GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2022

Subject Code:2150306   **Date:21-01-2023**
Subject Name:Microcontroller & Interfacing (Biomedical)
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Explain Basic block diagram of Microcontroller.	**03**
	(b)	Explain Structure of machine cycle in 8051.	**04**
	(c)	Draw and explain the architecture of 8051 microcontroller	**07**
Q.2	**(a)**	Explain PSW.	**03**
	(b)	Explain External Memory Interfacing with 8051 with necessary diagram.	**04**
	(c)	Explain PORT0 with necessary diagram.	**07**
		OR	
	(c)	Explain interrupt with vector table. Also explain IP and IE register.	**07**
Q.3	**(a)**	Explain Intel Hex format.	**03**
	(b)	Explain various modes of timer.	**04**
	(c)	Write steps for programming timers in 8051. Also explain TCON.	**07**
		OR	
Q.3	**(a)**	Write an assembly program to convert BCD number to Hex.	**03**
	(b)	Explain Logical instructions.	**04**
	(c)	Draw and Explain basic blocks to transmit serial data also explain SCON.	**07**
Q.4	**(a)**	Write an assembly program to find highest number from data stored in external memory.	**03**
	(b)	Explain different loops used in C Programming.	**04**
	(c)	Write an 8051 C program to transfer the message 'BME' serially at 4800 baud.	**07**
		OR	
Q.4	**(a)**	List the factors to be considered for selection of microcontroller.	**03**
	(b)	Draw interfacing diagram of stepper motor with 8051.	**04**
	(c)	Write a C program to interface DC motor with 8051.	**07**
Q.5	**(a)**	Write an assembly program to rotate data between R0 to R4 without using Exchange instruction.	**03**
	(b)	Draw and explain keypad interfacing with 8051.	**04**
	(c)	Explain interfacing of ADC0808 with 8051 with necessary program.	**07**
		OR	
Q.5	**(a)**	Explain different types of jumps with their range.	**03**
	(b)	Write a program to continuously generate a square wave of 2 kHz frequency on pin P1.5 using timer 1. Assume the crystal oscillator frequency to be 12 MHz.	**04**
	(c)	Write a C program to display up counter from 00-99 on seven segment.	**07**

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