Chemistry II   Electrochemistry   Name_____
                            Test

<u>**SHOW ALL WORK**</u>

1.   State how many minutes it would take to

     a.) deliver 84,200 Coulombs using a current of 6.30 A.

     b.) deliver 1.25 moles of electrons using a current of 8.40 A.

     c.) produce 0.500 moles of Al from molten Al_2O_3 (in cryolite)
          using a current of 18.3 A.

2.   What is the function of a salt bridge in a galvanic cell?

3.   What are the signs of the anode and cathode in galvanic and
     electrolytic cells?

4. Write a cell diagram that corresponds to the net cell reaction:

$$2Cr(s) + 3Sn^{2+}(1M) \longrightarrow 3Sn(s) + 2Cr^{3+}(1M)$$

5. Which is a better reducing agent?

a.) Ni or Fe

b.) SO_4^{2-} or F^-

6. Compute $E°$ and use its value to determine whether the following reaction will occur spontaneously.

$$2Cl^- + S_2O_8^{2-} \longrightarrow Cl_2 + 2SO_4^{2-}$$

7. Calculate the equilibrium constant for the following reaction:

$$Fe^{2+}_{(aq)} + Ag^+_{(aq)} \longrightarrow Ag_{(s)} + Fe^{3+}_{(aq)}$$

8. Calculate $\Delta G°_{298}$ in kilojoules for the reaction in problem 6.

9. Write the Nernst equation and calculate $E°$ $and\ E$ for the following reaction.

$$Sn^{2+}(0.5M) + Ni_{(s)} \longrightarrow Sn_{(s)} + Ni^{2+}(0.01M)$$