Pandit Deendayal Petroleum University School of Liberal Studies

20BSM307T					LINEAR PROGRAMMING					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25	--	--	100

COURSE OBJECTIVES

- To get familiarize with the mathematical formulation of a real world problem.
- To acquaint with the problem solving techniques theoretically as well as graphically.
- To tackle several parameters into account while dealing with the problem.
- To make aware the students about the applications of various forms of Linear Programming.

UNIT 1 LINEAR PROGRAMMING: MODEL FORMULATION **10 Hrs**

Structure of linear Programming, Advantages and limitations of linear programming, Mathematical model of linear problem, applications of LP model to Production, marketing, engineering and transportation etc. Solution of LPP by graphical method

UNIT 2 SOLUTIONS BY SIMPLEX ALGORITHM **10 Hrs**

Simplex algorithm (maximization case), Big M method, Multiple solutions, unbounded solutions, infeasible solution

UNIT 3 INTEGER LINEAR PROGRAMMING AND DUALITY **10 Hrs**

Types of integer Programming problem, Gomory's all integer cutting plane method, Branch and Bound method, formulation of dual from LP problem, advantages of duality

UNIT 4 TRANSPORTATION AND ASSIGNMENT PROBLEM **10 Hrs.**

Methods for finding initial basic feasible solution: North-West Corner Rule, Matrix Minima Method, Vogel's Approximation Method, Optimal Solution: MODI Method, Assignment Problem: Hungarian Method

40 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to
CO1 – **Understand** a basic thoughtfulness for linear programming problem
CO2 – **Apply** the techniques of LPP to solve real world problems
CO3 – **Distinguish** use of different methods to various kinds of LPP on the basis of type of constraints and number of variable.
CO4 – **Judge** Importance of solution obtained in terms of uniqueness, bound and optimality
CO5 – **Formulate** mathematical model for management and technical problems using LPP concepts.
CO6 – **Create** an interest to solve transportation and assignment problems with its physical significance.

TEXT/REFERENCE BOOKS

1. S. I. Gass, Linear programming, Mc Graw Hill Book Company, 1985.
2. Kanti Swaroop, Man Mohan and P.K. Gupta, Operations Research, Sultan Chand and Sons, 2005.
3. Hamdy A. Taha, Operations Research: An Introduction, McMillan Publishing Company, 2007.
4. K. V. Mittal and C. Mohan, Optimization methods in Operations Research and System Analysis, New Age International Publications,1996

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100 **Exam Duration: 3 Hrs**

Part A : 10 questions of 2 marks each	20 Marks (40 mins)
Part B: 5 questions 6 marks each	30 Marks (50 mins)
Part C: 5 questions 10 marks each	50 Marks (90 mins)