Answers to Lab Questions **Periodic Properties**

1. Electronegativity and ionization energy have similar trends. Electronegativity is a measure of the attraction an atom has for its electrons. Ionization energy is the amount of energy needed to remove the outermost electron. The alkali metals have both low I.E. and E.N. The attraction for electrons is low and it takes little energy to remove the electrons. The halogens and noble gases both have high I.E. and E.N. The hold on the electrons is great and it takes high amount of energy to remove the electron.

2. Ionization energy, electronegativity and atomic radius are periodic properties because they show a trend of increasing or decreasing as you go across any horizontal period of the periodic table. Density, melting point and boiling point do not show a trend across a period.

3. Properties of metals include low I.E., low E.N., and large radius. These properties allow metals to easily lose electrons.

4. Periodic trends are properties of elements that repeat in a regular manner (are periodic).

5. Across a period atomic radius tends to <u>decrease</u>
   Across a period first ionization energy tends to <u>increase</u>
   Across a period electronegativity tends to <u>increase</u>

   Down a group atomic radius tends to <u>increase</u>
   Down a group first ionization energy tends to <u>decrease</u>
   Down a group electronegativity tends to <u>decrease</u>

6. d. Phosphorus
7. a. Nickel