

Roll No

CE-8001 (CBGS)**B.E. VIII Semester**

Examination, November 2019

Choice Based Grading System (CBGS)**Advanced Structural Design -II (Steel)****Time : Three Hours****Maximum Marks : 70****Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Assume data suitable.

1. In a plate girder through bridge carrying a single broad gauge track, the cross-girder are spaced at 4m centres. The stringers are spaced at 2m centres. Design the stringers if the spacing between main girders is 4m centre to centre. 14
2. Symmetric trusses of span 30m and height 5m are spaced 4.5 m c/c. Design the channel section purlin to be placed at a suitable distance to resist the following loads. 14

Weight of sheeting including belts = 171 kN/m²Line Load = 0.4 kN/m²Wind Load = 1.2 kN/m²

Spacing of purlins = 1.4 m

Design the purlin as per IS800 : 2007.

3. Design an elevated cylindrical steel tank with hemispherical bottom for 1,70,000 liters capacity. The tank has conical roof, the ring beam of the tank is at a height of 10 m from the ground level. The tank is to be built at Delhi. Take $f_y = 250 \text{ N/mm}^2$. 14

4. Design for Delhi, a self supporting steel stack of height 72 m above the foundation. The diameter of the cylindrical part of the chimney is 3m. The foundation has to rest on the medium soil having bearing capacity of 200 kN/m^2 . The thickness of fire brick work lining is 100 mm, and the lining is supported by stack throughout the height. The chimney has one breech opening the topography at the site is almost flat, of the location is of terrain category 2. 14
5. Explain the analysis and design steps of Transmission line towers.
A 50 m high microwave antenna lattice tower to be built near kernel. The diameter of Hemispherical antenna disc, provided at the top is 2.5 m. The min width of the square platform is 3.75 m select a suitable truss configuration and determine. The max compressive force and tension in the leg of the tower. Assume suitable data. 14
6. Explain all light gauges section in detail. Draw different types of cold formed sections. Write down the design steps for design of compressive elements according to Indian standards. 14
7. Design a suitable bearing for a plate girder railway bridge of span 3 m centre to centre of bearings. The bridge is designed for meter gauge single track main line. 14
8. Write short notes on: 14
 - a) Sway Bracings
 - b) Disadvantages of Riveted Connections.
