Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2021

Subject Code:2150907   **Date:17/09/2021**

Subject Name:Microprocessor and Microcontroller Architecture & Interfacing

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)**	Discuss the internal RAM structure of 8051.	**03**
	(b)	Draw programming model of 8085 microprocessor and explain flag register in brief.	**04**
	(c)	Draw internal architecture of 8051 controller and explain function of each block.	**07**
Q.2	**(a)**	What is the function of following pins in 8085: TRAP & INTR	**03**
	(b)	Illustrate how address/data lines AD0-AD7are de-multiplexed in 8085?	**04**
	(c)	Write assembly language program count number of 0's and 1's in a byte stored in external memory location C500H. Draw flowchart.	**07**
		OR	
	(c)	Write assembly language program to find the number of negative number from the array of 10 numbers.	**07**
Q.3	**(a)**	Explain basic differences (1) Van neuman and Harvard architecture (2) CISC and RISC	**03**
	(b)	Discuss various addressing modes of 8051 microcontroller assembly language programming.	**04**
	(c)	Write a program to generate a square wave of 1kHz frequency at P2.0 using Timer 1 in Mode 1 with standard crystal frequency.	**07**
		OR	
Q.3	**(a)**	What are tri-state devices & why they are essential in bus oriented system?	**03**
	(b)	Explain all the bits of TMOD register.	**04**
	(c)	Write an assembly language program to convert given binary number to 3 digit BCD number.	**07**
Q.4	**(a)**	Explain advantages of IDE in program development.	**03**
	(b)	How baud rate can be set in 8051 microcontroller for serial communication?	**04**
	(c)	Draw and explain timing diagram of following 8085 microprocessor assembly language statement: MVI A,32H	**07**
		OR	
Q.4	**(a)**	What are the advantages of bit wise programming in 8051?	**03**
	(b)	C programming is more preferred over assembly programming. Justify your answer with proper reason.	**04**
	(c)	Explain the instructions POP, PUSH, DJNZ & SWAP with reference to 8051.	**07**
Q.5	**(a)**	Explain editor, assembler, compiler and linker.	**03**
	(b)	Draw and explain interfacing of 8051 with ADC 0808.	**04**

(c) Explain the Interrupt facility of 8051 microcontroller using IE and IP register. Also mention the internal priority of Interrupt and their vector locations. **07**

OR

Q.5 **(a)** Write C program to get bit P1.0 and send it to P2.1 after inverting it. **03**

(b) Draw interfacing diagram for interfacing of DC motor using H-bridge circuit with 8051 microcontroller. **04**

(c) Discuss the interfacing of seven segment display with 8051 with necessary diagram. **07**

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