8. Design an elevated cylindrical steel water tank with hemispherical bottom for 145000 liters capacity. The tank has conical roof. The ring beam of the tank is at 12.5 m from the ground level. The tank is to be built at Delhi. Take $f_y = 250$ N/mm^2. **20**

W-672

B. Tech. (Weekend)

EXAMINATION, May 2018

(Sixth Semester)

(Re-appear Only)

(CE)

CEW304

DESIGN OF STEEL STRUCTURES-II

Time : 3 *Hours*]   [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. Assume any data if missing in the question paper. Use of IS 800, IS 6533 : 1989, IS 875 and IS 801 is allowed.
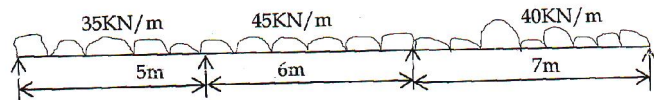
1. Define the following terms :

    (a) Static theorem

    (b) Kinematic theorem

    (c) Load factor and plastic modulus

    (d) Shape factor and its importance

    (e) Moment curvature relationship.   **20**

2. Design a continuous beam ABCD of uniform section. Take σ_y = 250 N/mm^2.   **20**

3. Design a roof truss for a factory building for a span of 30 m and a pitch of 1/5. The height of the truss at eves level is 16 m. The spacing of the truss is 3.5 m. The factory building which is 49 m long is situated at Delhi. Take f_y = 250 N/mm$_2$. Provide fink truss.   **20**

4. Design for Delhi a self-supporting steel stack of height 25 m above the foundation. The diameter of the cylindrical part of the chimney is 1m. The foundation has to rest on medium type of soil having bearing capacity 150 kN/m^2. The topography at the site is flat and location is of terrain category 2. Design the whole chimney except foundation.   **20**

5. Define Tower. Explain the analysis and design steps of microwave towers. What are the forces that that Act on the microwave towers ? **20**

6. Define light gauges section. Draw different types to cold formed sections. Write down the design steps for design of compressive elements according to Indian standard.   **20**

7. Determine the effective section modulus of a 220 × 80 × 22 × 5 mm lipped channel section cold formed from galvanized steel sheet with 0.04 mm thick coating. The yield strength and elastic modulus of the material of the channel section are 280MPa and 2.05×10^5 MPa, respectively.   **20**