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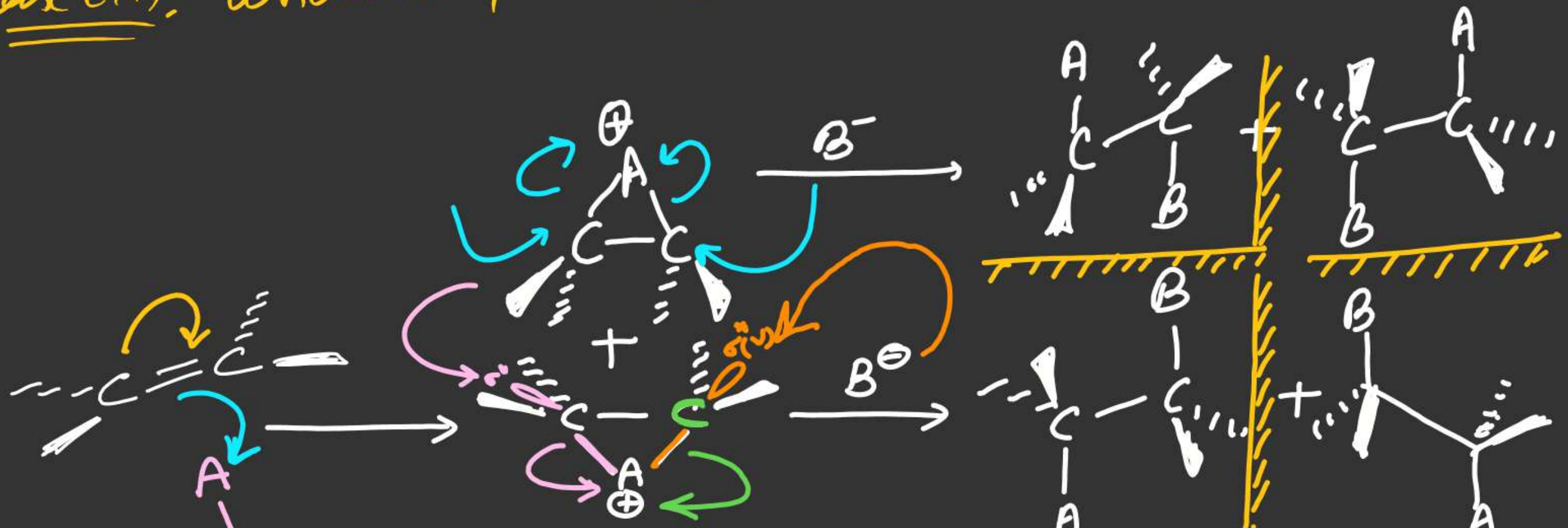
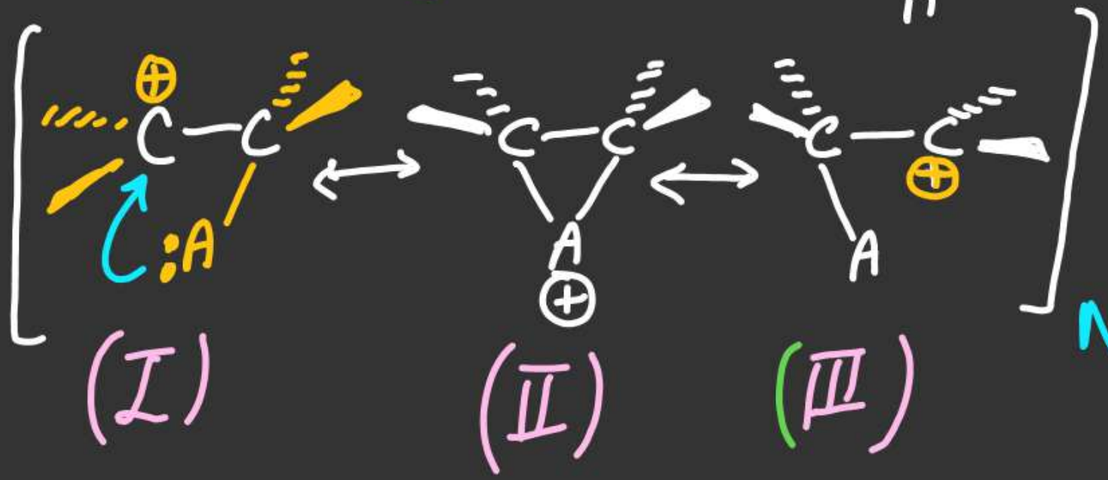
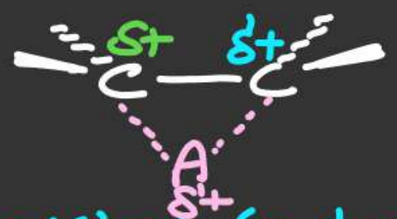
Case (II): when A of A–B Contains lone pair







Non classical carbocation (NCC)

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Note (i) NCC intermidiate

(ii) No Rearrangement possible

(iii) Anti addn

(iv) Formation of NCC is r.d.s

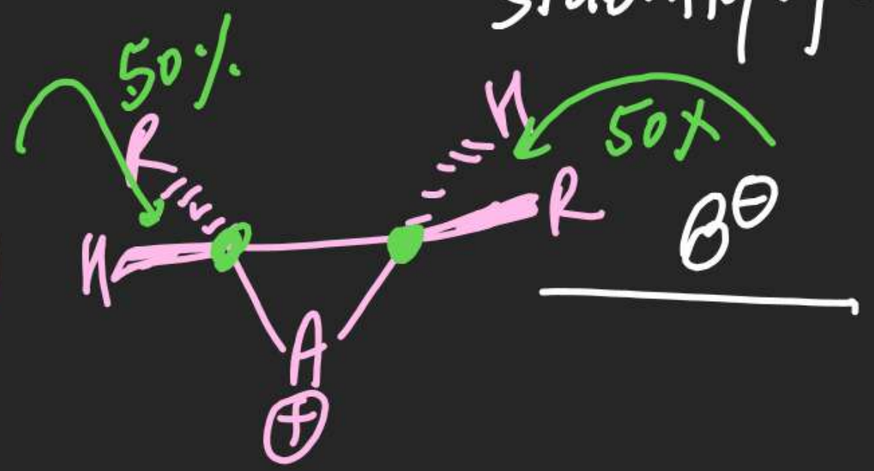
(v) rate of electrophilic addn $\propto$ Nucleophilicity of alkene.

$\propto$ Stability of NCC

$\propto \frac{1}{\text{Stability of alkene}}$

(vi) **opening of NCC:**

(i)



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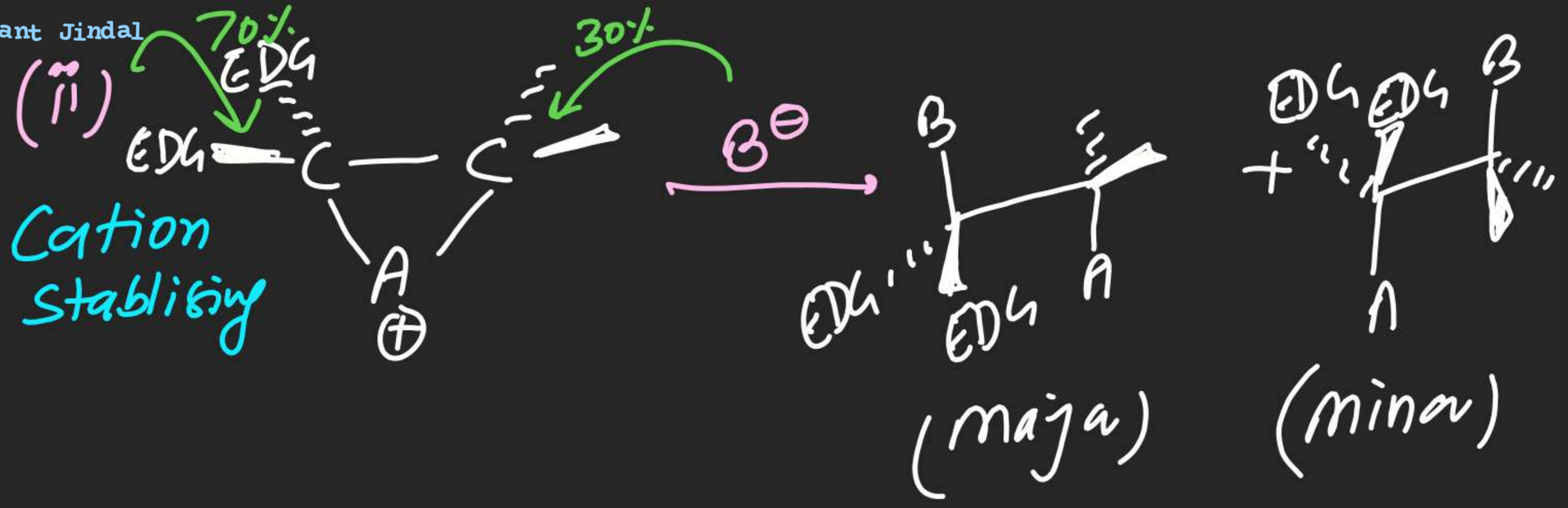
(ii) 70% 30%



Cation Stability

(major) (minor)

(vii) Possible A–B NCC formation / Anti addn

A–B	A⊕ (Electro)	B⊖ (Nucleph)
Br–Br in CCl_4	$Br^{\oplus}$	$Br^{\ominus}$
Br_2 in CH_2Cl_2	$Br^{\oplus}$	$Br^{\ominus}$
Cl_2 in CS_2	$Cl^{\oplus}$	$Cl^{\ominus}$
Br_2 water	$Br^{\oplus}$	$:OH_2$ / $Br^{\ominus}$

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(Tilden Reagent)

Cl_2 water	$:Cl^{\oplus}$	OH_2 / $Cl^{\ominus}$
HOCl	$:Cl^{\oplus}$	$^{\ominus}OH$
HOBr	$:Br^{\oplus}$	$^{\ominus}OH$
NOCl	$^{\oplus}N{=}O$	$^{\ominus}Cl$
ICl	$:I^{\oplus}$	$Cl^{\ominus}$
IBr	$:I^{\oplus}$	$Br^{\ominus}$
IN_3	$:I^{\oplus}$	$^{\ominus}N_3$
BrCl	$:Br^{\oplus}$	$Cl^{\ominus}$
NOBr	$^{\oplus}NO$	$Br^{\ominus}$
BrN_3	$^{\oplus}Br$	$^{\ominus}N_3$
Br_2 water in Brine soln	$Br^{\oplus}$	OH_2 / $Cl^{\ominus}$ / $Br^{\ominus}$

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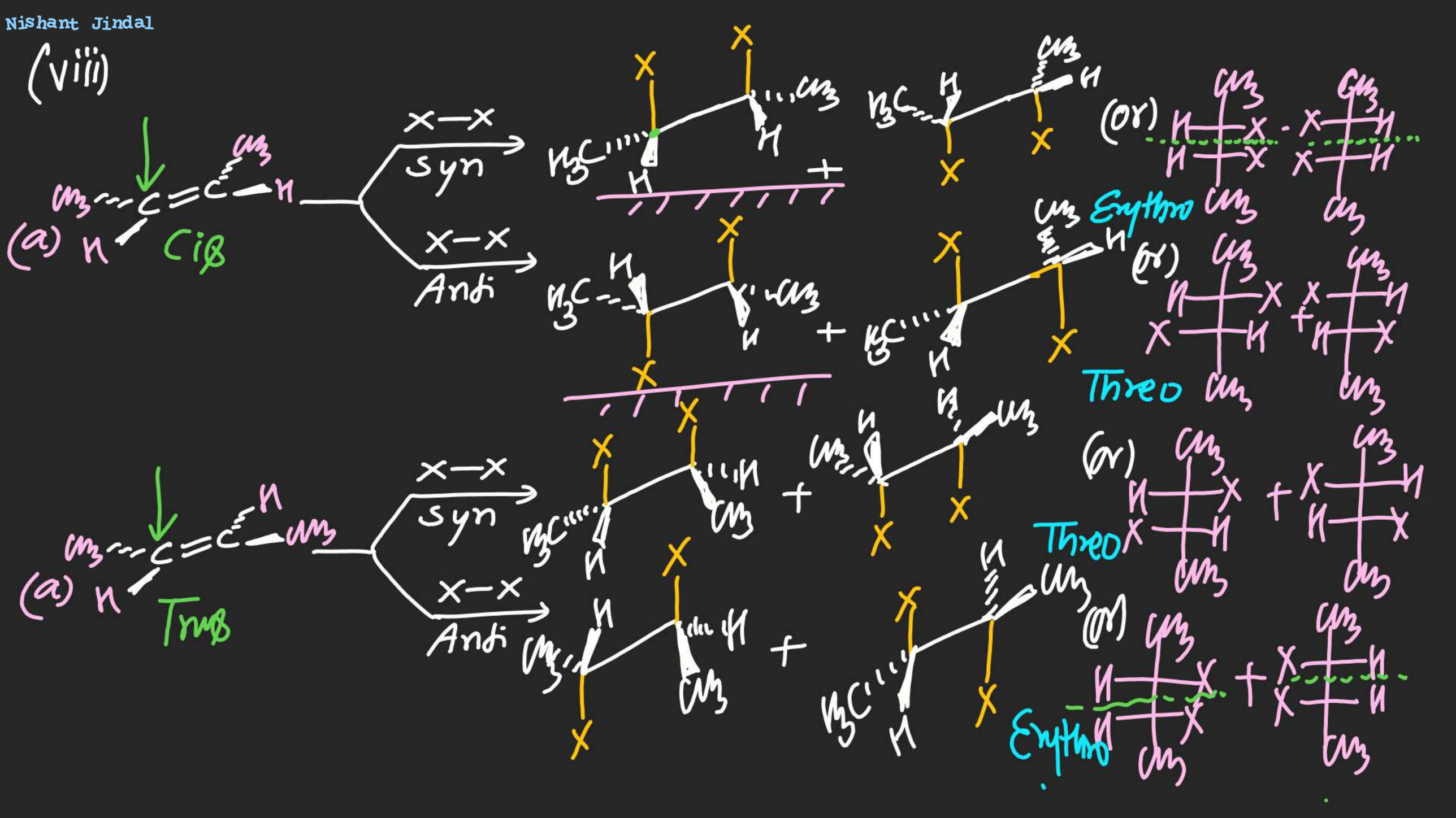
(viii)



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Alkene	Type of addn	Product	
		Symmetrical	Unsymmetrical
Cis	Syn	Meso	Erythro (±)
Trans	Anti	Meso	Erythro (±)
Cis	Anti	Threo (±)	Threo (±)
Trans	Syn	Threo (±)	Threo (±)

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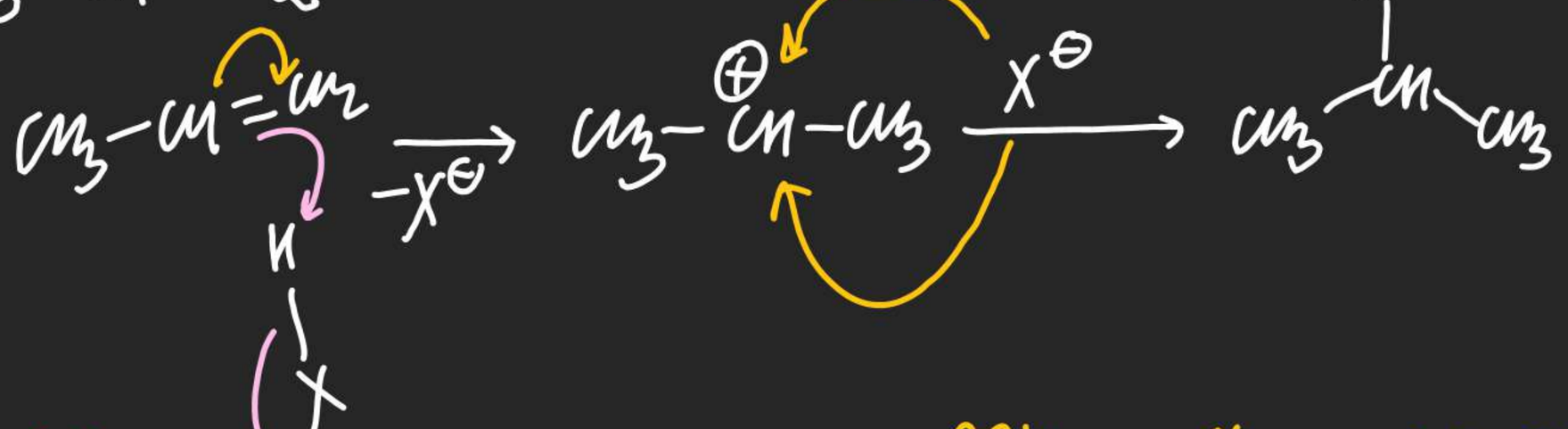
(#) Addition of HX (Hydrohalogenation)

⟹ On Rxn of HX & alkene, hydrohalogenation takes place & alkyl halide is obtained as a Product.

(1) $CH_3-CH=CH_2 + \overset{\delta+}{H}-\overset{\delta-}{X} \longrightarrow$

mechn:



Markonikoff's Rule: During electrophilic addn on alkene, (-)ve part of attacking Reagent attacks at that doubly Bonded Carbon

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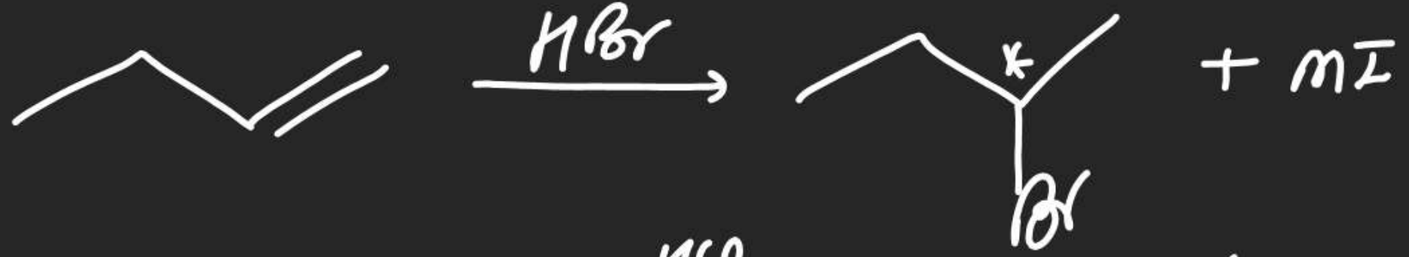
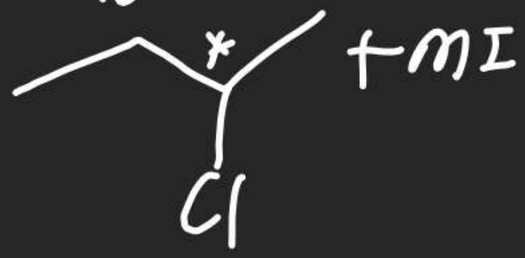
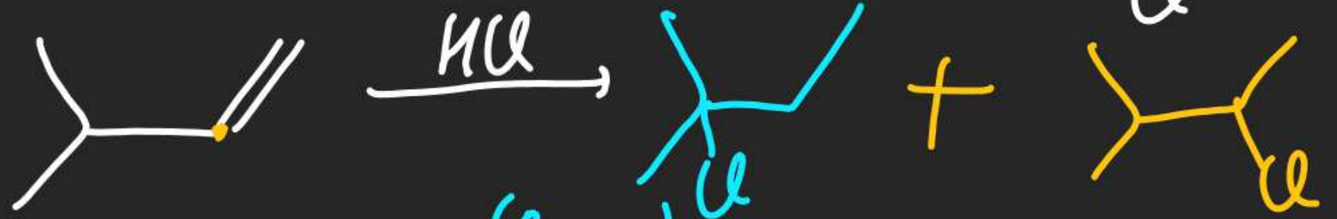
which contain lesser no. of "H" atom.

(2) 

(3) 

(4) $CH_3-CH=CH-CH_3 \xrightarrow{HCl}$ 

(5) $CH_3-CH=CH-CH_2-CH_3 \xrightarrow{HCl}$ 

(6) 

(Major)

Note: M. Rule is not applicable in alkenes involving same no. of "H" on doubly Bonded Carbon & involving peroxide phenomenon.

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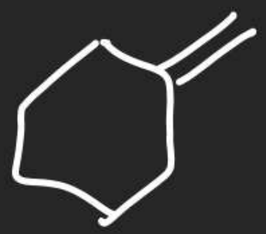
(7)  $\xrightarrow{HBr}$

(8)  $\xrightarrow{''}$

(9)  $\xrightarrow{''}$

(10)  $\xrightarrow{''}$

(11)  $\xrightarrow{''}$

(12)  $\xrightarrow{''}$

(13)  $\xrightarrow{''}$

Compare Rate

(14) $CH_2=CH_2 \xrightarrow{HBr}$

(15) $Cl-CH=CH_2 \xrightarrow{''}$

(16) $O_2N-CH=CH_2 \xrightarrow{''}$

(17) $Me_3\overset{\oplus}{N}-CH=CH_2 \xrightarrow{''}$

(18) $MeO-CH=CH_2 \xrightarrow{''}$

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(19) $HC \equiv CH \xrightarrow[(Excess)]{HBr}$

(20) $HC \equiv CH \xrightarrow{DCl} P \xrightarrow{DBr} Q$

(21) $CH_3-C \equiv CH \xrightarrow{H-Br} P' \xrightarrow{D-Cl} Q'$

(22) $CH_2=CH-CH_2 \xrightarrow{Br} \xrightarrow{HBr}$

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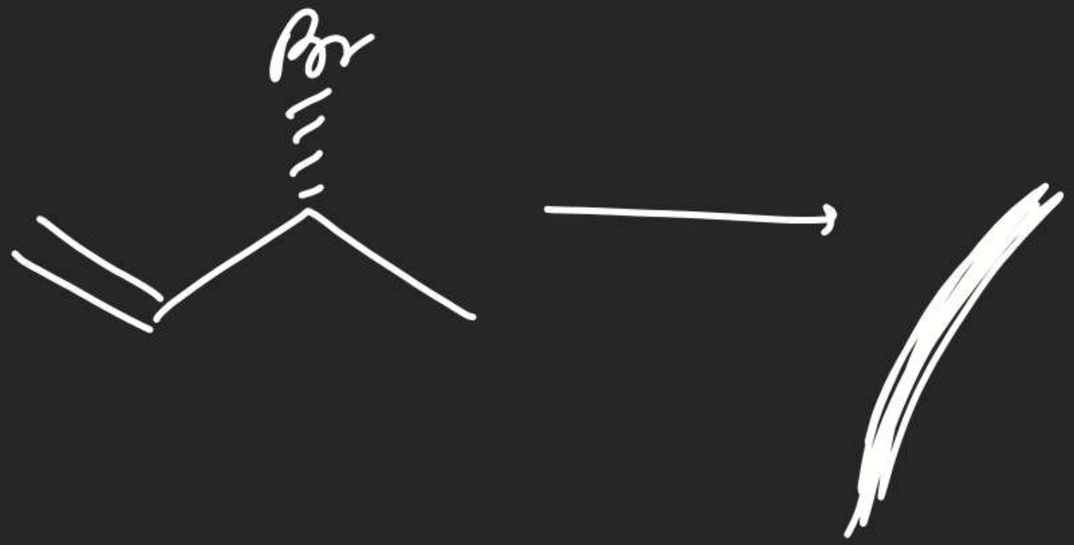
(23)

(24)

(25)



Schedule!-

Sheet 40 Question at least (EX-3)

Copy no. discussion