

## Chem 51A – SSI 2013

### Discussion 3 Worksheet

Dr. Renee Link

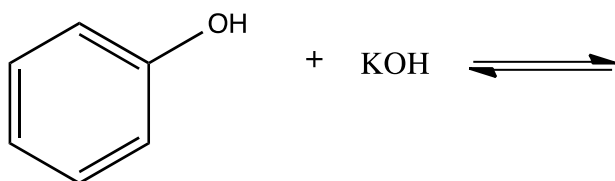
This worksheet will focus on concepts to be discussed or already discussed, in Chapter 2. Those concepts being 1) Acids and Bases 2) Acid Strength 3) Functional Groups.

A **mechanism** is, in short, the step-by-step process of how electrons move, in the course of a reaction, to produce products from starting materials. Mechanisms will be discussed in more detail later in this course.

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

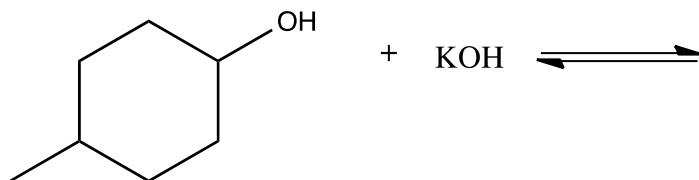
#### 1. Acids/Bases

- A. Examine the following acid/base reaction. First, fill in all missing lone pairs of electrons. Then, practice calculating formal charges by finding the formal charge of all oxygen atoms and drawing any charges on the structures. Circle and label the functional groups. Finally, identify the acid, the base, the conjugate acid and the conjugate base.



- B. Draw the curved arrow mechanism for A, showing how the proton was transferred in the acid/base reaction. Indicate which bond is broken in this process and which bond is formed. What types of bonds are these?

- C. Examine the following acid/base reaction. First, fill in all missing lone pairs of electrons. Then, practice calculating formal charges by finding the formal charge of all oxygen atoms and drawing any charges on the structures. Circle and label the functional groups. Finally, identify the acid, the base, the conjugate acid and the conjugate base.



Is the starting material of A or C a stronger acid? Why?

## 2. Acid Strength

A. What are the four primary stabilization effects that determine acid strength?

1)

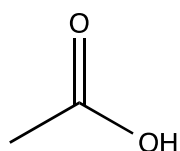
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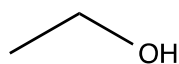
4)

B. For each of the pairs below, label the functional groups and circle the stronger acid. Explain briefly why.

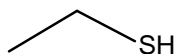
I.



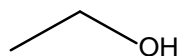
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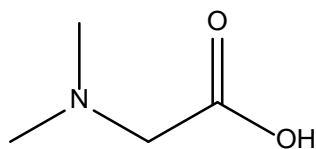
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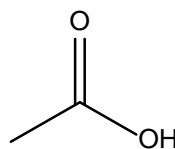
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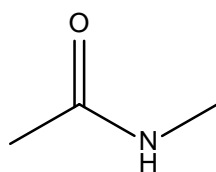
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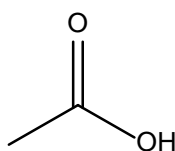
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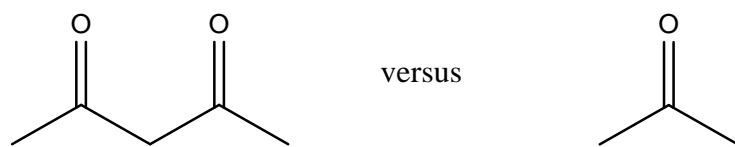
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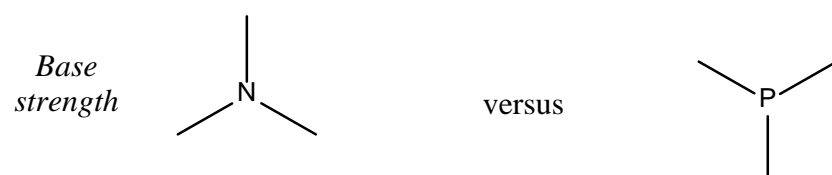
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V.



VI.



VII.

