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10CV751

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019 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

- Write down the steps involved in flexibility and stiffness method of analysis. (08 Marks)
 - 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)

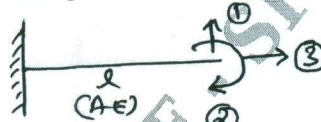


Fig.Q.1(b)

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

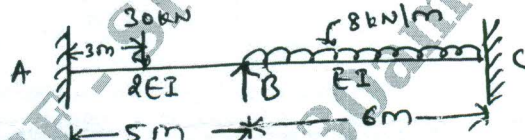


Fig.Q.2

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

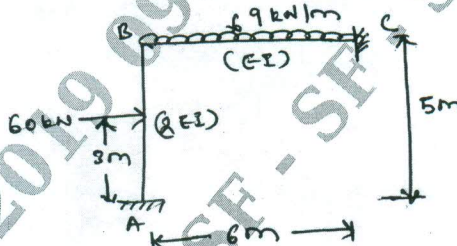


Fig.Q.3

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

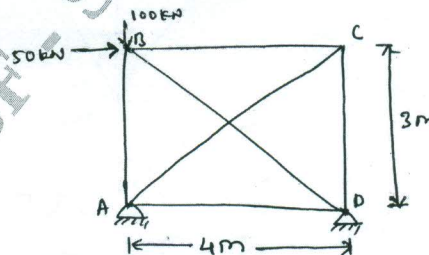


Fig.Q.4

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8=50, will be treated as malpractice.

PART - B

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

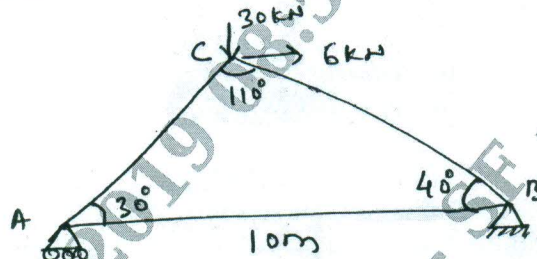


Fig.Q.5

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

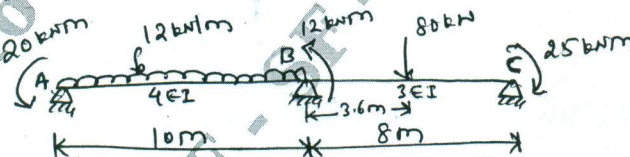


Fig.Q.6

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

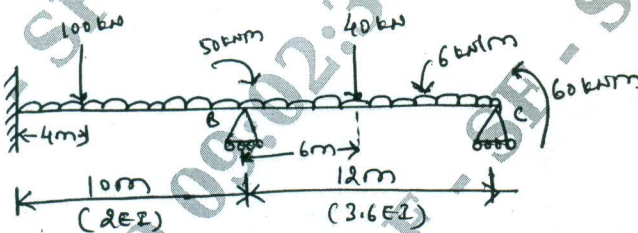


Fig.Q.7

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

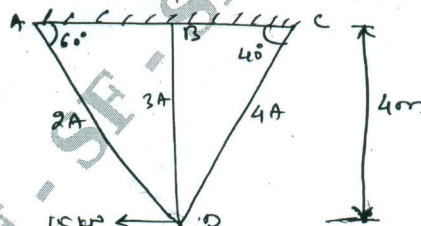


Fig.Q.8
