

EECS 216 – Winter 2008

Homework #7–Assigned March 4–Due Tuesday March 11

- **Grading:** Not all problems will be graded, but you should do all of them.
- **Submission:** Due in *black box in room 4230 EECS* before **5:00** Tues. March 11.
- **Read:** Text sections 4.4-4.5. **Topic:** Communications and sampling.
- **Next week:** More applications of Fourier transforms (mostly sampling).
- **Simple Analog Communications Systems Problems:**
 1. (*30 points: 10@3*) Text #4.25. 10 sketches of spectra in an AM radio system.
 2. (*15 points: 5+10*) Text #4.27. SSB radio. How could you make such a sharp filter?
 3. (*15 points: 10+5*) Text #4.21. What is the spectrum of $x(t) + j\mathcal{H}\{x(t)\}$?
The point of this is that SSB can be implemented using the Hilbert transform.
 4. (*25 points: 5+15+5*) Text #4.32. Stereo signals. Modulate this baseband signal.
 - Why use L+R and L-R signals instead of just L and R signals?
 - If signal is weak, just use mono signal half as much noise).
 - The following problem is just a simple sampling problem.
 5. (*15 points: 5+10*) Text #4.29. Should read: $x(t) = \frac{\sin(300\pi t)}{\pi t}$; $y(t) = \frac{\sin(700\pi t)}{\pi t}$.