

Name:.....Index No:.....

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545/3

**CHEMISTRY**

**(Practical Paper)**

Paper 3

Jul/Aug 2019

2 Hours



**MUKONO EXAMINATION COUNCIL**

**Uganda Certificate of Education**

**CHEMISTRY PRACTICAL**

Paper 3

2 Hours

**INSTRUCTIONS TO CANDIDATES**

*Attempt **all** questions.*

*Record your answers on this question paper in spaces provided.*

*Mathematical tables, slide rulers and silent non- programmable calculators may be used.*

*Reference books (i.e. text books, books on qualitative analysis established etc) should not be used.*

*Candidates are not allowed to start working with the first 15 minutes. This is to enable candidates to read the equation paper and make sure they have all the apparatus and chemicals that they need.*

*All the work to be neatly shown.*

For Examiner's use only		
Q1		
Q 2		
<b>TOTAL</b>		

1. You are provided with the following

**SA1**, which is a solution containing  $7.9\text{g l}^{-1}$  of a mixture of sodium carbonate and sodium chloride

**SA2**, which is 0.1M hydrochloric acid. You are required to determine the percentage of sodium chloride in the mixture.

### Procedure

Pipette  $25.0\text{cm}^3$  or  $20.0\text{cm}^3$  of **SA1** into a clean conical flask. Add 2 -3 drops of methyl orange indicator and titrate the mixture with SA2 from the burette until the end point is reached.

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

### Results

Volume of pipette used \_\_\_\_\_  $\text{cm}^3$  **( $\frac{1}{2}$ mark)**

Experiment	1	2	3
Final burette reading / $\text{cm}^3$			
Initial burette reading / $\text{cm}^3$			
Volume of SA2 used / $\text{cm}^3$			

**(4  $\frac{1}{2}$  marks)**

Value of **SA2** used to obtain the average volume

\_\_\_\_\_  $\text{cm}^3$  **(01mark)**

Average volume of **SA2** used

\_\_\_\_\_  $\text{cm}^3$  **(2  $\frac{1}{2}$ mrks)**

### Questions

a) Write the equation of reaction taking place between hydrochloric acid and **SA1**

\_\_\_\_\_  
\_\_\_\_\_

**(1  $\frac{1}{2}$  marks)**

b) Calculate the:

(i) Number of Mole of hydrochloric acid that reacted

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(ii) Number of moles of **SA1** that reacted

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c) Determine the;

(i) Concentration in g/l of the substance that reacted in **SA1**

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(ii) Percentage of sodium chloride in the mixture

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2. You are provided with substance Q which contains two cations and one anion. You are required to carry out the following tests to identify the cations and anion in Q. identify the gas(es) evolved. **(30 marks)**

TEST	OBSERVATIONS	DEDUCTIONS
a) Burn a spatula end full of Q in a dry test tube first gently and then strongly until no further change		
b) Dissolve two spatulaendful of Q in 6cm <sup>3</sup> of Distilled water, add sodium hydroxide solution drop wise until in excess. Filter and keep both the filtrate and residue.		

c) To the residue in (b) above dissolve it in dilute nitric acid until no further change and divide the resultant solution into portions.		
(i) To the first portion, add dilute sodium hydroxide solution drop wise until in excess.		
(ii) To the Second portion add aqueous ammonia solution drop wise until in excess.		
(ii) To the Third portion add 5 drops of Sodium Carbonate solution.		
(iii) Use the forth portion to carry out a test of your choice to confirm one of the cations in Q  _____  _____  _____  _____		

d) To the filtrate in (b) above add dilute nitric acid until the solution is just acidic, divide the resultant solution into portion		
(i) To the first portion add dilute sodium hydroxide solution drop wise until in excess.		
(ii) To the second portion add aqueous ammonia solution drop wise		
(iii) To the third portion add 5 drops of sodium Carbonate solution.		
(iv) To the fourth portion add potassium Iodide solution.		
(v) To the fifth portion add lead (II) nitrate and heat.		
(vi) To the sixth portion add 3 drops of silver nitrate solution		

(vii) Use the seventh portion to carry out a test of your choice to confirm the anions in Q  <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>		
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e) Identify the

(i) Cations in Q \_\_\_\_\_ and \_\_\_\_\_

(ii) Anions in Q \_\_\_\_\_

***End -***