RTDC Ch.2 - 2021-2022 Mañana

Volver a la Lista de Exámenes

Parte 1 de 3 - Preguntas de 1 puntos **3.0 / 3.0 Puntos**

Preguntas 1 de 8	1.0
	1.0 Puntos

At high SNR=3 dB the capacity of 512-QAM is:
- ○ A. 6 bits/symbol
- ○ B. 8 bits/symbol
- ○ C. 16 bits/symbol
- ● D. None of the above

Preguntas 2 de 8	1.0
	1.0 Puntos

The OSNR is specified for a noise bandwidth of:
- ○ A. The signal spectral content at 3-dB bandwidth (W)
- ○ B. The signal symbol rate (Rs).
- ○ C. The channel bandwidth (B)
- ● D. None of the other is correct.

Preguntas 3 de 8	1.0
	1.0 Puntos

Two of these statements correspond to a 16-ASK/PSK constellation
- ☑ A. For SNR_b=10 (dB) and SNR=5 (dB) the capacities per symbol are 6 and 2 bits/symbol respectively
- ☑ B. The capacity can be approximated by C=log2(1+SNR) if C<9 bits/symbol.
- ☐ C. If the amplitude corresponding to the outer ring is 1 then the amplitude of the smallest inner ring is 0.125.
- ☐ D. It has 16/2=8 possible amplitude values in quadrature

Parte 2 de 3 - Preguntas de 2 puntos **6.0 / 6.0 Puntos**

Preguntas 4 de 8	2.0
	2.0 Puntos

What option is preferred to achieve a capacity of 3 bits/symbol with the lowest SNR?
- ○ A. Use a single quadrature 4-ASK/2-PSK constellation
- ● B. use a two quadrature 16-QAM constellation leaving one bit/symbol as an overhead.
- ○ C. Use a two quadrature 8-PSK constellation.
- ○ D. use a two quadrature QPSK constellation.

Preguntas 5 de 8	2.0
	2.0 Puntos

Choose two correct statements related to the model of an optical communication systems
- ☑ A. If the transmitter is single quadrature the receiver can use direct detection
- ☐ B. If the transmitter is single quadrature the receiver cannot use direct detection
- ☐ C. If the transmitter is I-Q the receiver uses direct detection
- ☑ D. If transmitter is I-Q the receiver uses coherent detection

Preguntas 6 de 8	2.0
	2.0 Puntos

For the activities done during MATLAB exercise in class, check all that apply:
- ☑ A. The conditional entropy H(X|Y) included the probabilities for all the possible outcomes of Y.
- ☑ B. The source symbol space messages were normalized in power to unity.
- ☐ C. The capacity resulted from the maximization of mutual information, taking as free variable the information source messages probability distribution.
- ☐ D. The source information / entropy was numerically calculated over the generated symbols owing to their probabilities.

Parte 3 de 3 - Preguntas de 0.5 puntos **1.0 / 1.0 Puntos**

Preguntas 7 de 8	0.5
	0.5 Puntos

05 Information Theory part 7: Morse Code (check all that apply)
- ☐ A. How to increase amount of information sent? Always possible by increasing the number of signaling events per unit time.
- ☑ B. Jitter creates confusion in the receiver if symbols run into each other with 'continuous' signaling
- ☑ C. Speed can increase if you turn your continuous signaling into discrete signaling, e.g. with Morse code, the birth of On-Off Keying (OOK)

Preguntas 8 de 8	0.5
	0.5 Puntos

03 Information Theory part 3: What is coding theory? (check all that apply)
- ☑ A. Message sources are in practice discrete
- ☑ B. Noise usually forces to use some sort of line coding, so source messages are not send as they are, but transformed
- ☐ C. Source compression does not allow to send messages faster