

Define the Following

Sigma Orbital: _____

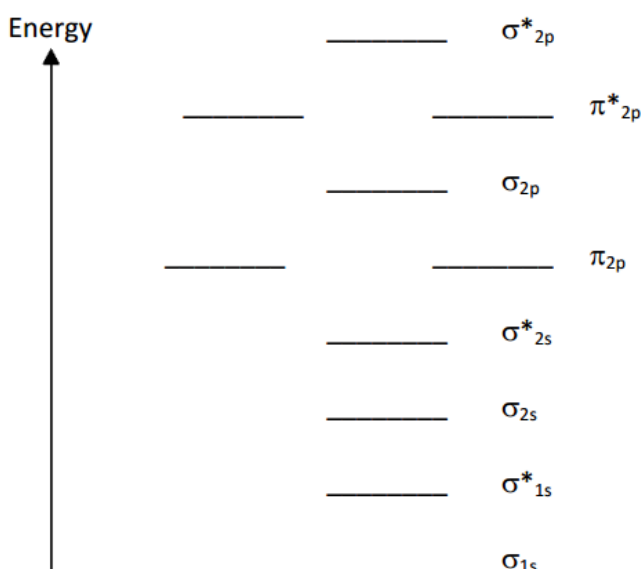
Pi Orbital: _____

Bonding Molecular Orbital: _____

Antibonding Molecular Orbital: _____

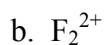
Molecular Orbital Diagram

The molecular orbital diagram below may be used for the following problem(s). However, the diagram will still yield the correct bond order and magnetic behavior for these molecules.



What orbitals change in oxygen and fluorine? Draw their diagram below.

1. Refer to the Molecular Orbital diagram above. According to molecular orbital theory, what is the bond order for each of the following:



2. Refer to the MO Diagram. According to molecular orbital theory, which of the following lists ranks the fluorine species in terms of increasing bond order?



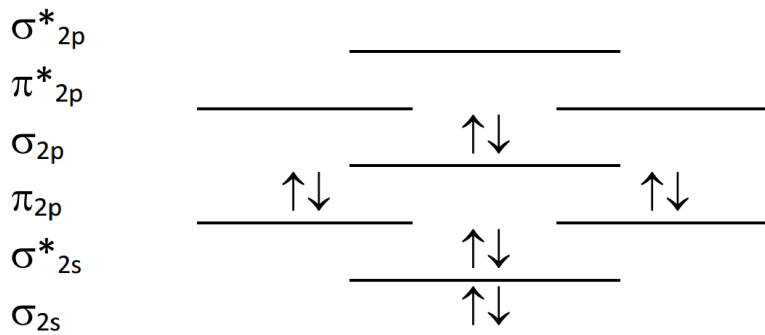
3. Refer to the MO Diagram. Use molecular orbital theory to determine if the molecules are paramagnetic or diamagnetic.



4. Refer to the MO Diagram. Assuming that the molecular orbital energy diagram for a homonuclear diatomic molecule applies to a heteronuclear diatomic molecule, determine bond order for each below.



5. Which molecule will have the following valence molecular orbital energy level diagram?



6. How many sigma and pi bonds are in the molecule drawn below?

Sigma Bonds: _____

Pi Bonds: _____

