

Roll No. ....

**24511**

**B.Tech. 7th Sem.  
(Civil Engineering) Elective  
Examination-May, 2013**

**DESIGN OF STEEL STRUCTURE-II**

**Paper CE-401-F**

**Time : 3 hours**

**Max. 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 the examination.

**Note :** (i) Attempt five questions. Question No. 1 is compulsory. Attempt one question from each Section. All questions carry equal marks.

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

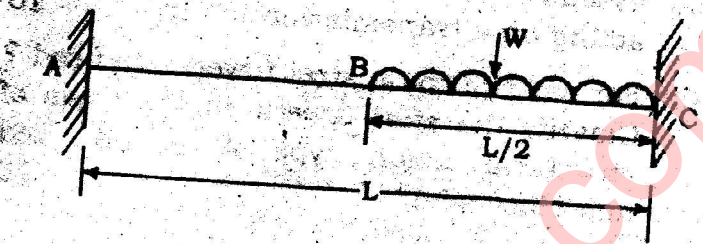
1. (a) What is mechanism ? 2

(b) Name the various methods used for analysis of structure for its ultimate load. 2

- (c) For what purpose purlins are provided over roof truss ? 2
- (d) Why heel of the rafter angle is placed on top in a roof truss ? 2
- (e) What are the reasons for the use of elevated tanks ? 2
- (f) Name the IS codes referred for the design of steel water storage tanks. 2
- (g) What is the proportioning of stack ? 2
- (h) What are the various loads acting on a microwave towers ? 2
- (i) What is local buckling ? 2
- (j) Define flat width ratio. 2

### SECTION - A

- 2. (a) Find the shape factor for hollow tube section of external diameter 'D' and internal diameter 'd'. 10
- (b) Discuss the scope of plastic analysis. Also mention limitations of plastic analysis. 10
- 3. A beam fixed at both the ends is subjected to uniformly distributed load W on its half portion as shown in fig 1. Determine the collapse load if the beam has uniform cross-section. 20



### SECTION - B

4. (a) What are the various loads that act on a roof truss? Explain in detail. 10  
 (b) What are 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 2,00,000 litres. The height of the tank bottom above the ground level is 8.5 m. 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
  - (d) Hemispherical bottom plates.

### SECTION - C

6. What are the steps involved in design of self supporting steel stacks? 20

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7. (a) Discuss in detail the various loads acting on a transmission tower. 10
- (b) For what purpose steel towers are used? Classify the steel towers on the basis of structural action, type of section used and placement. 10

#### SECTION - D

8. (a) With the help of neat sketches, show common shapes of cold formed light gauge action. 10
- (b) What do you understand by effective width of cold formed sections? Also describe effective section? 10
9. Find the safe axial load carried by a column of effective length 5m, the cross-section of which is shown in fig 2 20

