

These problems are for practice in drawing your molecular orbital diagrams, molecular electron configurations and determining bond order.

The following questions pertain to the  $F_2$  molecule:

A) Draw the molecular orbital energy diagram for this molecule. Label all of the orbitals specifically.

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B) Give the molecular electron configuration for the molecule:

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C) Determine the bond order for the molecule:

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D) Indicate whether the species is paramagnetic or diamagnetic:

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F) Compare the relative stability of this molecule to  $F_2^+$  and  $F_2^-$ :

The following questions pertain to the  $C_2^+$  ion:

A) Draw the molecular orbital energy diagram for this ion. Label all of the orbitals specifically.

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B) Give the molecular electron configuration for the ion:

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C) Determine the bond order for the ion:

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D) Indicate whether the ion is paramagnetic or diamagnetic:

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F) Compare the relative stability of this molecule to  $C_2$  and  $C_2^-$ :

The following questions pertain to the NO molecule:

A) Draw the molecular orbital energy diagram for this molecule. Label all of the orbitals specifically.

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B) Give the molecular electron configuration for the molecule:

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C) Determine the bond order for the molecule:

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D) Indicate whether the molecule is paramagnetic or diamagnetic:

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F) Compare the relative stability of this molecule to  $\text{NO}^+$  and  $\text{NO}^-$ :