

PREFACE

Botany is the branch of biology concerned with the scientific study of plant life and development. Botany encompasses a multitude of scientific disciplines that study plants, algae and fungi including growth, reproduction, metabolism, development, diseases, chemical properties, and evolutionary relationships between the different groups. One of the oldest sciences, the genesis of botany can be linked to the tribal quest of distinguishing edible, medicinal and poisonous plants. Today the scope of botany has enlarged to cover more than 550000 species.

Rationale

This title '*Fundamentals of Botany*' has been conceived with the aim of providing a basic knowledge of botany. A need was felt for a book with a fundamental orientation updated with recent developments in the field. The existing books are either outdated or voluminous or depict only specific aspects. The present text has been carefully structured to fulfill this lacuna. Recent trends in the subject show growing prominence of molecular genetics, knowledge of genes, genetic manipulation, biotechnology, recombinant DNA technology, application biology, use of microbes, environmental relation of plants and their conservation. This book covers the major trends in botany which many a times are not available in voluminous texts.

Users

This book is particularly well-suited for students of BSc (Botany), (Plant Biology and Biotechnology). It will also be a useful reference while preparing for various premedical competitive examinations—AFMC, AIIMS, AMU, BHU, AIPMT, CECE (Bihar, Jharkhand), CET (Karnataka, Kerala), CMC (Ludhiana, Vellore), EAMCET (AP), JEE (Orissa, West Bengal), MGIMS (Wardha) and JIPMER.

The book has been carefully developed to meet the requirements of students in pursuit of a brilliant career in B.Sc and PMT:

Organisation of Volume 1

A sectionwise organisation of the book is given below:

Section 1 explains characteristics, structure and reproduction, and uses of microbes and lower plants, viz., viruses, bacteria, cyanobacteria, mycoplasma, algae, fungi, bryophytes and pteridophytes. **Section 2** deals with cells, cell organelles, cell-cycle, nucleic acids, chromosomes, genetic code, gene expression and regulation, genetic variation, and genetic inheritance.

Features

This book is designed completely to be in sync with the UGC model curricula. It is a focused examination package for B.Sc Botany students who take papers of 'Diversity of Microbes and Cryptogams' and 'Cell Biology and Genetics' of all Indian universities. The text helps build the conceptual framework for the subject in a concise manner, which enables students to understand and grasp the subject in a short span of time and thus succeed in the exams.

- Complete coverage of all important topics such as Viruses, Bacteria, Cyanobacteria, Mycoplasma, Algae, Fungi, Lichens, Bryophytes and Pteridophytes, Cell and Cell organelles—Structure and Functions, Cell-cycle and Cell division, Nucleic acids and Chromosome Organisation, Genetic Code, gene expression and protein synthesis, gene regulation, genetic variations, and genetic inheritance.
- A dedicated chapter to common and latest tools and techniques in life-sciences— microscopy: light microscopy and electron microscopy, units of measurement, section cutting and staining, cell fractionation, autoradiography, spectrophotometry, cytochemistry, X-ray crystallography, and chromatography.
- Discover boxes interspersed all throughout the text.
- Pedagogy:
 - Relevant diagrams and tables
 - Frequently asked descriptive questions for university examinations (sectionwise)
 - Multiple choice questions with answers for PMT and other competitive examinations (sectionwise)
 - Eight appendices provide information resources like different branches of botany and their fathers; scientists and their contributions, renowned Indian botanists, botany nobel laureates, Indian research organisations and institutions, common abbreviations, famous books and their authors.

Online Learning Center

This book is accompanied by an exhaustive website that provides valuable resources including sample chapters, sample BSc question papers, and chapterwise PMT examinations questions. The website can be accessed at <http://www.mhhe.com/soni/botvol1>

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