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BB-22

M. Tech. EXAMINATION, May 2017

(Second Semester)

(B. Scheme) (Main & Re-appear)

EE(I&C)

MIC-504-B

MULTIRATE & ADAPTIVE SIGNAL PROCESSING

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. Define the Discrete Fourier transform and also explain its each property with proof. Explain the advantages of design FFT algorithm for computing the DFT.

2. (a) Define the discrete time system and also explain its different properties.

(b) What are the basic multriate operations ? Explain each in detail.

Unit II

3. (a) Explain the polyphase representation and also power symmetric QMF filter bank.

(b) Explain the lossless transfer matrices.

4. (a) Explain the M-channel paraunitary filter banks in detail.

(b) What do you mean by perfect reconstruction of filter bank ? Explain the cosine modulated filter bank.

Unit III

5. (a) Explain the multirate filter bank. And also explain the significance of decimation/interpolation in multirate filter bank.

(b) What do you mean by limit cycle in multirate filter bank ? Explain the multirate filter bank.

6. (a) What are differences between short time Fourier transform and wavelet transform.

(b) Define the multidimensional signal. Explain in detail orthogonal wavelets.

Unit IV

7. Explain the minimum mean square error.

8. Explain the applications of inverse system identification and prediction system.