

Discipline: ELECTRICAL ENGG.	Semester: THIRD SEMESTER	Name of the Teaching Faculty: ASISH SHARMA LECTURER IN MATHEMATICS
Subject: ENGG. MATH-III	No. of Days/per week class allotted: 04 DAYS	Semester From Date: 16/09/2022 To Date:20/01/2023 No. of Weeks: 15 WEEKS
Week	Class Day	Theory/Practical Topics
01	01	COMPLEX NUMBERS:- Real and Imaginary numbers. Complex numbers, conjugate complex numbers, Modulus and Amplitude of a complex number & Solving related problems.
	02	Geometrical Representation of Complex Numbers
	03	Properties of Complex Numbers & Solving related problems.
	04	Determination of three cube roots of unity and their properties
02.	05	De Moivre's theorem & Solving related problems.
	06	DOUBT CLEARING SESSION AND QUIZ
	07	Matrices:- Define rank of a matrix
	08	Perform elementary row transformations to determine the rank of a matrix
03.	09	State Rouche's theorem for consistency of a system of linear equations in 'n' unknowns.
	10	Solve equations in three unknowns testing consistency & problems based on it.
	11	Ordinary Differential Equations:- Defining Homogeneous and Non - Homogeneous Linear Differential Equations with constant coefficients with examples & order & degree of a ODE.
	12	Find general solution of linear Differential Equations in terms of C.F. and P.I. & solving related example.
04.	13	Discussing rules for finding C.F. And P.I. in terms of operator D , where $f(x) = e^{ax}, \cos ax, \sin ax$
	14	Discussing rules for finding C.F. And P.I. in terms of operator D , where $f(x) = x^n, n = 1, 2, 3$
	15	Discussing rules for finding C.F. And P.I. in terms of operator D , where $f(x) = v(x), v$ is any function in x .
	16	Partial Differential Equations:- Defining partial differential equation (P.D.E) & finding order & degree of a PDE.
05.	17	Formation partial differential equations by eliminating arbitrary constants and arbitrary functions
	18	Solving partial differential equations of the form $Pp + Qq = R$ (Lagrange's method).
	19	Solving partial differential equations of the form $Pp + Qq = R$ (Lagrange's method).
	20	CLASS TEST -I covering unit -1 to 3.
06.	21	Laplace Transforms:- Defining Gamma Functions, establishing relation between gamma and beta functions.

	22	Finding the value of Gamma $(1/2)$ value & discussing various formula of gamma function.
	23	Define Laplace Transform of a function & establish LT of various functions.
	24	Deriving L.T. of standard functions and explain existence conditions of L.T.
07.	25	Explaining linear, shifting property of L.T & solving related examples
	26	Formulate L.T. of derivatives, integrals, multiplication by and division by t.
	27	Defining Inverse Laplace Transformation.
	28	Derive formulae of inverse L.T. and explain method of partial fractions & solving examples.
08.	29	Explaining method of partial fractions & using partial fraction method finding ILT
	30	Solving previous semester questions related ILT.
	31	Solving Ordinary differential equation by Inverse Laplace Transformation.
	32	Class Test covering Unit -4.
09.	33	Fourier Series:- Discussing periodic functions ,odd & even functions & various example of these function.
	34	Discussing definite integrations & properties.
	35	Discussing Dirichlet's condition for the Fourier expansion of a function and it's convergence.
	36	Expressing periodic function satisfying Dirichlet's conditions as a Fourier series.
10.	37	Defining Euler's formulae & how to find Euler's Co-efficients & solving examples.
	38	Finding the Fourier Series of an even function in different intervals & solving examples.
	39	Finding the Fourier Series of an Odd function in different intervals & solving examples.
	40	Finding the Fourier Series of a Continuous function in different intervals & solving examples.
11.	41	Finding the Fourier Series of any function with discontinuity & solving examples.
	42	Solving Previous semester question paper.
	43	Quiz Test covering Unit 4 & 5.
	44	Class Test covering unit-5 only.
12.	45	Numerical Methods:- Discussions of limitation of analytic methods for finding solution of Algebraic equation.
	46	Formation of Iterative formula for various functions
	47	Finding approximate numerical solution of algebraic function by Bisection methods & Newton- Raphson method.
	48	Solving the example related to above method & previous semester question paper.
13.	49	Finite difference and interpolation :- Explaining finite difference & various difference operators.
	50	Formulating of backward & forward difference table.

	51	Defining Shift operator, Relating E & ∇ & Δ .
	52	Explaining Newton's forward interpolation formula for equal intervals & solving examples
14.	53	Explaining Newton's backward interpolation formula for equal intervals & solving examples
	54	Explaining Lagrange's interpretation formula for unequal intervals & solving examples
	55	Solving Previous semester question related to Interpolation
	56	Explaining the numerical integration and Newton-Cotes formula.
15.	57	Numerical integration by Trapezoidal method & Simpson 1/3 rd Rule.
	58	Solving problems related to numerical Integration.
	59	Class Test (Covering units of 6-7)
	60	Semester Mock Test

— Asish Sharma
23/12/2022

(ASISH SHARMA)

LECTURER IN MATH.