

Ans 2) Assumptions of kinetic theory of gases:

- (i) A gas is composed of large no. of tiny invisible particles, perfectly elastic in nature are called molecules
- (ii) The molecules are always in a state of continuous motion with bearing velocities in all possible directions
- (iii) The molecules travel in a straight path between any two collision.
- (iv) The size of the molecule is infinitely small.
- (v) The time of collision is negligible as compared with the time taken to traverse the pre-path.
- (vi) The distance between two consecutive collisions are called as pre-path
- (vii) The average distance between any two consecutive collisions are called mean pre path.
- (viii) The collision b/w the molecules and with the walls are perfectly elastic so that there is no loss of kinetic energy in the collision.
- (ix) The molecules exert no force on each other except when they collide.
- (x) The volume of the molecules of gas is negligible as compared to the volume of the vessel containing gas.
- (xi) The ~~intermolecular~~ intermolecular distance in a gas is much larger than in solid or in liquid. Therefore,

of molecules of the gas are free to move space.

Ans 2) Transport Phenomena - Viscosity, conduction & Diffusion

The equilibrium state of any gas is the most probable state but if the gas is not in an equilibrium state, we may have any of 3 cases

Case I $\rightarrow$ The different parts may have different velocities. If so, there will be a relative motion of the layers of gas with respect to one another in such a case, the layers moving faster impart momentum to the slower moving layers to bring the equilibrium state. This gives rise to phenomenon of viscosity.

Case II $\rightarrow$ The different parts may have different temp. in the gas. If so, the molecules of the gas will carry kinetic energy from regions of higher temperature to the region of lower temperature to bring the equilibrium state. This gives rise to phenomenon of conduction.

Case III $\rightarrow$ The different parts of gas may have different ~~erent~~ molecular concentration per unit volume. If so, the molecules of gas will carry the mass from region of higher concentration to the region of lower concentration to bring equilibrium state. This gives rise to phenomenon of diffusion.

- Properties of thermal radiation:
- Thermal radiation travels through empty space, with the velocity of light.
 - It travels in a straight line
 - It obeys the law of inverse square
 - thermal radiation is reflected and refracted like light.
 - thermal radiation exhibit the phenomenon of interference, diffraction and polarisation

Characteristics of Black body radiation:

- The black body radiation is more intense than the radiation from non-black body at the same temperature.
- The cavity radiations follows law
$$E = \sigma T^4$$
- At a given temperature, the total energy emitted per second per unit surface area of hole is independent of the material, shape and size of the cavity.