CHE – WRITING FORMULAE FROM VALENCIES

Oxidation number. Generally, metals exhibit positive oxidation numbers while non-metals tend to have negative oxidation number. Some elements exhibit more than one valency, e.g. oxygen, hydrogen.

Sometimes, a few atoms of different elements may also come together and react as a single unit. Such a group is referred to as a single unit. Such a group is referred to as a radical. The radicals may be charged and have oxidation numbers which are usually represented by the net number of positive or negative charges that they carry.

Formulae of compounds can be deduced from the valencies of the component elements or radicals. The valencies help in constructing the formulae of compounds. The following rules apply in writing these chemical formulae:

i. Write the symbols for the element and radicals,
ii. Write the valencies above and to the right of the symbols,
iii. Rewrite the symbols exchanging the valencies and write the numbers below and to the right of the symbols,
iv. The sum of positive valencies of a compound must be equal to the sum of its negative valencies,
v. The numbers of atoms of the component elements in a formula must be written as a numerical subscript after the element concerned. If a radical occurs more than once it must be enclosed within parenthesis.

Illustrating: the chemical formula for the compound sodium chloride would be deduced like this:

Na^{+} Cl^{-} → Na_1 Cl_1 → NaCl