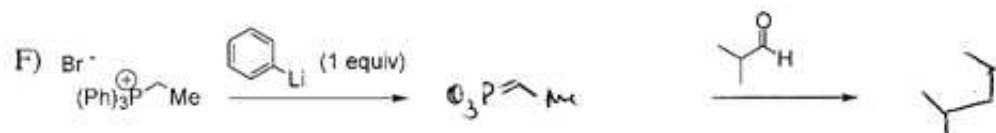
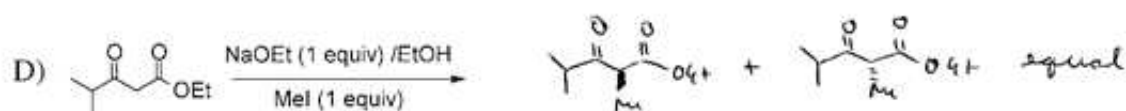
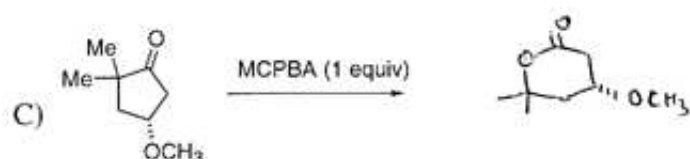
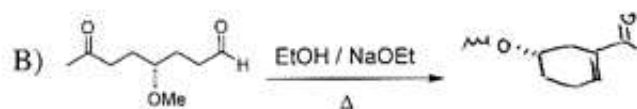
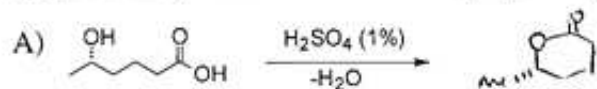
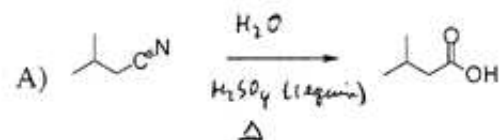
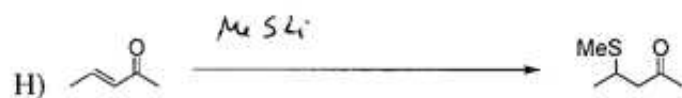
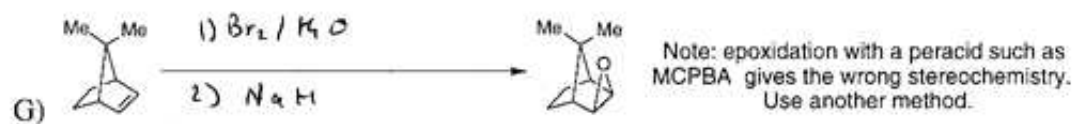
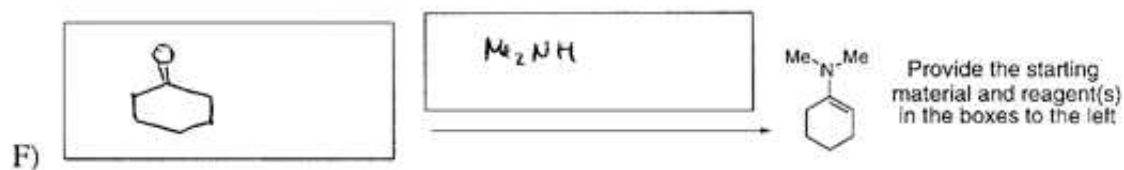
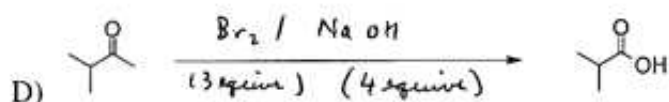
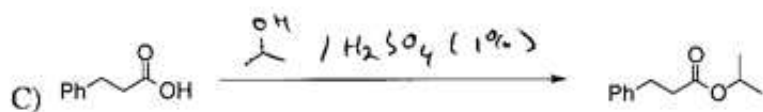
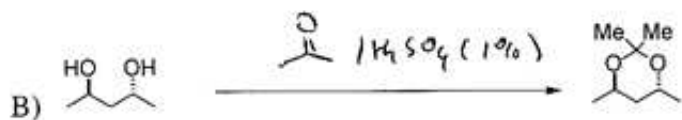


1) Provide the products of the following reactions. If no reaction would occur, then write NR. Draw all possible stereoisomers (i.e., draw dashed and bold lines as needed) and indicate if they would be produced in equal or unequal amounts. There is an appropriate aqueous work up for each reaction (3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

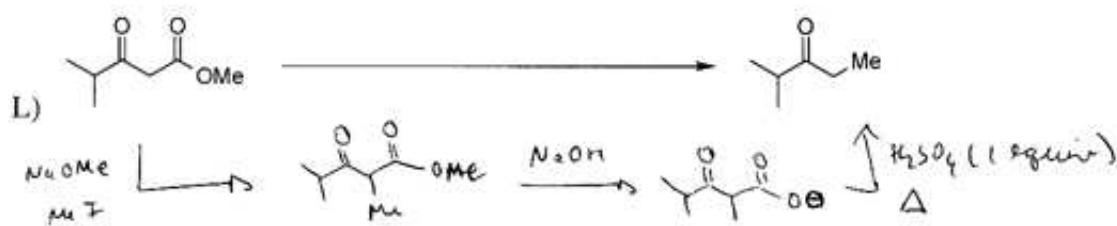
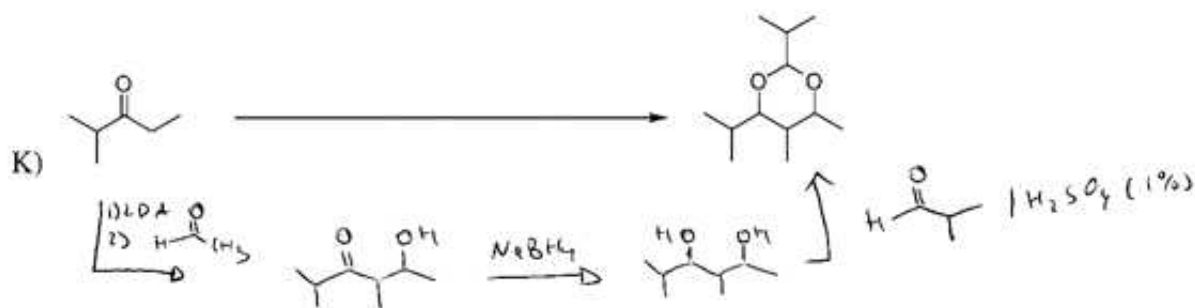
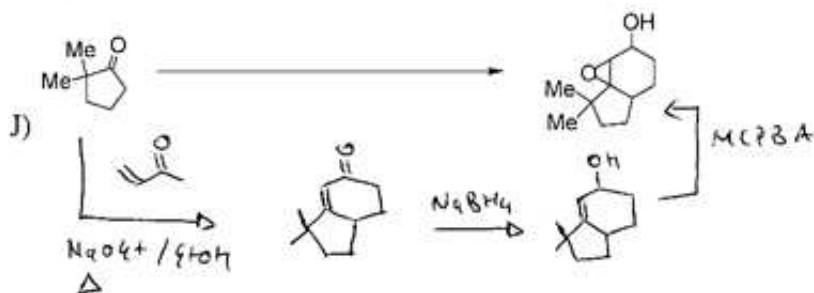
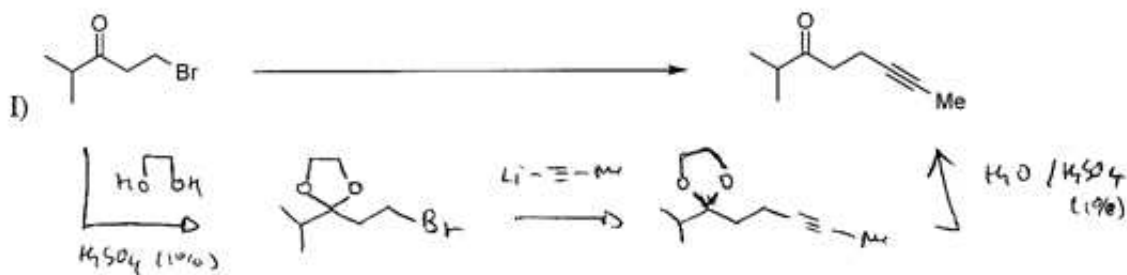


2) Complete the short syntheses shown below in one or two steps using organic reagents of 7 carbons or less and any inorganic reagents you wish. **Be sure to indicate the number of equivalents of your reagents!** If your synthesis requires more than one step, you must write the product of each step. Note that all chiral compounds are racemic mixtures. You do not have to include aqueous work up conditions in your syntheses (3 points each).





You only have to do **THREE** of the synthesis problems shown on this page (27 points). These problems may require more than two steps. **Cross out the problem you do not want graded!**



3) Provide a mechanism for reaction A, and provide the products and mechanisms for reactions B and C. Be sure to show all intermediates, arrows, and charges, etc.

