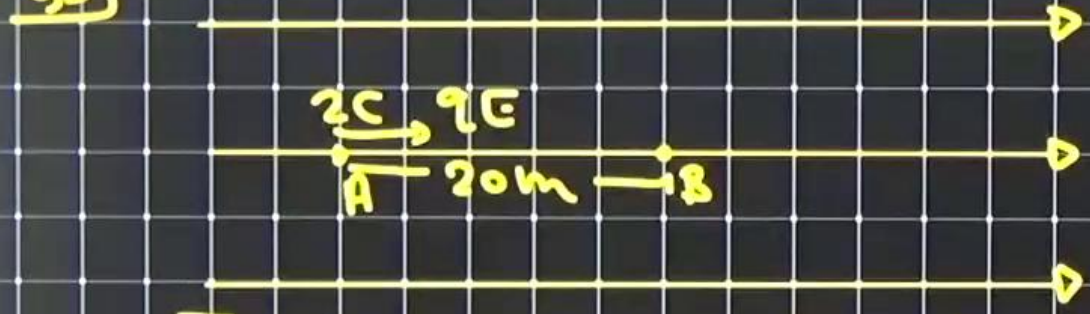
Q3)



$W_{ext} = q\Delta V$

$W_{elec} = q[V_i - V_f]$

$q[V_f - V_i]$

Find work done by Electrostatic force to bring a charge 2C from A to B.

⇒ we move from A to B

$\Delta V = -Ed$

$V_B - V_A = -20 \times 20$

$W_{ext} = q[\Delta V] = -400\,Volt$

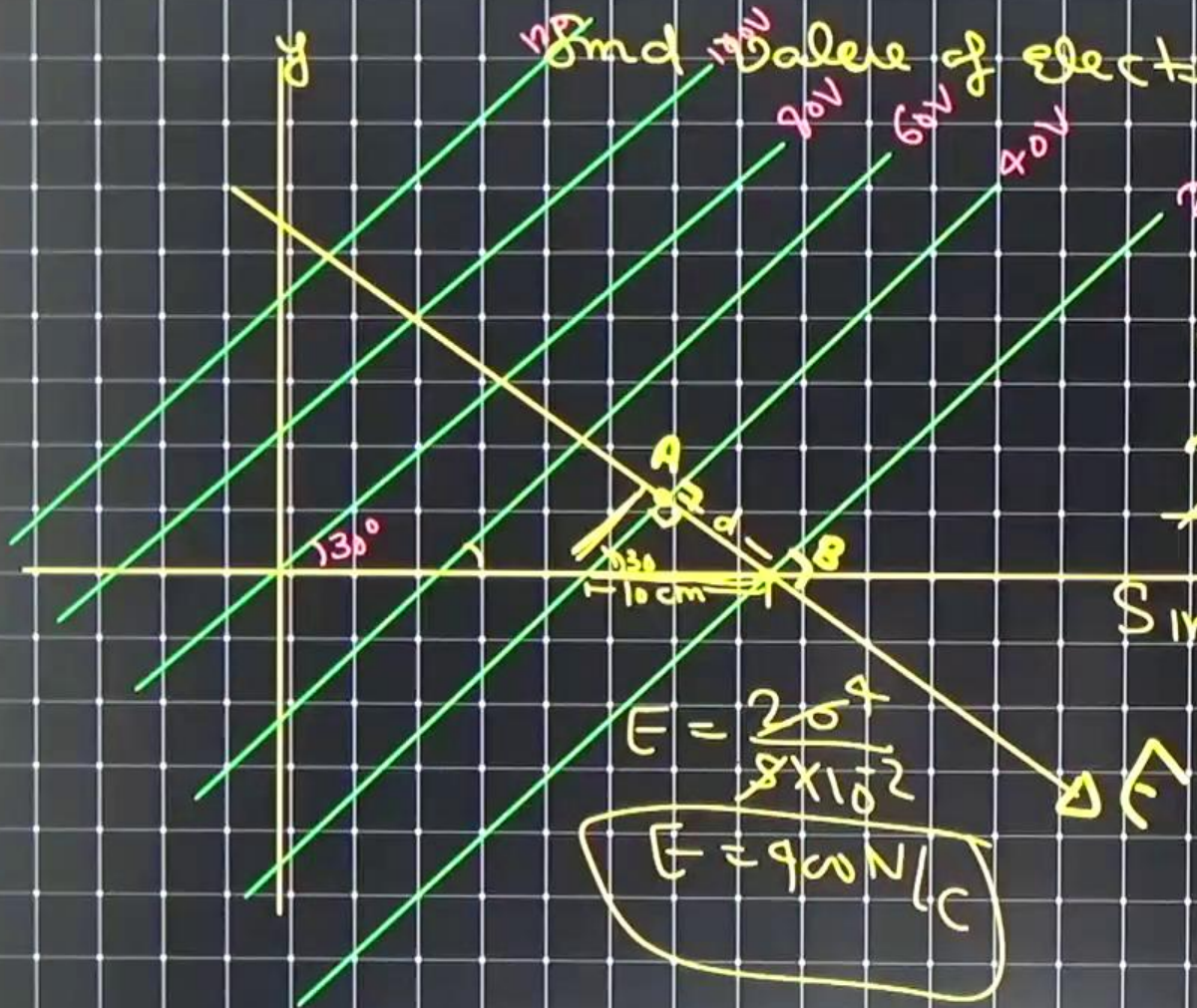
$V_A - V_B = 400$

$W_{elec} = q[V_i - V_f]$

$W_{el} = 2[400]$

$\boxed{W_{elec} = 800\,J}$

Find value of electric field & also find $\vec{E}$.



We move from A to B.

$V_B - V_A = -E \times d$

$20 - 90 = -E \times 5 \times 10^{-2}$

$-70 = -E \times 5 \times 10^{-2}$

$\sin 30° = \frac{d}{10}$

$d = 10 \sin 30° = 5\,cm$

$E = \frac{70}{5 \times 10^{-2}}$

$E = 1400\ N/C$

Isomerism

(3) Linkage isomerism :-

This isomerism occured when ambident ligand is present in complex.

ex :- $K_3[Cr(NO_2)Cl_5]$

& $K_3[Cr(ONO)Cl_5]$

→ linkge isomerism

Ques. Find no. of linkage isomers

$[Pt(en)(SCN)(NO_2)] \Rightarrow$ total 4

$[Pt(en)(SCN)(ONO)]$

$[Pt(en)(NCS)(NO_2)]$

$[Pt(en)(NCS)(ONO)]$

Ionisation isomer :-

Compound give different ions are called ionisation isomer

ionisation isomer

Ex :- $[Co(NH_3)_4 Br_2]Cl$ ⇌ $[Co(NH_3)_4 BrCl]Br$

$[Co(NH_3)_4 Br_2]^+ + Cl^-$

$+ AgNO_3$

$AgCl$ White PPt

$[Co(NH_3)_4 BrCl]^+ + Br^-$

$+ AgNO_3$

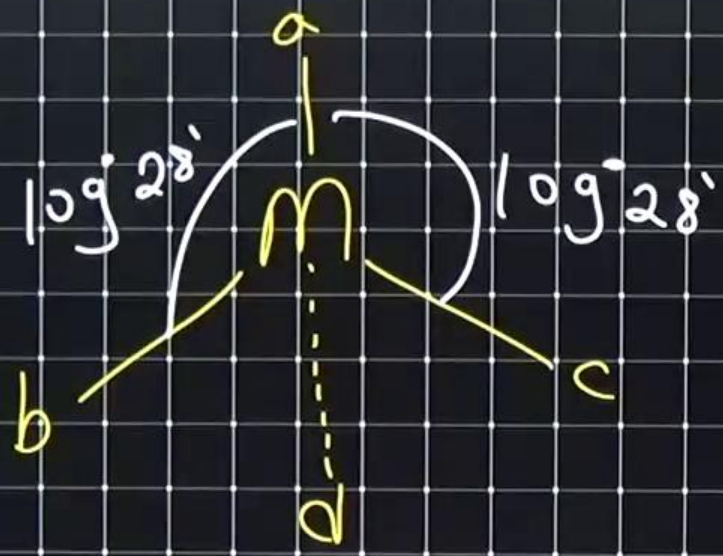
$AgBr$ Yellow PPt

Stereo isomer in Co-ordination compound :-

(1) Geometrical isomer :- (G.I.)

Case I (C.N. = 4)

(1) In Tetrahedral geometry :-


a
log 28°
log 28°
m
b
c
d

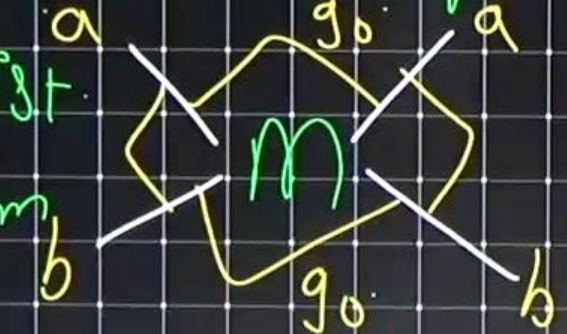
(1) C.N=4 in tetrahedral geometry

G.I. will not exist because all the angles are same.

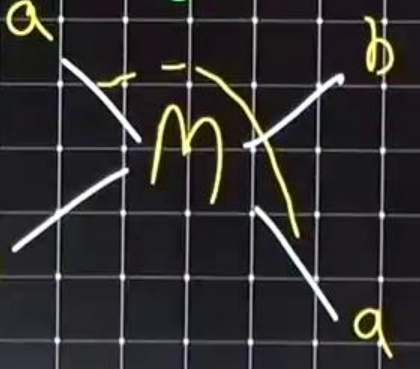
(2) C.N.=4 in Square planner geometry.

G.I. will exist.

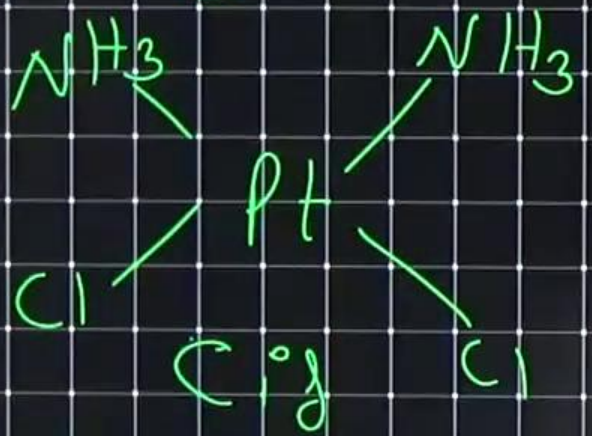
C is form



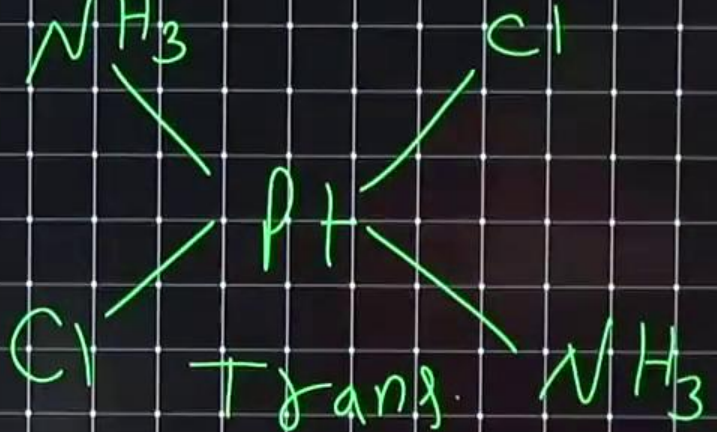
Trans form



ex (i) $[Pt(NH_3)_2Cl_2]$ ⇒ Square planner.



(2 G.I.)



(i) Ma_4

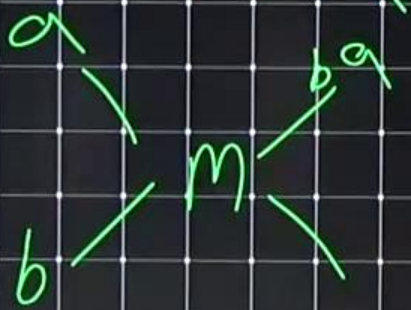
$\Rightarrow$ No G.I.

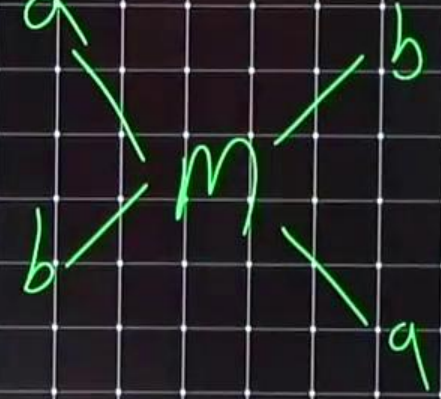
(ii) Ma_3b

No G.I.

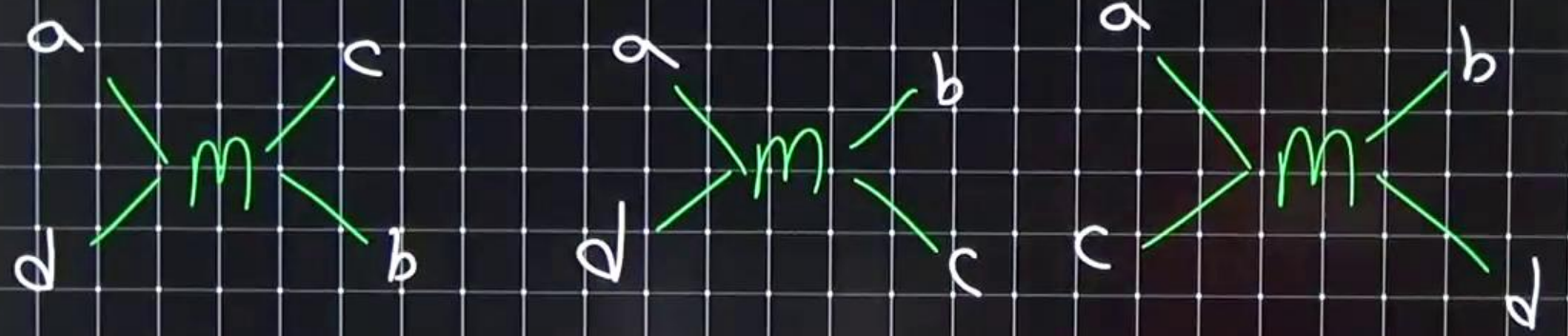
(iii) Ma_2b_2

2 G.I.





(v) $M(abcd)$ (3 G.I.)



Here a, b, c & d are mono dentate ligand.

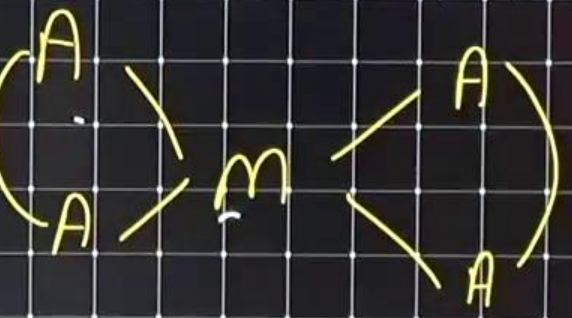
Using bi-dentate ligand :-

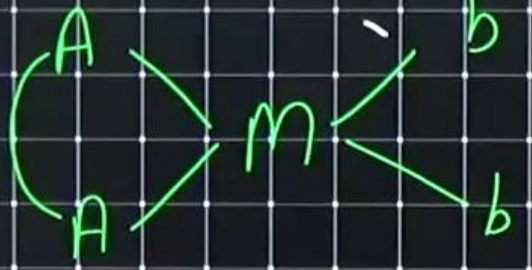
AA → Symmeritical bi-dentate ligand

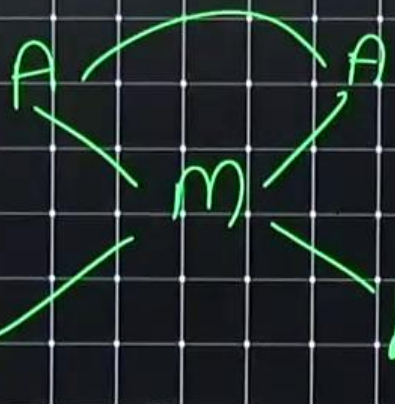
AB ⇒ Unsymmeritical bi-dentate ligand

Ex :- $[M(AA)_2]$

$[M(AA)b_2]$







If symmetrical ligand attached in Sq. planner, then G.I. will not exist.