Answer on Question #43344, Physics, Mechanics — Kinematics — Dynamics

a particle of mass 20kg attached to a spring force constant 400N/m ,is oscillated along x-axis about the equilibrium position x=0 ,if the amplitude x=10cm what is the kinetic energy at x=0

Solution

We will use energy conservation law. Kinetic energy at x=0 is equal to potential energy at maximum amplitude. Hence

$$E = \frac{1}{2}kx_{max} = \frac{1}{2}400\,N/m \cdot 0.1\,m = 20\,J$$

Kinetic energy at x=0 is 20 J.