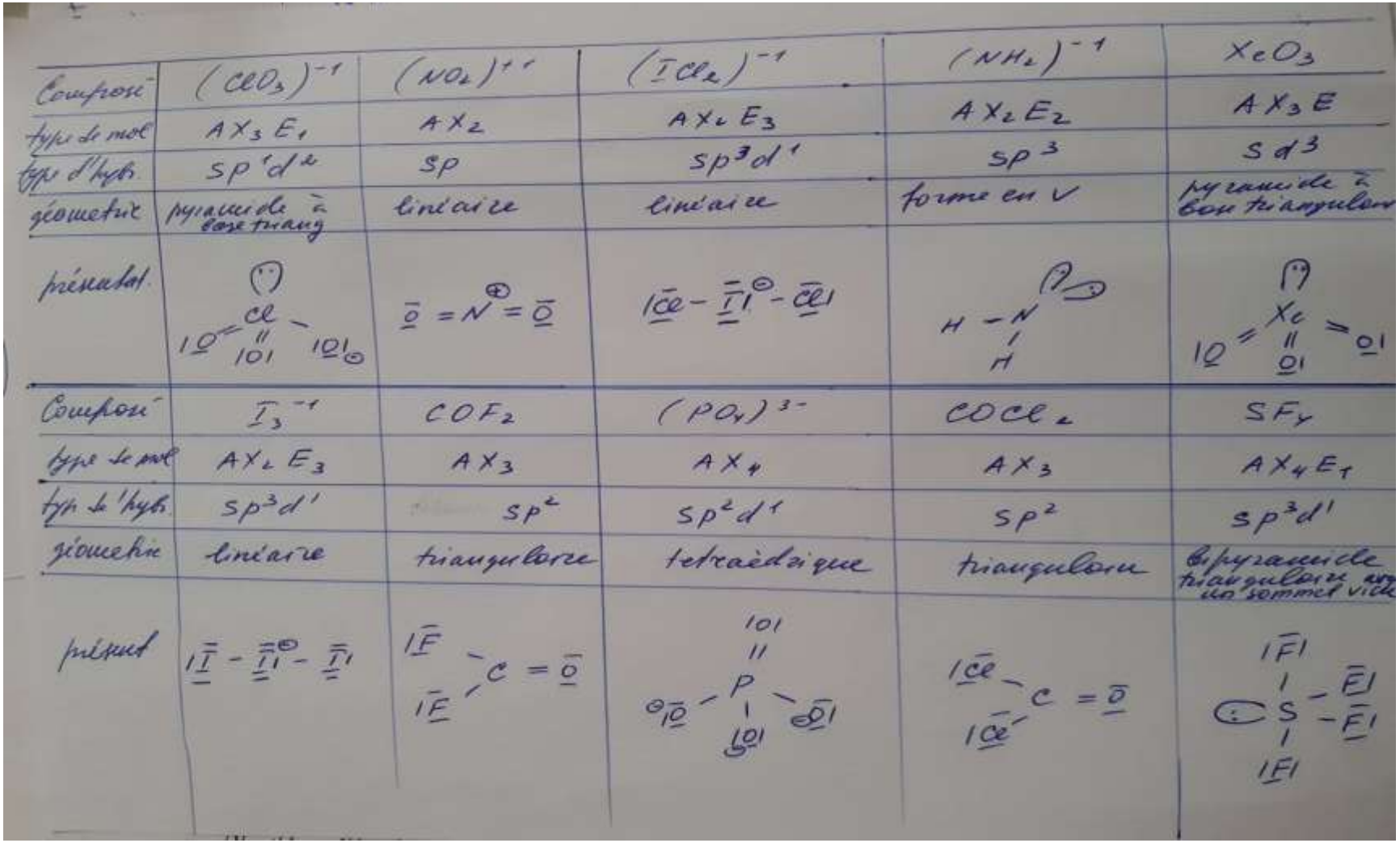
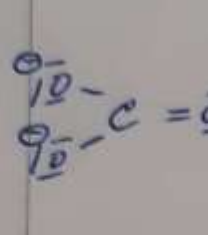
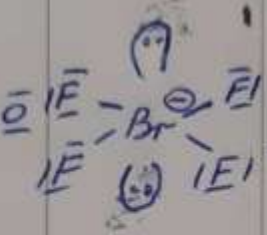
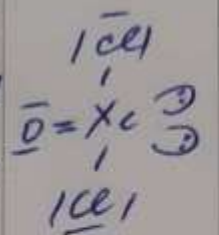
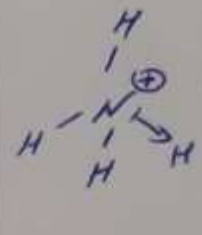
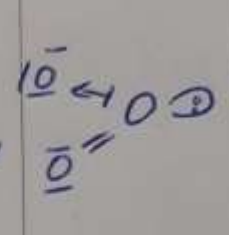
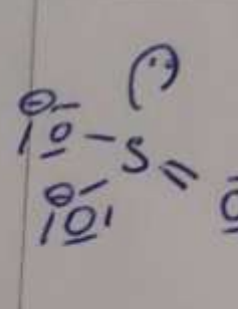
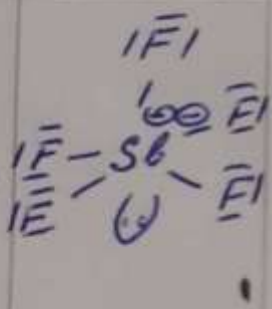
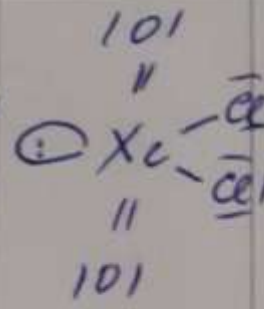
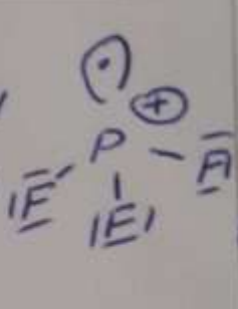
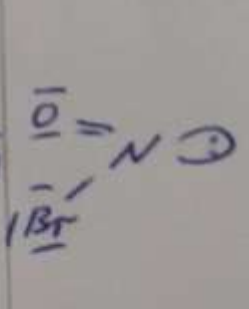
Séance 22 Corrigé



Composé	$(ClO_3)^{-1}$	$(NO_2)^{+}$	$(ICl_2)^{-1}$	$(NH_2)^{-1}$	XeO_3
type de mol	AX_3E_1	AX_2	AX_2E_3	AX_2E_2	AX_3E
type d'hyb.	sp^3d^2	sp	sp^3d^1	sp^3	sd^3
géométrie	pyramide à base triang	linéaire	linéaire	forme en V	pyramide à base triangulaire
présentat.					
Composé	I_3^{-1}	COF_2	$(PO_4)^{3-}$	$COCl_2$	SF_4
type de mol	AX_2E_3	AX_3	AX_4	AX_3	AX_4E_1
type de l'hyb.	sp^3d^1	sp^2	sp^2d^1	sp^2	sp^3d^1
géométrie	linéaire	triangulaire	tetraèdrique	triangulaire	bipyramide triangulaire un sommet vide
présent					

1. En utilisant la méthode des orbitales atomiques complétez le tableau suivant

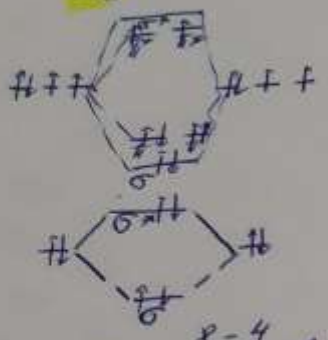
Composé	$(CO_3)^{2-}$	$(BrF_4)^-$	$XeOCl_2$	$(NH_4)^+$	O_3
Type de molécule	AX_3	AX_4E_2	AX_3E_2	AX_4	AX_2E_1
Type d'hybridation	sp^2	sp^3d^2	sp^2d^2	sp^3	sp^2
Type de géométrie	triangle	plan carré	en forme de T	tétraèdre régulier	forme en V $\approx 120°$
Présentation					

Composé	$(SO_3)^{2-}$	$(SbF_5)^{-2}$	XeO_2Cl_2	$(PF_3)^{+}$	NOBr
Type de molécule	AX_3E_1	AX_5E_1	AX_4E_1	AX_3E_1	AX_2E_1
Type d'hybridation	sp^2d^1	sp^3d^2	spd^3	sp^3	sp^2
Type de géométrie	pyramide à base triangulaire	Pyramide à base carrée	bipyramide triangulaire avec un sommet vide	pyramide à base triangulaire	forme en V $\approx 120°$
Présentation					

II O_2^+ O_2 O_2^- O_2^{2-}

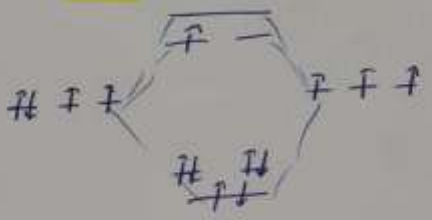
a)

O_2



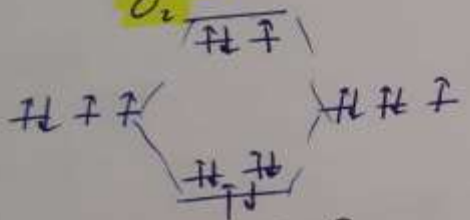
$$OL = \frac{8-4}{2} = 2$$

O_2^+



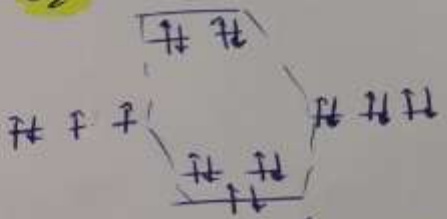
$$OL = \frac{8-3}{2} = 2,5$$

O_2^-



$$OL = \frac{8-5}{2} = 1,5$$

O_2^{2-}



$$OL = \frac{8-6}{2} = 1$$

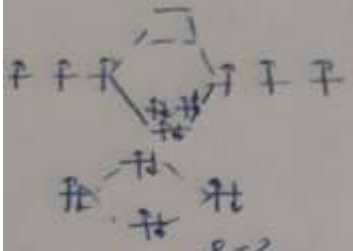
Energie de liaison croissante

O_2^{-2} O_2^{-1} O_2 O_2^{+1} →

Distance 149 132 121 112 pm.

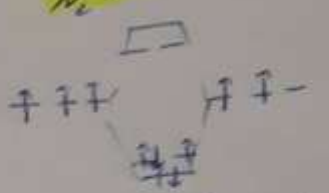
5)

N_2



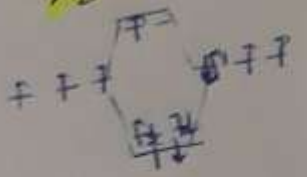
$OL = \frac{8-2}{2} = 3$

N_2^+



$OL = \frac{7-2}{2} = 2,5$

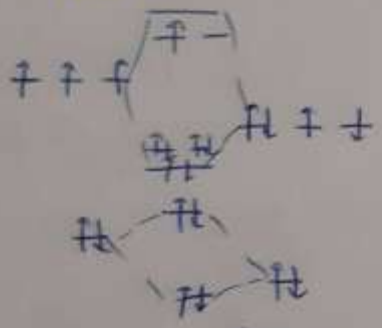
N_2^-



$OL = \frac{8-3}{2} = 2,5$

N_2 est plus stable

NO

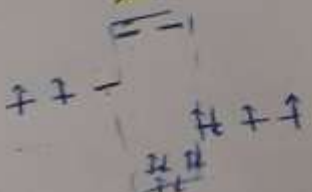


$OL = \frac{8-3}{2} = 2,5$

NO^-

$OL = \frac{8-4}{2} = 2$

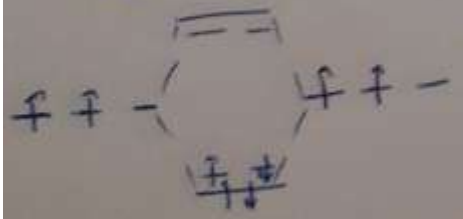
NO^+

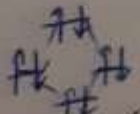


$OL = \frac{8-2}{2} = 3$

NO moins stable que (NO^+)

C_2



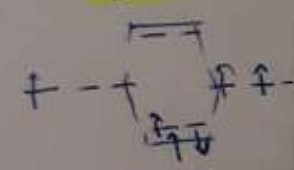


$OL = \frac{6-2}{2} = 2$

C_2^-

$OL = \frac{7-2}{2} = 2,5$

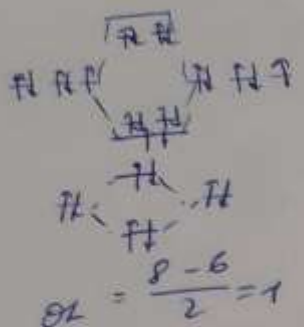
C_2^+



$OL = \frac{5-2}{2} = 1,5$

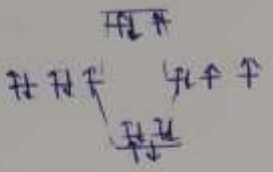
C_2^- est plus stable que C_2

F_2



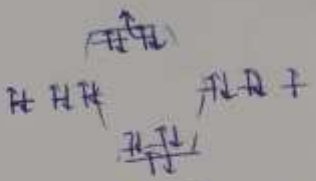
$$OL = \frac{8-6}{2} = 1$$

F_2^+



$$OL = \frac{8-5}{2} = 1,5$$

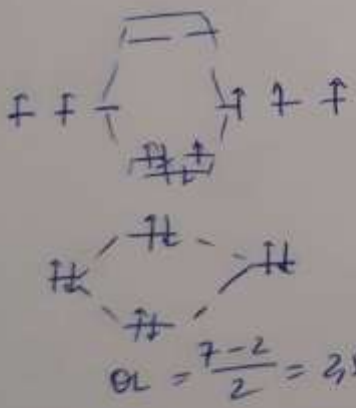
F_2^-



$$OL = \frac{8-7}{2} = 0,5$$

F_2^+ est plus stable que F_2

CN



$$OL = \frac{7-2}{2} = 2,5$$

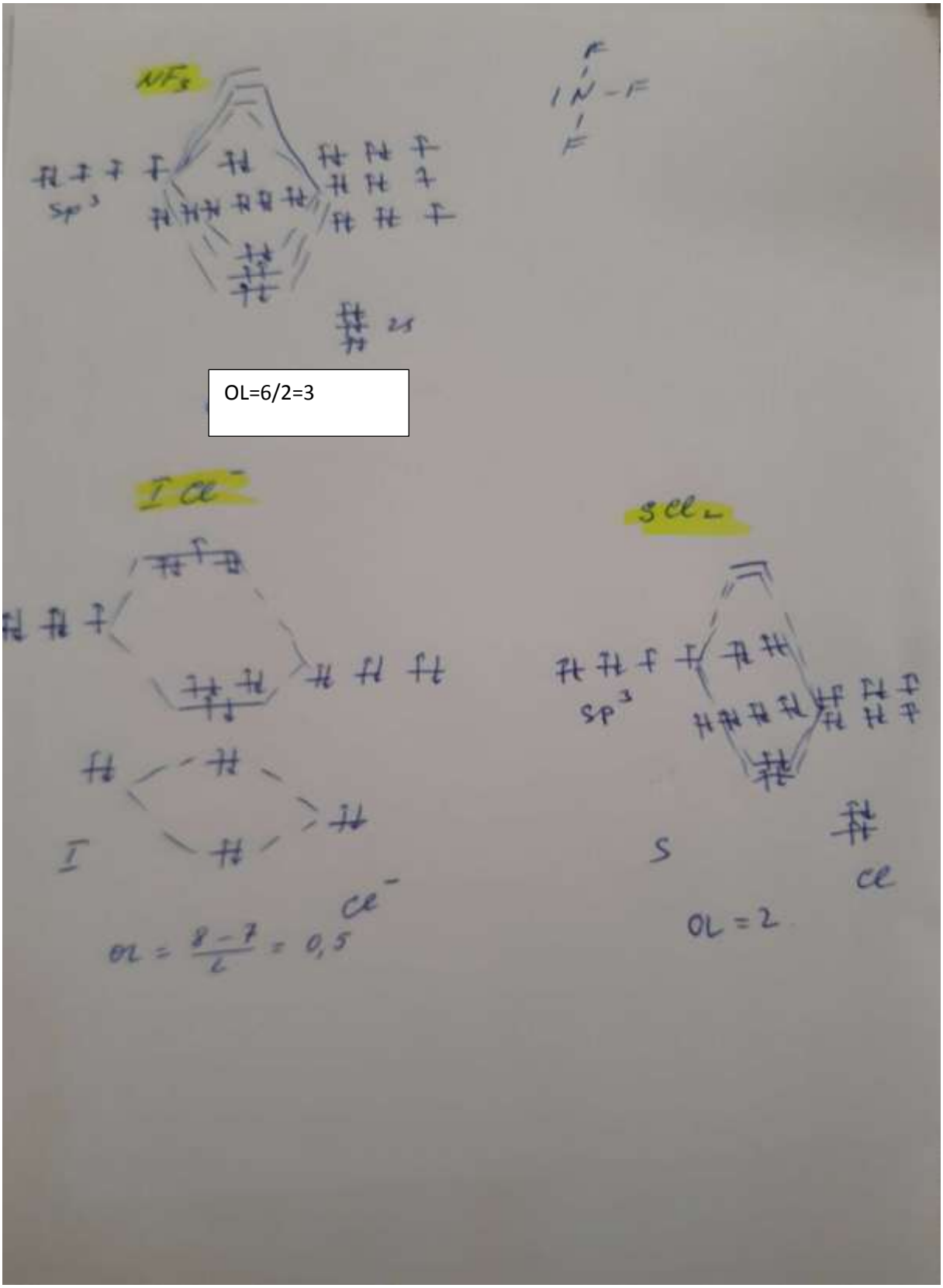
CN^-

$$OL = \frac{8-2}{2} = 3$$

CN^+

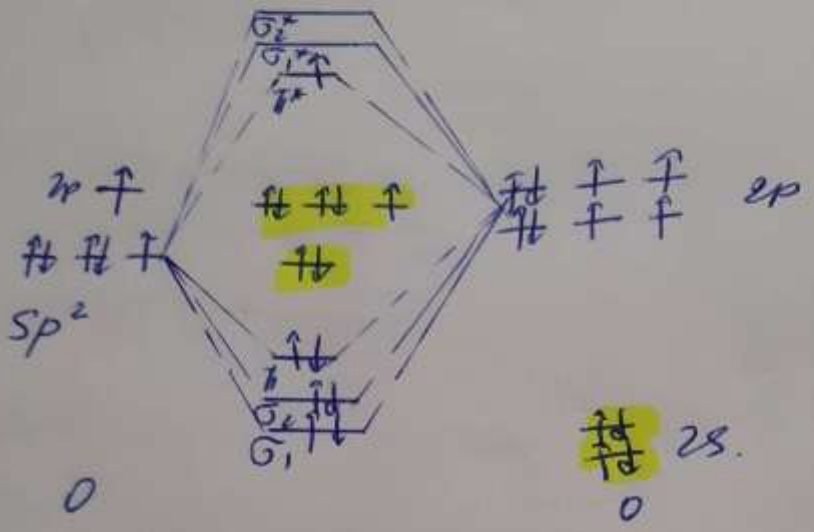
$$OL = \frac{6-2}{2} = 2$$

CN^- est plus stable que CN


NF3
sp3
OL=6/2=3
I Cℓ-
I
Cℓ-
OL = 8 - 7 / 2 = 0,5
SCℓ2
sp3
S
Cℓ
OL = 2

O_3

type d'hybridation : sp^2

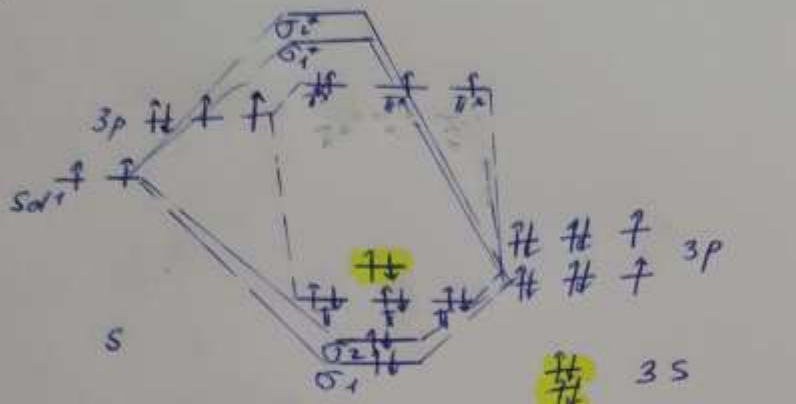


$$OL = \frac{6-1}{2} = 2,5$$

SCl_2

S^* $3s^1\ 3p^4\ 3d^1$

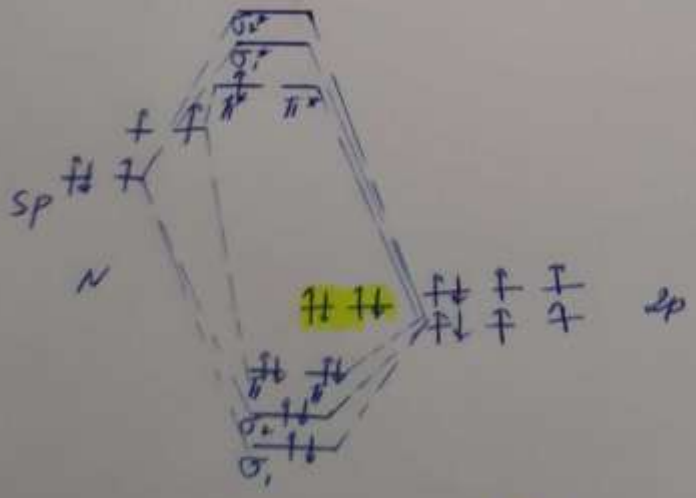
type d'hybridation : sd^2



$OL = \frac{10-4}{2} = 3$

NO_2

type d'hybridation : sp



$OL = \frac{8-1}{2} = 3,5$