



**Maharashtra State Board of  
Secondary & Higher Secondary School, Pune**

*Department of Mathematics*

**Subject: Mathematics and Statistics (40)**

**Standard: Eleven**

**Faculty: Science**

**\*Syllabus\***

**XI Mathematics and Statistics ( Theory & Practical Part 2)**

## Theory Index

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## Practical Index

Sr. No.	Practical's Name
1	Complex Numbers
2	Sequences and Series
3	Permutations and Combination
4	Mathematical Induction and Binomial Theorem
5	Sets and Relations
6	Functions
7	Limits
8	Continuity
9	Differentiation

## Syllabus

Sr. No.	Name of the Topic	Scope of Syllabus
1	Complex Numbers	<ul style="list-style-type: none"><li>● A complex number (C.N.)</li><li>● Algebra of C.N.</li><li>● Geometrical Representation of C.N.</li><li>● Polar &amp; Exponential form of C.N.</li><li>● De Moivre's Theorem.</li></ul>
2	Sequences and Series	<ul style="list-style-type: none"><li>● A.P. and G.P.</li><li>● Sum of n terms of a G.P.</li><li>● Sum of infinite terms of a G.P.</li><li>● H.P. and A.G.P.</li><li>● A.M., G.M, H.M.</li></ul>
3	Permutations and Combination	<ul style="list-style-type: none"><li>● Fundamental principles of counting</li><li>● Factorial notation</li><li>● Permutations</li><li>● Permutations of distinct objects</li><li>● Permutations when some objects are identical</li><li>● Circular permutations</li><li>● Combinations</li></ul>
4	Methods of Induction and Binomial Theorem	<ul style="list-style-type: none"><li>● Mathematical Induction</li><li>● Binomial Theorem</li><li>● General term of expansion</li><li>● Expansion for negative and fractional index</li><li>● Binomial coefficients</li></ul>
5	Sets and Relations	<ul style="list-style-type: none"><li>● Representation of a set</li><li>● Types of sets</li><li>● Intervals</li><li>● Operations on sets</li><li>● Ordered pair</li><li>● Types of relations</li></ul>

6	Functions	<ul style="list-style-type: none"> <li>● Function, Domain, Co-domain, Range</li> <li>● Types of functions</li> <li>● Representation of function</li> <li>● Basic types of functions</li> <li>● Piece-wise defined and special functions</li> </ul>
7	Limits	<ul style="list-style-type: none"> <li>● Meaning – Definition of Limit</li> <li>● Calculation of various limits</li> <li>● Limits of Trigonometric Functions</li> <li>● Limits of Exponential and Logarithmic Functions</li> <li>● Limit at Infinity and Infinite limit</li> </ul>
8	Continuity	<ul style="list-style-type: none"> <li>● Continuity of a function at a point.</li> <li>● Continuity of a function over an interval.</li> <li>● Intermediate value theorem.</li> </ul>
9	Differentiation	<ul style="list-style-type: none"> <li>● The meaning of rate of change.</li> <li>● Definition of derivative and the formula associated with it.</li> <li>● Derivatives of some standard functions.</li> <li>● Relationship between Continuity and Differentiability.</li> </ul>