

Reg. No. :

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**Question Paper Code: R4806**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fourth Semester

Information technology

R21UIT406 - MICROPROCESSOR BASED SYSTEM DESIGN

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. What are the different types of addressing modes of 8086 instruction set? CO1- U
2. Analyze how bus timing performing in 8086 minimum mode and maximum Mode. CO3- Ana
3. Name any four flags of 8086 and explain those flags in detail CO1- U
4. How would you connect a CPU, memory, and I/O devices using a system bus structure? CO1- U
5. How would you design the memory interface for a system using both RAM and ROM with the 8086? CO1- U
6. How is A/D convertor interfaced with 8051? CO2-App
7. Describe the role of the P0, P1, P2, and P3 registers in the 8051 microcontroller. How do these registers interact with the I/O pins? CO1- U
8. How does memory-to-memory data transfer using DMA differ from I/O-to-memory transfer? CO1- U
9. Design a real-time clock using Timer 0, displaying HH:MM:SS on an LCD. CO2-App
10. Compare polling & Interrupt. CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Explain 40 pin inline dual package microprocessor 8086 pin representation with neat diagrammatical representation CO1- U (16)  
Or  
(b) List the types of Addressing modes in 8086 microprocessor and also explain each mode with neat example CO1- U (16)

12. (a) Write an ALP for searching the largest & smallest data in a 10 elements of array; explain their executional output with neat diagrammatical representation. CO2- App (16)
- Or
- (b) Write an assembly language program and algorithm for converting the code and explain the executional output with neat diagrammatical representation. CO2- App (16)
13. (a) How would you design an address decoder for a system with a 1MB memory and multiple I/O devices? Explain diagrammatically with detailed explanation. CO1- U (16)
- Or
- (b) Describe in detail about modes of data transmission in serial and parallel communication. CO1- U (16)
14. (a) Explain features of 8051 Microcontroller and its architecture diagram with detailed description. CO1- U (16)
- Or
- (b) List the 7 groups of special function registers in 8051 Microcontroller and also explain each group with detail explanation. CO1- U (16)
15. (a) What is Interrupt Vector Table (IVT) in 8051 microcontroller, explain them with neat tabulation. Also list out the application, advantage and disadvantage using interrupt. CO1- U (16)
- Or
- (b) What is the basic principle of Analog -to- Digital Converter (ADC), and how does it convert analog signal into a binary data? CO1- U (16)