BRAINWARE UNIVERSITY

Term End Examination 2022
Programme – B.Tech.(ECE)-2019
Course Name – Wavelet Analysis
Course Code - PEC-ECEL701B
(Semester VII)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Wavelet series equation is described as

a) the sum of scaling coefficients
b) the sum of detail coefficients
c) the sum of span coefficients
d) Both a and b

(ii) Scaling vectors are considered as

a) heights
b) sharpness
c) intensity
d) weights

(iii) Narrow wavelets represents

a) sharp details of the signal
b) finer details of the signal
c) blur details of the signal
d) edge details of the signal

(iv) Evaluate the energy of the signal x(t)=A[u(t+a)-u(t-a)] for a>0

a) 2*a*A^2
b) a*A^2
c) 4*a*A^2
d) 6*a*A^2

(v) Analyzing image in more than one resolution is

a) histogram
b) image pyramid
c) local histogram
d) equalized histogram

(vi) The output signal in a linear system is determined by the superposition principal as

a) the product of all the signals
b) the sum of all the signals
c) the highest amplitude of all the signals
d) the largest spectrum of all the signals

(vii) Identify which is not a part of digital filter

a) unit delay
b) multiplier
c) subtractor
d) adder

(viii) Select the number of levels contain in the image pyramid

a) j levels
b) j-1 levels
c) j+1 levels
d) n levels

(ix) Integer wavelet translates are

a) pentagonal
b) square
c) orthogonal
d) oval

(x) Identify the representation of the * in multiresolution processing

a) complete conjugate operation
b) complex conjugate operation
c) complete complex operation
d) complex complex operation

(xi) Discarding every alternate sample is described as

a) up sampling
b) filtering
c) down sampling
d) blurring

(xii) High contrast images are considered as

a) low resolution
b) high resolution
c) intense
d) blurred

(xiii) Haar wavelet transform is used for

a) Signal or image compression
b) Signal or image decompression
c) Signal or image conversion
d) None of the above

(xiv) Write the time shifted value of discrete time signal

a) y[n] = x[n-k]
b) Â y[n] = x[-n-k]
c) y[n] = -x[n-k]
d) y[n] = x[n+k]

(xv) Fourier Transform is applicable for

a) Aperiodic signal
b) Periodic signal
c) Both periodic and aperiodic signal
d) None of the above

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Distinguish Fourier Transform and wavelet transform. (3)
3. Write the advantages of using filter bank approach. (3)
4. Explain Spline Scaling Functions. (3)
5. Describe Windowed Fourier transform with suitable example (3)
6. Explain Parseval's Theorem. (3)

OR

Write the disadvantages of wavelet transform. What are bi-orthogonal wavelets? (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain: Orthonormal wavelet (5)
8. Illustrate: The applications of integral wavelet transform (5)
9. Deduce the general wavelet constructions (5)
10. Describe the necessity of time-frequency localization (5)
11. How could dynamical system(chaotic behavior) as a time series be related in wavelet analysis? (5)
12. Describe about HAAR WAVELETS (5)

OR

express brief idea on Multiple Resolutions ? (5)

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