

X

reviewer1@nptel.iitm.ac.in ▾

Courses » **Mechanics Of Materials** Announcements **Course** Ask a Question Progress Mentor

## Unit 11 - week 9: Stresses and deflection in beams not loaded about principal axis

### Course outline

Week 0

How to access the portal

Week 1

Week 2

Week 3

Week 4-Concept of strain

Week 5-Constitutive relation, strain energy and potential

Week 6-Displacement due to uniaxial loading, temperature and bending

Week 7 -Stresses and deflection in homogeneous beams loaded about one principal axis

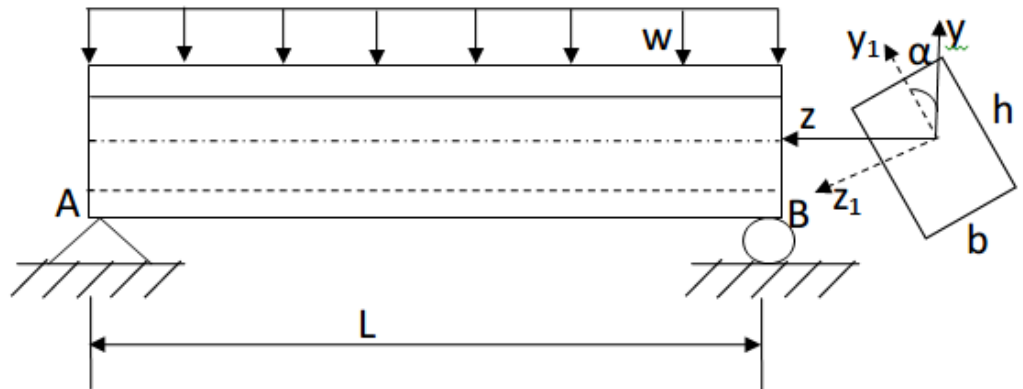
Week 8 - Stresses and deflection in beams loaded about one principal axis

week 9: Stresses and deflection in beams not loaded about principal axis

### Assignment 9

The due date for submitting this assignment has passed. **Due on 2018-03-28, 23:59 IST.**

#### Submitted assignment



A simply supported wood beam of rectangular cross section carries a uniform load of intensity,  $w$  as shown in figure. The plane of symmetry of the beam is inclined to the plane of loading by an angle  $\alpha$  as shown. Assume Young's modulus of the beam,  $E = 100$  GPa,  $L = 4$  m,  $w = 2$  kN/m,  $b = 0.12$  m,  $h = 0.2$  m and  $\alpha = 30$  degrees. For this beam compute the following:

- 1) **Moment of inertia about z axis,  $I_{zz} =$  \_\_\_\_\_  $\times 10^{-6} \text{ m}^4$**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 67.1,67.3

10 points

- 2) **Moment of inertia about y axis,  $I_{yy} =$  \_\_\_\_\_  $\times 10^{-6} \text{ m}^4$**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 41.5,41.7

10 points

- Moment of Intertia about arbitrarily oriented axis
- Example: Angle section
- Bending equation for bending about principal axis
- Bending equation about arbitrary axis
- Neutral axis
- Load not about principal axis
- Load about principal axis
- Quiz : Assignment 9
- Week 9 Feedback - Mechanics Of Materials
- Solution for Assignment - 9

**Week 10:**  
Stresses and displacement due to torsion or inflation

**Week 11**

**Week 12 -**  
Buckling of columns

**DOWNLOAD VIDEOS**

**Notes**

3) **Product moment of inertia,  $I_{yz} =$  \_\_\_\_\_  $\times 10^{-6} \text{ m}^4$**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 22.1,22.3

10 points

4) **Magnitude of the maximum bending normal stress = \_\_\_\_\_ MPa**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 8.4,8.6

10 points

5) **Orientation of the neutral axis with respect to z axis = \_\_\_\_\_ degrees**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 57.9,58.1

10 points

6) **Location of the maximum magnitude of the displacement from hinge support = \_\_ m**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Numeric) 2

10 points

7) **Magnitude of the displacement along y direction at mid span = \_\_\_\_\_ mm**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 1.1,1.3

10 points

8) **Magnitude of the displacement along z direction at mid span = \_\_\_\_\_ mm**

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

(Type: Range) 0.54,0.74

10 points

9) **Magnitude of the rotation about z axis at the hinge support = \_\_\_\_\_ degrees**

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.054,0.056

10 points

10 Magnitude of the rotation about y axis at the hinge support = \_\_\_\_\_ degrees

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Range) 0.028,0.03

10 points

Previous Page

End

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -



A project of



In association with



Funded by

Government of India  
Ministry of Human Resource Development

Powered by

