MCA (Revised)

Term-End Examination

December, 2011

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 – 28 and – 32 in binary using 8 -bit   5
          registers, using :

          (i)   Signed $1's$ Complement

          (ii)   Signed $2's$ Complement

     (b)   Simplify the following function using   5
          Karnaugh map and draw the circuit using
          AND, OR and NOT gates

          $F (A, B, C) = \Sigma (1, 3, 4, 6, 7)$

     (c)   Differentiate between the following :   2.5x2=5

          (i)   SRAM v/s DRAM

          (ii)   Data Organization in Hard Disk v/s
                Compact Disk.

(d) Explain the 2 way set associative mapping for cache memory. 5

(e) Explain the fetch cycle using microoperations. 4

(f) Explain the differences between COM and EXE programmes. 5

(g) Explain the following program control intructions with the help of suitable illustrations. 6

    (i) Branch and Jump

    (ii) CALL and RETN

(h) Write a program using 8086 assembly language for interchanging the values of two memory location. 5

2. (a) Discuss any five characteristics of a RISC architecture. What are the advantages of using large register file in these machines ? Explain using suitable illustration. 10

(b) Write a program using 8086 assembly language to find the average of three values stored in locations named FIRST, SECOND and THIRD and puts the result in the memory location AVGE. 10

3. (a) How are the problems in S-R flip flop **10** removed in J-K flip flop ? Explain the working of JK flip flop with the help of logic diagram and characteristics table. Also, make the excitation table for the same.

   (b) Explain the working of an ALU with the **5** help of a diagram.

   (c) Draw and explain the flow chart of the **5** working of programmed I/O technique.

4. (a) Explain the instruction pipeline using an **10** illustration. What are the various problems faced by instruction pipeline ?

   (b) Explain the following with the help of an **10** example/diagram if needed

   (i) DMA

   (ii) Wilkes Control

5. (a) Explain any five addressing modes with **10** examples.

   (b) Explain the term RAID. What are the **5** techniques used by RAID for enhancing reliability ?

   (c) Explain the term "Resolution"in the context **5** of Monitors and Printers.