NAME:.....

Signature:.....

Centre No.					Personal No		

(Do not write your school/ centre name or number anywere on this booklet.)

545/3
CHEMISTRY
(PRACTICAL)
Paper 3
Jul/ Aug. 2023
2 hours

TORORO ARCHDIOCESE EXAMINATIONS BOARD

Uganda Certificate of Education

MOCK EXAMINATIONS 2023

Chemistry Practical

Paper 3

2 hours

INSTRUCTIONS TO CANDIDATES.

- Answer both questions. Answers are to be written in the spaces provided in this booklet. All your work must be in blue or black ink. Any work done in pencil will not be marked.
- You are not allowed to use reference books (i.e text books, booklets on qualitative analysis etc).
- All working must be clearly shown.
- Mathematical tables and silent non- programmable scientific calculators may be used.

FOR EXAMINERS' USE ONLY

Qn . 1		
Qn. 2		
Total		

Turn Over

1. You are provided with the following:

BA_1, which is a solution containing 4.2g of salt **NaZ** in $1000cm^3$ of solution.

BA_2, Which is a 0.05M sulphuric acid.

Phenolphthalein indicator.

You are required to determine the value of **Z** in **NaZ.**

PROCEDURE:

Pipette $25cm^3$ (or $20cm^3$) of **BA_1** into a clean conical flask. Add 2 – 3 drops of phenolphthalein indicator and titrate the resultant mixture with solution **BA_2** from the burette until end point is reached. Repeat the titration 2-3 times until you obtain consistent results. Record your results in the table below.

Table of results:

Volume of pipette used.....cm^3

Titration Number	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of BA_2 used (cm^3)			

(a)(i) State the volumes of **BA_2** used to calculate the average volume.

.....

.....cm^3

(ii) Calculate the Average volume of **BA_2** used.

.....

.....cm^3

(b) Calculate the number of moles of:

(i) Sulphuric acid in BA_2 that reacted with **NaZ**

.....

.....

.....

.....

.....

.....

.....

(ii) Salt **NaZ** in BA_1 that reacted with sulphuric acid.

(2moles of **NaZ** reacts with 1 mole of H_2SO_4)

.....

.....

.....

.....

.....

.....

(iii) Salt **NaZ** in $1000cm^3$ of BA_1 that reacted.

.....

.....

.....

.....

.....

.....

(c) Determine the:

(i) Formula mass of the salt **NaZ.**

.....

.....

.....

.....

.....

(ii) Valve of **Z** in **NaZ** (Na = 23)

.....

.....

.....

.....

2. You are provided with substance **W**, which contains **two** cations and **one** anion. You are required to Carry out the following tests on **W** and identify the cations and anion in **W**. Identify any gas (es) evolved. Record your observations and deductions in the space provided in the table below. (25 marks)

TESTS	OBSERVATIONS	DEDUCTIONS
(a) Heat a spatula endful of **W** strongly in a dry test tube.		
(b) Dissolve two spatula endfuls of **W** in about $5cm^3$ of distilled water.		

(i) To about $1cm^3$ of this solution, add 2-3 drops of lead (II) nitrate solution.		
(ii) To about $1cm^3$ of the solution, add 2-3 drops of silver nitrate solution.		
(iii) Use about $1cm^3$ of the solution to carry out a test of your own choice to confirm the anion in **W**.		
(iv) To the rest of the remaining solution, add sodium hydroxide solution drop-wise until in excess and filter. Keep both the filtrate and the residue.		
(c) To the filtrate in (b)(iv) above, add dilute nitric acid drop-wise until the solution is Just acidic then divide the acidic solution into three parts. (i) To the first part of the acidic solution , add dilute sodium hydroxide solution drop-wise until in excess		

(ii) To the second part of the acidified solution, add dilute ammonia solution drop – wise until in excess		
(iii) To the third part of the acidified solution , add 2-3 drops of potassium iodide solution.		
(d) Wash the residue from (b)(iv) with water and dissolve it in dilute Hydrochloric acid. Divide the resultant solution into two parts. (i) To the first part of the solution, add dilute sodium hydroxide solution drop-wise until in excess		
(ii) To the second part of the solution, add dilute ammonia solution dropwise until in excess		

(e)(i) The cations in **W** are.....and .....

(ii) The anion in **W** is.....

END