Seat No.: _____　　　　　　　Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – WINTER 2018

Subject Code:2160807　　　　　　　　　　　　**Date:07/12/2018**

Subject Name:Digital Control System

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)**	Comparison between digital Control System & analog control system with block diagram.	**03**
	(b)	What is Aliasing? Explain it by waveforms	**04**
	(c)	Explain the Basic Structure of Computer-Controlled.	**07**
Q.2	**(a)**	Write a short note on Digital Position Control System.	**03**
	(b)	Explain Practical Sample and Hold Circuit	**04**
	(c)	Explain the Basic Block Diagram of PLC and Explain the Ladder Diagram of AND Function.	**07**
		OR	
	(c)	Explain the Generalized Operational Block Diagram of Feedback Control System	**07**
Q.3	**(a)**	Explain the various Advantages offered by Digital Control	**03**
	(b)	Explain the Jury Stability Criterion.	**04**
	(c)	Write a short note on Digital Temperature Control System.	**07**
		OR	
Q.3	**(a)**	Explain Properties of Z-transform any one.	**03**
	(b)	Explain Conversion of State variable Modals to transfer Function	**04**
	(c)	Explain the z-Domain Description of System with Dead Zone with Necessary Equation.	**07**
Q.4	**(a)**	Explain the Controllability and Observability.	**03**
	(b)	Explain Sampling and Quantization effect in detail.	**04**
	(c)	Design Phase Lag compensator using root locus plot.	**07**
		OR	
Q.4	**(a)**	Explain the reconstruction of analog signal	**03**
	(b)	Explain the Invariance property of a state variable system	**04**
	(c)	Explain the state variable analysis for a Multi-Variable system.	**07**
Q.5	**(a)**	Explain BIBO stability in detail.	**03**
	(b)	Explain Mathematical Modeling of Sampling Process.	**04**
	(c)	Explain the effect of High Gain on the Control system. Which are the Limiting factors for High Gain.	**07**
		OR	
Q.5	**(a)**	Explain the Eigen Values and Eigen Vectors of a System	**03**
	(b)	Explain the relation between transfer function and state space model for a discrete time system.	**04**
	(c)	Explain the design Specification & configuration of basic digital control system.	**07**

****