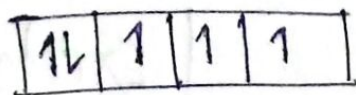
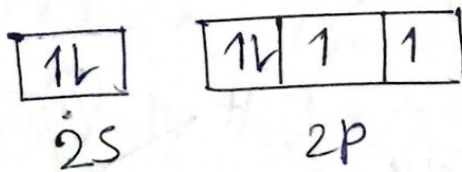
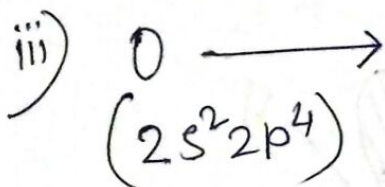
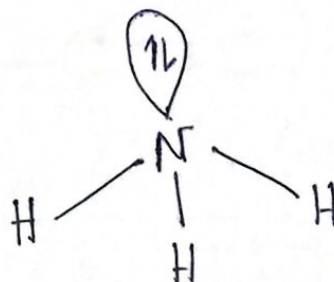
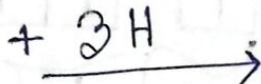
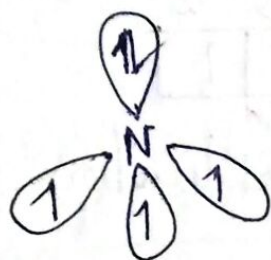


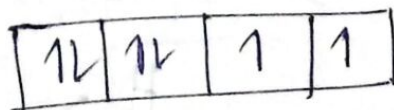
↓ Excitation & hybridisation



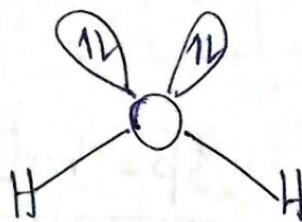
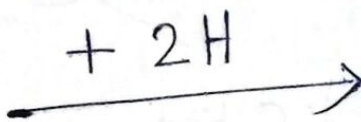
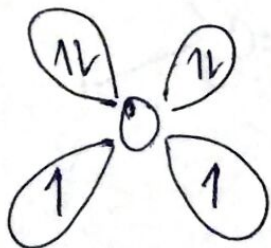
sp^3 hybrid orbitals



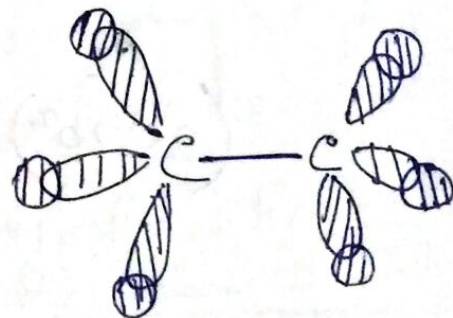
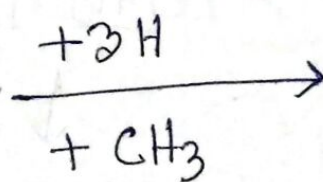
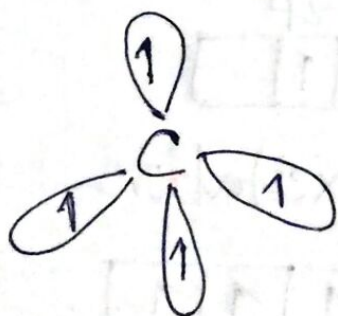
↓ Excitation and hybridisation



sp^3 hybrid orbitals



iv)

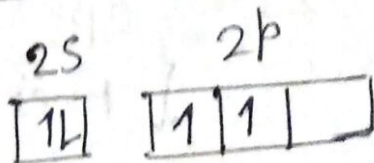


42

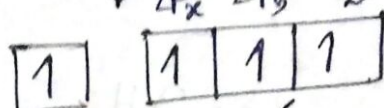
b) sp^2 hybridisation

i)

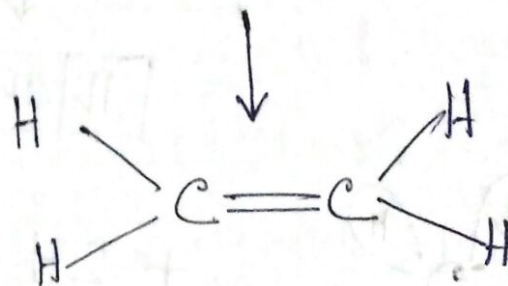
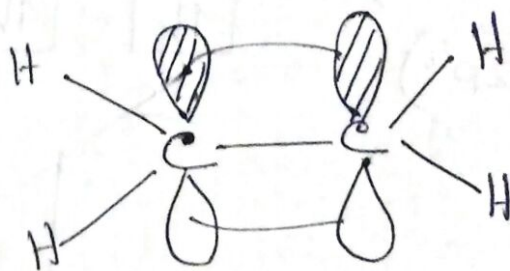
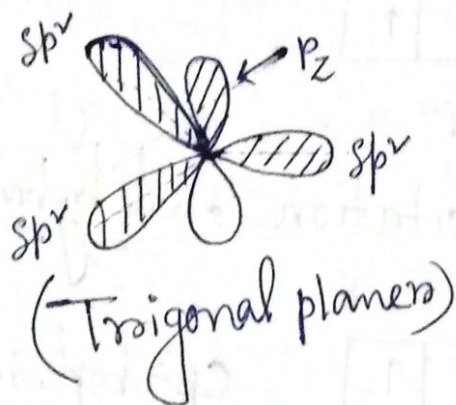
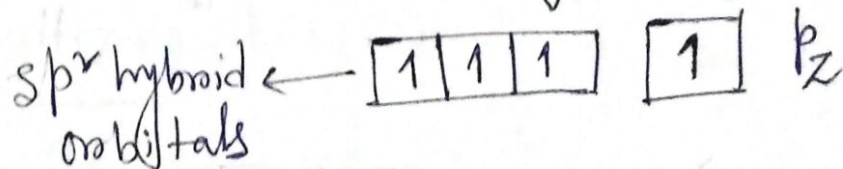
C $\rightarrow$ $(2s^2 2p^2)$



↓ Excitation

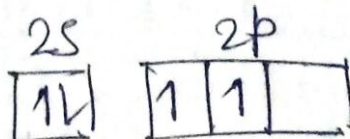


↓ hybridisation

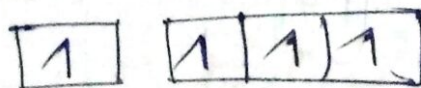


c) sp - hybridisation

C $\rightarrow$ $(2s^2 2p^2)$

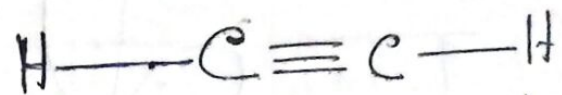
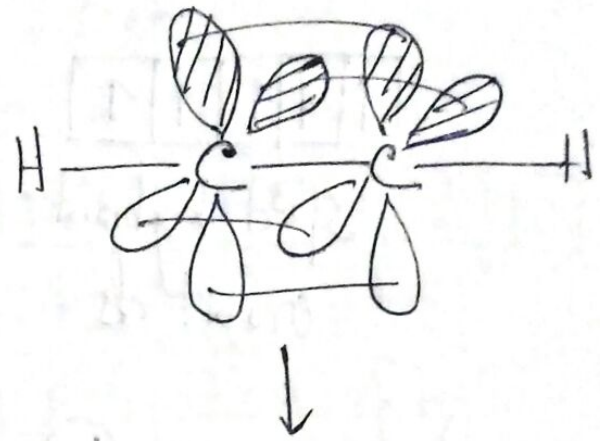
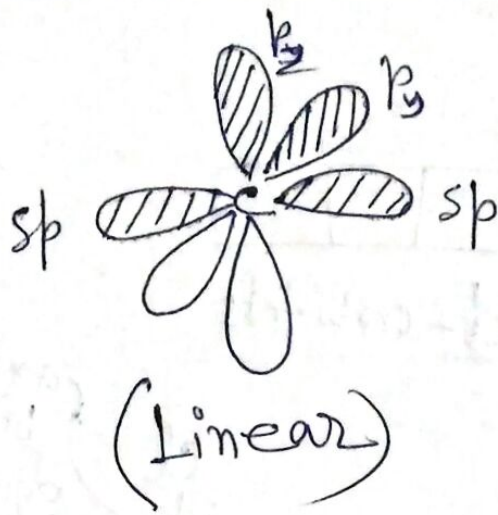


↓ Excitation



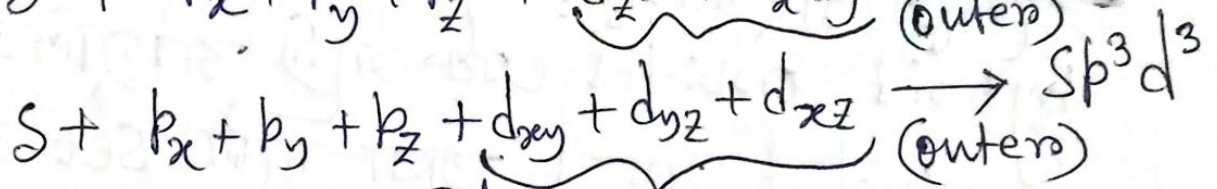
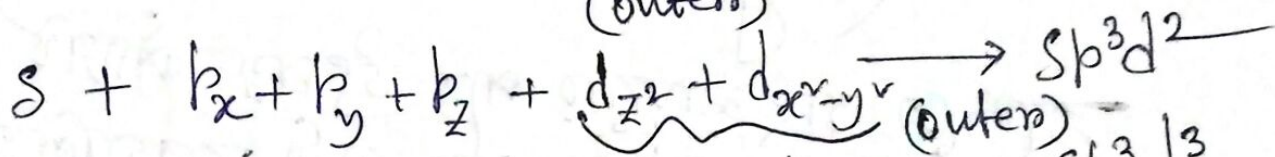
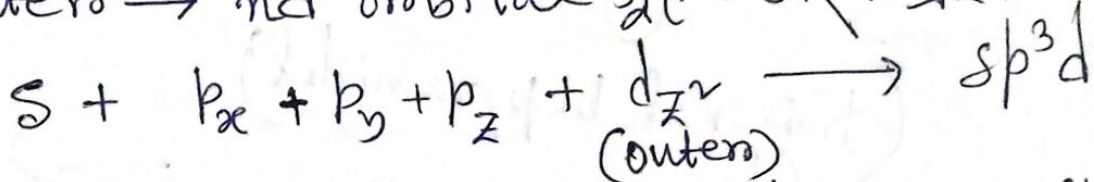
↓ hybridisation



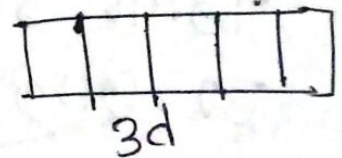
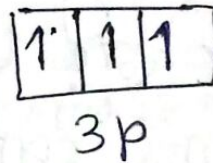
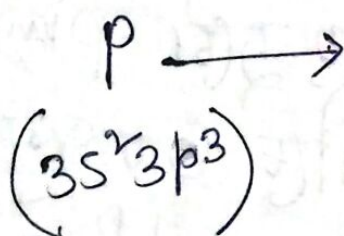


d) hybridization using d-orbitals (outer)

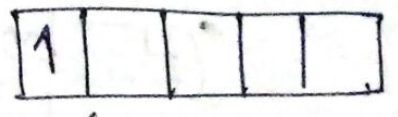
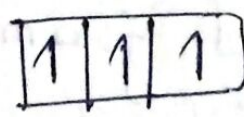
* Outer $\rightarrow$ nd orbital $\rightarrow$ nd orbital



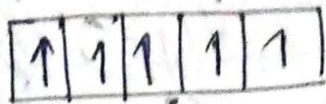
i) sp^3d hybridization (PCl_5)



↓ Excitation



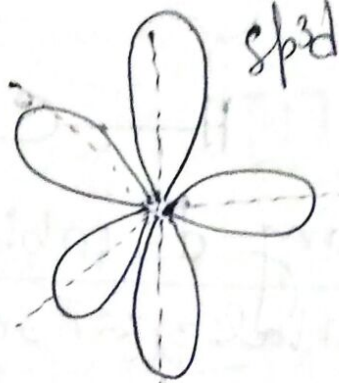
↓ hybridization



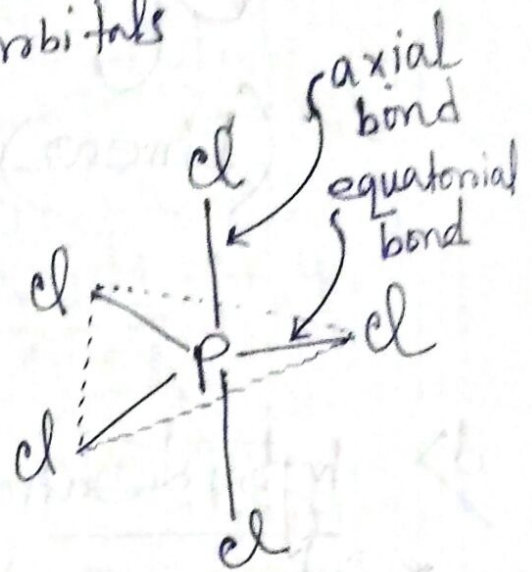
sp^3d hybrid orbitals



d-orbitals

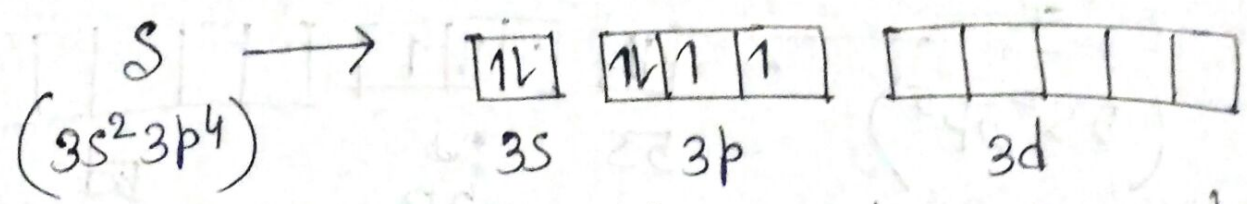


(Trigonal bipyramidal)

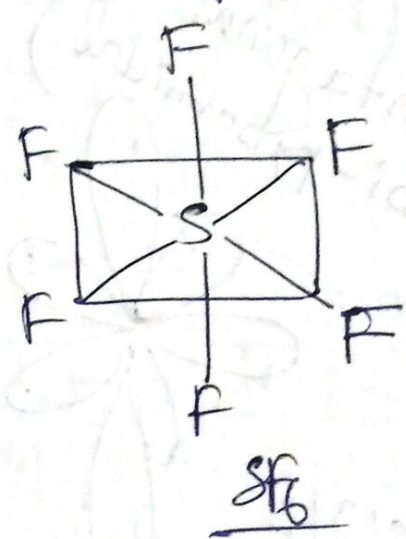
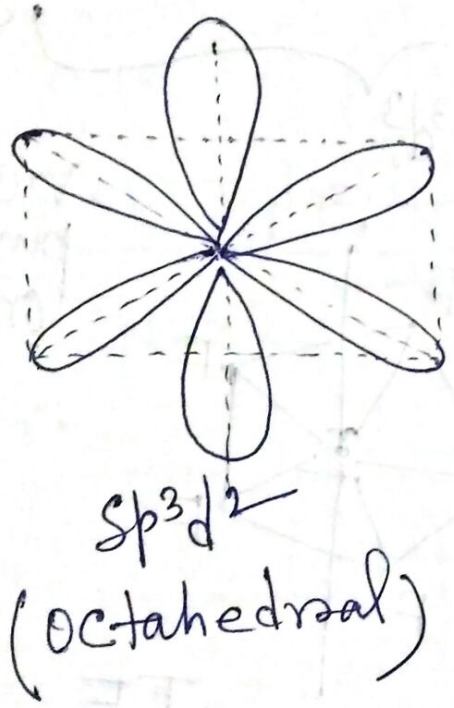
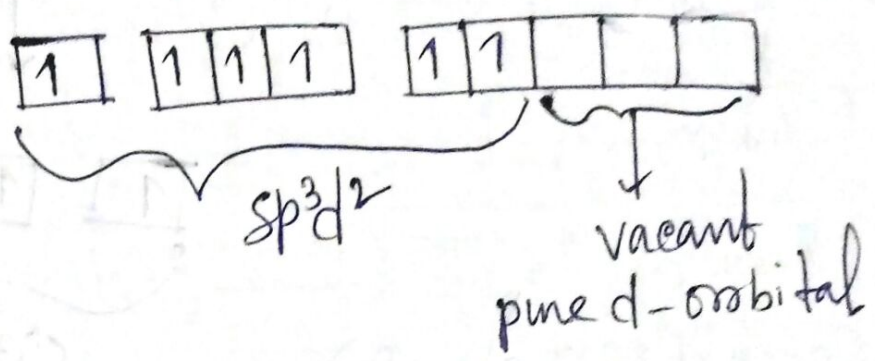


অন্যদিকে অরক্ষণশীল এবং উৎসাহ-সাঁচটি sp^3d hybrid orbital এবং আঁকি অবস্থানিত Equivalent নয়। তারা দুটো set অভিন্ন।
 $3+2$ - এই যুগ্ম দুটো set এ বিভক্ত হয়।
 তিনটি sp^3d hybrid orbitals একটি plane এ আঁকান কণ। এবং অন্য দুটো plane এ লম্বু ভায়া উল্লম্ব এবং নীচ আঁকান কণ।
 plane - এ আঁকিত hybrid orbitals দুটি
 for bond form কণ। অর্থাৎ এল
 equatorial bond এবং লম্বুভায়া আঁকিত
 orbitals দুটি for bond form কণ। অর্থাৎ
 এল axial bond.

ii) sp^3d^2 hybridisation (SF_6)



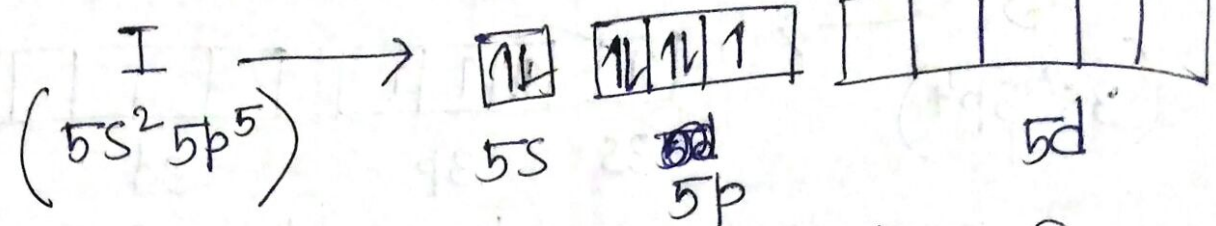
↓ Excitation & hybridisation



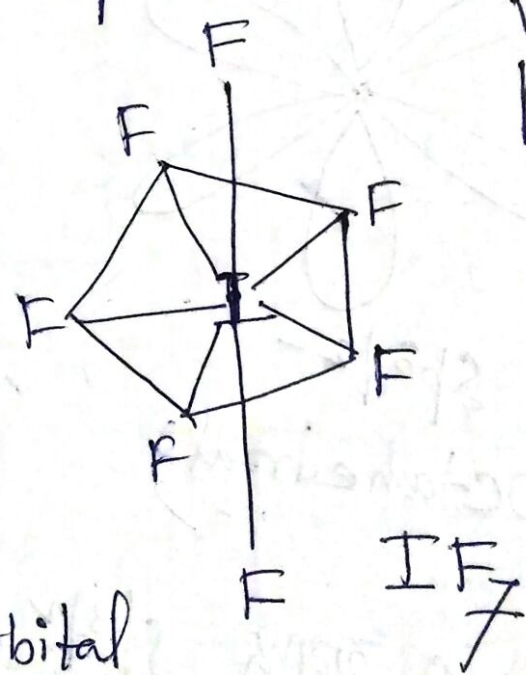
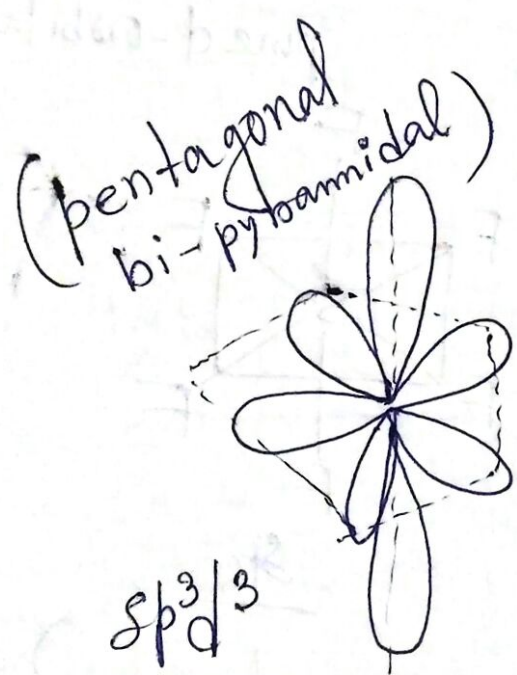
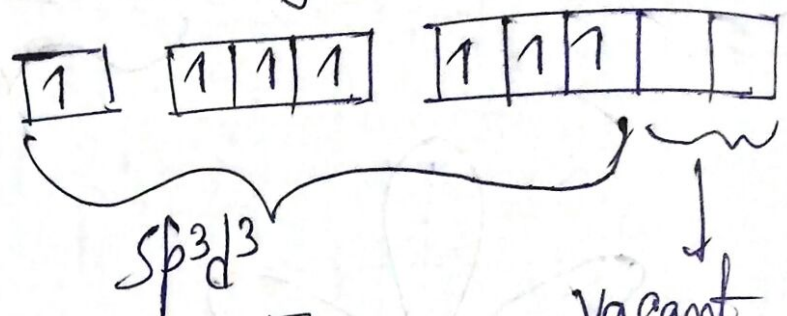
ଅର୍ଥାତ୍ sp^3d^2 hybrid orbitals 6/ମାନ
equivalent

46

iii) sp^3d^3 hybridisation



Excitation & hybridisation

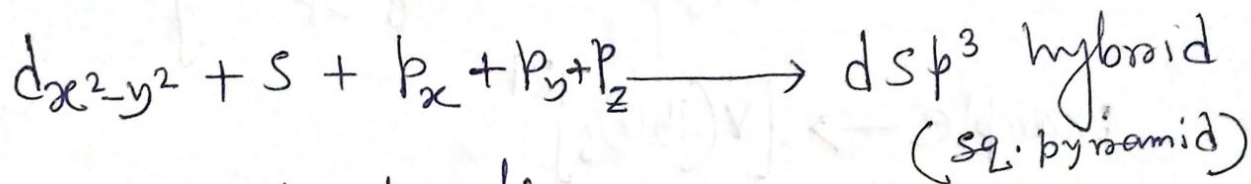
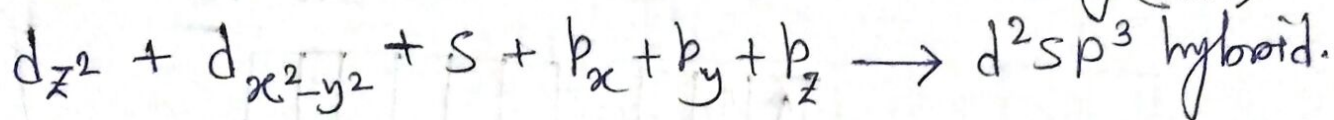
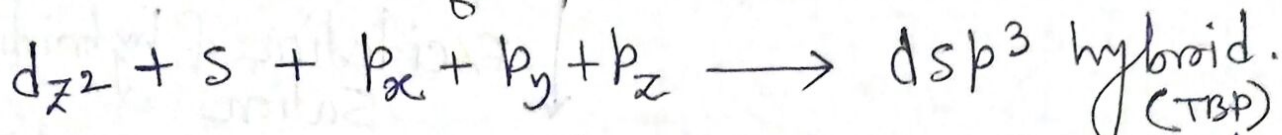


ଅକ୍ଷୀୟ ୨ hybrid orbital
 ଉପର (5+2) ଏକ୍ସକ୍ସନ ଉପରେ set ଏ
 ସିଲିକା ୨୫ 2m

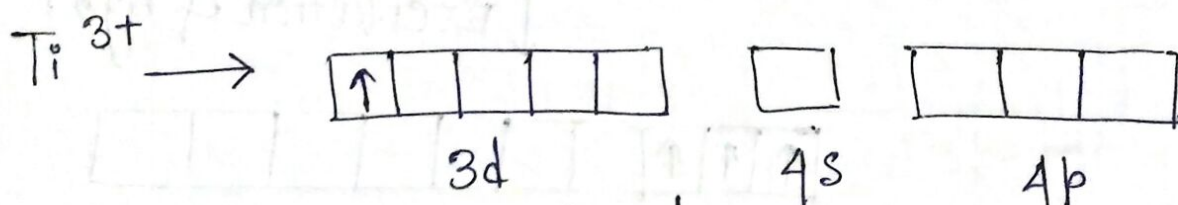
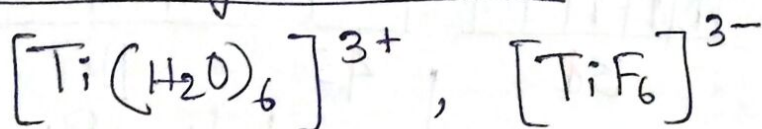
5 orbitals $\rightarrow$ equatorial set
 2 orbitals $\rightarrow$ axial set.

e) hybridisation involving d-orbitals (inner)

* Inner $\rightarrow$ (n-1)d orbital $\rightarrow$ inner orbital complex

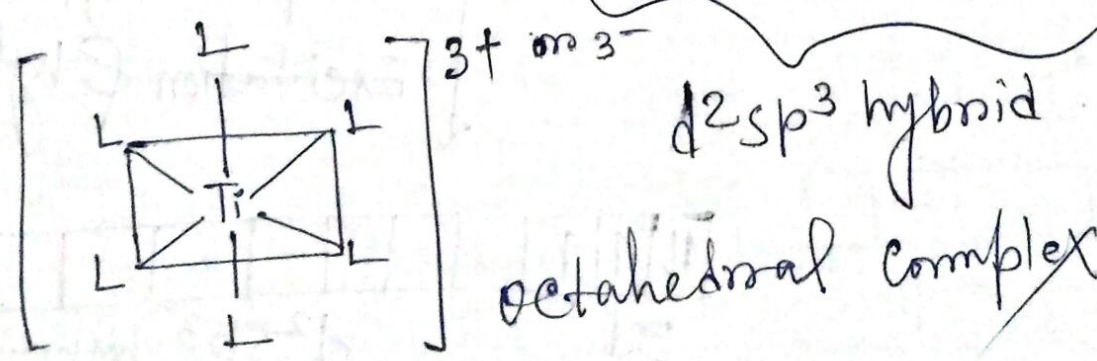
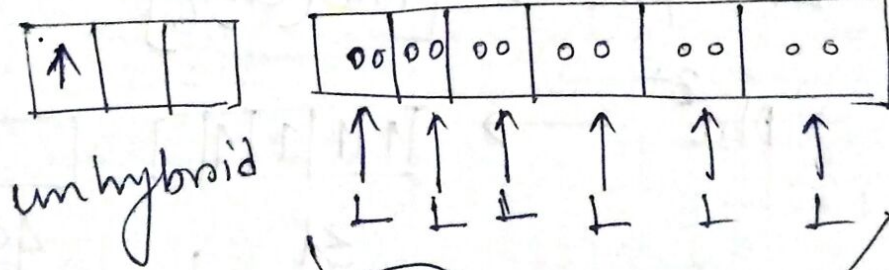


i) d^2sp^3 hybridisation

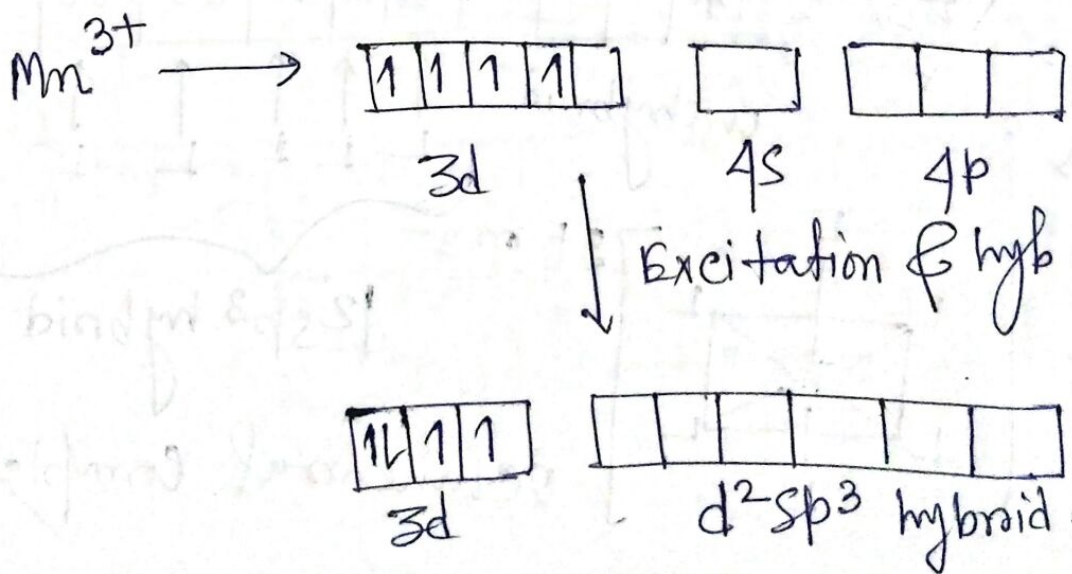
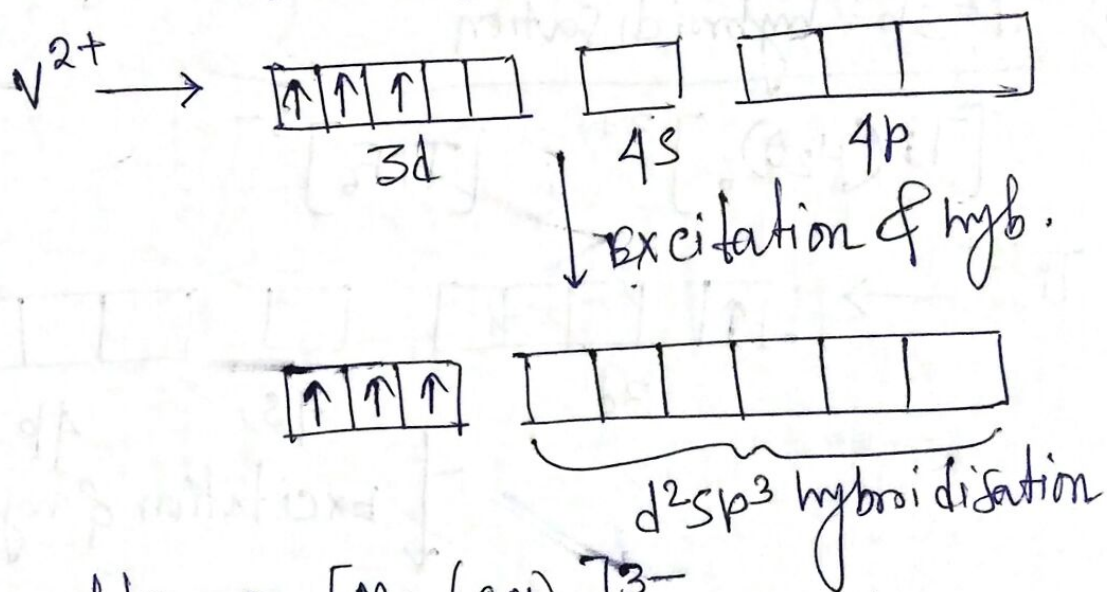
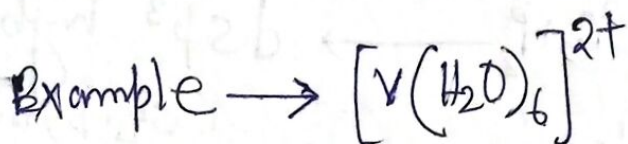
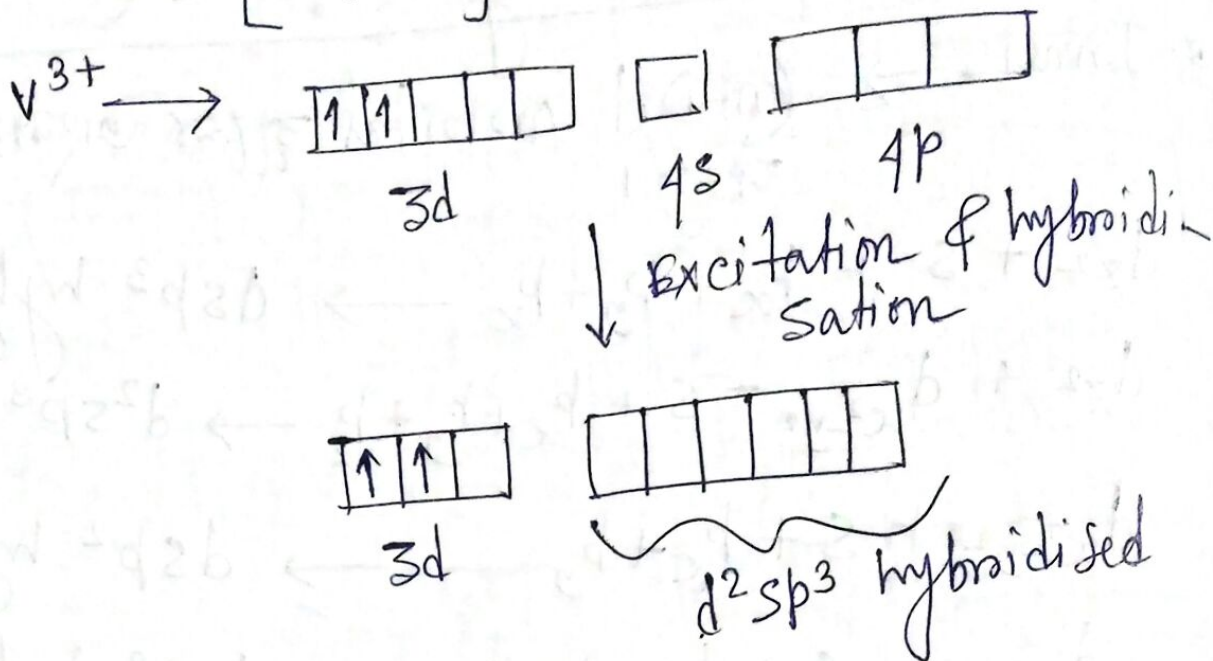


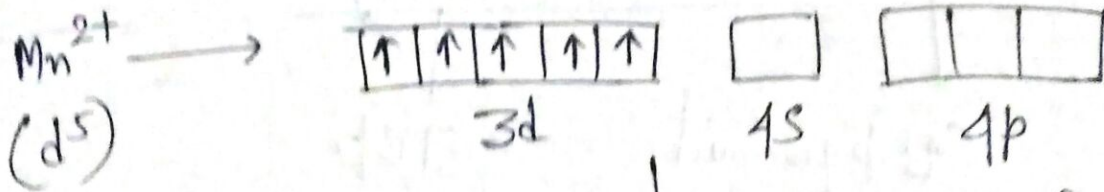
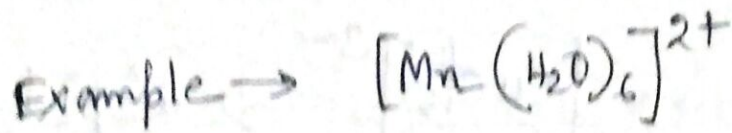
↓ Excitation & hybridisation

L = H_2O
L = F

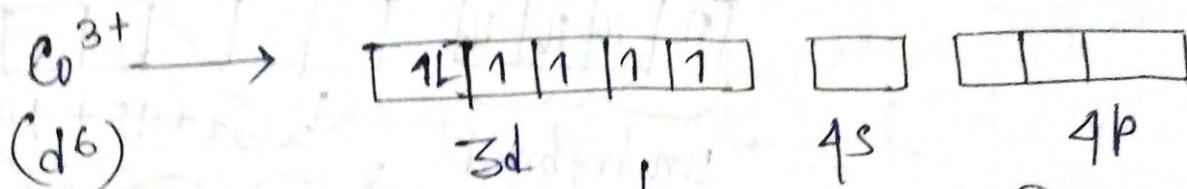
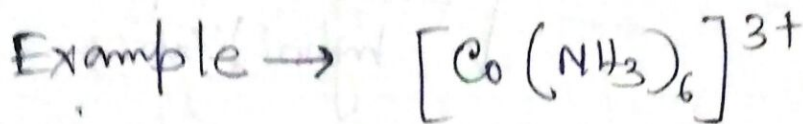
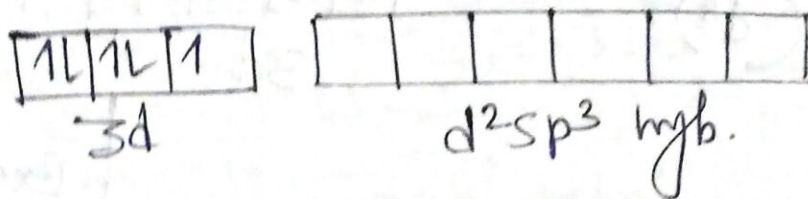


48

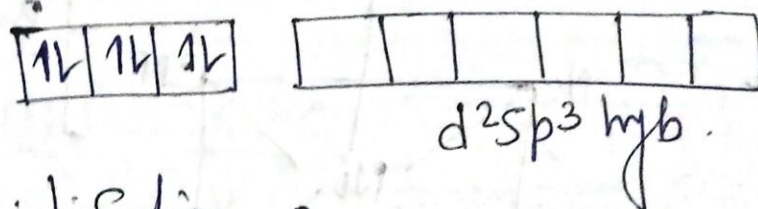




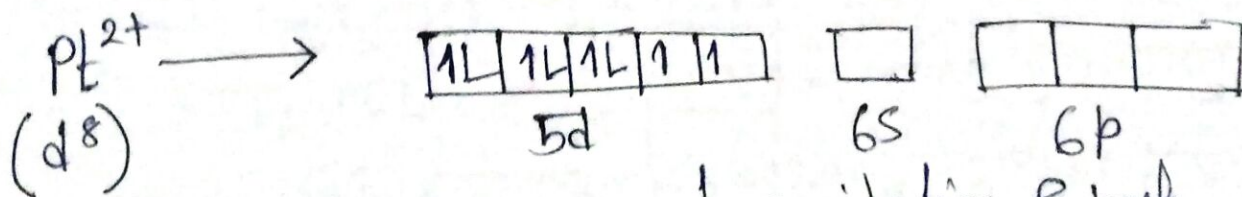
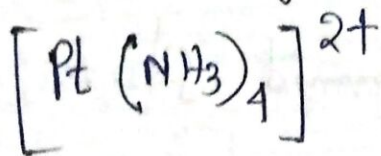
↓ Excitation & hybrid.



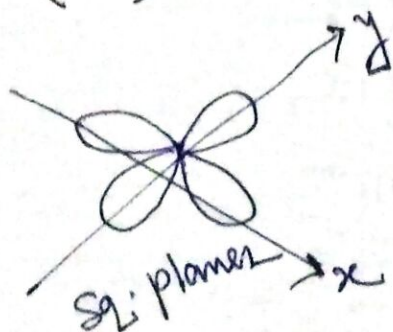
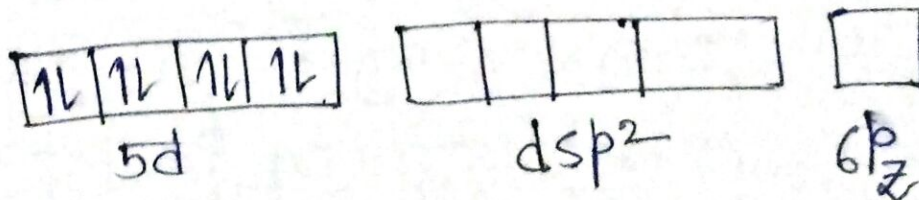
↓ Excitation & hyb.



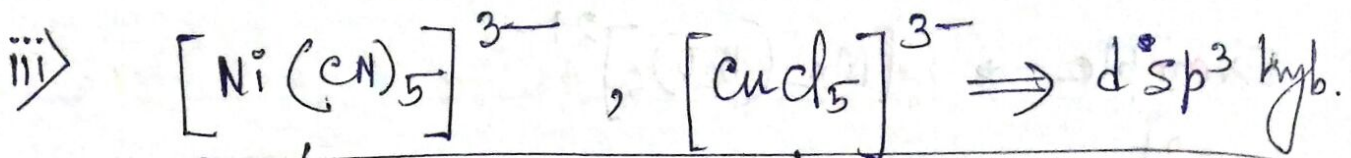
ii) dsp² hybridisation :-



↓ Excitation & hyb.

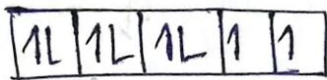
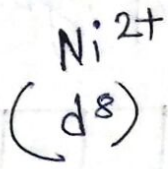


50



Sq. pyramid

TBP



3d

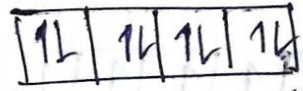


4s

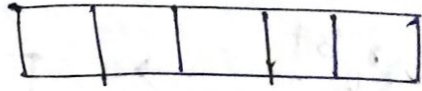


4p

Excitation & hybridisation

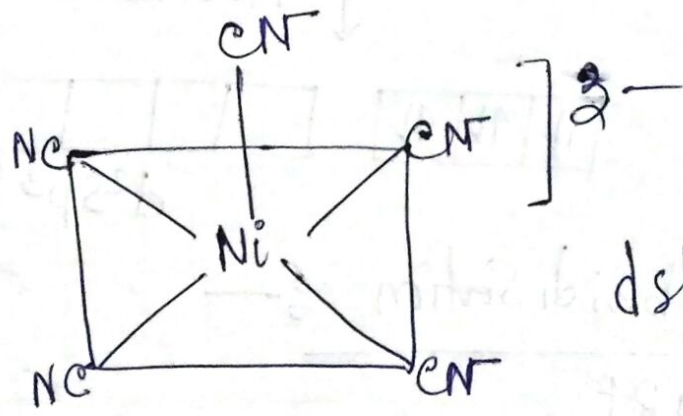


unhybrid



$3d_{x^2-y^2} + 4s + 4p$

$dsp^3 \text{ hybrid.}$



Square pyramid str.

$dsp^3 \text{ hybridisation}$