III B.Tech. II Semester Regular & Supplementary Examinations May 2019

Microprocessors and Microcontrollers

(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

****

UNIT–I

1. a) Draw the pin diagram of 8086 microprocessor and explain the functions of the following pins.
(i) ALE (ii) NMI (iii) INTR (iv) HOLD (v) HLDA (vi) BHE (vii) LOCK   8M

   b) What is a procedure? What are different types of procedures in 8086? Discuss each type of procedure with examples.   6M

OR

2. a) Distinguish between maximum and minimum modes of operation of 8086.   6M

   b) What do you mean by addressing mode? What are the different addressing modes supported by 8086? Explain each of them with suitable examples.   8M

UNIT–II

3. a) Draw the functional block diagram of 8253 programmable interval timer/counter and explain its modes of operation.   7M

   b) Describe the interfacing of D/A converter to 8086 microprocessor with a neat sketch.   7M

OR

4. a) Explain the A/D converter interface to 8086 microprocessor.   7M

   b) Interface an Analog to Digital converter ADC with an 8086 microprocessor using 8255 ports. Use port A of 8255 for transferring digital data output of ADC to the CPU and port C for control signals. Assume that an analog input is present at input 5 of the ADC and a clock input of suitable frequency is available for ADC. Draw the schematic and write the required assembly language program.   7M

UNIT–III

5. a) Discuss about EPROM interfacing with 8086 microprocessor.   6M

   b) What are the important features of 8257 DMA controller. Describe the internal architecture and signal description for the same.   8M

OR

6. a) Explain the procedure to interface 8257 with 8086. Draw the interfacing diagram and explain.   7M

   b) Explain the functions of the following signals of 8257: (i) $\overline{IOR}$ (ii) $\overline{IOW}$ (iii) HRQ (iv) HLDA (v) $\overline{MEMR}$ (vi) $\overline{MEMW}$ (vii) TC (viii) AEN (ix) ADSTB (x) MARK   7M

UNIT–IV

7. a) Draw the internal architecture of the 8251 USART and explain each block.   8M

   b) Why the synchronous serial data communication much more efficient than asynchronous serial data communication explain in detail.   6M

OR

8. a) Interface 8251 with 8086 at address 40H. Initialize it in asynchronous transmit mode, with 7 bit character size, baud rate factor 16, one start bit, one stop bit, even parity enable. Further transmit a message "BEST OF LUCK" in ASCII from to a modem?   7M

   b) Draw the functional block diagram of 8259 programmable interrupt controller and explain its operation.   7M

UNIT–V

9. a) Explain internal and external memory organization of 8051.   7M

   b) Explain the following pins of 8051:
(i) AD_0 - AD_7 (ii) T_0 and T_1 (iii) INT0 and INT1 (iv) TxD and RxD   7M

OR

10. a) Explain the procedure for interfacing of DC motor with 8051 microcontroller.   7M

    b) Discuss the various modes of operation of timer in 8051 microcontroller.   7M

****

Code: 5G262

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2018
Microprocessors and Microcontrollers
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

****

UNIT–I

1. a) Distinguish minimum mode and maximum mode of operation   8M
   b) Explain the instruction format of 8086µP with an example   6M

OR

2. a) Advantages of procedures used in 8086 µP? Illustrate the syntax of it.   8M
   b) List out the assembler directives used in 8086µP.   6M

UNIT–II

3. a) Describe about memory mapped I/O Interfacing.   7M
   b) Describe the stepper motor interfacing with 8086 µP.   7M

OR

4. a) Describe the A/D converters interfacing with 8086 µP.   7M
   b) Write an assembly language program to interface 8255 in mode-0 with 8086.   7M

UNIT–III

5. a) Explain about 4KB of RAM Memory interfacing with 8086.   7M
   b) Explain about modes of 8257.   7M

OR

6. a) Illustrate the basic structure of SRAM and DRAM cells   7M
   b) Need for DMA? Explain the master and slave modes of DMA.   7M

UNIT–IV

7. a) Describe 8259 PIC architecture.   7M
   b) Describe TTL to RS232C and RS232C to TTL conversion.   7M

OR

8. a) Describe 8251 USART architecture.   7M
   b) Describe Vector interrupt table of 8086 µP.   7M

UNIT–V

9. a) Explain about RAM organization in 8051 µC.   7M
   b) Explain about Timer/Counters of 8051µC.   7M

OR

10. a) Draw the pin diagram 8051µC.   7M
    b) Describe the addressing modes 8051µC.   7M

***

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019
Microprocessors and Microcontrollers
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
****

UNIT–I

1. a) With a neat diagram, explain the internal architecture of 8086 microprocessor.   8M

   b) What is an assembler directive? Explain any five assembler directives with examples.   6M

OR

2. a) Write an assembly language program in 8086 to arrange the given 16-bit numbers in lowest to highest order.   7M

   b) Draw the register organization of 8086 and explain typical applications of each register.   7M

UNIT–II

3. a) Explain the 8255 programmable peripheral interface and its operating modes with a neat functional block diagram.   7M

   b) Explain the interfacing procedure of an 8-bit DAC with 8086 microprocessor.   7M

OR

4. a) Discuss about I/O mapped I/O and memory mapped I/O. Write a comparison between I/O mapped I/O and memory mapped I/O.   6M

   b) Draw and explain the stepper motor interface to 8086 and write small program to rotate stepper motor in clock wise and anticlockwise direction   8M

UNIT–III

5. a) Explain the need for DMA data transfer? Draw and discuss the architecture of 8257.   7M

   b) Explain how static RAM is interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.   7M

OR

6. a) Explain the features of static RAM and dynamic RAM. Give the comparison between these two.   7M

   b) What are the advantages of DMA controlled data transfer over interrupt driven or program controlled data transfer? Why are DMA controlled data transfers faster?   7M

UNIT–IV

7. a) Explain with a neat diagram the working of 8251 PCI.   8M

   b) Draw the interface circuits for data conversion from
      (i) TTL to RS232C and (ii) RS232C to TTL   6M

OR

8. a) Describe the purpose of 8086 interrupt vector table.   6M

   b) With a neat schematic, explain the interfacing of 8259 with 8086 microprocessor.   8M

UNIT–V

9. a) Discuss the features of 8051 microcontroller and explain its operation with the help of a block diagram.   7M

   b) Explain the various instruction set of 8051 microcontroller.   7M

OR

10. a) What are the addressing modes of 8051 microcontroller? Explain each addressing mode with an example.   6M

    b) Discuss about the salient feature of ARM (Advanced RISC Machines) processors   4M

    c) Explain the different types of interrupts and their priorities in 8051.   4M

***

III B.Tech. II Semester Supplementary Examinations May 2019
Microprocessors and Microcontrollers
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

****

UNIT–I

1. a) Draw the pin diagram of 8086 microprocessor and explain the functions of the following pins.
        (i) ALE (ii) NMI (iii) INTR (iv) HOLD (v) HLDA (vi) BHE (vii) LOCK   8M

    b) What is a procedure? What are different types of procedures in 8086? Discuss each type of procedure with examples.   6M

OR

2. a) Distinguish between maximum and minimum modes of operation of 8086.   6M

    b) What do you mean by addressing mode? What are the different addressing modes supported by 8086? Explain each of them with suitable examples.   8M

UNIT–II

3. a) Draw the functional block diagram of 8253 programmable interval timer/counter and explain its modes of operation.   7M

    b) Describe the interfacing of D/A converter to 8086 microprocessor with a neat sketch.   7M

OR

4. a) Explain the A/D converter interface to 8086 microprocessor.   7M

    b) Interface an Analog to Digital converter ADC with an 8086 microprocessor using 8255 ports. Use port A of 8255 for transferring digital data output of ADC to the CPU and port C for control signals. Assume that an analog input is present at input 5 of the ADC and a clock input of suitable frequency is available for ADC. Draw the schematic and write the required assembly language program.   7M

UNIT–III

5. a) Discuss about EPROM interfacing with 8086 microprocessor.   6M

    b) What are the important features of 8257 DMA controller. Describe the internal architecture and signal description for the same.   8M

OR

6. a) Explain the procedure to interface 8257 with 8086. Draw the interfacing diagram and explain.   7M

    b) Explain the functions of the following signals of 8257: (i) $\overline{IOR}$ (ii) $\overline{IOW}$ (iii) HRQ (iv) HLDA (v) $\overline{MEMR}$ (vi) $\overline{MEMW}$ (vii) TC (viii) AEN (ix) ADSTB (x) MARK   7M

UNIT–IV

7. a) Draw the internal architecture of the 8251 USART and explain each block.   8M

    b) Why the synchronous serial data communication much more efficient than asynchronous serial data communication explain in detail.   6M

OR

8. a) Interface 8251 with 8086 at address 40H. Initialize it in asynchronous transmit mode, with 7 bit character size, baud rate factor 16, one start bit, one stop bit, even parity enable. Further transmit a message "BEST OF LUCK" in ASCII from to a modem?   7M

    b) Draw the functional block diagram of 8259 programmable interrupt controller and explain its operation.   7M

UNIT–V

9. a) Explain internal and external memory organization of 8051.   7M

    b) Explain the following pins of 8051:
        (i) AD_0 - AD_7 (ii) T_0 and T_1 (iii) INT0 and INT1 (iv) TxD and RxD   7M

OR

10. a) Explain the procedure for interfacing of DC motor with 8051 microcontroller.   7M

    b) Discuss the various modes of operation of timer in 8051 microcontroller.   7M

****

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2019
Microprocessors and Microcontrollers
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
****

UNIT–I

1. a) With a neat diagram, explain the internal architecture of 8086 microprocessor.   8M
    b) What is an assembler directive? Explain any five assembler directives with examples.   6M

OR

2. a) Write an assembly language program in 8086 to arrange the given 16-bit numbers in lowest to highest order.   7M
    b) Draw the register organization of 8086 and explain typical applications of each register.   7M

UNIT–II

3. a) Explain the 8255 programmable peripheral interface and its operating modes with a neat functional block diagram.   7M
    b) Explain the interfacing procedure of an 8-bit DAC with 8086 microprocessor.   7M

OR

4. a) Discuss about I/O mapped I/O and memory mapped I/O. Write a comparison between I/O mapped I/O and memory mapped I/O.   6M
    b) Draw and explain the stepper motor interface to 8086 and write small program to rotate stepper motor in clock wise and anticlockwise direction   8M

UNIT–III

5. a) Explain the need for DMA data transfer? Draw and discuss the architecture of 8257.   7M
    b) Explain how static RAM is interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.   7M

OR

6. a) Explain the features of static RAM and dynamic RAM. Give the comparison between these two.   7M
    b) What are the advantages of DMA controlled data transfer over interrupt driven or program controlled data transfer? Why are DMA controlled data transfers faster?   7M

UNIT–IV

7. a) Explain with a neat diagram the working of 8251 PCI.   8M
    b) Draw the interface circuits for data conversion from
        (i) TTL to RS232C and   (ii) RS232C to TTL   6M

OR

8. a) Describe the purpose of 8086 interrupt vector table.   6M
    b) With a neat schematic, explain the interfacing of 8259 with 8086 microprocessor.   8M

UNIT–V

9. a) Discuss the features of 8051 microcontroller and explain its operation with the help of a block diagram.   7M
    b) Explain the various instruction set of 8051 microcontroller.   7M

OR

10. a) What are the addressing modes of 8051 microcontroller? Explain each addressing mode with an example.   6M
     b) Discuss about the salient feature of ARM (Advanced RISC Machines) processors   4M
     c) Explain the different types of interrupts and their priorities in 8051.   4M

***

III B.Tech. II Semester Supplementary Examinations May 2019

Microprocessors and Microcontrollers

(Electrical & Electronics Engineering)

Max. Marks: 70   **Time: 03 Hours**

Answer *any five* questions

All Questions carry equal marks (14 Marks each)

****

1. Bring out the differences between MIN & MAX modes of 8086. Explain how the Bus control signals are obtained in Maximum mode.   14M

2. a) With suitable examples, bring out the similarities and differences between Procedure and Macro.   8M

    b) It is required to perform sum of two 16-bit numbers. Implement it with four different addressing modes.   6M

3. a) Compare the memory mapped I/O and the I/O mapped I/O in 8086.   7M

    b) List out the different Programmable and non Programmable interfacing devices.   7M

4. A memory system is to be designed for an 8086 processor based system with two chips of 16K X 8 EPROM and two chips of 32K X 8 RAM. Select the suitable memory map based on 8086 microprocessor's architecture.   14M

5. Draw and explain the internal structure of (8259) Programmable interrupt controller.   14M

6. a) Write the features of RS-232C serial communication standard.   7M

    b) Explain the features of Universal serial bus.   7M

7. a) Contrast interrupts and polling. Explain the interrupt handling mechanism in 8051 microcontroller.   7M

    b) What are the interrupts in 8051 microcontroller? Explain their priorities, call addresses and priority handling.   7M

8. a) Discuss the memory organization of MCS-96 microcontroller.   7M

    b) Compare 8051 and ARM microcontrollers.   7M

***