Power = Rate of doing work = Work done / Time taken

If under a constant force F a body is displaced through a distance **s** in time t, the power

$p = W / t = F * s / t$

But $s / t = v$; uniform velocity with which body is displaced.

$\therefore P = F * v = F v \cos \theta$

where θ is the smaller angle between F and v.

power is a scalar quantity. Its S1 unit is watt and its dimensional formula is $[ML^2T^{-3}]$.

Its other units are kilowatt and horse power,

1 kilowatt = 1000 watt

1 horse power = 746 watt

Energy

Energy of a body is its capacity of doing work.

It is a scalar quantity.

Its S1 unit is joule and CGS unit is erg. Its dimensional formula is $[ML^3T^{-3}]$.

There are several types of energies, such as mechanical energy (kinetic energy and potential energy), chemical energy, light energy, heat energy, sound energy, nuclear energy, electric energy etc.

Mechanical Energy

The sum of kinetic and potential energies at any point remains constant throughout the motion. It does not depend upon time. This is known as law of conservation of mechanical energy.

Mechanical energy is of two types:

1. **Kinetic Energy**

The energy possessed by any object by virtue of its motion is called its kinetic energy.

Kinetic energy of an object is given by

$k = 1 / 2\ mv^2 = p^2 / 2m$