THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

LAKE ZONE FORM FOUR MOCK EXAMINATION
(GEITA, KAGERA, MARA, SIMIYU, SHINYANGA AND MWANZA)

032/2A CHEMISTRY 2A

(ACTUAL PRACTICAL, A)

(For Both School and Private Candidates)

Time: 2:30 Hours **Year: 2025**

INSTRUCTIONS

1. This paper consists of **two (02)** questions, answer **all** questions
2. Each question carriers **twenty-five (25)** marks
3. Cellular phones **are not allowed** in the examination room
4. You may use the following constants:
   H = 1, C = 12, O = 16, Na = 23, S = 32, CL = 35.5
   1Litre = $1dm^3 = 1000cm^3$

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1. Your provided with the following

   AA: 7.15g of hydrated sodium carbonate ($Na_2CO_3. XH_20$) dissolved to make $500cm^3$ of a solution

   BB: 0.1 mole of hydrochloric acid dissolved in $1000cm^3$ to water to make a solution.

   - Methyl orange indicator (M.O)
   - Phenolphthalein indicator (P.O.P)

   Procedure

   - Put solution BB in burette, titrate it against solution AA until the end point is attained
   - Repeat the procedure to obtain three more reading and record the results in tabular form

   Questions

   (a) (i) Calculate the average titre volume

   (ii) ..... cm^3 of solution BB required ..... cm^3 of solution AA for completely neutralization reaction.

   (iii) The colour change at the end point was from ..... to .....

   (iv) What is the suitable indicator to be used in this experiment? Give reason.

(b) Write the balanced equation for the reaction between AA and BB

(c) Calculate the:-

(i) Molarity of solution BB

(ii) Molarity of solution AA

(iii) Molar mass of solution AA

(iv) Value of X in $Na_2 CO_3 . XH_20$.

(d) Name two sources of errors that might hinder this experiment and in each case state how to overcome the errors.

2. Sample J is a sample salt containing one cation and one anion. Carry out carefully the experiments described below recording all your observation and appropriate influences as shown in the table below the identity the cation and anion present in J.

EXPERIMENT	OBSERVATION	INFERENCE
(a) Observe the appearance of sample J		
(b) Put a little sample J in a clean and dry test tube and heat		
(c) Put a spatulaful of sample J in a test tube add distilled water stir and divide the obtained solution into four portion in different test tube. To the :-		
(i) First portion of solution of sample J in a test tube add sodium hydroxide drop wise till excess		
(ii) Second portion of the solution of sample J in a test tube add aqueous ammonia slowly till in excess		
(iii) Third portion of the solution of sample J in a test tube add potassium hexacyanoferrate (II)		
(iv) Fourth portion of the solution of sample J in a test tube add dilute HCL followed by addition of $BaCl_2$ solution		

Conclusion

- The cation in sample J is .....
- The anion in sample J is .....
- Molecular formula of sample J is .....
- Write chemical equation for the reaction that took place in experiment C(i)