

## Chapter 16 – Thermodynamics:

- Know 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> Law of Thermodynamics
- Calculate  $\Delta H_{\text{rxn}}^{\circ}$  given  $\Delta H_f^{\circ}$  of the reactants and products (equation NOT on sheet)
  - Remember enthalpy of formation of an element is zero
  - Remember what Standard State is
- Entropy (S)
  - Measure of disorder
  - Be able to predict if entropy will increase or decrease or which has more entropy
  - Entropy and Temperature
  - Be able to calculate given S of reactants and products (equation NOT on sheet)
    - o Products – reactants
  - Be able to calculate  $\Delta S_{\text{surr}}$  (equation on sheet) and  $\Delta S_{\text{tot}}$  (equation on sheet)
- Gibbs Free Energy ( $\Delta G$ )
  - Definition
  - Be able to calculate (equation on sheet)
  - Predict Spontaneity (-, +, or 0)
  - $\Delta G_f^{\circ}$  - what is it, and be able to identify reaction equation
  - $\Delta G$  vs  $\Delta G^{\circ}$  - what's the difference?
    - o Be able to calculate  $\Delta G$  (equation on sheet)
  - $\Delta G^{\circ}$  and Equilibrium – how is it related?
    - o Calculate K (equation on sheet)