



Seat No.	
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T.E. (Electrical) (Semester – V) Examination, 2010
DIGITAL SIGNAL PROCESSING
(New Course)

Day and Date : Monday, 6-12-2010
Time : 10.00 a.m. to 1.00 p.m.

Max. Marks : 100

Note: Attempt any three questions from each Section.

SECTION – I

1. a) Explain DSP system with block diagram and comment on the properties of DSP system. 8
b) Explain with general mathematical form of equation the recursive and non recursive representation of DSP system. 8
2. a) Compute the circular convolution using DFT and IDFT if 10
 $X(n) = [1, 1, 2, 2]$ and
 $h(n) = [2, 1, 2, 1]$.
b) Explain with signal flow graph DIT-FFT algorithm. 8
3. a) With the help of DIF-FFT algorithm compute DFT of sequence given as 8
 $X(n) = [1, 1, 1, 1, 0, 0, 0, 1]$.
b) Explain Decimation and Interpolation operations and comment on the use of it. 8
4. a) Explain sampling theorem and requirement of changing sampling rate. 8
b) Obtain the convolution using overlap-save method if 8
 $X(n) = [1, 2, 3, 4, 0, 1, 1, 1]$ and
 $h(n) = [1, 1, 1]$.

P.T.O.



SECTION – II

5. a) Obtain the direct form-II and cascade realization of

$$H(z) = \frac{z^2 + z}{z^2 + 5z + 6} \quad 8$$

b) Explain Linear phase property of FIR filter and compare it with IIR filter. 8

6. a) Design a second order low pass digital filters of Butterworth type using BLT method if cutoff frequency is 1 KHz and sampling frequency is 10 kHz. Also realize the filter structure in direct form I. 10

b) Explain with block diagram general architecture for DSP processor TMS 320 XX. 8

7. a) Explain Gibb's phenomenon and use of 'Windowing' in FIR filter. 8

b) Explain the effect of finite word length on the stability and frequency response. 8

8. a) Design DT-High pass filter using BLT if the cutoff frequency is 30 Hz and sampling frequency is 150 Hz. Assume that order of filter is one. Also realize the filter, structure in direct form I. 8

b) Explain frequency sampling method for filter design. 8