Homework assigned Thursday 10 Feb. 2005; due at 5:30 pm Thursday 17 Feb. 2005 in the box labeled EE 42 in Room 240 Cory Hall. Note: your graded homeworks will be returned in your discussion section; your GSI will keep your homework until you pick it up to maintain privacy.

**Reading: Hambley: Sections 4.1-4.3**

**Problems** are all in Hambley, 3rd Ed. (10 points each):

1. P3.9. (Voltage, current, power and energy in a charging capacitor)
2. P3.22  (Equivalent capacitances)
3. P3.27  (Effects of changes on a capacitor)
4. P3.32  (Use of a capacitor as a liquid level sensor)
5. P4.5  (RC circuit considering voltages, power, etc.)
6. P4.7  (Transient for circuit with R and C in parallel)
7. P4.9  (RC circuit charges starting at t = 0 and discharging starting at t = 25 s)
8. P4.10  (Shuffling on the carpet)
9. P4.14  (DC steady state) Note: This is a steady-state excitation problem, not a transient problem. Our first-order transient circuits have had resistors and only a C or an L, not both a C and an L at the same time. If you have both C and L you get a more complicated behavior that we won’t look at in this course, except to say that you can form an electrical resonator by connecting a C in parallel with an L. When that circuit is excited, energy “sloshes” back and forth between the C and the L, just like it does in a mechanical resonator such as a bell, where the stored energy is all kinetic energy (the metal is moving) at one time and, half a cycle later, it’s all potential energy (the metal is in tension or compression).
10. P4.19  (RC circuit with independent current source)