E°_{cell} PRACTICE PROBLEMS

1. Determine the standard cell potential of the following cell comprising this net ionic rxn occurring in an acidic medium and state whether it is galvanic or electrolytic: $Fe^{2+}(aq) + MnO_2(s) \rightarrow\rightarrow Fe^{3+}(aq) + Mn^{2+}(aq)$

2. Determine the E°_{cell} of the following cell and state whether it is galvanic or electrolytic: $Cd(s)/Cd^{2+}(aq)//Cr^{3+}(aq)/Cr(s)$

3. Calculate the E°_{cell} of the complete rxn represented below and state whether it is galvanic or electrolytic. (**note: keep PbO_2 together but separate $PbSO_4$ and don't bring SO_4^{2-} down**) $Pb(s) + PbO_2(s) + H_2SO_4(aq) \rightarrow\rightarrow PbSO_4(s) + H_2O(l)$

ANSWERS

1. from hand-out: +0.453 V cell is galvanic

2. from hand-out: –0.341 V cell is electrolytic

3. from hand-out: +1.581 V cell is galvanic

NERNST PRACTICE PROBLEMS

4. Determine the cell potential of the following cell comprising this net ionic rxn and state whether it is galvanic or electrolytic: $Fe^{2+}(0.175M) + MnO_2(s) \rightarrow\rightarrow Fe^{3+}(0.120M) + Mn^{2+}(0.500M)$ The pH of the cell is 3.50.

5. Determine the E_{cell} of the following cell and state whether it is galvanic or electrolytic: $Cd(s)/Cd^{2+}(0.516M)//Cr^{3+}(0.825)/Cr(s)$

6. Calculate the E°_{cell} of the complete rxn represented below and state whether it is galvanic or electrolytic. (**note: keep PbO_2 together but separate $PbSO_4$ and don't bring SO_4^{2-} down**) $Pb(s) + PbO_2(s) + H_2SO_4(aq) \rightarrow\rightarrow PbSO_4(s) + H_2O(l)$ The pH of the cell is 2.70.

ANSWERS

4. from hand-out: +0.0572 V cell is galvanic

5. from hand-out: −0.334 V cell is electrolytic

6. from hand-out: +1.42 V cell is galvanic