# ELECTRON CONFIGURATION WORKSHEET

1. What is the subshell designation (e.g. 2p, 3d…) for the following cases?

a) $n = 2, l = 0$ _____ b) $n = 4, l = 3$ _____

c) $n = 5, l = 1$ _____ d) $n = 3, l = 0$ _____

e) $n = 6, l = 1$ _____ f) $n = 5, l = 2$ _____

2. The quantum numbers listed below are for 4 different electrons in the same atom. Arrange them in order of increasing energy.

a) $n = 4, l = 0, m_l = 0, m_s = ½$ _____ least energy

b) $n = 3, l = 2, m_l = 1, m_s = ½$ _____

c) $n = 3, l = 2, m_l = -1, m_s = ½$ _____

d) $n = 3, l = 1, m_l = 1, m_s = -½$ _____ highest energy

Do any have the same energy? _____ which ones? _____

3. Write the complete electron configuration (simplified) for the following, using only the periodic table as a guide (do not use noble gas core configuration):

a. Cd _____

b. As _____

c. Sr _____

d. Sb _____

e. S _____

4. Write the outer shell electron configurations for the following, using the periodic table as a guide (this means use the noble gas core configurations)

a. K _____

b. Al _____

a. Fe _____

d. Bi _____

e. F _____

5. Give outer-shell configuration for the following ions (Noble gas core):

a. $Te^{2-}$ _____

b. $Rb^{+}$ _____

c. $Br^{-}$ _____

d. $Mn^{2+}$ _____

e. $Cr^{3+}$ _____

6. Which has the LARGER ionization energy?

a) B or Cl b) N or P c) Hf or Cs

d) Ga or Ge e) K or $K^{+}$ f) $Cs^{+}$ or $Ba^{+}$

7. Which has the most EXOTHERMIC electron affinity?

a) Cl or Ar b) Se or Br c) Si or P

d) Fr or F e) Se or $Se^{-}$ f) Pb or Po