

MATHEMATICS

(For Science Students Only)

Part – I 75 Marks

Part – II 75 Marks

Total 150 Marks

Part-I (Class-IX)	Marks: 75	Time: 2:30 Hours
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Unit-1	:	REAL NUMBERS
	1.1	Introduction to Real Numbers
	1.2	Radical Expressions
	1.3	Applications of Real Numbers in Daily Life
Unit-2	:	LOGARITHMS
		Introduction
	2.1	Scientific Notation
	2.2	Logarithm
	2.3	Common Logarithm
	2.4	Laws of Logarithm
Unit-3	:	SETS AND FUNCTIONS
		Introduction
	3.1	Mathematics as the Study of Patterns, Structures and Relationships
	3.2	Operations on Sets
	3.3	Binary Relations
Unit-4	:	FACTORIZATION AND ALGEBRAIC MANIPULATION
		Introduction
	4.1	Identifying Common Factors and Trinomials Concretely, Pictorially and Symbolically
	4.2	Factorization of the Expression
	4.3	Highest Common Factor (HCF) and Least Common Multiple (LCM) of Algebraic Expression
	4.4	Square Root of an Algebraic Expression
Unit-5	:	LINEAR EQUATIONS AND INEQUALITIES
		Introduction
	5.1	Linear Equation
	5.2	Linear Inequalities
	5.3	Feasible Solution
Unit-6	:	TRIGONOMETRY
		Introduction
	6.1	Identifying Angles in Standard Position (Degrees and Radians)
	6.2	Trigonometric Ratios
	6.3	Trigonometric Identities
	6.4	Values of Trigonometric Ratios of Special Angles
	6.5	Solution of a Triangle
	6.6	The Angle of Elevation and the Angle of Depression
Unit-7	:	COORDINATE GEOMETRY
		Introduction
	7.1	Coordinate Plane
	7.2	Equations of Straight Lines
	7.3	Applications of Coordinate Geometry in Real Life Situations
Unit-8	:	LOGIC
		Introduction
	8.1	Statement
Unit-9	:	SIMILAR FIGURES

- Introduction
- 9.1 Similarity of Polygons
- 9.2 Area of Similar Figures
- 9.3 Volume of Similar Solids
- 9.4 Geometrical Properties of Polygon and their Applications
- Unit-10 : GRAPHS OF FUNCTIONS
- Introduction
- 10.1 Functions and their Graphs
- 10.2 Exponential Growth/Decay of a Practical Phenomenon through its Graph
- Unit-11 : LOCI AND CONSTRUCTION
- Introduction
- 11.1 Construction of Triangles
- 11.2 Perpendicular Bisectors and Medians of a Triangle
- 11.3 Angle Bisector of a Triangle
- 11.4 Altitudes of Triangle
- 11.5 Loci and construction
- 11.6 Real Life Application of Loci
- Unit-12 : INFORMATION HANDLING
- Introduction
- 12.1 Ungrouped and Grouped Data
- 12.2 Measures of Location (Central Tendency)
- Unit-13 : PROBABILITY
- Introduction
- 13.1 Probability of Single Event
- 13.2 Probability of an Event Not Occurring
- 13.3 Real Life Problems Involving Probability
- 13.4 Relative Frequency as an Estimate of Probability
- 13.5 Real Life Application of Relative Frequency
- 13.6 Expected Frequency
- 13.7 Real Life Application on Expected Frequency

Prescribed Book: Mathematics (Science Group) for Part – I (Class –IX)
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Part-II (Class-X)	Marks: 75	Time: 2:30 Hours
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- Unit-1 : QUADRATIC EQUATIONS
- 1.1 Quadratic Equation
- 1.2 Solution of quadratic equations
- 1.3 Quadratic Formula
- 1.4 Equations reducible to quadratic form
- 1.5 Radical equations
- Unit-2 : THEORY OF QUADRATIC EQUATIONS
- 2.1 Nature of the roots of a quadratic equation
- 2.2 Cube Roots of Unity and their Properties
- 2.3 Roots and Co-efficient of a quadratic equation
- 2.4 Symmetric functions of the roots of a quadratic equation

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- 2.5 Formation of a quadratic equation
 2.6 Synthetic Division
 2.7 Simultaneous Equations
- Unit-3 : VARIATIONS
 3.1 Ratio, Proportions and Variations
 3.2 Theorems on Proportions
- Unit-4 : PARTIAL FRACTIONS
 4.1 Fraction
 4.1.1 Rational Expressions behave like Rational Numbers
 4.1.2 Rational Expression
 4.1.3 Properties of Rational Expression
 4.2 Resolution of Fraction into Partial Fractions
- Unit-5 : SETS AND FUNCTIONS
 5.1 Sets
 5.2 Binary Relation
 5.3 Function or Mapping
- Unit-6 : BASIC STATISTICS
 6.1 Frequency Distribution
 6.2 Cumulative Frequency Distribution
 6.3 Measures of Central Tendency
 6.4 Measures of Dispersion
- Unit-7 : INTRODUCTION TO TRIGNOMETRY
 7.1 Measurement of an Angle
 7.2 Sector of a Circle
 7.3 Trigonometric Ratios
 7.4 Trigonometric Identities
 7.5 Angle of Elevation and Angle of Depression
- Unit-8 : PROJECTION OF A SIDE OF A TRIANGLE
 Theorem 1 In an obtuse angled triangle, the square on the side opposite to the obtuse angle is equal to the sum of the squares on the sides containing the obtuse angle together with twice the rectangle contained by one of the sides, and the projection on it of the other.
 Theorem 2 In any triangle, the square on the side opposite to acute angle is equal to the sum of the squares on the sides containing that acute angle diminished by twice the rectangle contained by one of those sides and the projection on it of the other.
 Theorem 3 In any triangle, the sum of the squares on any two sides is equal to twice the square on half the third side together with twice the square on the median which bisects the third side.
- Unit-9 : CHORDS OF CIRCLE
 Theorem 1 One and only one circle can pass through three non-collinear points.
 Theorem 2 A straight line, drawn from the centre of a circle to bisect a chord (which is not a diameter) is perpendicular to the chord.
 Theorem 3 Perpendicular from the centre of a circle on a chord bisects it.
 Theorem 4 If two chords of a circle are congruent, then they will be equidistant from the centre.
 Theorem 5 Two chords of a circle which are equidistant from the centre, are congruent.
- Unit-10 : TANGENT TO A CIRCLE
 Theorem 1 If a line is drawn perpendicular to a radial segment of a circle at its outer end point, it is tangent to the circle at that point.
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- Theorem 2 The tangent to a circle and the radial segment joining the point of contact and the centre are perpendicular to each other.
- Theorem 3 Two tangents drawn to a circle from a point outside it, are equal in length.
- Theorem 4a If two circles touch externally, then the distance between their centres is equal to the sum of their radii.
- Theorem 4b If two circles touch each other internally, then the point of contact lies on the line segment through their centres and distance between their centres is equal to the difference of their radii.

Unit-11 : CHORDS AND ARCS

- Theorem 1 If two arcs of a circle (or of congruent circles) are congruent, then the corresponding chords are equal.
- Theorem 2 If two chords of a circle (or of congruent circles) are equal, then their corresponding arcs (minor, major or semi-circular) are congruent. In equal circles or in the same circle, if two chords are equal, they cut off equal arcs.
- Theorem 3 Equal chords of a circle (or of congruent circles) subtend equal angles at the centre (at the corresponding centres).
- Theorem 4 If the angles subtended by two chords of a circle (or congruent circles) at the centre (corresponding centres) are equal, the chords are equal.

Unit-12 : ANGLES IN A SEGMENT OF A CIRCLE

- Theorem 1 The measure of a central angle of a minor arc of a circle is double than that of the angle subtended by the corresponding major arc.
- Theorem 2 Any two angles in the same segment of a circle are equal.
- Theorem 3 The angle
In a semi-circle is a right angle,
In a segment greater than a semi-circle is less than a right angle
In a segment less than a semi-circle is greater than a right angle.
- Theorem 4 The opposite angles of any quadrilateral inscribed in a circle are supplementary.

Unit-13 : PRACTICAL GEOMETRY CIRCLES

- 13.1 Construction of a Circle
- 13.2 Circles Attached to Polygons
- 13.3 Tangent to the Circle
- 13.4 Answers
- 13.5 Symbols and abbreviations
- 13.6 Table of logarithm
- 13.7 Glossary
- 13.8 Index

Prescribed Book: Mathematics (Science Group) for Part – II (Class –X)

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