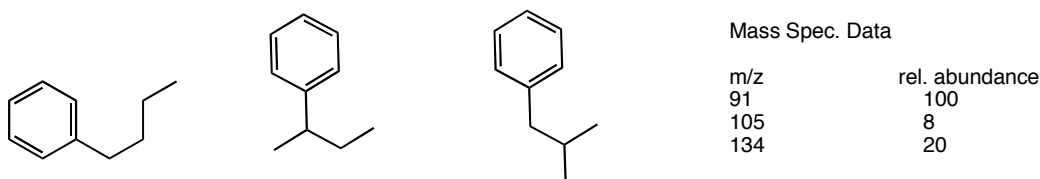


Chem. 218 Problem Set 2

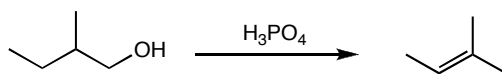
Recommended Problems from the text: 13.1-13.4, 13.21, 13.23, 10.4-10.8, 10.12-10.24, 10.34-10.35, 10.37-10.38, 10.44-10.45, 10.46-10.47 (a-f), 10.48-10.49, 10.50 (a, b, d, e, h), 10.51, 10.53 (a, b, c, e, f, h), 10.55, 10.56 part a, 10.57-10.60, 10.61 part a, 10.62, 10.65-10.67

(Recommended Problems from the first edition: 13.1-13.4, 13.21, 13.23, 10.4-10.7, 10.11-10.24, 10.33-10.36, 10.42-10.43, 10.44-10.45 (a-f), 10.46-10.47, 10.48 (a, b, d, e, h), 10.49, 10.51 (a, b, c, e, f, h), 10.54, 10.55-10.58, 10.59 part a, 10.60, 10.63-10.65)

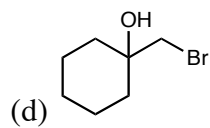
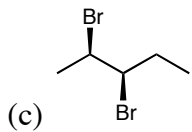
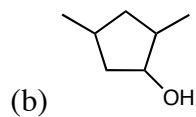
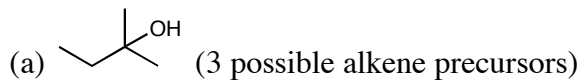
1. Identify the structure of the ion which is responsible for each of the following peaks in the mass spectrum of 2-methylbutane: 72, 57, 43, 29, 15.
2. For each of the following fragmentation peaks in the mass spectrum of 1-butanol, determine what was lost from the parent in order to form that peak. (For example, a peak at 59 would be characterized as $M^+ - CH_3$): 56, 43, 41, 31
3. Determine which isomer below corresponds to the mass spectral data.



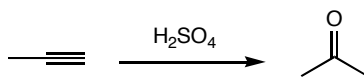
4. Explain why the molecular weight of a compound may be different than the mass of the parent ion.
5. None of the addition reactions we have studied so far is enantioselective, in that the products are always formed as a racemic mixture. Why?
6. Make sure you can do all assigned problems in chapter 10, and that you can draw the mechanism for all transformations in the assigned problems.
7. Unlike 2° and 3° alcohols, 1° alcohols cannot undergo cationic shifts during dehydration reactions (why?). However, they can appear to have undergone a shift. Based on what you now know about alkenes in the presence of acid, propose a mechanism for the following transformation without using a hydride shift.



8. Give an alkene precursor and the reagents necessary to form the following compounds:



9. Hydration of an alkyne actually results in a ketone rather than an alcohol. Propose a mechanism to account for this transformation.



10. Propose two syntheses of the following bromide from any alkene. You may use a different alkene for each synthesis.

