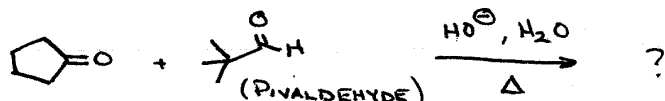


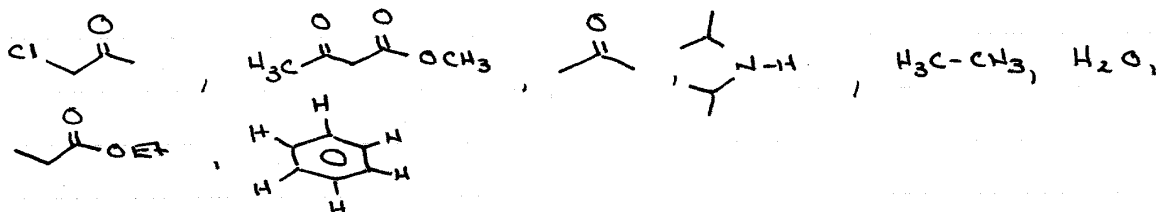
## ASSIGNMENT \*1

DUE JAN. 28, 2000

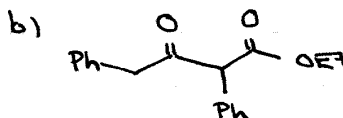
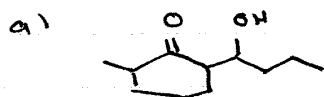
- 1) WRITE THE COMPLETE MECHANISM FOR THE BASE CATALYZED ALDOL CONDENSATION BETWEEN CYCLOPENTANONE AND PIVALDEHYDE (INCLUDING ELIMINATION STEPS). BE SURE TO SHOW ANY SMALL MOLECULES USED OR GIVEN OFF IN ANY OF THE STEPS. INDICATE WHICH STEPS ARE REVERSIBLE / IRREVERSIBLE.



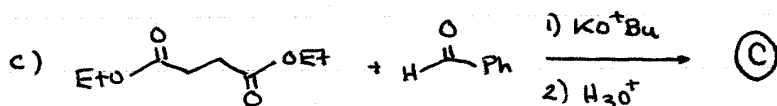
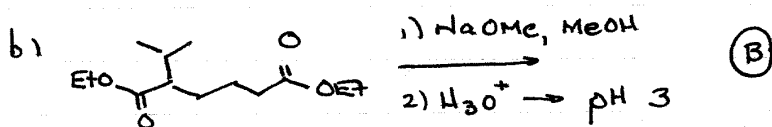
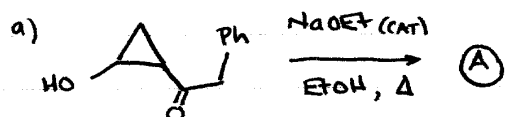
- 2) LIST THE FOLLOWING COMPOUNDS FROM MOST ACIDIC TO LEAST ACIDIC. WHERE IT IS NOT OBVIOUS, INDICATE THE SITE OF THE ACIDIC H



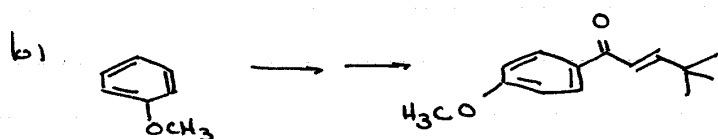
- 3) SHOW THE STRUCTURE OF THE REACTANTS WHICH YOU WOULD COMBINE TO GIVE THE INDICATE MATERIALS. INCLUDE THE CONDITIONS OF REACTION.



- 4) WHAT ARE THE MAJOR PRODUCT(S) OF THE FOLLOWING REACTIONS



5). How would you accomplish the following transformations (one or several steps). You may employ any additional reagent(s) you deem fit. Show all reagents, conditions, and any intermediates which could be isolated.



6). One of the ways of generating a stereochemically defined enolate is by attack of  $\text{CH}_3\text{Li}$  ( $\text{MeLi}$ ) on a silyl enol ether (the double bond stereochemistry remains intact). Predict <sup>the</sup> major product of the following reaction. Name the product diastereomer, and draw the transition state leading to the observed major product.

