

Metalloprotein : Protein + Metal ion

Metalloenzyme : Protein + Metal ion
complexed + Function

NPTTEL

T.M. ion:

↓
atom

d orbitals

$d_{xy}, d_{yz}, d_{zx}, d_{x^2-y^2}, d_{z^2}$

d orbitals are degenerate

T.M ion in
Free atom

the field of ligands

— — — — —
 d^5

Ligands

↑ increase in energy
Energy gap
↓ decrease in energy

d-orbital splitting or energy gap
is dependent on

- (a) Type & nature of the ligand
- (b) Nature of the metal ion (oxidation state & nd level etc)
- (c) the type of geometry

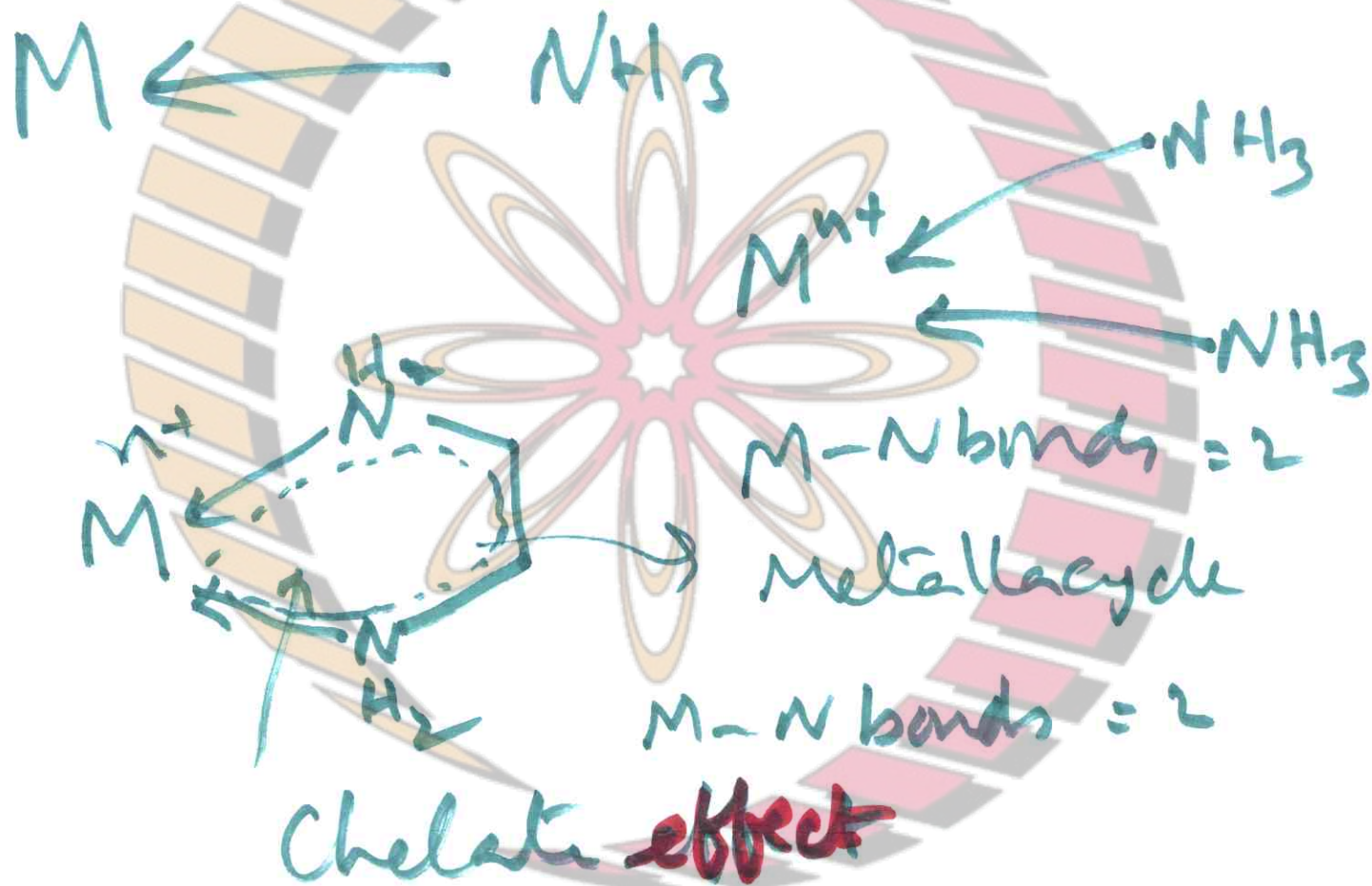
NPTTEL

d^5
free ion
Low spin
high spin

Oh field of
ligands

octahedral
 Δ_o field splitting

NPTTEL



NPTTEL

Δ_o order

halides $<$ Oxo ligands $<$

N-ligands $<$ Carbon ligands

π -acid or ~~but~~ π -base character

$\sigma \rightarrow$ bond is already present

NPTTEL