Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:2151707 **Date:22/01/2021**

Subject Name:Microcontroller & Interfacing (IC)

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **ALP means Assembly Language Program.**

			MARKS
Q.1	**(a)**	List differences between 8085 microprocessor and 8051 microcontroller.	**03**
	(b)	With help of neat diagram describe bus structure of 8085 microprocessor.	**04**
	(c)	Define addressing mode. Explain different addressing modes of 8051 microcontroller with appropriate examples.	**07**
Q.2	**(a)**	Do the comparison between lower level language and higher level language.	**03**
	(b)	Discuss the operation of LCALL & SJMP instruction of 8051.	**04**
	(c)	Draw and explain timing diagram of MVI A, 55h instruction for microprocessor 8085.	**07**
Q.3	**(a)**	Discuss about 8051 assembler directives.	**03**
	(b)	Write a short note on Port-3 of 8051 microcontroller.	**04**
	(c)	Develop an ALP to convert packed BCD number into two ASCII numbers.	**07**
Q.4	**(a)**	Describe each bit of 8051 microcontroller PSW (flag) register.	**03**
	(b)	Write an 8051 C program to toggle all bits of P2 continuously with some delay.	**04**
	(c)	Interface a seven segment common cathode display with microcontroller 8051. Write an ALP to display numbers from 0 to 9 at every second.	**07**
Q.5	**(a)**	Describe each bits of IE (Interrupt Enable) register of 8051.	**03**
	(b)	Write down the algorithm to detect the pressed key of 4 X 4 matrix keyboard.	**04**
	(c)	Write an ALP to send the message “INDIA” to serial port at 9600 bps forever. Show the load count calculation.	**07**
Q.6	**(a)**	List out 8051 interrupts with their ROM location.	**03**
	(b)	Interface DAC 0808 with 8051 microcontroller.	**04**
	(c)	Write an ALP to generate square wave of 2 kHz frequency on P1.4 with XTAL = 12MHz. Show time delay calculation.	**07**

Q.7	**(a)**	Write an ALP to get data from Port A and display its 1's complement on Port B & C. Assume that address of control register is 83H of IC-8255.	**03**
	(b)	Interface 8 Kbytes RAM with 8051 microcontroller. Draw interfacing diagram and decode memory address range.	**04**
	(c)	Draw interfacing circuit of LCD with 8051 microcontroller. Write an ALP to display "GTU" on LCD.	**07**
Q.8	**(a)**	Develop an 8051 C program to get a data byte form P2. If it is less than 80h, send it to P0; otherwise, send it to P1.	**03**
	(b)	Show the schematic of ADC0804 interfacing with 8051.	**04**
	(c)	Draw interfacing circuit of DC motor with microcontroller 8051. How can we control its speed and direction using PWM?	**07**

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