

# Preface to the First Edition

Water is vital to life and development in all parts of the world. In Third World countries where the agricultural sector plays a key role in their economic growth, the management of water resources is an item of high priority in their developmental activities. The basic inputs in the evaluation of water resources are from hydrological parameters and the subject of hydrology forms the core in the evaluation and development of water resources. In the civil engineering curriculum, this subject occupies an important position.

During my long teaching experience, I have felt a strong need for a textbook oriented to the Indian environment and written in simple and lucid style. The present book is a response to the same. This book is intended to serve as a text for a first course in engineering hydrology at the undergraduate level in the civil engineering discipline. Students specializing in various aspects of water-resources engineering, such as water-power engineering and agricultural engineering will find this book useful. This book also serves as a source of useful information to professional engineers working in the area of water-resources evaluation and development.

Engineering hydrology encompasses a wide spectrum of topics and a book like the present one meant for the first course must necessarily maintain a balance in the blend of topics. The subject matter has been developed in a logical and coherent manner and covers the prescribed syllabi of various Indian universities. The mathematical part is kept to the minimum and emphasis is placed on the applicability to field situations relevant to Indian conditions. SI units are used throughout the book.

Designed essentially for a one-semester course, the material in the book is presented in nine chapters. The hydrologic cycle and world-water balance are covered in Chap. 1. Aspects of precipitation, essentially rainfall, are dealt in sufficient detail in Chap. 2. Hydrologic abstractions including evapotranspiration and infiltration are presented in Chap. 3. Streamflow-measurement techniques and assessment of surface-flow yield of a catchment form the subject matter of Chaps. 4 and 5 respectively. The characteristics of flood hydrographs and the unit hydrograph theory together with an introduction to instantaneous unit hydrograph are covered in sufficient detail with numerous worked examples in Chap. 6. Floods, a topic of considerable importance, constitute the subject matter of Chap. 7 and 8. While in Chap. 7 the flood-peak estimation and frequency studies are described in detail, Chap. 8 deals with the aspects of flood routing, flood control and forecasting. Basic information on the hydrological aspects of groundwater has been covered in Chap. 9.

Numerous worked examples, a set of problems and a set of objective type multiple-choice questions are provided at the end of each chapter to enable the student to gain good comprehension of the subject. Questions and problems included in the book are largely original and are designed to enhance the capabilities of comprehension, analysis and application of the student.

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