M.Sc. – IV Semester

Paper No.	Title of the Paper	Teaching Load per week (Hours)	Max. Marks	Examinations (Hours)
19	Artificial Intelligence	04	50	03
20	Complier Design	04	50	03
21	Internet Computing using ASP.NET	04	50	03
22	Elective-2 2.1 Biometrics. 2.2 Bioinformatics 2.3 Neural networks 2.4 Operation Research	04	50	03
23	Major Project	08	70	04
24	Seminar	03	30	04
			300	

M.Sc. Computer Science IV Semester

Paper-22 Elective 2.4: Operation Research

Unity -I

1. **Operation Research** : Introduction, Nature and meaning of OR, Management of applications of OR, Modeling in OR, Principles of modeling, general method for solving OR Models, Scope of OR
2. **Linear Programming Problem:** Introduction of LPP, some important definitions, Formulation of LPP, Graphical Method, General formulation of LPP, Slack and Surplus Variables, Standers form, matrix form of LPP. Problems on Graphical Method

Unit-II

1. **Simplex Method :** Computational procedure of Simplex Method, Computation by Simplex Method, artificial variable method. Problems on Simplex method.
2. **Revised Simplex Method:** Standard Forms of Revised Simplex method, formulation of LPP in Standard Form, obtain BFS, computational procedure and problems.

Unit-III

1. **Duality in Linear Programming:** Introduction, Definition of Primal-Dual Problem, converting Primal into its Dual, Duality and Simplex Method, Problems.
2. **Dual Simplex Method:** procedure of Dual Simplex Method Problems,

Unit-IV

1. **Assignment Problem:** formulation of Assignment Problem, Hungarian Method for assignment problem,
2. **Transportation Problem:** formulation of Transportation Problem, Matrix form of Transportation Problem, Feasible Solution, Basic Feasible solution, and Optimal Solution, problems.

Unit – V

1. **PERT and CPM:** Introduction, Applications of PERT/CPM, Basic steps in PERT/CPM, Network diagram Representation, Drawing Network Diagram, Labeling and Fulkerson's I-J Rule, Time Estimates and Critical Path in Network Analysis, Resource Allocation, use of PERT/CPM for management, problems. Introduction to nonlinear Programming Problem.
2. **Critical Path Analysis (CAP):** Network representation of simple projects, Critical path computation: Construction of time schedule, Crashing of project duration

References:

1. *Operation Research* by S.D. Sharma
2. *Introduction to Operations Research by* Frederick S.Hiller, Gerald J.Lieberman
3. *Operations Research An introduction by* Hamdy A. Taha,
4. *Operations Research by* Kanti swarup, Gupta P.K. and ManMohan.
5. *The Critical Path Method by* Saffer L.R., Fitter J.B. and Meyer W.L.