

**Chemistry**  
**Quiz 1**  
**(November 2007)**

**Name:** \_\_\_\_\_

1) Naming:

*Name the following chemical compounds:*

- 1) NaBr \_\_\_\_\_
- 2) Ca(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_
- 3) P<sub>2</sub>O<sub>5</sub> \_\_\_\_\_
- 4) Ti(SO<sub>4</sub>)<sub>2</sub> \_\_\_\_\_
- 5) FePO<sub>4</sub> \_\_\_\_\_
- 6) MnO<sub>2</sub> \_\_\_\_\_
- 7) SO<sub>2</sub> \_\_\_\_\_
- 8) CuOH \_\_\_\_\_
- 9) Zn(NO<sub>2</sub>)<sub>2</sub> \_\_\_\_\_
- 10) V<sub>2</sub>S<sub>3</sub> \_\_\_\_\_

*Write the formulas for the following chemical compounds:*

- 11) silicon dioxide \_\_\_\_\_
- 12) nickel (III) sulfide \_\_\_\_\_
- 13) manganese (II) phosphate \_\_\_\_\_
- 14) silver nitrate \_\_\_\_\_
- 15) diboron tetrabromide \_\_\_\_\_
- 16) magnesium sulfate \_\_\_\_\_
- 17) potassium carbonate \_\_\_\_\_
- 18) ammonium oxide \_\_\_\_\_
- 19) tin (IV) selenide \_\_\_\_\_
- 20) carbon tetrachloride \_\_\_\_\_

2) For each of the following molecules, draw the Lewis structure (with any resonance structures, if applicable), indicate the molecular polarity (if any); indicate a net charge for polyatomic ions (if applicable):

1) carbon tetrabromide

2)  $\text{NF}_4$

3)  $\text{N}_2\text{F}_2$

4)  $\text{PF}_4$

5)  $\text{PCl}_3$

3) Answer the following questions:

A) Suppose the energy levels in eV for an element are given as:  $n_3 = -1.5$ ,  $n_4 = -0.85$ ,  $n_5 = -0.54$ . Suppose an electron jumps from the ground state to the 4th energy level, using 12.75 eV of energy; based on the given information, calculate the energy of the ground state of this element

B) Write the equation for formation of an ionic bond between sodium and fluorine; indicate the exothermic and endothermic steps:

C) Arrange the bonds in the following compounds in order of increasing stability and determine:  $H_2S$ ,  $H_2O$ ,  $H_2Te$ ,  $H_2Se$ ,  $HF$ .

D) Arrange the bonds in part C in order of increasing bond energy:

E) Name 3 characteristics of ionic compounds and 3 characteristics of metals:

4) Suppose an element has 61 neutrons and a mass of about 108 amu;

A) How many electrons, protons and neutrons does the element have in neutral state?

C) Draw the orbital system for this element.

D) Write the electron configuration for this element.

5) Write the electron configuration of elements with the following atomic numbers:

A) Atomic number 85

B) Atomic number 38

C) Atomic number 32

EC)

1) Consider the compound Manganese(II) nitrate .

A) Write the formula for this compound

B) Write the electron configuration of the  $\text{Mn}^{2+}$  cations:

2) Based on the molecular structures, what is one reason water is liquid at room temperature and  $\text{H}_2\text{S}$  is not?