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Question Paper Code : 91036

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

Fourth Semester

Electrical and Electronics Engineering

EE 3404 — MICROPROCESSOR AND MICROCONTROLLER

(Regulations 2021)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. Differentiate memory mapped I/O and I/O mapped I/O.
2. List the features of 8085 microprocessor.
3. Compare the difference between CALL and JUMP instructions.
4. Write an assembly language program to load the hexadecimal numbers 65H in register C, and 9CH in the accumulator A. After adding the contents of registers A and C, send logic high through SOD pin if Carry flag is set.
5. Find the resolution of 8-bit ADC. Also, determine the output of ADC for an input voltage of 2.5 V. Assume the reference voltage given to ADC0808 IC is of 3.3V.
6. Write the format of control word register in 8255 IC.
7. What is vectored and non-vectored interrupts?
8. Write the features of addressing mode.
9. Differentiate Power on reset and Brownout Reset.
10. Mention the steps involved in configuring the interrupts in PIC microcontroller.

PART B — ($5 \times 13 = 65$ marks)

11. (a) With a neat sketch, describe the interrupt structure of 8085 microprocessors. Also, comment on the interrupt processing mechanism.

Or

- (b) (i) Draw an interconnection diagram, for 8085 microprocessor based system interfaced with $2K \times 8$ RAM and $1K \times 8$ EPROM memory? (6)
- (ii) Draw the timing diagram of the LDA 8052H instruction and explain the operations carried out in each machine cycle. (7)
12. (a) (i) Illustrate the steps as a flowchart and write a program to add ten bytes of data stored in memory locations starting at a given location 353 AH, and display the sum. (6)
- (ii) With suitable examples, briefly explain about the different addressing modes supported in 8085 microprocessors. (7)

Or

- (b) (i) A set of three readings (A2H, 9AH and A9H) is stored in memory starting at 8050H, Sort the readings in ascending order. (6)
- (ii) With appropriate examples, explain the different types of control instructions supported by 8085 microprocessors. (7)
13. (a) With a neat sketch, describe the architecture and operation modes of 8279 IC.

Or

- (b) With appropriate diagrammatic representation, discuss in detail about the operation modes of 8254 IC.
14. (a) Explain the process of transmission and reception of data using the UART module of 8051 microcontrollers.

Or

- (b) Briefly explain about the features and operation modes of Timers/Counters in 8051 microcontrollers.
15. (a) Explain the memory organization of PIC 16 series microcontroller. Also, discuss about the importance of each memory type in relation to embedded system design.

Or

- (b) How I/O ports are configured and programmed in PIC microcontrollers. Illustrate it with suitable examples. Also, draw the internal architecture of any one of the PORT.

PART C — ($1 \times 15 = 15$ marks)

16. (a) With a neat sketch, describe the design process of building a temperature control system using 8051 microcontrollers. Support your answer with circuit diagram and assembly language code.

Or

- (b) Design a simple two-way traffic light control system using microcontrollers. Support your answer with circuit diagram and assembly language code.
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