About the Book

Drawing is the language of Engineers and Architects. Building Planning and Drawing is the foundation subject for Civil Engineering students. In this Eighth Revised Edition each topic of the textbook has been arranged in such a way that the reader is empowered with an in-depth knowledge in the subject of Building Planning and Drawing.

The entire subject is canvassed in the chapters like: Fundamentals of Building Drawing; Fundamentals of Buildings; Site Selection for Residential Buildings; Climate and Its Influence on Building Planning; Orientation of Buildings; Principles of Planning Of Buildings; Building Bye-Laws; Planning of Residential Buildings; Planning of Public Buildings; Different Methods of Construction; Prefabricated Construction; Economical Measures in Building Construction; Green Buildings; Anthropometric Studies; Intelligent Buildings; Construction Management Techniques; Basic Concepts of the Building Elements; Nomenclature of Building Planning and Construction; Standard Guidelines for Building Drawing; Guidelines for Planning and Drawing of Residential Building; Drafting Materials and their Utilization; Conventional Signs and B.I.S. Code Colours; A Few Facts of the Vaastu Sastra; Perspective Drawings; Computer Aided Building Drawings; Typical Building Drawings; Question Bank. The Appendix gives University Examination Questions.

The book now in its 27 Chapters and Appendix contains:

- 409 Neatly drawn self-explanatory diagrams
- 50 Plates of Important components and different plans of buildings
- 89 Useful Tables
- 26 Solved Problems
- 464 University Type questions are given for preparation of examinations.

A separate chapter as Question Bank includes:

- 307 Short Questions with Answers
- 123 Multiple Choice Questions
- 97 Short Questions.

It is the fervent hope of the authors that this book will satisfy the needs of the Civil Engineering students preparing for the B.Tech/B.E. examinations of almost all the Indian Universities, Diploma examinations conducted by various Boards of Technical Education, Certificate courses as well as for the A.M.I.E., U.P.S.C., G.A.T.E. and other similar competitive and professional Examinations. It should also be of an immense help to the practising Civil Engineers.
# Building Planning and Drawing

## Detailed Contents

### Chapter 1  FUNDAMENTALS OF BUILDING DRAWING
1-1. Introduction to building drawing
1-2. Brief history of building drawing
1-3. Preparation of drawings
1-4. Working drawings
1-5. Interpretation of drawings
1-6. Building plans approval procedure as per NBC 2005

Questions 1

### Chapter 2  FUNDAMENTALS OF BUILDINGS
2-1. Building
2-2. Classification of buildings based on nature of occupancy
2-3. Classification of buildings based on their fire resistance
2-4. Classification of building based on built-in environment and naturality
2-5. Classifications of residential buildings
2-5-1. Detached house
2-5-2. Semi-detached house
2-5-3. Row houses or chawls
2-5-4. Block of flats or terrace houses
2-5-5. Duplex type house

Questions 2

### Chapter 3  SITE SELECTION FOR RESIDENTIAL BUILDINGS
3-1. General
3-2. Factors affecting the selection of site

Questions 3

### Chapter 4  CLIMATE AND ITS INFLUENCE ON BUILDING PLANNING
4-1. Introduction
4-2. Elements of climate
4-2-1. Solar radiation
4-2-2. Temperature of air
4-2-3. Wind
4-2-4. Humidity
4-2-5. Precipitation
4-2-6. Topography
4-3. Climatic zones of India
4-4. Climate and comfort
4-5. Earth and its motion
4-6. Directions and their characteristics
4-7. Landscaping

Questions 4

### Chapter 5  ORIENTATION OF BUILDINGS
5-1. General
5-2. Orientation
5-3. Factors affecting orientation
5-4. Sun
5-5. Wind
5-6. Rain
5-7. C.B.R.I.: Suggestions for obtaining optimum orientation
5-8. Orientation criteria for Indian conditions

Questions 5

### Chapter 6  PRINCIPLES OF PLANNING OF BUILDINGS
6-1. Aspect
6-2. Prospect
6-3. Privacy
(1) Internal privacy
(2) External privacy
6-4. Furniture requirement
6-4-1. Drawing room
6-4-2. Dining table and dining chairs
6-4-3. Bed room
6-4-4. Kitchen
6-5. Roominess
6-6. Grouping
6-7. Circulation
6-8. Sanitation
6-8-1. Lighting
6-8-2. Ventilation
6-8-3. Cleanliness
6-9. Flexibility
6-10. Elegance
6-11. Economy
6-12. Practical considerations

Questions 6

### Chapter 7  BUILDING BYE-LAWS
7-1. Introduction
7-2. Building bye-laws
7-3. Objectives of building bye-laws
7-4. Principles underlying building bye laws
7-4-1. Minimum plot sizes and building frontage
7-4-2. Open spaces
7-4-3. Minimum standard dimensions of building elements
7-4-4. Provisions for lighting and ventilation
7-4-5. Provisions for safety from fire and explosions
7-4-6. Provisions for means of access
7-4-7. Provisions for drainage and sanitation
7-4-8. Provisions for safety of works against hazards or accidents
7-4-9. Requirements for off street parking
7-4-10. Requirements for green belt and landscaping
7-4-11. Special requirements for low income housing
7-4-12. Sizes of structural elements
7-5. Applicability of the bye-laws

Questions 7

### Chapter 8  PLANNING OF RESIDENTIAL BUILDINGS
8-1. Introduction
8-2. Rooms meant for the various activities

Questions 8

### Chapter 9  PLANNING OF PUBLIC BUILDINGS
9-1. A school
9-2. A library
9-3. A hospital
9-4. A cinema building
9-5. A hostel
9-6. A hotel
9-7. An office building
9-8. A post office
9-9. A bank
9-10. A bus station
9-11. A Church
9-11-1. Components of A church
9-11-2. Recommended design criteria
9-12. A Mosque

Questions 9

### Chapter 10  DIFFERENT METHODS OF CONSTRUCTION
10-1. General
10-2. Differences between load bearing walled structure and framed structure

Questions 10

### Chapter 11  PREFABRICATED CONSTRUCTION
11-1. General
11-2. Advantages of prefabricated construction
11-3. Disadvantages of prefabrication construction

Questions 11
Chapter 12 ECONOMICAL MEASURES IN BUILDING CONSTRUCTION
12-1. General
12-2. Economy of land
12-3. Economy in material of construction
12-4. Economy in labour
12-5. Economy of time
12-6. Economy in money spending
Questions 12

Chapter 13 GREEN BUILDINGS
13-1. General
13-2. Green building or sustainable building
13-3. General principles of green buildings
13-4. Benefits of green buildings
13-5. Social benefits
13-6. Disadvantages of green buildings
13-7. Design criteria for green building
13-7-1. Site sustainability
13-7-2. Water use efficiency
13-7-3. Energy efficiency
13-7-4. Indoor environmental quality
13-7-5. Green building materials
13-7-6. Occupant health and safety
13-8. Cost of construction
13-9. Green building compared with conventional building
13-10. Assessment and evaluation of green building
13-11. Green building certification
13-12. Green buildings in India
Questions 13

Chapter 14 ANTHROPOMETRIC STUDIES
14-1. Introduction
14-2. Golden section
14-3. Engineering anthropometry
14-4. Design criteria – for anthropometric data
14-5. Types of human body dimensions
14-6. Anthropometric design principles
14-7. Principles
14-8. Application of anthropometric data in design of residential building components
14-9. Drawing room
14-10. Dining room
14-11. Kitchen
14-12. Bed room
14-13. Stair
Questions 14

Chapter 15 INTELLIGENT BUILDINGS
15-1. Imagine
15-2. Introduction
15-3. Development of intelligent buildings
15-4. What is an intelligent building?
15-5. How buildings become intelligent
15-6. Benefits of intelligent buildings
15-7. Limitations of intelligent buildings
15-8. Intelligent buildings in India
15-9. Intelligent building design
15-10. Access control – CCTV system
15-11. Light control systems
15-12. Control and optimization of air-condition systems
15-13. Fire alarm system
15-14. Burglar alarm and intrusion prevention system
15-15. Elevators
Questions 15

Chapter 16 CONSTRUCTION MANAGEMENT TECHNIQUES
16-1. Introduction
16-2. Construction management functions
16-3. Objectives of construction management
16-4. Managing construction projects
16-5. Stages of a construction project and construction management team
16-6. Nomenclature
16-7. Methods of evaluation of the project
16-8. Network technique
16-9. Network technique in construction management
16-10. Programme Evaluation and Review Techniques
16-11. Three-time estimates for PERT
16-12. Critical path method
16-13. Definition
16-14. Applicability
16-15. Difference between CPM and PERT
16-16. Advantages of CPM
16-17. Time estimation for CPM
Questions 16

Chapter 17 BASIC CONCEPTS OF THE BUILDING ELEMENTS
17-1. General
17-2. Components of a building
17-3. Foundations
17-4. Foundations in clayey soils
17-5. Masonry walls
17-6. Doors
17-7. Window
17-8. Lintels and arches
17-9. Stairs
17-10. Roof
17-11. Flooring
17-12. Plastering
Questions 17

Chapter 18 NOMENCLATURE OF BUILDING PLANNING AND CONSTRUCTION

Chapter 19 STANDARD GUIDELINES FOR BUILDING DRAWING
19-1. Drawing sheet
19-2. Dimensioning
19-3. Lettering
19-4. General
Questions 19

Chapter 20 GUIDELINES FOR PLANNING AND DRAWING OF RESIDENTIAL BUILDING
20-1. Planning
20-2. Plan
20-3. How to prepare the plan of a residential building?
20-4. Section
20-5. Elevation
20-6. Standard dimensions for various building units
20-7. Fixing the position of various building components and justification

Chapter 21 DRAFTING MATERIALS AND THEIR UTILIZATION
21-1. Tracing paper
21-2. Vellum
21-3. Polyester film
21-4. Sketch paper
21-5. Prints and prints making
21-6. Drawing pens and ink
Questions 21
Chapter 22 CONVENTIONAL SIGNS AND B.I.S. CODE COLOURS
22-1. Conventional signs and conventional symbols
22-2. B.I.S. recommended colours for building materials
Questions 22

Chapter 23 A FEW FACTS OF THE VAASTU SAstra
23-1. Introduction
23-2. Shape of the site
23-3. Directions
23-4. Orientation
23-5. Level differences
23-6. Main entrance
23-7. Number of doors and windows
23-8. Number of columns and beams
23-9. Number of steps
23-10. Well
23-11. Colours
23-12. Position of stairs
23-13. Roof
23-14. Characteristics of sub soil
23-15. Basic rules of Vaastu construction
23-16. Relevance of Vaastu today
Questions 23

Chapter 24 PERSPECTIVE DRAWINGS
24-1. Necessity of perspective drawings of building
24-2. Principle of perspective projection
24-3. Characteristics of perspective
24-4. Perspective elements
24-5. Classification of perspective projection
24-6. Distance points
Questions 24

Chapter 25 COMPUTER AIDED BUILDING DRAWINGS
25-1. CAD hardware
25-2. CAD software
25-3. AutoCAD
25-4. Application of AutoCAD
25-5. Operation of AutoCAD package
25-6. Function keys
25-7. AutoCAD 2010 screen layout
25-8. Hardware requirement for AutoCAD 2010
25-9. Planning for a drawing
25-10. Methods to generate building drawings in AutoCAD
Questions 25

Chapter 26 TYPICAL BUILDING DRAWINGS
1. Conventional signs
2. Symbols for electrical installations
3. Conventional symbols
4. Stretcher and header bonds
5. English bond
6. Flemish bond
7. Stone masonry
8. Cavity walls (1)
9. Cavity walls (2)
10. Door frame
11. Types of panelled doors
12. Ledged, braced and battened door
13. Panelled door
14. Glazed and panelled door
15. Collapsible steel door
16. Types of doors (1)
17. Types of doors (2)
18. Hollow core or framed flush door
19. Window frame
20. Panelled window
21. Glazed window
22. Carpentry joints (1)
23. Carpentry joints (2)
24. Lean to roof
25. Types of roofs (1)
26. Types of roofs (2)
27. King post truss
28. Details of king post truss
29. Queen post truss
30. Steel roof truss
31. Stair cases
32. Straight stairs with two flights
33. Details of stairs
34. Foundations
35. Model drawing showing projection of section over plan (1)
36. Model drawing showing projection of section over plan (2)
37. A building
38. An office building
39. A home
40. A dwelling
41. L.I.G. House
42. M.I.G. House
43. A residential house
44. A cottage
45. Two storeyed residential building
46. Semi detached house
47. Plan of a secondary school
48. Primary health centre
49. Post office

Chapter 27 QUESTION BANK
27-1. Short questions with answers in building drawing
27-2. Short questions with answers in building planning
27-3. Multiple choice questions
27-4. Answers of multiple choice questions
27-5. Short questions
Appendix UNIVERSITY EXAMINATION QUESTIONS
BIBLIOGRAPHY
INDEX