10CS45

Fourth Semester B.E. Degree Examination, June/July 2018
Microprocessors

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a.   Define microprocessor. Briefly discuss evolution of microprocessors.   **(06 Marks)**
    b.   Draw and explain the block diagram of computer system showing address, data and control bus structure.   **(06 Marks)**
    c.   Why 8086 memory is divided into segments? Explain the use of Segment, Pointer and Index registers.   **(08 Marks)**

2   a.   Explain protected mode addressing of 80286 through Core2 64-bit processors.   **(12 Marks)**
    b.   Explain with an example, various program memory addressing modes (any 4 addressing modes).   **(08 Marks)**

3   a.   Explain the coding format of MOV instruction. Also generate opcode for the following instruction :
         MOV WORD PTR [BX + 1000H], 1234H   **(10 Marks)**
    b.   Explain the following instructions with an example for each :
         (i) LES   (ii) MOVS   (iii) XLAT   (iv) MUL   (v) CBW   **(05 Marks)**
    c.   Explain the following assembler directives with an example for each :
         (i) DB   (ii) ORG   (iii) ASSUME (iv) PROC   (v) USES   **(05 Marks)**

4   a.   Explain the following instructions with example for each :
         (i) DAA   (ii) AAS   (iii) AAM   (iv) WAIT   (v) BOUND   **(10 Marks)**
    b.   Write an 8086 assembly language program to separate odd and even numbers in an array.
                    (06 Marks)
    c.   Write an 8086 assembly language program to read a key from the keyboard and store its hexadecimal value in memory location TEMP (Use IF….ELSE statements).   **(04 Marks)**

PART – B

5   a.   What is an inline assembly? Explain the basic rules of the same for 16-bit DOS applications.
                    (08 Marks)
    b.   Differentiate between :
         (i)   Assembler and Linker
         (ii) Public and EXTRN
         (iii) Macros and Procedures   **(06 Marks)**
    c.   Write an 8086 ALP to find largest of 3 numbers.   **(06 Marks)**

6   a.   Explain the functions of following pins of 8086 microprocessor :
         (i) READY   (ii) $\overline{BHE}$ (iii) ALE   (iv) M/$\overline{IO}$ (v) NMI   (vi) HOLD   **(06 Marks)**
    b.   Draw and explain minimum mode memory read machine cycle of 8086.   **(06 Marks)**
    c.   With an internal block diagram, explain 8288 bus controller.   **(08 Marks)**

7 a. Briefly explain the following memory devices :
      (i) ROM   (ii) PROM   (iii) EPROM   (iv) EEPROM   (v) SRAM   (vi) DRAM
      (06 Marks)

   b. Design an interface between 8086 MPU and two chips of 16k×8 EPROM and two chips of 32k×8 RAM, Select the starting address of EPROM suitably.   **(08 Marks)**

   c. Differentiate between I/O - mapped - I/O and memory-mapped - I/O.   **(06 Marks)**

8 a. Explain different I/O modes of operation of 8255.   **(06 Marks)**

   b. With an internal block diagram, explain 8254 Programmable Interval Timer.   **(06 Marks)**

   c. Explain the structure of 8086 interrupt vector table with a neat diagram.   **(08 Marks)**

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