

Program: BE Electronics Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: EXC703 and Course Name: Digital Signal Processing

Time: 1 hour

Max. Marks: 50

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

Q1.	The odd 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:	$(1/2) * (x(t)-x(-t))$
Q2.	What is the cross correlation sequence of the following sequences? $x(n) = \{ \dots 0, 0, 2, -1, 3, 7, 1, 2, -3, 0, 0 \dots \}$ $y(n) = \{ \dots 0, 0, 1, -1, 2, -2, 4, 1, -2, 5, 0, 0 \dots \}$
Option A:	$\{ 10, 9, 19, 36, -14, 33, 0, 7, 13, -18, 16, 7, 5, -3 \}$
Option B:	$\{ 10, -9, 19, 36, -14, 33, 0, 7, 13, -18, 16, -7, 5, -3 \}$
Option C:	$\{ 10, 9, 19, 36, 14, 33, 0, -7, 13, -18, 16, -7, 5, -3 \}$
Option D:	$\{ 10, -9, 19, 36, -14, 33, 0, -7, 13, 18, 16, 7, 5, -3 \}$
Q3.	What is the order of the four operations that are needed to be done on $h(k)$ in order to convolute $x(k)$ and $h(k)$? Step-1: Folding Step-2: Multiplication with $x(k)$ Step-3: Shifting Step-4: Summation
Option A:	1-2-3-4
Option B:	1-2-4-3
Option C:	2-1-3-4
Option D:	1-3-2-4
Q4.	The impulse response of a LTI system is $h(n) = \{ 1, 1, 1 \}$. What is the response of the signal to the input $x(n) = \{ 1, 2, 3 \}$?
Option A:	$\{ 1, 3, 6, 3, 1 \}$
Option B:	$\{ 1, 2, 3, 2, 1 \}$
Option C:	$\{ 1, 3, 6, 5, 3 \}$
Option D:	$\{ 1, 1, 1, 0, 0 \}$
Q5.	An LTI system is said to be causal if and only if?
Option A:	Impulse response is non-zero for positive values of n

Option B:	Impulse response is zero for positive values of n
Option C:	Impulse response is non-zero for negative values of n
Option D:	Impulse response is zero for negative values of n
Q6.	Which of the following should be done in order to convert a continuous-time signal to a discrete-time signal?
Option A:	Sampling
Option B:	Differentiating
Option C:	Integrating
Option D:	Modulating
Q7.	The process of converting discrete-time continuous valued signal into discrete-time discrete valued (digital) signal is known as _____
Option A:	Sampling
Option B:	Quantization
Option C:	Coding
Option D:	Modulating
Q8.	The difference between the unquantized $x(n)$ and quantized $x_q(n)$ is known as _____
Option A:	Quantization coefficient
Option B:	Quantization ratio
Option C:	Quantization factor
Option D:	Quantization error
Q9.	What is output signal when a signal $x(t)=\cos(2\pi\cdot 40\cdot t)$ is sampled with a sampling frequency of 20Hz?
Option A:	$\cos(\pi\cdot n)$
Option B:	$\cos(2\pi\cdot n)$
Option C:	$\cos(4\pi\cdot n)$
Option D:	$\cos(8\pi\cdot n)$
Q10.	If 'F' is the frequency of the analog signal, then what is the minimum sampling rate required to avoid aliasing?
Option A:	F
Option B:	2F
Option C:	3F
Option D:	4F
Q11.	Which of the following is true regarding the number of computations required to compute DFT at any one value of 'k'?
Option A:	4N-2 real multiplications and 4N real additions
Option B:	4N real multiplications and 4N-4 real additions
Option C:	4N-2 real multiplications and 4N+2 real additions
Option D:	4N real multiplications and 4N-2 real additions

Q12.	If $N=LM$, then what is the value of W_N^{mqL} ?
Option A:	W_M^{mq}
Option B:	W_L^{mq}
Option C:	W_N^{mq}
Option D:	None of the mentioned
Q13.	How many complex multiplications are performed in computing the N-point DFT of a sequence using divide-and-conquer method if $N=LM$?
Option A:	$N(L+M+2)$
Option B:	$N(L+M-2)$
Option C:	$N(L+M-1)$
Option D:	$N(L+M+1)$
Q14.	What is the model that has been adopted for characterizing round off errors in multiplication?
Option A:	Multiplicative white noise model
Option B:	Subtractive white noise model
Option C:	Additive white noise model
Option D:	None of the mentioned
Q15.	How many quantization errors are present in one complex valued multiplication?
Option A:	One
Option B:	Two
Option C:	Three
Option D:	Four
Q16.	Computational complexity refers to the number of _____
Option A:	Additions
Option B:	Arithmetic operations
Option C:	Multiplications
Option D:	None of the mentioned
Q17.	Which of the following refers to the number of memory locations required to store the system parameters, past inputs, past outputs and any intermediate computed values?
Option A:	Computational complexity
Option B:	Finite word length effect
Option C:	Memory requirements
Option D:	None of the mentioned
Q18.	Which of the following are called as finite word length effects?
Option A:	Parameters of the system must be represented with finite precision
Option B:	Computations are truncated to fit in the limited precision constraints
Option C:	Whether the computations are performed in fixed point or floating point arithmetic

Option D:	All of the mentioned
Q19.	What is the stop band frequency of the normalized low pass Butterworth filter used to design a analog band pass filter with -3.0103dB upper and lower cutoff frequency of 50Hz and 20KHz and a stop band attenuation 20dB at 20Hz and 45KHz?
Option A:	2 rad/sec
Option B:	2.25 Hz
Option C:	2.25 rad/sec
Option D:	2 Hz
Q20.	What is the order of the normalized low pass Butterworth filter used to design a analog band pass filter with -3.0103dB upper and lower cutoff frequency of 50Hz and 20KHz and a stop band attenuation 20dB at 20Hz and 45KHz?
Option A:	2
Option B:	3
Option C:	4
Option D:	5
Q21.	The time required to complete the conversion of Analog to Digital is _____ the duration of the hold mode of S/H.
Option A:	Greater than
Option B:	Equals to
Option C:	Less than
Option D:	Greater than or Equals to
Q22.	The time required for the output of the D/A converter to reach and remain within a given fraction of the final value, after application of the input code word is called?
Option A:	Converting time
Option B:	Setting time
Option C:	Both Converting & Setting time
Option D:	None of the mentioned
Q23.	In D/A converter, the application of the input code word results in a high-amplitude transient, called?
Option A:	Glitch
Option B:	Deglitch
Option C:	Glitter
Option D:	None of the mentioned
Q24.	What is the type of quantizer, if a Zero is assigned a quantization level?
Option A:	Midrise type
Option B:	Mid tread type
Option C:	Mistreat type

Option D:	None of the mentioned
Q25.	What is the term used to describe the range of an A/D converter for bipolar signals?
Option A:	Full scale
Option B:	FSR
Option C:	Full-scale region
Option D:	FS