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

1. CT – 1mk
D.P – 1 mk
Accuracy (1 mk)

(a) Average volume of solution X = 25.0$cm^3$ (1 mk)
(b) Moles of solution X required

$NaOH(aq) + HCl(aq) \longrightarrow NaCl(aq) + H2O(l)$

1:1 (1/2 mk)

Moles of NaOH = $\frac{0.2\times25}{1000} = 0.005\ moles$ (1/2 mk)

Moles of solution X = $\frac{0.005\times1}{1}$ = 0.005 moles (1 mk)

(c) Molarity of solution X
No. of moles = 0.005 moles

0.005 moles 25$cm^3$
? 1000 $cm^3$

= $\frac{0.005\times1000}{25}$ (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 $cm^3$ (1 mk)
(e) Number of moles of $Na_2CO_3$ in 25$cm^3$

$Na2CO_{3(aq)} + 2HCl_{(aq)} \longrightarrow 2NaCl_{(aq)} + CO_{2(g)} + H_2O_{(l)}$

1:2

Moles of HCl reacting = $\frac{0.2\times25}{1000}$
= 0.005 moles (1/2 mk)

Mole ratio – $Na_2CO_3$:HCl
1:2 (1/2 mk)

Moles of $Na_2CO_3$ = 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 $\longrightarrow$ 25$cm^3$
? $\longrightarrow$ 1000$cm^3$

$\frac{0.0025\times1000}{25}\ (1\ mk) = 0.1$ M (1 mk)

2. (a)

| Observations | Inferences |
|---|---|
| - Solid turns to yellow and then to white on cooling. (1 mk)<br>- A gas that turns moist blue litmus paper to red. | $Zn^{2+}$ present (1 mk)<br>The gas is acidic |

(b) (i)

| Observations | Inferences |
|---|---|
| A white precipitate soluble in excess. (1 mk) | $Zn^{2+}$ present (1 mk) |

| | |
|---|---|
| | |

(ii)

| Observations | Inferences |
|---|---|
| A white ppt present (1 mk) | $SO_4^{2-}$, $Cl^-$, $CO_3^{2-}$ present (1 mk for any two) |

(c)

| Observations | Inferences |
|---|---|
| Effervescence present (1 mk) | $CO_3^{2-}$ present (1 mk) |

(i)

| Observations | Inferences |
|---|---|
| A white ppt which dissolves in excess (1 mk) | $Zn^{2+}$ present (1 mk) |

(ii)

| Observations | Inferences |
|---|---|
| No white ppt (1 mk) | $SO_4^{2-}$, $CL^-$, $SO_3^{2-}$ absent (1 mk for any two) |

3. (a) (i)

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

(iii)

| Observations | Inferences |
|---|---|
| Orange acidified Potassium dichromate (vi) turns to green. (1 mk) |  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) |