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10CV53

Fifth Semester B.E. Degree Examination, June/July 2018
Structural Analysis – II

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is an Influence line? Explain its importance in structural analysis. **(05 Marks)**

b. Draw influence line for shear force and bending moment. Find maximum shear force and bending moment at D, 6m from the left hand support as shown in Fig.Q1(b). Also find the absolute maximum bending moment due to the given load system. **(15 Marks)**

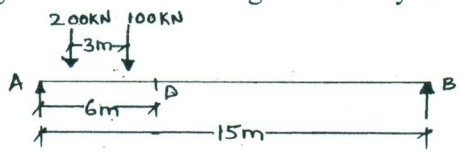

Fig.Q1(b)

2 Analyse the continuous beam shown in Fig.Q2 by Slope Deflection Method. Draw Bending moment diagram, shear force diagram and elastic curve. **(20 Marks)**

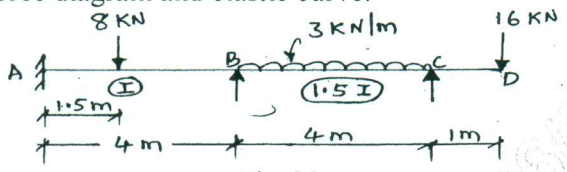

Fig.Q2

3 Draw the bending moment diagram for the beam loaded as shown in Fig.Q3 when support B sinks by 10 mm below the levels of A, C and D. Assume E = 200 GPa , I = 132×10^6 mm^4 for all the members. Use the moment distribution method. **(20 Marks)**

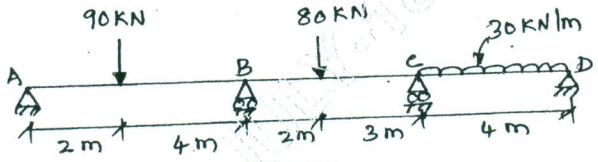

Fig.Q3

4 Analyse the frame shown in Fig.Q4 and draw bending moment diagram. Adopt Slope Deflection method. **(20 Marks)**

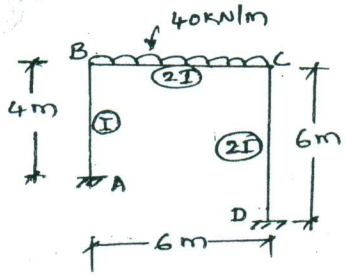

Fig.Q4

PART – B

5 Analyse the continuous beam shown in Fig.Q5 by Kani's method. Draw Bending Moment Diagram, Shear Force Diagram and Elastic Curve. **(20 Marks)**

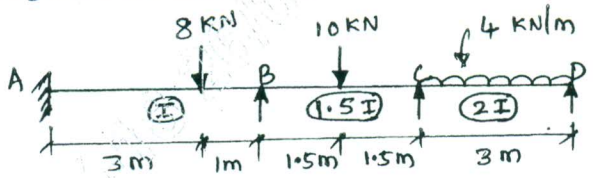

Fig.Q5

6 Analyse the continuous beam shown in Fig.Q6 by flexibility matrix method. Draw Bending Moment Diagram and elastic curve. **(20 Marks)**

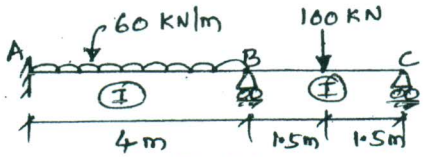

Fig.Q6

7 Using stiffness matrix method, analyse the frame shown in Fig.Q7. Draw bending moment diagram. Take EI constant throughout. **(20 Marks)**

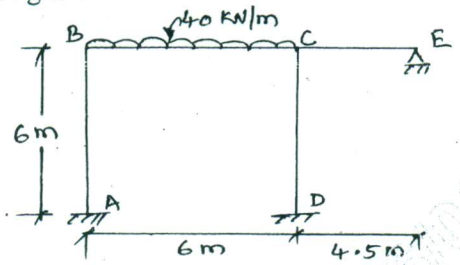

Fig.Q7

8 a. Explain :
(i) Degree of freedom (ii) Free vibration (iii) Natural frequency
(iii) Forced vibration (v) Damping. **(10 Marks)**

b. Determine the natural frequency, cyclic frequency and period of oscillation for the spring mass system with mass 10 kg and stiffness 1000 N/m. If the system is given an initial displacement of 0.1m and an initial velocity of 0.2 m/s. Obtain the equation of motion. Also find displacement, velocity and acceleration after 0.2 sec. **(10 Marks)**

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