

THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
UKEREWE DISTRICT COUNCIL



FORM THREE EXAMINATION
CHEMISTRY

TIME 3:00 Hours

Year: 2025

INSTRUCTIONS

1. This paper consists of three Sections A, B and C with a total of **eleven (11)** questions.
2. Answer **all** questions in section A and B and **two (2)** questions from section C.
3. Section A carries **16** marks, section B carries **54** marks and section C carries **30** marks.
4. Phones and any unauthorized materials are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s)

The following constants may be used

-Atomic mass , H=1, Cl=35.5, Cu=63.5, S=32, O=16, Ca=40, Na=23, C=12

-GMV at s.t.p=6.02x 10²³

-1Faraday=96,500C

-Standard pressure=760mmHg

-Standard temperature=273k

1 Litre=1dm³=1000 cm³

SECTION "A"(16 Marks)

1. For each of the items (i) –(x) choose the correct answer from among the given alternatives and write its letter beside the item number in the answer booklet provided.
 - i. A wasp sting is alkaline. The solution to help ease the pain by neutralizing the alkali would be one with a PH of:-
 - a) 5
 - b) 7
 - c) 8
 - d) 10
 - e) 13
 - ii. Five separate 1g sample of magnesium were placed in different beakers each containing 50cm cubes of dilute sulphuric acid. The mixture which showed the fastest reaction rate of the start was the one containing magnesium.
 - a) Block
 - b) Granules
 - c) Powder
 - d) Ribbon

- e) Turnings
- iii. Sea water contains various salts. Which salt is present in the greatest proportion
- a) Magnesium chloride
 - b) Calcium sulphate
 - c) Potassium chloride
 - d) Sodium chloride
 - e) Magnesium sulphate
- iv. The pair of elements which is most likely to form a covalent bond when reacted together is:-
- a) Sodium and iodine
 - b) Magnesium and oxygen
 - c) Aluminium and oxygen
 - d) Carbon and Chlorine
 - e) Calcium and carbon
- v. What number of faradays of electricity is required to deposit 4g of calcium from molten calcium chloride?
- a) 0.1
 - b) 0.2
 - c) 0.8
 - d) 0.3
 - e) 0.7
- vi. The electronic configuration of this element Cl^- is
- a) 2:8:7
 - b) 2:8:8
 - c) 2:8:8:1
 - d) 2:8:8:1
 - e) 2:8:6
- vii. In order to produce the greatest amount of hydrogen in a short time one gram of magnesium ribbon should react with
- a) 10cm^2 of 0.5m Sulphuric acid
 - b) 40cm^2 of 0.5m Acetic acid solution
 - c) 40cm^3 of 0.5m Sulphuric acid solution
 - d) 20cm^3 of 1m sulphuric acid solution
 - e) 20cm^3 of 1m acetic acid solution

- viii. Which of the following substances represent a group of acid oxide?
- Carbon dioxide, carbon monoxide and sulphur dioxide
 - Sulphur trioxide, nitrogen dioxide and nitrogen monoxide
 - Carbon dioxide, sulphur dioxide and dinitrogen oxide
 - Sulphur trioxide, carbondioxide and nitrogen dioxide
- ix. Bee sting can be cured by
- NaOH
 - NH₄OH
 - HCl
 - NaHCO₃
 - Dilute HNO₃
- x. Boiling removes water hardness because it causes;
- Removal of ions
 - Calcium bicarbonate to dissolve
 - Calcium carbonate to precipitate
 - Formation of calcium bicarbonate
 - Removal of potassium ions

2. Choose the correct answer in list A with the response in list B

LIST A	LIST B
i. Potassium	A. Melts and burns with bright white flame
ii. Sodium	B. Burns with a brick red flame
iii. Calcium	C. Melts easily and burn with lilac flame
iv. Magnesium	D. Burns vigorously with a yellow flame
iv. Zinc	E. Burn slowly with dull red flame
vi. Iron	F. Glows red hot
	G. Turns orange then surface of the product turns black

SECTION "B" (54MARKS)

3. (a) Elements are classified into metals and non – metals. Basing on the characteristics of metals, relate the characteristics of metals to its uses by giving four uses

(b) Matter can change from one state to another thus make our life better. As form three student briefly explain five importance of the process

4. (a) What is a mole?

(i) Mention two application of mole concept

(ii) Calculate the volume of carbon dioxide (measured at STP) liberated when 150g of CaCO_3 is completely decomposed

5. Lack of safe and clean water for industrial and domestic uses is a serious problem in most urban areas in Tanzania. The major cause of this problem is pollution in the water sources which cause the hardness of water. State six methods that could make such water clean and safe.

6. (a) A certain compound Q was heated and did not decompose. But when Q reacted with dilute hydrochloric acid gas P was produced the gas P turned lime water milky. When compound Q was burned in a direct flame it burned with golden – yellow flame.

(i) Identify compound Q and gas P.

(ii) Write the balanced equation for the reaction between Q and dilute hydrochloric acid.

(b) Give the chemistry conceptual meaning of the following terms

(i) Electrolytes

(ii) Electrodes

(c) Electrolysis process involves decomposition of substance in passage of electricity, after decomposition the ions formed attracted to different poles depends on their charges. What factors guide the discharge of ions on the pole attracted?

(d) Amount of substance deposited or liberated during electrolysis governed by Faraday's law of electrolysis. State two concerned laws.

7. (a) Iron is extracted in the blast furnace

(i) Name the three raw materials fed at the top of blast furnace

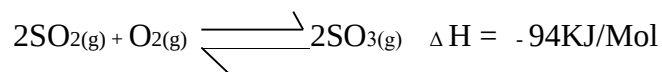
(ii) Give one function of each raw material fed in the blast furnace

(b) (i) Write down three chemical equations that lead to the formation of iron in the blast furnace

(ii) At the bottom of the blast furnace two liquid are removed from different outlets name the two liquids

8. (a) State Le – Chatelier's principle

(b) In the industrial preparation of sulphur trioxide equilibrium is established between sulphur dioxide and oxygen gas as follow



How would you adjust temperature and pressure to maximize the proportion of the product at equilibrium

- (c) Shortly explain five factor affecting the rate of chemical reaction.

SECTION “C” (30Marks)

Answer only two questions

9. Describe six major changes that matter is likely to undergo in our daily life and state their examples in each case

10. Now days the world is suffering from climatic changes which caused by over dependent on forest as source of fuels and over production of waste material that pollutes our environment. To overcome this problem is through the use of renewable source of energy such as biogas produced from animal dungs and sewage waste. As the expert of Chemistry prepare a report to convince a community to use this gas produced by animal dungs as the alternative source of energy while they are conserving the environment

11. Catherine is a student at Pacis Girls secondary. She was suffering from heartburn and a doctor prescribed to her to use antacids tablets to reveal the condition. By giving six points, explain the applications of the reaction which took place in Catherine’s stomach after being given with antacids tablets.

