**MT 201**

# MATHEMATICS-III
## (Common to all Branches)

### UNIT-I

**Partial differential Equations :** Formation of partial-differential equation of first order-Lagrange's solution, Standard types-Charpit's method of solution-partial differential equations of higher order, Monge's method.

### UNIT-II

**Fourier Series :** Expansion of a function in Fourier series for a given range-odd and even functions of Fourier series-change of interval-Applications of Fourier series-square wave forms-saw tooth wave form and modified square saw tooth wave form-half range sine and cosine expansions-complex Fourier series.

### UNIT-III

**Applications of Partial differential equations :** Solution of wave equation, hear equation and Laplace's equation by the method of separation of variables and their use in problems of vibrating string, one dimensional unsteady heat flow and two dimensional steady state hear flow.

### UNIT-IV

**Numerical methods :** Solutions of Algebraic and Transcendental equations - Bisection method, Regula-Falsi method and Newton-Raphson's method-Solution of Linear system of equations, Gauss elimination method, Gauss Seidel iterative method, ill conditioned equations and refinement of solutions, Interpolation, Newton's divided difference interpolation-Numerical differentiation, Solution of differential equations by Euler's method, modified Euler's method and Runge-Kutta Method of 4th order.

**UNIT-V**

**Z-Transforms :** Introduction, Basic Theory of Z-transforms. Z-transform of some standard sequences, Existence of Z-Transform. Linearity property, Translation Theorem, Scaling property, Initial and Final Value Theorems, Differentiation of Z-Transform, Convolution Theorem, Solution of Difference equations using Z-transforms.

***Suggested Reading** :*


1.R.K. Jain & S.R.K. Iyengar, *Advance Engineering Mathematics*, Narosa Publications - 2008.

2.B.S. Grewal, *Higher Engineering Mathematics*, Khanna Publications, 40th Edition, 2008.

3.N. Bali, M.Goyal, C.Watkins, *Advanced Engineering Mathematics*,

7th Edition, 2009 Laxmi Publications.

4.M.K. Venkatraman, *Engineering Mathematics-III*, Technical Publications, Chennai.

5.H.K. Dass, *Advanced Engineering Mathematics*, S.Chand & Co. Pvt. Ltd.,