

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2018**Subject Code: 2181912****Date: 30/04/2018****Subject Name: Optimization(Department Elective II)****Time: 10:30 AM to 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Enlist Minimization Methods. **03**
(b) Define: Constraint Surface, Objective Function. **04**
(c) Compare Quasi-Newton method & Newton - Raphson. **07**
- Q.2** (a) List out Application of Optimization. **03**
(b) Enlist Minimization Methods & Explain Fibonacci Method in detail. **04**
(c) State Kuhn-Tucker condition for Multi Variable Optimization with Inequality Constraint. **07**
- OR**
- (c) Find the dimensions of a cylindrical tin (with top and bottom) made up of sheet metal to maximize its volume such that the total surface area is equal to $A_0 = 24 \pi$. **07**
- Q.3** (a) Write the Taylor's Series Expansion of a function $f(\mathbf{x})$. **03**
(b) Define: Design Vector, Design Constraints. **04**
(c) Differentiate Simplex Method & Simple Algorithm. **07**
- OR**
- Q.3** (a) Explain Bisection Method. **03**
(b) Describe Lagrange's method of multipliers for solving optimization Problems. **04**
(c) Write Short note on Golden Section method. **07**
- Q.4** (a) What is Parametric Constraint? **03**
(b) Short note on Genetic Algorithms. **04**
(c) Application of Linear Programming. **07**
- OR**
- Q.4** (a) How many basic solutions can an LP problem have? **03**
(b) What do you mean by Neural Network? Discuss. **04**
(c) Explain optimization of Fuzzy System in detail. **07**
- Q.5** (a) State the Linear Programming Problem in Standard form. **03**
(b) Explain Random Search methods. **04**
(c) Classify Unconstrained Optimization Techniques. & Explain Grid Search method. **07**
- OR**
- Q.5** (a) What is difference between Interpolation & Elimination methods? **03**
(b) What are the roles of Exploratory and Pattern moves in the Hooke- Jeeves method? **04**
(c) Discuss Powell's Method for Non Linear Programming in detail. **07**
