CHEM 121 Biological Chemistry Problem Set 3

1. Name the following compounds using common “ous-ic” nomenclature:

   A. Hg_2Cl_2
   B. $FeCl_2$
   C. CuO
   D. $ZnCl_2$
   E. Cu_2O
   F. $HgCl_2$
   G. $FeCl_3$
   H. $CuCl_2$
   I. $ZnCl_4$
   J. $PbCl_2$

2. Name the following using the rules of naming compounds, e.g. cation named first, anion named second:

   A. KCl
   B. $NaOCl$
   C. Na_3PO_4
   D. $(NH_4)_2SO_4$
   E. $Ca_3(PO_4)_2$
   F. $K_2Cr_2O_7$
   G. $KMnO_4$
   H. $(NH_4)_3PO_4$
   I. $Mg_3(PO_4)_2$
   J. CrO_3

3. Write the electronic structure for the following elements:

   A. B
   B. Mg
   C. Na
   D. Cl
   E. S
   F. C
   G. Ca
   H. K
   I. He
   J. Ar

4. Write the electronic structures for the ionic forms in #3.

5. Draw the energy diagrams for the following:

   A. Elemental Carbon
   B. Carbon in an sp^3 hybrid
   C. Carbon in an sp^2 hybrid
   D. Carbon in an sp hybrid

6. Draw the geometric representations for the three hybrids in #5.

7. What is the hybridization that only Pt, Pd and Ni undergo? Draw that hybridization.

8. Name the following acids and bases:

A. HCl
B. H_2SO_4
C. H_3PO_4
D. HNO_3
E. H_3PO_4
F. HBr
G. NaOH
H. KOH
I. HNO_2
J. NH_4OH

9. Draw a generic titration curve for each of the following acids: HCl, H_2SO_4 and H_3PO_4 .

10. Using your generic curves in #9, show how you'd determine, graphically, the pK values for each hydrogen ion in the acids.