$K G H(s) = \frac{40}{s(s+2)}$

Given root locus, the poles of $T(s)$ can never have a negative real part $(\angle \omega_n)$ near $j\omega$ axis. Hence step response is quite oscillatory.
**EE 302 - Compensation Example**

**Added Phase-Lead Compensator**

\[
G_c(s) = \frac{1 + T \cdot s}{\alpha (1 + T \cdot s)}
\]

**Root Locus**

**Compensated Version of Bode Plot**

**Increased Phase Margin**

**Increased PM**

**Increased \( \theta \)**

**Less Overshoot**

\[
\text{Lp} = 0.26 \text{ sec}
\]

\[
\text{Lp} = 0.34 \text{ sec}
\]

\[
\text{Po} = 0.3 \times \%\]