No. of Printed Pages : 3

MCS-012

15375

MCA (Revised)

Term-End Examination

December, 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.*

1. (a) Add - 35 and - 31 in binary using 8 - bit register, 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, Not gates. **6**

$F(A, B, C, D) = \Sigma(0, 2, 8, 9, 10, 11, 13, 15)$

(c) Differentiate between. **4**

(i) SRAM Vs DRAM

(ii) CD - R Vs CD - RW

(d) How many RAM chips are required of size $128k \times 1$ to build 1 M byte of memory. Show the address distribution for the scheme. **5**

(e) What do you mean by Content Addressable Memory (CAM) ? Explain. **4**

(f) Explain the following. 5

(i) Seek time

(ii) Latency time

(iii) Access time

(g) Draw and explain the logic diagram of a 3 bit synchronous counter. 6

(h) Write a program using 8086 assembly language for division of a 16 bit number by a 8 bit number. Also display the result. 6

2. (a) What is instruction pipelining ? What are the various problems that can occur while using an instruction pipeline ? 8

(b) Write a program using 8086 assembly language to find the minimum number in a list of byte size values consecutively stored in the memory. 8

(c) How Call and Return instructions for a subroutine are handled in a computer ? 4

3. (a) What is a multiplexer ? Explain how an 8×1 multiplexer can be designed using two 4×1 multiplexers. 8

(b) What is a master slave flip flop ? Why do we require Master Slave Combination ? 6

(c) Explain the fetch cycle and execute cycle for an addition instruction. 6

4. (a) Explain with the help of an example/ diagram if needed. 6

(i) Programmed I/O (ii) DMA

(b) Explain the functioning of a Micro-programmed control unit with the help of a diagram. 8

(c) What are the uses of large register file in a RISC ? Explain with the help of a diagram. 6

5. (a) Explain any four addressing modes in 8086 microprocessor with the help of an example each. 8

(b) Write code sequence in 8086 assembly language for performing the following operation 6

$$Z = \left(\left(A + B/2 \right) / 10 \right)^{**2}$$

Where ** represents exponentiation.

(c) Differentiate between. 6

(i) Printers versus Scanners

(ii) CRT versus LCD