

MARKER CODE			



STUDENT ENROLMENT NUMBER							

FORM 2 COMMON EXAMINATIONS

2016

SCIENCE

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours

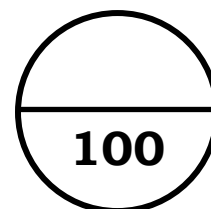
INSTRUCTIONS

1. This paper has **FIVE Sections**. ALL Sections are **COMPULSORY**.

SECTION A:	Science Skills	15 MARKS
SECTION B:	Living World	25 MARKS
SECTION C:	Physical World	25 MARKS
SECTION D:	Material World	20 MARKS
SECTION E:	Planet Earth and Beyond	15 MARKS
2. Write your **Student Enrolment Number (SEN)** on the top right hand corner of this page and on page 31.
3. Answer **ALL** questions in the spaces provided.
4. Use a black or blue pen for written answers and a pencil for drawings.
5. Write legibly and work neatly.
6. Check that this booklet contains **31** pages and that page 28 - 30 has been deliberately left blank.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

TOTAL MARKS



SECTION A:**SCIENCE SKILLS****(15 MARKS)****PART ONE: MULTIPLE CHOICE****(5 Marks)**

Circle the **LETTER** in front of the best answer.

If the best answer is A then circle A. If you want to change your answer from A to C, then put a cross on A and then circle C.

For example :  B  D

1. A science class wants to investigate whether “seeds can germinate without light”. The variable in this investigation is:
 - A. Soil
 - B. Air
 - C. Light
 - D. Seeds
2. Which of the following symbols will you place empty cans to be recycled?

A.



C.



B.

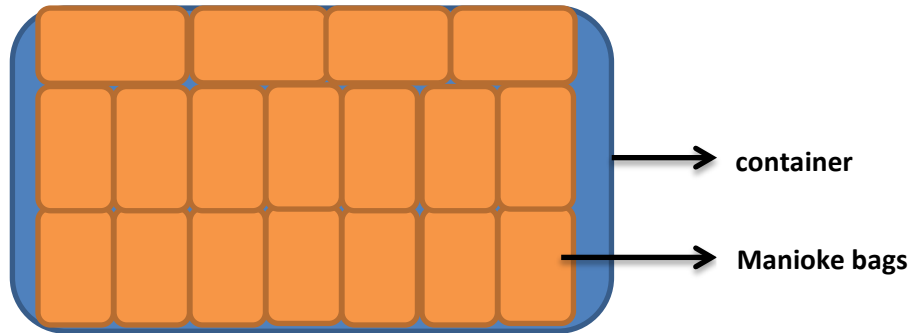


D.



Use the following diagram and information to answer Questions 3 and 4.

A food container was packed with 18 bags of manioke each weighing 20kg as shown in the diagram.



3. If the total mass of the packed container was 2360 kg, what is the mass of the empty container?
 - A. 360 kg
 - B. 1640 kg
 - C. 2000 kg
 - D. 2300 kg

4. The amount of force pressing down on the packed container is:
 - A. 2360N
 - B. 16400N
 - C. 20000N
 - D. 23600N

5. Never use a glass container in the lab to drink from. This is because:
 - A. The glass will break and injure your mouth.
 - B. The container may have hold some chemicals.
 - C. The glass beaker is a transparent container.
 - D. The glass beaker is a corrosive solid.

PART TWO: MATCHING**(5 Marks)**

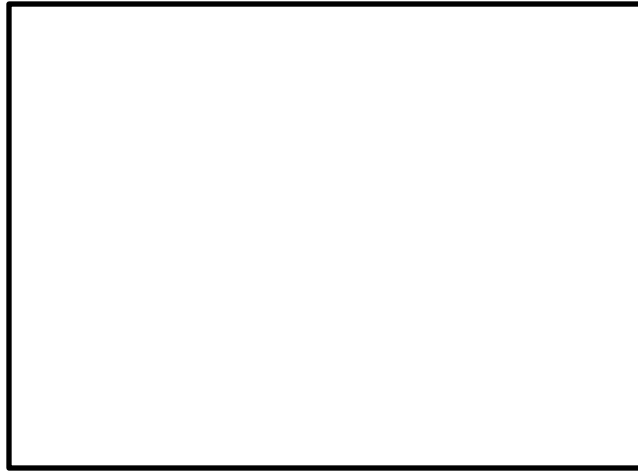
Match **Column B** to **Column A** by writing the correct letter on the line before each number.

Column A**Column B**

- | | |
|-------------------------------|---|
| 1. _____ A theory | A. An aim proven to be true |
| 2. _____ Pestle and Molar | B. Use with a funnel to separate a mixture |
| 3. _____ Inference | C. A hypothesis seems true but unable to be Tested. |
| 4. _____ Filter Paper | D. The composition, feel or structure of a Substance. |
| 5. _____ Texture | E. To reach a conclusion by reasoning |
| | F. Tool to grind solids |

PART THREE: SHORT ANSWER**(5 marks)**

1. In the box below, draw a measuring cylinder. On the cylinder draw a volume of water measuring 55mL of water. Label your diagram and draw with a pencil.



(2 marks)

2. You are given the following experiment to do in the lab:

Compare the ability of hot and cold water to dissolve 5 spoons of sugar placed in two separate beakers.

- a) What are two possible **errors** which may occur to affect your final observations?

i. _____

ii. _____ (2 marks)

- b) Make **ONE (1) prediction** as to what will be observed from your prior knowledge and what you have learnt in Science.

_____ (1 mark)

SECTION B:**LIVING WORLD****(25 MARKS)****PART ONE: MULTIPLE CHOICE****(5 Marks)**

Circle the LETTER of the best answer.

1. **Plant X** is usually found growing in damp/moist soil. They produce spores instead of seeds. **Plant X** is most likely to be classified as a:
 - A. Fungi
 - B. Hibiscus
 - C. Fern
 - D. Plantain

2. An **adaptive feature** of sea grass to withstand moving tides is:
 - A. Long thin leaves
 - B. Flexible stems to sway
 - C. The ability to photosynthesize
 - D. Having long thick roots

The diagram given below shows two animals belonging to **TWO** (2) different Kingdoms. Use the diagrams to answer Question 3 and 4.

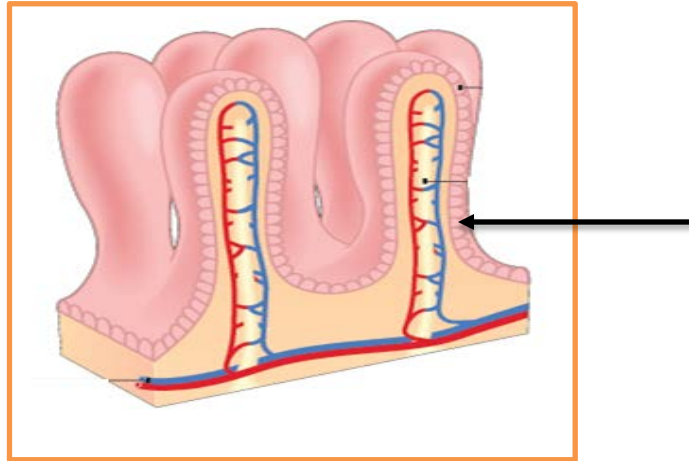
ANIMAL A**ANIMAL B**

3. **Animal A** is an invertebrate, has a shell and fleshy pad for movement. **Animal A** belongs to the:
 - A. Molluscs Family
 - B. Crustaceans
 - C. Insects
 - D. Arachnids

4. **Animal B** belongs to the Amphibians Family. Their main features are:
- A. Bodies in five parts with a spiny outer covering
 - B. Jointed legs, bodies in sections, thick, hard exoskeleton
 - C. Many pairs of legs, many body sections
 - D. Moist skin, lay eggs in water, eggs coated in jelly
5. Respiration in human cells requires _____.
- A. Carbon dioxide
 - B. Oxygen
 - C. Water
 - D. Water vapour

PART TWO:SHORT ANSWERS**(20 marks)**

1. The diagram below show a section of the human respiratory system. Study the diagram and using your other knowledge, answer the questions which follow:

Cross section of small intestine.

- a) Name the structure shown by the arrow.

Name: _____ (1 mark)

- b) The structure in part a) lines the walls of the small intestine. How does this structure help the main function of the small intestine during digestion? How?

 _____ (1½ mark)

- c) What lifestyle choice can cause a problem to the small intestine?

Lifestyle choice: _____ (½ mark)

Digestion problem: _____
 _____ (1 mark)

2. Sione is a farmer in Nualei. He decided to plant taro, corn, spring onions, kava, kape and some plaintain (bananas and hopa). His cultivation will be **organic** not chemical.

- a) In the box given, sketch how Sione **should** grow his crops. Use the Key given for each crop.



(2 marks)

Key:

	taro
	corn
	Spring onion
	kava
	kape
	plantain

b) Answer the following questions from the information given in the first part (a) of this question.

i. What type of cultivation did Sione carry out?

_____ (1 mark)

ii. Explain **ONE (1)** advantage of this type of cultivation?

_____ (1 mark)

iii. Why did Sione plant the corn as shown in your sketch?

_____ (1 mark)

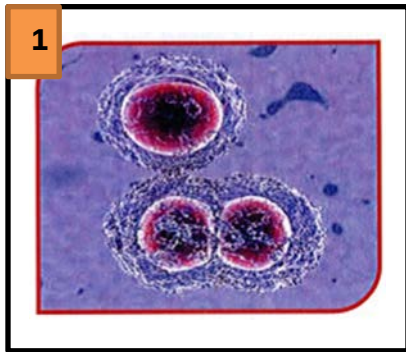
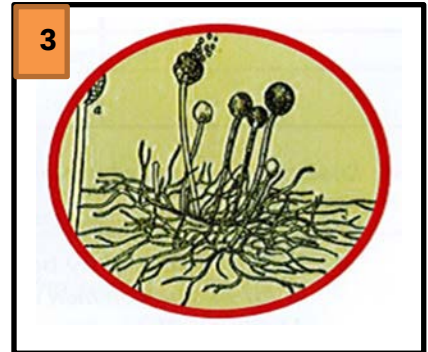
iv. What is **ONE (1) evidence** and explain why, to support Sione's choice to cultivate organically?

Evidence: _____

Why?: _____

_____ (2 marks)

3. Microbes can be useful or harmful to humans. The pictures below show three microbes. Study the pictures and use your other knowledge to answer the following questions.

Bacteria**Virus****Fungus**

- a) Name **TWO** (2) diseases (one plant cause by a virus and one animal or human disease cause by a bacteria):
- Plant disease 1: _____ (1 mark)
 - Animal/human disease 2: _____ (1 mark)
- b) Diseases caused by virus are usually the hardest to cure.
- Give **ONE** (1) reason why.

Reason:

 _____ (2 marks)

- What advices should be given to the public to prevent or control the following diseases?

Disease: Ringworm

 _____ (1 mark)

Disease: Typhoid

 _____ (1 mark)

4. Mangrove is a very important plant in Tonga. Use the picture and your other knowledge to answer the questions which follow.



- a) What ecosystem will you find this plant?

Name of ecosystem: _____ (1 mark)

- b) Give **ONE** (1) **adaptive** feature this plant will have to survive its habitat.

_____ (1 mark)

- c) The areas covered by this plant species have decreased over the years. What **action** should be taken by Tonga to solve this problem?

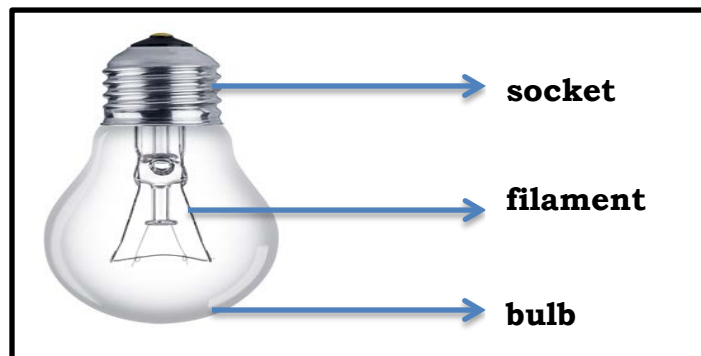
Action:

_____ (1 mark)

SECTION C:**PHYSICAL WORLD****(25 Marks)****PART ONE: MULTIPLE CHOICE****(5 Marks)**

1. A boy is flying a kite. What forces are acting on the kite?
 - A. The weight of the kite and the pull from the boy's hand.
 - B. The wind blowing and the shape of the kite.
 - C. The shape and the size of the kite.
 - D. The length of the string tied to the kite and the boy's hand.
2. Oil takes a very long time to renew. What should be the best source of energy to replace oil in Tonga in the near future?
 - A. Ocean waves.
 - B. Nuclear energy
 - C. Solar energy
 - D. Natural gas
3. In Science, work is done when.....
 - A. One eats a lot of energy food when they are awake.
 - B. Sitting on a chair for a very long time.
 - C. Holding a book on one hand for a long time.
 - D. Firewood burn to produce heat and light.

Answer questions 4 and 5 from the picture given.



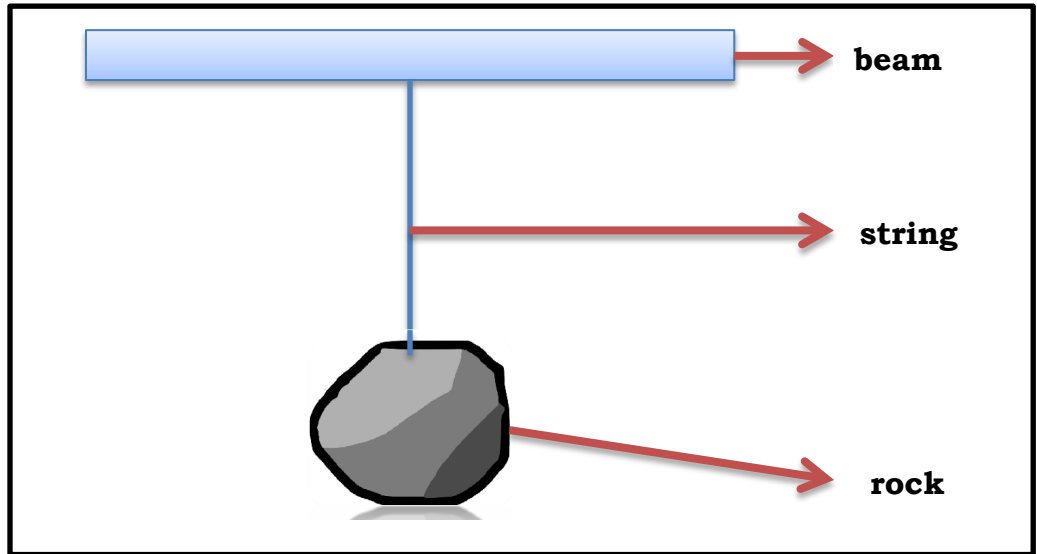
4. The function of the filament is to:
 - A. Convert electrical energy to heat.
 - B. Convert electricity to power.
 - C. Convert electrical energy to light.
 - D. Convert chemical power to light.

5. The filament is made from a metal. This is because:

- A. A metal is very shiny and hard.
- B. A metal can conduct electricity.
- C. A metal cannot conduct electricity.
- D. A metal is hard and tough.

PART TWO: SHORT ANSWERS**(20 Marks)**

1. A rock was tied with a string and hanged from a beam as shown in the picture below. Study the diagram and answer the following questions.



- a) What are the two forces acting on the rock?

_____ (1 mark)

- b) Why does the rock not fall?

_____ (1 mark)

- c) If a scissors is used to cut the string, what will happen to the rock? Give a reason for your answer.

Observation:_____

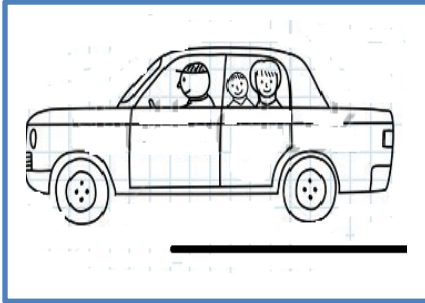
Reason:_____

_____ (3 marks)

- a. What can you do to show that the rock had potential energy?

 _____ (1 mark)

2. Friction can be an advantage or a disadvantage. Study the following pictures and answer the following questions.

Picture 1**Picture 2****Picture 3**

- a) What is the source of friction in a boat sailing (**Picture 3**) on the ocean?

_____ (1 mark)

- b) Is friction an advantage or a disadvantage in **Picture 2** and why?

Advantage or Disadvantage? _____

Reason:

 _____ (2 marks)

- c) In **Picture 1** explain whether friction is needed or not. Give a reason to support your answer.

 _____ (2 marks)

- d) Explain one way you can overcome friction in a fast moving jet landing. (**Picture 2**)

 _____ (2 marks)

3. The following table shows a monthly energy use by a family in Matuku island in Ha'apai.

Energy	From	Purpose	Average cost/week
Energy foods & drinks	Garden & ocean	To stay alive	\$3.00
Electricity	Solar power	Weaving & other work	\$2.00
Heat energy	Firewood	Cooking	\$0.00
Electric batteries	Shop	Radio & torch	\$2.00
Total			\$6.00

Answer the following questions from the information given and any other knowledge.

- a) What could be an energy source to provide heat when firewood runs out in Matuku?

_____ (1 mark)

- b) A similar survey showed that the average cost per week for a family in Pangai, the main town in Ha'apai was \$40.00 per week. Choose one energy need from the table which can cause the difference? Explain why?

Energy need: _____ (1 mark)

Reason: _____
 _____ (2 marks)

- c) List **TWO** (2) ways that the people of Matuku may obtain their energy need for electricity in the near future.

i. _____

ii. _____ (2 marks)

- d) Give **ONE** (1) action that the family in Pangai can conserve energy weekly?

_____ (1 mark)

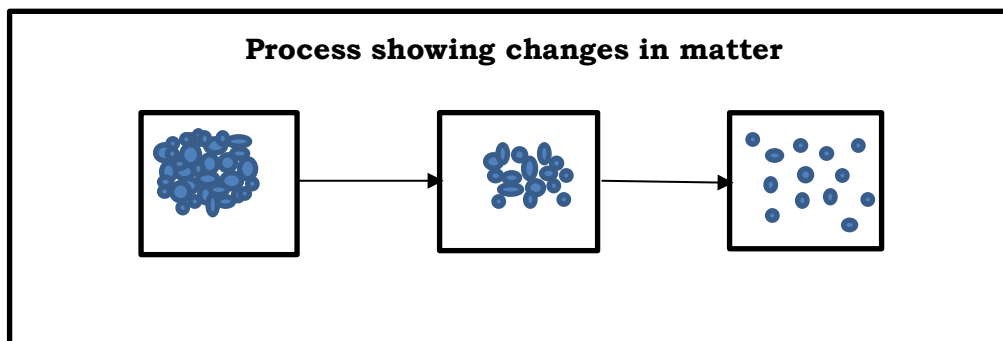
SECTION D:**MATERIALWORLD****(20 Marks)****PART ONE: MULTIPLE CHOICE****(5 marks)****Circle the letter of the best answer.**

1. 7500 grams (g) is equal to how many newtons?
 - A. 750N
 - B. 0.75N
 - C. 75N
 - D. 7.50N

2. During night time a land breeze is formed. This is due to:
 - A. Warm air rising over the ocean is replaced by cold air from the land.
 - B. Cold air rising over the land is replaced by cold air from the ocean.
 - C. Air pressure over land is less dense and is very cool.
 - D. Warm air over the ocean balance cold air on land.

3. When using a straw to suck up a liquid, what forces the water to move up the straw?
 - A. The straw is hollow inside and the liquid is forced to move up.
 - B. When air is sucked the vacuum created forces the liquid to move up.
 - C. The liquid is push upwards by the force of gravity acting on it.
 - D. The liquid is attracted to your mouth once.

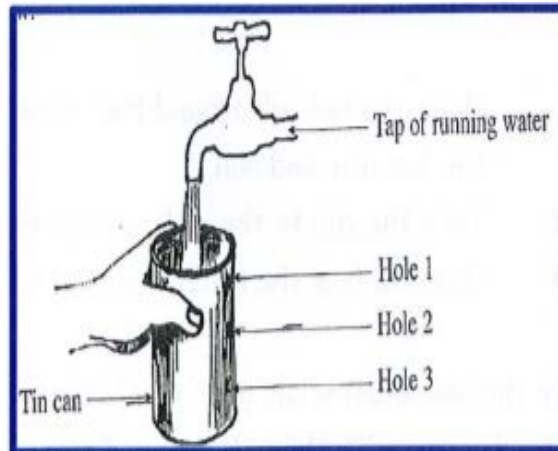
Answer question 4 and 5 from the diagram given below.



4. What substance will go through the changes given in the picture given?
- A. Carbon Dioxide
 - B. Water ice block
 - C. Copper metal
 - D. Perfume
5. Heat is used to cause the changes. In terms of particles, how does heat cause the changes?
- A. It gives energy to particles causing them to move apart.
 - B. It gives energy to particles causing them to come closer together.
 - C. It removes energy causing the particles to collide.
 - D. It converts heat energy to light and vapour.

PART TWO: SHORT ANSWERS**(20 MARKS)**

1. Study the picture given and using any other knowledge, answer the questions which follow:



- a) Give a prediction as to what will happen before the experiment is carried out.

_____ (1 mark)

- b) Which hole did the water come out the farthest distance?

_____ (1/2 mark)

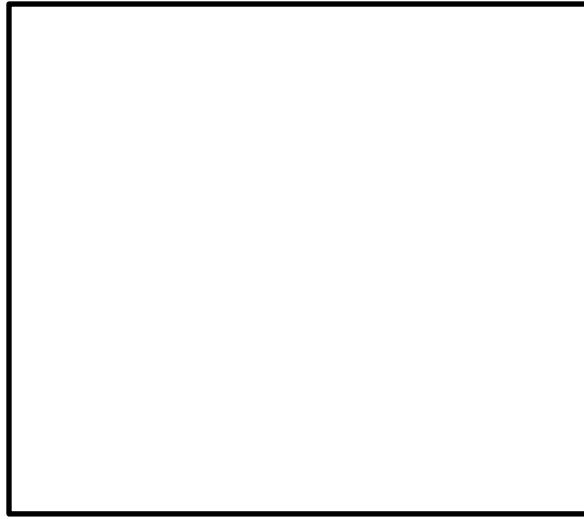
- c) Which hole did the water come out the shortest distance?

_____ (1/2 mark)

- d) What caused the difference between the two holes?

 _____ (2 marks)

- e) In the box given, draw a diagram to show how the stream of water runs out of the can.



(2 marks)

- f) Give an **example** of where this observed idea is used in everyday life.

_____ (1 mark)

2. Use the diagram given to answer the questions. You can use other knowledge too.



Place these objects one at a time in the beaker and observe.

- **A \$1 coin**
- **A piece of Styrofoam**
- **A cooked egg**

- a) Which object(s) will float?

_____ (1 mark)

- b) Which object(s) will sink?

_____ (1 mark)

- c) Explain your answers in **a** and **b**.

_____ (2 marks)

- d) If salt is added to the water, what difference will it make to any of the objects?

_____ (1 mark)

- e) A ship, like the coin, is made of metal. What makes the ship float in the sea?

_____ (2 marks)

3. Matter can show a physical or a chemical change. Given is a list of common substances. Study the list and answer the questions.

List of substances:

- ☐ **Butter**
- ☐ **limestone or coral**
- ☐ **wood**
- ☐ **dry ice (solid carbon dioxide)**

- a) If some butter is heated what **type of change** will take place? (1)

Type of change: _____ (1 mark)

- b) When wood is burnt a **chemical change** take place. What does this means?

_____ (1 mark)

- c) If dry ice is heated it **sublimes**. Explain this change.

_____ (1 mark)

- d) What **evidence** can you show to prove that wood cannot change back to its starting form?

_____ (1 mark)

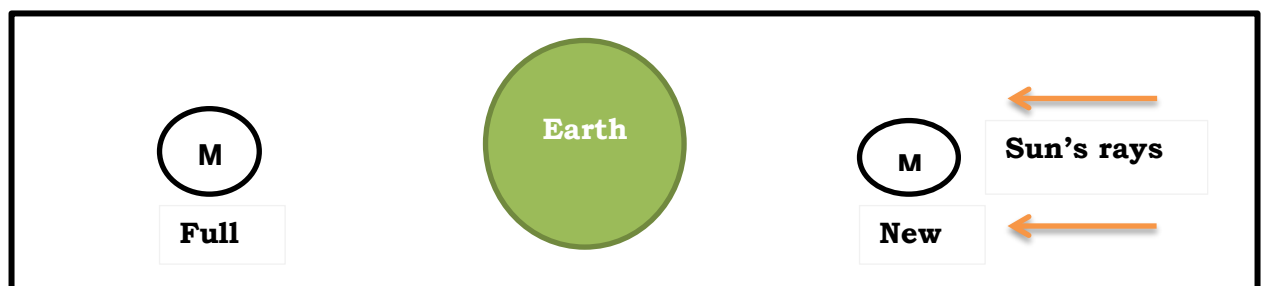
SECTION E:**PLANET EARTH AND BEYOND****(15 Marks)****PART ONE: MULTIPLE CHOICE****(5 Marks)**

1. The moon does not emit light of its own but we can still see it. How can you see the moon in the sky?
 - A. The sun shines through the moon enabling us to see it.
 - B. The moon has many phases and one of them is to be visible.
 - C. The moon reflects sunlight back to Earth.
 - D. The moon is a luminous object allowing us to see it.

2. Brightness of stars depend on:
 - A. Their sizes and distances from the earth.
 - B. Temperature, sizes and distances from earth.
 - C. Their temperature and their sizes.
 - D. Stars coming together to form a constellation.

3. The type of soil where water quickly drained away after a heavy rain is:
 - A. Clay soil
 - B. Loam soil
 - C. Silt soil
 - D. Sandy soil

Answer Question 4 and 5 from the diagram.



4. The position of the moon on the right side of the Earth above means:
 - A. Its illuminated half, faces away from the Earth.
 - B. Its illuminated half, faces towards the Earth.
 - C. The moon is fully illuminated and we can see it all.
 - D. The moon is moving towards a waning crescent phase.

5. A full moon occur after:
- A. A waxing gibbous phase
 - B. A waning gibbous phase.
 - C. A waxing Crescent phase.
 - D. A waning Crescent phase.

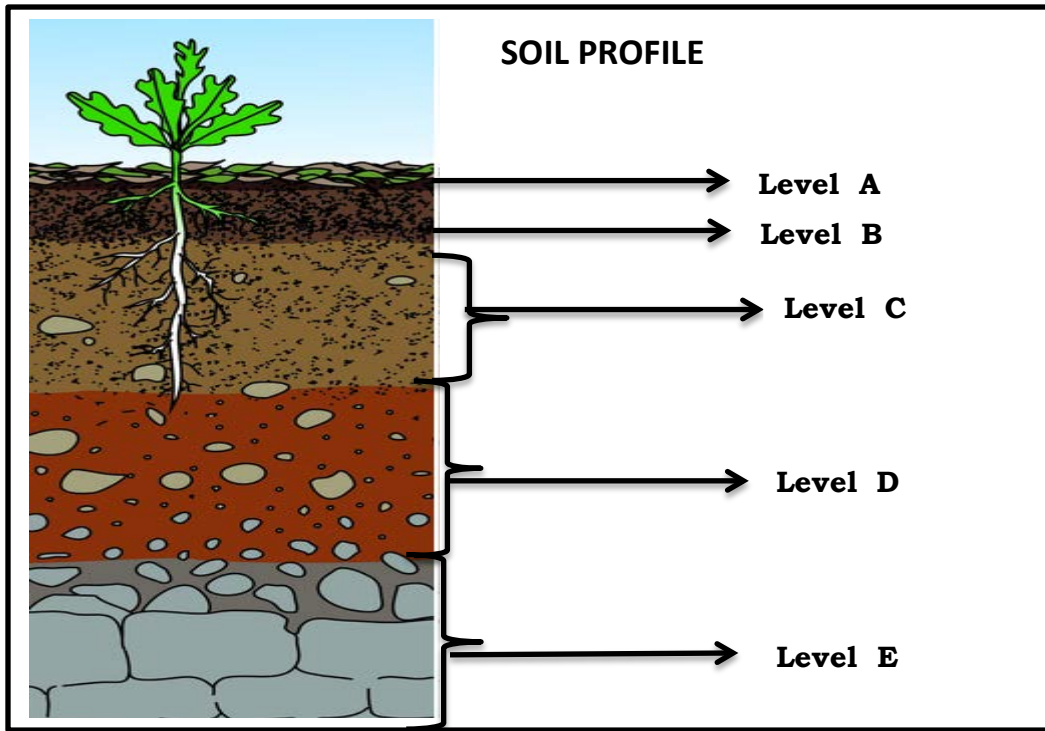
PART TWO: CLOZE

(4 Marks)

1. When the _____ and the _____ pull together on the earth, high tides are extra high and low tides are extra low. (1 mark)
2. When there is a full moon, Tongans carried out two very important activities. These are _____ and _____. (2 marks)
3. The Tongan months was based on the number of times the moon _____. (1 mark)

PART THREE SHORT ANSWERS**(6 Marks)**

1. The diagram below is an outline of a soil profile. Study the diagram and using your other knowledge, answer the questions which follow:



- a) Name the layer which decides the nature of the soil type found in any area?

_____ (1 mark)

- b) Which layer can change the composition or what makes up the final type of soil? Name this layer.

_____ (1 mark)

- c) Rocks weather to form different types of soil. If the rocks were sandstone and granite, what type of soil will it form?

_____ (1 mark)

2. Explain the following observations:

- a) A glass bottle was filled completely with water and placed in a freezer. The bottle cracked when completely frozen. Why?

_____ (1 mark)

- b) Sometimes the moon appears to be 'a coppery red' in colour. What is the cause of this observation?

_____ (2 marks)

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STUDENT ENROLMENT NUMBER									

SCIENCE

FORM 2 COMMON EXAMINATION

2016

SECTIONS	MARK	CHECK MARK	TOTAL
SECTION A			15
SECTION B			25
SECTION C			25
SECTION D			20
SECTION E			15
TOTAL			100