**JINJA JOINT EXAMINATIONS BOARD**

**MOCK EXAMINATIONS 2022**

**UACE CHEMISTRY**

**P525 /3, 2022**

**MARKING GUIDE**

1. Table of results

Volume of pipette used = 10.0 / 10.00 / 10

|  |  |  |  |
| --- | --- | --- | --- |
| Final burette reading (cm3) | 12.00 | 21.90 | 31.80 |
| Initial burette reading (cm3) | 2.00 | 12.00 | 21.00 |
| Volume of BA2 used (cm3) | 10.00 | 9.90 | 9.90 |

Titre Range

Titre values used to calculate average volume of FA2 used; 9.90 and 9.90 agree

Average volume of FA2 used

**Questions**

Moles of reacted =

Moles of in 10cm3 = ½

concentration of per litre =

= 0.0495 M

**B: RESULTS**

Mass of weighing container + T = 2.90

Mass of weighing container alone = 1.30

Mass of T alone = 1.60

Volume of pipette used = 10.00 / 10.0/ 10

**Table II**

|  |  |  |  |
| --- | --- | --- | --- |
| Final burette reading (cm3) | 10.80 | 20.20 | 29.60 |
| Initial burette reading (cm3) | 1.00 | 10.80 | 20.20 |
| Volume of BA2 used (cm3) | 9.80 | 9.40 | 9.40 |

Titre Range

Titre values used to calculate average volume of FA2 used; 9.40 and 9.40 agree

Average volume of FA2 used

**Questions**

1. (i)

Moles of reacted with excess =

Moles of reacted = ½

(ii) Moles of in 20cm3 of FA1 = =

=

Moles of reacted with X =



Moles of T in 10cm3 of FA3 =

250cm3 of FA3 contain

= 0.013 moles of T

0.013 moles of T weight 1.6

1 mole of T weigh

= 123

Molar mass of T is *123mol-*1



|  |  |
| --- | --- |
| **OBSERVATIONS** | **DEDUCTIONS** |
| * White solid * Colourless condensate turns white anhydrous CuSO4 blue * Colourless gas turns blue litmus red and limewater milky * Solid yellow when hot and white on cooling | / |
| 1. - Effervescence  * Purple vapour / gas / fumes turns blue litmus red |  |
| * Effervescence of colourless gas turns blue litmus red and limewater milky * Colourless solution ` | confirmed  (reject ) |
| * White ppt soluble in excess * White residue * Colourless filtrate | Probably  present |
| 1. - White ppt soluble in acid | Probably present |
| 1. White ppt soluble in excess giving a colourless solution | Probably present |
| 1. White ppt soluble in excess giving a colourless solution. | Probably present |
| 1. Test: Add half spatula endful of solid NH4Cl + Na2HPO4 solution + excess ammonia solution.   Observations:  White ppt soluble in excess ammonia | present |
| **OBSERVATIONS** | **DEDUCTIONS** |
| * Colourless solution | Probably  Present (reject ) |
| 1. White ppt insoluble in excess | Probably present (reject ) |
| 1. white ppt insoluble in excess | present |
| 1. Test: Add half spatula end ful of solid NH4Cl + Na2HPO4 solution + excess ammonia solution.   Observations:  White ppt insoluble in excess ammonia | present |
| * Partly soluble * White residue * Colourless filtrate | Probably non transition metal ions present in both filtrate and residue |
| (i) Pale yellow ppt insoluble in  Ammonia | Probably present |
| (ii) Colourless solution  turns  Brown  Brown solution turns  colourless  on addition of sodium  thiosulphate | Oxidised to  present |
| (iii) Yellow ppt | confirmed |

1. Cations in X : e(iii) and f(iii)

Anions in X : (c) and (iii)



|  |  |
| --- | --- |
| **OBSERVATION** | **DEDUCTION** |
| * Colourless liquid burns with a blue non – sooty flame | Aliphatic saturated compound with a low carbon content |
| Miscible with water forming a colourless solution that has no effect on both blue and red litmus | * Polar compound of low molecular mass * Neutral compound. * Probably carbonyl, alcohol, ester etc |
| 1. No yellow / orange ppt | * Carbonyl cpd absent |
| (ii) No purple colouration or  No observable change | * Phenol absent |
| 1. Purple acidified KMnO4 turns colourless | Primary or secondary alcohol  (Reject aldehyde) |
| 1. Yellow / orange ppt | Primary or secondary alcohol oxidized to carbonyl cpd |
| (ii) Orange acidified K2Cr2O7 turns  green | Aldehyde formed from a primary alcohol. |
| (iii) Reddish Brown ppt | Aldehyde formed from a primary alcohol |
| 1. No cloudy solution   Or  No observation change at room temperature | Primary alcohol |
| 1. No yellow ppt | Primary alcohol of the form CH3CHR or Ethanol absent OH |

1. Aliphatic primary alcohol without CH3CHR structure

OH

**E N D**