Errata (1308_2007)

From Siljo Kuruvila:

Lecture notes for 1/23: On page 19 on discussing colliding energy, the result should be 2.24 x 10^33 J/m^3, instead of 2.24 x 10^ -6 J / (10^-13)^3 m = 2.24 x 10 ^27 J/m

From Alex:

HW5key: problem 1, the conclusion should be that lamp C is four times as bright as A or B, not twice.

From Peter McCaffrey:

Lecture notes for 3/8, review for mid0term, part1, page 2, in the solution part for X and Y, it should read like this:

$$Y = \frac{a_1c_2 - a_2c_1}{a_1b_2 - a_2b_1} \equiv \frac{\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix}}{\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}} \quad \text{instead of } Y = \frac{a_1c_1 - a_2c_2}{a_1b_2 - a_2b_1} \equiv \frac{\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix}}{\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}}$$

From Laura Roberts:

Lecture notes for 3/8, review for mid-term, part3, problem 2, the answer should be $C_{AB} = 1.5\mu F$ instead of 3.

From Rachel Gambulos:

Lecture notes for 2/8, page 49. Under the line for Coulomb's Law, it should be (un)like charges (attract) repel, instead of (un)like charges (repel) attract.

Lecture notes for 2/8, page 54. Under the line for R-C, R and C, two places the calculations for capacitance of 2 caps with 2C connected in serials should be 1C, instead if 2C.

Lecture notes for 2/20, page 79 for self-induction. The graph indicates a current change in direction only (so not in magnitude), instead of in time.

From Siljo Kuruvia,

Lecture notes for 2/8, page 49. Under the line for Coulomb's Law, the formula for Coulomb's Law should be $F = k_0 \frac{q_1 q_2}{r^2}$.

Lecture notes for 2/13, the last page in this review, the charging and discharging formulas for R-C circuits are wrong. The correct ones are in page 52 of 2/8's lecture notes.

Lecture notes for 3/8, review for mid-term, part3, problem 4, the answer for the current *I* should be: $I = \frac{m_e v}{\mu_0 q_e R n}$

From Laura Roberts and Bahaa Bedair,

The key to problem 3. (b) in quiz 4 is wrong. It should be the following:

$$I = \frac{\mathcal{E}}{R}(1 - e^{-\frac{t}{\tau}}).$$

$$\tau = \frac{L}{R}$$

$$PE_M = \frac{1}{2} LI^2$$

$$\frac{d(PE_M)}{dt} = LI\frac{dI}{dt} = \mathcal{E} I e^{-\frac{t}{\tau}}$$

From $I = 1A$ we have:

$$1A = \frac{22V}{5\Omega}(1 - e^{-\frac{t}{\tau}})$$

$$e^{-\frac{t}{\tau}} = 1 - 5/22 = \frac{17}{22}$$

$$\frac{d(PE_M)}{dt} = 1A \cdot 22V \cdot \frac{17}{22} / \sec = 17W / \sec.$$