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Code No: A6501**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****M.Tech I Semester Examinations, March/April 2011****TRANSFORM TECHNIQUES****(WIRELESS AND MOBILE COMMUNICATION)****Time: 3hours****Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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- 1.a) What are the base functions for Fourier series?
 b) Define Hilbert transform and write its applications.
 c) Prove that Hilbert transform of a given function is shifted by π . [12]
2. Determine the DFT of the following matrix and $f = \begin{bmatrix} 1 & 2 & 3 & 1 \\ 2 & 3 & 1 & 2 \\ 1 & 2 & 2 & 1 \\ 3 & 1 & 1 & 1 \end{bmatrix}$ and prove inverse DFT gives the original function. [12]
- 3.a) What is the relation between DCT and DFT?
 b) Define Walsh transform and write its properties. [12]
- 4.a) How KL transform is differ from other transforms?
 b) Derive the inverse Radon transform equation. [12]
- 5.a) What is STFT? How to choose the window of it?
 b) Define CWT and what are the properties of it? [12]
- 6.a) Draw the two level analysis and synthesis banks of wavelet decomposition and explain it.
 b) Why the given function is decimated and also interpolated in wavelet decomposition & reconstruction? [12]
- 7.a) How PRQMF filter banks are used for wavelet transforms?
 b) What are the two scale relations and how these are related to wavelet functions? [12]
- 8) Write short notes on:
 a) Biorthogonality
 b) Two Dimensional DWT. [12]
