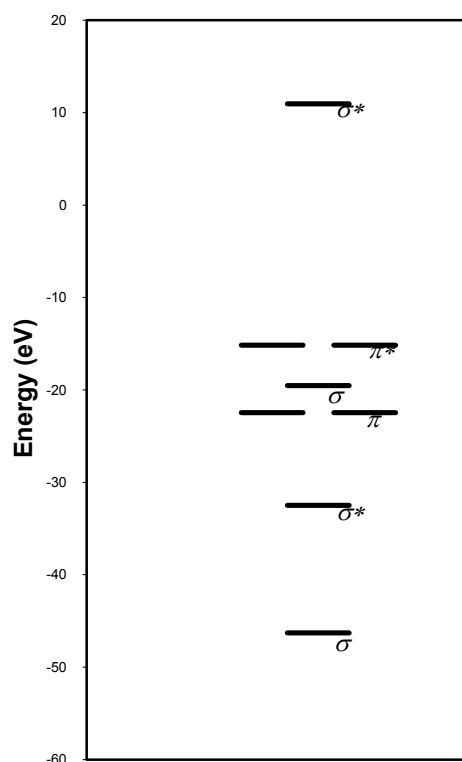


Marks
4

- Oxygen gas, O_2 , constitutes about 21% of the Earth's atmosphere.

How many valence electrons are there in O_2 ?

Complete the MO diagram for the ground state electronic configuration of O_2 by inserting an arrow to represent each valence electron.



What is the bond order of O_2 ?

Do you expect O_2 to be paramagnetic? Explain your answer.

- Sketch the following wave functions as lobe representations.

2

(a) a $2p$ atomic orbital

(b) a π^* molecular orbital

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