Seat No.:		
	GUJARAT TECHNOLOGICAL UNIVERSITY	
	BE- VII th SEMESTER-EXAMINATION - MAY/JUNE- 2012	
•	code: 170907 Date: 29/05/2012	
-	Name: Advanced Microcontrollers and Embedded Systems	
	2:30 pm – 05:00 pm Total Marks: 70	
Instruc		
	ttempt all questions.	
	lake suitable assumptions wherever necessary. Igures to the right indicate full marks.	
	Which are the different modes of operation of the PCA timer? Explain High Speed	
	Output mode in detail with block diagram.	07
(b)	Explain the operation of UART in mode 1 with diagram. What is the use of SM2 bit	
	of SCON register in multiprocessor communication?	07
O 1 (a)	Explain CDI amountion in Master and Clave made with Master Clave interconnection	
Q.2 (a)	Explain SPI operation in Master and Slave mode with Master-Slave interconnection diagram.	07
(b)	Write a 'c' program to measure the phase difference of two square wave signals using	07
· /	P89V51RD2 microcontroller with crystal frequency of 11.0592 MHz using PCA	07
	timer. Use mode 1 of PCA timer source.	
	OR	
	Write a 'c' program to receive ten alphabets serially and transmit after case	07
	conversion using P89V51RD2 microcontroller with crystal frequency of 11.0592 MHz, using Timer 1 with configuring UART in mode 1 with baud rate of 9600 in 6	07
	clock mode.	
Q.3 (a)	Explain Inter-IC protocol. Which are the different conditions in I2C? Explain each of	
	them in detail.	07
(b)	Enlist advanced features of CIP51 as compare to normal 8051.	
	OR	07
O(3)	What is PLL? Also Explain the PLL control and PLL pre-divider registers	
Q.5 (a)	what is I BE. Also Explain the I BE control and I BE pie divided registers	07
(b)	Explain SPI control and status register and draw the machine cycle of SPI data	
	transfer with CPHA=0 and CPHA=1.	07
Q.4 (a)	Explain Memory organization in CIP51 microcontroller.	٥-
(b)	How many times are available in C0051E1202 Which are the different modes of	07
(b)	How many timers are available in C8051F120? Which are the different modes of operation? Explain Timer 3 in capture mode with block diagram.	07
	OR	07
Q.4 (a)	Explain the Task states and Task data in RTOS with necessary diagram	
		07
(b)	Explain the PCA Timer interrupt structure and Edge-triggered mode of C8051F120	
0 5 (-)	with block diagram.	07
Q.5 (a)	Explain the characteristics of various software Architecture	07
(b)	Explain how following logics are incorporated in I2C protocol in CIP51	U/
(~)	Microcontroller family? (i) Arbitration, (ii) Clock low extension (iii) SCL Low timeout	
	(iv) SCL High timeout	
0.5 ()	OR	
Q.5 (a)	Draw and explain the internal block diagram of ADC0/ADC2 and explain modes of operation.	07

(b) Write a 'c' program for generating a square wave with 55% duty cycle using P89V51RD2 with crystal frequency of 11.0592 MHz using PCA Timer in PWM mode of operation.

What is the PWM frequency if PCA Timer is used in 12 clock mode in mode 1?
