GABARITO

Questão 1 –

I. $a = -10^{-3}$ $\quad b = 6.10^{-3}$ $\quad c = 3.10^{-3}$ $\quad f = 4.10^{-3}$

$$[\varepsilon] = 10^{-3} \begin{bmatrix} -1 & 0 & 0 \\ 0 & 6 & 2 \\ 0 & 2 & 3 \end{bmatrix}$$

ii. $\varepsilon_1 = 7.10^{-3}$ $\qquad \varepsilon_2 = 2.10^{-3}$ $\qquad \varepsilon_3 = -10^{-3}$

$$\boldsymbol{h_1} = \frac{1}{\sqrt{5}}(0,2,1) \quad \boldsymbol{h_2} = \frac{1}{\sqrt{5}}(0,-1,2) \quad \boldsymbol{h_3} = (1,0,0)$$

iii. $\varepsilon_l = 6{,}84.10^{-3}$

iv. $\gamma = -1{,}76.10^{-3}$

Questão 2 –

i. $[\varepsilon] = A \begin{bmatrix} 0 & 0 & -\frac{1}{5}x_2 \\ 0 & 0 & \frac{4}{5}x_1 \\ -\frac{1}{5}x_2 & \frac{4}{5}x_1 & 0 \end{bmatrix}$

ii. $A = 10^{-2}$

iii. $\gamma = -4{,}71.10^{-5}$

iv. $\varepsilon_1 = 2{,}24.10^{-4}$ $\qquad \varepsilon_3 = -2{,}24.10^{-4}$

$$\boldsymbol{v_1} = \alpha \left(\frac{1}{\sqrt{5}}, \frac{-2}{\sqrt{5}}, 1 \right) \qquad \boldsymbol{v_3} = \beta \left(\frac{-1}{\sqrt{5}}, \frac{2}{\sqrt{5}}, 1 \right)$$

Com α e β reais.

Questão 3 –

i. $\boldsymbol{\rho} = 6(1,7,1)$ $\qquad \|\boldsymbol{\rho}\| = 42{,}85$

ii. $\boldsymbol{\sigma} = \frac{22}{3}(-2,2,-1)$ $\qquad \|\boldsymbol{\sigma}\| = 22$

iii. $\theta = 59{,}12°$

Questão 4 –

i. $[T] = 100 \begin{bmatrix} \sqrt{3} & 1 & 0 \\ 1 & \sqrt{3} & 0 \\ 0 & 0 & 0 \end{bmatrix}$

ii. $\boldsymbol{\sigma} = 51{,}76(-1,1,0)$ $\qquad \|\boldsymbol{\sigma}\| = 73{,}21$