



Department of Mathematics
Assam University, Silchar
Ph.D Course work(IPP)

School level course in Mathematics

Course M-502

Unit : IV

either

Group Theory. Linear Algebra, Complex Analysis:

Symmetric Group, Dihedral group, Quaternion group, Application of group theory in related disciplines, Matrix representation of linear transformation, Eigen values of matrix and linear transformation, Canonical forms, Analytic functions, singularity and residue at poles, Cauchy integral formula and residue theorem, Contour integration.

or

Numerical Analysis, Ordinary differential equation, linear programming problem:

Interpolation, Numerical integration, solution of algebraic and transcendental equation, ODE of upto 2^{nd} order, Series solution of ODE of 2^{nd} order, simplex method of solving LPP, Transportation and Assignment Problem.



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Ph.D Course work(IPP)
Course M-503 (B)

Departmental Paper: Advanced Operations Research

Unit-I

Linear Programming: Different methods of solution and their applications, integer programming, 0-1 or binary programming and its application. Transshipment problem, Transportation paradox

Unit-II

Forecasting- Definition and its application, Different methods of forecasting, forecasting errors, casual forecasting with linear regression.

Unit-III

Non linear programming: Some definitions, Graphical illustration of NLP, Khun-Tucker Conditions and its applications, Quadratic programming, convex programming.

Unit-IV

Simulation: Essence of simulation, common type of simulation, generation of random number, optimization with opt quest.

Fuzzy set and Fuzzy logic: An over view, applications in decision making problem.

Inventory Management: Deterministic and probabilistic inventory models in different situations.

Reference Books :

1. Operations Research: S.D. Sharma
2. Operations Research: Kanti Swarup, P.K. Gupta and Manmohan
3. OR Methods and Problems : Sasieni Maurice, Arther Yaspan, Lawrence Friedman
4. Operations Research: H.S. Taha
5. Operations Research: T.L. Satty
6. Inventory systems: Eliczer Nadder- John Wiley and Sons
7. Analysis of Inventory Systems: G Hadley and T.M Whitin-Prentice Hall
8. Principles of Inventory and Material Management: RJ Tersine-North Holland.



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Ph.D Course work(IPP)

Course M-503 (C)

Departmental Paper: **Rings and Modules**

Unit-I

A brief review on Rings (with additional non-commutative examples), definition and example of modules, direct sum and product

Unit-II

Semisimple modules, chain conditions

Unit-III

Modules with finite length, tensor product

Unit-IV

The Jacobson radical, Structure of semi-simple rings

Prime and primitive rings, local and semi-local rings

Text Books:

1. Introductory Lectures on Rings and Modules, John A Beachy, London Mathematical Society
2. A First Course in Noncommutative Rings, T.Y. Lam, Springer

References:

1. Lectures on Rings and Modules, J. Lambek, AMS Chelsea Publishing
2. Ring Theory: Nonsingular Rings and Modules K.R. Goodearl, Marcel Dekker Inc



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Course M-504

Departmental Paper: Term paper