THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

032/2A CHEMISTRY 2A
ALTERNATIVE A: PRACTICAL
(For Both School and Private Candidates)

TIME: 2½ Hours 9 November 2000 A.M.

Instructions

1. This paper consists of THREE (3) questions.
2. Attempt TWO (2) questions including question number 1.
3. Record ALL your answers in the answer booklet(s) provided.
4. Qualitative guidance pamphlets are allowed after a thorough check by the supervisor.
5. Write your Examination Number on every page of your answer booklet(s).
6. The following constants may be used

Atomic weights H = 1, O = 16, Na = 23, S = 32.

This paper consists of 3 printed pages

1. You are provided with the following solutions

(i) Solution L; a solution containing 4.90 g of sulphuric acid in 1dm³

(ii) Solution M; a monovalent metal P hydroxide (POH). Solution M was made by dissolving 1.00 g of POH in distilled water and making up to 250 cm³

(iii) Indicator; methyl orange.

PROCEDURE:

Pipette 25.00 cm³ (or 20.00 cm³) of solution M into a titration conical flask provided. Add few drops of methyl orange indicator, then titrate this against solution L from the burette until an end point is reached.

Repeat this procedure to obtain three more readings, and record your results in a tabular form as shown below:

(a) Table of results

TITRATION	PILOT	1	2	3
Final reading (cm³)				
Initial reading (cm³)				
Volume used (cm³)				

(05 marks)

(i) The volume of the pipette used was _____ cm³ (01 mark)

(ii) Find the mean titre (02 marks)

(iii) Summary:
_____ cm³ of solution L were required to react with _____ cm³ of solution M. (02 marks)

(b) (i) Write down a balanced chemical equation for the reaction. (02 marks)

(ii) Calculate the molarity of solution L. (04 marks)

(iii) Calculate the molar mass of POH. (04 marks)

(iv) Find the atomic mass of P. (03 marks)

(v) Name element P and give its symbol. (02 marks)

2. Sample F is a simple salt containing ONE cation and ONE anion. Carefully, carry out the experiments described below and record your observations, inferences and hence identify the cation and the anion present in the sample salt F

EXPERIMENT	OBSERVATION	INFERENCES
(a) Appearance of sample F		
(b) Make a stock solution of sample F by putting a spatulaful of the salt in a large test tube adding distilled water to dissolve it. (Shake it if necessary).		
(c) To one portion of the solution add potassium hydroxide solution.		
(d) To another portion of the solution, add sodium hydroxide till in excess.		
(e) To the third portion slowly add ammonia solution till in excess.		
(f) To another portion, add potassium ferrocyanide solution.		
(g) To another portion, add dil. HCl, then $BaCl_2$ solution.		
(h) To another portion add lead acetate solution		

Conclusion:
The cation in F is _____
Anion in F is _____
The compound is _____ (25 marks)

3. Sample salt G is a simple salt containing ONE cation and ONE anion. Using systematic qualitative analysis procedures, carry out test on sample G and make appropriate observations and inferences. Hence identify the cation and anion present in the sample.

EXPERIMENT	OBSERVATION	INFERENCES

The cation in the sample is _____

The anion in the sample is _____ (25 marks)