

Exam #6 Objectives



CHEM 1090 General Chemistry I

Text Reading

Chapter 6: sections 1-9

Chapter 7: sections 3-6

Homework Assignment

McGraw-Hill LearnSmart and Connect online assignments.

Concepts

1. Describe the electromagnetic spectrum and the relationship between wavelength, frequency, and energy.
2. Discuss the relationship between shells, subshells, and orbitals.
3. Denote the possible values for the principle quantum number, n .
4. For a given value of n , denote the possible numeric and alphabetic values for the secondary (angular) quantum number, l .
5. For a given value of l , denote the possible values of the magnetic quantum number, m_l .
6. Denote the possible values for the spin quantum number, m_s .
7. Break the periodic table into blocks based on s, p, d, and f subshell filling rules.
8. Do the following for any representative and transition metal atom or ion (remember the rules and exceptions discussed in class) assuming ground-state-
 - a. Write the complete, abbreviated (shortcut), and valence electron configurations using subshell notation
 - b. Write the complete, abbreviated (shortcut), and valence orbital-filling diagrams.
9. Using the periodic table, compare the trends in atomic and ionic radii, ionization energy, and electron affinity.
10. Demonstrate a working vocabulary of the following terms:

angular quantum number	frequency	Pauli exclusion principle
atomic spectra	ground-state	photon
atom radius	Heisenberg uncertainty principle	principle quantum number
Aufbau principle	Hund's rule	quantum
effective nuclear charge	ionic radius	shell
electromagnetic radiation	ionization energy	spin quantum number
electromagnetic spectrum	magnetic quantum number	subshell
electron affinity	orbital	valence
electron configuration	orbital-filling diagram	wavelength