

CBCS SCHEME

USN

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

18EE52

Fifth Semester B.E. 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. What you meant by stack? Explain stack pointer operation. (07 Marks)
- b. Explain the addressing modes of 8051 microcontroller with an example. (05 Marks)
- c. Explain the function of each block of 8051 micro controller. Also explain the function of Program counter. (08 Marks)

OR

- 2 a. Explain the memory organization of 8051 micro controller. (07 Marks)
- b. What is memory address decoding? Explain the steps in interfacing memory chips to 8051 microcontroller. (07 Marks)
- c. After adding following number, show the status of CY, AC and P flags.
i) CDh and 87h ii) 68h and A9h (06 Marks)

Module-2

- 3 a. Explain the following instructions of 8051 with example.
i) XCHD A, @ Ri
ii) ADD A, @Ri
iii) MOVC A, @ A + DPTR
iv) CJNE A, iram addr, rel addr
v) DAA (10 Marks)
- b. Explain data type and assembler directives of 8051. (05 Marks)
- c. Write an ALP to load accumulator with the value 55h and complement the content of accumulator 900 times. (05 Marks)

OR

- 4 a. Write an assembly language program to add two numbers 58B6H and A5E7H. Store the result in 9500H memory location. (08 Marks)
- b. Explain PUSH and POP instruction in detail. (06 Marks)
- c. Differentiate RET and RETI instructions of 8051 microcontroller. (06 Marks)

Module-3

- 5 a. Describe the different data types used in C programming. Also explain why programming in 8051 C is more popular as compared to assembly programming? (08 Marks)
- b. Write a C program to get a byte of data from P₁, wait (1/2) second and then send it to P₂. (08 Marks)
- c. Explain the steps to generate time delay using Timer in model. (04 Marks)

OR

- 6 a. Explain the bit status of TMOD special function register of 8051 timers. Also explain its various modes. (08 Marks)
- b. Write a C program to toggle bits of P₀ continuously with 500 ms delay in between. (08 Marks)
- c. Write an ALP to generate square wave of 50Hz on P_{2.3} (04 Marks)

Module-4

- 7 a. Explain briefly the asynchronous serial communication, also indicate steps of programming 8051 to transmit a character serially. (08 Marks)
- b. Describe bit status of SCON register, also write an ALP to receive data in serial form and send it out to Port P₀ in parallel form. Assume baud rate as 9600. Use Timer -1, mode 2. (08 Marks)
- c. Explain Half duplex and Full duplex data transmission. (04 Marks)

OR

- 8 a. Describe different types of interrupts of 8051 with their vector address. Also show the sequence of events that take place on the occurrence of an interrupt. (08 Marks)
- b. Write an ALP to transfer the message "VTU" serially, continuously at 9600 baud rate, 8 – bit data, 1 stop bit. (08 Marks)
- c. Discuss the importance of TI and RI Flag. (04 Marks)

Module-5

- 9 a. Explain the construction and working of stepper motor. Also explain two phase on, four step sequence operation in detail. (08 Marks)
- b. Write an ALP to display message "CORONA". Also show how LCD can be interfaced with 8051? (08 Marks)
- c. Show the H. bridge operation in DC motor interfacing. (04 Marks)

OR

- 10 a. Describe the keyboard interfacing with 8051 along with diagram. (08 Marks)
- b. Write an ALP to generate sine wave using DAC. Also show how DAC is interfaced with 8051. (08 Marks)
- c. How to interface ADC with 8051? (04 Marks)
