

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**Fifth Semester B.E. Degree Examination, May/June 2010**  
**Structural Analysis - II**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions, selecting at least TWO questions from each part.**

**PART - A**

- 1 a. The load system shown in Fig.Q1(a) moves along a girder of span 20 metres. Find :  
 i) The maximum left end reaction and  
 ii) The maximum shear forces at a section 7.5 metres from the left end. (14 Marks)

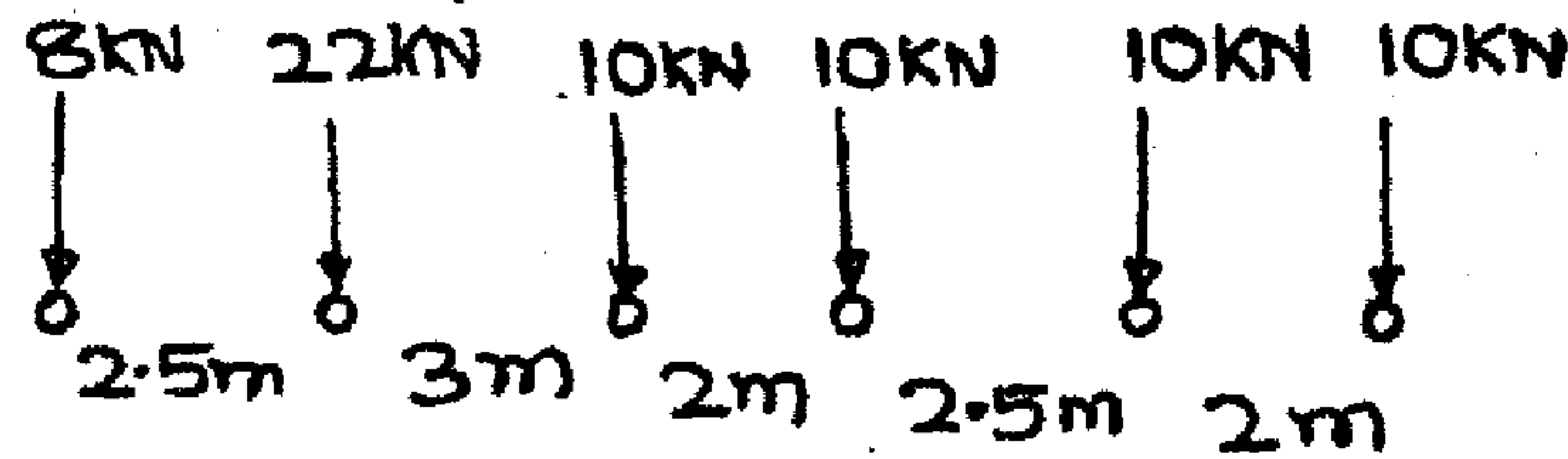


Fig.Q1(a)

- b. A live load of 5 kN per metre and of span 8 metres long moves on a simply supported girder of span 10 metres. Find the maximum bending moment which can occur at a section 4 metres from the left end. (06 Marks)

- 2 For a loaded beam shown in Fig.Q2, compute the end moments using slope deflection method. Also draw the bending moment and shear force diagrams. Ends A and C are fixed. (20 Marks)

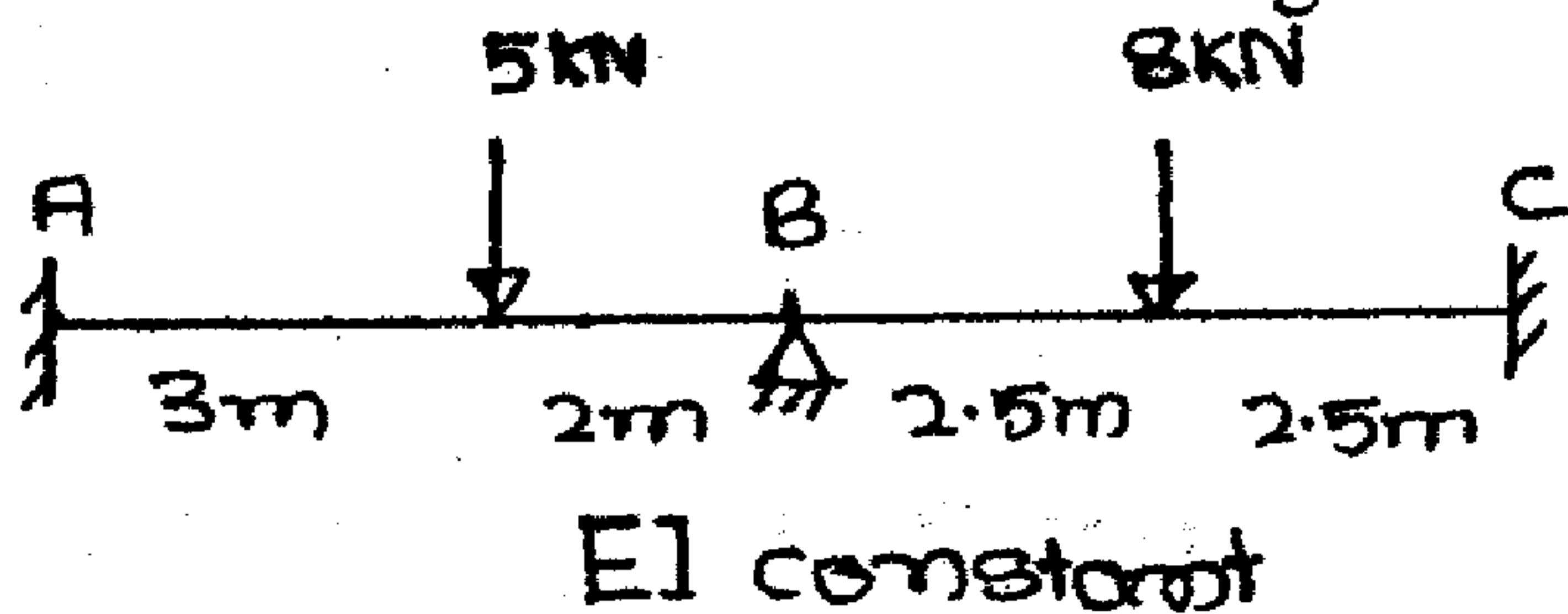


Fig.Q2

- 3 Determine the support moments and draw the bending moment diagram for a loaded beam shown in Fig.Q3. Use moment distribution method. Ends A and D are fixed. (20 Marks)

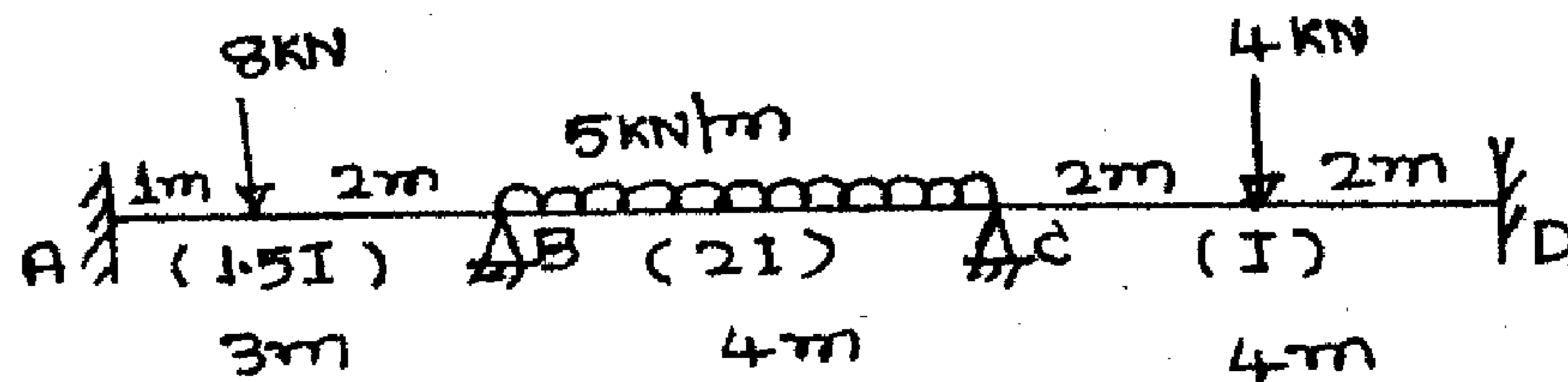


Fig.Q3

- 4 A portal frame ABCD fixed at A and D, has rigid joints at B and C and is loaded shown in Fig.Q4. Using slope deflection method, find the final moments at joints and draw the bending moment diagram. (20 Marks)

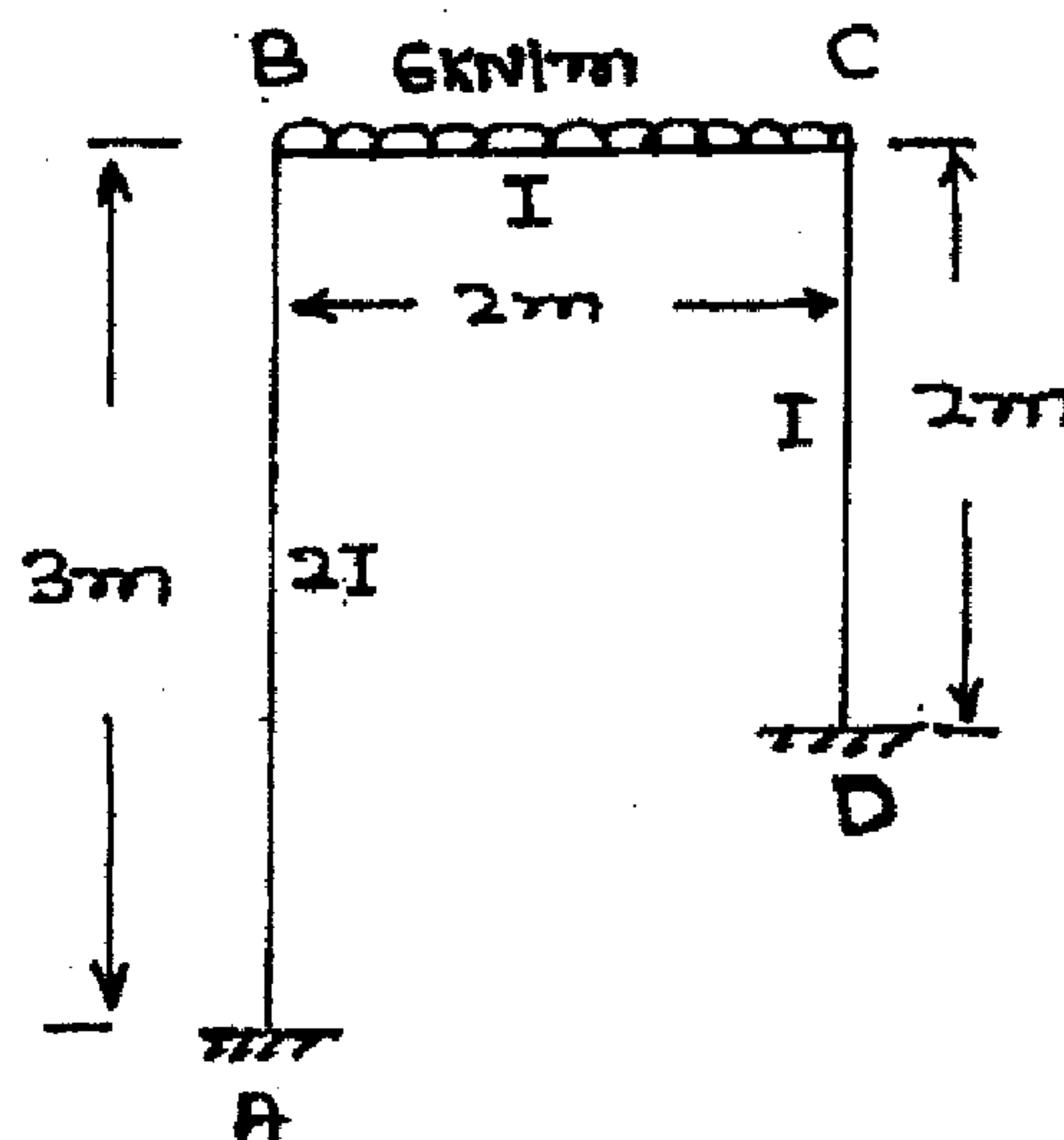


Fig.Q4

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification number, appeal to evaluator and/or equations written eg, 42+8( ) will be treated as malpractice.

## PART - B

5. A portal frame ABCD is fixed at A and D and has rigid joints at B and C. It is loaded shown in Fig.Q5. Using Kani's method, find the final moments at joints and draw the bending moment diagram. (20 Marks)

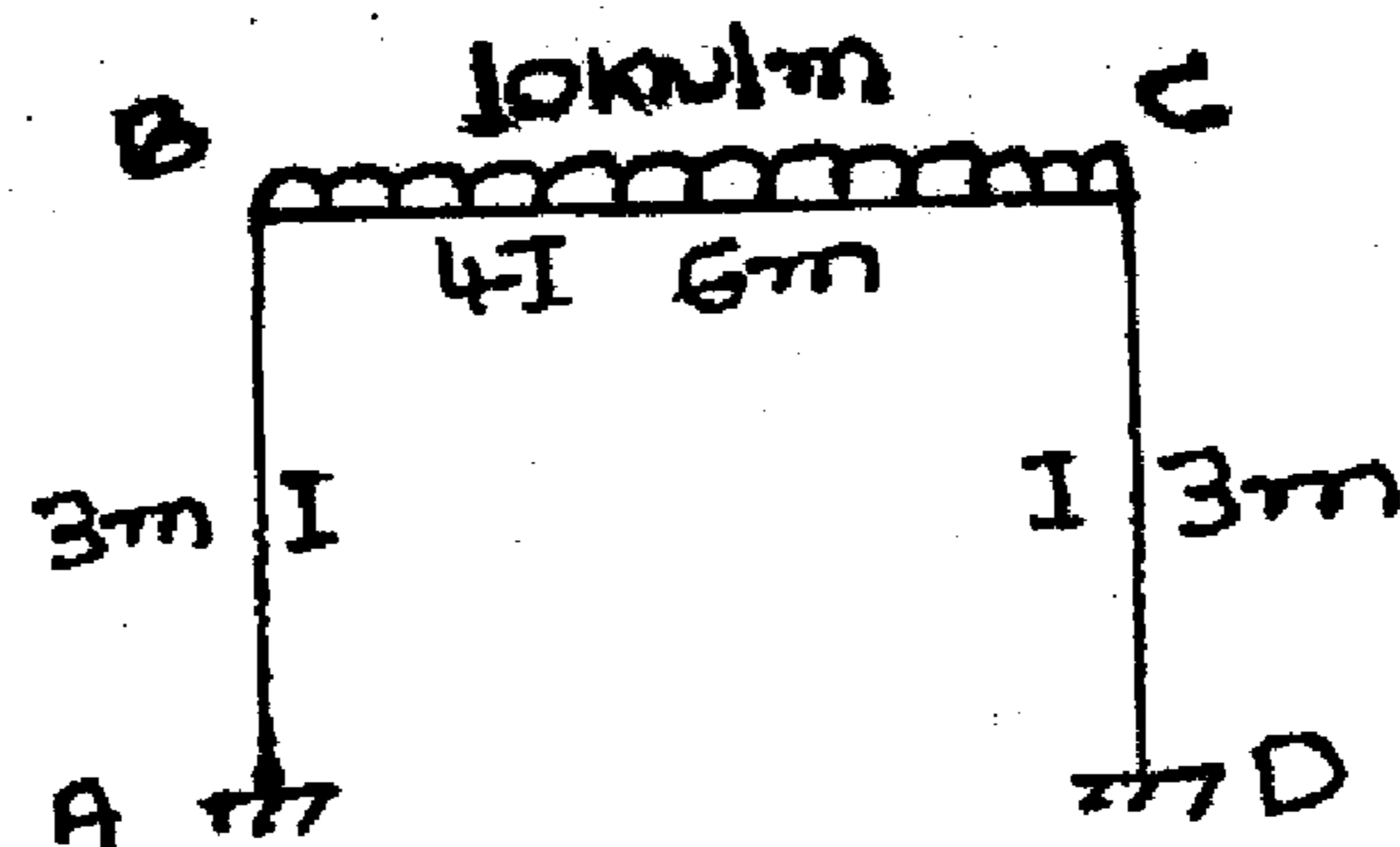


Fig.Q5

6. A continuous beam ABC shown in Fig.Q6 is fixed at A. Analyse and draw the bending moment diagram using flexibility matrix method. Assume  $EI = 10.0 \text{ MNm}^2$ . (20 Marks)

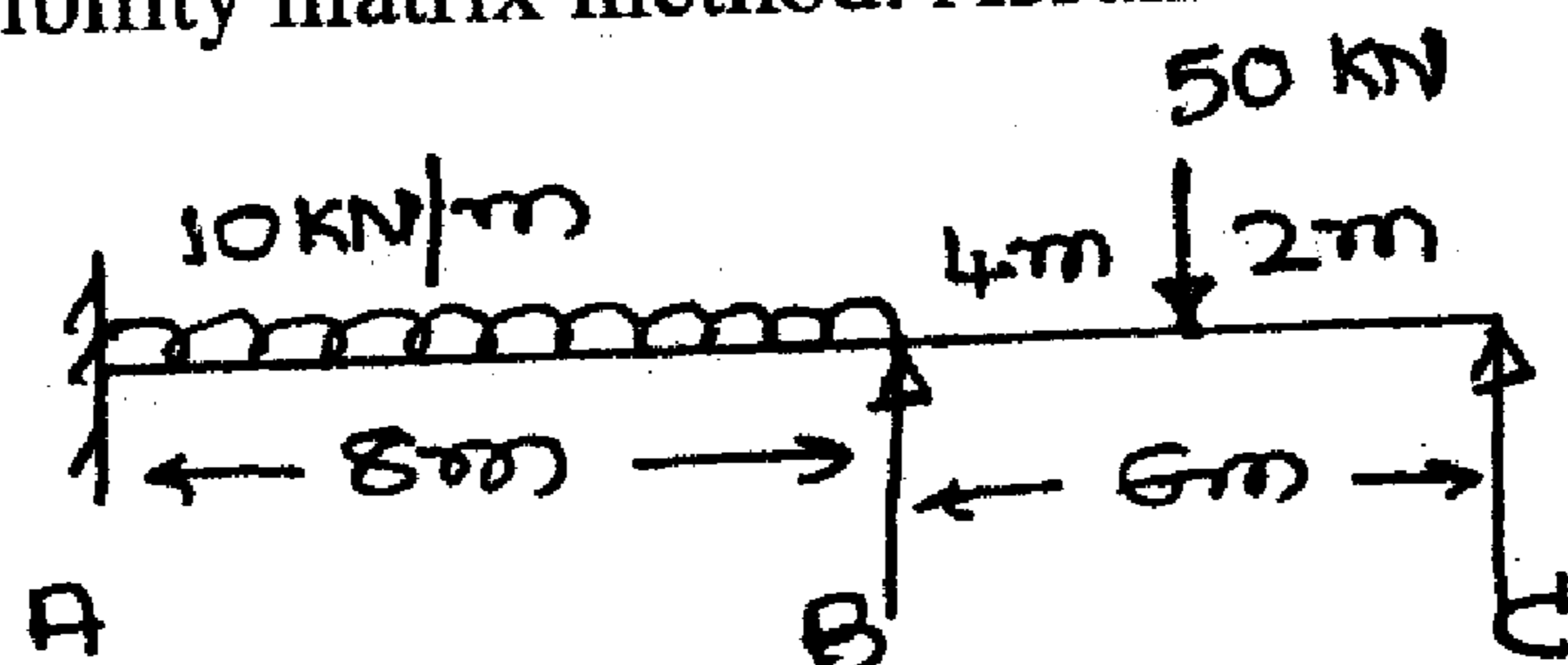


Fig.Q6

7. Analyse the continuous beam shown in Fig.Q7 by stiffness method. Draw the bending moment diagram. A and C are fixed ends. (20 Marks)

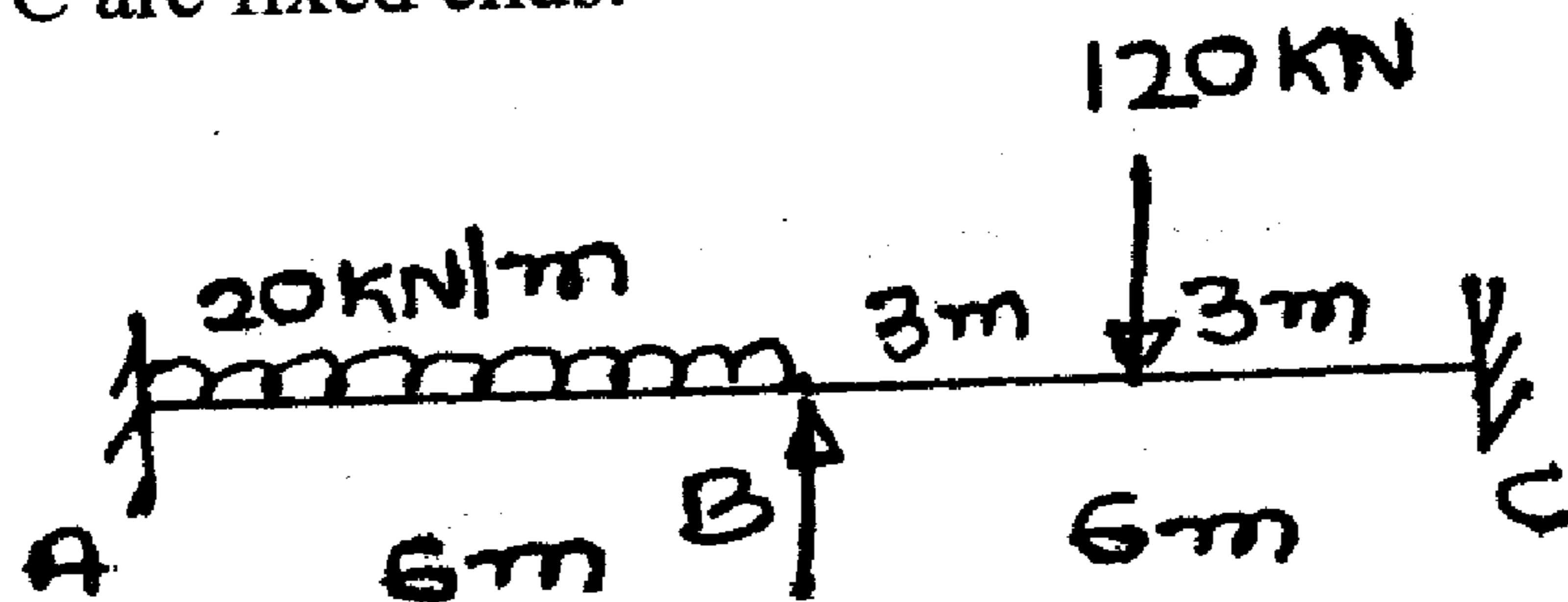


Fig.Q7

8. a. Explain the following: (04 Marks)
- Period and frequency
  - Damping
  - Forced vibration
  - Single degree of freedom system
- b. Develop the solution for a differential equation of a body, when it is under : (16 Marks)
- Free undamped vibration and
  - Free damped vibration.

\*\*\*\*\*