SÈRIE 5

Primera part

Exercici 1

Q1 d **Q2** d **Q3** a **Q4** b **Q5** b

Exercici 2

a) $I(R_1) = I_1 = \frac{U_1}{R_1} = \frac{20}{10} = 2\ A; \quad I(R_2) = I_2 = \frac{U_1}{R_2} = \frac{20}{10} = 2\ A; \quad I(R_3) = I_3 = 0\ \text{A}$

b) $P(U_1) = U_1 \cdot (I_1 + I_2) = 20 \cdot (2 + 2) = 80\ \text{W}; \quad P(U_2) = 0\ \text{W}$

c) $I(U_1) = I_1 + I_2 = 2 + 2 = 4\ \text{A}$

d) $P(R_3) = \frac{U_2^2}{R_3} = \frac{30^2}{2} = 450\ \text{W}$

OPCIÓ A

Exercici 3

a) $A_3 = \sqrt{A_1^2 + A_2^2} = \sqrt{4^2 + 3^2} = 5\ \text{A}$

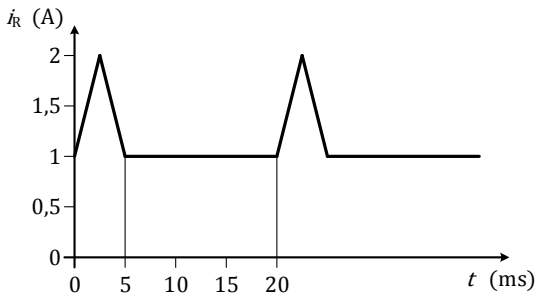
b) $V_1 = R \cdot A_1 = \frac{W_1}{A_1^2} \cdot A_1 = \frac{W_1}{A_1} = \frac{600}{4} = 150\ \text{V}$

c) $V_2 = \sqrt{3} V_1 = \sqrt{3} \cdot 150 = 259{,}8\ \text{V}$

d) $S = \sqrt{3} \cdot V_2 \cdot A_3 = \sqrt{3} \cdot 259{,}8 \cdot 5 = 2250\ \text{VA}$

Exercici 4

a)



b) $U_{\text{R mitja}} = 10 + \frac{\frac{5 \cdot 10}{2}}{20} = 11{,}25\ \text{V}$

OPCIÓ B

Exercici 3

a) $\eta(\%) = 100\frac{P}{\sqrt{3}UI\cos\varphi} = 100\frac{110\cdot10^3}{\sqrt{3}\cdot690\cdot120\cdot0{,}84} = 91{,}31\ \%$

b) $\Gamma = \frac{P}{\omega} = \frac{110\cdot10^3}{1450\frac{2\pi}{60}} = 724{,}4\ \text{N m}$

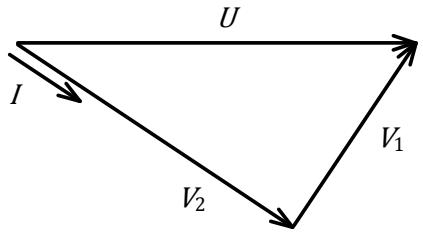
c) $P = \sqrt{3}UI\cos\varphi = \sqrt{3}\cdot690\cdot120\cdot0{,}84 = 120{,}5\ \text{kW}$

d) $400\ \text{V}$

e) $S = \sqrt{3}UI = \sqrt{3}\cdot400\cdot90 = 62{,}35\ \text{kVA}$

Exercici 4

a)



b) $X_\text{L} = \frac{V_1}{A_1} = \frac{127{,}5}{5{,}1} = 25\ \Omega$

c) $V_2 = \sqrt{U^2 - V_1^2} = \sqrt{230^2 - 127{,}5^2} = 191{,}43\ \text{V}$

d) $P = V_2\cdot A_1 = 191{,}43\cdot5{,}1 = 976{,}3\ \text{W}$