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06CV53

Fifth Semester B.E. Degree Examination, Dec.08/Jan.09
Structural Analysis - II

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer any FIVE full questions choosing at least Two from each part. 2. Any missing data may suitably be assumed.

PART - A

- 1 a. What is an Influence Line? Explain its importance in structural analysis. (04 Marks)
b. State the condition for maximum bending moment at a section in a simply supported beam, for a series of moving concentrated loads. (02 Marks)
c. A moving U. D. L. of 20kN/m and 8M long cross over a simply supported girder of span 20M. Determine:
i) Maximum positive shear force, Negative shear force and bending moment at 6M from left support.
ii) Absolute maximum shear force and bending moment anywhere on the girder.
iii) Intensity of static U.D.L. throughout the spars. (14 Marks)

- 2 a. Analyze the frame shown in Fig.Q(2). Draw bending moment diagram, shear force diagram and elastic curve. Assume uniform flexural rigidity. Use Slope - Deflection method. (20 Marks)

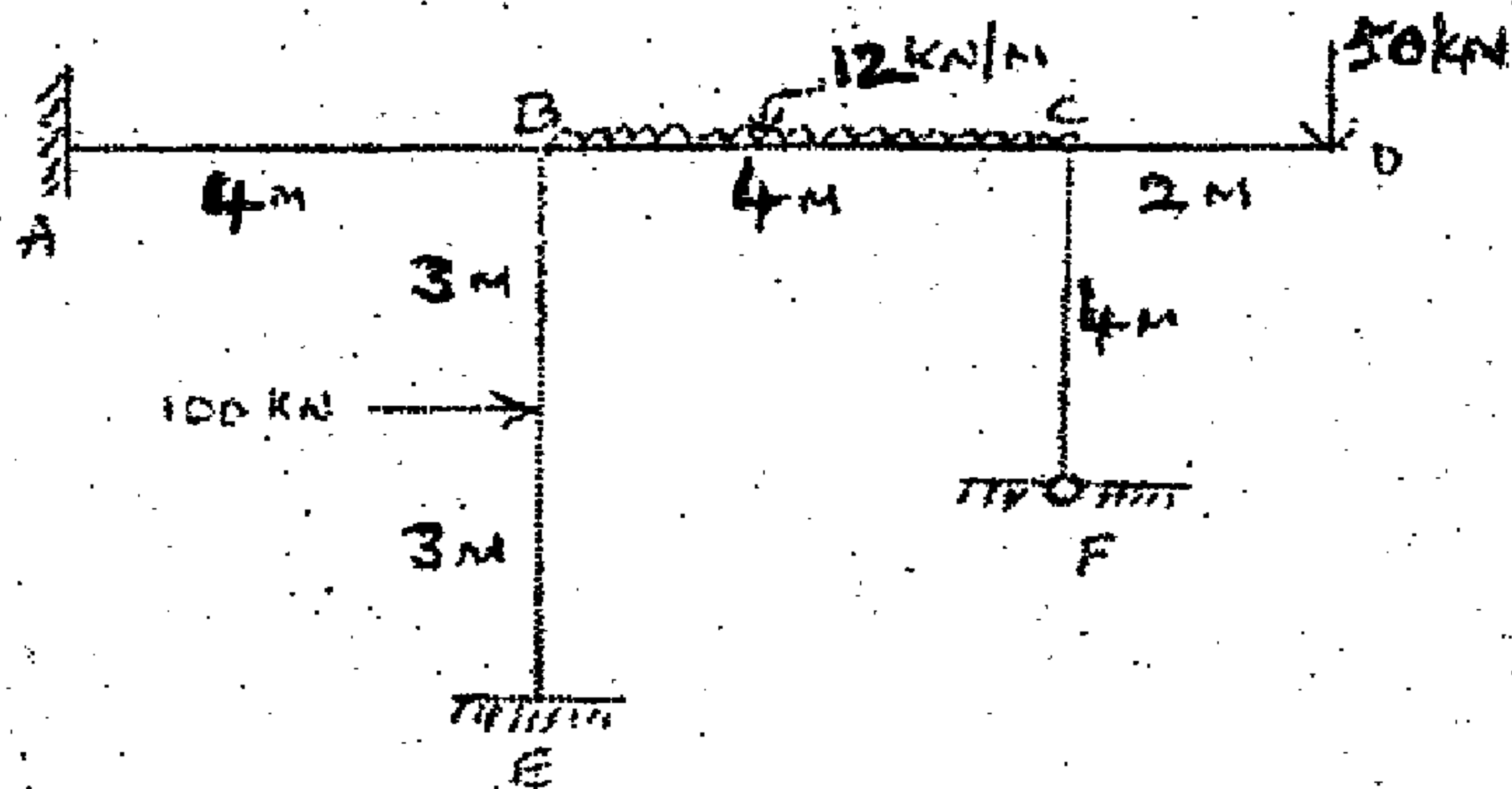


Fig.Q(2).

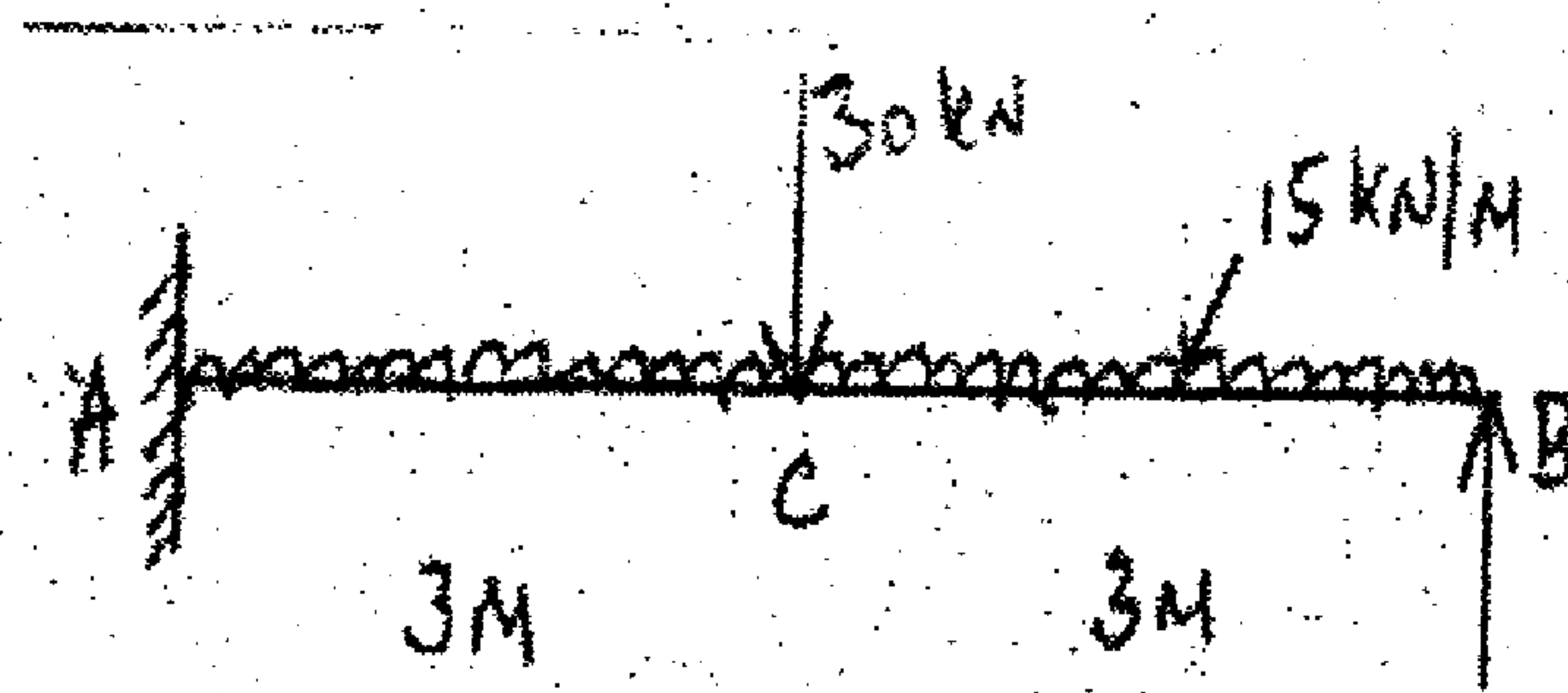


Fig. Q.3(a).

- 3 a. Analyze the beam shown in Fig.Q3(a) by moment distribution method. Draw bending moment diagram and elastic curve. EI is constant. (08 Marks)
b. Analyze the frame shown in Fig.Q.3(b) by moment distribution method. Draw bending moment diagram and elastic curve. (12 Marks)

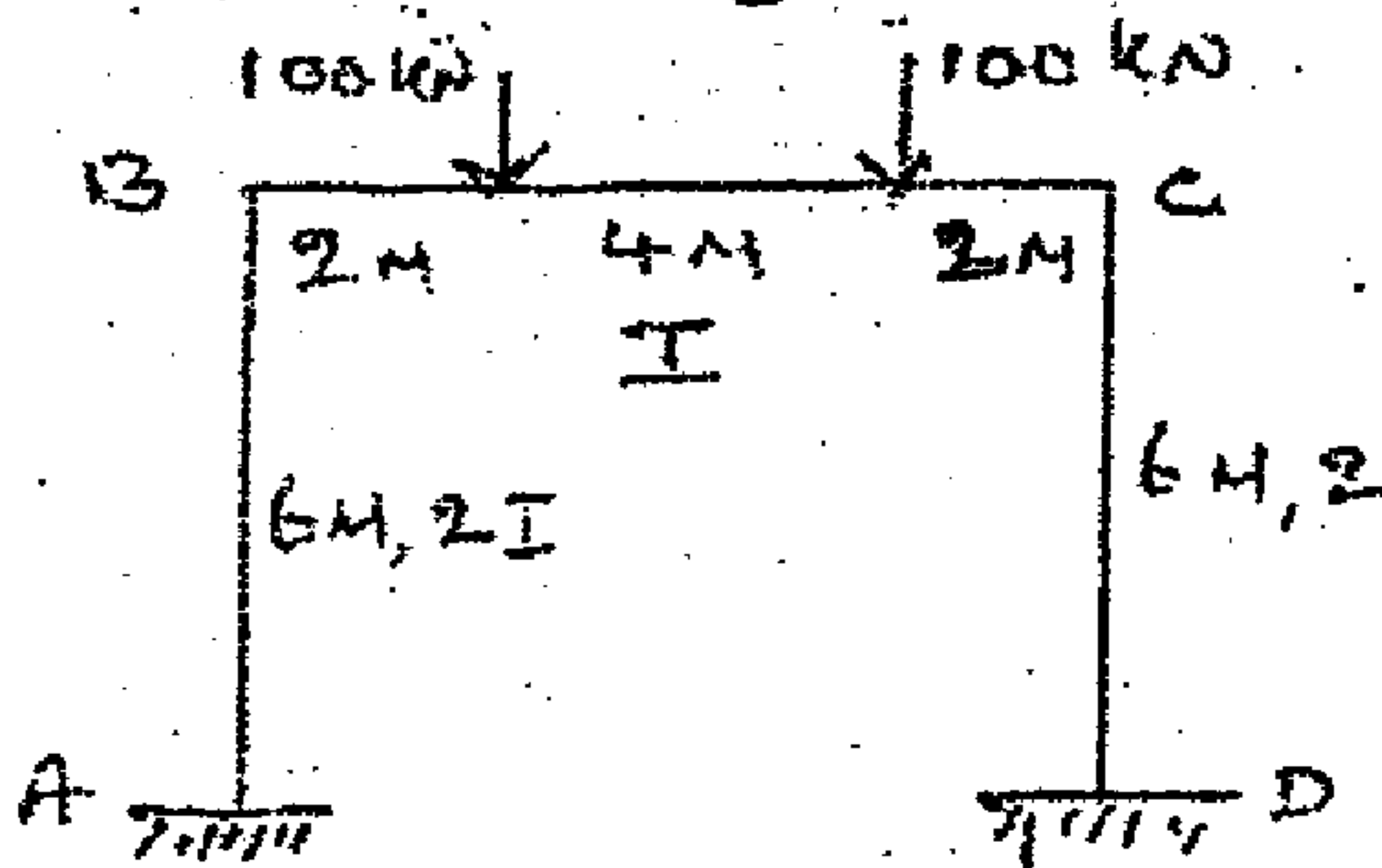


Fig.Q.3(b).

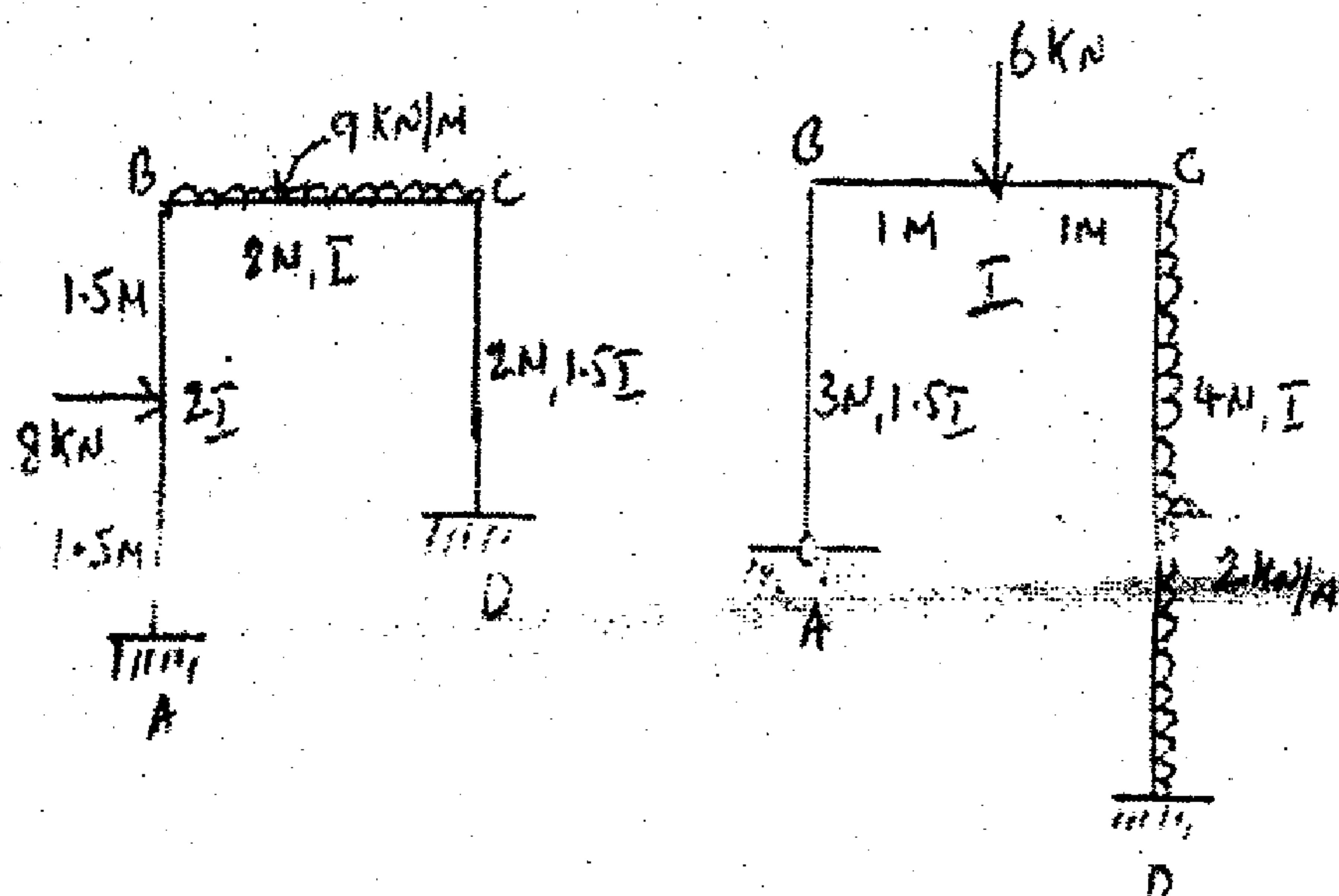


Fig.Q.4(a).

- 4 a. Formulate the shear condition required for the analysis of the frames with side sway shown in Fig.Q4(a). (06 Marks)

- b. Analyse the frame shown in Fig.Q.4(b). Draw bending moment diagram. Assume uniform flexural rigidity. Use slope – deflection or moment distribution method. (14 Marks)

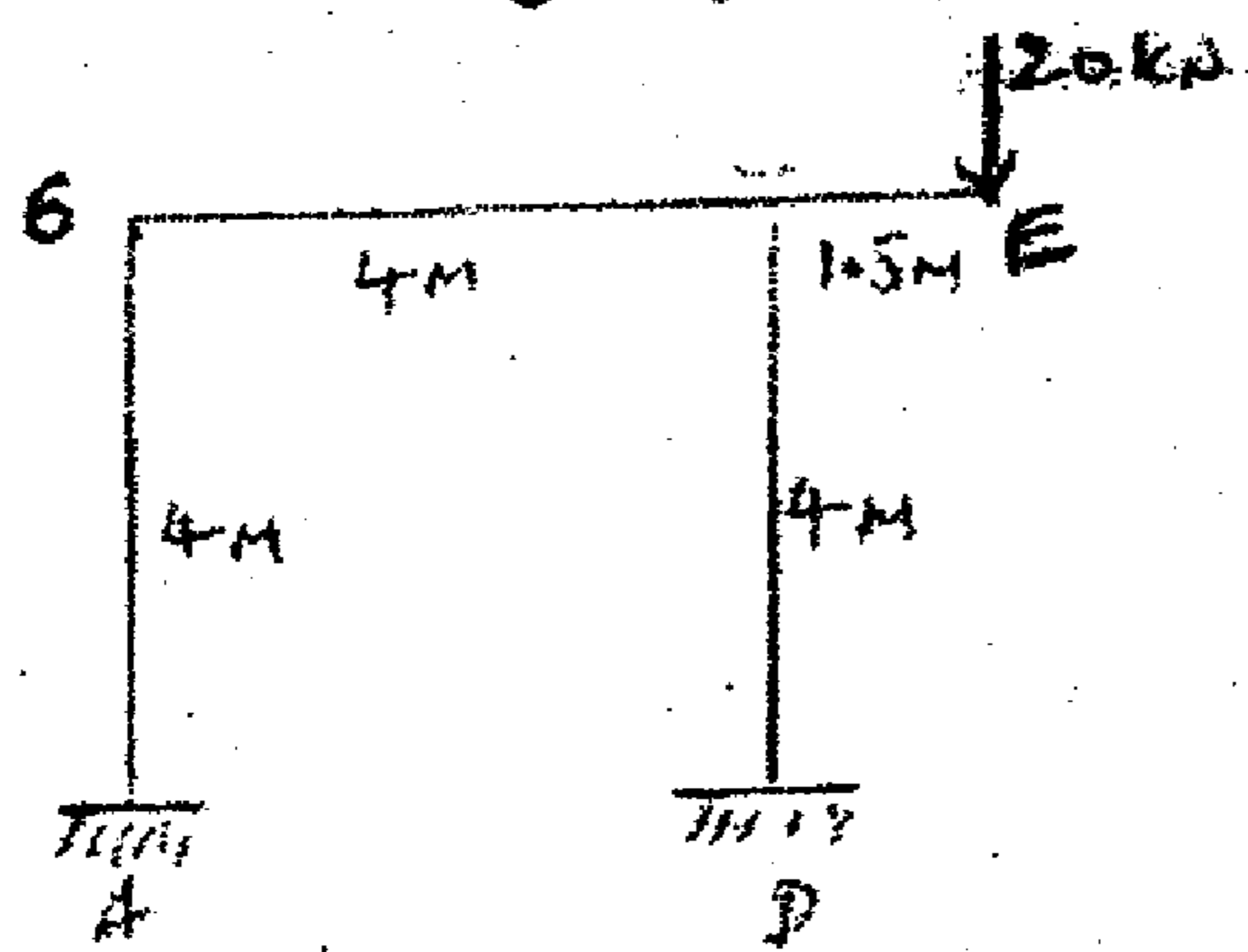


Fig.Q.4(b).

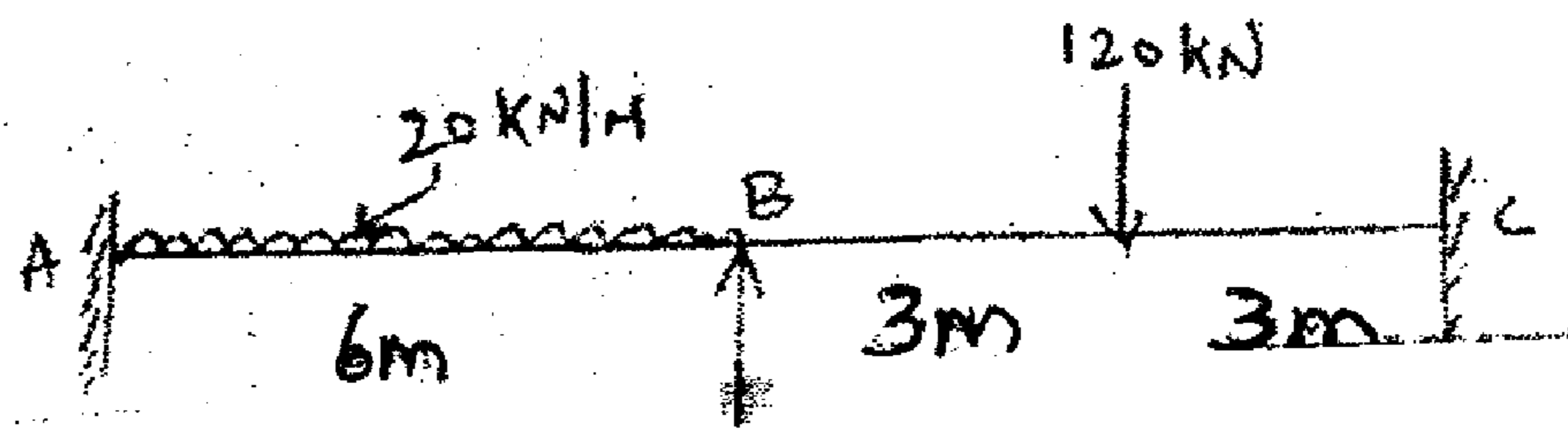


Fig.Q.5

PART – B

- 5 a. Analyse the beam shown in Fig.Q.5 by Kani's method. Assume uniform flexural rigidity. Draw bending moment diagram, shear force diagram and elastic curve. (20 Marks)

- 6 a. Analyse the Pin – jointed plane truss shown in Fig.Q.(6) by flexibility matrix method. The numbers given in the paranthesis are the cross sectional area of members in MM^2 . (20 Marks)

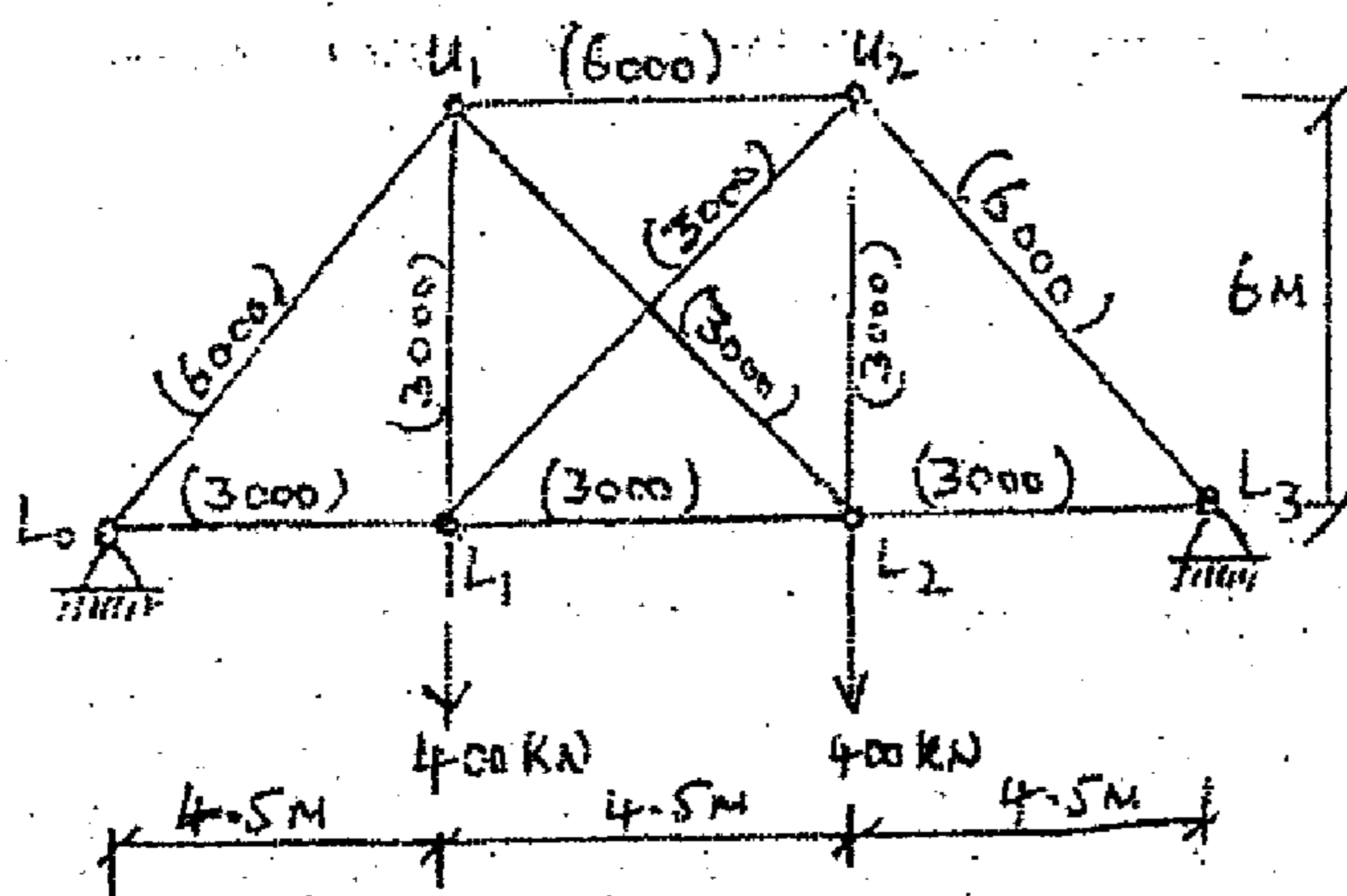


Fig.Q.(6)

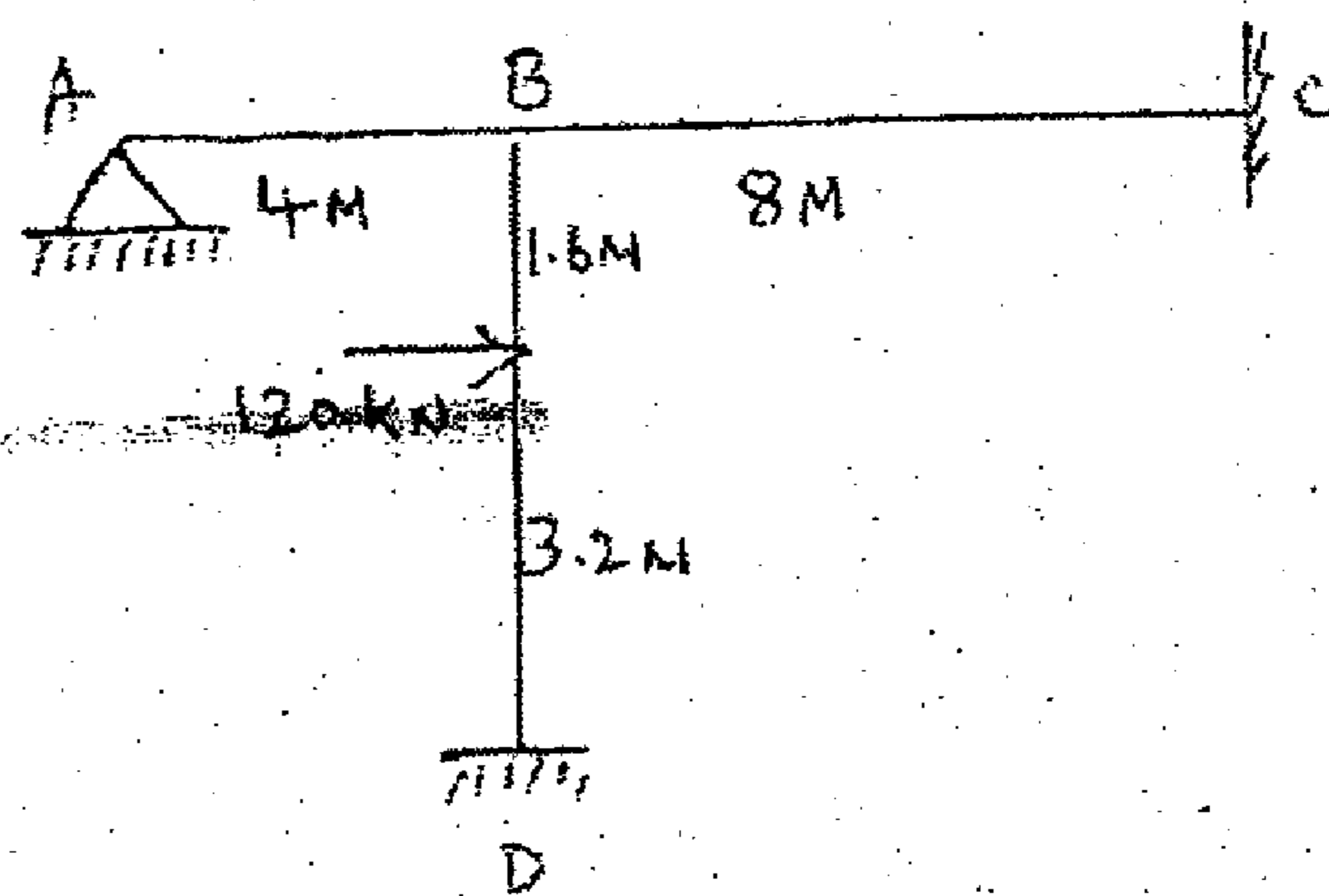


Fig.Q.(7).

- 7 a. Analyse the rigid jointed frame using stiffness matrix method. Draw bending moment diagram for the frame shown in Fig.Q.(7). Assume uniform flexural rigidity. (20 Marks)

- 8 a. Define Natural frequency and Period of vibration. (04 Marks)
 b. Determine the natural frequency of the systems shown in Fig.Q.8(b). (10 Marks)

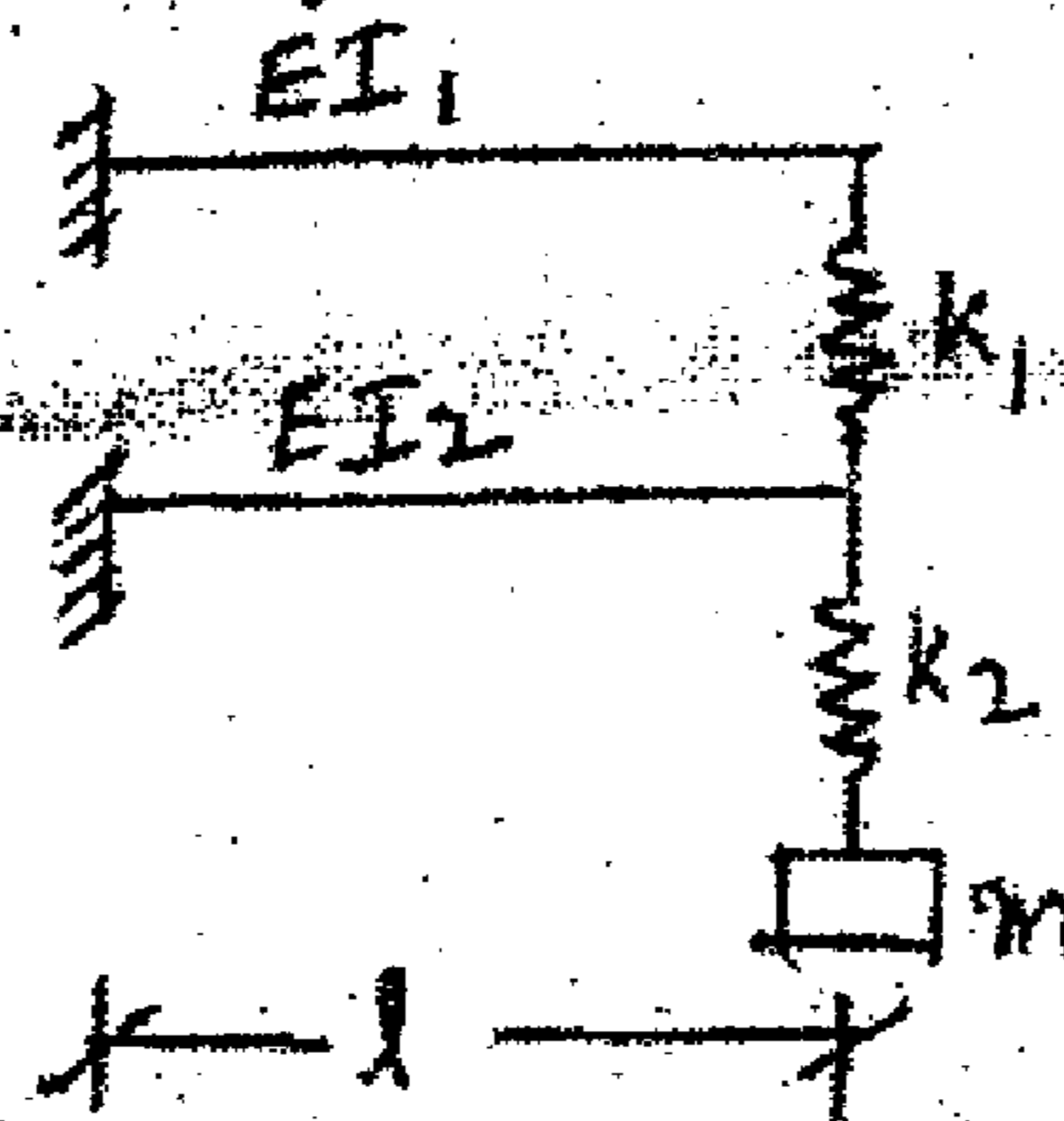


Fig.Q.8(b).

- c. Set up the differential equations of motions for the free vibration of a spring – mass system. (06 Marks)
