1 what a complex compound? How d	oes it differ from a double salt?
Those compounds which retain the water or any other solvent of different from those of the consti	and their properties are completely tuents are called complex compound
Double salt	Complex compound
	a. They may or may not be in aguimolar amount
be The exist in solid state	6 Exist in solid as well as liquid
ion in solution state	is solution state.
d They have no dative bond	d. They have dative bond.
e.g. Mohr's salt (Fesay(NH4) 2 504.6 H20)	eg [Cu(NH3)4]SO4 Tetraominecopper (11) sulphate
compound.	ed to explain the bonding in coordination
The postulates of Werner's Theo	·
a Promosy valency (Principal valency)	

Here, sp? hybridization leads to tetrahechal	geometry and n= 0 so it u
diamognetic	J
o o	
( Co \	
Ni C. 7	I had a factor
(co. co - co) #g-1	etrahedral geometry & [Ni (co),
( What do you mean by square planar com	plex? Explain the formation
a [NI (CO): 72 on the balls & VCT.	1
a tractoral on the con a	
These and low commands a last madera	des2 hibidization and are
formed by strong field ligarth are square	algorithm complete
formed by strong field ligate are square	re plantit complete
Formation of [Ni(N)4]	
Central metal atom 1 - Ni	
Oxidation State of Mi = +2	A COLUMN TO A COLU
Coordination number (CN)=4	
Co o Great	A A COLOR DE LA CO
Here, It may be sp3 or dsp2 hybridized. NE	applying VBT
34 45	40
14. [4. [4. ]4. ]4. [4. ]	
Ni atom 11/11/11/11/11	49
3 4 4 1	1111
NI (+2) 16 16 16 16	
24 dsp2	
NI (CN)4] 2 [14/14/14] 24 4 4 4	
	A Section of the sect

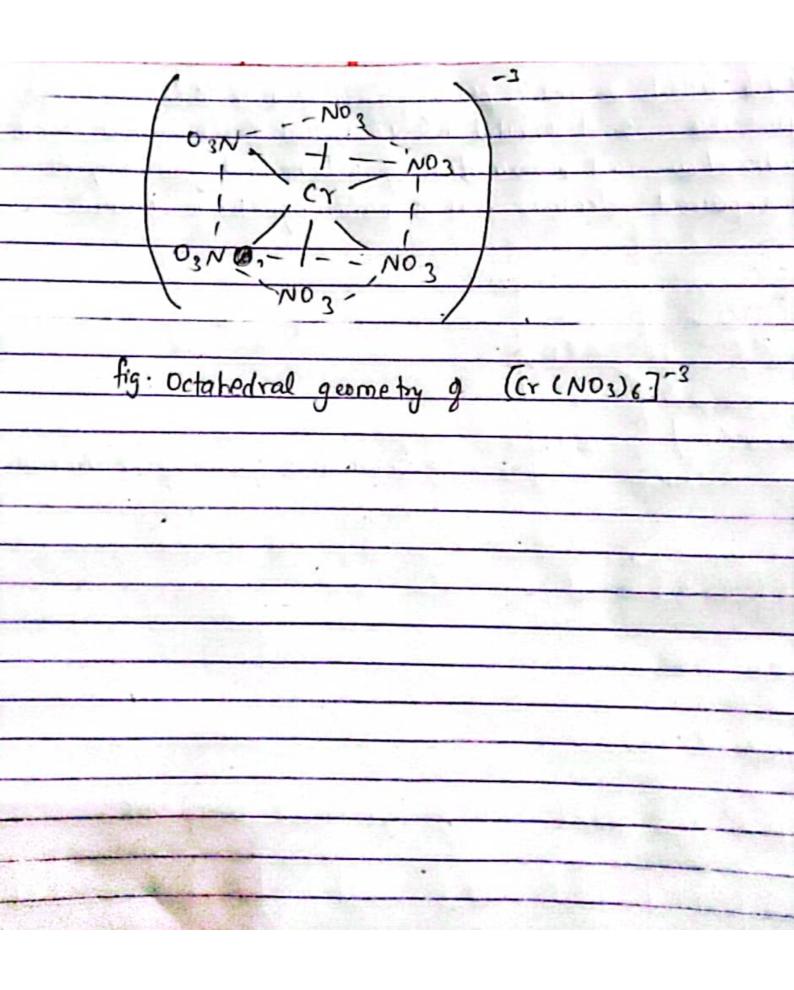
Here (call is a char fact to the
Here, (CN) is a strong field ligand So, back pairing of electron takes place and the d crisital is vacant which leads to dsp2 hybridical. Thus it has square planar geometry. As there is no unpowed electron (i.e. n. 0) it is a diamagnetic
Thus it has some a cristal is vacant which leads to dep by bride of
the or out of plange geometry. As there is no unpoured electron
a diamagnetic
2
CN
tig: Square-planar geometry of
No.   fig: Square -planar geometry of [No
4)
7. Explain the formation of [Ni(NH2)6]2+ and [Cr(No3)6]3- on the basis off NBT. Predict the geometry and magnetic property also
off VRT. Product the control of [NI(NH3)6] and [Cr(NO3)6] on the basis
reduce the yearne by and magnetic property also
= formation of [NI(NH2)6]2+
G (MICHA) [ ]
Central metal atom : Ni
Oxidation State of Ni = +2
Coordination number CNH3) = 6
The part of the challes of the chall
So it may be sp3d2 or d2sp3 by hybridized Using MDT
So it may be sp3d2 or d2sp3 by hybridized Using VRT
Ni-atom 11/11/11/11/11/11/11/11/11/11/11/11/11/
32
N(42) 10/10/11/11/11/11/11/11/11/11/11/11/11/1
N. M. 1724 Apr 124 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Here although (NH2) in a change of the
Here, although (NH2) is a strong field ligand, the two outer orbitals

[ [ Fe(CN) (] 3			
No.			
nexa cyano t	create (111) ion		
Here,			
	er & fe (2)= 26		
Oxidation Aumit	er g fe (2) = 26		
no of ligand	$\frac{1}{2} \left( \frac{1}{2} \right) = \frac{1}{2}$	-	and the second second
no a electron	ns donated by a ligar	-1/ ) 0	
		na(y): 2	
EAN: (2-%)	tny		
EAN: (2-21) -(26-3	)+ 2x6		
- 35	which is not equal to	any nichel a	al
so it a un	istable	7 110500 9	-9
5. Explain the f	formation of CNI (co)4]	' complex es	the Levis A MOT
	0	complex on	The pasts of ARI
Her, formation	n & [NI ((0)4]°		
central metal	al' atom = Ni		
Oxidation s	tale of Ni = 0		
lo or dination	number (CA)-4		
Co. 71			
So, It may		ndization . N	ow weing VRT
Ni alem	1141411111	111 1	
N. W.	34 4	10	
Ni- O	176 176 176 176 1	12 49	1 (80)
	34	293	(Back-pairing due to r
(Ni (10))	12 12 747676	xx xx x	x/
A COLUMN TWO IS NOT THE OWNER.			

c K3 [ Co (CN) , No] Potassium pentacyano nitrosyl cobaltade (11) Here, Atomic number of cobalt (co)=27 no. of ligands (n) = 6 no. a electrons donated by a ligand (y) = 2 SO EAN = (2-21) try = (7-2) + 6x2 37 which is "equal to any noble gas. [ (r (Hao) 5 C1] C/2 Penta aqua chloro chromium (111) chloride Here, Atomic number of Cr (2)=24 no of ligandi(n): 6 (Both the of of are monodentate) no a electoons donated by one ligard (y) = 2 EAN = (2-x) +ny - 194-3)+ 2×6 which is not equal to any mobil gas 33

and remain half-filled as back-paining would lead to one varied spot which is not possible. So d orbital has no varient space which leads
which is not possible. So I orbital has no varant space which leads
to spide hybridization and a formation of octahedral geometry As
there are two unpaired electrons, it is paramagnetic in nature
NHS
H3N NH3
NI NI
H3N NH - 1 - NH - 1 - 1 - 1 - 1 - 1 - 1 - 1
H3N NHs fig. Octahedral geometry & (Ni (NH2))
( /*!/3 ) .
Formation of [Cr (NO3)6]
Central metal atom = Cr
Oxidation State of Cr = +3
coordination number (NO3) = 6
10 2 1 1 1 1 1 1 107
so it may be sp3d2 hybridized or d2sp3 hybridized. Using VRT
38 45 40
C1 - atom 111111111111111111111111111111111111
6 (3) 1 1 1 1
32 d <sup>2</sup> Sp <sup>3</sup>
[Cr (NO3)6]" 1 1 1 1   xx 20 xx xx xx xx
at the terms of th
place as two d orbital one vacant So, it undergoes despossible hybridization
place as two d orbital one vacant so, it undergoes a sp hybria zation
resulting in octahedral geometry. As there are 3 unpaired electrons, it is paramagnetic in nature
paramagnetic in nature

e [Ni(cN)4)-2 Tetracyano nictelate (11) 100 Here , Atomic number of NI (2) = 28 Oxidation number of Ni(2)-2 no. of ligands (n)=4 no a electrons donated by one ligard (y)= 2 NOW. EAN: (2-2)+ny - (28-2)+4×2 - 34 which is not equal to any nobel gas. so it is instable. f. [ci(en)2]cl3 Tris (ethylene diamine) chromium (111) chloride Here. Atomic number of Cr (2)=24 oxidation number of (1(x):3 no of ligands (n)=3 no of electrons donated by one ligarit (4)=4 02 FAN = (2 x) try (24-3) + 3x4 = 33 which is not equal to any ideal gas so it is instable



4. 12- to the TripAc	- L coloulate
4. Write the IUPAc name of the following complex	and Carcurate
EAN value Predict the stability of complex.	
a. 1; (A) H4]	Nobel gases
	k1 = 36
· Lithium tetra hydridoaluminate (111)	Xe = 54
	Rn = 86
Here,	
atomic number of A1 (2)=13	Land to the land
Oxidation number of A1 (2)=+3	
number of ligands (n)=4	No.
no of elections donated by a ligand (y) = 2	41 41 4
New,	death bearing
FAN = (2-x) try	
- (13-3)+ 4 x2	
= 18 which is agreal to Ar	
So, it is stable,	
5. [ (4 (504) (NH3)4] NO2	
· Tetraconine sulphato copper (III) nitrate	The same of the same
Has	A A A
atomic number of cult): 29	to the same of the
oridationstated cu:+3 (x)	
no. d lig ards (n): 5	
no & electrons donated by a ligard (y) = 2	
So	Maria Cara Cara
EAN = (7-71) try	
- (29-3) + 2×5	***************************************
36 which is equal to Kr so it is stal	le

hereas secondary valency is satisfied by negative or neutral or
whereas secondary valency is satisfied by negative or neutral or
by both
Structure of COCIZ. 6NH3
[(O(NH3)6]C13 -> [CO(NH3)6]+3 + 3C1-
3203 1 3 6 1
3C1 + 3AgNO2> 3AgC1 + 3NO3
319 (10 1 310)
C)
The state of the s
Har i NH3 Gives a conducting solution
301 are satisfied by primary valency
H3N NH3 · Gives a conducting solution  3CI are satisfied by primary valency  while GNH3 are satisfied by secondary
outeriu.
H <sub>3</sub> N Cl NH <sub>3</sub>
Secondary valency are represented by dotted lines.
Secondary valency are represented by solid lines.
3. Differentiate between primary valency and secondary valency on
3. Differentiate between primary valency and secondary valency on the basis of werner's theory
B and the sy
= On the Lavis A werners. H.
- On the basis of werner's theory
Primary Valency Secondary Valency
on negative ions satisfied by positive. This valency is satisfied by positive or neutral or both molecules
or negative ions negative or neutral or both molecules
I a non directional in nature 12 It is an directional in nature.