Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER III (NEW) – EXAMINATION – WINTER-2016

Subject Code: 2730504 **Date:25/10/2016**

Subject Name: INTRODUCTION TO OPTIMIZATION TECHNIQUES

Time:02:30 pm to 05:00 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 major applications of Optimization in engineering field. Explain any one application in very brief.	**07**
	(b)	Explain direct substitution method in classical optimization techniques.	**07**
Q.2	**(a)**	Compare Constrained and Unconstrained optimization in brief.	**07**
	(b)	Explain the basic features of Lagrange multiplier method for simple problem with two variables and one constraint.	**07**
		OR	
	(b)	Explain multivariable optimization with inequality constraints.	**07**
Q.3	**(a)**	Explain scalar form and matrix form of linear programming method.	**07**
	(b)	Explain transportation models and its variants.	**07**
		OR	
Q.3	**(a)**	Explain mixed integer programming in brief.	**07**
	(b)	Explain search with fixed step size and search with accelerated step size.	**07**
Q.4	**(a)**	Explain Exhaustive search method in brief. With respect to that method, find the minimum of $f = x(x-1.5)$ in the interval of (0.0, 1.00) to within 10% exact value.	**07**
	(b)	Explain the Fibonacci method of nonlinear programming with suitable example.	**07**
		OR	
Q.4	**(a)**	Differentiate between quadratic interpolation method and cubic interpolation method with suitable example.	**07**
	(b)	Explain Particle swarm optimization method in detail.	**07**
Q.5	**(a)**	Explain characteristics of Unconstrained problem in detail.	**07**
	(b)	Explain Taguchi's method of optimization in detail.	**07**
		OR	
Q.5	**(a)**	Explain optimization in fuzzy system with suitable example.	**07**
	(b)	Explain genetic algorithms in optimization.	**07**