Chapter 1, problem 1: (2 + 2 + 2 pts) Convert the following unsigned binary numbers to decimal.

c) 10 0110 1101

f) 0000 1111 0000

g) 1100 1100 1100

Chapter 1, problem 2: (2 + 2pts) Convert the following decimal numbers to binary. Assume all numbers are unsigned and represented by 12 bits.

a) 73

b) 127

Chapter 1, problem 3: (2 + 2 pts) Convert the following numbers to hexadecimal

b) 101101000001012

c) 79110

Chapter 1, problem 4: (2 pts) Convert the following numbers to decimal

c) $3FF16$

Chapter 1, problem 5: (5 + 5 pts) Compute the sum of the following pairs of 6-bit unsigned numbers. If the answer is to be stored in a 6-bit location, indicate which of the sums produce overflow. Also, show the decimal equivalent of both operands and the result.

a) 000011 + 001100

b) 010100 + 101101

Chapter 1, problem 6: (2 + 2 pts) The following numbers are to be stored in a 6-bit signed binary format. Show how they are stored.

d) +15

e) -15

Chapter 1, problem 7: (5 + 5 pts) The following 6-bit signed binary numbers were found in a computer. What decimal number do they represent?

e) 011111

f) 111001

Chapter 1, problem 9: (10 pts) Each of the following pairs of signed integers are stored in computer words (6 bits). Compute the sum as it is stored in a 6-bit computer word. Show the decimal equivalent of each operand and the sum. Indicate if there is overflow.

a) 110101 + 001111

Chapter 2, problem 2: (10 + 10 pts) Show truth tables for each of the following.

c) The system has four inputs. The first two, **a** and **b**, represent a number in the range 1 to 3 (0 is not used). The other two, **c** and **d**, represent a second number in the same range. The output , **y**, is to be 1 if and only if the first number is greater than the second or the second is 2 greater than the first.

f) The system has four inputs. The first two, **a** and **b**, represent a number in the range 0 to 2 (3 is not used). The other two, **c** and **d**, represent a second number in the same range. The output, **y**, is to be 1 if and only if the two numbers do not differ by more than 1.