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| ***JJEB HD Logo B&W - 2019*** | ***JINJA JOINT EXAMINATIONS BOARD***  ***JJEB MARKING GUIDE, 2019***  **545/4**  **CHEMISTRY**  **Paper 4**  **July/August, 2019** |

1. (b)**Results:**

Volume of pipette used: **25.00 / 25.0 /25**

|  |  |  |  |
| --- | --- | --- | --- |
| Final burette reading (cm3) | 25.00 | 25.80 | 26.80 |
| Initial burette reading(cm3) | 1.00 | 2.00 | 3.00 |
| Volume of **BA4** used (cm3) | 24.00 | 23.80 | 23.80 |

Titre values used forcalculating average volume of **BA4**:

* 23.80 , 23.80

Average volume of **BA4**used: cm3

(c)

(d) (i) 1000cm3 of **BA4** contain 0.1 moles of HCl

23.8cm3 of **BA4** contain moles of HCl

moles HCl

(ii) Mole ratio of

Moles of that reacted

(iii) 25 cm3 of **BA3** contain moles of

1000 cm3 of **BA3** contain moles of

= 0.095 moles of

2 moles of aqueous are produced by 1 mole of**M**

0.095 moles of are produced by moles of **M**

**=** 0.0475 moles of **M**

(iv) 0.0475 moles of **M** weigh 3.8g

1 mole of**M**weighs g

= 80g

RFM of **M**is 80g.

**M** + 2(16 +1) = 80

**M** + 34 =80

**M** = 80 = 46

**Total Marks =**

|  |  |  |
| --- | --- | --- |
| ***TESTS*** | ***OBSERVATIONS*** | ***DEDUCTIONS*** |
| **(a)**Heat a spatula end-fulof **Y**in  strongly in a dry hard glass tube. | * Colourless vapour or liquid turns anhydrous CuSO4 from white to blue. * Colourless gas turns moist blue litmus red and acidified K2Cr2O7 orange to green * White solid. | Hydrated salt.  Or  Water of crystallisation.  SO2 produced  present. |
| **(b**) Dissolve threespatula end-fuls of **Y**  in a boiling tube, add about 5cm3 of  distilled water and shake.  **Divide the resultant solution into**  **five parts.** | * Dissolves / soluble giving a colourless solution. | or Mg2­+ probably present. |
| 1. To the **first** part of the solution, add dilute sodium hydroxide solutiondrop-wise until in excess. | * White precipitate soluble in excess giving a colourless solution. | probably present. |
| 1. To the **second** part of the solution, add dilute ammonia solution drop-wise until in excess. | * White precipitate insoluble in excess. | or probably  present. |
| 1. To the **third** part of the solution,add 2 – 3 drops of potassium iodide solution. | * No yellow precipitate   or  No observable change. | absent.  present |
| 1. To the **fourth** partof thesolution, add 2 – 3 drops of lead (II) nitrate solution then followed by dilute nitric acid. | * White precipitate. | or probably present |
| (**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**. | * White precipitate. * White residue. * Colourless filtrate. | present |
| 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. | * White precipitate, soluble on boiling and reforms/recrystallizes on cooling. | confirmed. |
| 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. | * White precipitate **soluble in excess ammonia**. | confirmed. |

(d) (i) anionsin **Y :**  (c) and c(i) or c(ii)

(ii) cationin **Y:** b(iii) or b(ii)

**Total Marks=**

***END***