

III B. Tech II Semester Supplementary Examinations, November/December-2016
DESIGN AND DRAWING OF STEEL STRUCTURES

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any ONE Question from Part – A and any THREE Questions from Part – B
Use of IS: 800-2007 and steel tables are allowed. For all designs adopt Limit State Method

PART –A

- 1 Design an 18m long simply supported welded plate girder carrying a uniformly distributed load of 50kN/m excluding self weight and two concentrated loads of 350kN each at quarter points of the span. Assume that girder is laterally supported throughout. Draw to scale i) the cross-section, ii) the longitudinal views. [28M]
- 2 Design a beam of effective span 6.0m and subjected to a bending moment of 105.3×10^6 Nmm. The compression flange is laterally unsupported throughout. Check for deflections and shear. Assume $f_y = 250$ MPa. Draw to scale the cross-section, the longitudinal section and plate. [28M]

PART –B

3. Design a splice for tension member sections 160 x 10mm and 250 x 14mm the member is subjected to a pull of 200kN. Assume $f_y = 250$ N/mm². [14M]
4. a) Explain the live load and dead loads criteria considerations in the roof trusses. [7M]
 b) Explain the design procedure of simple roof truss. [7M]
- 5 A column section ISHB 350 @ 0.674kN/m is carrying an axial load of 1000kN. It is to be supported over a column section ISHB 450 @ 0.872kN/m. Design the column splicing. [14M]
6. Explain the design procedure of gantry girders. [14M]
7. Design a slab base for a column consisting of ISHB 300 @ 58.8kg/m and carrying an axial load of 1000kN. Take allowable bearing pressure on concrete as 4N/mm². [14M]

