NAME:……..…….INDEX NO:……

SCHOOL:…….…….SIGNATURE……..

545/4

CHEMISTRY
PRACTICAL

SEPTEMBER 2023

TIME: 2HOURS

PEAS NETWORK POST MOCK EXAMINATION 2023

UGANDA CERTIFICATE OF EDUCATION

CHEMISTRY PRACTICALS

TIME :2 hours

PAPER 4

INSTRUCTIONS TO CANDIDATES:

- Answer both questions. All answers must be written in the spaces provided in this booklet.
- You are not allowed to use any reference books (i.e., text books or handouts etc.)
- All working must be clearly shown.
- Mathematical tables and silent non-programmable scientific calculators may be used

FOR THE EXAMINER'S USE ONLY		
Q1	Q2	TOTAL

1. You are provided with the following solutions
   BAI which is a solution made by dissolving 6.9g of a hydrated salt ***M.xH$_2$0*** in 500cm^3 of distilled water.

   BA2 which is a 0.1M hydrochloric acid.

   You are required to determine the value of ***x*** in the salt and hence the percentage of water of crystallisation in the salt

   Procedure
   Pipette 20/25cm^3 of BAI into a clean conical flask, then add 2-3 drops of Methyl orange indicator. Titrate BAI with BA2 from the burette.
   Repeat the titration until you obtain consistent results. Record your results in the table below.

   Volume of pipette used ……cm^3

Experiment No.	1	2	3
Final burette reading (cm^3)			
Initial burette reading(cm^3)			
Volume of BA2 used (cm^3)			

   Values used to calculate the average volume of BA2 used

   … ……..and ……... cm^3

   Average volume of BA2

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   Questions

   a) Calculate the number of moles of
      i) Hydrochloric acid that reacted

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ii) ***$M.xH_20$*** per litre of solution ***(hydrochloric acid reacts with $M.xH_20$ In the ratio of 2:1 respectively)***

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b) Determine the

i) Molar mass of the salt ***$M.xH_20$*** and hence the value of ***x***
(M=106, H=1,O=16)

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i) percentage of water of crystallization the salt $M.xH_2O$

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2. You are provided with substance **K** which contains **two cations** and **one anion.** Carryout the following tests on **K** to identify the cations and anions present in **K**. Identify any gas(s) that may be evolved.

Test	Observation	Deduction
(a) Heat a spatula endful of **K** in a test tube until no further change.		
(b) To two spatula endful of **K** in a test tube, add about $5cm^3$ of water. To the resultant solution, add dilute sodium hydroxide solution drop-wise until in excess. filter, keep both the filtrate and residue		
e)To the filtrate add dilute nitric acid dropwise until the solution is just acidic. Divide the acidic solution into five portion i)To the first portion add sodium hydroxide dropwise until in excess.		

ii)To the second portion add 2-3 drops of potassium iodide solution		
iii)To the third part, add ammonium solution dropwise until in excess		
iv)To the fourth part, add lead(II) nitrate solution		
v)To the To the fifth portion, add barium nitrate solution followed by dilute nitric acid.		
ii)To the second portion add ammonia solution dropwise until in excess		
e) Dissolve the residue in minimum amount of dilute sulphuric acid. Divide the resulting solution into 3 portions. i)To the first portion add sodium hydroxide solution dropwise until in excess		
i) To the second portion add sodium carbonate solution		
ii) To the third portion add ammonia solution dropwise until in excess		
iv)To the fourth portion, add iron powder and leave to stand for 4 minutes		

f) State the

i) cations in K

…….. and ……..

ii) Anion in K

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END