Chemistry Study Materials for Class 12

(NCERT Based Notes of Chapter - 11)

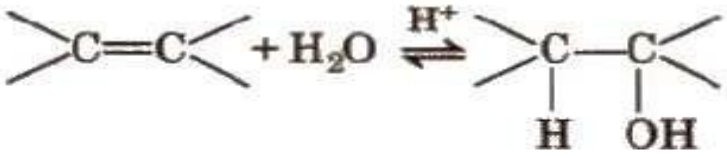
Ganesh Kumar Date:- 01/10/2020

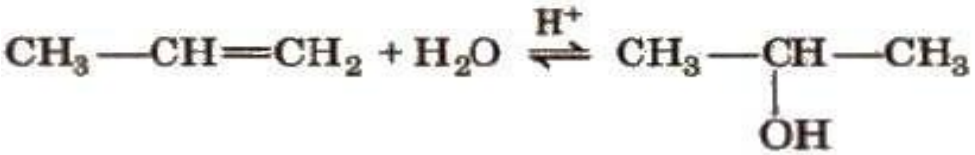
Alcohols, Phenols and Ethers

Preparation of Alcohols

(i) From alkenes

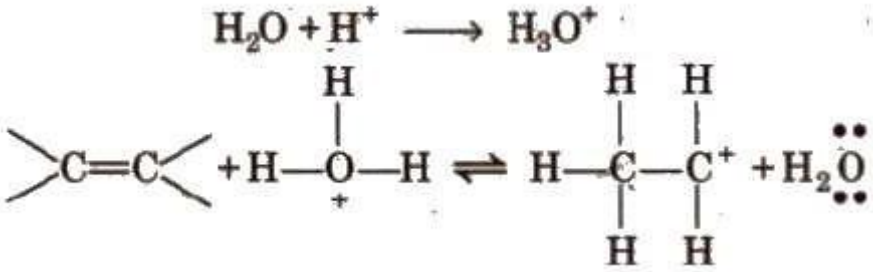
(a) By acid catalyzed hydration in accordance with Markovnikov's rule.



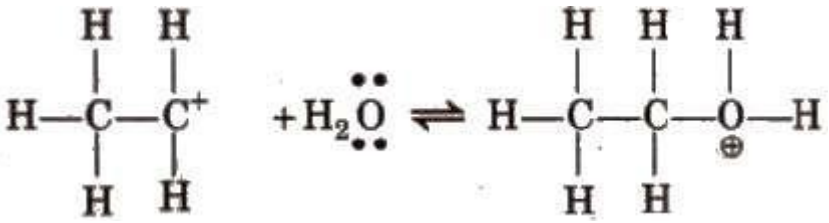


Mechanism

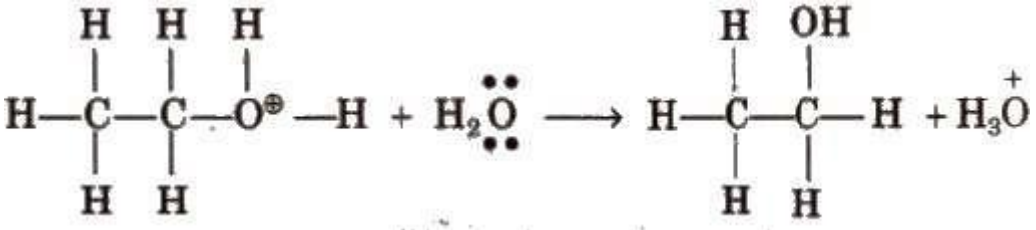
Step I Protonation of alkene by attack of H_3O^+



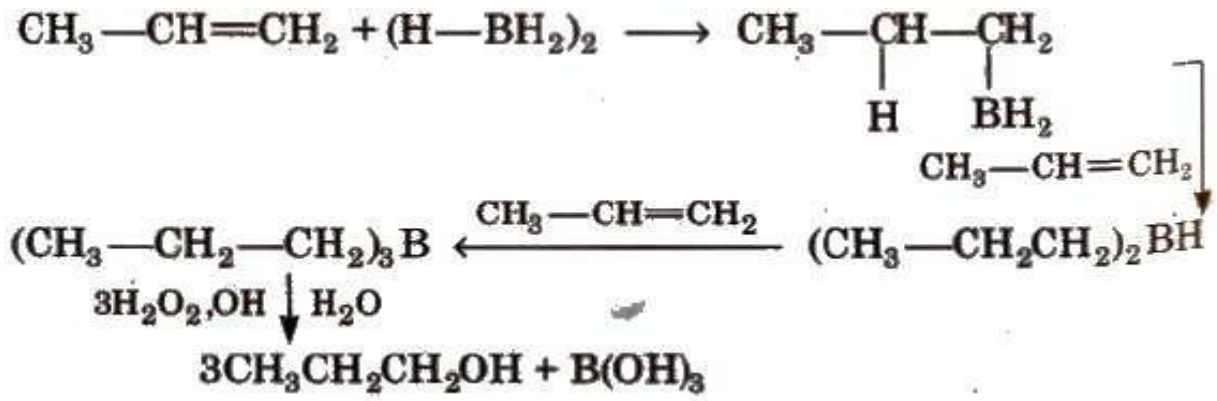
Step II Nucleophilic attack



Step III Deprotonation to form an alcohol

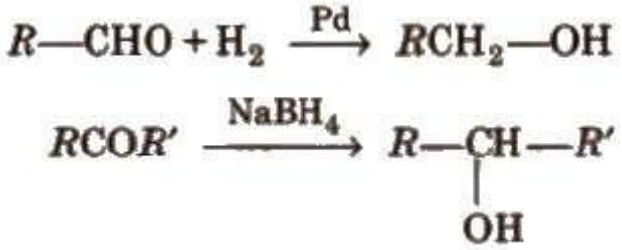


(b) By hydroboration-oxidation



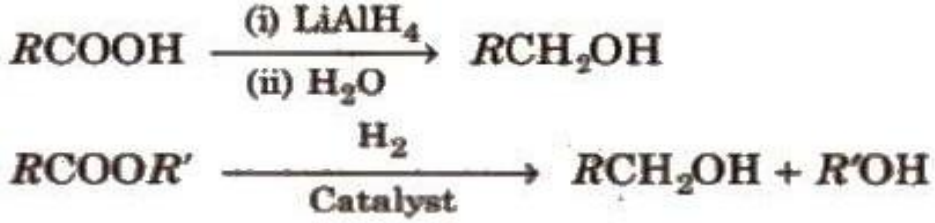
(ii) From carbonyl compounds

(a) By reduction of aldehydes and ketones

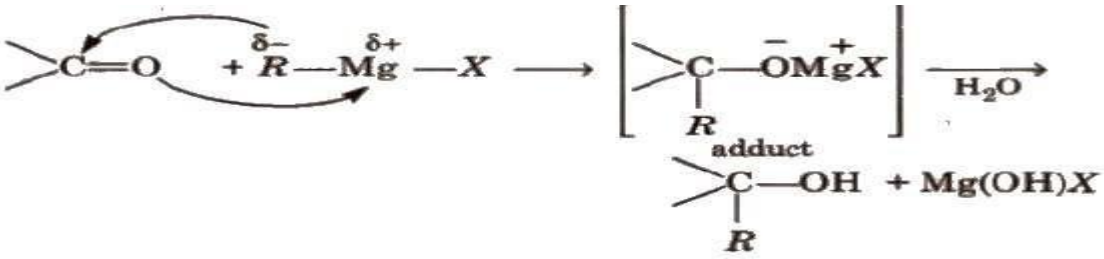


Aldehydes yield primary alcohols whereas ketones give secondary alcohols, when subjected to reduction.

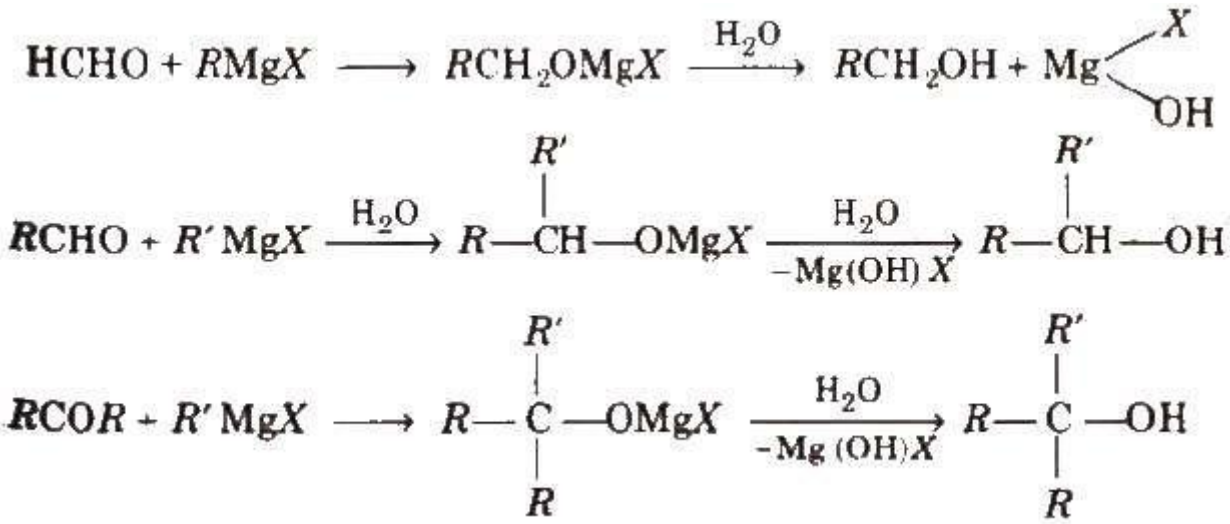
(b) By reduction of carboxylic acids and ester



Reduction of aldehyde, ketones and esters with No Alcohol is called Bouveault-blanc reduction.



The reaction produces a primary alcohol with methanol, a secondary alcohol with aldehydes (except methanal) and tertiary alcohol with ketones

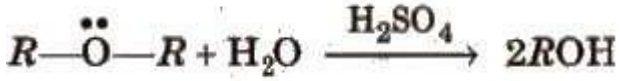


(iv) Hydrolysis of alkyl halides

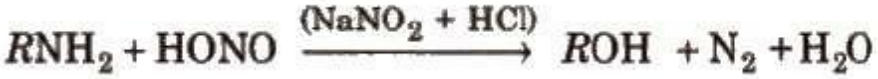
$$R - X + KOH(aq) \rightarrow ROH + KX$$

To avoid dehydrohalogenation of RX, mild alkalies like moist Ease of hydrolysis of alkyl halides RI > R – Br > RCI > and t > s > p alkyl halides.

(v) Hydrolysis of ethers

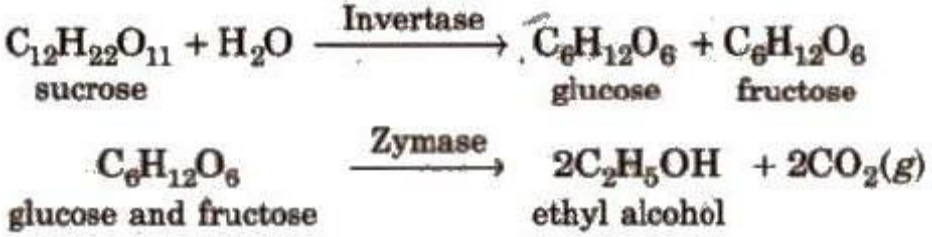


(vi) From primary amines By treatment with nitrous acid.



Methylamine does not give methyl alcohol when treated with HNO_2. It gives CH_3OCH_3 and CH_3ONO.

(vii) By alcoholic fermentation



****