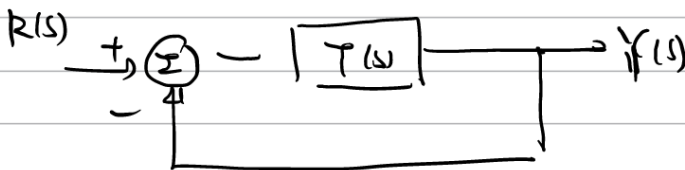
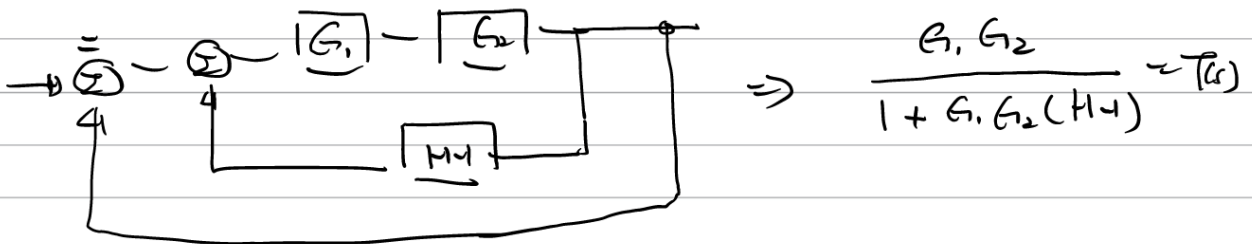
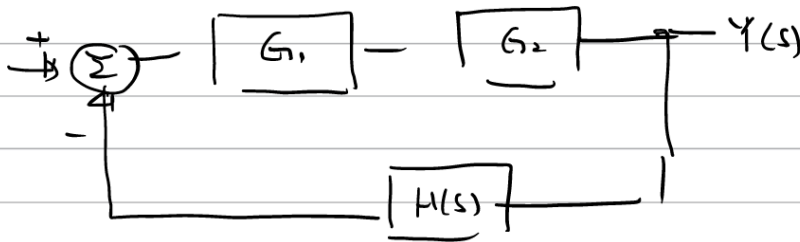


उदा ७  $k_p = ?$   $e_{ss} = ?$



$$e_{ss} = \lim_{s \rightarrow 0} \frac{1}{1 + T(s)} R(s)$$

$$T(s) = \frac{K}{1 + G_2(H(s))} =$$

$$\text{Ex } T(s) = \frac{20}{1 + \frac{20}{20} \left( \frac{50}{s} - 1 \right)} = \frac{1}{1 + 9} = 0.1$$

$$e_{ss} \stackrel{\lim_{s \rightarrow 0}}{=} \lim_{s \rightarrow 0} \frac{1}{1 + T(s)} R(s) = \frac{1}{1 + 0.1} = \frac{1}{1.1}$$

$$\text{Ex } G_1 = \frac{s+2}{s+p}$$

$$T_{\text{compensated}}(s) = \frac{\frac{K}{P} G_2}{1 + \frac{K}{P} G_2 (H+1)} = \frac{\frac{K}{P}}{1 + \frac{K}{P} (9)}$$

$$\frac{K}{P} = k_2$$

$$\frac{k_2}{1 + k_2 \times 9} = \frac{1}{2.2}$$

$$1 + 9k_2 = 2.2k_2$$

$$T_{\text{compensated}}(s) = \frac{G_1 G_2}{1 + G_1 G_2 (H+1)} = \frac{k_2 \times 1}{1 + k_2 \times 1 \times 9} = \frac{k_2}{1 + 9k_2}$$

$$e_{ss} = \frac{1}{1 + T_{\text{compensated}}(s)} = \frac{1}{1 + \frac{k_2}{1 + 9k_2}} = \frac{1}{2.2}$$

$$1 + \frac{k_2}{1 + 9k_2} = 1 + 1.2$$

$$\frac{k_2}{1 + 9k_2} = 1.2$$

$$1.2 + 9 \times 1.2k_2 = k_2$$