Name…………………………………………………………………….…………..

Sign ……………………………………………………………………...…………..

Random No.						Personal No.		

(**Do not write your school/Centre Name or Number anywhere on this booklet**)

545/3
CHEMSITRY
(PRACTICAL)
Paper 3
Jul/Aug 2022
2 hours

BUSOGA REGION JOINT EXAMINATION BOARD

Uganda Certificate of Education

CHEMISTRY PRACTICAL

Paper 3

INSTRUCTIONS TO CANDIDATES

*Answer **both** questions. Answers are to be written in the spaces provided in this booklet*

*All your working **must** be in **blue** or **black** ink. Any work done in pencil **except** drawings will **not** be marked*

*You are **not** allowed to use any reference books (i.e. text books, booklets on qualitative analysis etc.)*

All working must be clearly shown

Mathematical tables and silent non – programable calculators may be used

For Examiner's Use Only		
Q.1		
Q.2		
Total		

TURN OVER

1. You are provided with the following

    BA₁ which is a solution containing **8.15g** of acid, **A** per litre of solution.

    BA₂ which is a solution of a basic compound **B** made by dissolving **5.1g** to make **500cm³** of solution.

    You are required to determine the formula mass of acid, **A**.

    Procedure

    Pipette 20.0 or 25.0cm³ of **BA₂** into a conical flask

    Add 2 – 3 drops of methyl orange indicator and titrate the mixture with **BA₁** from the burette.

    Repeat the procedure until you obtain consistent results.

    Record your results in table 1 below.

    Table: 1

    Volume of pipette used…………………………………………………………………………...cm³

Titration number	1	2	3
Final burette reading (cm³)			
Initial burette reading (cm³)			
Volume of **BA₁** used (cm³)			

(07½marks)

(a) (i) State the volumes of **BA₁** used to calculate the average volume.   (01½marks)

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   (ii) Calculate the average volume of **BA₁** used   (02½marks)

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(b) Calculate the;

(i) molarity of BA_2 (Molecular mass of $B = 201$) (04marks)

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(ii) number of moles of BA_2 that reacted (02marks)

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(iii) number of moles of BA_1 that reacted (A reacts with B in the ratio $2 : 1$) (02marks)

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(iv) molarity of BA_1 (03marks)

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(c) Determine the formula mass of **A.**   (02½marks)

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2. You are provided with substance **F** which contains **three** cations and **one** anion. Carry out the following tests to identify the cations and the anion in **F**. Identify any gas(es) evolved and record your observation and deductions in the table 2 below.

Table 2

TEST	OBSERVATION S	DEDUCTIONS
(a) Heat a spatula endful of **F** strongly in a dry test tube		
(b) Dissolve two spatula endful of **F** in about 5cm^3 of distilled water		

(i) To 1cm³ of solution, add 2 – 3 drops of lead(II) nitrate solution and warm			5
(ii) Use 1cm³ of solution to carry out a test of your own to confirm the anion in **F** **TEST** ……………………………………… ……………………………………… ………………………………………			
(c) To the remaining solution, add dilute sodium hydroxide dropwise until no further change and filter			
(d) To the filtrate from (c), add dilute nitric acid dropwise until the solution is just acidic and divide the resultant solution into four parts			
(i) To the first part of the solution, add dilute sodium hydroxide dropwise until in excess and warm			
(ii) To the second part of the solution, add 2 – 3 drops of potassium iodide solution			

(iii) To the third part of the solution, add ammonia solution dropwise until in excess		
(e) Wash the residue with distilled water and dissolve it in dilute hydrochloric acid. Divide the solution into two parts		
(i) To the first part of the solution, add dilute sodium hydroxide solution dropwise until in excess		
(ii) To the second part of solution, add ammonia solution dropwise until in excess		

(f) (i) The cations in **F** are

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(ii) The anion in **F** is

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END