

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- December 2017

M.Tech III Semester, PhD

COURSE CODE: 17M1WEC331

MAX. MARKS: 35

COURSE NAME: VLSI IN BIOMEDICAL SIGNAL PROCESSING

COURSE CREDITS: 03

MAX. TIME: Two Hour

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. a) What are the various Linear Adaptive Filter algorithms? Explain Stochastic Gradient Algorithm.
b) Explain how the 60 Hz sine wave algorithm adapts to the phase of the noise?
2. Explain the basic configuration of an Adaptive filter operating in discrete time domain. Describe any two generic configurations?
3. Name four ways in which an integer digital filter's magnitude and phase response change when the filter is cascaded with itself. Why are not these changes helpful?
4. How Kogge Stone Prefix Adder is different from Carry Look Ahead Adder.
5. An ECG with 1mV peak to peak QRS amplitude is passed through a filter with a very sharp cutoff, 100Hz passband, and sampled at 200 samples/sec. The ECG is immediately reconstructed with a digital to analog converter (DAC) followed by a low pass reconstruction filter. Comparing the DAC output with the original signal, comment on any differences in appearance due to (a) aliasing, (b) the sampling process itself, and (c) the peak to peak amplitude.
6. a) Design an adaptive filter using LMS algorithm.
b) Explain any two Non classical Adaptive Systems.
7. Derive correlation matrix and cross correlation vector for Recursive least square (RLS) algorithm.