

**Massachusetts Institute of Technology  
Department of Physics  
Physics 8.022 - Fall 2002**

**Assignment #10  
RL Circuits, Energy in the Magnetic Field  
Driven and Undriven RLC Circuits  
Impedance, Resonance  
Phasor Representation for RLC Circuits  
Energy and Power Dissipation**

**NOTICE CHANGE OF DUE DATE CYCLE FROM THIS POINT ON (SETS#10,11,12) -  
CONSULT THE SYLLABUS WHEN IN DOUBT**

**Reading Purcell:** Chapters 7 and 8

**Please note:** *QUIZ#2 will cover only up to section 8.1 of chapter 8, i.e., it will NOT treat the response of the RLC circuits to sinusoidal drivers- this will be part of QUIZ#3. In the problems following, #1-3 are QUIZ#2 material while problems #4-7 are NOT (they are QUIZ#3 material).*

**Problem Set #10**

Work on **all** problems. Not all problems receive equal points. Total points for this set is 100.

- **(15 points) [1]** *Purcell* Problem 7.17 (p.290): Be careful from back EMFs!
- **(15 points) [2]** *Purcell* Problem 7.28 (p.293): Decay time in an earth-like circuit.
- **(15 points) [3]** *Purcell* Problem 8.8 (p.320): Critical dumping.
- **(15 points) [4]** *Purcell* Problem 8.4 (p.319): RLC in parallel.
- **(10 points) [5]** *Purcell* Problem 8.7 (p.320): Resonant cavity.
- **(15 points) [6]** *Purcell* Problem 8.12 (p.321): Driven RC circuit.
- **(15 points) [7]** *Purcell* Problem 8.13 (p.321): Driven RL circuit.