RAMAKRISHNA MISSION VIDYAMANDIRA

CBCS Syllabus B.Sc. Computer Science Honours

Semester-V

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 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 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.