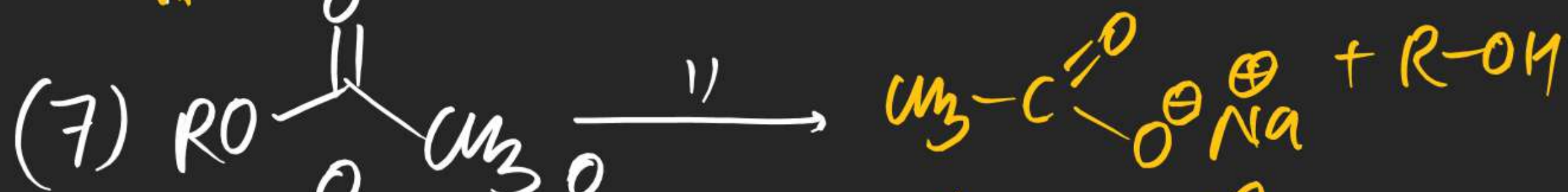
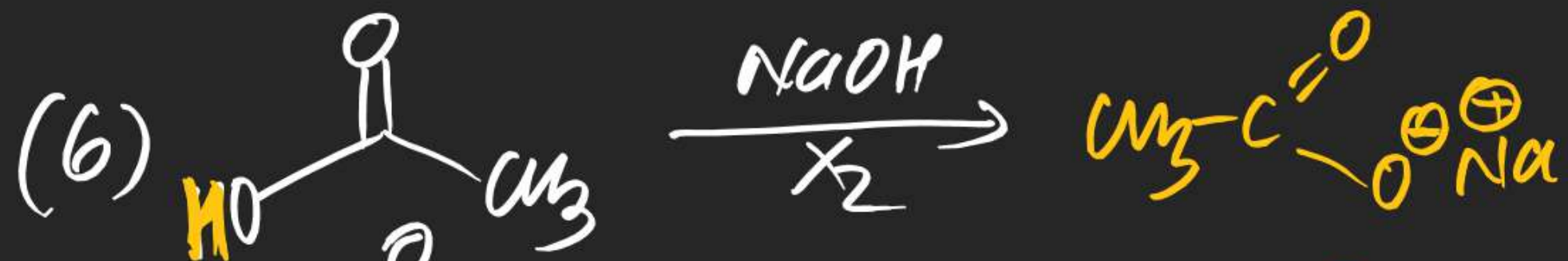
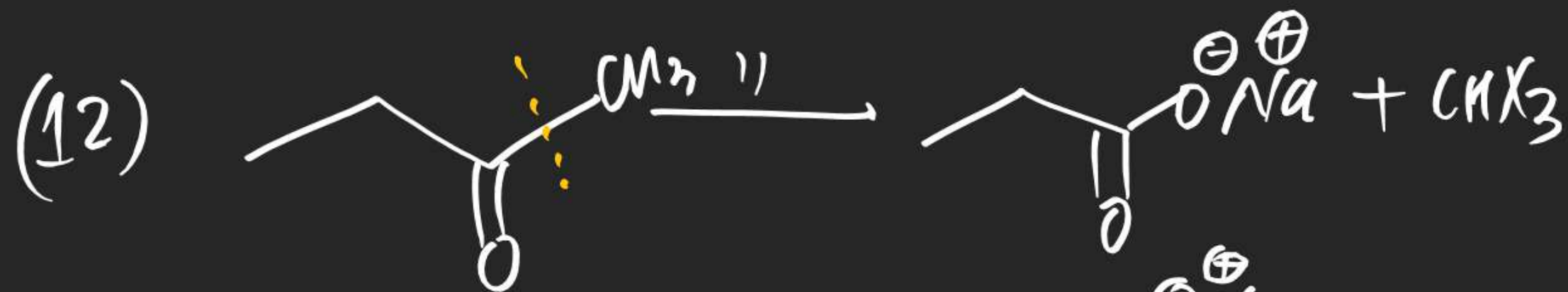
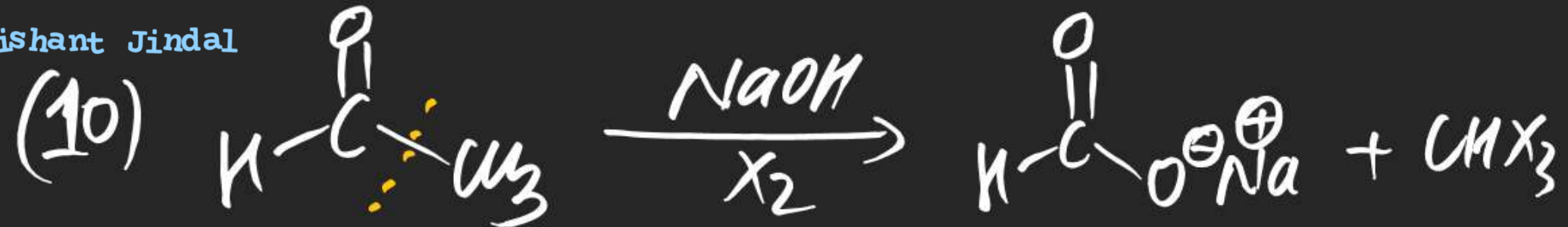
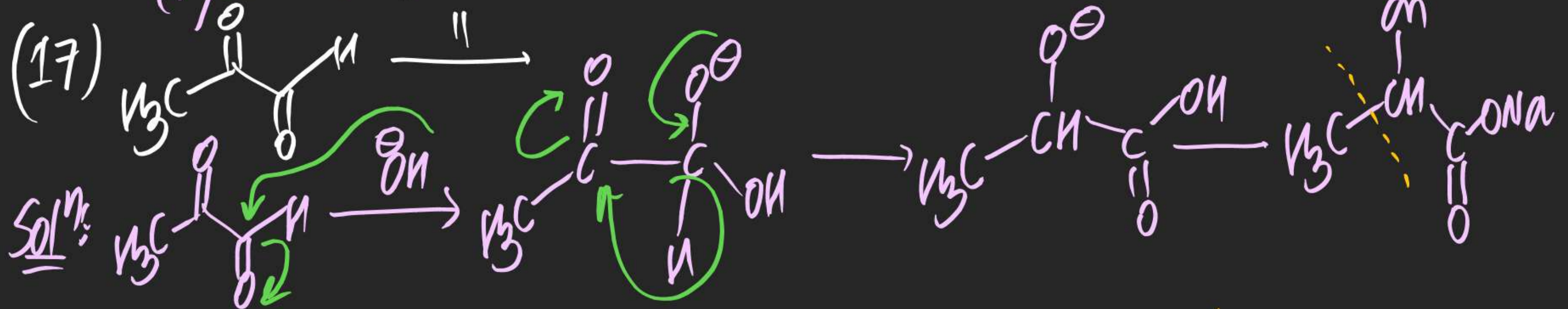
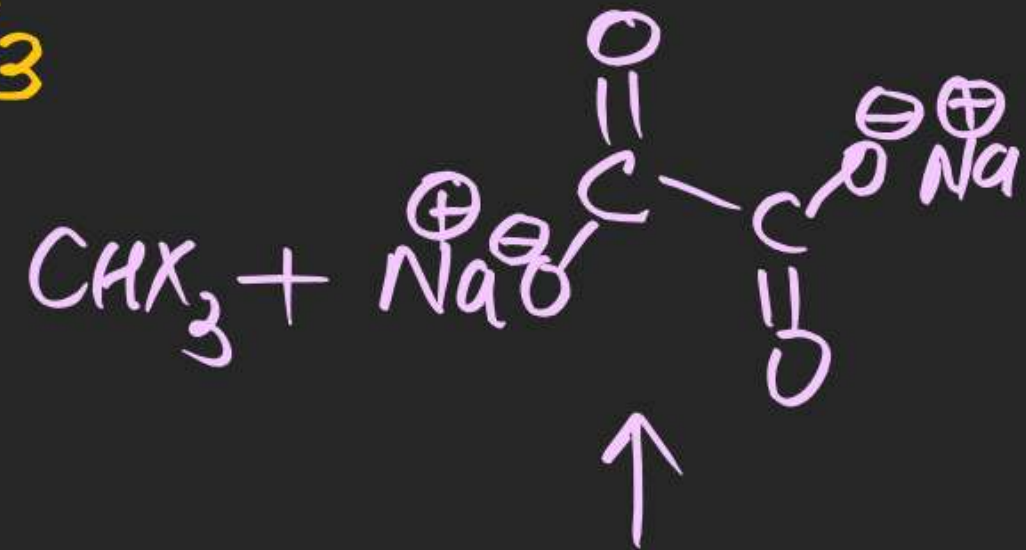
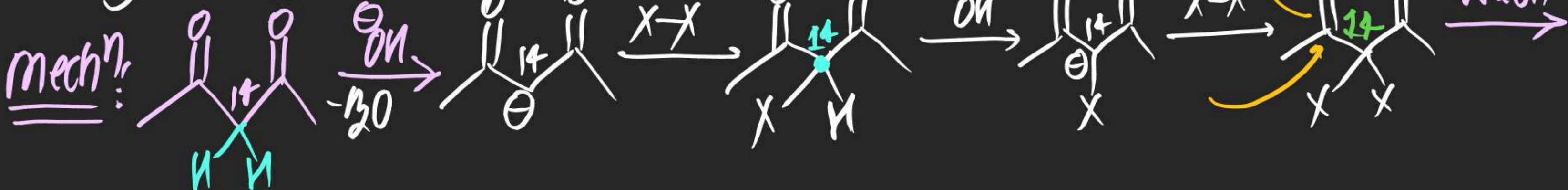
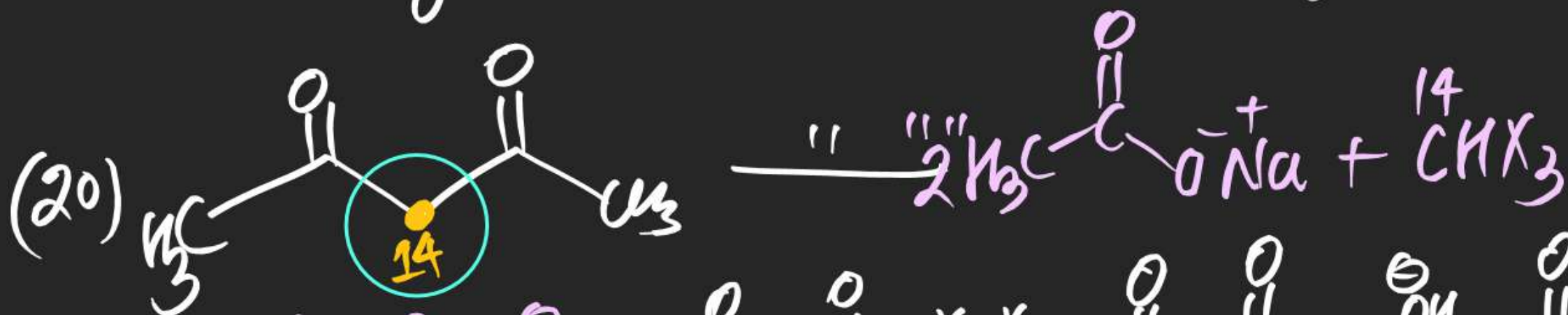
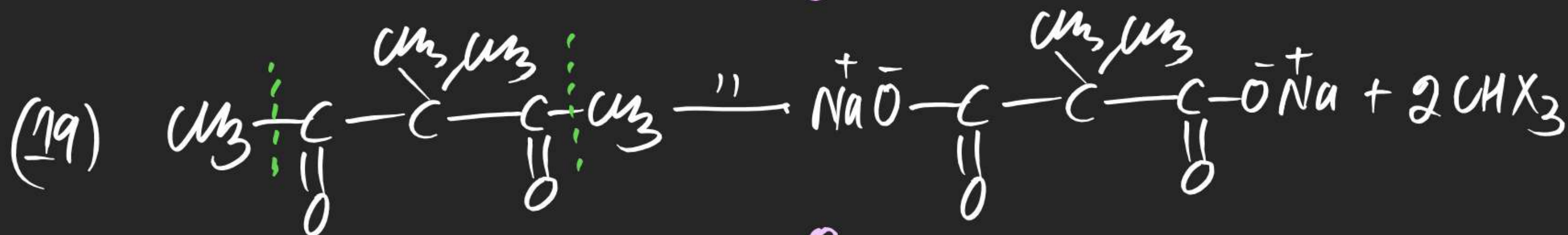


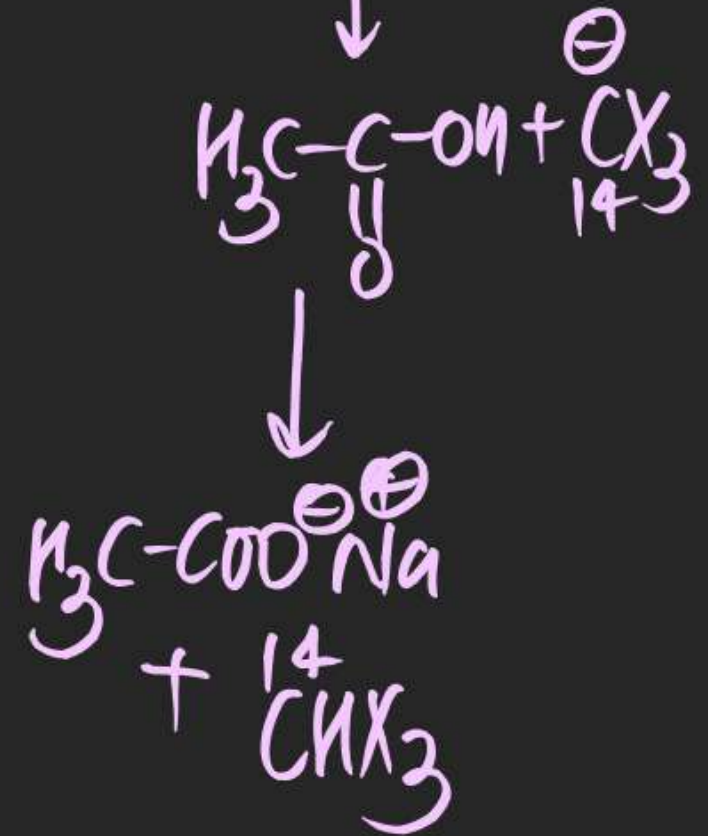
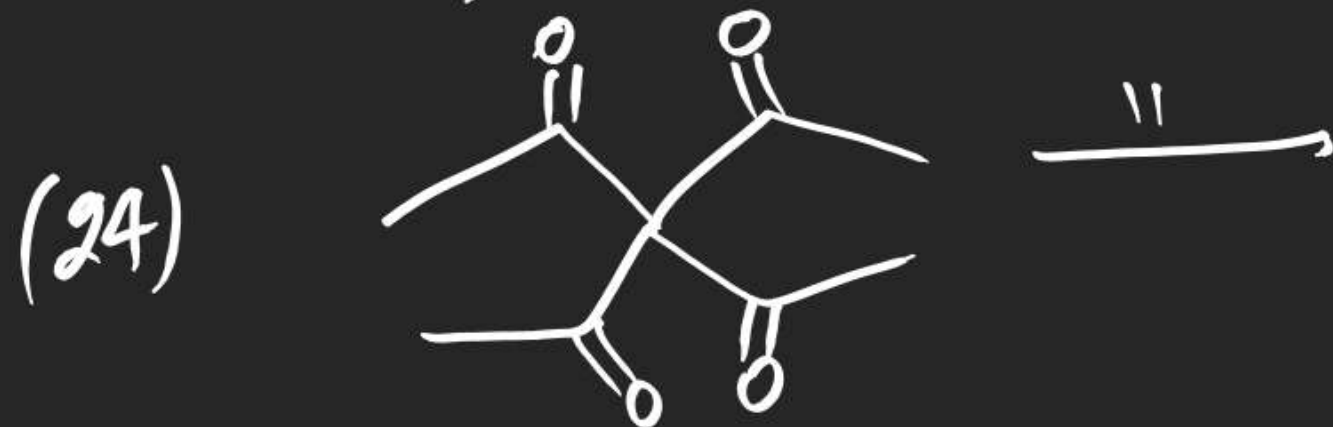
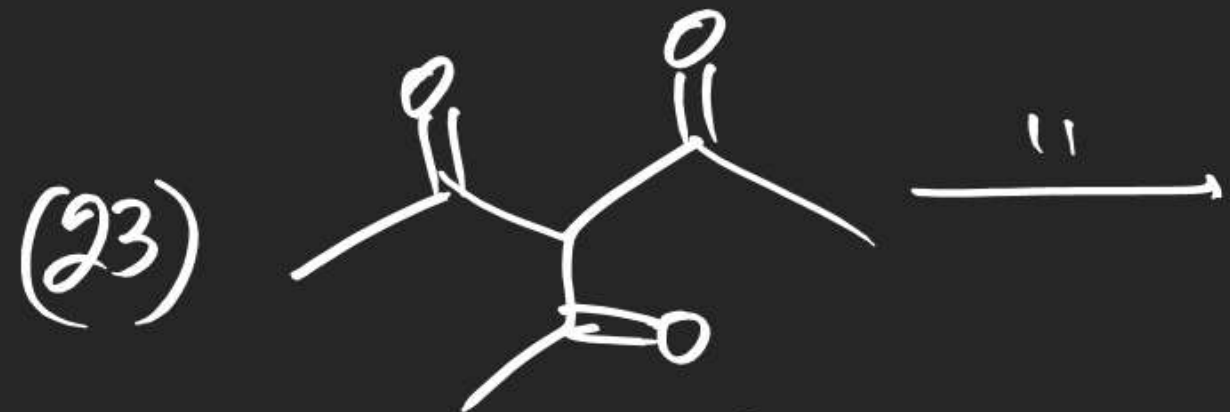
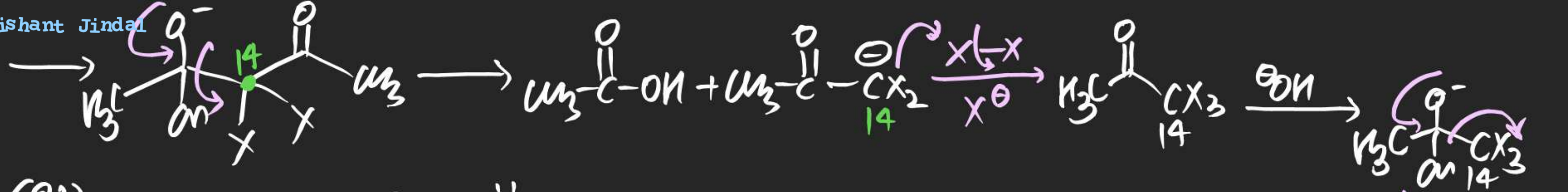
isolated in Basic condⁿ.

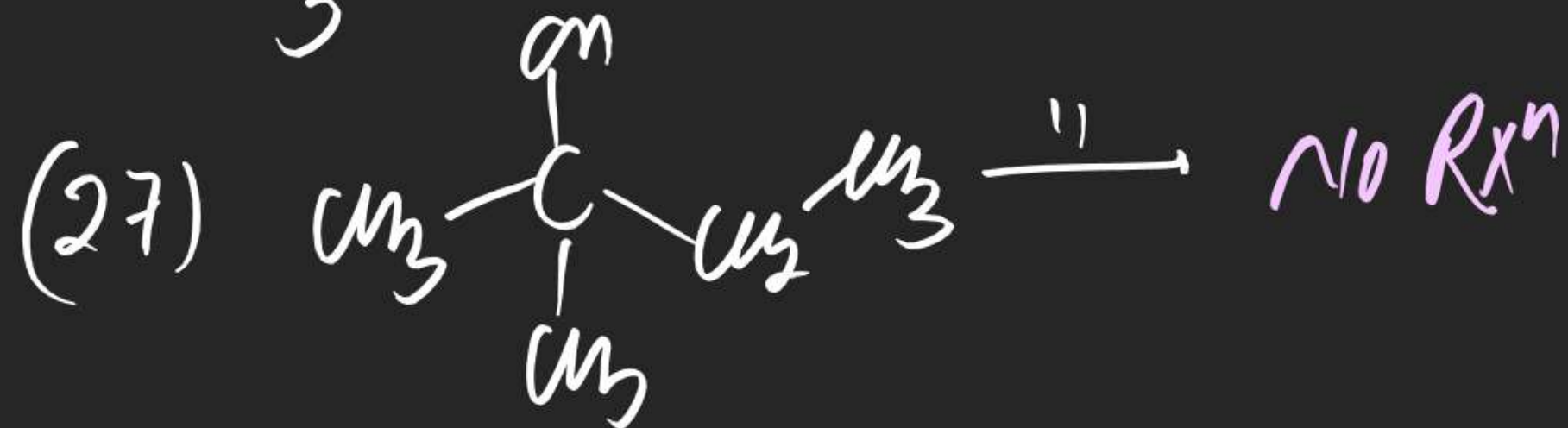


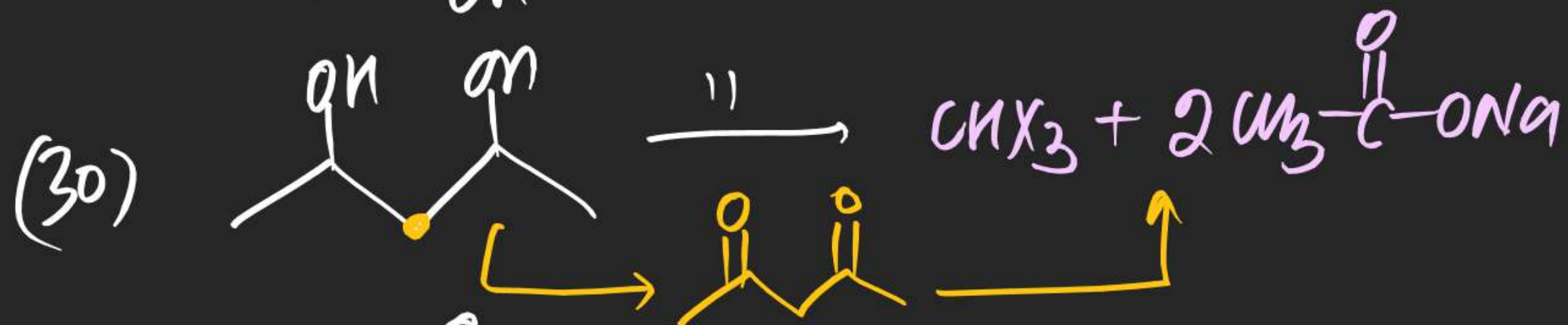












(a) $t=0$ $\frac{1}{3}$
 $t=\infty$ $\left(\frac{1-\frac{1}{3}}{\frac{1}{3}}\right) = \frac{2}{3}$ $\left(\frac{1-3\left(\frac{1}{3}\right)}{\frac{1}{3}}\right) = 0$

(b) $\frac{1}{3} : \frac{2}{3}$
 $\frac{1}{3} : 0$

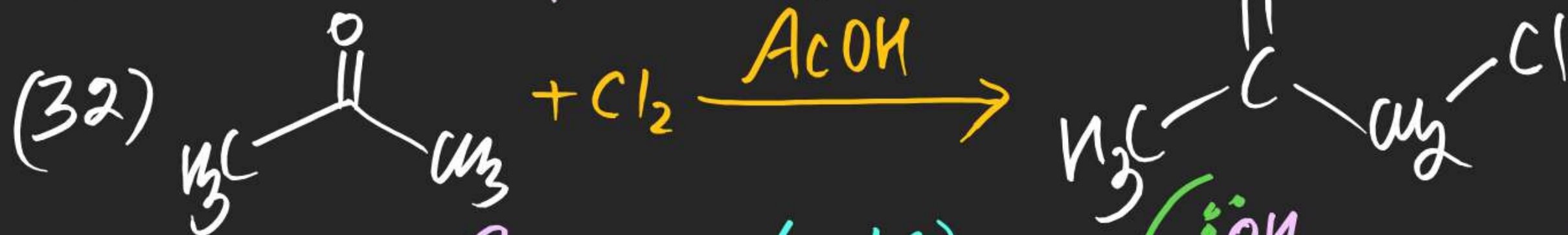
(c) $\frac{1}{3} : \frac{2}{3}$
 $0 : 0$

$\frac{0}{1/3}$ $\frac{0}{1/3}$

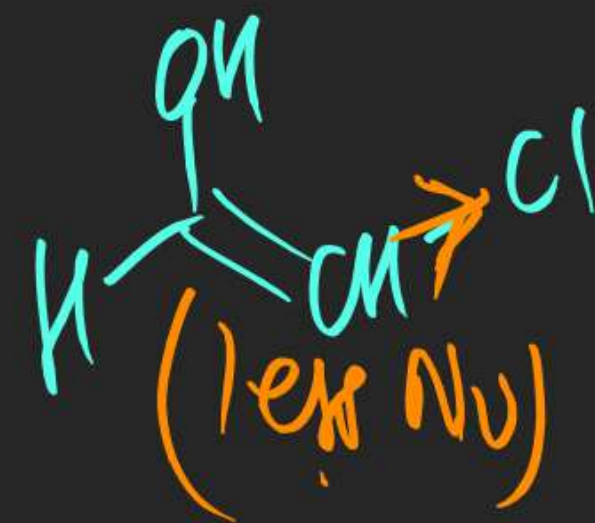
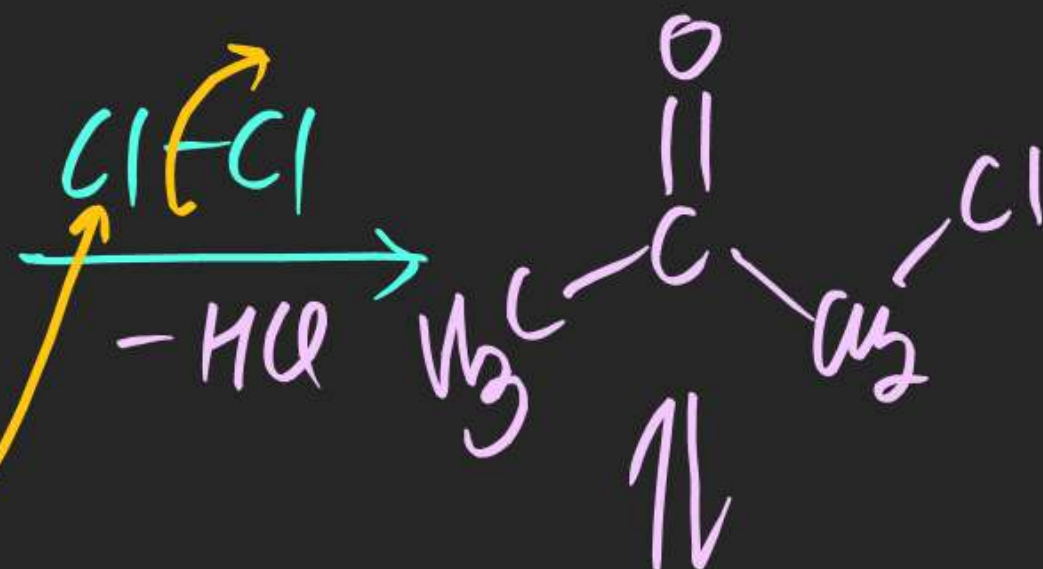
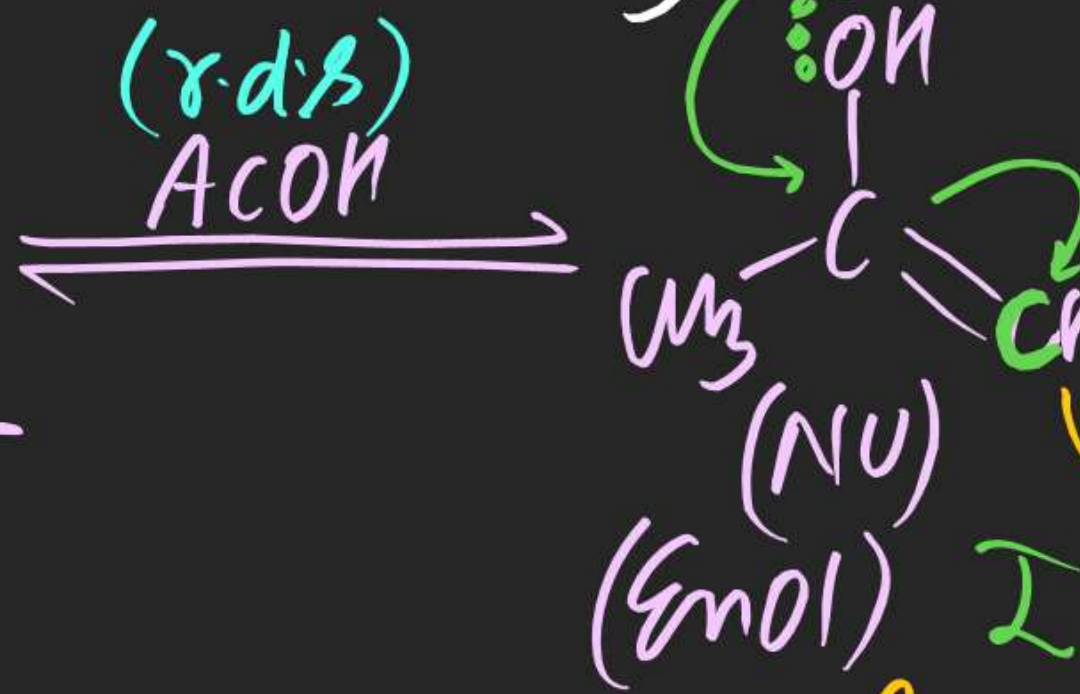
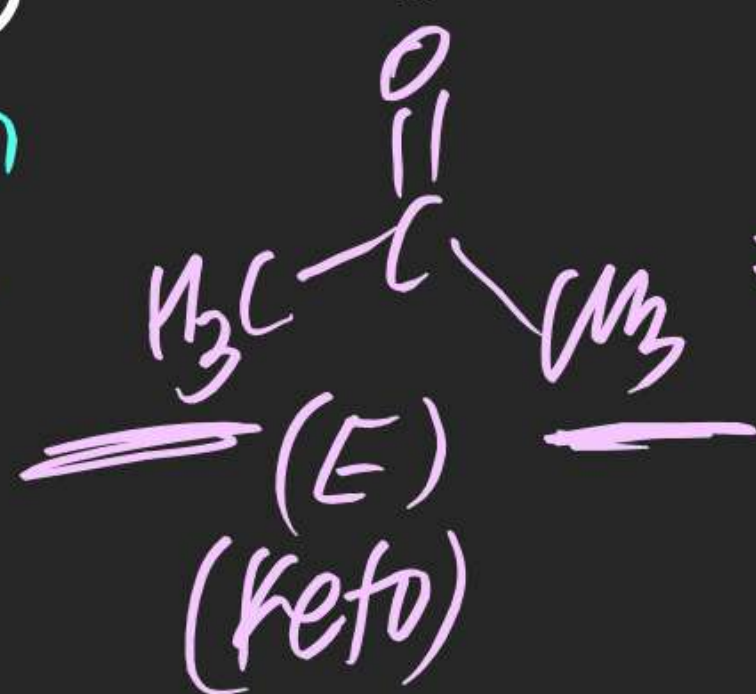
$\frac{2}{3}$ $\frac{2}{3}$

1 1

(#) Acid Catalysed Halogenation: (e.m.m. Imp)
 \Rightarrow on Acid Catalysed halogenation mono/di/Tri halogenated product is obtained.



mechⁿ



Note (i) Rxⁿ gets slow down as products
 (ii) step-I (Keto to Enol) is r.d.b

(iii) rate exp.

$$r = k [\text{Acetone}]^1 [\text{X}_2]^0$$

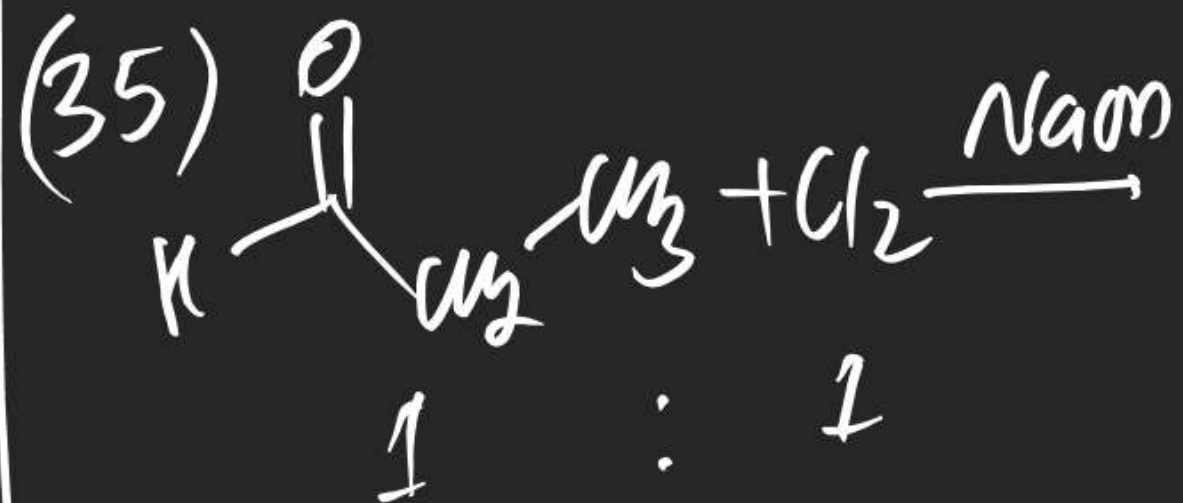
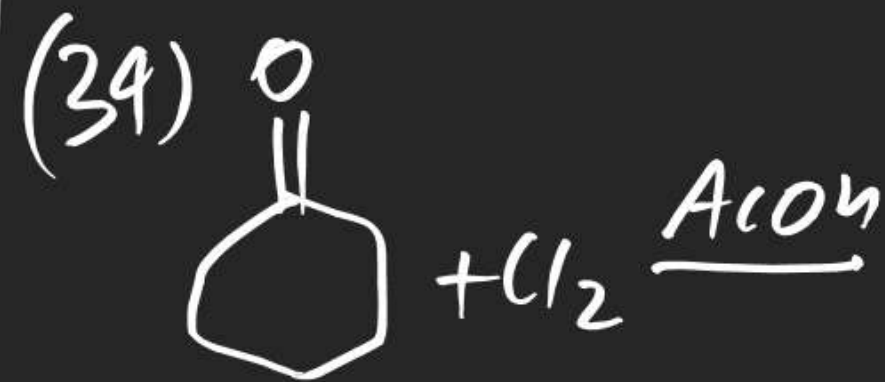
$$\Rightarrow r = k [\text{Acetone}]$$

(iv) rate of halogenation



(a) 1 1

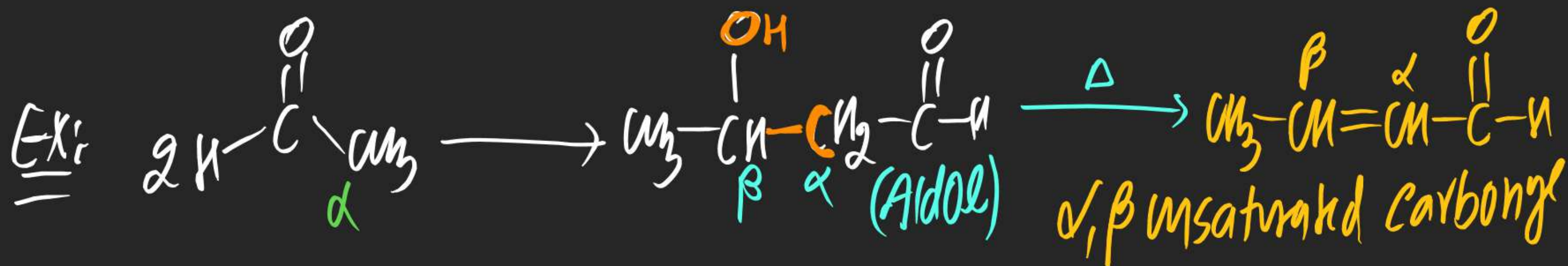
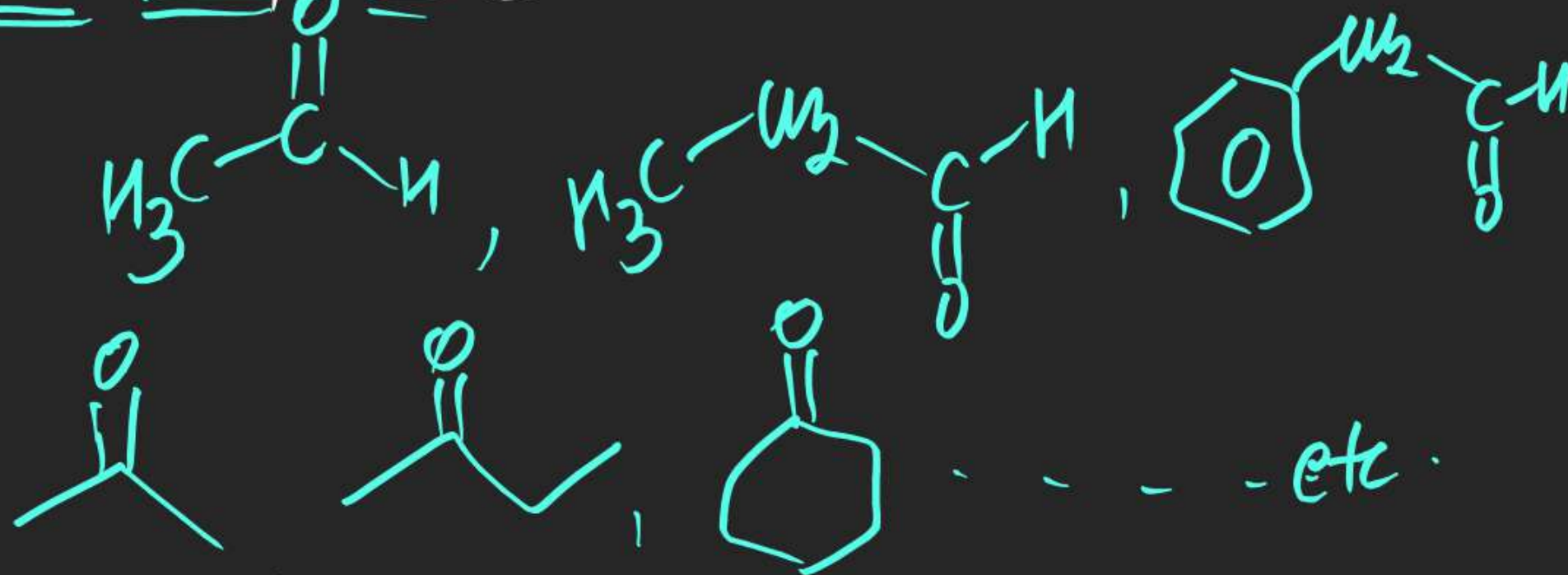
(b) 1 2



Aldol Reaction/Aldol Condensation

⇒ Carbonyl compound containing " α " H atom gets dimerised to give β -hydroxy carbonyl compound (Aldol) as a product.

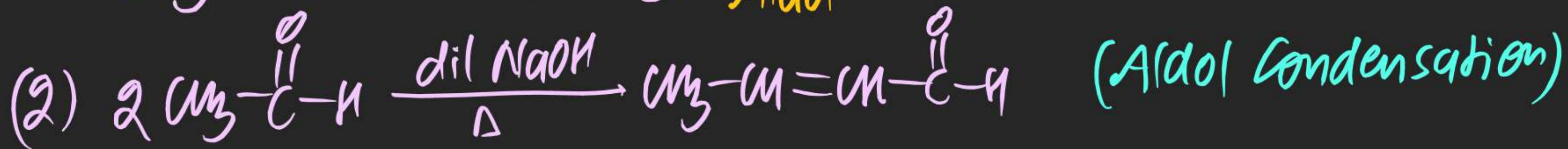
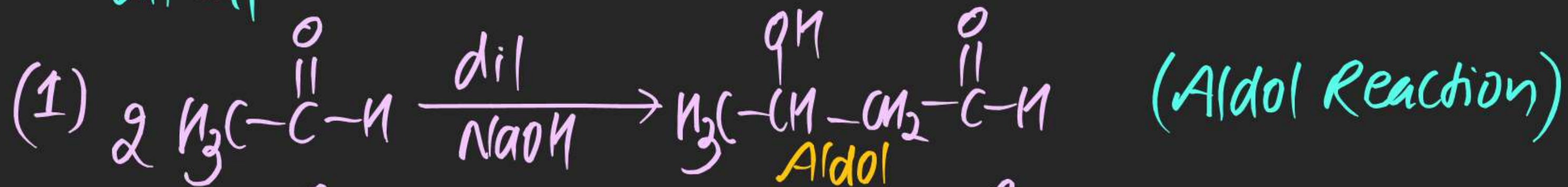
Ex: Carbonyl compound with " α " H



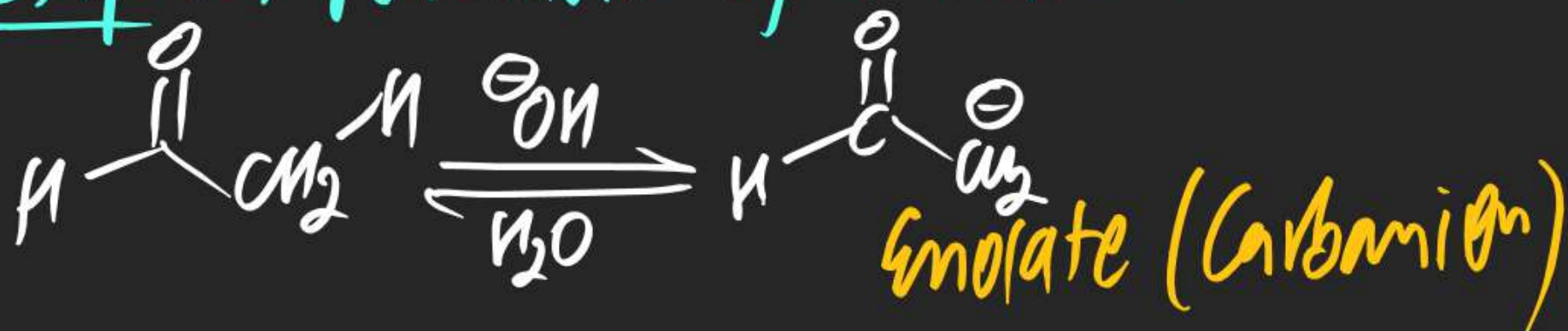
\Rightarrow Aldol Rxⁿ can be catalysed BOTH By Acid & Base

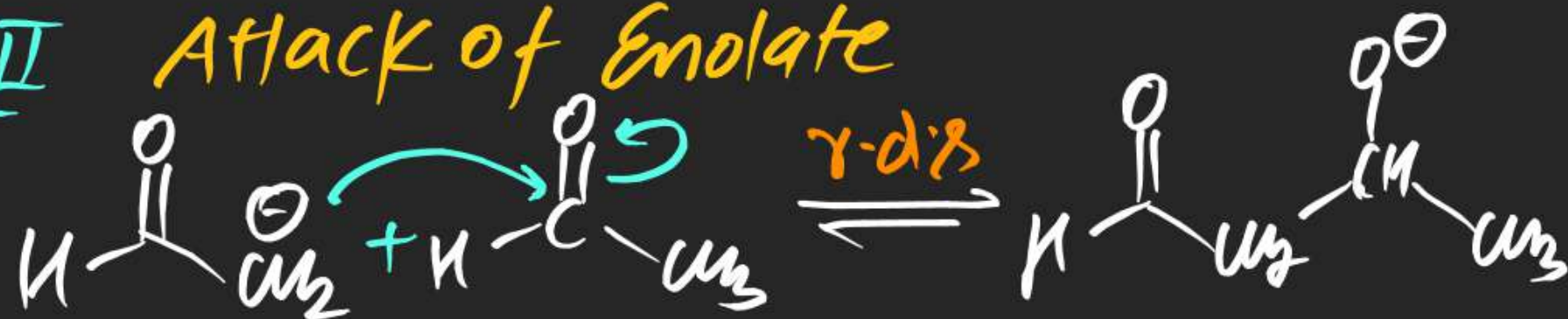
Base Catalysed Aldol:

\Rightarrow whenever Carbonyl Compound with " α " H is treated with dil alkali Aldol is obtained as a Product



mechⁿ: Step-I: Formation of Enolate ion



Step-II Attack of EnolateStep-III ProtonationStep-IV: DeprotonationStep-V Elimination

Note (i) Carbanion (Enolate) Intermediate

(ii) Step-II (Attack of enolate) is r.d.s

(iii) Alkali ofently used in Aldol Rxⁿ

dil NaOH

dil KOH

**** Ba(OH)₂**

Aq. K₂CO₃

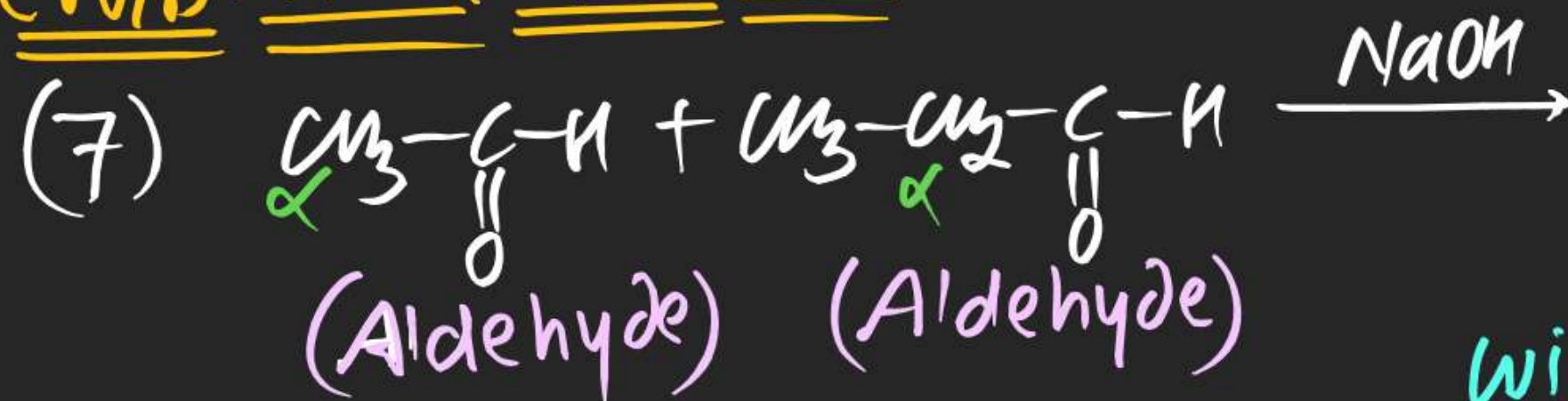
Aq. Na₂CO₃

(iv) Aldol of ketone is highly Reversible & usually Carried out in Ba(OH)₂, which helps in separation of Aldol of ketone.





Cross Aldol Reaction:

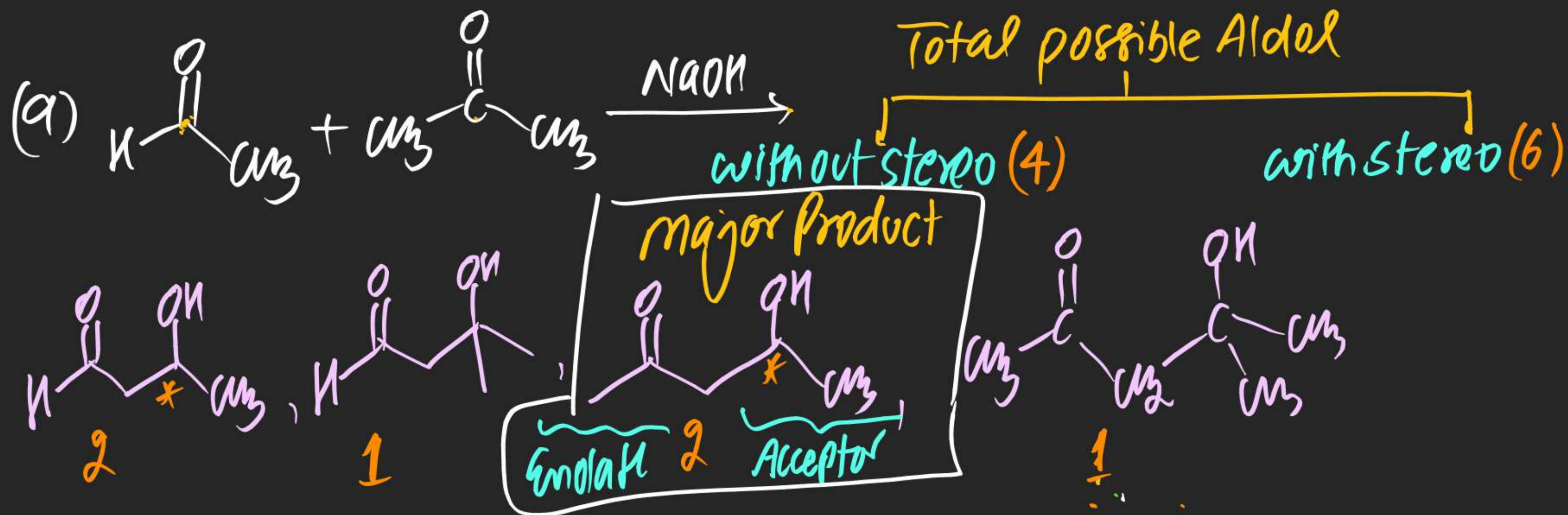
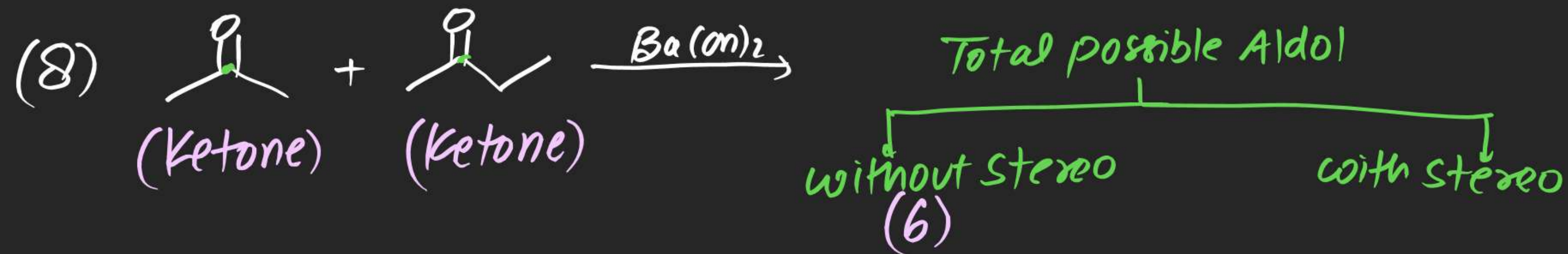


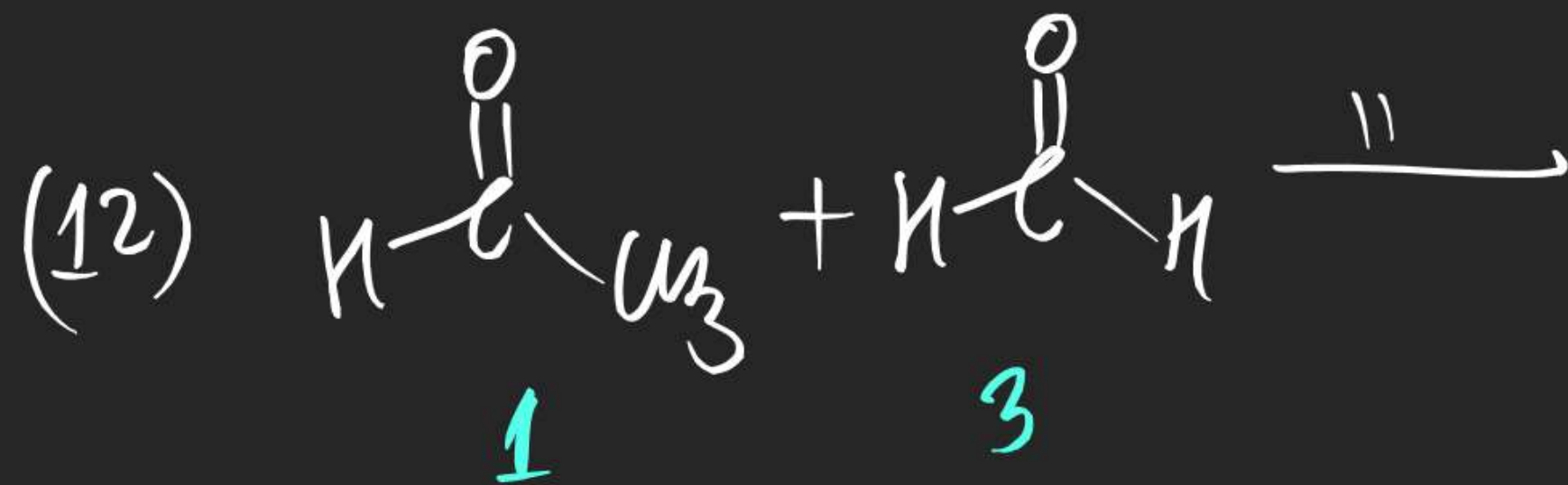
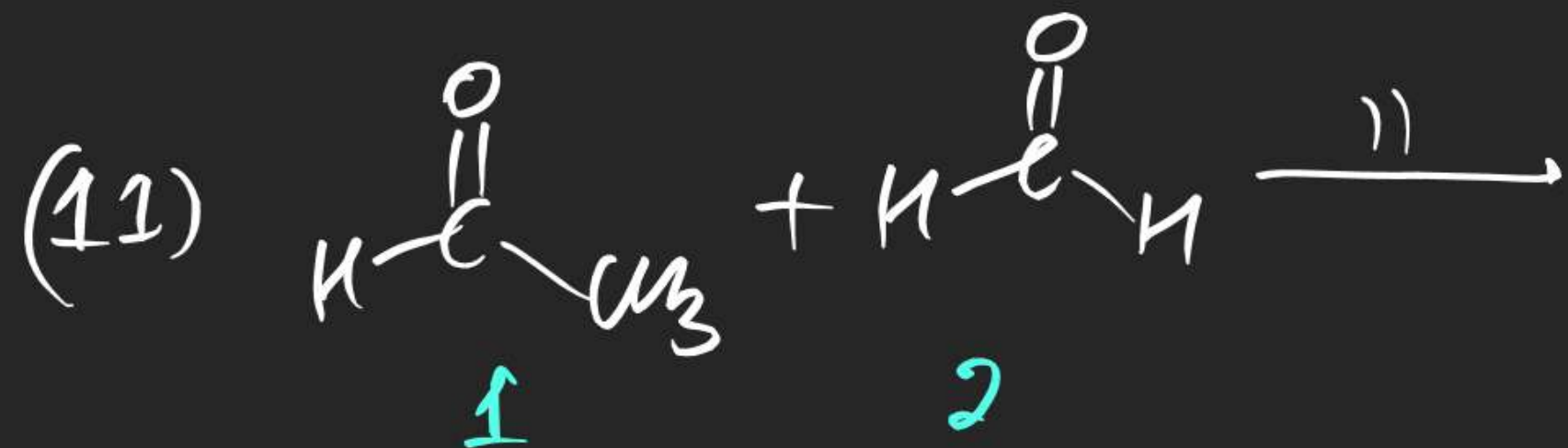
Total possible Aldol

without
Stereoisomerism

(4)

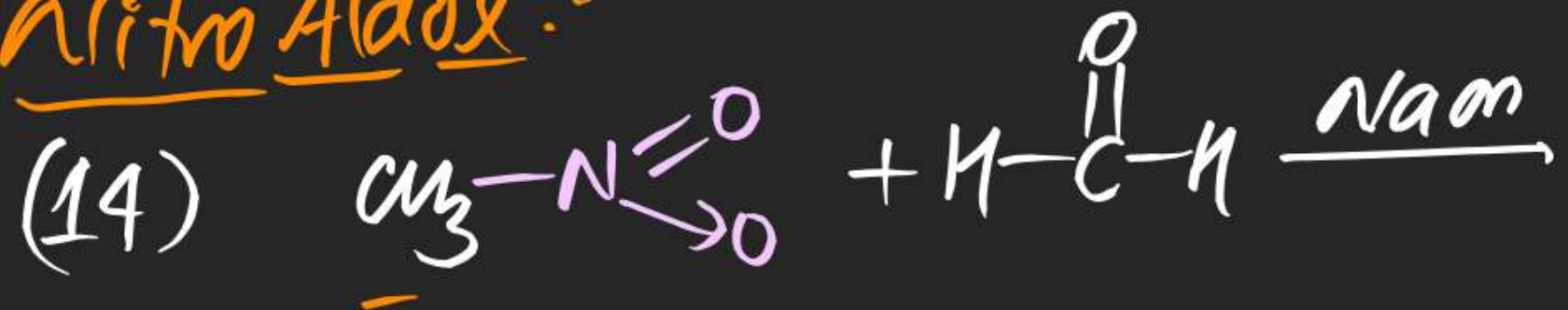
with Stereo-
Isomerism







Nitro Aldol:-



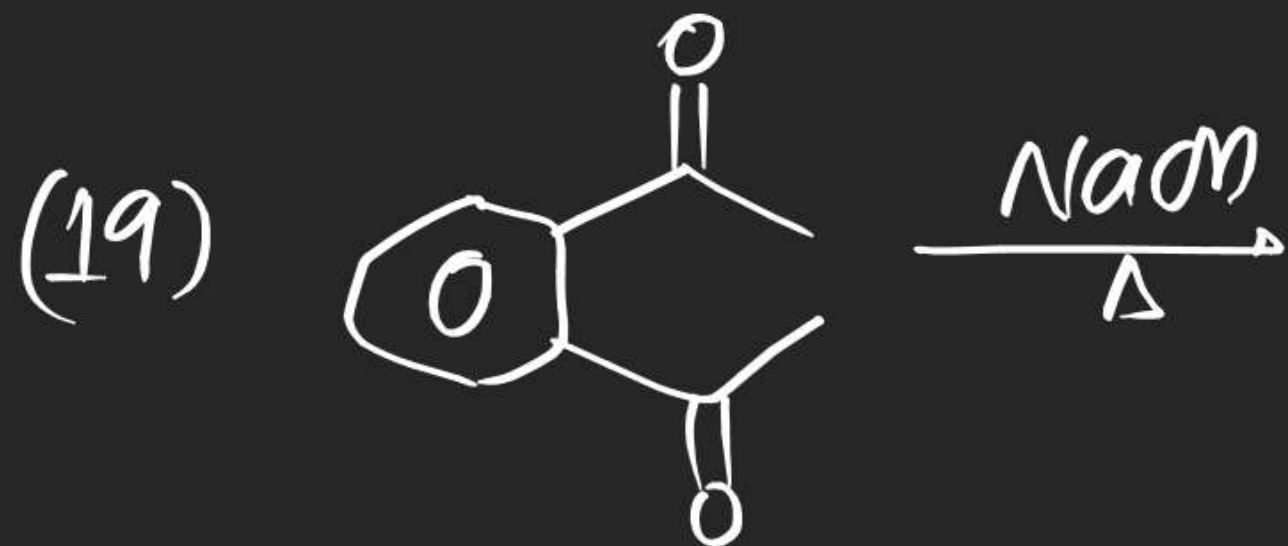
Cyano Aldol

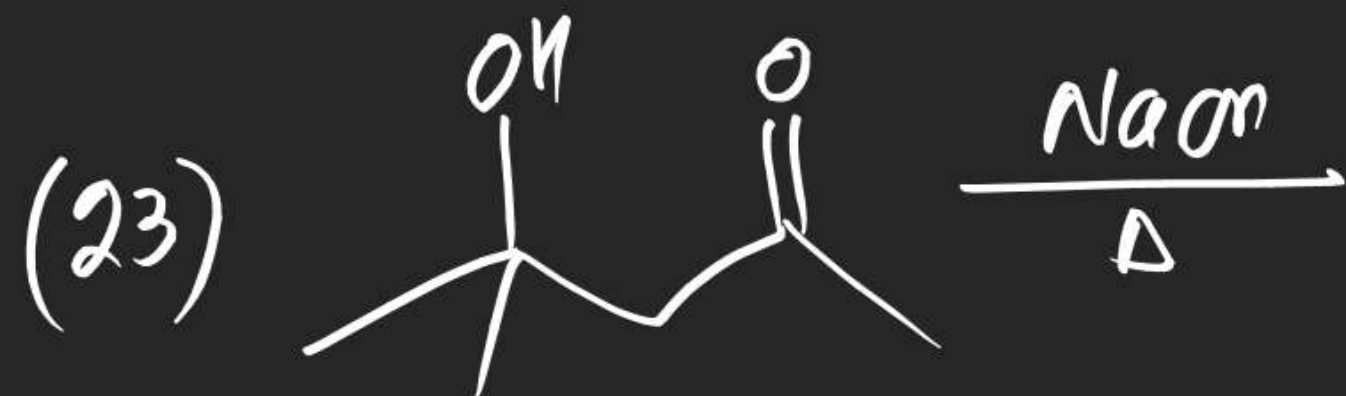
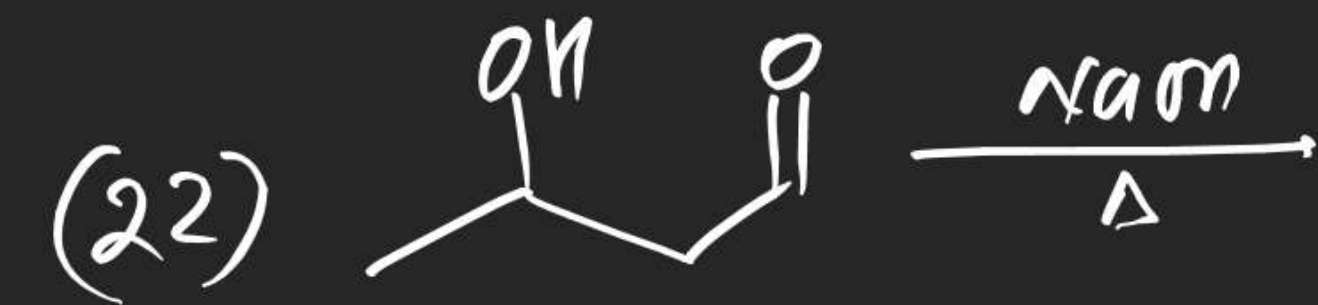
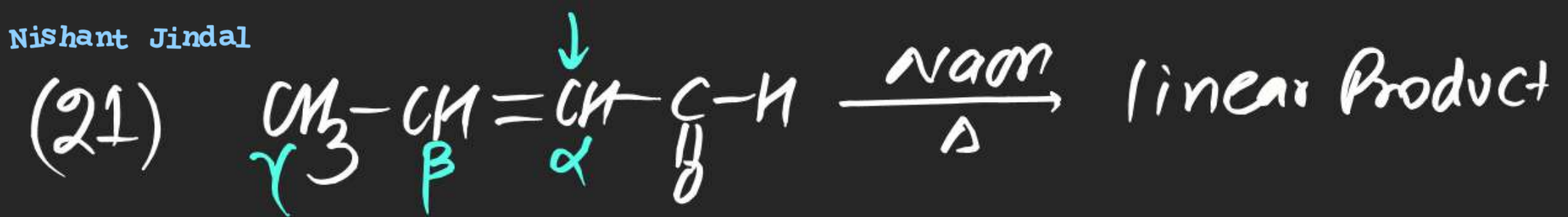


Intramolecular Aldol:

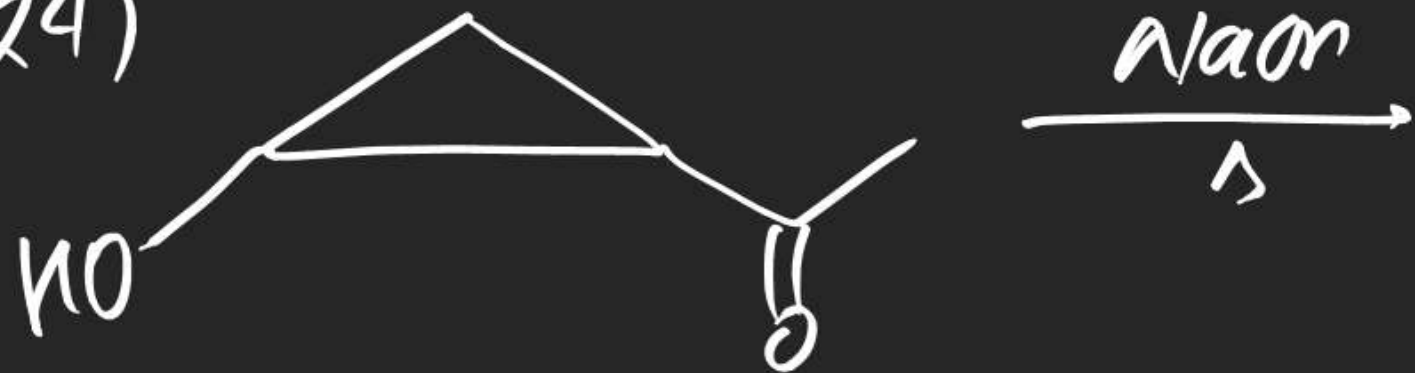
⇒ di Carbonyl compound may undergo Intramolecular Aldol only when 5 or 6 membered ring is formed



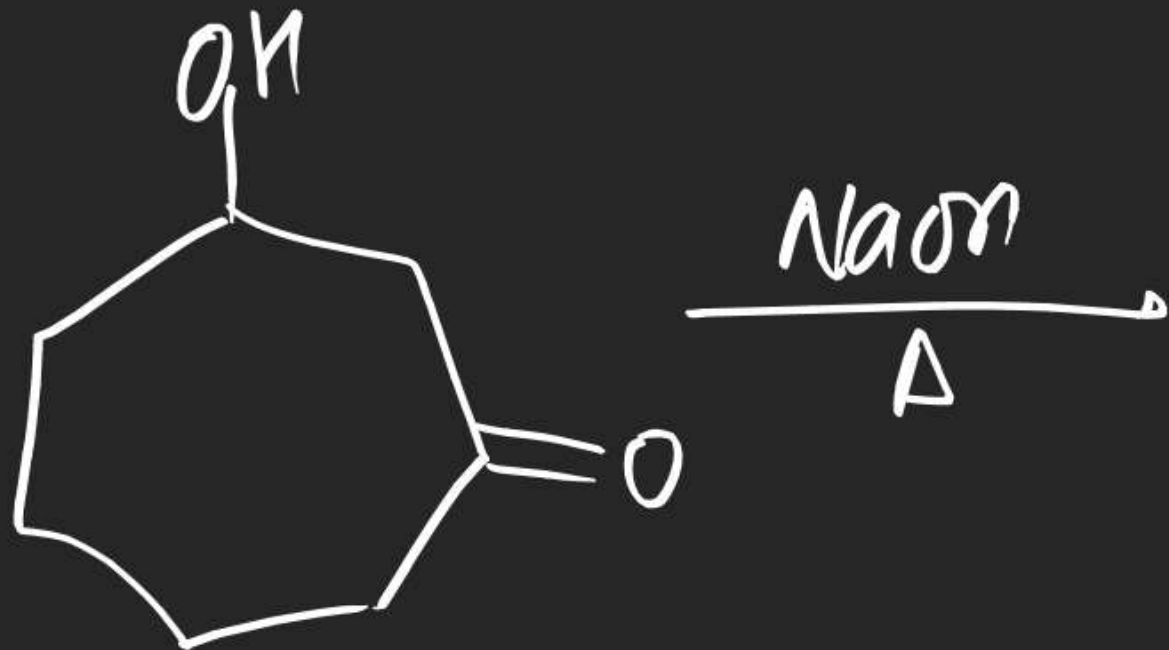




(24)



(25)



(#) Retro Aldol:-



(#) Acid-Catalysed Aldol:-