**B.Tech.7th Semester**

**(Non-departmental Elective)**

**Advanced Mathematics-I MAT – 467**

**L T P Theory : 50 marks**

**3 1 - Sessional : 50 marks**

**Time : 3 Hours**

**PART – A**

1. **Complex Variables**:

Definition, limit, continuity, derivative, Analytic function, Cauchy-Riemann equations, conformal mapping and its properties, complex integration, Cauchy’s theorem, Cauchy’s integral formula, Taylor’s series and Laurent’s series, Singularity, Residues and Residue theorem, Evaluation of real and definite integrals (Contour integration).

**PART – B**

1. **Fourier Transforms:**

Fourier transorms, Finite fourier transforms, Riemann’s theorem on sectional continuous functions, Fourier’s integral formula, Different forms of fourier integrals, Inversion theorem(sine and cosine formula), Properties of Fourier transforms, similarity, addition, shifting, modulation, convolution theorem, Fourier Transform of derivatives, Solution of partial differential equations**.**

**PART – C**

1. **Numerical Methods:**

Numerical solution of simultaneous and second order differential equations by Runga-Kutta method, Numerical solution of Partial Differential Equations (Laplace, wave equation, heat equation in one dimension only) by

a) Iteration method (b) Relaxation method.

**NOTE TO PAPER SETTER:**

Set 8 questions in all, 4 from Part A, 2 from Part B and 2 from Part C.

Candidates have to attempt 5 questions selecting atleast 1 question from each part.

**BOOKS RECOMMENDED:**

1. Advanced Engg. Mathematics : E. Kreyzic

2. Numerical Mathematics Analysis : IB Scarborough

3. Higher Engg. Mathematics : BS Grewal

4. Advanced Engg Mathematics : V P Jaggi & AB Mathur

5. Operational Mathematics: : R.Charchill