Exam #6 Objectives

CHEM 1100 General Chemistry II

Text Reading

Chapter 18: sections 1-6

Homework Assignment

McGraw-Hill LearnSmart and Connect online assignments.

Concepts

1. Discuss the four laws of thermodynamics (three laws and the "zeroth" law) and their scientific significance.
2. Recognize the difference between the standard state and other states both conceptually and in calculations.
3. Using standard enthalpy of formation table values, calculate the standard enthalpy of reaction for a given chemical equation.
4. Using standard molar entropy table values, calculate the standard entropy of reaction.
5. Using the mathematical definition of free energy, calculate the free energy of reaction.
6. Using standard free energy of formation table values, calculate the standard free energy of reaction.
7. Using the signs for entropy and enthalpy change, determine whether the reaction is spontaneous.
8. Demonstrate the ability to relate equilibrium and thermodynamics and calculate equilibrium constants from thermodynamic data.
9. Demonstrate a working vocabulary of the following terms:

$\Delta G°$	entropy	standard entropy of reaction
$\Delta G°_f$	exothermic	standard free energy of formation
$\Delta H°$	free energy	standard free energy of reaction
$\Delta H°_f$	spontaneous	standard state
$\Delta S°$	standard enthalpy of formation	surroundings
endothermic	standard enthalpy of reaction	system
enthalpy	standard entropy of reaction	

10. Memorize and demonstrate the ability to use the following equation(s):

$$\Delta G = \Delta H - T\Delta S \qquad \Delta G° = \Delta H° - T\Delta S°$$

$$\Delta G = \Delta G° + RT\ln(Q) \qquad \Delta G° = -RT\ln(K)$$