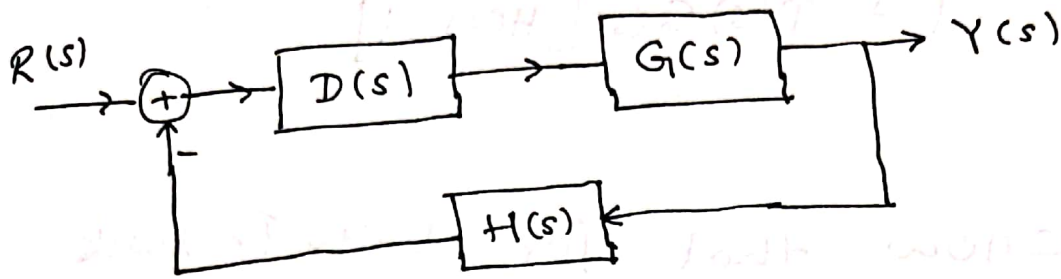
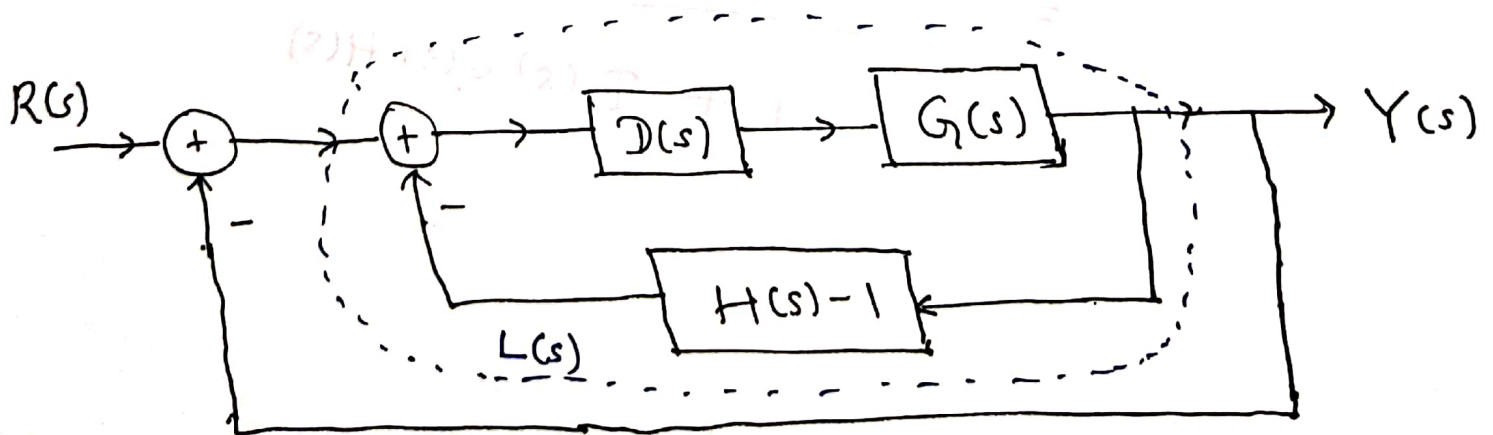
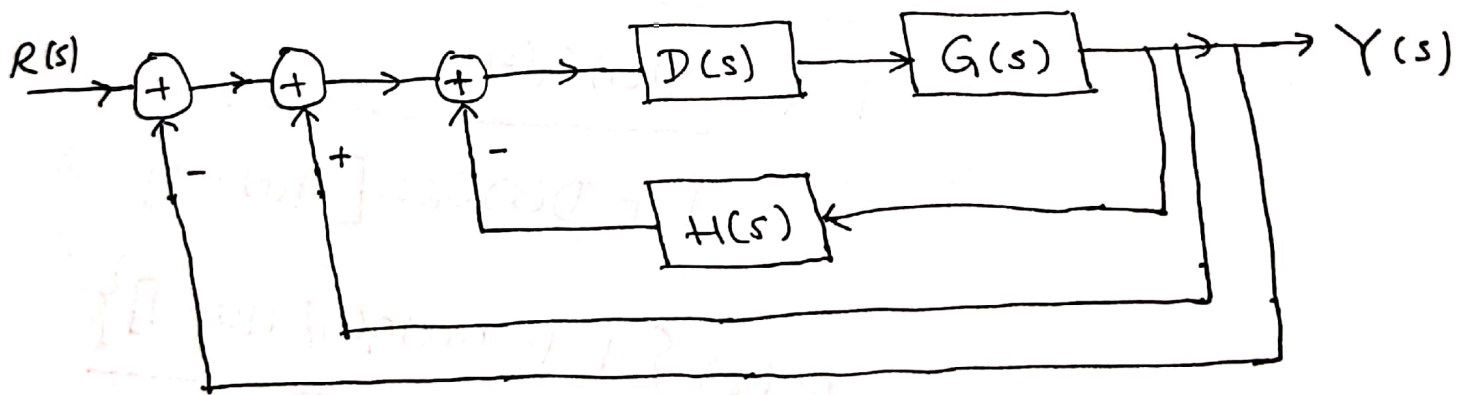


STEADY STATE ERROR ANALYSIS FOR NON UNITY FEEDBACK SYSTEM.



To derive the error function $E(s)$
we convert the above system to
unity feedback system.



From the above figure which is equivalent to Unity Feedback Structure

$$L(s) = \frac{D(s)G(s)}{1 + D(s)G(s)[H(s) - 1]}$$

We know that for Unity Feedback Structure

$$E(s) = \frac{R(s)}{1 + L(s)}$$

$$= \frac{R(s)}{1 + \frac{D(s)G(s)}{1 + D(s)G(s)[H(s) - 1]}}$$

$$= \frac{R(s) \{ 1 + D(s)G(s)[H(s) - 1] \}}{1 + D(s)G(s)H(s)}$$

Transfer function of closed-loop system

$$G_{cl}(s) = \frac{L(s)}{1 + L(s)}$$

$$= \frac{D(s) G(s)}{1 + D(s) G(s) H(s)}.$$

With the defn of $L(s) = \frac{D(s) G(s)}{1 + D(s) G(s) [H(s) - 1]}$

Results for Type-1 and standard reference inputs remain same.