Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3152409 Date:29/01/2021

Subject Name:Microcontrollers Architecture, Interefacing and Applications

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.**

			MARKS
Q.1	**(a)**	Discuss (1) EEPROM (2) DRAM	**03**
	(b)	Draw the block diagram of microcontroller 8051.	**04**
	(c)	Why delay are required during programming and how they are generated?	**07**
Q.2	**(a)**	Define bits of SCON & TCON registers.	**03**
	(b)	Define the terms: address bus, data bus and control bus.	**04**
	(c)	Explain SFR (Special Function Register) and PSW (Program Status Word).	**07**
Q.3	**(a)**	State important criterion for the selection of microcontroller.	**03**
	(b)	Explain Instructions: LJMP, XCHD, CJNE, and NOP.	**04**
	(c)	Write a program to generate an output as a square wave with a frequency of 50 Hz at P2.2 pin of 8051. Assume that the crystal frequency is 12MHz.	**07**
Q.4	**(a)**	Explain TMOD register.	**03**
	(b)	Define instruction cycle, machine cycle & T-state.	**04**
	(c)	Write a program to Toggle all the LEDs ON and OFF (Blinking LEDs) with a frequency of 01 Hz that are connected to PORT 01 of the 8051 Microcontroller. Take crystal frequency of 12 Mhz.	**07**
Q.5	**(a)**	What is the function of interrupts in 8051? List various interrupts available in 8051.	**03**
	(b)	Explain any two logical instructions of 8051 microcontroller.	**04**
	(c)	Explain different addressing modes of 8051 with example.	**07**
Q.6	**(a)**	What do you mean by stack? Explain in brief w.r.t 8051.	**03**
	(b)	Write a brief note on DAC.	**04**
	(c)	Explain interfacing of 7-segment display with 8051 microcontroller.	**07**
Q.7	**(a)**	Explain the Interfacing of LED with 8051.	**03**
	(b)	State the similarities and differences between following instructions. ADD A, @R1 and ADD A, R1	**04**
	(c)	State various types of Jump and Loop instructions. Explain any three with examples.	**07**
Q.8	**(a)**	What is a subroutine in 8051? Explain in brief with a suitable short example.	**03**
	(b)	Compare vectored & non-vectored interrupts for 8051 microcontroller.	**04**
	(c)	Draw internal architecture of 8051 microcontroller. Discuss function of each block in detail.	**07**

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