e) I) $y(\tau) = 0,63 \cdot 2 = 1,26$

$\tau = 0,025s$

$G(s) = \frac{K}{s+a}$, $a = \frac{1}{\tau} = 40$

$\lim_{s \to 0} \frac{K}{s+a} = 2$, $K/a = 2$

$K = 2 \cdot a = 80$

$G(s) = \frac{80}{s+40}$

II) $G(s) = \frac{K\omega_n^2}{s^2 + 2\xi\omega_n s + \omega_n^2}$

$\%OS = \frac{14-11}{11} \cdot 100 = 21,46$

$\xi = \frac{-\ln(21,46/100)}{\sqrt{\pi^2 + \ln^2(21,46/100)}} = 0,4394$

$T_p = \frac{\pi}{\omega_n \sqrt{1-\xi^2}} \Rightarrow \omega_n = \frac{\pi}{T_p \sqrt{1-\xi^2}}$

$T_p = 1$

$\omega_n = \frac{\pi}{\sqrt{1-\xi^2}} = 3,498$