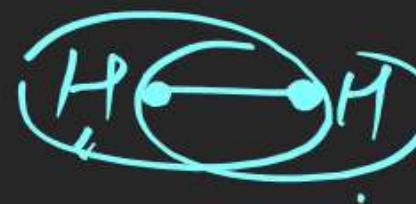


CHEMICAL BONDING

Strongly bonded with Na^+ Ionic bond [Fajan's Rule]



Acc. to Fajan's, cation and anion come close together in isolated condition then, e^- -cloud of anion is attracted by charge on cation simultaneously e^- -cloud on cation is attracted by nucleus of anion as the result of this distortion. Cation is negligible in both ions but distortion in e^- -cloud of cation

distortion in e⁻ cloud of anion
is called polarisation of anion

Note ⇒ the tendency of cation to distort
to anion is called Polarising Power

$$\text{(Ionic Potential)} \phi = \frac{\text{Charge}}{\text{size}}$$

of cation charge density, degree of covalency
and ionic potential.

$\phi \uparrow$ Polarisation ↑ Covalent Ch. ↑ I-C ↓

CHEMICAL BONDING

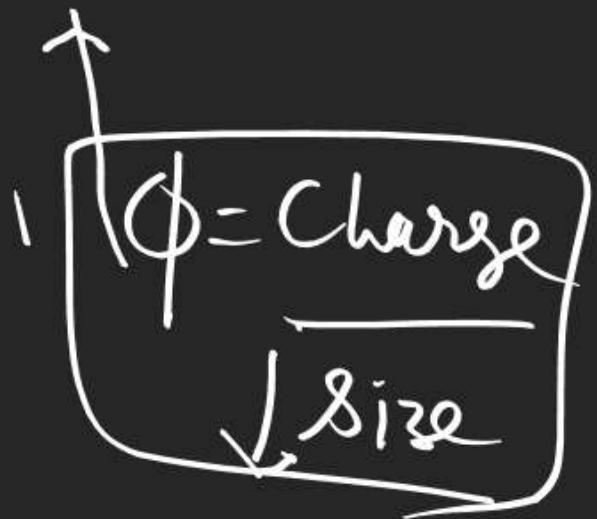
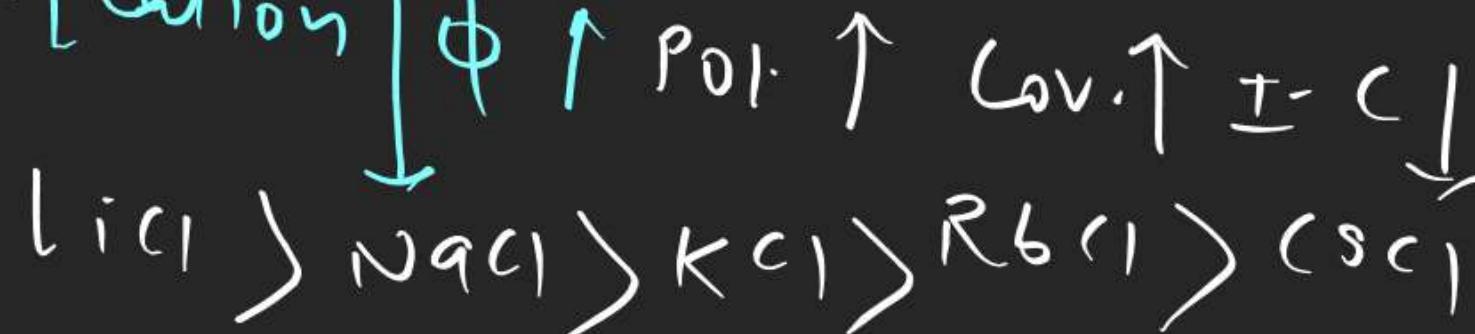
Factor affecting Fajan's Rule

① Charge on cation $\uparrow \phi \uparrow \text{pol.} \uparrow \text{cov.} \uparrow \text{I.C.}$

order of Covalent Ch.



② size of cation $\downarrow \phi \uparrow \text{pol.} \uparrow \text{cov.} \uparrow \text{I.C.}$

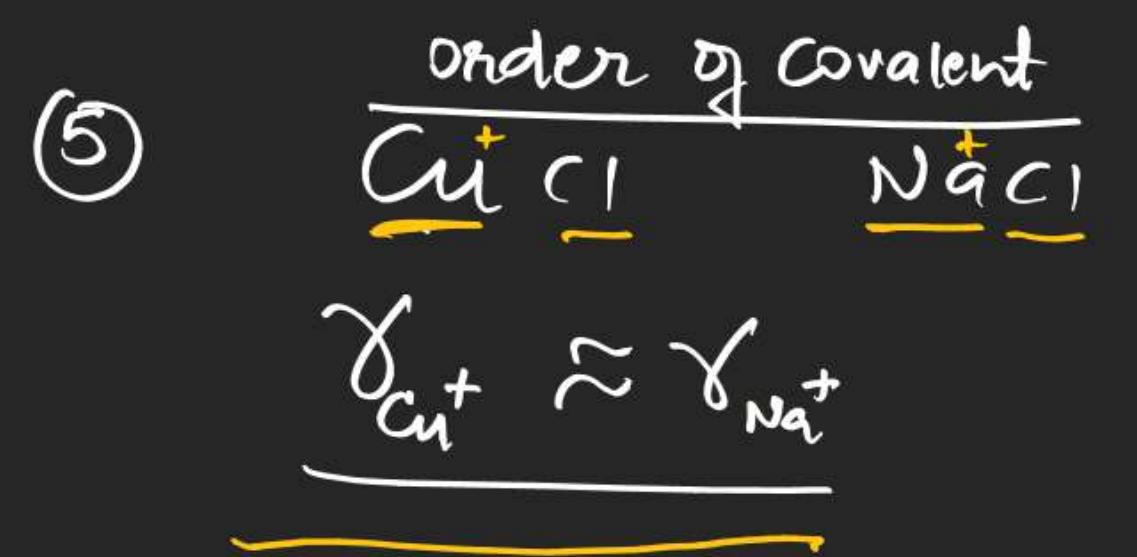


③ Size of anion ↑ pol. ↑ conv. ↑ t.c. ↓



④ Charge on anion ↑ pol. ↑ conv. ↑ t.c. ↓

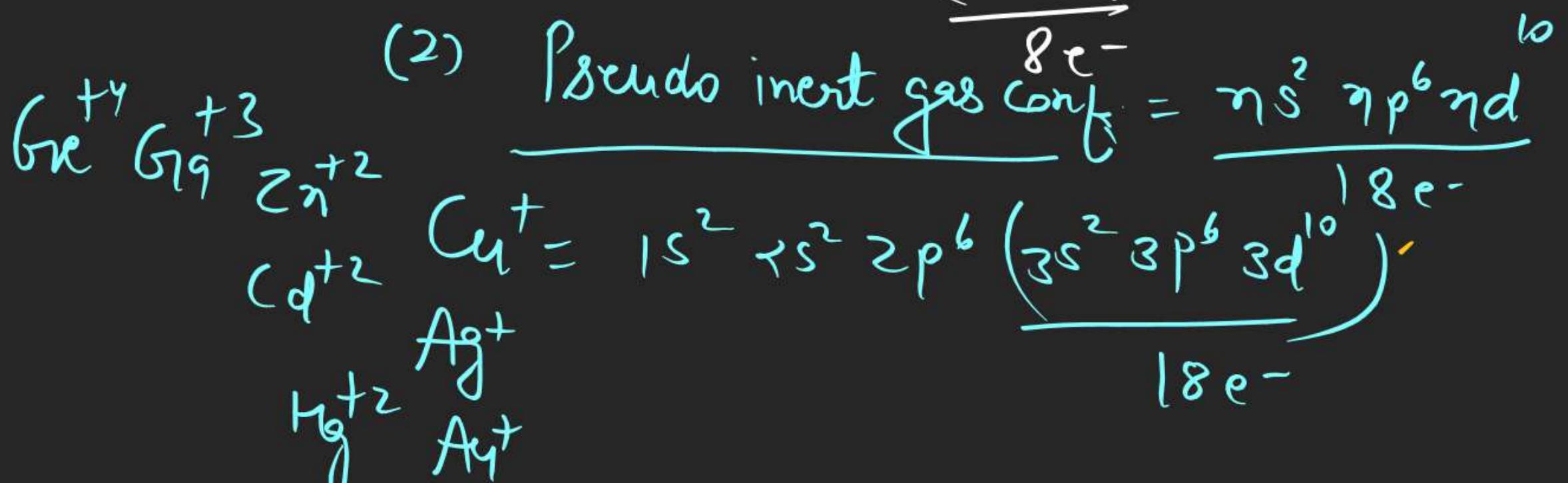




CHEMICAL BONDING

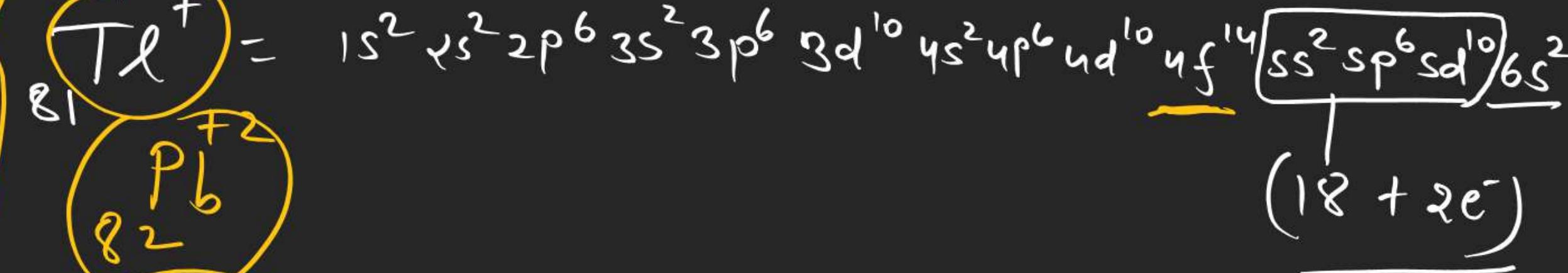
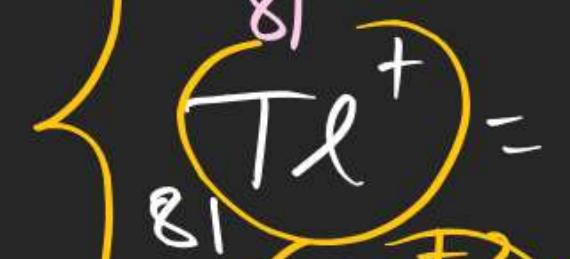
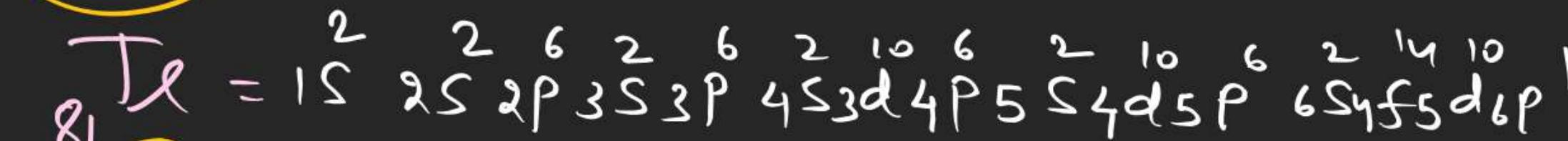
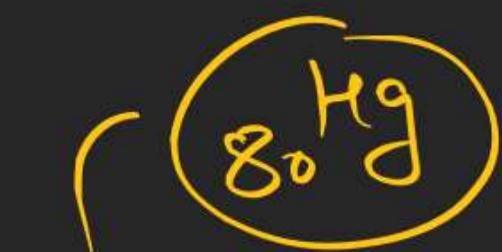
⑤ type of cation

① Inert gas configuration = $\frac{n s^2 n p^6}{8 e^-}$



③ Non inert gas config

$$\frac{n^2 n\text{p}^6 n\text{d}^{10} (n+1)s^2}{(18 + 2e^-)}$$

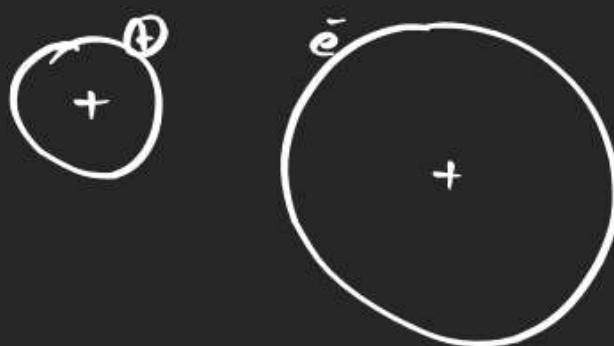


CHEMICAL BONDING

Inert gas
 $\frac{sp}{8}$

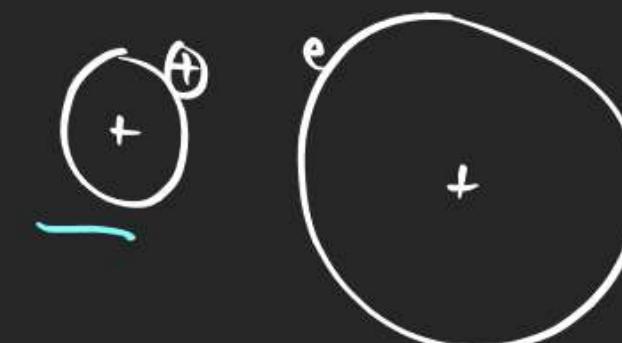


Pseudo
 $\frac{d \ sp}{10}$



non inert gas conf

$4f \ 5d \ 6sp$
 14



S.E Power

$S > P > d > f$

Note \Rightarrow order of polarising power

Order of Covalent ch. $\begin{cases} \text{non inert gas Conf.} > \text{Pseudo} \\ > \text{Inert} \end{cases}$

$CuCl > NgCl$

$AgCl > KCl$

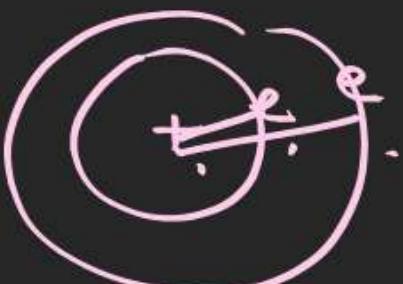
$AuCl > RbCl$

$C_9Cl < CdCl$

$GCl < CdCl < PbCl$

CHEMICAL BONDING

S.E



$$S > P > d > f$$

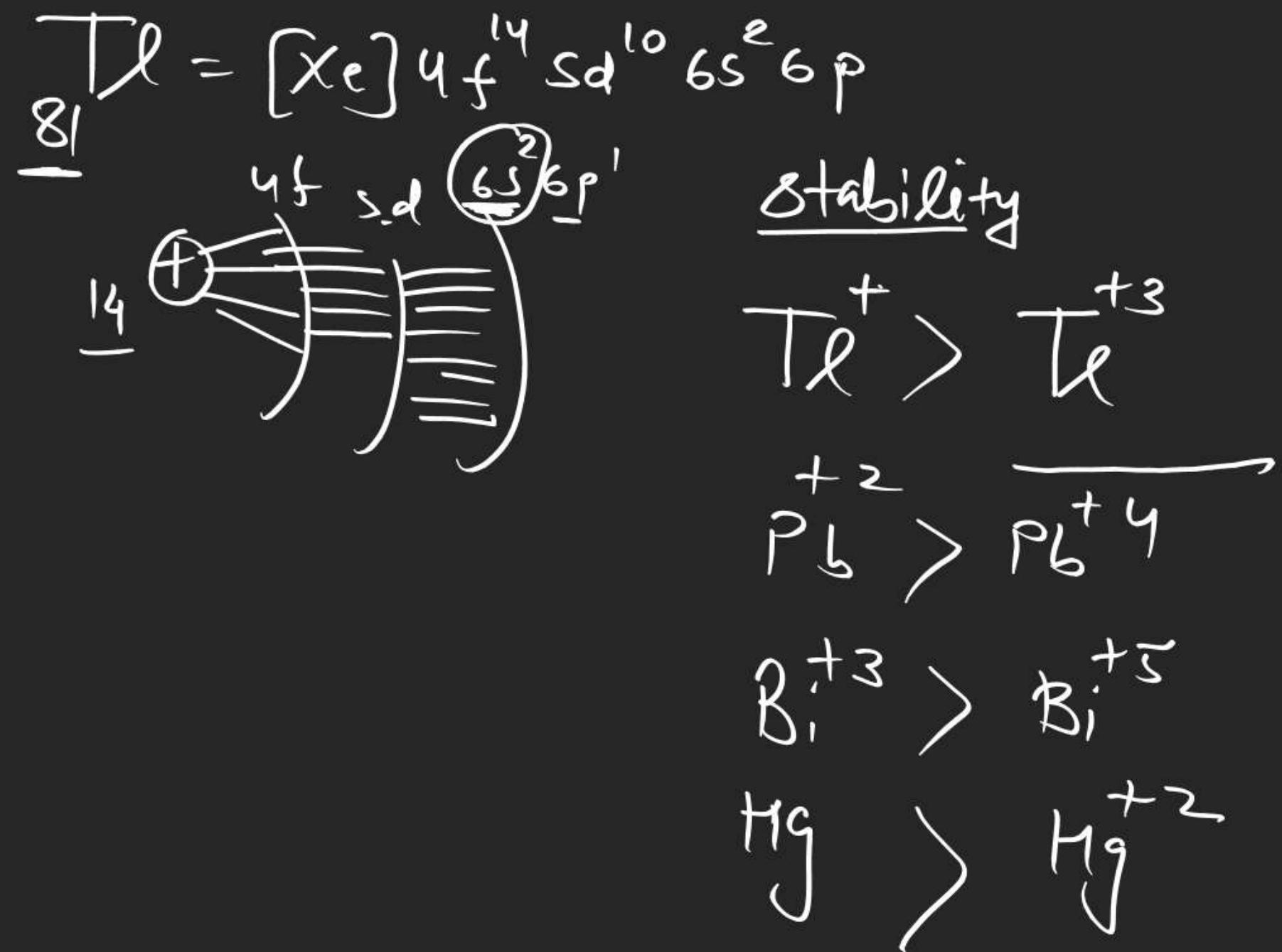
Note \Rightarrow the tendency of inertness of bonding is called inert pair effect of $nS e^-$ towards n_p sub shell.

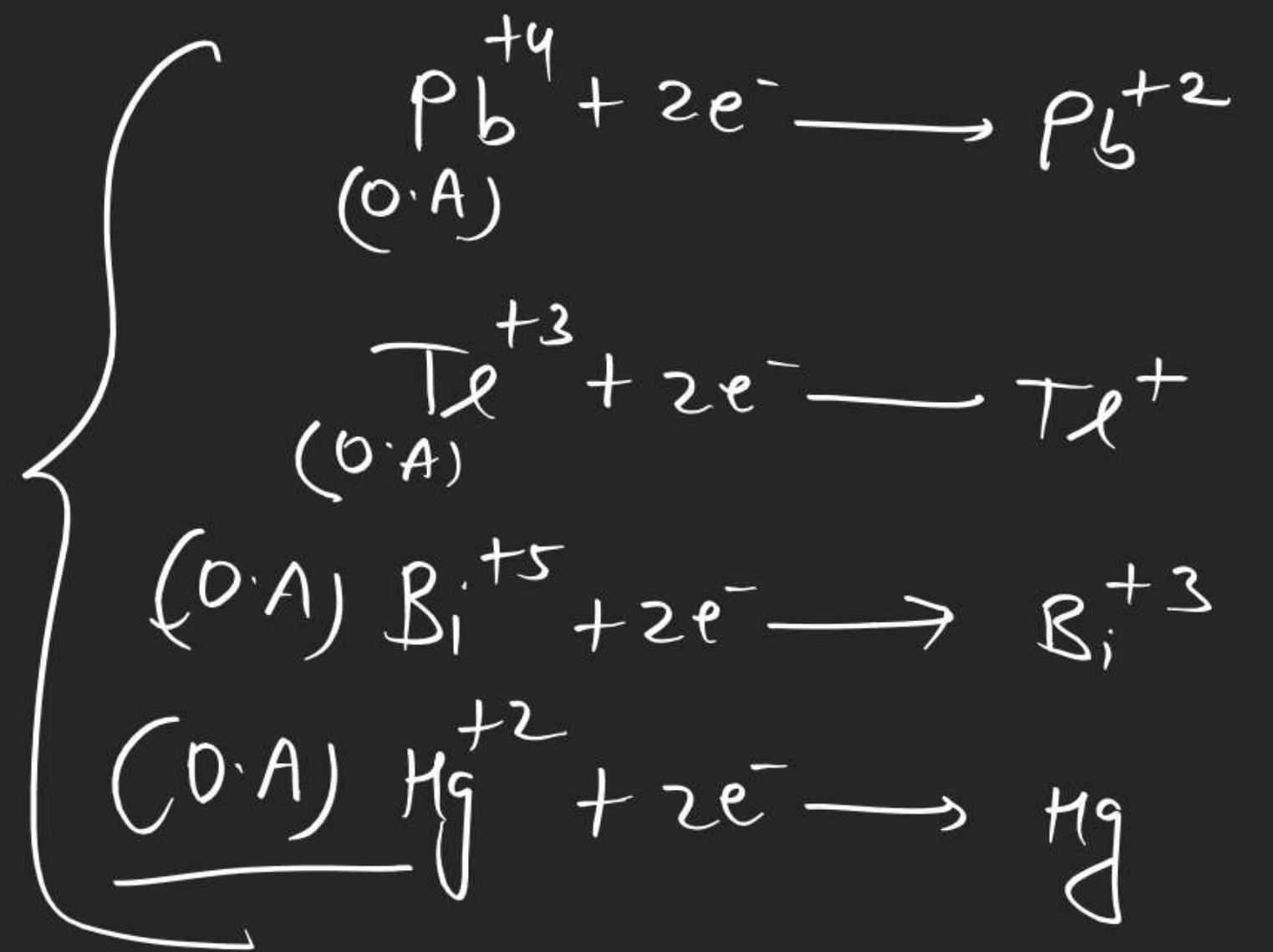
Inert pair effect

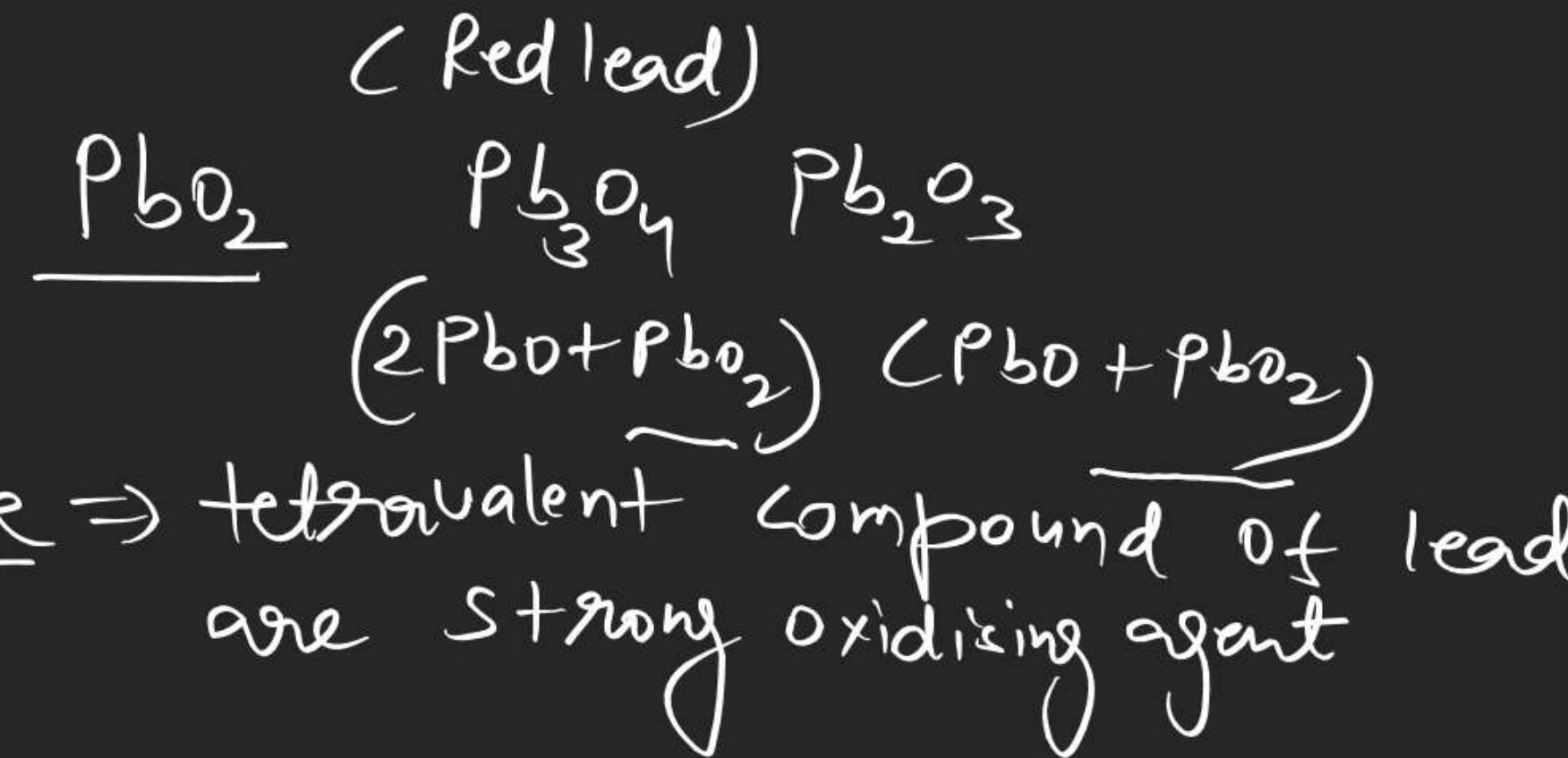
13 th	14 th	15 th
B +3	C +2	N +3
Al +1	Si +2	P +3
Ga +3	Ge +2	As +3
In +3	Sn +2	Sb +2
Tl +1	Pb +2	B +3

Generally higher oxidation becomes more stable than lower oxidation state but in p-block 13 to 15 group on moving down lower oxidation state becomes more stable than the higher due to poor S.E of nf sub shell.

CHEMICAL BONDING

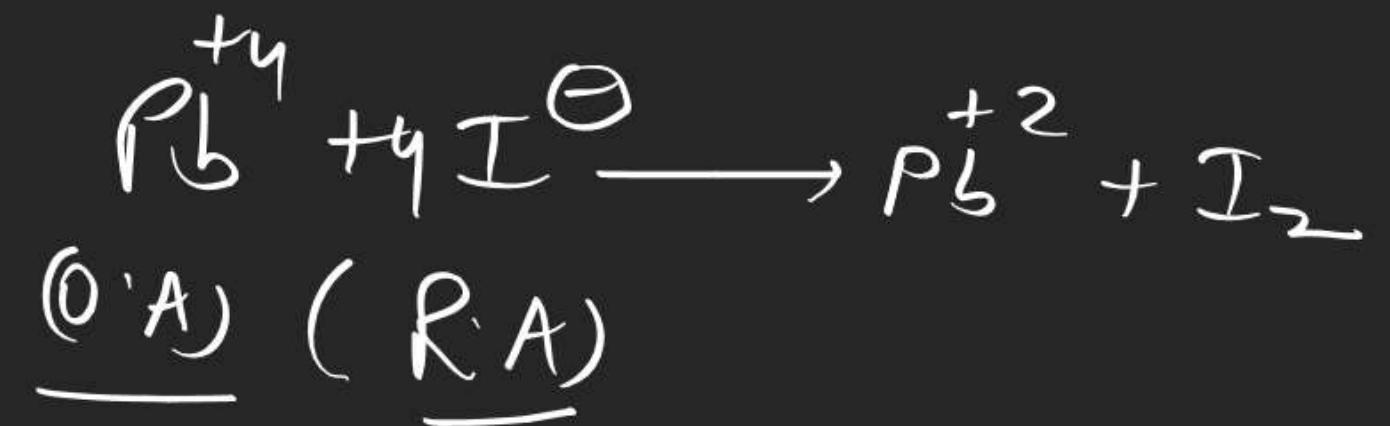
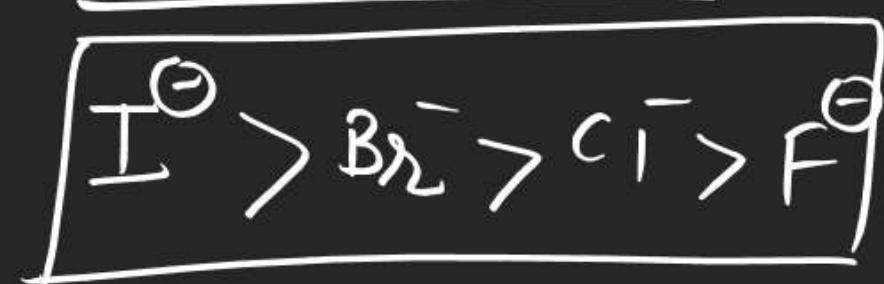




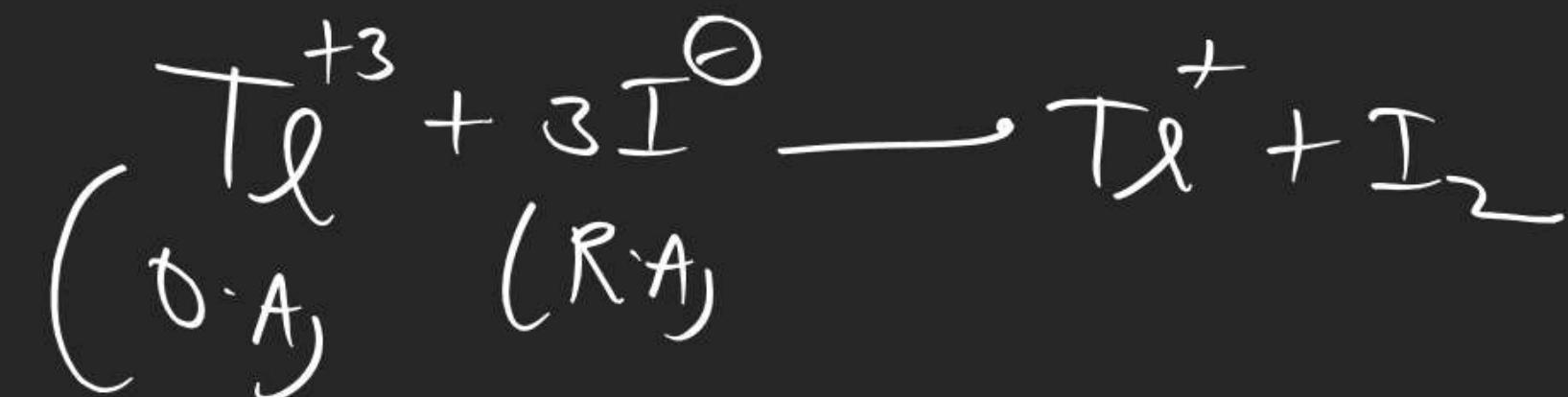


on PbI_y does not exist why?

Reducing Power



on TlI_3 does not exist with I^-



BiI_5 does not exist



(O.A) (R.A)

we TlI_3 exist with I_3^\ominus Why?

