Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – WINTER 2015

Subject Code: 170907 **Date: 04/12/2015**

Subject Name: Advanced Microcontrollers and Embedded System

Time: 10:30am to 1:00pm **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 the architecture of CIP-51 microcontroller with block diagram.	**07**
	(b)	Which are the different modes of operation of the PCA timer in P89C51RD2xx? Explain 16-Bit software timer mode in detail with block diagram.	**07**
Q.2	**(a)**	Write a 'c' programme to use Watch Dog Timer in PCA of P89v51RD2.	**07**
	(b)	Explain with diagram, the various sources of system clock used in Si-Lab. C8051F12x microcontroller.	**07**
		OR	
	(b)	Which are the different UART0 operational modes in P89V51RD2 Microcontroller? Explain Multiprocessor Communication and Automatic address recognition features in detail.	**07**
Q.3	**(a)**	Explain the bits of CMOD & CCON of PCA timer in P89V51RD2.	**07**
	(b)	Explain SPI control and status register and draw the machine cycle of SPI data transfer with CPHA=0 and CPHA=1.	**07**
		OR	
Q.3	**(a)**	What is the role of PLL in the generation of system clock? Explain the procedure for PLL initializing.	**07**
	(b)	Explain the TMOD, TCON and CKCON SFR register for Timer 1 of C8051F12x.	**07**
Q.4	**(a)**	Draw & explain interfacing of E^2PROM with P89V51RD2.	**07**
	(b)	Discuss the interfacing of 89C51RD2xx microcontroller to RTC.	**07**
		OR	
Q.4	**(a)**	What is worst time and worse case in embedded system? Also explain the difference between Real Time OS and Conventional OS.	**07**
	(b)	Explain the task code and routine code in embedded programming.	**07**
Q.5	**(a)**	How many timers are available in C8051F12x? Which are the different modes of operation? Explain Timer 3 in capture mode with block diagram.	**07**
	(b)	Explain in short the operational modes of UART1 of Si-lab. Microcontroller.	**07**
		OR	
Q.5	**(a)**	Describe in short the various modes in which the Timer 2 of P89C51RD2xx microcontroller can be used for different applications.	**07**
	(b)	Write 'c' programme using PCA of P89V51RD2 for variable frequency with constant duty cycle. Use timer0 in mode 1 to provide appropriate delay. Crystal frequency is 12MHz.	**07**

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