

The Maharaja Sayajirao University of Baroda
Polytechnic
Diploma in Electronics & Communication Engg.
(HPP)

ACADEMIC YEAR
2021-22

Year	I	APPLIED MATHEMATICS-I (AMT3117)	Lecture /Tutorial Hrs per week	4/2
Semester	I		Max marks	100

Pre-Requisite: 10th Standard Mathematics

CO1	Solve examples based on the basic elements of Algebra viz., Logarithms, Partial Fractions, Quadratic equations, progressions and binomial theorem and complex numbers.
CO2	Recall and solve examples based on Trigonometry and the properties of triangles.
CO3	Solve and apply the basic concepts of two-dimensional co-ordinate geometry viz., straight line and circle.
CO4	Evaluate the limits and examine the continuity at a point of functions of one variable. Solve examples of finding derivatives of functions of one variable using appropriate methods.
CO5	Solve examples to apply the process of differentiation in various practical problems.

BT	1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation
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COURSE CONTENT/SYLLABUS

Unit	Unit Name	Hrs	Weightage	CO
1	<u>Algebra:</u> Logarithm-Introduction, Rules of logarithm and Examples. Partial fractions: Introduction, Proper and Improper fraction Quadratic Equations: Nature of roots of quadratic equations Binomial Theorem: Introduction, Development of Binomial expansion	8	13	CO1
2	<u>Trigonometry:</u> (Trigonometric functions as circular functions), Addition and Factor formula, Trigonometric functions of multiple and submultiples angles. Introduction of inverse trigonometric functions. Properties of Triangle: Sine formula, Cosine formula, Projection formula, Napier's analogy, Half-Angle formulae	12	20	CO2
3	<u>Co-ordinate Geometry :</u> Line, Inclination and slope of a line, different forms of equations to a straight line (i) Slope-intercept form (ii) Point-slope form (iii) Two-point form (iv) Intercept-form. General equation of a Straight line, Family of lines. Conditions for concurrency of lines. Circle, Definition, Equation of a circle with given center and radius, General form of equation of circle, Equation of a circle when intercepts are given, circle passing through three points, Equation of chord, Equations of tangents and normal at a point on a circle	10	17	CO3
4	<u>Complex Numbers:</u> Definition, operation, properties, Cartesian and polar forms, De'Moivers theorem and its application	6	5	CO1
5	<u>Functions, Limits, and Continuity :</u> Concept of Limit, Standard Limit, different methods to evaluate limits and Continuity of function of one variable <u>Differentiation:</u> Definition of derivative, differentiation of standard functions by first	16	30	CO4

	principle, Rules of Differentiation, Differentiation of algebraic, trigonometric, Exponential, Logarithmic, Implicit functions and Composite functions, Higher order derivatives, Leibnitz's Theorem.			
6	<u>Applications of differentiation:</u> Geometrical interpretation of the derivative, Tangent and Normal, Maxima and Minima, Approximate value, Radius of Curvature	8	15	CO5
		60	100	

REFERENCE BOOKS:

1.	Elementary Engineering Mathematics For I & II Semesters of B. Tech. and Diploma Courses by B. S. Grewal, Khanna Publishers, Delhi (2015)
2.	Mathematics for Polytechnic students By S. P. Deshpande (For Diploma Students), Pune Vidyarthi Gruha Prakashan
3.	Calculus and Analytic Geometry by G. B. Thomas, R. L. Finney, Narosa Publishing House, Delhi (Sixth Edition,1998)
4.	A textbook of Engineering Mathematics by N .P. Bali, Laxmi Publications(2016)
5.	Integral Calculus by Shanti Narayan, Dr. P.K.Mittal, S.Chand Publications (35th Edition,2005)