THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

MOROGORO REGIONAL FORM FOUR MOCK EXAMINATIONS, 2023
CHEMISTRY

CODE: 032/1
TIME: 3 HOURS **July, 2023**

INSTRUCTIONS

1. This paper consist of section **A, B**, and **C** with a total of **eleven (11)** questions.
3. Answer **all** questions in section **A, B** and **two (2)** question from section **C.**
3. Section A carries **sixteen (16)** marks, section B carries **fifty-four (54)** and section C carries thirty (30) marks.
4. Non programmable calculators may be used.
5. Write your **examination number** on every page of your answer sheet provided.
6. The following constant may be used.

Atomic masses; **H=1, O=16, C=12, Na=23, Cu=64, S=32, Al= 27.**

Avogadro's number = **6.02×10^{23}**

GMV at STP **= 22.4 dm^3**

1Faraday **=96500Coulombs.**

1Litre =1dm^3 =**1000Cm^3**

Specific heat capacity of water=**4.18$KJKG^{-1}K^{-1}$**

Density of water= **1000kg/M^3 or 1g/cm^3.**

CamScanner

SECTION A (16 Marks)

1. For each of the items (i) – (ix), choose the correct answer from the given alternatives and write its letter besides the item number in the answer booklet provided.

i. What is the IUPAC name for H_2SO_4?

A. Sulphuric acid B. Sulphuric (VI) acid C. Hydrogen sulphate
D. Dihydrogen sulphate E. Hydrogen tetrasulphates

ii. What types of chemical reaction is represented by the equation?

$Zn_{(s)} + 2HCl_{(aq)} \longrightarrow ZnCl_{2(aq)} + H_{2(g)}$

A. Displacement reaction
B. Combination reaction
C. Precipitation reaction
D. Decomposition reaction
E. Redox reaction

iii. The molarity of 5.3g Na_2CO_3 in 100mls of solution is

A. 0.20M
B. 0.50M
C. 0.05
D. 0.005M
E. 0.01M

iv. Chloride ions (Cl-) differ from chloride atoms (Cl) in that, the ions have one ..... than the atom.

A. More protons
B. Less protons
C. More electrons
D. Less electrons
E. More neutrons

v. A wasp stings are alkaline. The solution to help ease the pain by neutralizing alkali would be one with a PH of

A. 5 B. 7 C. 8. D. 10 E. 13

vi. Which of the following action would results into increase the temperature of the earth?

A. Increase distance from the earth
B. Removal of water vapour from the atmosphere.
C. Increase of cloud cover.
D. Removal of noble gases from the atmosphere.
E. Increase of the carbon dioxide content of the atmosphere.

vii. The pairs of element which is most likely to form covalent bond when reacted together is

A. Sodium and iodine
B. Magnesium and oxygen
C. Aluminum and oxygen
D. Carbon and chlorine
E. Calcium and oxygen

viii. Alkynes are organic compounds whose homologous series has general formula of

A. C_nH_{2n}
B. $C_nH_{(2n+2)}$
C. $C_nH_{(2n-2)}$
D. $C_nH_{(2n+1)}$
E. $C_nH_{(n+2)}$

CamScanner

ix. Which oxides are gaseous at room temperature?

A. Carbon dioxide and copper oxides
B. Sulphur dioxide and copper oxides
C. Carbon dioxide and Sulphur dioxide
D. Copper oxides and iron oxides
E. Iron oxides and carbon dioxide

x. A steady current of 4A was passed through an aqueous solution of copper sulphate solution for 1800seconds. The mass of copper deposited is

A. 63.5g B.31.75g C.1.185g D. 2.37g E. 11.85g.

2. Match the items in **LIST A** with the responses in **LIST B** by writing the letter of correct response besides the item number in the answer booklet provided.

LIST A	LIST B
i. Colorless gas that is used in manufacturing of margarine.	A. Carbon dioxide
ii. The gas that forms about 78% by volume of air.	B. Sulphur dioxides.
iii. Greenish yellow gas with a pungent irritating smell.	C. Oxygen.
iv. The gas that can be used as fire extinguishers and used in manufacturing of fizzy drinks.	D. Chlorine water.
v. Liquid formed when Sulphur dioxide is dissolved in water.	E. Hydrogen.
vi. Clourless gas used at large by animals for respiration and it re-lights a- glowing splint	F. Oleum.
	G. Nitrogen.
	H. Ammonia
	I. Nitrogen dioxide.
	J. Chlorine.
	K. Sulphur.

SECTION B (54 Marks)

Answer ALL questions in this section.

3. (a) Different salts behave differently when are heated. Use balanced chemical equation to explain how carbonates and nitrates behaves when are subjected to heat.

(b) States two uses of salts in daily life.

4. Gas X is the colourless, tasteless and odorless. It is prepared by the reaction between hydrogen peroxides and manganese (IV) oxides.

(a) Identify gas X

(b) State the chemical test for gas X.

(c) Write the chemical equation for the production of gas X.

(d) Give four uses of gas X.

5. (a) States four characteristics for a good laboratory.

(b) Giving first aid to a victim is just a wastage of time to hospitals and this habit must be prohibited by the government. React with this statement against it stated in five points.

CamScanner

When Acid Rain is Hot. —

6. (a) States whether the followings are chemical or physical change.
   (i) Melting of ice.
   (ii) Decaying of meat.
   (iii) Burning of paper.
   (iv) Decomposing of calcium carbonate into calcium oxides and carbon dioxides.
   (v) Drying of clothes
   (vi) Rusting of iron
   (b) Give three significances of writing chemical equation.

7. (a) Calculate the oxidation states of the following underlined elements.
   (i) $Al_2(\underline{S}O_4)_3$
   (ii) $\underline{S}O_4^{-2}$
   (b) State three advantages of hard water.

8. a) State five characteristics for a good fuel.
   (b) A mass of 20.0g of petrol was burnt in air. The heat produced was used to heat 2.5litres of water. Given that, the heat value of petrol is 43, 640KJ/Mol. What was the temperature change in temperature?

SECTION C (30 Marks)
Answer two (2) questions in this section

9. Ammonia gas is manufactured in industry by Haber process. The reaction for this process is represented by the equation bellow.

$$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}, \quad \Delta H = -92KJ/mol.$$

   (a) Explain in which side the reaction will shift when;
      (i) More nitrogen is added to the equilibrium reaction.
      (ii) Hydrogen gas is removed from the reaction.
      (iii) Temperature of the reaction is lowered.
      (iv) The pressure of the reaction is increased.
   (b) State three factors that can increase the production of ammonia according to the given reaction.
   (c) With reference to the energy change, describe the types of the reaction that involve in production of ammonia.
   (d) Draw the energy level diagram for the above reaction.
   (e) Write the reverse reaction for the above reaction.

10. By giving six points, explain how electrolysis is applied in industry.
11. Both types of fertilizers are important in the soil. Explain how organic fertilizer differ from inorganic fertilizers

CamScanner