

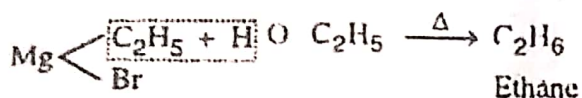
after sometime and the flask is cooled to moderate the reaction. When whole of the Mg has dissolved, 50 ml. of ether are added and the flask contains the solution of the reagent in ether and is used for various synthetic reactions.

Q.73. How may ethyl magnesium bromide (Grignard reagent) be used to obtain—

(1) An alkane (2) an alkene (3) alkyne (4) 1°, 2° and 3° alcohols (5) an ether (6) an aldehyde (7) a ketone (8) a carboxylic acid (9) a 1° amine (10) an ester (11) an alkyl cyanide.

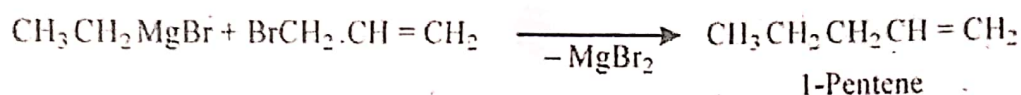
Ans. : Synthetic uses :

(1) Alkanes are prepared by the action of compounds containing active H-atoms e.g. H<sub>2</sub>O, alcohols or amines or Grignard reagent.

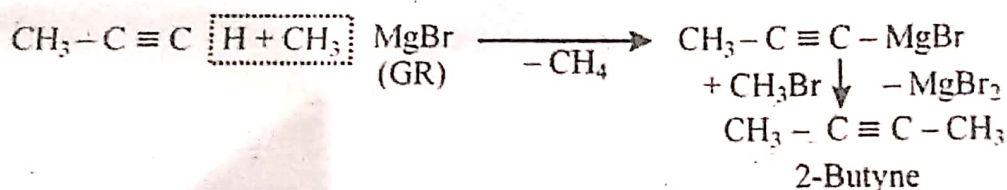


This reaction is used to detect and estimate the active H-atoms in organic compounds.

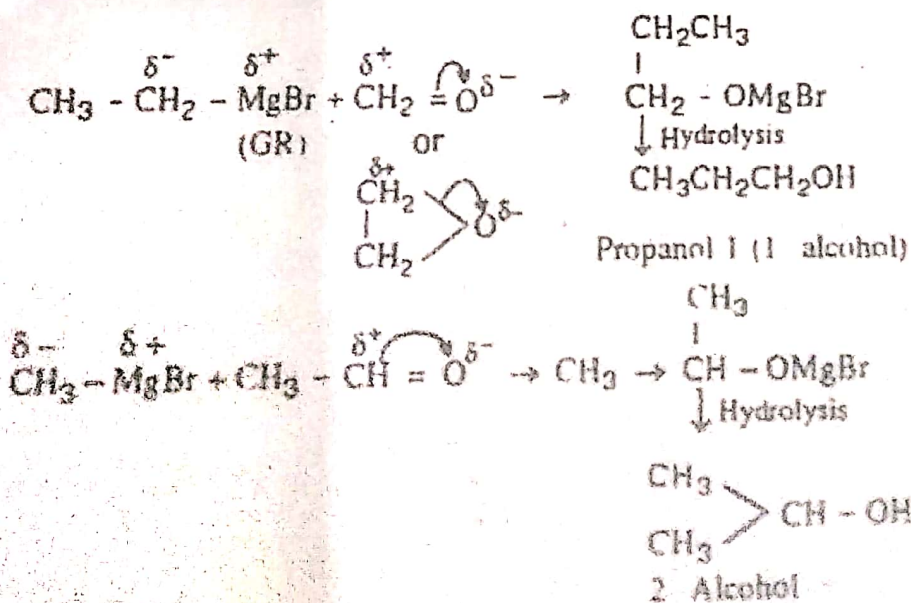
(2) Alkenes are prepared by the action of unsaturated halide on Grignard reagent.

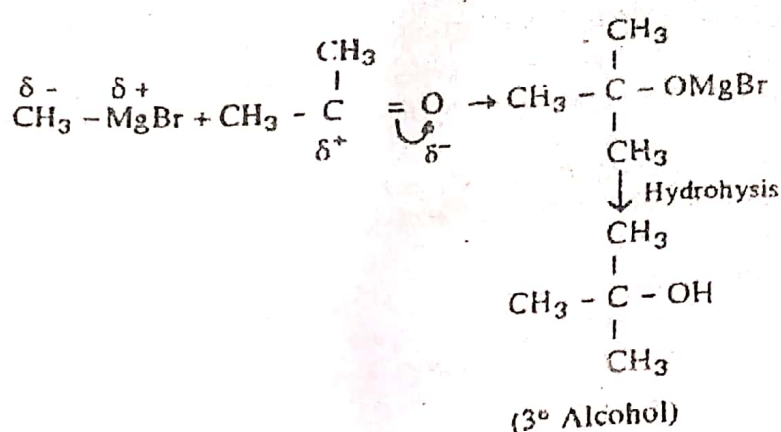


(3) Alkynes are prepared by the action of lower alkynes and then alkyl halides on Grignard reagent.

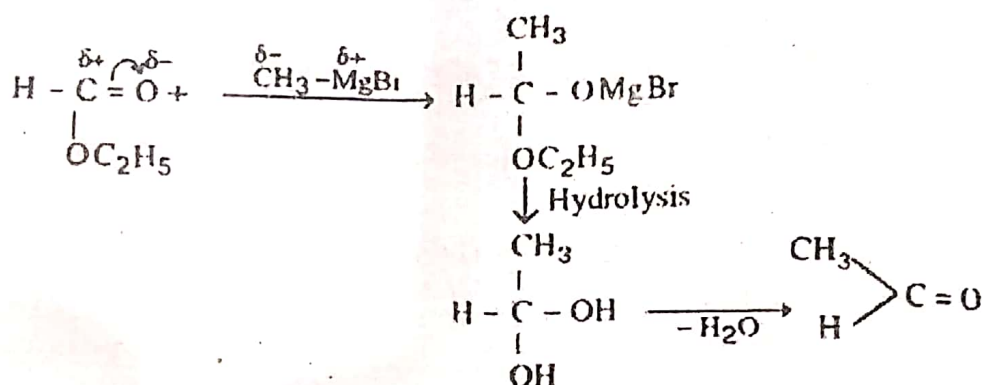


(4) Grignard reagent gives 1°, 2° and 3° alcohols when treated with methanal or ethylene oxide, higher aldehydes and ketones respectively

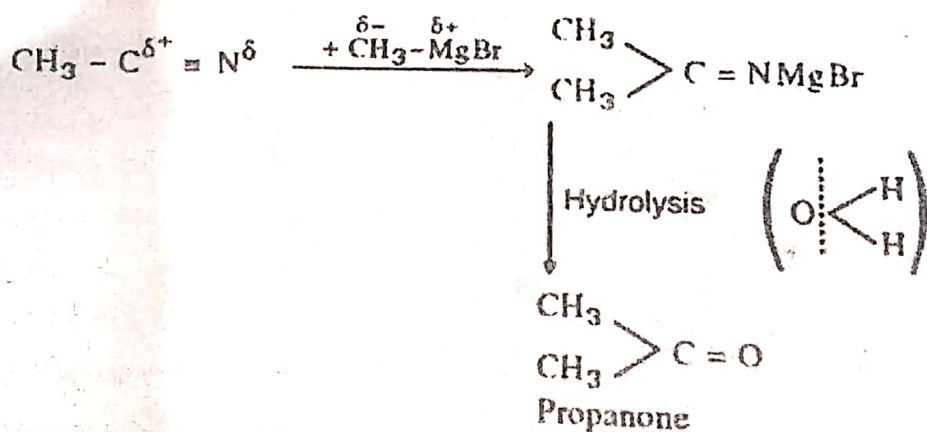




(5) Aldehydes are prepared by the action of Grignard reagent on excess ethyl formate.



(6) Ketones are prepared by the action of either alkyl cyanides or acid chlorides on Grignard reagent.



(7) Carboxylic acids prepared by the action of dry ice i.e.  $\text{CO}_2$  on Grignard reagent.

