**30.6.3 Chemistry Paper 3 (233/3)**

**Procedure A**

**Table 1**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time (min) | 0 | ½ | 1.0 | 1.5 | 1.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 |
| Temperature oC) | 19 | 18.5 | 18.0 | 18.0 | 18.0 | X | 13.0 | 13.0 | 13.5 | 13.5 | 14.0 |

 ***(5 marks)***

 ***(3 marks)***

(ii) ΔT = 6oC ***(1 mark)***

 (iii) ΔH = 20 × 4.2 × 6

 = 504 joules ***(2 marks)***

**Procedure B**

**Table 2**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **I** | **II** | **III** |
| Final burette reading | 16.5 | 32.20 | 32.20 |
| Initial burette reading | 0.0 | 16.0 | 16.0 |
| Titre (cm3) | 16.5 | 16.20 | 16.20 |

 ***(3 marks)***

 (i)  = 16.2 cm3 ***(1 mark)***

 (ii)

I  = 0.00162m ***(1 mark)***

 II Moles of HCI = Moles of NaOH ***(1 mark)***

 = 0.00162

 III 0.00162 × 10 = 0.0162m ***(1 mark)***

 IV  0.04 ***(1 mark)***

 V 0.04-0.00162 = 0.00238 ***(1 mark)***

 (c) 0.0238 moles = 504

1 mole = 

 = +21.176 kjmol-1 ***(2 marks)***

2.

| ***Observations*** | ***Inferences*** |
| --- | --- |
| (a)* Green solid turned black.
* Colourless liquid condenses on cool part water of crystallization.
* Blue litmus paper turned pink.
* Red litmus paper remains the same.
 | * Solid d is hydrated or contains water of crystallization.
* Acidic gas is produced

***(3 marks)*** |
| (b)* No effervescence.
* Black solid reacts to form a green solution.
 | * Black solid is basic.
* Coloured ion present i.e Fe2+orCu2+.

***(2 marks)*** |
| (c) (i)* Blue precipitate formed.
* Re-dissolves in excess to form a deep. blue/Royal blue solution.
 | * Cu2+ present.

***(2 marks)*** |
|  (ii)* Effervescence occurs.
* Brown solid deposited.
* Colourless formed.
* Green solution turns.
* Test-tube gets warm.
 | * E is a metal more reactive than copper or E displaces Copper or E reduces Cu2+ to Cu.

***(2 marks)*** |
| 3. (a) Yellow smoky flames/sooty flame. | F is along chain hydrocarbon or an unsaturated organic compound. ***(1 mark)***  |
|  (b) Dissolves to form a colourless. | It is probably a soluble salt or Polar organic compound. ***(2 marks)*** |
|  (c) (i)* Effervescence occurs.
* Colourless gas given out.
 | Compound is acidic – COOH or H+ or H3O+***(2 marks)*** |
|  (ii) Orange/Yellow colour persists. | Absence of Hydroxyl group. ***(2 marks)*** |
|  (iii) KMnO4(aq) is decoloursied. |   C= C or –C≡C- present.***(2 marks)*** |