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Question Paper Code: R4806

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Fourth Semester

R21UIT406- MICROPROCESSOR BASED SYSTEM DESIGN

Information technology

(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 instructions in 8086 Microprocessor? CO1- U
2. Write an 8086-assembly language program to add two 8-bit numbers. CO2-App
3. Write an 8086-assembly language program to convert HEX to BCD CO2-App
4. Compare and contrast a single bus structure with a multiple bus structure in terms of data transfer speed and complexity. CO1- U
5. Analyze the impact of key debounce logic on keyboard scanning. CO3- Ana
6. Examine how serial communication errors can occur and how to handle them. CO3- Ana
7. List the instruction set in 8051 microcontroller CO1- U
8. Write the program addition of two number using 8051? CO2-App
9. Write a program to mask the 0th & 7th bit using 8051? CO2-App
10. How does the timing of LCD initialization affect data display performance? CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Write an assembly language program for arranging an array of data in ascending order and explain them in detail. CO2-App (16)
- Or
- (b) Write an assembly language program for any two arithmetic operations using two 16 bit numbers to give 32 bit result. CO2-App (16)

12. (a) Draw the architecture diagram for System Bus Structure and explain in detail about the bus connectivity in System Bus Structure. CO1- U (16)
- Or
- (b) How a control bus signal could manage a read and write operation on the data bus, construct a circuit diagram with detailed explanation. CO1- U (16)
13. (a) How would you configure the 8279 to interface an 8x4 keypad to a microcontroller? Explain diagrammatically with detailed explanation. CO1- U (16)
- Or
- (b) Explain about various modes in Timer 8051 microcontrollers with neat diagrammatical explanation and also the following CO1- U (8)
- i. TMOD (Timer mode register) (8)
- ii. TCON (Timer Control Register)
14. (a) Write an ALP using 8051 Microcontroller for: CO2- App (8)
- i. Convert packed BCD to ASCII (8)
- ii. Convert hexadecimal to ASCII
- Or
- (b) Write an ALP using 8051 Microcontroller for: CO2- App (8)
- i. Addition of two 8 bit numbers (8)
- ii. Subtraction of two 8 bit numbers
15. (a) What is Interrupt in 8051, List out their Types and also explain IP (Interrupt Priority) Register and IE (Interrupt Enable) Register with neat diagrams. CO1- U (16)
- Or
- (b) What is the basic principle of Digital – To - Analog Converter (DAC), and how does it convert binary data into analog signal? CO1- U (16)