

Preface to the Third Edition

This is the third edition of the book, the first edition of which was published in 1984. While the second edition of the book is receiving very good response from the students and teachers alike, a need was felt to update the book to accommodate changes in technology and practice. Towards this, the book was reviewed thoroughly with a view to enhance its usefulness as a textbook to meet the needs of the present day, as well as that of the near future, in the area of Engineering Hydrology.

Through careful pruning of the second edition and appropriate additions of new material, this edition attempts to make the book useful, catering to a wider range of interests by covering additional subject areas. While the book is essentially an undergraduate textbook in the subject area of Engineering Hydrology, in its present form it also serves as a useful reference book for post-graduate students and field engineers in the domain of Hydrology. The book also meets the need of students taking AMIE examinations. Candidates taking competitive examinations like Central Engineering Services examinations and Central Civil Services examinations will find this book very useful in their preparations related to the topic of hydrology. The book has a unique feature of being India centric; the applications, practices, examples and information about water resources are all aimed at familiarizing the reader to the present-day Indian water resources scene. As such, students and professionals in the related areas of Watershed development, Water Harvesting, Minor Irrigation, Forestry and Hydro-Geology would find this book a useful source material relating to technical issues dealing with water resources in general and hydrology in particular. NGOs working in the water sector would find this book useful in their training activities. The use of mathematics, statistics and probability concepts are kept at the minimal level necessary for understanding the subject matter and emphasis is placed on engineering applications of hydrology.

The significant additions in the present edition are:

- The **SCS–CN method of estimating Runoff volume**
- A new chapter entitled **Erosion and Reservoir Sedimentation**
- Thoroughly revised and re-written section on **infiltration** with descriptions of various infiltration models
- Revised and enlarged section on **Yield of River Basins** to cover current Indian practice
- A new section dealing with **SCS–dimensionless unit hydrograph** and **SCS–Triangular unit hydrograph**
- Improvements to the chapter on Groundwater by including **sections on dug wells and recuperation tests of tube wells and dug wells**

- A new section dealing with various aspects of **recharge of groundwater**
- A section on **water harvesting**
- Improved coverage of **droughts**
- Revised information on **water resources of India**
- Additional **worked examples, revision questions, problems and objective questions**

The contents of the book cover essentially the entire subject areas normally covered in an undergraduate course in Engineering Hydrology. Each of the chapters covers not only the basic topics in detail but also includes some advanced topics at an introductory level. The book is designed as a textbook with clear explanations, illustrations and sufficient worked examples. As hydrology is best learned by solving problems, a vast number of problems, amounting to more than **200 problems, with answers** are provided in the book. Additionally, the sets of **Revision questions** and **Objective questions** (with answers) provided at the end of each chapter help not only in the comprehension of the subject matter but also in preparing well for competitive examinations. Most of the problems can be solved by use of a spreadsheet (such as MS Excel) and this infact can be made use of in designing interesting teaching and tutorial sessions.

The Online Learning Center of this book can be accessed at <http://www.mhhe.com/subramanya/eh3e>. The site contains a Solution Manual and PowerPoint Slides for **Instructors**; and Sample Question Papers with Solutions and Sample Case studies for **students**. I have received a large number of feedback, both formally and informally, towards the improvement of the book. The following reviewers of the typescript have provided valuable inputs for the contents of this edition.

Mohammed Jamil

*Department of Civil Engineering,
Z H College of Engineering and Technology,
Aligarh Muslim University, Aligarh*

Molly Kutty M V

*Department of Civil Engineering,
Crescent Engineering College, Chennai*

Thiruvenkatasamy K.

*Department of Civil Engineering,
Bharath University, Chennai*

Jothi Prakash V

*Department of Civil Engineering,
Indian Institute of Technology, Mumbai*

M R Y Putty

National Institute of Engineering, Mysore

I would also like to express my sincere thanks to all those who have directly or indirectly helped me in bringing out this revised edition. Comments and suggestions for further improvement of the book would be greatly appreciated. I can be contacted at the following e-mail address: subramanyak1@gmail.com .

K. SUBRAMANYA
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