

Hybridization and Geometries

CHM 1311.003 - Practice Questions

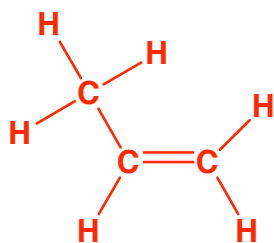
From the formulas given, draw the correct Lewis structure, then give the correct hybridization and geometry for each atom indicated. Give the number of pi and sigma bonds.

1. Acetylene, C₂H₂ (C)



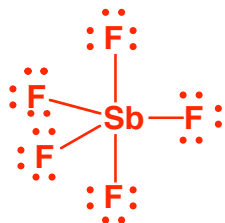
C's are sp
C-C is triple bond – 1 sigma, 2 pi -
linear
2 C-H sigma bonds

2. CH₃CH=CH₂ (all C)



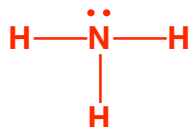
sp³, sp², sp²
tetrahedral, trigonal planar, trigonal
planar
C-C 1 sigma bond
C=C 1 sigma, 1 pi
6 C-H sigma bonds

3. SbF₅ (Sb)



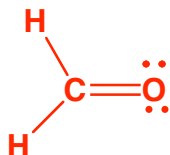
dsp³
trigonal bipyramid
5 Sb-F sigma bonds

4. NH_3 (N)



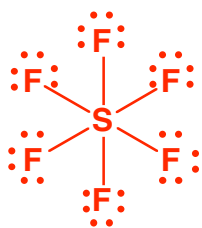
sp^3
trigonal pyramidal
3 N-H sigma bonds

5. $\text{CH}_2=\text{O}$ (C)



sp^2
trigonal planar
C=O 1 sigma, 1 pi bond
2 C-H sigma bonds

6. SF_6 (S)



d^2sp^3
octahedral
6 S-F sigma bonds