Soluciones hoja 4

(1) $R = r_1 + r_2$

(2) $R_{eq} = 8\,\Omega$; $V_{xa} = 12\,V$

(3) $R = 3\,\Omega$; $I = 0{,}5\,A$

(4) $R_{eq} = 32\,\Omega$; $V_{cb} = 20\,V$

(5) $P = 90\,W$

(6) $P_{max} = 27\,W$

(7) (a) $1\,W$ (b) $I_{60\Omega} = 0{,}05\,A$ (c) $U = 9 \cdot 10^{11}\,J$

(8) $I(t) = \frac{V_0}{R} e^{-t/R_i C}$ $\qquad C = 4\pi\varepsilon_0 R$

$Q(t) = C V_0 (1 - e^{-t/R_i C})$

(9) ~~$I(0^+) = 3\,\mu A$~~

$Q(0) = 2{,}67\,\mu C$

(10) (a) porque $V_{ab} = 0$ (b) $I = 1\,mA$ $\quad P = 20\,mW$ (c) $Q = 37{,}2\,\mu C$

(11) (a) $R_3 = 8\,\Omega$ (b) $V_a - V_b = -9{,}6\,V$

(c) (i) $I_{R_1} = I_{R_2} = 4\,A$

$I_{R_3} = I_{R_4} = 2\,A$

(ii) $I_1 = 3{,}369\,A$ $\quad I_3 = 4{,}210\,A$

$I_2 = 4{,}632\,A$ $\quad I_4 = 2{,}947\,A$

$I_5 = 1{,}263\,A$

$I = I_1 + I_3 = I_2 + I_4$

$I = 7{,}579\,A$