***MARKING SCHEME***

1. ***Table 1***

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***I*** | ***II*** | ***III*** |
| ***FINAL BURRETE RADING (CM3)*** | ***20.0*** | ***20.0*** | ***20.0*** |
| ***INITIAL BURRETE READING(CM3)*** | ***0.0*** | ***0.0*** | ***0.0*** |
| ***VOLUMEF SOUTION (CM3)*** | ***20.0*** | ***20.0*** | ***20.0*** |

***CT 1mk***

***D.P 1mk***

***Ac 1mk***

***P.A 1mk***

***F.A 1mk***

***a) i) Average volume =20.0cm3***

***ii)g/dm3 = Mol /dm3 x R.m.m***

***7.3g/dm3 = Mol/dm3 x36.5 √1***

***Mol/dm3 = =0.2M√1***

***iii) NaOHaq + HCLaq NaOHaq + H2Og***

***Mole ratio 1:1***

***Moles of M used***

***100cm3  0.2 moles***

***20cm3+ = 0.04 moles√1***

***Mole of solution M equals moles of solution K***

***o.004 x 40 = 0.16 √1***

***Table II***

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***I*** | ***II*** | ***III*** |
| ***FINAL BURRETE READING (CM3)*** | ***12.0*** | ***12.0*** | ***12.0*** |
| ***INITIAL BURRETE READING(CM3)*** | ***0.0*** | ***0.0*** | ***0.0*** |
| ***VOLUME OF SOUTION (CM3)*** | ***12.0*** | ***12.0*** | ***12.0*** |

***CT 1mk***

***D.P 1mk***

***Ac 1mk***

***P.A 1mk***

***F.A 1mk***

1. ***Average volume of solution W***

***=12.0cm3***

***b) i) Moles of solution W***

***25cm3 of solutionK HAS 0.004 MOLES***

***Mole ratio 2:1√1***

***Moles of solution W = 0.002 moles √1***

***ii) Moles of solution W in 100cm3***

***12cm3 0.002 moles √1***

***100cm3  = 0.101667 moles √1***

***iii) Moles per litter in the original***

***0.01667 moles in 25cm3***

***25cm3 0.01667√1***

***1000cm3 = 0.6668 Mol/dm3 √1***

1. ***Table***

|  |  |  |
| --- | --- | --- |
| ***Volume of water***  ***(cm3)*** | ***Temperature at which***  ***Crystals first appear (0C)*** | ***Solubility***  ***g/100g of H2O*** |
| ***4*** | ***70.0*** | ***100.00 √*** |
| ***6*** | ***56.0*** | ***66.67 √*** |
| ***8*** | ***49.0*** | ***50.0 √*** |
| ***10*** | ***40.0*** | ***40.0 √*** |
| ***12*** | ***35.0*** | ***33.33 √*** |

***Complete table - 1mk (temperature column)***

***Trend - mk (temperature reducing)***

***Decimal place  mk (whole number consistently or one d.p. the number being 0 or 5)***

***Accuracy - mk 20 C of school value***

***Solubility calculations - mk each up to 2mks***

1. ***Graph -***

***Labeling of axes mk***

***Scale (at least  - mk***

***Plots - 1 mk***

***Shape (smooth curve) - mk***

1. ***showing on graph - mk***

***correct reading - mk***

1. ***showing on graph - mk***

***correct reading - mk***

***3 i) I Observations Inferences***

***-Blue litmus paper turns √ acidic gas***

***White ppt Zn2+,Al3+,Pb2+***

***II Observations Inferences***

***White ppt√ soluble √ in Zn2+ present***

***Excess Award the mark for the inference if the observation is scored fully***

***III Observations Inferences***

***White PPT √ SO32-, SO42-,CO32-,MAY BE PRESENT***

***Award 1mk if all the three ions are correctly mentioned***

***IV) Observations Inferences***

***-While ppt /remains does SO42- Present***

***not Dissolve√1 Award only if mentioned in III***