CH 221 Chapter Six Part 2 Study Guide

- Be able to classify substances as diamagnetic or paramagnetic.
- Realize that most paramagnetic compounds are not normally attracted to magnetic fields, with the exception of ferromagnetic and antiferromagnetic materials.
- Know that the spin quantum number, m_s, has values of $+ {}^1/_2$ and $- {}^1/_2$. Know what these values refer to in the presence of a magnetic field.
- Recognize that each electron in an atom has a different set of the four quantum numbers - the Pauli Exclusion Principle.
- Recognize that the Pauli Exclusion Principle leads to the conclusion that no atomic orbital can be assigned more than two electrons *and* that the two electrons must have opposite spins (i.e. opposite values of m_s.)
- Using the periodic table as a guide, be able to depict electron configuration of the elements and monatomic ions by the orbital box notation or the spectroscopic notation. Understand the significance and relevance of the noble gas notation.
- Understand that electrons are generally assigned to the subshells of an atom in order of increasing subshell energy.
- Recognize that subshell energies in the hydrogen atom depend on both the n and l quantum numbers.
- When assigning electrons to atomic orbitals, be able to apply the Pauli Exclusion Principle and Hund's rule.
- Predict how properties of atoms - size, ionization energy and electron affinity - change on moving down a group or across a period of the periodic table.
- Be able to solve and understand the assigned problems in problem set #6.