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| Centre Number | Candidate Number |
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MINISTRY OF EDUCATION AND HUMAN RESOURCES DEVELOPMENT

SOLOMON ISLANDS YEAR 9 EXAMINATION

2017

SCIENCE

QUESTION AND ANSWER BOOKLET

THURSDAY 2ND NOVEMBER 9:00 AM

**TIME: 2 HOURS plus
10 minutes reading time**

This Exam Paper consists of TWO sections. **ATTEMPT ALL QUESTIONS.**

| | | MARKS | TIME |
|-------------------|------------------------------|--------------|--------------------|
| SECTION A: | 20 Multiple Choice Questions | 20 | 20 minutes |
| SECTION B: | 4 Short Answer Questions | 50 | 50 minutes |
| SECTION C: | 4 Long Answer Questions | 30 | 50 minutes |
| | TOTAL: | 100 | 120 minutes |

INSTRUCTIONS

1. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
2. WRITE BOTH YOUR CENTRE NUMBER AND CANDIDATE NUMBER IN THE BOX PROVIDED AT THE TOP RIGHT HAND CORNER OF THIS PAGE AND AT THE BACK OF THIS BOOKLET.
3. BEFORE YOU BEGIN EACH PART, READ THROUGH THE INSTRUCTIONS CAREFULLY.
4. WRITE YOUR BEST ANSWER LETTERS TO **SECTION A** IN THE FOLD OUT FLAP OF THIS BOOKLET ON PAGE 27.
5. WRITE YOUR ANSWERS TO **SECTION B & SECTION C** IN THE SPACES PROVIDED IN THIS BOOKLET.
6. USE 10 MINUTES READING TIME TO READ THROUGH THE PAPER.

THIS BOOKLET CONTAINS 27 NUMBERED PAGES.

SECTION A: MULTIPLE CHOICE QUESTIONS

(20 MARKS)

ANSWER ALL THE QUESTIONS IN THIS SECTION. WRITE YOUR BEST ANSWER IN THE BOXES OF THE FOLD-OUT FLAP PROVIDED ON THE BACK OF THIS BOOKLET. EACH QUESTION IS WORTH 1 MARK.

Study the diagram of a cross section of the Earth's crust as shown below and answer question 1.

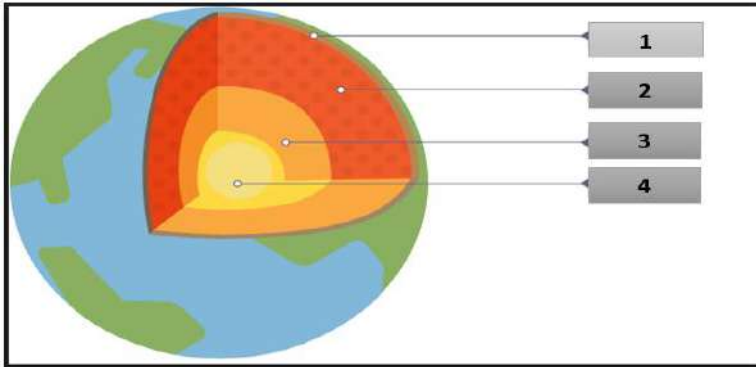


Fig A: 'Diagram showing the structure of the earth.'

1. The region labelled **3** is called the
- A. outer mantle
 - B. inner mantle
 - C. outer core
 - D. inner core

Study the diagram below and answer Q2.

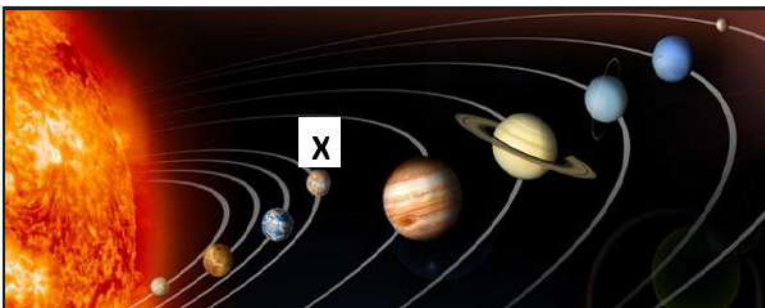


Fig B: 'Diagram showing the order of planets in the solar system.'

2. Which of the following planet is labelled **X**

- A. Mercury
- B. Venus
- C. Mars
- D. Earth

3. The most abundant element on the Earth's crust is;

- A. Oxygen
- B. Silicon
- C. Aluminium
- D. Iron

4. The list that contain all the conditions for mineral formation would be;

- A. fault, cavity, impervious rocks, energy and time.
- B. fault, impervious rocks and time
- C. cavity, impervious rocks and energy
- D. impervious rocks, time and energy.

5. Which of these is a balanced chemical equation?

- A. $\text{HCl} + \text{Mg} \rightarrow \text{MgCl} + \text{H}_2$
- B. $2\text{HCl} + \text{Mg} \rightarrow \text{MgCl}_2 + \text{H}_2$
- C. $\text{H}_2\text{Cl} + \text{Mg} \rightarrow \text{Mg}_2\text{Cl}_2 + 2\text{H}_2$
- D. $\text{HCl}_2 + \text{Mg} \rightarrow \text{MgCl}_2 + 2\text{H}$

6. The correct energy flow diagram involving the Sun, plant, and animals would be;

- A. Sun \longrightarrow cassava \longrightarrow Chicken \longrightarrow Tom.
- B. Sun \longrightarrow cassava \longleftarrow Chicken \longrightarrow Tom.
- C. Sun \longleftarrow cassava \longleftarrow Chicken \longleftarrow Tom.
- D. Sun \longleftarrow cassava \longrightarrow Chicken \longleftarrow Tom.

Use Figure 'C' below to answer Q 7.

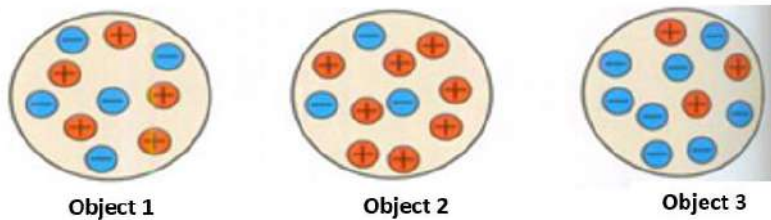


Fig C: 'Diagram showing the number of electrons and protons a material has.

7. Which statement about the above objects is correct?
- A. Object 1 is not neutral
 - B. Object 2 is negatively charged
 - C. Object 2 is positively charged
 - D. Object 3 is positively charged

Use the list given below to answer Q8 and Q9.

Silver, copper, rubber, oil, aluminium, iron, steel, glass

8. From the list, two examples of insulators are;
- A. Copper and steel.
 - B. Silver and oil.
 - C. Rubber and oil.
 - D. Aluminium and plastic
9. Some materials are called insulators because they are;
- A. good conductors of heat and electricity.
 - B. good conductors of electricity only.
 - C. good conductors of heat but only.
 - D. good at inhibiting the flow of electricity.

Study the diagrams below and answer Q10.

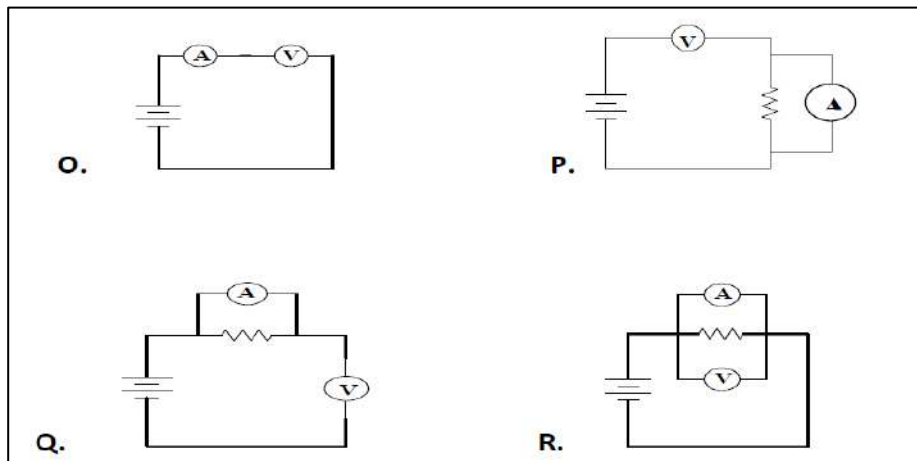


Fig D: 'Diagrams' showing how voltmeter is connected in each circuit.

10. Which of the above diagrams shows the correct arrangement of a Voltmeter in a circuit?

- A. O
- B. P
- C. Q
- D. R

A form 3 female student went to an optician (eye doctor) to have her eyes checked because she had trouble focusing on close objects. Below is a sketch of her eye that shows her poor vision.

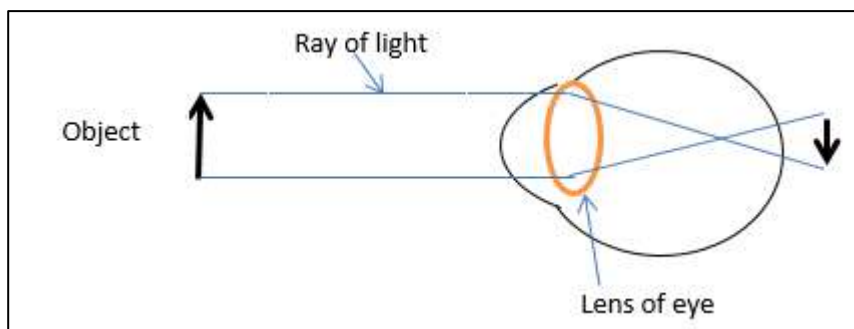


Fig E: 'Diagram' showing the formation of image behind the retina

11. Which of the following should the optician recommend the student to correct her vision?
- Converging lenses (convex)
 - Diverging lenses (Concave)
 - Magnifying glasses
 - Plain glasses

Study the food web below and answer Q12 and Q13.

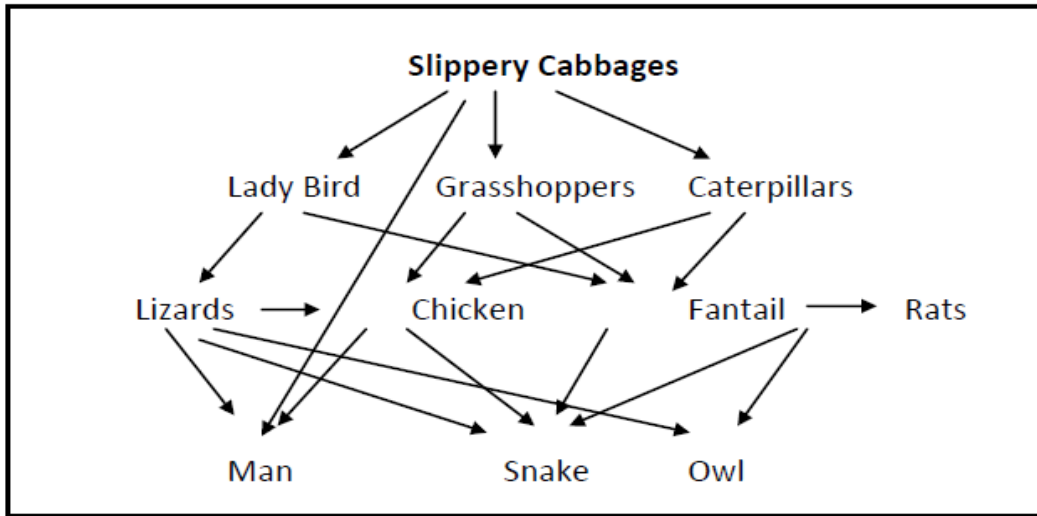


Fig F: 'Diagram' showing a feeding relationship in an ecosystem.

12. In the above food web, which of the following organisms is an omnivore?
- grasshopper
 - lizard
 - man
 - owl
13. The herbivores in the above food web would be;
- Lady bird and caterpillars.
 - Grasshoppers and chickens.
 - Lady bird and lizards.
 - Caterpillars and snakes

14. Which of the following statements is **true** about predation?
- A. Organisms live and feed inside the body of other organisms
 - B. Organisms that feed on both plants and animals
 - C. Organisms that live together and both benefit.
 - D. Organisms that catches and kills other living organisms.
15. The process of releasing the ripe female gamete (egg) from the ovary is called;
- A. Reproduction
 - B. Fertilization
 - C. Ovulation
 - D. implantation
16. The diagram below shows the parts of the human heart and arrows showing the direction of the flow of blood in or out of the heart.

The letters that correctly show the direction of flow of blood from the lungs into the heart would be;

- A. C
- B. D
- C. G
- D. H

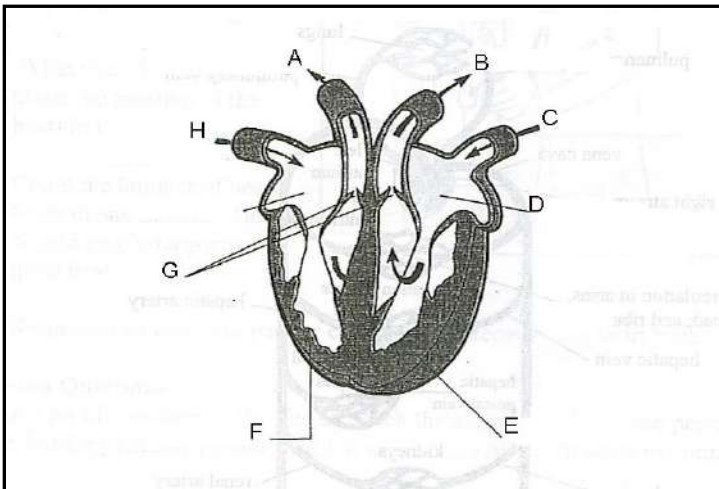


Fig G: 'Diagram' showing a human heart.

17. Which component of blood is responsible to stop bleeding by clumping and clotting blood vessel injuries?
- A. Plasma
 - B. Platelets
 - C. Red Blood Cells
 - D. White Blood Cells
18. The main functions of the ears are hearing and
- A. maintaining balance.
 - B. control swallowing.
 - C. sensitivity.
 - D. running away from danger.

Study the diagram below of a human arm, and answer Q19.

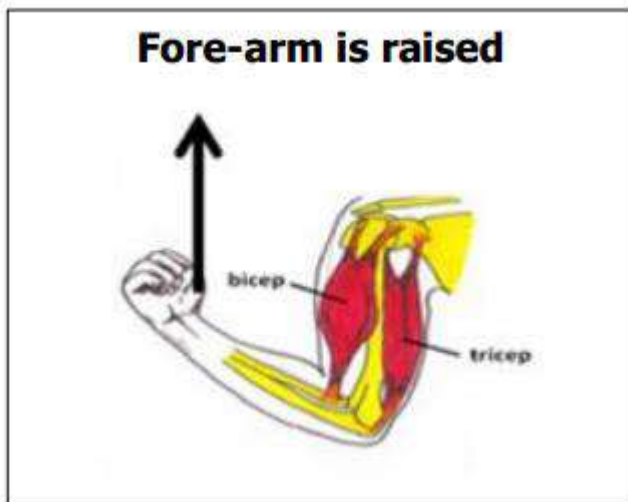


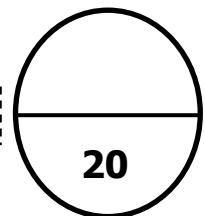
Fig H: 'Diagram' showing how the fore arm has been raised.

19. Which of the following statements describe what happens to the biceps and triceps muscles, when the fore-arm is raised?
- A. The biceps muscle contracts while the triceps relaxes.
 - B. The biceps muscle relaxes while the triceps contracts.
 - C. Both the biceps and triceps muscles contract.
 - D. Both the biceps and triceps muscles relax.

20. The functions of the skeleton are for support, protection and movement. Study the table below to determine which set correctly matches the bones and the organs they protect.

| | Skull | Rib cage | Vertebral column |
|----------|-----------------|-----------------|-------------------------|
| A | Lungs and heart | Spinal cord | Brain |
| B | Spinal cord | Brain | Lungs and heart |
| C | Brain | Lungs and heart | Spinal cord |
| D | Brain | Spinal cord | Lungs and heart |

TOTAL MARK FOR SECTION A:



SECTION B: SHORT ANSWER QUESTIONS

(50 MARKS)

THIS SECTION IS WORTH 50 MARKS. ANSWER ALL QUESTIONS IN THE SPACE PROVIDED. IF YOU NEED MORE SPACE TO WRITE YOUR ANSWERS, USE THE PAGE(S) PROVIDED AT THE BACK OF THIS BOOKLET.

Question 21: Resources (16 marks)

A. Origin of Elements

1. The earth's structure is made up of several layers. Each layer has different contents. Complete the table below by filling in the contents of the layers.

| Layer | Contents |
|--------------|-----------------|
| Mantle | |
| Outer core | |

(2 marks)

2. Natural mineral resources are mainly found on the earth's crust. Two elements that are found in this layer are Iron and Silicon. Write down the chemical symbols for the two elements.

Iron : _____

Silicon : _____

(2 marks)

B. Mineral Resource

1. There are two types of energy sources, i.e., renewable and non-renewable energy sources. Identify from the list of **energy forms** in the table below whether the source of energy is renewable or non-renewable. Write your answer, either, as **renewable** or **non-renewable**.

| # | Energy Form | Energy Source |
|------|-------------------------|---------------|
| i. | Light from torch | |
| ii. | Sound from ships engine | |
| iii. | Light from moon | |
| iv. | Heat from burning wood | |

(4 marks)

C. Properties of Metals.

1. Metals are very important to the people of Solomon Islands because of the properties they possess. State **TWO** properties of metals that make them useful in making

a. Cooking pots

i. _____

ii. _____

(2 marks)

b. Electric wires

i. _____

ii. _____

(2 marks)

D. Energy Resources

1. Sun is the ultimate source of all energy on earth.

a. Describe the important process by which plants use sun's energy to produce sugar.

(2 marks)

b. Briefly explain how animals get their energy.

(2 marks)

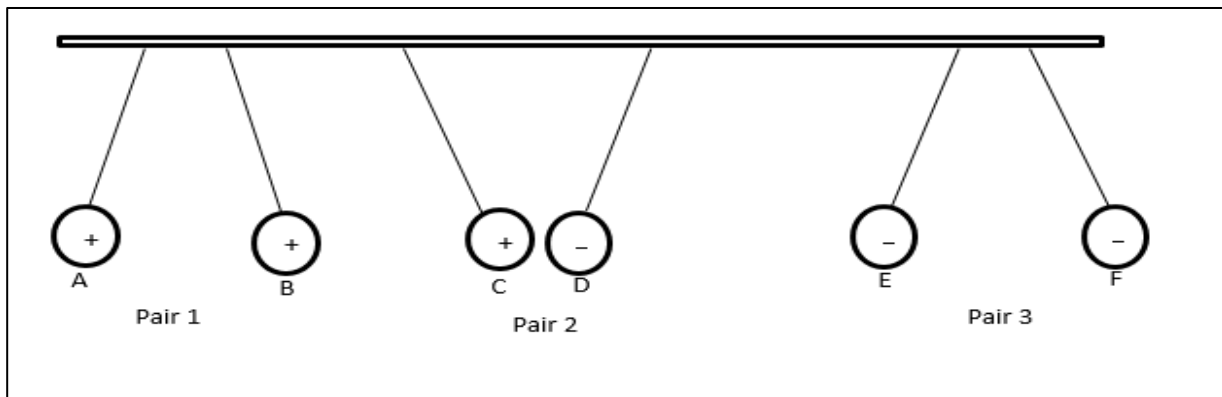
TOTAL MARK FOR SECTION B: Q.21

16

Question 22: Electricity and light (10 marks)

A. Static Electricity

The sketch below shows what happens when pairs of electrically charged spheres (or balls labelled A, B, C, E and F) suspended by threads were brought close to each other.



**Key: (+) positive charge
(-) negative charge**

Describe what is happening for each pair of spheres in pair 1 and pair 2.

1. Pair 1:

(2 marks)

2. Pair 2:

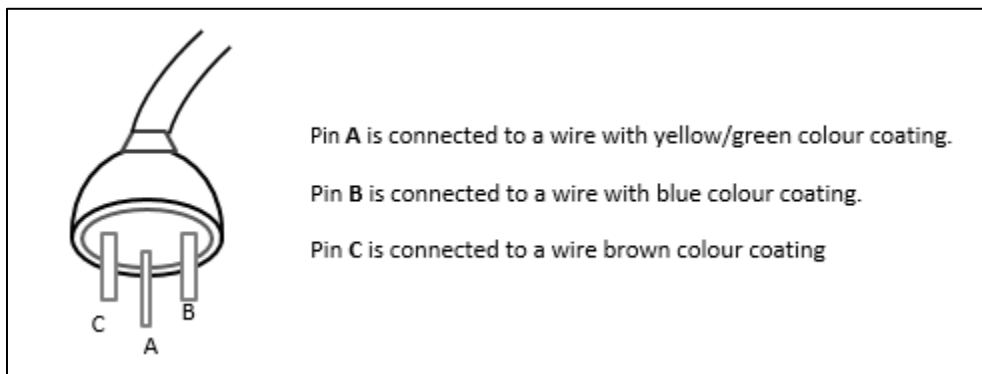
(2 marks)

B. Electric Circuits and Appliances

1. The two basic types of circuits are series and parallel circuits. In the space provided below, describe the **series circuit**.

(2 marks)

2. The diagram below shows a three pin plug with brief descriptions of the wires that the pins are connected to and the colours of the plastic coatings.



Explain why the wires inside the three pin plug are plastic coated.

(2 marks)

C. Property of light

A rain bow is an example of white light splitting into its component colours.



Briefly explain how rain bow forms.

(2 marks)

TOTAL MARK FOR SECTION B: Q.22

10

Question 23: Considering our future (8 Marks)

A. Local environmental concerns

1. Define the following terms, and give ONE example of each:

a. i. A biotic factors

ii. Example: _____ (2 marks)

b. i. Biotic

ii. Example: _____ (2 marks)

2. Local fishermen in the country have experienced a reduction in the population of sea turtles and other marine species over the last years.

State how important sea turtles and other marine species are to the lives of Solomon Islanders.

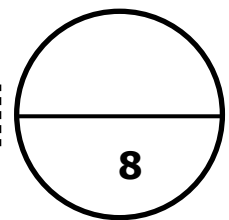
(2 marks)

B. Environmental concerns

1. Human actions are causing the destruction of ecosystems. Describe how the ecosystem is being destroyed by humans.

(2 marks)

TOTAL MARK FOR SECTION B: Q.23



Question 24: The Human System (10 Marks)

A. Reproduction and Growth

1. When a Human (male and female) reach maturity, physical changes occur to their body due to effects of hormonal actions. This is called puberty.

List any two (2) physical changes that occur in the male and female when reaching puberty.

- a. Changes in male:

(2 marks)

- b. Changes in female:

(2 marks)

B. Nutrition Lifestyle and Diseases

1. Chewing betel nut is commonly practiced in the Solomon Islands as a way of promoting cultural values which in turn promotes communal life. This was practiced through sharing of lime, leaf and betel nut. Concerns have been raised by medical practitioners that such lifestyle threatens our health.

Briefly explain why betel nut chewing causes problems to our health.

(2 marks)

C. Blood Transport

1. Name the two components of white blood cells.

i. _____

ii. _____

(2 marks)

2. Differentiate the types of blood that passes through the pulmonary artery and pulmonary vein.

(2 marks)

3. Arteries have thick walls while veins have very thin walls. Explain why arteries have thick walls?

(2 marks)

D. Movement and Coordination

1. Name the two gases that are exchanged in the alveoli.

(2 marks)

2. Describe the characteristics of the alveoli that facilitate gas exchange.

(2 marks)

TOTAL MARK FOR SECTION B: Q.24

16

SECTION C: LONG ANSWER QUESTIONS

(50 MARKS)

THIS SECTION IS WORTH 30 MARKS. ANSWER ALL QUESTIONS IN THE SPACE PROVIDED. IF YOU NEED MORE SPACE TO WRITE YOUR ANSWERS, USE THE PAGE(S) PROVIDED AT THE BACK OF THIS BOOKLET.

Question 25: Resources (10 marks)

A. Origin of elements

1. Study the periodic table below and answer the questions that follow;

| | | | | | | | | | | | | | | | |
|---|----|---|--|--|--|--|--|--|---|-----|----|---|----|-----|------|
| I | II | | | | | | | | | III | IV | V | VI | VII | VIII |
| | | A | | | | | | | | | | | | | B |
| C | D | | | | | | | | E | F | G | H | I | J | |
| K | L | | | | | | | | M | N | O | P | Q | R | |
| S | T | | | | | | | | | | | | | | |

Using your knowledge about groups and periods of the periodic table, construct an **atomic structure (electron diagram)** of the element represented by letter **H**.

(4 marks)

B. Mineral Resources

1. A student conducted a series of chemical reactions to determine the reactivity of metals using displacement reactions. The results are as follows;

“Metal **X** displaces metal **Y**.
Metal **Y** displaces **Z** but not metal **U**.
Metal **U** displaces metal **Y** but not Metal **X**.
Metal **V** displaced metal **X**.”

Arrange the metals in order of their reactivity from the **least reactive** to the **most reactive**

Order: _____
Least reactive *Most reactive*
(3 marks)

C. Energy Resources

1. Firewood is one of the forms of stored chemical energy widely used by most rural people in Solomon Islands. Describe how firewood as a stored chemical energy is converted to two other forms of energy.

(3 marks)

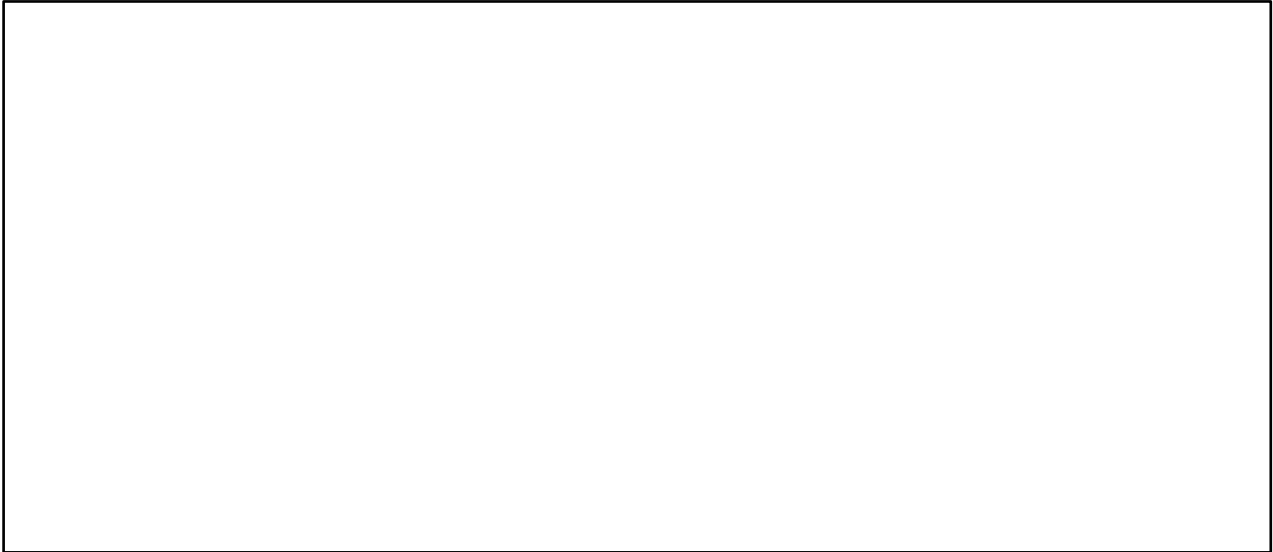
TOTAL MARK FOR SECTION B: Q.25

10

Question 26: Electricity and Light (6 marks)

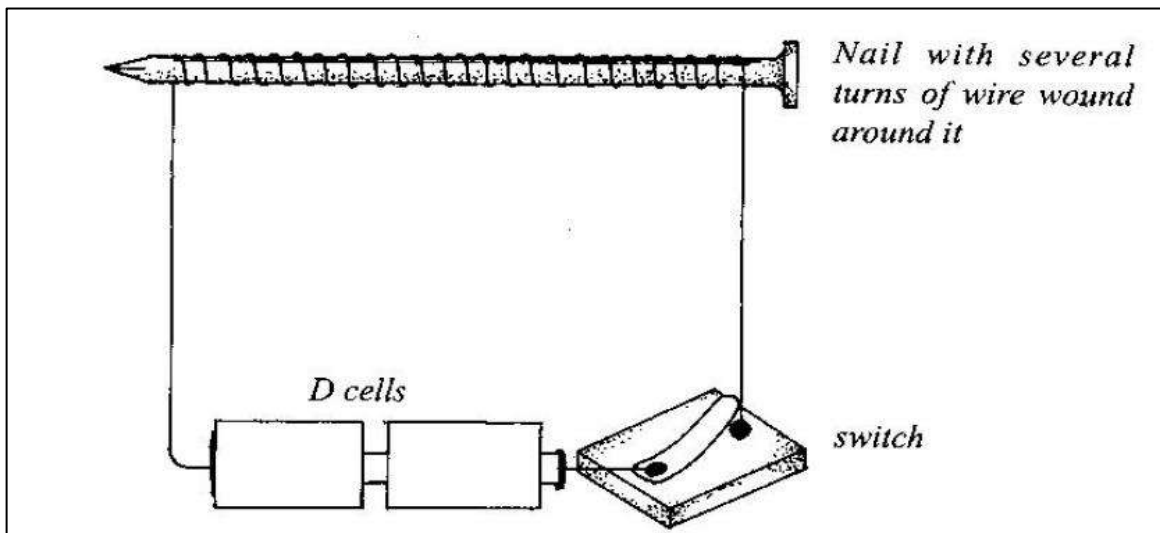
Electrical circuits

1. Draw a Parallel circuit containing the following components: **a cell, connecting wires, two bulbs, ammeter and switch.**



(3 marks)

2. The diagram below shows an experimental set up used by a form three (3) student to investigate the relationship between electricity and magnetism.



Describe what the student would observe if another iron nail is brought close to nail coiled by a wire in the set up when the switch is on and give an explanation to the student's observation.

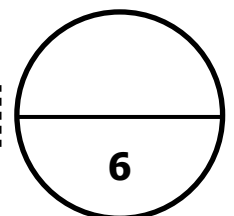
i. Observation:

(1 mark)

ii. Explanation:

(2 marks)

TOTAL MARK FOR SECTION B: Q.26



Question 27: Considering our Future (4 marks)

“Communities in west Are’ Are lagoon in Malaita province are now beginning to feel the impact of sea level rise due to global warming. This was the headline of the article in the Solomon star on the 11th of July 2017.

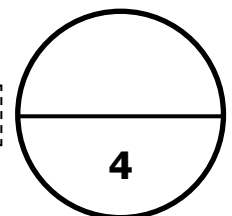
1. Explain how global warming causes the rise in sea level.

(2 marks)

2. State at least TWO social impacts that would likely to be felt by the people of Solomon Islands due to the rise in sea level.

(2 marks)

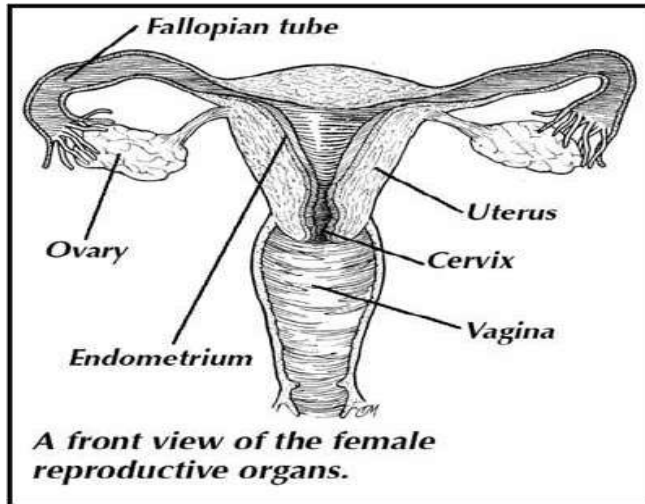
TOTAL MARK FOR SECTION B: Q.27



Question 28: Human Systems 10 marks.

A. Reproduction and Growth

1. Below is a diagram of the female reproductive organs.



Complete the table by writing down the function of each organ.

| Name of organ | Function |
|----------------|----------|
| Fallopian tube | |
| Ovary | |
| Uterus | |
| Vagina | |

(4 marks)

B. Nutrition, lifestyle and diseases

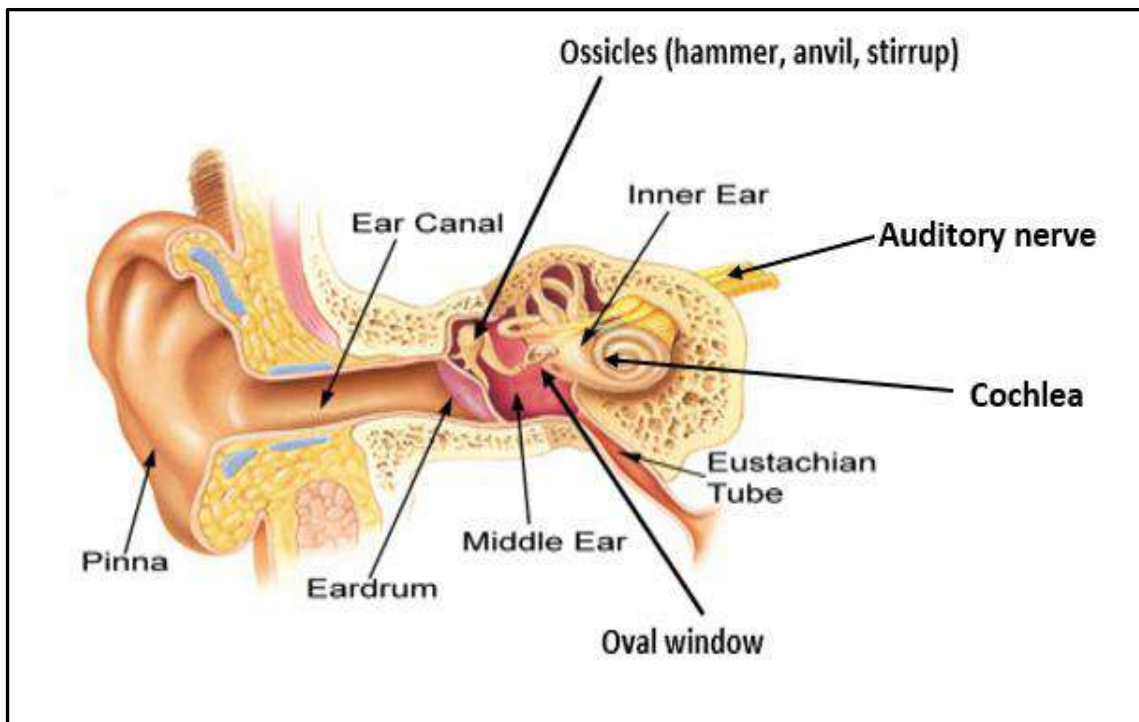
1. Complete the table below by filling in the function of the stomach, type of food that breaks down in the stomach and the enzyme that is responsible for the food break down in the stomach.

| Organ | Function | Type of food broken down | Enzyme |
|---------|----------|--------------------------|--------|
| Stomach | | | |

(3 marks)

C. Movement and Coordination

1. Below is the diagram of the human ear.



Use the diagram of the human ear above to complete the table below

| Parts of the ear | Function |
|------------------|----------|
| Pinna | |
| Ossicles | |
| Cochlea | |

(3 marks)

TOTAL MARK FOR SECTION B: Q.28

10

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**ANSWER SHEET
MULTIPLE CHOICE**

Write clearly the letter of the correct answer in the box provided. Make sure your answer is put alongside the right question number

| | | | |
|----|----------------------|----|----------------------|
| 1 | <input type="text"/> | 11 | <input type="text"/> |
| 2 | <input type="text"/> | 12 | <input type="text"/> |
| 3 | <input type="text"/> | 13 | <input type="text"/> |
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| 10 | <input type="text"/> | 20 | <input type="text"/> |

FOR MARKER USE ONLY

| SECTION | MARKS | SCORE |
|---------------|------------|-------|
| A | 20 | |
| B: Q21 | 16 | |
| B: Q22 | 10 | |
| B: Q23 | 8 | |
| B: Q24 | 16 | |
| C: Q25 | 10 | |
| C: Q26 | 6 | |
| C: Q27 | 4 | |
| C: Q28 | 10 | |
| TOTAL | 100 | |

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