Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI (OLD).EXAMINATION – WINTER 2016

Subject Code: 160305 **Date: 24/10/2016**

Subject Name: Bio-Medical Signal Processing

Time: 10:30 AM to 01:00 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)**	What are standard Test Signals? What is the significance of it.	**07**
	(b)	What is a system.Explain classification of a System? Explain any two in detail.	**07**
Q.2	**(a)**	Explain the Amplitude Scaling Operations with an example.	**07**
	(b)	Explain DFT property "Circular Time shift of sequence".	**07**
		OR	
	(b)	Explain Difference Equations. Based upon length of Impulse response how the discrete Time systems are classified.	**07**
Q.3	**(a)**	Write a short Note on All Pass System.	**07**
	(b)	Develop Direct form-II realization of the Transfer Function	**07**

H(Z)=

$$\frac{3 + 3.6Z^{-1} + 0.6Z^{-2}}{1 + 0.1Z^{-1} - 0.2Z^{-2}}$$

Is it advantageous than direct Form-I?

		OR	
Q.3	**(a)**	List the Properties of DFT .Explain any two in brief.	**07**
	(b)	Calculate the DFT of a sequence x(n)={4,1-j,-2,1+j}.	**07**
Q.4	**(a)**	Define DFT & Twiddle Factor. Explain the relationship between DFT and DTFT.	**07**
	(b)	Compare Decimation in Time and Decimation in Frequency Algorithms.	**07**
		OR	
Q.4	**(a)**	Write a short note on: Goertzel Algorithm.	**07**
	(b)	Discuss Bilinear Transformation for IIR Filter Designs.	**07**
Q.5	**(a)**	Give generalized architecture of DSP Processor. List application of DSP Processor.	**07**
	(b)	Write a short note on Analysis of Coefficients of Quantization Effects in FIR Filters.	**07**
		OR	
Q.5	**(a)**	Explain DSP Application in Dual Tone Multi Frequency Signal Detection.	**07**
	(b)	Discuss Window Function used in FIR Filter Design along with important Frequency Domain Characteristics.	**07**

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