Communication Theory
EC5.203 - Spring 2023

Instructions:

- Each question carries 10 marks. Answer all the questions.

- Clearly state the assumptions (*if any*) made that are not specified in the question.

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 impluse response $h(t) = \exp(-at)$ when input is the zero-mean white noise process.