

3. a) Discuss the designing of linear phase FIR filter using Kaiser window.
b) Discuss about chebyshev approximation used in FIR filter design.
4. a) Discuss about the nonlinear equation solution for maximal ripple FIR filter.
b) Give some elementary properties of IIR filters.
5. a) Discuss Bilinear transformation method for designing of IIR filter.
b) What do you understand by phase response and group delay.
6. a) What is meant by Round off effects in digital filters? Also discuss about limit cycle oscillations in Recursive system.
b) Derive the radix-2 decimation in time FFT algorithm for N=8 point DFT.
7. a) Explain briefly about the Digital matched filters for Radar signals.
b) Explain about Air borne surveillance Radar for air traffic.
8. Write short notes on any two of the following.
 - a) Windows in spectrum analysis
 - b) IIR and FIR filter
 - c) Matched Z transform.

Roll No

MEMT - 202
M.E./M.Tech., II Semester
 Examination, June 2014
Digital Signal Processing
Time : Three Hours

Maximum Marks : 70

- Note :** i) Attempt any five questions.
 ii) All questions carry equal marks.

1. a) Determine the output $y(n)$ of a relaxed linear invariant system with impulse response.
 $h(n) = a^n u(n), |a| < 1$
 When the input is unit step sequence that is $x(n) = u(n)$.
 b) Determine the convolution of the following pair of signals by means of the Z transform
 i) $x_1(n) = u(n), x_2(n) = \delta(n) + \left(\frac{1}{2}\right)^n u(n)$
 ii) $x_1(n) = n u(n), x_2(n) = 2^n u(n-1)$
2. a) Compute the unit step response of the system with impulse response.

$$h(n) = \begin{cases} 3^n & n < 0 \\ \left(\frac{2}{3}\right)^n & n \geq 0 \end{cases}$$

 b) Discuss about the recursive and nonrecursive realization of FIR systems.