

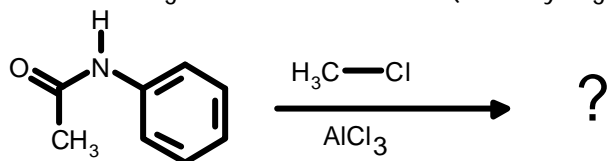
University of Windsor
Department of Chemistry and Biochemistry

Chemistry 59-235
First Test

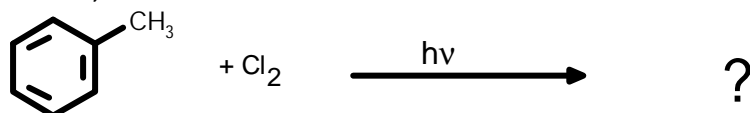
Feb. 10, 1998
Time: 50 minutes

Note: Please write in exam booklets. Tests written in pencil will be marked, but cannot be returned for re-marking.

1. Give the complete mechanism for the electrophilic aromatic (Friedel Crafts) alkylation of acetanilide (drawn below). The correct answer will include the formation of the reactive electrophilic species, all reasonable resonance forms of the intermediates, and reasons for the observed regiochemical outcome (i.e. why it goes where it does). **(15 marks)**

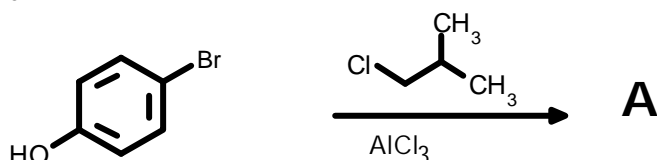


2. Show the radical chain mechanism of the light initiated chlorination of toluene. The complete answer will include reasonable initiation, propagation, and termination steps. **(15 marks)**

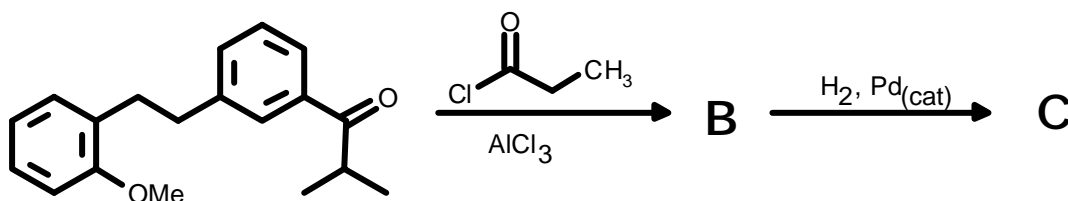


3. Predict the most reasonable structure of the major product(s) from each of the following reactions. Mechanisms are not necessary, but showing your work is likely to be a help. *Note: If there is >1 significant product, show them and take the major one on to any further step.* **(5 marks for each letter, 30 marks total)**

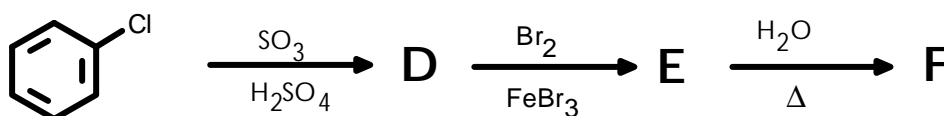
a.



b.

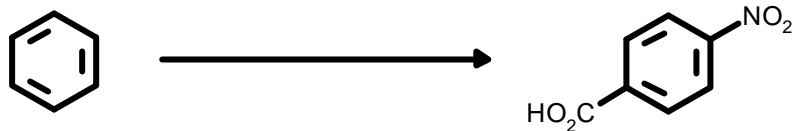


c.



4. Show by equation (in one or several steps) how you could prepare the illustrated products from the given starting material. You may use any other reagent which you deem fit. Show all reagents, conditions, and intermediates which could be isolated. Mechanisms are not necessary, but may be a help. (10 marks each, 20 marks total)

a.



b.

