MATHEMATICS

STANDARD - X

Untouchability is a sin

Untouchability is a crime

Untouchability is inhuman

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PREFACE

It is not an exaggeration if we declare that Mathematics Today owes a huge debt to the outstanding and original contributions made by Indian Mathematicians over many millenniums. The beautiful Number Systems invented by Indians is no doubt the base of the entire world of Mathematics. Eminent Mathematician Laplace puts it in unambiguous terms: "The ingenious method of expressing every possible number using a set of ten symbols emerged in India. The idea seems so simple nowadays that its significance and profound importance is no longer appreciated. Its simplicity lies in the way it facilitated calculation and placed arithmetic foremost amongst useful inventions. The importance of this invention is more readily appreciated when one considers that it was beyond the two greatest men of antiquity, Archimedes and Apollonius".

The study of Mathematical Astronomy in India which should have been carried out on huge mathematical calculations goes back to atleast the 3rd millennium BC. In this period Mathematics and Geometry must have existed to support the mathematical study of Astronomy. The Indus civilization which began around 2500 BC and survived until 1700 BC witnessed mathematical skills among people who were literates. Vedas which were composed in Vedic Sanskrit between 1500 BC and 800 BC was associated with the next mathematics of importance on the Indian soil. Vedas consisted of the Sulbasutras which included enormous geometrical knowledge. A famous American Historian Will Durant (1885 – 1981) observed : "India was the motherland of our race and Sanskrit the mother of Europe's languages. India was the mother of our Philosophy, of much of our Mathematics, of the ideas ….. of the self government and democracy. In many ways, Mother India is the mother of us all!"

It is now generally accepted by the Mathematicians world over that the technique of Algebra and the concept of zero originated in India. The rudiments of Geometry called Rekha – Ganita in ancient India were formulated and applied in drafting Mandalas for architectural purposes. They were also displayed in the geometrical patterns used in many temple motifs. Even the technique of calculations called Algorithm which is today widely used in designing Software Programs for computers was also derived from Indian Mathematics!

In this book in the introductory remarks of the chapters we attempt to highlight some of the original and significant contributions made by Indian Mathematicians in order to motivate our teachers as well as students to know the Indian tradition in intuitive and intelligent approach to Mathematics and work towards recapturing the lost tradition. The days have gone when students were encouraged to solve mental sums in the classrooms. Students

no longer attempt to solve mathematical problems discovering their own inherent talents and skills but they cram proofs and solutions with the sole purpose of obtaining centum in the Public Examination. The present teaching – learning process adopted to Mathematics should be revamped. Mathematics teachers should seed with clarity all basics and fundamentals in the minds of students and demonstrate solutions to problems selecting a few representative ones. They should play a catalytic role in shaping the mathematical acumen in students with constant encouragement, inspiration and motivation. It is the responsibility of students who with their acquired knowledge, strong determination, interest and enthusiasm assault and solve all the problems in this textbook relying on their own skills channelising youth energy in constructive and productive manner.

We are sure that when students solve problems independently, they are adventuring in the jungle of Mathematics full of encounters and whenever they solve a mathematical problem they derive fascinating experience with lot of delight and ecstasy! Every literate should have good mathematical skill and analytical bent of mind in order to do well in any walk of life!

All the topics presented in this book are covered comprehensively within the framework of the syllabus, within the scope of students of class X and with clarity in lucid and easy way of grasping. A large number of problems were solved in order to help students acquire skills and solve problems of multifarious nature.

While preparing for the examination, students should not restrict themselves only to the problems given in self evaluation exercises. They must be prepared to answer all questions and problems from the entire text book.

Despite all our efforts to provide an error – free text book, the book may still contain a few errors. Please bear with us and be assured that all such errors will be rectified.

Thanking the Almighty God, cherishing the rich heritage, the tradition and the originality of the Indian Mathematics, and wishing you all a good recreation with Mathematics,

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