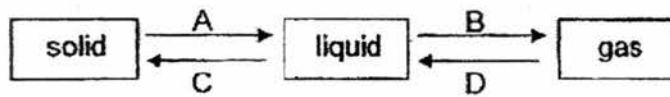
- (1) iron
 - (2) wood
 - (3) plastic
 - (4) rubber
11. A pump is connected to a glass container as shown below. The volume of the glass container is 200 cm^3 . It contains 50 cm^3 of oil.



By pushing the plunger once, 50 cm^3 of air is pumped into the glass container. What is the final volume of air in the glass container?

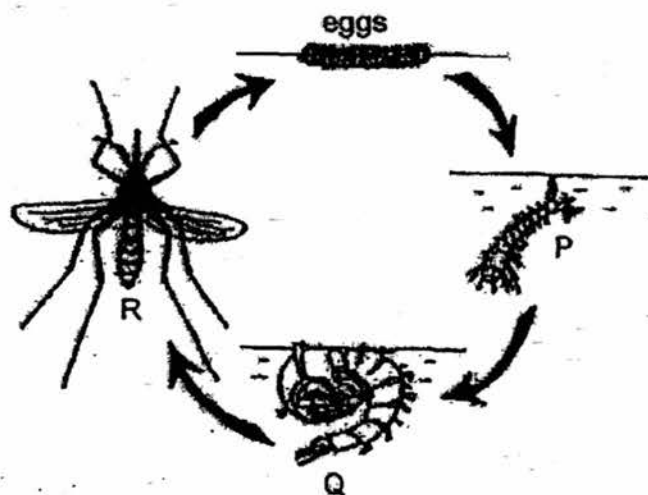
- (1) 50 cm^3
- (2) 100 cm^3
- (3) 150 cm^3
- (4) 200 cm^3

12. The diagram below shows the change in state of water.



Which of the above processes, A, B, C or D, best represents the process that occurs when water is placed in a freezer?

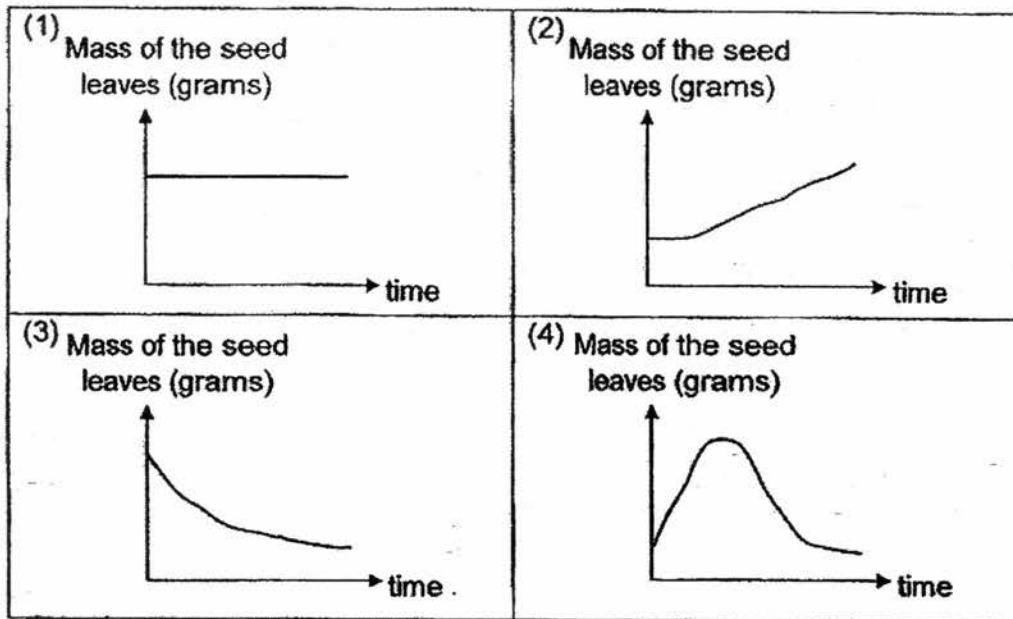
- (1) A
 - (2) B
 - (3) C
 - (4) D
13. The diagram below shows the life cycle of a mosquito.



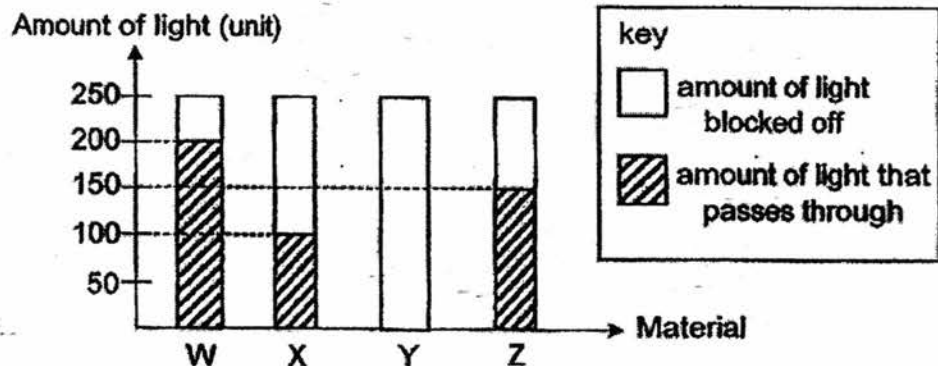
Based on the diagram of the life cycle of a mosquito shown above, which is/are the stage(s) that is/are most difficult to get rid of the mosquito?

- (1) Q only
- (2) R only
- (3) P and Q only
- (4) Q and R only

14. The mass of the seed leaves changes as the seed develops into a seedling. Which graph below shows the change in mass of the seed leaves with time?



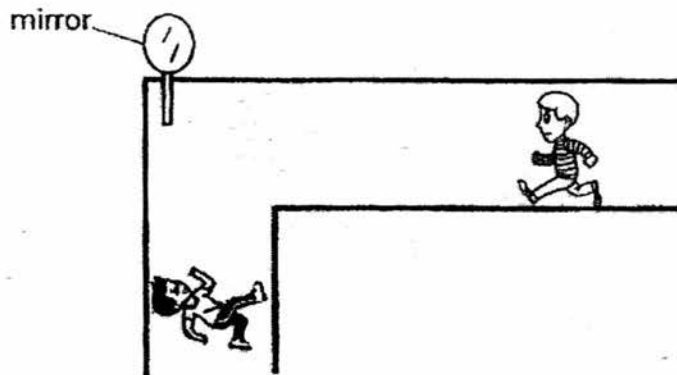
15. A datalogger with a light sensor is used to measure the amount of light that passes through four materials, W, X, Y and Z. The graph below shows the amount of light recorded by the light sensor when light passes through the four materials.



Which material is most suitable for making the lenses of a pair of swimming goggles that blocks off 120 units to 160 units of light to reduce the glare and yet allowing the swimmer to see where he is swimming towards?

- (1) material W
- (2) material X
- (3) material Y
- (4) material Z

16. A mirror was placed to prevent pupils from colliding into each other when they turned the corner as shown in the picture below.

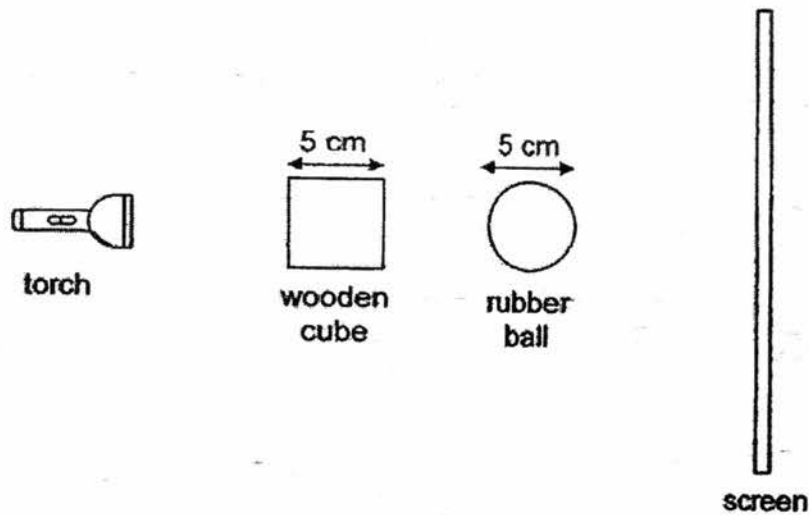


Which of the following properties of light is/are used in the above situation?

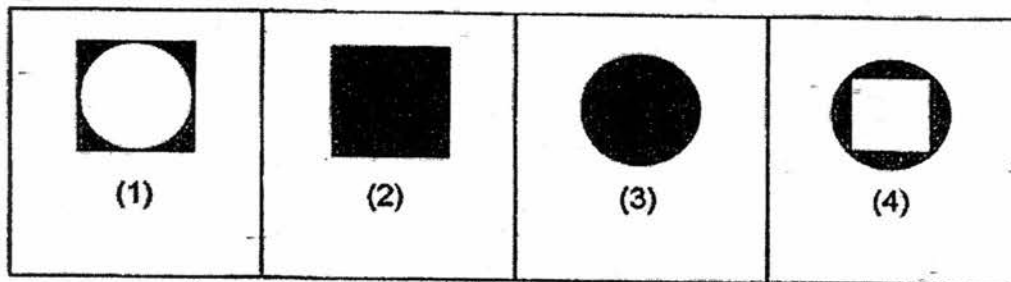
- A Light does not have mass.
- B Light travels in a straight line.
- C Light can be reflected by a mirror.
- D Light cannot pass through an opaque object, hence forming a shadow.

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

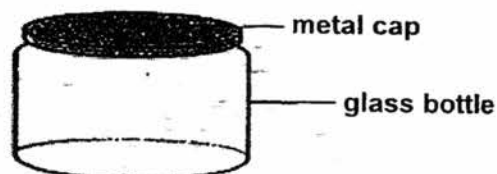
17. A torch, a wooden cube, a rubber ball and a screen are arranged in a straight line as shown below.



Which one of the following would be seen on the screen when the torchlight is switched on?



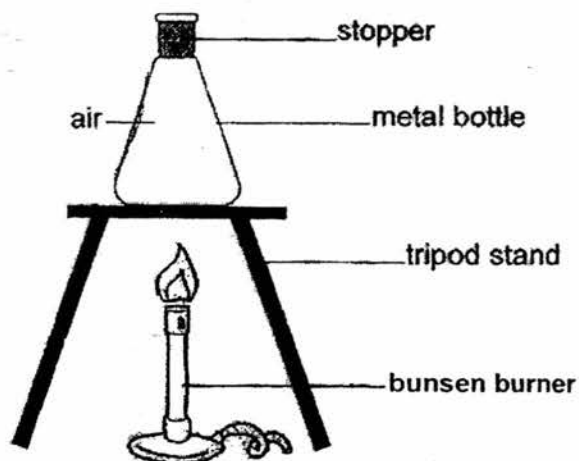
18. Don took out a glass bottle from a refrigerator. However, the metal cap was too tight to unscrew.



What could he do to loosen the cap?

- (1) Heat the metal cap over a flame.
- Heat the glass bottle over a flame.
- (3) Put some ice cubes on top of the metal cap.
- (4) Submerge both the glass bottle and the metal cap into a basin of hot water.

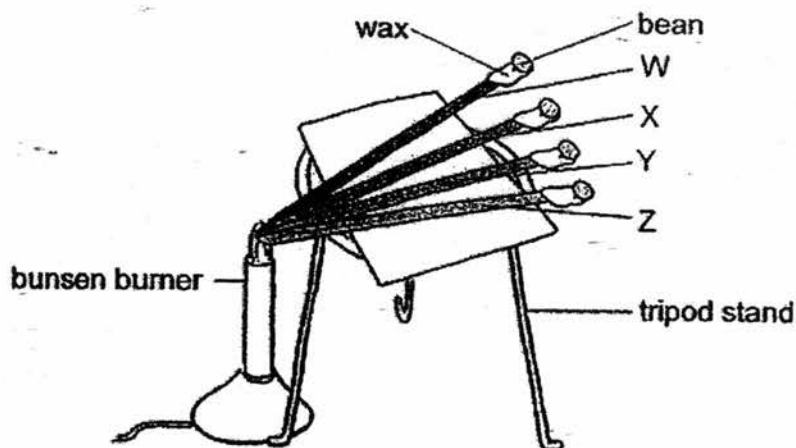
19. Jon heated an empty metal bottle with a stopper over a flame as shown below.



After a while, Jon observed that the stopper popped out of the metal bottle. Which one of following statements explains why the stopper popped out?

- (1) Air in the bottle lost heat and contracted.
- (2) Air in the bottle gained heat and expanded.
- (3) The stopper lost heat to the air and contracted.
- (4) The stopper gained heat from the metal bottle and expanded.

20. Mr Lim used 4 similar rods of different materials, W, X, Y and Z, to find out which rod is the best conductor of heat as shown in the diagram below. He put a bean on 5g of wax at the end of each rod and heated the rods over a bunsen burner until the wax melted and all the beans dropped.



The time taken for each bean to drop was recorded in the table below.

Material of rod	Time taken for the bean to drop (minutes)
W	20
X	25
Y	14
Z	7

Based on the results obtained, arrange the materials from the best conductor of heat to the poorest conductor of heat.

	best conductor of heat → poorest conductor of heat
(1)	Z , W , Y , X
(2)	Z , Y , W , X
(3)	X , W , Y , Z
(4)	X , W , Z , Y

21. The table below shows the properties of four materials, E, F, G and H. A tick (✓) indicates that the material has the property.

material	strong	sinks in water	waterproof
E	✓	✓	✓
F		✓	
G	✓		✓
H			✓

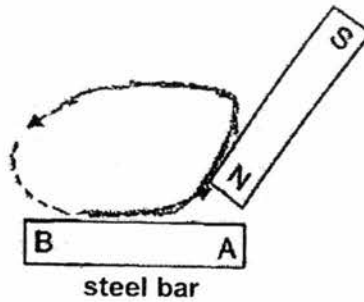
The diagram below shows a person wakeboarding on the surface of the water.



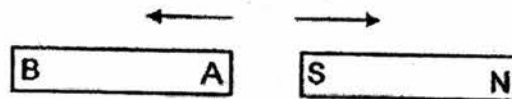
Which one of the materials, E, F, G or H, is most suitable for making the wakeboard?

- (1) E
- (2) F
- (3) G
- (4) H

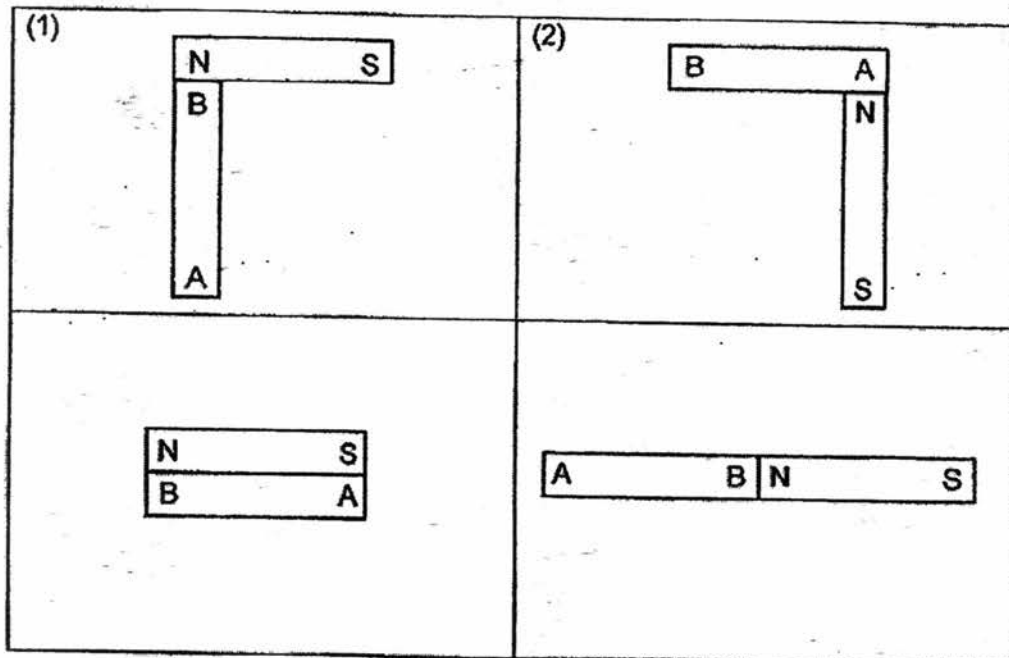
22. Fanny magnetised a steel bar with a magnet by using the stroking method as shown in the diagram below.



Then, Fanny brought the steel bar near the magnet. The arrows in the diagram below shows the movement of both the steel bar and the magnet.



Which of the following diagrams shows a possible arrangement of the magnet and the steel bar?



End of Booklet A

PRIMARY 4 END-OF-YEAR EXAMINATION 2017

Name : _____ ()

Date: 25 October 2017

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Time: 8.00 a.m. – 9.30 a.m.

Parent's Signature : _____

Duration: 1 hour 30 minutes

SCIENCE
BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	44
Booklet B	36
Total	80

Booklet B (36 marks)

For questions 23 to 34, write your answers clearly in this booklet.

The number of marks available is shown in brackets [] at the end of each question or part question.

(44 marks)

23. The diagram below shows an ice cream cone.



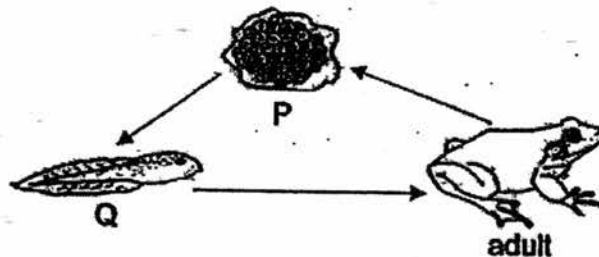
Complete the sentence to state if the parts are solid, liquid or gas.

[2]

(a) The cone is a _____.

(b) The melted ice cream is a _____.

24. The diagram below shows the life cycle of a frog.



Choose the correct words from the box below to answer the following questions.

young	egg	pupa	seed
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Name the stages P and Q.

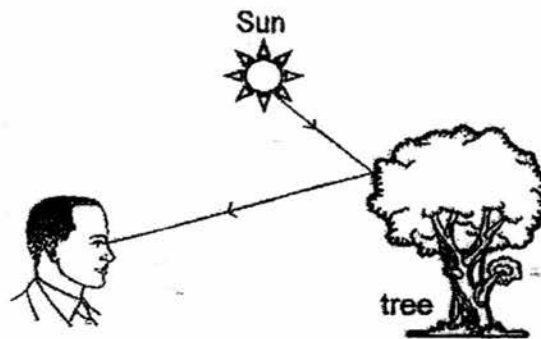
[2]

(a) P: _____

(b) Q: _____



25. The diagram below shows how Joshua sees the tree.

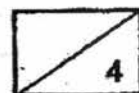


The _____ from the Sun is _____ by the tree and enters Joshua's eyes. [2]

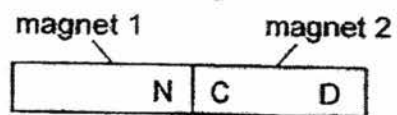
26. The diagram below shows a pair of safety goggles for construction workers working at construction sites.



- (a) Part Y is made of clear plastic because it allows _____ to pass through so that the worker can see his surrounding clearly. [1]
- (b) Part Z is made of _____ because Z can stretch to strap round the head of the worker. [1]



27. Ken placed two magnets together as shown below.



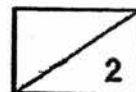
The north pole of magnet 1 is labelled as N.

Name the poles labelled C and D on magnet 2.

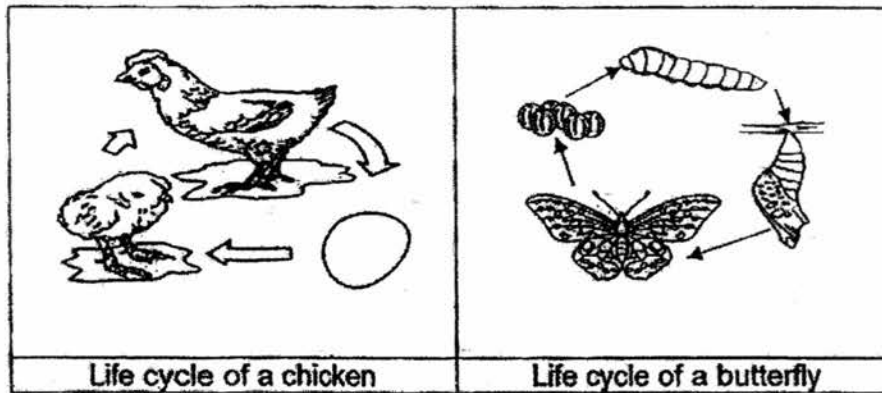
[2]

(a) C: _____

(b) D: _____



28. The diagrams below shows the life cycle of a chicken and a butterfly.



(a) State a difference between the life cycle of the chicken and the butterfly [1]

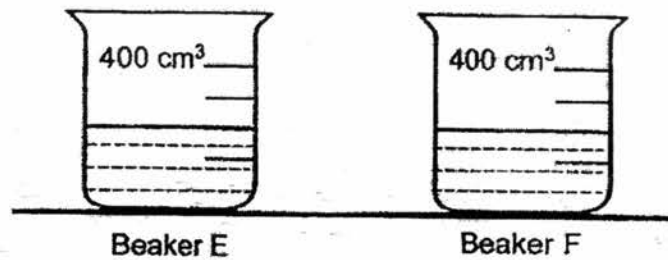
Farmer Lee studied the effect of temperature on the hatching of chicken eggs. The table below shows the results of his study.

Temperature	Number of eggs hatched
34 °C	0
35 °C	4
36 °C	9
37 °C	15
38 °C	24

(b) Based on the table above, what would be the best temperature to hatch the most number of chicken eggs? [1]

(c) Based on the results shown above, state the relationship between the temperature and the number of eggs hatched. [1]

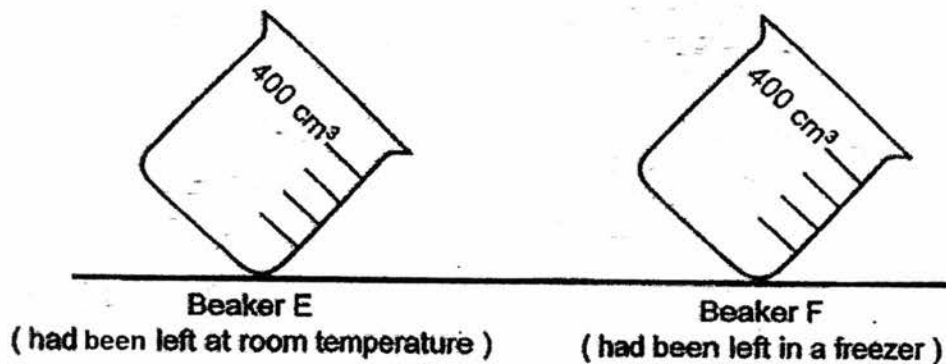
29. Ben filled beakers, E and F, each with 200 cm^3 of water as shown below.



He left beaker E at room temperature and placed beaker F in a freezer. After 5 hours, Ben removed the beakers from their locations and immediately tilted them on a table as shown below.

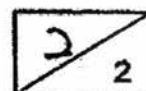
- (ai) Draw the water levels for Beakers E and F in the diagrams below as they were tilted. [1]

- (aii) Write their states of water in the boxes provided below the diagrams. [1]

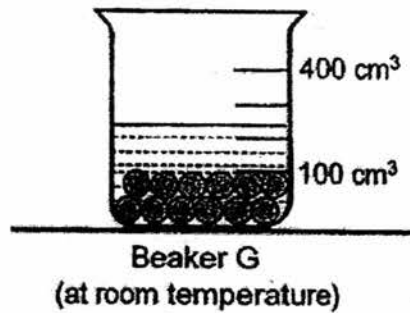


state of water:

state of water:

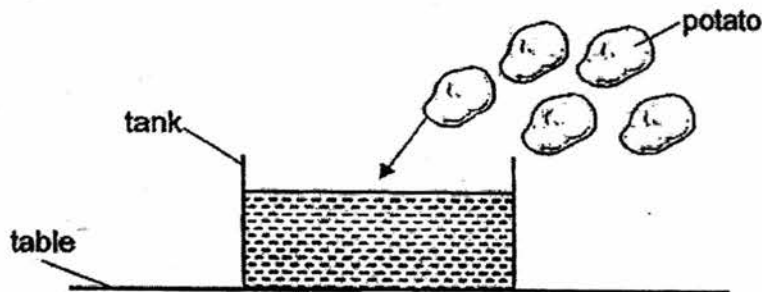


Ben placed some marbles in Beaker G until they reached 100 cm^3 as shown below. Then, he poured 200 cm^3 of water into the beaker.

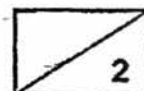


- (b) Explain why the water level was lower than the 300 cm^3 marking of the beaker. [1]

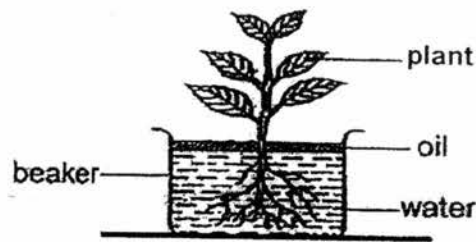
Ben placed five potatoes into a tank of water.



- (c) The water in the tank overflowed. Explain why. [1]

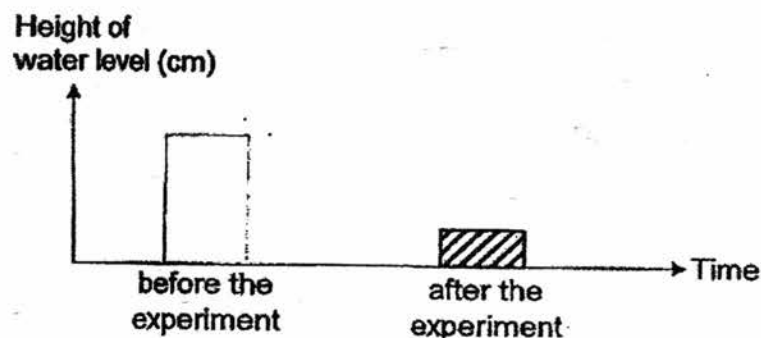


30. Mrs Lim placed a plant in a beaker of water as shown in the diagram below. Then, she placed the set-up near an opened window for two days.



Mrs Lim recorded the height of the water level before and after the experiment.

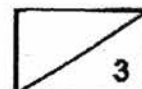
- (a) Complete the bar graph below by drawing a bar to represent the height of the [1]



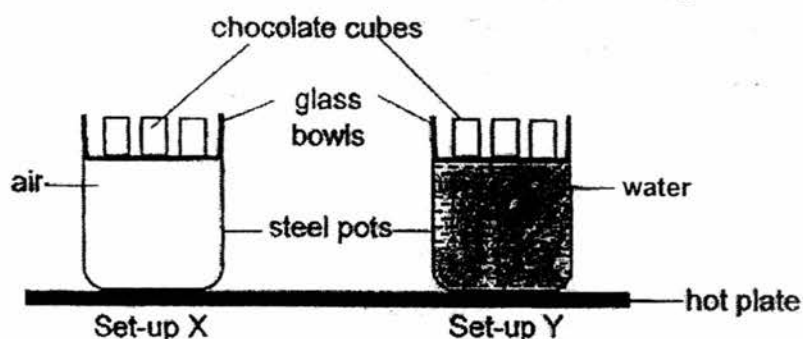
- (b) Explain your drawing in (a). [1]

- (c) Match the plant parts, leaf and root, shown below to their function(s). You can match them to more than one function by drawing lines. (You need not select all the functions.) [1]

Plant parts	Functions
leaf	• makes food for the plant
	• holds the plant firmly to the ground
root	• holds the plant upright
	• allows gaseous exchange
	• absorbs water



31. Mrs Ho wanted to melt some chocolate cubes as shown in the diagram below. The pots were placed on a hot plate.



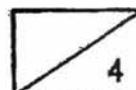
- (a) The table below shows the time taken for the chocolate cubes to melt completely for set-up X and Y. Fill in 'X' and 'Y' in the boxes in the table below to match Mrs Ho's given results. [1]

Set-up	Time taken for the chocolate cubes to melt completely (minutes)
	5
	9

- (b) If Mrs Ho increased the temperature of the hot plate, how would it affect the time taken for the chocolate to melt for set-up Y? [1]

- (c) Mrs Ho removed the glass bowls from the steel pots with a piece of cloth to prevent her fingers from getting burnt. Explain why she used the piece of cloth. [1]

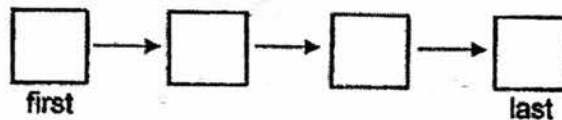
- (d) Mrs Ho replaced the glass bowl with an iron bowl of similar size and shape for set-up Y. She noticed that the chocolate cubes melted faster than before. Explain why. [1]



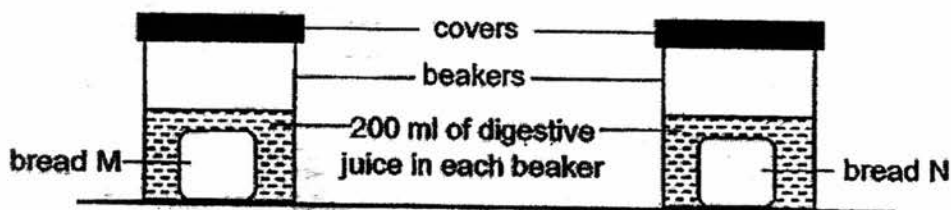
32. Study the table which shows the description of digestion in some parts of a human body.

A	Undigested food is passed out of the body.
B	The food is churned into smaller pieces as it mixes with some digestive juices.
C	Water and some minerals are removed from the undigested food.
D	The food enters into a long tube to be further digested and absorbed into the blood.

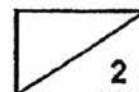
- (a) Arrange the above descriptions, A, B, C and D in the order of digestion in a human body by filling 'A', 'B', 'C' and 'D' in the boxes below. [1]



Sam had two kinds of bread, M and N. He conducted an experiment to find out which bread, M or N, of similar size would be digested at a faster rate. He set up the experiment as shown in the diagram below.



- (b) Was Sam conducting a fair test? Explain your answer. [1]

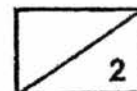


- (c) If Sam's digestive system produced far less digestive juices compared to a normal person, explain how this affected the amount of digested food he would be able to absorb compared to a normal person. [1]

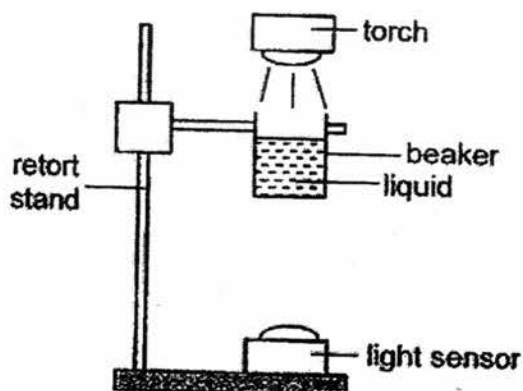
The diagram below shows the large intestine of a human.



- (d) When the undigested food remains in the large intestine for a longer period of time, the waste released out of the body is drier. Based on the function of the large intestine, explain why. [1]



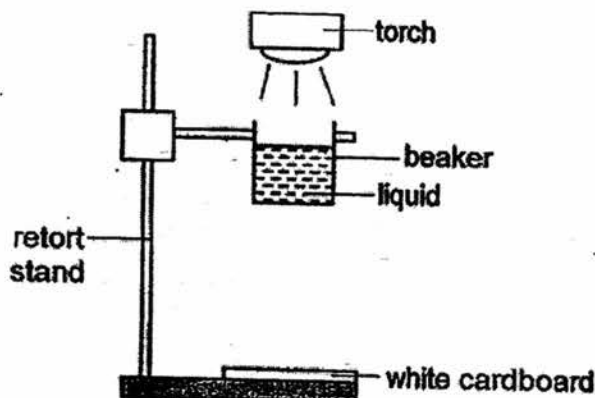
33. James set up an experiment as shown in the diagram below.



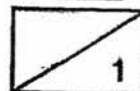
He prepared four beakers, each containing a different liquid, W, X, Y or Z, of the same amount. He switched on the torch and recorded the amount of light which passed through each liquid as detected by the light sensor. The result is shown in the table below.

Type of liquid	W	X	Y	Z
Amount of light detected (lux)	650	100	900	500

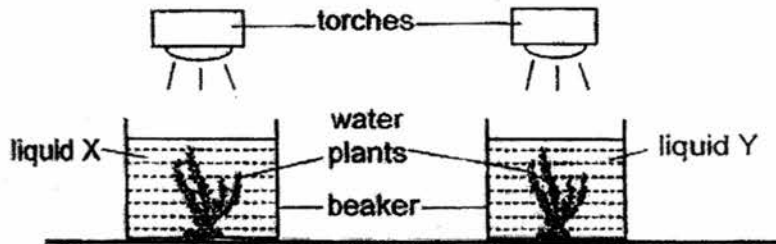
James replaced the light sensor with a white cardboard.



- (a) Based on the results he had obtained, which liquid, W, X, Y or Z, would form the lightest shadow on the white cardboard when light is being shone through it? Give a reason for your answer. [1]

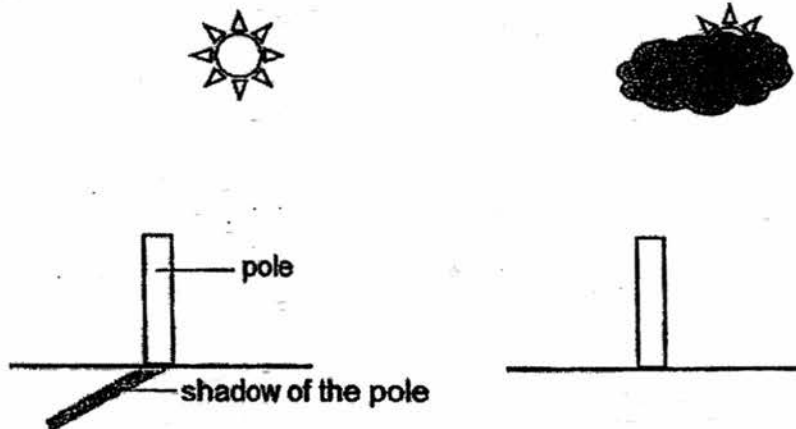


James then submerged 2 similar water plants into liquid X and Y respectively and placed each of the two beakers under a torch.

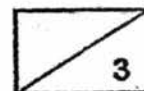


After 3 days, he observed that the plant in liquid X was dying but the plant in liquid Y was growing well. Explain James' observation. [2]

James saw an upright pole on a cement floor. Its shadow was cast on the cement floor as shown below. Just then a huge, thick and dark cloud passed by and James noticed that the shadow of the pole disappeared.



(c) Explain why the shadow of the pole disappeared. [1]



34. Glass bottles are formed by a glass blower blowing air into melted glass called molten glass. The drawing below shows a glass blower blowing air into a clump of molten glass after taking it out from an oven to shape the glass. The temperature of the molten glass is around 1400°C .

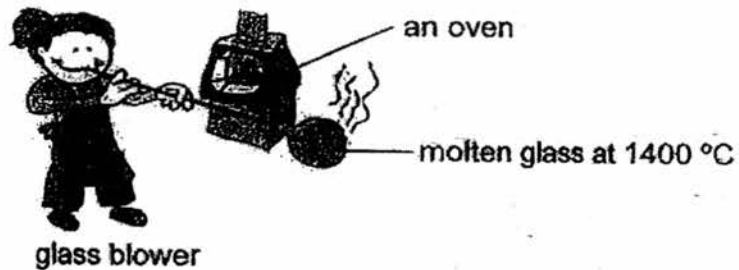
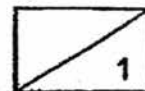
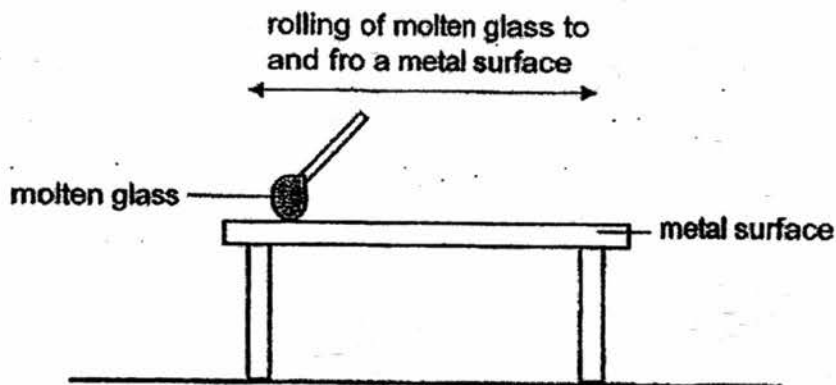


Diagram 1

- (a) Draw an arrow ($\leftarrow$ or $\rightarrow$) to show the direction of the transfer of heat in the box below after the molten glass is removed from the oven in Diagram 1. [1]

surrounding air molten glass

After blowing into a certain size, the molten glass is rolled over a metal surface on a table to fix its shape as shown in the diagram below.

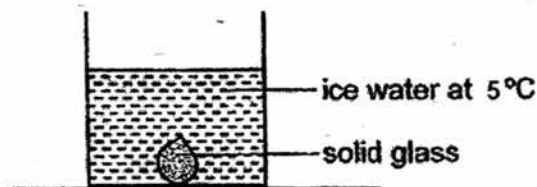


The table below shows the change in temperature of the molten glass when it was rolled on the metal surface.

Time (minutes)	Temperature of molten glass ($^{\circ}\text{C}$)
0	1400
2	1390
4	1350
6	1300

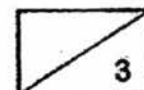
- (b) Explain why the temperature of the molten glass decreases as it is being rolled to and fro the metal surface. [1]

When a drop of molten glass is dropped into a beaker of ice water, it turns into solid glass almost instantly.



- (c) Explain why the molten glass turns from liquid into solid glass faster when it comes in contact with the ice water. [2]

End of paper



SCHOOL : TAONAN PRIMARY SCHOOL

LEVEL : PRIMARY 4

SUBJECT : SCIENCE

TERM : 2017 SA2

CONTACT :

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	4	4	1	3	3	1	2	1
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	3	2	3	2	2	2	1	2	2

Q 21	Q22
3	2

SECTION B

Q23)	a) Solid b) Liquid
Q24)	a) Egg b) Young
Q25)	a) Light b) Reflected
Q26)	a) Most light b) Rubber
Q27)	a) S b) N
Q28)	a) The chicken has a 3-stage life cycle while the butterfly has a 4-stage life cycle. b) The best temperature would be 38 c) As the temperature increases, the number of eggs hatched increases

	too.
Q29)	a) (i) - (ii) Liquid, Solid b) Water occupied the space in between the marbles. c) Potatoes occupy space and they pushed the water out of the tank.
Q30)	a) {draw the bar higher than the after experiment} b) The roots of the plant absorb the water so the water level before the experiment has to be higher than the water level after the experiment. c) Leaf → makes food for the plant → Allows gaseous exchange Root → holds the plant firmly to the ground → Absorbs water
Q31)	a) Y, X b) If Mrs Ho increases the temperature of the hot plate, the time taken for the chocolate to melt would decrease. c) The cloth is a poor conductor of heat. It slows down heat gain from the glass bowls to her fingers. d) Iron is a better conductor of heat than glass. Heat transfer from the steel pots to the chocolate cubes will be faster.
Q32)	a) B→D→C→A b) Yes, there was only one changed variable for the experiment, which is the type of bread. c) Food will be digested slower. Hence, the digested food will be absorbed more slowly. d) More water will be absorbed by the large intestine.
Q33)	a) Liquid Y. It allowed the most light to pass through, hence it will block the least light. b) Liquid X allowed less light to pass through than Liquid Y. Hence the planet received less light and made less food. c) The cloud blocked the sun which was the source of light. As the pole was no longer blocking light, the shadow disappeared.
Q34)	a) ← b) The molten glass lost heat to the metal surface. c) The ice water has a lower temperature than the metal surface. The molten glass lost heat to the ice water at a faster rate.