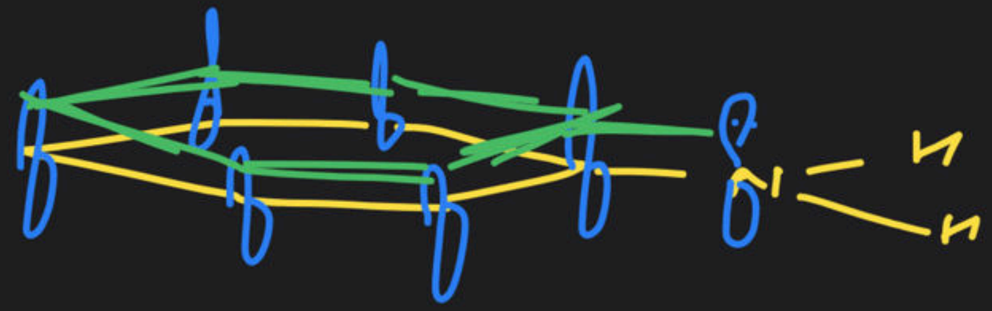
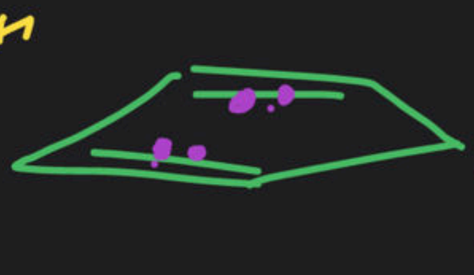
Rules for Drawing Resonating Structure - I

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

SURENDRA K MISHRA • Lesson 5 • Sept 17, 2021

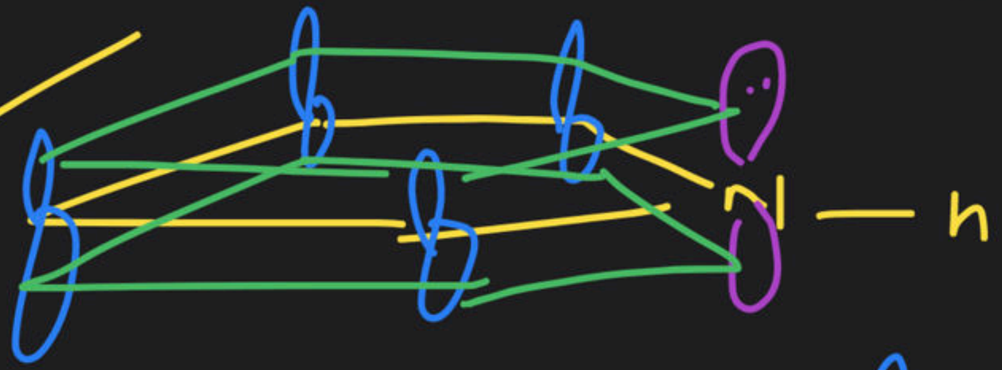
(14)





$2+2+2$
$= 2(1+1+1)$
$= 2(2+1)$
$= 2 \times 3$
$(6\ \pi\bar{e}s) = 6$

(15)



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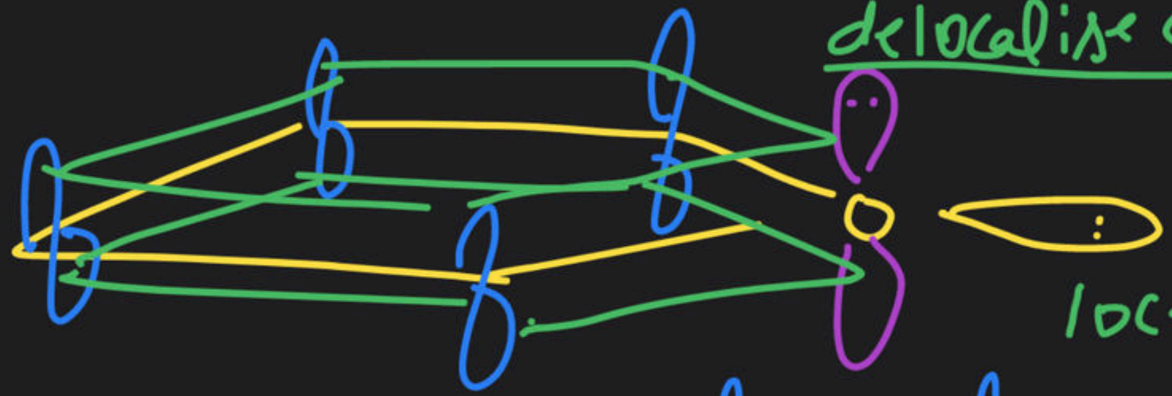
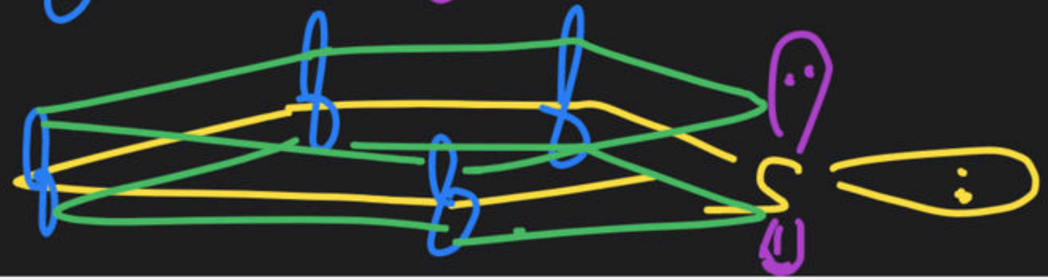


delocalised

$\pi\bar{e}s = 6$

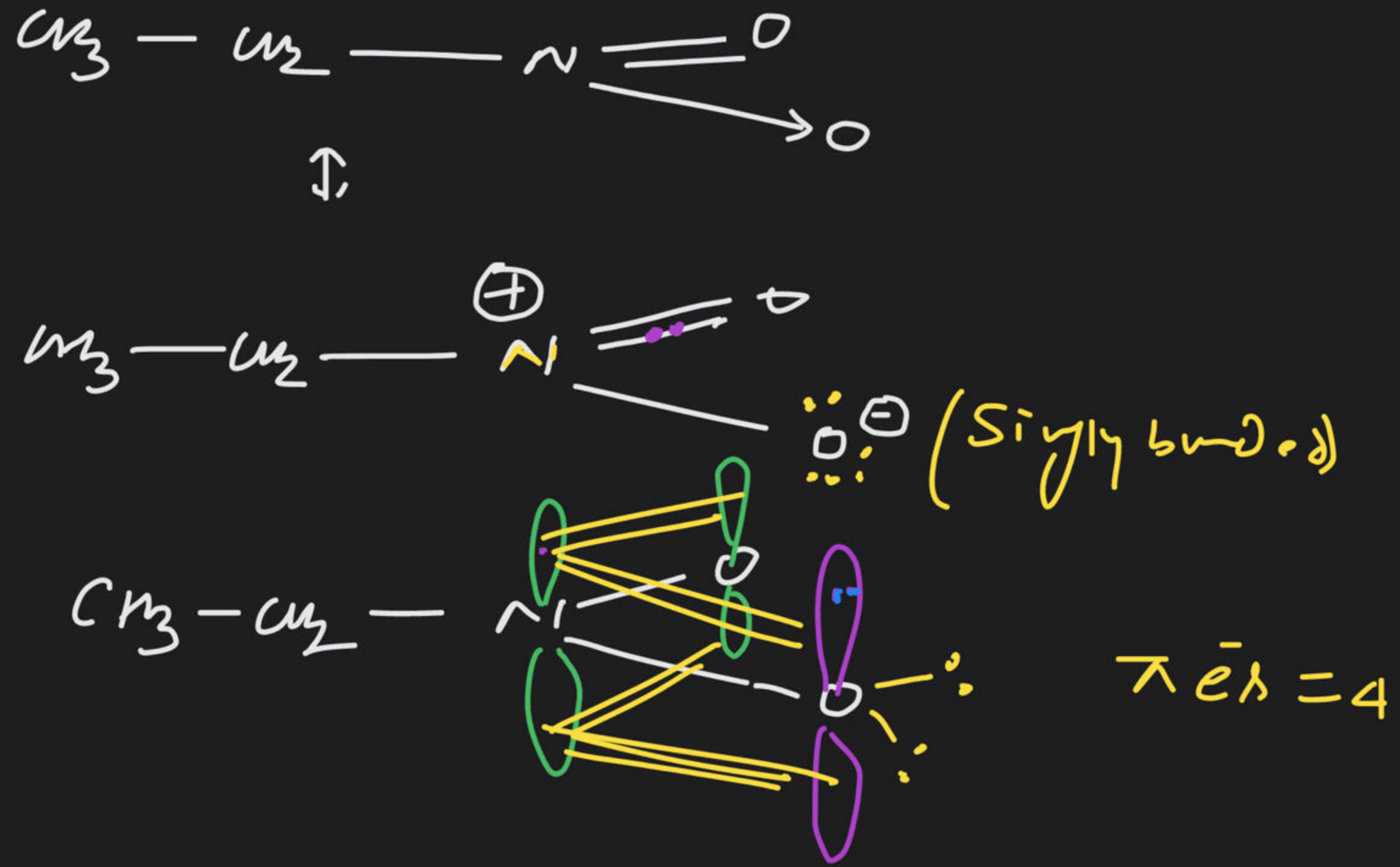
localised.

(17)



$\pi\bar{e}s = 6$

(10)



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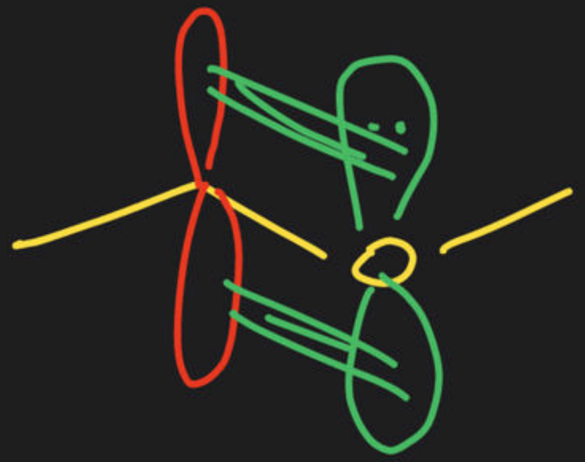
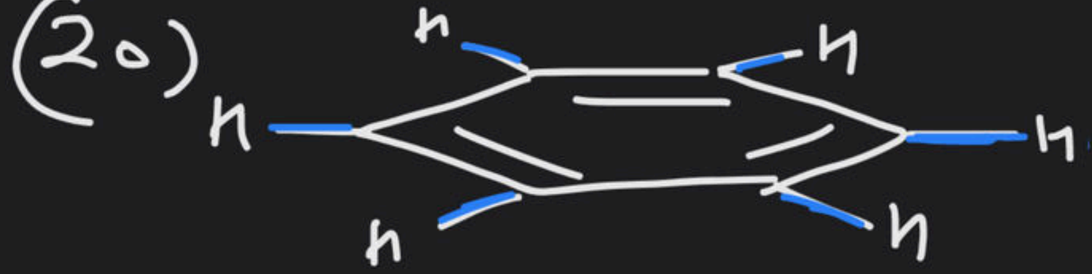
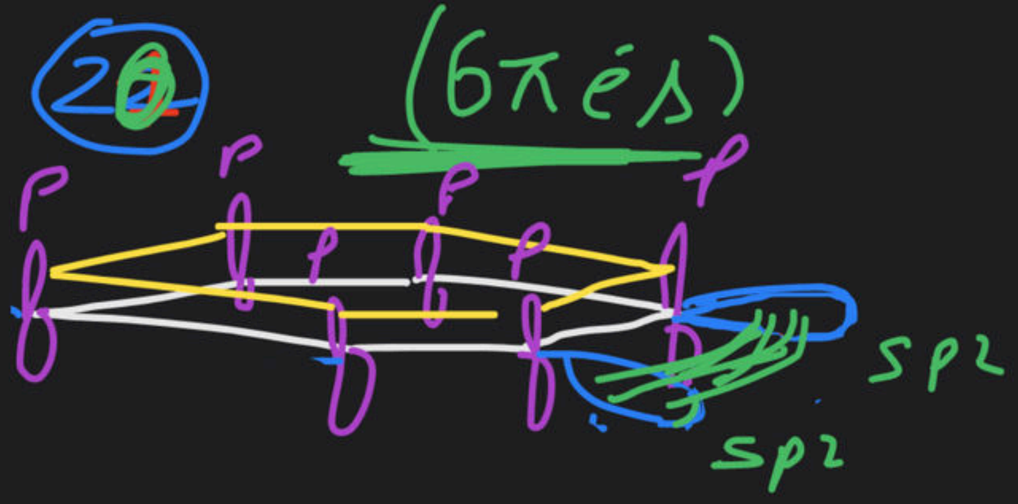


(2π e⁻s)

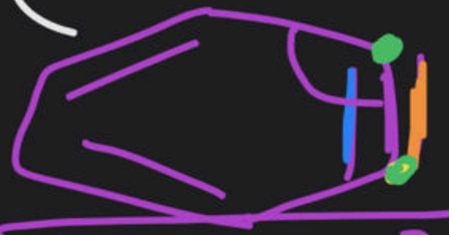
(20)





No participation of σ Bond / hybrid orbital

(Benzyne)



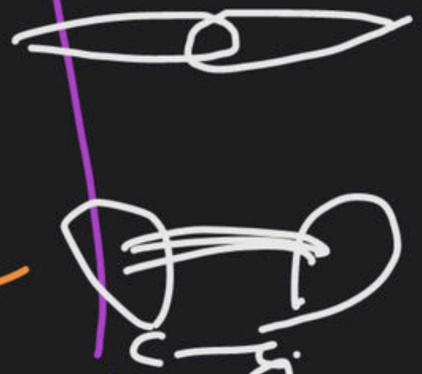
dosnt contain Alkyne $H-C\equiv C-H$

BA = 120°

σ ⇒ sp^2-sp^2

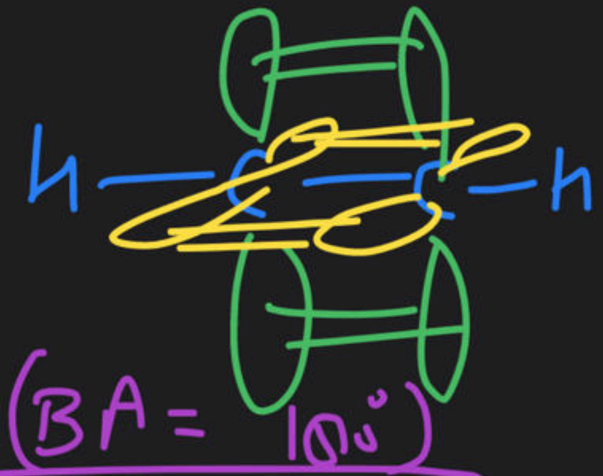
π ⇒ p_z-p_z

Weak Bond ⇒ sp^2-sp^2



8 से होती Ring में

Triple Bond (alkyne) नहीं आता है!



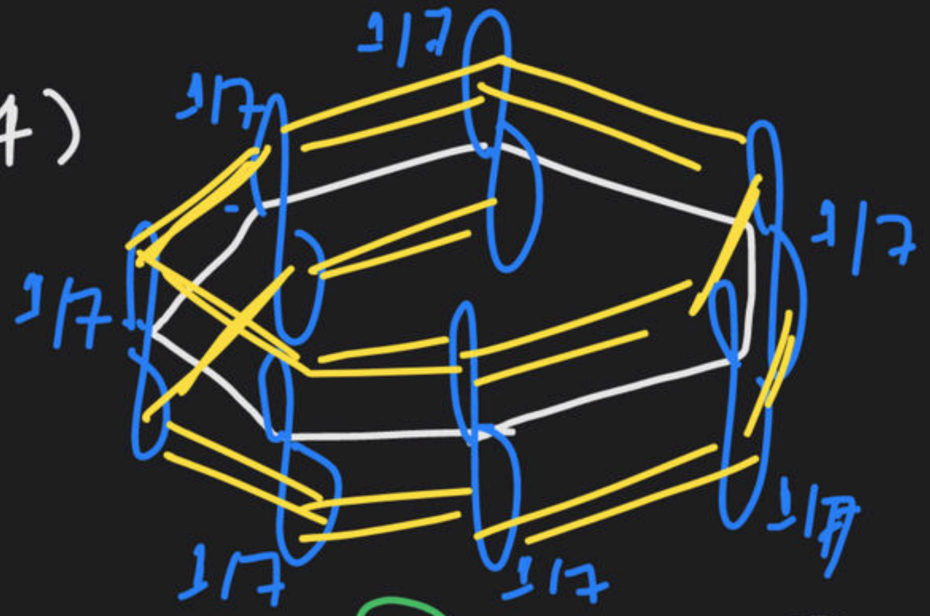
(BA = 180°)

σ ⇒ $sp-sp$

π ⇒ p_y-p_y

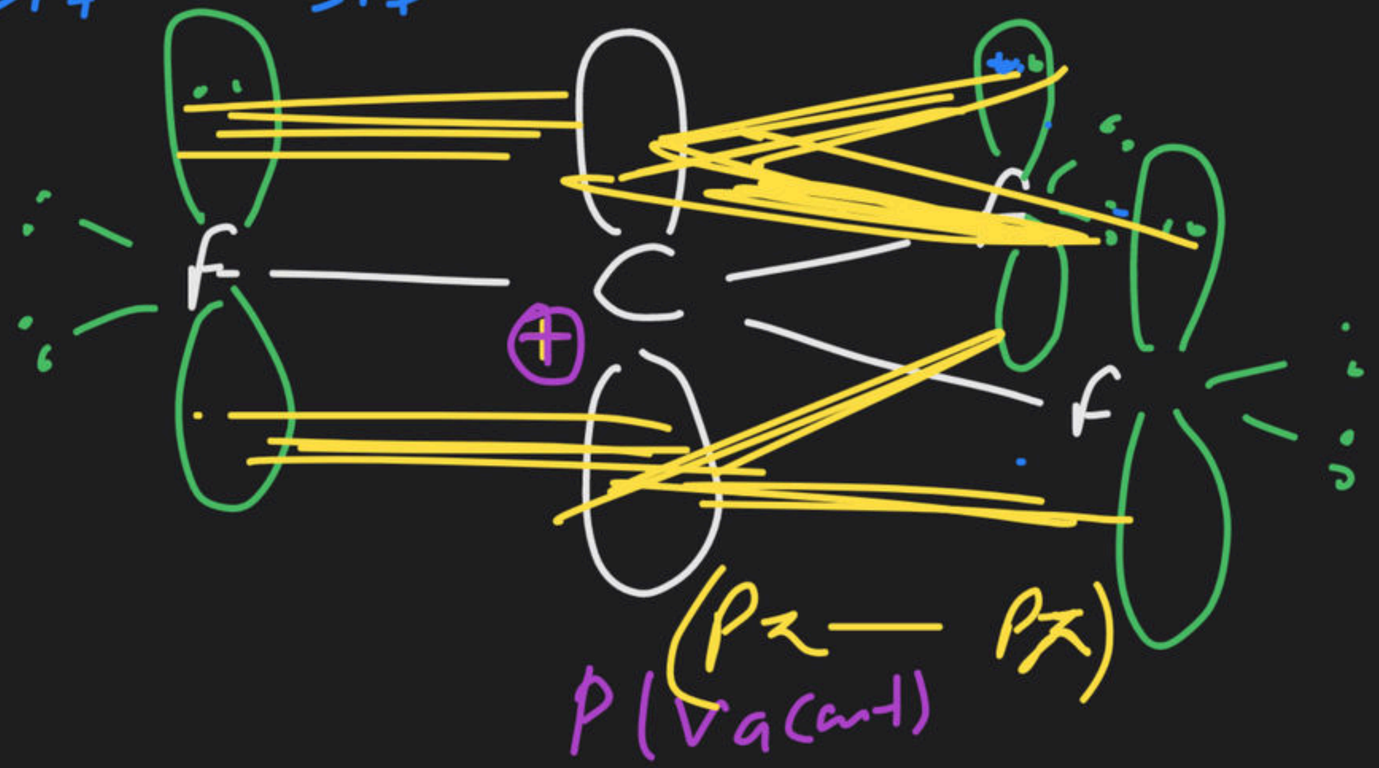
π ⇒ p_z-p_z

(24)



Gate

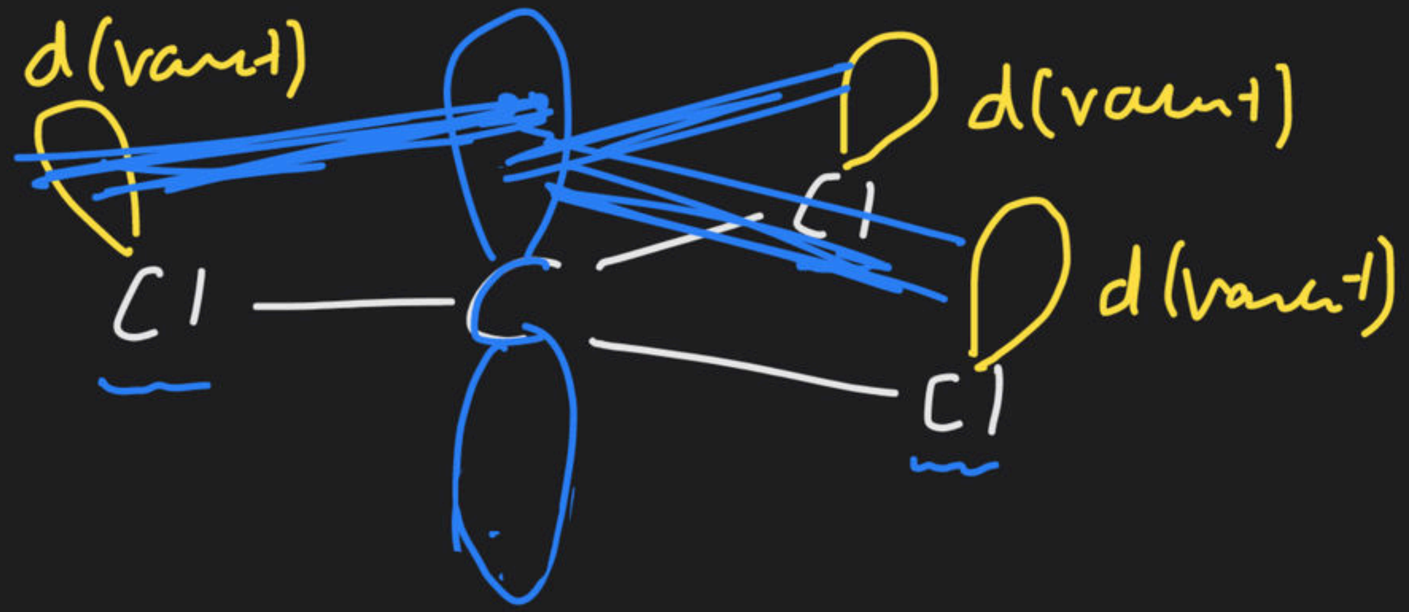
(25)



(✓) Resonance.
(✗) Back Bonding
(✗) ⊕ dispersed over 4 atoms

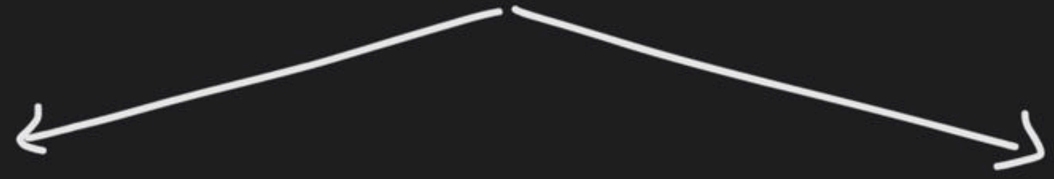
N.C. of 3F:

(26)



$(P\tau - d\tau$

⇒ There are two type of Conjugated system.



Crossed Conjugation

⇒ There must be three segments/unit at least

⇒ electron dispersion in opp direction

⇒ Terminal segments are not related with each other

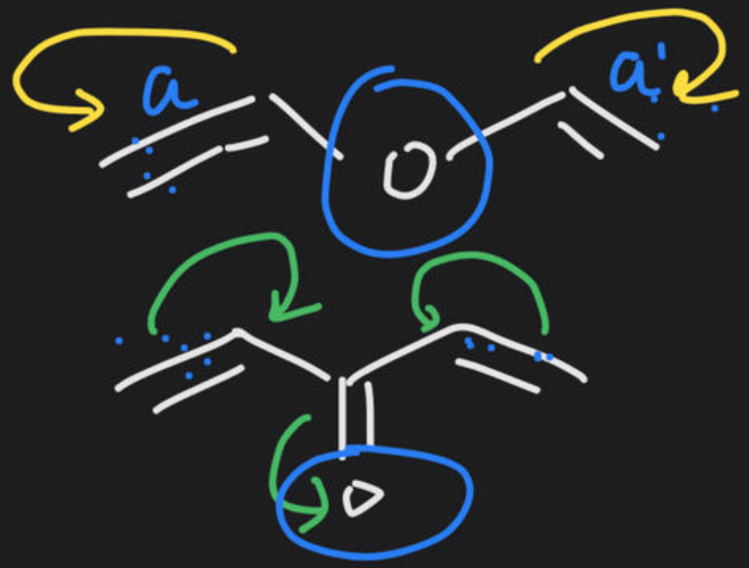
Extended Conjugation

⇒ Must be three segments/unit at least

⇒ Electron dispersion in one direction

⇒ All segments are related.

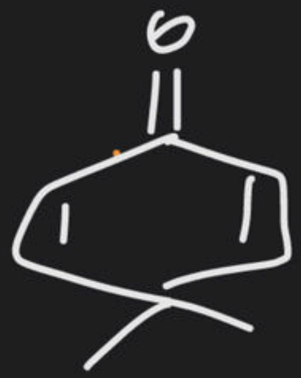
Ex:



Ex:

Ex

Ex-



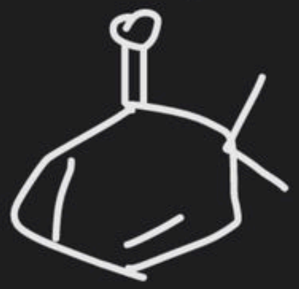
Ex:

Ex:

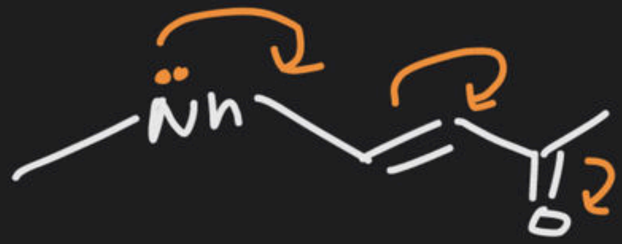
Ex

Ex:

Ex



Ex:



Ex :

Note :- (i) Extended Conjugation in any Compound make it more stable then analogus Compound having crossed Conjugation

Ex 1.

(a)

(GIIP) Resonance

1 → 2

Extended Cross

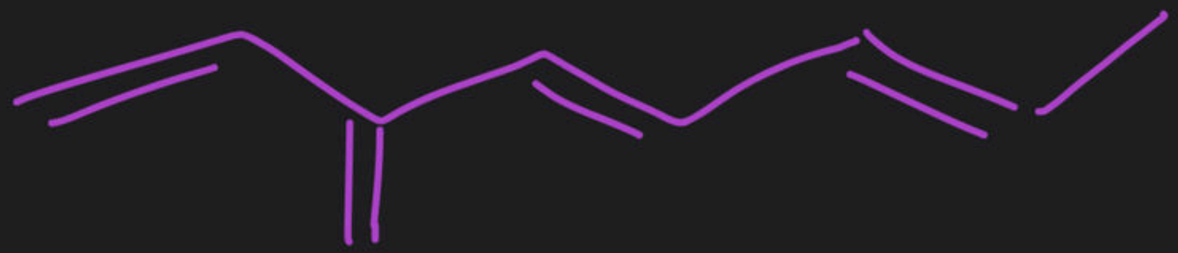
(GIIP) Resonance

(b)

5 ||P Reso-

5 ||P Reson.

(c)



8 ||P Resonance

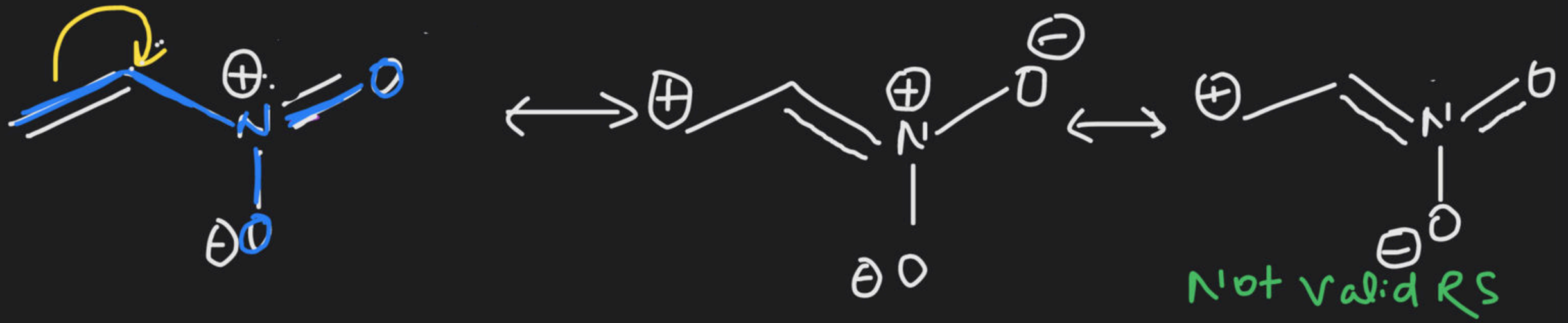
6 ||P Reson.

(1 > 2)

(#) Rules for Drawing Resonating Str.

R-1 Each RS must have a valid / bonafide Representation (don't violate octet Rule).

Ex: Nitro Ethene



R-2 Each RS must have same No. of unpaired electrons

Ex: Buta-1,3-diene

(UP = 0) ⟷ (UP = 0)

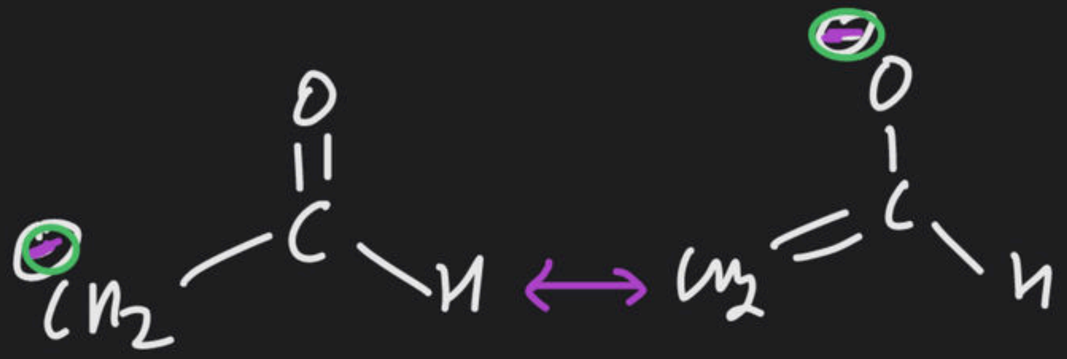
(UP = 2)

नहीं तो हो नहीं सकता

R-3 Nucleus of Each atom must be same in Each Rs.

Ex-3:-

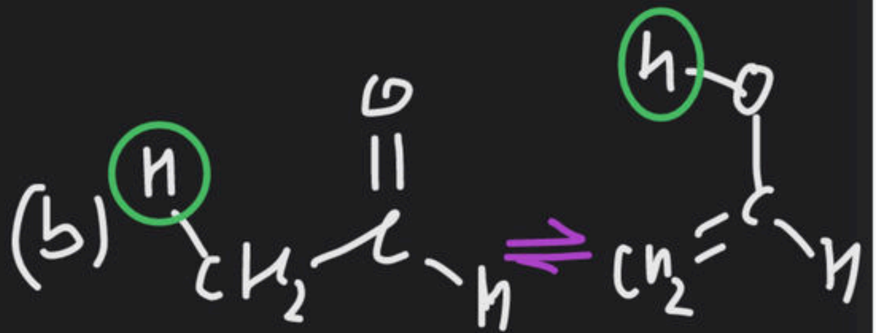
(a)



P_1 Q_1

$P_1, Q_1 \Rightarrow$ R.str.

(b)



P_2 Q_2

$P_2, Q_2 \neq$ R-str (Tautomers)

R-4 RS having unlike charges (which conform Bond) on adjacent atoms is neglected.

Ex:-

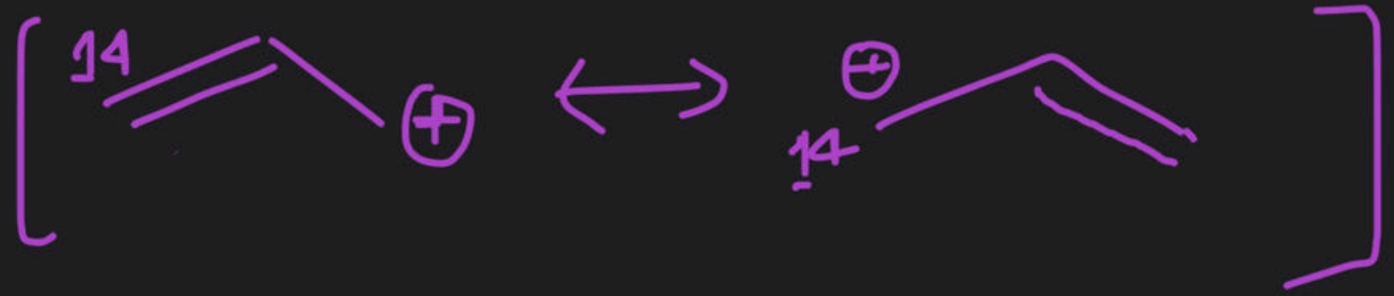
Note: $R-X \xrightarrow{\text{Anhy. } AlX_3 / BX_3 / SbX_5} [R^{\oplus}]\overline{A}lX_4$ $\overline{B}X_4$ $\overline{Sb}Y_6$

(#) Total no. of R.S of Product of following Reaction

(1) 

$\xrightarrow{AlCl_3}$ "Product"

Soln:

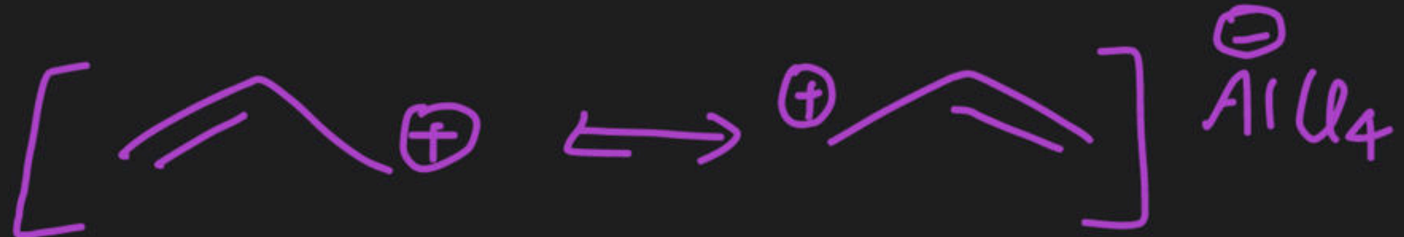


(2)

(2) 

$\xrightarrow{AlCl_3}$ Product

Soln:

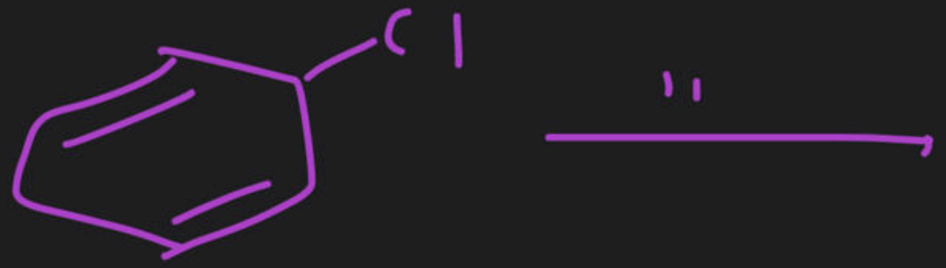


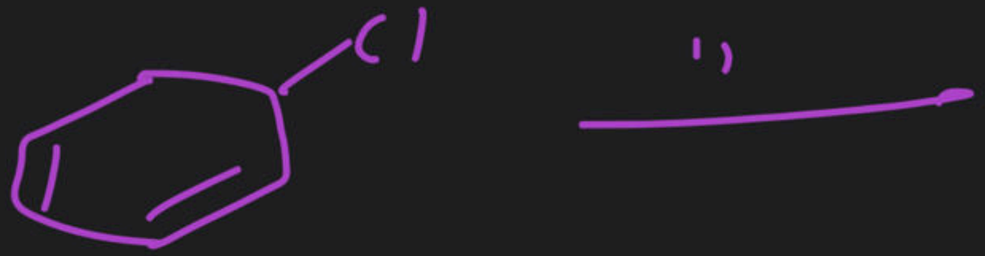
(2)

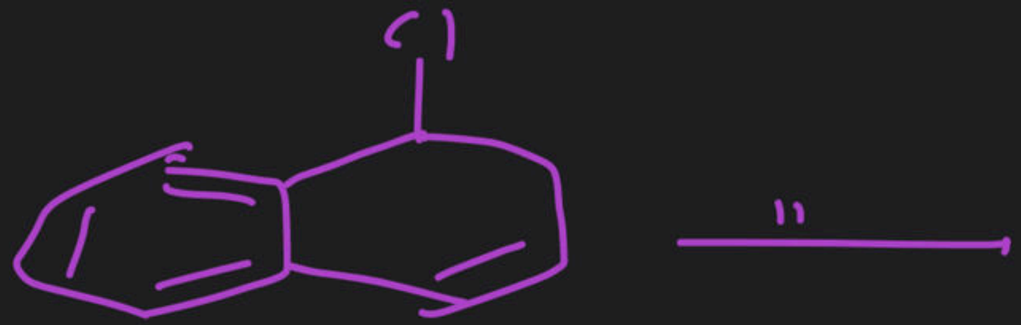
(3) 

(4) 

(5) 

(6) 

(7) 

(8) 

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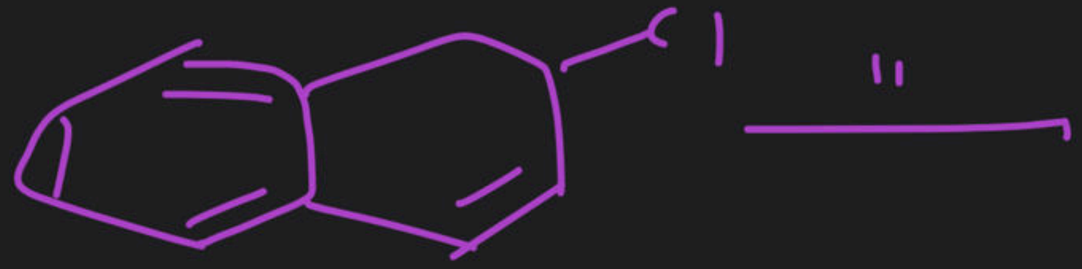

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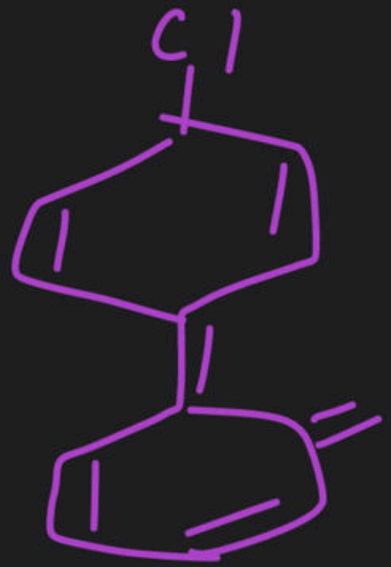
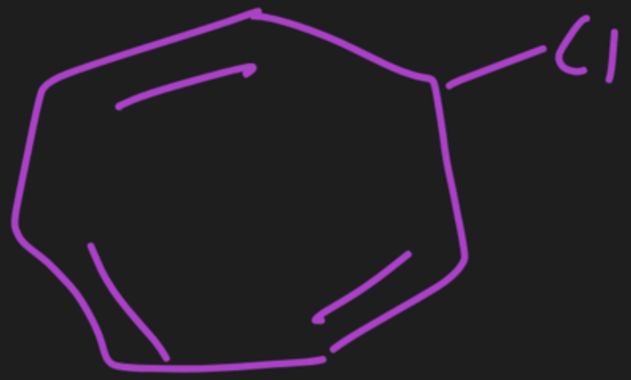


(11)

(17)



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▲ 12 • Asked by Raghav

Charan sparsh sir

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▲ 9 • Asked by Karan

Bb is here! Shubharambh kab se krna hai sir?