

MARKING SCHEME
233/3
CHEMISTRY PRACTICAL
ARISE AND SHINE TRIAL ONE EXAM

March/April 2020

1. (a). Table 1

Complete table	1mk
Decimal	1mk
Accuracy	1mk
Principal of averaging	<u>1mk</u>
	<u>4mks</u>

(i). Determine the average volume of solution Z

$$\text{Exp 1} + \frac{\text{Exp 2} + \text{Exp 3}}{2} = \text{Final answer} \sqrt{1/2}$$

(ii). No of moles of sodium hydroxide (solution Z)

$$\text{Answer in (i)} \times \frac{0.5M}{1000\text{cm}^3} \sqrt{1/2}$$

$$= \text{Final answer} \sqrt{1/2}$$

(iii). Find the number of moles of hydrochloric acid in 25.0cm³ of solution F.

No of moles of sodium hydroxide $\sqrt{1}$ = No of moles of hydrochloric acid

Mole ratio = 1:1

Moles of HCl = moles in (ii) above $\sqrt{1}$

(iv). Determine the no of moles of HCl in 100cm³ of solution F 25cm³ = moles in (iii) above

$$\therefore 100\text{cm}^3 = ?$$

$$= \left(\frac{100\text{cm}^3 \times \text{moles in (iii) above} \sqrt{1}}{25\text{cm}^3} \right)$$

= Final answer $\sqrt{1}$

(v). Moles of HCl in original 60cm³ of solution

Concentration of HCl = 1M

$$1000\text{cm}^3 = 1M$$

Volume used = 60cm³

$$\frac{60\text{cm}^3 \times 1M}{1000\text{cm}^3} \sqrt{1/2}$$

$$= 0.06 \text{ moles} \sqrt{1/2}$$

(vi) Moles of HCl that reacted with carbonate

No of moles in original-No of $\sqrt{1/2}$ moles of Hcl in (iv) solution above
 =Final answer $\sqrt{1/2}$

(vii). Mass of carbonate that reacted with acid

Moles of $\text{Na}_2\text{CO}_3 = \frac{\text{moles of Hcl}}{2}$ in (vi) above

Mass of $\text{Na}_2\text{CO}_3 = 106 \times \text{moles of Na}_2\text{CO}_3$
 = final answer $\sqrt{1}$

2. Table 1 (4 marks)

Time (sec)	0	30	60	90	120	150	180	210	240
Temperature	18	20	21	33	37	37	37	42	48

Accuracy 1mk
 Decimal points 1mk
 Trend 1mk
 Complete table 1

i). On the grid provided, plot a graph of time (Horizontal axis) against temperature (3 marks)

Labeling $\frac{1}{2}$ mk
 Scale $\frac{1}{2}$ mk
 Plots 1mk
 Line 1mk

ii). From the graph, determine the melting point of solid M

Showing on the graph $\frac{1}{2}$ mk
 Correct reading $\frac{1}{2}$ mk

iii). Name the type of heat change at the melting point 1mk

Latent heat of fusion

3. (a) (i).

observations	inferences
Colourless liquid condenses on the cooler parts $\sqrt{1/2}$ -white solid $\sqrt{1/2}$ - Blue litmus paper turns red	Hydrated $\sqrt{1/2}$ salt Acidic gas $\sqrt{1/2}$ gas produced

(ii).

observations	inferences
White $\sqrt{1/2}$ precipitate soluble $\sqrt{1/2}$ in Excess	$\text{Al}^{3+}, \text{Pb}^{2+}, \text{Zn}^{2+}$ present

3 mention =1
 2 mention $\frac{1}{2}$
 1 mention 0

(iii).

observations	inferences
No white precipitate formed (1mk)	Al^{3+} and Zn^{2+} present

(iv).

observations	inferences
White precipitate formed ✓1	SO_4^{2-} , Cl^- present

3.(b)(i).

observations	inferences
Burns with a yellow Sooty flame	$C=C$, $C \equiv C$ present

(ii).

observations	inferences
Solid dissolves to form a colourless solution	Polar compound

(iii).

observations	inferences
Bromine water decolourised	$C=C$, $C \equiv C$ present

(iv).

observations	inferences
Blue litmus change to red Red litmus Remain red	H^+ / $-COOH$

(v)

observations	inferences
PH 4/5/6	Weakly acidic