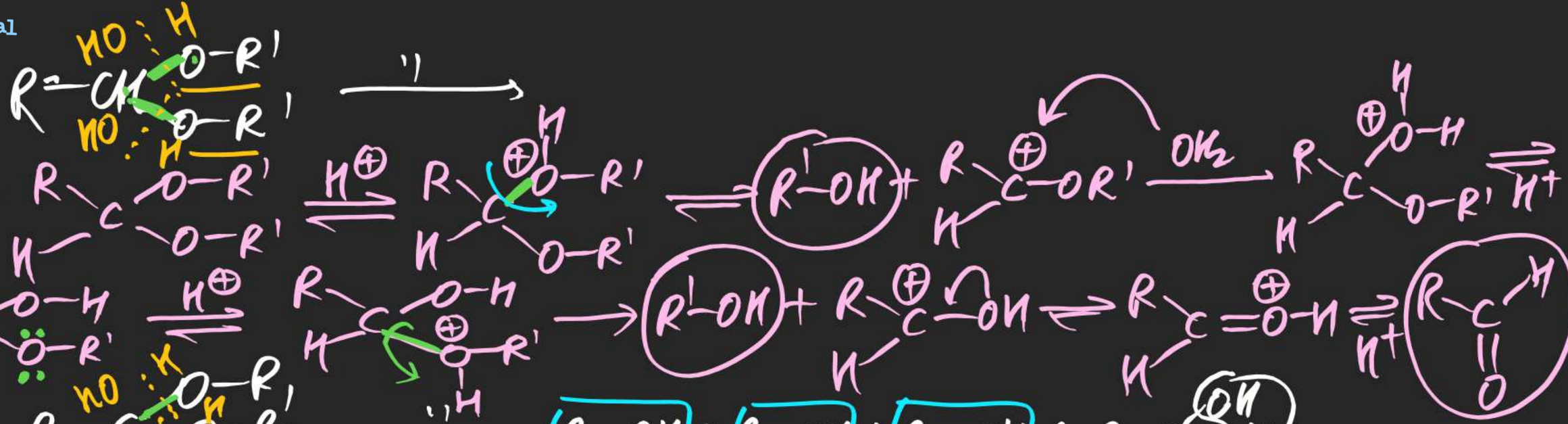
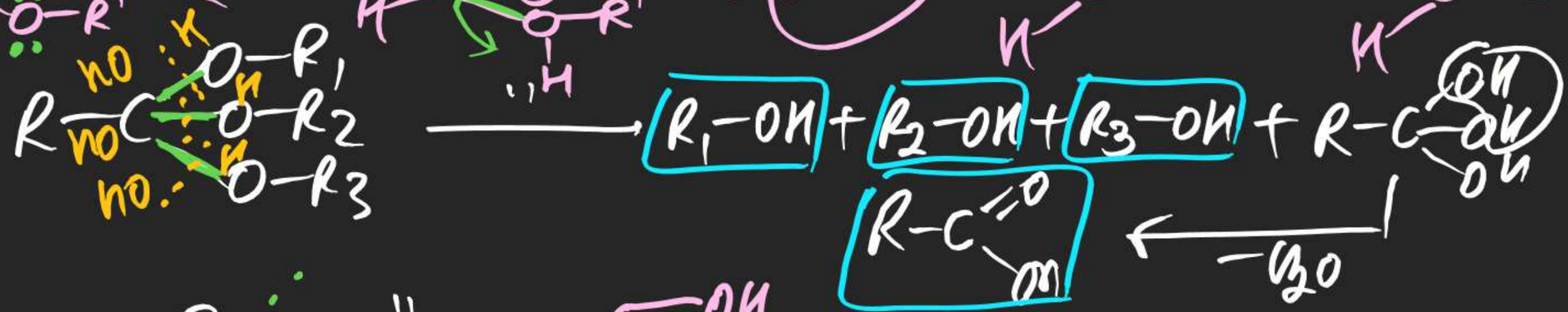
(15)



mechⁿ:

(16)



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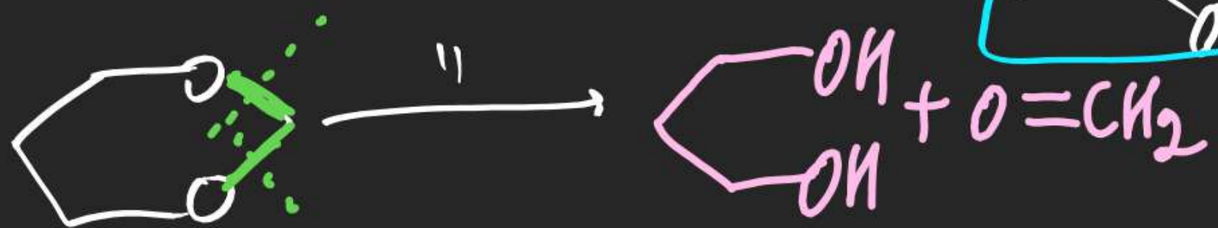

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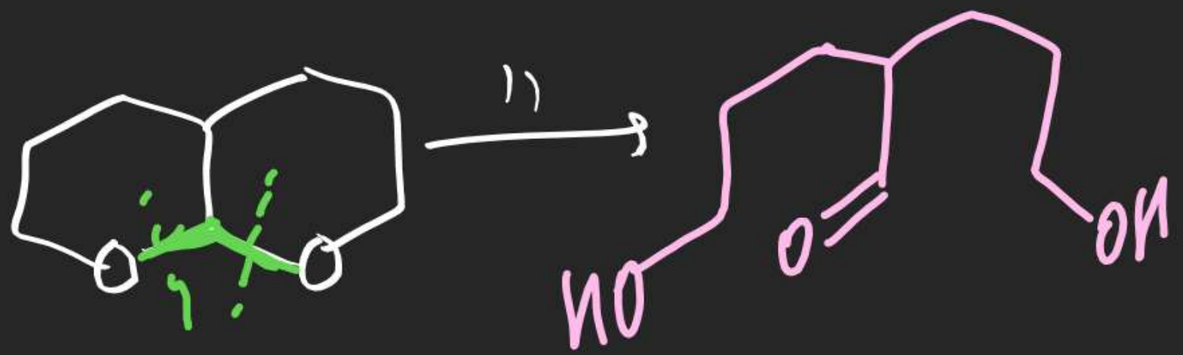

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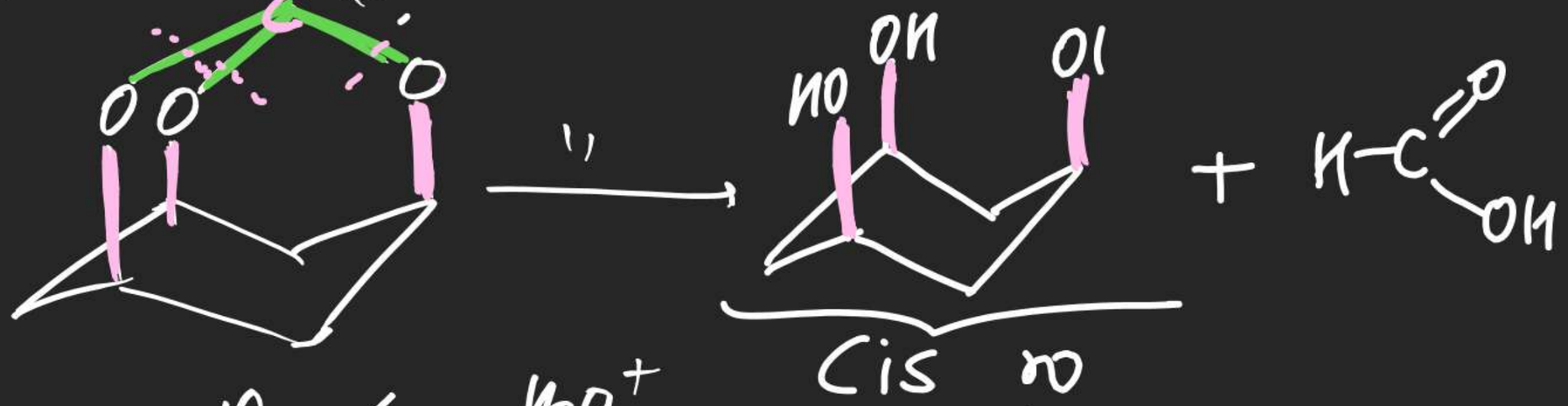
(19)

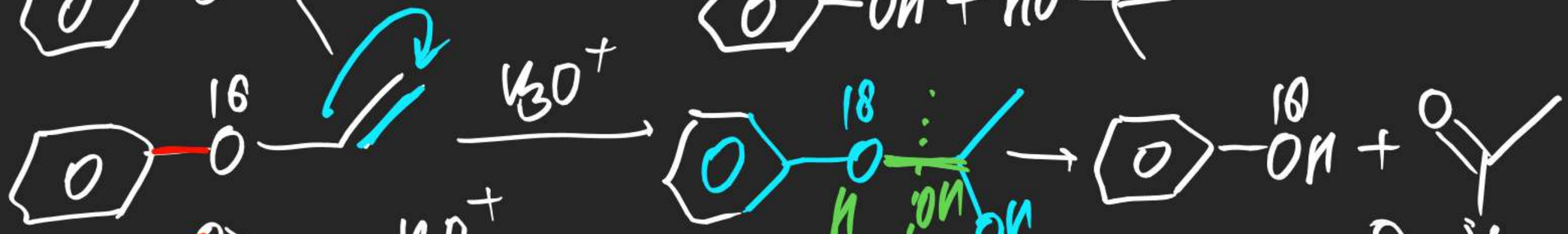
(20)



Cis no

(21)

(22)



(23)

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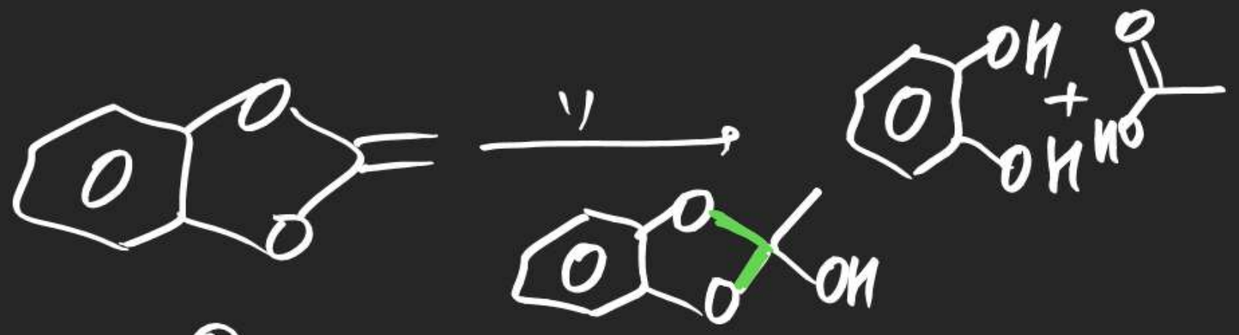
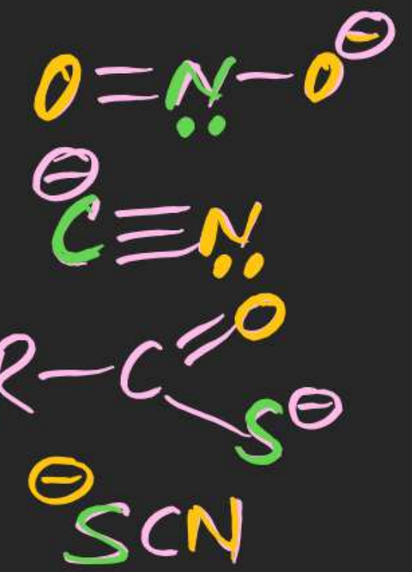
(24) 

(25) 

(#) Ambidentate Nucleophile :-

⇒ Nucleophiles having more than one electron donating sites are known as Ambidentate Nucleophiles

(Ex) :

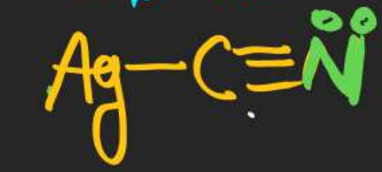


(1) $R-X + NaCN \underset{KCN}{\text{or}} \rightarrow R-CN + R-NC$ (Ma) (Mi)

Na Salts are ionic

(2) $R-X + AgCN \rightarrow R-CN + R-NC$ (Mi) (Ma)

Ag Salts are Covalent



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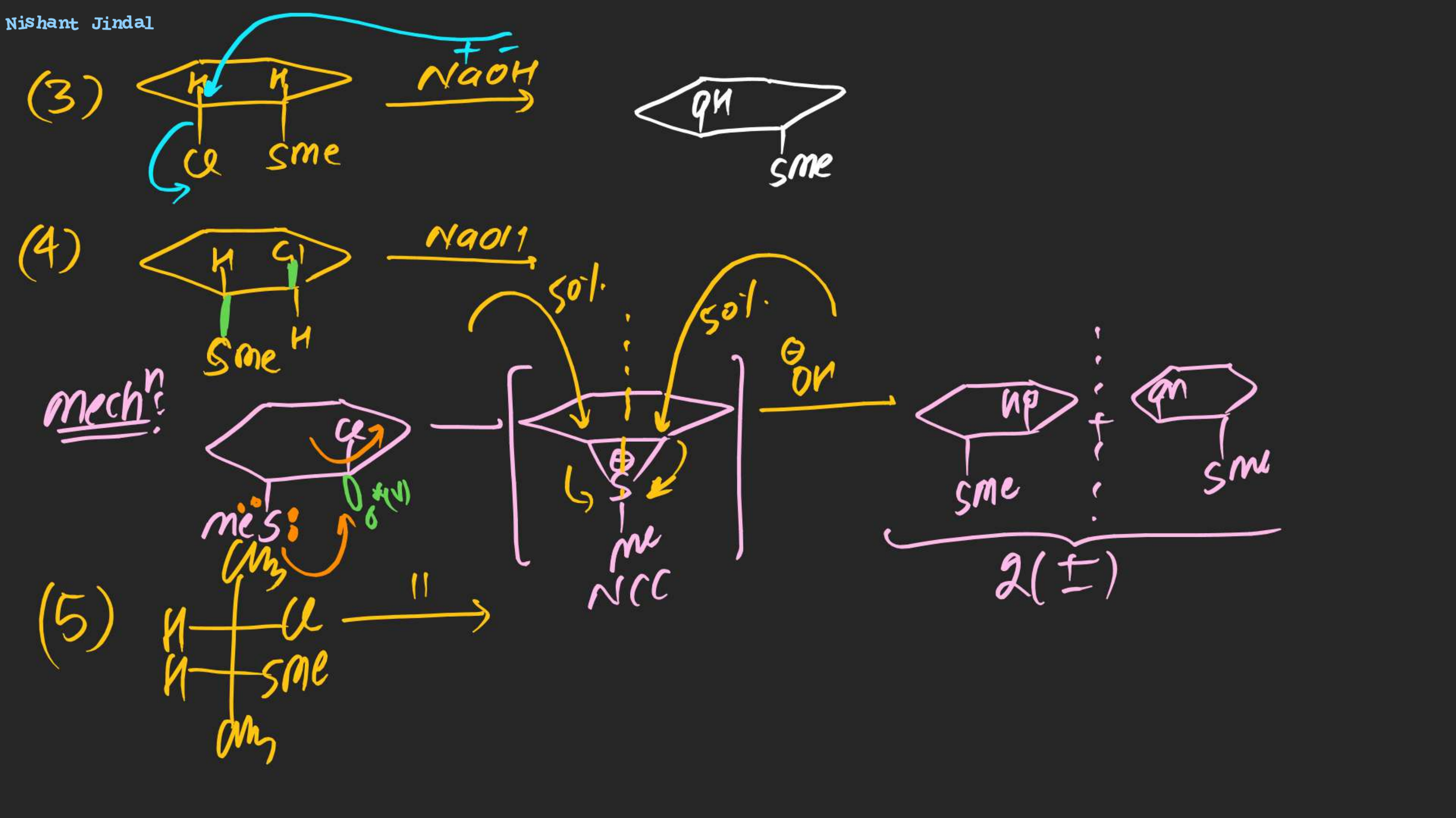

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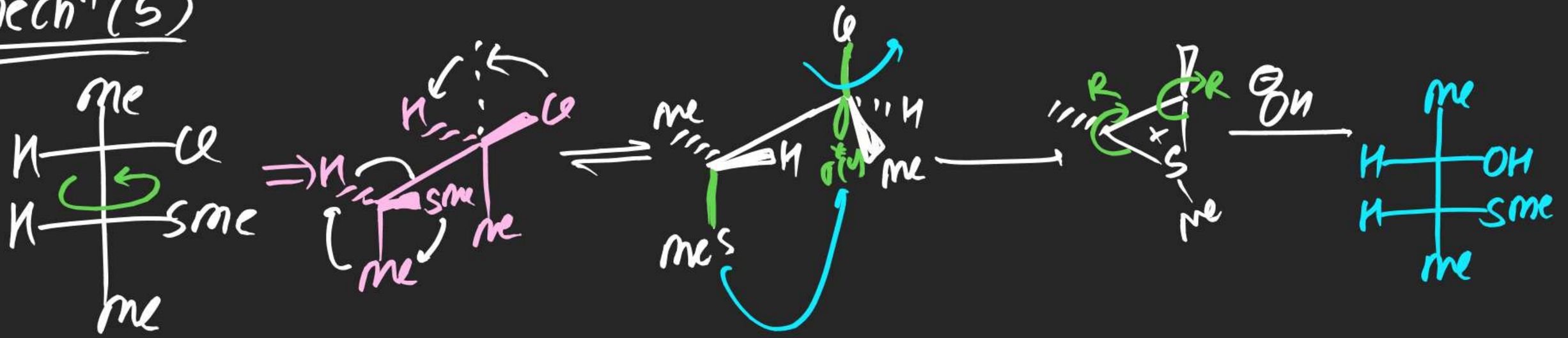
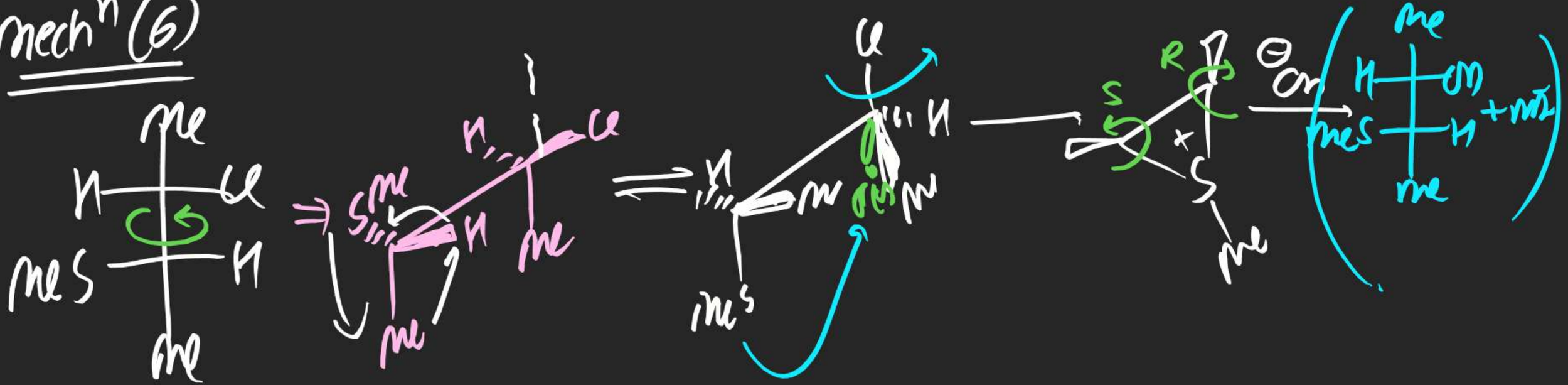
Mechⁿ (5)



Mechⁿ (6)



(#) SN_{AE} Mechⁿ:

E elimination

Addition

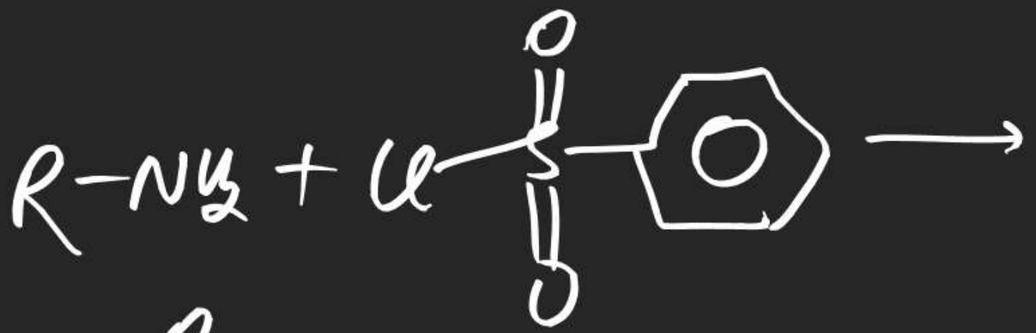
(1) $NaOH + R-\underset{\underset{O}{\|}}{C}(SP^2)-lg \longrightarrow$

Mechⁿ:

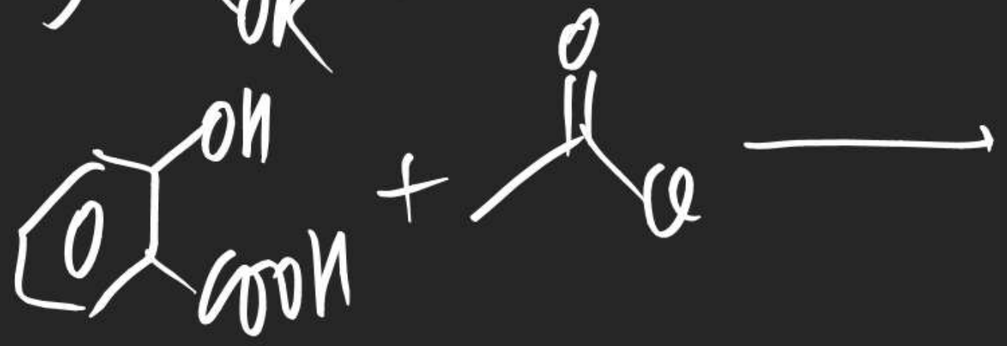
(2) $NaOR + CH_3-\underset{\underset{O}{\|}}{C}-Cl \longrightarrow$ SN_{AE}

(3) 

(4) 

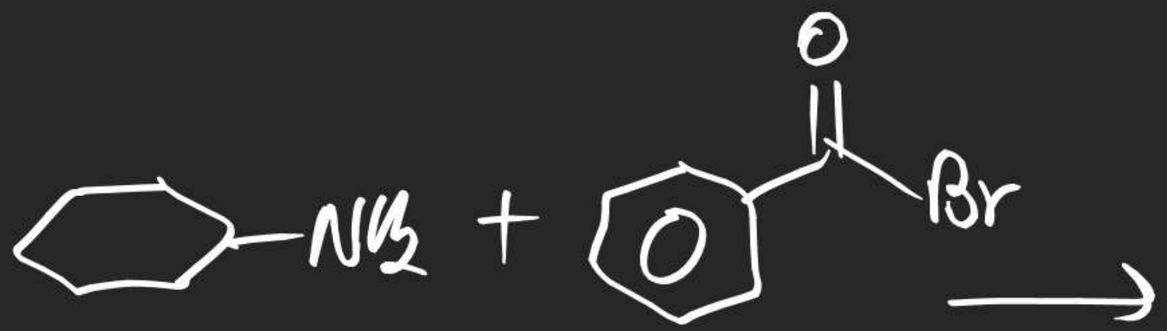
(5) 

(6) 

(7) 

(8) $NaOH + CH_3-\overset{\overset{O}{\|}}{C}-OPh \longrightarrow$

(9) $R_2NH + CH_3-\overset{\overset{O}{\|}}{C}-O-\overset{\overset{O}{\|}}{C}-CH_3 \longrightarrow$

(10) 

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Elimination Rxn

⇒ When Two atom/groups are eliminated from any compound during a Reaction it is known as Elimination Rxn

Types of Elimination Rxn:-

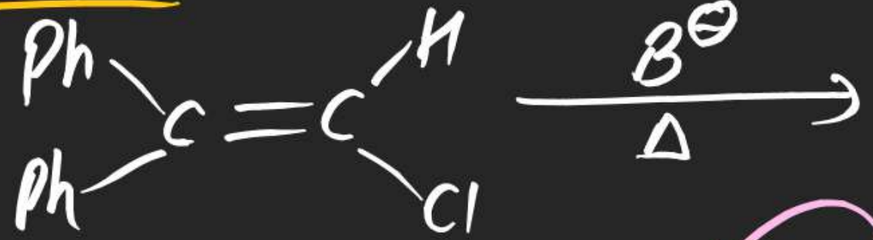
(i) α,α /α-Elimination/ 1,1-Elimination

(i) α,β /β-Elimination/ 1,2-Elimination

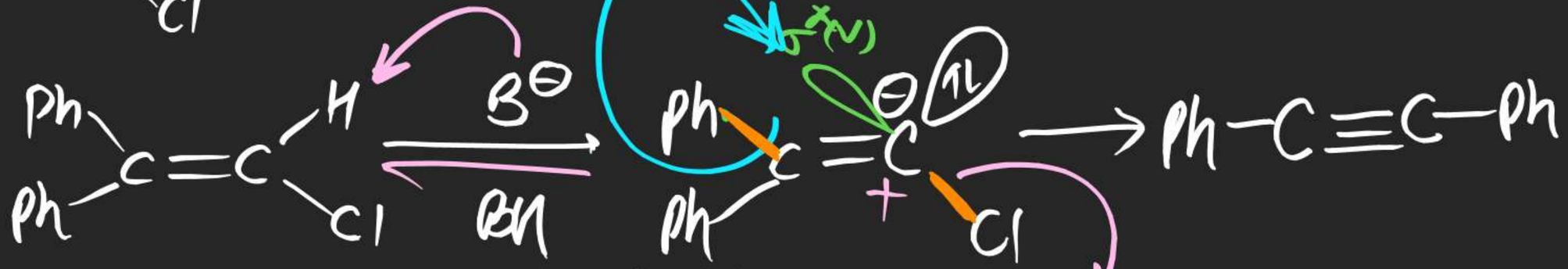
(i) α,γ /γ-Elimination/ 1,3-Elimination

α-Elimination when Both Eliminating atom/groups eliminates from same site, Elimination is known as 1,1 Elimination

Frist Rxn :-

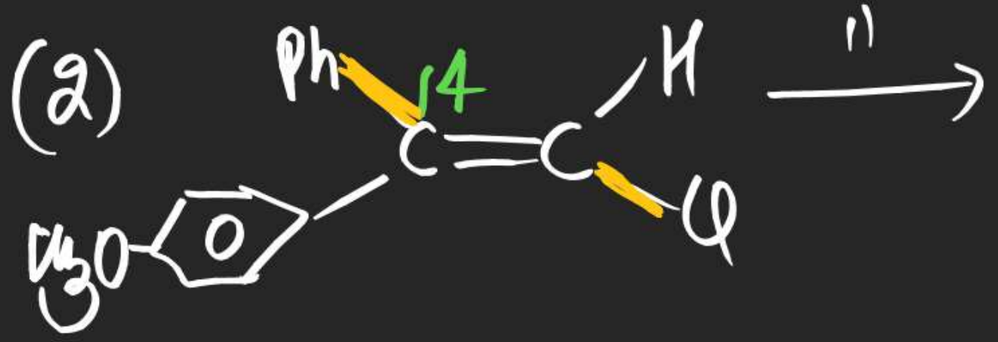
(1) 

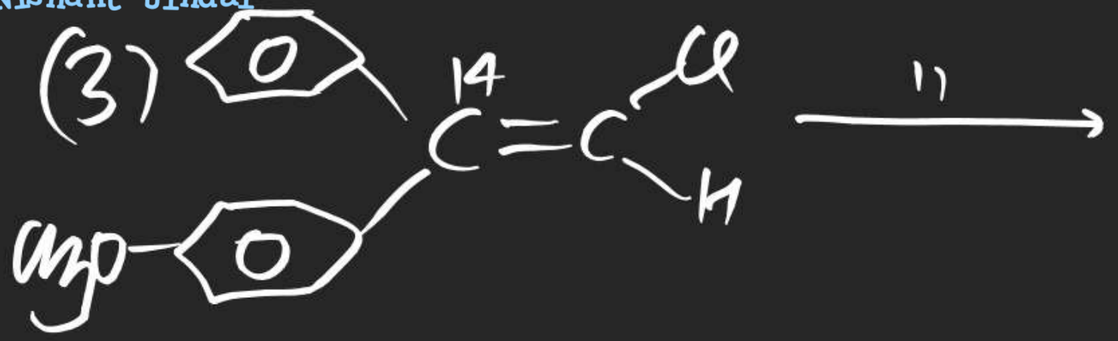
Mechn :

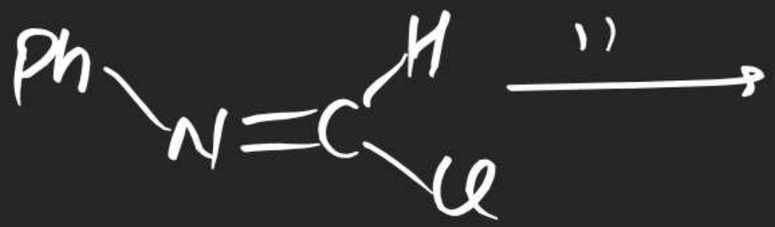


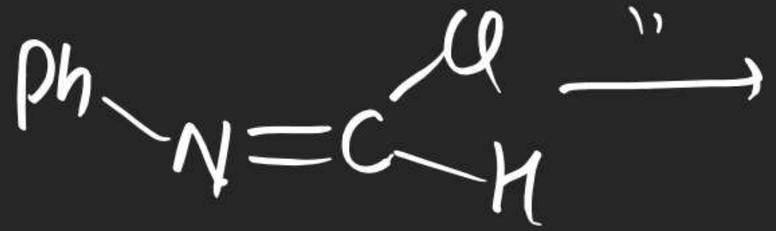
Note (i) Anti group migration takes place

(ii) 1,1 Elimination

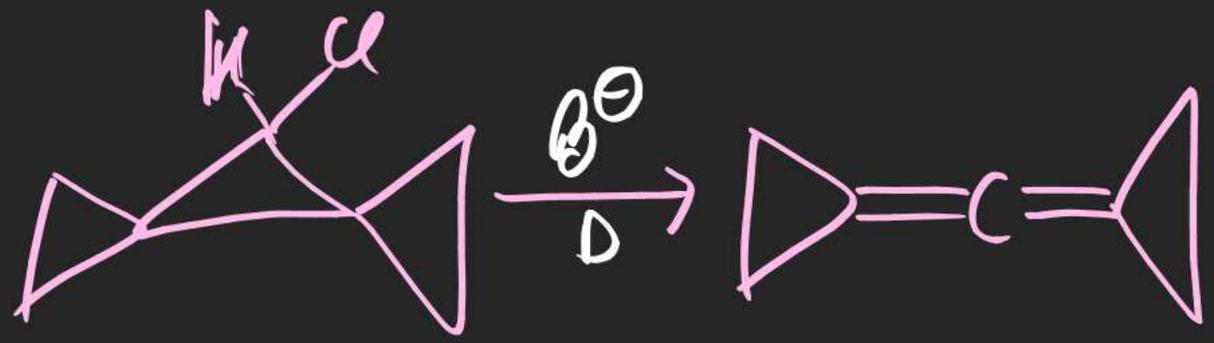
(2) 

(3) 

(4) 

(5) 

(6) Propose mechanism



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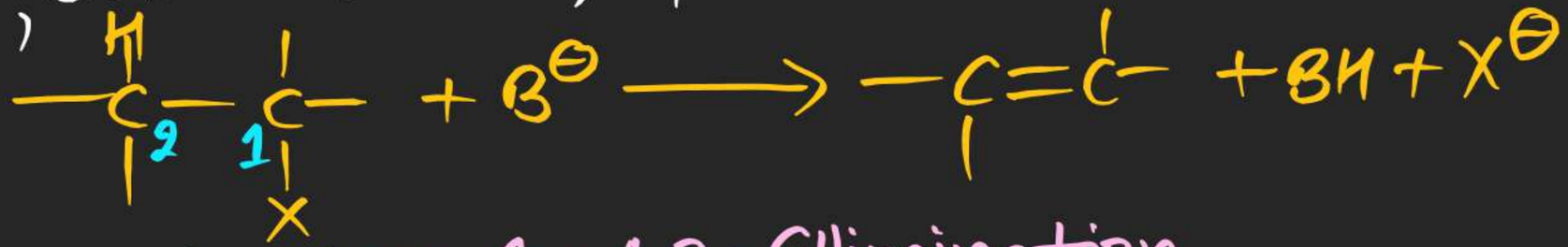
(#) 1,2 Elimination:-

⇒ When Both Eliminating atom/groups eliminate from vicinal sites, elimination is known as 1,2-Elimination.

(1) 

Possible mechanism for 1,2-Elimination

(i) E^2 mechanism [Bimolecular Elimination mechanism]

(ii) E^1 mechanism [Unimolecular Elimination mechanism]

(iii) E^1_{CB} mechanism [Unimolecular Conjugate Base Elimination mechanism]

(iv) E^i mechanism [Intramolecular Elimination mechanism]

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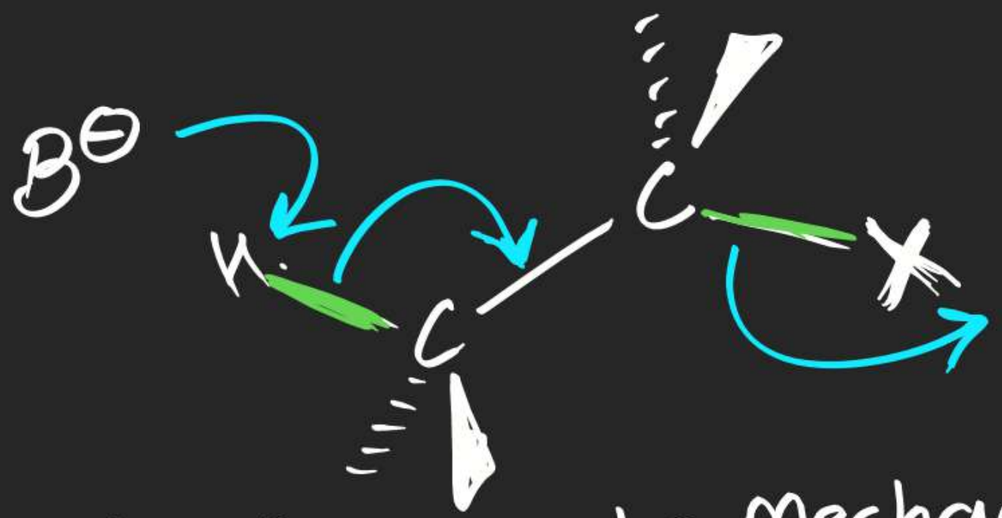
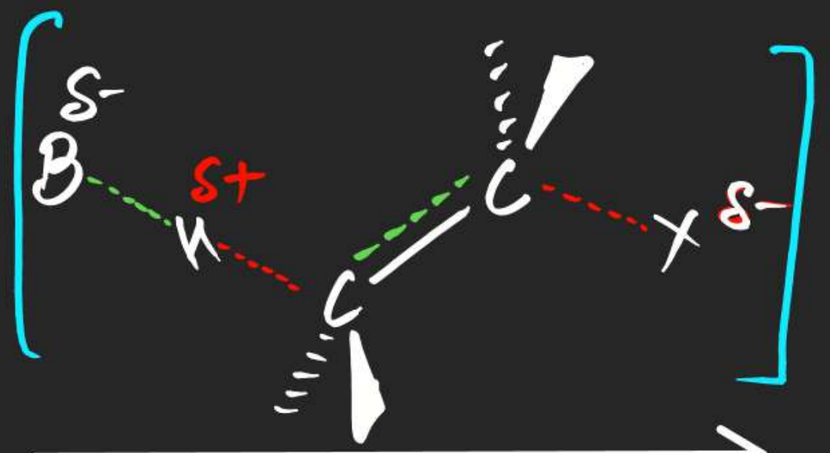
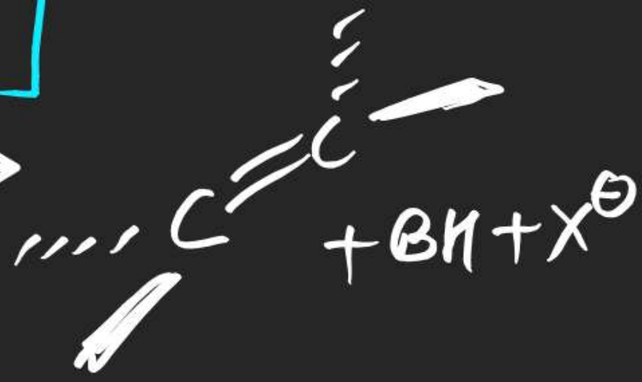
E^2 mechanism





T.S



Note

(i) One step Mechanism

(ii) No Carbocation intermidiate

(iii) No Rearrangement possible

(iv) rate $\propto$ $\gamma_{E2} = K_{E2}[R\text{-}X][B^{\ominus}]$

(v) Bi Molecular Rxn

(vi) II-order Rxn [I-order w.r.to [R-X] & I-order w.r.to [B$^{\ominus}$]]

(vii) E^2 Mechn

(viii) Anti Ellimination

(ix) Anti periplanar Transition State is involved

(x) P.E diagram

(xi) Kinetic Isotopic effect is observed.

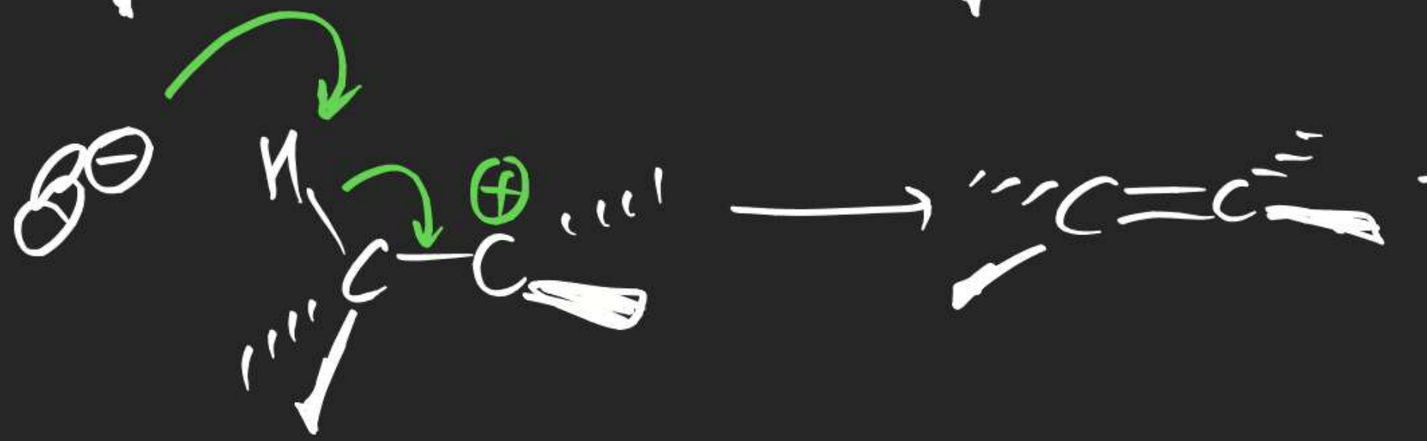
(xii) Elemental effect present (w.r.to lg)

(xiii) Usually Sytzeff product dominates over Hofmann.

E^1 mechanism

Step-I

Step-II



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Note

(i) Two step mechⁿ
(ii) Carbocation intermidiate
(iii) Rearrangement possible
(iv) Endothermic Rxⁿ
(v) Formation of Carbocation is r.d.s
(vi) rate expression

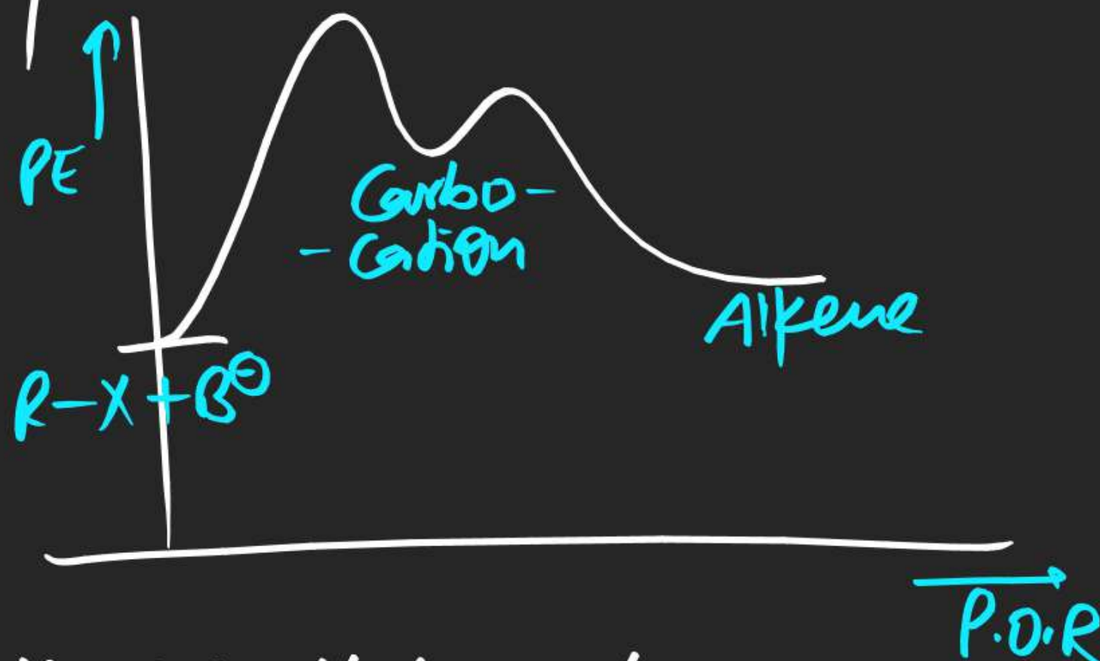
$$r_{E'} = k_{E'}[R{-}X]$$

(vii) Unimolecular Rxⁿ
(viii) Pseudo I-order
(ix) No Kinetic isotopic effect present

(X) Elemental effect present

(Xi) E^1 mechanism

(Xii) P.E diagram



(Xiii) Usually Sytzeff dominates over Hofmann alkene

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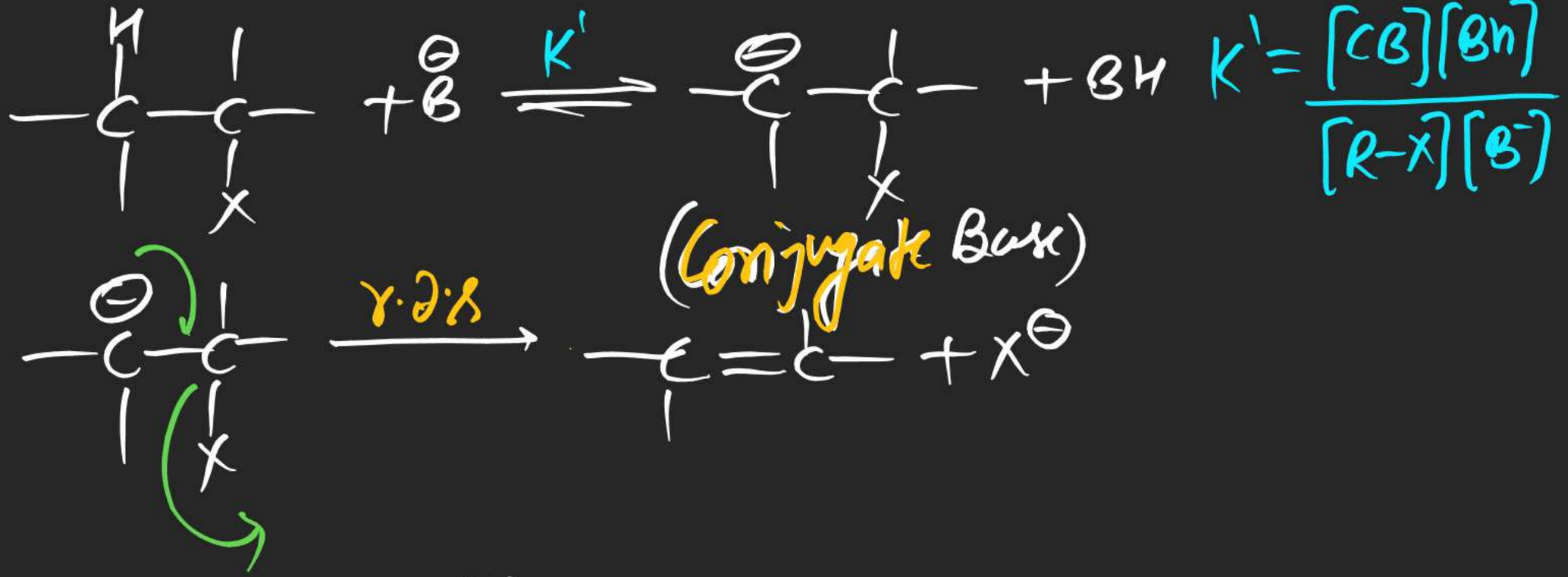
(#) E_1CB mechanism :-



$$K' = \frac{[CB][BH]}{[R-X][B^-]}$$

Note (i) Two step mech^n
(ii) Carbanion intermidiate
(iii) Step-II is r.d.s

(iv) rate exp $r_{E'CB} = k[C \cdot B]$

$\Rightarrow r_{E'CB} = k_{E'CB}[R\text{-}X][B^{\ominus}]$

(v) Unimolecular

(vi) II-order

(vii) Kinetic isotopic effect present

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Factors affecting Elimination mechanism :-