

CHN-603 (I) Co-Ordination Chemistry Paper-III

કુલ સમય :- ૬૦ મીનીટ

કુલ પ્રશ્નો : ૫૦

વિદ્યાર્થીએ ટીક કરવાના પ્રશ્નો : ૩૫

નોંધ : વિદ્યાર્થીએ માત્ર ૩૫ પ્રશ્નો જ ટીક કરવાના રહેશે. જો વધારે ટીક કરેલ હશે તો પ્રથમ ૩૫ પ્રશ્નો જ ગણતરીમાં લેવામાં આવશે.

- Multiplicity of State is
A. $(2S+1)$ B. $(2L+1)$ C. Both D. None of above
- The ground state is
A. S_D B. 3_H C. 3_P D. 3_I
- j-j Coupling applies for
A. Heavy metals B. Alkaline metals C. Alkaline earth metals D. All of above
- Term Symbol is
A. $(^{2S+1})L_J$ B. $^{2S}L_J$ C. $(^{2I+1})L_J$ D. $^{2I}S_J$
- forbidden transition are responsible for pale colour of Mn^{+2} ion
A. John-Teller effect B. Laporte's and Spin C. Laporte's . D. All of above
- Crystal field splitting plays no role in electronic configuration
A. d^0 B. d^5 C. d^{10} D. all of above
- The Complex has Square Planar geometry
A. $[Ni(Cl)_4]^{2-}$ B. $[Ni(CO)_4]$ C. $[Ni(CN)_4]^{2-}$ D. None of these
- The effective atomic number of Fe in $[Fe(CO)_5]$ is
A. 26 B. 34 C. 36 D. 54
- According to MOT, e-orbitals are in Tetrahedral Complexes.
A. Bonding B. Antibonding C. Non-bonding D. Can't say
- Acceptor ligands causes Δ_0 to
A. Increases B. Decreases C. Sometime increases, sometime decreases D. None of these
- The lowest energy transition for d^2 ion is .
A. $3T_{1g}(F) \rightarrow 3T_{2g}(F)$ B. $3T_{1g}(F) \rightarrow 3T_{1g}(F)$
C. $3T_{1g}(F) \rightarrow 3A_{2g}(F)$ D. None of above
- CFT was proposed by
A. Bethe and Van Vleck B. Orgal C. Pauling D. Faraday
- The correct relation is ...
A. $\Delta G = RT \log \beta_n$ B. $\Delta G = -RT \log \beta_n$ C. $\Delta G = -2.303 (1/R) \log \beta_n$ D. None of above
- When the ligands are weaker then
A. $\Delta_0 = P$ B. $\Delta_0 < P$ C. $\Delta_0 > P$ D. Can't say
- Charge transfer bands generally are .
A. Intense B. weak C. Can't say D. All of above
- The geometry of $[Ni(CN)_4]^{2-}$ and $[Ni(Cl)_4]^{2-}$
A. Square planar B. Tetrahedral
C. Tetrahedral and Square planar D. Square planar and Tetrahedral
- In Which complex john teller distortion is possible.
A. $[Cu(H_2O)_6]^{2+}$ B. $[Cr(H_2O)_6]^{3+}$ C. $[Fe(CN)_6]^{2-}$ D. None
- The operator operating on the wave function should always standing on side.
A. Middle B. Right C. Left D. Upper
- Mercurochrome and Silver Sulfadiazene complex is used as _____ and _____ respectively.
A. Disinfection & Antiviral B. Disinfection & Severe burns.
C. Antiulcer & Antibacterial. D. All of above
- The magnetic Susceptibility of a Paramagnetic materials is.
A. Independent of Temperature. B. Increases with increases in temperature.
C. Decreases with increases in temperature. D. None.
- According to spin selection rule.
A. $\Delta_s = 0$ B. $\Delta_s = 1$ C. $\Delta_s = 1/2$ D. $\Delta_s = 2$
- The complex has the highest Paramagnetism.
A. $[Cr(H_2O)_6]^{3+}$ B. $[Fe(H_2O)_6]^{2+}$ C. $[Cu(H_2O)_6]^{2+}$ D. $[Zn(H_2O)_6]^{2+}$
- The larger the value of J, the greater the _____ and the smaller the value of _____.
A. Paramagnetism & χ_A B. Antiferromagnetism & χ_A C. Diamagnetism & χ_A D. Ferrimagnetism & χ_A

24. d-d transition.
 - A. Ligand-ligand transition.
 - B. Metal-metal transition.
 - C. Ligand-Metal transition.
 - D. Metal-ligand transition.
25. The ion show maximum crystal field splitting according to spectro-chemical series.
 - A. Cl^-
 - B. F^-
 - C. NO_2^-
 - D. CN^-
26. _____ Complex is used for treatment of cancer.
 - A. Trans-platinum (II)
 - B. Cis-platinum (II)
 - C. Gold compounds
 - D. A & C Both.
27. Pale colour of Mn(II) ion is explained by.
 - A. Spin forbidden transition.
 - B. Laporte's forbidden transition.
 - C. Both
 - D. None of above.
28. The Instability constant K_i can be defined as
 - A. B
 - B. $1/\beta$
 - C. K
 - D. None of above.
29. The dark violet Colour of MnO_4^- is due to.
 - A. d-d transition.
 - B. Charge transfer transition (O^{2-} to Mn^{+7})
 - C. Charge transfer transition (Mn^{+7} to O^{2+})
 - D. All of above.
30. Ground State term for Ni^{+2} ion is
 - A. $2p$
 - B. $3F$
 - C. $3G$
 - D. $1G$
31. According to effective atomic numbers the central metal gains.
 - A. Duplet
 - B. Inert gas configuration
 - C. Octet
 - D. None
32. The electron transfer in LMCT is Laporte..... and
 - A. Allow, allow
 - B. Allow, forbidden.
 - C. Forbidden, forbidden.
 - D. Forbidden, allow.
33. The ground state term for $t_{2g}^6 e_g^2$ in Octahedral field is.
 - A. $3A_{2g}$
 - B. $3E_g$
 - C. $4T_{1g}$
 - D. None of this
34. cis-and trans-complexes of the type $[\text{PtA}_2\text{X}_2]$ are distinguished by.
 - A. Chromyl chloride test.
 - B. Carbylamine test
 - C. Kurnakov test
 - D. Ring test
35. The dark purple colour of known is due to.
 - A. d-d transition
 - B. Ligand field transition
 - C. Charge transfer
 - D. All of above
36. which compounds is used in magnetic resonance image (MRI).
 - A. Phthalocyanine
 - B. Gadolinium
 - C. Mercurochrome
 - D. All of above.
37. Value of Δ depends upon
 - A. Nature of ligand
 - B. Oxidation of metal
 - C. Principal quantum number
 - D. All of above.
38. $[\text{CoF}_6]^{3-}$ complex has _____ and $[\text{Co}(\text{NH}_3)_6]^{3+}$ complex has _____ magnetic properties
 - A. Paramagnetic and diamagnetic
 - B. Both paramagnetic
 - C. Diamagnetic and paramagnetic
 - D. Both diamagnetic
39. The outer orbital complexes are generally formed by.
 - A. Strong ligands
 - B. Weak ligands
 - C. Neutral ligands
 - D. None of these.
40. The electronic transition responsible for the colour of the transition metal ion is.
 - A. $d\pi \rightarrow d\pi$
 - B. $d\pi \rightarrow d\sigma^*$
 - C. $d\pi \rightarrow d\pi^*$
 - D. $d\pi \rightarrow d\sigma\pi$
41. Number of micro states for V^{3+} (d^2 configuration) is.....
 - A. 15
 - B. 54
 - C. 12
 - D. 45
42. Thermodynamic stability is related to
 - A. Rate of reaction
 - B. Activation Energy
 - C. Stability constant
 - D. All of above
43. t_{2g} orbitals in octahedral complexes are.
 - A. Bonding
 - B. Anti-bonding
 - C. Non-bonding
 - D. None of above.
44. The correct relation is
 - A. $\Delta_0 = (-4/9) \Delta_t$
 - B. $\Delta_t = (1/2) \Delta_0$
 - C. $\Delta_0 = (-2) \Delta_t$
 - D. $\Delta_t = (4/9) \Delta_0$
45. CN^- ligand causes strong splitting of d-orbitals in complexes because it is a good.
 - A. σ -Acceptor
 - B. π -Acceptor
 - C. π -donor
 - D. All of above.
46. CFSE of transition metal complexes can be determined by.
 - A. UV- visible spectroscopy
 - B. IR - spectroscopy
 - C. Micro wave spectroscopy
 - D. NMR spectroscopy
47. Identify the high-spin complexes among the choice give one below.
 - A. $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - B. $[\text{Co}(\text{CN})_6]^{3-}$
 - C. $[\text{Co}(\text{F}_6)]^{3-}$
 - D. None of above
48. Pt^{+4} ion forms where as Pt^{+2} ion forms complexes respectively
 - A. Square planar, octahedral
 - B. Square planar, Square planar
 - C. Octahedral, octahedral
 - D. octahedral, Square planar
49. The complex $[\text{Co}(\text{EDTA})]^-$ is
 - A. Monodentate
 - B. Macromolecules
 - C. Chelates
 - D. None of above
50. The orange colour of $\text{Cr}_2\text{O}_7^{2-}$ is due to.
 - A. $\text{M} \rightarrow \text{L}$ Charge transfer
 - B. $\text{L} \rightarrow \text{M}$ Charge transfer
 - C. CFT transition
 - D. Charge transfer formation