MOLECULAR ORBITAL THEORY

1. Arrange the F_2, F_2^+, F_2^- in increasing order of bond energies.

2. Determine the bond order, number of unpaired electrons, and magnetic character for O_2, O_2^+, O_2^-.

3. Write the ground state molecular orbital configuration for NO and NO^+. Give their bond orders and number of unpaired electrons. Which one has the weaker bond and which one has the shorter bond length?

4. The bond dissociation energy of N_2^+ is less than that of N_2. Show why this is the case.

5. Use molecular orbital theory to predict the relative bond lengths and magnetic properties for OF^+, OF, and OF^-.

6. Is it possible for He_2 and F_2- to exist?

7. Using Lewis theory draw the electron dot structures for CO and CN^-. Does molecular theory predict the same bond orders for the species?

8. Predict the molecular orbital configuration, bond order, and expected stability for H_2^+ and Li_2.

9. Arrange CN, CN^-, and CN^+ in ascending order of bond length.

10. Does CO or CO^+ has the longer bond length?