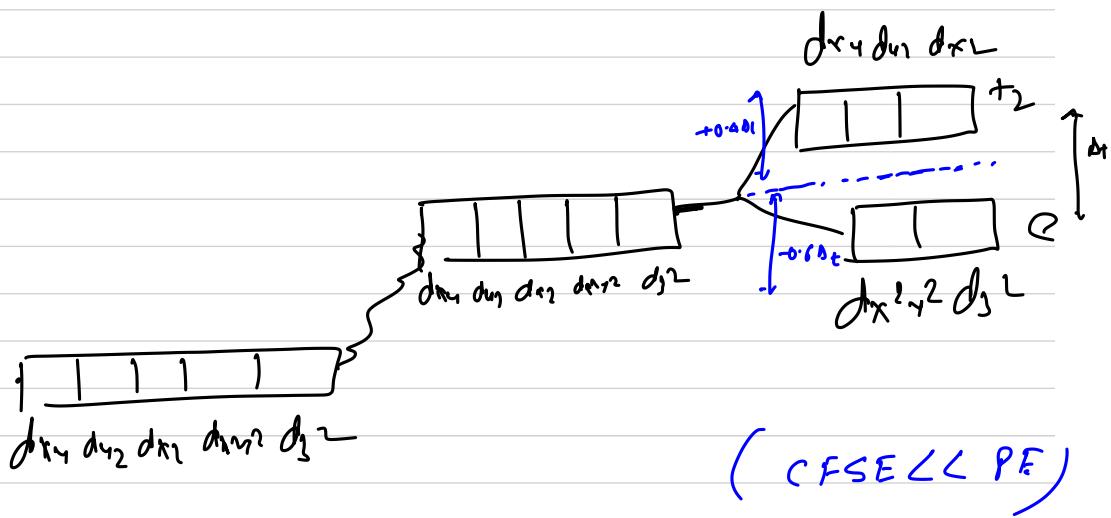
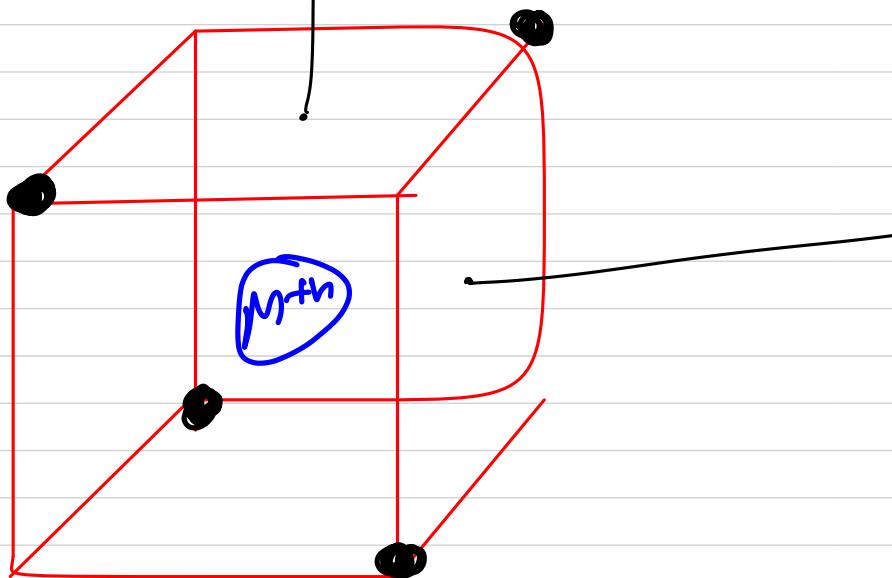
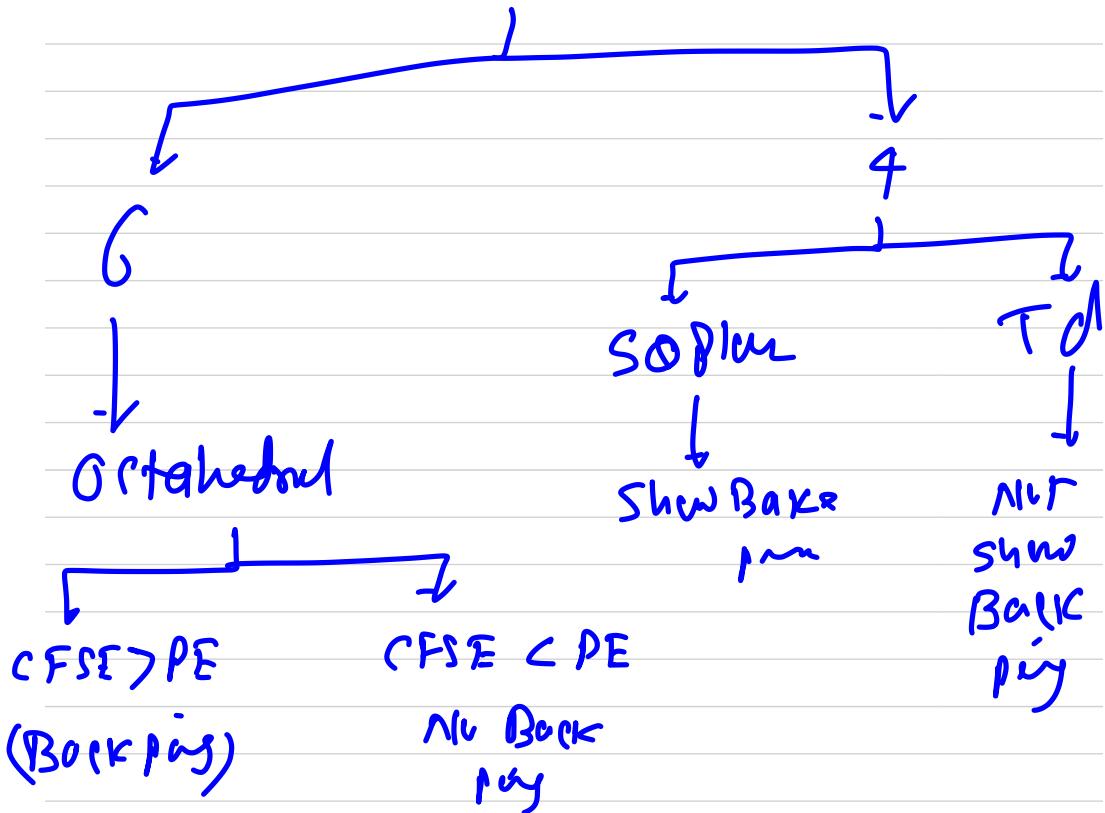


Splitting in Tetrahedron :-



C.N.



① C.N.=6 always Octahedral

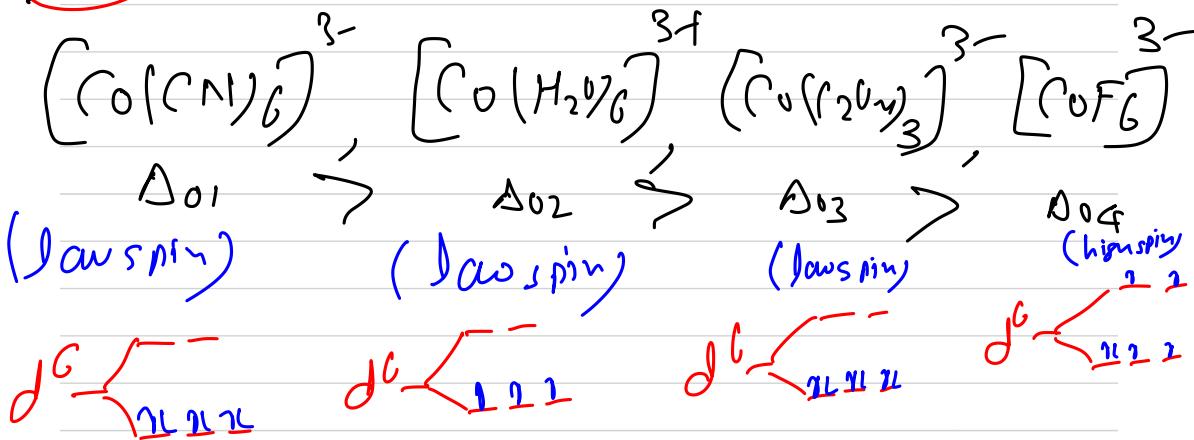
② C.N.=4 ligand - Metal interaction
Slow. - SQ Planar

③ C.N.=4 ligand - Metal interaction
well< T.O / Metal ion d¹⁰

farmer afforty o FSE :-

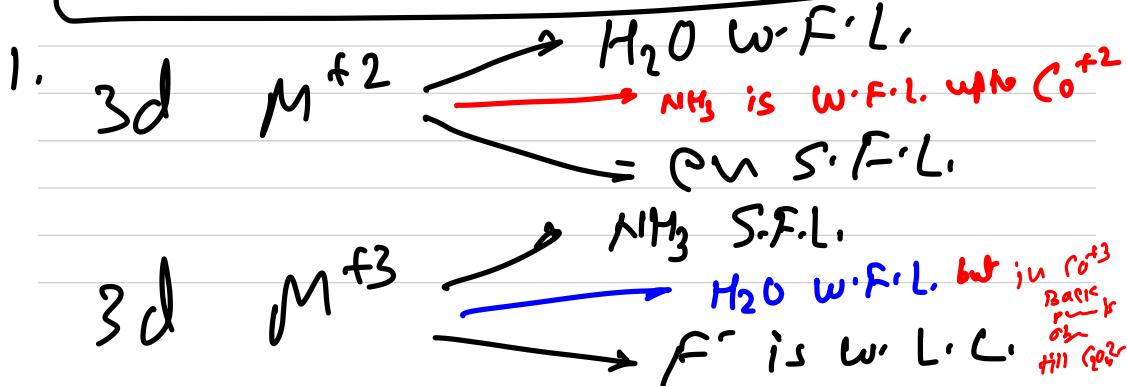
(1) Type of ligd:-

Q1

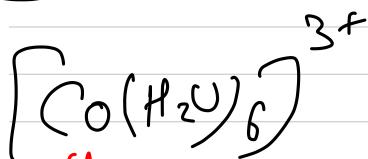


$\Gamma < \text{Br}^- < \text{SCN}^- < \text{Cl}^- < \text{F}^- < \text{OH}^- < \text{C}_2\text{O}_4^{2-} < \text{H}_2\text{O} < \text{NCS}^- < \text{edta}^4- < \underline{\text{NH}_3} < \underline{\text{en}} < \text{CN}^- < \text{CO}$

Note : In SCN^- , S is donating atom and in NCS^- , N is donating atom.

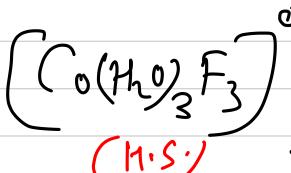


Q-2



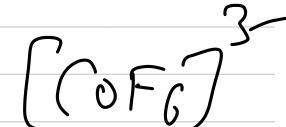
(low spin)

Δ_{01}



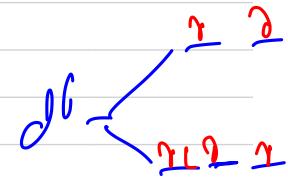
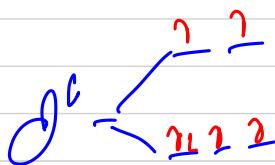
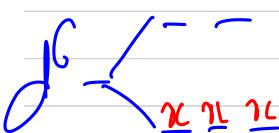
(H.S.)

Δ_{02}

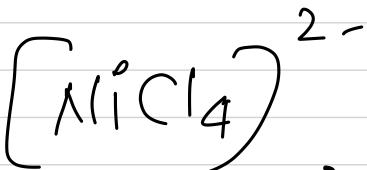


(H.S.)

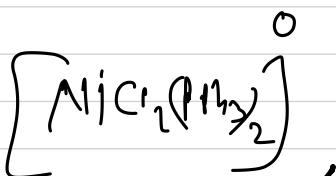
Δ_{03}



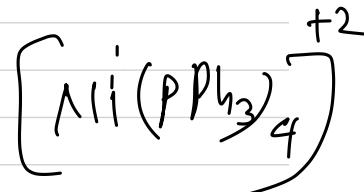
Q-3



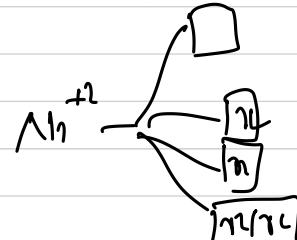
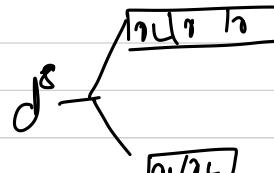
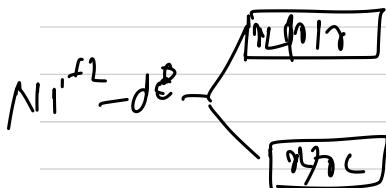
Tetrahedral

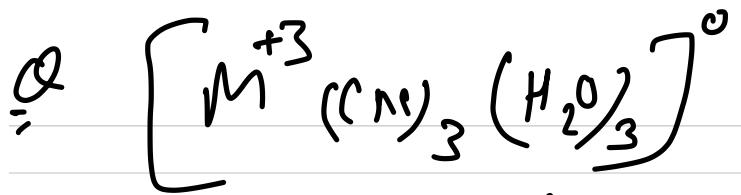


Extended



Spherical





$$M^{+3} = O^6$$

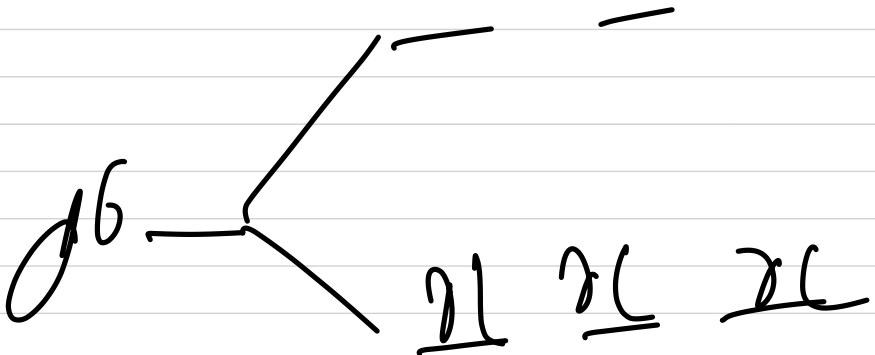
Magnetic moment

(A) $\sqrt{15}$

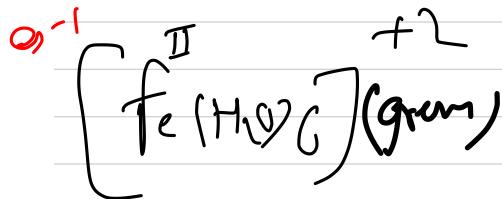
(B) $\sqrt{8}$

(C) $\sqrt{3}$

(D) 0

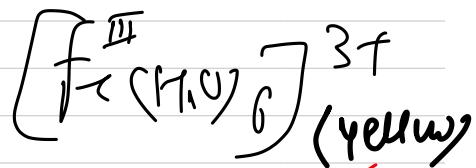


② Charge on Metal:-



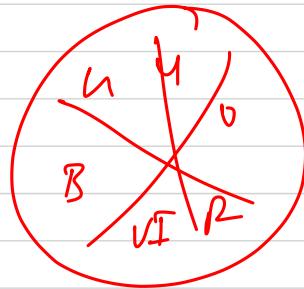
Δ_0

(R)



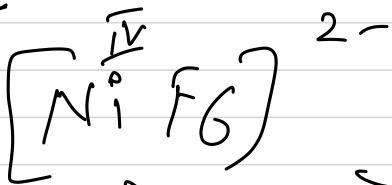
Δ_{01}

(V)



VI B H Y O R

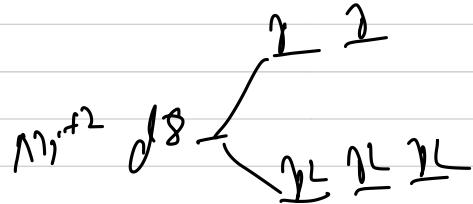
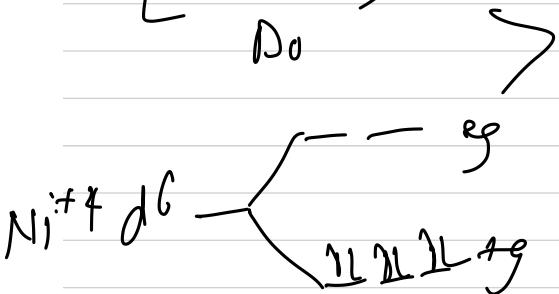
eg:-1



Δ_0



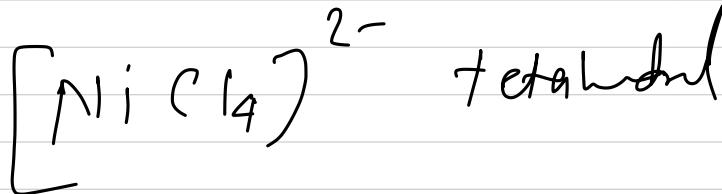
Δ_{01}



③ Position of Metal in P.T. :-

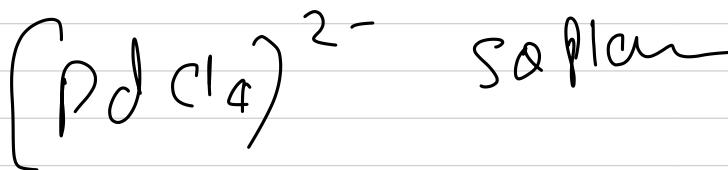
Og-1

$$\text{Ni}^{+2} = [\text{Ar}] 3d^8$$

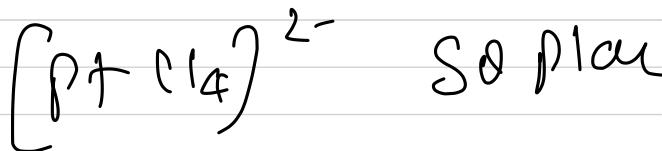


CFSE

Pd⁺² = [Kr] 4d⁸

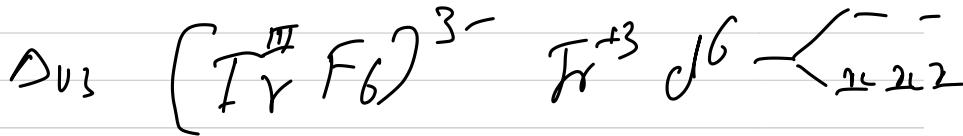
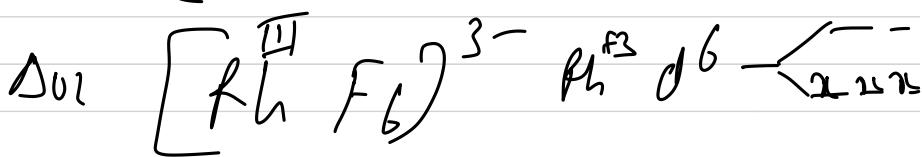
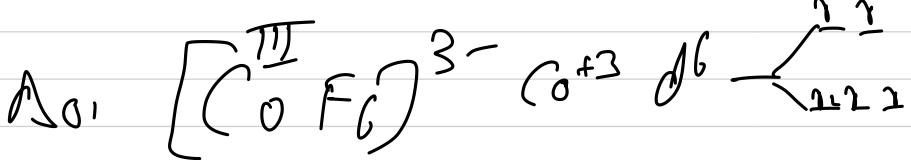


Pt⁺² = [Kr] 4f¹⁴ 5d⁸



↓
Incr

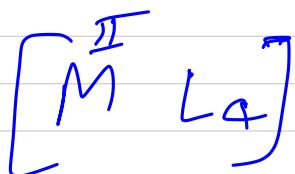
Og-2



$\Delta_{01} < \Delta_{02} < \Delta_{03}$

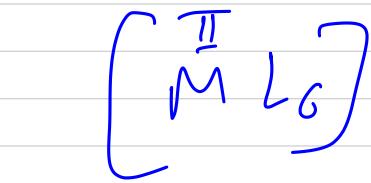
(4) Shape & Centres

eg-1



Tetrahedral

Δ_f



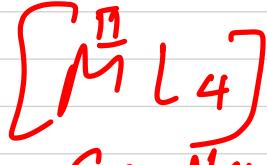
Octahedral



Δ_o

$$\boxed{\Delta_f = \frac{4}{9} \Delta_o}$$

eg-1



SO₄²⁻

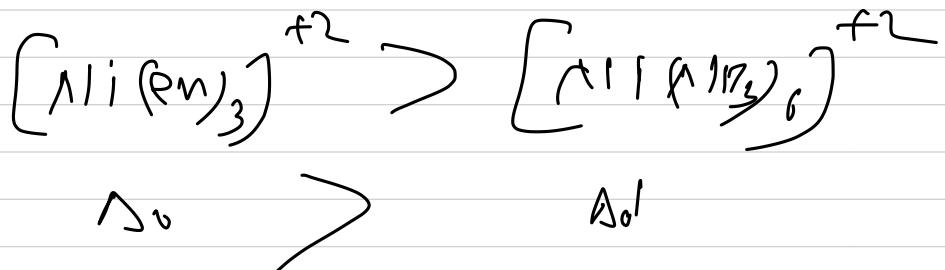


Octan.

$$\Delta_{sp} > \Delta_o$$

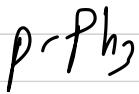
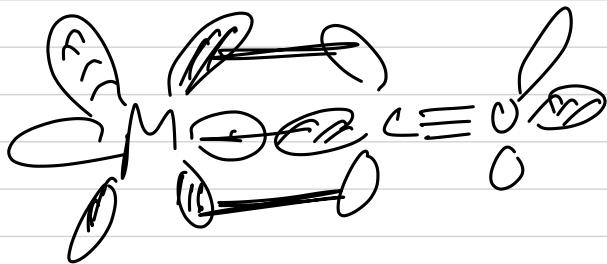
$$\boxed{\Delta_{sp} = 1.33 \Delta_o}$$

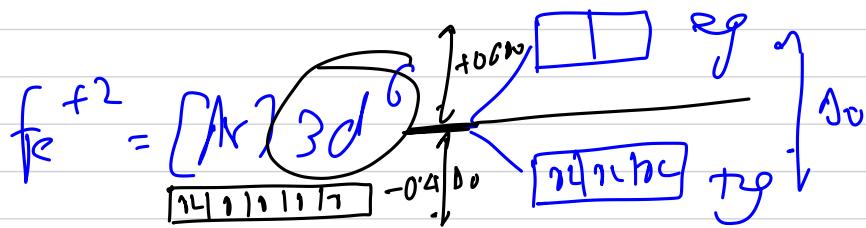
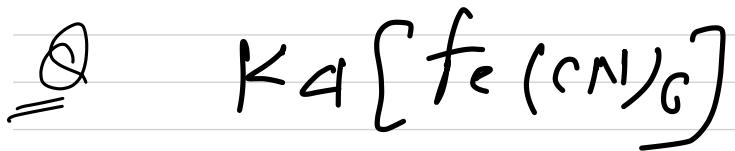
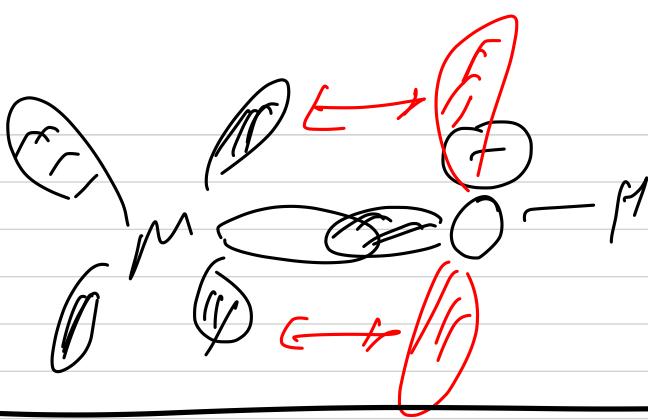
(5) Chelation :-



~~*~~

(6) Synergic bonding:-





✓ Octa.

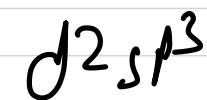
✓ Dio

✓ $\Delta = 0$

t_{2g}^6, e_g^0

✓ CFSE > PE, Jahn-Teller

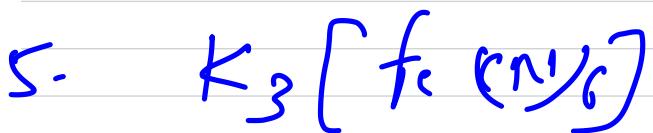
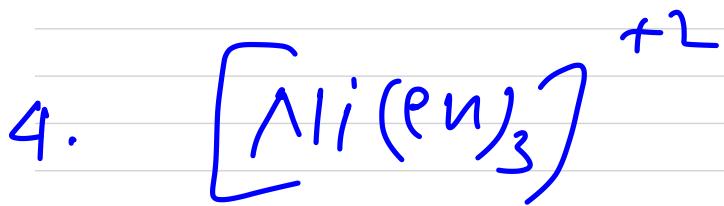
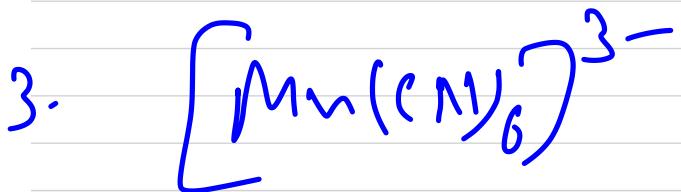
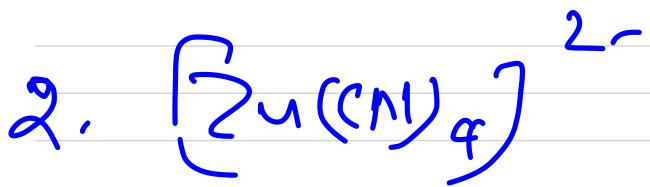
✓ Colored (yellow)



Immaculated Octa. Config.

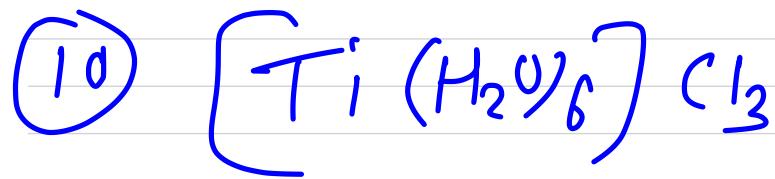
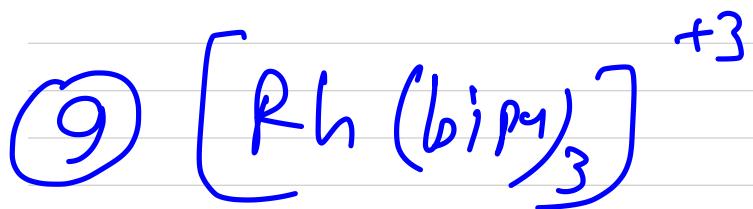
$$\begin{aligned}
 \text{C.F. Stabilization} \Sigma &= (-0.4\Delta_0 \times 6) + 2PE \\
 &= -2.4\Delta_0 + 2PF
 \end{aligned}$$

H.W.



6. Sodium nitroprusside





Q (I) (II)

