University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Electronics & Telecommunication Engineering
Curriculum Scheme: Rev2016
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.	Which one is error due to finite word length registers?
Option A:	Input quantization error
Option B:	Mean square error
Option C:	Square error
Option D:	Measurement error
Q2.	In floating point arithmetic if X= M1 x 2^{c1} and Y= M2 x 2^{c2}, Where M1 ,M2 are mantissa and c1,c2 are exponents. Then X x Y is ?
Option A:	(M1+ M2) 2^{c1}
Option B:	(M1+ M2) 2^{c1+c2}
Option C:	M1+ M2
Option D:	(M1+ M2) 2^{c1- c2}
Q3.	As compare to floating point arithmetic fixed point arithmetic is
Option A:	slow operation
Option B:	Overflow does not arise
Option C:	Fast operation
Option D:	More expensive
Q4.	Limit cycle occurs as a result of
Option A:	Truncation

Option B:	Round off
Option C:	Quantization effect in multiplication
Option D:	Scaling
Q5.	Fixed point arithmetic round off errors occurs only for
Option A:	Addition
Option B:	Addition and multiplication
Option C:	Division
Option D:	Multiplication
Q6.	What is the full form of DTMF?
Option A:	Dual-Tone Multi frequency
Option B:	Dual Telephony Multiple Frequency
Option C:	Dual-Tone Minimum Frequency
Option D:	Digital Tone Minimum Frequency
Q7.	The radar in which both transmission and reception is done using the same antenna are called:
Option A:	Monostatic radar
Option B:	Bistatic radar
Option C:	Monopole radar
Option D:	Dipole radar
Q8.	7The term radar cross section defines the:
Option A:	Scattering ability of the target
Option B:	Power radiating ability of the radar

Option C:	Amount of energy scattered by unwanted objects
Option D:	Cross section of radar area through which energy is emitted
Q9.	The cost of the digital processors is cheaper because
Option A:	Processor allows time sharing among a number of signals
Option B:	The hardware is cheaper
Option C:	Require less maintenance
Option D:	Less power consumption
Q10.	In the process of the ECG waveform, the detection filter removes ________ and ________
Option A:	Baseline wander, motion noise
Option B:	Muscle artifact, motion noise
Option C:	Low frequency noise, motion noise
Option D:	Baseline wander, muscle artifact
Q11.	Which of the following is true in case of Overlap add method?
Option A:	M zeros are appended at last of each data block
Option B:	M zeros are appended at first of each data block
Option C:	M-1 zeros are appended at last of each data block
Option D:	M-1 zeros are appended at first of each data block
Q12.	How many complex multiplications are required to compute X(k)?
Option A:	N(N+1)
Option B:	N(N-1)/2
Option C:	N2/2

Option D:	N(N+1)/2
Q13.	If X (k) is the N-point DFT of a sequence x (n), then what is the DFT of x*(n)?
Option A:	X (N-k)
Option B:	X*(k)
Option C:	X*(N-k)
Option D:	X (n+k)
Q14.	What is the DFT of the four point sequence x(n)={1,2,3,4}?
Option A:	{10,-2+2j-2,-2-2j}
Option B:	{6,-2-2j,2,-2+2j}
Option C:	{10,-2-2j,-2,-2+2j}
Option D:	{-10,-2+2j,-2,-2-2j}
Q15.	If x (n) and X (k) are an N-point DFT pair, then X (k+N) =?
Option A:	X (-k)
Option B:	`-X (k)
Option C:	X (k)
Option D:	X (n+k)
Q16.	With an increase in the value of M, the height of each side lobe _____________
Option A:	Do not vary
Option B:	Does not depend on value of M
Option C:	Decreases
Option D:	Increases
Q17.	What is the value of h(M-1/2) if the unit sample response is anti-symmetric?
Option A:	0
Option B:	1
Option C:	-1
Option D:	Infinity (∞)
Q18.	What is the number of filter coefficients that specify the frequency response for h(n) symmetric?

Option A:	(M-1)/2 when M is odd and M/2 when M is even
Option B:	(M-1)/2 when M is even and M/2 when M is odd
Option C:	(M+1)/2 when M is even and M/2 when M is odd
Option D:	(M+1)/2 when M is odd and M/2 when M is even
Q19.	What is the peak side lobe (in dB) for a rectangular window?
Option A:	-13
Option B:	-27
Option C:	-32
Option D:	-58
Q20.	Which of the following window function of causal system is given by $h(n)=0.42 - 0.5 \cos(2\pi n / M-1) + 0.08 \cos(2\pi n / M-1))$;$0 \leq n \leq M-1$?
Option A:	Hamming window
Option B:	Hanning window
Option C:	Barlett window
Option D:	Blackman window
Q21.	The mapping in the Bilinear transformation method is
Option A:	One-to-many mapping
Option B:	Many-to-one mapping
Option C:	Many-to-many mapping
Option D:	One-to-one mapping
Q22.	If the Analog filter to digital filter conversion technique is to be effective, then the left half plane of s-plane should be mapped in to
Option A:	Outside of unit circle
Option B:	Inside unit circle
Option C:	Outside of unit ellips
Option D:	Inside unit ellips
Q23.	In the impulse-invariant transformation method the relationship between the analog frequency Ω and digital frequency ω is given by
Option A:	$\omega=\Omega+T$

Option B:	$\omega = \Omega^2 T$
Option C:	$\omega=\Omega T$
Option D:	$\omega = \Omega T^2$
Q24.	What is the number of maxima present in the pass band of magnitude frequency response of a low pass chebyshev-I filter of order 5?
Option A:	1
Option B:	2
Option C:	3
Option D:	4
Q25.	A low pass Butterworth filter meet the following specification passband frequency is 200rad/sec,stopband frquency is 600 rad/sec,pass band attenuation is 1 dB and stop band attenuation is 30 dB.Find order N of low pass Butterworth Filter
Option A:	N=7
Option B:	N=4
Option C:	N=1
Option D:	N=2

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	B
Q3.	C
Q4	D
Q5	E
Q6	A
Q7	A
Q8.	A
Q9.	A
Q10.	C
Q11.	C
Q12.	D
Q13.	C
Q14.	A
Q15.	C
Q16.	D
Q17.	A
Q18.	D
Q19.	A
Q20.	B
Q21.	D
Q22.	B
Q23.	C
Q24.	C
Q25.	B