HOMEWORK ASSIGNMENT #2 ORGANIC CHEMISTRY I (30 pts)

the Pauling Model (Hybridization), HONC Rules, Abbreviated Bond Line/ Condensed Structures & Resonance **(due Wednesday 13 September 2017)**

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

1. Practice problem 2.36 (3 pts)





1. Practice problem 2.43 (1 pt)

(first and third choices)

1. Practice Problem 2.44 (2 pts)



*Use arrows to ID all sp3 carbons*

1. Practice Problem 2.48 (3 pts)

We will show how to do this

In class

1. (CH3)3CH2CH2CJ(CH3)2
2. (CH3)2CHCH2CH2OH
3. CH3CH2CHC(C2H5)2
4. There are lone pairs in each compound shown below. Circle where they are and determine the hybridization of the orbital they reside in. ( 4 pts)



A \_\_\_\_\_\_sp2\_\_\_\_\_\_\_\_\_

B\_\_\_\_N sp2\_\_\_\_C\_sp3\_\_

C\_\_\_\_\_sp3\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 pt each

A B C

5 . Determine the hybridization on the **bolded** atoms below : (1 pt ea/4 pt total)

H2 C=**O** H2**C=**O H2C=**C**=O **C**FBr3

\_\_\_sp2\_\_\_\_\_\_ \_\_\_sp2\_\_\_\_\_\_\_\_ \_\_\_sp\_\_\_\_\_\_\_\_ \_\_\_\_sp3\_\_\_\_\_\_

6a. Determine the number 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 3 0 0 1 0

hybridization **sp3 sp sp2 sp sp2** (1/2 pt ea, 5 pts total)

on \*

1. Practice Problem 2.52 c, f, i (3 pts)



1. **f) i)**





1. Problem 2.81a Identify and indicate where each functional group in the structure resides. (5 pts)



ether

aldehyde

aromatic

aromatic ketone

amine

Extra credit (2 pts): Problem 2.81b



A resonance shift of the lone pair of N to the carbonyl (C=O) creates a double bond on the right side N-C bond (and charge separation), which the right side of the molecule is locked into

A planar configuration



This side will spin freely around left side N-C bond