

JEE MAIN LAWS OF MOTION — STATIC, KINETIC AND ROLLING FRICTION — PYQS

Max. Marks: 20
Questions: 5

Section A (MCQ) — 3 questions

- Q.1** The time taken by a block of mass m to slide down from the highest point to the lowest point on a rough inclined plane is 50 % more compared to the time taken by the same block on identical inclined smooth plane. Both inclined planes are at 45° with the horizontal. The coefficient of kinetic friction between the rough inclined surface and block is _____. [JEE Main 2026 (Online) 4th April Morning Shift]

 (1) $3/4$ (2) $2/3$ (3) $5/9$ (4) $4/9$

Scan or tap for the full solution



- Q.2** A block of mass 5 kg is moving on an inclined plane which makes an angle of 30° with the horizontal. Friction coefficient between the block and inclined plane surface is $\frac{\sqrt{3}}{2}$. The force to be applied on the block so that the block will move down without acceleration is _____ N. ($g = 10 \text{ m/s}^2$). [JEE Main 2026 (Online) 28th January Morning Shift]

(1) 25 (2) 12.5 (3) 15 (4) 7.5

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- Q.3** A cubic block of mass m is sliding down on an inclined plane at 60° with an acceleration of $\frac{g}{2}$, the value of coefficient of kinetic friction is _____ [JEE Main 2025 (Online) 7th April Morning Shift]

 (1) $\frac{\sqrt{3}}{2}$ (2) $\frac{\sqrt{2}}{3}$
 (3) $1 - \frac{\sqrt{3}}{2}$ (4) $\sqrt{3} - 1$

Scan or tap for the full solution



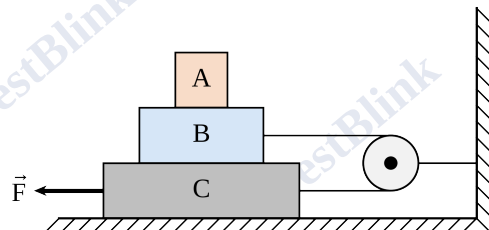
Section B (Numerical) — 2 questions

- Q.4** A block takes t time to slide down a plane inclined at 45° to the horizontal. If the surface is made smooth (frictionless), the block takes time $\frac{t}{2}$ to slide down the plane. The coefficient of friction between the block and the inclined plane is $\left(\frac{\alpha}{100}\right)$. The value of α is _____. [JEE Main 2026 (Online) 6th April Evening Shift]

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- Q.5** In the given figure the blocks A, B and C weigh 4 kg, 6 kg and 8 kg respectively. The coefficient of sliding friction between any two surfaces is 0.5. The force $\vec{F}$ required to slide the block C with constant speed is _____ N. (Use $g = 10 \text{ m/s}^2$) [JEE Main 2026 (Online) 24th January Morning Shift]



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ANSWER KEY

Section A (MCQ) — 3 questions

Ques.	1	2	3									
Ans.	3	2	4									

Section B (Numerical) — 2 questions

Ques.	4	5							
Ans.	75	210							