

B.Tech. 7th Semester (Civil Engg.) XI Examination  
December-2013

**DESIGN OF STEEL STRUCTURES-II**

**Paper-CE-401-F**

*Time allowed : 3 hours]*

*[Maximum marks : 100*

*Note : Attempt five questions in all. Question No. 1 is compulsory and do one question from each section of the question paper. All questions carry equal marks. Use of IS : 800 : 1984 and IS : 801-1975 with latest amendments is allowable. If any data is missing then assume the same.*

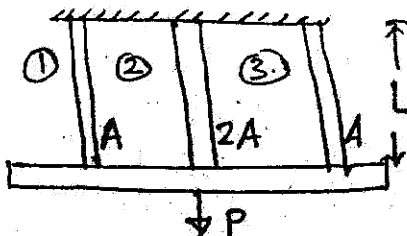
1. Answer the following clearly :

- (a) Find out the value of a plastic modulus for a square of side 'x' bent about a diagonal.
- (b) What is plastic collapse and shape factor?
- (c) List out the elements of an Industrial Building.
- (d) What is the shape of the shell of a circular tank?
- (e) Name the forces encountered to resist under four legs of a tower.
- (f) What is flat width ratio ? Define.
- (h) Define spacing of connections in compression flange of cold-formed sections.
- (i) Name the loads applied to a Tower during its analysis.

8×2.5=20

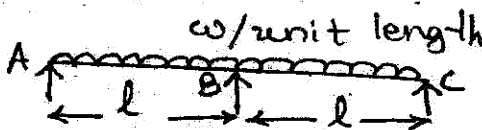
## Section-A

2. Find the ultimate load of the three bar structure shown below



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3. Find the collapse load factor for the shown, continuous beams loaded, fully plastic moment for each span.



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## Section-B

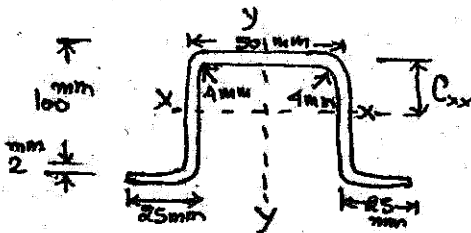
4. Find the wind pressure for design of a sloping roof of span 10m and pitch  $1/4$ . The height of eaves is 5m above ground. The building is situated in Chennai and its permeability is normal. Assume other data suitably.
- 20
5. Design an overhead rectangular tank for 1.6 lakh liters capacity. The height of staging is 10m and is supported on 6-rectangular columns. Take bearing stress of concrete as 4 MPa and bearing capacity of soil as 120 KN/m<sup>2</sup>.
- 20

## Section-C

6. Design a self-supporting chimney of 80m height. The diameter of cylindrical shell is 4m. The chimney has a 10 cm thick brick lining. 20
7. (a) Name the factors upon which configuration of a transmission line tower depends.
- (b) Write a descriptive note on the types of main bacing systems used in towers. 8,12

## Section-D

8. A hat section  $100 \text{ mm} \times 50 \text{ mm} \times 2 \text{ mm}$  with lip  $25 \text{ mm}$  is to be used as a concentrically loaded column of 3 metres effective length. Determine the Allowable load.



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9. The section  $200 \text{ mm} \times 200 \text{ mm} \times 2 \text{ mm}$ , to be used as a column of effective length 4 metres; is stiffened on all four sides. Find the maximum load it carries. Design the stiffener. 20

