No. of Printed Pages : 4

MCS-012

00514

MCA (Revised)

Term-End Examination

June, 2013

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.*

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1. (a) Add +45 and −10 in binary using 8 bit registers, in **4**

(i) Signed 1's complement

(ii) Signed 2's complement

(b) Simplify the following function using Karnaugh map and draw the circuit using AND, OR and NOT gates. **6**

$F(A, B, C) = \sum (1, 3, 4, 5, 6, 7)$

(c) Differentiate between **4**

(i) ROM and Flash Memory

(ii) CDROM and CDRW

(d) How many RAM chips of size 512K × 1 bit are required to build 1MByte of memory.Show the address distribution for the scheme. 5

(e) Explain the associative Mapping scheme for Cache Memory. 4

(f) Explain the features of RAID level 1 and RAID level 5. 5

(g) Explain various types of instructions used in a typical computer system. 4

(h) Write a program using 8086 assembly language for multiplication of two 8 bit numbers. Also display the result. 4

(i) Explain the following 8086 microprocessor with the help of an example. 4

(i) DAA

(ii) TEST

2. (a) What are logic Microoperations ? Explain with the help of examples. 6

(b) Write a program using 8086 assembly language to linear search an 8 bit value in consecutive byte memory locations. 7

(c) What is the role of control unit in a computer ? Explain Wilke's control unit using a diagram. 7

3. (a) Explain the memory interleaving with the help of a diagram. 4

(b) Draw and explain a 4 - bit Adder Subtractor circuit. 6

(c) Design and explain an instruction pipeline using an illustration. What are various problems faced by an instruction pipeline ? 10

4. (a) Explain with the help of an example/ diagram if needed 8

(i) Isolated I/O

(ii) Memory Mapped I/O

(b) Explain the following techniques for monitors 8

(i) Shadow Mask

(ii) Cathode Ray tubes

(iii) Dot Pitch

(iv) DPI

(c) Explain the concept of Virtual Memory in the context of memory management. 4

5. (a) Represent a binary number 1001011 in IEEE 754 floating point representation using 32 bit word length (24 bit mantissa and 8 bit biased exponent). 6

(b) What is Interrupt ? Briefly explain the four interrupt conditions. Explain the process of interrupt handling with the help of diagrams. 8

(c) Explain the functioning of a J-K Master Slave flip flop with the help of a diagram. 6