III. CORE COURSE [CCCOM303]: (Credits: Theory-04, Tutorial-01)

Marks: 30 (MSE: 20Th. 1Hr + 5Attd. + 5Assign.) + 70 (ESE: 3Hrs)=100 Pass Marks (MSE:17 + ESE:28)=45

Instruction to Question Setter:

Mid Semester Examination (MSE):
*There will be **two** groups of questions in written examinations of 20 marks. **Group A is compulsory** and will contain five questions of **very short answer type** consisting of 1 mark each. **Group B will contain descriptive type five** questions of five marks each, out of which any three are to be answered.*

End Semester Examination (ESE):
*There will be **two** groups of questions. **Group A is compulsory** and will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type six** questions of fifteen marks each, out of which any four are to be answered.*

Note: *There may be subdivisions in each question asked in Theory Examinations*
*The Mid Semester Examination shall have three components. (a) Two Semester Internal Assessment Test (SIA) of 20 Marks each, (b) Class Attendance Score (CAS) of 5 marks and (c) Class Performance Score (CPS) of 5 marks. "**Best of Two**" shall be applicable for computation of marks for SIA.*

(Attendance Upto75%, 1mark; 75<Attd.<80, 2 marks; 80<Attd.<85, 3 marks; 85<Attd.<90, 4 marks; 90<Attd, 5 marks).

QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS

Theory: 60 Lectures; Tutorial:15 Hrs

Objective:

The objective of this paper is to acquaint the students with quantitative techniques that play an important role in managerial decision-making.

Contents:

Unit I – Fundamental of Decision Making:

Types of decisions; Steps in decision making; Quantitative analysis and decision making; Different types of models and their uses; Model building steps.

Unit II - Linear Programming:

Basic concepts; mathematical formulation and applications; Solution of LP problem using graphic and simplex method; Use of artificial variables; Sensitivity analysis and interpretation of solution; Duality in linear programming – formulation and solution; Integer linear programming – solution.

Unit III – Transportation, Assignment and Trans-shipment:

Formulation; Solving transportation and assignment problems; Dealing with exceptional cases of transportation and assignment problems.

Unit IV - Inventory and Queuing Management:

Concepts of inventory management; Inventory models – classical EOQ, EOQ with price breaks, EOQ model for production runs, planned shortage model- deciding optimum safety stock and reorder level, probabilistic model; Techniques of selective control. Queuing models: Elements of a queuing system; Models with Poisson arrival and Exponential services rates- single server and infinite and finite population; Cost behavior analysis. Simulation: Monte Carlo Simulation, Application of simulation in inventory management and queuing situation.

Unit V – Project Scheduling:

Concepts of PERT & CPM techniques and their applications; Network analysis- scheduling activities, determining critical path, calculation of floats; Time-cost trade-off; Resource allocation and resource levelling.

Unit VI- Markov Chains and Theory of Games:

Markov Chains- decision processes; Market share analysis; Account receivable analysis. Game Theory- Pure strategy games; Mixed strategy games; Value of the game; Rules of Dominance.

Suggested Readings:

- Levin, R.I., D.S. Rubin and J.P. Stingson, *Quantitative Approaches to Management*, McGraw - Hill.
- Vohra N.D*., Quantitative Techniques in Management*, The McGraw Hill companies
- Bierman H. Jr, C.P. Bonini and W.H. Hausman, *Quantitative Analysis for Business Decisions*, Homewood, Ill., Irwin.
- Anderson, *Quantitative Methods for Business*, CENGAGE.
- Gupta and Khanna, *Quantitative Techniques for Decision Making,* Prentice Hall of India.
- Kapoor V.K., *Operations Research: Concepts, Problems and Solutions,* Sultan Chand & Sons.
- Swarup Kanti, P K Gupta, Manmohan, *Operations Research,* Sultan Chand & Sons.

Note: Latest edition of the readings may be used.
