

Roll No. ....

Total Page No. : 4

41N0402/41N0902/41N1402/  
41N1502/41N1602/41N1702/  
41N1802/41N1902/41N2002/  
41N2102/41N2202/41N2302/41N2402

**41N0402/41N0902/41N1402/41N1502/41N1602/  
41N1702/41N1802/41N1902/41N2002/41N2102/  
41N2302/41N2402**

**B.TECH. IV SEM MAIN EXAM AUGUST-2023  
COMPUTER SCIENCE AND ENGINEERING  
(4CS4-02) - MICROPROCESSOR AND  
INTERFACES  
COMMON TO CS, IT, AI, DS, MC, CM, CD, CA,  
AD, AM, CY, IO**

Time : 3 Hours]

[Max. Marks : 70

[Min. Passing Marks :

**Instructions to Candidates :** Part – A : Short answer type questions (up to 25 words)

10 × 2 marks = 20 marks. All ten questions are compulsory.

Part – B: Analytical/Problem Solving questions, 5 × 4 marks = 20 marks. Candidates have to answer 5 questions out of 7.

Part – C: Descriptive/Analytical/Problem Solving questions 3 × 10 marks = 30 marks. Candidates have to answer 3 questions out of 5.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination. (Mentioned in form No. 205)

1 : NIL

2 : NIL

**PART A**

Q. 1. Draw the timing diagram of the I/O write machine cycle.

Q. 2. What is the difference between opcode and operand ? Explain with a suitable example.

- Q. 3. What is Address and Data Bus ?
- Q. 4. What do you mean by Multiplexing of buses ?
- Q. 5. Why data bus is bidirectional ?
- Q. 6. Define Interpreter.
- Q. 7. What is Special Function Registers (SFR) ?
- Q. 8. Differentiate MOV and MVI with suitable examples.
- Q. 9. Give the significance of SIM and RIM instructions available in 8085.
- Q. 10. What are the types of Interrupts in 8051 ?

### PART B

- Q. 1. What is the Instruction format ? Discuss different types of instruction formats.
- Q. 2. Develop an assembly language program to multiply two BCD numbers of 2 digits each.
- Q. 3. What is the difference between the instruction cycle, machine cycle, and clock cycle ?
- Q. 4. Discuss fetch and Execution cycles of 8085 by considering an instruction.
- Q. 5. Discuss the DMA controller briefly.
- Q. 6. Explain different addressing modes of 8085 in detail with examples.
- Q. 7. Compare memory-mapped I/O and I/O mapped I/O.

### PART C

- Q. 1. Draw and explain the timing diagram for execution of IN and OUT instructions in the 8085 microprocessor.
- Q. 2. (a) Write an assembly language program that reads numbers from the users until the user types 5.  
(b) Write an assembly language program to calculate the 2's complement of a 16-bit number.

- Q. 3. Discuss the architecture and pin diagram of the 8051 Microcontroller. ✓ <sup>10</sup>
- Q. 4. (a) Explain various registers present in the 8085 microprocessor.
- (b) Explain the difference between the following two instructions:
- (I) MOV A, 40H
- (II) MOV A, #40H.
- Q. 5. Design an interfacing circuit to set up bidirectional data communication in the master-slave format between two 8085 microcomputers. Use the 8255 as the interfacing device with the master and a tri-state buffer with the slave microcomputer.

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