CH 222 Chapter Seventeen Study Guide

- Be able to explain the concept of reaction rate.
- Be able to derive the average and instantaneous rate from experimental information.
- Know the possible conditions that might affect reaction rate (such as reactant concentrations, temperature, presence of a catalyst, etc.)
- Know how to use a rate equation, and know how to find the rate constant and order of reaction from such an equation. Be able to derive a rate equation from experimental data.
- **MEMORIZE** the relationships between reactant concentration and time for zero order, first order and second order reactions. Know the integrated rate laws for these relationships.
- Know how to apply graphical techniques for determining the rate or reaction, reaction order and the rate constant.
- Be able to use the idea of half-life in kinetic equations.
- Know the principles behind the collision theory of reaction rates.
- Memorize the Arrhenius equation; be able to calculate the activation energy from experimental data.
- Be able to comprehend the concept of the reaction mechanism. Know how the mechanism relates to the overall stoichiometric equation for a reaction.
- Be able to describe the elementary steps of a mechanism and give their molecularity.
- Know how to find the rate-determining step in a mechanism and describe any reaction intermediates.
- Describe the role of the catalyst in reactions; know how it affects the activation energy and mechanism of a reaction. Understand the difference between a homogeneous and heterogeneous catalyst.
- Be able to solve and understand the assigned problems in problem set #6.