Code: 13A04803 **R13**

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2018

ADVANCED DIGITAL SIGNAL PROCESSING MULTIRATE & WAVELET

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Mention the advantage of wavelets.
(b) State two properties of Haar wavelets.
(c) What is an orthogonal function?
(d) What is multi-rate signal processing?
(e) What is the uncertainty principle?
(f) What is a mother wavelet? Mention its importance.
(g) Define the DWT.
(h) Name the wavelets which are based on the spline functions.
(i) Mention why wavelets are used for biomedical signal analysis with an example.
(j) What is meant by singularity detection?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain how time frequency analysis is to analyze signals in digital communication.

OR

3 Describe how DYADIC multiresolution analysis can be related to filter bank approach.

UNIT – II

4 Describe the Daubechies family of wavelets in detail.

OR

5 Describe the design and applications of Conjugate Quadrature filter banks with necessary equations and diagrams.

UNIT – III

6 (a) Give a brief description of the importance of the Gaussian function.
(b) Define the Gabor wavelet transform and explain its significant properties.

OR

7 Describe the application of CWT in wideband correlation processing.

UNIT – IV

8 What is a wavelet packet? Explain the construction and implementation of wavelet packet transforms.

OR

9 (a) Describe the lifting method and explain how it can be used.
(b) Explain the polyphase method for decomposition and reconstruction of filter bank.

UNIT – V

10 Explore how wavelet transforms can be used in geophysical signal analysis, such as detection of seismic jolts.

OR

11 Elucidate the applications of wavelets in computer graphics and computer vision.

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