Tutorial 1

1. What is the value of x for $(1\ 2\ 3)_X=(1\ 2\ X)_3$.

2. What is the approximate number of bits needed to represent 20-digit decimal number in binary?

3. What is the relation between number of 1's and 0's if the following decimal expression is converted into binary?

$$(16^3*9+3)_{10}$$

4. Consider the following 16-bit register representing the floating point number with mantissa in normalized sign magnitude form, exponent in excess-64 form and base of the system is 2.

a) What is the relevant expression to calculate the value of the floating point representation?
b) What is the 16-bit pattern that represent the value $(-111.75)_{10}$?
c) What is the largest value stored in the above register?

5. Consider IEEE 754 single precision format register. What is the value interpreted with the following 32-bit number in the given format?

11000001111000…..0

6. Compare for number of add, shift and subtract operations carried out for following numbers using conventional multiplication and Booth multiplication algorithms.

a) 011110 b) 011011011 c) 01111001

7. Perform the following multiplication using Booth Algorithm.

a) 7*3 b) (-7)*3 c) 7*(-3) d) (-7)*(-3)