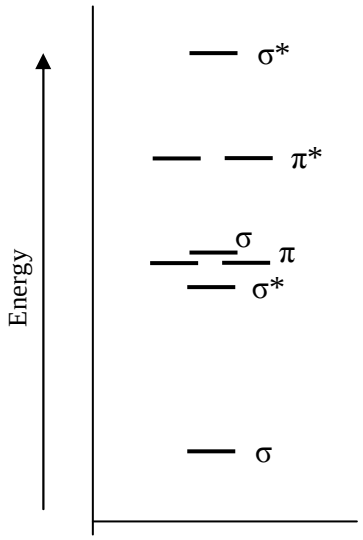
Marks 6

- Carbon and oxygen can combine to form carbon monoxide, the second most abundant molecule in the universe.

The molecular orbital energy level diagram provided shows the energies of the orbitals for the valence electrons in CO. Indicate on this diagram the ground state electronic configuration of CO using the arrow notation for electron spins.



What homonuclear diatomic molecule has the same electronic structure as CO? Comment on the bond orders of these two species.

How would adding an electron to CO to form CO^- affect the strength of the bond between the two atoms? Explain your answer.

Are the atomic orbital energies of oxygen lower or higher than carbon? Explain your answer and comment on how this may affect the electron density in bonding orbitals of the CO molecule.