GUJARAT UNIVERSITY
K.S.SCHOOL OF BUSINESS MANAGEMENT
[Five Years (Full Time) M.B.A. Integrated Degree Course]
FOURTH Year M.B.A. (SEM-VIII)
KS_M_ 481
QUANTITATIVE TECHNIQUES FOR MANAGEMENT – II

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3 credit course

Objective – As mentioned in the earlier semester course, quantitative techniques are adopted and applied to aid the process of decision making. The objective of this semester course is to provide further knowledge of mathematical models and analytical tools to deal with complex decision making problems.

Module – 1   [20%]

➢ **Inventory Control**
Introduction, Different costs associated with Inventory.
Models of Inventory: (without proof)
  • Purchase Model with Instantaneous Replenishment and without Shortages
  • Manufacturing Model without Shortages
  • Purchase Model with Instantaneous Replenishment and with Shortages (planned shortage only)
  • Manufacturing Model with Shortages (planned shortage only)
  • Quantity discount for EOQ Related examples.

Module – 2   [20%]

➢ **Sequencing**
Introduction, Notation, Terminology and Assumptions, Solving the Sequencing Problems through Johnson's Rule, Different Problems like: Processing n Jobs through 2 Machines, Processing n Jobs through 3 Machines, Processing n Jobs on k Machines, Processing 2 jobs through k Machines, Maintenance Crew Scheduling, Related examples.

➢ **Decision Theory**
Introduction, The framework of decision making,
Decision making under uncertainty
  • Maximin or Minimax criteria
  • Laplace criteria
  • Hurwicz criteria
  • Savage criteria
  • Expected Monetary Value (E.M.V.)
  • Expected Profit with Perfect Information(E.V.P.I.)
  • Bayesian decision rule : posterior analysis
Decision theory for Marginal Analysis, Decision – Tree Analysis
Related examples.

Module – 3   [20%]

➢ **Queuing Theory**

Introduction, General Structure of Queuing System: Arrival Process, Service System, Queue Structure, Operating Characteristics of Queuing System, Terminologies of Queuing System, Queuing Model for single server: (M/M/1):(□/FIFO) Model (without proof), Related examples.

➢ **Simulation**

Introduction, Types of Simulation, Steps of Simulation Process, Monte Carlo Simulation, Advantages and Disadvantages of Simulation. Different problems like: Simulation of an Inventory Problem, Queuing Problem, Sequencing Problem, Investment Problem, Maintenance Problem etc. Related examples.

Module – 4   [20%]

➢ **Replacement Theory**

Types of Maintenance, Replacement Policy for Equipment which Deteriorates Gradually: with time value of money and without time value of money, Replacement of Items that Fail Suddenly.

➢ **Markov Analysis**

Markov Processes, Assumption underlying Markov Analysis, Related examples.

Module – 5   [20%]

➢ **Non-Parametric Methods**

Introduction to Non-Parametric Statistics, Different Tests for Large Sample like: The Sign Test for Paired Data, Rank Sum Tests, The Mann-Whitney U Test, Kruskal-Wallis Test, The One-Sample Runs Test, Rank Correlation Test, The Kolmogorov-Smirnov Test etc. Related examples.

No of lectures in semester – 40 – 45 Hours (approximately)

Assignment: Minimum 3

Reference Books

➢ Statistics for management by Levin & Rubin
➢ Comprehensive statistical methods by P.N.Arora, Sumeet Arora, S.Arora
➢ Operation Research by Hamdy A. Taha
➢ Quantitative Techniques in Management by N.D.Vohra
➢ Operation Research by J.K.Sharma
➢ Operation Research by Prem Kumar Gupta, D.S.Hir
➢ Operation Research by R.Panneerselvam
➢ Statistics for business & economics by Anderson, Sweeney, Williams
➢ An Introduction to Management Science: Quantitative Approach to Decision Making by Anderson, Sweeney, Williams