Chapter 6

Problem 1:

1 1 1 0 1

0 1 1 0 0

1 0 0 1 0

1 1 0 1 1

1 1 0 0 0

Problem 2:

(1) initial two-dimensional parity matrix

0 0 0 0

1 1 1 1

0 1 0 1

1 0 1 0

(2) a bit error in row 2, column 3

0 0 0 0

1 1 0 1

0 1 0 1

1 0 1 0

(3)

0 0 0 0

1 0 0 1

0 1 0 1

1 0 1 0

Problem3

01001100 01101001

+ 01101110 01101011

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10111010 11010100

+ 00100000 01001100

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11011011 00100000

+ 01100001 01111001

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00111100 10011010 (overflow, then wrap around)

+ 01100101 01110010

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10100010 00001100

The one's complement of the sum is 01011101 11110011

Problem 5:

Dividing 10011 into 1010101010 0000, we will get 1011011100, with a remainder of R=0100. So, G=10011 is CRC-4-ITU standard

Problem 6:

a) 1000110000, with a remainder of R=0000.

b) 0101010101, with a remainder of R=1111.

c) 1011010111, with a remainder of R=1001.