USN ☐☐☐☐☐☐☐☐☐☐   **10CS45**

Fourth Semester B.E. Degree Examination, Dec.2016/Jan.2017
Microprocessors

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. Discuss the development of Intel 86 family of microprocessors. Briefly indicate the additional features introduced at each stage of development from 8086 to Pentium IV. (06 Marks)
   b. Explain with a neat sketch the memory map of a personal computer system. (06 Marks)
   c. With a neat sketch explain architecture of 8086. (08 Marks)

2 a. Discuss the following Addressing modes of 8086 with example.
      i) Register indirect   ii) Immediate   iii) Base plus index. (06 Marks)
   b. What are the different program memory addressing modes? Explain with example. (06 Marks)
   c. Calculate the physical address for the following instructions. Assume
      DS = 1000H, SS = 7000H, ES = 4000H, BP = 0100H, SI = 0020H, DI = 0200H,
      BX = 0700H, Values = 0500H.
      i) MOV AX, [BX] [SI]
      ii) ADD AL, [BP + 40H]
      iii) MOV CX, Values [BX] [DI]
      iv) MOV ES : [1000H], 20H. (08 Marks)

3 a. Explain the following assembler directives with example.
      i) ASSUME   ii) PUBLIC AND EXTRN
      iii) MACRO AND ENDM   iv) MODEL. (10 Marks)
   b. Write the instruction template (format) for the following instructions.
      i) MOV AX, DX   ii) MOV DX, [BP] 0200H   iii) MOV AL, [BX] [DI] (06 Marks)
   c. What is meant by segment override prefix? Explain with an illustration. (04 Marks)

4 a. Explain the working of following 8086 instructions.
      i) DAA   ii) IMUL   iii) REPE CMPSB   iv) LOOP. (08 Marks)
   b. Differentiate between 'short', 'near' and 'far' jump instruction with example. (06 Marks)
   c. Explain with an example, how parameters can be passed to subroutine, using stack. (06 Marks)

PART – B

5 a. Differentiate between 'Macros' and 'Procedures' with an example for each. (08 Marks)
   b. Write an ALP to compute the factorial of a given 8-bit number using recursion. (06 Marks)
   c. Write an ALP to sort a given set of N numbers in ascending order using bubble sort. (06 Marks)

6 a. Illustrate with a neat diagram, the working of 8086 in minimum mode. (10 Marks)
   b. Explain the memory read bus cycle of 8086 in minimum mode with a neat diagram. (10 Marks)

7 a. Interface four 8KB RAMs starting with an address of 40000H using 3:8 Decoder. Clearly mention the decoding logic and memory map. (10 Marks)
   b. Differentiate between memory mapped I/O and I/O mapped I/O. (06 Marks)
   c. Write a note on Interrupt driven I/O. (04 Marks)

8 a. With a neat sketch explain the functioning of 8255 PPI. (10 Marks)
   b. Discuss the control word format of 8255 PPI with a sketch. (10 Marks)

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