

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

PAPER ID : 2119

Roll No.

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### 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  $1024 \times 1$ .
  
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.