BRAINWARE UNIVERSITY

ODD Semester Examinations 2021- 22

Programme – Bachelor of Technology in Electronics & Communication Engineering - 2018 [B.Tech.(ECE)]

Course Name – Wavelet Analysis

Course Code – PEC-ECEL701B

(Semester VII)

Time allotted : 1 Hour 25 Minutes | Full Marks : 70

(Multiple choise type question) | 70 x 1 = 70

Choose the correct alternative from the following

(I) MRA stands for

A) Multiresolution analysis
B) Multiresolution assembly
C) Multiresemble analysis
D) Multiresemble assembly

(II) DSF stands for

A) Design signal filtering
B) Digital signal filtering
C) Digital segment filtering
D) Design segment filtering

(III) The region of convergence of x/ (1+2x+x2) is

A) 0
B) 1
C) Negative
D) Positive

(IV) What is the process of increasing the sampling rate by a factor I?

A) Sampling rate conversion
B) Interpolation
C) Decimation
D) None of the mentioned

(V) For designing a multirate LPF with passband 0 to 50 Hz, stopband 60 to 280 Hz, stopband deviation 0.001, passband deviation 0.01 and sampling frequency (fs) = 400 Hz, what would be the value of normalized transition width?

A) 0.025 Hz
B) 1.25 Hz
C) 1.50 Hz
D) 2.6 Hz

(VI) Which peripheral on C 6 X processor allows buffering of serial samples in memory by port automatically & especially with an assistance of EDMA controller?

A) Boot Loader
B) HPI
C) EMIF
D) McBSP

(VII) The similarity between the Fourier transform and the z transform is that

A) Both convert frequency spectrum domain to discrete time domain
B) Both convert discrete time domain to frequency spectrum domain
C) Both convert analog signal to digital signal
D) Both convert digital signal to analog signal

(VIII) Decomposition in subband coding is performed to

A) segment image
B) reconstruct image
C) blur image
D) sharpened image

(IX) The nonlinear difference equations are solved using

A) Iterative method
B) Cobweb model
C) Phase diagram
D) Power series method

(X) In DSP Processor, what kind of queuing is undertaken/executed through instruction register and instruction cache?

A) Implicate
B) Explicate
C) Both a and b
D) None of the above

(XI) Overlap-Add Method Deals with principles that

A) The linear convolution of a discrete-time signal of length L and a discrete-time signal of length M produces a discrete-time convolved result of length L + M – 1

B) The linear convolution of a discrete-time signal of length L and a discrete-time signal of length M produces a discrete-time convolved result of length L + M

C) The linear convolution of a discrete-time signal of length L and a discrete-time signal of length M produces a discrete-time convolved result of length 2L + M – 1

D) The linear convolution of a discrete-time signal of length L and a discrete-time signal of length M produces a discrete-time convolved result of length 2L + 2M – 1

(XII) Parallel form of realisation is done in

A) High speed filtering applications

B) Low speed filtering applications

C) Both a and b

D) None of the above

(XIII) The anti causal sequences have _____ components in the left hand sequences.

A) Positive

B) Negative

C) Both a and b

D) None of the above

(XIV) What is the folding frequency for the aliased version of x(n) with sampling rate F?

A) F/D

B) F/4D

C) F/2

D) F/2D

(XV) DSP stands for

A) Digital signal processing

B) Design signal processing

C) Digital signal processed

D) Design signal processed

(XVI) K multiplication constants in digital filters are called

A) co efficient

B) multipliers

C) subtractors

D) filter coefficients

(XVII) Ak coefficients are computed by

A) integrated outer products

B) integrated inner products

C) integral outer products

D) integral inner products

(XVIII) One that is not a part of digital filter

A) unit delay

B) multiplier

C) subtractor

D) adder

(XIX) Heisenberg uncertainty principle is used for

A) data processing

B) information processing

C) data processinerosion

D) dilation

(XX) A system is said to be unstable if

A) None of the poles of its transfer function is shifted to the right half of s-plane

B) At least one zero of its transfer function is shifted to the right half of s-plane

C) At least one pole of its transfer function is shifted to the right half of s-plane

D) At least one pole of its transfer function is shifted to the left half of s-plane

(XXI) Wavelet series equation is the sum of

A) scaling coefficient

B) detail coefficient

C) span coefficient

D) Both a and b

(XXII) The circular convolution of two sequences in time domain is equivalent to

A) Multiplication of DFTs of two sequences

B) Summation of DFTs of two sequences

C) Difference of DFTs of two sequences

D) Square of multiplication of DFTs of two sequences

(XXIII) Time shifting of discrete time signal means

A) y[n] = x[n-k]

B) y[n] = x[-n-k]

C) y[n] = -x[n-k]

D) y[n] = x[n+k]

(XXIV) One dimensional signal is a function of

A) Multiple independent variables

B) Single independent variable

C) Multiple dependent variables

D) Single dependent variable

(XXV) One that is not a part of digital filter

A) unit delay

B) multiplier

C) subtractor

D) adder

(XXVI) Subspaces spanned are nested at

A) lower scales
B) higher scales
C) mid scales
D) intense scales

(XXVII) In A/D converter, what is the time relation between sampling period T and the duration of the sample mode and the hold mode?

A) Should be larger than the duration of sample mode and hold mode
B) Should be smaller than the duration of sample mode and hold mode
C) Should be equal to the duration of sample mode and hold mode
D) Should be larger than or equals to the duration of sample mode and hold mode

(XXVIII) The image pyramid contains

A) j levels
B) j-1 levels
C) j+1 levels
D) n levels

(XXIX) The IIR filter designing involves

A) Designing of analog filter in analog domain and transforming into digital domain
B) Designing of digital filter in analog domain and transforming into digital domain
C) Designing of analog filter in digital domain and transforming into analog domain
D) Designing of digital filter in digital domain and transforming into analog domain

(XXX) In which of the following, sampling rate conversion are used?

A) Narrow band filters
B) Digital filter banks
C) Quadrature mirror filters
D) All of the mentioned

(XXXI) Which of the following is the advantage of sampling rate conversion by converting the signal into analog signal?

A) Less signal distortion
B) Quantization effects
C) New sampling rate can be arbitrarily selected
D) None of the mentioned

(XXXII) Orthonormal filter is developed around filter called

A) up sampling
B) filtering
C) Digital segment filtering
D) prototype

(XXXIII) What is the process of converting a signal from a given rate to a different rate?

A) Sampling
B) Normalizing
C) Sampling rate conversion
D) None of the mentioned

(XXXIV) Function space is referred to as

A) open span
B) fully span
C) closed span
D) span

(XXXV) Causal systems are the systems in which

A) The output of the system depends on the present and the past inputs
B) The output of the system depends only on the present inputs
C) The output of the system depends only on the past inputs
D) The output of the system depends on the present input as well as the previous outputs

(XXXVI) Which of the following is the disadvantage of sampling rate conversion by converting the signal into analog signal?

A) Signal distortion
B) Quantization effects
C) New sampling rate can be arbitrarily selected
D) Signal distortion & Quantization effects

(XXXVII) For a system function H(s) to be stable

A) The zeros lie in left half of the s plane
B) The zeros lie in right half of the s plane
C) The poles lie in left half of the s plane
D) The poles lie in right half of the s plane

(XXXVIII) The condition for a system to be stable is

A) All poles of its transfer function lie on the left half of s-plane
B) All poles of its transfer function must be right half of s-plane
C) All zeros of its transfer function must be right half of s-plane
D) All zeros of its transfer function must be left half of s-plan

(XXXIX) In Barlett window, the triangular function resembles the tapering of rectangular window sequence _____ from the middle to the ends.

A) linearly
B) elliptically

C) hyperbolically
D) parabolically

(XL) Damping is the ability of a system

A) To support oscillatory nature of the system's transient response
B) To oppose the continuous nature of the system's transient response
C) To oppose the oscillatory nature of the system's transient response
D) To support the discrete nature of the system's transient response

(XLI) How is the sampling rate conversion achieved by factor I/D?

A) By increase in the sampling rate with (I)
B) By filtering the sequence to remove unwanted images of spectra of original signal
C) By decimation of filtered signal with factor D
D) All of the above

(XLII) A direct partial-fraction expansion of the transfer function in Z leads to

A) The parallel form II structure
B) The parallel form I structure
C) Cascaded structure
D) None of the above

(XLIII) The partial fraction of x2+1/x(x-1)2 is

A) 1/ (x-1) + 2/(x-1)2 – 1/x
B) 1/ (x-1) + 2/(x-1)2 – 3/x
C) 1/ (x-1) + 2/(x-1)2 – 3/x2
D) 1/ (x+1) + 2/(x+1)2 – 1/x

(XLIV) In FIR filter design, which among the following parameters is/are separately controlled by using Kaiser window?

A) Order of filter (M)
B) Transition width of main lobe
C) Both a and b
D) None of the above

(XLV) How is/are the roundoff errors reduced in the digital FIR filter?

A) By representation of all products with double-length registers
B) By rounding the results after acquiring the final sum
C) Both a and b
D) None of the above

(XLVI) The principle of Gram-Schmidt Orthogonalization (GSO) states that, any set of M energy signals can be expressed as

A) Summation of N ortho normal basis functions, where N ≤ M.
B) Linear combinations of N ortho normal basis functions, where N ≤ M.
C) Product of logarithmic combinations of N ortho normal basis functions, where N ≤ M.
D) Product of inverse squares of N ortho normal basis functions, where N ≤ M.

(XLVII) Sampling rate conversion by the rational factor I/D is accomplished by what connection of interpolator and decimator?

A) Parallel
B) Cascade
C) Convolution
D) None of the mentioned

(XLVIII) The apex of image pyramid contains

A) low resolution
B) high resolution
C) intensity
D) blurred portion

(XLIX) No filtering produces

A) Gaussian pyramids
B) pyramids
C) mean pyramids
D) subsampling pyramids

(L) Narrow wavelets represents

A) sharp details
B) finer details
C) blur details
D) edge details

(LI) In upsampling after every sample placing value is

A) 1
B) 0
C) 2
D) 3

(LII) The scaling of a sequence x[n] by a factor α is given by

A) y[n] = α [x[n]]2
B) y[n] = α x[n2]
C) y[n] = α x[n]
D) y[n] = x[n]x[-n]

(LIII) Which is/are the correct way/s for the result quantization of an arithmetic operation?

A) Result Truncation
B) Result Rounding
C) Both a and b
D) None of the above

(LIV) Radix – 2 FFT algorithm performs the computation of DFT in

A) N/2Log2 N multiplications and 2Log2 N additions
B) N/2Log2 N multiplications and 2Log2 N additions
C) Log2 N multiplications and N/2Log2 N additions
D) NLog2 N multiplications and N/2Log2 N additions

(LV) Images are

A) 1D arrays
B) 2D arrays
C) 3D arrays
D) 4D arrays

(LVI) Two vectors a, b are orthogonal if

A) = 0
B) =
C) = 1
D) = –

(LVII) A filter is said to be linear phase filter if the phase delay and group delay are _____

A) High
B) Moderate
C) Low
D) Constant

(LVIII) In the frequency response characteristics of FIR filter, the number of bits per coefficient should be _____in order to maintain the same error.

A) Increased
B) Constant
C) Decreased
D) None of the above

(LIX) Which of the following is true regarding the number of computations requires to compute an N-point DFT?

A) N2 complex multiplications and N(N-1) complex additions
B) N2 complex additions and N(N-1) complex multiplications
C) N2 complex multiplications and N(N+1) complex additions
D) N2 complex additions and N(N+1) complex multiplications

(LX) The cost of the digital processors is cheaper because

A) Processor allows time sharing among a number of signals
B) The hardware is cheaper
C) Require less maintenance
D) Less power consumption

(LXI) Function having compact support is

A) histogram
B) pyramids
C) mean pyramids
D) haar function

(LXII) Consider the assertions given below. Which among them is an advantage of FIR Filter?

A) Necessity of computational techniques for filter implementation
B) Requirement of large storage
C) Incapability of simulating prototype analog filters
D) Presence of linear phase response

(LXIII) wavelet series is sum of

A) scaling coefficient
B) detail coefficient
C) none of this
D) both a & b

(LXIV) Subband of input image, showing dD(m,n) is called

A) approximation
B) vertical detail
C) horizontal detail
D) diagonal detail

(LXV) In DAGs, which register/s provide/s increment or step size for index register especially during the register move?

A) Index Register
B) Length & Base Register
C) Modify Register
D) All of the above

(LXVI) In tapped delay line filter, the tapped line is also known as _____

A) Pick-on node
B) Pick-off node
C) Pick-up node
D) Pick-down node

(LXVII) Decimation is a process in which the sampling rate is _____

A) enhanced
B) stable
C) reduced
D) unpredictable

(LXVIII) Which of the following methods are used in sampling rate conversion of a digital signal?

A) D/A convertor and A/D convertor
B) Performing entirely in digital domain
C) None of the mentioned
D) D/A convertor, A/D convertor & Performing entirely in digital domain

(LXIX) The transformation technique in which there is one to one mapping from s-domain to z-domain is

A) Approximation of derivatives
B) Impulse invariance method
C) Bilinear transformation method
D) Backward difference for the derivative

(LXX) To change the sampling rate for better efficiency in two or multiple stages, The decimation and interpolation factors must be _____unity.

A) Less than
B) Equal to
C) Greater than
D) None of the above