

## Revised syllabus (2019Pattern) M. Com. Degree course (CBCS) Syllabus for

### M.Com Part II Semester – IV

#### Subject Name: - Operations Research

#### Compulsory Subject Course code: - 202B-II

**Preamble to the syllabus:** Operations research deals with operational planning control issues and execution. It is needed in all sectors of the society. One of the objectives of an operations manager is that how to make use of the available resources in the best way to achieve certain objectives. Quantitative approaches are indeed needed in tackling many of such problems.

Operations Research (OR) deals with problem formulation and application of analytical methods to assist in decision-making of operational problems in planning and control. The techniques of OR are useful quantitative tools to assist operations managers, and has a wide applicability in engineering, manufacturing, construction, financial and various service sectors.

#### Objective of the Program

1. To understand and master the concepts of Operations Research.
2. To inculcate an attitude of enquiry, logical thinking about Quantitative techniques.
3. To develop skills of facing real life problems using operational research techniques.
4. To prepare students to understand the art of applying Operational research techniques.
5. To gain knowledge of Operations research.

Unit No.	Unit Title	Contents
1	<b>Game Theory</b>	Introduction, Characteristics of game theory, Two person zero sum game, Pay off and pay off matrix, saddle point, pure strategy, mixed strategy, value of game, Dominance Principle, Algebraic system of solving 2X2 Game, Numerical problems
2	<b>Linear Programming Problem (L.P.P.)</b>	Introduction, Advantages and Applications of L.P.P., Basic Definitions and Terminology, Formulation, Canonical and Standard forms, Slack, Surplus and Artificial variables, Solution by graphical method (for problems with two variables only), Solution by simplex method (canonical form and two iterations only), degenerate, alternate, unbounded and Infeasible solutions, Big M method, Formation of dual of a L.P.P. and relation between solution of primal and dual, Numerical problems

3.	<b>Transportation Problem (T. P.) and Assignment Problem</b>	Definition, T.P. as L.P.P., balanced and unbalanced T.P., Methods of finding Initial Basic Feasible Solution (I.B.F.S.) - North – West corner method, Matrix Minima Method, Vogel's approximation method, Optimal solution by U-V method, Maximization and degeneracy in T.P. Definition, balanced and unbalanced A.P., Hungarian method, Variations of A.P (maximization and restrictions), Numerical Problems
4.	<b>Project Management and Sequencing</b>	Activity, Event, Loop, Network (definition and drawing), Critical Path Method(CPM): critical activity, critical path, float (free, independent, total) , forward pass and backward pass calculations Programme Evolution and Review Technique PERT): optimistic, pessimistic, most likely time estimates, expected time estimate and its variance Numerical Problems
5.	<b>Sequencing Problems</b>	Assumptions in sequencing model, Basic terminology, n-jobs through two machine problems.

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