

# Chem 51A – SSI 2013

## Discussion 2 Worksheet

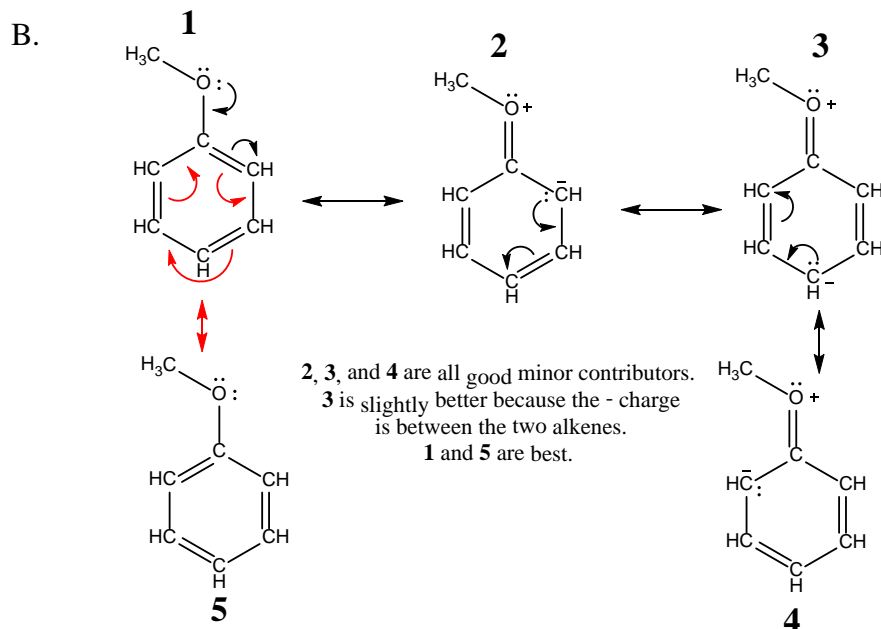
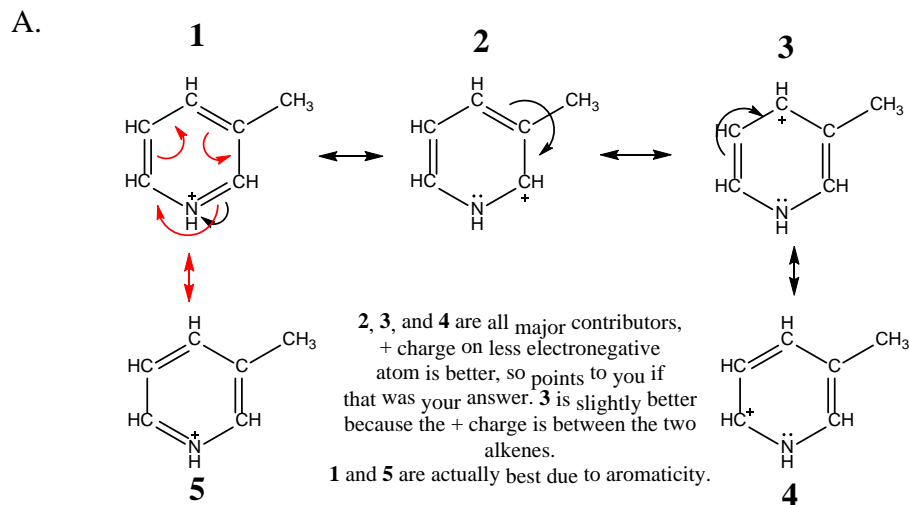
### Dr. Renee Link

This worksheet will focus on concepts to be discussed or already discussed, for Chapter 1. Those concepts being 1) Resonance Structures 2) Skeletal Structures and 3) Acids/Bases.

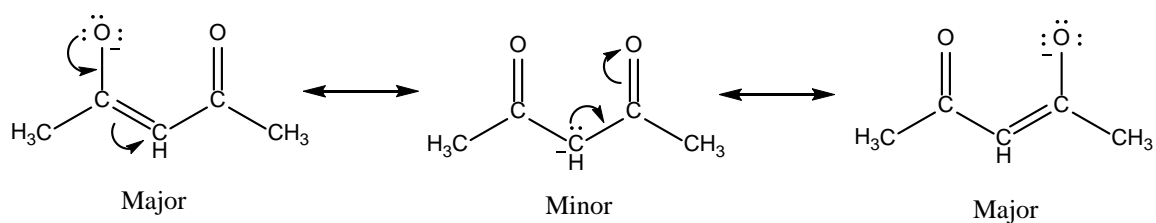
On a practical note, we **STRONGLY** recommend you work on these sheets using erasable pencil.

#### 1. Resonance Structures

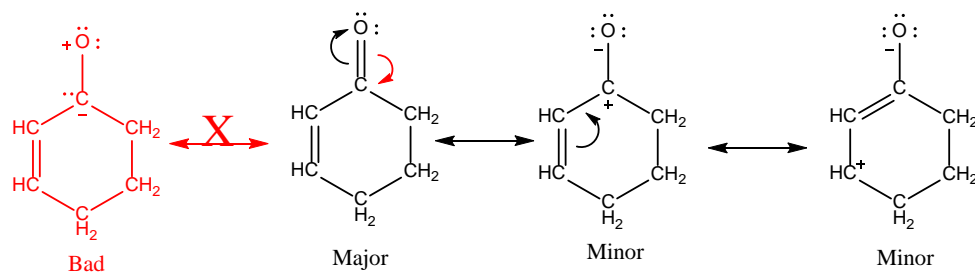
Draw valid resonance structures for the following molecules and label the structures as major or minor contributors. Use curved arrows to show electron movements and double-headed resonance arrows where needed. (Note: Lone pairs are not shown...draw them in where they are needed.)



C.

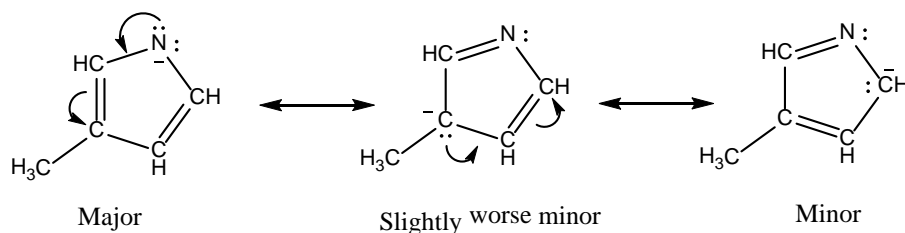


D.



You may be tempted to draw the red resonance structure...don't.  
The + on O and - on C makes this a worse resonance structure.

E.

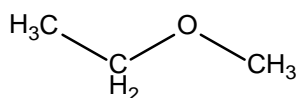
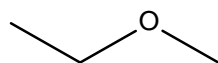


- charge on electronegative N is favored.

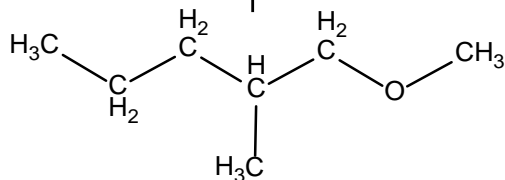
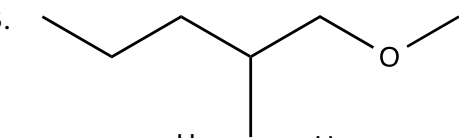
## 2. Drawing Organic Structures

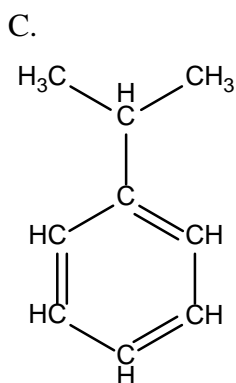
For each of the following, the condensed structure, Lewis structure, or skeletal structure is shown. Provide the other two.

A.  $\text{CH}_3\text{CH}_2\text{OCH}_3$

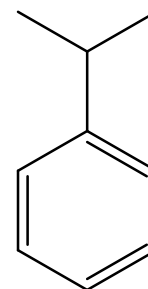


B.





There may be other ways to write this one,  
but this is probably the least ambiguous



### 3. Acids/Bases

A. What is the Bronsted-Lowry definition of an acid?

Proton ( $\text{H}^+$ ) donor, such as  $\text{HCl}$  or  $\text{H}_2\text{SO}_4$

B. Of a Bronsted-Lowry base?

Proton ( $\text{H}^+$ ) acceptor, such as  $\text{HO}^-$  or  $\text{CH}_3\text{O}^-$

C. What is the Lewis definition of an acid?

Lone pair acceptor, such as  $\text{Na}^+$  or  $\text{BCl}_3$ . Note for  $\text{BCl}_3$  that B has only 6 electrons, so it wants another 2 electrons.

D. Of a Lewis base?

Lone pair donor, such as  $(\text{CH}_3)_3\text{N}$  or  $\text{Cl}^-$

E. Give an example of each of the above.

See above. Note that all Bronsted-Lowry acids and bases are also Lewis bases/acids.

F. Rank the hydrogens shown below from least acidic (1) to most acidic (6):

