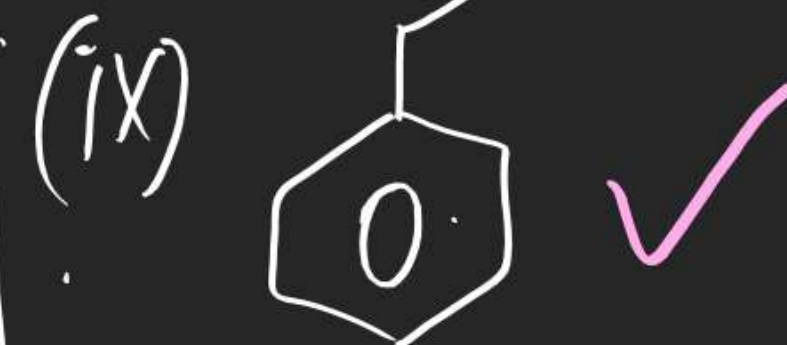
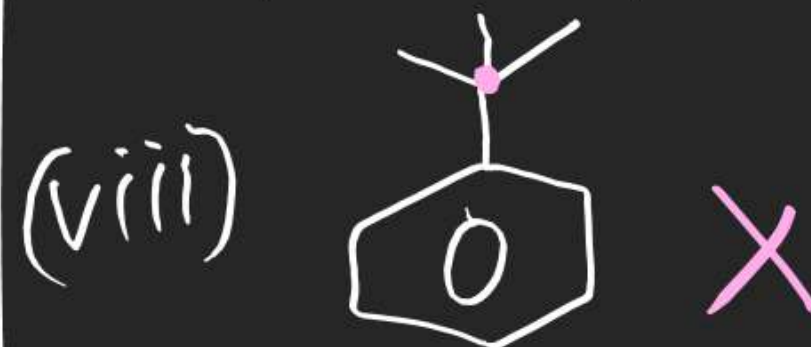
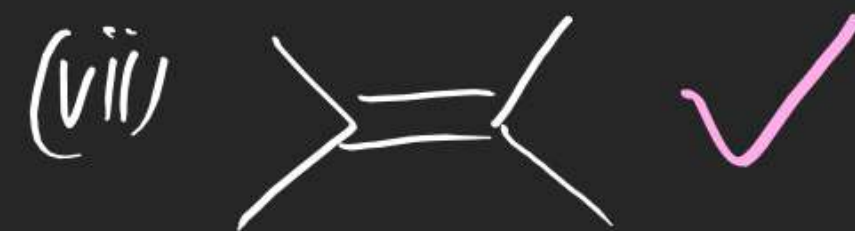
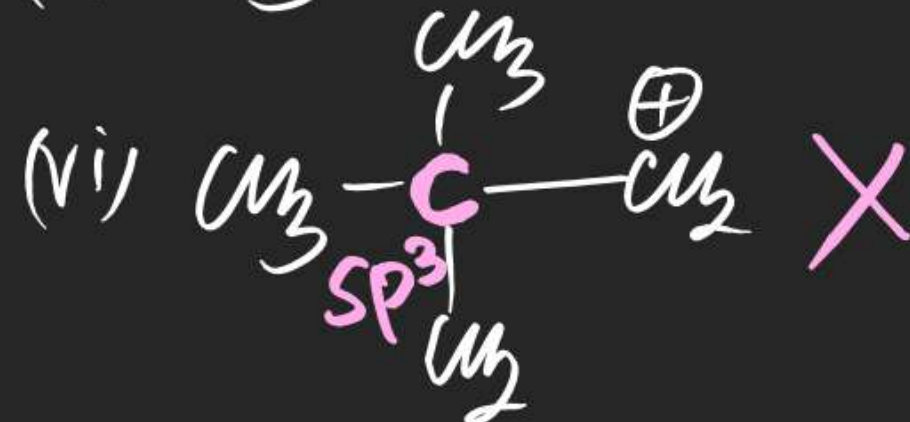
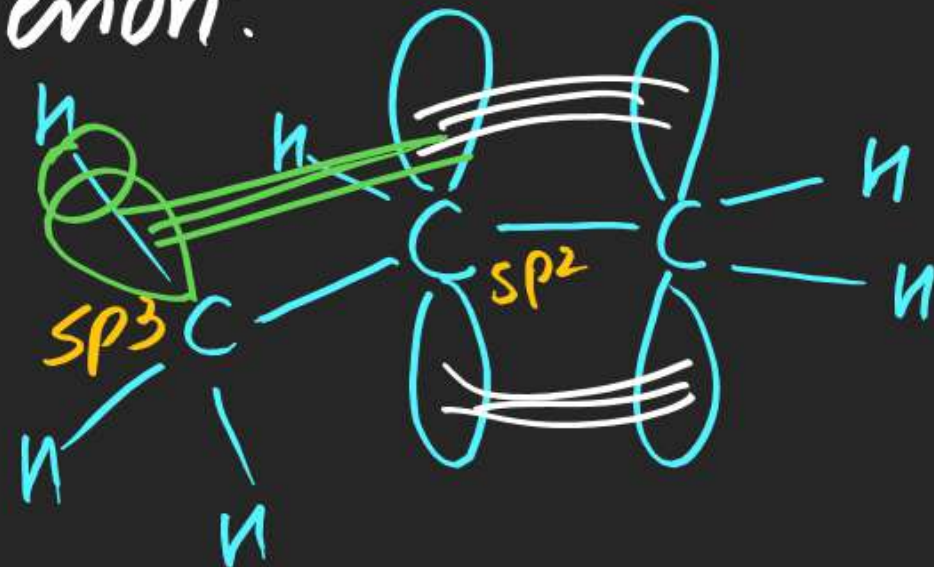
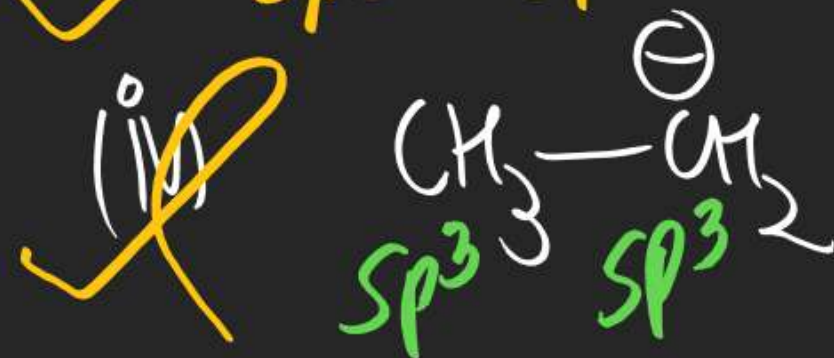
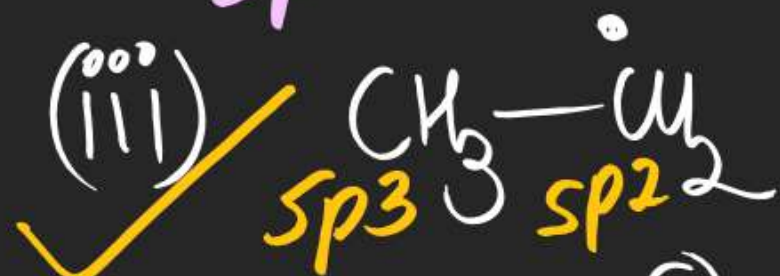
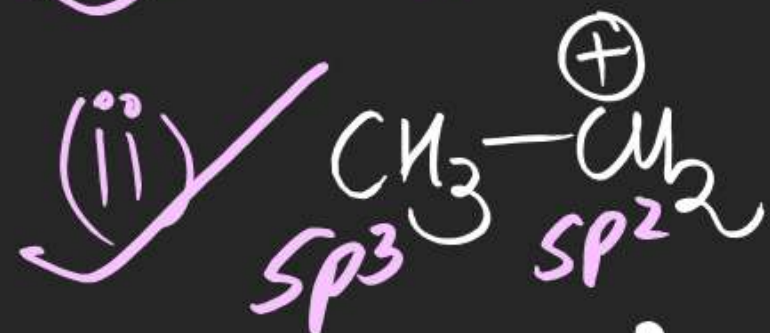
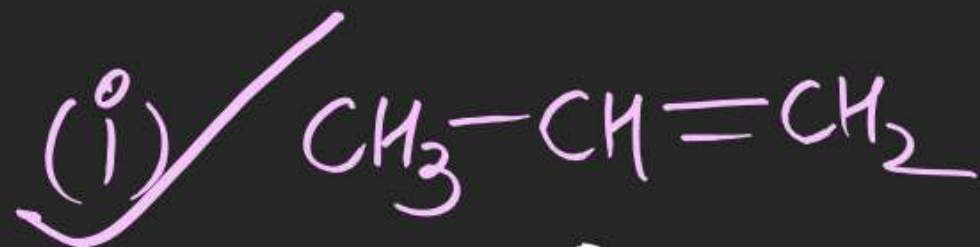
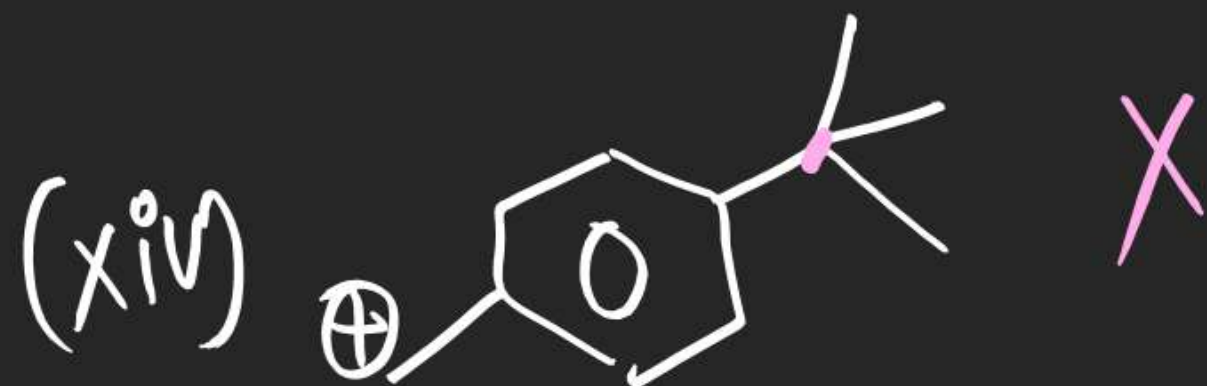
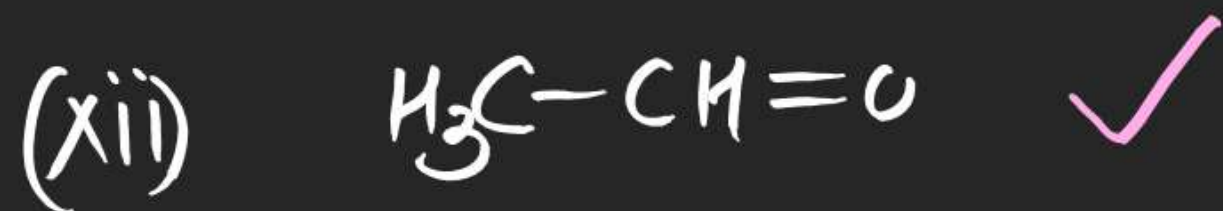


+H effect of that alkyl group.

Ex: (i) which of the following contains H effect phenomenon.

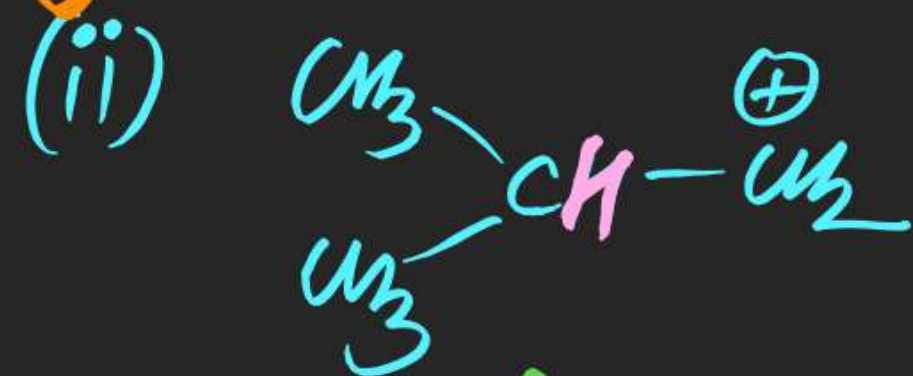




EX-4: Total no. of HS for involving C-H Bond.



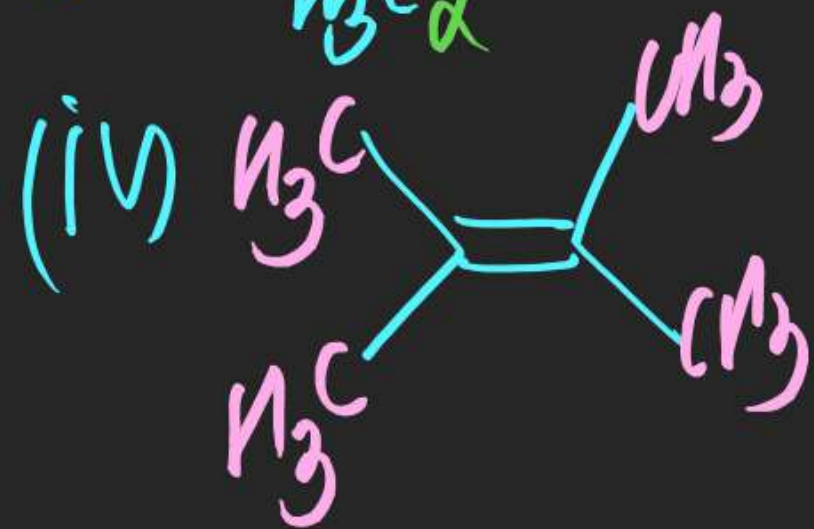
(5)



(1)



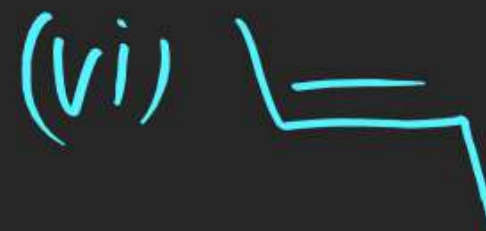
(6)



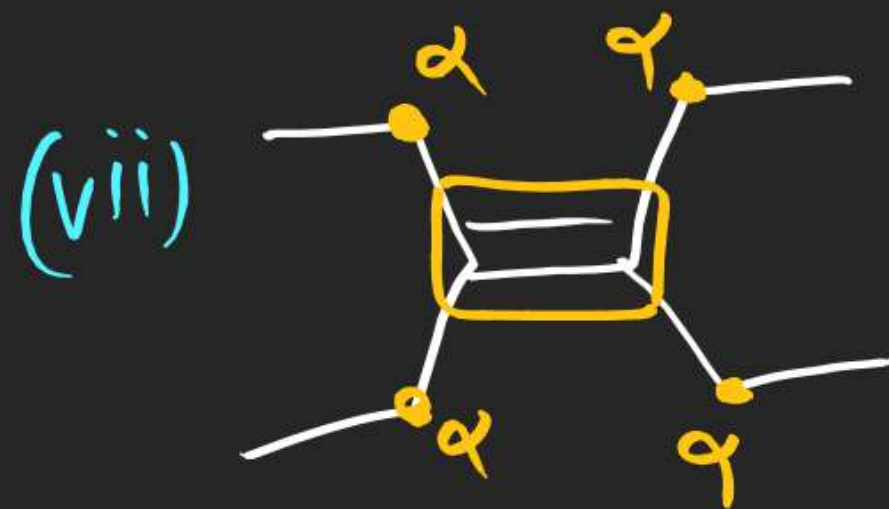
(12)



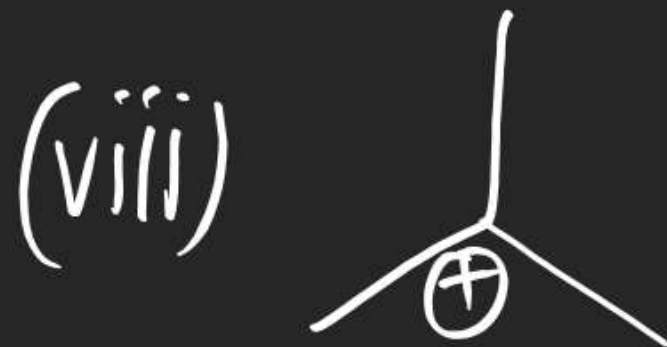
6



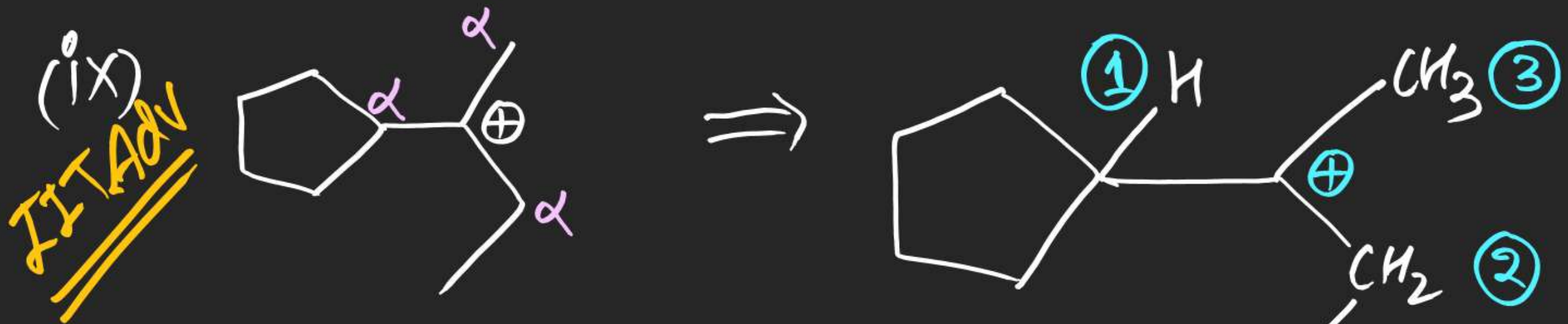
6



8



9



Note: H effect depends on Bond strength H_3C
 Arry following in \downarrow order of +H effect when attached with a "sp²" Carbon

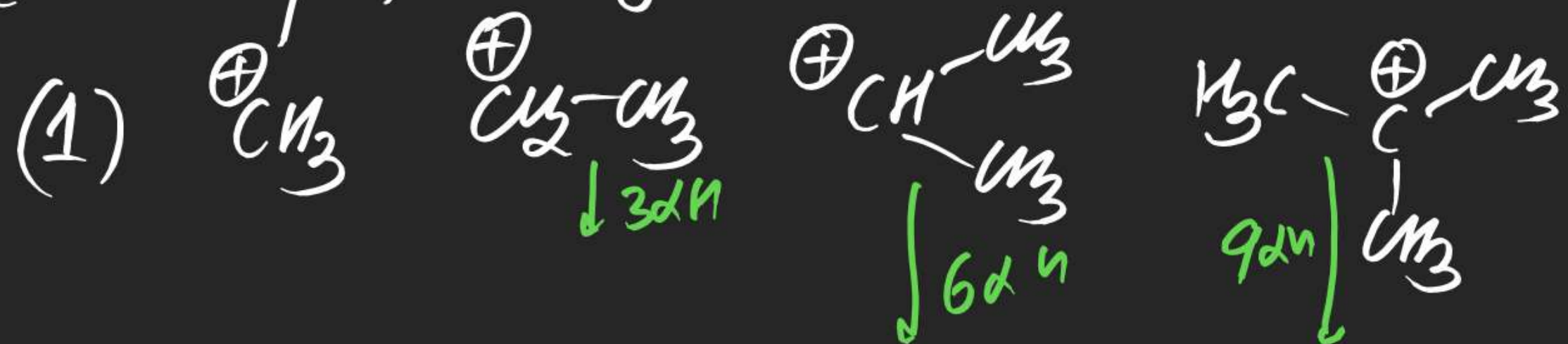
(a) $-CH_3, -CD_3, -CT_3$ (I > II > III)

Bond strength order $C-T > C-D > C-H$

(b) $-CH_3, -CH_2D, -CHD_2, -CD_3$ (I > II > III > IV)

(c) $-CH_3, -CH_2-CH_3, -CH(CH_3)-CH_3, -C(CH_3)_3$ (I > II > III > IV)

(#) Arrange following in ↓ order of stability



$\text{IV} > \text{III} > \text{II} > \text{I}$
(due to +H effect)

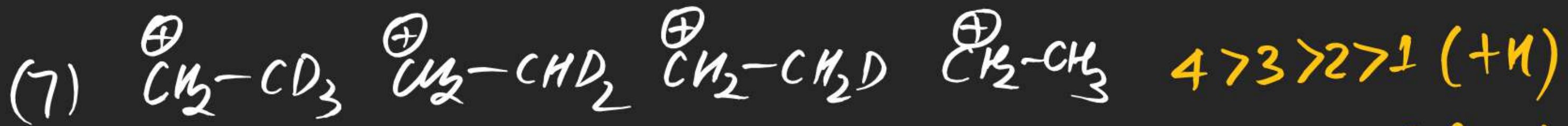


$\text{IV} > \text{III} > \text{II} > \text{I}$
(due to +H effect)

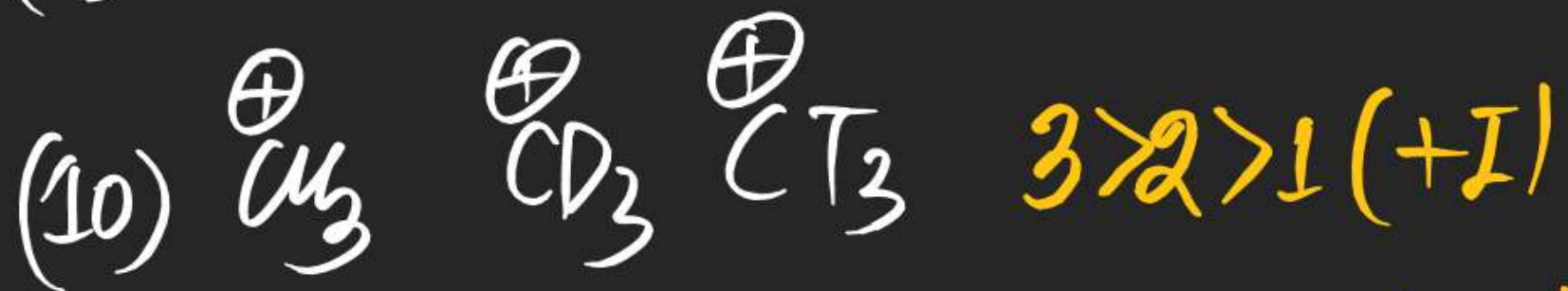


$\text{I} > \text{II} > \text{III} > \text{IV}$





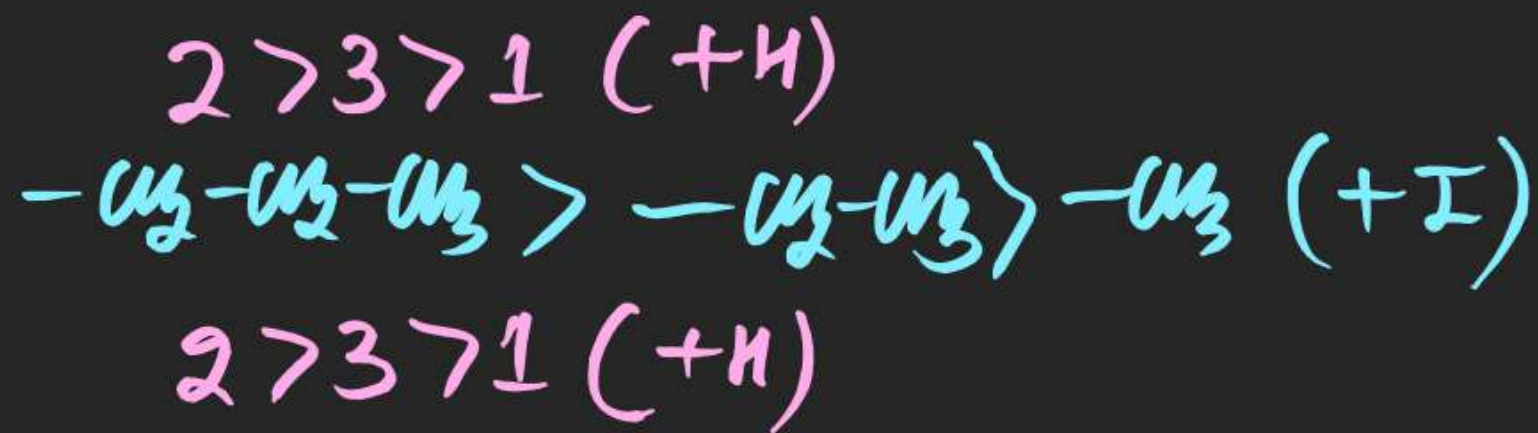
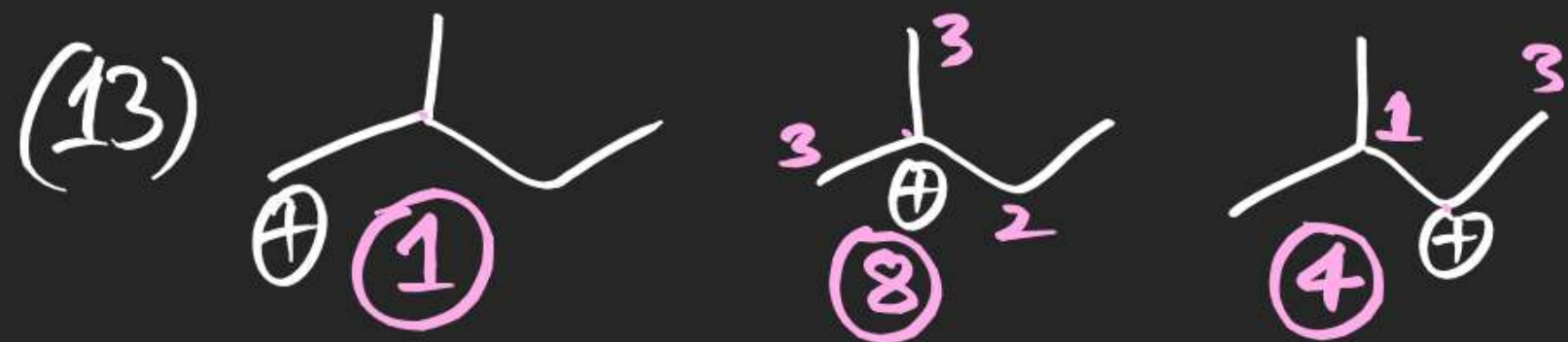
(9)



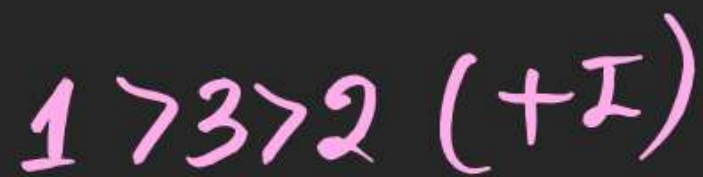
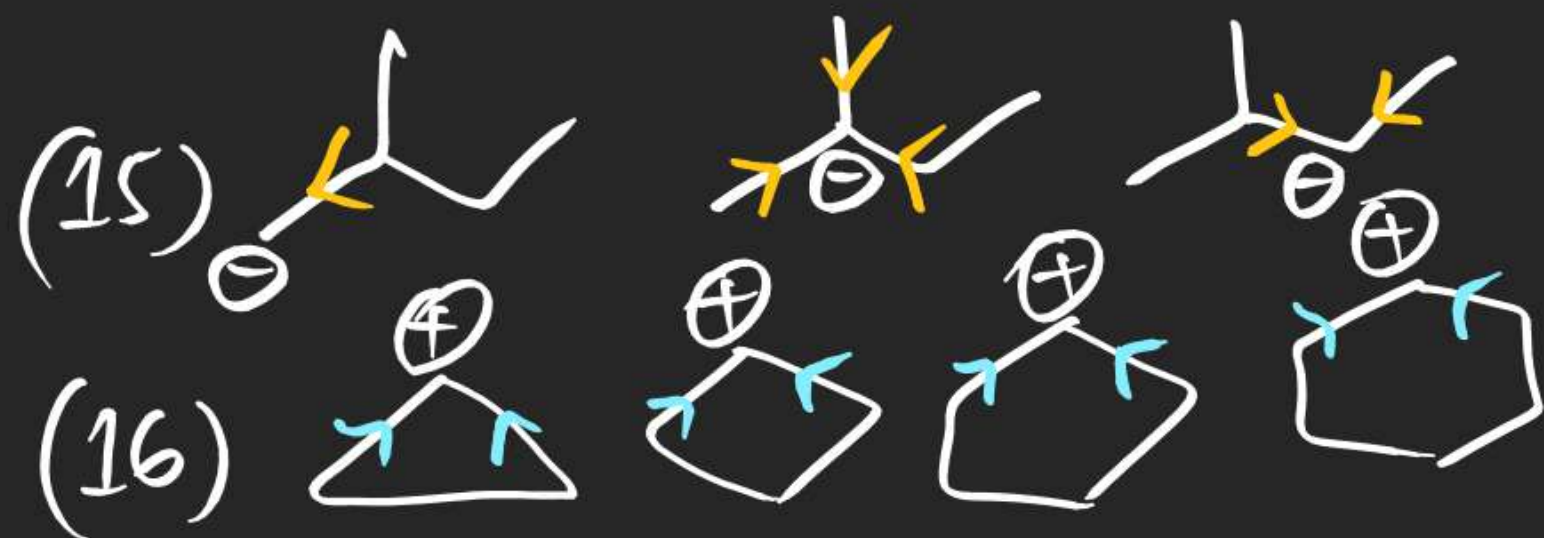
(11)

(12)





(14)



(17)



(18)





2 > 1 (Resonance)

(20)

2 > 1 (")

(21)



2 > 1 (")

(22)



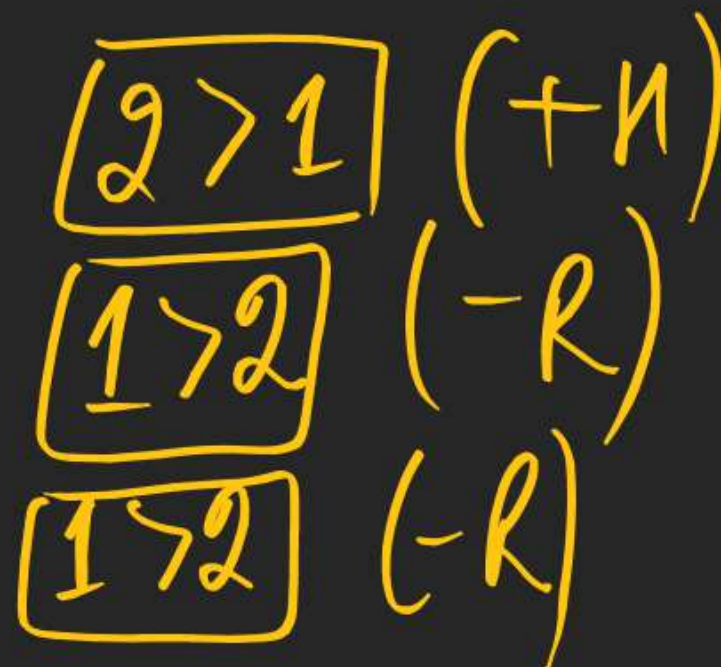
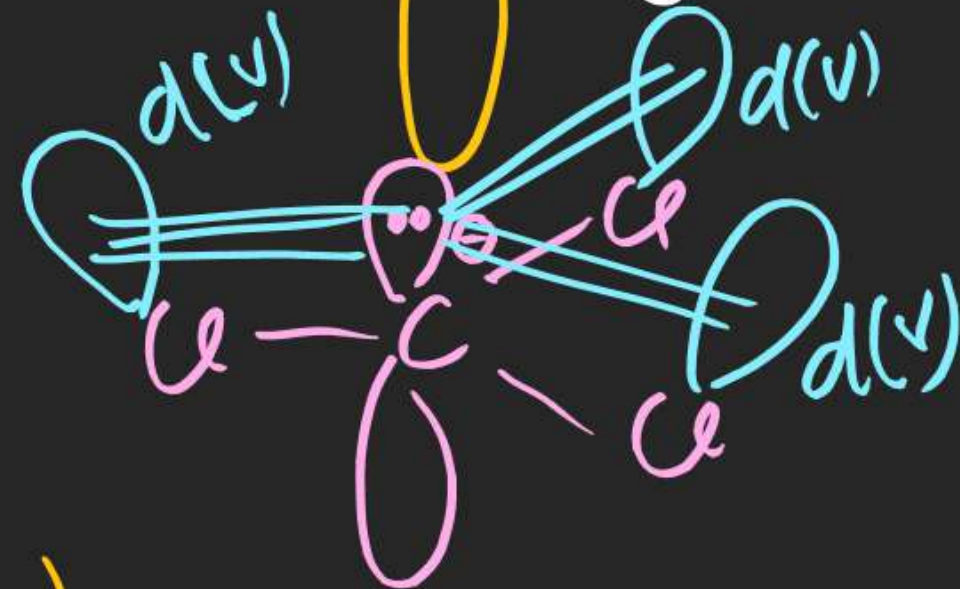
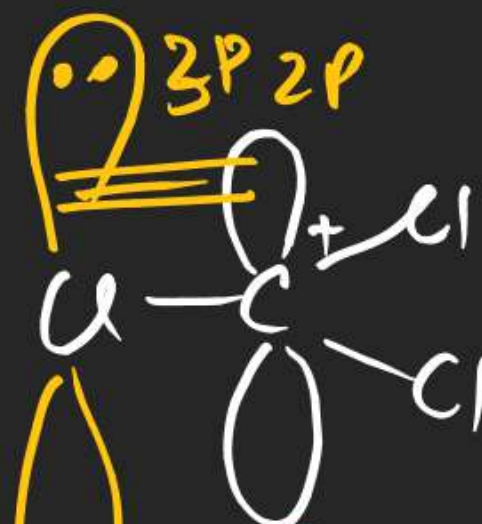
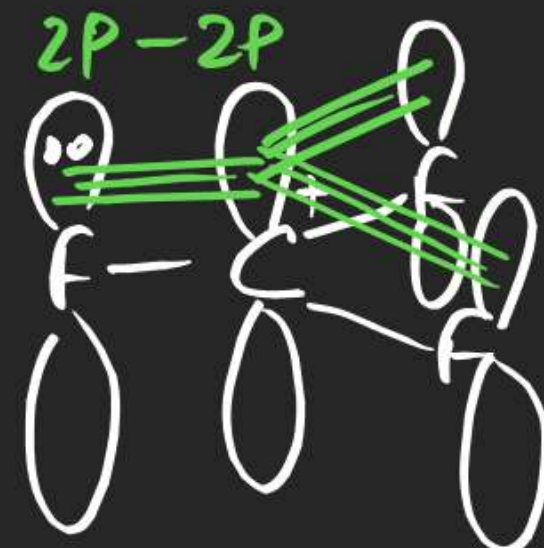
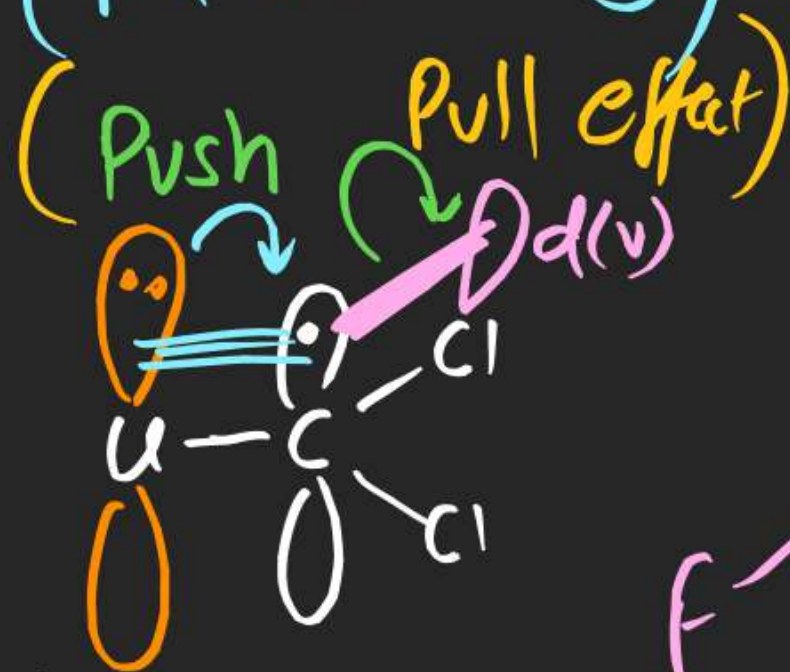
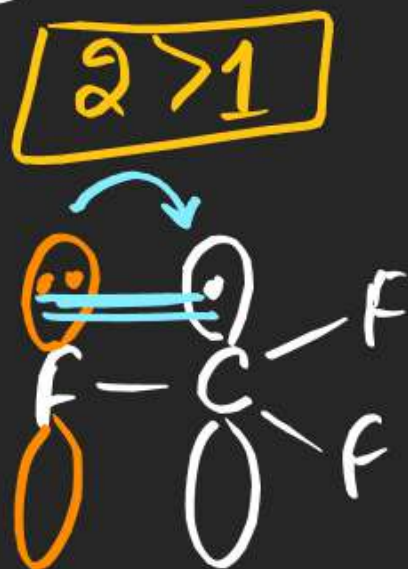
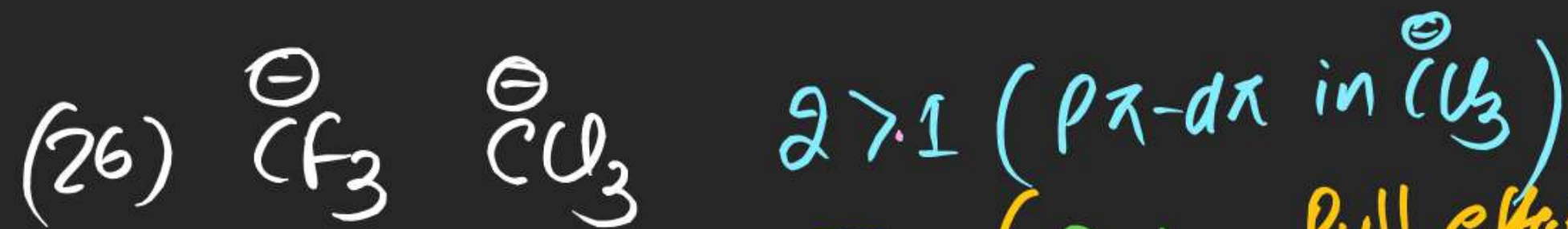
1 > 2 (")

(23)

1 > 2 (")

(24)

1 > 2 (")

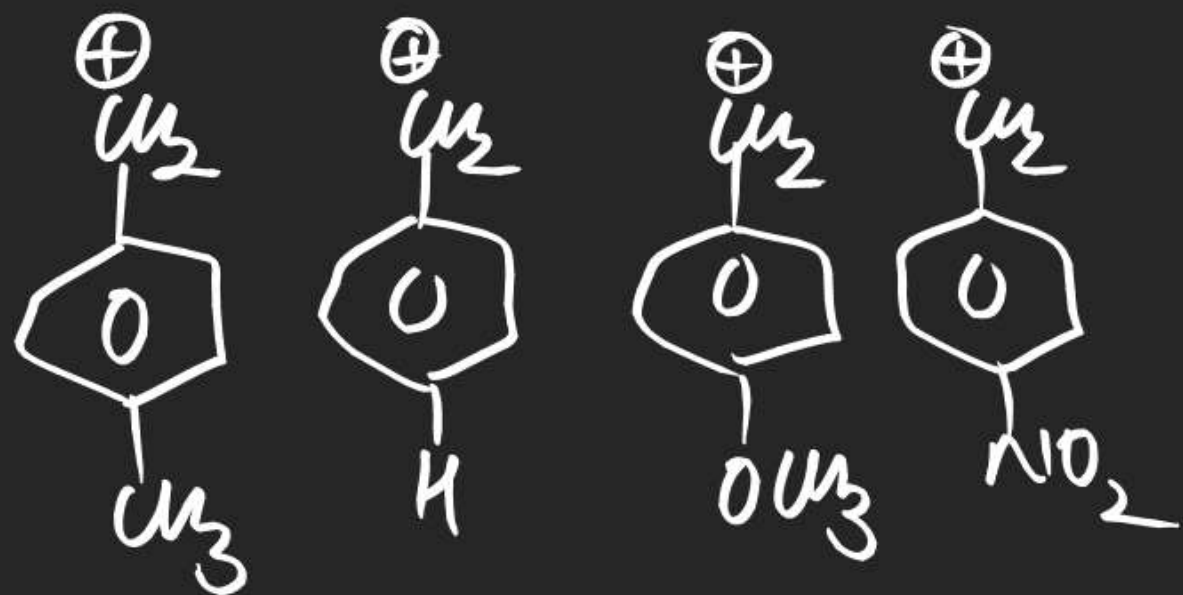




(32)

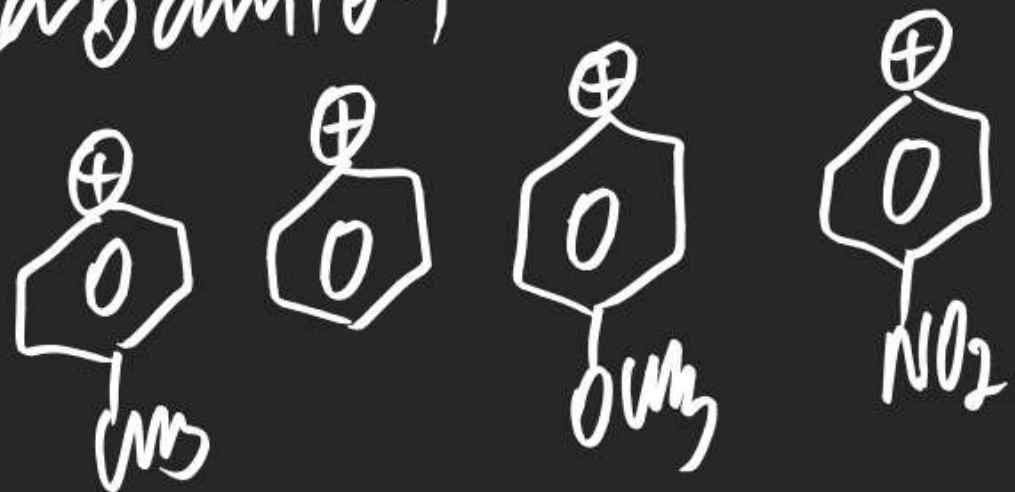
(33)

(34)

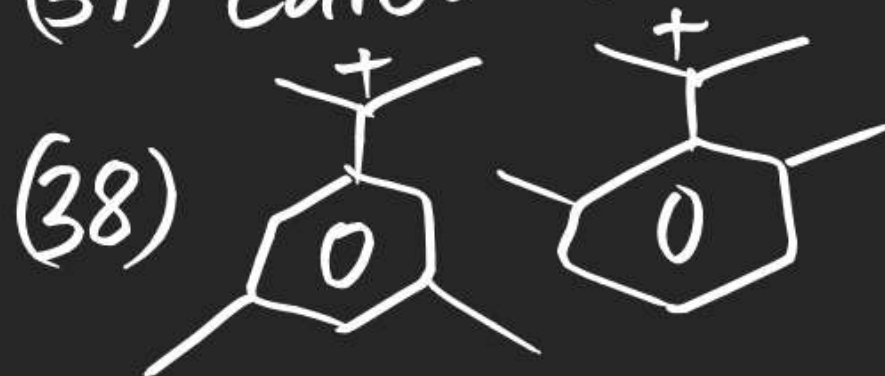


(35) Carbanion

(36)



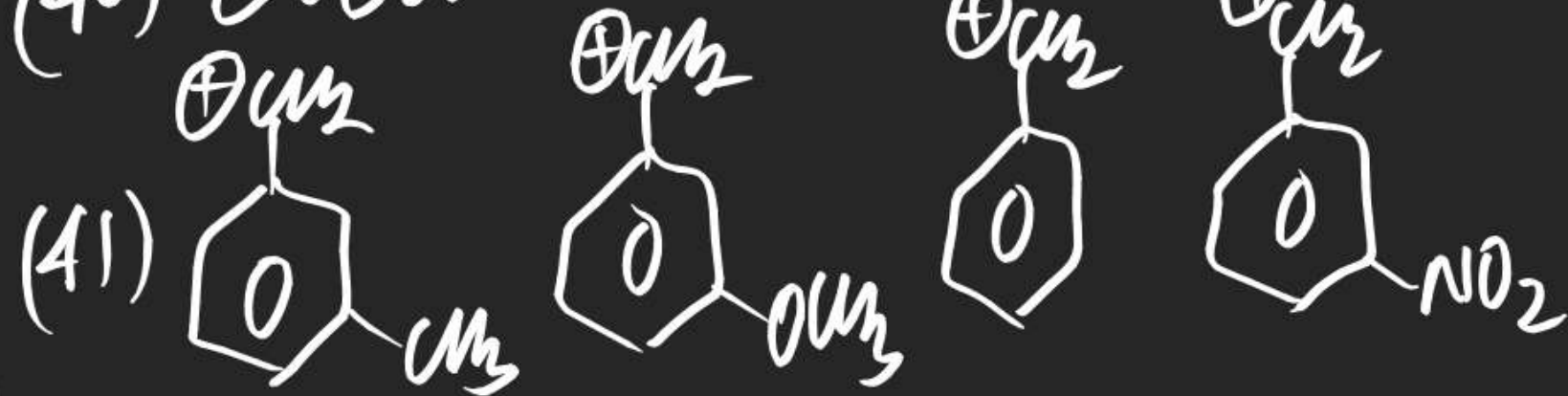
(37) Carbanion



(38)

(39) Free Radical

(40) Carbanion



(41)

(42) Carbanion.

(43)



(44)



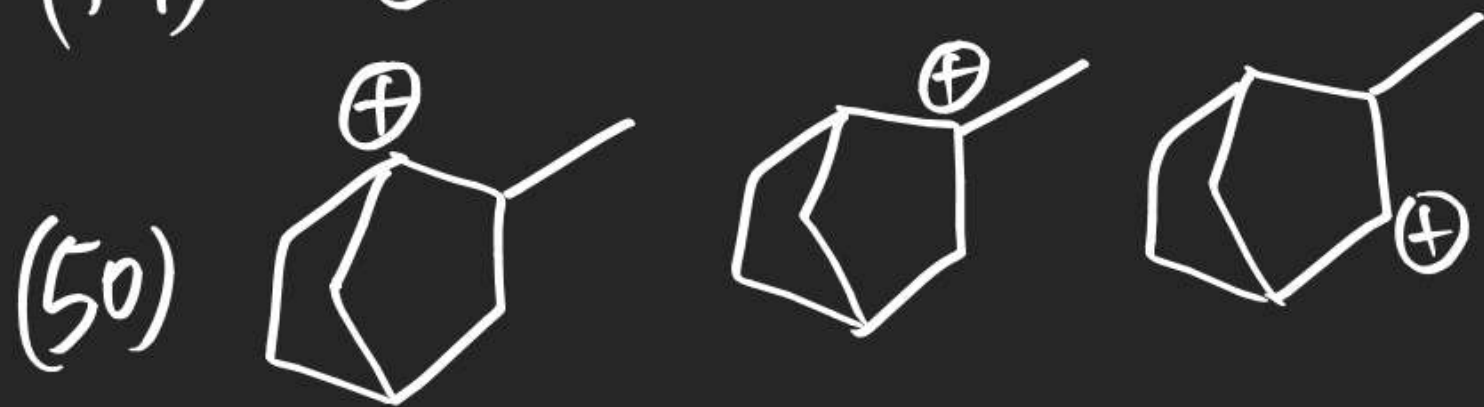
(45)



(46) Carbanion



(49) Carbocation

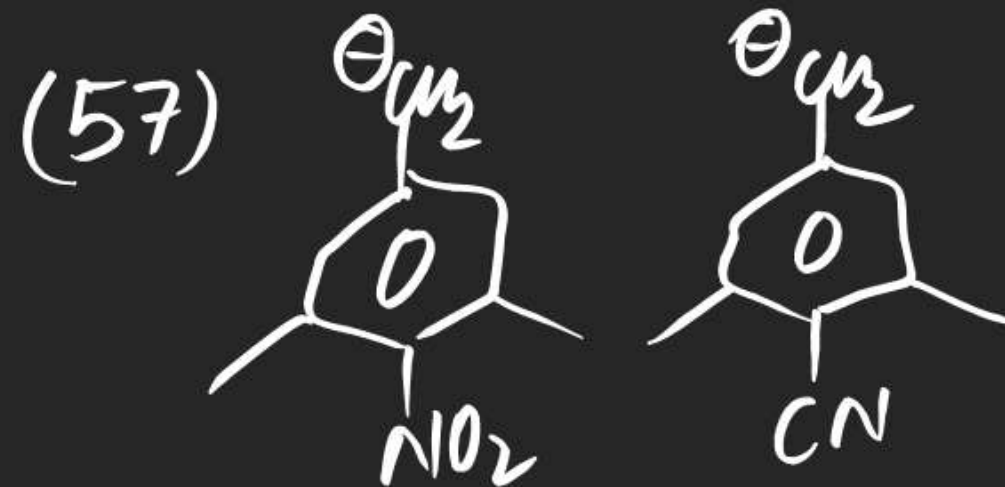
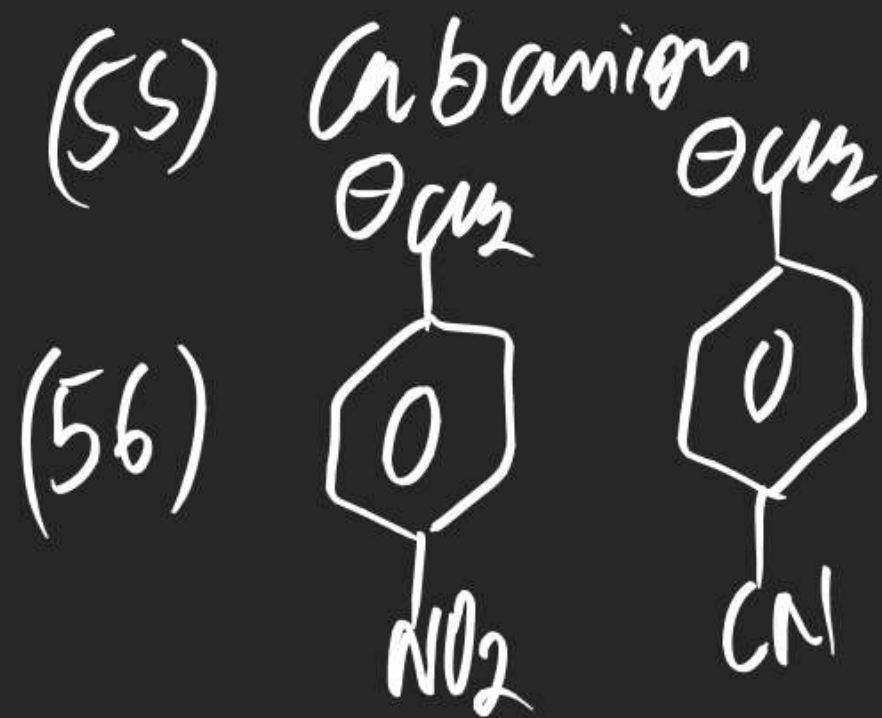
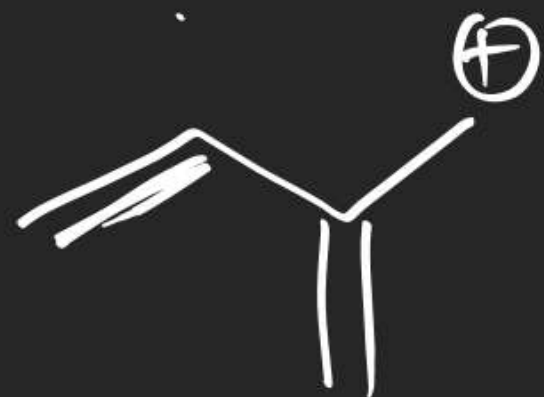


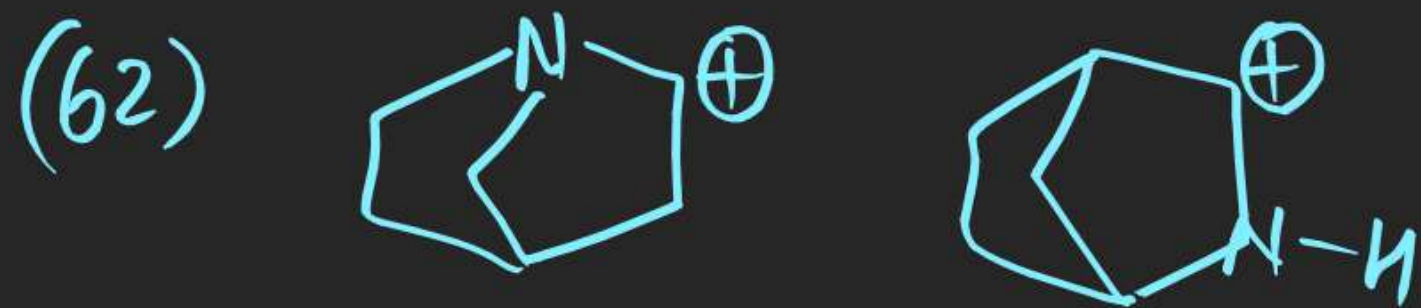
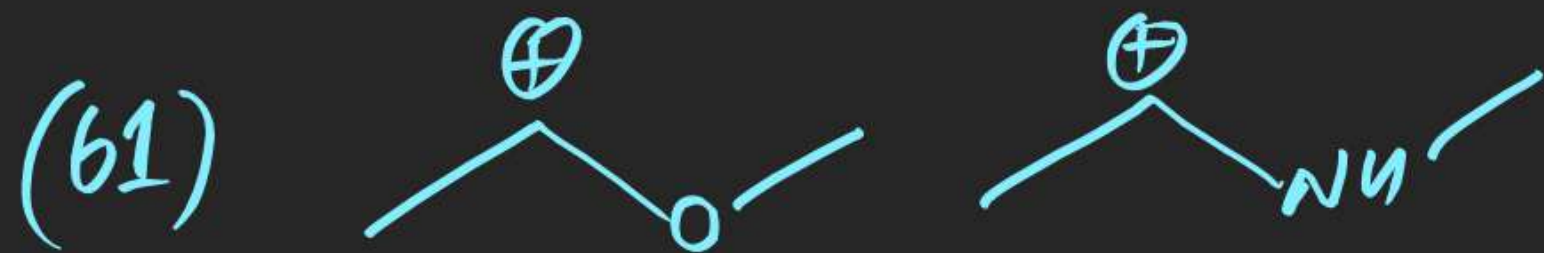
(51) Free Radical

(52) Carbanion



(54) Radical

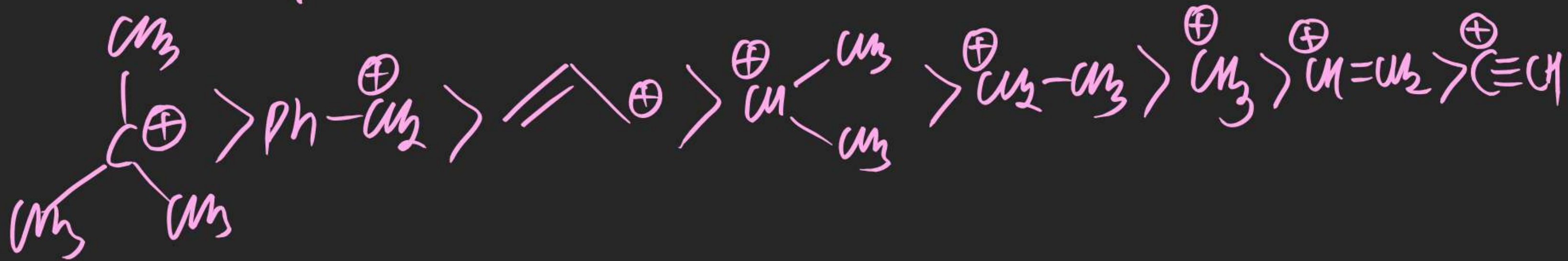
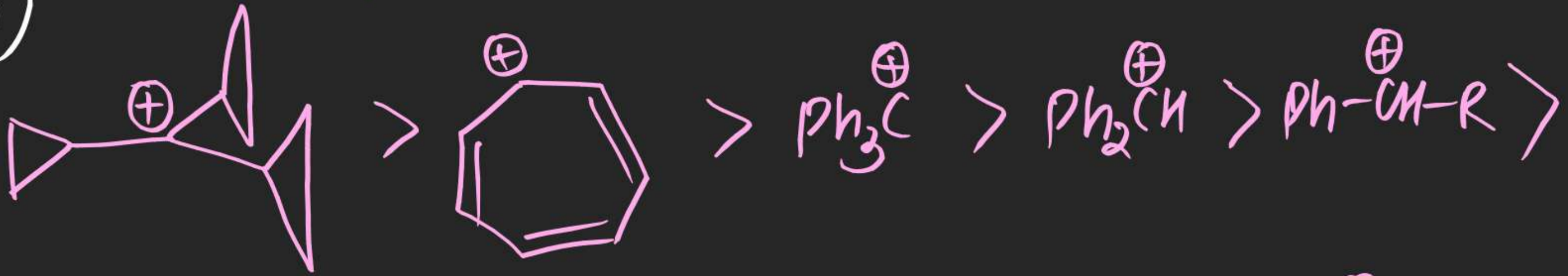




(64) Free Radical

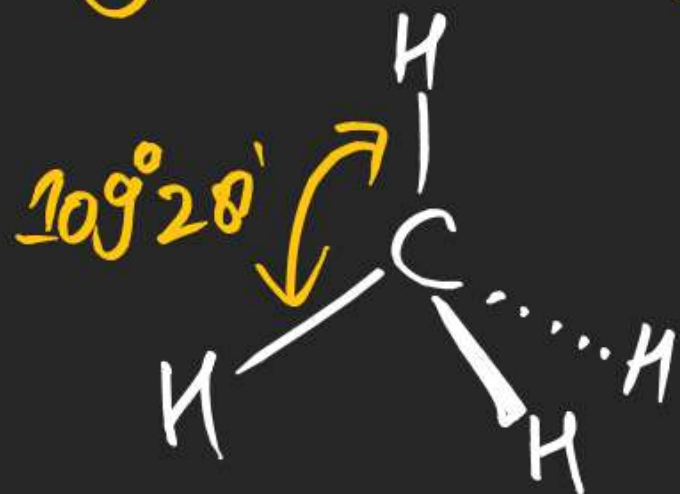
Imp
(65)

Stability order of Carbocation.



(#) Bayer's Strain Angle Theory:

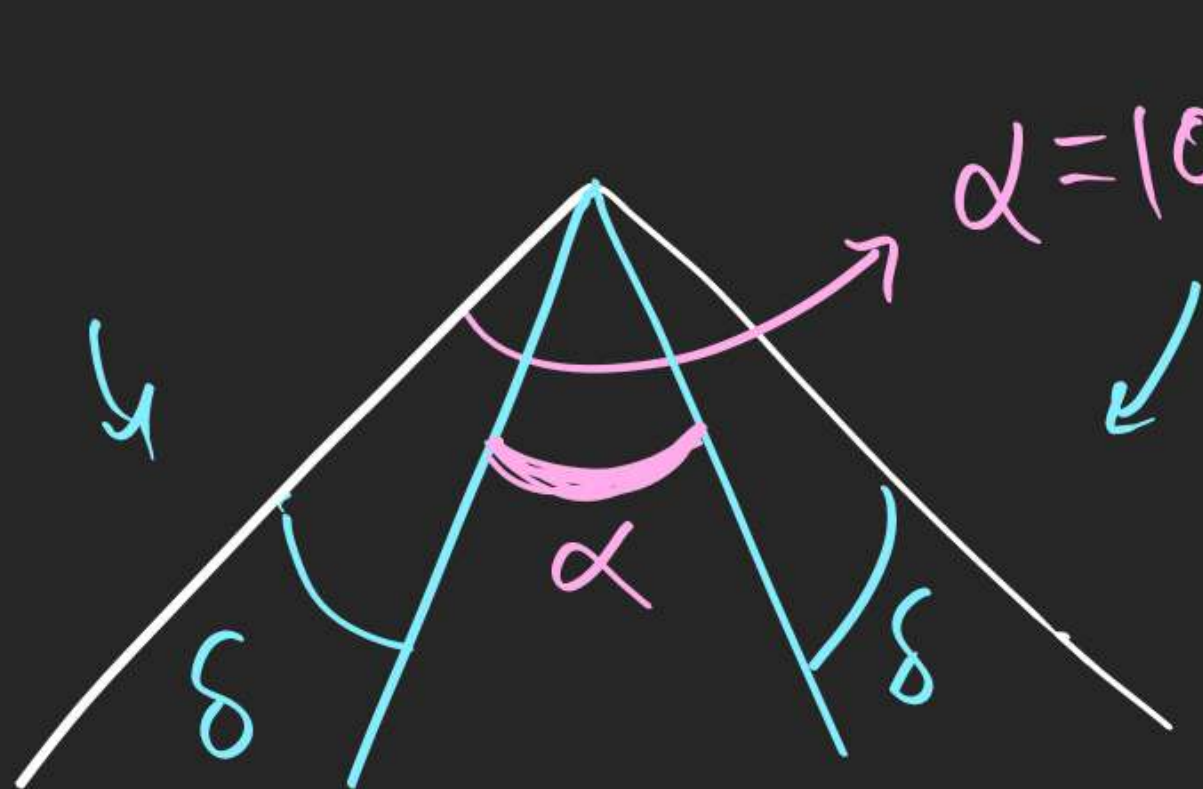
For max. stability of sp^3 atom Bond angle must be close to $109^\circ 28'$.



\Rightarrow For Cycloalkanes (Considered as planar compounds)



\Rightarrow Stability $\propto \frac{1}{\text{Strain}}$



$$\alpha = 109^{\circ} 28'$$

$$\Rightarrow \delta + \alpha + \delta = 109^{\circ} 28'$$

$$\Rightarrow \delta = \frac{1}{2} [109^{\circ} 28' - \alpha]$$

For $\alpha = 60^{\circ}$

$$\delta = +24.5^{\circ}$$

$\alpha = 90^{\circ}$

$$\delta = +9.5^{\circ}$$

$\alpha = 100^{\circ}$

$$\delta = +0.5^{\circ}$$

$\alpha = 120^{\circ}$

$$\delta = -5.5^{\circ}$$

Acc. to Baeyer's

Strain order



Stability order



(जल्द से)

But HOC per CH_2 data shows
strain order is



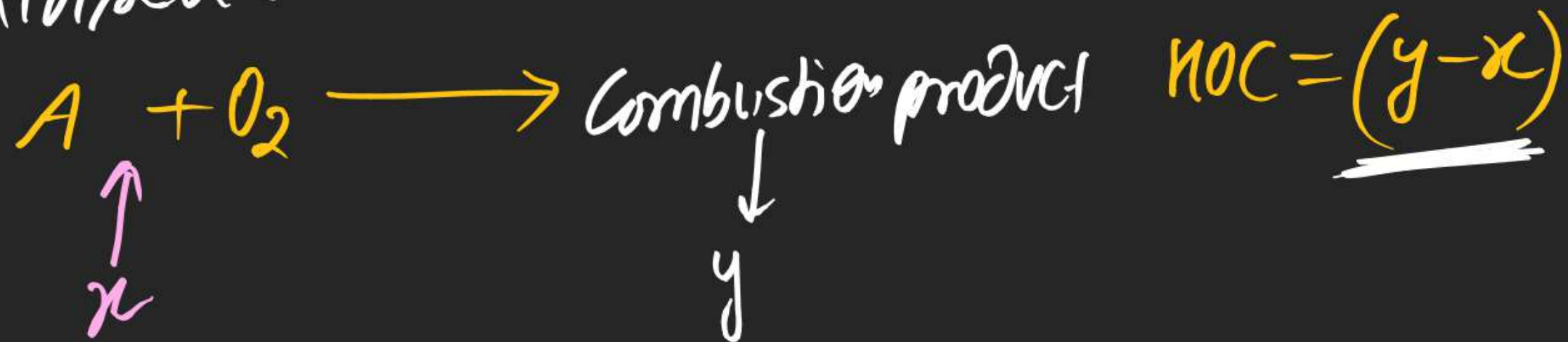
Stability order



It can be explained by that cycloalkanes are not planar
(except cyclopropane). They exist in various non planar
forms in cyclohexane $\alpha \rightarrow 109^\circ 28'$
 $\delta \rightarrow 0$

(#) Heat of Combustion (HOC)

⇒ Enthalpy change when 1 mole of any compound gets completely Burn or oxidised.



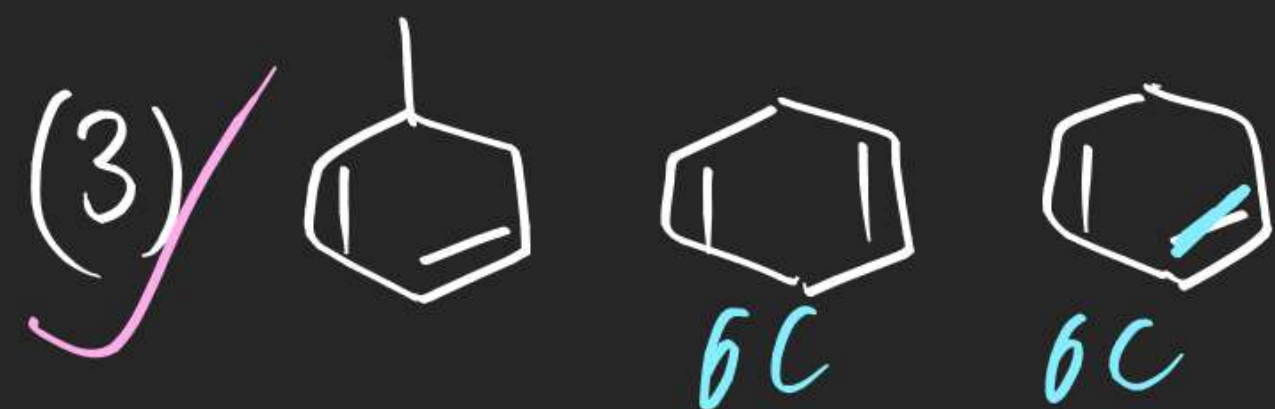
$$\text{HOC} = \underline{(y - x)}$$

Heat of Combustion \propto No. of Carbon atom
 $\propto \frac{1}{\text{Stability}}$ \propto strain

Arrange following in \downarrow order of HOC



4 > 3 > 2 > 1



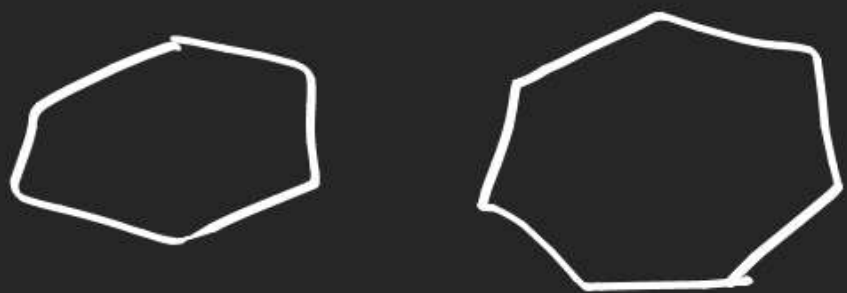
6C

6C

1 > 2 > 3



(5)



$$\frac{x}{3}$$

$$\frac{y}{4}$$

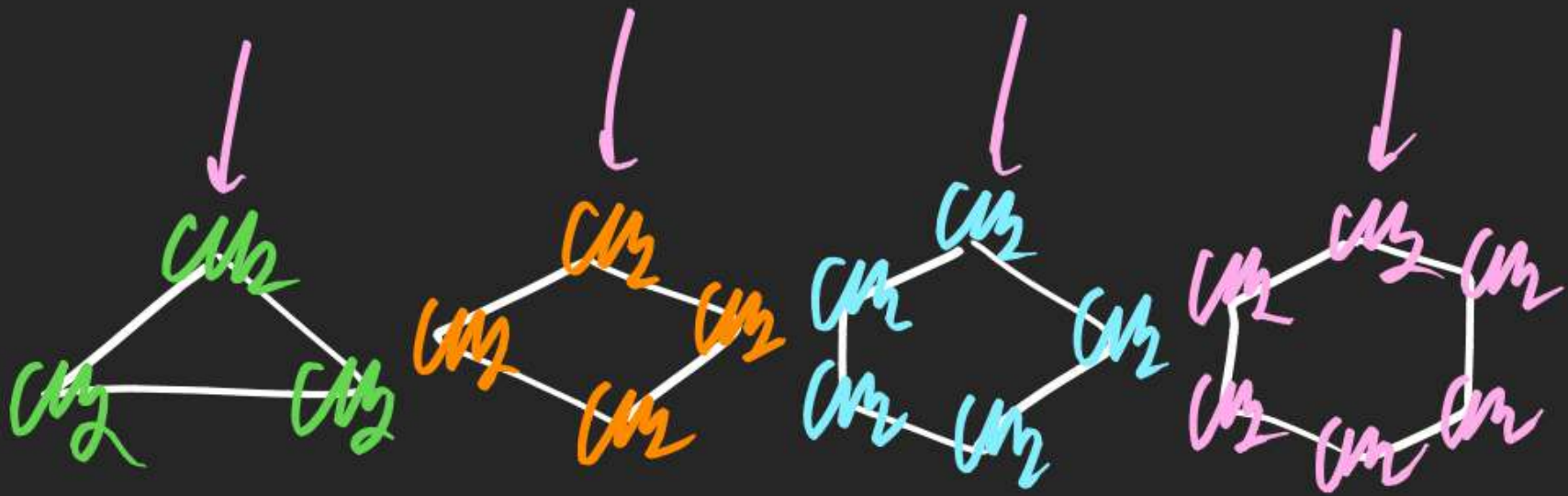
$$\frac{z}{5}$$

$$\frac{w}{6}$$

(6)



(7)



HOC 4 > 3 > 2 > 1

(8)



HOC per CH₂ & strain



(9)



(10)



