1. Draw all possible Lewis structures for C3H6O? Which compounds have a molecular dipole? Include enantiomers and stereoisomers.
2. For 1 above indicate the highest occupied orbital and the lowest unoccupied orbital in two of the molecules and explain your reasoning.
3. What is the symmetry (C2 or  plane) of 3 for the  molecular orbitals of allyl anion (C3H5-)? How many electrons are in this orbital?
4. How many nodes does a 7d orbital have? Indicate the number of each type of node.
5. What is the symmetry (C2 or  plane) of 4 for the molecular orbitals of heptatrienyl cation (C7H9+)? How many electrons are in this orbital? How many nodes does it have?
6. What is the symmetry (C2 or  plane) of 4 for the molecular orbitals of hexatriene anion (C6H8-)? How many electrons are in this orbital? How many nodes does it have?
7. Which orbital is higher in energy 3p on chlorine or 3p on phosphorus? Explain?
8. Indicate the hybridization of each carbon and nitrogen in the following in molecules?



1. What percentage of an sp2.5 orbital is s?
2. Draw a Hückel MO energy diagram (p orbitals only) for N3- and show nodal properties and label the orbitals.
3. Compare the Hückel MO energy diagrams for propenal and butadiene. Which has the highest energy LUMO? HOMO?
4. Use molecular orbital theory (not polar or inductive effects) showing orbital interactions to explain the difference in stability of methyl and ethyl cations.