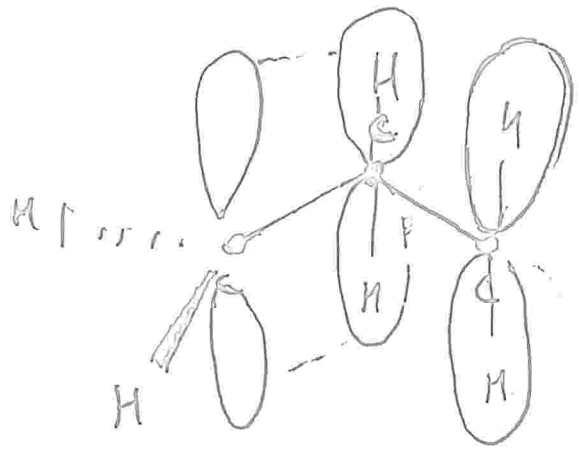
CHM151 : ELECTROPHILIC ADDITION

20161021

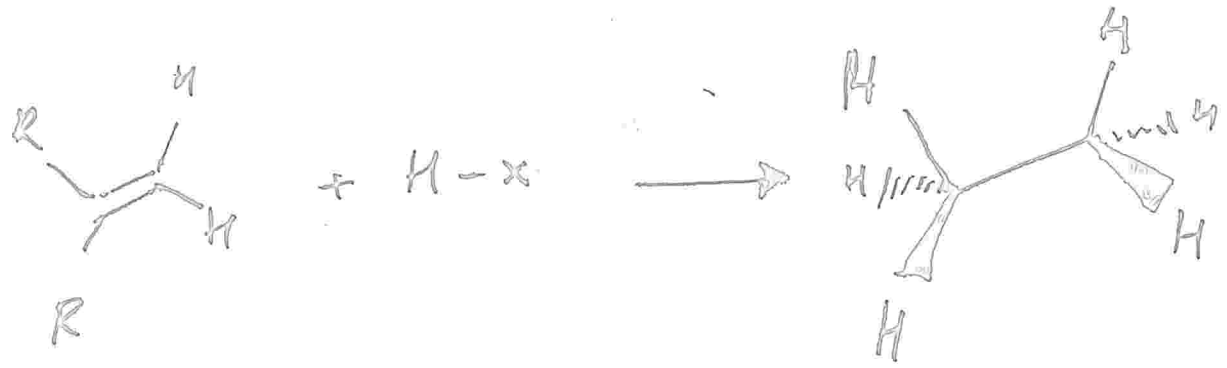
STABICITY

TETRASUBSTITUTED > TRI-> DI- > MONO-

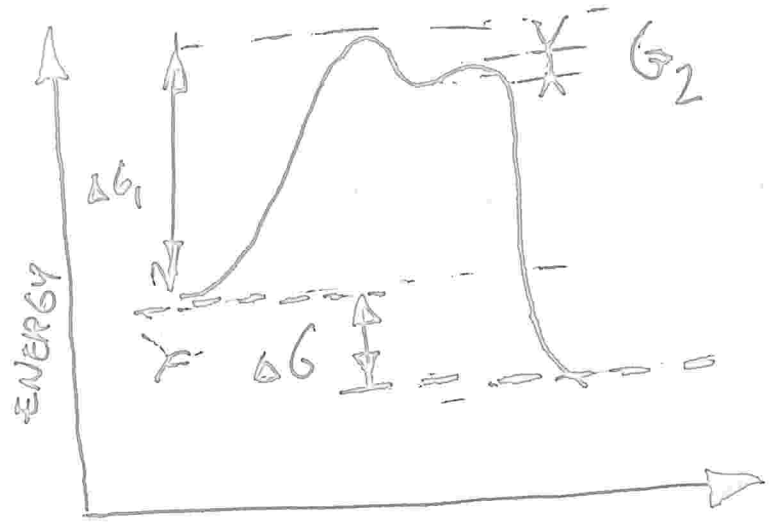
↔ HYPERCONJUGATION



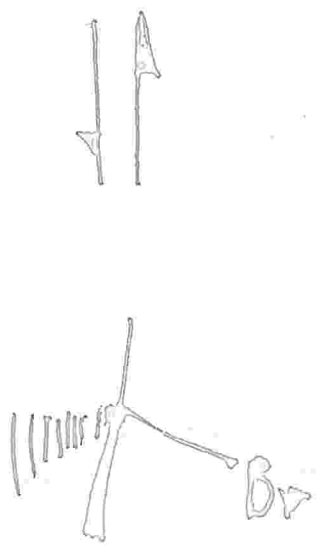
ELECTROPHYLIC ADDITION TO ALKENES



MECHANISM OF ELECTROPHILIC ADDITION:



CARBOCATION
(INTERMEDIATE)



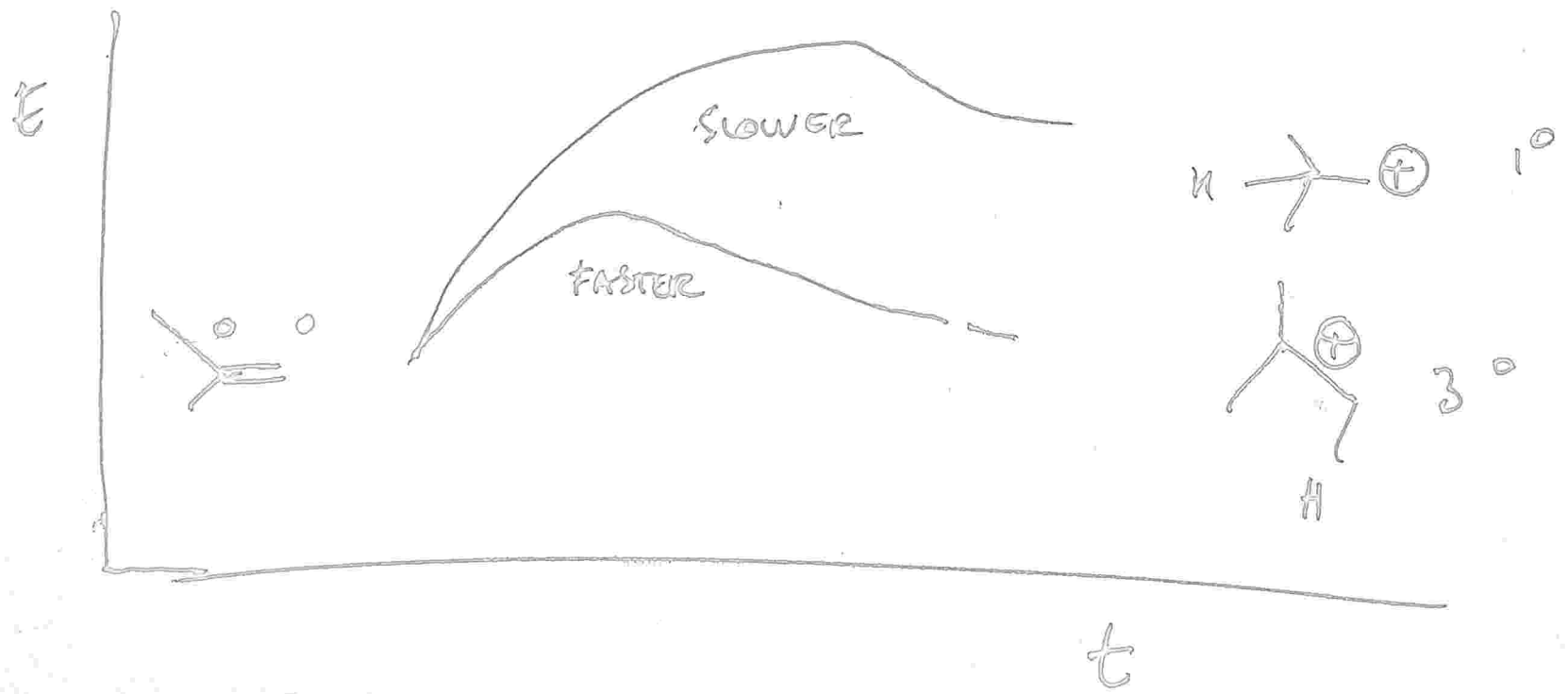
MARKOVNIKOV'S RULE AND HAMMOND POSTULATE

- THE MORE HIGHLY SUBSTITUTED CARBOCATION INTERMEDIATE IS FORMED SELECTIVELY UPON PROTONATION OF AN UNSYMMETRICALLY SUBSTITUTED ALKENE.

- MORE HIGHLY SUBSTITUTED CARBOCATIONS ARE MORE STABLE THAN LESS HIGHLY SUBSTITUTED CARBOCATIONS.

HAMMOND POSTULATE

- TRANSITION STATE HAS A SIMILAR STRUCTURE TO THAT OF THE MOST STABLE SPECIES

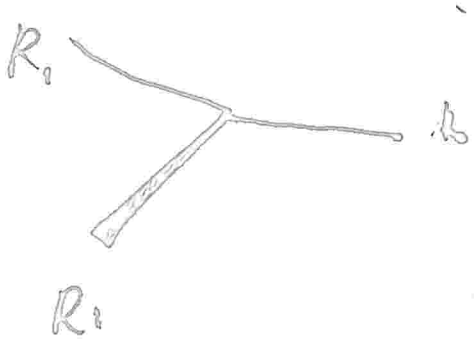


REGIOSELECTIVITY : THE SELECTIVITY FOR ONE DIRECTION OF CHEMICAL BOND MAKING OR BREAKING OVER ALL OTHER DIRECTIONS.

MARKOVNIKOV'S RULE:

ADDITION OF HX TO AN ALKENE PROCEED THROUGH THE MORE HIGHLY SUBSTITUTED CARBOCATION INTERMEDIATE.

REMARK FOR ALKENES, $3° > 2° > 1°$



A CARBOCATION CAN BE STABILIZED:

① ADDITION OF ALKYL GROUPS

② HYPERCONJUGATION