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10CV751

Matrix Method of Structural Analysis

Time: 3 hrs.   Max. Marks:100

Note: *Answer FIVE full questions, selecting*
at least TWO full questions from each part.

PART – A

1   a. Write down the steps involved in flexibility and stiffness method of analysis.   **(08 Marks)**
    b. Develop flexibility matrix and stiffness matrix with respect to coordinates shown in Fig.Q.1(b) and show that both are reciprocal of each other.   **(12 Marks)**
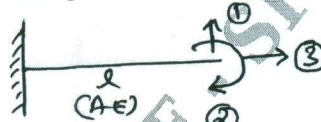

Fig.Q.1(b)

2   Analyze the fixed beam by flexibility method. Fig.Q.2 shown below. Draw BMD and SFD.   **(20 Marks)**
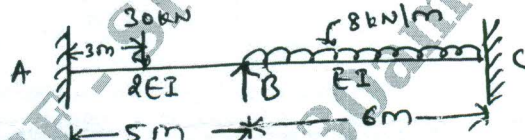

Fig.Q.2

3   Analyze the frame by flexibility method shown in Fig.Q.3 and also draw BMD and SFD.   **(20 Marks)**
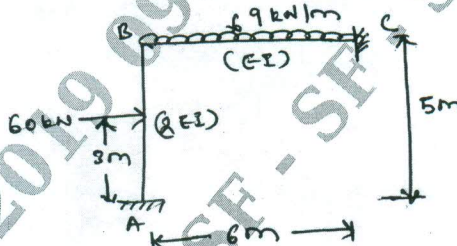

Fig.Q.3

4   Analyze the pin jointed structure shown in Fig.Q.4 by flexibility method. AE is constant for all members.   **(20 Marks)**
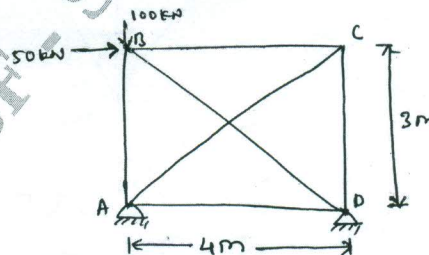

Fig.Q.4

PART – B

5 Find displacements at A and C and forces in members by stiffness method shown in Fig.Q.5, A = 8cm^2 and E = 125GPa. **(20 Marks)**
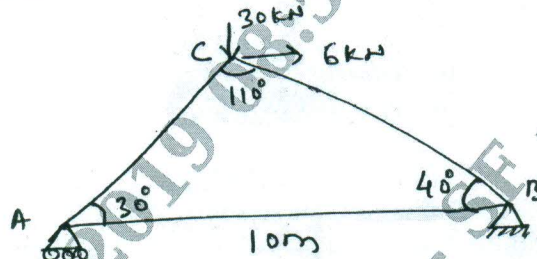

Fig.Q.5

6 Analyze the given continuous beam shown in Fig.Q.6 and plot the BMD and elastic curve use stiffness method. **(20 Marks)**
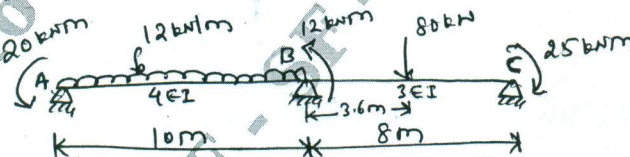

Fig.Q.6

7 Analyze the following beam shown in Fig.Q.7 by direct stiffness method. Draw BMD. **(20 Marks)**
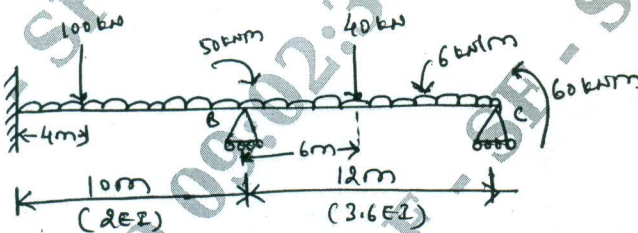

Fig.Q.7

8 Find the displacement of joint 'D' and forces in the members shown in Fig.Q.8 by direct stiffness method. **(20 Marks)**
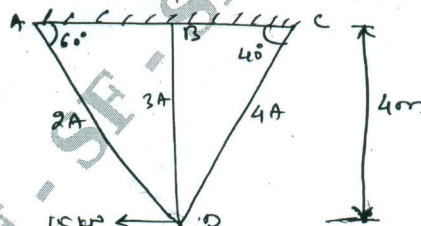

Fig.Q.8

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