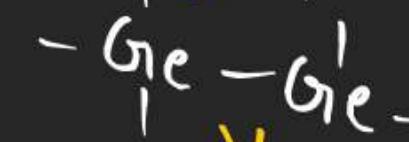
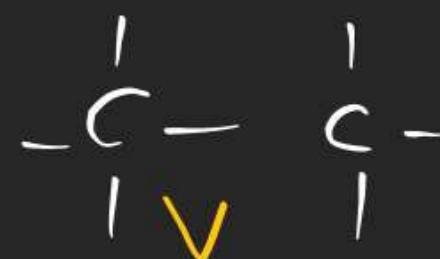


Catenation prop (chain formation prop.)

Catenation \propto B·E (Bond energy)

order of B·E



$$B \cdot E \propto \frac{1}{\text{size}}$$

size (dominant except 2nd period if R-present)

$$B \cdot E \propto \frac{1}{R \cdot P - L \cdot P \text{ resp.}}$$

(only 2nd period)

for 2nd period $\rightarrow R \cdot P - L \cdot P$ dominant

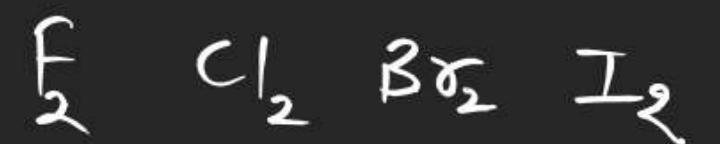
order of BE

$$:\ddot{o} - \dot{o}:$$

Λ

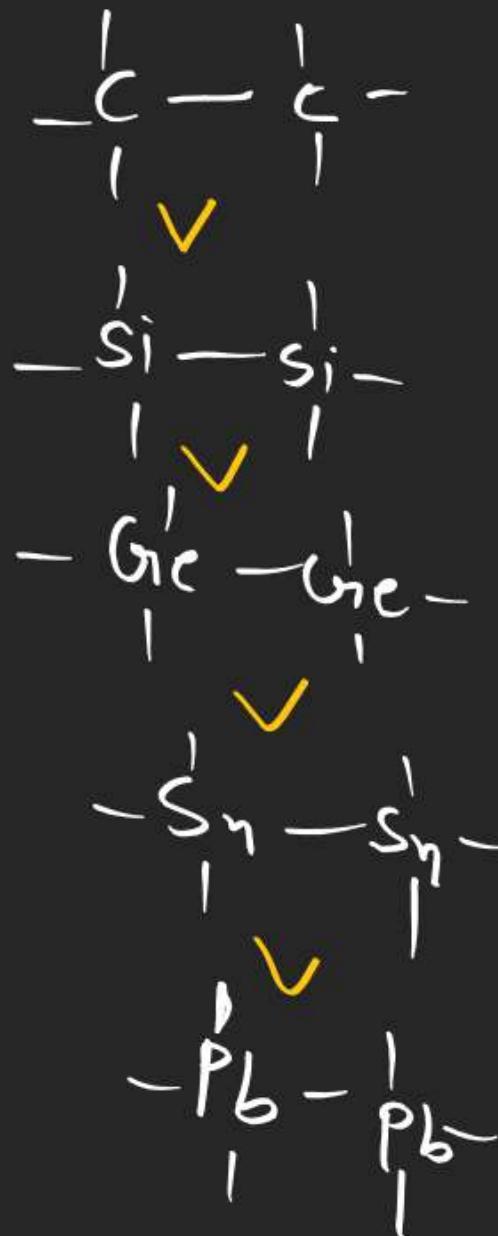
$$:\ddot{s} - \dot{s}:$$

one
order of BE



~~↗~~ $\boxed{\text{Cl}_2 > \text{Br}_2 > \underline{\text{F}_2} > \underline{\text{I}_2}}$

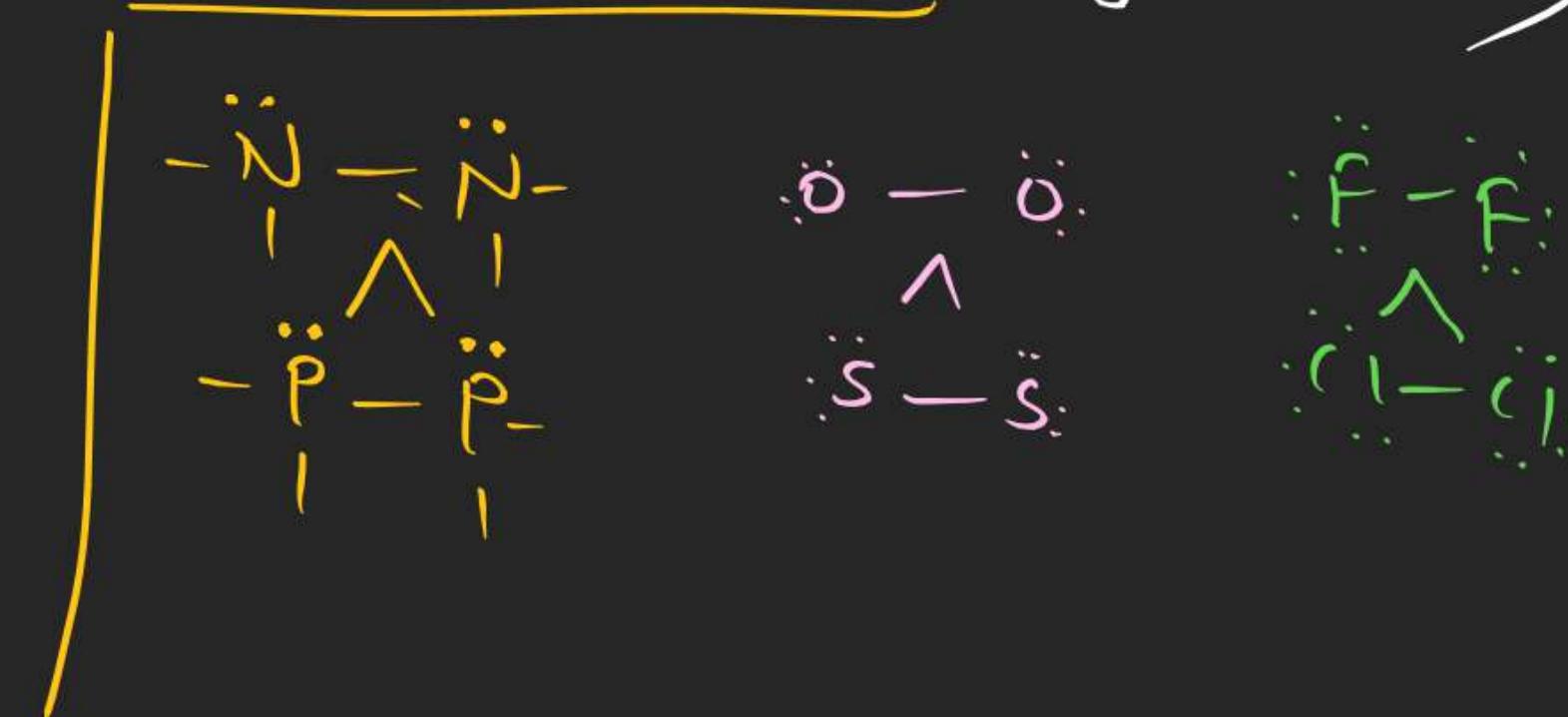
Catenation [Chain formation tendency]



B.E & Catenation

$$\text{B.E} \propto \frac{1}{\text{size}} \quad \text{[dominating except 2nd period]} \quad Q_{mb}$$

$$\text{B.E} \propto \frac{1}{\ell \cdot P \cdot \ell \cdot P} \quad \text{[only 2nd period]}$$



one order of B.E
 $F_2 \text{ Cl}_2 \text{ Br}_2 \text{ I}_2$
 $\boxed{Cl > Br > F > I_2}$

Atomicity = no of atoms in a molecule

(N₂) atomicity of N = 2

(P₄) atomicity of P = 4

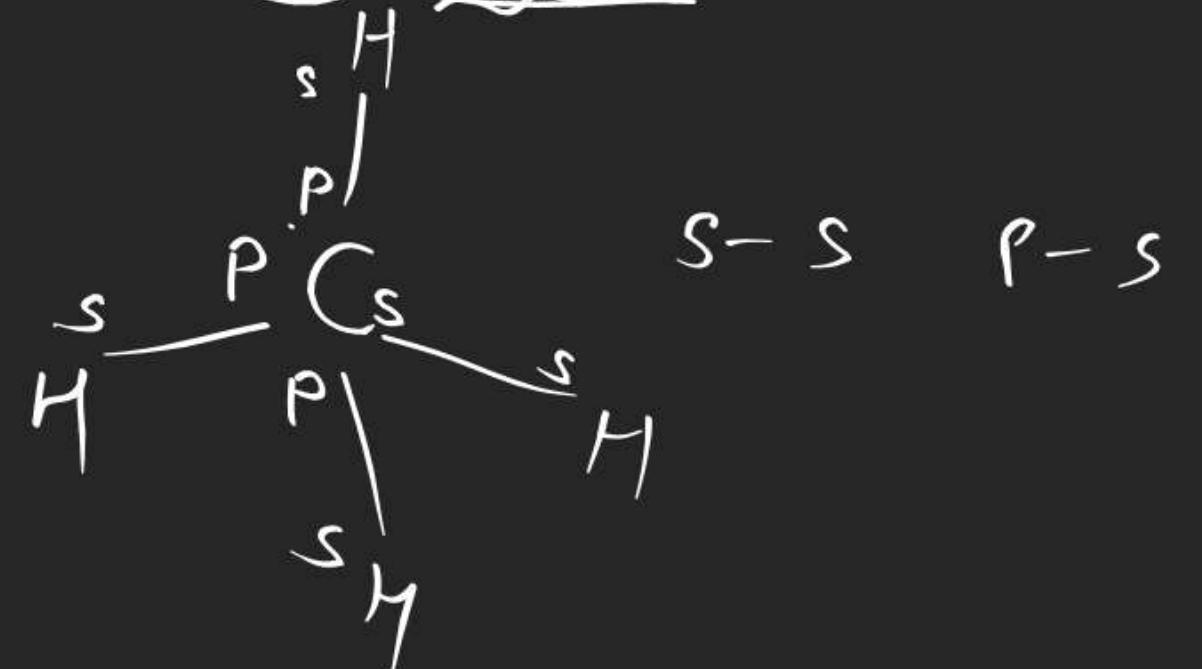
O₂ = 2

S₈ = 8

Hybridisation

(Hy)

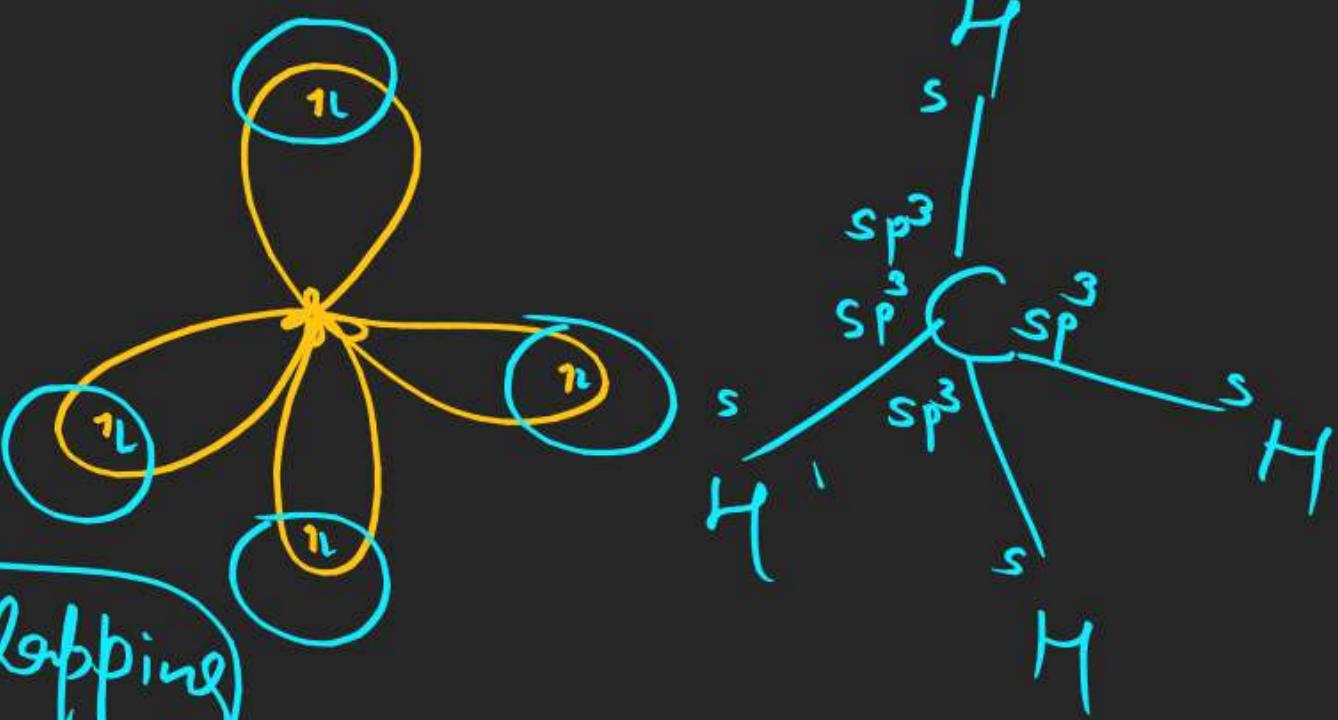
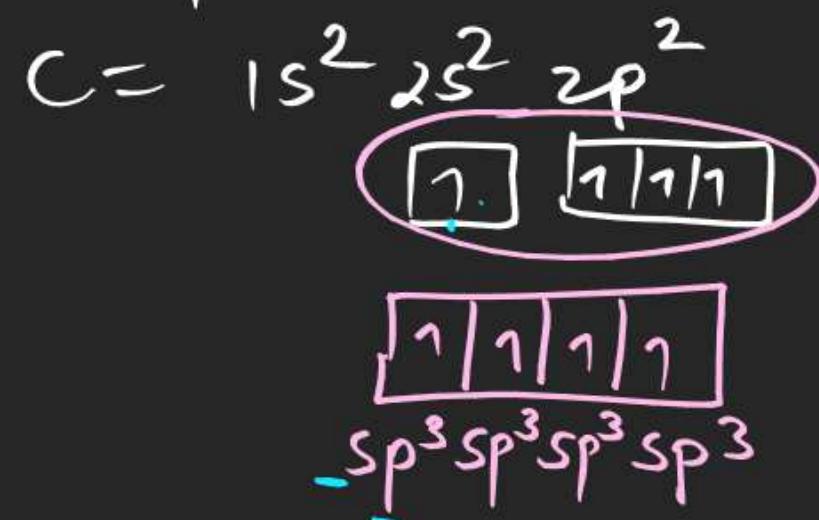
$$\underline{C} = 1s^2 \underset{1}{\cancel{s^2}} 2p^2$$



$$\begin{array}{cccc}
 & 8 & 8 & 8 \\
 & | & | & | \\
 10 & & 10 & 10 \\
 & | & | & | \\
 & O & O & O \\
 & | & | & | \\
 & O & O & O \\
 \hline
 & (10+10+10+2) & & \\
 & \frac{32}{4} = 8 & &
 \end{array}$$

Hyb. \rightarrow Intermixing of atomic orbitals having less energy diff.

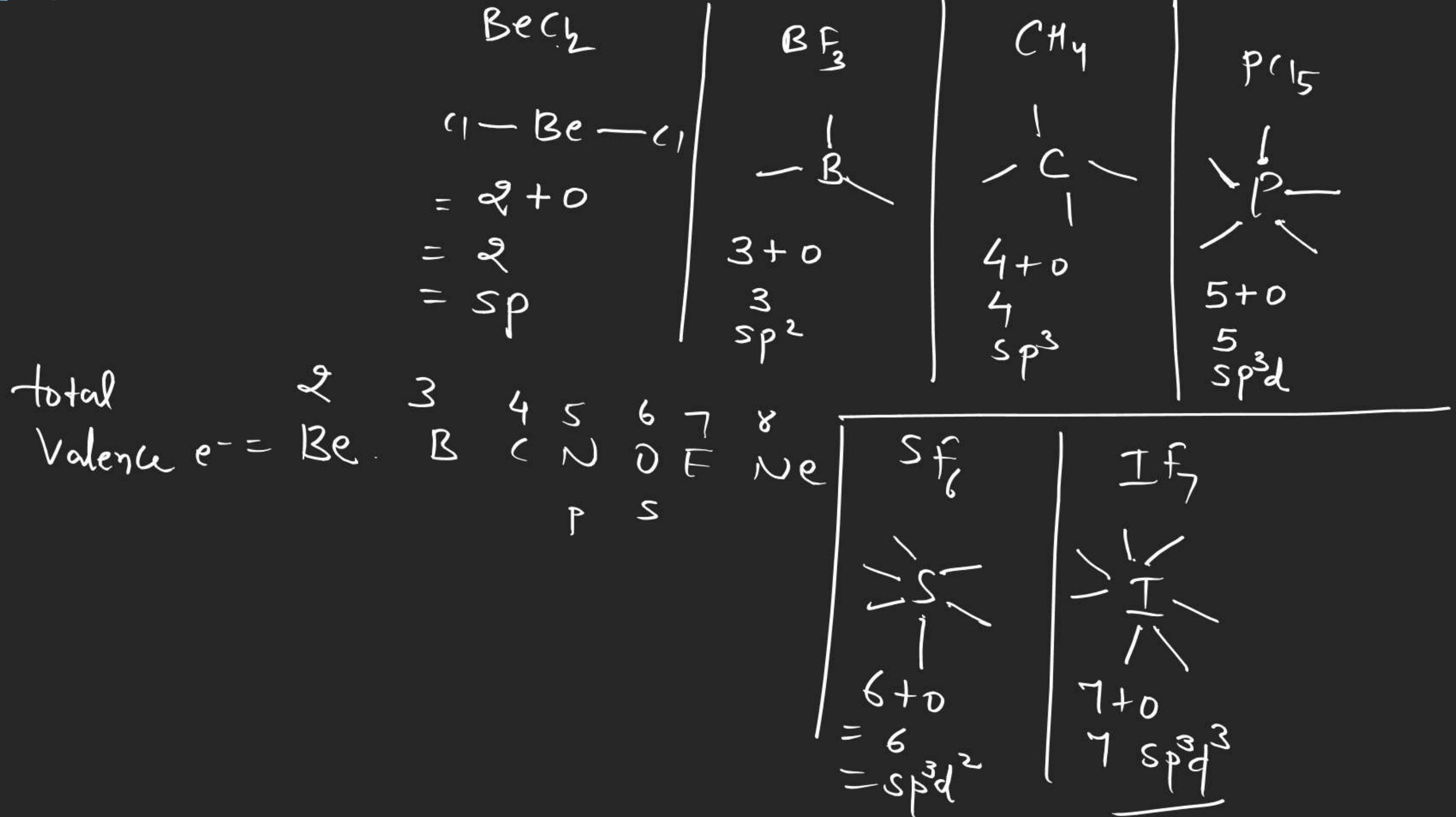
CH_4

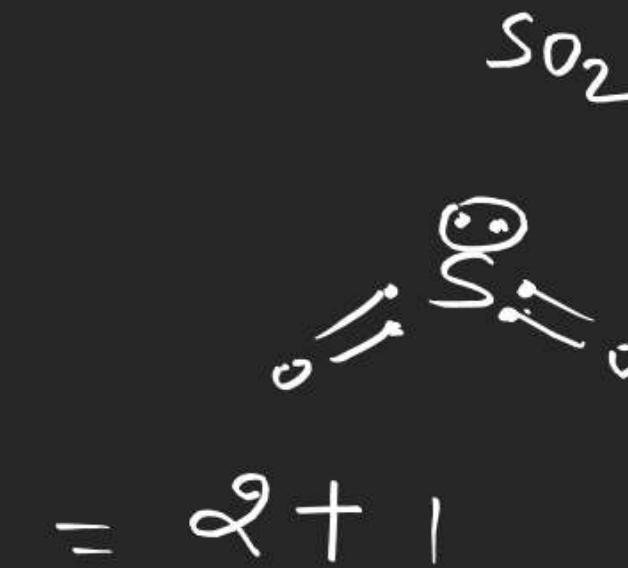


Calculation of Hyb.

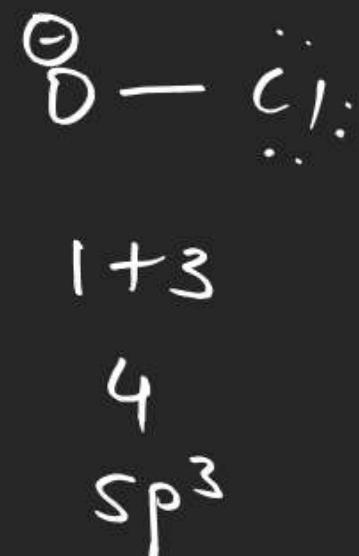
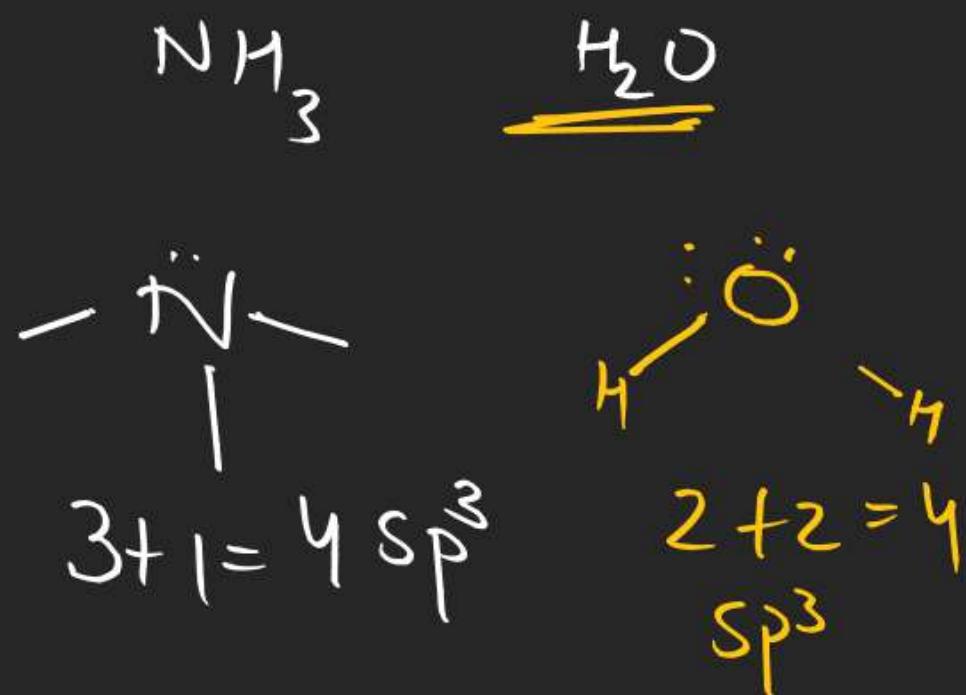
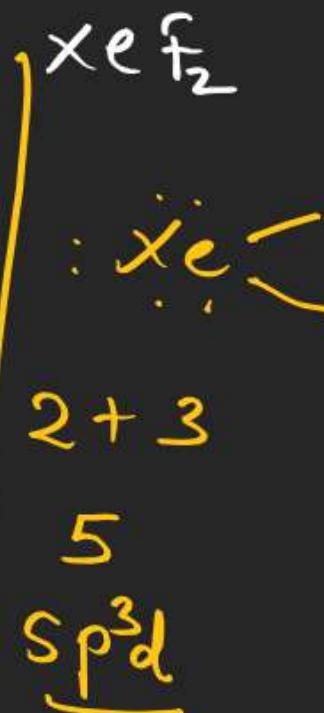
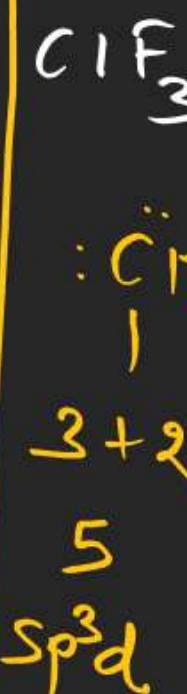
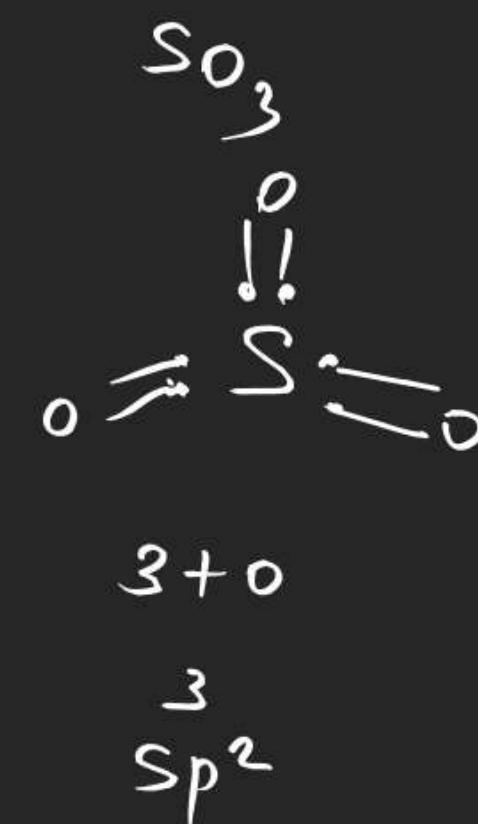
T·H·O = no of σ -bonds + no of σ & p
 (total hybrid orbitals)

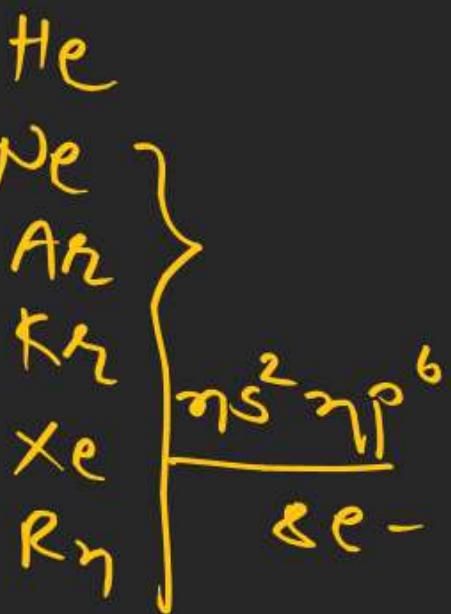
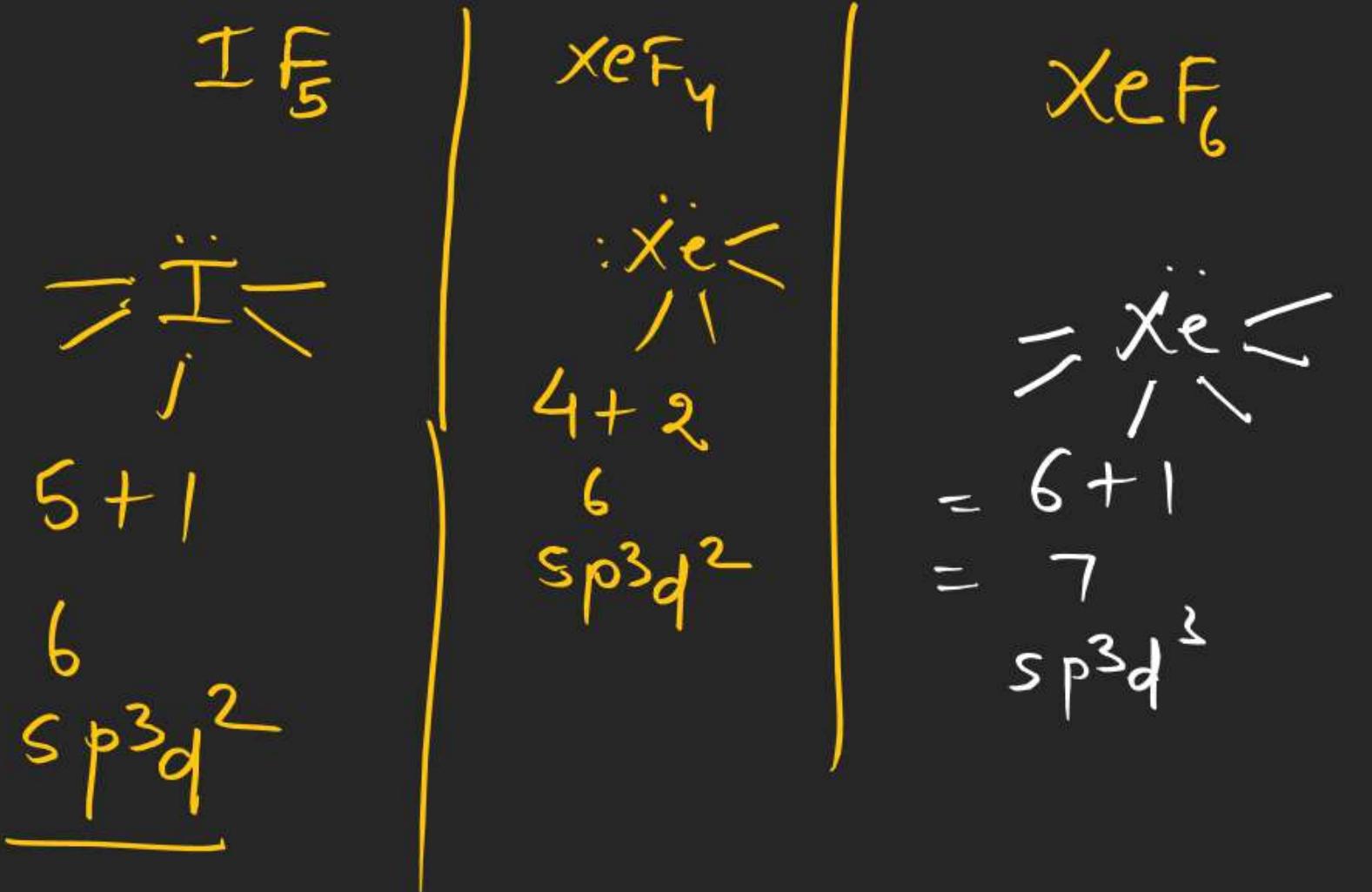
2	SP
3	SP^2
4	SP^3
5	SP^3d
6	SP^3d^2
7	SP^3d^3

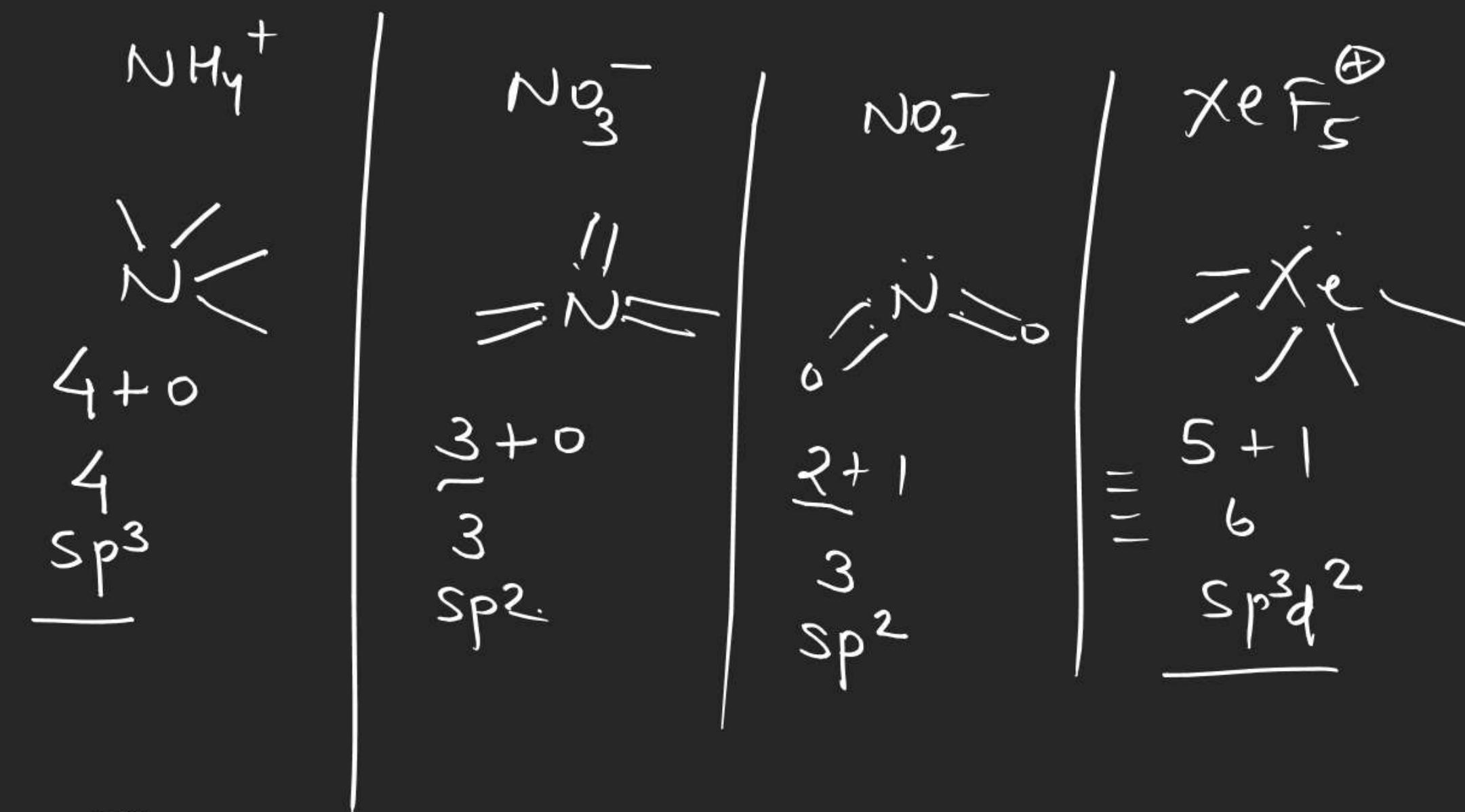




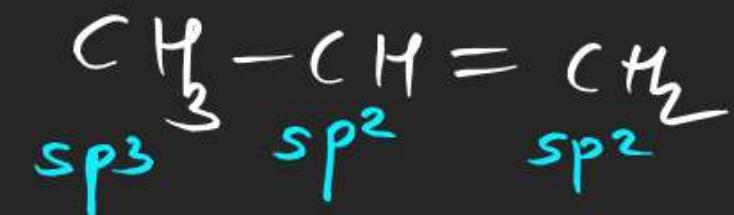
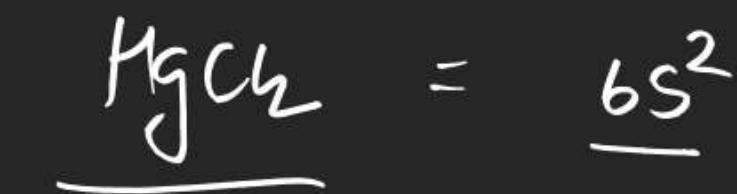
$$= \frac{3}{\text{sp}^2}$$





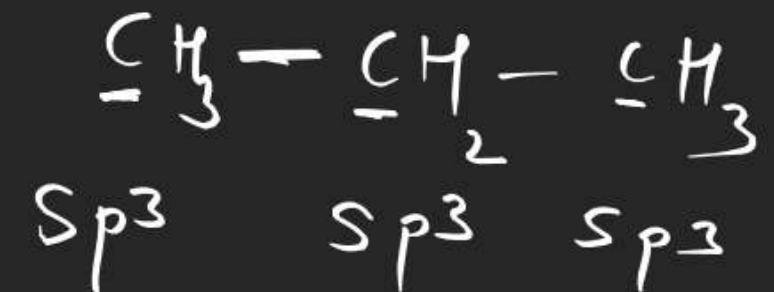
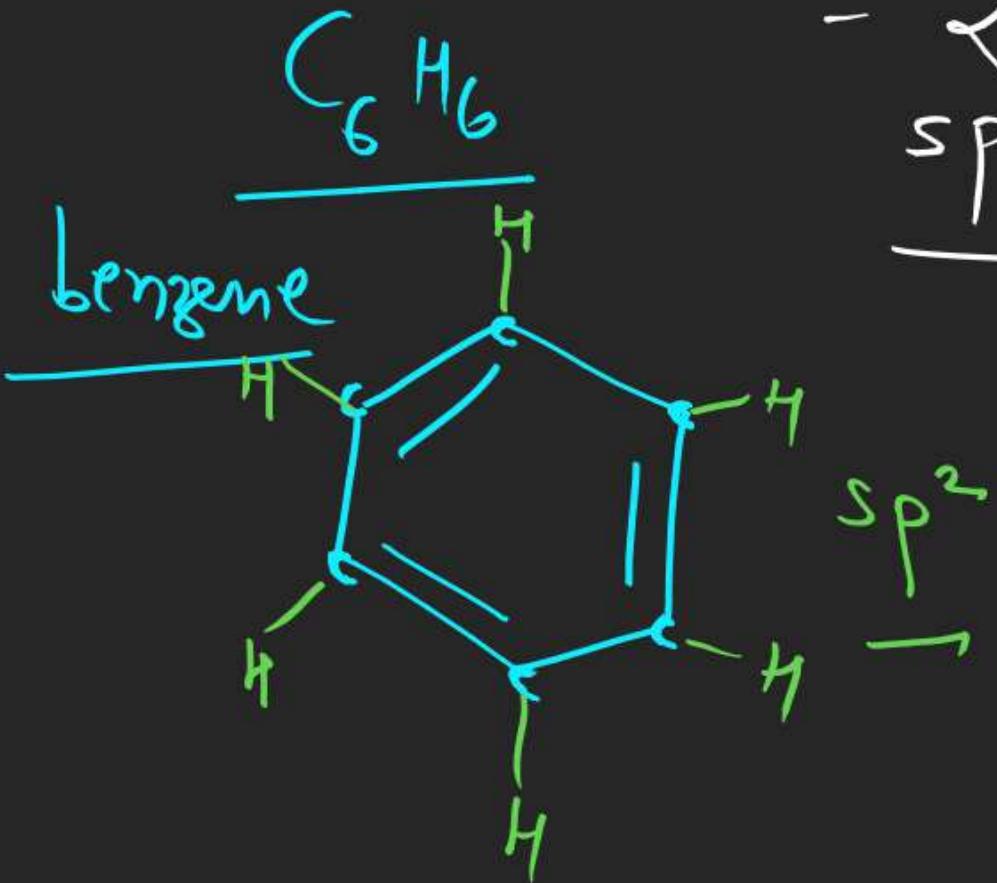


$$\text{TH-O} = \frac{\text{no of O bond}}{} + \frac{\text{no of lone pair}}{}$$



$$= 2 + 0$$

$$= 2$$



$$P-P > N-N > As-As > Sb-Sb > Bi-Bi;$$



