

MARKER CODE			



STUDENT ENROLMENT NUMBER (SEN)							

FORM TWO COMMON EXAMINATION 2020 SCIENCE

QUESTION AND ANSWER BOOKLET

Time Allowed: 2 Hours + 10 minutes reading

INSTRUCTIONS

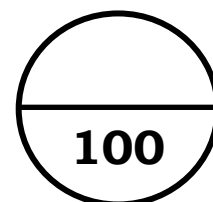
1. This paper has **FIVE SECTIONS**. ALL Sections are COMPULSORY.

SECTION	TOPIC	MARKS
ONE	SCIENCE SKILLS	13
TWO	LIVING WORLD	26
THREE	PHYSICAL WORLD	21
FOUR	MATERIAL WORLD	21
FIVE	PLANET EARTH AND BEYOND	19
TOTAL MARKS		100

2. Write your **Student Enrolment Number (SEN)** on the top right hand corner of this page and on page **23**.
3. Answer **ALL** questions in the spaces provided.
4. Use a black or blue ball point pen for your written answer. Use a pencil **ONLY** for drawings.
5. Write legibly and work neatly.
6. Check that this booklet contain pages **2-23** in the correct order and that page 22 have been deliberately left blank.
7. If you need more papers for answers, ask the supervisor for extra paper. Write your **Student Enrolment Number (SEN)** on the extra paper(s).

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

TOTAL MARKS



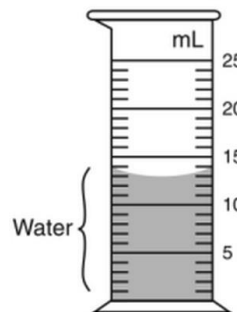
SECTION ONE:**SCIENCE SKILLS****(13 MARKS)****PART A:****MULTIPLE CHOICE QUESTIONS****(3 Marks)**

Circle the letter 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 through A and then circle C.

For example:  B  D

- Which procedure is **unsafe** when heating a liquid in a test-tube?
 - Point it away from others and yourself.
 - Use a tong to hold the test tube.
 - Touch the test tube to check for boiling.
 - The test tube should be less than half full.
- In a fair test, you should change
 - all the variables.
 - only one variable.
 - the dependent variable.
 - both variables.
- A student needs 22 ml of water for an experiment. How much additional water must the student add to the graduated cylinder shown below to reach 22 milliliters?



- 7mL
- 8 mL
- 9 mL
- 10 mL

PART B:**EXTENDED ANSWER QUESTIONS****(10 Marks)**

Answer **ALL** the questions in the spaces given below.

1. **Figure 1.1** shows a Form 2 class in a laboratory. Use it to answer the questions that follow.

Figure 1.1

- a. Draw a circle around a student that seems to be breaking a laboratory safety rule.
- i. State the laboratory rule the student is breaking. (1 mark)

- ii. Describe why this rule is important. (1 mark)

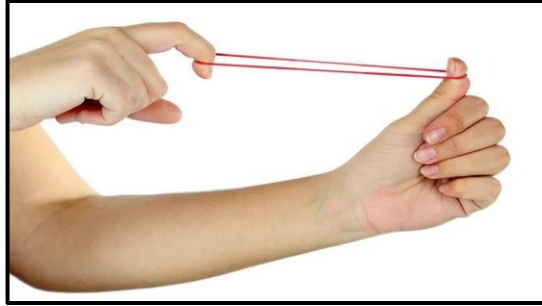
2. The diagrams below show three safety symbols used to warn danger.

**A****B****C**

- a. Write the letter of the diagram that is suitable to place on a **petrol** container. (1 mark)

P.3

3. Inoke and Savelio wanted to make a catapult for firing marbles.



First of all, they took a thin band, pulled it back 3cm, fired a marble and found it travelled 36 cm. Then they put 2 thin bands together pulled back 3cm and found that the marble travelled 54cm. They repeated this with 3, 4 and 5 bands and got distances of 72 cm, 90 cm and 108 cm.

- a. What were Inoke and Savelio trying to find out? (1 mark)

- b. What is the **independent variable** in this experiment? (1 mark)

- c. What factors did the two boys keep constant? (1 mark)

- d. Record the results of this experiment in the given table below. (3 marks)

- e. State a conclusion based on the results in d. (1 mark)

SECTION TWO:**LIVING WORLD****(26 MARKS)****PART A:****MULTIPLE CHOICE QUESTIONS****(3 Marks)**

Circle the letter of the BEST answer.

1. Which of these organisms have a diet consisting only of plant matter?
 - A. Omnivore.
 - B. Carnivore.
 - C. Herbivore.
 - D. Insectivore.

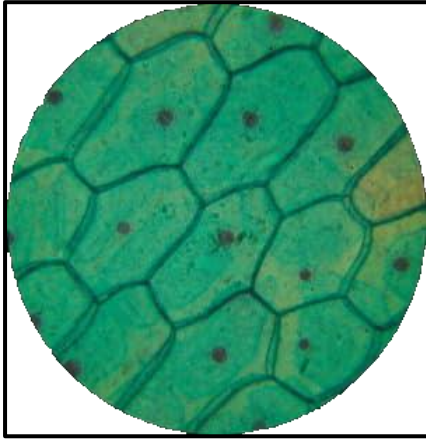
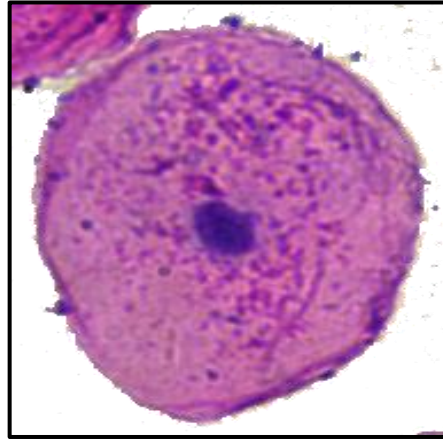
2. The _____ is an organelle in a cell that breaks down sugar molecules to release energy.
 - A. Chloroplast
 - B. Nucleus
 - C. Vacuole
 - D. Mitochondria

3. Which of the following unicellular organisms is NOT a protist?
 - A. Bacteria
 - B. Amoeba
 - C. Paramecium
 - D. Euglena

PART B:**EXTENDED ANSWER QUESTIONS****(23 Marks)**

Answer **ALL** the questions in the spaces given below.

1. Here are two different types of cells as seen through a school microscope.

**Cell A****Cell B**

- a. Label the parts of the cells which you can positively identify. (1 mark)

- b. Suggest what type of cells A and B are and give a reason for your suggestion. (3 marks)

Cell A: _____

Cell B: _____

Reason: _____

2. Respiration is a very important process that is carried out by all living things.

a. Define **respiration**

(1 mark)

b. Complete these **word equation** for the process of respiration.

(2 marks)

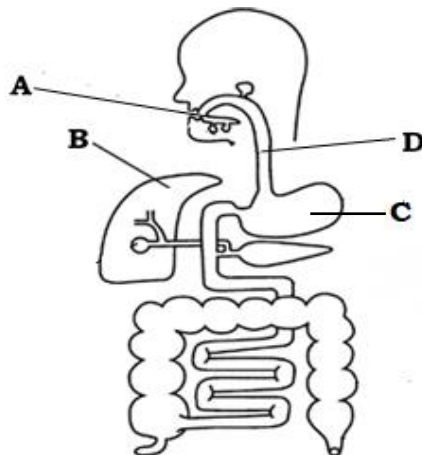
_____ + _____ $\longrightarrow$ _____ + _____ + energy

3. The diagram below shows where gas exchange takes place. Label the following parts of the diagram and the gases involved in this process. (5 marks)

capillary, alveolus, oxygen, red blood cell, carbon dioxide



4. The diagram below shows the human digestive system.



a. Name the enzyme found in the part labelled A.

(1 mark)

A: _____

- b. Describe the function of structure B. (2 marks)

- c. Label structure D: (1 mark)

D: _____

- d. What is the enzyme found in C and give its function? (2 marks)

5. Read the article below and use it to answer the questions that follow.

In a large pond, microscopic plants called **phytoplankton** turn the surface of the sea into a thick soup. Tiny animals feed on this food source, including **mayfly nymphs** and **water beetles**. Both of these are a food source for the **dragonfly nymph**.

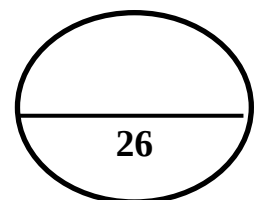
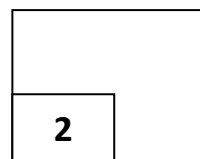
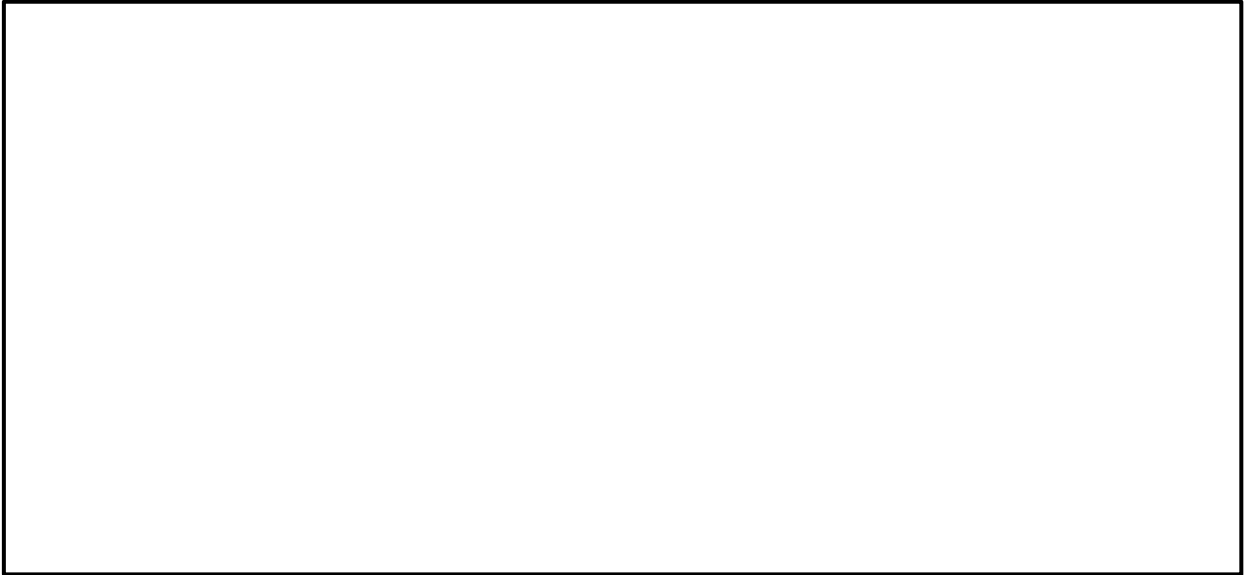
- a. Write beside each of the organism listed below whether it is a **herbivore**, **carnivore**, or **producer**. (3 marks)

Dragonfly nymph: _____

Water beetles: _____

Phytoplankton: _____

- b. Use the information provided to DRAW A FOOD WEB which includes **all** the organisms printed in bold in the article. (2 marks)



SECTION THREE:**PHYSICAL WORLD****(21 MARKS)****PART A:****MULTIPLE CHOICE QUESTIONS****(3 Marks)**

Circle the letter of the BEST answer.

1. A **hairdryer** converts
 - A. electrical energy into chemical energy
 - B. electrical energy into heat energy
 - C. chemical energy into mechanical energy
 - D. heat energy into mechanical energy

2. Heat energy travels along copper wire by
 - A. contraction.
 - B. radiation
 - C. conduction.
 - D. convection.

3. Which of these forces can be described as a contact force?
 - A. Gravitational force
 - B. Magnetic force
 - C. Electrostatic force
 - D. Frictional force

PART B: EXTENDED ANSWER QUESTIONS**(18 Marks)**

Answer **ALL** the questions in the spaces given below.

1. A certain apple on Earth weighs 1N.

a. Define **weight**. (1 mark)

b. Calculate the mass of the apple in kg. (1 mark)

c. Calculate the weight of the apple if taken to the moon. (2 marks)

2. **Energy transformations.**

Energy comes in different forms, and it can be changed from one form into another.

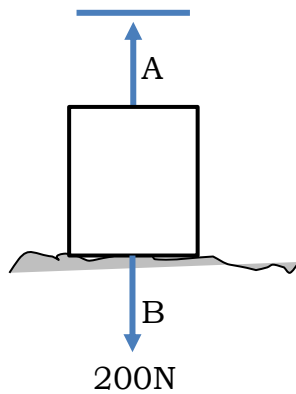
Complete the sentences below using the correct form of energy. (4 marks)

a. A light bulb will convert _____ energy into _____ energy along with some heat energy.

b. An electric motor will convert electrical energy into _____ energy, and also produces some _____ and sound energy.

3. The changes of energy shown above agree with the principle of energy conservation. State the “**Principle of Conservation of Energy**” (1 mark)

4. The diagram below represents a box resting on the line given above arrow A.



- a. Write the size of Force A, in newtons on arrow A. (1 mark)

The arrows show the forces acting on the box.

- b. State the names of **Forces A** and **B**.

Force **A**: _____ (1 mark)

Force **B**: _____ (1 mark)

- c. Explain why the box would be weightless if it were floating in outer space.

 _____ (2 marks)

5. Complete the paragraph below with the most **suitable** word. (4 marks)

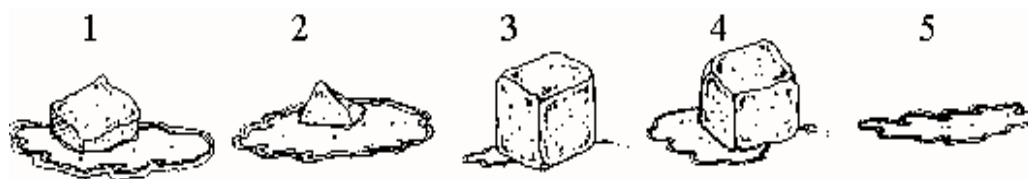
Gravity is a force of attraction that exists between all objects with a mass. This force depends on the _____ of the objects and the _____ between them.

The closer the two objects are to each other, the _____ is this force. The force of gravity between an object on the Earth's surface and the Earth is called the _____ of the object.

SECTION FOUR: MATERIAL WORLD**(21 MARKS)****PART A: MULTIPLE CHOICE QUESTIONS****(3 Marks)**

Circle the letter of the BEST answer.

1. Here are five pictures of an ice-cube as it melts.



1. What **order** should they be placed in from start to finish?
 - A. 1, 2, 3, 4, 5
 - B. 3, 4, 1, 2, 5
 - C. 4, 3, 1, 2, 5
 - D. 5, 2, 1, 4, 3

2. The series of diagrams above show an example of a _____ change.
 - A. mass
 - B. chemical
 - C. physical
 - D. weight

3. **“It does have a fixed shape and a definite volume but it cannot be compressed”.**
 The state of matter that is defined by the above statement is _____.
 - A. gas
 - B. solid.
 - C. liquid
 - D. carbon dioxide.

PART B:**EXTENDED ANSWER QUESTIONS****(18 Marks)**

Answer **ALL** the questions in the spaces given below.

1. Rearrange the parts of these sentences to make four true statements. (4 marks)

Write the correct sentences in the spaces provided.

1	Gases	can soon be smelt throughout a room	because the particles vibrate rather than move.
2	Balloons	can be easily compressed	because the particles are moving quickly.
3	Solid	expand on hot days	because the particles move faster when heated.
4	Perfume	particles stay neatly packed in tidy rows	because the particles are far apart.

1. Gases _____

2. Balloons _____

3. Solid _____

4. Perfume _____

2. Jasmine investigated how the weight of an object changes when it is submerged in water. She wrote down the method and drew diagrams to show her results.

<u>Method</u> 1. Tie cotton around a block and suspend it from the hook of a spring balance. 2. Find the dry mass of the block using a spring balance. 3. Find the volume of the block using a displacement can. 4. Find the mass of the block in water using a spring balance	
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- a. Fill in this table of results and calculation for Jasmine's experiment. ($g=10 \text{ Nkg}^{-1}$)

Calculation for experiment

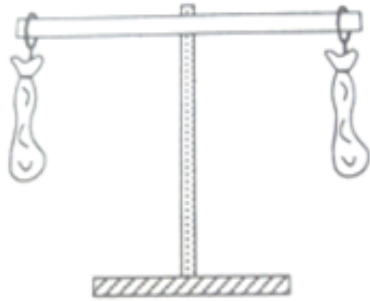
Weight of block in air	1.12 N
Mass of block in air	
Volume of block	46ml
Density of block ($\text{density} = \frac{\text{mass}}{\text{volume}}$)	
Weight of block in water	0.66N

(3 marks)

- b. In this experiment the mass of the block remained constant, but its weight changed. Clearly explain the difference between **mass** and **weight**. (2 marks)

- c. What force caused the block to lose weight when it was placed in the beaker of water? (1 mark)
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3. Two equal sized balloons were tied to opposite ends of a balance as shown below.



One student was asked to blow air into one balloon and hang it back on the balance.

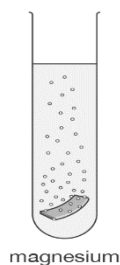
- a. Draw your observation after one balloon was blown in the box below.



(2 marks)

- b. What property of air does this activity show? (1 mark)
-

4. Penisimani did an experiment to find out what happens when a piece of magnesium is added to acid.



- a. State one observation made during this experiment. (1 mark)

- b. The reaction above is an example of a chemical change.

Define **chemical change**.

(1 mark)

5. The diagram below show a day time coastal wind pattern during some summer months.



- a. Name the type of breeze that will happen in the above diagram (1 mark)

- b. Describe the wind pattern in the diagram. (2 marks)

SECTION FIVE: PLANET EARTH AND BEYOND**(19 MARKS)****PART A: MULTIPLE CHOICE QUESTIONS****(3 Marks)**

Circle the letter of the BEST answer.

1. The tilting of the earth on its axis is responsible for the change of
 - A. days.
 - B. the sun's rays.
 - C. seasons.
 - D. tides.

2. The layer of soil just below the topsoil is _____
 - A. loam.
 - B. decayed matter.
 - C. rock.
 - D. subsoil.

3. The phases of the moon are caused by the
 - A. earth rotating on its axis
 - B. moon rotating on its axis
 - C. moon revolving around the earth.
 - D. earth revolving around the moon.

PART B:**EXTENDED ANSWER QUESTIONS****(16 Marks)**

Answer **ALL** the questions in the spaces given below.

1. **Eclipse**

- a. Complete the diagram below to show how a lunar eclipse occurs.

Label the Sun, Earth and the Moon. Also label the **umbra**, **penumbra** and the **light rays**. (Use a ruler and pencil for this drawing). (2 marks)



2. Match the following events with its causes by writing the letter of the correct answer in the spaces provided. (4 marks)

Events

_____ sunrise and sunset

_____ tide

_____ seasons

_____ year

Causes

A. tilt of the Earth

B. Earth orbiting the Sun

C. Moon's gravity

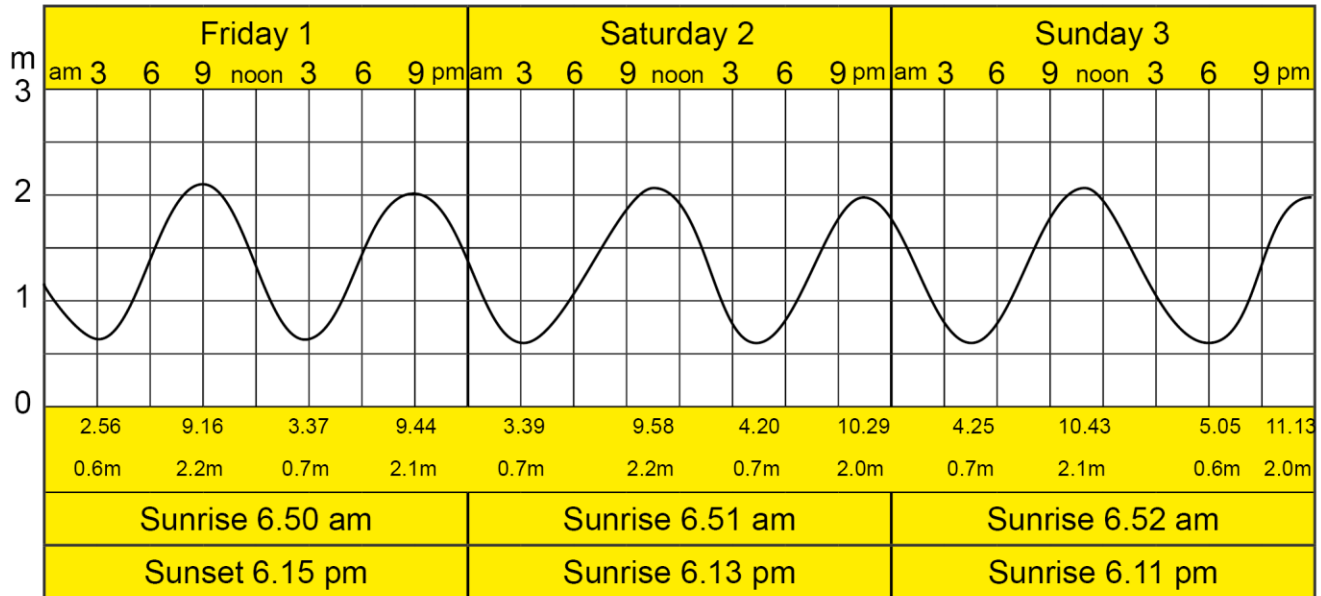
D. rotation of the Earth

E. Moon orbiting the Earth

3. Time and tide

The chart shown below gives the information about the tides, sun and moon for Nuku'alofa from the Fua'amotu Weather Forecasting Centre.

Use the information shown on the chart to answer the questions below.



- a. State the time and height of the first high tide on Sunday the 3rd.

Time: _____ Height: _____ (2 marks)

- b. Predict the times of sunrise and sunset for Monday the 4th.

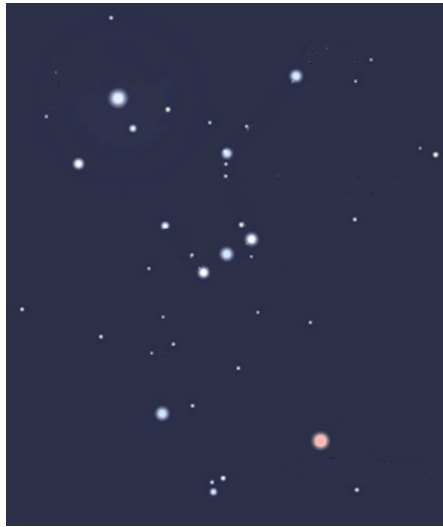
Sunrise: _____ Sunset: _____ (2 marks)

The newspaper states a cyclone warning. It warns people living in the coastal areas such as Sopo and Pātangata to move inland because if the cyclone happens it is also full moon.

- c. Explain why the warning is given especially to people living at coastal area.

(3 marks)

4. The diagram below shows a constellation that you have studied this year.



- a. Define **constellation**. (1 mark)

- b. State the name of this constellation. (1 mark)

- c. What is the other name of this constellation? (1 mark)

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STUDENT ENROLMENT NUMBER (SEN)

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FORM TWO COMMON EXAMINATION

2020

SCIENCE

(FOR MARKERS USE ONLY)

SECTION		MARKS	CHECK MARKS	TOTAL MARKS
ONE	SCIENCE SKILLS			13
TWO	LIVING WORLD			26
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FIVE	PLANET EARTH AND BEYOND			19
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