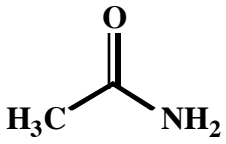
Chemistry 333R

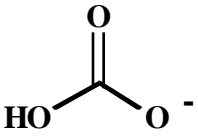
Week 2 Group Questions

1. Draw all important resonance structures for each of the following species.

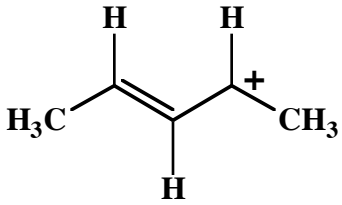
a.



b.



c.



2. Draw a Lewis structure for each of the following compounds. Specify the hybrid orbitals that overlap to form each bond. Then label each bond as a σ or π bond. Finally, draw all nonbonding hybrid orbitals.
   a. H_3COH
   b. $HC{\equiv}CCH_2OH$
   c. H_3CCOCH_3

3. Use the VSEPR rules to determine the shape of each of the following compounds.
   a. CF_4
   b. NH_3
   c. H_2O

4. Which of the following compounds have polar bonds? Which compounds have a net dipole moment?
   a. CF_4
   b. H_3COH
   c. H_3CCOCH_3

5. Rank each of the following lists from the most to least acidic compound.
   a. H_3CCO_2H , H_2SO_4 , H_2O
   b. H_3CCH_2OH , $H_3CCH_2NH_2$, H_3CCO_2H
   c. H_2O , HCl , HI

6. Which solvent(s) would one use to dissolve each of the following compounds?
   (choices: water, a polar organic solvent or a nonpolar organic solvent)
   a. NaI
   b. $H_3CCH_2CH_2OH$
   c. $H_3CCH_2CH_2CH_2CH_2CH_2CH_2CH_3$

Please bring your set of molecular models to class, next week.