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D – 4024

Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, January 2018
(2013 Scheme)
13.802 : DESIGN AND DRAWING OF STEEL STRUCTURES (C)

Time : 4 Hours Max. Marks : 150

Instructions : *1) Answer **all** questions from Part – **A** and **two** questions from Part – **B**.*
*2) Assume suitable data **wherever** necessary.*
*3) Use of steel section tables, IS Codes IS 800-1984, IS 800-2007, IS 875 (2&3) – 1987, IS 6533 – 1989, IS 1161, IS 804, IS 806 and Railway loading standards are **permitted** in the examination hall.*

PART – A **(2×20=40 Marks)**

1. Design a purlin for a span of 4 m with spacing 1.75 m, wind pressure 1.5 kN/m² and slope of principal rafter 30°.

2. Explain the IS code method for wind pressure calculation.

PART – B **(2×55=110 Marks)**

3. a) A rectangular pressed steel tank is required to store 120 m³ of water at a height 12 m above ground level. Also design the supporting structures if wind force is 1.5 kN/m². Design of slab base and foundation not expected. **30**

   b) Draw to suitable scale : **25**

      i) General elevation of tank showing dimensions and arrangement of structural elements including staging.

      ii) Plan showing the arrangement of stays.

OR

4. a) Design a steel tubular roof truss for the following data. Span = 10 m, spacing 4.5 m, roofing GI sheets, wind pressure as per IS 875. Place Cochin Kerala. **30**

   b) Prepare drawing of the truss designed with details of joint at ridge and at the base. **25**

P.T.O.

5. a) Design a lined self supporting chimney of height 85 m and diameter 4 m. The thickness of brick lining is 100 mm and wind pressure is 1.5 kN/m^2. **30**

   b) Draw to suitable scale : **25**

      i) The elevation and foundation details.

      ii) Section showing the details of plate connections of the above designed stack.

OR

6. a) Design a plate girder for a deck type railway bridge of span 25 m for a modified broad gauge loading. **30**

   b) Draw to suitable scale plan, elevation and central section of the plate girder. **25**