

CE 102 B Operations Research

Objective: - Students must be familiar with basic techniques of Operation Research.

Unit 1. Linear Programming Problem: [25%]

Meaning of linear programming, its uses, assumptions and limitations, Explanation of basic terminologies, Mathematical form of linear programming problem, Solution of linear programming problem by using graphical methods, Simple formulation problems (for two variables).

Unit 2. Transportation Problem: [25%]

Definition of balanced Transportation Problem (T.P.), General Transportation table and its mathematical form, Initial basic feasible solution and initial cost by using North-West Corner rule, Least Cost Method, Vogel's Approximation Method, Examples base on these methods.

Unit 3. Assignment and Replacement Problems: [25%]

Definition of balanced Assignment Problem (A.P.), its mathematical form, Application of Hungarian method for solving A.P. in the cases of maximization and minimization problem, Meaning of Replacement problem (R.P.), Simple examples of replacement problem when the units are deteriorate depending on time and money value remains same.

Unit 4. PERT and CPM Techniques: [25%]

Meaning and characteristics of PERT, Explanation of basic terms – activity, event, dummy activity, Fulkerson's rule for numbering the events, Meaning of Critical Path Method (CPM), Differences between PERT and CPM, Earliest start time, Earliest finish time, Latest start time, Latest finish time, Total float time of activities, Uses and limitations of PERT and CPM and simple examples.

Recommended Reading :

1. H.A.Taha, Operations. Research, Macmillan Publishing Co. Inc.
2. Vohra N.D, Quantitative Techniques in Management Tata Mc Graw Hill, New Delhi.
3. J.K.Sharma : O.R. Theory and Applications, Macmillan India Ltd.