

Sèrie 2

Primera part

Exercici 1

Q1 c Q2 a Q3 a Q4 c Q5 a

Exercici 2

$$\text{a) } I_2 = \frac{U_2 - V_3}{R_2} = 10 \text{ A}$$

$$\text{b) } I_1 = \frac{U_1 - V_3}{R_1} = 10 \text{ A}$$

$$\text{c) } R_3 = \frac{V_3}{I_1 + I_2} = 2 \Omega$$

Segona part

OPCIÓ A

Exercici 3

$$\text{a) } I_R = \frac{U}{R} = 29,23 \text{ A}; I_X = \frac{U}{X} = 12,67 \text{ A}; I_{AB} = \sqrt{I_R^2 + I_X^2} = 31,86 \text{ A}$$

$$\text{b) } I_A = I_{AB} \sqrt{3} = 55,18 \text{ A}$$

$$\text{c) } P = 3 \frac{U^2}{R} = 33,32 \text{ kW}; Q = 3 \frac{U^2}{X} = 14,44 \text{ kVAr}; S = \sqrt{P^2 + Q^2} = 36,32 \text{ kVA}$$

Exercici 4

$$\text{a) } \mathfrak{R} = \frac{e}{\mu_0 S} = 4,775 \text{ MA / Wb}$$

$$\text{b) } \Phi_{\max} = \frac{N \sqrt{2} I_{ef}}{\mathfrak{R}} = 0,1481 \text{ mWb}; B_{\max} = \frac{\Phi_{\max}}{S} = 0,2962 \text{ T}$$

OPCIÓ B

Exercici 3

a) $C_{12} = C_1 + C_2 = 20\mu\text{F}$

b) $\frac{1}{C_{\text{eq}}} = \frac{1}{C_{12}} + \frac{1}{C_3} \Rightarrow C_{\text{eq}} = 10\mu\text{F}$

c) $I = 0 \text{ A}$

d) $E = \frac{1}{2}C_{\text{eq}}U^2 = 12,5 \text{ mJ}$

e) $\tau = RC_{\text{eq}} = 0,1 \text{ ms}$

Exercici 4

a) $I = 10 \text{ A}$

b) $p = 2$

c) $S = \sqrt{3}UI = 6,582 \text{ kVA}; P_e = S \cos\varphi = 5,397 \text{ kW}$

d) $\eta = \frac{P}{P_e} = 0,9264; \eta(\%) = 92,64\%$

e) $\omega_{\text{nom}} = 1450 \frac{2\pi}{60} = 151,8 \text{ rad}; \Gamma = \frac{P}{\omega_{\text{nom}}} = 32,93 \text{ Nm}$