

CATHOLIC HIGH SCHOOL PRELIMINARY EXAMINATION 2 2016 PRIMARY SIX

SCIENCE

BOOKLET A

Name:
Class: Primary 6
Date: 25 August 2016
30 questions
60 marks
Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 17 printed pages, excluding the cover page.

Booklet A (30 × 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet. (60 marks)

1	Which o	of the folk	wing need	i(s) to be	present for	bread to	turn mouldy?	
---	---------	-------------	-----------	------------	-------------	----------	--------------	--

- A light
- B water
- C oxygen
- D carbon dioxide
- (1) B only
- (2) A and C only
- (3) B and C only
- (4) A, B and D only

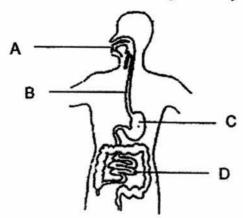
2 Mr Song observed the following characteristics of an animal.

- A Number of wings
- B Number of feelers
- C Number of legs it has
- D Number of body parts it has

Which of the above characteristics would conclude that the animal is an insect?

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

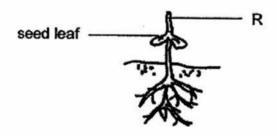
3 The diagram below shows the human digestive system.



Which of the following shows the changes in the amount of undigested food at A, B, C and D?

	Α	В	C	D
1)	decrease	decrease	Increase	increase
2)	no change	no change	decrease	decrease
3)	decrease	no change	decrease	decrease
1)	no change	no change	increase	no change

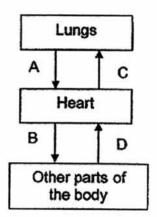
4 The diagram shows a seed growing into a young plant.



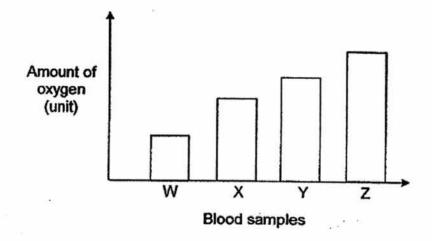
What is the direction in which food and water are being transported to R?

	Direction for transport of				
	food	water			
)	upwards	upwards			
	downwards	upwards			
	upwards	downwards			
)	downwards	downwards			

5 The diagram below shows the direction of blood flow in some parts of the body.



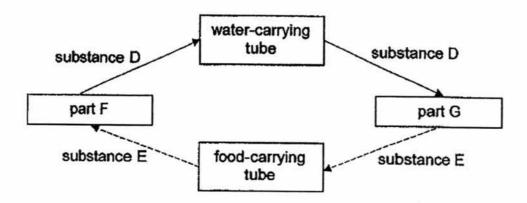
Four blood samples were taken at the same time from four different blood vessels, A, B, C and D, in the body. The graph below shows the amount of oxygen in the four blood samples.



Which blood samples shown in the graph were most likely taken from C and D of the circulatory system shown in the diagram above?

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

6 The diagram below represents the transport system of a plant.



What do parts F and G and substances D and E represent?

	part F	part G	substance D	substance E
(1)	stem	roots	mineral salts	water
(2)	roots	leaf	water	mineral salts
(3)	leaf	roots	water	sugar
(4)	roots	leaf	mineral salts	sugar

7 The table below provides some information on four types of cells, A, B, C and D. A tick (

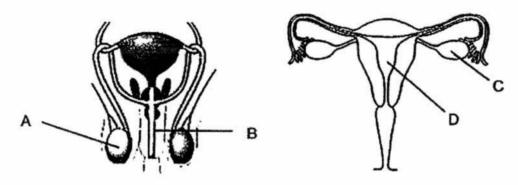
 indicates the presence of the part of the cell.

Parts of a cell	Cell A	Cell B	Cell C	Cell D
cell wall		1	1	
nucleus	1	~	1	
chloroplasts		1		
cell membrane	1	1	1	1

Which of the above cells is/are most likely to produce oxygen?

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

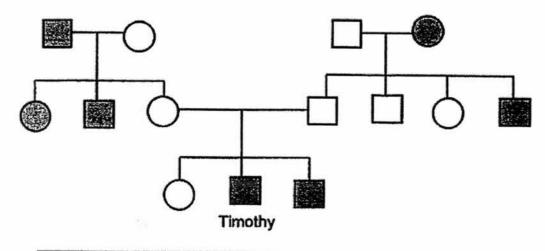
- 8 Which of the following statements is/are correct of a cockroach and a mealworm beetle?
 - A Their young do not have wings.
 - B Their young look like the adults.
 - C They have four stages in their life cycles.
 - (1) A only
 - (2) B only
 - (3) A and C only
 - (4) B and C only
- 9 The diagram below shows the human reproductive systems.

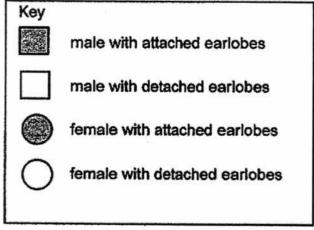


Which parts of the reproductive systems produce cells that have to be fused to develop into a baby?

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

Study the family tree of Timothy below. The family tree shows the members who have attached earlobes or detached earlobes.





Which one of the following statements about the family tree is correct?

- Timothy's parents have attached earlobes.
- (2) Timothy and his brother have detached earlobes.
- (3) Both Timothy's grandfathers have detached earlobes.
- (4) Timothy's father has a brother who has attached earlobes.

- Jackie carried out an experiment to find out if the type of water would affect how well fruit that are dispersed by water can float. He planned and carried out an investigation.
 - Step 1 Collected a lotus fruit and a coconut.
 - Step 2 Filled a pail with 5 litres of tap water.
 - Step 3 Filled another identical pail with 5 litres of sea water.
 - Step 4 Placed the lotus fruit in the first pail and the coconut in the second pail.

Jackie recorded his observations and presented his findings to his teacher who said that he had made a mistake in his investigation.

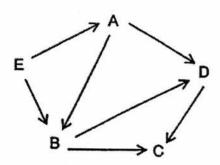
What mistake did Jackie make?

- (1) He used two types of fruit.
- (2) He used two types of water.
- (3) He used two pails instead of one.
- (4) He used the same amount of water.
- 12 Yusoff carried out a project to study more about the habitats of a garden and a desert.

Which of the following factors could be use to tell the difference between the habitats of a garden and a desert?

- A type of soil
- B amount of light present
- C amount of water available
- D number of organisms present
- (1) A and D only
- (2) A, B and C only
- (3) B, C and D only
- (4) A, B, C and D

Using the food web provided below, answer Questions 13 and 14.



13 Which one of the following classifications is correct?

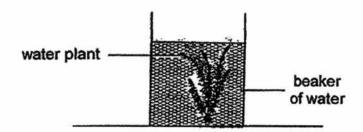
	producer	prey only	prey and predator	predator only
1) [Α	С	B, D	E
2)	E	Α	B, D	С
) [E	С	D	A, B
) T	E	E	A, B, D	С

- 14 How many food chains are there in the food web above that involve at least four organisms?
 - (1) 1

10

- (2) 2
- (3) 3
- (4) 4
- 15 Which of the following statements about photosynthesis is/are correct?
 - A Plants require only light for photosynthesis to take place.
 - B During photosynthesis, oxygen is produced by the plants.
 - C After photosynthesis, food is stored only in the leaves of a plant.
 - (1) B only
 - (2) C only
 - (3) A and B only
 - (4) A, B and C

16 Aishah prepared a set-up as shown below and left it in an open field for 24 hours.



At every six-hour interval, she took a sample of the water and added liquid A to it.

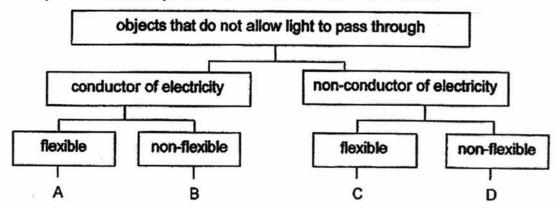
Liquid A changes colour as shown below.

amount of carbon dioxide in the water	low	high
colour of water with liquid A	yellow	red

What colour of water with liquid A would Aishah observe when samples were collected at noon and at midnight respectively?

At noon	At midnight
red	red
red	yellow
yellow	yellow
yellow	red
	red red yellow

17 Study the information provided in the classification chart below.



Based on the information above, which one of the following represents objects A, B, C and D?

	Α	В	С	D
1)	nylon	iron nail	magnifying lens	ceramic mug
2)	nylon	aluminium foil	towel	rubber band
3)	copper wire	steel pipe	rubber band	magnifying lens
4)	copper wire	iron nail	towel	ceramic mug

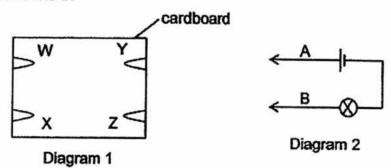
Kumala was given a beaker containing three powders, J, K and L, mixed together. These powders cannot be dissolved in water. The properties of the three powders are given in the table below.

	property X	property Y	property Z
g (80	Does it float in water?	Is it a magnetic material?	is it a good conductor of electricity?
powder J	no	no	yes
powder K	yes	no	no
powder L	no	yes	yes

Which property / properties should Kumala make use of in order to separate the three powders quickly?

- (1) Yonly
- (2) X and Y only
- (3) X and Z only
- (4) Y and Z only

Four paper clips, W, X, Y and Z, were fixed onto a cardboard as shown in Diagram 1 below. Diagram 2 shows a battery and a bulb connected to two wires A and B.

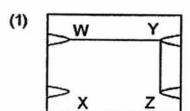


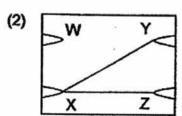
Lloyd connected some but not all of the paper clips on the cardboard in Diagram 1 with wires.

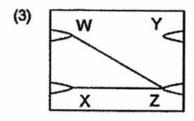
He then connected A and B across different pairs of paper clips in turn. He recorded his results in the table below.

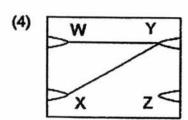
Paper clips connected to A	Paper clips connected to B	Did the bulb light up?
W	Y	yes
Х	Z	no
Y	X	yes
Z	W	no

Which one of the following shows a possible arrangement of the wires behind the circuit card?

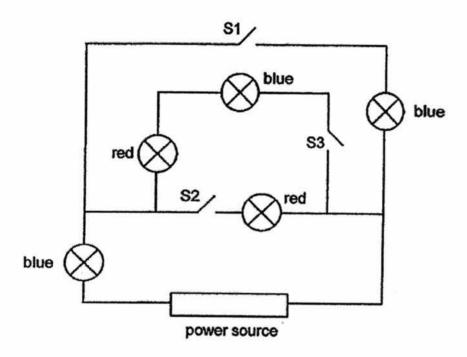








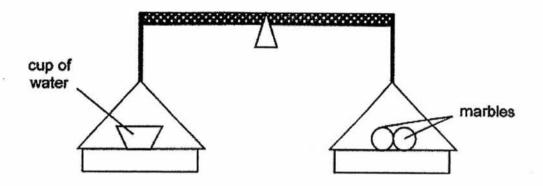
20 The diagram below shows some blue and red bulbs in a circuit.



Which switch(es) should be closed in order to light up 2 blue bulbs and 2 red bulbs at the same time?

- (1) S2 only
- (2) S1 and S3 only
- (3) S2 and S3 only
- (4) S1, S2 and S3

21 A cup of water and 2 marbles are placed on a balance scale as shown below. The pointer of the balance is at the centre.



Which one of the following is correct?

- (1) The cup of water and two marbles have no mass.
- (2) The cup of water and two marbles have the same volume.
- (3) The mass of the cup of water is equal to the mass of the two marbles.
- (4) The cup of water occupies the same amount of space as the two marbles.

22 Which of the following actions are gravity acting on?

- A A pencil rolling on a table
- B A cyclist cycling up a slope
- C A box moving down a ramp
- D A rocket launching into space
- (1) A and C only
- (2) B and D only
- (3) B, C and D only
- (4) A, B, C and D

Suriah wanted to find out how the rate of evaporation of water was affected by the exposed surface area of water. She poured water into 4 containers, P, Q, R and S, made of the same material.

The table below shows the different conditions at the start of the experiment.

	Containers			
	Р	Q	R	S
Room temperature (°C)	34	25	25	25
Exposed surface area of water (cm²)	50	140	50	50
Volume of water (cm³)	300	300	600	300

Which two containers should Suriah compare?

- (1) P and Q
- (2) R and P
- (3) Q and S
- (4) S and P
- 24 Han Ming conducted an experiment using four bars, A, B, C and D. Each bar was made of a different material. He heated them one at a time over a strong flame for one minute each. The table below shows the temperature of the bars that were recorded before and after the experiment.

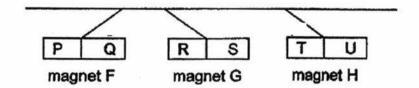
Bar	Temperature at the start of the experiment (°C)	Temperature at the end of the experiment (°C)
Α	30	50
В	30	39
С	30	58
D	30	43

Which one of the following correctly shows the arrangement of the bars from the best to the poorest conductor of heat?

Best conducto	7	→ Poo	rest conductor
Α	С	D	В
В	D	Α	С
С	Α	D	В
С	D	A	В
	A B C C	A C B D C A C D	A C D B D A C A D C D A

Using the information provided, answer Questions 25 and 26.

25 The diagram below shows the observation made by Chloe when she hung three magnets, F, G and H, next to one another.



Which one of the following correctly shows the observation that would be made by Chloe when magnets F and H are placed next to each other?

- (1) PQTU
 (2) TUPQ
 (3)
- (4) T UP Q

Q

P

- 26 Which of the following is/are possible conclusion(s) about magnetic force based on Chloe's observation?
 - A It acts at a distance.
 - B It exerts a push or a pull.
 - C It is strongest at the poles of magnets.
 - D Its strength is dependent on the material that makes the magnets.
 - (1) B only
 - (2) A and B only
 - (3) A and C only
 - (4) C and D only

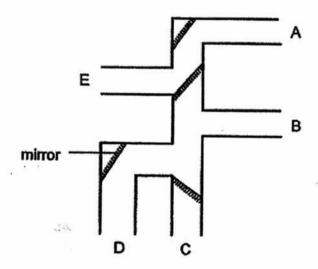
27 The table shows the melting and boiling points of two substances, P and R.

Substances	Melting point (°C)	Boiling point (°C)
Р	80	150
R	60	250

Which one of the following shows the states of P and R at 70°C?

	Р	R	
1)	solid	solid	
2)	solid	liquid	ANDVINE
3)	liquid	solid	
)	liquid	liquid	

28 Rachael made a set-up as shown in the diagram below. It was made up of pipes with openings at A, B, C, D and E. Four mirrors were placed inside the pipes.

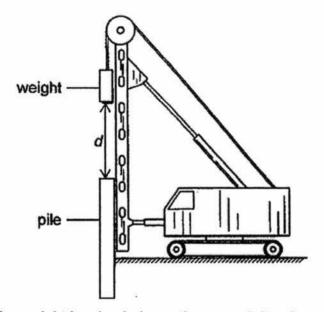


Rachael used her set-up to see an object X that was placed near one of the openings.

Which one of the following would enable Rachael to see object X?

	Position of eye	Position of object X
)	A	E
	В	D
	C	A
	D	В

- 29 Which one of the following is not an example of energy conversion?
 - (1) walking up a staircase
 - (2) cooling hot water in a cup
 - (3) lighting a candle with a matchstick
 - (4) generating electricity in a power station
- 30 The diagram below shows a machine used to drive piles into the ground which serve as support for buildings.



As the weight is raised above the ground, it gains gravitational potential energy. When it is released to hit the pile, its gravitational potential energy is converted to kinetic energy.

How should distance d and mass of weight be changed in order to increase the kinetic energy of the weight when released?

	distance d	mass of weight
)	increase	decrease
)	decrease	increase
	Increase	increase
	decrease	decrease

End of Booklet A



CATHOLIC HIGH SCHOOL PRELIMINARY EXAMINATION 2 2016 PRIMARY SIX

SCIENCE

BOOKLET B

Name:	()	
Class: Primary 6 -		-
Date: 25 August 2016	Booklet A 60)
	Booklet B 40	<i>/</i>
Parent's Signature:	Total 10	10

14 questions

40 marks

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

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so. Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

This booklet consists of 17 printed pages, excluding the cover page.

Booklet B (40 marks)

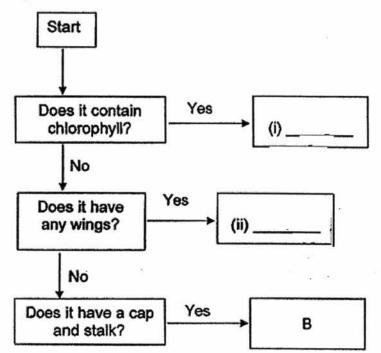
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in brackets [] at the end of each question or part question. (40 marks)

31 The table below shows three organisms and their characteristics.

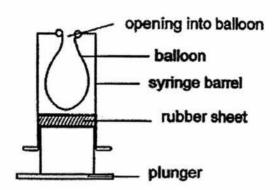
Organism	Able to move	Has head, body and legs	Able to make its own food
Α	Yes	Yes	No
В	No	No	No
С	No	No	Yes

(a) Use the information in the table above to complete the flow chart by filling in the boxes below with the letters A and C.

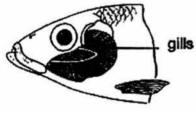


(b) Which group of organisms does Organism B belong to? [1]

32 Pauline made a model of the human respiratory system using a syringe and a balloon as shown below.



- (a) Which part of the body does the following parts of the model represent?
- (i) syringe barrel:
- (ii) balloon:
- (b) State one difference between the air entering the lungs and the air leaving the lungs.

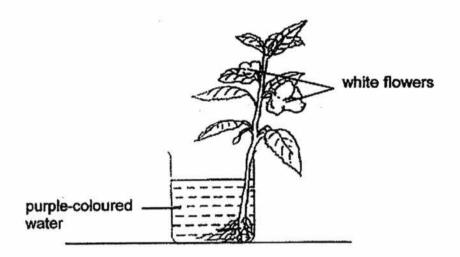


(c) Pauline then observed the gills of a flsh using a magnifying glass and [1] realised that the gills have many folds. How does this help the fish in the process of taking in oxygen?

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[1]

33 Joong Ki placed a plant with white flowers into a beaker containing purplecoloured water as shown below. He left the set-up on the table for 2 days.

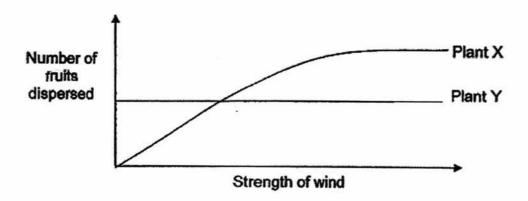


(a)	What would he observe about the flowers after 2 days?	
(b)	Explain your answer in (a).	[1]

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SCORE

34 Study the graph below.

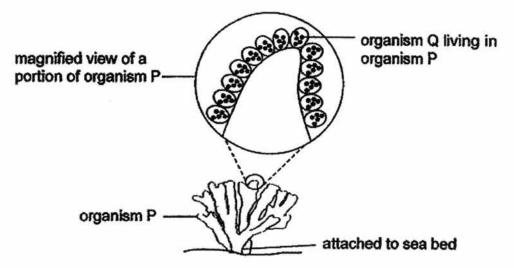


(a) Based on the graph above, how are the number of fruits dispersed by [2] Plant X and Plant Y affected by the strength of the wind?

	 	 -

(b) What can you infer about the structure of the fruits of Plant X based [1] on the graph?

35 The diagram below shows organisms P and Q which live in the sea.



(a)	Organism Q is found living in organism P. How does organism Q benefit from its relationship with organism P?	[1]

(b) Organism Q contains coloured pigment which gives organism P its colour, preventing organism P from being easily infected by diseases. The coloured pigment in organism Q also allows it to make food for itself and organism P. When temperature of the sea rises, organism Q will leave organism P.

State two ways how organism P will be affected.

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(ii) _____

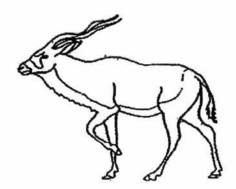
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SCORE
3

[2]

Continue from Question 35

(c)	Besides temperature, state one other environmental factor that will affect the process which organism Q carries out to make food.	[1]

36 Animal A shown below lives in a very dry and hot habitat. There is very little rainfall throughout the year in the habitat.



(a) Animal A gets its water from the plants it feeds on. It is able to store most of the water from those plants in its body. It does not need to drink water frequently.

Based on the description above, what type of adaptation does Animal [1] A have?

(b) The average temperature in the habitat is very high for some months of the year while in the other months, the average temperature is low.

Animal A is observed to have two different coloured coat in a year. It usually has a light-coloured coat during the hotter months and a dark-coloured coat during the cooler months.

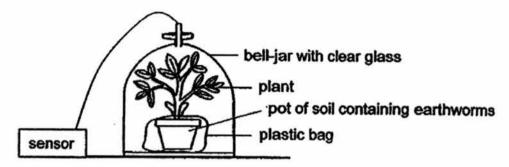
Explain how such an adaptation would help Animal A survive in its habitat.

[1]

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SCORE

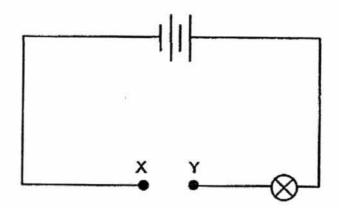
37 Dylan placed a potted plant in a bell jar. A sensor was attached to measure the amount of carbon dioxide in the air in the bell jar as shown below.



He left the set-up in a brightly-lit room for four hours.

1)	Four hours later, it was recorded that the air in the bell jar had a lower amount of carbon dioxide than at the start of the experiment. Give a reason.	I
)	Why did Dylan tie a plastic bag around the pot of the potted plant?	
)	Using the same set-up, what must Dylan do if he wants to increase the amount of carbon dioxide in the air in the bell jar?	1

38 The diagram below shows a circuit.



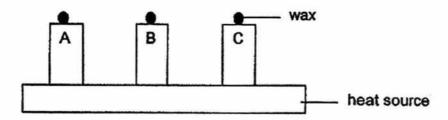
The table below shows what happens to the lamp when three objects A, B and C are connected, one at a time, across XY.

Object across XY	Bulb light up	
Α	Yes	****
В	No	
С	Yes	

(a)	From the results above, which object is most likely to be a non- conductor of electricity? Explain your answer.	[1
		_
		_

Continue from Question 38

In another experiment, same amount of wax was placed on the top end of the same three objects, A, B and C. The three objects were then placed on a heat source as shown below.



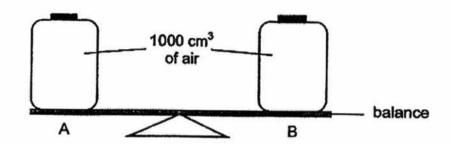
It was observed that the wax on object A melted first, followed by that on object C then object B.

(b)	What conclusion can you draw about the conduction of heat in objects A, B and C?	[1]
(c)	From your answers to (a) and (b), what can you conclude about the likely relationship between a conductor of electricity and a conductor of heat?	[1]
		E
(d)	Why was the same amount of wax used in the experiment to ensure a fair test?	[1]

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SCORE 3

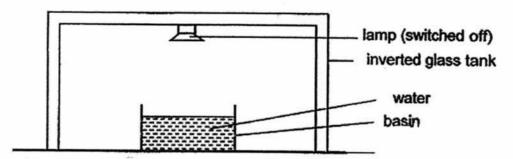
39 Sangeetha had two identical containers, A and B, of equal capacity of 1000 cm³ each. She placed them on a balance as shown in the diagram below.



(a)	from container A?	[1]
(b)	What would be the volume of air in container A after Sangeetha had	[1]

What would be the volume of air in container A after Sangeetha had removed the 500 cm³ of air? Explain your answer.

40 Sanjay set up the experiment as shown below.



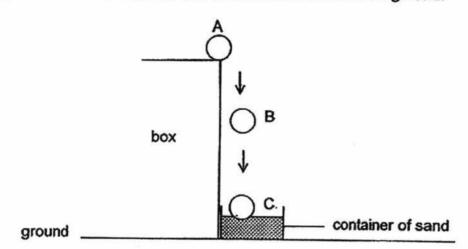
At the start of Day 1 of the experiment, there was 100 ml of water in the basin.

The temperature inside the tank and the volume of water left in the basin were recorded at the end of each day.

Day	Temperature inside tank (°C)	Volume of water in basin (ml)
1	30	95
2	30	90
3	30	86
4	30	83
5	30	81

hat change of state had occurred to the water in the basin?.
ter Day 5, Sanjay switched on the lamp in the set-up. How will this fect the rate of evaporation?

41 The diagram below shows a ball with a mass of x g, being released from the edge of a box. The arrow shows the path taken by the ball from positions A to C as it falls into a container of sand on the ground.



The depth of the depression made in the container of sand when the ball lands is measured and recorded as shown in the table below.

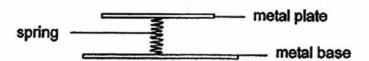
Number of attempts	Depth of depression in the sand (cm)	
1	5.8	
2	5.6	
3	5.9	

- (a) Other than air resistance, state another force that is exerted on the ball as it travels from positions A to C.
- (b) Why was the above experiment repeated several times? [1]
- (c) Using a ball of a mass lighter than x g in the same set-up, would the depth of the depression in the container be shallower or deeper than 5.6cm? Explain.

(Go on to the next page)

SCORE 3

42 Lionel attached a metal plate onto a spring as shown below.

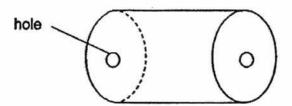


He placed different number of identical cubes on the metal plate and measured the length of the spring. The results recorded are shown in the table below.

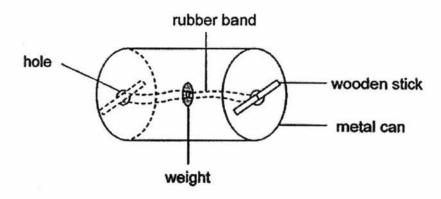
Number of cubes	Length of spring (cm)
0	24
2	21
4	18
6	15

1)	How does the number of cubes on the metal plate affects the length of the spring?
)	Why did the length of spring change as more cubes were placed on the metal plate?

43 Aaron made a toy using a cylindrical metal can as shown in the diagram below. He made a hole on each side of the metal can.



He then secured a rubber band with a weight attached, in the centre of the metal can, using a wooden stick on each side of the metal can.



(a) Fill in the boxes with the forms of energy converted when Aaron gave [1] the metal can a slight push forward to start it rolling.

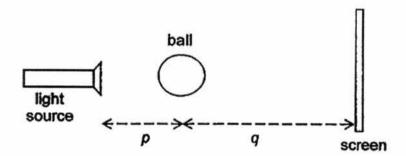
·	** 3
energy in Aaron	energy in rolling can
→	
energy in twisted rubber band	

Continue from Question 43

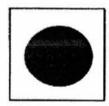
Aaron observed that after the metal can had started rolling forward for a short distance, it would roll backward on its own. This happened several times before the toy came to a complete stop.

	\rightarrow
energy in twisted rubber band	energy in rolling can
hat would Aaron observe if he isted more in the toy?	e used a rubber band that could be

44 Elijah used a set-up as shown below to demonstrate a property of light. He placed a ball at distance p away from the light source and a screen at distance q away from the ball.



The shadow cast by the ball on the screen is shown below.



(a)	What property of light is demonstrated based on Elijah's set-up?	
		_
b)	Assuming that the light source and the screen are fixed at their positions, how will the size of shadow on the screen be affected as distance p increases?	
		 9

End of Booklet B

SCHOOL: CATHOLIC HIGH SCHOOL

LEVEL : PRIMARY 6 SUBJECT : SCIENCE TERM : PRELIM 2

- K1

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	3	1	1	4	1	1	1	4

Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	2	4	1	4	4	2	4	3

Q 21	Q22	Q23	Q24	Q25	Q26	.Q27	Q28	Q29	Q30
3	4	3	3	4	2	2	1	2	3

SECTION B

Q31)	(a) (i) C
	(a) (ii) A
	(b) Fungi
Q32)	(a) (i) ribcage
	(a) (ii) lungs
	(b) The air entering the lungs is cooler than the air leaving the lungs.
	(c) The folds of the gills increases the exposed surface areas so that the

	oxygen can be taken in by the fish.
Q33)	(a) The colour of the plant would become purple.
	(b) The roots took in the purple-coloured water and transported to the
	flowers through the water-carrying tubes.
Q34)	(a) The number of Plant X's fruits dispersed increases as the strength of the
	wind increases. After a certain point, as the strength of the wind
	increases, the number of Plant X's fruits dispersed remains constant.
	As for Plant Y, the number of fruits dispersed remains constant when
	the strength of wind increases.
	(b) It has a wing-like structure.
Q35)	(a) Organism P will offer protection to Q.
	(b) (i) Organism P will lose its colour, becoming more easily infested by
	diseases.
	(b) (ii) It will not have food to eat.
	(c) The presence of the light.
Q36)	(a) Structural adaptation
	(b) In the hotter month, Animal A has a light-coloured coat to reflect heat
	and thus prevent from absorbing heat from the surrounding too fast,
	keeping it cool. In the cooler months, it has a dark-coloured coat to lose
	heat to the surroundings slower, keeping it warm for a longer period of time.
Q37)	(a) In the presence of light, photosynthesis would occur and it needs
	carbon dioxide. So the carbon dioxide would be lower.
8	(b) To prevent carbon dioxide from escaping.
	(c) Untie the bag to released carbon dioxide produced by the plant.
Q38)	(a) When object B is placed across XY, the bulb did not light up which
	proves that it is most likely to be a non-conductor of electricity.
	(b) A is the fastest followed by B then C.
	(c) A good conductor of electricity is also a good conductor of heat.
	(d) This is to ensure that the time takes for the wax to melt is only only
	affected by the rate of conductivity of heat.
239)	(a) The balance will tilt downwards on the side of B.
	(b) The volume of A will be 1000 cm3 as air can be compressed.
	Air has no definite volume and it takes the volume of its container.

Q40)	(a) 100 ml – 81 ml = 19 ml
	(b) Changed from liquid to gaseous state
	(c) When the lamp is switched on, more heat gained by the air increases
	which resulted in the water gaining more heat. This increases the rate
	of evaporation of water.
Q41)	(a) Gravitational Force
	(b) To have a more reliable results by finding the average results
	(c) Shallower. There is a weaker/ less gravitational force resulting in a
	smaller impact when the bulb lands in the container of sand, thus
	creating a shallower depression.
Q42)	(a) When the number of cubes increases, the length of spring decreases.
	(b) The gravitational force that has acting on the cubes overcame the
	elastic spring force in the spring. This resulted in the spring becoming
	short when more cubes were placed on the metal plate.
Q43)	(a)
	chemical potential kinetic
	energy in Aaron energy in rolling can
	energy in
	twisted rubber band
	/L\ clostic neterical
	(b) elastic potential kinetic
	energy in energy in rolling can
	twisted rubber band
	(c) The toy would roll forward and backward more times.
	The toy would roll forward and backward across a longer distance.
	The toy would roll forward and backward for a longer time.
Q44)	(a) Light travels in a straight line.
	(b) The size of the shadow would be smaller.
	To emailor,