CBCS SCHEME

USN

15CV52

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022
Analysis of Indeterminate Structures

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 Analyze the beam shown in Fig.Q.1 by slope-deflection method. EI is constant for all members, get final moments and draw BMD. Support 'B' sinks by 10mm and support 'C' sinks by 20mm, take EI = 3000 kN-m^2. **(16 Marks)**

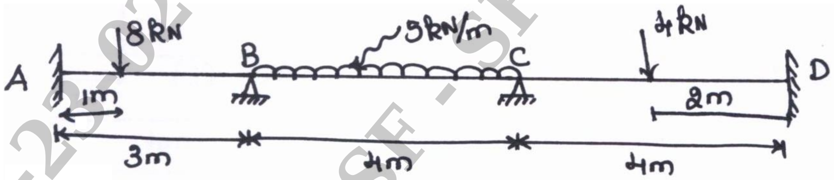

Fig.Q.1

OR

2 Analyze the frame shown in Fig.Q.2 by slope-deflection method. Get final moments and draw BMD. **(16 Marks)**

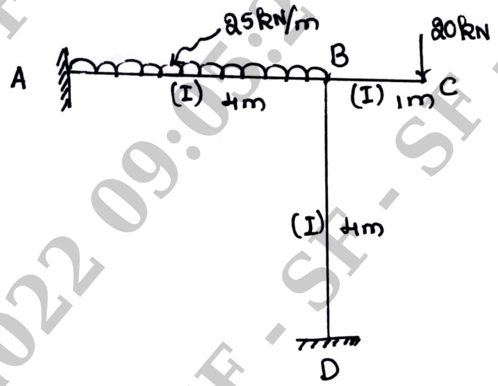

Fig.Q.2

Module-2

3 Analyze the beam shown in Fig.Q.3 by moment distribution method. Draw BMD and elastic curve. **(16 Marks)**

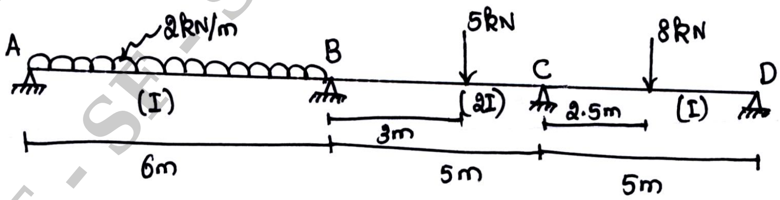

Fig.Q.3

OR

4 Analyze the frame by moment distribution method. Draw BMD frame is as shown in Fig.Q.4. **(16 Marks)**

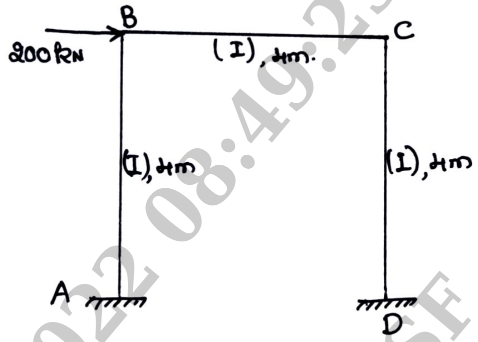

Fig.Q.4

Module-3

5 Analyze the continuous beam by Kani's method to calculate end moments and to develop BMD. Here support 'B' sinks by 10mm and 'C' sinks by 15mm. Take, $E = 200 \times 10^6$ kN/m^2 and $I = 100 \times 10^{-6}$ m^4, for beam in Fig.Q.5. **(16 Marks)**

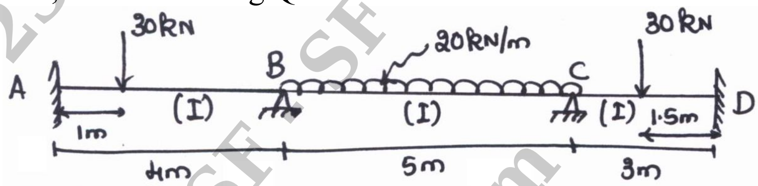

Fig.Q.5

OR

6 Obtain end moments and develop BMD for frame as shown in Fig.Q.6 by Kani's method. **(16 Marks)**

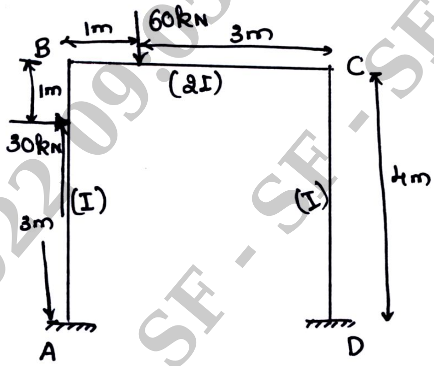

Fig.Q.6

Module-4

7 Analyze the continuous beam as shown in Fig.Q.7 by flexibility method using system approach and develop SFD. **(16 Marks)**

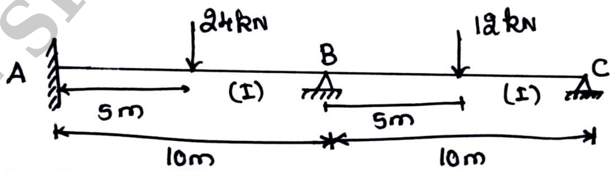

Fig.Q.7

OR

8 Analyze the continuous beam as shown in Fig.Q.8 by flexibility method and develop BMD. EI is constant. **(16 Marks)**

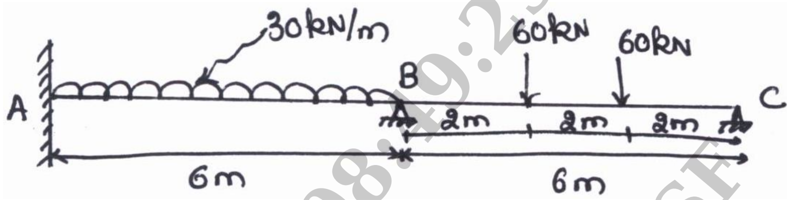

Fig.Q.8

Module-5

9 A continuous beam as shown in Fig.Q.9. Here support 'B' sinks by 10mm, analyze the beam by stiffness matrix method and develop BMD. Take E = 200 × 10^6kN/m^2 and I = 100 × 10^{-6} m^4. **(16 Marks)**

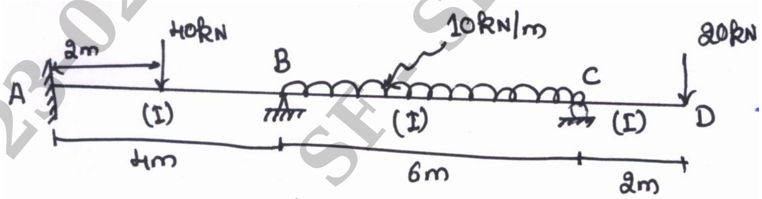

Fig.Q.9

OR

10 Determine the displacement of the joint 'A' of the pin jointed frame as shown in Fig.Q.10 by stiffness matrix method. Also determine the member forces for the given loading. Take area of the members as 'A' and modulus of elasticity as 'E'. **(16 Marks)**

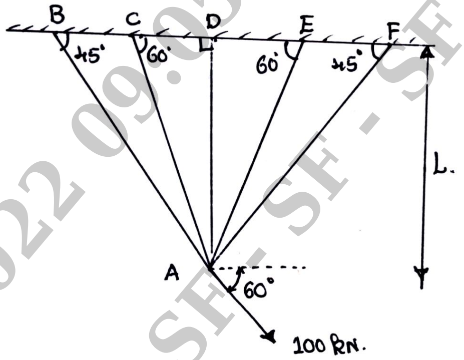

Fig.Q.10

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