

Corso di Laurea in Ingegneria Edile
Prova scritta di Fisica II
Dicembre 2002

Problema 1

$$L = \mu_0 N^2 A / l = 4.16 \cdot 10^{-4} \text{ H} \quad e = -L di/dt \quad di/dt = -0.421 \text{ A/s}$$

Problema 2

$$F_{\text{semisfera}} = (1/4 \pi \epsilon_0) Q / R^2 \cdot 1/4 \pi R^2 = Q / 2 \epsilon_0 \quad F_{\text{cerchio}} = - F_{\text{semisfera}} = - Q / 2 \epsilon_0$$

Problema 3

$$e = -N d/dt [BA \cos q] = NBA \omega \cos \omega t \quad e_{\max} = NBA \omega = NBA \cdot 2\pi f = 12.6 \text{ mV}$$

Problema 4

$$C_1 + C_2 = 4 \quad 1/C_1 + 1/C_2 = 4/C_1 \quad C_1 = 3 \text{ mF} \quad C_2 = 1 \text{ mF}$$

Problema 5

$$K + U = \text{cost} \quad \frac{1}{2} m v_i^2 + qV_0 = \frac{1}{2} m v_f^2 + qV_2 \quad V_2 - V_0 = -38.9 \text{ V}$$

Problema 6

$$V = (1/4 \pi \epsilon_0) Q / R \quad E = (1/4 \pi \epsilon_0) Q / R^2 \quad q = 1.19 \cdot 10^{-7} \text{ C} \quad r = 2.67 \text{ m}$$

Problema 7

$$a_x = 0 \quad a_y = -2.87 \cdot 10^9 \quad a_z = 5.75 \cdot 10^9 \quad [\text{m/s}^2]$$