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10CV53

Fifth Semester B.E. Degree Examination, June/July 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. What is an influence line? Explain its advantages in structural analysis. **(06 Marks)**

b. A moving u.d.l of 20kN/m and 8m long cross over a simply supported girder of span 20m. Determine :
   i) Maximum +ve shear force –ve shear force and B.M at 6m from left support
   ii) Absolute maximum SF and BM anywhere on the girder
   iii) Intensity of u.d.l throughout the span. **(14 Marks)**

2 Analyse the frame shown in Fig Q2 by slope deflection method. Draw BMD and elastic curve. **(20 Marks)**

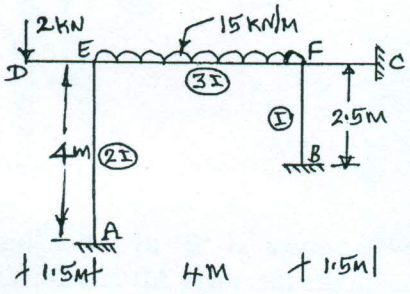

Fig Q2

3 Analyse the continuous beam shown in Fig Q3 by moment distribution method. Sketch the BMD, SFD and Elastic curve, EI constant. **(20 Marks)**

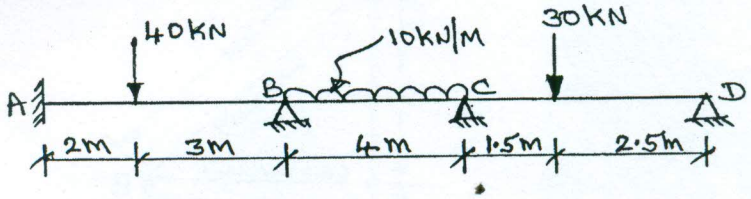

Fig Q3

4 Analyse the frame shown in Fig Q4 by moment distribution method. Draw BMD, EI is constant. **(20 Marks)**

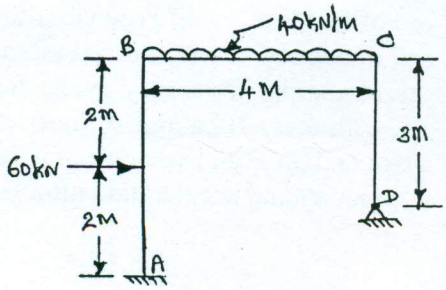

Fig Q4

PART – B

5 Analyse the frame by Kani's method. Take advantages of the symmetry and draw BMD. **(20 Marks)**

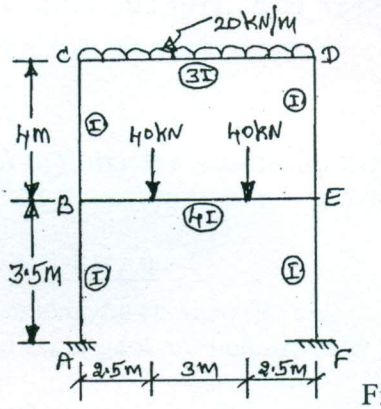

Fig Q5

6 Analyse the frame shown in Fig Q 6 by flexibility matrix method. Draw BMD and Elastic curve. **(20 Marks)**

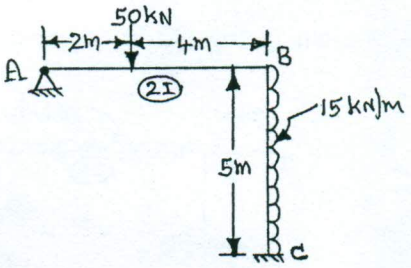

Fig Q6

7 Determine the displacement at 'B' of a pin jointed plane frame shown in Fig Q7. Also calculate the forces in the members AB and BC due to the given loading, by stiffness matrix method. Take $E = 2 \times 10^5$ N/mm^2. **(20 Marks)**

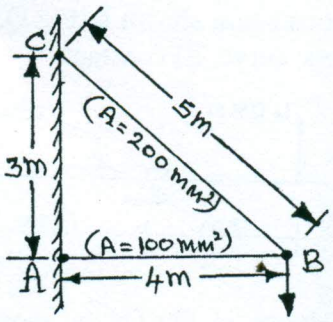

Fig Q7

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

b. Determine the natural angular frequency cyclic frequency and periodic of oscillation for a spring mass system with mass 10kg and stiffness 1000 N/m. If the system is given an initial displacement of 0.1m and an initial velocity of 0.2m/sec obtain the equation of motion. Also find displacement, velocity and acceleration after 0.2 sec. **(12 Marks)**

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