Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. Civil Engg (2016 Batch) (EL-I) (Sem.–2)

INDUSTRIAL STRUCTURES

Subject Code : MTCE-211

M.Code : 74304

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. Design gable and components for an industrial building for the data given below :

   Overall length: 48m, Overall width: 16.5m, width c/c of roof columns: 16m, height of columns: 11m, roofing material: Asbestos cement sheets, side covering: Asbestos cement sheets.

   The industrial building situated in Allahabad. Assume suitably any data that is missing.

2. Design the following for an elevated rectangular water tank to store 1×10^5 liters water :

   a) Bottom plates

   b) Side plates

   c) Tee covers

   d) Stays

   e) Upper tier beams

   f) Lower tier beams

3. A 40m high microwave antenna lattice tower to be built near Delhi. The diameter of hemispherical antenna disc, provided at the top is 2m. The minimum width of the square platform is 3.3m. Select a suitable truss configuration and determine :

   a) Maximum compressive force and tension in the leg of the tower

   b) Transverse maximum shear at base. Assume suitable data.

4. a) Write a short note on the devices used for connecting light gauge structural members.

   b) Explain with neat sketches the forms of light gauge sections.

5. A self supporting chimney is of effective height equal to 28m, having its diameter at top equal to 1.8m. Design the chimney taking a uniform wind pressure intensity of 1.5 kN/m^2 throughout the height. Assume uniform values of permissible tensile and compressive stresses as 120 N/mm^2 and 90 N/mm^2.

6. a) Write a short note on physical and mechanical properties of aluminium structures.

   b) How can we calculate the local buckling of compression element in case of aluminium structures? Give description.

7. Explain the following terms of plastic analysis and design :

   a) Stages of bending of rectangular sections.

   b) Evaluation of shape factor for all types of Sections.

8. Write stepwise procedure of overhead rectangular tank.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.