Date: _____ AP Chemistry

Chapter 17 – Additional Aspects of Aqueous Equilibria

Chemistry: The Central Science

1. This chapter (pgs. 718-765) will conclude our discussion of equilibrium. Read through all of the sample and practice exercises before trying the problems paying close attention to the figures and tables.

2. 17.1 (The Common-Ion Effect): A Basic concept that we can apply to a variety of situations

3. 17.2 (Buffers):
   - Terms: Buffers and buffer capacity
   - Henderson-Hasselbalch equation: When is it appropriate to use this equation in equilibrium problems?
   - See Figure 17.3 for help in solving for the pH of a buffer
   - Take note of some simplifications that can be made to make the math easier.

4. 17.3 (Acid-Base Titrations):
   - Recall Experiments 20 & 25 for some review of terms and concepts.
   - Terms: pH titration curve, titrant, equivalence point, and end point
   - Describe the 4 regions in titration curves (strong acid-strong base, weak acid-strong base, and weak base-strong acid)
     - *Hint 1: Pay close attn. to the reactants and products of the reactions occurring at that moment in the titration.*
     - *Hint 2: Then look at what's left-over after the reaction occurs that can affect the pH. If an acid and its conjugate base are present (or base and its conjugate acid), then the Henderson-Hasselbalch equation can be used.*
   - In a titration, how do you know what indicator to use?
   - In what 3 ways do weak acid-strong base titrations differ from those for strong acid-strong base titrations?
   - Titrations of polyprotic acids: Describe them; What determines the number of equivalence points?

5. 17.4 (Solubility Equilibria):
   - ✓ Terms: saturated solution, solubility product constant (K_{sp}), solubility, molar solubility
   - ✓ This is a popular concept on the AP Exam!

6. 17.5 (Factors That Affect Solubility): How it is affected (& why) by the following:
   - A common ion present in the soln. (common-ion effect)
   - A change in pH
   - Formation of complex ions w/ certain metals (recall from your first equilibrium labs)
   - Substances that are amphoteric (recall class demos)

7. 17.6 (Precipitation and Separation of Ions):
   - ✓ This section ties many of the equilibrium concepts together.
   - ✓ Solving for Q
   - ✓ How is this related to the other equilibrium probs. that we've had in Ch. 15-17?
   - ✓ What is "selective precipitation"? What are some applications of this concept in "real-life"?

8. 17.7 (Qualitative Analysis for Metallic Elements): We'll briefly discuss. We'll see this later in the "Giga-Lab" (Exp. 31).

9. Labs:
   - ❖ LabQuest 19: Buffers
   - ❖ Experiment 25: Determination of the Dissociation Constant of a Weak Acid
   - ❖ LabQuest 23: Determining the K_{sp} of Calcium Hydroxide

10. Chapter 17 Exercises: **YOU SHOULD DO AS MANY AS HUMANLY POSSIBLE!!**
    - o Visualizing Concepts & Exercises: #'s 2, 4, 15, 17, 21-27(odds), 5, 33, 35, 39, 41, 43, 44, 8, 49-63(odds), & 67
    - o Additional Exercises: #'s 77, 80-82, 91 & 99
    - o Integrative Exercises: #'s 102, 104, 105

11. Ch. 16-17 Test: The test cover Ch. 16 and Ch. 17 through 17.3. It 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 (17.4-17.6) and will be shortly after.