EE 413/513
Design Project #1
Due: March 12, 2001

Rules:
1. You may share sources of information, e.g., webpages, manuals, etc.
2. You may NOT share block diagram nor circuit design. Carefully guard your
design, because violation may result in zero grade for BOTH parties.
3. Partial credit will be given.

Pick one of the following design projects. Develop a block diagram and implement it
with IC or discrete components. Both a working circuit built from components, including,
kits, or results from simulations are acceptable. Block diagram alone will only receive
partial credit.

Review frequency synthesizers, especially, the 2-modulus prescaler. Design a frequency
synthesizer for the 1.710-1.785 GHz band of DCS-1800 mobile communications system.
The channel spacing is 200 kHz.

Choose a favorable AM station, demonstrate a receiver for the station assuming that the
input signal is < 1 mV and the output is a 10-k load. The design should have RF, IF,
detector, and audio sections. Plot the frequency responses for RF, IF, and audio sections.

Choose a favorable FM station, demonstrate a receiver for the station assuming that the
input signal is < 1 mV and the output is a 10-k load. The design should have RF, IF,
discriminator, and audio sections. Plot the frequency responses for RF, IF, and audio
sections.