Outline for Exam 1

Kinetic Molecular Theory

Understand the Postulates of the Kinetic Molecular Theory

Be Able to Outline the Derivation of the Maxwell-Boltzmann Distribution

Understand the Consequences of the Maxwell-Boltzmann Distribution

Be Able to Calculate Basic Parameters of the Maxwell-Boltzmann Distribution

Be Able to Perform Calculations of Basic Parameters of the Maxwell-Boltzmann Distribution

Understand the Experimental Evidence that Supports the Maxwell-Boltzmann Distribution

Be Able to Calculate $\lambda$, $Z_1$ and $Z_{11}$

Classical Kinetics

Understand the Definition of the Reaction Rate

Be Able to Relate the Reaction Rate to an Observable Quantity

Understand the Rate Law

Be Able to Determine the Rate Law from Data

Be Able to Integrate Basic Rate Laws to Determine Concentrations versus Time

Be Able to Calculate Arrhenius Law Parameters from Data

Understand Basic Kinetic Mechanisms

Understand Sequential, Reversible and Parallel Reactions

Understand the Lindemann Mechanism

Be Able to Apply the Equilibrium and Steady State Approximations
Understand 4th Order Runge-Kutta and Euler Methods

Be Able to Calculate a Step in the Euler Method

Understand the Issues Involving Reactions in Condensed Solutions

Understand the Cage Effect

Be Able to Calculate a k for a Diffusion Controlled Reaction

Be Able to Calculate k for an Aqueous Ionic Reaction

Understand the Basics of Catalysis