Program: Electronics & Telecommunication
Curriculum Scheme: Revised 2016
Examination: Final Year Semester VIII
Course Code and Course Name: ECCDLO8042 and Advanced Digital Signal Processing

Time: 1 hour Max. Marks: 50

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1		For a 4 point signal x(n) ={ 3, -1 , 0, 2}. The average power
	a	4
	b	3
	c	3.5
	d	4.5
2		In Sub band coding of speech signal, _____ is used in transmitter and _____is used in Reciever.
	a	Interpolation, Decimation
	b	Decimation, Interpolation
	c	Decimation, Decimation
	d	Interpolation, Interpolation
3		Synthesis filter banks are used for
	a	Separating a signal to several frequency bands
	b	combining the processed subband signals to one signal
	c	removing the noise in the signal
	d	removing the images frequencies
4		Downsampling is usally preceeded by LPF to avoid

	a	Aliasing
	b	images
	c	noise
	d	peak value of the signal
5		In polyphase filter, which kind of realization is/are adopted for three subfilters possessing coefficients?
	a	Cascade
	b	Parallel
	c	Direct
	d	Cascade & parallel
6		Quality factor of Bartlett power spectrum estimate is
	a	1.1NΔf
	b	1.39NΔf
	c	2.34NΔf
	d	1.15NΔf
7		State which of the statement is true in the following
	a	Parametric methods requires infinite set of data points for estimation
	b	Non parametric method of estimation provides both good frequency resolution with good variance
	c	The non-parametric method is a Fourier transforms based method
	d	Non parametric methods do not suffer frequency leakage
8		The frequency resolution of the Bartlett's method is

	a	9/L
	b	0.9/L
	c	1/9L
	d	1/0.9L
9		Levinson-Durbin algorithm uses_____ structure of correlation matrix for efficient calculations
	a	Toeplitz
	b	diagonal
	c	Complex
	d	upper triangular
10		If R is the is the autocorrelation of the input sequence {x(n)} fed to an FIR Weiner filter with weight vector W and then if P is the cross correlation between the desired sequence {d(n)} and the input sequence {x(n)} then the Weiner Hopf equation is given as
	a	RW = P
	b	RP = W
	c	R = W/P
	d	W = R/P
11		For MA(q) model is
	a	All pole system with valleys
	b	All zero system with valleys
	c	All zero system with sharp peak
	d	All pole system with sharp peak

12		Levinson-durbin algorithm is used for_____
	a	solving cost functions of IIR filter
	b	solving augmented weiner hopf equation
	c	obtaining error in forward linear predictors
	d	obtaining error in backward linear predictors
13		The cost function J depends upon_____ for optimization
	a	Correlation matrix
	b	Filter weights
	c	input u(n)
	d	desired input d(n)
14		The important modules/ components of an adaptive filter are
	a	Filtering structure, Weights of the filter
	b	Filtering structure, Criteria of performance
	c	Filtering structure, Criteria of performance, adaptation algorithm
	d	Criteria of performance, Weights of the filter
15		Weight update equation of _____ is $W(n+1) = W(n) - \frac{1}{2}\mu g$ where g is the gradient vector of the cost function J(W) and μ is the step size
	a	Recursive Least square algorithm
	b	Levinson Durbin algorithm
	c	Least Mean square algorithm
	d	Steepest descent algorithm

16		Steepest descent algorithm is a _____ algorithm and LMS algorithm is a_____ algorithm
	a	Non adaptive, Non adaptive
	b	Adaptive, Adaptive
	c	Non adaptive, Adaptive
	d	Adaptive, Non adaptive
17		Steepest Descent is _____ algorithm and LMS is _____ algorithm
	a	Stochastic, Deterministic
	b	Deterministic, Stochastic
	c	Stochastic, Stochastic
	d	Deterministic, Deterministic
18		If the equalizer o/p = C0y(n+2) + C1y(n+1)+C2y(n) , there are
	a	2 Taps in the equalizer
	b	3 Taps in the equalizer
	c	4 Taps in the equalizer
	d	5 Taps in the equalizer
19		Short time Fourier Transform is used for analyzing _____ and _____ signals
	a	Time-variant, Non-stationary
	b	Time-invariant, Non-stationary
	c	Time-variant, Stationary
	d	Time-invariant, Stationary

20		In Haar Wavelet family Φ(t) is called _____function and ψ(t) is called _____function
	a	Wavelet, Scaling
	b	Wavelet, Translate
	c	Translate, wavelet
	d	Scaling, Wavelet
21		Which is the special condition a window function must satisfy to be used in Gabor transform (STFT?)
	a	tw(t)∈L^2
	b	w(t)∈L^2
	c	tw(t)∈L^3
	d	w(t)∈L^3
22		Fourier Transform is used for analyzing _____ and _____ signals
	a	Time-variant, Non-stationary
	b	Time-invariant, Non-stationary
	c	Time-variant, Stationary
	d	Time-invariant, Stationary
23		EEG signal contains ---------- waves
	a	QRS Waves
	b	P and T waves
	c	Gamma waves
	d	alpha & beta waves

24		Full form of EEG is _____ and it represents electrical activity _____
	a	Electrocardiogram, Human Brain
	b	Electrocardiogram, Human heart
	c	Electroencephalogram, Human Brain
	d	Electroencephalogram, Human heart
25		Consider a diffrence equation, $x(n) = \mathrm{w(n)} + \sum_{k=1}^{q} (b_k w(n-k))$
	a	It is MA model
	b	It is AR model
	c	It is ARMA model
	d	It is AP model