Chem 101B Exam 3 Concepts

Chapter 14 – Acids and Bases

- ✓ Identify whether an aqueous solution of a salt will be acidic, basic or neutral.
- ✓ Calculate pH, pOH for a salt (Use $K_a K_b = K_w$ to calculate the conjugate ionization constant)
- ✓ Identify Lewis acid or Lewis base.
- ✓ Metallic oxides = basic, nonmetallic oxides = acidic

Chapter 15 – Acid-Base Equilibria

- ✓ Calculate $[H^+]$, $[OH^-]$, pH, pOH, %diss of a weak acid + conjugate base (buffer).
- ✓ Calculate ΔpH when either strong acid or strong base is added to buffer
  - ⇨ either by adding moles H^+ or OH^- directly, or
  - ⇨ adding a solution containing H^+ or OH^-
- ✓ Know how a buffer works in that (HA or A^-) reacts directly with (OH^- or H^+) respectively
- ✓ Buffer Capacity
  - ⇨ $[HA]/[A^-] \sim 1$
  - ⇨ $[HA]$ & $[A^-]$ large
- ✓ pH Titrations (SA/SB, WA/SB, or SA/WB)
  - ⇨ General shape of the curve pH vs volume titrant
  - ⇨ Estimate pH at equivalence point
  - ⇨ Calculations:
    - ⇨ pH before titrant added
    - ⇨ pH before equivalence point
    - ⇨ pH at equivalence point
    - ⇨ pH after equivalence point
- ✓ Acid-Base Indicators – choosing indicator to detect equivalence point

Chapter 16 – Solubility Equilibria

- ✓ Calculate K_{sp} given solubility
- ✓ Compare solubility of salts given K_{sp}
- ✓ Calculate solubility (mol/L or g/L) given K_{sp}
- ✓ Calculate solubility with common ion given K_{sp}
- ✓ Identify pH-dependent solubility salts
- ✓ Calculate solubility of pH-dependent salt at a given pH