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Unit 4 - Week-3

Assignment-3

The due date for submitting this assignment has passed. **Due on 2016-04-05, 23:55 IST.**

Submitted assignment

Assignment for Week-3

1) Let C_1, C_2 be two codes defined by generator matrices *1 point*

$G_1 = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$ and $G_2 = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{bmatrix}$ respectively. Is C_1 dual code of C_2?

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True

2) All linear $\left(n, \frac{n}{2}\right)$ block codes are self dual codes? *1 point*

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
False

3) An information sequence is encoded using (7,4) Hamming code. A codeword r = (0101011) is received which has single error in it. The bit location of single error is *1 point*

- First bit
- Third bit
- Fifth bit
- Seventh bit

No, the answer is incorrect.
Score: 0

Accepted Answers:
Seventh bit

4) A code derived from (15,11) Hamming code is described by following parity check matrix $\mathbf{H}$. This is an example of. *1 point*

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

- Extended Hamming Code
- Expurgated Hamming Code
- Shortened Hamming Code
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Shortened Hamming Code

5) An information sequence is encoded using (7,6) Single Parity Check (SPC) code. Received sequence was 1100011. Which of the following statement is true? ***1 point***

- (a) No error occurred
- (b) Even number of errors occurred
- Odd number of errors occurred
- Either of (a) and (b)

No, the answer is incorrect.
Score: 0

Accepted Answers:
Either of (a) and (b)

6) Generator matrix of Reed Muller RM(1,3) code is given by ***1 point***

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

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

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

- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:

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

7) Reed Muller RM(1,3) code ***1 point***

- Can correct single errors
- Can correct double errors
- Can simultaneously detect and correct double errors
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Can correct single errors

8) Which of the following is an example of **perfect** code? ***1 point***

- (7, 3, 3)
- (7, 4, 3)
- (7, 5, 3)
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
(7, 4, 3)

9) Which of the following is an example of **maximum distance separable (MDS)** code? ***1 point***

- (7, 4, 4)
- (7, 5, 3)
- (7, 6, 2)
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
(7, 6, 2)

10) Which of the following is a valid binary linear block code? ***1 point***

- (a) (7, 5, 3)
- (b) (7, 4, 4)
- Both (a) and (b)
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of the above

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