

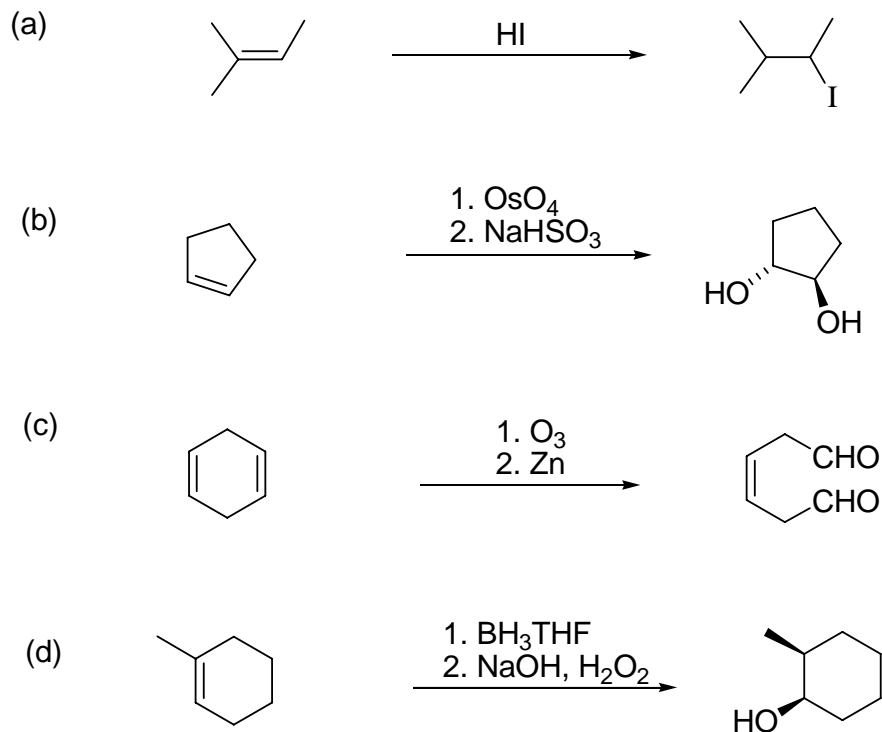
Name: \_\_\_\_\_

Student ID# \_\_\_\_\_

## CH 231 Test 3 Chapters 7, 8, 9 (Oct. 30, 2006)

- You have 80 minutes to complete the exam.

1. (12 pts) In planning a synthesis, it is just as important to know what *not* to do as to know what to do. The following reactions have serious flaws. Explain the potential problems of each.



2. (12 pts) Draw structures of each of the following compounds:

Tetrahydrofuran (THF)

Dimethylsulfoxide (DMSO)

Sodium Acetylide

*(S,E)*-7-bromooct-5-en-2-yne

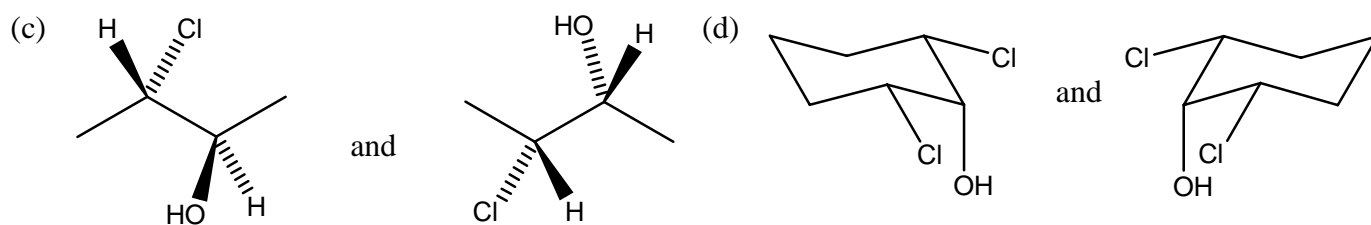
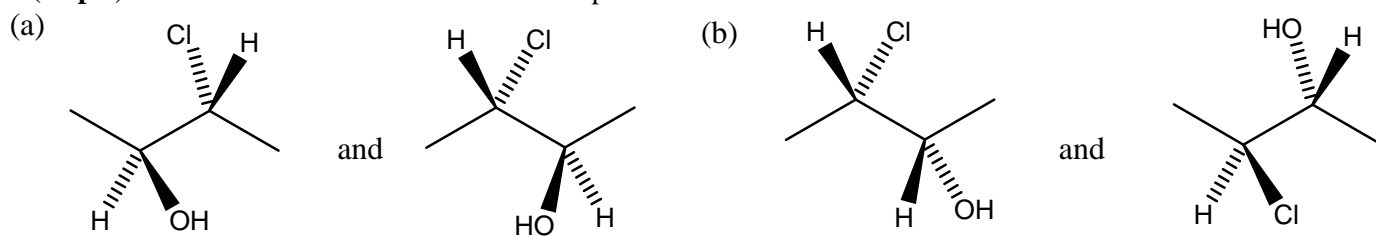
Score: \_\_\_\_\_/100

Combined Avg. through Test III: \_\_\_\_\_%

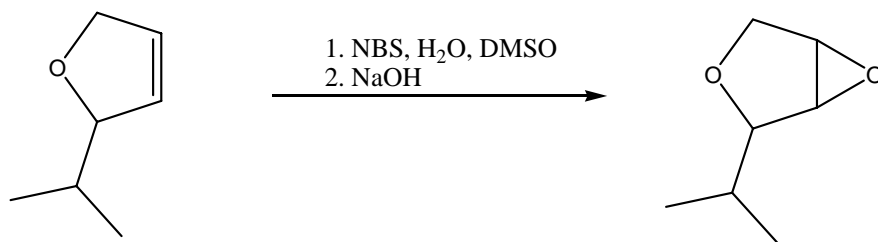
3. (14 pts) Draw tetrahedral representations (wedge-dash) of the two enantiomers of the amino acid cysteine,  $\text{HSCH}_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H}$ , and identify each as *R* or *S*:

What is the relationship between  $[\alpha]_D$  of *R*-cysteine and of *S*-cysteine if each is measured in enantiopure form?

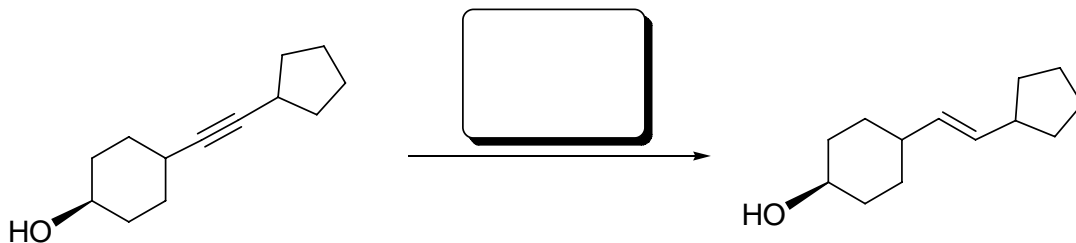
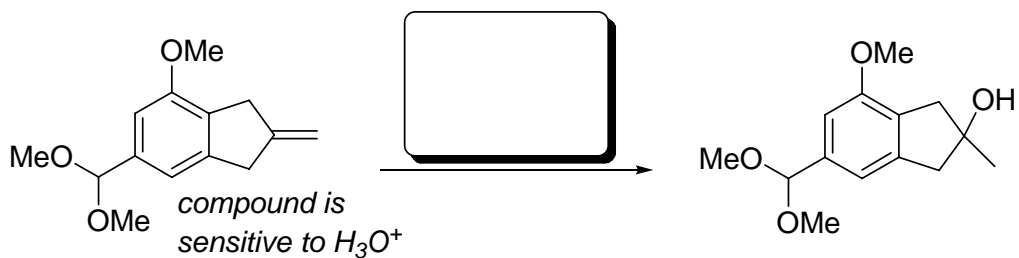
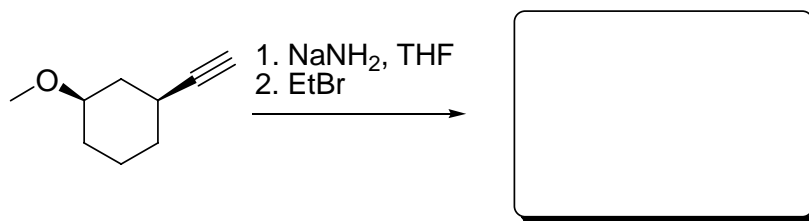
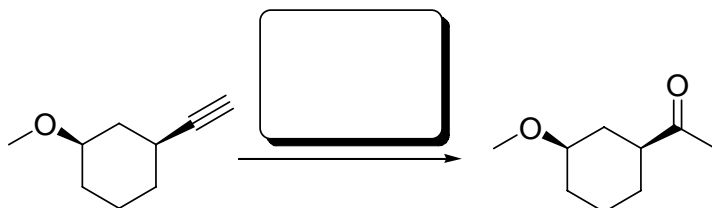
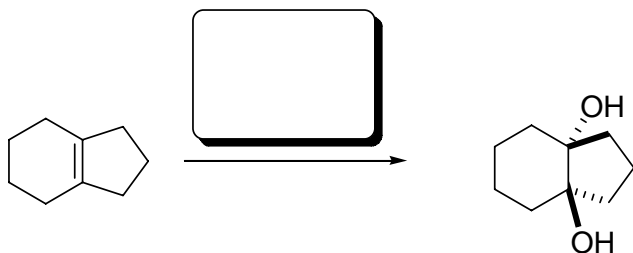
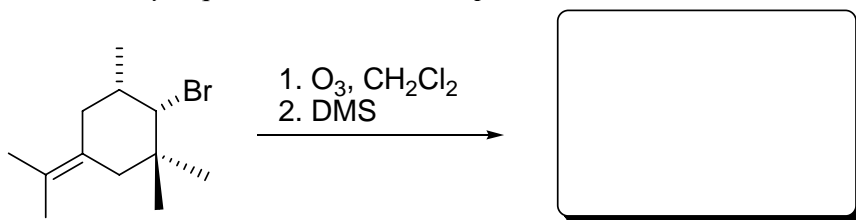
4. (12 pts) Indicate the stereochemical relationship between the molecules within each set:



5. (18 pts) Provide a complete electron pushing mechanism for the following reaction sequence. Be sure to show all intermediates:



6. (12 pts) Supply the missing reactant, reagent(s), or major product(s) in the schemes below. *Some transformations may require more than one step.*



7. (8 pts) Localized vinylic cations are generally regarded as high energy compounds that are rarely found as intermediates in reaction mechanisms. Provide at least two reasons to explain the instability of *localized* vinylic cations.

8. (12 pts) How would you carry out the following transformation? Multiple steps are needed. (You need not show electron-pushing mechanisms, but all reagents *and* intermediate structures must be indicated.)

