

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

Max. Marks: 12
Questions: 3

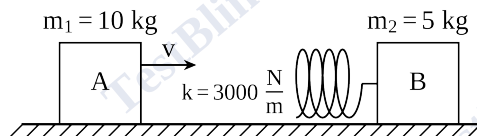
Section A (MCQ) — 3 questions

- Q.1** In a perfectly inelastic collision, two spheres made of the same material with masses 15 kg and 25 kg, moving in opposite directions with speeds of 10 m/s and 30 m/s, respectively, strike each other and stick together. The rise in temperature (in °C), if all the heat produced during the collision is retained by these spheres, is :
- (specific heat of sphere material 31 cal/(kg °C) and 1 cal = 4.2 J)

[JEE Main 2026 (Online) 23rd January Morning Shift]

- (1) 1.75 (2) 1.44 (3) 1.95 (4) 1.15

Scan or tap for the full solution


Q.2


Consider two blocks A and B of masses $m_1 = 10$ kg and $m_2 = 5$ kg that are placed on a frictionless table. The block A moves with a constant speed $v = 3$ m/s towards the block B kept at rest. A spring with spring constant $k = 3000$ N/m is attached with the block B as shown in the figure. After the collision, suppose that the blocks A and B, along with the spring in constant compression state, move together, then the compression in the spring is, (Neglect the mass of the spring)

[JEE Main 2025 (Online) 3rd April Evening Shift]

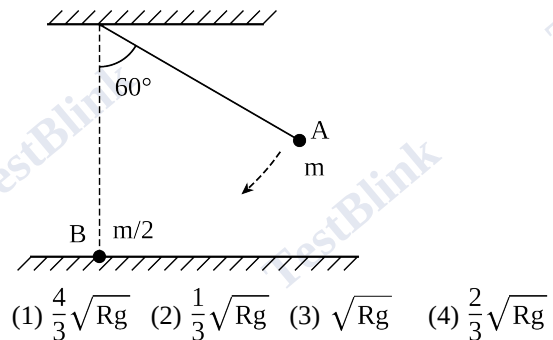
- (1) 0.3 m (2) 0.1 m (3) 0.4 m (4) 0.2 m

Scan or tap for the full solution



- Q.3** As shown below, bob A of a pendulum having massless string of length 'R' is released from 60° to the vertical. It hits another bob B of half the mass that is at rest on a frictionless table in the center. Assuming elastic collision, the magnitude of the velocity of bob A after the collision will be (take g as acceleration due to gravity.)

[JEE Main 2025 (Online) 29th January Morning Shift]



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ANSWER KEY

Ques.	1	2	3								
Ans.	2	2	2								