

CHEMISTRYFORM 4MARKING SCHEME

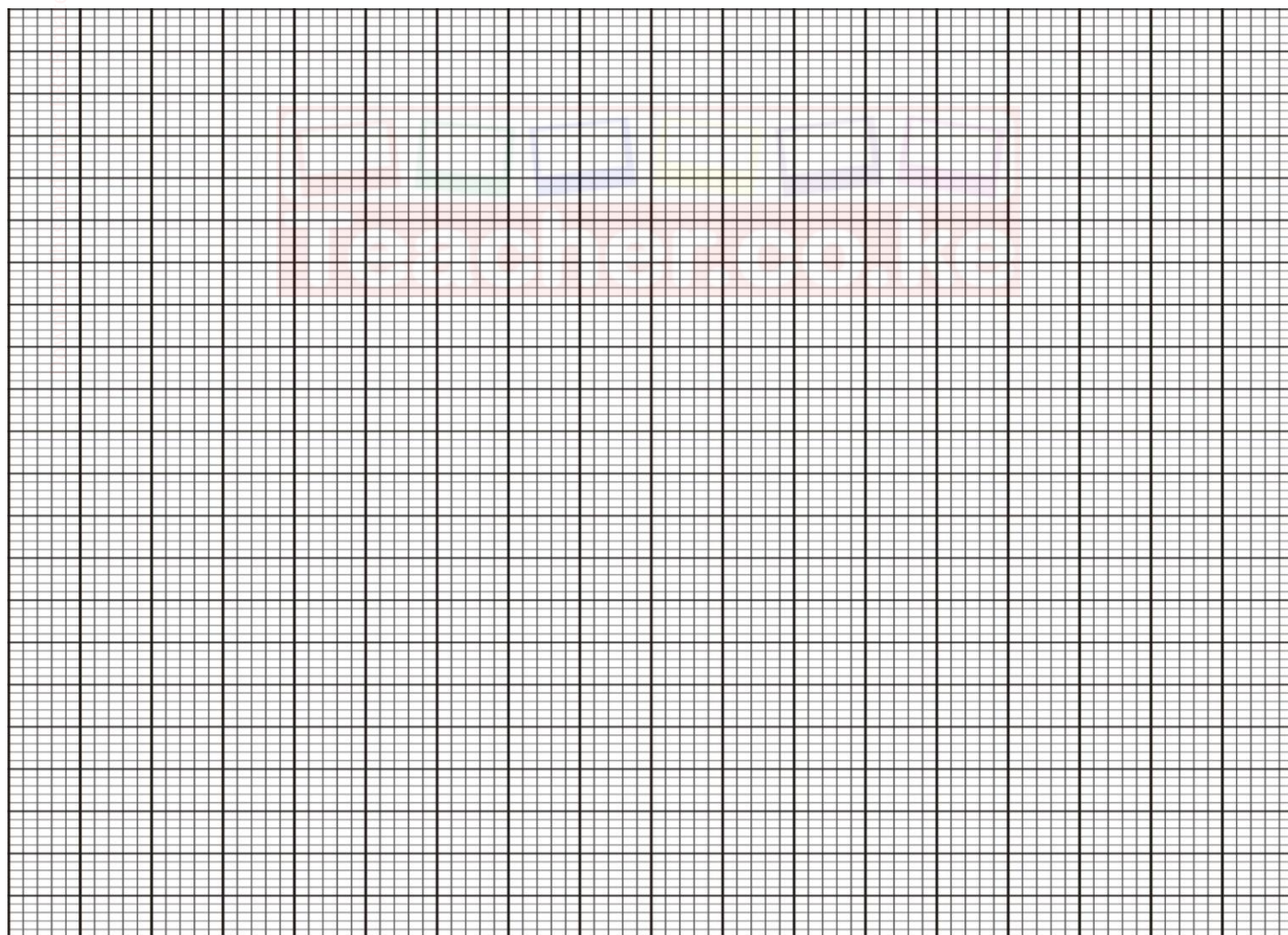
Procedure 1

TABLE 1 (4mks)

Time (min)	0	½	1	1 ½	2	2 ½	3	3 ½	4	4 ½	5
Temperature (c)	22	22	22	22	22		17	18	19	20	21

a)

(3mks)



Time (minutes)

b) $\Delta T = \text{correct reading}$
 $22.0 - 16.0 = 6^{\circ}\text{C}$

c) $\Delta H = mC\Delta T$
 $\Delta H = 20 \times 4.2 \times 6 = +504\text{J}$

Procedure 2

Table 2

	I	II	III
Final burette reading	15.0	15.0	15.0
Initial burette reading	0.0	0.0	0.0
Titre (cm^3)	15.0	15.0	15.0

d) $\frac{15.0+15.0+15.0}{3} = 15\text{cm}^3$

e) (i) Moles of NaOH = $\frac{15 \times 0.1}{1000} = 0.0015 \text{ moles}$

(ii) Mole ratio of NaOH:HCL = 1.1

Moles of HCL in 25cm^3 = answer in (i) = 0.0015 moles

(iii) $\frac{0.0015 \times 250}{25} = 0.015 \text{ moles}$

(iv) Moles of HCL in 20cm^3 of B = $\frac{2 \times 20}{1000} = 0.04 \text{ moles}$

(v) Moles of HCL reacted with A = answer in (iv) – answer in (iii) = $0.04 - 0.015 = 0.025 \text{ moles}$

(f) $\frac{\text{Answer in (c)}}{\text{Answer in (e)(iv)}} = \frac{504}{0.025} = +20160\text{Jmol}^{-1} \text{ OR } +20.16\text{kJmol}^{-1}$

2.

(a)

Observations	Inferences
Green solid changes black. Colourless liquid forms on the cooler parts of the test tube, blue litmus paper changes to red. Red litmus paper remains red.	Hydrated compound/contains water of crystallization. Acidic gas (tied to blue litmus paper changes red).

(b)

Observations	Inferences
Black solid reacts to form a green solution.	Black solid is basic, Fe^{2+} , Cu^{2+} present

(c) (i)

Observations	Inferences
Blue precipitate that dissolves to form a deep blue solution.	Cu^{2+} present

(ii)

Observations	Inferences
Effervescence occurred. Brown solid is deposited	E is a metal beyond copper in the reactivity series or E displaces copper or E reduces Cu^{2+} to Cu.

3. (a)

Observations	Inferences
F burns with a yellow sooty flame.	Presence of a long chain hydrocarbon/unsaturated hydrocarbon. $C = C$, $-C C$ present

(b)

Observations	Inferences
Dissolves to form a colourless solution.	Polar organic compound present.

(c)

(ii)

Observations	Inferences
Effervescence occurs.	Presence of $-COOH$, $H^+H_{30}^+$

(ii)

Observations	Inferences
Orange colour of acidified potassium dichromate(VI) persists or acidified potassium dichromate(VI) remains orange.	R – OH absent

(iii)

Observations	Inferences
Purple $KMnO_4$ is decolourised OR changes from purple to colourless.	$C = C$, $-C C$ present