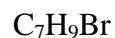


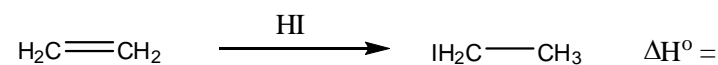
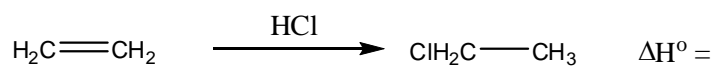
Discussion Problem Set 12

1. Draw a structure for (*E*)-4-ethyl-3-heptene and (*Z*)-3-isopropyl-2-heptene. (problem 10.35ae)

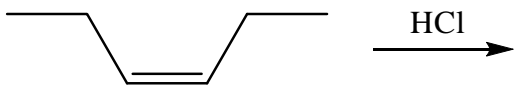
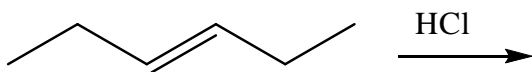
2. Calculate the number of degrees of unsaturation for these molecular formulas. (problem 10.40gh)



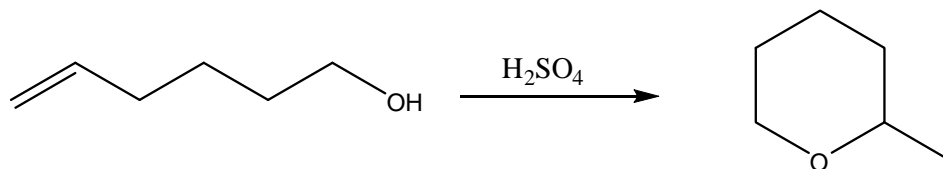
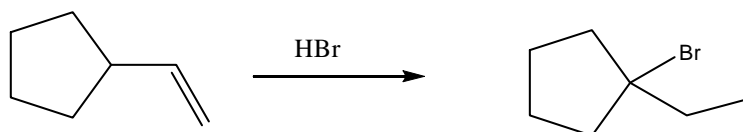
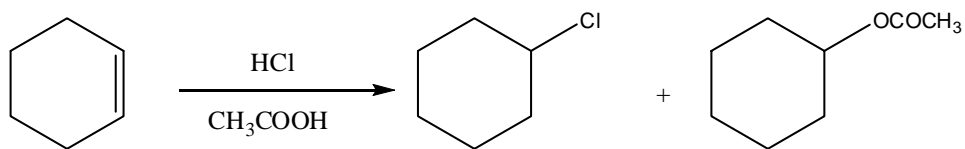
3. Using the data found in Tables 1.3 and 6.2, calculate  $\Delta H^\circ$  for both of the following reactions. Assuming the entropy change for the two reactions is identical, which reaction has the larger  $K_{\text{eq}}$ ? (problem 10.45)



4. Draw all addition products of the reactions below, showing stereochemistry. Explain why the addition of HCl is not a stereospecific reaction. (problem 10.55)

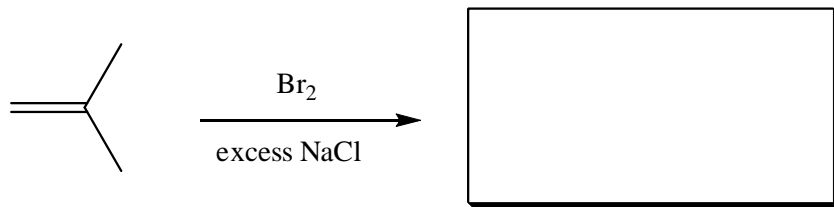


5. Draw stepwise mechanisms for each reaction. (problems 10.57-10.58)

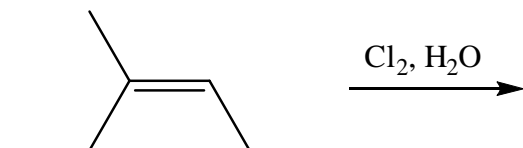
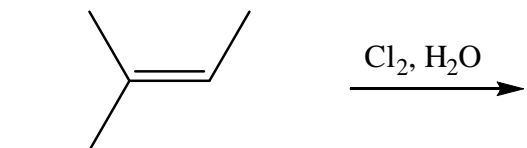


6. Draw an energy diagram for the two step mechanism of the addition of  $\text{Br}_2$  to  $\text{CH}_2=\text{CH}_2$  to form 1,2-dibromoethane. Assume that the first step is rate limiting and the overall reaction is exothermic. Draw the transition state structures for each step.

7. Predict the product. (problem 10.26)



8. Draw all stereoisomers formed in each reaction. (problem 10.52bc)



9. Provide all reagents needed for a multistep synthesis. (problem 10.63)

