

Semester - IV

Operations Research II

Course No. MM-CP-409

Duration of Examination: 3 hrs

Maximum Marks: 100

(a) External Exam: 80

(b) Internal Exam: 20

Unit I

Sensitivity Analysis: changes in the coefficients of objective function and right hand side constants of constraints, adding a new constraint and a new variable. parametric linear programming: changes in the coefficients of objective functions and right hand constants. Goal programming, simplex method of solving goal programming.

Unit II

Sequence and scheduling problems, 2 machine n-jobs and 3 machine n-job problems with identical machine sequence for all jobs; n-jobs n-machine problem with different routings. Project management: PERT and CIM: probability of completing a project.

Unit III

Decisions Making in the face of competition. Game theory: Two person zero sum Games, games with pure strategies, Games with mixed strategies, Min. Max. principle, Dominance rule, finding solution of 2×2 , $2 \times m$, $m \times 2$, and $m \times n$ games. Equivalence between game theory and linear programming problem(LPP). Simplex method for game problem. Queues: Empirical models
(M/ M/1): (GD/ ∞ / ∞) (M/M/C : (GD/ ∞ / ∞) model and (M/M/!): (GD/N/ ∞) model.

Unit IV

Concept of programming: Applications of Non-linear programming, Langrangian method, Kuhn Tucker conditions, Quadratic programming: Beal's and Wolf's method and separable programming.

References

1. Curchman C.W Ackoff R.L and Arnoff E.L (1957) Introduction to Operations Research.
2. F. S Hiller and G.J. Lieberman: Introduction to Operations Research (Sixth Edition) , McGraw Hill International, Industries Series, 1995.
3. G. Hadley : Linear programming problem, Narosa publishing House, 1995.
4. Gauss S.I : Linear Programming : Wiley Eastern
5. Kanti Swarup, P.K Gupta and Singh M. M: Operation Research; Sultan Chand & Sons.
6. M.S. Bazaara, J.J Jarvis and Hanief D. Sherali : Linear programming and Network flows, John Wiley And Sons. New York 190.
7. S.S Roa : Optimization Theory and Application, Wiley Eastern Ltd. New Delhi.
8. Philips D.T., Ravindran A. and Solberg J. Operation Research, Principles and Practice.
9. Taha H.A (1982) Operational Research : An Introduction; M,acmillan.
10. G. Hadley : Nonlinear and dynamic programming problem,Addision Wesely, reading Mass.
11. M.S. Bazaara, C.S. Shettyu and Hanief D. Sherali Non linear Programming Algorithm and Practice- John Wiley and sons, NewYork .
12. N.S. Kamboo : Mathematical programming Techniques, Affiliated East-west press Pvt. Ltd. New Delhi, Madras.
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