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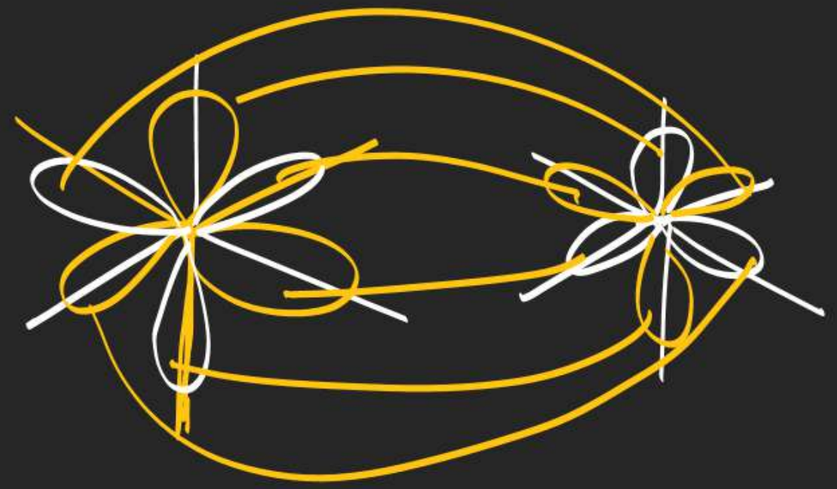
Φ bond ⇒ when all 6 lobes of f-orbital involve in bonding



Φ bond

Example ⇒ U_2

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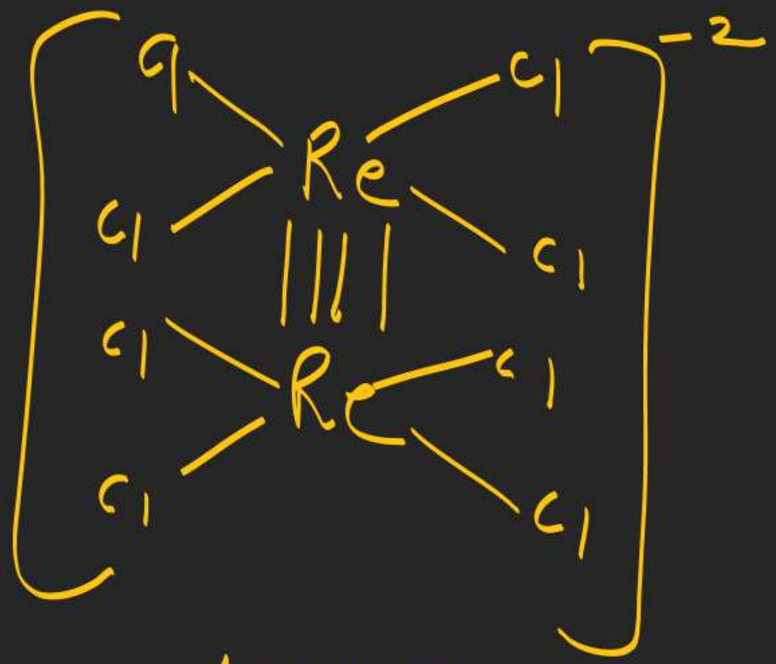
Quadruple bond



$1\sigma + 2\pi + \delta$

Quadruple

Ques $H = 1s^1$

$H - H$ ✓

$O = 1s^2 2s^2 2p^4$

$O = O$ ✓

$N = 1s^2 2s^2 2p^3$

$N \equiv N$ ✓

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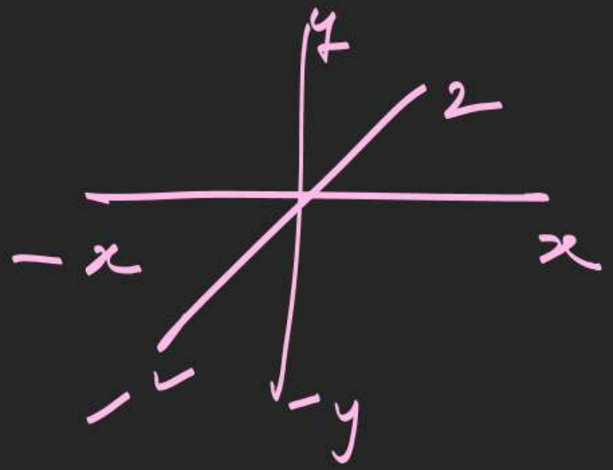
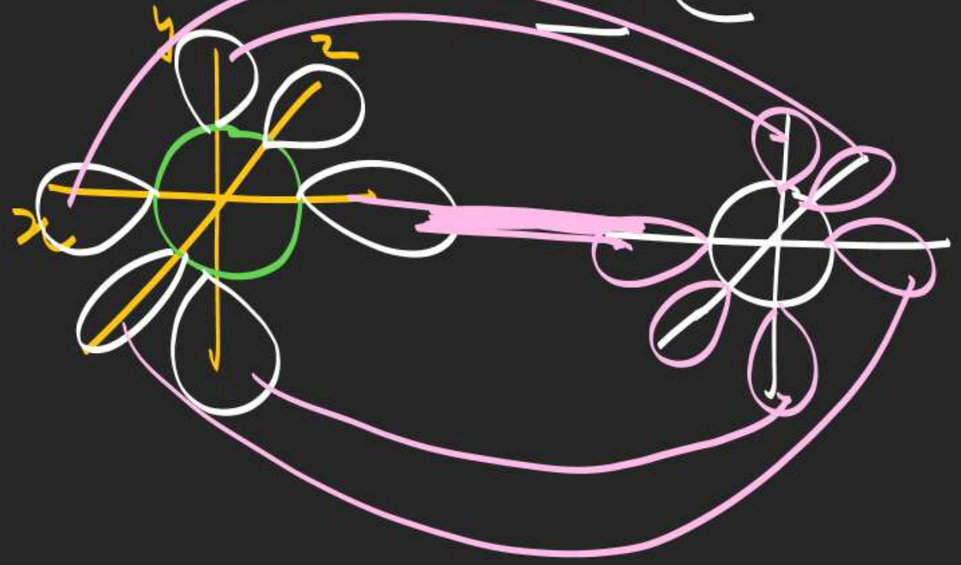


$C = 1s^2\ 2s^2\ 2p^2$

$C \equiv C$ does not exist. Why



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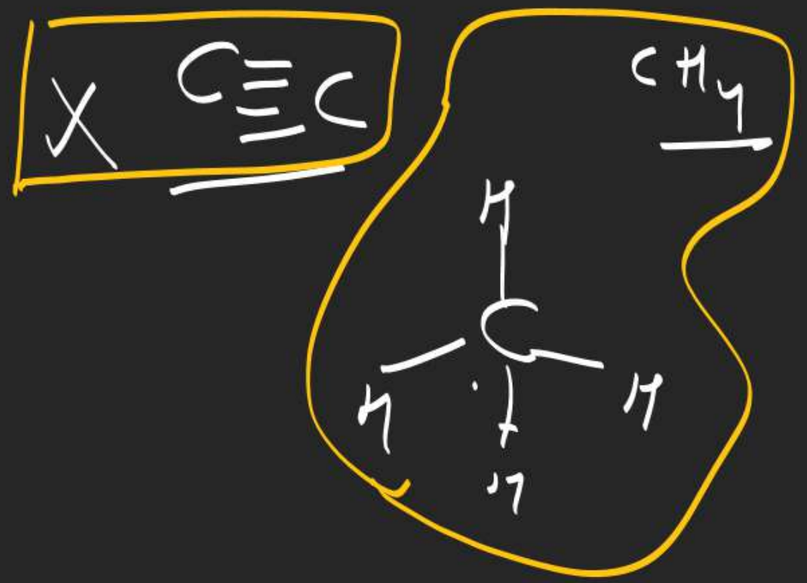
Maximum three bonds can form between two atoms of non metal



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ane $N \equiv N$ exist

but $P \equiv P$ $\underset{=}{\times}$ doesn't exist why

$P = 3s^2 3p^3$

1, $\boxed{\uparrow\downarrow}\ \boxed{\uparrow}\ \boxed{\uparrow}\ \boxed{\uparrow}$

$P \equiv P$ $^{3p_\pi \quad 3p_\pi}\rightarrow$

due to large internuclear distance $3p_\pi$-$3p_\pi$ overlapping doesn't exist

$0 = 0$ exist but $s = s$ does not exist why

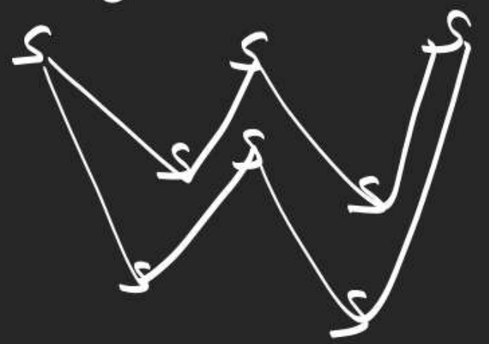
$s = 3s^2$ $3p^7$

π	1	1

$s = s$

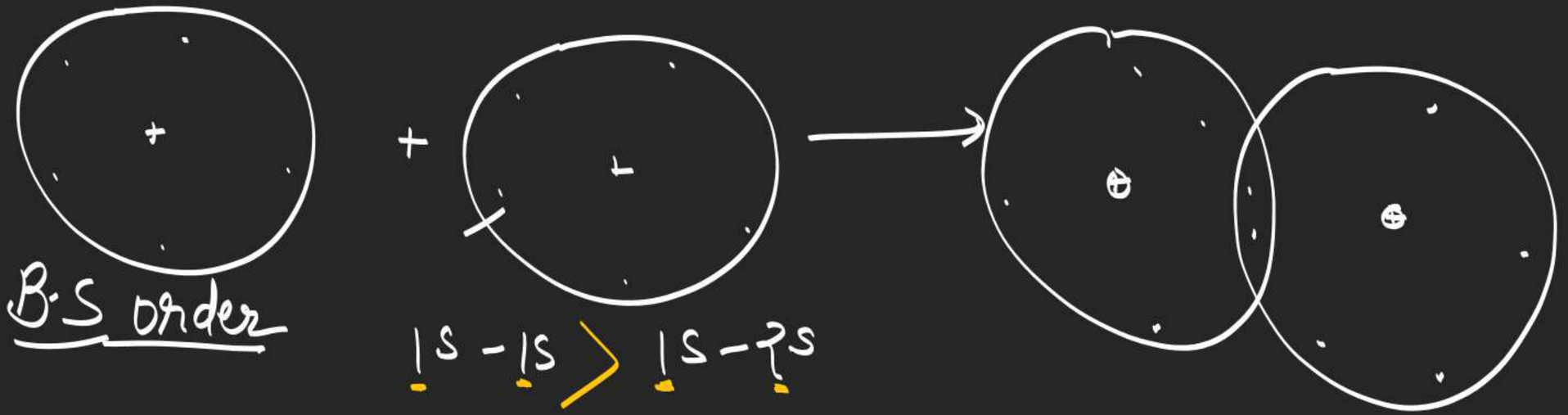
$3p_{\pi} - 3p_{\pi}$ does not exist

S_8



B.S $\propto \frac{1}{\text{size}}$ [dominating]

B.S $\propto$ directional character [% p character]
(when size const.)



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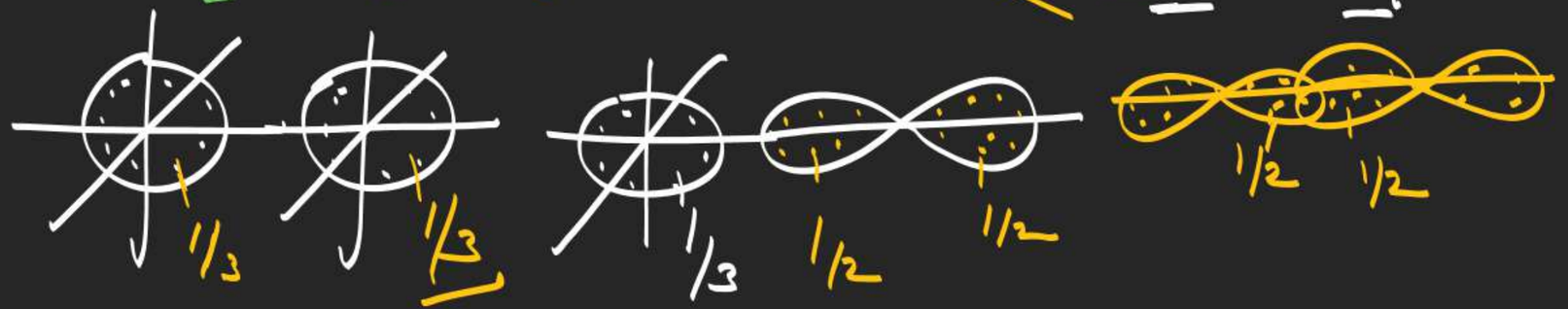
Order of B.S

1S-1S > 1S-2S > 2S-2S

2S-2S < 2S-2P < 2P-2P




1S-1S
1S—2P

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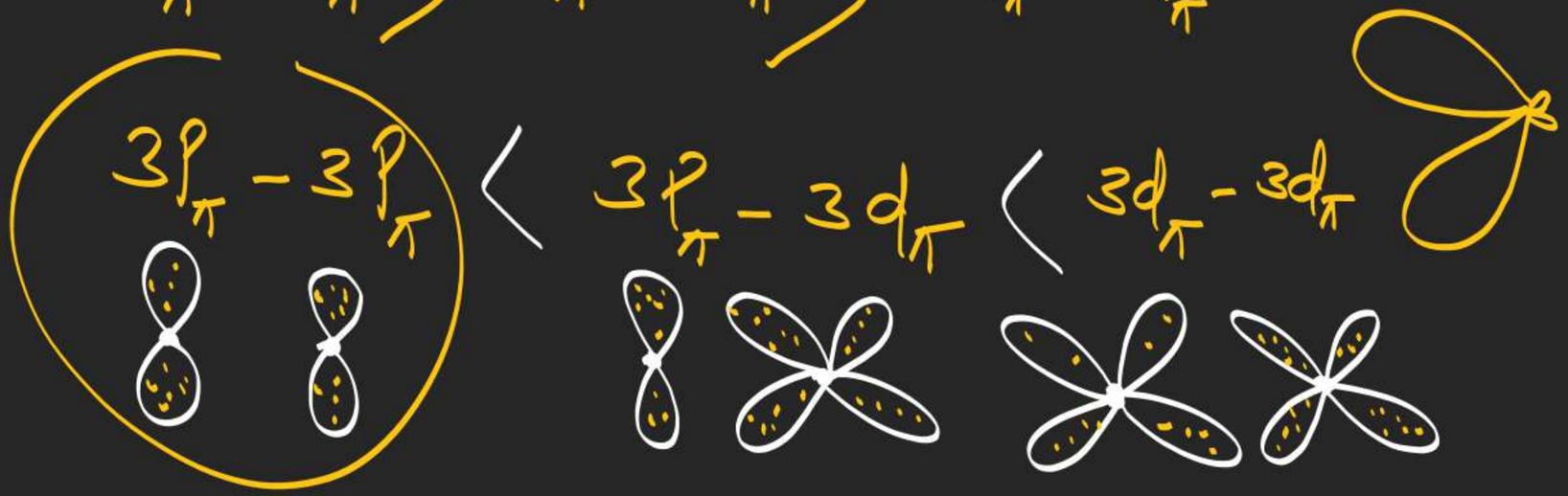
1S-1S | 1S-2S 1S-2P | 2S-2S 2S-2P 2P-2P | 2S-3S 2S-3P | 3S-3S 3S-3P 3P-3P

1S-1S > 1S-2P > 1S-2S > 2P-2P > 2S-2P > 2S-2S > 2S-3P > 2S-3S > 3P-3P > 3S-3P > 3S-3S

order of B.S

$2p_\pi - 2p_\pi$ > $2p_\pi - 3p_\pi$ > $3p_\pi - 3p_\pi$

$3p_\pi - 3p_\pi$ < $3p_\pi - 3d_\pi$ < $3d_\pi - 3d_\pi$



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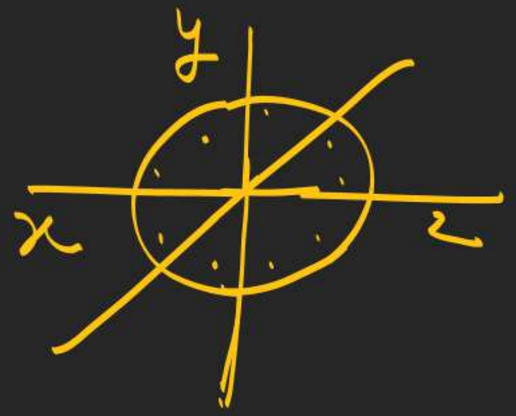
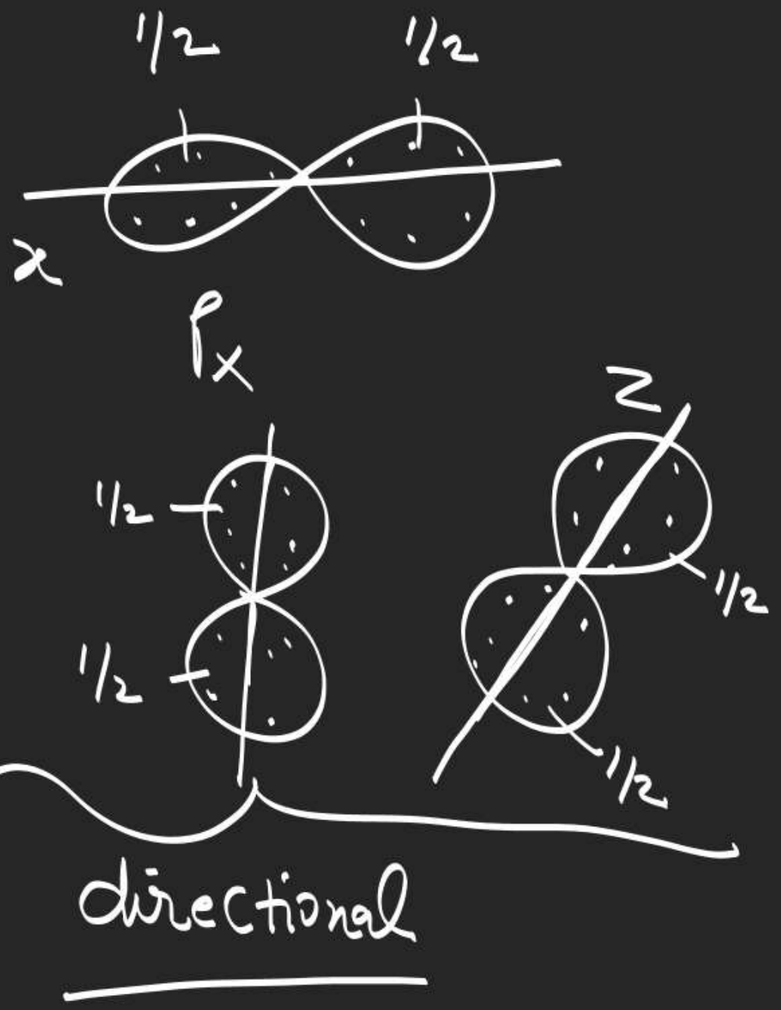


non directional



directional

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