

1. a. (6 pts) For each of the following reactions, determine whether an E1 or an E2 mechanism will occur.

1. _____

b. (9 pts.) Predict the elimination product(s) for the reactions.

2. _____

c. (3 pts.) Identify the major product.

3. _____

4. _____

5. _____

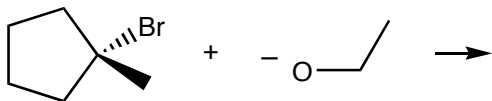
6. _____

7. _____

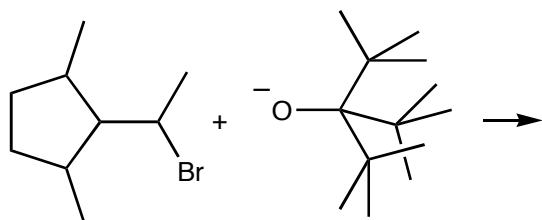
8. _____

9. _____

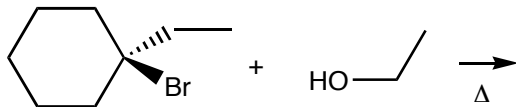
i.



ii.

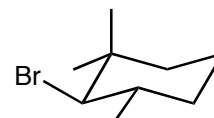
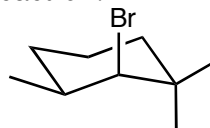
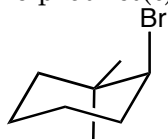
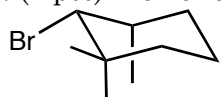


iii.

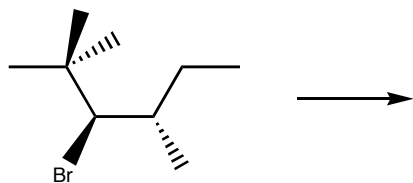


2. a. (8 pts.) Which of the following substituted cyclohexanes can undergo an E2 reaction.

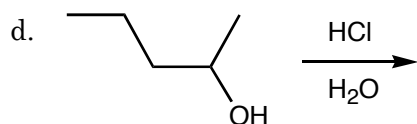
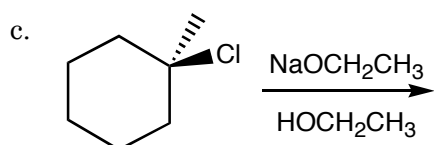
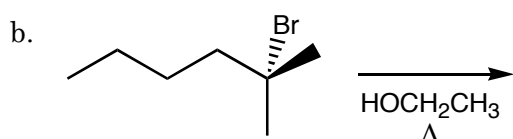
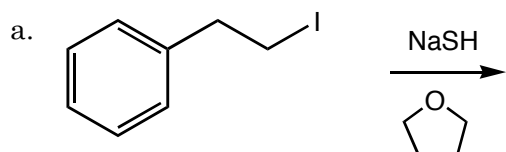
b. (4 pts) Pick one and draw the product(s) of the E2 reaction.



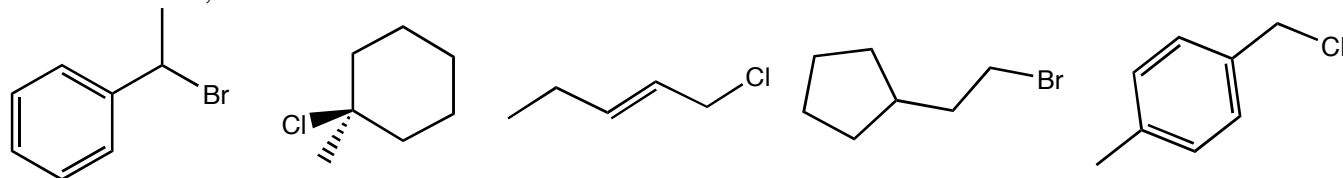
3. (8 pts.) Predict the product(s) of the following E2 reaction (consider the stereochemistry of the starting material carefully).



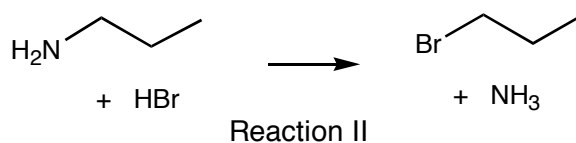
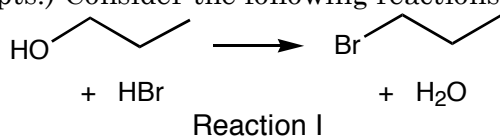
4. a. (8 pts.) Identify the type of reaction that will occur for each of the following reactions, and
 b. (8 pts.) Predict the product(s) of the reactions (solvents are drawn below the reaction arrow).



6. (10 pts.) Determine whether the following alkyl halides can react by an S_N1 mechanism, an S_N2 mechanism, or both.

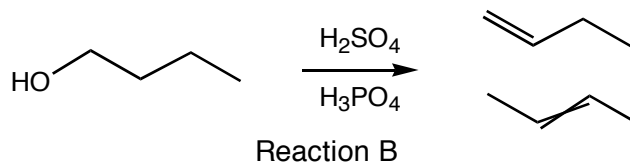
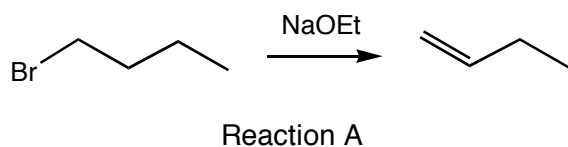


7. (6 pts.) Consider the following reactions.



Explain why Reaction I works, whereas Reaction II doesn't (consider the basicity of the leaving groups in each reaction).

In lab we performed an E2 reaction on 1-bromobutane and E1 reaction on 1-butanol. The reaction of 1-bromobutane with ethoxide produces one product, whereas the dehydration of 1-butanol produces three products.



8. (12 pts.) Draw a mechanism that accounts for the formation of 1-butene during the dehydrohalogenation of 1-bromobutane (Reaction A).

9. (12 pts.) Draw a mechanism that accounts for the formation of both 1- and 2-butene during the dehydration of 1-butanol (Reaction B).