

NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch : BE /ECE	Year / Semester : II/III	Format No.	NAC/TLP-07a.13
Subject Code : EC8391	Subject Name : CONTROL SYSTEMS ENGINEERING	Rev. No.	02
Unit No : 4	Unit Name : STABILITY ANALYSIS	Date	30.09.2020

OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
1.	Stability of a system implies that : a) Small changes in the system input does not result in large change in system output b) Small changes in the system parameters does not result in large change in system output c) Small changes in the initial conditions does not result in large change in system output d) All of the above mentioned	L2
2.	A linear time invariant system is stable if : a) System in excited by the bounded input, the output is also bounded b) In the absence of input output tends zero c) Both a and b d) System in excited by the bounded input, the output is not bounded	L2
3.	Asymptotic stability is concerned with: a) A system under influence of input b) A system not under influence of input c) A system under influence of output d) A system not under influence of output	L2
4.	Bounded input and Bounded output stability notion concerns with : a) A system under influence of input b) A system not under influence of input c) A system under influence of output d) A system not under influence of output	L1
5.	If a system is given unbounded input then the system is: a) Stable b) Unstable c) Not defined d) Linear	L1
6.	Linear mathematical model applies to : a) Linear systems b) Stable systems c) Unstable systems d) Non-linear systems	L1
7.	For non-linear systems stability cannot be determined due to: a) Possible existence of multiple equilibrium states b) No correspondence between bounded input and bounded output stability and asymptotic stability c) Output may be bounded for the particular bounded input but may not be bounded for the bounded inputs d) All of the mentioned	L1
8.	If the impulse response is absolutely integrable then the system is : a) Absolutely stable b) Unstable c) Linear d) Stable	L1
9.	The roots of the transfer function do not have any effect on the stability of the system. a) True	L2

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	b) False	
10.	Roots with higher multiplicity on the imaginary axis makes the system : a) Absolutely stable b) Unstable c) Linear d) Stable	L1
11.	Roots on the imaginary axis makes the system : a) Stable b) Unstable c) Marginally stable d) Linear	L1
12.	If the roots of the have negative real parts then the response is _____ a) Stable b) Unstable c) Marginally stable d) Bounded	L1
13.	If root of the characteristic equation has positive real part the system is : a) Stable b) Unstable c) Marginally stable d) Linear	L1
14.	A linear system can be classified as : a) Absolutely stable b) Conditionally stable c) Unstable d) All of the mentioned	L1
15.	_____ is a quantitative measure of how fast the transients die out in the system. a) Absolutely stable b) Conditionally stable c) Unstable d) Relative Stability	L1
16.	The techniques of linear system can be used in the non-linear system entirely: a) True b) False	L2
17.	The disadvantages of the linear system are: a) The constraints on the linear operation over wide range demands unnecessarily high quality. b) The restriction to the linear theory may inhibit the designer's curiosity to deliberately introduce the non-linear components. c) Practically systems are non-linear d) All of the mentioned	L1

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18.	System non-linearities are taken account by: a) Analytical b) Graphical and numerical techniques c) Both a and b d) None of the mentioned	L1
19.	The superposition theorem is : a) Homogeneity b) Additivity c) Combination of homogeneity and additivity d) Applied to non-linear systems	L1
20.	The standard test signal can be applied to give output to: a) Linear systems b) Non-linear systems c) Time variant systems d) Time invariant systems	L1
21.	The non-linear systems: a) Do not obey superposition theorem b) May be highly sensitive to the input amplitude c) Laplace and z transform are not applicable to the non-linear systems d) All of the mentioned	L1
22.	The stability of the linear system: a) Determined by the location of the poles b) Dependent entirely of whether or the system is driven c) The stability of the undriven linear system is dependent on the magnitude of the final initial state. d) Stability cannot be determined by the open loop poles	L1
23.	In non-linear system stability is : a) Dependent on the input b) Independent on initial state c) Independent on input d) Dependent on input and initial state	L1
24.	The necessary condition of stability are: a) Coefficient of characteristic equation must be real and have the same sign b) Coefficient of characteristic equation must be non-zero c) Both of the mentioned d) Coefficient of characteristic equation must be zero	L1

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25.	None of the coefficients can be zero or negative unless one of the following occurs: a) One or more roots have positive real parts b) A root at origin c) Presence of root at the imaginary axis d) All of the mentioned	L1
26.	The Positiveness of the coefficients of characteristic equation is necessary as well as sufficient condition for: a) First order system b) Second order system c) Third order system d) None of the mentioned	L2
27.	Routh Hurwitz criterion gives: a) Number of roots in the right half of the s-plane b) Value of the roots c) Number of roots in the left half of the s-plane d) Number of roots in the top half of the s-plane	L1
28.	Routh Hurwitz criterion cannot be applied when the characteristic equation of the system containing coefficient's which is/are a) Exponential function of s b) Sinusoidal function of s c) Complex d) Exponential and sinusoidal function of s and complex	L2
29.	Consider the following statement regarding Routh Hurwitz criterion: a) It gives absolute stability b) It gives gain and phase margin c) It gives the number of roots lying in RHS of the s-plane d) It gives gain, phase margin and number of roots lying in RHS of the s-plane	L1
30.	The order of the auxiliary polynomial is always: a) Even b) Odd c) May be even or odd d) None of the mentioned	L2
31.	Which of the test signals are best utilized by the stability analysis. a) Impulse b) Step c) Ramp d) Parabolic	L1

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32.	The characteristic equation of a system is given as $3s^4+10s^3+5s^2+2=0$. This system is : a) Stable b) Marginally stable c) Unstable d) Linear	L1
33.	The characteristic equation of a system is given as $s^3+25s^2+10s+50=0$. What is the number of the roots in the right half s-plane and the imaginary axis respectively? a) 1,1 b) 0,0 c) 2,1 d) 1,2	L3
34.	Consider the following statement: a) A system is said to be stable if its output is bounded for any input b) A system is said to be stable if all the roots of the characteristic equation lie on the left half of the s plane. c) A system is said to be stable if all the roots of the characteristic equation have negative real parts. d) A second order system is always stable for finite values of open loop gain	L1
35.	The necessary condition for the stability of the linear system is that all the coefficients of characteristic equation $1+G(s)H(s)=0$, be real and have the : a) Positive sign b) Negative sign c) Same sign d) Both positive and negative	L2
36.	For making an unstable system stable: a) Gain of the system should be increased b) Gain of the system should be decreased c) The number of zeroes to the loop transfer function should be increased d) The number of poles to the loop transfer function should be increased	L1
37.	Which one of the following statements is not correct? a) Root loci can be used for analyzing stability and transient performance b) Root loci provide insight into system stability and performance c) Shape of the root locus gives idea of type of controller needed to meet design specification d) Root locus can be used to handle more than one variable at a time	L2
38.	The main objective of drawing root locus plot is : a) To obtain a clear picture about the open loop poles and zeroes of the system b) To obtain a clear picture about the transient response of feedback system for various values of open loop gain K c) To determine sufficient condition for the value of 'K' that will make the feedback system unstable d) Both b and c	L2

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39.	While increasing the value of gain K, the system becomes a) Less stable b) More stable c) Unstable d) Absolute stable	L3
40.	Root locus of $s(s+2)+K(s+4)=0$ is a circle. What are the coordinates of the center of this circle? a) -2,0 b) -3,0 c) -4,0 d) -5,0	L4
41.	The addition of open loop poles pulls the root locus towards: a) The right and system becomes unstable b) Imaginary axis and system becomes marginally stable c) The left and system becomes unstable d) The right and system becomes unstable	L2
42.	Root locus is used to calculate: a) Marginal stability b) Absolute stability c) Conditional stability d) Relative stability	L1
43.	Routh Hurwitz criterion is better than root locus. a) True b) False	L2
44.	Number of roots of characteristic equation is equal to the number of _____ a) Branches b) Root c) Stem d) Poles	L1
45.	Which of the following statements are correct? a) Root locus is for the negative feedback systems b) Complementary root locus is for the positive feedback systems c) Root locus is for the negative feedback and Complementary root locus is for the positive feedback systems d) Complementary root locus is for the negative feedback systems	L2