FMCC803 OPTIMIZATION TECHNIQUES (3-1-0)

Module-I (14 Hours)

Integer Programming: Integer programming problem, Application of IPP, Gromory cutting plane method and fractional cut method for solution of IPP, Zero one programming problem, Linear fractional programming, Quadratic programming.

Game theory : Pay off, types of games, maxima minima principle ,without saddle point ,2x2 and 2xn and nx2 dominance principle.

Goal programming: Goal programming model formulation, Goal programming algorithm and modified simplex method of Goal programming. Application of Goal programming.

Sequencing : Basic assumptions, n jobs through two machines ,n jobs through three machines, n jobs through k machines , 2 jobs through k Machines,

Module -II (12 Hours)

Network model

Minimal spanning tree problem, Cyclic Dijkstra's algorithm, shortest route problems, Maximal flow problem ,minimal cost capacity flow problem.

Decision theory

Decision making Environments, Decision making under Uncertainty, Decision making under conditions of Risks ,Decision Trees, Limitation of Decision Tree.

Simulation and Modeling : Introduction to simulation and modeling, random variable ,Monte Carlo Technique and Monte Carlo Simulation , Generation of random variables.

Module -III (14 Hours)

Dynamic Programming : Decision tree Bellman principle of optimality, characteristics of DPP and DPP algorithm, solution of LPP by Dynamic programming ,Application of DPP.

Penalty function method , Projected gradient method ,Karmarkar Algorithm, Generalized Reduced Gradient Method ,Steepest descent method.

Geometric programming , Stochastic Programming , Project management PERT AND CPM , Non Traditional Optimization Algorithm ,Genetic Algorithm, Global Optimization ,Classical optimization Theory.

Text books

1. A. Ravindran, D. T. Philips, J. Solberg, " *Operations Research- Principle and Practice*", Second edition, Wiley India Pvt Ltd

2. Kalyanmoy Deb, " *Optimization for Engineering Design*", PHI Learning Pvt Ltd

Reference books:

1. H.A.Taha, A.M.Natarajan, P.Balasubramanie, A.Tamilarasi, "*Operations Research*", Eighth Edition, Pearson Education.

2. A.P.Verma , " *Operations Research*" , S.K .Kataria & Sons.

3. F.S.Hiller, G.J.Lieberman, " *Operations Research*", Eighth Edition, Tata McDraw Hill

4. Kalabati. S.. " *Optimization for Engineering* ",

5. KantiSwarup, P. K. Gupta, Man Mohan, "*Operations Research*", Sultan Chand and Sons.