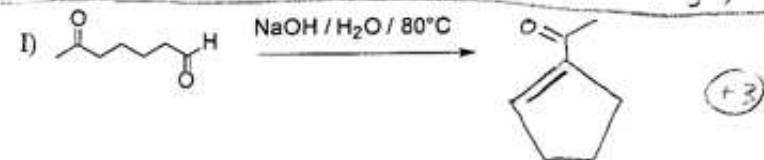
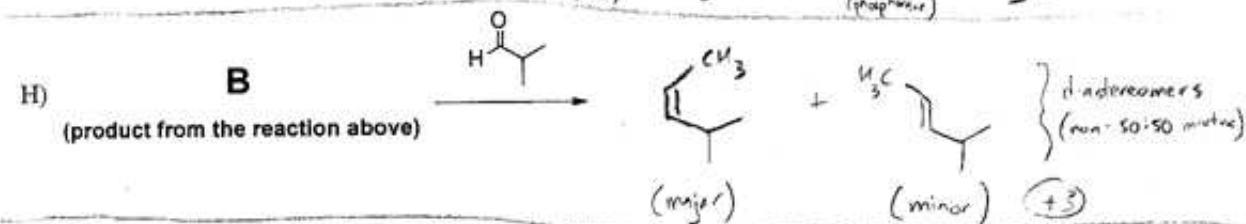
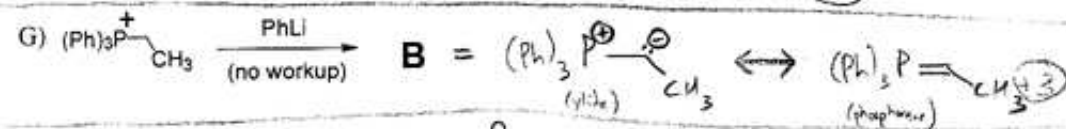
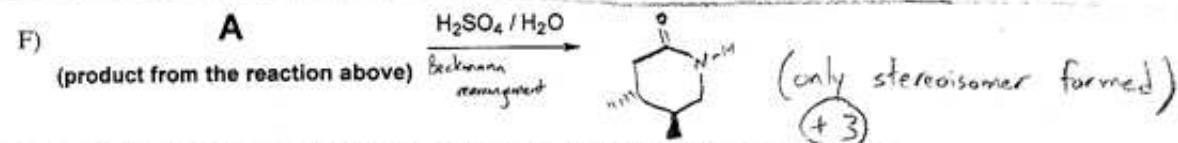
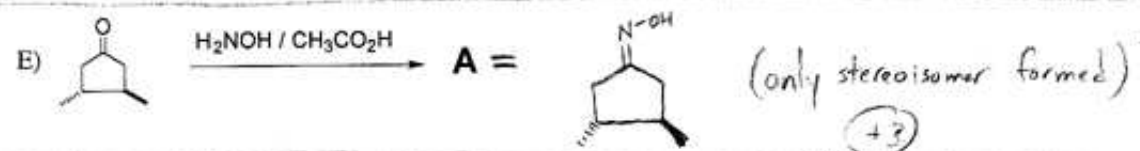
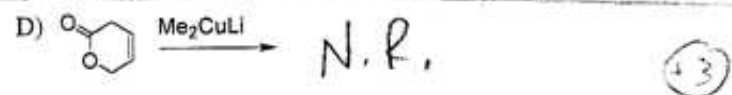
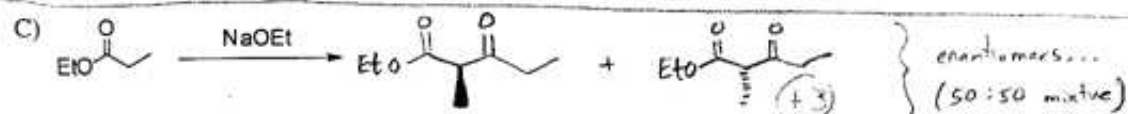
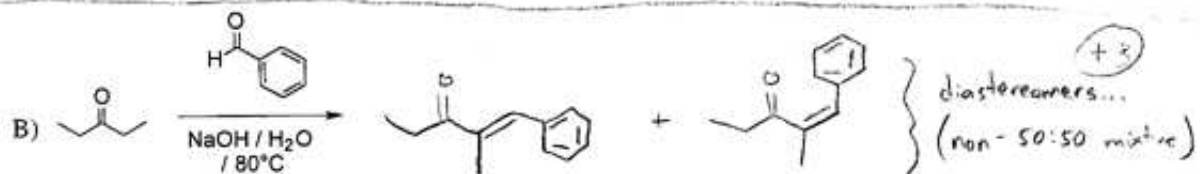
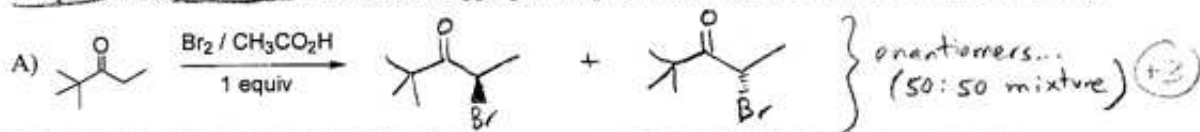
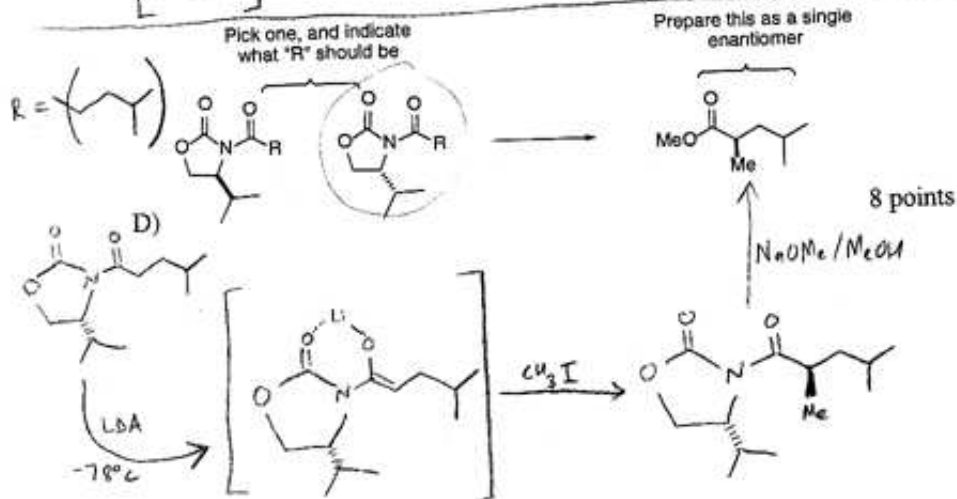
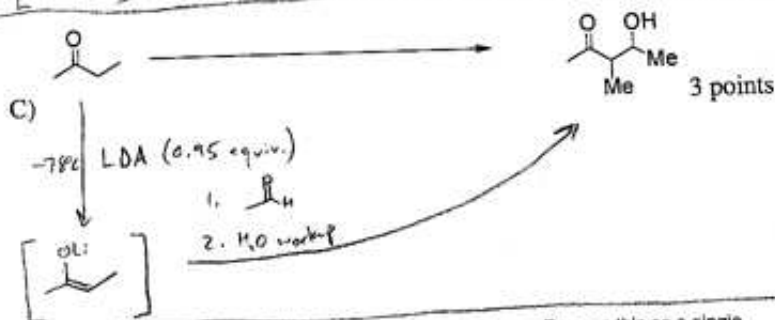
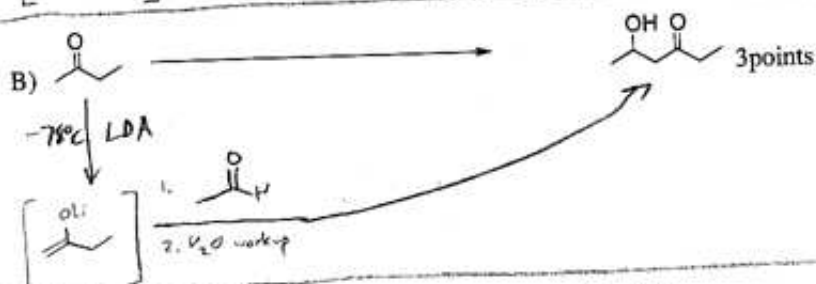
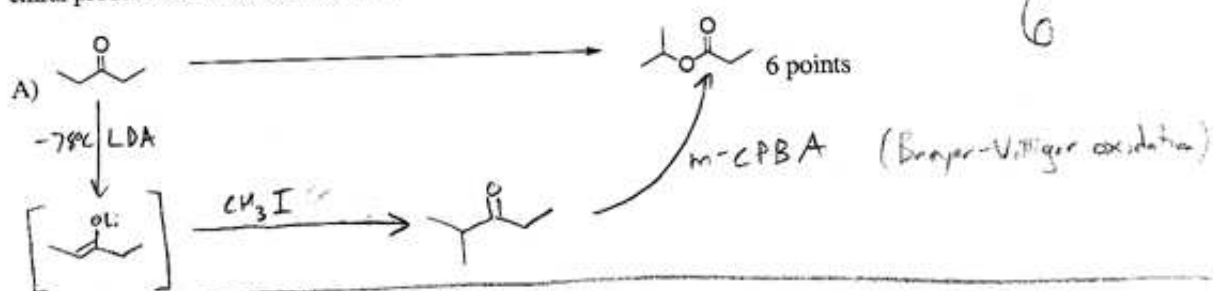


1) Provide the products of the following reactions. If no reaction would occur, then write NR. Draw all possible stereoisomers (i.e., draw dashed and bold lines as needed) and indicate if they would be produced in equal or unequal amounts. There is an appropriate aqueous work up for each reaction (3 points each).

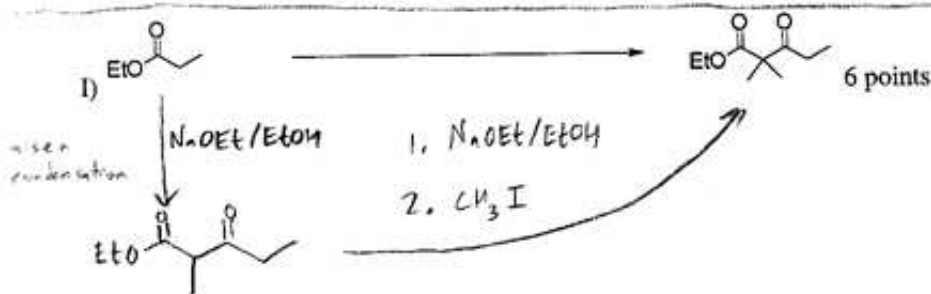
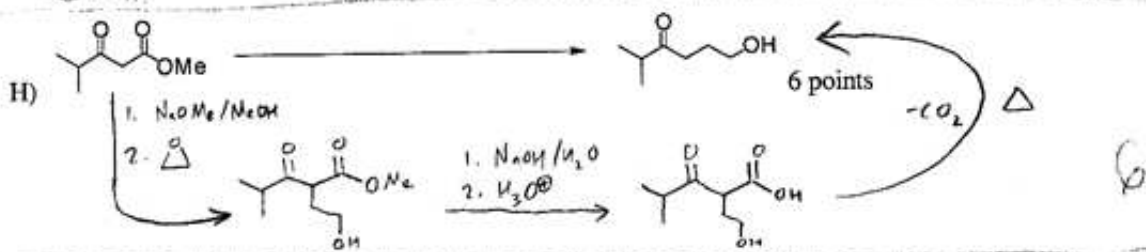
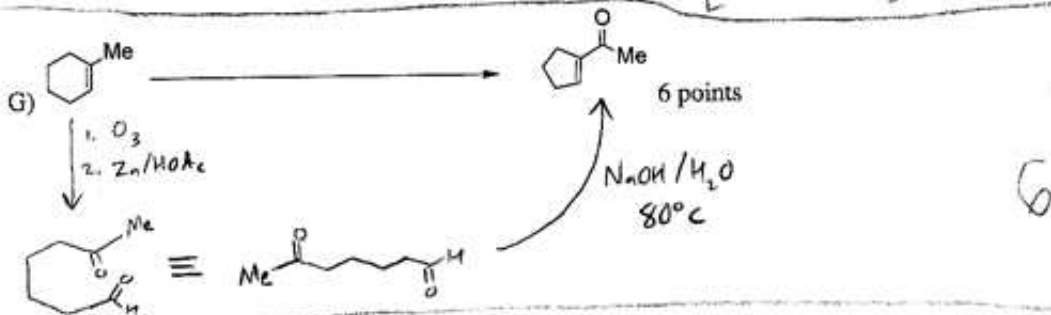
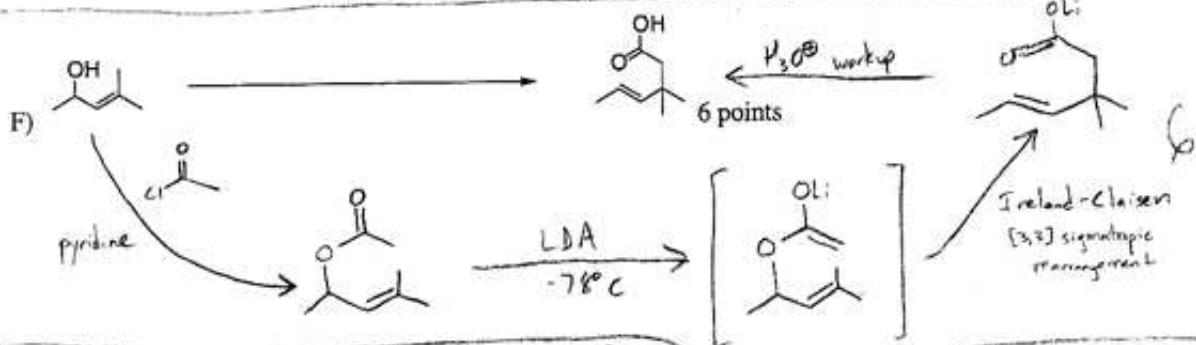
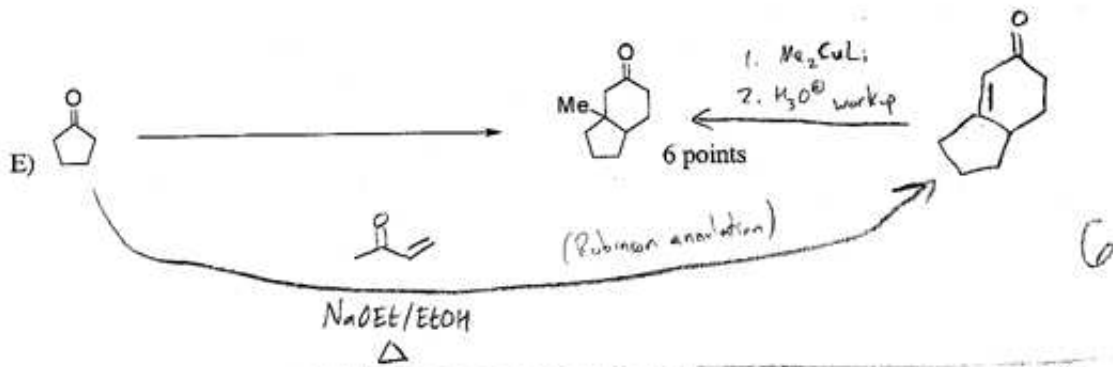


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2) Complete the following syntheses using any inorganic reagents you need and organic reagents of 20 carbons or less. If your synthesis requires more than one step, you must write the product of each step. Show the number of equivalents of a reagent whenever more or less than one equivalent is used. All chiral products are racemic mixtures.

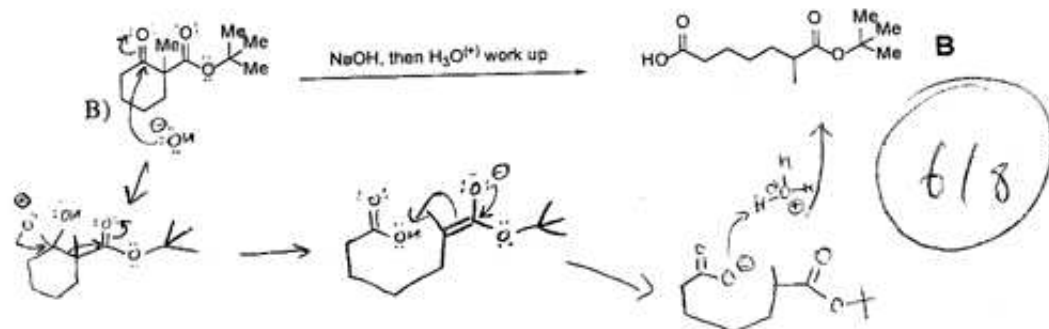
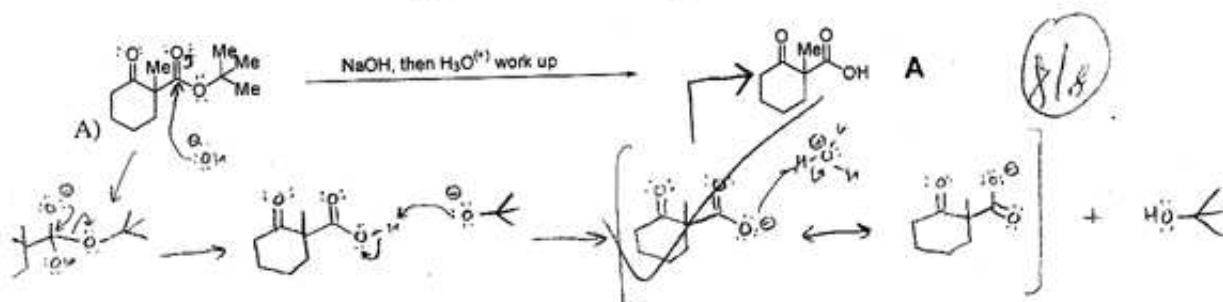
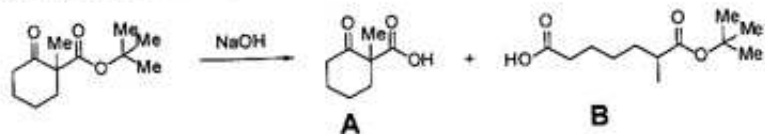


20



6  
30 min!

3) Treatment of the compound shown below with NaOH provides two products labeled as **A** and **B**. Provide me with two mechanisms, one for the formation of **A** and one for the formation of **B**. Be sure to show all intermediates, arrows and charges required for each step of your mechanisms (16 points).



C) Provide the product and mechanism for the reaction shown below (7 points)

