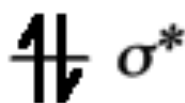
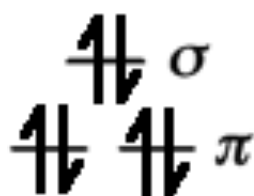
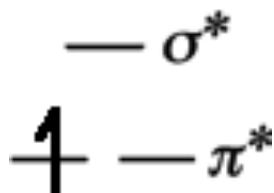
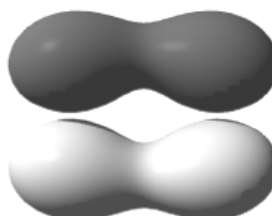
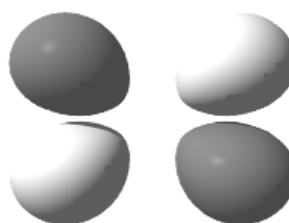


Marks
6

- f) The NO molecule formed in the reaction in part d) is also formed in its ground electronic state. Complete the molecular orbital diagram for NO by filling in the valence electrons in the occupied orbitals. Sketch the shape of the π and π^* orbitals, clearly showing all nodes. Determine the bond order of NO and whether it is paramagnetic or diamagnetic.

MO orbital energy level diagram for NO


 Sketch of the π MO

 Sketch of the π^* MO

 Bond order of NO: $\frac{1}{2} (8 - 3) = 2.5$

 Paramagnetic or diamagnetic? **Paramagnetic (as it has 1 unpaired electron)**