CH301 Week Four RAQ

UNIT TWO: BONDING

BIBERDORF

Important Information

No Office Hours for Dr. McCord this week.

Q08 – Q11 were due this morning at 9 AM.

Q12 – Q13 are due Friday (10/1) at 9 AM.

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Ionic vs. Covalent Review

ionic

bond between M + NM

↑ cation ↑ anion

transfer e^-

LE $\propto \frac{\text{charge}}{\text{radius}}$

covalent

two nonmetals

share e^-

bond energies

bond length/strength

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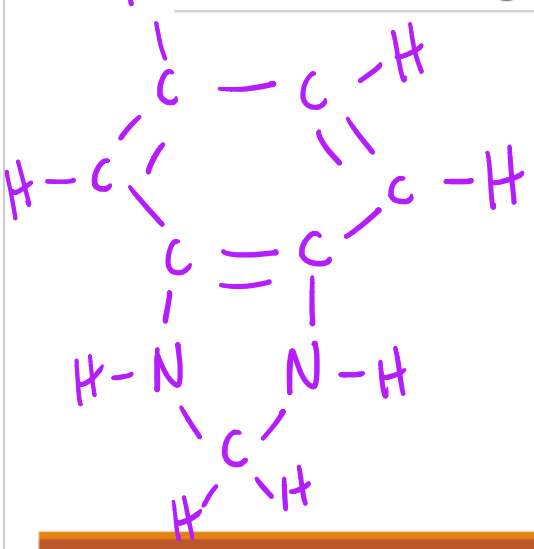
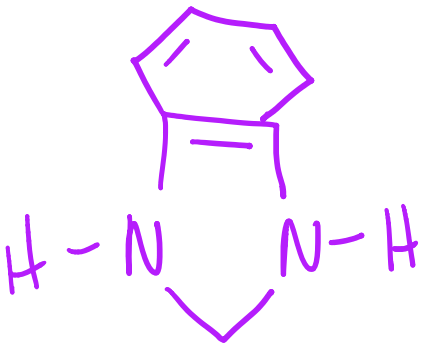
A

Line Drawing Review





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Octet Rule

* stable molecules tend to have 8 e⁻ (total) in their outershell

* a good "guideline" for lewis

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Octet Rule Exceptions

H 2e⁻ H-H

He 4e⁻

B 6e⁻

atomic # > 12, can have more than 8 e⁻

only octet rule followers: C, N, O, F, Ne

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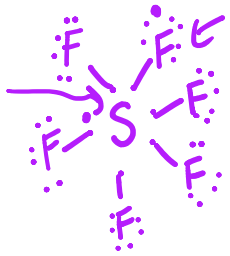
Question

SF_6

What is the Lewis Structure for sulfur hexafluoride?

6-6=0



7-7=0

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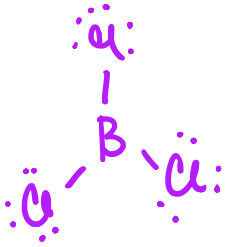
Question

BCl_3

What is the Lewis Structure for boron trichloride?



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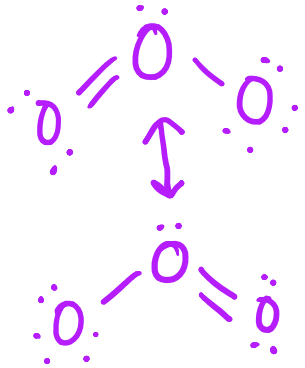
Resonance

* when a bond "resonates" in a molecule



No single bonds

No double bonds

Two 1.5 bonds

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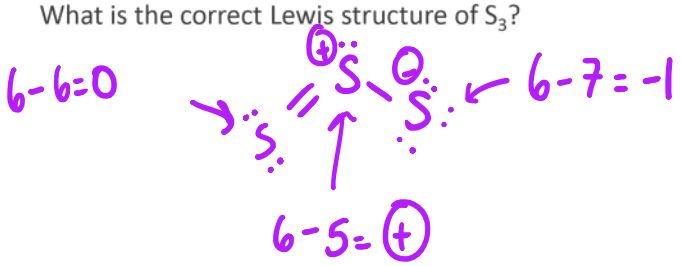
must obey octet rule

Question

What is the correct Lewis structure of S_3?



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CH301 Week Four RAQ

1. Draw the Lewis Structure for the following compounds: CF_3COCF_3 and CF_3CF_2OH.
2. Draw the Lewis Structure for acetic acid (CH_3CO_2H).
3. Draw the Lewis structure for the acetate anion. Assign formal charges to all carbons and oxygens.
4. Draw the Lewis structure for N_2O.
5. Draw the Lewis structure for PCl_3 and PCl_5.
6. Draw the Lewis structure for BF_3 and BF_4^-.
7. Using a sketch and words, explain the potential energy well associated with the formation of a covalent bond.

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Question One

Draw the Lewis Structure for the following compounds: CF_3COCF_3 and CF_3CF_2OH.

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Question Two

Draw the Lewis Structure for acetic acid (CH_3CO_2H).

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Question Three

Draw the Lewis structure for the acetate anion. Assign formal charges to all non-Hydrogen atoms.

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Question Four

Draw the Lewis structure for N_2O.

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Question Five

Draw the Lewis structures for PCl_3 and PCl_5.

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Question Six

Draw the Lewis structures for BF_3 and BF_4^-.

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Question Seven

Using a sketch and words, explain the potential energy well associated with the formation of a covalent bond.

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Question Eight

Consider the potential energy diagrams of two similar diatomic molecules. Molecule A is slightly more stable than Molecule B.

Please draw both potential energy diagrams to indicate the differences in stability.