

Subject	QUANTITATIVE TECHNIQUES - II
Subject Code	UCMAL02/BL02 / CL02
Nature	Allied Subject
SEMESTER	II
Maximum Marks	75

Unit I

Differential calculus: Functions, Limits, Continuity, Differentiation –Simple differentiation (without Trigonometric functions), Differentiation of Implicit functions, (Up to second order)-Simple problems. Maxima and minima of functions of one variable, Concavity and convexity, Point of inflexion, Application: Marginal cost, Average cost, Marginal revenue, Total revenue-Simple problems. **Integral Calculus:** Integration by substitution, integration using partial fractions, integration by parts –(Without trigonometric functions) - simple problems. Definite integrals - Properties of definite integrals (without proof), Simple problems. Applications: Marginal cost, Average cost, Marginal revenue, Total revenue-Simple problems.

Unit II

Sampling: Large sample: Definition, Types of Sampling, Standard error, Large sample Test for single mean and Test for difference between two means - Simple problems **Small Samples Tests:** t-test for single mean, t-test for difference between two population means, Chi-square test - Test for the Significant difference between observed and expected frequencies and Test for the independence of attributes - Simple problems.

Unit III

Correlation: Types, Karl Pearson's Coefficient of Correlation, Spearman's Rank Correlation Coefficient, Simple Problems **Regression:** Definition, Method of Least Squares, Regression Lines - Properties, Regression Coefficients – Properties – Simple Problems (bivariate only)

Unit IV

Assignment Problem: Introduction, Assignment problem structure and solution, Unbalanced AP, Maximization type and AP with restrictions (no traveling salesman problem) – simple problems. **Transportation Problem:** Definition, IBFS using NWCR, LCEM, VAM. Modified distribution method (with degeneracy). Unbalanced TP. Maximization type – Simple Problems

Unit V

Game Theory: Two Person Zero Sum Game – Solution of TPZS Games using Maximin & Minimax rules - Principle of Dominance – Algebraic Method (only 2*2 Game) – Graphical Method (without LPP) **Network Analyses:** Definitions – Activity, Node, Critical Path, Float, CPM, PERT (without Crashing) Simple Problems.

REFERENCE BOOKS

- 1 Business Mathematics and Statistics by Dr P.R.Vittal Margham Publication.
- 2 Business Statistics and operations research by Dr P.R.Vittal Margham Publication.
- 3 Business Mathematics and Statistics by B.M.Agarwal Sultan chand Publication.

Question Paper Pattern:

Pattern	Theory	Problems	Total Questions	To answer	Marks per Question	Total Marks
Section A	5	7	12	10	2	20
Section B	1	6	7	5	5	25
Section C	0	4	4	2	15	30

Instructions to Paper Setter:

Section-A: Minimum 2 Questions to be asked from each of the five Units
Section-B: Minimum 1 Question to be asked from each of the five Units
Section-C: Minimum 1 Question to be asked from any four Units