GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VI (OLD) - EXAMINATION – SUMMER 2017 Subject Code: 160305 Date: 01/05/2017 Subject Name: Bio-Medical Signal Processing			
Q.1	(a) (b)	Describe classification of Signals with one example. What are the applications of DSP in Telecommunication and Biomedical Engineering?	07 07
Q.2	(a) (b)	Explain frequency response of Rational System Functions. Prove that any Arbitrary Signal can be expressed as the sum of two signals, one of the, which is EVEN and other is ODD.	07 07
	(b)	Obtain Energy of the signal $x(n)=a^n u(n)$ where $ a <1$.	07
Q.3	(a) (b)	Compute the linear convolution of signals: $x(n) = 1$ and $h(n) = \{2, 1, 2, 1\}$. Write short note on All Pass System.	07 07
Q.3	(a)	Two signals $x_1(t) = \cos 20\pi t$ and $x_2(t) = \cos 100\pi t$ are sampled with sampling frequency 40 Hz. Obtain the associated discrete time signals $x_1(n)$ and $x_2(n)$ and comment on the result.	07
	(b)	Write Properties of Discrete Time Fourier Transform.	07
Q.4	(a) (b)	Explain Decimation-in-Frequency FFT Algorithms. Determine 4-point DFT of a sequence, $x(n) = \{1, 1, 1, 2\}$. OR	07 07
Q.4	(a) (b)	The transfer function of Discrete time Causal system is given by, H (z) = $(1-Z^{-1})/(1-0.2Z^{-1}-0.15Z^{-2})$. Draw Cascade and Parallel realization. The transfer function of Analog filter H(s) = $3/(s+2)(s+3)$ with T _s = 0.1 sec. Design the Digital IIR filter using BLT.	07 07
Q.5	(a) (b)	Write short note on Linear Phase FIR filters. Discuss the process of ECG analysis for Arrhythmia detection. OR	07 07
Q.5	(a) (b)	Explain procedure of EEG signal analysis using DSP. Explain generalized Architectures of DSP processors. List applications of DSP Processors.	07 07
