

## \* Kinetic theory of gases :-

The continuous collision of the molecules of the gas with the walls of the containing vessel and their reflections from the walls result in the change of momentum of the molecules. According to Newton's second law of motion, the rate of change of momentum per unit area of the wall surface corresponds to the force exerted by the gas per unit area. The force per unit area measures the pressure of the gas.

## \* Postulates of the kinetic theory of Gases :-

- (i) The gas is composed of small ~~individual~~ indivisible particles called molecules. The properties of the individual molecules are the same as that of the gas as a whole.
- (ii) The distance between the molecules is large as compared to that of a solid or liquid and hence the forces of intermolecular attraction are negligible.
- (iii) The molecules are continuously in motion with varying velocities and the molecules move in a straight line between any two consecutive collisions. The collision doesn't alter the molecular density of the gas i.e. on the average the number of molecules present in a unit volume remains the same. Also the molecules do not accumulate at any place within the volume of the gas.
- (iv) The time of impact is negligible in comparison to the time taken to traverse the free path.

(v) The size of molecules is infinitesimally small as compared to the average distance traversed by a molecule between any two consecutive collisions. The distance between any two consecutive collisions is called free path. The mean free path is dependent on the pressure of the gas. If the pressure is high the mean free path is less and if the pressure is low the mean free path is more.

(vi) The molecules are perfectly hard elastic sphere and the whole of their energy is kinetic energy.