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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 151001 **Date: 12/05/2017**

Subject Name: Microcontroller and Interfacing

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.**

Q.1	**(a)**	Explain basic architecture of 8051 microcontroller.	**07**
	(b)	Write a C/Assembly Program to transfer the message "GUJARAT" Serially at 9600 baud, 8 bit data, 1 stop bit. Do this continuously. Xtal =11.0592MHz	**07**
Q.2	**(a)**	List the JUMP and CALL instruction. Describe Conditional JUMP Instruction.	**07**
	(b)	Write an assembly language program to generate square wave of 5 KHz Frequency on pin P1.5 Use Timer 0 in Mode 1.	**07**
		OR	
	(b)	Describe TMOD and TCON Special Function registers.	**07**
Q.3	**(a)**	Explain Internal RAM organization.	**07**
	(b)	Explain following 8051 instructions with an example. (1) MUL AB (2) SUBB A,R0 (3) RR A (4) SWAP A (5) ANL C, Bit (6)XCHD A,R0 (7)RLC A	**07**
		OR	
Q.3	**(a)**	Explain (1) $\overline{EA}$ (2) $\overline{PSEN}$	**07**
	(b)	Write difference between ACALL and LCALL instruction with example.	**07**
Q.4	**(a)**	What is look up table? Describe its application with microcontroller operation	**07**
	(b)	Write an assembly language Program to perform the following (a) Keep monitoring pin P0.1 until it becomes high. (b) When p0.1 becomes high, read in the data from port 1. (c) Send a low-to-high pulse on P0.2 to indicate that the data has been read.	**07**
		OR	
Q.4	**(a)**	Explain PSW of 8051 with neat diagram and example.	**07**
	(b)	Write a C/Assembly Program to send out the value 44H serially one bit at a time P1.0. The LSB Should go out first. (use shift operator of C Programming)	**07**
Q.5	**(a)**	Interface LCD with 8051 microcontroller. Connect data lines with port P0, control lines with any three port pins of port P1. Write program to display message 'Microcontroller" on center of first line and "8051" on the second line with center align.	**07**
	(b)	Two Push to ON switches (SW0 and SW1) are connected to pin P2.0 and P2.1 respectively. Write an assembly language program to monitor the status of SW and perform the clockwise and anticlockwise operation of stepper-motor with interfacing diagram.	**07**
		OR	
Q.5	**(a)**	Explain with diagram of interfacing, ADC 0804 in free running mode interfaced with 8051.	**07**
	(b)	Prepare Assembly Language Program (ALP) with schematic to interface SPDP Relay with 8051.	**07**

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