

Topic :- WORK ENERGY AND POWER

- A constant power p is applied to a car starting from rest. If v is the velocity of the car at time t , then
 - $v \propto t$
 - $v \propto \frac{1}{t}$
 - $v \propto \sqrt{t}$
 - $v \propto \frac{1}{\sqrt{t}}$
- A body of mass 3 kg is under a force which causes a displacement in it, given by $s = t^2/3$ (in m). Find the work done by the force in 2 s
 - 2 J
 - 3.8 J
 - 5.2 J
 - 2.6 J
- A bomb of mass 9 kg explodes into two parts. One part of mass 3 kg moves with velocity 16 m/s, then the KE of the other part is
 - 162 J
 - 150 J
 - 192 J
 - 200 J
- A spring gun of spring constant 90 N/cm is compressed 12 cm by a ball of mass 16 g . If the trigger is pulled, the velocity of the ball is
 - 50 ms^{-1}
 - 9 ms^{-1}
 - 40 ms^{-1}
 - 90 ms^{-1}
- A body is initially at rest. It undergoes one-dimensional motion with constant acceleration. The power delivered to it at time t is proportional to
 - $t^{1/2}$
 - t
 - $t^{3/2}$
 - t^2
- A shell initially at rest explodes into two pieces of equal mass, then the two pieces will
 - Be at rest
 - Move with different velocities in different directions
 - Move with the same velocity in opposite directions
 - Move with the same velocity in same direction
- The slope of the kinetic energy displacement curve of a particle in motion is
 - Equal to the acceleration of the particle
 - Inversely proportional to the acceleration
 - Directly proportional to the acceleration
 - None of the above

15. A particle of mass $100g$ is thrown vertically upwards with a speed of $5m/s$. The work done by the force of gravity during the time the particle goes up is
a) $-1.25 J$ b) $1.25 J$ c) $0.5 J$ d) $-0.5 J$
16. A neutron makes a head-on elastic collision with a stationary deuteron. The fractional energy loss of the neutron in the collision is
a) $16/81$ b) $8/9$ c) $8/27$ d) $2/3$
17. Which among the following, is a form of energy
a) Light b) Pressure c) Momentum d) Power
18. A particle moves in a straight line with retardation proportional to its displacement. Its loss of KE for any displacement x is proportional to
a) x b) x^2 c) x^0 d) e^x
19. A smooth sphere of mass M moving with velocity u directly collides elastically with another sphere of mass m at rest. After collision their final velocities are V and v respectively. The value of v is
a) $\frac{2uM}{m}$ b) $\frac{2um}{M}$ c) $\frac{2u}{1+\frac{m}{M}}$ d) $\frac{2u}{1+\frac{M}{m}}$
20. A body of mass $2 kg$ is thrown up vertically with kinetic energy of $490 J$. The height at which the kinetic energy of the body becomes half of its original value is?
a) $50 m$ b) $12.25 m$ c) $25 m$ d) $10 m$

