MCS-012

MCA (Revised)

Term-End Examination

December, 2010

MCS-012 : COMPUTER ORGANISATION & ASSEMBLY LANGUAGE PROGRAMMING

Time : 3 hours   *Maximum Marks : 100*

(Weightage 75%)

Note :   *Question   no. 1 is* **compulsory** *and carries* **40 marks.** *Attempt any* **three** *questions from the rest.*

1.   (a)   Add the following numbers using signed   5
             2's complement representation for 8 bit
             numbers. Indicate overflow/underflow if
             any

             (i)   +75 and −58

             (ii)   −75 and −52

      (b)   Design and draw a 3 × 8 decoder using NOT   7
             gates and AND gates and explain its
             working.

(c) Explain the following 8086 microprocessor instructions with the help of an example each.   **5**

(i) DAS (ii) XOR

(iii) SHL (iv) ROR

(v) RCL

(d) Discuss the operation of Programmed I/O and Interrupt driven I/O technique using flow chart. Compare them briefly.   **8**

(e) Write a program in 8086 assembly language that adds two five byte numbers, use arrays.   **5**

(f) Design and draw a Binary Adder-Subtractor logic circuit.   **5**

(g) Explain Register relative and Index addressing scheme.   **5**

2. (a) Write an assembly language program for 8086 microprocessor to sort a given list of 5 numbers in ascending order and explain its logic.   **10**

(b) List all the features of RISC architecture.   **5**

(c) Explain LCDs.   **5**

3. (a) Simplify the following function in SOP and POS forms by means of K-map. Also draw the logic diagram.   **10**

$F(A,B,C,D) = \sum (0,2,5,7,8,10,13,15)$

(b) What is Interrupt ? Briefly explain the four 5
interrupt conditions.

(c) Discuss the difference between SDRAM 5
and RDRAM.

4. (a) Construct a 5 to 32 line decoder with four 10
3 to 8 line decoders with enable and one
2 to 4 line decoder.

(b) What are program visible and program 5
invisible registers. Explain flag register in
8086.

(c) Write a program in assembly language for 5
8086 microprocessor that compares a pair
of characters entered through keyboard.

5. (a) Represent a binary number 1101011 in 6
floating point representation using 32 bit
word length (24 bit mantissa and 8 bit biased
exponent).

(b) Explain 8

(i) Associative Mapping.

(ii) Set Associative Mapping.

(c) Explain the concept of FAT and Inode. 6