MA 533: Operations Research (3-0-0:3)

System of linear equations and inequations, convex set, convex functions, formulation of linear programming problem, theory of simplex method, simplex algorithm, Charne's M-method, two phase method,computational complexity of simplex algorithm.

Duality in linear programming, dual simplex method,sensitivity analysis, bounded variable problem, transportation problem, integrity property, MODI method, degeneracy,unbalancedproblem,assignment problem, development of Hungarian method, routing problems.

Nature of dynamic programming problem, Bellmann's optimality principle, cargo loading problem,replacement problem, multistage production planning and allocation problem, rectangular games, two persons zero sum games,pure and mixed strategies, 2xn and mx2 games,relation between theory of games and linear programming.

Critical path analysis, probability consideration in PERT,distinction between PERT and CPM,resourcesanalysis in networking scheduling, time cost optimization algorithm, linear programming formulation.

Text Books and References:

1. H. A. Taha, "Operation Research: An Introduction", Pearson Education
2. N. S.Kambo, "Mathematical Programming Techniques", Affiliated East-West Press Pvt. Ltd
3. M. S. Bazaara, J. J. Jarvis and H. D. Sherali, "Linear programming and Network flows", Wiley India Pvt. Ltd
4. M. S. Bazaara, H. D.Sherali and C. M. Shetty, "Nonlinear Programming Theory and Algorithms", Wiley