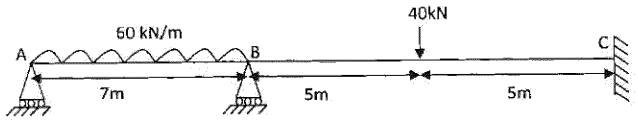
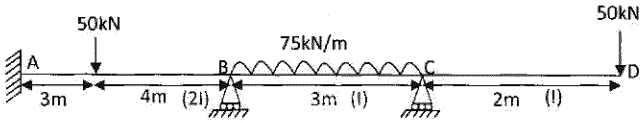
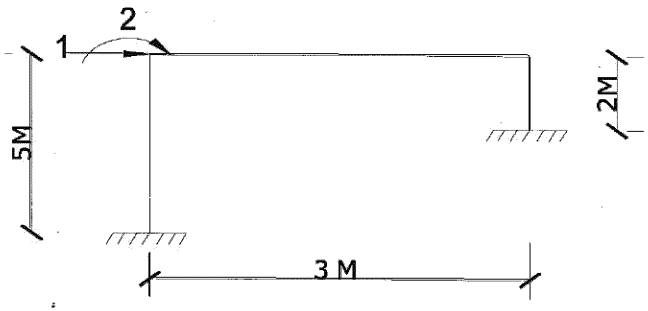


6. Analyze the beam by stiffness matrix method. **15**



Unit IV

7. Analyse the frame shown in figure below and draw the bending moment diagrams. Consider only flexural deformations and take EI as constant throughout. **15**



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AA-561

M. Tech. EXAMINATION, Dec. 2017

(First Semester)

(B. Scheme) (Main & Re-appear)

CE(SE)

CES-501

ADVANCED STRUCTURAL ANALYSIS

Time : 3 *Hours*] [*Maximum Marks* : 75

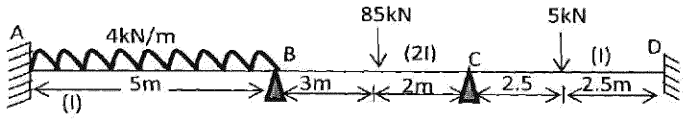
Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume any data if missing in the question paper.

Unit I

1. Drive an expression for force displacement relationship. Also explain the static and kinematic determinacy and indeterminacy of a structure. **15**

2. A continuous beam ABCD consists of three spans and is loaded as shown in Fig. Ends A and D are fixed. Using the slope deflection method and determine the bending moment at the supports and plot the bending moment diagram. **15**



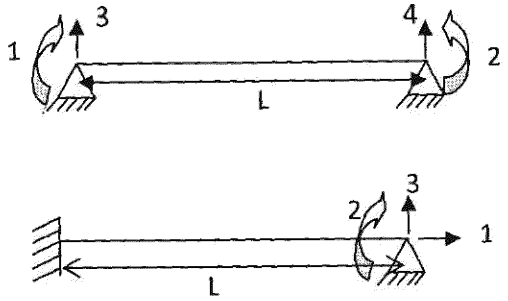
Unit II

3. Explain the following in detail : **15**

   (a) How do the flexibility and stiffness matrices depend on static and kinematic indeterminancies ?

   (b) The stiffness matrix of a linear elastic structure is symmetric. Why ?

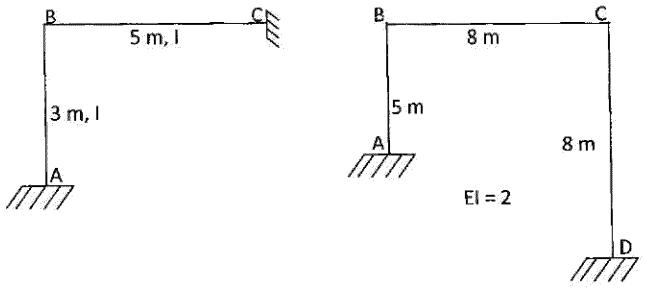
4. For simply supported beam of uniform cross-section as shown, develop the stiffness matrix with reference to co-ordinate shown in Fig. **15**



Unit III

5. Analyze the continuous beam shown by flexibility method in which support reaction at A and B are treated as the redundant. Hence, calculate the bending moment at B. Assume flexural rigidity EI as constant for all the beams. **15**

8. Develop the displacement transformation matrix for the structures shown in Fig. and hence derive the stiffness matrix. Assume EI constant for all the members. **15**



8. Develop the displacement transformation matrix for the structures shown in Fig. and hence derive the stiffness matrix. Assume EI constant for all the members. **15**