The United Republic Of Tanzania

President's Office

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

RUVUMA REGION

SONGEA MUNICIPAL COUNCIL

FORM TWO MIDTERM EXAMINATION MARCH 2024

032 CHEMISTRY

TIME: 2½ Hours **March, 2024**

Instructions

1. This paper consists of Section **A**, **B** and **C** with a total of **ten (10)** questions.
2. Answer all the questions
3. Section **A** and **C** carry **fifteen (15)** marks each and section **B** carries **seventy (70)** marks.
4. All writing must be in black or blue ink except diagrams which must be in pencil.
5. Cellular phones and any unauthorized materials are not allowed in the examination room.
6. Write your assessment number at the top right corner of every page.
7. The following atomic masses may be used; **Ca = 40, S = 32, O = 16**

This paper consists of 5 printed pages

SECTION A (15 Marks)

Answer all questions in this section

1. *For each of the items (i) – (x), choose the correct answer from the given alternatives and write its letter in the box provided.*

(i) What are the common kills applied at home after studying chemistry?

A. Nursing wounds
B. weeding flowers in a garden
C. Cooking food in the kitchen
D. Welding piece of iron

(ii) Which process among the following is involved in decantation?

A. Sedimentation
B. Melting
C. Saturation
D. Distillation

(iii) Why water is said to be a universal solvent?

A. It is colourless, odourless and tasteless
B. It dissolves many solute
C. It is the only substance that exist in all states
D. It is an essential commodity on earth

(iv) What is the name given to burns caused by hot liquids or vapour?

A. Wounds
B. Scalds
C. Scars
D. Injuries

(v) Which of the following is an example of a chemical change?

A. Melting butter
B. Mixing water and kerosene
C. Burning leaves
D. Breaking glass

(vi) The best tern to describe when a piece of wood burns in air is;

A. Combustion
B. Ignition
C. Reactivity
D. Heating

(vii) What types of fire occurs over the surface of flammable liquids?

A. Class A
B. Class C
C. Class B
D. Class D

(viii) Why most atoms are neutral?

A. Equal numbers of electrons and protons in the shells
B. The neutrons normally have zero charge
C. Number of electrons balances out the number of protons in the atom
D. The nucleus is only made up of neutrons.

(ix) Which among of the following is classified as a renewable source of energy?

A. Biomass
B. Coal
C. Diesel
D. Petroleum

(x) What happens when ions are formed?

A. Non-metal atoms gain protons
B. Metal atoms lose their outermost electrons
C. Metal atoms gain electrons in their outermost shells
D. Non-metal atoms lose electrons of their outermost shells.

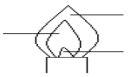
2. Match the items in List A with the corresponding items in List B by writing the letter of a correct response below the item number in the table provided.

LIST A		LIST B	
(i)	Attracts shared electrons towards itself.	A.	Halogens
(ii)	Energy required to remove an electron from an atom or ion	B.	Noble gases
(iii)	Elements with similar properties appeared at regular intervals	C.	Electronegative
(iv)	The distance between the nucleus of an atom and the outermost shell	D.	Ionization energy
(v)	Salt makers	E.	Atomic radii
		F.	Periodicity
		G.	Electropositive

SECTION B. (70 Marks)

Answer all questions in this section

3. Consider the two flames illustrated by diagrams



FLAME 1 FLAME 2

(a) (i) Identify the flames which used for lighting and for heating.

(ii) Give two sources of heat that produces flame 1

(b) Write procedures on how flame 1 is produced.

(c) Differentiate flame 1 from flame 2

(d) In what ways is a flame 2 important?

(e) With reasons, mention areas in which flame 1 is applied?

4. (a) (i) Outline four elements with their corresponding chemical symbols which starts with letter "C"

(ii) How chemical symbols are important in chemistry?

(b) Two liquids, liquid A is a combination between water and chalk powder while liquid B composed of water and table salts.

(i) What is the common name given to liquid A and B?

(ii) How liquid A differ from liquid B?

5. (a) With regards to temperature variations, how a mixture of water and salt is

classified?

(b) Give at least two examples of each of the following substances

(i) Solid – liquid solution

(iii) Liquid – liquid solution

(iv) Liquid – solid solution

(c) A laboratory technician took a small amount of hydrated copper (II) sulphate and placed on a watch glass followed by addition of few drops of unknown liquid. Finally, there was no change in the colour observed.

(i) What was the aim of the experiment?

(ii) Why was there no change in the colour of the hydrated copper (II) sulphate?

(iii) Suggest two substances that could be used in place of the hydrated copper (II) sulphate to observe the required colour change.

(d) Is water a compound or a mixture? Give four points.

6. (a) Give the meaning of the following terms

(i) Valency

(ii) Binary ionic compounds

(b) Identify the valencies and oxidation number from each of the following substances.

	Valency	Oxidation number
Carbonate		
Phosporous		
Flourine		
Silver		
Lead (II)		
Oxygen		

7. Compare the properties of charcoal and natural gas based on the following aspects

(a) Energy value

(b) Affordability

(c) Effects in the environment

(d) Plyometric burning effect

(e) Non-combustible materials

8. (a) An isotope of aluminum has a mass of 27 and an atomic number of 13.

(i) Write its nuclide notation

(ii) Determine the number of electrons and protons

(iii) Determine the number of neutrons

(b) Draw the electronic diagram indicating the number of electrons of the following substances.

(i) Magnesium atom

(ii) Magnesium ions

(c) How Dalton atomic theories explain the structure of potassium atom?

9. (a) State the oxidation states of each of the following underlined elements

(i) $\underline{N}H_4^+$

(ii) $\underline{Cr}_2O_7^{-2}$

(iii) $K\underline{Mn}O_4$

(iv) $Na_2\underline{C}O_3$

(b) Write the chemical formula and give the IUPAC name of the following Substances

(i) Aluminium and sulphate

(ii) Magnesium and chlorine

(iii) Carbon and oxygen

(iv) Nitrogen and sulphur

SECTION C. (15 Marks)
Answer question ten (10)

10. (a) An experiment was shown that, a certain rock contains 29.41% Calcium, 23.53% Sulphur and 47.06% Oxygen.

(i) Determine the empirical formula of the compound

(ii) What is the molecular formula of the compound given that its vapour density is 68?

(b) In terms of chemical form, differentiate carbon dioxide from potassium oxide.