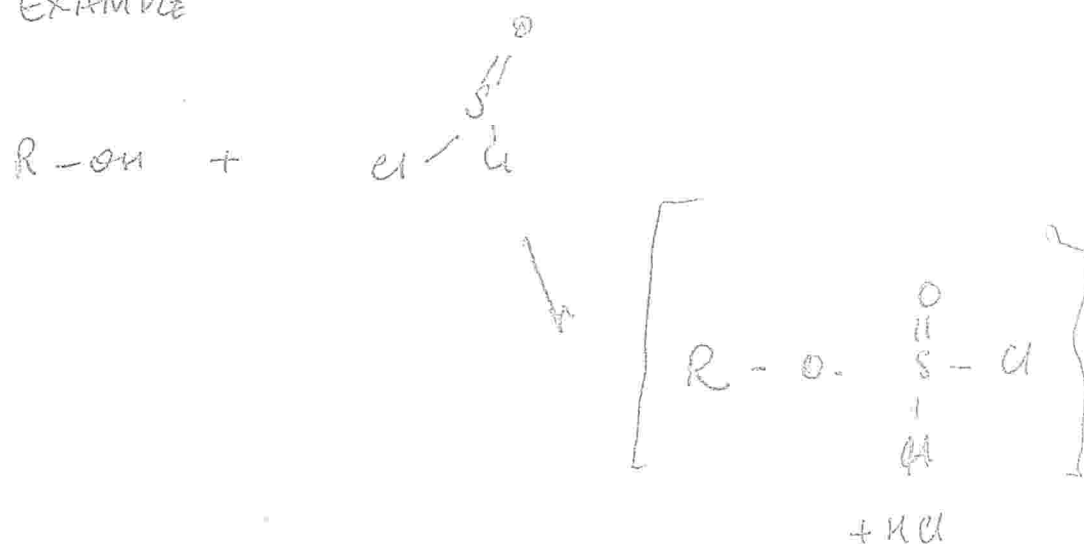


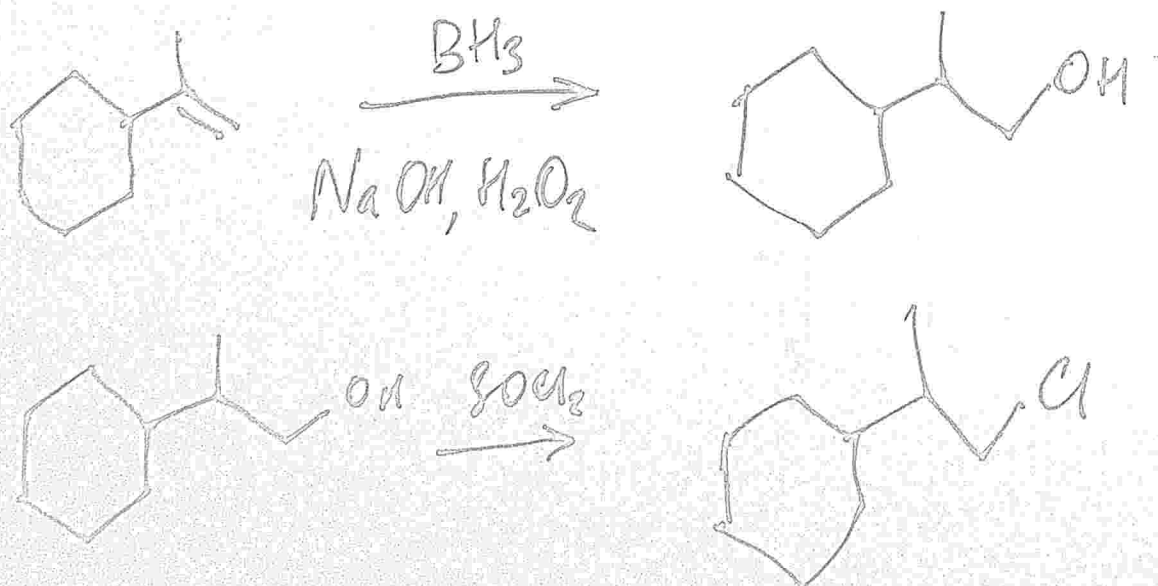
S<sub>N</sub>1, S<sub>N</sub>2, EliminationEFFECTS OF THE LEAVING GROUP  
ON THE S<sub>N</sub>2 REACTION

A GOOD LEAVING GROUP MUST HAVE  
AN ABILITY TO STABILIZE THE DEVELOPING  
NEGATIVE CHARGE IN THE TRANSITION STATE.  
WEAK BASES ARE GOOD LEAVING GROUPS  
IN GENERAL.

## EXAMPLE



## SYNTHESIS OF ALKYL HALIDES



# SOLVENT EFFECTS ON THE $S_N2$ REACTION

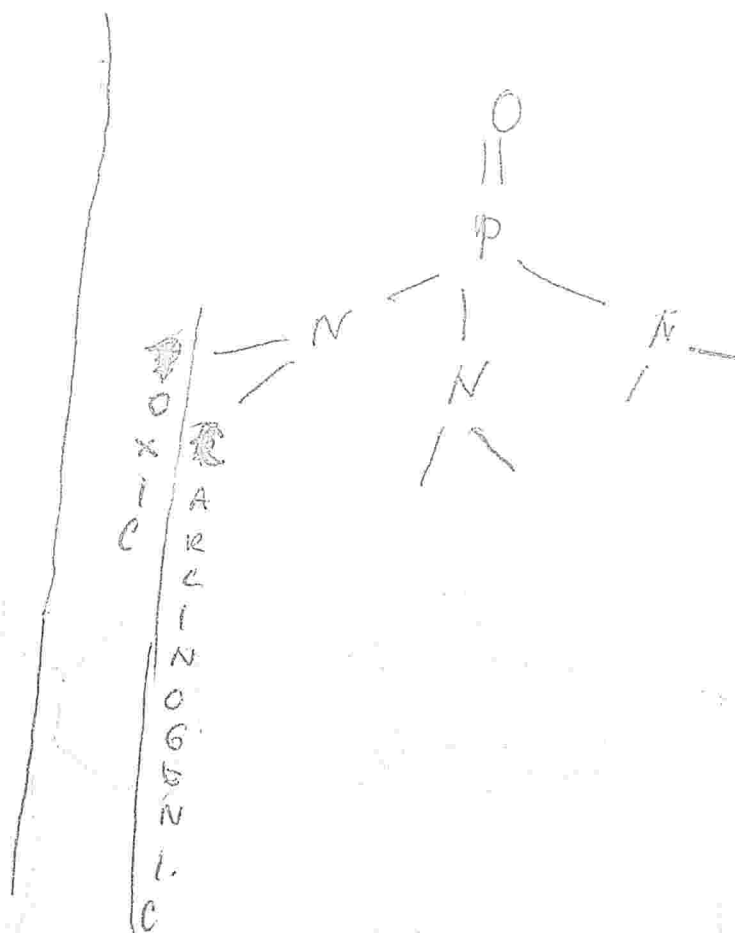
|                         |   |                  |
|-------------------------|---|------------------|
| POLAR, PROTIC SOLVENTS  | ↓ | RATE OF $S_N2$ . |
| POLAR, APROTIC SOLVENTS | ↑ | RATE OF $S_N2$ . |

1. GOOD  $S_N2$  SOLVENT

2. AVOIDS A SOLVATED ANION

3. INTERACTS WITH A COUNTERION

|                 |          |         |
|-----------------|----------|---------|
| SOLVENT         | $CH_3OH$ | HMPA    |
| REL. REACTIVITY | 1        | 200 000 |

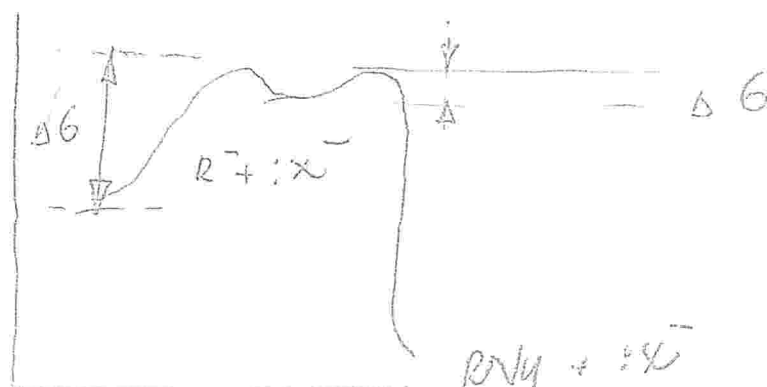


CHM 151:

$S_N1$  REACTIONS

20161104

$S_N1$  REACTIONS HAVE OPPOSITE TRENDS TO  
 $S_N2$  REACTIONS



STEREOCHEMISTRY OF THE  $S_N1$  REACTION.

BY THE  $S_N1$  MECHANISM, THE FORMATION  
 OF A RACEMIC PRODUCT MIXTURE FROM  
 THE ENANTIOMERICALLY PURE SUBSTRATE  
 WOULD BE EXPECTED

$S_N2$  ee,  $s_m = ee$

$S_N1$  ee  $s_m \ll ee_{\text{product}}$

## EFFECTS OF SUBSTRATE STRUCTURE

BY HAMMOND POSTULATE, SUBSTRATES

THAT GIVE RISE TO STABLE CARBOCATIONS  
WILL BE PRONE TO SUBSTITUTION REACTIONS  
BY THE  $S_N1$  MECHANISM.

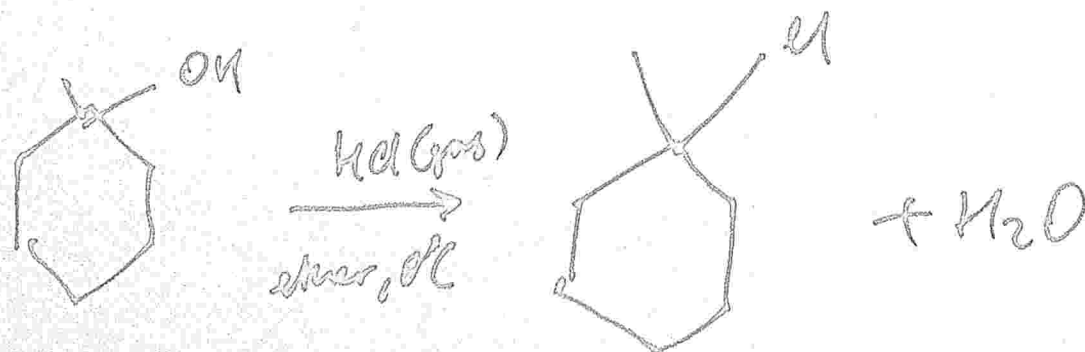
## EFFECTS OF THE LEAVING GROUP,

$S_N1$  strongly depends  
ON THE LEAVING GROUP.

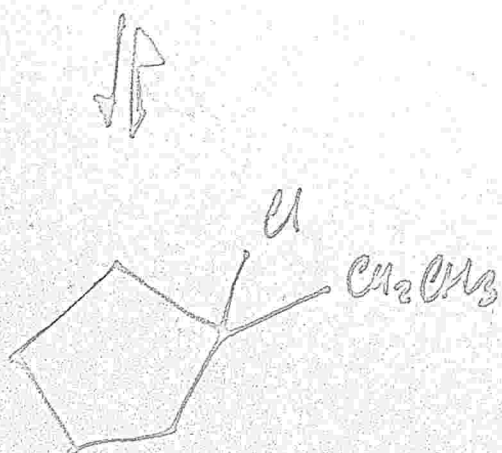
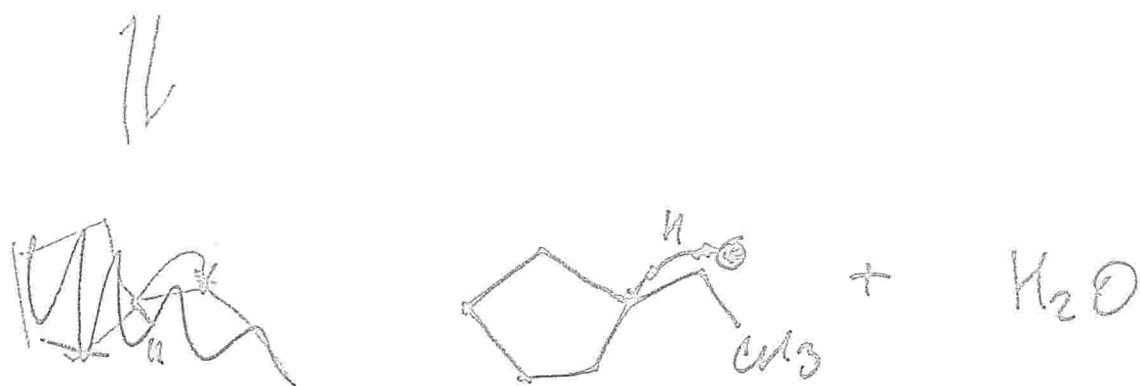
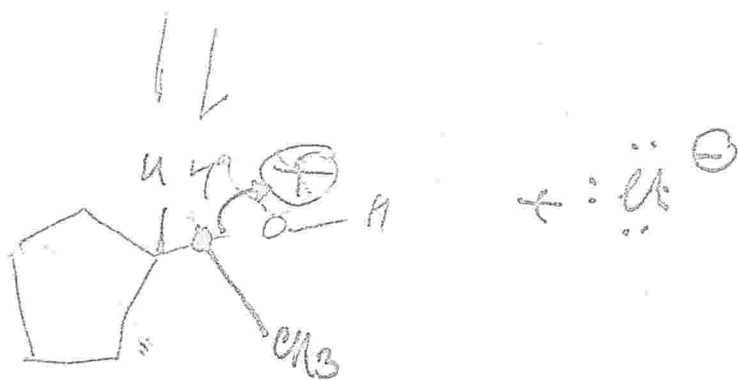
## EFFECTS OF THE SOLVENTS ON $S_N1$ REACTIONS

BY THE HAMMOND POSTULATE,  
POLAR SOLVENTS WOULD BE EXPECTED TO ACCELERATE  $S_N1$   
REACTIONS BY STABILIZING THE POLAR TRANSITION STATE.

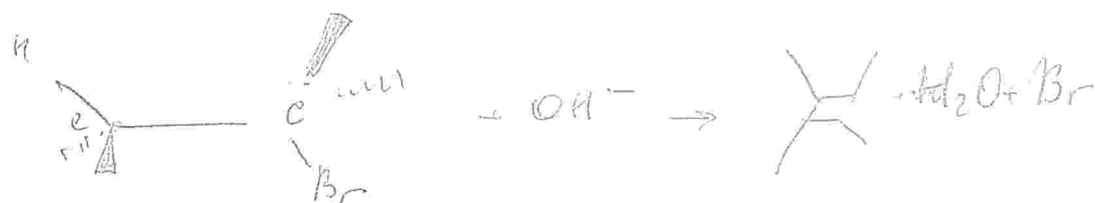
## $S_N1$ REACTIONS - TERTIARY ALKYL HALIDE SYNTHESIS



# EXAMPLE

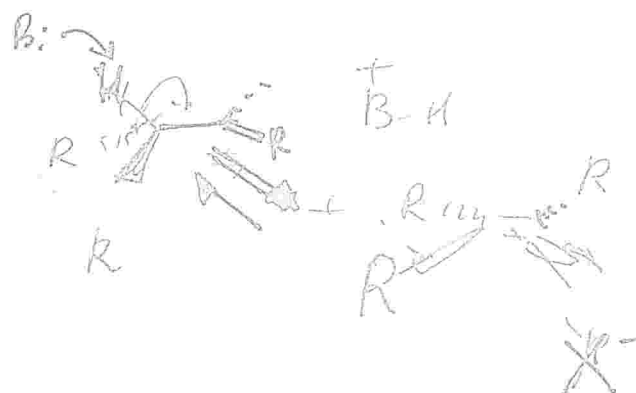


# ELIMINATION REACTIONS



possible

MECHANISMS:



NEED ACTIVE C-H FOR E1CB

E1CB

