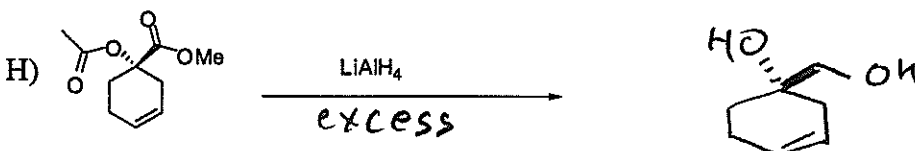
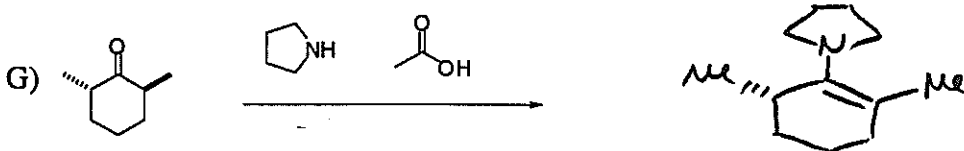
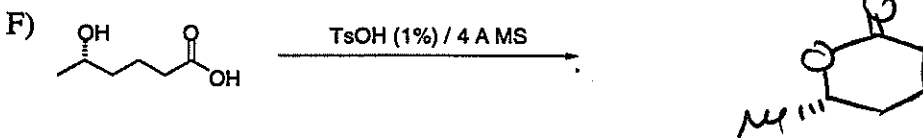
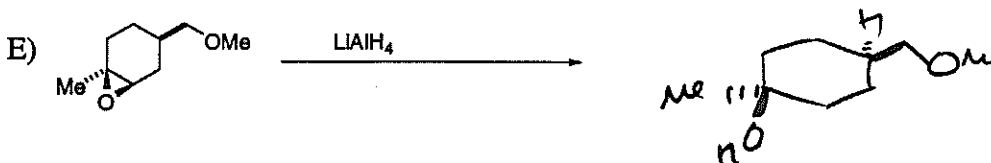
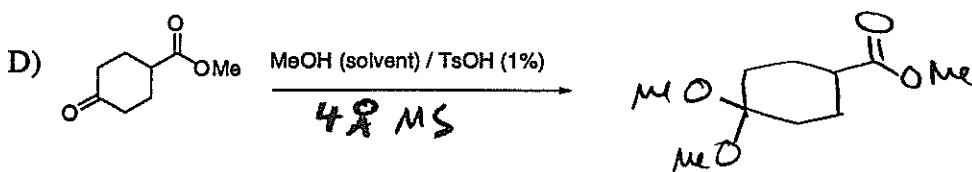
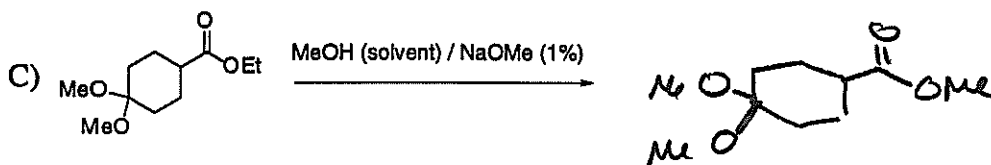
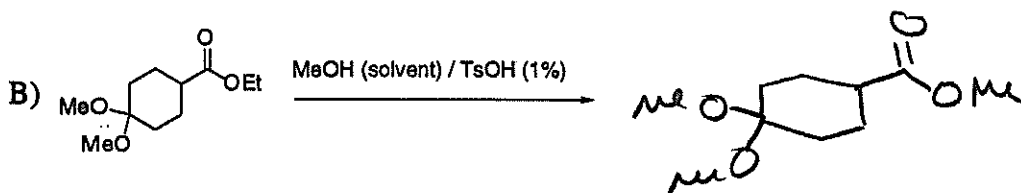
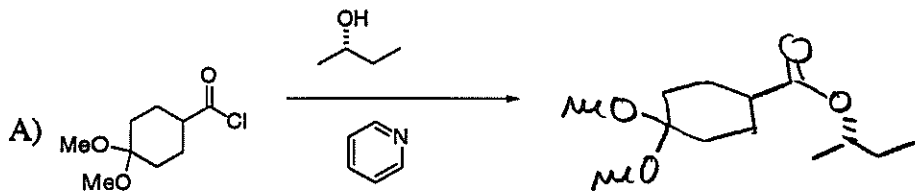
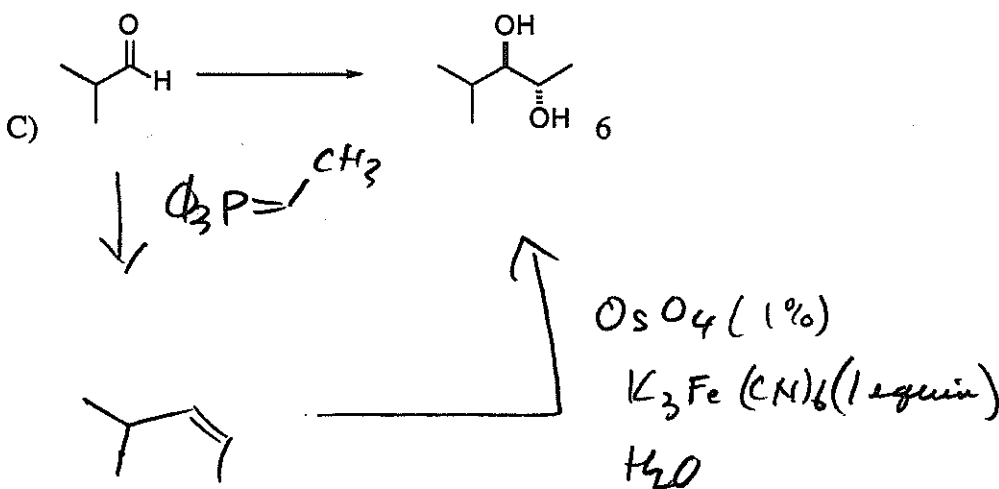
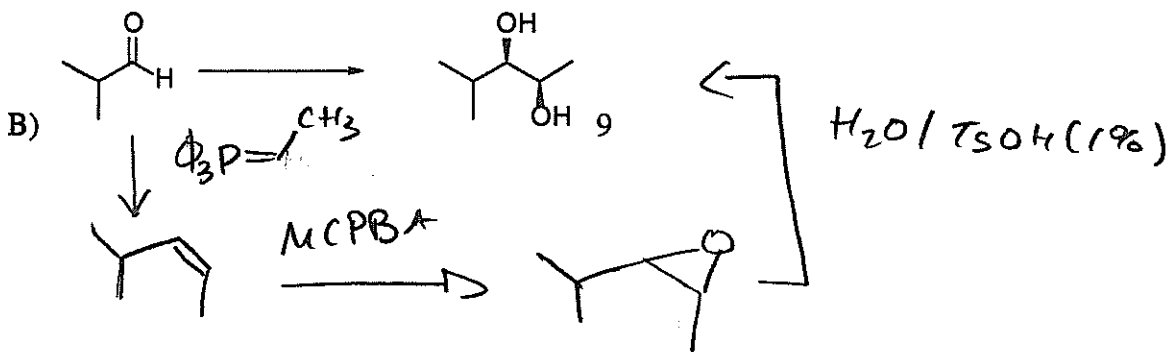
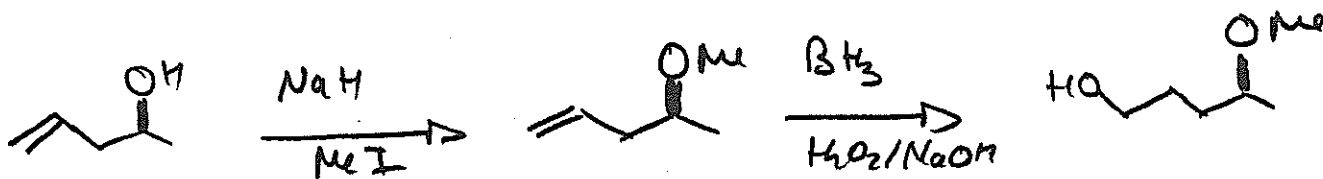
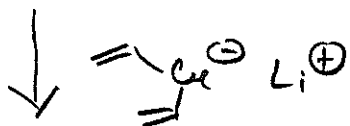


1) Provide the products of the following reactions. If no reaction would occur, then write NR. Draw all possible stereoisomers (i.e., draw dashed and bold lines as needed) and indicate if they would be produced in equal or unequal amounts. There is an appropriate aqueous work up for each reaction (3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



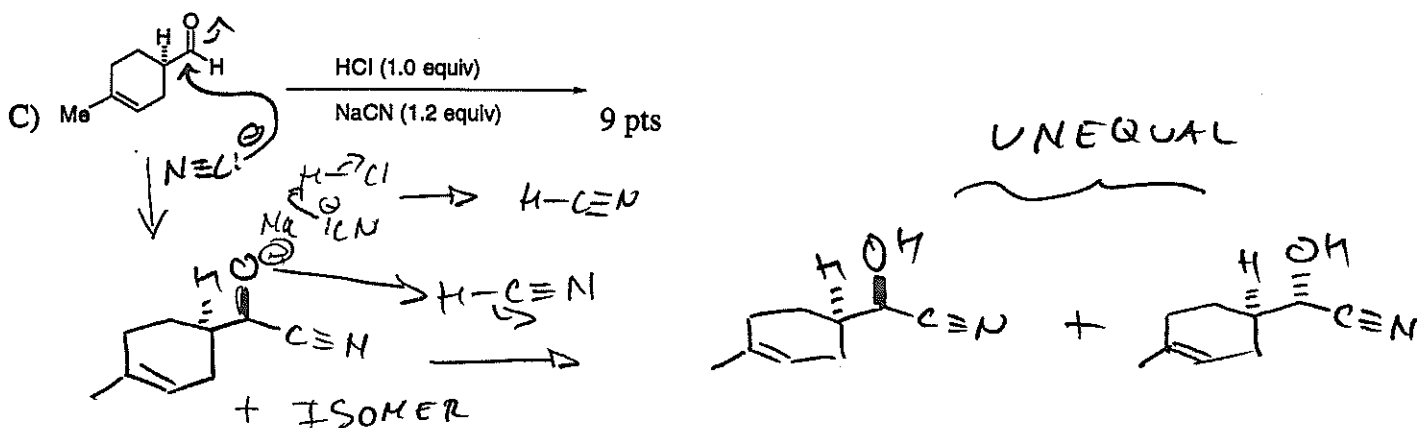
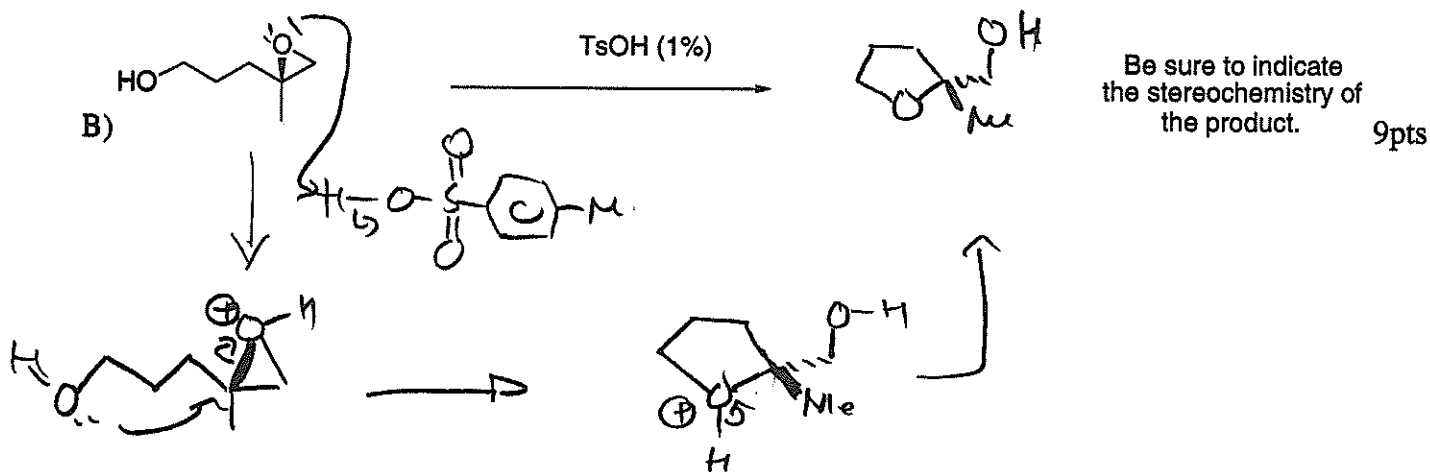
20

2) Provide the most efficient syntheses of the molecules shown below using organic reagents of 4 carbons or less and any common organic or inorganic reagents you wish. 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.





Mechanism question continued



Retrosynthesis question: I have provided four different retrosynthetic disconnections for the molecule shown below labeled as A - D. All of these are feasible in principle, but not all are necessarily practical. For each possible retrosynthesis, tell me if it is practical, and if it is practical, provide the necessary substrate and reagents. 6 pts (-1 or -2 for each incorrect answer)

Practical (yes/no) If practical, provide substrate and reagents

