

ALCOHOLS PHENOLS & ETHERS ^{1.}

CHEMISTRY , CLASS-XII , UNIT-11

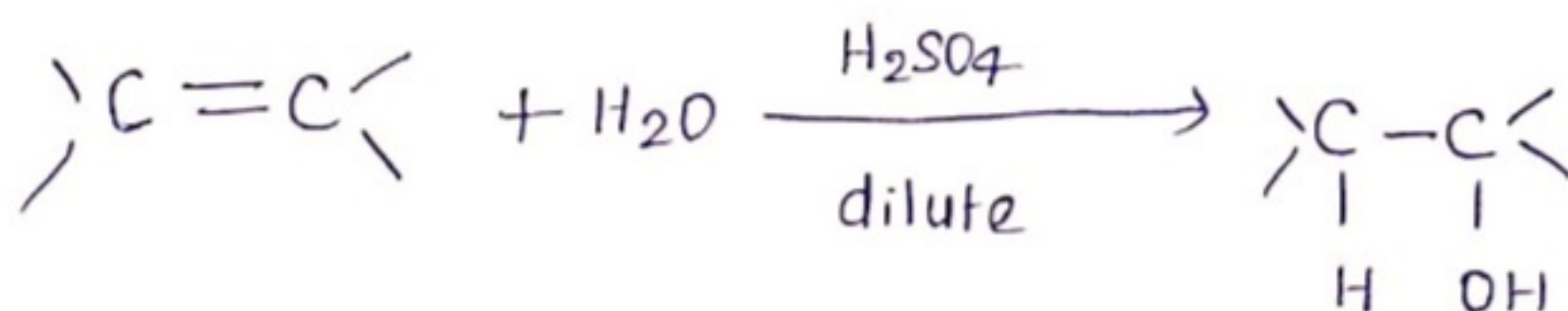
LECTURE-4 ,10/09/2020

TOPIC :- GENERAL METHODS OF PREPARATION
OF ALCOHOLS

By-Dr.Rinky
Dept.of Chemistry.
J.N.College ,Madhubani.

1. From Alkenes

a. By hydration of alkene (addition of water)
catalysed by acid (Markownikoff's addition)

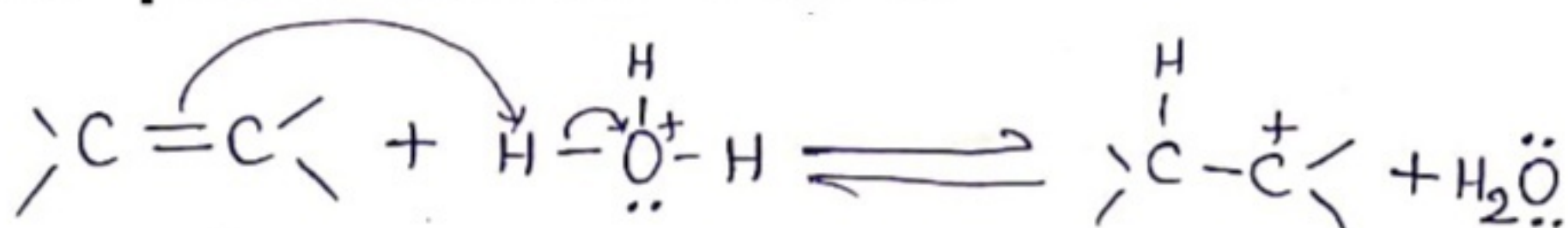


Mechanism

The mechanism of the reaction involves
the following steps :-

Step : 1

Protonation of alkene to form carbocation
by electrophilic attack of H_3O^+

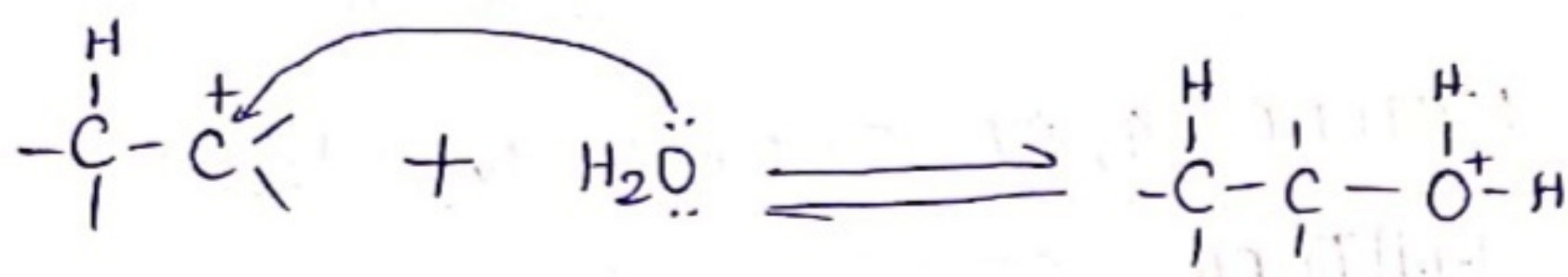


* This is rate determining step *

Step : 2

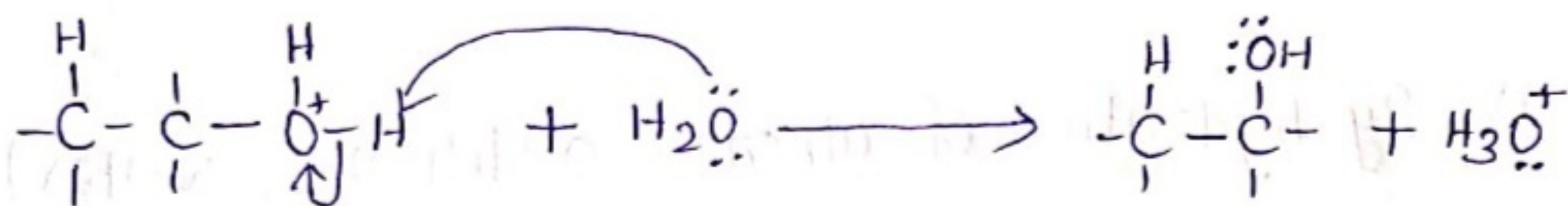
2.

Nucleophilic attack of water on carbocation.



Step : 3

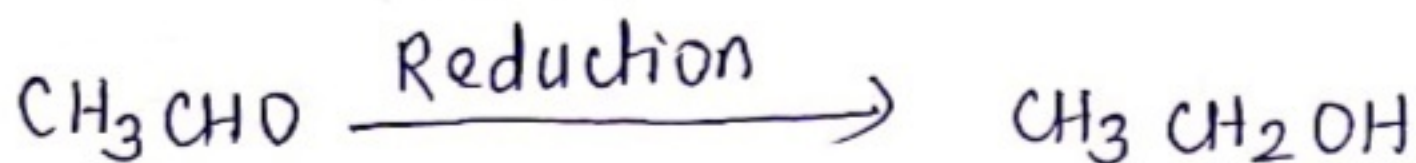
Deprotonation to form an alcohol.



2. From aldehydes and ketones

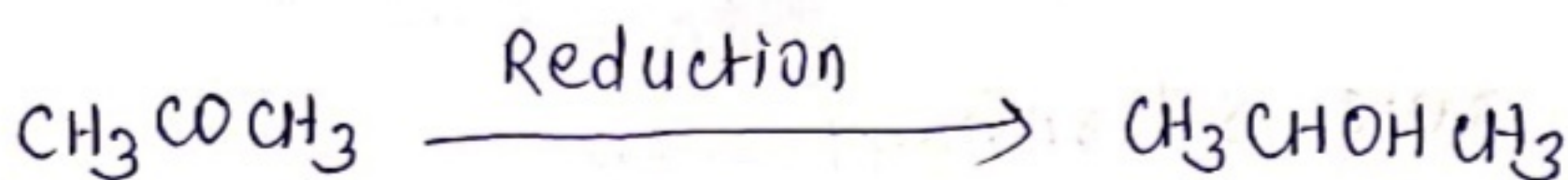
a. By Reduction Method

* When reduced, an aldehyde RCHO gives primary alcohol while ketone RCOR' yields secondary alcohol.



Aldehyde

Primary alcohol



Ketone

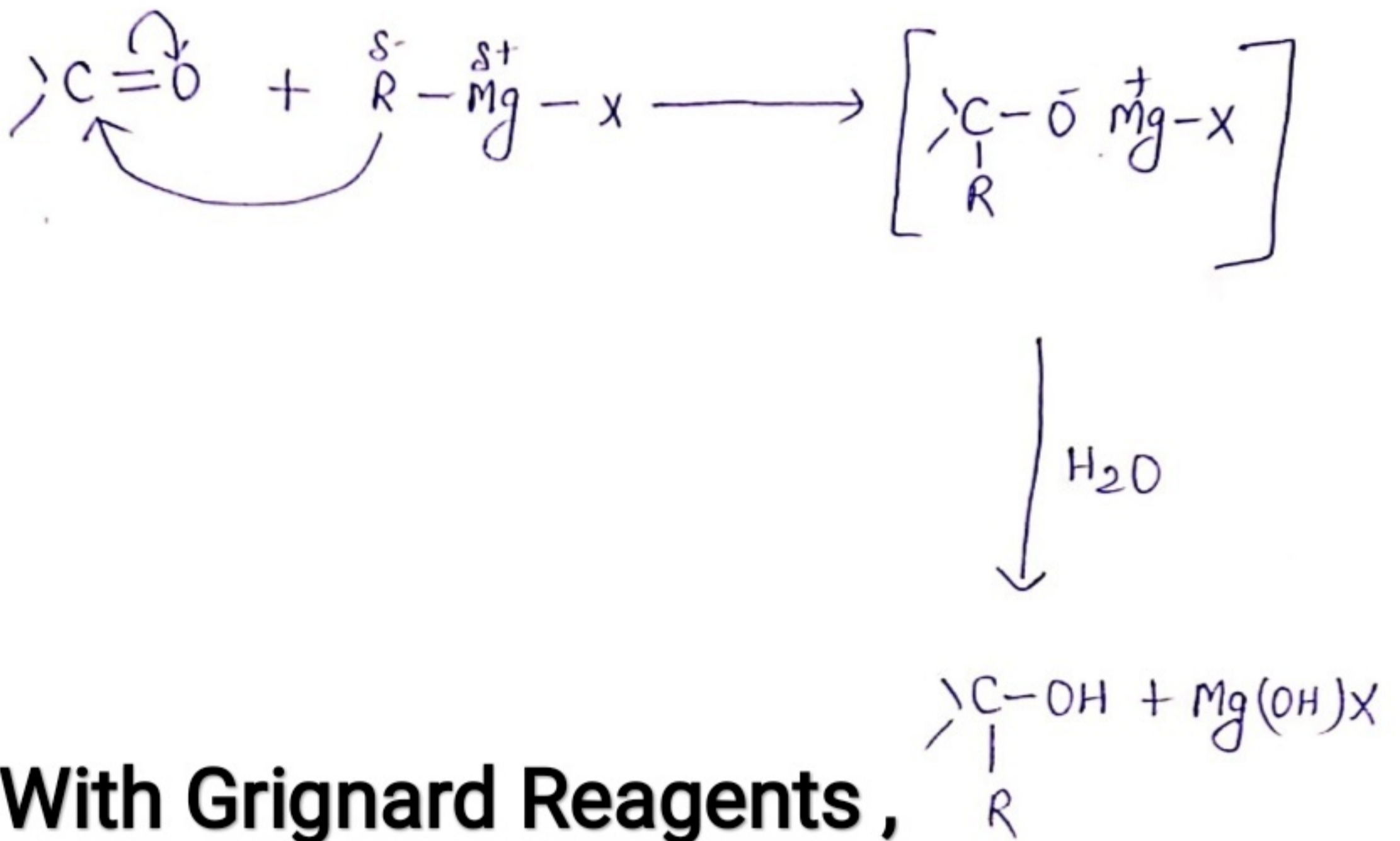
secondary alcohol

* Reducing agents can be any of these.*

H_2/Pd , NaBH_4 , LiAlH_4 etc.

b. From Grignard reagents (RMgX)

* This reaction is an example of nucleophilic addition reaction.

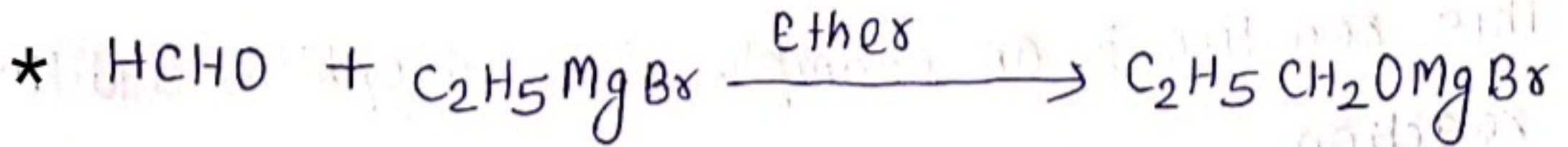


* With Grignard Reagents ,

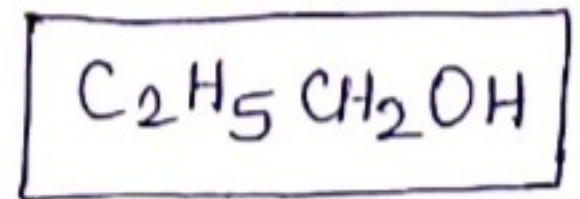
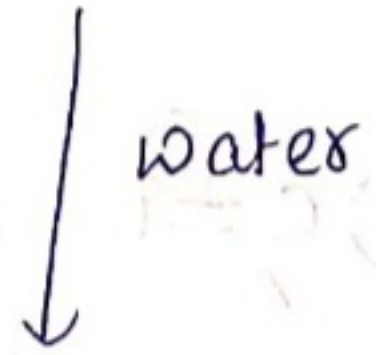
- (i) Methanal gives a primary alcohol (one alkyl group from G.R.)
- (ii) Any aldehyde other than methanal gives a secondary alcohol (one alkyl group from G.R and other from aldehyde.)
- (iii) Any ketone gives a tertiary alcohol (one alkyl group from G.R and two from ketone)

For example :

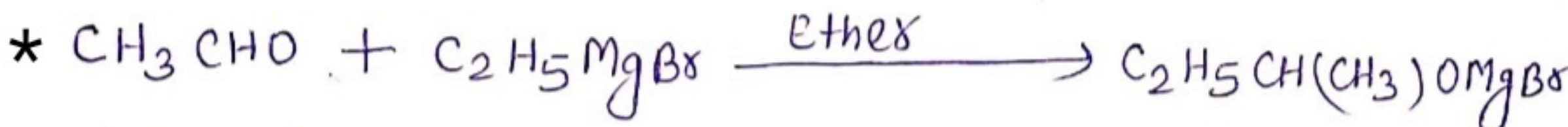
4.



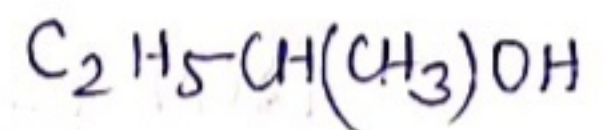
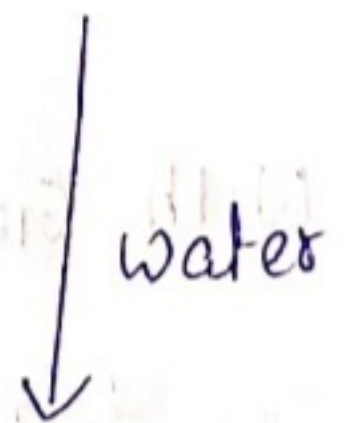
Methanal



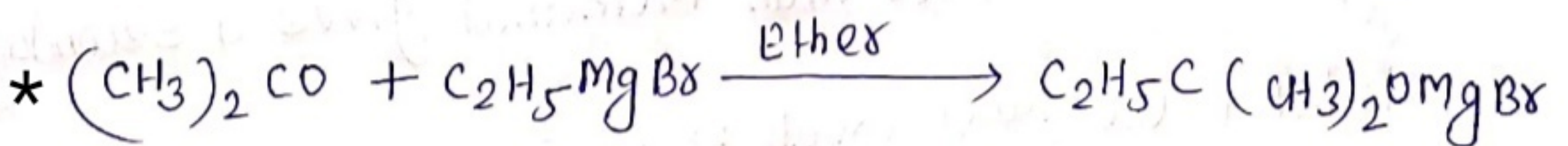
Propan-1-ol



Ethanal



Sec-butyl alcohol



Propanone



tert-Pentyl alcohol

Completed..