Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20519

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

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. What is the function of the pins HOLD and HOLDA in 8085 microprocessor?
2. Name the various interrupts present in 8085 along with their priority.
3. Write an 8085 ALP to add two 8 bit numbers.
4. What is a stack? How it is used?
5. List the hardware interrupts available in 8051 microcontroller.
6. List the advantages of having timer in microcontroller.
7. List the elements of 8255 programmable peripheral interface.
8. List the sequence of steps in Analog to Digital conversion of a microprocessor based system using a timing diagram.
9. Interpret the function of the following instructions.
   (a) MOVX A, @ A + DPTR
   (b) MOVX A, @ DPTR
10. Draw the circuit Diagram to interface a seven segment display device with 8051 microcontroller.

PART B — (5 × 13 = 65 marks)

11. (a) Draw the block diagram of 8085 microprocessor and explain how the various units of 8085 work in executing an instruction. (13)

Or

(b) Explain the interrupt structure of 8085 microprocessor. (13)

12. (a) Explain the following 8085 instructions with an example. (13)

JP,JPO,CM,RPE,DAA,XCHG,SPHL and PCHL.

Or

(b) Write an assembly language program to add two 32 bit hexadecimal numbers using 8085 instruction set. (13)

13. (a) Draw the timer/counter control logic for the 8051 microcontroller and explain the special function registers involved in the counting operation. (13)

Or

(b) Classify the addressing modes of 8051 microcontroller and explain them with suitable examples. (13)

14. (a) Draw the architecture diagram of 8259 and list the roles of each component. (13)

Or

(b) Sketch the interface of serial ADC to the 8051 microcontroller. Write an 8051 assembly language program to read an analog signal through the ADC. (13)

15. (a) Write an 8051 assembly language program to evaluate $Z=(x+3y)/5$, where x and y will be 5 and 10. (13)

Or

(b) Write an 8051 assembly language program for 8051 to transfer letter "A" serially at 4800 baud rate continuously. Assume all other fields. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Design an 8086 based system to monitor the temperature in a boiler and display the temperature in two digits using seven segment display unit. (15)

Or

(b) Design an 8051 based system to control the speed of a stepper motor. (15)

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