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10CV53

Fifth Semester B.E. Degree Examination, May 2017
Structural Analysis – II

Time: 3 hrs. Max. Marks:100

Note: 1. ***Answer FIVE full questions, selecting at least TWO questions from each part.***
2. ***Assume any missing data suitably.***

PART – A

1 A simply supported beam shown in Fig Q(1) is subjected to a set of four concentrated loads which move from left to right. Determine
i) Maximum Bending moment and shear force at 6m from left support
ii) Absolute shear force and absolute maximum bending moment use influence line principle. **(20 Marks)**

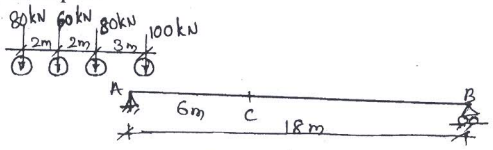

Fig Q1

2 Analyse a continuous beam shown in Fig Q2. Using scope deflection method. The support 'C' sinks by 10mm. Take EI = 3000 kN – m^2. Draw BMD and elastic curve. **(20 Marks)**

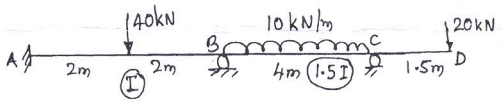

Fig Q2

3 Analyse the frame shown in Fig Q3. Using moment distribution method sketch BMD. Take EI constant throughout. **(20 Marks)**

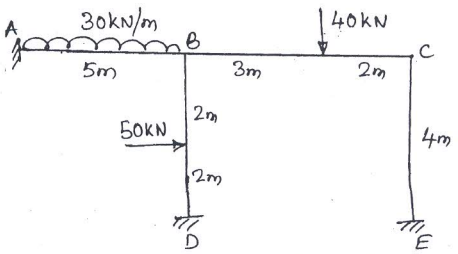

Fig Q3

4 Analyse the frame shown in Fig Q4 using moment distribution method. Sketch BMD. **(20 Marks)**

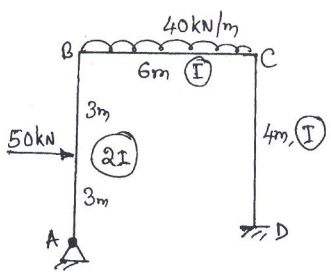

Fig Q4

PART – B

5 Analyse the frame shown in Fig Q5 using Kani's method. Sketch BMD. **(20 Marks)**

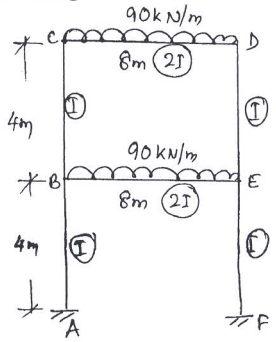

Fig Q5

6 Analyse the continuous beam shown in Fig Q6. Using flexibility matrix method. Sketch BMD. **(20 Marks)**

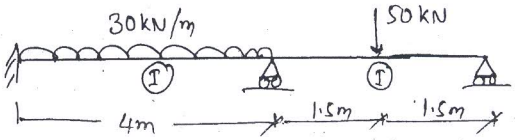

Fig Q6

7 Analyse the continuous beam shown in Fig Q7 using stiffness matrix method. Sketch BMD. **(20 Marks)**

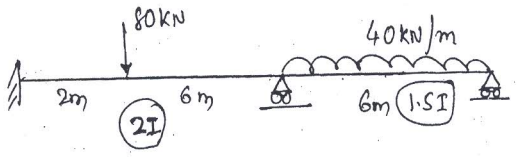

Fig Q7

8 a. Explain :
i) Degree of freedom ii) Damping iii) Free and Forced vibration iv) Natural frequency. **(08 Marks)**

b. In a free vibration test, a pull of 73kN is applied to a elevated tank to give an initial displacement of 50mm. At the end of 4 cycles with time 2sec, the amplitude is 25mm. From these compute the following :
i) Damping ratio
ii) Undamped natural frequency
iii) Damping coefficient
iv) Number of cycles to reach amplitude of 5mm. **(12 Marks)**

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