Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No .....

EI/IC-603

B.E. VI Semester

Examination, December 2016

Digital Signal Processing

Time : Three Hours

Maximum Marks : 70

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

1. a) Make comparison between CTFT and DTFT. 7
   b) Explain and proved even and add symmetry property of DFT. 7

   OR

   Explain computational requirement of direct computation of DFT. 7

2. a) Explain Tellegen's theorem for digital filters and its application. 7
   b) Draw basic direct form I and direction form II structure of FIR and IIR filter and make comparison. 7

   OR

   Draw and explain frequency sampling structure of linear phase filter. 7

3. a) Enlist all the advantages of FIR filters. Also comment on its short commings. 7
   b) What is the Criteria of selection of window function explain? How windowing is responsible for cribbs phenomenon also explain. 7

   OR

   Make comparison between IIT, BLT and MZT method of IIR filter design. 7

4. a) What do you mean by Decimation in time and frequency explain? These algorithm exploit which properties of twiddle factor. 7
   b) Justify the name chirp Z-transform and explain the procedure. 7

   OR

   Explain Goertzel algorithm of DFT computation. 7

5. a) What do you mean by energy spectral density and power spectral density Explain. Also make comparison between them. 7
   b) Determine the response of a LTI system to random signals 7

   OR

   Explain welch method of power spectrum estimation. 7

6. Draw and explain DIF-FFT algorithm with complete flow graph. 14

7. a) Explain basic principles of spectrum estimation. 7
   b) Explain the terms; Cross covariance and Cross spectra. 7

   OR

   How do you represent infinite energy signals explain. 7

8. Write short notes on any two of the following 14
   a) FFT algorithm for composite signals
   b) Matrix representation of digital filters
   c) Two dimensional DFT
   d) Discrete Fourier series

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