

Subject: COMPUTER ORGANIZATION

Time: 3 Hours

Max. Marks: 100

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
 - **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
 - **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
 - **Any required data not explicitly given, may be suitably assumed and stated.**
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Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The ascending order of a data hierarchy is

- (A) bit-bytes-fields-record-file-database
- (B) bit-bytes-record-field-file-database
- (C) bytes-bits-field-record-file-database
- (D) bytes-bit-record-field-file-database

b. In immediate addressing the operand is placed

- (A) in memory
- (B) in stack
- (C) after OP code in the instruction
- (D) in the CPU register

c. Interrupts which are initiated by an instruction are

- (A) trap
- (B) pseudocode
- (C) hardware
- (D) software

d. A microprogram written as string of 0's and 1's is a

- (A) symbolic microinstruction
- (B) algebraic microinstruction
- (C) symbolic microprogram
- (D) binary microprogram

e. How many different locations can be selected using 16 address lines?

- (A) 16
- (B) 32
- (C) 65536
- (D) 4096

f. What is the binary representation of 254?

- (A) 11111111
- (B) 10000000
- (C) 11111110
- (D) 11001110

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- g. Convert the binary number 110 to decimal (base 10)
- (A) 8 (B) 10
(C) 6 (D) 4
- h. Subroutines are used in larger program
- (A) To increase the programming ease
(B) To reduce storage equipment
(C) To reduce program execution time
(D) For ease of program testing at the program development time
- i. A counter is a
- (A) sequential circuit
(B) combinational circuit
(C) both sequential and combinational circuit
(D) None of the above
- j. What type of computer chips are said to be volatile?
- (A) RAM chips (B) ROM chips
(C) DRAM (D) None of the above
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**Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.**

- Q.2** a. Draw a block diagram to illustrate the basic organization of computer system and explain the function of its various units. (8)
- b. How the main memory and processor are related to each other? Explain it with help of diagram. (4)
- c. Differentiate between multiprocessors and multicomputers. (4)
- Q.3** a. Define stack pointer. How the stack pointer is used in the stack of words in the memory? (6)
- b. What is the difference between direct address mode and register address mode? (2)
- c. What is assembly language? Explain the assembler directives. (8)
- Q.4** a. Define interrupts. Describe the various types of interrupts handler. (8)
- b. How DMA controllers are used in a computer system? (8)
- Q.5** a. Draw a neat diagram of USB tree structure. (8)

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- b. What are serial ports? Explain applications and features of a serial port. (8)
- Q.6** a. Discuss the characteristics of static memory. Differentiate between static and dynamic memory systems. (8)
- b. Explain the use of cache memory with the help of block diagram. What is the difference between the direct mapping and associative mapping? (8)
- Q.7** a. Draw the block diagram of the virtual memory organization. (6)
- b. Using 2's complement subtract 2 from 7. (2)
- c. Design a 4-bit carry-look ahead adder. (8)
- Q.8** a. Explain Booth's algorithms for multiplication of signed 2's complement numbers. (8)
- b. Draw the IEEE standard for floating-point representation in 32-bits representation. (8)
- Q.9** a. Explain the working of MAR and MDR using single bus organization. (8)
- b. Differentiate between hard-wired control and microprogrammed control? (8)