COE 202, Term 162

Digital Logic Design

HW# 1

Q.1. Convert the following numbers from the given base to the bases indicated:

  (i) Decimal 225.225 to binary, octal, and hexadecimal.

  (ii) Binary 11010111.110 to decimal, octal, and hexadecimal.

  (iii) Octal 623.77 to decimal and binary.

  (iv) Hexadecimal 2AC5.D to decimal, octal and binary.

Q.2. Perform the following arithmetic operations using the designated bases without converting to decimal. Verify your result by converting the numbers to decimal and then performing the operation in decimal:

  (i) $(10E)_{16} + (13F)_{16}$

  (ii) $(1E)_{16} * (10)_{16}$

  (iii) $(1101)_2 * (1000)_2$

Q.3. If you type the phrase COE205 on your keyboard, what is the binary sequence sent to the computer using 8-bit ASCII with the 8th bit being an even parity bit.

Q.4. Translate the following secret message, which has been encoded in ASCII as: 41 74 74 61 63 6B 20 61 74 20 44 61 77 6E.

Q.5. Suppose that a byte contains the ASCII code of a decimal digit; that is `0` to `9`. What hex number should be subtracted from the byte to convert it to the numerical form of the characters?