Seat No.: _____ **Enrolment No.**_____

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 A0 = 24 π.	**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**

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