Shradha

DELUXE

- EMPLOYEE'S ATTENDANCE
- LEDGER BOOK
- CASH BOOK

ENGG - MATH - I

Lesson - plan

Branch - Mechanical

1st sem (2021) 2022

ENGG. MATH-I

Faculty Name - Jyotsna Pradhan.

MONTH - November.

Week	Day/period	Topic
		Determinant
	1st -	Introduction, Linear equation cross multiplication method with examples.
	2nd	Define row and Column. Solve 2nd order determinant with examples.
	3rd	Define Minor and Co-factors, with examples.
	4th	Properties of determinant with examples.
	5th -	Solve 3rd order determinant.
	6th -	problem based on above.
Week	1st	Explain cramer's Rule (two unknown variable)
	2nd	Solve some Linear equations by Cramer's rule. (Three unknown variable)
		Matrices
	3rd	Introduction - Define matrix with symbol.

	4th	Type of matrices. Explain with examples.
	5th	Row matrix, Column matrix, zero matrix, Null matrix.
	6th	Exercise discussion.
week	1st	Singular matrix and non-singular matrix with examples.
	2nd	Equality of matrices.
	3rd	Algebra of matrix
	4th	Addition, subtraction and multiplication of matrix.
	5th	Multiplicative Inverse of a square matrix.
	6th	problem based on above.
week	1st	Transpose of a matrix. Adjoint of a matrix.
	2nd	Inverse matrix. $A^{-1} = \frac{Adj A}{\lvert A \rvert}$
	3rd	Solve linear equation by matrix method.
		Trigonometry
	4th	Introduction. Measurement of an angle, and Explain Trigonometric functions.
	5th	Trigonometric Ratios of Angles.
December week	6th	Revision class.
	1st	Relation between the trigonometric Ratios.

	2nd	Table of T-ratios and various formula.
	3rd	T-ratios of $(90°-\theta)$, $(90°+\theta)$ $(180°-\theta)$, $(180°+\theta)$ . . .
	4th	T-ratios of $(-\theta)$. T-ratios of $(270°+\theta)$, $(270°-\theta)$ $(360°+\theta)$, $(360°-\theta)$ . . .
	5th	Quadrant Rule.
	6th-	problems based on above
Week	1st	Compound angle, multiple angle, Sub multiple angle.
	2nd	Addition formula. $\sin(A+B)$, $\cos(A+B)$, $\tan(A+B)$. .
	3rd	ASTC Rule.
	4th	Difference formula. $\sin(A-B)$, $\cos(A-B)$, $\tan(A-B)$ . .
	5th	Transformation of sum or difference into product.
	6th-	Exercise discussion
Week	1st	Find the expansion of $\sin 2A$, $\tan 2A$, $\cos 2A$, $\sin(A+B+C)$
	2nd	Define Inverse T. function and its properties.
	3rd	Various theorem of I.T.F. $\sin^{-1}(-x) = -\sin^{-1}x$ $\cos^{-1}(-x) = \pi - \cos^{-1}x$
	4th	If $xy<1$, then $\tan^{-1}x + \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$ $xy>1$, $\tan^{-1}x - \tan^{-1}y = \pi + \tan^{-1}\left(\frac{x+y}{1-xy}\right)$
	~~5th~~ ~~5th~~	Co-ordinate Geometry

Week	5th	Introduction of geometry in two dimension.
	6th –	problem based on above
	1st –	Division formula. Area of a triangle.
	2nd	Co-ordinate system, Rectangular Co-ordinate axes, Cartesian Co-ordinates of a point.
	3rd	Distance between two given point with example.
	4th	Internal division formula, External division formula with example.
	5th	Condition of collinearity of three points.
	6th –	Exercise discussion.
January Week	1st	Centroid of a triangle. Incentre of a triangle.
	2nd	Define slope of a line. Condition of parallelism and perpendicularity
	3rd	Angle between two lines
	4th	Different form of st. line. a) one point form. b) two point form.
	5th –	slope form. intercept form perpendicular form.
	6th –	problem based on above
Week	1st	Equation of a line passing through a point.
	2nd	Equation of a st. line parallel to a line.
	3rd	Equation of a st. line perpendicular to a line.
	4th	Equation of a line passing through the intersection of two lines.

	5th	Distance of a point from a line.
	6th	Exercise discussion
		Circle
Week	1st	Define Circle. Equation of a circle in standard form.
	2nd	General equation of a circle with examples.
	3rd	Equation of a circle passing through three given points.
	4th	Equation of a circle with given end points of a diameter.
	5th	Intercept made on the axes by a circle.
	6th	problem based on above.

Week	1st	Equation of a circle in parametric form (centre is at the origin).
	2nd	Angle of intersection of two curves and orthogonal curves.
		THREE DIMENSION (3D)
	3rd	Introduction of geometry in three dimensions.
	4th	Co-ordinate of a point - Rectangular Cartesian Co-ordinate
	5th	Distance formula with examples
	6th	Exercise discussion.
February Week	1st	Direction formula with examples.
	2nd	Centroid of a triangle, Direction Cosines and direction ratios of a line.

	3rd	Angle between two lines. projection of a line segment on another line.
	4th	Condition of parallelism and perpendicularity.
	5th	Define plane. Equation of a plane having direction ratios.
	6th –	problem based on above.
Week	1st	General form. Angle between two planes.
	2nd	perpendicular distance of a point from a plane.
	3rd	Equation of a plane passing through a point.
	4th	Equation of a plane passing through a point and perpendicular to a plane.
	5th	Equation of a plane passing through a point & parallel to a plane.
	6th –	Exercise discussion

SPHERE

Week	1st	Define sphere. Equation of a sphere having centre and radius.
	2nd	General equation of a sphere and radius formula.
	3rd	Equation of a sphere with two end points of a diameter form.
	4th	Equation of a sphere passes through three given points.
	5th –	Equation of a sphere passes through four given points.
	6th –	Exercise discussion