

NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch : B.E./ECE	Year / Semester : II/III	Format No.	NAC/TLP-07a.13
Subject Code : EC8352	Subject Name : Signals and Systems	Rev. No.	02
Unit No : 1	Unit Name : Classification of Signals and Systems	Date	30.09.2020

OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices)	BTL
1	When is a system said to be BIBO stable? A) Every Bounded input results in a bounded output B) When the boundary conditions of the system are stable C) When there is stability in the overall system D) When the input and output conditions are stable	L2
2	When does a signal say to be bounded? A) Magnitude does not grow without bound B) When it is stable C) When it has small inputs D) When it gives slow responses	L2
3	The system is stable when $y(t) = tx(y)$. A) True B) False	L4
4	The discrete time function defined as $u(n) = n$ for $n \geq 0$; $u(n) = 0$ for $n < 0$ is an _____ A) Unit ramp signal B) Unit sample signal C) Unit step signal D) Impulse signal	L5
5	$x(n) * \delta(n-k) = ?$ A) $x(k) * \delta(n-k)$ B) $x(k) * \delta(k)$ C) $x(n)$ D) $x(k)$	L1
6	The odd part of a signal $x(t)$ is? A) $(1/2) * (x(t) - x(-t))$ B) $x(t) + x(-t)$ C) $x(t) - x(-t)$ D) $(1/2) * (x(t) + x(-t))$	L2
7	The function given by the equation $x(n) = 1$, for $n = 0$; $x(n) = 0$, for $n \neq 0$ is a _____ A) Impulse function B) Triangular function C) Ramp function D) Step function	L2
8	If a signal $x(n)$ is passed through a system to get an output signal of $y(n) = x(n+1)$, then the signal is said to be _____ A) Advanced B) Delayed C) No operation D) None of the mentioned	L4
9	The output signal when a signal $x(n) = (0, 1, 2, 3)$ is processed through an 'Delay' system is? A) (1, 2, 3, 0) B) (3, 2, 1, 0)	L5

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	C) (0,1,2,3) D) None of the mentioned	
10	The system described by the input-output equation $y(n)=nx(n)+bx^3(n)$ is a _____ A) Static system B) Dynamic system C) Identical system D) None of the mentioned	L1
11	The system described by the input-output equations $y(n)=x^2(n)$ is A) Non-linear B) Linear C) Both Linear and Non-linear D) None of the above	L2
12	The system described by the input-output equations $y(n)=x(-n)$ is A) causal B) non-causal C) anti-causal D) none of the above	L2
13	Given the signal $X(t) = \cos t, \text{ if } t < 0$ $\sin t, \text{ if } t \geq 0$ The correct statement among the following is? A) Periodic with fundamental period 2π B) Periodic but with no fundamental period C) Non-periodic and discontinuous D) Non-periodic but continuous	L4
14	The fundamental period of the signal $X(t) = 10 \cos^2(10\pi t)$ is _____ A) 0.1 B) 0.5 C) 0.2 D) No fundamental period exists	L5
15	The even component of the signal $X(t) = e^{t^2}$ is _____ A) $\sin t$ B) $\cos t$ C) $\sinh t$ D) $\cosh t$	L1
16	The period of the signal $X(t) = 4 \sin 6t + 3 \sin \sqrt{3}t$ is _____ A) $2\pi/3$ B) $2\pi/\sqrt{3}$ C) 2π D) non-periodic	L2
17	The signal $X(t) = e^{-4t} u(t)$ is _____ A) Energy signal with $E_\infty = 1/4$ B) Energy signal with $E_\infty = 0$ C) Power signal with $P_\infty = 0$	L2

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	D) Power signal with $P_{\infty} = 14$	
18	<p>A discrete time signal is as given below $X[n] = \cos(\pi n/9) + \sin(\pi n/7 + 1/2)$ The period of the signal X [n] is _____</p> <p>A) 126 B) 32 C) 252 D) Non-periodic</p>	L4
19	<p>A time invariant system is a system whose output</p> <p>A) remains same with a delay in input B) vanishes with a delay in input C) decreases with a delay in input D) increases with a delay in input</p>	L5
20	<p>All causal systems must have the component of</p> <p>A) linearity B) stability C) time invariance D) memory</p>	L1
21	<p>The type of systems which are characterized by input and the output quantized at certain levels are called as</p> <p>a) analog b) discrete c) continuous d) digital</p>	L2
22	<p>The type of systems which are characterized by input and the output capable of taking any value in a particular set of values are called as</p> <p>a) analog b) discrete c) digital d) continuous</p>	L2
23	<p>A time invariant system is a system whose output</p> <p>a) increases with a delay in input b) decreases with a delay in input c) remains same with a delay in input d) vanishes with a delay in input</p>	L4
24	<p>A system is said to be defined as non causal, when</p> <p>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</p>	L5
25	<p>When we take up design of systems, ideally how do we define the stability of a system?</p> <p>a) A system is stable, if a bounded input gives a bounded output, for some values of the</p>	L1

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	<p>input</p> <p>b) A system is unstable, if a bounded input gives a bounded output, for all values of the input</p> <p>c) A system is stable, if a bounded input gives a bounded output, for all values of the input</p> <p>d) A system is unstable, if a bounded input gives a bounded output, for some values of the input</p>	
26	<p>What is single-valued function?</p> <p>a) Single value for all instants of time</p> <p>b) Unique value for every instant of time</p> <p>c) A single pattern is followed by after 't' intervals</p> <p>d) Different pattern of values is followed by after 't' intervals of time</p>	L2
27	<p>Discrete time signal is derived from continuous time signal by _____ process.</p> <p>a) Addition</p> <p>b) Multiplying</p> <p>c) Sampling</p>	L2
28	<p>If $x(-t) = -x(t)$ then the signal is said to be _____</p> <p>a) Even signal</p> <p>b) Odd signal</p> <p>c) Periodic signal</p> <p>d) Non periodic signal</p>	L4
29	<p>Which of the following is true for complex-valued function?</p> <p>a) $X(-t) = x^*(t)$</p> <p>b) $X(-t) = x(t)$</p> <p>c) $X(-t) = -x(t)$</p> <p>d) $X(-t) = x^*(-t)$</p>	L5
30	<p>Fundamental frequency $x[n]$ is given by _____</p> <p>a) $\Omega = 2\pi / N$</p> <p>b) $\Omega = 2\pi * N$</p> <p>c) $\Omega = 4\pi * 2N$</p> <p>d) $\Omega = \pi / N$</p>	L1
31	<p>The general form of real exponential signal is _____</p> <p>a) $X(t) = be^{at}$</p> <p>b) $X(t) = (b+1) e^{at}$</p> <p>c) $X(t) = b(at)$</p> <p>d) $X(t) = be^{(a+1)t}$</p>	L2
32	<p>In the equation $x(t) = be^{at}$ if $a < 0$, then it is called _____</p> <p>a) Growing exponential</p> <p>b) Decaying exponential</p> <p>c) Complex exponential</p> <p>d) Both Growing and Decaying exponential</p>	L2

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33	The time period of continuous-time sinusoidal signal is given by _____ a) $T = 2\pi / \omega$ b) $T = 2\pi / 3\omega$ c) $T = \pi / \omega$ d) $T = \pi / 2\omega$	L4
34	Euler's identity $e^{j\theta}$ is expanded as _____ a) $\cos \theta + j \sin \theta$ b) $\cos \theta - j \sin \theta$ c) $\cos \theta + j \sin 2\theta$ d) $\cos 2\theta + j \sin \theta$	L5
35	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	L1
36	What is the value of $d[0]$, such that $d[n]$ is the unit impulse function? a) 0 b) 0.5 c) 1.5 d) 1	L2
37	What is the value of $u[1]$, where $u[n]$ is the unit step function? a) 1 b) 0.5 c) 0 d) -1	L2
38	Which is the correct Euler expression? a) $\exp(2jt) = \cos(2t) + j\sin(t)$ b) $\exp(2jt) = \cos(2t) + j\sin(2t)$ c) $\exp(2jt) = \cos(2t) + \sin(t)$ d) $\exp(2jt) = j\cos(2t) + j\sin(t)$	L4
39	The range for unit step function for $u(t - a)$, is _____ a) $t < a$ b) $t \leq a$ c) $t = a$ d) $t \geq a$	L5
40	Unit Impulse function is obtained by using the limiting process on which among the following functions? a) Triangular Function b) Rectangular Function c) Signum Function d) Sinc Function	L1