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CS-01

00970

PGDCA / MCA (I Year) / BCA

Term-End Examination

December, 2010

CS-01 : COMPUTER FUNDAMENTALS

Time : 3 hours *Maximum Marks : 75*

Note : ***Question no. 1 is compulsory.*** *Answer* ***any three*** *questions from the rest.*

1. (a) Make the truth table for the following expressions and design the digital logic circuit for the same. 5

   (i) $f(x,y,z) = x'y + z' + xyz$

   (ii) $f(x,y,z) = x'(y'+z)$

   (b) Write a program in 8086 assembly language to multiply two single digit positive numbers by repeated addition method. (for example, to multiply 6x3, the program evaluated the product by adding 6 three times) 6

   (c) Explain the use of segmentation in 8086 microprocessor. What are the various segments in 8086 microprocessor ? Illustrate the generation of physical address in 8086 microprocessor. 5

(d) What in Cache Coherence ? Why is it important for shared memory multi-processor systems ? 5

(e) Represent the following floating point numbers using 32 bits IEEE 754 floating point representation. 4

(i) 22.25 (ii) 0.825

(f) What is the importance of RISC machines. Explain the basic features of RISC architecture. 5

2. (a) 4-bit odd parity checker calculates the number of bits in the given 4 bits of data. If the number of bits are odd in the given number it generates output "1". For example, 8

Input = 1011, output = 1

Input = 0011, output = 0

Using this logic, design a 4 - bit parity checker with the help of K-maps. Draw the resultant logic circuit.

(b) How the Effective Address (EA) is calculated in the following addressing schemes ? Using suitable example of each. 5

(i) Register Indirect Addressing

(ii) Displacement addressing using Base Register.

(c) Subtract - 27 from - 68 using 2's Complement. 2

3. (a) Write a program in 8086 assembly language to search for a number in a list of numbers. 6

(b) Explain the differences between a branch instruction, a call instruction and an interrupt, using an example for each. 6

(c) What is set-associative mapping scheme for cache memory. 3

4. (a) How can a J-K flip flop be constructed ? Draw its logic diagram and characteristic table. 3

(b) Explain the following Mnemonics of 8086 Instruction set with an example of each. 12

(i) SHL

(ii) ROR

(iii) TEST

(iv) CBW

(v) NEG

(vi) POP

5. (a) Give at least three differences between loosely coupled microprocessors and Tightly coupled microprocessors. 3

(b) Explain the following with the help of an example/diagram if needed **12**

(i) Vector Processing

(ii) Multi port memory

(iii) Vertical Micro instruction

(iv) Flags register

(v) Interleaved memory

(vi) Instruction Pipeline
