**Paper Name: PG 402: Decision Analysis & Operations Research**

**1. Linear Programming [12L]**

a) Formulation of LP Models

b) Graphical LP Solution

c) Simplex Method

d) Artificial Variables – Big M - Method and Two-phase Method

e) Dual Simplex, Duality, Sensitivity Analysis, Shadow Price and their economic

interpretation

**2. Transportation, Transshipment and Assignment Models [6L]**

a) Construction of Transportation, Transshipment and Assignment Models

b) The Transportation Algorithm

c) The Hungarian Method for the Assignment Problem

d) The Transshipment problem

**3. Goal Programming [3L]**

a) Construction of Goal Programming Models

b) Goal Programming Algorithms

**4. Integer Linear Programming [4L]**

a) ILP Algorithms - Branch and Bound, Cutting Plane Algorithm

**5. Decision Analysis [4L]**

a) Decision Making under Certainty – Analytic Hierarchy Process

b) Decision Making under Risk and Uncertainty

**6. Queuing Models [3L]**

a) M/M/1 Queues and applications

b) M/M/c and M/M/c/k Queues and their applications

**7. Simulation Models [4L]**

a) Construction of Simulation Models

b) Generation of Random numbers from discrete distributions

Application models to be discussed in detail

**8. Game Theory [4L**]

a) Basic Concepts and application in Capital Budgeting and Duopoly Strategy

b) 2 person zero sum game, mixed strategy, graphical solution, non-zero sum games.

**References :**

1. Hillier, F.S. and Lieberman, G.J. : Operations Research (8th edition), TMH.Kasana, H.S. & Kumar, K.D. - Introductory Operations Research; Springer

2. Render B, Stair R M Jr, Hanna M E : Quantitative Analysis for Management (9th edition); Pearson Education Ross, Sheldon – Simulation; Elsevier

3. Taha, H.A. : Operations Research - An Introduction (8th edition), Prentice Hall/Pearson Education