Roll No.....

CE-601

B.E. VI Semester

Examination, December 2012

Theory of Structures-II

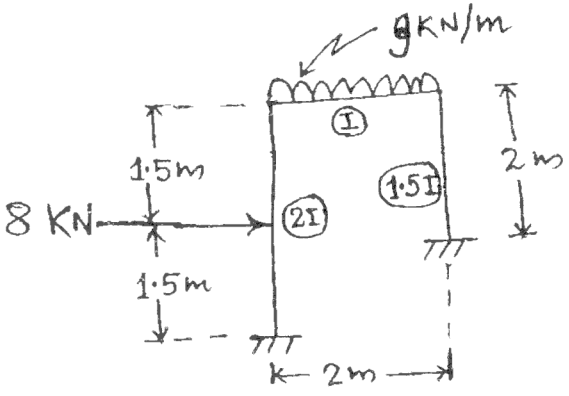
Time : Three Hours

Maximum Marks : 100 ***Minimum Pass Marks :35***

Note : Attempt any five questions, selecting one question from each unit. Assume any data suitably, if missing and mention it in answer book clearly.

UNIT - I

1) Draw the BMD and sketch the deflected shape of the frame shown in figure 1 by using moment distribution method. The ends A and D are fixed. **(20)**



2) Determine the support moments for the continuous girder if the support B sink by 2.50 mm. For all members take $I=3.50 \times 10^7$ mm^4 and $E = 200$ kN/mm^2. Use Kani's Method. **(20)**

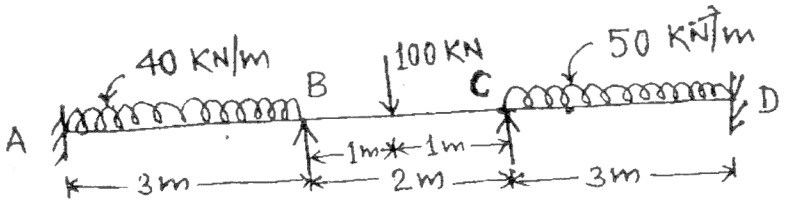


Figure 2

UNIT - II

3) a) Calculate the plastic modulus, shapefactor and plastic moment of section ISHT 150 having the following properties : $I_{xx} = 573.7$ cm^4, $A = 37.42$ cm^2 and distance of C.G. from the top is 26.6 mm. Take the yield stress for mild steel as 250 N/mm^2. **(10)**

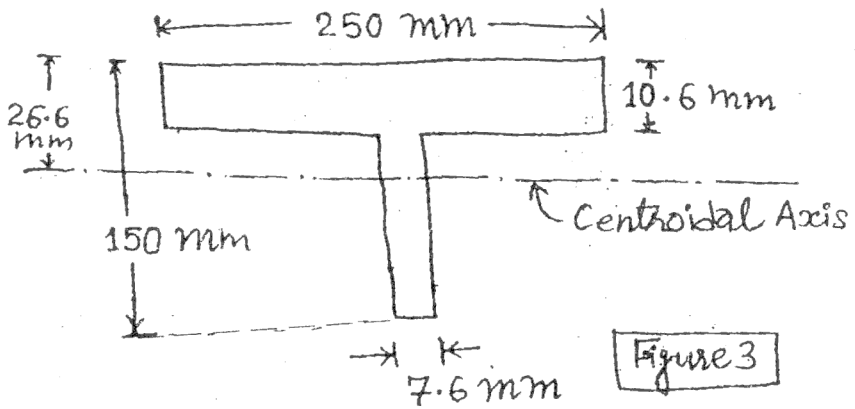


Figure 3

b) Find the value of M_p for the portal frame loaded upto collapse. The supports A and D are fixed. The members AB, CD and BC have plastic moment of resistance M_p, M_p and $2M_p$ respectively. **(10)**

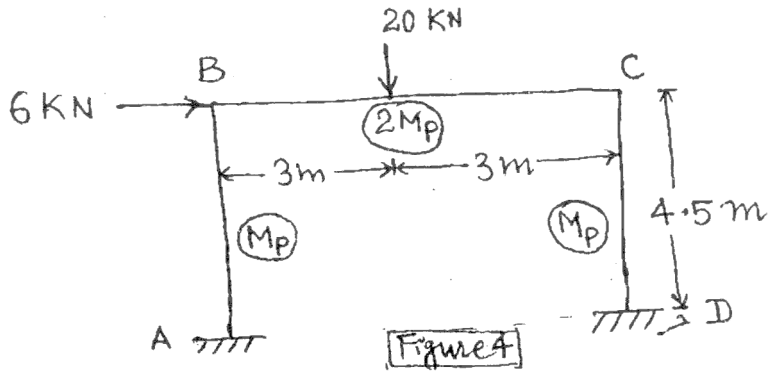
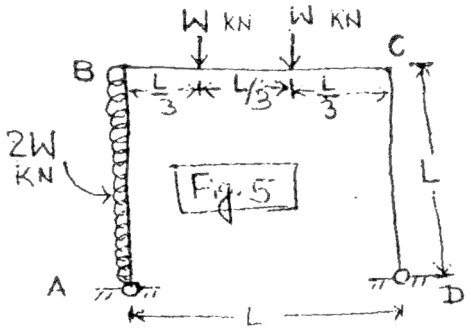


Figure 4

4) a) Evaluate the shape factor for triangular section (base 'b' and height 'h') and circular section of diameter 'd'. **(10)**

b) Determine the value of W at collapse for the portal frame. All the members have the same plastic moment of resistance M_p. The supports A and D are hinged. **(10)**



(Figure 5)

UNIT - III

5) Analyse the building frame, subjected to horizontal forces as shown in figure 6. **(20)**

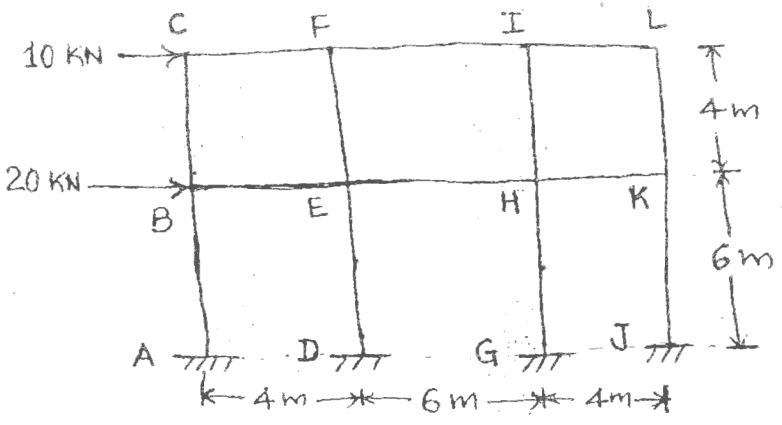


Figure 6

6) Explain the portal method and cantilever method for analysis a building frame subjected to horizontal forces. **(20)**

UNIT - IV

7) a) Compare stiffness and flexibility methods of matrix for analysis of structure. **(5)**

b) Analyse the beam by matrix method of structural analysis. **(15)**

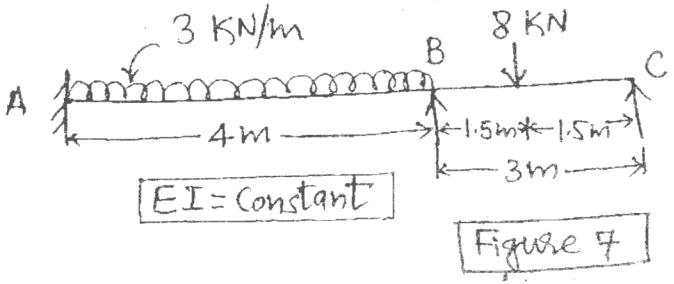


Figure 7

8) a) Explain degree of static and kinematic indeterminacy, briefly. **(5)**

b) Analyse the beam by stiffness method. EI is constant. **(15)**

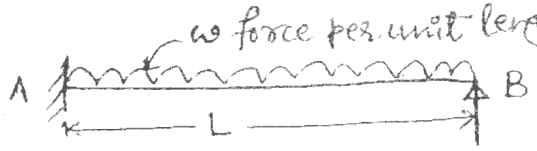


Figure 8

UNIT - V

9) Determine the influence line for reaction at A in the beam shown in figure 9. Compute the ordinates at every 1m interval. EI is constant.

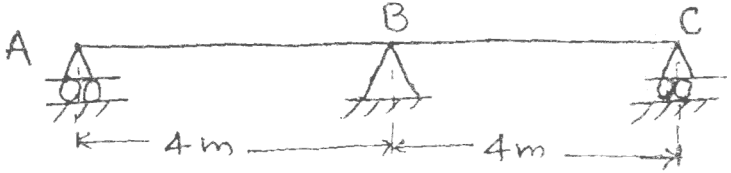


Figure 9

10) a) How the influence lines can be drawn qualitatively for determinate and indeterminate structures ? Explain. **(5)**

b) Using the beam column differential equation or otherwise calculate the elastic buckling load for a pin-ended column. **(15)**

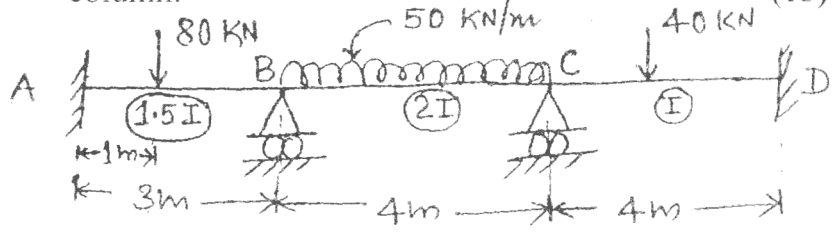


Figure 10

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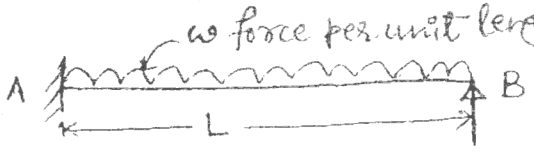

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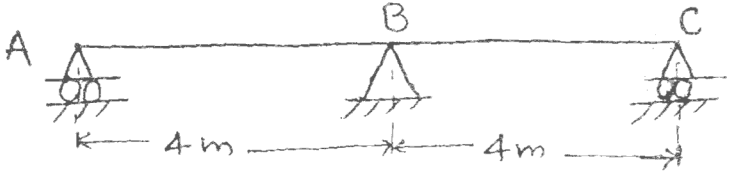

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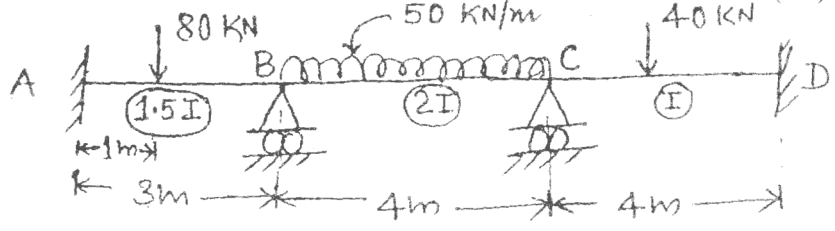

Figure 10