UNIVERITY OF CALIFORNIA
College of Engineering
Department of Electrical Engineering and Computer Sciences
NTU 247

	Homework 3	**NTU 247**
B. E. Boser	**Due Monday, February 19, 2007**	**Spring 2007**

1. A full-scale sine wave with frequency $f_x = 7MHz$ is input to a DAC clocked at $f_s = 20MHz$. Calculate the frequency and amplitude (relative to full-scale input) of all tones in the DAC output up to $f = 50MHz$. Assume the DAC output for each sample is held for 30ns and returned to zero for 20ns. Ignore quantization noise and other non-idealities.

2. For the differential switched-capacitor integrator below, find the z-domain output/input transfer function assuming:

a) Output is sampled in Φ_1;
b) Output is sampled in Φ_2;
c) For output sampled in Φ_2, find the continuous-time equivalent for the integrator time-constant using the output expression derived. Assume $f_{Signal}/f_{Sampling} << 1$.