CHE – REPRESENTATION OF ELEMENTS AND COMPOUNDS

Element is a substance which cannot be split into simpler units by ordinary chemical process that is by simple chemical reaction.

In 1814, Berzelius suggested a simple system of representing elements with symbols. The first letter of the name of an element was taken as the symbol for that element; for example, H for hydrogen, S for sulphur, O for oxygen, C for carbon, etc. Such symbols are written in capital letter. Where the first letter had already been adopted, the initial letter, in capital, together with a small letter from its name was used. For example, Ca for calcium, Cl for chlorine, Al for aluminium, He for helium, and Sr for strontium. The symbols for some metals were derived from their Latin names in a similar way.

Element	**Latin Name**	**Symbol**
Sodium	Natrium	Na
Iron	Ferrum	Fe
Copper	Cuprum	Cu
Silver	Argentum	Ar
Tin	Stannum	Sn
Gold	Aurum	Au

Formulae of Elements and Compounds

A molecule of a substance is represented by the symbols of its component elements. Such representation is known as chemical formula.

Where an element exists as a molecule (that is the element is not monoatomic), a number representing its atomicity is written as a subscript after the symbol of that element. For example, diatomic hydrogen is written as H_2 to show that it contains two atoms of hydrogen; triatomic molecule of ozone is written as O_3 to show that it contains 3 atoms of oxygen.

A molecule of a compound contains whole numbers of atoms of the component elements. Its molecular formula is written as follows:

- The symbols of all the component elements are written close together as a group;
- The number of atom of each component element is written as a subscript after the symbol of that element.

Thus, the molecular formula of calcium trioxocarbonate (IV) is $CaCO_3$ since it contains one atoms of calcium, one atom of carbon and three atoms of oxygen.

Groups of atoms, like trioxonitrate (V), $–NO_3$, hydroxide, –OH, trioxocarbonate (IV), $–CO_3$, and ammonium, $–NH_4$, are known as radicals. Each radical is treated as a single unit in a molecular formula. When more than one unit of a radical is present in a molecule, we write the formula by enclosing the radical within parenthesis, with the relevant numerical subscript after the parenthesis. Thus, calcium hydroxide is written as $Ca(OH)_2$ rather than CaO_2H_2. The subscript outside the parenthesis applies to every symbol within it so that the subscript 2 in $Ca(OH)_2$ indicates two atoms, of both oxygen and hydrogen.