HOMEWORK ASSIGNMENT #2 ORGANIC CHEMISTRY I (24 pts)

More Lewis Modeling, the Pauling Model (Hybridization)

& Polarity Effects **(due Monday 10 September 2012)**

**Your name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Consider the 4 compounds below: (4 pts)

A B C D

.... .. .. ..

H-C=N=O: H-C≡N-O: H-C≡N-O: H-C=N-O:

**.. ..**

1. which contain positively charged C \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. which contains positively charged O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. which contains negatively charged N \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. which contains negatively charged O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Draw all the possible structures that obey the Lewis rules for a compound that has the empiric formula C2H4O. Make sure to indicate where lone pairs and formal charges are present in order for the octet rule to apply. (3 pts)
2. Draw all the possible structures for O3 that obey the Lewis rules. Indicate (if present) formal charges, lone pairs and if resonance is present, circle the resonant structures. (3 pts)

4. Which of the compounds below, would you expect to be most reactive based on

simple Lewis structure modelling ? (CIRCLE /1 pt)

NO2  CH2O NO+ COOH-

5 . Determine the hybridization on the **bolded** atoms below : (1 pt ea/5 pt total)

H2 C=**O** H2**C=**O H2C=**C**=O **C**FBr3 C**F**Br3

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6a. Determine the number of of H assumed to be present on the Carbons in the skeletal

organic structure below.

6b. Determine the hybridization on the indicated **C** and on **N**

\* \* \* \* \*

C-C≡C-C=C=NH

#H \_ \_ \_ \_ \_

hybridization **\_\_ \_\_ \_\_ \_\_ \_\_** (1/2 pt ea, 5 pts total)

on \*

1. Using gross reactivity rules (see supplement 2) circle the molecule in each pair below which is more reactive ***and*** ***briefly explain why you made your choice:***

(hint: draw the Lewis structure including formal charges and lone pairs and include the VSEPR geometry for both to aid explanation) 4 pts total

* 1. CH3Cl vs H2N-CH3
  2. CO2 vs NO3‑
  3. NO2 vs NO2-
  4. NO vs CO