

Ganpat University
B. Tech. Regular Examination Nov/Dec 2014
5th Semester Civil Engineering
2CI501 Structural Analysis-II

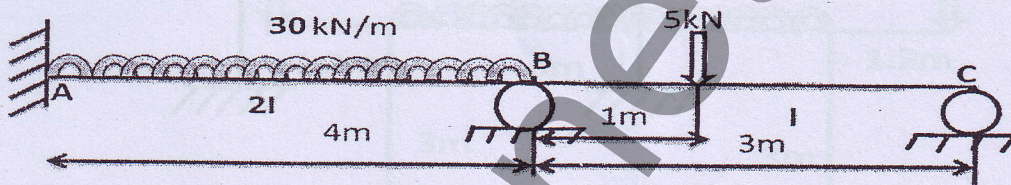
Time: 3 Hours

Total Marks: 70

- Instructions: -**
- (1) Answer to the two sections must be written in **separate answer books**.
 - (2) Figures to the **right** indicate **full marks**.
 - (3) Assume suitable data if required.

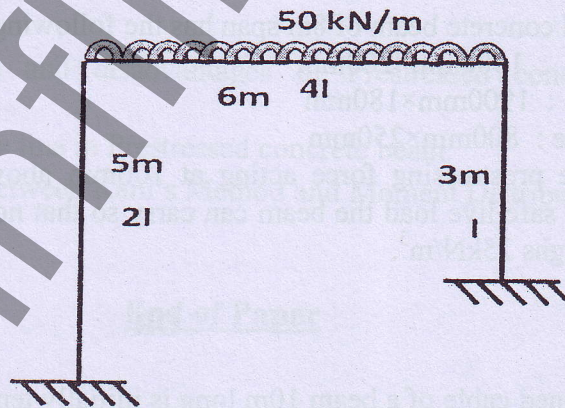
Section – I

Que-1 Using Slope Deflection Method, Draw SFD and BMD for Beam shown below. 12



OR

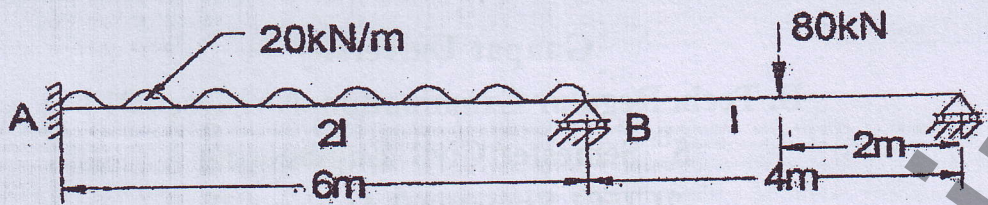
Que-1 Using Slope Deflection Method, Draw SFD and BMD for Frame shown below. 12



- Que-2** Attempt Following Questions
- (a) Differentiate between: Distribution Factor and Rotation Factor. 04
 - (b) Define the following terms: 04
 - i. Stiffness & Flexibility
 - ii. Fixed End Moment
 - (c) Define: 04
 - i. Distribution and Carryover factor
 - ii. Kinematic indeterminacy

Que-3 Solve the following problem by Flexibility Matrix. Draw BMD

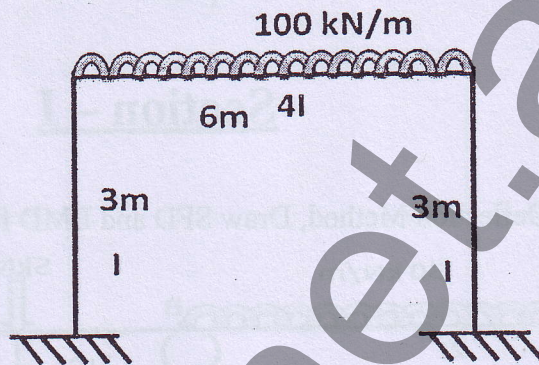
11



OR

Que-3 Solve the following problem by Moment Distribution Method. Draw BMD

11



Section - II

Que-4 A Prestressed concrete beam of 8m span has the following dimensions:

12

Top flange : 1500mm×200mm

Web : 1900mm×180mm

Bottom flange : 800mm×250mm

The effective prestressing force acting at 100mm above the bottom edge is 1200kN.

Calculate the safe live load the beam can carry so that no tension is developed at bottom.

Concrete weighs 25kN/m³.

OR

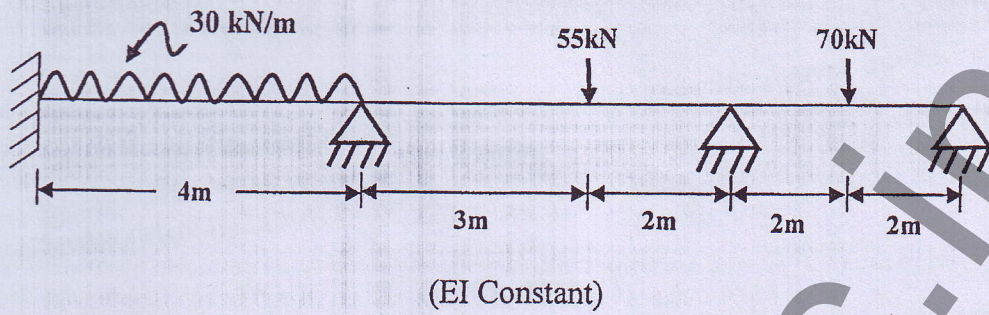
Q-4(A) A post tensioned cable of a beam 10m long is initially tensioned to a stress of 1200N/mm² at one end. If the tendons are curved so that the slope is 1 in 24 at each end, with a cross-sectional area of 1200mm², calculate the loss of Prestressed due to friction given following data:

Coefficient of friction between duct and cable = 0.3

Friction coefficient for wave effect = 0.0015 N/mm.

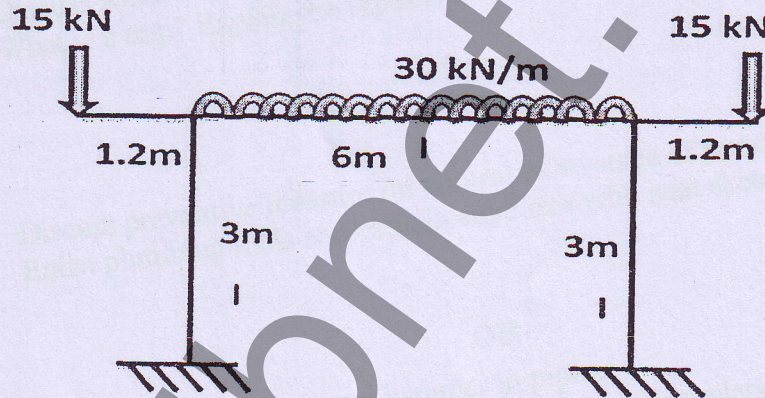
Q-4(B) A Prestressed concrete beam 400mm×600mm in section has a span of 10m and is subjected to a uniformly distributed load of 15kN/m. The prestressing tendons are located at the lower third point and provide an effective prestressing force of 1000kN. Determine the extreme fiber stresses in concrete at the mid span section. Draw stress distribution sketches.

Que-5 Find out the moment and reaction of following problem and plot SFD and BMD by using Kani's Method. 11



OR

Que-5 Find out the moment and reaction of following problem and plot SFD and BMD by using Kani's Method. 11



- 6 Attempt any two:** 12
- (A) Compare advantages and disadvantages of Prestressed concrete versus reinforced concrete.
 - (B) Explain about pressure line in Prestressed concrete beam.
 - (C) Give the Difference between Kani's Method and Moment Distribution Method.

End of Paper