Law of conservation of energy and its examples Work Energy Theorem, Power, Transformation of energy

CLASS-IX

SUBJECT : PHYSICS
CHAPTER NUMBER: 11
CHAPTER NAME : WORK AND ENERGY

Home Assignment

1. Work done in time t on a body of mass m which is accelerated from rest to a speed of v in time t_1 as a function of time t is given by –

   (1) $\dfrac{1}{2} m \dfrac{v}{t_1} t^2$

   (2) $m \dfrac{v}{t_1} t^2$

   (3) $\dfrac{1}{2} m \left(\dfrac{mv}{t_1} \right)^2 t^2$

   (4) $\dfrac{1}{2} m \dfrac{v^2}{t_1^2} t^2$

2. A particle of mass m moves from rest under the action of a constant force F which acts for two seconds. The maximum power attained is –

   (1) 2Fm

   (2) F^2/m

   (3) 2 F/m

   (4) $2F^2/m$

3. A car is moving with a constant speed of 20 m/s against a resistance of 100N. The power exerted by the car is

   (1) 2 kW

   (2) 5 W

   (3) 200 W

   (4) 1 kW

Home Assignment

4. A ball is dropped from a height of 10m. If the energy of the ball reduces by 40% after striking the ground, how much high can the ball bounce back (Take g = 10 m/s2)

5. (a) State law of conservation of energy. Explain it with one example.
    (b) Two girls each of weight 400 N climb up a rope through a height of 8 metres. Girl A takes 20 seconds while Girl B takes 50 seconds to accomplish this task. What is the power expended by each girl ?
    (c) An electric heater is rated 1500 watt. How much energy does it use in 10 hours ?

6.
a) What is the work done to increase the velocity of a car from 36 km/h to 72 km/h if the mass of the car is 1500 kg. Does the work done by the force have a negative or a positive magnitude?
b) Where does an oscillating pendulum has maximum P.E. and K.E. ?

THANKING YOU

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