

Organic Chemistry: CHEM 231B

Whittier College

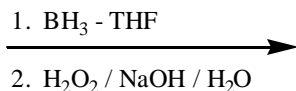
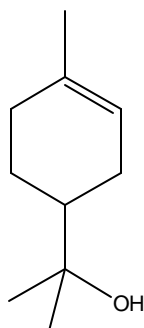
Spring 2004

Problem Set #2

Due Thursday 3/12/2004 @ 5:00 p.m.

40 pts

1. Consider the following two reactions and experimental data (10 pts):

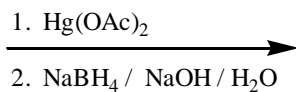
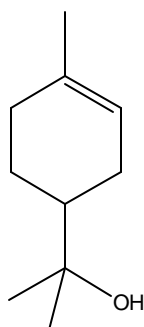


Product A

GC-MS = 1 peak, $m/z = 172$

IR peaks at 3300 (s&b), 2950(m), 2934(m), 1490 (m), 1420 (m), 1190 (s) 1135(s)

NMR = not obtained



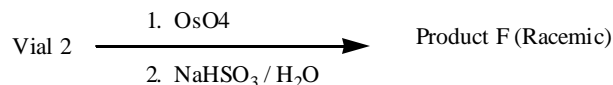
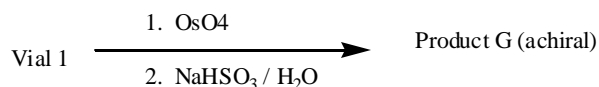
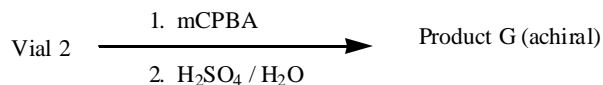
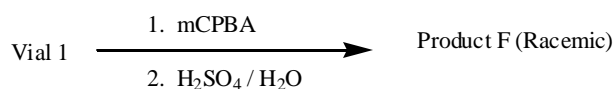
Product B

GC-MS = 1 peak, $m/z = 156$

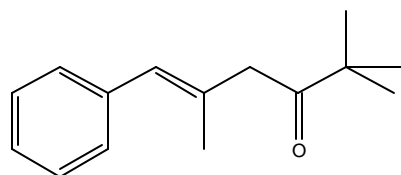
IR peaks at 2970(m), 2934(m), 1480 (m), 1415 (m), 1105(s)

NMR = not obtained

- 1a. What is the identity of products A & B? (2 pts)
1b. What is the mechanism for the formation of product A? (4 pts)
1c. What is the mechanism for the formation of product B? (4 pts)
2. Bob found two bottles of chemicals in the stockroom labeled diisopropyl ethene. An IR spectrum revealed that the compounds were alkenes. GC analysis revealed that each bottle contained a different compound; however, MS suggested that they were the same, at least by mass ($m/z = 112$). NMR analysis simply revealed the presence of the isopropyl groups and one alkene CH peak. As a result Bob conducted the following experiments. Please help Bob identify which vial represents the two possible alkenes. In addition, identify each product and show your work. (10 pts)



3. Conduct a retrosynthetic analysis for the two problems below. Investigate more than one method to make the desired molecules; the various methods do not have to be completely correct (they need to be real reactions but do not have to go all the way to the desired starting material), but rather should show that you have thought of alternative routes. Choosing the best route, show the synthetic scheme you would use to make the desired molecules. (12 pts)



From any compound with seven carbons or less

4. Write a mechanism that accounts for the formation the product from the following reaction. (8 pts)

