Code: 13A04803 **R13**

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

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) What do you mean by time frequency analysis?
(b) Specify the speciality of Haar wavelet functions.
(c) Compare orthogonal wavelets with bi-orthogonal wavelets.
(d) Draw the block diagram of a two channel analysis and synthesis filter banks.
(e) State Heisenberg's uncertainty principle.
(f) What is the relationship between scale and frequency?
(g) What is the advantage of discrete wavelet over continuous wavelet?
(h) How wavelet packet transform is variant of wavelet transform?
(i) What is the use of wavelets in geophysical signal analysis?
(j) What are all the applications of fractals in imaging & signal processing?

PART – B

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

UNIT – I

2 Discuss in detail about the formation of dyadic multi-resolution analysis in wavelets.

OR

3 Mention the practical situation which demands the need for time-frequency analysis and wavelets. Also Discuss about beginning of wavelet for image processing.

UNIT – II

4 Explain in detail about various signal processing related elements of multi-rate systems.

OR

5 Construct the block diagram of JPEG 2000 image compression standard and explain each individual blocks in detail.

UNIT – III

6 Explain in detail about the application of the continuous wavelet transform in wideband correlation processing.

OR

7 Explain in detail about continuous wavelet transform and its admissibility condition.

UNIT – IV

8 Derive and explain the relationship between wavelets and filter banks.

OR

9 Explain with neat block diagram the analysis and synthesis sections of a filter bank structure.

UNIT – V

10 Explain how wavelet and multi-rate systems are effective in biomedical signal processing applications.

OR

11 Explain how wavelets are helping in computer graphics and computer vision based applications

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