ANNUAL ACADEMIC PLAN – 2021 – 22

MATHEMATICS – I(B) FIRST YEAR

S.No.		TOPIC
	Prerequisites - Introduction	
	0.1	Prerequisites
1		**Locus**
		Introduction
	1.1	Definition of Locus- IIIustrations
	1.2	Equation of Locus-Problems connected to it
2	**Transformation of Axes**	
	Introduction	
	2.1	Transformation of axes-Rules,derivations and illustratiorts
	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 Valve Theorem
	10.8	Increasing and Decreasing functions
	10.9	Maxima and Minima