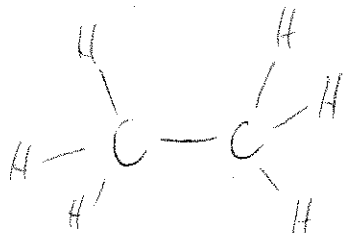


Chem 141
Problem-Set
Wednesday 6th September 2006.

1. Write the proper Lewis dot structures for the following compounds. A covalent bond should be drawn as a line.

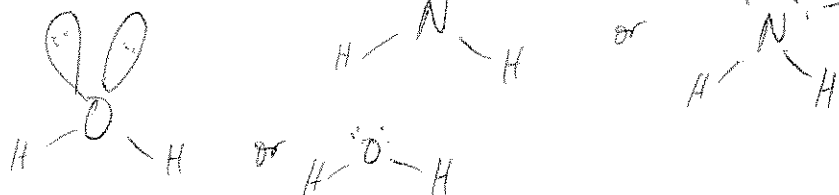
a) C_2H_6



b) NH_2^- (-1 charge).



c) H_2O



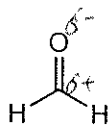
2. What are the two main trends when defining electronegativity. Consider the trends relative to the Periodic Table.

Electronegativity increases up a column

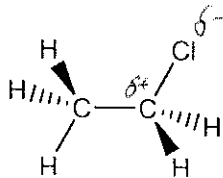
Electronegativity increases across (from left to right) a row.

3. Assign partial charges (δ^- and δ^+) to the following polar covalently bonded compounds.

a)

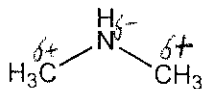


b)



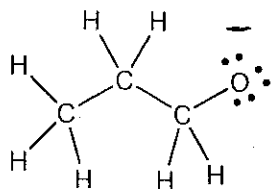
Since C-H are very similar in electronegativity no $\delta^+/-$ need be assigned.

c)



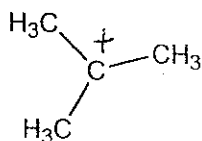
4. What are the formal charges on the atoms in the following structures and what is the resultant overall charge.

a)



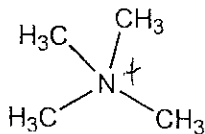
Overall charge = -1

b)



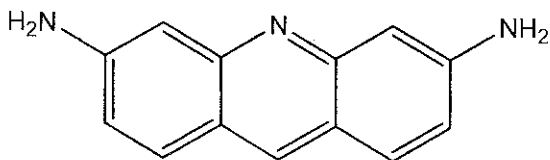
Overall charge = +1

c)



Overall charge = +1

5. The following compound (acridine) was used as a powerful antiseptic in WWII to dress wounds. It also works well as an antiviral drug. How many sp^3 , sp^2 and sp hybridized atoms are present?



$sp^3 =$ 2

$sp^2 =$ 14

$sp =$ 0

6. Draw and illustration of ethyne clearly illustrating the orbitals which were not hybridized and the effect that has on the bonding between the two carbons.

