Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER– II (New) - EXAMINATION – SUMMER-2017

Subject Code: 3725201 **Date: 25/05/2017**

Subject Name: System Design

Time:02:30 PM To 5:00 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 Hardware Software Co-Design for System Design.	**07**
	(b)	Explain in detail about the SPI Bus Interface and the generic software support for the SPI devices.	**07**
Q.2	**(a)**	Explain the concept of System Design in brief.	**07**
	(b)	Explain in detail about the Floating Point and Fixed Point Data formats.	**07**
		OR	
	(b)	Explain the followings: 1. Compiler 2. Assembler 3. Linker 4. Debugger	**07**
Q.3	**(a)**	Explain about the decoupling at (a) IC level and (b) Board Level.	**07**
	(b)	Explain in detail about the basic components of any typical real time embedded system.	**07**
		OR	
Q.3	**(a)**	Explain in detail the following: 1. Single Layer PCB 2. Double Layer PCB 3. Multi Layer PCB	**07**
	(b)	Define a Real Time Embedded System and describe its characteristics.	**07**
Q.4	**(a)**	Explain in detail about the I^2C Bus Interface and the generic software support for the I^2C devices.	**07**
	(b)	Explain in detail power consumption issues in Hardware-Software Co-Design.	**07**
		OR	
Q.4	**(a)**	Explain the following I/O data transfer techniques: 1. Program Driven I/O Transfer 2. Interrupt Driven I/O Transfer 3. Direct Memory Access I/O Transfer	**07**
	(b)	Explain the need for prototyping and prototyping using FPGA platforms.	**07**
Q.5	**(a)**	Compare FPGA v/s ARM Microcontroller	**07**
	(b)	Explain the characteristic impedance property of transmission lines on the Hardware board for signal transmission	**07**
		OR	
Q.5	**(a)**	Explain in brief Chemical Etching: Principles and Mechanisms.	**07**
	(b)	List down the high speed hardware system design challenges and explain any one.	**07**

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