CH 223 Chapter Sixteen Study Guide

- Be able to define and use the terms battery, electrochemical cell, fuel cell, electrolysis, electrode, electrolyte, salt bridge, anode and cathode.

- **MEMORIZE** the value of the Faraday Constant, F = 96,485 C mol^{-1} electrons.

- Be able to balance oxidation-reduction reactions in acidic or basic solutions using the half-reaction approach.

- Realize the internal workings of an electrochemical cell.

- Be able to appreciate the meaning of standard electrode potential and its connection to the free energy change for a cell reaction. Know the meaning of the SHE in electrochemistry.

- Realize that product favored reactions have a positive E value while reactant favored reactions have a negative E value.

- Know that when a half-reaction or net electrochemical reaction is reversed, the sign of E is reversed but its value does not change.

- Know how to compare two chemical species for the relative strength of oxidizing agents.

- Recognize that electrochemical potentials depend on the nature of the reactants and products and their concentrations, not their quantities of material used.

- Be able to use the Nernst equation to calculate the cell potential under nonstandard conditions.

- Be able to calculate the equilibrium constant for a reaction from the value of E.

- Be able to describe the difference between electrolysis of an electrolyte and the operation of a galvanic or voltaic cell.

- Know how to use the relationship between current, electric charge, and time and occasionally the Faraday constant.

- Be able to solve and understand the assigned problems in problem set #5.