**CMPE 220 Fall 2017 Homework #1**

**Problem 1: Perform the following number conversion**

1. **Ox39A7F8 to binary**
2. **Binary 1100100101111011 to hexadecimal**

**Problem 2: Fill in the blanks below to represent numbers with different powers of 2.**

**n (power) 2\*\*n (in decimal)**

**3 8**

**5 ?**

**9 ?**

**16 ?**

**Problem 3: Solve the following arithmetic problems and give answers in hexadecimal.**

1. **Ox503c + Ox8 = ?**
2. **Ox503c - Ox40 = ?**
3. **Ox503c + 64 = ?**
4. **Ox50ea - Ox503c = ?**

**Problem 4: Fill in the blanks below to show the resulting Boolean operations.**

**a = 01101001**

**b = 01010101**

**Boolean operation result**

**~a (NOT) ?**

**~b ?**

**a & b (AND) ?**

**a I b (OR) ?**

**a ^ b (XOR) ?**

**Problem 4: Fill in the blanks below for the shift operations.**

**X x(binary) x<<3(binary) logical x>>2 (binary) arithmetic x>>2 (binary)**

**OxC3**

**Problem 5: A, B and C below are in 2’s complement representation. What are their respective equivalent values in decimal.**

**A = 1011**

**B = 11011**

**C = 111011**

**Problem 6:**

**X and y are represented as 5-bit integers in 2’s complement.**

1. **Write 32 numbers in both binary (5-bit) and decimal that can be represented by x**
2. **What is the maximal value of x**
3. **What is the minimal value of x**
4. **Fill in the blanks below**

**x y x+y(in 6-bit) x+y(in 5-bit) x+y(in decimal)**

**10100(-12) 10001(-15)**

**11000(-8) 11000(-8)**

**10111(-9) 01000(8)**

**00010(2) 00101(5)**

**01100(12) 00100(4)**