

Trent Archie

CH 235 SI

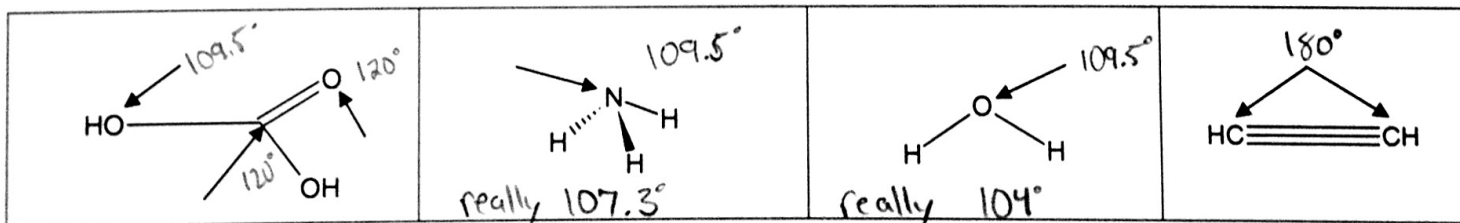
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**Part 1: Short answer**

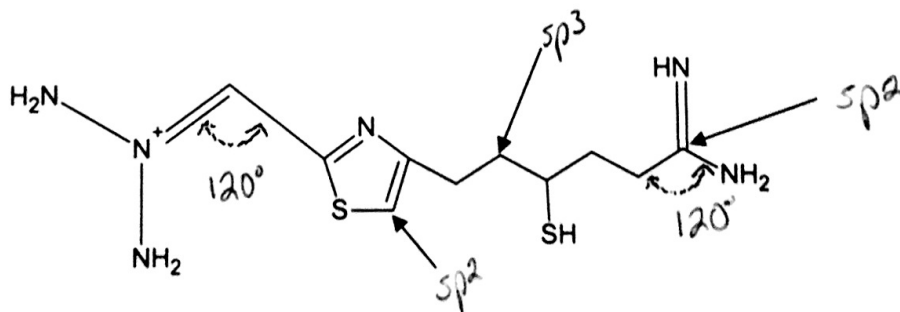
1. S-orbitals have a circular shape. P-orbitals have a dumbbell shape.
2. Rank the following in order of decreasing energy levels: Bonding molecular orbital, uncombined orbital, antibonding molecular orbital. (higher energy > lower energy)  
antibonding > uncombined > bonding
3. True/False: Pi bonds are stronger than sigma bonds.
4. Orbitals of equal energy are referred to as degenerate orbitals?
5. Rank the following in **increasing** bond strength between the two carbon bonds: C≡C, C-C, C=C.  
3 1 2
6. Resonance forms only differ in the placement of pi bonds?

**Part 2: Hybridization**

Predict the bond angles for the following molecules. (Note: lone pairs are not shown)



Identify the hybridization of the atoms indicated by **linear** arrows and predict the bond angles indicated by **curved** arrows in the following molecule.



### Part 3?

What are the four preferences of resonance forms?

- 1.
- 2.
- 3.
- 4.

For each of the following molecules, draw **all** valid resonance structures and determine which structure, if any, contributes most to the resonance hybrid. Keep in mind the fundamental rules, formal charges, and electron count.

