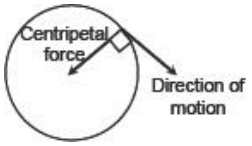
Ch-10 Work and Energy

1. **Work Done –** Work done on an object is defined as the magnitude of the force multiplied by the distance moved by the object in the direction of the applied force.



   Work done = force × distance
   = F × s
   1 Joule = 1 Newton × 1 metre.
   The unit of work is joule.
   Work done by a force acting obliquely is equal to $W = F \cos\theta \times s$
   Work done on a body moving in circular path is zero.
2. **Energy –** The energy of a body is its capacity of doing work. The S. I. unit of energy is Joule (1 KJ = 1000 J).
   Form of energies – (P.E & K.E.), heat energy, light energy, sound energy etc.
   a. Kinetic energy is the energy possessed by a moving body by virtue of its motion. Kinetic energy = $\frac{1}{2}mv^2$.
   b. Potential energy is the energy possessed by the body due to its position or shape. Potential energy = m g h.
   Law of conservation of energy states that whenever energy gets transformed from one form to another, the total energy remains unchanged. i.e., energy can neither be created nor destroyed.
3. **Power –** Power is defined as the rate of doing work. S.I. unit of power is Watt. (*W*). Commercial unit of energy is *kWh* (kilowatt –hour).