Work Done

U82-6 A net force of 100 N acts constantly on a body of mass 40 kg so that the body, initially at rest, moves along a smooth horizontal track. The work done on the body by this force during the first second is ____J

A. 0 B. 75 C. 100 D. 125 E. 150

U88-5 A body of mass m moves with a constant angular speed ω in a horizontal circle of radius r. What is the work done by the external force on the body in completing one revolution?

A. 0 B. $mr^2\omega^2$ C. $0.5mr^2\omega^2$ D. $2\pi mr^2\omega^2$ E. N.O.T.A.

U93-P3a A uniform force F is applied to a small ball of mass 600 g for 7 seconds, when its initial speed is 12 m s^{-1}. When the force is withdrawn after 7 seconds, the ball reaches a speed of 40ms^{-1}.

(i) What is the acceleration of the ball during these 7 seconds?

(ii) How many newton is the uniform force F?

(iii) What is the impulse of the ball?

(iv) How much work has been done by the force F?

(b) A neutron of mass m_p makes a head-on, perfectly elastic collision with a nitrogen nucleus of mass 14 m_p, which is initially at rest. After the collision, the neutron and nucleus move along the same line. Find the ratio of the kinetic energy of the neutron before and after the collision.

[4 m s^{-1}; 2.4 N; 16.8 kg m s^{-1}; 436.8 J; 225/169]

U94-7 A goal-keeper kicks a stationary football with a force F. If the football, of mass m, flies off with an initial velocity v_0 and travels a total distance S before it stops, then how much work is done to the football by the goal-keeper?

A. FS B. $\frac{1}{2}mv_0^2$ C. $\frac{1}{2}mv_0^2 + FS$ D. $\frac{1}{2}mv_0^2 - FS$

U2k10-7. Objects P of mass 3 kg and object Q of mass 5 kg have the same amount of kinetic energy. What is the ratio of the momentum of object P to the momentum of object Q?

A. $\frac{5}{3}$ B. $\frac{3}{5}$ C. $\sqrt{\frac{3}{5}}$ D. $\sqrt{\frac{5}{3}}$

U2k13-5 As shown by the graph in Fig.U2k13-5, force F acting on a body varies as its displacement s. The area under the graph represents

A. the displacement of the body.
B. the work done by the external force.
C. the momentum gained by the body.
D. the acceleration gained by the body.

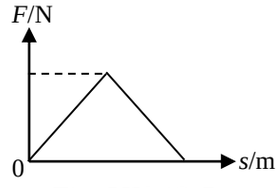

Fig. U2k13-5