

06/09/23

HOME ASSIGNMENT

classmate
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① How is work related to energy?

Ans → There is a relationship between work and energy. The work done on a body in changing its state is said to be the energy possessed by the body.

② What is potential energy? State its unit.

Ans → The energy possessed by a body due to its state of rest or position is called potential energy. Joule is its unit.
($GPE = mgh$) (P.E.)

③ Give one example of a body that has potential energy in each of the following -

Ans (a) Due to its position at height -

Ans → A stone placed at a height has potential energy stored

In it. The stone has this energy because of its position at a height. The stone is dropped on a nail fixed on a piece of wood. It drives the nail into the wood due to its potential energy.

(c) Due to its elongated stretched state.

Ans → A stretched rubber band has potential energy. It does work in restoring itself to its original state. A pebble placed on the stretched rubber catapult, is thrown away when it is released to restore its original state. In stretching a rubber band, work is done. This work is stored in the rubber band in form of potential energy. This potential energy does work in moving the pebble.

④ State two factors on which the potential energy of a body at a certain height above the ground depends.

Ans Two factors on which potential energy of a body at a certain height above the ground depends are -

* Amount of work done in moving the thing up to the height against the gravity force of gravity acting on the body, or Distance moved.

* Height raised, against the force gravity.

⑤ A body of mass m is moved from ground to a height h . If force of gravity on mass of 1 kg is g newton,

(a) Find the force needed to lift the body. $F = mg$.

(b) Find the work done in lifting the body = work done in lifting the body = Force (mg) \times displacement (h) = $mg \times h$.

(c) Find the potential energy ~~stored~~ stored in the body. = $P.E = mgh$.

(d) Name the type of energy (kinetic or potential) possessed by the following:

(a) A moving cricket ball
~~Ans~~ \rightarrow Kinetic energy

(b) A stone at rest on the top of a building.
~~Ans~~ \rightarrow Potential energy

(c) A compressed spring
~~Ans~~ \rightarrow Potential energy

(d) A moving bus.

Ans → Kinetic Energy

(e) A bullet fired from a gun.

Ans → Kinetic Energy

(f) Water flowing in a river.

Ans → Kinetic Energy

(g) A stretched rubber band.

Ans → Potential Energy

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