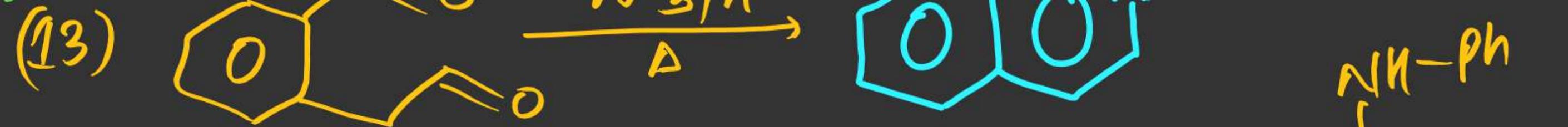


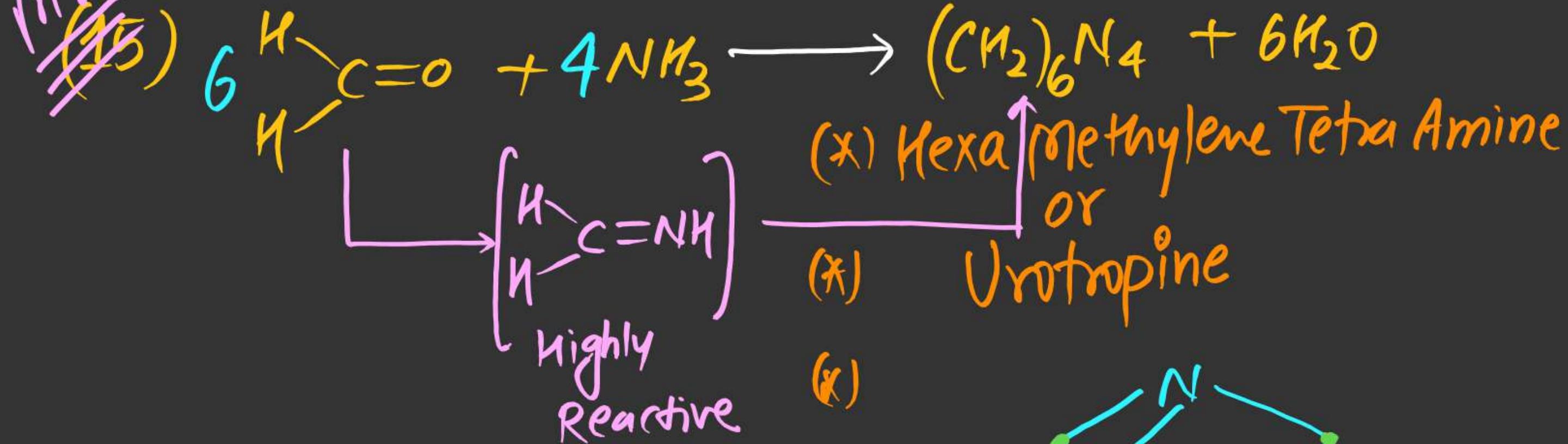


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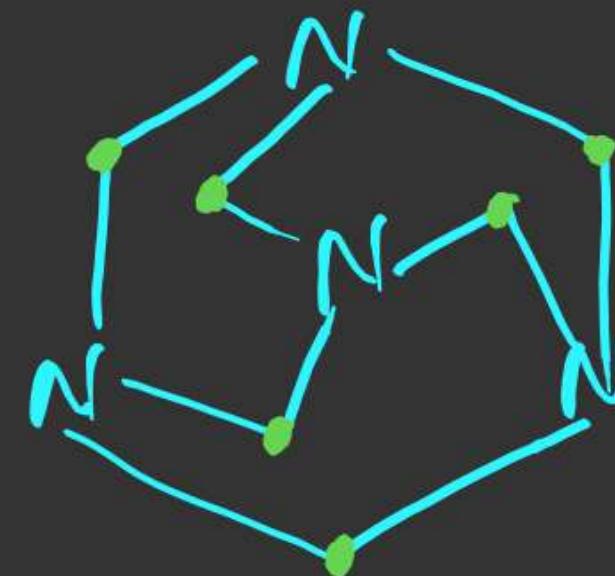


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M.F. ~~(15)~~

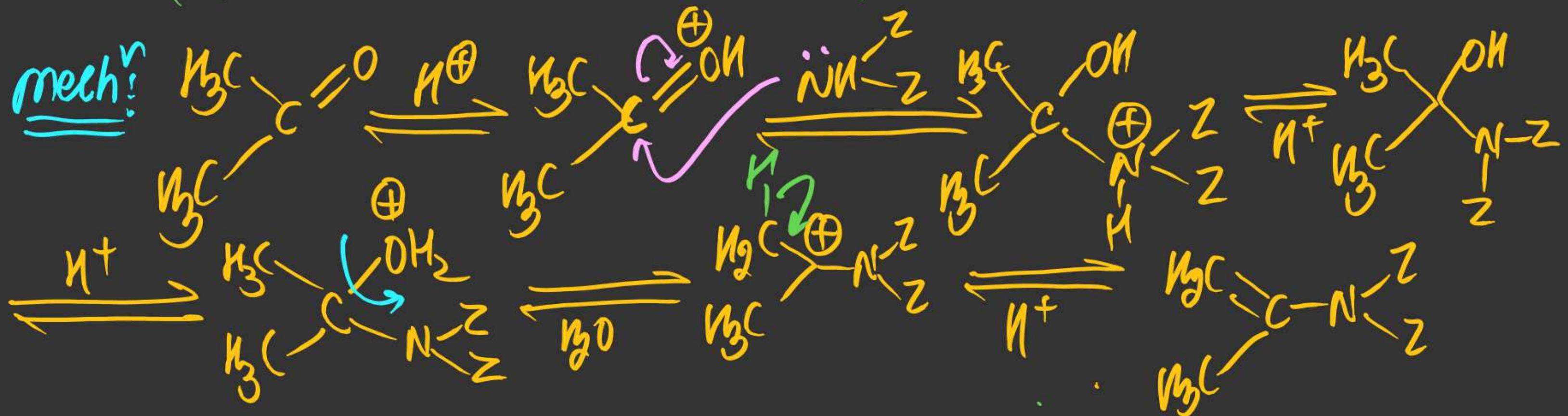
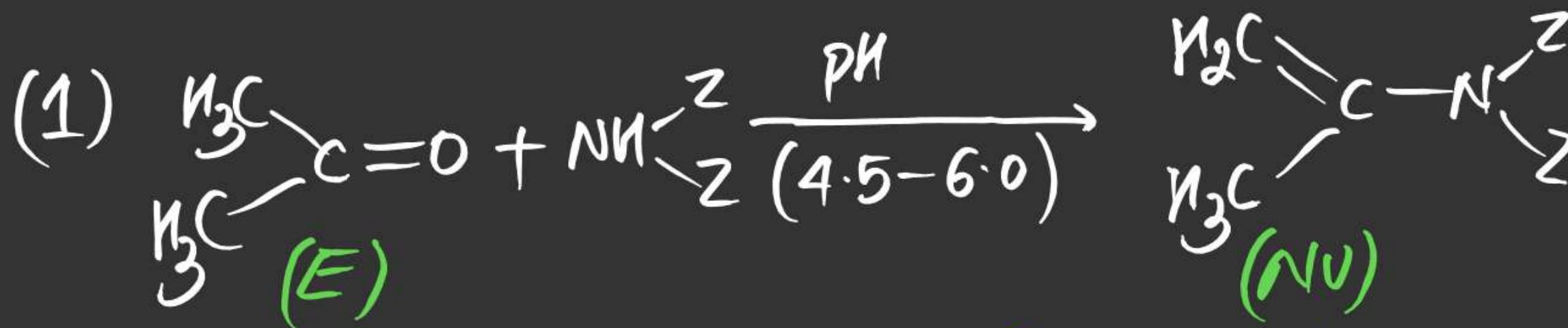


(x)



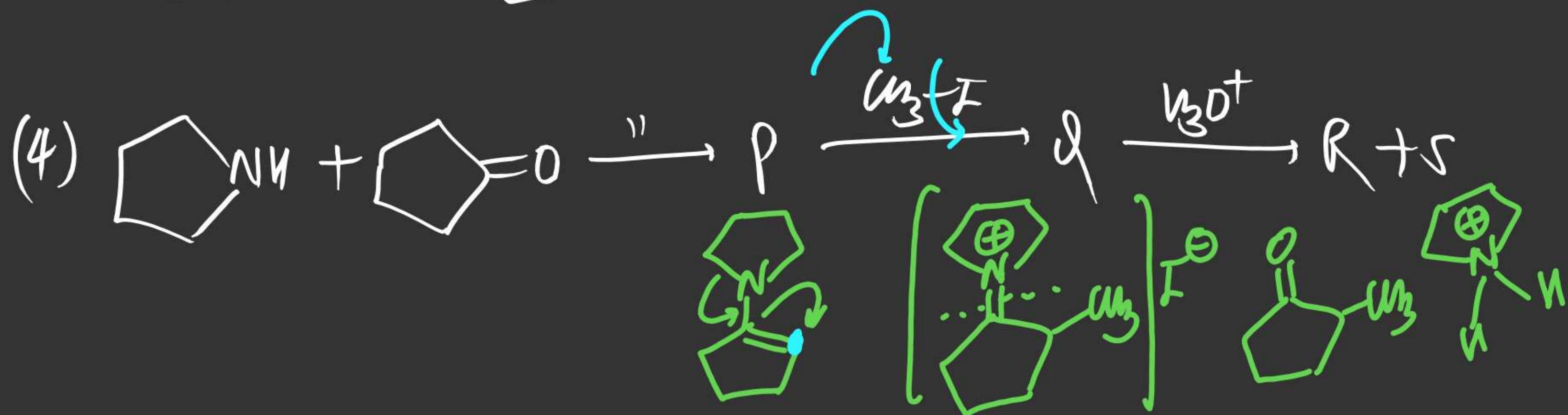
(#) Rxn of Sec. Amine $\text{HN}=\text{Z}$ with C=O :

$\Rightarrow \text{Rxn b/w } \text{C=O} \text{ & Sec. Amine Enamine is obtained as a Product.}$



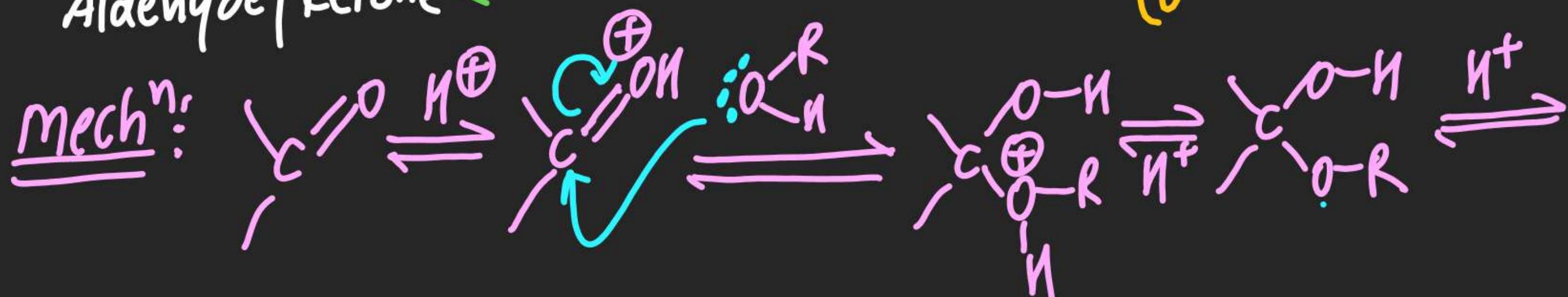
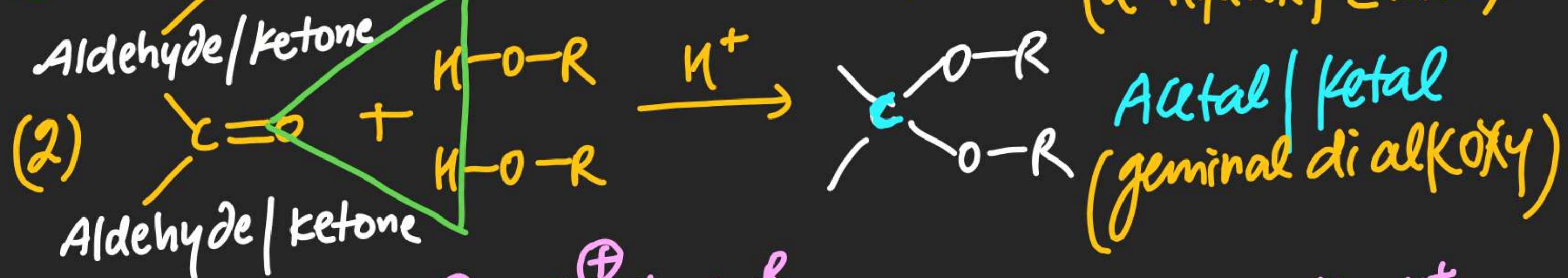
Note (i) Carbocation int

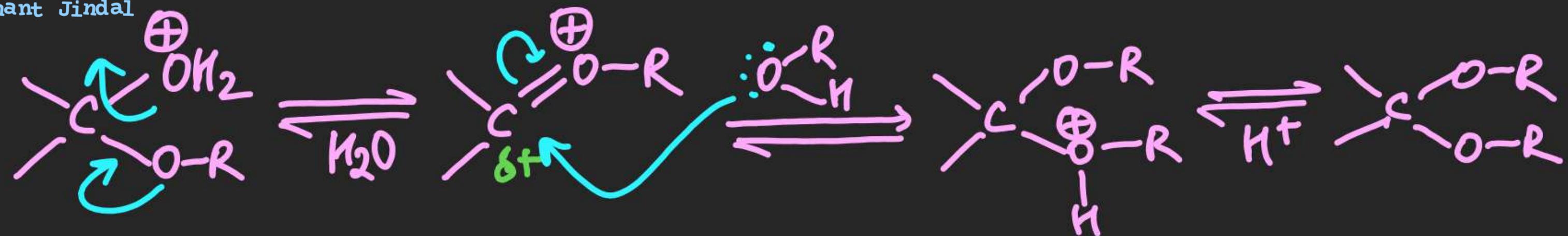
(ii) Nucleophilic product is obtained



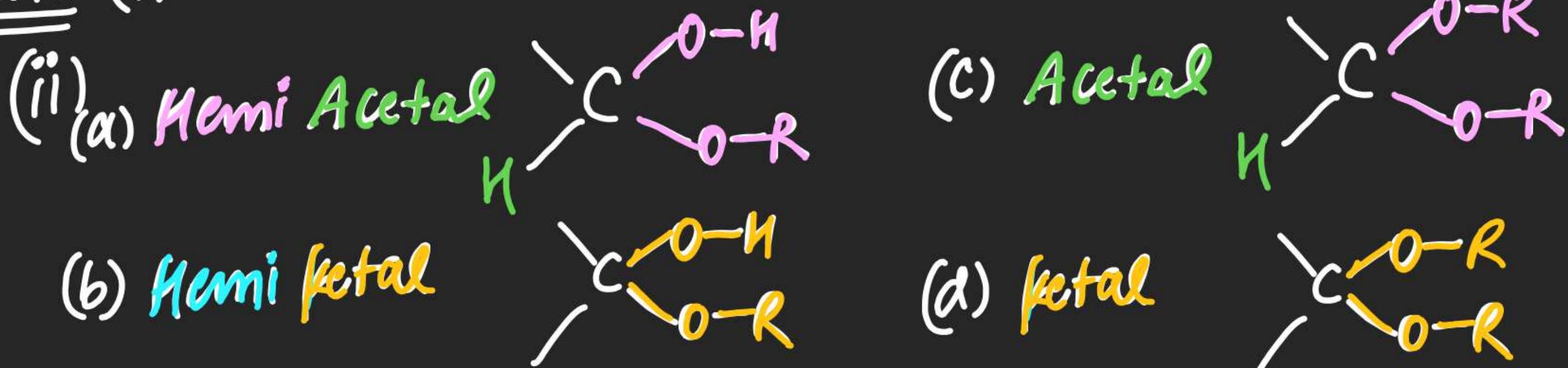
(#) Rxn of R-OH :

⇒ On Reaction of C=O & Alcohol Hemi Acetal/Hemi Ketal or Acetal/Ketal is obtained as a product.





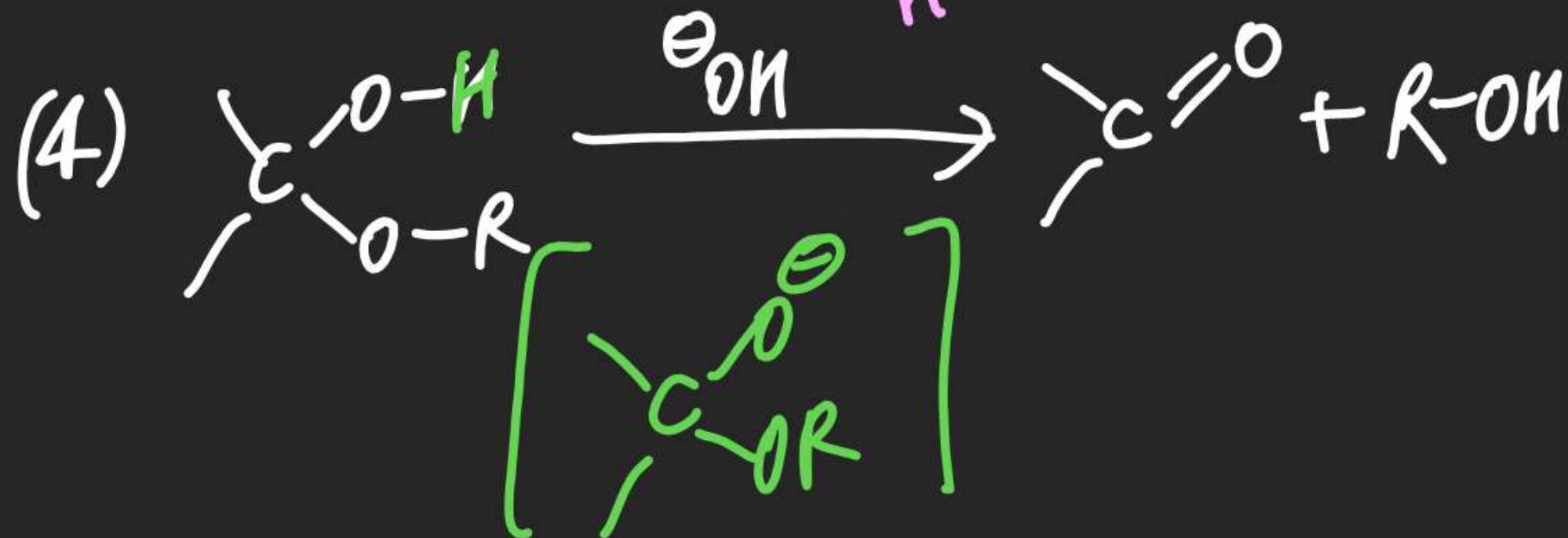
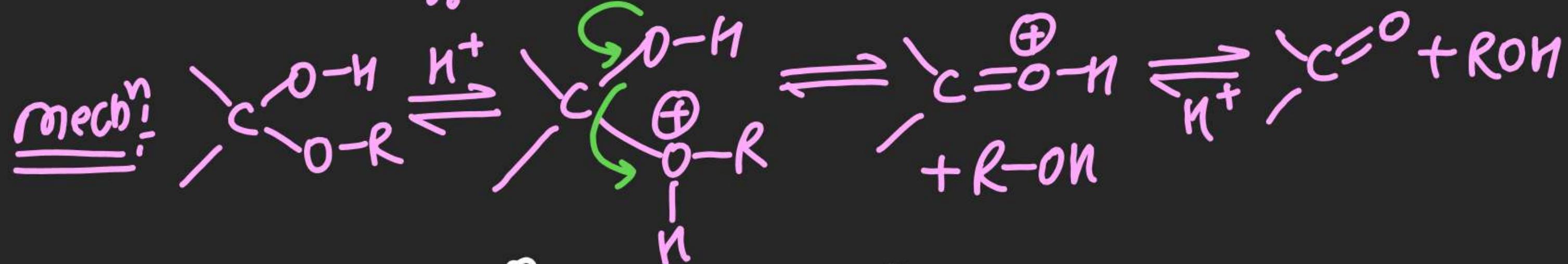
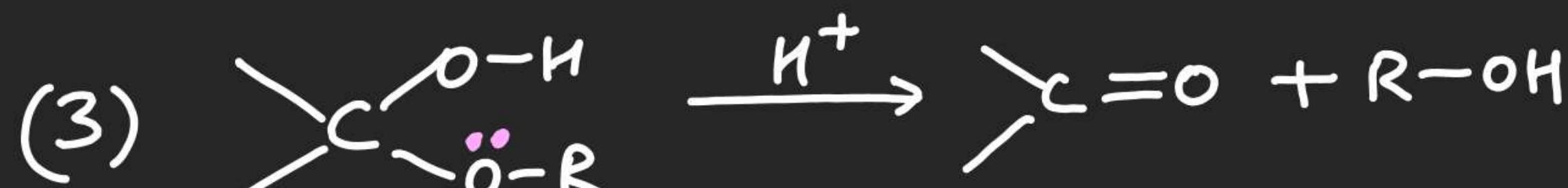
Note (i) Carbo cation Intermediate



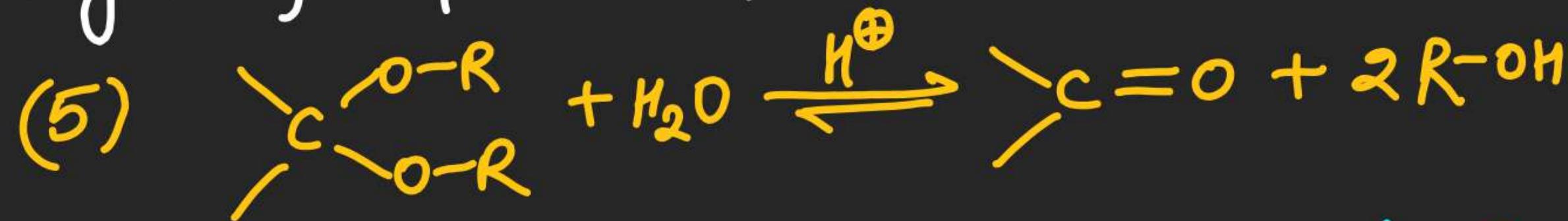
(iii) Reversible Reaction

(iv) Hemi Acetal or Hemi Ketal Both are highly unstable in Acidic

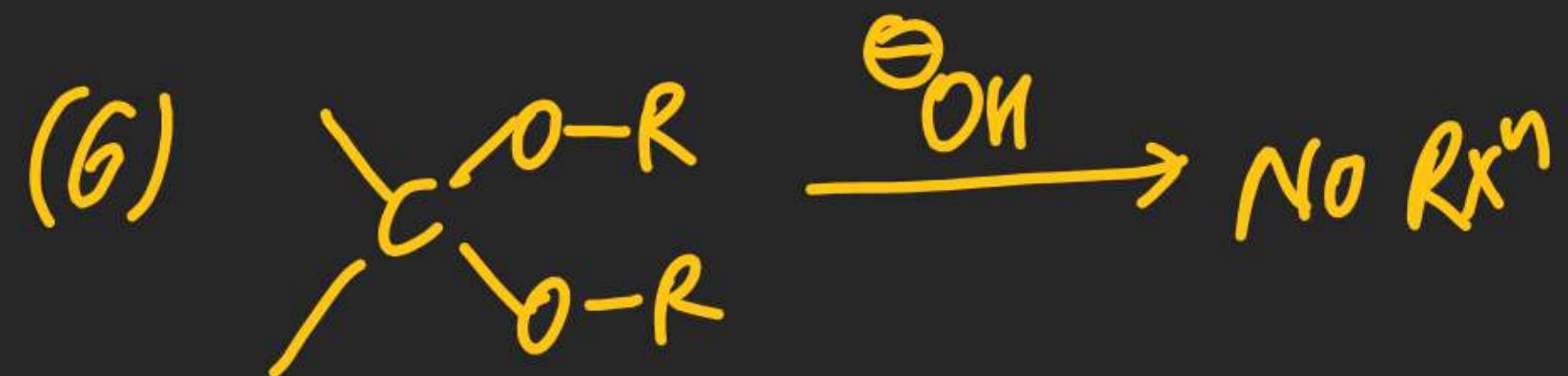
as well as in Basic Condition & gets decomposed into
 C=O & Alcohol.



(v) Acetal & Ketal Both are highly unstable in Acidic Condition
 & gets hydrolysed into C=O & Alcohol.

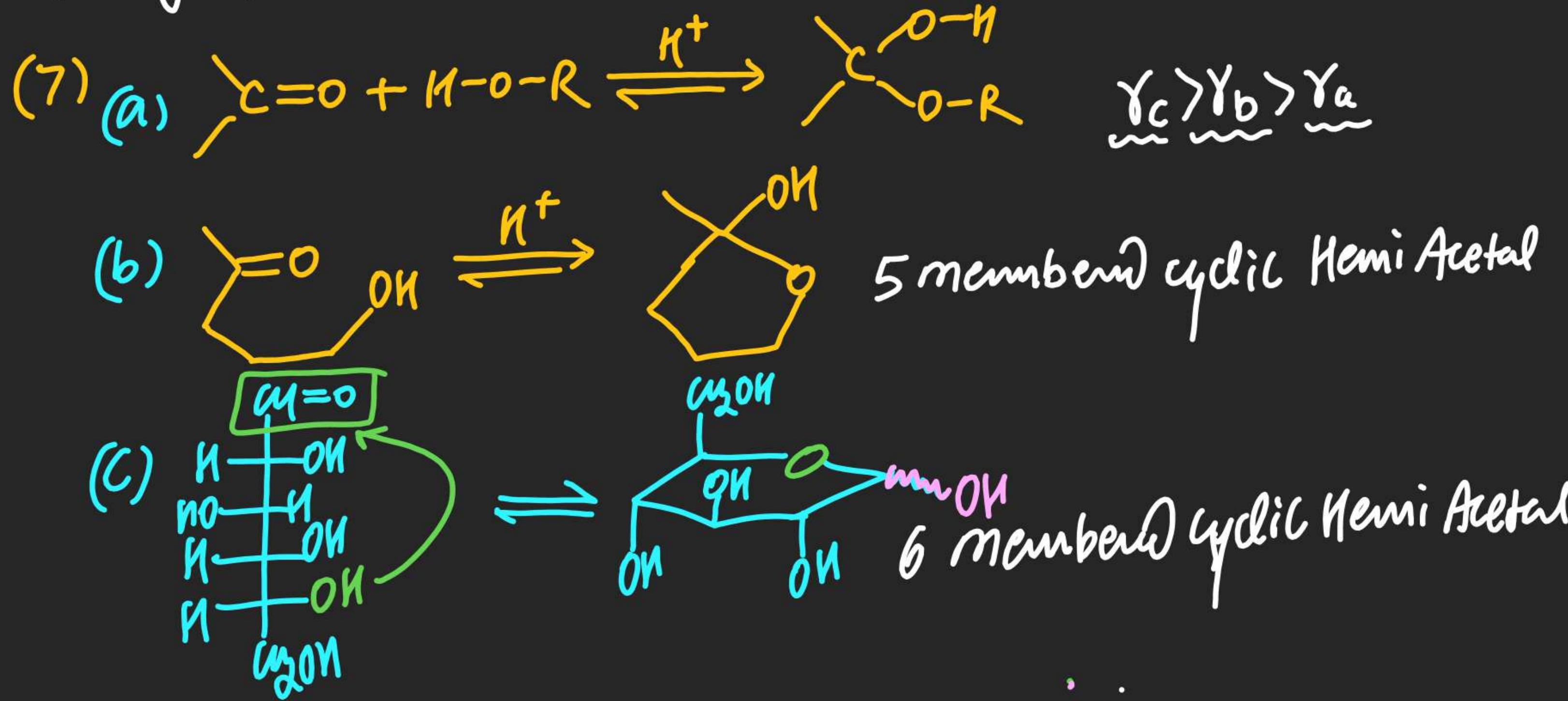


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 (vii) Acetal & Ketal Both are highly Stable in Basic Condition

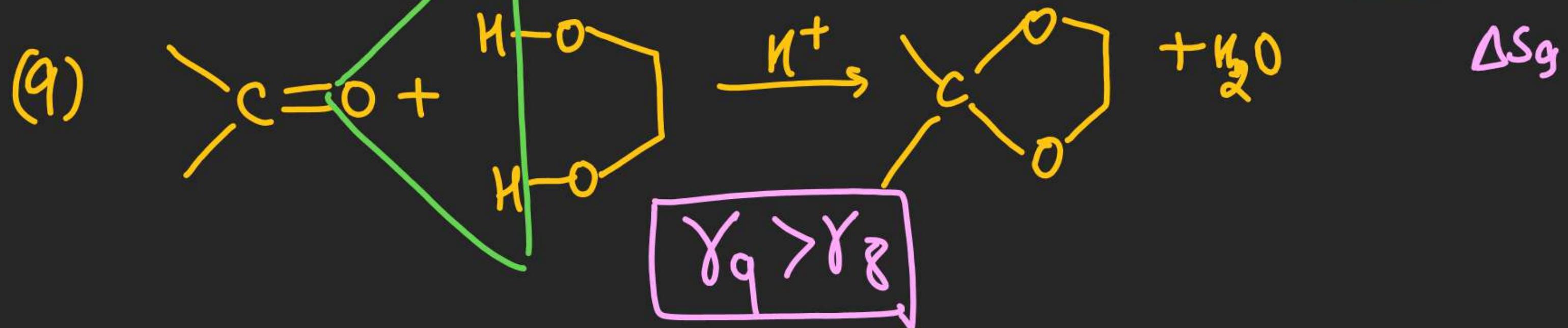
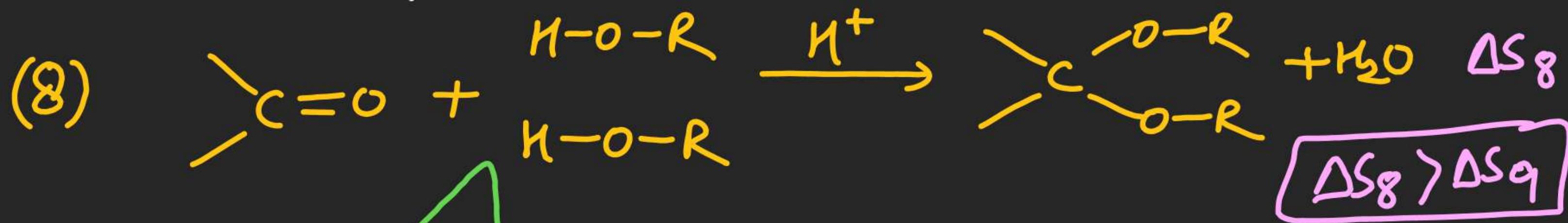


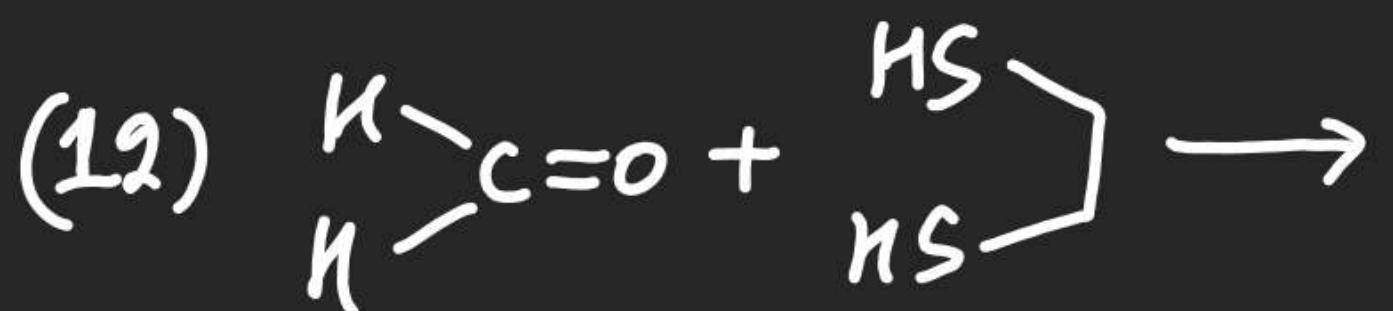
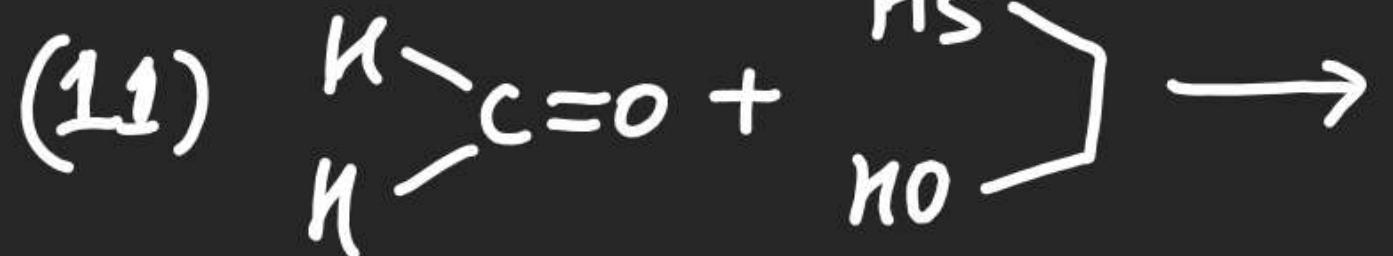
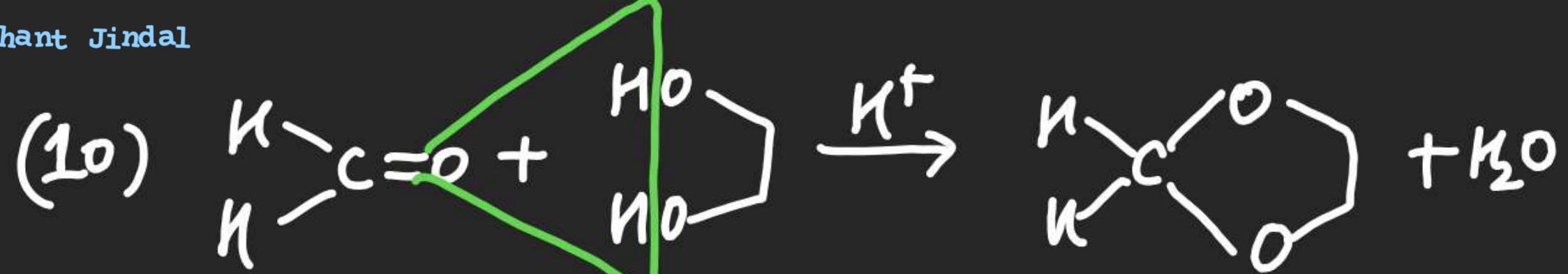
(vii) Formation of Cyclic Hemiacetal or Hemiketal if m/e

preferred over acyclic Hemi Acetal/Hemi Ketal formation if Ring size is 5 or 6 members.

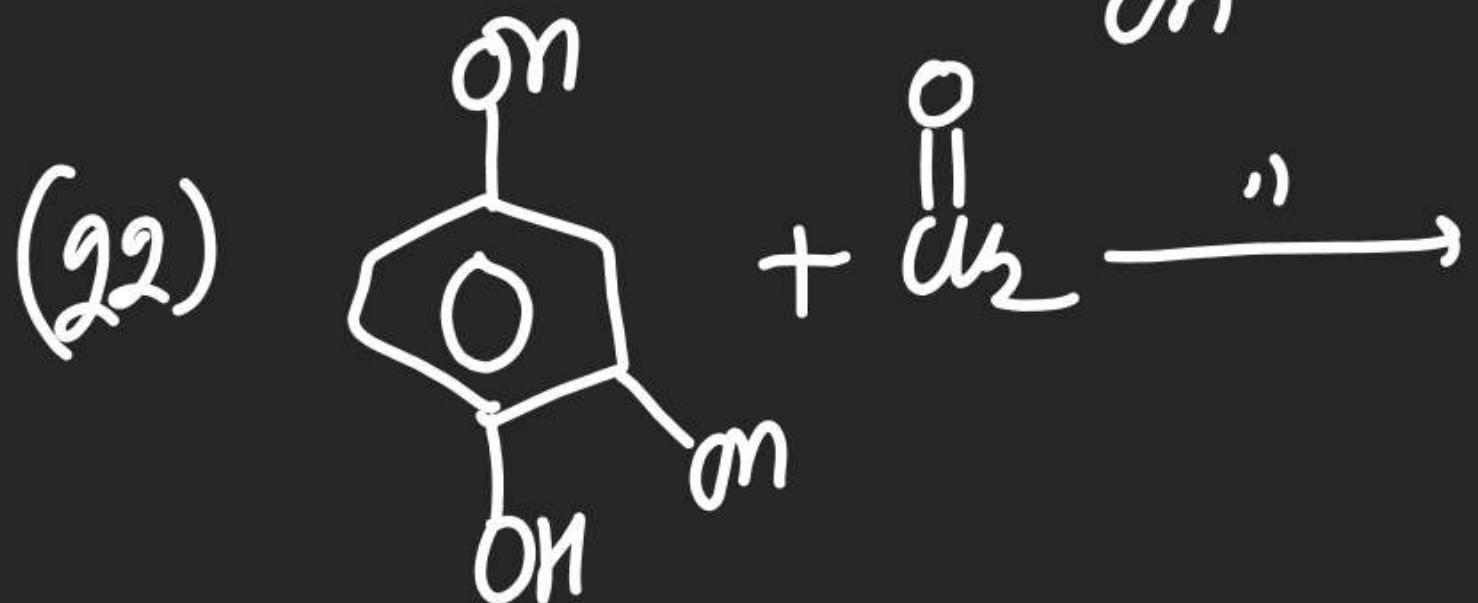
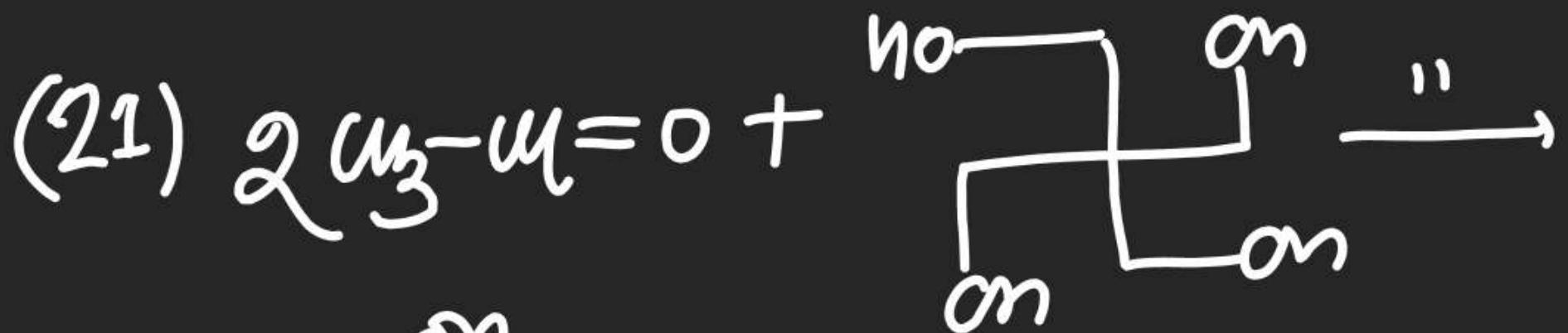
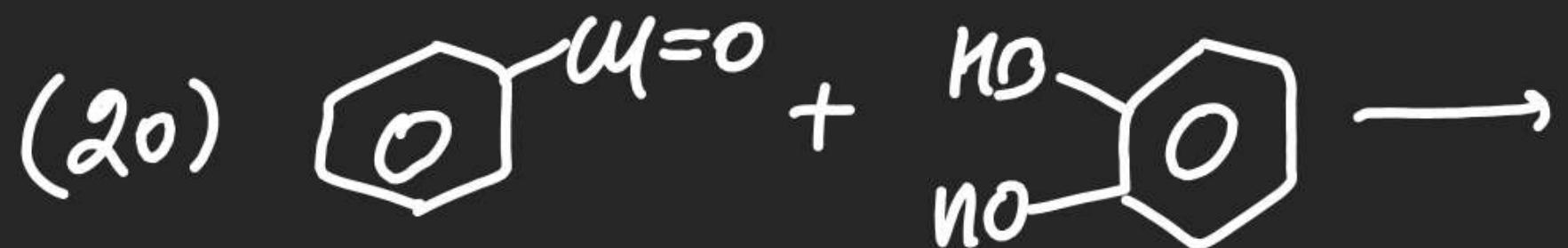
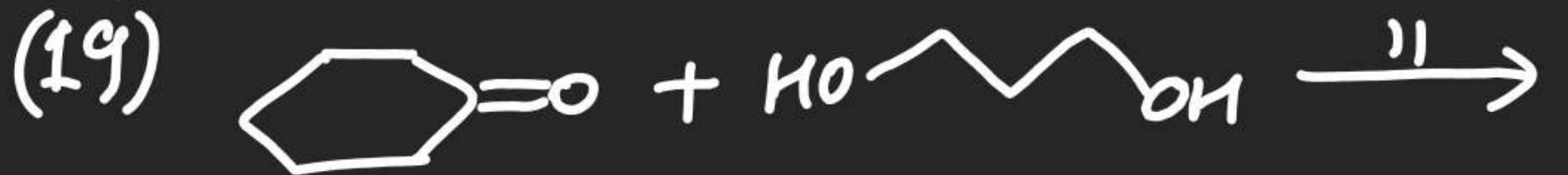


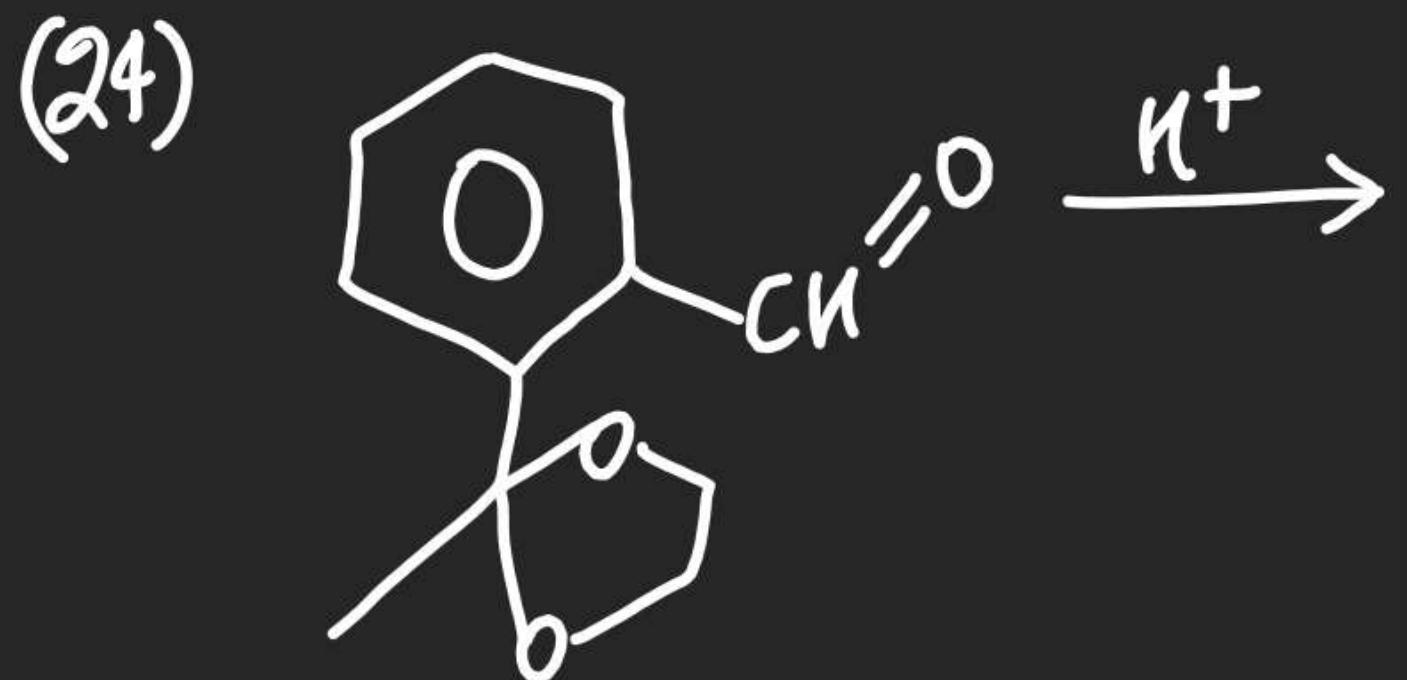
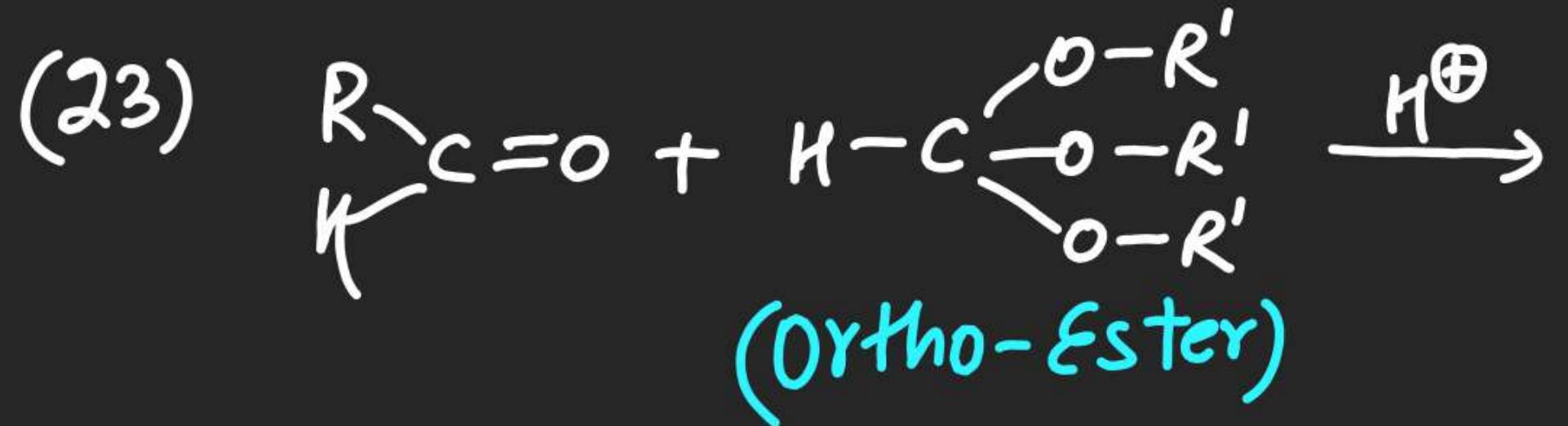
(viii) Formation of 5/6 membered Cyclic Acetal/Ketal.
are more favorable than Acyclic Acetal & Ketal due
to less change in Entropy.











(#) Addition of H-OH // Hydration of C=O // Geminal diol formation:

⇒ on Reaction of C=O & H_2O , geminal diol is obtained as a product.

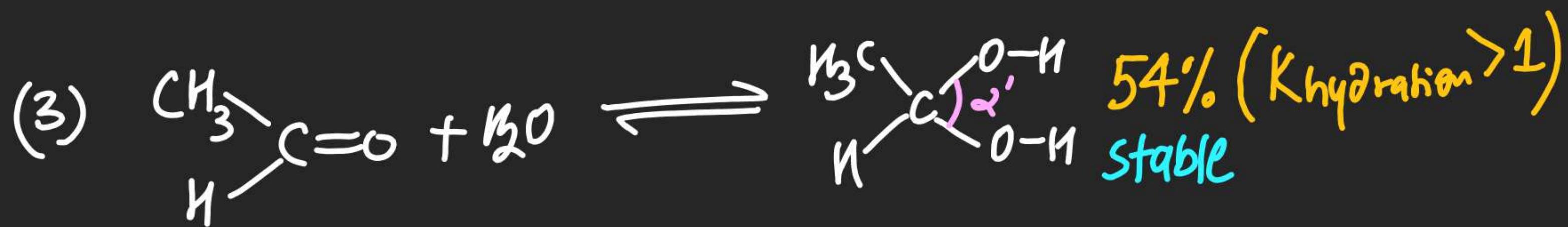
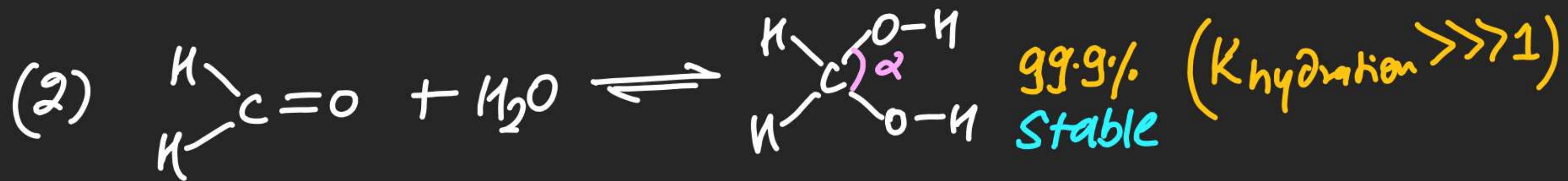


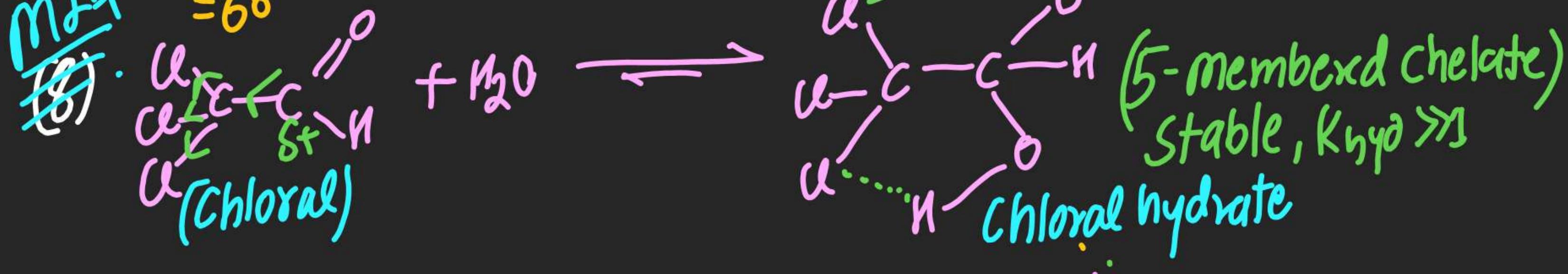
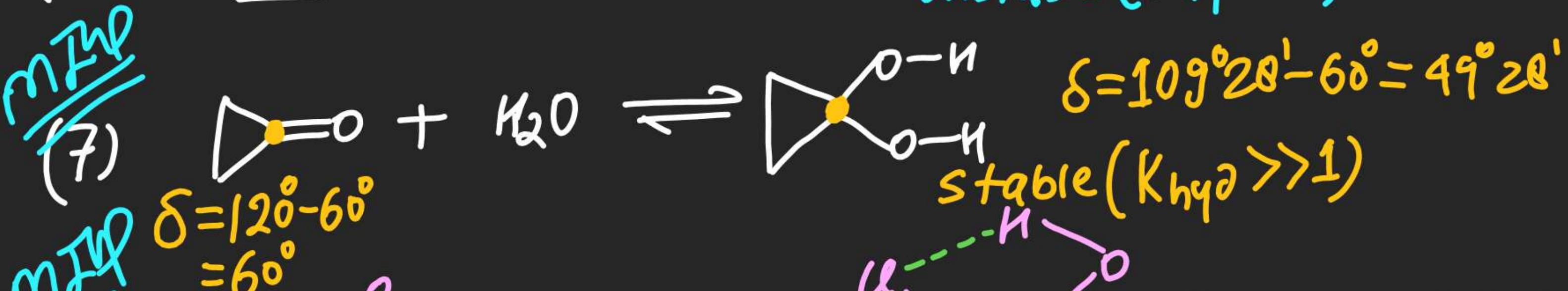
Note (i) $K_{\text{hydration}} = \frac{[\text{Geminal diol}]}{[\text{carbonyl comp}] [\text{H}_2\text{O}]}$

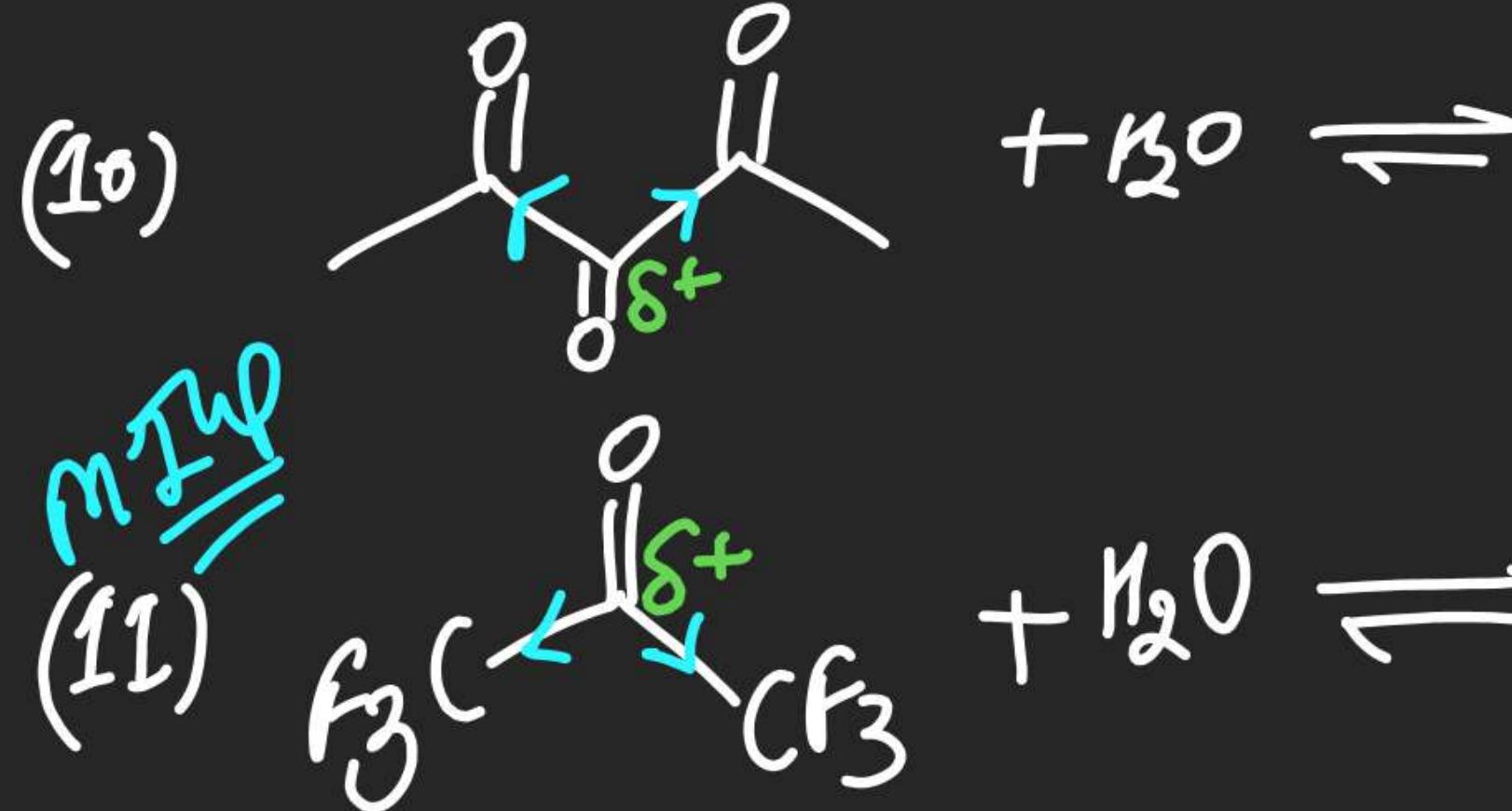
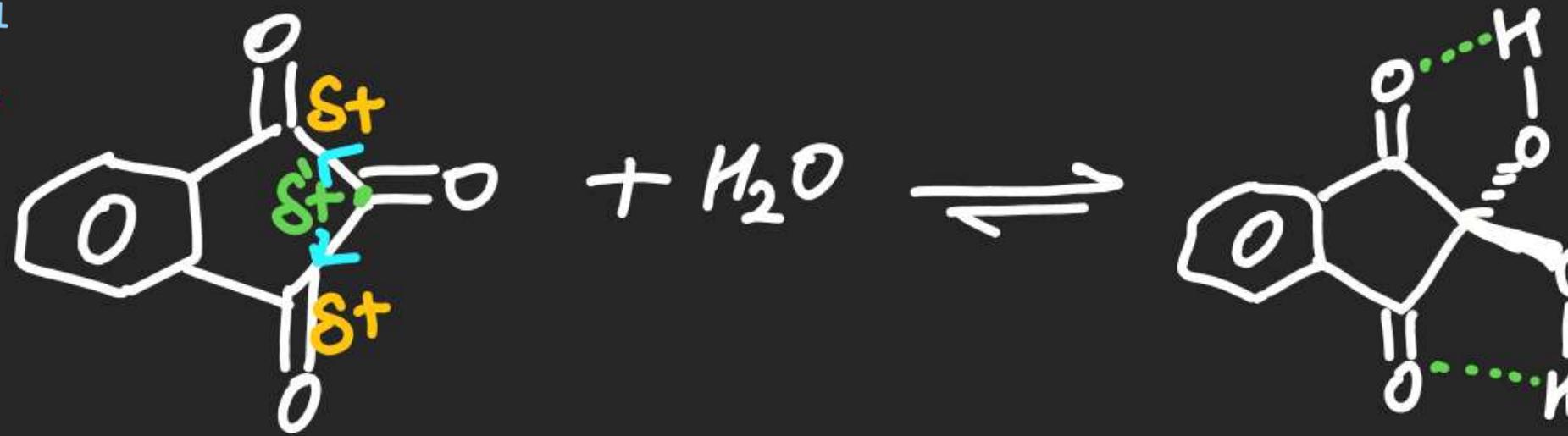
- (ii) Geminal diol would be more stable iff
 (a) Formation of 5/6 membered chelation.

(b) Relief in Angle strain

(c) higher Bond angle b/w two -OH group.

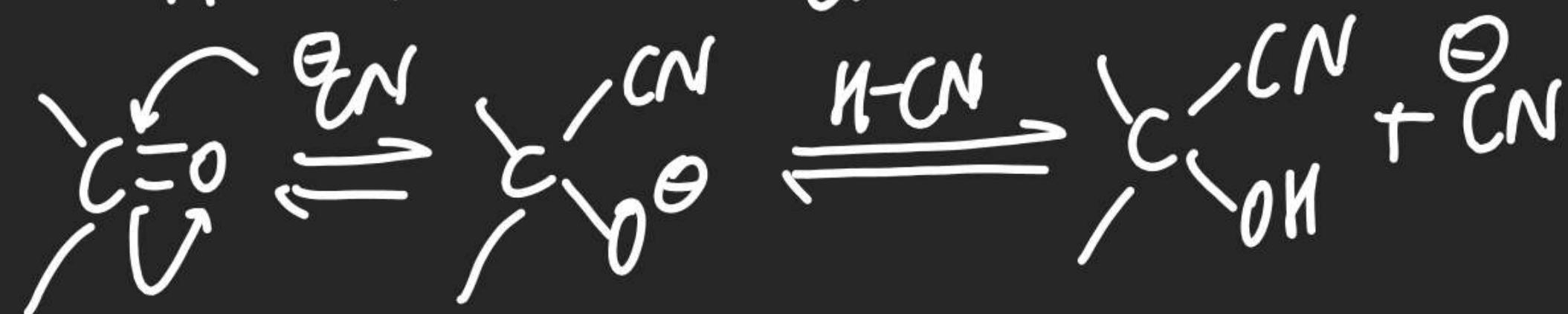
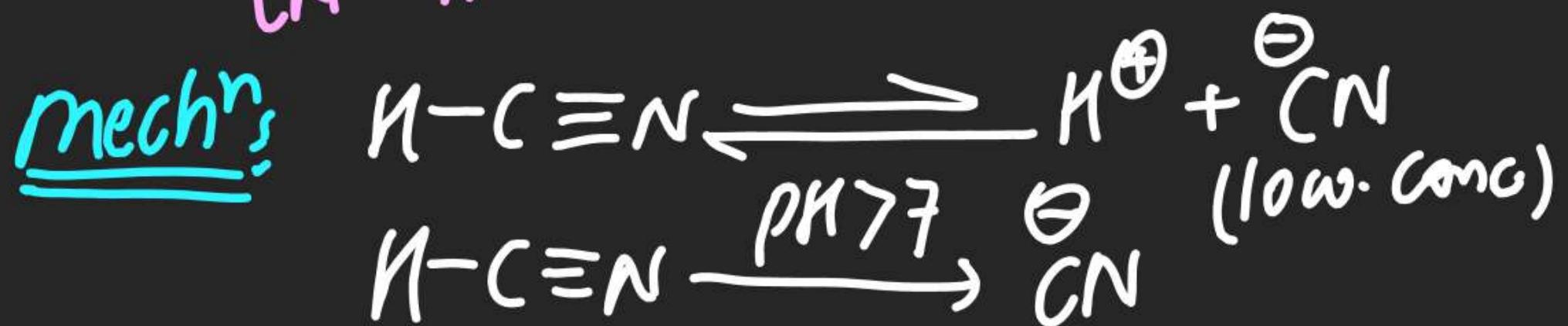
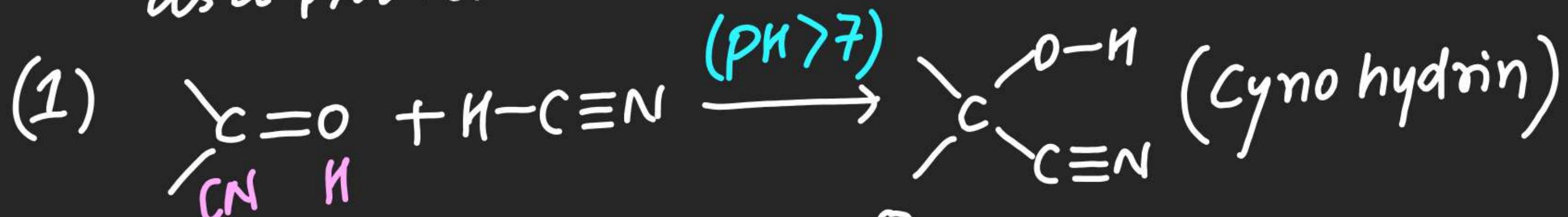




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(#) Addition of HCN!

\Rightarrow C=O Compound on Reaction with HCN gives Cyno hydrin as a product.



Note (i) Basic condn (pH > 7) is used

(ii) Sometimes salt of CN is also used.

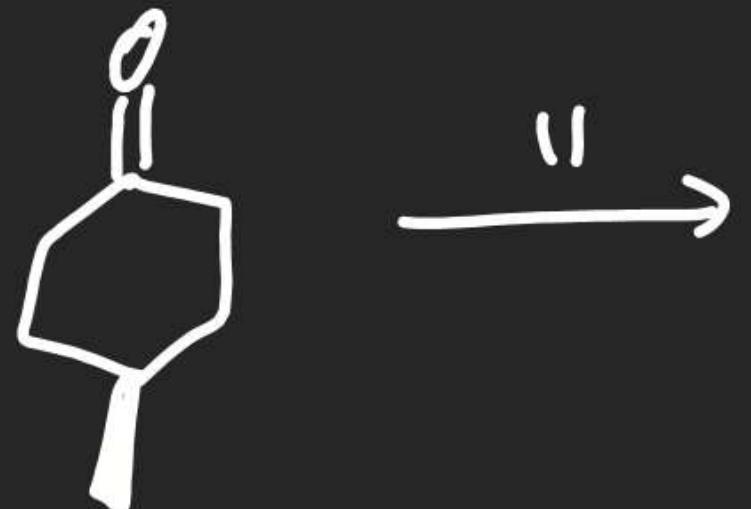
(2)

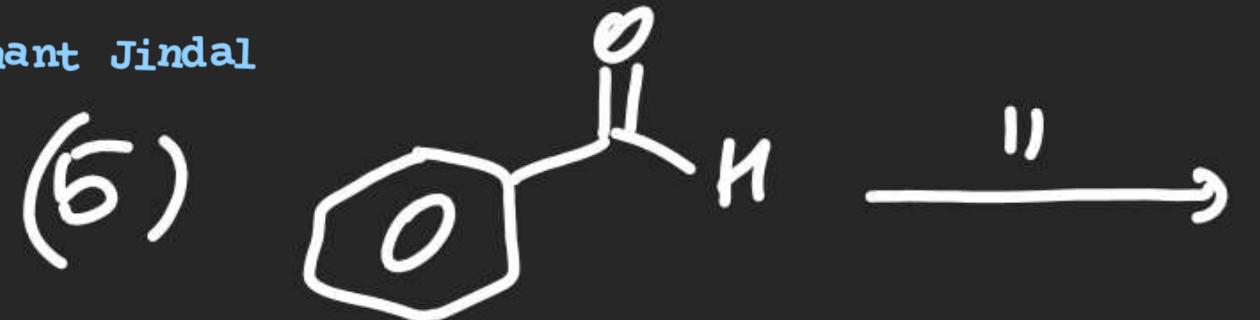


(3)



(4)





(#) Addition of NaHSO_3 :-