

ECE 281 - HW #1
(Due Lesson 3)

NAME _____
Documentation:

You are encouraged to attach any *neat* work that is not included with this sheet. You may seek help from any current ECE 281 student or instructor and reference any publication in its completion. Normal documentation is required.

1. Convert to base 2:

125_{10} : _____

1492_{10} : _____

23647_8 : _____

53243_8 : _____

$2A3_{16}$: _____

$EE281_{16}$: _____

2. Convert to base 10:

1001001_2 : _____

10101010_2 : _____

23647_8 : _____

53243_8 : _____

$2A3_{16}$: _____

$EE281_{16}$: _____

3. Convert to base 16:

1001001_2 : _____

10101010_2 : _____

125_{10} : _____

1492_{10} : _____

23647_8 : _____

53243_8 : _____

4. If possible, convert the following decimal numbers to the specified format. Otherwise write “not possible”.

a. To unsigned 8 bit

23:_____

-33:_____

67:_____

220:_____

b. To 8 bit two’s complement

23:_____

-33:_____

67:_____

220:_____

5. Compute the following binary additions and subtractions. Identify if an overflow or carry out occurs.

a. Assume 8 bit unsigned

$$\begin{array}{r} 00001010 \\ + \quad 01101101 \\ \hline \end{array}$$

$$\begin{array}{r} 10110110 \\ + \quad 11001000 \\ \hline \end{array}$$

$$\begin{array}{r} 11101101 \\ + \quad 01100101 \\ \hline \end{array}$$

$$\begin{array}{r} 11111101 \\ + \quad 00000011 \\ \hline \end{array}$$

b. Assume 8 bit 2’s complement

$$\begin{array}{r} 00001010 \\ + \quad 01101101 \\ \hline \end{array}$$

$$\begin{array}{r} 10110110 \\ + \quad 11001000 \\ \hline \end{array}$$

$$\begin{array}{r} 11101101 \\ + \quad 01100101 \\ \hline \end{array}$$

$$\begin{array}{r} 11111101 \\ + \quad 00000011 \\ \hline \end{array}$$

$$\begin{array}{r} 11111101 \\ - \quad 00000011 \\ \hline \end{array}$$

c. Now do the above problems in decimal to check them