

For B.Sc-III, Paper-VII

Types of Reactions

By Dr.S.R.Haider
Department of chemistry
Oriental college

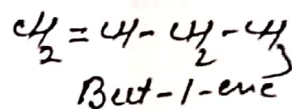
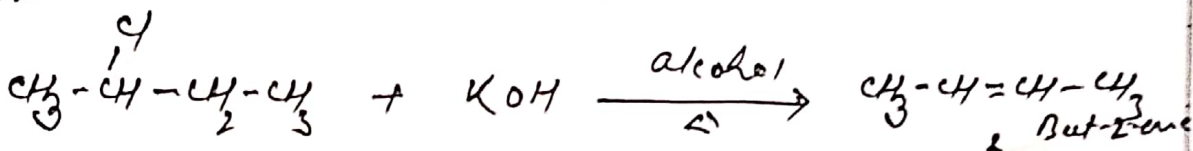
② TYPE OF REACTION

by Dr. S. L. Haiden
H.O.D. Chem.

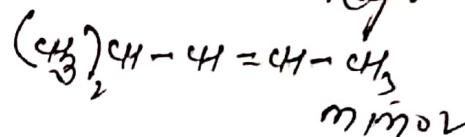
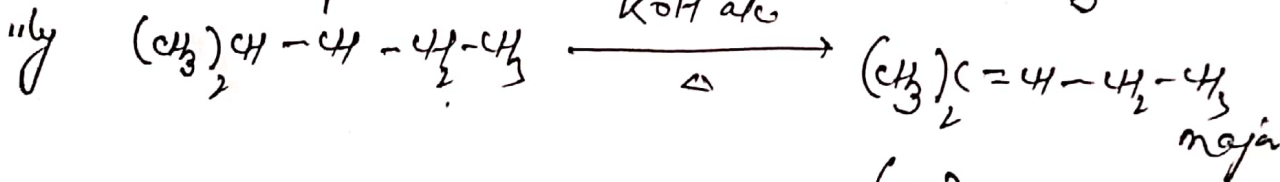
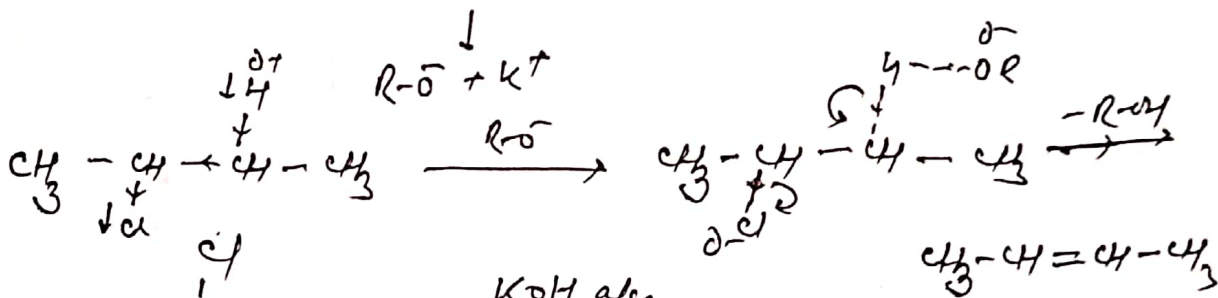
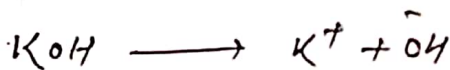
SAYTZEFF'S RULE AND HOFFMANN'S ELIMINATION.

Saytzeff's rule:

In case of unsymmetrical 2° halide during the dehydrohalogenation β -hydrogen is detached from that β -carbon which has lesser number of hydrogens. α and β carbons become α and β carbons.



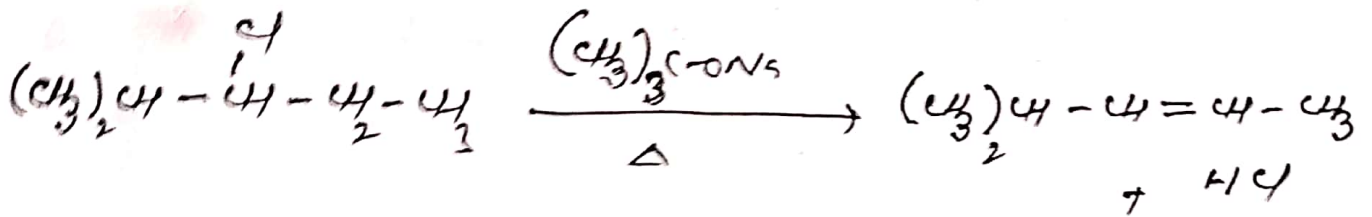
mech:



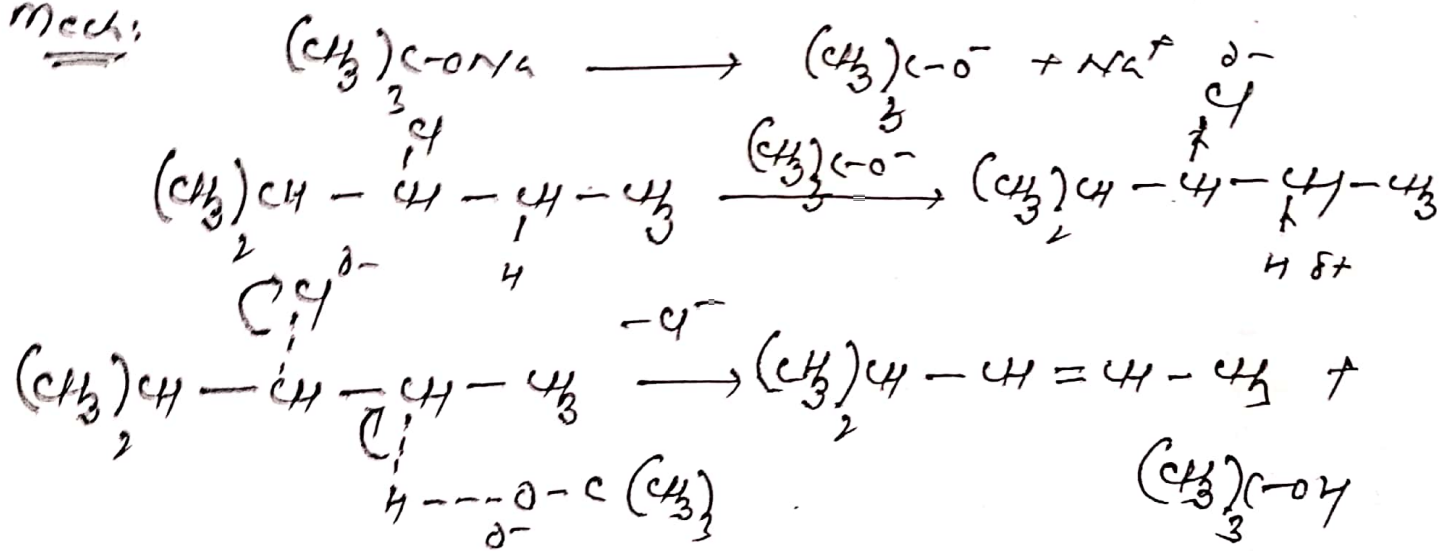
Hoffmann's elimination

Dehydrohalogenation of unsymmetrical 2° halide or unsymm. 3° halide when

Carried out in presence of bulky base $(CH_3)_3CO^-$, abstraction of H-atom takes place only on β -carbon which has more no. of hydrogens. i.e. it gives less substituted alkene as main product.



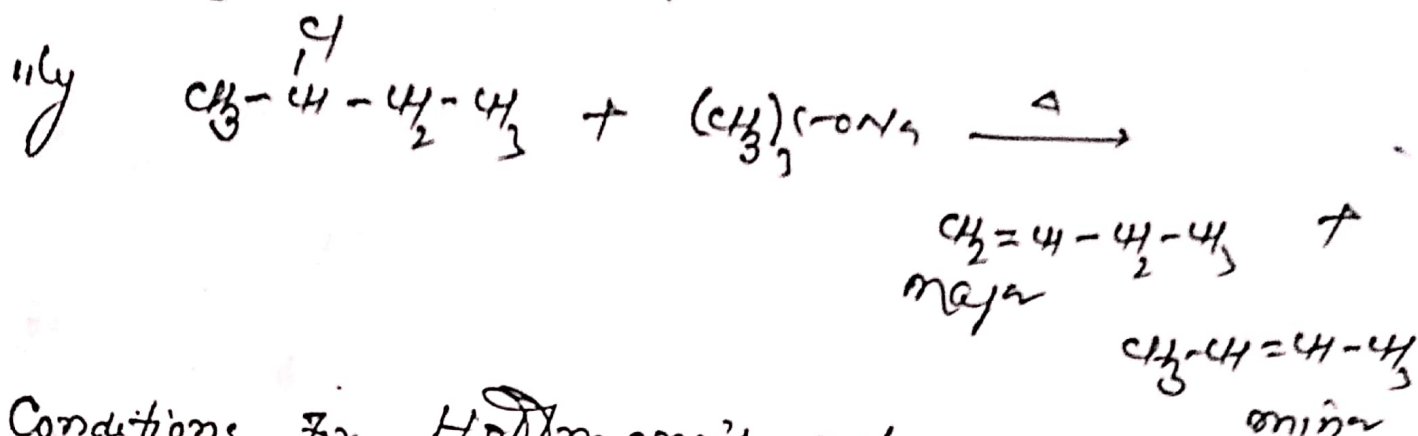
Mech:



Explanation:

In case of bulky base (tert-butoxide ion) owing to its bulky nature on oxidation of base it causes steric hindrance & result it gives less substituted β -carbon as less substituted β -carbon. This is reason abstraction of β -hydrogen becomes more easier for less substituted

Less substituted β -carbon.



Conditions for Hoffmann's rule

- ① Leaving Group — Leaving group should be better $(\text{CH}_3)_3\text{C}^+$, $-\text{SO}_3\text{H}$, $-\text{OCOCH}_3$ etc) or very poor $(-\text{F})$
- ② Base used in elimination should be better $(\text{CH}_3)_3\text{C-OH}$
- ③ β -carbon should be 3° or 4° — Quaternary in nature.