

Unit 2 - Introduction to Wireless Systems

Course outline

How to Access the Portal ?

Introduction to Wireless Systems

- Evolution of Wireless Communication Technologies
- Modeling Wireless Channel
- Wireless Fading Channel Model
- Fading Channel Distribution
- Rayleigh Fading Channel
- Bit Error Rate (BER) Performance
- Bit Error Rate (BER) of AWGN Channels

Quiz : Assignment-1

- Assignment-1 Solution
- Feedback For Week 1

Performance in Fading wireless channels

Multiple Antenna Wireless Systems and Diversity

Wireless Channel Characterization - Delay Spread and Doppler

Principles of CDMA Wireless Communication

Principles of CDMA and MIMO Wireless Communication

Principles of MIMO Wireless Communication (Continued)

Principles of OFDM Wireless Communication

Text Transcription

Unit-0

Assignment-1

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

Due on 2019-09-11, 23:59 IST.

1) The acronym WCDMA stands for

1 point

- Worldwide band Code Division Multiple Access
- Wideband Code Division Multiple Access
- Wireless Interoperability Code Division Multiple Access
- Wireless-Fidelity CDMA

No, the answer is incorrect.
Score: 0

Accepted Answers:
Wideband Code Division Multiple Access

2) Multipath Propagation of the wireless channel leads to

1 point

- Fading
- Inter-symbol interference
- Both of the above
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both of the above

3) The process by which the channel coefficient is constantly changing is termed as _____ and it arises due to _____

1 point

- Variation, large bandwidth
- Modulation, small coherence bandwidth
- Signal, frequency selectivity
- Fading, mobility

No, the answer is incorrect.
Score: 0

Accepted Answers:
Fading, mobility

4) The probability density function of an exponential random variable X with mean 2 is

1 point

- $\frac{1}{2} e^{-\frac{x}{2}}$
- $\frac{1}{2} e^{\frac{x}{2}}$
- $\frac{1}{2} e^{\frac{|x|}{2}}$
- $\frac{1}{2} e^{(x-2)^2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\frac{1}{2} e^{-\frac{x}{2}}$

5) Which of the following is NOT a 3G Wireless Standard

1 point

- HSDPA
- HSUPA
- HSPA
- OFDM

No, the answer is incorrect.
Score: 0

Accepted Answers:
OFDM

6) The distribution of the phase of the Rayleigh fading channel coefficient is

1 point

- Rayleigh random variable
- Uniform random variable
- Exponential random variable
- Gaussian random variable

No, the answer is incorrect.
Score: 0

Accepted Answers:
Uniform random variable

7) The probability that the attenuation of the Rayleigh fading channel is worse than 25 dB is

1 point

- $1 - e^{-0.01124}$
- $1 - e^{-0.001581}$
- $1 - e^{-0.003162}$
- $1 - e^{-0.0562}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $1 - e^{-0.003162}$

8) Consider a simple multipath propagation scenario with $a_0 = a_1 = \sqrt{2}$ and $a_2 = 2$. Let the delays $\tau_0 = \frac{3}{4f_c}$, $\tau_1 = \frac{5}{4f_c}$, $\tau_2 = \frac{9}{8f_c}$. The net amplitude of the channel coefficient h is

1 point

- 0
- 1
- 2
- 3

No, the answer is incorrect.
Score: 0

Accepted Answers:
2

9) The real and imaginary parts of a standard wireless channel coefficient are assumed to be distributed as

1 point

- Rayleigh random variable
- Uniform random variable
- Exponential random variable
- Gaussian random variable

No, the answer is incorrect.
Score: 0

Accepted Answers:
Gaussian random variable

10) What is the approximate dB SNR required to achieve BER of 8×10^{-9} in the AWGN channel $y = 2x + n$, where x denotes the transmitted symbol and n denotes the additive white Gaussian noise.

1 point

- 6.53 dB
- 12.5 dB
- 9.53 dB
- 8.97 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:
9.53 dB