

Homework #10

Name: _____

Student ID: _____

Chem 192 – Spring 2010
Cañada College

Total Possible Points: 20
Due Thursday April 15th

Suggested chapter 10 problems: 4, 10, 12, 14, 16, 18, 26, 28, 30, 36

1. (five points) Write the symbol for the neutral atom which has the following electron configurations. Circle the valence electrons in the electron configuration.

(a) $1s^2 2s^2 2p^3$ _____ (c) $[\text{Ne}] 3s^2 3p^2$ _____

(b) $1s^2 2s^2 2p^6 3s^1$ _____ (d) $[\text{Kr}] 5s^2 4d^{10} 5p^2$ _____

Write the symbol for the +1 ion, the neutral atom, and the -1 ion which all share the electron configuration of

(e) $1s^2 2s^2 2p^6 3s^2 3p^6$ _____ +1 ion _____ neutral atom _____ -1 ion _____

2. (three points) Fill in the orbital diagram below for each atom or ion. Circle the valence electrons.

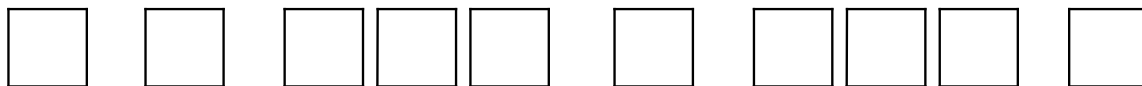
(a) **N**



(b) **S²⁻**

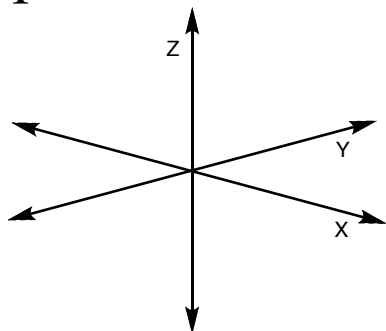


(c) **K**

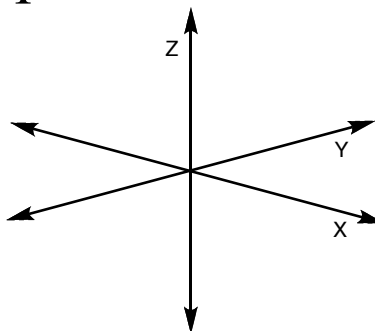


3. (four points) Draw each of the following orbitals on the coordinate axis provided. Consider the shape, orientation, and relative size of each orbital.

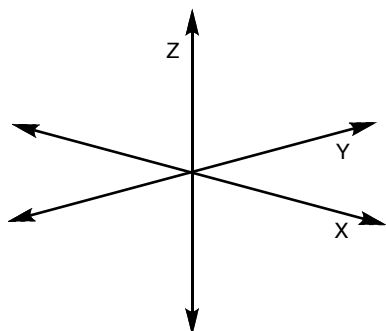
a) $2p_x$ orbital



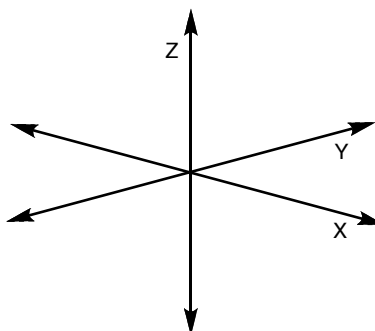
b) $2p_z$ orbital



c) $1s$ orbital



d) $2s$ orbital



4. (three points) For each ion below:

- (a) Write the number of protons.
- (b) Write the number of electrons.
- (c) Write the electron configuration.

Ca^{2+}

(a) _____ electrons

(b) _____ protons

(c) _____

Cl^-

(a) _____ electrons

(b) _____ protons

(c) _____

5. (three points) In each of the three sets of elements below, write the full electron configuration for the elements. Use the electron configurations to predict which two elements in each set, will have similar chemical and physical properties (hint: look closely at the valence electrons). Circle the symbols for the two elements in each set that will have similar chemical and physical properties.

(a) **N** _____
O _____
S _____

(b) **Li** _____
K _____
Ca _____

(c) **Cl** _____
Ar _____
I _____

6. (two points) For each element below, write the group number and the group name for the element. (As an example, the first one is done for you.)

Mg 2A Alkaline Earth Metals

K _____

Cl _____

Ba _____

Ar _____