

B.E. / B.Tech. Civil Engineering (Model Curriculum) Semester-V
PCC-CE504 / CIVILSTRU - Structural Analysis-I

P. Pages : 2

Time : Three Hours

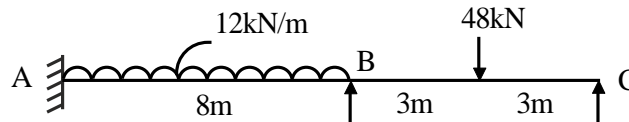


GUG/S/25/13727

Max. Marks : 80

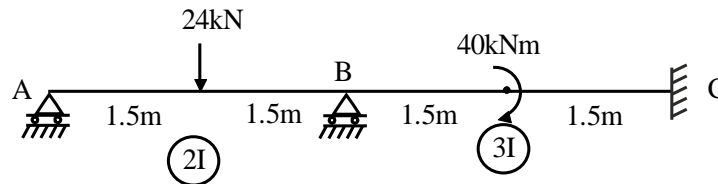
- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.

1. A continuous beam of uniform flexural rigidity is fixed at A and supported over B and C. Using Clapeyron's theorem calculate support moments and draw bending moment diagram. 16



OR

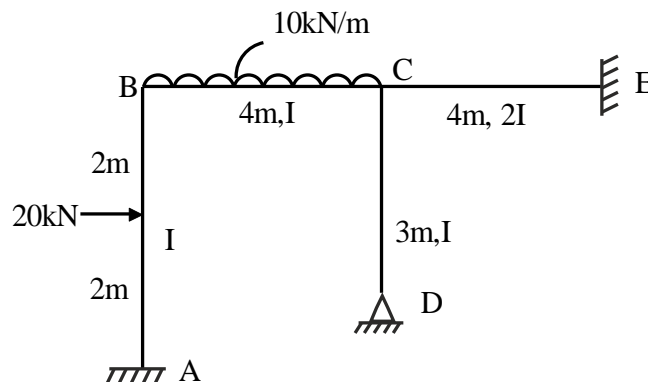
2. Analyze the beam using slope deflection method. 16



3. A continuous beam ABCD is fixed at A and simple supported at B, and C and CD is overhang. Beam carries an uniformly distributed load of 20 kN/m over a length of AC and point load of 25 kN at D. AB = 4m, BC = 6m and CD = 2m. Using method of moment distribution, find support moments and construct BMD for the beam. 16

OR

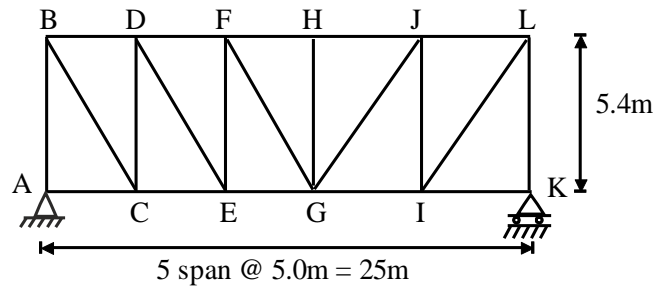
4. Analyze the frame by moment distribution method and draw BMD. 16



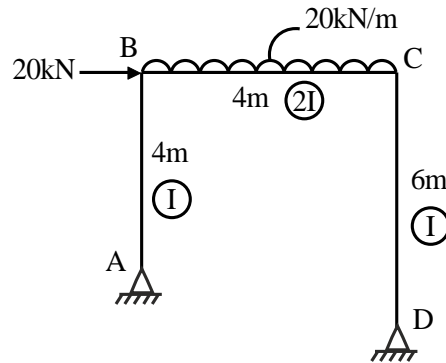
5. A uniform load of 25 kN/m, 6m long, crosses a girder of 30m span. 16
- 1) Calculate maximum shear force and Bending moment at section 5 and 10 m from left hand support.
 - 2) Construct ILD for maximum SF and BM.

OR

6. Construct the Influence lines for the forces in members. CD, DF, CE and GJ for N truss as shown in figure below. 16

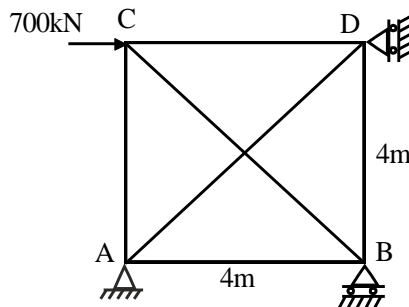


7. Find the horizontal thrust for the portal frame. Use strain energy method and draw BMD. 16



OR

8. Analyze the frame by strain energy method. E and A for all members are same. 16



9. Determine the ratio of the strength of a solid steel column to that of a hollow column of the same material and having the same cross sectional area. The internal diameter of hollow column is $\frac{3}{4}$ of the external diameter. Both the columns have the same length and area pinned at both ends. 16

OR

10. A two hinged parabolic arch of span 12m and central rise 2.4m has secant variation for M. I of the rib. 16

