CO-ORDINATION COMPOUNDS AND CHEMICAL BONDING

ANSWERS

1. **Ans: c) triamine bromo chloro nitro platinum (IV) Chloride**
2. **Ans: d) Nitrosonium** NO^+
3. **Ans: d) Hexadentate ligand**
4. **Ans: c)** BF_3 **Lewis acids cannot be ligands**
5. **Ans: a)** $[Co(NH_3)_6]CI_3$ **gives maximum no of ions in solution (1+3=4)**
6. **Ans: b)** $^2/_3$ **Out of 3Cl only 2 Cl are ionisable and can give PPT with** $AgNO_3$
7. **Ans: d)** $[Co(NH_3)_5CI]CI_2$
8. **Ans: c) hydrate isomers**
9. **Ans: d)** $[Ni(CN)_4]^{-2}$ **is square planar and diamagnetic.**

   $[NiCI_4]^{-2}$ **is tetrahedral and paramagnetic**
10. **Ans: a)** $Ni(CO)_4$ **- tetrahedral but diamagnetic**
11. **Ans: d)** $[Ni(NH_3)_6]^{+2}$ **involves** sp^3d^2 **hybridization and is outer d complex.**
12. **Ans: b) Linkages isomers**
13. **Ans: b) EAN=Z-X+Y=26-3+6(2)=35**
14. **Ans: b) only bidentate ligands and above can form chelate but not monodentate ligands**
15. **Ans: c) Chlorophyll is the green pigment of plants and contains magnesium**
16. **Ans: c)** $[Ni(CO)_4]$
17. **Ans: d)** dsp^2 **hybridization**

18.Ans: a) [Pt $(NH_3)_2CI_4$] and K_2 [Pt (CI) $_6$]

19.Ans: a) CN^{-1} strong ligand form inner d complex with d^2sp^3 hybridization

H_2O is a weak ligand form outer d complex with sp^3d^2 hybridization

20.Ans: b) In alkaline solution insoluble Cu $(OH)_2$ is precipitated which is soluble in excess of any alkali.

21.Ans: d) $[Ni\ CI_4]^{-2}$

22.Ans: c) SCN^- is a weak ligand. 3 unpaired electrons in Co^{+2} reminds as they are

M= $\sqrt{3(3+2)} = \sqrt{15}$

23.Ans: b) same as secondary valency

24.Ans: d) $[Fe(CN)_6]^{-4}$

25.Ans: b) 1

26.Ans: b) $[CoF_6]^{-3}$

27.Ans: d) d is an atomic orbital

28.Ans : c)

29.Ans: b)

30.Ans: C

For ABMO $(\psi_A - \psi_B)^2 = \psi^2 AMBO$

($\psi_A{}^2 + \psi_B{}^2$**)-** $2\psi_A\psi_B = \psi^2 AMBO$

31.Ans: b)

32.Ans: b)

33.Ans: c)

34.Ans: c) BO in He_2 is O

35.Ans: B O of O_2=2 and that of O_2^+ **is 2.5 $E_1 < E_2$**

36.Ans: a) N_2 **and** O_2^{2+} **both have bond order =3**

37.Ans: a) O_2^{2+} **has the highest bond order 3 and so has shortest bond length**

38.Ans: b)

39.Ans: a)

40.Ans: d)

41.Ans: c)

$\sigma 1s^2, \sigma^* 1s^2, \sigma 25^*, \sigma^* 2s^2, \sigma 2Pz^2, \pi 2Px^2, \pi 2Py^2, \sigma^* 2Px^2, \sigma^* 2Py^2$

42.Ans: b) B. O of O_2^+ (2.5) is more than that of due to one electron in the antibonding molecular orbital.

43.Ans: d) **B.O. of single bond = 1**

B.O. of double bond = 2

Average B.O. = $\frac{2+1+1+1}{4} = 1.25$

44.Ans: b)

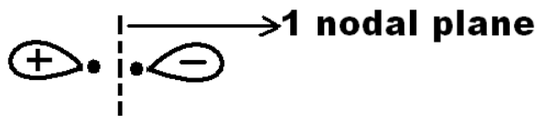
B. O. N_2^{-2} **and** N_2^{+2} **=2**

B. O of N_2^- **and** N_2^+ **=2.5**

B. O of N_2 = 3

45.Ans: C) Z- axis is arbitrarily chosen as internuclear axis

46.Ans: C)



47.Ans: a

48.Ans: c

49.Ans: c)

50.Ans: d)

51.Ans: c) In N2 the difference in energies of 2s and σ_{2P_z} **orbital's is small and therefore they can interact.**

52.Ans : b)

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