

CHAPTER 4: What You've Learned & Stuff to Know

In addition to the electron configuration that you did at the end of the chapter, don't forget that this chapter covered problems at the beginning of the chapter, and a whole lot of concepts that you need to memorize and learn to apply.

- ❑ Make sure you know all the vocabulary, the bold-faced and italicized words
- ❑ Memorize and be able to list in order by frequency, wavelength, or energy the electromagnetic spectrum and the visible spectrum; know the wavelength range of the visible spectrum
- ❑ Know the symbols and units for wavelength, frequency, energy, and speed
- ❑ Memorize the speed of light ($c = 3.0 \times 10^8 \text{ m/s}$) and Planck's constant ($h = 6.626 \times 10^{-34} \text{ Js}$)
- ❑ Memorize and be able to use the following formulas to solve problems:
 - ❖ $c = \lambda\nu$
 - ❖ $E = h\nu$
 - ❖ $E = \frac{hc}{\lambda}$
- ❑ Be able to illustrate, describe, and give examples of the photoelectric effect
- ❑ Be able to illustrate and describe spectroscopy
- ❑ Describe what happens when an element/electrons become excited
- ❑ Know what the following people did and describe their work: Planck, Einstein, Bohr, DeBroglie, Schrödinger, and Heisenberg
- ❑ Memorize and be able to apply the information regarding quantum numbers and their relationship to atomic structure
- ❑ Know the definitions of and be able to apply the Aufbau principle, Hund's rule, and the Pauli exclusion principle
- ❑ Write orbital notation or electron configuration notation for any element and its ion
- ❑ Identify an element based on its electron configuration
- ❑ Be able to determine the number of inner shell & outer shell electrons in an atom, paired & unpaired electrons
- ❑ Describe the electron configuration of noble gases
- ❑ Be able to read and write noble gas notation for elements and ions
- ❑ Explain the deviant electron configuration of the transition metals
- ❑ Using only electron configuration, be able to identify an element's period, block, group, and type.

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).