

## School of Engineering

B.TECH Civil Engineering  
Mid Term Examination - Nov 2023

Duration : 90 Minutes  
Max Marks : 50

### Sem V - G1UA504T - Advanced Structural Analysis

General Instructions

*Answer to the specific question asked*

*Draw neat, labelled diagrams wherever necessary*

*Approved data hand books are allowed subject to verification by the Invigilator*

- 1) Describe the role of the yield moment in the plastic analysis of beams and portals. K2 (2)
- 2) Define "moment-curvature relationship" and its significance in plastic analysis. K1 (3)
- 3) Why is it important to identify plastic hinges in the analysis of continuous beams and portals? K2 (4)
- 4) Explain the Flexibility matrix method K2 (6)
- 5) Calculate the plastic moment of resistance for a concrete T-section beam given its dimensions and material properties. K3 (6)
- 6) Determine the value of shape factor for a diamond section . K3 (9)
- 7) Investigate the behavior of a continuous beam with multiple plastic hinges under various loading conditions, considering the redistribution of moments. K4 (8)
- 8) Evaluate the collapse load for a propped cantilever having W KN load at midspan . K4 (12)

**OR**

Analyse the continuous beam shown in figure by stiffness method. Support B sinks by  $300/EI$  units and support C sinks by  $200/EI$  units K4 (12)

