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$CaCN_2$ [Calcium cyanide]

Ca^{+2} CN_2^{-2}

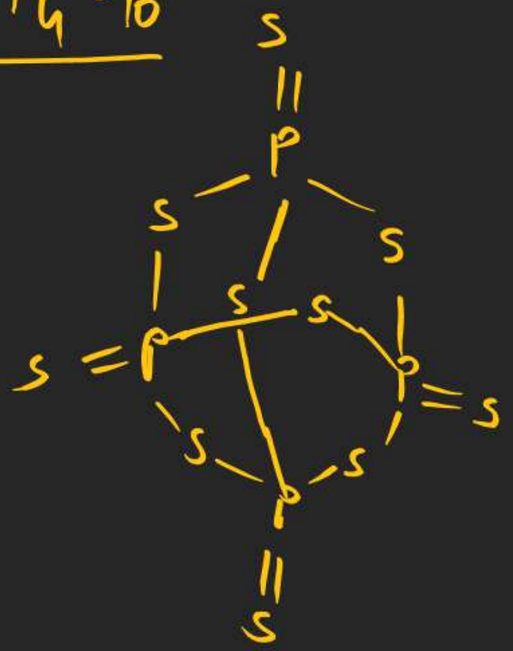
$\overset{\ominus}{N}=C=\overset{\ominus}{N}$

NH_4OCN

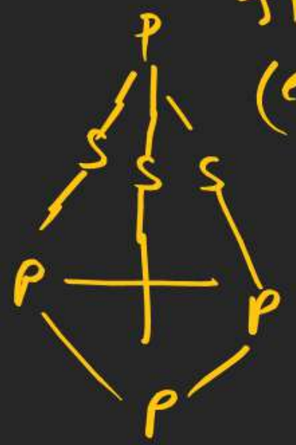
NH_4^+ $\overset{\ominus}{O}CN$

$\overset{\ominus}{O}-C\equiv N$

P_4S_{10}



P_4S_3 (match box) fine cr. (explosive)



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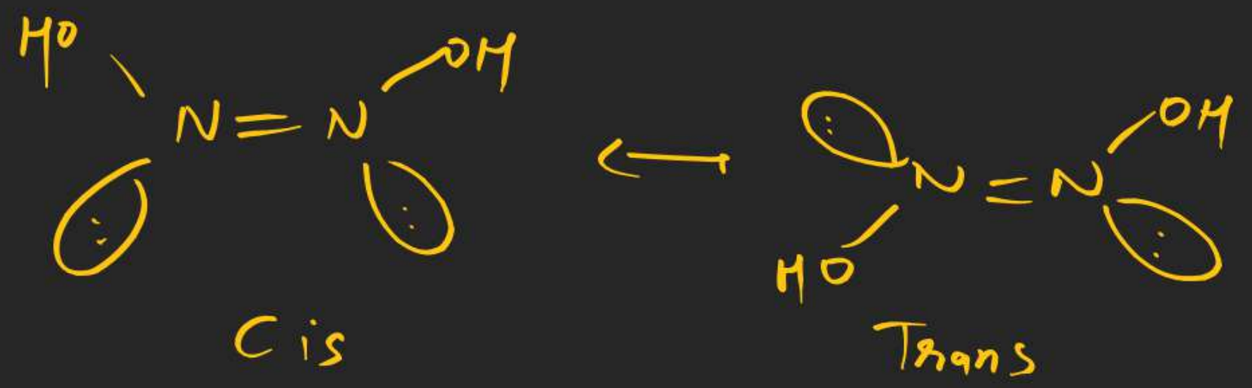
$H_2N_2O_2$

[Hyponitrous acid]



Cis

Trans

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M·O·T [Molecular orbital theory]

	B·O
H—H	= 1
O=O	= 2
N≡N	3
$N^{\times}\overset{\bullet\bullet}{\equiv}O$	2.5

B·O = [Bond order]

Drawback of V·B·T

(1) acc. to V·B·T O_2 is Diamagnetic but actully it is paramagnetic

$:\ddot{O}=\ddot{O}:$

(2) V·B·T can't explain formation of odd e^- bond.

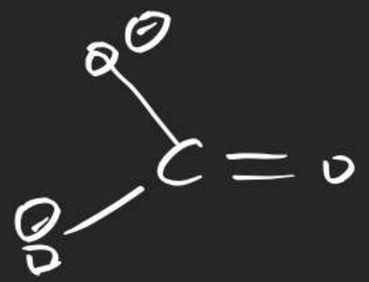
B·O = 2.5

$N\overset{\times\ \bullet\bullet}{\equiv}O$

(1) V·B·T can't explain fractional bond order in diatomic molecules but in polyatomic molecule

fractional bond order is explain by

Resonance



1.33

for removal of these difficulties Hund's and Mulliken introduce a theory which is known as Molecular theory

$\downarrow \lambda = \frac{h}{\uparrow mv}$ e^- mass $\downarrow$ $\lambda \uparrow$ (wave nature)

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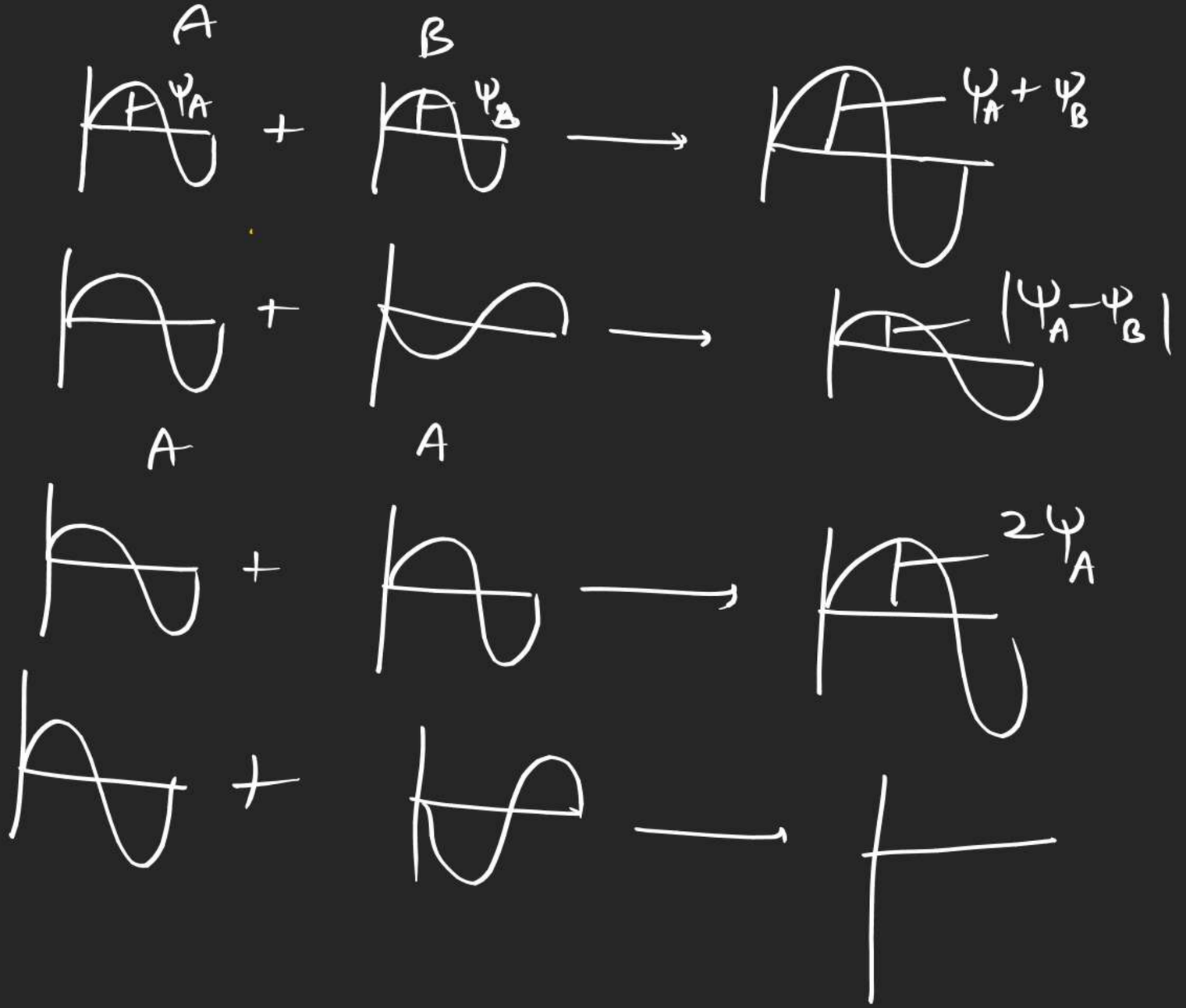

e^- wave meet in same phase then there would be constructive interference then e^- probability ↑ between nucleus of both bonded atoms due to attraction and formed molecular orbital named as bonding molecular orbital [B.M.O] which has lower energy than the atomic orbital.

If e^- wave meet in oppositive phase then there would be destructive interference then e^- probability ↓ between nucleus of atomic orbitals due to repulsion formed molecular orbital named as anti bonding molecular orbital [A.B.M.O] which has higher energy then the atomic orbital.

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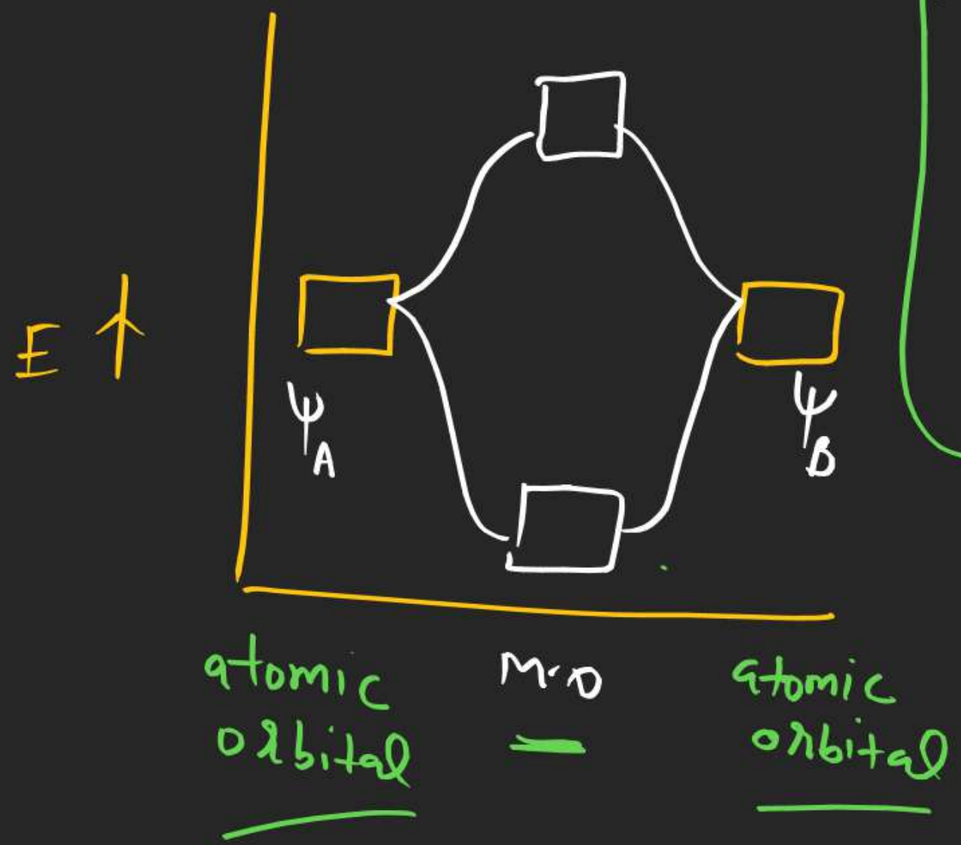

V.J sir book

11th Class Chemical bonding

Part B → H.W

12th Class Chemical bonding

Part - A

Wave function of molecular orbital is explained by L.C.A.O [Linear Combination of atomic orbital] that may be of two type.

(1) axial (2) sideways

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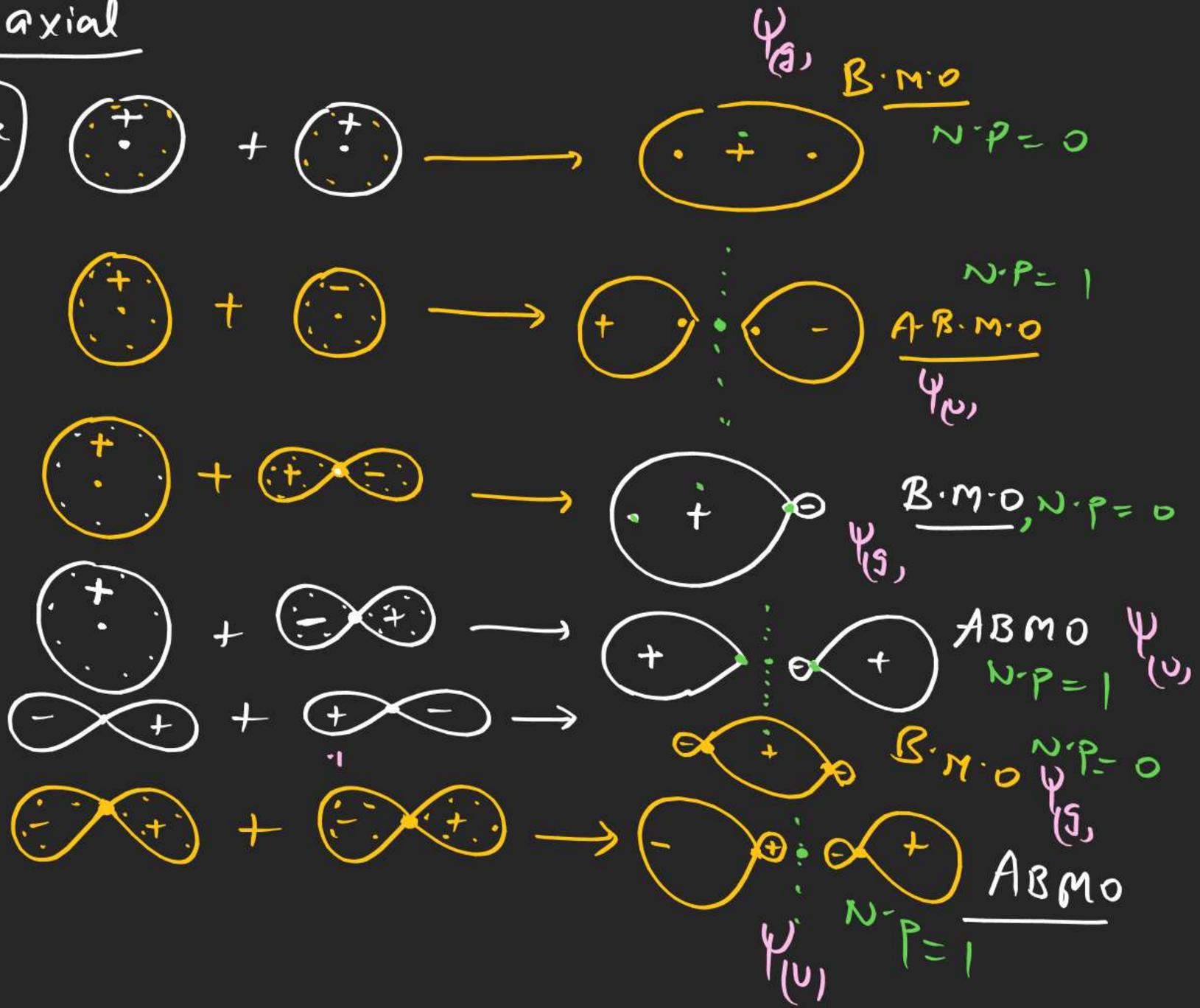
axial

here +, − sign show phase of orbital



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Sideways

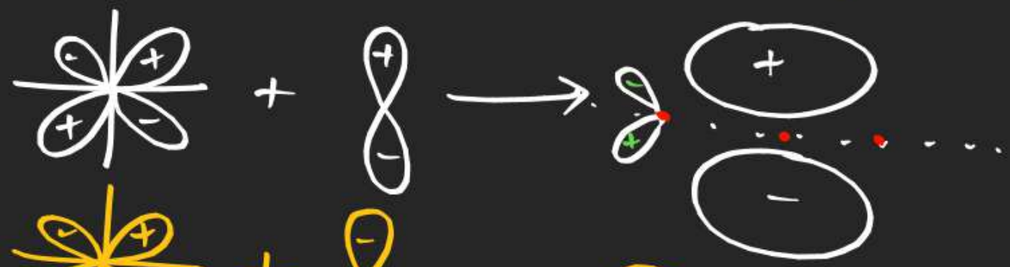
N·P = 1

B·M·O $\psi_{(u)}$

N·P = 2

A·B·M·O

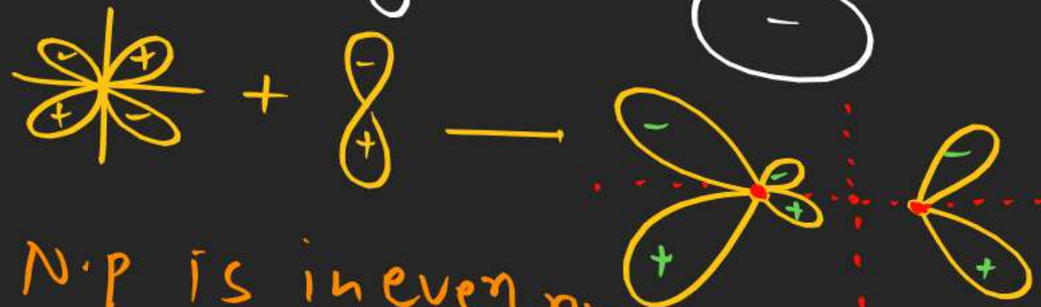
$\psi_{(g)}$



B·M·O

N·P = 1

$\psi_{(u)}$



A·B·M·O

N·P = 2

$\psi_{(g)}$

if N·p is in even number = Gerade orbital

if N·p is odd number = Ungerade orbital

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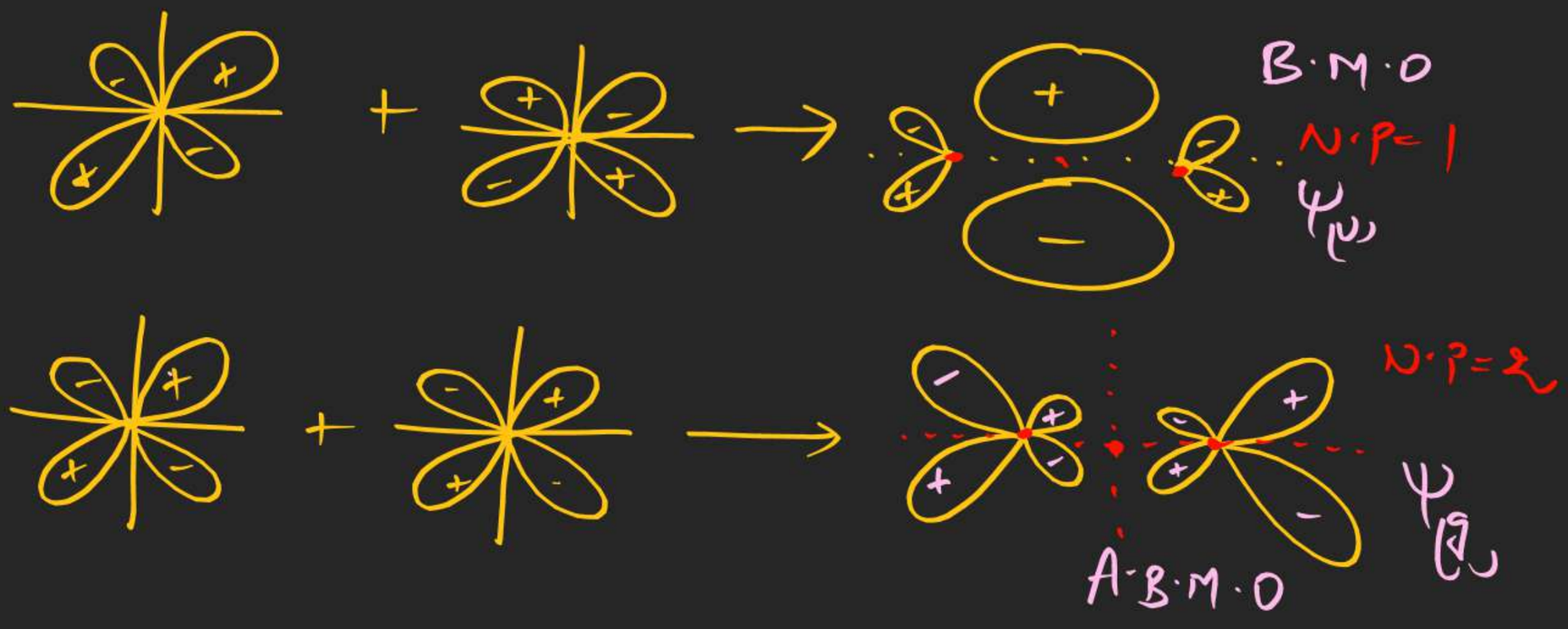

N·P = any imaginary plane which has zero e^- probability and must be pass through nucleus of atomic orbital in case of molecular orbital must be passed through mid point.