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^3)	19.20	19.10	19.00

(3 marks)

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

(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^3 $= 0.00191$

Moles in 250 cm^3 $= 0.00191 \times 10$

$= 0.0191$ (1)

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

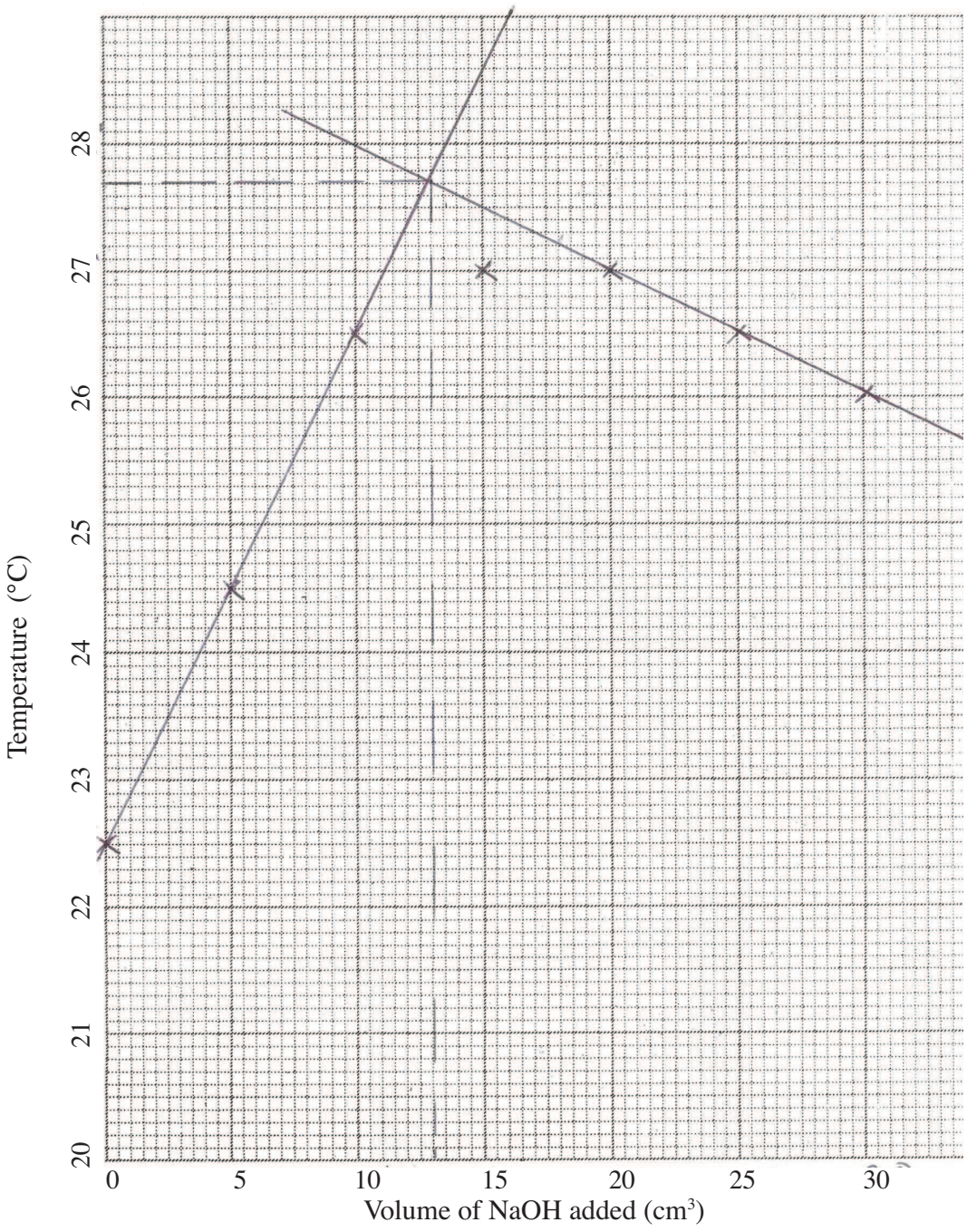
$= 0.764$ M ($\frac{1}{2}$)

2. **Table 2**

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

($3\frac{1}{2}$ marks)

(i) Graph



(3 marks)

(ii) I 13.0 ± 0.2 1 mark for working

1 mark for value

II $\triangle T = 5.2\,^{\circ}C \pm 0.1$ 1 mark

(ii) $\triangle H = 33 \times 5.2 \times 4.2$

$= 720.72\ J$ (1)

Moles of Cu^{2+} = $\frac{20 \times 0.764}{1000}$

= 0.01528 (½)

1 mole = $\frac{720.721}{0.01528}$ (1)

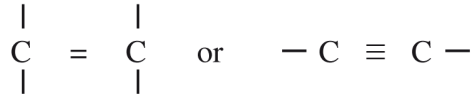
= -47.2 $KJMol^{-1}$ (½)

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

(b)	**Observations**	**Inferences**
	Colourless liquid condenses on the cool parts of T-Tube leaving behind a white solid	Hydrated salt or salt contains water of crystallisation
	(1 mark)	(1 mark)
(c)	Solid dissolves to form colourless solution.	P is soluble in water No coloured ions
	(1 mark)	(1 mark)
(d)	(i) White PPt formed	SO_4^{2-}, SO_3^{2-} or CO_3^{2-} present
	(1 mark)	(2 marks)
	(ii) No effervescence or no bubbles	SO_4^{2-}, present or SO_3^{2-} or CO_3^{2-} absent
	(1 mark)	(1 mark)
	(iii) White PPt	Mg^{2+} present
	(1 mark)	(1 mark)

(e)	Cation	Mg^{2+} or Magnesium ions	(½)
	anion	SO_4^{2-} or Sulphate ions	(½)

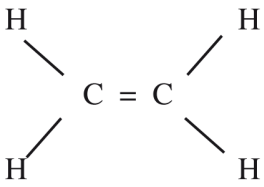
3. (a)

Observations	**Inferences**
Burns with a yellow sooty flame or luminous flame.	 Organic compound with high C:H ration aromatic compound, long chain organic compound.
(1 mark)	(1 mark)

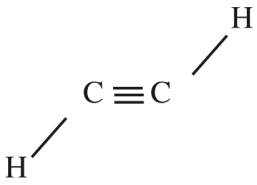
(b) (i) Efferescence observed — Has a - COOH group or carboxylic/alkanoic acid.

(1 mark) (1 mark)

(ii) Decolourised — Could be an alcohol or has



or



(1 mark) (1 mark)