

BM 251 UE

MATHEMATICS-IV

Instruction:	4 Periods per week
Duration of University Examination:	3 Hours
University Examination	75 Marks
Sessional:	25 Marks
Credits	4

UNIT I

Functions of Complex Variables: Elementary functions of complex variables, limit and continuity of function, Analytic function, Cauchy-Riemann equations, Complex integration, Cauchy's theorem, Derivatives of analytic functions, Cauchy's integral formula and its applications.

UNIT II

Taylor's and Laurent's Series Expansions: Zeroes and singularities, Residues, Residue theorem, Evaluation of real integrals using residue theorem, conformal mapping, Bilinear transformation.

UNIT III

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

UNIT IV

Statistics: Random variable, Distributions, Density functions, Conditional distributions, bay's theorem, Mathematical expectation, Expected values, moments and Moment generating functions, Distributions: Poisson, Normal, Gamma and Chi-Square distribution, Fitting these curves of the data.

UNIT V

Curve Fitting by Method of Least Squares: Correlation and Regression, Lines of Regression, Tests of Significance, Chi-Square, F and T-Tests

Suggested reading:

1. R.V.Churchill, "*Complex Variables & Its Applications*", Mc Graw-Hill Book Company, INC, 2008
2. R.K.Jain & S.R.K.Iyengar, "*Advanced Engineering Mathematics*", Narosa Publications, 2008
3. I.Miller and J.E.Fireund, "*Probabilities and Statistics for Engineers*" 3rd Edition, Pearson Publishers, 2000
4. P.N.Arora, Sumeet Arora, S.Arora, "*Statistical Methods*", 2nd Edition, S.Chand & Co. Ltd, 2008.
5. Keryszig E, "*Advanced Engineering Mathematics*", 8th Edition, John Wiley & Sons Ltd, 2006
6. H.K.Dass, "*Advanced Engineering Maths*", S.Chand & co. Pvt. Ltd, 2008