



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

Department of Mathematics

Subject: Mathematics and Statistics (40)

Standard: Twelve

Faculty: Science

Syllabus

XII Mathematics and Statistics (Theory & Practical Part 2)

Theory Index

Sr. No.	Unit/Topic	Weightage
1	Differentiation	9
2	Applications of Derivatives	9
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5	Application of Definite Integration	4
6	Differential Equation	8
7	Probability Distribution	5
8	Binomial Distribution	5

Practical Index

Sr. No.	Practical's Name
1	Application of Derivative -I
2	Application of Derivative -II
3	Definite Integration - I
4	Definite Integration - II
5	Application of Definite Integration
6	Differential Equation
7	Probability Distribution
8	Binomial Distribution

Syllabus

Sr. No.	Name of the Topic	Scope of Syllabus
1	Differentiation	<ul style="list-style-type: none">● Derivatives of Composite functions.● Geometrical meaning of Derivative.● Derivatives of Inverse functions● Logarithmic Differentiation● Derivatives of Implicit functions.● Derivatives of Parametric functions.● Higher order Derivatives.
2	Applications of Derivatives	<ul style="list-style-type: none">● Applications of Derivatives to Tangents and Normals● Derivative as a rate measure● Approximations● Rolle's Theorem and Lagrange's Mean Value Theorem.● Increasing and Decreasing Functions● Maxima and Minima
3	Indefinite Integration	<ul style="list-style-type: none">● Definition and Properties● Different Techniques :<ol style="list-style-type: none">1. by substitution2. by parts3. by partial fraction
4	Definite Integration	<ul style="list-style-type: none">● Definite integral as limit of sum.● Fundamental theorem of integral calculus.● Methods of evaluation and properties of definite integral.

5	<p style="text-align: center;">Application of Definite Integration</p>	<ul style="list-style-type: none"> ● Area under the curve <ul style="list-style-type: none"> i. Area bounded by the curve, axis and given lines ii. Area between two curves.
6	<p style="text-align: center;">Differential Equation</p>	<ul style="list-style-type: none"> ● Differential Equation ● Order and degree of differential equation ● Formation of differential equation ● Solution of differential equation ● Types of differential equation. ● Application of differential equation.
7	<p style="text-align: center;">Probability Distribution</p>	<ul style="list-style-type: none"> ● Random variables ● Types of random variables ● Probability distribution of random variable. ● Discrete random variable ● Continuous random variable ● Probability mass function ● Probability density function ● Expected values and variance ● Cumulative distribution function
8	<p style="text-align: center;">Binomial Distribution</p>	<ul style="list-style-type: none"> ● Bernoulli Trial ● Binomial distribution ● Mean and variance of Binomial Distribution.