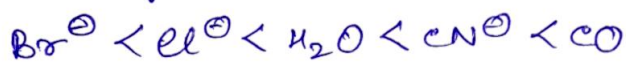


Assignment - 04NAME : Priyanshu Mahato.ROLL NO. : pm21ms002.EXPT. NO. - 04 : Cyanotype Blue Printing.

Q1. Ligands that produce a large splitting of d-orbitals and favour pairing of electrons are called Strong Field Ligands. Those which produce a small splitting of d orbitals are called Weak Field Ligands.

In ascending order,



Q2. In both the complexes, Fe is the +3 Oxid<sup>n</sup> State with configuration  $3d^5$ .  $\text{CN}^{\ominus}$  is strong ligand and in its presence, 3d electrons pair up leaving only one electron unpaired. The hybridisation is  $d^2sp^3$  forming inner orbital complex. In contrary to this,  $\text{H}_2\text{O}$  is a weak ligand and in its presence, 3d electrons do not pair up. The hybridisation is  $sp^3d^2$  forming an outer orbital complex containing five unpaired electrons. Hence,  $[\text{Fe}(\text{CN})_6]^{3-}$  shows weak paramagnetic responses than its aqueous complex.

Q3.  $[\text{Fe}(\text{C}_2\text{O}_4)_6]^{3-}$  is not stable among four ion complexes.

Reason: Metal chelates are more stable. Oxalate is a bidentate ligand and forms metal chelates.