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Code No. : 161

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (Civil Engg.: CBCS) VI-Semester Advanced Supplementary Examinations, July-2019

Theory of Structure-II

Time: 3 hours Max. Marks: 70

*Note: Answer ALL questions in **Part-A** and any FIVE from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. Where do you get rolling loads in practice?
2. Identify the type of rolling loads for which the absolute maximum bending moment occurs at the mid span of a beam.
3. What is meant by influence lines?
4. How the influence line diagrams for top chord member of a truss is plotted?
5. Determine kinematic in determinacy of a beam with one end fixed and the other end free.
6. Write stiffness matrix for a truss element.
7. What is the importance of displacement and load transformation matrices?
8. The flexibility matrix of a member is (8, -3, -3, 8) mm/N. Write the stiffness matrix for the same.
9. Write and explain the expression to find redundant actions using flexibility method.
10. Differentiate between local axis and global axis of member.

Part-B (5 × 10 = 50 Marks)

11. a) A simply supported beam has a span of 15 m and subjected to an UDL of 30 kN/m, 5 m long travelling from left to right. Draw the ILD f or shear force and bending moment at a section 6 m from the left end. Use these diagrams for calculating the maximum BM and SF at his section. [5]

    b) Two point loads of 100 kN and 200 kN spaced 3 m apart cross a girder of span 12m from left or right with the 100 kN leading. Draw the ILD for shear force and bending moment and find the values of maximum shear force and bending moment at a section 4 m from the left hand support. [5]

12. A Pratt truss shown in Fig.1 has eight panels each of 3.5m square. The loading being on the lower boom Draw the influence line of the member EC, BC & EF and determine the maximum compression and tension in EC due to uniform load of 10kN/m and 10m long [10]

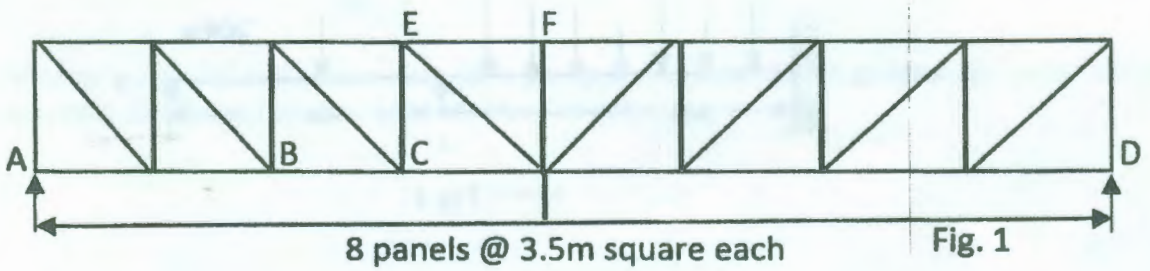

Fig. 1

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13. Analyse the beam shown in Fig.2 by using flexibility method draw bending moment diagram. [10]

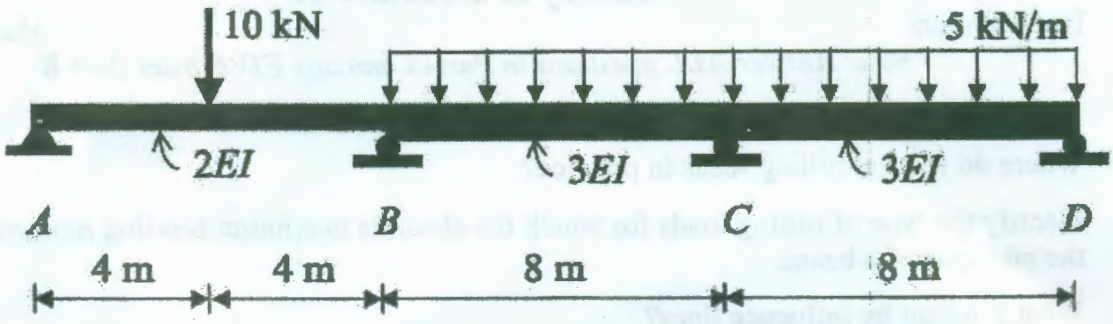

Fig. 2

14. Develop global stiffness matrix for the truss shown in Fig 3. [10]

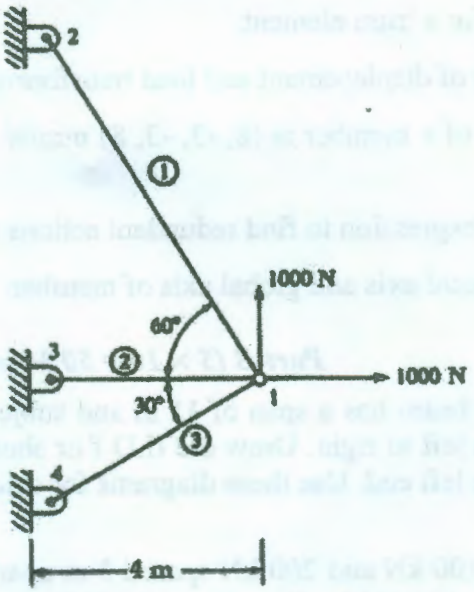

Fig.3

15. Analyse the continuous beam shown in Fig.4 by direct stiffness method. Given E=25.5x 10^6 kN/mm^2 breadth of beam 300mm and depth of beam 600mm. [10]

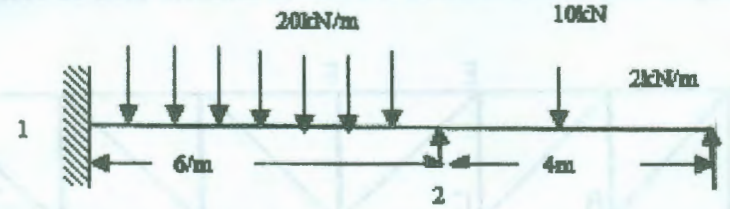

Fig.4