

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
