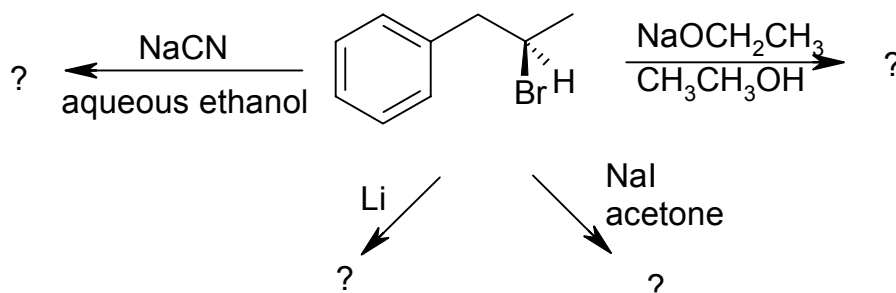


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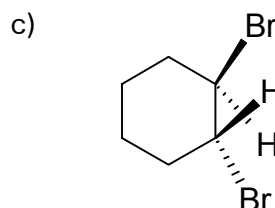
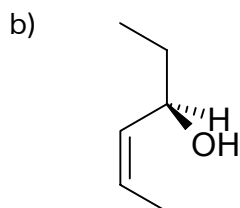
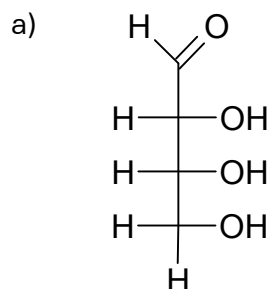
Organic Chemistry 1, CHEM 331  
 Sections 003 and 004, Dr. Sweeting  
 Exam 3, Nov. 30, 2001  
 Full credit 100 points (possible 110)

Please answer the following questions in the space allotted. If you need more space, you may use the back of the page, but you **MUST** say where your answer is. If you give multiple answers to any question, please mark the one you believe to be the best to avoid my grading instead the one you don't believe is best.

1. Please complete the following reactions by sketching the missing reagent or product as indicated by the "?". If more than one product is expected, please show the major product. Include stereochemistry of reagent or product if it is known. (16 points)

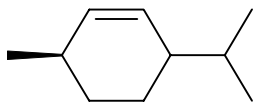


2. Label any chiral centers R or S and any alkenes E or Z in the following structures. (32 points)

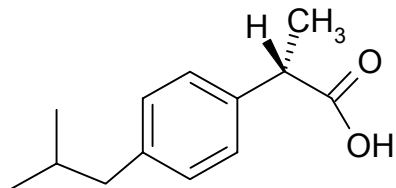


3. Please give complete IUPAC names, including stereochemistry in the name where appropriate, for each of the following compounds (22 points):

a)



b) the drug ibuprofen



5. a) Write the mechanism for the reaction of (R)-1-bromo-1-phenylethane with water to form racemic 1-phenylethanol. (10 points)

5. b) Give one piece of experimental evidence that has been observed previously that the reaction occurs by the mechanism you gave above and briefly explain how the experiment either leads to or supports that mechanism. (6 points)

6. a) Ethane reacts with chlorine in the presence of light to give 1-chloroethane and other chlorinated ethanes. Please outline in equations the mechanism for the production of 1-chloroethane. You need not show termination steps. (12 points)

6. b) Describe two experiments which have been done by other scientists that support the mechanistic theory, i.e. that indicate that this reaction occurs as you have stated in part a). Please explain how the evidence either leads to or supports the mechanism you have written. (12 points)

P.S. this question is asking for the same kind of information as in 5.b), but the words chosen to describe the request are a little different.