

PYQSide

JEE MAIN WORK, ENERGY AND POWER — VERTICAL CIRCULAR MOTION — PYQs

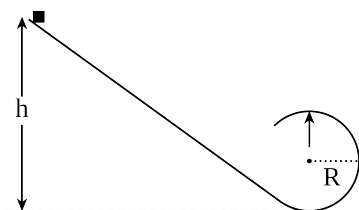
Max. Marks: 16

Questions: 4

Section A (MCQ)

- Q.1** A smooth inclined plane ends in a vertical circular loop, as shown in the figure. A small body is released from height h as shown. If the body exerts a force of three times its weight on the plane at the highest point of circle then the height $h = \alpha R$. The value of α is _____.

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



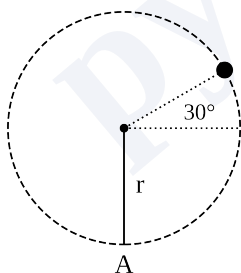
- (1) 2 (2) 4 (3) 3 (4) 6

Scan or tap for the full solution



- Q.2** In case of vertical circular motion of a particle by a thread of length r , if the tension in the thread is zero at an angle 30° shown in figure, the velocity at the bottom point (A) of the circular path is (g = gravitational acceleration)

[JEE Main 2026 (Online) 24th January Evening Shift]



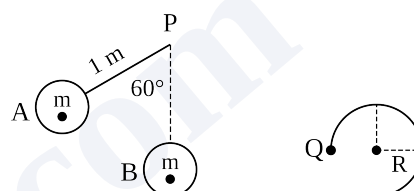
- (1) $\sqrt{\frac{7}{2}gr}$ (2) $\sqrt{4gr}$ (3) $\sqrt{\frac{5}{2}gr}$ (4) $\sqrt{5gr}$

Scan or tap for the full solution



- Q.3** A small bob A of mass m is attached to a massless rigid rod of length 1 m pivoted at point P and kept at an angle of 60° with vertical as shown in figure. At distance of 1 m below point P, an identical bob B is kept at rest on a smooth horizontal surface that extends to a circular track of radius R as shown in figure. If bob B just manages to complete the circular path of radius R upto a point Q after being hit elastically by bob A, then radius R is _____ m.

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



- (1) $\frac{1}{5}$ (2) $\frac{2 - \sqrt{3}}{5}$
(3) $\frac{3}{5}$ (4) $\frac{2 + \sqrt{3}}{5}$

Scan or tap for the full solution



- Q.4** A body of mass ' m ' connected to a massless and unstretchable string goes in vertical circle of radius ' R ' under gravity g . The other end of the string is fixed at the center of circle. If velocity at top of circular path is $n\sqrt{gR}$, where, $n \geq 1$, then ratio of kinetic energy of the body at bottom to that at top of the circle is :

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

- (1) $\frac{n^2 + 4}{n^2}$ (2) $\frac{n + 4}{n}$ (3) $\frac{n^2}{n^2 + 4}$ (4) $\frac{n}{n + 4}$

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4						
Ans.	2	1	1	1						