Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 70561

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Electrical and Electronics Engineering

EE 8551 — MICROPROCESSORS AND MICROCONTROLLERS

(Common to : Electronics and Instrumentation Engineering/Instrumentation and Control Engineering)

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   How many memory locations can be addressed by 8085 microprocessor?

2.   List the interrupts available in 8083 microprocessor.

3.   What operation can be performed by using the instruction XRA A? Specify the status of Z and CY flag.

4.   Write the difference between continuous loop and conditional loop.

5.   What are the bit-addressable registers in 8051 microcontroller?

6.   Write the difference between AJMP and LJMP instruction.

7.   List the four display modes of 8279 Keyboard/Display controller.

8.   List the various modes of 8254 Timer.

9.   Write any four commands used in LCD interface.

10. Name any four applications of microcontroller in industrial automation.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the addressing modes of 8085 microprocessor with one example for each. (13)

Or

(b) Draw the timing diagram for STA 8800 H. The memory address of this instruction is 5500 H. (13)

12. (a) Write an assembly language program using 8085 instruction set to convert a string or ASCII characters into its hexadecimal equivalent. (13)

Or

(b) Write an 8085 assembly language program to convert a single digit BCD number into a binary number. (13)

13. (a) With the help of neat diagram explain the architecture of 8051 microcontroller in detail. (13)

Or

(b) Explain the 16-bit timer mode and 8-bit auto-reload mode of 8051 microcontroller. (13)

14. (a) Draw the functional diagram of 8255 and explain its control word and modes of operation. (13)

Or

(b) Draw and explain block diagram of 8259 programmable interrupt controller. Explain control word definition of the same. (13)

15. (a) With a neat connection diagram explain interfacing of 16 × 2 LCD with 8051 microcontroller. (13)

Or

(b) Discuss on control of servo motor by 8051 microcontroller. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Draw the interfacing diagram and write 8051 assembly language program for interfacing 4 × 4 matrix keyboard and display the key number in Port 0. (15)

Or

(b) (i)   After executing an arithmetic instruction, the value present in PSW register in 8051 is E4 H. Interpret the different FLAG status and their significance. (5)

    (ii)   Name the addressing mode used in the following 8051 instructions:

MOV A, @R1

MOV A, 4AH

MOV A, #18H

MOV A, R5

MOVC A, @A+DPTR (5)

    (iii)   What is the content of Accumulator of 8051 microcontroller after the following instructions are executed?

MOV A, #29H

ADD A, #B5H

ANL A, #0F0H

RRA (5)

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