CHE – REPRESENTATION AND BALANCING OF CHEMICAL REACTIONS

Chemical reactions can be represented simply on paper by chemical equations involving only formulae and symbols. The reactants are written in their formula form on the left-hand side (LHS) of the equation symbol (→) while the products are written also in their formulae form on the right-hand side (RHS). Example:

$Mg + 2HCl \rightarrow MgCl_2 + H_2$

Illustrate the above equation in molecular bonding

The above illustration means that one mole of magnesium atoms react with two moles of hydrogen chloride molecules to produce or yield one mole of magnesium chloride molecules.

An 'atom count' for each element in the equation shows that the total number of moles of atoms for each element is the same before and after the chemical reaction i.e. on the LHS and RHS of the equation.

It is wrong to write an equation to represent a chemical reaction that does not occur. For example, copper does not react with hydrochloric acid. So the below equation is wrong:

$Cu + 2HCl \rightarrow CuCl_2 + H_2$

Balancing Equations

All equations must be balanced in order to comply with the Law of Conservation of Matter, which states that matter is neither created nor destroyed in the course of a chemical reaction. An unbalanced equation would imply that atoms have been created or destroyed.

When balancing equations, we must remember that

- The formulae of the reactants and products in an equation are fixed and cannot be altered, so the only way of balancing an equation is
- By taking appropriate number of moles of the reactants and the products concerned. Do an atom count to check if an equation is balance.