2.13 30279 STEEL STRUCTURE DESIGN

UNIT-1 INTRODUCTION

1.1 Introduction
1.2 Structural steel & types of structural steel
1.3 Rolled steel section
1.4 Choice of section
1.5 Loads & types of load
1.6 Mechanical properties of steel
1.7 Advantages and disadvantages

UNIT-2 RIVETED CONNECTIONS

2.1 Structural steel connections
2.2 Riveted connections
2.3 Types of rivets
2.4 Definitions of terms used in riveting
2.5 Specifications
2.6 Permissible stresses
2.7 Types of riveted joints
2.8 Comparison between lap and butt joint
2.9 Arrangement of rivets
2.10 Failure of riveted joint
2.11 Strength of a riveted joint
2.12 Rivet value
2.13 Assumptions in the analysis of riveted joints
2.14 Eccentric riveted connection
2.15 Design of Eccentric
2.16 Design of connection

UNIT-3 WELDED CONNECTION

3.1 Welding
3.2 Welded connection
3.3 Advantages & disadvantages of welded connection
3.4 Types of welds
3.5 Butt weld
3.6 Types of butt welds
3.7 Specification of fillet weld
3.8 Permissible stresses in welds
3.9 Strength of fillet weld joints
3.10 Strength of butt weld joint
3.11 Steps for design of fillet weld
3.12 Testing and inspection of welded joints
3.13 Defects in weld

UNIT-4 TENSION MEMBER

4.1 Tension member
4.2 Types of tension member
4.3 Net sectional area
4.4 Permissible stress in axial tension
4.5 Strength of member in axial tension
4.6 Design of axially loaded tension members
4.7 Tension splice
4.8 Design of tension splice

UNIT-5 COMPRISSION MEMBER (STRUTS)

5.1 Compression member
5.2 Common sections of compression members used as strut
5.3 Radius of gyration
5.4 Slenderness ratio
5.5 Strength of angel sections used as struts
5.6 Strength of an axially loaded compression members (struts)
5.7 Tacking rivets

UNIT-6 COLUMNS

6.1 Columns
6.2 Classification of columns
6.3 Concept of Buckling
6.4 Effective length (1)
6.5 Column design formula
6.6 Strength & design of an axially loaded column .
6.7 Combined bending and axial compression
6.8 Column splice
6.9 Column base

UNIT-7 BEAMS

7.1 Beam
7.2 Types of beam sections
7.3 Technical terms used in beam design
7.4 Laterally restrained beam
7.5 Steps for finding out load carrying capacity of beams
7.6 Design of laterally restrained beam
7.7 Web buckling
7.8 Web crippling
7.9 Simple beam connections
7.10 Beam to column connections
7.11 Beam to Beam connections
7.12 Plate girders

UNIT-8 ROOF TRUSSES

8.1 Roof truss
8.2 Parts of roof truss
8.3 Types of trusses
8.4 Use of roof truss
8.5 Pitches of trusses
8.6 Depth of trusses
8.7 Spacing of purlins
8.8 Economical spacing of roof trusses
8.9 Connection between purlin and principle rafter
8.10 Loads on roof trusses
8.11 Load combinations

Reference Book:

1. Design of Steel Structures by S. S. Bhavikatti,
2. Design of Steel Structures by S. K. Duggal,
3. Design of Steel Structures by S. Ramamrutham are preferred