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Avaliação 1 - N2

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(1º) a) $S = \dfrac{110}{\sqrt{2}} \cdot \dfrac{10}{\sqrt{2}} \big\lfloor -35 - (-250) =$

$$\boxed{S = 550 \big\lfloor -10° \ V_A}$$

$FP = \cos(-10°)$

$$\boxed{FP = 0,984}$$

$R = \dfrac{\dfrac{110}{\sqrt{2}} \big\lfloor -350}{\dfrac{10}{\sqrt{2}} \big\lfloor -250} =$

$$\boxed{R = 10,83 - j \ 19 \ \sim}$$

$P = 10,83 \cdot \left(\dfrac{10}{\sqrt{2}}\right)^2 =$

$$\boxed{P = 541,5 \ W}$$

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① b) $S = \dfrac{440}{\sqrt{2}} \cdot \dfrac{8}{\sqrt{2}} \left\lfloor 45° - 50° = \right.$

$$\boxed{S = 1760 \left\lfloor -5° \, VA \right.}$$

$FP = \cos(-5°) =$

$$\boxed{FP = 0,996}$$

$R = \dfrac{\dfrac{440}{\sqrt{2}} \left\lfloor 45° \right.}{\dfrac{8}{\sqrt{2}} \left\lfloor 50° \right.} =$

$$\boxed{R = 54,79 - 14,79 \, \text{z}}$$

$P = 54,79 \cdot \left(\dfrac{8}{\sqrt{2}}\right)^2 =$

$$\boxed{P = 1753,28 \, W}$$

②

$$\boxed{30W \atop 40\ VAR}$$

$$100V\ \checkmark$$

$$\boxed{200W \atop F_P = 1}$$

$$\boxed{100\ VAR \atop F_P = 0}$$
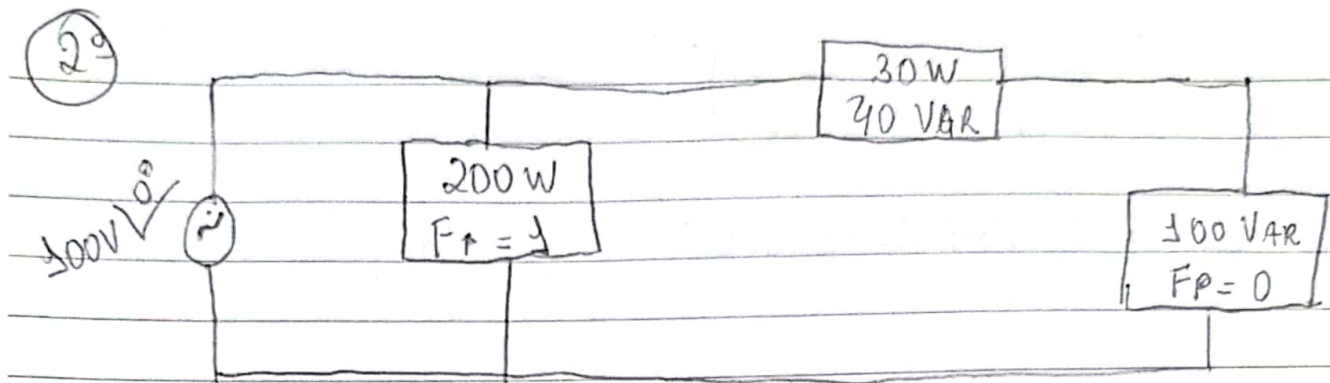
I) $P_T = 200\ W + 30\ W + 0 =$

   $P_T = 230W$

II) $Q_T = 0 + 40\ VAR + 100\ VAR =$

   $Q_T = 140\ VAR\ (L)$

III) $S_T = \sqrt{P_T{}^2 + Q_T{}^2} =$

   $S_T = 269,26\ VA$

IV) $F_P = \dfrac{P_T}{S_T} = \dfrac{230W}{269,26\ VA} =$

   $F_P = 0,854\quad ou\quad 31,35°\ (arco)$

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③ I) $R_{eq} = \left(\dfrac{1}{3 + j4} + \dfrac{1}{-j10} \right)^{-1} =$

$R_{eq} = 7,454 \angle 26,565° \, \Omega$

II) $i = \dfrac{50 \angle 60° \, V}{7,454 \angle 26,565° \, \Omega} =$

$i = 6,708 \angle 33,435° \, A$

III) $S = 6,708 \cdot 50 \angle 60° - 33,435°$

$S = 335,4 \angle 26,565° \, VA$

IV) $Q = 335,4 \, sen \, (26,565°) =$

$Q = 150 \, V_{AR}$

V) $P = 335,4 \, cos \, (26,565°) =$

$P = 300 \, W$

VI) $F_P = cos \, (26,565°) =$

$F_P = 0,874$

④ fator de potência = 0,8

P_a = 50 KW ou 50.000 W

I) cos 36,864 = $\dfrac{50\,000\,W}{S}$

$S = \dfrac{50\,000\,W}{cos\ 36,869}$

$S = \dfrac{50\,000\,W}{0,8}$

$\boxed{S = 62,5\ K\ VA}$

II) $cos^{-1}\ 0,8 = 36,869°$

$ton\ 36,869° = \dfrac{a_T}{50\,000\,W}$

$a_T = (50\,000) \cdot ton\ 36,869°$

$a_T = 50\,000 \cdot 0,74997$

$\boxed{a_T = 37\,498,77\ VAR\ (L)}$

(5º) $X_L = 900 \times 300 m^{\times 2\pi} = 0$

$X_L = 175,398 r$

$Z_{eq} = 4 + \dfrac{1}{175,398} + \dfrac{-1}{15}\Big)^{-1}$

$Z_{eq} = 18,651 \angle 8,8530° \; r$

$F_P = \cos(8,8530°) =$

$\boxed{F_P = 0,988}$