

PYQSide

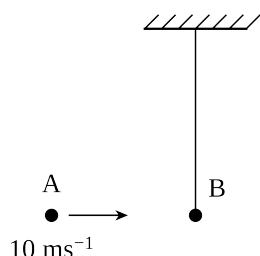
NEET WORK, ENERGY AND POWER — COLLISIONS IN ONE DIMENSION (ELASTIC AND INELASTIC) — PYQS

Max. Marks: 28

Questions: 7

Section A (MCQ)

- Q.1** Bob B of mass m at rest is hanging vertically from the ceiling via a massless string of length 10 m , as shown in the figure. Point mass A of mass m travelling horizontally with speed 10 ms^{-1} hits bob B elastically. The bob B rises h meter after the collision. Taking the acceleration due to gravity $g = 10\text{ ms}^{-2}$ and neglecting the size of the bob, the value of h is: [RE-NEET (UG) 2026]



- (1) 2.5 (2) 8 (3) 7 (4) 5

Scan or tap for the full solution



- Q.2** Two bodies A and B of same mass undergo completely inelastic one dimensional collision. The body A moves with velocity v_1 while body B is at rest before collision. The velocity of the system after collision is v_2 . The ratio $v_1:v_2$ is [NEET (UG) 2024]

- (1) 1:2 (2) 2:1 (3) 4:1 (4) 1:4

Scan or tap for the full solution



- Q.3** Body A of mass $4m$ moving with speed u collides with another body B of mass $2m$, at rest. The collision is head on and elastic in nature. After the collision the fraction of energy lost by the colliding body A is: [NEET (UG) 2019]

- (1) $\frac{5}{9}$ (2) $\frac{4}{9}$ (3) $\frac{8}{9}$ (4) $\frac{1}{9}$

Scan or tap for the full solution



- Q.4** A moving block having mass m , collides with another stationary block having mass $4m$. The lighter block comes to rest after collision. When the initial velocity of the lighter block is v , then the value of coefficient of restitution (e) will be [NEET 2018]

- (1) 0.5 (2) 0.25 (3) 0.8 (4) 0.4

Scan or tap for the full solution



- Q.5** Two identical balls A and B having velocities of 0.5 m s^{-1} and -0.3 m s^{-1} respectively collide elastically in one dimension. The velocities of B and A after the collision respectively will be:

[NEET 2016 (Phase 2)]

- (1) -0.5 m s^{-1} and 0.3 m s^{-1}
 (2) 0.5 m s^{-1} and -0.3 m s^{-1}
 (3) -0.3 m s^{-1} and 0.5 m s^{-1}
 (4) 0.3 m s^{-1} and 0.5 m s^{-1}

Scan or tap for the full solution



- Q.6** Two particles of masses m_1, m_2 move with initial velocities u_1 and u_2 . On collision, one of the particles gets excited to higher level, after absorbing energy ϵ . If final velocities of particles be v_1 and v_2 then we must have:

[AIPMT 2015 (Cancelled)]

- (1) $\frac{1}{2}m_1u_1^2 + \frac{1}{2}m_2u_2^2 - \epsilon = \frac{1}{2}m_1v_1^2 + \frac{1}{2}m_2v_2^2$
 (2) $\frac{1}{2}m_1^2u_1^2 + \frac{1}{2}m_2^2u_2^2 + \epsilon = \frac{1}{2}m_1^2v_1^2 + \frac{1}{2}m_2^2v_2^2$
 (3) $m_1^2u_1 + m_2^2u_2 - \epsilon = m_1^2v_1 + m_2^2v_2$
 (4) $\frac{1}{2}m_1u_1^2 + \frac{1}{2}m_2u_2^2 = \frac{1}{2}m_1v_1^2 + \frac{1}{2}m_2v_2^2 - \epsilon$

Scan or tap for the full solution



- Q.7** A ball moving with velocity 2 m/s collides head on with another stationary ball of double the mass. If the coefficient of restitution is 0.5 , then their velocities (in m/s) after collision will be

[AIPMT 2010 (Prelims)]

- (1) 0, 1 (2) 1, 1 (3) 1, 0.5 (4) 0, 2

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7				
Ans.	4	2	3	2	2	1	1				