Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1722906 Date: 02-01-2013

Subject Name: Embedded and Real Time System

Time: 10.30 am – 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 following applications of microcontroller:- (1) Temperature control (2) Stepper motor control	**07**
	(b)	Compare full-custom and semi-custom IC Technology.	**04**
	(c)	Explain in brief PID control.	**03**
Q.2	**(a)**	Define Embedded system. Draw & explain block diagram of digital camera system.	**07**
	(b)	What are the advantages of using standard single purpose processor over general-purpose processor? Draw & explain basic architecture, operation and design of general-purpose processor. **OR**	**07**
	(b)	What are the basic stages when microprocessor executes an instruction? Explain the concept of pipelining with neat sketches.	**07**
Q.3	**(a)**	Enlist types of Processors. Compare various types of Processors in tabular forms.	**07**
	(b)	Explain in detail architecture of PIC (16F72) processor.	**07**
		OR	
Q.3	**(a)**	Explain in detail PWM interfacing.	**07**
	(b)	How USART differs from UART.Explain in detail USART.	**07**
Q.4	**(a)**	Write a program to exchange the nibbles of a data byte without use of ROTATE instructions. Data is stored at memory location C050H. Store result at memory location C051H.	**07**
	(b)	Write a detailed note on Timers of 8051.	**07**
		OR	
Q.4	**(a)**	How microcontroller differs from microprocessor. Draw & explain functional block diagram of 8051 microcontroller.	**07**
	(b)	Explain interfacing of LED display & keyboard with 8051 microcontroller.	**07**
Q.5	**(a)**	Write a detailed note on semaphores-deadlock-process and stack management.	**07**
	(b)	Define interrupt. Enlist & explain interrupts for 8051 microcontroller. Which interrupt(s) has the highest priority?	**07**
		OR	
Q.5	**(a)**	What are the basic steps involved in executing an interrupt. Discuses in brief interrupt driven system.	**07**
	(b)	Explain round robin primitive rate monolithic foreground and background systems.	**07**

****