10CS45

Fourth Semester B.E. Degree Examination, Feb./Mar. 2022
Microprocessors

Time: 3 hrs.   Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

1 a. Discuss the memory accessing in real mode addressing scheme.   (08 Marks)
   b. Explain the functionality of Transient Program Area (TPA) with suitable diagram. (06 Marks)
   c. Describe the block diagram of personal computer model.   (06 Marks)

2 a. Describe the control register structure of Microprocessor.   (08 Marks)
   b. Explain the functions of Selector and Descriptor in the protected mode memory addressing scheme.   (06 Marks)
   c. Illustrate the functioning of Memory Paging and Stack Memory Addressing Mode with an example.   (06 Marks)

3 a. List different data movement instructions and explain any four with illustrative examples.
                                                                                        (08 Marks)
   b. What are assembler directives? Explain the following assembler directives:
      (i) ORIGIN   (ii) SEGMENT   (iii) DT   (06 Marks)
   c. Describe the multiplication and division instructions of singed and unsigned integer operands.   (06 Marks)

4 a. Explain the operations of the following instructions of 8086 with an example for each:
      (i) TEST   (ii) XLAT   (iii) SCAS   (iv) NOP   (08 Marks)
   b. Describe the different BCD and ASCII arithmetic instructions.   (06 Marks)
   c. Differentiate between near CALL and far CALL of a procedure using illustrative example.
                                                                                        (06 Marks)

PART – B

5 a. What is modular programming? How PUBLIC and EXTRN directives are important to modular programming? Explain.   (08 Marks)
   b. Compare and contrast MACRO and PROCEDURE.   (06 Marks)
   c. Describe the three different methods of data conversion from binary to ASCII.   (06 Marks)

6 a. Explain the maximum mode operation of 8086 microprocessor.   (08 Marks)
   b. Describe the significance of the following pins of 8086:
      (i) ALE   (ii) HOLD   (iii) $\overline{BHE}$ (06 Marks)
   c. With the help of block diagram, explain the functionality of 8284 clock generator. (06 Marks)

7 a. Explain the function of NAND and 3-to-8 decoder. How these decoders are used in address decoding of memory interfacing? Explain.   (08 Marks)
   b. Compare and contrast isolated I/O and memory-mapped I/O.   (06 Marks)
   c. Design a memory interface circuit to interface 32K word of memory to the 8086 microprocessor system. Available memory chips are $16K \times 8$ RAM. Use suitable decoder for generating chip select logic.   (06 Marks)

8 a. Describe the different operating modes of 8255 Programmable Peripheral Interface.
                                                                                        (08 Marks)
   b. Discuss the functionalities of 8254 Programmable Interval Timer.   (06 Marks)
   c. What is an interrupt? Explain the response steps of 8086 microprocessor to an interrupt signal.   (06 Marks)

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