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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2161007 **Date:13/05/2016**

Subject Name: Digital Control

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)**	Explain Basic Block Diagram of Digital Control System.	**07**
	(b)	Explain the Pulse Transfer Function of Closed Loop System.	**07**
Q.2	**(a)**	Explain Mathematical Modeling of Sampling Process.	**07**
	(b)	Explain Block Diagram realization of a Filter Showing Direct Programming.	**07**
		OR	
	(b)	Explain the Pulse Transfer Function of Digital PID Controller.	**07**
Q.3	**(a)**	Explain Primary strip and Complementary strip with Necessary Diagram**.**	**07**
	(b)	Explain the Jury Stability Criterion.	**07**
		OR	
Q.3	**(a)**	Explain the Modal of the Sample and Hold Operation.	**07**
	(b)	Explain Steady state Riccati Equation.	**07**
Q.4	**(a)**	Explain Stability Improvement by State Feedback.	**07**
	(b)	Explain Solution of the Linear Time-Invariant Discrete time Equation.	**07**
		OR	
Q.4	**(a)**	Explain the Controllability and Observability.	**07**
	(b)	Explain Optimal Regulator System based on a Quadratic Performance Index.	**07**
Q.5	**(a)**	Explain the State Equation with Diagram and Necessary Equation.	**07**
	(b)	Explain the Stability Analysis of Closed Loop System in Z-plane.	**07**
		OR	
Q.5	**(a)**	Explain Quadratic Optimal Control Problem.	**07**
	(b)	Explain the Discretization of Continuous time State-Space Equation.	**07**

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