

SYLLABUS

MATHEMATICS – I(B)

FIRST YEAR

S.No.	TOPIC
	Prerequisites - Introduction
	0.1 Prerequisites
1	Locus
	Introduction
	1.1 Definition of Locus- Illustrations
	1.2 Equation of Locus-Problems connected to it
2	Transformation of Axes
	Introduction
	2.1 Transformation of axes-Rules, derivations and illustrations
	2.2 Rotation of axes-Derivations-Illustrations
3	The Straight Line - Introduction
	3.1 Revision of fundamental results
	3.2 Straight line- Normal form-Illustrations
	3.3 Straight line-Symmetric form
	3.4 Straight line-Reduction into various forms
	3.5 Intersection of two straight lines
	3.6 Family of straight lines-Concurrent lines
	3.7 Condition for Concurrent lines
	3.8 Angle between two lines
	3.9 Length of the perpendicular from a point to a line
	3.10 Distance between two parallel lines
	3.11 Concurrent lines- Properties related to a \triangle
4	Pair of Straight Lines - Introduction
	4.1 Equations of a pair of lines passing through the origin Angle between a pair of lines
	4.2 Condition for perpendicular and coincident lines, bisectors of angles
	4.3 Pair of bisectors of angles
	4.4 Pair- of lines – Second degree general equation
	4.5 Conditions for parallel lines- Distance between them, Point of intersection of pair of lines
	4.6 Homogenising a second degree equation with a first degree equation in x and y
5	Three Dimensional Coordinates - Introduction
	5.1 Coordinates
	5.2 Section formula
	5.3 Solved Problems
6	Direction Cosines and Direction Ratios - Introduction
	6.1 Direction cosines
	Direction ratios
7	The Plane - Introduction
	7.1 Cartesian equation of a plane- Simple illustrations
8	Limits and Continuity - Introduction

8.1 Intervals and neighbourhoods

8.2 Limits

8.3 Standard limits

8.4 Continuity

9 Differentiation - Introduction

9.1 Derivative of a function

9.2 Elementary properties

9.3 Trigonometric, Inverse Trigonometric, Hyperbolic, Inverse Hyperbolic Functions- Derivatives

9.4 Methods of differentiation

9.5 Second Order Derivatives

10 Applications of Derivatives Introduction

10.1 Errors and approximations

10.2 Geometrical interpretation of the derivative

10.3 Equations of tangent and normal to a curve

10.4 Lengths of tangent, normal, subtangent and subnormal

10.5 Angle between two curves and condition for orthogonality of curves

10.6 Derivatives as a rate of change

10.7 Rolle's Theorem and Lagrange's Mean Value Theorem

10.8 Increasing and Decreasing functions

10.9 Maxima and Minima