

Fifth Semester B.E. Degree Examination, June/July 2015

Structural Analysis - II

Time: 3 hrs.

Max. Marks: 100

- Note: 1. Answer FIVE full questions, selecting at least TWO questions from each part.
2. Missing data, if any, may be suitably assumed,**

PART - A

- Draw the influence line diagram for Bending moment at any given section of a simply supported beam. (04 Marks)
 - Show that for maximum bending moment at any section of a simply supported girder traversed by a moving uniformly distributed load shorter than the girder span, the section should divide the uniformly distributed load in the same ratio as it divides the girder span. (06 Marks)
 - A uniformly distributed load of 5kN/m and 5m long sides across a beam of 15m long simply supported at its both ends. Determine Max Bending moment and shear force at a section 6m from left hand support. (10 Marks)
- Analyse the continuous beam shown in Fig Q No.2 by slope deflection method. Draw B.M.D.

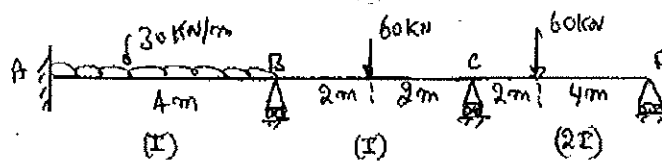


Fig Q No.2

(20 Marks)

- Analyse the frame shown in Fig. Q No. 3 by moment distribution methods. Draw B.M.D

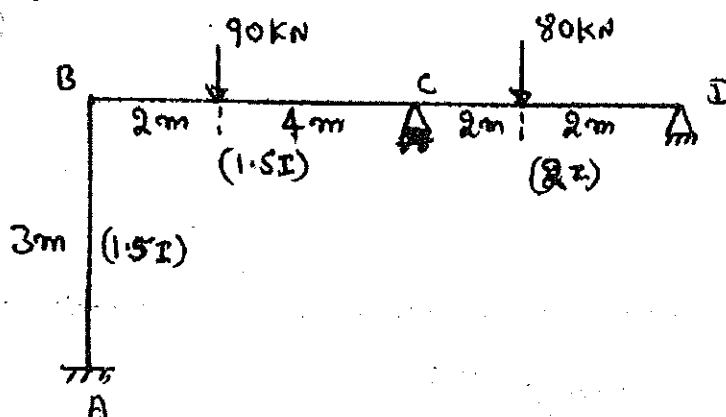


Fig. Q No. 3

(20 Marks)

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.

- 4 Analyse the frame show below by moment distribution methods. Draw B.M.D.
(Refer Fig. Q No.4).

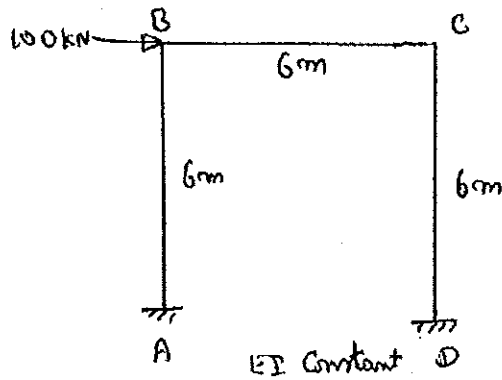


Fig. Q No.4.

(20 Marks)

PART - B

- 5 Analyse the frame shown in Fig. Q No.5 by taking advantage of symmetry. Draw B.M.D.

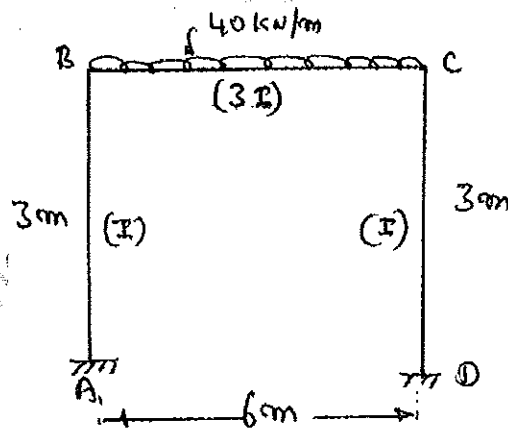


Fig. Q No.5

(20 Marks)

- 6 Analyse the frame shown in Fig. Q No.6 by using Flexibility matrix method. Use system approach.

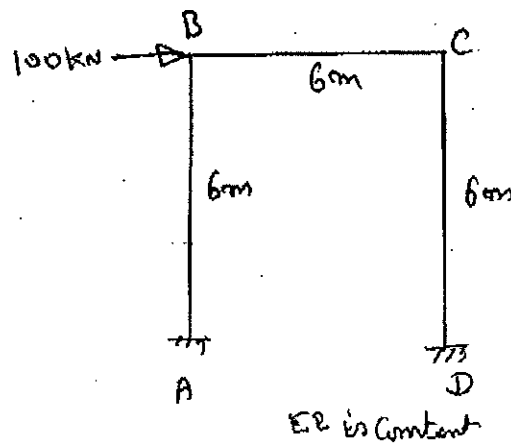


Fig. Q 6

(20 Marks)

- 7 Find the displacement components along the system coordinates for the frame shown in Fig Q No. 7 using stiffness method (use system approach)

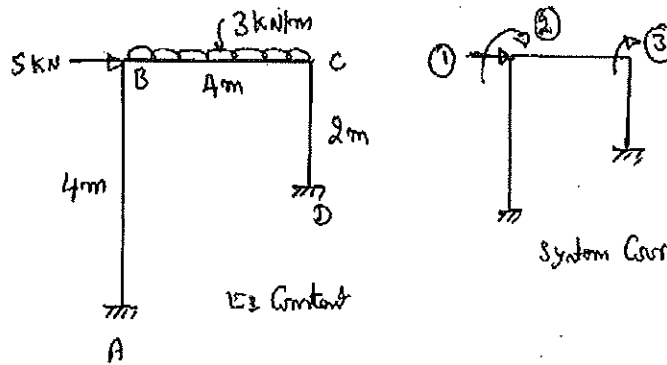


Fig Q No. 7

(20 Marks)

- 8 a. Define the following terms
 i) Free Vibration ii) Forced Vibration iii) Periodic motion. iv) Natural frequency
 v) Damping (10 Marks)
- b. Determine the natural frequency and Time period of the system as shown in Fig Q No. 8 (b). Take $E = 2.1 \times 10^5 \text{ N/mm}^2$ and $I = 13 \times 10^6 \text{ mm}^4$.

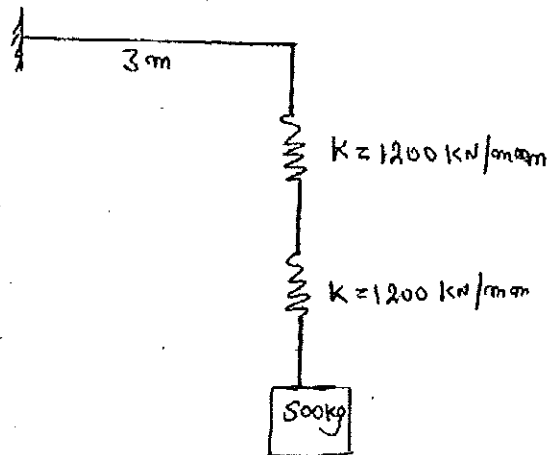


Fig Q No. 8 (b)

(10 Marks)
