Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VI (New) EXAMINATION – WINTER 2019

Subject Code: 2160307   **Date: 06/12/2019**

Subject Name: Embedded system Design

Time: 02:30 PM TO 05:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Explain Types of Embedded system.	**03**
	(b)	Draw Pin Diagram of PIC16F877A.	**04**
	(c)	Explain and draw Architecture of PIC16F877A.	**07**
Q.2	**(a)**	List out essential attributes of embedded system.	**03**
	(b)	Explain Internal RAM organization of pic16F877A.	**04**
	(c)	Draw and explain SPI interfacing in PIC16F877A.	**07**
		OR	
	(c)	Write a C program to turn on buzzer with 200Hz frequency when switch is pressed at C0 pin else turn on buzzer with 400Hz frequency.	**07**
Q.3	**(a)**	Give difference between UART and I2C Protocol.	**03**
	(b)	Write a C program to generate triangular waveform using PIC16F877A.	**04**
	(c)	Explain interfacing of Servo motor with PC16F877A.	**07**
		OR	
Q.3	**(a)**	Explain ADCON1 SFR.	**03**
	(b)	Explain PWM module of PIC16F877A.	**04**
	(c)	Explain Timer2 module of PIC16F877A. Describe its configuration registers.	**07**
Q.4	**(a)**	Explain OPTION register.	**03**
	(b)	Draw block diagram of USART transmit block.	**04**
	(c)	Write a C program for Temperature control system.	**07**
		OR	
Q.4	**(a)**	Draw block diagram of Arduino UNO board.	**03**
	(b)	Write a program to read Potentiometer value, convert it to angle and display it on hyper terminal using Arduino Uno.	**04**
	(c)	Write a c program to display "SEM6" on LCD using PIC16F877A controller.	**07**
Q.5	**(a)**	Define terms: Watchdog timer, BOR and POR.	**03**
	(b)	Write a c program code for 7 segment interface to display 0 to 9 with 500ms delay.	**04**
	(c)	Write a Program to transmit with PIC16F877A using 300 baud rate.	**07**
		OR	
Q.5	**(a)**	Explain parallel port of PIC16F877A.	**03**
	(b)	Design alcohol detection system using Arduino Uno board and program it.	**04**
	(c)	Write a C program to control a Fan connected via relay to PIC16F877A using HyperTerminal commands from Computer.	**07**

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