

## EE 2310 Homework #1 – Number Conversions

Name: \_\_\_\_\_ Student Number: \_\_\_\_\_

1. Convert the following positive decimal numbers to binary (byte form; take the binary point of non-exact fractions to at least 2x the decimal number of places):

126                                      99                                      0.125

8.1875                                      23.57                                      63.06

2. Convert the following positive binary numbers to decimal:

1110 0011                                      0.110001                                      1 1111.0101

1.1101 01                                      0.101111                                      1010.0101

3. Convert the following binary numbers to hexadecimal (prefix the hexadecimal number with “0x,” which is the symbolic notation meaning “hexadecimal number”).

1111 1100                                      111 1110                                      1010 1111

101.1011 01                                      1 0001.101                                      11 1101.10111

4. Convert the following hexadecimal numbers to binary (byte form):

0x d6                                      0x 0.e7                                      0x 0.ac

0x 34.f4                                      0x af.f8                                      0x b5.c

5. Convert the following numbers to decimal:

0x51              0x a4.d              0x 0.9e              0x d7.32              0x 8c.ff

6. Convert the following numbers to hexadecimal:

256              81              0.5              0.38              144.375              117.125

## Homework #1 (Continued) Number Conversions

7. Convert the following two's complement binary numbers to hexadecimal and decimal (prefix the hexadecimal number with "0x"). Note: The leading zeros are required for two's complement numbers below to show the correct sign.

0011 1111

1001 1111

1010 1111

1110 1111

0110 1000

1111 0001

8. Convert the following hexadecimal numbers to signed binary numbers, using the 2's complement sign convention:

0x 5a

-0x24

-0xa

-0x6f

-0x52

-0x79

0x4a

-0x78

9. Convert the following decimal numbers to signed binary numbers, using the 2's complement sign convention:

75

-101

-84

-33

-40

-96

10. Perform the indicated math operation (numbers are positive binary [i.e., NOT 2's complement]):

1100 1000  
-0001 1001

1100 1101  
+0010 1111

1000 0001  
+11 1111

1010 1111  
-11 1001

11. Perform the indicated math operation (numbers are two's complement binary). Write the decimal value of the answer below the binary answer.

1110 0111  
+0111 1100

0011 1000  
-1011 1010

0100 1000  
+1000 0111

1110 1011  
+0111 0111