MCA (Revised)

01064

Term-End Examination
December, 2009

MCS-012 : COMPUTER ORGANISATION & ASSEMBLY LANGUAGE PROGRAMMING

Time : 3 hours   *Maximum Marks : 100*

(Weightage 75%)

Note : *Question number 1 is **compulsory** and carries **40** marks. Attempt any **three** questions from the rest.*

1. (a) Differentiate between SRAM and DRAM. Draw the cell of a DRAM.   5

   (b) Explain the use of I/O interface in digital circuits.   5

   (c) Prepare the truth table for the following boolean expressions and simplify them using K-Maps.   5

   (i) $A \bar{B} \bar{C} + \bar{A} B \bar{C}$

   (ii) $(A+B) . (\bar{A}+\bar{B})$

   (d) Explain the functioning of a 3-bit synchronous counter with the help of its logic diagram.   5

(e) Explain how does a CPU fetches and executes a simple ADD instruction using microoperations. Make suitable assumptions whereever necessary. **5**

(f) Explain any five features of RISC architecture. **5**

(g) Explain the working of the following instructions in 8086 processor. **5**

(i) MOV AX, BX

(ii) MOV AX, [BX]

(iii) MOV AX, [BX + SI]

Make suitable assumptions if any.

(h) Write an assembly language program for 8086 micro processor to add two 32 bit numbers. **5**

2. (a) Explain any six addressing modes with the help of an example each. **9**

(b) Write the code sequence in 8086 assembly language for performing the following operation- $Z = ((A - B)/10*C) * * 2$. **5**

(c) What is a segment in 8086 microprocessor ? Discuss the advantages of segmentation in this processor. How addresses are calculated in 8086 microprocessor ? **6**

3. (a) Discuss the differences between Hardwired Control and Microprogrammed Control Units. **5**

(b) What will be the value for R2 operand if : 5

(i) Mask operation clears register R1

(ii) Bits 10110001 is to be inserted in an 8 bit R1 register.

You may assume the contents of R1 initially as 01010101.

(c) Explain the process of subroutine CALL and RETURN with the help of a suitable diagram. 5

(d) Explain how data is stored in a CD-ROM with the help of a suitable diagram. 5

4. (a) Which of the I/O techniques does not require an interrupt signal ? Is this technique useful in multiprograming operating systems ? Give reason. 5

(b) Calculate the number of entries required in the FAT table using the following parameters for an MS-DOS system. 5

Disk capacity 30MB

Block Size 512 bytes

Blocks/Cluster 4.

(c) Explain the term Resolution and how it applies to Monitors, Printers and Scanners. 5

(d) What is RAID ? What are the techniques used by RAID for enhancing reliability. 5

5. (a) Add the following numbers in 8-bit register   4
    using 2's complement notation.
    (i)   +50 and −5
    (ii)   +45 and −65
    (iii) +75 and +85
    Also indicate the overflow if any.

   (b) Explain the following terms with the help   16
    of an example/diagram/illustration if
    needed.
    (i)   SCSI
    (ii)   I node
    (iii) Daisy chain interrupt handling
    (iv)   Address space in virtual memory
    (v)   .EXE files
    (vi)   INT 21h
    (vii) Assembler
    (viii) Encoder

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