

Chapter 10 Work and Energy Class 9 Important Questions NCERT Science

Q.1 (a) Derive an expression for kinetic energy of a body having mass m and moving with a velocity v .

(b) When velocity of a body is increased 5 times, what is the change in its kinetic energy ?

(c) Two masses m and $2m$ are dropped from heights h and $2h$. On reaching the ground, which will have greater kinetic energy and why ? [SAII-2013]

Answer.

(a) For derivation see above questions.

(b) Kinetic energy is given by the expression

$KE = \frac{1}{2} mv^2$, therefore, if velocity is made 5 times KE will increase by 25 times.

(c) More the potential energy more will be the kinetic energy of the body when it falls. Hence, the body with mass $2m$ will have greater kinetic energy as it has more potential energy.

Q.2 (a) Define power. Give its SI unit.

(b) Taking the example of a simple pendulum, explain the variations in the forms of energy and the inter-conversions involved. [SA II-2011]

Answer.

(a) Power is defined as the rate of doing work. Its SI unit is watt.

(b) For a simple pendulum, the inter-conversion of energy is as shown in the table below :

Question.3 Define : (a) power (b) work done (c) kinetic energy. Give SI unit of each. [SAII-2014]

Answer.

(a) The rate of doing work is called power. Its SI unit is watt.

(b) Work is the product of force and displacement. Its SI unit is joule.

(c) It is the energy possessed by a body by virtue of its motion. Its SI unit is joule.