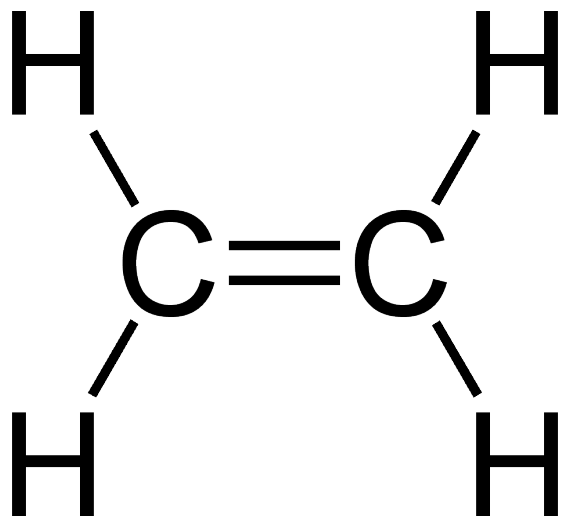
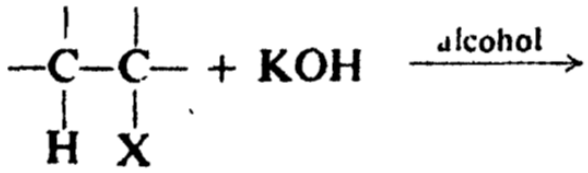
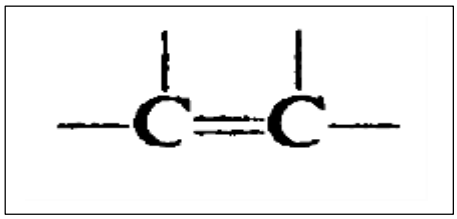
The Islamic University - College of Pharmacy

Synthesis of Alkenes

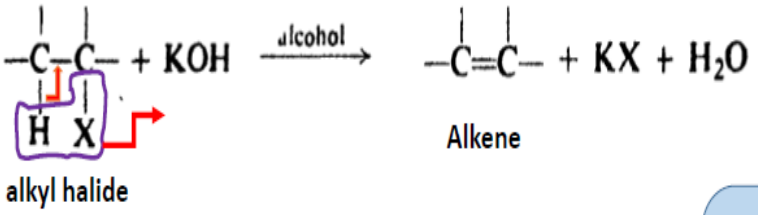


1.Dehydrohalogenation of alkyl halides: (Elimination of HX)



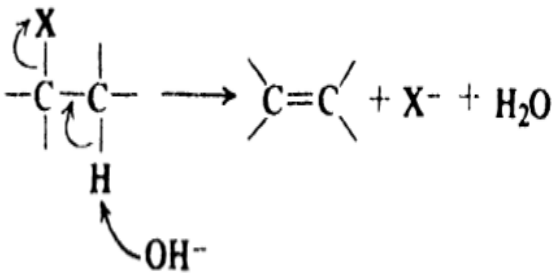


Mechanism ↓



Ease of dehydrohalogenation of alkyl halides

3° > 2° > 1°

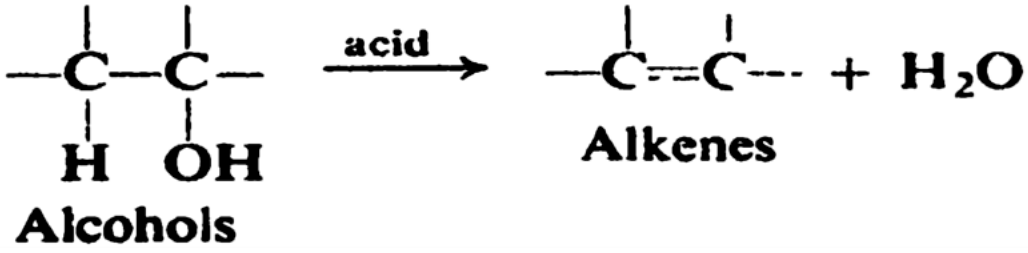


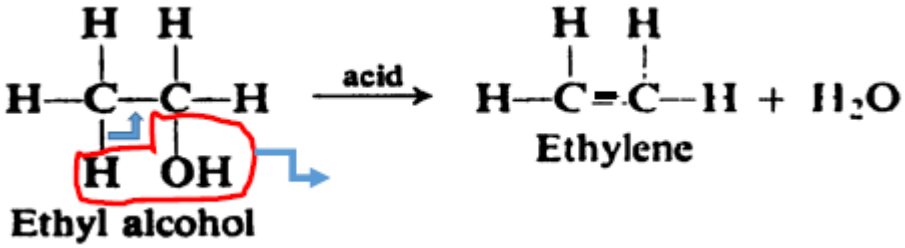
where arrows show the direction of electron shift

The function of hydroxide ion is to pull a hydrogen ion away from carbon; simultaneously a halide ion separates and the double bond forms

The breaking of the C–H and C–X bonds occurs in an unsymmetrical fashion: hydrogen relinquishes both electrons to carbon, and halogen retains both electrons. The electrons left behind by hydrogen are now available for formation of the second bond (the π bond) between the carbon atoms

2.Dehydration of alcohols: (Elimination of H2O)

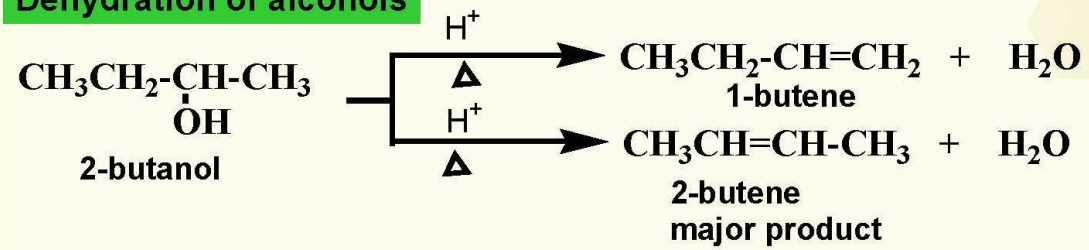




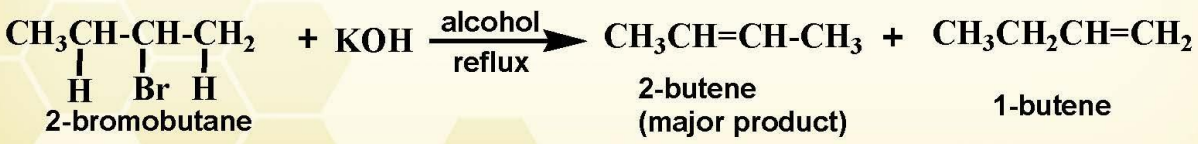
- ***Saytzeff rule:***

  - A reaction that produces an alkene would favour the formation of an alkene that has the greatest number of substituents attached to the C=C group.

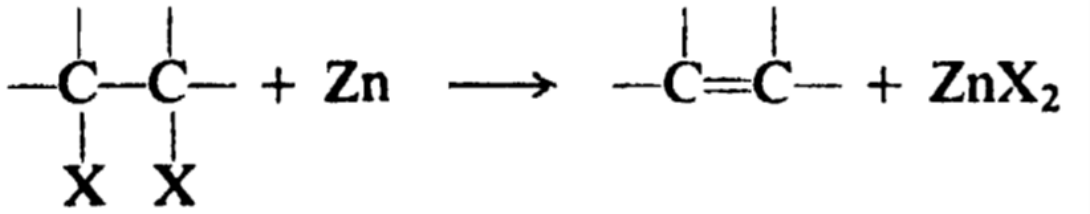
Dehydration of alcohols



Dehydrohalogenation of haloalkanes



3. Dehalogenation of vicinal dihalides



$$CH_3CHBrCHBrCH_3 \xrightarrow{Zn} CH_3CH{=}CHCH_3$$

2,3-Dibromobutane — 2-Butene

4. Reduction of alkynes