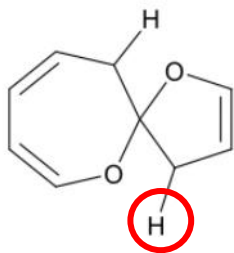
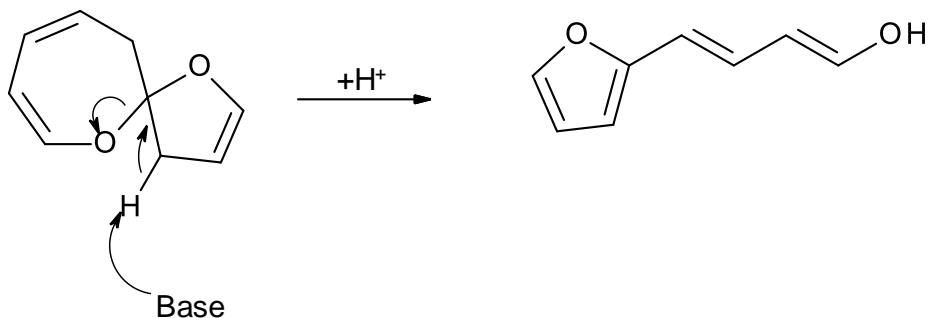


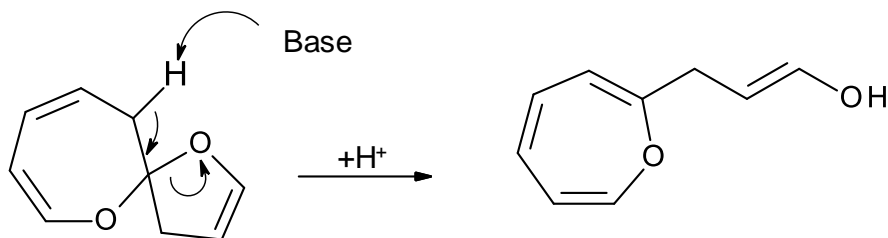
QUESTION 1: When this compound is treated with a base, elimination occurs. What is the product of this elimination? Explain your reasoning.



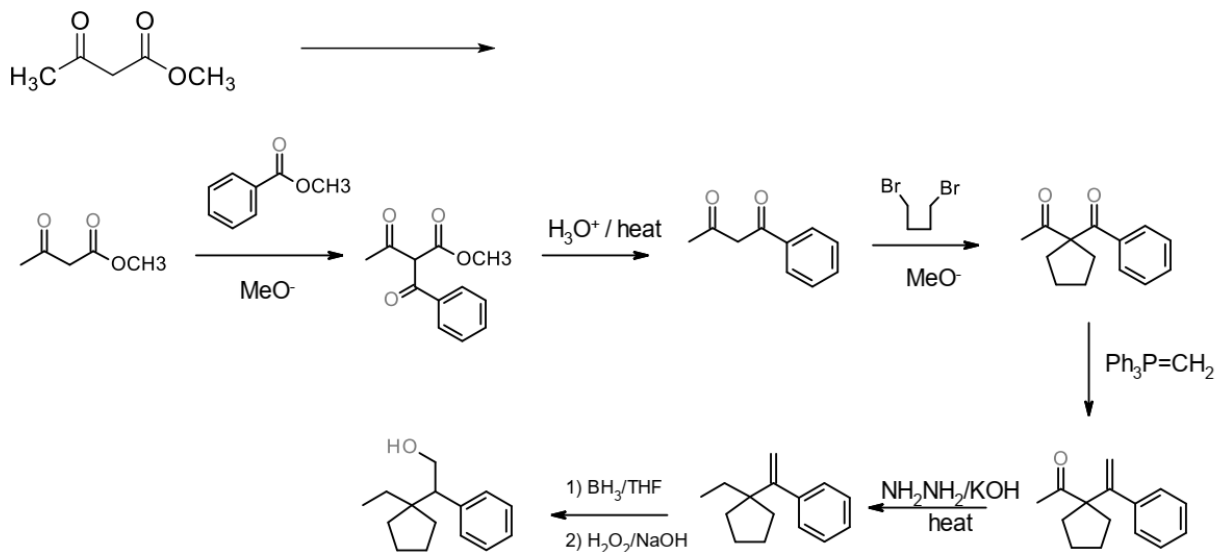
The highlighted proton is eliminated due to the fact that the product is an aromatic ring, which gives stability to the product and therefore, its formation is thermodynamically favored.



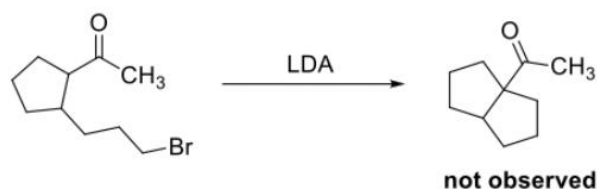
On the other hand, the elimination of the other proton, even when it might be slightly more acidic due to the formation of more resonance structures, leads to the formation of an antiaromatic ring with 8 pi electrons, which is not as stable.



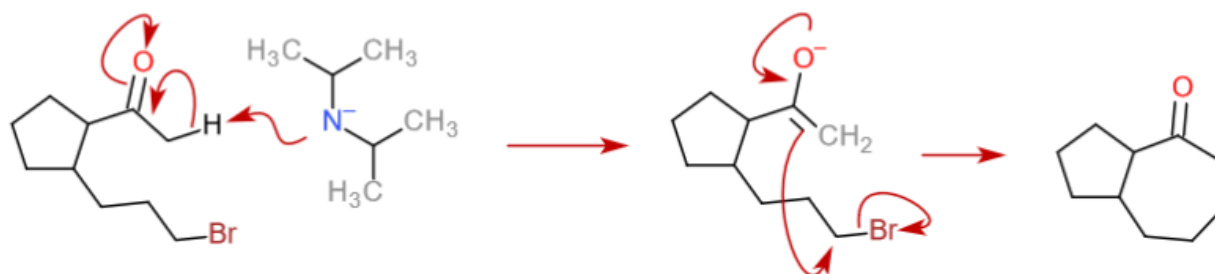
QUESTION 2: Design a synthesis sequence that includes at least 6 steps. You must draw at least two of the intermediate products and the final product and use at least one reaction that is an Aldol, Claisen, or Michael reaction.



QUESTION 3: The product shown is not formed in this reaction. What is the major product? And what would you change to make the product shown?



When using LDA, the less sterically hindered proton is eliminated. Therefore, the proton from the methyl ketone is removed forming the corresponding enolate. Then, a seven-membered ring is formed, as shown below.



In order to form the desired product, a smaller base, such as sodium methoxide should be used.