Ganapati Institute of Engineering & Technology, Cuttack

Department of Mathematics and Science

LESSON PLAN

Academic Session: 2025-26(Winter)

Semester: 1st SEM

Branch: CIVIL,

ELECTRICAL, ETC

Subject:Mathematics

Prepared by: RAMAKANTA BEHERA

Discipline: CIVIL ELECTRICAL ETC	Name Of The Teaching Faculty: APARNA TRIPATHY (Faculty In Mathematics)	
Subject: Mathematics	Semester From: Date:06/08/2025 to 06/12/2025	
Week	**Class Days**	**Theory Topics**
1st	1.	a)**Introduction & Syllabus discussion**
	2.	**UNIT-I: Trigonometry**: Concept of angles. Measurement of angles in degrees, grades and radians and their conversions. T-Ratios of Allied angles(without proof)
	3.	Problem based on previous class
	4.	Book exercise practice
2ND	5.	Sum, difference formulae and their applications (without proof).
	6.	Product formulae (Transformation of product to sum, difference and vice versa).
	7.	Problem based on previous class
	8.	Book exercise practice
3RD	9.	Problems workout on above topic.
	10.	T-Ratios of multiple angles, sub-multiple angles(2A,3A,A/2).
	11.	Problem based on previous class.
	12.	Graphs of sinx, cosx, tanx and e^x
4TH	13.	Book exercise practice.
	14.	Problems based on trigonometry.
	15.	Book examples workout.
	16.	**Class test-1**
5TH	17.	**UNIT-II**: Differential Calculus Definition of function; Concept of limits.

	18.	Four standard forms of limit: **Type-1:** $\lim_{x\to a}\frac{x^n-a^n}{x-a}=na^{n-1}$
	19.	Problems based on type-1
	20.	**Type -2:** $\lim_{x\to 0}\frac{sinx}{x}=1$
6TH	21.	Problem based on type -1.
	22.	Type -3:
	23.	Problem based on type-3
	24.	**Type -4:** $\lim_{x\to 0}(1+x)^{\frac{1}{x}}=e$
7TH	25.	Problems based on type 4
	26.	Differentiation by definition of $x\,n$, sin θ, cos θ,
	27.	Differentiation by definition of tan θ , $e\,x$, log$a$
	28.	Problem based on previous class.
8TH	29.	Logarithmic differentiation, Exponential functions.
	30.	Problem based on previous class.
	31.	Book exercise practice.
	32.	Doubt clearing class.
9TH	33.	**Classtest-2**
	34.	**UNIT - III: Complex Numbers** : imaginary Unity √i, Algebra Complex Numbers
	35.	Definition and theory discussion.
	36.	Real and imaginary parts of a Complex number.
10TH	37.	Book Examples workout.
	38.	Polar and Cartesian representation of a complex number and its conversion from one form to other.

	39.	Book examples practice.
	40.	Problem based on it.
11TH	41.	Conjugate, modulus, amplitude of a complex number. Theory discussion.
	42.	Problem based on it.
	43.	Book examples practice.
	44.	Addition, Subtraction, Multiplication and Division of a complex number.
12TH	45.	Book examples practice.
	46.	Problem based on it.
	47.	De-movier's theorem, its application. Problems practice.
	48.	Problem based on it.
13TH	49.	Book exercise practice.
	50.	**Partial fractions**: Definition of polynomial fraction. Proper & improper fractions .
	51.	Definition of partial fractions.
	52.	Problems practice.
14TH	53.	To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors.
	54.	Problem based on it.
	55.	Repeated linear factors and irreducible non-repeated quadratic factors.
15TH	56.	Problem based on it.
	57.	To resolve improper fraction into partial fraction.
	58.	Problem based on it.

	59.	Book exercise practice.
16TH	60.	**Permutations and Combinations:** Value of npr and nCr.
	61.	Examples practice based on above.
	62.	**Binomial theorem:** Binomial theorem (without proof) for positive integral index (expansion and general form)
	63.	Binomial theorem for any index (expansion without proof)
17TH	64.	Problem based on it.
	65.	First and second binomial approximation with applications to engineering problems.
	66.	Problem based on it.
	67.	Book exercise practice.
18TH	68.	**Classtest-3**
	69.	MOCK TEST
	70.	MOCK TEST
	71.	VST

References:

- Mathematics-I by Dr. Deepak Singh (Download from https://ekumbh.aicteindia.org/dbook.php)
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi, 40th Edition, 2007.
- G. B. Thomas, R. L. Finney, Calculus and Analytic Geometry, Addison Wesley, 9 th Edition, 1995.
- Reena Garg, Engineering Mathematics, Khanna Publishing House, New Delhi (Revised Ed. 2018)
- V. Sundaram, R. Balasubramanian, K.A. Lakshminarayanan, Engineering Mathematics, 6/e., Vikas Publishing House.
- Reena Garg & Chandrika Prasad, Advanced Engineering Mathematics, Khanna Publishing House, New Delhi

28/7/24

Sign. Of Teaching Faculty

28/7/24

Sign. Of Sr. Lecturer

Sr. Lecturer
Math & Science
G.I.E.T (Poly), Jagatpur, Ctc

28/7/24

Sign. Of PRINCIPAL
GIET (POLYTECHNIC)

Principal
GIET (Polytechnic)
Jagatpur, Cuttack