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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 160903 **Date: 27/04/2017**

Subject Name: Microcontroller

Time: 10:30 AM to 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)**	Draw and explain the block diagram of 8051 Microcontroller.	**07**
	(b)	Discuss the different types addressing modes available in 8051 with suitable illustrations.	**07**
Q.2	**(a)**	Draw and explain structure of P0 and P1 ports in 8051 microcontroller.	**07**
	(b)	Give the format of PSW register and explain the function of all flags. Also explain how PSW can be addressed at bit level.	**07**
		OR	
	(b)	Briefly explain the modes of serial communication.	**07**
Q.3	**(a)**	Explain the following instruction . 1. ACALL 2. DJNZ 3. RETI 4.SWAP	**07**
	(b)	Differentiate between following instruction. 1. MOVC & MOVX 2. PUSH & POP 3. RLA & RLCA	**07**
		OR	
Q.3	**(a)**	Write a program to count the number of 1's and 0's of an 8 bit number.	**07**
	(b)	Eight Hex numbers are stored in RAM locations 50H onwards. Write an assembly language program for 8051 microcontroller to find the biggest number in the set. The biggest number should finally be saved in 60H.	**07**
Q.4	**(a)**	Explain the advantages of IDE in program development. Explain the steps to create a program in Keil µVision3. Why 'C' programming is preferred as compared to assembly programming.	**07**
	(b)	Write a C program to generate a square wave of 50Hz at pin P2.1.	**07**
		OR	
Q.4	**(a)**	Discuss the different types of interrupts available with 8051. State their priorities.	**07**
	(b)	Explain how the speed and direction of DC motor can be controlled using microcontroller.	**07**
Q.5	**(a)**	Explain TCON and TMOD special function registers. Also discuss how external interrupts can be made edge triggered by setting appropriate bits in TCON.	**07**
	(b)	What are assembly directives? Explain any three.	**07**
		OR	
Q.5	**(a)**	Explain how microcontroller can be interfaced with keyboard. Draw flowchart for reading the code of key that has been pressed.	**07**
	(b)	Write a short note on different microcontroller family (PIC, AVR, ARM).	**07**

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