



CBCS SCHEME

17EE52

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

Max. Marks: 100

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

Module-1

- 1 a. Sketch a neat block diagram and explain the architecture of 8051 along with its features. (12 Marks)
- b. Briefly explain about stack and stack pointer operation. (04 Marks)
- c. Distinguish between microcontrollers and embedded processors. (04 Marks)

OR

- 2 a. Explain with neat sketch, the internal memory organization of 8051 microcontroller. (08 Marks)
- b. With an example, explain any four addressing modes of 8051. (08 Marks)
- c. Sketch the interface of 8 K RAM to 8051 microcontroller. (04 Marks)

Module-2

- 3 a. What are assembler directives? Explain any four assembler directives used in ALP. (05 Marks)
- b. Explain the operation of the following instructions with examples, (10 Marks)
 - (i) CJNE
 - (ii) SUBB
 - (iii) ORL
 - (iv) RRC
 - (v) AJMP.
- c. Write an ALP for 8051 to find the average marks of 08 subjects of a student. Marks are stored from RAM location 5000h. (05 Marks)

OR

- 4 a. Write an ALP in 8051 to find the given number is odd/even. (05 Marks)
- b. Explain with illustrations, the operation of PUSH and POP instructions. (05 Marks)
- c. Explain the different types of conditional and unconditional jump instructions of 8051. Specify the different range associated with jump instructions. (10 Marks)

Module-3

- 5 a. What are advantages and disadvantages of programming 8051 in C? (04 Marks)
- b. Explain different data types supported in 8051 C programming. (10 Marks)
- c. Write an 8051 C program along with comments to get a byte of data from P1, wait for certain time and then send it to P2. (06 Marks)

OR

- 6 a. Sketch bit positions of TMOD and TCON register. Explain. (08 Marks)
- b. Describe the steps to program the timers of 8051 in mode1 operation. (04 Marks)
- c. Write 8051 assembly program to generate square wave of 50% duty cycle with $T_{ON} = T_{OFF} = 5$ ms on pin P0.0. system clock is 12 MHz, use timer 1 mode 1. (08 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.

Module-4

- 7 a. Describe the bit positions of SCON register of 8051. (05 Marks)
b. Write the steps to program 8051 to transfer the data serially. (07 Marks)
c. Write the C program for 8051 to receive bytes of data serially and put them in P1. Set the baud rate at 4800, 8-bit data and 1 stop-bit. Assume XTAL = 11.0592 MHz. (08 Marks)

OR

- 8 a. List the various interrupts of the 8051 with their corresponding vector addresses. (06 Marks)
b. Explain the bit positions of IE and IP registers. (08 Marks)
c. Explain different steps in executing an interrupt. (06 Marks)

Module-5

- 9 a. With diagram, explain how to interface 4×4 matrix keyboard to 8051. Present the flow chart. (10 Marks)
b. Sketch ADC0808 interface diagram and explain different steps to program with 8051. (10 Marks)

OR

- 10 a. Sketch the connection diagram of 8255 to 8051 microcontroller. (06 Marks)
b. Explain the control word format of 8255 PPI. (08 Marks)
c. Draw the connection diagram of DAC 0808 to 8051 microcontroller. (06 Marks)
