PAPER-VIII
OPTIMIZATION TECHNIQUES

TIME: 3 hours **Max. Marks: 100**

UNIT-I

Dual simplex algorithm, Bounded value algorithm, Parametric linear Programming, sensitivity analysis, changes in the coefficients of the objective function, changes in the components of vector b, variation in the components (aid) of the matrix A. Addition of the new variable, deletion of a variable, Addition of a new constraint. Deletion of constraint.

UNIT-II

Integer programming problem. All integer and mixed integer programming problems, Gamory's cutting plane methods(Fractional cut and λ-cut),Branch and bound method; Traveling salesman problem.

UNIT-III

Project scheduling through PERT and CPM, cost time, trade off, Resource leveling.

UNIT-IV

Quadratic forms, convex functions, Global and relative optimum of a function f(x), unconstrained extreme of differentiable functions, method of Lagrange multipliers for constrained extreme with equality constraints, convex programming problem. Lagrangian function and saddle point, Kuhn-Tucker theorem, Kuhn-Tucker conditions, Quadratic programming problem Wolfe's algorithms, and Beale's algorithm.

UNIT-V

Dynamic Programming: Bellman's principle of optimality, multiple stage decision problems, characteristics of DPP. Solution of finite number of stages problems by Dynamic programming. Network flow problems. Maximal flow, minimal cut theorems, shortest route problem.

Books Recommended:

1. Operation Research : Kanti swaroop, Mak-Mohan, P.K.Gupta.
2. Operation Research : Hamdy A Taha
3. Operation Research : S.D.Sharrna
4. Linear-Programming : S.I.Gass
5. Optimization Methods in Operations Research and systems analysis : K.V.Mittal