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CS-01

PGDCA/MCA (I YEAR)/BCA

Term-End Examination

December, 2011

00291

CS-01 : COMPUTER FUNDAMENTALS

Time : 3 hours *Maximum Marks : 75*

Note : *Question number **1** is **compulsory** and carries **30** marks. Answer **any three** questions from the rest.*

1. (a) Make the truth table for the following boolean function : 5

$F(A, B, C, D) = A'B + B'C + C'D$

Simplify the function above using Karnaugh's map. Draw the resultant logic diagram. Using AND, OR and NOT gates. (Please note A′ represents complement of A).

(b) Explain with the help of an example how number of addresses in an instruction changes the size of a program. 5

(c) Write a program in 8086 assembly language programming that counts the number of characters in a given string. You may 6

assume that the string is stored in the consecutive memory locations and is terminated by a $ character.

(d) What is instruction pipelining ? How is it implemented in RISC machine ? Explain with the help of a diagram. 6

(e) Define the following terms in the context of computer organisation : 8

(i) Interrupt driven Input/Output

(ii) Associative memory

(iii) Register indirect addressing

(iv) Flag register

2. (a) Explain the floating point representation with the help of any example using 32 bit representation. 6

(b) Explain the functioning of master - slave flip - flop using a suitable diagram. 6

(c) List three uses of INT 21h in 8086 assembly language programs. 3

3. (a) What is vector computation ? Explain with the help of an example. 4

(b) Explain the basic structure of a control unit with the help of a diagram. 5

(c) Write a program using 8086 assembly language that converts two ASCII digits stored in consecutive memory location to a packed BCD number. The resultant BCD number is left in AL register. 6

4. (a) What is the need of memory hierarchy ? Explain the terms seek time and rotational latency in the context of a magnetic disk. 5

(b) Explain the following addressing modes with the help of an example each : 5

(i) Displacement addressing using base register.

(ii) Stack addressing.

(c) Explain the multiport memory organisation for multiprocessor as system with the help of a diagram. 5

5. Explain the following with the help of an example/diagram, if needed : 15

(a) Micro - instruction

(b) Fetch Cycle

(c) Subroutine call

(d) DRAM

(e) Advantages of Integrated Circuits
