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Unit 13 - Week 12

Assignment 12

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2018-10-24, 23:59 IST.

1) Equiprobable binary data sequence is transmitted over an AWGN channel using a binary differential phase shift keying (DPSK) signaling scheme. The average transmitted power is 150 milliwatts with channel attenuation of 80 dB. The channel noise is zero mean with noise power spectral density $\frac{N}{2} = 0.5 \times 10^{-15} W/Hz$. If it is desirable to have the probability of bit error $P_b = 10^{-4}$ then the maximum possible bit rate for transmission in kbps (kilo-bits per second) is _____

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 175,177

1 point

2) It is given that (5, 1) repetition code consists of the two codewords 00000 and 11111, corresponding to message 0 and 1, respectively. Is this a perfect code? ***0.5 points***

- Yes
- No

No, the answer is incorrect.
Score: 0

Accepted Answers:
Yes

3) Consider the (4, 3) single parity check code. The Generator matrix $[G]$ for this code, where I_n denotes an identity matrix of size n, is ***1 point***

$[G] = \begin{bmatrix} P^T & I_1 \end{bmatrix}$ where $P = [1]$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$[G] = \begin{bmatrix} P^T & I_3 \end{bmatrix}$ *where* $P = \begin{bmatrix} 1 & 1 & 1 \end{bmatrix}$

4) In Question [3], the minimum distance d_{min} for this code is _____

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 2

0.5 points

5) In Question [3], does this code possess error correction property? ***0.5 points***

- Yes
- No

No, the answer is incorrect.
Score: 0

Accepted Answers:
No

6) Is a (7, 3) code a perfect code? ***0.5 points***

- Yes
- No

No, the answer is incorrect.
Score: 0

Accepted Answers:
No

7) A (15, 11) linear block code can be defined by the following parity array ***1 point***

$$[p] = \begin{bmatrix} 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 \\ 1 & 1 & 1 & 0 \\ 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$$

A vector V= [0 1 1 1 1 1 0 0 1 0 1 1 0 1 1] is received. The syndrome $[S]$ for this received vector is

- $[S] = [0 \quad 1 \quad 0 \quad 0]$
- $[S] = [1 \quad 0 \quad 1 \quad 0]$
-

$[S] = [0 \quad 1 \quad 1 \quad 0]$

$[S] = [0 \quad 0 \quad 1 \quad 1]$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$[S] = [0 \quad 1 \quad 1 \quad 0]$

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