

General Chemistry II Chapter-by-Chapter detailed learning objectives

Aqueous Equilibria

1. Review buffer definition, its preparation and reactions with strong acids and bases.
2. Perform stoichiometric and equilibrium calculations and differentiate between the two types of calculations.
3. Apply the Henderson Hasselbalch equation to solve buffer/equilibrium problems.
4. Review buffer capacity and buffer range definitions.
5. Relate titration problems to their pH curve and calculate different points (pH determination) along the titration curve.
6. Identify important features of strong acid/strong base, weak acid/strong base and weak base/strong acid pH titration curves.
7. Review polyprotic acid titration principles and important features of their titration curve.
8. Review indicator (weak acid) chemistry and the reaction principles describing the color change of an indicator.
9. Apply the solubility equilibria to solve for equilibrium ion concentration, salt solubility or K_{sp} determination.
10. Quantitatively and qualitatively account for the presence of a common ion and its impact on equilibrium.
11. Review selective precipitation concepts and calculate order of precipitation, % removal and % remaining of ions.
12. Review complex ion equilibria. Write the complex ion formation (and dissociation) reactions based on the correct complex ion formulas as shown in the appendix.
13. Perform calculations involving simultaneous complex ion and solubility equilibria.