CE-14801 Design of Steel Structures – II

Internal Marks: 40 L T P
External Marks: 60 3 1 0
Total Marks: 100

Course Outcomes:

After completing this course the student must demonstrate the knowledge and ability to:

1. Demonstrate knowledge of basic concepts for analysis and design of various structural steel elements like ties, struts, beams, columns and fasteners.
2. Identify importance of various elements of a plate girder and their design.
3. Compile various loads for a foot bridge, and thereby design its elements including wooden deck, cross beam and main girder
4. Plan structural framing of industrial building for given design data and design various elements like gantry girder, column bracket, mill bent and bracings.
5. Identify various loads and load combinations for design of different components of a railway bridge as per the railway code.
6. Design various elements of a railway bridge for given design data.

Course Content:

Note: *Use of relevant Indian Standards is allowed.*

1) Elements of a plate girder, design of a plate girder, curtailment of flanges, various type of stiffeners.

2) Design of steel foot bridge with parallel booms and carrying wooden decking, using welded joints.

3) Complete design of an industrial shed including:

i) Gantry girder

ii) Column bracket

iii) Mill bent with constant moment of inertia

iv) Lateral and longitudinal bracing for column bent

4) Design of single track Railway Bridge with lattice girders having parallel chords (for B.G.)

i) Stringer

ii) Cross girder

iii) Main girders with welded joints

iv) Portal sway bracings

v) Bearing rocker and rollers

References:

1) Limit state design of steel structures: S K Duggal

2) Design of steel structures: N Subramanian

3) Design of steel structures (Vol. 2): Ram Chandra

4) IS 800: 2007 (General construction in steel-Code of practice)*

5) SP: 6(1) (Handbook for structural engineers-Structural steel sections)*

6) Indian Railway Standard Code of Practice for the Design of Steel or Wrought iron Bridges Carrying Rail Road or Pedestrian Traffic, Research Design and Standard s Organization Lucknow, Govt. of India, Ministry of Railways, 2003.*

7) Rules Specifying the Loads for the Design of Super-Structure and Sub-Structure of Bridges and for Assessment of the Strength of Existing Bridge, Research Design and Standard s Organization Lucknow, Govt. of India, Ministry of Railways, 2003.*

* *permitted in Examination*