B. Tech. 7th Semester (Civil Engg.) Examination,

December–2011

DESIGN OF STEEL STRUCTURES–II

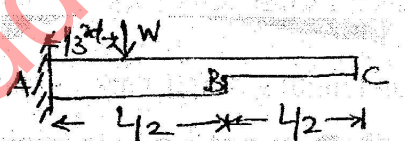
Paper–CE-401-E

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt any* **five** *questions. All questions carry equal marks. Use of IS 800–1984 revised 2000, IS – 875 and Steel Tables are allowed. If any data is missing then assume the same.*

1. Define shape factor. The collapse load for a steel beam is 40 kN and the service load is 28 kN. What is the load factor. 20

2. A fixed ended beam is subjected to load W at 1/3 rd span as shown below :

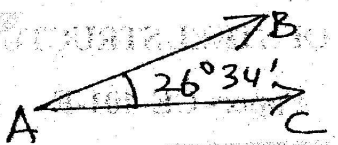


Estimate the collapse load. 20

3. The roof slope of a roof truss in an industrial building is inclined at 22° 30′ Estimate the Live Load as per IS–875. 20

download all btech stuff from StudentSuvidha.com

4. Design members AB, AC and joint A of a roof truss as shown partly below, for the following data



Member	Length	Comp. force	Tensile force
AB	2.3 m	75 kN	55 kN
AC	1.8 m	60 kN	80 kN

Design also welded connections at joint A. Use tubes of grade y_{st} 210. 20

5. (a) Name the elements of an Industrial building and discuss it. 12

(b) How many types of loads act upon the roof trusses ? Detail it. 8

6. Design a rectangular water tank of capacity 1,50,000 litres supported over a 12 m high staging columns are supported over concrete pedestal M-15 conc. B.C. of soil is 100 kN/mm². Design wind pressure is 1.05 kN/m². Use plates of 1.25 width and 8.75 m length. 20

download all btech stuff from StudentSuvidha.com

7. (a) Detail out the various steps for the design of self supporting steel stacks.

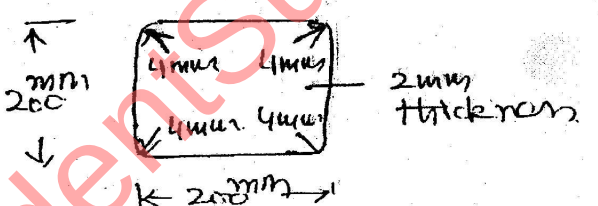
(b) What do you understand by proportioning of stacks. 10+10

8. Write short notes on :

(i) Loads on Transmission Towers

(ii) Analysis of Tower and Guyed Masts. 6,6,8

9. A square box section 200 mm × 200 mm × 2 mm is to be used as a column of effective length 4 m. Find max^{m} load it can carry.



20

StudentSuvidha.com

 download all btech stuff from StudentSuvidha.com