

Q.P. Code: 18CE1013

R18

Reg. No.

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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY::PUTTUR  
(AUTONOMOUS)

M.Tech I year II Semester Supplementary Examinations Dec 2019

Time: 3 hours

ADVANCED STEEL DESIGN

Max. Marks:60

(Structural Engineering)

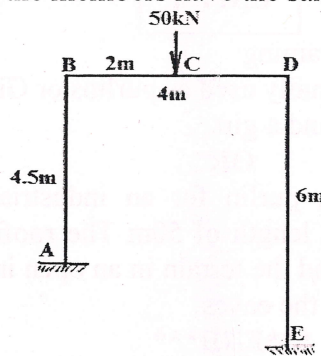
(Answer all Five Units 5×12=60 Marks)

UNIT I

- 1 a Explain plastic hinge. 3M
- b Determine shape factor for triangular section with base width 'b' and height 'h' 5M
- c Determine shape factor for Hollow tube section with its external diameter 'D' and internal diameter 'd' 4M

OR

- 2 Explain fully plastic moment and determine the fully plastic moment required for the frame shown in Figure, if all the members have the same value of  $M_p$ . 12M

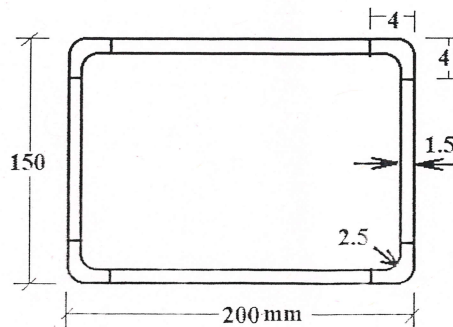


UNIT II

- 3 A hat of 100mm x 80mm x 5mm section with a 30 mm lip is to be used as concentrically loaded column of effective length 4.0 m. Determine the allowable load. Take  $f_y = 235 \text{ N/mm}^2$ . 12M

OR

- 4 Find the allowable axial load for a column section shown in Figure1. Effective length of the column is 3.6 m. Take  $f_y = 235 \text{ N/mm}^2$ . 12M



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**UNIT III**

- 5 a Write about Tower configuration 6M  
b Loads on Transmission Towers 6M

**OR**

- 6 Explain the procedure for design of self-supporting simple towers. 12M

**UNIT IV**

- 7 a Compare the hollow circular & hollow square section as thin tubular sections, for its strength with respect to use as compression member 6M  
b Enlist the loads acting on the structure and write on live load calculation for roof truss 6M

**OR**

- 8 Design a purlin for a roof truss having the following data: 12M  
Spacing of truss = 3m c/c,  
Spacing of Purlin = 2m c/c  
Wind pressure = 2.5 kN/m, Roof coverage= AC  
Sheeting weighing 700N/m  
Live load on purlin=1.4 kN/m

**UNIT V**

- 9 a Explain briefly about Structural Framing 5M  
b What are the sections that are normally used as purlins or Girts? 4M  
c State difference between a purlin and a girt. 3M

**OR**

- 10 Design a roof truss, rafter bracing, purlin for an industrial building located at Guwahati with a span of 20m and a length of 50m The roofing is galvanized iron sheeting Basic wind speed is 50m/s and the terrain in an open industrial area Building is class B with a clear height of 8m at the eaves 12M

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