

**THE UNITED REPUBLIC OF TANZANIA
THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
MWANGA SECONDARY SCHOOLS EXAMINATIONS SYNDICATE (MWASSES)
FORM FOUR PRE-NATIONAL EXAMINATIONS 2020**

CODE:032/2A

CHEMISTRY (ACTUAL PRACTICAL)

TIME 2:30 HOURS

Wednesday 7th Oct, 2020A.M

INSTRUCTIONS

- 1) This paper consists of two (2) questions. Answer all questions
- 2) Each questions carries 25 marks
- 3) Quantitative analysis quidline pamphlets may be used after a thorough check by the supervisor
- 4) Non- programmable calculators may be used
- 5) Write your Examination number (index number) on every page of your answers booklets provided
- 6) You may use the following constants:
H = 1, C = 12, O = 16, S = 32, Na = 23, K = 32
1 litre = 1dm³ = 1000cm³

1. You are provided with the following

MM: A solution made by dissolving 3.15g of ethanedioic (oxalic) acid with the formula H₂C₂O₄.XH₂O in water to make 500cm³ of solution

NN: A solution made by dissolving 4.0g of sodium hydroxide to make 1 litre of solution

Methyl orange (M.O) indicator

Phenolphthalein (P.O.P) indicator

PROCEDURE:

Titrate the solution **MM** (from the burette) against solution **NN** (in the conical flask) using two drops of a suitable indicator. Record your results. Repeat the procedure to obtain three more titre values.

Questions:

- a) Which is the suitable indicator for this titration? Give reasons(s)
- b) Why is it important to vintse the burette with the acid solution before the experiment?
- c) _____ cm³ of **MM** required _____ cm³ of **NN** for complete neutralization
- d) Write the balanced chemical equation for the reaction between **MM** and **NN**.
- e) Determine the value of X in the acid H₂C₂O₄.XH₂O

2. You are provided with sample S containing one cation and one anion. Carry out carefully experiment and record all you observations and appropriate inferences as shown in a table below:

Experiment	Observation	Inference
(a) Observe appearance of sample S		
(b) Put a little solid sample S in a clean and dry test tube and heat		
(c) Put a spatulaful of sample S in a test tube, add distilled water, stir and divided the obtained solution into four portions in a different test tubes		
(i) First portion of the solution of sample S in a test tube add dilute sodium hydroxide slowly till in excess.		
(ii) Second portion of the solution of sample S add aqueous Ammonia solution till in excess.		
(iii) Third portion add potassium hexacyano ferrate (II).		
(iv) Fourth portions of solution of sample S, add dilute HCl followed by BaCl ₂ solution.		

Conclusion

- i. Cation of sample S is _____
- ii. Anion in a sample S is _____
- iii. Molecular formula of sample S is _____
- iv. Write the equations in the experiment (b) and (c) (i)