

O.P.Code: 23EC0414

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H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)

B.Tech. III Year II Semester Regular Examinations April-2026

MICROPROCESSORS AND MICROCONTROLLERS

(Common to EEE & CIC)

Time: 3 Hours

Max. Marks: 70

**PART-A**

(Answer all the Questions 10 x 2 = 20 Marks)

- |     |                                                                       |     |    |    |
|-----|-----------------------------------------------------------------------|-----|----|----|
| I a | What is the function of ALE signal in 8086?                           | CO1 | L1 | 2M |
| b   | Describe the function of Stack Pointer in 8086.                       | CO1 | L1 | 2M |
| c   | Write a simple 8-bit addition program using general purpose register. | CO3 | L3 | 2M |
| d   | What are the assembly language program development tools?             | CO3 | L1 | 2M |
| e   | Mention any two features of Intel 8251.                               | CO4 | L1 | 2M |
| f   | List the applications of a stepper motor.                             | CO4 | L1 | 2M |
| g   | Discuss about Data Pointer.                                           | CO2 | L2 | 2M |
| h   | Explain about the function of a program counter.                      | CO2 | L2 | 2M |
| i   | What is the difference between Timer and Counter in 8051?             | CO2 | L1 | 2M |
| j   | What is an Interrupt Service Routine (ISR)?                           | CO2 | L1 | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- 2 Draw the functional pin diagram of 8086 microprocessor and explain the function of each and every pin. CO1 L1 10M

OR

- 3 a Explain about maximum mode read cycle with suitable timing diagrams. CO1 L2 5M  
b Explain about the following: i) Pointer and Index Registers CO1 L2 5M  
ii) Segment Registers iii) Instruction byte Queue

**UNIT-II**

- 4 a Discuss about the following assembler directives. CO3 L2 5M  
(i) DB (ii) DW (iii) DQ (iv) DT (v) ASSUME  
b Explain any five flag manipulation instructions. CO3 L2 5M

OR

- 5 Discuss about the following instructions with examples. CO3 L2 10M  
(i) ADD (ii) SBB (iii) DEC (iv) MUL (v) NEG

**UNIT-III**

- 6 a Draw the pin diagram of 8255 PPI. CO4 L1 4M

- b Interface an 8255 with 8086 to work as an I/O port. Initialize port A as output port, port B as input port and port C as output port. Port A address should be 0740H. Write a program to sense switch positions SW0 – SW7 connected at port B. The sensed pattern is to be displayed on port A, to which 8 LEDs are connected. CO4 L3

OR

- 7 Discuss about the interfacing of 8-bit 0800 Digital to Analog Converter to the 8086 microprocessors. Write necessary Assembly Language Program. CO4 L3

**UNIT-IV**

- 8 Draw and explain the pin diagram of 8051 microcontroller CO2 L1

OR

- 9 a Differentiate between Jump and Call instructions. CO3 L4  
b Explain the following instructions i) PUSH ii) POP iii) XCH CO3 L2

**UNIT-V**

- 10 What are the advantages, disadvantages, and applications of PIC Microcontroller and ARM Processors. CO5 L1
- 11 How is a 4×4 matrix keyboard interfaced with the 8051? Explain the row–column scanning technique. CO6 L2

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