**END OF TERM 3 2022**

**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 = (1/2 mk)

Moles of solution X = = 0.005 moles (1 mk)

(c) Molarity of solution X

No. of moles = 0.005 moles

0.005 moles 25cm3

? 1000 cm3

= (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 =

= 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

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) |