KISI-KISI SOAL UAS PENGANTAR KONTROL

# Inverse Laplace Transform

1. Obtain the unit-step response of a unity-feedback system whose open-loop transfer function is
2. Obtain the unit-impulse response and the unit-step response of a unity-feedback system whose open-loop transfer function is
3. Figure 1 shows a position control system with velocity feecback. What is the response to the unit-step input ?

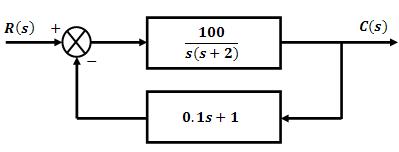


Figure 1

# Second-order systems and transient-response specifications

1. Consider the unit-step response of a unity-feedback control system whose open-loop transfer function is

Obtain the rise time, peak time, maximum overshoot and settling time

1. Consider a unity-feedback control system whose open-loop transfer function is

Obtain the response to a unit-step input. What is the rise-time for this system? What is the maximum overshoot ?

# Proportional Control of Second-order system

1. Consider the closed-loop system given by

Determine the value of and so that the system responds to a step input with approximately 5 % overshoot and with a settling time of 2 sec. (Use the 2% criterion)

1. Referring to the system in Figure 2, determine the values of and such that the system has a damping ratio of 0.7 and an undamped natural frequency of 4 rad/sec.

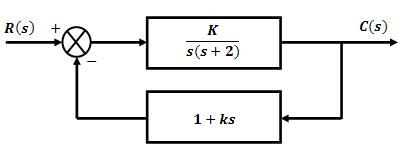


Figure 2

1. Consider the system shown in Figure 3. Determine the value of such that the damping ratio is 0.5. Then obtain the rise time, peak time, maximum overshoot and settling time in the unit-step response.

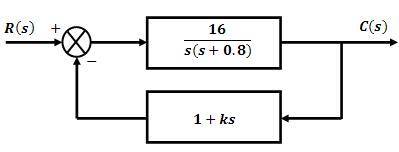


Figure 3

# Routh’s Stability Criterion

1. Apply Routh’s stability criterion to the following characteristic equation :

Determine the range of for stability

1. Determine the range of for stability of a unity feedback control system whose open-loop transfer function is

# MATLAB Computation

1. Consider the position control system shown if Figure 4. Write a MATLAB program to obtain a unit-step response.

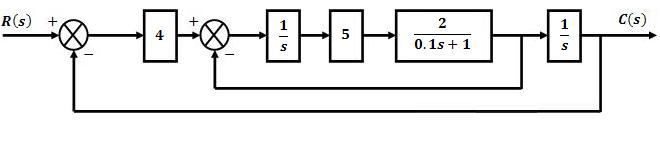


Figure 4