Unit 9 - Week 1: Assignments

Register for Certification exam

Course outline

How to access the portal

Matlab access and Learning Modules

Week 0 : Introduction to Error Correction Codes

Week 0 : Linear Binary Block Codes

Week 0 : Assignment

Join the 5G Revolution in India

Week 1: LDPC Codes for 5G

Week 1: 5G Standard

Week 1: Assignments

- Quiz : Assignment 1
- Quiz : Matlab Assignment 1
- Upload MATLAB code 1
- Assignment 01 :Solutions

Week 2: Building Blocks for

Matlab Assignment 1

The due date for submitting this assignment has passed. **Due on 2019-02-13, 23:59 IST.**
As per our records you have not submitted this assignment.

Write MATLAB code for solving the following problems. Run the code with the required input and find answers to the questions below.

1) The generator matrix of a $(32, 16)$ code is given in the following text file: click here. Write a program to find a nonzero codeword of smallest weight in the code. The smallest such nonzero weight is called the minimum distance of the code. Recall that weight of a binary vector equals the number of 1s in it.

The minimum distance of this code is _____.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 4

5 points

2) Consider coded-BPSK transmission (0->+1, 1->-1) over an AWGN channel using the (10,5) code with generator matrix ***5 points***

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 0 & 1 & 0 & 0 & 1 & 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 & 0 & 1 & 1 & 0 \end{bmatrix}.$$

Write a MATLAB program for implementing optimal hard-decision and soft-decision decoding for the above transmission.

If
$[-0.1116 \quad -2.1471 \quad -0.0689 \quad -1.8095 \quad -1.9443 \quad 0.4384 \quad 1.3252 \quad 0.2451 \quad 0.3703 \quad -2.7$
is the received vector, then the outputs of the optimal hard decision decoder and the optimal soft decision decoder are, respectively,

- $[1 \quad 1 \quad 0 \quad 1 \quad 1], [1 \quad 1 \quad 0 \quad 1 \quad 1]$
- $[0 \quad 1 \quad 1 \quad 0 \quad 1], [0 \quad 1 \quad 1 \quad 0 \quad 1]$

Accepted Answers:
[1 1 0 1 1],[1 1 0 1 1]

Previous Page End