

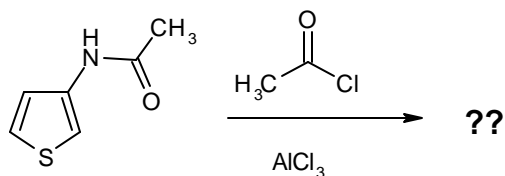
**University of Windsor
Chemistry and Biochemistry**

**Chemistry 59-235
Midterm #2**

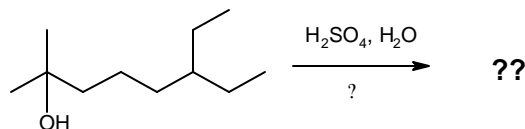
**Mar. 20, 2001
Time: 50 minutes**

Answer all questions in the test booklets. Exams written in pencil will be marked, but cannot be returned for remarking.

- 1a.** Predict the predominant product of the following reaction on the indicated substituted thiophene. Explain the expected regiochemistry in terms of the reasonable possible resonance forms, including the complete set for the actual reaction pathway. Hint: Steric effects here will be very *minor* as compared to electronic effects (**10 marks**).

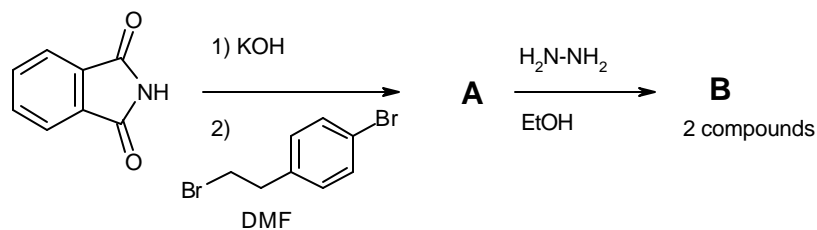


- 1b.** Show all the steps of the complete mechanism for the indicated acid catalyzed elimination reaction of the following alcohol. Indicate the rate determining (slow) step of the process. Any small molecules coming off should be included. What type of mechanism is this reaction occurring under? (**10 marks**)

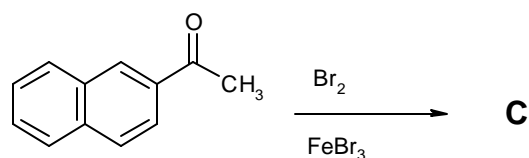


- 2.** Predict the major product(s) of the following reactions. Mechanisms are not necessary, but showing your work is likely to be a help (**5 each, 30 marks total**).

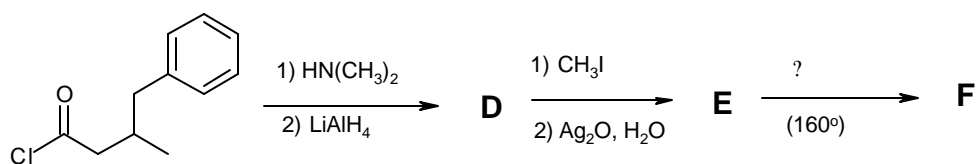
a.



b.

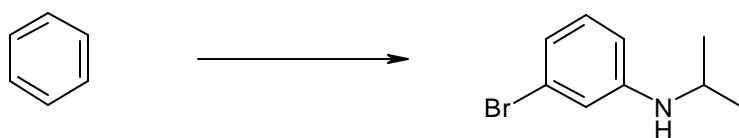


c.

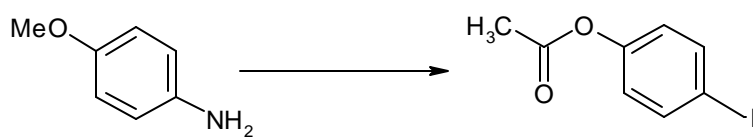


3. Show by equations how you would prepare each of the shown products from the indicated starting materials. You may use any other reagents you deem fit, as long as they are stable and make chemical sense. Show all intermediates that could be isolated. Mechanisms are not necessary (**10 each, 30 marks total**).

a.



b.



c.

