CHAPTERS 5 & 6: Stuff to Know & Study Suggestions

In addition to all the things you've been learning to do lately, don't forget that there are a tons of definitions and a whole lot of concepts in these two chapters that you need to memorize and learn to apply.

THINGS TO KNOW

- ❑ Make sure you know all the vocabulary, the bold-faced and italicized words
- ❑ Be able to explain the roles of Cannizzaro, Mendeleev, Moseley, Janssen, Strutt (Lord Rayleigh), Ramsey and Pauling in the development of the periodic table and what we know about the reactivity of elements
- ❑ Know the major divisions of the periodic table and for each major group of elements, make sure you know the physical properties, chemical properties, occurrence, and uses of the elements
- ❑ Know the "Most Abundant" elements
- ❑ From the Periodic Videos at http://periodicvideos.com/ for the following elements: H, K, Hg, As, C, O, F
  - ❖ Physical properties and occurrence of the element
  - ❖ Chemical properties
  - ❖ Uses of the element
- ❑ Define atomic radii, ionization energy, electron affinity, ionic radii, and electronegativity and tell what happens to each as you go across a period and down a group.
- ❑ Know the number of valence electrons for each group (and therefore for each main group element), and the possible ion charge of the elements by group

THINGS TO KNOW HOW TO DO

- ❑ Be able to list a given set of elements in increasing or decreasing order of atomic radii, ionization energy, electron affinity, and electronegativity
- ❑ Write the equation for an atom losing an electron and for gaining an electron
- ❑ Be able to read and write electron configuration for ions
- ❑ Classify bonds according to electronegativity differences, percent ionic character, and covalent character (you'll be given a table of electronegativities)
- ❑ Draw the Lewis structure for molecules and polyatomic ions containing both single and multiple bonds
- ❑ Use the VSEPR theory to name the shape of molecules and polyatomic ions
- ❑ Draw dipoles on Lewis structures and determine if molecules are polar or nonpolar
- ❑ Describe dipole-dipole forces, hydrogen bonding, an induced dipole and London dispersion forces
- ❑ Use van der Waals forces to explain why molecules exist either as solids, liquids or gases at room temperature
- ❑ Use bond type to describe solubility – why some substances are soluble and some substances are not
- ❑ Draw ionic bonding and write the formula unit for the compound formed
- ❑ List and compare the distinctive properties of ionic and molecular compounds. Use bond energy and lattice energy to explain the differences
- ❑ Describe the electron-sea model of metallic bonding and use it to explain the properties of metals

STUDY HINTS:

- ✧ Write down and memorize the definitions of all the VOCABULARY.
- ✧ Go through the chapter and re-work the Sample Problems, Practice Problems, and Sections Reviews. Write the answers down. Go back and re-memorize and re-study any of the sections that you think will cause you a problem.
- ✧ Answer the section quizzes – no peeking for answers in the chapter! Go back and re-memorize and re-study any of the sections that you think will cause you a problem.
- ✧ Review the answers to the homework questions from your homework. If there are any you still cannot answer, go back and watch vodcasts for those topics.
- ✧ **Do The Physics Classroom practice that's on your syllabus.**
- ✧ Practice the online quizzes at http://www.sciencegeek.net/Chemistry/taters/directory.shtml
- ✧ **Give yourself plenty of time to study.** Do not try to complete all of these suggestions in one night. It is too much for you to keep straight. I would suggest a **minimum** of 3 hours of study time (not all at once).

THINGS YOU KNOW YOU NEED TO PRACTICE

- ☐
- ☐
- ☐
- ☐