Name: _____)

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Mid-Year Assessment

SCIENCE

BOOKLET A

16 May 2019

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

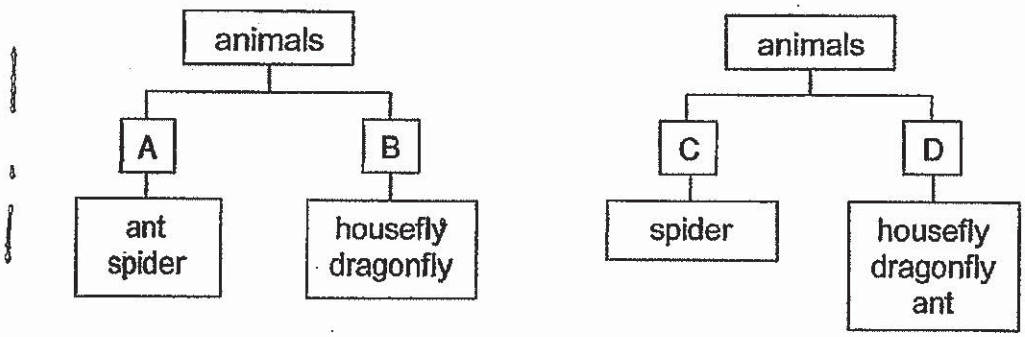
28 questions
56 marks

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

This booklet consists of 16 printed pages.

Section A (28 x 2 marks = 56 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). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Study the classification charts below.



Which one of the following shows the correct headings for A, B, C and D?

	A	B	C	D
(1)	have 3 body parts	have 2 pairs of wings	has more than 3 pairs of legs	have 3 pairs of legs
(2)	have more than 3 pairs of legs	have 3 pairs of legs	has no wings	have wings
(3)	have no wings	have 3 pairs of legs	has more than 3 body parts	have 3 body parts
(4)	have no wings	have wings	has more than 3 pairs of legs	have 3 pairs of legs

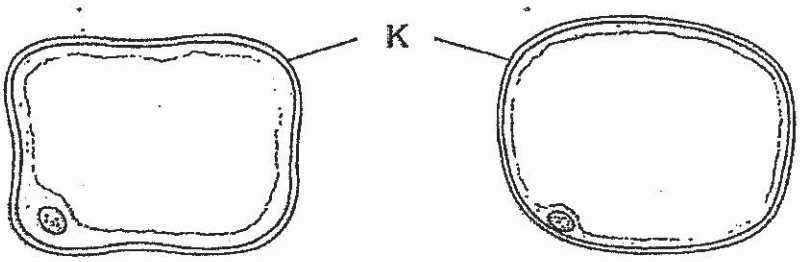
2. The following observations were made about organ H of a human body system.

A Digestive juices were not found.
B Water was absorbed from undigested food.
C Undigested food starts to become solid waste.

Which one of the following would most likely happen if organ H fails to function properly?

(1) Food cannot be digested in organ H.
(2) Undigested food will flow back to the stomach.
(3) Watery waste will be passed out through the anus.
(4) Digested food cannot be absorbed into the bloodstream.

3. The diagram below shows what happened after cell T was placed in pure water for some time.



cell T at the start of experiment

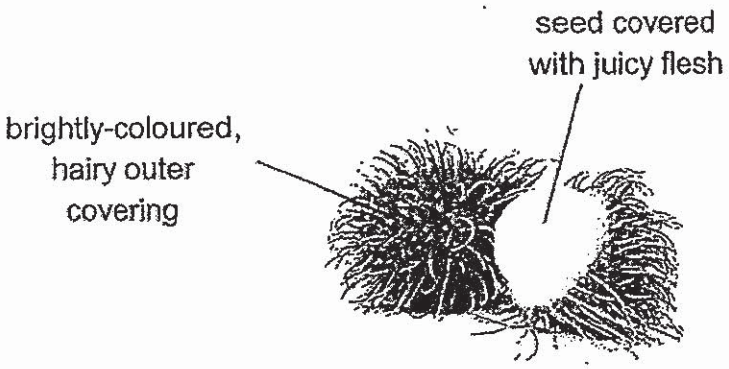
cell T after being placed in water for some time

When part K of cell T was removed and cell T was placed in pure water again, cell T was observed to burst after some time.

Which one of the following best explains the function of part K?

(1) It controls the activities of the cell.
(2) It allows substances to move around within the cell.
(3) It controls the substances moving in and out of the cell.
(4) It allows the cell to swell up and still retain a regular shape.

4. Study the picture of fruit X below.

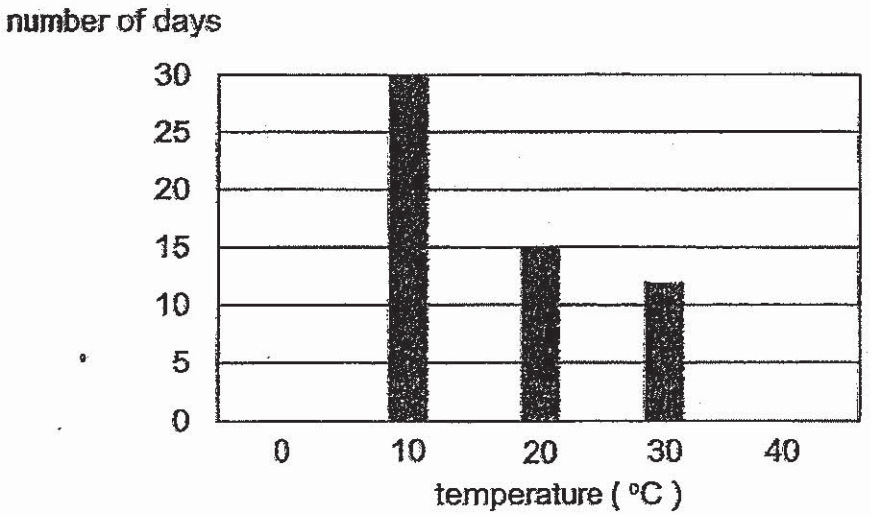


Which of the following statement(s) about fruit X is / are correct?

A The seed can be dispersed by splitting
B The seed is developed from a single ovary.
C The fruit is dispersed by hooking onto the fur of animals.
D Pollination and fertilisation has taken place before fruit X is formed.

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

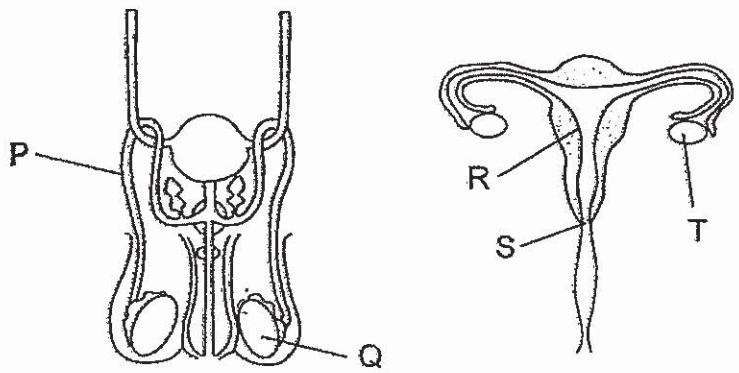
5. Five similar seeds from plant A were each planted in 5 similar pots. Each pot was placed at a different surrounding temperature. The number of days that it took for the roots to appear was recorded in the graph shown below.



Based on the experiment, which one of the following statement is **false**?

(1) The seed at 0 °C did not have enough warmth to germinate.
(2) The seed planted at 30 °C took the shortest time to germinate.
(3) Increasing the temperature of the surroundings caused the seed to germinate faster.
(4) When planted at 20 °C, the seed took 15 days lesser to germinate than when planted at 10 °C.

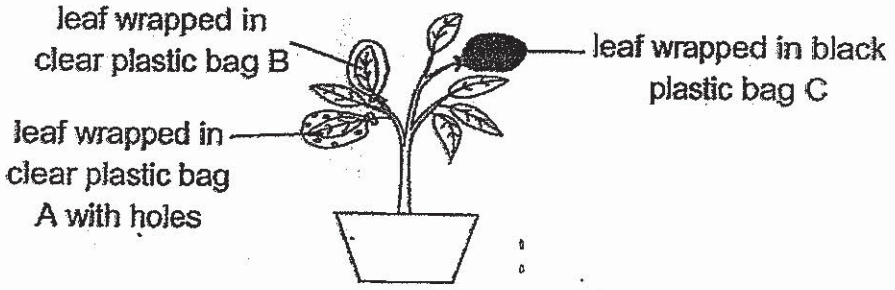
6. The diagram below shows the human male and female reproductive systems.



Which one of the following statements is **false**?

(1) Both parts Q and T produce reproductive cells.
(2) Female reproductive cells can be found at part T.
(3) The male reproductive cells are deposited at part S.
(4) The male reproductive cell enters part Q through part P.

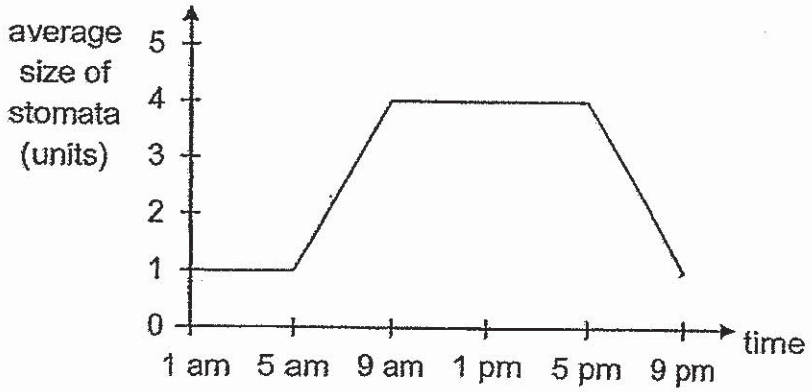
7. Sheena set up the experiment as shown below. She wrapped three similar leaves in different plastic bags A, B and C and measured the amount of carbon dioxide, water vapour, oxygen and nitrogen inside each of the bags at the start of the experiment. She then left the plant in a dark room and measured the amounts of the gases at the end of one day.



Which one of the following is likely to be the results after one day?

		Plastic bag A	Plastic bag B	Plastic bag C
(1)	amount of carbon dioxide	remained the same as before	increased	increased
(2)	amount of water vapour	increased	remained the same as before	increased
(3)	amount of oxygen	decreased	increased	remained the same as before
(4)	amount of nitrogen	remained the same as before	decreased	decreased

8 The graph below shows how the average size of the stomata of a plant changes at different times of the day.



Based on the graph above, which one of the following statements is most likely to be true?

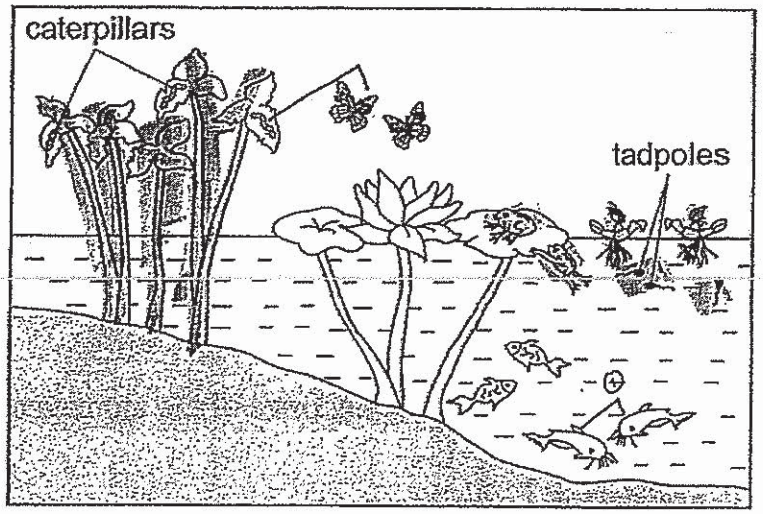
(1) The plant did not photosynthesis after 9 pm.
(2) The plant was photosynthesising at its maximum rate from 9 am to 5 pm.
(3) The average size of the stomata increases with increasing amount of light.
(4) When the amount of light increases, the average size of the stomata decreases.

9. Ravi wanted to find out if the colour of the leaves would affect whether the leaves were able to photosynthesise. Which of the following variable(s) should he keep constant to ensure that his experiment was a fair one?

A size of leaves
B colour of the leaves
C amount of water given to the plant
D amount of carbon dioxide given to the plant

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

10. The diagram below shows a pond habitat.



Based on the diagram above, which one of the following statements is true?

(1) All the populations form two communities.
(2) There are only two populations of producers.
(3) There are only four populations of consumers.
(4) The frog population is only made up of two frogs.

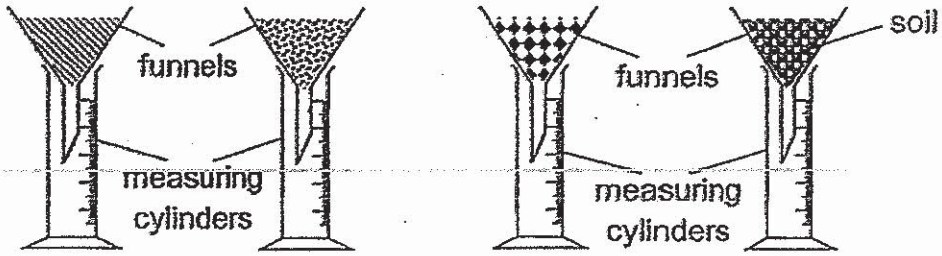
11. The table below shows some animals living in their respective habitats.

Habitat	Animals
A	hermit crab, starfish, clam
B	fish, duck, frog
C	butterfly, ladybird, beetle
D	fungi, termites, woodlouse

In which of the above habitats A, B, C or D would you most likely find a bee?

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

12. Four set-ups each containing equal amount of soil samples A, B, C and D were placed into each funnel as shown below.



soil sample A soil sample B soil sample C soil sample D

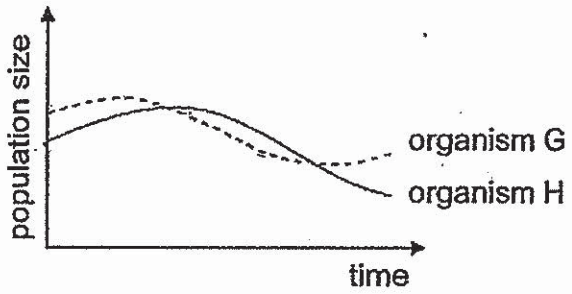
50 ml of water was poured into each funnel and the volume of water collected in each measuring cylinder after 3 minutes was recorded in the table below.

Soil sample	Volume of water collected (ml)
A	22
B	10
C	45
D	35

Which soil sample was most likely taken from the mangrove swamp?

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

13. The graph below shows how the populations of organisms G and H changed over time in an environment.

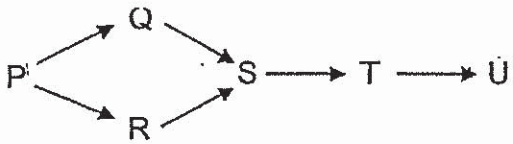


Based on the graph, which of the following conclusion(s) would **not** be possible?

A H is a predator of G.
B H feeds on G, which is a producer.
C Both G and H prey on the same animal.
D The population of organism G increases when the population of organism H increases.

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

14. Study the food web below.



Which one of the following is a possible conclusion?

(1) P is a prey of Q and R.
(2) U is a decomposer in the community.
(3) When the population of T increases, the population of Q will decrease.
(4) The energy from the Sun is transferred to P before it is transferred to the other organisms in the community.

15. Peter was stirring a hot drink with a metal spoon. After some time, the spoon felt hot.

Which one of the following correctly explains why the spoon became hot after some time?

(1) The spoon lost heat to the hot drink and his fingers.
(2) The spoon gained heat from the hot drink and his fingers.
(3) The spoon lost heat to the hot drink and gained heat from his fingers.
(4) The spoon gained heat from the hot drink and lost heat to his fingers.

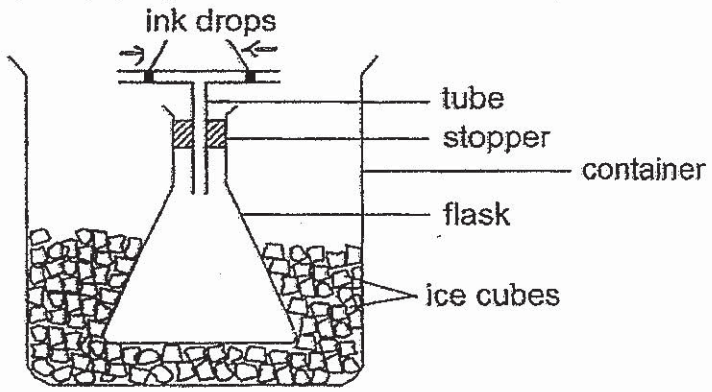
16. Three powders X, Y and Z were mixed together in a beaker. These powders cannot be dissolved in water. The properties of the three powders are given in the table below.

	Property A Is it a magnetic material?	Property B Is it a good conductor of heat?	Property C Does it float in water?
Powder X	no	no	no
Powder Y	yes	yes	no
Powder Z	no	yes	yes

Which of the following property / properties should be used in order to separate the three powders quickly?

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

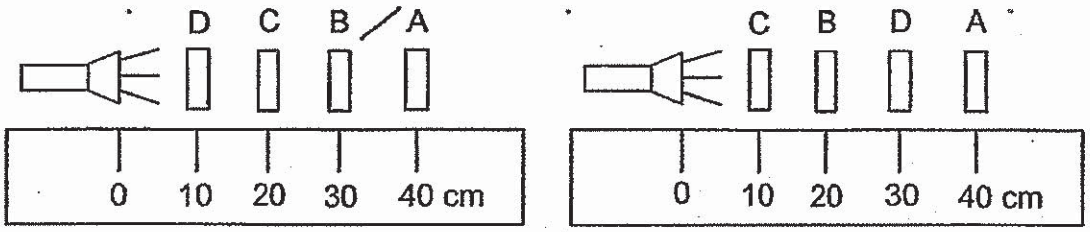
17. A flask connected to a tube containing two drops of ink was immersed in a container filled with ice cubes as shown below. The positions of the ink drops were observed after 5 minutes.



Which one of the following shows the correct observation and explanation about the positions of the ink drops?

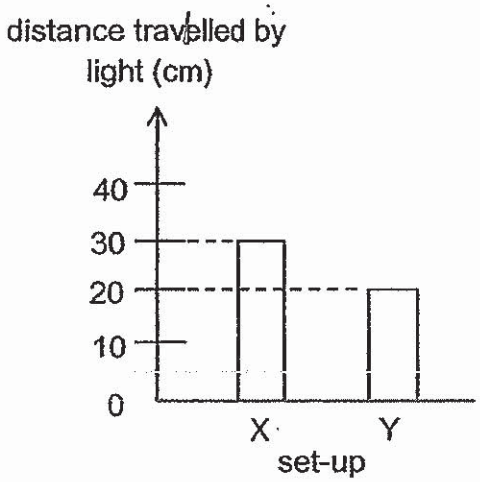
	Observation	Explanation
(1)	The ink drops moved towards each other.	The air in the flask lost heat and contracted.
(2)	The ink drops moved away from each other.	The air in the flask gained heat and expanded.
(3)	The ink drops moved towards each other.	The ink drops gained heat and expanded.
(4)	The ink drops moved away from each other.	The ink drops lost heat and contracted.

18. An experiment was conducted to find out if light can pass through four sheets A, B, C and D made of different materials. The sheets were arranged in the two set-ups shown below.



set-up X set-up Y

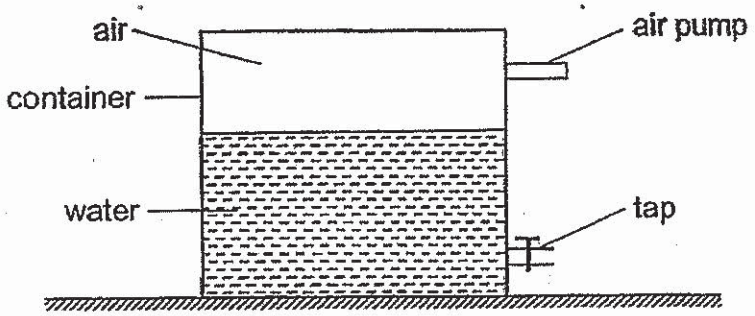
The graph below shows the distance travelled by light in set-ups X and Y.



Which one of the following correctly describes sheets A, B, C and D?

	Does it allow light to pass through?			
	A	**B**	**C**	**D**
(1)	yes	no	yes	unable to tell
(2)	unable to tell	no	yes	yes
(3)	no	yes	unable to tell	yes
(4)	yes	unable to tell	no	no

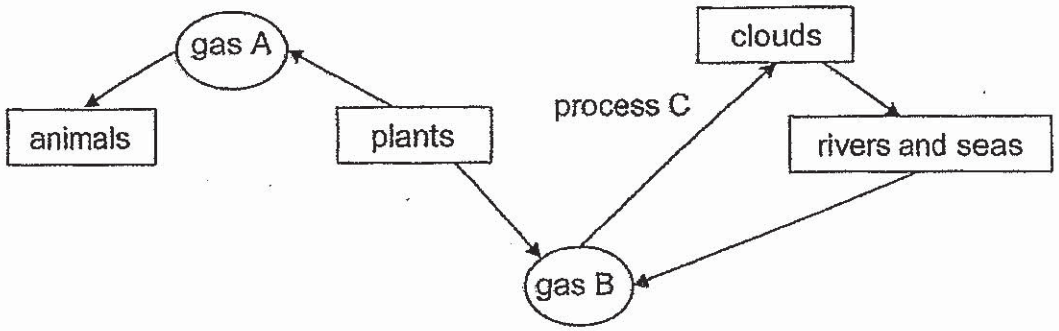
19. The diagram below shows a container with **70 cm³ of water and 30 cm³ of air.** 20 cm³ of water was removed and 50 cm³ of air was pumped into the container.



What would be the final volume of water and air in the container?

	Final volume of water (cm³)	Final volume of air (cm³)
(1)	50	80
(2)	40	50
(3)	50	50
(4)	20	80

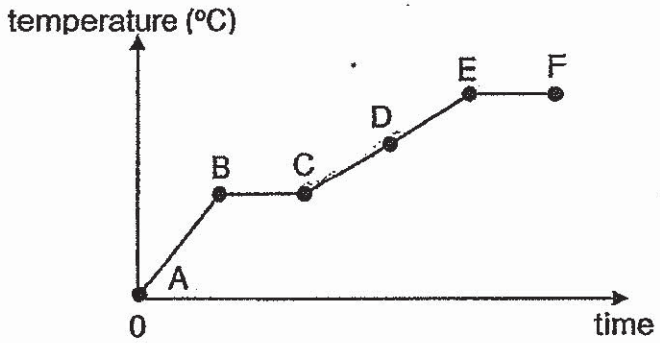
20. Study the diagram below. The arrows show some processes that occur in the environment.



Which one of the following is correct?

	Gas A	Gas B	Process C
(1)	oxygen	carbon dioxide	evaporation
(2)	oxygen	water vapour	condensation
(3)	carbon dioxide	oxygen	condensation
(4)	water vapour	carbon dioxide	evaporation

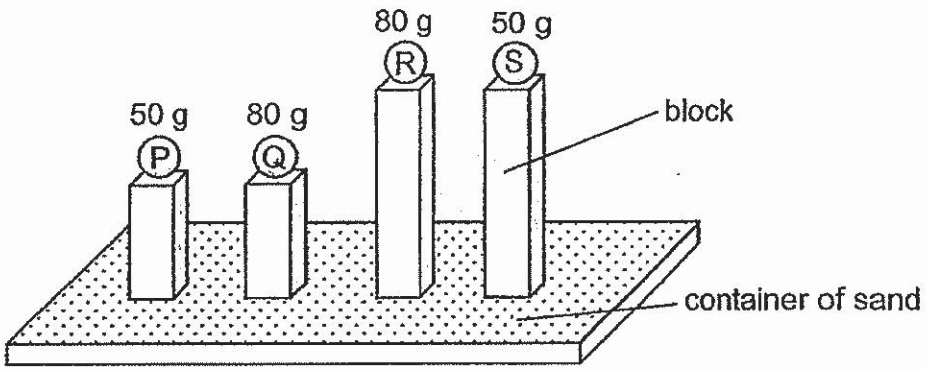
21. The graph below shows the changes in temperature of substance Q over time.



Which one of the following is correct?

(1) Substance Q is not gaining heat at part BC of the graph.
(2) Part AB of the graph represents the melting point of substance Q.
(3) Part CE of the graph represents substance Q changing state from solid to liquid.
(4) The graph remains constant at part EF as substance Q is changing from a liquid to a gas.

22. The diagram below shows four balls P, Q, R and S of similar sizes but different masses resting on blocks of different heights. They were then released into a container of sand from their respective heights.



Based on the above diagram, which of the following statements are correct?

A Ball S has more gravitational potential energy than ball P.
B Ball R has more kinetic energy than ball Q when released.
C Ball Q has the least amount of gravitational potential energy
D Ball R will make the deepest depression in the sand when released.

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

23. Which one of the following is a non-renewable source of energy?

(1) sun
(2) wind
(3) fossil fuels
(4) flowing rivers

24. Block M was hung on spring L as shown in diagram 1. When a magnet was placed under block M, length of spring L decreased as shown in diagram 2.

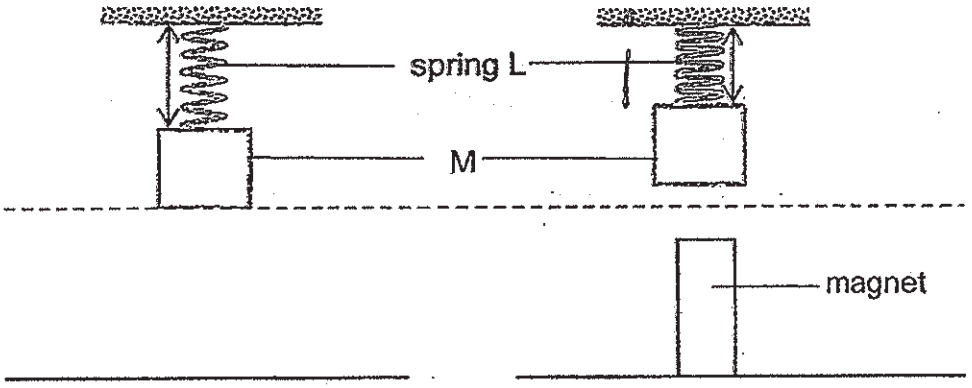


diagram 1 diagram 2

Which of the following forces are acting on spring L in diagram 2?

A frictional force
B magnetic force
C gravitational force
D elastic spring force

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

25. Which of the following **does not** show the effects of forces?

(1)

pushing against a wall

(2)

catching a ball

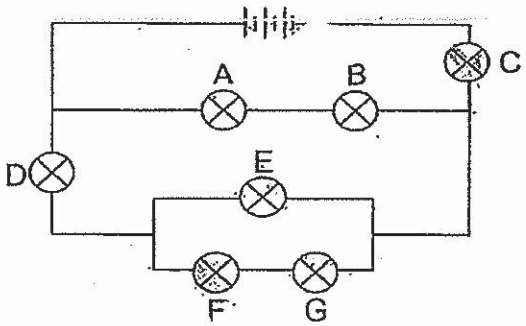
(3)

pushing a trolley

(4)

moulding a clay vase

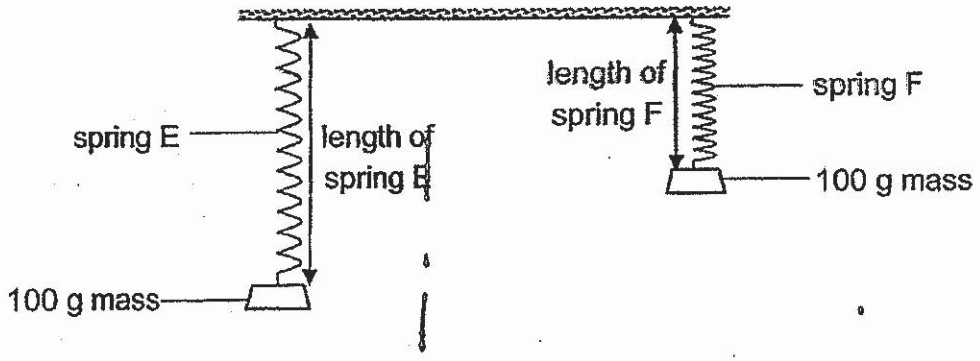
26. Study the circuit diagram below. The batteries and bulbs are all working properly.



Which one of the following correctly states the number of bulbs that will still be lit when one or more bulbs is / are removed?

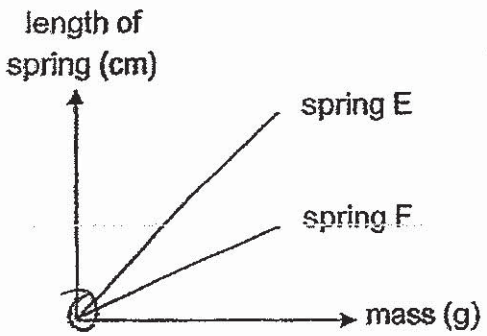
	Bulb(s) removed	Number of bulb(s) still remained lit
(1)	A and G	3
(2)	C and F	4
(3)	B	4
(4)	D and E	5

27. Putra wanted to investigate two springs E and F of the same length. He added a 100 g mass on each spring as shown below and recorded the change in lengths of the springs. He added more 100 g masses to the springs and plotted his results in a graph.

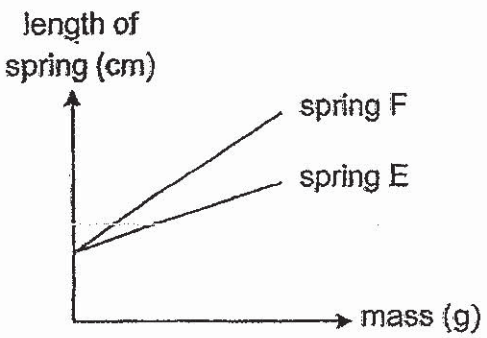


Which one of the following shows the graph that Putra has most likely plotted?

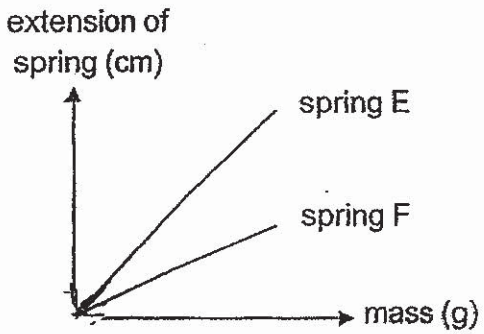
(1)



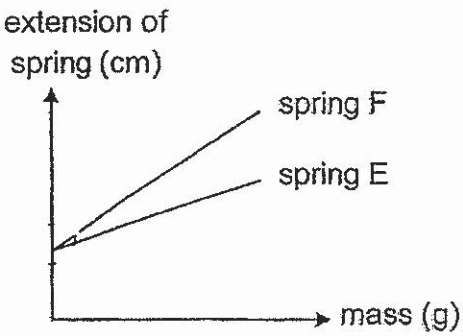
(2)



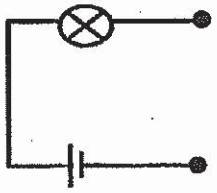
(3)



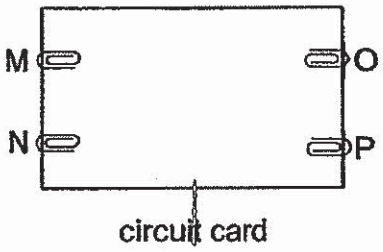
(4)



28. A circuit card was tested with a circuit tester to find out which metal clips M, N, O and P are connected by wires.



circuit tester



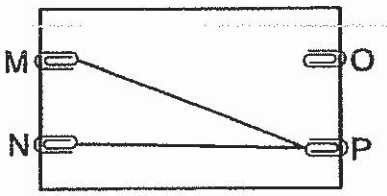
circuit card

The results of the circuit test is shown in the table below.

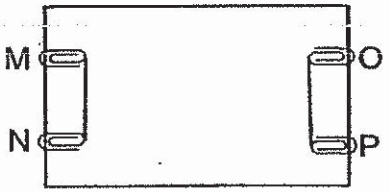
Clips tested	Did bulb light up?
M and N	no
N and P	no
O and P	yes
M and O	yes
M and P	yes

Which one of the following shows the correct wire connections on the card?

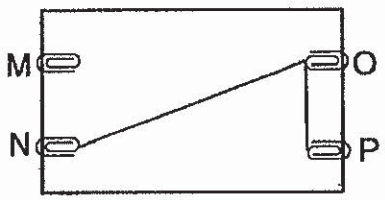
(1)



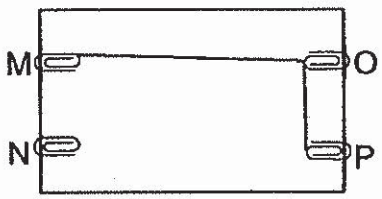
(2)



(3)



(4)



~End of Booklet A~~

Name : _____ ( )

Class : Primary 6

CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

Primary 6

Mid-Year Assessment

SCIENCE

BOOKLET B

16 May 2019

Booklet A	56
Booklet B	44
Total	100

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

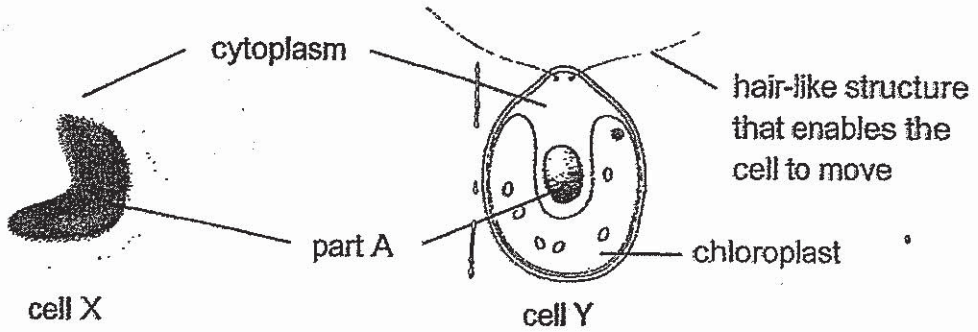
13 questions
44 marks

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

This paper consists of 14 printed pages.

Section B (44 marks)
For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in the brackets at the end of each question or part question.

29. The diagram below shows two cells X and Y.



(a) Part A contains genetic information of the cell. State the function of part A. [1]

_____

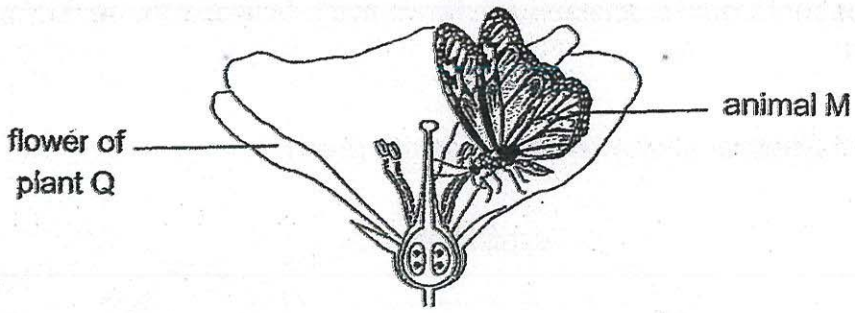
_____

(b) Based on the diagram above, suggest what cell Y can do but cell X cannot do. [1]

_____

_____

30. Animal M and plant Q depend on each other as shown below.



(a) Suggest how animal M and plant Q are beneficial to each other. [2]

(i) Benefit for animal M: _____

_____

(ii) Benefit for plant Q: _____

_____

(b) How will the number of fruits produced by plant Q be affected when the population of animal M decreases? Give a reason for your answer. [1]

_____

_____

31. Every year, farmers piled layers of dead leaves on their plots of land after harvesting their crops. After some time, the dead leaves turned into a soil-like substance.

(a) Name the process that causes the dead leaves to turn into a soil-like substance. [1]

_____

(b) Besides air and temperature, name one other environmental factor that could affect the rate of the above process. [1]

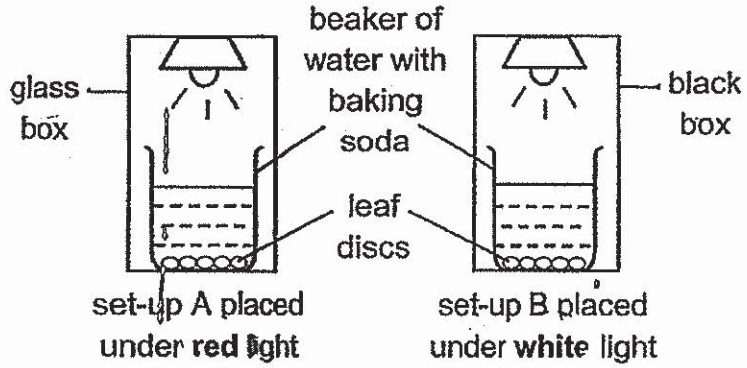
_____

(c) How does the process in (a) benefit the farmer? [1]

_____

_____

32. Karen wanted to find out if plants can photosynthesise faster under red light. She set up an experiment using leaf discs of similar size punched from freshly plucked leaves of the same plant. She placed the same amount of baking soda in both beakers of water. Baking soda increases the amount of dissolved carbon dioxide in the water. The set-ups were left on a table in a brightly lit room.



Karen made sure that all the leaf discs had sunk to the bottom of the beakers before she started the experiment. The leaf discs would float to the water surface when photosynthesis had occurred. She recorded the number of leaf discs that floated to the water surface after 2 minutes.

The table below shows her results.

Colour of light	Red	White
Number of leaf discs that floated to the water surface in 2 minutes	1	0

(a) Based on her experiment above, she concluded that plants photosynthesise faster under red light. Her teacher said that her experiment was not fair. Suggest two ways in which she can improve her experiment. [2]

Improvement 1: _____

_____

Improvement 2: _____

_____

(b) Set-up B is a control set-up. Why is set-up B needed? [1]

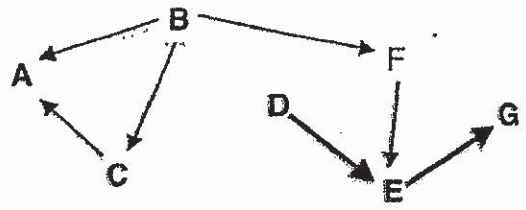
_____

_____

(c) Bubbles of gas X were observed from the leaf disc that floated in set-up A. What could gas X be?

_____

33. Study the food web below.



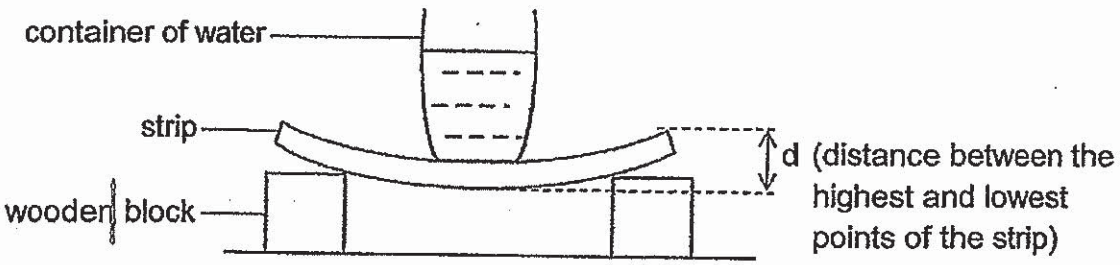
(a) How many food chains are there in the food web above? [1]

(b) Explain why the energy transfer along a food chain decreases. [1]

(c) Besides a prey-predator relationship, what other relationship does organism A and C have? [1]

(d) Would the removal of organism B or organism G result in a greater effect on the rest of the organisms in the food web above? Why? [1]

34. Malcom set up the experiment shown below to compare a property of four strips M, N, O and P which are made of different materials.



For each strip, he added 80 cm^3 of water into the container and measured the distance, d. He recorded the results in the table below.

Strip	Amount of water added into the container (cm^3)	d (mm)
M	80	56
N	80	34
O	80	6
P	80	18

(a) Based on the above experiment, what could be **the aim of the** experiment? [1]

_____

_____

(b) Which material M, N, O or P is most suitable for making a table top? Explain your answer. [1]

_____

_____

_____

_____

35. When a ball of plasticine was added to a beaker of water, the water level rose to level X as shown in diagram 1.

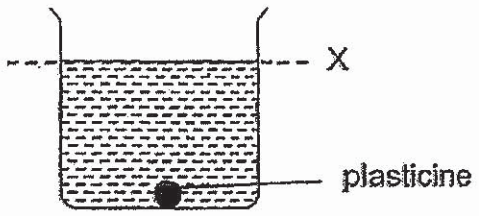


diagram 1

(a) Which property of matter allows the above observation to be made? [1]

The ball of plasticine was removed from the beaker of water and reshaped. It was then placed back to the same beaker of water.

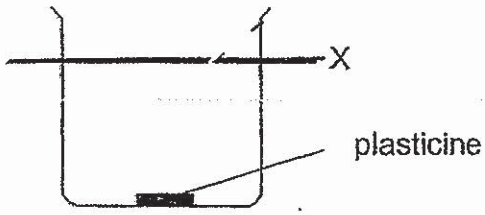
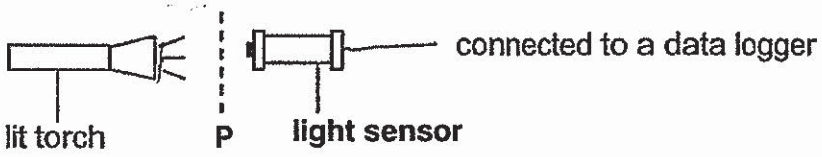


diagram 2

(b) In diagram, 2, draw the final water level after the plasticine was being placed in the beaker. [1]

(c) Explain your drawing in (b). [1]

36. The set-up below is used to test for the transparency of materials. When no material is placed at position P, the light sensor shows a reading of 100 units. Materials X, Y and Z are placed at position P, one at a time, and the readings recorded by the light sensor are shown in the table below.



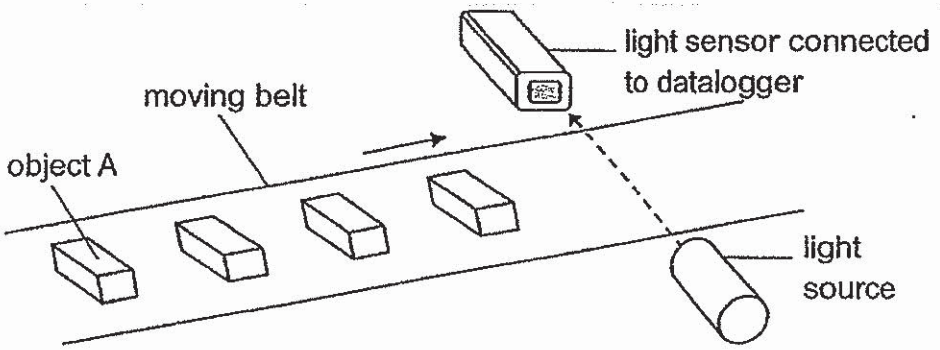
Material	Amount of light recorded (units)
X	95
Y	0
Z	50

(a) Based on the table, compare the transparency of materials **X and Z** [1]

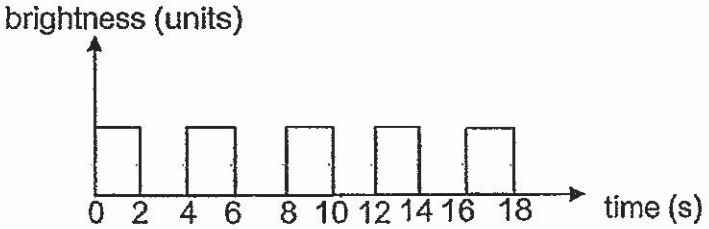
_____

_____

The set-up below shows a light sensor used to count the number of identical object A made of material Y on a moving belt.



The belt moves at a constant speed. The data recorded is shown below.

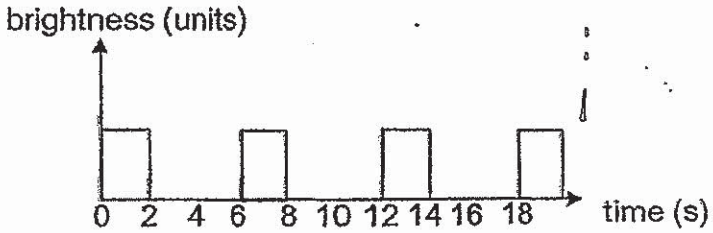


(b) Based on the graph, how many objects passed the sensor in 18 seconds? [1]

_____

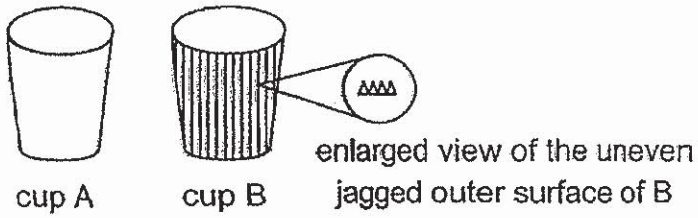
(c) The light source and the sensor are placed 5 cm above the belt. State whether an object less than 5 cm in height can be counted by the light sensor. Give a reason for your answer. [1]

When identical object B made of material Y were placed on the moving belt, the number of objects counted in 18 seconds were fewer. The data recorded is as shown below.



(d) Based on the above graph, state a difference between object A and B. [1]

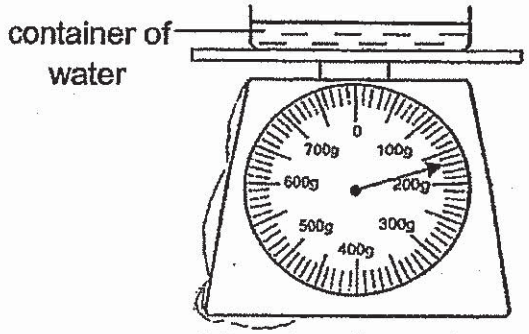
37. Mandy wanted to design a cup that allowed her to hold a hot drink for a longer time. She made two designs of the cup using similar material of the same thickness as shown below. Cup A had a smooth outer surface and cup B had uneven jagged outer surface. When both cups A and B were filled with equal amount of hot milk, Mandy's hand felt less hot while holding cup B.



(a) Explain why Mandy's hand felt less hot when holding cup B. [2]

(b) State one other variable that she has to keep constant in order for the experiment to be a fair one. [1]

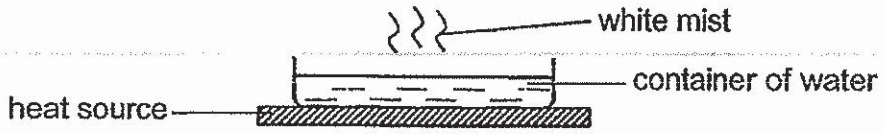
38. Sindu carried out an experiment as shown below. She noted the mass of the water at the start of the experiment before leaving the set-up in a room for five hours.



at the start of experiment

(a) After five hours, Sindu observed a change in the mass of the water. State the process that has taken place. [1]

(b) Sindu wanted to find out if the mass of the water will decrease faster when the container was placed over a heat source as shown below. After 10 minutes, she noticed that some white mist started to form over the top of the water.

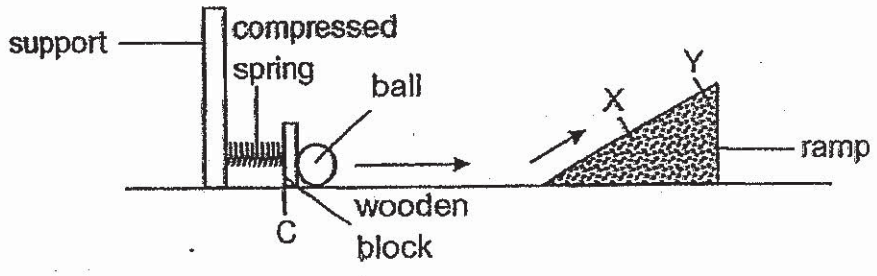


Explain how this white mist was formed. [2]

(c) Would the mass of water in part (b) decrease faster or slower as compared to part (a)? Give a reason for your answer. [1]

(d) Other than the temperature of the water, state another factor that can affect the process in (a). [1]

39. The set-up below shows a device which consists of a spring connected to a wooden block. When the spring was compressed to position C and released, the ball rolled up the ramp. It was observed that the ball continue rolling but stopped at point X before rolling down the ramp.

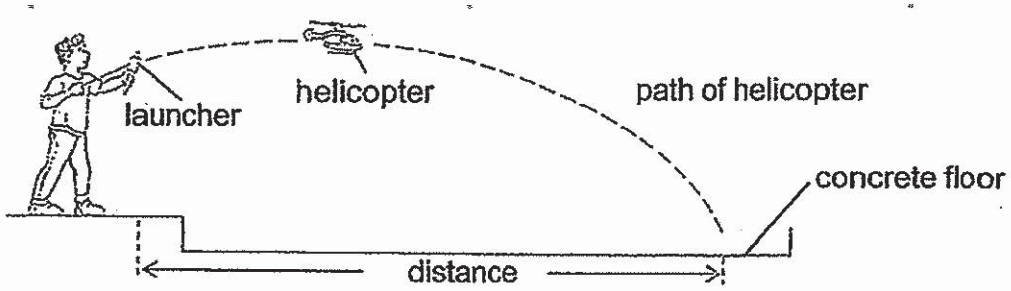


(a) Fill in the boxes to show the main energy conversion. [1]

energy (spring)	energy (rolling ball)	energy (ball at position X)

(b) Without changing the above set-up, give a suggestion that will allow the ball to roll to point Y on the ramp. Explain your suggestion in terms of energy conversion. [2]

40. Khye carried out an experiment on three toy helicopters of similar size but different masses using the set-up shown below.



He launched the helicopters from the same height and angle and measured the distance moved. His results are shown below.

	Distance (cm)		
	Helicopter A (mass = 10 g)	**Helicopter B (mass = 20 g)**	**Helicopter C (mass = 30 g)**
1st try	400	350	200
2nd try	420	310	210
3rd try	380	320	230

(a) Give a reason why the distance moved by each toy helicopter is different for each try. [1]

_____

_____

(b) Based on the results, what is the relationship between the mass of the helicopter and the distance moved by it? [1]

_____

_____

(c) How can you tell that along the path of the helicopter, there is a force acting on the helicopter? [1]

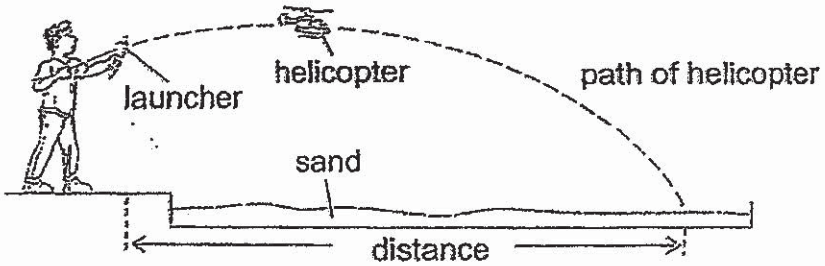
_____

_____

_____

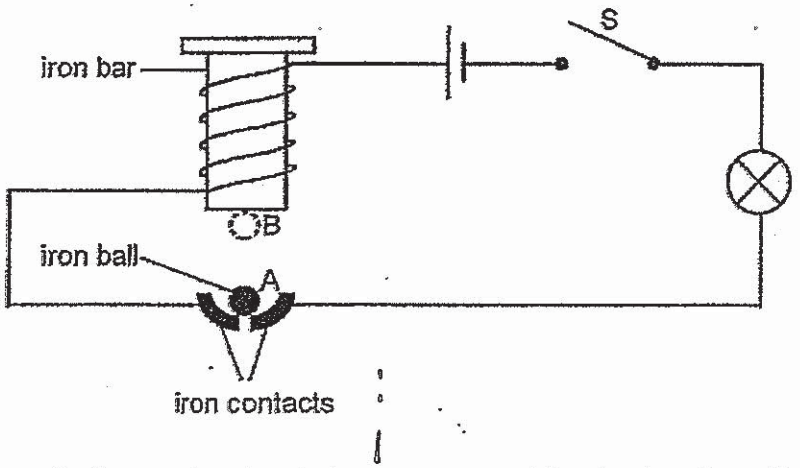
(d) Why did Khye repeat the experiment 3 times for each toy helicopter? [1]

Khye's teacher suggested that he could conduct his experiment on a sandpit in the diagram shown below.



(e) Suggest how does the sandpit help him measure the distance moved by the helicopter more accurately? [1]

41. Study the circuit shown below. When switch S was closed, the iron ball moved up and down between points A and B, and the light bulb was lit and unlit repeatedly.



(a) When the iron ball was at point A, it was attracted by the iron bar. Explain this observation.

_____

_____

_____

(b) Would the light bulb be lit or unlit when the metal ball is at point A and B? [1]

Point A: _____

Point B: _____

Another metal ball was used to replace the iron ball. When switch S was closed, the metal ball remained at point A and the bulb was lit.

(c) Based on the above observation, state two properties of the metal ball. [1]

Property 1: _____

Property 2: _____

~ End of Booklet B ~

ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICHOLAS GIRLS' SCHOOL PRI
SUBJECT : SCIENCE
TERM : MID-YEAR

BOOKLET A

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

BOOKLET B

Q29a) Part A controls the activities inside the cell.

Q29b) Cell Y can move around.

Q30a) i: Animal M can obtain nectar as food
ii: Flower Q is pollinated by animal M.

Q30b) There will be lesser fruits produced by Q as there will be lesser animal M to pollinate Q, resulting in lesser fertilization.

Q31a) Decomposition

Q31b) Humidity

Q31c) The next batch of plants can grow healthier.

Q32a) Improvement 1: Use a black box instead of a glass box for set-up A.

Improvement 2: Give a longer duration for leaf discs to float to the top of the beaker instead of 2 minutes.

Q32b) To show that any changes in the number of floating leaf discs is solely due to the presence of red light.

Q32c) Oxygen

Q33a) 4 food chains

Q33b) Energy is used to carry out life processes.

Q33c) They are competitors for food.

Q33d) The removal of organism B. B is a food producer which provides food and energy directly or indirectly to most of the others except D.

Q34a) To find out which material bends the most/least.

Q34b) Material D. It bent the least when holding the same amount of water, showing that it is least flexible and sturdy enough to be made into a table-top.

Q35a) Matter has mass/occupy space/has volume.

Q35b) (DRAW SAME LINE AS X)

Q35c) Though the plasticine has changed shape, its volume remained the same.

Q36a) Material X allows more light to pass through compared to Material Z.

Q36b) 4

Q36c) No. Objects lesser than 5cm in height would not be able to block light and hence the light sensor would not be able to record any readings.

Q36b) Object B is bigger/larger in size/has longer width than Object A.

Q37a) Cup B has a smaller surface area in contact with her hand. Thus, her hand gained lesser heat from the hot milk.

Q37b) Duration of holding both cups/ Size of cup to be constant/ Temperature of milk at start of experiment

Q38a) Evaporation

Q38b) The water from the container gained heat from heat source to become hot water vapour. The hot water vapour touches the cooler surrounding air, loses heat and condenses to become tiny water droplets.

Q38c) The mass of water will decrease faster. The water gained heat from the heat source and hence rate of evaporation was faster.

Q38d) ↳ Presence of wind ↳ Humidity of surroundings
↳ exposed surface of water ↳ surrounding temperature.

Q39a) Elastic potential > Kinetic > Gravitational potential

Q39b) Compress the spring further towards the support. More elastic potential energy will be converted to more kinetic energy to allow the ball to roll higher.

Q40a) The force used to launch the helicopter was different.

Q40b) The larger the mass of the helicopter, the shorter the distance moved.

Q40c) The push force from the launcher caused the helicopter to move forward.

Q40d) He repeated his experiment, so the results are more reliable.

Q40e) There would be a marking on the sand where the helicopter first land, so it would be easier to measure the distance.

Q41a) There is a close circuit and electric current could flow through the circuit, so the iron bar is magnetised and attracts the ball.

Q41b) Point A: Lit Point B: Unlit

Q41c) Property 1: It is an electrical conductor
Property 2: It is a non-magnetic material.

END