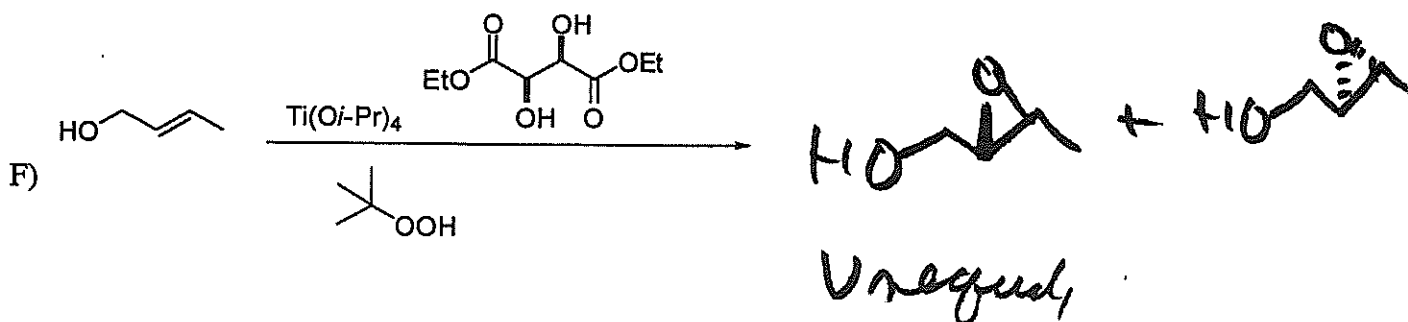
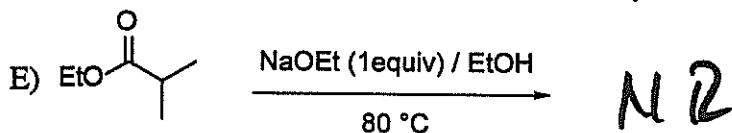
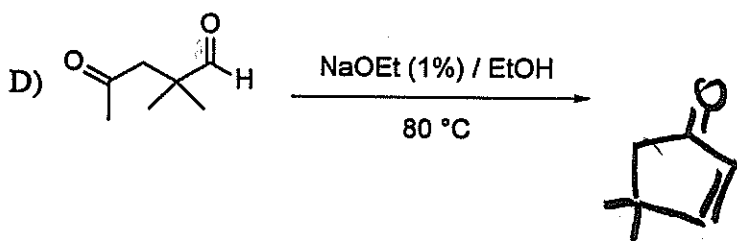
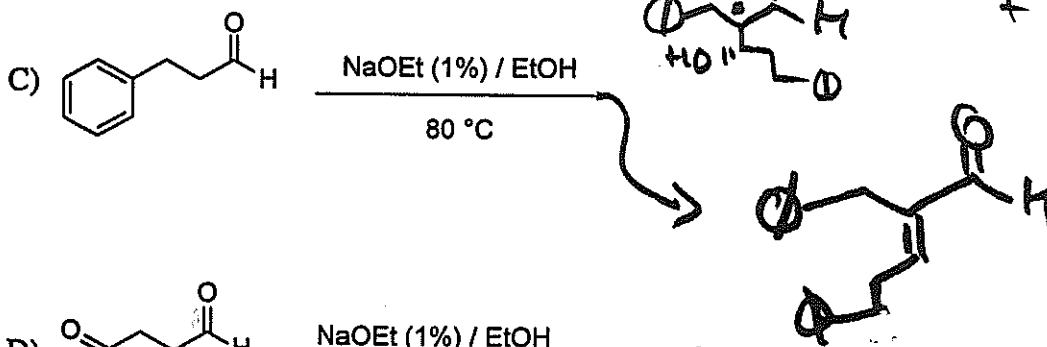
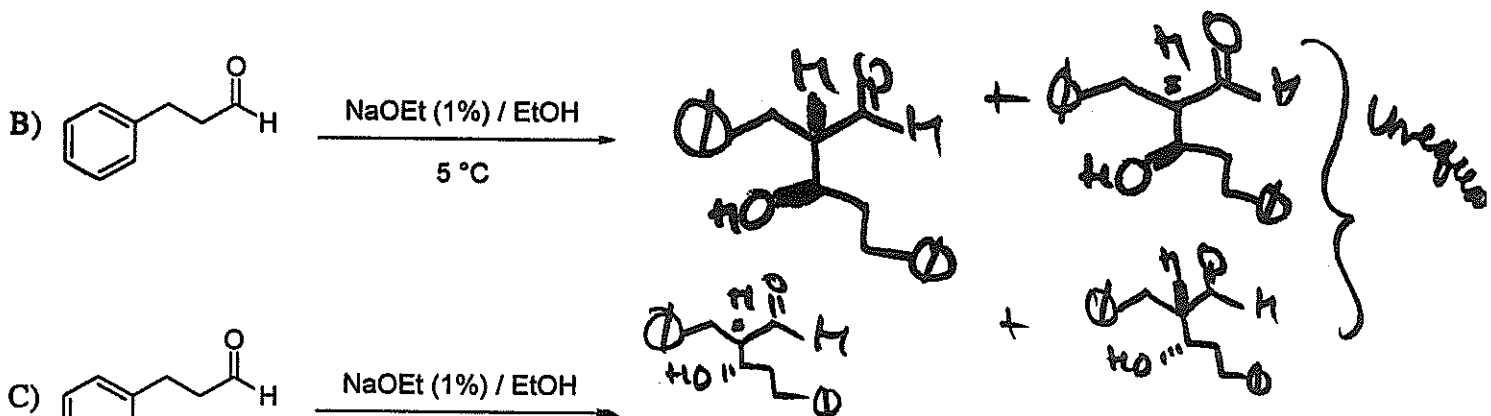
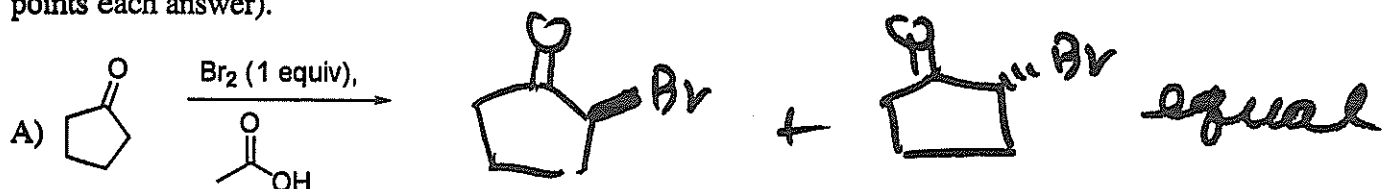
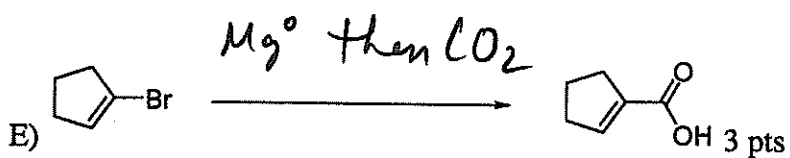
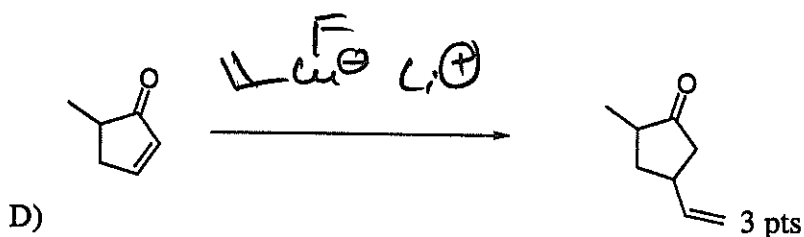
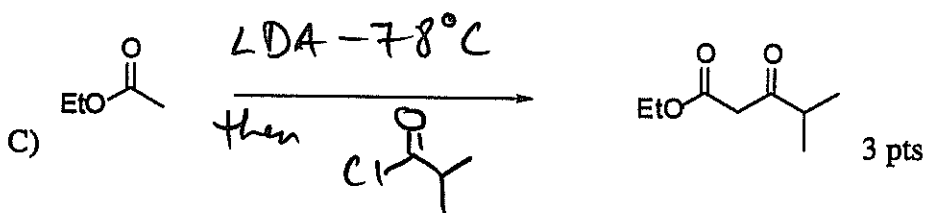
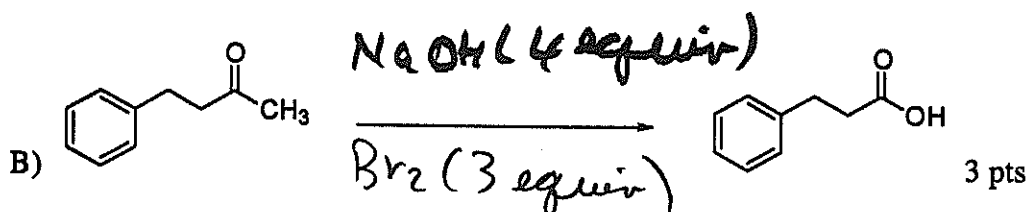
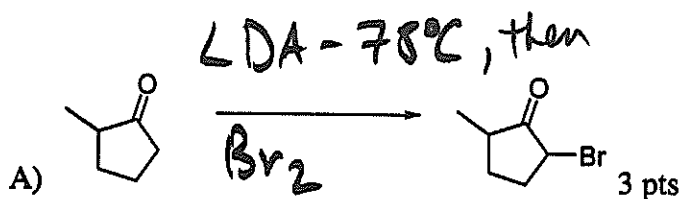


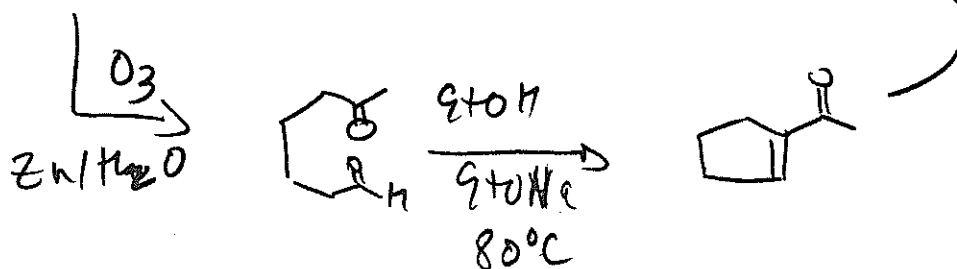
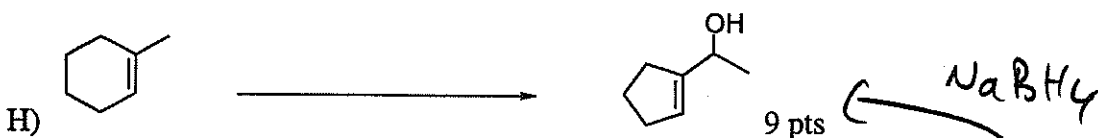
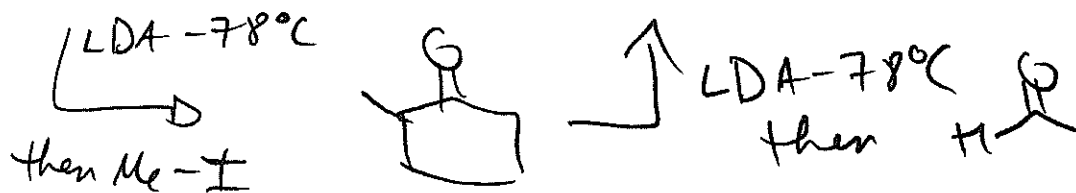
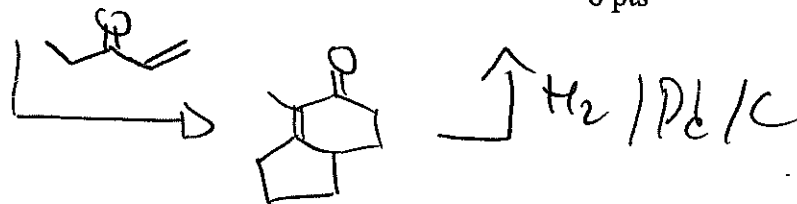
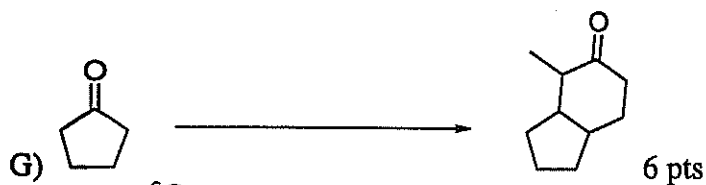
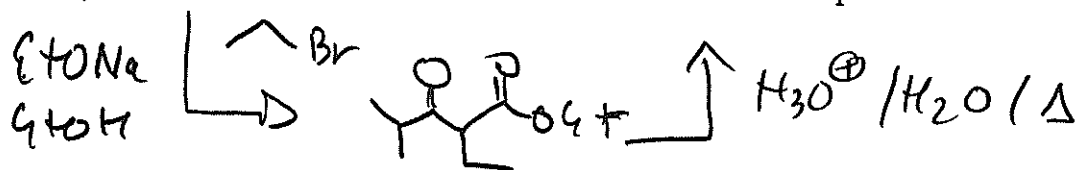
1) Provide the products of the following reactions. If no reaction would occur, then write NR. Draw all possible stereoisomers (i.e., draw dashed and bold lines as needed) and indicate if they would be produced in equal or unequal amounts. There is an appropriate aqueous work up for each reaction (3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



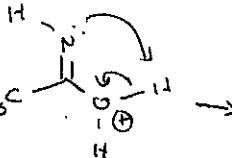
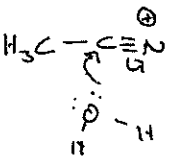
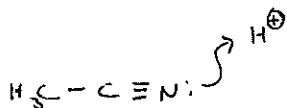
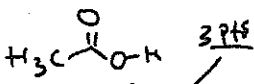
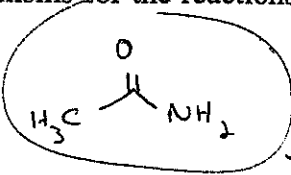
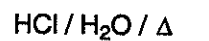
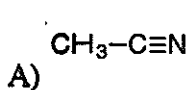
2) Provide the most efficient syntheses of the molecules shown below using common inorganic reagents and organic reagents of 20 carbons or less. If your synthesis requires more than one step, you must write the product of each step. You do not have to include aqueous work up conditions. All chiral products are racemic mixtures.



Problem 2 continued...



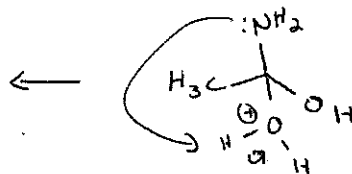
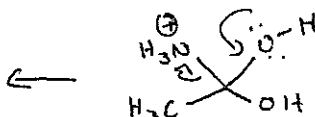
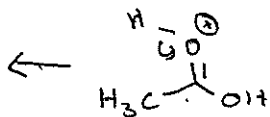
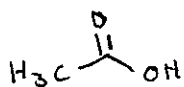
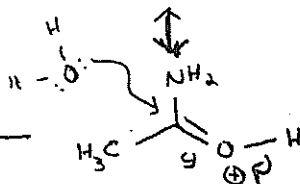
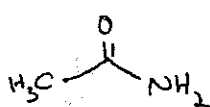
3) Provide the products and mechanisms for the reactions shown below. Be sure to show all arrows, charges, etc.



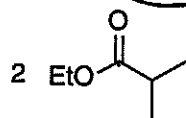
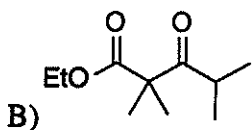
3 pts product
14 pts mech

2/5+4

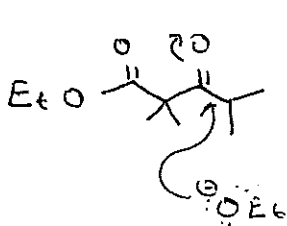
10 pts Mech
to here \rightarrow



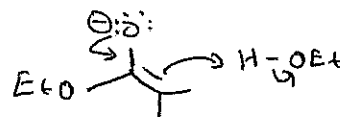
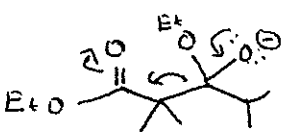
Does the above reaction require ~~catalytic~~ amounts of HCl, or 1 equivalent of HCl (circle ur answer 1 pt)



9 pts



3/5+4



1)

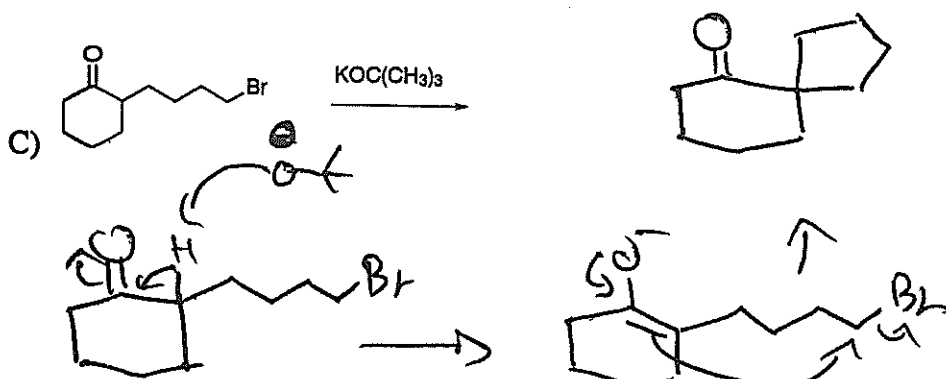
for protonating enolate w/ H^+

+6 for correct mech with carbonyl protonation

+6 for ketone mechanism

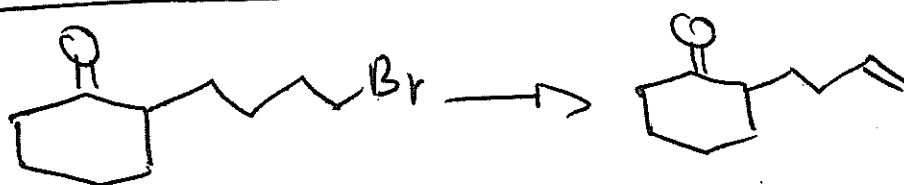
No HCl used -6

Question 3 continued



3 pts product
6 pts mech

? Problem
18.41 from
the book.



= 0 pts

4) a) Reactions which proceed via enantiomeric transition states and produce stereoisomers will **always**, never] provide the products in a 50/50 ratio (circle correct answer, 2 pts).

b) Reactions which proceed via diastereomeric transition states of different energies and produce stereoisomers will **always**, never] provide the products in a 50/50 ratio (circle correct answer, 2 pts).