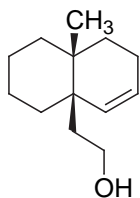
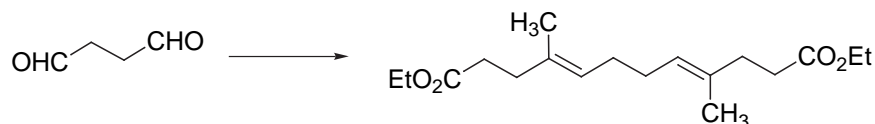


Literature references are required only for steps 1 and 2

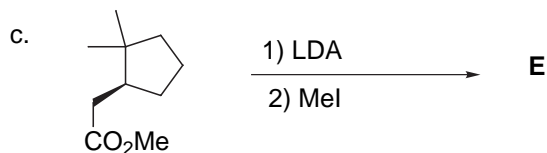
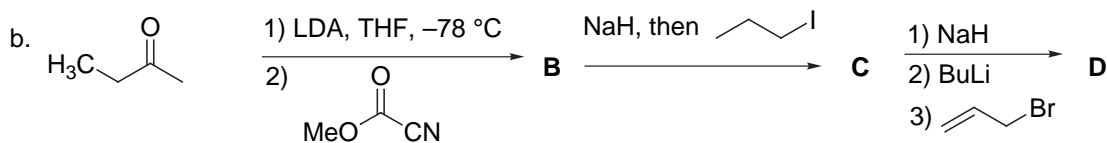
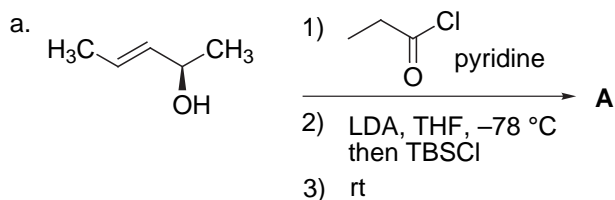
1. Outline a synthesis from commercial materials. Provide a literature reference for each step, (20 pts)



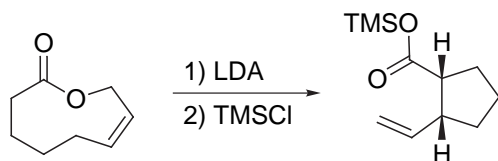
2. Outline a synthesis. Provide a literature reference for each step, (20 pts)



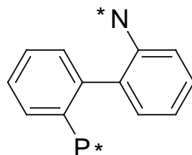
3. Predict the products of the following transformations (10 pts each)



4. Provide a mechanism (20 pts)



5. Do a substructure search on Beilstein for the following. Draw the first structure that matches the description



\* = free site