

PART 1 - PHYSICS

Topic : System of particles and rotational motion

SECTION-B : (Maximum Marks : 12)

This section contains **ONE** paragraph.

Based on each paragraph, there are **THREE** questions.

The answer to each question is a **NUMERICAL VALUE**.

For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30) in the place designated to enter the answer.

Answer to each question will be evaluated according to the following marking scheme :

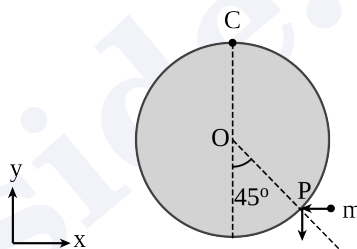
Full Marks : +4 If **ONLY** the correct answer is entered;

Zero Marks : 0 In all other cases.

Paragraph for Questions 1 and 2

A uniform circular disk of radius 0.2 m and mass 1 kg is pivoted at its top point C such that it can rotate freely around C in the XY plane, as shown in the figure. Initially, when the disk is at rest, a particle of mass 20 g, travelling along negative x direction in the XY plane with speed 100 m s^{-1} , hits the circumference of the disk at a point P. After collision the particle moves along negative y direction at a speed of 90 m s^{-1} .

[Given: the acceleration due to gravity (g) = $-10\hat{j} \text{ m s}^{-2}$]



1. After the collision the disk starts to rotate around point C in the XY plane. The maximum change in the height (in m) of its center O is:

[JEE Advanced 2026 Paper 2]

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2. Amount of energy loss (in J) in the collision is:

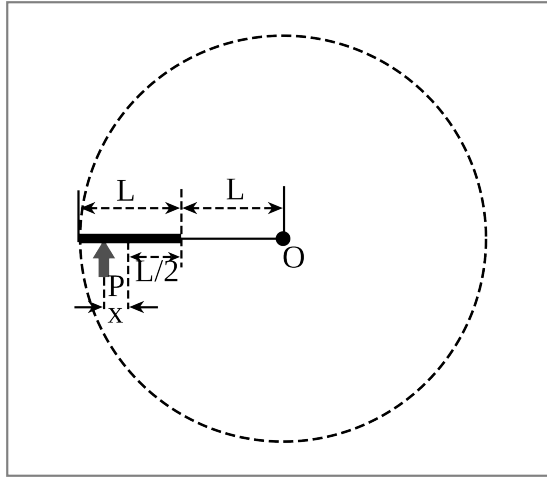
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3. A thin uniform rod of length L and certain mass is kept on a frictionless horizontal table with a massless string of length L fixed to one end (top view is shown in the figure). The other end of the string is pivoted to a point O. If a horizontal impulse P is imparted to the rod at a distance $x = L/n$ from the mid-point of the rod (see figure), then the rod and string revolve together around the point O, with the rod remaining aligned with the string. In such a case, the value of n is ____.

[JEE Advanced 2024 Paper 1]

Space for Rough Work



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Space for Rough Work

**JEE ADVANCED SYSTEM OF PARTICLES AND
ROTATIONAL MOTION — IMPULSE, COLLISION AND
ANGULAR MOMENTUM OF RIGID BODIES (JEE) —
PYQS**

Test Pattern : JEE (Advanced)

ANSWER KEY**SECTION-B**

Ques.	1	2	3							
Ans.	0.14 to 0.16	17 to 18	18							