COSC2406 Lab 1 – Math, Part 1 Name: Jeel Tikiwala

Submit this sheet with all calculations and all supporting work.

Convert the following decimal numbers to binary without converting into hexadecimal:

(a) 125 ANS: 1111101
(b) 42 ANS: 101010

Convert the following binary numbers to decimal without converting into hexadecimal:

(a) 1001 0010 1101 1000 ANS: 37592
(b) 1011 1010 1010 1111 ANS: 47727

Convert the following decimal numbers to hexadecimal without converting into binary:

(a) 925 AND: 39D
(b) 104 ANS: 68

Convert the following hexadecimal numbers to decimal without converting into binary:

(a) 0x5F53DA ANS: 6272386
(b) 0x54ABC2 ANS: 5977210

Convert the following binary numbers to hexadecimal without converting into decimal:

(a) 1011 1000 0001 0000 ANS: B810
(b) 1010 0100 0011 1100 ANS:A43C

Convert the following hexadecimal numbers to binary without converting into decimal:

(a) 0x5CD6 ANS: 0101n1100 1101 0110
(b) 0x2BCD ANS: 0010 1011 1100 1101

Calculate the 2's complement of each of the following numbers:

(a) 1000 0101 ANS: 0111 1011
(b) 1001 1101 ANS: 0110 0011

Perform the following signed operations in binary. Do not convert the numbers to any other base. Remember to complement and add for signed subtraction.

(a) 1101 1000 + 1000 1100
(b) 1110 1010 – 0010 0100

Perform the following signed operations in hexadecimal. Do not convert the numbers to any other base. Remember to complement and add for signed subtraction.

(a) 0x1F + 0xA9
(b) 0x3B – 0x12

Fill in a truth table for the following functions. Follow the precedence order and show all steps. Note: + = OR, & = AND, ~ = NOT, xor = XOR

(a) x + (y & ~z) xor y
(b) (x + y) & ~z xor y