Daily Tutorial Sheet-11	Numerical Value Type

126.(5) ml. eq. $K_2Cr_2O_7$ = ml. eq. of H_2O_2

$$80 \times \frac{1}{24} \times 6 = \frac{V}{5.6} \times 22.4 \quad \Rightarrow \quad V = 5$$

127.(6) $Fe_2(C_2O_4)_3 + KMnO_4 \longrightarrow CO_2 + Fe^{3+} + Mn^{2+}$

Moles of $MnO_4^- \times 5 =$ moles of $Fe_2(C_2O_4)_3 \times 6$

Moles $\times 5 = 5 \times 6$

Moles of $MnO_4^- = 6$

128.(6) $2NH_4^+ \longrightarrow N_2 + 6e^-$

$Cr_2O_7^{2-} + 6e^- \longrightarrow Cr_2O_3$

129.(0.56) $S_2O_3^{2-} + I_2 \longrightarrow S_4O_6^{2-} + 2I^-$

meq of I_2 = meq of $S_2O_3^{2-}$

$$1000 \times \frac{w}{254} \times 2 = 0.11 \times 40 \times 1 \quad \Rightarrow \quad w = 0.56\,g$$

130.(23.8) meq of $K_2Cr_2O_7$ = meq of H_2S

$$2 \times V = \frac{0.81}{34} \times 2 \times 1000$$

$V = 238\,mL$

131.(3.54) meq of Cl_2 = meq $KMnO_4$

$$\frac{w}{71} \times 2 \times 1000 = \frac{10}{158} \times 1000 \times 5$$

$w = 11.23\,g \qquad V_{Cl_2} = \frac{22.4 \times 11.23}{71} = 3.54\,l$

132.(5) meq of $KMnO_4$ = meq of salt

$x \times 4 = 4 \times 5 \quad \Rightarrow \quad x = 5$

133.(85%) meq of H_2O_2 = meq of $KMnO_4$

$$\frac{w}{34} \times 2 \times 1000 = 1 \times 10$$

$w = 0.17\,g$

$$\% \text{ purity } = \frac{0.17}{0.2} \times 100 = 85\%$$

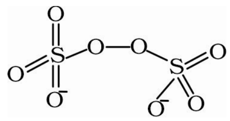
134.(3.55) meq of bleaching powder = meq of Cl_2 = meq of hypo

$$\frac{w}{35.5} \times 1000 = 50 \times \frac{1}{10}$$

$w_{Cl_2} = 0.1775\,g$

$$\% Cl_2 = \frac{0.1775}{5} \times 100 = 3.55\%$$

135.(3) Calculate ox. No. by taking NO^+ in NOCl

136.(3) 

137.(0.25) $S \xrightarrow{O_2} SO_2 \xrightarrow{Cl_2} SO_4^{2-} \xrightarrow{BaCl_2} BaSO_4$

1 mole of S will give 1 mole of $BaSO_4$

$\therefore \quad \frac{8}{32} = \frac{1}{4}$ mole of S will give $\frac{1}{4}$ mole of $BaSO_4$

138.(88.96%)

The redox changes are

$Fe^{2+} \longrightarrow Fe^{3+} + e$

$Mn^{7+} + 5e \longrightarrow Mn^{2+}$

$\because \quad$ meq of $FeSO_4 \cdot 7H_2O$ in 25 mL sample $=$ meq of $KMnO_4 = 20 \times \left(\frac{1}{10}\right)$

$\therefore \quad$ meq of $FeSO_4 \cdot 7H_2O$ in 1 litre sample $= \left(\frac{20}{10}\right) \times \left(\frac{1000}{25}\right) = 80$

$\left(\frac{w}{E}\right) \times 1000 = 80$

Or $\quad \left[\frac{w}{(278/1)}\right] \times 1000 - 80$ or $w = 22.24\,g$

$\because \quad$ Molar mass of $FeSO_4 \cdot 7H_2O = 278 \quad \therefore \quad E = \frac{278}{1}$

$\therefore \quad$ % purity of $FeSO_4 \cdot 7H_2O$ sample $= \frac{22.24 \times 100}{25} = 88.96\%$

139.(0.26) $(C^{3+})_2 \longrightarrow 2C^{4+} + 2e$

$2e + Mn^{4+} \longrightarrow Mn^{2+} \qquad \left[E_{MnO_4} = \frac{M}{2}\right]$

meq of $MnO_2 =$ meq of $H_2C_2O_4$

$\frac{w}{E_{MnO_2}} \times 1000 = 30 \times 0.1 \times 2 = 6$

$w_{MnO_2} = \frac{87 \times 6}{2 \times 1000} = 0.261g$

140.(2.5) $8e + S^{6+} \longrightarrow S^{2-}$

$2I^- \longrightarrow I_2 + 2e^- \times 4$

$8KI + H_2SO_4 \longrightarrow H_2S + 4I_2$

Balancing other atom

$8KI + 5H_2SO_4 \longrightarrow 4K_2SO_4 + 4I_2 + H_2S + 4H_2O$

5 mole of $H_2SO_4 = 8$ mole $KI = 8 \times 1$ eq. KI

1 mole of $H_2SO_4 = \frac{8}{5}$eq. of $KI = \frac{8}{5}$eq. of H_2SO_4

$\therefore$ valence factor for $H_2SO_4 = \frac{8}{5}$

meq. of H_2SO_4 = meq of H_2S

$0.2 \times \frac{8}{5} \times V = \frac{3.4}{34/8}$ (n factor for H_2S is 8)

$V = \frac{3.4 \times 8 \times 5}{34 \times 8 \times 0.2} = 2.5$ litre