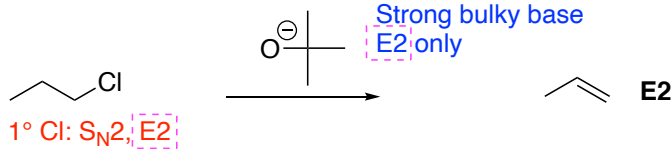
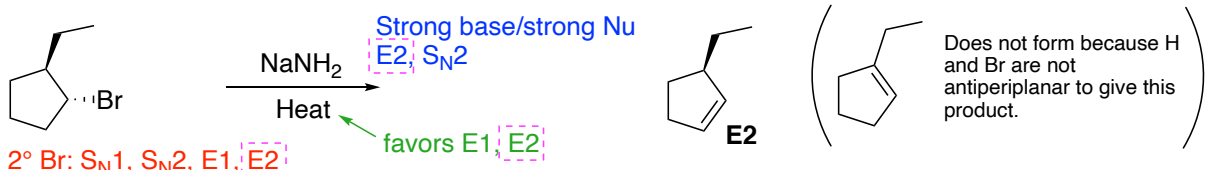
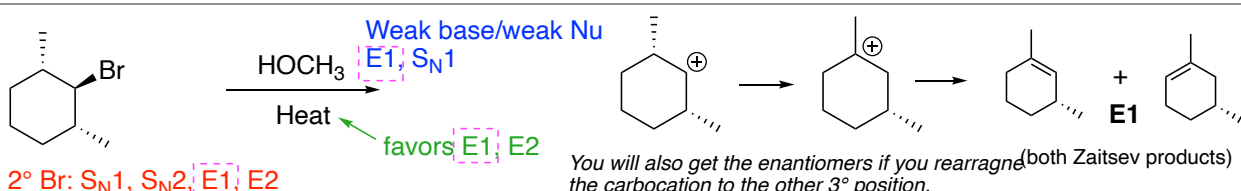
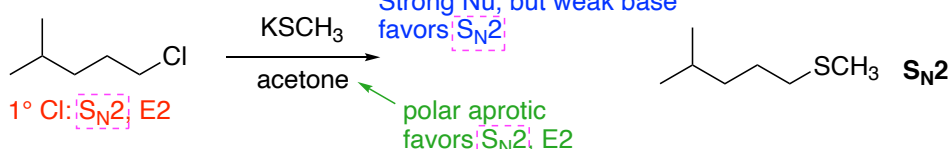
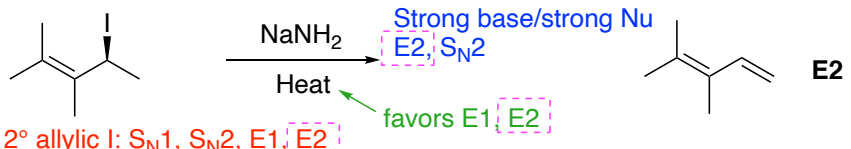
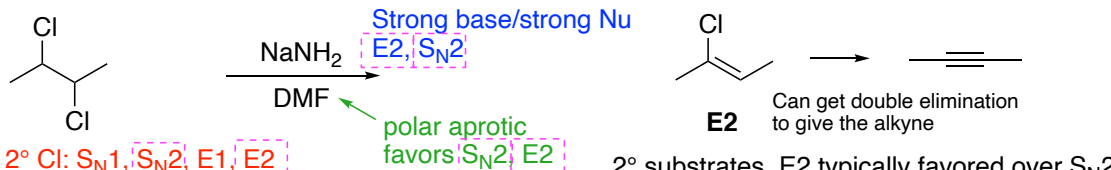
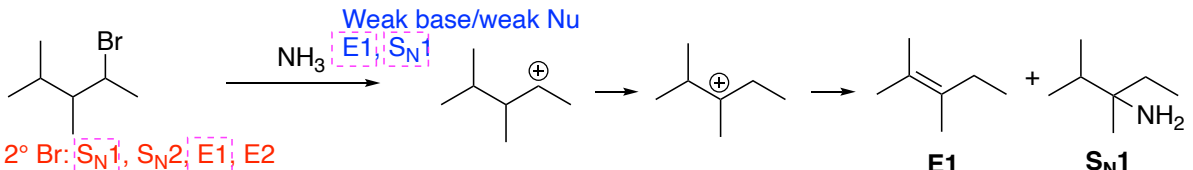
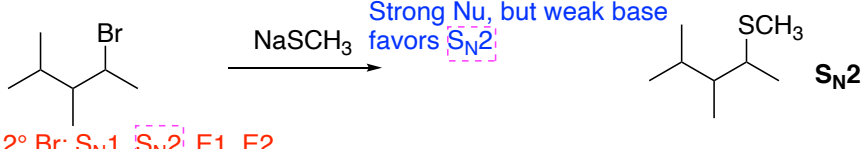
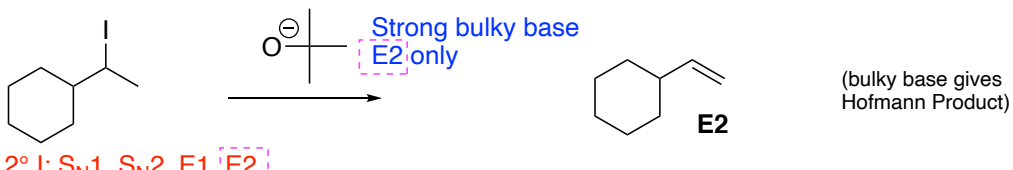


Chemistry 233
Chapter 11 Problem Set – Pt. 3 (Substitution/Elimination Competition)

For each of the following reactions, predict the major mechanism (S_N1 , S_N2 , E1, or E2) and provide the major product. Show correct stereochemistry where appropriate.

- a. 
1° Cl: S_N2 , E2
- b. 
2° Br: S_N1 , S_N2 , E1, E2
Strong base/strong Nu
E2, S_N2
Heat favors E1, E2
Does not form because H and Br are not antiperiplanar to give this product.
- c. 
2° Br: S_N1 , S_N2 , E1, E2
Weak base/weak Nu
E1, S_N1
Heat favors E1, E2
You will also get the enantiomers if you rearrange the carbocation to the other 3° position. (both Zaitsev products)
- d. 
1° Cl: S_N2 , E2
Strong Nu, but weak base
favors S_N2
acetone polar aprotic favors S_N2 , E2
- e. 
2° allylic I: S_N1 , S_N2 , E1, E2
Strong base/strong Nu
E2, S_N2
Heat favors E1, E2
- f. 
2° Cl: S_N1 , S_N2 , E1, E2
Strong base/strong Nu
E2, S_N2
DMF polar aprotic favors S_N2 , E2
E2
Can get double elimination to give the alkyne
2° substrates, E2 typically favored over S_N2
- g. 
2° Br: S_N1 , S_N2 , E1, E2
Weak base/weak Nu
E1, S_N1
NH3
- h. 
2° Br: S_N1 , S_N2 , E1, E2
Strong Nu, but weak base
favors S_N2
- i. 
2° I: S_N1 , S_N2 , E1, E2
Strong bulky base
E2 only
(bulky base gives Hofmann Product)

