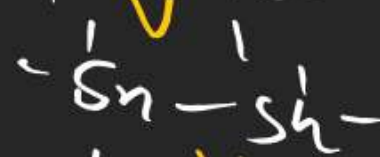
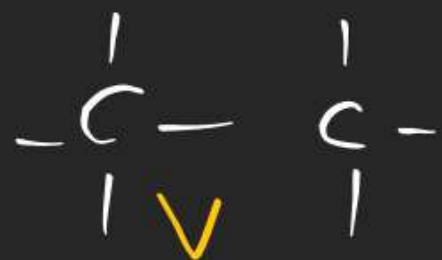


Catenation prop. (chain formation prop.)

Catenation \propto B.E (Bond energy)

Order of B.E



$$B.E \propto \frac{1}{\text{Size}}$$

[dominant except 2nd period if l.p present]

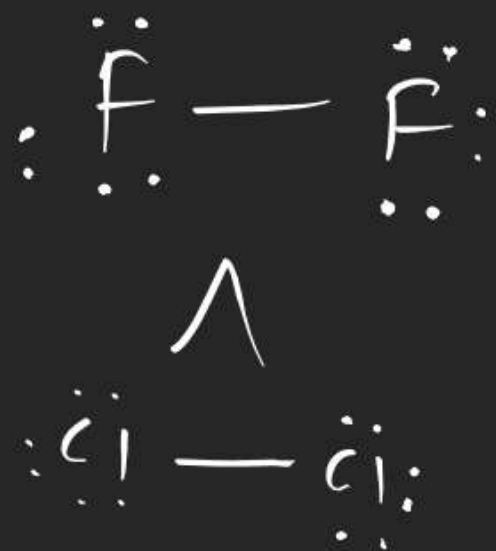
$$B.E \propto \frac{1}{\text{l.p - l.p rep.}}$$

[only 2nd period]

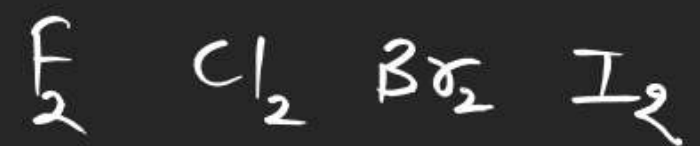
for 2nd period — l.p — l.p dominant

order of B.F





Ques order of B.E

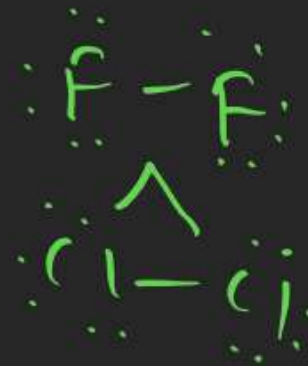
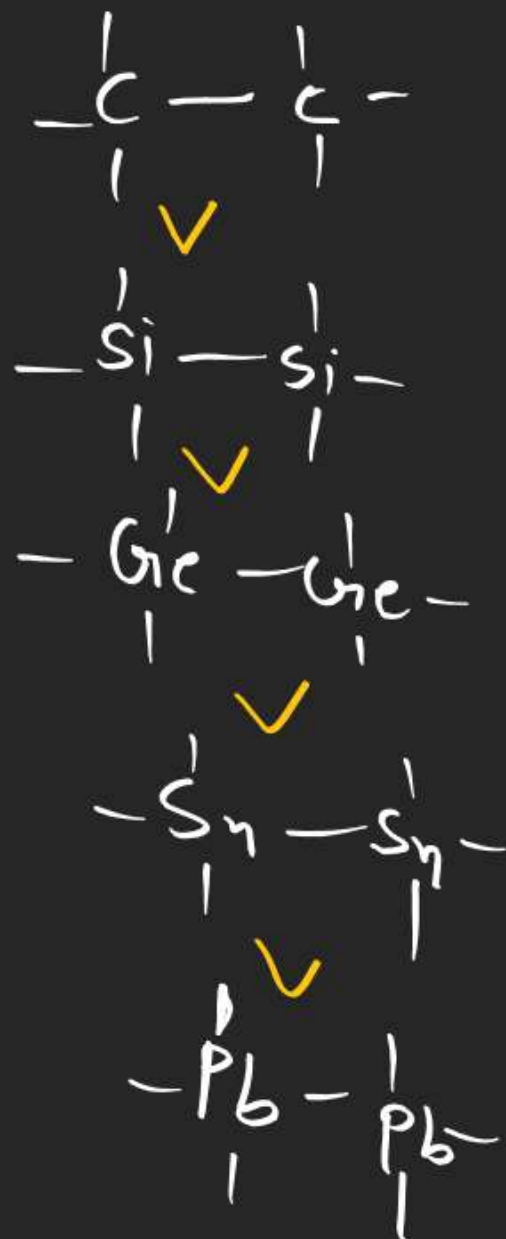


Catenation [chain formation tendency]

B.E \propto Catenation

B.E $\propto \frac{1}{\text{Size}}$ [dominating except 2nd period] Group

B.E $\propto \frac{1}{\text{e.p. - e.p.}}$ [only 2nd period]



one order of B.E

$\text{F}_2 \quad \text{Cl}_2 \quad \text{Br}_2 \quad \text{I}_2$

$\text{Cl}_2 > \text{Br}_2 > \text{F}_2 > \text{I}_2$

Atomicity = no of atoms in a molecule

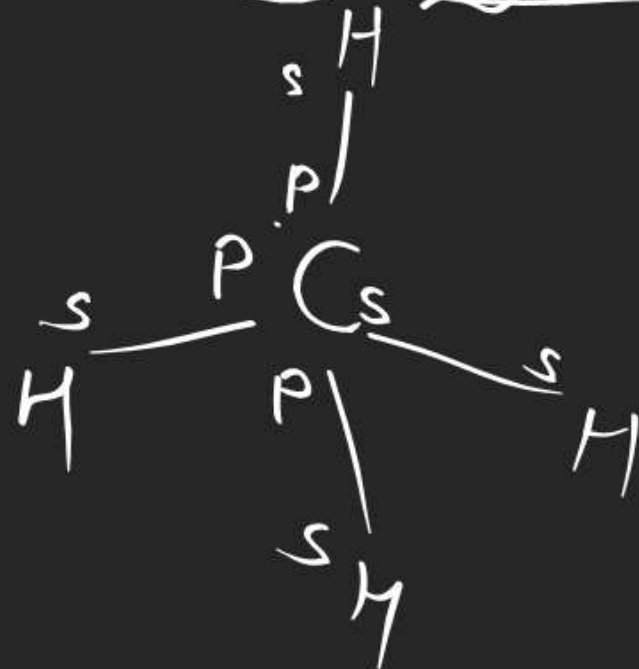
(N_2) atomicity of N = 2

(P_4) atomicity of P = 4

O_2 = 2 ^{atomicity}

S_8 = 8

Hybridisation



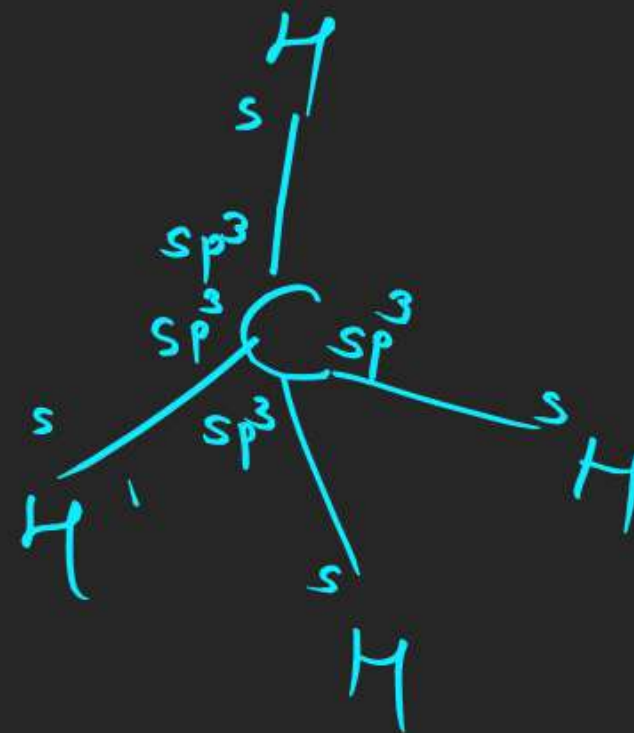
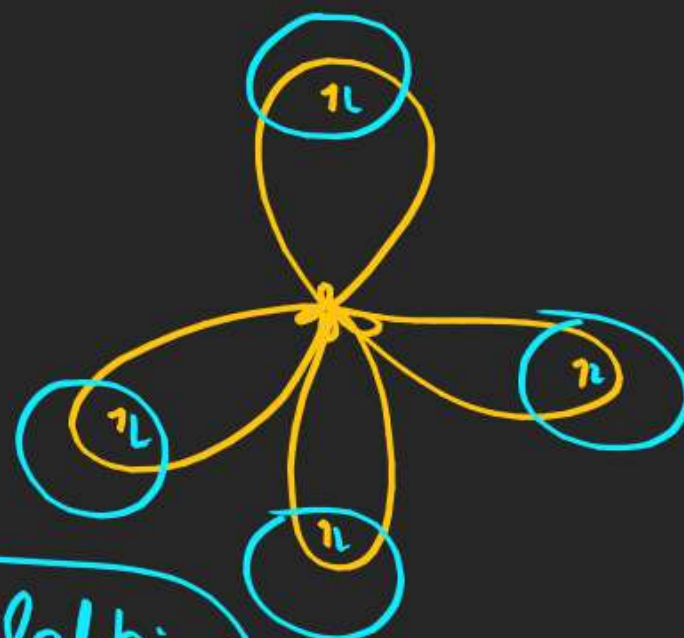
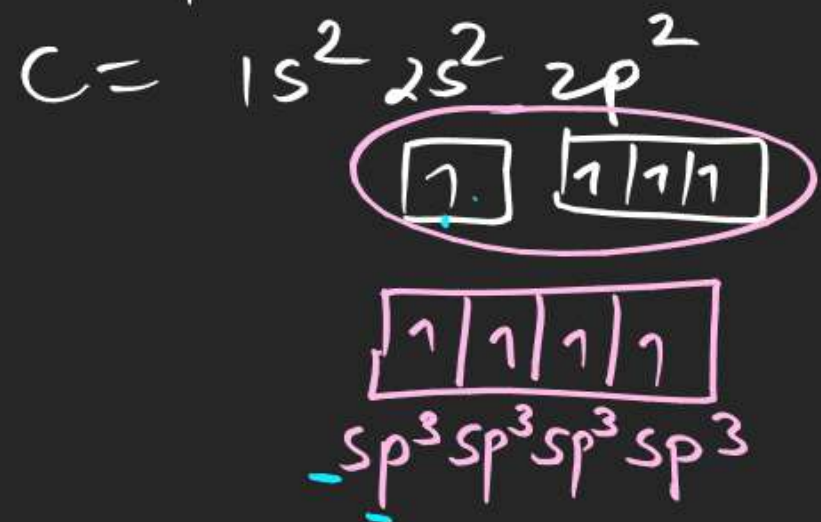
8	8	8	8
10	10	10	2
0	0	0	0
↑	↑	↑	↑

$$(10 + 10 + 10 + 2)$$

$$\frac{32}{4} = 8$$

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

CH_4



First hyb followed by overlapping

Calculation of Hyb.

$$\text{T.H.O} = \text{no of } \sigma\text{-bonds} + \text{no of l.p.} \\ (\text{total hybrid orbitals})$$

T.H.O =

2	sp
3	sp ²
4	sp ³
5	sp ³ d
6	sp ³ d ²
7	sp ³ d ³



$$= 2 + 0$$

$$= 2$$

$$= sp$$



$$3 + 0$$

$$3$$

$$sp^2$$



$$4 + 0$$

$$4$$

$$sp^3$$



$$5 + 0$$

$$5$$

$$sp^3d$$

total
Valence e⁻ = Be

2

3

4

5

6

7

8

Ne



$$6 + 0$$

$$= 6$$

$$= sp^3d^2$$



$$7 + 0$$

$$7$$

$$sp^3d^3$$



$$= 2 + 1$$

$$= 3$$

$$= sp^2$$



$$3 + 0$$

$$3$$

$$sp^2$$



$$4 + 1$$

$$5$$

$$sp^3d$$



$$3 + 2$$

$$5$$

$$sp^3d$$



$$2 + 3$$

$$5$$

$$sp^3d$$



$$3 + 1 = 4$$

$$sp^3$$



$$2 + 2 = 4$$

$$sp^3$$



$$1 + 3$$

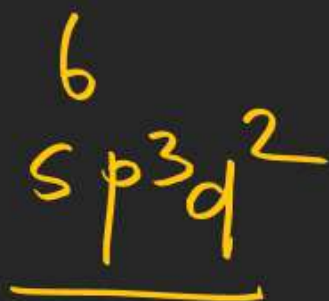
$$4$$

$$sp^3$$

IF_5



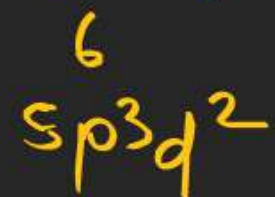
$$5 + 1$$



XeF_4



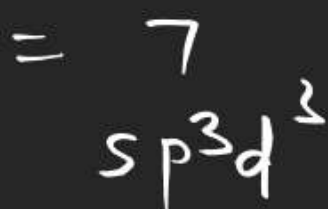
$$4 + 2$$



XeF_6



$$= 6 + 1$$



He

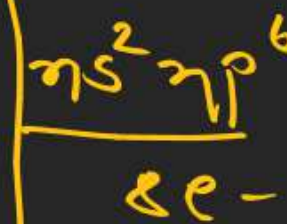
Ne

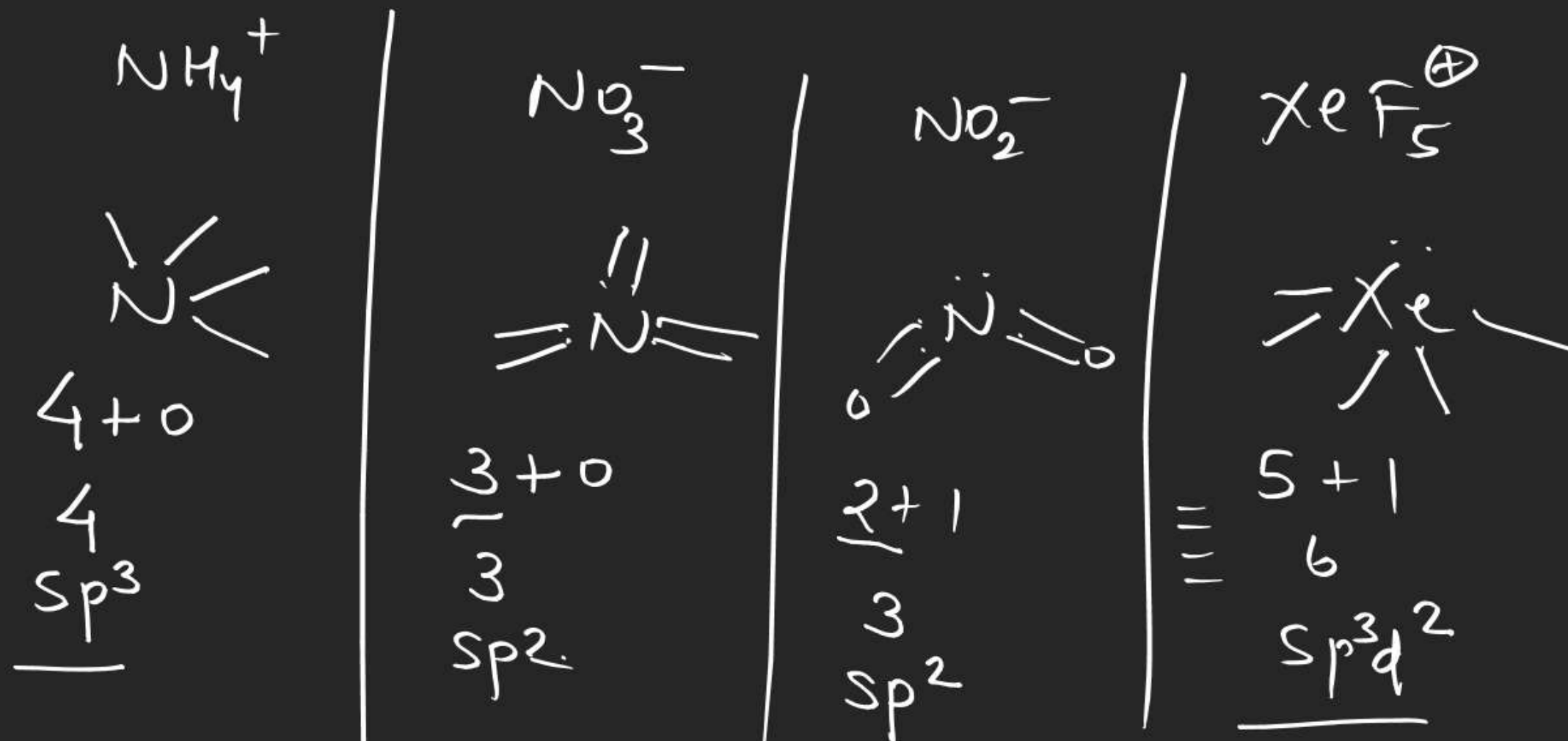
Ar

Kr

Xe

Rn





$$\text{T.H.O} = \underline{\text{no of } \sigma \text{ bond} + \text{no of l.p}}$$



$$= 2 + 0$$

$$= 2$$

$$\underline{sp}$$

