**PVP 23**

Code: 23EE3602

**III B.Tech - II Semester - Regular Examinations – APRIL 2026**

# MICROPROCESSORS AND MICROCONTROLLERS
## (ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

## PART – A

| | | BL | CO |
|---|---|---|---|
| 1.a) | Write the uses of memory segmentation in 8086. | L2 | CO1 |
| b) | Describe the role of the Bus Interface Unit (BIU) in 8086. | L2 | CO1 |
| c) | Define and list out various addressing modes of 8086. | L2 | CO2 |
| d) | Explain the push and pop operation of 8086. | L2 | CO2 |
| e) | Write any three silent features of mode 2 of 8255. | L2 | CO3 |
| f) | Draw the control word format of I/O modes of 8255 PPI. | L2 | CO3 |
| g) | What is the function of the TMOD and TCON registers? | L2 | CO1 |
| h) | List the five interrupt sources of the 8051. | L2 | CO1 |
| i) | List out the various features of PIC 18. | L2 | CO4 |
| j) | What are the three main registers used for I/O port operations in the PIC18? | L2 | CO4 |

## PART – B

| | | | BL | CO | Max. Marks |
|---|---|---|---|---|---|
| **UNIT-I** | | | | | |
| 2 | a) | Summarize the architectural advancements of 80486 over 8086. | L2 | CO1 | 5 M |
| | b) | Draw the functional diagram of 8086 Microprocessor and explain the function of each block in detail. | L2 | CO1 | 5 M |
| **OR** | | | | | |
| 3 | a) | Briefly explain register organization in 8086 microprocessor. | L2 | CO1 | 5 M |
| | b) | Describe the memory segmentation and instruction queue. | L2 | CO1 | 5 M |
| **UNIT-II** | | | | | |
| 4 | a) | Draw and discuss the read and write cycle timing diagrams of 8086 in minimum mode. | L2 | CO1 | 5 M |
| | b) | Write an Assembly language program to multiply two 16-bit Hexa decimal numbers in 8086. | L4 | CO2 | 5 M |
| **OR** | | | | | |
| 5 | a) | List out the shift and rotate instructions of 8086 microprocessor with examples. | L2 | CO2 | 5 M |
| | b) | Write an Assembly language program to find the sum of squares of first ten numbers. | L4 | CO2 | 5 M |
| **UNIT-III** | | | | | |
| 6 | a) | With a neat diagram explain the architecture of 8255. | L2 | CO3 | 5 M |

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|---|---|---|---|---|---|
| | b) | Differentiate between BSR and I/O modes of 8255 PPI. | L2 | CO3 | 5 M |
| **OR** | | | | | |
| 7 | a) | Draw and explain the interfacing of analog to digital converter with 8086 microprocessor. | L2 | CO3 | 5 M |
| | b) | Draw the architecture of 8257 DMA controller and explain its working. | L3 | CO3 | 5 M |
| **UNIT-IV** | | | | | |
| 8 | a) | Describe the operation of timers present in 8051 microcontroller. | L2 | CO2 | 5 M |
| | b) | List the various registers present in 8051 microcontroller and explain with an example. | L2 | CO1 | 5 M |
| **OR** | | | | | |
| 9 | a) | Explain the different Instruction set of 8051 in detail. | L2 | CO2 | 6 M |
| | b) | Explain how interrupts are prioritized. | L2 | CO2 | 4 M |
| **UNIT-V** | | | | | |
| 10 | a) | Explain status register of PIC 18 microcontroller. | L2 | CO4 | 5 M |
| | b) | Draw and explain the block diagram of PIC 18 microcontroller. | L3 | CO4 | 5 M |
| **OR** | | | | | |
| 11 | a) | Explain different data types and operators used in PIC C programming. | L2 | CO4 | 5 M |
| | b) | Write a C program to toggle PORTB bits with a delay of 200ms. | L4 | CO4 | 5 M |