1. Consider a unit feedback system with series compensator which models a radar tracking system with G = 1/[(0.1s + 1)s], design series compensation to meet the following specifications:
   1. The steady-state error following ramp inputs must not exceed 2%.
   2. The error in response to sinusoidal inputs up to 5 rad/sec should not exceed about 5%.
   3. The crossover frequency should be about 50 rad/sec to meet bandwidth requirements while limiting the response to high-frequency noise.
   4. The ratio of the break frequencies of Gc should not exceed 5 to limit noise effects.
   5. The phase margin should be about 50◦.

   Using
   - A. Root Locus
   - B. Bode Plots
   - C. State Space
   - D. Nyquist Plot

zafar@iith.ac.in
Phone: +91-40 2301 6010