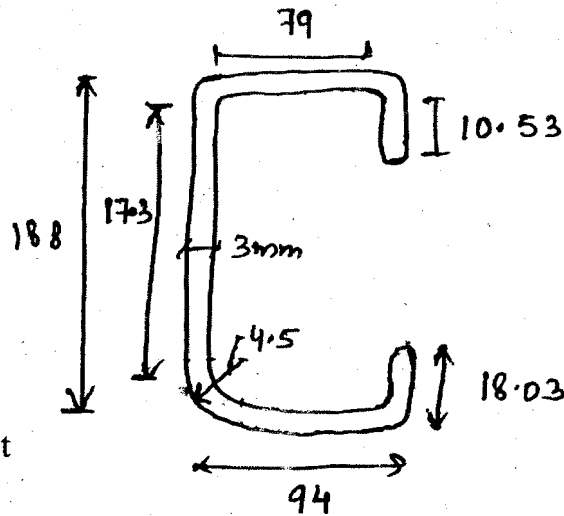


(4)

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- 9 Find the section properties and compressive load carrying capacity for the section as shown in fig. 9 under axial compression load. 20



Internal radius of the corners is 1.5 t

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

DESIGN OF STEEL STRUCTURE-II

Paper-CE-401-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Question No. 1 is compulsory. Attempt one question from each section. All questions carry equal marks. Use of ID : 800-1984, IS : 801-1975, Is 800-2007 is allowed.

1. Explain briefly :
- (a) Advantage and disadvantage of steel structure.
 - (b) Cantilever bridge
 - (c) Portal sway bracing
 - (d) Fillet welds
 - (e) Load factor. 20

Section-A

2. (a) Explain the method of plastic analysis. 5
- (b) Determine the collapse load in the fixed beam shown in fig. 2 in which plastic moment is $2M_p$ in one half and M_p in other half. 15

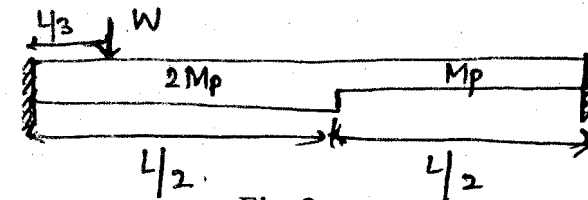


Fig. 2

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24511-P-4-Q-9 (17)

[P.T.O.]

(2)

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- 3 Collapse loads acting on frame ABCD are shown in fig. 3. Determine plastic moment capacity of the required section.

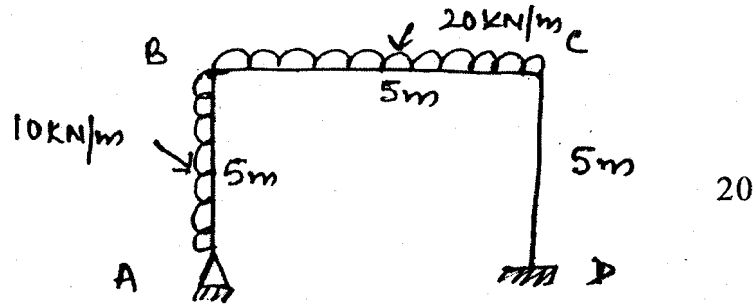


fig. 3.

Section-B

- 4 Determine the various loads to be considered for designing a truss near Nagpur, for the following data :

Class of building – General with life of 50 yrs.

Terrain category – 2

Size of building – 20 m × 60 m

Height of eaves – 10 m

Topography – Plane area with slope $< 3^\circ$

Span of truss – 20 m, pitch of 1/4 AC sheets

Medium permeability.

20

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(3)

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- 5 Briefly explain the steps to design Elevated hopper based circular water tank having capacity of 1,60,000 litres. The tank is to be build in Delhi. Take $F_y = 250 \text{ N/mm}^2$.

20

Section-C

- 6 (a) What are the types of steel stacks ? Explain the forces acting on it.
(b) Explain the structure action of 2 types of steel stacks.
- 7 What do you mean by Transmission line tower ? What are design procedure and specification for the design of Transmission line tower ?

20

20

Section-D

8. Explain the following :
- (a) Stiffened compression element
(b) Flat width ratio
(c) Torsional flexural buckling
(d) Effective design width.

20

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[P.T.O.]