

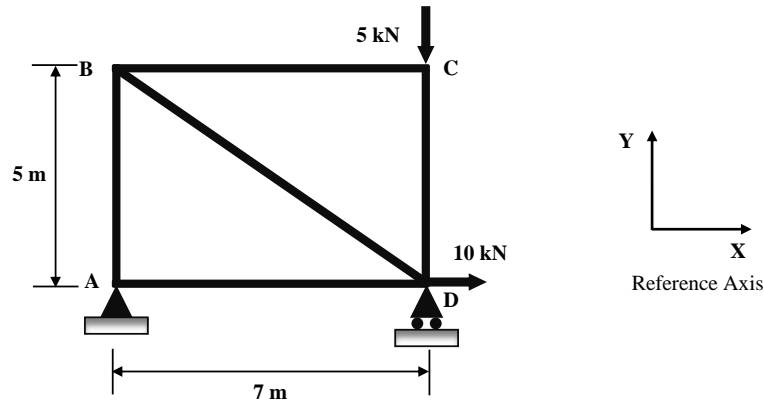
BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
 Second Semester (2021-2022), Comprehensive Test
 Course: Analysis of Structures (CE F241)

Date: 20th May 2022

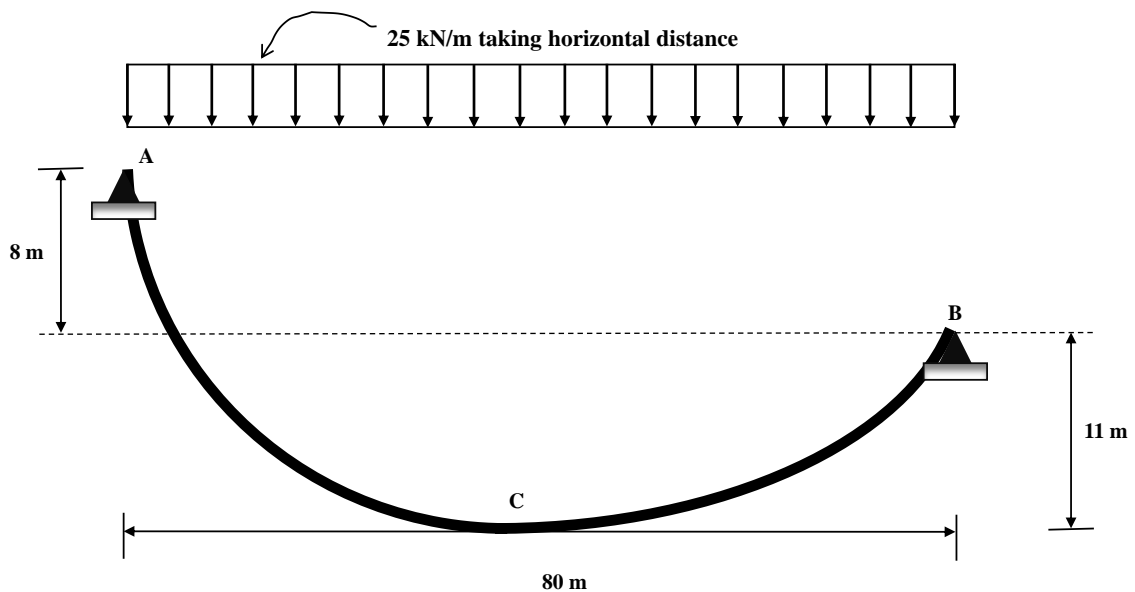
Max. Marks: 90

Duration: 8:00 AM-11:00 AM

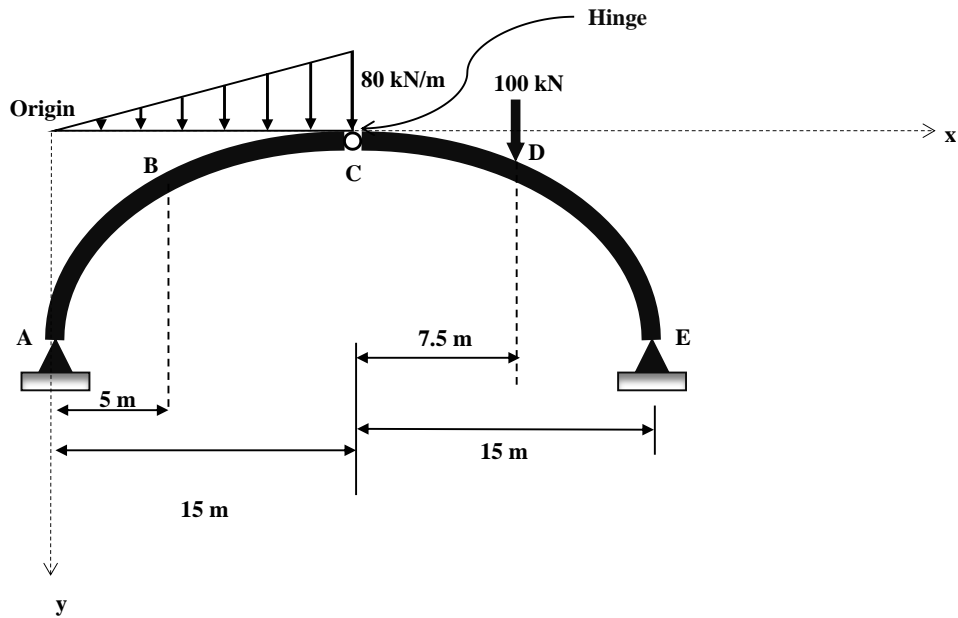
Q.1. Find ΔB_x (horizontal displacement at B) of the following truss using Castigliano's 2nd theorem. **[15]**



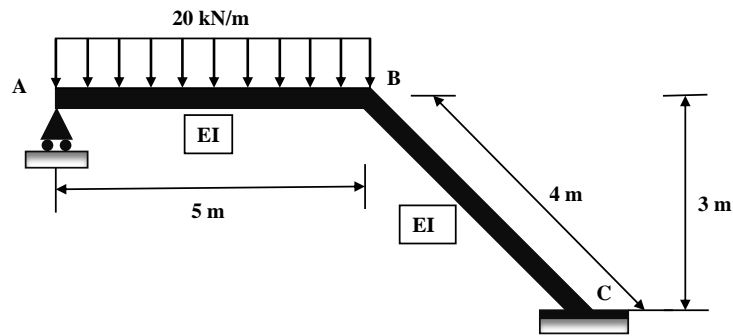
Q.2. Find the tension of the cable at A, B and C points. Point C is the bottom most point. Determine the reactions (horizontal and vertical) at A and B points. Check the total applied load is the summation of total vertical components developed at A and B. **[10]**



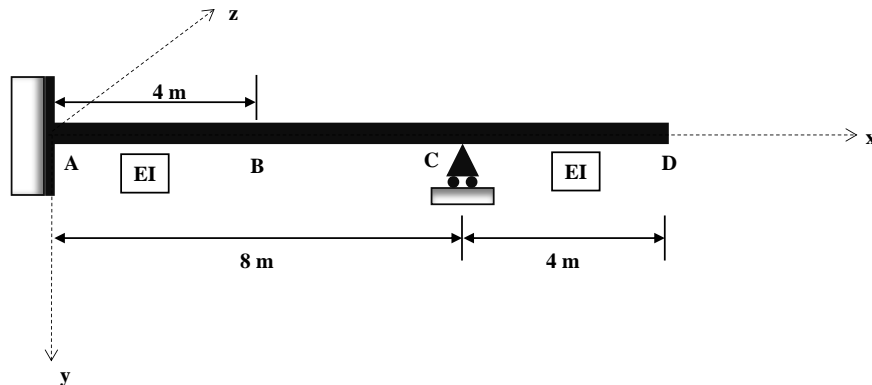
Q.3. Find the vertical force and bending moment at point B for the following 3-hinged arch. Equation of the shape of the arch is $y = 0.06666(x - 15)^2$. **[10]**



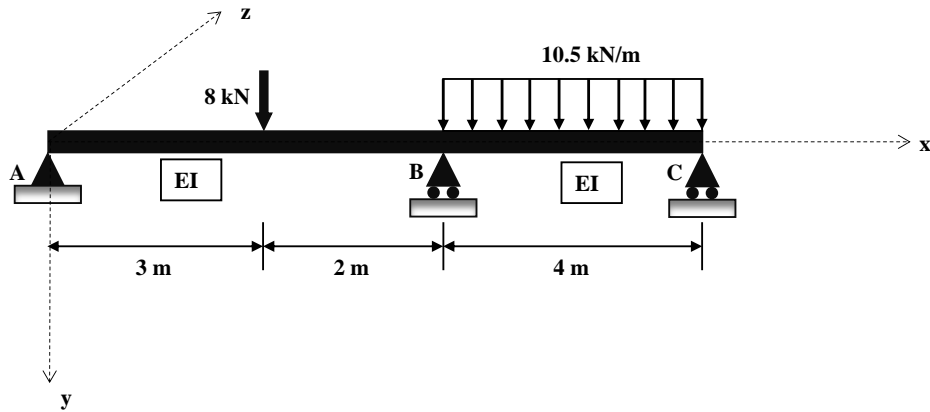
Q.4. Solve the frame by force method. Find the reactions. Draw the shear force and bending moment diagrams mentioning the values. [15]



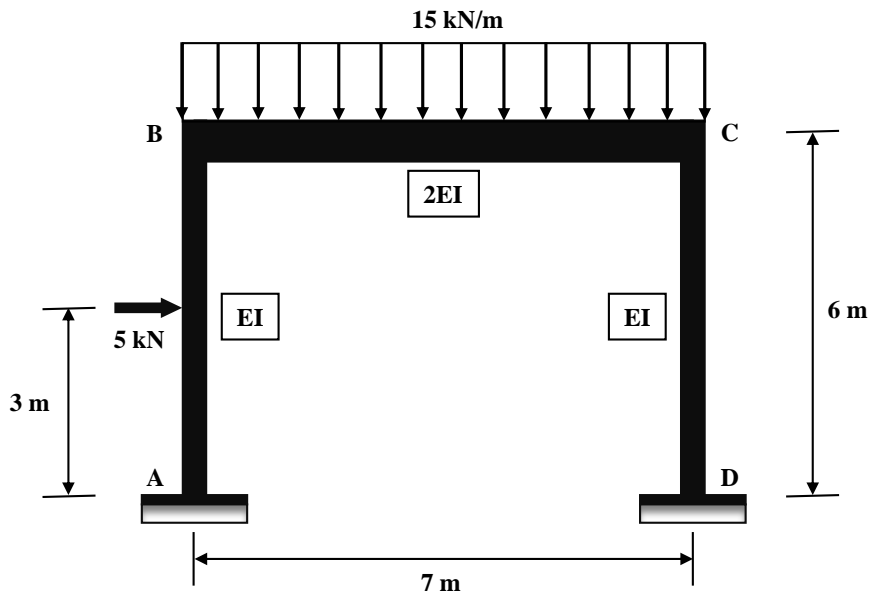
Q.5. Draw the influence line diagram (I.L.D) for bending moment at B of the following beam. Use Müller-Breslau principle. Find the ordinates of the diagram at every 2m. EI is constant throughout the beam. [15]



Q.6. Analyze the following beam using moment distribution method. Find all the reactions and BM at B. Draw the BMD. Find the points of contraflexure. EI is constant throughout the beam. [10]



Q.7. Solve the following frame using slope-deflection method. Find the reactions at A and D and the internal forces at B and C. [15]



****All the Best ****