The term reset control refers to |||| Integral control

Control System are frequently tested for step input because |||| It is reasonably drastic

The Order of a system is determined by |||| The highest degree of S in the Denominator polynomial

The transient response of a system with feedback compared to that of a system without feedback |||| decays more quickly

The impulse response of a first order system is |||| Constant with respect to time

The over-shoot of 2 IIorder systems with same damping but different natural frequency of oscillations will be |||| Different

The speed of decay of transient response of a second order system depends on |||| Damping factor

The settling time of a second order system subjected to step input increases as |||| Damping factor increases

Proportional +Derivative controller connected in cascade with a second order system |||| Increases the effective damping

The Proportional + Integral controller connected in cascade with a second order system |||| Improves the steady state error of the system.

An under damped second order system will possess over-shoot when it is subjected to only |||| Step input.

The static error constants depends on |||| Both type and order of the system.

For a stable second order over damped system, the poles are |||| real and unequal

The response of the system when the input changes from one state to another is called |||| Transient response

The signal whose value changes from 0 to A and remains constant at A for t>0 is a |||| Step signal

The value at which the function F(s) becomes infinite is at the |||| Pole

The system in which the damping ratio is greater than 1 is called |||| Over damped system

Ratio of the rotor reactance X to the rotor resistance R for a two-phase servomotor is |||| less than that of a normal induction motor

Peak overshoot of a step input response of an underdamped second order system is explicitly indicative of |||| damping ratio

Generalized error series gives the error signal as a function of |||| time

The time taken for the response to reach 50% of the final value for the very first time is called |||| delay time

For the unity fedback system with the open loop transfer function G(s) = 25/s(s+6), the peak overshoot is approximately |||| 10%

The steady state error is the value of the error signal e(t), when t tends to |||| infinity

For the unity feedback system with the open loop transfer function G(s), the steady state error is zero for |||| step input and type-1

The nature of the response of a underdamped second order system is |||| damped oscillatory

The ratio of actual damping to critical damping is called_____ |||| damping ratio

A control system is said to be good if it has |||| Sufficient and economical power handling capacity

If the gain K of the system increases, the steady-state error of the system |||| Decreases

The first derivative control can be used to |||| Decreases damping

For a II order-type 1 system, the resonance peak will occur when the system gain is at the |||| Critical damping value.

In an over damped system the damping ratio is |||| Greater than one

For type 2 system the steady-state error due to ramp input is equal |||| Zero.

For type 2 system the steady-state error due to step input is equal to |||| Zero.

The unit step signal is |||| C(t) = 1, t ≥ 0

The transfer function PI Controller. |||| Gc(s) = KP + Ki / s

The transfer function PD Controller |||| Gc(s) = KP + Kd s

The transfer function PID Controller |||| Gc(s) = KP + Ki / s + Kds

Zero initial condition for a system means |||| System is at rest and no energy is stored in any of its component

Types of systems is |||| Number of poles at the origin

The Laplace Transform of the unit parabolic Function |||| 1 / s3

The Laplace Transform of the unit ramp Function |||| 1 / s2

The Laplace Transform of the unit step Function |||| 1 / s

The mathematical expression for rise time |||| π-Θ/ωd

The steady state error for unit step input is |||| 1/1+Kp

The steady state error for unit ramp input is |||| 1/Kv

The steady state error for unit parabolic input is ……. |||| 1/Ka

The Laplace Transform of e -at |||| 1/s+a

The Laplace Transform of e +at |||| 1/s-a

The condition of unit ramp signal is |||| C(t) = t, t ≥ 0

In a critical damped system the damping ratio is |||| One

The mathematical expression for peak time of ……. |||| π/ωd

In a undamped system the damping ratio is |||| Zero

In a undamped system the roots are |||| Purely imaginary

In a Critically damped system the roots are |||| Real and equal

The unit of damped frequency of Oscillation is |||| Radian/Sec.

Delay time is the |||| Time taken for response to reach 50% of the final value

Laplace transform and fourier integrals are related to |||| Both frequency and time domain function

Transfer function is defined for |||| Linear and time-invariant system

The steady state output of unity feed back control systems is |||| very near to reference input

The characteristic equation of an AC servo motor is |||| Second order equation

Sinusoidal oscillators are …… system. |||| marginally stable

If all the roots of the characteristic equation have negative real parts, then the system is …….. |||| stable

For the application of Routh's test, all the coefficients of the characteristic equation must be ……. |||| real

The number of sign changes in the elements of the first column of the Routh array denotes |||| the number of poles of the closed-loop system in the RHP

G(s)=e-2s/s(s+4). The system with this transfer function is operated in closed-loop with unity feedback. The closed-loop system is |||| stable

The closed-loop transfer function of a system is C(s)/R(s) =s-2/(s+1)(s+3)(s+4).The system is |||| stable

The terms in the first column of the Routh array of the characteristic equation of certain system are 2, 1, 8, -7, 2, and 6. The number of roots of the characteristic equation in the right-half of the s-plane is equal to |||| 2

The terms in the first column of the Routh array of the characteristic equation of a certain system are 5, 7, 4, 3, -2. The number of roots of the characteristic equation in the right-half of the s-plane is equal to |||| 1

The open-loop transfer function of a closed-loop system is G(s)=K/s(s+2)(s+4). The range of values of K for stable operation is |||| 0 < K < 48

The characteristic equation of a unity feedback system is given by s3+s2+2s+2=0. |||| The system exhibits oscillatory response

The root locus is …….of the system |||| a graphical representation

The root locus is …….. of the system. |||| a time-domain approach

The root locus can be applied to |||| only linear system

The root locus can be used to determine |||| both absolute and relative stabilities of a system

The root locus always starts at the |||| open-loop poles

The root locus always terminates on the |||| open-loop zeros

The root locus gives the locus of |||| closed-loop poles

An open-loop transfer function has 4 poles and 1 zero. The number of branches of root locus is |||| 4

Asymptotes can intersect |||| any where on the real axis

Angles of asymptotes are measured at the centroid with respect to |||| positive real axis

In a root locus system the break points are |||| real or complex

The angle of departure from a real pole is always |||| either 0? or 180?

The angle of arrival at a real zero is always |||| either 0? or 180?

The root locus can be used to solve higher-order |||| algebraic equations

The roots of the characteristic equations are same as |||| closed-loop poles

For a stable system |||| both gain margin and phase margin must be positive

A point lying inside the closed contour is said to be |||| enclosed

A point or region lying to the right of the path of traversal when the closed contour is traversed in the clockwise direction is said to be |||| encircled

In q(s)-plane the Nyquist plot is symmetrical about the |||| real axis

The root locus can be used to solve higher order ……. |||| integral equation

If the system has non repeated poles on the j? axis , the system is ……. |||| marginally stable

If the system has multiple poles on the j? axis, the system is ……. |||| unstable

Integrators are …….systems |||| marginally stable

Stability is a very important characteristic of the ---------- response of the system. |||| transient

Marginally stable systems have some roots with real parts equal to Zero, but none with |||| positive real parts

The Routh stability criterion for testing the stability of the system is |||| an algebraic method

In the formulation of the Routh array, when ever difficulty 1 or difficulty 2 arises, it can be concluded that the system is |||| Stable

A closed-loop control system has the following characteristic equation s3+8Ks2+(K+4)s+20=0 where K is the open-loop gain of the system. The condition for marginal stability is |||| K=2

The characteristic equation 1+G(s)H(s)= 0 of the system is given by s4+8s3+12s2+8s+K=0 for the system to remain stable, the value of gain K should be |||| 0<K<11

If the root loci do not cross the imaginary axis then the system is …….. |||| stables for all values of ‘k’

The feed back system with characteristic equation s4+20Ks3+5s2+10s+15=0 is |||| unstable for all values of K

A system has loop gain as G(s)H(s) = K/s(s+1)(s+2)(s+3), the number of separate root |||| unstable for all values of K

……. is the best method for determining the stability and transient response. |||| Root locus

The system characteristic equation is (S3-2S2+3S+6) = 0. The system is ……. |||| Unstable

Unity feedback system has a open loop transfer function of G(s) = K / S2 (S+10) (S+100). The Position error coefficients are |||| 8

In a s-plane the roots are lie on the imaginary axis the system is …….. |||| Marginally stable

The gain margin of a system is 0 dB. It represents a …….. |||| marginally stable system

The stability of a system which approaches the origin as times tends to infinity is termed as |||| Asymptotically stable

Self tuning control is mostly utilized in |||| Discrete time system

Dominant poles are the poles which lie …….. |||| very near to the origin

The characteristic equation of a system is s2+4s+10 = 0. The system is |||| underdamped

Bode plot is a ----------. |||| Frequency response of the system.

Neper is a _____ |||| Real part of natural logarithm of magnitude.

The gain margin of a second order system is ……. |||| infinite

Polar plot is a ----------. |||| Plot between magnetic versus phase angle in polar coordinate.

The polar form of -4-j3 is |||| Magnitude value is 5 and angle value is 216.87.

Standard representation of bode plot is …….. |||| -20log(G(jω))

_____ increases the steady state accuracy of the system. |||| Integrator

In a frequency response system the two asymptotes meet at a point is ….. … |||| Corner frequency

The frequency response system, resonant peak (Mr) does not exist for ……. |||| x >0.707

The bode plot is applicable to ..... |||| Minimum phase network

The function (1/jωT) has the slope of ……. |||| -20db/decade

Phase margin of a system is used to specify …….. |||| Relative stability

The effect of adding poles and zeros can be determined quickly by which of the |||| bode plot

The damping ratio x of a system is 0.5. The value of r(resonant peak) is…….. |||| 1.54

For a second-order system wn=8 and x=0.5. The value of wr in rad/sec. (wn = natural frequency of oscillation, x = wr = resonant frequency) damping ratio |||| 5.657

The gain margin of a system is 0 dB. It represents a …….. |||| marginally stable system

The phase margin of a system is 0°. It represents a …….. |||| marginally stable system

For a stable system |||| both gain margin and phase margin must be positive

Trfer function of a system is 100(1+0.25s)/(1+0.5s). The corner frequencies are |||| 4 and 2

Large values of gain margin and phase margin result is ……. |||| an sluggish system

The roots of the characteristic equation are same as |||| closed-loop poles

Frequency response test is not recommended for systems with |||| with large time constants

Trfer function of a system is 1/(1+0.02s). The corner frequency will be |||| 50 rad. /sec.

For an unstable system |||| both gain margin and phase margin must be negative

The gain cross over frequency is ……. |||| the frequency at which magnitude of G(jω) is zero dB

x |||| the frequency at which the phase angle of G(jω) at -1800(degree)

The gain margin is ……. |||| the magnitude in decibels at phase cross over frequency

The phase margin is ……. |||| the phase angle in degrees at gain cross over frequency

For a marginally stable system |||| both gain margin and phase margin must be zero

The function 1/s has the phase angle value of bode plot ……. |||| -900 (degree)

The M circle is a …… |||| Magnitude of closed loop trfer function is constant

The N circle is a …….. |||| Phase angle of closed loop trfer function is constant

The function 1/s2 has the phase angle value of bode plot ……. |||| -1800 (degree

The function 1/s2 has the magnitude value of bode plot ……. |||| -40 log ω

The function 1/s has the magnitude value of bode plot ……. |||| -20 log ω

The function (1+ s T1) has the slope of bode plot ……. |||| +20 db/decade

The function (1+ s T1) has the phase angle(φ) of bode plot ……. |||| φ = +tan-1 ω T1

The characteristic equation of a closed loop control system is given by |||| 1.1414
At resonance condition |||| XL = XC

The closed-loop trfer function of a system is C(s)/R(s) =s-2/(s+1) (s+3) (s+4).The system is …… |||| stable

For a factor 1/(s+4)2 at w(natural frequency) = 2 rad/sec, the asymptotic plot will have an error of |||| –2 dB

At the phase crossover frequency w(natural frequency) = 7 rad/sec,|G(jw)H(jw)| = –12 dB. Its gain margin ……. |||| is +12 dB

At the gain crossover frequency w=5 rad/s, |G(jw)H(jw)|=–170°. The phase margin is |||| +10°

A trfer function which has all its poles and zeros only in the left-half of the s-plane is called |||| a minimum-phase trfer function

A transfer function having a pole-zero patterns which is antisymmetric about the imaginary axis is called…….. |||| an all-pass trfer function

A point or region lying to the right of the path of traversal when the closed contour is traversed in the clockwise direction is said to be |||| encircled by it

A point lying inside the closed contour is said to be |||| enclosed by it

A system has 14 poles and 2 zeros .The slope of its highest frequency asymptotes in its magnitude plot is …… |||| -320

If the s-plane contour encloses 3 zeros and 2 poles of q(s), the corresponding q(s) plane contour will encircle the origin of q(s) plane |||| once in clockwise direction

If a polar plot touches the negative real axis only at the origin, then the gain margin is |||| ¥

51. The open-loop trfer function of a second-order system is G(s)H(s)=20(s+1)(s+10).gain margin is |||| 2 dB

As the polar plot gets closer to the (-1+j0) point, the stability of the system is |||| reduced

The Nichols chart can be used to determine |||| closed-loop frequency response

The frequency and time domain are related through |||| laplace trform and fourier integral

is/are used for Nyquist plot. |||| Open loop function

Bode plot is a …….. |||| combined magnitude and phase angle plot

The term of asymptotes in a bode plot is low frequency and high frequency approximation can be represented by |||| zero decibel

The advantages of Bode plot is …….. |||| the effect of noise can be easily visualized in time response analysis

A system has good degree of relative stability then the phase margin is …….. |||| 300 to 350

A system has good degree of relative stability the gain margin is …….. |||| about +6 dB

A devices inserted in to the system for the purpose of satisfying the desired specifications is called …… |||| compensator

The lag compensator will reduce ……. |||| bandwidth

The lead compensator will reduce ……. |||| peak overshoot

The lead compensator is to increase the ……. |||| bandwidth

The compensator required to improve the transient response of a system is …….. |||| lead

The compensator required to improve the steady-state response of a system is |||| lag

"The compensator required to improve both the transient and the steady-state response of a system is" |||| lag-lead

A rough measure of bandwidth of a system is…….. |||| gain crossover frequency

Rise time (tr) and settling time (ts)are measures of |||| speed of response

Resonant peak (Mr) and phase margin(?pm)are measures of |||| absolute stability

Damping ratio(?) and peak overshoot (Mp) are measures of |||| relative stability

Bandwidth is reduced when the compensator used is |||| lag

When the specifications are resonant peak Mr and resonant frequency ?r, the plot used to design the compensator is |||| Bode plot

The transfer function approach is applicable to |||| only linear time-invariant systems

"When the specifications are phase margin ?pm and bandwidth ?b, the plot used to design the compensator is " |||| Bode plot

Any type of specification can be handled using ……..system. |||| Bode plot

Direct decomposition is applicable to transfer functions in which |||| both numerator and denominator are in factored form

The number of state variables of a system is equal to |||| the number of integrators present in the system

Using state variables, an nth-order differential equation can be decomposed into |||| 'n' number of first-order differential equations

In state space representation, x(t) = Ax(t)+ Bu(t) is called the |||| state equation

In state space representation the 'A' matrix is called the |||| system matrix

The transients response system time constant T is indicative of |||| how fast the system tends to reach the final value

Rise time in time response specification of a system indicates the time required for the response to rise from |||| 10 percent to 90 per cent of the final value of underdamped system;

The characteristic equation of a first order system is a0s+a1= 0. The condition for stability of the system is |||| "both a0 or a1 must be positive
"

Root locus technique is applicable to |||| single as well as multiple loop system

Root locus technique provides a graphical method of plotting locus of the roots in the S-plane for |||| a given parameter that varies over a complete range of values

Addition of a pole to the open-loop transfer has the effect of |||| shifting the root-locus to the left, thereby decreasing the relative stability and increasing the settling time.

Frequency response of a system is defined as |||| The steady-state response to sinusoidal input signal.

A compensating network is added to |||| alter the locus of the roots as a parameter is varied

Performance of a control system can be described in terms of |||| time-domain performance measures or frequency –domain performance measures

The performance of a feedback control system in terms of frequency performance measures can be described by |||| peak of the closed-loop frequency response, resonant frequency, bandwidth and phase margin of the system.

In frequency response approach, compensation network is used to alter and reshape the system's characteristics represented on |||| "bode diagram and Nichols chart "

The design of the control system can be accomplished in the s-plane by root locus method |||| altering and reshaping the root locus so that the roots of the system lie in the desired position

The lag network acts as a_____filter. |||| low pass

For a lead compensator a_____ is nearer to the origin. |||| Zero

. The lead network acts as a_____filter. |||| high pass

. The lag-lead network acts as a_____filter. |||| "band pass"

. A Closed loop system pole location can be arbitrarily placed if and only if the system is |||| linear

. Phase variables are defined as those state variables which are obtained from |||| one of the system variable and its derivatives

. Principle of duality, according to kalman ,can be used to establish analogies |||| controllability and sensitivity

The type 1 system has a finite non-zero value of |||| KA

The type two system has |||| two pole at the origin

The transfer function of a system is 10/1+s. The steady state error to unit step input when operated at a unity feed back system is |||| unity

An on-off controller is |||| "Non-Linear controller"

The time required for the response to reach the half the final value for the first time is |||| delay time

Introduction of integral action changes the system…….. |||| from type 1 to type 2

The AC Servo motor is suitable for |||| low power application devices

The Stepper motor is . |||| a digital devices

The synchro is |||| an electromagnetic transducer

Three block with gain of 4, 6 & 8 are connected in parallel. The total gain of the arrangement is |||| 18

The transfer function is defined only for. |||| Linear and time invariant system

Block diagrams can be used to represent |||| Both linear and non linear systems

Signal flow graph can be used to represent |||| Only linear system

In a signal flow graph the node represent |||| the system variable

A node which has the out going branches is called |||| Input node

Three blocks with gains of 5, 8 and 4 are connected in a cascade. The total gain of the arrangement is |||| 160

Three blocks with gains of 4,6 and 8 are connected in a cascade. The total gain of the arrangement is |||| 192

In electric circuit the power dissipating elements are |||| Resistance

open loop control systems |||| They are generally stable

Traffic light control system is a |||| time variant system

Voltage stabilizer is a |||| optimal control system

A signal flow graph is diagram that represents a set of |||| Simultaneous linear algebraic equation

The loops are said to be Non-touching if they do not have |||| Common node

The basic element of the thermal systems are |||| thermal resistance and thermal capacitance

The basic element of Automatic control system |||| error detector

In an electric circuit the energy storing elements are |||| Inductance, Resistance

Time derivative of position control system is called |||| servo mechanism

The model of mechnical system can be obtained by using |||| Three element

The dash pot will offer an opposing force,whick is proportional to |||| Velocity

The mass will offering an opposing force whick is proportional to |||| Acceleration

The spring will offering an opposing force which is proportional to |||| Displacement

A node which has only outgoing branches is called a |||| Input node

The Mason's gain formula is used to find the |||| Transfer function of the system

The dashpot is a mechanical system is analogous to the following in a loop system of an electric circuit |||| Resistance

The Dashpot is a mechanical system is analogous to the following in a Nodal system of an electric circuit |||| Conductance

The Mass is a mechanical system is analogous to the following in a Nodal system of an electric circuit |||| Capacitance

The Mass is a mechanical system is analogous to the following in a Loop system of an electric circuit |||| Inductance

The Linear spring is a mechanical system is analogous to the following in a Loop system of an electric circuit |||| Reciprocal of capacitance

The Linear spring is a mechanical system is analogous to the following in a Nodal system of an electric circuit |||| Reciprocal of Inductance

The Stepper motor has the following advantages |||| it is highly efficient only

Torque -Voltage analogy of Moment of Inertia is |||| Inductance.

Torque -Voltage analogy of stiffness of the spring is |||| Reciprocal of capacitance

Torque -Current analogy of stiffness of the spring is |||| Reciprocal of Inductance

Torque -Current analogy of moment of inertia is |||| Capacitance

Torque -Current analogy of angular displacement is |||| Flux

In open loop system |||| the control action is independent of the output

In closed loop control system, with the positive value of feedback gain the overall gain of the system |||| Decrease

A.C Servo motor is also known as |||| Two phase induction motor

Example of a closed loop system |||| Auto pilot for an Aircraft

The transient response, with feedback system |||| Decays quickly

Zero initial condition for a system means |||| System is at rest and no energy is stored in any of its components

This is not a final control element in process control systems |||| Potentiometer

A node which has both incoming and outgoing branches is called a |||| mixed node

The system that has the tendency to oscillate is |||| Open loop system

Which of the following is an open loop control system |||| Field controlled DC Generator

A good control system has all the following features except |||| Slow response

Regenerative feedback implies feed back with |||| Step input

As a result of introduction of negative feedback which of the following will not increase? |||| Bandwidth

A node which has only incoming branches is called a |||| output node

A closed loop system is distinguished from open loop system by which of the following |||| Feedback

A control system working under unknown random action is called |||| Stochastic control system

The part of the human temperature control system is |||| Perspiration system

This signal will become zero when the feedback signal and reference signal are equal |||| Actuating signal

Which of the following can be measured by the use of a tacho-generator? |||| Speed

Which of the following is the input to a controller? |||| Error signal

The On-Off controller is a …… system |||| Non-linear