

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:2150306****Date:20/01/2021****Subject Name:Microcontroller & Interfacing (Biomedical)****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) Explain special features of 8051 microcontroller.	03
	(b) Explain various Special function registers of 8051 microcontroller.	04
	(c) Explain with neat diagram internal port pin structure and its working of Port 0,1,2, &3. Explain in which port we require pull up registers and why?	07
Q.2	(a) Explain why do we write LJMP instruction normally at 0000H address location?	03
	(b) With neat schematic show how will you interface 16K ROM and 16 K RAM with 8051 microcontroller. Give the address range for the same.	04
	(c) Write a program in which the 8051 reads data from P1 and writes it to P2 continuously while giving a copy of it to the serial COM port to be transferred serially. Assume that Crystal frequency is 11.0592MHz and baud rate is set at 4800.	07
Q.3	(a) Explain the difference between low-level and edge triggered interrupts.	03
	(b) A stepper motor uses the following sequence of binary numbers to move the motor. How would you generate them? 1100,0110,0011,1001	04
	(c) Write a program using interrupts to get data from P1 and send it to P2 while timer 0 is generating square wave of 3 KHz.	07
Q.4	(a) Explain bank structure of 8051 microcontroller.	03
	(b) Which baud rates will be generated if 12MHz crystal is used instead of 11.0592MHz with 8051 microcontroller.	04
	(c) Write a program to generate a square wave of 100 Hz Frequency on pin P1.3. Assume crystal frequency of 11.0592MHz.	07
Q.5	(a) Explain with neat schematic Timer/counter control logic.	03
	(b) Explain various serial data transmission modes of 8051 microcontroller.	04
	(c) Interface ADC 0804 with 8051 microcontroller and write a program to fetch data from ADC every 1 sec. using port P1 and sending data on port P0.	07
Q.6	(a) Explain various Interrupts used in 8051.	03
	(b) Explain various Timer operation modes in 8051 microcontroller.	04
	(c) Interface a simple stepper motor with 8051 and write a program to rotate it continuously.	07

- Q.7** (a) Explain various addressing modes of 8051 with example, **03**
(b) Write a program to read 200 bytes of data from Port P1 and save the data in external RAM starting at RAM location C000H. **04**
(c) Interface 16*2 LCD with 8051 microcontrollers and write a program to display word "HELLO". **07**
- Q.8** (a) Explain with example the relative and absolute ranges used with jump instruction in 8051 microcontrollers. **03**
(b) Write a program to create square wave that has a high portion of 1085uS and a low portion of 15uS using timer 1. Assume crystal frequency of 11.0592MHz. **04**
(c) Explain with neat diagram architecture of 8051 microcontroller. **07**
