SERIES 27 EXAMS

233/3
CHEMISTRY PRACTICAL
MARKING SCHEME

Table I

Complete table …….. (1 ½ mks)
Accuracy …… (½ mk)
Decimal……(½mk)
Trend……(½mk)
(3mks)

(ii) Graph
Labeling the axes ……..(½mk)
Scale……...(½mk)
Plotting of points……(1mk)
Lines……...(1mk)
3mks

(iii) $\Delta T = T_{highest} - T_{(s)}$ min √ = final answer
Showing on the graph……..(1mk)
(2mks)

Table II

(b) (i) Complete table ……....(1mk)
Decimal……(1mk)
Accuracy……..(1mk)
Principal of averaging……(1mk)
Final answer……(1mk)

(ii) Average volume(on above table)
(iii) Moles of solution B. (NaOH) 0.1 x 21 √½mk = 0.0025 moles
(iv) $NaOH_{(aq)} + HCl_{(aq)}$ $NaCl_{(aq)} + H2)(l)$
Mole ratio 1:1
∴ Moles of solution A(HCl)
0.0025 moles

(c) (i) Moles of HCl in 250cm3 =
$= \frac{250 \times 0.0025}{\text{Titer volume}}$ = final answer.

(ii) Moles of HCl in 230cm3 of solution C
$= \frac{2 \times 30}{1000}$ √ 1mk
= 0.06 moles √ 1mk

(d) (i) Moles of HCl used in reaction with NaOH
= Moles in (c)(ii) – moles in (c)(i)
= 0.06 – Moles in c(i) √ 1mk
= final answer √ 1mk

(ii) Moles of Na2Co3 in solid H.
$Na_2CO_{3(s)} + 2HCl_{(aq)}$ $2NaCl_{(aq)} + H_2O_{(l)} + CO_{2(g)}$
∴ Mole ratio Na_2CO_3 = ½ x answer d(i) √ 1mk
= Final answer √ 1mk

(e) $\Delta H = \frac{50 \times 4.2 \times \Delta T}{1000}$ = answer
Moles of HCl = answer c(ii) 0.06 moles
$\frac{50 \times 4.2 \times \Delta T}{1} \times 1$ = Correct answer.

1000 0.06

	Observations	**Inferences**
(i)	Dissolves √½mk It forms a colourless √½ solution.	Absence of coloured ions 2mks Fe^{2+},√ Fe^{3+}, Cu^{2+} absent. 3 ions mentioned – 1mk 2 ions mentioned -1mk 1 ion mentioned 0mk
(ii)	White ppt √ ½ formed which dissolves √ ½ in excess	Al^{3+}, Pb^{2+}, Zn^{2+} Present. 2mks 3 ions mentioned – 1mk 2 ions mentioned -1mk 1 ion mentioned 0mk
(iii)	No yellow ppt. √1mk	Al^{3+} √½, Zn^{2+}, Present 2mks Or Pb^{2+} absent √1mk
(iv)	White ppt √ ½ insoluble√ ½ in excess NH_4OH	Al^{3+} √ 1mk present 2mks Or $Zc2^{+}$ √ 1mk absent
(v)	pH = 1 √ 1mk - award √ ½ for red colour	Strong √ 1mk acidic solution 2mks formed
(vi)	No white ppt	Absence of SO^{2-}_4, SO^{3-}_4, 2mks CO^{2-}_3, 3 ions mentioned – 1mk 2 ions mentioned -1mk 1 ion mentioned 0mk
(vii)	White ppt √ 1mk	Cl^- Present. 2mks

2.