University of Mumbai
Examination 2020

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: _ETC602____ 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.	The system having transfer system $H(Z) = 1 - Z^{-1} - 6Z^{-2}$ is
Option A:	Minimum Phase
Option B:	Maximum Phase
Option C:	Mixed Phase
Option D:	Unstable
Q2.	DFT of impulse is
Option A:	one
Option B:	Zero
Option C:	infinite
Option D:	impulse in frequency domain
Q3.	What is the order of analog butterworth filter which has 1dB passband attenuation at frequency 200rad/sec and 30dB stopband attenuation at at 600 rad/sec
Option A:	8.75
Option B:	7.75
Option C:	3.75
Option D:	9.75
Q4.	Which of the following use quadrature mirror filters?
Option A:	Sub band coding
Option B:	multiplexer
Option C:	Sub band coding & Trans-multiplexer
Option D:	Demultiplexer
Q5.	In the truncation of Negative number, the truncation error is always
Option A:	undetermined
Option B:	negative
Option C:	zero
Option D:	positive

Q6.	FIR filter has …………. Phase response and are……………always ……..
Option A:	Non-linear,stable
Option B:	Linear,unstable
Option C:	Linear, stable
Option D:	Non-linear,unstable
Q7.	Deadline is the finite value of the output when the recursive cycle enters to which cycle?
Option A:	Infinite Cycle
Option B:	Under cycle
Option C:	Undetermined Cycle
Option D:	Limit Cycle
Q8.	If sequence is imaginary and even the DFT is
Option A:	Real and Even
Option B:	Imaginary and odd
Option C:	Imaginary and even
Option D:	Real and Odd
Q9.	If the Analog filter has transfer function Ha(S)=1/(S+2) then what is transfer function of digital filter using Impulse invarient method? (Assume T=1sec)
Option A:	$$H(z) = \frac{1}{Z - 0.14}$$
Option B:	$$H(z) = \frac{Z}{Z - 0.14}$$
Option C:	$$H(z) = \frac{Z}{Z - 2.72}$$
Option D:	$$H(z) = \frac{1}{Z - 2.72}$$
Q10.	Sampling rate conversion by the rational factor I/D is accomplished by what connection of interpolator and decimator?
Option A:	Parallel
Option B:	Cascade
Option C:	convolution
Option D:	correlation
Q11.	What is NTF?
Option A:	Negative Transfer Function
Option B:	Noise Truncation Function
Option C:	Negative Truncation Function
Option D:	Noise Transfer Function
Q12.	The total number of complex additions required to compute N point DFT by radix-2 FFT is? (Note the base of all Log is 2)

Option A:	(N/2)log(N)
Option B:	(N/2)log(N*2)
Option C:	Nlog(N)
Option D:	N
Q13.	Which of the following has to be performed in sampling rate conversion by rational factor?
Option A:	Interpolation
Option B:	Decimation
Option C:	multiplication
Option D:	division
Q14.	Due to oversampling, the amplitude difference between successive sample becomes____
Option A:	0
Option B:	Very large
Option C:	Very small
Option D:	10
Q15.	What is the function of Ideal low pass filter?
Option A:	To allow low frequency components and prevent high frequecny components
Option B:	To allow high frequency components and prevent low frequecny components
Option C:	To allow all frequency components
Option D:	To amplify the frquency components
Q16.	Impulse invarient method is nothing but
Option A:	one to one mapping from s-domain to z-domain
Option B:	Sampling the impulse response of an equivalent analog filter
Option C:	Taking backward difference for the derivative
Option D:	Approximation of Derivaties
Q17.	The System output noise power due to product quatization error is called as
Option A:	Roundoff
Option B:	Rounding Off
Option C:	Round Off Noise power
Option D:	Round Off Noise Error
Q18.	To what value should the bandwidth of x(n) has to be reduced in order to avoid aliasing
Option A:	F/2D
Option B:	F/D
Option C:	F/4D
Option D:	F/D
Q19.	Which of the following is true regarding the number of computations required to compute an N-point DFT?

Option A:	N*N complex multiplications and N(N-1) complex additions
Option B:	N*N complex additions and N(N-1) complex multiplications
Option C:	N*N complex multiplications and N(N+1) complex additions
Option D:	N*N complex additions and N(N+1) complex multiplications
Q20.	The reverberation needs _____ per sound
Option A:	100 echoes/sec
Option B:	10 echoes/second
Option C:	1000echoes/sec
Option D:	5echoes /second
Q21.	The Short Term Fourier Transform (STFT) is _____ dependent transform
Option A:	Amplitude
Option B:	Phase
Option C:	Frequency
Option D:	Time
Q22.	Direct form I realization of IIR filter require……………memory location
Option A:	M-1
Option B:	M-N
Option C:	M+1
Option D:	M+N+1
Q23.	Relation between DFT and Fourier series Coefficients Ck is given by
Option A:	X(K)=Ck
Option B:	X(K)=N*Ck
Option C:	X(K)=(1/N)*Ck
Option D:	N*X(K)=Ck
Q24.	If DFT of x(n) is X(K) then DFT of x(-n) is
Option A:	X(K)
Option B:	-X(K)
Option C:	X(-K)
Option D:	-X(-K)
Q25.	The oscillatory behavior near the band edge of the filter is called the…………………..
Option A:	Finite wordlength effect
Option B:	Gibbs Phenomenon
Option C:	warping
Option D:	Quantization Error