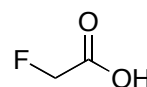
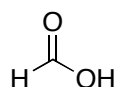
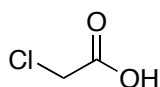
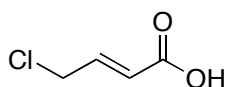


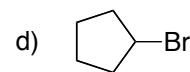
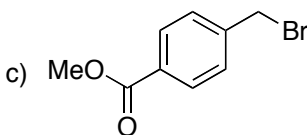
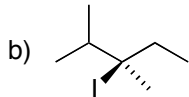
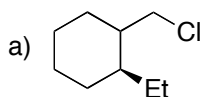
## Chem 51A SS14 Practice Problems!

The following questions pertain to acetic acid or related compounds.

- 1) The molecular formula of acetic acid is  $\text{CH}_3\text{CO}_2\text{H}$ . Draw the skeletal structure of acetic acid.
- 2) Using the structure you drew, label each type of bond present. Label the types of orbitals used to make each bond. Identify the geometry around each atom (except for hydrogens). Identify the strongest bond.
- 3) Draw the reaction of acetic acid with n-butyllithium ( $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Li}^+$ ). Label all acids and bases. Indicate the direction that the equilibrium will lie.
- 4) The  $\text{pK}_a$  of acetic acid is approximately 5. What is the  $K_a$  for acetic acid? This  $\text{pK}_a$  value was determined in water. Draw the corresponding acid-base reaction determine the ratio of reactants and products.
- 5) Are the C-O bonds in the conjugate base of acetic acid different lengths or the same lengths? Explain your answer (structure helpful).
- 6) The following compounds share common structural features with acetic acid. Rank them in order of acidity (1 = most acidic). Explain your choices, drawing additional structures when appropriate.



- 7) The conjugate base of acetic acid is also a nucleophile. Draw the product(s) of the reaction of the conjugate base of acetic acid with each of the following. Indicate stereochemistry when appropriate. What type of reaction is occurring to form each product? Draw a mechanism to show the formation of each product.



Do not rely only on these problems! You have Sapling problems, book problems, quizzes, the midterm, discussion worksheets, and tutor worksheets and review packets to study from, too!