

**Advanced Organic Chemistry**

**Problem Set #1**

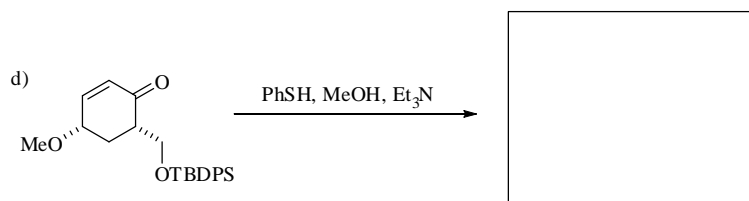
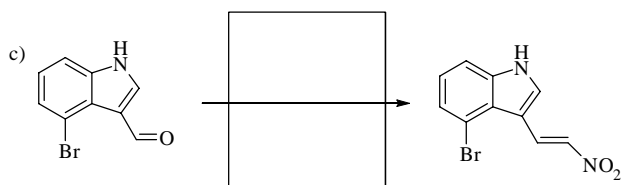
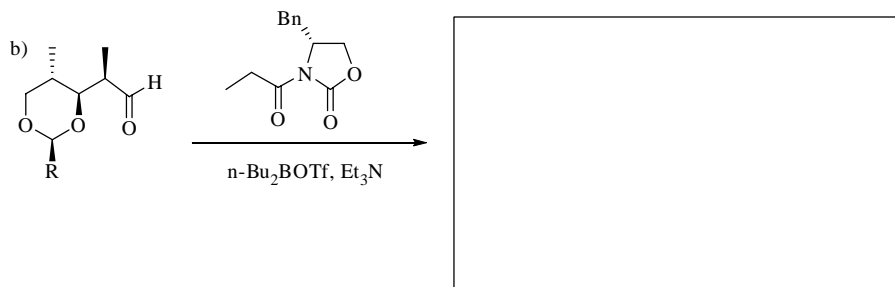
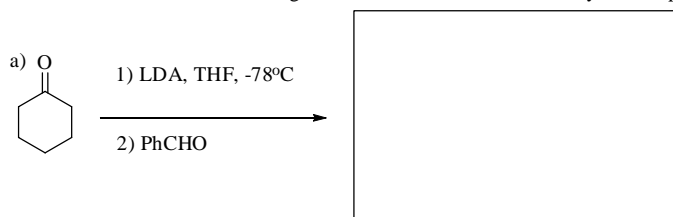
Due: Sept. 25, 2007

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

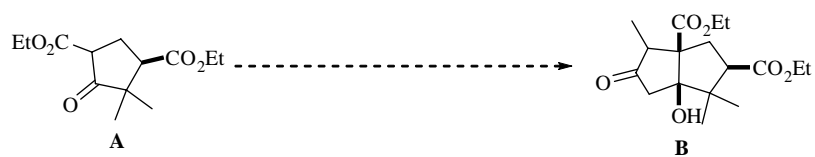
1. Although, as discussed in class, boron enolates do not have an additional chelation site, chemists have made titanium enolates and they do chelate to the oxazolidinone oxygen. In seminal research by Dr. Nerz-Stormes, while she worked with Prof. E. R. Thornton at the University of Pennsylvania, they demonstrated that, in the presence of excess  $\text{TiCl}_4$ , a Z enolate formed which when combined with an aldehyde afforded the opposite stereochemical result as the analogous boron enolate. Based on this information, draw the favored transition state and provide the product of the following reaction. (3 pts. each)



2. Fill in the box for the following reactions. Include stereochemistry where applicable. (2 pts. each)



3. Suggest a synthesis of **B** from **A**. (3 pts. undergraduates; 4 pts. graduate students)



4. Suggest a mechanism for the following reaction and identify what moiety is responsible for the stereoselectivity in the reaction. (3 pts. undergraduates; 4 pts. graduate students)

