Code No: NR410105 **NR**

IV B.Tech I Semester Supplementary Examinations, November 2006
ADVANCED STRUCTURAL ANALYSIS
(Civil Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Analyse the frame shown in figure 1 using Cantilever method. Take the cross sectional areas of all columns as same. [16]

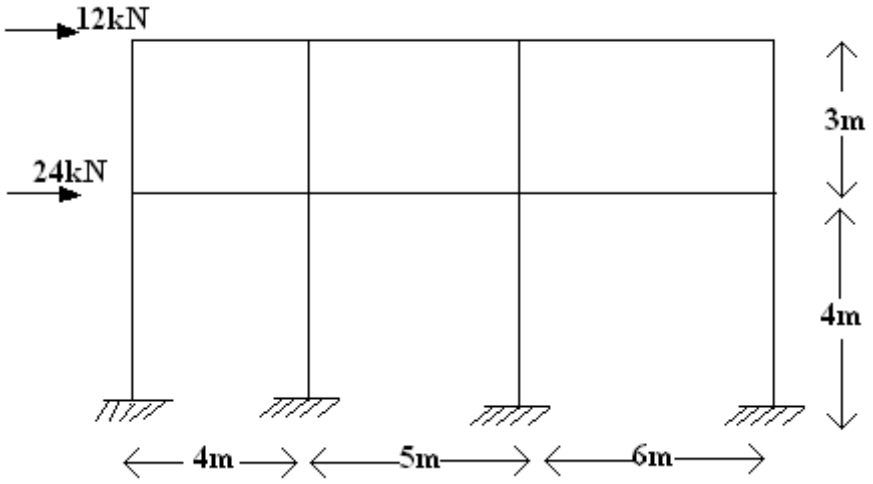

Figure 1:

2. (a) What are the characteristics of a stiffness matrix? [8]
   (b) Obtain Stiffness Matrix for a beam element? [8]

3. Using Stiffness method analyse the following frame shown in the figure 2. Flexural rigidity is constant throughout. [16]

4. Using Multer-Breslau principle, calculate the influence line ordinates at 2m interval for vertical reaction B of the continuous beam ABC. as shown in the figure.3 [16]

5. (a) Define plastic hinge and plastic moment capacity. [6]
   (b) Explain the term 'shape factor' in plastic analysis. [5]
   (c) Explain in detail the assumptions made in the plastic theory. [5]

6. Determine the collapse load for the fixed beam shown in figure 4

7. Explain about modulus of subgrade reaction and how to determine it? Give the ranges of modulus of subgrade reaction for different types of soils? [16]

8. Explain the following:

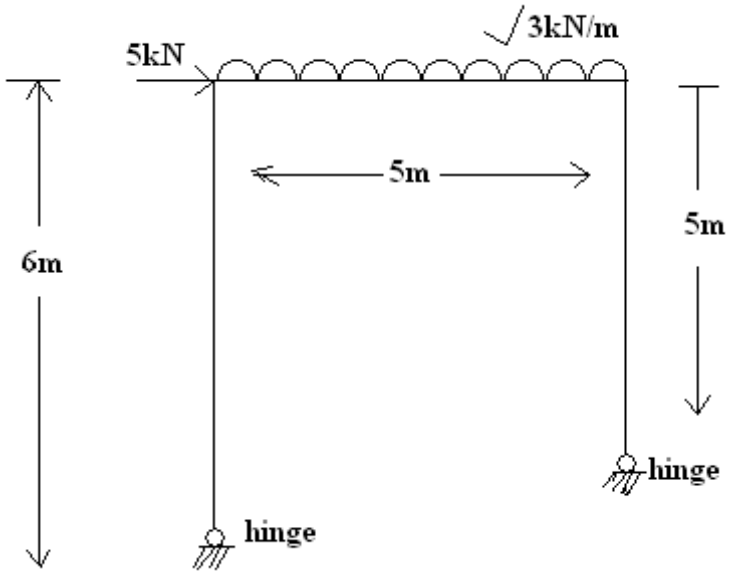

Figure 2:

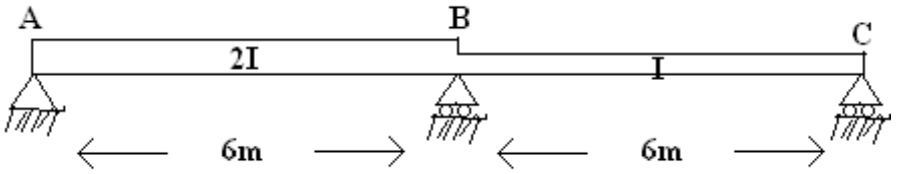

Figure 3:

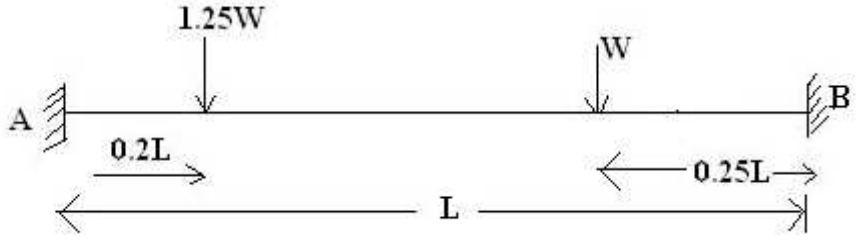

Figure 4:

(a) Influence lines [5]

(b) Portal method [5]

(c) strain energy methods of structural analysis. [6]

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