

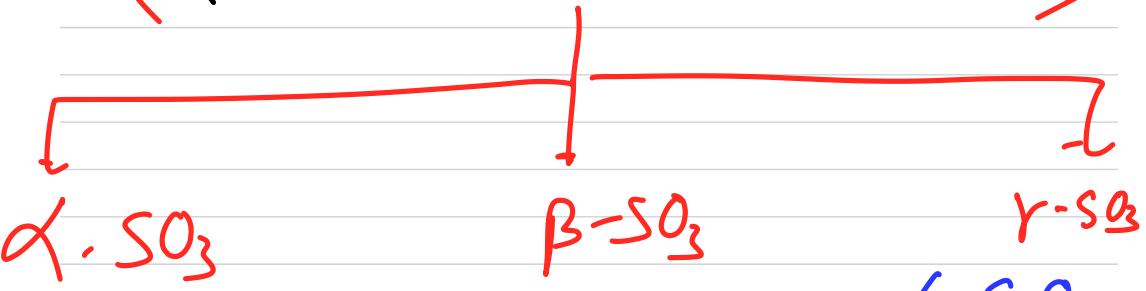
gray Amorph

white  
metallic

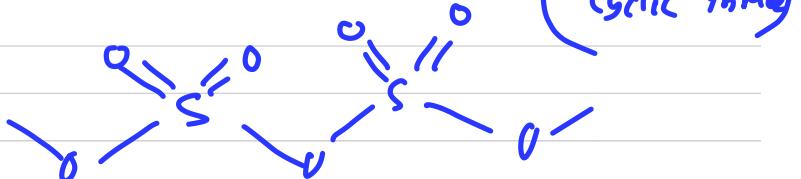
                        

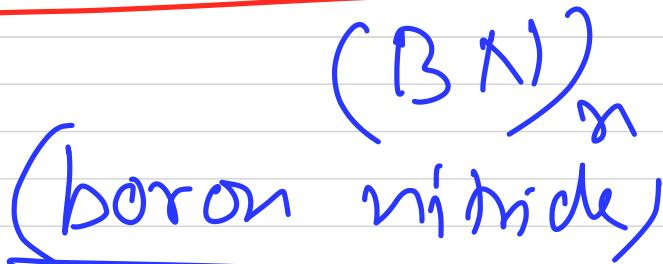
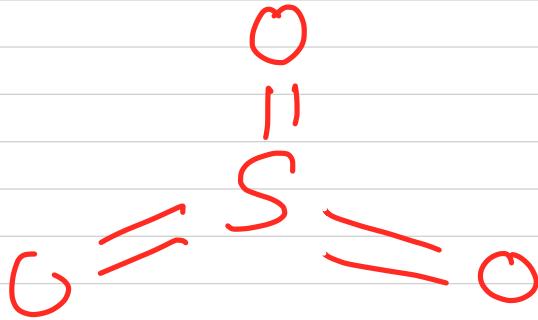


(at room temp. it is solid)



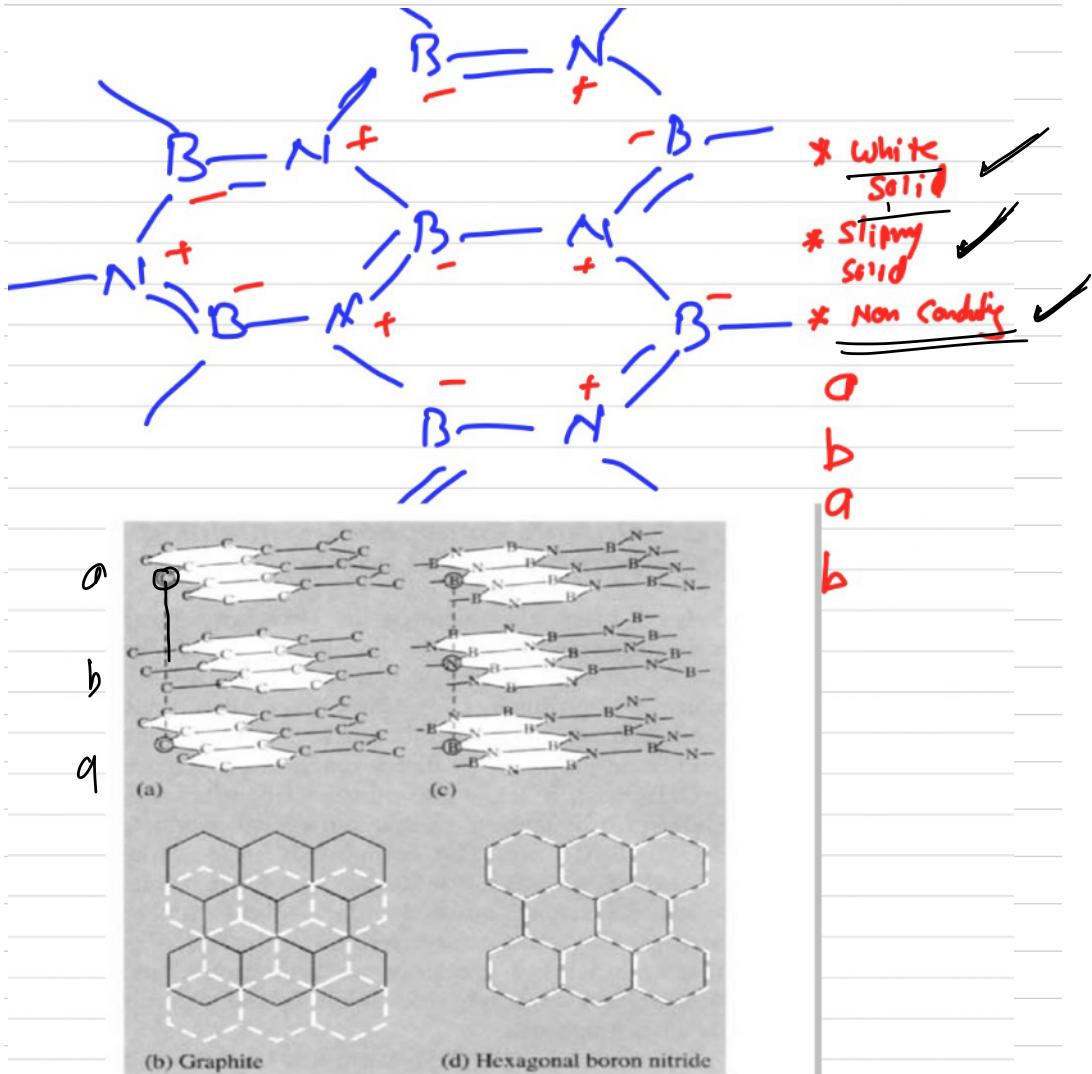
Branches  
polymeric





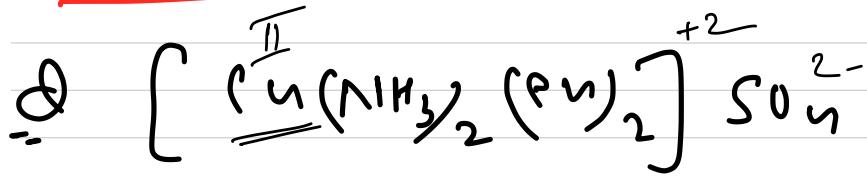
Inorganic  
graphite

Similar  
to diamond  
(Borazon)



**Figure 6.27** Comparison of the hexagonal layer structures of BN and graphite. In BN the atoms of one layer are located directly above the atoms of adjacent layers with  $B \cdots N$  contacts; in graphite the C atoms in one layer are located above interstices in the adjacent layer and are directly above atoms in alternate layers only.

## Co-ordination Number:-



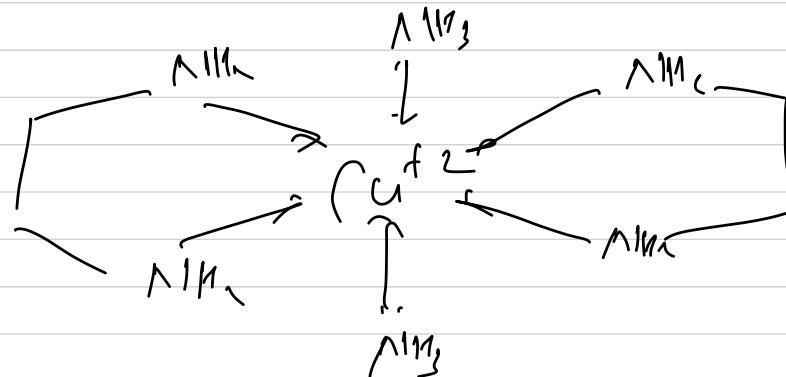
have O.N. & C.N.  
rgnly -

(A) +2, 4

(B) +2 2

(C) +4, 6

~~(D)~~ +2, 6



$$C_0^{+3} = 6$$

$$Ag^+ = 2$$

$$Au^+ = 2$$

$$Mn^{+2} = 4, 6$$

$$Au^{+3} = 6 - 4$$

$$Cu^{+2} = 4, 6$$

$$* Pt^{+2} = 4$$

$$Cr^+ = 4$$

$$* Pd^{+2} = 4$$

$$Mg^{+2} = 4, (3)$$

$$* Pt^{+4} = 6$$

$$Sc^{+3} = 6$$

$$* Pd^{+4} = 6$$

$$Ti^{+3} = 4, 6$$

$$Ni^{+2} = 4, 6$$

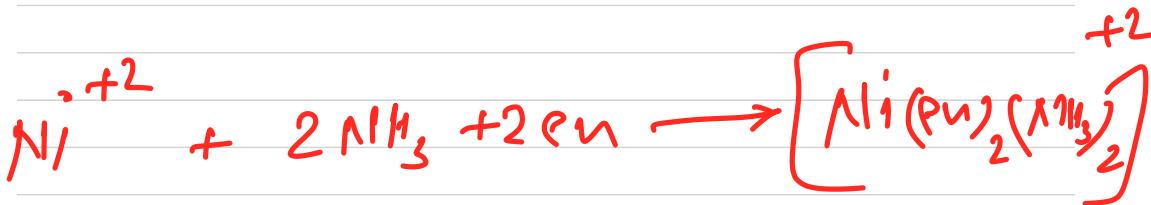
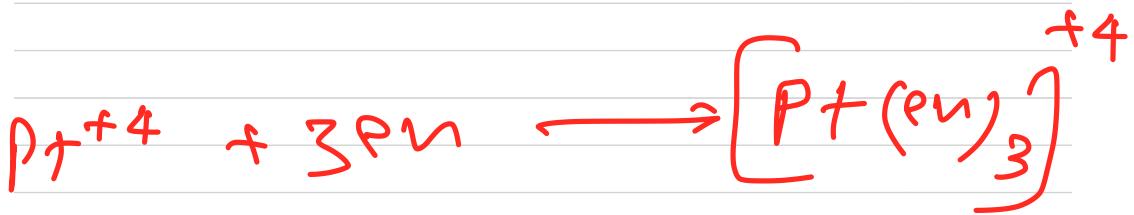
$$Cr^{+3} = 6 (4)$$

$$Zn^{+2} = 4, (6)$$

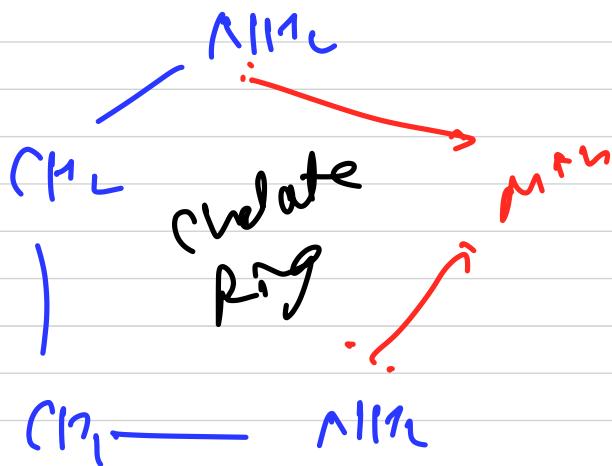
$$Fe^{+2} = 4, 6 (5)$$

$$Fe^{+3} = 6$$

$$Co^{+2} = 4, 6$$



## Chelating ligands:-



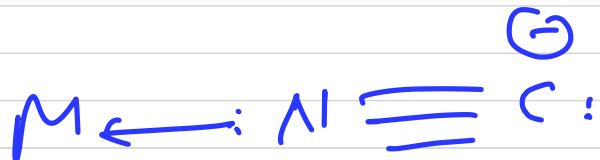
(e.g.: chelating ligand)

All multidentate ligands are  
Chelating ligands-

# Ambidentate Iodide: -

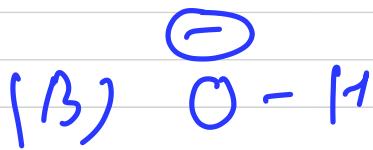


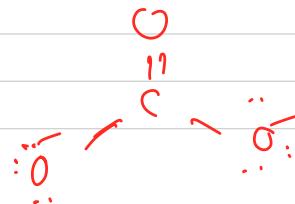
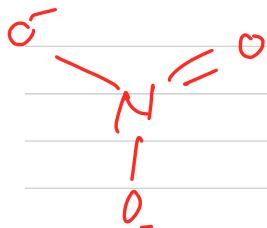
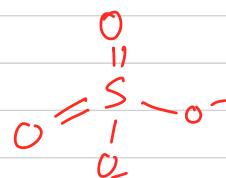
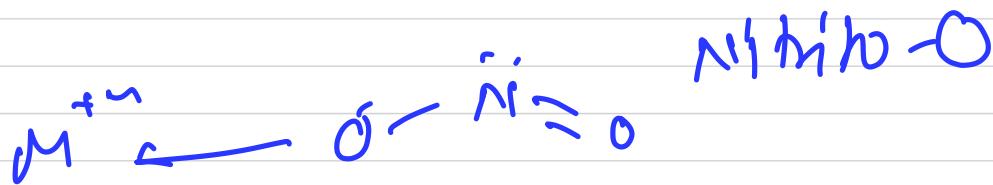
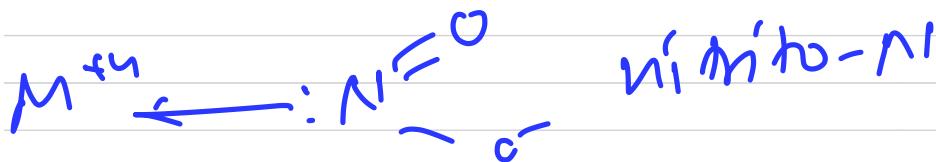
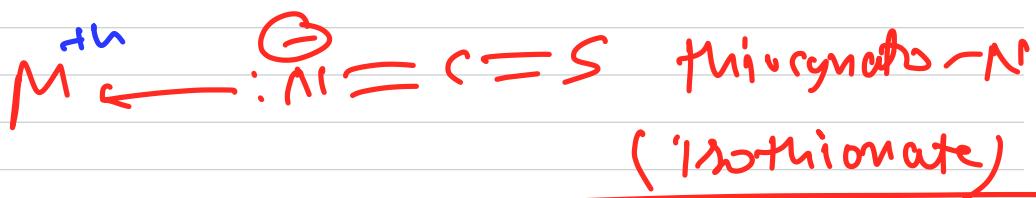
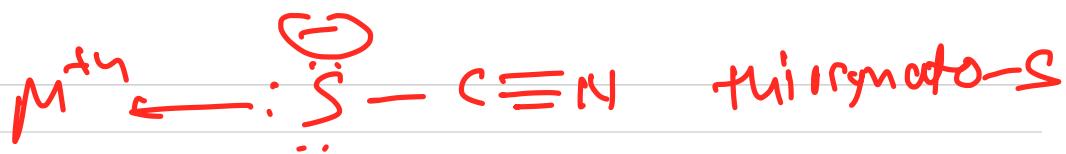
Cyanoido



isocyanoido

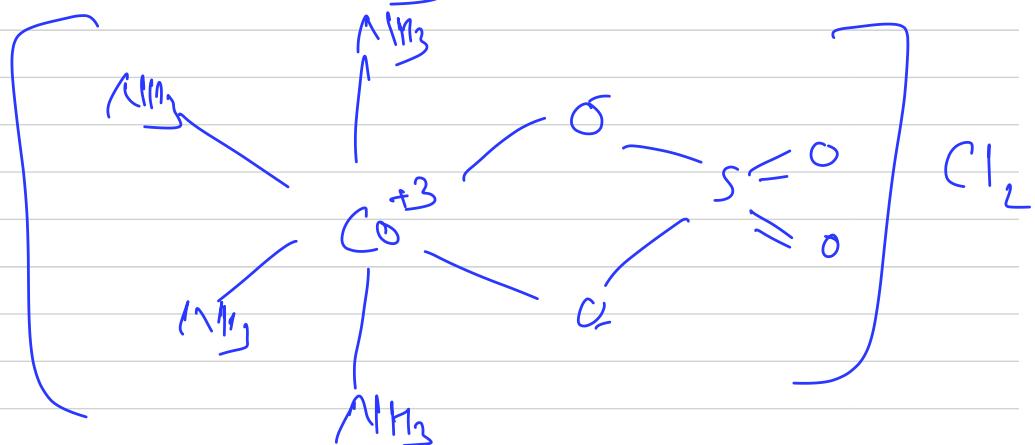
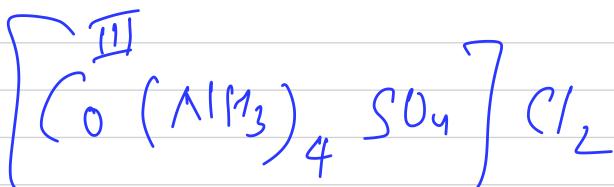
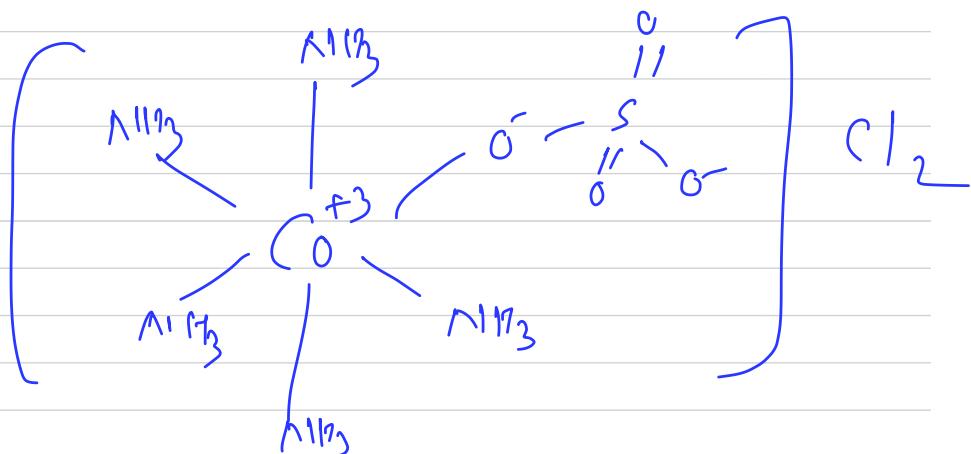
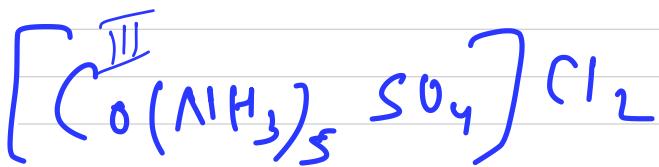
$\stackrel{Q}{=}$  which is / can ambidentate  
Iodide-

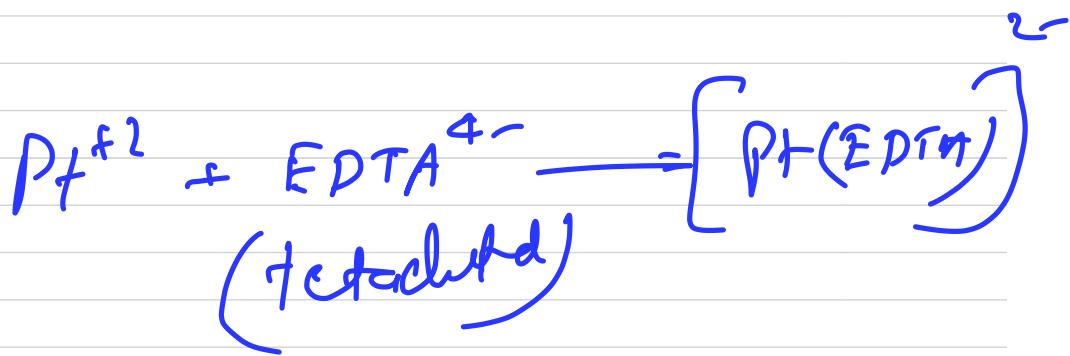






## flexidentate ligand :-





ONE OR MORE THEN ONE CORRECT TYPE

1.  $(\text{NH}_4)_2[\text{Ce}(\text{NO}_3)_6]$  have common name ceric ammonium nitrate, required in some organic reactions.

What is O.N. , C.N. of metal

(A) +4 , 6

(B) +4 , 12

(C) +3 , 6

(D) +3 , 10

2. What is correct about ceric ammonium nitrate :

(A) It is chelating complex

(C) Ligands bonded by O and N atoms

3. Which ligand have 3° amine group.

(A) dien

(B) en

(C) trien

(D) tren (triaminotriethylamine)

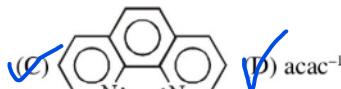
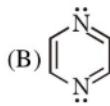
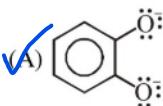
4. Dithioxalate ion is  $\begin{array}{c} \text{COS}^- \\ | \\ \text{COS}^- \end{array}$

Select correct about it.

(A) Bidentated ligand

(C) Carbon is doner atom

5. Select which is/are chelating ligand.

MATRIX MATCH TYPE

## 6. Column-I

(A) nta<sup>3-</sup> ~~Q R S~~

(B) pn ~~Q S T~~

(C) Gly<sup>-1</sup> ~~Q R S~~

(D) Amide ~~P S~~

## Column-II

(P) Monodentated ligand

(Q) Polydented ligand

(R) O-donor atom

(S) N-donor atom

(T) Have chiral center

INTEGER TYPE

7. Consider  $[\text{Co}(\text{EDTA})]^{3-}$  octahedral complex and find.

(i) Co-N linkages **2**

(ii) Co-O linkages **4**

(iii) Number of N-Co-O bond angles **8**

(iv) Number of O-Co-O bond angles **6**

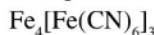
(v) Number of N-Co-N bond angles **7**

(vi) Number of cis N-Co-O bond angles **4**

8. Find number of chelate rings in  $[\text{Co}(\text{trien})\text{Cl}_2]^{3+}$  : **3**

9. Find sum of the "N" donor site in  
Gly<sup>-1</sup> , bipy , en , oxine , EDTA<sup>4-</sup> **Sum = 8**

10. Consider prussian blue



Find O.N. of central metal = **II**

Find O.N. of counter ion = **III**

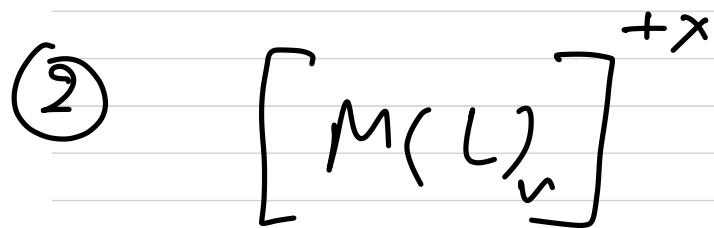
Find average O.N. of metal (Fe) =  $\frac{4 \times (3) + 3(1)}{7}$  Number of counter ions in 1 mole. **4**

Number of complex ions in 1 mole.

$$\frac{4 + 3}{7} = \frac{7}{7} = 1$$

# [TUPAC Naming]

① Name of one cation + Name of one anion



No. of ligand + Name of ligand + Name of Metal  
+ (O.N.)

③ Naming of ligand.

i) anionic :-

ide = ido

ate = ato

ite = ito

(ii) Cationic = No charge

(iii) Neutral =

PPh<sub>3</sub> = triphenylphosphine

Py = Pyridine

en = ethylenediamine  
(ethane 1,2 diamine)

NH<sub>3</sub> = ammonia

H<sub>2</sub>O = Aqua

CO = Carbonyl

CS = thiocarbonyl

NO = Nitro group

(4)

(5)