

## Unit 2: Molecules

Chapters 2, 4, 6, 7, and 8; Whitten text.

Chapter 2 & Chapter 4 Inorganic Nomenclature (2.3, 4.5, 4.6)

Chapter 6: Chemical Periodicity (6.1-6.6)

Chapter 7: Chemical Bonding (7.1-7.3, 7.5-7.12)

Chapter 8: Molecular Structures and Covalent Bonding Theories (8.1-8.15)

Chapter 9: Molecular Orbitals in Chemical Bonding (9.1, 9.2)

### Strongly Recommended Problems!!

You should be able to draw and explain the following concepts for each molecule listed below.

1. Each element's valence electrons
2. Lewis Structure (ionic or covalent)
3. Name
4. Oxidation Number or Formal Charge for each atom
5. Include any isomers, resonance structures, and/or expanded valence.
6. Central Atom Hybridization
7. Electronic Geometry
8. Standard bond angle, then "tweaked" with bond polarity and lone pairs
9. Molecular Weight/ grams per mole

**NaCl, YCl<sub>3</sub>, MgO, H<sub>2</sub>O, H<sub>2</sub>S, H<sub>3</sub>N, BH<sub>3</sub>, BF<sub>3</sub>, SO<sub>2</sub>, O<sub>3</sub>, Na<sub>2</sub>CO<sub>3</sub>, AgNO<sub>3</sub>, CH<sub>4</sub>, CH<sub>3</sub>OH, CH<sub>3</sub>CH<sub>2</sub>OH, CH<sub>2</sub>O, POCl<sub>3</sub>, DMSO, SF<sub>4</sub>, SF<sub>6</sub>, HNCO, CH<sub>2</sub>Cl<sub>2</sub>, C<sub>2</sub>H<sub>2</sub>BrCl, H<sub>2</sub>SO<sub>4</sub>, H<sub>3</sub>PO<sub>4</sub>, HCN, N<sub>2</sub>, O<sub>2</sub>, Benzene.**