Unit 4 Study Guide

Lesson 14

- Define the following terms: temperature, energy, heat, internal energy, enthalpy, endothermic reaction, & exothermic reaction
- Understand and explain the different types of systems.
- Be able to understand and explain the first Law of Thermodynamics.
- Be able to read an energy graph as shown in 14.2 to determine if the reaction is endothermic or exothermic.

Lesson 15

- Define the following terms: calorimetry, enthalpy of formation, stability, enthalpy of combustion, Hess's Law, spontaneity, entropy, & free energy
- Understand and explain both enthalpy of formation and combustion.
- Be able to use Hess's Law to calculate enthalpy.
- Be able to explain entropy and the second law of thermodynamics.
- Be able to explain what spontaneity means for a chemical reaction.
- Be able to use the table in 15.3 on the values of $\Delta G°$, $\Delta H°$, & $\Delta S°$ to see if a reaction is spontaneous or not.

Lesson 16

- Define the following terms: effective collision, activation energy, collision theory, activation complex, reaction rate, collision theory, & effective collisions
- Be able to explain and answer questions on Collision theory.
- Be able to look at energy graphs and interpret data for them as in 16.1.
- Be able to use collision theory to explain rate reaction.
- Explain how temperature, concentration, surface area, pressure, and catalysts affect rate reaction.
- Explain what catalysts do to the activation energy of a reaction.

Lesson 17

- Define the following terms: rate law, order of reactant, order of reaction, specific rate constant, reaction mechanism, rate-determining step,
- Understand and explain the differences between order of reactant and order of reaction.
- Be able to determine the specific rate constant.
- Be able to calculate the order rate when given multiple reactions.