

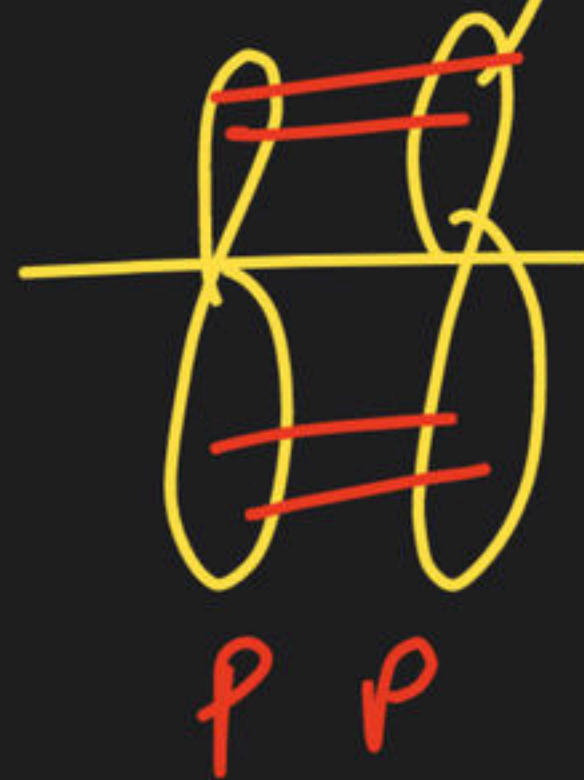


# Doubt Clearing Session

Course on General Organic Chemistry (GOC) for Dropper 13th students

Q: why I effect is applicable only on  $\sigma$  e $^-$ s.

$\pi$  Bond



$\sigma$  Bond

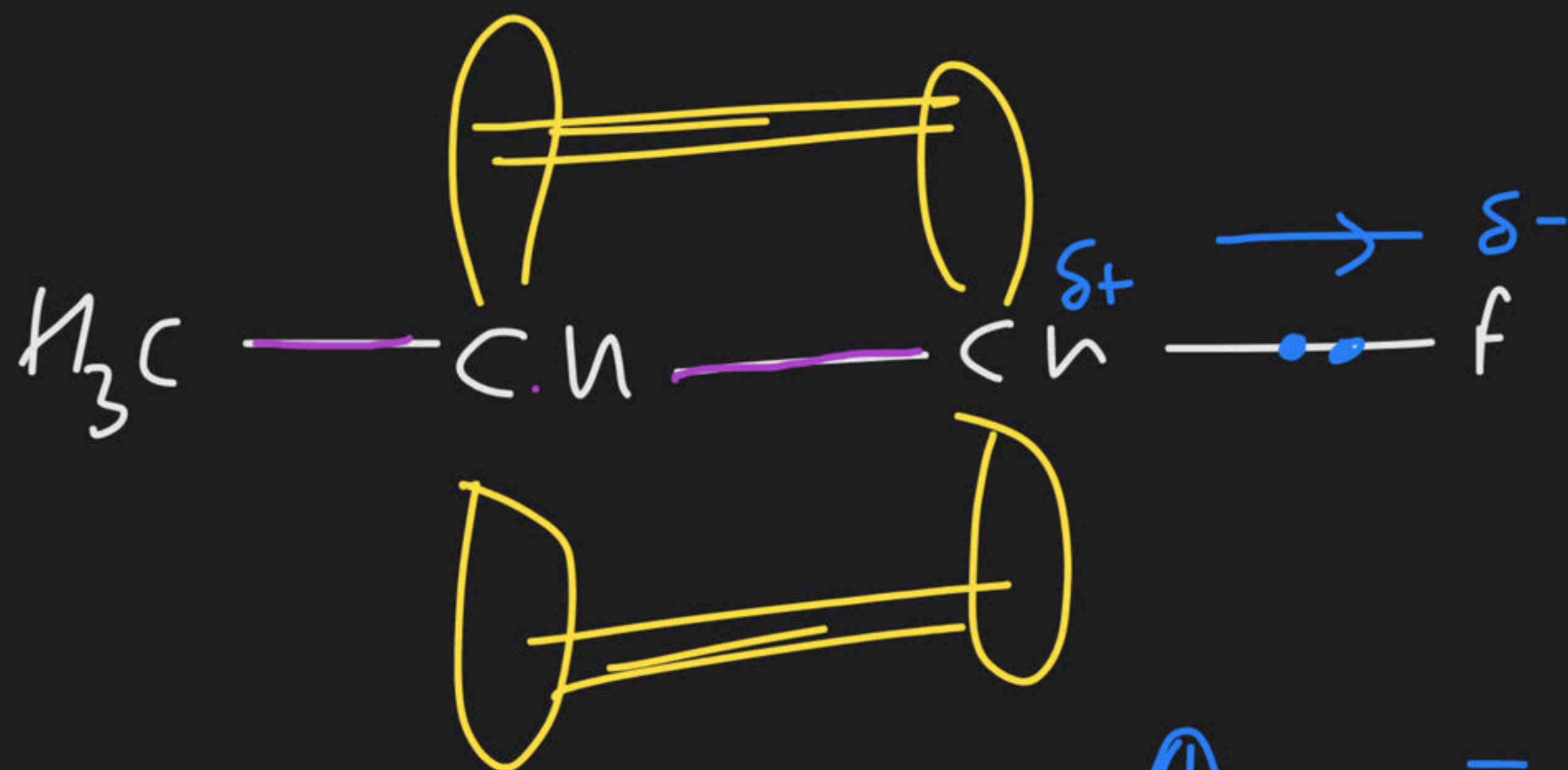


s-s

s-sp<sup>3</sup> / s-sp<sup>2</sup> / s-sp

sp<sup>3</sup>-sp<sup>3</sup> / sp<sup>3</sup>-sp<sup>2</sup> / sp<sup>3</sup>-sp

sp<sup>2</sup>-sp<sup>2</sup> / sp<sup>2</sup>-sp / sp-sp

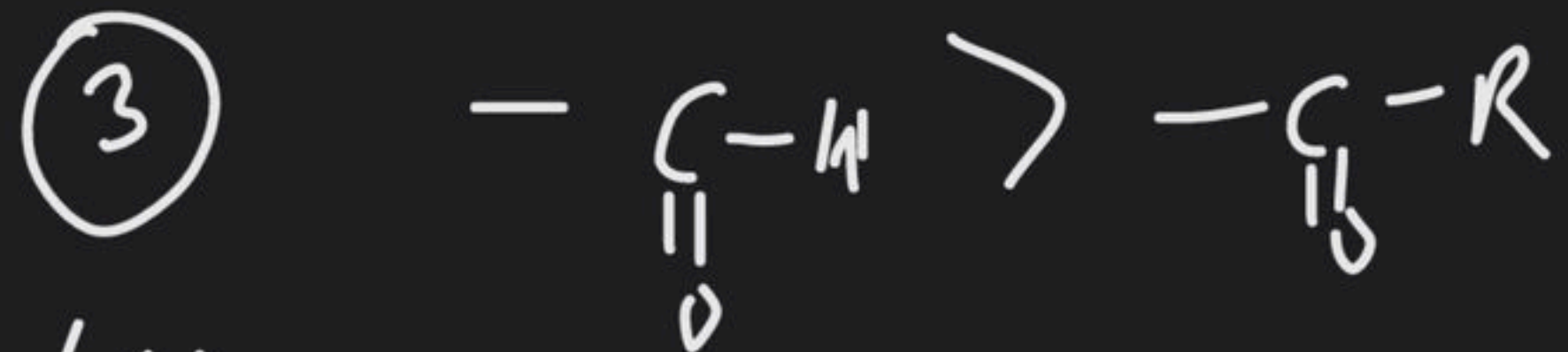


atom +  $\uparrow \Rightarrow E \uparrow \Rightarrow \text{p-orbital}$   
 $\Rightarrow \sigma \text{ bond } e^- \text{ displaced.}$



$$\textcircled{1} \quad -f > -cl > -Br > -I$$

$$\textcircled{2} \quad -CF_3 > -Cl_3 > -Br_3 > -Cl_3$$



$$(4) \quad -T > -D > -H$$

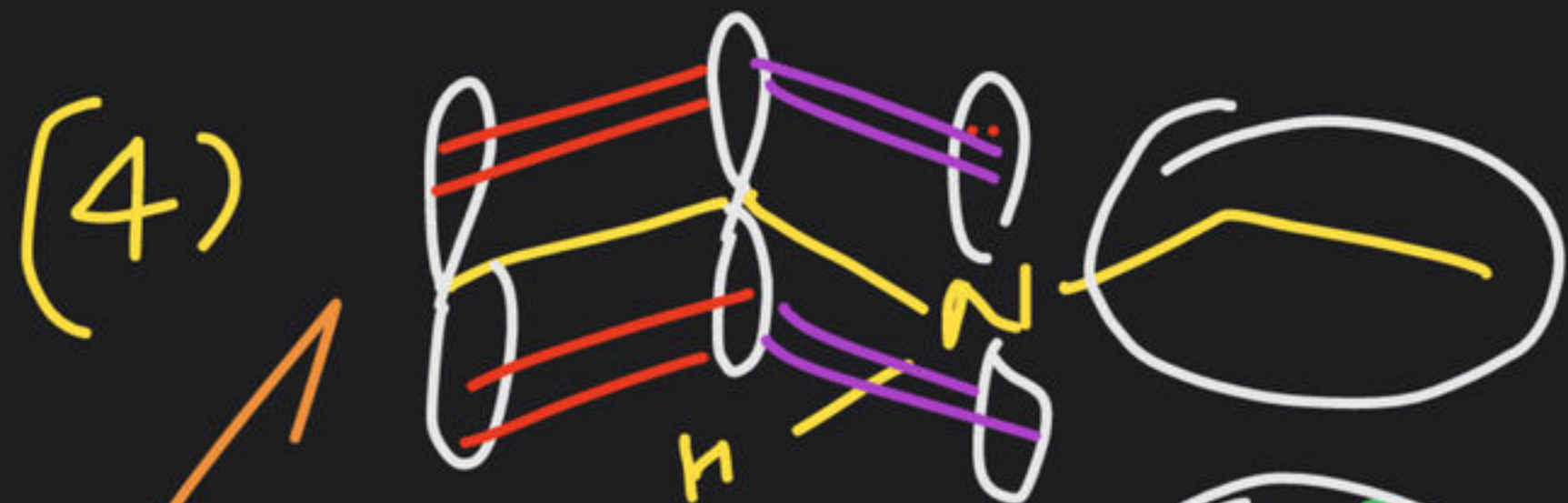
$$(5) \quad -C_6T_6 > -CD_3 > -CH_3$$

$$(6) \quad -CD_3 > -CD_2H > -CDH_2 > -CH_3$$

$$(7) \quad -CH_2-CH_2-CH_3 > -CH_2-CH_3 > -CH_3$$

$$(8) \quad -CH_2-CH_2-CH_2-CH_3 > -CH_2-CH_2-CH_3 > -CH_2-CH_3$$



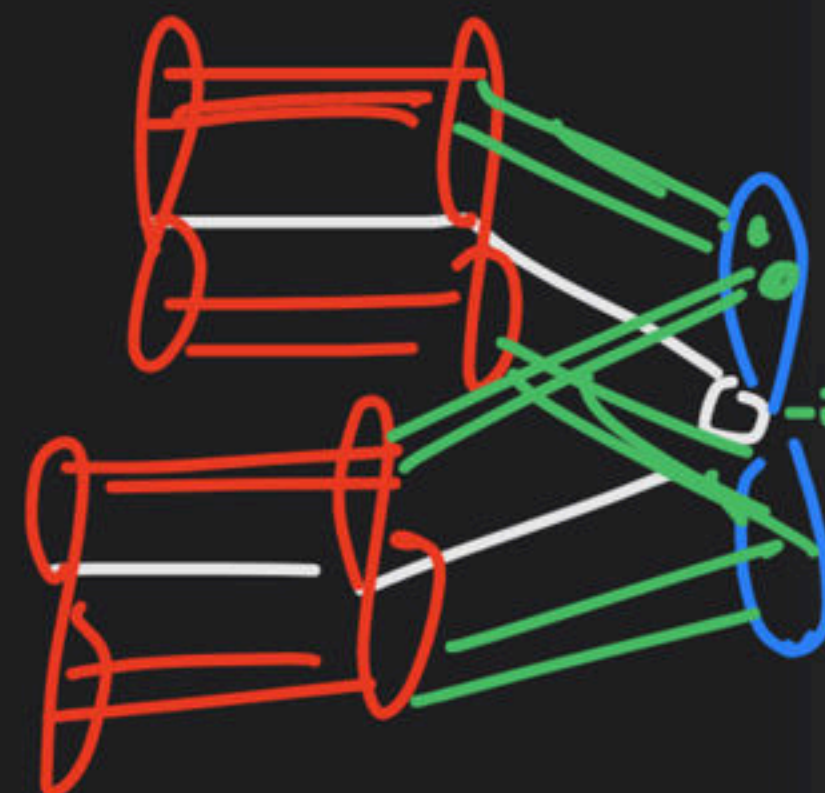
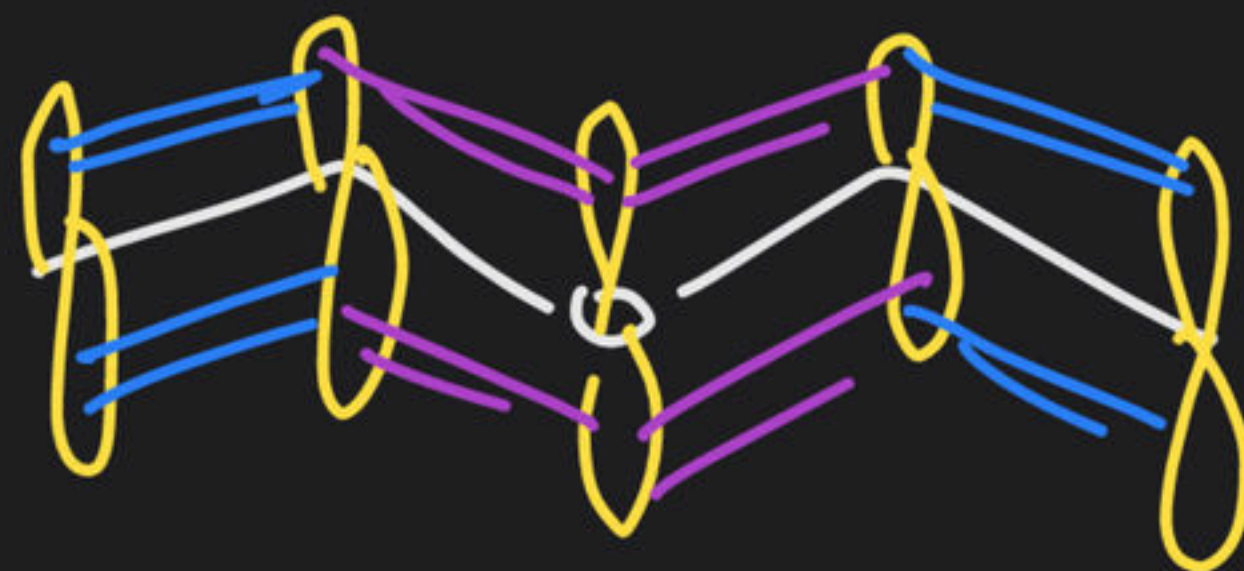
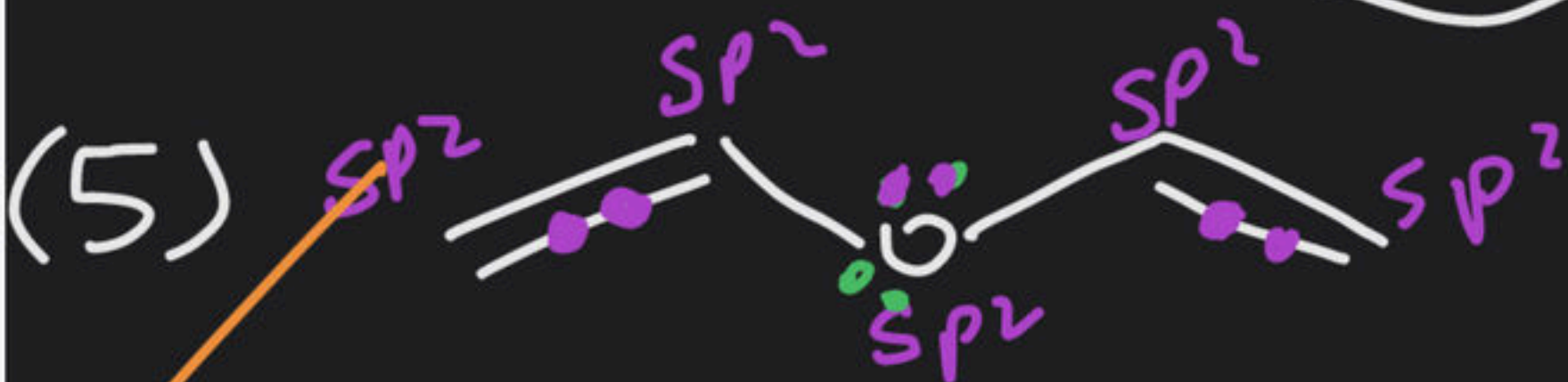
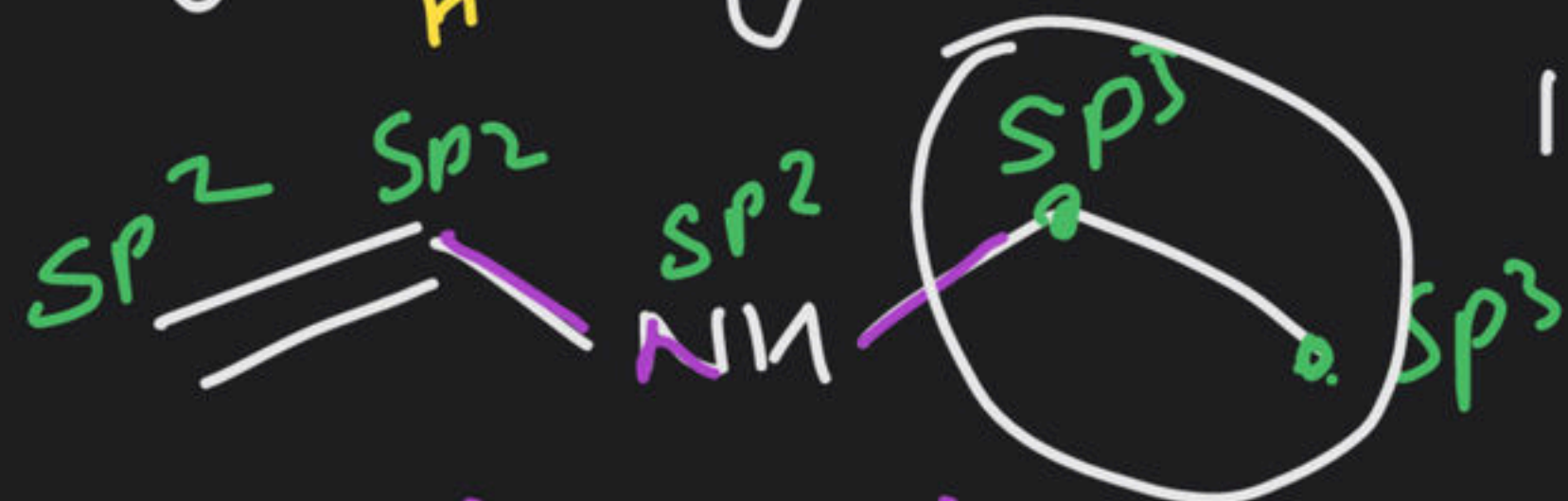


max || p orbitals = 3

$\pi e^- / \pi e^- = 4$

1 lone pair of N delocalized.

$N \Rightarrow sp^2$

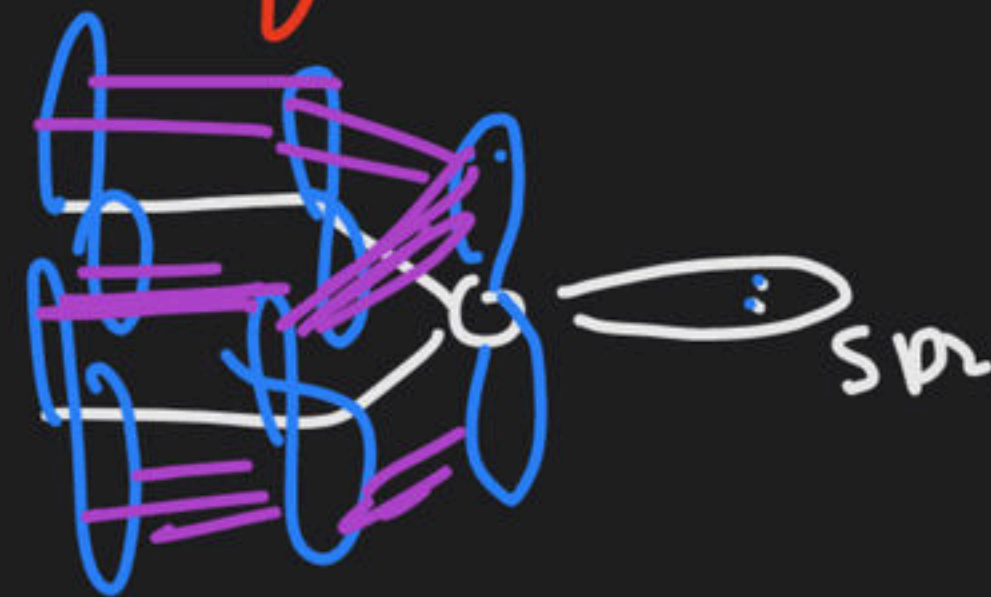


|| p orbitals = 5

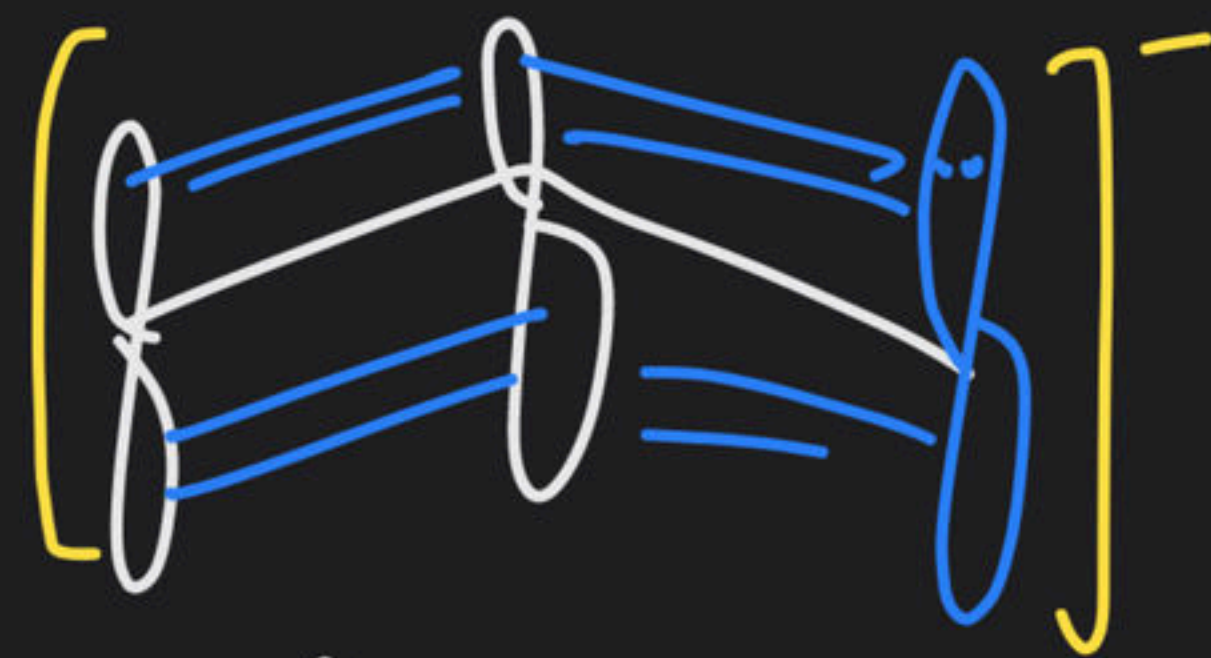
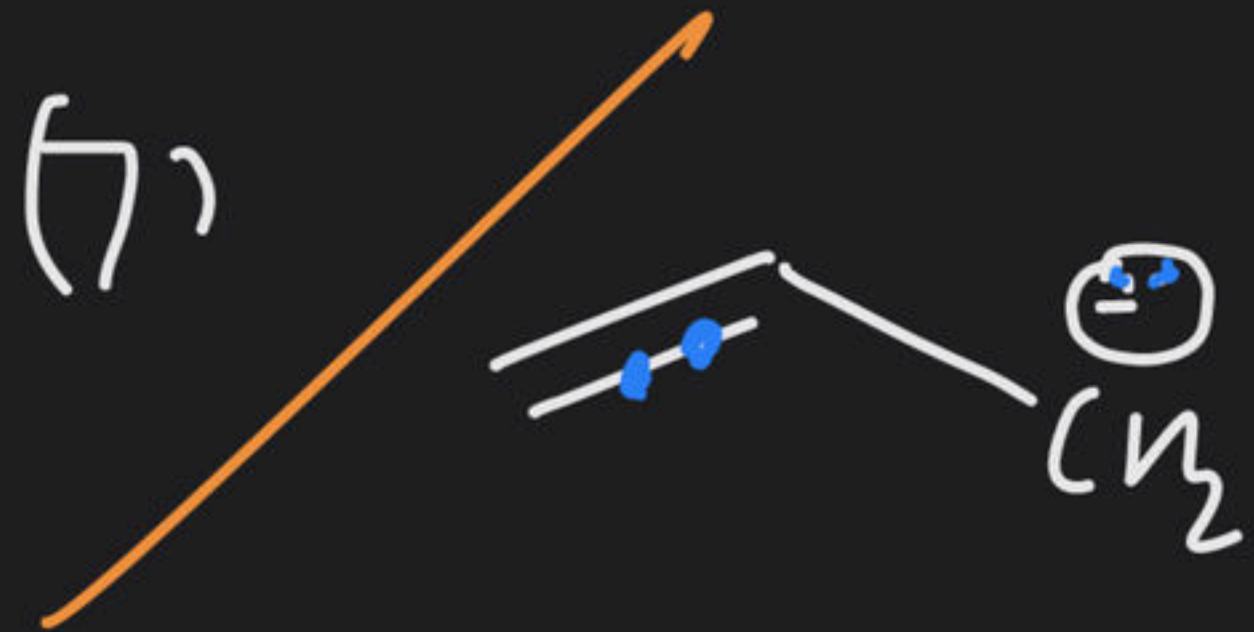
$\pi e^- / \pi e^- = 6$



$r = 3$   
 $\pi e^- = 2$

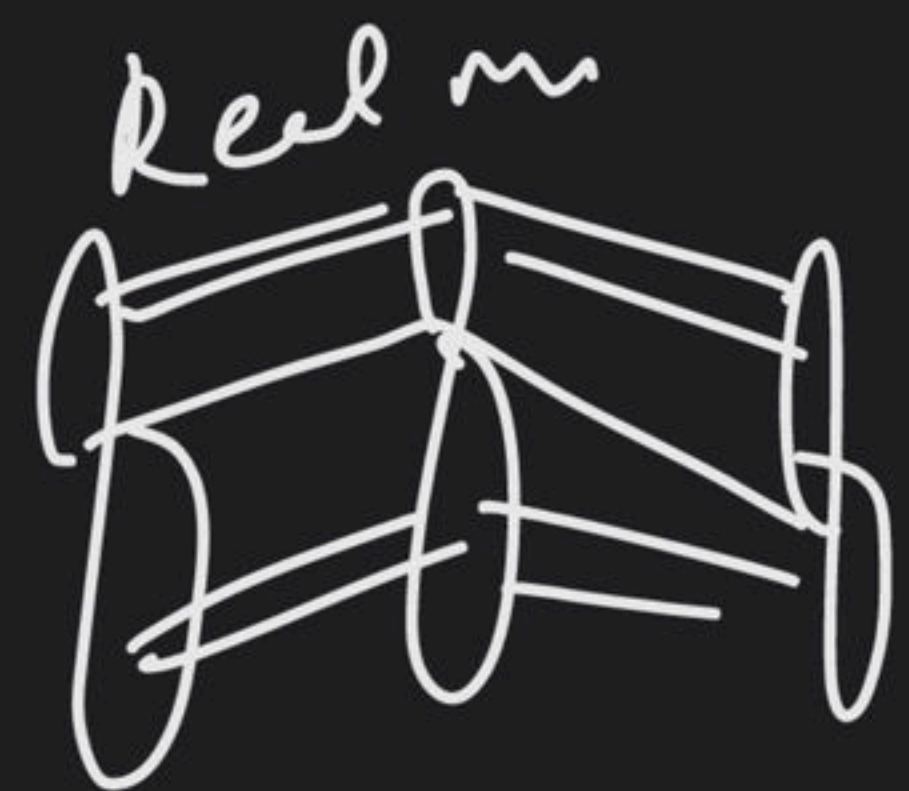
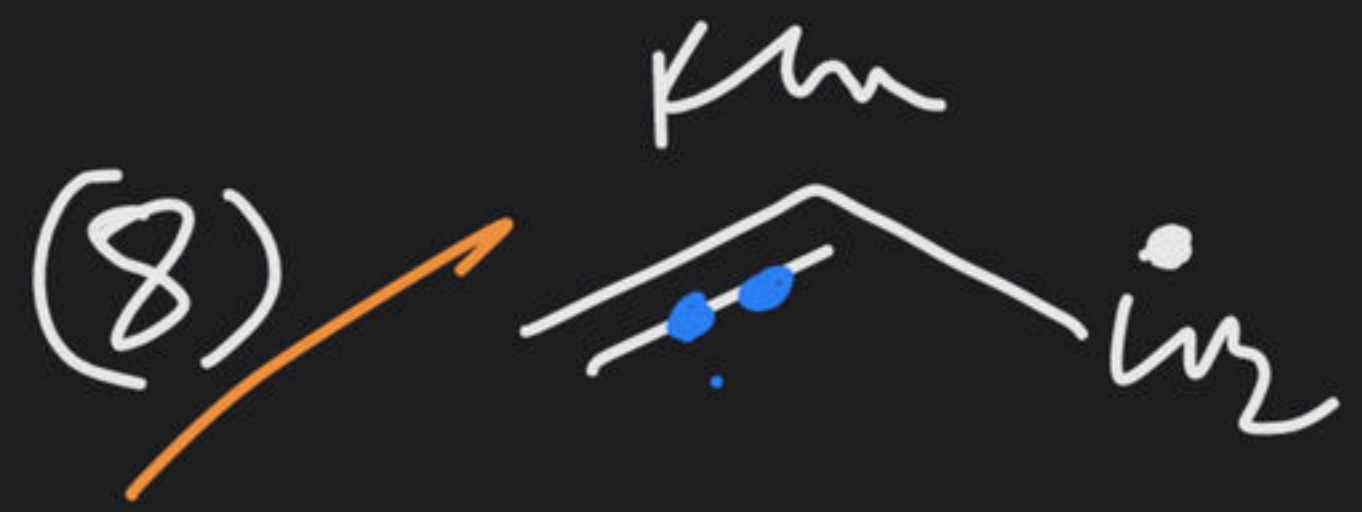






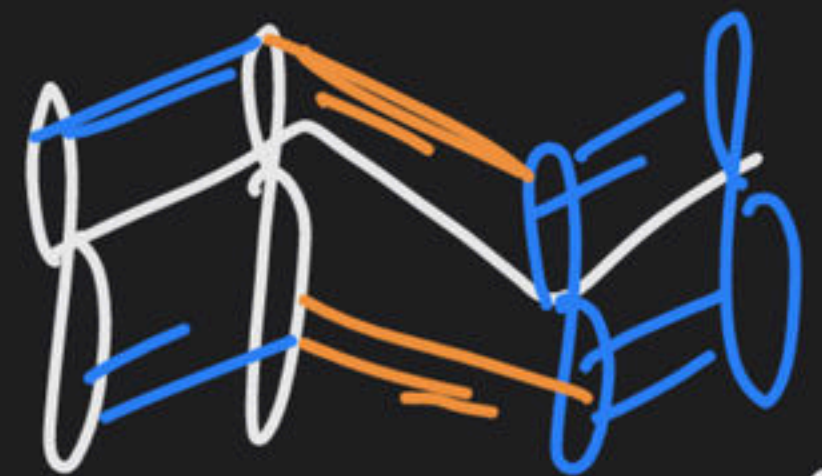
$$\parallel p = 3$$

$$p/\pi e^- = 4$$



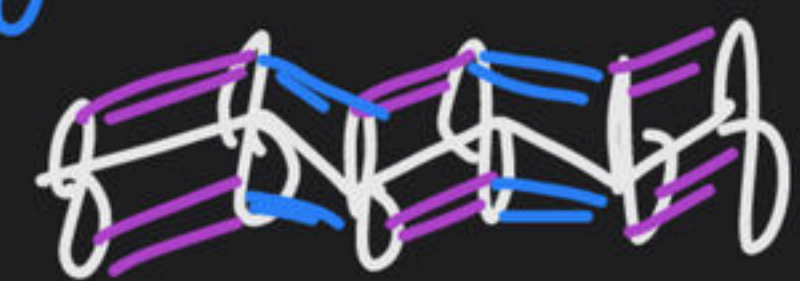
$$\parallel p = 3$$

$$\pi e^- = 3$$



$$\parallel p = 4$$

$$\pi e^- = 4$$

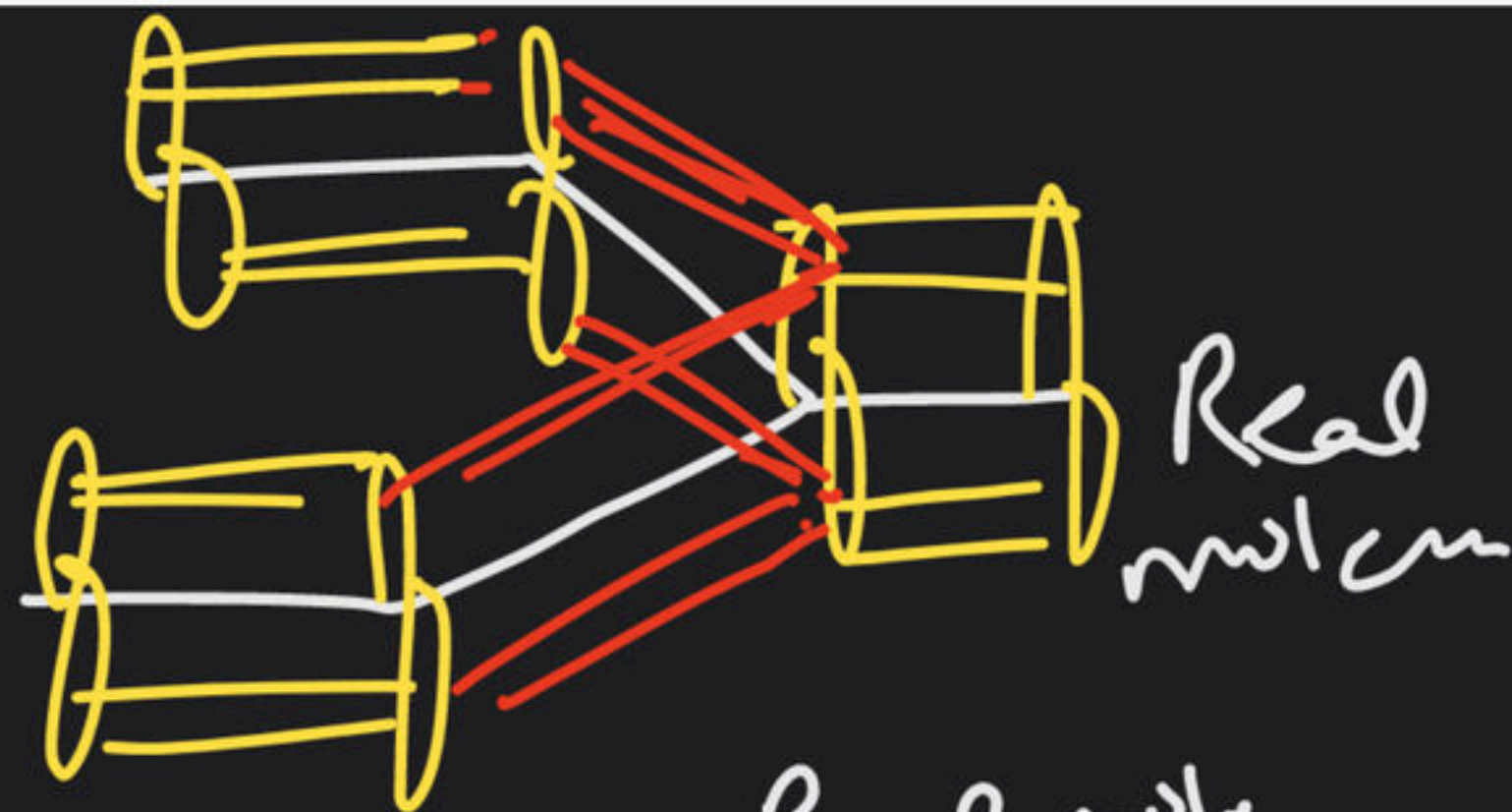


$$\parallel p = 6$$

$$\pi e^- = 6$$



(11)



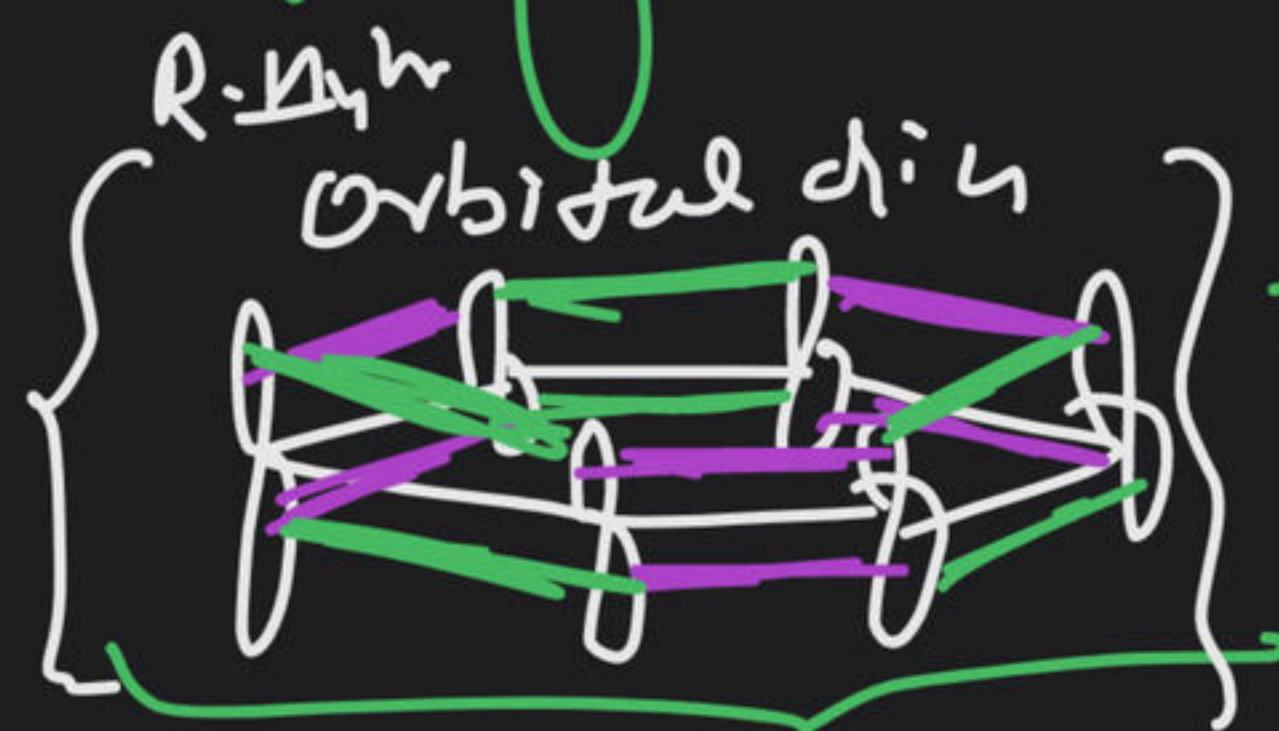
Orbital  $p\bar{e}_0$   
6, 6

(12)



1P  $\pi\bar{e}_0$   
3 4

(13)



1P  $\pi\bar{e}_0$   
6 6



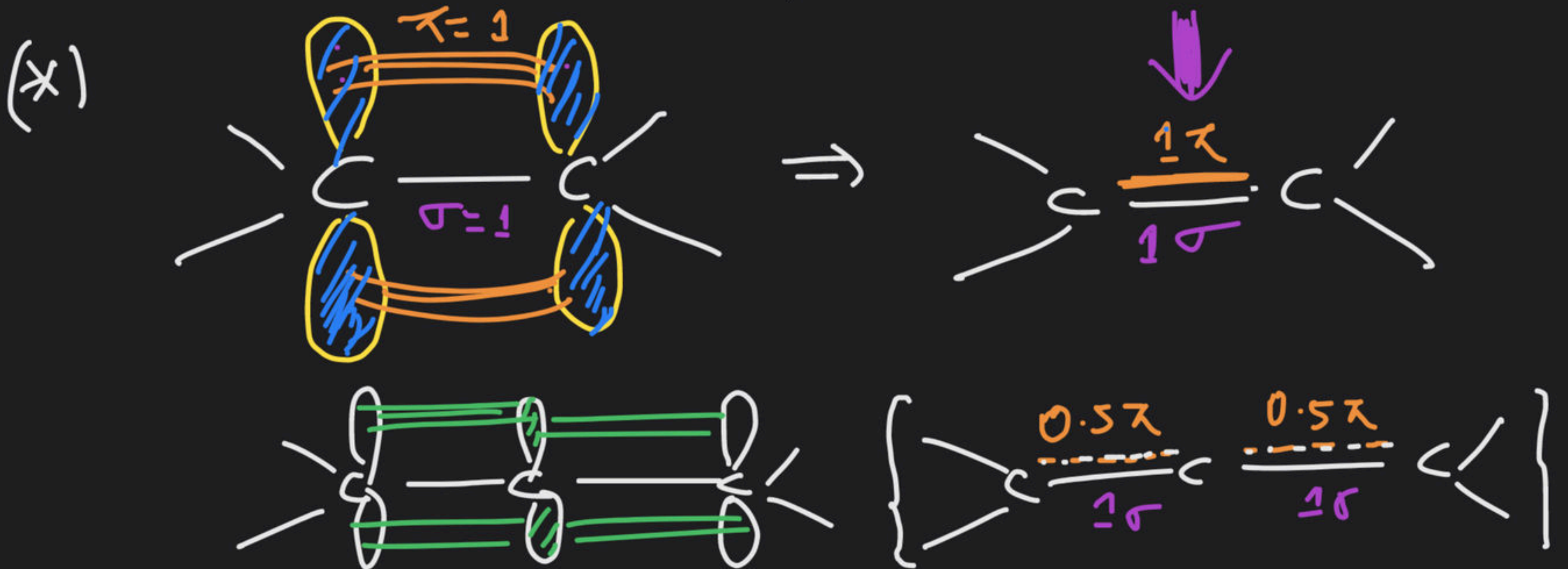
# Resonance

→ When all properties of any compound can not be shown by single representation, two or more than two representations are required. Compound is known to have Resonance phenomenon.

→ All these structures/representations required are known as Resonating str / Contributinal forms / Canonical forms.



- $\Rightarrow$  R.S which contribute most is known as most contributing R.S  
 $\Rightarrow$  A compound having all properties of all R.S is known as Resonance hybrid.





⇒ Resonance Hybrid is Real

⇒ Resonating strs are hypothetical.

## Condition for Resonance

Compound must

(a) be conjugated 

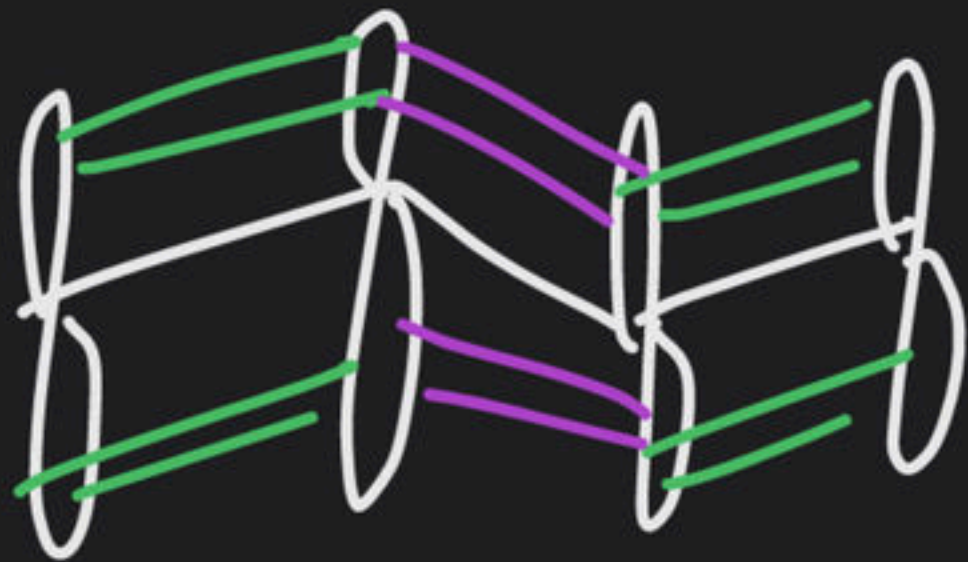
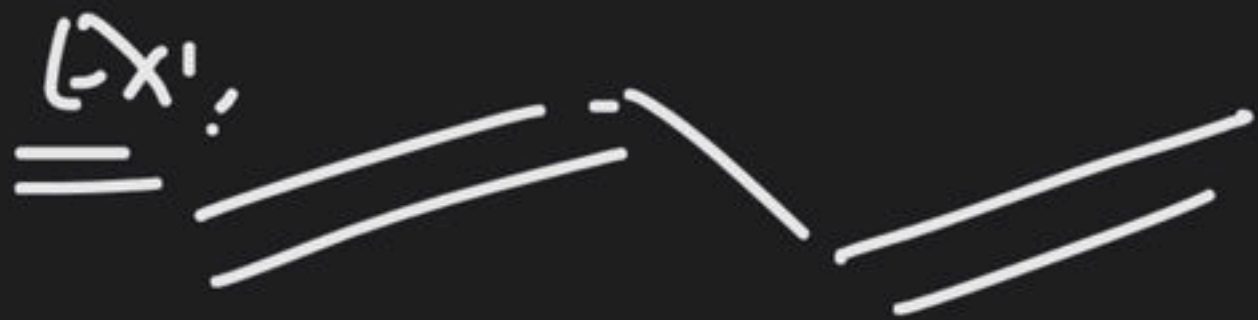
(b) be planar (|| p orbital)

(or) Compound contains at least 3 || p orbitals



On adjacent atoms (2 || orbitals in case of ions).

Case (i): (double Bond — double Bond)

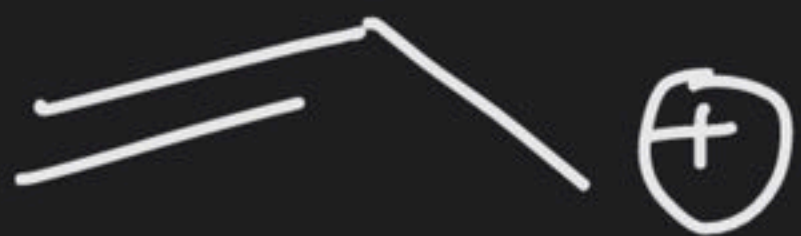


Case (ii): (double Bond — lone pair)



Case (iii): (double Bond —  $\pi$  charge)

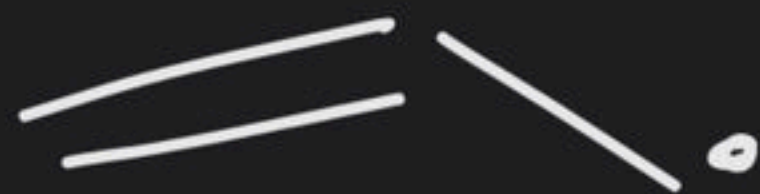




Case (iv) (double bond — anion)

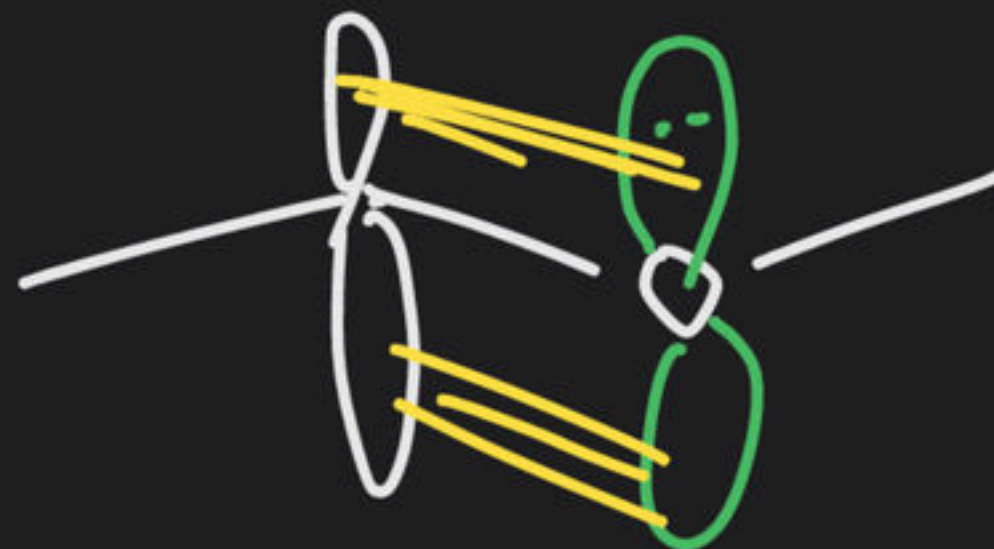
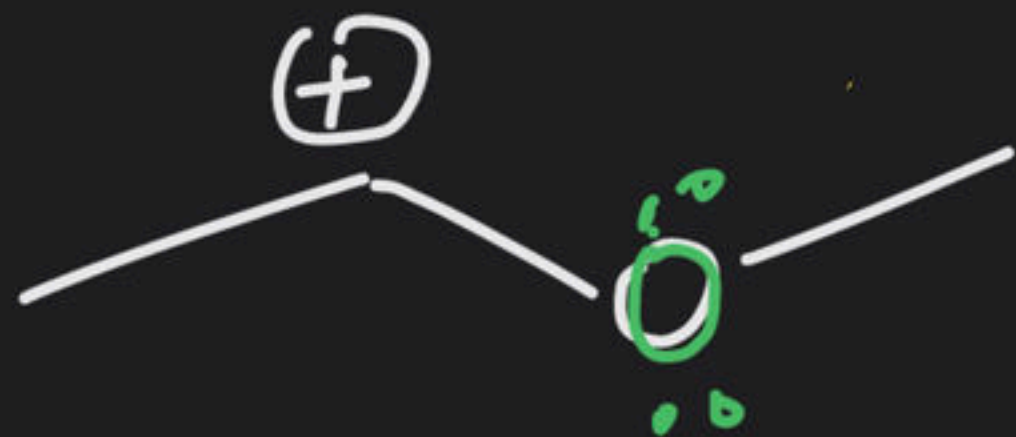


Case (v) (double bond — Radical)



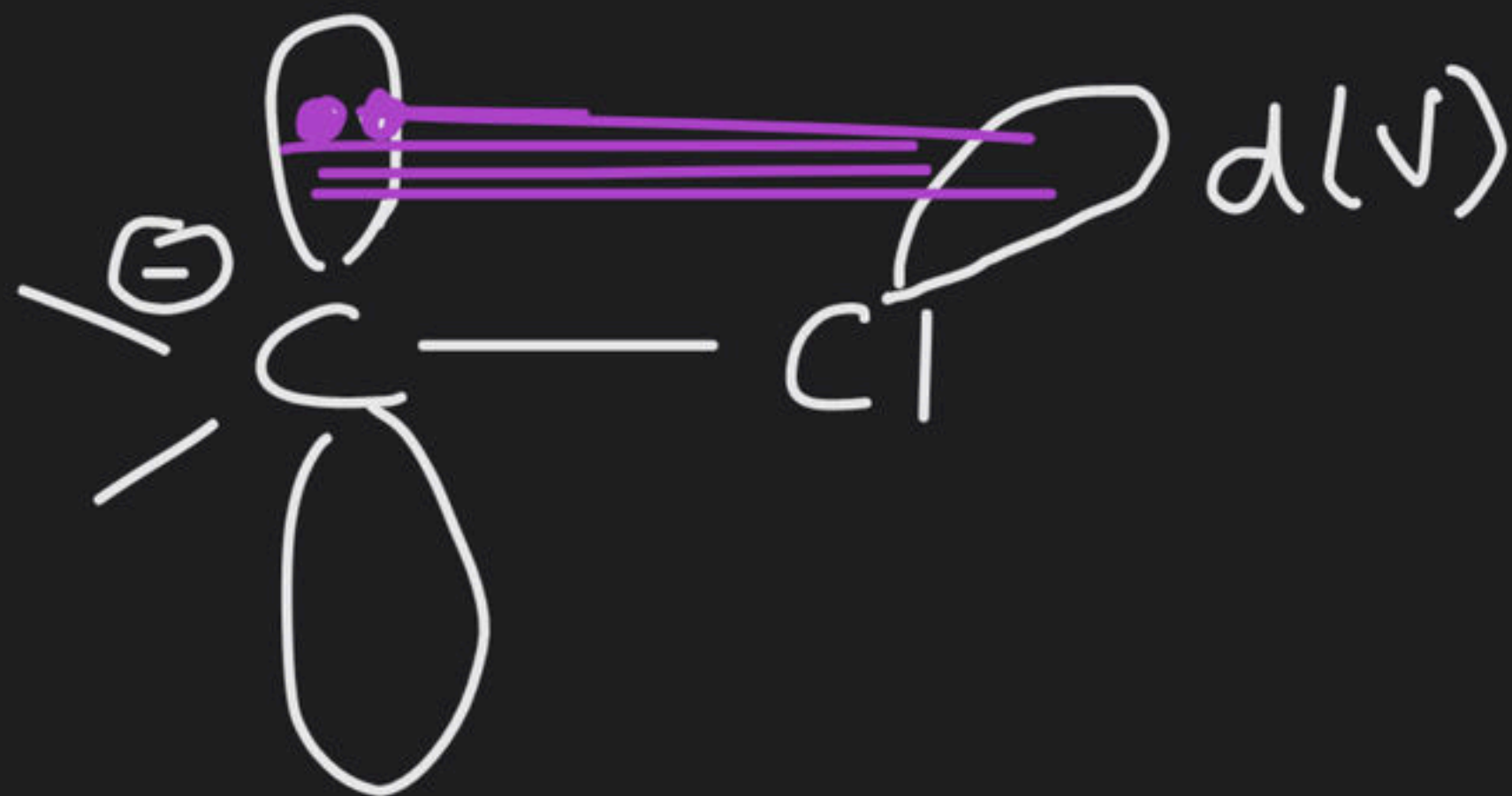
Case (vi) ((+) — lone pair)





Cene(viii)

$\longleftrightarrow$  ——— d orbital



( $p\pi - d\pi$ )



▲ 22 • Asked by Sadique

Don bradman ko dekhne ka man kiya :)





▲ 12 • Asked by Raghav

Charansparsh sir

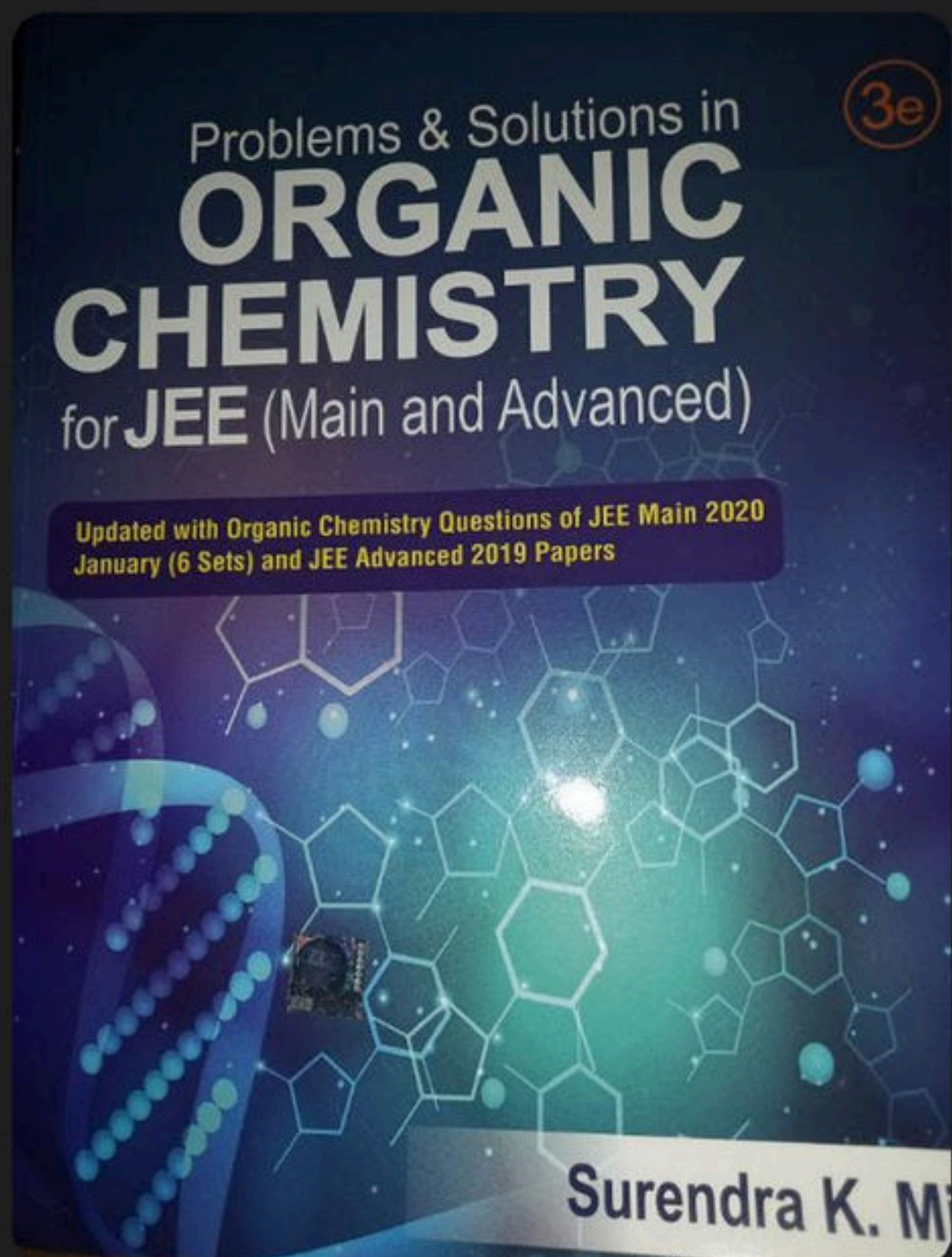




BB

▲ 6 • Asked by Neil Rohan

Sir meri bibi aa gayi...ashirwaad do ki mera bits Pilani me  
ho jaaye





▲ 17 • Asked by Anurag

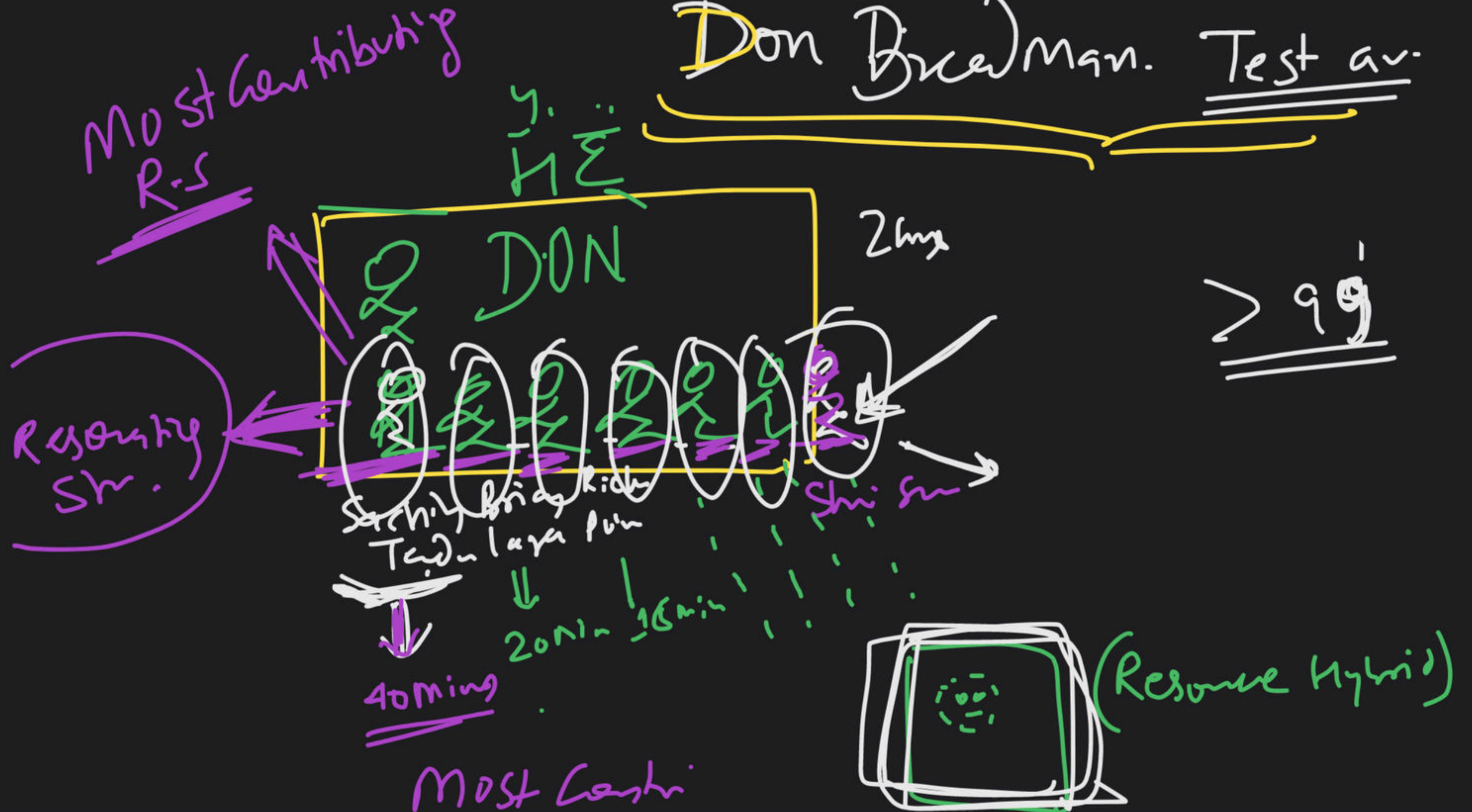
Please help me with this doubt





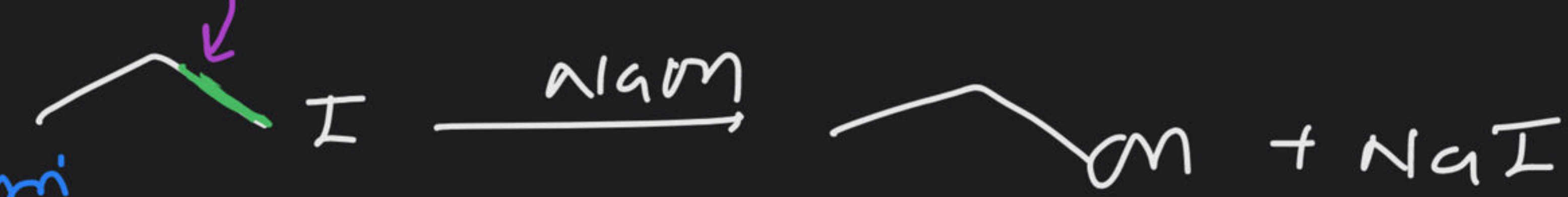
# Don Breckman. Test av.

> 99





(#)



Khatri

