Daily Tutorial Sheet-10	Level-2

116.(C) $H_2SO_4 + 8HI \longrightarrow 4I_2 + H_2S + 4H_2O$

117.(A) Due to the pressure of oxygen, Fe^{2+} readily gets oxidised to Fe^{3+}

118.(B) $C_2O_4^{2-} \longrightarrow 2CO_2 + 2e^-$

$\therefore \quad E_{Na_2C_2O_4} = \dfrac{134}{2} = 67\,g$

$$\text{Normality} = \frac{\frac{3.2}{67}}{500} \times 1000 = 0.096\,N$$

119.(B) meq of $K_2Cr_2O_7 = 1$ meq in 50 mL

$\therefore$ In 500 mL, meq of ferrous ammonium sulphate $= 10$ meq

$\Rightarrow \quad 10 = \dfrac{g}{392} \times 1000$ [As n-factor = 1]

$\Rightarrow \quad g = 3.92$ grams

120.(C) Amount of ferrous ammonium sulphate reacted with pyrolusite $(MnO_2) = 20 - 3.92 = 16.08\,g$

or, number of equivalent of $MnO_2 = \dfrac{16.08}{392} = 0.041$

$\therefore \quad 0.041 = \dfrac{x}{\frac{87}{2}}$ [n-factor for $MnO_2 = 2$]

$\Rightarrow \quad x = 1.781 \quad \therefore \quad \%\text{ purity} = \dfrac{1.781}{3} \times 100 = 59.4\%$

121.(B) $MnO_2 + 4HCl \longrightarrow MnCl_2 + 2H_2O + Cl_2$

$Cl_2 + 2KI \longrightarrow 2KCl + I_2$

Reaction involved

$I_2 + 2S_2O_3^{2-} \longrightarrow 2I^- + S_4O_6^{2-}$

$\therefore \quad$ Number of m moles of $I_2 = \dfrac{30 \times 0.1}{2} = 1.5\,m$ moles

So, m moles of $Cl_2 = 1.5\,m$ moles

m moles of $MnO_2 = 1.5\,m$ moles

$\Rightarrow \quad \dfrac{1.5}{1000} = \dfrac{g}{87} \quad \Rightarrow \quad$ Amount of $MnO_2 = 0.1305\,g$

$\%$ of $MnO_2 = \dfrac{0.1305}{0.5} \times 100 = 26.1\%$

122.(C) HCl can act as a reducing agent & thereby interfering with the titration.

Similarly, HNO_3 is a good oxidising agent.

123.(C) $\dfrac{1.34}{\frac{134}{2}} = V \times \dfrac{5}{10} \quad \Rightarrow \quad V = \dfrac{1}{25}L = 40\,mL$

124.(D) $100\,mL\,\dfrac{M}{10}NaOH \longrightarrow 10$ mmoles of NaOH

This can neutralise $\longrightarrow$ 5 mmoles of $H_2C_2O_4$ or 5 mmoles of H_2SO_4

125.(A) Number of equivalents of oxalate = Number of equivalents of $KMnO_4 = \frac{250}{1000} \times \frac{5}{10} = \frac{1}{8}$

$\Rightarrow \quad \frac{1}{8} = \frac{g}{\frac{88}{2}} \quad \Rightarrow \quad g = 5.5\,\text{gram} \quad \therefore \quad \%\ \text{purity} = \frac{5.5}{10} \times 100 = 55\%$