Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. – SEMESTER-VI EXAMINATION – SUMMER 2015

Subject Code:160305 Date:12/05/2015

Subject Name: Biomedical Signal Processing

Time:10:30 AM to 1:00 PM 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)**	Differentiate (i) Time variant Vs. Time invariant system (ii) Causal Vs. Non-Causal system.	**07**
	(b)	Give classification of signals. Distinguish multichannel & multidimensional signal.	**07**
Q.2	**(a)**	Write short note on: All pass system	**07**
	(b)	Explain effect of Coefficient Quantization in IIR system & FIR system.	**07**
		OR	
	(b)	Explain Frequency response for Rational system functions.	**07**
Q.3	**(a)**	Explain the effect of round off noise in digital filters.	**07**
	(b)	Draw the block diagram representation in cascade form & parallel form for a discrete time LTI system expressed by the following transfer function.	**07**

$$H(z) = \frac{1 + 2z^{-1} + z^{-2}}{1 - 0.75z^{-1} + 0.125z^{-2}}$$

OR

Q.3	**(a)**	Write sort note on: Goertzel Algorithm	**07**
	(b)	Determine the unit sample response of the ideal low pass filter. Why is it not realizable?	**07**
Q.4	**(a)**	Compare Decimation-in-time & Decimation-in-frequency algorithms.	**07**
	(b)	Given x(n)={1,2,3,4,4,3,2,1}, find X(k) using Decimation-In-Time FFT algorithm.	**07**
		OR	
Q.4	**(a)**	Explain generalized architecture of DSP processor. List application of DSP processor.	**07**
	(b)	Given x(n)= {1,2,3,4,4,3,2,1}, find X(k) using Decimation-In-Frequency FFT algorithm.	**07**
Q.5	**(a)**	What are the various methods for QRS detections? Explain any one in detail.	**07**
	(b)	Discuss the Bilinear transformation of IIR filter design.	**07**
		OR	
Q.5	**(a)**	Explain the procedure for EMG signal processing and analysis.	**07**
	(b)	Explain DFT analysis of sinusoidal signals with effects on it.	**07**

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