BABATI DISTRICT COUNCIL
FORM THREE MID- TERM EXAMINATION

CODE 032 **CHEMISTRY**

TIME : 3 HOURS _____ **MARCH 2025**

Instructions:

1. This paper consists of section A,B and C with a total of eleven (11) questions
2. Answer all questions in sections A and B and two (2) questions from section C
3. Sections A caries sixteen (16) marks, section B Fifty four (54) marks and section C Thirty (30) Marks
4. Non-programmable calculators may be used.
5. Communication devices and any unauthorized materials are not allowed in the examination room
6. Write your examination Number on every page of your answer booklet (s)
7. The following constants may be used
   Atomic masses
   Cu=64, N=14, O=16, Zn=65, S=32, H=1
   GMV at s.t.p = $22.4dm^3$
   Avogadro's number = 6.022×10^{23}
   I litre = $1dm^3$ = $1000 cm^3$

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 alternatives and write its letter in the answer booklet provided .

(i)   How can you prevent a hoe from getting rust ?
A. By painting and oiling them
B. By exposing them to air
C. By keeping them in moisture
D. By cleaning them with water after use
E. By leaving them in the garden after use

(ii)   When 2.45_g of zinc granules are dropped in 50 cm^3 of acid 'Y', Zinc sulphate is formed along with evolution of gas 'M' which burns with pop sound when kept close to a burning candle. which one of the following pairs represent the acid Y and gas M?
A. Sulphuric acid and Carbon dioxide gas
B. Sulphuric acid and Hydrogen gas
C. Hydrochloric acid and Oxygen gas
D. Hydrochloric acid and Hydrogen gas
E. Sulphuric acid and Oxygen gas

(iii) In periodic Table, hypothetical element X and Y are found in group VI and II respectively. What is the correct formula for the compound formed between the two elements?

A. XY   B. YX   C. X_6Y_2 D. Y_2X_6 E. X_3Y

(iv) The following are steps of writing ionic equation except.

A. Writing the correct formula for the reaction

B. Writing all soluble ionic substances

C. writing the reaction in words

D. writing all insoluble ionic products

E. Writing balanced formula equation for the reaction

(v) Permanent hardness of water can be removed by using washing soda. which reaction is the correct ionic equation for the softening precess?

A. $Ca^{2+}_{(aq)} + SO_4^{2-}_{(aq)} \rightarrow CaSO_{4(aq)}$

B. $Ca^{2+}_{(aq)} + CO_3^{2-}_{(aq)} \rightarrow CaCO_{3(aq)}$

C. $Mg^{2+}_{(aq)} + SO_4^{2-}_{(aq)} \rightarrow MgSO_{4(aq)}$

D. $Ca^{2+}_{(aq)} + 2HCO_3^-_{(aq)} \rightarrow Ca(HCO_3)_{2(aq)}$

E. $Mg^{2+}_{(aq)} + 2HCO_3^-_{(aq)} \rightarrow Mg(HCO_3)_{4(aq)}$

(vi) –Which statement is the most correct about chemistry Laboratory?

A. It is a special room designed for conducting chemical test

B. It is a special room designed for science practical's

C. It is a special room designed for keeping apparatuses

D. It is a special room where data analysis is carried out

E. It is a special room where students learn chemistry

(vii) The following are the uses of chromatography except ;-

A. To analyse blood in crime scenes

B. To detect different fibers

C. To detect water pollution

D. To detect soil erosion

E. To test purity of organic substances

(viii) Why sodium hydroxide pellets should be stored in a closed container

A. Sodium hydroxide is efflorescence

B. Sodium hydroxide is hygroscopic

C. Sodium hydroxide is deliquescent

D. Sodium hydroxide is volatile

E. Sodium hydroxide is flammable

(ix) which of the following is an agricultural chemical product made by the application of chemistry

A. drugs

B. pesticides

C. clothes

D. yeasts

E. cement

(x) Which of the following solutions is the most concentrated ?

A. 50g of calcium carbonate in 100 cm^2 of water

B. 60g of sodium chloride in $200cm^3$ of water

C. 65g of potassium nitrate in $100cm^3$ of water

D. 120g of potassium sulphate in $200cm^3$ of water

E. 50g of sodium hydroxide in $2000cm^3$ of water

2. Match the classes of fire in list A with the burning materials in list B by writing the letter of the correct response besides the item number in the answer bootlet provided

List A		List B
i)	fire class A	A. Electrical equipment
ii)	fire class B	B. Flammable gases
iii)	fire class C	C. sold material
iv)	fire class D	D. cooking oils and fats
v)	fire class E	E. Flammable liquids
vi)	fire class F	F. metal (combustible metals)
		G. computer and phone chargers
		H. organic waster

SECTION B (54marks)

Answer all question in this section

3. a) why is Bunsen burner a preferable source of heat in the chemistry laboratory? give four points

   b) suggest five source of heat that can be used in a chemistry laboratory a part from Bunsen burner

4. An atom of element x having atomic number 11 combines with an atom of element y having atomic number 9 to from a compound.

   a. write the formula of the compound and state the type of bond formed in the compound

   b. give four properties of the compound formed in 4(a)

5. a) with example per each explain any four types of chemical reactions

   b) Balance each of the following chemical equation and write its ionic equation

   i) $Na_2CO_{3(S)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)} + CO_{2(g)}$

   ii) $Pb(NO_3)_{2(aq)} + Na_2SO_{4(aq)} \rightarrow PbSO_{4(s)} + NaNO_{3(aq)}$

6. a) How many chlorine molecules are in $20cm^3$ of chlorine gas at s.t.p?

   b) Calculate the number of ions present in 5g of copper (ii) nitrate

7. a) give three advantages of using chemical equestrian over word equitation

   b) you are provide with a compound composed of 22.2% zinc , 11.6% sulphur , 22.3% oxygen and the rest percentage is water of crystallization. Calculate the molecular formula of the compound if its molecular mass is 283.

8. a) justify each of the following statements

   i) it is advisable to use an evaporating dish instead of conical flask to evaporate a solution

ii) in filtration process the filtrate passes though the filter paper while the residue does not
iii) melting of ice is regarded as a physical change
iv) rusting of iron is regarded as a chemical change
v) carbon is a non – metal

b) a solution of sugar is said to be a mixture. Justify the statement using four points.

SECTION C (30MARKS)
Answer two (2) question in this section

9. Lack of safe and clean water for industry and domestic uses is a serious problem in most urban area in Tanzania. the major cause of this problem is pollution in the water. state six methods that could make such water clean and safe

10. How neutralization reaction applicable in daily life. Briefly explain your answer by giving six points.

11. Explain how to handle chemical having the warning signs of flammable, corrosive, harmful, explosive and toxic in the laboratory