Example 5.10

Q: $T = 0.1s$, $C(z) = ?$

Solution $G_{ZAS}(z) = (1-z^{-1}) z \left\{ \frac{G(s)}{s} \right\}$

$= (1-z^{-1}) z \left\{ \frac{1}{s[s+1)(s+10)} \right\}$

$= 35.501 \times 10^{-4} \frac{z + 0.9945}{(z-0.9048)(z-0.3679)}$

$G_{CC}(z) = z^{-1}$ ✓ $2-1=1$

$C(z) = \frac{1}{G_{ZAS}(z)} \left[ \frac{z^{-1}}{1-z^{-1}} \right]$

$= \frac{1}{35.501 \times 10^{-4} \frac{z + 0.9945}{(z-0.9048)(z-0.3679)}} \cdot \frac{z^{-1}}{1-z^{-1}}$

$= \frac{2819.22 (z-0.9048)(z-0.3679)}{(1-z)(z+0.9945)}$

acceptable