Work the following Questions in Chapter 5 of the course laboratory manual.

For your report, use the file LABEX5.doc from the course web site.

Work these questions only:

1. Q5.1
2. Q5.2
3. Q5.5
4. Q5.9 - Q5.11
5. Q5.13 - Q5.17

NOTES:

1. In equation (5.21) on p. 77 of the lab manual, the lowercase omega “ω” is a misprint. It should be “Ω.”

2. Questions Q5.1 through Q5.5 have to do with program P5_1.m, which is shown on p. 81 of the Lab Manual. Notice in the first xlabel command that time is in units of milliseconds for this program. So, when the program says $T = 0.1$; it means 0.1 msec, not 0.1 seconds!

   Similarly, in the first plot that P5_1 makes, the range of the horizontal axis is from 0 seconds to 1 msec, e.g., 0 to 1/1000 sec. Since the first signal $x_a(t)$ goes through 13 cycles in 1 msec, the answer to Q5.2 is 13 kHz, not 13 Hz.

3. In Q5.5, the Lab Manual asks you to repeat Program P5_1 by changing the frequency to 3 Hz and 7 Hz. This is an error. It should say 3 kHz and 7 kHz instead! Again, this is because the units of time in P5_1 are milliseconds, not seconds.

4. Section 5.6 mentions “anti-imaging” filters. For our purposes, this means the same thing as “reconstruction” filters. In a practical D/A converter, the anti-imaging filter is the low pass analog filter that converts the stair-step signal coming out of the zero-order hold into the smooth analog output signal.

Submit this assignment electronically on Canvas.

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