

THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
FORM FOUR SERIES No.04
CHEMISTRY 1

TIME 3 HRS

INSTRUCTIONS

- This paper consists of section **A, B** and **C** with total number of **ten (11)** questions.
- Answer all questions in the space provided
- All writing must be in **black** or **blue** pen except for diagrams which must be in **pencil**.
- Write your **examination number** at the top right corner of every page
- The following atomic masses may be used; H = 1, O = 16, S = 32, Cl = 35.5, Na = 23, C = 12, Ag = 108, N = 14

SECTION A (16 Marks)

Answer **all** questions in this section

1. For each of the items (i)-(x) choose the correct answer from the given alternative and write its letter beside the item number in the answer booklet provided.
 - i) Form four students in a certain school were doing a scientific about Malaria diseases in the coast region. Which among the following scientific procedures was used to accept or reject the hypothesis made?
 - a) Data interpretation
 - b) Experimentation
 - c) Conclusion
 - d) Hypothesis formulation
 - e) Problem identification
 - ii) Which of the following sets of laboratory apparatus are used to measure volume of water?
 - a) Thistle funnel, separation funnel and beaker
 - b) Burette, pipette and measuring cylinder
 - c) Crucible, kip's apparatus and volumetric flask
 - d) Volumetric flask, distillation flask and test tube
 - e) Test tube, beaker and gas jar
 - iii) What is the proper set of apparatus would you use to measure various substance in the laboratory.
 - a) Stopwatch, beaker, burette and pipette
 - b) Beaker, pipette, stopwatch and electrical balance
 - c) Electrical balance, pipette, stopwatch and thermometer
 - d) Thistle funnel, pipette, burette and measuring cylinder
 - e) Beaker, measuring cylinder, thermometer and pipette
 - iv) Equal volume of water from different sources boiled in a dish until no water left. Which of the following will leave out with no deposits?
 - a) Spring water
 - b) Rain water

- c) Lake water
 - d) Pound water
 - e) Tap water
- v) Works from a cement industry careless dispose waste contaminants with lime to a nearby field. The soil in the field is likely to be
- a) Acidic
 - b) Alkaline
 - c) Neutral
 - d) Amphoteric
 - e) As hard as cements
- vi) Mrs. Robson wanted to transfers some chemicals from the wincher bottle to small bottlers for her students to do an experiment. The smaller bottle are called
- a) Storing bottles
 - b) Wash bottles
 - c) Reagent bottler
 - d) Chemical bottler
 - e) Drop per bottles
- vii) If you want the Bunsen burner to have the same flame colour as the candle flame, you must.
- a) Have air hole completely opened
 - b) Turn on a large supply of gas
 - c) Have air hole completely closed
 - d) Have more candle burning
 - e) Have completely removed the barrel
- viii) Access to safety equipment should never be blocked by any object because
- a) It is just a simple law
 - b) There must be space for people to move around in the laboratory
 - c) The equipment is used everyday
 - d) It is important to reach safety equipment quickly in case of an accident
- ix) Ammonia is the basic gas that can be obtained by reacting ammonium salt and calcium hydroxide. Which of the following can be dry ammonia during its preparation?

- a) Concentrated sulphuric acid
 - b) Calcium chloride
 - c) Calcium oxide
 - d) Lime water
 - e) Calcium carbonate
- x) If Peter wants to electroplate a spoon with copper by using copper (II) sulphate solution. He should arrange the electrodes as:
- a) Spoon as anode and copper as cathode
 - b) Spoon as cathode and copper as anode
 - c) Spoon as anode and carbon as anode
 - d) Spoon as cathode and copper sulphate solution
 - e) Spoon as copper solution

2. Match the items in LIST A with the response in LIST B by writing the letter of the corresponding response.

LIST A		LIST B
i)	A colorless gas which is slight soluble in water, neutral to litmus paper but used as rocket fuel	A. Oxygen
ii)	It supports plant survive but less important to combustion	B. Nitrogen
iii)	A greenish gas, denser than air used as military weapon since it is poisonous.	C. Sulphur dioxide
iv)	It is colorless acidic gas with pungent choking smell used to control PH in chemical process.	D. Hydrogen chloride
v)	A non poisonous gas physically isolated from air and used to make fertilizer	E. Carbon dioxide
vi)	It has strong choking smell of urine	F. Fluoride
		G. Ammonia
		H. Hydrogen
		I. Chlorine

SECTION B (54 Marks)

Answer **all** questions from this section

3. (a) We encounter many events in process in our daily lives that are good examples of chemicals changes. Give three (03) examples of these changes.
- (b) List down three properties that clearly justify whether muddy water is a mixture or a compound.

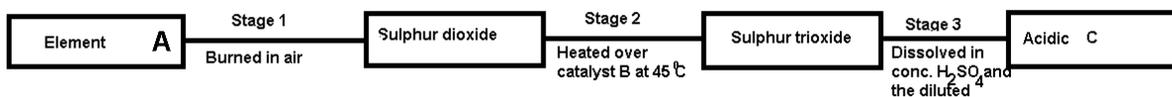
- (c) Iron (II) Chloride is an electrovalent compound which ionizes in water when electric current is allowed to flow through it.
- i) How many moles of ions are formed when the compound is completely ionized in water?
 - ii) How many ions will be responsible for the passage of electric in it?
4. (a) Laboratory technician wanted to confirm an unknown compound using cobalt chloride paper. Cobalt chloride paper changed from blue to pink upon the addition of small amount of an unknown compound
- i) Identify the name and chemical formula of an unknown compound
 - ii) Name the other substance that can be used to confirm an known compound and provide its positive observation.
 - iii) State three chemical properties of an unknown compound
- b) An organic compound contains 5.3g carbon, 0.44 hydrogen and 14.22g oxygen. Determine its empirical formula
5. (a) People living near Geita gold mines face the challenges of destruction of their infrastructures. As an expert asses three major ways which can be used to control environmental impacts that are caused by extraction of metal through mining
- (b) A teacher told form two students to write the balanced chemical equation for the action of heat on Iron (II) Sulphate, action of heat on calcium hydrogen carbonate and action of heat on Ammonium nitrate but they failed to do so because it is above their level. As a form four student help them to do so.
6. (a) As a form four student, briefly explain why Neon does not react with sodium.
- b) Laboratory technician allowed sodium thiosulphate solution to react with dilute hydrochloric acid the product was deeply formed, communicate to the laboratory technician.
- i) Chemistry language by a balanced chemical equation
 - ii) Providing net ionic equation for the reaction in b (i) above and state the spectator ions

7. (a) When excess of magnesium metal dissolved in a limited volume of hydrochloric acid 288cm³ of hydrogen was liberated at S.T.P, calculate the mass of the metal that produced this volume of hydrogen.
- (b) Juma was given two gas jars, one containing gas “X” and another containing gas “Z” Gas “X” is used to prepare water gas in the laboratory and gas Z is used in treating sewage plants.
- Identify the two gases
 - With reasons give the method used to collect gas “Z” in the laboratory.
 - Give two uses of gas “X” in our daily life
8. (a) Ammonia gas is manufactured by Nitrogen gas in presence of catalyst. Write a balanced chemical equation for the reaction and explain the role played by the catalyst in this reaction.
- (b) When Hydrogen sulphide gas is passed through sulphur dioxide a yellow deposit of sulphur is produced immediately. Write the chemical equation for the observation.
- (c) Give the name of the metal which meets the following requirements
- The metal which must be kept in kerosene to protect it from air and water.
 - The metal which is found in limestone
 - The metal of which its oxide is brown when hot and yellow when cold.

SECTION C (30 Marks)

Answer **two (02) questions** from this section

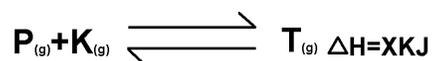
9. (a) Study the flow diagram showing the stages in contact process



- From the stages in contact process. Give the name of element A, Catalyst B and an acid C
 - Provide a well-balanced chemical equation for the reaction for the formation of sulphur trioxide in stage2.
- (b) Carbon dioxide can be prepared by adding an acid to calcium carbonate.
- Using the named acid, write a balanced chemical equation for the reaction.
 - Name all the product formed in (b) (i).

10. (a) When I was in an interview at a certain school, one student asked me to state faraday's laws of electrolysis. How could you answer the student?
- (b) Dilute silver nitrate solution was decomposed by the passage of electric current through it. What mass of silver and what volume of oxygen (measured at STP) would be liberated in electrolysis by 9650 coulombs of electricity).

11. Consider the following equation



Describe how the rate of production of T can be altered through the use of the Le-chatellier principle.