

General Notes:

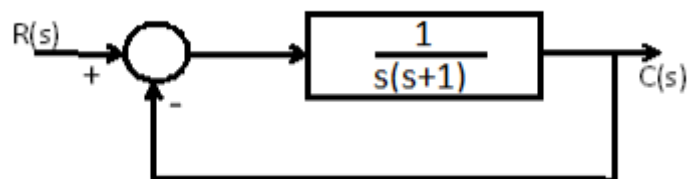
- Show steps clearly.
- Duplicate submissions are not accepted and will result in a zero grade for both the original and the duplicate.
- Late submission policy is that 25% of the grade will be deducted per day.
- Deadline: November 21, 23:59.

Problem 1

Design a second order system by finding the system transfer function with response to a unit step input that ensures maximum overshoot equal or less than 10% and settling time less than 0.5 seconds. Also compute rising time, peak time, and steady state error.

Problem 2

For the system shown below, state whether the system is **stable or not**. Also find the transient and steady state parameters.



Problem 3

Find the poles and Zeros of the following T.F. and locate on the s-plane.

$$G(s) = \frac{(s^2 + 5s + 4)(s - 3)}{s^2 - 6s + 8}$$

Problem 4

Determine the range of K that stabilizes the closed loop system.

