



Unit 2 - Week-1

Introduction to error control coding

Course outline

How to access the portal

Week-1 Introduction to error control coding

- Introduction to Error Control Coding-I
- Introduction to Error Control Coding-II
- Introduction to Error Control Coding-III
- Introduction to Linear Block Codes, Generator Matrix and Parity Check Matrix
- Syndrome, Error Correction and Error Detection
- Problem Solving Session-I
- Quiz : Assignment 1
- assignment 1 solutions

Week-2

Week-3

Week-4

Assignment 1

The due date for submitting this assignment has passed. **Due on 2016-03-22, 23:55 IST.**

Submitted assignment

Assignment for Week - 1

1) In a communication system, secrecy is achieved by 1 point

- Channel Coding
- Modulation
- Source Coding
- Encryption

No, the answer is incorrect.

Score: 0

Accepted Answers:

Encryption

2) Source coding involves 1 point

- Adding parity bits
- Modulating analog signal using digital information
- Removing redundancy from the information sequence
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Removing redundancy from the information sequence

3) If we encode the following information sequence using $R = \frac{1}{2}$ Repetition code, what will be the coded sequence ? 1 point

Information Sequence : 10110

- 1011010110
- 1100111100
- 0110101101
- 1011001101

No, the answer is incorrect.

Score: 0

Accepted Answers:

1100111100

4) What is the Hamming distance between the codewords "1001101" and "1110101" ? 1 point

- 1
- 2
- 3
- 4

No, the answer is incorrect.

Score: 0

Accepted Answers:

3

5) What should be the rank of generator matrix for (10,6) linear block code ?

1 point

- 4
- 6
- 10
- none of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

6

6) Given below is a generator matrix for (3,2) linear block code.

1 point

$$G = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix}$$

List the set of codewords

- C = {000,110,101,011}
- C = {000,111,110,001}
- C = {000,010,101,111}
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

C = {000,110,101,011}

7) Given below is a parity check matrix of a linear block code.

1 point

$$H = \begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 0 & 0 \end{bmatrix}$$

This corresponds to a

- (6,3) linear block code
- (6,4) linear block code
- (6,2) linear block code
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

(6,3) linear block code

8) A received codeword \mathbf{r} is error free if

1 point

-
- $\mathbf{rH}^T = \mathbf{e}$
-
- $\mathbf{rH}^T = \mathbf{0}$

$$\mathbf{rG}^T = \mathbf{0}$$

 None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$\mathbf{rH}^T = \mathbf{0}$$

9) The syndrome depends on

1 point

- Error pattern
- Codeword transmitted
- Information sequence
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Error pattern

10) In a (6,3) linear block code, if a received codeword is $\mathbf{r} = (101001)$ and

1 point

$$G = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

the syndrome will be

- (1 1 1)
- (1 0 0)
- (1 0 1)
- (1 1 0)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(1 1 0)

Previous Page

End

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