

CORE COURSE – VII : OPERATION RESEARCH

Objectives:

The objectives of the course is to acquaint the student with the application of Operations Research to business and industry and help them to grasp the significance of analytical techniques in decision making. Students will be tested on the application of Operations Research to business related problems.

UNIT – I

Introduction to Operations Research, evaluation of the field, scope, phase merits and limitations – concept of optimization, Theory of simplex methods to solve canonical and general LPP, Primal-dual problem and its properties, dual simplex method, sensitivity analysis relating to changes in tightness of constraints and co- efficient of objectives function; LINDO Package and its applications in solving LPP and sensitivity analysis. Concept of Goal Programming.

UNIT –II

Transportation problem by Vogel's approximation method with MODI optimality test; assignment problem including traveling salesman model; integer 1 linear Programming complete enumeration method and Gomory's cutting plane methods; fixed charge problem and Zero-one Programming (formulation only).

UNIT – III

Network analysis – drawing of Arrow diagram-critical path method – calculation of critical path duration, total, free and independent floats, PERT problems; Inventory Theory, Deterministic models-purchase problem without and with shortages, with price breaks, production problem without shortages, probabilistic models, single period model.

UNIT – IV

Decision under risk-expected money value criterion – decision trees – decision under uncertainty – minimax criterion: Theory of Games – pure and mixed Strategies, Principles of dominance, graphical methods, simplex methods.

UNIT – V

Queing theory – M/M/1/FIFO/oc model; Markovian chain, Simulation:- Monte Carlo Method.

References:

1. Operations Research : An Introduction, Handy A.Taha, Macmillan.
2. Fundamentals of Operations Research for Management – Gupta and Cozzolino, Hoden – Day, IUC.
3. Operations Research – Kanti Swarup, Manmohan and Gupta, Sultan Chand & Sons.