Subject Code : RNENS3

PAPER III - COMPLEX ANALYSIS

Unit I

Analytic functions as mappings: Elementary point set topology – Conformality – Linear transformations – Elementary conformal mappings.

Unit II

Complex Integration: Fundamental theorems – Cauchy's integral formula – Local properties of analytic functions – General form of Cauchy's theorem.

Unit III

Complex Integration: Calculus of residues – Harmonic functions

Unit IV

Series and Product Development: Power series expansion – Partial fractions and factorization – Entire functions – Riemann zeta function – Normal; families.

Unit V

Riemann Mapping theorem – Elliptic functions: Simply periodic functions – Doubly periodic functions – the Weierstrass theory

Text Books:

1. L.V. Alfors, "Treatment as in Complex Analysis ", III Edition, I.S.E., McGraw Hill.

Unit I : Chapter 3
Unit II : Chapter 4, Sections: 1, 2, 3 and 4
Unit III: Chapter 4, Sections 5 and 6
Unit IV: Chapter 5
Unit V : Chapter 6 – Section 1, Chapter 7

Books for Reference :

1. E.Hille, "analytic Functions", Vol.I and II.
2. J.B.Conway, "Functions of one Complex Variable".
3. Nevalinna and Paatro, "Complex analysis".