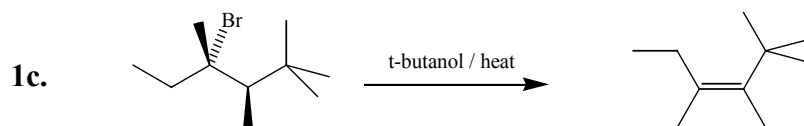
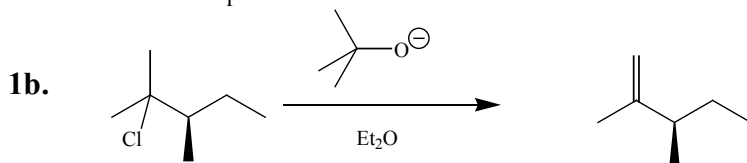
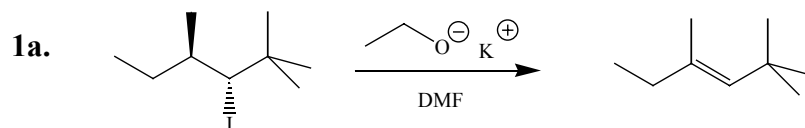


Whittier College
Organic Chemistry: CHEM 231A
Problem Set # 4

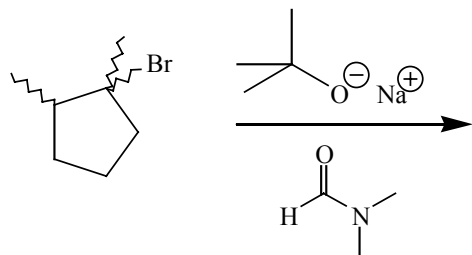
40 Points Total

Due at 12:00pm on Thursday, November 21, 2002

1. Name the starting material. Predict whether the following reactions will occur as drawn and explain your rationale: (12 points)



2. Provide products for the following reaction: Remember that the starting material is a mixture of many molecules. Pay close attention to stereochemistry. If there are enantiomers, do not work the problem for each enantiomer, treat them the same (draw a single enantiomeric product and write “+ enantiomer”). Name each product. Choose one of the stereoisomers and explain how the products will change if the reaction is carried out in t-butanol and is heated. (13 points)



3. Both cis- and trans-4-methylcyclohexyl chlorides react with t-butoxide in ethyl acetate to produce 4-methylcyclohexene. However, the cis-isomer reacts more rapidly than the trans-isomer. Draw all pertinent reactions and products. Explain the observed rate data. A mechanism and an energy diagram would be appropriate as part of your answer. (6 points)
4. When trans-4-t-butyl-1-tosylcyclohexane is reacted with t-butoxide in diethyl ether, no reaction occurs. However, when cis-4-t-butyl-1-tosylcyclohexane reacts under the same conditions, 4-t-butyl-1-cyclohexene is formed. Explain these results (6 points)
5. Vollhardt and Schore, Chapter 5, # 42 (3 points)