

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2181912

Date: 04/05/2017

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) List out Application of Optimization. & define 1. Design Vector, 2. Design Constraints, 3. Constraint Surface, 4. Objective Function **07**
- (b) Differentiate Simple Algorithm & Simplex Method. **07**
- Q.2** (a) Describe Lagrange's method of multipliers for solving multi variable optimization Problems. **07**
- (b) State Kuhn-Tucker condition for multi variable optimization with inequality constraint. **07**
- OR**
- (b) Find the dimension of a box of largest volume that can be inscribed in sphere of unit Radius by Direct Substitution method. **07**
- Q.3** (a) Enlist Minimization methods & Explain Fibonacci method in detail. **07**
- (b) Short note on Golden Section method. **07**
- OR**
- Q.3** (a) Compare Newton-Raphson and Quasi-Newton method. **07**
- (b) Find the minimum of  $f = x(x - 1.5)$  in the interval (0.0, 1.0) to within 10% of the exact value by Interval Halving method. **07**
- Q.4** (a) Classify Unconstrained Optimization Techniques. & Explain Grid Search method. **07**
- (b) What are the roles of Exploratory and Pattern moves in the Hooke-Jeeves method? **07**
- OR**
- Q.4** (a) Explain in detail Random Search methods. **07**
- (b) Discuss Powell's Method for nonlinear programming in detail. **07**
- Q.5** (a) Write Short note on Genetic Algorithms. **07**
- (b) What do you mean by Neural Network? Discuss in detail. **07**
- OR**
- Q.5** (a) Explain optimization of Fuzzy System in detail. **07**
- (b) Discuss application of Linear Programming. **07**

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