

R15

Code No: 126WZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, April - 2018

STRUCTURAL ANALYSIS - II

(Common to CEE, CE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Define distribution factor. [2]
- b) What is the carry over factor of a bending member when the far end is (i) hinged (ii) fixed. [3]
- c) What are the basic assumptions made in slope deflection method? [2]
- d) Name the different types of arches as per structure configuration and determine SI of fixed arch. [3]
- e) What is Substitute frame method, when this method will be used? [2]
- f) Write the assumptions made in portal method. [3]
- g) Discuss the properties of stiffness matrix. [2]
- h) Develop flexibility matrix for the beam shown in Figure 1. [3]



figure 1

- i) State Castigliano's First theorem. [2]
- j) Draw ILD for Reaction at prop of a Propped Cantilever beam. [3]

PART - B

(50 Marks)

2. Analyze the continuous beam shown in Figure 2 using Kani's method. [10]

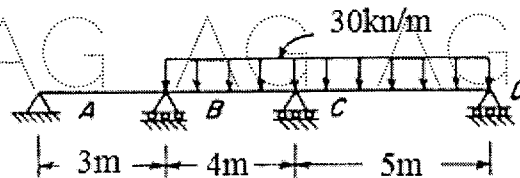


Figure 2

OR

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3. Analyze the portal frame shown in figure 3 by Moment Distribution method and draw BMD. [10]

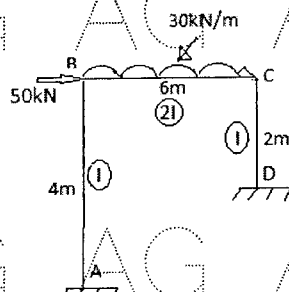


Figure 3

4. Analyze the portal frame shown figure 4 by Slope-Deflection method. [10]

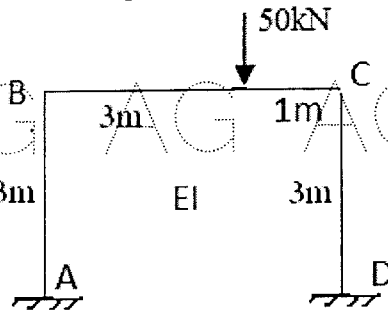


Figure 4

OR

5. A parabolic two hinged arch has a span of 24m and a rise of 4m is subjected to 100kN and 150kN acting left and right quarter span respectively. Calculate the horizontal thrust and also calculate the bending moment at the loaded points. [10]

6. Determine the approximate values of moment, shear and axial force in each member of frame as shown in figure 5 using portal method. [10]

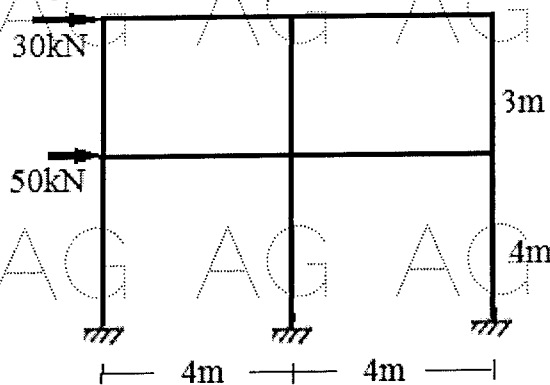


Figure 5

OR

7. Discuss about factor method and substitute frame method analysis of frames for loads. [10]

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8. Analyse the continuous beam shown in Figure 6 using Flexibility method. [10]

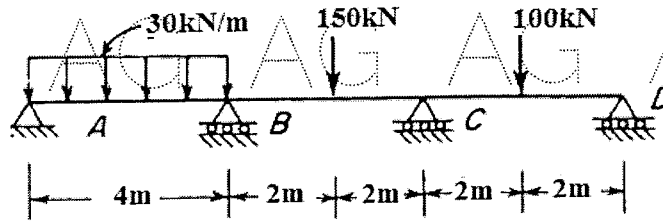


figure 6

OR

9. Analyse the frame shown in figure 7 by matrix stiffness method. Flexural rigidity is EI . [10]

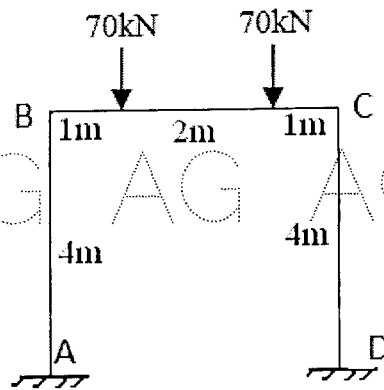


Figure 7

10. Analyse the truss shown in Figure 8. [10]

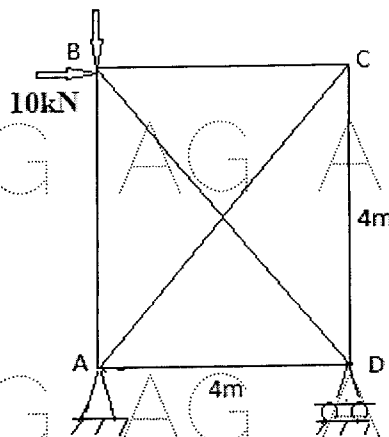


Figure 8

OR

- 11.a) State Muller-Breslau's Principle, explain how to draw Qualitative Influence Lines for Statically Indeterminate Structures.
b) Draw qualitative ILD for vertical reaction at each supports of a three span continuous beam. [5+5]

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