USN | | | | | | | | | |

10MT54

Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024
Microcontroller

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full 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 different modes of operation of timer/counter with relevant block diagram. **(12 Marks)**

b. Explain the bit pattern of TMOD and TCON SFR register. **(08 Marks)**

6 a. Explain SCON register with its bit pattern. **(06 Marks)**

b. Explain the different steps in recurring data serially using 8051. **(06 Marks)**

c. Write a program to send the data message "MICROCONTROLLERS" of length 17 character at a band rate Q400, 8 bit data, 1 stop bit serially. **(08 Marks)**

7 a. What is interrupt? List out the difference between interrupt and polling method. **(06 Marks)**

b. Explain various types of interrupts and also write the sequence for interrupt execution. **(08 Marks)**

c. Explain bit pattern of IE and IP. **(06 Marks)**

8 a. Show the interfacing circuit and functional pins of LCD. Write a C program to display "FLOWER" on LCD continuously. **(10 Marks)**

b. Show the interfacing of stepper motor to 8051. Write 8051 assembly or C program to rotate stepper motor in anticlockwise rotation with appropriate delay. **(10 Marks)**

* * * * *