## Sixth Semester B.E. Degree Examination, May/June 2010
## Microprocessors

Time: 3 hrs.

Max. Marks:100

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

### PART – A

1 a. Explain in brief the functions of 'execution unit', with a neat block diagram. **(07 Marks)**
   b. Explain: i) How physical address is generated by 8086?
      ii) 16 byte paragraph boundary.
      iii) Segment override prefix. **(06 Marks)**
   c. Explain with at least two examples, the register indirect addressing and register relative addressing. Identify the addressing modes for the following instructions: **(07 Marks)**
      i) MOV AX, BP [100]       ii) XCHG num[ BX + SI ], SP       iii) MOV CL, 'A'

2 a. What are the differences between 8086 and 8088 processors? **(04 Marks)**
   b. What is wrong, if any, in the following instructions? Correct them and explain the operation performed by these instructions.
      **(06 Marks)**
      i) ADD [ 23A5H ], AL       ii) INC [ BX ]       iii) LEA SI, offset num
   c. Write an ALP to add N one byte BCD numbers, store the result in memory location. **(10 Marks)**

3 a. What do you mean by 'assembler directives'? Explain the following assembler directives:
      i) ALIGN 16     ii) PROC .... ENDP     iii) ASSUME     iv) EXTRN....PUBLIC **(05 Marks)**
   b. Explain any four conditional branch instructions which check the carry and zero flags simultaneously. **(06 Marks)**
   c. Write an ALP to convert a four digit ASCII coded hexadecimal number to its binary equivalent using SEGMENT.......ASSUME directives. **(09 Marks)**

4 a. What are the differences between a MACRO and a PROCEDURE? Write an ALP that displays a carriage return and a line feed using a MACRO. **(10 Marks)**
   b. Write an ALP to find the GCD of four numbers using a procedure. **(10 Marks)**

### PART – B

5 a. Describe the purpose of interrupt vector table and the condition (s) which causes the microprocessor to perform the following types of interrupts:
      type 0, type 1, type 2, type 3 and type 4 **(07 Marks)**
   b. Write an interrupt procedure that sets the trap flag to enable trap. **(04 Marks)**
   c. Write a program that outputs characters to a printer using INT 17h interrupt. **(09 Marks)**

6 a. Explain the different types of key switches used in a computer. **(05 Marks)**
   b. Draw a block diagram of 7 - segment LED display which is interfaced to a microprocessor using dedicated display controller. **(10 Marks)**
   c. Explain the different types of floating point numbers stored in the memory by the coprocessor. **(05 Marks)**

7 a. Convert the following:
      i) Decimal 1259.125 to single precision number       ii) Decimal -29.563 to long real form.
      iii) Short real 010111010110011100....0 to decimal. **(09 Marks)**
   b. Write an ALP to find the roots of a quadratic equation $x^2 + 3x + 2 = 0$. **(11 Marks)**

8 Write short notes on :   a) Minimum and maximum modes of 8086  ; b) Universal serial bus (USB) ; c) Special registers of 80386  ; d) Pentium processor. **(20 Marks)**

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