Program: BE Electronics & Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: ECC504 and Course Name: Discrete Time 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.	What is the value of complex addition required to compute DFT for N=8?
Option A:	56
Option B:	64
Option C:	32
Option D:	16
Q2.	For a decimation-in-frequency FFT algorithm, which of the following is true?
Option A:	Both input and output are in order
Option B:	Both input and output are shuffled
Option C:	Input is shuffled and output is in order
Option D:	Input is in order and output is shuffled
Q3.	If $x_1(n)$ and $x_2(n)$ are two real valued sequences of length N, and let x(n) be a complex valued sequence defined as $x(n)=x_1(n)+jx_2(n)$, $0 \leq n \leq N-1$, then what is the value of $x_2(n)$?
Option A:	$x_2(n) = \frac{x(n) + x^*(n)}{2}$
Option B:	$x_2(n) = \frac{x(n) - x^*(n)}{2}$
Option C:	$x_2(n) = \frac{x(n) - x^*(n)}{2j}$
Option D:	$x_2(n) = \frac{x(n) + x^*(n)}{2j}$
Q4.	What is DFT of {1,1,1,1}
Option A:	X(K)= {1,0,0,0,}
Option B:	X(K)={4,4,4,4}
Option C:	X(K)= {4,0,0,0}
Option D:	X(K)={4,0,1,0}

Q5.	Aliasing occur in which of the following method?
Option A:	DFT & IDFT
Option B:	FFT & IFFT
Option C:	Overlap Save method
Option D:	Overlap Add method
Q6.	Which of the filter exhibit more transition band?
Option A:	Chebyshev-1
Option B:	Chebyshev-2
Option C:	Butterworth
Option D:	FIR Filter
Q7.	Due to aliasing error the impulse invariant method is not suitable for design of
Option A:	Low pass filter
Option B:	Band pass filter
Option C:	High pass filter
Option D:	High pass and band pass filter
Q8.	While designing IIR digital filter, Aliasing effect occurs due to which transformation method?
Option A:	Bilinear transformation Method
Option B:	Impulse Invariant Method
Option C:	Butterworth method
Option D:	Windowing Method
Q9.	Which of the following is true in the case of Butterworth filters?
Option A:	Smooth pass band
Option B:	Wide transition band
Option C:	Not so smooth stop band
Option D:	All of the mentioned
Q10.	. If the conversion technique is to be effective, then the LHP of s-plane should be mapped _____.
Option A:	Outside of unit circle
Option B:	On the Unit circle
Option C:	Inside unit circle
Option D:	Does not matter
Q11.	In Bilinear Transformation Method poles are transferred by using
Option A:	$s = \frac{2}{Ts}\left(\frac{Z-1}{Z+1}\right)$
Option B:	$s = \frac{Ts}{2}\left(\frac{Z-1}{Z+1}\right)$
Option C:	$s = \frac{2}{Ts}\left(\frac{Z+1}{Z-1}\right)$

Option D:	$s = \frac{Ts}{2}\left(\frac{Z+1}{Z-1}\right)$
Q12.	Which of the following windows has a time domain sequence h(n)=$1-\frac{2\left\lvert n-\frac{M-1}{2}\right\rvert}{M-1}$?
Option A:	Bartlett window
Option B:	Blackman window
Option C:	Hanning window
Option D:	Hamming window
Q13.	Which of the following is the difference equation of the FIR filter of length M, input x(n) and output y(n)?
Option A:	$y(n) = \sum_{k=0}^{M+1} b_k x(n+k)$
Option B:	$y(n) = \sum_{k=0}^{M+1} b_k x(n-k)$
Option C:	$y(n) = \sum_{k=0}^{M-1} b_k x(n-k)$
Option D:	$y(n) = \sum_{k=0}^{M-1} b_k x(n+k)$
Q14.	A filter is said to be linear phase filter if the phase delay and group delay are _____
Option A:	High
Option B:	Moderate
Option C:	Low
Option D:	Constant
Q15.	for design of multirate system, which should be the ideal choice
Option A:	IIR filter
Option B:	FIR filter
Option C:	Feedback filter
Option D:	Non linear filter
Q16.	Which of the following windows has a time domain sequence?

	$W(n) = 0.42 - 0.5COS\left(\frac{2\pi n}{M-1}\right) + 0.08COS\left(\frac{4\pi n}{M-1}\right)$
Option A:	Rectangular window
Option B:	Hanning window
Option C:	Triangular window
Option D:	Blackman window
Q17.	The effects caused due to finite word lengths are
Option A:	Coefficient quantization error
Option B:	Granular error
Option C:	Ringing effect
Option D:	Slope overflow error
Q18.	Whenever the quantization of filter coefficients is done,
Option A:	The degradation of frequency response takes place.
Option B:	The enhancement of frequency response takes place.
Option C:	The magnitude response remains unchanged.
Option D:	The input response remains unchanged.
Q19.	In the frequency response characteristics of FIR filter, the number of bits per coefficient should be _____in order to maintain the same error.
Option A:	Increased
Option B:	Constant
Option C:	Decreased
Option D:	Either decrease or increase
Q20.	Quantization is a _____ process.
Option A:	Non linear
Option B:	Reversible
Option C:	Non linear & Reversible
Option D:	linear
Q21.	What is function of MAC unit
Option A:	Multiply and Add data in one cycle
Option B:	Multiply and Add data in multiple cycle
Option C:	Multiply and Shift data in one cycle
Option D:	Multiply and Shift data in multiple cycle
Q22.	The function of Boot Loader is
Option A:	Speed the operation
Option B:	To access Internal Memory
Option C:	Decide the action after DSP reset.
Option D:	Helps for serial communication
Q23.	Advantage of DSP processor over simple processor is

Option A:	Accuracy is high
Option B:	Accuracy is less
Option C:	Stability is more
Option D:	Less dynamic range
Q24.	Function of DSP processor in ECG is to
Option A:	To modulate signal
Option B:	To detect signal
Option C:	Remove high frequency components
Option D:	Detect Target
Q25.	Function of DSP processor in RADAR is to
Option A:	To modulate signal
Option B:	To detect signal
Option C:	To amplify signal
Option D:	Detect Target