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**545/4**

**CHEMISTRY**

**PRACTICAL**

**Paper 4**

AUGUST, 2019

2 hours

**JINJA JOINT EXAMINATIONS BOARD**

***Uganda Certificate of Education***

**MOCK EXAMINATIONS – AUGUST, 2019**

**CHEMISTRY**

**PRACTICAL**

**Paper 4**

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:

**BA3** which is a solution containing 3.8gl-1 of a substance, **M** .

**BA4** which is a 0.1M hydrochloric acid solution.

*You are required to determine the value of* ***M*** *in*  **M.**

**Procedure:**

1. Pipette 25cm3 (or 20cm3) of **BA3** into a clean conical flask. Add 2 –3 drops of

Phenolphthalein indicator and titrate the mixture with**BA4** from the burette.

1. Repeat the titration 2 – 3 times until you obtain consistent readings.

Enter your results in the table below.

**Results:**

Volume of pipette used…………………………………………………......(0½ mark)

**Table** (4½ marks)

|  |  |  |  |
| --- | --- | --- | --- |
| Final burette reading (cm3) |  |  |  |
| Initial burette reading(cm3) |  |  |  |
| Volume of **BA4**used (cm3) |  |  |  |

Titre values used for calculating average volume of **BA4** used are …….………………….…

…………..………………………… …………………………………………

(0½ mark)

Average volume of **BA4**used …………………….……………………………………….…

……………………………………………………………………………...…

(2½ marks)

**Questions:**

1. Write the ionic equation of the reaction taking place. (1½ marks)

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1. Calculate the number of moles of;
2. Hydrogen ions that reacted. (03 marks)

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1. Hydroxyl ions in **BA3** that reacted. (02 marks)

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1. **M** in one litre of **BA3**. (04 marks)

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1. Work out the *Relative Formula Mass* of **M**and hence the value of **M** in **M.** (**H =1 , O =16**) (04 marks)

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1. You are provided with substance **Y** which contains **one cations** and **two anions**. You are required to identify the cation and anions in **Y.** Carry out the following tests on **Y** and record your observations and deductions in the table below**.** Where gas(es) is (are) evolved, it must be identified. ***(27 marks)***

|  |  |  |
| --- | --- | --- |
| ***TESTS*** | ***OBSERVATIONS*** | ***DEDUCTIONS*** |
| **(a)**Heat a spatula end-full of **Y**in  strongly in a dry hard glass tube. |  |  |
| **(b**) To three spatula end-fulls of **Y**in a  boiling tube, add about 5cm3of  distilled water and shake.  **Divide the resultant solution into**  **five parts.** |  |  |
| 1. To the **first** part of the solution, add dilute sodium hydroxide solution drop-wise until in excess. |  |  |
| 1. To the **second** part of the solution, add dilute ammonia solution drop-wise until in excess. |  |  |
| 1. To the **third** part of the solution, add 2 – 3 drops of potassium iodide solution. |  |  |
| 1. To the **fourth** part of the solution, add 2 – 3 drops of lead (II) nitrate solution then followed by dilute nitric acid. |  |  |
| (**c**) To the **fifth** part of the solution, add  Barium nitrate solution drop-wise  until in excess.  **Filter and divide the filtrate into**  **two portions**. |  |  |
| 1. To the **first** portion of the filtrate, add an equal volume of lead (II) nitrate then followed by 2 – 3 drops of dilute nitric acid. Boil and cool under tap water. |  |  |
| 1. To the **second** portion of the filtrate, add 2 – 3 drops of silver nitrate solution followed by dilute ammonia drop-wise until in excess. |  |  |

(**d**) Identify the;

1. anionsin **Y**...….…………………………and ………….……….……………………
2. cationin **Y**……………………………. …… ………...………………………………