LESSON PLAN FOR WINTER SEMESTER(2020-21)

Discipline : 3rd semester (Electrical & ETC)
Name of the Faculty: SAMIRA KUMAR PATHI (Lect. in Mathematics)

Subject: Engg. Mathematics-3	**4 therory classes per week**	**From: 01.09.2020 To: 31.12.2021 No. of Weeks: 15 Total no. periods : 60 theory**	
Week	**Class Day**	**Theory**	**Range**
1st	1st	**Complex Numbers** 1.1 Real and Imaginary numbers	01.09.2020 to 07.09.2020
	2nd	1.2 Complex numbers, conjugate complex numbers, Modulus and Amplitude of a complex number	
	3rd	1.3 Geometrical Representation of Complex Numbers.	
	4th	1.4 Properties of Complex Numbers	
2nd	1st	1.5 Determination of three cube roots of unity and their properties.	08.09.2020 to 14.09.2020
	2nd	1.6 De Moivre's theorem	
	3rd	1.6 De Moivre's theorem	
	4th	**Matrices** 2.1. Define rank of a matrix.	
3rd	1st	2.2. Perform elementary row transformations to determine the rank of a matrix.	15.09.2020 to 21.09.2020
	2nd	2.3. State Rouche's theorem for consistency of a system of linear equations in unknowns.	
	3rd	2.4. Solve equations in three unknowns testing consistency.	
	4th	2.4. Solve equations in three unknowns testing consistency.	
4th	1st	**Linear Differential Equations** 3.1. Define Homogeneous and Non – Homogeneous Linear Differential Equations with constant coefficients with examples	22.09.2020 to 28.09.2020
	2nd	3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I.	
	3rd	3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I.	
	4th	3.3. Derive rules for finding C.F. And P.I. in terms of operator D	
5th	1st	3.3. Derive rules for finding C.F. And P.I. in terms of operator D	29.09.2020 to 05.10.2020
	2nd	3.3. Derive rules for finding C.F. And P.I. in terms of operator D	
	3rd	3.4 Define partial differential equation (P.D.E)	
	4th	3.5. Form partial differential equations by eliminating arbitrary constants and arbitrary functions.	

6th	1st	3.6. Solve partial differential equations of the form Pp + Qq = R	06.10.2020 to 12.10.2020
	2nd	3.6. Solve partial differential equations of the form Pp + Qq = R	
	3rd	3.6. Solve partial differential equations of the form Pp + Qq = R	
	4th	**4. Laplace Transforms** 4.1. Define Gamma function	
7th	1st	4.2. Define Laplace Transform of a function and Inverse Laplace Transform	13.10.2020 to 19.10.2020
	2nd	4.3. Derive L.T. of standard functions and explain existence conditions of L.T.	
	3rd	4.4. Explain linear, shifting property of L.T	
	4th	4.4. Explain linear, shifting property of L.T	
8th	1st	4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t .	02.11.2020 to 08.11.2020
	2nd	4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t .	
	3rd	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	
	4th	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	
9th	1st	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	09.11.2020 to 15.11.2020
	2nd	4.6. Derive formulae of inverse L.T. and explain method of partial fractions	
	3rd	**5. Fourier Series** 5.1. Define periodic functions.	
	4th	5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence	
10th	1st	5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence	16.11.2020 to 22.11.2020
	2nd	5.3. Express periodic function f(x) satisfying Dirichlet's conditions as a Fourier series	
	3rd	5.4. State Euler's formulae	
	4th	5.4. State Euler's formulae	
11th	1st	5.5. Define Even and Odd functions and find Fourier Series	23.11.2020 to 29.11.2020
	2nd	Obtain F.S of continuous functions and functions having points of discontinuity	
	3rd	Obtain F.S of continuous functions and functions having points of discontinuity	
	4th	Obtain F.S of continuous functions and functions having points of discontinuity	

12th	1st	**6. Numerical Methods** 6.1. Appraise limitation of analytical methods of solution of Algebraic Equations	30.11.2020 to 06.12.2020
	2nd	6.2. Derive Iterative formula for finding the solutions of Algebraic Equations by : 6.2.1. Bisection method	
	3rd	6.2.2. Newton- Raphson method	
	4th	**7. Finite difference and interpolation** 7.1. Explain finite difference and form table of forward and backward difference	
13th	1st	7.2. Define shift Operator and establish relation between & difference operator .	07.12.2020 to 13.12.2020
	2nd	7.2. Define shift Operator and establish relation between & difference operator .	
	3rd	7.3. Derive Newton's forward and backward interpolation formula for equal intervals.	
	4th	7.3. Derive Newton's forward and backward interpolation formula for equal intervals.	
14th	1st	7.4. State Lagrange's interpretation formula for unequal intervals.	14.12.2020 to 20.12.2020
	2nd	7.4. State Lagrange's interpretation formula for unequal intervals.	
	3rd	7.5 Explain numerical integration and state: 7.5.1. Newton's Cote's formula.	
	4th	7.5 Explain numerical integration and state: 7.5.1. Newton's Cote's formula.	
15th	1st	7.5.2. Trapezoidal rule.	21.12.2020 to 27.12.2020
	2nd	7.5.2. Trapezoidal rule.	
	3rd	7.5.3. Simpson's 1/3rd rule	
	4th	7.5.3. Simpson's 1/3rd rule	