

## Review Chapter 9

1. What is the molecular orbital model, and how is it different from the localized electron model? Where is one model better than the other?
2. Be able to identify the bond angles and molecular geometries associated with  $sp$ ,  $sp^2$ ,  $sp^3$ ,  $dsp^3$ , and  $d^2sp^3$  hybridized bonds
3. What are the molecular orbitals associated with  $H_2$ ,  $He_2$ ,  $Li_2$ , and  $Be_2$ ?
4. What are the molecular orbitals associated with diatomic molecules made B, C, N, O, F  
Order these orbitals from lowest energy to highest energy
5. What is a  $\sigma$  orbital, a  $\pi$  orbital in the molecular orbital model
6. What is a bonding orbital, and antibonding orbital?
7. What is Bonding order? Be able to calculate bonding order for any diatomic molecule and use to estimate the stability of different ions
8. How can you have both  $\sigma$  and  $\pi$  type orbitals made from p atomic orbitals
9. What is paramagnetism, diamagnetism? How can you predict the presence of either using the molecular orbital model?
10. Discuss the molecular orbital treatment of benzene, how does this differ from the localized electron model?