

B.Tech - Odd Sem : Semester in Exam-I
Academic Year:2024-2025
23EC2106R - PROCESSORS AND CONTROLLERS
Set No: 3

| Time: | | Max.Marks: 50 | | | | | |
|-------|---|---------------|---------|---------|-----|--------|---|
| S.NO | Answer All Questions | Choice | Options | Marks | CO | CO BTL | |
| 1. | Answer all the Questions | | | 12Marks | CO1 | 3 | 2 |
| 1.A. | List the functions of ALE and MN/MX' pins in the 8086 microprocessor? | | | 2Marks | CO1 | 3 | 2 |
| 1.B. | Mention the process of 20 bit address calculation in the 8086 microprocessor? | | | 2Marks | CO1 | 3 | 2 |
| 1.C. | List the functions of any two rotate instructions in the 8086 processor with an example? | | | 2Marks | CO1 | 3 | 2 |
| 1.D. | Discuss the function of any two general-purpose registers in the 8051 microcontroller? | | | 2Marks | CO2 | 3 | 2 |
| 1.E. | Write an ALP to perform a logical NAND operation on two input values with the 8051 microcontroller? | | | 2Marks | CO2 | 3 | 2 |
| 1.F. | What are the primary functions of timers in the 8051 microcontroller? | | | 2Marks | CO2 | 3 | 2 |
| 2. | Answer all the Questions | | | 16Marks | CO1 | 3 | 2 |
| 2.A. | Describe the structure and purpose of the flag register in the 8086 microprocessor? | | | 4Marks | CO1 | 3 | 2 |
| 2.B. | Mention the Default Segment & Offset registers in 8086 microprocessor? | | | 4Marks | CO1 | 3 | 2 |
| 2.C. | Describe the role of the stack pointer in the 8051 microcontroller and how it operates discuss with an example? | | | 4Marks | CO2 | 3 | 2 |
| 2.D. | Explain the different modes of operation for the timers in the 8051 microcontroller? | | | 4Marks | CO2 | 3 | 2 |

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|------|---|------------|--|---------|-----|---|---|
| 3. | Answer all the Questions | choice Q-4 | | 11Marks | CO1 | 3 | 3 |
| 3.A. | Discuss the direct, immediate, and register addressing modes with suitable examples. | | | 5Marks | CO1 | 3 | 2 |
| 3.B. | Illustrate and explain the timing diagram for the memory write cycle in the minimum mode of the 8086 microprocessor. | | | 6Marks | CO1 | 3 | 3 |
| 4. | Answer all the Questions | | | 11Marks | CO1 | 3 | 3 |
| 4.A. | Discuss the advantages of Memory Segmentation and list the types of data transfer and bank selection concepts in the 8086 microprocessor. | | | 5Marks | CO1 | 3 | 2 |
| 4.B. | Write a program to sort an array of 10 numbers in ascending order using the bubble sort algorithm? | | | 6Marks | CO1 | 3 | 3 |
| 5. | Answer all the Questions | choice Q-6 | | 11Marks | CO2 | 3 | 3 |
| 5.A. | Discuss in detail the 8051 PSW register & PSW Bank selection procedure. | | | 5Marks | CO2 | 3 | 2 |
| 5.B. | Write a program to generate a time delay using Timer 1 in Mode 2 of the 8051 microcontroller? | | | 6Marks | CO2 | 3 | 3 |
| 6. | Answer all the Questions | | | 11Marks | CO2 | 3 | 3 |
| 6.A. | Explain how Port 3 is used for general-purpose I/O and special functions in the 8051 microcontroller. | | | 5Marks | CO2 | 3 | 2 |
| 6.B. | Write an ALP to copy the data 49H into the RAM location from 50h-58h using an indirect addressing mode with a loop? | | | 6Marks | CO2 | 3 | 3 |