

PNS SCHOOL OF ENGINEERING AND TECHNOLOGY

Branch: Electrical & ETC Engg.	Semester: 3 rd	Name of the Lecturer: Sunakar Singh
Subject: Engg. Math III	No of Classes Alloted in a Week: 6	Duration of Semester: 01.08.2023 - 30.11.2023
Week	Class Day	Theory / practical Topic
1st	1	Real and imaginary numbers, complex number, conjugate, modulus, reciprocal, equality of a complex number.
	2	Argument and geometrical representation of a complex number, properties of complex number.
	3	Problems on above
	4	Cube roots of unity & their properties, problems on it.
	5	De Moivre's theorem & its application, problems on it.
	6	Problems on above.
2nd	1	Rank of a matrix, Elementary row transformation to determine rank
	2	Rouche's theorem to test consistency of a system of linear equation, problems on above
	3	Problems on above
	4	Problems on above
	5	Introduction to differential equation, Linear differential equation (LDE) & its general form. Homogeneous and non homogeneous LDE with constant coefficients.
	6	Differential operator D and symbolic representation of LDE, General solution of LDE in terms of C.F and P.I, Inverse operator
3rd	1	Rules for finding C.F
	2	Rules for finding P.I
	3	Problems on above
	4	Problems on above
	5	Partial Differential equation (PDE), Formation of PDE by eliminating arbitrary constants or function
	6	Problems on above
4th	1	Procedure to solve PDE of the form $Pp + Qq = R$ and problems
	2	Problems on above
	3	Gamma function, deduction on Gamma function
	4	Deduction of Gamma function and problems
	5	Laplace transform (LT), Condition of existence of LT, Linearity property of LT, Inverse LT
	6	LT of standard functions
5th	1	LT of standard functions, unit step function and its LT
	2	Shifting property, LT of derivatives, integral, multiplication by t^n , Division by t
	3	Problems on above.
	4	Problems on above
	5	Standard formula for inverse LT
	6	Method of partial fraction, problems
6th	1	Problems on above
	2	Problems on above
	3	Periodic function, even and odd function
	4	Problems on above
	5	Dirichlet's condition for Fourier expansion of a function and its convergence.
	6	Fourier series of function and Euler's formula
7th	1	Problems on above
	2	Problems on above
	3	Fourier series of function having point of discontinuity in the interval $[0, 2\pi]$ and $[-\pi, \pi]$
	4	Problems on above
	5	Problems on above
	6	Fourier series of even and odd function in the interval $[0, 2\pi]$ and $[-\pi, \pi]$

8th	1	Problems on above
	2	Problems on above
	3	Rules for rounding a number, Limitation of Analytical methods of solution of Algebraic equation
	4	Iterative methods for finding solutions of Algebraic equations by Bisection and Newton-Raphson method
	5	Some recurrence formula and problems on above
	6	Problems on above
9th	1	Finite difference and types of finite difference, shift operator (E)
	2	Forward and backward difference operator
	3	Difference of polynomial and problems
	4	Factorial notation and problems
	5	Relation between shift operator and forward difference operator
	6	Problems on above
10th	1	Interpolation, Newton's forward and backward interpolation formula for equal intervals
	2	Lagrange's interpolation formula for unequal intervals
	3	Problems on above
	4	Numerical integration, Newtoncote's formula
	5	Trapezoidal rule, Simpsons $1/3^{\text{rd}}$ rule
	6	Problems on above

Signature of the
Lecturer

Signature of the
H.O.D