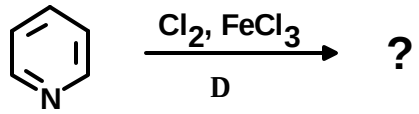
University of Windsor
Chemistry and Biochemistry

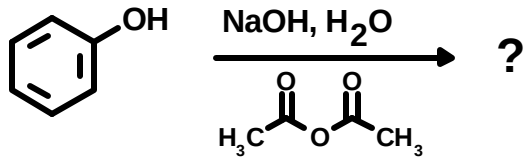
Chemistry 59-235 **Mar. 14, 2000**
Second Test **Time: 50 minutes**

Please note: Test written in pencil will be marked, but cannot be returned for remarking.

1a. Show the product of the electrophilic chlorination of pyridine (the reaction does go). Rationalize, by way of resonance forms of the reactive intermediates, the regiochemistry that is observed (i.e., why the reaction goes where it does). You do not need to show step forming the reactive electrophile or every step of the substitution. Is pyridine more or less reactive than benzene in this reaction? (**10 marks**)

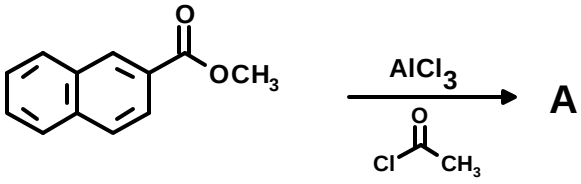


b. Show the mechanistic steps for the base (HO^- ion) induced reaction of phenol with acetic anhydride. Make sure to include any small molecules that are produced in any of the steps. (**10 marks**)

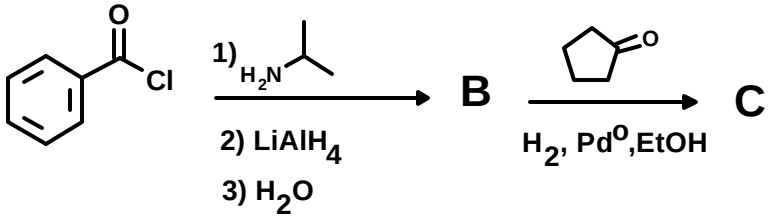


2. Predict the major product(s) of each of the following transformations. It is *not* necessary to give mechanisms in your answers, but showing you work may be a help.(**5 marks for each letter, 30 total**).

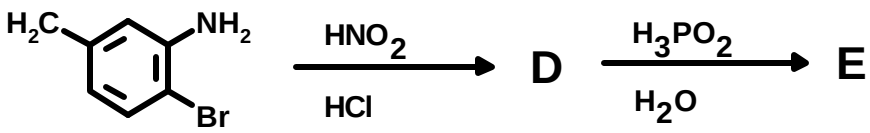
a.



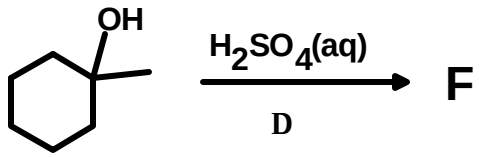
b.



c.



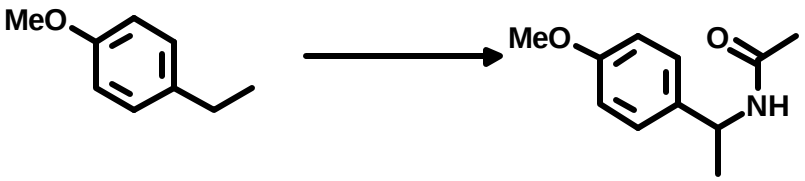
d.



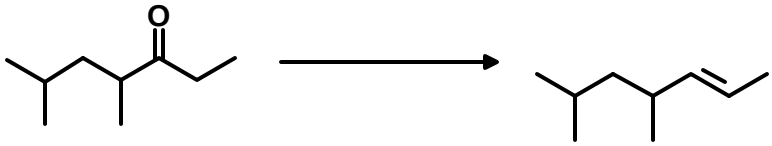
What mechanism is this reaction operating by?

3. Give reasonable routes to accomplish the synthesis of the following products from the indicated starting materials. You may use any other reagents that you consider to be appropriate. Show all reagents, conditions, and any intermediates that could be isolated. Again, mechanisms are not necessary, but may be a help. (**10 marks each, 30 total**).

a.



b.



c.