

L-14

G-7
PHYSICS

Kinetic and potential energy.

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1. Explain kinetic energy.

Ans. Kinetic energy is the energy a body has because of its motion. For a body of mass 'm' travelling with velocity 'v' its kinetic energy can be calculated by,

$$KE = \frac{1}{2} mv^2$$

Here, KE – Kinetic energy of the body in joules.

m = Mass of the body in kg.

v = Velocity of the body in m/s.

2. What is potential energy?

Ans. Potential energy is the energy a body has because of its position or condition.

A body above the Earth's surface is considered to have an amount of gravitational potential energy equal to the work that has been done against gravity by the force used to raise it. To lift a body of mass 'm' through a vertical height 'h' at a place where the Earth's gravitational field strength is 'g', needs a force equal and opposite to the weight 'mg'. So

$$\begin{aligned} \text{Work done by force} &= \text{Force} \times \text{vertical height} \\ &= mg \times h \end{aligned}$$

$$\text{So, Potential energy} = E_p = mgh$$

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1. a $KE = \frac{1}{2}mv^2$

Here, $m=1\text{kg}$, $v= 2\text{m/s}$, $KE= ?$

$$KE = \frac{1}{2} \times 1 \times 2^2 = 2 \text{ Joules}$$