Ref. No.: Ex/CE/5/T/303/2025

BACHELOR OF ENGINEERING (CIVIL ENGINEERING) THIRD YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2025

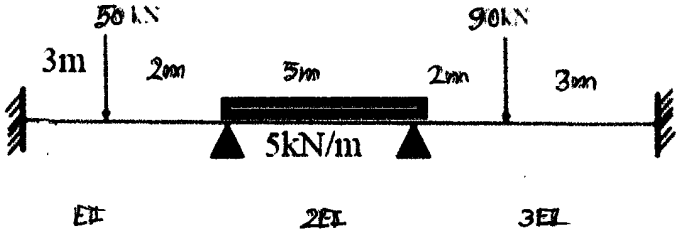
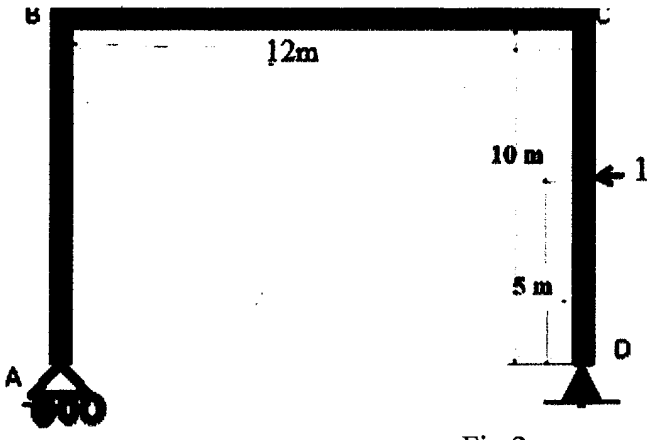
PART-I

THEORY OF STRUCTURE II

Time: Three Hours | Full Marks 100 (50 marks for 1st part)

Use a separate Answer-Script for each part

[No code or handbook is allowed]

No. of questions	Answer any two from the followings	Marks
1(a)	Analyze the beam and draw Bending Moment Diagram by slope deflection method.(Fig.1)	12
(b)	Analyze the beam and draw Bending Moment Diagram by moment distribution method.(Fig.1)  Fig.1	13
2	 Fig.2 Analyse the Portal frame by Moment distribution method. A is roller supported and D is hinged. Flexural rigidity of AB, BC and CD are EI, 2EI and 3EI respectively.	25

Ref. No.: Ex/CE/5/T/303/2025

BACHELOR OF ENGINEERING (CIVIL ENGINEERING) THIRD YEAR FIRST SEMESTER SUPPLEMENTARY EXAM 2025

PART-I

Time: Three Hours

Full Marks 100
(50 marks for 1st part)

Use a separate Answer-Script for each part

[No code or handbook is allowed]

No. of questions	Answer any two from the followings	Marks
3(a)	Prove that moment carry by a member of a joint is proportional to its stiffness.	6
(b)	Derive the slope deflection equation.	8
(c)	Find out the horizontal reactions, radial shear, normal thurst of a cubic parabola three hinge arch and a UDL (w) is acting over its whole span.	11

Ref. No.: Ex/CE/5/T/303/2025

Bachelor of Engineering (Civil Engineering) Third Year First Semester Exam. - 2025

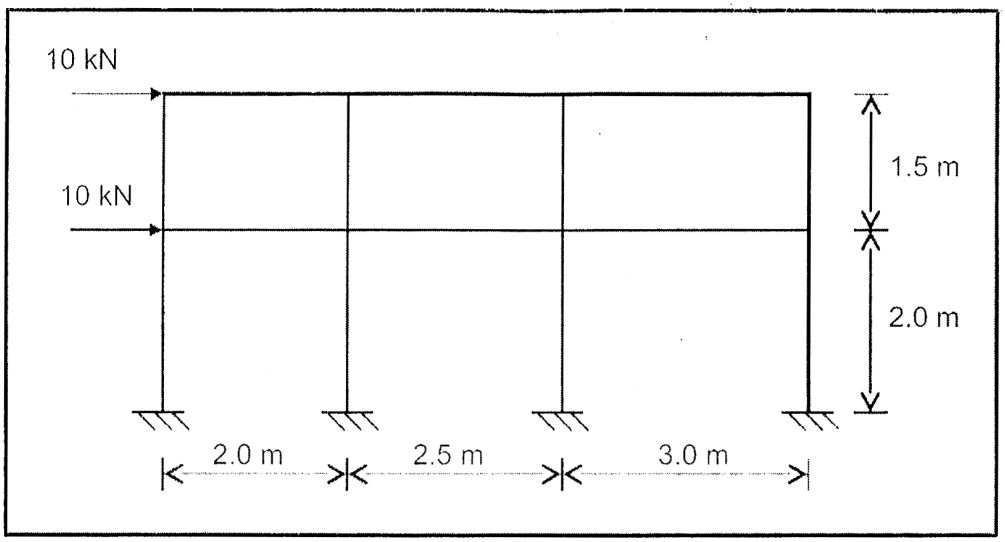
THEORY OF STRUCTURES – II
PART - II

Answer ANY TWO Questions. **Full Marks – 50**

---

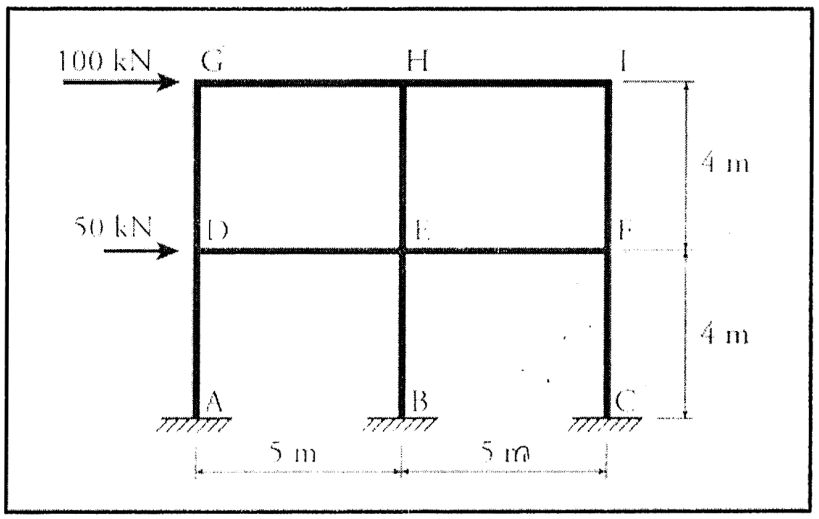
1. (A) State the assumptions, applicability and limitations of the Portal Method. **(5)**

(B) Determine the Bending Moment, Shear Force, and Axial force for all the members of the frame shown below by Portal Method. Draw the BMD and SFD. **(20)**



2. (A) State the assumptions, applicability and limitations of the Cantilever Method. **(5)**

(B) Determine the Bending Moment, Shear Force, and Axial force for all the members of the frame shown below by Cantilever Method. Draw the BMD and SFD. **(20)**



3. (A) Discuss the assumptions and the basic theory behind the Substitute Frame Method. **(5)**

(B) Analyze the Substitute Frame shown in the figure below to find the maximum Span-Moment in segment FG, for the given Dead Load of 20 kN/m and Live Load of 15 kN/m. **(20)**