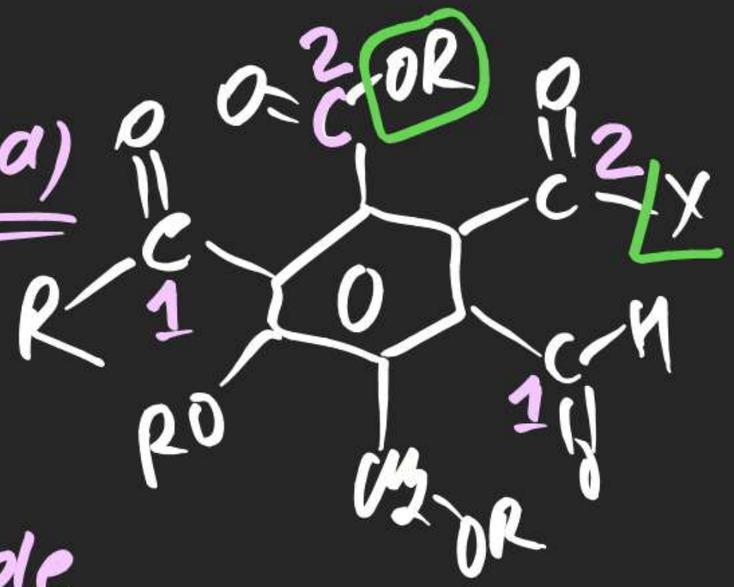
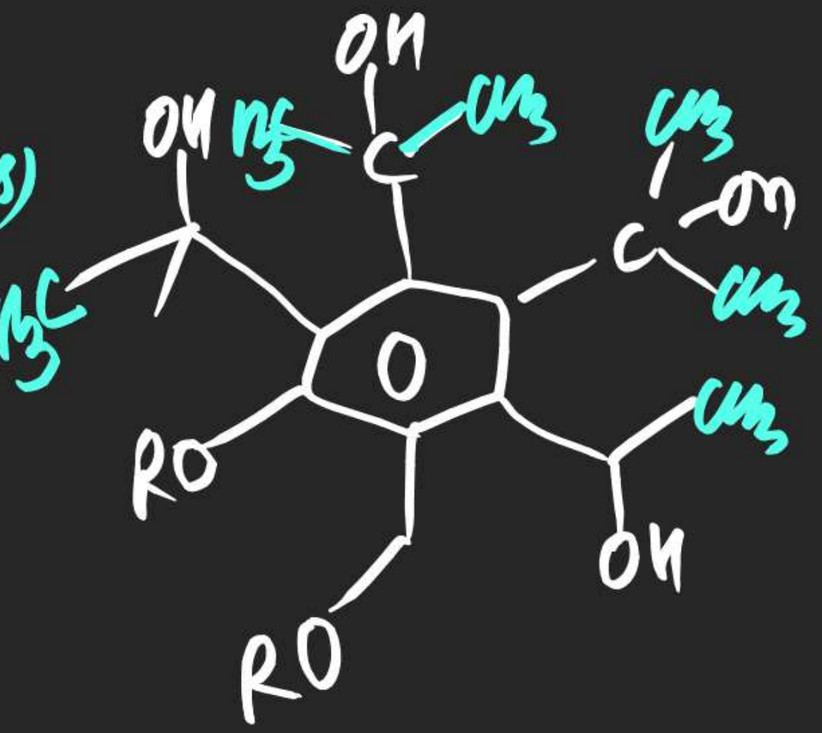
Nishant Jindal

Soln (a)

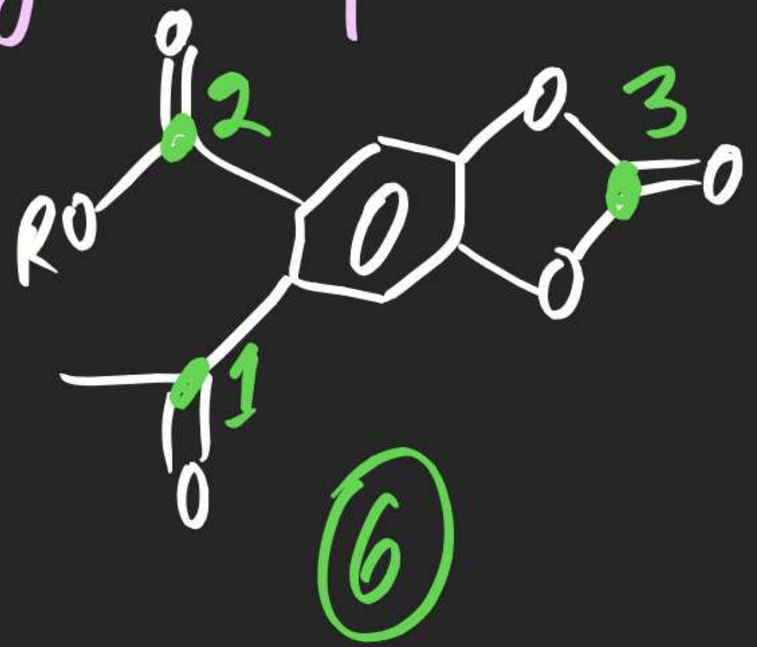


(i) CH_3-MgCl (Excess)

(ii) NH_4Cl

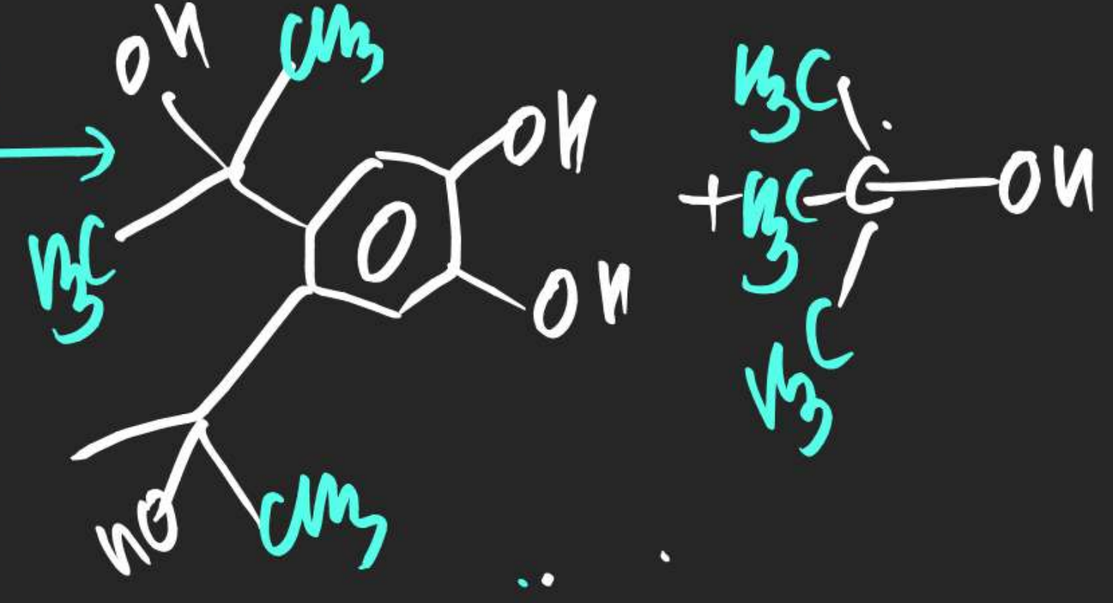


6 mole Grignard Reagent



6

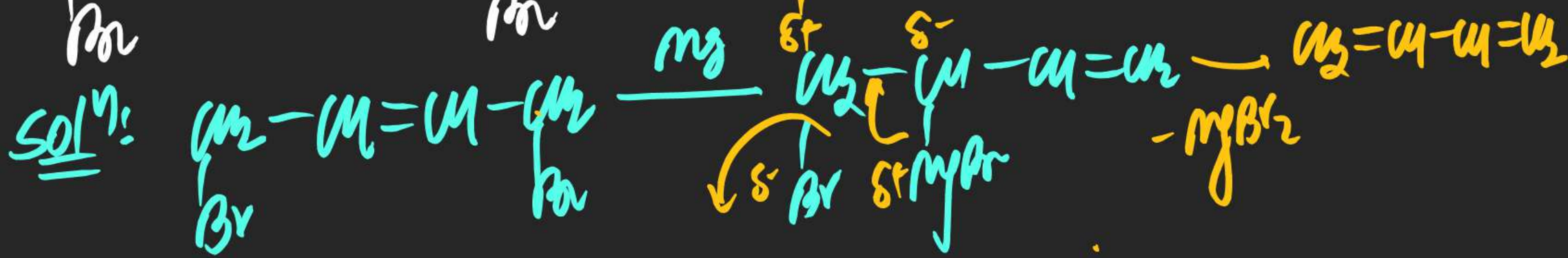
=



(84)

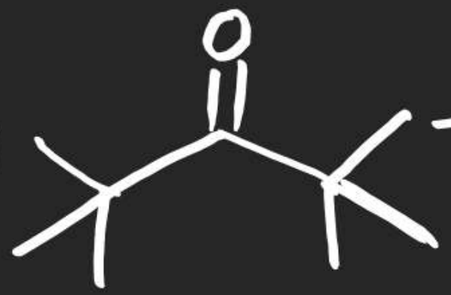
(85) $CH_2(Br)-CH=CH-CH_2(Br) \xrightarrow{Mg}$

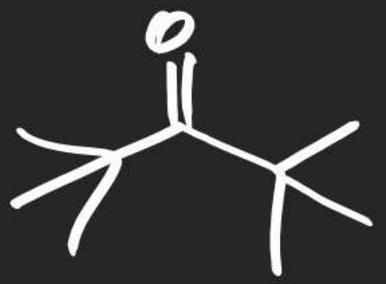
Soln:



(86) $H_2N-Cl \xrightarrow[(ii)\ NH_4Cl]{(i)\ CH_3-MgX} CH_3-NH_2 + CH_4$

(87) $H_2N-OEt \xrightarrow[(ii)\ NH_4Cl]{(i)\ CH_3-MgX} CH_3-NH_2 + EtOH + CH_4$

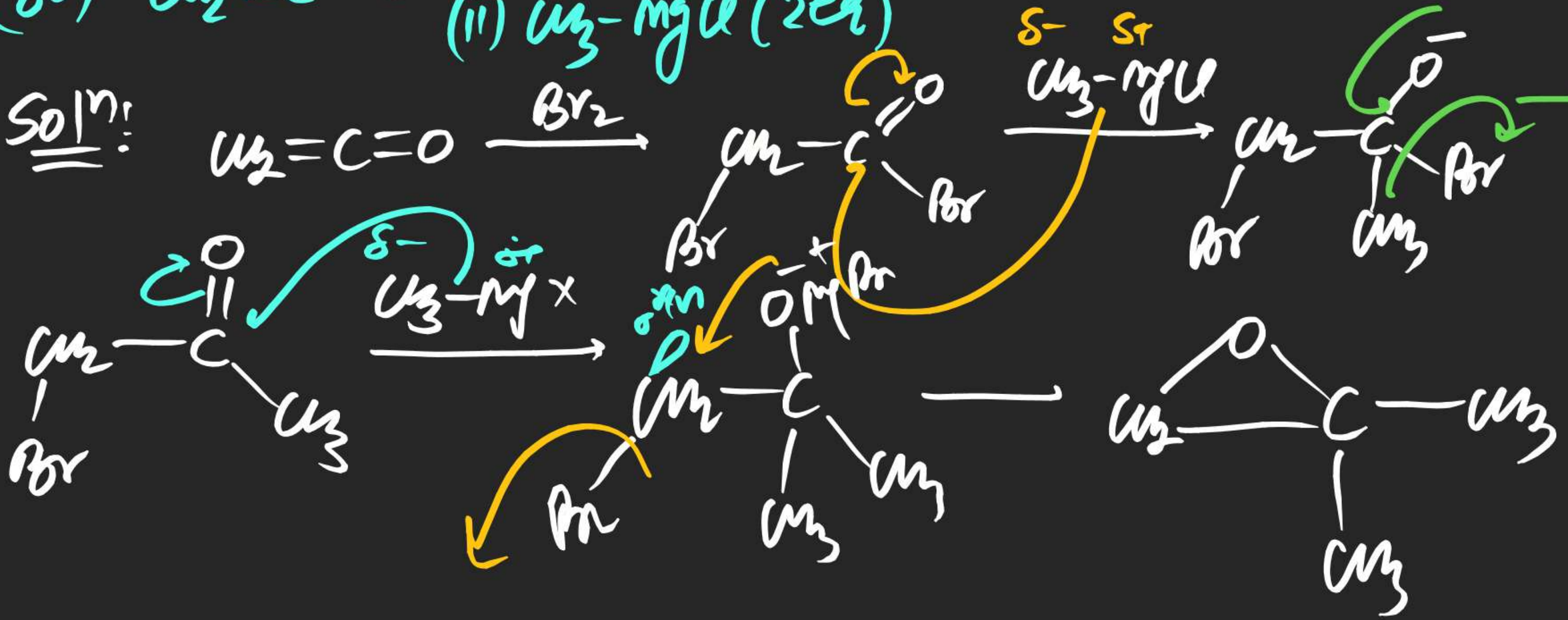
(88) (a)  + $CH_3-MgCl \longrightarrow$ No Rxn

(b)  +  $\longrightarrow$ Alcohol + "P"

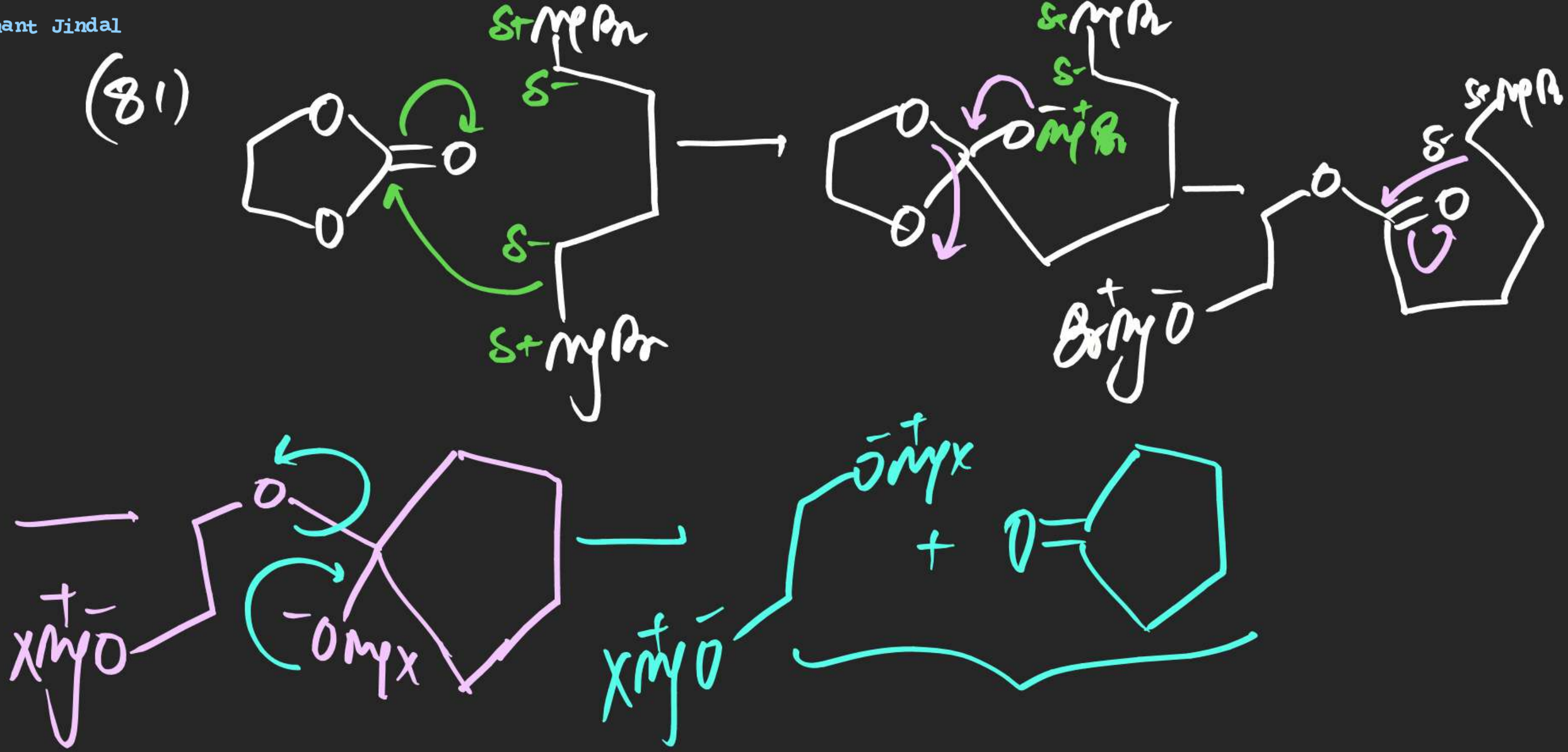
Nishant Jindal

(80) $CH_2=C=O \xrightarrow[\text{(ii) } CH_3-MgCl\ (2\text{eq})]{\text{(i) } Br_2}$

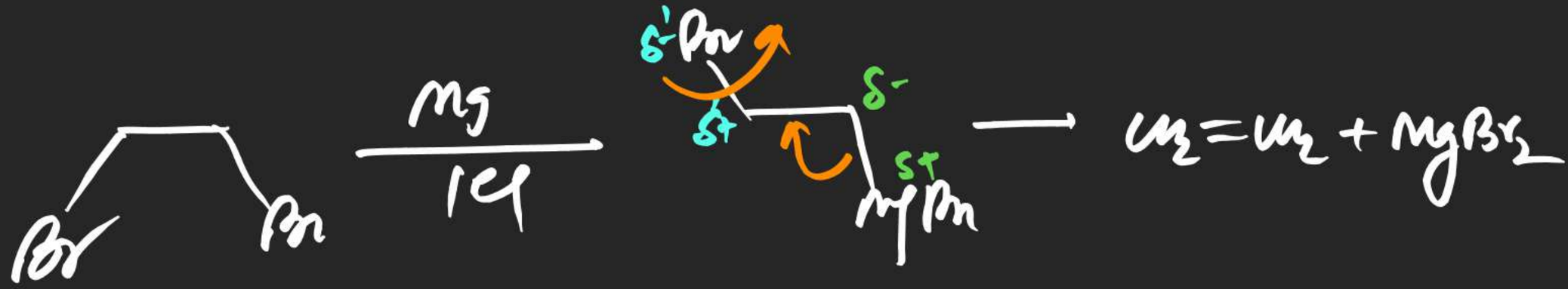
Soln:



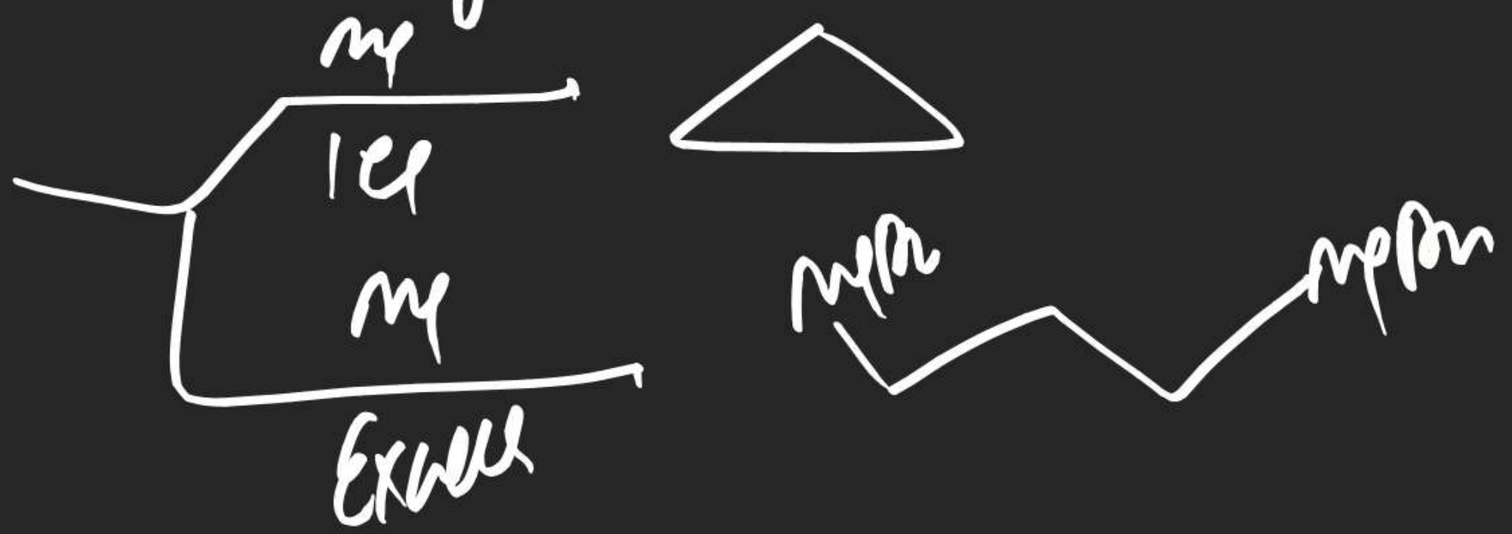
(81)



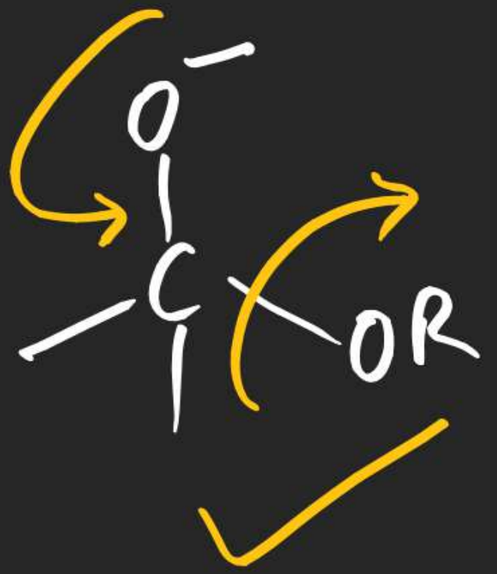
(82)

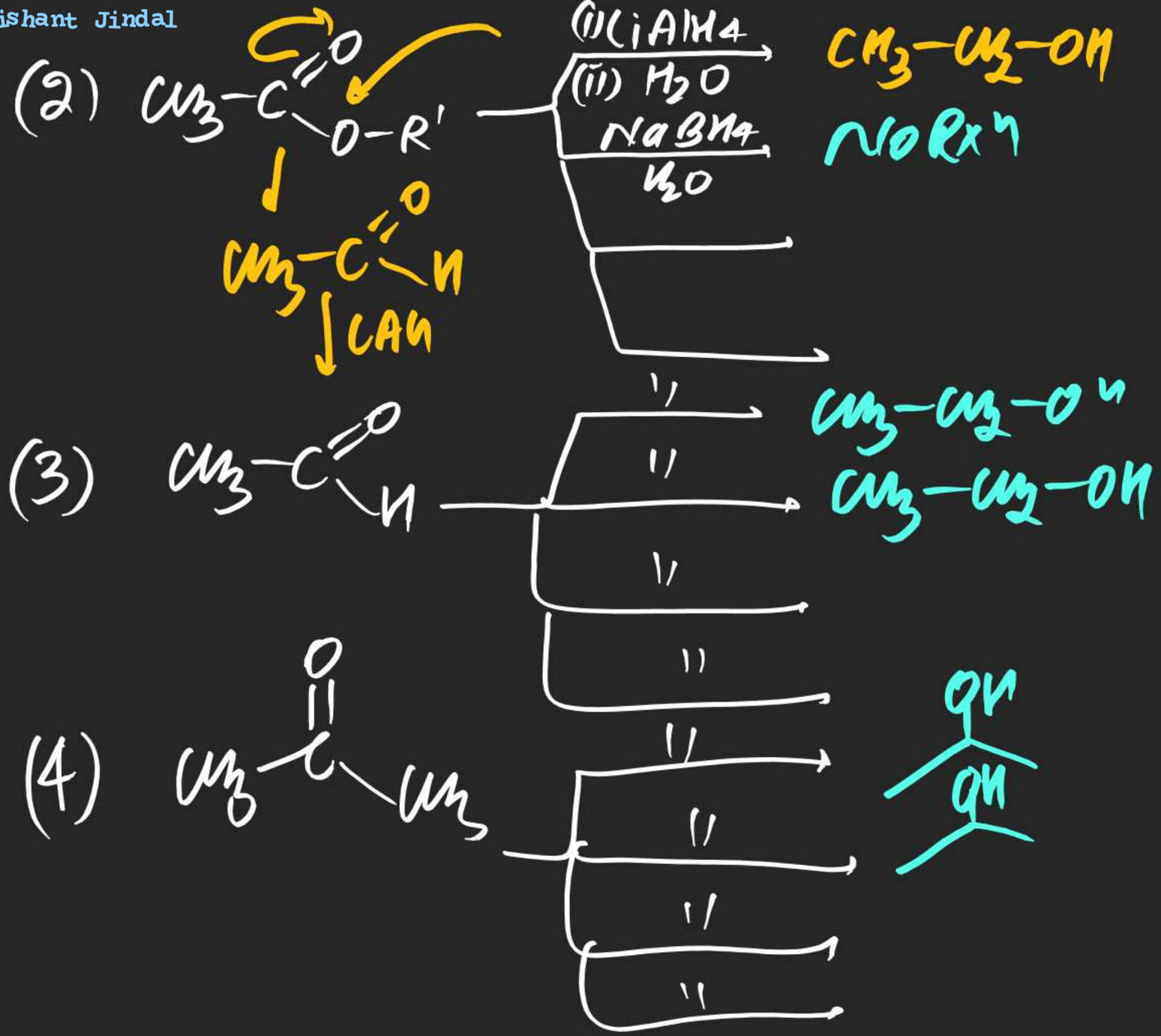


(83)



Nishant Jindal





(5) $CH_3-\overset{O}{\overset{\|}{C}}-OH$ → $CiAlH_4$ / $NaBH_4$ / (i) B_2H_6 (ii) H_2O — NOR^{xn}

(6) $CH_3-\overset{O}{\overset{\|}{C}}-O-\overset{O}{\overset{\|}{C}}-CH_3 \xrightarrow[(ii)\ H_2O]{(i)\ CiAlH_4}$

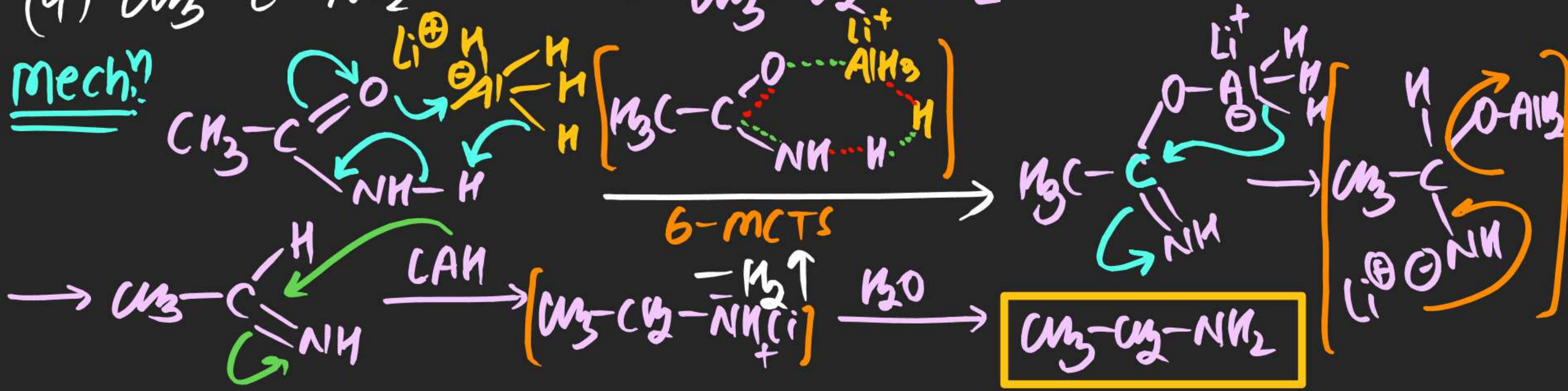
(7) $CH_3-\overset{O}{\overset{\|}{C}}-NR_2 \xrightarrow{\|} CH_3-CH_2-NR_2$

(8) $CH_3-\overset{O}{\overset{\|}{C}}-NHR \xrightarrow{\|} CH_3-CH_2-NHR$

Nishant Jindal

(9) $CH_3-\overset{O}{\overset{\|}{C}}-NH_2 \xrightarrow{\text{??}} CH_3-CH_2-NH_2$

Mechⁿ

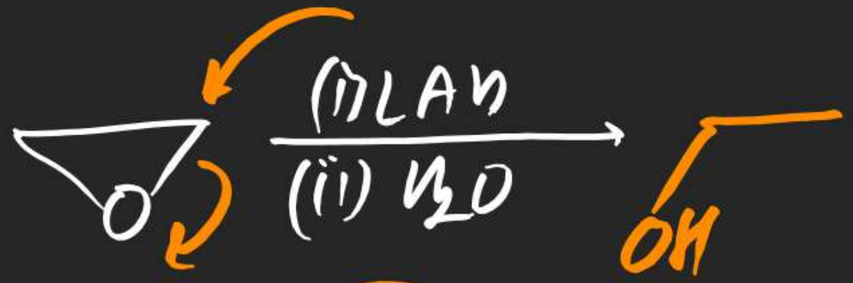


(10) $CH_3-CH_2-N_3 \xrightarrow{\text{??}}$??

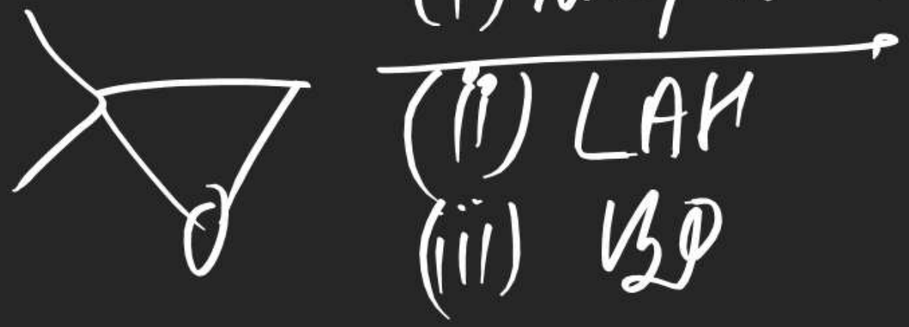
(11) $CH_3-CH=NH \xrightarrow{\text{??}}$?? (SBH)

(12) $CH_3-C\equiv N \xrightarrow[\text{(ii) } H_2O]{\text{(i) LAH}}$??

(13) $CH_3-CH_2-NO_2 \xrightarrow{\text{??}}$??

(14) 

(15) 

(16) 

(17) 

Nishant Jindal

(#) difference b/w Reactivity of R-MgX & RLi

(55) (a) $CO_2 + R\text{-}MgX$ (Excess) $\xrightarrow{(ii)\ H^+}$ $R\text{-}C(=O)\text{-}OH$

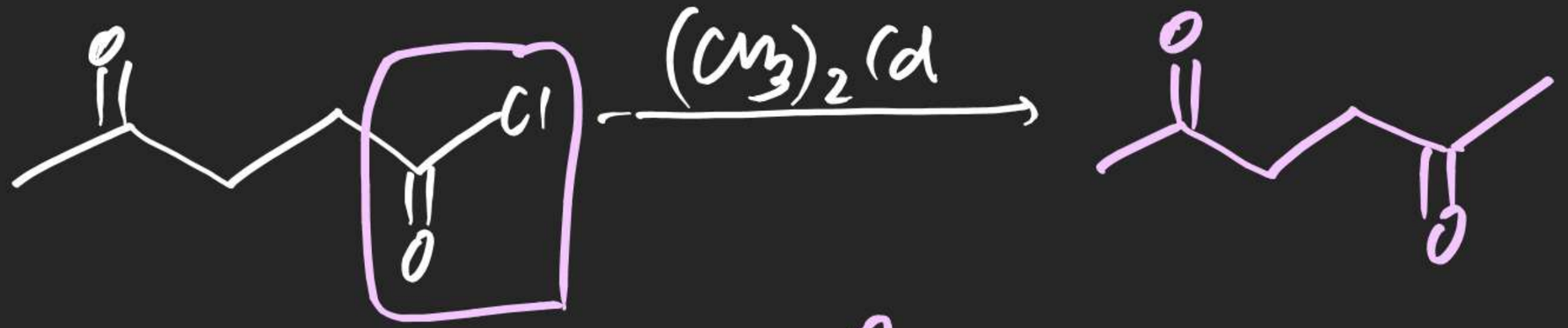
(b) $CO_2 + RLi$ (Excess) $\xrightarrow{(ii)\ H^+}$ $R_2C=O$

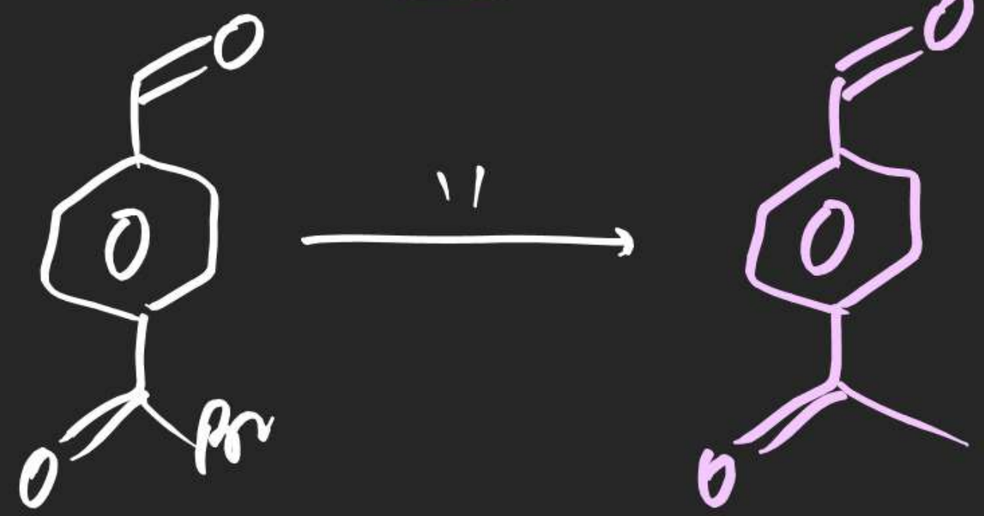
Mechⁿ (6)

M.Imp

Note R_2Cd is less Reactive & Reacts only with Acid halide.

$\left(\begin{matrix} R \\ R \end{matrix}\!\!>\!C=O\right)$

(56) 

(57) 

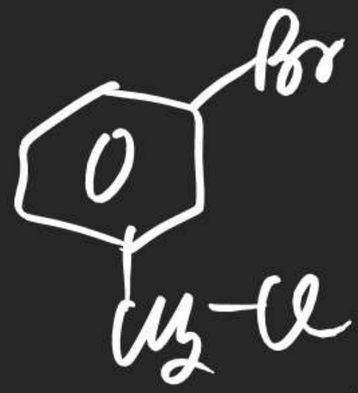
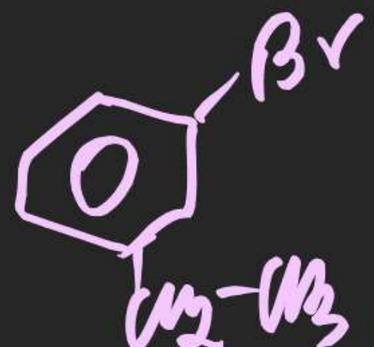
(58) $CH_3-MgX + CH_3-Cl \xrightarrow{SN^2} CH_3-CH_3$

(59) 

(60) $R-MgX + \text{>}-Cl \xrightarrow{E^2}$ 

(61) $R-MgX +$  $\longrightarrow$ No Rxn.

(62) $R-MgX +$  $\longrightarrow$ No Rxn

(63) $CH_3-MgCl +$  $\xrightarrow{I_2}$ 

(64) $CH_3-MgCl +$  $\xrightarrow{II}$ 

(65) $R\text{-}MgX$ (Excess) $+ SnCl_4 \longrightarrow R_4Sn$

(66) 〃 $+ TiCl_3 \longrightarrow R_3Ti$

(67) 〃 $+ ZnCl_2 \longrightarrow ZnR_2$

(68) $R\text{-}MgX$ (Hard) $+ CuCl \longrightarrow RCu$ (Soft)

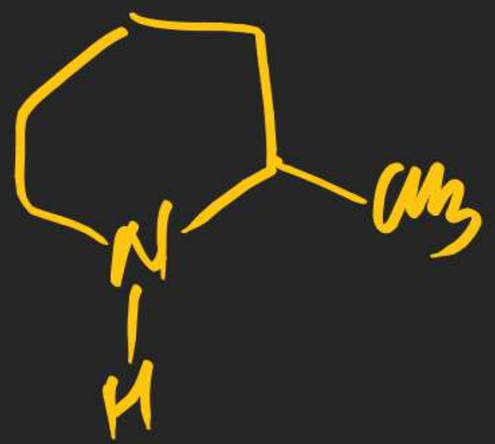
(69) 〃 $+ PbCl_4 \longrightarrow R_4Pb$

(70) 〃 $+ PbCl_2 \longrightarrow R_4Pb$ (due to EAN)

(71) $CH_2(Cl)-CH_2(OCH_3) + CH_3-MgCl \longrightarrow CH_2(CH_3)-CH_2(OCH_3)$

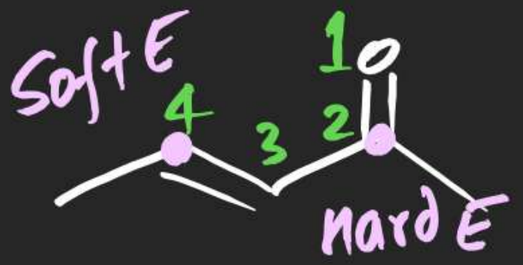
(72) $CH_3-MgCl + NC-Cl \longrightarrow CH_3-CN$

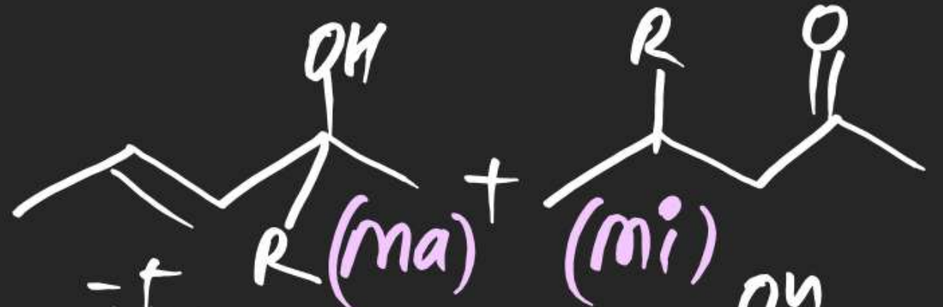
(73) $\ddot{I}\ddot{I} + NC-CN \longrightarrow CH_3-CN$

(74) $\overset{\delta-}{C}H_3-\overset{\delta+}{M}gCl +$  $\xrightarrow{(ii)\ H^+}$ 

Nishant Jindal

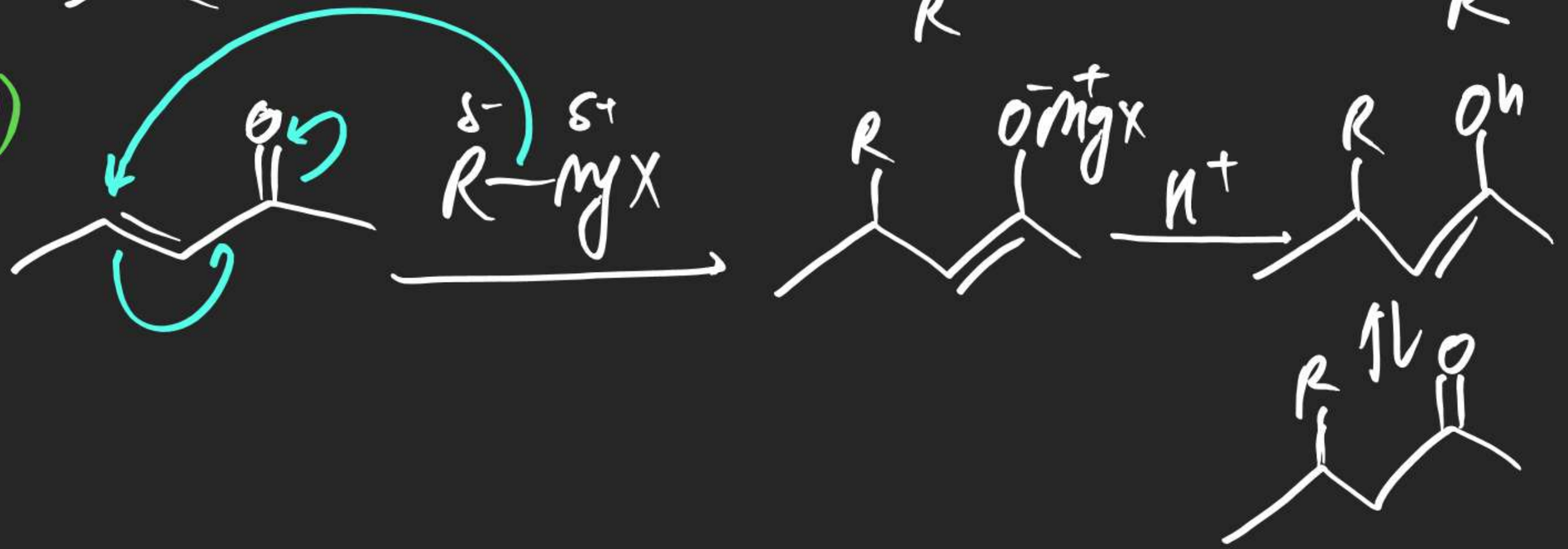
(A) Conjugate addⁿ of GR:-

(75) 

+ Hard NU
+ R–MgCl $\xrightarrow{\text{(ii) } H^+}$ 

Soln:- (1,2 addⁿ)

(1,4 addⁿ)



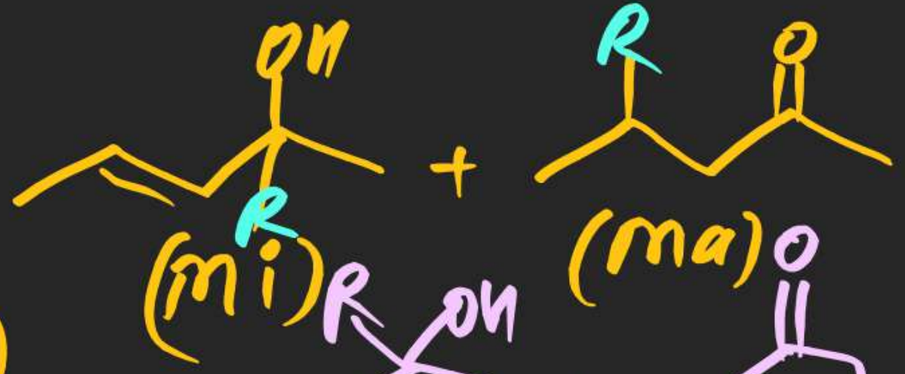
Nishant Jindal

(76)

(Soft Nu)

(i) R_2CuLi

(ii) $H^{\oplus}$



(mi) (ma)

(77)

(i) R-MgX (Hard)

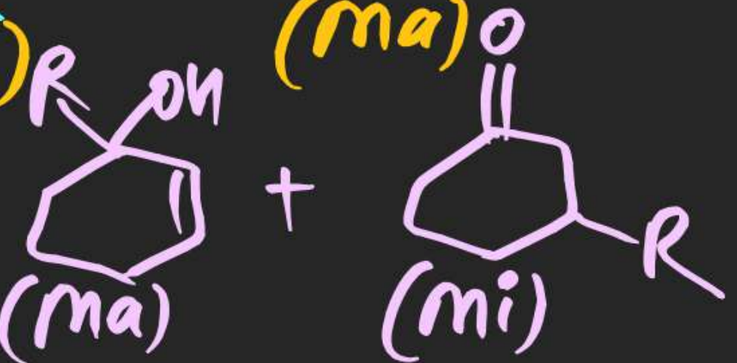
(ii) NH4Cl

(i) R-MgX / CuX (Soft)

(ii) NH4Cl

(i) R_2CuLi (Soft)

(ii) NH4Cl



(ma) (mi)

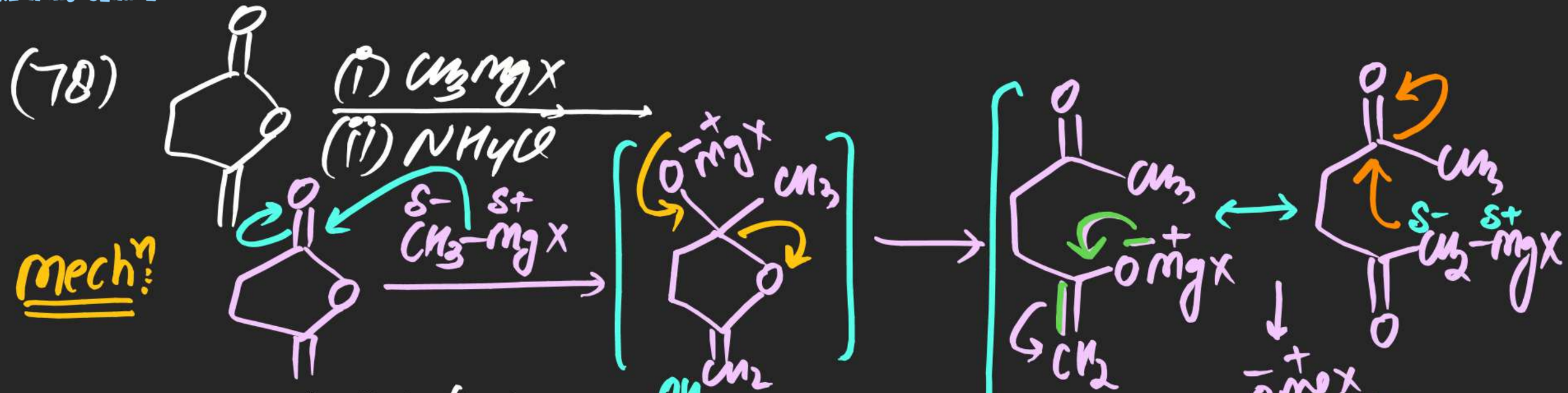
|| (mi)

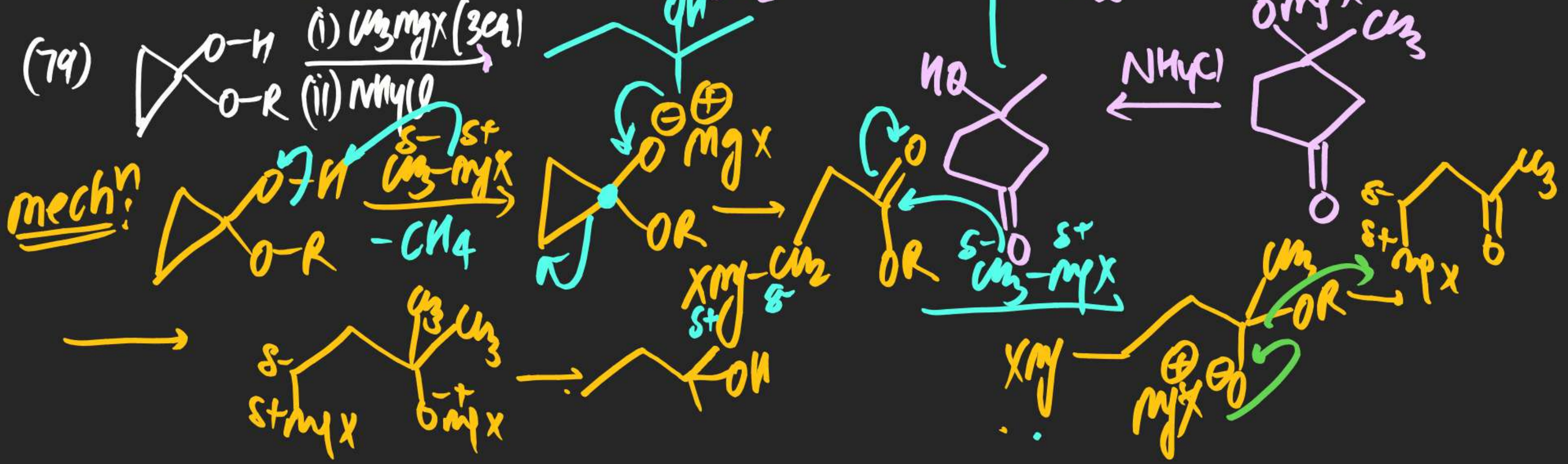
|| (mi)

+ || (ma)

+ || (ma)

Nishant Jindal

(78) 

(79) 

⇒ DIBAL or DIBAL-H

(*) Di Iso Butyl Aluminium Hydride

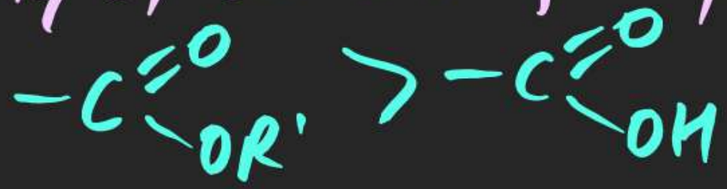
(*)  or H-Al(iBu)$_2$

(*) Single Hydride donor.

(*) Electrophilic Reducing agent

(*) Order of Rate of Rxn

⇒ Reactivity of DIBAL to following



⇒ DIBAL-H Reduces only single step.

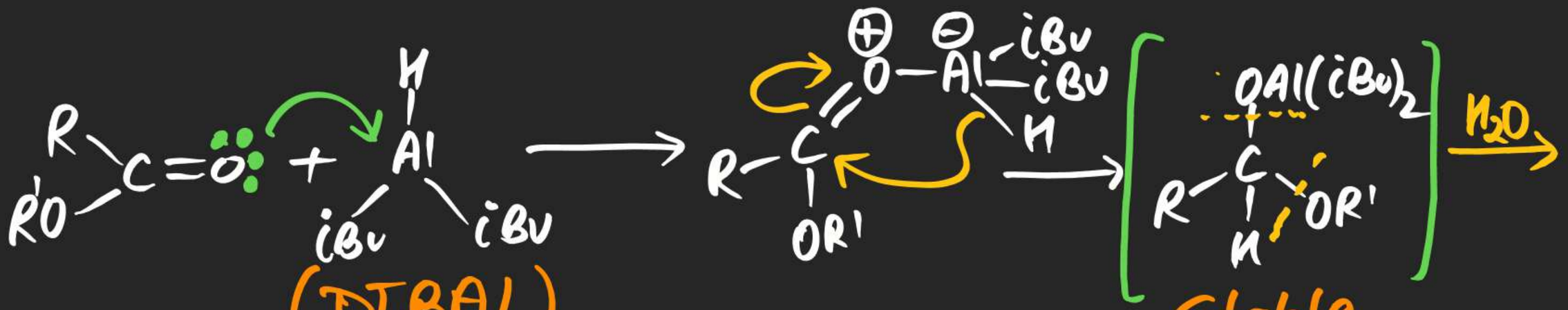
(1) $R-C\equiv N \xrightarrow[(ii)\ H_2O]{(i)\ DIBAL} R-C(=O)-H$

(2) $R-C(=O)-OR' \xrightarrow[(ii)\ H_2O]{(i)\ DIBAL} R-C(=O)-H + R'-OH$

(3) $R-C(=O)-H \xrightarrow{\text{II}} R-CH_2-OH$

Nishant Jindal

Mechⁿ:



(4)