Arab Academy for Science and Technology & Maritime Transport

College of Engineering & Technology

Department : Electrical power and computer control

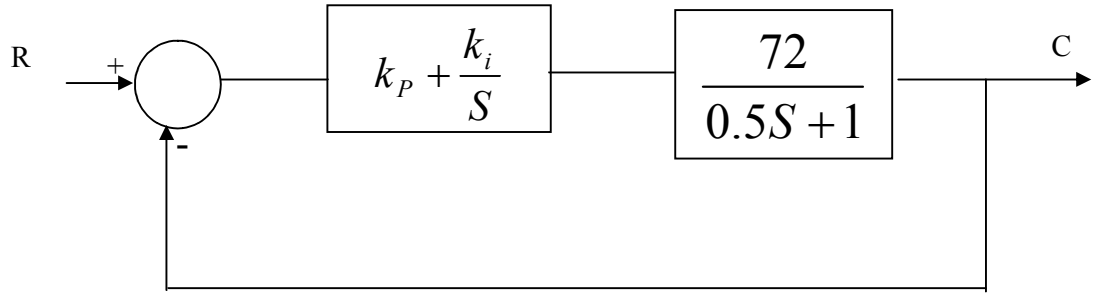
Course : Control System I **Course No:** EE 411

Lecturer : Prof. Dr. Hassan Ibrahim

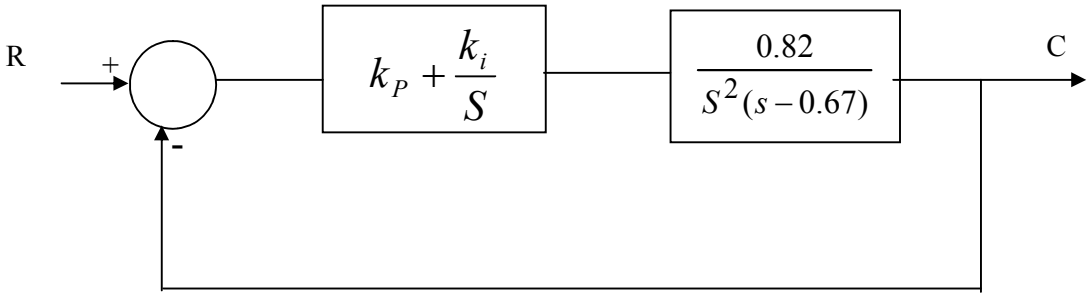
TA : Eng.

Sheet (6)

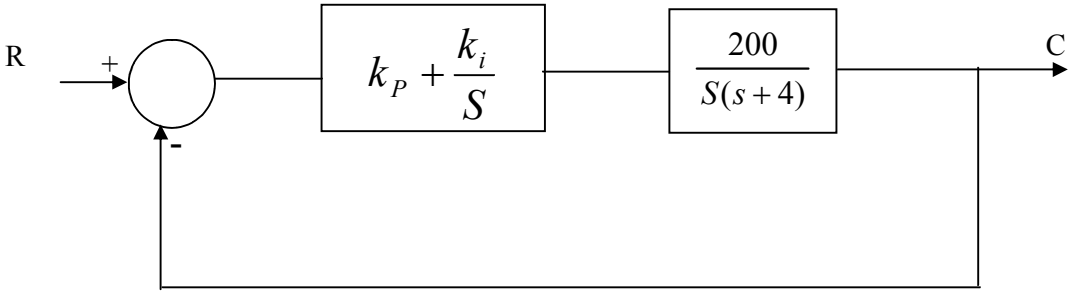
1. Design a PI controller to the shown system which has a maximum peak overshoot of 0.01 and settling time of 1 sec.



2. Design a PI controller to the shown system which has desired poles of (S = -0.56±j0.4).



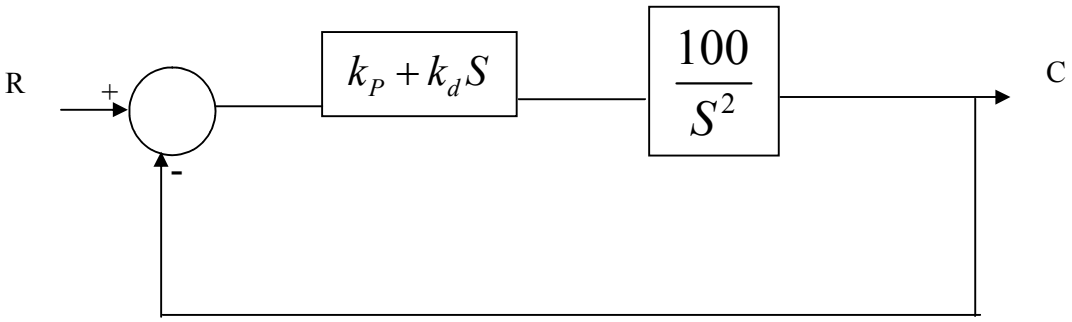
3. Consider the system shown in figure. Design a controller that gives the system zero steady state error for a velocity input and dominant closed loop poles with damping ratio of 0.707. Estimate a unit step response of the compensated system.



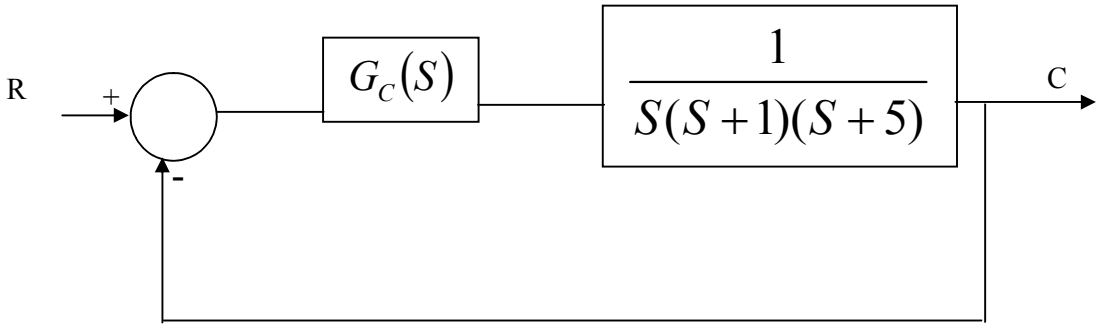
4. The control system which has a transfer function of G(s) = 4/s(s+2) need a PD controller to satisfy the following requirements Mp = 5% and Ts = 0.04.

5. For the control system G(s) = 1/s(s-0.4)^2, design a PD compensator at desired poles of (S = -0.5±j0.5) and a unity feedback.

6. The system shown is a mechanical positioning system. Design PD controller which meet the following specifications Wn=1 rad/sec Unit step response of the closed loop system has an overshoot of no more than 10%



7. Design a PID controller to the shown system to satisfy a maximum peak overshoot of 25%.



8. For the system shown in figure design a PID controller using a Ziegler-Nichols method for tuning the coefficients and compute the resulting step response of the closed loop system.