C 48878 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION JUNE 2008

AI/BM 04 403—INTRODUCTION TO MICROPROCESSORS

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

1. (a) List the hardware interrupt pins of 8085 in descending of priority and also specify their vector address.

   (b) Explain the use of the following control signals of 8085 microprocessor (i) READY ; (ii) HOLD.

   (c) The 'ret' instruction is a single byte instruction, how the 'ret' instruction at the end of a subroutine makes the processor to return to the main program.

   (d) Name a single instruction of 8085 processor which can be used to give a left shift to the content of H-L register pair. Justify your answer with an example.

   (e) What is the address bus width of the 8086 processor ? How much memory can it access ? How many different I/O ports can the 8086 access ?

   (f) Name the addressing modes supported by 8086 instruction set.

   (g) The clock signal frequency input to 8279 keyboard display controller IC is 3.1 MHz. After rest what will be the interval clock frequency ?

   (h) How many 8259 programmable Interrupt controller ICs are to be cascaded to provide interrupt facility to 43 different devices ? (State the minimum number of ICs required). Also justify your answer.

(8 × 5 = 40 marks)

2. Draw the internal architecture of 8085 in block diagram form and explain the function of each block.

Or

3. (a) State the features of memory mapped I/O and I/O mapped I/O modes of operation.

(8 marks)

   (b) With the help of logic gate diagram explain how the signals $\overline{\text{MEMR}}$, $\overline{\text{MEMW}}$, $\overline{\text{IOR}}$ and $\overline{\text{IOW}}$ are generated from the control signals IO/$\overline{\text{M}}$, $\overline{\text{RD}}$ and $\overline{\text{WR}}$

(7 marks)

4. Write an assembly language program to rearrange an array of unsigned binary numbers in ascending order. The array starts from 1001*h* and ends at 101*Bh*. Explain the algorithm with an example.

Or

Turn over

5. (a) Is it possible to use jump instruction to jump to a sub-routine ? Justify your answer.

(6 marks)

(b) With the help of suitable example explain the algorithm which converts a 8 bit binary number into its equivalent BCD form.

(9 marks)

6 (a) What is meant by memory segmentation ? Name the different segments with which 8086 works and also state the advantages of segmented memory operation.

(8 marks)

(b) Discuss about the interrupt vector table of 8086 in detail. (7 marks)

Or

7. Write an assembly language program using 8086 instructions to multiply two matrices (3 × 3). The elements of the matrices are stored as two linear array each consisting of 9 elements. Draw the flow chart.

8. Draw the block diagram of 8237 DMA controller and explain the function of each block.

Or

9. Discuss about asynchronous serial I/O standard and asynchronous serial data communication.

[4 × 15 = 60 marks]