



ANURAG GROUP OF INSTITUTIONS

Autonomous

School of Engineering

II – B.Tech – II – Semester – Assignment Questions-2

2016-2017

Subject: CONTROL SYSTEMS

(Common to EEE A & B)

1. Sketch the root locus plot for the control system with a forward transfer function $G(s) = \frac{K(s+2)}{s^2+2s+3}$ and $H(s) = 1$.
2. The open loop transfer function of a certain unity feedback system is $G(s) = k/s(s + 2)(S + 10)$. Draw the Bode a plot and determine gain margin and phase margin.
3. The open loop transfer function of a unity feedback system is given by $\frac{1}{s^2(1+s)(1+2s)}$. Sketch the polar plot and determine gain margin and phase margin.
4. Construct the state model for a system characterized by the differential equation $\frac{d^3y}{dt^3} + 6\frac{d^2y}{dt^2} + 11\frac{dy}{dt} + 6y + u = 0$. Give the block diagram representation of the state model.
5. Obtain the state model of the system whose transfer function is given as $\frac{Y(s)}{U(s)} = \frac{10}{s^3+4s^2+2s+1}$.
6. Consider the matrix A, Compute e^{At}

$$A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$$