



USN

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

10MT54

Fifth Semester B.E. Degree Examination, Aug./Sept. 2020

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. With the neat block diagram, explain the specific features of 8051 microcontroller. (10 Marks)
b. Give the difference between CISC and RISC architecture. (06 Marks)
c. Explain the following pins of 8051 i) ALE ii) $\bar{E}A$. (04 Marks)
- 2 a. Define addressing mode. Explain each of them with example. (12 Marks)
b. Find the syntax error if any in the following instructions and write the correct instructions and explain them.
i) XCHB R₂, @R₀ ii) Move A, @DPTR iii) PUSH R₄ iv) SWAP A, B. (08 Marks)
- 3 a. Explain the ranges of Jump and call instruction with a neat sketch. (10 Marks)
b. Write an ALP to count the number of positive and negative numbers in a given array of ten bytes. The numbers are available from memory location 8000 h. Store the positive count in R₂ and negative count in R₃. Write suitable comments. (10 Marks)
- 4 a. Explain the different Data types in 8051 'C' with example. (08 Marks)
b. Write a 8051 'C' program to convert packed BCD number to ASCII and display the bytes on P1 and P2. (06 Marks)
c. Write a 8051 C program to generate a square wave of 250ms on –time, 50% duty cycle in pin P1.4. (06 Marks)

PART – B

- 5 a. Explain the bit configuration of TMOD register neatly. (08 Marks)
b. Write a 8051 assembly and C program to generate a delay of 12μsec using Timer 1 in mode 1 with XTAL = 22 MHz. (12 Marks)
- 6 a. Explain different handshake signals of RS232. (09 Marks)
b. Explain the need for MAX232 in serial communication by showing Null modem connection. (06 Marks)
c. Write a Assembly program to transfer a letter 'y' serially at 9600 baud rate continuously. Using timer 1, Mode 2. Do it continuously. (05 Marks)
- 7 a. Explain the different interrupts in 8051, Also write interrupt vector table for the 8051, and explain steps in executing an interrupt. (12 Marks)
b. Write an assembly program that displays a values of 'y' at port 0 and 'N' at port 2 and also generates a square wave of 10KHz with Timer 0 in mode 2 at port pin P1.2, XTAL = 22MHz. (08 Marks)
- 8 a. Write a C program to display sinewave by interfacing DAC with microcontrollers. (08 Marks)
b. With a neat circuit and flow chart, explain interfacing of 8051 microcontroller with 4 × 4 keypad. (12 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.