Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER – I EXAMINATION – SUMMER 2017

Subject Code: 2714107 **Date:10/05/2017**

Subject Name: Signal Analysis and Transform

Time:02:30 p.m. to 05:00 p.m. **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	Determine the following systems are Static or Dynamic. [1] $y(t) = 2x(t)$ [2] $y(t) = 2x(t) + 3x(t-3)$	07
	(b)	State and Prove " Convolution Property" of Z-Transform	07
Q.2	(a)	Compute Discrete Fourier Transform(DFT) of following sequence: $X[n] = \{1, 0, -1, 0\}$	07
	(b)	Find the Inverse Z-Transform of the following using Partial Fraction Expansion (PEF) Method. $F[z] = \frac{2Z^2 + Z}{Z^2 - 1.5Z + 0.5}$	07
		OR	
	(b)	Explain "Decimation in Frequency Fast Fourier Transform (FFT) algorithm Fundamentally.	07
Q.3	(a)	What is "Discrete Cosine Transform"? Explain DCT fundamentally with necessary derivations.	07
	(b)	Write Short Note on: Linear Filtering Methods based on DFT	07
		OR	
Q.3	(a)	What is Wavelet? Explain "Fast Wavelet" transform fundamentally.	07
	(b)	Compare: Continuous Wavelet Transform and Discrete Wavelet Transform	07
Q.4	(a)	List and Explain Classification of Signal with suitable example.	07
	(b)	Write short note on: Signal Distortion over a Communication Channel.	07
		OR	
Q.4	(a)	Write shot note on: Correlation of Signals.	07
	(b)	Define the terms: (1) Sampling (2) Orthogonal signal and (3) Power Spectral Density	07
Q.5	(a)	Write Short Note on : Walsh Transform	07
	(b)	List and Explain properties of Eigen Values and Eigen Vectors.	07
		OR	
Q.5	(a)	Explain Quantization effects in the computation of the DFT.	07
	(b)	Write Short Note on : Radon Transform	07

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