SYNERGY SCHOOL OF ENGINEERING, DHENKANAL

Department- All	**Semester-** 1st	**Name Of the Teaching Faculty-** Biswajit Mishra **No. of weeks-** 15 **Session-** 2025-26 From - 06/08/25 To - 04/12/25
Subject- Mathematics-I	**No. of days per week-** 04	
Week	**Class**	**Topic to be taught**
1.	1.	Concept of Angle , its type and conversion
	2.	Introduction to Trigonometry
	3.	Trigonometric ratios and other formulae
	4.	ASTC Rule and questions on identity using ASTC Rule
2.	5.	Trigonometric values and table
	6.	Compound angles and related angles
	7.	Covert into acute angle and test for +ve or –ve
	8.	-ve angle and further convert into acute angle
3.	9.	Addition and difference formulae, $\sin 75°, \sin 15°, \cos 75°, \cos 15°$
	10.	Multiple angles like $\sin 2A, \cos 2A, \tan 2A, \cot 2A$
	11.	Sub-multiple angles like $\sin\frac{A}{2}, \cos\frac{A}{2}, \tan\frac{A}{2}$; also $\sin 3A, \cos 3A, \tan 3A$
	12.	Graphs of Trigonometric Functions
4.	13.	**Exercise Questions and Doubt Clear**
	14.	**Exercise Questions and Doubt Clear**
	15.	Introduction to Functions
	16.	Types of Functions
5.	17.	Concept of Limits
	18.	Factorization & rationalization method
	19.	Limit of trigonometric functions
	20.	Limit of exponential functions
6.	21.	Limit of logarithmic functions
	22.	Introduction to Derivatives
	23.	Standard Derivative Formulae and its examples
	24.	Differentiation of sum, product and quotient of a function
7.	25.	Derivative of composite functions/ Chain Rule
	26.	More questions on chain rule
	27.	Derivative of trigonometric & inverse trigonometric functions
	28.	Logarithmic Differentiation
8.	29.	Exponential Differentiation
	30.	Some more questions on previously taught topics
	31.	**Exercise question and Doubt clear**
	32.	**Exercise question and Doubt Clear**
9.	33.	**Monthly Test-I**
	34.	Real and Imaginary numbers, Complex numbers; Conjugate, Modulus and Amplitude of a complex number.
	35.	Conversion into a+ib form
	36.	Geometrical Representation of Complex Numbers. Properties of Complex Numbers.

10.	37.	Polar form representation
	38.	Determination of three cube roots of unity and their properties.
	39.	De Moivre's theorem and its examples
	40.	Square Roots and question answer discussion
11.	41.	**Exercise Question and Doubt Clear**
	42.	Definition of Proper & Improper fraction, Partial Fraction
	43.	To resolve proper fraction into partial fraction with denominator containing (i) non- repeated linear factor (ii) repeated linear factor
	44.	(iii) irreducible non-repeated quadratic fraction
12.	45.	To resolve improper fraction into partial fraction
	46.	Some more questions on previously taught topics
	47.	**Exercise Questions and Doubt Clear**
	48.	Value of n_{P_r} & n_{C_r}
13.	49.	Introduction to Binomial Theorem
	50.	Binomial theorem for positive integral index (Expansion & General Form)
	51.	Examples on +ve index expansion
	52.	Expansion of any index
14.	53.	Questions on any index expansion
	54.	1st & 2nd binomial approximation with application to engineering problems
	55.	Questions on previously taught topics
	56.	**Exercise Questions and Doubt Clear**
15.	57.	**Monthly Test-II**
	58.	**Previous Year Question Discussion**
	59.	**Selective questions practice**
	60.	**Doubt Clear Class & Quiz Test**

Prepared By

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