

SECOND HOUR EXAM - CHEMISTRY 3311

March 12, 2008

NAME: Answers

PROBLEM 1. _____

Circle Name/Time of Discussion TA

Ashley Wed at 12 or Wed at 5

PROBLEM 2. _____

Heather Tues 8 or Tues 1

PROBLEM 3. _____

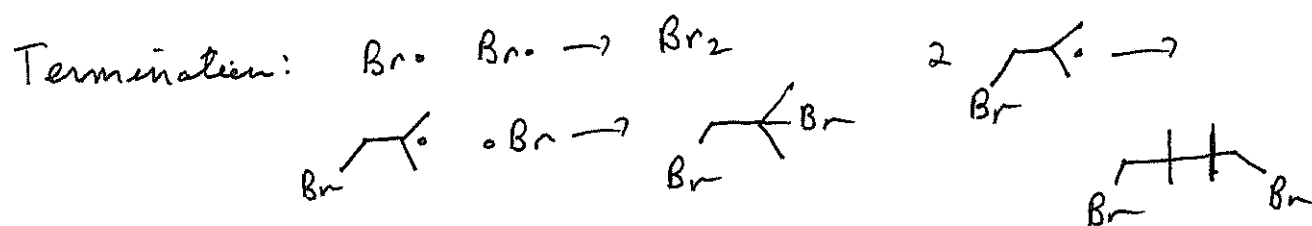
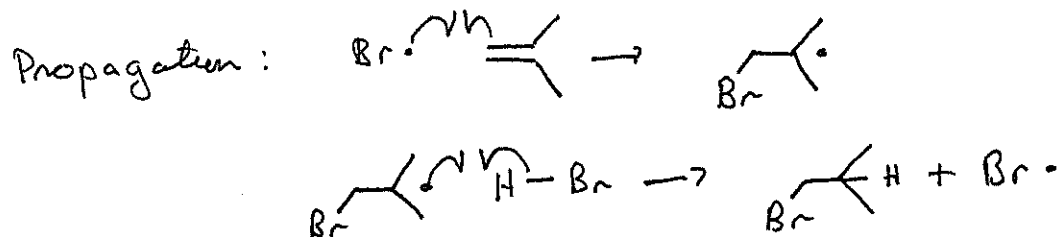
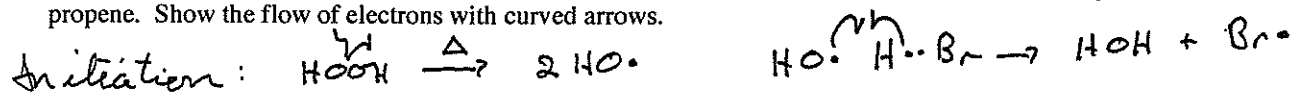
Wed 8 or Wed 12

Thur. 12

PROBLEM 4. _____

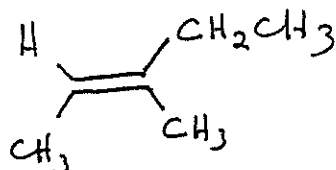
Total: _____

Problem 1 (5 points) Show the entire mechanism for the **free radical addition** of HBr to 2-methylpropene. Show the flow of electrons with curved arrows.



Problem 2. (10 points) When (2R,3R)-2-bromo-3-methylpentane reacts in the presence of $\text{CH}_3\text{O}^-\text{Na}^+$ in methanol, an alkene is formed. A) What is the major product formed? B) What is the IUPAC name for the major product formed? C) Give the structure of the transition state for the reaction and depict the flow of electrons with curved arrows.

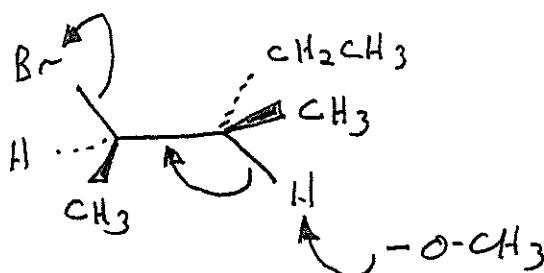
A - (structure of product)



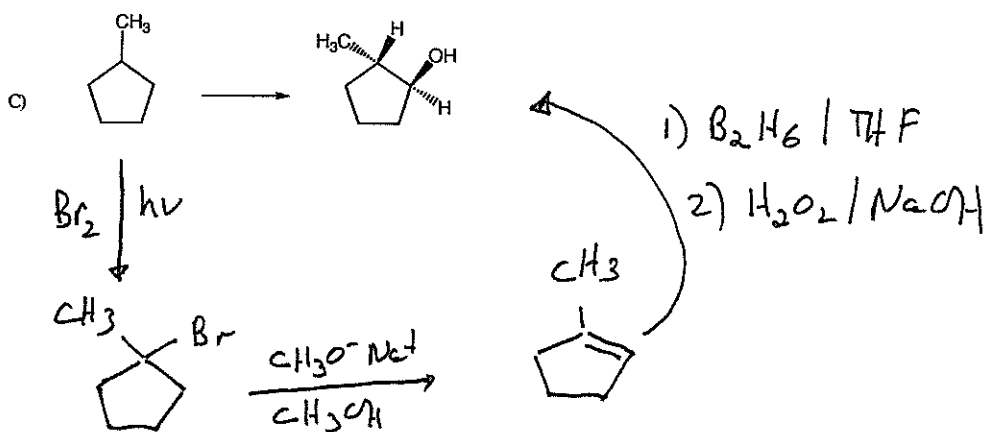
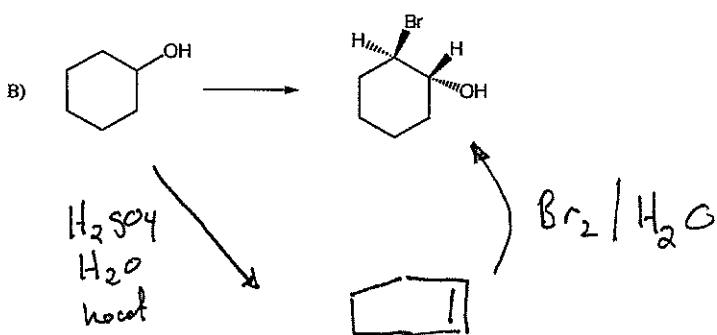
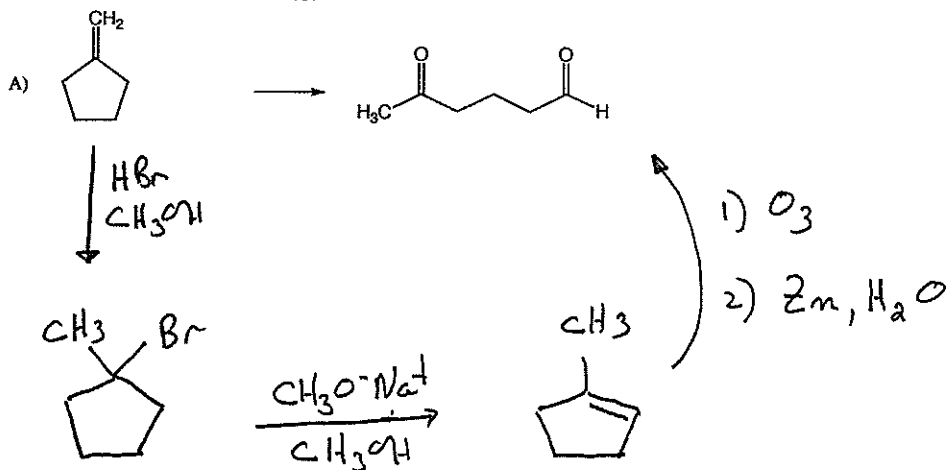
B - (IUPAC name)

E-3-methyl-2-pentene

C - (structure of transition state)



Problem 3. (45 points) Show how you would carry out the following chemical transformations. Show intermediate molecules that could be isolated along the reaction pathway. Do not worry about the formation of racemic mixtures.



Problem 4. (40 points) Give the products for the following reactions. If more than one product is formed and the products are isomers of one another, indicate what kind of isomer they are. If they are stereoisomers, indicate if they are enantiomers or diastereomers. If the reaction produces a racemic mixture, please state so. If the product molecule is meso, please state so. Also, indicate if the products are chiral or achiral. If no reaction occurs, please state so. **Circle your answers – only circled answers will be graded.**

