Aashvesh Sharma
R.no: 1
FE (Mech)

Q.1.

Cell representation :-

$$Ni/Ni^{2+} // Ag^{+}/Ag$$

$E^{\circ}Ni^{2} = -0.25$, $E^{\circ}Ag = 0.8$

Cell reactions

at anode: $Ni \longrightarrow Ni^{2+} + 2e^{-}$

at cathode: $2Ag^{+} + 2e^{-} \longrightarrow 2Ag$

$$Ni + 2Ag^{+} \longrightarrow Ni^{2+} + 2Ag$$

$E^{\circ}cell = E^{\circ}right - E^{\circ}left$

$= 0.8 - (-0.25)$

$= 0.8 + 0.25$

$= 1.05V.$

Q.2.

(i) Though aluminium is with lower electrode potential than iron it has higher corrosion resistance than Iron in oxidising environment. This is because Al in an oxidising environment gets coated with an oxide film which is impervous in nature. It acts as protective layer and prevents corrosion, therefore has higher corrosion resistance

(ii) Iron bolts in Cu vessels are undesirable because it undergoes galvanic corrosion. In galvanic corrosion two dissimilar metals are electrically connected is exposed to an environment the metal of lower reduction potential in electrochemical series undergoes corrosion.

(iii) Part of the nail inside the frame undergoes corrosion but the important part doesn't because it goes differential aeration corrosion.