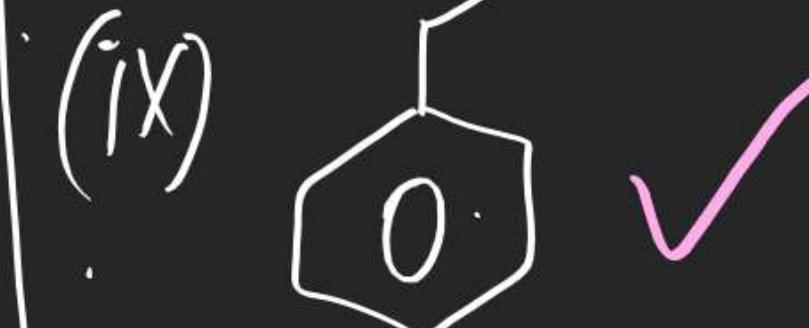
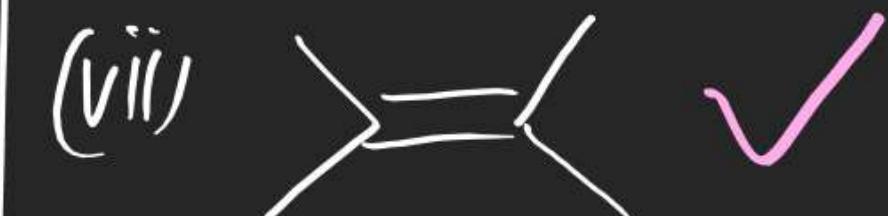
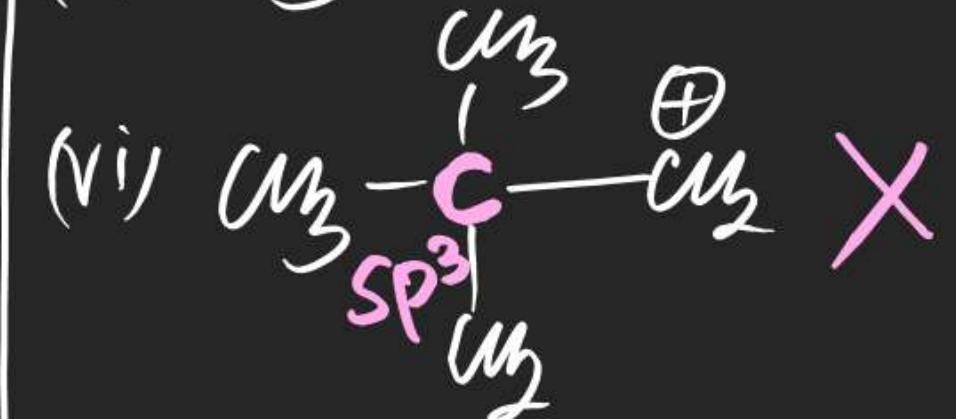
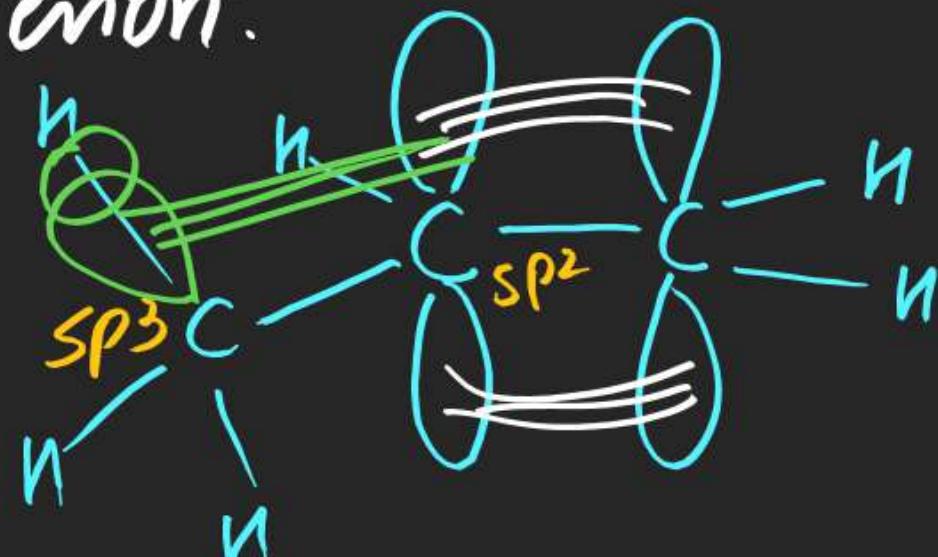
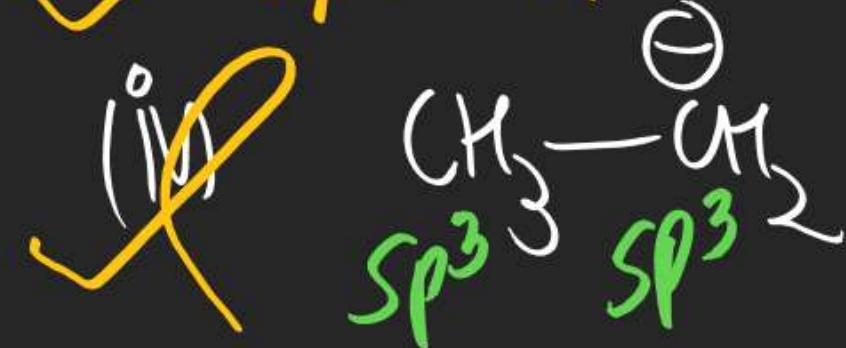
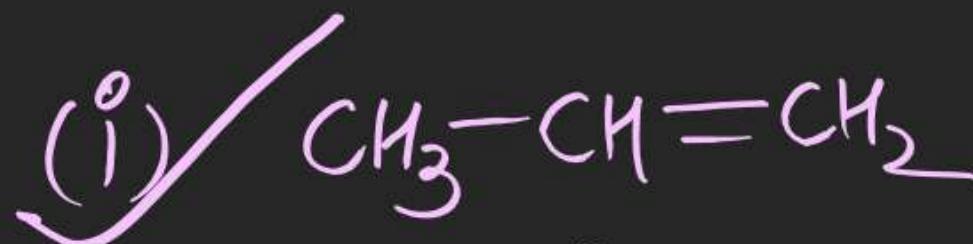
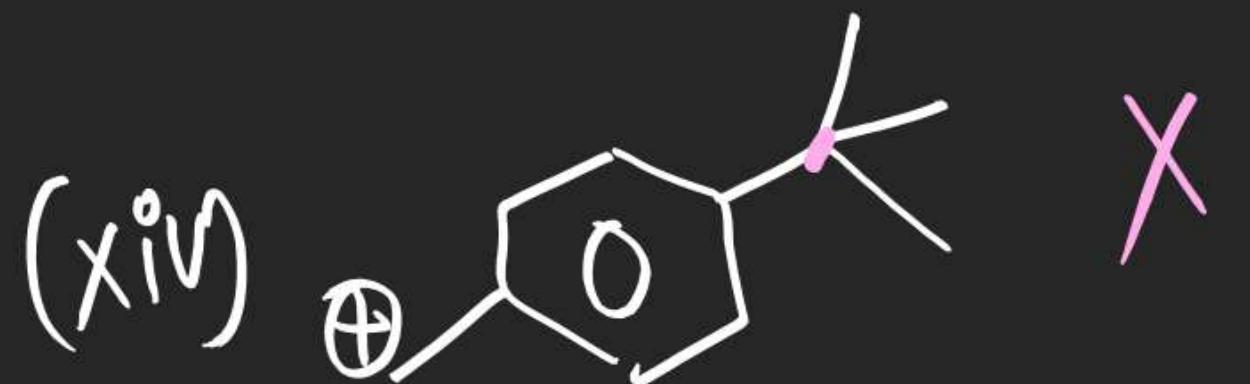


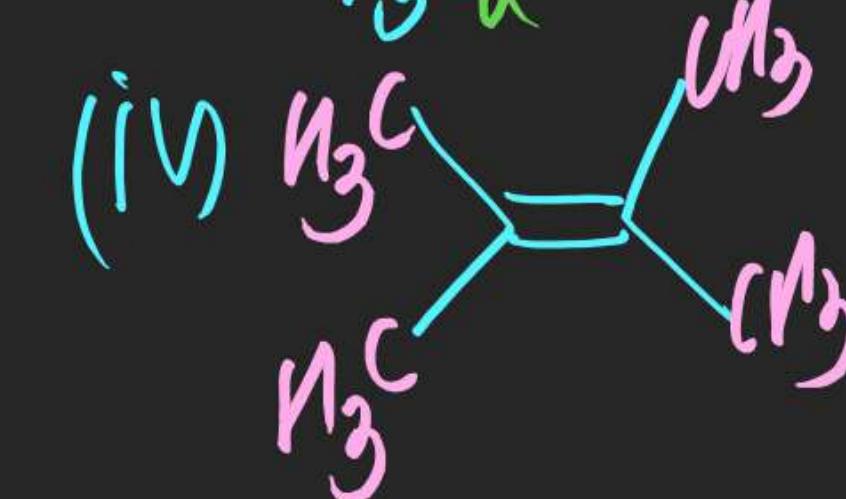
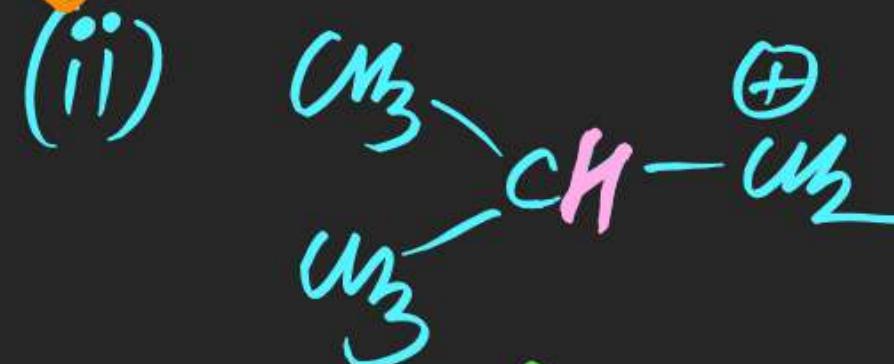
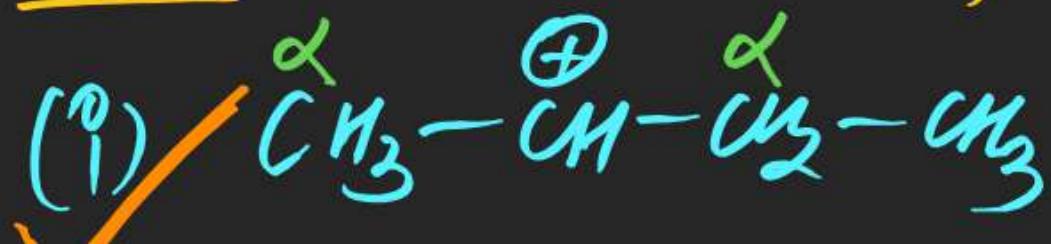
+H effect of that alkyl group.

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





Ex-4: Total no. of HS Str*involving C-H Bond.*



⑤

①

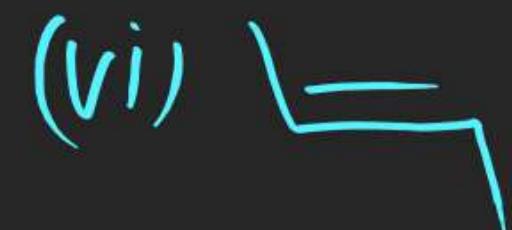
⑥

⑫

C-H Bond.



6



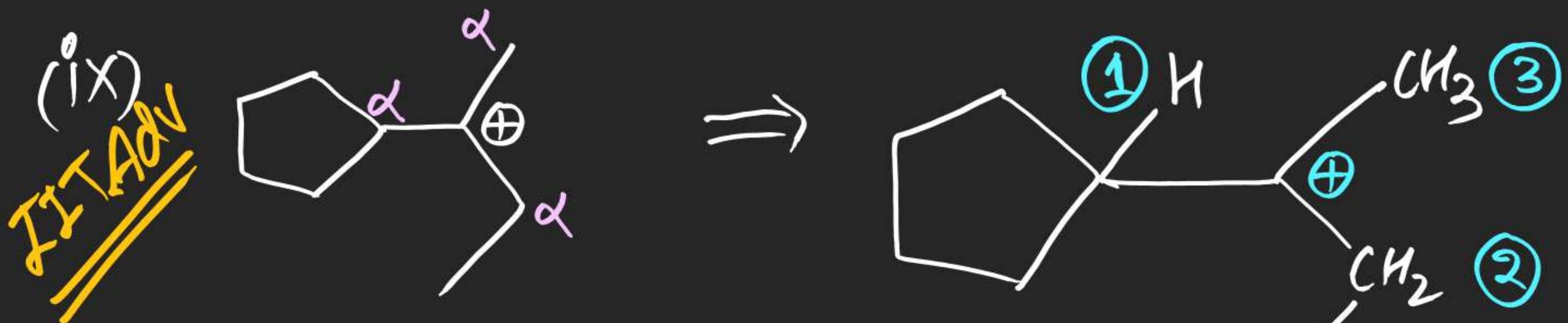
6



8



9

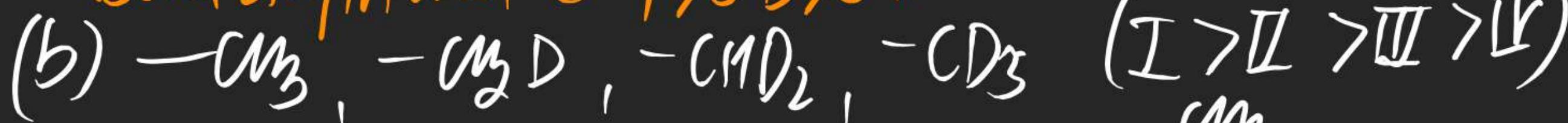


Note: π effect depends on Bond Strength N_3C ↓. α effect when attached with a sp^2 carbon

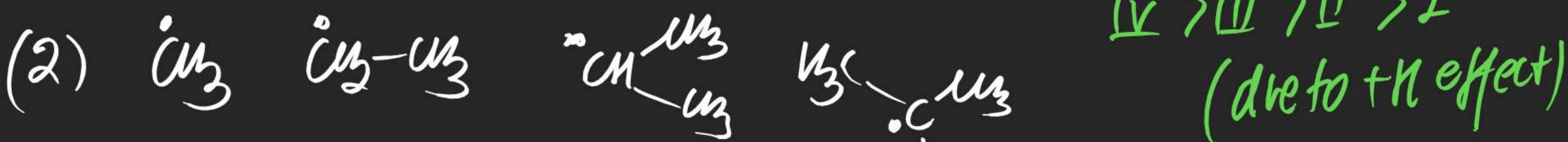
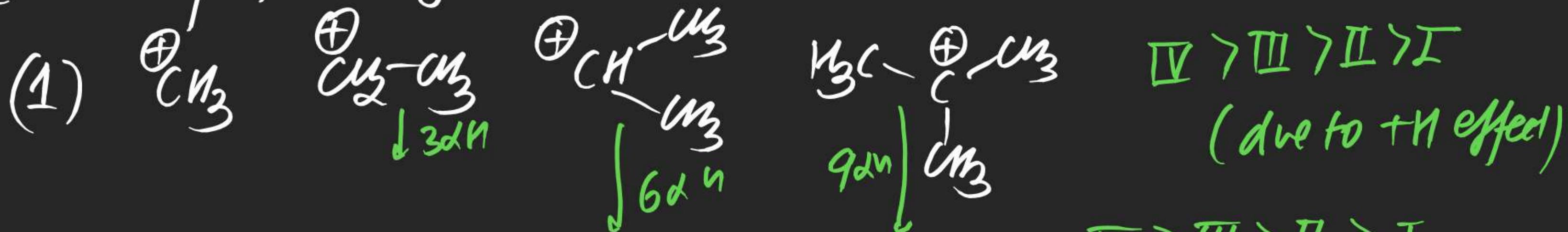
Arms following in ↓ order of $\pm\pi$ effect

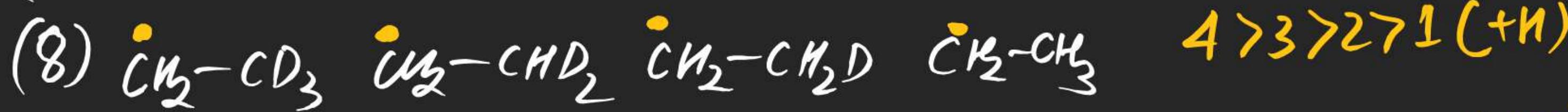
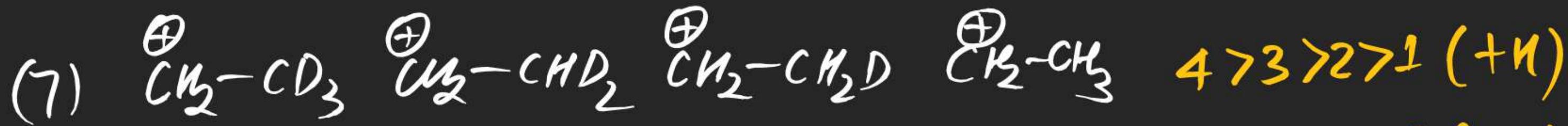
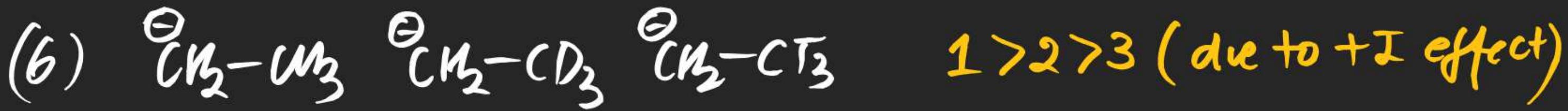


Bond Strength order $C-T > C-D > C-H$



(#) Anze following in ↓ and of Stability

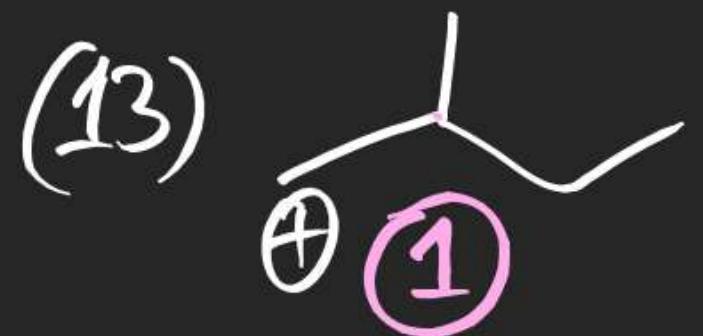




(11)

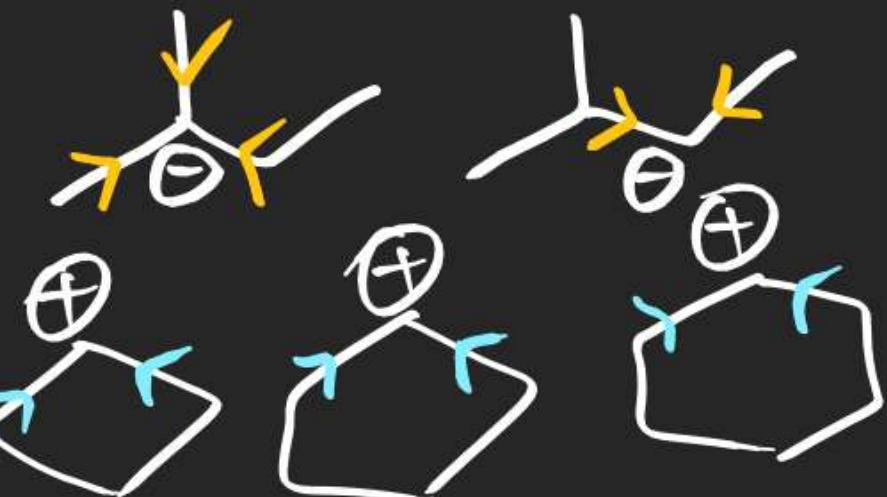


(12)



$2 > 3 > 1 (+\text{H})$
 $-m_2 - m_3 - m_3 > -m_3 - m_3 - m_3 (+\text{I})$

(14)



$1 > 3 > 2 (+\text{I})$



$4 > 3 > 2 > 1$ [Angle strain]

(16)

$4 > 3 > 2 > 1$

(17)

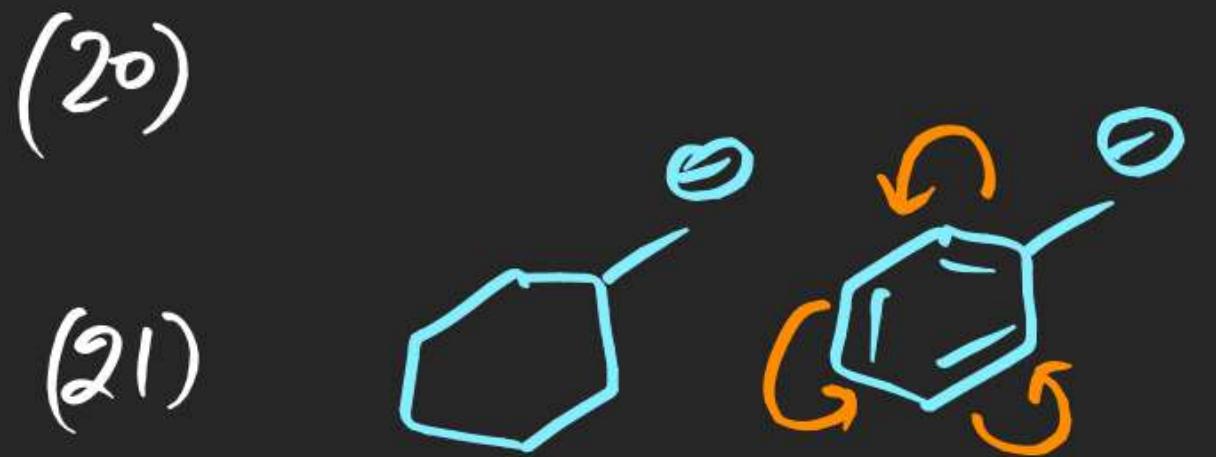
$1 > 2 > 3 > 4$

⋮

(18)



$2 > 1$ (Resonance)



$2 > 1$ ("")



$2 > 1$ ("")



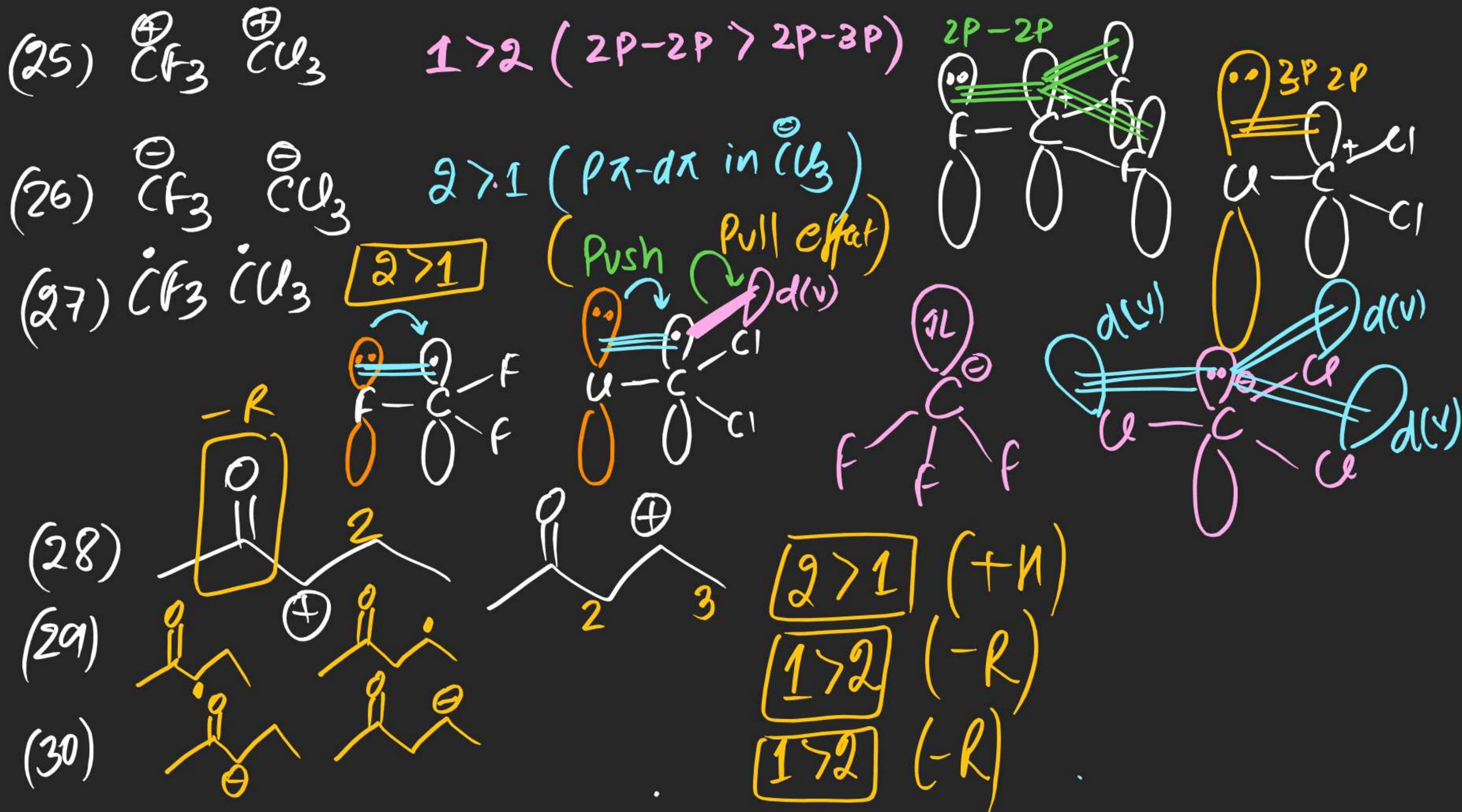
$1 > 2$ ("")



$1 > 2$ ("")



$1 > 2$ ("")





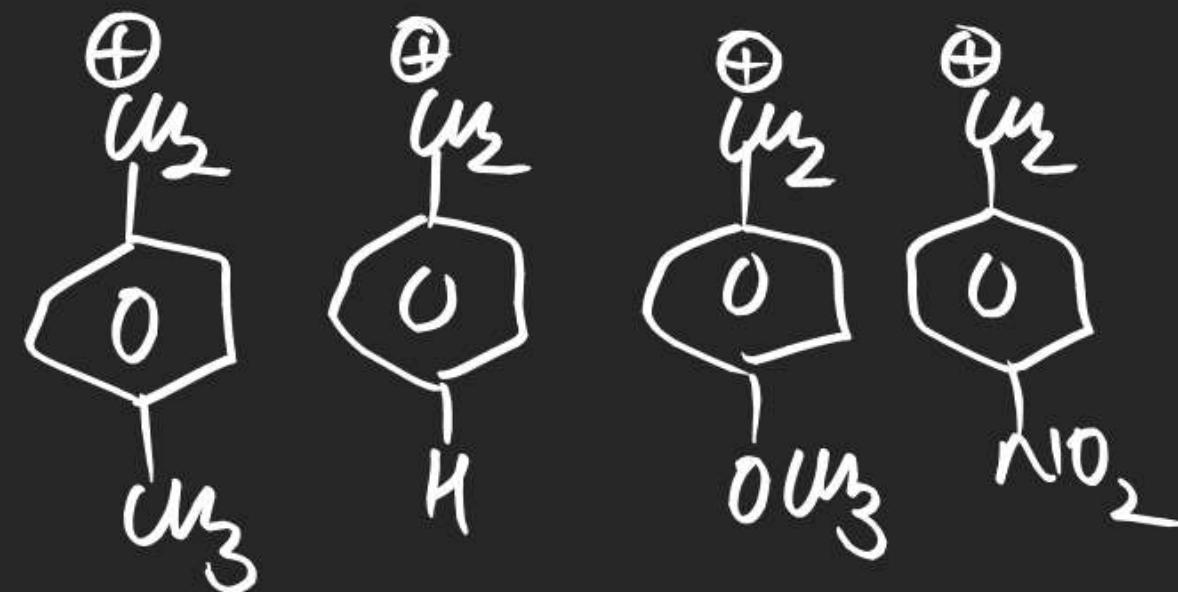
(32)

(33)

(34)

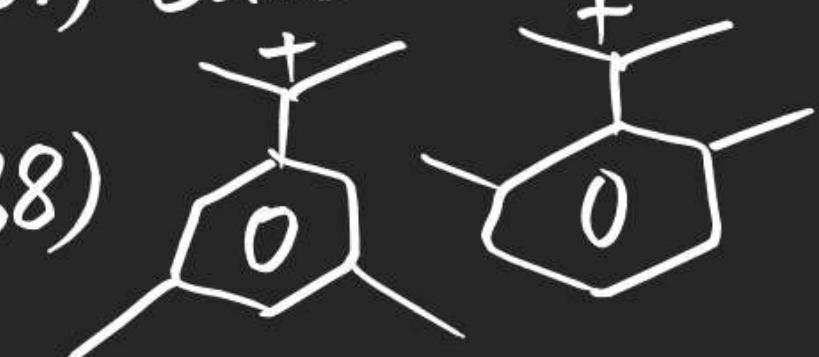
(35) carbamion

(36)



(37) Carbamion

(38)



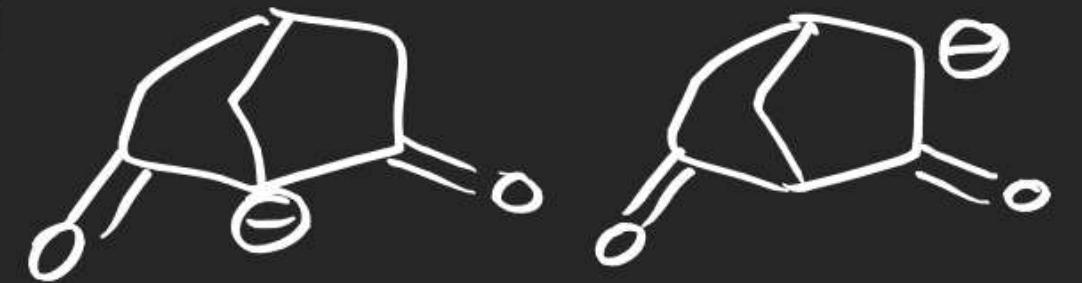
(39) Free Radical

(40) Carbamion



(42) Carbamion.

(43)



(44)



(45)



(46) Carbamion

(47)

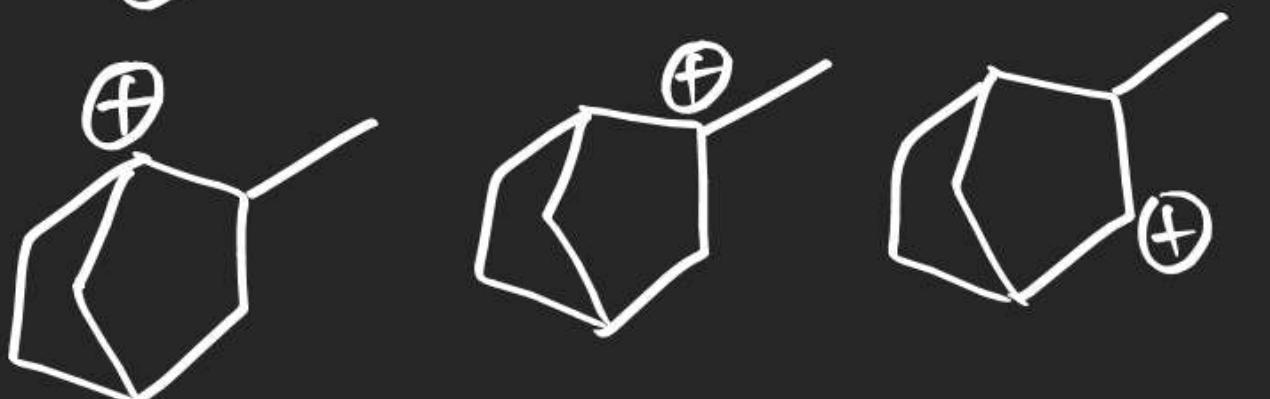


(48)



(49) Carbamion

(50)

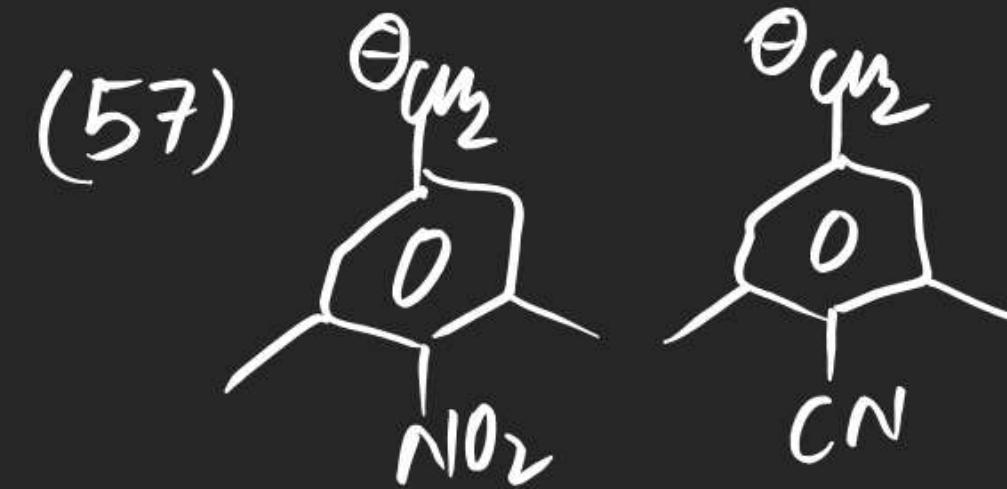
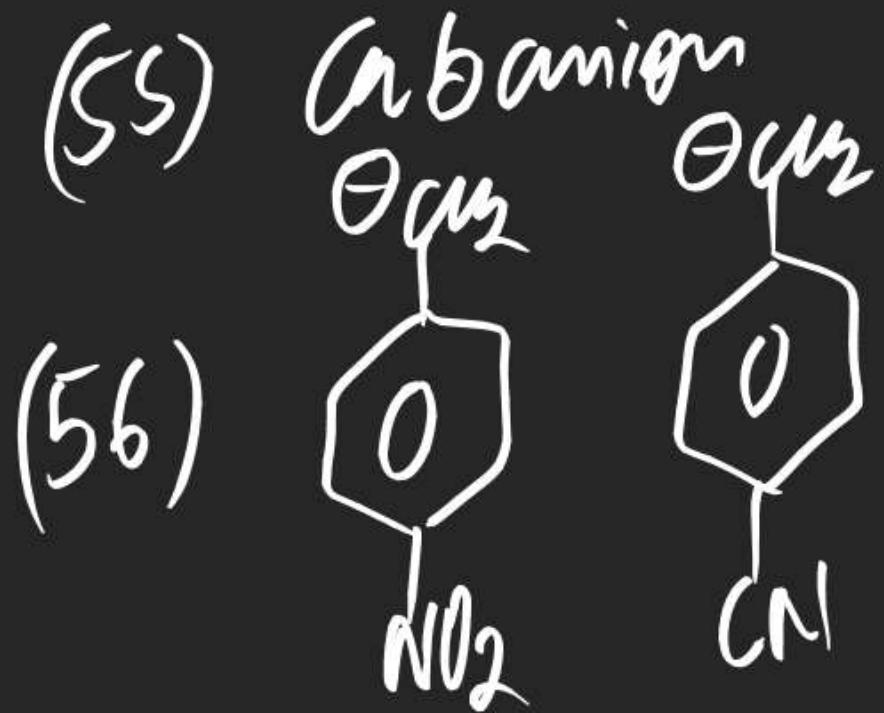


(51) Free Radical

(52) Carbamion



(54) Radical



(61)



(62)



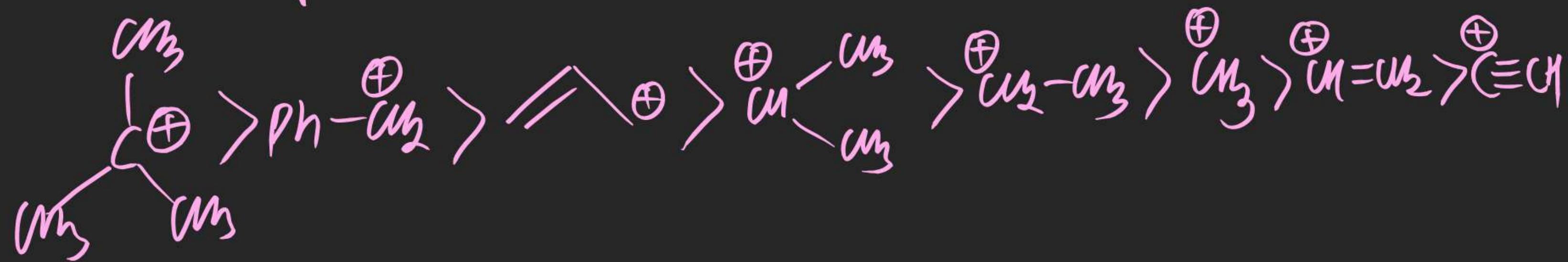
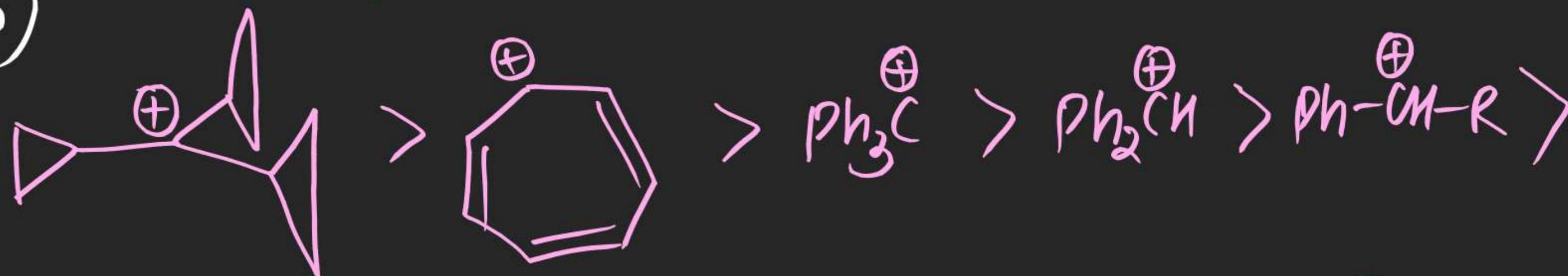
(63)



(64) Free Radical

MIMP
(65)

Stability order of Carbocation.



(#) Bayer's Strain Angle Theory:

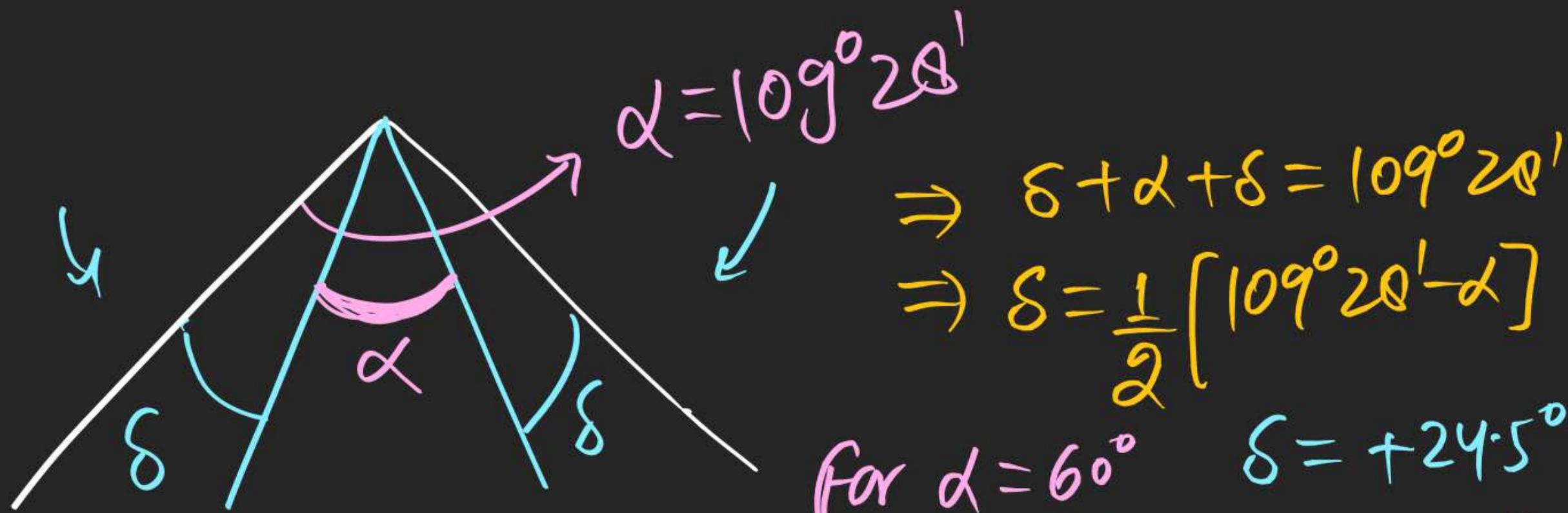


For max. stability of sp^3 atom Bond angle must
Be close to $109^{\circ}28'$.

⇒ For Cycloalkanes (Considered as planar Compounds)



⇒ Stability of Strain



$$\text{for } \alpha = 60^\circ \quad \sigma = +24.5^\circ$$

$$\alpha = 90^\circ \quad \sigma = +9.5^\circ$$

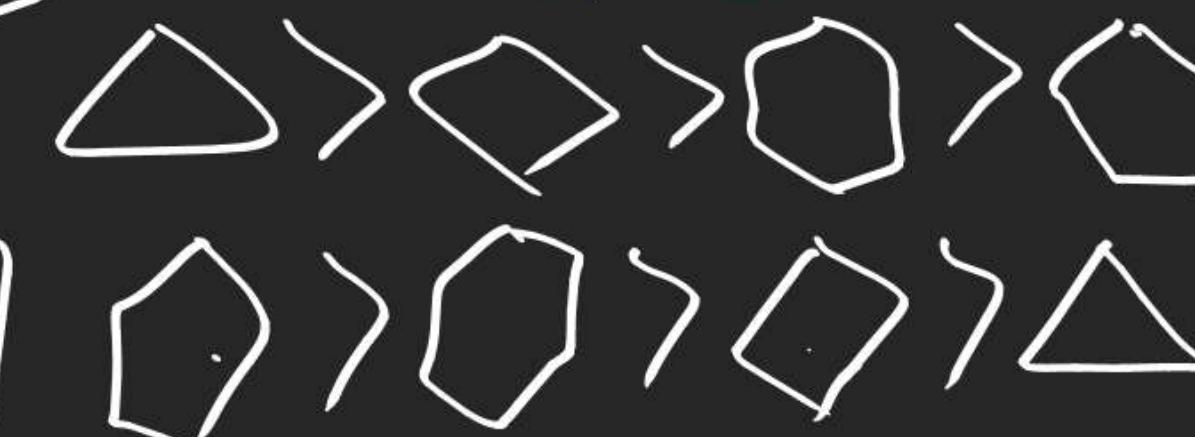
$$\alpha = 108^\circ \quad \sigma = +0.5^\circ$$

$$\alpha = 120^\circ \quad \sigma = -5.5^\circ$$

Acc. to Baye & S

Stain order

Stability order



πCΔE

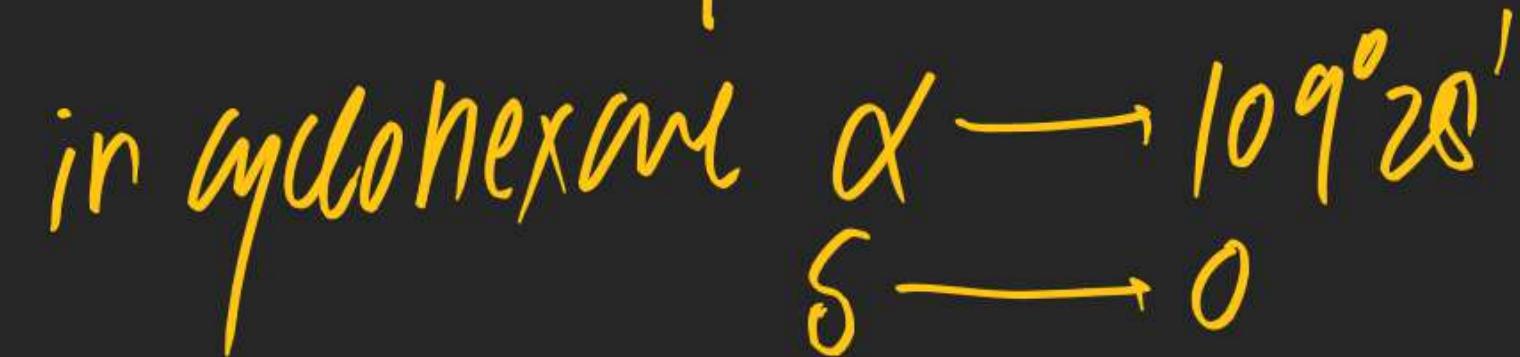
But NOC per CH_2 data shows

Stain order is



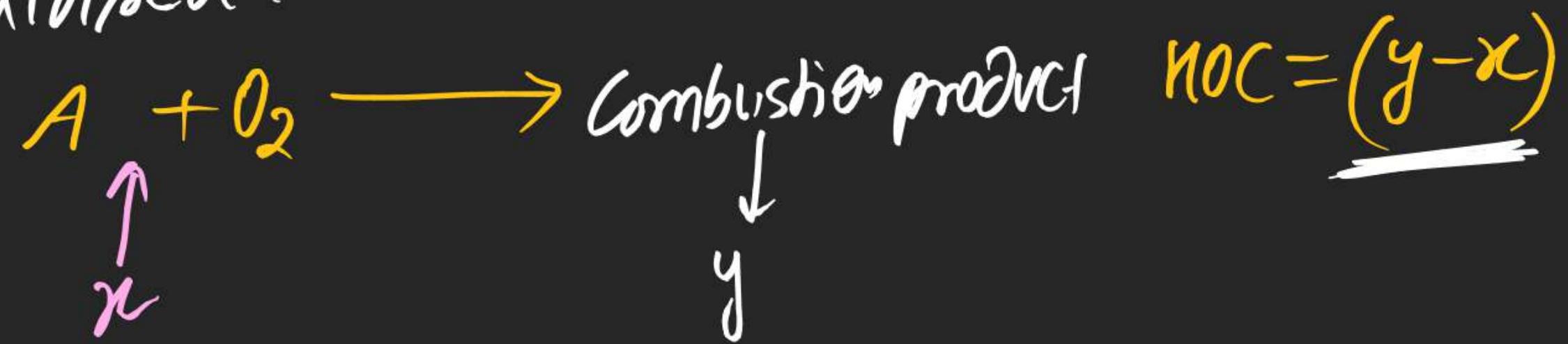
Stability order

It can be explained by that cycloalkanes are not plane (Except cyclopropane). They exist in various non plane forms



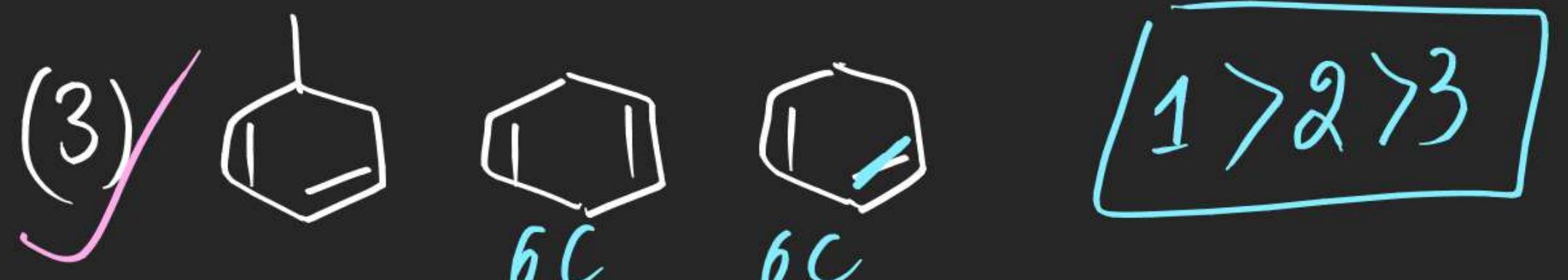
(#) Heat of Combustion (HOC)

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



heat of combustion \propto No. of Carbon atom
 \propto $\frac{1}{\text{Stability}}$ \propto strain

Any one following in ↓ order of HOC



(5)



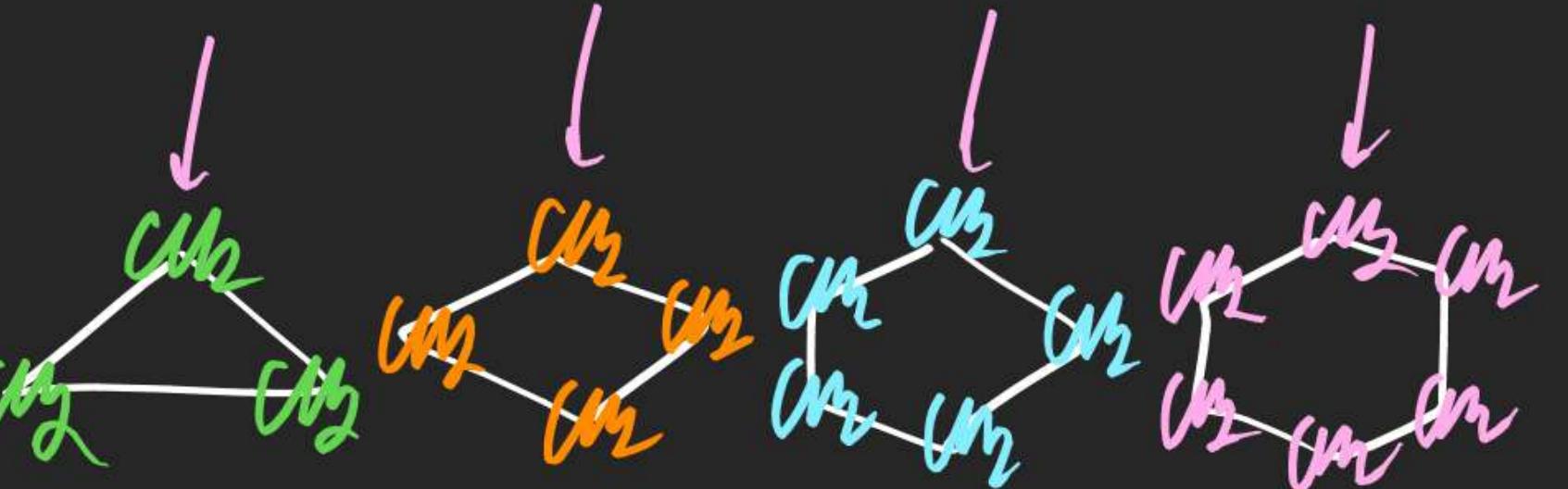
$$\frac{x}{3}$$

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

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

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

(6)



HOC

$4 > 3 > 2 > 1$

(7)

> (8)



HOC per CH_2 of strain



...
...

