

FORM FOUR CHEMISTRY I BASED ON NEW FORMAT

INSTRUCTIONS

1. This paper consists of section A, B, and with total of thirteen (14) questions.
2. Answer ALL questions in section A and B but answer one question in section C.
3. Calculators, cellular phones and any unauthorised materials are NOT allowed in the examination room.
4. Write your Examination Number on every page of your answer sheet(s)

The following constants may be used

• Atomic masses: H=1, C=12, O=16, Na=23. Mg = 24. Al=27. S= 32. K= 39.

Ca 40, Pb=207. Avogadro's number

= $6,02 \times 10^{23}$ GMV A STP

= 22,4 dm³

• 1 Faraday

- 96,500 coulombs = 1000cm³

• 1 Litre

SECTION A (15MARKS)

Answer all questions in this section .

1. For the following items

(i) -(x), choose the correct answer from the given alternatives and write its letter beside the item number in the answer sheet provided

(i). Alcohols reacts with carboxylic acid to form a group of organic compound called:

- A. Alkane
- B. Alkynes C. Esters
- D. Aldehydes E. Esthers

(ii). The metal nitrate which will NOT give a metal oxide on heating is:

A. Calcium nitrate

B. Copper nitrate C. Silver nitrate

D. Zinc nitrate E. Lead nitrate (iii). When an atom gains electrons it becomes;

A. A molecule

B. A cation C. An isotope

D. Proton E. An anion

(iv). Which of the following compounds contains only two elements?

A Magnesium sulphate

B. Magnesium sulphite C. Magnesium hydroxide

D. Magnesium nitride E. Magnesium phosphate

(v) The calcium salt responsible for permanent hardness of water is:

A. Carbonate

B. Sulphate C. Nitrate

D. hydrogen sulphate

E. Hydrogen carbonate

(vi) A mixture of ammonium chloride and sand can be separated by a method known as:

A. Fractional distillation

B. Decantation C. Solvent extraction

D. Sublimation E. Evaporation

(vii) Which of the following sets of elements is arranged in order of increasing electronegativity?

A. Chlorine, Fluorine, Nitrogen, Oxygen, Carbon

B. Fluorine, Chlorine, Oxygen, Nitrogen, Carbon

C. Carbon, Nitrogen, Oxygen, Chlorine, Flourine

D. Nitrogen, Oxygen Carbon, Flourine, Chlorite

E. Flourine, Nitroccen, Oxygen, Chlorine, Carbon

(viii). Which of the following is not an advantage of a biogas, A. It is cheaper source of energy

B. Creates employment among the youth

C. It pollute the environment

D. It is readily available

E. It is a renewable source of energy

(ix). If 0.5g of hydrogen gas exploded in air the mass of water formed is :

A. 4.5g

B. 0.18g

C. 1.82g

D. 1.82g

E. 0.45g

(x). The use of electricity to decompose molten Sodium Chloride into its component elements is an example of:

A. Electroplating

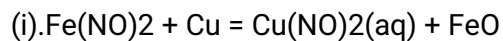
B. Hydrolysis C. Galvanization

D. Electrolysis

E. Electrical deposition

2. Match the items in LIST A with the response in LIST B by writing the letter of the correct response beside the item number in the answer sheet provided..

LIST A



(ii). Neutralization reaction

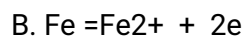
(iii). Spectator ions

(iv). A reaction that proceeds in both directions

(v). Endothermic reaction

LIST B.

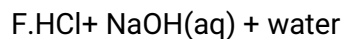
A. Oxidation equation.



C. Do not take part in reactions are cancelled in writing ionic equations

D. Irreversible reaction

E. Reversible reaction



G. Heat absorbed to the surrounding

H. Ionic equation

I. Heat is liberated to the surrounding

SECTION B (70 MARKS)

Answer all questions in this section

3. (a) Briefly explain why covalent compounds do not conduct electricity:

(b) A, B, C and D are isotopes of element J whose abundances are 2%, 24%, 22% and X% respectively. Given that the relative atomic mass of element J is 207. Calculate;

(i). Abundance of isotope D

(ii). Mass number - "Y" of isotope D, Given mass number of A, B and C are 204, 205 and 206 respectively.

4. (a) From the following statements, make chemistry Laboratory rules which warn or guide you.

(i).Control movement of people in the laboratory

(ii).You are fellow come with bread in the laboratory.

(b). State Avogadro's law.

(C) .What volume of Oxygen will be obtained at STP by decomposing 43.2g of potassium chlorate (V)?

5. (a). State Faraday's laws of electrolysis.

(b) Describe two application of electrolysis.

6. (a) Define the following terms:

(i). Saturated hydrocarbons

(ii). Homologous series (b)Write the structural formula from the following IUPAC name of organic compound;

(i). Prop - 1- ene

(ii) 2-methyl butan-1-ol

(iii). 1-chloro-3,3-dimethyl butane

(iv). 2-methyl butanoic acid

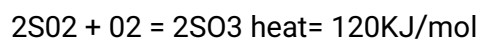
7. (a) Briefly explain how the following factors affects the rate of chemical reactions;

(i)Temperature

(ii). Concentration

(iii) Catalyst

(b) The equation below shows the reactions of two gases to form one gas:



Giving reasons explain what would happen to the position of equilibrium if

- (a) Pressure is lowered
- (b) Sulphur trioxide is removed (c) Temperature is increased

8. (a) Enumerate four (4) uses of carbon dioxide in daily life.

(b) Explain the following observations:

(i). Graphite conducts electricity and heat while diamond does not.

(ii) All non-metals are said to be oxidizing agents

(iii). Chlorine gas when passed through coloured flowers it bleaches the colour of the flower

(iv). Industrial concentrated sulphuric acid is neutral to litmus paper but dilute sulphuric acid turns blue litmus paper into red.

9. (a). What is meant by the following terms, Salt

(b) A sample of water from four different areas were tested with soap solution, the result was is shown in the table below:

Sample V-For untreated water After boiling the volume of soap used was 1.7

Sample X-For untreated water, volume of soap solution used was 1.7.

Sample Y after boiling water, volume of soap used was 1.3

Sample Z-Water passed through an ion exchanger, volume of soap used was 1.0

(i). Which of the samples is the hardest water? Give reason for your answer.

(ii). Which sample behaves like distilled water? Explain.

(iii). Name one chemical substance that could be the causes of the hardness in sample X and sample Y.

(iv) Write an equation for the reaction of removing hardness in sample Y.

10. (a) (i) Differentiate between empirical formula and molecular formula

(ii) An organic compound consists of 52.2% carbon, 13% of hydrogen and the rest is Oxygen. The vapour density of the organic compound is 23. Calculate the molecular formula of the organic compound.

(b) List four (4) characteristics of a good fuel

11. (a) List two components of fire triangle

(b) State why water is not suitable extinguisher of an observation made when burning magnesium ribbon plunged into gas jar of Carbon (IV) Oxide

(c). By using two Causes and two effects mention the causes and effects of each of the followings:

(i). Depletion of ozone layer

(ii) .Acidic rain

12. (a). (i). Outline four common stages for extraction of less reactive metals.

(ii). Indicate the two reducing agents in the blast furnace.

(iii). Extraction of metal is a reduction process Explain.

(b) Iron is extracted from various ores by reduction in the blast furnace

(i). What is the chief ore from which iron is extracted?

(ii). Explain the purpose of limestone and coke in the blast furnace

(iii). Write all necessary equation reactions involved in the blast furnace during extraction of iron.

SECTION C (15marks)

Answer one question from this section.

13. (a) Define the following terms as used in soil chemistry :

(i). Soil pH

(ii) Soil Fertility

(iii) Soil profile

(iv) Monoculture

(b) Explain why a good farmer is advised to include leguminous plants in crop rotation.

(c) Discuss four (4) methods of application of Inorganic fertilizes in the farm.

14. 3g of impure Sodium carbonate were made up to 250cm³ of solution. 25cm³ of this solution required 21.00cm³ of 0.105M of HCl for complete neutralization

(a). Write down balanced chemical equation

(b). Calculate molarity of pure Sodium carbonate

(c). Calculate concentration of pure Sodium carbonate

(d). Calculate % purity of Sodium carbonate

(d). Calculate % impurity of Sodium carbonate

By madam Annastazia - 0766404584, any problem concerning the questions you can consult me.