Name:.....**Centre/Index No:**.....

School:.....**Signature:** .....

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

KAYUNGA SECONDARY SCHOOLS HEAD TEACHERS AND PRINCIPALS ASSOCIATION (KASSHPA)
JOINT MOCK EXAMS 2023
UGANDA CERTIFICATE OF EDUCATION

CHEMISTRY PRACTICAL
Paper 3
2 hours

INSTRUCTIONS TO CANDIDATES:

- *Answer* **ALL** *the questions. Answers are to be written in the spaces provided in this question paper.*
- *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-programmable calculators may be used.*

For Examiner's Use Only	
Question	***Marks***
1.	
2.	
Total	

1. You are provided with the following:

   Q, which is a 1M acid, H_nY.

   BA2 is a solution made by dissolving 4.0g of sodium hydroxide in 500 cm^3 of water.

   Phenolphthalein indicator.

   You are required to determine the value of **n** in an acid, H_nY.

Procedure:

(a) Measure 10 cm^3 of **Q** using a measuring cylinder, add distilled water upto the 100 ml mark and label the resultant solution **BA1**.

(b) Pipette 20 or 25cm^3 of **BA1** into a conical flask. Add 2 – 3 drops of phenolphthalein indicator and titrate the solution with **BA2** from the burette until the colour of the solution just turns pink.

Repeat the titration until you obtain consistent results. Record your results in the table below.

Volume of pipette used ..... cm^3. (0.5mks)

Titration number	1	2	3
Final burette reading (cm^3)			
Initial burette reading (cm^3			
Volume of **BA2** used (cm^3)			

(7.5mks)

Values of **BA2** used to calculate the average .....and.....(1mk)

Determine the average volume of **BA2** used. (2.5mks)

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(a) Calculate the number of moles of Sodium hydroxide that reacted. (5.5mks)

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(b) Calculate the number of moles of

(i) H_nY in the original solution **Q.** (2.5mks)

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(ii) H_nY in **BA1.** (1.5mks)

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(iii) H_nY that reacted. (2mks)

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(c) Determine the value of **n**. (2mks)

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2. You are provided with substance **T** which contains one anion and two cations. You are required to carry out the following tests to identify the ions in **T**. Identify any gases evolved. (23.5mks)

TESTS	OBSERVATIONS	DEDUCTIONS
(a) Gently heat a spatula end full of **T** in a hard glass test tube first, then strongly heat until no further change.		

(b) To two spatula endfulls of **T** add 5 cm^3 of distilled water and shake the mixture. To the resultant solution add sodium hydroxide solution drop by drop until in excess. **Filter** the mixture and **keep** both **filtrate** and **residue**.		
(c) To the filtrate, add dilute nitric acid drop by drop until the mixture is just acidic. Divide the resultant mixture into **five parts**		
(i) To the **first part,** add sodium hydroxide solution drop by drop until in excess.		
(ii) To the **second part,** add 1 cm^3 of potassium iodide solution.		
(iii) To the **third part,** add ammonia solution drop by drop until in excess		
(iv) To the **fourth part,** add 1 cm^3 of lead(II) nitrate solution and warm.		

(v) To the **fifth part**, add 2-3 drops of barium nitrate solution.		
(c) Dissolve the residue in a minimum amount of dilute nitric acid. Divide the resultant solution into **two parts**.		
(i) To the **first part**, add 2 cm^3 of sodium hydroxide solution and then heat.		
(ii) To the **second part**, add ammonia solution drop by drop until in excess.		

(d) Identify the ions:

(i) Cations: ..... and .....(1mk)

(ii) Anion ..... (0.5mk)

END

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S.4 Chemistry P.3 Mock Exams 2023

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Qn.1 Each candidate should have the following:

1 50 cm^3 burette.
1 pipette (25 ml/ 20 ml).
1 conical flask.
1 filter funnel.
1 100 cm^3 measuring cylinder.
1 beakers labeled BA1.
15 cm^3 of **Q** which is 1M H_2SO_4.
100 cm^3 of **BA2** which is 0.2M NaOH.

Qn.2 Each candidate should have the following:

6 test-tubes on a racker.
1 filter funnel.
1 filter paper.
W is a mixture of hydrated aluminium sulphate and hydrated iron(III) sulphate in the ratio of 1:1

NB: Easy access to the heat source and common reagents used in Qualitative analysis.

END