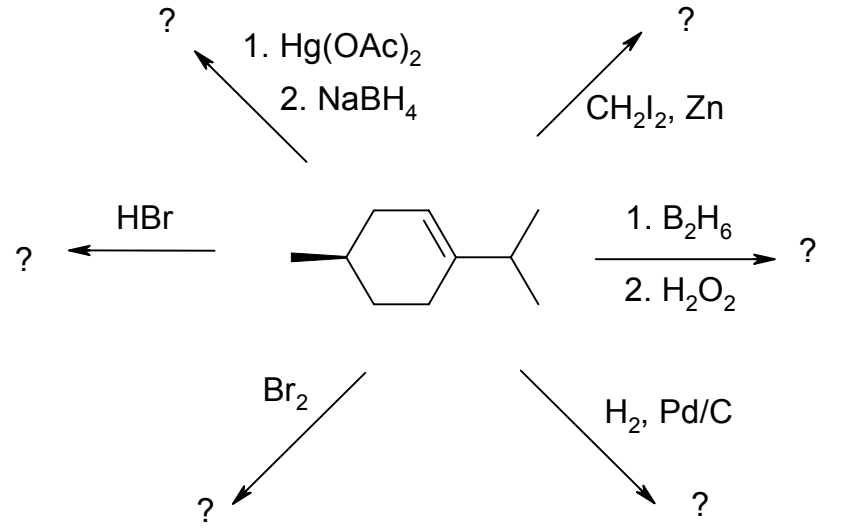
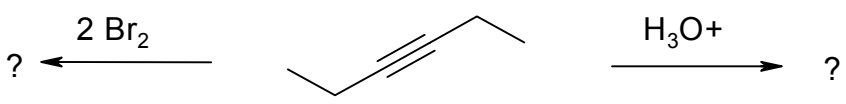
NAME_____

Organic Chemistry I, CHEM 331
Exam 2, November 2, 2001
Sections 003 and 004, Dr. Sweeting
Full credit

Please attempt all of the questions. Partial credit will be given for partially correct answers. If you give several answers and do not select one as your response, you will not receive credit, even if one of the answers is correct. If you need more space to answer a question, you may write on the back of the page, but you must indicate where your answer is.

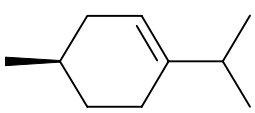
1. For each of the reactions following, please fill in the **major** product, as indicated by the "?" in the equation. If only one stereoisomer is formed from the reaction, please sketch the correct stereoisomer. (30 points)



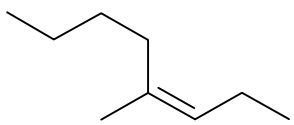


2. Please give complete IUPAC names, including stereochemistry in the name where appropriate, for each of the following compounds (30 points):

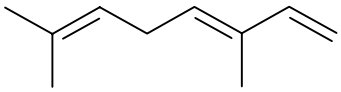
a)



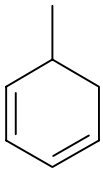
b)



c) ocimene, a natural plant oil



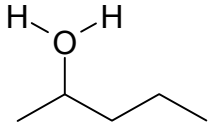
d)



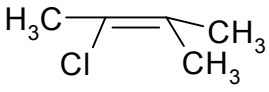
3. Please indicate the errors in the following common student drawings by correcting them. Redraw if necessary to make the correction clear. (12 points)

a) $(CH_3)_2CH_2CH_2CH_2(CH_3)_2$

b)



c)



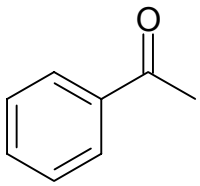
4. a) Outline the currently accepted mechanism of the reaction of HCl with an alkene, using as your alkene reagent 2-methyl-2-hexene. Please make a sketch of each intermediate but **not** the transition states. (10 points)

b) Describe one experiment that has been done that supports the mechanism that you have written above, describing *how* the information obtained in the experiment supports the mechanism. (6 points)

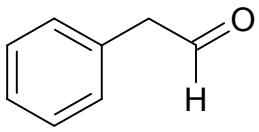
5. When HCl is added to 3-methyl-1-hexene, the final product is 3-chloro-3-methylhexane. Explain how this product is formed by referring to the mechanism of the addition. You may refer to the mechanism you wrote out in 4.a. (6 points)

6. How would you make **one** of the following from ANY alkene or alkyne? You may solve more than one problem for extra credit. (6 points each)

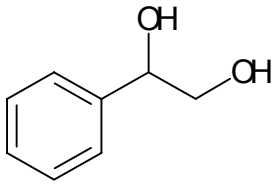
a)



b)



c)



d) From an alkene or alkyne with fewer carbon atoms