ICS3U

# Number Systems Review

**Show all work** for all questions unless otherwise noted.

1. Convert as indicated:

a) $1101_2$ to decimal

b) $1111010_2$ to decimal

c) $37_{10}$ to binary

d) $243_{10}$ to binary

e) $11110010_2$ to hexadecimal

f) $11101010_2$ to octal

g) $1001110011110010_2$ to hexadecimal

h) $BE3C_{16}$ to binary

i) $ACED_{16}$ to octal

j) $111.1011_2$ to decimal

k) $1010.0011_2$ to decimal

l) 14.125 to binary

m) $4.9_{10}$ to binary

n) $7.75_{10}$ to binary

2. Complete the table below. No need to show work.

| Binary | Octal | Decimal | Hexadecimal |
|---|---|---|---|
| 1001001101110 | | | |
| | 304 | | |
| | | 91 | |
| | | | C0B |

3. Perform the following tabular addition:

a) **Binary**

$$\begin{array}{r} 1100111 \\ +\ 0110110 \\ \hline \end{array}$$

b) **Hex**

$$\begin{array}{r} 4E23 \\ +\ 5542 \\ \hline \end{array}$$

c) $1001101_2 + 0010010_2$

d) $1000111_2 + 10110_2 + 10111_2$

e) $437_8 + 4AF_{16}$

f) $F2A3_{16} + 10011010_2 + 342_8$

4. Subtract each pair of numbers below using the indicated method by:

(i) first converting the numbers to binary (ii) making appropriate conversions
(iii) determining the answer (iv) checking your result

a) 14 – 34

b) 29 – 22

c) 16 – 46

d) 37 – 30

e) -70 + 58

f) 88 - 68