

① Newton law of gravitation:- Every particle of matter attract every other particle of matter with a force which is directly proportional to the product of their masses and inversely proportional to the square of distance between them.

② Kepler law:-

1) First law (Law of orbit):-

All planet revolve around the sun in elliptical orbit with the sun at one of the focus of orbit.

2) Second law:- (Law of equal area):-

The radius

vector drawn from the sun to the planet swept equal area in equal interval of time.

3) Third law:- (Law of period):-

The square of time periode of revolution of planet is directly proportional to the cube of the mean distance of the plane from sun.

③ Law of conservation of angular momentum:-

If no exte-

nal torque act on a rotating body then the total angular momentum of body remain constant

④ Law of simple pendulum:- $T = 2\pi \sqrt{l/g}$

law 1) The period of simple pendulum at given place is directly proportional to the square root of its length

law 2) The period of simple pendulum of given length is inversely proportional to the square root of gravitational accn.

Law-③ The period of simple pendulum is independent of mass of bob, material of bob and amplitude of motion provided amplitude is small.

⑤ Hooke's law:-

within elastic limit stress developed in a body is directly proportional to the ~~the~~ strain produced in it

⑥ Doppler effect :- (for sound)

The apparent change in frequency ^{of sound} ~~heard by observer~~ due to relative motion betⁿ source of sound and observer is called 'Doppler effect'

⑦ Law of vibrating string:- $n_1 = \frac{1}{2L} \sqrt{\frac{T}{m}}$

① Law of Length:-

The fundamental frequency of vibration of stretched string is inversely proportional to the vibrating length of string. if the ~~vibrating~~ tension ~~length~~ ^{of} the string and mass per unit length of string remains constant.

2) Law of tension:-

The fundamental frequency of vibration of a stretched string is directly proportional to the square root of tension in the string if the vibrating length of string and mass per unit length of string remain constant.

3) Law of mass per unit length:-

The fundamental frequency of vibration of stretched string is inversely proportional to the square root of mass per unit length if vibrating length and tension in string remain constant.

(8) Boyle's law:-

For a given mass of a gas at constant temperature the pressure exerted by the gas is ~~directly~~ inversely proportional to the volume of gas.

(9) Charles law:-

At a fixed pressure, the volume of gas is directly proportional to its absolute temperature.

(10) Dalton's law of partial pressure:-

The total pressure of a mixture of ideal gases is the sum of partial pressures.

(11) Law of equipartition of energy:-

For any dynamical system in thermal equilibrium, the total energy is equally distributed amongst ~~all~~ all degrees of freedom and the energy associated with each molecule per degree of freedom is $\frac{1}{2} k_B T$ where k_B is Boltzmann constant and T is temperature of system.

(12) Wien's displacement law:-

The product of wavelength (λ_m) corresponding to the max. value of wavelength and absolute temperature (T) of black body is constant.

(13) Kirchhoff's law:-

The coefficient of absorption of a body is equal to its coefficient of emission at given temperature.

(14) Stefan's law of radiation:-

The emissive power of a perfectly black body is directly proportional to the fourth power of its absolute temperature.

(15) Newton law of cooling:-

The rate of loss of heat by a body is directly proportional to the excess temperature of body over a surrounding, provided the excess temperature is small.

(16) Zeroth law of thermodynamics:-

If two bodies P and Q are in thermal equilibrium and also P and R are in thermal equilibrium then Q and R are also in thermal equilibrium.

(17) First law of thermodynamics:-

The energy supplied to the system goes in partially to increase the internal energy of system and the rest in work on the environment.

(18) Second law of thermodynamics:-

Mechanical work can be converted completely into heat but heat cannot be converted completely into the mechanical work i.e. work and heat are not equivalent.