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1. For the correct assignment of electronic configuration of a complex, the valence bond theory often requires the measurement of

- (a) Molar conductance
- (b) Optical activity
- (c) **Magnetic moment**
- (d) Dipole moment

2. A complex of certain metal has the magnetic moment of 4.91 BM whereas another complex of the same metal with same oxidation state has zero magnetic moment. The metal ion could be

- (a) Co^{2+}
- (b) Mn^{2+}
- (c) **Fe^{2+}**
- (d) Fe^{3+}

3. The tetrahedral $[\text{CoI}_4]^{2-}$ and square planar $[\text{PdBr}_4]^{2-}$ complex ions are respectively:

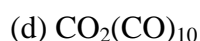
- (a) Low spin, high spin
- (b) **High spin, low spin**
- (c) Both low spin
- (d) Both high spin

6. The EAN of metal atoms in $\text{Fe}(\text{CO})_2(\text{NO})_2$ and $\text{Co}_2(\text{CO})_8$ respectively are

- (a) 34, 35
- (b) 34, 36
- (c) **36, 36**
- (d) 36, 35

7. Following Sidgwick's rule of EAN, $\text{Co}(\text{CO})_x$ will be

- (a) $\text{Co}_2(\text{CO})_4$
- (b) $\text{Co}_2(\text{CO})_3$



8. On treatment of $[\text{Ni}(\text{NH}_3)_4]^{2+}$ with concentrated HCl, two compounds I and II having the same formula, $[\text{NiCl}_2(\text{NH}_3)_2]$ are obtained, I can be converted into II by boiling with dilute HCl. A solution of I reacts with oxalic acid to form $[\text{Ni}(\text{C}_2\text{O}_4)(\text{NH}_3)_2]$ whereas II does not react. Point the correct statement of the following

- (a) I cis, II trans; both tetrahedral
- (b) I cis, II trans; both square planar**
- (c) I trans, II cis: both tetrahedral
- (d) I trans, II cis; both square planar

9. Which one of the following statement is incorrect?

- (a) Greater the formation of (K_f) of a complex ion, greater is its stability
- (b) Greater the positive charge on the central metal ion, greater is the stability of the complex
- (c) Greater is the basic character of the ligand, lesser is the stability of the complex.**
- (d) Chelate complexes have high stability constants

10. Point out the correct statements amongst the following

- (a) $[\text{Cu}(\text{CN})_4]^{3-}$ has tetrahedral geometry and dsp^2 hybridization
- (b) $[\text{Ni}(\text{CN})_6]^{4-}$ is octahedral and Ni has d^2sp^3 hybridization
- (c) $[\text{ZnBr}_4]^{2-}$ is tetrahedral and diamagnetic**
- (d) $[\text{Cr}(\text{NH}_3)_6]^{3+}$ has octahedral geometry and sp^3d^2 hybridization