CHAPTER 16 LEARNING OBJECTIVES

Learning Objectives (sections 16.1-16.10)

You should be able to:

1. List the general properties that characterize acidic and basic solutions and identify the ions responsible for these properties.

2. Define the terms Bronsted-Lowry acid and base, and conjugate acid and base.

3. Identify the conjugate base associated with a given Bronsted-Lowry acid and the conjugate acid associated with a given Bronsted-Lowry base.

4. Explain what is meant by the autoionization of water and write the ion-product constant expression for the process.

5. Define pH; calculate pH from knowledge of $[H^+]$ or $[OH^-]$, and perform the reverse operation.

6. Identify the common strong acids and bases and calculate pHs of their aqueous solutions given their concentrations.

7. Calculate the pH for a weak acid solution in water, given the acid concentration and K_a; calculate K_a given the acid concentration and pH.

8. Write stepwise ionization equations and the corresponding equilibrium-constant expressions for polyprotic acids.

9. Calculate the pH for a weak base solution in water, given the base concentration and K_b; calculate K_b given the base concentration and pH.

10. Calculate the percent ionization for an acid or base, knowing its concentration in solution and the value of K_a or K_b.

11. Determine the relationship between the strength of an acid and that of its conjugate base; calculate K_b using a given K_a, and vice-versa.

12. Predict whether a particular salt solution will be acidic, basic, or neutral.

13. Explain how acid strength relates to the polarity and strength of the H—X bond.

14. Predict the relative acid strengths of oxyacids.

15. Understand and explain the boldface terms in the Summary and Key Terms section of Chapter 16 (pages 652-653).