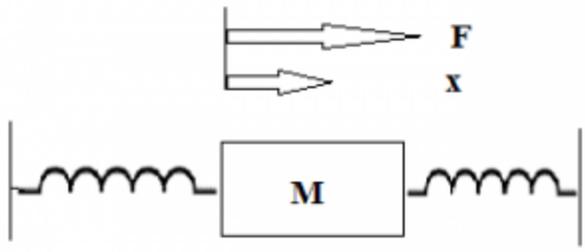| Id	1
Question	Consider a simple mass spring friction system as given in the figure K1, K2 are spring constants f-friction, M-Mass, F-Force, x-Displacement. The transfer function X(s)/F(s) of the given system will be
A	1/(Ms2+fs+K1.K2)
B	1/(Ms2+fs+K1+K2)
C	1/(Ms2+fs+K1.K2/K1+K2)
D	K2/(Ms2+fs+K1)
Marks	1.5
Unit	1

Id	2
Question	The output of an first order hold between two consecutive sampling instants is:
A	Constant
B	Quadratic Function
C	Ramp Function
D	Exponential Function
Marks	1.5
Unit	2

Id	3
Question	Which of the following is an example of an open loop system?
A	Household Refrigerator
B	Respiratory system of an animal
C	Stabilization of air pressure entering into the mask
D	Execution of program by computer
Marks	1.5
Unit	1

Id	4
Question	Which of the following is not the feature of modern control system?
A	Quick response
B	Accuracy
C	Correct power level
Answer	D
Marks	1.5
Unit	1

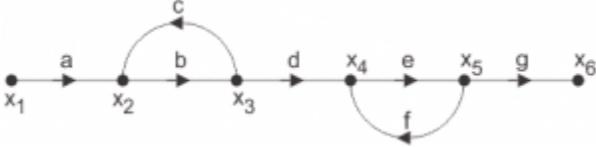| Id	5
Question	The output of the feedback control system must be a function of:
A	Reference input
B	Reference output
C	Output and feedback signal
D	Input and feedback signal
Marks	1.5
Unit	1

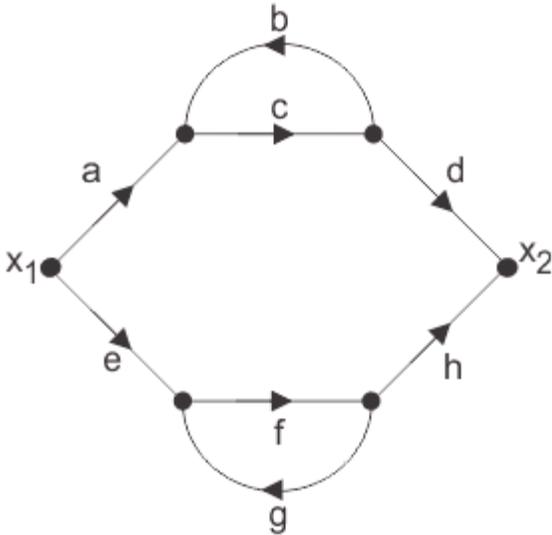| Id	6
Question	The principle of homogeneity and superposition are applied to:
A	Linear time invariant systems
B	Nonlinear time invariant systems
C	Linear time variant systems
D	Nonlinear time invariant systems
Marks	1.5
Unit	1

Id	7
Question	In regenerating the feedback, the transfer function is given by
A	C(s)/R(s)=G(s)/1+G(s)H(s)
B	C(s)/R(s)=G(s)H(s)/1-G(s)H(s)
C	C(s)/R(s)=G(s)/1+G(s)H(s)
D	C(s)/R(s)=G(s)/1-G(s)H(s)
Marks	1.5
Unit	2

Id	8
Question	A transfer function has two zeroes at infinity. Then the relation between the numerator(N) and the denominator degree(M) of the transfer function is:
A	N=M+2
B	N=M-2
C	N=M+1
D	N=M-1
Marks	1.5
Unit	1

Id	9
Question	When deriving the transfer function of a linear element
A	Both initial conditions and loading are taken into account
B	Initial conditions are taken into account but the element is assumed to be not loaded
C	Initial conditions are assumed to be zero but loading is taken into account
D	Initial conditions are assumed to be zero and the element is assumed to be not loaded
Marks	1.5
Unit	1

Id	10
Question	A node having only outgoing branches.
A	Input node
B	Output node
C	Incoming node
D	Outgoing node
Marks	1.5
Unit	1

Id	11
Question	Use mason's gain formula to find the transfer function of the given signal flow graph:
A	abd/1-(ac)
B	abdeg/1-(bc+ef)+bcef
C	abd/1-(bc+ef)+bcef
D	adcdef/1-(bc+ef)+bcef
Marks	1.5
Unit	1

Id	12
Question	Use mason's gain formula to find the transfer function of the following signal flow graph:
A	abcd+efg/1-cd-fg-cdfg
B	acdfg+bcefg/1-cd-fg-cdfg
C	abef+bcd/1-cd-fg-cdfg
D	adcdefg/1-cd-fg-cdfg
Marks	1.5
Unit	1

Id	13
Question	Loop which do not possess any common node are said to be _____ loops.
A	Forward gain
B	Touching loops
C	Non touching loops
D	Feedback gain
Marks	1.5
Unit	1

Id	14
Question	Signal flow graphs:
A	They apply to linear systems
B	The equation obtained may or may not be in the form of cause or effect
C	Arrows are not important in the graph
D	They cannot be converted back to block diagram
Marks	1.5
Unit	1

Id	15
Question	The relationship between an input and output variable of a signal flow graph is given by the net gain between the input and output node is known as the overall_____
A	Overall gain of the system
B	Stability
C	Bandwidth
D	Speed
Marks	1.5
Unit	1

Id	16
Question	Use mason's gain formula to calculate the transfer function of given figure:
A	G1/1+G2H
B	G1+G2/1+G1H
C	G2/1+G1H
D	None of the mentioned
Marks	1.5
Unit	1
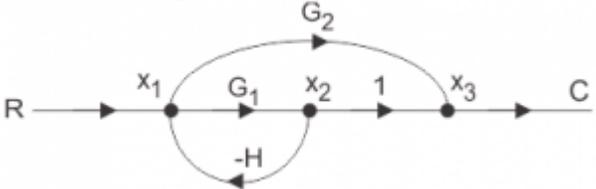
Id	17
Question	Use mason's gain formula to find the transfer function of the given figure:
A	G1+G2
B	G1+G1/1-G1H+G2H
C	G1+G2/1+G1H+G2H
D	G1-G2
Marks	1.5
Unit	1
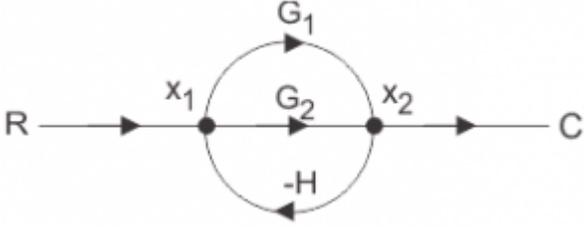
Id	18
Question	Consider the block diagram shown below: If the transfer function of the system is given by T(s)=G1G2+G2G3/1+X. Then X is:
A	G2G3G4
B	G2G4
C	G1G2G4
D	G3G4
Marks	1.5
Unit	1

Id	19
Question	For the block diagram given in the following figure, the expression of C/R is:
A	G1G2G3/1-G2G1
B	G1G2/1-G1G2G3
C	G1G2G3/1-G1G2G3
D	G1G2/G3(1-G1G2)
Marks	1.5
Unit	1

Id	20
Question	The overall transfer function from block diagram reduction for cascaded blocks is :
A	Sum of individual gain
B	Product of individual gain
C	Difference of individual gain
D	Division of individual gain
Marks	1.5
Unit	1

Id	21
Question	The overall transfer function of two blocks in parallel are :
A	Sum of individual gain
B	Product of individual gain
C	Difference of individual gain
D	Division of individual gain
Marks	1.5
Unit	1

Id	22
Question	Transfer function of the system is defined as the ratio of Laplace output to Laplace input considering initial conditions_____
A	1
B	2
C	0
D	infinite
Marks	1.5
Unit	1

Id	23
Question	Oscillations in output response is due to :
A	Positive feedback
B	Negative feedback
C	No feedback
D	None of the mentioned
Marks	1.5
Unit	1

Id	24
Question	Benefits of feedback:
A	Performance of system is greater.
B	Need for system much larger path gain and system instability.
C	Controlled variable accurately follows the desired value
D	Affected by parameter variations
Marks	1.5
Unit	1

Id	25
Question	Consider the following statements with respect to the feedback of the control systems: 1. Feedback can improve stability or be harmful to stability if it is not properly applied. 2. Feedback can always improve stability 3. In many situations the feedback can reduce the effect of noise and disturbance on system performance. 4. In general the sensitivity of the system gain of a feedback system of a parameter variation depends on where the parameter is located.
A	1,2 and 3 only
B	1,3 and 4 only
C	1,2 and 4 only
D	1,2,3 and 4 only
Marks	1.5
Unit	1

Id	26
Question	The closed system has higher _____ than open loop control system, this implies increased speed of response.
A	Gain
B	Bandwidth
C	Frequency
D	Speed
Marks	1.5
Unit	1

Id	27
Question	Multiple signals as input can be used in which systems:
A	Feedback systems
B	Non feedback systems
C	Feedforward systems
D	None of the mentioned
Marks	1.5
Unit	1

Id	28
Question	Feedback can cause a system that is originally stable to become_____
A	Stable
B	Unstable
C	Conditionally stable
D	Either more stable or unstable
Marks	1.5
Unit	3

Id	29
Question	Regenerative feedback implies feedback with
A	Oscillations
B	Step input
C	Negative sign
D	Positive sign
Marks	1.5
Unit	2

Id	30
Question	The output of a feedback control system must be a function of
A	Reference and output
B	Reference and input
C	Input and feedback signal
D	Output and feedback signal
Marks	1.5
Unit	1

Id	31
Question	A control system with excessive noise, is likely to suffer from
A	Saturation in amplifying stages
B	Loss of gain
C	Vibrations
D	Oscillations
Marks	1.5
Unit	2

Id	32
Question	Zero initial condition for a system means
A	Input reference signal is zero
B	Zero stored energy
C	Initial movement of moving parts
D	System is at rest and no energy is stored in any of its components
Marks	1.5
Unit	2

Id	33
Question	Transfer function of a system is used to calculate which of the following?
A	The order of the system
B	The time constant
C	The output for any given input
D	The steady state gain
Marks	1.5
Unit	1

Id	34
Question	The transient response, with feedback system,
A	Rises slowly
B	Rises quickly
C	Decays slowly
D	Decays quickly
Marks	1.5
Unit	2

Id	35
Question	The second derivative input signals modify which of the following?
A	The time constant of the system
B	Damping of the system
C	The gain of the system
D	The time constant and suppress the oscillations
Marks	1.5
Unit	2

Id	36
Question	In an automatic control system which of the following elements is not used?
A	Error detector
B	Final control element
C	Sensor
D	Oscillator
Marks	1.5
Unit	1

Id	37
Question	In a control system the output of the controller is given to
A	Final control element
B	Amplifier
C	Comparator
D	Sensor
Marks	1.5
Unit	1

Id	38
Question	A controller, essentially, is a
A	Sensor
B	Clipper
C	Comparator
D	Amplifier
Marks	1.5
Unit	1

Id	39
Question	Which of the following is the input to a controller?
A	Servo signal
B	Desired variable value
C	Error signal
D	Sensed signal
Marks	1.5
Unit	1

Id	40
Question	The on-off controller is a _____ system.
A	Digital
B	Linear
C	Non-linear
D	Discontinuous
Marks	1.5
Unit	1

Id	41
Question	The capacitance, in force-current analogy, is analogous to
A	Momentum
B	Velocity
C	Displacement
D	Mass
Marks	1.5
Unit	1

Id	42
Question	The temperature, under thermal and electrical system analogy, is considered analogous to
A	Voltage
B	Current
C	Capacitance
D	Charge
Marks	1.5
Unit	1

Id	43
Question	In electrical-pneumatic system analogy the current is considered analogous to
A	Velocity
B	Pressure
C	Air flow
D	Air flow rate
Marks	1.5
Unit	1

Id	44
Question	The use of feedback element in the feedback loop is:
A	It converts the output variable 'c' to another suitable feedback variable 'b' to compare with the input command signal.
B	It is the actuating element
C	To increase the stability
D	None of the mentioned
Marks	1.5
Unit	1

Id	45
Question	The major components of a controller are:
A	Control element
B	Error detector and control element
C	Feedback element
D	Error detector and feedback element
Marks	1.5
Unit	1

Id	46
Question	Practically all the elements are:
A	Linear
B	Non-linear
C	Exponential
D	None of the mentioned
Marks	1.5
Unit	1

Id	47
Question	The need of assuming non-linear element as linear:
A	Simplicity of analysis and accuracy of results
B	Ease of calculations
C	Less time consuming
D	Mathematical tool available
Marks	1.5
Unit	1

Id	48
Question	The effect of adding feedback makes the system_____
A	Linear
B	Non-linear
C	Time variant
D	Time invariant
Marks	1.5
Unit	1

Id	49
Question	The relation between output response and input signal in closed loop system is :
A	Exponential
B	Parabolic
C	Linear
D	Nonlinear
Marks	1.5
Unit	1

Id	50
Question	Assertion (A): Practical systems must be closed loop system. Reason (R): This is due to the fact that closed loop systems are least affected by parameter variations, stable, higher bandwidth, linear and more speed of response.
A	Both A and R are true and R is the correct explanation of A.
B	Both A and R are true but R is not the correct explanation of A.
C	A is true but R is false.
D	A is false but R is true.
Marks	1.5
Unit	1

Id	51
Question	Regenerative feedback is also called as_____
A	Negative feedback
B	Positive feedback
C	No feedback
D	Negative and Positive Fee
Marks	1.5
Unit	1

Id	52
Question	Which of the following are the characteristics of regenerative feedback:
A	Zero damping
B	Stable
C	Least sensitive to parameter variations
D	None of the mentioned
Marks	1.5
Unit	2

Id	53
Question	Which of the following are true:
A	Sensitivity of regenerative feedback is more than negative feedback but less than non-feedback system
B	Sensitivity of regenerative feedback is more non-feedback system but less than negative feedback system
C	Sensitivity of regenerative feedback is less than both
D	Sensitivity of regenerative feedback is more than both
Marks	1.5
Unit	3

Id	54
Question	Which of the following statements is correct for any closed loop system?
A	All the co-efficient can have zero value
B	All the co-efficient are always non-zero
C	Only one of the static error co-efficient has a finite non-zero value
D	None of the mentioned
Marks	1.5
Unit	1

Id	55
Question	What is the algebraic sum of the reference input and feedback?
A	Error Signal
B	Error Detector
C	Controlled system
D	Controlled output
Marks	1.5
Unit	1

Id	56
Question	Which principle does the linear system follow?
A	Principle of energy conservation
B	Principle of mass conservation
C	Principle of electromagnetism
D	Principle of superposition
Marks	1.5
Unit	1

Id	57
Question	_____ control systems have unpredictable & non-repeatable.
A	Static
B	Dynamic
C	Deterministic
D	Stochastic
Marks	1.5
Unit	1

Id	58
Question	On what difference does the pneumatic system works?
A	Speed
B	Pressure
C	Area
D	Length
Marks	1.5
Unit	1

Id	59
Question	In a thermal system, the temperature of the medium is _____
A	increasing
B	decreasing
C	zero
D	uniform
Marks	1.5
Unit	1

Id	60
Question	How many parameters does process control refer to?
A	1
B	3
C	5
D	7
Marks	1.5
Unit	1

Id	61
Question	What is the effect of feedback in the overall gain of the system?
A	Increases
B	Decreases
C	Zero
D	No change
Marks	1.5
Unit	1

Id	62
Question	In a temperature control system, what conversion in signal takes place?
A	Digital to Analog
B	Analog to Digital
C	Error to Digital
D	Error to Analog
Marks	1.5
Unit	1

Id	63
Question	Transient response analysis is done for_____ systems.
A	Unstable
B	Stable
C	Conditionally stable
D	Marginally stable
Marks	1.5
Unit	2

Id	64
Question	The input signals to control systems are not known fully ahead of time, the characteristics of control system which suddenly strain a control system are:
A	Sudden shock
B	Sudden change
C	Constant velocity and acceleration
D	All of the mentioned
Marks	1.5
Unit	2

Id	65
Question	Standard test signals in control system are:
A	Impulse signal
B	Ramp signal
C	Unit step signal
D	All of the mentioned
Marks	1.5
Unit	2

Id	66
Question	The nature of transient response is revealed by _____
A	Sine wave
B	Cos wave
C	Tan wave
D	Test signals
Marks	1.5
Unit	2

Id	67
Question	Step signal is the signal whose values is :
A	1 for all values greater than zero
B	Indeterminate at zero
C	It is zero for time less than zero
D	All of the mentioned
Marks	1.5
Unit	2

Id	67
Question	Ramp input :
A	Denotes constant velocity
B	Value increases linearly with time
C	It denotes constant velocity and varies linearly with time
D	It varies exponentially with time
Marks	1.5
Unit	2

Id	68
Question	To find system's response by means of convolution integral _____ of the system is used.
A	Sum
B	Difference
C	Exponential
D	Weighing
Marks	1.5
Unit	2

Id	69
Question	First order system is defined as :
A	Number of poles at origin
B	Order of the differential equation
C	Total number of poles of equation
D	Total number of poles and order of equation
Marks	1.5
Unit	2

Id	70
Question	A unit step is applied at t=0 to a first order system without time delay. The response has the value of 1.264 units at t=10 mins, and 2 units at steady state. The transfer function of the system is_____
A	3/(1+600s)
B	2/(1+500s)
C	5/(1+220s)
D	2/(1+600s)
Marks	1.5
Unit	2

Id	71
Question	The transfer function of the system is G(s) =100/(s+1) (s+100). For a unit step input to the system the approximate settling time for 2% criterion is:
A	100 sec
B	4 sec
C	1 sec
D	0.01 sec
Marks	1.5
Unit	2

Id	72
Question	A system with transfer function 1/Ts+1, subjected to a step input takes to seconds to reach 50% of step height. The value of t is :
A	6.9s
B	10s
C	14.4s
D	20s
Marks	1.5
Unit	2

Id	73
Question	Assertion (A): It is observed that step function is first derivative of a ramp function and impulse function is first derivative of a step function. Reason (R): From the derived time response expression it is concluded that the output time response also follows the same sequence as that of input functions.
A	Both A and R are true and R is the correct explanation of A
B	Both A and R are true but R is not correct explanation of A
C	Both A is True but R is false
D	Both A is False but R is true
Marks	1.5
Unit	2

Id	74
Question	Laplace transform of unit impulse signal is :
A	A/s
B	A
C	1
D	1/s
Marks	1.5
Unit	2

Id	75
Question	Which of the following transfer function will have the greatest maximum overshoot?
A	$9/(s^2+2s+9)$
B	$16/(s^2+2s+16)$
C	$25/(s^2+2s+25)$
D	$36/(s^2+2s+36)$
Marks	1.5
Unit	2

Id	76
Question	A system generated by control-systems-questions-answers-time-response-second-order-systems $\frac{dy}{dx} + 2y = 4tu(t).$ The ramp component in the forced response will be:
A	t u(t)
B	2t u(t)
C	3t u(t)
D	4t u(t)
Marks	1.5
Unit	2

Id	77
Question	The system in originally critically damped if the gain is doubled the system will be :
A	Remains same
B	Overdamped
C	Under damped
D	Undamped
Marks	1.5
Unit	2

Id	78
Question	Let c(t) be the unit step response of a system with transfer function K(s+a)/(s+K). If c(0+) = 2 and c(∞) = 10, then the values of a and K are respectively.
A	2 and 10
B	-2 and 10
C	10 and 2
D	2 and -10
Marks	1.5
Unit	2

Id	79
Question	The damping ratio and peak overshoot are measures of:
A	Relative stability
B	Speed of response
C	Steady state error
D	Absolute stability
Marks	1.5
Unit	2

Id	80
Question	A system has a complex conjugate root pair of multiplicity two or more in its characteristic equation. The impulse response of the system will be:
A	A sinusoidal oscillation which decays exponentially; the system is therefore stable
B	A sinusoidal oscillation with a time multiplier ; the system is therefore unstable
C	A sinusoidal oscillation which rises exponentially ; the system is therefore unstable
D	A dc term harmonic oscillation the system therefore becomes limiting stable
Marks	1.5
Unit	2

Id	81
Question	The forward path transfer function is given by G(s) = 2/s(s+3). Obtain an expression for unit step response of the system.
A	1+2e-t+e-2t
B	1+e-t-2e-2t
C	1-e-t+2e-2t
D	1-2e-t+e+2t
Marks	1.5
Unit	2

Id	82
Question	Find the initial and final values of the following function: F(s) = 12(s+1)/s(s+2)^2(s+3)
A	1,∞
B	0,∞
C	∞,1
D	0,1
Marks	1.5
Unit	2

Id	83
Question	The step response of the system is c(t) = 10+8e-t-4/8e-2t . The gain in time constant form of transfer function will be:
A	-7
B	7
C	7.5
D	-7.5
Marks	1.5
Unit	2

Id	84
Question	What will be the nature of time response if the roots of the characteristic equation are located on the s-plane imaginary axis?
A	Oscillations
B	Damped oscillations
C	No oscillations
D	Under damped oscilaations
Marks	1.5
Unit	2

Id	85
Question	Consider a system with transfer function $G(s) = s+6/Ks^2+s+6$. Its damping ratio will be 0.5 when the values of k is:
A	2/6
B	3
C	1/6
D	6
Marks	1.5
Unit	2

Id	86
Question	The output in response to a unit step input for a particular continuous control system is c(t)= 1-e-t. What is the delay time Td?
A	0.36
B	0.18
C	0.693
D	0.289
Marks	1.5
Unit	2

Id	87
Question	Which one of the following is the most likely reason for large overshoot in a control system?
A	High gain in a system
B	Presence of dead time delay in a system
C	High positive correcting torque
D	High retarding torque
Marks	1.5
Unit	2

Id	88
Question	For the system 2/s+1, the approximate time taken for a step response to reach 98% of its final value is:
A	1s
B	2s
C	4s
D	8s
Marks	1.5
Unit	2

Id	89
Question	The unit step response of a second order system is = 1-e-5t-5te-5t . Consider the following statements: 1. The under damped natural frequency is 5 rad/s. 2. The damping ratio is 1. 3. The impulse response is 25te-5t. Which of the statements given above are correct?
A	Only 1 and 2
B	Only 2 and 3
C	Only 1 and 3
D	1,2 and 3
Marks	1.5
Unit	2

Id	90
Question	The standard second order system to a unit step input shows the 0.36 as the first peak undershoot, hence its second overshoot is:
A	0.135
B	0.216
C	0.1296
D	0.116
Marks	1.5
Unit	2

Id	91
Question	Consider the input with the inputs 4 u(t) and the impulse response 5 +7 , the time constants of the output are,
A	0.2, 0.33 and 0.5
B	4.5 and 7
C	0.2, 0.4 and 0.7
D	0.2, 0.1 and 0.25
Marks	1.5
Unit	2

Id	92
Question	In a second order feedback control system natural frequency and damping
A	Can be designed by changing the gain of the individual system
B	Cannot be designed by changing the gain of the individual system
C	Are independent on the type of input excitation
D	None of the mentioned
Marks	1.5
Unit	2

Id	93
Question	Undamped natural frequency of a second order system has the following influence on the response due to various excitations:
A	Increase in speed of response and decrease sensitivity
B	Decrease in speed of response and increase sensitivity
C	Has no influence in the dynamic response
D	Increase oscillatory behavior
Marks	1.5
Unit	2

Id	94
Question	The transfer function of a system is G(s) = 100/(s+1) (s+100). For a unit step input to the system the approximate settling time for 2% criterion is:
A	100 sec
B	4 sec
C	1 sec
D	0.01 sec
Marks	1.5
Unit	2

Id	95
Question	The characteristic equation of a control system is $s(s^2+ 6s+13)+K=0$. The value of k such that the characteristic equation has a pair of complex roots with real part -1 will be :
A	10
B	20
C	30
D	40
Marks	1.5
Unit	3

Id	96
Question	Normalized difference between the time response peak and steady state output is _____
A	Maximum peak overshoot
B	Damping factor
C	Minimum peak overshoot
D	Undershoot
Marks	1.5
Unit	2

Id	97
Question	Control system are normally designed to be:
A	Overdamped
B	Under damped
C	Un damped
D	Critically damped
Marks	1.5
Unit	2

Id	98
Question	Which of the following quantities give a measure of the transient characteristics of a control system, when subjected to unit step excitation. 1. Maximum overshoot 2. Maximum undershoot 3. Overall gain 4. Delay time 5. Rise time 6. Fall time
A	1,3 and 5
B	2, 4 and 5
C	2,4 and 6
D	1,4 and 5
Marks	1.5
Unit	2

Id	99
Question	Consider a second order all-pole transfer function model, if the desired settling time(5%) is 0.60 sec and the desired damping ratio 0.707, where should the poles be located in s-plane?
A	-5+j4√2
B	-5+j5
C	-4+j5√2
D	-4+j7
Marks	1.5
Unit	3

Id	100
Question	The peak percentage overshoot of the closed loop system is :
A	5.0%
B	10.0%
C	16.3%
D	1.63%
Marks	1.5
Unit	2

Id	101
Question	The disadvantages of the error constants are:
A	They do not give the information of the steady state error when the inputs are other than the three basic types
B	Error constant fail to indicate the exact manner in which the error function change with time.
C	They do not give information of the steady state error and fail to indicate the exact manner in which the error function change with time
D	They give information of the steady state error
Marks	1.5
Unit	2

Id	102
Question	Steady state refers to
A	Error at the steady state
B	Error at the transient state
C	Error at both state
D	Precision
Marks	1.5
Unit	2

Id	103
Question	A particular control system yielded a steady state error of 0.20 for unit step input. A unit integrator is cascaded to this system and unit ramp input is applied to this modified system. What is the value of steady-state error for this modified system?
A	0.10
B	0.15
C	0.20
D	0.25
Marks	1.5
Unit	2

Id	104
Question	Consider the unity feedback system with open loop transfer function the minimum value of the steady state error to a ramp input r(t) = 6tu(t) is OLTF = K/s(s+1)(s+2)
A	1
B	2
C	3
D	4
Marks	1.5
Unit	2

Id	105
Question	Which among the following is a unique model of a system?
A	Transfer function
B	State variable
C	Block diagram
D	Signal flow graphs
Marks	1.5
Unit	1

Id	106
Question	Which among the following is a disadvantage of modern control theory?
A	Implementation of optimal design
B	Transfer function can also be defined for different initial conditions
C	Analysis of all systems take place
D	Necessity of computational work
Marks	1.5
Unit	1

Id	107
Question	Consider the assertions related to block diagram. Which among them represents the precise condition? A. Block diagram is used for analysis & design of control system. B. Block diagram also provides the information regarding the physical construction of the system.
A	A is true, B is false
B	A is false, B is true
C	Both A & B are true
D	Both A & B are false
Marks	1.5
Unit	1

Id	108
Question	According to signal flow graph, which among the following represents the relationship between nodes by drawing a line between them?
A	Branch
B	Self-loop
C	Semi-node
D	Mesh
Marks	1.5
Unit	1

Id	109
Question	Where are the dummy nodes added in the branch with unity gain?
A	At input & output nodes
B	Between chain nodes
C	Both a and b
D	None of the above
Marks	1.5
Unit	1

Id	110
Question	In second order system, which among the following remains independent of gain (k)?
A	Open loop poles
B	b. Closed loop poles
C	c. Both a and b
D	d. None of the above
Marks	1.5
Unit	2

Id	111
Question	Which condition is used to verify the existence of a particular point on the root locus?
A	Amplitude
B	Frequency
C	Magnitude
D	Angle
Marks	1.5
Unit	3

Id	112
Question	If finite number of blocks are connected in series or cascade configuration, then how are the blocks combined algebraically?
A	addition
B	By multiplication
C	By differentiation
D	By integration
Marks	1.5
Unit	1

Id	113
Question	In a signal flow graph method, how is an overall transfer function of a system obtained?
A	Poisson's equation
B	Block diagram reduction rules
C	Mason's equation
D	Lagrange's equation
Marks	1.5
Unit	1

Id	114
Question	In Routh array, if zero is found in the first column, then by which term it needs to be replaced?
A	δ
B	η
C	σ
D	ε
Marks	1.5
Unit	3

Id	115
Question	In a second order system, if the damping ratio is greater than equal to '1', then what would be the nature of roots?
A	Imaginary
B	Real and equal
C	Real but not equal
D	Complex conjugate
Marks	1.5
Unit	2

Id	116
Question	For drawing root locus, the angle of asymptote yields the direction along which _____branches approach to infinity.
A	p + z
B	p − z
C	p / z
D	p x z
Marks	1.5
Unit	3

Id	117
Question	Which point on root locus specifies the meeting or collision of two poles?
A	Centroid
B	Break away point
C	Stability point
D	Anti-break point
Marks	1.5
Unit	3

Id	118
Question	Match the following notations with their meanings: A. G(s) ————— 1) Laplace of error signal B. H(s) ————— 2) Laplace of output signal C. C(s) ————— 3) Forward transfer function D. E(s) ————— 4) Feedback transfer function
A	A- 2, B- 3, C- 1, D- 4
B	A- 3, B- 4, C- 2, D- 1
C	A- 2, B- 3, C- 4, D- 1
D	A- 1, B- 2, C- 3, D- 4
Marks	1.5
Unit	1

Id	119
Question	At which condition of 'ξ', resonant peak does not exist and its maximum value is considered to be unity along with zero resonant frequency?
A	$0 < \xi < 0.707$
B	$\xi > 0.707$
C	$\xi = 0$
D	$\xi = 1$
Marks	1.5
Unit	2

Id	120
Question	If the damping of the system becomes equal to zero, which condition of the resonant frequency is likely to occur?
A	ωr = ωd
B	ωr > ωn
C	ωr < ωn
D	ωr = ωn
Marks	1.5
Unit	2

Id	121
Question	The output of a feedback control system must be a function of
A	Reference and output
B	Reference and input
C	Input and feedback signal
D	Output and feedback signal
Marks	1.5
Unit	1

Id	122
Question	A control system with excessive noise, is likely to suffer from?
A	Saturation in amplifying stages
B	Loss of gain
C	Vibrations
D	Oscillations
Marks	1.5
Unit	1

Id	123
Question	Zero initial condition for a system means?
A	Input reference signal is zero
B	Zero stored energy
C	Initial movement of moving parts
D	System is at rest and no energy is stored in any of its components
Marks	1.5
Unit	1

Id	124
Question	Transfer function of a system is used to calculate which of the following?
A	The order of the system
B	The time constant
C	The output for any given input
D	The steady state gain
Marks	1.5
Unit	1

Id	125
Question	The band width, in a feedback amplifier.
A	Remains unaffected
B	Decreases by the same amount as the gain increase
C	Increases by the same amount as the gain decrease
D	Decreases by the same amount as the gain decrease
Marks	1.5
Unit	3

Id	126
Question	On which of the following factors does the sensitivity of a closed loop system to gain changes and load disturbances depend?
A	Frequency
B	Loop gain
C	Forward gain
D	All of the mentioned
Marks	1.5
Unit	3

Id	127
Question	The transient response, with feedback system,
A	Rises slowly
B	Rises quickly
C	Decays slowly
D	Decays quickly
Marks	1.5
Unit	2

Id	128
Question	The second derivative input signals modify which of the following?
A	The time constant of the system
B	Damping of the system
C	The gain of the system
D	The time constant and suppress the oscillations
Marks	1.5
Unit	2

Id	129
Question	Which of the following statements is correct for any closed loop system?
A	All the co-efficient can have zero value
B	All the co-efficient are always non-zero
C	Only one of the static error co-efficient has a finite non-zero value
D	Only two of the static error co-efficient has a finite non-zero value
Marks	1.5
Unit	2

Id	130
Question	Which of the following statements is correct for a system with gain margin close to unity or a phase margin close to zero?
A	The system is relatively stable
B	The system is highly stable
C	The system is highly oscillatory
D	The system is stable
Marks	1.5
Unit	3

Id	**131**
Question	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
Marks	1.5
Unit	3

Id	132
Question	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
Marks	1.5
Unit	3

Id	133
Question	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
Marks	1.5
Unit	3

Id	134
Question	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
Marks	1.5
Unit	3

Id	135
Question	If a system is given unbounded input then the system is:
A	Stable
B	Unstable
C	Not defined
D	Linear
Marks	1.5
Unit	3

Id	136
Question	Linear mathematical model applies to :
A	Linear systems
B	Stable systems
C	Unstable systems
D	Non-linear systems
Marks	1.5
Unit	3

Id	137
Question	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
Marks	1.5
Unit	3

Id	138
Question	If the impulse response in absolutely integrable then the system is :
A	Absolutely stable
B	Unstable
C	Linear
D	Stable
Marks	1.5
Unit	3

Id	139
Question	Roots with higher multiplicity on the imaginary axis makes the system :
A	Absolutely stable
B	Unstable
C	Linear
D	Stable
Marks	1.5
Unit	3

Id	140
Question	Roots on the imaginary axis makes the system :
A	Stable
B	Unstable
C	Marginally stable
D	Linear
Marks	1.5
Unit	3

Id	141
Question	If the roots of the have negative real parts then the response is _____
A	Stable
B	Unstable
C	Marginally stable
D	Bounded
Marks	1.5
Unit	3

Id	142
Question	If root of the characteristic equation has positive real part the system is :
A	Stable
B	Unstable
C	Marginally stable
D	Linear
Marks	1.5
Unit	3

Id	143
Question	A linear system can be classified as :
A	Absolutely stable
B	Conditionally stable
C	Unstable
D	All of the mentioned
Marks	1.5
Unit	3

Id	144
Question	_____ 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
Marks	1.5
Unit	2

Id	145
Question	The superposition theorem is :
A	Homogeneity
B	Additivity
C	Combination of homogeneity and additivity
D	Applied to non-linear systems
Marks	1.5
Unit	1

Id	146
Question	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
Marks	1.5
Unit	3

Id	147
Question	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
Marks	1.5
Unit	3

Id	148
Question	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
Marks	1.5
Unit	3

Id	149
Question	The order of the auxiliary polynomial is always:
A	Even
B	Odd
C	May be even or odd
D	None of the mentioned
Marks	1.5
Unit	3

Id	150
Question	Which of the test signals are best utilized by the stability analysis.
A	Impulse
B	Step
C	Ramp
D	Parabolic
Marks	1.5
Unit	2

Id	151
Question	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
Marks	1.5
Unit	3

Id	152
Question	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
Marks	1.5
Unit	3

Id	153
Question	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
Marks	1.5
Unit	3

Id	154
Question	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
Marks	1.5
Unit	3

Id	155
Question	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
Marks	1.5
Unit	3

Id	156
Question	A system with unity feedback having open loop transfer function as G(s) = K(s+1)/s3+as2+2s+1. What values of 'K' and 'a' should be chosen so that the system oscillates ?
A	K =2, a =1
B	K =2, a =0.75
C	K =4, a =1
D	K =4, a =0.75
Marks	1.5
Unit	3

Id	157
Question	The open loop transfer functions with unity feedback are given below for different systems. Among these systems the unstable system is
A	G(s) =2/s+2
B	G(s) =2/s(s+2)
C	G(s) =2/(s+2)s^2
D	G(s) =2(s+1)/s(s+2)
Marks	1.5
Unit	3

Id	158
Question	Determine the stability of closed loop control system whose characteristic equation is $s^5+s^4+2s^3+2s^2+11s+10=0$.
A	Stable
B	Marginally stable
C	Unstable
D	None of the mentioned
Marks	1.5
Unit	3

Id	159
Question	Determine the condition for the stability of unity feedback control system whose open loop transfer function is given by G(s) = 2e-st/s(s+2)
A	T >1
B	T <0
C	T <1
D	T >0
Marks	1.5
Unit	3

Id	**160**
Question	Determine the value of K such that roots of characteristic equation given below lies to the left of the line s = -1. $s^3+10s^2+18s+K$.
A	K>16 and K<9
B	K<16
C	9<K<16
D	K<9
Marks	1.5
Unit	3

Id	161
Question	Consider a negative feedback system where G(s) =1/(s+1) and H(s) =K/s(s+2). The closed loop system is stable for
A	K>6
B	0<K<2
C	8<K<14
D	0<K<6
Marks	1.5
Unit	3

Id	162
Question	The characteristic equation of a feedback control system is $s^3+Ks^2+9s+18$. When the system is marginally stable, the frequency of the sustained oscillation:
A	1
B	1.414
C	1.732
D	3
Marks	1.5
Unit	3

Id	163
Question	Consider a characteristic equation, s4+3s3+5s2+6s+k+10=0. The condition for stability is
A	K>5
B	-10<K
C	K>-4
D	-10<K<-4
Marks	1.5
Unit	3

Id	164
Question	The polynomial s4+Ks3+s2+s+1=0 the range of K for stability is _____
A	K>5
B	-10<K
C	K>-4
D	K-1>0
Marks	1.5
Unit	3

Id	**165**
Question	The characteristic equation of a system is given by3s4+10s3+5s2+2=0. This system is:
A	Stable
B	Marginally stable
C	Unstable
D	Linear
Marks	1.5
Unit	3

Id	166
Question	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
Marks	1.5
Unit	3

Id	167
Question	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
Marks	1.5
Unit	3

Id	168
Question	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
Marks	1.5
Unit	3

Id	169
Question	While increasing the value of gain K, the system becomes
A	Less stable
B	More stable
C	Unstable
D	Absolute stable
Marks	1.5
Unit	3

Id	170
Question	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
Marks	1.5
Unit	3

Id	171
Question	Root locus is used to calculate:
A	Marginal stability
B	Absolute stability
C	Conditional stability
D	Relative stability
Marks	1.5
Unit	3

Id	172
Question	Consider the following statements regarding root loci:
A	All root loci start from the respective poles of G(s) H(s)
B	All root loci end at the respective zeros of G(s) H(s) or go to infinity
C	The root loci are symmetrical about the imaginary axis of the s-plane
D	All root loci start and end from the respective poles of G(s) H(s) or go to infinity
Marks	1.5
Unit	3

Id	173
Question	Number of roots of characteristic equation is equal to the number of _____
A	Branches
B	Root
C	Stem
D	Poles
Marks	1.5
Unit	3

Id	174
Question	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
Marks	1.5
Unit	3

Id	175
Question	Consider the loop transfer function K(s+6)/(s+3)(s+5) In the root locus diagram the centroid will be located at:
A	-4
B	-1
C	-2
D	-3
Marks	1.5
Unit	3

Id	176
Question	Which one of the following applications software's is used to obtain an accurate root locus for?
A	LISP
B	MATLAB
C	dBase
D	Oracle
Marks	1.5
Unit	3

Id	177
Question	Which one of the following is not the property of root loci?
A	The root locus is symmetrical about imaginary axis
B	They start from the open loop poles and terminate at the open loop zeroes
C	The breakaway points are determined from dK/ds = 0
D	Segments of the real axis are the part of the root locus if and only is the total number of real poles and zeroes to their right is odd.
Marks	1.5
Unit	3

Id	178
Question	What is the number of the root locus segments which do not terminate on zeroes?
A	The number of poles
B	The number of zeroes
C	The difference between the number of poles and zeroes
D	The sum of the number of poles and the number of the zeroes
Marks	1.5
Unit	3

Id	179
Question	Which one of the following are correct? The root locus is the path of the roots of the characteristic equation traced out in the s-plane?
A	As the input of the system is changed
B	As the output of the system is changed
C	As a system parameter is changed
D	As the sensitivity is changed
Marks	1.5
Unit	3

Id	180
Question	If the gain of the system is reduced to a zero value, the roots of the system in the s-plane,
A	Coincide with zero
B	Move away from zero
C	Move away from poles
D	Coincide with the poles
Marks	1.5
Unit	3

Id	181
Question	The addition of open loop zero pulls the root loci towards:
A	The left and therefore system becomes more stable
B	The right and therefore system becomes unstable
C	Imaginary axis and therefore system becomes marginally stable
D	The left and therefore system becomes unstable
Marks	1.5
Unit	3

Id	182
Question	If root loci plots of a particular control system do not intersect the imaginary axis at any point, then the gain margin of the system will be:
A	0
B	0.707
C	1
D	Infinite
Marks	1.5
Unit	3

Id	183
Question	When the number of poles is equal to the number of zeroes, how many branches of root locus tends towards infinity?
A	1
B	2
C	0
D	Equal to number of zeroes
Marks	1.5
Unit	3

Id	184
Question	The steady state error for a unity feedback system for the input r(t) to the system $G(s) = K(s+2)/s(s^3+7s^2+12s)$ is 6R/K. The input r (t) is _____
A	Rt2/2
B	Rt3/2
C	Rt5/2
D	Rt7/2
Marks	1.5
Unit	2

Id	185
Question	The ramp input is applied to a unity feedback system with type number 1 and zero frequency 20. What is the percentage of steady state error?
A	1%
B	2%
C	5%
D	9%
Marks	1.5
Unit	2

Id	186
Question	A unit integrator is applied to a modified system along with a ramp input. The modified value of the steady state error is 0.25. What was the initial value?
A	0.05
B	0.1
C	0.15
D	0.2
Marks	1.5
Unit	2

Id	187
Question	The initial response when output is not equal to input is _____
A	Error response
B	b) Transient response
C	c) Dynamic response
D	d) Static response
Marks	1.5
Unit	2

Id	188
Question	The steady state error for a unit step input is _____
A	1/kp
B	1/(1-kp)
C	1/2kp
D	1/(1+kp)
Marks	1.5
Unit	2

Id	189
Question	For a unity feedback system, the open loop transfer function is G(s) = K(s+2)/s2 (s2+7s+12). What is the type of system?
A	One
B	Two
C	Three
D	Four
Marks	1.5
Unit	2

Id	190
Question	The For a unity feedback system the open loop transfer function is G(s) = K(s+2)/s2 (s2+7s+12). What is the value of Ka?
A	12/k
B	k/12
C	k/6
D	6/k
Marks	1.5
Unit	2

Id	191
Question	or a system whose transfer function is G(s) =10/s (1+s), what are the dynamic error coefficients k2 & k3 respectively as k1 is infinity?
A	11, 10.1
B	10.1, 11
C	10, 11.1
D	9, 10.1
Marks	1.5
Unit	2

Id	192
Question	The Laplace transform of a parabolic signal is _____
A	1
B	A/s3
C	A/s2
D	A/s
Marks	1.5
Unit	2

Id	193
Question	Poles and zeros are arranged alternatively on negative real axis, then type of network is/are
A	LC network.
B	RC network.
C	RL network.
D	Both 2 and 3.
Marks	1.5
Unit	1

Id	194
Question	Transfer function of a system is defined as the ratio of output to input in
A	Z-transform
B	Fourier transform
C	Laplace transform
D	All of these
Marks	1.5
Unit	1

Id	195
Question	Electrical resistance is analogous to
A	Intertia
B	Dampers
C	Spring
D	Fluid capacity
Marks	1.5
Unit	1

Id	196
Question	Steady state error is always zero in response to the displacement input for
A	Type 0 system
B	Type 1 system
C	Type 2 system
D	Type (N > 1) system for N= 0, 1, 2….N
Marks	1.5
Unit	2

Id	197
Question	Which notation represents the feedback path in closed loop system representation?
A	b(t)
B	c(t)
C	e(t)
D	r(t)
Marks	1.5
Unit	1

Id	198
Question	How is an output represented in the control systems?
A	r(t)
B	c(t)
C	x(t)
D	y(t)
Marks	1.5
Unit	1

Id	199
Question	By equating the denominator of transfer function to zero, which among the following will be obtained?
A	Poles
B	Zeros
C	Both a and b
D	None of the above
Marks	1.5
Unit	1

Id	200
Question	While shifting a take-off point after the summing point, which among the following should be added?
A	Summing point in series with take-off point
B	Summing point in parallel with take-off point
C	Block of reciprocal transfer function
D	Block of inverse transfer function
Marks	1.5
Unit	1