Unit 3 - Performance in Fading wireless channels

Assignment-2

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 poor error rate of a fading wireless communication channel can be intuitively explained by *1 point*

- Higher bandwidth
- Time selectivity
- Frequency selectivity
- Deep fade event

No, the answer is incorrect.
Score: 0
Accepted Answers:
Deep fade event

2) At $SNR = 35\ dB$, deep fade occurs when the amplitude a of the Rayleigh fading channel is lower than the threshold *1 point*

- 0.0125
- 0.0003
- 0.0178
- 0.0356

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.0178

3) For equal noise power, the difference in transmit powers required to achieve $BER = 5 \times 10^{-10}$ in a wireless and wireline systems is approximately, *1 point*

- $74\ dB$
- $64\ dB$
- $84\ dB$
- $44\ dB$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$74\ dB$

4) The BER of a single antenna Rayleigh fading wireless channel of average power gain 2, i.e., $E\{|h|^2\} = 2$ where h is the fading channel coefficient, as a function of SNR is given as *1 point*

- $\frac{1}{2}\left(1 - \sqrt{\frac{SNR}{1+SNR}}\right)$
- $\frac{1}{2}\left(1 - \sqrt{\frac{SNR}{2+SNR}}\right)$
- $\frac{1}{2}\left(1 - \sqrt{\frac{SNR}{3+SNR}}\right)$
- $\frac{1}{2}\left(1 - \sqrt{\frac{SNR}{4+SNR}}\right)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{2}\left(1 - \sqrt{\frac{SNR}{1+SNR}}\right)$

5) What is the approximate $dB\ SNR$ required to achieve BER of 5×10^{-10} in an AWGN channel *1 point*

- $10.08\ dB$
- $13.08\ dB$
- $15.08\ dB$
- $17.08\ dB$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$15.08\ dB$

6) The exact BER of an AWGN channel $y(k) = 2x(k) + n(k)$ for a given transmit $SNR = \frac{P}{\sigma^2}$ is *1 point*

- $Q(\sqrt{SNR})$
- $Q(\sqrt{2\ SNR})$
- $Q(\sqrt{3\ SNR})$
- $Q(\sqrt{4\ SNR})$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$Q(\sqrt{4\ SNR})$

7) At $SNR = 35\ dB$, deep fade occurs when the amplitude a of the Rayleigh fading channel is *1 point*

- < 0.017
- < 0.027
- < 0.037
- < 0.047

No, the answer is incorrect.
Score: 0
Accepted Answers:
< 0.017

8) The approximate BER at $SNR = 65\ dB$, in a Rayleigh fading wireless channel is *1 point*

- 1.58×10^{-6}
- 1.58×10^{-7}
- 1.58×10^{-8}
- 1.58×10^{-9}

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.58×10^{-7}

9) For a given BER, the $dB\ SNR$ required in a Rayleigh fading wireless channel of average power gain $E|h|^2 = \kappa$ is given as *1 point*

- $10\log_{10}\frac{2(1-2\ BER)^2}{1-(1-2\ BER)^2}$
- $10\log_{10}\frac{2(1-2\ BER)^2}{\kappa(1-(1-2\ BER)^2)}$
- $10\log_{10}\frac{2(1-BER^2)}{2\kappa(1-(1-BER)^2)}$
- $10\log_{10}\frac{2(1-BER^2)}{\kappa(1-(1-BER)^2)}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$10\log_{10}\frac{2(1-2\ BER)^2}{\kappa(1-(1-2\ BER)^2)}$

10) In a single antenna Rayleigh fading wireless channel, the probability of deep fade is proportional to *1 point*

- $\frac{1}{\sqrt{SNR}}$
- SNR
- $\sqrt{SNR}$
- $\frac{1}{SNR}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{SNR}$