

SERIES 25 EXAMS

CHEMISTRY 233/3 MARKING SCHEME

1. Table 1

Complete table	-2mks	}	5mks
Decimal point	-1mk		
Accurate value	-1mk		
Principal of average	-1mk		
Final answer	-1mk		

(i) average = $\pm 0.1 \frac{(20+20.0+20.0)}{3} = 20.0\text{cm}^3$

(ii) Molarity of R = $\frac{40}{40\sqrt{1/2}} = 1.0 \sqrt{1/2}$ 1

$\frac{25 \times 1}{1000\sqrt{1/2}} = 0.025 \sqrt{1/2}$ 1

(iii) NaOH : HCl

1 : 1

0.025 = 0.025 (same moles) 1

(iv) $20.0\text{cm}^3 = 0.025$

$100\text{cm}^3 = \frac{0.025}{20} \times 100 \sqrt{1}$ 1

$= 0.125 \sqrt{1}$ 1

(v) $1000\text{cm}^3 = 2\text{moles}$

$100\text{cm}^3 = \frac{100 \times 2 \sqrt{1}}{1000}$ 1

$= 0.2\text{moles} \sqrt{1}$

(vi) $0.2 - 0.125 \sqrt{1} = 0.075 \sqrt{1}$ 2



Moles of $\text{MCO}_3 = \frac{0.075 \sqrt{1/2}}{2}$ 1

$= 0.0375\text{moles} \sqrt{1/2}$ 1

(viii) RFM of $\text{MCO}_3 = \frac{4.69 \sqrt{1/2}}{0.0375}$

$= 125$ 2

(ix) RAM of Q = $125 - 60 = 65 \sqrt{1/2}$ 1

20

2.(i) Blue litmus paper turns red $\sqrt{1/2}$ Red litmus remains red $\sqrt{1/2}$	Acidic compound/ H^+ $\sqrt{1}$ present	2
(ii) Effervescence occurs $\sqrt{1}$	H^+ present /solution acidic $\sqrt{1}$	2
(iii) Purple colour changes to colourless/ H^+ / KMnO_4 is decolourised	$\text{>C=C-C}\equiv\text{C-}$ $\sqrt{1}$	2
(iv) Fruity or sweet smell $\sqrt{1}$	$-\text{COOH}-$ confirmed $\sqrt{1}$	2=8

3. Solid N

(a) Dissolves to form a colourless solution $\sqrt{1}$	Fe^{2+} , Fe^{3+} or Cu^{2+} $\sqrt{1}$ absent	2
(b) White $\sqrt{1/2}$ precipitate soluble $\sqrt{1/2}$ in excess 1	Al^{3+} , Zn^{2+} or Pb^{2+} $\sqrt{1}$ 3 ions -1mk 2 ions - $1/2$ mk	2
(c) white $\sqrt{1/2}$ precipitate insoluble $\sqrt{1/2}$ in excess alkali 1	Al^{3+} , Pb^{2+} present $\sqrt{1}$	2
(d) No white precipitate is formed 1	Al^{3+} $\sqrt{1}$ confirmed	2
(e) white precipitate $\sqrt{1}$	Cl^- , SO_4^{2-} , SO_3^{2-} $\sqrt{1}$ IRj CO_3^{2-} Note aluminum carbonate does not exist	2
(f) white precipitate dissolves on warming $\sqrt{1}$	Cl^- ions $\sqrt{1}$ confirmed	2

