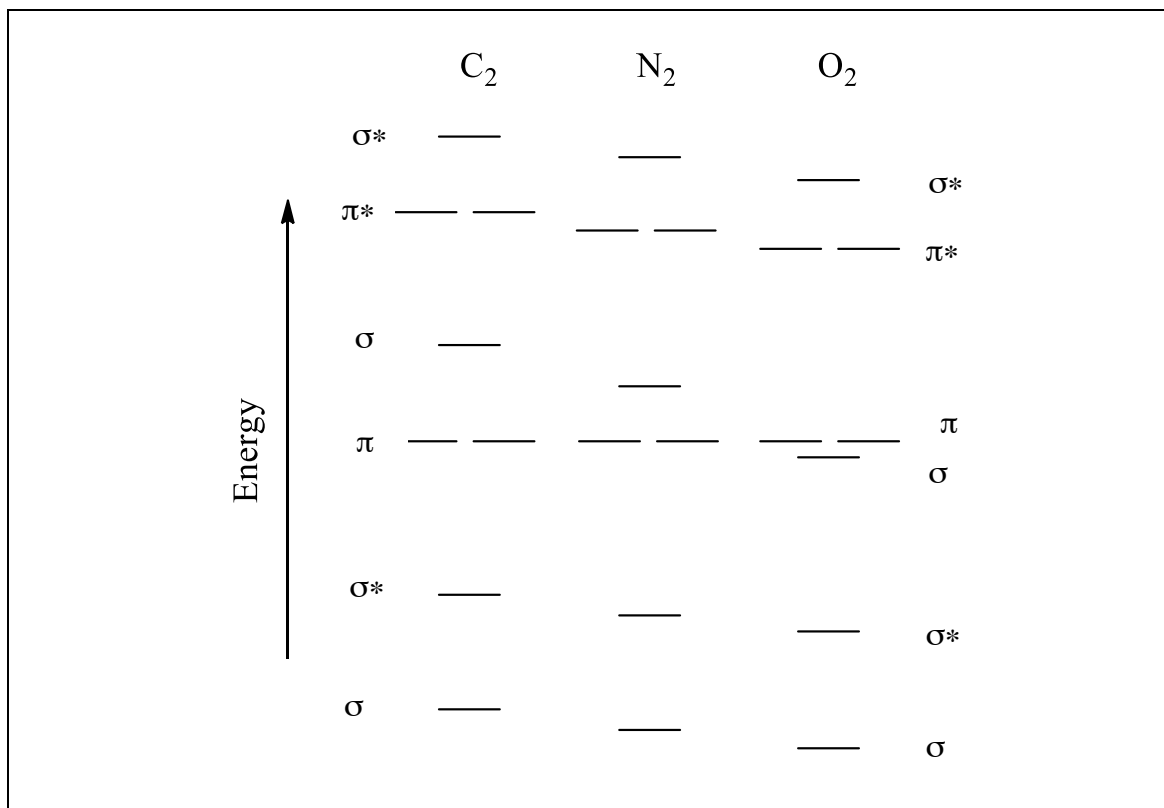


Marks
6

- The following diagram shows the molecular orbital energy level diagrams for the valence electrons in the homonuclear diatomic molecules C_2 , N_2 and O_2 .

Complete the diagram by filling in the remaining *valence* electrons for each molecule and determining its bond order.



Bond order:

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Explain why the energy of the lowest energy σ orbital shown above gets lower from left to right across the periodic table.

Clearly label the HOMO and LUMO of O_2 on the diagram above.