Unit IV

7. (a) State advantage and disadvantaged of selecting tubular structural members. **10**

(b) State design consideration for design of tubular roof truss member. **10**

8. (a) Write step by step procedure for design of aluminium beam **10**

(b) What are the permissible stress and design critia for aluminium compression members. **10**

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B. Tech. EXAMINATION, May 2019

(Sixth Semester)

(Old Scheme) (Re-appear Only)

CE

CE306

Design of Steel Structures–I

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 *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume suitable data if not provided, use of relevant IS Code is permitted.

Unit I

1. (a) State and explain advantages of Steel as a structural member. **10**

(b) What is Efficiency of Cross Section ? Explain in detail. **10**

2. (a) Design a Lap joint to connect two plates 300 mm wide and 16 mm thick using 20 mm diameter bolts of grade 4.6 the applied service load is 375 kN. **10**

(b) What are the various types of failure of welded joints. **10**

Unit II

3. (a) Design a bridge truss diagonal subjected to a factored tensile load of 300 kN. The length of the diagonal is 3.0 metre. The tension member is connected to a gusset plate 16 mm thick with one line of 20 mm diameter bolts of grade 4.6. **15**

(b) Draw various types of steel tension member. **5**

4. (a) Design a built up column 5.90 metre long to carry a factored axial compressive load of 200 kN. The column is restrained in position but not in direction at both the ends. Design the column with battern. Use two channel section back to back use steel Fe 410. **15**

(b) What is slenderness ratio and effective length of column ? **5**

Unit III

5. A simply supported steel joist of 4 metre effective span is laterally supported throughout. It carries a total uniformity distributed load of 40 kN. Design a approximate section using steel of grade Fe 410. **20**

6. A column section ISHB 450 @ 907.4 N/m is subjected to the following factored load.

Axial compressive load P=500 kN

Moment M = 100 kN

Assuming M 30 grade a Concrete for the pedestal and a square base plate, Design the following (a) Thickness of base plate (b) Anchor Bolts. **20**