

Stereochemistry of Coordination
Compounds

Co-ordination Compound of
certain Geometry can
exhibit Geometrical isomerism
and optical isomerism

- Geometrical isomerism is exhibited
by complex of coordination number
4 & 6 of certain type which
has different spatial distance

of group/substituents

- C.N. = 4 - Sq. planar complex can't show optical
isomerism due to presence of P.O.S.

- C.N. = 4 Square planar complex

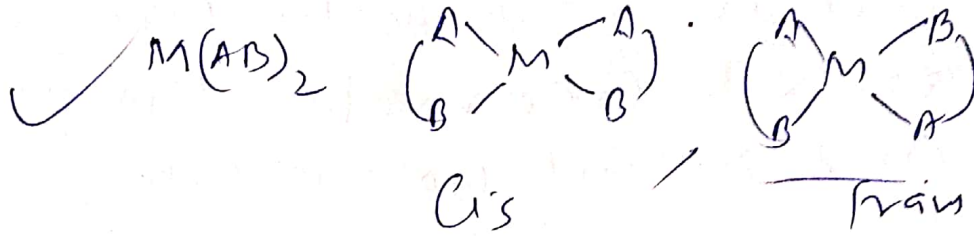
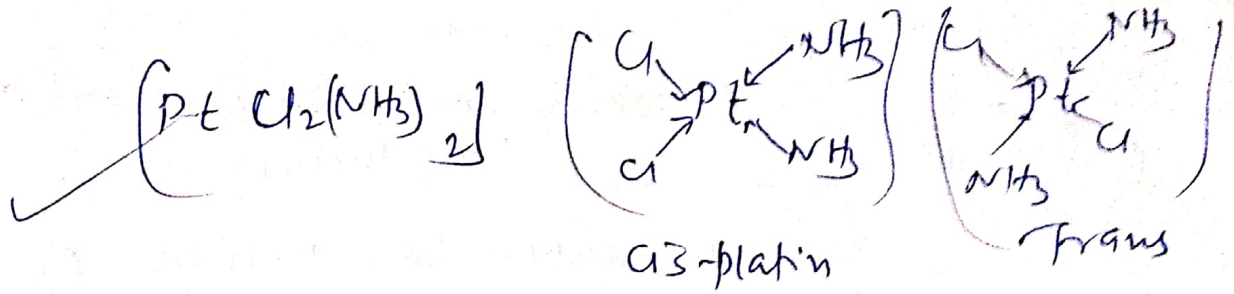
can show geometrical isomerism

if it has type MA_2B_2 , MA_2BC

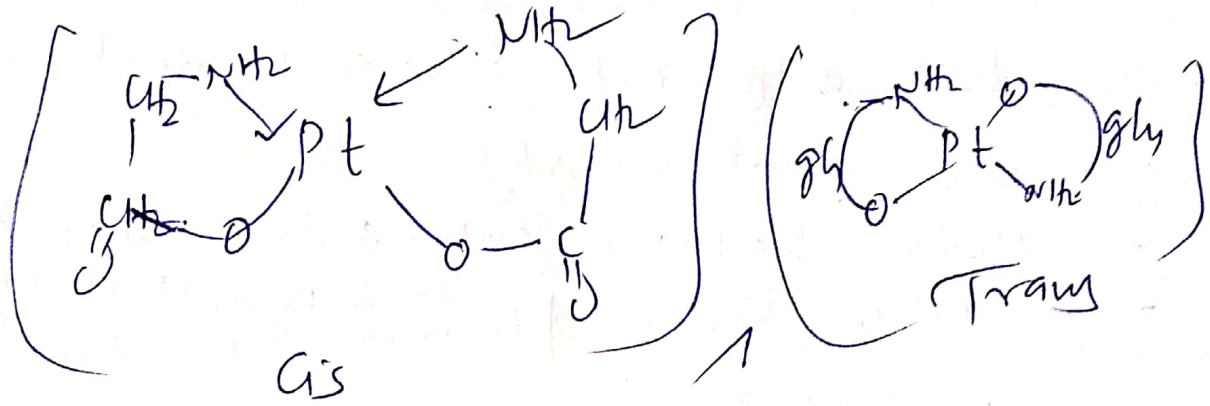
MA_2BC , $M(AB)_2$, $M(AB)ab$ where a, b, c, d
are monodentate ligand

AB = bidentate 'unsymmetrical'
ligand

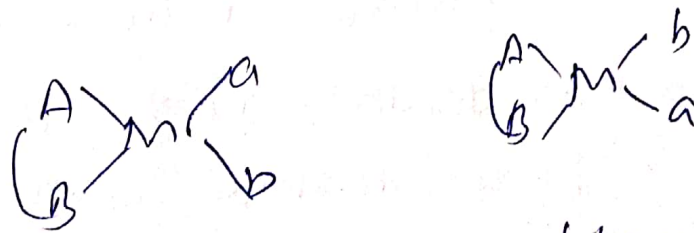
- Square planar MA_4 , MA_2B_2 , $M(AB)_2$,
 $M(AB)ab$ etc type can not
show geometrical isomerism



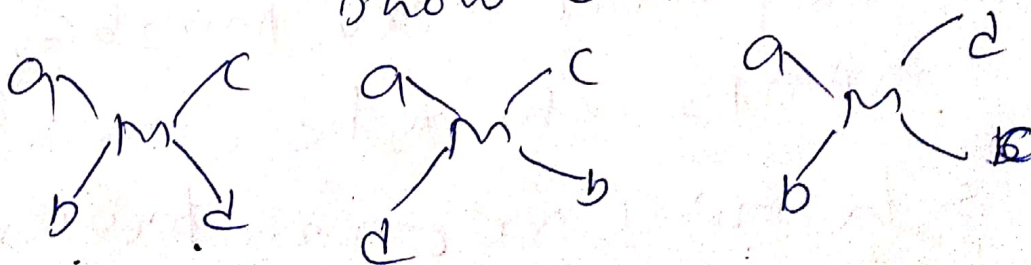
✓ $[Pt(gly)_2]$ can show cis-trans isomerism



✓ $M(AB)ab$ can also show G.I.



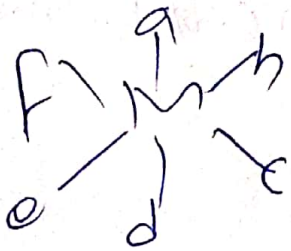
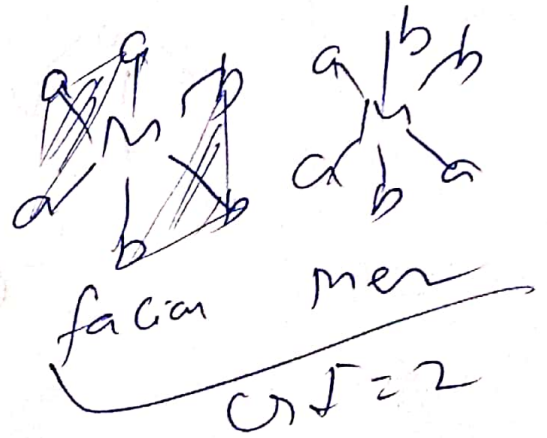
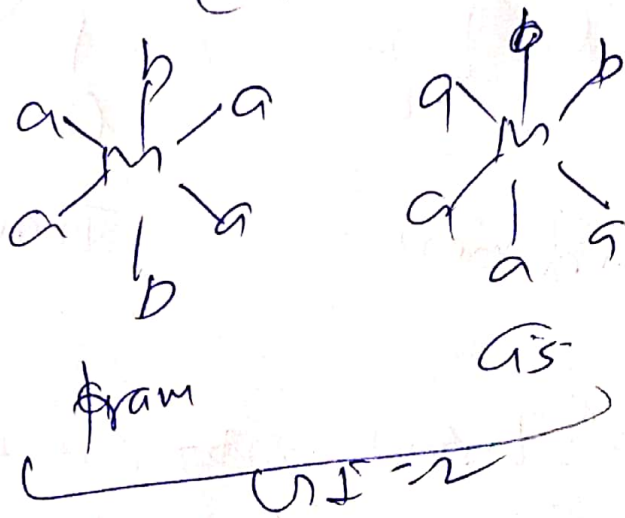
✓ $Mabcd$ square planar complex show 3 G.I.



(1)

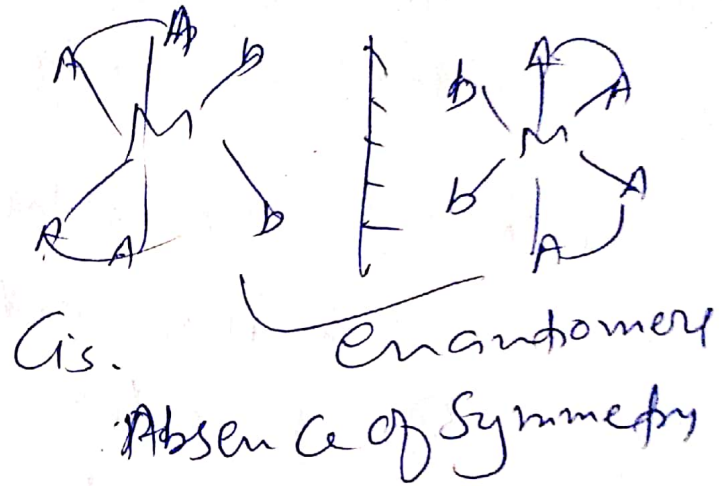
- C.N = 6 Octahedral complex of certain type Ma_2b_2 , Ma_2bc , Ma_3b_3 , Ma_3b_2c , Ma_3bcd & $M(AA)_2b_2$ etc can show σI

- C.N = 6 Octahedral complex having absence of plane of symmetry, Alternate Axis of symmetry, Centre of symmetry can show optical isomerism. $M(AA)_3$, $M(AB)_3$, $Trans-M(AA)_2b_2$, Ma_2bcdef can show optical isomerism.

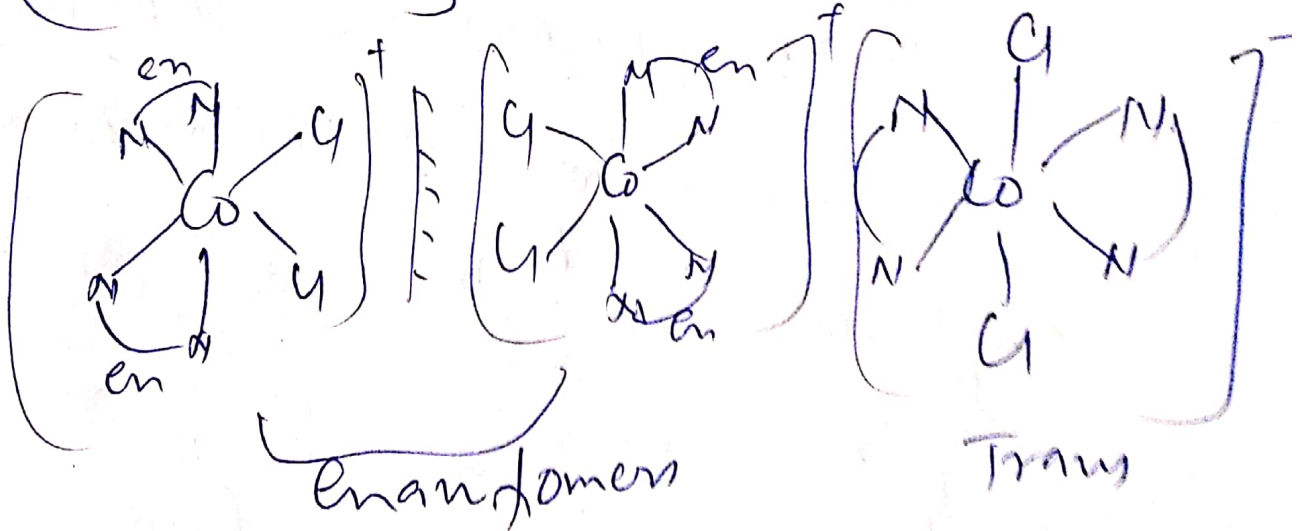


Show total $CI = 15$
Optical isomers = 30.

✓ $M(AA)_2b_2$ Type (can show G.I. as well as optical)



✓ $[Co(en)_2Cl_2]^+$



- $M(AA)_3$ Can show optical but no geometrical isomerism

