KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

COMPUTER ENGINEERING DEPARTMENT

COE 308-01, Term 982
HW# 2

Computer Arithmetic

Due Date: Wednesday February 24

Q.1. Use 8-bit two's complements addition/subtraction to perform the following operations:

$40 - 50$; $1 + 127$.

State if there is an overflow in any of the above operations.

Q.2. Multiply the unsigned numbers 5 x 11 in 5-bit using the algorithm studied in class. Show all steps,

Q.3. Multiply the signed numbers –5 x 11 is 5-bit two's complement using Booth's algorithm. Show all steps.

Q.4. Represent the following two numbers in a floating-point representation of 6-bit mantissa and 6-bit exponent in a biased representation with 32 as a bias:

(-4.3) and (128×10^6) (assume that $\log_{10} 2 = 0.3$)

Q.5. Add the two numbers in Q.4 using the floating-point addition algorithm studied in class. Show all steps.

Q.6. Multiply the two numbers in Q.4 using the floating-point multiplication algorithm studied in class. Show all steps.