

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
1 st	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
2 ND	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
3 RD	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 $\sin x$, $\cos x$, $\tan x$ and e^x
4 TH	13.	Book exercise practice.
	14.	Problems based on trigonometry.
	15.	Book examples workout.
	16.	Class test-1
5 TH	17.	UNIT-II: Differential Calculus Definition of function; Concept of limits.

	18.	Four standard forms of limit: Type-1: $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = na^{n-1}$
	19.	Problems based on type-1
	20.	Type -2: $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$
6 TH	21.	Problem based on type -1.
	22.	Type -3:
	23.	Problem based on type-3
	24.	Type -4: $\lim_{x \rightarrow 0} (1 + x)^{\frac{1}{x}} = e$
7 TH	25.	Problems based on type 4
	26.	Differentiation by definition of x^n , $\sin \theta$, $\cos \theta$,
	27.	Differentiation by definition of $\tan \theta$, e^x , $\log a$ ♦
	28.	Problem based on previous class.
8 TH	29.	Logarithmic differentiation, Exponential functions.
	30.	Problem based on previous class.
	31.	Book exercise practice.
	32.	Doubt clearing class.
9 TH	33.	Classtest-2
	34.	UNIT - III: Complex Numbers : imaginary Unity $\sqrt{-1}$, Algebra Complex Numbers
	35.	Definition and theory discussion.
	36.	Real and imaginary parts of a Complex number.
10 TH	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.
11 TH	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.
12 TH	45.	Book examples practice.
	46.	Problem based on it.
	47.	De-moivre's theorem, its application. Problems practice.
	48.	Problem based on it.
13 TH	49.	Book exercise practice.
	50.	Partial fractions: Definition of polynomial fraction. Proper & improper fractions .
	51.	Definition of partial fractions.
	52.	Problems practice.
14 TH	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.
15 TH	56.	Problem based on it.
	57.	To resolve improper fraction into partial fraction.
	58.	Problem based on it.

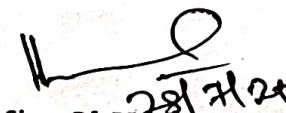
	59.	Book exercise practice.
16 TH	60.	Permutatlons and Combinations: Value of npr and nCr.
	61.	Examples practice based on above.
	62.	Binomial theorem: Binomial theorem (without proof) for positive integral index (expansion and general form)
	63.	Binomial theorem for any index (expansion without proof)
17 TH	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.
18 TH	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


28/7/25
Sign. Of Teaching Faculty


28/7/25
Sign. Of Sr. Lecturer
Sr. Lecturer
Math & Science
G.I.E.T (Poly), Jagatpur, Ctc


28/7/25
Sign. Of PRINCIPAL
GIET (POLYTECHNIC)
Principal
HET (Polytechnic),
Jagatpur, Cuttack