

	The Maharaja Sayajirao University of Baroda Polytechnic Department of Applied Mathematics Polytechnic, Near Shastri Bridge, Fatehgunj, Vadodara-2 0265-2781983, www.msubaroda.ac.in			ACADEMIC YEAR 2023-24
	Diploma in Information Technology			
Year	First	Applied Mathematics-II (AMT 3218)	Marks:	100 (Theory)+ 25 (Tutorial/Tw-Viva)
Semester	Second			
COURSE CONTENT / SYLLABUS				
No.	TOPICS			
UNIT-I	Determinants			
	Equation of second and third order determinants, Properties, Minor and cofactors, solution of simultaneous linear equations in two and three unknowns, Consistency condition			
	Matrices			
	Definition and operation, Transpose, adjoint and Inverse of a matrix, solution of simultaneous linear equations in two and three unknowns, Eigen values, eigen vectors and Cayley Hamilton Theorem			
UNIT-II	Indefinite Integrals			
	Standard formulae, Integration by substitution, Integration of Algebraic functions, Integration by parts, Trigonometric substitutions, Integration by the method of partial fractions			
UNIT-III	Definite Integration			
	Definite Integrals : Definition, Definite Integrals as the limit of a sum, Fundamental theorem of Integral Calculus, properties of definite integrals			
UNIT-IV	Differential Equations:			
	Formation of differential equations, Separation of variables, Equations reducible to separation of variables, Linear Differential Equation, Equation Reducible to Linear form, Exact Differential Equation.			
	Higher Order Linear Differential Equations with constant co-efficients (right hand side is equal to zero, e^{ax} , $\sin ax$, $\cos ax$, x^m).			
UNIT-V	Vector Algebra			
	Introduction, Addition of Vectors, Properties of Addition of Vectors, Subtraction of a vector, Multiplication of a Vector by scalar, Position Vector, Product of two Vectors- Scalar or dot Product, Vector or cross product			
UNIT-VI	Numerical Methods			
	Solution of algebraic and transcendental equations of one variable: Bisection Method, Method of false position, Newton Raphson's Method.			
	Finite differences, Newton's interpolation, Lagrange's formula.			
	Numerical integration: Trapezoidal Rule, Simpson's 1/3 & 3/8th rules			
REFERENCES				
1.	Elementary Engineering Mathematics For I & II Semesters of B. Tech. and Diploma Courses by B. S. Grewal, Khanna Publishers, Delhi(2015)			
2.	A textbook of Engineering Mathematics by N .P. Bali, Laxmi Publications(2016)			
3.	Mathematics for Polytechnic students, by S. P. Deshpande, Pune Vidyarthi Gruha Prakashan. (For Diploma Students).			
4.	Integral Calculus by Shanti Narayan, Dr. P. K. Mittal, S. Chand Publications(35th Edition,2005)			
5.	Introductory Methods of Numerical Analysis by S.S.Sastry, Prentice Hall,India(5 th Edition)			

