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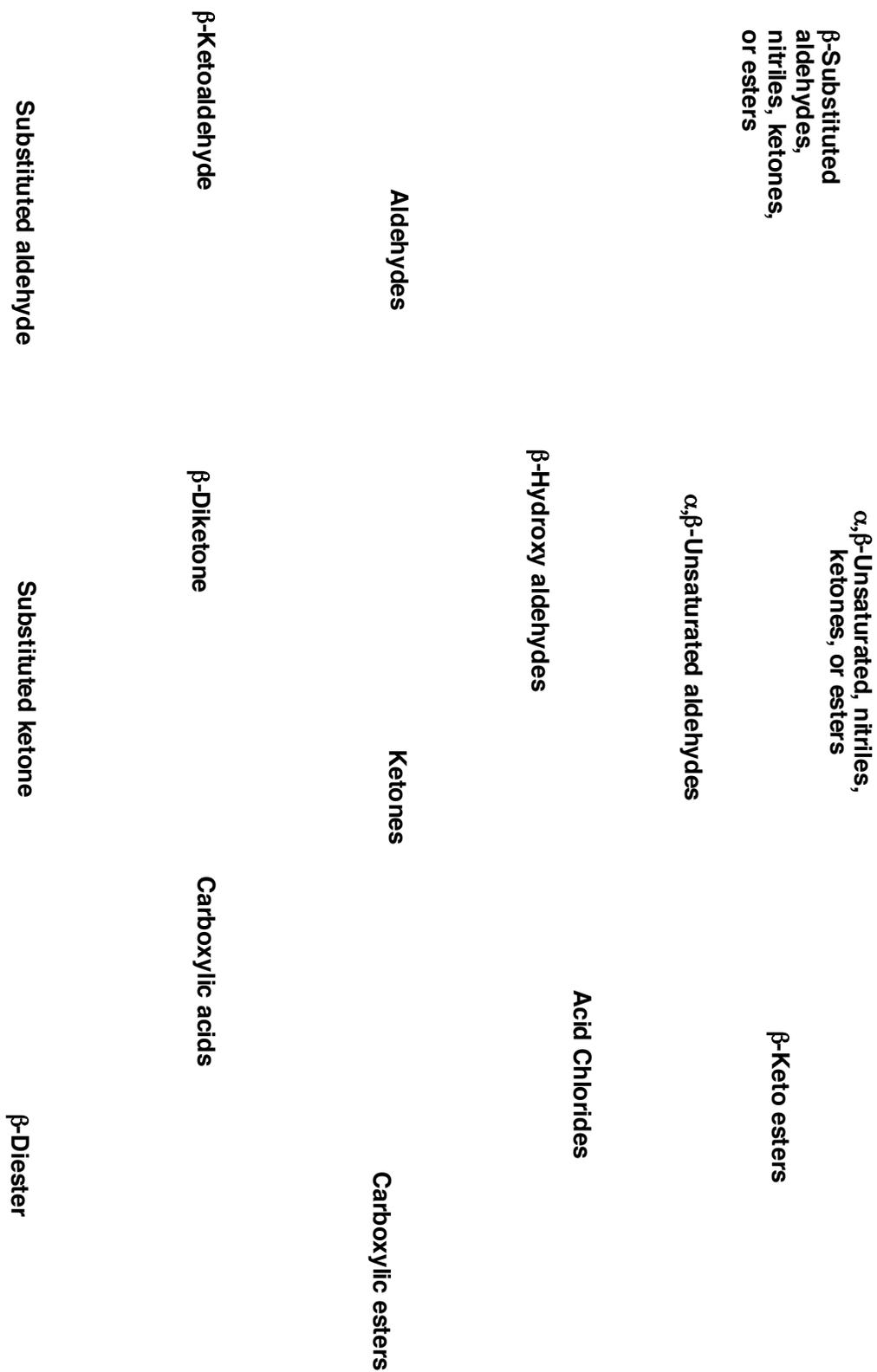
SIGNATURE: _____

**Chemistry 320N
Dr. Brent Iverson
8th Homework
March 25, 2026**

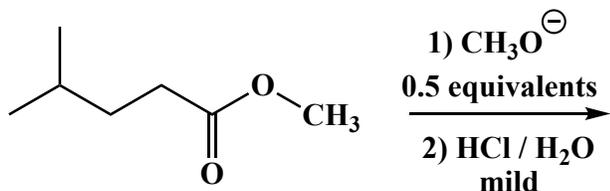
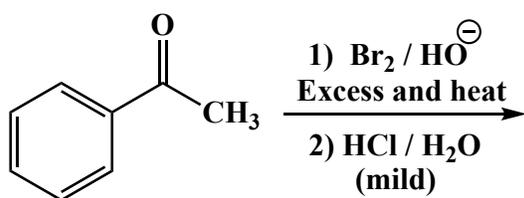
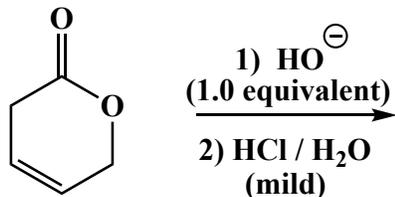
**Please print the
first three letters
of your last name
in the three boxes**

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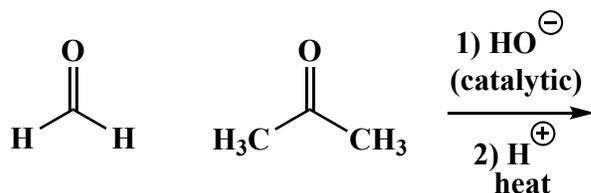
Fill in the missing arrows and reagents to complete this roadmap using all the reactions you have learned this semester that interconvert these types of molecules.



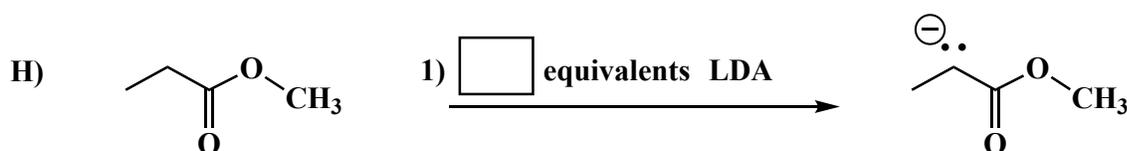
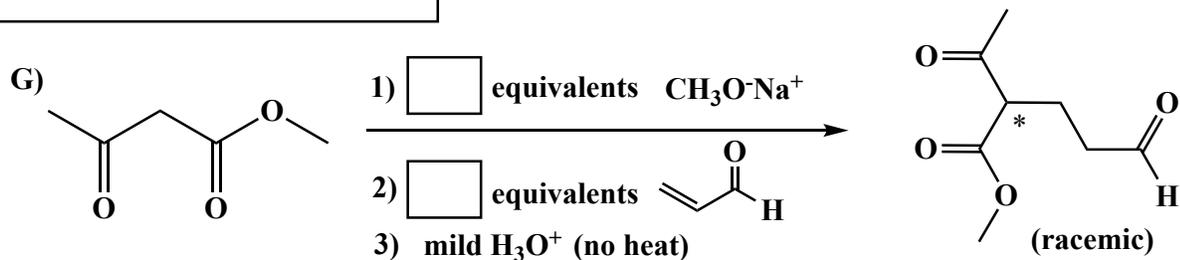
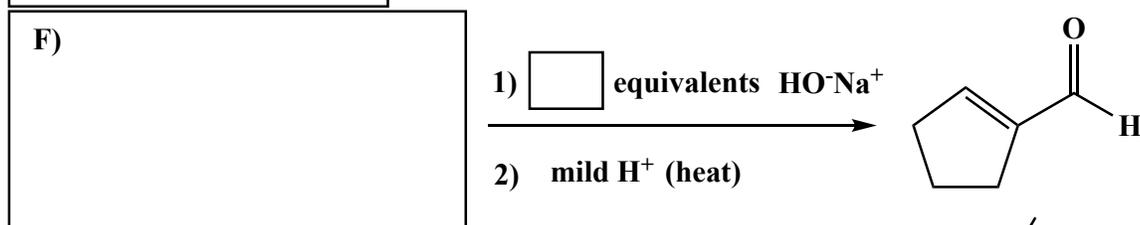
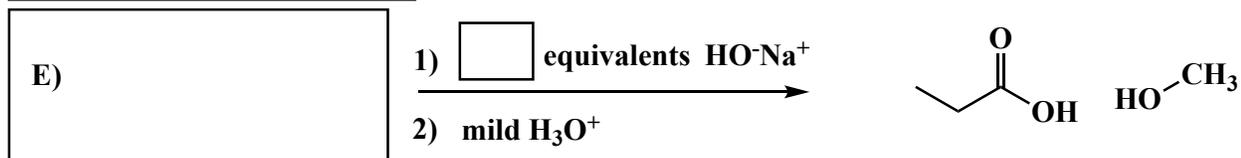
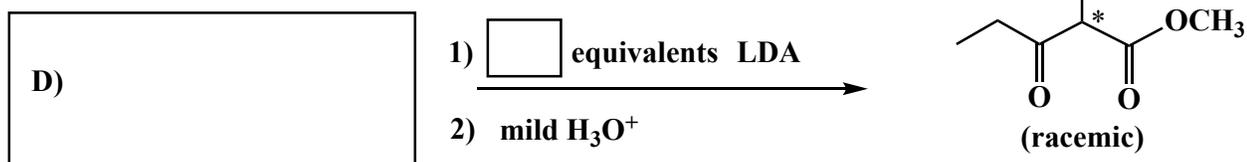
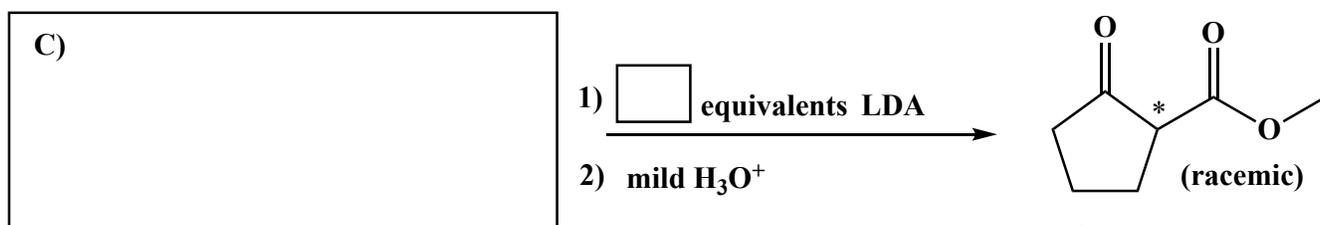
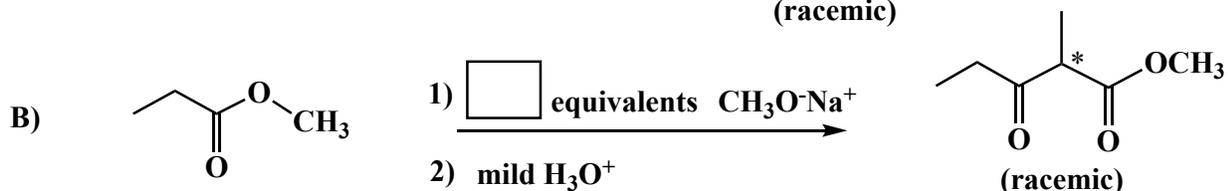
Write the predominant product that will occur for each transformation. If a new chiral center is created and a racemic mixture is formed, you must draw both enantiomers and write "racemic" under the structure. Use wedges (\blacktriangleleft) and dashes (\cdots) to indicate stereochemistry. For these, you do not have to worry about metal salts in the products.



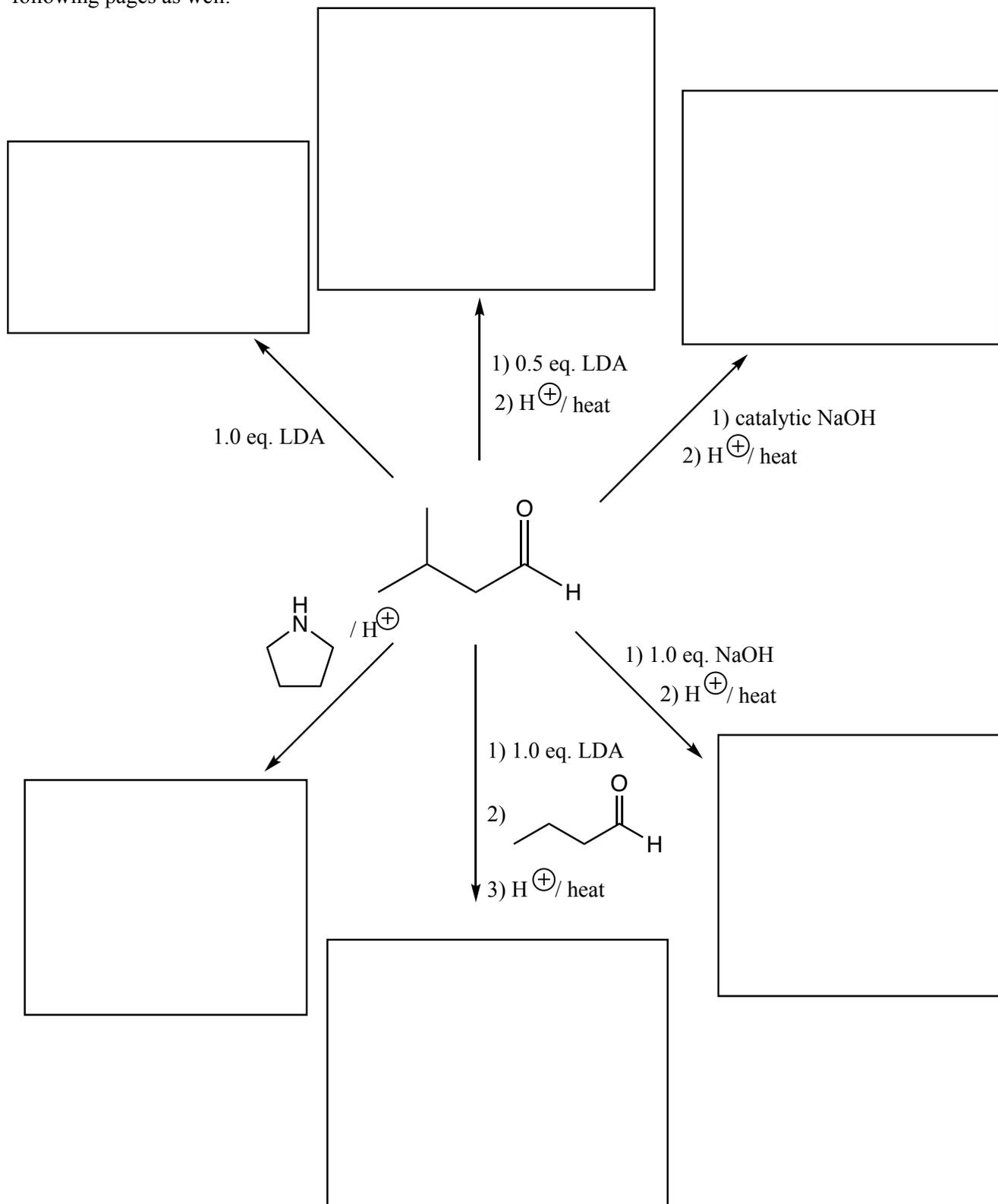
There is a lot to think about here. Please take your time. ASSUME THIS DEHYDRATES.

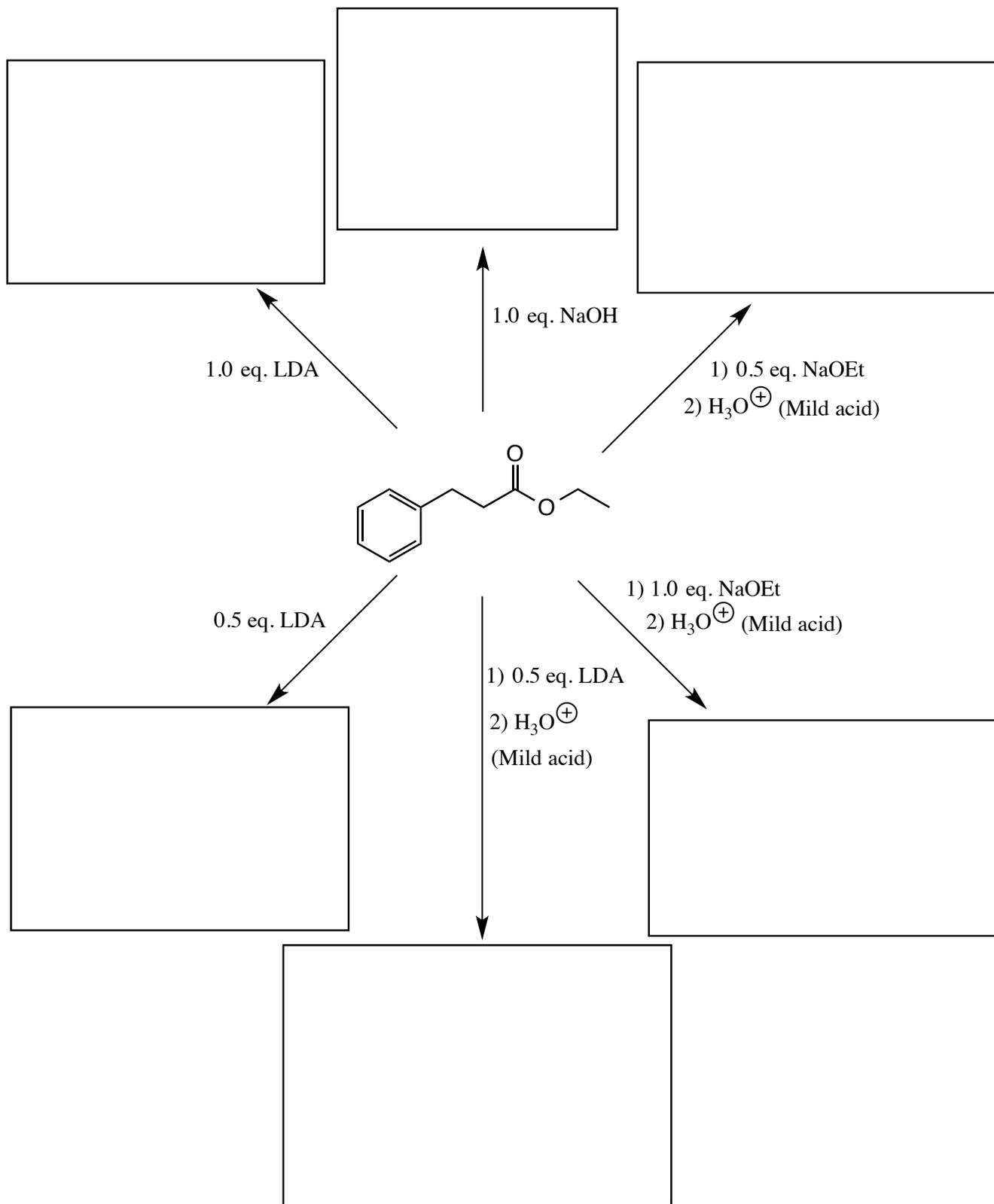


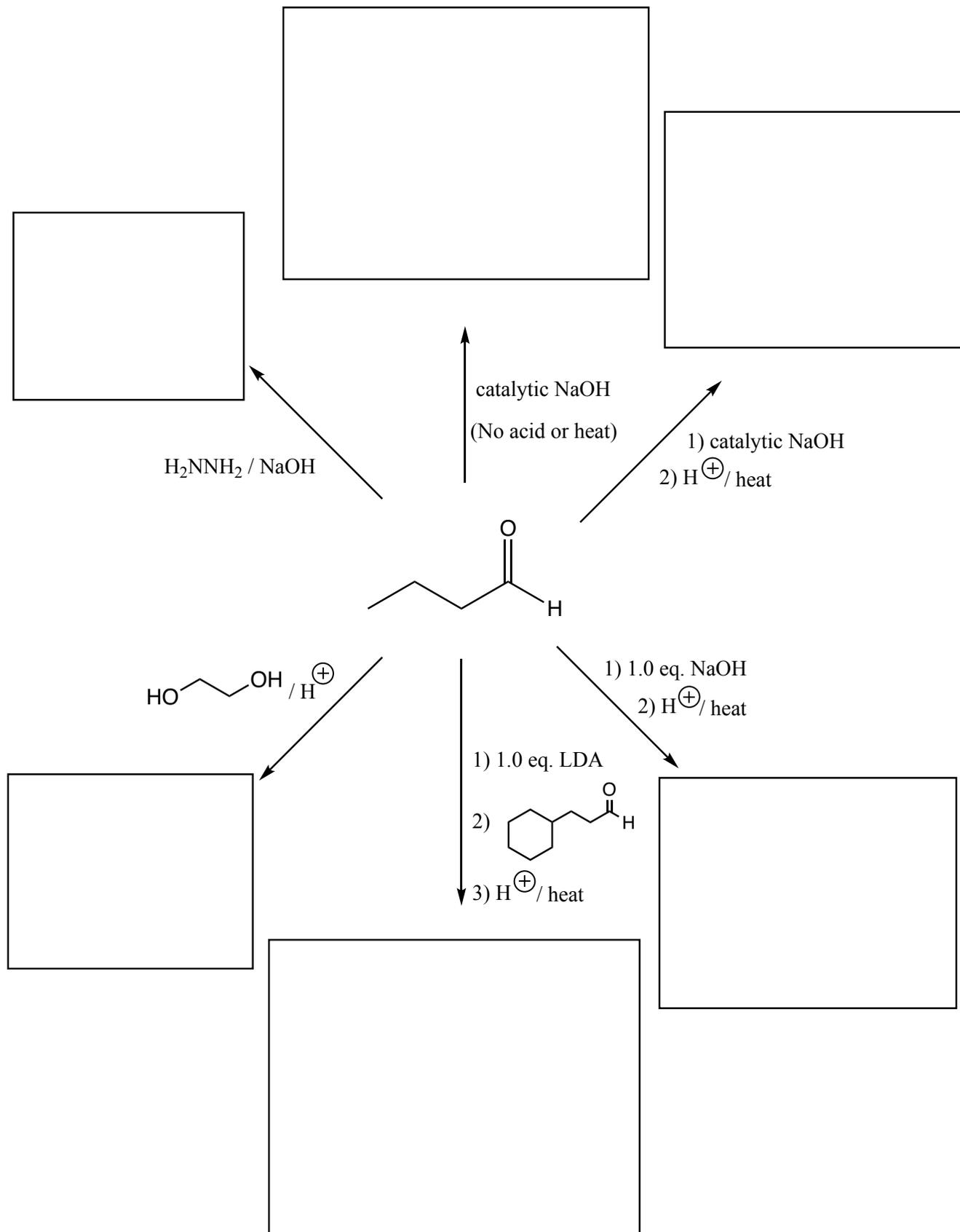
In each of the boxes over an arrow, write the **minimum number of equivalents** of the specified reagent required to carry out the reaction shown **to completion**. If only a catalytic amount is needed, write "CAT". Note: **You must assume the carbonyl compound starting material is initially present in an amount of 1.0 equivalent.** In the problems with an empty reagent box, C) - F), fill in the missing starting material.

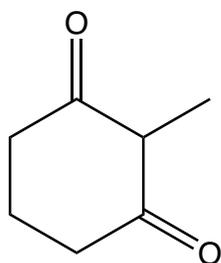


Fill in the boxes with the appropriate structure or structures. Because these structures are getting complex, you **do not need to draw both enantiomers**. Instead, when a new chiral center is created, just mark it with an asterisk (*) and label the product as "racemic". No need to use wedges and dashes. Also, when an E,Z mixture is formed, only draw one and label it as "E,Z mixture". These directions apply to all of the following pages as well.

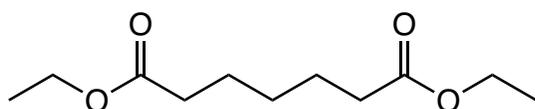
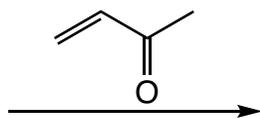




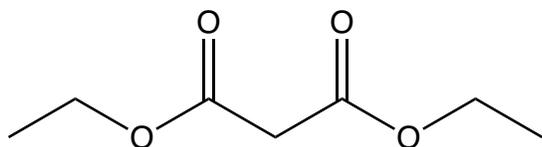
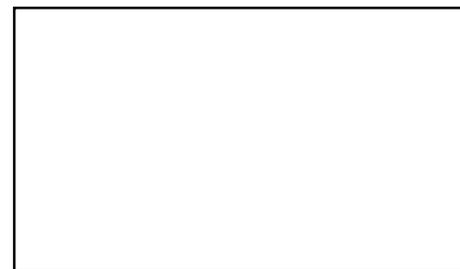


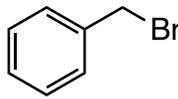


Catalytic NaOH / heat



1) 1.0 eq. NaOEt
2) mild H_3O^+



1) 1.0 eq. NaOEt
2) 
3) Strong H_3O^+ / heat

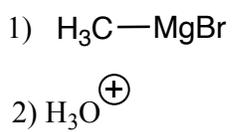
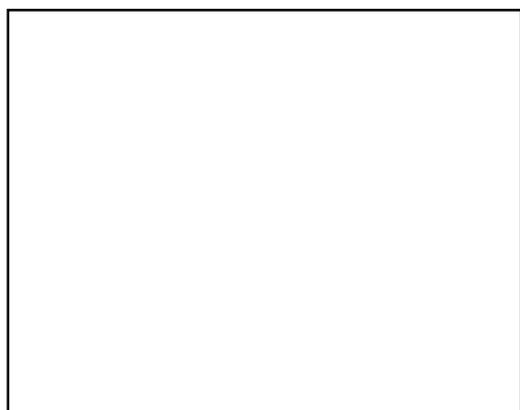
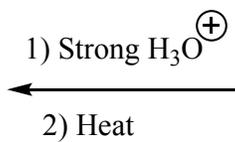
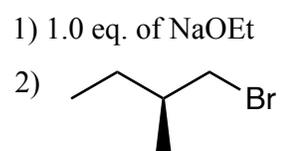
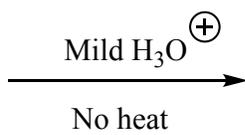
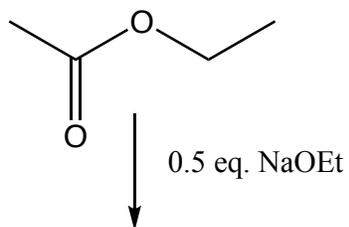


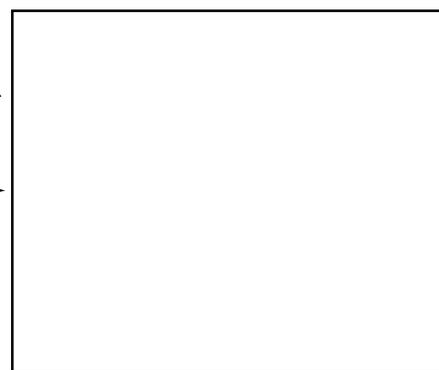
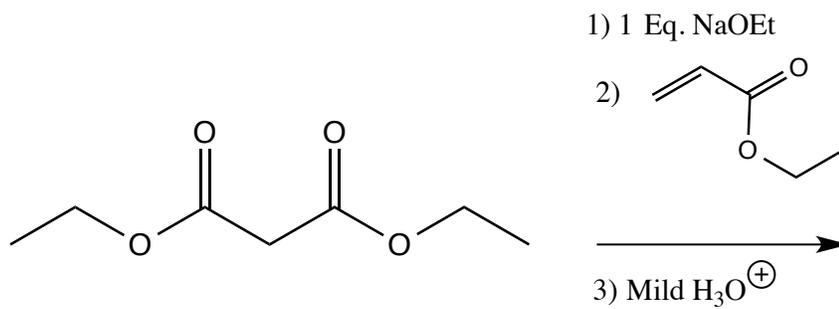
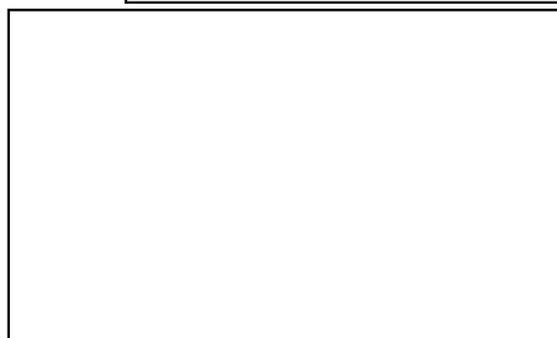
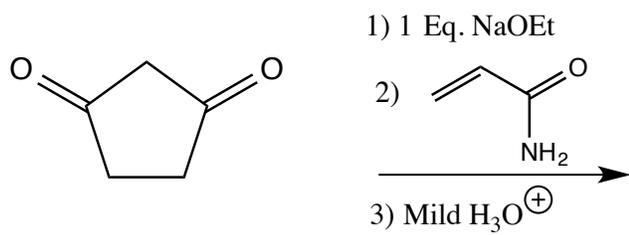
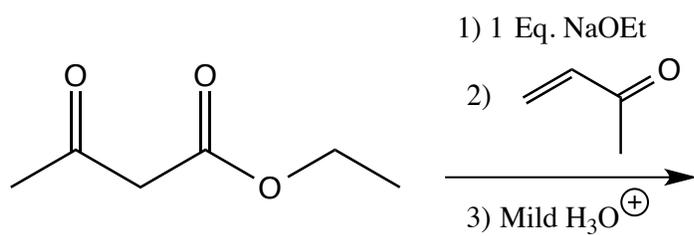
1) O_3
2) $(\text{CH}_3)_2\text{S}$



1) catalytic NaOH
2) H^+ / heat







3) Strong H_3O^+ / heat



