**ECE 177 - Homework 1**                    Name:
                                            Lab Day:


1) Convert the following base 10 numbers to both 8-bit and 16-bit binary numbers. Express each value in hexadecimal as well as binary. Use 2's complement for negative numbers. The first is done as an example.

| Decimal | 8-bit binary | 8-bit hex | 16-bit binary | 16-bit hex |
|---------|--------------|-----------|---------------|------------|
| 1 | 00000001 | 0x01 | 0000000000000001 | 0x0001 |
| 2 | | | | |
| 4 | | | | |
| 11 | | | | |
| 91 | | | | |
| 127 | | | | |
| 144 | | | | |
| 255 | | | | |
| -1 | | | | |
| -2 | | | | |
| -4 | | | | |
| -11 | | | | |
| -91 | | | | |
| -127 | | | | |
| -128 | | | | |

2) Convert each hexadecimal number a) to 8-bit binary, b) to decimal assuming they are unsigned, c) to decimal assuming they are signed. Also give the negative of each value d) in 8-bit binary and e) in hexadecimal. The first is done as an example.

| Hex value | 8-bit binary | Decimal assuming unsigned | Decimal assuming signed | Negative in 8-bit binary | Negative in hex |
|-----------|--------------|---------------------------|-------------------------|--------------------------|-----------------|
| 0x02 | 00000010 | 2 | 2 | 11111110 | 0xFE |
| 0x0B | | | | | |
| 0x11 | | | | | |
| 0x2C | | | | | |
| 0x82 | | | | | |
| 0x9D | | | | | |
| 0xFC | | | | | |

3) Give the following in decimal, binary and hexadecimal.

| Value | Decimal | Binary | Hex |
|-------|---------|--------|-----|
| The smallest 8-bit unsigned number | | | |
| The largest 8-bit unsigned number | | | |
| The most negative 8-bit signed number | | | |
| The largest 8-bit signed number | | | |
| The smallest 16-bit unsigned number | | | |
| The largest 16-bit unsigned number | | | |
| The most negative 16-bit signed number | | | |
| The largest 16-bit signed number | | | |