

Ligand \rightarrow l.p donating species

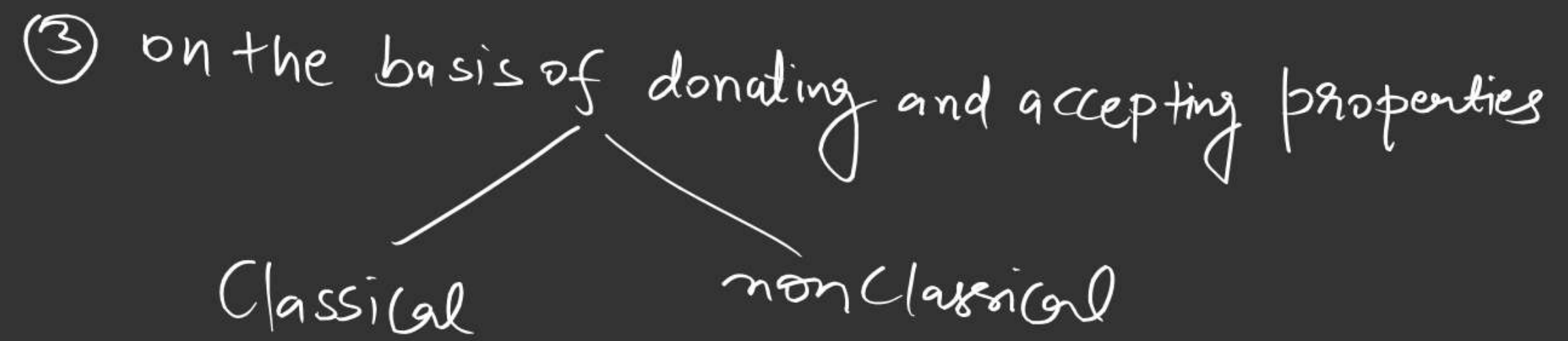
Classification of ligand

① on the basis of charge

- ive
- +ive
- neutral

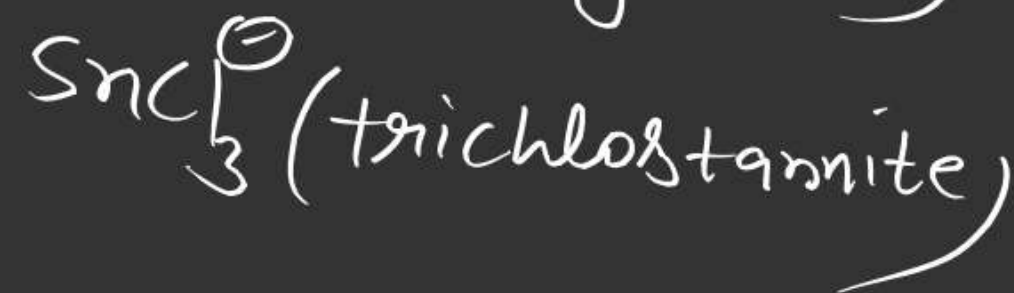
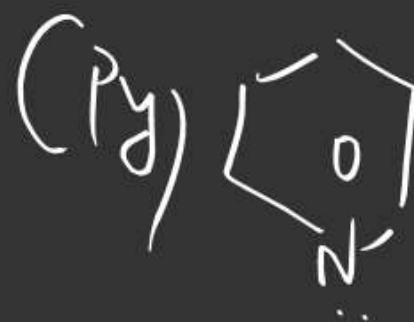
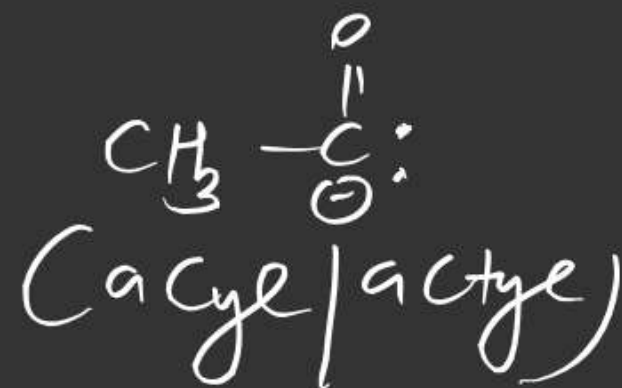
② on the basis of donor atom

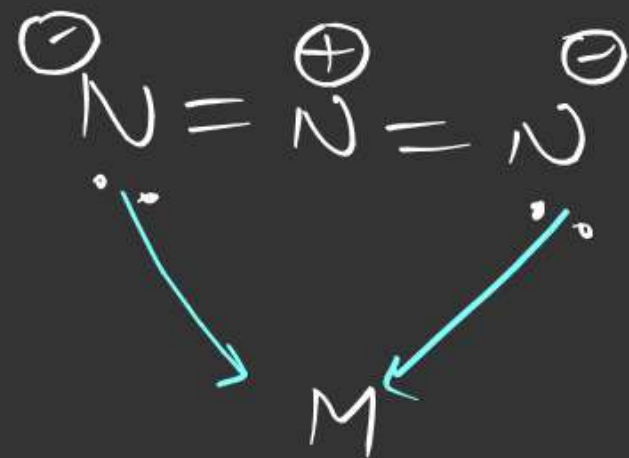
- Monodentate
- Bidentate
- Polydentate
- Ambidentate



① Monodentate

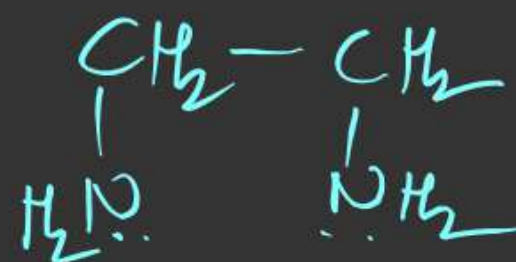
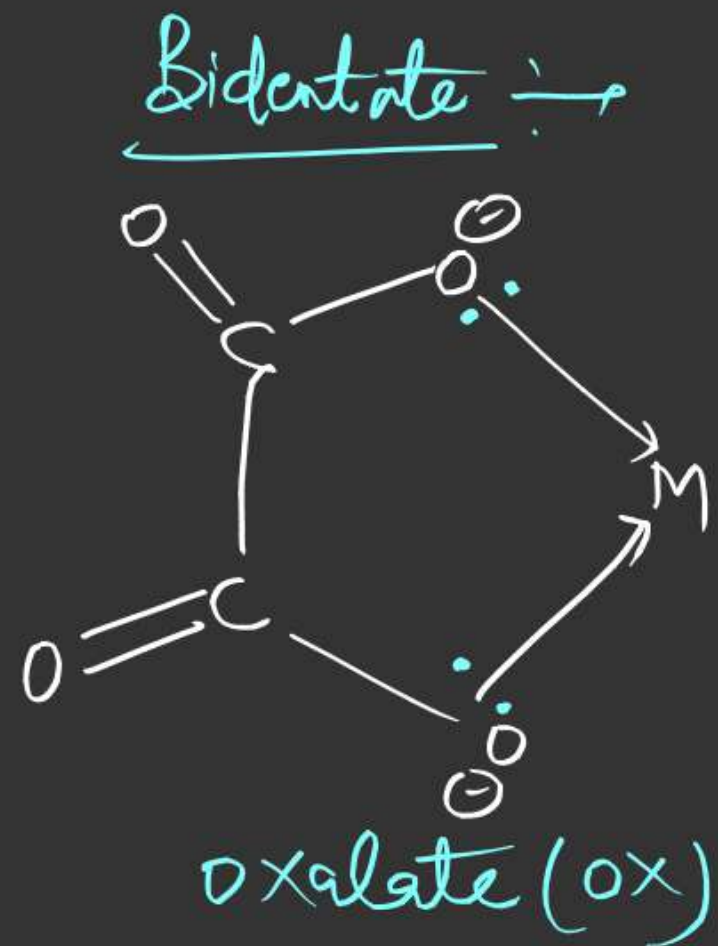
	H^{\ominus}
	OH^-
(Halide)	X^-
(amide)	NH_2^-
(Imide)	NH^-
(Peroxide)	O_2^{2-}
(Superoxide)	O_2^-
(Mercapto)	SH^{\ominus}



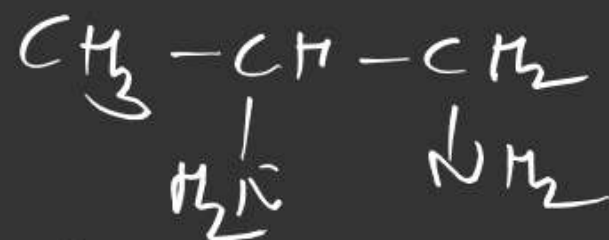


Note \rightarrow 3 memb. Ring
and four memb. Ring
Unstable

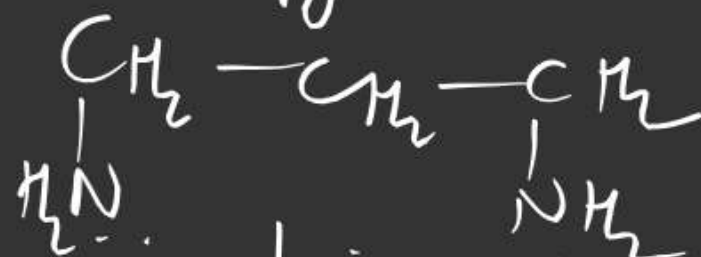




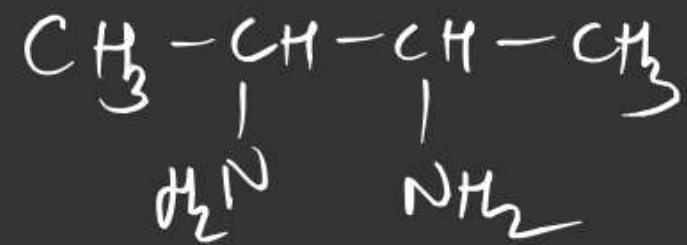
ethylene diamine (en)



propylene diamine (pn)



trimethyl diamine (tn)

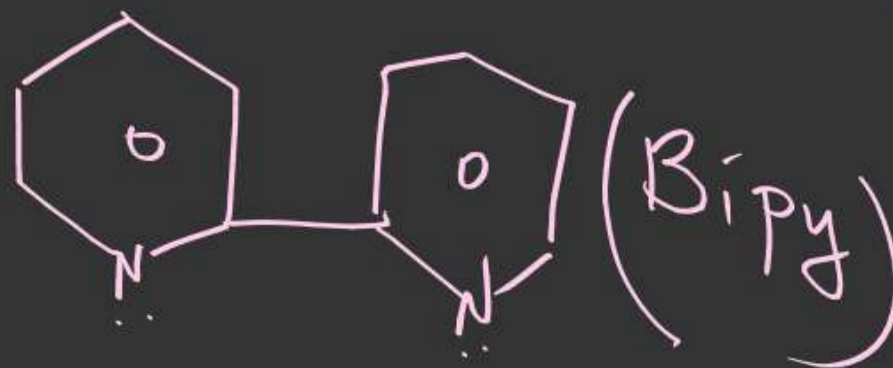


Butylene diamine (Bn)

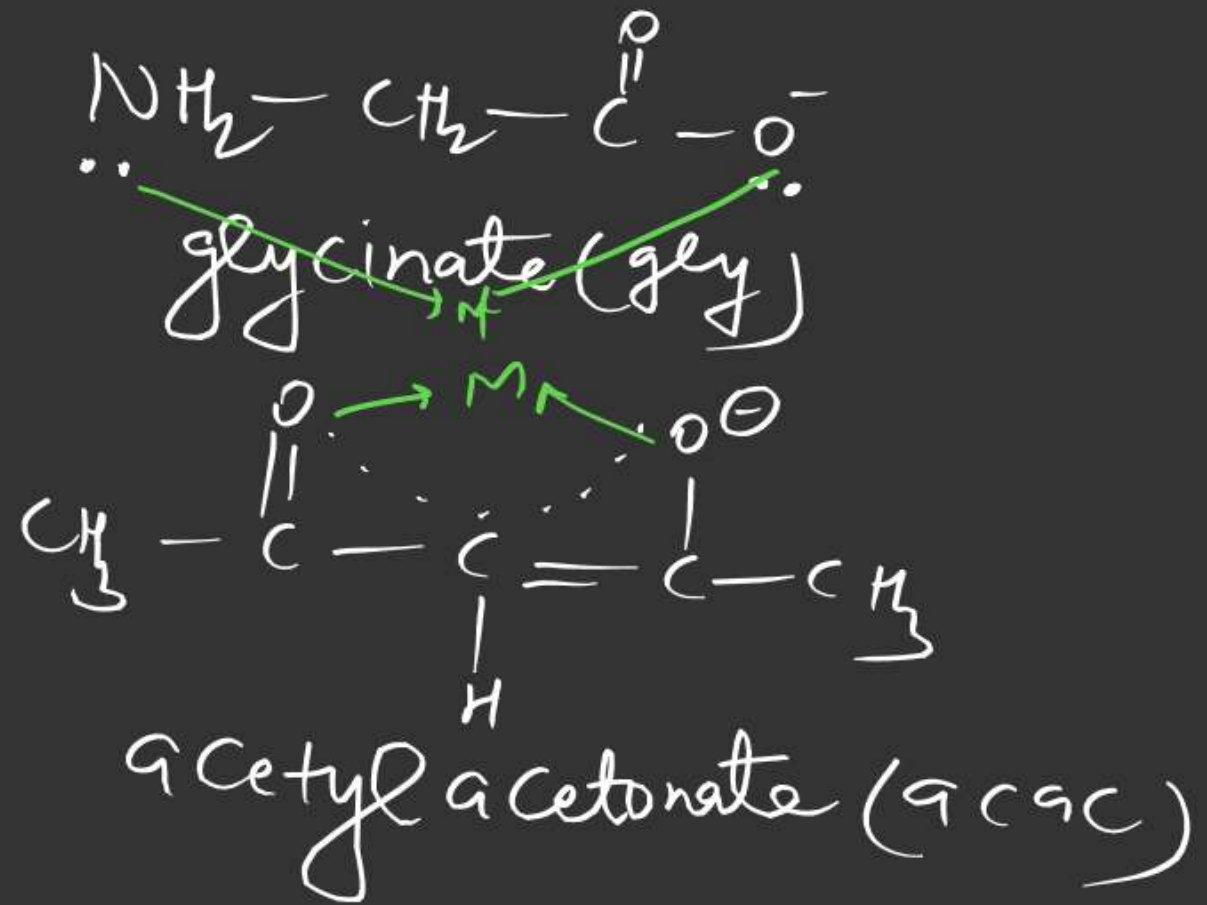


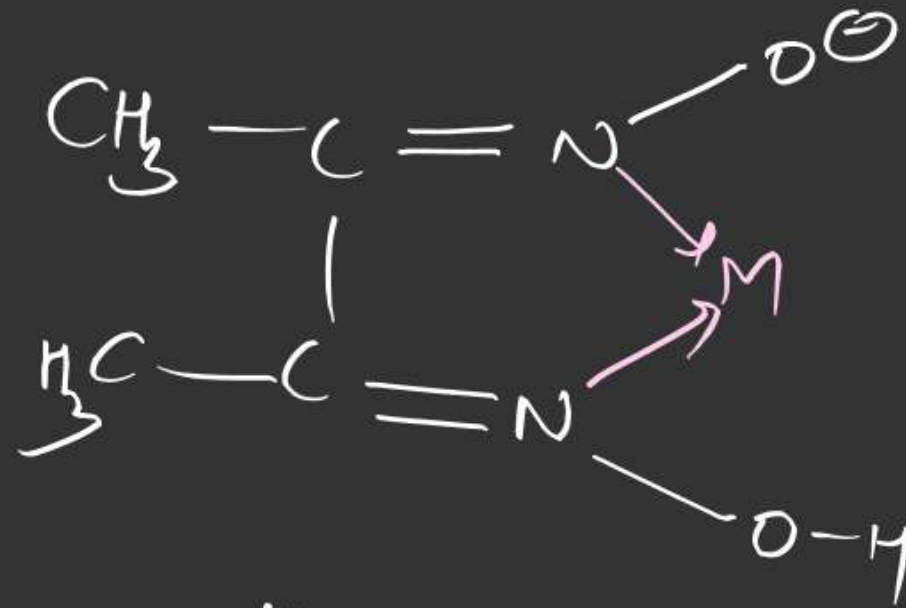
1,10 phenanthroline

ortho phenanthroline (phen)



(-)

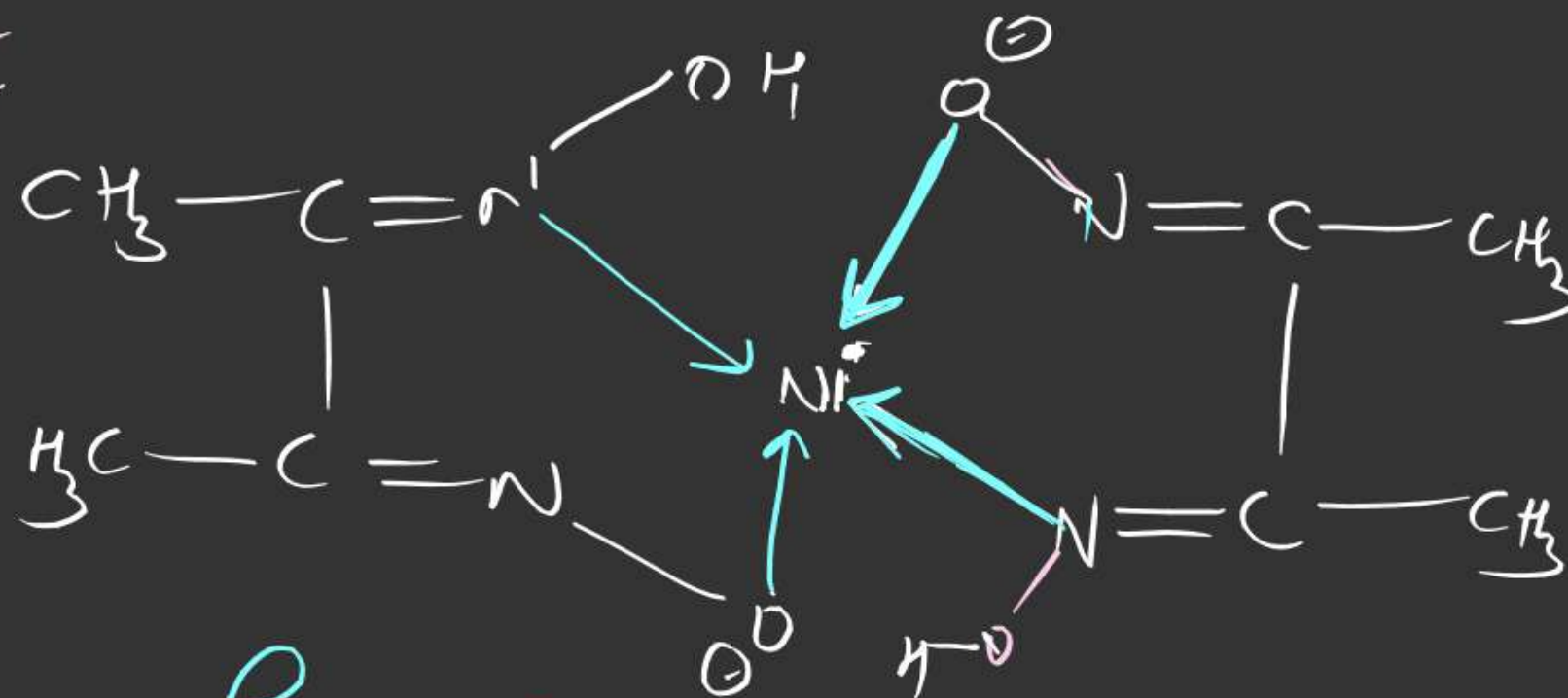




dimethyl glyoximate (DMG)

Ques Draw the structure of
 $[\text{Ni}(\text{dmg})_2]$

total rings = four
 (H-Bonding)
 two = Six memb. Ring
 two = five memb. Ring
 (Co-ordinate bond)

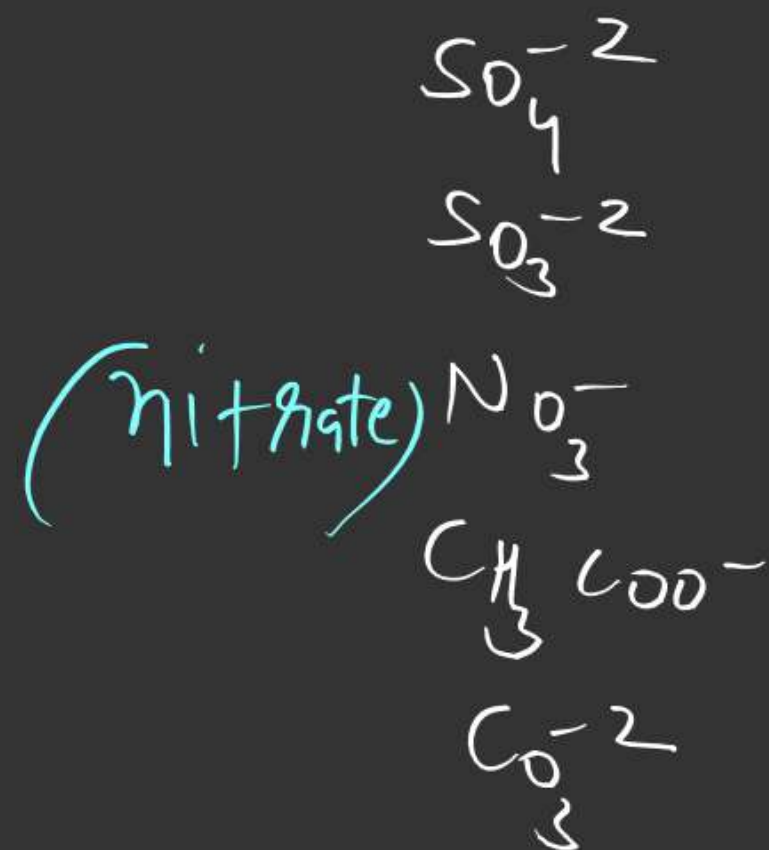
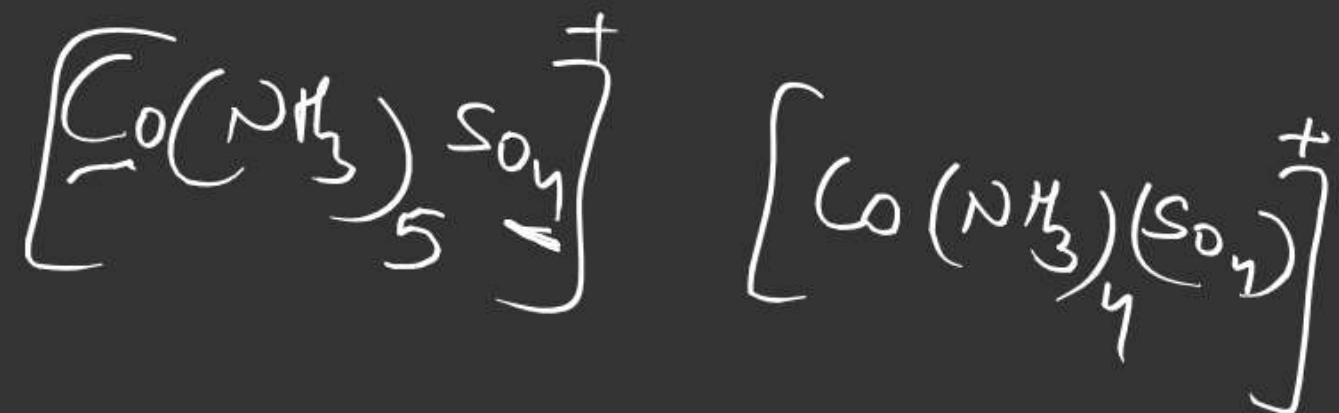


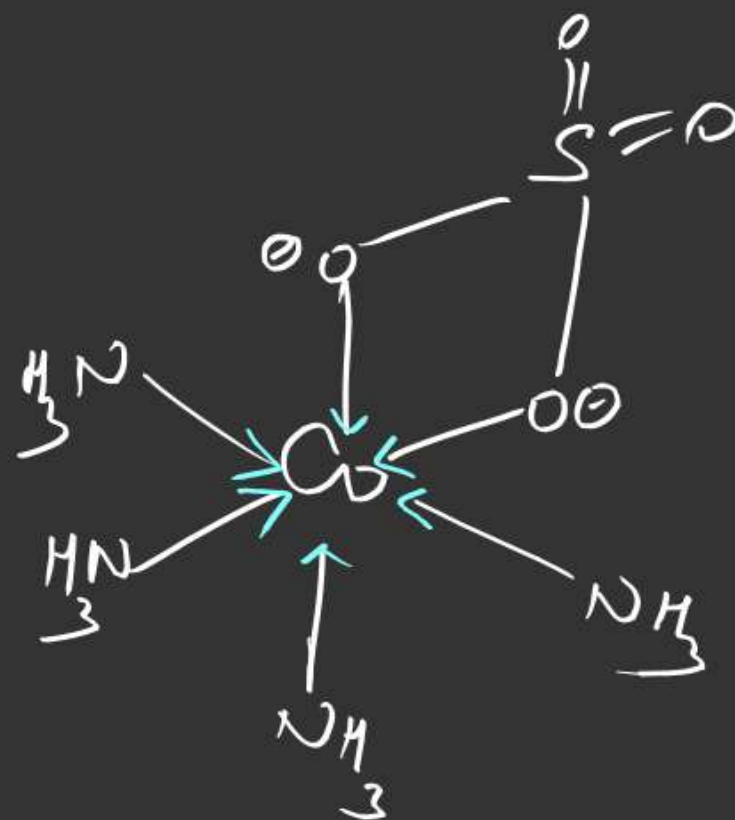
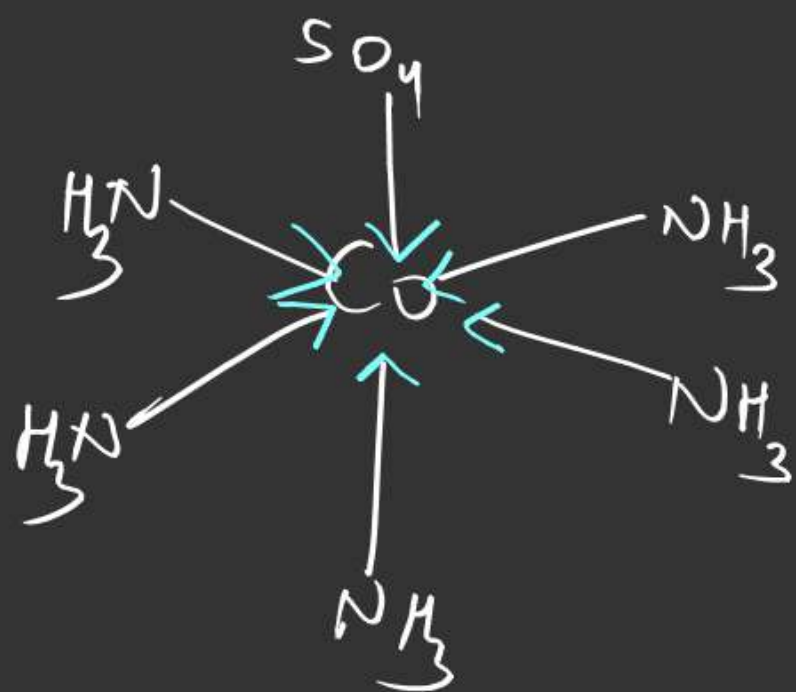
Rosy Red ppt.

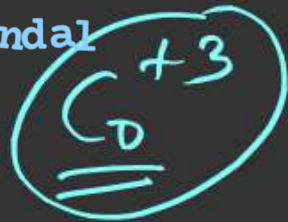
flexidentate \rightarrow ligand which can act as monodentate as well as

$$\text{Co}^{+3} \quad \text{C.N} = 6$$

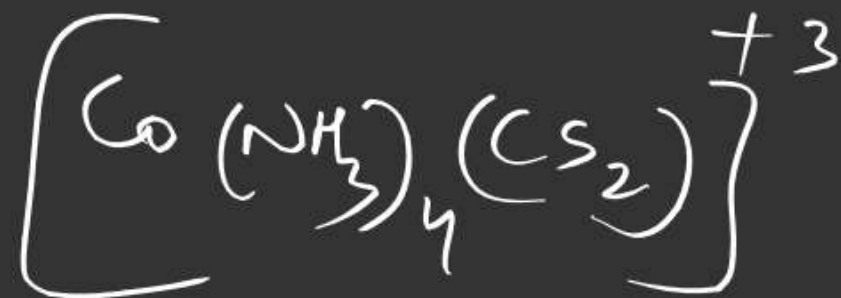
Bidentate



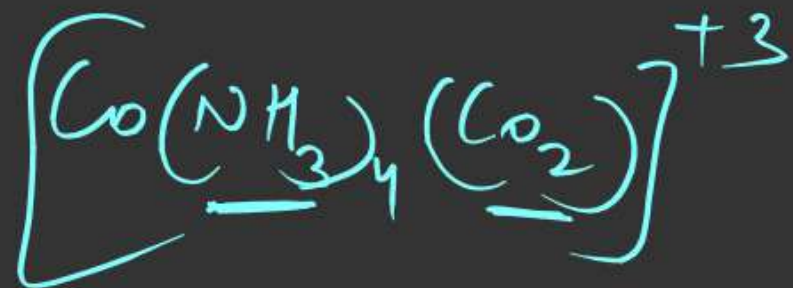




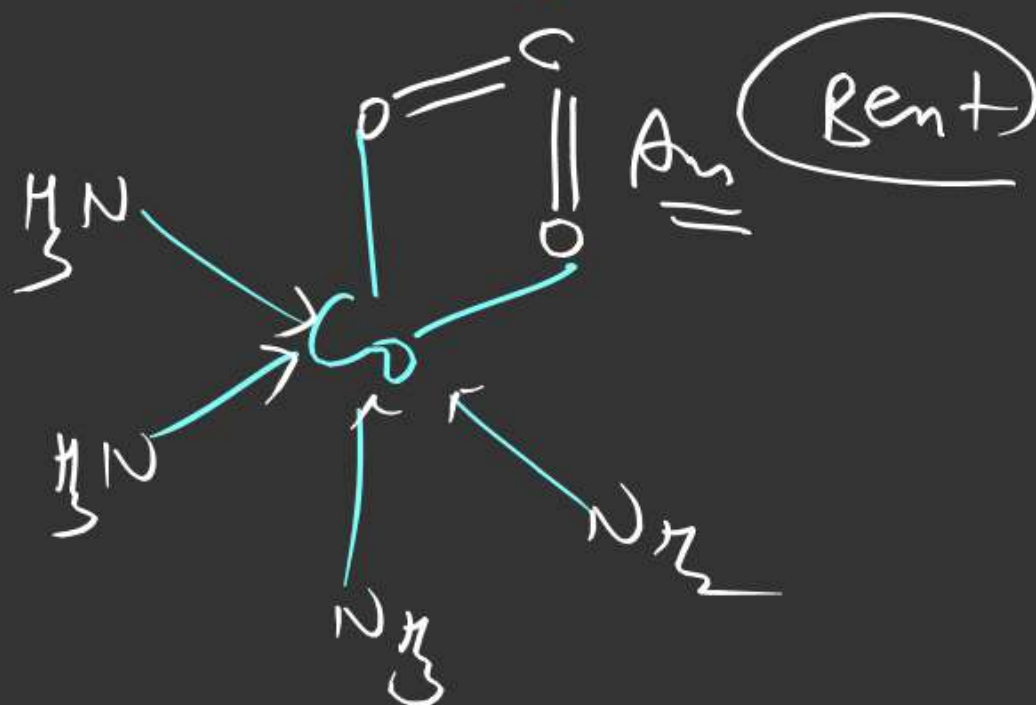
one



Bent



Structure of CO_2 in this compound.



Ambidentate ligand →

more than two donor

When ligand have two or more sites but at the time of donation only one can donate.

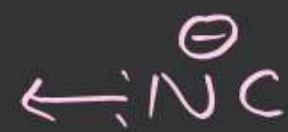


Cyanide



Cyanate

Cyanato - O

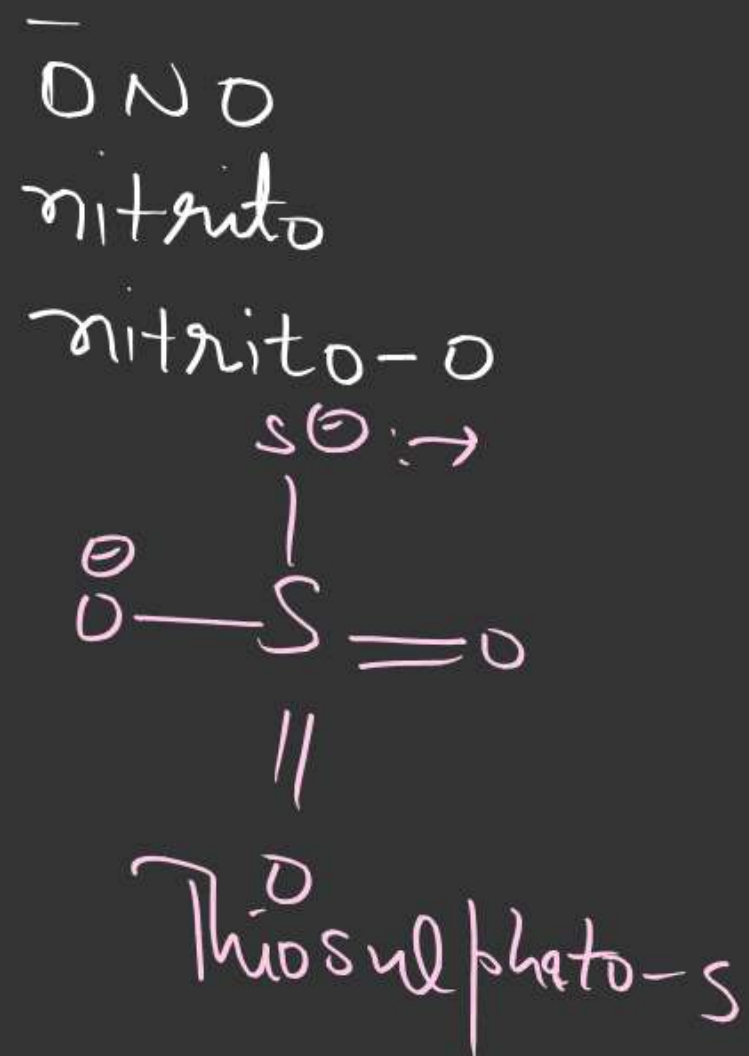
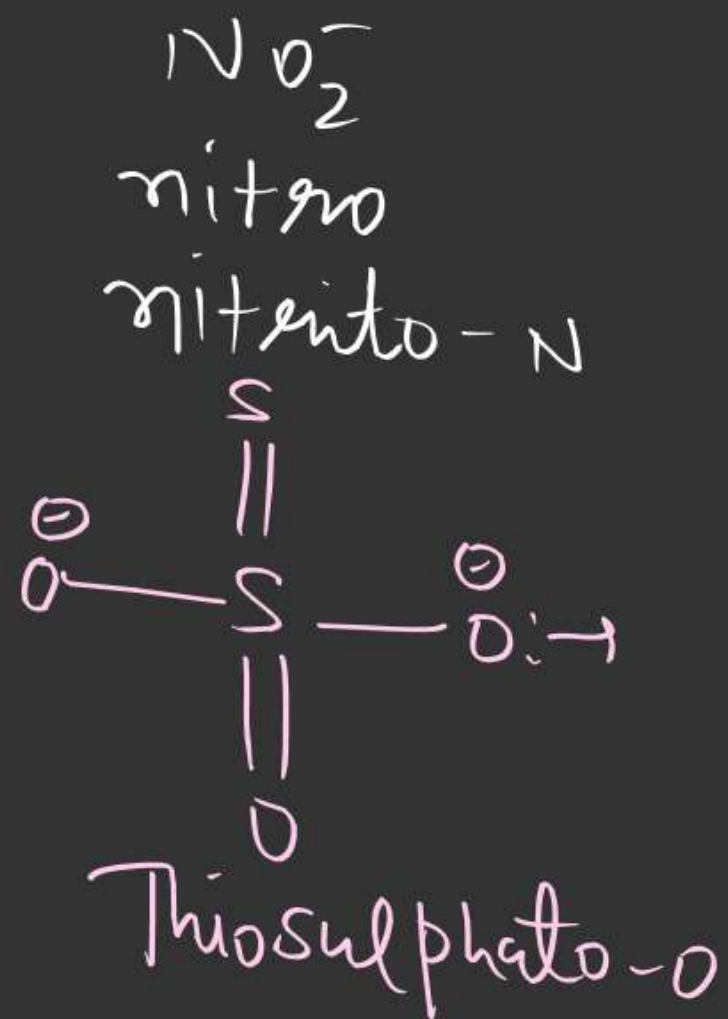
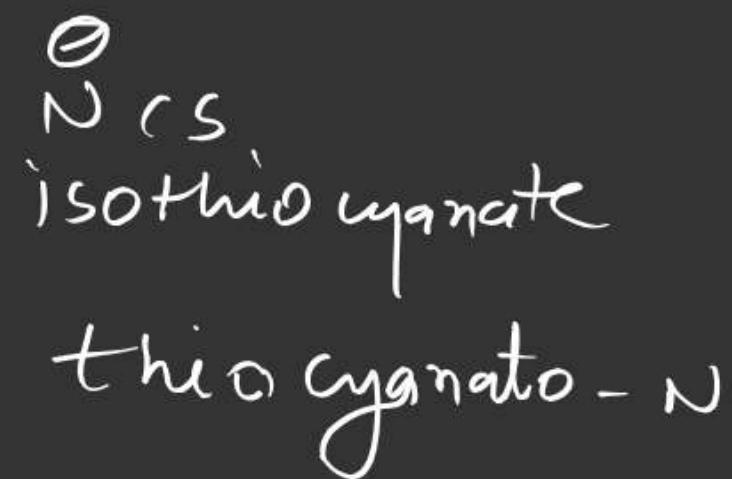
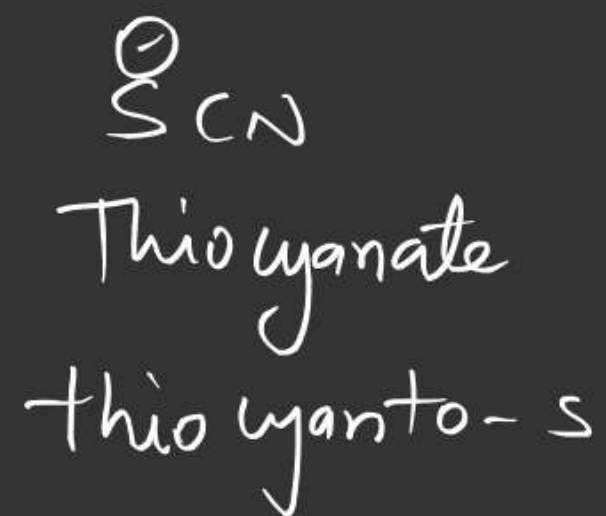


isocyanide



isocyanate

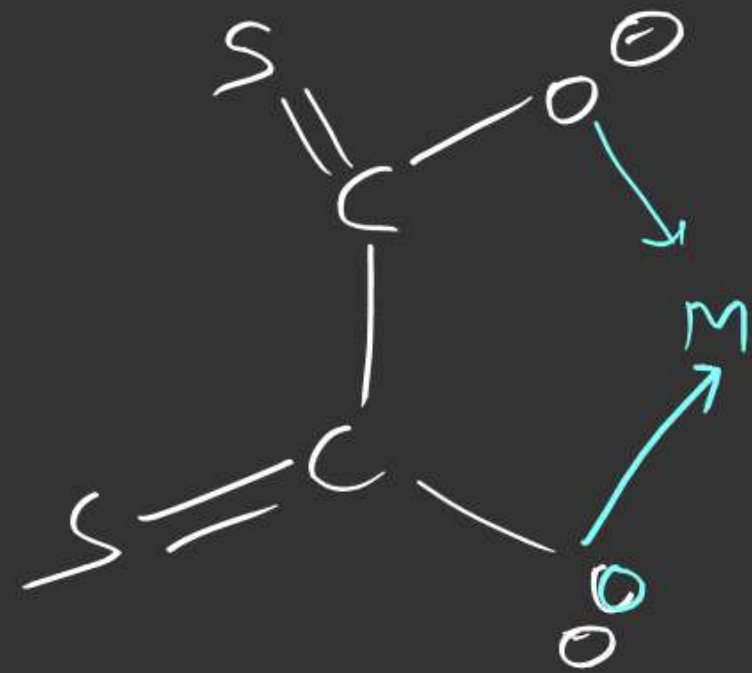
Cyanato - N



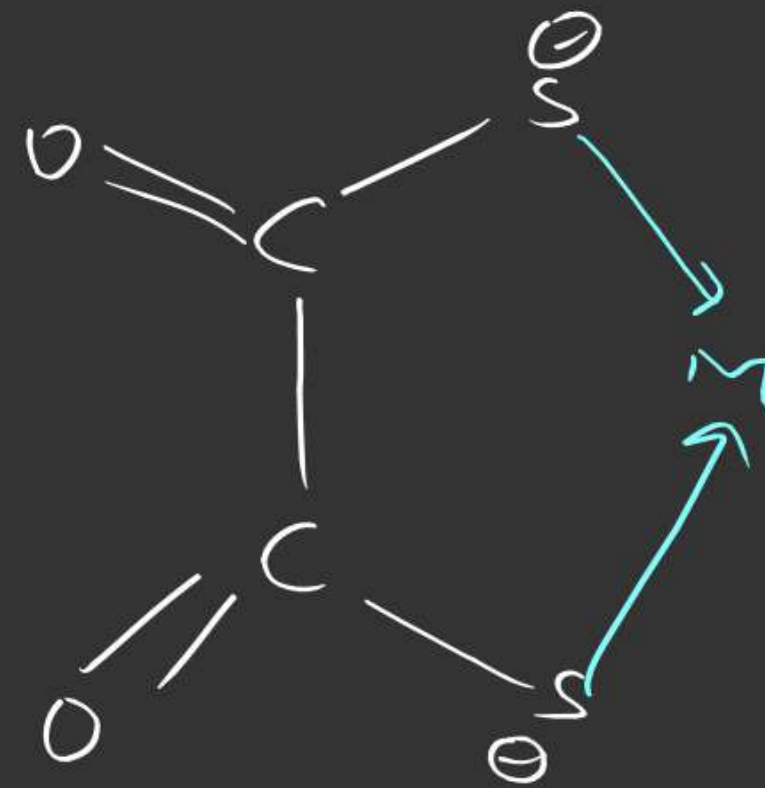
Macrocyclic effect

number of stable rings \uparrow stability of complex \uparrow

$(C_2O_2S_2)^{2-}$ → Bidentate Ambidentate ligand.



Dithiooxalato-O



Dithiooxalato-S

