



CBCS SCHEME

18MT43

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025 Microcontroller

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With a neat block diagram, explain the architecture of 8051 microcontroller. (08 Marks)
- b. Explain memory organization of 8051 with suitable diagram. (08 Marks)
- c. Differentiate between microprocessor and microcontroller. (04 Marks)

OR

- 2 a. Draw and explain PSW of 8051MC. Calculate the status of CY, AC and P flags after the addition of : i) 9CH and 64H ii) 91H and 92H. (06 Marks)
- b. Explain the register organization of 8051. (06 Marks)
- c. Write short note on special function registers. (08 Marks)

Module-2

- 3 a. Explain the junctions of following opcodes also illustrate it using example.
i) MOVX ii) MOVC iii) PUSH and POP iv) XCH v) DJNZ vi) SWAP (12 Marks)
- b. With a neat diagram, explain the Range of Jump and call Instructions. (08 Marks)

OR

- 4 a. Explain the different addressing modes of 8051. Illustrate each with a suitable example. (10 Marks)
- b. Consider a 10 bytes of data stored in memory location 9400h. Separate even and odd bytes store even bytes from location 30h and odd bytes from location 40h. (10 Marks)

Module-3

- 5 a. Explain the different data types in 8051 C with example. (10 Marks)
- b. Define Data Serialization, Time delay. Discuss factors affecting the accuracy of time delay. Also mention ways to create time delay in 8051 C. (10 Marks)

OR

- 6 a. Write 8051 C program to toggle bits of P1 ports continuously with 250ms. (06 Marks)
- b. Explain the different possible modes of Operation Timer. (10 Marks)
- c. Mention differences between Timer and Counter. (04 Marks)

Module-4

- 7 a. Explain different handshake signals of RS-232, Also mention the need for MAX232. (10 Marks)
- b. Write an 8051 C program to transfer the message "YES" serially at 9600 baud rate, 8 bit data, 1 stop bit. Do it continuously. (10 Marks)

OR

- 8 a. What is Interrupt? Explain different interrupts of 8051. Also write Interrupt vector table. (10 Marks)
- b. With a neat sketch, explain the bit configuration of IE register. (04 Marks)
- c. Show the instruction to
- i) Enable serial interrupt timer 0 interrupt and external hardware interrupt, (EXO)
 - ii) Disable the timer 0 interrupt
 - iii) Show how to disable all the interrupt with single instruction. (06 Marks)

Module-5

- 9 a. With neat diagram write an assembly language program to interface DAC to 8051 μ c. (10 Marks)
- b. Write an ALP to rotate the stepper motor clockwise/anticlockwise with full step sequence. (10 Marks)

OR

- 10 a. What is interfacing? Write an ALP to generate a triangular waveform. (10 Marks)
- b. Explain the pin description of ADC804. Explain how to interface DC motor with 8051. (10 Marks)
