



USN

--	--	--	--	--	--	--	--	--	--

10MT54

### Fifth Semester B.E. Degree Examination, July/August 2022 Microcontroller

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

#### PART - A

- 1 a. Explain with block diagram, the architecture of 8051. (10 Marks)
- b. Bring out the architectural differences between microprocessor and a microcontroller. (04 Marks)
- c. Explain the working principle of input & output operation of Port - 1. (06 Marks)
- 2 a. Explain the different addressing modes of 8051 with examples and mention their limitations. (10 Marks)
- b. Explain the following instructions with suitable examples:  
i) SWAP A                      ii) RL A                      iii) MOVC A, @A+PC  
iv) XCHD A, @Ri              v) DAA (10 Marks)
- 3 a. Briefly explain the various types jump instruction. (06 Marks)
- b. What is subroutine? Discuss the subroutine instruction with execution steps. (08 Marks)
- c. Write an ALP to generate Fibonacci series upto given value 'n' and store all the n bytes starting from memory location 30h. (06 Marks)
- 4 a. Discuss the data types in 8051C. (06 Marks)
- b. Write an 8051C program to toggle all the bits of P1 and P2 continuously with 250 ms delay. Use SFR keyword to declare the port address. (06 Marks)
- c. Write a 8051C program to convert a hex-data 0FFh in to its equivalent decimal data and display the result digits on P0, P1, P2. (08 Marks)

#### PART - B

- 5 a. Explain TMOD and TCON SFR registers of 8051 timers. (08 Marks)
- b. Write an ALP program to generate a frequency of 100 Hz square wave, using timer 0 in mode 1. Assume crystal frequency = 11.0592 MHz. (12 Marks)
- 6 a. List out the difference between synchronous and asynchronous serial communication. (06 Marks)
- b. Discuss RS-232 Hand shaking signals. (08 Marks)
- c. Write a 'C' program for the 8051 to transfer the message "HELLO" serially at 9600 baud rate, 8-bit data, 1 stop bit, Do this continuously. (06 Marks)
- 7 a. What are edge triggered interrupts? How to set INT0 as level triggered interrupt and INT1 as edge triggered interrupt, explain with the help of SFR related to it. (08 Marks)
- b. What is interrupt priority? Explain how priorities are assigned with the help of IP SFR. (06 Marks)
- c. What are Interrupts, Interrupt subroutines, Interrupt vector table? (06 Marks)
- 8 a. Interface ADC 0804 to 8051 and write a program to read analog data and display the converted data at port 2. (10 Marks)
- b. Explain with a block diagram step by step procedure involved to interface 4 × 4 matrix keyboard to 8051. (10 Marks)

\* \* \* \* \*

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.