

C U SHAH UNIVERSITY
Faculty of Technology and Engineering
M.Tech- SEMESTER-II June-2015

Subject Code: 5TE02WAP1**Date:****Subject Name:** Wavelet and Application**Time:****Total Marks: 70****Instructions:**

1. Make suitable assumptions whenever necessary.
2. Figures to the right indicate full marks.
3. Question one is compulsory.

SECTION 1

- | | | |
|------------|--|-----------|
| Q-1 | a) Define Fourier series with equation. | 2 |
| | b) Define sub ordinate pass | 2 |
| | c) What is bi-orthogonal filter? | 2 |
| | d) Write application of image processing in wavelet. | 1 |
| Q-2 | | 14 |
| | a) Explain multi carrier modulation using wavelet packet modulation. | 5 |
| | b) Explain Image De-noising using wavelet thresholding technique. | 5 |
| | c) Explain proposed steps for image fusion using wavelet transform. | 4 |
| OR | | |
| Q-2 | | 14 |
| | a) Write the features of wavelet packet modulation system compared to OFDM. | 5 |
| | b) Draw the block diagram of wavelet based OFDM transmitter receiver and Explain. | 5 |
| | c) Define audio masking. | 4 |
| Q-3 | | 14 |
| | a) Explain SPIHT with Necessary data. | 5 |
| | b) Explain embedded image coding using zero tree of wavelet coefficient with suitable example. | 5 |
| | c) Explain wavelet packet transform and draw wavelet packet tree with example. | 4 |
| OR | | |
| Q-3 | | 14 |
| | a) Ridgelets and Curvelets | 5 |
| | b) Explain EZW algorithm for image compression. | 5 |
| | c) Write the application of wavelet transform in various fields. | 4 |

SECTION 2

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|------------|---|-----------|
| Q-4 | a) Define dominant pass | 2 |
| | b) CWT property | 2 |
| | c) What is sound pressure level (SPL)? | 2 |
| | d) Critical bandwidth | 1 |
| Q-5 | | 14 |
| | a) Draw and explain MPEG encoder-decoder for audio compression. | 5 |
| | b) Explain Haar analysis filter bank frequency response with magnitude and phase. | 5 |
| | c) Write the disqualification of ideal filter. | 4 |
| OR | | |
| Q-5 | | 14 |
| | a) Explain Time Frequency Resolution. | 5 |

	b) Difference Between Fourier transform and Wavelet Transform.	5
	c) Explain MRA	4
Q-6		14
	a) What is constant Q-factor Filtering Interpretation? Explain it.	5
	b) Explain Inverse Continuous Wavelet Transform.	5
	c) Write axioms of multi resolution analysis.	4
	OR	
Q-6		14
	a) Explain Mallat Algorithm	5
	b) Explain approximating vector in nested subspace.	5
	c) Explain two channel filter bank.	4
