GENERAL DEPARTMENT

GOVERNMENT ENGINEERING COLLEGE, DAHOD

B.E. 1st SEM (All Branches) - ODD SEMESTER: 2024-25

Subject: Mathematics-1

MID Semester Examination Syllabus

Max. Marks: 30 **Time: 90 minutes**

1	**Module 1: Basic Calculus:** Evaluation of improper integrals of Type-I and Type-II, Beta and Gamma functions and their properties; Applications of definite integrals to evaluate surface areas and volumes of revolutions	**CO1**
2	**Module 2: Single-variable Calculus (Differentiation):** Taylor's and Maclaurin's theorem for a function of one variable, Taylor's and Maclaurin's series of a function using statement of the theorems; Extreme values of functions; Indeterminate forms and L' Hospital's rule.	**CO2**
3	**Module 4: Multivariable Calculus (Differentiation):** Limit, Continuity and Differentiation for function of two or more variables, total derivative, gradient, directional derivatives; Tangent plane and Normal line to the surface $f(x,y,z)=c$; Extreme values for function of two variables (Maxima, minima and saddle points); Method of Lagrange multipliers.	**CO4**
	Reference Books: 1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002. 2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006. 3. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010. 4. AICTE's Prescribed Textbook: Mathematics-I (Calculus & Linear Algebra), Khanna Book Publishing Co. 5. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010. **Open source software and website:** 1. MIT Open Courseware (https://ocw.mit.edu/search/?s=department_course_numbers.sort_coursenum) 2. NPTEL Open Courseware (https://nptel.ac.in/)	

CO-1	To apply differential and integral calculus to improper integrals. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
CO-3	The fallouts of Taylor's and Maclaurin's Theorem that is fundamental to application of analysis to Engineering problems.
CO-5	To deal with functions of several variables that is essential in most branches of Engineering.

CO	**CO1**	**CO2**	**CO4**	**Total**
Weightage	10	10	10	30

Bloom's Taxonomy level	**R**	**U**	**A**	**N**	**E**	**C**
As per GTU	9	15	6	0	0	0
Actual	-	-	-	0	0	0