Assignment 07

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

Due on 2019-04-17, 23:59 IST.

1) Eigenvalues of a system will not be influenced by ______.
   - external force.
   - material stiffness.
   - material density.
   - boundary conditions.

No, the answer is incorrect.
Score: 0
Accepted Answers:
external force.

2) ______ is a correct expression for shear strain for a shear deformable beam.
   - $\Psi + \frac{d\psi}{dx}$
   - $\frac{d\psi}{dx}$
   - $\psi + 1$
   - $\psi$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\Psi + \frac{d\psi}{dx}$

3) Which of the following statements is not true about an Eigenvalue problem?
   - Eigenvalues are unique to a particular system.
   - Eigenvalues change due to changes in externally applied loads.
   - Eigenvalues are characteristics of the mathematical mode of the problem.
   - None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Eigenvalues change due to changes in externally applied loads.
Shear strain is constant throughout the beam.
- Timoshenko beam theory is preferred for short and thick beams.
- Neutral axis will remain normal to the cross-section before and after bending.
- Cross-sectional planes which are straight will remain straight after bending.

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Timoshenko beam theory is preferred for short and thick beams.

5) Primary variables for a Timoshenko beam can be expressed as:
1 point

Which of the following methods cannot be used to remove shear locking?
- Let \( m=n \), and use reduced integration on specific terms.
- Let \( m = n+1 \).
- Let \( m=n \), and use standard integration method for all terms.
- None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Let \( m=n \), and use standard integration method for all terms.

6) Primary variables for a Timoshenko beam can be expressed as:
1 point

If \( m=n=2 \), then which of the following statements is not true?
- Lagrangian approximation functions cannot be used.
- Bending energy will vanish.
- \( d^4\psi/dx^4 \) will become equal to zero.
- Shear locking will occur.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Lagrangian approximation functions cannot be used.

7) Primary variables for a Timoshenko beam can be expressed as:

Which of the following statements is true if approximation functions are Lagrangian in nature?

No, the answer is incorrect.
Score: 0

Accepted Answers:

8) Primary variables for a Timoshenko beam can be expressed as:

Which of the following statements is not true regarding shear locking?

- It is a numerical error related to the order of the approximation polynomial.
- It is a numerical issue related to rounding off error.
- Shear stress will become constant for \( m=n=2 \).
- \( n=m=2 \) will lead to shear locking.

No, the answer is incorrect.
Score: 0

Accepted Answers:
It is a numerical issue related to rounding off error.