**R20**

**SET -1**

**III B. Tech II Semester Regular Examinations, July -2023**
**MICRO PROCESSORS AND MICRO CONTROLLERS**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                       Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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### UNIT-I

1. a) With the help of functional diagram explain the operation of 8086 microprocessor. [7M]
   b) Discuss the Flag register of 8086 with neat figure. [7M]

(OR)

2. a) Draw the Register organization of 8086 microprocessor and explain its operation. [7M]
   b) List out the salient features of 80386DX. [7M]

### UNIT-II

3. a) Explain the following assembler directives. [8M]
   i) END            ii) ORG            iii) EQU            iv) ASSUME
   b) List out and explain instruction formats of 8086 microprocessor. [6M]

(OR)

4. a) Explain the minimum mode operation of 8086 with the help of a pin diagram. [7M]
   b) Develop an assembly language program to multiply two BCD numbers of 2-digits each. [7M]

### UNIT-III

5. a) Interfacing of a two 8X4 PROM and two 16X4 RAM with 8086 CPU, draw the memory map and interfacing diagram for it, the RAM address follows the ROM address. [8M]
   b) Draw the Inter facing diagram of 8257 DMA with 8086 CPU and explain its operation. [6M]

(OR)

6. a) Draw the 8251 USART architecture and explain the operation of each block in it. [7M]
   b) Draw the Interfacing diagram of D/A Converter with 8086 Microprocessor along with 8255 PPI and explain its operation. [7M]

### UNIT-IV

7. a) Draw and discuss the internal architecture of 8051 family of microcontrollers. [7M]
   b) Classify and explain the instruction set of 8051 microcontroller. [7M]

(OR)

8. a) Explain the timers and counters of 8051 microcontroller. [7M]
   b) Draw and Explain the pin configuration of 8051 controller. [7M]

### UNIT-V

9. a) What is the need of timers in PIC 18 microcontroller? Explain. [7M]
   b) Draw and explain the instruction pipeline flow of PIC 18 Microcontroller. [7M]

(OR)

10. a) Explain the interrupts in PIC 18 microcontroller. [7M]
    b) Draw and explain PIC 18 memory spaces both data memory and programmed memory. [7M]

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## UNIT-I

| | | | |
|---|---|---|---|
| 1. | a) | What do you mean by pipelined architecture? Discuss. | [7M] |
| | b) | Explain various instruction formats with examples? | [7M] |

(OR)

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|---|---|---|---|
| 2. | a) | Draw the EFLAG register of 80386 processor and explain the function of each flag with example. | [7M] |
| | b) | Compare the 80286 and 80386 with respect to architecture and function. | [7M] |

## UNIT-II

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|---|---|---|---|
| 3. | a) | Explain the addressing modes of 8086 microprocessor each with an example. | [7M] |
| | b) | Write an assembly language program to generate Fibonacci series up to a given number. | [7M] |

(OR)

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|---|---|---|---|
| 4. | a) | Explain the following instructions<br> i) AAS          ii) DIV                    iii) CALL           iv) RET | [8M] |
| | b) | Draw the timing diagram for the memory write cycle operation in the minimum mode of 8086 processor. | [6M] |

## UNIT-III

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|---|---|---|---|
| 5. | a) | Draw the 8255 PPI architecture and explain its operation of each block along with modes of it. | [7M] |
| | b) | Discuss the modes of operation of 8255. | [7M] |

(OR)

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| 6. | a) | Distinguish between synchronous and asynchronous serial data transmission techniques. | [7M] |
| | b) | Explain how static RAM are interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size. | [7M] |

## UNIT-IV

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| 7. | a) | Draw the flag structure of 8051 microcontroller and explain the function of each flag. | [7M] |
| | b) | Explain the Timers in 8051 and its modes. | [7M] |

(OR)

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|---|---|---|---|
| 8. | a) | Discuss about memory organization of 8051 microcontroller. | [7M] |
| | b) | What is the purpose of using I/O ports in 8051? Classify and explain them in Detail. | [7M] |

## UNIT-V

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|---|---|---|---|
| 9. | a) | Draw the internal architecture of PIC 18 microcontroller and explain its operation. | [7M] |
| | b) | List out the interrupts of PIC 18 Microcontroller. | [7M] |

(OR)

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|---|---|---|---|
| 10. | | Discuss the registers, addressing modes and I/O ports of  PIC 18 Microcontroller. | [14M] |

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**SET -3**

**III B. Tech II Semester Regular Examinations, July -2023**
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Time: 3 hours                                                                 Max. Marks: 70

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## UNIT-I

1.  a) Describe about the physical memory organization of 8086 microprocessor. [7M]
    b) Draw the block diagram of 8086 and explain BIU and EU. [7M]

(OR)

2.  a) Explain the salient features of 80286 along with flag register. [7M]
    b) Explain the types of registers available in 80386 and explain them briefly. [7M]

## UNIT-II

3.  a) Define assembler and explain the different assembler directives used in 8086 microprocessor. [7M]
    b) Explain the different minimum mode pins of 8086 microprocessor [7M]

(OR)

4.  a) Explain the data transfer instructions with examples [7M]
    b) Write an Assemble language program to find number of even and odd numbers in an 8- bit array. [7M]

## UNIT-III

5.  a) Explain the methods of serial communications with examples. [7M]
    b) Explain the need for DMA along with block diagram. [7M]

(OR)

6.  a) Draw the interfacing diagram of DAC AD7523 with an 8086 CPU running at 8MHz and Write an assembly language program to generate a saw tooth waveform of period 1ms with Vmax 5V. [7M]
    b) List out different modes of operation of 8255 PPI. [7M]

## UNIT-IV

7.  a) Explain the concept of addressing modes used in 8051 microcontroller. [7M]
    b) Draw the pin diagram of 8051 microcontroller and explain the function of each pin in detail. [7M]

(OR)

8.  a) Explain the interrupt structure of 8051 Microcontroller. [7M]
    b) Explain the differences between microprocessor and microcontroller. [7M]

## UNIT-V

9.  a) List out different Data types of PIC 18 micro controller and explain. [7M]
    b) Draw the flag register of PIC 18 micro controller and explain the function of each flag in detail. [7M]

(OR)

10. a) Draw the architecture of PIC 18 micro controller and explain the operation of each block in it. [7M]
    b) Write short notes on PIC18 Memory Organization. [7M]

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## UNIT-I

1.  a) Draw and discuss the internal architecture of 80386 processor. [7M]
    b) Explain the concepts of segmentation and paging of 80386 processor. [7M]

(OR)

2.  a) Draw the flag register of 8086 microprocessor and explain the function of each flag. [7M]
    b) Explain the different registers present in 8086 microprocessor and explain [7M]

## UNIT-II

3.  a) Draw the minimum mode pin diagram and explain the function of each pin in detail. [7M]
    b) Explain any six assembler directives used in 8086 microprocessor. [7M]

(OR)

4.  a) Draw the timing diagrams of minimum mode write operation and explain in detail. [7M]
    b) Define addressing mode and explain different addressing modes presented in 8086 microprocessor. [7M]

## UNIT-III

5.  a) Design an interface between 8086 CPU and two chips of 16KX8 EPROM and two chips of 32KX8 RAM. Select the starting address of EPROM suitably. The RAM address must start at 00000H. [7M]
    b) Explain the mode instruction and command instruction format of 8251 USART in detail. [7M]

(OR)

6.  a) Explain the Register organization of 8257 DMA in detail. [8M]
    b) Discuss the 8255 PPI with neat block diagram. [6M]

## UNIT-IV

7.  a) Explain the timer and counter operations of 8051 Microcontroller. [7M]
    b) Draw the 8051 Microcontroller architecture and explain its operation in detail. [7M]

(OR)

8.  a) Write short notes on  (i) PSW      (ii) SCON         (iii) PCON          (iv) TMOD [7M]
    b) Briefly list out the relevant features of 8051 microcontroller. [7M]

## UNIT-V

9.  a) Draw and Explain PIC 18 microcontroller in detail. [7M]
    b) List out the salient features of PIC 18 micro controller. [7M]

(OR)

10. a) Explain different I/O ports presented in PIC controller and draw the necessary diagram for it. [7M]
    b) Explain the concept of PIC18 Memory Organization along with diagram. [7M]

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