Homework 4 - Aidan Sharpe

Problem 1

A multilevel digital communication system sends one of 16 possible levels over the channel every 0.8[ms].

a

What is the number of bits corresponding to each level? Or what is the number of bits per symbol?

16 levels $= \log_2(16) = 4$ bits per symbol.

b

What is the baud rate?

1 symbol per 0.8[ms] $= \frac{1}{0.8 \times 10^{-3}} = 1250$ symbols per second.

c

What is the bit rate?

4 bits per symbol at 1250 baud is 5000[bps].

Problem 2

The input to a differential coding signal is 10110010. Begin with reference digit 1. What is the encoded sequence?

Apply XOR operation to each element, diagonally down and left, and store the result below.

	1	0	1	1	0	0	1	0
1	0	0	1	0	0	0	1	1