

CPEG455
Spring 2020
Assignment 2

Date: April 28, 2020
Type: individual
10 Marks

Student Name: _____ ID: _____

Instructions:

- Show all your work in order to get full credit.
 - Write down your assumptions (if any) clearly.
 - Submission via Moodle
 - You can type or handwrite your answer. Handwriting should be legible, if used.
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Q1: Consider the Direct Sequence Spread Spectrum (DSSS) technique. Suppose that User 1 wants to transmit the following binary sequence (data stream $d(t)$) 11010011 to User 2. Both users agreed to use the following PN sequence 1010 (a.k.a chip sequence).

Show how the transmitted signal $s(t)$ will look like using two different techniques;

(a) multiplying the data stream $d(t)$ and $c(t)$ together and then performing the BPSK modulation, where $c(t)$ is the PN sequence taking on values of $+1$ and -1 .

(b) performing the BPSK modulation on the data stream $d(t)$ to generate the modulated signal (data signal) $s_d(t)$ and then multiplying by $c(t)$.