CHAPTER OUTLINES/WORKSHEETS

CHAPTER 2

BONDING AND MOLECULAR PROPERTIES

I. CHEMICAL STRUCTURE DEPICTIONS
   1. Be able to understand and use both condensed and skeletal structures.

II. PROPERTIES OF BONDS
   1. Formal charge determination and assignment
   2. Polar Covalent Bonds
      a. Electronegativity difference (electron movement and arrows)
      b. Inductive effects
      c. Dipole Moment (exact formula is unimportant; know trends and generalizations)
   3. Resonance and resonance hybrids

III. PROPERTIES OF ACIDS AND BASES
   1. Brønsted-Lowry definition (proton acceptors (bases) and donators (acids))
   2. pK\textsubscript{a} values (what do they mean? - conjugate acids and bases — direction of equilibria?)
   3. Lewis definition (electron pair acceptors (acids) and donators (bases))

IV. ANALYSIS OF ORGANIC COMPOUNDS
   1. Determination of molecular composition by elemental analysis

Chapter 2 Worksheet

How are condensed and skeletal structures different?

What are formal charges? How are they assigned to individual atoms?

How does the bonding between two atoms change as their electronegativity difference increases?
What is the inductive effect?

Why is resonance a stabilizing effect? Which contributing resonance structures will be most important?

What is the dipole moment of a molecule? Why does CCl$_4$ have a dipole moment of zero?

What is the Brønsted-Lowry definition of acids and bases?

What is a conjugate acid? A conjugate base? Why is the stability of the conjugate base so important?

What is the Lewis definition of acids and bases? Draw the structures of three examples of each, and show how they interact (bond hybridizations, etc.)

In general, how can the empirical formula of a compound be determined via elemental analysis?