

Code No: 5620AB

R19

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech I Semester Examinations, July/August - 2021

ADVANCED STRUCTURAL ANALYSIS

(Structural Engineering)

Time: 3 Hours

Max. Marks: 75

Answer any Five Questions  
All Questions Carry Equal Marks

- 1.a) Derive the stiffness matrix of a two noded truss element of length 'L' and axial rigidity 'AE'.
- b) Explain local and global stiffness matrix for a simple truss member with example. [8+7]
- 2.a) Derive load vector and displacement matrix for simply supported beam subjected to 'w' kN/m uniformly distributed load long entire span of 'L'.
- b) Differentiate between structure approach and member approach used in stiffness matrix method. Explain how support conditions are accounted in both approaches. [8+7]
- 3.a) State the importance of band width in stiffness analysis by computer and measures to keep it minimum.
- b) A two bay two storey frame is to be analyzed by computer programme of stiffness matrix method. Illustrate node numbering and determine the half band width and size of stiffness matrix to be stored. [8+7]
- 4.a) Using the direct stiffness matrix approach, determine stiffness matrix for a beam element considering the axial deformation is negligible.
- b) Explain assembly of stiffness matrix from element stiffness matrix. [8+7]
5. A pin jointed Truss is as shown in figure 1. Analyse the Truss by using Flexibility Method. [15]

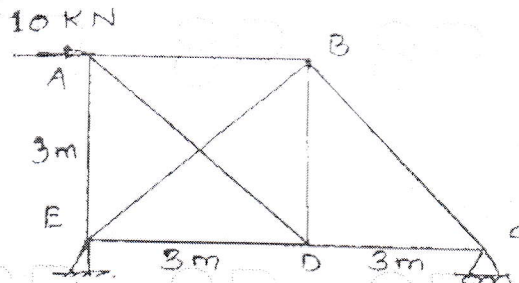


Figure: 1