

GENERAL DEPARTMENT
GOVERNMENT ENGINEERING COLLEGE, DAHOD
B.E. 1st SEM (All Branches) - ODD SEMESTER: 2021-22
Subject: Mathematics-I (3110014)

MID semester Exam Syllabus

1	Indeterminate forms, Improper Integral and Application of definite Integral: Indeterminate Forms and L'Hôpital's Rule, Improper Integrals, Convergence and divergence of the integrals, Beta and Gamma functions and their properties. Applications of definite integral, Volume using cross-sections, Length of plane curves, Areas of Surfaces of Revolution.	CO1
2	Partial Differentiation: Functions of several variables, Limits and continuity, Test for non existence of a limit, Partial differentiation, Mixed derivative theorem, differentiability, Chain rule, Implicit differentiation, Gradient, Directional derivative, tangent plane and normal line, total differentiation, Local extreme values, Method of Lagrange Multipliers.	CO3
3	Matrices and Eigen values & Eigen vectors: Elementary row operations in Matrix, Row echelon and Reduced row echelon forms, Rank by echelon forms, Inverse by Gauss-Jordan method, Solution of system of linear equations by Gauss elimination and Gauss Jordan methods. Eigen values and eigen vectors, Cayley-Hamilton theorem, Diagonalization of a matrix.	CO5
<p>Reference Books:</p> <p>(1) Maurice D. Weir, Joel Hass, Thomas' Calculus, Early Transcendentals, 13e, Pearson, 2014. (2) Howard Anton, Irl Bivens, Stephens Davis, Calculus, 10e, Wiley, 2016. (3) James Stewart, Calculus: Early Transcendentals with Course Mate, 7e, Cengage, 2012. (4) Anton and Rorres, Elementary Linear Algebra, Applications version,, Wiley India Edition. (5) T. M. Apostol, Calculus, Volumes 1 & 2,, Wiley Eastern. (6) Erwin Kreyszig, Advanced Engineering Mathematics, Wiley India Edition. (7) Peter O'Neill, Advanced Engineering Mathematics, 7th Edition, Cengage.</p>		

CO-1	Apply differential and integral calculus to improper integrals and to determine applications of definite integral. Apart from some other applications they will have a basic understanding of indeterminate forms, Beta and Gamma functions.
CO-3	Compute directional derivative, maximum or minimum rate of change and optimum value of functions of several variables.
CO-5	Perform matrix computation in a comprehensive manner.

CO	CO1	CO2	CO3	Total
Weightage	07	10	13	30

Bloom's Taxonomy level	R	U	A	N	E	C
As per GTU	10	15	35	0	0	0
Actual	9	13	28	0	0	0