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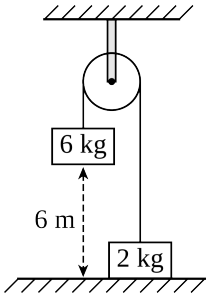
# JEE MAIN LAWS OF MOTION — FREE BODY DIAGRAMS, CONNECTED BODIES, PULLEYS, LIFTS AND WEDGES — PYQS

**Max. Marks:** 12 **Questions:** 3

## Section A (MCQ) — 3 questions

**Q.1** The velocity at which 6 kg mass (shown in figure) strikes the ground when it is released from a height of 6 m above the ground is _____ m/s. Assume pulley is massless and string is light and inextensible. (Take g = 10 m/s$^2$)

[JEE Main 2026 (Online) 6th April Evening Shift]

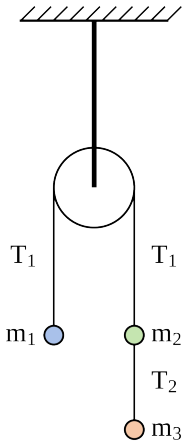



(1) 7.74 (2) 7.20 (3) 6.55 (4) 4.50

Scan or tap for the full solution

**Q.2** Three masses $m_1$ = 4 kg, $m_2$ = 4 kg and $m_3$ = 6 kg are suspended from a fixed smooth frictionless pulley as shown in the figure below. The value of $T_1/T_2$ is _____.
(take g = 10 m/s$^2$)

[JEE Main 2026 (Online) 5th April Morning Shift]




(1) 5/3 (2) 2/3 (3) 3/5 (4) 2/5

Scan or tap for the full solution

**Q.3** A block is sliding down on an inclined plane of slope θ and at an instant t = 0 this block is given an upward momentum so that it starts moving up on the inclined surface with velocity u. The distance (S) travelled by the block before its velocity becomes zero, is _____ .
(g = gravitational acceleration)

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

(1) $\frac{2u^2}{g\cos\theta}$ (2) $\frac{u^2}{\sqrt{2}g\cos\theta}$

(3) $\frac{u^2}{2g\sin\theta}$ (4) $\frac{u^2}{2g\cos\theta}$

Scan or tap for the full solution

## ANSWER KEY

| Ques. | 1 | 2 | 3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ans. | **1** | **1** | **3** | | | | | | | | |