SYLLABUS 2021-2022

STD : 12 **SUBJECT : MATHEMATICS**

MONTH	TOTAL NUMBER OF UNITS	UNIT	CONTENT
JANUARY	2	**5. Two Dimensional Analytical Geometry-II**	5.1 Introduction(Theorem 5.1-5.5 without proof) 5.2 Circle 5.2.1 Equation of a circle in standard form 5.2.2 Equations of tangent and normal at a point P on a given circle(without proof) 5.2.3 Condition for the line $y = mx+c$ to be a tangent to the circle $x^2 + y^2 = a^2$ and finding the point of contact (without proof) 5.3 Conics 5.3.1 The general equation of a Conic 5.3.2 Parabola 5.3.3 Ellipse (Theorem 5.3.3-without proof) 5.3.4 Hyperbola (Theorem 5.3.4-without proof) 5.4 Conic Sections 5.4.1 Geometric description of conic section 5.4.2 Degenerate Forms 5.5 Parametric form of Conics 5.5.1 Parametric equations 5.6 Tangents and Normals to Conics 5.6.1 Equation of tangent and normal to the parabola $y^2 = 4ax$ (without proof) 5.6.2 Equations of tangent and normal to Ellipse and Hyperbola (without proof) 5.6.3 Condition for the line $y = mx+c$ to be a tangent to the conic sections (without proof) 5.7 Real life Applications of Conics 5.7.1 Parabola 5.7.2 Ellipse 5.7.3 Hyperbola 5.7.4 Reflective property of parabola 5.7.5 Reflective property of Ellipse (*All properties without proof)

JANUARY		**6. Applications of Vector Algebra**	6.1 Introduction (Theorems 6.1-6.23-without proof) 6.2 Geometric Introduction to Vectors 6.3 Scalar Product and Vector Product 6.3.1 Geometrical interpretation 6.3.2 Application of dot and cross products in plane Trigonometry 6.3.3 Application of dot and cross products in Geometry 6.3.4 Application of dot and cross product in Physics 6.4 Scalar triple product 6.4.1 Properties of the scalar triple product 6.5 Vector triple product 6.6 Jacobi's Identity and Lagrange's Identity 6.7 Application of Vectors to 3D Geometry 6.7.1 Different forms of equation of a straight line 6.7.2 A point on the straight line and the direction of the straight line are given 6.7.3 Straight Line passing through two given points 6.7.4 Angle between two straight lines 6.7.5 Point of intersection of two straight lines 6.7.6 Shortest distance between two straight lines 6.8 Different forms of Equation of a plane 6.8.1 Equation of a plane when a normal to the plane and the distance of the plane from the origin are given 6.8.2 Equation of a plane perpendicular to a vector and passing through a given point 6.8.3 Intercept form of the equation of a plane 6.8.4 Equation of a plane passing through three given non-collinear points 6.8.5 Equation of a plane passing through a given point and parallel to two given non-parallel vectors. 6.8.6 Equation of a plane passing through two given distinct points and is parallel to a non-zero vector 6.8.7 Condition for a line to lie in a plane 6.8.8 Condition for coplanarity of two lines 6.8.10 Angle between two planes 6.8.11 Angle between a line and a plane 6.8.12 Distance of a point from a plane 6.8.13 Distance between two parallel planes (*All properties without proof)

FEBRUARY	2	**7. Applications of Differential Calculus**	7.1 Introduction 7.1.1 Early Developments 7.2 Meaning of Derivatives 7.2.1 Derivative as slope 7.2.2 Derivative as rate of change 7.2.3 Related rates 7.2.4 Equations of Tangent and Normal 7.2.5 Angle between two curves 7.5 Indeterminate Forms 7.5.1 A Limit Process 7.5.2 The l'Hôpital's Rule 7.5.3 Indeterminate forms $0/0, \infty/\infty, 0 \times \infty, \infty - \infty$ 7.6 Applications of First Derivative 7.6.1 Monotonicity of functions 7.6.2 Absolute maxima and minima 7.6.3 Relative Extrema on an Interval 7.6.4 Extrema using First Derivative Test 7.7 Applications of Second Derivative 7.7.1 Concavity, Convexity, and Points of Inflection 7.7.2 Extrema using Second Derivative Test 7.8 Applications in Optimization (*All properties without proof)
		8. Differentials and Partial Derivatives	8.1 Introduction 8.2 Linear Approximation and Differentials 8.2.2 Errors: Absolute Error, Relative Error, and Percentage Error 8.2.3 Differentials (*All properties without proof)