Universidad Fidélitas

Curso: Control Automático

Tarea #8 Ajuste final con compensador

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$$G(s) = \frac{1}{(s+4)(s+6)}$$

Valor final para una entrada de escalón unitario:

$$Valor\ Final = \lim_{s\to 0} s * \frac{1}{(s+4)(s+6)} * \frac{1}{s} = \frac{1}{24}$$

$$Valor\ final\ requerido = \frac{1}{24} * 1.20 = 0.05$$

$$e_{ss} = \lim_{s\to 0} s * \frac{1}{1 + \frac{1}{(s+4)(s+6)}} * \frac{1}{s}$$

$$e_{ss} = \lim_{s\to 0} \frac{1}{1 + \frac{1}{24}} = 0.96$$

$$Er = \frac{1}{1 + k_p}$$

$$k_p = 0.0416$$

$$Nuevo\ Error = 1 - Valor\ final\ requerido$$

$$Nuevo\ Error = 1 - 0.05 = 0.95$$

$$0.95 = \frac{1}{1 + k_p}$$

$$Nuevo\ k_p = 0.052$$

$$Nuevo\ k_p = \frac{z}{p} * k_p$$

$$0.052 = \frac{z}{1} * 0.0416$$

$$Z = 1.25$$

$$P = 1$$

$$Valor\ Final = \lim_{s \to 0} s * \frac{s + 1.25}{s + 1} * \frac{1}{(s + 4)(s + 6)} * \frac{1}{s}$$

$$Valor\ Final = \frac{1.25}{1} * \frac{1}{24}$$

$$Valor\ Final = 0.052$$