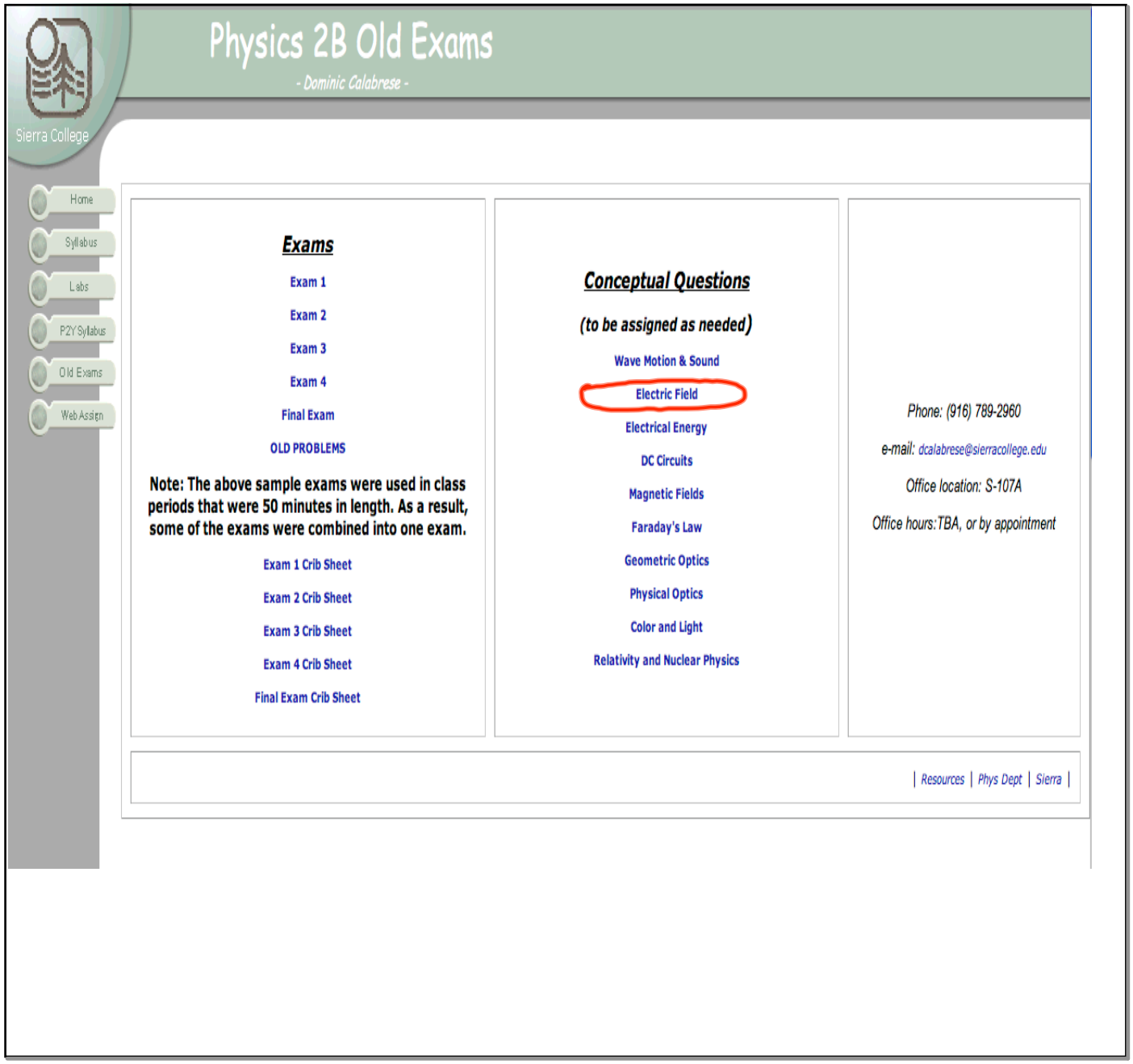
Reminders 1-31-08:

- Next Webassign Due February 3
- Wave Motion and Sound Conceptual Questions Due 1/31
- Read Chapter 15
- Exam 1 Tuesday February 5 Chapters 13&14.
- Write your name and last 4 digits of ID on random page in book. Do not leave books unattended (it will disappear).

Objectives:

- Finish up Chapter 14
- Electric Charge
- Conservation of Charge
- Coulomb's Law
- The Electric Field



Sierra College

Physics 2B Old Exams

- Dominic Calabrese -

Home
Syllabus
Labs
P2Y Syllabus
Old Exams
Web Assign

Exams

Exam 1
Exam 2
Exam 3
Exam 4
Final Exam
OLD PROBLEMS

Note: The above sample exams were used in class periods that were 50 minutes in length. As a result, some of the exams were combined into one exam.

Exam 1 Crib Sheet
Exam 2 Crib Sheet
Exam 3 Crib Sheet
Exam 4 Crib Sheet
Final Exam Crib Sheet

Conceptual Questions

(to be assigned as needed)

Wave Motion & Sound
Electric Field
Electrical Energy
DC Circuits
Magnetic Fields
Faraday's Law
Geometric Optics
Physical Optics
Color and Light
Relativity and Nuclear Physics

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- **Based on the range of human hearing, what are the lengths of the longest and shortest pipes (open at both ends and producing sound at their fundamental frequencies) that you would expect to find in a pipe organ ?**

$v_s = 340\ m/s$

$20\ Hz \rightarrow 20{,}000\ Hz$

$v = f\lambda = \frac{v}{f}$

$\lambda_{20} = \frac{340}{20} = 17\ m$

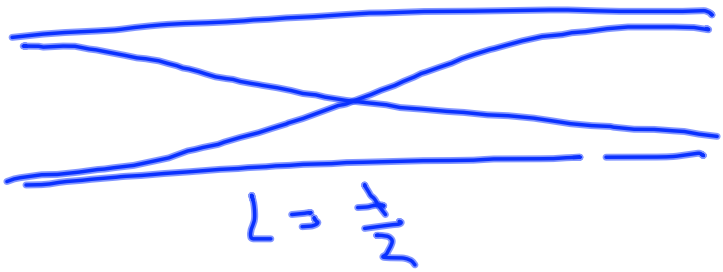
$\lambda_{20k} = \frac{340}{20{,}000} = 0.017\ m$

Conditions for standing wave

$\lambda = 2L \quad L = \frac{\lambda}{2}$

$8.5\ m$

$.00085\ m$



$L = \frac{\lambda}{2}$

- **A person hums into the top of a well and finds that standing waves are established at frequencies of 42, 70, and 98 Hz. The frequency of 42 Hz is not necessarily the fundamental frequency. How deep is the well ?**

open at one end

$L = (2n+1)\frac{\lambda}{4}$ $n = 0, 1, 2$

or

$L = n\frac{\lambda}{4}$ where n is odd

$\lambda = \frac{4L}{n}$ $v = f\lambda$ $f = \frac{v}{\lambda}$

$f = \frac{v}{4L/n} = \left(\frac{n}{4L}\right)v = n\left(\frac{v}{4L}\right)$

{ 42, 70, 98

$\frac{70}{42} = \frac{35 \times 2}{21 \times 2} = \frac{35}{21} = \frac{5 \times 7}{3 \times 7} = \frac{5}{3}$

$n = 3$ $f_n = 42$

$n = 5$ $f_n = 70$

$n = 7$ $f_n = 98$

$f_n = n f_1$

$f_1 = 1$ $V_{sound} = 340\ m/s$

$v = f\lambda$ $\lambda = \frac{v}{f} = \frac{340}{14} = 24.8\ m$

$L = \frac{\lambda}{4} = \frac{24.8\ m}{4} = 6.2\ m$