

**CENTRE FOR DISTANCE AND ONLINE EDUCATION
SRI SRI UNIVERSITY, CUTTACK**

**BACHELOR OF BUSINESS ADMINISTRATION
TUTOR MARKED ASSIGNMENT**

Course Code: BBC 206

Academic Year: 2025-26

Course Name: QUANTITATIVE TECHNIQUE

Session: February 2025

Semester: 2nd

Total Marks: 100

A. Answer any eight questions (essay type). Answer in about 350-500 words each.

(10 X 8 = 80)

1. Define Linear Programming Problem (LPP). Explain in detail its meaning, objectives, assumptions, and the fields where LPP can be effectively applied. Give suitable business examples.
2. Describe the process of mathematical formulation of an LPP. Explain decision variables, objective function, constraints, and non-negativity conditions, and provide a complete illustration showing the formulation from a word problem.
3. Discuss the Graphical Solution Method of solving a two-variable LPP. Explain feasible region, corner point method, bounded and unbounded solutions, and illustrate with a solved diagram-based example.
4. What are the Canonical Form and the Standard Form of a Linear Programming Problem? Explain the steps of converting a general LPP into standard and canonical forms with examples.
5. Explain the Simplex Method of solving LPP. Discuss the concepts of basic and non-basic variables, pivot element, entering and leaving variables, simplex table, and optimality test. Solve one numerical example.
6. Describe the Big M Method used for LPPs involving \geq and $=$ type constraints. Explain artificial variables, penalties, infeasible solutions, and solve one illustrative example.
7. Explain the Two-Phase Method of solving LPP. Compare this method with the Big M Method and discuss situations where the two-phase approach is preferred. Provide an example.
8. What is a Transportation Problem? Explain its mathematical structure, initial basic feasible solution methods, degeneracy, and the MODI Method for optimality testing. Solve a numerical problem using MODI.
9. Define Assignment Problem. Explain in detail the Hungarian Method for solving minimisation and maximisation assignment problems. Show the steps using a solved numerical example.

10. Explain the different types of probability approaches: classical, relative frequency, and subjective. Discuss marginal, joint, and conditional probability under independence and dependence, and derive Bayes' theorem with an example. Also explain its application in real-life business decision-making.

B. Write short notes on any four. Answer in about 150-200 words each.

(5 X 4 = 20)

1. Feasible region, bounded and unbounded solutions, feasible and infeasible solutions, decision variables, and objective function.
2. Role of artificial variables in \geq and $=$ type constraints; relevance in Big M and Two-Phase methods.
3. Meaning, causes, and how degeneracy affects initial feasible solutions and optimality tests.
4. Conversion of a maximization matrix into a minimization matrix and solving using the Hungarian Method.
5. Meaning, assumptions, properties, and conditions where each distribution is applicable.