

## DECISION SCIENCE

**Paper Code: ETIT-302**  
**Paper: Decision Science**

<b>L</b>	<b>T/P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>4</b>

**INSTRUCTIONS TO PAPER SETTERS:**

**MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks

***Objective:** Skills acquired from this course will enable students to apply various decisions making and optimization techniques in solving problems pertaining to their respective areas of study.*

**UNIT- I**

Descriptive Statistics, Presentation of Data, Measures of Central Tendency and Variation, Probability-Concepts, Theorems, Bayes' Rule, Linear Programming, Formulation, Graphical and Simplex Method.

[T1][R1] [No. of hrs. 10]

**UNIT- II**

Decision Sciences and Role of quantitative techniques, Steps in decision making. Decision making under uncertainty, including optimism criterion, pessimism criterion, Laplace criterion, optimism criterion, Hurwicz criterion and Regret criterion. Decision making under risk, Multistage decision making, Multi criteria decision making. Posterior probabilities and Bayesian Analysis.

[T1][T2][No. of hrs. 10]

**UNIT- III**

**Game Theory:** Two person zero-sum games, concept of dominance, Pure and Mixed Strategy. Arithmetic, Algebraic, Matrix Algebra method. Solution by Dominance, Subgame and Linear programming method. Queuing Theory, Basic structure, Terminology, Classification, Birth and Death Process. Queuing Models upto 2 service stations.

[T1][R1][No. of hrs. 12]

**UNIT-IV**

Transportation Problems, Initial Basic Feasible Solution, Test for Optimality. Assignment problems. Network Analysis - PERT and CPM.

Network Models, Concept, Drawing network, identifying critical path, Calculating EST, LST, EFT, LFT, Slack and probability of project completion (CPM and PERT), Crashing of Network.

[T1][R3][No. of hrs. 12]

**Text Books:**

[T1] Ken Black (2009) Business Statistics: For Contemporary Decision Making, 5th edition, Wiley-India.

[T2] Barry Render, RM Stair, ME Hanna and TN Badri (2009) Quantitative Analysis for Management, 10<sup>th</sup> edition, Pearson Prentice Hall.

**References Book:**

[R1] Operations Research, H.A. Taha , Prentice-Hall India, 6<sup>th</sup> Edition, 2004