

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.

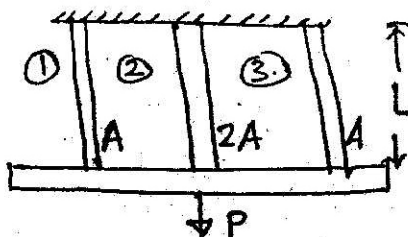
1. Answer the following clearly :

- (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.

$8 \times 2.5 = 20$

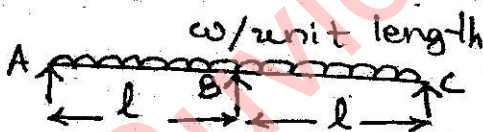
Section-A

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



20

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



20

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^2 .

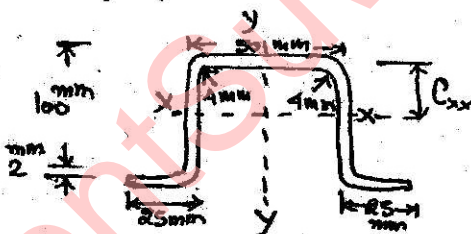
20

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 mm is to be used as a concentrically loaded column of 3 metres effective length. Determine the Allowable load.



20

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

