

Chemistry 1310/2370 - Synthetic Organic Chemistry

Problem Set 1: Due Date 9/23/09

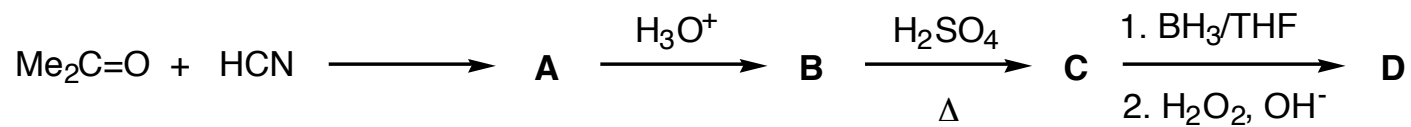
Name:

A. Propose syntheses for the following compounds (include reagents):

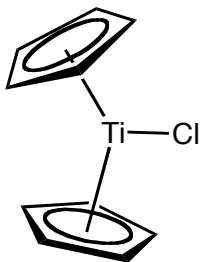
a) **Indigo**, from aniline and using a Strecker synthesis as the first step.

b) α -**Terpineol**, from ethyl cyanoacetate and using malonic ester, Claisen condensation, Grignard, and Fischer esterification reactions..

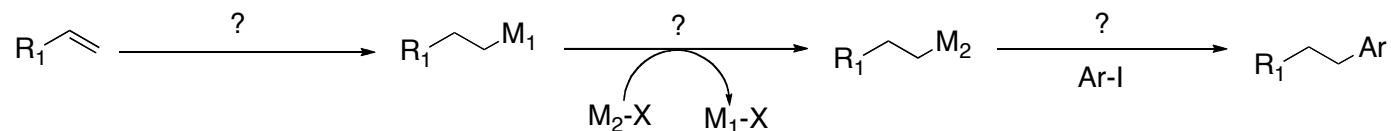
B. Write structures for **A** through **D**:



C. Determine the oxidation state, the d-electron count, and the total electron count of the titanocene chloride.



D. In the following sequence, insert the names of the organometallic mechanisms:



E. Provide a mechanism for the Heck coupling of (*Z*)- β -methylstyrene with 2-bromofuran. Pay particular attention to the stereochemistry of the intermediates and the product.