Discipline: Electrical /Cse/Mechanical/Civil	Semester: 1ˢᵗ	Name Of The Teaching Faculty: Debi Prasad Tripathy
Subject: Mathematics-1	No. Of Days/Week Class Allotted: 4	No. Of Weeks:15 Date :06/08/2025 to Date: 04/12/2025
Week	Class Day	Theory Topics
	1	Introduction to angles; types of angles
	2	Measurement of angles: Degrees, Gradians, Radians
1	3	Conversions between Degrees, Gradians, and Radians
	4	Introduction to Trigonometric Ratios
	1	T-Ratios of Allied Angles (without proof)
	2	Sum and Difference Formulas (without proof)
2	3	Applications of Sum and Difference Formulas
	4	Product to Sum/Difference Formulas
	1	T-Ratios of Multiple Angles
	2	T-Ratios of Sub-Multiple Angles (2A, 3A, A/2)
3	3	Graphs of Sin x, Cos x, Tan x
	4	Properties of Trigonometric Graphs
	1	Review of Trigonometric Concepts
	2	Practice Problems on Trigonometry
4	3	Introduction to Functions
	4	Concept of Limits
	1	Four Standard Limits
5	2	$\lim_{x \to a} \dfrac{x^n - a^n}{x - a} = na^{n-1}$ $\lim_{x \to 0} \dfrac{sinx}{x} = 1$
	3	Problems on above limits
	4	$\lim_{x \to 0} \dfrac{a^x - 1}{x} = \ln a = \log_e a$ $\lim_{x \to a}(1 + x)^{\frac{1}{x}}$
	1	Problems on above limits
	2	Revision on limits
6	3	Definition of Derivative
	4	Differentiation of e^x
	1	Differentiation of sin x, cos x
	2	Differentiation of Polynomial Functions
7	3	Examples and problems on above functions
	4	Product Rule and Quotient Rule
	1	Examples and problems on Product Rule and Quotient Rule
8	2	Chain Rule with examples
	3	Differentiation of Inverse Trigonometric Functions

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	4	Logarithmic Differentiation
	1	Differentiation of Exponential Functions
9	2	Problems on logarithmic and exponential derivatives
	3	Review of Differential Calculus Concepts
	4	Practice Problems on Differentiation
	1	Unit II Summary and Review
10	2	**Introduction to Complex Numbers**
	3	Real and Imaginary Parts of Complex Numbers
	4	Operations on Complex Numbers
	1	Conjugate, Modulus, and Amplitude
11	2	Polar and Cartesian Representation
	3	Problems on polar and cartesian form conversion
	4	De Moivre's Theorem and Applications
	1	Problems on De Moivre's Theorem
12	2	Introduction to Partial Fractions
	3	Resolving Proper Fractions
	4	Resolving Improper Fractions
	1	Problems on partial fractions with examples
13	2	Introduction to Permutations and Combinations
	3	Value of nPr and nCr
	4	Problems on nPr and nCr with examples
	1	Introduction to Binomial Theorem
14	2	Binomial Theorem for Positive Integral Index
	3	Problems on Binomial theorem
	4	Binomial Theorem for Positive Integral Index
	1	Problems and examples on Binomial Theorem
15	2	First and Second Binomial Approximations
	3	Applications of Binomial Theorem in Engineering
	4	Summary and review on Permutation and Combination

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