Oxidation state and formal charge are both counting systems in which the number of electrons around an atom in a compound is compared to the number of electrons that atom would have in its unreacted elemental state. Oxidation state treats bonds as if they were ionic, meaning the atom that is more electronegative receives the electrons for the bond (unless the bond is made up of two of the same element, in which case each atom receives half of the bonding electrons). Formal charge treats bonds as if they were covalent, meaning half of the bonding electrons are given to each atom in a bond.

Short cut for oxidation state of carbon

- Each atom more electronegative than carbon (ex: O, N, F, Cl, Br) causes carbon to have +1 O.S. (per bond)
- Each atom less electronegative than carbon (ex: B; H) causes carbon to have −1 O.S. (per bond)
- Each carbon attached has no effect on O.S.