

Roll No.

24511

B.Tech. 7th Semester (Civil Engineering)

Examination – December, 2012

DESIGN OF STEEL STRUCTURE-II

Paper : CE – 401-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : (i) Attempt *five* question in all. Question No. *one* is *compulsory* and attempt *one* question from each Section. All question carry equal marks.

(ii) Use of IS 800 – 1984 revised 2000, IS – 801 and steel tables are allowed. If any data is missing then assume the same.

1. (a) What are the conditions to be satisfied for the plastic methods of analysis. $2 \times 10 = 20$

(b) Define shape factor.

(c) Name various types of bracing.

- (d) What is the assumption made for analysis of industrial building bents for columns hinged at base?
- (e) What is the minimum thickness of steel section specified as per IS 805 - 1995 to account for corrosion?
- (f) What is difference between self supporting steel stack & gauged steel stack?
- (g) Define proportioning of stack.
- (h) For what purpose cold formed sections are used?
- (i) What are stepped columns?
- (j) Define plastic collapse?

SECTION - A

2. (a) Find the shape factor for triangular section of base 'b' & height 'h'. 10
- (b) What do you mean by mechanism? With the help of neat sketch discuss various possible mechanism. 10
3. A continuous beam of uniform section throughout carries central loads in all spans as shown in fig 1. Find the collapse load factor. 20

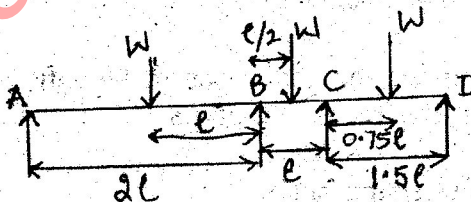


Fig: 1

Also draw bending moment diagram

SECTION - B

4. (a) Discuss various elements of an industrial buildings 10
- (b) Explain the design procedure of a roof truss. 10
5. Design the following for a circular elevated water tank for a capacity of 2,50,000 litres the height of tank bottom above the ground level is 8.7 m. The tank is supported over eight columns & is situated at the railway station in Allahabad. 20
- (i) Size of tank
- (ii) Thickness of plates
- (iii) Conical roof
- (iv) connections

SECTION - C

6. Explain the design procedure of the following components of self supporting steel stacks. 20
- (a) Flare,
- (b) Thickness of steel plates forming the stack,
- (c) Design of base plate,
- (d) Design of plain concrete pedestal.

7. What are the various loads acting on transmission line towers ? Also mention various conditions of design of transmission line towers. 20

SECTION - D

8. (a) Discuss the concepts of effective width in detail. Also mention von-kaiman equation. 10
(b) What are various types of cold formed section ? Explain. 10
9. Find the column section properties and allowable load for the column section shown in fig 2. The effective length of column is 3.0m take $f_y = 235 \text{ N/mm}^2$. 20

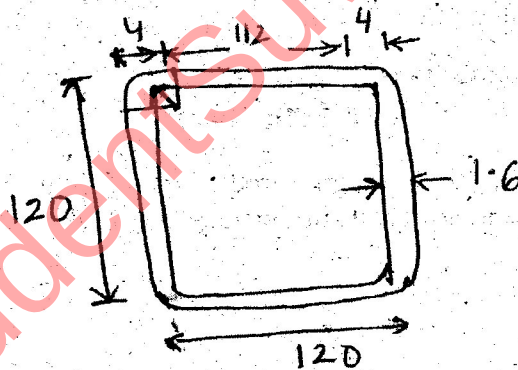


Fig : 2