Prasad V. Potluri
SIDDHARTHA INSTITUTE OF TECHNOLOGY
(Autonomous)
Kanuru, Vijayawada-07

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CA2T2: OPERATIONS RESEARCH

UNIT I: Development Definition - Introduction to O.R, Characteristics and phases of O.R, Scientific Method, General methods for solving, Operations Research models.

UNIT II: Linear Programming Problems - Introduction, Linear programming Formulation, Graphical solution – Maximum problem, Minimum problem, Exceptional cases, Simplex method, any ARTIFICIAL VARIABLE TECHNIQUE.

UNIT III: Replacement Models - Introduction, replacement of items that deteriorate when money value is not counted & replacement of items that deteriorate when money value is counted, replacement items that fail completely i.e., group replacements problems.

UNIT IV: Transportation Problem - Formulation, optimal Basic Feasible solution (OBFS)-NW corner method, Voggles Approximation method(VAM),Optimal solution-MODI Method,un-balanced transportation problem, Degeneracy in transportation problems. Assignment problem: formulation, optimal solution, HUNGARIAN Method, Degenerate assignment problem - a non-square (m x n) Matrix, Restrictions.
JOB SEQUENCING: Introduction, optimal solution for processing each of n-jobs through TWO machines, optimal solution for processing each of n-jobs through THREE machines.

UNIT V: Waiting Lines - Introduction, Structure of a waiting system,Queing model-Queuing model with a single channel, Poisson arrivals, exponential service times, with infinite population and unrestricted queue.

UNIT VI: Inventory Model - Introduction, single item deterministic models, production is instantaneous or at a constant rate and withdrawals from stock is continuous, shortages are allowed & production is instantaneous or at a constant rate and withdrawals from stock is continuous & shortages are not allowed, Inventory model –Ignoring ordering cost& Inventory model –Considering ordering cost, PRICE BREAKS: purchase inventory model with one price break, Instantaneous production rate & demand Rate inventory model.

UNIT VII: Theory Of Games - Introduction, Minimax (maximin) criterion and optimal strategy, solution of games with saddle points, rectangular games without saddle points,Algebriac method to solve 2*2 games , rectangular games without saddle points-other than 2*2 games, Sub games-2*n games.

UNIT VIII: Project Management - PERT & CPM, Difference between PERT & CPM, PERT/CPM Network Components, Finding Critical route or path, Critical events, Total Floats, Variance using PERT/CPM.

Text Books:

1. Operations Research, S.D.SHARMA, kedarnath, ramanath & Co. Meerut 11th edition 2002
2. Operations Research, P.K.GUPTA & D.S.HIRA sultan Chand & Sons 8/e 2000
3. OR an Introduction, TAHA pearson 8/e 2008

Reference Books:

1. Operations Research: Applications and Algorithms, Wayne L Winston, Indian University, 4th edition, 2004
2. Operations Research, Hiller, Libwerman, 8th edition TMH 2005
3. Operations Research, R.D.ASRHEDKAR & R.V.KULKARNI, Dhanpat rai & Co 4ed 1998.