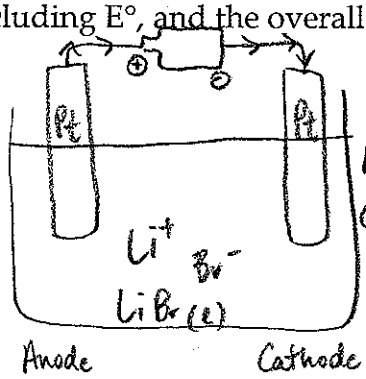
Name: KEY

Redox Quiz 5A /14

1. Draw and label all parts of an electrolytic cell used for the electrolysis of molten LiBr. Show the direction of electron flow, give the anode and cathode half reactions including E°, and the overall reaction including $E°_{cell}$. (4)



A: $2Br^- \longrightarrow Br_2 + 2e^-$ $-1.09\ V$

C: $Li^+ + e^- \longrightarrow Li$ $-3.04\ V$

$E°_{cell} = -4.13\ V$

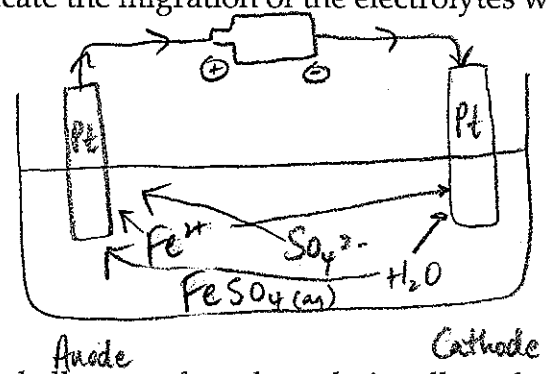
$2Br^- + 2Li^+ \longrightarrow Br_2 + 2Li$

2. Describe what is meant by the phrase 'cathodic protection using a sacrificial anode'. Use an example to help with your explanation. (2)

A metal that is a stronger Reducing Agent is preferentially oxidized before the original anode/cathode metal.

eg: Zn strips on Fe boat hull

3. Give the anode and cathode half reactions and the overall reaction including E° values for a 1M ~~FeSO4~~ electrolytic cell. Draw a picture of this cell and use arrows to indicate the migration of the electrolytes within the cell as it operates. (4)



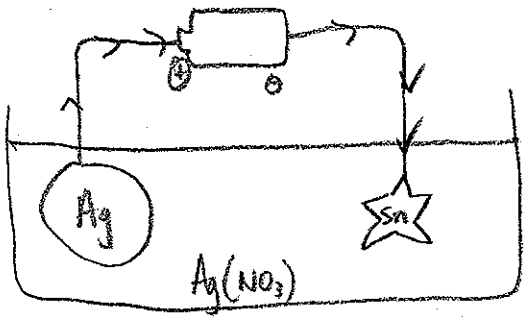
A: $Fe^{2+} \longrightarrow Fe^{3+} + e^-$ $E° = -0.77\ V$

C: $Fe^{2+} + 2e^- \longrightarrow Fe$ $-0.45\ V$

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

$E°_{cell} = -1.22\ V$

4. Draw and label all parts of an electrolytic cell used to plate a tin ornament with silver. Give anode and cathode half reactions as well as the voltage necessary to have the cell functioning. (4)



A: $Ag \longrightarrow Ag^+ + e^-$

C: $Ag^+ + e^- \longrightarrow Ag$

Voltage req'd: $> 0V$