

Chapter 22- Rates of Reaction

22.1 Chemical Kinetics

What is chemical kinetics?

Define reaction rate.

How are rates of reactions determined?

Write the equation for the **average rate of reaction**.

What is a reaction mechanism?

What is an elementary step in a reaction mechanism?

What is an intermediate in a reaction mechanism?

What is the importance of the rate-determining step in a reaction mechanism?

** Do Practice Problems 1 and 2 on page 726.*

What is a rate law and how is it determined?

Write the rate equation.

Why is the rate law not necessarily related to the balanced equation for a particular reaction?

** Do Practice Problems 3 and 4 on page 731.*

22.2 The Reaction Process

How does the collision theory help us to better understand the dynamics of a chemical reaction?

How does the collision theory vindicate the presence of reaction mechanisms in many reactions?

Differentiate an effective and ineffective collision.

What are the two general factors which determine the effectiveness of a collision?

What does activation energy refer to?

What is an activated complex?

Draw an energy diagram for an exothermic reaction and label the following parts: energy of reactants and products, reaction pathway, x and y-axis, activation energy (E_a), activated complex, and energy released (ΔH)

How are reaction rates and activation energies related?

22.3 Factors Affecting Reaction Rates

Describe how the following factors affect the rate of a reaction:

Nature of Reactants in terms of
Complexity-

Heterogeneous/Homogeneous reactions-

Temperature in terms of the collision theory-

Concentration in terms of the collision theory-

Surface area in terms of the collision theory-

Catalysts-

What is a catalyst?

Draw a catalyzed Energy Diagram

What is an inhibitor?