



PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

**PRIMARY 6
SCIENCE
(BOOKLET A)**

24 AUGUST 2018

Name: _____ ()

Class: Resilience _____

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
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.

This booklet consists of **15** printed pages, excluding the cover page.

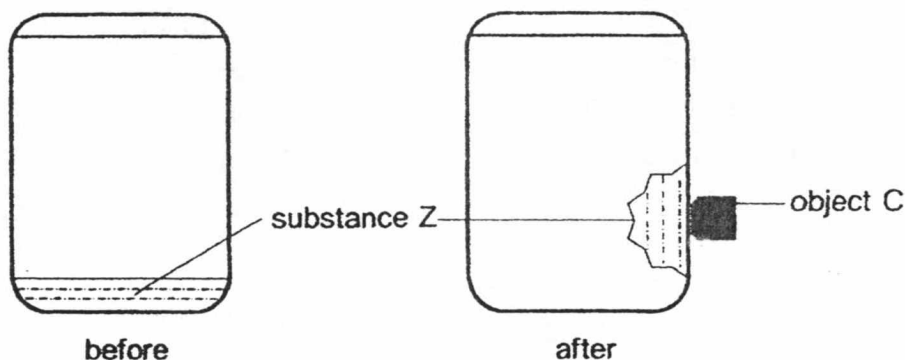
THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
5700 S. UNIVERSITY AVENUE
CHICAGO, ILLINOIS 60637

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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. — (56 marks)

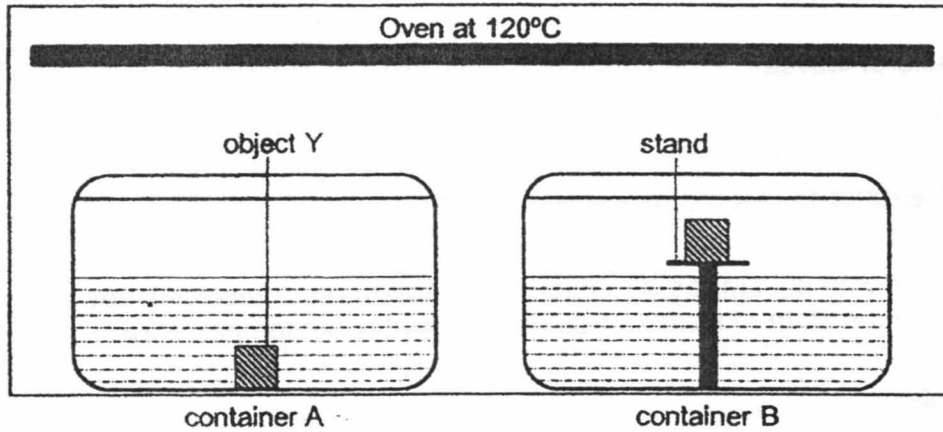
- 1 Which of the following characteristics should be used to identify a flowering and non-flowering plant?
- (1) size of leaves
 - (2) type of flowers
 - (3) presence of pollens
 - (4) presence of chloroplasts
- 2 Ahmad has some substance X. Which of the following equipment would be best to determine the state of matter of substance X at room temperature?
- (1) ruler
 - (2) syringe
 - (3) data logger
 - (4) electronic balance
- 3 Devi poured in substance Z into a container and sealed it. She then placed object C close to the side of the container and noticed substance Z moved to the side as shown below.



What property of substance Z allows for Devi's observation?

- (1) magnetic
- (2) light-weight
- (3) ability to float
- (4) definite shape

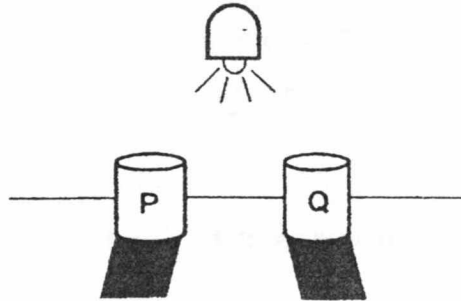
- 4 Xinli had two similar containers, A and B. She placed a stand made of poor conductor of heat in container B only. She then poured 80ml of water and placed object Y in both containers. She sealed and placed both containers into an oven set at 120°C as shown below.



After 3 minutes, both containers were removed from the oven and there was 50ml of water left. Xinli then measured the temperature of object Y in both containers. Which of the following about the temperature of object Y in both containers is most likely correct?

Temperature of object Y in	
Container A	Container B
(1) 120°C	120°C
(2) Higher than in B	Lower than in A
(3) Lower than in B	Higher than in A
(4) Room temperature	Room temperature

- 5 Thomas placed 2 similar objects of different materials, P and Q, at equal distance away from a light source. He observed that the shadows made by the objects were different as shown below.



Why was there a difference in the shadows?

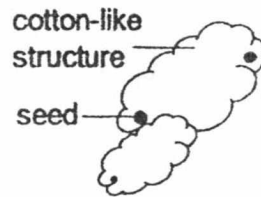
- (1) The amount of light received by P and Q was different.
 - (2) P reflected some light away but Q did not reflect any light away.
 - (3) Q allows most light to pass through but P did not allow light to pass through.
 - (4) P allows some light to pass through but Q did not allow light to pass through.
- 6 Yun Zhao made three statements about sexual reproduction in humans.

- A Testes produces the female reproductive cell.
- B Fertilised egg develops in the ovary.
- C Fertilisation occurs when a sperm and egg cell fuses.

Which of the above statements is/are correct?

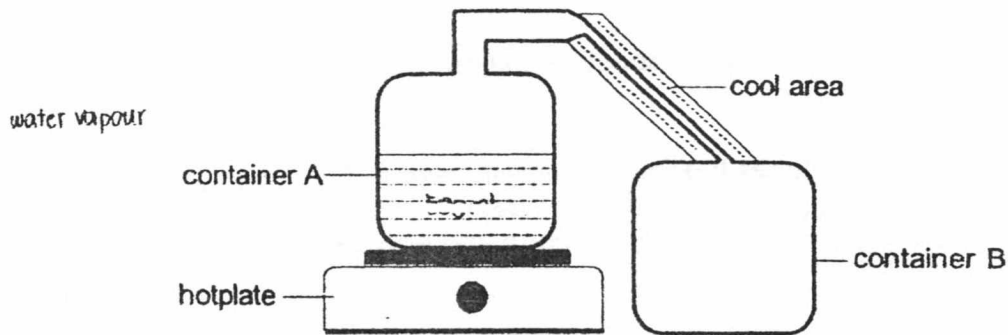
- (1) B only
- (2) C only
- (3) A and B only
- (4) A and C only

- 7 Kelly found a seed with white cotton-like structure as shown below.



What is the likely method of dispersal of the seed?

- (1) wind
 - (2) water
 - (3) animal
 - (4) explosive action
- 8 Priya conducted an experiment using a sealed set-up as shown below. Container A is filled with 500ml of water and was heated till the water boiled. The cool area is kept cool throughout the experiment.



At the end of the experiment, there was no water left in container A. What is the maximum amount of water she would collect in container B at the end of the experiment?

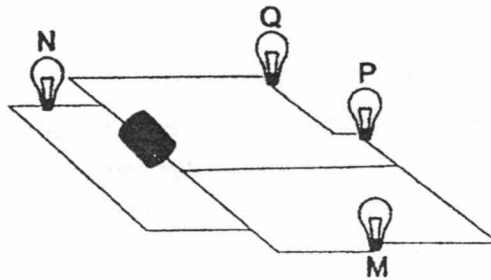
- (1) 1ml
- (2) 201ml
- (3) 301ml
- (4) 501ml

- 9 When Ali jumped into cool water, he realised that he was able to hold his breath longer in water as compared to when he was out of water. Ali found that when he is in cool water, his blood vessels contract.

How did the blood vessels contracting help him hold his breath longer in water?

- (1) less carbon dioxide will be used by the body
- (2) more carbon dioxide will be conserved by the body
- (3) more blood rich in oxygen will be pumped by the heart
- (4) less blood rich in oxygen will reach to all parts of the body

- 10 Study the circuit below. All bulbs and battery are new and identical.

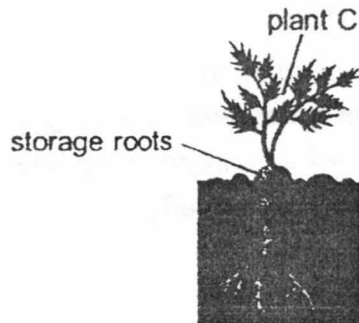


Which bulb(s) will still light up if bulb M fuses?

- (1) Q only
- (2) N and Q only
- (3) Q and P only
- (4) N, Q and P

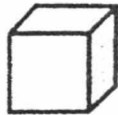
- 11 A farmer found out that plant C, shown below, will produce sweeter storage roots during colder months as compared to warmer months even though during colder months, the sun shines for only six hours daily.

less daylight



Which statement best explains why plant C produces sweeter storage roots during colder months?

- (1) In warmer months, plant C loses more water.
 - (2) In colder months, plant C needs more sugar to survive.
 - (3) In warmer months, plant C's food and water-carrying tubes expand.
 - (4) In colder months, plant C receives more light to photosynthesize more.
- 12 Claire has a cube magnet as shown below.



Without using any other equipment, how can she determine the 2 poles on the cube magnet, if she only has paper clips with her?

- (1) Check for repulsion between the magnet and a paper clip.
- (2) Count the number of paper clips attracted by each face of the magnet.
- (3) Allow the magnet to hang freely from the paper clips so that it will face the north-south direction.
- (4) Stroke one paper clip till it becomes a temporary magnet and check for attraction between the paper clip and the magnet.

13 Which of the following does not help in the conservation of energy?

- (1) Use solar-powered cars.
- (2) Eat less food and throw the rest away.
- (3) Switching off all electrical appliances when not in use.
- (4) Take public transport instead of driving your own vehicle.

14 Wee Chiong observed the following pod-like structure as shown below.

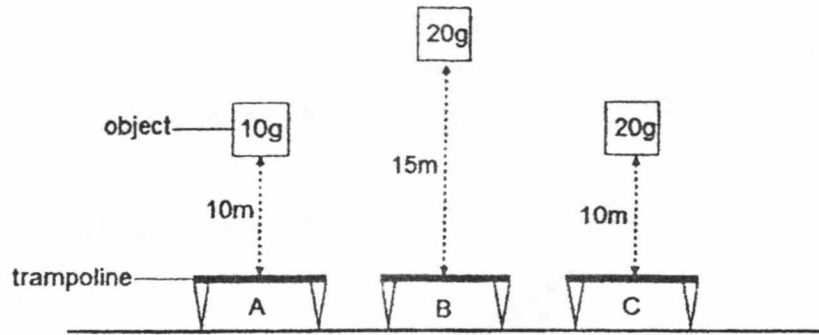


After some days, the pod-like structure dries up and the contraction of the pod results in a push which forces the seeds out, dispersing them a distance away.

Which one of the following correctly explains how the seeds are dispersed, in terms of energy?

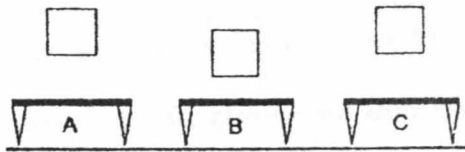
- (1) Kinetic energy of the pod drying up is transferred to kinetic energy of the seeds dispersed.
- (2) Heat energy from the sun dries up the pod and is converted to kinetic energy as the seeds dispersed.
- (3) ^{KE of pod drying up} Elastic potential energy of the pod, converted to kinetic energy of the pod and is transferred to kinetic energy of the seeds dispersed.
- (4) Gravitational potential energy in the pod, converted to kinetic energy of the pod and is transferred to kinetic energy of the seeds dispersed.

- 15 Kim dropped 3 objects of same size but of different mass onto 3 similar trampolines as shown in the diagram below.

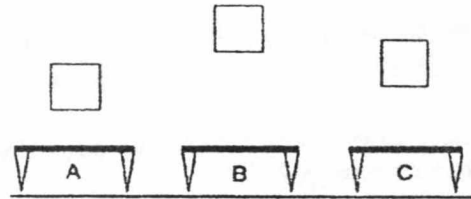


Which one shows the maximum height of the 3 objects after they bounced off the trampoline once?

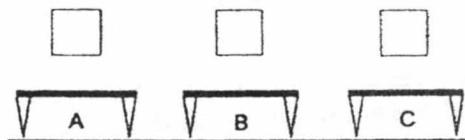
(1)



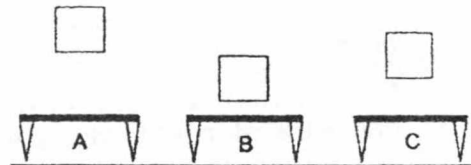
(2)



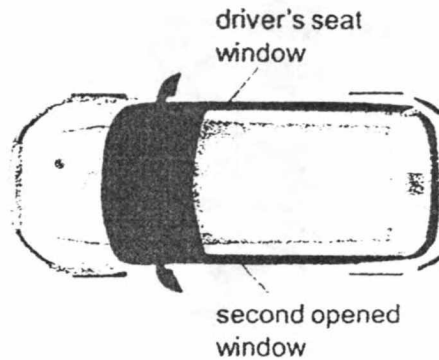
(3)



(4)



- 16 Yan yue was driving his car and decided to lower down the driver's seat window. He realised that even as he was driving at high speeds, very little wind entered his car. His daughter asked him to lower down another window.



How does lowering down 2 windows allow more wind to enter the car?

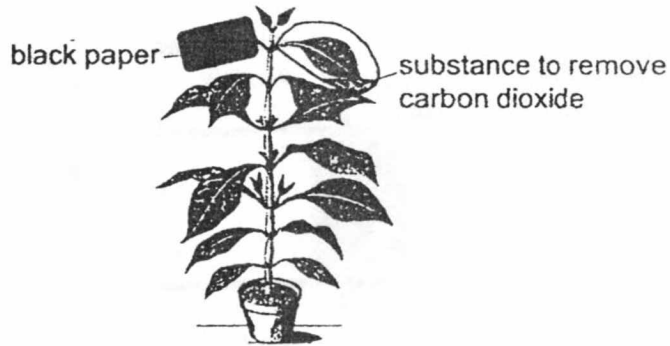
- (1) More wind can enter from both sides.
 - (2) It allows for air in the car to escape and more wind to enter.
 - (3) It will not allow more wind to enter the car as there is no difference.
 - (4) The opening creates more friction causing more wind to be formed.
- 17 Which two statements are true of both plants and animals?

- A Both need energy to survive.
- B Both can make their own food.
- C Both need the sun directly to have energy.
- D Both can store energy if there is excess.

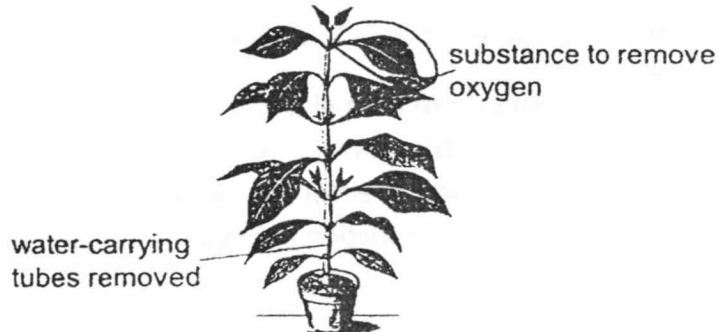
- (1) A and C
- (2) A and D
- (3) B and C
- (4) B and D

18 Andy wanted to find out if carbon dioxide and water affects photosynthesis of a plant. Which set up should he use to carry out his experiment? —

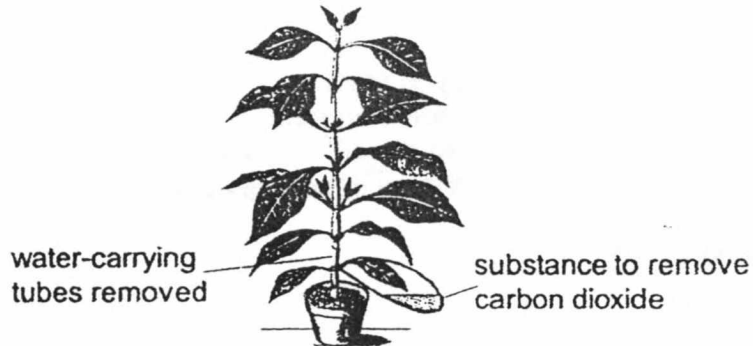
(1)



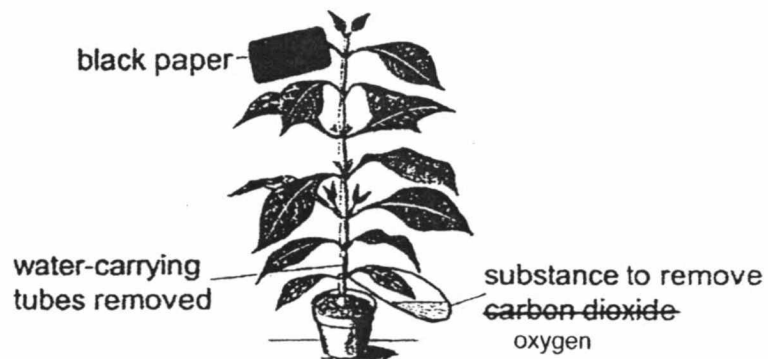
(2)



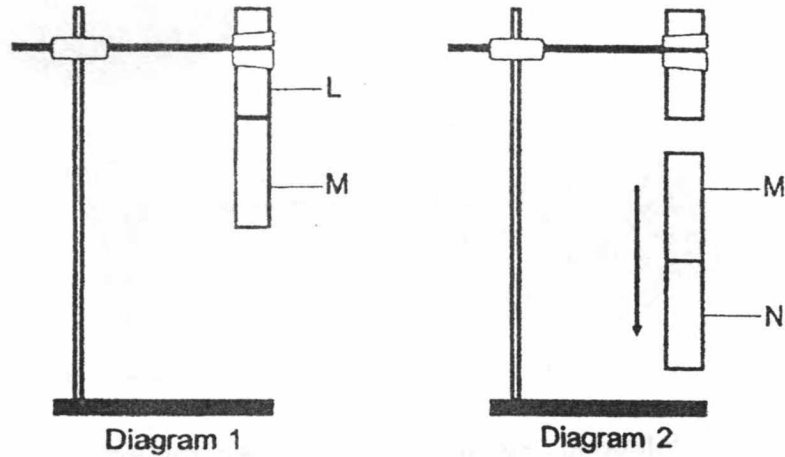
(3)



(4)



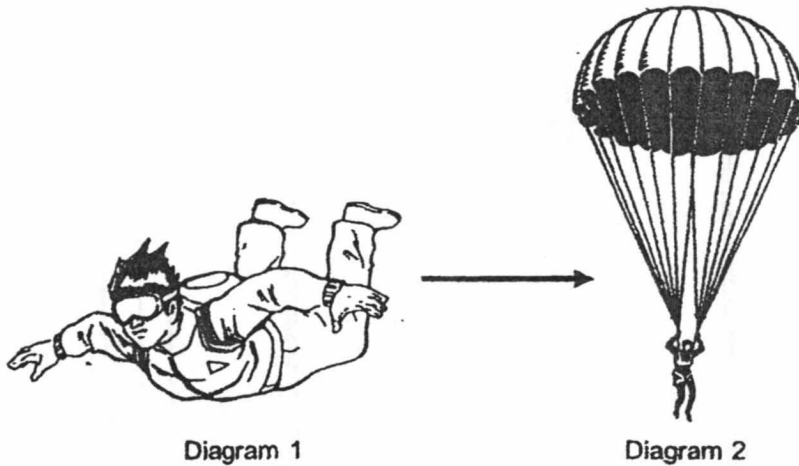
- 19 Magnet L was clamped on a retort stand. Val placed magnet M near magnet L and it was attracted to magnet L as shown in Diagram 1. However, when magnet N was attracted to magnet M, both magnet M and N fell to the ground as shown in Diagram 2.



Which one of the following explains why M and N fell?

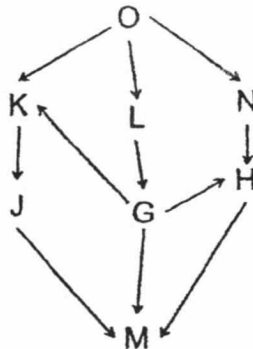
- (1) N has greater magnetic force than L, pulling M down.
- (2) M's magnetic force was less than L's and N's magnetic force.
- (3) N's weight is more than the magnetic force between M and N.
- (4) M and N's total weight is greater than magnetic force between L and M.

- 20 Brayden went skydiving. At the start, he was moving very fast towards the ground as shown in Diagram 1. Once his parachute opened, he was moving slower towards the ground as shown in Diagram 2.



Which one of the following explains why Brayden moved slower when the parachute opened?

- (1) Frictional force increased as the parachute opened.
 - (2) Brayden's weight decreased as the parachute opened.
 - (3) Gravitational force decreased as the parachute opened.
 - (4) Gravitational potential energy was converting to kinetic energy.
- 21 The diagram below shows a food web in a community.



How many food chains are there that ends with 'M'?

- (1) 3
- (2) 4
- (3) 5
- (4) 6

22 What are the physical characteristics of the environment that will ensure the survival of organisms living in a habitat?

- A Amount of water
- B Type of food
- C Amount of light
- D Type of water
- E Other organisms placed in environment

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

23 During a study of the forest habitat, Mira was able to identify the food relationship between three organisms as shown.

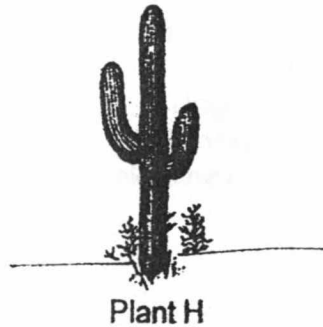


After some time, Mira observed that the population of organism B increased and the population of organism A decreased.

What can she introduce to increase the number of organism A?

- (1) a predator for C
- (2) more organism C
- (3) another herbivore
- (4) more food producers

- 24 Study the diagram of plant H which survives **well** in a place of high temperature.



Which structural adaptation allows it to survive **well** in very high temperatures?

- (1) swollen stems to trap air
 - (2) spines which protects the plant H
 - (3) modified leaves to reduce water loss
 - (4) roots that spread out at the surface of the soil and deep underground
- 25 Yani found an animal P which is able to survive in extreme cold temperatures.

Which is a possible behavioural adaptation that the animal has which allows it to survive in that environment?

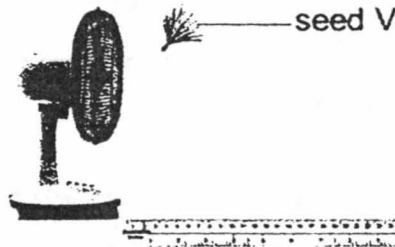
- (1) hollow hair
 - (2) thick layer of fats
 - (3) huddling together
 - (4) replacing body covering
- 26 Country A has been having increasing temperatures and frequent soil erosion in many areas. What can the government do to reduce the two negative impacts in Country A?
- (1) carry out reforestation
 - (2) stop the selling of cars
 - (3) build barriers around the soil
 - (4) install more air-conditioners in the country

- 27 Malcom wanted to find out which soil, X, Y or Z would be best to grow a plant. He listed some of his steps in the table below.

Steps	Instructions
A	Place all 3 set-ups in the open field
B	Prepare 3 similar pots and put 100grams of soil X, Y and Z
C	Water each pot with 20ml of water daily
D	Observe and record the growth of all plants daily
E	Place similar seedlings into each soil

In which order should the steps be carried out?

- (1) A, D, C, B, E
 - (2) B, C, D, E, A
 - (3) B, E, A, C, D
 - (4) D, C, A, B, E
- 28 Julia carried out an experiment as shown below.



Julia wanted to find out how far seed V would travel with different wind speed.

What can Julia do to increase the accuracy of her results?

- (1) repeat the experiment a few more times
- (2) ensure that the amount of wind is the only changed variable
- (3) use a stopwatch to collect the time it takes for the seed to travel
- (4) carry out the experiment in an enclosed room with no other wind sources



PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

PRIMARY 6
SCIENCE
(BOOKLET B)

24 AUGUST 2018

Name: _____ ()

Class: Resilience _____

Parent's Signature

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

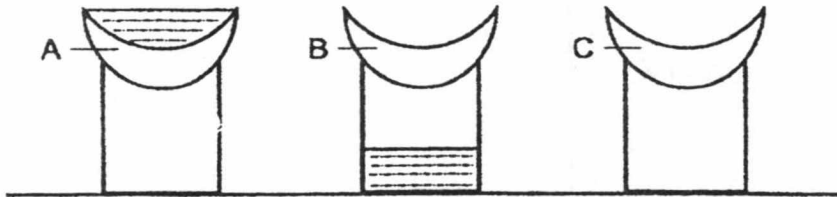
Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklets A & B) :	100

This booklet consists of 13 printed pages, excluding the cover page.

For questions 29 to 41, write your answers in the booklet.

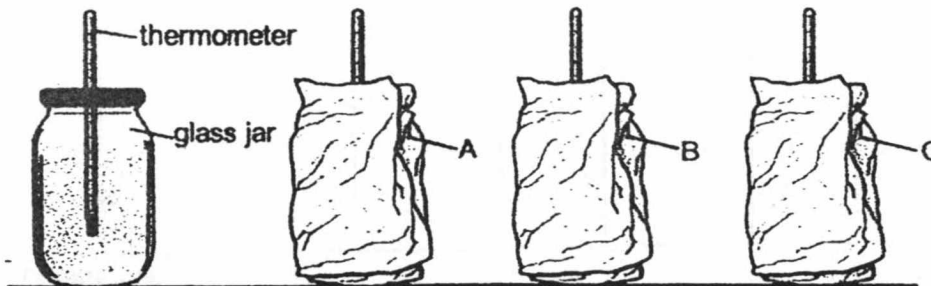
The number of marks available is shown in brackets [] at the end of each question or part question. (44 marks)

- 29 Mr Tan carried out an experiment to examine the property of 3 materials. He poured 100ml of water at 20°C through each material. The diagram below shows his observation at the end of the experiment.



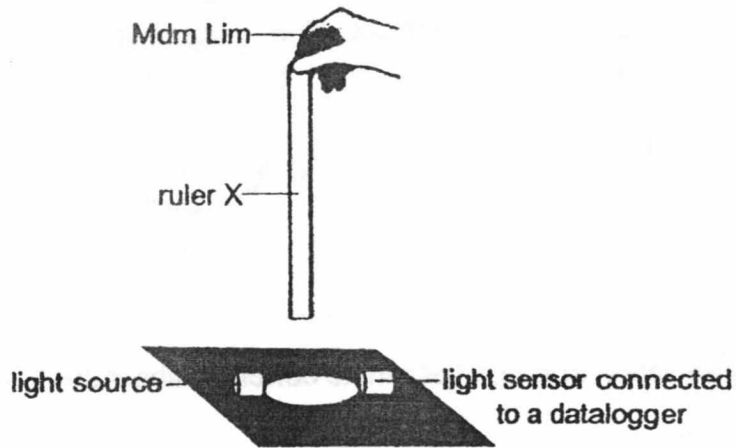
- (a) *Contextual Evidence*
Based on the observation above, what can he conclude about the 3 materials? [2]

Mr Tan removed the 3 materials from the above experiment and used them to wrap around 3 glass jars filled with water at 80°C as shown below.

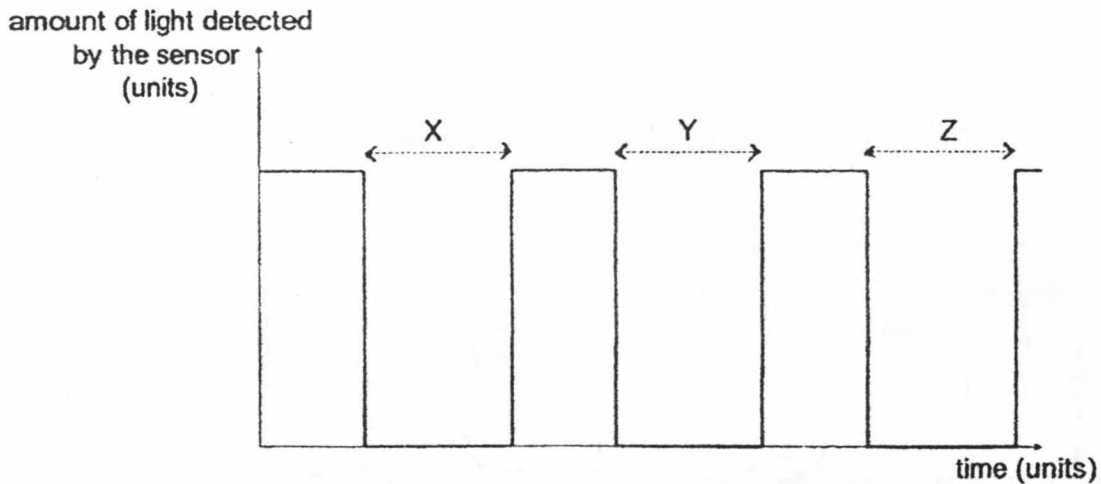


- (b) After 3 minutes, which container, A, B or C will have water at the lowest temperature? Explain why. [2]

- 30 Mdm Lim wanted to find out if the mass of an object would affect how fast it moves when dropped. She used three 30cm rulers, X, Y and Z of similar sizes but of different mass and a light sensor to collect the time it took for the ruler to pass through a hole as shown below.



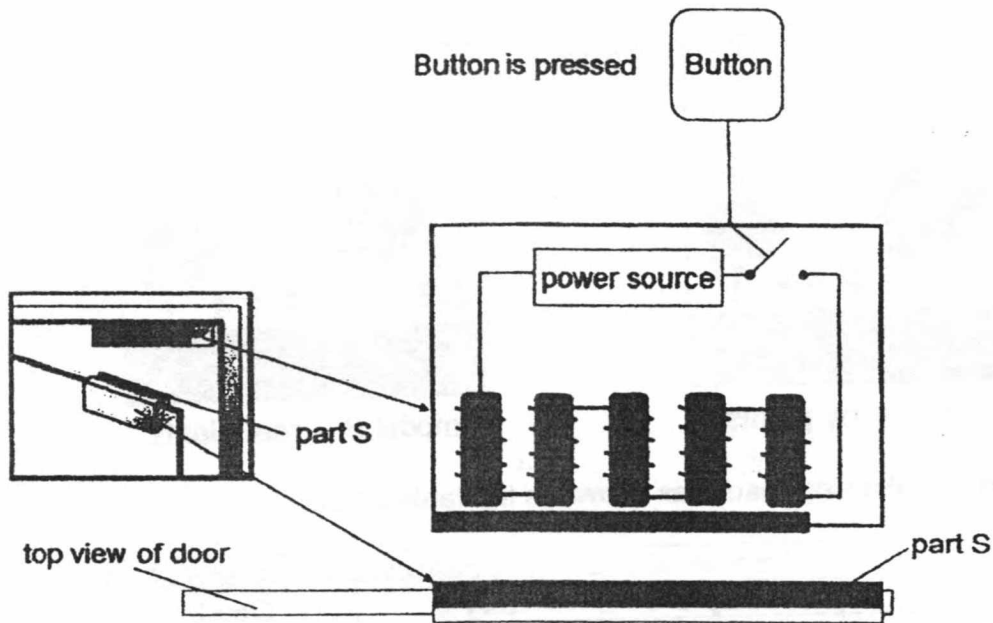
She released rulers X, Y and Z one at a time and recorded the following results.



- (a) What can Mdm Lim conclude from the results? [1]

- (b) Explain why the results is so. [2]

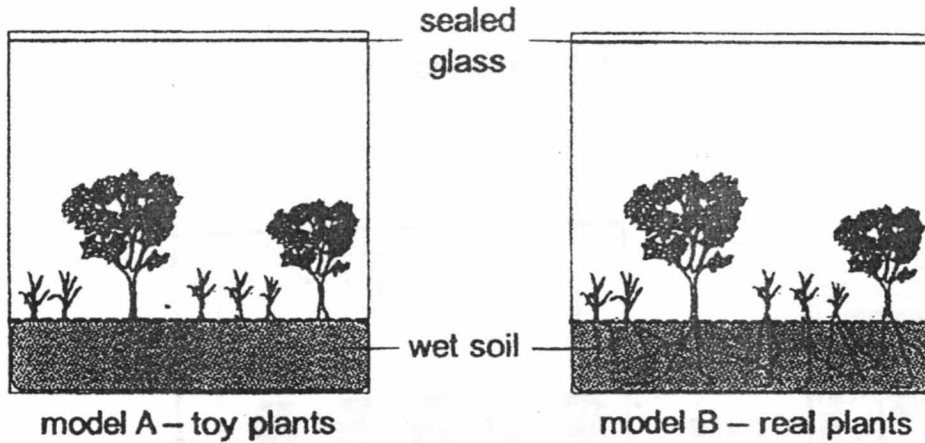
- 31 Jamie wanted to find out how the door in the Science Lab would unlock when the button was pressed. She took apart the device that kept the door shut and drew out a simple diagram of the parts in the device when the button is pressed as shown below.



- (a) Describe how the door was unlocked when Jamie pressed the button. [2]

- (b) Jamie replaced part S with a permanent magnet. Will the device still work as it should? Explain your answer. [1]

- 32 Linsey wanted to find out how plants affected the natural process of the water cycle. She created two models in tanks as shown below and filled them with the same amount of water. She sealed the tank and measured the amount of water that would form on the underside of the sealed glass.



She collected the following results as shown in the table below.

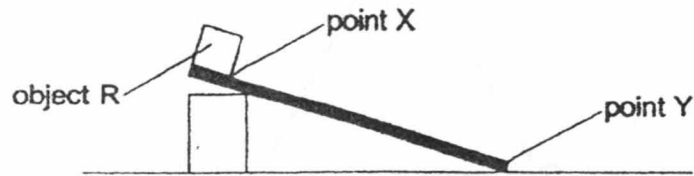
	Amount of water (ml) collected at the end of		
	Day 1	Day 2	Day 3
Model A	20	30	24
Model B	40	45	41

- (a) Describe how water is collected on the underside of the sealed glass in Model A. [2]

- (b) Explain why Model B has more water collected than Model A. [2]

- (c) Explain how the clearing of forest will lead to global warming. [1]

- 33 Ahmad carried out an experiment as shown below. He had three similar objects of the same mass and size but made of different materials, R, S and T. He placed the object at point X and released it. He measured the time it took for the object to reach point Y.



He collected the results as shown in the table below.

Objects	Time taken for object to reach point Y (s)		
	1 st try	2 nd try	3 rd try
R	3	4	4
S	10	13	11
T	14	16	16

- (a) Arrange the objects, R, S and T, starting with the roughest material. [1]

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Roughest \longrightarrow Smoothest

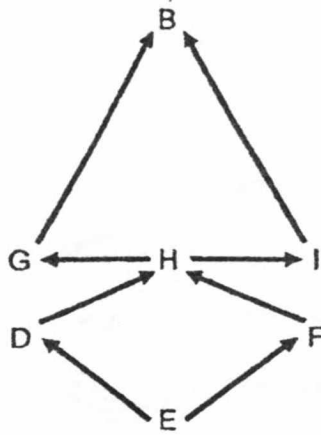
- (b) Explain how keeping the mass of the 3 objects the same makes the experiment fair. [1]

Ahmad usually plays at the slide as shown below.



- (c) On days Ahmad wore clothes made of material R, he slid down faster than on days when he wore clothes made of material T. Explain why. [2]

34 The food web below represents the organisms' interactions in a habitat.

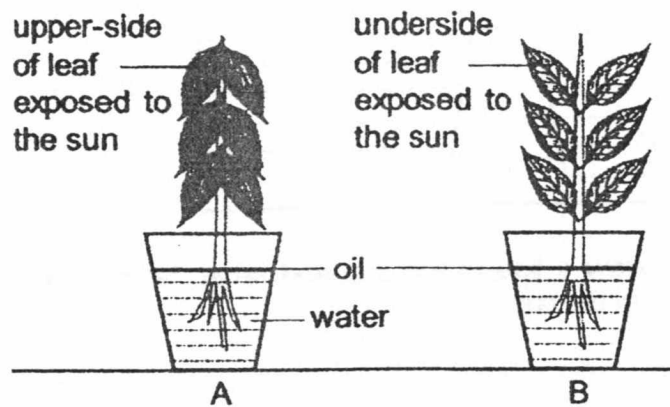


(a) When a predator for organism H was introduced, the population of H decreased. Describe how this affects the population of organism B. [2]

(b) Classify all the organisms in the habitat in the classification chart below. [1]

Producer	Plant-eater	Animal-eater	Plant-and-animal eater

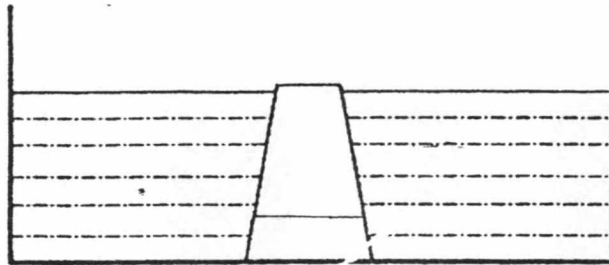
- 35 David used 2 similar plants, A and B. He positioned the leaves of each plant differently as shown in the diagrams below. David ensured that the 2 different positions of the leaves would allow sunlight to shine on a specific side of the leaves. He placed each plant in 100ml of water and measured the amount of water left after 12 hours in a field.



- a) The results show that plant B absorbed more water. Explain why. [2]

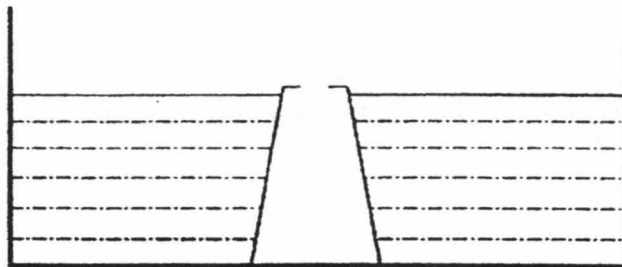
- b) State an environment where the positioning of the leaves, similar to that in plant A, would be advantageous for the plant's survival. Explain how this is so. [2]

- 36 Gary prepared a basin of water and a cup. He then pushed the cup into the basin as shown below.



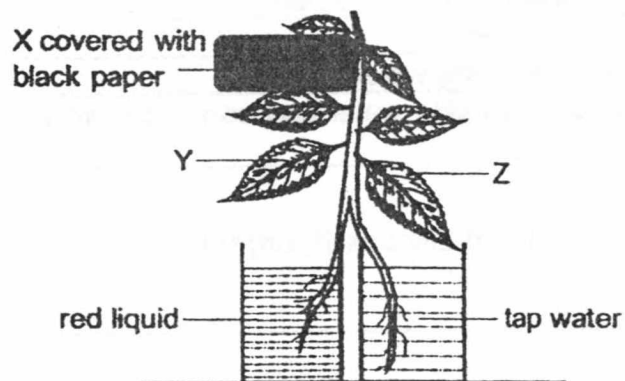
- (a) In the diagram above, draw a line in the cup and label "water level" to represent the water level in the cup. [1]
- (b) Explain your answer in (a). [1]

While holding the cup in the basin of water, Gary then poked a hole in the cup as shown in the diagram below.



- (c) Explain what would happen to the water in the cup when the hole is made. [2]

- 37 Charlie kept a plant in a dark room for 48 hours. He then prepared the setup as shown below and placed it under the sun.



After a few days, he plucked out leaves X and Y to conduct a starch test with iodine solution. In the presence of starch, the yellowish-brown colour of the solution will turn blue-black.

- (a) Explain how keeping the plant in a dark room for 48 hours increases the accuracy of the results. [1]

- (b) Put a tick (✓) in the correct box to show the colour of the iodine solution for leaves X and Y after the starch test. [2]

	Yellowish-brown	Blue-black
i) Leaf X		
ii) Leaf Y		

- (c) Explain your answer in (b). [1]

- (d) He noticed that leaves X and Y were stained red but not leaf Z. Explain why Leaf Z did not turn red. [1]

38 Lily found an organism Q with the characteristics listed in the table below.

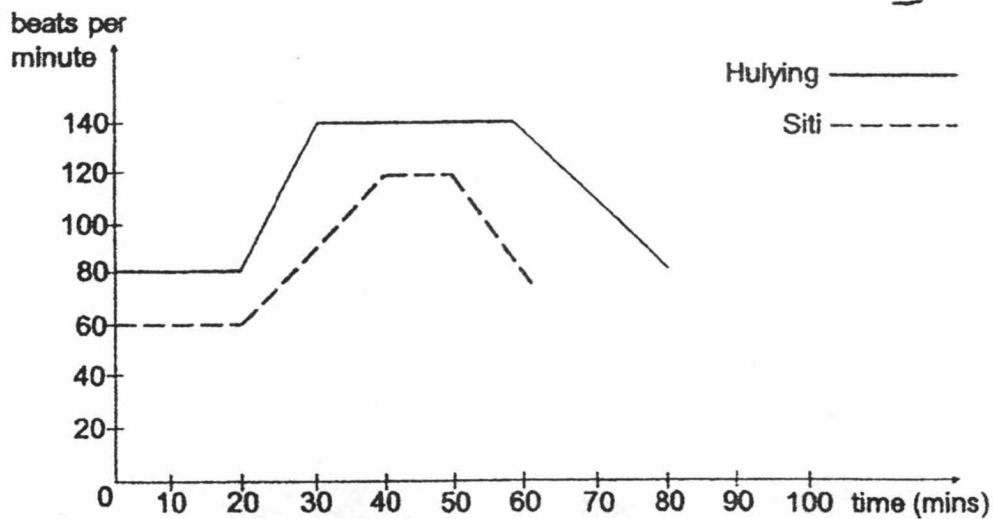
It has lungs and nostril which it uses on land.
It can live on land and in water.
It can swim and lay eggs in the water.
The egg cannot survive outside water and can hatch very quickly after being laid.

(a) In which animal group should Lily classify organism Q? [1]

After further research on organism Q, Lily found that the organism lives in a habitat that has little rainfall yearly. When it rained, the puddles of water that formed dried up after a few days.

(b) From the information above, state how organism Q has adapted to reproduce in such an environment. [1]

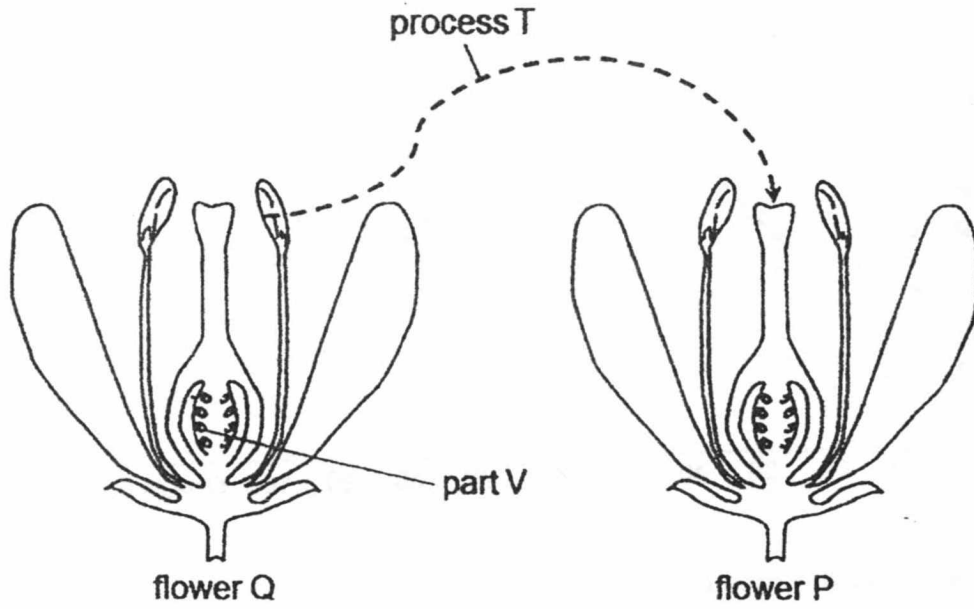
39 The graph below shows Siti's and Huiying's heart rate during their running race.



(a) Who completed the race first? [1]

(b) Explain why Siti's and Huiying's heart rate increased when they started running after the 20th-minute. [2]

40 Study flower Q and flower P.



(a) Describe process T. [1]

(b) What happens to part V after fertilisation? [1]

41 The diagram below shows process P.



(a) State and explain process P. [1]

(b) Mr Chua has liquid K and liquid T mixed in a glass beaker. Liquid K boils at 60°C while liquid T boils at 120°C. Describe how he could obtain only liquid T in the glass beaker. [1]

-- END OF PAPER --

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 6
SCHOOL : PEI HWA PRESBYTERIAN PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

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

BOOKLET B

Q29a) A is water proof, B allows most water to pass through and C absorbs the most amount of water.

Q29b) C. It absorbs the most amount of water, so the water will gain the most amount of heat from the glass jar, causing the temperature of water in the glass jar C to lose heat the fastest and decrease the most.

Q30a) The mass of the ruler will not affect how fast it drops down.

Q30b) The size of the rulers are the same, so the amount of air resistance acting against the ruler is the same. Hence, the rulers drop at the same speed.

Q31a) When the button is pressed, the switch is opened, so the circuit is opened and electricity cannot flow through. The electromagnet will not work and part S will not be attracted.

Q31b) No. The permanent magnet will either attract or repel the device, keeping the door locked or unlocked, when the button is not pressed.

Q32a) Water from the wet soil gains heat and evaporates into water vapour. The water vapour touches the cooler underside of the sealed glass, loses heat and condenses to form water droplets.

Q32b) Model B has real plants which lose water vapour through their stomata. Water from the wet soil will also evaporate into water vapour. So there is more water vapour in Model B to be condensed into water droplets.

Q32c) When there are less trees, less carbon dioxide is taken in, so there will be more carbon dioxide in the air, trapping more heat, increasing the temperature.

Q33a) T, S, R

Q33b) It ensures that the amount of gravitational potential energy of the 3 objects is the same at X.

Q33c) R is smoother than T, so there is less friction between clothes made of material R and the slide, so he takes a shorter time to slide down.

Q34a) When H decreases, G and I will have less food to feed on, so both G and I will decrease. Then B will have less of G and I to feed on, and the population of B will decrease.

Q34b) Producer: E

Plant-eater: D, F

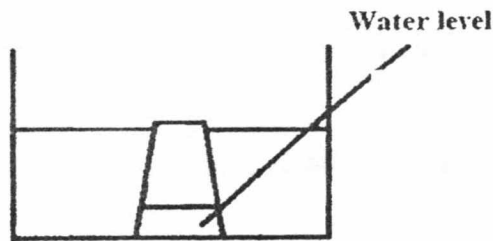
Animal-eater: B, G, H, I

Plant-and-animal eater: NONE

Q35a) Most stomata are found on the underside of the leaves, so plant B will lose more water vapour through its stomata as they are facing the sun, causing plant B to absorb more water.

Q35b) A hot environment. It helps the plant to reduce the amount of water loss.

Q36a)



Q36b) There is air in the cup, which takes up space and can be compressed, so only some water is able to enter the cup.

Q36c) The water level in the cup will rise, because the hole allows the air in the cup to escape, allowing water to take up the space in the cup.

Q37a) To ensure that all the leaves will not have any starch in them at the end of the experiment.

Q37b) Leaf X: Yellowish brown

Leaf Y: Blue-black

Q37c) X did not receive any sunlight, so it cannot make food and starch is not formed, so iodine solution is yellow. But Y can receive sunlight, so it can make food and starch is formed, so iodine solution is blue-black.

Q37d) Z has tap water absorbed by the roots and transported in separate water-carrying tubes from X and Y.

Q38a) Amphibian

Q38b) Q's eggs can hatch very quickly after being laid.

Q39a) Siti

Q39b) Their bodies need more energy when they run. So their heart rate increased to pump blood containing oxygen and digested food to all parts of the body faster.

Q40a) Pollen from the anther is transferred to the stigma.

Q40b) Develops into a seed.

Q41a) Freezing.

Liquid loses heat until a certain temperature and changes state from liquid to solid.

Q41b) Heat up liquid K and T at 60° c, until all K boils and evaporates.

END