

University of Mumbai

Examination 2020

Program: EXTC Engineering

Curriculum Scheme: Rev2016

Examination: Second Year Semester III

Course Code: ECC 305B and Course Name: EIC

Time: 1 hour

Max. Marks: 50

For the students:- All the Questions are compulsory and carry equal marks .

Q1.	Which of the following is not a characteristic of an ideal transducer?
Option A:	High dynamic range
Option B:	Low linearity
Option C:	High repeatability
Option D:	Low noise
Q2.	A transducer converting ground movement or velocity to voltage is known as
Option A:	Geophone
Option B:	Pickup
Option C:	Hydrophone
Option D:	Sonar transponder
Q3.	Which of the following represent active transducer?
Option A:	Strain gauge
Option B:	Thermistor
Option C:	LVDT
Option D:	Thermocouple
Q4.	Which transducer is known as 'self-generating transducer'?
Option A:	Active transducer
Option B:	Passive transducer
Option C:	Secondary transducer
Option D:	Analog transducer
Q5.	What is the relation between scale factor and sensitivity of a transducer?
Option A:	Scale factor is double of sensitivity
Option B:	Scale factor is inverse of sensitivity
Option C:	Sensitivity is inverse of scale factor
Option D:	Sensitivity is equal to scale factor
Q6.	Which of the following is an analog transducer?
Option A:	Encoders
Option B:	Strain gauge
Option C:	Digital tachometers
Option D:	Limit switches
Q7.	What is the principle of operation of LVDT?
Option A:	Permanence

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Option B:	Self-inductance
Option C:	Mutual inductance
Option D:	Reluctance
Q8.	Which of the following can be measured using Piezo-electric transducer?
Option A:	Velocity
Option B:	Displacement
Option C:	Force
Option D:	Sound
Q9.	Capacitive transducer is used for?
Option A:	Static measurement
Option B:	Dynamic measurement
Option C:	Transient measurement
Option D:	Both static and dynamic
Q10.	Which of the following is used in photo conductive cell?
Option A:	Selenium
Option B:	Quartz
Option C:	Rochelle salt
Option D:	Lithium sulphate
Q11.	Routh Hurwitz criterion cannot be applied when the characteristic equation of the system containing coefficient's which is/are
Option A:	Exponential function of s
Option B:	Sinusoidal function of s
Option C:	Complex
Option D:	Exponential and sinusoidal function of s and complex
Q12.	Consider the following statement regarding Routh Hurwitz criterion:
Option A:	It gives absolute stability
Option B:	It gives gain and phase margin
Option C:	It gives the number of roots lying in RHS of the s-plane
Option D:	It gives gain, phase margin and number of roots lying in RHS of the s-plane
Q13.	The order of the auxiliary polynomial is always:
Option A:	Even
Option B:	Odd
Option C:	May be even or odd
Option D:	None of the mentioned
Q14.	Which of the test signals are best utilized by the stability analysis.
Option A:	Impulse
Option B:	Step
Option C:	Ramp
Option D:	Parabolic

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Q15.	Consider the loop transfer function $K(s+6)/(s+3)(s+5)$ In the root locus diagram the centroid will be located at:
Option A:	-4
Option B:	-1
Option C:	-2
Option D:	-3
Q16.	Which one of the following applications software's is used to obtain an accurate root locus for?
Option A:	LISP
Option B:	MATLAB
Option C:	dBase
Option D:	Oracle
Q17.	Which one of the following is not the property of root loci?
Option A:	The root locus is symmetrical about imaginary axis
Option B:	They start from the open loop poles and terminate at the open loop zeroes
Option C:	The breakaway points are determined from $dK/ds = 0$
Option D:	Segments of the real axis are the part of the root locus if and only if the total number of real poles and zeroes to their right is odd.
Q18.	What is the number of the root locus segments which do not terminate on zeroes?
Option A:	The number of poles
Option B:	The number of zeroes
Option C:	The difference between the number of poles and zeroes
Option D:	The sum of the number of poles and the number of the zeroes
Q19.	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?
Option A:	As the input of the system is changed
Option B:	As the output of the system is changed
Option C:	As a system parameter is changed
Option D:	As the sensitivity is changed
Q20.	If the gain of the system is reduced to a zero value, the roots of the system in the s-plane,
Option A:	Coincide with zero
Option B:	Move away from zero
Option C:	Move away from poles
Option D:	Coincide with the poles
Q21.	The addition of open loop zero pulls the root loci towards:
Option A:	The left and therefore system becomes more stable
Option B:	The right and therefore system becomes unstable
Option C:	Imaginary axis and therefore system becomes marginally stable
Option D:	The left and therefore system becomes unstable
Q22.	If root loci plots of a particular control system do not intersect the imaginary axis

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	at any point, then the gain margin of the system will be:
Option A:	0
Option B:	0.707
Option C:	1
Option D:	Infinite
Q23.	When the number of poles is equal to the number of zeroes, how many branches of root locus tends towards infinity?
Option A:	Equal to number of zeroes
Option B:	1
Option C:	2
Option D:	0
Q24.	Assertion (A): Relative stability of the system reduces due to the presence of transportation lag. Reason (R): Transportation lag can be conveniently handled by Bode plot.
Option A:	Both A and R are true but R is correct explanation of A
Option B:	Both A and R are true
Option C:	A is true but R is false
Option D:	A is false but R is true
Q25.	A system has poles at 0.01 Hz, 1 Hz and 80Hz, zeroes at 5Hz, 100Hz and 200Hz. The approximate phase of the system response at 20 Hz is :
Option A:	-90°
Option B:	0°
Option C:	90°
Option D:	-180°