

Mid-Term Exam 2

Time: 10:00 am - 11:00 am

Date: March 23, 2017 Room: BO 2059

100 Points - Total

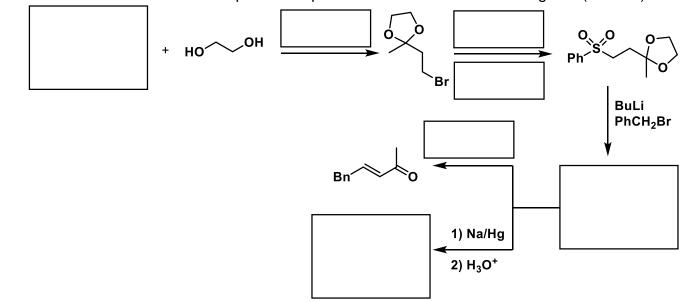
1. Problem: Please provide mechanisms for 5 of the following 10 named reactions: (25 PTS)

Cannizzaro Reaction Chichibabin Reaction Claisen Rearrangement Clemmensen Reduction Corey-Kim Oxidation Curtius Rearrangement Dakin Reaction Dess-Martin Oxidation Edman Degradation Ene Reaction

Answer(s):



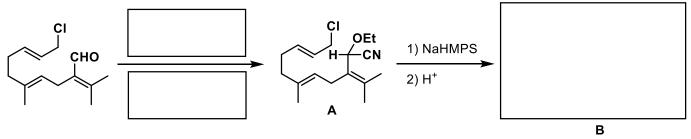
2. Problem: Below is a roadmap. Please provide the structures or the reagents (20 PTS)



Answer:



3. Problem: Please provide the reagents and structure for the following series of reaction transformations. Using the curved arrow formalism, provide a reasonable mechanism for the transformation of **A** to **B**. (20 Points)



Answer:



4. Problem: The following was an idea that was proposed to us by a former WSU graduate student (2000) who is now employed at Array BioPharm in Boulder, CO. The proposal is based on the fact that borane-methyl sulfide complex is an effective hydroboration reagent (eq. 1). It is proposed that homoallylic sulfides such as that illustrated below should be capable of "directing" the hydroboration process from this substituent through the borane-substrate complex. (20 PTS)

Part A. In order to begin your critique, you must possess a good working knowledge of the details of the hydroboration of olefins with borane-methyl sulfide. Provide a clear depiction of the transition state for the hydroboration process using ethylene as the olefinic substrate and borane-methyl sulfide as the hydroborating agent.

Part B. Now based on your knowledge of the hydroboration reaction and the principles learned thus far in CHEM 8410, critique the idea proposed in (eq. 2). You should concisely state the logic upon which you based your assessment. Remember the old saying "A picture is worth a thousand words".

Answer:





5. Problem: Fill in the blanks. There may be more than one reagent necessary to carry out some of the indicated transformations. (15 PTS)

Answer: