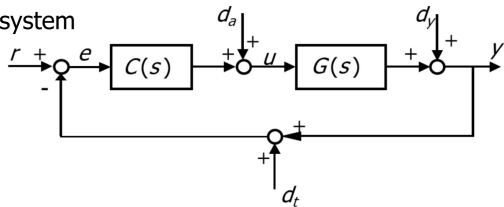Consider the feedback control system

where

$$G(s) = \frac{2}{(1 + 0.2s)(1 + 0.1s)}, d_a(t) = \delta_a \varepsilon(t), |\delta_a| \le 0.2$$

design the cascade controller $C(s)$ to satisfy the following requirements.

$$\begin{cases} |e_r^\infty| \le 0.1, r(t) = t\varepsilon(t) \\ |y_{d_a}^\infty| = 0 \end{cases}$$

$\hat{s} \le 30\%$

$t_r \le 0.3s$