

CHAPTER 33

MATHEMATICAL SCIENCES MATHEMATICS

Doctoral Theses

274. ARORA (Sudha)
Some Aspects of Facility Location Problems.
Supervisor : Dr. S. R. Arora
Th 16468

Abstract

Discusses briefly multiobjective facility location problems, partial coverage facility location problems, branch and bound solutions of facility location problem, application of utility function to solve a facility location problems and different interpretations of facility location problems as vendor selection problems.

Contents

1. Introduction. 2. Multiobjective facility location problems. 3. Partial coverage facility location problems. 4. Algorithms for facility location problems using branch and bound. 5. Vendor selection problems and an application of utility function. Bibliography.

275. DATT (Gopal)
Multiplication and Composition Induced Operators on Lorentz Spaces.
Supervisor : Prof. S. C. Arora
Th 16473

Abstract

Presentes a brief development of composition operations during the last two decades.

1. Introduction . 2. Multiplication operators : Lorentz spaces.
 3. Multiplication operators : Lorentz - Bochner spaces.
 5. Weighted composition operators. 6. Open problems.
 Bibliography.

276. DHARMARHA (Preeti)
Study of Weighted Weyl Spectra of Operators.
 Supervisor : Prof. S. C. Arora
Th 16471

Abstract

Explores and studies the concept of weighted Weyl spectrum of an operator and related areas. A significant part is devoted to the study of weighted Weyl spectrum, weighted Weyl theorem and left weighted spectrum. Also studies the joint weighted spectrum and talk of a class W_α of operators.

Contents

1. Introduction. 2. Weighted wely spectrum. 3. Spectral mapping theorems. 4. Joint weighted spectrum and class W_α .
 5. On left weighted spectrum and left weighted wely theorem.
 6. Some unanswered questions. Bibliography.

277. GUPTA (NISHA)
Study of Banach Frames and Related Concepts in Banach Spaces.
 Supervisors : Prof. Ajay Kumar and Dr. Shiv K. Kaushik
Th 16470

Abstract

Aims to enrich the theory of frames for Banach spaces. Studies frames for the subspaces of Banach spaces, near exact banach frames, framesystems in Banach spaces and bounded Banach frames in Banach spaces.

Contents

1. Prerequisites. 2. Frames in Banach spaces. 3. Near-exact banach frames in banach spaces. 4. Fram systems in banach spaces. 5. Bounded banach frames in banach spaces.
 Bibliography.

278. GUPTA (Ritu)
On Multi-Level and Multi-Objective Programming Problems Using Goal and Fuzzy Programming.
 Supervisor : Dr. S. R. Arora
Th 16469

Abstract

Concentrates on Goal and Fuzzy programming approaches to solve Multi-Objective, Bilevel and Multi-Level programming problems.

Contents

1. Introduction. 2. Multiple objective programming problem. 3. Bilevel programming problem : An interactive approach. 4. Multi-level programming problem : A goal programming approach. References. Bibliography.

279. KAPOOR (Reena)
Various Techniques for Linearizing Binary Non-Linear Programming Problems.
 Supervisor : Dr. S. R. Arora
Th 16467

Abstract

Concentrates on developing the new Linearization techniques to solve the various types of 0-1 Non-Linear Programming - Problem. Developed various linearization techniques for solving diverse 0-1 NLPP.

Contents

1. Introduction. 2. Linearization and various complexity issues of 0-1 quadratic fractional programming problem. 3. Crisp linearization strategies for an unrevealed branch of general linear fractional programming problem and 0-1 multi-quadratic fractional programming problem. 4. A condensed linearization of 0-1 polynomial and multi-polynomial fractional programming problem after a simple reformulation.

280. MANGANG (Khundrakpam Binod)
Linear and Non Linear Stability of Equilibrium Points in Robe's Restricted Three Body Problem.
 Supervisors : Prof. S. C. Arora and Dr. P. P. Hallan
Th 16475

Abstract

Studies linear and non-linear stability of the equilibrium points in the Robe's circular restricted three body problem. Describes the history and development of restricted problem and Robe's three body problem. The existence and linear stability of equilibrium points in the Robe's restricted three body problem is discussed.

Contents

1. Introduction. 2. Existence and Linear stability of equilibrium points in the Robe's restricted three body problem when the first primary is an oblate spheroid. 3. Existence and linear stability of equilibrium points in the Robe's restricted three body problem when the primaries are oblate spheroids. 4. Non linear stability of equilibrium point in the Robe's restricted circular three body problem. 5. Effect of perturbations in coriolis and centrifugal forces on the non linear stability of equilibrium point in the Robe's restricted circular three body problem. Bibliography and appendix.

281. MEHTA (Monika) Nee MONIKA SETHI
On Some Aspects of Variational Inequality Problems in Terms of Bifunctions.
 Supervisors : Prof. B. K. Dass and Prof. C. S. Lalitha
Th 16474

Abstract

Presents some basic results regarding the classical Stampacchia variational inequality problem for instance, its relation with optimization problems, complementarity problems, fixed point problems and the existence and uniqueness of its solutions and a brief review of the various development in this field. Studies variational inequality problems defined by bifunctions. For the mixed variation inequality problem saddle point optimality criteria in terms of an associated Lagrangian is developed. Concentrates on the vector counterpart of the variational inequality problem (of the Stampacchia type) introduced in the second chapter and explores its relation with vector optimization problem. A relation between this problem and the corresponding Minty problem is worked.

Contents

1. Introduction. 2. Variational inequalities and its generaliza-

tions in terms of bifunctions. 2. Characterization of solution sets of variational inequality problems and mathematical programs. 4. Vector variational inequality problems in terms of bifunctions. Bibliography.

282. NARENDER KUMAR

Vector Optimization Involving n-Set Functions.

Supervisors : Prof. Davinder Bhatia and Prof. S. C. Arora

Th 16466

Abstract

Studies special classes of multiobjective mathematical programming problem involving n-set functions. Optimality condition and duality results for these problems, under different assumptions on the functions involved, have been investigated for both differentiable as well as nondifferentiable cases.

Contents

1. Introduction. 2. n-Set optimization with generalised ζ -convexity. 3. Optimality and duality for n-set minmax problems. 4. Approximate efficiency in n-set vector optimization. Bibliography.

283. VERMA (Daulti) Nee DAULTI RANI

Weighted Mean Inequalities in Certain Banach Function Spaces.

Supervisor : Prof. Pankaj Jain

Th 16472

Abstract

Aims to obtain weight characterizations of the Hardy operator H and the geometric operator G in the framework of X^p -spaces for various different parameters and under various different situations.

Contents

1. Introduction. 2. Weighted mean inequalities : The case $p < q$. 3. Weighted mean inequalities : The case $q < p$. 4. Two dimensional mean inequalities. 5. Mixed norm space $X^{(p_1, p_2)}$ and corresponding Hardy inequalities. 6. Equivalent conditions for higher dimensional Hardy inequalities. Bibliography.