

VIDYA BHAVAN, BALIKA VIDYAPEETH  
SHAKTI UTTHAN ASHRAM, LAKHISARAI, PIN:-811311

SUBJECT:- PHYSICS

CLASS:- IXTH

DATE:-24/12/XX

SUBJECT TEACHER:- MR. NEEL NIRANJAN

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

**Question 1. An object of mass, m is moving with a constant velocity, v. How much work should be done on the object in order to bring the object to rest?**

**Ans:-** Kinetic energy of an object of mass m moving with a velocity v is given by the expression  $\frac{1}{2}mv^2$ . To bring the object to rest, an equal amount of work i.e.  $\frac{1}{2}mv^2$  is required to be done on the object.

**Question 2. Calculate the work required to be done to stop a car of 1500 kg moving at a velocity of 60 km/h.**

**Ans:-**

Mass of car,  $m = 1500 \text{ kg}$

Velocity of car,  $v = 60 \text{ km/h} = 60 \times \frac{5}{18} \text{ m/s}$

Kinetic energy,  $E_k = \frac{1}{2}mv^2$

$$E_k = \frac{1}{2} \times 1500 \times \left(60 \times \frac{5}{18}\right)^2 = 20.8 \times 10^4 \text{ J}$$

To stop the car, an amount of work equal to  $E_k$  is required to be done.

Hence,  $20.8 \times 10^4 \text{ J}$  of work is required to stop the car.

**Question 3. Sonia says that the acceleration in an object could be zero even when several forces are acting on it. Do you agree with her? Why?**

**Ans:-** Yes, acceleration in an object could be zero even when several forces are acting on it. This happens when all the forces cancel out each other i.e., the net force acting on the object is zero.