

## ECE-497/BME-491: Applied Biomedical Signal Processing

### Homework #3

Due at the beginning of class, December 21, 2006

1) **Rangayyan**, Chapter 3, Laboratory Exercises and Projects, Problem 1. Plot the input signal, the output signal, and the magnitude of the frequency response of the filter (using real frequencies, not normalized frequencies) on one page. Your program should indicate the magnitude of the pole in the title. The frequency response should be plotted like for a Bode plot, in dB on the y-axis and logarithmically on the the x-axis. The Matlab functions *semilogx* and *log10* will be usefull here. Also be sure to use the *orient tall* or *orient landscape* commands to use more of the page for your plots.

2) **Rangayyan**, Chapter 3, Laboratory Exercises and Projects, Problem 3. Plot the input signal, the output signal, and the magnitude of the frequency response of the filter (using real frequencies, not normalized frequencies) on one page. Your program should indicate order of the filter and the cutoff frequency in the title. The frequency response should be plotted like for a Bode plot, in dB on the y-axis and logarithmically on the the x-axis. The Matlab functions *semilogx* and *log10* will be usefull here. Also be sure to use the *orient tall* or *orient landscape* commands to use more of the page for your plots. Don't do the "comparison" part...

3) **Rangayyan**, Chapter 3, Laboratory Exercises and Projects, Problem 4. Plot the input signal, the output signal, and the magnitude of the frequency response of the filter (using real frequencies, not normalized frequencies) on one page. Your program should indicate the magnitude of the pole in the title. Use the same type of filter used in *laptop3.m*. Try and adjust the parameters to remove the baseline wander while retaining as much of the original signal shape as possible. Also be sure to use the *orient tall* or *orient landscape* commands to use more of the page for your plots.

4) **Rangayyan**, Chapter 3, Laboratory Exercises and Projects, Problem 5. Plot the input signal, the output signal, and the magnitude of the frequency response of the filter (using real frequencies, not normalized frequencies) on one page. Your program should indicate the order of the filter and the cutoff frequency in the title. Also be sure to use the *orient tall* or *orient landscape* commands to use more of the page for your plots.