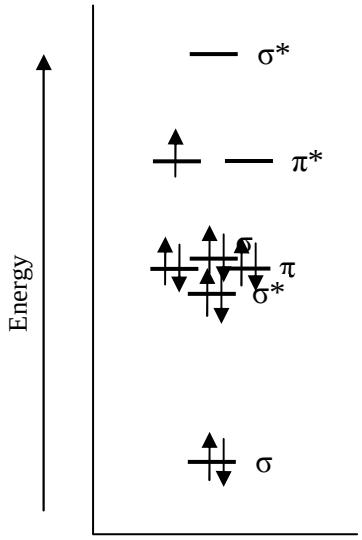
Marks 4

- The molecular orbital energy level diagram below is for the valence electrons of the O_2^+ ion.

Indicate the ground state electronic configuration of O_2^+ using the arrow notation for electron spins on the provided molecular orbital energy level diagram.



Calculate the bond order of O_2^+.

Bond order = ½ (8 – 3) = 2.5

Indicate the lowest energy electron excitation in this ion by identifying the initial and final molecular states of the electron undergoing the excitation.

The gap between the highest occupied σ and the π* is very similar to that between π* and σ*: either σ → π* or π* → σ*