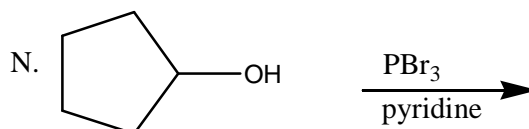
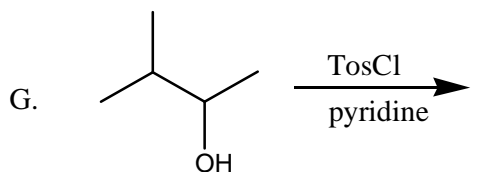
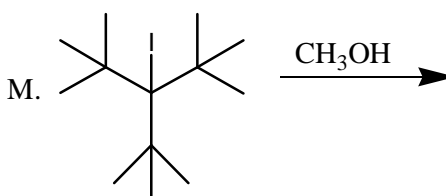
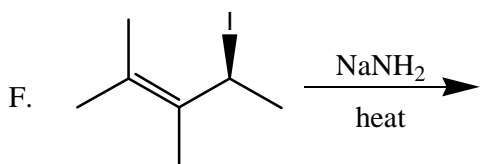
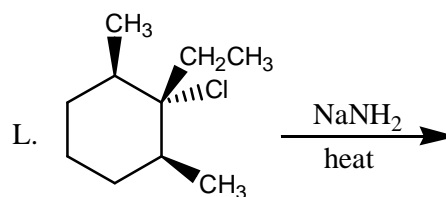
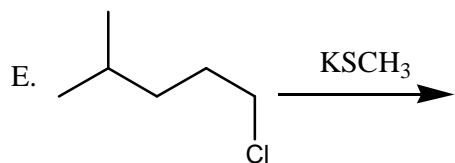
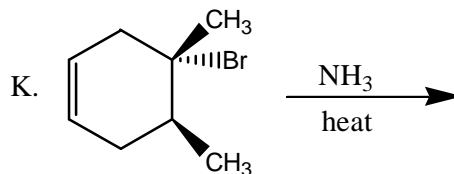
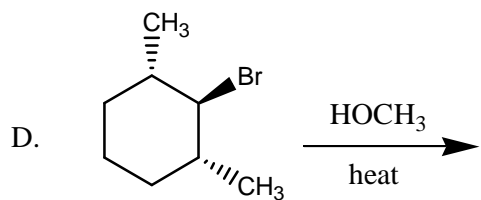
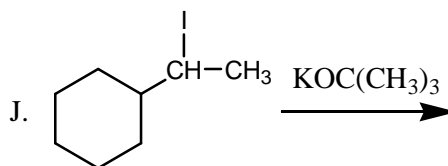
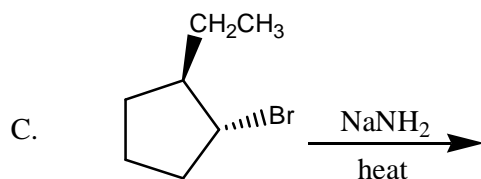
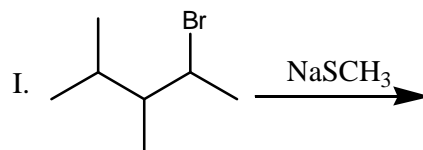
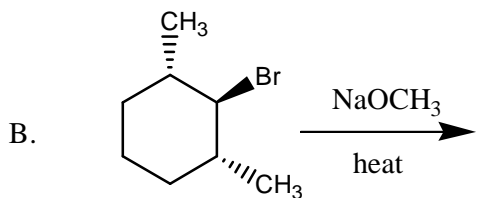
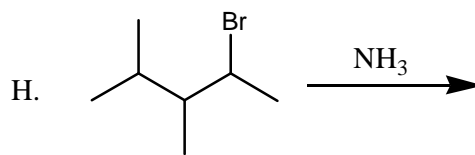
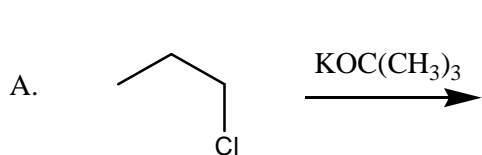
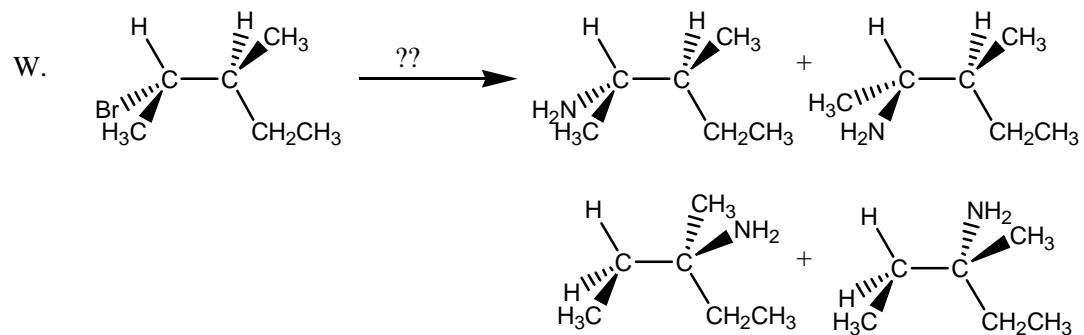
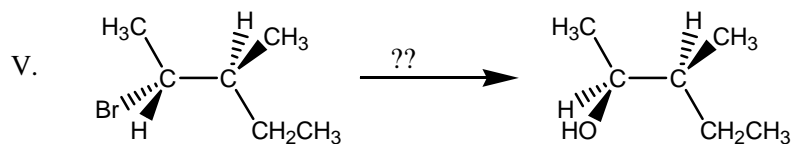
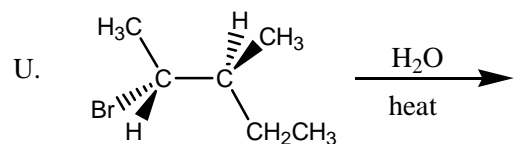
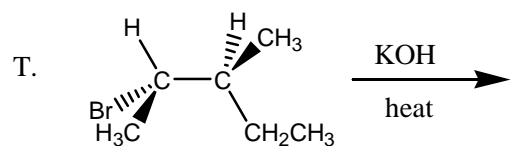
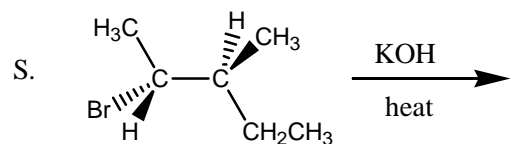
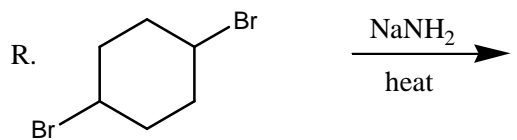
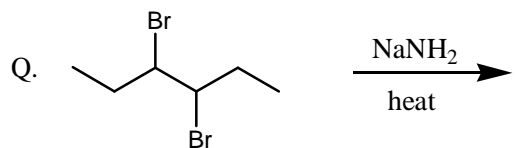
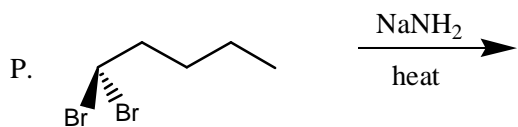
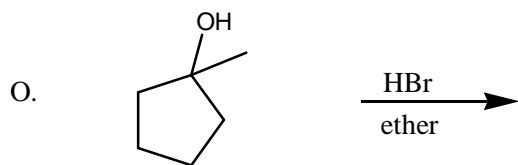


**Chem 233: Problem Set #11B (on Chapter 11)**

1. Specify how each of the following affects the rate of an E1 reaction. Does it increase, decrease, or have no effect on the rate of an E1 reaction?
  - A. increase in concentration of base
  - B. increase in base strength
  - C. increase in concentration of alkyl halide
  - D. decrease in strength of halide as a leaving group
  - E. change in alkyl halide from 1° to 3°
  
2. Specify how each of the following affects the rate of an E2 reaction. Does it increase, decrease, or have no effect on the rate of an E2 reaction?
  - A. decrease in concentration of base
  - B. decrease in base strength
  - C. decrease in concentration of alkyl halide
  - D. increase in strength of halide as a leaving group
  - E. change in alkyl halide from 3° to 1°
  
3. Circle which of the following pairs will give a higher yield of elimination product over substitution product.
  - A.  $(\text{CH}_3)_2\text{CH-I} + \text{NaNH}_2$   
 $\text{pK}_A(\text{NH}_3)=36$  vs.  $(\text{CH}_3)_2\text{CH-I} + \text{NaCN}$   
 $\text{pK}_A(\text{HCN})=9.1$
  - B.  $(\text{CH}_3)_2\text{CH-I} + \text{NaOH}$  vs.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{-I} + \text{NaOH}$
  - C.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{-Cl} + \text{KOCH}_3$  vs.  $(\text{CH}_3)_2\text{CHCH}_2\text{-Cl} + \text{KOCH}_3$
  - D.  $(\text{CH}_3)_2\text{CH-I} + \text{KOC}(\text{CH}_3)_3$  vs.  $(\text{CH}_3)_2\text{CH-I} + \text{KOCH}_3$
  - E.  $(\text{CH}_3)_3\text{C-Br} + \text{NaSCH}_3$  vs.  $(\text{CH}_3)_2\text{CH-Br} + \text{NaSCH}_3$
  - F.  $(\text{CH}_3)_2\text{CH-I} + \text{NaCN}$   
low temperature vs.  $(\text{CH}_3)_2\text{CH-I} + \text{NaCN}$   
high temperature

4. For the following reactions: predict major product(s) and specify the mechanism ( $S_N2$ ,  $S_N1$ , E1, or E2) by which the reaction occurs. Show stereochemistry where applicable.





5. Synthesize the following organic compounds from given starting material.

