

CHM 1046 Final Exam Review Sheet

- Determine the amount of ice that can be frozen with a refrigerant. (Example 11.01)
- Determine and convert between the following concentrations: Molarity, molality, and mole fractions (Example 12.04)
- Raoult's Law (Example 12.09)
- Boiling Point Elevation: $\Delta T_b = k_b C_m$ (Example 12.10)
- Freezing Point Depression: $\Delta T_f = k_f C_m$ (Example 12.10)
- Rate Laws and Rate Constants (Examples 13.03 and 13.04)
- Concentration-Time Equations and Graphs (Pages 3-4 in chapter 13 notes. Examples [12.6](#), [12.8](#), [12.11](#), and [12.12](#))
- Reaction Mechanisms ([Example 12.14](#))
- Determine K_c and K_p using concentrations, Δn , and $(RT)^{\Delta n}$. (Example 14.04)
- Set up and solving an equilibrium table for a reaction equation. (Examples 14.01, 14.03, and 14.07)
- Use K_c to find concentrations, and vice-versa.
- Interpret the reaction quotient, Q_c (Example 14.05)
- Determine pH, pOH, $[H_3O^+]$, and $[OH^-]$. (Find pH, pOH, $[H_3O^+]$, and $[OH^-]$ in Examples 15.04, 15.05, and 15.06)
- Set up and solve equilibrium tables for acid-base reactions, ionic solubility reactions, and complex ion reactions.
- Set up expressions for acid/base ionization constants (K_A and K_B), solubility products (K_{SP}), and complex ion formation/dissociation constants (K_F and K_D).
- Find K_A from pH (Example 16.01)
- Use K_{SP} and common ion concentrations to determine molar solubility. (Example 17.02, 17.03, and 17.05)
- Determine K_D using K_F , and solve for concentrations of ions involved in the expressions. (Example 17.09)

- Determine if a reaction is spontaneous from Gibbs' free energy.
- Determine ΔU and ΔH from q , w , P , and ΔV .
- Determine ΔG° from ΔS° and ΔH° .
(Example 18.10)
- Determine ΔG° from equilibrium constant (and vice-versa).
(find **K** and spontaneous **T** in Example 18.10)
- Determine ΔG° for reaction from ΔG_f° 's of reactants and products.
- Balance half-cells and overall redox reactions.
- Convert cell notation into balanced half-cells and overall redox reactions.
(Example 19.04)
- Determine overall cell potentials using standard reduction potentials.
- Determine K and ΔG° from E° .