These are sample MCQs to indicate pattern, may or may not appeared in Examination

University of Mumbai

Online Examination 2020

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester V

Course Name: Signals and Systems (Semester IV)

Q1	A system is said to be shift invariant only if_____
Option A:	a shift in the input signal also results in the corresponding shift in the output
Option B:	a shift in the input signal does not exhibit the corresponding shift in the output
Option C:	a shifting level does not vary in an input as well as output
Option D:	a shifting at input does not affect the output

Q2	What is the nature of Fourier representation of a discrete & aperiodic signal?
Option A:	Discrete & aperiodic
Option B:	Continuous & periodic
Option C:	Continuous & aperiodic
Option D:	Discrete & periodic

Q3	Generally, the convolution process associated with the Laplace Transform in time domain results into_____
Option A:	Simple multiplication in complex time domain
Option B:	Simple division in complex frequency domain
Option C:	Simple multiplication in complex frequency domain
Option D:	Simple division in complex time domain

Q4	If x (-t) = -x (t) then the signal is said to be _____
Option A:	Non periodic signal
Option B:	Odd signal
Option C:	Periodic signal
Option D:	Even signal

Q5	Y (t) = x (2t) is _____
Option A:	Compressed signal
Option B:	Expanded signal
Option C:	Shifted signal
Option D:	Amplitude scaled signal by a factor of 2

Q6	Which of the following systems is memoryless?
Option A:	y(t) = x(2t) + x(t)
Option B:	y(t) = x(t) + 2x(t)
Option C:	y(t) = -x(t) + x(1-t)
Option D:	y(t) = x(t) + 2x(t+2)

Q7	Discrete-time signals are _____
Option A:	Continuous in amplitude and continuous in time
Option B:	Continuous in amplitude and discrete in time

Option C:	Discrete in amplitude and discrete in time
Option D:	Discrete in amplitude and continuous in time

Q8	What is the period of the signal: 2cos(t/6)?
Option A:	8π
Option B:	16π
Option C:	12π
Option D:	10π

Q9	What are the conditions called which are required for a signal to fulfil to be represented as Fourier series?
Option A:	Dirichlet's conditions
Option B:	Gibbs phenomenon
Option C:	Fourier conditions
Option D:	Fourier phenomenon

Q10	What are the two types of Fourier series?
Option A:	Trigonometric only
Option B:	Trigonometric and logarithmic
Option C:	Exponential and logarithmic
Option D:	Trigonometric and exponential

Q11	If the signal x(t) is odd, what will be the Fourier series coefficients?
Option A:	Real and even
Option B:	Odd
Option C:	Real only
Option D:	Real and odd

Q12	The property of Fourier Transform which states that the compression in time domain is equivalent to the expansion in the frequency domain is _____
Option A:	Duality
Option B:	Scaling
Option C:	Time scaling
Option D:	Frequency shifting

Q13	A band-limited signal with a maximum frequency of 5 kHz is to be sampled. According to the sampling theorem, the sampling frequency which is not valid is _____
Option A:	5 kHz
Option B:	12 kHz
Option C:	15 kHz
Option D:	20 kHz

Q14	Find the Laplace transform of u(t) and its ROC.
Option A:	$1/s, \sigma<0$
Option B:	$1/s, \sigma>0$
Option C:	$1/s-1, \sigma=0$
Option D:	$1/1-s, \sigma\leq 0$

Q15	The auto-correlation function of a rectangular pulse of duration T is _____
Option A:	A rectangular pulse of duration T
Option B:	A rectangular pulse of duration 2T
Option C:	A triangular pulse of duration T
Option D:	A triangular pulse of duration 2T

Q16	Find the Z-transform of u(-n).
Option A:	1/1−z
Option B:	1/1+z
Option C:	z/1−z
Option D:	z/1+z

Q17	The Z transform of δ (n − m) is _____
Option A:	z^{-n}
Option B:	z^{-m}
Option C:	1/z−n
Option D:	1/z−m

Q18	The ROC of u(n) = 4^n, for n<0; 2^n, for n≥0 is _____
Option A:	0<z<1
Option B:	2<z<4
Option C:	2<z
Option D:	z<4

Q19	If G(f) represents the Fourier Transform of a signal g (t) which is real and odd symmetric in time, then G (f) is _____
Option A:	Complex
Option B:	Imaginary
Option C:	Real
Option D:	Real and non- negative

Q20	The Fourier series of an odd periodic function, contains _____
Option A:	Only odd harmonics
Option B:	Only even harmonics
Option C:	Only cosine terms
Option D:	Only sine terms

Q21	A Discrete signal is said to be even or symmetric if X(-n) is equal to _____
Option A:	X(n)
Option B:	0
Option C:	–X(n)
Option D:	–X(-n)

Q22	The even part of a signal x(t) is:
Option A:	x(t)+x(-t)
Option B:	x(t)-x(-t)
Option C:	(1/2){(x(t)+x(-t))}
Option D:	(1/2){(x(t)-x(-t))}

Q23	When two LTI systems with impulse responses $h_a(t)$ and $h_b(t)$ are cascaded then equivalent response is given by _____
Option A:	$h(t) = h_a(t) + h_b(t)$
Option B:	$h(t) = h_a(t) – h_b(t)$
Option C:	$h(t) = h_a(t)\, h_b(t)$
Option D:	$h(t) = h_a(t) * h_b(t)$

Q24	Compute u (t) convolved with itself?
Option A:	$y(t)=t.u(t)$
Option B:	$y(t)=u(t)$
Option C:	$y(t)=t^2.u(t)$
Option D:	$y(t)=t.u(t-1)$

Q25	Find the ROC of $x(t) = e^{-2t}\, u(t) + e^{-3t}\, u(t)$.
Option A:	$\sigma>2$
Option B:	$\sigma>3$
Option C:	$\sigma>-3$
Option D:	$\sigma>-2$