

Chapter 16 – Acid-Base Equilibria (Syllabus)

Chemistry: The Central Science

1. This chapter (pgs. 664-715) will continue our discussion of equilibrium and will extend into Chapter 17. Read through all of the sample and practice exercises before trying the problems.
2. 16.1 & 16.2 (The Basics of Acid-Base Equilibrium): Basic terminology and concept setup
 - Arrhenius
 - Brønsted-Lowry
 - Conjugate acid-base pairs
 - Relative strengths
3. 16.3 & 16.4 (Autoionization of Water & The pH Scale):
 - Autoionization
 - K_w
 - pH & pOH
 - A new rule for sig. figs. with logs (See pg. 674 & Sample Exercise 16.6. on pg. 675)
 - How pH can be measured
4. 16.5 (Strong Acids and Bases):
 - You already memorized these!! (See Ch. 4)
 - Calculations of pH & pOH with these
5. 16.6 - 16.8 (Weak Acids & Bases & Relationship Between K_a and K_b):
 - ✓ This is where things start to get “challenging”!
 - ✓ K_a , K_b , pK_a , pK_b , and pK_w
 - ✓ Polyprotic acids
 - ✓ This will take a lot of practice with the problems!! [*Hint: Some math can be simplified by making some valid assumptions (see pgs. 682-685 & Sample Exercises 16.10 & 16.12 on pgs. 682 & 685)*]
6. 16.9 (Acid-Base Properties of Salt Solutions):
 - ✓ Hydrolysis
 - ✓ Many ions can affect pH (see pg. 697-698)
7. 16.10 (Acid-Base Behavior and Chemical Structure): Many factors can affect acid-base strength
8. 16.11 (Lewis Acids and Bases): Offers more general definitions of acids and bases
9. Lab: Experiment 20-Titration of Acids and Bases
10. Chapter 16 Exercises:
 - Visualizing Concepts & Exercises: #'s 2, 15, 17, 21, 23, 25, 29, 35, 39, 43, 45, 5, 51, 53, 57, 61, 63, 71, 79, 83, 87, 89, 95, & 97
 - Additional Exercises: #'s 100, 103, & 109
 - Integrative Exercises: #'s 118, 121, & 125
11. Ch. 16-17 Test: The test cover Ch. 16 and Ch. 17 through 17.3. It will in about 2 weeks and will be about a 100 pt. test & may contain at least 1 AP Exam question. There will also be a separate quiz covering the rest of Ch. 17 (17.4-17.7) and will be shortly after.