

S-72.245 Transmission Methods in Telecommunication Systems

Tutorial 11

Objectives

- To understand and learn to apply channel coding
- Topics: Hamming distance, parity check and repetition coding, block coding principles and circuits

Quizzes

Q11.1

Show a table to encode 3-bit words by even parity. Give the expression for respective word error rate probability.

Q10.2

Explain by your own words a) Hamming distance, b) Hard decoding c) Soft decoding

Q10.3

A block code consists of the following codes: 10011, 11101, 01110, 00000. a) How many errors can be detected/corrected by this code? b) Is this a linear code?

Q10.4

What kind of channels interleaving should be used? Why?

Q10.5

Create (5,2) Hamming code, determine its code words and determine based on them its Hamming distance thus proving it is indeed a Hamming code.

Matlab assignments

M11.1 Investigate functions available in Matlab for GF(2) calculus and repeat problem Q.10.5 by using Matlab.

M11.2 Design syndrome decoder for Q.10.5 by using Matlab.