

Oxidation state of Central metal ion in Complex

Oxidation state of Central metal ion is written after the name of Central ion in small bracket in Roman Numeral i.e. I II III IV V ... etc.
If we have to name any "Complex ion" not a complex compound, then metal ion is named after Oxidation state.

Example: - $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ $\rightarrow$ Dichloro tetra amine Cobalt III ion.
 $x + 0 - 2 = 1$ [Complex ion is cation]
 $x = 2 + 1 = 3$

$[\text{Ag}(\text{CN})_2]^-$ $\rightarrow$ Dicyano Argentate I ion
 $x - 2 = -1$ [Complex ion is anion]
 $x = 1$

For Zero Oxidation state a letter '0' is written in Bracket and for a negative Oxidation state the "negative sign" is used before Roman Numeral.

For example: - (i) $\text{K}_4[\text{Ni}(\text{CN})_4]$, O.S. of Ni is Zero
Now name is as Potassium tetra cyano Nickelate [0]
Nickel is named as Nickelate because $[\text{Ni}(\text{CN})_4]^{4-}$ is anion.

(ii) $\text{Na}[\text{Co}(\text{CO})_4]$ O.S. of Co is -1
Naming as Sodium tetra Carbonyl Cobaltate (-1)

Co-ordination Number

What do you mean by Co-ordination Number?