EEL 3701C - Digit Logic & Computer Systems

EXERCISES I

Problem I (Number Conversion)

1. Convert using **Horner Scheme**
   a) 2543_7 to Base 9
   b) 3412_5 to Base 8

2. Convert using **successive integer divisions**
   a) 375_8 to Base 3
   b) $3BA_{14}$ to Base 6

Problem II (Binary Operation)

1. Add, subtract, and multiply the following numbers in Binary
   a) 15 and 10
   b) 105 and 54
   c) 50 and 29

3. Do the following operations in binary
   a) 233 / 5
   b) 285 / 14

Problem III (Complement Representation)

Add the following numbers in binary using 2's complement to represent negative numbers. Use a word length of 6bits (including sign) and indicate if an overflow occurs.

a) (-10) + (-11)
b) (-10) + (-6)
c) (–11) + (–4)

Repeat a) b) and c) using 1's complement to represent negative numbers.

Problem IV (Floating Point Representation 32-bits)

Convert the floating-point number pairs into the floating-point representation taught in the class. Then perform addition and multiplication operation. Report the results.

a) $(0.25)_{10}$, $(0.75)_{10}$

b) $(1.5)_{10}$, $(3.125)_{10}$