Physics 231a Course Update 08 Oct 2007

• Chapter 26(§1-5), 27(§1-8).

• The 5th problem set is now on line. Due to the break and the 2nd exam, this problem set will be due at 0800h on Mon. 22 Oct.

The 2nd hour exam will be given on Wed, Oct 17. The test will cover material through chapter 26.
Physics 231 – 1st hour exam – 25 Sept 2006

PUT YOUR NAME AND STUDENT NUMBER ON EACH PAGE!!

The pages of the tests may be separated and graded independently

Only work that is entirely on one of the test pages, with a name and an ID# on the sheet will be graded.

If you need more space, write “continued on back” and write on the back of the page

EXPLAIN YOUR REASONING
FULL OR PARTIAL CREDIT WILL ONLY BE GIVEN IF YOU CLEARLY SHOW YOUR WORK AND EXPLAIN YOUR REASONING.

Reminders:
- give units if necessary
- if the answer is a vector, you must give magnitude and direction!!

Potentially Useful Equations:
\[ \int x^n \, dx = \frac{1}{n+1} x^{n+1} \text{ for } n \neq -1 \]
Surface Area of a Sphere of Radius \( r \)
\[ A = 4\pi r^2 \]
\[ \cos(60^\circ) = \frac{1}{2} \quad \sin(60^\circ) = \frac{\sqrt{3}}{2} \quad \sin(45^\circ) = \frac{1}{\sqrt{2}} \quad \cos(45^\circ) = \frac{1}{\sqrt{2}} \]
Volume of a Sphere of Radius \( r \)
\[ V = \frac{4}{3} \pi r^3 \]
Volume of right circular cylinder
\[ V = \text{(area of base)} \times \text{(height)} \]
Coulomb’s Law:
\[ \vec{F} = \frac{q_1 q_2}{4\pi \varepsilon_0 r^2} \]
Electric Field
\[ \vec{E} = \lim_{q \to 0} \frac{\vec{F}}{q} \]
Gauss’s Law:
\[ \oint_{\text{closed surface}} \vec{E} \cdot d\vec{A} = \frac{Q_{\text{enclosed}}}{\varepsilon_0} \]