THE PRESIDENT'S OFFICE

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

ILEMELA MUNICIPAL COUNCIL

FORM FOUR MOCK EXAMINATION – MAY, 2021

032/1

CHEMISTRY 1

TIME: 3:0 Hours **Thursday, 20th May, 2021, a.m.**

INTSRUCTIONS.

1. This paper consists of section A, B and C with a total of fourteen (14) questions.
2. Answer ALL questions in section A and B and one question from section C.
3. Cellular phones and any unauthorized materials are not allowed in the examination room.
4. Write your examination number on every pages of your answer booklet(s)
5. The following constants may be used

   Atomic masses H=1 , C=12 , O=16 , Na=23

   Avogadro's number = 6.02×10^{23}

   GMV at S.T.P = $22.4dm^3$

   1 Faraday = 96500 coulombs

   Standard pressure = 760mmHg

   Standard temperature = 273K

   1 litre = $1dm^3$ = $1000cm^3$

This paper consists of 4 printed pages

SECTION A: (15 MARKS)

Answer ALL questions in this section

1. For each of the item (i) – (x), choose the most correct answer from the given alternatives and write its letter beside the item number in the answer sheet.

(i) Which of the following will be used to prevent infection on a wounded victim when giving first Aid?

A. Goggles B. A pair of scissors C. Apron
D. Razor blade E. Gloves

(ii) The simplest ionic equation which summarizes the process of neutralization reaction is,

A. $H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$
B. $Na^+_{(aq)} + Cl^-_{(aq)} \rightarrow Nacl_{(l)}$
C. $Na^+_{(aq)} + OH^-_{(aq)} \rightarrow NaOH_{(aq)}$
D. $KOH_{(aq)} + HCl_{(aq)} \rightarrow KCl_{(aq)} + H_2O_{(l)}$
E. $Na^+_{(aq)} + SO_4^{2-}{}_{(aq)} \rightarrow Na_2SO_{4(aq)}$

(iii) An element having electronic configuration 2:8:7 is likely to be

A. A non-metal having one electron in outermost shell
B. A metal of valency one
C. A non-metal having seven electrons in outermost shell
D. A non-metal of period 2
E. Noble gas element

(iv) Technicians prefer to use blue flame in welding because

A. It is very hot and bright B. It is bright and non-sooty
C. It is very hot and non-sooty D. It is not expensive
E. It is light and non-sooty

(v) Increased formation of fog in Africa cities is due to use of firewood in the house holds. This statement may represent

A. Observation and data collection B. Formulation of a problem
C. Data interpretation D. Formulation of hypothesis
E. conclusion

(vi) Why is carbondioxide used in fire extinguishers?

A. It is denser than air B. It turns lime water milky
C. It does not support combustion D. It is colorless and odorless
E. It supports combustion

(vii) If 0.5g of hydrogen gas is exploded in air , the mass of water formed is

A. 1.8g B. 4.5g C. 0.75g
D. 4.0g E. 18g

(viii) Which statements are correct?

1. Hydrogen is prepared at large scale by electrolysis
2. Hydrogen support combustion
3. Hydrogen supports life of premature babies.
4. Hydrogen hardens sunflower oil

A. 1 and 4 B. 1 and 3 C. 2 and 3 D. 3 and 4 E. 2 and 4

(ix) The Brownian movement is taken to be evidence of
A. Theory of association of water molecule
B. Theory of ionization of electrolyte
C. Theory of colloidal suspension
D. Kinetic theory of behaviour of substance
E. Brownian motion

(x) The equation below shows an industrial preparation of ethene from a high alkane

$$C_{13}H_{28(l)} \xrightarrow[70\ atm]{750°C} C_2H_{4(g)} + C_3H_{6(g)} + C_8H_{18(aq)}$$

The above process is called
A. Cracking B. Double decomposition C. Sublimation
E. Chain decomposition E. Combustion

2. Match the items in List A with responses in List B by writing the letter of the correct response beside the item number in the answer sheet(s) provided

LIST A	LIST B
(i) A gas prepared in the laboratory by isolation from the air	A. Ammonia
(ii) A non-metal which is a good conductor of heat and electricity	B. Sulphur dioxide
(iii) Extracted by frasch process	C. Carbon
(iv) It is only alkaline gas	D. Nitrogen
(v) Forms white precipitate with aqueous silver nitrate solution	E. Sulphur
	F. Chlorine
	G. Hydrogen chloride

SECTION B: (70 MARKS)
Answer ALL questions in this section

3. (a) Give four (4) laboratory apparatus used for heating purposes
(b) Outline three criteria that must be taken into consideration by a contractor who has won a tender to construct a chemistry laboratory at Shibula Secondary School.

4. (a) (i) Why doesn't pure water have any effect on litmus paper?
(ii) People suffering from heart burn usually use wood ashes for relief. Mention three characteristics which makes the ashes to be used for heart burn relief.
(b) $40cm^3$ of molar solution of sodium hydroxide is obtained after diluting a stock solution of $5.0mol/dm^3$. Calculate the volume of stock solution used.

5. (a) Study carefully the electronic configuration of elements Q, R and S given below then answer the questions that follow;
Q = 2:7 R = 2:8:1 S = 2:6
(i) What type of bond will exist in a compound formed when Q combine with R.
(ii) In what group and period in the periodic table does element S occupy
(iii) Write the molecular formula of a compound formed when element R combined with S.
(b) A hydrocarbon B contains 92.3% carbon by mass, determine the molecular formula of B which have a molecular mass of 78.

6. (a) Brief explain why calcium carbonate is used in the blast furnace and suggest what you think would happen if calcium carbonate was not used.
   (b) Give three uses of salts in daily life.

7. (a) With a vivid example distinguish a renewable source of energy from non-renewable source of Energy
   (b) What are the five factors to be considered when choosing a fuel?

8. (a) State the effect of changing pressure and temperature in the contact process where product is formed as heat is given out
   (b) Solid calcium carbonate is added into excess 1.0 $moldm^{-3}$ aqueous hydrochloric acid. Briefly explain how you would increase the rate of formation of carbondioxide.

9. (a) Give three significances of changes in states of matter in the daily life.
   (b) Suggest one best method for separating each of the following mixtures
   (i) Water from salt solution
   (ii) Iodine and sand
   (iii) Piece of iron and sand
   (iv) Petrol and kerosene

10. (a) Draw and name the possible isomers of butene
    (b) Complete and balance the following chemical equations
    (i) $CH_2 = CH_2 + O_2 \longrightarrow$
    (ii) $CH_3COOH + Na \longrightarrow$
    (iii) $CHCl_3 + Cl_2 \xrightarrow{Sun\ light}$
    (iv) $CH_2 = CH_2 + HCl \longrightarrow$

11. (a) Give three (3) application of electrolysis
    (b) A steady current of 2A was passed through a solution of containing ions of metal M^{2+} for 9 minutes
    (i) Calculate the quantity of electricity passed
    (ii) Calculate the mass of metal M^{2+} liberated
    NB Electrochemical equivalent of M^{2+} is 3.29×10^{-4} gc^{-1}

12. (a) Give three advantages of using the balanced chemical equation for the reaction between hydrogen and oxygen rather than using word equation
    (b) With the aid of a balanced chemical equation explain how
    (i) Temporary hardness of water can be removed by boiling
    (ii) Permanent hardness of water can be removed by adding sodium carbonate crystals

SECTION (15 MARKS)

Answer ONE (01) questions from this section

13. (a) With the aid of a well labelled diagram explain how Sulphur is extracted from its deposit
    (b) With the help of a balanced chemical equation outline the steps of preparation of sulphuric acid by contact process.

14. The extraction of Tanzanite, gold, diamond and natural gas in some parts of Tanzania contributes to terrestrial pollution. Verify this statement by using six points.