**545/3**

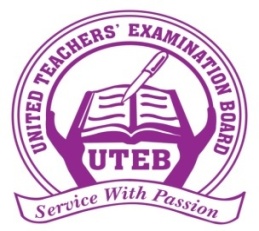
**CHEMISTRY**

**PRACTICAL**

**Paper 3**

AUGUST, 2019

2 hours

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**UTEB JOINTMOCK EXAMINATIONS 2019**

**Uganda Certificate of Education**

**CHEMISTRY**

**PRACTICAL**

**Paper 3**

2 hours

**INSTRUCTIONS TO CANDIDATES:**

* Answer **all** questions.
* Answers are to be written in the spaces provided.
* You are not allowed to use any reference books.
* All working must be clearly shown.
* Mathematical tables, slide rules and non-programmable silent electronic calculators may be used.
* [H=1, C=12, O=16, Na=23]

**For Examiner’s use only**

|  |  |  |
| --- | --- | --- |
| **Q1** | **Q2** | **TOTAL** |
|  |  |  |
|  |  |  |

1. You are provided with the following:

**Turn Over**

Solution B; A solution containing 4g of sodium hydroxide per dm3.

Solid X; A dibasic organic acid of relative formula mass 134

Liquid A is Distilled water

You are to determine the solubility of the acid in mol dm-3

(The acid reacts with sodium hydroxide in the mole ratio 1:2)

Procedure

Place 2 spatula measures of X in a conical flask. Using a measuring cylinder measure 100cm3 of A into the flask. Cork the flask and shake vigorously for 5 minutes to obtain a saturated solution. Filter and keep the filtrate. Lable the filtrate solution “C”.

Pipette 20 or 25 cm3 of solution C into a clean conical flask. Add 2 or 3 drops of phenolphthalein indicator. Titrate with solution B from the burette to a faint persistent pink colour. Repeat the titration to obtain consistent results.

Table of results

Pipette volume = …………………………….cm3

|  |  |  |  |
| --- | --- | --- | --- |
| Titre number | 1 | 2 | 3 |
| Final burette reading (cm3) |  |  |  |
| Initial burette reading (cm3) |  |  |  |
| Volume of B used (cm3) |  |  |  |

Selected values for the average titre

…………………………………………………………………………...……………………………….Average titre

…………………………………………………………………………...……………………………….Questions

a) Determine the concentration of solution B in moles per dm3.

…………………………………………………………………………...……………………………….

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**Turn Over**

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2. Y contains two cations and one anion. Carry out the following tests on Y recording your observations and deductions in the table below. For any of the gases liberated carry out a confirmatory test.

|  |  |  |
| --- | --- | --- |
| **TESTS** | **OBSERVATIONS** | **DEDUCTIONS** |
| a) Heat 2 spatula endfuls of Y strongly till no further change. Allow the residue to stand and cool. Keep the residue for the tests below. |  |  |
| (b) To the cool residue from  (a) add dilute nitric acid to a third the depth of the test tube. Heat gently for 2 to 3 minutes. Cool and transfer the solution to another test tube. To this solution add excess sodium hydroxide to two-thirds the depth of the test tube and shake vigorously. Filter. Keep the filtrate and residue for the tests below. |  |  |
| (c) Acidify the filtrate with dilute nitric acid divide this solution into 4 parts. |  |  |
| (i) To the 1st part add sodium hydroxide dropwise till in excess. |  | **Turn Over** |
| (ii) To the 2nd part add ammonia solution drop wise till in excess |  |  |
| (iii) To the 3rd part add a few drops of barium nitrate solution |  |  |
| (iv) Use the 4th part to carry out a confirmatory test of your choice for the anion. |  |  |
| (d) Wash the residue from (b) and dissolve in 5cm3 of dilute nitric acid. Divide into 2 parts. |  |  |
| (i) To the 1st part add sodium hydroxide solution dropwise till in excess. |  |  |
| (ii) To the 2nd part add ammonia solution dropwise till in excess. |  |  |

Cations in Y are:

1…………………….……… 2………………………………

Anion in Y is:……………………………………………………………………………

**End**