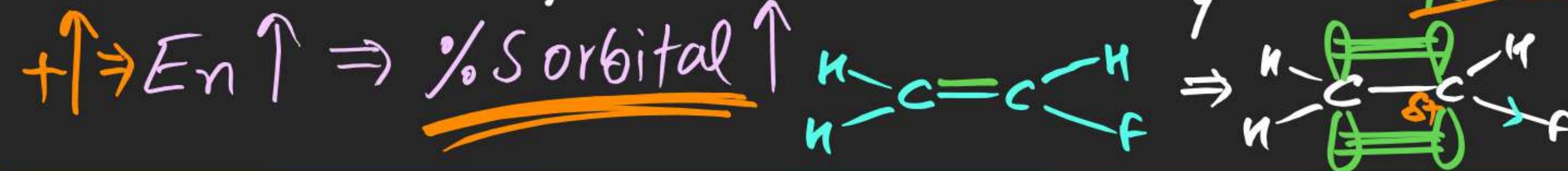
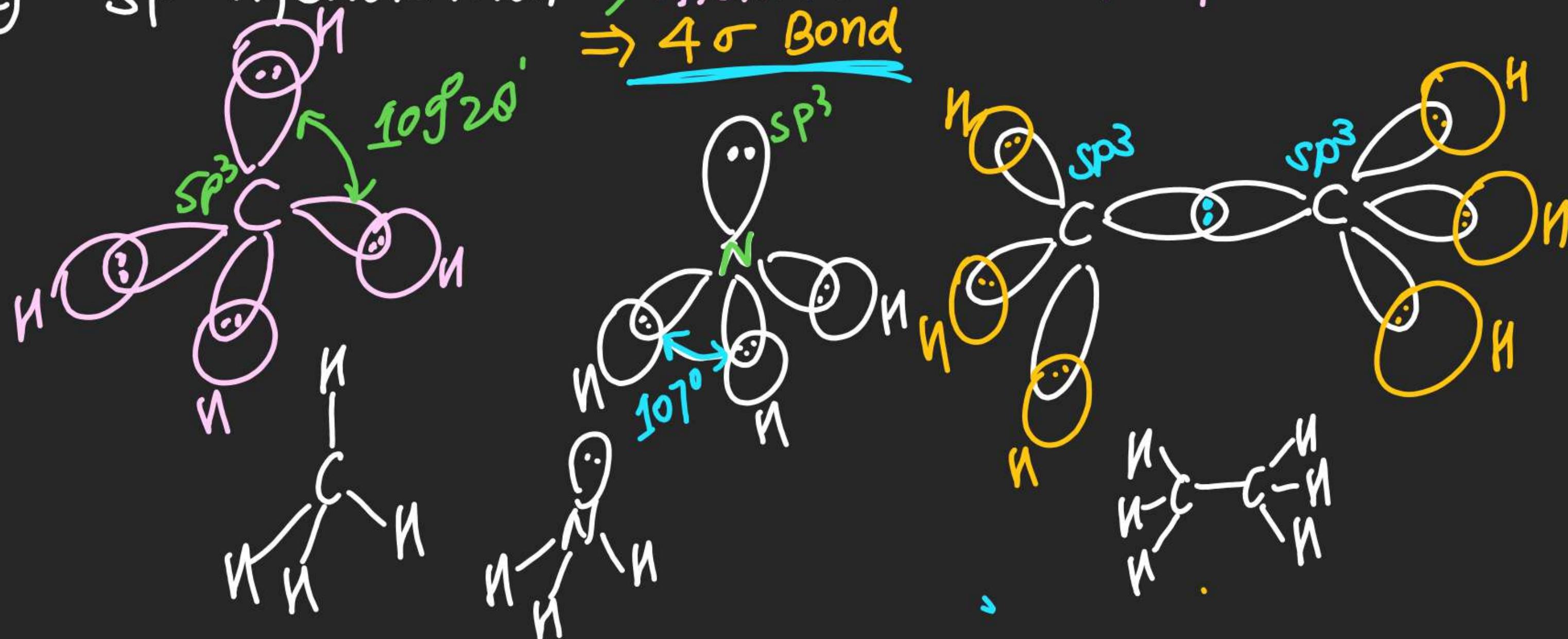


Ex:- Explain why I effect is applicable on  $\sigma$  es.



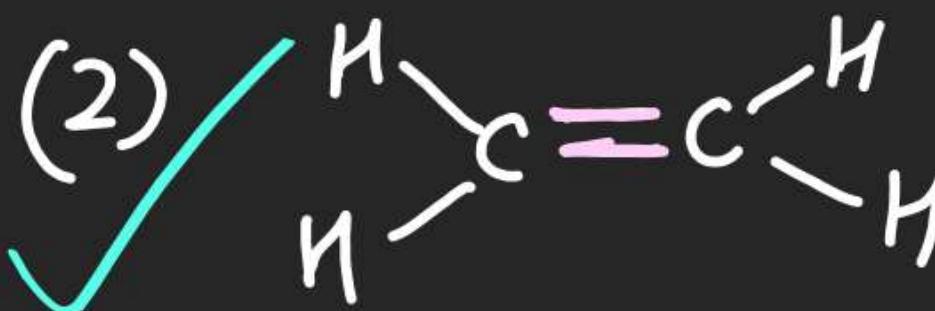
(#)  $sp^3$  hybridisation  $\Rightarrow$  Atom must have 4 hybridised orbital  
 $\Rightarrow 4\sigma$  Bond





$BO(C-H)$   
1

$BO(C-C)$   
1



1

2



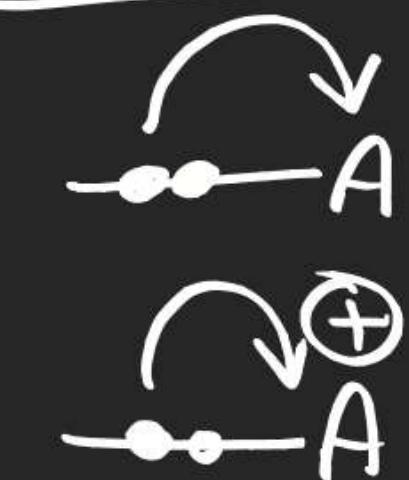
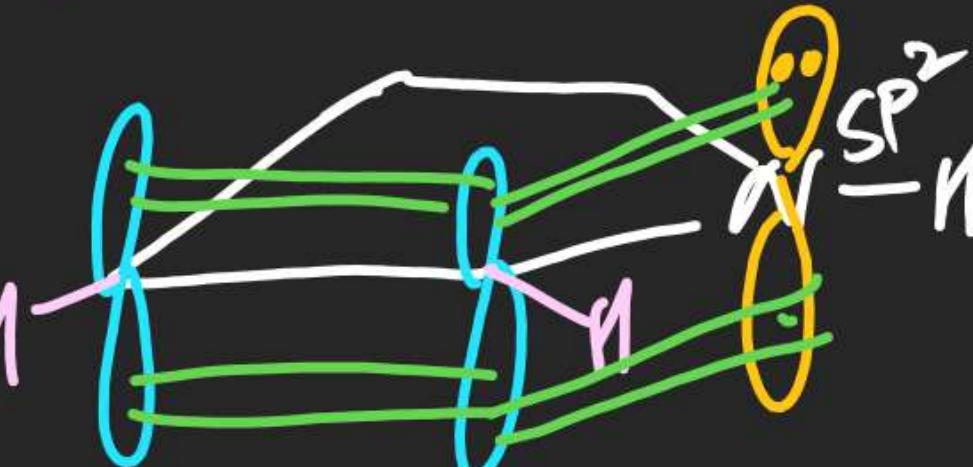
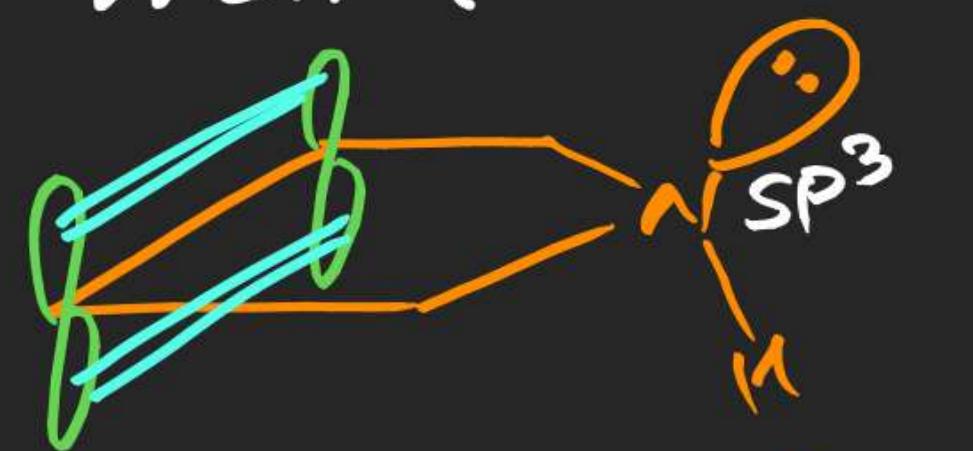
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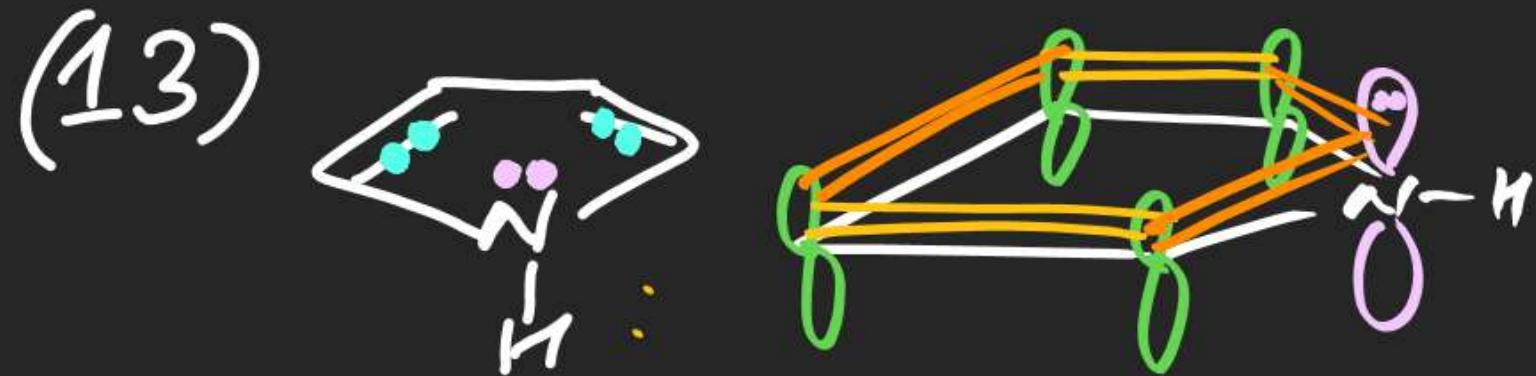
(4) 

$BO_{C-H} \in (0, 1)$

3  
 $BO_{C-C} \in (1, 2)$  or  $BO_{C-C} \in (2, 3)$

Note: If Singly Bonded lone pair atom contains "P"  
orbital on adjacent atom then that lone pair  
atom is "SP<sup>2</sup>" hybridised & its one lone pair  
must be present in "P" orbital.





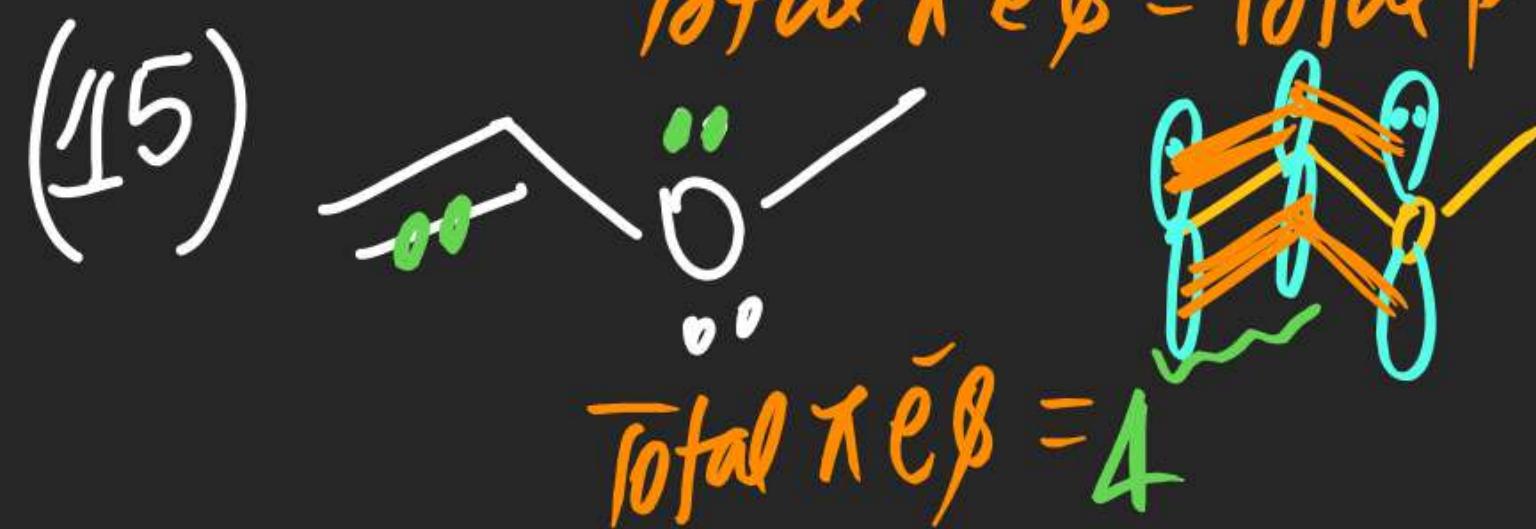
Delocalised lone pair of N

$$\text{Total } \pi \text{ e}^- \phi = \text{Total } "P" \text{ e}^- \phi = 6$$

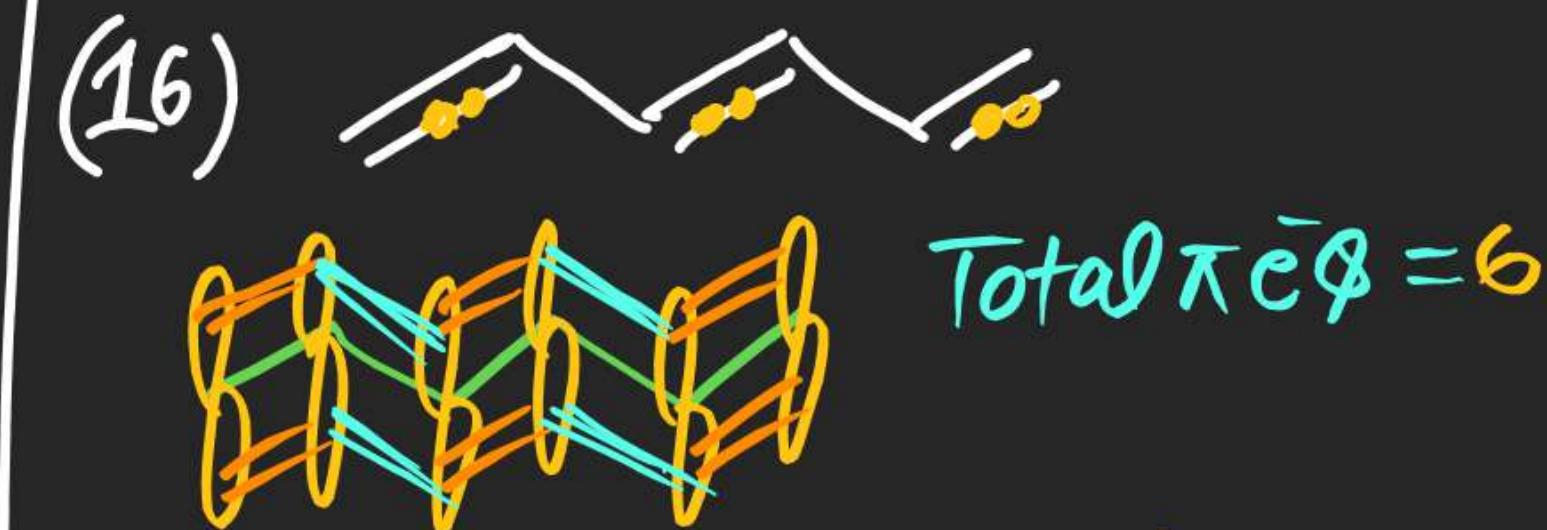


localised lone pair

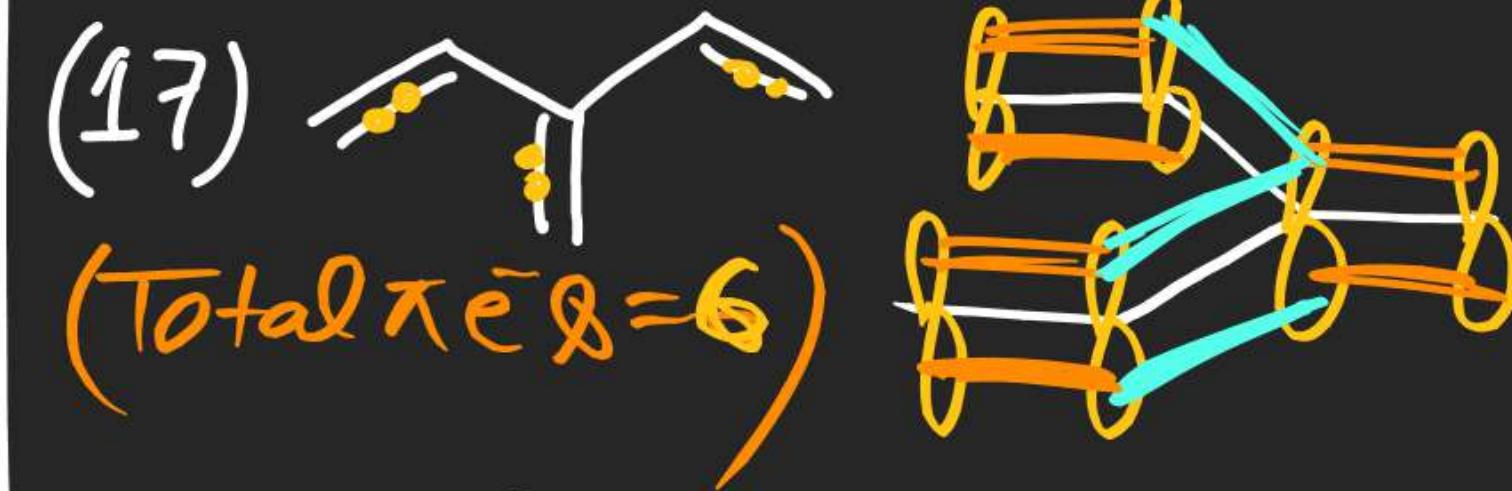
$$\text{Total } \pi \text{ e}^- \phi = \text{Total } "P" \text{ e}^- \phi = 4$$



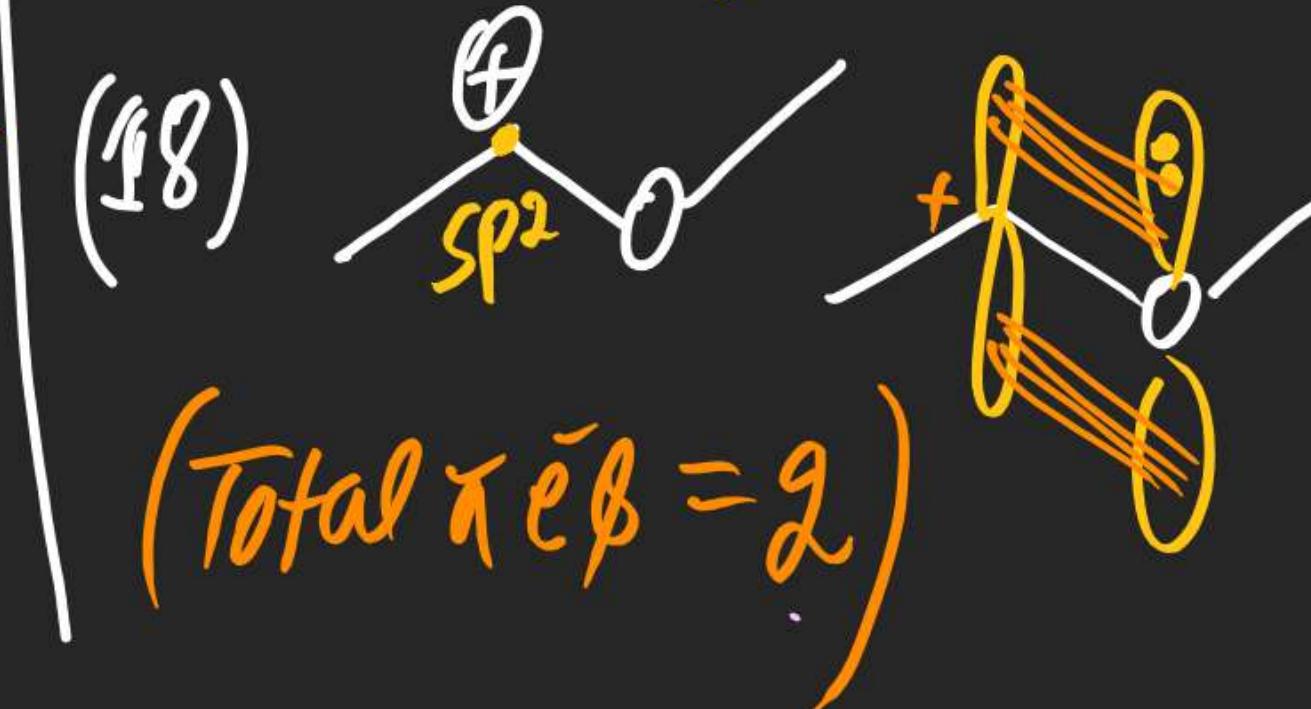
$$\text{Total } \pi \text{ e}^- \phi = 4$$



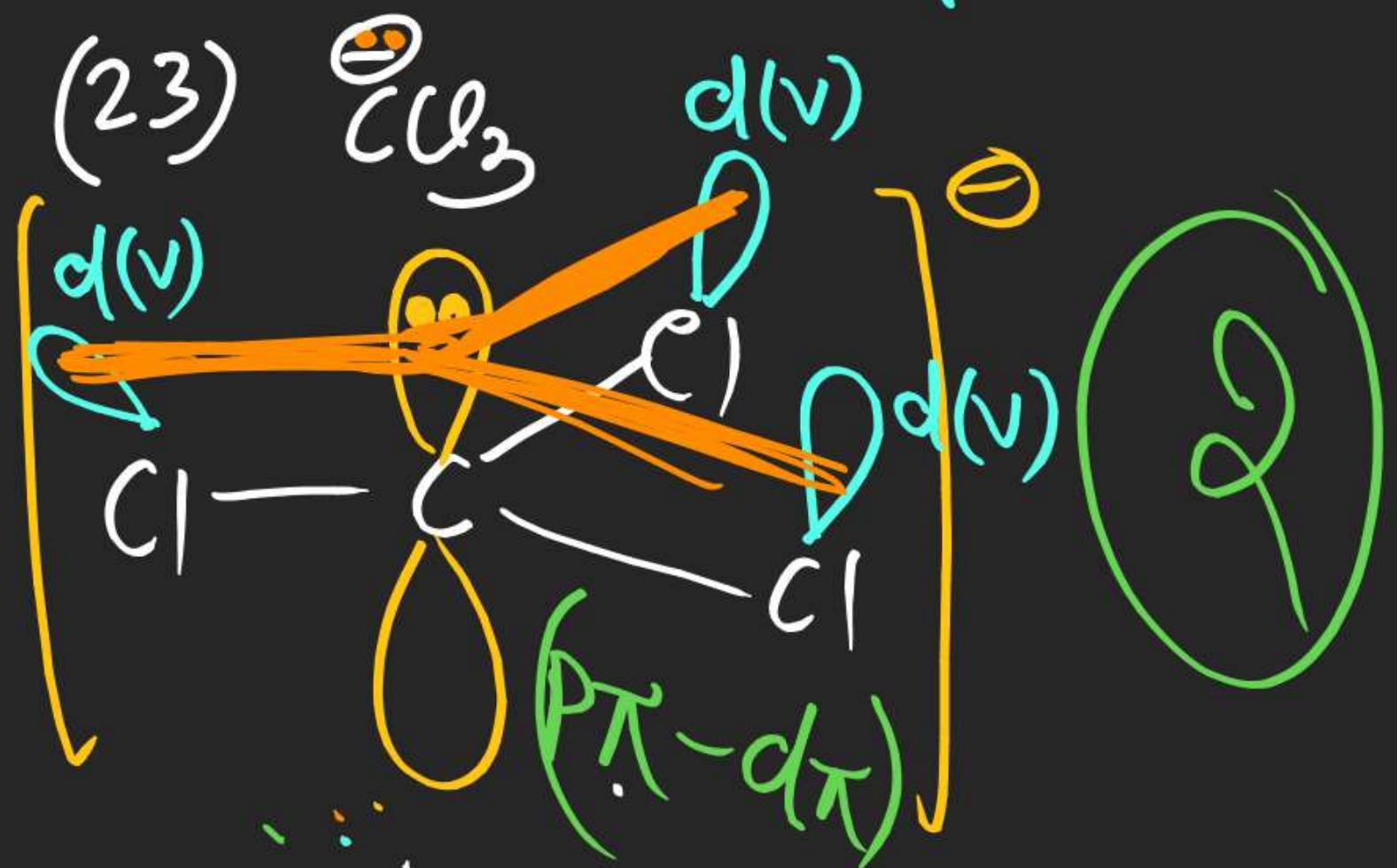
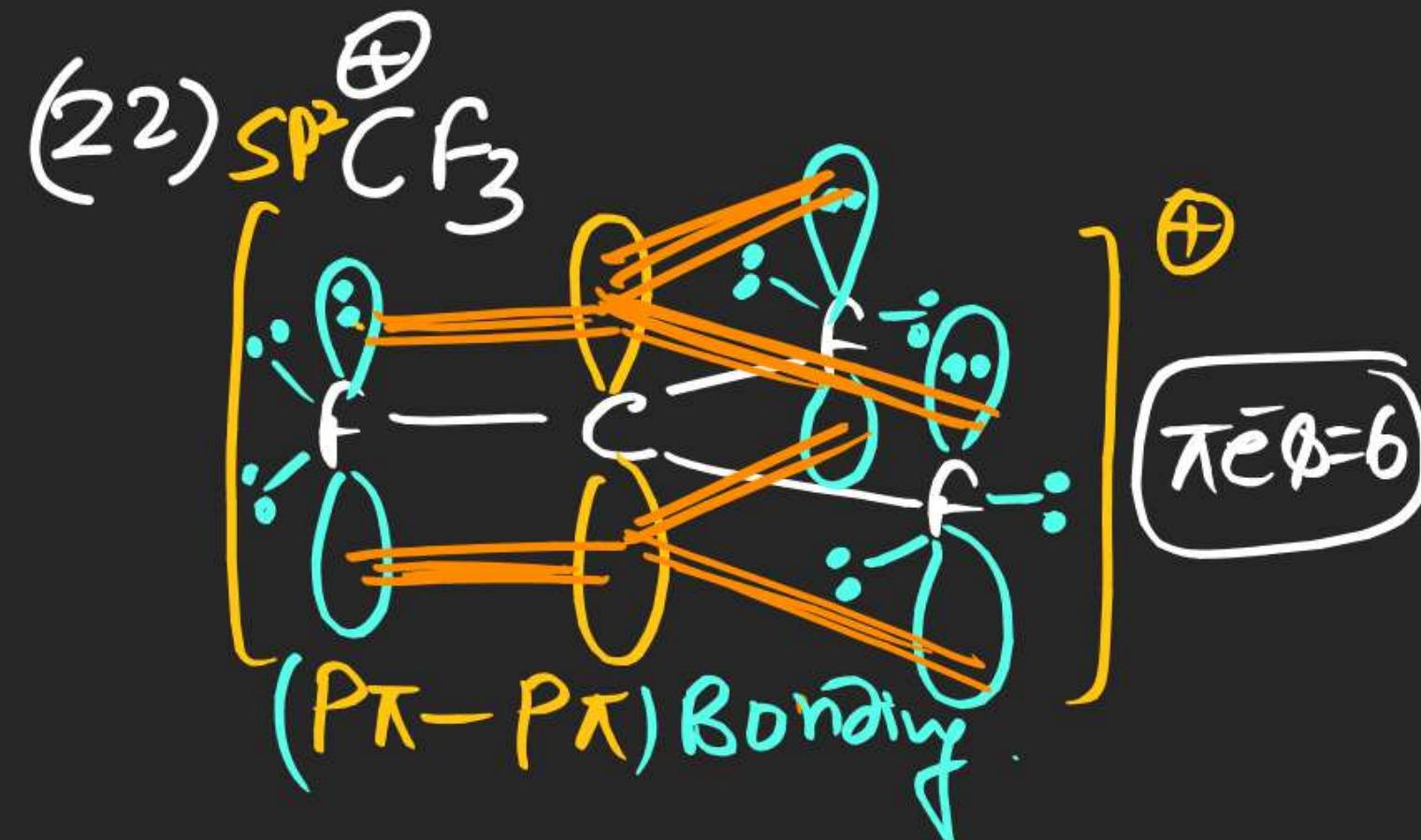
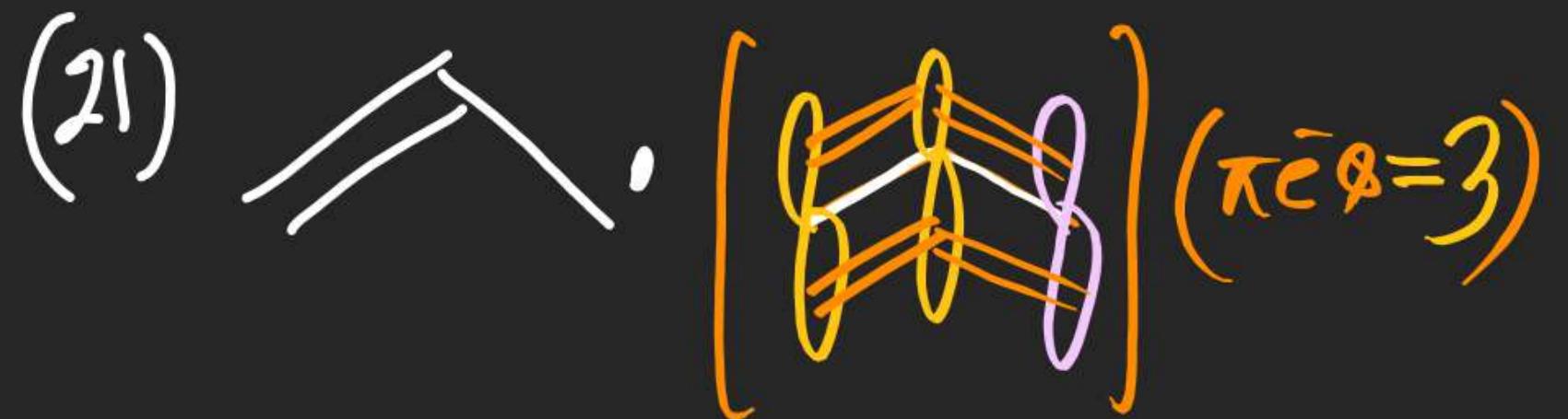
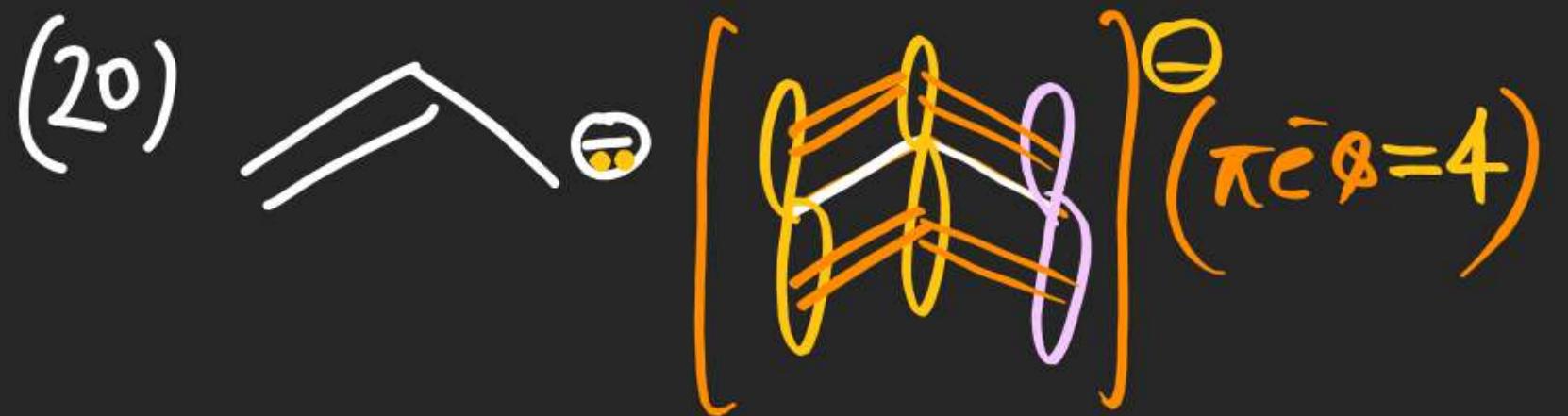
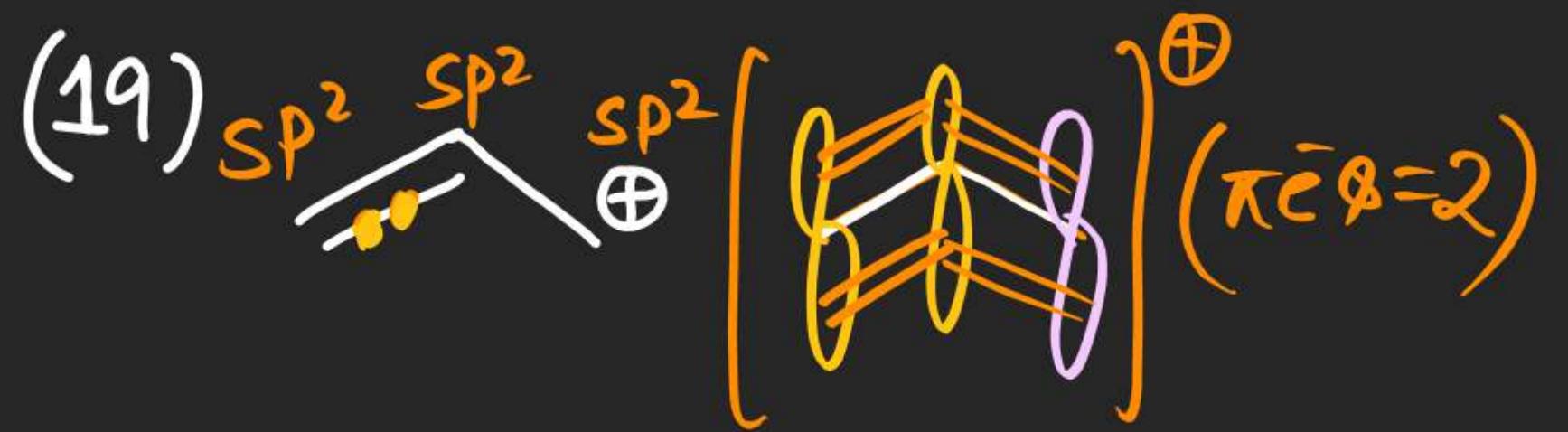
$$\text{Total } \pi \text{ e}^- \phi = 6$$



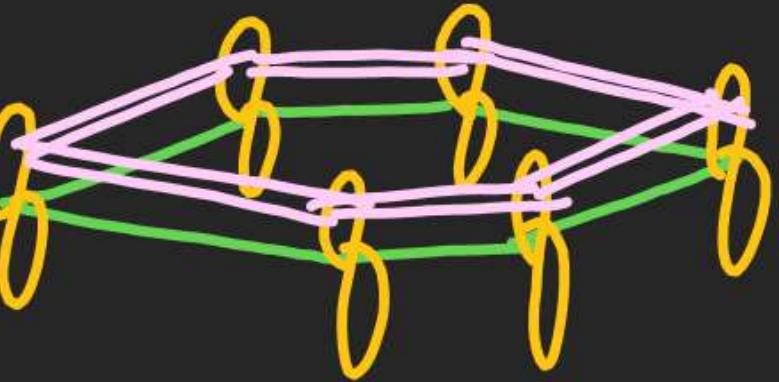
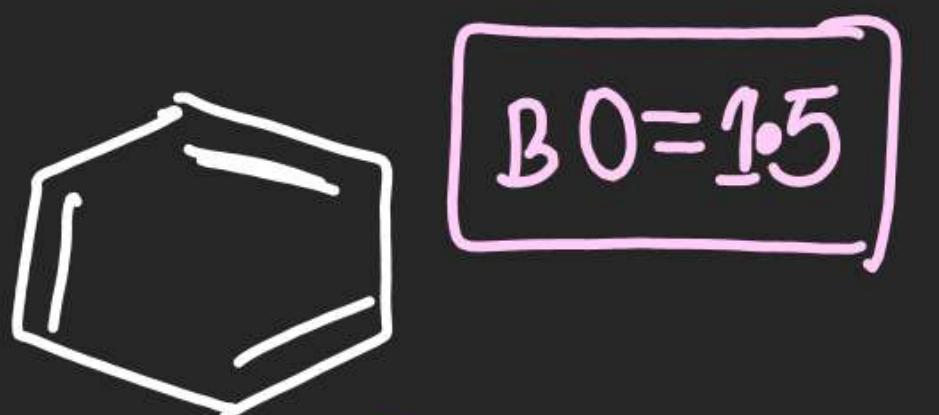
$$(\text{Total } \pi \text{ e}^- \phi = 6)$$



$$(\text{Total } \pi \text{ e}^- \phi = 2)$$

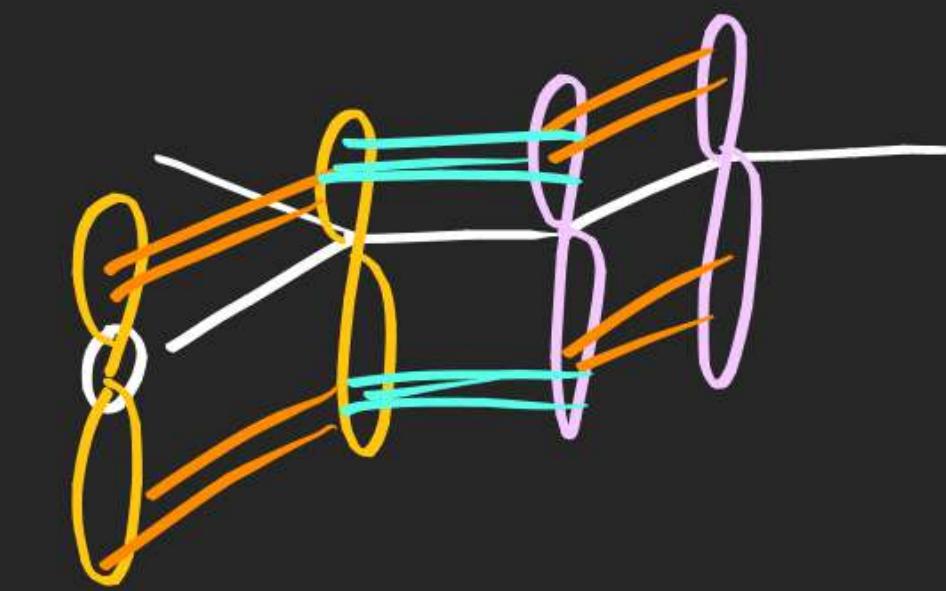
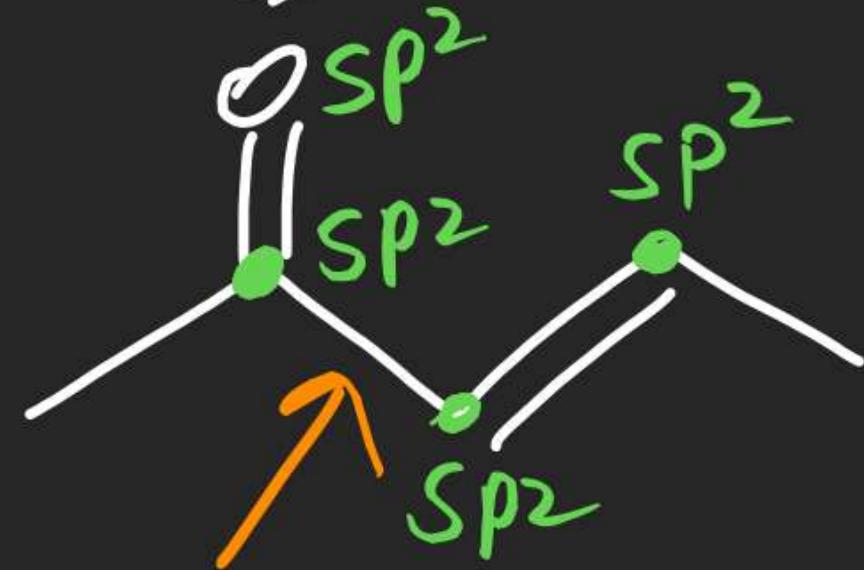


(24)



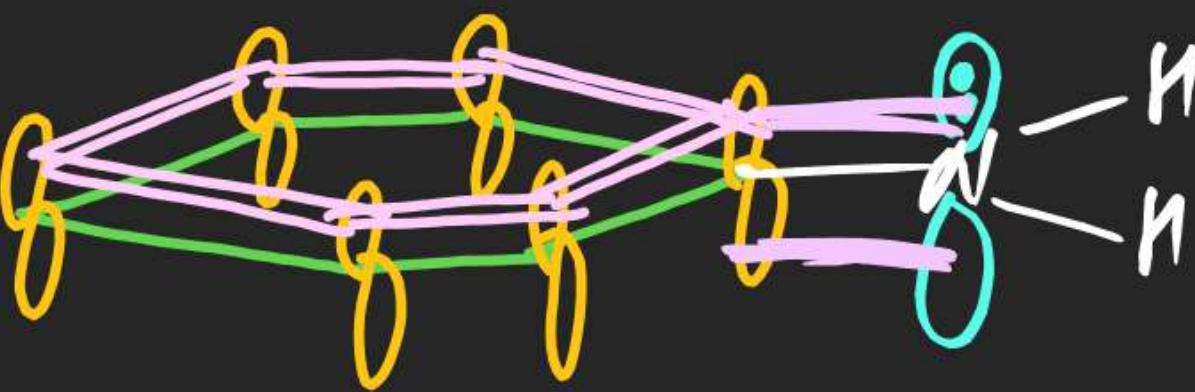
$(\pi c\phi = 6)$

(25)

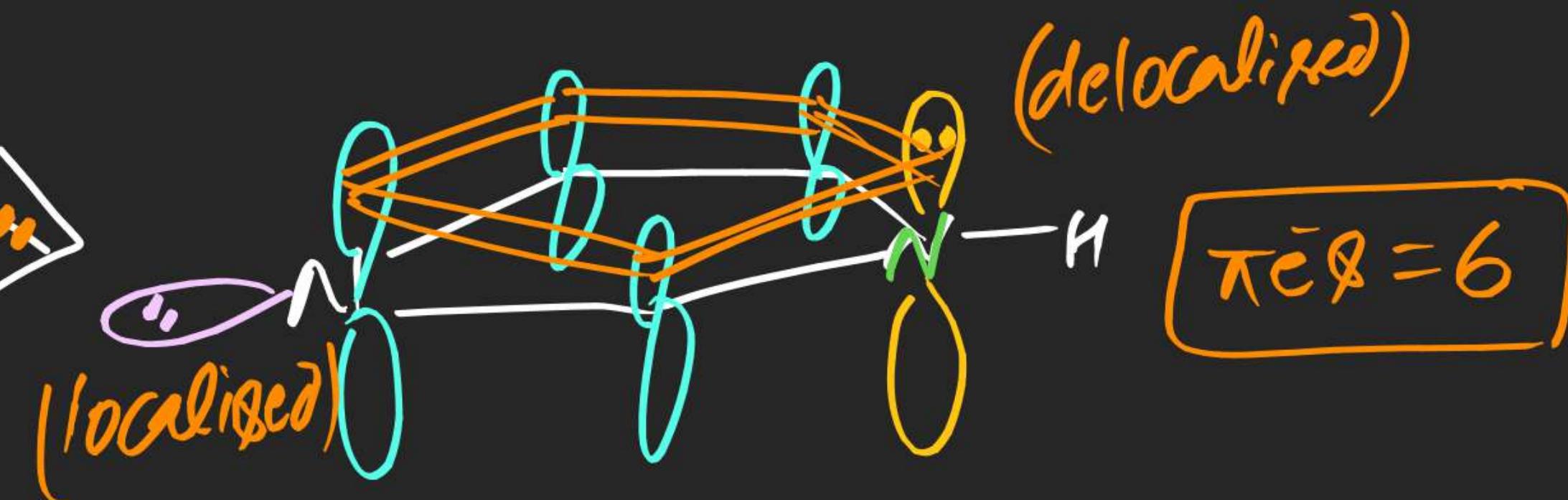
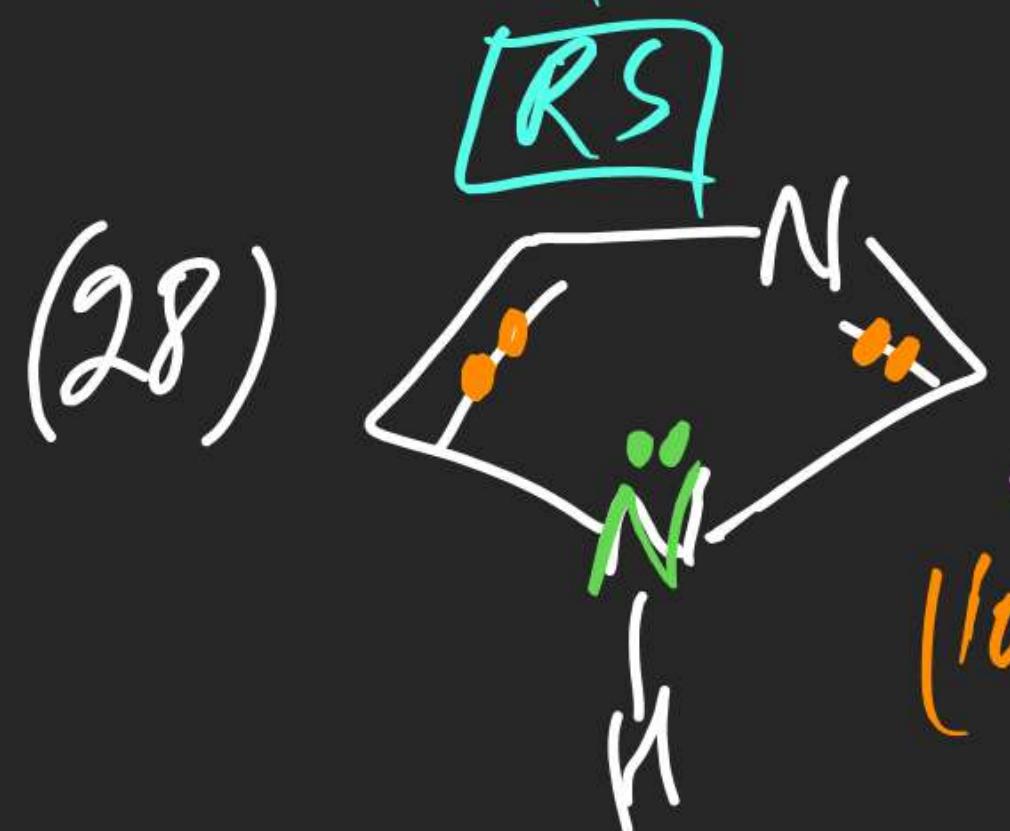
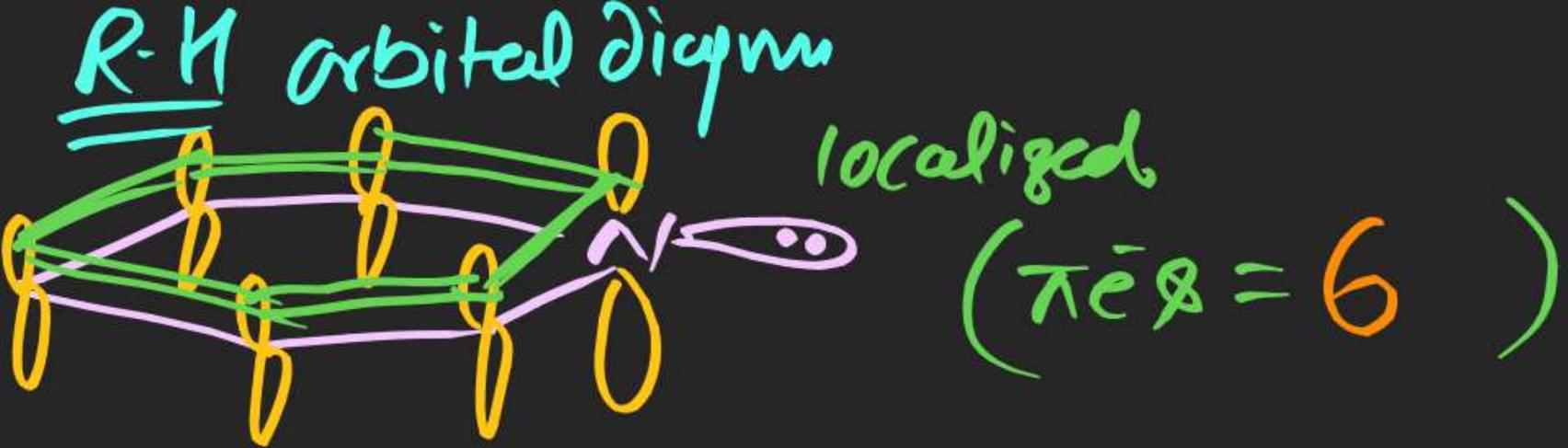
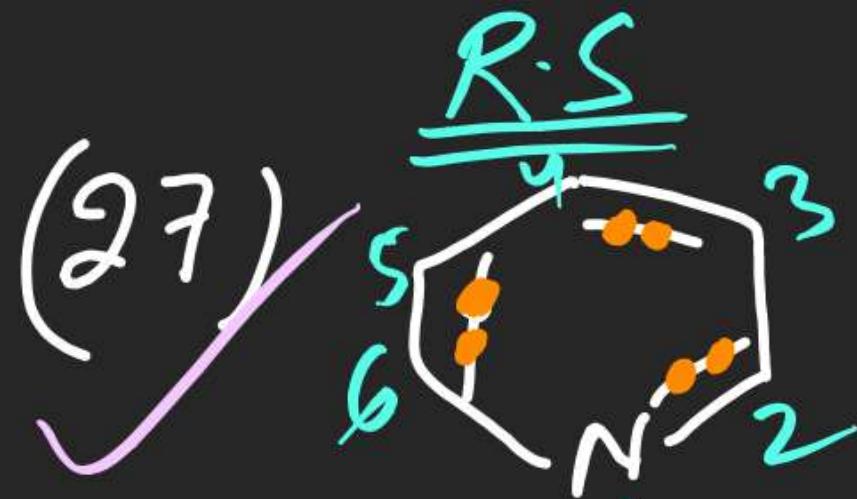


$(\pi c\phi = 4)$

(26)

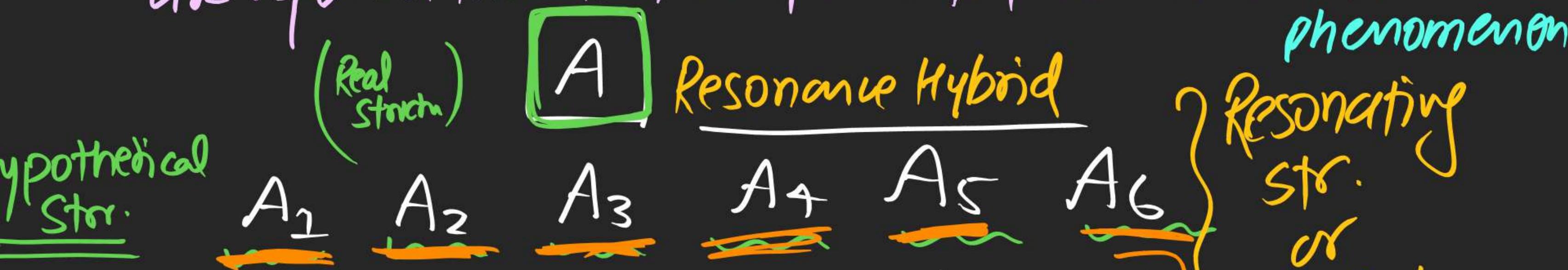


$\pi c\phi = 8$



## Resonance:

⇒ When all properties of a compound can not be shown by single representation, Two or more than two representations are required then that compound is known to have Resonance phenomenon



- ⇒ All these representations required are known as Resonating/Contributing/Cannonical Str.
- ⇒ A Str. having all properties explained by all RS

is known as Resonance Hybrid.

⇒ Resonating str. are Hypothetical

⇒ Resonance Hybrid is Real

⇒ Resonating str. contributes in Resonance hybrid in proportion of their stability

higher the stability of RS  $\Rightarrow$  higher the contribution

⇒ RS which contribute most in Resonance Hybrid is known as most contributing R-str.

## (#) Condition of Resonance:

(\*) Compounds having at least 3 || P orbital on adjacent atom.

Note 2 || P or P-d orbitals in case of ions & multiple Bond.

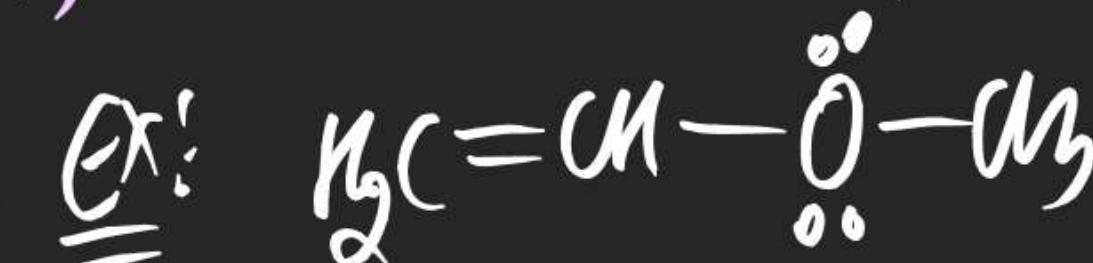
- Compound must be
- (\*) Planar ( $SP/SP^2$ )
- (\*) Conjugated

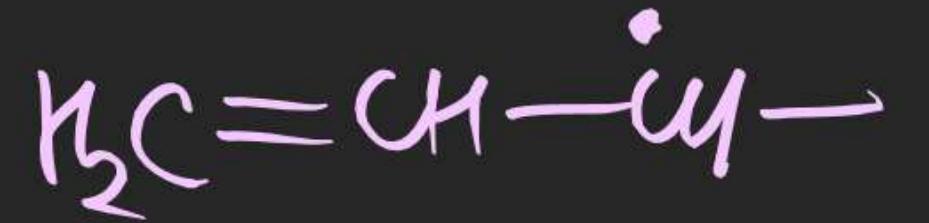
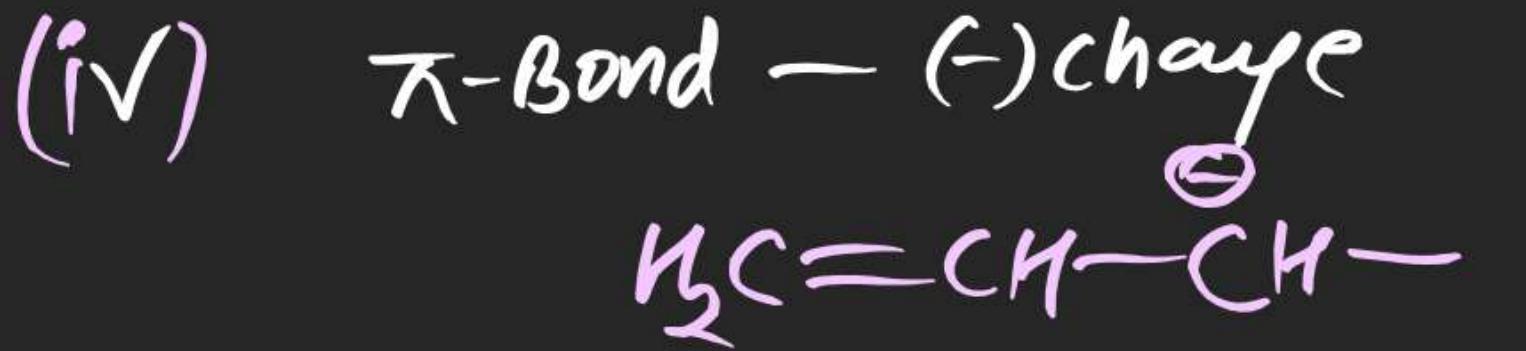
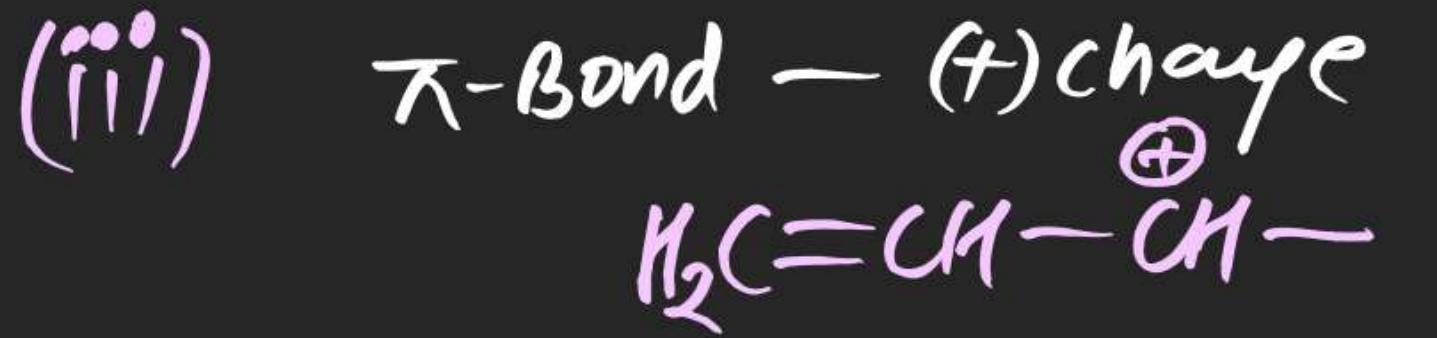
⇒ Compound may have following Type of Conjugation

(i)  $\pi$ -Bond -  $\pi$ -Bond



(ii)  $\pi$ -Bond - lone pair





(vii) (+) - (lone pair)



(viii) (-) - (dabital)

