

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: ELX604 and Course Name: Signals and systems

Time: 1 hour

Max. Marks: 50

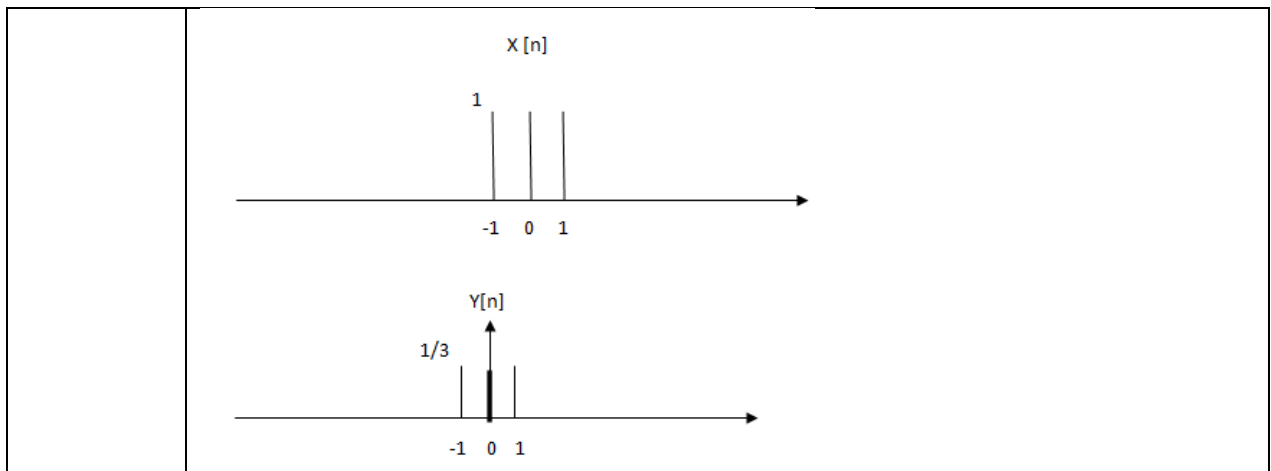
Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Find the smallest angular frequency for which the discrete time signal with fundamental period $N=8$ would be periodic?
Option A:	$\pi/4$
Option B:	$\pi/2$
Option C:	$3\pi/4$
Option D:	$\pi/16$
Q2.	Exponentially damped sinusoidal signal is _____
Option A:	Periodic
Option B:	Non Periodic
Option C:	Insufficient information
Option D:	May be periodic
Q3.	Which of the following is an example of amplitude scaling?
Option A:	Electronic amplifier
Option B:	Electronic attenuator
Option C:	Both amplifier and attenuator
Option D:	Adder
Q4.	A system produces zero output for one input and same gives the same output for several other inputs. What is the system called?
Option A:	Non-Invertible system
Option B:	Invertible system
Option C:	Non – causal system
Option D:	Causal system
Q5.	$y(t) = \sin(x(t-1))$: Comment on its memory aspects.
Option A:	Having Memory
Option B:	Needn't have memory
Option C:	Memoryless system
Option D:	Time invariant system
Q6.	$y(t) = x(t-2) + x(2-t)$. Comment on its causality:
Option A:	Causal
Option B:	Time variant

Option C:	Non-Causal
Option D:	All of the mentioned
Q7.	Find the Laplace transform of $\sin \omega t u(t)$
Option A:	$\frac{s}{s^2 + \omega^2}$
Option B:	$\frac{s}{s^2 - \omega^2}$
Option C:	$\frac{\omega}{s^2 + \omega^2}$
Option D:	$\frac{\omega}{s^2 - \omega^2}$
Q8.	Find the initial value of $f(t)$ if $F(s) = \frac{s}{(s+a)^2 + \omega^2}$
Option A:	0
Option B:	-1
Option C:	∞
Option D:	1
Q9.	The Laplace transform of the signal $t^3 u(t)$ is _____
Option A:	$3/s^4$
Option B:	$-3/s^4$
Option C:	$6/s^4$
Option D:	$-6/s^4$
Q10.	The Laplace transform of the signal $e^{-2t}u(t+1)$ is _____
Option A:	$\frac{1}{s+2}$
Option B:	$\frac{e^{-2s}}{s+2}$
Option C:	$\frac{e^{-(s+2)}}{s+2}$
Option D:	$\frac{-e^{-s}}{s+2}$
Q11.	Find the Z-transform of $u(-n)$
Option A:	$\frac{1}{1-z}$
Option B:	$\frac{1}{1+z}$
Option C:	$\frac{1-z}{z}$
Option D:	$\frac{z}{z+1}$
Q12.	The z-transform of $3^n u[-n-1]$ is _____
Option A:	$\frac{z}{3-z}, Z >3$

Option B:	$\frac{z}{3-z}, Z < 3$
Option C:	$\frac{3}{3-z}, Z > 3$
Option D:	$\frac{3}{3-z}, Z > 3$
Q13.	Find the Z-transform of $x(n) = n^2 u(n)$
Option A:	$\frac{z(z-1)}{(z-1)^3}$
Option B:	$\frac{z(z+1)}{(z-1)^3}$
Option C:	$\frac{z(z+1)}{(z+1)^3}$
Option D:	$\frac{z(z-1)}{(z+1)^3}$
Q14.	Find $x(\infty)$ if $X(z) = \frac{z+3}{(z+1)(z+2)}$
Option A:	∞
Option B:	-1
Option C:	1
Option D:	0
Q15.	A 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 $y(n)$ will be?
Option A:	2
Option B:	1
Option C:	0
Option D:	-1
Q16.	Find the Fourier transform of the function $f(t) = e^{-a t }$, $a > 0$.
Option A:	$\frac{2a}{a^2 - \omega^2}$
Option B:	$\frac{2a}{a^2 + \omega^2}$
Option C:	$\frac{2a}{-a^2 + \omega^2}$
Option D:	$\frac{a}{a^2 + \omega^2}$
Q17.	Find the Fourier transform of $1/(a+jt)$
Option A:	$2\pi e^{a\omega} u(\omega)$
Option B:	$2\pi e^{a\omega} u(-\omega)$
Option C:	$2\pi e^{-a\omega} u(\omega)$
Option D:	$2\pi e^{-a\omega} u(-\omega)$
Q18.	Find the inverse Fourier transform of $X(\omega) = e^{-2\omega} u(\omega)$

Option A:	$\frac{1}{2\pi(2 + jt)}$
Option B:	$\frac{1}{2\pi(2 - jt)}$
Option C:	$\frac{1}{2(2 + jt)}$
Option D:	$\frac{1}{\pi(2 + jt)}$
Q19.	Find the inverse Fourier transform of e^{j2t} .
Option A:	$2\pi\delta(\omega-2)$
Option B:	$\pi\delta(\omega-2)$
Option C:	$\pi\delta(\omega+2)$
Option D:	$2\pi\delta(\omega+2)$
Q20.	A discrete time periodic signal is defined as $x(n)= x(n+N)$ How is the N defined here?
Option A:	Samples/ cycle
Option B:	Samples/ twice cycle
Option C:	Fundamental period
Option D:	Rate of change of the period
Q21.	What is the general range of a period of a signal?
Option A:	It can have of any value from positive to negative
Option B:	It can be negative
Option C:	It can be positive
Option D:	It is always positive
Q22.	What is the fundamental period of the signal : $e^{j\omega t}$?
Option A:	$2\pi/\omega$
Option B:	$2\pi/\omega^2$
Option C:	$2\pi/\omega^3$
Option D:	$4\pi/\omega$
Q23.	What is the area of a Unit Impulse function?
Option A:	Zero
Option B:	Half of unity
Option C:	Depends on the function
Option D:	Unity
Q24.	$x[n]$ and $y[n]$ is as shown below, the relationship between $x[n]$ and $y[n]$ is given by _____



Option A:	$x[n] = y[n]/3$
Option B:	$x[n] = 3 * y[n]$
Option C:	$y[n] = x[n]/3$
Option D:	$y[n] = 3 * x[n]$
Q25.	The area under the pulse defines _____ of the impulse.
Option A:	Strength
Option B:	Energy
Option C:	Power
Option D:	Duration