(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2119   Roll No. ☐☐☐☐☐☐☐☐☐☐

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2010-11

MICROPROCESSORS

Time : 2 Hours   *Total Marks : 50*

Note :— Attempt **ALL** questions. All questions carry equal marks.

1. Attempt any **two** parts :   **(5×2=10)**

    (a) Explain the 8085 Bus structure.

    (b) Explain the functions of the AIE and $IO/\overline{M}$ signals of the 8085 microprocessor. Also explain the need to demultiplex the bus $AD_7 - AD_0$.

    (c) (I) Calculate the address lines required for an 8K-byte memory chip.

         (II) Calculate the number of memory chips needed to design 8K-byte memory if the memory chip size is 1024×1.

2. Attempt any **two** parts :   **(5×2=10)**

    (a) (I) Explain why the number of output parts in the peripheral-mapped I/O is restricted to 256 ports.

(II) In the peripheral-mapped I/O, can an input port and an output port have the same port address ?

(b) (I) Explain why a latch is used for an output port, but a tri-state buffer can be used for an input port.

(II) What are the control signals necessary in the memory-mapped I/O ?

(c) Register B has 65 H and the accumulator has 97 H. Subtract the contents of register B from the contents of the accumulator. Also give flag status and display the answer at PORT 1.

3. Attempt any **two** parts : (5×2=10)

(a) The memory location 2050H holds the data byte F7H. Write instructions to transfer the data byte to the accumulator using three different opcodes : MOV, LDAX and LDA. Also give your comments.

(b) Sixteen bytes of data are stored in memory locations at XX50H to XX5FH. Write a program to transfer the entire block of data to new memory locations starting at XX70H.

(c) Explain 8085 interrupts.

4. Attempt any **two** parts : (5×2=10)

(a) Write a program to convert an 8-bit binary number into a BCD number. Also give flow chart for conversion.

(b) How an ASCII Hex number is converted into its binary equivalent ? Give flow chart and subroutine for it.

(c) Write a subroutine to set the zero flag and check whether the instruction JZ functions properly, without modifying any register contents other than flag.

5. Attempt any **two** parts : (5×2=10)

(a) Describe the functional block diagram of 8086 microprocessor.

(b) With the help of block diagram, describe 8237 DMA controller.

(c) How a keyboard and a seven-segment LED is interfaced with 8085 microprocessor ? Explain.