MMA-C211
COMPLEX ANALYSIS

MM : 100
Time : 3 hrs
L T P
5 2 0

Sessional : 30
ESE : 70
Pass Marks : 40

NOTE: The question paper shall consist of two sections (Sec.-A and Sec.-B). Sec.-A shall contain 10 short answer type questions of six marks each and student shall be required to attempt any five questions. Sec.-B shall contain 8 descriptive type questions of ten marks each and student shall be required to attempt any four questions. Questions shall be uniformly distributed from the entire syllabus. The previous year paper/model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

Continuity and differentiability of complex functions, Analytic and regular functions, Cauchy-Reimann equations, Necessary and sufficient conditions for a function to be analytic, some properties of conjugate functions, Construction of an analytic function, Milne Thomson's method.

Complex integration, Cauchy Goursat theorem, Cauchy's theorem, Morera's theorem, Cauchy's integral formulae, Cauchy inequalities, Liouville's theorem.

Gauss mean value theorem, Maximum & minimum modulus theorems, The Argument Theorem, Rouche's Theorem, Poisson's integral formulae.

Power series, The circle of convergence of the power series, Taylor's series, Laurent's series, The zeros of an analytic function, Types of singularities, Introductory conformal mapping (Bilinear transformation).

Residue at a single pole, Residue at a pole a of order greater than unity, Residue at infinity, Cauchy's residue theorem, Evaluation of real definite integral, Integral round the unit circle.

Text /Reference Books
1. B.Churchil, Fundamental of Complex Analysis
2. T.Pati, Fundamental of Complex Variable
3. J.H. Methews & R.W.Howell, Complex Analysis for Mathematics & Engineering, Narosa Pub.
4. Murry R. Spiegel, Complex Analysis, Schaum's outline
5. LV.Ahlfors, Complex Analysis, McGraw-Hill
6. Z. Nehari, Conformal Mapping , Dover Pub.