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B.Tech. 7th Semester, (F) Scheme (Civil)

Examination, December-2018

DESIGN OF STEEL STRUCTURES-II

Paper- CE-401-F

Time allowed : 3 hours]

[Maximum marks : 100

Note: Attempt any five questions. All questions carry equal marks. Question No. 1 is compulsory. Attempt one question from each section. Assume suitable data where required or missing. Use of code IS 800-1984, IS 801-1975 and Steel Table is allowed.

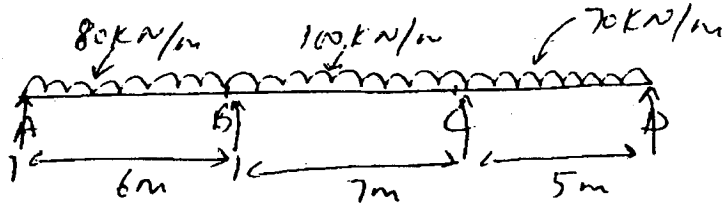
1. Explain the following: 4×5=20
- (a) Basic theorems of plastic analysis
 - (b) Different types of mechanism
 - (c) Types of stacks
 - (d) Types of cold formed structures
 - (e) Shape factor and load factor

Section-A

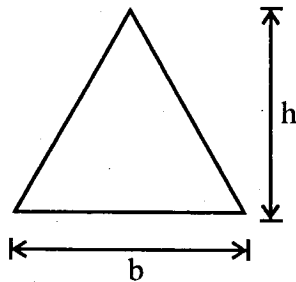
2. A three span continuous beam ABCD is loaded with ultimate load as shown in fig. Determine the required plastic moment of resistance when 20
- (a) The beam is of uniform section.
 - (b) The three spans of beam has different sections.

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3. Calculate the shape factor of the section as shown in fig. 20



Section-B

4. (a) What are the various loads that act on a roof truss? Explain in detail. 10
 (b) What are the stepped columns? With the help of a neat sketch show the various components of stepped columns. 10
5. Design the following components of a circular elevated water tank for a capacity of 165000 liters. The height of the tank bottom above the ground level is 7m. The tank is supported over eight columns and is situated at the railway station in Allahabad. 20
 (a) Size of tank
 (b) Thickness of plates.
 (c) Connections

(3)

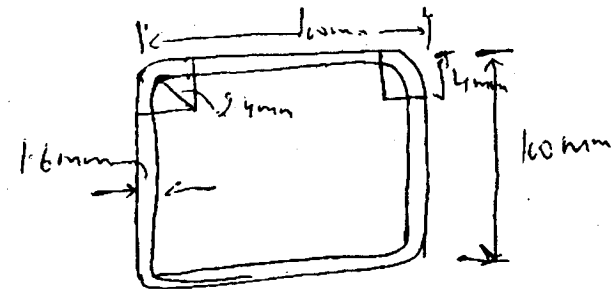
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Section-C

6. Design a self-supporting steel stack with a 100m height to be constructed at Allahabad. The diameter of cylindrical shaft is 4m. The stack has 110 mm thick lining. Design the plates of stack, base plate and anchor bolts only. Assume the necessary relevant data. 20
7. (a) Explain the different bracing configurations of microwave towers. 10
 (b) What are the various loads acting on transmission line towers? 10

Section-D

8. Find the column section properties and allowable load for the column section as shown in fig. The effective length of column is 3.2 m. Take $f_y = 235 \text{ N/mm}^2$. 20



9. Explain the following: 10
 (a) Multistiffened Elements and Flat width ratio. 10
 (b) Adequacy of edge stiffener for compression element. 10