Key for Take-Home Assignment 01

As we move through the semester it is important that you are comfortable with the way we represent and identify covalent and ionic inorganic compounds using chemical formulas and names. In this case, the compounds are divided for you into those that are covalent and those that are ionic; be sure that you agree with these assignments.

Set I: Six Covalent Inorganic Compounds

General rule for naming binary (two element) covalent compounds is to use prefix to indicate number of element (but omit mono for first element) and replace ending of second element with a suffix of –ide.

Write the chemical formula for the following covalent inorganic compounds:

- diphosphorous pentoxide (a dehydrating reagent) **is $\mathbf{P_2O_5}$**
- silicon dixode (or sand, as you know it) **$\mathbf{SiO_2}$**
- iodine heptafluoride (of interest for its unusual structure) **is $\mathbf{IF_7}$**

Give the name for the following covalent inorganic compounds:

- Cl_2O_2 (a gas that contributes to the destruction of ozone) **is dichlorine dioxide**
- N_2O_5 (a gas used to prepare nitric acid) **is dinitrogen pentoxide**
- CBr_4 (a liquid used as an industrial solvent) **is carbon tetrabromide**

Set II: Nine Ionic Inorganic Compounds

General rule for naming ionic compounds is to let the charge of the cation and the charge of the anion convey the information about composition. If a cation has only a single charge, then we simply give its name; if the cation has multiple possible charges, then we use a Roman numeral to indicate the charge.

Write the chemical formula for the following inorganic compounds, each of which is used to impart or to enhance in fireworks:

- potassium perchlorate (a color enhancer) **is $\mathbf{KClO_4}$**
- lithium carbonate (red) **is $\mathbf{Li_2CO_3}$**
- copper (II) oxide (blue) **is CuO**
- calcium sulfate (orange) **is $\mathbf{CaSO_4}$**
- barium nitrate (green) **is $\mathbf{Ba(NO_3)_2}$**

Give the name for the following ionic inorganic compounds, each of which is used to generate a special effect in fireworks:

- Sb_2S_3 (glitter) **is antimony (III) sulfide**
- $BaCl_2$ (time delay) **is barium chloride**
- NH_4Cl (smoke) **is ammonium chloride**
- Bi_2O_3 (crackling microstars) **is bismuth(III) chloride**
- ZnO (smoke) **is zinc oxide**