ATOMS AND MOLECULES

ATOMIC MASS, MOLECULES

❖ **Molecules: -**

A molecule is the smallest particle of an element or compound that has independent existence.

A molecule contain one or more than one atoms. The molecules of elements contain atoms of only one kind.

The number of atoms in a molecule of an element is known as atomicity of the element. For example -The atomicity of the noble gases is 1, that of hydrogen, nitrogen, oxygen etc. is 2 each and of ozone is 3. Thus, noble gases, hydrogen and ozone are respectively monoatomic, diatomic and triatomic molecules.

❖ **Molecules of elements:**

The molecules of an element contain two similar atoms chemically bonded together, for example ozone gas has 3 oxygen atoms combined together, so ozone exists in the form of O_3. A recently discovered form of carbon, called Buckminster fullerene has molecular formula C_{60}.

❖ **Molecules of compounds:**

The molecules of a compound contain two or more different types of atoms chemically bonded together. For example: the molecule sulphur dioxide (SO_2) contains one atom of sulphur chemically bonded with two atoms of oxygen.

❖ **ATOMIC MASS: -**

Atomic mass of an element may be defined as the average relative mass of an atom of the element as compared with mass of an atom of carbon (C-12 isotope) taken as 12 amu.

$$\text{Molecular Mass} = \frac{\text{Mass of 1 molecule of the substance}}{\text{1/ 12 of mass of an atoms of C -12}}$$

❖ **How do Atoms Occur:**

The atoms of only a few elements called noble gases (such as helium, neon, argon and krypton etc.) which are chemically unreactive and exist in the free state (as single atom). Atoms of the elements are chemically very reactive and do not exist in the free state (as single atom)

Atoms usually exist in two ways: