

Name..... Centre/Index No.....

School..... Signature.....

**545/3**  
**CHEMISTRY**  
**(PRACTICAL)**  
**Paper 3**  
**July/August 2017**  
**2hours**



## **WAKISSHA JOINT MOCK EXAMINATIONS**

**Uganda Certificate of Education**

**CHEMISTRY PRACTICAL**

**Paper 3**

**2hours**

### **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 on qualitative analysis etc).
- All working must be clearly shown.
- Mathematical tables and silent non-programmable scientific calculators may be used.

For Examiner's use only		
Q.1	Q.2	Total

1. You are provided with the following:
- BA<sub>1</sub> which is solution containing 0.1 moles of an acid H<sub>n</sub>X per litre of solution.
- BA<sub>2</sub> which is a solution prepared by dissolving 1.95g of sodium hydroxide in 500cm<sup>3</sup> of distilled water.
- You are required to determine the basicity of the acid (value of n in H<sub>n</sub>X).

### Procedure

Pipette accurately 20cm<sup>3</sup> (or 25cm<sup>3</sup>) of BA<sub>2</sub> into a clean conical flask.

Add 2 to 3 drops of phenolphthalein indicator and titrate with BA<sub>1</sub> from the burette.

Record your results in table below.

Repeat the titration until you obtain consistent results.

### Results;

Volume of pipette used \_\_\_\_\_ cm<sup>3</sup> (2½ marks)

Final burette reading (cm <sup>3</sup> )			
Initial burette reading (cm <sup>3</sup> )			
Volume of BA <sub>1</sub> used (cm <sup>3</sup> )			

Values used to calculated average volume of BA<sub>1</sub> used. (1½ marks)

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Average volume of BA<sub>1</sub> used. (02 marks)

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### Questions:

a) Calculate the;

i) molarity of  $\text{BA}_2$ . (Na = 23, O = 16, H = 1) (2½ mark)

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ii) number of moles of  $\text{BA}_2$  that reacted. (01 mark)

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iii) number of moles of  $\text{BA}_1$  that reacted. (01 mark)

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iv) mole ratio of  $\text{BA}_1 : \text{BA}_2$ ; hence determine the value of n in  $\text{H}_n\text{X}$ . (1½ marks)

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b) Write the equation of reaction between  $\text{BA}_1$  and  $\text{BA}_2$ . (1½ marks)

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2. You are provided with substance T, which contains two cations and one anion. You are required to identify the cations and the anion in T and identify any gas or gases that may be evolved.

Record your observations and deductions in the table below.

(16½ marks)

TESTS	OBSERVATIONS	DEDUCTIONS
a) Heat two spatula endfuls of T in a dry clean test tube until there is no further change.		
b) To the residue in (a) above, add 5cm <sup>3</sup> of dilute nitric acid and warm to dissolve.		
c) To 5cm <sup>3</sup> of the solution in (b) above, add excess ammonia solution, shake well and filter. Keep both the filtrate and residue.		
d) To 2cm <sup>3</sup> of the filtrate, add dilute hydrochloric acid drop wise until the solution is just acidic. Divide the acidic solution into two portions.		
i) To the first portion, add sodium hydroxide solution drop wise until in excess.		
ii) To the second portion, add ammonia solution drop wise until in excess.		
e) To the residue, add dilute nitric acid drop wise until it just dissolves. Divide the resultant solution into three parts.		
i) To the first part, add sodium hydroxide solution drop wise until in excess.		
ii) To the second part, add 5 drops of hydrochloric acid and warm.		
iii) Use the third part to carry out a test of your own to confirm the cation present.		
f) To one spatula endful of T, add drops of dilute nitric acid.		

g) Identify the;

i) cations in T: \_\_\_\_\_ and \_\_\_\_\_

ii) anion in T: \_\_\_\_\_

**END**