

SIXTH SEMESTER B.Sc(CS) DEGREE EXAMINATION, 2014**Digital signal processing****Maximum : 80 Marks****Time : 3 Hours****Instructions to Candidates:****Answer any five full questions.**

- a) With necessary equations explain DFT & IDFT?
- b) Define twiddle factor & Explain advantages of it?
- c) Explain DFT as linear transformation? **(6+4+6)**
- a) Determine the 4-point DFT of the sequence $u(n) - u(n-2)$?
- b) Determine $x(n)$ if its DFT $X(k) = (4, 1-j, -2, 1+j)$ **(8+8)**
- a) Explain the relation ship of DFT to Z transform?
- b) Explain circular symmetries of a sequence with graphical representation? **(8+8)**
- a) Derive the equation for circular convolution?
- b) The first 5-points of 8-point DFT of real valued sequence are $\{0.33, 0.135+j0.3015, 0, 0.135-j0.3189, 0\}$ determine remaining points. **(10+6)**
- a) Define both Direct computation of DFT & FFT algorithms & mention the differences between them?
- b) Explain the frequency transformation in analog domain with necessary equations? **(8+8)**
- a) Explain DIF-FFT algorithms? **(8+8)**
- b) Show that FIR filters are linear-phase filters?
- a) Explain IIR filter design by impulse invariance method & mention the steps for impulse invariance method? **(8+8)**
- b) Explain Basic FIR filter structures?

Turn over

8. Write a short note on any four of the following:

- a) Cooley algorithm
- b) Windowing method
- c) Frequency analysis of signals using DFT
- d) Comparison of FIR & IIR digital filters
- e) Transposed structures
- f) Lattice ladder structure.

(4+4+4+4)

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