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Date
Page

Work, Energy and Power

H/W-1

5. What kind of energy transformation takes place in the following devices:

a) hydro-electric power station
→ Mechanical Energy ~~and~~ into Electrical energy

b) battery
→ Chemical into Electrical energy.

c) electric bulb
→ ~~Electrical and~~ into ~~Light energy~~.
Heat
→ Electrical energy into Light and Heate energy.

d) heater
→ Electrical energy into Heat and Light energy

e) a green plant
→ Light energy into Chemical energy

f) human body
→ Chemical energy into mechanical energy and heat energy

6. State the kind of energy (potential or kinetic) possessed the following phenomena.

a) a bullet fired from a gun
→ Kinetic energy

b) an arrow on a bow
→ Potential energy

c) a wound spring of a toy car
→ Potential energy.

d) water in spring

→ Kinetic energy.

e) a stone resting at the top of a hill

→ Potential energy.

f) a stretched rubber

→ Potential energy.

8. Numerical problems.

a) An object can be displaced to 5m by the application of 20N force. Calculate the work done.

→ Soln,

Here,

Displacement [d] = 5m

Force [F] = 20N

Work done [W] = ?

We have,

$W = F \times d$

or, W = 20N × 5m

∴ W = 100J

∴ Work done is 100J.

b. Calculate the work done if a boy of mass ~~20kg~~ 20kg is taken to a height of 2m. (take g = 9.8m/s²)

→ Soln,

Here,

mass [m] = 20kg

acceleration due to gravity [g] = 9.8m/s²

height [h] = 2m

Work [W] = ?

We have,

W = m × g × h

= 20kg × 9.8m/s² × 2m

∴ W = 392 J

∴ Work done is 392J.