Thoroughly Revised and Enlarged 3rd Edition to comply the latest syllabus of the B.Tech.,MCA etc. course offered by the Engineering or Technological Institutes and other equivalent courses also.

NUMERICAL METHODS

Theoretical and Practical

Including Complete Solution of MAKAUT Question Papers for the year 2006 to 2016

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Preface to the 3rd Edition

This edition of is thoroughly revised and enlarged to comply the latest syllabus of the B.Tech.,MCA etc. course offered by the Engineering or Technological Institutes and other equivalent courses.

The Complete Solution of MAKUT Question Papers on Discrete Mathematics for the year 2006 to 2016 have been added at the end of this book.

This book will be very much helpful to the students for securing high marks in the examination. .

I am thankful to the publisher for bringing out this edition in time.

Any positive suggestion shall be accepted with thanks.

November, 2017 *Kalidas Das*
Kolkata

Preface to the 1st Edition

This book has been introduced to fulfil the necessity for the students of B.Tech.courses, 3rd & 4th Semester according to the latest syllabus of WBUT.

All the chapters arranged and written in a lucid manner to create interest about the subject, Numerical Methods, where practical part also presented alongwith the theoretical concept.

I do hope this book will positively serve the students not only for securing high marks in the examinations, but also will have a clear idea of both the theoretical and practical aspects of the subject.

I am thankfull to Dr. Purnendu Dhar, M.Sc., Ph.D., of U.N.DHUR & SONS (P) LTD. for encouraging me to bring out this book in a very short span of time.

July, 2011 *Kalidas Das*
Kolkata

Syllabus of NUMERICAL METHODS

Code : M (CS) 301, Contacts : 2L, Credits : 2

Theory

Approximation in numerical computation : Truncation and rounding errors, Fixed and floating-point arit hmetic, Propagation of errors. 4

Interpolation : Newton forward / backward interpolation, Lagrange's and Newton's divided difference Interpolation 5

Numerical integration : Trapezoidal rule, Simpson's $\frac{1}{3}$ rd rule, Expressions for corresponding error terms. 3

Numerical solution of a system of linear equations :

Gauss elimination method, Matrix inversion, LU Factorization method Gauss-Seidel iterative method.

Numerical solution of Algebraic equation : 6

Bisection method, Regula-Falsi method, Newton-Raphson method 4

Numerical solution of ordinary differential equation : Euler's method, Runge-Kutta methods, Predictor-Corrector methods and Finite Difference method. 6

Code : (CS) 301,Contacts : 2L, Credits : 1

Practical

1. Assignments on Newton forward / backward, Lagrange's interpolation.
2. Assignments on numerical integration using Trapezoidal rule, Simpson's $\frac{1}{3}$ rd rule, Weddle's rule
3. Assignments on numerical solution of a system of linear equations using Gauss elimination,Gauss-Seidel iterations.
4. Assignments on numerical solution of Algebraic equation by Bisection, Regular-falsi and Newton Raphson methods.
5. Assignments on ordinary differential equation : Taylor series, Euler's, Runga-Kutta methods.
6. Introduction to Software Packages : Matlab/ mathematica scilab / Labview

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