MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR
THIRD YEAR
B. Sc. MATHEMATICS 2016-17
PAPER – III(B)
NUMERICAL ANALYSIS AND OPERATIONS RESERCH

Duration: 3 Hours   Max. Marks: 75

Paper –III (Optional): Any one of the following papers –

UNIT - I

Differences, Relation between differences and derivatives, differences of Polynomial, Newton-Gregory formula for forward and backward interpolation, divided differences. Newton's General interpolation formula, Lagranges's interpolation formula.

UNIT - II

Gauss's central difference formula, Stirling's and Bessels interpolation formula, Inverse interpolation. Numerical differentiation, Derivatives from Interpolation formulae, Method of operators, Numerical Integration: Newton-cotes Quadrature formula, Trapezoidal, Simpson's one third, Simpson's three-eight rules.

UNIT-III

Gauss Quadrature formulae, Estimation of errors in quadrature formula, location of roots by Descarte's method of sign, Newtons theorem on multiple roots, Numerical solution of Algebraic and Transcendental equations, Bisection method, Regula-Falsi method, Method of integration .

UNIT-IV

Introduction to linear programming problems, Mathematical formulation Graphical method of solution of linear programming problems (Problems of two variables only), Theory of convex sets, Theory of Simplex method and its applications to simple linear programming problems.

UNIT - V

Concepts of duality in linear programming, formation of dual problems, Elementary theorems of duality. Assignment and transportation problems and their optimum solutions.

References:

1.   C. E. Froberg : Introduction to Numerical Analysis
2.   M. K. Jain, S. R. K. Iyenger   : Numerical methods: Problems & solution
          and R.K. Jain
3.   G. Hadley   : Linear Programming

4.   Kanti Swaroop, P. K. Gupta   : Operation Research
         and Man Mohan
5.   H.C. Saxena   : Numerical Analysis
6.   Goyal, Mittal : Numerical Analysis
7.   Goyal, Mittal : Numerical Analysis (Hindi ed.)
8.   Goyal, Mittal : Numerical Analysis (Hindi ed.)
9.   Goyal, Mittal : Operations Research
10.   S.D.Sharma   : Operations Research
11.   Gokhroo, Saini, Jain   : Operations Research (Hindi ed.)
12.   Bhargava, Bhati, Sharma   : Linear Programming (Hindi ed.)
13.   Gokhroo, Saini, Jain : Linear Programming (Hindi ed.)