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EE/E

Question Paper Code : 81285

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 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. Name any four externally initiated signals of 8085 microprocessor.
2. Define Bus in the context of microprocessor/microcontroller.
3. Define instruction format.
4. State the need of subroutine.
5. State the basic operations of 8251 USART.
6. Mention the significance of Interrupt Mask Register in 8259 chip.
7. List the special function registers of Timer module in 8051 Microcontroller.
8. State the interrupts in 8051 microcontroller.
9. State the purpose of the prescaler in Timer of PIC microcontroller.
10. Name any two on-chip communication peripherals of the PIC16microcontroller.

PART B — ($5 \times 13 = 65$ marks)

11. (a) (i) Explain the various general purpose and special purpose registers in 8085 microprocessor. (8)
- (ii) Mention the maximum size of memory that shall be interfaced with 8085 microprocessor. Justify your answer. (5)

Or

- (b) (i) Explain the software interrupts in 8085 microprocessor and working of Interrupt Service Routing (ISR) using an example. (8)
- (ii) Explain the function of SOD and SID pins in 8085 microprocessor. (5)
12. (a) Describe the various addressing modes supported by 8085 microprocessor using suitable examples.
- Or
- (b) (i) Distinguish between Instruction Cycle, Machine Cycle and T-State. (6)
- (ii) Explain the loop structure while programming with an example. (7)
13. (a) (i) Explain the operating modes and control words of 8255 PPI. (9)
- (ii) Find the data direction and modes of operation of 8255 ports if the control word written into it is AOH. (4)
- Or
- (b) Explain the features of 8279 programmable keyboard and display interface controller with neat internal block diagram.
14. (a) With neat functional block diagram of 8051 microcontroller, explain the components of the same.
- Or
- (b) Explain the structure of port 0 and port 3 of 8051 microcontroller with neat diagram.
15. (a) Explain the functions of Byte-oriented instructions of PIC 16 microcontroller.
- Or
- (b) Explain the basic working of a timer module in a PIC16 microcontroller.

PART C — (1 × 15 = 15 marks)

16. (a) Design suitable interface and write an algorithm and 8085 Assembly Language program to generate a square waveform using a DAC chip.
- Or
- (b) For an industrial application, precise 8051 microcontroller based control of stepper motor is required to run the stepper motor in clockwise direction for 45 degrees and after certain delay, to run in anticlockwise direction for 45 degrees. Draw the interfacing diagram and develop algorithm and program assuming suitable step angle.