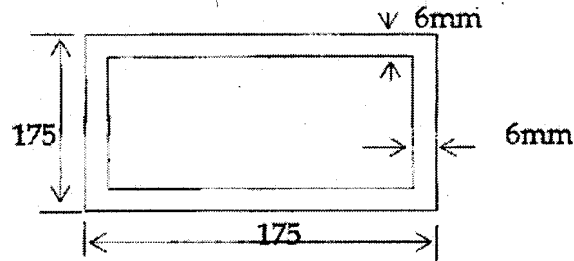


(4)

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8. Find the column section properties and allowable load for the column section as shown below. The effective length of the column is 2.5 m. Take $f_y = 250 \text{ N/mm}^2$.



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B. Tech. 7th Semester (Civil) F-Scheme Examination,
December-2017

DESIGN OF STEEL STRUCTURES-II

Paper-CE-401-F

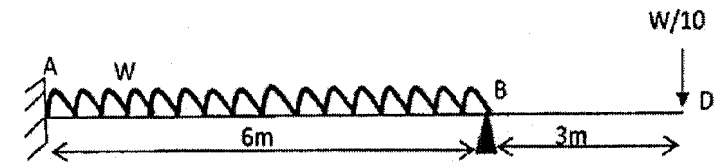
Time allowed : 3 hours]

[Maximum marks : 100

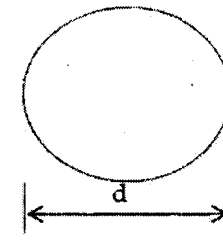
Note : Attempt any five questions.

Section-A

1. (a) Explain the following : 10+10
 (i) Shape factor.
 (ii) Conditions for plastic analysis.
 (b) Find the value of W , for the beam shown in fig. so that the collapse may take place. The plastic moment of beam section is M_p .



2. (a) Determine the shape factor for the following sections : 10+10



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[P.T.O.]

(2)

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- (b) A simply supported beam of span L carries a central point load. Calculate the value of the load at collapse in terms of the plastic moment of resistance.

Section-B

3. Design a roof truss for a factory building for a span of 20 m and a pitch of $1/5$. The height of the truss at eaves level is 10 m. The spacing of the truss is 4.0 m. The factory building which is 75 m long is situated at Delhi. Take $f_y = 250 \text{ N/mm}^2$. 20
4. Design a rectangular steel overhead tank to hold 150,000 liters of water. The height is 2.2 m and depth of water is 2 m. Steel plates are available in 2 m and 1.25 m width and of any thickness. Design 20
- (a) The bottom plate,
(b) The bottom tee cover

Section-C

5. Design for Delhi a self-supporting steel stack of height 110 m above the foundation. The diameter of

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(3)

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the cylindrical part of the chimney is 4.75 m. The foundation has to rest on soil having capacity 180 kN/m^2 . The topography at the site is flat and location is of terrain category 2. Design any three sections along with foundation. 20

6. Explain the analysis and design steps of Transmission line towers. 20
- A 50 m high microwave antenna lattice tower to be built near Karnal. The diameter of hemispherical antenna disc, provided at the top is 2.5 m. The min width of the square platform is 3.75 m select a suitable truss configuration and determine a) the max compressive force and tension in the leg of the tower. Assume suitable data.

Section-D

7. Explain all light gauges section in detail. Draw different types to cold formed sections. Write down the design steps for design of compressive elements according to Indian standard. 20

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[P.T.O.]