SUBJECT:- PHYSICS   CLASS:- IXTH   DATE:-21/01/XXI

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CHAPTER 4. (WORK, ENERGY AND POWER REVISION)(BASED ON NCERT PATTERN)

Q1. What is power?
Ans:-Power is defined as the rate of doing work
Q2. Define 1 watt of power.
Ans:-When a work of 1 joule is done in 1 s, the power is said to be one watt.
Q3. A lamp consumes 1000 J of electrical energy in 10 s. What is its power?
Ans:-Given W = 1000J, t = 10s, P =?
We know, P = W/t = 1000/10 = 100W
Q4. Define average power.
Ans:-When a machine or person does different amounts of work or uses energy in different intervals of time, the ratio between the total work or energy consumed to the total time is average power.

Q5. Certain force acting on a 20 kg mass changes its velocity from 5 m s⁻¹ to 2 m s⁻¹. Calculate the work done by the force.

Ans:-

Work done by the force is equal to the change in kinetic energy produced in the body.

Now, $m = 20$ kg, $u = 5$ m s^{-1}, $v = 2$ m s^{-1}, $W = ?$

Using the expression $W = \dfrac{1}{2}\ mv^2 - \dfrac{1}{2}\ mu^2$, we have

$$W = \frac{1}{2}\ m(v^2 - u^2) = \frac{1}{2} \times 20\ ((2)^2 - (5)^2)$$

Or $W = -210$ J

The negative sign indicates that work has been done in slowing the body.