# CHAPTER 30

# MATHEMATICAL SCIENCES
# OPERATIONAL RESEARCH

## Doctoral Theses

351.    ANAND (Adarsh)
**Study of Innovation Adoption & Warranty Analysis in Marketing and Successive Software Releases.**
Supervisors : Prof. P. K. Kapur and Dr. Ompal Singh
Th 19817

*Contents*

1. Introduction. 2. Stochastic differential equation based modeling of diffusion process incorporating adopters behaviour. 3. Warranty analysis & two dimensional modeling in marketing. 4. Innovation diffusion & launch time to successive generational technologies. 5. Irregular fluctuation based successive software release models. 6 Optimal release planning of software. Conclusions and scope for future research. References.

352.    AMIR HOSSEIN SOLEIMAN GARMABAKI
**Some Contributions to Multi-Release Problems in Software Reliability and Successive Generations of Technologies.**
Supervisors : Dr. Anu G. Aggarwal and Prof. P. K. Kapur
Th 19824

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1. Introduction. 2. Multi up-gradation software reliability model with fault severity and imperfect debugging. 3. Multi release SRGMs for fault detection-correction processes and the effect of reported bugs. 4. Two-dimensional problems in software reliability. 5. Modeling multi-generational innovation diffusion process. 6. Two-dimensional model for successive generations of technology. Conclusions and future research directions. References.

353. BALI (Shivani)
**Optimal Component Selection for Fault Tolerant Software Design Under Consensus Recovery Block Scheme.**
Supervisor :  Dr. P. C. Jha
Th 19822

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1. Introduction. 2. Optimal component selection for cots based modular software system. 3. Fuzzy multi-objective approach to component selection for cots based fault tolerant software system. 4. Optimal component selection for fault tolerance modular software system using build-or-buy policy under fuzzy environment. 5. Fuzzy multi-objective approach to component selection for cots based modular software system incorporating mandatory redundancy for critical modules. Conclusion and future scope, references and appendices.

354. JYOTISH KUMAR
**Generalized Modeling Framework in Software Reliability and Related Problems.**
Supervisors : Prof. P. K. Kapur and Dr. Ompal Singh
Th 19823

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1. Introduction. 2. Software reliability growth modeling incorporating errors of different severity and change point. 3. Unified framework for modeling fault removal using change point phenomenon. 4. Software reliability growth models with various modes. 5. Some related problems in software reliability. Conclusion and future scope and references.

355. MITTAL (Garima)
**Study of Multiobjective Portfolio Optimization Models and Their Solutions Using Soft Computing Approaches.**
Supervisor : Dr. Pankaj Gupta
Th 19819

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1. Introduction. 2. A hybrid approach to portfolio optimziation. 3. A multiobjective optimization model for portfolio rebalancing. 4. Multicriteria credibilistic framework for portfolio optimization. 5. Multicriteria expected value framework for portfolio optimization. Bibliography.

356. MITTAL (Neha)
**Some Optimum Fully and Partially Accelerated Life Testing Models in Reliability.**
Supervisor : Dr. Preeti Wanti Srivastava
Th 19818

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1. An introduction to fully and partially accelerated life testing modles. 2. Optimum multi-objective ramp-stress fully accelerated life test plans for the burr type-XII distribution under type-I censoring. 3.Optimum multi-objective fully accelarated life test plans for the burr type-XII life distribution with modified stress loading methods under type-I censoring. 4. Optimum constant-stress partially accelerated life test plans for the truncated logistic distribution with type-1 and type-II censoring. 5. Optimm step-stress partially accelerated life test plans for the truncated logistic distribution with type-I and type-II censoring. Appendix and references.

357. SAHAY (Rishi Ranjan)
**Study of Global Strict Minimizers in Mathematical Programming Problems Involving Higher Order Strong Invexity.**
Supervisors : Prof. Davinder Bhatia and Dr. Pankaj Gupta
Th 19821

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1. Introduction. 2. Characterization for higher order global strict minimizers. 3. Higher order strong invariant monotonicity and nonsmooth higher order strong invex programs. 4. Nondifferentiable multiobjective optimization problems involving square root terms. 5. Higher order global strict minimizers for pseudoinvex programs with variational inequalities. Conclusion and scope for future research. Bibliography.

358. VERMA (Shilpi)
**Mathematical Programming Approaches for Components Selection of Modular Software Systems.**
Supervisor : Dr. Pankaj Gupta
Th 19820

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1. Introduction. 2. Cost-reliability trade-off of COTS selection

in fuzzy environment. 3. Multiobjective COTS selection in fuzzy environment. 4. COTS selection based on cohesion and coupling under multiple applications environment. 5. Build-or-buy decision under multiple applications nevironment. Bibliography.

359.   YOGENDER SINGH
**Contribution to Some Optimization Problems for Inventroy System and Marketing.**
Supervisor :  Dr. P. C. Jha
Th 20280

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1. Introduction. 2. Optimal production and inventory policies for inventory-level-dependent demand in segmented market. 3. Optimal production and inventory policies for deteriorating items in segmented market. 4. Optimal advertising and princng policies of successive generation products in segmented market. 5. Promotional resource allocation for a product incorporating segment specific and spectrum effect of promotion. References.