

SERIES 21 EXAMS

233/3 CHEMISTRY MARKING SCHEME

QUESTION 1

PROCEDURE 1

TABLE 1

	i.	ii.	iii.
Final burette reading (cm ³)	20.0	20.0	20.0
Initial burette reading (cm ³)	0.0	0.0	0.0
Volume of solution c used (cm ³)	20.0	20.0	20.0

C.T-1
A.P-1
AC-1
AV-1
F.A-1
5

a)

i). Average volume = $\frac{20.0 + 20.0 + 20.0}{3} = 20.0 \text{ cm}^3$

ii). Moles of solution C = $\frac{0.125 \times \text{titre} \sqrt{1/2}}{1000} = \text{Ans} \sqrt{1/2}$

iii). Moles of solution D = $1 \times \text{ans a(ii)} = \text{Ans} \sqrt{1/2}$

iv). Molarity of solution D = $\frac{\text{Ans a(iii)} \times 1000 \sqrt{1/2}}{25} = \text{Ans} \sqrt{1/2}$

v). Molarity of solution B

$$M_{\text{conc.}} \times V_{\text{conc.}} = M_{\text{di}} \times M_{\text{di}} \sqrt{1/2}$$

$$\text{Molarity} = \frac{\text{Ans a(iv)} \times 150 \sqrt{1}}{50} = \text{Ans} \sqrt{1/2}$$

b) Table 2

	i.	ii.	iii.
Final burette reading (cm ³)	15.8	15.8	15.8
Initial burette reading (cm ³)	0.0	0.0	0.0
Volume of solution c used (cm ³)	15.8	15.8	15.8

C.T-1

D.P- 1

b)

AC-1

i). Average volume of sol A = $\frac{15.8 + 15.8 + 15.8}{3} = 15.8 \text{ (cm}^3\text{)}$

AV-1

ii). Moles of solution D used = $\frac{\text{Ans a(iv)} \times 25 \sqrt{1/2}}{1000} = \text{Ans (cm}^3\text{)} \sqrt{1/2}$

F.A-1

iii). Moles of sol A = $\frac{\text{Ans b(ii)} \sqrt{1/2}}{2} = \text{Ans} \sqrt{1/2}$

iv). Solubility of solid A

$$\text{Titre volume} = \text{Ans b (iii)}$$

$$100 \text{ cm}^3 = \frac{100 \times \text{Ans b (iii)}}{\text{Titre}} = \text{moles} \sqrt{1/2}$$

$$\text{Solubility} = \frac{100 \times \text{Ans b (iii)} \sqrt{1}}{\text{Titre}} \times 126$$

$$= \text{Ans} \sqrt{1/2}$$

2.

No.	Observation	Inference
a)	Colour less filtrate $\sqrt{1/2}$ white residue $\sqrt{1/2}$	$\text{Cu}^{2+}, \text{Fe}^{2+}, \text{Fe}^{3+}, \sqrt{1/2}$ absent in both filtrate and residue $\sqrt{1/2}$
I.	White ppt $\sqrt{1/2}$ soluble in excess $\sqrt{1/2}$	$\text{Zn}^{2+}, \text{Pb}^{2+}, \text{Al}^{3+}, \sqrt{1}$
II.	White ppt $\sqrt{1/2}$ soluble in excess $\sqrt{1/2}$	$\text{Zn}^{2+} \sqrt{1}$
III.	White ppt $\sqrt{1/2}$	$\text{SO}_3^{2-} \sqrt{1/2}, \text{CO}_3^{2-}, \text{Cl}^-$
	Effervescence / bubbles of colours less ordour less gas	$\text{CO}_3^{2-} \sqrt{1/2}$

	$\sqrt{1/2}$	
	White ppt $\sqrt{1/2}$ soluble in excess $\sqrt{1/2}$	$\text{Pb}^{2+}, \text{Zn}^{2+}, \text{Al}^{3+} \sqrt{1}$
	White ppt $\sqrt{1/2}$ insoluble in excess $\sqrt{1/2}$	$\text{Pb}^{2+}, \text{Al}^{3+} \sqrt{1}$
	White ppt formed	$\text{Pb}^{2+} \sqrt{1/2}$

3.

No.	Observation	Inference
a)	Solid melts and burns with yellow sooty flame $\sqrt{1}$	$\begin{array}{c} \diagdown \\ \text{C} = \text{C} \diagup \\ \diagup \end{array} \sqrt{1} \quad \text{C} = \text{C} -$
b)	Purple potassium manganate Solution turns colourless $\sqrt{1}$	$\begin{array}{c} \diagdown \\ \text{C} = \text{C} - \text{C} \equiv \text{C} - \text{C} \diagup \\ \diagup \end{array} \sqrt{1} \quad \text{R-OH}$
	Effervescence / bubble of colourless gas $\sqrt{1}$	$\begin{array}{c} \text{O} \\ \\ \text{H}^+ / -\text{C} - \text{OH} \sqrt{1} \end{array}$

