

Unit 10 - Week 8

Course outline
How to access the portal?
Week 0 Assignment 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
<ul style="list-style-type: none"> Lecture 36 : Approximate Methods (Contd.) Lecture 37 : Collocation Method Lecture 38 : Analytical Methods Lecture 39 : Analytical Methods (Contd.) Lecture 40 : Analytical Methods (Contd.) Lecture Material Quiz : Assignment 8 Feedback for week 8
DOWNLOAD VIDEOS
Solution
Live Session
Text Transcription

Assignment 8

The due date for submitting this assignment has passed. Due on 2019-10-23, 23:59 IST.
 As per our records you have not submitted this assignment.

- The cross-sectional area A of a bar under axial vibration varies as $A = 5 \sin \frac{\pi x}{2L}$. Which of the following scheme can be used to obtain the mode shapes

 - a. Rayleigh- Ritz method
 - b. Collocation method
 - c. None of the above

a.
 b.
 c.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
 b.
- For simply supported Euler-Bernoulli beam of length L, which of the following is an acceptable trial function for Rayleigh-Ritz Method?

 - a. $x(1 - \frac{x}{L})$
 - b. $\sin \frac{\pi x}{2L}$
 - c. $x + L$
 - d. $\cos \frac{\pi x}{L}$

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- For a fixed-free bar of length L, which of the following is an acceptable trial function for collocation method

 - a. $x(1 - \frac{x}{L})$
 - b. $\sin \frac{\pi x}{2L}$
 - c. $x + L$
 - d. $\cos \frac{\pi x}{L}$

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 b.
- Which of the following are acceptable station points for collocation method for fixed-free bar of length L?

 - a. 0 and L
 - b. L/2 and L/4
 - c. L/3 and 2L/3
 - d. L/2 and L/5

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 b.
 c.
 d.
- Which of the following is true for collocation method?

 - a. Involve integration
 - b. $k_{ij} = k_{ji}$
 - c. Require station points
 - d. None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 c.
- Rayleigh –Ritz method involves minimization of

 - a. Error
 - b. Natural frequencies
 - c. Mode shapes
 - d. Rayleigh’s quotient

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 d.
- Rayleigh –Ritz method can be used for beams with uniform cross-sectional area but varying mass distribution

 - a. True
 - b. False

a.
 b.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- The right hand side of the Euler-Lagrange equation is

 - a. Zero
 - b. Non- conservative force
 - c. Conservative force
 - d. None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 b.
- Euler-Lagrange equation is derived from Hamilton principle

 - a. True
 - b. False

a.
 b.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- Euler-Lagrange equation is used to _____ the equation of motion

 - a. Derive
 - b. Solve
 - c. Simplify
 - d. None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- The kinetic energy of a simple pendulum is

 - a. $\frac{1}{2} mL^3 \dot{\theta}^2$
 - b. $\frac{1}{2} mL \dot{\theta}^2$
 - c. $\frac{1}{2} mL^2 \dot{\theta}^2$
 - d. $\frac{1}{2} m \dot{\theta}^2$

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 c.
- Lagrangian L is given as

 - a. Kinetic energy
 - b. Potential energy
 - c. Kinetic energy – Potential energy
 - d. Potential energy – Kinetic energy

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 c.
- Euler- Lagrange equation can be used for a non-linear system

 - a. True
 - b. False

a.
 b.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- The number of natural frequencies obtained from Rayleigh-Ritz method is equal to the number of trial functions

 - a. True
 - b. False

a.
 b.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
- The primary advantage of Euler-Lagrange equation over dynamic equilibrium is because of use of _____ instead of forces

 - a. Energies
 - b. Scalars
 - c. Derivatives
 - d. None of the above

a.
 b.
 c.
 d.

No, the answer is incorrect.
 Score: 0
Accepted Answers:
 a.
 b.