

Communication Theory

EC5.203 - Spring 2023

Exam: Quiz 1
Total Marks: 30

Date: 02 Feb 2023
Time: 08:30 to 09:15

Instructions:

- Each question carries 10 marks. Answer all the questions.
- Clearly state the assumptions (if any) made that are not specified in the question.

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1. Explain what is orthogonal signal space and how it is useful to obtain the generalized Fourier series representation of a finite duration signal.
 - ✓ 2. Explain DSB-SC modulation and demodulation scheme in detailed. Also, find out the PSD, total power and bandwidth of the modulated signal.
 - ✓ 3. Show that the power spectral density is Fourier transform of the autocorrelation function. Also, derive the PSD of output of LTI system with impulse response $h(t) = \exp(-at)$ when input is the zero-mean white noise process.
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