

Name:

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COE 205, Term 012
Computer Organization & Assembly Programming

Quiz# 1

Date: Sunday, March 3, 2002

Q1. Consider an 8-bit register that has the binary number 11000011. Determine the decimal value of the number if it represents:

- i. An unsigned number.

- ii. A signed number in sign-magnitude representation.

- iii. A signed number in 1's complement representation.

- iv. A signed number in 2's complement representation.

- v. A character where the most significant bit is a parity bit. Is the parity bit even or odd parity. Note that the ASCII code of character 'A' is 41H.

Q2. Perform the following arithmetic operations assuming that numbers are represented using 8-bit 2's complement representation. Determine the decimal values of the numbers and the result. Indicate in your answer when an overflow occurs.

i. $01110101 + 11001100$

ii. $11111101 - 01111110$

Q3. Complete the following sentences:

(1) The instruction register is a register in the CPU that

(2) The program counter is a register in the CPU that

(3) In the fetch-execute cycle, the instruction is read from memory in the phase, and its operands are read from memory in the phase.

(4) After fetching an instruction from memory, the instruction pointer is always incremented by

(5) Assuming 8-bit 2's complement representation, the smallest (negative) number in binary is and in decimal is and the largest (positive) number in binary is and in decimal is

(6) The ASCII code representation of the decimal number 64 is expressed in hexadecimal as Note that the ASCII code for the digit 0 is 30H.

(7) A CPU with a 32-bit address bus and a 64-bit data bus can access a memory of size bytes, and transfer a maximum of bytes in a read or write cycle.

(8) The instruction set architecture of a computer consists of,
.....,
and