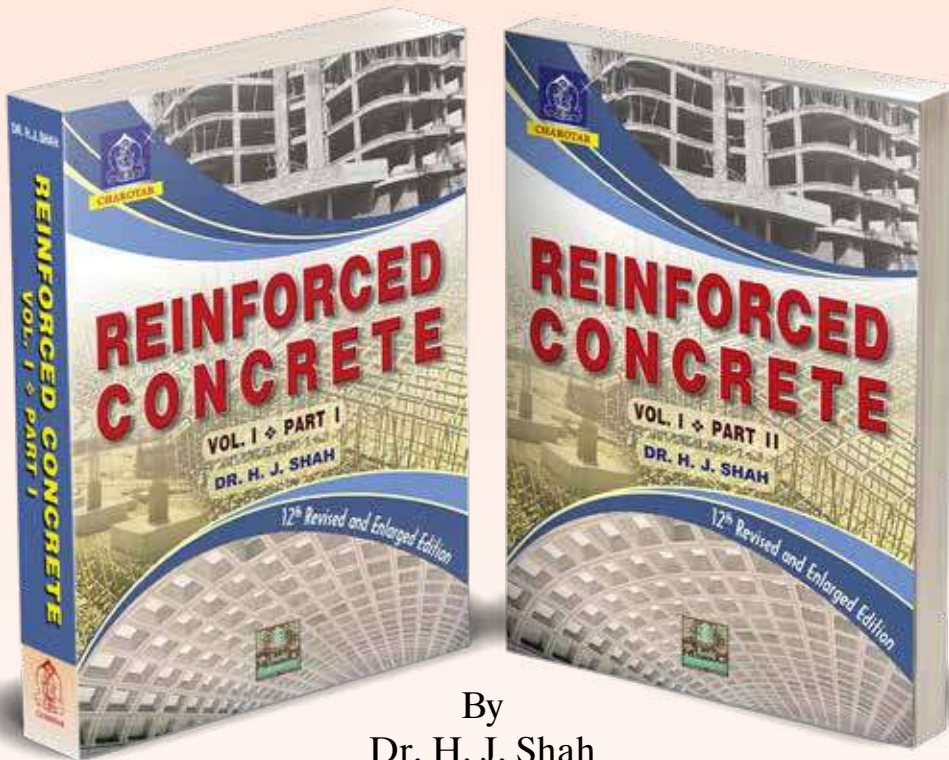


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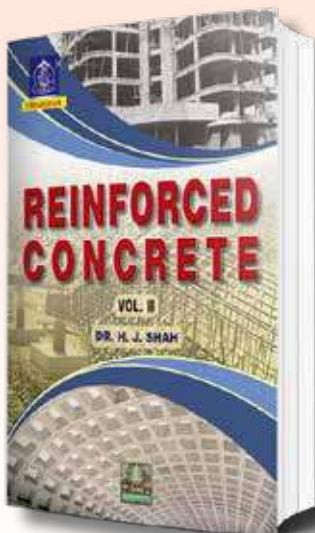
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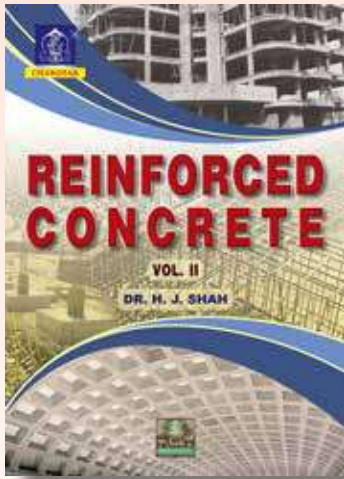


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SYNOPSIS OF REINFORCED CONCRETE VOLUME II

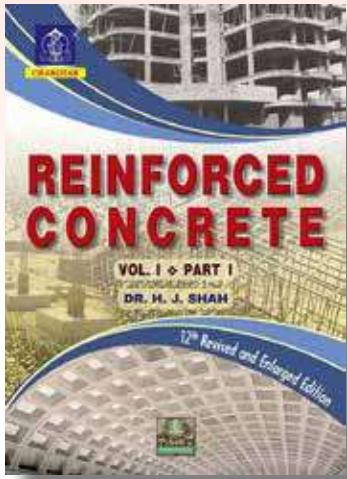
This volume includes two major topics namely Multi-storeyed buildings and Water tanks. During last three years very important revisions are made in IS codes like IS:875 Part III, IS:1893 Part I, IS:3370 Parts I to IV, IS:13920, etc. These changes have forced me to entirely revise the existing chapters. Manual calculations are given due importance. In this modern designing world, excel calculations are termed as manual. The subject matter is arranged in two major topics as follows:

PART I: MULTI-STOREYED BUILDINGS: Analysis and design of medium rise buildings have been treated in details. The manual calculations are given sole importance. It is believed that once manual calculations are understood fundamentally, it will be easy to understand complicated programs run by the computer.

The subject matter starts with building fundamentals and overview of analysis and design for gravity loads. Next, the deformations of RCC building are attended since lateral loads are becoming more important with height of the building. The analysis of building for horizontal loads being dynamic, the building dynamics is treated in brief. A thorough discussion on lateral loads like wind and earthquake. Manual calculation of these loads is described with special attention to response spectrum method. The code has made it mandatory to use response spectrum method. An excellent explanation using excel software of the method is treated. Latest ductility provisions as per IS: 13920 are included and lucidly discussed in details. To properly grasp the analysis and design of multi-storeyed buildings, a seven storeyed unbraced building is analysed and typical members are designed with manual (including excel) calculations. Ordinary and special isolated shear walls are treated in details. The design work is carried out by using manual (excel) methods.

PART II WATER TANKS (LIMIT STATE METHOD): Fundamentals of liquid retaining structures are treated in lucid way. Using limit state method, designs are treated for individual members like cantilever wall subjected to flexure, Base slab of an elevated tank, and side wall of a container subjected to flexure and tension. The members are designed step by step considering professional designs. Circular tanks resting on ground are professionally discussed in details. A design of 10 ML USR is presented. Rectangular tanks resting on ground are solved by using approximate methods. A step by step treatment to the calculation of earthquake forces as per IS:1893-Part II is presented for ground supported and elevated tanks. The elevated circular and square tanks of small size are completely analysed (including earthquake forces), designed and detailed. A number of short questions are framed and answered from each of the chapters to clear basic fundamentals of the subject.

REINFORCED CONCRETE VOL. I ❖ PART-I



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ABOUT THE BOOK

This book presents the basic principles involved in Analysis and Design of Reinforced Concrete Structures. This 12th edition of Vol. I has been thoroughly revised and extensively enlarged in two parts. Almost all chapters are revised with adding a plenty of new matter, examples and figures. Mix design as per latest IS:10262 with excel programs is added. A number of excel programs have been added to clarify the subject matter and design the elements of structure. As per prevailing market conditions the default combination of materials is revised to M20 grade concrete and Fe 500 grade steel, however, the other combinations of materials have not been completely ignored.

The outline of the book "**Reinforced Concrete Vol. I – Part I**" is as mentioned below:

Chapter 1 to 3 discuss mainly Concrete Technology. Chapter 1 introduces the subject, while chapter 2 deals with properties of ingredients of concrete. Chapter 3 deals with properties of wet and set concrete. It explains design mix concrete and presents excel programs to design a concrete mix for standard concretes based on IS:10262-2019.

Chapter 4 to 6 discuss fundamentals of flexure design, also discuss working stress method as well as limit state method for flexure design. It designs singly and doubly reinforced rectangular and flanged beams for flexure.

Chapter 7 and 8 presents design for Shear and checking for Development Length, Deflection and Cracking.

Chapter 9 and 10 deal with the design of Simply Supported and Cantilever Beams and Slabs.

Chapter 11 Continuous beams and slabs capable of free rotation at supports are discussed, including redistribution of moments.

Chapter 12 and 13 Simple cases of torsion and stairs are discussed.

Chapter 14 and 15 Introduce the Load Calculations and Simple designs. Considering the fundamentals developed in earlier chapters, the load calculations on simple structures like Slabs and Beams, capable of free rotation at supports are considered. A few cases are designed in chapter 15.

Chapter 16 Designs of Framed Beams are introduced with examples considering it appropriate to discuss with the elements that are not free to rotate at their supports.

Now this book "**Reinforced Concrete Vol. I – Part I**", in its 16 Chapters and Appendix contains:

- 350 Neatly drawn sketches
- 063 Useful tables
- 167 Design problems
- 243 Questions at the end of the chapters
- 019 Excel programs
- 316 Short questions with answers.

The book in the present form will prove to be extremely useful to the students preparing for the Degree examinations in Civil Engineering and Architecture of 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., I.E.S., and other similar competitive and professional examinations. It should also be an immense use to practicing Civil Engineers.

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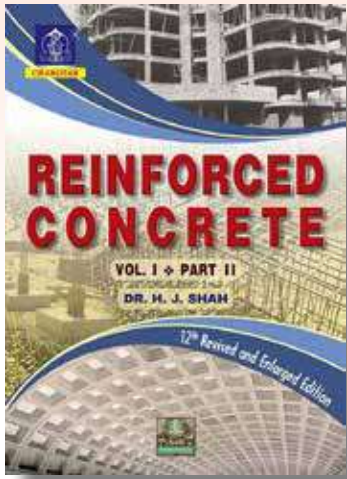
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REINFORCED CONCRETE VOL. I ❖ PART-II



By
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ABOUT THE BOOK

This book presents the basic principles involved in Analysis and Design of Reinforced Concrete Structures. This 12th edition of Vol. I has been thoroughly revised and extensively enlarged in two parts. Almost all chapters are revised with adding a plenty of new matter, examples and figures. Mix design as per latest IS:10262 with excel programs is added. A number of excel programs have been added to clarify the subject matter and design the elements of structure. As per prevailing market conditions the default combination of materials is revised to M20 grade concrete and Fe 500 grade steel, however, the other combinations of materials have not been completely ignored.

The outline of the book “*Reinforced Concrete Vol. I – Part II*” is as mentioned below:

Chapter 17 contains design of columns used in framed structures. The design interaction diagrams are derived and excel program is prepared for rectangular columns.

Chapter 18 emphasis on Design of Foundations: Fundamentals. Moreover this chapter is extensively revised and soil design is sufficiently elaborated.

Chapter 19 on Isolated Footings for walls and columns subjected to various types of loads. Discusses topics on axially loaded pad and sloped footing; eccentrically loaded footings; isolated slab and beam type footing; footing for multi-storeyed building columns and also gives an excel program on design of an isolated footing.

Chapter 20 discusses Combined Footings for two axially loaded columns and also explains strap, strip and raft foundations. Also includes the guidelines to design a combined footing for general loading system.

Chapter 21 elucidates topics on Pile Foundations such as loads on pile groups; soil design of a pile; structural design of a pile; design of a pile cap.

Chapter 22 Circular raft foundations with annular and solid rafts used under circular peripheral columns or RCC shafts are discussed.

Chapter 23 on Retaining walls includes design of cantilever and counterfort retaining walls.

Chapter 24, 25 and 26 deals with variety of roof coverings, viz., Circular, Ribbed and Waffle slabs; Flat slabs and domes are discussed in these chapters.

Chapter 27 discusses the empirical designs of both, the deep beams and corbels

Chapter 28 Grid or Coffered Floors are designed by using classical analysis.

Chapter 29 Formworks: Basic formworks used on general sites for slabs, beams and columns are discussed in this chapter.

Chapter 30. Detailing of Reinforcement: This chapter explains basic style of practical RCC structural drawings.

Now this book “*Reinforced Concrete Vol. I – Part II*”, in its 14 Chapters and Appendix contains:

- 261 Neatly drawn sketches
- 037 Useful tables
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- 106 Short questions with answers.

The book in the present form will prove to be extremely useful to the students preparing for the Degree examinations in Civil Engineering and Architecture of 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., I.E.S., and other similar competitive and professional examinations. It should also be an immense use to practicing Civil Engineers.

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