

Code No: C2008

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I - Semester Examinations March/April-2011

ADVANCED STRUCTURAL ANALYSIS

(STRUCTURAL ENGINEERING)

Time: 3hours

Max.Marks:60

Answer any five questions
All questions carry equal marks

- - -

1. a) What do you understand by “static” in determining? Illustrate with sketch 1 & 2 degree statically indeterminate frames internal & external.
b) Generate the flexibility matrix for an cantilever beam span L, flexural rigidity EI, subjected to actions A_1 and A_2 at the free end. Fig.1 [12]

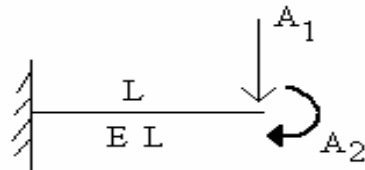


Fig.1

2. Using stiffness method analyses the two –span continuous beam loaded as shown in Fig. 2 [12]

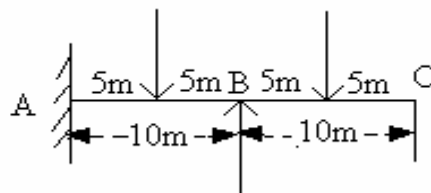


Fig.2

3. Analysis the pin – jointed truss loaded as shown in Fig.3 by the Flexibility method and find the horizontal displacements of joints B and C the vertical displacement of joint B. [12]

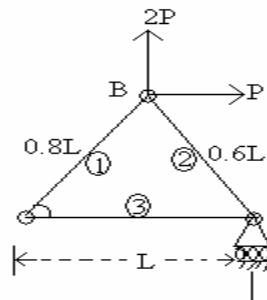


Fig.3

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4. Analyse the portal frame by the stiffness method and find the moments at the joints A, B, C, of D of Fig.4 ($EI = \text{Constant}$). [12]

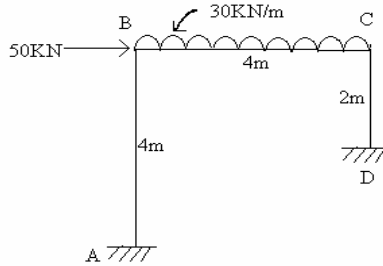


Fig.4

5. What are “shear walls”? Describe the structural behaviour of large frames without and with shear walls. [12]
6. Illustrate the analysis of grid structure by the stiffness method taking a simple example. [12]
7. Explain how the initial and thermal stresses can be accounted for in the Electricity method by taking a simple example. [12]
8. Write short notes on any **three**: [12]
- a) Local of Global co-ordinates
 - b) Load vector
 - c) Semi –band width
 - d) Sub structuring
