

Unit 6 - Principles of CDMA Wireless Communication

Course outline

How to Access the Portal ?

Introduction to Wireless Systems

Performance in Fading wireless channels

Multiple Antenna Wireless Systems and Diversity

Wireless Channel Characterization - Delay Spread and Doppler

Principles of CDMA Wireless Communication

● Introduction to Code Division Multiple Access (CDMA)

○ Chip Time and Bandwidth Expansion in CDMA

○ Code Generation for CDMA

○ CDMA Codes: Properties of PN Sequences

○ BER of CDMA Systems

○ Quiz : Assignment-5

○ Solution-5

Principles of CDMA and MIMO Wireless Communication

Principles of MIMO Wireless Communication (Continued)

Principles of OFDM Wireless Communication

Text Transcription

Unit-0

Assignment-5

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

Due on 2019-10-02, 23:59 IST.

1) Consider codes $c_0 = \{1, 1, 1, 1\}$, $c_1 = \{1, 1, -1, -1\}$ and symbols 1.5, -2.5 for users 0, 1 respectively. The net transmitted signal is **1 point** given as,

- $\{-1, -1, 1, 1\}$
 $\{-1, -1, -4, -4\}$
 $\{-1, -1, 4, 4\}$
 $\{4, 4, -1, -1\}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\{-1, -1, 4, 4\}$

2) Consider a CDMA bandwidth of 5 MHz and spreading code length $N = 256$ in a CDMA system. If 64 QAM constellation is used for digital modulation, the net information bit-rate of the system is, **1 point**

- 19.5 kbps
 5 Mbps
 117 kbps
 58.5 kbps

No, the answer is incorrect.
Score: 0

Accepted Answers:
117 kbps

3) In order to overcome the near-far problem in CDMA system, which of the following strategies can be employed **1 point**

- Multi-user transmission
 Spread Spectrum
 Power Control
 Lower spreading length

No, the answer is incorrect.
Score: 0

Accepted Answers:
Power Control

4) If the total number of runs in a PN sequence is 32, the number of runs of length 2 is, **1 point**

- 8
 4
 16
 12

No, the answer is incorrect.
Score: 0

Accepted Answers:
8

5) Auto-correlation of the PN sequence of length 127 for a non-zero shift is **1 point**

- $\frac{1}{127}$
 0
 $-\frac{1}{127}$
 $\frac{1}{128}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $-\frac{1}{127}$

6) Consider the state 1011 in the LFSR to design the PN sequence described in the lecture. The next state of the LFSR is, **1 point**

- 1101
 0110
 1010
 0101

No, the answer is incorrect.
Score: 0

Accepted Answers:
0101

7) Consider noise power $\sigma^2 = 13$ dB and spreading length $N = 512$. It is targeted to achieve a BER = 5×10^{-5} at the output in a flat-fading CDMA scenario with a single user. What is the required approximate transmit power to for such a scenario, **1 point**

- 65.9 dB
 55.9 dB
 25.9 dB
 45.9 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
25.9 dB

8) The multiplicative factor of N in the SNR in a CDMA systems is termed as **1 point**

- Spreading Gain
 CDMA Gain
 Diversity Gain
 Near-Far Gain

No, the answer is incorrect.
Score: 0

Accepted Answers:
Spreading Gain

9) Consider a CDMA system with $L = 8$ tap frequency selective channel, and Spreading gain = 512 and a BER = 5×10^{-8} is required to be achieved by this system. What is approximate SNR required to achieve this? **1 point**

- 15.34 dB
 15.34 dB
 -12.33 dB
 9.33 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
-15.34 dB

10) If the total length of the PN sequence is 63, the number of -1 s and $+1$ s respectively are **1 point**

- 32, 31
 31, 32
 30, 33
 33, 30

No, the answer is incorrect.
Score: 0

Accepted Answers:
32, 31