

Chemistry 244A

Fall 2003

Second Hour Exam

November 17, 2003

M. E. Jung

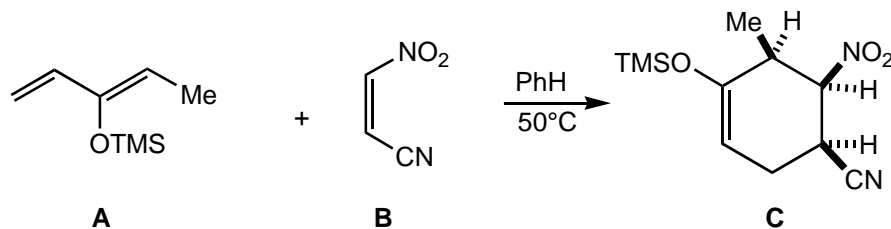
Name _____

Problem	Points	Score
1	10	
2	36	
3	24	
4	30	
Total	100	

Note: Place all of your answers on this exam. Scratch paper will be provided, but must not be used for final answers. Use the backs of these pages as necessary. Good luck!

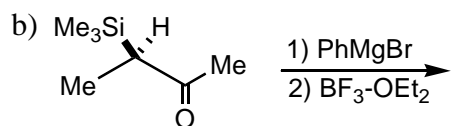
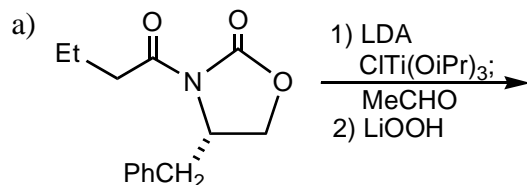
1. (10 points) Explain briefly but fully (using three-dimensional structural drawings whenever possible):

Why the Diels-Alder reaction of (*Z*)-3-trimethylsilyloxy-1,3-pentadiene **A** and (*Z*)-3-nitropropenenitrile **B** gives compound **C** as the major product and not the other possible regio- and stereoisomers.

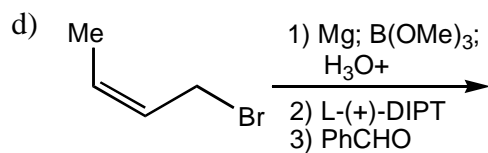
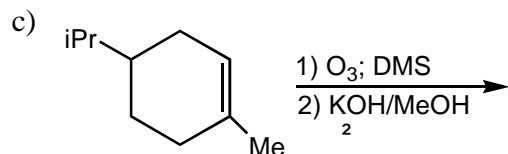


Remember to justify both the **regio-** and **stereochemistry!**

2. (36 points, 4 pts each) Predict the major product(s) of each of the following reactions, showing stereochemistry whenever appropriate. If no reaction is expected, state No Reaction. Assume normal aqueous workup after all reactions.

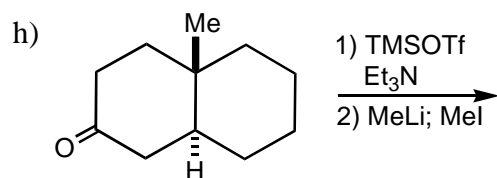
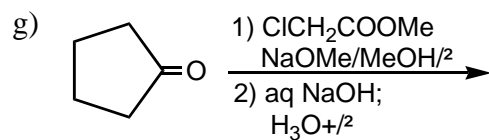
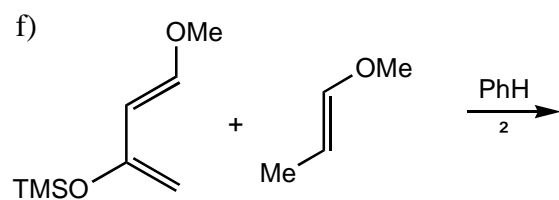
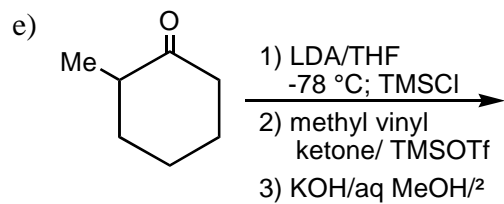


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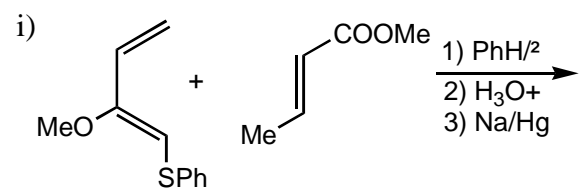


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2. (continued) Predict . . .

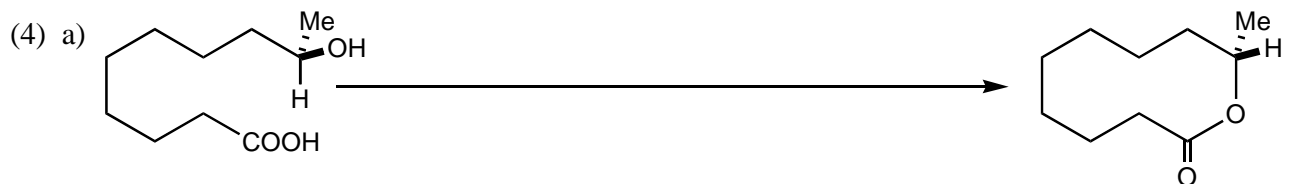


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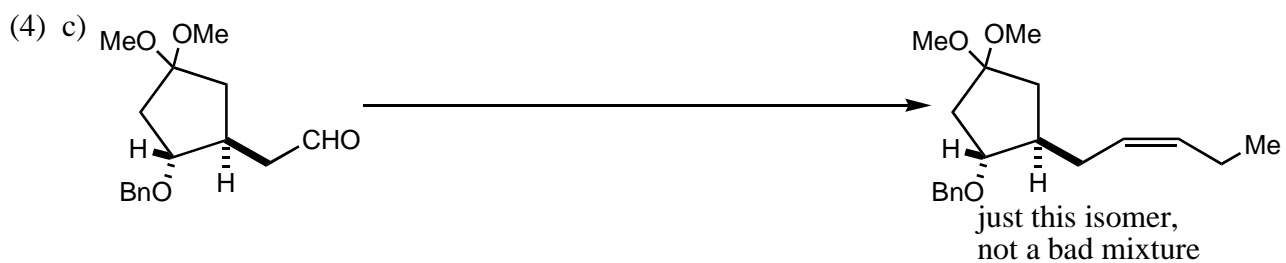
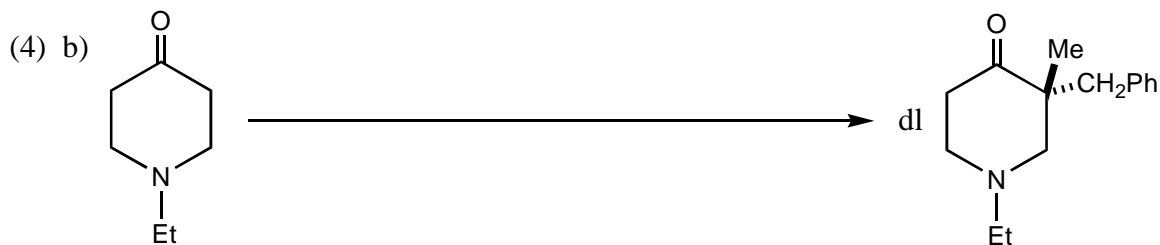


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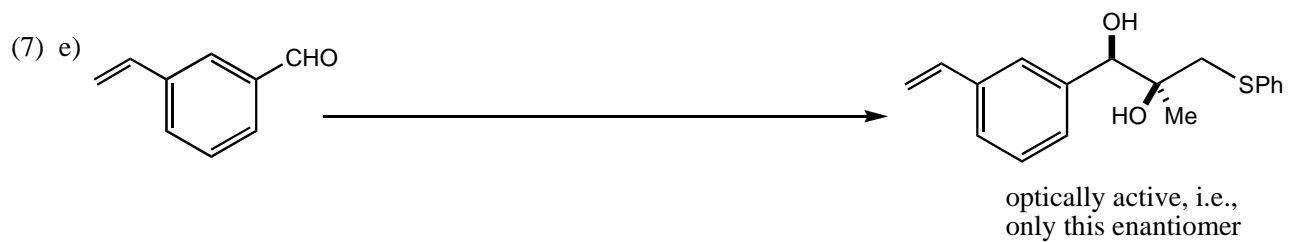
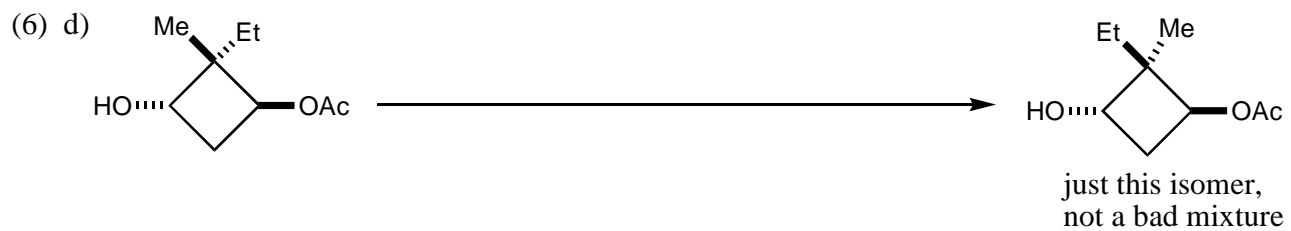
3. (24 points, as indicated) Transform each of the given starting materials into the desired products by a reasonable route, using any other readily available reagents.



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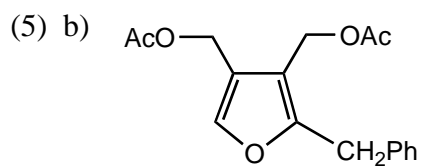
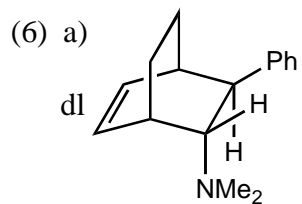


3. (continued) Transform . . .

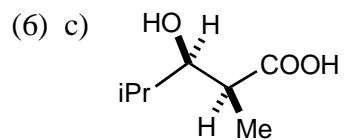


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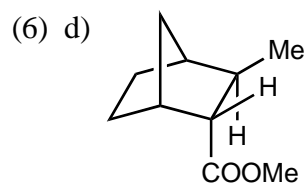
4. (30 points, as indicated) Synthesize each of the following molecules by a reasonable route beginning with readily available starting materials (i.e., commercially available or *Org. Synth.* preps).



4. (continued) Synthesize . . .

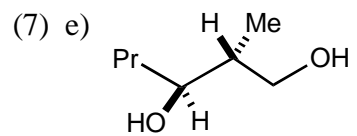


optically active, i.e.,
only this enantiomer



optically active, i.e.,
only this enantiomer

4. (continued) Synthesize . . .



optically active, i.e.,
only this enantiomer