

RAMAKRISHNA MISSION VIDYAMANDIRA

CBCS Syllabus B.Sc. Computer Science Honours

Semester-V

Course Code: CMSA DSE 3 Credit: 6

Course Type: Discipline Specific Elective

Course Outcome:

- i) Developing fundamental knowledge of various Operations Research models.
- ii) To be able to understand applications domains of various Operations Research models.
- iii) To be able to solve transportation and assignment problem.
- iv) Understanding Game Theory.
- v) To be able to understand network scheduling.
- vi) Understanding practical implementations Operations Research techniques.

CMSA DSE 3 T: Operations Research

Credit: 4

Marks: 50

Introduction: Origin and development of operation research, Nature and characteristic features, Overview of various models in O.R: Linear Programming, Non Linear Programming, Network Flow Programming, Stochastic Programming, Queuing, Simulation; Application of O.R. [5 L]

Linear Programming Problem: Introduction, Mathematical formulation of the problem and graphical solution method. [5 L]

Simplex Method: Introduction, computational procedure, artificial variable, problem of degeneracy, application of simplex method. [12 L]

Duality: Concept, formulation of primal – dual, duality and simplex method, Dual Simplex method. [10 L]

Transportation Problem: Introduction, mathematical formulation, finding initial basic feasible solution, optimality, degeneracy, unbalanced transportation problem; Applications. [5 L]

Assignment Problem: Introduction, mathematical formulation and solution; Applications. [5 L]

Game Theory: Some basic terminology, Two-person Zero-sum Game, Game without Saddle Point –Mixed strategy, Algebraic method for 2×2 Game; Applications. [13 L]

Network scheduling: Introduction, Critical Path Method (CPM), PERT calculation; Applications. [5 L]

CMSA DSE 3 P: Operations Research Laboratory

Credit: 2

Marks: 25

Linear Programming Problem.	[5 L]
Simplex Method.	[7 L]
Transportation Problem.	[8 L]
Assignment Problem.	[8 L]
Game Theory.	[5 L]
Network scheduling.	[7 L]

Recommended Books:

1. Operation Research by S Kalavathy; 4th Edition, Vikas.
 2. Operation Research by Kanti Swarup, Gupta, Manmohan; Sultan Chand & Sons.
 3. Operation Research: Principles and Practice by Ravidran, Philip, Solburg; 2nd Edition; Wiley.
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