Introduction to Natural Science, Winter 2007
Chemistry Workshop – Week 9

1. Determine the hybridization of the central atom in the following.
   I_3^-, SF_6, NH_4^+, BH_4^-

2. Describe the bonding of the acetylene molecule (C_2H_2) using the hybridization model
   - Determine if the molecule is planar and describe why.
   - Determine the location of π electron densities (if there are any).
   - Discuss its bond polarity and molecular polarity

3. Describe the bonding of the benzene molecule (C_6H_6) using the hybridization model
   - Determine if the molecule is planar and describe why.
   - Determine the location of π electron densities (if there are any).

4. Draw MO diagrams for the diatomics of H, He, Li, Be, B, C, N, O, F, Na. Write their electron configurations, determine bond order, stability, and magnetism.

5. Draw MO diagrams for O_2, O_2^- and O_2^{2-}. For each species:
   - write the electron configuration
   - determine magnetic properties and explain why
   - determine which of the three is most stable and explain why