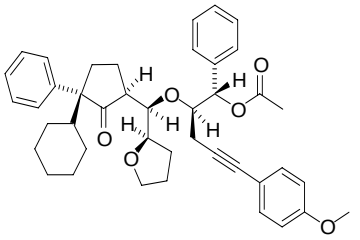
Student Number:_____

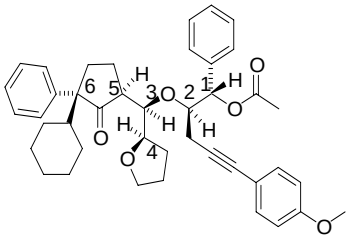
U. of Kentucky Chemistry 535 Synthetic Organic Chemistry Spring 2004
Final Exam (open notes)

Problem 1. (50 pts) In the molecule below pick two strategic bonds to disconnect and discuss why you think they are strategic. These are disconnections that are not trivial. There are disconnections that you would definitely show when discussing the strategy of the synthetic plan.

Problem 2. (100 pts) Describe an **enantiospecific** forward synthesis of the molecule shown below at right. Work it out on scratch paper. Then use the space below and the following page to neatly present your work. You might with a short retrosynthesis first if your answer to problem 2 does not adequately introduce your strategy.

You can use any molecule containing 7 carbon atoms or less, or any molecule that you can find in the Aldrich catalog.





Before you answer this question consider my grading criteria.

1) *30 pts. (10pts x 3) Did the student control stereochemistry at the three stereogenic carbon atoms C1-C3?*
    a. *Recovery pts. (possibly 3pts x 6) Did the student realize that stereocontrol at any particular atom was a problem?*
2) *15 pts. The quaternary stereogenic C atom (C6) is particularly challenging. Did the student choose a decent method to install the groups stereoselectively based on recent lectures?*
3) *10 pts. The relative stereochemistry between C6 and C5 is difficult. Does the student realize that cyclohexyl is bigger than phenyl and how she/he can use this advantageously to solve the problem?*
4) *10 pts. Did the student handle the tetrahydrofuranyl group and its respective stereochemistry in a convincing manner?*
5) *10 pts. Is the student using the material discussed or are they still at the sophomore level using RMgX and R'Br -> R-R'? Is he/she using oxygen-atom functionality effectively?*
6) *15 pts. Has the student chosen a convergent solution? I'll define four levels of convergence (15, 10, 5, 0 pts) for the purpose of grading.*
7) *10 pts. Has the student followed instructions by using pieces containing 7 carbon atoms or less? Is the synthesis a product of a logical retrosynthetic analysis or has the student fumbled through the land of possible starting materials? Do I really get the feeling that I taught this person anything this semester?*