

### 4.6.3 Chemistry Practical Paper 3 (233/3)

#### 1. Table 1

	I	II	III
Final burette reading	41.20	19.20	38.00
Initial burette reading	22.00	0.10	19.00
Volume of solution K used (cm <sup>3</sup> )	19.20	19.10	19.00

(3 marks)

(i) Average  $\frac{19.2 + 19.1 + 19.0}{3} = 19.10 \text{ cm}^3$

(1 mark)

(ii) Moles of Sodium thiosulphate =  $\frac{19.1 \times 0.1}{1000}$  (1)

= 0.00191 (1)

$\therefore$  Moles of Copper ions in 25 cm<sup>3</sup> = 0.00191

Moles in 250 cm<sup>3</sup> = 0.00191  $\times$  10

= 0.0191 (1)

Concentration of Copper ions =  $\frac{0.0191 \times 1000}{25}$  (1)

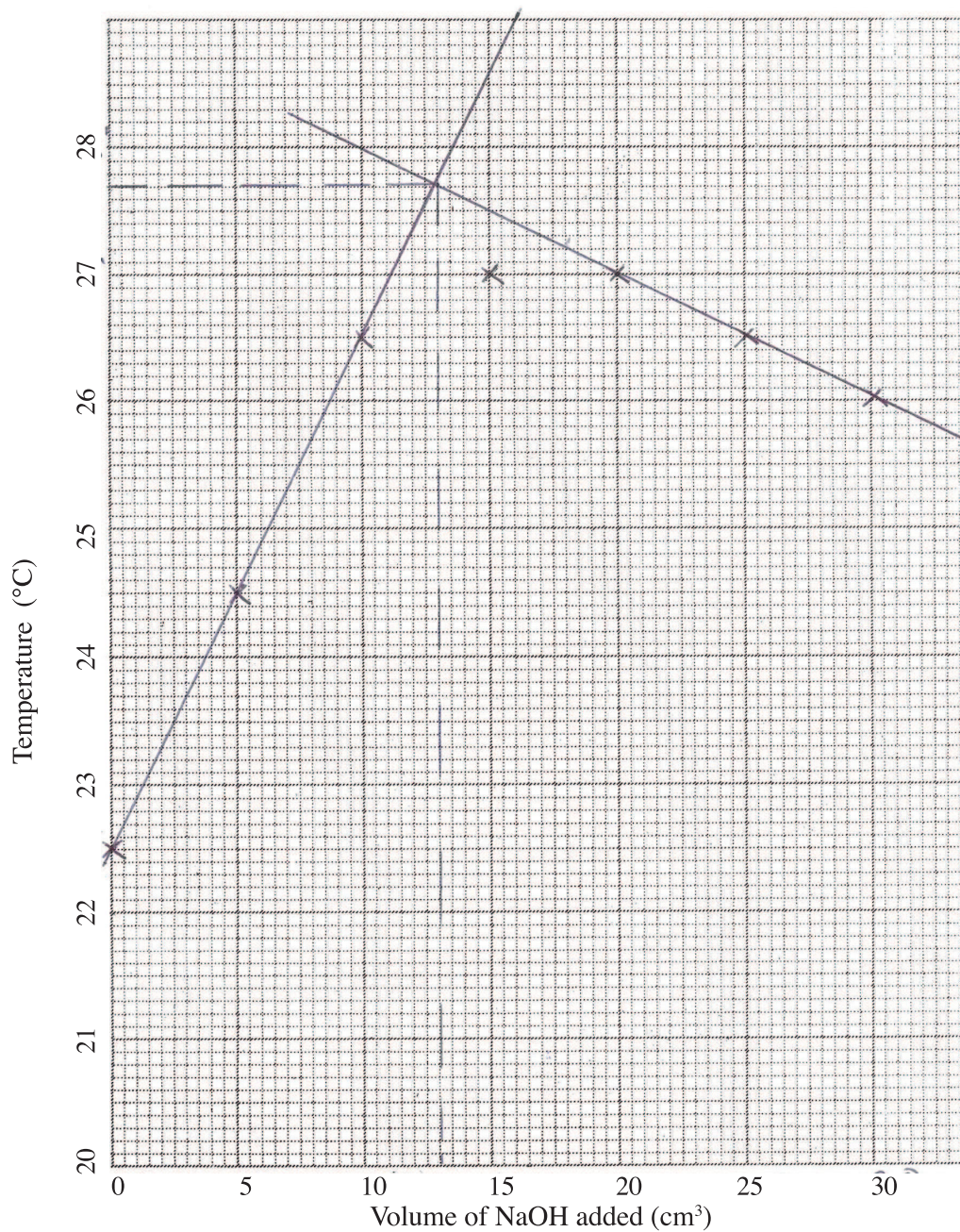
= 0.764 M ( $\frac{1}{2}$ )

#### 2. Table 2

Volume of NaOH added (cm <sup>3</sup> )	0	5	10	15	20	25	30
Maximum Temperature (°C)	22.5	24.5	26.5	27.0	27.0	26.5	26.0

(3½ marks)

(i) Graph



(3 marks)

(ii) I  $13.0 \pm 0.2$

1 mark for working

1 mark for value

II  $\Delta T = 5.2 \text{ }^\circ\text{C} \pm 0.1$

1 mark

(ii)  $\Delta H = 33 \times 5.2 \times 4.2$   
 $= 720.72 \text{ J} \quad (1)$

$$\begin{aligned} \text{Moles of Cu}^{2+} &= \frac{20 \times 0.764}{1000} \\ &= 0.01528 \quad \left(\frac{1}{2}\right) \end{aligned}$$

$$\begin{aligned} 1 \text{ mole} &= \frac{720.721}{0.01528} \quad (1) \\ &= -47.2 \text{ KJmol}^{-1} \quad \left(\frac{1}{2}\right) \end{aligned}$$

2. (a) White crystalline substance. (1 mark)

(b) **Observations**

Colourless liquid condenses on the cool parts of T-Tube leaving behind a white solid

(1 mark)

**Inferences**

Hydrated salt or salt contains water of crystallisation

(1 mark)

(c) Solid dissolves to form colourless solution.

(1 mark)

P is soluble in water  
No coloured ions

(1 mark)

(d) (i) White Ppt formed

(1 mark)

$\text{SO}_4^{2-}$ ,  $\text{SO}_3^{2-}$  or  $\text{CO}_3^{2-}$  present

(2 marks)

(ii) No effervescence or no bubbles

(1 mark)

$\text{SO}_4^{2-}$ , present or  $\text{SO}_3^{2-}$  or  $\text{CO}_3^{2-}$  absent

(1 mark)

(iii) White Ppt

(1 mark)

$\text{Mg}^{2+}$  present

(1 mark)

(e) Cation

$\text{Mg}^{2+}$  or Magnesium ions

$\left(\frac{1}{2}\right)$

anion

$\text{SO}_4^{2-}$  or Sulphate ions

$\left(\frac{1}{2}\right)$

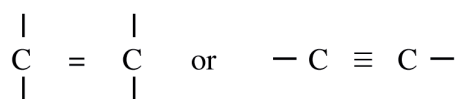
3. (a)

**Observations**

Burns with a yellow sooty flame or luminous flame.

(1 mark)

**Inferences**



Organic compound with high C:H ration  
aromatic compound, long chain organic compound.

(1 mark)

(b) (i) Effervescence observed

(1 mark)

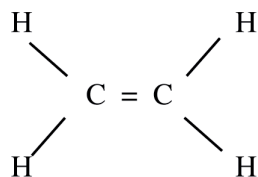
Has a - COOH group or carboxylic/alkanoic acid.

(1 mark)

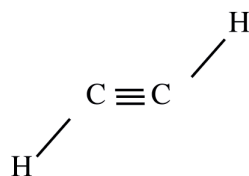
(ii) Decolourised

(1 mark)

Could be an alcohol or has



or



(1 mark)