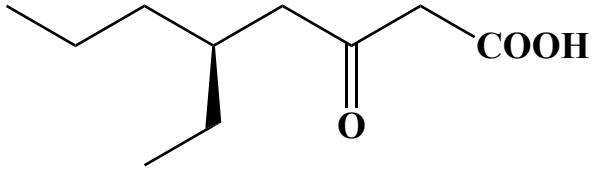
NAME (Print): _____

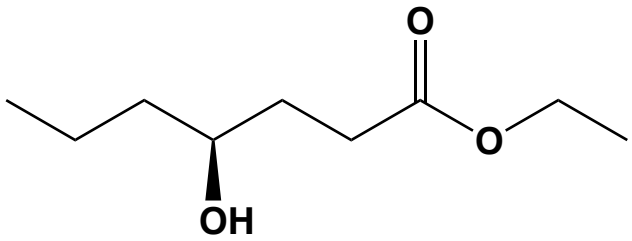
SIGNATURE: _____

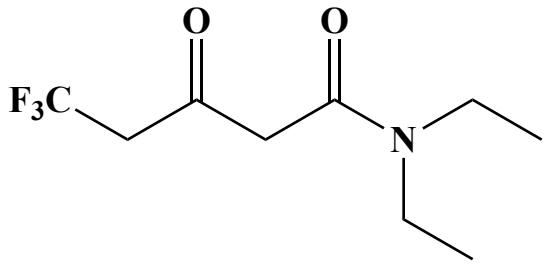
Chemistry 320N
Dr. Brent Iverson
7th Homework
March 19, 2024

Please print the first three letters of your last name in the three boxes

4 pts each) In the space provided, write the IUPAC name (including stereochemistry where appropriate) for the following two molecules:



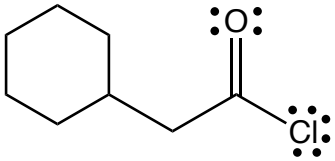


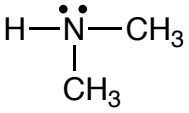


(4 pts) In the space provided, draw the following molecule: **(3*S*,4*S*)-3,4,5,5-tetramethylhexanamide**

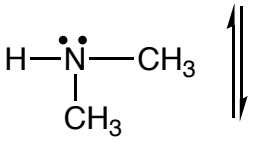
Complete the mechanism for the following reaction. **Be sure to show arrows to indicate movement of all electrons, write all lone pairs, all formal charges, and all the products for each step.** Remember, I said all the products for each step. **IF A NEW CHIRAL CENTER IS CREATED IN AN INTERMEDIATE, MARK IT WITH AN ASTERISK. IF A CHIRAL CENTER IS CREATED IN THE PRODUCTS YOU NEED TO DRAW BOTH ENANTIONMERS, AND LABEL THE PRODUCT MIXTURE AS RACEMIC IF RELEVANT.**

Acid Chlorides Reacting with Amines





Proton transfer

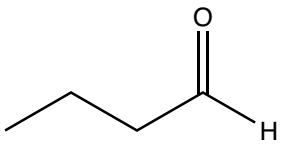


Products

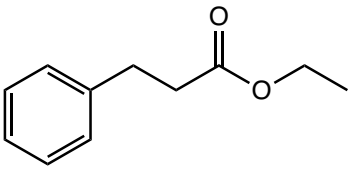
This is an example of Mechanism ____

with a protron transfer in the middle

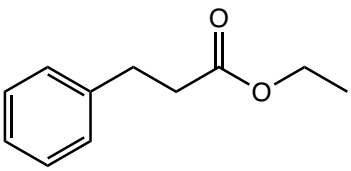
(3 or 5 pts each) Fill in the boxes with the appropriate structure or structures. Because these structures are getting complex, you **do not need to draw both enantiomers. Instead, when a new chiral center is created, just mark it with an asterisk (*) and label the product as "racemic". No need to use wedges and dashes. However, when an E,Z mixture is formed, you must draw both the E and Z products. Notice that H_3O+ is the same as HCl/H_2O**



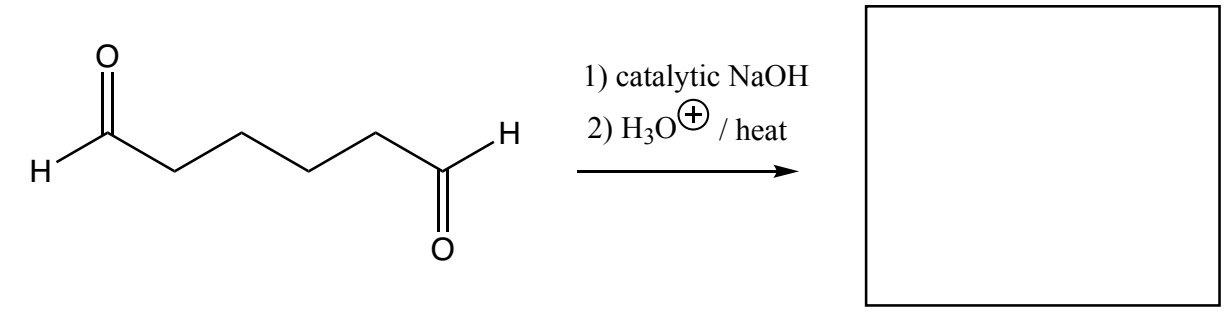
1) catalytic NaOH
2) $H_3O^{\oplus}$ / heat

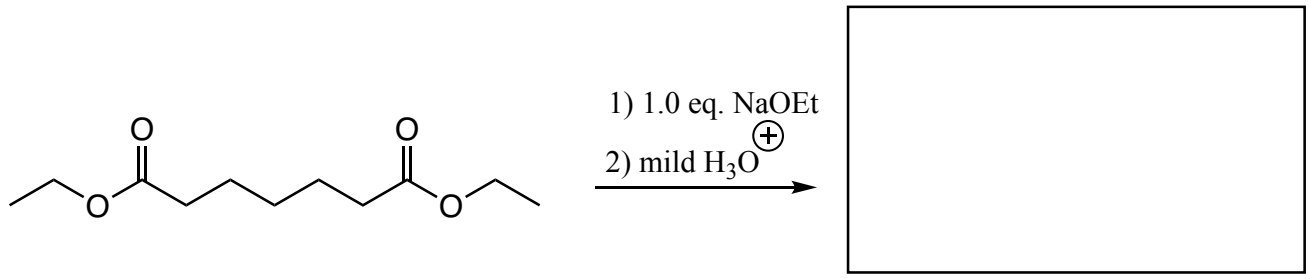


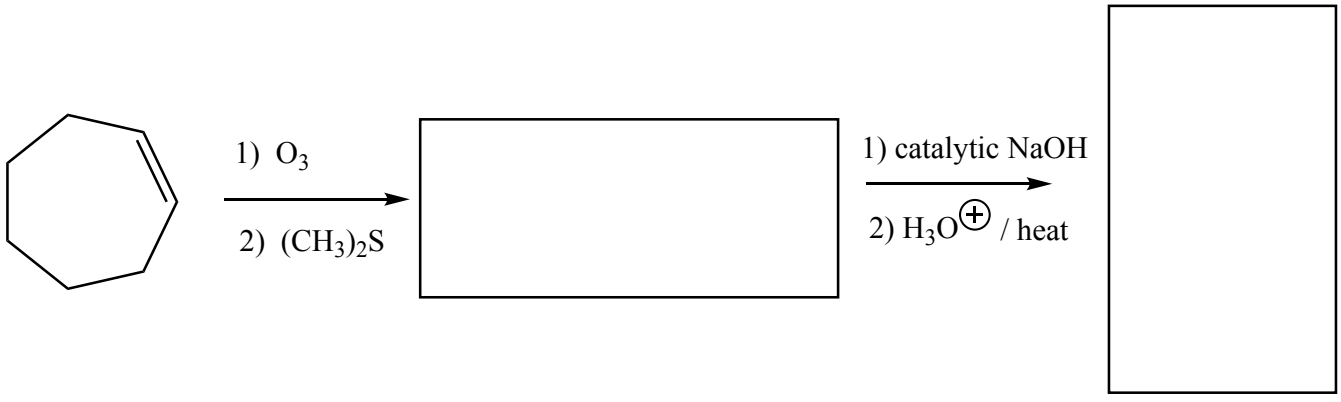
1) 0.5 eq. NaOEt
2) $H_3O^{\oplus}$ (Mild acid)

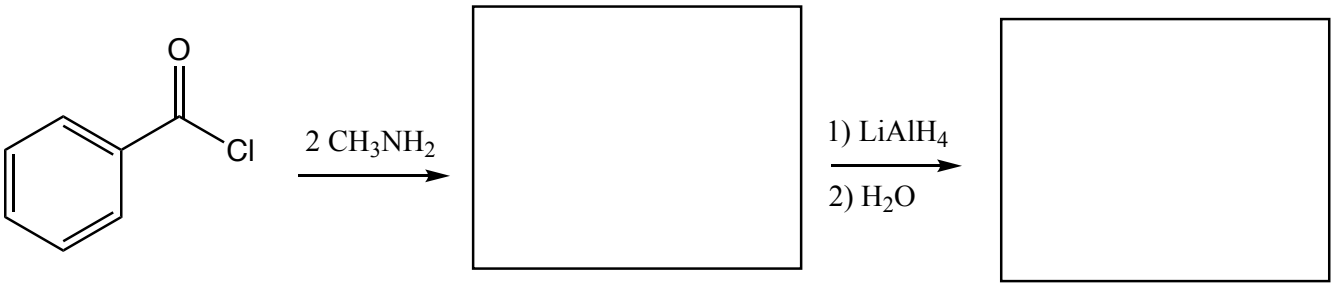


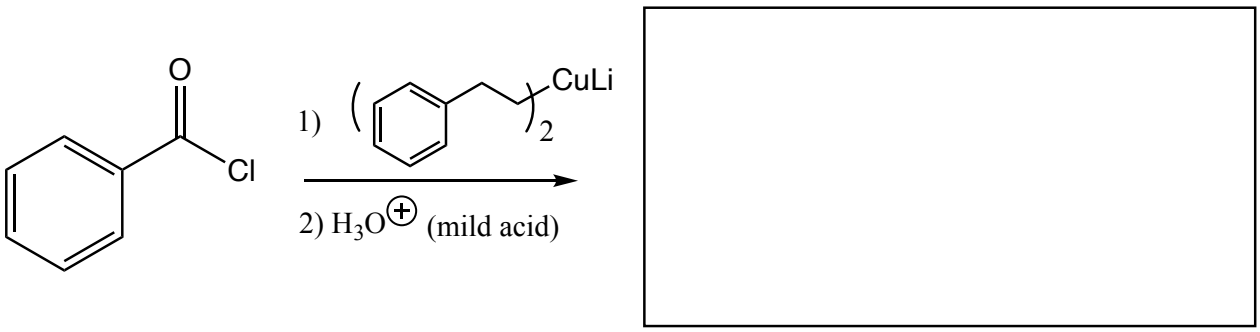
1) 1.0 eq. NaOH
2) $H_3O^{\oplus}$ (Mild acid)

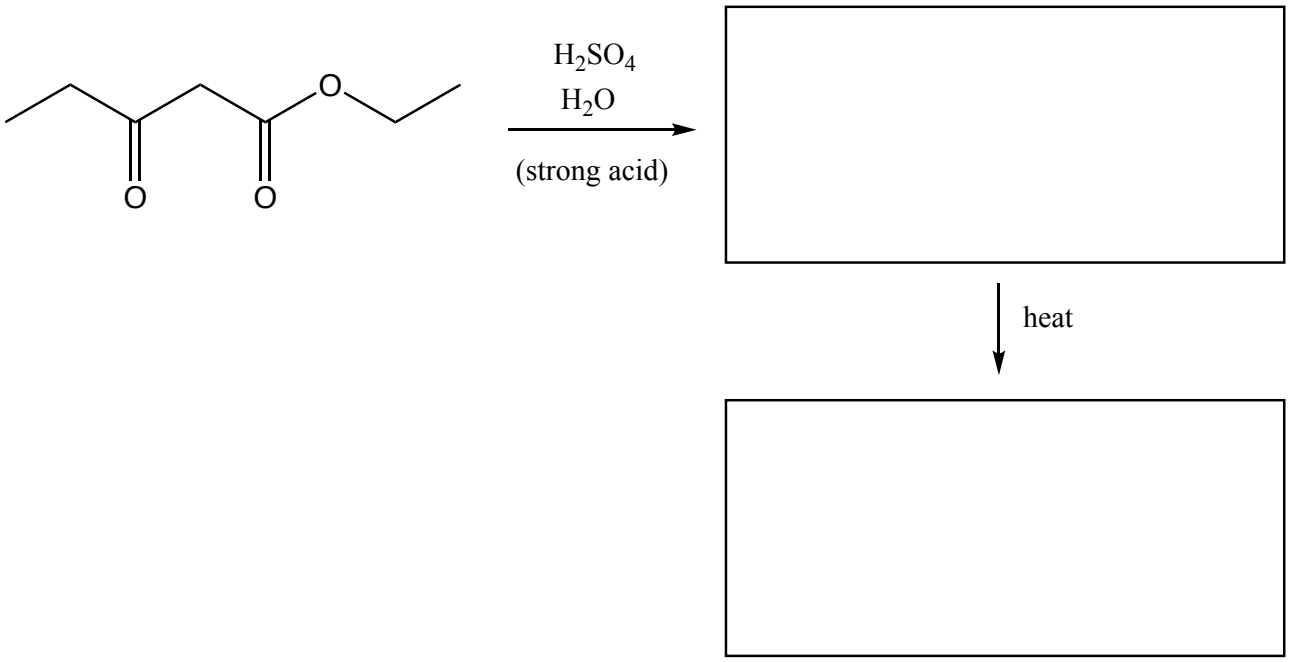

O
H
H
O
1) catalytic NaOH
2) $H_3O^{\oplus}$ / heat


O
O
O
O
1) 1.0 eq. NaOEt
2) mild $H_3O^{\oplus}$


1) O_3
2) $(CH_3)_2S$
1) catalytic NaOH
2) $H_3O^{\oplus}$ / heat


O
Cl
2 CH_3NH_2
1) $LiAlH_4$
2) H_2O

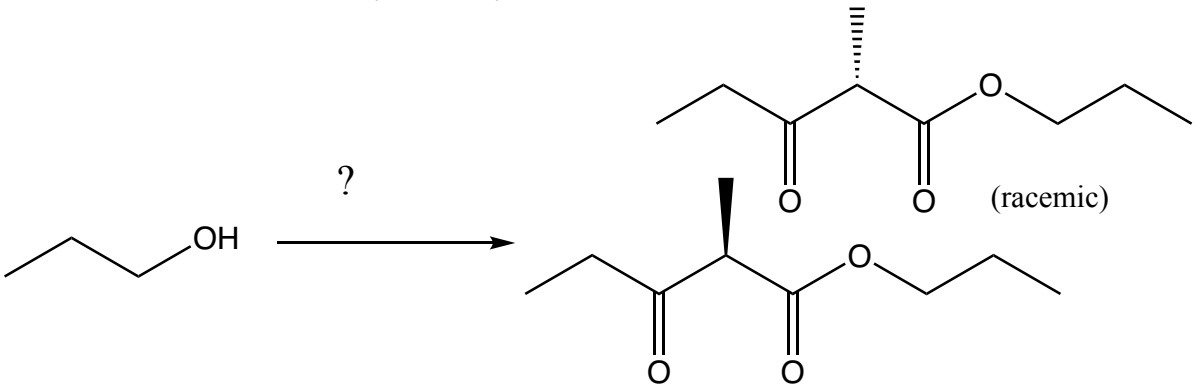

O
Cl
1)
CuLi
2
2) $H_3O^{\oplus}$ (mild acid)


O
O
O
H_2SO_4
H_2O
(strong acid)
heat

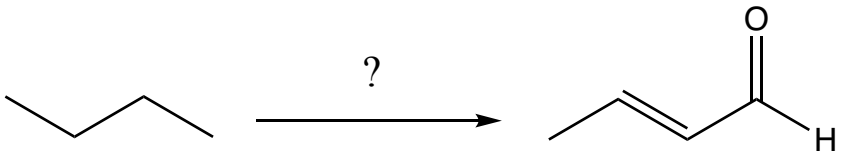
These are enolate synthesis problems. In each case, all of the carbons of the products must come from the listed starting materials. You may use any reagents we have discussed this semester or last semester. Show all molecules synthesized along the way. For each step, you will only get full credit if the product you list is the major product of that transformation. Use wedges and dashes for all chiral centers. Remember to work backwards, count carbons, and make sure you know your KRE's.

(10 pts)

A)



(13 pts)

B) 

(only a small amout of Z product seen)

(16 pts)

C)