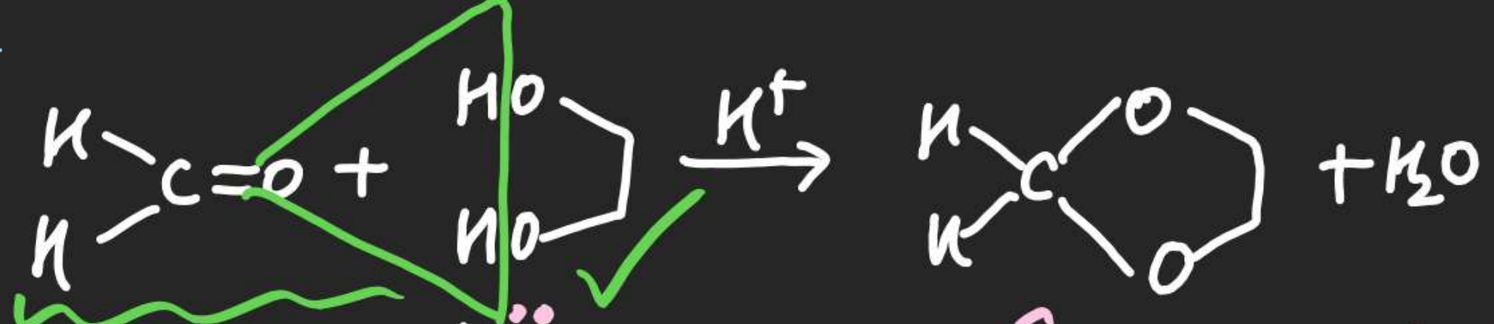
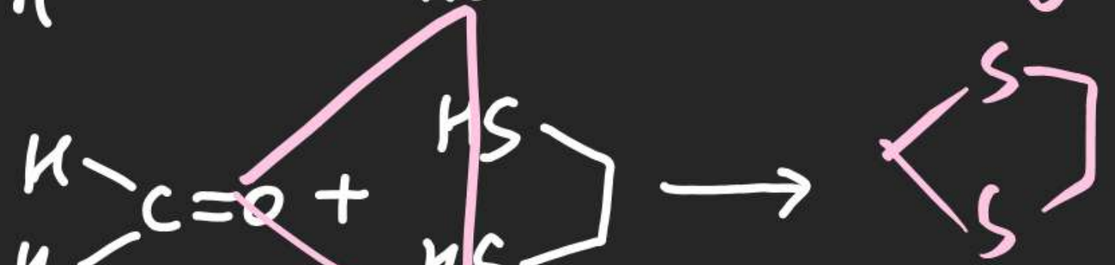
Nishant Jindal

(10)  $+H_2O$

(11) 

$\gamma_{12} > \gamma_{11} > \gamma_{10}$

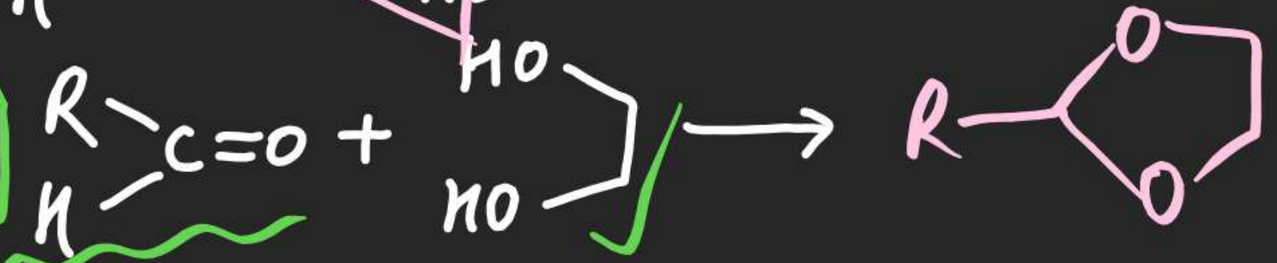
$\gamma_{10} > \gamma_{13} > \gamma_{16}$

(12) 

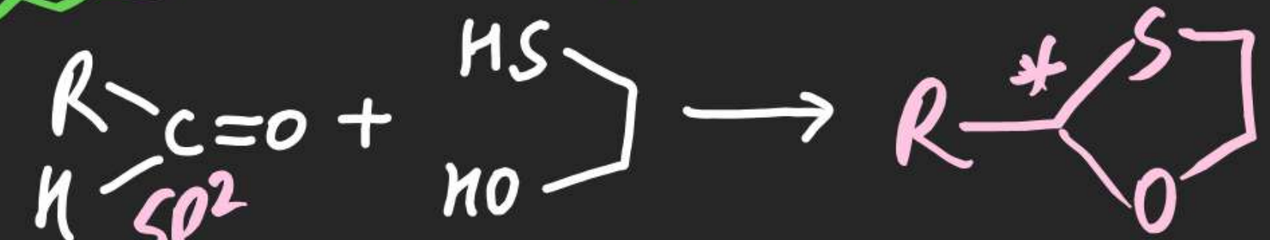
Thio Acetal

$\gamma_{11} > \gamma_{14} > \gamma_{17}$

$\gamma_{15} > \gamma_{14} > \gamma_{13}$

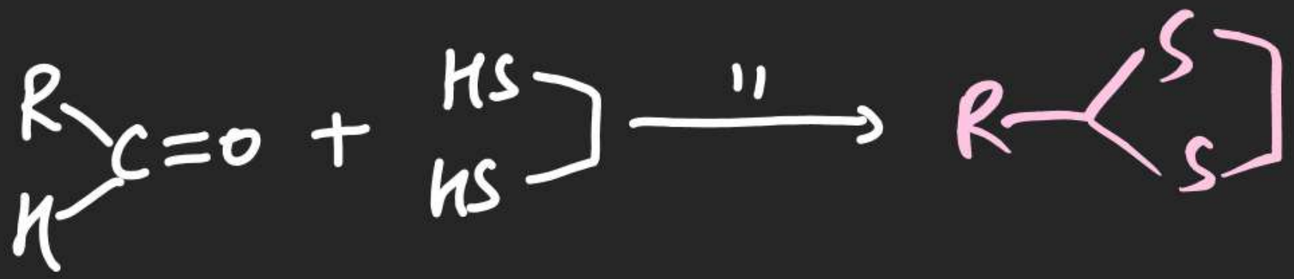
(13) 

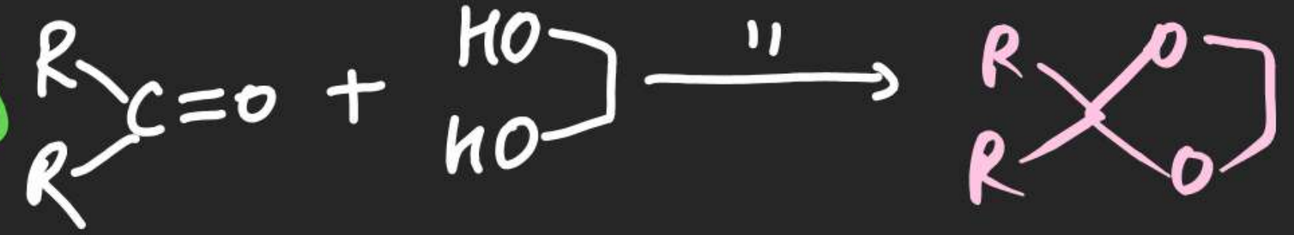
$\gamma_{12} > \gamma_{15} > \gamma_{10}$

(14)  $2(\pm)$

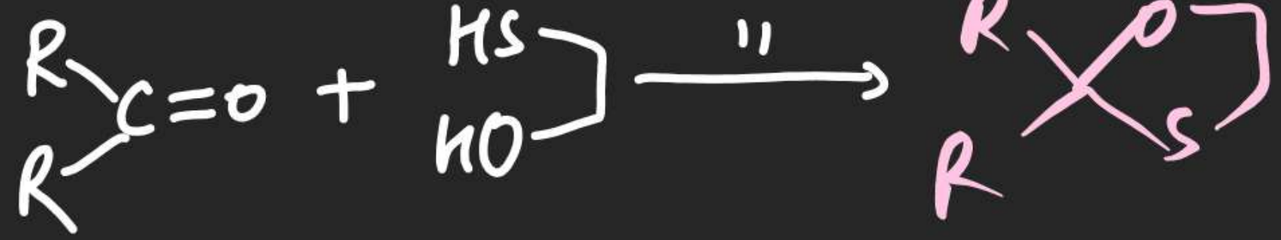
sp^2

Nishant Jindal

(15) 

(16) 

$\gamma_{18} > \gamma_{17} > \gamma_{16}$

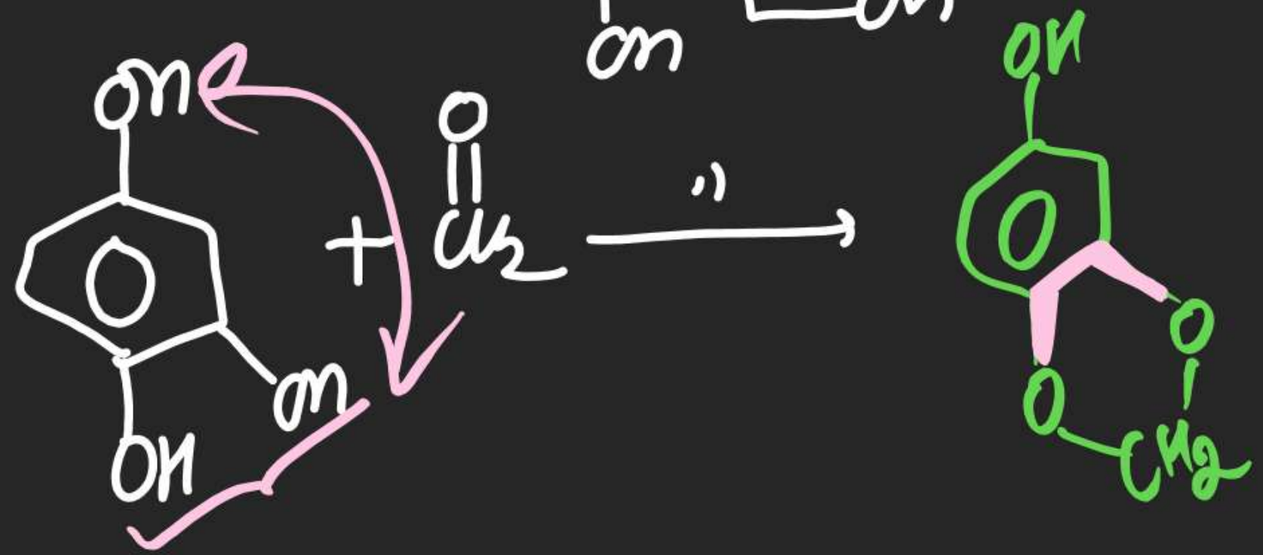
(17) 

(18) 

(19) 

(20) 

(21) 

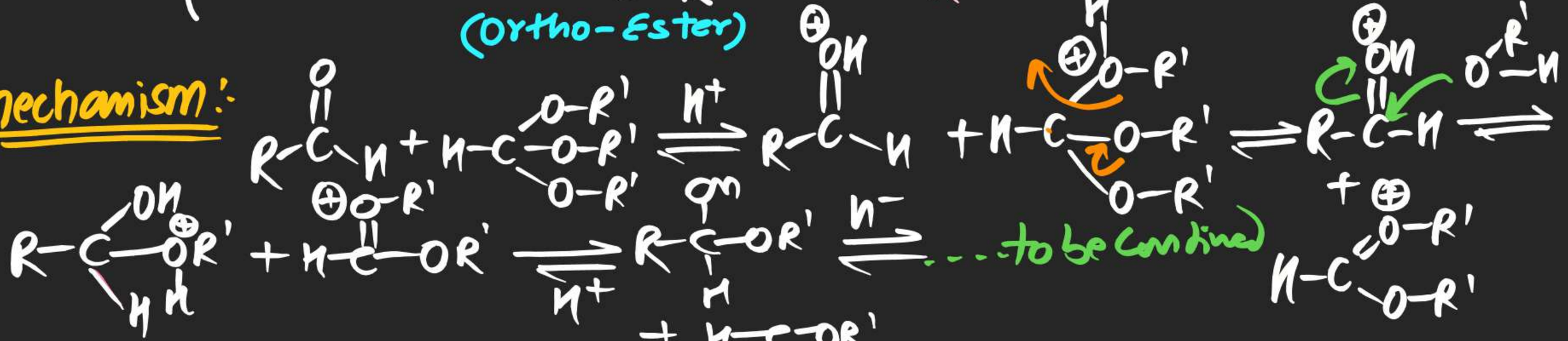
(22) 

Nishant Jindal

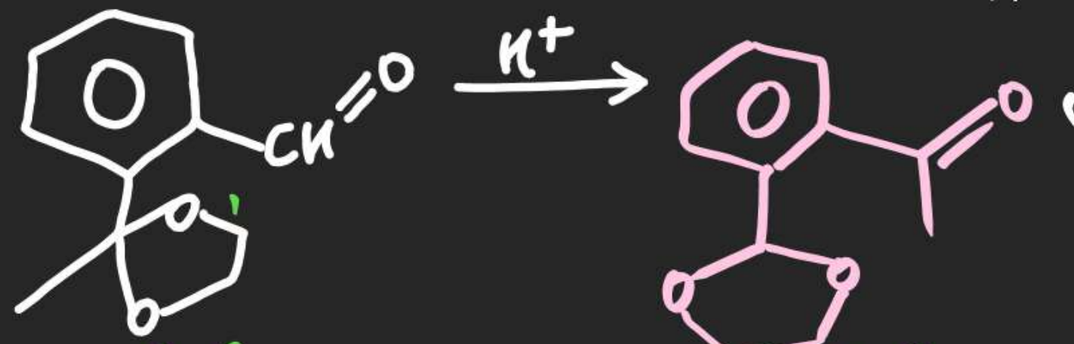
(23)

(Ortho-Ester)

mechanism:-



(24)

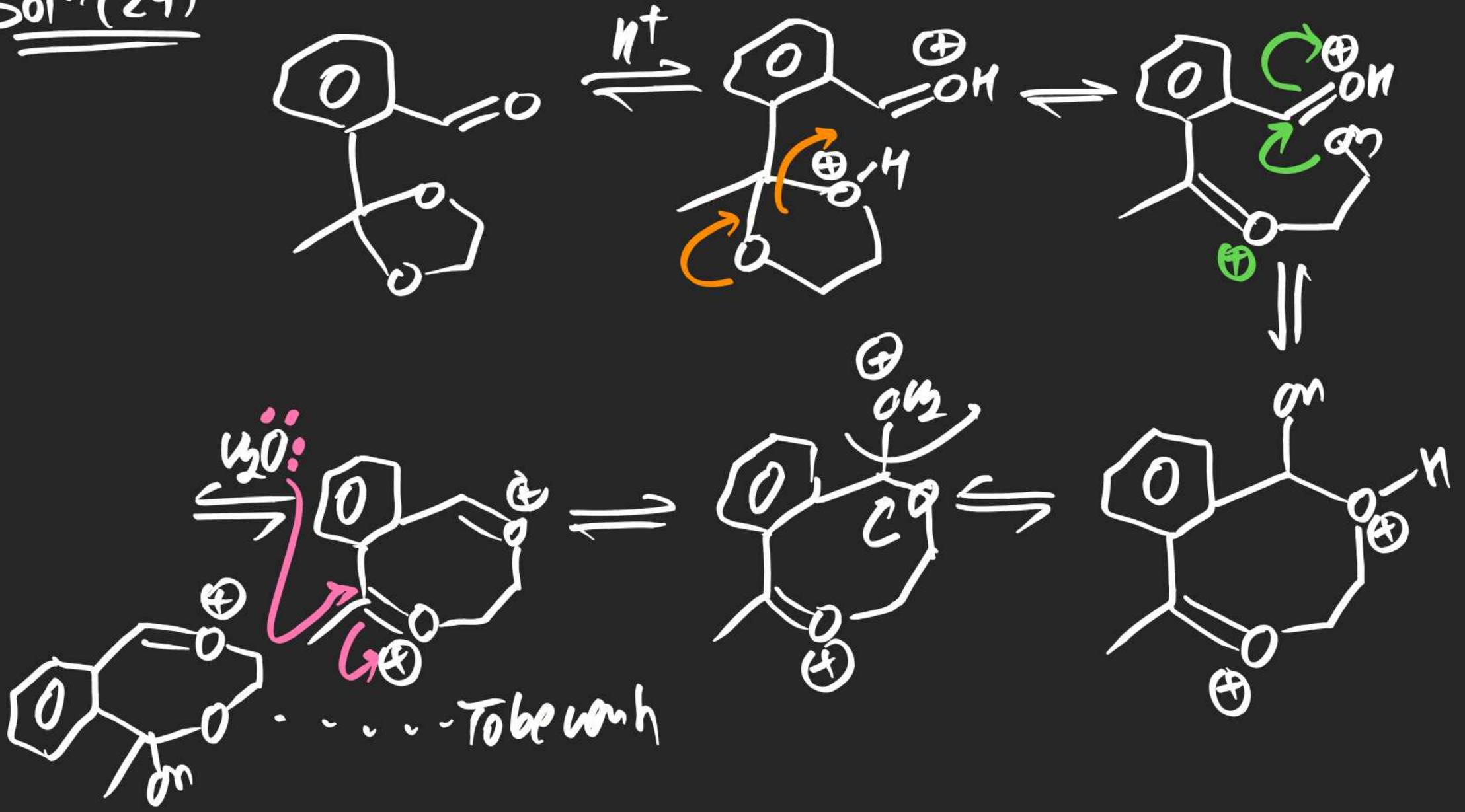


Ketal

Acetal

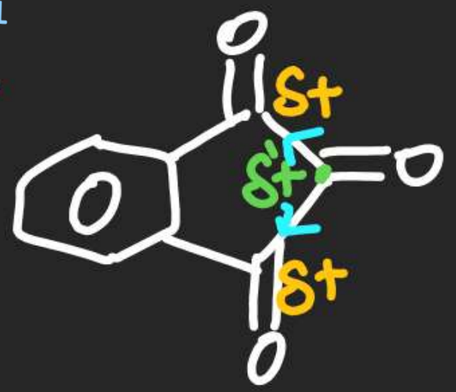
Nishant Jindal

Soln (24)

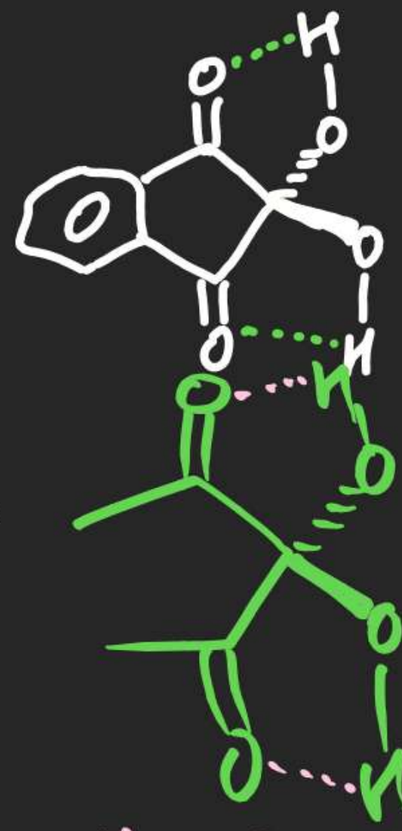


M.I.P

(9)



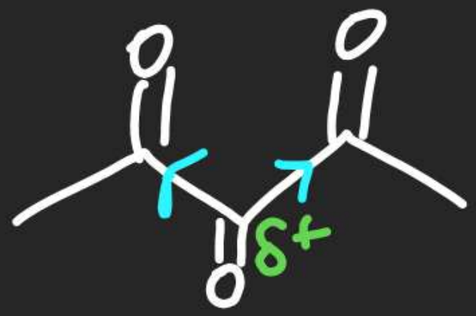
$+ H_2O \rightleftharpoons$



$K_{hyd} >> 1$

(Stable)

(10)



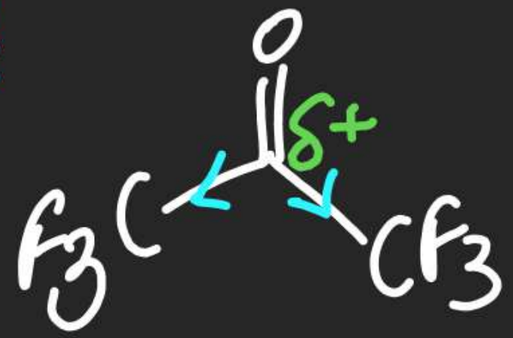
$+ H_2O \rightleftharpoons$

$K_{hydm} > 1$

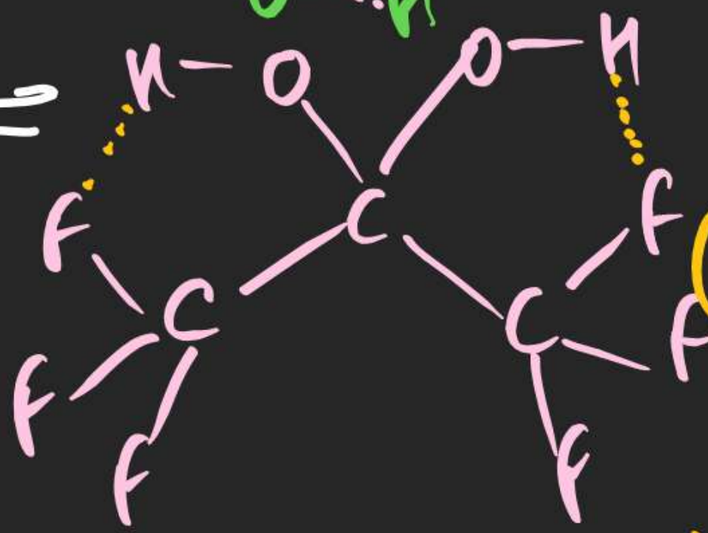
(Stable)

M.I.P

(11)



$+ H_2O \rightleftharpoons$



$K_{hyd} > 1$

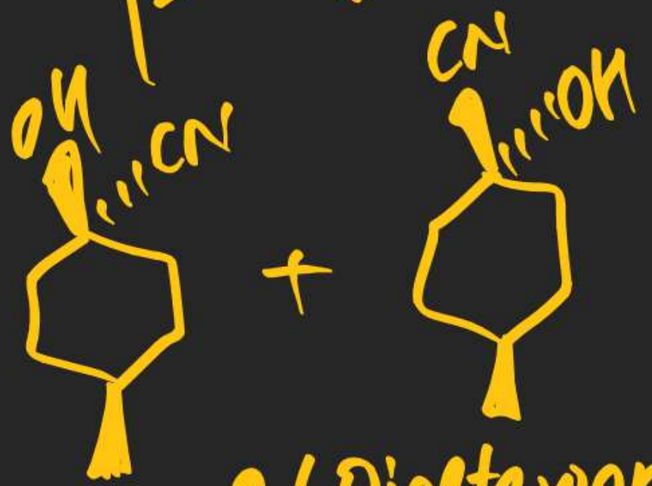
(Stable)

Note (i) Basic condⁿ (pH > 7) is used

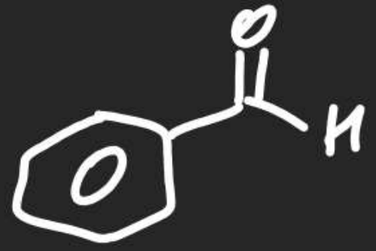
(ii) Sometimes salt of CN is also used.

(2)  $\xrightarrow[NaCN]{HCN}$ 

(3)  $\xrightarrow{H^{\oplus}}$ [ + ] 2(±)

(4)  $\xrightarrow{H^{\oplus}}$ 

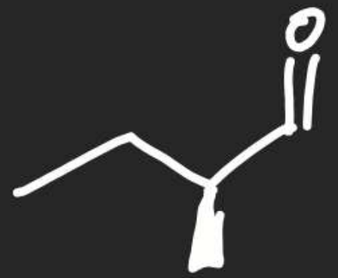
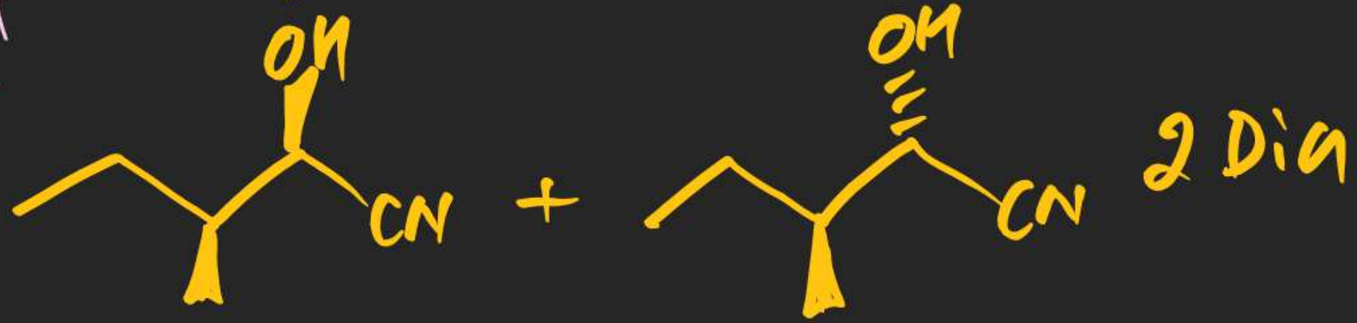
2 (Diastereomers)

(6)  $\xrightarrow{\ddots}$  2(±)

^-CN

(6)  $\xrightarrow[CH_3COOH]{Ba(CN)_2}$  2 Dia

H^+

(7)  $\xrightarrow{\ddots}$  2 Dia

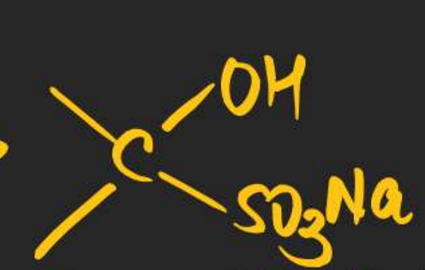
I-mp

(8) $CH_3-\underset{P}{C}=O \xrightarrow[NaCN]{HCN} CH_3-\underset{Q}{C}(OH)(C\equiv N) \xrightarrow{H_3O^+}$ Lactic Acid $CH_3-CH(OH)-COOH$

Nishant Jindal

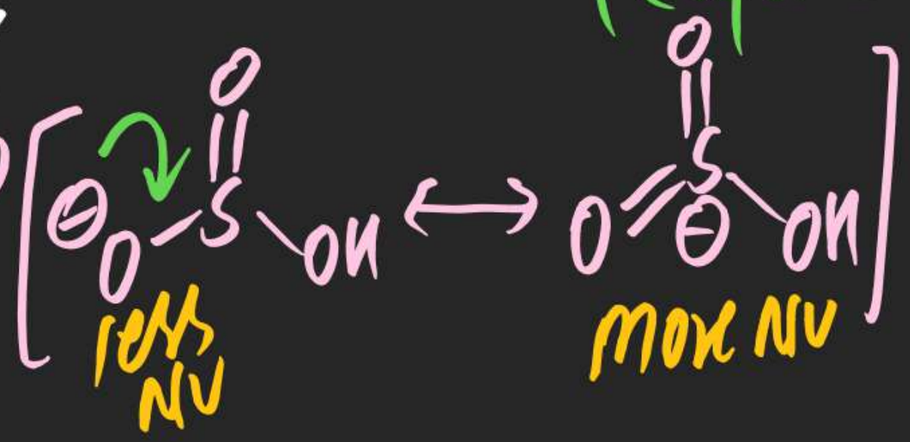
(#) Addition of $NaHSO_3$:-

⇒ On Reaction of $>C=O$ with $NaHSO_3$, Sodium Bi sulphite adduct is obtained as a Product.

(1) $>C=O \xrightarrow{Na^{\oplus}HSO_3^{\ominus}}$ 

Sodium Bi Sulphite (Crystaline)

Mechⁿ :-

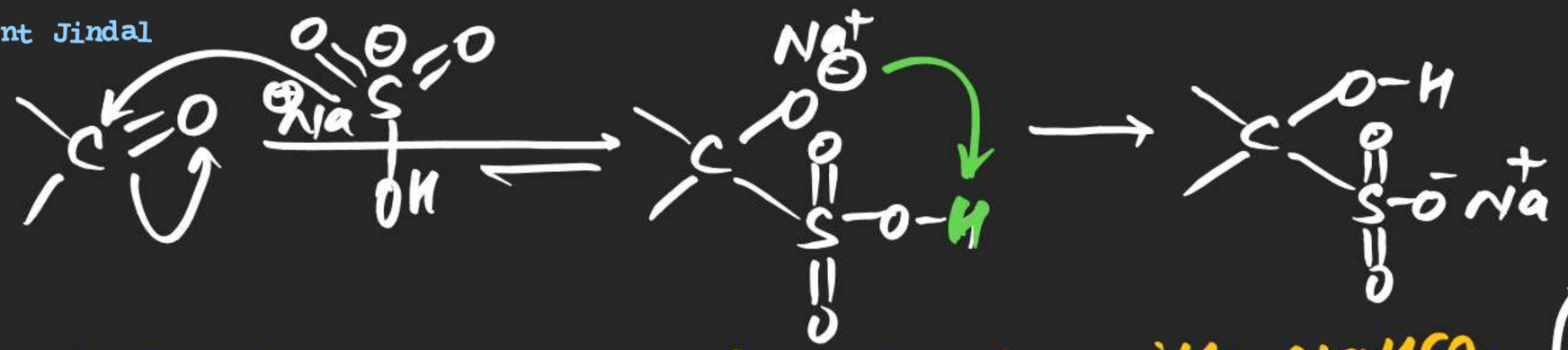


pKa < 7 : NH_2-Z, $NH-Z$, H_2O, ROH

pKa > 7 : H-CN

Covalent

$NaHSO_3$ — ionic



Note :- (i) All aldehydes Reacts with $NaHSO_3$

(ii) only methyl ketones show Rxn with $NaHSO_3$

(iii) Rxn is used for distinguishion b/w methyl & non methyl ketones

(iv) Cyclic ketones show positive Rxn

(v) Adduct in Basic medium gets decomposed in to  .

(2) $CH_3-\overset{O}{\overset{\|}{C}}-H \xrightarrow{NaHSO_3}$

Nishant Jindal

(3)  $NaHSO_3$

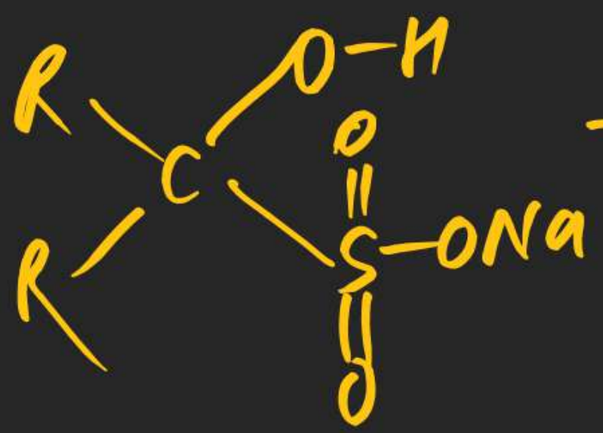
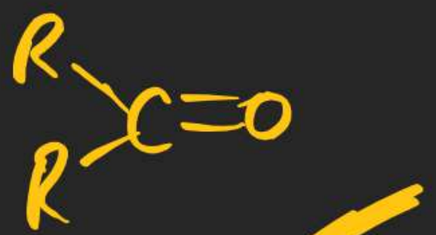
(4)  "

(5)  "

(6)  "

Nishant Jindal

(7)  $\xrightarrow{NaHSO_3}$

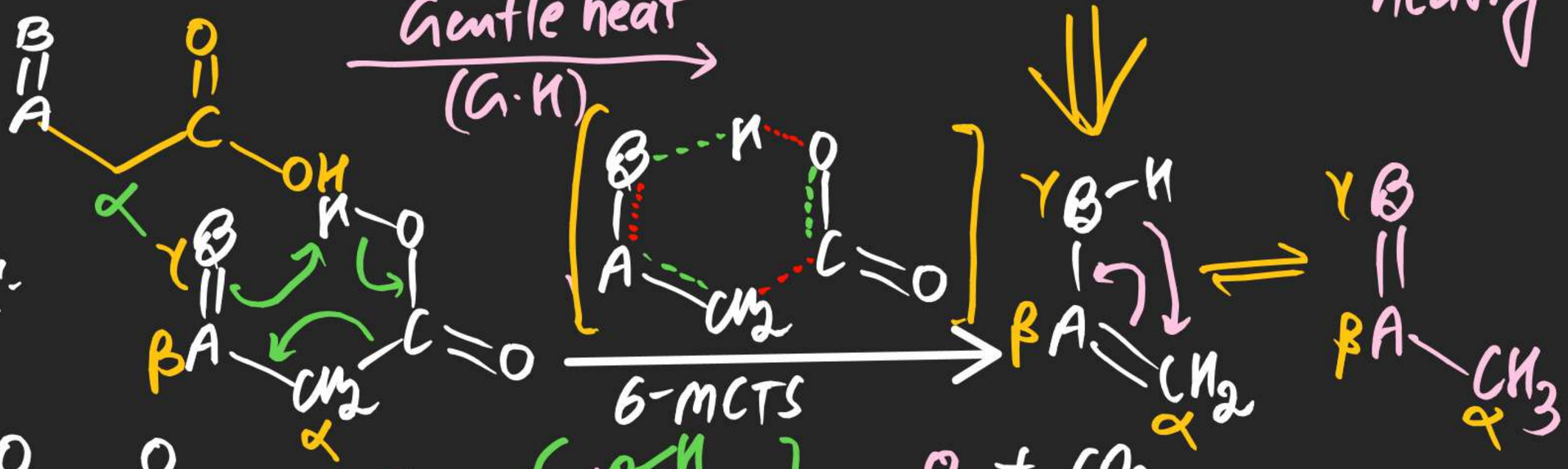
(8)  $\xrightarrow[\Delta]{NaOH}$ 

Nishant Jindal

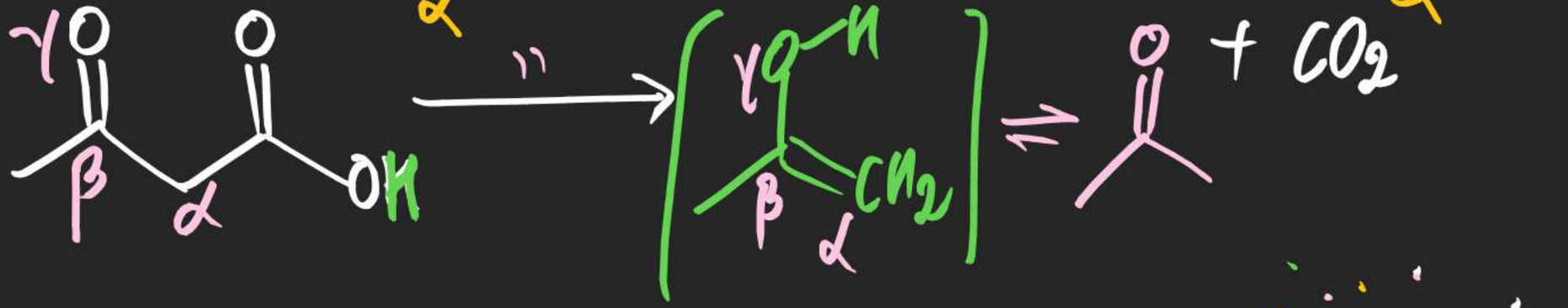
Heating Effect

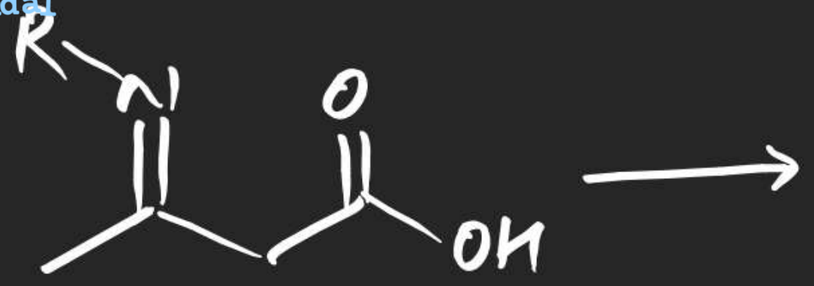
(#) β-γ Unsaturated Carboxylic Acid: Such kind of Acids gets decarboxylate on gentle heating.

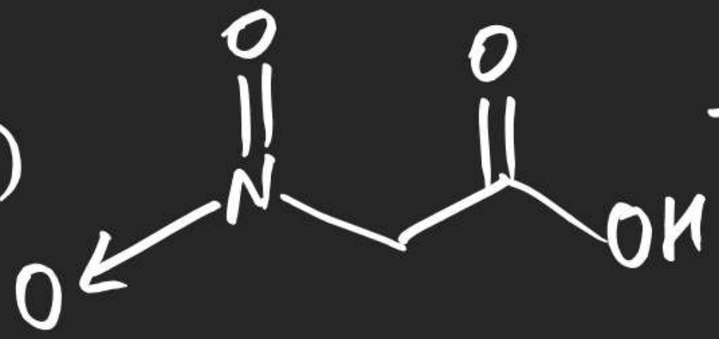
(1) γ

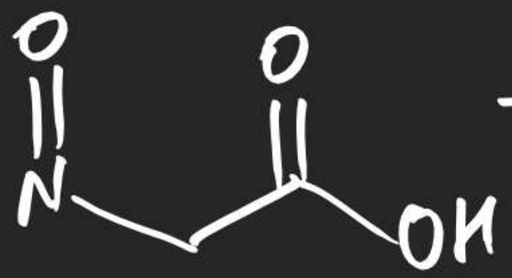


(2)

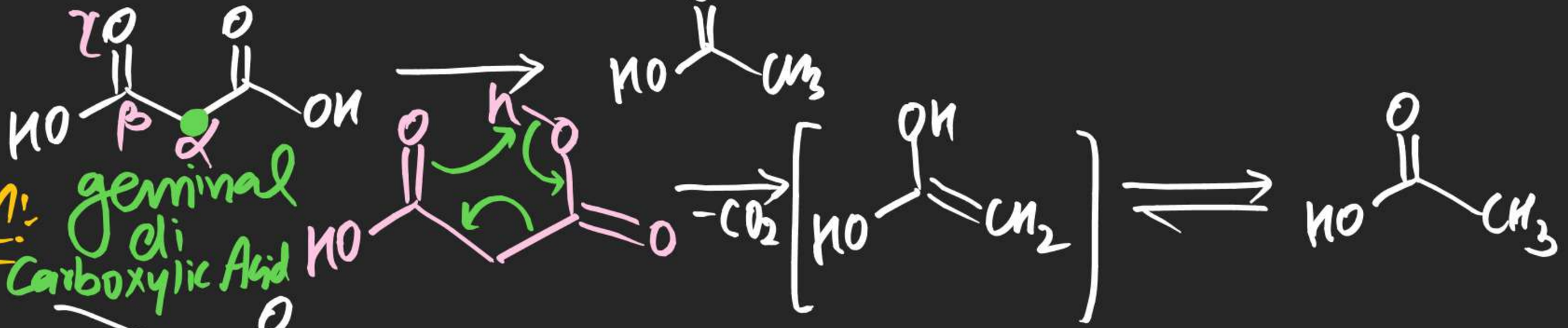


(3) 

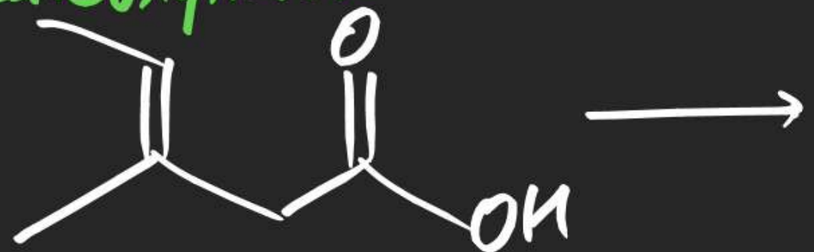
(4) 

(5) 

Nishant Jindal

(6) 

Soln: geminal di Carboxylic Acid

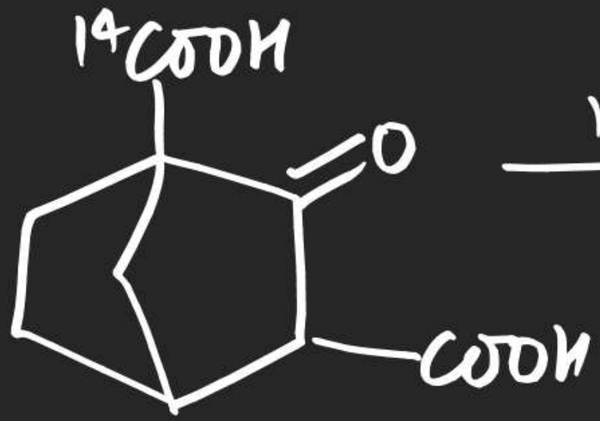
(7) 

(8) 

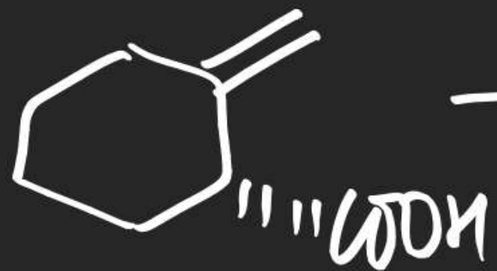
Nishant Jindal

(9)

(10)



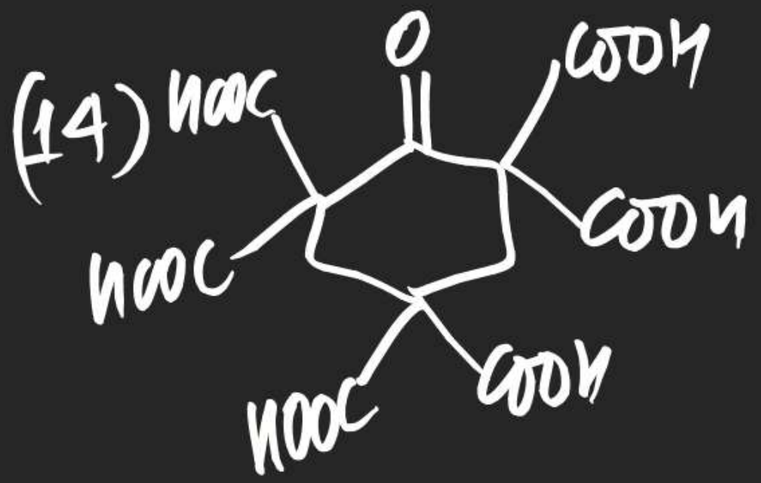
(11)



Nishant Jindal

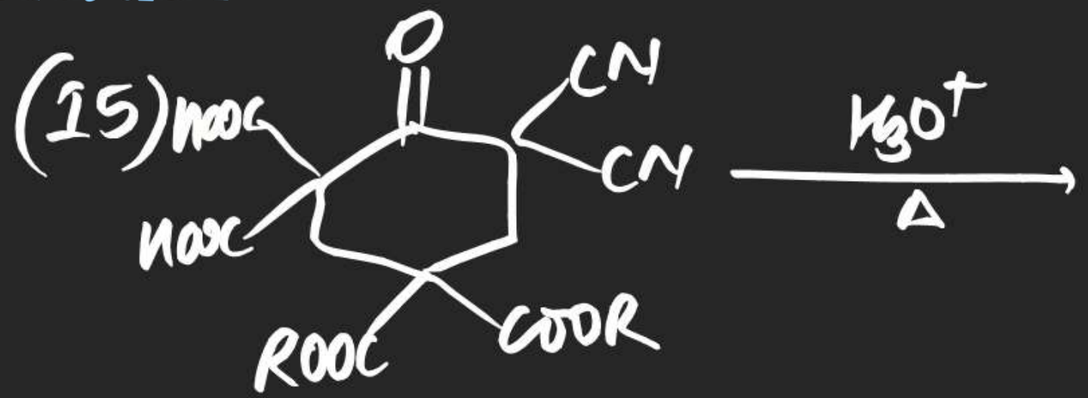
(12) 

(13) 

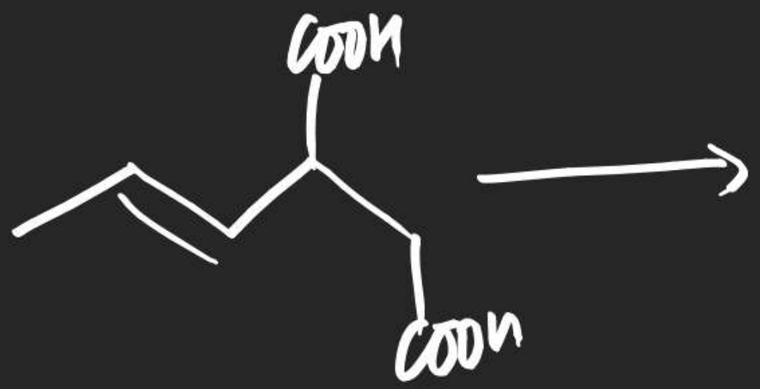
(14) 

Nishant Jindal

(15)

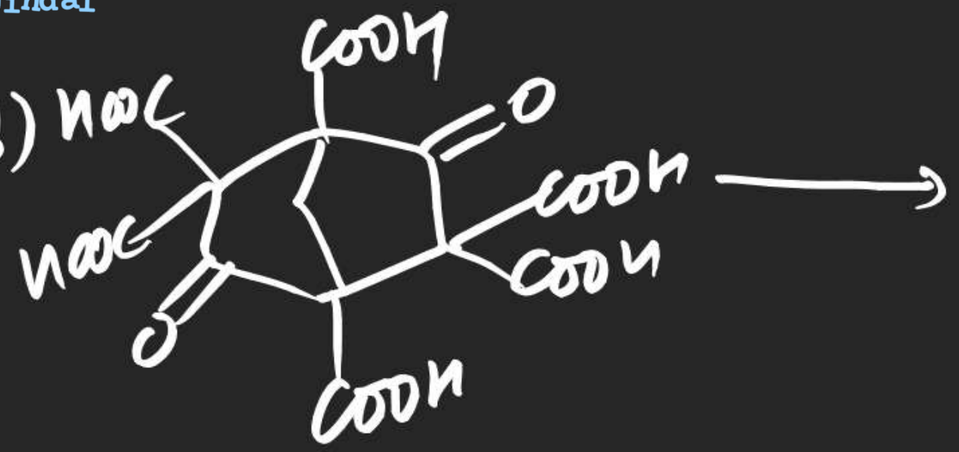


(16)



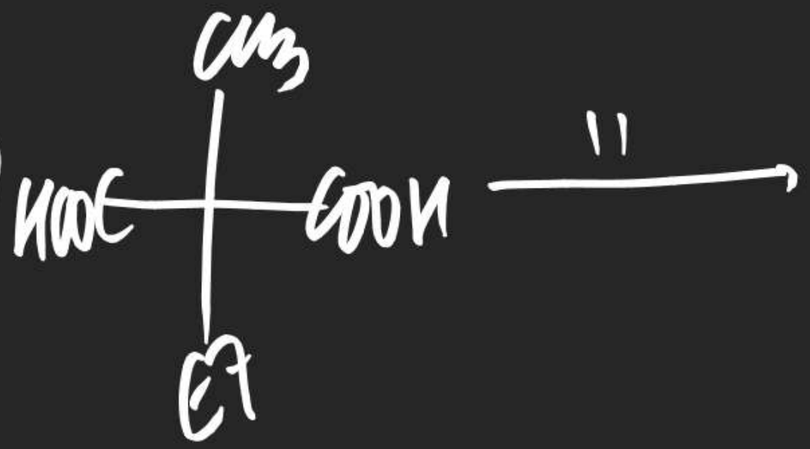
(17)

(18)



(19)

(20)



Nishant Jindal

(#) Heating of Di Carboxylic Acid :

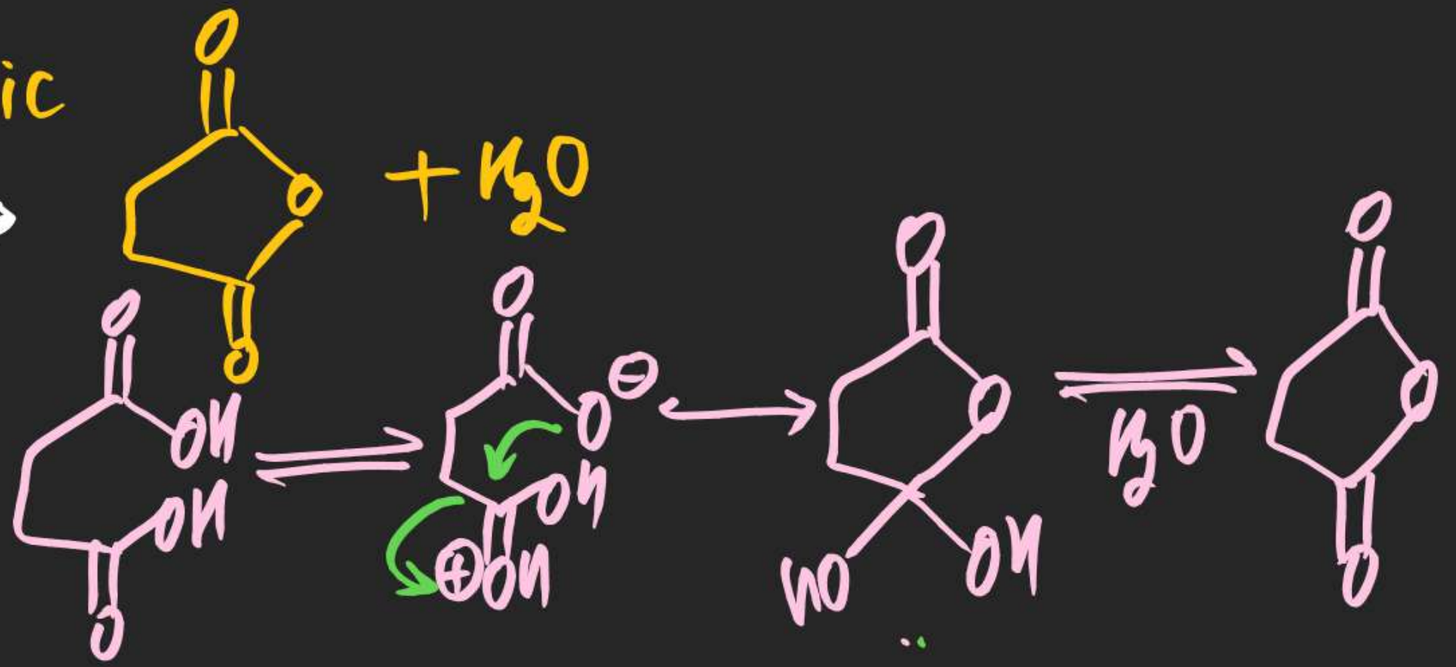
(1) $\begin{matrix} COOH \\ | \\ COOH \end{matrix} \xrightarrow{\Delta} HCOOH + CO_2$

Oxalic Acid

mImp

(2) $\overset{1}{*}CH_2(COOH)_2 \xrightarrow{\Delta} CH_3-COOH + CO_2$

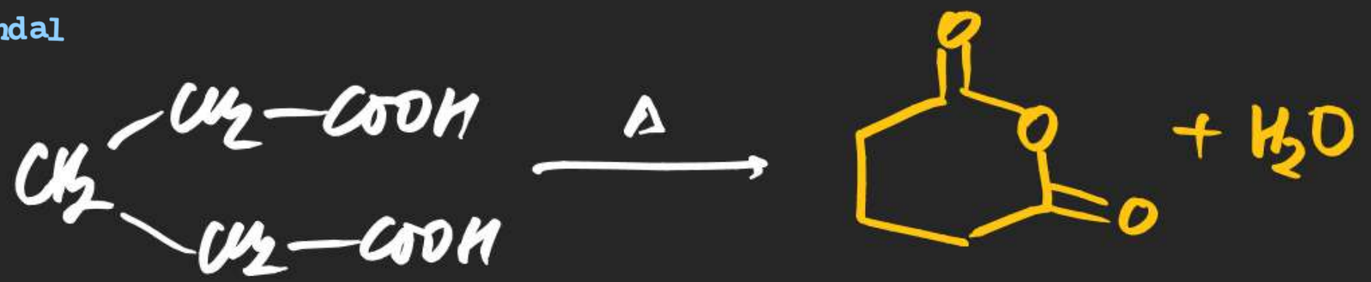
Geminal di Carboxylic

(3) $\begin{matrix} 1CH_2-COOH \\ | \\ 2CH_2-COOH \end{matrix} \xrightarrow{\Delta}$ 

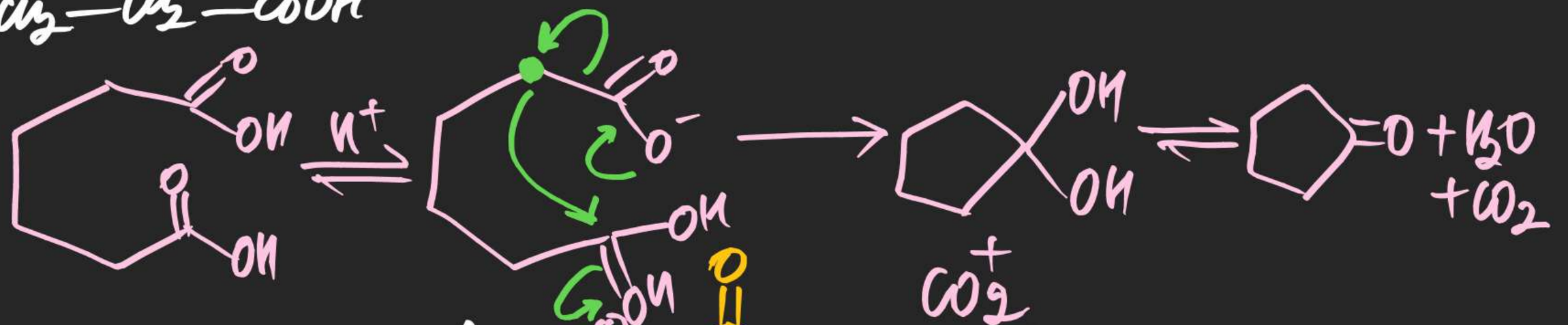
Vicinal di Carboxylic

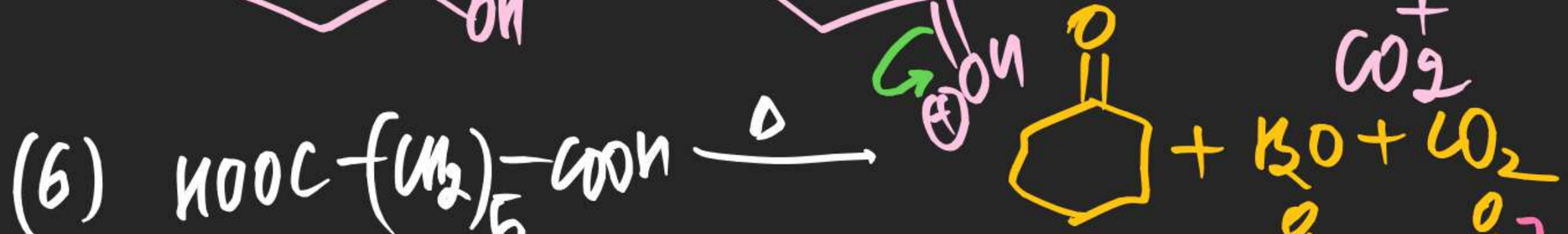
mechn!

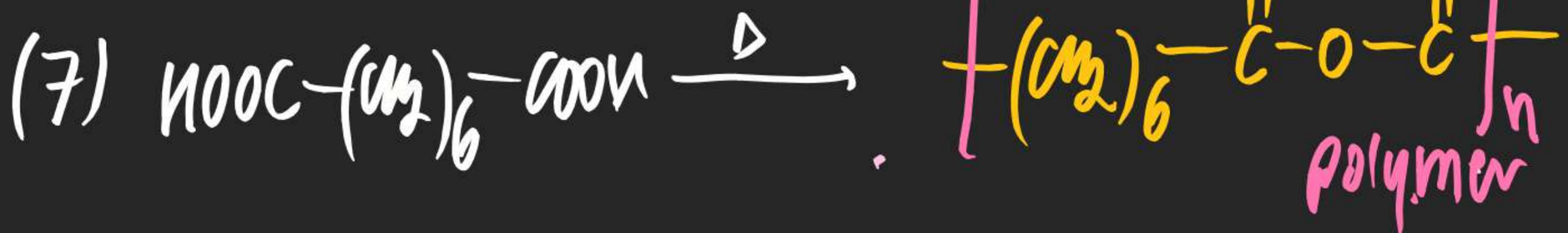
Nishant Jindal

(4) 

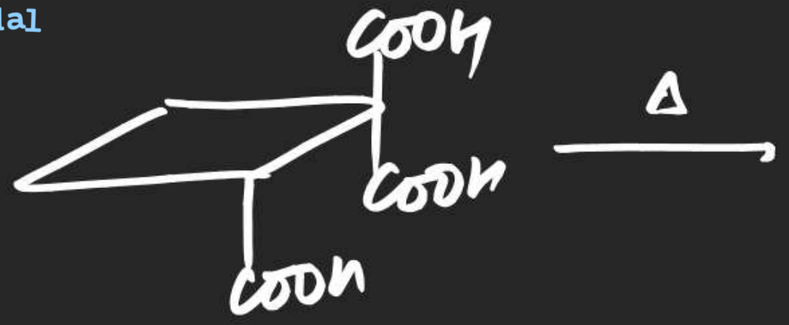
(5) 

Soln: 

(6) 

(7) 

polymer

(8) 

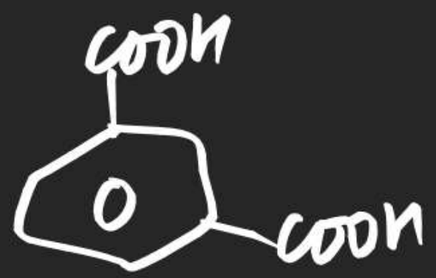
(9) 

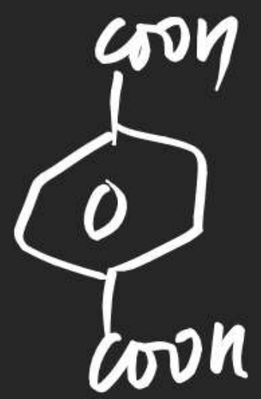
(10) 

(11) 

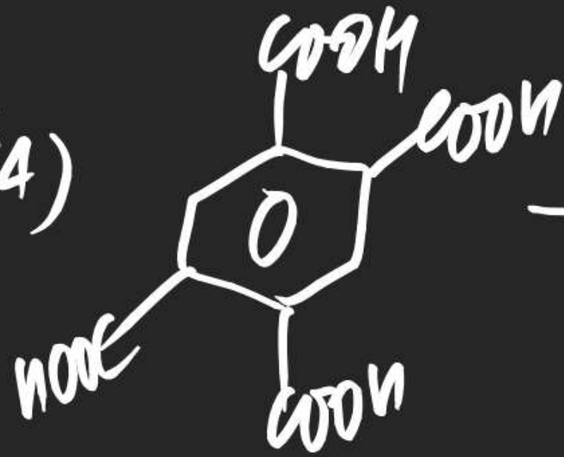
(12) 

$\xrightarrow{\Delta}$

(13) 

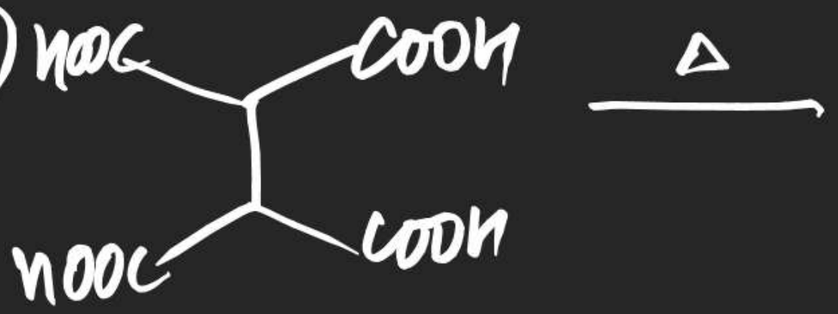
/ 

$\xrightarrow{\Delta}$

(14) 

$\xrightarrow{\Delta}$

Nishant Jindal

(15) 

(16)