Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.TECH (ME)/SEM-2/ME-202/2012

2012
ADVANCED MICROPROCESSOR AND MICROCONTROLLER

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. 5 × 14 = 70

1. a) Draw the schematic block diagram of 8088 microprocessor and explain the function of each block briefly. 8

   b) Write the difference between the following : 2 × 3

      i) 8085 microprocessor and 8086 microprocessor.

      ii) 8088 microprocessor and 8086 microprocessor

2. a) Discuss logical address and physical address of 8086 microprocessor. 4

   b) Determine the physical address when C = 4767 H and offset address = 4230 H. 4

   c) What is the function of flags in a microprocessor ? What are the different flags available in 8086 ? Explain the operation of each flag. 6

3. a) Define minimum mode and maximum operation of 8086 microprocessor. 3

   b) Draw the timing diagram of memory write bus cycle of 8086. 5

   c) Discuss Based Indexed with displacement addressing of 8086 and 8088 microprocessors. 3

   d) What is the output of DL after exectution of the following instructions ? 3

      MOV DL, 36

      AND DL, OF

4. Write the assembly language program of 8051 microcontroller (any *four*) : $4 \times 3\frac{1}{2}$

   a) Addition of two 16-bit numbers

   b) 2's complement of a 8-bit number and store the result in 9405 H memory location

   c) Multiplication of two 8-bit numbers

   d) Find the smallest number from an array of numbers.

   e) Find square of a number using look-up table.

   f) Division of two 8-bit numbers.

5. Write the short notes on any *four* of the following : $4 \times 3\frac{1}{2}$

   a) Registers of 8086

   b) Applications of microprocessors × micro controllers

   c) Instruction format of 8088

   d) Memory organization of 8051

   e) Key board interface

   f) ADC interface.

6. a) What are the different instruction groups of 8051 microcontroller ? 3

b) Explain the functions of the following instructions. 5

i) ADD A, @ Ri (ii) MOV A, @ A + DPTR

(iii) MOV DPTR, # 4050H (iv) MUL AB (v) DIV AB

c) How many *T* states are required to execute the following instructions ? 6

	MOV CX, 8000 H	4 *T* states
Loop :	DEC CX	2 *T* states
	NOP	3 *T* states
	JNZ Loop	16*T* states / 13 *T* states

7. a) Write assembly language program of 8086 microprocessor for the following :

i) Shift Left of a 16-bit number by one bit 3

ii) Addition of a string of words with a sum of 16 bit. 3

b) What will be the result after executing the following instructions : 4

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MOV AL, O5
MOV CL, 05
MUL CL
AAM
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c) Define assembler. Write advantages of assembler. 4

8. a) What are the advantages of having segmentation in 8086 microprocessor ? 2

b) What do you mean by sub-routines ? How sub-routines are used in a program ? 3

c) What do you mean by 8-bit microprocessor ? 1

d) What do you mean by pipelined architecture ? 1

e) Compare memory mopped I/O and I/O mapped I/O. 2

f) What are the function $\overline{EA}/V_{pp}$ and $\overline{PSEN}$ pins of 8086 microprocessor ? 2

g) What is the advantage of multiplexed address and data bus ? Show how it can be demultiplexed in 8085. 3