PRESIDENT'S OFFICE

REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

LINDI MUNICIPAL COUNCIL

FORM FOUR UMEKTA EXAMINATION

031/2A **CHEMISTRY 2A (PRACTICAL)**

TIME: 2:30 HOURS **JULY 2023**

INSTRUCTIONS

1. This paper consists of **two (2)** questions. Answer **all** questions

2. Where calculations are involved show your work clearly

3. Marks for questions are indicated at the end of each question

4. Calculators and cellular phones are not allowed in the examination room

5. Write your **Examination Number** on every page of your answer booklet (s)

6. Use the following constants where necessary;

   Atomic masses: H = 1, C = 12, O =16, Na =23, Cl = 35.5, S= 32

   1 litre = 1dm3 = 1000cm3

1. You are provided with the following;
   Solution **AA** containing 3.65g of pure hydrochloric acid per dm^3 of the solution
   Solution **BB** containing 14.3g of hydrated sodium carbonate [$Na_2CO_3 . XH_2O$] per dm^3 of the solution
   Solution **M.O** is methyl indicator.

   Questions
   (a) Titrate AA (in burette) against BB (in a conical flask) using two drops of your indicator and obtain three titre values. Record your data in a tabular form
   (b) …… cm^3 BB required ……. cm3 of AA for complete reaction
   (c) The colour change at the end point was from……. to…….
   (d) Showing your procedures clearly, calculate the value of X in the formula [$Na_2CO_3 . XH_2O$]
   (e) List any two applications of volumetric analysis ***(25 Marks)***

2. Sample Q is a simple salt containing one cation and one anion. Carry out the experiments described below. Record your observations and inferences as shown in the table below

S/N	Experiment	Observation	Inference
(a)	Observe the appearance of sample Q		
(b)	Place a spoonful of sample Q in a test tube, add water and shake to dissolve		
(c)	Put a spatulaful of sample Q in a test tube and heat		
(d)	Put a spatulaful of sample Q in a dry test tube and add concentrated sulphuric acid		
(e)	To a portion of the solution add few drops of sodium hydroxide solution slowly till excess		
(f)	To another portion of the solution of sample Q in a test tube add aqueous ammonia slowly till excess		
(g)	To another portion of the solution of sample Q in a test tube add potassium iodide solution		
(h)	To another portion of the solution of sample Q in a test tube add freshly prepared ferrous sulphate solution followed by careful addition of Conc.H_2SO_4 along the side of the test tube.		

CONCLUSION

(i) The cation present in Q is……

(ii) The anion present in Q is…….

(iii) The chemical formula of Q is……..

(iv) The chemical name of Q is……

(v) Write the balanced chemical equation for the reactions taking place in experiment (c)

(25 Marks)