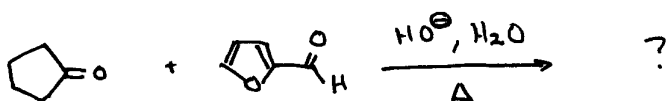
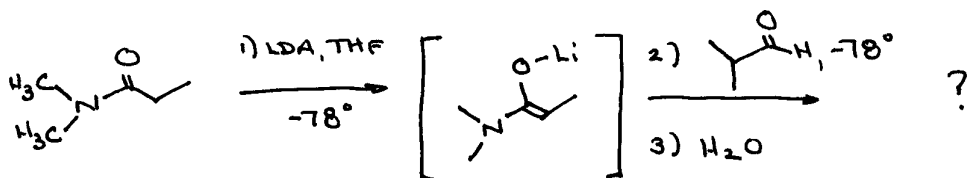


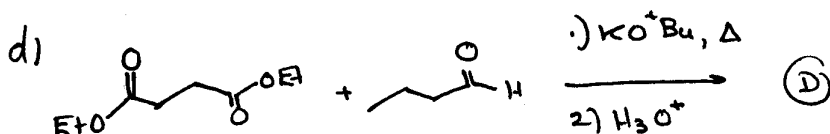
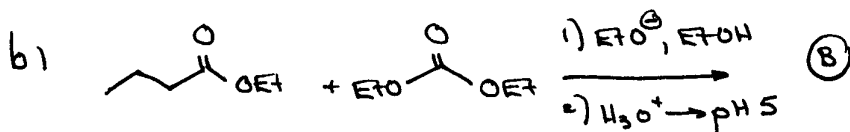
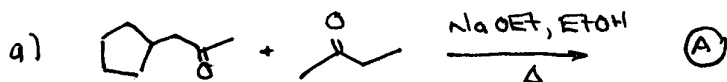
1. WRITE THE COMPLETE MECHANISM FOR THE BASE (HYDROXIDE) CATALYZED ALDOL CONDENSATION BETWEEN CYCLOPENTANONE AND FURFURAL. BE SURE TO INDICATE ANY SMALL MOLECULES USED OR GIVEN OFF IN ANY STEPS, AND TO INDICATE WHETHER EACH STEP IS REVERSIBLE OR IRREVERSIBLE. INCLUDE THE ELIMINATION PORTION OF THIS TYPE OF OF ALDOL



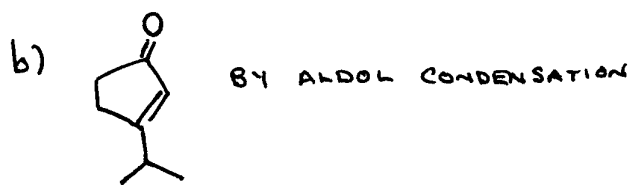
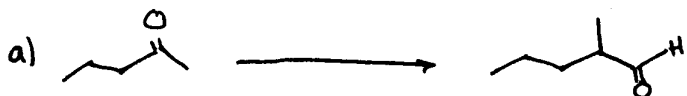
2. SHOW THE PRODUCT (AND NAME THE DIASTEREOMER) FOR THE FOLLOWING REACTION. DRAW THE TRANSITION STATE FOR THE CONDENSATION.



3. GIVE THE PREDOMINANT PRODUCT(S) FOR THE FOLLOWING REACTIONS. MECHANISMS ARE NOT NECESSARY, BUT SHOWING YOUR WORK MAY BE A HELP. SHOW ANY INTERMEDIATES THAT COULD BE ISOLATED.



4. SHOW BY EQUATION (ONE OR >1 STEPS) HOW YOU WOULD ACCOMPLISH THE FOLLOWING TRANSFORMATIONS. YOU MAY USE ANY OTHER REASONABLE REAGENTS THAT YOU DEEM FIT. SHOW ANY AND ALL REAGENTS, REACTION CONDITIONS, AND INTERMEDIATES THAT COULD BE ISOLATED.



THIS IS TRICKY; YOU MUST THINK ABOUT YOUR TYPES OF ENOLATE FORMATION CAREFULLY.