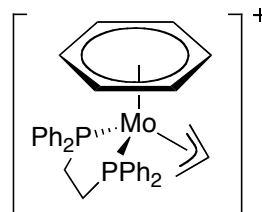
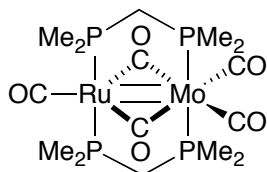
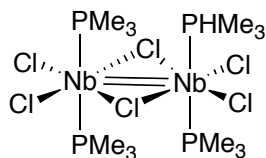
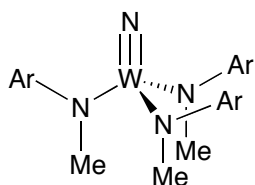
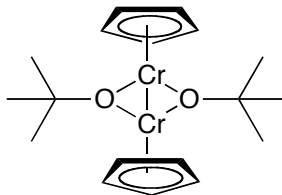
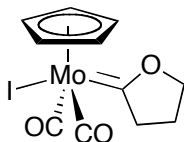


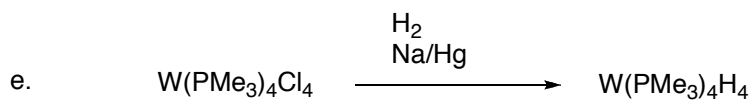
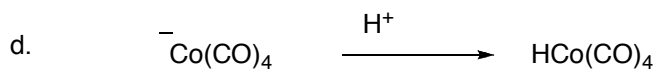
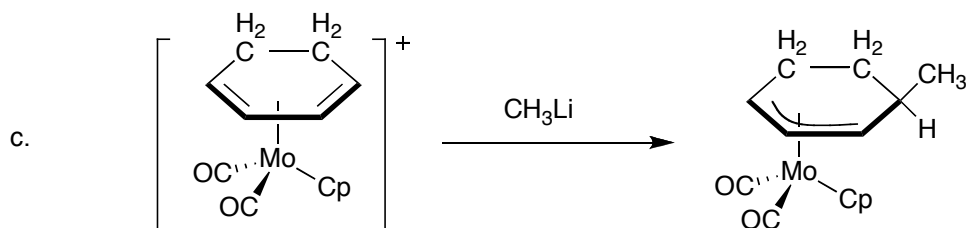
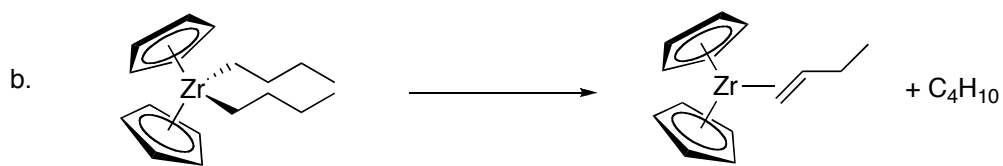
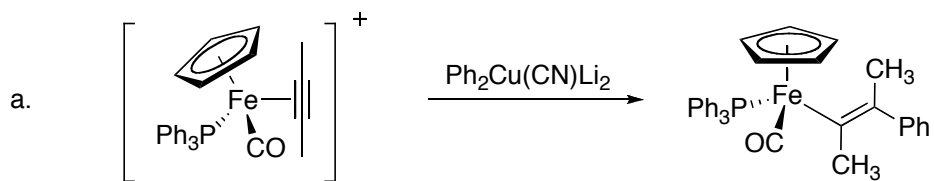
CH 609, Spring 2008
Dr. Shaughnessy
Problem Set #1
Due, Friday, Feb 1st, 2008

Name: _____

1. For each complex below, provide the oxidation state of the metal, the number of *d* electrons, and the total electron count for the complex. If there is more than one metal center, consider each separately.



2. For each of the following reactions, indicate whether the metal is oxidized, reduced, or retains the same oxidation state?



3. For each problem below, determine the correct number of ligands to give a stable, neutral metal complex. Draw this complex with the correct 3-dimensional geometry.

a. Pt^0 , PMe_3

b. Mn^0 , CH_3CN

c. Au^{III} , Bu_3P , Cl

d. Nb^{V} , Cp , H

4. In class, we discussed that an L_2X alkoxide ligand is isolobal (has same orbital symmetry) with the cyclopentadienyl ligand.
 - a. Draw the MOs for Cp (see notes) and an alkoxide ligand. Use your drawings to explain how these two ligands can be isolobal, despite their very different appearance. Indicate which orbitals have the same symmetry.

- b. Draw a molecular orbital diagram for a Cp-M fragment showing which metal orbitals can interact with the Cp π -orbitals.