R.V.R. & J.C. COLLEGE OF ENGINEERING, GUNTUR-19

(AUTONOMOUS)

ENGINEERING MATHEMATIC S – III (CS/EC/EE/IT 211)

Lectures	: 4 Periods / week	Internal Assessment: 40 Marks
Semester Exams	: 3 hrs	Semester End Examinations: 60 Marks

Credits: 4

UNIT – I

Partial Differential Equations: Introduction, Formation of Partial Differential Equations, Solutions of a Partial Differential Equations, Equations solvable by direct integration, Linear equations of the first order, Non-Linear equations of the first order using Charpit's Method, Homogeneous Linear Equations with Constant Coefficients, Rules for finding the Complementary Function, Rules for finding the Particular Integral, Non-Homogeneous Linear Equations.

(15)

UNIT – II

Integral Transforms: Introduction, Definition, Fourier Integral Theorem (without proof), Fourier sine and cosine integrals, Complex form of the Fourier Integral, Fourier Transforms, Properties of Fourier transforms, Finite Fourier sine and cosine transforms, **Numerical Methods**: Solution of Algebraic and Transcendental Equations: Introduction, Newton-Raphson Method, Solution of Linear Simultaneous Equations: Gauss Seidel Iterative Method. **(15)**

UNIT – III

Finite Differences & Interpolation: Introduction, Finite difference operators, Symbolic relations, Differences of a polynomial, Newton's forward and backward interpolation formulae, Central difference interpolation formulae- Stirling's formulae, Interpolation with Unequal intervals: Lagrange's Interpolation, inverse interpolation.

Numerical Differentiation: Finding first and second order Differentials using Newton's formulae. **(15)**

UNIT – IV

Numerical Integration: Trapezoidal rule, Simpson's one-third rule.

Numerical Solutions of Ordinary Differential Equations (first order): Picard's Method, Euler's Method, Runge-Kutta Method of fourth order, Simultaneous equations (R K method).

Numerical Solutions of Partial Differential Equations: Classification of Partial Differential Equation of second order, Solutions of Laplace's and Poisson's Equations by iteration methods.

(15)

Text Book:

Higher Engineering Mathematics, B.S. Grewal, 40th edition, Khanna publishers, New Delhi.

Reference Books:

1. Advanced Engineering Mathematics by Erwin Kreyszig
2. A text book of Engineering Mathematics by N.P. Bali.