

As per Latest CBSE Syllabus

S. Chand's Biology



For Class XII

**Dr. P.S. VERMA
Dr. B.P. PANDEY**

**3500 Multiple
Choice
Questions**



As per New CBSE Course Structure and New NCERT Guidelines

MULTICOLOUR EDITION

S. Chand's
BIOLOGY
FOR CLASS XII

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PREFACE

There are more than two million different kinds of living things on this Earth. Each kind of living thing is called an **organism**, which is suited to live in its own special place. However, the Earth contains countless places to live, and therefore, a great diversity of life is observed all over. The living organisms possess distinct characteristics, which entail a mechanism of origin and evolution of diversities and maintain a balancing relation with nature. All these aspects of life come under the science of **Biology**. In modern days, the development of research techniques, sophisticated equipment and information technology have enriched the biological sciences with numerous inventions and new discoveries. For example, biologists have completed the deciphering of the human genome, which may determine capabilities and predispositions in modern medical sciences to certain forms of behaviour and ailments.

The recent scientific developments have enlarged the scope of Biology. The study of biotechnology and their applications ; the improvement of crops and animal breeds; the genetically modified organisms and their products ; new technologies for abatement of pollution and environment would influence our lives to a great extent.

The text includes structural and functional dynamics of living world, where both plant and animal examples have been cited. Diversity of living organisms, life processes, mechanism of growth and development have been dealt with; environment related issues and problems such as pollution, degradation of land, overuse of natural resources, wise use of natural resources and population have been discussed in detail while focussing on human welfare. The issues related to health, plant and animal disease, agriculture, environment and sustainable development have been covered to highlight the role of Biology in improving quality of life.

This Textbook of Biology has been rewritten strictly according to the latest syllabus of **Biology as per the new CBSE Course structure and new NCERT guidelines for class XII.**

The syllabus of class XII contains five units. They are : **Unit-1, Reproduction; Unit-2, Genetics and Evolution; Unit-3, Biology in Human Welfare; Unit-4, Biotechnology and Unit-5, Ecology and Environment.** Each unit is further divided into chapters. In all, sixteen chapters are there which contain the details of various aspects.

The highlights of the present edition are : **(i) Summary of every chapter (Important points); (ii) Terms to remember (Glossary of important words used in every chapter); (iii) Addition of seven types of revision questions such as very short answer, long answer, true and false, fill in the blanks, multiple choice questions (MCQs) or objective type questions given after each chapter (Quite useful for the Competitive Examinations).**

The text of the present edition is entirely reorganised as per the requirements of the present day competition oriented students. It has been made examination oriented and for giving the full insight into the subject.

P.S. Verma expresses his sincere thanks to Dr. Prashant Solanki, M.D., D.M. and Dr. Ms. Shalini Solanki, for the immense pains they have taken in compiling intricate details wherever required in writing and preparation of this and to Shri R.V. Singh Sishodia, M.Sc., B.Ed., Principal, Kendriya Vidyalaya, Ambala Cantt., for the help in the selection of various types of questions.

We are also thankful to Sanjeeva Pandey, I.F.S. and Rahul Pandey, I.F.S. who have provided us some transparencies and photographs of Trans-Himalayan region and Eastern Ghats.

The authors wish to express their sincere thanks to **Shri Ravindra Kumar Gupta, CMD,** and **Shri Himanshu Gupta, Director,** S.Chand & Company Ltd., New Delhi for their keen interest in the publication of the book in **multicolour.** Thanks are also due to **Shri Navin Joshi, General Manager (S & M),** S.Chand & Company Ltd., for encouragement and help at various levels. Thanks are also due to **Shri R.S. Saxena, Advisor,** and **Shri Shishir Bhatnagar, Senior co-ordinator** S.Chand & Company Ltd., for the good printing and bringing out the book in a very short period and in an excellent get up.

Suggestions for further improvement of the book would be welcomed and incorporated in the subsequent editions.

P.S. VERMA
B.P. PANDEY



SYLLABUS

CLASS XII

One Paper

Time : 3 Hours

70 Marks

THEORY	MARKS
Unit I. Reproduction	12
Unit II. Genetics and Evolution	20
Unit III. Biology and Human Welfare	12
Unit IV. Biotechnology	12
Unit V. Ecology and Environment	14
Total	70

UNIT — ONE REPRODUCTION

- Pollination and fertilization in flowering plants, Development of seeds and fruits. Human reproduction : reproductive system in male and female, menstrual cycle. Production of gametes, fertilization, implantation, embryo development, pregnancy and parturition.

Practicals

Study of flowers adapted to pollination by different agencies (wind, insects). Study of the reproductive parts of unisexual and bisexual flowers. Study of pollen germination on a slide and pollen tube growth on the stigma. Study of tissue sections of mammalian testis and ovary to identify stages of gamete development. Study of fruits and seeds of any common fruit (e.g. legume) at different stages of development.

UNIT — TWO GENETICS AND EVOLUTION

- Mendelian inheritance. Chromosome theory of inheritance, deviations from Mendelian ratio (gene interaction-Incomplete dominance, co-dominance, complementary genes, multiple alleles). Sex determination in human beings : XX, XY, Linkage and crossing over. Inheritance pattern of haemophilia and blood groups in human beings. DNA : replication, transcription, translation, Gene expression and regulation, Genome and Human Genome Project, DNA fingerprinting, Evolution : Theories and evidences.

Practicals

Study mitosis in onion root tips and animal cells (grasshopper) (preparation) and meiosis in onion buds and grasshopper testis (permanent slides). Stain tissue section for nucleic acids (aceto carmine stain). Study Mendelian inheritance using seeds of different colours/sizes of any plant. Prepare pedigree charts for genetic traits such as rolling of tongue, blood groups, widow's peak, colour blindness. Study of analogous and homologous organs in various plants and animals.

UNIT — THREE

BIOLOGY IN HUMAN WELFARE

- Animal husbandry, Basic concepts of immunology, vaccines, Pathogens, Parasites, Plant breeding, tissue culture, food production. Microbes in household food processing , industrial production, sewage treatment and energy generation, Cancer and AIDS. Adolescence and drug/alcohol abuse.

Practicals

Exercise on controlled pollination-emasculation, tagging and bagging. Identify common disease causing organisms such as *Ascaris*, *Entamoeba*, *Plasmodium*, ring worm. Comment on the symptoms of the diseases that they cause.

UNIT — FOUR

BIOTECHNOLOGY

- Recombinant DNA technology, Applications in Health, Agriculture and Industry, Genetically modified (GM) organisms; biosafety issues, Insulin and Bt cotton.

Practicals

Stain tissue section for nucleic acids (aceto-carmin staining). Make a model of DNA. Observe the quality and shelf life etc. better quality of fruits/seeds available in the market.

UNIT — FIVE

ECOLOGY AND ENVIRONMENT

- Ecosystems : components, types and energy flow. Species, population and community. Ecological adaptations. Centres of diversity and conservation of biodiversity, National parks and sanctuaries.

Practicals

Collect soils from different sites and study them for texture, moisture content and pH. Correlate with the kinds of plants found in them. Study plants and animals found in dry and aquatic conditions. Collect water from any water bodies around you and study them for pH, clarity, and presence of any living organisms. Study the amount of SPM (suspended particulate matter) in air at two widely separated sites.

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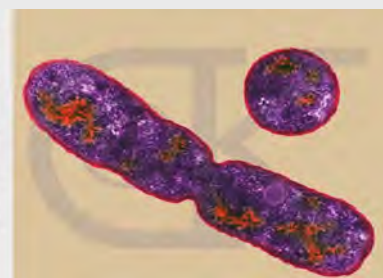
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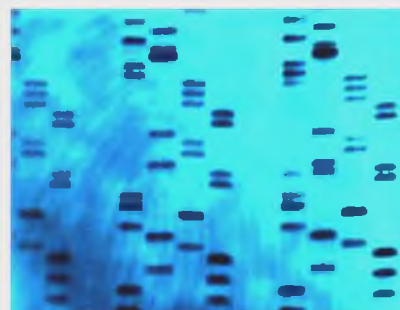


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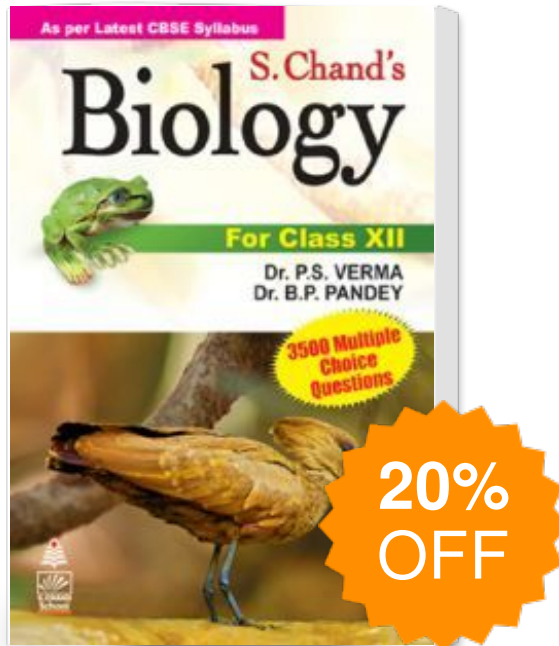
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