

P. Pages : 2



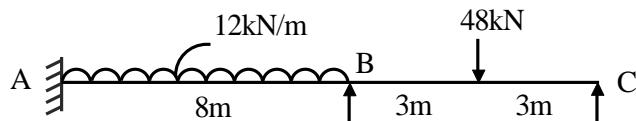
Time : Three Hours

GUG/S/25/13727

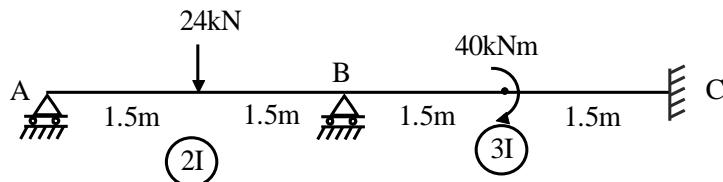
Max. Marks : 80

- 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. **16**
Using Clapeyron's theorem calculate support moments and draw bending moment diagram.

**OR**

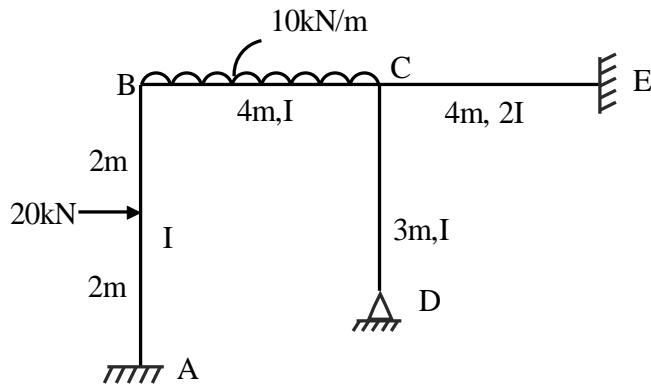
- 2.** Analyze the beam using slope deflection method. **16**



- 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 25kN 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**



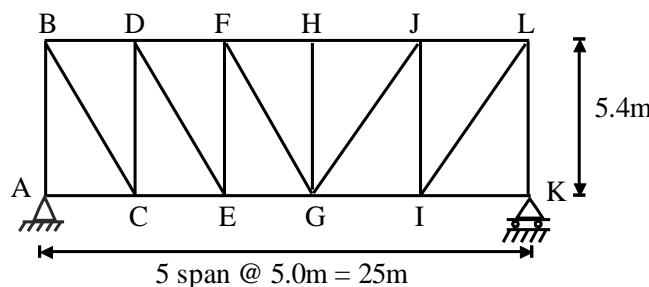
- 5.** A uniform load of 25 kN/m, 6m long, crosses a girder of 30m span. **16**
- 1) Calculate maximum shear force and Bending moment at section 5 and 10 m from left hand support.
 - 2) Construct ILD for maximum SF and BM.

OR

6.

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

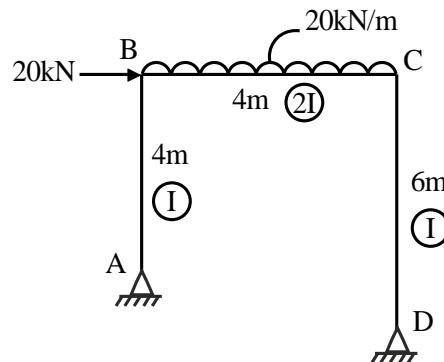
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7.

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

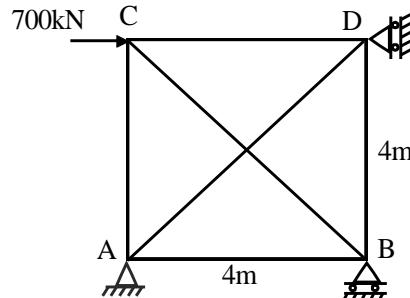
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**OR**

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

