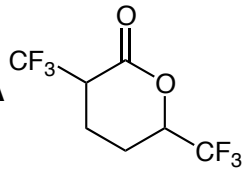
Name .....

L.I.U.

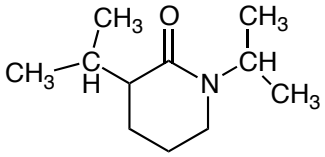
Chem. 122, Sect 008, Quiz 3, 50 pts, Spring, 2011

1. Which molecule below is more reactive to basic hydrolysis in $NaOH/H_2O$? Explain your choice briefly and show the hydrolysis reaction for BOTH molecules, giving all of the steps of the reaction mechanism. (20 pts)

A



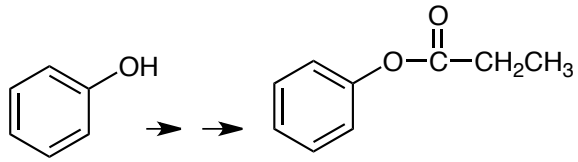
B



2. Synthesize the following molecules from the starting materials on the left as shown. (10 pts)

(a) $CH_3CH_2CH_2-\overset{\overset{O}{\|}}{C}-NHCH_2CH_3 \rightarrow\rightarrow CH_3CH_2CH_2-\overset{\overset{O}{\|}}{C}-OCH_2CH_3$

(b)



3. In the unknown amine experiment, show the reaction that occurs between dibutylamine $[(C_4H_9)_2NH]$ and benzenesulfonyl chloride $(C_6H_5SO_2Cl)$ in aqueous KOH solution. (b) How many layers would be formed? Explain. (c) Would the product of this reaction, if separated from the aqueous solution, be soluble in 1.0 M HCl? Explain briefly. (10 pts)

4. In the preparation of methyl orange, (a) show the reaction that occurs when sulfanilic acid $(HOSO_2C_6H_4NH_2)$ is added to 0.5 M sodium carbonate solution and briefly explain the purpose of this step. (b) Show the reaction that occurs when N,N-dimethylaniline $[(CH_3)_2NC_6H_5]$ is added to acetic acid and explain the purpose of this step. (c) What color is methyl orange? Explain your answer. (10 pts)