

SARDAR PATEL UNIVERSITY
Programme: B.Sc
Semester: II
Syllabus with effect from: November-2011

Paper Code: US02CMTH03	Total Credit: 2
Title of Paper: Problems & Exercises in Mathematics	

Unit	Description in detail	Weightage (%)
I	Review of matrix theory, algebra of matrices, special types of matrices, sub-matrices, determinant and minors of matrices.	25%
II	Characteristic equation of a matrix; and Cayley-Hamilton theorem, eigenvalue and eigen vector of square matrices, eigenvalue of special type of matrices, The construction of orthogonal matrices.	25%
III	Linear differential equations with constant coefficients; complimentary function and particular integral; operators; Products of operators, Determination of complimentary function. Inverse operators; determination of Particular integral and working rules for $f(D)y = emx$.	25%
IV	Determination of Particular integral and working rules for $f(D)y = X$ where $X = \sin mx, \cos mx, xm, e^{ax}V, x^m V$ (where V is a function of x only). Homogeneous linear differential equations. Method of variation of parameters for solving second order nonhomogeneous differential equation.	25%

Basic Text & Reference Books:

- Shanti Narayan and Mittal P.K., A textbook of Matrices, S. Chand and Co. New Delhi, 2005, 11th revised edition.
- Introduction to calculus and differential equations. - D J Karia, N Y Patel, B P Patel, M L Patel
- Shanti Narayan. Differential calculus. Fourteenth Edition, Shamlal charitable trust, New Delhi, 1996
- Advanced Engineering Mathematics, Fifth Ed.- Kreyszig E. [New Age International Publishing Co.
- Higher Engineering Mathematics, Thirtyfifth edition. Grewal, B.S. [Khanna Publ]

