

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- Oct 2017

M.Tech III Semester, PhD

COURSE CODE: 17M1WEC331

MAX. MARKS:25

COURSE NAME: VLSI IN BIOMEDICAL SIGNAL PROCESSING

COURSE CREDITS: 03

MAX. TIME: One Hour Thirty Minutes

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

1. a) What are the steps to designing a filter using a window method?
b) What is the fundamental difference between min-max design and the window design method?
2. A 100Hz full wave rectified sine wave is sampled at 200 samples/sec. The samples are used to directly reconstruct the waveform using a digital to analog converter. Which converter is suitable for this? Will the resulting waveform be a good representation of the original signal? Explain.
3. What is the difference between simple one pole method and two pole methods? Design a Low pass and Band reject recursive filter using the two pole method.
4. a) A digital filter has the transfer function $H(z) = z^{-1} + 6z^{-4} - 2z^{-7}$. What is the difference equation for the output, $y(nT)$?
b) Suppose you are given a filter with a zero at 30 on the unit circle. You are asked to use this filter as a notch filter to remove 60Hz noise. How will you do this? Can you use the same filter as a notch filter, rejecting different frequencies?
5. What are the main difference between the two point difference and three point central difference algorithms for approximating the derivatives?