QUANTITATIVE TECHNIQUES FOR MANAGEMENT

Unit 1:

Total Marks: 100

- Linear Programming: Formulation of L.P. Problems, Graphical Solutions (Special Cases: 0 Multiple optimal solution, infeasibility, unbounded solution);
- Simplex Methods (Special cases: Multiple optimal solution, infeasibility, degeneracy, unbounded solution) Big-M method and Two-phase method; Duality and Sensitivity (emphasis on formulation & economic interpretation); Formulation of Integer programming, Zero-one programming, Goal Programming.

Unit 2:

- Elementary Transportation: Formulation of Transport Problem, Solution by N.W. Corner 0 Rule, Least Cost method, Vogel's Approximation Method (VAM), Modified Distribution Method. (Special cases: Multiple Solutions, Maximization case, Unbalanced case, prohibited routes)
- Elementary Assignment: Hungarian Method, (Special cases: Multiple Solutions, 0 Maximization case, unbalanced case, Restrictions on assignment.)

Unit 3:

Network Analysis: Construction of the Network diagram, Critical Path-float and slack analysis 0 (Total float, free float, independent float), PERT, Project Time Crashing. Queuing Theory: Arrival pattern, Service pattern, Traffic intensity, Queuing model.

Unit 4:

- Decision Theory: Pay off Table, Opportunity Loss Table, Expected Monetary Value, 0 Expected Opportunity Loss, Expected Value of Perfect Information and Sample
- Information Markov Chains: Predicting Future Market Shares, Equilibrium Conditions (Questions based on Markov analysis) Limiting probabilities, Chapman Kolmogrov equation.
- 0 Introduction to Game Theory: Pay off Matrix- Two person Zero-Sum game, Pure strategy, Saddle point; Dominance Rule, Mixed strategy, Reduction of m x n game and solution of 2x2, 2 x s, and r x 2 cases by Graphical and Algebraic methods; Introduction to Simulation: Monte Carlo Simulation.

References:

- 1. N. D. Vohra: Quantitative Management. Tata McGraw Hill
- 2. P. K. Gupta, Man Mohan, Kanti Swarup: Operation Research, Sultan Chand.
- 3. V. K. Kapoor: Operations research, Sultan Chand & Sons.
- 4. J. K. Sharma: Operations Research Theory & Applications, Macmillan India Limited.
- 5. S. Kalavathy: Operations Research, Vikas Publishing House.
- 6. P. K. Gupta, D S Hira: Operation Research, Sultan Chand.

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