Roll No.----------

Paper Code		
5	0	4

(To be filled in the OMR Sheet)

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No. | | | | | | | | |

प्रश्नपुस्तिका सीरीज
Question Booklet Series
A

M.Sc (Electronics) First Semester, Examination, February/March-2022
ELC-102(N)
Signal Analysis and Mathematical Methods in Electronics

Time : 1:30 Hours **Maximum Marks-100**

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

निर्देश : –

1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही– सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
2. **इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमे से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने है। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET)में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वांइट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा निर्धारित प्रश्नों से अधिक प्रश्नों के उत्तर दिये जाते हैं तो उसके द्वारा हल किये गये प्रथमतः यथा निर्दिष्ट प्रश्नोत्तरों का ही मूल्यांकन किया जायेगा।**
3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
5. ओ०एम०आर० उत्तर पत्रक **(O.M.R. ANSWER SHEET)** पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी प्रश्नपुस्तिका बुकलेट एवं ओ०एम०आर० शीट पृथक–पृथक उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
7. निगेटिव मार्किंग नहीं है।

महत्वपूर्ण : – **प्रश्नपुस्तिका खोलने पर प्रथमतः जॉच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभॉति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।**

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Rough Work / रफ कार्य

1. Which among the following systems are described by partial differential functions?

(A) Causal systems and Dynamic systems

(B) Distributed parameter systems and linear systems

(C) Distributed parameter systems and Dynamic system

(D) Causal systems and linear systems

2. Which one of the following systems is causal ?

(A) $y(t) = x(t) + x(t-3) + x(t^2)$

(B) $y(n) = x(n+2)$

(C) $y(t) = x(t-1) + x(t-2)$

(D) $y(n) = x(2n^2)$

3. What is the period of the following signal, $x(t) = \sin(18\pi t + 78°)$?

(A) $\frac{1}{9}$

(B) $\frac{2}{9}$

(C) $\frac{1}{3}$

(D) $\frac{4}{9}$

4. Sum of two periodic signals is a periodic signal when the ratio of their time periods is _____.

(A) A rational number

(B) An irrational number

(C) A complex number

(D) An integer

5. Determine the odd component of the signal :$x(t) = \cos t + \sin t$

(A) $\sin t$

(B) $2 \sin t$

(C) $\cos t$

(D) $2 \cos t$

6. Determine the power of the signal : $x(t) = \cos(t)$.

(A) $\frac{1}{2}$

(B) 1

(C) $\frac{3}{2}$

(D) 2

7. A signal is anti-causal if _____.

(A) $x(t) = 0$ for $t = 0$

(B) $x(t) = 1$ for $t < 0$

(C) $x(t) = 1$ for $t > 0$

(D) $x(t) = 0$ for $t > 0$

8. If $x(-t) = -x(t)$ then the signal is said to be _____.

(A) Even signal

(B) Odd signal

(C) Periodic signal

(D) Non-periodic signal

9. The step function $u(t)$ is integral of _____ with respect to time t.

(A) Ramp function

(B) Impulse function

(C) Sinusoidal function

(D) Exponential function

10. $\partial(at) = {}^{1}/_{a}\,\partial(t)$, this property of unit impulse in called_____.

(A) Time shifting property

(B) Time scaling property

(C) Amplitude scaling property

(D) Time reversal property

11. Which of the following systems is linear ?

(A) $Y(t) = \sin(x(t))$

(B) $y(t) = \log(x(t))$

(C) $y(t) = \exp(x(t))$

(D) $y(t) = tx(t) + 1$

12. Which of the following systems is time invariant ?

(A) $y(t) = x(2t) + x(t)$

(B) $y(t) = x(t) + x(1 - t)$

(C) $y(t) = -x(t) + x(1 - t)$

(D) $y(t) = x(t) + x(t - 1)$

13. If h1, h2 and h3 are cascaded, find the overall impulse response :

(A) h1*h2*h3

(B) h1 + h2 + h3

(C) h3

(D) All of the mentioned

14. For an LTI discrete system to be stable, the square sum of the impulse response should be :

(A) Integral multiple of 2pi

(B) Infinity

(C) Finite

(D) Zero

15. Which is the commutative property of the LTI System in case of discrete time system ?

(A) $x[n] + h[n] = h[n] + x[n]$

(B) $x[n] + h[n] = h[n] * x[n]$

(C) $x[n] * h[n] = h[n] * x[n]$

(D) $x[t] + h[t] = h[n] * x[n]$

16. Which of the following systems is stable ?

(A) $y(t) = \log(x(t))$

(B) $y(t) = \sin(x(t))$

(C) $y(t) = \exp(x(t))$

(D) $y(t) = tx(t) + 1$

17. When is a system said to be BIBO stable ?

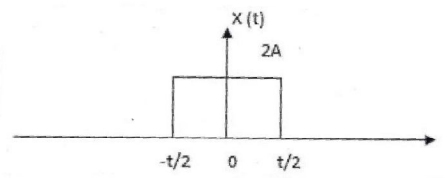
(A) When the boundary conditions of the system are stable

(B) When there is stability in the overall system

(C) Every Bounded input results in a bounded output

(D) When the input and output conditions are stable

18. Mathematical representation of given rectangular pulse is _____.



(A) $X(t) = \{2A, t/2 < 0 < -t/2$

(B) $X(t) = \{2A, -t/2 < 0 < t/2$

(C) $X(t) = \{2A, 0 <= |t| <= t/2$

$\{0, |t| > t/2$

(D) $X(t) = \{2A, 0 < |t| < t/2$

$\{0, |t| > t/2$

19. What is the value of $u[1]$, where $u[n]$ is the unit step function ?

(A) 1

(B) 0.5

(C) 0

(D) -1

20. Compute $d[n]\ d[n-1] + d[n-1]\ d[n-2]$ for $n = 0, 1, 2$.

(A) 0, 1, 2

(B) 0, 0, 1

(C) 1, 0, 0

(D) 0, 0, 0

21. Fourier series uses which domain representation of signals ?

(A) Time domain representation

(B) Frequency domain representation

(C) Both combined

(D) Neither depends on the situation

22. If $x(t)$ and $y(t)$ are two periodic signals with coefficients X_n and Y_n then the linearity is represented as ?

(A) $ax(t) + by(t) = aX_n + bY_n$

(B) $ax(t) + by(t) = X_n + bY_n$

(C) $ax(t) + by(t) = aX_n + Y_n$

(D) $ax(t) + by(t) = X_n + Y_n$

23. If the signal $x(t)$ is odd, what will be the Fourier series coefficients ?

(A) Real and even

(B) Odd

(C) Real only

(D) Real and odd

24. Which system among the following is a time invariant system ?

(A) $y(n) = n\,x(n)$

(B) $y(n) = x(n) - x(n-1)$

(C) $y(n) = x(-n)$

(D) $y(n) = x(n) \cos 2nf$

25. Which of the following is a causal system ?

(A) $y(n) = 3x(n) - 2x(n-1)$

(B) $y(n) = 3x(n) + 2x(n+1)$

(C) $y(n) = 3x(n+1) + 2x(n-1)$

(D) $y(n) = 3x(n+1) + 2x(n-1) + x(n)$

26. Which of the following is a dynamic system ?

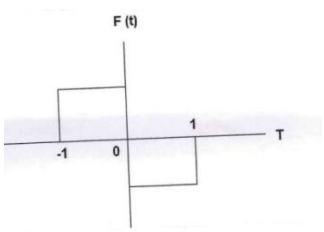
(A) $y(n) = y(n-1) + y(n+1)$

(B) $y(n) = y(n-1)$

(C) $y(n) = x(n)$

(D) $y(n) + y(n+1) + y(n+3) = 0$

27. The Fourier series of the given signal is _____.



(A) $-4/\pi \sin x$

(B) $4/\pi \sin x$

(C) $4/\pi \cos x$

(D) $-4/\pi \cos x$

28. The system characterized by the differential equation $d2y(t)t2 - dydt - 2y(t) = x(t)$ is _____.

(A) Linear and stable

(B) Linear and unstable

(C) Nonlinear and unstable

(D) Nonlinear and stable

29. The Fourier series for the function $f(x) = \sin^2 x$ is _____.

(A) $0.5 + 0.5 \sin 2x$

(B) $0.5 - 0.5 \sin 2x$

(C) $0.5 + 0.5 \cos 2x$

(D) $0.5 - 0.5 \cos 2x$

30. Given a real valued function $y(t)$ with period T. Its trigonometric Fourier series expansion contains no term of frequency $\omega = 2\pi(2k)T$; where, $k = 1, 2\ldots\ldots$ Also no terms are present. Then,$y(t)$ satisfies the equation_____.

(A) $y(t) = y(t + T) = -y(t + T2)$

(B) $y(t) = y(t + T) = y(t + T2)$

(C) $y(t) = y(t - T) = -y(t - T2)$

(D) $y(t) = y(t - T) = y(t - T2)$

31. Find the Fourier transform of an exponential signal $f(t) = e^{-at}\, u(t), a > 0.$

(A) $1/a + j\omega$

(B) $1/a - j\omega$

(C) $1/-a + j\omega$

(D) $1/-a - j\omega$

32. Find the Fourier transform of the gate function :

(A) $1/\omega\ \sin(\omega\tau 2)$

(B) $1/\omega \cos(\omega\tau 2)$

(C) $2/\omega \sin(\omega\tau 2)$

(D) $2/\omega \cos(\omega\tau 2)$

33. Which of the following is not a Fourier transform pair ?

(A) $u(t) \leftrightarrow \pi\delta(\omega) + 1j\omega$

(B) $sgn(t) \leftrightarrow 2j\omega$

(C) $A \leftrightarrow 2\pi\delta(\omega 2)$

(D) $G(t) \leftrightarrow sa(\omega\tau 2)$

34. Find the Fourier transform of $f(t) = te^{-at}\, u(t).$

(A) $1/(a - j\omega)2$

(B) $1/(a + j\omega)2$

(C) $a/(a - j\omega)2$

(D) $\omega/(a - j\omega)2$

35. Find the Fourier transform of $x(t) = f(t-2) + f(t+2)$.

(A) $2F(\omega)\cos 2\omega$

(B) $F(\omega)\cos 2\omega$

(C) $2F(\omega)\sin 2\omega$

(D) $F(\omega)\sin 2\omega$

36. Find the inverse Fourier transform of $\delta(\omega)$.

(A) 12π

(B) 2π

(C) 1π

(D) π

37. Find the inverse Fourier transform of e^{j2t}.

(A) $2\pi\delta(\omega - 2)$

(B) $\pi\delta(\omega - 2)$

(C) $\pi\delta(\omega + 2)$

(D) $2\pi\delta(\omega + 2)$

38. Given a signal $x[n] = \delta[n] + 0.9\delta[n-6]$. The Discrete Time Fourier Transform for 8 points is _____.

(A) $1 - 0.9\ e^{-j2\pi 8k6}$

(B) $1 + 0.9\ e^{-j2\pi 8k6}$

(C) $1 + 0.9\ e^{j2\pi 8k6}$

(D) $1 - 0.9\ e^{j2\pi 8k6}$

39. The Z transform of $\delta(n-m)$ is _____.

(A) Z^{-n}

(B) Z^{-m}

(C) 1z-n

(D) 1z-m

40. If G(f) represents the Fourier Transform of a signal g(t) which is real and odd symmetric in time, then G(f) is _____.
    (A) Complex
    (B) Imaginary
    (C) Real
    (D) Real and non – negative

41. Find the Laplace transform of $\delta(t)$.
    (A) 1
    (B) 0
    (C) ∞
    (D) 2

42. Find the Laplace transform of $\cos \omega t \; u(t)$.
    (A) $s/(s2 + \omega 2)$
    (B) $s/(s2 - \omega 2)$
    (C) $\omega/(s2 + \omega 2)$
    (D) $\omega/(s2 - \omega 2)$

43. Find the inverse Laplace transform for $s(s + 2)2$.
    (A) $te^{-t}u(t)$
    (B) $e^{-t} \sin(t)\, u(t)$
    (C) $e^{-2t}(1 - 2t)u(t)$
    (D) $e^{2t}(1 - 2t)u(t)$

44. Find the inverse Laplace transform forthe function $X(s) = 2s - 1s2 + 4s + 8$.
    (A) $e^{-2t} \cos 2t\, u(t) - e^{-2t} \sin 2t\, u(t)$
    (B) $2e^{-2t} \cos 2t\, u(t) - 52e^{-2t} \sin 2t\, u(t)$
    (C) $2e^{-2t} \cos 2t\, u(t) - e^{-2t} \sin 2t\, u(t)$
    (D) $e^{-2t} \cos 2t\, u(t) - 52e^{-2t} \sin 2t\, u(t)$

45. Find the inverse Laplace transform for the function $X(s) = 1 + e - 2s3s2 + 2s$.
    (A) $e^{-(2/3)t}\, u(t) - u(t) + e^{-(2/3)(t-2)}\, u(t-2) - u(t-2)$
    (B) $e^{-(2/3)t}\, u(t) + e^{-(2/3)(t-2)}\, u(t-2)$
    (C) $e^{-(2/3)(t-2)}\, u(t-2) - \; u(t-2)$
    (D) $e^{-(2/3)t}\, u(t) - \; u(t)$

46. When do DTFT and ZT are equal ?

(A) When $\sigma = 0$

(B) When $r = 1$

(C) When $\sigma = 1$

(D) When $r = 0$

47. Find the Z-transform of $\delta(n + 3)$.

(A) z

(B) z^2

(C) 1

(D) z^3

48. Find the Z-transform of $a^n u(n); a > 0$.

(A) $z/z - a$

(B) $z/z - a$

(C) $1/1 - az$

(D) $1/1 + az$

49. Find the Z-transform of $y(n) = x(n + 2)u(n)$.

(A) $z^2X(Z) - z^2x(0) - zx(1)$

(B) $z^2X(Z) + z^2x(0) - zx(1)$

(C) $z^2X(Z) - z^2x(0) + zx(1)$

(D) $z^2X(Z) + z^2x(0) + zx(1)$

50. The z-transform of $x[n] = \{1, 0, -1, 0, 1, -1\}$ (1^{st} 1 as the reference variable) is _____.

(A) $1 + 2z^{-2} - 4z^{-4} + 5z^{-5}$

(B) $1 - z^{-2} + z^{-4} - z^{-5}$

(C) $1 - 2z^2 + 4z^4 - 5z^5$

(D) $1 - z^2 + z^4 - z^5$

51. Given the z-transform pair $3^n n^2\, u[n] \boxed{\leftrightarrow} X(z)$. The time signal corresponding to $\{X(z)\}^2$ is _____.

(A) $\{x[n]\}^2$

(B) $x[n]^* x[n]$

(C) $x[n]^* x[-n]$

(D) $x[-n]^* x[-n]$

52. The system described by the difference equation $y(n) - 2y(n-1) + y(n-2) = X(n) - X(n-1)$ has $y(n) = 0$ and $n < 0$. If $x(n) = \delta(n)$, then $y(z)$ will be ?

(A) 2

(B) 1

(C) 0

(D) -1

53. The value of inverse Z-transform of $\log(zz + 1)$ is _____.

(A) $(-1)^n/n$ forn $= 0$; 0 otherwise

(B) $(-1)^n/n$

(C) 0, for $n = 0$; $(-1)^n/n$,otherwise

(D) 0

54. The inverse Z-transform of $z/(z+1)^2$is_____.

(A) $(-1)^{n+1}$

(B) $(-1)^{n-1}n$

(C) $(-1)^{n-1}$

(D) $(-1)^{n+1}n$

55. The z-transform of $\delta[n-k] > 0$ is _____.

(A) $Z^k, Z > 0$

(B) $Z^{-k}, Z > 0$

(C) $Z^k, Z \neq 0$

(D) $Z^{-k}, Z \neq 0$

56. Find $x(\infty)$ if $X(z) = (z+3)/(z+1)(z+2)$.

(A) ∞

(B) -1

(C) 1

(D) 0

57. When do DTFT and ZT are equal ?

(A) When $\sigma = 0$

(B) When $r = 1$

(C) When $\sigma = 1$

(D) When $r = 0$

58. Find the Z-transform of $\delta(n+3)$.

(A) z

(B) z^2

(C) 1

(D) z^3

59. For causal sequences, the ROC is the exterior of a circle of radius r.

(A) True

(B) False

(C) Can not be determined

(D) None of the above

60. For a right hand sequence, the ROC is entire z-plane.

(A) True

(B) False

(C) Can not be determined

(D) None of the above

61. If 40% of boys opted for maths and 60% of girls opted for maths, then what is the probability that maths is chosen if half of the class's population is girls ?

(A) 0.5

(B) 0.6

(C) 0.7

(D) 0.4

62. Suppose 5 men out of 100 men and 10 women out of 250 women are colour blind, then find the total probability of colour blind people. (Assume that both men and women are in equal numbers.)

(A) 0.45

(B) 0.045

(C) 0.05

(D) 0.5

63. Two boxes containing candies are placed on a table. The boxes are labelled B_1 and B_2. Box B_1 contains 7 cinnamon candies and 4 ginger candies. Box B_2 contains 3 cinnamon candies and 10 pepper candies. The boxes are arranged so that the probability of selecting box B_1 is $\frac{1}{3}$ and the probability of selecting box B_2 is $\frac{2}{3}$. Suresh is blindfolded and asked to select a candy. He will win a colour TV if he selects a cinnamon candy. What is the probability that Suresh will win the TV(That is, she will select a cinnamon candy) ?

(A) $^{7}/_{33}$

(B) $^{6}/_{33}$

(C) $^{13}/_{33}$

(D) $^{20}/_{33}$

64. In a colony, there are 55 members. Every member posts a greeting card to all the members. How many greeting cards were posted by them ?

(A) 990

(B) 890

(C) 2970

(D) 1980

65. Find the number of ways of arranging the letters of the words DANGER, so that no vowel occupies odd place.

(A) 36

(B) 48

(C) 144

(D) 96

66. Runs scored by batsman in 5 one day matches are 50, 70, 82, 93 and 20. The standard deviation is _____.

(A) 25.79

(B) 25.49

(C) 25.29

(D) 25.69

67. Find median and mode of the messages received on 9 consecutive days 15, 11, 9, 5, 18, 4, 15, 13, 17.

(A) 13, 6

(B) 13, 18

(C) 18, 15

(D) 15, 16

68. Mean of a random variable X is given by _____.

(A) $E(X)$

(B) $E(X^2)$

(C) $E(X^2) - \big(E(X)\big)^2$

(D) $\big(E(X)\big)^2$

69. In a Binomial Distribution, if 'n' is the number of trials and 'p' is the probability of success, then the mean value is given by _____.

(A) np

(B) n

(C) p

(D) $np(1-p)$

70. Variance of a random variable X is given by _____.

(A) $E(X)$

(B) $E(X^2)$

(C) $E(X^2) - \big(E(X)\big)^2$

(D) $\big(E(X)\big)^2$

71. n a Binomial Distribution, if p, q and n are probability of success, failure and number of trials respectively then variance is given by_____.

(A) np

(B) npq

(C) np^2q

(D) npq^2

72. Normal Distribution is applied for _____.

(A) Continuous Random Distribution

(B) Discrete Random Variable

(C) Irregular Random Variable

(D) Uncertain Random Variable

73. The mean of exponential distribution is given as _____.

(A) $1/\lambda$

(B) λ

(C) λ^2

(D) $1/\lambda^2$

74. The shape of the Normal Curve is _____.

(A) Bell Shaped

(B) Flat

(C) Circular

(D) Spiked

75. Exponential distribution is bi-variate.

(A) True

(B) False

(C) Can not be determined

(D) None of the above

76. Normal Distribution is symmetric is about _____.

(A) Variance

(B) Mean

(C) Standard deviation

(D) Covariance

77. If f(x) is a probability density function of a continuous random variable, then $\int \infty - \infty f(x) = ?$

(A) 0

(B) 1

(C) Undefined

(D) Insufficient data

78. The variable that assigns a real number value to an event in a sample space is called_____.

(A) Random variable

(B) Defined variable

(C) Uncertain variable

(D) Static variable

79. A random variable that assumes a finite or a countably infinite number of values is called_____.

(A) Continuous random variable

(B) Discrete random variable

(C) Irregular random variable

(D) Uncertain random variable

80. If $P(x) = 0.5 \text{and } x = 4$, then $E(x) = ?$

(A) 1

(B) 0.5

(C) 4

(D) 2

81. Find $f(0.18)$ from the following table using Newton's Forward interpolation formula.

x	0	0.1	0.2	0.3	0.4
f(x)	1	1.052	1.2214	1.3499	1.4918

(A) 0.8878784

(B) 1.9878785

(C) 1.18878784

(D) 1.8878784

82. Newton – Gregory Forward interpolation formula can be used_____.

(A) Only for equally spaced intervals

(B) Only for unequally spaced intervals

(C) For both equally and unequally spaced intervals

(D) For unequally intervals

83. Find x if $x_0 = 0.6, n = 2.6$ and $h = 0.2$

(A) 12

(B) 1.2

(C) 1.12

(D) 1.22

84. Numerical techniques more commonly involve _____.

(A) Elimination method

(B) Reduction method

(C) Iterative method

(D) Direct method

85. Which is the best method of numerically solving ODE ?

(A) Taylor Series Method

(B) Eulers and Modified Eulers Methods

(C) Runge and Runge Kutta Methods

(D) Predictor and Corrector Method

86. In general the ratio of truncation error to that of round off error is :

(A) 2:1

(B) 1:1

(C) 1:2

(D) 1:3

87. Match the following :

A.	Newton-COTES	1.	Integration
B.	Runge-kutta	2.	Differentiation
C.	Gauss-Seidel	3.	Ordinary Differential Equations
D.	Simpson's Rule	4.	Solution of system of Linear Equations

The correct sequence is :

(A) A2 B3 C4 D1

(B) A3 B2 C1 D4

(C) A1 B4 C2 D3

(D) A4 B1 C2 D3

88. Find f(2.75) using Newton's Forward interpolation formula from the following table.

x	1.5	2	2.5	3	3.5	4
y	3.375	7	13.625	24	38.875	59

(A) 1.8296875

(B) 18.296875

(C) 22.296875

(D) 24.296875

89. Find the polynomial for the following data :

x	4	6	8	10
f(x)	1	3	8	16

(A) $3x^2 - 22x + 368$

(B) $3x^2 - 22x + 36$

(C) $3x^2 + 22x + 362$

(D) $3x^2 - 19x + 368$

90. Which the following is not a integration method ?

(A) Weedle's

(B) Simpson's

(C) Trapezoidal

(D) Picard's

91. The Radius of convergence of $f(n) = 5^n/n!, n \geq 0$ is _____.

(A) $-2 < |z| < 2$

(B) Z-plane

(C) $|z| < 2$

(D) $|z| = 2$

92. The impulse response of a LTI system which is continuous is $H(t) = e^{-|t|}$. The system is _____.

(A) Causal and stable

(B) Causal but not stable

(C) Stable but not causal

(D) Neither causal nor stable

93. For the system, $y(t) = u\{x(t)\}$ which of the following holds true?

(A) System is Linear, time – invariant, causal and stable

(B) System is time – invariant, causal and stable

(C) System is causal and stable

(D) System is stable

94. A series RC circuit excited by voltage V is _____.

(A) A memory less system

(B) A causal system

(C) A dynamic system

(D) Static system

95. $X_1(z) = 2z + 1 + z^{-1}$ and $X_2(z) = z + 1 + 2z^{-1}$ is _____.

(A) Even signal

(B) Odd signal

(C) In time power signal

(D) In time energy signal

96. The spectral density of white noise is _____.

(A) Exponential

(B) Uniform

(C) Poisson

(D) Gaussian

97. For a stable system which of the following is correct ?

(A) $|z| < 1$

(B) $|z| = 1$

(C) $|z| > 1$

(D) $|z| \neq 1$

98. An example of a discrete set of information/system is :

(A) The trajectory of the Sun

(B) Data on a CD

(C) Universe time scale

(D) Movement of water through a pipe

99. A system is said to be defined as non causal, when :

(A) The output at the present depends on the input at an earlier time.

(B) The output at the present does not depend on the factor of time at all.

(C) The output at the present depends on the input at the current time.

(D) The output at the present depends on the input at a time instant in the future.

100. All causal systems must have the component of :

(A) Memory

(B) Time invariance

(C) Stability

(D) Linearity

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