

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

**PAPER ID : 0210**

Roll No. 

1	1	0	9	1	2	0	9	0	7
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**B.Tech.**

**(SEMESTER-IV) THEORY EXAMINATION, 2011-12**

**MICROPROCESSORS**

*Time : 3 Hours ]*

*[ Total Marks : 100*

**Note :** Answer all the Sections.

**Section – A**

1. Attempt all parts. 10 × 2 = 20
- (a) List the difference between the machine-language and the assembly language of the 8085 microprocessor.
  - (b) Identify the main purpose of ROM & RAM in microprocessors.
  - (c) How many BCD numbers can accommodate in an 8-bit register in the 8085 ?
  - (d) How does the microprocessor differentiate between a code and data when both are binary numbers ?
  - (e) Specify the numbers of registers and memory cells in a 128 × 4 memory chip.
  - (f) Why are the program counter and the stack-pointer 16-bit registers ?
  - (g) If the 8085 has fetched the machine code located at the memory location 205FH, specify the contents of the program counter.
  - (h) Specify the two 8085 signals that are used to latch data in an output port.
  - (i) If the CS register contains the number 5ABEH and the IP contains the number F12CH, what is the address of the instruction ?
  - (j) List the default segment register-offset register pairs.

## Section- B

3 × 10 = 30

2. Attempt any **three** parts.

- (a) Describe the organization of a Microprocessor-based system with bus architecture. Specify functions of various components of a microprocessor-based system.
- (b)
  - (i) List the 8086 addressing modes and give an example on each mode.
  - (ii) Write an 8086 assembly program to perform 3 byte un-packed number addition.
- (c) List the sequence of events that occurs when the 8085 MPU reads from memory and draw the timing of the memory read cycle.
- (d) Six bytes of data are stored in memory locations starting at XX50H. Add all the data bytes. Use register B to save any carries generated while adding the data bytes. Display the entire sum at two output ports, or store the sum at two consecutive memory locations XX70H and XX71H. Write a flow chart and the 8085 assembly program for it.
- (e) Draw the block diagram of the 8255A and explain all I/O ports and their modes.

## Section – C

Attempt **all** parts.

5 × 10 = 50

3. Attempt any **one** part :

- (a) Write an 8085 assembly program to count from 0 to 9 with one second delay between each count. At the count of 9, the counter should reset itself to 0 and repeat the sequence continuously. Assume the clock frequency of micro-computer is 1 MHz.
- (b) Explain how the stack pointer can be initialized at one memory location beyond the available user memory. Illustrate the contents of stack memory and registers when PUSH and POP instructions are executed.

4. Attempt any **one** part :
- (a) List the sequence of steps executed to handle interrupt – process in 8085.
  - (b) With neat hardware schematic, explain how multiple interrupts are handled using 8-to-3 priority encoder.
5. Attempt any **one** part.
- (a) Draw and discuss a typical maximum mode 8086 system. What is the use of a bus controller in maximum – mode ?
  - (b) Explain functionality of these instructions with one example on each :
    - (i) AAA
    - (ii) AAM
    - (iii) AAD
    - (iv) DAA
    - (v) CBW
6. Attempt any **one** part :
- (a) Explain all assembler directives, pseudo-ops and operators with suitable examples.
  - (b) Write an assembly program to find out the number of even and odd numbers from a given series of 16-bit hexadecimal numbers.
7. Attempt any **one** part.
- (a) Write a sub-routine, in 8085, to transmit an ASCII character, stored in register B, using SOD line as a 1-bit output port.
  - (b) Draw the block diagram of 8259A. In 8259A, list the sequence of events occurs when one or more interrupt lines go high.