SUBJECT:- PHYSICS   CLASS:- IXTH   DATE:-22/02/XXI

SUBJECT TEACHER:- MR. NEEL NIRANJAN

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

Question 1. Illustrate the law of conservation of energy by discussing the energy changes which occur when we draw a pendulum bob to one side and allow it to oscillate. Why does the bob eventually come to rest? What happens to its energy eventually? Is it a violation of the law of conservation of energy?

Ans:- When the pendulum bob is pulled (say towards left), the energy supplied is stored in it is the form
Of PE on account of its higher position. When the pendulum is released so that it starts moving towards right, then its PE changes into KE such that in mean position, it has maximum KE, and Zero PE. As the pendulum moves towards extreme right, its KE changes into PE such that at the extreme position, it has maximum PE and zero KE. When it moves from this extreme position to mean position, its PE again changes to KE. This illustrates the law Of conservation of energy. Eventually, the bob comes to rest, because during each oscillation a part of the energy possessed by it transferred to air and in overcoming friction at the point of suspension. Thus, the energy of the pendulum is dissipated in air.

Question 2. Find the energy in kWh consumed in 10 hours by four devices of power 500 W each.
Ans:- Power rating of each device, P = 500 W = 0.50 kW
Time for which each device runs, t = 10 h
Work done = Energy consumed by each device (E)
We know, power = Energy consumed / Time
Energy consumed by each device= Power × Time
E = P x t = 0.50×10 = 5 kWh
Hence, the energy consumed by four devices of power 500 W each in 10 h will be
4 × 5 kWh = 20 kWh = 20 units