B.Tech. (Civil)7th Semester (G-Scheme)

Examination, December-2022

ADVANCED STEEL STRUCTURE

Paper - PCC-CE-403-G

*Time allowed : 3 hours]* *[Maximum marks : 75*

***Note:*** ***Question No. 1 is compulsory.*** Attempt total **five** questions, *selecting* ***one*** *question from each unit. All questions carry equal marks. Use of IS 800-1984 revised 2000, IS-801-1975 IS 875-1987 and steel tables are allowed. If any data is missing then assume the same.*

1. Write short note on the following : 2½×6=15

(i) Shear Connections or Flexible connections

(ii) Types of light gauge section

(iii) The loads applied to a tower during its analysis

(iv) Principle rafter and purlins

(v) Types of steel stacks

(vi) Define stagging.





## Unit - I

2. (a) What are the various types of cold formed section? Explain with neat sketch. 7½

(b) Explain stiffened and unstiffened compression members with the help of sketch. 7½

3. Find out the safe load P carried by the joint shown in figure 1. The rivets are power driven 20 mm ϕ at a pitch of 80 mm. The thickness of the flange is 9·1 mm and that of the bracket plate is 10 mm. 15

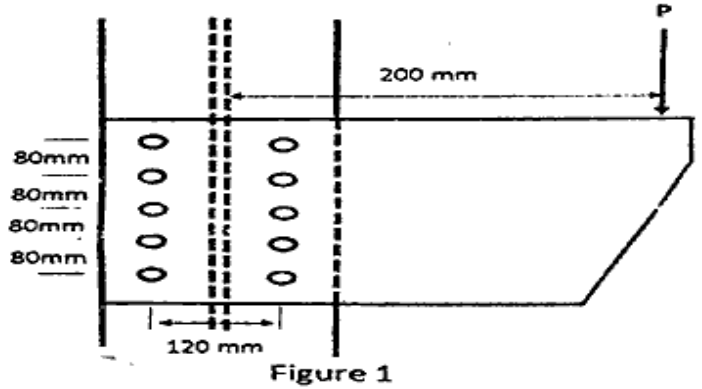


Figure 1

## Unit - II

4. (a) Write about various elements of an industrial building. 7½

(b) Explain the design procedure of a roof truss. 7½

5. What do you mean by transmission line tower? What are design procedure and specification for the design of transmission line tower? 15

## Unit - III

6. Design for Delhi a self-supporting steel stack of height 80 m foundation. The diameter of cylindrical part of the chimney is 3 m. The foundation has to rest on medium soil having bearing capacity of 190 $kNm^2$. The thickness of fire brick lining is 100 mm, and lining is supported by stack throughout the height. The chimney has one breech opening, the topography at the site is almost flat, and the location is of terrain category 2. 15

7. Design a rectangular tank of capacity 1,10,000 litres of water supported over a 12 m high staging. Columns are supported over concrete pedestal of M-15 concrete. The bearing capacity of soil is 100 $kN/m^2$. Design wind pressure may be assumed to be 1.05 $kN/m^2$. Plates of 1·25 width and 8·75 m length are available. Design

   (i) the bottom plate 7½

   (ii) the bottom tee-cover 7½

## Unit - IV

8. What are stiffeners? Explain the types of stiffeners used in plate girders with diagram. 15

9. What are different elements of plate girder. Write the steps for design of a plate girder. 15