

I Year II Semester

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## OPTIMIZATION TECHNIQUES

### UNIT-I:

**Development:** Definition, Characteristics and Phrases, scientific method. Types of models, general methods for solving, operations research modes.

**Allocation:** introduction linear programming formulation, graphical solution, simplex methods, artificial variable technique, duality principle.

### UNIT-II:

Transportation problem: Formulation, optimal solution, unbalanced transportation, assignment problem: formulation, optimal solution, variations problem, degeneracy i.e. non square  $M \times N$  matrix, restrictions sequencing: Introduction, optimal solution for processing each of  $n$  jobs through three machines, travelling salesman problem(i.e. ) shortest acyclic route models.

### UNIT-III:

**Replacement:** Introduction, replacement of items that deteriorate when money value is not counted and counted, and replacement of items that fail completely (i.e.) group replacements.

**Waiting lines:** Introduction , single channel, poisson arrivals, exponential service time infinite population and unrestricted queue.

### UNIT-VI:

**Inventory:** Introduction, single item, deterministic models, production is instantaneous or at a constant rate , shortages are allowed or not allowed and with drawls from stock is continuous, purchase inventory model with one price break ,shortages are not allowed , instantaneous production demand production or purchase cost is relevant, stochastic models, simple problems.

### UNIT-V:

**Theory of Games:** Introduction, minmax (maximum), criterion and optimal strategy solution of games with saddle points, rectangular without saddle points. Dynamic programming: Introduction, Bellman's Principle of optimality, solutions for simple problems.

**Project Management:** PERT and CPM , difference between PERT and CPM, PERT/CPM network components and precedence relations, Time Estimates for activities.

### TEXTBOOKS:

1. Operations Research, S.D.Sharma, Ramnath, & Kedarnath co, Meerut.
2. Operations Research, An introduction , 8/e, Taha, Pearson.

### REFERENCES:

1. Operations Research, P.K.Gupta, D.S. Hira, S.Chand.
2. Operations Research, R.D.Asrhedkar, R.V.Kulkarni.
3. Operations Research, Problems & sollutons, 3/e, JKSharma, Macmillan.
4. Operations Research, 8/e, Hillier, Liberman, TMH.
5. Operations Research, 2/e, Panneerselvam.