

Unit 8 - Week 6

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Assignment 6

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

Due on 2019-10-09, 23:59 IST.

1) The natural frequency of a bar under axial deformation depends on

1 point

- a. Length
b. Area of Cross-Section
c. Boundary condition
d. Young's modulus

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.
b.
c.
d.

2) The mode shape of a bar under axial deformation depends on

1 point

- a. Length
b. Area of Cross-Section
c. Boundary condition
d. Young's modulus

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.
b.
c.
d.

3) The second natural frequency of a fixed-fixed bar is

1 point

- a. $\frac{\pi}{L} \sqrt{\frac{EA}{m}}$
b. $\frac{\pi}{2L} \sqrt{\frac{EA}{m}}$
c. $\frac{2\pi}{L} \sqrt{\frac{EA}{m}}$
d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- c.

4) The first natural frequency of a fixed-free bar is

1 point

- a. $\frac{\pi}{L} \sqrt{\frac{EA}{m}}$
b. $\frac{\pi}{2L} \sqrt{\frac{EA}{m}}$
c. $\frac{2\pi}{L} \sqrt{\frac{EA}{m}}$
d. $\frac{3\pi}{2L} \sqrt{\frac{EA}{m}}$

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- b.

5) Which of the following is a natural frequency of a free-free bar?

1 point

- a. 0
b. $\frac{\pi}{2L} \sqrt{\frac{EA}{m}}$
c. $\frac{3\pi}{2L} \sqrt{\frac{EA}{m}}$
d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

6) The first mode shape of a fixed- free bar is

1 point

- a. $\sqrt{\frac{2}{mL}} \sin \frac{\pi x}{2L}$
b. $\sqrt{\frac{2}{mL}} \sin \frac{3\pi x}{2L}$
c. $\sqrt{\frac{2}{mL}} \sin \frac{\pi x}{L}$
d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

7) The mode shape of a bar fixed at one end and a mass at free end are orthogonal to each other

1 point

- a. True
b. False

- a.
 b.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

8) The expression of orthogonality of mode shapes of a bar is given as,

0 points

- a. $\int_0^L \theta_p(x) m(x) \theta_q(x) dx = 0$
b. $\int_0^L \theta_p(x) EA(x) \theta_q(x) dx = 0$
c. $\int_0^L \theta_p(x) m(x) \theta_p(x) dx = 0$
d. $\int_0^L \theta_p(x) EA(x) \theta_p(x) dx = 0$

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.
b.

9) The mode shapes of a bar with varying cross-sectional area are orthogonal

1 point

- a. TRUE
b. FALSE

- a.
 b.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

10) The response $u(x,t)$ can be written as $\theta(x)T(t)$ when the bar is undergoing vibration under

1 point

- a. Force
b. Initial condition
c. Normal modes
d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- c.

11) The first natural frequency of a simply-supported beam with uniform cross-section is

1 point

- a. $\frac{\pi^2}{L^2} \sqrt{\frac{EI}{m}}$
b. $\frac{\pi}{L} \sqrt{\frac{EI}{m}}$
c. $\frac{2\pi^2}{L^2} \sqrt{\frac{EI}{m} \frac{qL}{8}}$
d. $\frac{2\pi}{L} \sqrt{\frac{EI}{m}}$

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

12) The first mode shape of a simply-supported beam with uniform cross-section is

1 point

- a. $C \sin \frac{\pi x}{L}$
b. $C \sin \frac{2\pi x}{L}$
c. $\sqrt{\frac{2}{mL}} \sin \frac{\pi x}{L}$
d. $\sqrt{\frac{2}{mL}} \sin \frac{2\pi x}{L}$

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.
c.

13) One of the natural frequencies of a free-free beam is

1 point

- a. $\frac{\pi}{L} \sqrt{\frac{EI}{m}}$
b. $\frac{\pi^2}{L^2} \sqrt{\frac{EI}{m}}$
c. 0
d. None of the above

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- c.

14) The mass normalized mode shapes of a simply-supported beam satisfy the following condition

1 point

- a. $\int_0^L \theta_p(x) m(x) \theta_p(x) dx = 1$
b. $\int_0^L \theta_p(x) EA(x) \theta_p(x) dx = 1$
c. $\int_0^L \theta_p(x) m(x) \theta_q(x) dx = 0$
d. $\int_0^L \theta_p(x) EA(x) \theta_q(x) dx = 1$

- a.
 b.
 c.
 d.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.

15) The mode shapes of a fixed-fixed beam of uniform cross-section are orthogonal to each other

1 point

- a. TRUE
b. FALSE

- a.
 b.

No, the answer is incorrect.
Score: 0

Accepted Answers:

- a.