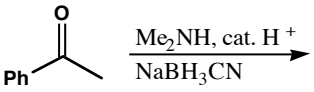
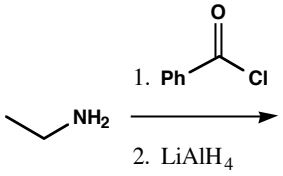
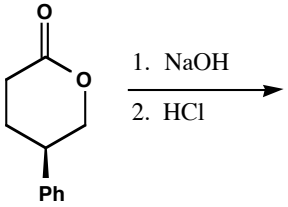
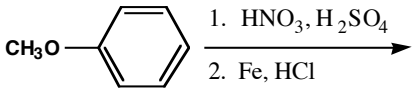
JASPERSE CHEM 342 TEST 4 VERSION 2
Ch 24 Amines Ch 20 Carboxylic Acids Ch 21 Carboxylic Acid Derivatives

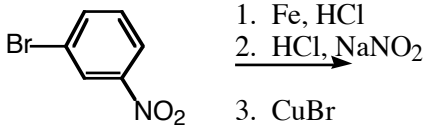
1. Synthesis Reactions. Draw the feature product of the following reactions (need not show any byproducts). (22 points, 2 points each)

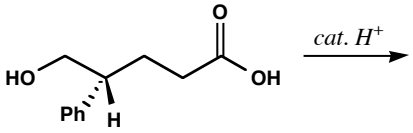


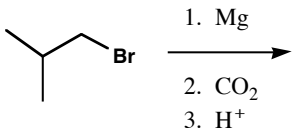


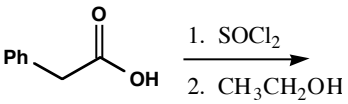


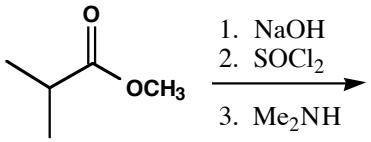


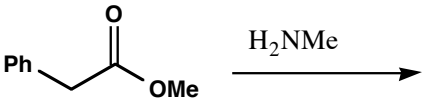


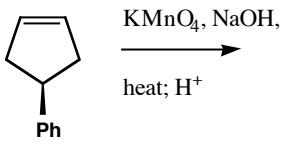






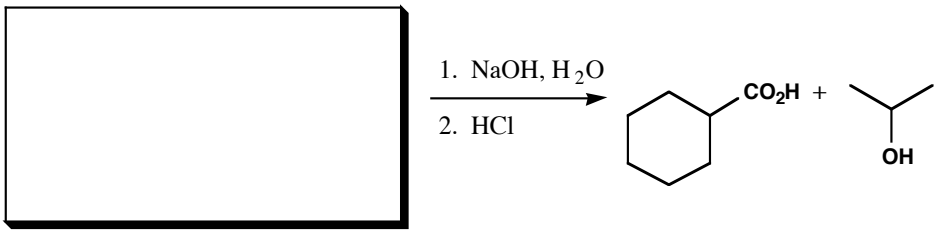




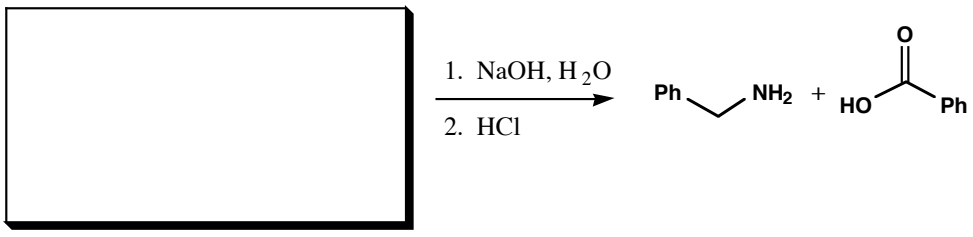


2. Hydrolysis Reactions. Draw the starting materials for the following hydrolysis reactions. (4 points)

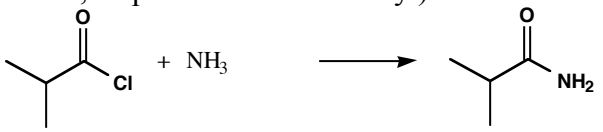
a.

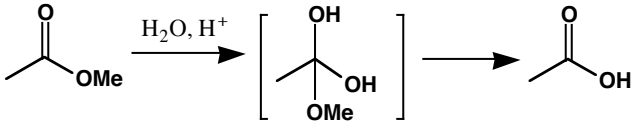


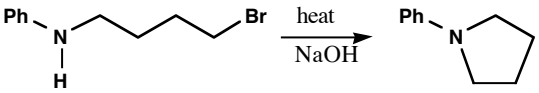
b.

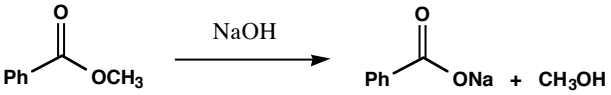


3. Draw the Mechanisms for the following reactions. (16 points total. Some are relatively trivial, so point values will vary.)

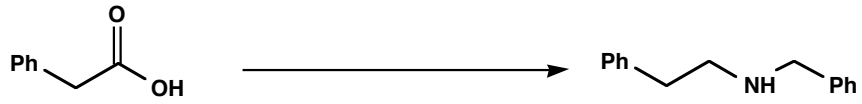


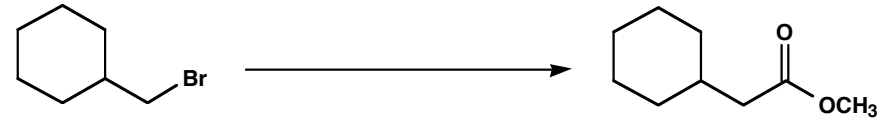


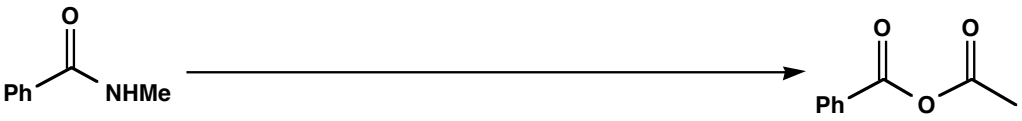




4. Provide Reagents for the following Transformations (12 points)

a. 

b. 

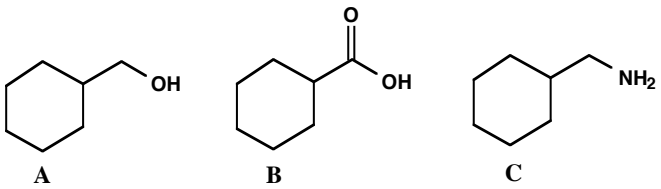


5. Which (if any) after being dissolved in diethyl ether, will: (6 points. Note: The answers may be none or more than one, you tell me!)

a) Extract into $NaOH/H_2O$?

b) Extract into HCl/H_2O?

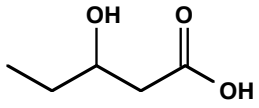
c) Extract into water?

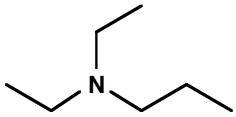


6. Nomenclature. Provide Either the Name or the Structure for the Following Chemicals. (8 points)

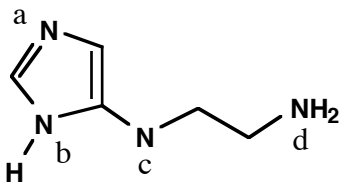
a. N-propyl-5-methyl-1-hexanamine

b. (R)-2-bromopropanoic acid

d. 

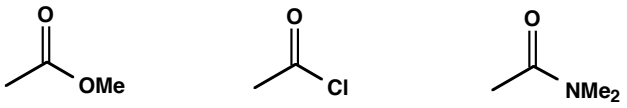
e. 

7. For each nitrogen a-d, identify the hybridization of the nitrogen atom, and identify the hybridization of the nitrogen lone pair. (6 points, 2 points off for 1st error, 1 for each additional)

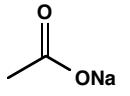


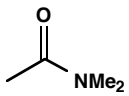
Nitrogen Atom	Hybridization of the Nitrogen Atom	Hybridization of the Nitrogen Lone Pair
a		
b		
c		
d		

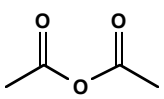
8. Rank the following according to their reactivity toward $NaOH/H_2O$ hydrolysis, from 1 (most) to 3 (least). (2 points)



9. Circle the compounds, if any, (may be none, one, or more than one) that would <u>not</u> react with methanol to give a methyl ester: (4 points)







10. Rank the acidity of the following, 1 being most acidic, 3 being least (9 points)

a. $CH_3NH_3^+Cl^-$ benzoic acid water

b. CH_3CO_2H CH_3CH_2OH $CH_3CH_2NH_2$

c. water p-nitrobenzoic acid p-methylbenzoic acid

11. Rank the basicity of the following, 1 being most basic, 3 being least (9 points)

a. $PhNH_2$ $(CH_3)_3N$ CH_3NH_2

b. Me_2NH CH_3CO_2Na H_2O

c. NaOH CH_3MgBr pyridine