

**TABLE A**

1. (a) Complete table – 1 mark  
 Decimal places – 1 mark (must be used consistently)  
 Accuracy – 1 mark  $\left( \begin{array}{l} \pm 0.1 \text{ of school value} - 1 \text{ mark} \\ \pm 0.2 \text{ of school value} - \frac{1}{2} \text{ mark} \end{array} \right)$   
 Principles of averaging – 1 mark  $\left( \begin{array}{l} \text{Volumes averaged should be within a range} \\ \text{of } 0.2 \text{ of each other} \end{array} \right)$   
 Final accuracy – 1 mark  $\left( \begin{array}{l} \text{Average value within } \pm 0.1 \text{ of S.V} - 1 \text{ mark} \\ \text{Average value within } \pm 0.2 \text{ of S.V} - \frac{1}{2} \text{ mark} \end{array} \right)$
- (b) (i) Moles of C used  

$$\frac{25 \times 0.1}{1000} \quad \checkmark \frac{1}{2} = 0.0025 \quad \checkmark \frac{1}{2}$$
- (ii) 
$$\frac{1 \times 0.0025}{5} \quad \checkmark \frac{1}{2} = 0.0005 \quad \checkmark \frac{1}{2}$$
- (iii) 
$$\frac{0.0005 \times 1000}{\text{Average volume of } B} \quad \checkmark \frac{1}{2} = \text{ans} \quad \checkmark \frac{1}{2}$$

**TABLE B**

Marking is as per table A above.

- (c) (ii) 
$$\frac{\text{Average volume} \times 0.02}{1000} \quad \checkmark \frac{1}{2} = \text{ans} \quad \checkmark \frac{1}{2} \text{ c(ii)}$$
- (iii) 
$$\frac{\text{Ans c(ii)} \times 5}{2} \quad \checkmark \frac{1}{2} = \text{ans} \text{ c(iii)}$$
- (iv) 
$$\frac{\text{Ans c(iii)} \times 1000}{25} \quad \checkmark \frac{1}{2} = \text{ans} \text{ c(iv)}$$
- (v) Same as ans c(iv)  $\checkmark^1$
- (vi) Mass of 5salt =  $1 \times 25 = 25\text{g}$   
 Mass of  $\text{Na}_2\text{C}_2\text{O}_4 = \text{Ans (v)} \times \text{RFM} = \text{Ans (A)} \quad \checkmark \frac{1}{2}$   
 Mass of water (solvent) =  $25\text{g} - \text{Ans (A)} = \text{Ans (B)} \quad \checkmark \frac{1}{2}$   

$$\text{Solubility} = \frac{\text{Ans (A)}}{\text{Ans (B)}} \times 100 \quad \checkmark \frac{1}{2}$$
  

$$= \text{Final Ans} \quad \checkmark \frac{1}{2}$$

| 2. | (a) | Observation  | Inference   |
|----|-----|--|---|
|    |     | - Colourless liquid formed on cooler parts $\checkmark \frac{1}{2}$<br>- White residue $\checkmark \frac{1}{2}$<br>Accept: Colourless vapour condense on cooler upper part of the test tube.<br>Reject: Liquid condensing. | - Hydrated solid $\checkmark \frac{1}{2}$<br>(tied to idea of condensation)<br>- $\text{OH}^-$ $\checkmark \frac{1}{2}$ |

|     |      |   |  |
|-----|------|---|--|
| (b) | (i)  | Observation   | Inference  |
|     |      | - Colourless filtrate ✓½<br>- White residue ✓½                            | - Sparingly soluble ✓¹   |
|     | (ii) | Observation   | Inference  |
|     |      | - Red litmus turns blue ✓½<br>- Colour of blue litmus remains/persists ✓½ | - $OH^-$ , $HCO_3^-$ , $CO_3^{2-}$<br><b>NB:</b> 3 ions ✓¹<br>2 ions ✓½<br>1 ion – 0mk |

|  |       |  |  |
|--|-------|--|--|
|  | (iii) | Observation                                | Inference                                    |
|  |       | - No effervescence ✓½<br>- No white ppt ✓½ | - $OH^-$ present ✓½<br>- $Pb^{2+}$ absent ✓½ |

|  |      |                |                             |
|--|------|----------------|-----------------------------|
|  | (iv) | Observation    | Inference                   |
|  |      | - White ppt ✓¹ | - $Ca^{2+}$ ✓½ $Ba^{2+}$ ✓½ |

|  |     |   |                |
|--|-----|---|----------------|
|  | (v) | Observation   | Inference      |
|  |     | - No white ppt ✓¹<br>Accept: - White ppt dissolves<br>Reject: White ppt insoluble | - $Ba^{2+}$ ✓¹ |

|    |     |   |   |
|----|-----|---|---|
| 3. | (a) | Observation                                   | Inference   |
|    |     | - Burns with a yellow sooty or smoky flame ✓¹ | <u>Present</u><br>Accept: Unsaturated organic cpd<br>- Long chain hydrocarbon |

|     |                             |                         |
|-----|-----------------------------|-------------------------|
| (b) | Observation                 | Inference               |
|     | Immiscible/form 2 layers ✓½ | - Non-polar compound ✓½ |

|     |     |   |                      |
|-----|-----|---|----------------------|
| (c) | (i) | Observation   | Inference            |
|     |     | - No effervescence/bubbling/fizzing ✓¹<br>- White residue ✓½<br>Rej: Fizzling/hissing | - H+/RCOOH absent ✓¹ |

|      |  |  |
|------|--|--|
| (ii) | Observation  | Inference  |
|      | Acidified $K_2Cr_2O_7$ remains orange ✓¹<br>Accept: Acidified dichromate (VI) did not change from orange to green.<br>Reject: Yellow colour for dichromate | - R – OH assent ✓¹<br><u>Ignore</u><br><br>Indicated as absent |

|       |   |           |
|-------|---|-----------|
| (iii) | Observation   | Inference |
|       | Bromine water remains orange/yellow//Bromine water not decolourised. ✓¹ | Absent    |

|  |  |                               |
|--|--|-------------------------------|
|  |  | Accept: — C — C — Present<br> |
|--|--|-------------------------------|