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Covalency	oxidation state
number of covalent bond.	permanant formal charge
depends on no of covalent bond.	does not depends on number of bond
Can not zero, negative fraction	Can be zero, neg. and fractional.

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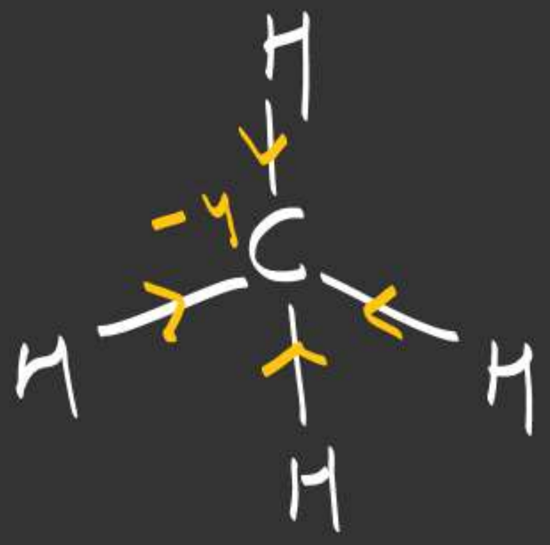
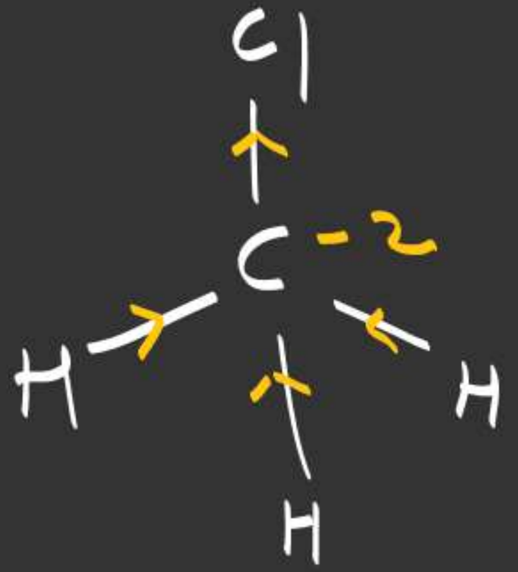
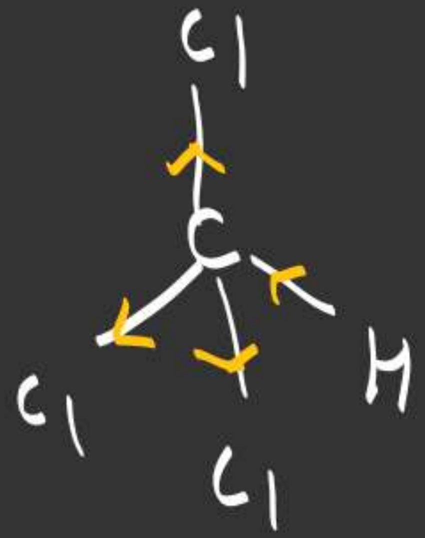
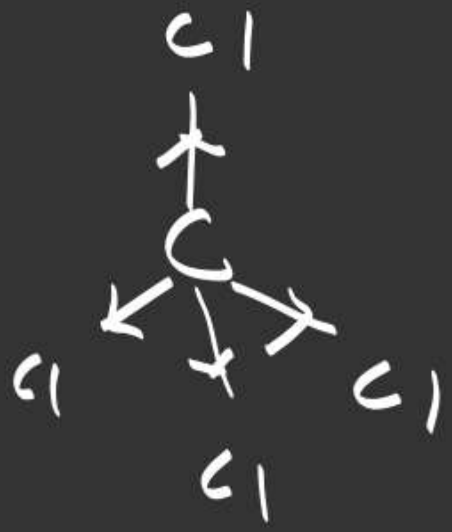
H = 2.1
C = 2.5
Cl = 3

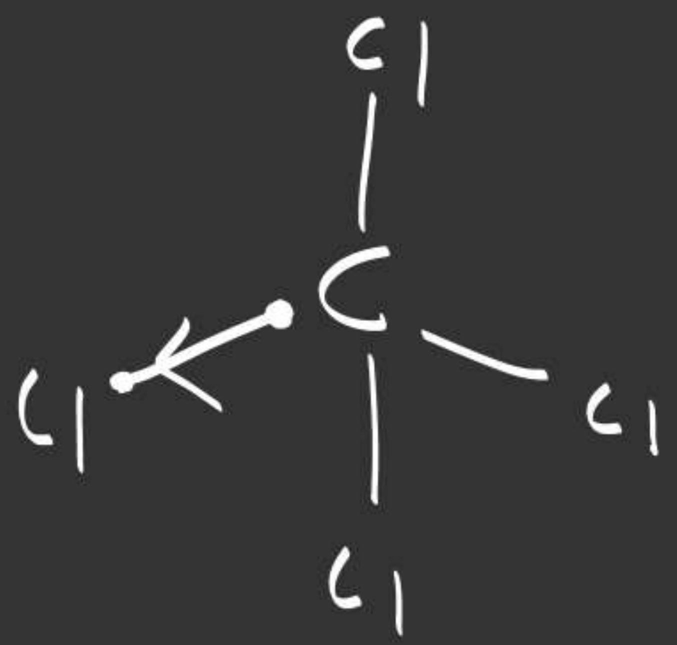



Covalency =	4	4	4	4	4
Oxidation state	-4	-2	0	+2	+4

$C = 2.5$

$Cl = 3$



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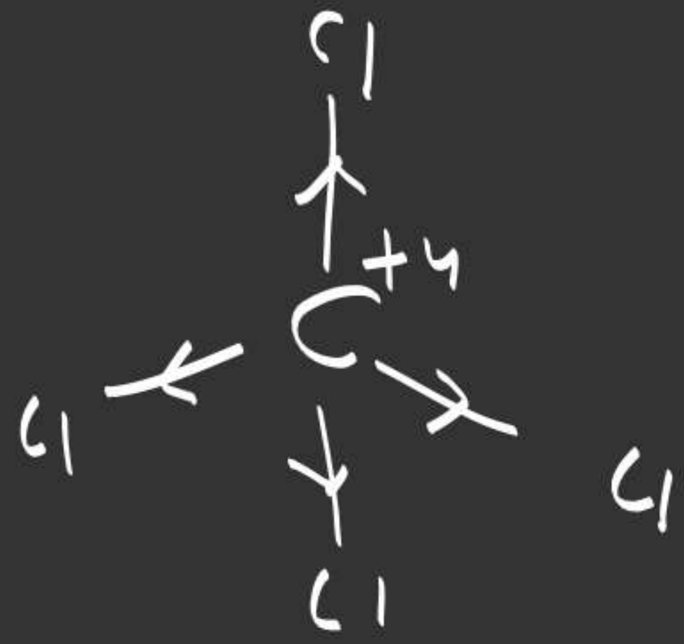
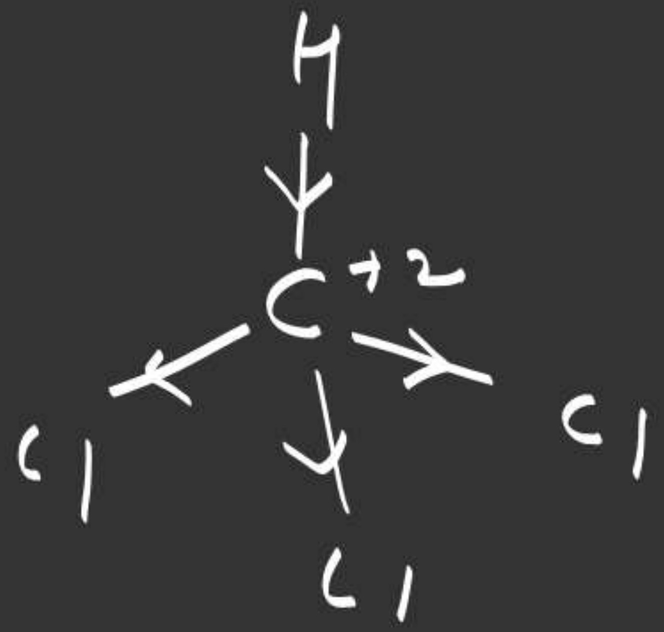
HN_3 (Hydrazoic acid)

$1 + 3x = 0$

$3x = -1$

$x = -1/3$





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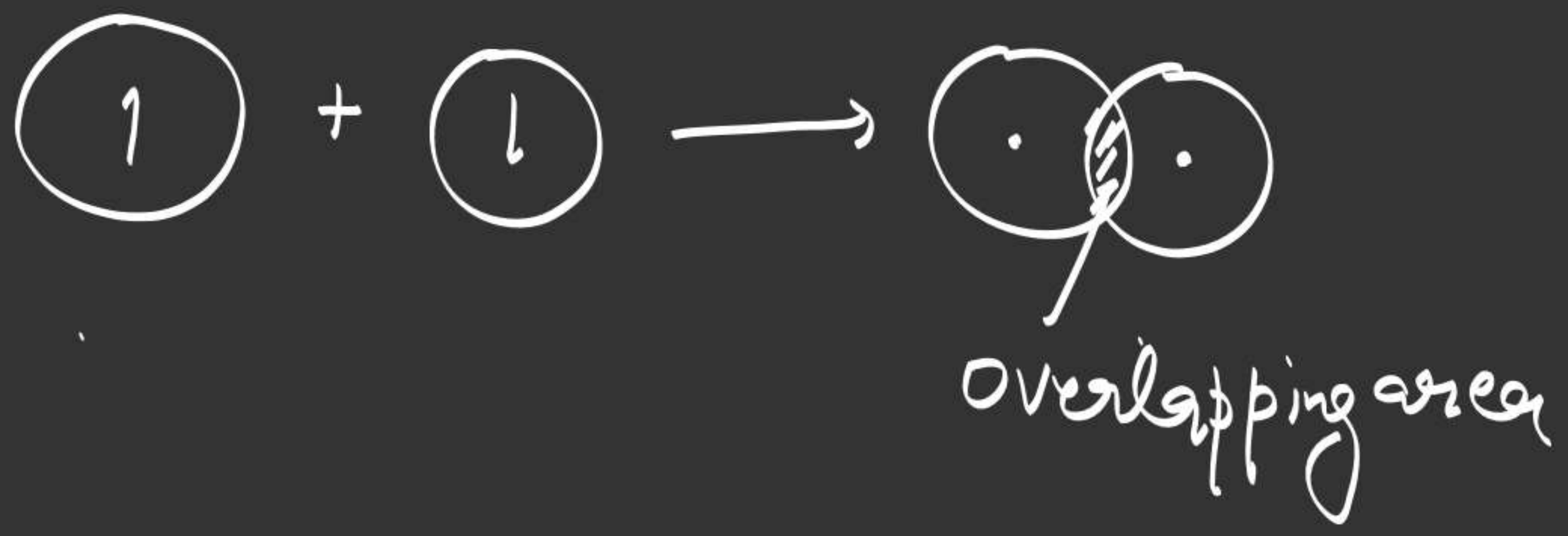
V.B.T (valency bond theory)

V.B.T explains covalent bond formation through overlapping



Que which of the following option doesnot show overlapping

1. 1L + 1 →
2. 1L + 1L →
3. + →
4. ~~all~~

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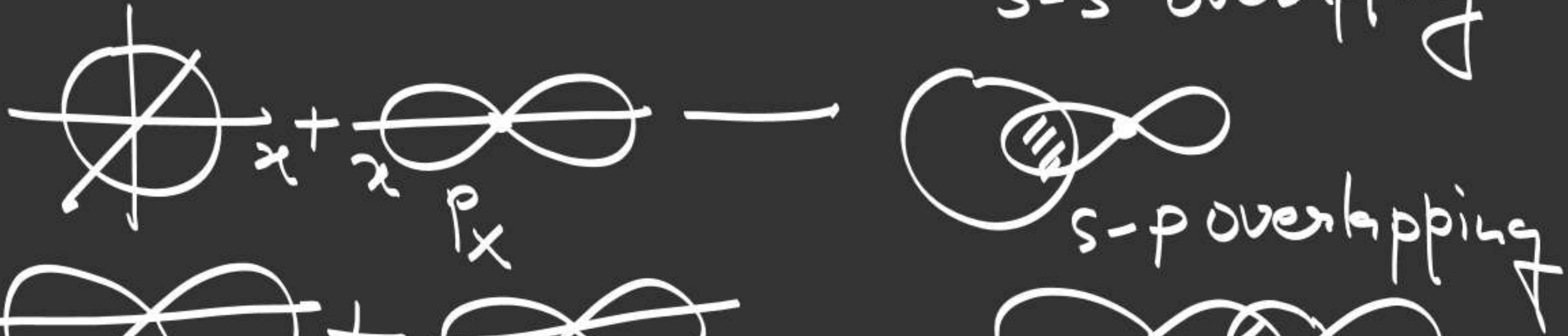
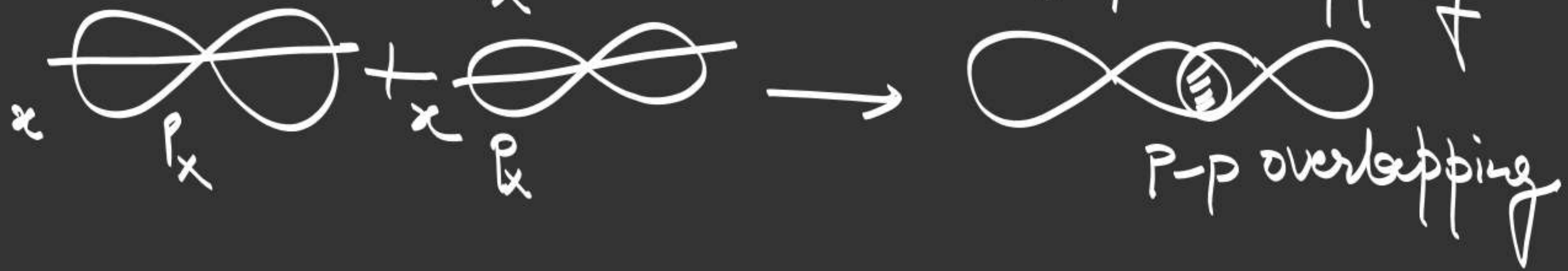
type of overlapping

(1) axial (Head on) (2) sideways [collatral]

(a) axial (Head on) [σ - bond]

if x is internuclear axis





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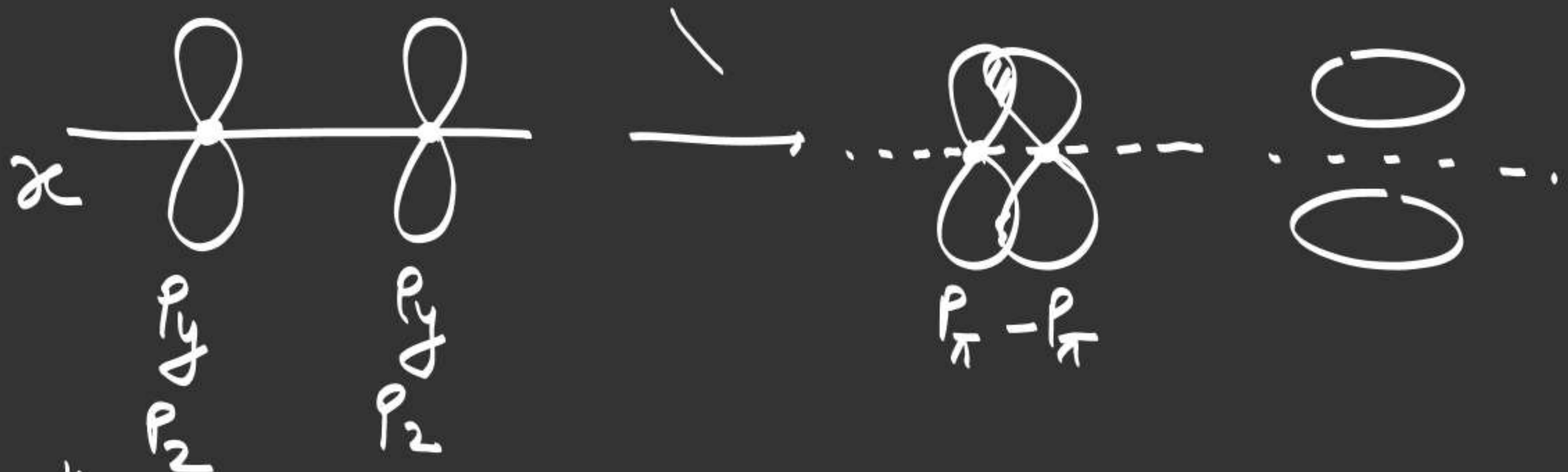
Sideways

if x is internuclear axis



$p_\pi - p_\pi$

$p_\pi - d_\pi$

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if $\underline{x}$ is internuclear axis

if y is internuclear

$s + s = \sigma$

$s + p_y = \sigma$

$p_y + p_y = \sigma$

$p_x + p_x = \pi$

$p_z + p_z = \pi$

$s + s = \sigma$

$s + p_x = \sigma$

$p_x + p_x = \sigma$

$p_y + p_y = \pi$

$p_z + p_z = \pi$

$d_{xy} + p_y = \pi$

if $\underline{z \text{ is internuclear}}$ axis

$s + s = \sigma$

$s + p_z = \sigma$

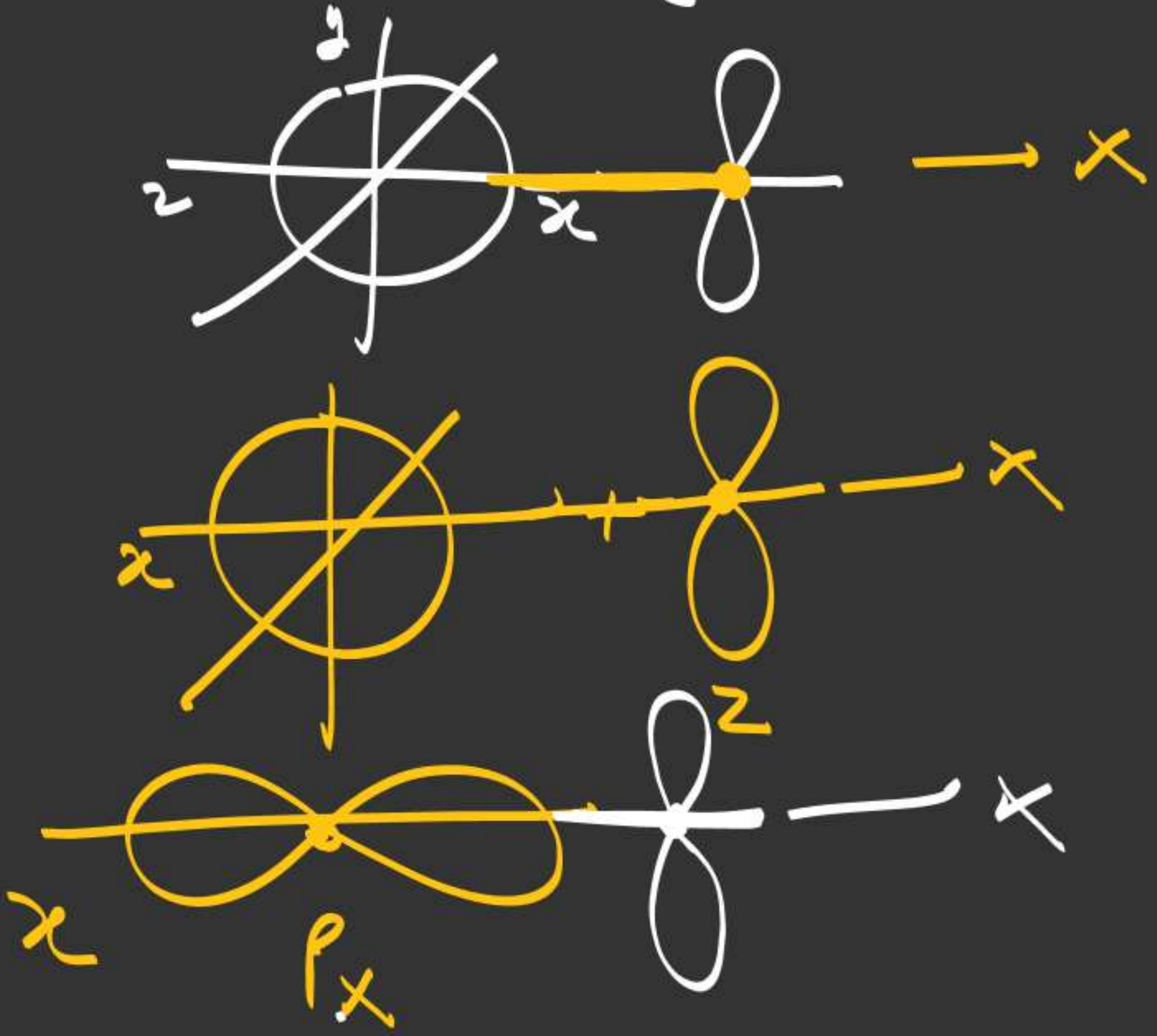
$p_z + p_z = \sigma$

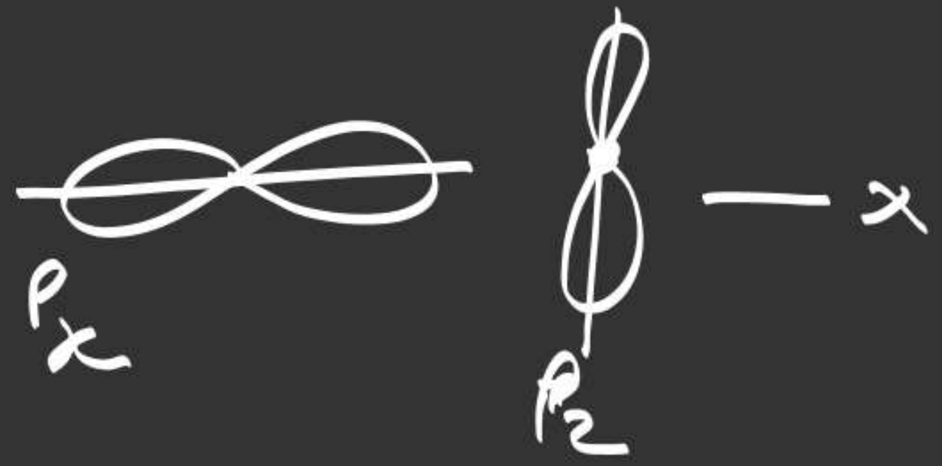
$p_x + p_x = \pi$

$p_y + p_y = \pi$

if x is internuclear axis

$s + p_y$





$p_z + p_x \longrightarrow \times$

$p_z + p_y \longrightarrow \times$

$p_x + p_y \longrightarrow \times$

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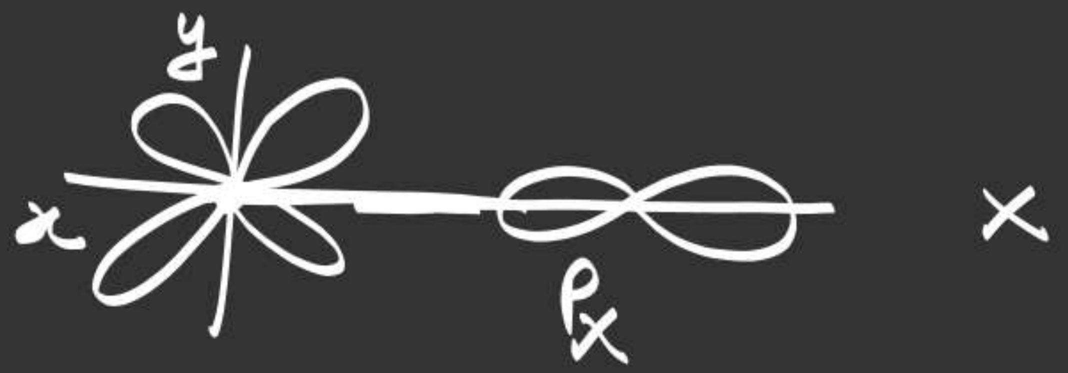
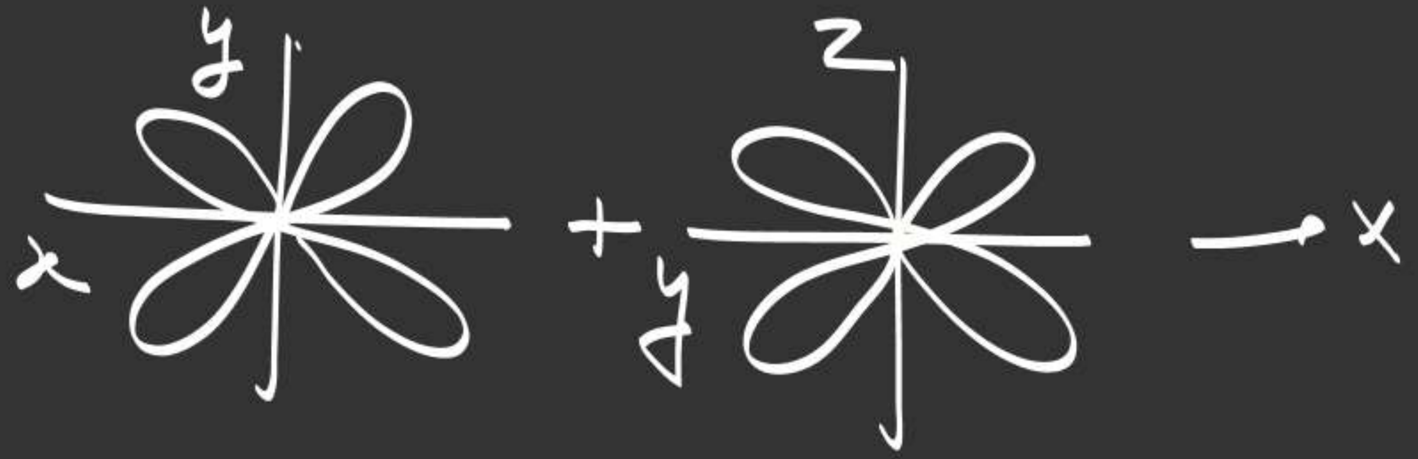
If x is internuclear axis





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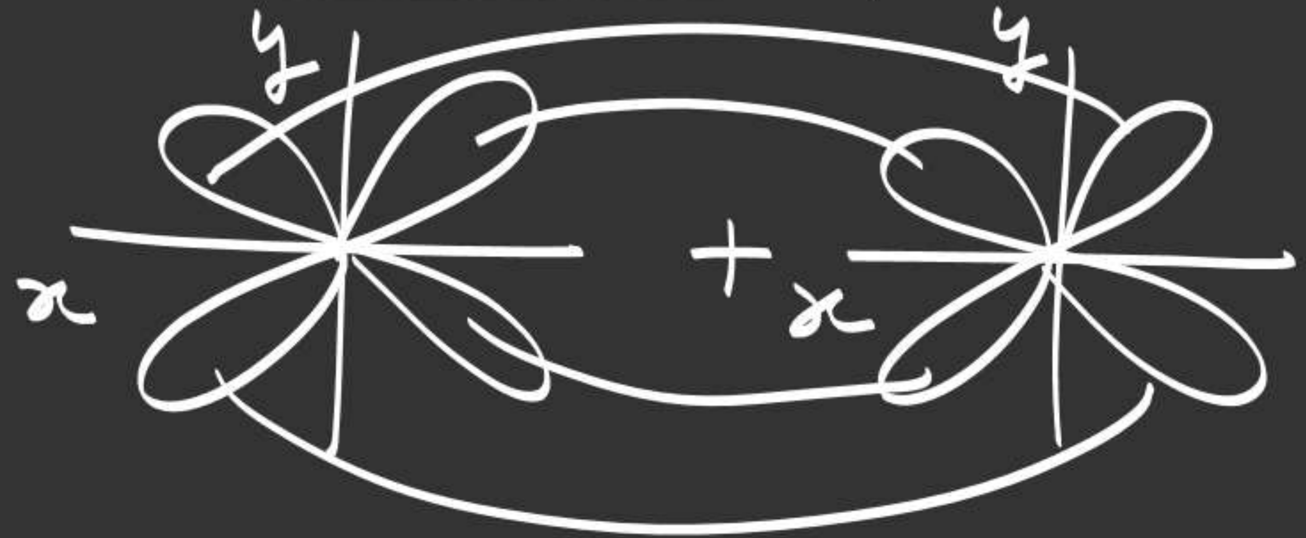
δ-Bond (four lobe interaction)

if z is internuclear axis



$\longrightarrow$ δ-Bond

When all four lobes involve in bonding then formed bond known as δ-Bond.

all d-orbitals can form δ-Bond except d_{z^2} because it has only two lobes

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if z is internuclear axis

$s + s \longrightarrow \sigma$

$s + p_x \longrightarrow \times$

$s + p_y \longrightarrow \times$

$s + p_z \longrightarrow \sigma$

$p_x + p_x \longrightarrow \pi$

$p_y + p_z \longrightarrow \times$

$p_z + p_x \longrightarrow \times$

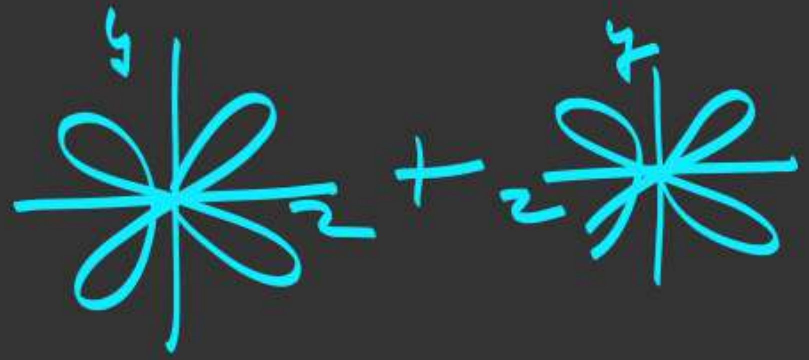
$d_{xy} + p_x \longrightarrow \times$

$d_{xy} + p_z \longrightarrow \times$

$d_{xy} + p_y \longrightarrow \times$

$d_{xy} + d_{xy} \longrightarrow \delta$

$d_{yz} + d_{yz} \longrightarrow \pi$



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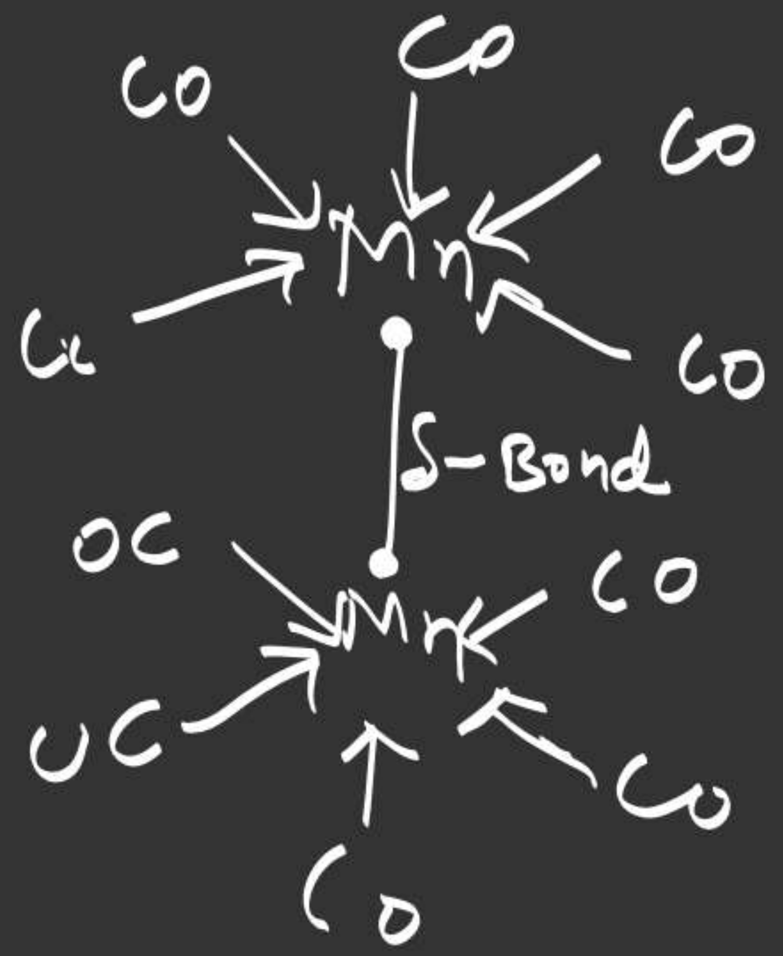

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if internuclear

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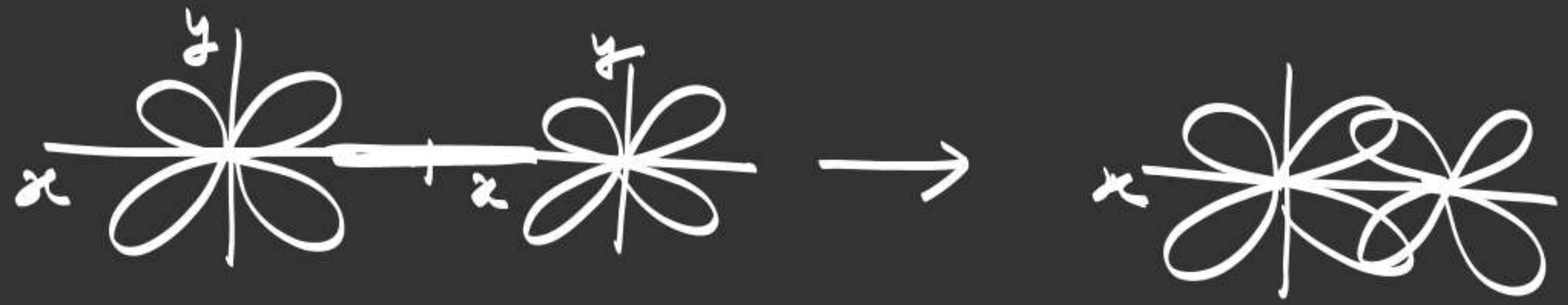
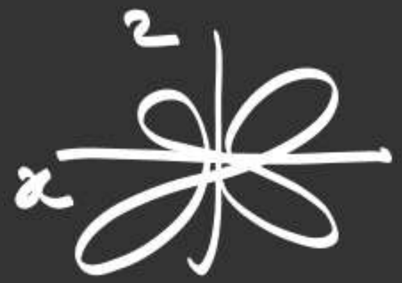
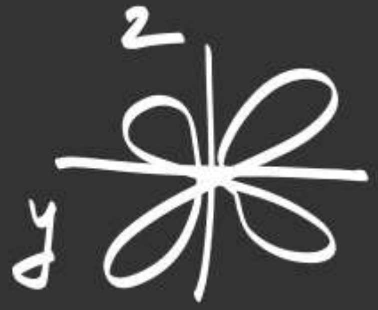


$d_\pi - d_\pi$

d_{xy}

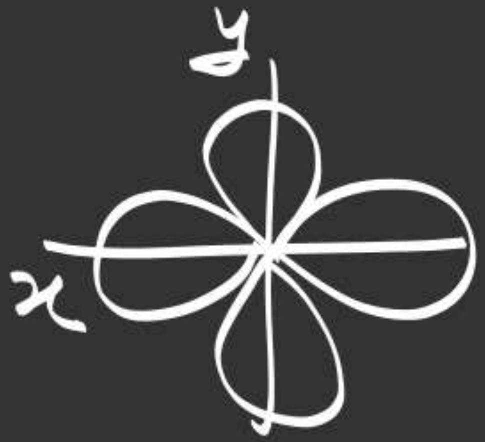


d_{xz}



d_{yz}

non axial



$d_{x^2-y^2}$

d_{z^2}

axial

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