

## PGDCA/MCA (I YEAR)/BCA

Term-End Examination

June, 2011

## CS-01 : COMPUTER FUNDAMENTALS

Time : 3 hours

Maximum Marks : 75

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

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1. (a) Make the truth table for the following 5  
boolean function, and design the optimal  
logic circuit using Karnaugh's map.  
$$F(x, y, z, \delta) = x'y + z\delta + x'\delta$$
  
(Note  $x'$  represent complement of  $x$ )
- (b) What are the uses of displacement 5  
addressing modes? Explain the use of index  
register during addressing of an array with  
the help of an example.
- (c) Write a program in 8086 assembly 6  
programming language that finds the  
largest of given three numbers. You may  
assume that the numbers are in the  
consecutive memory locations and the  
largest number is left in AX register.

- (d) What are the advantages of using large register files in RISC ? Explain with the help of diagram/ illustration. 6
- (e) Explain the following terms. 8
- (i) D M A
  - (ii) Micro-operation
  - (iii) 2's complement notation
  - (iv) Vector processing
2. (a) What is an Interrupt ? How can interrupt be used in an Input/Output operation ? Explain with the help of a suitable example/ diagram. 5
- (b) What are the different segment registers that are used in 8086 processor ? Explain how a segment register can be used along with 16 bit Index/Pointer register to calculate the address of an Instruction in the memory. 5
- (c) What is a micro-instruction ? How are micro - instructions used for executing an instruction ? 5
3. (a) Explain the Flynn's classification of computers. 4
- (b) What is the need of high speed memories ? Explain the concept of interleaved memory with the help of an example. 5

- (c) Explain the following Mnemonics of 8086 micro - processor with the help of an example each : 6
- (i) ROL
  - (ii) PUSH
  - (iii) AND
4. (a) A shared memory multi - processor system has separate cache memory for each processor. What Cache related problem may occur in such system ? Explain the problem with the help of a diagram/example. 5
- (b) Represent the following numbers using 32 bit IEEE 754 floating point representation : 6
- (i) 12.50
  - (ii) 25.125
  - (iii) 0.0025
- (c) Explain the subroutine call and return with the help of a diagram. 4
5. Explain the following with the help of an example/diagram, if needed. 15
- (a) Wilkes Control
  - (b) Pipeline
  - (c) Input/Output Processor
  - (d) Error Detection Codes
  - (e) Von-Neumann Architecture.