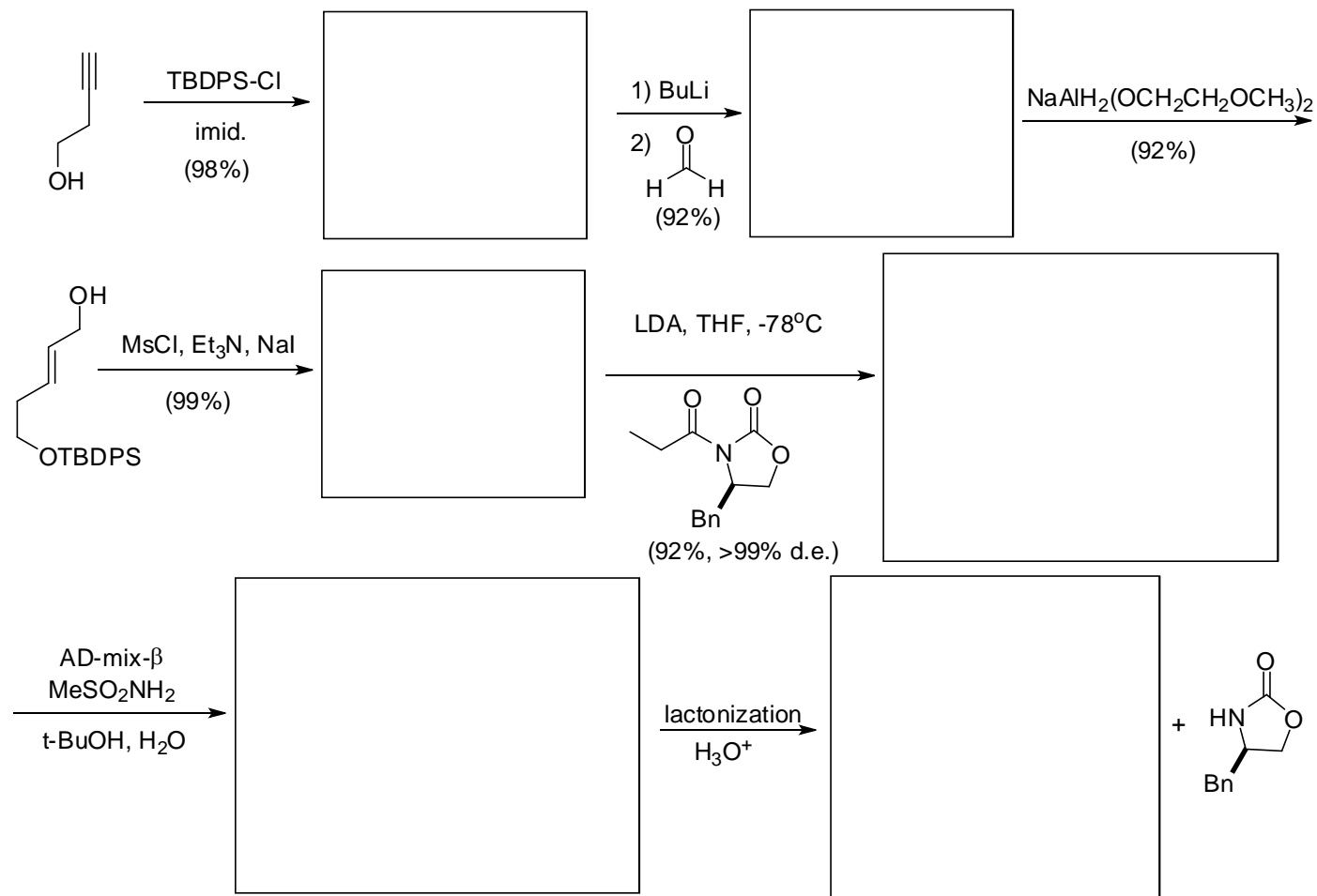




1. Provide the necessary information, products or reagents, to complete the following reactions. Undergraduates must complete eight of the ten boxes and graduate students must complete all ten. (10 pts.)

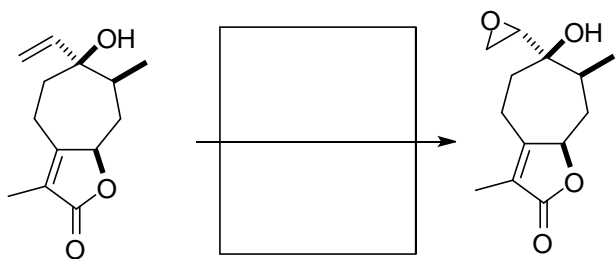
a)



b)

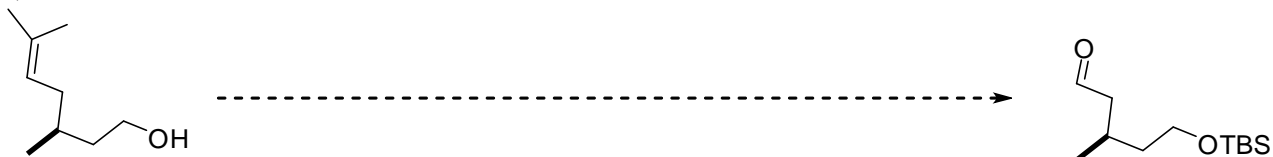


c)

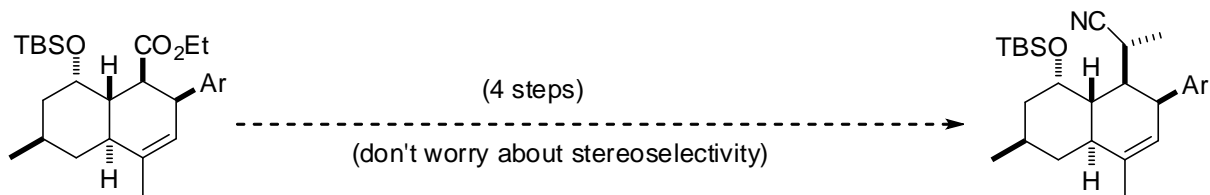


2. Syntheses questions. Undergraduates choose two questions and graduate students do all three. (10 pts.)

a)



b)



c)

