Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC SEM-III Examination-Nov-2011

Subject code: X31103 **Date: 17/12/2011**

Subject Name: Microcontroller and Interfacing

Time: 2.30 pm -5.00 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)**	List basic features of 8051 Microcontroller. Explain RAM structure for Intel 8051 Microcontroller.	**07**
	(b)	Explain difference between Microprocessor and Microcontroller.	**07**
Q.2	**(a)**	List different Addressing Modes of 8051 Microcontroller. Explain them in short with one example.	**07**
	(b)	List the interrupts available in the 8051 Microcontroller. Explain interrupt enable (IE) SFR and Interrupt priority (IP) SFR.	**07**
		OR	
	(b)	Explain TCON and TMOD SFR for 8051 Microcontroller.	**07**
Q.3	**(a)**	Explain different modes of serial communication for 8051 Microcontroller.	**07**
	(b)	Define and describe the directives of 8051 Microcontroller.	**07**
		OR	
Q.3	**(a)**	Answer the following questions [1] Explain PC. [2] Explain function of MOVX A,@DPTR [3] Draw bit format of PSW SFR. [4] Explain function of MOVC A,@A+DPTR [5] Draw clock circuit of 8051 Microcontroller. [6] What is the function of GATE bit in TMOD SFR? [7] Explain function of PUSH instruction	**07**
	(b)	Write assembly language program to sort block of data in descending order.	**07**
Q.4	**(a)**	Explain operation of timer in mode 2.Write program to generate 5 KHz pulse waveform of 50% duty cycle on pin 1.0 using timer 1 in mode 2.	**07**
	(b)	Explain interfacing of external 16K EPROM and 8K RAM with Microcontroller.	**07**
		OR	
Q.4	**(a)**	Write C program to transfer the message "Welcome" serially at 4800 baud rate, 8-bit data, 1 stop bit.	**07**
	(b)	Draw interfacing diagram of LCD with 8051 Microcontroller. Write C program to display "Hello" on LCD.	**07**

Q.5	**(a)**	Draw interfacing diagram of DAC with 8051 Microcontroller. Write program to generate sine wave at the output of DAC.	**07**
	(b)	Draw and explain interfacing of 4x4 matrix keyboard with 8051 Microcontroller. Write program to read switch.	**07**

OR

Q.5	**(a)**	Explain interfacing of stepper motor with Microcontroller. Write program to rotate stepper motor in anti- clockwise direction continuously in full step mode.	**07**
	(b)	Explain RTC interfacing with Microcontroller. Write program to get values of hour, minute and second from RTC to RAM location 30h, 31h and 32h respectively.	**07**

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