**MWAKICAN JOINT EVALUATION – TERM III 2016**

**CHEMISTRY PAPER 3 (PRACTICAL) FORM THREE MARKING SCHEME**

1. CT – 1mk

D.P – 1 mk

Accuracy (1 mk)

(a) Average volume of solution X = 25.0cm3 (1 mk)

(b) Moles of solution X required

 NaOH(aq) + HCl(aq) NaCl(aq) + H2O(l)

 1:1 (1/2 mk)

Moles of NaOH = $\frac{0.2×25}{1000}=0.005 moles$ (1/2 mk)

Moles of solution X = $\frac{0.005×1}{1}$ = 0.005 moles (1 mk)

(c) Molarity of solution X

No. of moles = 0.005 moles

0.005 moles 25cm3

? 1000 cm3

= $\frac{0.005×1000}{25 }$ (1 mk) = 0.2m (1 mk)

**Procedure II**

CT – 1 mk

D.P – 1 mk

Accuracy – 1 mk

(d) Average volume of solution X

 = 25.0 cm3 (1 mk)

(e) Number of moles of Na2CO3 in 25cm3

Na2CO3(aq) + 2HCl(aq) 2NaCl(aq) + CO2(g) + H2O(l)

 1:2

Moles of HCl reacting = $\frac{0.2×25}{1000}$

 = 0.005 moles (1/2 mk)

Mole ratio – Na2CO3:HCl

 1:2 (1/2 mk)

Moles of Na2CO3 = ½ x 0.005(1/2 mk) = 0.0025 moles (1/2 mk)

(f) Concentration of sodium carbonate in moles per litre.

0.0025 moles 25cm3

 ? 1000cm3

$\frac{0.0025×1000}{25} \left(1 mk\right)=0.1 $ M (1 mk)

2. (a)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| * Solid turns to yellow and then to white on cooling. (1 mk)
* A gas that turns moist blue litmus paper to red.
 | Zn2+ present (1 mk)The gas is acidic  |

(b) (i)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| A white precipitate soluble in excess. (1 mk) | Zn2+ present (1 mk)  |

(ii)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| A white ppt present (1 mk)  | SO42-, Cl-, CO32- present (1 mk for any two)  |

(c)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Effervescence present (1 mk)  | CO32- present (1 mk) |

(i)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| A white ppt which dissolves in excess (1 mk) | Zn2+ present (1 mk) |

(ii)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| No white ppt (1 mk) | SO42-, CL-, SO32- absent (1 mk for any two) |

3. (a) (i)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Solid burns with a sooty flame (1 mk) | C =C or –C=C- present (1/2 mk for each) |

(b) (i)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Solid dissolves forming a colourless solution. (1/2 mk) | The solid is polar (1/2 mk) |

(ii)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Purple acidified potassium manganate (vii) is decolourised (1 mk) | C=C or –C=C- present (1/2 mk for each) |

(iii)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Orange acidified Potassium dichromate (vi) turns to green. (1 mk) | C =C or –C=C- present (1/2 mk for each) |

(iv)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| Effervescence present (1 mk) | H+ present (1 mk) |

(v)

|  |  |
| --- | --- |
| Observations  | Inferences  |
| PH is 5 (1 mk) | Solution is weakly acidic. (1 mk) |