545/3
CHEMISTRY
PRACTICAL
Paper 3
28th July 2022
2 Hours

Name : ……..……

Signature : …… Personal No : ……..

KAMPALA WAKISO GIANT SCHOOLS' ASSOCIATION (KWGSA)

National Joint Mock Examination 2022

Uganda Certificate of Education

CHEMISTRY PRACTICAL

Paper 3

2 Hours

INSTRUCTIONS TO CANDIDATES

- *This paper consists of* **two** *sections*
- *Attempt both questions in the spaces provided*
- *Silent non-programmable calculators may be used*
- *The candidate is not supposed to use any reference books on qualitative analysis like text books during the examination*

For Examiner's use only

Question	Marks
1	
2	
Total	

1. You are provided with the following

BA_1 which is a solution made by dissolving 6.9g of potassium carbonate(K_2C0_3) in 500cm^3 of a solution .

BA_2 is a solution of hydrochloric acid in of unknown concentration

You are required to determine the concentration of hydrochloric acid in gdm^{-3}

Procedure

Pipette 25.0 / 20.0cm^3 of **BA_1** into a clean conical flask and add 2 drops of methyl/orange indicator.

Titrate the solution using **BA_2** from the burette. Repeat the experiment until you get consistent results and record your results in the table below.

Volume of Pipette used ……cm^3 (01 mark)

Titre Number	**1**	**2**	**3**
Final Burette reading (cm^3)			
Initial Burette reading (cm^3)			
Volume of **BA_2** used (cm^3)			

(07 marks)

(i) Values used to calculate the average volume of **BA_2**. (01 mark)

…… and ……

(ii) Average volume of **BA_2** used. (01 mark)

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(b) Calculate the;

(i) Molar concentration of potassium carbonate used (K=39, C=12, O=16) (03 marks)

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(ii) Moles of Potassium Carbonate that reacted. (02 marks)

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(iii) Moles of the hydrochloric acid that reacted with Potasium carbonate (02 marks)

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(iv) Molar concentration of hydrochoric acid used (03 marks)

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(v) mass of hydro choric acid used in the experiment (H=1, C*l*=35.5) (02 marks)

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2. You are provided with substance **J** which contains **two** cations and one common anions. Carry out the following tests on **J** to identify the cautions and anions in **J** . Identify any gas evolved and record your observation and deductions in the Record your observations and deductions in the table below. (25 marks)

	Test	**Observation**	**Deduction**
a)	Heat a spatula end ful of **J** in a hard dry test tube strongly until there is no further change		
(b) (i)	Dissolve the residue above in dilute Nitric acid (warm the mixture if necessary to dissolve)		
ii)	To the above solution, add sodium hydroxide solution drop wise until in excess		
iii)	Filter and keep both the residue and the filtrate		
(c)	To the filtrate above , add dilute Nitric acid until it becomes just acidic and divide the solution into four portions (i) To the first portion add sodium hydroxide drop-wise untill in excess		
	(ii). To the second portion add ammonia solution drop wise until excess		
	(iii) To the third portion, add 10 drops of dilute hydrochloric acid and warm it gently and allow it to cool		

	(iv) Use the forth portion to carry out a test of your own choice to identify the cation in the filtrate. ….…… ….…… ….…… ….…… ….……		
d)	Wash the residue with Sodium hydroxide and add dilute Nitric acid until it dissolves. Divide the resultant solution into two portions		
	(i) To the first portion, add sodium hydroxide drop wise until in excess		
	(ii) To the second portion, add ammonia solution drop wise until in excess		

Identify the;
Cation in **J** : ……..…… and ……

Anions in **J** : ……..…… ……

END