

Lukhdhirji Engineering College, Morbi

Department of Mechanical Engineering

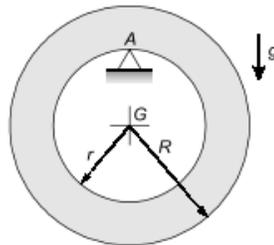
Bright Student Assignment (GTU MID SEM Marks more than 20)

Subject: DYNAMICS OF MACHINERY (3151911)

Semester : 5th

Year : 2022-23

1. A rigid uniform annular disc is pivoted on a knife edge A in a uniform gravitational field as shown, such that it can execute small amplitude simple harmonic motion in the plane of the figure without slip at the pivot point. The inner radius r and outer radius R are such that $r^2 = R^2/2$, and the acceleration due to gravity is g . If the time period of small amplitude simple harmonic motion is given by $T = \beta\pi\sqrt{R/g}$, where π is the ratio of circumference to diameter of a circle, then $\beta =$ _____ (round off to 2 decimal places). (GATE-2022)



2. For a dynamical system governed by the equation, $\ddot{x}(t) + 2\zeta\omega\dot{x}(t) + \omega^2 x(t) = 0$, the damping ratio ζ is equal to $\frac{1}{2\pi} \log_e 2$. The displacement x of this system is measured during a hammer test. A displacement peak in the positive displacement direction is measured to be 4 mm. Neglecting higher powers (>1) of the damping ratio, the displacement at the next peak in the positive direction will be _____ mm (in integer). (GATE-2022)

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Vision of the Department:

To deliver quality engineering education for Mechanical Engineers with Professional competency, Human values and Acceptability in the society.

Mission of the Department:

- To nurture engineers with basic and advance mechanical engineering concepts
- To impart Techno-Managerial skill in students to meet global engineering challenges
- To create ethical engineers who can contribute for sustainable development of society