SYNERGY SCHOOL OF ENGINEERING, DHENKANAL

Department- CE	Semester- 1st	Name Of the Teaching Faculty- Biswajit Mishra No. of weeks- 15 Session- 2023-24
Subject- Engineering Mathematics-I	No. of days per week- 05	
Week	Class	Topic to be taught
1.	1.	Introduction, Types of Matrices
	2.	Algebra of matrices
	3.	Questions on Matrices
	4.	Determinants up to 3x3 matrices and its properties
2.	5.	Minor, Co-factor
	6.	adjoint and inverse of matrices
	7.	Questions on Inverse of Matrices
	8.	System of Linear Equations, its matirx form,
3.	9.	constancy and inconsistency of a linear system
	10.	Crammer's rule and its examples
	11.	Solution of linear system using inverse of matrix
	12.	**Exercise Questions and Doubt Clear**
4.	13.	Concept of Angle , its type and conversion
	14.	Introduction to Trigonometry
	15.	Trigonometric ratios and other formulae
	16.	ASTC Rule and questions on identity using ASTC Rule
5.	17.	Trigonometric values and table
	18.	Compound angles and related angles
	19.	Covert into acute angle and test for +ve or –ve
	20.	-ve angle and further convert into acute angle
6.	21.	Addition and difference formulae, $\sin 75°, \sin 15°, \cos 75°, \cos 15°$
	22.	Multiple angles like $\sin 2A, \cos 2A, \tan 2A, \cot 2A$
	23.	Sub-multiple angles like $\sin \frac{A}{2}, \cos \frac{A}{2}, \tan \frac{A}{2}$; also $\sin 3A, \cos 3A, \tan 3A$
	24.	Graphs of Trigonometric Functions
7.	25.	**Exercise Questions and Doubt Clear**
	26.	**Exercise Questions and Doubt Clear**
	27.	Introduction of geometry in two dimension, Distance formulae
	28.	Slope of a line, angle between two lines, condition of perpendicularity and parallelism
8.	29.	Graph of different lines
	30.	Different forms of straight lines i) One point form, (ii) two point form
	31.	(iii) slope form, (iv) intercept form, (v) Perpendicular form
	32.	Intersection of two lines and perpendicular distance formula
9.	33.	**Exercise questions and doubt clear**
	34.	**Monthly Test-I**
	35.	Equation of a line passing through a point and (i) parallel to a line and (ii) Perpendicular to a line

	36.	Equation of a line passing through the intersection of two lines, Distance of a point from a line	
10.	37.	Equation of a circle (i) centre radius form	
	38.	(ii) general equation of a circle (iii) end point of diameter form	
	39.	Circle passing through three points	
	40.	Exercise of Circle	
11.	41.	Definition of conics, parabola and its questions	
	42.	Ellipse and its questions	
	43.	Hyperbola and its questions	
	44.	**Exercise Questions and Doubt Clear**	
12.	45.	Introduction to 3D, Distance formulae	
	46.	Section formulae and its questions	
	47.	Direction ratio, direction cosine	
	48.	Angle between two lines (condition of parallelism and perpendicularity)	
13.	49.	Equation of a plane(General form), angle between two planes	
	50.	perpendicular distance of a point from a plane	
	51.	Equation of a plane passing through a point and i) parallel to a plane and (ii) perpendicular to a plane	
	52.	**Exercise Questions and Doubt Clear**	
14.	53.	Introduction to Spear, Equation of a sphere i) centre radius form	
	54.	ii) general form iii) two end points of a diameter form	
	55.	More 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**	

No. of Assignments to be given- 04

No. of Monthly Tests to be done- 02

No. of Quiz Tests to be done- 01

Prepared By

Biswajit Mishra

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(Lect. In Math)