

Department of Mathematics
Faculty of Science, The Maharaja Sayajirao University of Baroda, Vadodara.

T. Y. B. Sc. (Mathematics)

Linear Programming and Operations Research : Paper – VI

Effective from June 2000

Prerequisites: Probability theory, random variables and probability distribution.

Unit 1: General discussions of Linear programming problems and their illustrations, Linear inequalities, Graphical method of solving two variable problem, convex sets, Problem of Linear Programming, Slack and Surplus variables, L.P.P. in a standard form, Properties of a solution, Generating extreme point solutions, Development of minimum feasible solution.

Unit 2: Simplex method, Computational procedure, Artificial basis technique, Revised Simplex method, The unsymmetric and symmetric dual problems, Transportation problem, Assignment problem.

Unit 3: General discussions of operations research, Inventory, Associated costs and inventory control, Deterministic inventory situations without and with shortages, Buffer stocks, Multi-item deterministic problems (EOQ with constraints), Probabilistic inventory situations.

Unit 4: Expectation function of $m \times n$ rectangular games and the minimax theorem for it, Symmetric games, Games and linear programming, Fundamental theorem of rectangular games, Algebraic method of solving a game.
Queueing system and its parameters, The Poisson queues (queues with Poisson arrivals and Poisson services channel (finite/infinite capacity) and its characteristics, Poisson queues with more than one parallel service channels (finite/infinite capacity) and its characteristics.

Reference Books:

1. S. I. Gass, *Linear Programming*, Mc Graw Hill Book Company, International student Edition.
2. K. V. Mittal, C. Mohan, *Optimization Methods in Operations Research and System Analysis*, 3rd Edition, New Age International Publications.
3. K. Swaroop, Man Mohan and P.K. Gupta, *Operations Research*, Sultan Chand and Sons.
4. H. A. Taha, *Operations Research: An Introduction*, McMillan Publishing Company, New York.