

CHEM151: ELIMINATION REACTIONS 20161109

ZAITSEV'S RULE

BASE-PROMOTED ELIMINATION REACTIONS
GENERALLY ARE SELECTIVE FOR THE MORE
STABLE (MORE HIGHLY SUBSTITUTED)
ALKENE PRODUCT

E2 MECHANISM.

EMPIRICAL DATA:

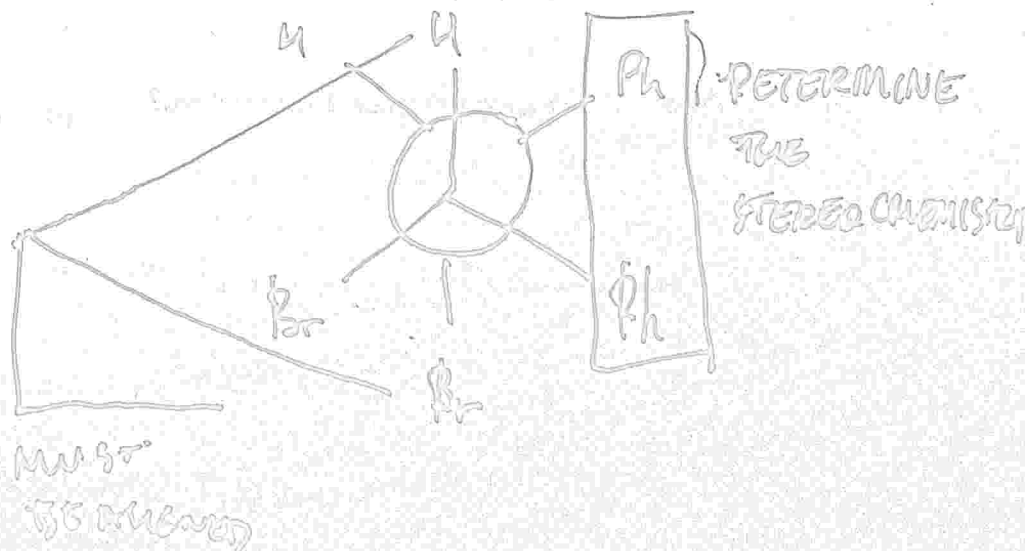
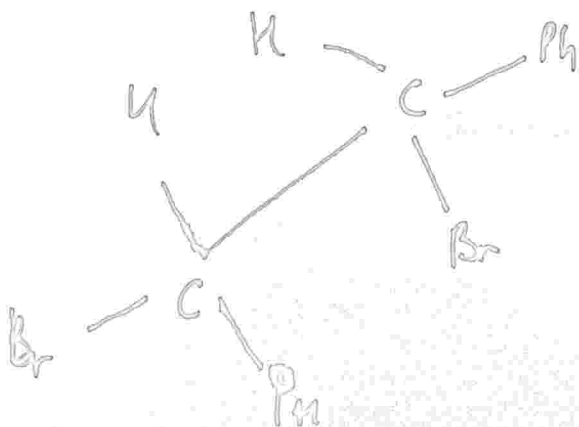
1. $\frac{d[P]}{dt} = k[RX][BASE]$

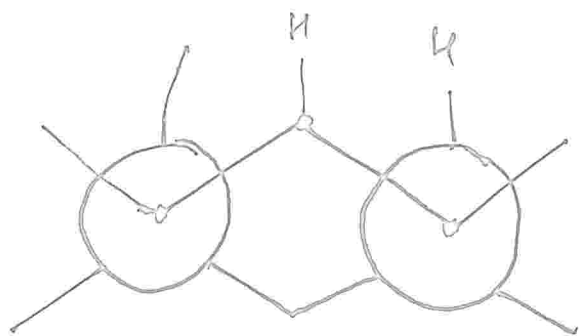
2. A PRIMARY KINETIC: ISOTOPE EFFECT

$$\frac{k_D[H]}{k_D[D]} > 1,$$

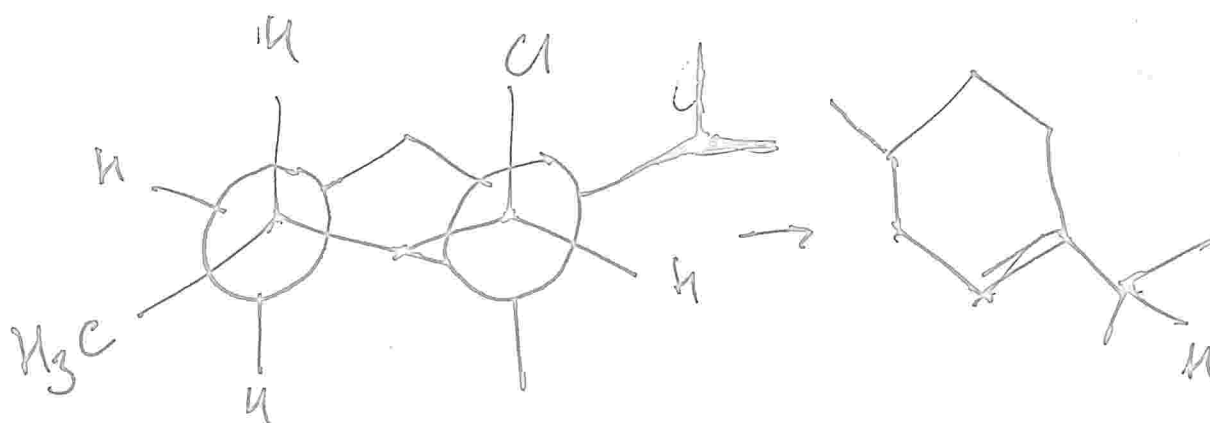
- WHICH HAPPENS WHEN D/H IS BROKEN
- IN THE RATE-DETERMINING STEP.

3. STEREOCHEMICAL OUTCOMES CONSISTENT WITH
AN ANTIPERIPLANAR TRANSITION STATE.





BRIM CHORINE. H and Cl ARE
ANTI PERIPLANAR



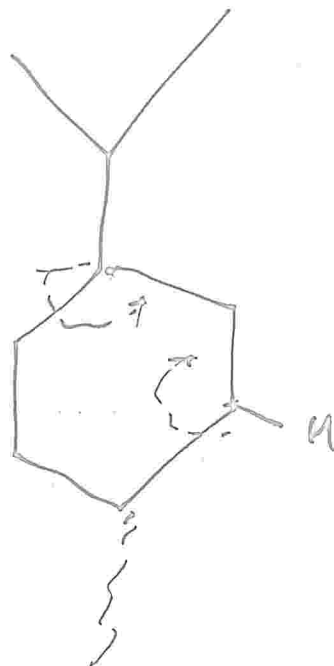
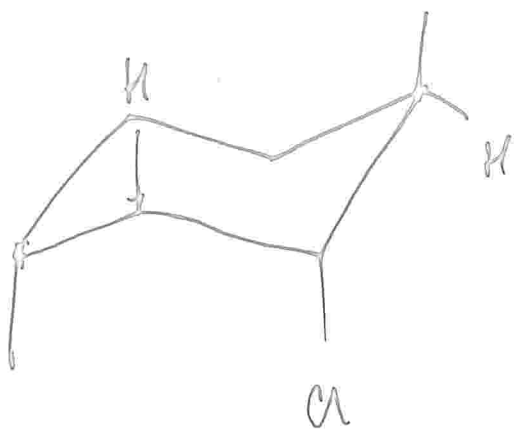
E1 REACTION

EMPIRICAL DATA.

1. Pseudo. 1st order kinetics $\frac{d[P]}{dt} = k[RX]$

2. $k_u/k_b \sim 1$

3. NO ANTIPERIPLANAR ARRANGEMENT.



E1 cB

POSSIBLE WHEN THE RESULTING
CARBANION IS STABILIZED

E1 AND S_N1

E1 AND S_N1

• OFTEN TAKE PLACE UNDER NEUTRAL OR
ACIDIC CONDITIONS WITHOUT A STRONG
NUCLEOPHILE OR BASE PRESENT

• FAVOURED BY SUBSTRATES THAT GENERATE
STABILIZED CARBOCATIONS

TERTIARY, BENZYLIC / ALKYLIC

• OFTEN MIXTURES OF S_N1 AND E1 FORMED

E2 AND S_N2

- OCCUR IN PRESENCE OF A GOOD NUCLEOPHILE / STRONG BASE
- REACTIONS UNDER THESE CONDITIONS ARE A COMPETITION BETWEEN E2 AND S_N2 CHEMISTRY

WILLIAMSON ETHER SYNTHESIS

THE WILLIAMSON ETHER SYNTHESIS GENERATES A C-O BOND FROM AN ALKoxide AND ALKYL HALIDE

