**2020 FORM 4 TERM 1 ENRTY EXAMS**

**CHEMISTRY PP. 3 (MARKING SCHEME)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | I | II | III |
| Final burette reading (cm3) | 20.5 | 20.5 | 20.5 |
| Initial burette reading(cm3) | 0.0 | 0.0 | 0.0 |
| Volume of solution W used (cm3) | 20.5 | 20.5 | 20.5 |

1. i) Average volume = 20.5 + 20.5 + 20.5

3

= 20.5cm3 (1mk)

ii) 0.1 moles in 1000cm3

? 20.5cm3

* 1. x 20.5 (1mk)

1000

= 0.00205 moles (1mk)

1. i) Mole ratio HCl : Na2CO3 . XH2O

2 : 1

Moles of D = 0.00205 (1mk)

2

= 0.00103 moles (1mk)

ii) 0.00103 moles in 25cm3

? 250cm3

0.00103 x 250 (1mk)

25

= 0.0103 moles (1mk)

iii) 0.0103 moles in 250cm3

? 1000cm3

= 0.0103 x 1000 (1mk)

250

= 0.0412M (1mk)

iv) 2.86g in 250cm3

? 1000cm3 (1mk)

= 11.4 g/litre

0.04 = 11.4 (1mk)

mm

mm = 11.4

0.04

= 286 (1mk)

v) Rmm of Na2CO3 = (23 x 2) + 12 + (16 x 3) = 106 (1mk)

Mass of water = 286 – 106 = 180g (1mk)

vi) XH2O = 180

Rmm of H2O = (1 x 2) + 16 (1mk)

= 18

18 x =180

18 18

X = 10 (1mk)

2. (i)

|  |  |
| --- | --- |
| Observation | Inferences |
| The solid dissolved to form a colourless solution (1mk) | Soluble salt (1mk) |

ii)

|  |  |
| --- | --- |
| Observation | Inferences |
| In few drops white precipitate is formed which dissolves in excess (1mk) | Zn2+Pb2+ and Al3+ present (1mk) |

iii)

|  |  |
| --- | --- |
| Observation | Inferences |
| In few drops white precipitate is formed which dissolves in excess (1mk) | Zn2+ present (1mk) |

iv)

|  |  |
| --- | --- |
| Observation | Inferences |
| White precipitate is formed which does not dissolve on warming (1mk) | CO32- , SO32- or SO42- present (1mk) |

v)

|  |  |
| --- | --- |
| Observation | Inferences |
| The white precipitate remains (1mk) | SO42-  present (1mk) |

b)

i)

|  |  |
| --- | --- |
| Observation | Inferences |
| It burns with a yellow sooty flame (1mk) | C = C or -C = C- present (1mk) |

ii)

|  |  |
| --- | --- |
| Observation | Inferences |
| Dissolves to form a colourless solution (1mk) | Polar compound (1mk) |

iii)

|  |  |
| --- | --- |
| Observation | Inferences |
| pH ( 4or 5) (1mk) | Weakly acidic (1mk) |

iv)

|  |  |
| --- | --- |
| Observation | Inferences |
| There was effervescence (1mk) | Presence of H+  (1mk) |

v)

|  |  |
| --- | --- |
| Observation | Inferences |
| The purple colour of the solution persists (1mk) | -C=C- or -C = C- absent (1mk) |