

Quantitative Methods for Operations

Sr. No.	Particulars	Sessions
1	Network Analysis (CPM and PERT) Drawing a CPM network and finding the critical path Floats calculation, Crashing of Paths Project Planning & Control by use of CPM/PERT Concepts. Definitions of Project PERT Network	2
2	Queuing (Waiting-line) Models Concepts - Types of Queuing Systems (use of 6 Character Code) - Queues in Series and Parallel – Problems based on the results of following models (M/M/1) Single Channel Queue with Poisson Arrival Rate, and Negative Exponential Service Time, With and Without Limitations of Queue Size (M/G/1) Single Channel with Poisson Arrival Rate, and General Service Time, PK-Formulae.	2
3	Inventory Models Types of Inventory Situations Fixed Quantity/Fixed Review Period Costs Involved - Deterministic Probability Models - Economic-Order-Quantity (EOQ) and EBQ for Finite Production Rate - Sensitivity Analysis of EOQ- EOQ Under Price Break - Determination of Safety Stock and Reorder Levels - Static Inventory Model - (Insurance Spares).	1
4	Digital Simulation – Concepts - Areas of Application - Random Digits and Methods of Generating Probability Distributions Application to Problems in Queuing, Inventory, New Product, Profitability, Maintenance etc.	1
5	Replacement and Maintenance Models :- Replacement of Items Subject to Deterioration and Items Subject Random Total Failure Group vs Individual Replacement Policies.	1

6	Game Theory - Concepts - 2 – person N-person games - Zero - sum and Non-zero-sum games Solution Procedures to 2-person zero sum games Saddle point Mixed Strategy Sub-games Method for $m \times 2$ or $2 \times n$ games - Graphical Methods	2
7	Case Studies and Presentations	1

Reference Text

1. Quantitative techniques in Management by N. D. Vohra, Tata McGraw Hill
2. Operations Research – An Introduction by Hamdy Taha, Prentice Hall
- 3. Quantitative Methods/Operations Research by Banerjee**