

EECS 216 – Winter 2008

Homework #4 – Assigned Jan. 29 – Due Tuesday Feb. 5

Grading: Not all problems will be graded, but you should do all of them.

Submission: Submit in *black box in room 4230 EECS* before **4:45pm** Tuesday.

Relevant Lectures: Jan. 22-29. **Last homework before Exam #1.**

Relevant Reading in Textbook: Chapter 3: 3.1 and 3.6.

Sections 3.3-3.5 (Fourier series) will be on Problem Set #5.

Topics: Frequency response and line spectra

1. (20 points: 10+5+5) Text #3.7, p. 151. Line spectrum.

2. (15 points) Text #3.27, p. 156. Frequency response.

3. (25 points: 5+5+15) Text #3.26(a),(b),(c), p. 156.

Input $x(t) = \sum_{n=-\infty}^{\infty} c_n e^{j2\pi nt/T}$ where T is unspecified.

Frequency response; need to know what “harmonics” means.

Read page 113 ONLY.

4. (20 points) Text #3.36, p. 158. Frequency response.

Input $x(t) = \sum_{n=-\infty}^{\infty} c_n e^{jnt}$ where $c_n = \frac{\cos(n\pi/2)}{\pi(1-n^2)}$ and $c_{\pm 1} = \frac{1}{4}$.

Recall voltage dividers from EECS 215.

5. (20 points) Text #3.37, p. 158. Frequency response.

Input $x(t) = \sum_{n=-\infty}^{\infty} c_n e^{jnt}$ where $c_n = \frac{\cos(n\pi/2)}{\pi(1-n^2)}$ and $c_{\pm 1} = \frac{1}{4}$.

Same $x(t)$, different circuit.