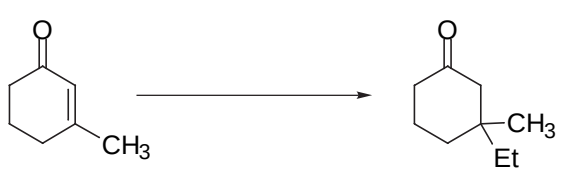
Chem 332, Professor Fox
Problem Set #4 Use additional paper

1. Provide the reagents

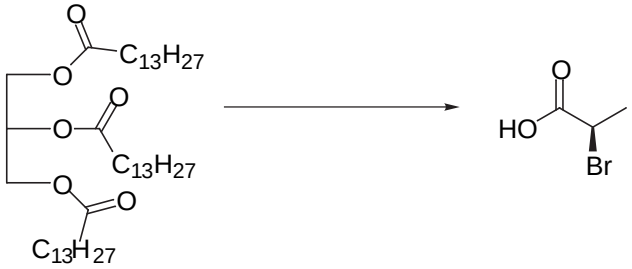
a) 

b) 

c) 

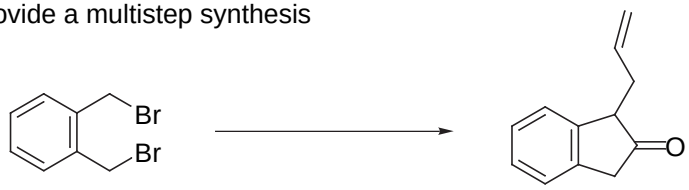
d) 

e) 

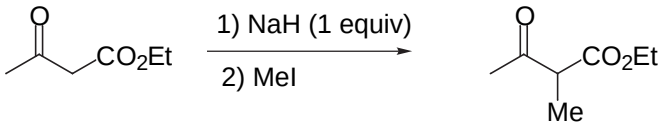
f) 

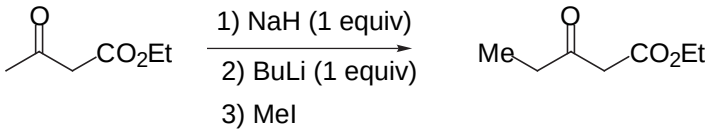
g) 

2) Provide a multistep synthesis

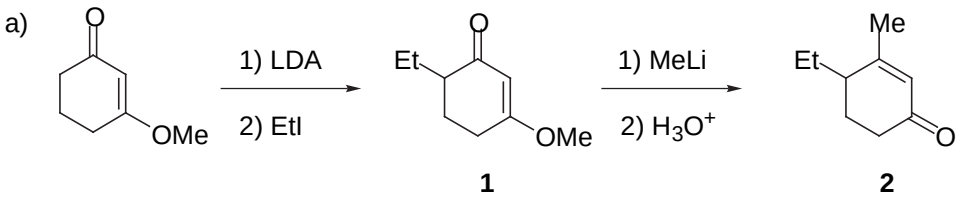


3) Rationalize the following observations:



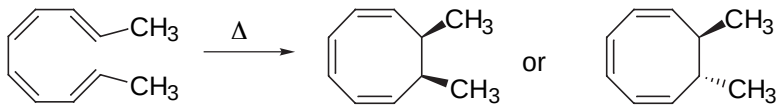


4. Provide a mechanism for the formation of **1** and **2**

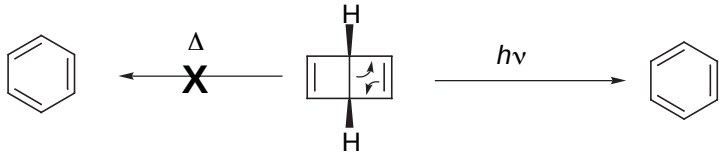
a) 

1 **2**

5. Circle the product, and explain using your knowledge of molecular orbitalsof the following transformation



6. The conversion of Dewar benzene (**3**) to benzene is extremely exothermic (by 60 kcal/mol), yet it occurs only very slowly under thermal conditions. However, photolysis converts Dewar benzene into benzene very readily. Explain why, using your knowledge of electrocyclic rearrangements to determine the problem with a concerted thermal ring opening, and why a concerted photochemical ring opening should be facile.



3

for this problem it might be helpful if you consider Dewar benzene as a cyclobutene with 2 R groups, and benzene as a butadiene with two R groups.