

Unit 10 - Week 8

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

- Classical Mechanics: Principal Moments
- Classical Mechanics: Lagrangian of a rigid body
- Classical Mechanics: Motion of a free symmetric top
- Classical Mechanics: Angular velocity using Euler angles
- Classical Mechanics: Lagrangian of a heavy symmetric top

Quiz : Assignment 8

Week 8 Feedback Form : Introduction to Classical Mechanics

Week 9

Week 10

Week 11

Week 12

Live session

Video Download

Assignment 8

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-11-11, 23:59 IST.

1) If I_{km} denotes inertia tensor of a rigid body, then the following second rank tensor

4 points

$$\epsilon_{ijk} \epsilon_{ilm} I_{jk}$$

evaluates to

- 0
-
- $r_l r_m$
- $r^2 \delta_{lm}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
0

2) Imagine a rock that is symmetric (but not spherical) in shape – a symmetric top. It is thrown deep in space away from any source of forces. It is then observed from an inertial frame of reference in which its center of mass is at rest. A student claims that : "As the rock is symmetric in shape and there are no forces on it, the rock can only spin and there can not be any precession. "

3 points

Is the student's claim correct?

- Yes
- No

No, the answer is incorrect.
Score: 0

Accepted Answers:
No

3) For an asymmetric top the direction of its angular velocity vector $\boldsymbol{\Omega}$ points in the direction of its intrinsic angular momentum \mathbf{M} only if \mathbf{M} is parallel to one of its principal axes. Is this a correct statement?

3 points

- Yes
- No

No, the answer is incorrect.
Score: 0

Accepted Answers:
Yes