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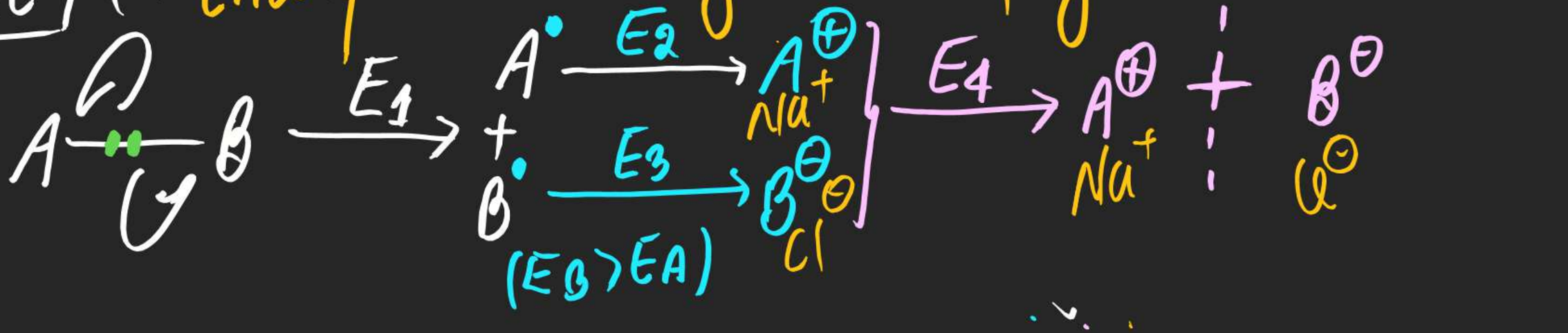
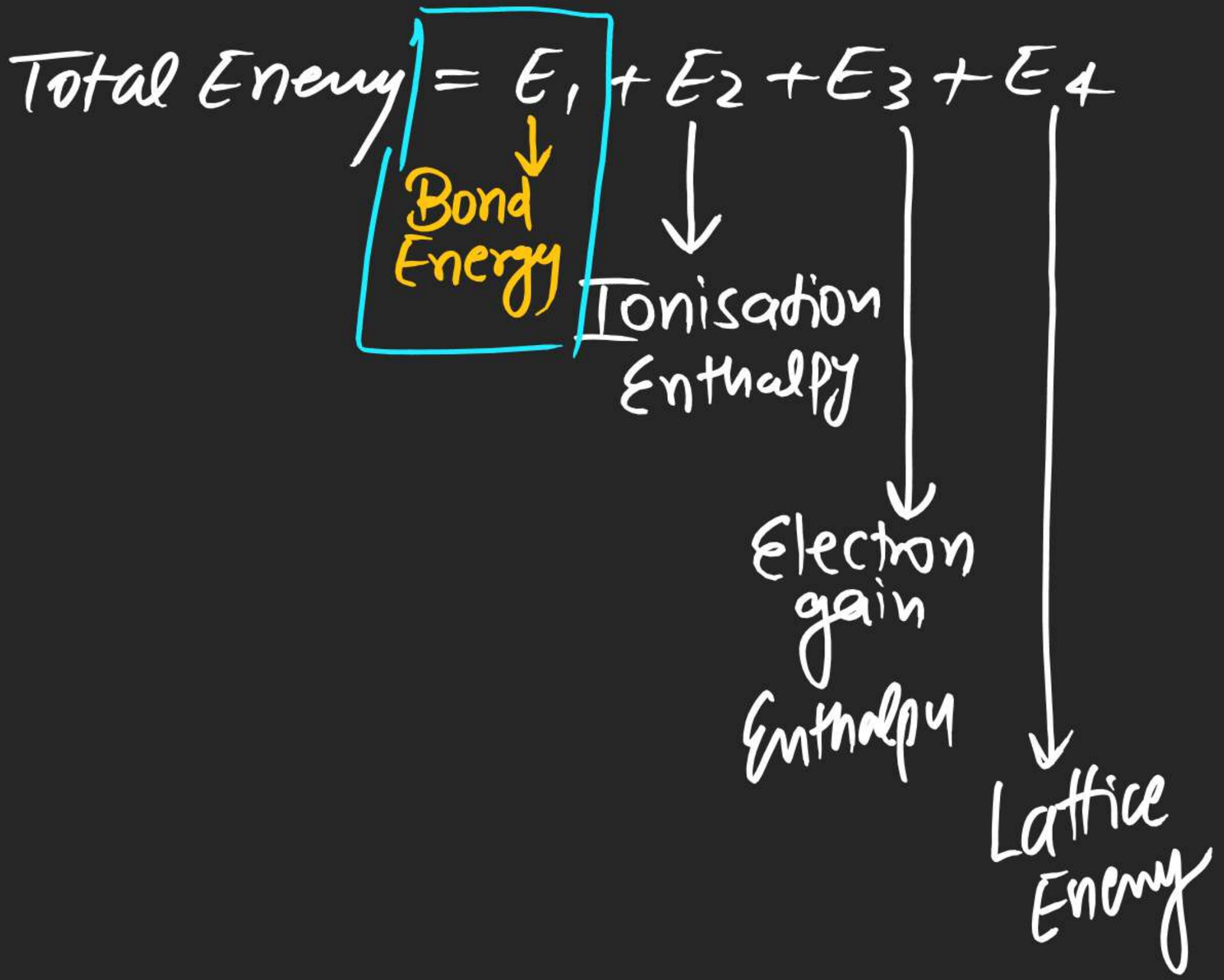
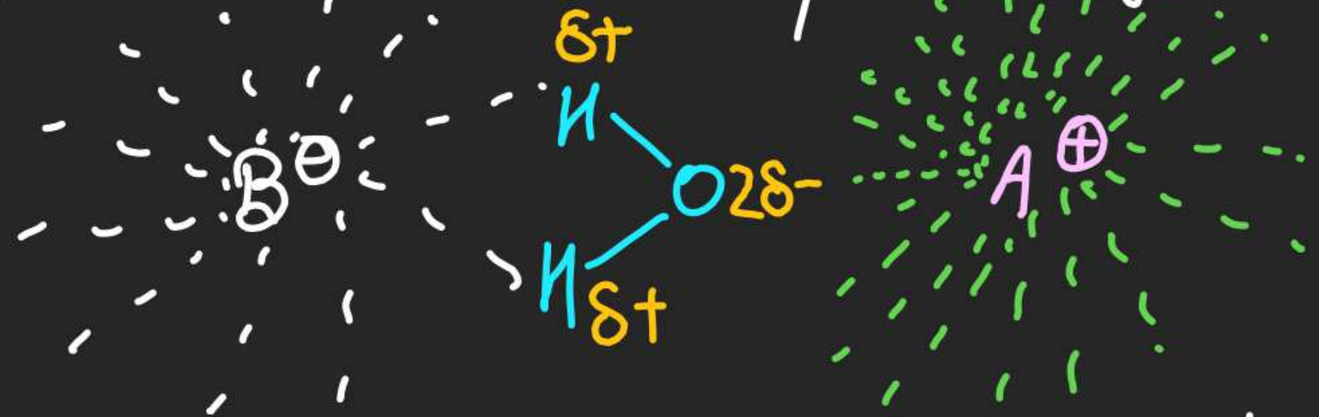
(#) **Heterolytic Bond Breaking:** In such kind of Bond Breaking Bonding e⁻s are shifted towards more electronegative atom so that Ions are obtained.

Note (i) Enemy involved during Bond Breaking





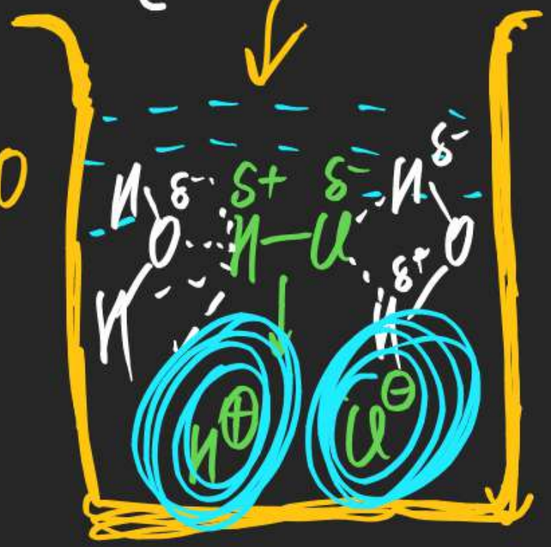
(ii) H_2O Stabilises ions By Solvating it.



H_2O (Polar Solvent) help in dissociating Bond.

(iii) Free Radicals ($\mu \neq 0$) (neutral) are never stablised By Solvents

(iv) $\overset{\delta+}{H}-\overset{\delta-}{Cl}$ is Acid in H_2O



(v) $\overset{\delta+}{H}-\overset{\delta-}{Cl}$ is not a Acid in CCl_4

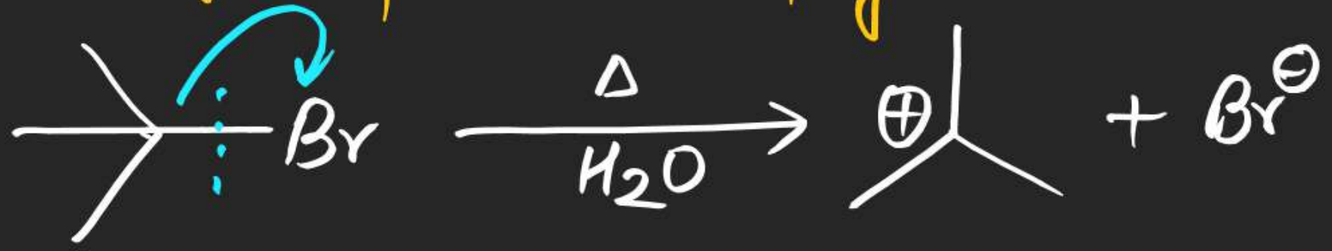
(Non polar) CCl_4 ($\mu = 0$)

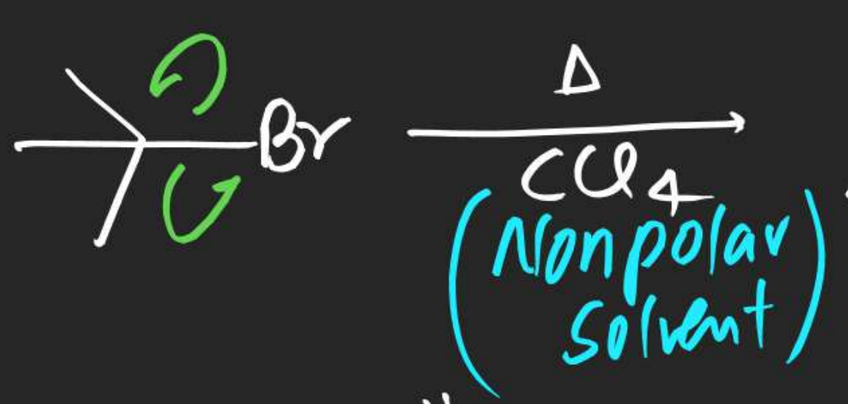
(vi) Heterolytic Bond Breaking takes place always in presence of polar solvent.

(vii) Homolytic Bond Breaking takes place By supplying Energy in Non polar Solvent.

(viii) **Bond Energy** minimum amount of Energy Req^{d} to Break a Bond is known as Bond Energy (In homolytic pattern)

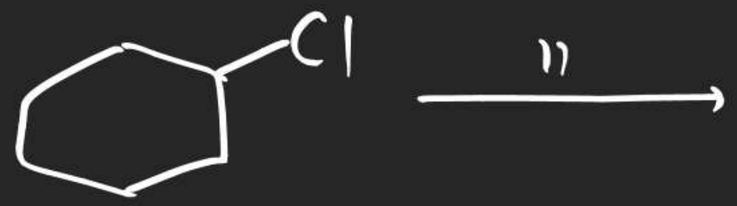
(#) Few Examples of Bond Breaking.

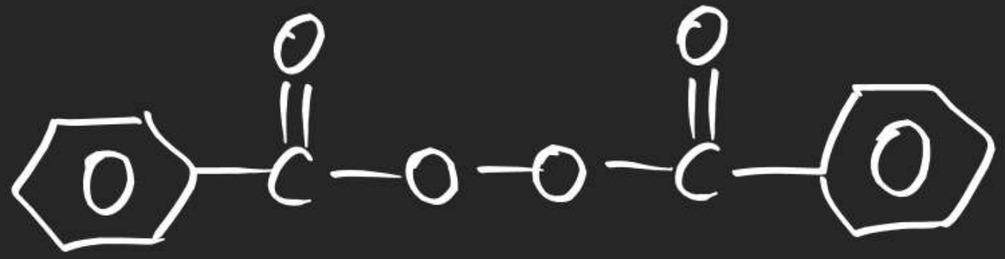
(1) 

(2) 

(3) $Cl-Cl \xrightarrow{h\nu}$

(4) 

(5)  $\xrightarrow{h\nu}$

(6)  $\xrightarrow[\text{in } CCl_4]{\Delta}$

(7) $CH_3-O-O-CH_3 \xrightarrow{h\nu}$

(8)  $\xrightarrow[\text{in } H_2O]{\Delta}$

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(#) Reaction Intermidiate:-

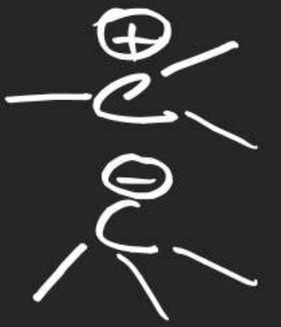
Species obtained during a Reaction in b/w Reactant & product.

Reactant ⟶ Intermidiate ⟶ Product

Reaction Intermidiates

Carbocation

Carbanion



Carbon free Radical

Carbene

Nitene

R–N

Benzyne

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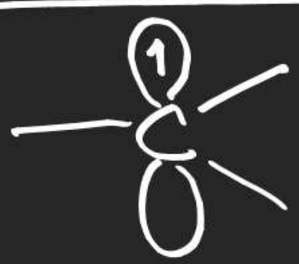
Carbocation :-

Carbon Free Radical



Carbanion

⇒ Trivalent
⇒ Incomplete octet
⇒ highly unstable
⇒ highly Reactive
⇒ BP = Bond pair = 3
⇒ UP = Un pair = 0
⇒ LP = lone pair = 0
⇒ m.m = magnetic moment = $\sqrt{n(n+2)}$ (n = UP) = 0
⇒ Diamagnetic
⇒ Hybridisation sp^2
⇒ Trigonal planer

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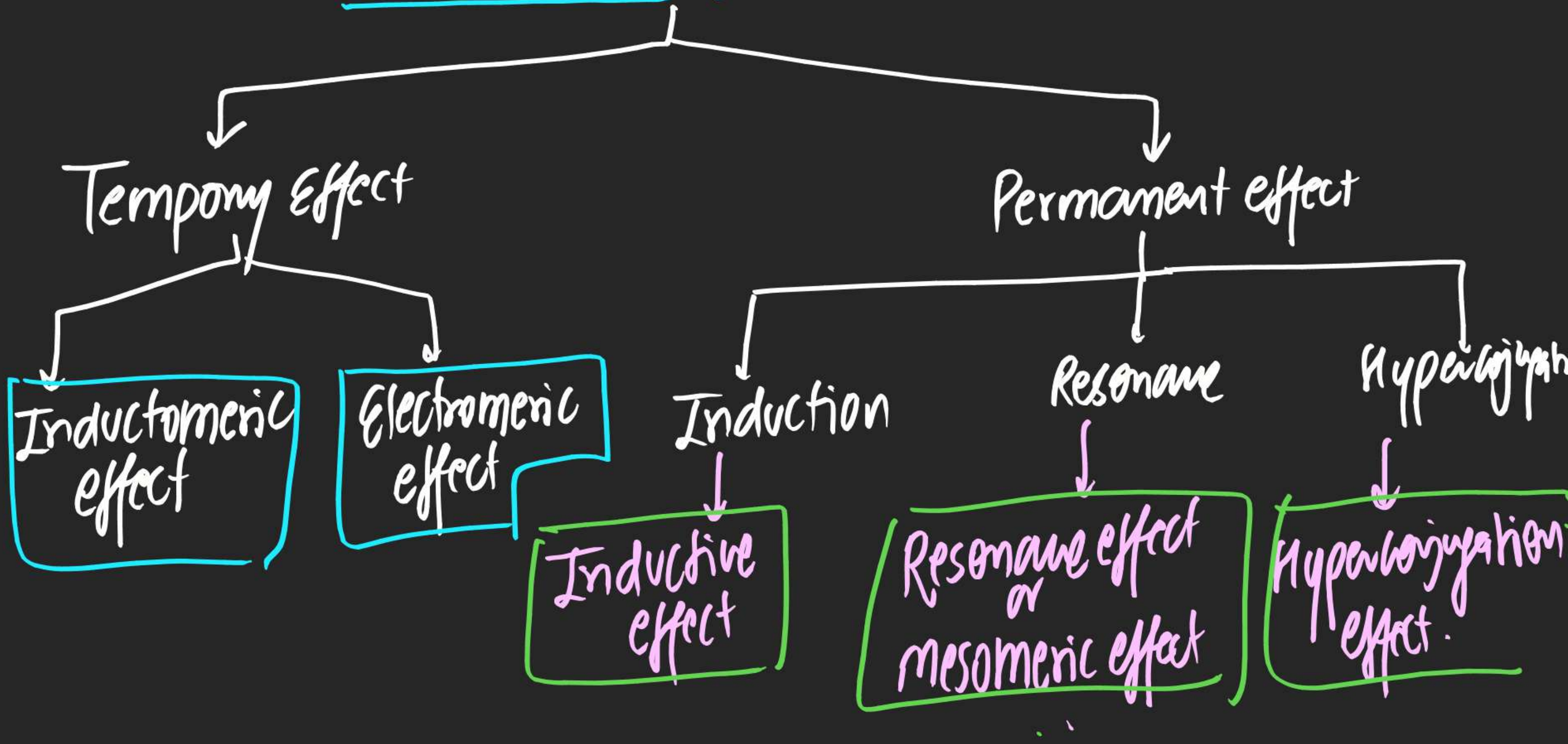
Electronic Displacement Effect



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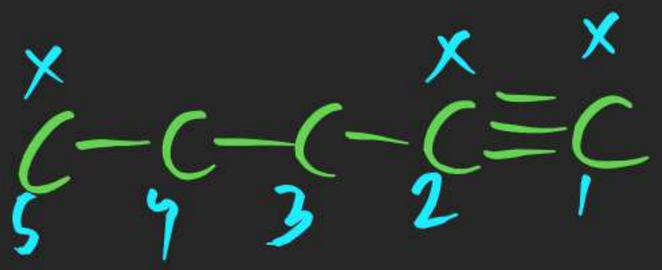
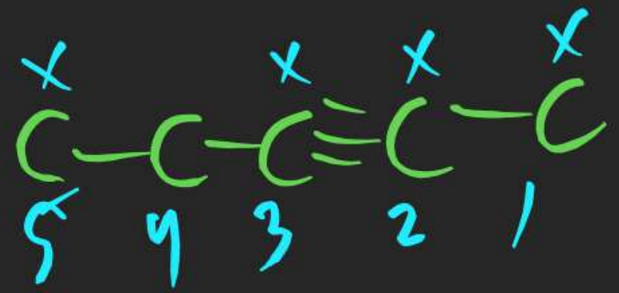
BB (Dis.)

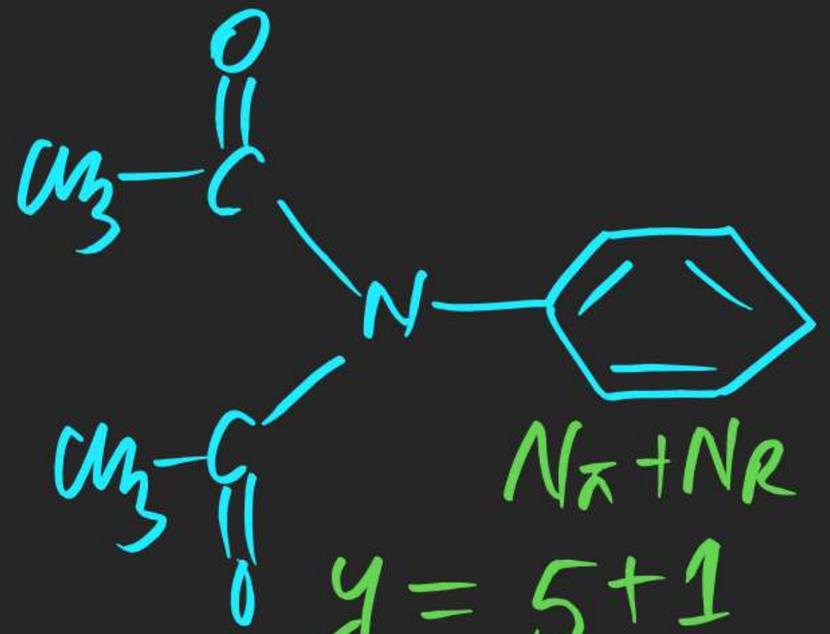
P_1-methyl pent-P_2-yne





P_2	P_1
1	3
1	4
2	4

(74)

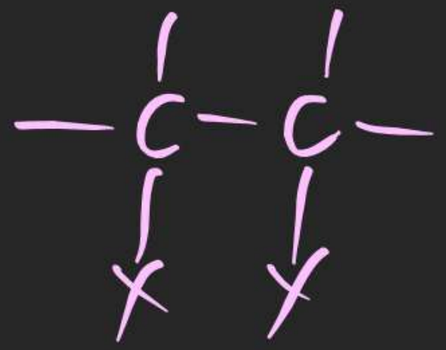


$N_\pi + N_R$

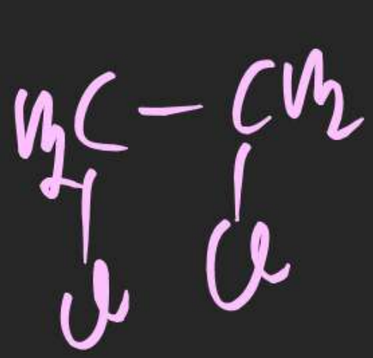
$y = 5 + 1$

$y = 6$

(75)



(B)



(C)

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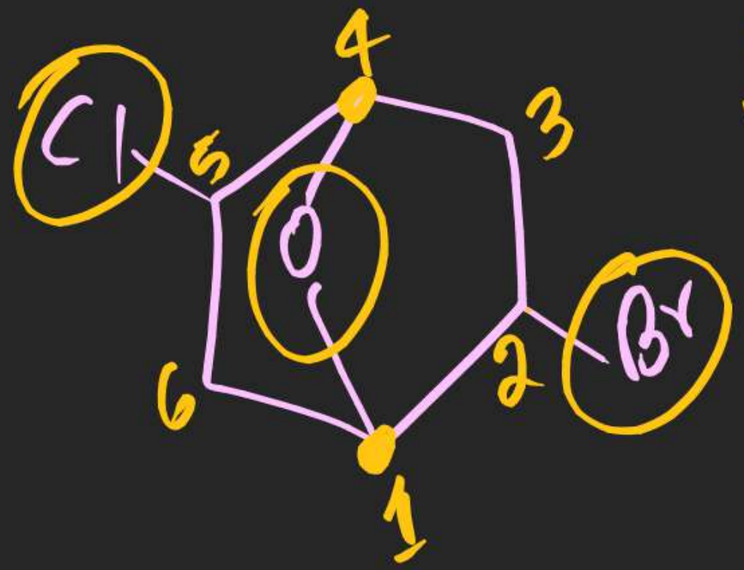
(72)

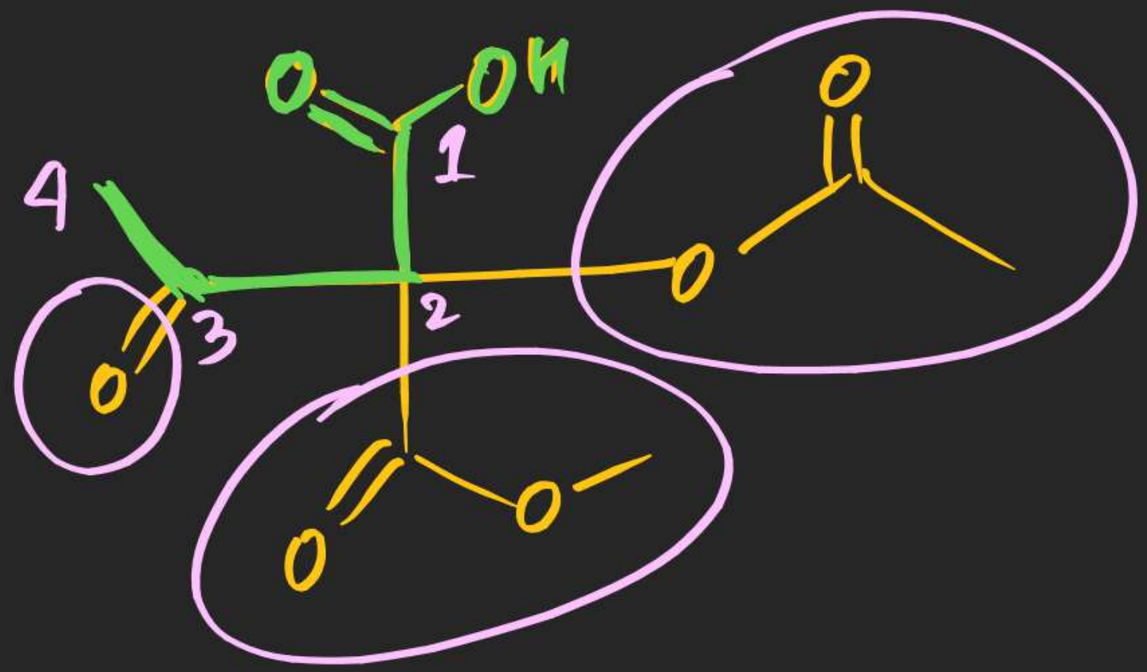
1,5-Dimethyl Cyclohexa-1,4-diene

(78)

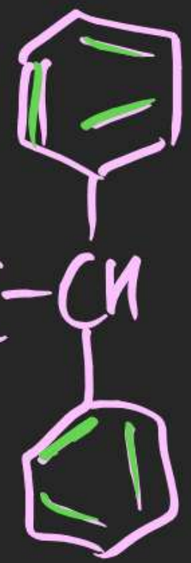


2-Bromo-5-Chloro
1:4-Epoxy Cyclohexane

(80)



(77) $C_3H_4 \Rightarrow HC\equiv C-CH_3 \xrightarrow[+2\pi]{-2\pi} H(\equiv C-CH$



$N_\pi + N_R$

$= 8 + 2$

$= 10$

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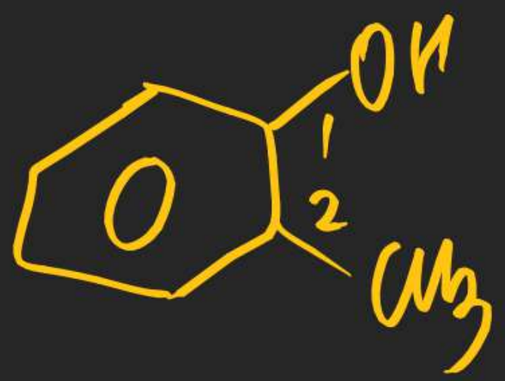
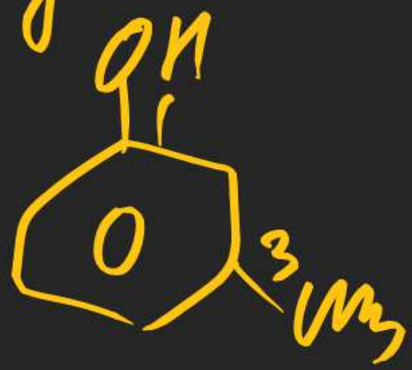
(82) $CH_3 - \overset{3}{CH} = \overset{2}{CH} - \overset{1}{CH_2} - NH - CH_3$

N-methyl

(83)



"ortho"

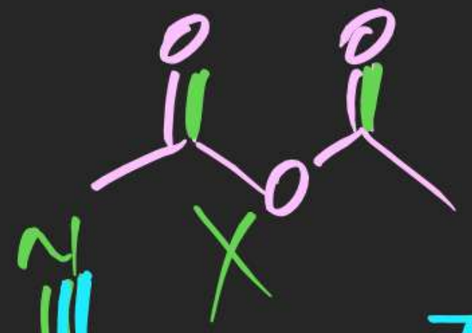


"meta"

(para)

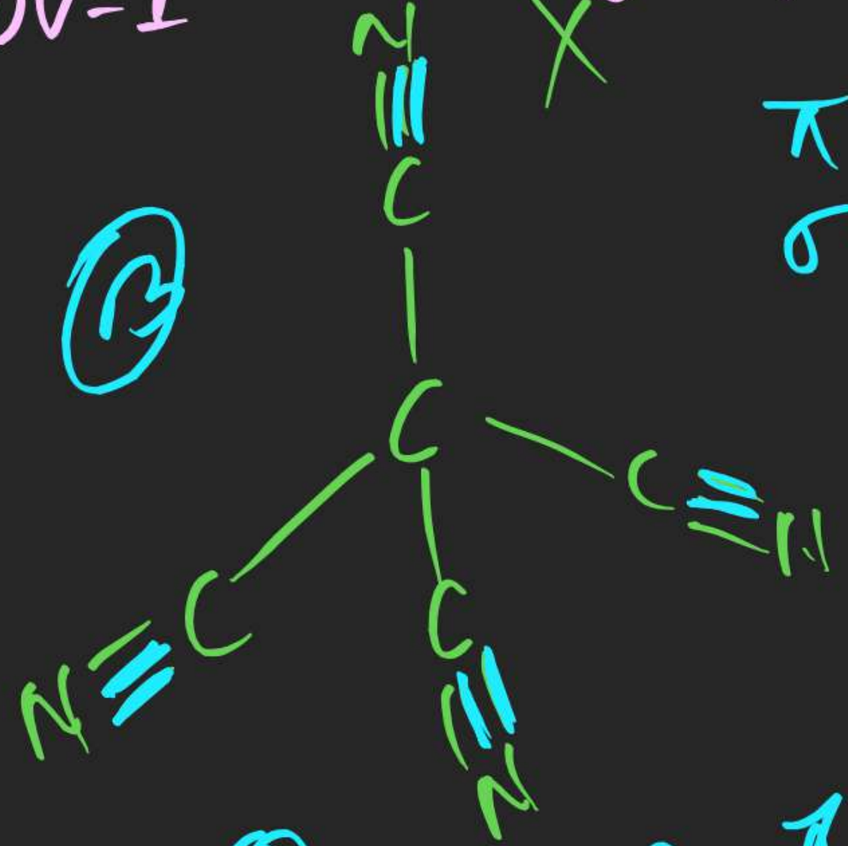
(86) $C_6H_{12}O_3$

DOU = 1



DOU = 2

(87) (3)



$\pi = 8$

$\sigma = 8$

(3) $\sigma = 12, \pi = 8$

(91) $-NH_2$ & $-\overset{|}{N}H$ diff Fgrps

(92) ~~t-Butyl~~ in IUPAC

NW (BB)

Nomenclature Chapter 101 – 150