

DEPARTMENT OF CIVIL ENGINEERING, IIT DELHI

MINOR II :CVL756 ADVANCED STRUCTURAL ANALYSIS (2019-20)

Time allowed: 1 hour

Date: 26 September 2019

Venue: LH 408

Max marks : 20

NOTE: (a) All questions are compulsory. (b) Draw neat and clear sketches wherever required.
(c) Assume suitable data if necessary. (d) Assume members as extensible unless otherwise stated.
(e) All answers must be supported by calculations/ justification to secure assigned marks.

Q1. For the inverted mild steel T beam section (yield stress 250 MPa, yield strain 0.002) shown in Fig. 1, determine the yield moment, the plastic moment and the shape factor.

(5 marks)

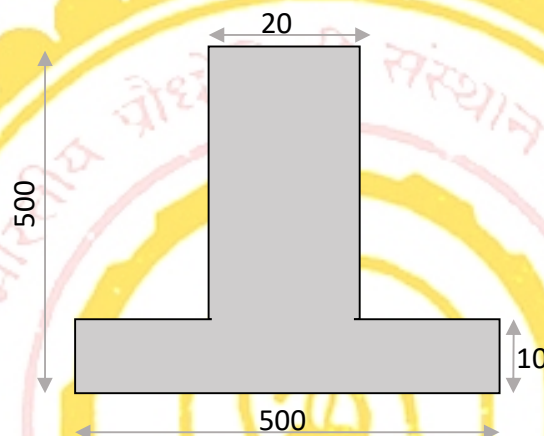


Fig. 1 All dimensions are in mm

Q2. For the section shown in Fig. 1, determine the bending moment that will cause yield strain at the bottom most fibre of the section?

(8 marks)

Q3. State any five requirements for ensuring truly plastic behaviour from a steel section.

(3 marks)

Q4. Explain why general 3D frame analysis will not give accurate results for a symmetrical building acted upon by unsymmetrical lateral loading?

(2 marks)

Q5. Explain why 3D frame analysis taking into account the rigid diaphragm action of floor slabs is not valid for steel frames with GI sheeting?

(2 marks)