Assignment 4

Due on 2020-02-20, 03:00 AM

Objectives:
- To find the stress that causes the sink to bend.
- To determine the strain at the point of maximum stress.
- To calculate the displacement at a given point on the beam.
- To analyze the behavior of a cantilever beam under load.
- To apply the principles of mechanics to solve practical problems.

Question 1:
A beam is subjected to a concentrated load P at its midpoint. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at the mid-span.

Question 2:
A beam is subjected to a distributed load of intensity q over its entire length. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at a distance x from the support.

Question 3:
A beam is subjected to a point load P at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at a distance x from the load.

Question 4:
A beam is subjected to a couple of moment M applied at one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at a distance x from the application point.

Question 5:
A beam is subjected to a combination of load P and moment M at a point on the beam. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at a distance x from the point of application.

Question 6:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflection y at a distance x from the point of application.

Question 7:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the bending moment M at a distance x from the point of application.

Question 8:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the shear force V at a distance x from the point of application.

Question 9:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the slope of the beam at a distance x from the point of application.

Question 10:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the rotation of the beam at a distance x from the point of application.

Question 11:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the stresses at a distance x from the point of application.

Question 12:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the displacements at a distance x from the point of application.

Question 13:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the curvature of the beam at a distance x from the point of application.

Question 14:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the deflections at a distance x from the point of application.

Question 15:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the rotations at a distance x from the point of application.

Question 16:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the slopes at a distance x from the point of application.

Question 17:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the shear forces at a distance x from the point of application.

Question 18:
A beam is subjected to a combination of load P and moment M applied at a distance x from one end. If the length of the beam is L, and the modulus of elasticity E is known, write the expression for the bending moments at a distance x from the point of application.