

PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH



LESSON PLAN Session-2022-2023

Discipline: Electrical Engg. Semester: 3rd

Name of the Teaching Faculty: Mr Shubhanshu Kumar Sahu

Subject: Engg. Math - III No. of Days/per week class allotted 4

Semester From Date: 15.9.22 To Date: 22.12.22 No. of Weeks: 15

Week	Class Day	Theory / Practical Topics
1st	1	Complex Numbers (Define Real and Imaginary numbers), Integral power of i
	2	Algebraic Operations with Complex numbers (Addition, Subtraction, Multiplication and Division)
	3	Conjugate, Modulus and Amplitudes of a Complex numbers
	4	Geometrical Representation of Complex numbers and square roots of a complex numbers
2nd	1	cube roots of unity and their properties
	2	De Moivre's Theorem and solve Problems
	3	Basic concepts and Rank of matrix
	4	Elementary row transformation to determine Rank of matrix
3rd	1	State Rouché's Theorem for consistency of a system of linear equations in n unknowns
	2	Linear equations in three unknowns testing consistency
	3	Linear Differential Equation, Homogeneous and Non-homogeneous diff. equ ⁿ s with constant coefficients
	4	General solution of linear diff. equ ⁿ s in terms of C.F. and P.I.

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Dt. 12. 2022

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Week	Class Day	Theory / Practical Topics
4th	1	Rules of finding C.F. and P.I. in terms of Operator D
	2	Solve Problems
	3	Solve Problems
	4	Solve Problems
5th	1	Partial diff. equ ⁿ s by eliminating arbitrary constants and eliminating arbitrary functions
	2	Partial diff. equ ⁿ s of the form $Pp + Qq = R$
	3	Solve Problems
	4	Solve Problems
6th	1	Gamma Function, $\Gamma(n+1)$ and find $\Gamma(1/2)$
	2	Laplace Transformation of a function $f(t)$ and transforms of elementary functions
	3	Linearity, shifting and change of scale property of Laplace Transform
	4	Laplace transforms of derivatives

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Week	Class Day	Theory/Practical Topics
7th	1	Solve Problems
	2	Laplace Transforms of Integrals
	3	Multiplication by t^n
	4	Division by t
8th	1	Evaluation of Integrals by Laplace Transforms
	2	Solve Problems
	3	Formulae of inverse Laplace transforms (Method of Partial fractions)
	4	Solve Problems
9th	1	Appraise limitation of analytical methods of solution of Algebraic Equations
	2	Derive Iterative formulae for finding the solutions of Algebraic Equations by
	3	a) Bisection Method and solve Problems
	4	b) Newton-Raphson Method and Solve Problems

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Week	Class Day	Theory/Practical Topics
10th	1	Finite differences and form table of forward with example
	2	and backward difference with example
	3	Factorial Notation and solve Problems
	4	Define shift operator (E) and establish relation between E and difference operator (Δ)
11th	1	Derive Newton's forward and backward interpolation formula for equal intervals
	2	Solve Problems
	3	Solve Problems
	4	Solve Problems
12th	1	Inverse interpolation (Lagrange's interpolation formulae for unequal intervals)
	2	Solve Problems
	3	Numerical Integration a) Newton's Cote's formulae
	4	b) Trapezoidal Rule and c) Simpson's $\frac{1}{3}$ Rule and solve Problems

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Week	Class Day	Theory /Practical Topics
13th	1	Define periodic functions
	2	Euler's formulae (state and solve Problems)
	3	Solve Problems
	4	Solve Problems
14th	1	Dirichlet's conditions for a Fourier expansion
	2	Obtain Fourier series of continuous functions and functions having points of discontinuity and solve Problems
	3	Solve Problems
	4	Change of Intervals and solve Problems
15th	1	Solve Problems
	2	Define odd and even functions with examples
	3	Solve Problems
	4	Solve Problems

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Dt. 12/2022