

## Engineering Geology By Parbin Singh Semester 3

This book is a collection of twenty one papers presented during the symposium on Coping with Natural Hazards at University of Pune on 5 and 6 October 2001. This very successful symposium, organised by the National Academy of Sciences, outlined the strategies our country should adopt to be prepared to face hazards like earthquakes, floods, landslides, avalanches, cyclones, droughts and desertification. It contains papers by pre-eminent scientists and leading lights like Professors M G K Menon, P K Das, D R Sikka and R K Bhandari and many others. Each paper has been critically reviewed by atleast two experts in their respective fields.

Physical Geology \* Geomorphology \* Crystallography \* Descriptive Miner \* Optical Mineralogy \* Petrology \* Structural Geology \* Stratigraphy \* Palaeontology \* Economic Geology \* Geochemistry \* Hydrogeology \* Engineering Geology \* Photogeology and Remote Se

All engineering structures react with the ground, and most structures make use of materials extracted from the earth. While an engineer cannot be expected to be also an expert geologist, he must have a working knowledge of the subject if his structures are to be economically designed, safely built and safely used. He must also be able to recognise where and when he needs the advice of a specialist. A Manual of Applied Geology is designed as a guide for practising engineers. A team of distinguished

engineers and scientists has been assembled to present the basic information which an engineer needs and to explain how best to use this information to deal with problems in his work. Chapters cover general theory, Formation of rocks, their properties and identification, landforms and soils, geophysical methods, maps and other information sources. the particular problems of terrain evaluation, site selection and investigation and common construction problems (including groundwater control, stability, foundations and underground work) are examined and there are chapters on materials and hydrogeology. Aimed principally at the engineer who is meeting geological problems in his everyday work, this generously illustrated volume will also be useful as an introduction to the subject for first degree engineering students

'Engineering geology' is one of those terms that invite definition. The American Geological Institute, for example, has expanded the term to mean 'the application of the geological sciences to engineering practice for the purpose of assuring that the geological factors affecting the location, design, construction, operation and maintenance of engineering works are recognized and adequately provided for'. It has also been defined by W. R. Judd in the McGraw-Hill Encyclopaedia of Science and Technology as 'the application of education and experience in geology and other geosciences to solve geological problems posed by civil engineering structures'. Judd goes on to specify those branches of the geological or geo-sciences as surface (or surficial) geology, structural/fabric geology, geohydrology, geophysics, soil and rock

mechanics. Soil mechanics is firmly included as a geological science in spite of the perhaps rather unfortunate trends over the years (now happily being reversed) towards purely mechanistic analyses which may well provide acceptable solutions for only the simplest geology. Many subjects evolve through their subject areas from an interdisciplinary background and it is just such instances that pose the greatest difficulties of definition. Since the form of educational development experienced by the practitioners of the subject ultimately bears quite strongly upon the corporate concept of the term 'engineering geology', it is useful briefly to consider that educational background.

Textbook of Engineering Geology presents study of geology comprehensively from a civil engineering point of view. The author contends that mere technical perfection cannot ensure the safety and success of large-scale civil engineering constructions such a

Now in full colour, the third edition of this well established book provides a readable and highly illustrated overview of the aspects of geology that are most significant to civil engineers. Sections in the book include those devoted to the main rock types, weathering, ground investigation, rock mass strength, failures of old mines, subsidence on peats and clays, sinkholes on limestone and chalk, water in landslides, slope stabilization and understanding ground conditions. The roles of both natural and man-induced processes are assessed, and this understanding is developed into an

appreciation of the geological environments potentially hazardous to civil engineering and construction projects. For each style of difficult ground, available techniques of site investigation and remediation are reviewed and evaluated. Each topic is presented as a double page spread with a careful mix of text and diagrams, with tabulated reference material on parameters such as bearing strength of soils and rocks. This new edition has been comprehensively updated and covers the entire spectrum of topics of interest for both students and practitioners in the field of civil engineering.

Geology is the science of earth's crust (lithosphere) consisting of rocks and soils. While mining and mineralogical engineers are more interested in rocks, their petrology (formation) and mineralogy, civil engineers are equally interested in soils and rocks, in their formations, and also in their properties for civil engineering design and construction. This book is so written that the subject can easily be taught by a civil engineering faculty member specialised in soil mechanics. Dexterously organized into four parts, this book in Part I (Chapters 1 to 11) deals with the formation of rocks and soils. The classification of soils, lake deposits, coastal deposits, wind deposits along with marshes and bogs are described in Part II (Chapters 12 to 20). As the book advances, it deals with the civil engineering problems connected with soils and rocks such as landslides, rock slides, mudflow, earthquakes, tsunami and other natural phenomena in Part III (Chapters 21 to 24). Finally, in Part IV (Chapters 25 to 30), this text discusses the allied subjects like the origin and nature of cyclones, rock mass

classification and soil formation. Designed to serve as a textbook for the undergraduate students of civil engineering, this book is equally useful for the practising civil engineers. SALIENT FEATURES : Displays plenty of figures to clarify the concepts Includes chapter-end review exercises to enhance the problem-solving skills of the students Summary at the end of each chapter brings into focus the essence of the chapter Appendices at the end of the text supply extra information on important topics No engineering structure can be built on the ground or within it without the influence of geology being experienced by the engineer. Yet geology is an ancillary subject to students of engineering and it is therefore essential that their training is supported by a concise, reliable and usable text on geology and its relationship to engineering. In this book all the fundamental aspects of geology are described and explained, but within the limits thought suitable for engineers. It describes the structure of the earth and the operation of its internal processes, together with the geological processes that shape the earth and produce its rocks and soils. It also details the commonly occurring types of rock and soil, and many types of geological structure and geological maps. Care has been taken to focus on the relationship between geology and geomechanics, so emphasis has been placed on the geological processes that bear directly upon the composition, structure and mechanics of soil and rocks, and on the movement of groundwater. The descriptions of geological processes and their products are used as the basis for explaining why it is important to investigate the ground, and to show how

the investigations may be conducted at ground level and underground. Specific instruction is provided on the relationship between geology and many common activities undertaken when engineering in rock and soil.

A Textbook of Engineering and General Geology  
A Text Book Of Geology  
Discovery Publishing House

This book is written to explain the influence ground conditions can have upon engineering with rocks and soils, and upon designing, analysing and executing an engineered response to the geological and geomorphological processes acting on them; these subjects form the essence of Engineering Geology. The text is written for students of the subject, either geologists or engineers, who encounter the challenge of idealising the ground and its processes for the purposes of design and of quantifying them for the purpose of analysis. With this in mind the book describes how geology can dictate the design of ground investigations, influence the interpretation of its findings, and be incorporated into design and analysis. The reader is constantly reminded of basic geology; the "simple" things that constitute the "big picture", a neglect of which may cause design and analyses to be at fault, and construction not to function as it should.

Engineering Geology will serve as a textbook for the undergraduate and postgraduate students of engineering geology, applied geology, mining and civil engineering. It will also serve as a reference text for civil engineers and professional geologists.

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Presents a comprehensive and up-to-date account of the fundamental aspects of structural geology, emphasising both classical concepts and modern developments. A detailed account of the techniques of geometrical analysis is provided, giving a sound background to principles of geological deformation and in-depth analysis of mechanisms of formation of geological structures. Many new features are included such as detailed discussions on rotation of rigid inclusions and passive markers, boudinage (including chocolate tablet boudins, foliation boudins and shear fracture boudins), structural implications of basement-cover relations and time-relation between crystallation and deformation. The book presents the methods of structural analysis from microscopic to map scale, describes modern techniques used in field and laboratory and offers a balanced picture of modern structural geology as it emerges from combined field, experimental and theoretical studies. Hardback edition (0 080 41879 1) also available £50.00

With reference to India.

The fifth edition of the Glossary of Geology contains nearly 40,000 entries, including 3,600 new terms and nearly 13,000 entries with revised definitions from the previous edition. In addition to definitions, many entries include background information and aids to syllabication. The Glossary draws its authority from the expertise of more than 100 geoscientists in many specialties who reviewed definitions and added new terms. The book has been thoroughly revised. Several new articles have been

added, specifically, in chapters in mortar, Concrete, Paint: Varnishes, Distempers and Antitermite treatment to make the book to still more comprehensive and a useful unit for the students preparing for the examination in the subject.

This book deals with both the principles as well as practices of engineering geology. It will serve as a basic course material for undergraduate students of civil engineering, graduate students of geology and applied geology, and field practitioners. Use of simple language, lucid expression, self-explanatory illustrations and excellent pedagogy makes this book very useful. Salient Features • The book gives a comprehensive coverage on mineralogy, petrology and geophysical investigations • Coverage on Emerging trends – Remote Sensing and GIS • Colored photographs and self-explanatory illustrations for better understanding of topics Keeping this in mind, the present book is designed by the author based on his vast experience spanning about four decades, as a basic first course, in particular, to the students of Civil Engineering. The contents of the book are dealt under eleven chapters.

This Volume Is One Of The Two Which Offer A Comprehensive Course In Those Parts Of Theory And Practice Of Plane And Geodetic Surveying That Are Most Commonly Used By Civil Engineers. The First Volume Covers In 24 Chapters, The Most Common Surveying Operations. Each Topic Introduced Is Thoroughly Described, The Theory Is Rigorously Developed, And A Large Number Of Numerical Examples Are Included To Illustrate Its Application. General Statements Of Important Principles And Methods Are Almost Invariably Given By Practical Illustration. Apart From Illustrations Of Old And Conventional Instruments, Emphasis Has Been Placed On New Or Modern Instruments, Both For Ordinary As Well As Precise Work. A Good Deal Of Space Has Been Given To Instrumental Adjustments With

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Thorough Discussion Of Geometrical Principles In Each Case. Many New Advanced Problems Have Also Been Added Which Will Prove Useful For Competitive Examinations.

This Book Is The Outcome Of The Authors Long Teaching Experience And Has Been Designed To Meet The Needs Of Civil Engineering Curricula For The Courses In Soil Mechanics And Foundation Engineering Of Indian Universities. The Book Has Been Written Mainly In The S.I. Units, Although Some Problems And Examples In The M.K.S. System Have Been Included For Convenience During The Period Of Transition. The Concepts Have Been Developed Systematically In Lucid Language, Sufficient Number Of Well-Graded Numerical Examples And Problems For Solution Have Been Included, And The Answers For The Latter Have Been Given At The End Of The Book. Summary Of Main Points And Chapter-Wise References Have Been Given At The End Of Each Chapter. References Are Made To The Relevant Indian Standard At Appropriate Places. The Book Covers The Syllabus In Geotechnical Engineering For The Degree And Diploma Students In Civil Engineering And Is Designed To Be Useful To Practicing Engineers As Well.

An attempt is made to place before students (degree and post-degree) and professionals in the fields of Civil and Agricultural Engineering, Geology and Earth Sciences, this important branch of Hydroscience, i.e., Hydrology. It deals with all phases of the Hydrologic cycle and related topics in a lucid style and in metric system. There is a departure from empiricism, with emphasis on collection of hydrological data, processing and analysis of data, and hydrological design on sound principles and matured judgement. Large number of hydrological design problems are worked out at the end of each article, to illustrate the principles involved and the design procedure. Problems for assignment are given at the end of each chapter, along with

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objective type and intelligence questions.

All undergraduate and postgraduate students of science and engineering faculties will be benefited by this book. It is meant for all undergraduate and postgraduate students of civil engineering science faculty and geology irrespective of their specializations. This book is based mainly on a course of lectures prepared to cover the syllabus of engineering geology course in Universities all over the country. The book will be useful for Civil Engineering students of other universities also. The engineering geology portion of the book also covers the engineering geology included in the B.Sc, M. Sc and M. Tech courses in geology and the book will meet the requirements of students of geology as far as engineering geology is concerned like practicing engineers who need a simple introduction to the principles of geology which are important from the point of view of engineering will get them in this book.

Contents: Introduction, Origin of the Earth, Age of the Earth, Interior of the Earth, Interior of the Earth, The Continents and Mountains, Isostasy, Theory of Plate Tectonics, Evolution of Landforms, Volcanoes, Earthquakes, Weathering, Soils, The Study of Rocks, Mineralogy, Structural Geology.

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