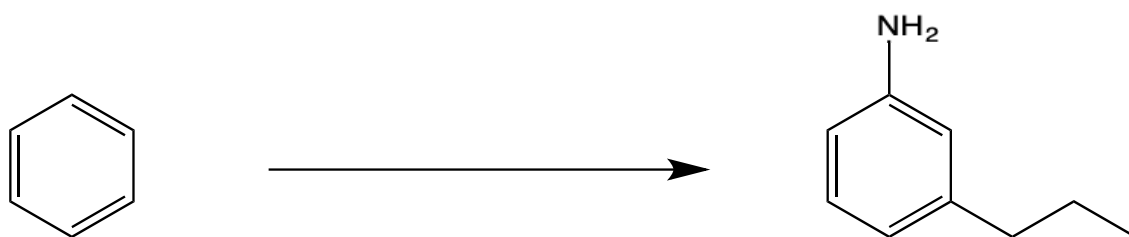


Organic Chemistry II

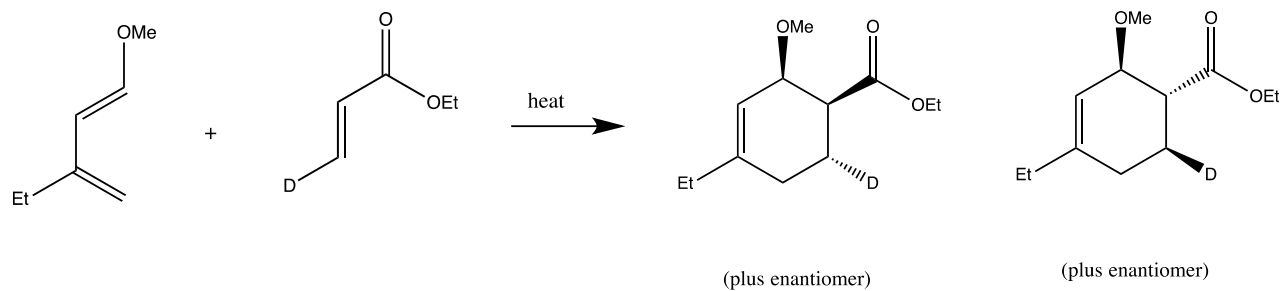
Exam 1



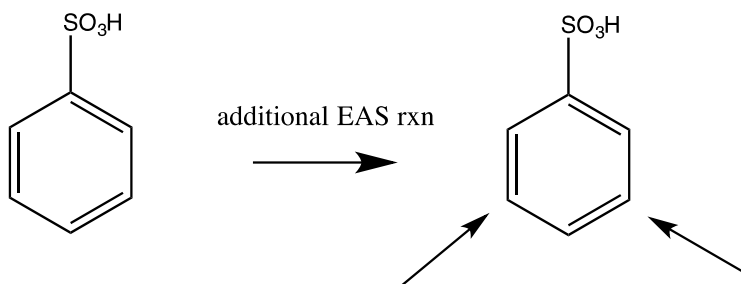
- 1.) Below various reactants and products are shown. In each reaction, provide the necessary reagents to make the given transformations occur (kind of like mini synthesis problems).
Note: The reactions can possibly require multi-step reagents.



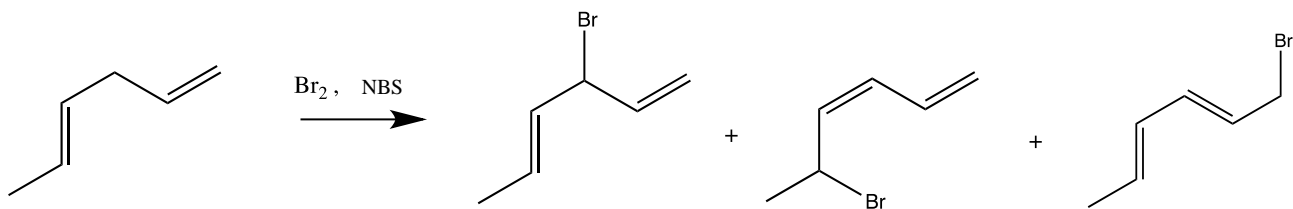
2.) The Diels Alder reaction (pictured below) is executed in a lab setting. After completing the reaction, product A is observed and B is **NOT** observed. BRIEFLY explain why this is the case: Provide a transition state to aid your brief explanation.



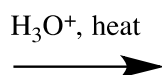
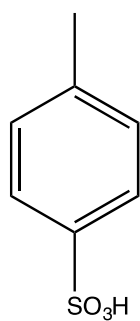
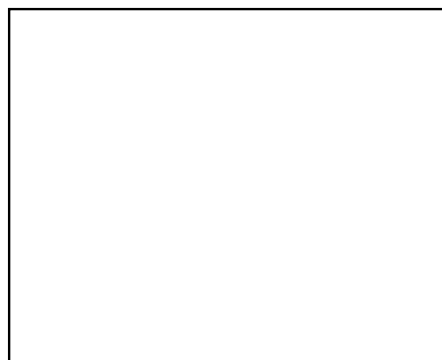
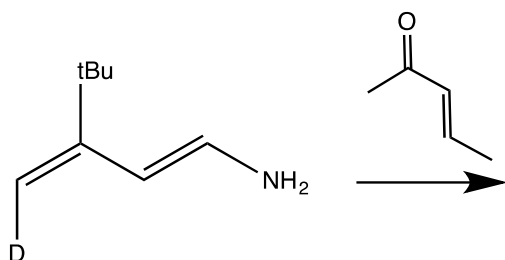
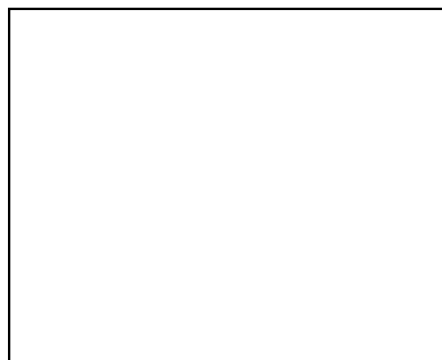
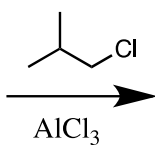
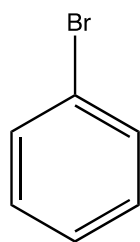
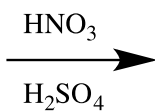
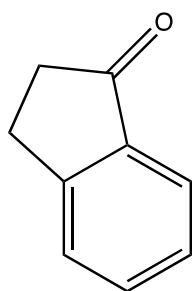
- 3.) When benzenesulfonic acid undergoes a subsequent EAS reaction and an additional group is added to the ring, the reaction proceeds slowly and the new group is placed meta to the preexisting sulfonyl group. Using structures and a **BRIEF** explanation, illustrate why this is observed.

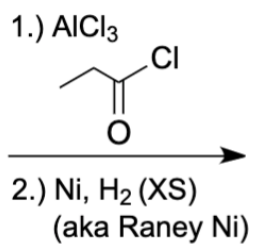
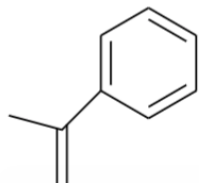
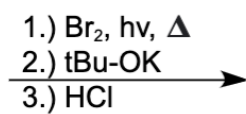
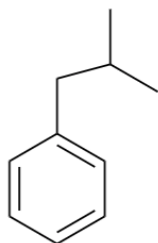
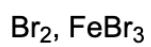
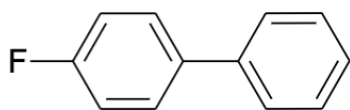
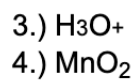
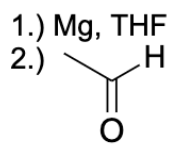
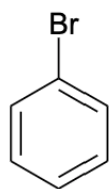


- 4.) When the following Free Radical Bromination (pictured below) is executed in a lab setting, instead of observing one monobrominated product, a mixture of 3 monobrominated products are seen. Using electron pushing arrows and structures, illustrate why this mixture of products resulted.

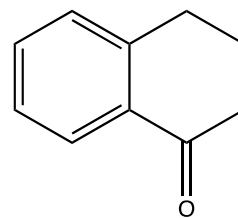
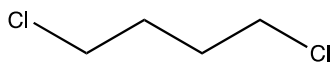
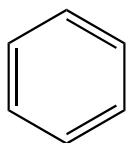


5.) The reactions below are shown missing their **final product**. For each problem below, correctly predict the final product. If you believe no product is formed/no reaction occurs, write "NR".

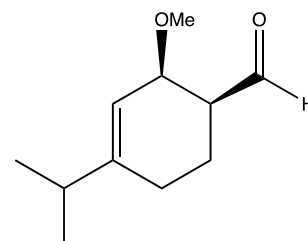
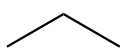
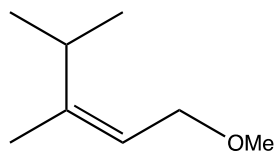




6.) Given the target molecule pictured below on the right hand side of the page, provide an efficient synthesis using only benzene and 1,4-dichlorobutane as your carbon sources. You may use whatever inorganic reagents to achieve the synthesis.



7.) Okay, another synthesis question. While I think this is a bit tough, if you can understand this/replicate it/solve it, I think you're in pretty good shape. Give it your best shot.



(plus enantiomer)

8.) Okay, gang, last question to bring it on home. One more synthesis—you got this!

