Paper Name: Operation Research & Optimization Techniques
Paper Code: IT 505 B
Contacts:3L+1T
Credit:4

Module I

Linear Programming Problems (LPP): Basic LPP and Applications; Various Components of LP Problem Formulation.

Solution of Linear Programming Problems: Solution of LPP: Using Simultaneous Equations and Graphical Method; Definitions: Feasible Solution, Basic and non-basic Variables, Basic Feasible Solution, Degenerate and Non-degenerate Solution, Convex set and explanation with examples. [**5L]** Solution of LPP by Simplex Method; Charnes' Big-M Method; Duality Theory. Transportation Problems and Assignment Problems. [**12L]**

Module II

Network Analysis: Shortest Path: Floyd Algorithm; Maximal Flow Problem (Ford-Fulkerson); PERT-CPM (Cost Analysis, Crashing, Resource Allocation excluded). [**6L]**

Inventory Control: Introduction to EOQ Models of Deterministic and Probabilistic ; Safety Stock; Buffer Stock.[**3L]**

Module III

Game Theory: Introduction; 2-Person Zero-sum Game; Saddle Point; Mini-Max and Maxi-Min Theorems (statement only) and problems;Games without Saddle Point; Graphical Method; Principle of Dominance.[**5L]**

Module IV

Queuing Theory:

Introduction; Basic Definitions and Notations; Axiomatic Derivation of the Arrival & Departure (Poisson Queue). Poisson Queue Models: (M/M/1): (∞ / FIFO) and (M/M/1: N / FIFO) and problems.[**5L]**

Suggested Text / Reference Books:

1. H. A. Taha, "Operations Research", Pearson
2. P. M. Karak – "Linear Programming and Theory of Games", ABS Publishing House
3. Ghosh and Chakraborty, "Linear Programming and Theory of Games", Central Book Agency
4. Ravindran, Philips and Solberg - "Operations Research", WILEY INDIA
5. Kanti Swaroop — "Operations Research", Sultan Chand & Sons
6. Rathindra P. Sen—"Operations Research: Algorithms and Applications", PHI