Subject Code: 2160307

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

BE – SEMESTER – VI (NEW).EXAMINATION – WINTER 2016

Date: 24/10/2016

Subject Name: Embedded system Design Time: 10:30 AM to 01:00 PM Instructions:  1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.			
Q.1	(a) (b)	Enlist and explain necessary attributes of embedded systems.  Draw block diagram of PIC16F87X controller for Embedded Systems. Enlist specifications of PIC16F87X.	07 07
Q.2	(a) (b)	Enlist names and their memory location of digital I/O ports available in PIC16F87X. Draw simplified form of digital I/O pin hardware. Enlist the basic Interrupts Sources in the PIC16F87X. Explain basic timer interrupt process.	07 07
	<b>(b)</b>	OR  Draw the serial peripheral interface (SPI) bus connections for data exchange.  Give detail description of SPI signals.	07
Q.3	(a) (b)	Explain sequence control operation in PIC controller.  Draw interfacing diagram of ADC with PIC controller. Write necessary program for ADC interfacing with PIC controller.  OR	07 07
Q.3	(a) (b)	Write a short note on Special function registers available in PIC controller. Explain design aspects of temperature sensor with PIC controller with programming concepts.	07 07
Q.4	<ul><li>(a)</li><li>(b)</li></ul>	Write a c program to Generate square wave with 1 KHz frequency from pin C1 of PIC controller. With 25% duty cycle.  Write a c program to arrange the data of register bank 2 into ascending order.  OR	07 07
Q.4	<ul><li>(a)</li><li>(b)</li></ul>	Write a c program code for 7 segment interface to display 0 to 9 with some delay. Write a c language code to check input data from port C is EVEN or ODD.	07 07
Q.5	(a) (b)	Draw block diagram of Arduino UNO board. Enlist its features & Applications. Write a c programming language for LCD interface with PIC controller.  OR	07 07
Q.5	(a) (b)	Explain design aspects of Ultrasonic sensor interfacing with Arduino UNO board.  Explain technical aspects of Peripheral interface with PIC controller.	07 07

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