

P-Block13<sup>th</sup> group

B

143 pm Al
135 pm Ga

In

Tl

① Conf.  $n s^2 n p^1$ ② order of size $B < Al > Ga < In < Tl$  $B < Ga < Al < In < Tl$  $Al = 1s^2 2s^2 2p^6 3s^2 3p^1$ d.s  $Ga = 1s^2 2s^2 2p^6 \boxed{3s^2 3p^6 3d^{10}} 4s^2 4p^1$ 10 ~~(+)~~

due to poor S.E of 3d subshell

order of I.E

B  
Al  
Ga  
In  
Tl

$B > Al < Ga > In < Tl$

$B > \underline{Tl} > \underline{Ga} > \underline{Al} > In$

$Tl = [Xe] 4f^{14} 5d^{10} 6s^2 6p^1$



Boron Black Colour solid extremely Hard  
Having icosahedral structure ( $B_{12}$ )

20 face and 12 corner

— other metals are soft and having  
low melting point.

— Ga has unusual m.p (303K)  
It could exist in liq. state during summer

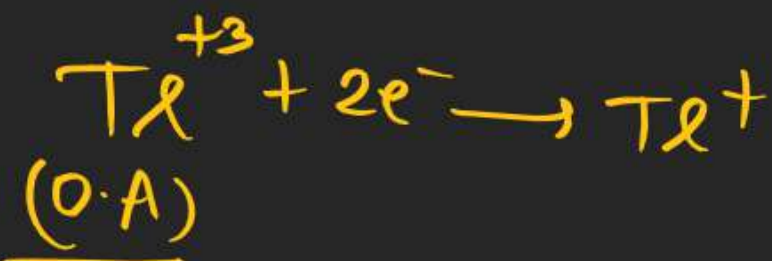
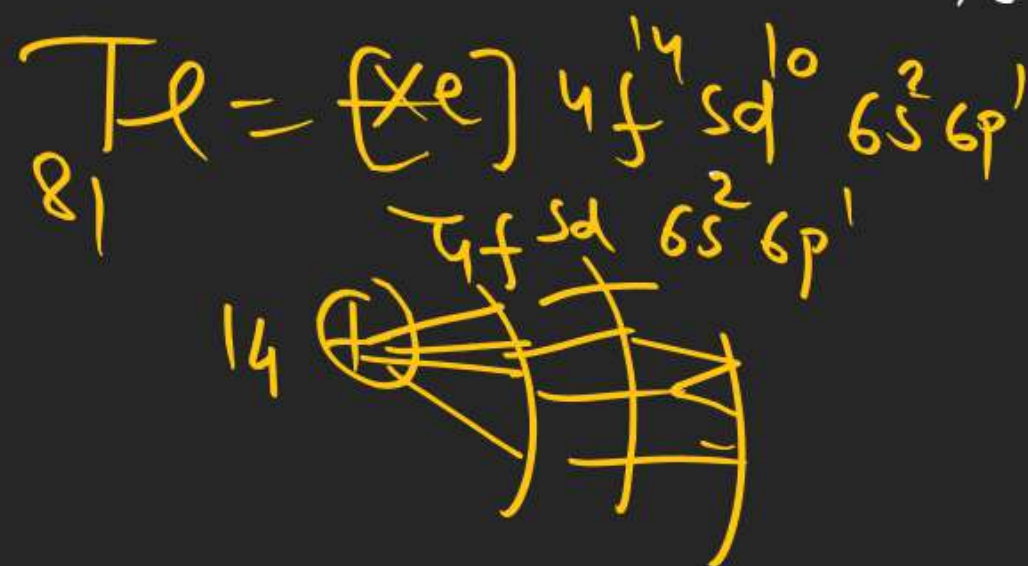
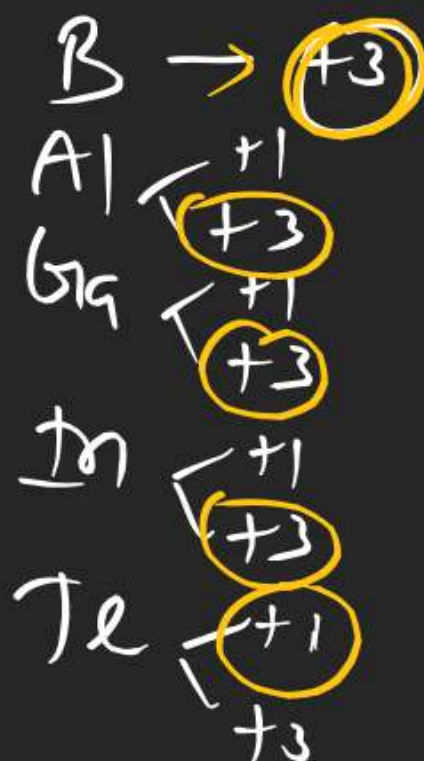


# oxidation state

gve

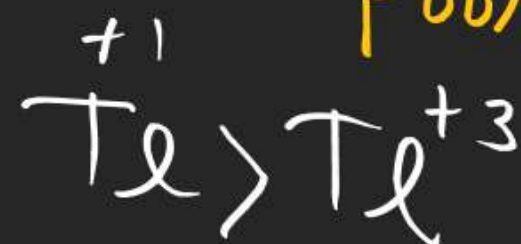
S.E power

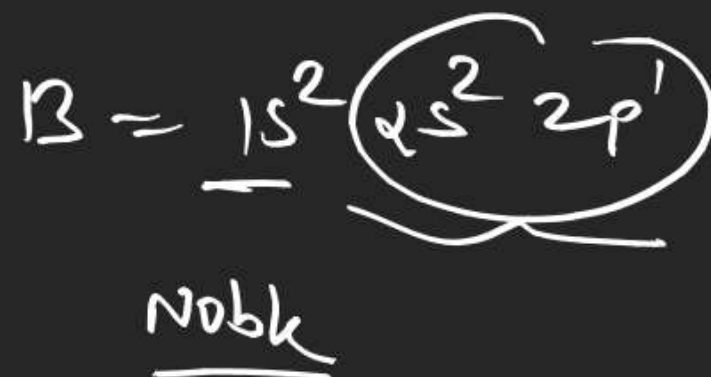
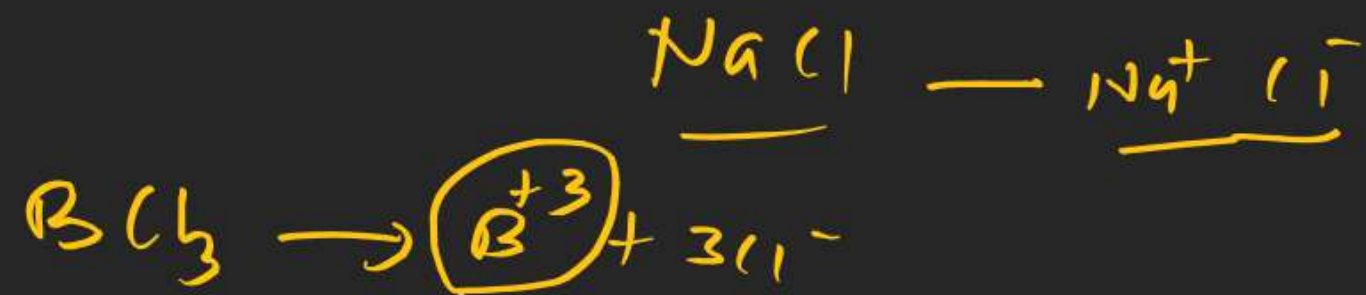
$$s > p > d > f$$



Gen. Higher oxidation  
 state is more stable than  
 lower but in P-block (13 to 15)  
 group on moving down

lower oxidation state becomes  
 more stable due to  
 poor S.E of 4f sub shell

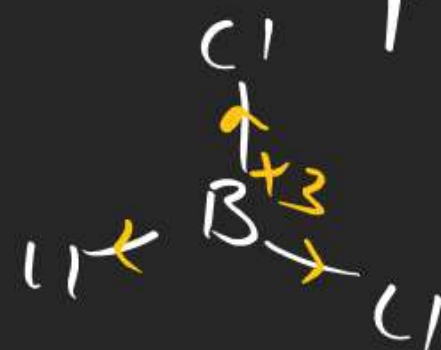




$\text{B}^{+3}$   
Cation does not exist

Why B does not show +3 cation

because of higher value of sum of  
three I.E, So Boron form covalent  
compound.

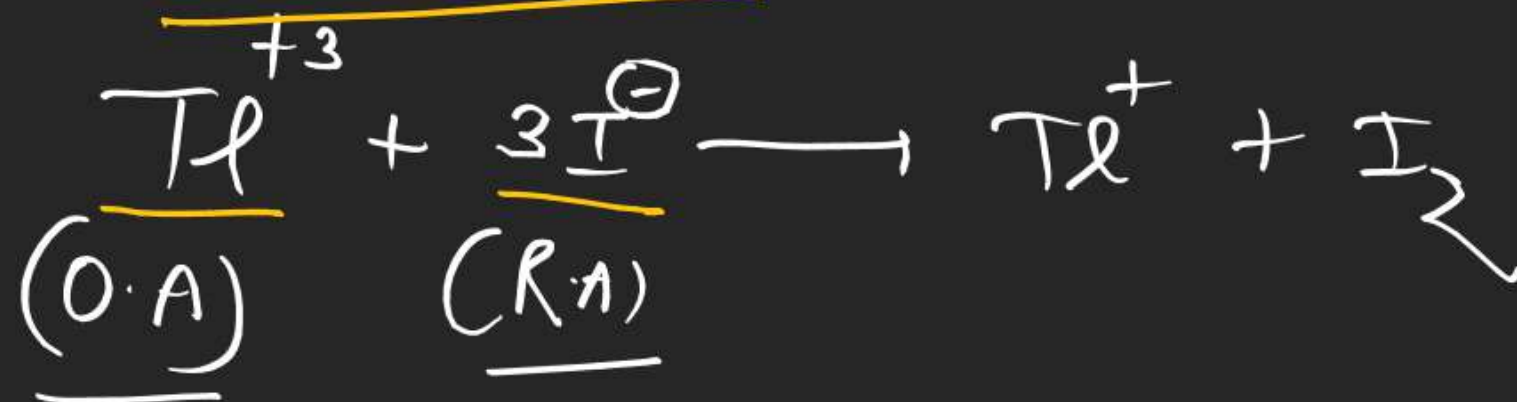




Reducing agent



Ques  $TlI_3$  does not exist explain why  
Ans  $\Rightarrow$  due to Redox



Ques  $TlI_3$  exists with  $I_3^-$  explain why



due to absence of Redox Reaction  
 $Tl^+$  is not an oxidising agent

$$\underline{\underline{B}} = 1s^2 \underline{2s^2 2p^1}$$