Chemistry 210
October 29, 2003

Name _____

16 1. Give structures for each of the following compounds or ions:

t-butyl oxonium ion

trans-2-methyl-3-hexene

propylbromonium ion

sec-butylcarbocation

thionyl chloride

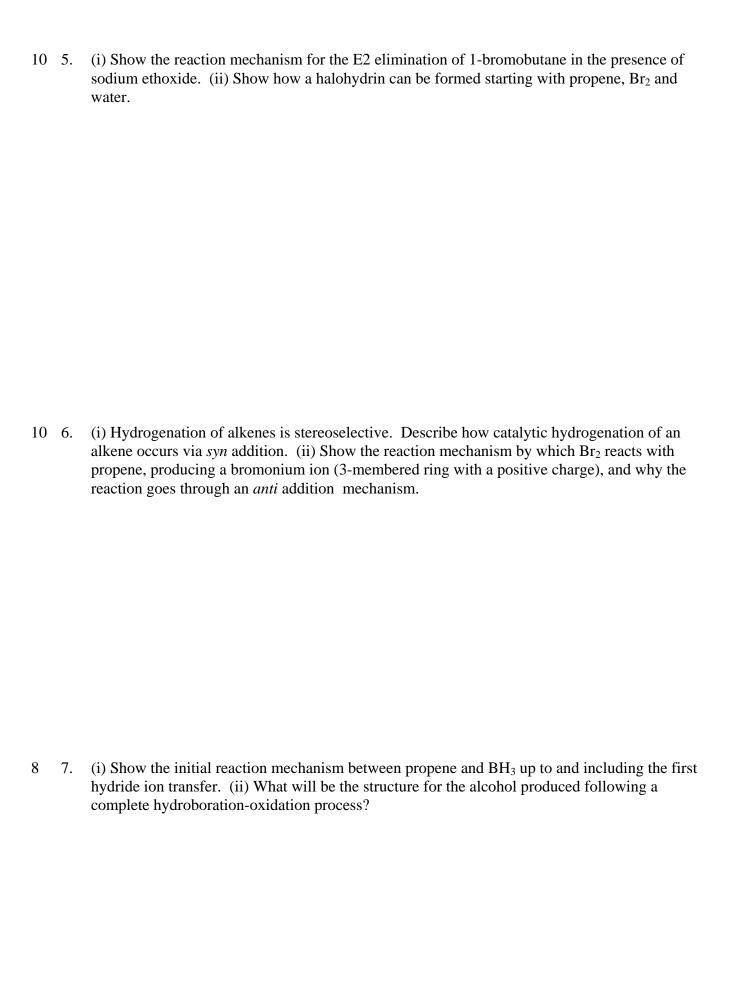
(Z)-1,2-dibromo-1-butene

(*E*)-1-methyl-1,2-cylcopentanediol

a 4-carbon aldehyde

12 2. Show the reaction mechanism for the acid-catalyzed elimination reaction of 3-methyl-2-butanol that actually produces three different alkenes. Alkyl and/or hydride shifts may be required. For the three potential products predict the order of increasing percentage of product formed (the product which is preferred will be formed more!).

16	3.	We have usually started with a reactant and showed the product. However, organic chemists are often given a product, and have to determine a good reactant. For the following products, show any <i>alkene</i> that could be used to produce the product shown. Include any other chemicals which may be required for these chemical transformations. (<i>Draw the structure of the product, to give yourself a better idea about structures of potential alkene reactants.</i>)
		t-butyl alcohol
		1-bromo-2-pentanol
		2-butanol
		1-butanol
12	4.	(i) Show the complete <i>reaction mechanism</i> (with arrows) and product for the reaction of propene and HBr, including the formation of the intermediate carbocation. (ii) Show the reaction product (<i>but no reaction mechanism is necessary</i>) for reaction of HBr and propene in the presence of peroxides. (iii) Explain why peroxides lead to anti-Markovnikov HBr addition.



6	8.	Each of the following compounds are weak nucleophiles as shown. Show a reaction that you could use to make each into a stronger nucleophile (a more basic compound or ion). HOH
		NH_3
		ethanol
10	9.	Show the reaction mechanism by which <i>t</i> -butyl bromide reacts with water to produce <i>t</i> -butyl alcohol, going through a carbocation.