ACADEMIC LESSON PLAN OF ENGG.MATH-III 2024(WINTER)
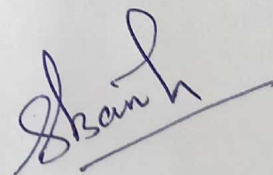
Subject: Engg. Math-III

Bramch-ETC

Discipline	Name of teaching faculty: Smt. Smita Rani Barik,Lect.Math.	
Subject-Engg.Mathematics - III(Th-1)	Semester from date: 01.07.2024 to 08.11.2024 No.of Week:19	
Week	Class Day	Theory Topics
1st	1st	1.1 Real and Imaginary numbers. 1.2 Complex numbers, conjugate complex numbers, Modulus and Amplitude of a complex number
	2nd	1.3 Geometrical Representation of Complex Numbers. 1.4 Properties of Complex Numbers.
	3rd	1.5 Determination of three cube roots of unity andtheir properties with examples .
	4th	1.6 De Moivre's theorem
2nd	1st	More problems on De Moivre's theorem 1.7 discussion on above topics
	2nd	TEST of chapter-complex no.
	3rd	2.1. Define rank of a matrix. 2.2. Perform elementary row transformations to determine the rank of a matrix.
	4th	2.3. State Rouche's theorem for consistency of a system of linear equations in n unknowns with solving some examples
3rd	1st	2.4. Solve equations in three unknowns testing consistency
	2nd	2.5. Solve problems on above

	3rd	3.1. Define Homogeneous and Non – Homogeneous Linear Differential Equations with constant coefficients with examples
4th	1st	3.2. Find general solution of linear Differential Equations in terms of C.F. and P.I.
	2nd	3.3. Derive rules for finding C.F
	3rd	3.3. Derive rules for P.I. in terms of operator D, excluding $\frac{1}{f(D)} x^n$
	4th	Derive rules for P.I. in terms of operator D, excluding $\frac{1}{f(D)} x^n$
5th	1st	More examples on above
	2nd	3.4. Define partial differential equation (P.D.E)
	3rd	3.5. Form partial differential equations by eliminating arbitrary constants and arbitrary functions.
6th	1st	3.6.to solve partial differential equations of the form Pp+Qq=R 3.7. to solve problems on above
	2nd	Test on chapter- Differential equation
	3rd	4.1. Define Gamma function and problems
7th	1st	4.2. Define Laplace Transform of a function $f(t)$ and Inverse Laplace Transform and examples
	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	4.5. Formulate L.T. of derivatives, integrals, multiplication by t^n and division by t.
8th	1st	More examples on 4.5
	2nd	More examples on 4.5
9th	1st	4.6. Derive formulae of inverse L.T. and explain method of partial fractions. More examples on 4.6

	2nd	4.6. Derive formulae of inverse L.T. and explain method of partial fractions. More examples on 4.6
	3rd	4.7 -problem solving on above topics More examples from laplace transformation
10th	1st	Test on chapter -Laplace Transformation
	2nd	5.1. Define periodic functions. 5.2. State Dirichlet's condition for the Fourier expansion of a function and it's convergence
	3rd	5.3. Express periodic function $f(x)$ satisfying Dirichlet's conditions as a Fourier series
	4th	Explanation on 5.2 and 5.3
11th	1st	5.4. State Euler's formulae.
	2nd	5.5. Define Even and Odd functions and find Fourier Series in $0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi$
	3rd	Examples of 5.5
	4th	Problem solving and more examples of 5.5
12th	1st	5.6. Obtain F.S of continuous functions and functions having points of discontinuity in $0 \leq x \leq 2\pi$ and $-\pi \leq x \leq \pi$
	2nd	More examples on the above topic
	3rd	5.7. Solve problems on the above topic
	4th	Solve problems on the above topic
13th	1st	Test on the chapter-Fourier series
	2nd	6.1. Appraise limitation of analytical methods of solution of Algebraic Equations.
	3rd	6.2. Derive Iterative formula for finding the solutions of Algebraic Equations by : 6.2.1. Bisection method
	4th	6.2.2. Newton- Raphson method
14th	1st	6.3. solve problems on the above topic
	2nd	Test on the chapter-NUMERICAL METHODS

	3rd	7.1. Explain finite difference and form table of forward and backward difference
	4th	7.2. Define shift Operator(E) and establish relation between E & difference operator Δ .
15th		DURGA PUJA HOLIDAY
16th	1st	7.3. Derive Newton's forward and backward interpolation formula for equal intervals.
	2nd	More Examples on 7.3
	3rd	More Problems on the above topic
	4th	Test on above topic
17th	1st	7.4. State Lagrange's interpretation formula for unequal intervals.
	2nd	7.5. Explain numerical integration and state: 7.5.1. Newton's Cote's formula.
	3rd	7.5.2. Trapezoidal rule.
	4th	More examples on Trapezoidal Rule
18th	1st	7.5.3. Simpson's 1/3rd rule
	2nd	More examples on Simpson's 1/3rd rule
	3rd	Test on chapter -Finite Difference and Interpolation
	4th	Revision and previous year question paper discussion

Signature of faculty