

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:2150306****Date:04/09/2021****Subject Name:Microcontroller & Interfacing (Biomedical)****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) Give difference between Microprocessor and Microcontroller.	03
	(b) Explain Internal Memory organization of 8051.	04
	(c) Explain various loops and compare them with jump instruction.	07
Q.2	(a) Draw Pin diagram of 8051.	03
	(b) Draw and explain Reset circuit of 8051.	04
	(c) Explain all addressing modes of 8051.	07
	OR	
	(c) Draw and Explain architecture of 8051.	07
Q.3	(a) Explain operations of Stack.	03
	(b) Explain arithmetic instructions.	04
	(c) List down all the interrupts of 8051. Explain its handling with example.	07
	OR	
Q.3	(a) Explain PSW of 8051.	03
	(b) Explain TMOD and TCON.	04
	(c) Draw and explain PORT1's internal design.	07
Q.4	(a) Explain in detail auto-reload mode of 8051 timers with necessary diagram.	03
	(b) Explain the following instructions with example: (1) SWAP A (2) XCHD A, @Ri,, (3) INC @Ri, (4) JBC bit, target	04
	(c) Write an 8051 C program to transfer the message 'SEM5' serially at 9600 baud.	07
	OR	
Q.4	(a) Draw circuit to interface external 4K RAM memory with 8051.	03
	(b) Double the number in register R2, and put the result in R3 (high byte) and R4 (low byte) without using instructions ADD, MUL.	04
	(c) Draw and explain 4×4 matrix keyboard interfacing to the ports of 8051.	07
Q.5	(a) Draw interfacing diagram of ADC0804 with 8051.	03
	(b) List the factors to be considered for selection of microcontroller.	04
	(c) Write an assembly program to interface Stepper motor with 8051.	07
	OR	
Q.5	(a) Give specifications of AT89C51 microcontroller.	03
	(b) Write an assembly program to rotate data between R0 to R4 without using Exchange instruction.	04
	(c) Design 8051 connection to LCD. Write commands to display the message 'BM-GECCG'	07
