

ENERGY

The ability of a body to do work is known as its energy.

There are two types of energy possessed by a body.

1. Kinetic Energy:

The energy possessed by a virtue of its motion is known as its kinetic energy.

Kinetic energy possessed by a body of mass m , moving with velocity v is given by

$$K = \frac{1}{2} mv^2 \dots\dots\dots(9)$$

Now, energy is the capacity to do work. Using this definition of energy and Newton's laws of motion we can



derive the quantity of kinetic energy possessed by rigid body.

Consider a rigid body of mass m , moving with a velocity \vec{V}_P .

Suppose that we make an arrangement by means of which our moving body exerts a constant force \vec{F} on some lever AB and displaced it, thus doing work. The amount of work done by force (untill it comes to rest, $\vec{V}_Q = 0$) is the kinetic energy of the body.

According to Newton's 3rd law of motion, a reaction force - F acts on our body. And so we can write.