MATHEMATICS

CLASS- 10

BOARD OF SECONDARY EDUCATION, RAJASTHAN
AJMER

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MATHEMATICS

Class - X

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MATHEMATICS

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PREFACE

This book has been written in accordance with the new syllabus for class X prescribed by the Board of Secondary Education, Rajasthan, Ajmer. In presenting the book the basic object of the syllabus has been fully kept in mind and an attempt has been made to acquaint the students with the contribution of Indian Mathematician towards the development of scientific traditions. The contribution of Indian Mathematician have been mentioned at appropriate places. Every effort has been made to present the subject in simple and lucid manner Important principal have been explained in detail.

In the interest of the students sufficient number the illustrative examples have been given. At the end of each chapter a summary of the chapter is given in the form of important points, which will help the students in revision. In each chapter objective, short and essay type questions have been given in sufficient number in the miscellaneous exercise.

We hope the book will be useful to students. Students, teachers and reviewers are requested to send their comments, suggestions and to point out any shortcoming in the book, so that the desired improvement in the book can be made in the subsequent edition.

Authors

SYLLABUS

MATHEMATICS

Class-X

Time- 3.15 hours **Subject code- 09**

Question paper	Marks for question paper	Sessional Marks	Max. Marks
One	80	20	100

S.N.	Name of Unit	Marks
1.	Vedic Mathematics	4
2.	Numbers System	3
3.	Algebra	12
4.	Trigonometry	11
5.	Coordinate Geometry	6
6.	Geometry	20
7.	Mensuration	10
8.	Statistics and Probability	10
9.	Road Safety Education	4

Details of the Syllabus

Unit 1. Vedic Mathematics 4

Fundamental Concepts of Vedic mathematics

Expansion and exercise on fundamental operations, the meaning and applications of sutra Urdhva triyagbhyam, study to find square and cube by the sutra Nikhilam base – subbase, division operation (sutra Nikhilam, sutra paravartya yojayet and dhvajanka method) solution of simple equations by Vedic system, Navanka and Ekadashanka methods of checking the result for division operation.

Unit 2. Number System 3

Real numbers

Euclid's division lemma, Fundamental theorem of Arithmetic- Statements, After reviewing work done earlier and after illustrating through examples, Proofs of results irrationality of $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, decimal expansions of rational numbers in terms of terminating/non-terminating recurring decimals.

Unit 3. Algebra 12

(a) Polynomials 4

Zeroes of polynomials. Relationship between zeroes and Coefficients of quadratic

polynomials, statement and simple problems on division algorithm for polynomials with real coefficients. Standard form of a quadratic equation and its solution. Discriminant and nature of roots. LCM and HCF of Algebraic expression.

(b) Linear equation and Inequalities in two variables 5

Pair of linear equations in two variables. The graphical solution of pair of linear equation and its different possibilities, linear inequalities in two variable.

(c) Arithmetic Progressions 3

Motivation for studying A.P. Derivation of Standard results of finding the n^{th} term and sum of first n terms.

Unit -4. Trigonometry 11

(a) Trigonometric ratios

Trigonometric ratios of an acute angle of right-angled triangle. Values of trigonometric ratios of $0°, 30°, 45°, 60°, 90°$. Relationship between the ratios.

(b) Trignometric identities

The application of trigonometric identities Trigonometric ratios of complementary angles.

(c) Height and Distance

Angles of elevation/depression. Simple problems on height and distance. (based on $30°$, $45°$, $60°$)

Unit 5. Coordinate Geometry 6

Coordinate Geometry

Cartesian plane, Coordinates, Distance between two points, section formulae. Area of a triangle.

Unit 6. Geometry 20

(a) Point and Concurrent lines

Locus, concurrent points of a triangle (Circumcentre, incentre, orthocentre)

(b) Similar Triangles

Similarity, similar triangle and its related theorms, Theorms related areas of similar triangles.

(c) Circle

Relation between arc and angle of congruent circles. Chord and its related theorm, arc and angles subtended by it, cyclic quadrilateral, Tangents of circle and its related theorm. Chord and angle of Alternate segment.

(d) Practical Geometry

Internal division of a line segment in a given ratio, Construction of tengents from the outer point of circle. Construction of common tengents of two circles, construction of circumcircle and in circle of triangles.

Unit- 7. Mensuration 10

(a) Area of plane figures 4

Circumference of a circle and its area, area of sectors and segments of a circle.

(b) Surface areas and volumes 6

Surface areas and volumes of cube, cuboids, sphere, hemisphere, right circular cylinder, cone . Converting one type of metallic solid into another

Unit- 8 Statistics and probability 10

(a) Statics 6

Mean, Median and mode of ungrouped and grouped data.

(b) Probability 4

Random experiment, classical definition of probability. Simple problems on single events.

Unit- 9 Road Safety Education 4

Arithmetic Progression (Objective, content, exercise) Data collection (objective) Applications of trigonometry (Objective, content, exercise) Problems on two variables (Objective).

Prescribed book : **Mathematics**
Board of Secondary Education, Rajasthan, Ajmer

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