

# CH301 Week Four RAQ

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UNIT TWO: BONDING

BIBERDORF



## Important Information

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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.



## Ionic vs. Covalent Review

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ionic

salt

bond between a NM+M  
transfer  $e^-$

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

covalent

share  $e^-$

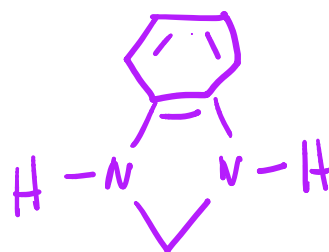
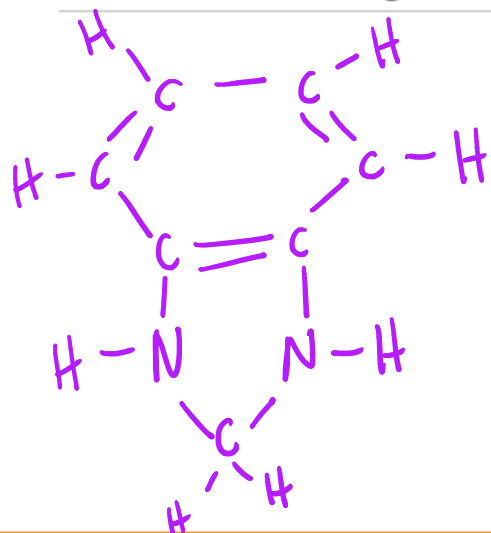
two NM

C has 4 bonds

bond length/strength

## Line Drawing Review

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## Octet Rule

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\* stable molecules tend to have 8  $e^-$  (total) in their outershell

\* a good "guideline" for Lewis structures



# Octet Rule Exceptions *← everything*

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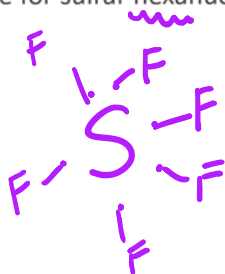
atomic #  $> 12$ , can have more than 8 valence  $e^-$

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## Question

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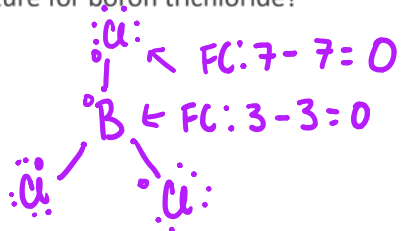
What is the Lewis Structure for sulfur hexafluoride?



## Question



What is the Lewis Structure for boron trichloride?

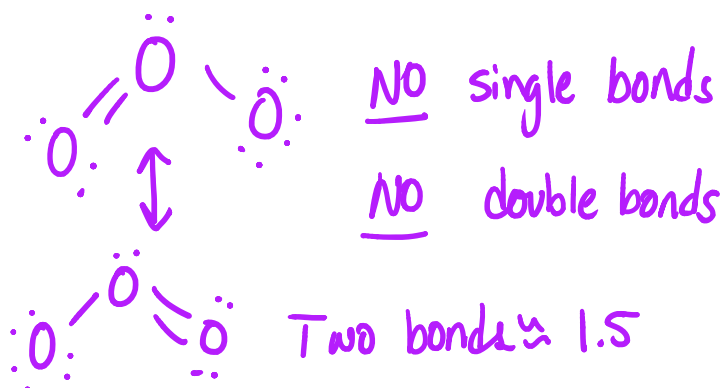




## Resonance

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\* when a bond "resonates" in a molecule



## Question


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What is the correct Lewis structure of  $S_3$ ?



## CH301 Week Four RAQ

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1. Draw the Lewis Structure for the following compounds:  $\text{CF}_3\text{COCF}_3$  and  $\text{CF}_3\text{CF}_2\text{OH}$ .
  2. Draw the Lewis Structure for acetic acid ( $\text{CH}_3\text{CO}_2\text{H}$ ).
  3. Draw the Lewis structure for the acetate anion. Assign formal charges to all carbons and oxygens.
  4. Draw the Lewis structure for  $\text{N}_2\text{O}$ .
  5. Draw the Lewis structure for  $\text{PCl}_3$  and  $\text{PCl}_5$ .
  6. Draw the Lewis structure for  $\text{BF}_3$  and  $\text{BF}_4^-$ .
  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

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Draw the Lewis Structure for the following compounds:  $\text{CF}_3\text{COCF}_3$  and  $\text{CF}_3\text{CF}_2\text{OH}$ .



## Question Two

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Draw the Lewis Structure for acetic acid ( $\text{CH}_3\text{CO}_2\text{H}$ ).



## Question Three

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



## Question Four

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Draw the Lewis structure for  $\text{N}_2\text{O}$ .



## Question Five

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Draw the Lewis structures for  $\text{PCl}_3$  and  $\text{PCl}_5$ .





## Question Six

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Draw the Lewis structures for  $\text{BF}_3$  and  $\text{BF}_4^-$ .



## Question Seven

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



## Question Eight

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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.

